

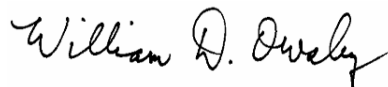
**TYCO SAFETY PRODUCTS
SENSORMATIC
EMC
TEST REPORT**

Model:
AMS-1140
FCC ID: BVCAMS1140
IC: 3506A-AMS1140

Intentional Radiator

FCC and IC
47 CFR, Part 15, Subpart B, AND Subpart C
Industry Canada
RSS GENe, ICES-003e, RSS-210e

Date:
January 22, 2010



EMC Engineer

1 SUMMARY OF RESULTS

1.1 47 CFR Part 15, Subpart B / Subpart C

Part	PARAMETER TO BE MEASURED	Applies	Comments
SubPart B, Unintentional Radiators (Class B)			
15.107	Conducted Disturbance (Conducted Emissions, 0.15-30 MHz)	X	Complies
15.109	Radiated Disturbance (Radiated Emissions, 30-1000 MHz)	X	Complies
SubPart C, Intentional Radiators (General Limits)			
15.207	Conducted Disturbance (Conducted Emissions, 0.15-30 MHz)	X	Complies
15.209	Radiated Disturbance (Radiated Emissions, 0.009 plus MHz)	X	Complies

Compliance with 15.203:

This product is professionally installed and setup, therefore the device is compliant with the requirement of this clause.

Compliance with 15.204:

The only antenna type used with this transmitter is a loop. The loop with the highest gain (area x turns x current) has been used for testing and the transmit circuit adjusted for highest output.

1.2 IC RSS 210 (RSS GEN)

Clause	PARAMETER TO BE MEASURED	Applies	comment
4.6.1	Emission Bandwidth	X	Complies

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3 DESCRIPTION AND CHARACTERISTICS OF THE EUT

3.1 Description and Characteristics of Equipment Under Test (EUT).

Unit: AMS-1140
 Product Code: ZA1140-D
 Part Number:
 Regulatory ID: AMS1140

3.1.1 Additional EUT Setup / Configuration Details

Configurator:
 Application:
 Application Build:
 Boot Utility Version:

3.1.2 Type Designation

The type designation may be either a single alphanumeric code or an alphanumeric/code divided into two parts.

TYPE DESIGNATION AS A SINGLE ALPHANUMERIC CODE: (See Note 1)

A	M	S	-	1	1	4	0												
---	---	---	---	---	---	---	---	--	--	--	--	--	--	--	--	--	--	--	--

OR TYPE DESIGNATION IN TWO PARTS:

1. EQUIPMENT SERIES No. (See Note 2)

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

2. EQUIPMENT SPECIFIC No. (See Note 3)

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Note 1: This is the manufacturer’s numeric or alphanumeric code or name that is specific to a particular equipment. It may contain information in coded form on the characteristics of the equipment e.g. frequency, power. The manufacturer is free to choose the form of the type designation.

Note 2: This is the number, code or trade name used by the manufacturer to describe a series or “family” of equipment of substantially the same mechanical and electrical construction which will include a number of related equipments. This number is often referred to as the “model no.”

Note 3: This is the manufacturer’s identification number given to specific equipment in the series or “family” of equipments. It is often referred to as the “identification number”.

3.2 CONSTRUCTION OF EQUIPMENT UNDER TEST (EUT)

Single unit

Multiple units

If multiple units describe each one clearly:

2 pedestals; Control section in primary and capacitor section in secondary.

3.2.1 Overview

The AMS-1140 is a controller capable of driving a pair of antennas to generate a magnetic field to excite tags, receive the tag signal and alarm when an acceptable tag signal is detected and verified. This controller functions by transmitting a 58 kHz ringing pulse for 1.6 mS at a maximum rate of 90 Hz. Then at the end of the pulse detects the resonance ringing of any tags in the field. A single main PCB in the Primary pedestal accommodates the Receiver, the Switching Amplifier Transmitter and the Power Supply. The Secondary pedestal has a capacitor board for tuning the loop to resonance.

3.2.2 Installation

This system is professionally installed.

3.3 EQUIPMENT RATINGS

Electrical

Power Supply

- Primary input100-120Vac or 200-240Vac @ 50–60Hz
- Primary power fuse.....2.5A, 250V, slo-blow
- Current draw (120V)<1.5Arms
- Current draw (240V)<1Arms
- Input power (120V)<130W
- Input power (240V)<123W

Transmitter

- Operating frequency58kHz (±200 Hz)
- Transmit burst duration.....1.6ms
- Transmit current maximum.....16A peak
- Burst Repetition Rate:
- Based on 50Hz ac.....75Hz or 37.5Hz
- Based on 60Hz ac.....90Hz or 45Hz

Receiver

- Center frequency58kHz

- Ambient temperature0°C to 50°C, (32°F to 122°F)
- Relative humidity0 to 90%, non-condensing

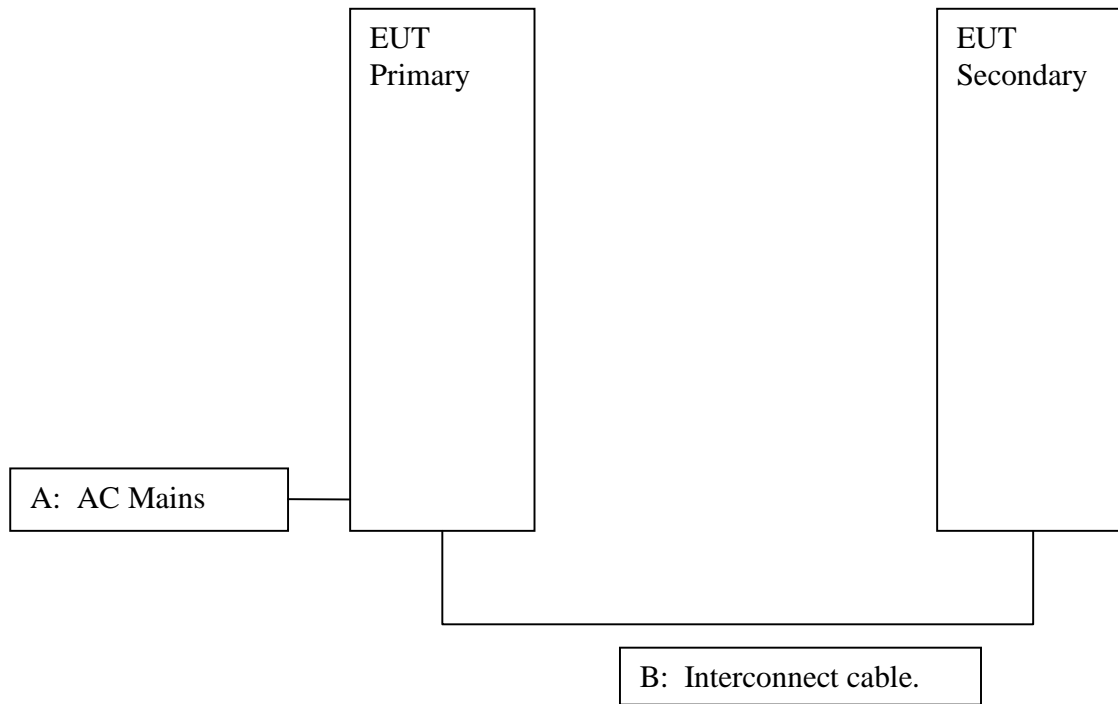
3.3.1 Frequency Characteristics And Internal Clocks

- 58 kHz +/- 200 Hz Emission Designator – P0N
- 500 kHz
- 16 MHz
- 20 MHz
- 100 MHz
- 30 MHz

3.3.2 Marketing And Installation Environment

- Either (FCC 15: Sub-part B, Class A or B) – Unintentional Radiator
- Emissions Class A is non-residential, not advertised or marketed to general public.
- or
- Emissions Class B is residential; advertised and marketed to general public
- And/or
- FCC 15, Sub-part C – Intentional Radiator

3.4 TEST SET-UP BLOCK DIAGRAM



3.4.1 List Of Ports

	Function	Classification	Max Cable Length	Test Length	Cable Type/Description
A	AC Mains	AC power	> 1 m but < 3 m	1.83m	3 conductor unshielded
B	Antenna Interconnect cables	Signal	< 3 m	2.5m	Shielded 2 Twisted Pairs w/drn

* Classify ports as ac power, dc power, or signal/control.

** Classify maximum cable lengths as ≤ 1 m, > 1m but ≤ 3 m, or > 3m

3.1 Sample Calculation – Radiated & Conducted Emissions

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:

$$\text{Field Strength (dB}\mu\text{V/m)} = \text{RAW} - \text{AMP} + \text{CBL} + \text{ACF}$$

Where:

RAW = Measured level before correction (dB μ V)

AMP = Amplifier Gain (dB)

CBL = Cable Loss (dB)

ACF = Antenna Correction Factor (dB/m)

$$\text{dB}\mu\text{V/m} = 20 * \log * \mu\text{V/m}$$

Margin to Limit is calculated by subtracting corrected measurement from Limit. Positive margin indicates compliance. Negative margin indicates non-compliance

To convert dB μ V/m to dB μ A/m,

Reduce reading in dB μ V/m by 51.5 dB to convert to dB μ A/m.

Radiated and Conducted Emissions tests were performed using the procedures of ANSI C63.4 including methods for signal maximizations and EUT configuration.

3.2 Test Site Registration

The Tyco Safety Products / Sensormatic Electronics Corp OATS located at 6600 Congress Ave. Boca Raton, FL. 33487 is registered with the FCC, number – 889978 and with Industry Canada, number – 3506A-1.

