

TEST NUMBER - 278-99

FEDERAL COMMUNICATIONS COMMISSION

PART 15.249 CERTIFICATION TESTING 902 - 928 MHz

Subpart C - Intentional Radiators

for

Safety 1ST, Inc.
210 Boylston Street
Chestnut Hill, MA 02167
800-962-7233

of

Premium Privacy Monitor

49242

FCCID#: MNJ49242T

on

November 5, 1999

by

Larry K. Stillings

Larry K. Stillings



TEST NUMBER - 278-99
Safety 1ST, Inc.
Premium Privacy Monitor - 49242

TABLE OF CONTENTS

- Test Description
- Test Results and Conclusions
- Test Procedures
- Part 15 Subpart C Test Limits
- Measurement Uncertainty Budget and Calculations
- Test Facility Description
- Test Setup and Connection Information
- Test Measurements and Results
 - Radiated Measurements
 - Radiated Output Power & Occupied Bandwidth
 - Conducted Measurements
- Notes and Comments



TEST NUMBER - 278-99
Safety 1ST, Inc.
Premium Privacy Monitor - 49242

TEST DESCRIPTION

1. TEST OBJECTIVE

To test the Premium Privacy Monitor 49242 to FCC Part 15.239, Subpart C limits and write a report.

2. E.U.T. DESCRIPTION

GENERAL

The Premium Privacy Monitor 49242 is a 4 channel baby monitor transmitting in the 902 - 928 MHz band. The 4 channels operate at 904.9, 905.9, 906.9 and 907.9 MHz.

SERIAL NUMBERS:

Pre production unit



TEST NUMBER - 278-99
Safety 1ST, Inc.
Premium Privacy Monitor - 49242

TEST RESULTS AND CONCLUSIONS

PRODUCT TESTED - Premium Privacy Monitor

MODEL NUMBER - 49242

RADIATED TEST RESULTS

The test results show that the emissions radiated from this equipment are in compliance with FCC Rules, Part 15, Subpart C, Section 15.209.

OCCUPIED BANDWIDTH & OUTPUT POWER

The test results show that the occupied bandwidth and output power of this equipment are in compliance with FCC Rules, Part 15, Subpart C, Section 15.239.

CONDUCTED TEST RESULTS

The test results show that the emissions conducted through the power line from this equipment are in compliance with FCC Rules, Part 15, Subpart C, Section 15.207.

ANALYSIS AND CONCLUSIONS

Based upon the radiated and conducted measurements we find that this equipment is within the limits of the FCC Rules, Part 15, Subpart C.

NOTES (Special conditions unique to this test)

None



TEST NUMBER - 278-99
Safety 1ST, Inc.
Premium Privacy Monitor - 49242

TEST PROCEDURES

1. TEST EQUIPMENT

- A. HP 8546A (9 kHz - 6.5 GHz) EMI Receiver w/ RF Filter Section, S/N 3704A00323 / 3650A00360. Calibration Date 3-25-1999, calibrated annually.
- B. HP 8593E (9 kHz - 26.5 GHz) Spectrum Analyzer, S/N 3829A03887. Calibration Date 9-3-1999, calibrated annually.
- C. Electro-Metrics BiConical Antenna, Model EM6912A, S/N 149. Calibration Date 9-19-1999, calibrated annually.
- D. Electro-Metrics Log Periodic Antenna, Model EM-6950, S/N 1017. Calibration Date: 3-31-1999, calibrated annually.
- E. Electro-Metrics Double Ridged Guide Antenna, Model EM-6961, S/N 6337. Calibration Date: 7-14-1999, calibrated annually.
- F. HP 1 - 26.5 GHz Preamplifier, Model 08449B, S/N 3008A01323. Calibration Date: 9-29-1999, calibrated annually.
- G. LISN, Compliance Worldwide, Model 50 μ H / 50 ohm, S/N 100. Calibration Date 7-13-1999, calibrated annually.

2. FREQUENCY RANGE TO BE SCANNED.

- A. Radiated Test from 30 MHz to 40 GHz (or the 10th harmonic of the highest frequency whichever is lower).
- B. Conducted Test from 450 kHz to 30 MHz.



TEST NUMBER - 278-99
Safety 1ST, Inc.
Premium Privacy Monitor - 49242

3. TEST PROCEDURES.

Radiated test procedure

The EUT, associated cables and peripheral devices are placed on the supporting table and any support equipment is placed off the site. The EUT is turned on and any necessary operating or test software installed and allowed to warm up. The frequency band from 30 MHz to 40 GHz is scanned. When an emission is found the emission is maximized by varying the bundle position of the connecting cables, the antenna height, the antenna polarization (vertical and horizontal) and the table orientation (360 degrees). The maximum reading is recorded and the next signal is searched for.

Conducted test procedure

The power line of the EUT is connected to the LISN (Line Impedance Stabilization Network). A measurement of the emissions are made from the power line for both phase and neutral on the analyzer in the frequency range from 450 kHz to 30 MHz. The maximum readings are recorded for each phase.

All measurements are made according to the procedures defined in: "ANSI C63.4-1992 Standard Methods of Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronics Equipment in the Range of 9 kHz to 40 GHz, American National Standard for (ISBN 1-55937-215-5).



