

FCC PART 15, SUBPART C
TEST REPORT

for

INDOOR ALARM PANEL

MODEL: PS90-17

Prepared for

MILLENNIUM ELECTRONICS², INC.
3265 SOUTH SHORE DRIVE, SUITE #10
ALBANY, OREGON 97321

Prepared by: _____

KYLE FUJIMOTO

Approved by: _____

MICHAEL CHRISTENSEN

COMPATIBLE ELECTRONICS INC.
114 OLINDA DRIVE
BREA, CALIFORNIA 92823
(714) 579-0500

DATE: APRIL 29, 2002

| REPORT BODY | APPENDICES | | | | | TOTAL |
|----------------|------------|---|---|----|----|-------|
| | A | B | C | D | E | |
| PAGES | 17 | 2 | 2 | 13 | 20 | 56 |

This report shall not be reproduced except in full, without the written approval of Compatible Electronics.



TABLE OF CONTENTS

| Section / Title | PAGE |
|--|-----------|
| GENERAL REPORT SUMMARY | 4 |
| SUMMARY OF TEST RESULTS | 4 |
| 1. PURPOSE | 5 |
| 2. ADMINISTRATIVE DATA | 6 |
| 2.1 Location of Testing | 6 |
| 2.2 Traceability Statement | 6 |
| 2.3 Cognizant Personnel | 6 |
| 2.4 Date Test Sample was Received | 6 |
| 2.5 Disposition of the Test Sample | 6 |
| 2.6 Abbreviations and Acronyms | 6 |
| 3. APPLICABLE DOCUMENTS | 7 |
| 4. Description of Test Configuration | 8 |
| 4.1 Description of Test Configuration - EMI | 8 |
| 4.1.1 Cable Construction and Termination | 9 |
| 5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT | 10 |
| 5.1 EUT and Accessory List | 10 |
| 5.2 EMI Test Equipment | 11 |
| 6. TEST SITE DESCRIPTION | 12 |
| 6.1 Test Facility Description | 12 |
| 6.2 EUT Mounting, Bonding and Grounding | 12 |
| 7. Test Procedures | 13 |
| 7.1 Conducted Emissions Test | 13 |
| 7.2 Radiated Emissions (Spurious and Harmonics) Test | 14 |
| 7.3 Bandwidth of the Fundamental | 16 |
| 8. CONCLUSIONS | 17 |



LIST OF APPENDICES

| APPENDIX | TITLE |
|----------|--|
| A | Modifications to the EUT |
| B | Additional Models Covered Under This Report |
| C | Diagrams, Charts and Photos <ul style="list-style-type: none">• Test Setup Diagrams• Radiated Emissions Photos• Antenna and Effective Gain Factors |
| D | Data Sheets |
| E | Laboratory Recognitions |

LIST OF FIGURES

| FIGURE | TITLE |
|--------|----------------------------------|
| 1 | Conducted Emissions Test Setup |
| 2 | Plot Map And Layout of Test Site |



GENERAL REPORT SUMMARY

This electromagnetic emission test report is generated by Compatible Electronics Inc., which is an independent testing and consulting firm. The test report is based on testing performed by Compatible Electronics personnel according to the measurement procedures described in the test specifications given below and in the "Test Procedures" section of this report.

The measurement data and conclusions appearing herein relate only to the sample tested and this report may not be reproduced without the written permission of Compatible Electronics, unless done so in full.

This report must not be used to claim product endorsement by NVLAP or any other agency of the U.S. Government.

Device Tested: Indoor Alarm Panel
 Model: PS90-17
 S/N: N/A

Product Description: See Expository Statement.

Modifications: The EUT was not modified during the testing.

Manufacturer: Millennium Electronics², Inc.
 3265 South Shore Drive, Suite #10
 Albany, Oregon 97321

Test Dates: April 25 and 26, 2002

Test Specifications: EMI requirements
 CFR Title 47, Part 15 Subpart C, Sections 15.205, 15.207, and 15.231

Test Procedure: ANSI C63.4: 1992

Test Deviations: The test procedure was not deviated from during the testing.

SUMMARY OF TEST RESULTS

| TEST | DESCRIPTION | RESULTS |
|------|--|---|
| 1 | Conducted RF Emissions, 450 kHz - 30 MHz | Complies with the limits of CFR Title 47, Part 15, Subpart C, section 15.207 |
| 2 | Radiated RF Emissions, 10 kHz - 4300 MHz | Complies with the limits of CFR Title 47, Part 15, Subpart C, sections 15.205, 15.209, and 15.231 |



1. PURPOSE

This document is a qualification test report based on the Electromagnetic Interference (EMI) tests performed on the Indoor Alarm Panel Model: PS90-17. The EMI measurements were performed according to the measurement procedure described in ANSI C63.4: 1992. The tests were performed in order to determine whether the electromagnetic emissions from the equipment under test, referred to as EUT hereafter, are within the specification limits defined by CFR Title 47, Part 15, Subpart C, sections 15.205, 15.207, 15.209, and 15.231.



2. ADMINISTRATIVE DATA

2.1 Location of Testing

The EMI tests described herein were performed at the test facility of Compatible Electronics, 114 Olinda Drive, Brea, California 92823.

2.2 Traceability Statement

The calibration certificates of all test equipment used during the test are on file at the location of the test. The calibration is traceable to the National Institute of Standards and Technology (NIST).

2.3 Cognizant Personnel

Millennium Electronics², Inc.

| | |
|-----------------|--------------------|
| Michael Hargett | CEO |
| Mike Allen | Chief Ops. Officer |

Compatible Electronics, Inc.

| | |
|---------------------|---------------|
| Kyle Fujimoto | Test Engineer |
| Michael Christensen | Test Engineer |

2.4 Date Test Sample was Received

The test sample was received on April 24, 2002.

2.5 Disposition of the Test Sample

The test sample has not been returned to Millennium Electronics², Inc. as of April 29, 2002.

2.6 Abbreviations and Acronyms

The following abbreviations and acronyms may be used in this document.

| | |
|------|--------------------------------------|
| RF | Radio Frequency |
| EMI | Electromagnetic Interference |
| EUT | Equipment Under Test |
| P/N | Part Number |
| S/N | Serial Number |
| HP | Hewlett Packard |
| ITE | Information Technology Equipment |
| CML | Corrected Meter Limit |
| LISN | Line Impedance Stabilization Network |



3. APPLICABLE DOCUMENTS

The following documents are referenced or used in the preparation of this EMI Test Report.

| SPEC | TITLE |
|--------------------------|---|
| CFR Title 47, Subpart C. | FCC Rules – Radio frequency devices – Intentional Radiators |
| ANSI C63.4 1992 | Methods of measurement of radio-noise emissions from low-voltage electrical and electronic equipment in the range of 9 kHz to 40 GHz. |



4. DESCRIPTION OF TEST CONFIGURATION

4.1 Description of Test Configuration - EMI

Setup and operation of the equipment under test.

Specifics of the EUT and Peripherals Tested

For the Transmit Mode: The Indoor Alarm Panel Model: PS90-17 (EUT) was connected to a class 2 transformer via its power port. The EUT was transmitting on a continuous basis. The antenna connector is a SplatCh antenna that is soldered directly to the PCB

For the Receive Mode: The Indoor Alarm Panel Model: PS90-17 (EUT) was connected to a class 2 transformer via its power port. The EUT was receiving on a continuous basis. The antenna connector is a SplatCh antenna that is soldered directly to the PCB

The final radiated as well as the conducted data was taken in the modes above. Please see Appendix D for the data sheets.



4.1.1 **Cable Construction and Termination**

Cable 1 This is a 2 meter unshielded cable connecting the EUT to the class 2 transformer. It has a 1/8 inch power connector at the EUT end and is hard wired into the class 2 transformer.