3.1 Uncertainty of Measurements

Combined Standard Uncertainty and Expanded Uncertainty using an expansion factor of 2. (estimated)		CISPR 16-4-2 Uncertainty Limits
Radiated Emissions = ± 1.56 dB	Expanded Uncertainty = 3.12 dB	5.2 dB
Conducted Emissions = ± 1.12 dB	Expanded Uncertainty = 2.24 dB	3.6 dB
Harmonic Current and Flicker = ± 2.6 %	Expanded Uncertainty = 5.12 %	
Radiated Immunity = ± 2.15 dB	Expanded Uncertainty = 4.3 dB	
ESD Immunity = 4.15 %	Expanded Uncertainty = 8.3 %	
EFT - Fast Transient Immunity = ± 2.82 %	Expanded Uncertainty = 5.64 %	
Conducted Immunity = ± 1.83 dB	Expanded Uncertainty = 2.24 dB	
Voltage Variation and Interruption = ± 1.7 %	Expanded Uncertainty = 3.4 %	
Surge Immunity = ± 3.1 %	Expanded Uncertainty = 6.2 %	

Uncertainty values were calculated based on methods in ETSI TR 100 028.

Per EN 300 330-1, Clause 9, the value of the measurement uncertainty for each measurement, shall be equal to or lower than the figures given below.

RF frequency $\pm 1 \times 10^{-7}$;

RF power, conducted ± 1 dB;

RF power, radiated ± 6 dB;

Temperature $\pm 1^\circ\text{C}$;

Humidity ± 5 %.

4 FCC TESTS

4.1.1 Conducted Emissions, FCC Part 15, Clause 15.107 And 15.207

Limit : Class B – (15.107 limit levels are the same as 15.207)
 Equipment operation : Tag Detecting
 Line Voltage / Freq : 120V / 60 Hz
 Temp : 22° C
 Humidity : 52.0% RH
 Date : 12/16/09

FCC Class A 15.107 limits

Frequency range	Quasi-peak (dBuV)	Average (dBuV)
0,15 - 0,50	79	66
0,50 - 30	73	60

FCC Class B 15.107 and 15.207 limits

Frequency range	Quasi-peak (dBuV)	Average (dBuV)
0,15 - 0,50	66 - 56	56 - 46
0,50 - 5	56	46
5 - 30	60	50

Freq (MHz)	Peak (dBuV)	QP (dBuV)	Avg (dBuV)	Cable + Limiter	QP/Avg Limit	QP/Avg Margin	Line	Comments
10.06	55	53	22	10	60/50	7/28	L1	Complies
4.91	49	47	18	10	56/46	9/28	L2	Complies
.983	52	50	32	10	56/46	6/14	L1	Complies
.635	52	50	25	10	56/46	6/21	L1	Complies
.756	52	51	26	10	56/46	5/20	L2	Complies
.873	52	50	27	10	56/46	6/19	L1	Complies
22.65	51	48	17	10	60/50	12/33	L2	Complies

Figure 1. Conducted Emissions on Line 1 (L1) (peak hold over time)

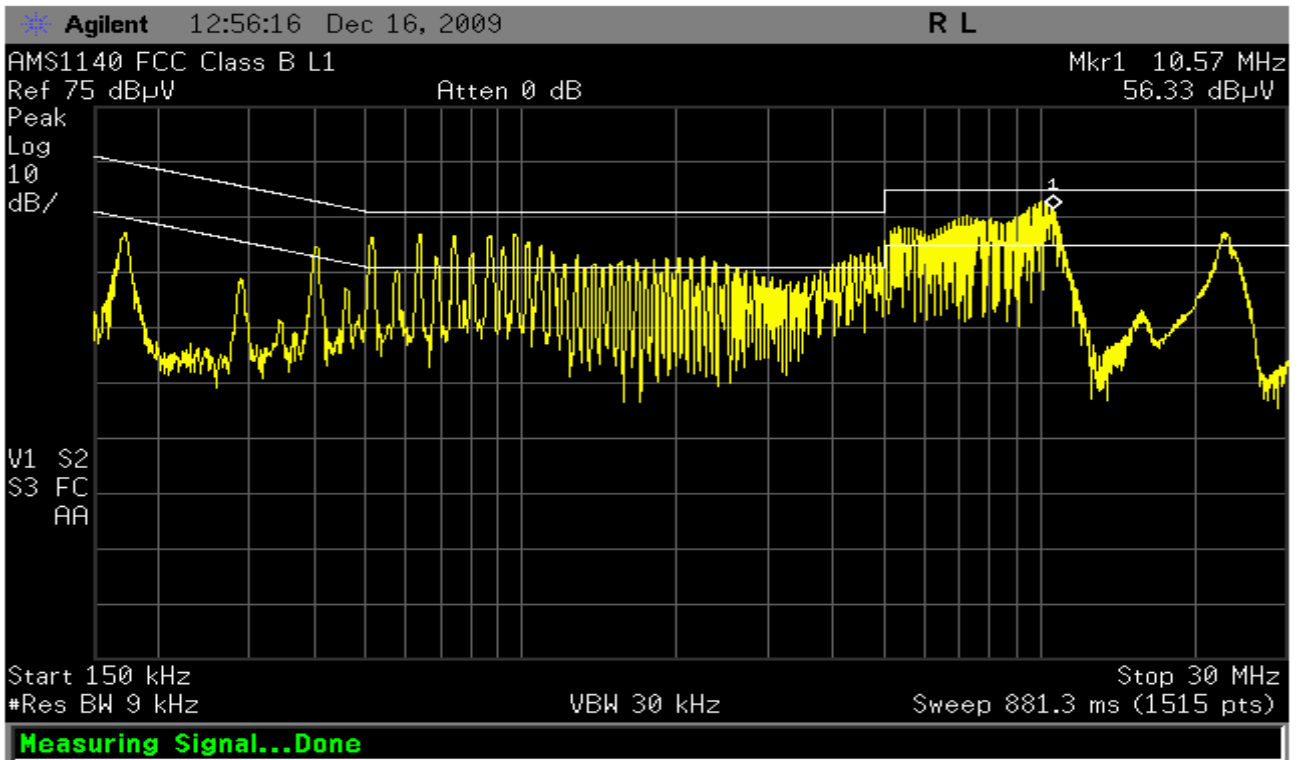
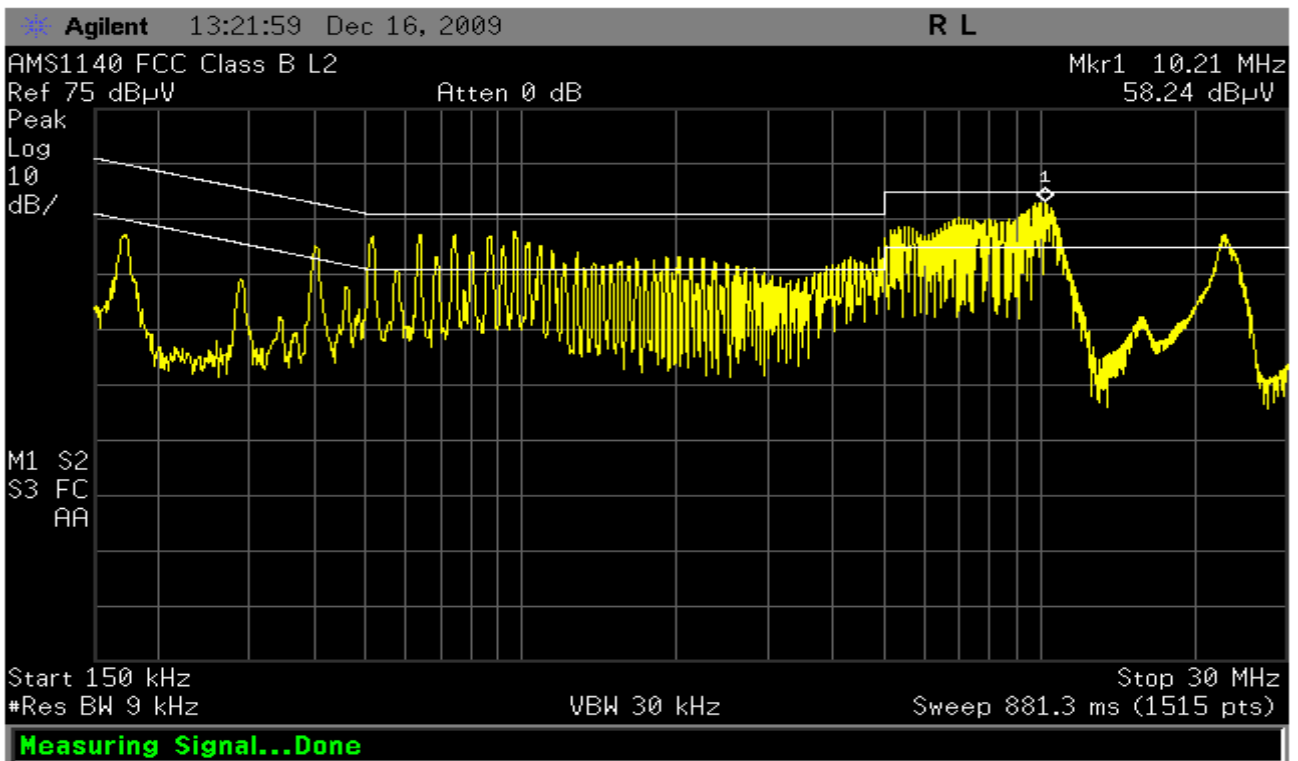


Figure 2. Conducted Emissions on Line 2 (L2) (peak hold over time)



4.1.2 Radiated Emissions, FCC Part 15, Clause 15.109 (above 30 MHz)

Limit : Class B
 Equipment operation : Tag Detecting
 Line Voltage / Freq : 120V / 60 Hz
 Distance : 3 meters OATS
 Temp : 21° C
 Humidity : 51.5% RH
 Date : 1/15/09

LIMIT FCC Part 15, Subpart B.

Class A digital devices at 10 meters and limit adjusted to 3 meters.

Frequency of emission (MHz)	Field strength (microvolts/meter)	Field strength (dBuV/m) at 10 meters	Field strength (dBuV/m) at 3 meters
30-88	90	39	49
88-216	150	44	54
216-960	210	46	56
Above 960	300	50	60

Distance adjustment is found by $20 \cdot \log(10/3) = 10.5$ dB

Class B digital devices at 3 meters, Subpart B and General Limits, Subpart C > 30 MHz.