TEST NUMBER - 278-99
Safety 1ST, Inc.
Premium Privacy Monitor - 49242

PART 15 SUBPART C TEST LIMITS

1. 15.209, 15.235 & 15.249 Radiation Limits (Quasi-Peak):

Frequency MHz	Distance meters	Limit dB μ V/m	Limit μ V/m
1.705 - 30	30	29.5*	30*
30 - 88	3	40.0	100
49.82 - 49.90	3	80.0*	10,000*
88 - 216	3	43.5	150
216 - 960	3	46.0	200
902 - 928	3	94.0*	50,000*
960 - 1000	3	54.0	500
1000 - 40000	3	54.0*	500*

*NOTE: Average Limits

2. 15.207 Conduction Limits (Quasi-Peak):

Frequency MHz	Limit dB μ V/m	Limit μ V/m
0.450 - 30.0	48.0	250



TEST NUMBER - 278-99
Safety 1ST, Inc.
Premium Privacy Monitor - 49242

MEASUREMENT UNCERTAINTY BUDGET AND CALCULATIONS

These measurement uncertainties were calculated in accordance with the requirements of the NAMAS Document Draft NIS63 with a confidence level of 95%.

Measurement Uncertainty for Radiated Emissions Measurements 30 MHz - 1000 MHz

Contribution	Distribution	Uncertainty (dB)	
		Biconical Antenna 3m-10m	Log-Periodic Antenna 3m-10m
Antenna factor calibration	Gaussian (2s)	± 1.0	± 1.0
Cable loss calibration	Gaussian (2s)	± 0.5	± 0.5
EMI receiver specification	Rectangular	± 0.5	± 0.5
Antenna factor variation with height	Rectangular	± 2.0	± 0.5
Antenna directivity	Rectangular	± 0.5	± 3.0/± 0.5
Antenna phase center variation	Rectangular	± 0.0	± 1.0/± 0.2
Antenna factor frequency interpolation	Rectangular	± 0.2	± 0.2
Measurement distance variation	Rectangular	± 0.5	± 0.5
Site imperfections	Rectangular	± 1.0	± 1.0
Mismatch	U-shaped	± 1.2	± 0.5
Random	Gaussian (1s)	± 0.7	± 0.7
Total uncertainty at 95% min confidence probability		± 4.1/4.2	± 4.7/3.0

References:

1. ANSI C63.6-1988 - American National Standard Guide for the computation of errors in open area test sites.
2. ANSI C63.5-1988 - American National Standard for the calibration for antennae used for radiated emission measurements in Electromagnetic Interference control.
3. Draft NIS63 - The treatment of uncertainty in EMC measurements.



TEST NUMBER - 278-99
Safety 1ST, Inc.
Premium Privacy Monitor - 49242

Measurement Uncertainty Calculation

Total Uncertainty

$$U = 2\sqrt{S_{s1}^2 + S_{s2}^2 + \dots + S_{sm}^2 + S_r^2}$$

Total Uncertainty for Biconical Antenna at 3 meters

$$U = 2\sqrt{\frac{1.0^2}{2} + \frac{0.5^2}{2} + \frac{1.5^2 + 2.0^2 + 0.5^2 + 0.2^2 + 0.5^2 + 1.0^2}{3} + \frac{1.2^2}{2} + 0.7^2} = 4.06\text{dB}$$

Total Uncertainty for Biconical Antenna at 10 meters

$$U = 2\sqrt{\frac{1.0^2}{2} + \frac{0.5^2}{2} + \frac{1.5^2 + 2.0^2 + 0.5^2 + 0.2^2 + 0.5^2 + 1.0^2}{3} + \frac{1.2^2}{2} + 0.7^2} = 4.15\text{dB}$$

Total Uncertainty for Log-Periodic Antenna at 3 meters

$$U = 2\sqrt{\frac{1.0^2}{2} + \frac{0.5^2}{2} + \frac{1.5^2 + 0.5^2 + 3.0^2 + 1.0^2 + 0.2^2 + 0.5^2 + 1.0^2}{3} + \frac{0.5^2}{2} + 0.7^2} = 4.70\text{dB}$$

Total Uncertainty for Log-Periodic Antenna at 10 meters

$$U = 2\sqrt{\frac{1.0^2}{2} + \frac{0.5^2}{2} + \frac{1.5^2 + 0.5^2 + 0.5^2 + 0.2^2 + 0.2^2 + 0.5^2 + 1.0^2}{3} + \frac{0.5^2}{2} + 0.7^2} = 3.03\text{dB}$$



TEST NUMBER - 278-99

Safety 1ST, Inc.
Premium Privacy Monitor - 49242

**Measurement Uncertainty for Conducted Emissions Measurements
0.450 - 30 MHz**

Contribution	Distribution	Uncertainty 0.45 MHz - 30MHz
EMI Receiver Specification	Rectangular	± 1.5
LISN Specification	Rectangular	± 1.5
Cable Calibration	Gaussian (2s)	± 0.2
Mismatch	U-Shaped	± 0.6
Random	Gaussian (1s)	± 0.8
Total uncertainty at 95% min confidence probability		± 3.1

References:

1. ANSI C63.6-1988 American National Standard Guide for the computation of errors in open area test sites.
2. Draft NIS63 The treatment of uncertainty in EMC measurements.