5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT

5.1 EUT and Accessory List

| EQUIPMENT | MANUFACTURER | MODEL NUMBER | SERIAL NUMBER | FCC ID |
|--------------------------|--|--------------|---------------|------------|
| INDOOR ALARM PANEL (EUT) | MILLENNIUM ELECTRONICS ² , INC. | PS90-17 | N/A | QCGPS90-17 |
| CLASS 2 TRANSFORMER | CUI STACK | DPA120060-P1 | N/A | N/A |



5.2 EMI Test Equipment

| EQUIPMENT TYPE | MANUFACTURER | MODEL NUMBER | SERIAL NUMBER | CAL. DATE | CAL. DUE DATE |
|---|------------------------|--------------|---------------|---------------|---------------|
| Radiated Emissions Manual Test – Radiated | Compatible Electronics | N/A | N/A | N/A | N/A |
| Conducted Emissions Program | Compatible Electronics | N/A | N/A | N/A | N/A |
| Spectrum Analyzer – Main Section | Hewlett Packard | 8566B | 3638A08768 | June 15, 2001 | June 15, 2002 |
| Spectrum Analyzer – Display Section | Hewlett Packard | 85662A | 3701A22262 | June 15, 2001 | June 15, 2002 |
| Spectrum Analyzer – Quasi-Peak Adapter | Hewlett Packard | 85662A | 2811A01363 | June 15, 2001 | June 15, 2002 |
| Preamplifier | Com Power | PA-102 | 1017 | Dec. 31, 2001 | Dec. 31, 2002 |
| Biconical Antenna | Com Power | AB-100 | 1548 | Oct. 11, 2001 | Oct. 11, 2002 |
| Log Periodic Antenna | Com Power | AL-100 | 16089 | Oct. 11, 2001 | Oct. 11, 2002 |
| Computer | Hewlett Packard | D5251A 888 | US74458128 | N/A | N/A |
| Printer | Hewlett Packard | C5886A | SG7CM1P090 | N/A | N/A |
| Monitor | Hewlett Packard | D5258A | DK74889705 | N/A | N/A |
| Loop Antenna | Com-Power | AL-130 | 17070 | May 21, 2001 | May 21, 2002 |
| Horn Antenna | Antenna Research | DRG-118/A | 1053 | Jan. 13, 2002 | Jan. 13, 2003 |
| Microwave Preamplifier | Com-Power | PA-122 | 25195 | Jan. 7, 2002 | Jan. 7, 2003 |



6. TEST SITE DESCRIPTION

6.1 Test Facility Description

Please refer to section 2.1 and 7.1 of this report for EMI test location.

6.2 EUT Mounting, Bonding and Grounding

The EUT was mounted on a 1.0 by 1.5 meter non-conductive table 0.8 meters above the ground plane.

The EUT was not grounded.



7. TEST PROCEDURES

The following sections describe the test methods and the specifications for the tests. Test results are also included in this section.

7.1

Conducted Emissions Test

The spectrum analyzer was used as a measuring meter. The data was collected with the spectrum analyzer in the peak detect mode with the "Max Hold" feature activated. The quasi-peak was used only where indicated in the data sheets. A 10 dB attenuation pad was used for the protection of the spectrum analyzer input stage, and the offset was adjusted accordingly to read the actual data measured. The LISN output was measured using the spectrum analyzer. The output of the second LISN was terminated by a 50 ohm termination. The effective measurement bandwidth used for this test was 9 kHz.

Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The EUT was powered through the LISN, which was bonded to the ground plane. The LISN power was filtered and the filter was bonded to the ground plane. The EUT was set up with the minimum distances from any conductive surfaces as specified in ANSI C63.4: 1992. The excess power cord was wrapped in a figure eight pattern to form a bundle not exceeding 0.4 meters in length.

The conducted emissions from the EUT were maximized for operating mode as well as cable placement. The final data was collected under program control by the Compatible Electronics conducted emissions software in several overlapping sweeps by running the spectrum analyzer at a minimum scan rate of 10 seconds per octave. The final qualification data is located in Appendix E.



7.2

Radiated Emissions (Spurious and Harmonics) Test

The spectrum analyzer was used as a measuring meter along with the quasi-peak adapter. Amplifiers were used to increase the sensitivity of the instrument. The Com Power Preamplifier Model: PA-102 was used for frequencies from 30 MHz to 1 GHz, and the Com-Power Microwave Preamplifier Model: PA-122 was used for frequencies above 1 GHz. The spectrum analyzer was used in the peak detect mode with the "Max Hold" feature activated. In this mode, the spectrum analyzer records the highest measured reading over all the sweeps.

For the peak readings below 1000 MHz that were within 3 dB of the spec limit or higher, the quasi-peak adapter was used.

For the peak readings above 1000 MHz that were within 3dB of the spec limit or higher, the readings were averaged manually by narrowing the video filter down to 10 Hz and slowing the sweep time to keep the amplitude reading calibrated.

The measurement bandwidths and transducers used for the radiated emissions test were:

| FREQUENCY RANGE | EFFECTIVE MEASUREMENT BANDWIDTH | TRANSDUCER |
|-------------------|---------------------------------|----------------------|
| 9 kHz to 150 kHz | 200 Hz | Active Loop Antenna |
| 150 kHz to 30 MHz | 9 kHz | Active Loop Antenna |
| 30 MHz to 300 MHz | 120 kHz | Biconical Antenna |
| 300 MHz to 1 GHz | 120 kHz | Log Periodic Antenna |
| 1 GHz to 4.3 GHz | 1 MHz | Horn Antenna |

The open field test site of Compatible Electronics, Inc. was used for radiated emission testing. This test site is set up according to ANSI C63.4: 1992. Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The turntable supporting the EUT is remote controlled using a motor. The turntable permits EUT rotation of 360 degrees in order to maximize emissions. Also, the antenna mast allows height variation of the antenna from 1 meter to 4 meters. Data was collected in the worst case (highest emission) configuration of the EUT. At each reading, the EUT was rotated 360 degrees and the antenna height was varied from 1 to 4 meters (for E field radiated field strength). The gunsight method was used when measuring with the horn antenna in order to ensure accurate results. The loop antenna was also rotated in the horizontal and vertical axis in order to ensure accurate results.



Radiated Emissions (Spurious and Harmonics) Test (con't)

The presence of ambient signals was verified by turning the EUT off. In case an ambient signal was detected, the measurement bandwidth was reduced temporarily and verification was made that an additional adjacent peak did not exist. This ensures that the ambient signal does not hide any emissions from the EUT. The EUT was tested at a 3 meter test distance to obtain final test data. The final qualification data sheets are located in Appendix D.



7.3

Bandwidth of the Fundamental

The -20 dB bandwidth was checked to see that it was within 0.25% of the fundamental frequency for the EUT. A plot of the -20 dB bandwidth is located in Appendix D.



8. CONCLUSIONS

The Indoor Alarm Panel Model: PS90-17 meets all of the specification limits defined in CFR Title 47, Part 15, Subpart C, sections 15.205, 15.207, 15.209, and 15.231.



APPENDIX A

MODIFICATIONS TO THE EUT



MODIFICATIONS TO THE EUT

The modifications listed below were made to the EUT to pass FCC 15.231 specifications.

All the rework described below was implemented during the test in a method that could be reproduced in all the units by the manufacturer.

No modifications were made to the EUT during the testing.



APPENDIX B

***ADDITIONAL MODELS COVERED
UNDER THIS REPORT***



ADDITIONAL MODELS COVERED UNDER THIS REPORT

USED FOR THE PRIMARY TEST

Indoor Alarm Panel
Model: PS90-17
S/N: N/A

There were no additional models covered under this report.