Frequency of emission (MHz)	Field strength (microvolts/meter)	Field strength (dBuV/m) at 3 meters
30-88	100	40
88-216	150	44
216-960	200	46
Above 960	500	54

Measurements:

Frequency (MHz)	Receiver Antenna Details	QP Amplitude (dBuV)	Antenna Corr.Factor (dB)	Cable + Amplifier Corr.Factor (dB)	Corrected QP Amplitude (dBuV)	QP Limit (dBuV)	Margin (dB)	Comments
60.24	vert	39	9.2	-24	24	40	16	Complies
72	vert	41	9.2	-24	26	40	14	Complies
85	vert	38	9.7	-22	26	40	14	Complies
60.24	Horz	30	8.2	-24	14	40	26	Complies
72	Horz	37	8.2	-24	21	40	19	Complies
85	Horz	25	7.7	-22	11	40	29	Complies

Figure 1. Horizontal (peak hold over time)

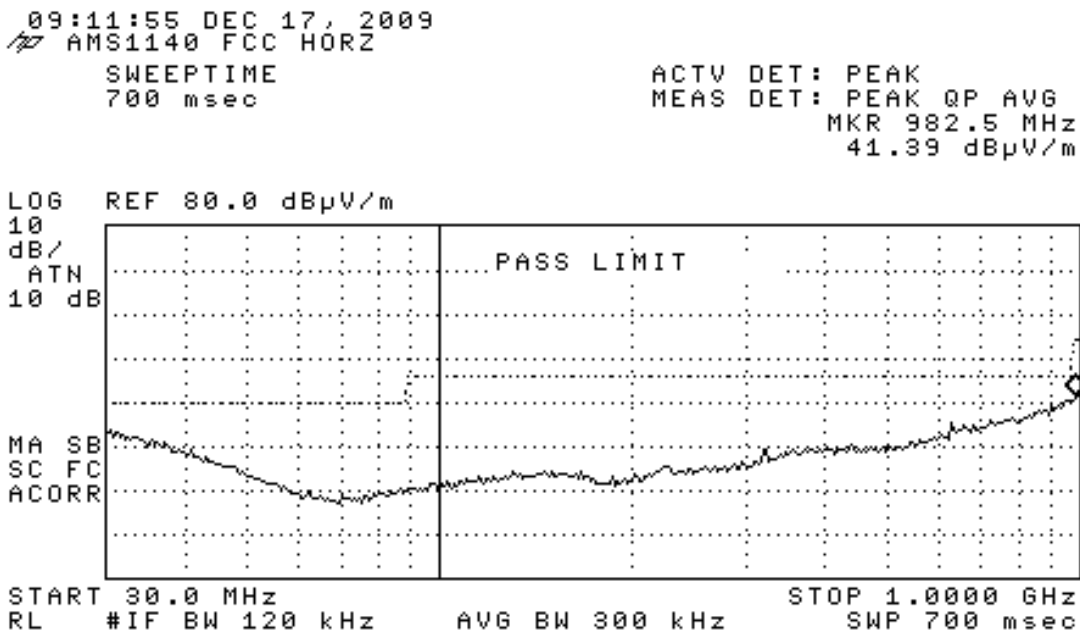
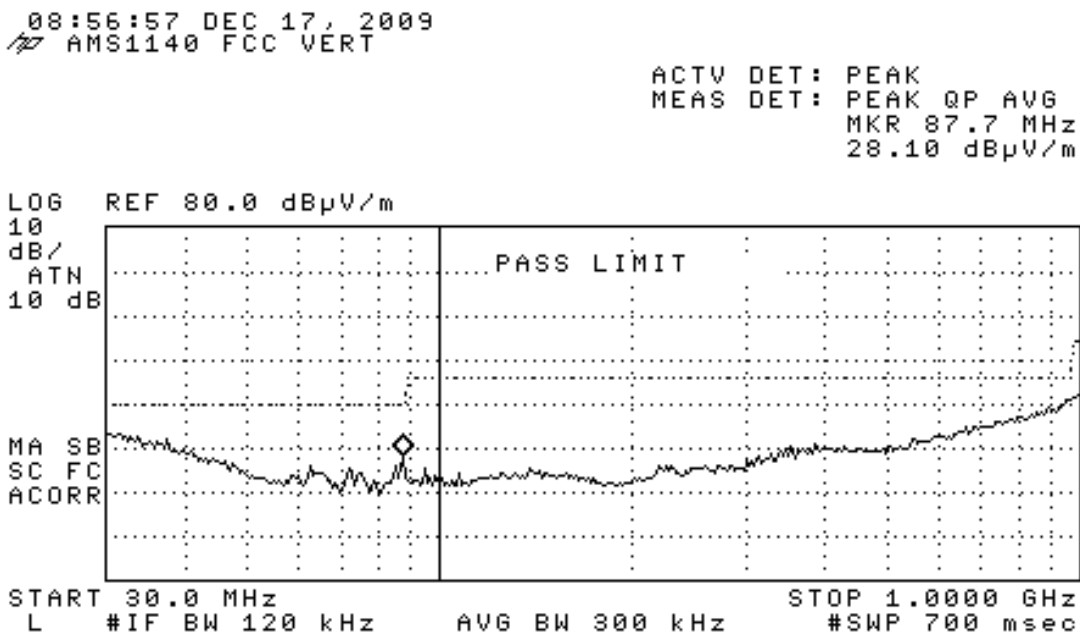


Figure 2. Vertical (peak hold over time)



4.1.3 Radiated Emissions, FCC Part 15, Clause 15.209 (below 30 MHz)

Limit : General Limits
 Line Voltage / Freq : 120V / 60 Hz
 Distance : 10 meters, H-field test site south end of property.
 Temp : 20° C
 Humidity : 52% RH
 Date : 1/14/09

All measurements made at appropriate RBW, 200 or 9000 Hz and with proper detector Average up to 490 kHz and QP above that.

Dist	Freq	SpecAn Level			Ant Fact	Filt Fact	DCF	DCCF	Pk Cor	QP Cor	AvgCor	FCC Limit	Limit	Margin	Peak Limit	Peak Margin
		pk	QP	av												
10.0	(pwr-15%=-102vac)	42.7	36.8	27.8	61.60	0	-105.0	-16.8	-0.7	-6.6	-15.6	32.3	av@300m	47.9	52.3	53.0
10.0	(pwr+15%=-138vac)	45.4	41.4	31.0	61.60	0	-105.0	-16.8	2.0	-2.0	-12.4	32.3	av@300m	44.7	52.3	50.3
30.0	at a longer distance	9.9	4.5	-3.1	61.60	0	-71.1	-16.8	0.4	-5.0	-12.6	32.3	av@300m	44.9	52.3	51.9
10.0	58	44.4	38.4	29.3	61.60	0	-105.0	-16.8	1.0	-5.0	-14.1	32.3	av@300m	46.4	52.3	51.3
10.0	116	-14.7	-20.9	-25.0	55.75	1.3	-105.0	-16.8	-62.6	-68.8	-72.9	26.3	av@300m	99.2	46.3	108.9
10.0	174	7.0	3.2	-7.8	52.80	0.7	-105.0	-16.8	-44.5	-48.3	-59.3	22.8	av@300m	82.0	42.8	87.2
10.0	232	5.3	-3.2	-12.8	50.60	0.4	-105.0	-16.8	-48.7	-57.2	-66.8	20.3	av@300m	87.0	40.3	88.9
10.0	290	5.3	-1.8	-14.7	48.80	0.3	-105.0	-16.8	-50.6	-57.7	-70.6	18.4	av@300m	88.9	38.4	88.9
10.0	348	4.2	-6.3	-18.4	47.35	0.3	-105.0	-16.8	-53.1	-63.6	-75.7	16.8	av@300m	92.5	36.8	89.9
10.0	406	8.0	-0.4	-13.6	46.15	0.2	-105.0	-16.8	-50.6	-59.0	-72.2	15.4	av@300m	87.6	35.4	86.0
10.0	464	5.5	-5.5	-18.1	45.05	0.2	-105.0	-16.8	-54.2	-65.2	-77.8	14.3	av@300m	92.1	34.3	88.5
10.0	522	7.9	-1.8	-11.4	44.25	0.2	-33.9	-16.8	18.5	8.8	-0.8	33.3	QP@30m	24.5	53.3	34.8
10.0	580	14.9	9.6	3.2	43.70	0.2	-33.9	-16.8	24.9	19.6	13.2	32.3	QP@30m	12.7	52.3	27.4

Legend for Radiated Emissions below 30 MHz Table.