Measurement Uncertainty Calculation

Total Uncertainty-

$$U = 2\sqrt{S_{s1}^2 + S_{s2}^2 + \dots + S_{sm}^2 + S_r^2}$$

Total Uncertainty for Conducted Emissions

$$U = 2\sqrt{\frac{1.5^2 + 1.5^2}{3} + \frac{0.2^2}{2} + \frac{0.6^2}{2} + 0.8^2} = 3.05\text{dB}$$



TEST NUMBER - 278-99
Safety 1ST, Inc.
Premium Privacy Monitor - 49242

TEST FACILITY DESCRIPTION

In keeping with the requirements of Section 2.948 of the Federal Communications Commission's Rules, Compliance Worldwide has filed a Test Facility Description with the F.C.C.

Anyone wishing to review this Test Facility Description is referred to file number 31040/SIT, 1300F2. This is currently on file at the FCC's Authorization and Evaluation Lab in Columbia, Maryland, U.S.A.

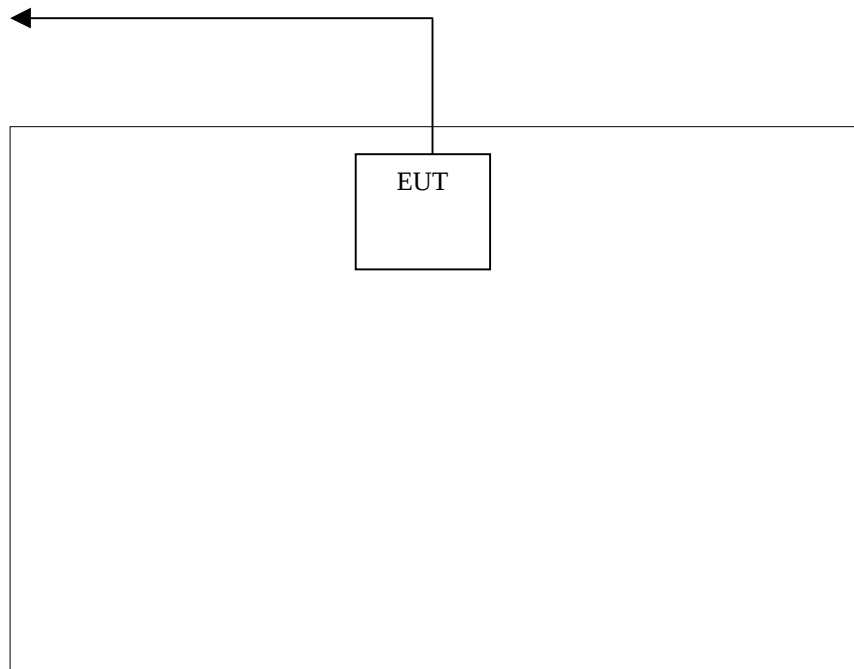
DATE ON FILE: May 7, 1997



TEST NUMBER - 278-99
Safety 1ST, Inc.
Premium Privacy Monitor - 49242

**TEST SET UP
AND
PERIPHERAL CONNECTION INFORMATION**

To 120 VAC via 9 VDC Transformer





TEST NUMBER - 278-99
Safety 1ST, Inc.
Premium Privacy Monitor - 49242

PLEASE NOTE - EUT (equipment under test) is Premium Privacy Monitor.

The cables directly connected to this equipment are listed below.
Please see below for a complete list of FCC ID's etc. on the
supporting equipment.

Connection Descriptions

1. Power Cable

(description)

EUT

(from device)

120 VAC via 9 VDC Transformer

(to device)

CABLE LENGTH 1.8 meters (S) SHIELDED or (U) UNSHIELDED __U__



TEST NUMBER - 278-99
Safety 1ST, Inc.
Premium Privacy Monitor - 49242

RADIATED TEST RESULTS

Frequency Range: 30 - 9280 MHz.
Measurement Distance: 3.0 Meters.
Bandwidth: 120 kHz, Per ANSI C63.4-1992.*
Detector Functions: Peak, Quasi Peak, Average
Video Filter: 300 kHz
Table Height: 0.8 meters
Antenna Height Variation: 1 - 4 Meters.
Horizontal and Vertical Polarization Measurements Taken.

*Measurement Bandwidth is 1 MHz above 1 GHz

PLEASE SEE NEXT PAGE FOR RADIATED TEST DATA

Measurement Uncertainties

The measurement uncertainties stated were calculated in accordance with the requirements of NAMAS Document NIS63 with a confidence level of 95%. The complete measurement uncertainty budget and calculations are located in the Measurement Uncertainty section of this report.