APPENDIX C

DIAGRAMS, CHARTS AND PHOTOS



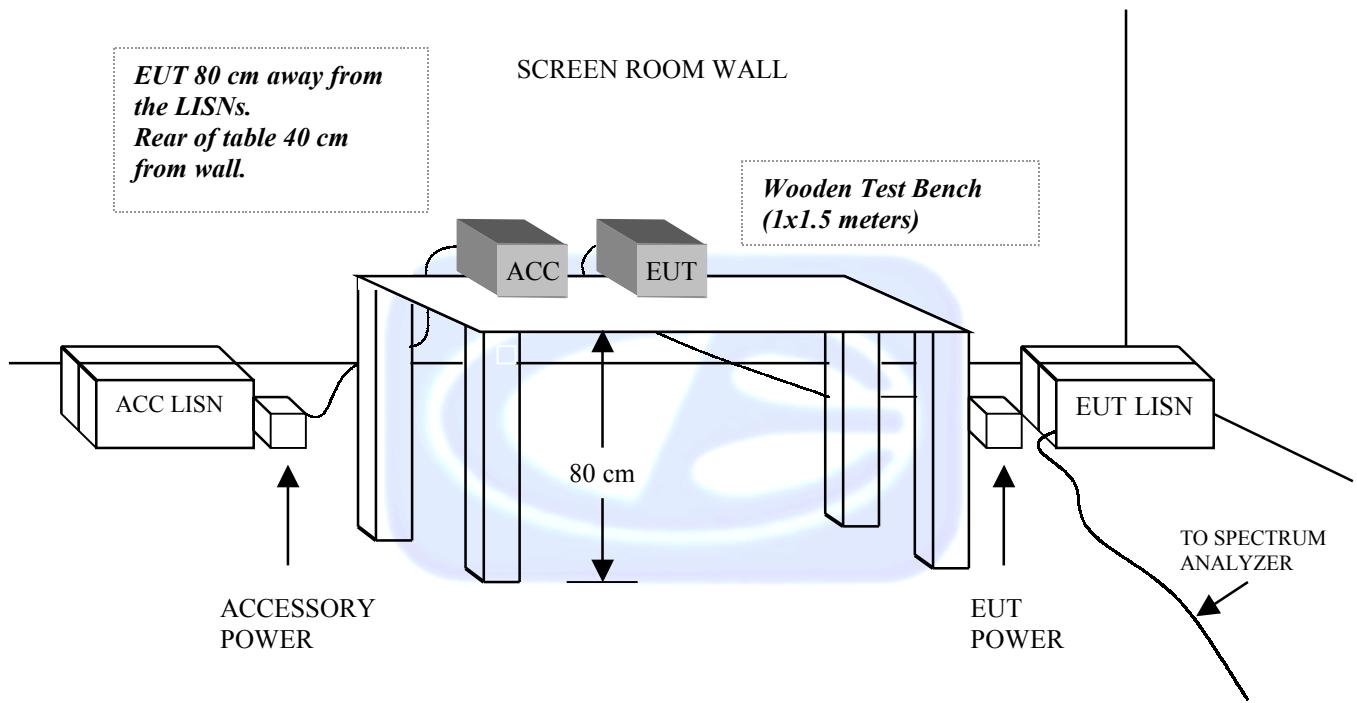
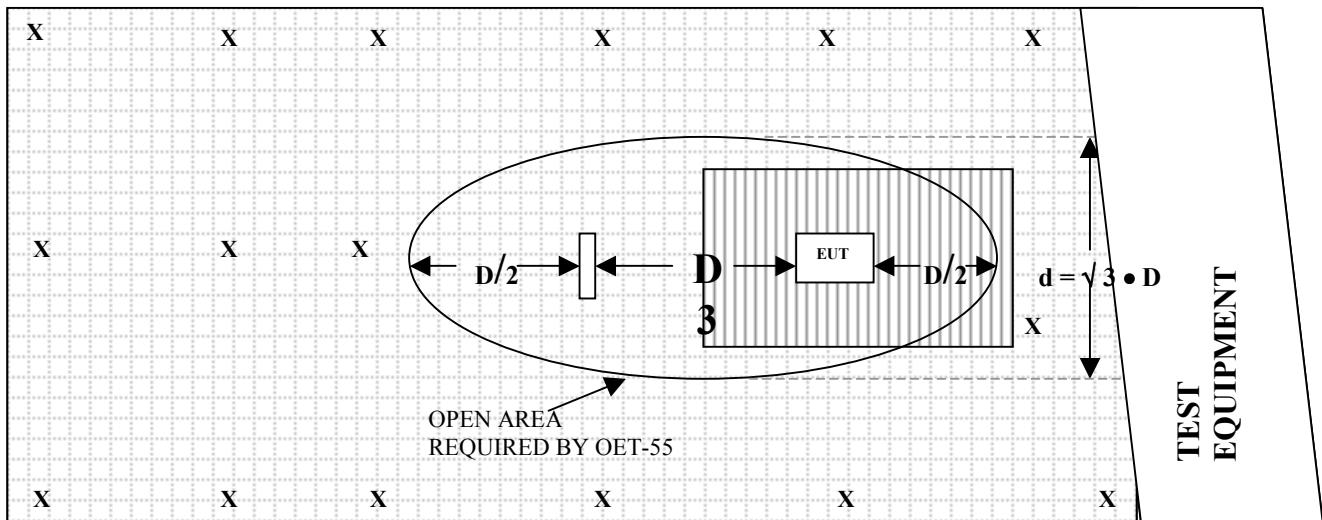
FIGURE 1: CONDUCTED EMISSIONS TEST SETUP

FIGURE 2: PLOT MAP AND LAYOUT OF RADIATED SITE**OPEN LAND > 15 METERS****OPEN LAND > 15 METERS****OPEN LAND > 15 METERS**

| | | | |
|--|--------------------------|--|-----------------|
| | = GROUND RODS | | = GROUND SCREEN |
| | = TEST DISTANCE (meters) | | = WOOD COVER |