Note: Limits and details change at 490 kHz, per 15.209(a)
Detector bandwidths are specified in ANSI C63.4-2003, sec 4.2 which references ANSI C63.2-1996 and CISPR 16-1-1:2003-11
Video bandwidth is set to at least 3 times wider than the IF bandwidth.
Use Average detector for Freq bands 9-90 kHz and 110-490 kHz and above 1000 MHz per 15.209(d)
Use QP detector for other Freq bands below 1000 MHz per 15.209(d)
Average Detector measuring time is set to 100 mSec per 15.35(c)
QuasiPeak Detector measuring time is set to at least 1 second per CISPR 16
Peak Detector values may be used instead of QP if the value complies with the limit. 15.35(a)
Peak Limit is 20 dB higher than QuasiPeak or Average Limit in Table of 15.209 per 15.35(b)
Measure Variation of Fundamental Emission due to power supply variation +/-15% per 15.31(e)
AF = Antenna Factor
FF = Filter Factor: Insertion loss of High Pass Filter, excluding fundamental.
DCCF (duty cycle correction factor) = 20 log (duty cycle) = 20 log (pulse duration/pulse repetition period)
Math Average of DCCF can be used instead of using Average Detector
DCF: Use square law (40 dB). If "Actual" is non-compliant, determine actual correction factor per formula below.
Distance Correction Factor (DCF) = 20 log(Test Dist / 300)^P = 20 P log (Test Dist / 300) to adjust measurement to 300 meters.
Where P is the roll-off exponent . P is found as follows:
Roll off Factor P = (Level(@ Distance 1) - Level(@ Distance 2)) / 20 log (Distance 2 / Distance 1)

FCC 15.209 - Radiated General Limits < 30 MHz

Frequency (MHz)	Field strength (uV/m)	Field strength (dBuV/m)	Measurement distance (meters)	Field Strength at 3m (dBuV/m)	Field Strength at 10m (dBuV/m)
0.009–0.490	2400/F(kHz)	49-14	300	89 - 54	79 - 44
0.490–1.705	24000/F(kHz)	34-23	30	54 – 43	44 – 33
1.705–30.0	30	30	30	50	40

4.1.4 Occupied Bandwidth For Industry Canada – IC. RSS GEN, sec 4.6.1

Port : AC Mains
 Line Input Voltage and Freq : 120V / 60 Hz
 Ambient temperature : 22.6⁰C
 Relative humidity : 51.2%
 Date : 12/12/08

The trace data points are recovered and are directly summed in linear terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached and that frequency recorded. The process is repeated for the highest frequency data points. This frequency is recorded.

The span between the two recorded frequencies is the occupied bandwidth.

meas	calc
55.32	55.26
61.25	60.83
5.93	5.57

Occupied bandwidth measured = 5.93 kHz; calculated = 5.57 kHz.

20 dB and 30 dB bandwidth screen captures follow.

1/6/2010 9:35		5.52E+04	1.14E-02	
Instrument ID:	Agilent E7401A	5.52E+04	1.20E-02	
Resolution		5.53E+04	1.29E-02	
Bandwidth:	2.00E+02	5.53E+04	1.32E-02	
Reference Level:	2.24E+00	5.53E+04	1.36E-02	
Sweep Time:	7.50E+00	5.53E+04	1.41E-02	
Video Bandwidth:	3.00E+02	5.53E+04	1.39E-02	
Amplitude Units:	V	5.53E+04	1.42E-02	
dB Per Division:	10	5.53E+04	1.39E-02	
	Trace A	5.54E+04	1.50E-02	
	TRA	5.54E+04	1.42E-02	
Hz	V	5.54E+04	1.45E-02	
	5.50E+04	8.00E-03	5.54E+04	1.41E-02
	5.50E+04	1.24E-02	5.54E+04	1.40E-02
	5.50E+04	1.25E-02	5.54E+04	1.37E-02
	5.50E+04	1.23E-02	5.55E+04	1.37E-02
	5.51E+04	1.20E-02	5.55E+04	1.46E-02
	5.51E+04	1.16E-02	5.55E+04	1.51E-02
	5.51E+04	1.19E-02	5.55E+04	1.50E-02
	5.51E+04	1.20E-02	5.55E+04	1.61E-02
	5.51E+04	1.10E-02	5.55E+04	1.69E-02
	5.51E+04	1.02E-02	5.55E+04	1.68E-02
	5.52E+04	1.01E-02	5.56E+04	1.71E-02
	5.52E+04	9.83E-03	5.56E+04	1.75E-02
	5.52E+04	1.08E-02	5.56E+04	1.84E-02
	5.52E+04	1.10E-02	5.56E+04	1.82E-02
	5.52E+04	1.16E-02	5.56E+04	1.89E-02

5.56E+04	1.81E-02	5.64E+04	2.44E-02
5.56E+04	1.82E-02	5.64E+04	2.28E-02
5.57E+04	1.82E-02	5.64E+04	2.34E-02
5.57E+04	1.73E-02	5.64E+04	2.55E-02
5.57E+04	1.75E-02	5.64E+04	2.64E-02
5.57E+04	1.65E-02	5.65E+04	2.73E-02
5.57E+04	1.67E-02	5.65E+04	2.90E-02
5.57E+04	1.61E-02	5.65E+04	3.00E-02
5.58E+04	1.58E-02	5.65E+04	3.13E-02
5.58E+04	1.47E-02	5.65E+04	3.26E-02
5.58E+04	1.50E-02	5.65E+04	3.37E-02
5.58E+04	1.51E-02	5.65E+04	3.41E-02
5.58E+04	1.58E-02	5.66E+04	3.57E-02
5.58E+04	1.66E-02	5.66E+04	3.52E-02
5.58E+04	1.82E-02	5.66E+04	3.62E-02
5.59E+04	1.88E-02	5.66E+04	3.65E-02
5.59E+04	1.88E-02	5.66E+04	3.58E-02
5.59E+04	1.92E-02	5.66E+04	3.57E-02
5.59E+04	2.07E-02	5.67E+04	3.54E-02
5.59E+04	2.06E-02	5.67E+04	3.45E-02
5.59E+04	2.11E-02	5.67E+04	3.70E-02
5.59E+04	2.18E-02	5.67E+04	3.91E-02
5.60E+04	2.16E-02	5.67E+04	4.21E-02
5.60E+04	2.26E-02	5.67E+04	4.54E-02
5.60E+04	2.22E-02	5.67E+04	4.73E-02
5.60E+04	2.18E-02	5.68E+04	4.89E-02
5.60E+04	2.19E-02	5.68E+04	5.16E-02
5.60E+04	2.19E-02	5.68E+04	5.20E-02
5.61E+04	2.07E-02	5.68E+04	5.52E-02
5.61E+04	2.12E-02	5.68E+04	5.60E-02
5.61E+04	2.33E-02	5.68E+04	5.74E-02
5.61E+04	2.33E-02	5.68E+04	5.81E-02
5.61E+04	2.44E-02	5.69E+04	5.85E-02
5.61E+04	2.52E-02	5.69E+04	5.90E-02
5.61E+04	2.61E-02	5.69E+04	5.84E-02
5.62E+04	2.70E-02	5.69E+04	5.78E-02
5.62E+04	2.81E-02	5.69E+04	5.76E-02
5.62E+04	2.81E-02	5.69E+04	5.77E-02
5.62E+04	2.94E-02	5.70E+04	5.45E-02
5.62E+04	2.86E-02	5.70E+04	5.29E-02
5.62E+04	2.97E-02	5.70E+04	5.20E-02
5.62E+04	2.98E-02	5.70E+04	4.96E-02
5.63E+04	2.95E-02	5.70E+04	4.54E-02
5.63E+04	2.91E-02	5.70E+04	4.33E-02
5.63E+04	2.89E-02	5.70E+04	4.40E-02
5.63E+04	2.88E-02	5.71E+04	4.69E-02
5.63E+04	2.77E-02	5.71E+04	5.06E-02
5.63E+04	2.58E-02	5.71E+04	5.32E-02
5.64E+04	2.60E-02	5.71E+04	5.68E-02
5.64E+04	2.52E-02	5.71E+04	5.88E-02

5.71E+04	6.20E-02	5.79E+04	3.70E-01
5.71E+04	6.28E-02	5.79E+04	3.66E-01
5.72E+04	6.62E-02	5.79E+04	3.65E-01
5.72E+04	6.78E-02	5.79E+04	3.58E-01
5.72E+04	6.75E-02	5.79E+04	3.55E-01
5.72E+04	6.96E-02	5.80E+04	3.51E-01
5.72E+04	7.06E-02	5.80E+04	3.62E-01
5.72E+04	7.16E-02	5.80E+04	3.71E-01
5.73E+04	7.30E-02	5.80E+04	3.79E-01
5.73E+04	8.24E-02	5.80E+04	3.89E-01
5.73E+04	9.16E-02	5.80E+04	3.96E-01
5.73E+04	1.01E-01	5.80E+04	4.05E-01
5.73E+04	1.13E-01	5.81E+04	4.12E-01
5.73E+04	1.21E-01	5.81E+04	4.17E-01
5.73E+04	1.31E-01	5.81E+04	4.22E-01
5.74E+04	1.44E-01	5.81E+04	4.24E-01
5.74E+04	1.56E-01	5.81E+04	4.32E-01
5.74E+04	1.66E-01	5.81E+04	4.34E-01
5.74E+04	1.76E-01	5.82E+04	4.37E-01
5.74E+04	1.82E-01	5.82E+04	4.39E-01
5.74E+04	1.96E-01	5.82E+04	4.39E-01
5.74E+04	2.06E-01	5.82E+04	4.40E-01
5.75E+04	2.20E-01	5.82E+04	4.41E-01
5.75E+04	2.29E-01	5.82E+04	4.40E-01
5.75E+04	2.42E-01	5.82E+04	4.39E-01
5.75E+04	2.51E-01	5.83E+04	4.33E-01
5.75E+04	2.63E-01	5.83E+04	4.33E-01
5.75E+04	2.71E-01	5.83E+04	4.29E-01
5.76E+04	2.81E-01	5.83E+04	4.26E-01
5.76E+04	2.88E-01	5.83E+04	4.21E-01
5.76E+04	2.96E-01	5.83E+04	4.16E-01
5.76E+04	3.05E-01	5.83E+04	4.07E-01
5.76E+04	3.13E-01	5.84E+04	4.01E-01
5.76E+04	3.21E-01	5.84E+04	3.94E-01
5.76E+04	3.30E-01	5.84E+04	3.87E-01
5.77E+04	3.37E-01	5.84E+04	3.77E-01
5.77E+04	3.41E-01	5.84E+04	3.69E-01
5.77E+04	3.48E-01	5.84E+04	3.59E-01
5.77E+04	3.53E-01	5.85E+04	3.48E-01
5.77E+04	3.59E-01	5.85E+04	3.39E-01
5.77E+04	3.62E-01	5.85E+04	3.24E-01
5.77E+04	3.64E-01	5.85E+04	3.17E-01
5.78E+04	3.66E-01	5.85E+04	3.02E-01
5.78E+04	3.70E-01	5.85E+04	2.92E-01
5.78E+04	3.72E-01	5.85E+04	2.79E-01
5.78E+04	3.73E-01	5.86E+04	2.66E-01
5.78E+04	3.74E-01	5.86E+04	2.54E-01
5.78E+04	3.73E-01	5.86E+04	2.44E-01
5.79E+04	3.73E-01	5.86E+04	2.28E-01
5.79E+04	3.71E-01	5.86E+04	2.17E-01