Tests Performed	Total Uncertainty
Radiated Emissions with Biconical Antenna at 3 Meters -- 30 MHz - 200 MHz	±4.06
Radiated Emissions with Biconical Antenna at 10 Meters -- 30 MHz - 200 MHz	±4.15
Radiated Emissions with Log-Periodic Antenna at 3 Meters -- 200 MHz - 1000 MHz	±4.70
Radiated Emissions with Log-Periodic Antenna at 10 Meters -- 200 MHz - 1000 MHz	±3.03



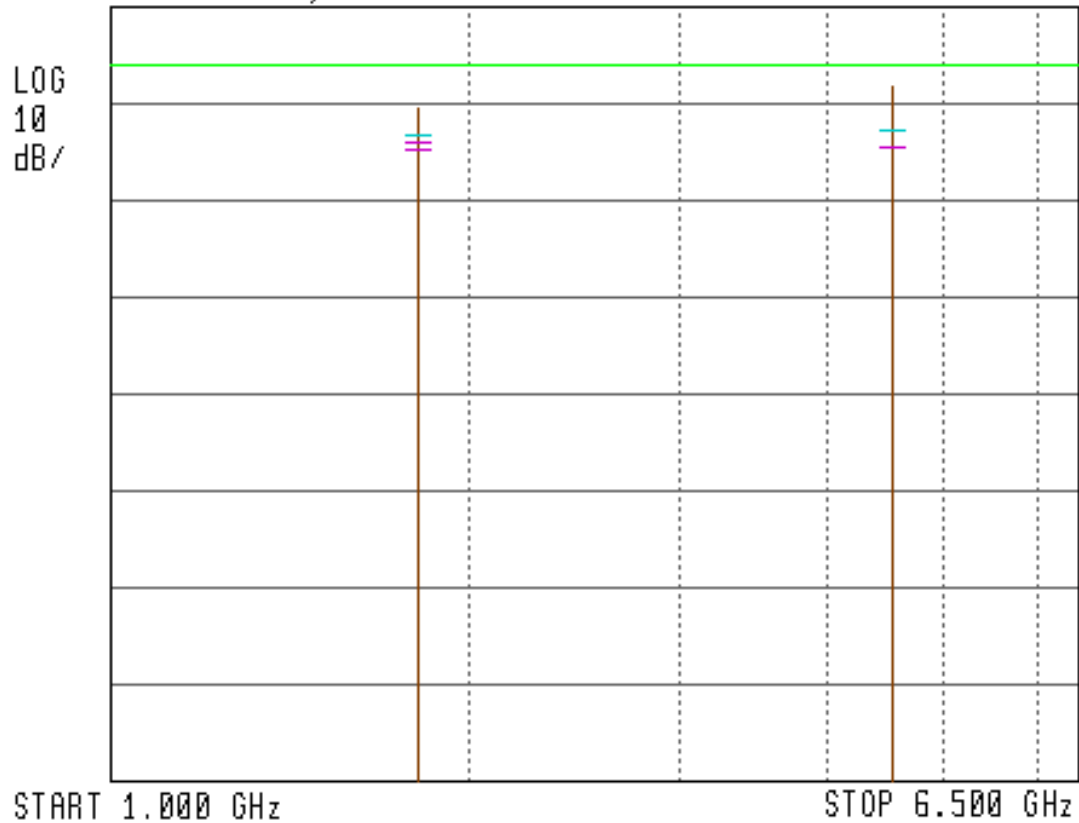
TEST NUMBER - 278-99
Safety 1ST, Inc.
Premium Privacy Monitor - 49242

NO SIGNALS WERE FOUND BETWEEN 30 and 1000 MHz



TEST NUMBER - 278-99
Safety 1ST, Inc.
Premium Privacy Monitor - 49242

 17:11:06 NOV 03, 1999
SAFETY 1ST PREMIUM PRIVACY MONITOR 49242T #278-99
REF 60.0 dB μ V





TEST NUMBER - 278-99
Safety 1ST, Inc.
Premium Privacy Monitor - 49242

FCC Part 15 Subpart C

Radiated Results @ 3 Meters

Frequency MHz	Polarization H/V	Height m	Table degrees	Peak Amplitude dBμV	QP Amplitude dBμV	Average Amplitude dBμV	Limit dBμV	Margin dB
1811.92	V	1.25	135	49.8	47.0	46.3	54.0	7.7
1812.04	H	1	180	48.9	46.0	45.4	54.0	8.6
4530.03	H	1	160	52.1	47.4	45.7	54.0	8.3



TEST NUMBER - 278-99
Safety 1ST, Inc.
Premium Privacy Monitor - 49242

RADIATED OUTPUT POWER & OCCUPIED BANDWIDTH TEST RESULTS

Frequency Range: 902 - 928 MHz.
Measurement Distance: 3.0 Meters.
Bandwidth: 120 kHz, Per ANSI C63.4-1992.
Detector Functions: Peak, Quasi Peak, Average.
Video Filter: 300 kHz
Table Height: 0.8 meters
Antenna Height Variation: 1 - 4 Meters.
Horizontal and Vertical Polarization Measurements Taken.

PLEASE SEE NEXT PAGE(S) FOR OCCUPIED BANDWIDTH RADIATED TEST DATA

Measurement Uncertainties

The measurement uncertainties stated were calculated in accordance with the requirements of NAMAS Document NIS63 with a confidence level of 95%. The complete measurement uncertainty budget and calculations are located in the Measurement Uncertainty section of this report.