**FRONT VIEW**

MILLENNIUM ELECTRONICS², INC.
INDOOR ALARM PANEL
MODEL: PS90-17
FCC SUBPART C - RADIATED EMISSIONS - 04-25-02

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**

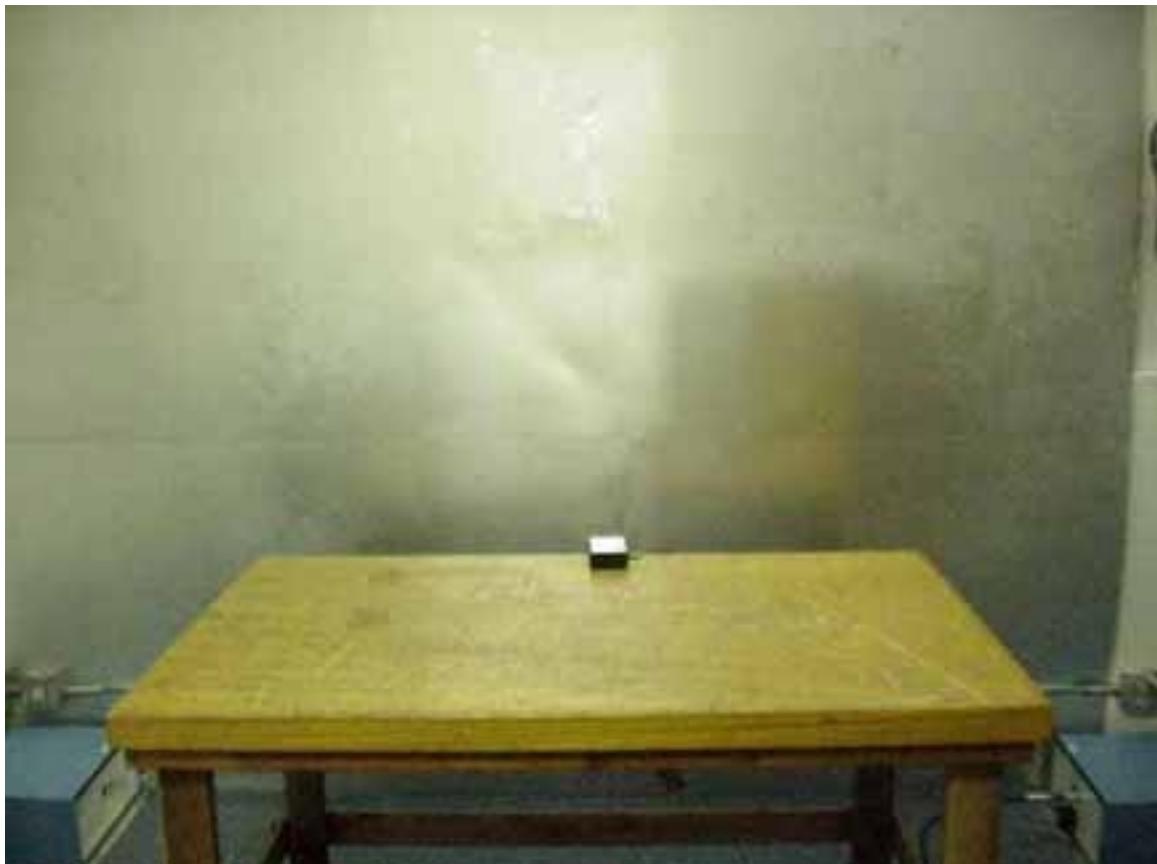


**REAR VIEW**

MILLENNIUM ELECTRONICS², INC.
INDOOR ALARM PANEL
MODEL: PS90-17
FCC SUBPART C - RADIATED EMISSIONS – 04-25-02

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**

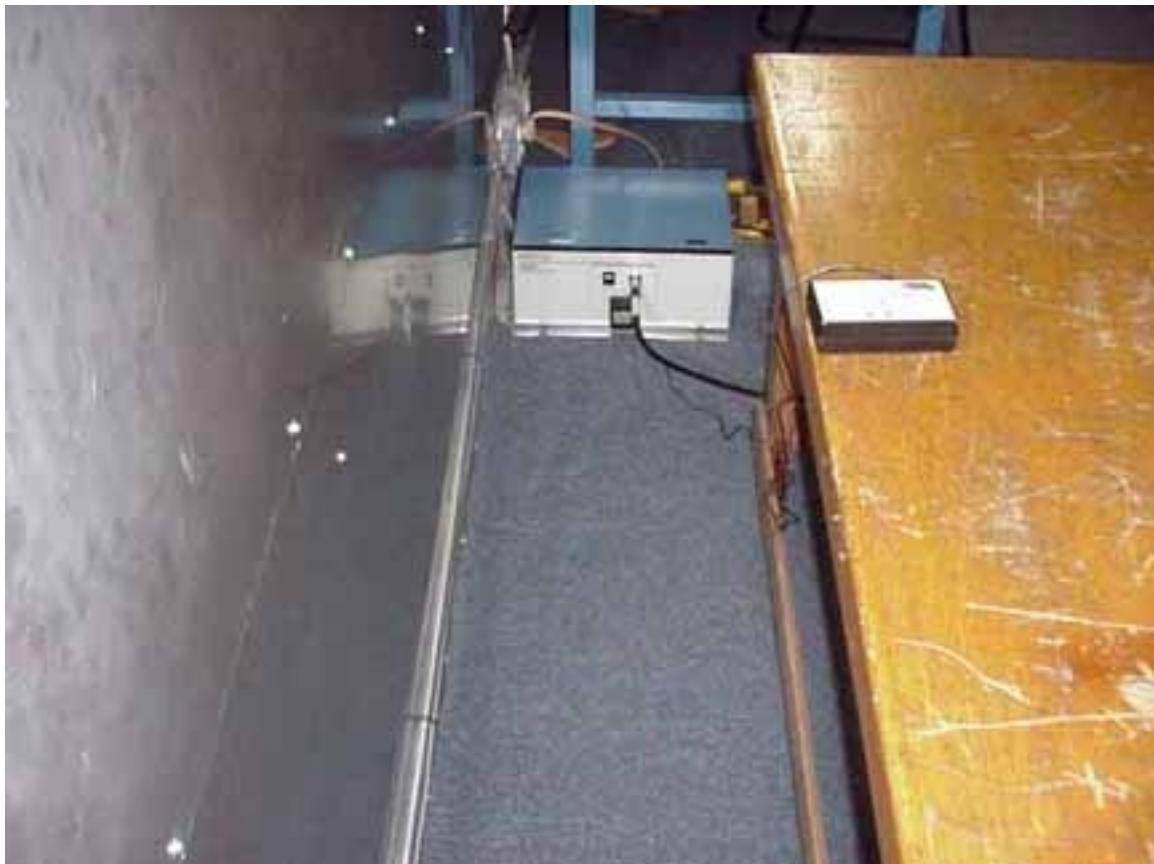


**FRONT VIEW**

MILLENNIUM ELECTRONICS², INC.
INDOOR ALARM PANEL
MODEL: PS90-17
FCC SUBPART C - CONDUCTED EMISSIONS – 04-26-02

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



**REAR VIEW**

MILLENNIUM ELECTRONICS², INC.
INDOOR ALARM PANEL
MODEL: PS90-17
FCC SUBPART C - CONDUCTED EMISSIONS – 04-26-02

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



COM-POWER AB-100

BICONICAL ANTENNA

S/N: 01548

CALIBRATION DATE: OCTOBER 11, 2001

| FREQUENCY (MHz) | FACTOR (dB) | FREQUENCY (MHz) | FACTOR (dB) |
|--------------------|----------------|--------------------|----------------|
| 30 | 13.70 | 120 | 11.00 |
| 35 | 13.70 | 125 | 11.20 |
| 40 | 11.80 | 140 | 12.50 |
| 45 | 12.30 | 150 | 13.20 |
| 50 | 11.00 | 160 | 13.50 |
| 60 | 10.40 | 175 | 14.60 |
| 70 | 8.60 | 180 | 14.40 |
| 80 | 8.30 | 200 | 15.90 |
| 90 | 8.30 | 250 | 17.60 |
| 100 | 8.80 | 300 | 19.90 |



COM-POWER AL-100

LOG PERIODIC ANTENNA

S/N: 16089

CALIBRATION DATE: OCTOBER 11, 2001

| FREQUENCY (MHz) | FACTOR (dB) | FREQUENCY (MHz) | FACTOR (dB) |
|--------------------|----------------|--------------------|----------------|
| 300 | 14.10 | 700 | 20.60 |
| 400 | 15.10 | 800 | 22.40 |
| 500 | 16.60 | 900 | 22.70 |
| 600 | 19.90 | 1000 | 26.50 |



COM-POWER PA-102

PREAMPLIFIER

S/N: 1017

CALIBRATION DATE: DECEMBER 31, 2001

| FREQUENCY (MHz) | FACTOR (dB) | FREQUENCY (MHz) | FACTOR (dB) |
|--------------------|----------------|--------------------|----------------|
| 30 | 38.5 | 300 | 38.5 |
| 40 | 38.5 | 350 | 38.4 |
| 50 | 38.5 | 400 | 38.2 |
| 60 | 38.5 | 450 | 37.8 |
| 70 | 38.5 | 500 | 38.0 |
| 80 | 38.5 | 550 | 38.2 |
| 90 | 38.3 | 600 | 38.2 |
| 100 | 38.3 | 650 | 38.0 |
| 125 | 38.6 | 700 | 38.1 |
| 150 | 38.5 | 750 | 37.7 |
| 175 | 38.4 | 800 | 37.4 |
| 200 | 38.5 | 850 | 37.9 |
| 225 | 38.5 | 900 | 37.2 |
| 250 | 38.4 | 950 | 36.8 |
| 275 | 38.4 | 1000 | 37.3 |