5.86E+04	2.00E-01	5.94E+04	4.50E-02
5.86E+04	1.91E-01	5.94E+04	4.00E-02
5.87E+04	1.77E-01	5.94E+04	3.96E-02
5.87E+04	1.63E-01	5.94E+04	4.02E-02
5.87E+04	1.50E-01	5.94E+04	3.94E-02
5.87E+04	1.36E-01	5.95E+04	3.91E-02
5.87E+04	1.25E-01	5.95E+04	3.82E-02
5.87E+04	1.07E-01	5.95E+04	3.71E-02
5.88E+04	9.78E-02	5.95E+04	3.82E-02
5.88E+04	8.79E-02	5.95E+04	3.63E-02
5.88E+04	7.93E-02	5.95E+04	3.53E-02
5.88E+04	7.86E-02	5.95E+04	3.36E-02
5.88E+04	7.76E-02	5.96E+04	3.24E-02
5.88E+04	7.63E-02	5.96E+04	3.03E-02
5.88E+04	7.39E-02	5.96E+04	2.92E-02
5.89E+04	7.26E-02	5.96E+04	2.92E-02
5.89E+04	7.14E-02	5.96E+04	3.06E-02
5.89E+04	6.73E-02	5.96E+04	3.31E-02
5.89E+04	6.54E-02	5.97E+04	3.37E-02
5.89E+04	6.09E-02	5.97E+04	3.45E-02
5.89E+04	5.80E-02	5.97E+04	3.70E-02
5.89E+04	5.39E-02	5.97E+04	3.79E-02
5.90E+04	5.07E-02	5.97E+04	3.88E-02
5.90E+04	5.18E-02	5.97E+04	3.96E-02
5.90E+04	5.59E-02	5.97E+04	4.15E-02
5.90E+04	5.97E-02	5.98E+04	4.15E-02
5.90E+04	6.49E-02	5.98E+04	4.10E-02
5.90E+04	6.72E-02	5.98E+04	4.14E-02
5.91E+04	7.10E-02	5.98E+04	4.21E-02
5.91E+04	7.26E-02	5.98E+04	4.19E-02
5.91E+04	7.46E-02	5.98E+04	4.17E-02
5.91E+04	7.62E-02	5.98E+04	3.96E-02
5.91E+04	7.85E-02	5.99E+04	3.92E-02
5.91E+04	7.88E-02	5.99E+04	3.86E-02
5.91E+04	7.97E-02	5.99E+04	3.72E-02
5.92E+04	7.91E-02	5.99E+04	3.62E-02
5.92E+04	7.88E-02	5.99E+04	3.45E-02
5.92E+04	7.80E-02	5.99E+04	3.34E-02
5.92E+04	7.74E-02	6.00E+04	3.24E-02
5.92E+04	7.55E-02	6.00E+04	3.08E-02
5.92E+04	7.35E-02	6.00E+04	2.91E-02
5.92E+04	7.06E-02	6.00E+04	2.86E-02
5.93E+04	6.83E-02	6.00E+04	2.66E-02
5.93E+04	6.72E-02	6.00E+04	2.61E-02
5.93E+04	6.54E-02	6.00E+04	2.59E-02
5.93E+04	6.12E-02	6.01E+04	2.57E-02
5.93E+04	5.74E-02	6.01E+04	2.55E-02
5.93E+04	5.30E-02	6.01E+04	2.54E-02
5.94E+04	5.01E-02	6.01E+04	2.53E-02
5.94E+04	4.67E-02	6.01E+04	2.50E-02

6.01E+04	2.47E-02	6.06E+04	1.98E-02
6.01E+04	2.30E-02	6.06E+04	1.96E-02
6.02E+04	2.28E-02	6.06E+04	1.86E-02
6.02E+04	2.20E-02	6.06E+04	1.85E-02
6.02E+04	2.14E-02	6.07E+04	1.91E-02
6.02E+04	2.00E-02	6.07E+04	1.89E-02
6.02E+04	2.09E-02	6.07E+04	1.84E-02
6.02E+04	2.12E-02	6.07E+04	1.86E-02
6.03E+04	2.21E-02	6.07E+04	1.88E-02
6.03E+04	2.29E-02	6.07E+04	1.76E-02
6.03E+04	2.41E-02	6.07E+04	1.77E-02
6.03E+04	2.39E-02	6.08E+04	1.71E-02
6.03E+04	2.54E-02	6.08E+04	1.70E-02
6.03E+04	2.55E-02	6.08E+04	1.66E-02
6.03E+04	2.60E-02	6.08E+04	1.50E-02
6.04E+04	2.64E-02	6.08E+04	1.51E-02
6.04E+04	2.67E-02	6.08E+04	1.56E-02
6.04E+04	2.67E-02	6.09E+04	1.57E-02
6.04E+04	2.74E-02	6.09E+04	1.59E-02
6.04E+04	2.67E-02	6.09E+04	1.66E-02
6.04E+04	2.65E-02	6.09E+04	1.74E-02
6.04E+04	2.69E-02	6.09E+04	1.74E-02
6.05E+04	2.65E-02	6.09E+04	1.84E-02
6.05E+04	2.57E-02	6.09E+04	1.84E-02
6.05E+04	2.56E-02	6.10E+04	1.84E-02
6.05E+04	2.44E-02	6.10E+04	1.81E-02
6.05E+04	2.42E-02	6.10E+04	1.84E-02
6.05E+04	2.33E-02	6.10E+04	1.84E-02
6.06E+04	2.32E-02	6.10E+04	1.90E-02
6.06E+04	2.25E-02		
6.06E+04	2.08E-02		

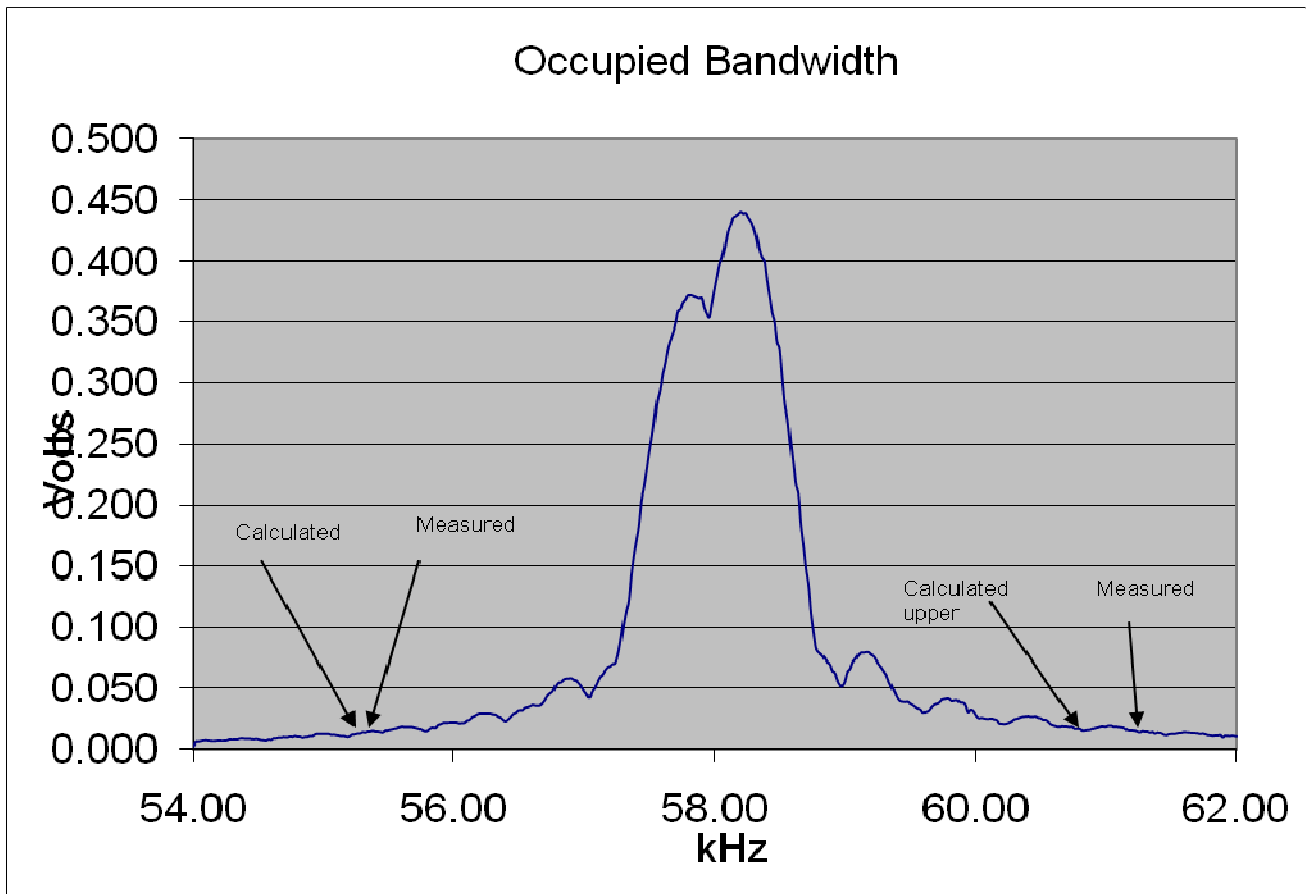


Figure 1.