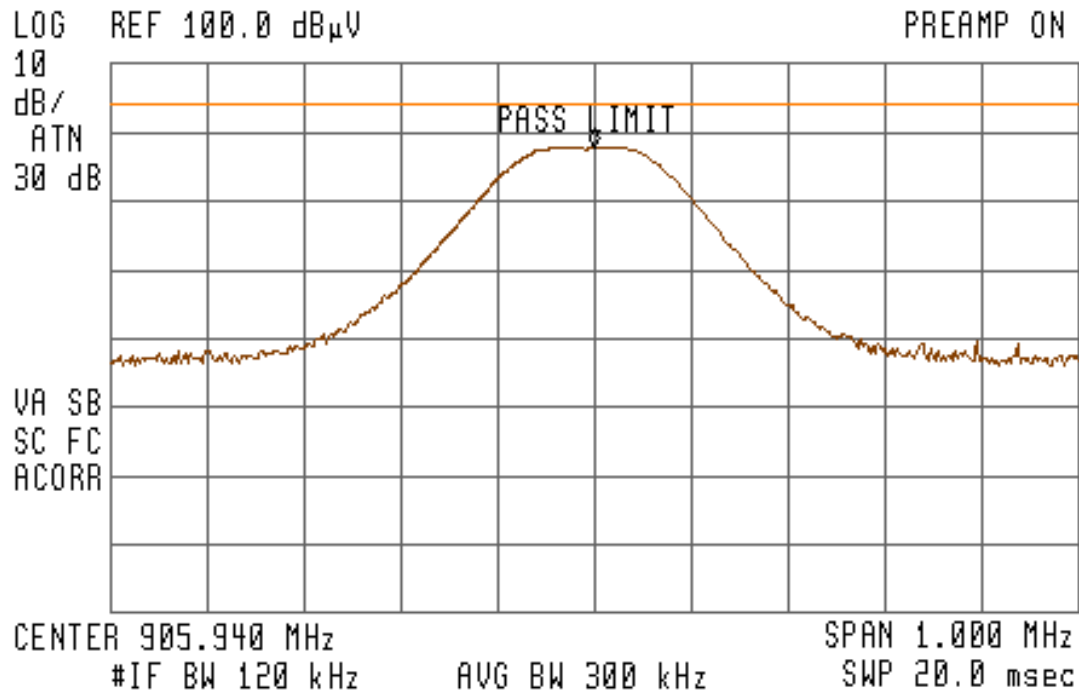
Tests Performed	Total Uncertainty
Radiated Emissions with Biconical Antenna at 3 Meters -- 30 MHz - 200 MHz	±4.06
Radiated Emissions with Log-Periodic Antenna at 3 Meters -- 200 MHz - 1000 MHz	±4.70



