

**FCC PART 15 SUBPART B CLASS B  
and CSA C108.8  
EVALUATION REPORT  
RADIO FREQUENCY INTERFERENCE TEST**

Prepared for:  
**Secure Communication Systems, Inc.**  
1507 E. McFadden Avenue  
Santa Ana, CA 92705

Product Description:  
**Inkjet Printer**

Model:  
**SCS-IJ8**

FCC Identification:  
**LJS4-1526-100**

Test Completion Date:  
**February 25, 1999**

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## 1.0 LETTER OF CERTIFICATION

PDE Laboratories, Inc is accredited by the U.S. National Institute Standards Technology under NVLAP as suppliers of test results to the criteria established by ISO/IEC guide 25 and ISO 9002.

PDE Laboratories, Inc is authorized by NEMKO, a Notified Body, to perform EMC testing.

PDE Laboratories, Inc is approved by TUV Product Services as a test facility testing to the EMC DIRECTIVE 89/336/EEC.

PDE Laboratories, Inc is approved as a contractor to Radio Frequency investigation LTD, a UK Competent Body and by Radio Frequency Technologies LTD, a Competent Body of Ireland.

The data, data evaluation and equipment configuration represented herein are a true and accurate representation of the test sample (EUT), and of the radio frequency susceptibility characteristics and measurements obtained as of the dates and at the times of the test under the conditions specified.

The test results provided with this report indicate that the equipment tested is COMPLIANT with the following Rules and Regulations, as Class B equipment:

- 1) The Code of Federal Regulations 47, Part 15, Subpart B, Class B and ANSI C63.4
- 2) The Industry Canada, Radio Act Registration SOR/88-475, Canadian Standards Association (CSA) C108.8-M1983

Tests Performed By:

  
T. Reysbergen

Report Approved By:

  
D. Feher

## 2.0 SUMMARY OF TEST

### 2.1A ADMINISTRATIVE DATA

DEVICE TESTED: Inkjet Printer, Model: SCS-IJ8

ACCESSORIES: N/a

APPLICANT: Secure Communication Systems, Inc.  
1507 E. McFadden Avenue  
Santa Ana, CA 92705

CONTACT: Bob Korb

MANUFACTURER: Secure Communication Systems, Inc.

### 2.1B TEST DESCRIPTION

FREQUENCY RANGES: Conducted: 0.45 - 30.0 MHz  
Radiated: 30.0 - 1000 MHz

TEST LOCATION: 950 Calle Negocio, San Clemente, Calif.

TEST DATES: February 25, 1999

PURPOSE OF TEST: To demonstrate compliance with the Class B limits of FCC Part 15 B and CSA 108.8-M1983.

TESTS PERFORMED:

1. Conducted Emissions Per ANSI C63.4. \*\*
2. Radiated emissions Per ANSI C63.4 at 3 or 10 Meters.\*\*  
See actual data for measurement distance.
3. Engineering Evaluations

All Measurement Data is acquired according to the content of ANSI C63.4. The Test Site Data and performance complies with ANSI C63.4, unless supplemented with additional requirements as noted in the test report. \*\*FCC rules allow for Radiated emission measurements taken at 10 meters under CISPR guidelines and Conducted emission measurements under CISPR guidelines

## 2.2 TEST RESULTS - CONDUCTED EMISSIONS

Conducted Emission Results - High or Supply Lead

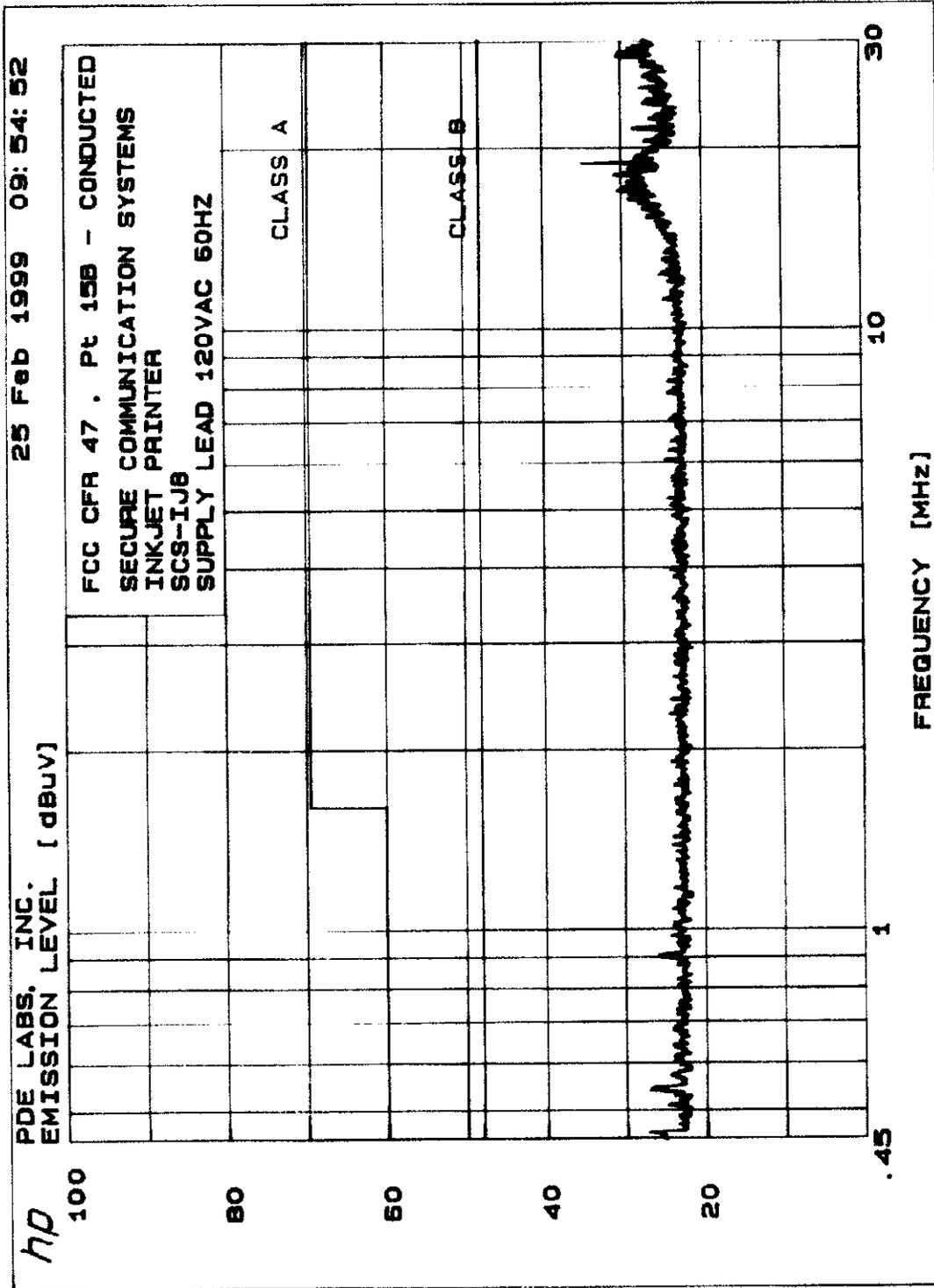
**\*\*Unless otherwise noted, measurements taken per ANSI C63.4\*\***

Note: Tests performed under both ANSI and CISPR criteria as provided under Title 47 CFR Part 15, Paragraph 15.107 .

See following page.