20 dB Bandwidth from highest level. **The indicated BW is 3.08 kHz.**

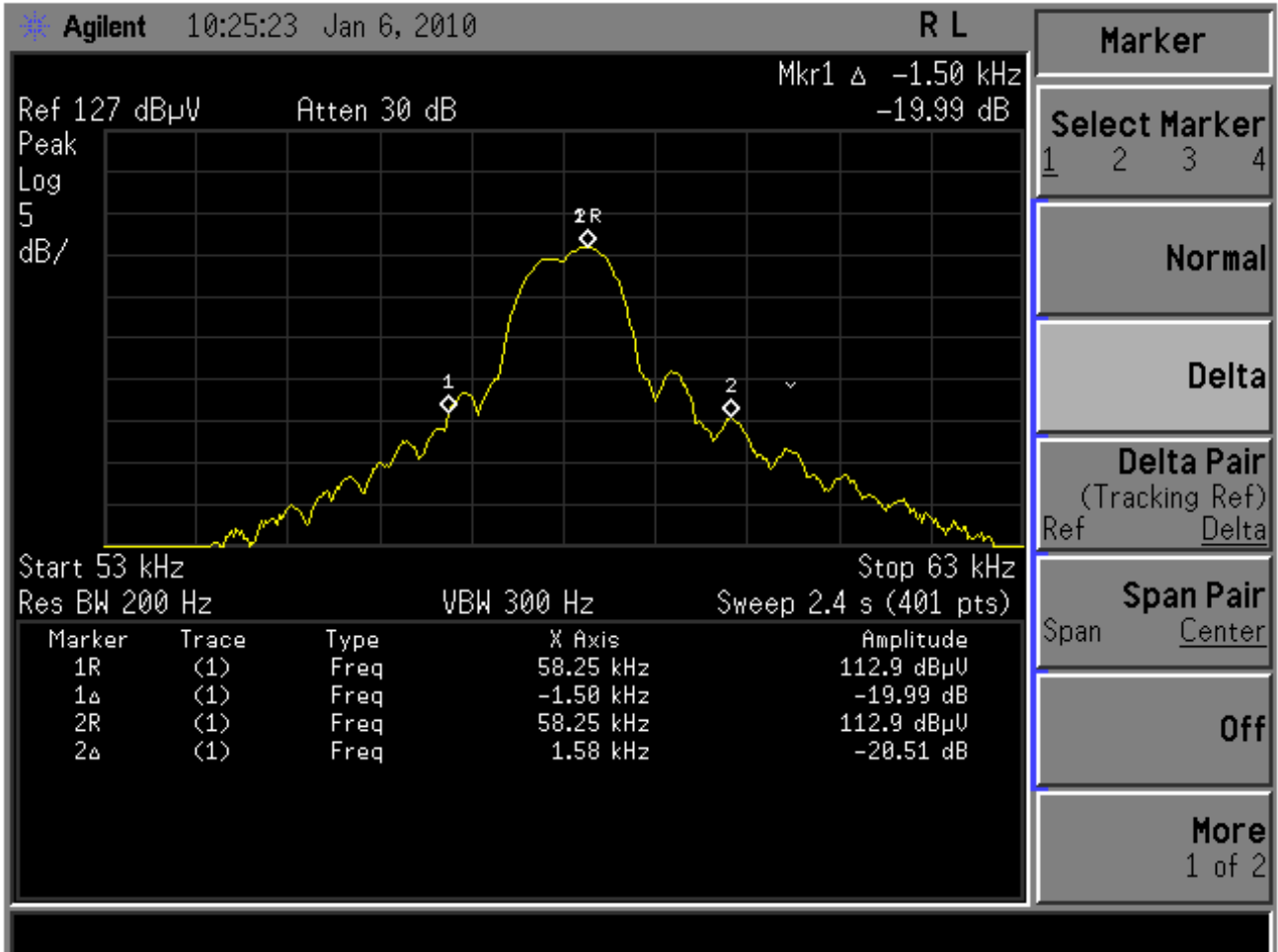
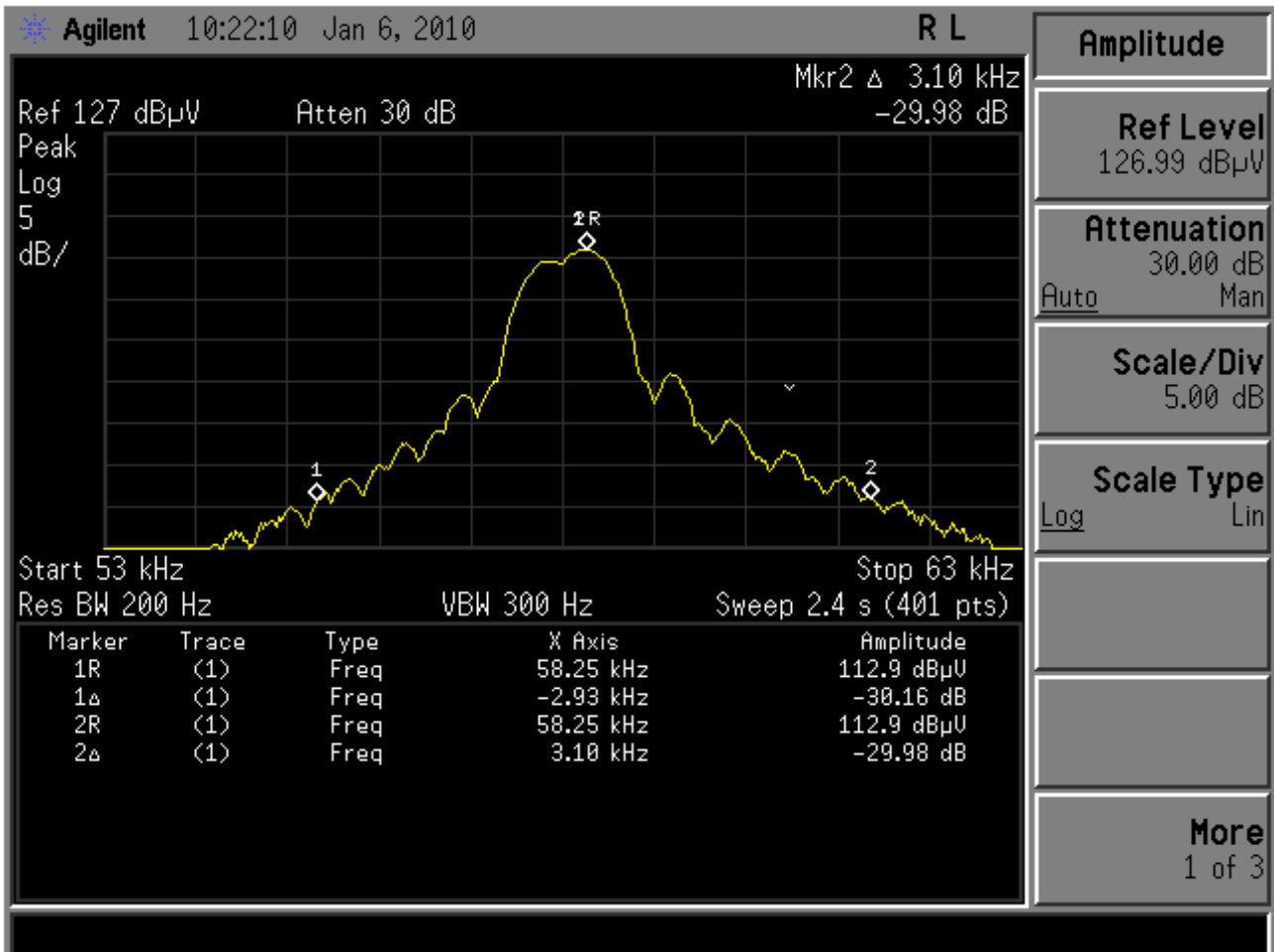


Figure 2.

30 dB Bandwidth from highest level. **The indicated BW is 6.03 kHz**



5 EQUIPMENT LIST

Description	Manufacturer	Model	Serial #	Due	Last
Antenna Bicon	EMCO	3104C	4334	4/3/2010	4/3/2009
Antenna BiLog (Immunity)	Schaffner Chase	CBL6141	4112	Verify	
Antenna Double-Ridge Horn	EMCO	3115	3006	4/2/2010	4/2/2009
Antenna Log Periodic	EMCO	3146	4731	5/4/2010	5/4/2009
Antenna Log Periodic	EMCO	3146	3576	4/3/2010	4/3/2009
Antenna Log Periodic	EMCO	3146	3909	5/4/2010	5/4/2009
Antenna Loop	Electro Metrics	ALP-70	163	5/4/2010	5/4/2009
Antenna Loop (Immunity)	Solar Elect	7334-1	73626	Verify	
Capacitive Cable Clamp	Haefely Trench	PEFT Junior	083-078-31	Verify	
CI 5kv VA AC Power Source	California Inst.	5001ix	54328	10/0610	10/6/2009
CI Electronic Output Switch	California Inst.	EOS-1	72377	10/0610	10/6/2009
CI Power Analyzer System	California Inst.	PACS-1	72376	10/0610	10/6/2009
Directional Coupler	Werlatone	C3910	6706	Verify	
Directional Coupler	Werlatone	C5673	11481	Verify	
DMM	Fluke	87IV	174	8/20/2010	8/20/2009
EFT Generator	Haefely Trench	PEFT Junior	083 180-16	7/10/2010	7/10/2009
ESD Simulator	Schaffner	NSG435	1197	7/15/2010	7/15/2009
Filter >58 kHz High Pass	Tyco EMC lab	unique	1	Verify	
Humidity & Temperature Meter	Davis Inst	4465CF	10304858	8/20/2010	8/20/2009
Line Imp Stable Network	EMCO	3816/2NM	1018	6/10/2010	6/10/2009
Line Imp Stable Network	EMCO	3816/2NM	1064	2/5/2010	2/5/2009
Pre-Amp .009-1300MHz	HP	8447F	2805A03473	Verify	
Pre-Amp .009-1300MHz	HP	8447F	3113A06072	Verify	
RF Current Probe	FCC	F-33-1	304	6/10/2010	6/10/2009
RF Field Meter	Narda	EMR-200	AN-0055	5/5/2010	5/5/2010
RF Injection Clamp	FCC	F-203I	30	10/8/2010	10/8/2009
RF Power Meter	Boonton	4231-30	53701	6/5/2010	6/5/2009
RF Power Sensor	Boonton	51011-EMC	31932	6/5/2010	6/5/2009
Signal Generator	Marconi	2024	783031	2/6/2010	2/6/2009
Spectrum Analyzer	HP	8562A	2712A00534	11/4/2010	11/4/2009
Spectrum Analyzer	HP	E7401A	US39110103	2/26/2010	2/26/2009
Surge CDN Signal Line bal	Key Tek	CM-TELCD	9904206	Verify	
Surge CDN Signal Line unbal	Key Tek	CM-I/OCD	9904213	Verify	
Surge Coupler/Decoupler	Key Tek	CE50	9507535	7/21/2010	7/21/2009
Transient Limiter	Electro Metrics	EM 7600	187	Verify	