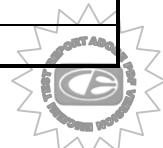
COM-POWER PA-122

MICROWAVE PREAMPLIFIER

S/N: 25195

CALIBRATION DATE: JANUARY 7, 2002

| FREQUENCY (GHz) | FACTOR (dB) | FREQUENCY (GHz) | FACTOR (dB) |
|--------------------|----------------|--------------------|----------------|
| 1.0 | 33.7 | 9.5 | 31.8 |
| 1.1 | 33.4 | 10.0 | 32.2 |
| 1.2 | 33.1 | 11.0 | 31.4 |
| 1.3 | 33.1 | 12.0 | 30.2 |
| 1.4 | 33.2 | 13.0 | 32.9 |
| 1.5 | 32.5 | 14.0 | 33.9 |
| 1.6 | 32.7 | 15.0 | 32.4 |
| 1.7 | 32.3 | 16.0 | 32.2 |
| 1.8 | 32.3 | 17.0 | 31.5 |
| 1.9 | 31.4 | 18.0 | 32.2 |
| 2.0 | 32.8 | 19.0 | 31.2 |
| 2.5 | 33.3 | 20.0 | 31.3 |
| 3.0 | 31.7 | 21.0 | 31.7 |
| 3.5 | 31.6 | 22.0 | 29.7 |
| 4.0 | 31.2 | | |
| 4.5 | 31.2 | | |
| 5.0 | 31.0 | | |
| 5.5 | 31.3 | | |
| 6.0 | 32.1 | | |
| 6.5 | 32.1 | | |
| 7.0 | 31.8 | | |
| 7.5 | 32.0 | | |
| 8.0 | 33.1 | | |
| 8.5 | 32.0 | | |
| 9.0 | 30.8 | | |



ANTENNA RESEARCH DRG-118/A

HORN ANTENNA

S/N: 1053

CALIBRATION DATE: JANUARY 13, 2002

| FREQUENCY (GHz) | FACTOR (dB) | FREQUENCY (GHz) | FACTOR (dB) |
|-----------------|-------------|-----------------|-------------|
| 1.0 | 25.5 | 9.5 | 39.1 |
| 1.5 | 26.6 | 10.0 | 39.7 |
| 2.0 | 29.4 | 10.5 | 40.9 |
| 2.5 | 30.4 | 11.0 | 40.7 |
| 3.0 | 31.2 | 11.5 | 42.4 |
| 3.5 | 32.3 | 12.0 | 42.6 |
| 4.0 | 32.9 | 12.5 | 42.4 |
| 4.5 | 33.0 | 13.0 | 41.5 |
| 5.0 | 34.8 | 13.5 | 41.0 |
| 5.5 | 35.2 | 14.0 | 40.5 |
| 6.0 | 36.4 | 14.5 | 43.6 |
| 6.5 | 36.6 | 15.0 | 43.7 |
| 7.0 | 38.8 | 15.5 | 43.3 |
| 7.5 | 38.8 | 16.0 | 42.8 |
| 8.0 | 38.0 | 16.5 | 43.0 |
| 8.5 | 38.1 | 17.0 | 42.7 |
| 9.0 | 39.9 | 17.5 | 44.0 |
| | | 18.0 | 41.8 |



Com-Power Corporation

(949) 587-9800

Antenna Calibration

| Active Loop Antenna | | |
|---------------------|--------------------|--------------------|
| AU-130 | | |
| 77930 | | |
| 05/21/97 | | |
| Frequency MHz | Magnetic (dB/m) | Electric (dB/m) |
| 0.009 | -40.5 | 11.0 |
| 0.01 | -40.4 | 11.1 |
| 0.02 | -41.4 | 10.1 |
| 0.03 | -40.0 | 11.5 |
| 0.04 | -40.4 | 11.1 |
| 0.05 | -41.7 | 9.8 |
| 0.06 | -41.2 | 10.3 |
| 0.07 | -41.5 | 10.0 |
| 0.08 | -41.8 | 9.7 |
| 0.09 | -41.8 | 9.7 |
| 0.1 | -41.8 | 9.7 |
| 0.2 | -44.0 | 7.5 |
| 0.3 | -41.6 | 9.9 |
| 0.4 | -41.6 | 9.9 |
| 0.5 | -41.6 | 9.9 |
| 0.6 | -41.5 | 10.0 |
| 0.7 | -41.4 | 10.1 |
| 0.8 | -41.3 | 10.2 |
| 0.9 | -41.3 | 10.2 |
| 1 | -40.9 | 10.6 |
| 2 | -40.3 | 11.2 |
| 3 | -40.5 | 11.0 |
| 4 | -40.8 | 10.7 |
| 5 | -40.2 | 11.3 |
| 6 | -40.0 | 11.5 |
| 7 | -40.4 | 11.1 |
| 8 | -40.5 | 11.0 |
| 9 | -40.0 | 11.5 |
| 10 | -40.7 | 10.8 |
| 12 | -41.2 | 10.3 |
| 14 | -41.3 | 10.2 |
| 15 | -41.3 | 10.2 |
| 16 | -41.4 | 10.1 |
| 18 | -41.4 | 10.1 |
| 20 | -41.4 | 10.1 |
| 25 | -41.7 | 9.8 |
| 30 | -43.1 | 8.4 |

Separation Distance

1-meter

APPENDIX D

DATA SHEETS



RADIATED EMISSIONS

DATA SHEETS



RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)

| | | | |
|---------------|-------------------------------|-------------|---------------|
| COMPANY | MILLENNIUM ELECTRONICS2, INC. | DATE | 4/25/02 |
| EUT | INDOOR ALARM PANEL | DUTY CYCLE | 33 % |
| MODEL | PS90-17 | PEAK TO AVG | -9.6297212 dB |
| S/N | N/A | TEST DIST. | 3 Meters |
| TEST ENGINEER | KYLE FUJIMOTO | LAB | D |

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED READING

PAGE 1 of PAGE 9

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)

| | | | |
|---------------|-------------------------------|-------------|---------------|
| COMPANY | MILLENNIUM ELECTRONICS2, INC. | DATE | 4/25/02 |
| EUT | INDOOR ALARM PANEL | DUTY CYCLE | 33 % |
| MODEL | PS90-17 | PEAK TO AVG | -9.6297212 dB |
| S/N | N/A | TEST DIST. | 3 Meters |
| TEST ENGINEER | KYLE FUJIMOTO | LAB | D |

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED READING

PAGE 2 of PAGE 9

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)

| | | | |
|---------------|-------------------------------|-------------|---------------|
| COMPANY | MILLENNIUM ELECTRONICS2, INC. | DATE | 4/25/02 |
| EUT | INDOOR ALARM PANEL | DUTY CYCLE | 33 % |
| MODEL | PS90-17 | PEAK TO AVG | -9.6297212 dB |
| S/N | N/A | TEST DIST. | 3 Meters |
| TEST ENGINEER | KYLE FUJIMOTO | LAB | D |

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED READING

PAGE 3 of PAGE 9

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)

| | | | |
|---------------|-------------------------------|-------------|---------------|
| COMPANY | MILLENNIUM ELECTRONICS2, INC. | DATE | 4/25/02 |
| EUT | INDOOR ALARM PANEL | DUTY CYCLE | 33 % |
| MODEL | PS90-17 | PEAK TO AVG | -9.6297212 dB |
| S/N | N/A | TEST DIST. | 3 Meters |
| TEST ENGINEER | KYLE FUJIMOTO | LAB | D |

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED READING

PAGE 4 of PAGE 9

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)

| | | | |
|---------------|-------------------------------|-------------|---------------|
| COMPANY | MILLENNIUM ELECTRONICS2, INC. | DATE | 4/25/02 |
| EUT | INDOOR ALARM PANEL | DUTY CYCLE | 33 % |
| MODEL | PS90-17 | PEAK TO AVG | -9.6297212 dB |
| S/N | N/A | TEST DIST. | 3 Meters |
| TEST ENGINEER | KYLE FUJIMOTO | LAB | D |

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED READING

PAGE 5 OF PAGE 9

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)

| | | | |
|---------------|-------------------------------|-------------|---------------|
| COMPANY | MILLENNIUM ELECTRONICS2, INC. | DATE | 4/25/02 |
| EUT | INDOOR ALARM PANEL | DUTY CYCLE | 33 % |
| MODEL | PS90-17 | PEAK TO AVG | -9.6297212 dB |
| S/N | N/A | TEST DIST. | 3 Meters |
| TEST ENGINEER | KYLE FUJIMOTO | LAB | D |