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## 2.2 TEST RESULTS - CONDUCTED EMISSIONS

Conducted Emission Results – Low or Return Lead

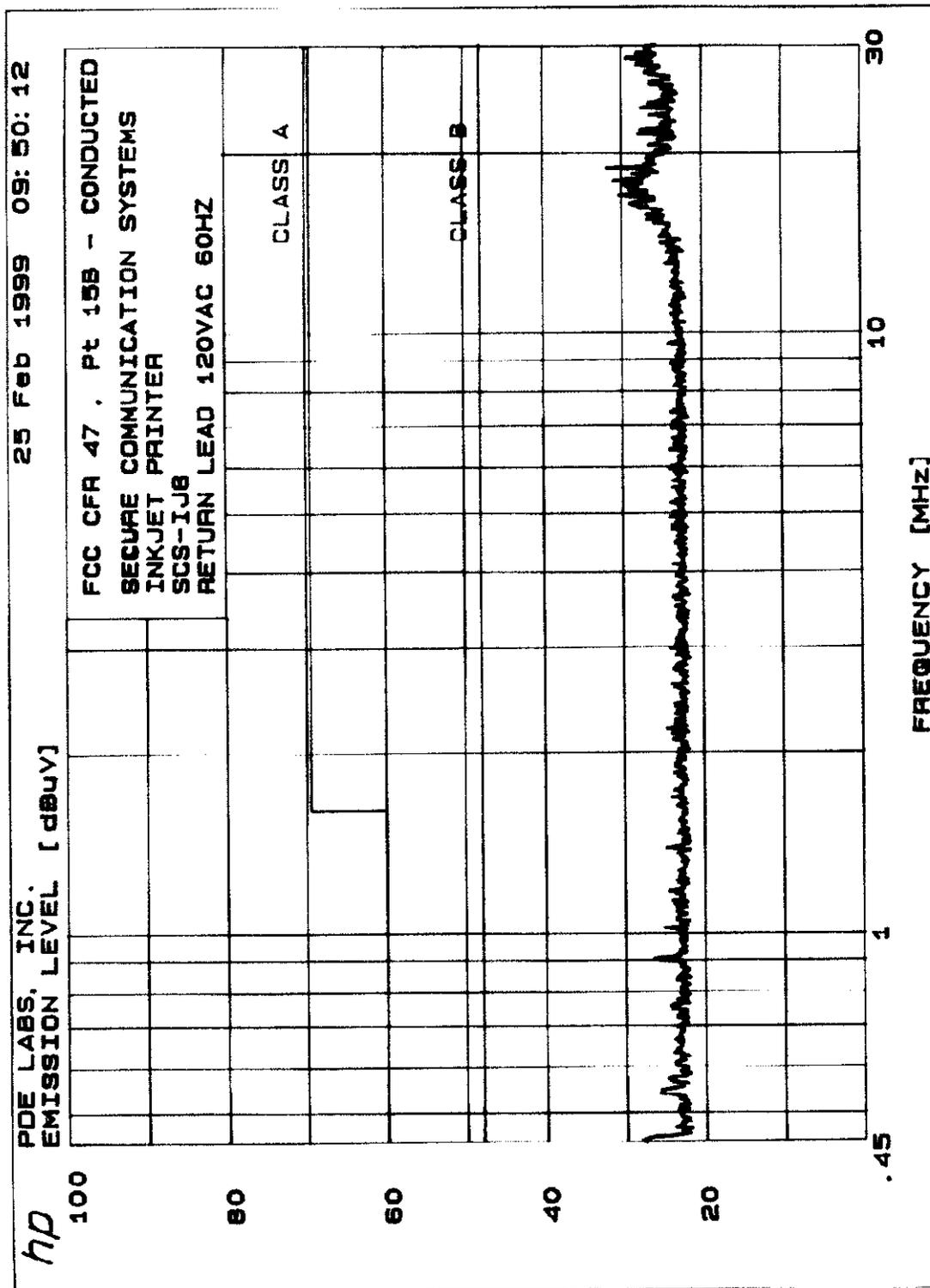
**\*\*Unless otherwise noted, measurements taken per ANSI C63.4\*\***

Note: Tests performed under both ANSI and CISPR criteria as provided under Title 47 CFR, Part 15, Paragraph 15.107.

SEE FOLLOWING PAGE.

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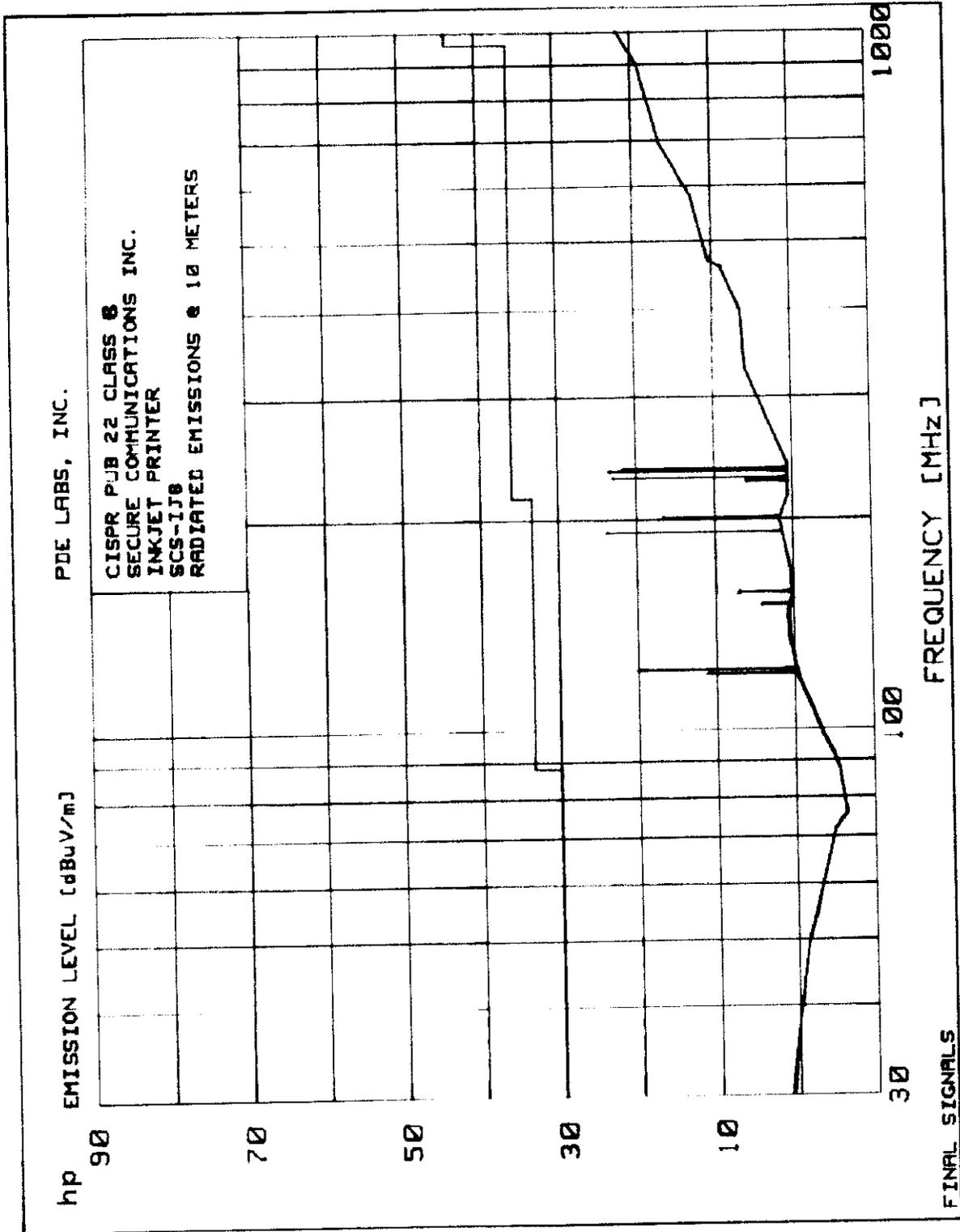
## 2.3 TEST RESULTS - RADIATED EMISSIONS

Measurements taken at 10 Meters

**\*\*Unless otherwise noted, measurements taken per ANSI C63.4\*\***

Note: Test performed using CISPR criteria as allowed under Title 47 CFR, Part 15, Paragraph 15.109.