6 ANTENNA FACTORS.

Date of Calibration = 4/May/2009
 Date Printed: Monday, May 04, 2009 2:41 PM
 Customer Name: Tyco Safety Products - Sensormatic
 Antenna Manufacturer: Electro-Metrics
Antenna Model: ALP-70 Loop
 Antenna Serial No.: 163
 Temperature (Deg C): 21.0
 Humidity (%): 50.0
 Measurement Distance in Meters = 1.0
 NOTES: ACF valid to 10 meters per NIST methods.
 CAL CERT #: 2009042912

Freq (MHz)	E-field ACF (dB)	H-field ACF (dB)
0.01	75.6	24.1
0.02	71.6	20.2
0.03	68.3	16.9
0.04	65.5	14.0
0.05	63.6	12.2
0.06	61.1	9.7
0.07	59.6	8.2
0.08	58.5	7.0
0.09	57.8	6.4
0.10	56.8	5.4
0.20	51.8	0.4
0.30	48.5	-3.0
0.40	46.3	-5.1
0.50	45.0	-6.5
0.60	43.6	-7.8

0.70	42.8	-8.6
0.80	41.6	-9.8
0.90	41.1	-10.3
1.00	40.5	-11.0
2.00	38.2	-13.3
3.00	37.2	-14.3
4.00	37.0	-14.4
5.00	36.7	-14.8
6.00	37.6	-13.8
7.00	37.7	-13.8
8.00	37.7	-13.7
9.00	37.6	-13.9
10.00	37.6	-13.8
15.00	37.4	-14.0
20.00	37.2	-14.2
25.00	36.2	-15.2
30.00	37.4	-14.1

Date of Calibration = April 3, 2009
 Date Printed: Friday, April 03, 2009 1:51 PM
 Customer Name: Tyco Safety Products - Sensormatic
 Antenna Manufacturer: EMCO
Antenna Model: 3104C Biconical
 Antenna Serial No.: 9009-4334
 Temperature (Deg C). 3
 Humidity (%). 65
 Measurement Distance in Meters = 3
 Antenna Polarization = VERT / HORZ

NOTES:

CAL CERT #: 2009033120

Freq (MHz)	Vertical ACF (dB)	Horizontal ACF (dB)
20.0000	17.7	20.6
21.0000	17.4	20.0
22.0000	16.4	18.6
23.0000	16.1	18.1
24.0000	15.3	16.9
25.0000	14.9	16.4
26.0000	14.2	15.5
27.0000	13.6	15.0
28.0000	13.0	14.3
29.0000	12.3	13.7
30.0000	11.9	13.3
31.0000	11.3	12.7
32.0000	11.0	12.4
33.0000	10.5	11.9
34.0000	10.3	11.7
35.0000	9.9	11.3
36.0000	9.8	11.3
37.0000	9.6	11.0
38.0000	9.6	11.0
39.0000	9.5	10.8
40.0000	9.5	10.7
40.0000	9.5	10.7
41.0000	9.6	10.7
42.0000	9.7	10.7
43.0000	9.9	10.6
44.0000	10.0	10.6
45.0000	10.2	10.7
46.0000	10.4	10.7
47.0000	10.5	10.7
48.0000	10.7	10.7
49.0000	11.0	10.8

50.0000	11.2	10.8
51.0000	11.4	10.8
52.0000	11.6	10.8
53.0000	11.9	10.9
54.0000	12.0	10.9
55.0000	12.1	11.0
56.0000	11.9	10.9
57.0000	11.9	11.0
58.0000	11.4	10.9
59.0000	11.2	10.9
60.0000	10.8	10.8
61.0000	10.5	10.8
62.0000	10.0	10.5
63.0000	9.7	10.4
64.0000	9.2	10.1
65.0000	8.9	9.9
66.0000	8.5	9.5
67.0000	8.2	9.3
68.0000	7.8	8.9
69.0000	7.6	8.6
70.0000	7.3	8.2
71.0000	7.2	7.9
72.0000	7.0	7.5
73.0000	7.0	7.3
74.0000	6.8	7.0
75.0000	6.8	6.8
75.0000	6.8	6.8
76.0000	6.7	6.5
77.0000	6.7	6.4
78.0000	6.6	6.3
79.0000	6.7	6.3
80.0000	6.7	6.3
81.0000	6.9	6.3

82.0000	7.2	6.4
83.0000	7.4	6.5
84.0000	7.6	6.7
85.0000	7.9	6.8
86.0000	8.2	7.1
87.0000	8.3	7.2
88.0000	8.7	7.6
89.0000	8.8	7.7
90.0000	9.1	8.0
91.0000	9.2	8.1
92.0000	9.5	8.5
93.0000	9.5	8.6
94.0000	9.8	8.9
95.0000	9.9	9.0
96.0000	10.2	9.4
97.0000	10.6	9.9
98.0000	11.4	11.2
99.0000	11.7	12.0
100.0000	11.7	11.7
101.0000	11.4	11.3
102.0000	11.6	11.4
103.0000	11.5	11.2
104.0000	11.8	11.5
105.0000	11.9	11.5
106.0000	12.1	11.8
107.0000	12.2	11.8
108.0000	12.5	12.1
109.0000	12.6	12.2
110.0000	12.9	12.6
111.0000	13.1	12.7
112.0000	13.5	13.2
113.0000	13.8	13.5
114.0000	14.3	14.2
115.0000	14.8	14.9
116.0000	15.6	15.7
117.0000	16.3	15.8
118.0000	16.3	15.3
119.0000	15.6	14.5
120.0000	15.0	14.1
121.0000	14.3	13.6
122.0000	14.1	13.5
123.0000	13.8	13.3
124.0000	13.6	13.3
125.0000	13.4	13.2
126.0000	13.4	13.3

127.0000	13.2	13.1
128.0000	13.1	13.2
129.0000	12.9	13.0
130.0000	13.0	13.2
131.0000	12.8	13.0
132.0000	12.8	13.2
133.0000	12.7	13.0
134.0000	12.8	13.1
135.0000	12.7	13.0
136.0000	12.8	13.0
137.0000	12.8	13.0
138.0000	12.8	13.1
139.0000	12.8	13.0
140.0000	12.8	13.0
141.0000	12.8	13.0
142.0000	12.9	13.1
143.0000	13.0	13.1
144.0000	13.0	13.2
145.0000	13.2	13.3
146.0000	13.3	13.4
147.0000	13.5	13.6
148.0000	13.7	13.8
149.0000	14.0	14.1
150.0000	14.2	14.2
151.0000	14.4	14.3
152.0000	14.3	14.2
153.0000	14.5	14.1
154.0000	14.5	13.9
155.0000	14.6	13.9
156.0000	14.7	13.8
157.0000	14.8	13.8
158.0000	14.7	13.7
159.0000	14.8	13.8
160.0000	14.8	13.8
161.0000	15.0	14.0
162.0000	15.1	14.0
163.0000	15.3	14.2
164.0000	15.4	14.2
165.0000	15.7	14.4
166.0000	15.7	14.4
167.0000	16.0	14.7
168.0000	15.9	14.7
169.0000	16.1	14.9
170.0000	16.1	15.0
171.0000	16.1	15.2

172.0000	16.1	15.2
173.0000	16.2	15.4
174.0000	16.3	15.5
175.0000	16.4	15.7
176.0000	16.5	15.8
177.0000	16.7	16.0
178.0000	16.8	16.1
179.0000	16.9	16.3
180.0000	17.0	16.4
181.0000	17.1	16.6
182.0000	17.1	16.7
183.0000	17.2	16.9
184.0000	17.2	17.0
185.0000	17.3	17.1
186.0000	17.3	17.2
187.0000	17.5	17.3
188.0000	17.6	17.5
189.0000	17.8	17.6
190.0000	17.8	17.7
191.0000	17.9	17.7
192.0000	17.8	17.5
193.0000	17.8	17.5
194.0000	17.7	17.3
195.0000	17.8	17.4
196.0000	17.7	17.4
197.0000	17.9	17.5
198.0000	17.8	17.4
199.0000	17.7	17.5
200.0000	17.6	17.3
201.0000	17.7	17.4
202.0000	17.6	17.3
203.0000	17.5	17.3
204.0000	17.4	17.3
205.0000	17.4	17.3
206.0000	17.2	17.2
207.0000	17.2	17.2
208.0000	17.2	17.2
209.0000	17.2	17.2
210.0000	17.1	17.1
211.0000	17.0	17.2
212.0000	16.9	17.0
213.0000	16.9	17.0
214.0000	16.8	16.9
215.0000	16.7	16.9
216.0000	16.6	16.8