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED READING

PAGE 6 of PAGE 9

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)

| | | | |
|---------------|-------------------------------|-------------|---------------|
| COMPANY | MILLENNIUM ELECTRONICS2, INC. | DATE | 4/25/02 |
| EUT | INDOOR ALARM PANEL | DUTY CYCLE | 33 % |
| MODEL | PS90-17 | PEAK TO AVG | -9.6297212 dB |
| S/N | N/A | TEST DIST. | 3 Meters |
| TEST ENGINEER | KYLE FUJIMOTO | LAB | D |

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED READING

PAGE 7 OF PAGE 9

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)

| | | | |
|---------------|-------------------------------|-------------|---------------|
| COMPANY | MILLENNIUM ELECTRONICS2, INC. | DATE | 4/25/02 |
| EUT | INDOOR ALARM PANEL | DUTY CYCLE | 33 % |
| MODEL | PS90-17 | PEAK TO AVG | -9.6297212 dB |
| S/N | N/A | TEST DIST. | 3 Meters |
| TEST ENGINEER | KYLE FUJIMOTO | LAB | D |

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED READING

PAGE 8 of PAGE 9

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)

| | | | |
|---------------|-------------------------------|-------------|---------------|
| COMPANY | MILLENNIUM ELECTRONICS2, INC. | DATE | 4/25/02 |
| EUT | INDOOR ALARM PANEL | DUTY CYCLE | 33 % |
| MODEL | PS90-17 | PEAK TO AVG | -9.6297212 dB |
| S/N | N/A | TEST DIST. | 3 Meters |
| TEST ENGINEER | KYLE FUJIMOTO | LAB | D |

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN
** DELTA = SPEC LIMIT - CORRECTED READING

No Harmonics nor Emissions Found After the 9th Harmonic

PAGE 9 of PAGE 9

Test location: Compatible Electronics
 Customer : MILLENNIUM ELECTRONICS², INC. Date : 4/25/2002
 Manufacturer : MILLENNIUM ELECTRONICS², INC. Time : 15.10
 EUT name : INDOOR ALARM PANEL
 Model : PS90-17
 Specification: Fcc_B Test distance: 3.0 mtrs Lab: D
 Distance correction factor(20*log(test/spec)) : 0.00
 Test Mode : INDOOR ALARM PANEL WITH A/C ADAPTER
 SPURIOUS EMISSIONS 30 MHz TO 9300 MHz
 RECEIVE MODE (WORST CASE)
 TEMPERATURE 73 DEGREES F., RELATIVE HUMIDITY 47%
 TESTED BY: KYLE FUJIMOTO

| Pol | Freq MHz | Rdng dBuV | Cable loss dB | Ant factor dB | Amp gain dB | Cor'd rdg = R dBuV | limit = L dBuV/m | Delta R-L Db |
|-------------------------|-------------|--------------|---------------------|---------------------|-------------------|--------------------------|------------------------|--------------------|
| HORIZONTAL POLARIZATION | | | | | | | | |
| 1H | 45.20 | 49.10 | 1.00 | 12.25 | 38.50 | 23.85 | 40.00 | -16.15 |
| 2H | 334.14 | 44.70 | 3.34 | 14.44 | 38.43 | 24.05 | 46.00 | -21.95 |
| 3H | 462.46 | 36.20 | 3.95 | 16.04 | 37.85 | 18.34 | 46.00 | -27.66 |
| 4H | 508.86 | 39.90 | 4.15 | 16.89 | 38.04 | 22.91 | 46.00 | -23.09 |
| VERTICAL POLARIZATION | | | | | | | | |
| 5V | 30.17 | 48.40 | 0.70 | 13.70 | 38.50 | 24.30 | 40.00 | -15.70 |
| 6V | 32.24 | 58.80 | 0.74 | 13.70 | 38.50 | 34.74 | 40.00 | -5.26 |
| 7V | 133.81 | 38.60 | 1.87 | 11.96 | 38.56 | 13.87 | 43.50 | -29.63 |
| 8V | 375.48 | 32.90 | 3.55 | 14.85 | 38.30 | 13.01 | 46.00 | -32.99 |
| 9V | 687.00 | 37.10 | 5.00 | 20.51 | 38.07 | 24.53 | 46.00 | -21.47 |

Test location: Compatible Electronics
Customer : MILLENNIUM ELECTRONICS², INC. Date : 4/25/2002
Manufacturer : MILLENNIUM ELECTRONICS², INC. Time : 15.25
EUT name : INDOOR ALARM PANEL
Model : PS90-17
Specification: Fcc_B Test distance: 3.0 mtrs Lab: D
Distance correction factor(20*log(test/spec)) : 0.00
Test Mode : INDOOR ALARM PANEL WITH A/C ADAPTER
SPURIOUS EMISSIONS 10 kHz TO 30 MHz
RECEIVE MODE (WORST CASE)
TEMPERATURE 73 DEGREES F., RELATIVE HUMIDITY 47%
TESTED BY: KYLE FUJIMOTO

THERE WERE NO EMISSIONS FOUND FOR THE EUT BETWEEN 10 kHz AND 30 MHz.
BOTH THE VERTICAL AND HORIZONTAL POLARIZATIONS WERE INVESTIGATED.