SEE FOLLOWING PAGES.



# PDE Laboratories, Inc.

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## PRODUCT EMISSIONS

No	Emission Frequency MHz	Spec Limit dB	Measurements			Site			Corr Factor dB	Comments
			ABS UV/m	dLim dB	Mode	Pol	Hgt Cm	AZM deg		
1	120.008	33.5	11.2	-22.3	PK	H	340	98	-11.1	Computer
2	121.710	33.5	20.0	-13.5	PK	V	117	87	-11.2	Computer
3	151.049	33.5	4.1	-29.4	PK	H	339	212	-11.0	Computer
4	157.508	33.5	7.0	-26.5	PK	H	304	191	-11.3	
5	192.010	33.5	23.8	-9.7	PK	H	167	274	-10.3	Monitor Cable
6	201.399	33.5	16.6	-16.9	PK	V	105	324	-9.7	Computer
7	266.572	36.0	5.9	-30.1	PK	V	108	346	-10.3	Computer
8	299.102	36.0	23.0	-13.0	PK	H	335	188	-10.1	
9	234.440	36.0	23.4	-12.6	PK	H	300	248	-11.0	
10	236.301	36.0	21.7	-14.3	PK	V	259	212	-11.4	

## 2.4 MODIFICATIONS

None required to demonstrate compliance.

## 2.5 INTENT TO INCORPORATE ENGINEERING REWORK (If required by 2.4 above)

### INTENT TO INCORPORATE ENGINEERING REWORK

This is a letter of Intent to Incorporate the Engineering Rework as described in the above referenced PDE Laboratories. Test Report, Section 2.4, to achieve compliance with the intent of the testing as documented. I, the undersigned have the responsibility for marketing the device tested, and have implemented procedures to monitor the quality of the product (device tested), during continued manufacturing processes and possible product changes or enhancements, and take the responsibility to monitor continued compliance through periodic re-testing during the life of product (device tested), and re-testing any new configuration which might alter the status of the product's continued compliance to the applicable Rules and Regulations.

[ NOT APPLICABLE FOR THIS TEST REPORT ]

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Name

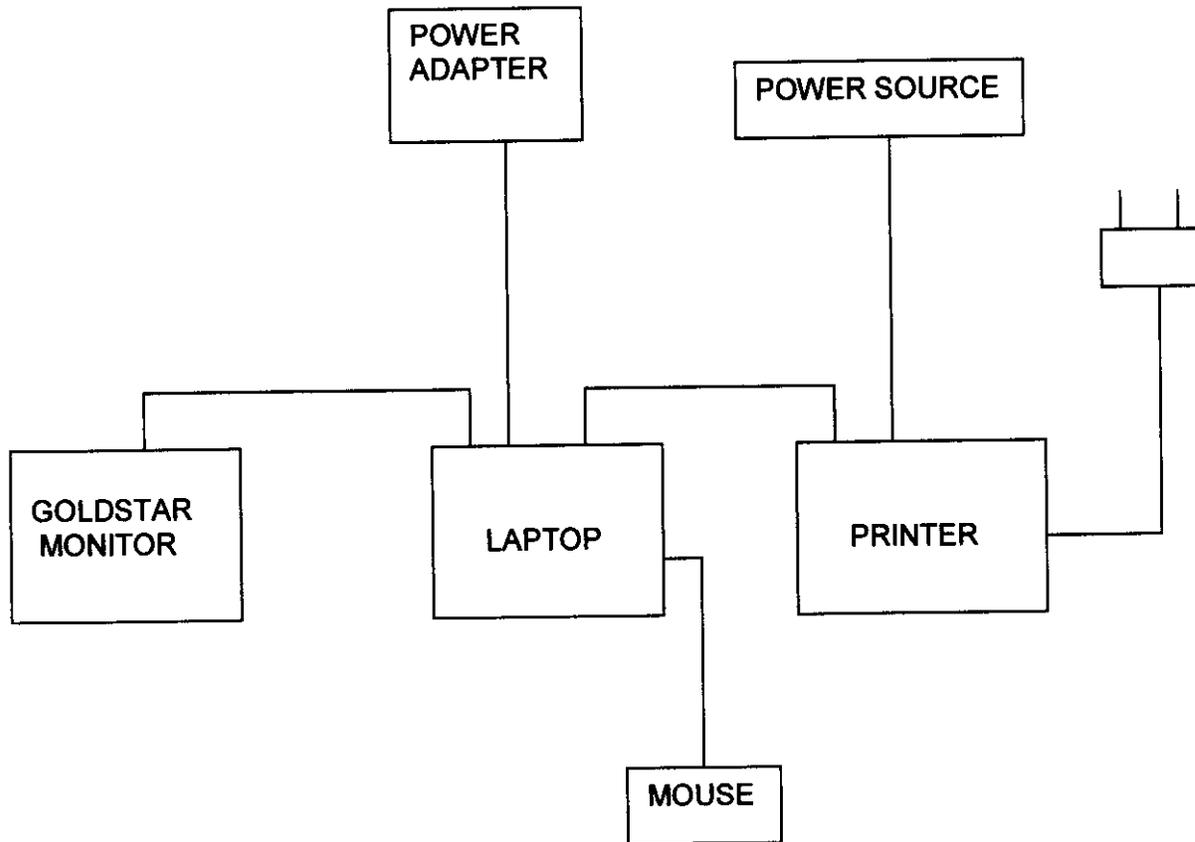
\_\_\_\_\_  
Title

## 2.6 RECOMMENDATIONS

None. Paragraph 2.4 refers.

## 3.0 DESCRIPTION OF EUT CONFIGURATION

### 3.1 SKETCH OF EQUIPMENT, CABLE CONFIGURATION AND PERIPHERAL ATTACHMENT, if applicable.



## 3.2 DESCRIPTION OF EUT AND PERIPHERAL EQUIPMENT

### 3.2.1 DESCRIPTION OF EUT

The EUT is a. Secure Communication Systems Inc. Model: SCS-IJ8

Equipment: Inkjet Printer  
Manufacturer: Secure Communication Systems Inc.  
Model No.: SCS-IJ8  
Serial No.: N/A

Internal  
Frequencies: N/A

Power Supply: External: 120 VAC / 60 HZ

RFI Suppression Features, if applicable:

Powerline Filter: N/A  
Ferrite Chokes: N/A

Internal compliance components, if applicable:

Equipment: Not Applicable  
Manufacturer:  
Model No.:  
Serial No.:  
Location within EUT:

## 3.2.2 DESCRIPTION OF PERIPHERAL EQUIPMENT

- 1) Equipment: Printer  
Manufacturer: Secure Communication Systems Inc.  
Model No.: 41526-100  
Serial No: N/A
- 2) Equipment: Mouse  
Manufacturer: Toshiba  
Model No.: 58268  
Serial No: 00383274
- 3) Equipment: Laptop  
Manufacturer: Toshiba  
Model No.: PR1272U  
Serial No: 68810208A-1
- 4) Equipment: Laptop Power Adapter  
Manufacturer: Toshiba  
Model No.: PA244OU  
Serial No: 0147333
- 5) Equipment: Goldstar Monitor  
Manufacturer: Goldstar  
Model No.: 1425 Plus  
Serial No: MC00215575