TEST NUMBER - 278-99
Safety 1ST, Inc.
Premium Privacy Monitor - 49242

 10:45:29 NOV 05, 1999 BW & OUTPUT POWER CH A
SAFETY 1ST PREMIUM PRIVACY MONITOR 49242T #278-99

FREQ	905.9 MHz
PEAK	88.1 dB μ V
QP	87.6 dB μ V
AVG	NOT SELECTED

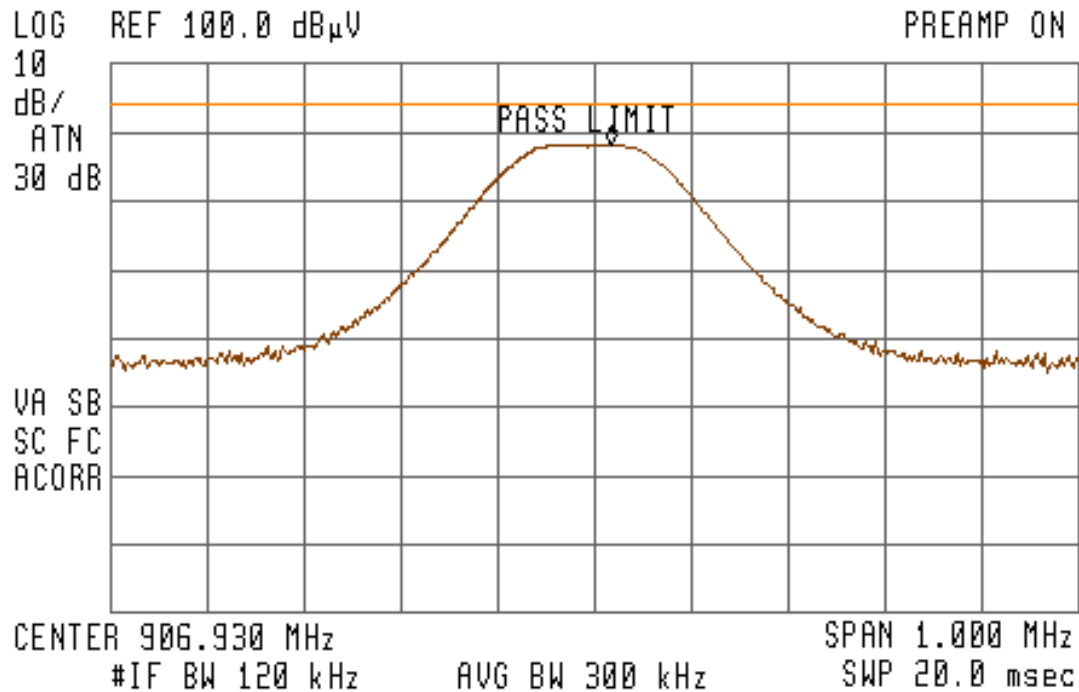




TEST NUMBER - 278-99
Safety 1ST, Inc.
Premium Privacy Monitor - 49242

 11:19:00 NOV 05, 1999 BW & OUTPUT POWER CH B
SAFETY 1ST PREMIUM PRIVACY MONITOR 49242T #278-99

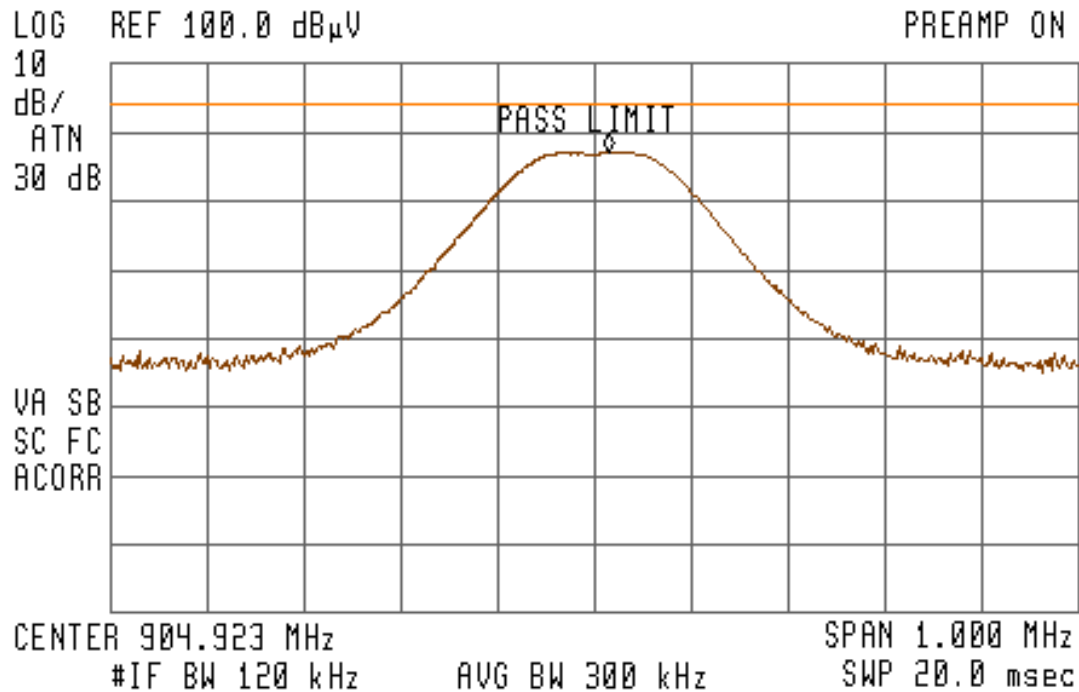
FREQ	906.9 MHz
PEAK	88.8 dB μ V
QP	88.2 dB μ V
AVG	NOT SELECTED