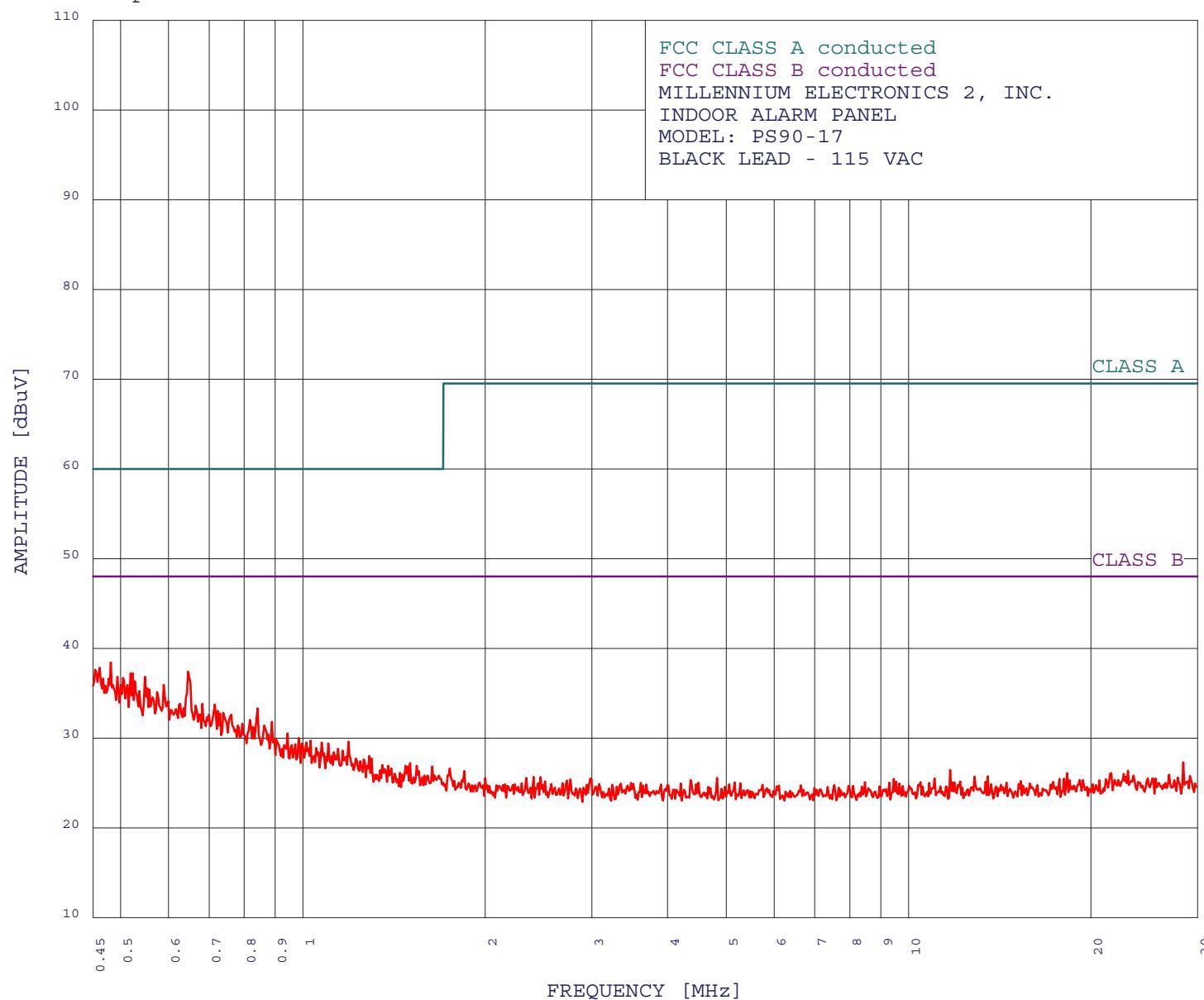
CONDUCTED EMISSIONS
DATA SHEETS



EMISSION LEVEL [dBuV] PEAK
Graph for Peak

4/26/2002 7:40:23

FCC CLASS A conducted
FCC CLASS B conducted
MILLENNIUM ELECTRONICS 2, INC.
INDOOR ALARM PANEL
MODEL: PS90-17
BLACK LEAD - 115 VAC





MILLENNIUM ELECTRONICS 2, INC.

INDOOR ALARM PANEL

MODEL: PS90-17

FCC CLASS B - BLACK LEAD - 115 VAC

TEST ENGINEER : KYLE FUJIMOTO

4/26/2002

7:40:23

30 highest peaks above -50.00 dB of CLASS B limit line

Peak criteria : 1.00 dB, Curve : Peak

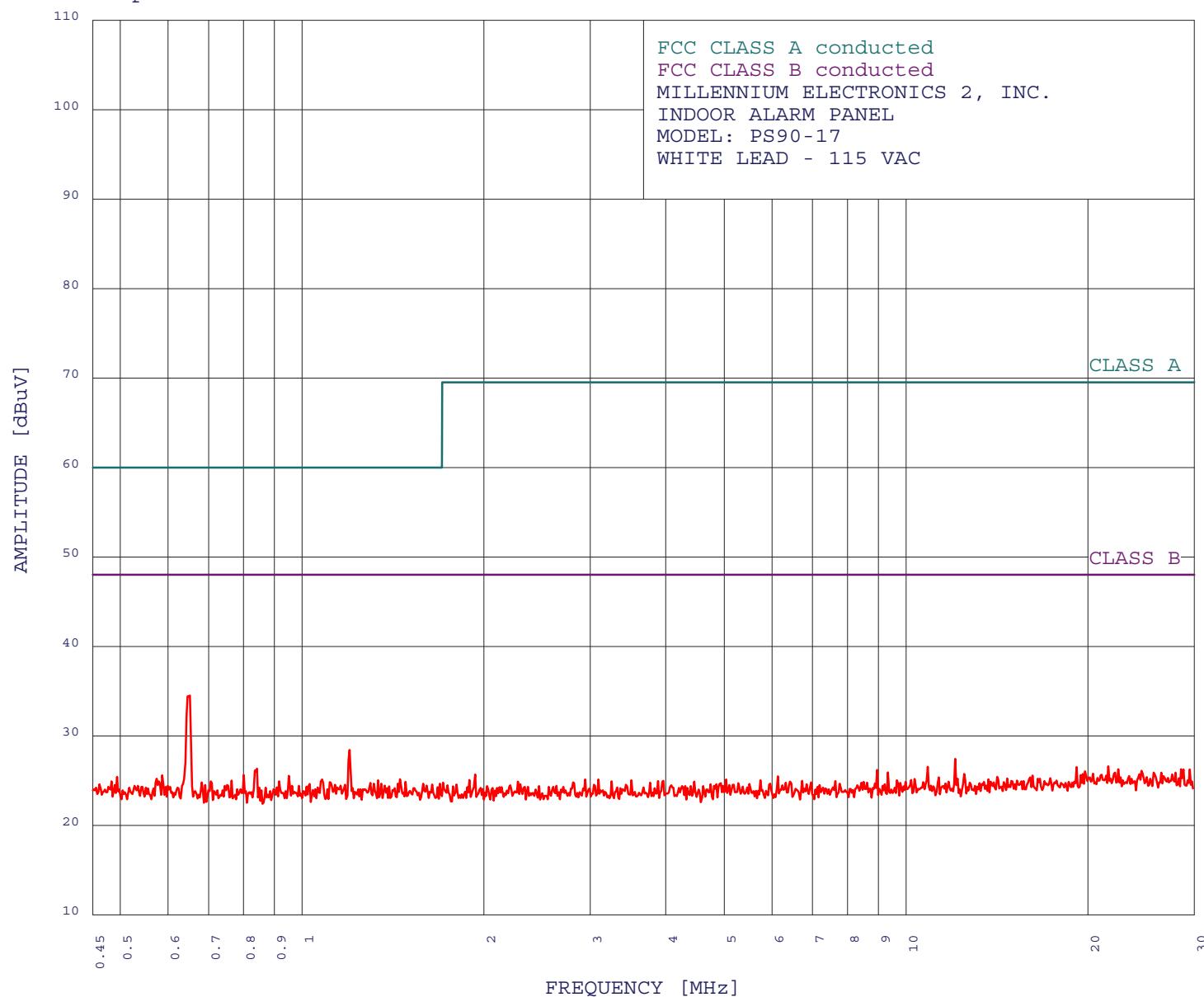
Peak# Freq(MHz) Amp(dBuV) Limit(dB) Delta(dB)

| | | | | |
|----|-------|-------|-------|--------|
| 1 | 0.482 | 38.42 | 48.00 | -9.58 |
| 2 | 0.462 | 37.83 | 48.00 | -10.17 |
| 3 | 0.454 | 37.63 | 48.00 | -10.37 |
| 4 | 0.646 | 37.42 | 48.00 | -10.58 |
| 5 | 0.519 | 37.22 | 48.00 | -10.78 |
| 6 | 0.524 | 37.22 | 48.00 | -10.78 |
| 7 | 0.494 | 36.82 | 48.00 | -11.18 |
| 8 | 0.549 | 36.82 | 48.00 | -11.18 |
| 9 | 0.504 | 36.72 | 48.00 | -11.28 |
| 10 | 0.468 | 36.62 | 48.00 | -11.38 |
| 11 | 0.528 | 36.32 | 48.00 | -11.68 |
| 12 | 0.500 | 35.92 | 48.00 | -12.08 |
| 13 | 0.513 | 35.92 | 48.00 | -12.08 |
| 14 | 0.589 | 35.92 | 48.00 | -12.08 |
| 15 | 0.558 | 35.42 | 48.00 | -12.58 |
| 16 | 0.537 | 35.22 | 48.00 | -12.78 |
| 17 | 0.574 | 35.12 | 48.00 | -12.88 |
| 18 | 0.627 | 33.82 | 48.00 | -14.18 |
| 19 | 0.682 | 33.82 | 48.00 | -14.18 |
| 20 | 0.715 | 33.72 | 48.00 | -14.28 |
| 21 | 0.666 | 33.62 | 48.00 | -14.38 |
| 22 | 0.842 | 33.31 | 48.00 | -14.69 |
| 23 | 0.617 | 33.22 | 48.00 | -14.78 |
| 24 | 0.724 | 33.02 | 48.00 | -14.98 |
| 25 | 0.739 | 32.82 | 48.00 | -15.18 |
| 26 | 0.730 | 32.72 | 48.00 | -15.28 |
| 27 | 0.700 | 32.62 | 48.00 | -15.38 |
| 28 | 0.761 | 32.62 | 48.00 | -15.38 |
| 29 | 0.817 | 32.01 | 48.00 | -15.99 |
| 30 | 0.889 | 31.81 | 48.00 | -16.19 |

EMISSION LEVEL [dBuV] PEAK
Graph for Peak

4/26/2002 7:42:14

FCC CLASS A conducted
FCC CLASS B conducted
MILLENNIUM ELECTRONICS 2, INC.
INDOOR ALARM PANEL
MODEL: PS90-17
WHITE LEAD - 115 VAC





**COMPATIBLE
ELECTRONICS**

MILLENNIUM ELECTRONICS 2, INC.