### Types of Cables Used:

#### Power Cords

- 1) Unit: EUT  
MFG: Generic  
Shielded: No  
Length: 2 m
- 2) Unit: EUT to Computer  
MFG: Generic  
Shielded: No  
Length: 2 m

## I/O Cables - External

- 1) Connection: EUT to LPT 1  
MFG: Generic  
Shielded: No  
Connectors: Parallel Port Connector  
Length: 1.5 m
  
- 2) Connection: Mouse to Serial Port of Computer  
MFG: Generic  
Shielded: Yes  
Connectors: Serial Port Connector  
Length: 1.5m

## 3.4 OPERATING MODES

The Secure Communication Systems, Inc. Inkjet Printer, Model: SCS-IJ8 was configured as a complete system and operated continuously during the procedure.

The position of the peripherals (if required in the test set up) and interconnect cables (if required in the test set up) were varied to provide generally the highest emissions prior to the final tests.

Absolute emission level measurements were made in an automatic orientation fashion such that the EUT was uniquely positioned for each of the significant emissions detected in the prescan evaluation and at the highest level obtainable. Those data are herein recorded.

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## 4.0 TEST EQUIPMENT AND TEST SET UPS

4.1 LIST OF EQUIPMENT USED IN TESTS. An "X" in the used column denotes applicability and use.

TEST EQUIPMENT			CALIBRATION		USED
DEVICE / MANUFACTURER	MODEL	SERIAL NO	DATE	DUE	
SITE NUMBER 2	OATS	-----	9-30-98	9-30-99	
SPECTRUM ANALYZER HEWLETT PACKARD	8568B	2841A04345	2-8-99	2-8-00	
ANALYZER DISPLAY HEWLETT PACKARD	85662A	3001A18487	2-8-99	2-8-00	
PRE SELECTOR HEWLETT PACKARD	85685A	2901A00858	2-8-99	2-8-00	
QUASI-PEAK ADAPTOR HEWLETT PACKARD	85650A	2811A01210	2-8-99	2-8-00	
PRE-AMP HEWLETT PACKARD	8447F	2805A03163	9-30-98	9-30-00	
ANTENNA LOG PERIODICAL A. H. SYSTEMS	SAS-200-512	116	3-28-99	3-28-00	
ANTENNA BICON A.H. SYSTEMS	SAS-200-540	343	3-28-99	3-28-00	

SITE NUMBER 3	OATS	-----	8-30-98	8-30-99	X
SPECTRUM ANALYZER HEWLETT PACKARD	8567	2727A00415	9-16-98	9-16-99	X
ANALYZER DISPLAY HEWLETT PACKARD	85662A	264815252	9-16-98	9-16-99	X
PRE SELECTOR HEWLETT PACKARD	85685A	2837A00827	9-16-98	9-16-99	X
QUASI-PEAK ADAPTOR HEWLETT PACKARD	85650A	2521A00678	9-16-98	9-16-99	X
PRE-AMP HEWLETT PACKARD	8447F	1937A01214	9-30-98	9-30-99	X
ANTENNA BICONILOG EMCO	3142	9603-1025	3-28-99	3-28-00	X

# PDE Laboratories, Inc.

Report No: 993389 F15B  
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## 4.1 LIST OF EQUIPMENT USED IN TESTS(continued)

TEST EQUIPMENT			CALIBRATION		USED
DEVICE / MANUFACTURER	MODEL	SERIAL NO	DATE	DUE	
SPECTRUM ANALYZER HEWLETT PACKARD	8566B	2427A04639	2-8-99	2-8-00	
ANALYZER DISPLAY HEWLETT PACKARD	85662A	2848A17070	2-8-99	2-8-00	
QUASI PEAK ADAPTOR HEWLETT PACKARD	85650A	2521A01043	2-8-99	2-8-00	
PRE AMP HEWLETT PACKARD	8449B	3008A00410	9-30-98	9-30-99	
ANTENNA HORN A.H. SYSTEMS	SAS-200/571	145	9-30-98	9-30-99	
LISN (EUT) EMCO	923825/2	9202-1410	9-30-98	9-30-00	X
LISN (SUPPORT) EMCO	923825/2	9202-2024	9-30-98	9-30-00	

## 4.2 CONDUCTED EMISSIONS TEST SETUP

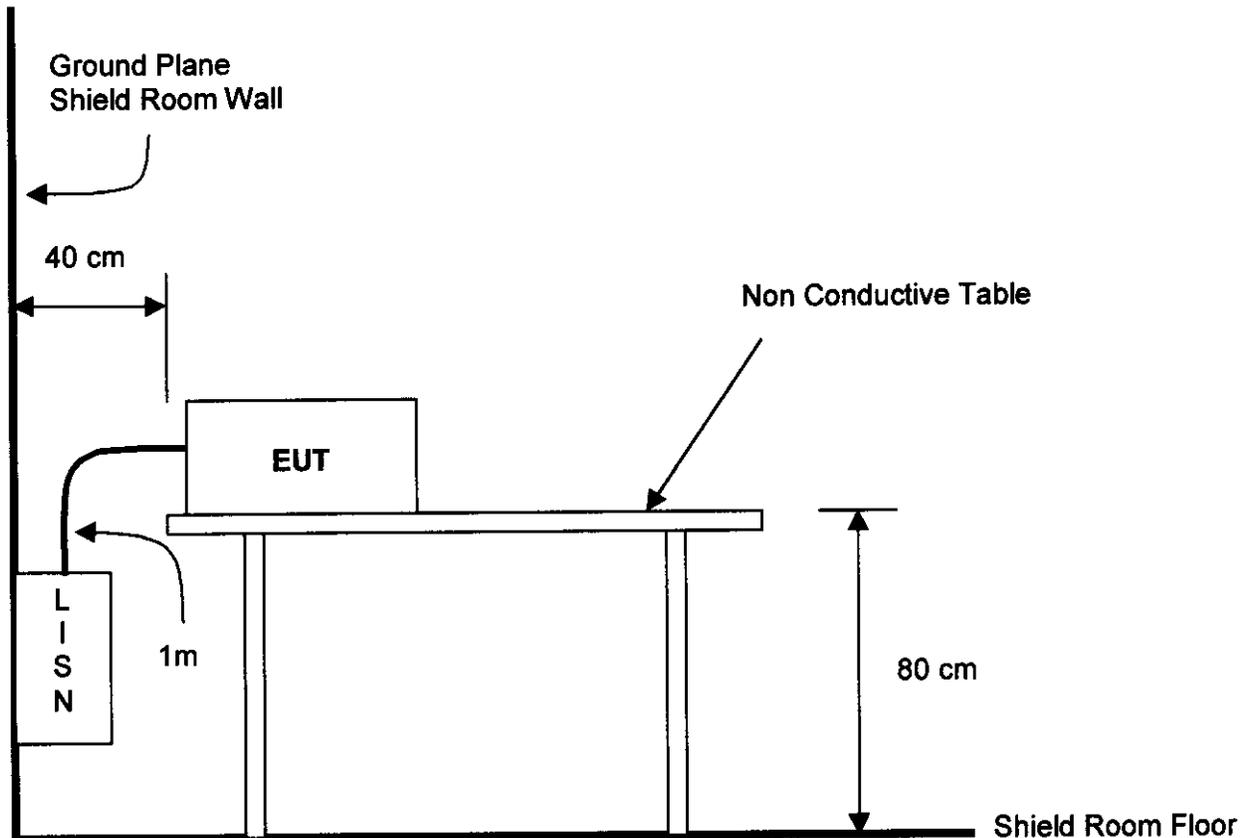
The Equipment Under Test (EUT) is configured as a system with peripherals connected, so that at least one interface port of each type is connected to one external peripheral. The EUT shall have one of two test configurations. These are either in a tabletop setup, or in a freestanding configuration as appropriate. The test data shall be collected using a Spectrum Analyzer and Quasi-Peak Adapter as described in Section 4.1.