217.0000	16.5	16.7
218.0000	16.5	16.7
219.0000	16.4	16.5
220.0000	16.5	16.4
221.0000	16.5	16.3
222.0000	16.4	16.2
223.0000	16.4	16.1
224.0000	16.2	16.1
225.0000	16.2	15.9
226.0000	16.0	16.0
227.0000	16.1	16.0
228.0000	16.1	15.9
229.0000	16.0	15.8
230.0000	16.1	15.7
231.0000	16.1	15.7
232.0000	16.2	15.7
233.0000	16.2	15.6
234.0000	16.3	15.7
235.0000	16.3	15.6
236.0000	16.5	15.7
237.0000	16.6	15.7
238.0000	16.6	15.7
239.0000	16.6	15.7
240.0000	16.7	15.7
241.0000	16.7	15.8
242.0000	16.8	15.9
243.0000	16.8	15.9
244.0000	16.9	16.0
245.0000	17.0	16.0
246.0000	17.0	16.1
247.0000	17.2	16.2
248.0000	17.2	16.3
249.0000	17.4	16.4
250.0000	17.4	16.5
251.0000	17.5	16.6
252.0000	17.5	16.7
253.0000	17.5	16.8
254.0000	17.5	17.0
255.0000	17.5	17.1
256.0000	17.6	17.3
257.0000	17.7	17.4
258.0000	17.9	17.5
259.0000	18.1	17.6
260.0000	18.2	17.7
261.0000	18.4	17.9

262.0000	18.5	18.0
263.0000	18.5	18.1
264.0000	18.6	18.3
265.0000	18.6	18.4
266.0000	18.6	18.6
267.0000	18.7	18.7
268.0000	18.7	18.8
269.0000	18.7	19.0
270.0000	18.8	19.1
271.0000	18.9	19.2
272.0000	18.9	19.3
273.0000	19.1	19.4
274.0000	19.2	19.5
275.0000	19.3	19.5
276.0000	19.4	19.6
277.0000	19.5	19.7
278.0000	19.6	19.7
279.0000	19.8	19.8
280.0000	19.9	19.9
281.0000	20.1	20.0

282.0000	20.1	20.1
283.0000	20.1	20.2
284.0000	20.1	20.3
285.0000	20.1	20.4
286.0000	20.2	20.6
287.0000	20.2	20.7
288.0000	20.3	21.0
289.0000	20.3	21.2
290.0000	20.5	21.3
291.0000	20.6	21.5
292.0000	20.6	21.7
293.0000	20.6	21.8
294.0000	20.7	21.8
295.0000	20.6	21.9
296.0000	20.6	22.0
297.0000	20.7	22.1
298.0000	20.7	22.2
299.0000	20.8	22.3
300.0000	20.8	22.4

Date of Calibration = April 3, 2009
 Date Printed: Friday, April 03, 2009 1:41 PM
 Customer Name: Tyco Safety Products - Sensormatic
 Antenna Manufacturer: EMCO
Antenna Model: 3146 – Log periodic
 Antenna Serial No.: 9303-3576
 Temperature (Deg C). 3
 Humidity (%). 65
 Measurement Distance in Meters = 3
 Antenna Polarization = VERT / HORZ

NOTES:

CAL CERT #: 2009033116

Freq (MHz)	Vertical ACF (dB)	Horizontal ACF (dB)
200.0000	11.7	12.1
205.0000	11.6	12.1
210.0000	11.7	11.9
215.0000	11.6	11.7
220.0000	11.5	11.5
225.0000	11.2	11.4
230.0000	11.1	11.4
235.0000	11.5	11.6
240.0000	11.8	11.9
245.0000	12.2	12.1
250.0000	12.6	12.4
255.0000	12.6	12.6
260.0000	12.8	13.0
265.0000	12.9	13.2
270.0000	13.0	13.5
275.0000	13.3	13.6
280.0000	13.6	13.7
285.0000	13.9	13.8
290.0000	14.1	14.0
295.0000	14.1	14.1
300.0000	14.2	14.3
305.0000	14.5	14.8
310.0000	14.8	15.2
315.0000	14.8	15.1
320.0000	14.7	14.8
325.0000	14.7	14.6
330.0000	14.6	14.6
335.0000	14.3	14.7
340.0000	14.1	14.9
345.0000	14.2	14.9
350.0000	14.5	14.9

355.0000	14.8	14.8
360.0000	15.0	14.9
365.0000	15.3	15.0
370.0000	15.2	15.1
375.0000	15.1	15.2
380.0000	15.0	15.3
385.0000	15.4	15.5
390.0000	15.7	15.8
395.0000	15.5	15.9
400.0000	15.4	16.1
405.0000	15.5	16.0
410.0000	15.7	15.9
415.0000	16.0	16.1
420.0000	16.0	16.2
425.0000	15.9	16.4
430.0000	15.8	16.5
435.0000	15.9	16.5
440.0000	16.1	16.4
445.0000	16.4	16.5
450.0000	16.7	16.7
455.0000	16.9	16.9
460.0000	16.9	17.2
465.0000	16.9	17.3
470.0000	16.9	17.3
475.0000	17.1	17.4
480.0000	17.2	17.4
485.0000	17.5	17.5
490.0000	17.7	17.6
495.0000	17.9	17.9
500.0000	17.9	17.9
505.0000	18.0	18.2
510.0000	18.3	18.6
515.0000	18.5	19.0

520.0000	18.3	18.8
525.0000	18.0	18.6
530.0000	17.7	18.5
535.0000	17.6	18.6
540.0000	17.6	18.4
545.0000	17.9	18.3
550.0000	18.2	18.3
555.0000	18.3	18.6
560.0000	18.2	18.7
565.0000	18.1	18.8
570.0000	18.0	18.9
575.0000	18.2	18.7
580.0000	18.4	18.6
585.0000	18.7	18.8
590.0000	18.8	19.1
595.0000	18.7	19.2
600.0000	18.7	19.2
605.0000	18.7	19.1
610.0000	18.8	19.3
615.0000	19.0	19.5
620.0000	19.2	19.4
625.0000	19.4	19.4
630.0000	19.2	19.4
635.0000	19.2	19.4
640.0000	19.5	19.7
645.0000	19.7	19.9
650.0000	19.9	20.0
655.0000	20.1	20.1
660.0000	20.3	20.3
665.0000	20.4	20.4
670.0000	20.5	20.6
675.0000	20.5	20.7
680.0000	20.5	20.9
685.0000	20.4	20.9
690.0000	20.4	21.1
695.0000	20.4	21.0
700.0000	20.5	21.0
705.0000	20.6	21.0
710.0000	20.5	21.0
715.0000	20.5	21.0
720.0000	20.5	21.2
725.0000	20.7	21.3
730.0000	20.7	21.2
735.0000	20.7	21.2
740.0000	20.6	21.1

745.0000	20.6	21.2
750.0000	20.6	21.4
755.0000	20.6	21.4
760.0000	20.7	21.3
765.0000	20.7	21.4
770.0000	20.7	21.4
775.0000	20.7	21.4
780.0000	20.7	21.4
785.0000	20.7	21.4
790.0000	20.8	21.5
795.0000	20.9	21.6
800.0000	21.1	21.6
805.0000	21.0	21.7
810.0000	21.1	21.7
815.0000	21.1	21.8
820.0000	21.3	22.0
825.0000	21.4	22.1
830.0000	21.5	22.1
835.0000	21.6	22.2
840.0000	21.7	22.3
845.0000	21.7	22.4
850.0000	21.8	22.4
855.0000	21.9	22.5
860.0000	22.2	22.7
865.0000	22.4	22.9
870.0000	22.5	23.0
875.0000	22.6	23.1
880.0000	22.6	23.1
885.0000	22.5	23.2
890.0000	22.6	23.1
895.0000	22.6	23.1
900.0000	22.7	23.3
905.0000	22.7	23.3
910.0000	22.8	23.3
915.0000	22.8	23.2
920.0000	22.6	23.3
925.0000	22.6	23.4
930.0000	22.6	23.4
935.0000	22.7	23.4
940.0000	22.7	23.5
945.0000	22.7	23.6
950.0000	22.6	23.5
955.0000	22.7	23.6
960.0000	22.9	23.7
965.0000	22.9	23.9

FCC ID: BVCAMS1140

IC: 3506A-AMS1140

970.0000	23.1	23.8
975.0000	23.1	23.8
980.0000	23.1	23.9
985.0000	23.2	23.9

990.0000	23.3	24.1
995.0000	23.5	24.4
1000.0000	23.6	24.4

Date of Calibration = 2/Apr/2009
 Date Printed: Thursday, April 02, 2009 3:33 PM
 Customer Name: Tyco Safety Products - Sensormatic
 Antenna Manufacturer: EMCO
Antenna Model: 3115 Horn
 Antenna Serial No.: 3006
 Temperature (Deg C): 20.0
 Humidity (%): 37.0
 Measurement Distance in Meters = 3.0
 Antenna Polarization = VERT / HORZ
 NOTES: Observed Pin Depth: -0.0003" from typical.
 CAL CERT #: 2009033119

Freq (MHz)	Vertical ACF (dB)	Horizontal ACF (dB)
1000.0000	23.377	23.524
1500.0000	25.067	25.087
2000.0000	27.357	27.365
2500.0000	29.000	29.024
3000.0000	30.277	30.385
3500.0000	31.557	31.512
4000.0000	32.827	32.580
4500.0000	32.593	32.499
5000.0000	33.481	33.288
5500.0000	34.467	34.421
6000.0000	34.894	34.639
6500.0000	34.730	34.612
7000.0000	35.473	35.489
7500.0000	36.832	36.780
8000.0000	37.271	37.207
8500.0000	37.649	37.600
9000.0000	37.956	37.940

9500.0000	37.858	37.743
10000.0000	38.517	38.433
10500.0000	38.992	39.004
11000.0000	40.566	40.541
11500.0000	39.704	39.684
12000.0000	39.424	39.396
12500.0000	38.797	38.822
13000.0000	39.622	39.615
13500.0000	40.408	40.394
14000.0000	41.209	41.203
14500.0000	41.665	41.584
15000.0000	40.325	40.233
15500.0000	38.024	38.049
16000.0000	37.320	37.358
16500.0000	38.400	38.340
17000.0000	41.136	40.903
17500.0000	42.866	42.522
18000.0000	44.717	44.269