INDOOR ALARM PANEL

MODEL: PS90-17

FCC CLASS B - WHITE LEAD - 115 VAC

TEST ENGINEER : KYLE FUJIMOTO

4/26/2002

7:42:14

30 highest peaks above -50.00 dB of CLASS B limit line

Peak criteria : 1.00 dB, Curve : Peak

| Peak# | Freq(MHz) | Amp(dBuV) | Limit(dB) | Delta(dB) |
|-------|-----------|-----------|-----------|-----------|
| 1 | 0.652 | 34.51 | 48.00 | -13.49 |
| 2 | 1.198 | 28.43 | 48.00 | -19.57 |
| 3 | 12.065 | 27.41 | 48.00 | -20.59 |
| 4 | 21.627 | 26.59 | 48.00 | -21.41 |
| 5 | 10.861 | 26.52 | 48.00 | -21.48 |
| 6 | 19.156 | 26.50 | 48.00 | -21.50 |
| 7 | 0.842 | 26.32 | 48.00 | -21.68 |
| 8 | 22.472 | 26.26 | 48.00 | -21.74 |
| 9 | 28.550 | 26.26 | 48.00 | -21.74 |
| 10 | 29.517 | 26.23 | 48.00 | -21.77 |
| 11 | 8.958 | 26.19 | 48.00 | -21.81 |
| 12 | 24.544 | 26.10 | 48.00 | -21.90 |
| 13 | 19.798 | 26.04 | 48.00 | -21.96 |
| 14 | 9.337 | 25.90 | 48.00 | -22.10 |
| 15 | 25.694 | 25.89 | 48.00 | -22.11 |
| 16 | 26.472 | 25.89 | 48.00 | -22.11 |
| 17 | 27.946 | 25.88 | 48.00 | -22.12 |
| 18 | 22.191 | 25.88 | 48.00 | -22.12 |
| 19 | 12.483 | 25.75 | 48.00 | -22.25 |
| 20 | 19.633 | 25.73 | 48.00 | -22.27 |
| 21 | 1.934 | 25.67 | 48.00 | -22.33 |
| 22 | 0.800 | 25.61 | 48.00 | -22.39 |
| 23 | 0.587 | 25.60 | 48.00 | -22.40 |
| 24 | 16.194 | 25.57 | 48.00 | -22.43 |
| 25 | 0.951 | 25.52 | 48.00 | -22.48 |
| 26 | 23.420 | 25.51 | 48.00 | -22.49 |
| 27 | 6.135 | 25.46 | 48.00 | -22.54 |
| 28 | 14.149 | 25.40 | 48.00 | -22.60 |
| 29 | 0.494 | 25.40 | 48.00 | -22.60 |
| 30 | 16.060 | 25.36 | 48.00 | -22.64 |

-20 dB BANDWIDTH

DATA SHEET



-20 dB BANDWIDTH OF THE FUNDAMENTAL
REF 117.0 dB μ V ATTEN 20 dB

MKR Δ 203 kHz
-0.10 dB

hp

10 dB/

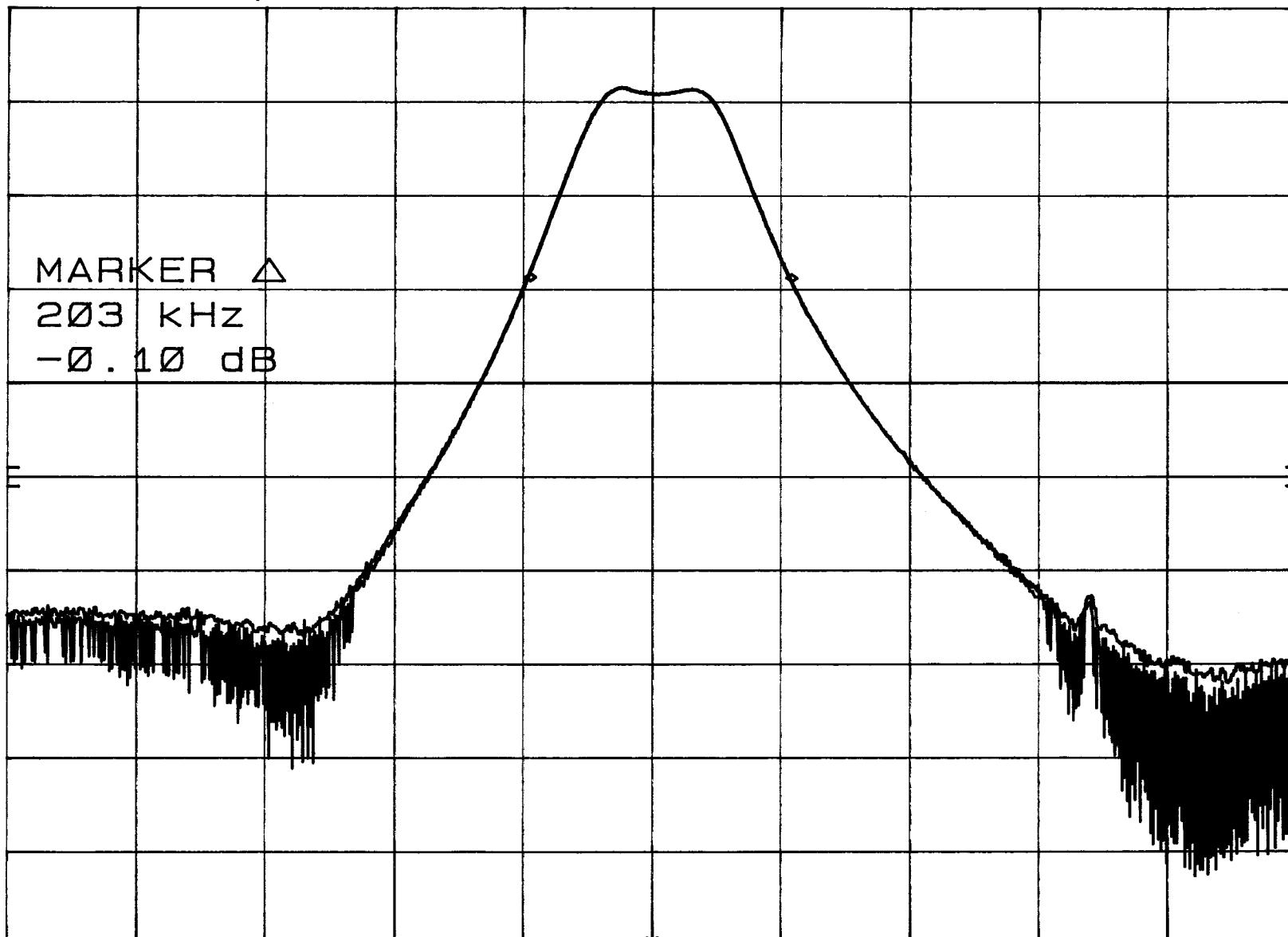
DL
77.0
dB μ V

CORR'D

CENTER 418.07 MHz
RES BW 1 MHz

VBW 1 MHz

SPAN 1.00 MHz
SWP 20.0 msec



APPENDIX E

LABORATORY RECOGNITIONS



LABORATORY RECOGNITIONS

Compatible Electronics has the following agency accreditations:

National Voluntary Laboratory Accreditation Program - Lab Code: 200063-0

Voluntary Control Council for Interference - Registration Numbers: R-983, C-1026, R-984 and C-1027

Bureau of Standards and Metrology Inspection - Reference Number: SL2-IN-E-1031

Conformity Assessment Body for the EMC Directive Under the US/EU MRA Appointed by NIST

Compatible Electronics is recognized or on file with the following agencies:

Federal Communications Commission

Industry Canada

Radio-Frequency Technologies (Competent Body)