The Conducted Test for tabletop configurations shall be performed on a 1.0 by 1.5 meter by 0.8-meter high, non-metallic test table, which is set up inside a shielded test chamber, with the rear edge of the table 40-cm from one wall of the chamber. Freestanding configurations shall also be setup inside the shielded test chamber. All wall spacing and LISN power shall conform to CISPR 11-22-16 Or ANSI 63.4-1992, Section 5.2 as necessary.

The EUT shall be powered through a Line Impedance Stabilization Network (LISN) bonded to the ground plane. The LISN power shall be isolated from other filtered power via an additional filter to ensure that RF Energy from the auxiliary instrumentation or support equipment does not influence the readings obtained. The Measurement System shall be located outside of the Shield Room.

All Peripheral and supporting equipment shall be powered through a second line impedance stabilization network (LISN) separate from the EUT. The second LISN shall be bonded to the ground plane and isolated from other filtered power via an additional filter.

## 4.2 CONDUCTED EMISSIONS TEST SETUP PLATFORM

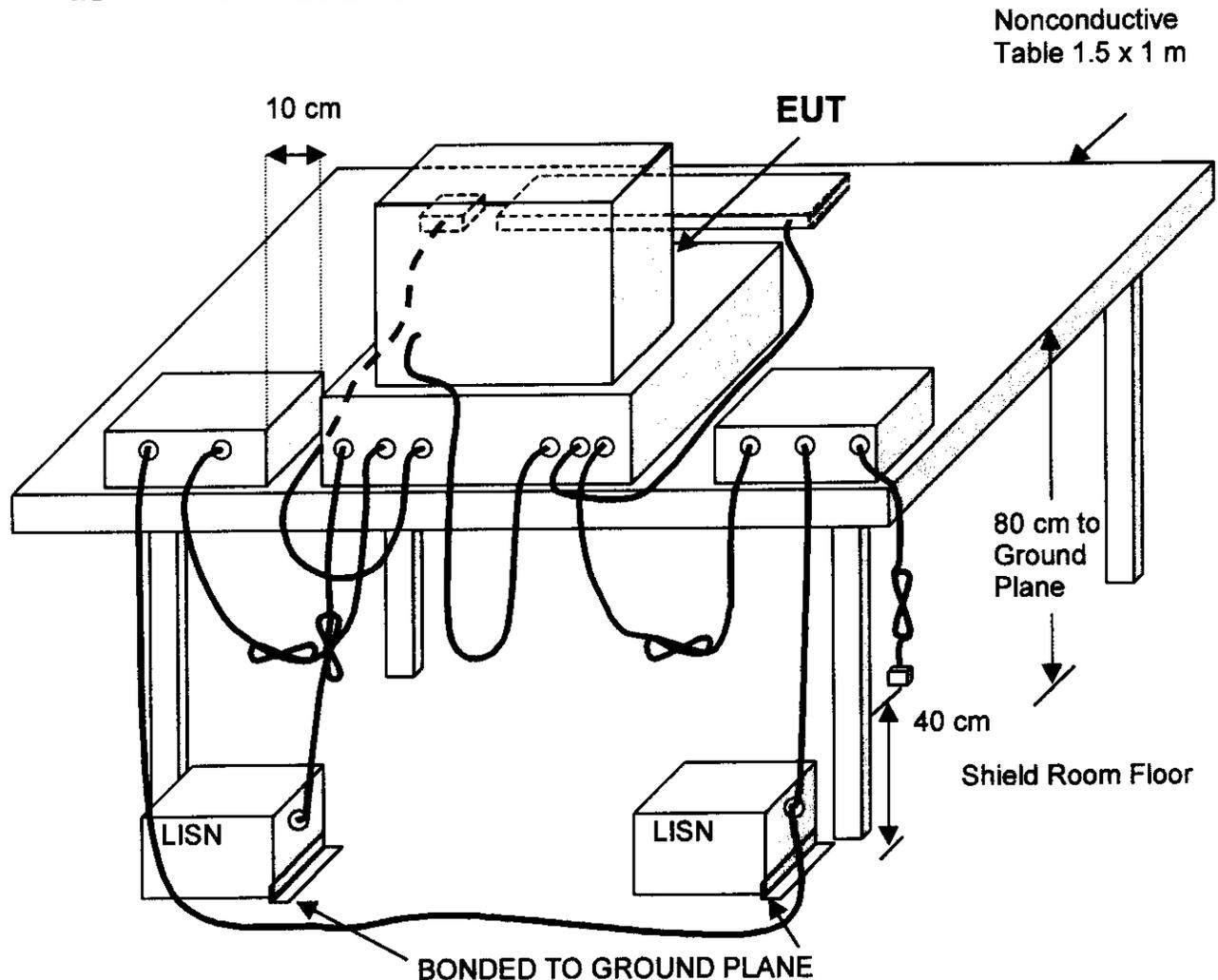


### Legend

Excess I/O cables are bundled in center (where possible) or the cables are arranged in a serpentine fashion. I/O cables, which are not connected to a peripheral, are bundled in the center. The ends of the I/O cables are terminated using correct terminating impedance.  
Excess power cords are bundled in the center or shortened to appropriate length.