TEST NUMBER - 278-99
Safety 1ST, Inc.
Premium Privacy Monitor - 49242

11:56:21 NOV 05, 1999 BW & OUTPUT POWER CH C
SAFETY 1ST PREMIUM PRIVACY MONITOR 49242T #278-99

FREQ 904.9 MHz
PEAK 87.6 dB μ V
QP 87.1 dB μ V
AVG NOT SELECTED

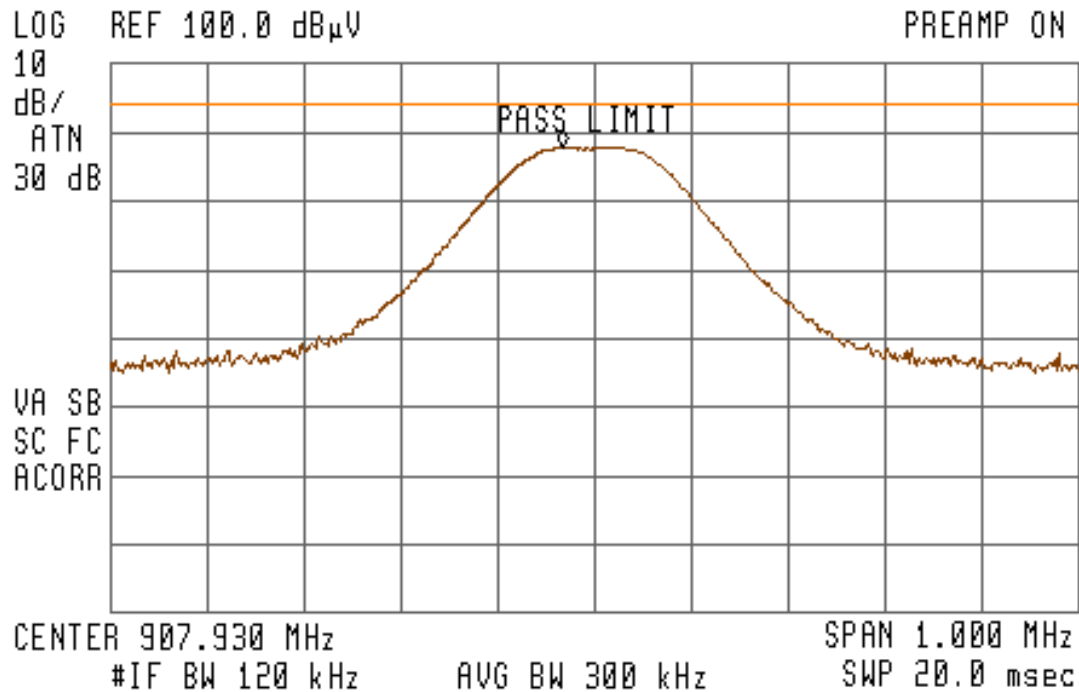




TEST NUMBER - 278-99
Safety 1ST, Inc.
Premium Privacy Monitor - 49242

 12:17:09 NOV 05, 1999 BW & OUTPUT POWER CH D
SAFETY 1ST PREMIUM PRIVACY MONITOR 49242T #278-99

FREQ	907.9 MHz
PEAK	88.2 dB μ V
QP	87.8 dB μ V
AVG	NOT SELECTED





TEST NUMBER - 278-99
Safety 1ST, Inc.
Premium Privacy Monitor - 49242

CONDUCTED TEST RESULTS

Frequency Range: 450 kHz to 30.0 MHz.
Bandwidth: 9 kHz per ANSI C63.4-1992.
Detector Functions: Peak, Quasi-Peak, Average
Table Height: 0.8 meters
Video Bandwidth: 30 kHz.

Phase and Neutral Measurements Taken.

PLEASE SEE NEXT PAGE FOR CONDUCTED TEST DATA

Measurement Uncertainties

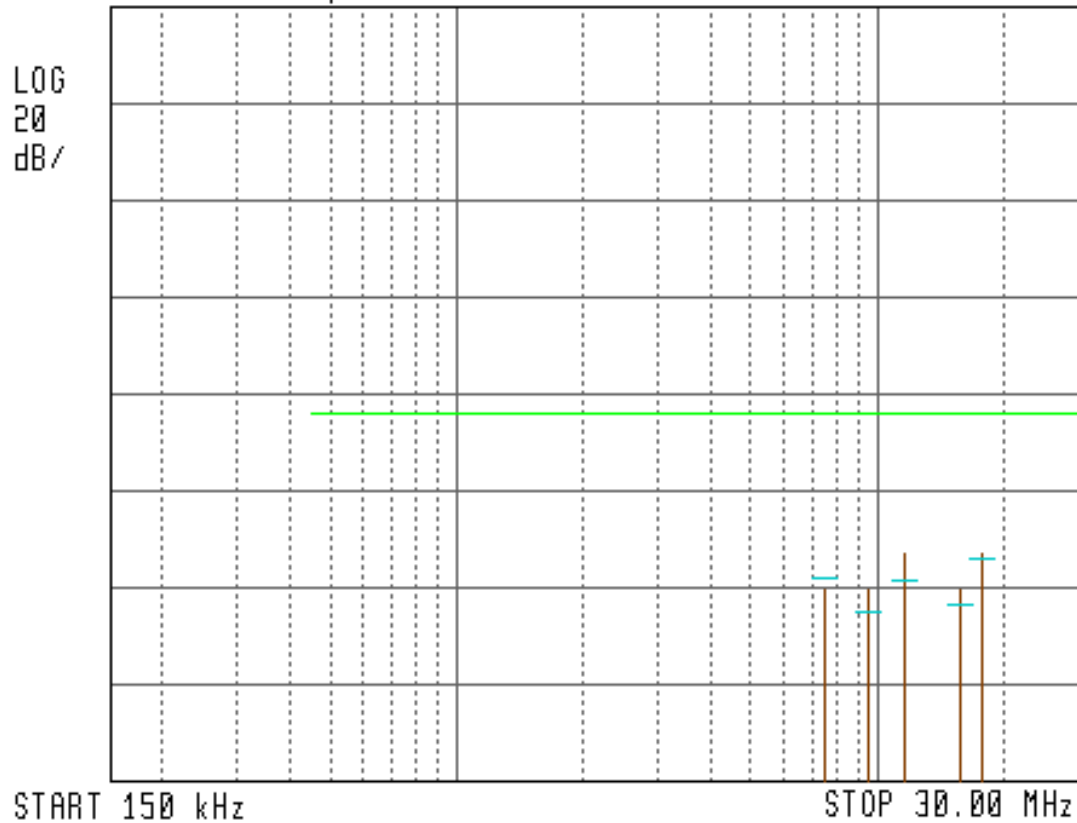
The measurement uncertainties stated were calculated in accordance with the requirements of NAMAS Document NIS63 with a confidence level of 95%. The complete measurement uncertainty budget and calculations are located in the Measurement Uncertainty section of this report.