TEST SET UP CISPR 11-22-16  
Table Top Products

## 4.2 CONDUCTED EMISSIONS TEST SETUP PLATFORM

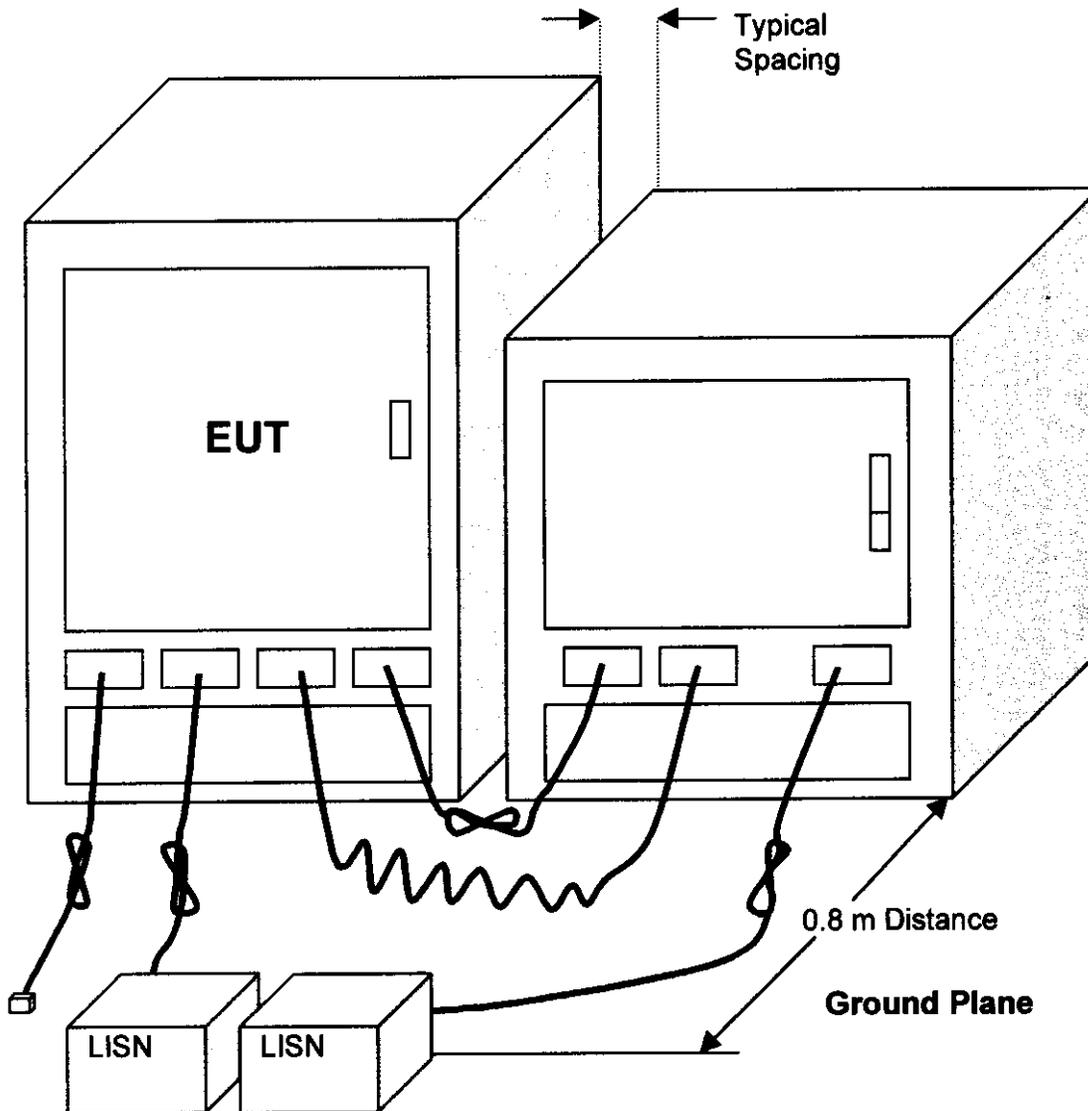


### Legend

1. Interconnecting cables are folded back and forth into bundles 40 cm from the tabletop.
2. I/O cables, which are not connected to a peripheral, are bundled in the center. The ends of the I/O cables are terminated using correct terminating impedance.
3. The EUT is connected to one LISN. Unused LISN connectors are terminated in 50 ohms.
  - 3.1 All other equipment powered from second LISN.
  - 3.2 Multiple outlet strips are used for multiple power cords of non-EUT equipment.
  - 3.3 The LISN is 80 cm from nearest part of EUT chassis.
4. Cables of a hand-operated device, such as a keyboard, mouse, etc., are placed as close as possible to the host.
5. The rear of the EUT and peripherals are all aligned and flush with the rear of the tabletop.
6. The rear of the tabletop is positioned 40 cm from the wall of the shield room.

### EMISSIONS TEST SETUP ANSI 63.4 1992 Table Top Products

## 4.2 CONDUCTED EMISSIONS TEST SET UP



### Legend

1. Excess I/O cables are bundled in center or wound in turns. Bundling does not exceed 40 cm in length.
2. I/O cables, are not connected to a peripheral, are bundled in center. The ends of the I/O cables are terminated using correct terminating impedance.
3. Excess power cords are bundled in the center or shortened to appropriate length.
4. The EUT is connected to one LISN. Unused LISN connectors are terminated in 50 ohms.
5. EUT and all cables shall be insulated from ground plane by 3 to 12 mm.

TEST SET UP ANSI 63.4-1992, CISPR 11-22-16  
Floor Standing Products

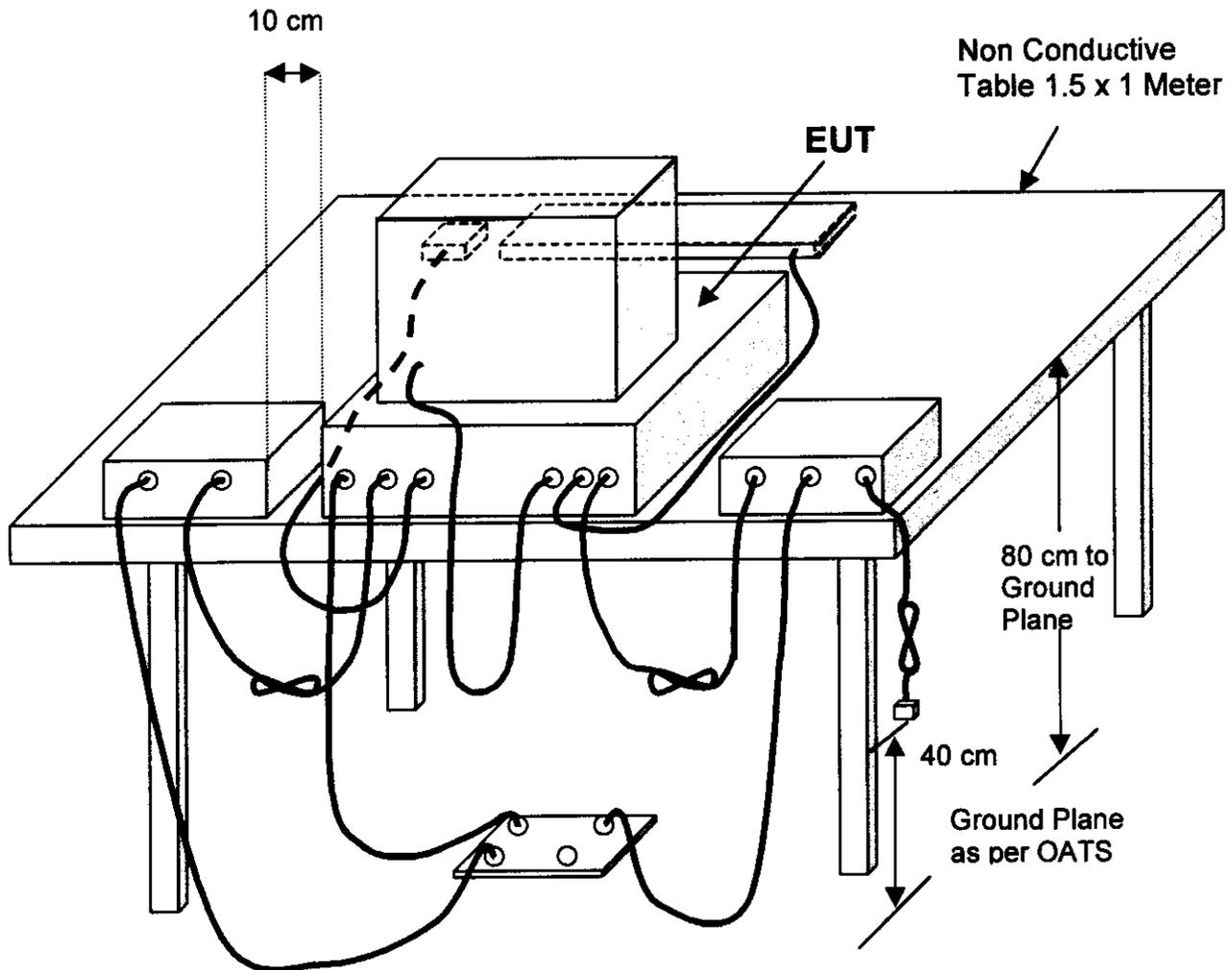
## 4.3 RADIATED EMISSIONS TEST SETUP

ANSI 63.4  
CISPR 11-22-16

The Open Area Test Sites (OATS) of PDE Laboratories, Inc. are designed according to ANSI 63.4-1992 and C.I.S.P.R. Publication 11, 22 and 16 requirements. The site attenuation data has been filed with the U.S. FCC, Nemko, Norway, RFI, a European Competent Body: U.K. and RFT a European Component Body: Ireland. The Oats facilities are periodically tested using a calibrated field site source with the resultant test data compiled into a statistical data base used to check the integrity of the test site measurements.

The Measurement procedures are in accordance with the Procedures of ANSI 63.4-1992 and C.I.S.P.R. The EUT is placed in the prescribed position of the OATS, (either atop a remote-controlled turntable, or atop a turntable flush with a ground plane) as shown in Section 3.5 of this Test Report. Figures in Section 3 depict typical test configurations. The EUT is rotated through 360 degrees to determine the azimuth of the highest or maximum emission. During rotation of the EUT, the antenna(s), supported by a remote controlled motorized mast, are varied from one to four meters in height and placed in both the vertical and horizontal polar positions to find the maximum energy lobe, or highest emission.

## 4.3 RADIATED EMISSIONS TEST SETUP PLATFORM (ON TURNTABLE)

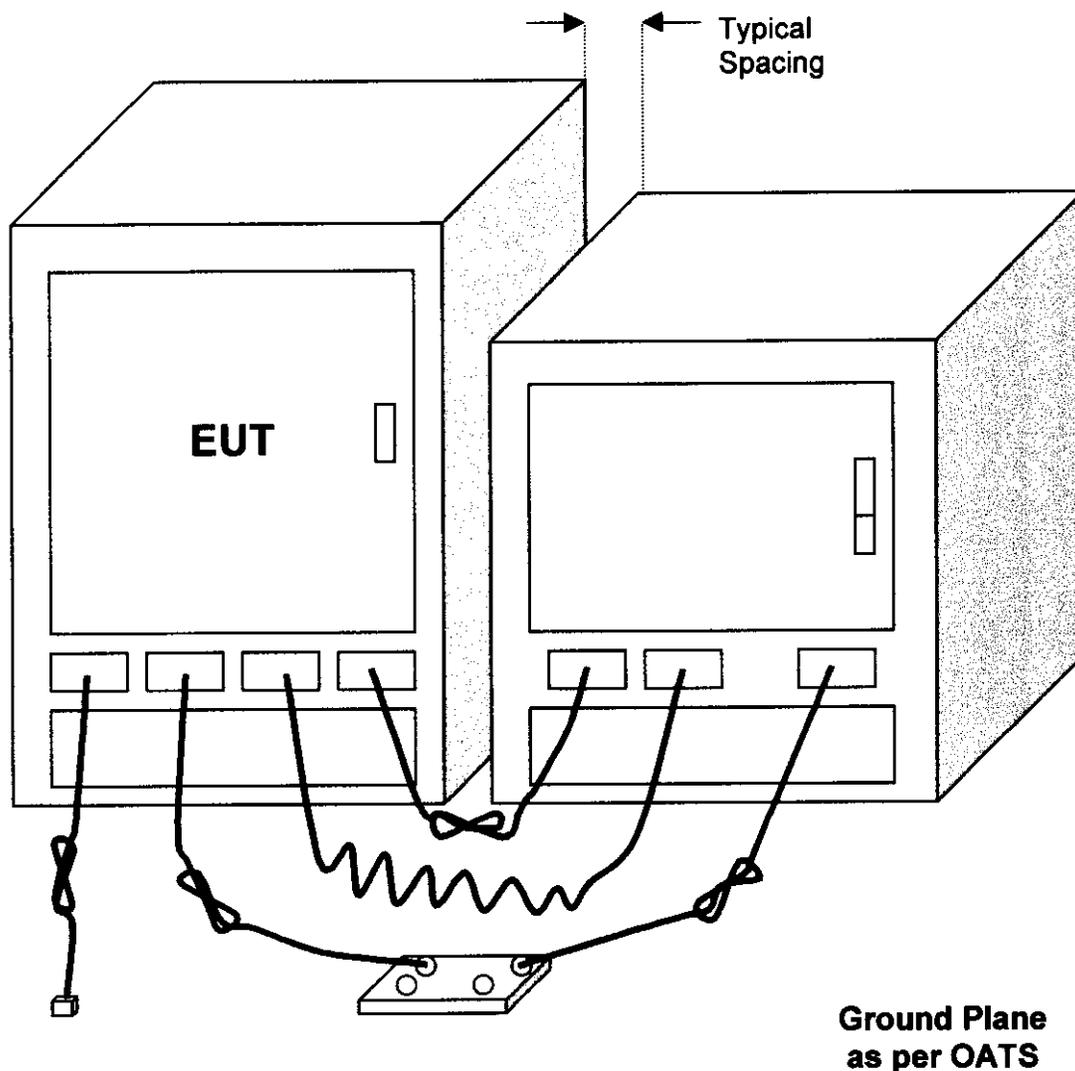


### Legend

1. Interconnecting cables are folded back and forth into bundles 40 cm from the tabletop.
2. I/O cables, which are not connected to a peripheral, are bundled in the center. The ends of the I/O cables are terminated using correct terminating impedance.
3. Cables of a hand-operated device, such as a keyboard, mouse, etc., are placed as close as possible to the controller.
4. Rear of the EUT and peripherals are all aligned and flush with the rear of the tabletop.

TEST SET UP ANSI 63.4-1992, CISPR 11-22-16  
Table Top Products

## 4.3 RADIATED EMISSIONS TEST SETUP PLATFORM (FLOOR STANDING)



### Legend

1. Excess I/O cables shall be bundled in center or wound in turns. Bundling shall not exceed 40 cm in length.
2. I/O cables, which are not connected to a peripheral, are bundled in center. The ends of the I/O cables are terminated using correct terminating impedance. in turns.
3. Excess power cords shall be bundled in the center or shortened to appropriate length.
4. EUT and all cables shall be insulated from ground plane by 3 to 12 mm.

TEST SET UP ANSI 63.4-1992, CISPR 11-22-16  
Floor Standing Products

## 5.0 TEST PROCEDURE

### 5.1 CONDUCTED EMISSIONS TEST

#### Preliminary Conducted Emissions Test:

The initial test data shall be taken in manual mode to investigate the worst emission configuration. While scanning the frequencies in the ranges of .450 MHz to 1.60 MHz, 1.60 MHz to 5.00 MHz and 5.00 MHz to 30.00 MHz, the conducted emissions from EUT shall be investigated for maximization of operating modes. Once predominant frequencies are found within 12 dB of the limit, the Spectrum Analyzer frequency span shall be lowered and the frequency(s) shall be closely examined.

#### Final Conducted Emissions Test:

The Final Conducted Test shall be done in the "Peak Detector" mode for line 1, which is High Line to Ground. When Peak Amplitudes are found above the limits, or within 6 dB of the limit, the specific points shall be remeasured manually in the Quasi-Peak Detector Mode for the line which was observed to have the highest RFI voltage. The Peak signal, the Peak Reading and Quasi-Peak Readings will be nearly the same. However, when narrow-band spikes occur from diode rectification process, the Quasi-Peak reading will be 7 dB lower when the RFI spikes have a 100-120 Hz repetition rate. When spiking (or Broadband RFI) is observed, the measurement is also repeated with the Average Detector.