Tests Performed	Total Uncertainty
Conducted Emissions -- 0.450 MHz - 30 MHz	±3.05



TEST NUMBER - 278-99
Safety 1ST, Inc.
Premium Privacy Monitor - 49242

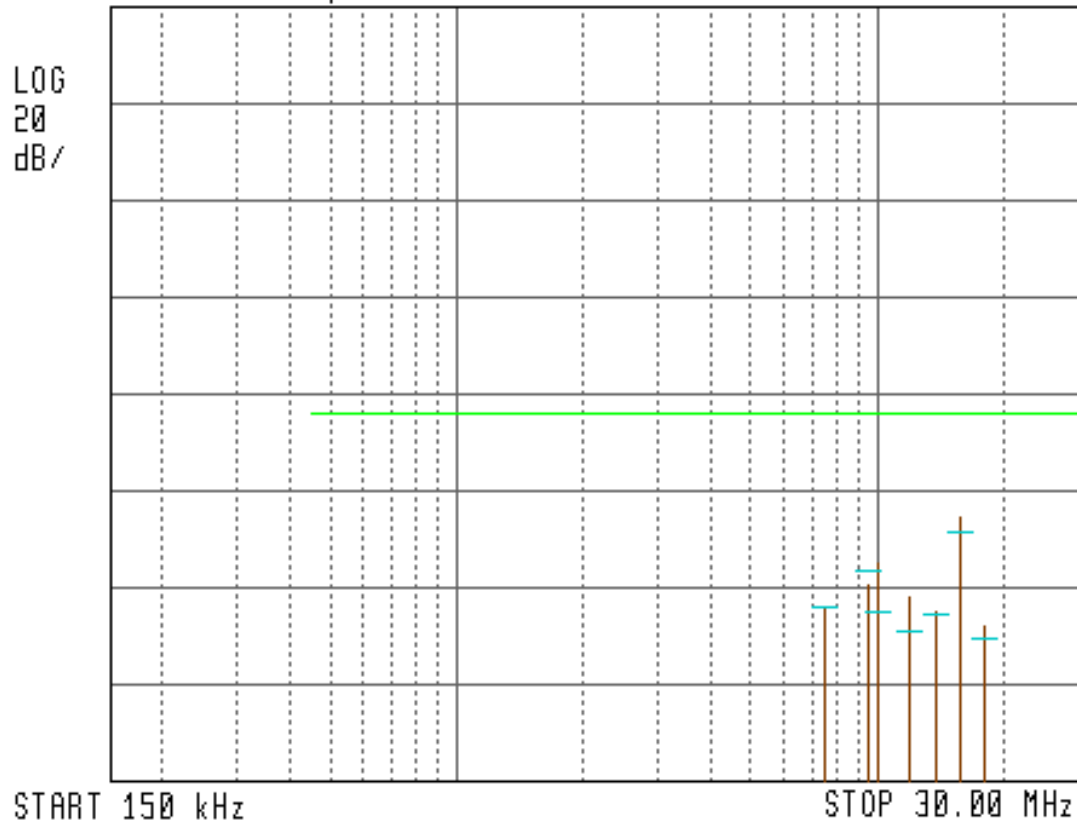
 16:06:19 NOV 05, 1999 120 VAC PHASE
SAFETY 1ST PREMIUM PRIVACY MONITOR 49242T #278-99
REF 132.0 dB μ V





TEST NUMBER - 278-99
Safety 1ST, Inc.
Premium Privacy Monitor - 49242

 16:23:21 NOV 05, 1999 120 VAC NEUTRAL
SAFETY 1ST PREMIUM PRIVACY MONITOR 49242T #278-99
REF 132.0 dB μ V





TEST NUMBER - 278-99
Safety 1ST, Inc.
Premium Privacy Monitor - 49242

FCC Part 15 Subpart C

Conducted Results

Phase 120 VAC

Frequency MHz	Peak Amplitude dB μ V	QP Amplitude dB μ V	Limit dB μ V	Margin dB
7.42	12.3	14.6	48.0	33.4
9.46	12.6	7.2	48.0	40.8
11.55	19.2	13.4	48.0	34.6
15.68	12.4	9.1	48.0	38.9
17.64	19.3	18.1	48.0	29.9

Neutral 120 VAC

Frequency MHz	Peak Amplitude dB μ V	QP Amplitude dB μ V	Limit dB μ V	Margin dB
7.42	8.3	8.3	48.0	39.7
9.90	17.3	7.2	48.0	40.8
9.46	12.7	16.0	48.0	32.0
11.82	10.8	3.9	48.0	44.1
13.75	7.8	6.6	48.0	41.4
15.69	27.0	23.8	48.0	24.2
17.81	4.6	1.9	48.0	46.1



TEST NUMBER - 278-99
Safety 1ST, Inc.
Premium Privacy Monitor - 49242

NOTES AND COMMENTS

(Special conditions unique to this test)

No signals were found between 30 MHz and 1 GHz per 15.209 radiated emissions requirements.