When the RFI voltage is caused by broadband RFI sources, the following relaxation for broadband RFI is made:

For AC power line conducted tests, the following option may be exercised if the EUT emissions exceed the limit when using the Quasi-Peak instrumentation. If the level of the emission measured using the Quasi-Peak instrumentation may be reduced by 14 dB for comparison to the limit. When exercising this option, both of the following conditions shall be observed:

- 1) The measuring instrumentation with the average detector shall employ a linear IF amplifier.
- 2) Care must be taken not to exceed the dynamic range of the measuring instrument when measuring an emission with a low duty cycle.

The frequencies shall be scanned and the peaks shall be selected with audible modulation, monitored with a speaker. The Quasi-Peak meter reading shall be recorded at the indicated frequency and at the specified bandwidths. For EUTs where the prescribed 50-ohm LISN cannot be used, the RFI voltage shall be measured with a line probe. The insertion loss of 25 dB for the PDE Laboratories, Inc.'s probe is added to the meter reading in this case.

## 5.2 RADIATED PRELIMINARY TEST

Preliminary Radiated emission testing shall, typically, be done at a one-meter distance to the EUT, accomplished in either a Shielded Room or on the OATS facility.

Shielded Room preliminary testing is preferred, provided the emissions from the EUT are not exceedingly high, or that the EUT is too large or requires unique power configurations. The objective of the preliminary radiated measurements in the Shielded Room is to identify the frequency spectrum in the absence of the electromagnetic environment existing on the open area test site. The frequencies can then be pre-selected on the OATS facility to obtain the corresponding amplitude. The initial scan shall be made with the automated system. In a normal case, the EUT shall be placed inside the Shielded Room, onto a one-meter tall non-metallic table, if overall height is less than one-meter. The measurement antenna shall be placed upon a non-conductive tripod, one or two meters from the EUT, dependent upon the field strength of the radiated energy. Cables shall be stretched out horizontal and at a height of one-meter above the Shielded Room floor.

The EUT detected peaks shall be measured manually to determine the exact frequencies. Initially, Broadband antennas shall be used to scan large frequency in accordance with Measurement Procedure of ANSI 63.4-1992 or appropriate C.I.S.P.R Publications. If any frequency is found to be above 30-microvolts/meter level (at a one-meter distance), it shall be recorded as a significant frequency, worthy of examination later at the proper distances and protocols. All significant frequencies shall be examined at a reduced frequency span on the spectrum analyzer, while manipulating the cables and peripherals to maximize the emissions.

OATS preliminary testing shall be done at a distance of one-meter, using the non-conductive motorized mast assembly to hold the antenna at either one or two meters in height, depending upon the size and configuration of the EUT. This is done to determine the predominant frequencies from the EUT configurations that produce the maximum or highest emissions.

## 5.3 RADIATED EMISSIONS TEST

Initially, broadband antennas shall be used to scan large frequency bands, while manipulating the cables and peripheral equipment. This shall be done in accordance with Measurement Procedure of ANSI 63.4-1992 or appropriate C.I.S.P.R. Publications. If any frequencies shall be examined at a reduced frequency span on the spectrum analyzer, while manipulating the cables and peripherals to maximize the emissions, while changing the antenna height and while rotating the EUT.

## 5.4 FINAL RADIATED TESTING

The Radiated Emissions test shall then be repeated on the OATS facility to accurately measure the radiated RFI amplitudes without the multiple reflections existing in the Shielded Room (if this process was used), or if at an OATS pre-scan, to allow the proper distances, searched heights, and spectrum analyzer sensitivities to be used. The EUT shall be configured in accordance with Measurement Procedure of ANSI 63.4-1992 or appropriate C.I.S.P.R. Publications. Two complete Test Scans shall be done; one with Horizontal Antenna Polarization. Each scan shall be identical with respect to rotating the EUT, while raising and lowering the antenna to obtain the highest emission or maximum reading. Once the maximum reading is obtained, the bandwidth shall be narrowed and the signal audibly examined, to ensure separation from possible ambient signals. Average, peak and Quasi-Peak readings shall be measured on the six highest amplitude frequencies (if necessary), and so noted on the Engineering Data Sheets.

## 6.0 SAMPLE CALCULATIONS

If a preamplifier is used during the Radiated Emissions Testing, it is required that the amplifier gain be subtracted from the spectrum Analyzer (Meter) Reading. In addition, a correction factor for the antenna, cable, and a distance factor, if any, must be applied to the Meter Reading before a true field strength reading can be obtained. In the automatic mode of A.R.M.S. measurements, these considerations are automatically presented as a part of the printout. In the case of manual measurements and for greater efficiency and convenience, instead of using these correlation factors for each meter reading, the specification limit, shall be modified to reflect these correlation factors at each frequency value so that the meter readings can be compared directly to the modified specification limit. This modified specification limit. This modified specification limit is referred to as the "Corrected Meter Reading Limit" or simply CML.

The equation shall be derived in the following manner:

$$\text{Corrected Meter Reading} = \text{Meter Reading} + F + C - G$$

Where, F= Antenna Factor  
C = Cable Factor  
G = Amplifier Gain

Therefore, the equation for determining the Corrected Meter Reading Limit (CML) is:

$$\text{CML} = \text{Specification Limit} - F - C + G$$

For the manual mode of measurement, a table of corrected meter reading limits shall be used to permit immediate comparison of the meter reading to determine if the measured emission amplitude exceeded the specification limit at that specific frequency. There shall be two calculation sheets done, one for three-meter and one for ten-meter measurement distances. The correction factors for the antenna and amplifier gain are attached along with the Engineering Data Sheets, at the end of this report.

## 7.0 MEASUREMENTS AND UNCERTAINTIES

### ERROR ANALYSIS

The error analysis in Table 1 applies to the normalized attenuation measurement methods given in 4.1.3 of ANSI C63.4-1988. The total estimated errors are the basis for the  $\pm 4$ dB site acceptability criteria in 4.1.3.1 of ANSI C 63.4-1988, that is approximately 3 dB measurement uncertainty and an additional allowable 1 dB for site imperfections.

Table 1 – Error Budget

Error Item	
Antenna Factor	$\pm 1$ dB
Spectrum Analyzer/ Preselector Preamplifier	$\pm 2$ dB
Site imperfections	$\pm 1$ dB
Totals	$\pm 4$ dB

## 8.0 LABELING AND NOTIFICATION REQUIREMENTS (USA ONLY)

### 8.1 INFORMATION TO USER: PART 15, PARAGRAPH 15.21

The User's manual or instruction manual for an intentional or unintentional radiator shall caution the User that changes or modifications not expressly approved by the party responsible for compliance could void the User's authority to operate the equipment.

### 8.2 SPECIAL ACCESSORIES: PART 15, PARAGRAPH 15.27 (A - C)

- (a) Equipment marked to a consumer must be capable of complying with the necessary regulations in the configuration in which the equipment is marketed. Where special accessories, such as shielded cables and/or special connectors, are required to enable an unintentional or intentional radiator to comply with the emissions limits in this part, the equipment must be marketed with i.e., shipped and sold with, those special accessories. However, in lieu of shipping or packaging the special accessories with the unintentional or intentional radiator, the responsible party may employ other methods of ensuring that the special accessories are provided to the consumer, without additional charge, at the time of purchase. Information detailing any alternative method used to supply the special accessories shall be included in the application of a grant of equipment authorization or retained in the verification records, as appropriate. The party responsible for the equipment, as detailed in Part 2.909 of this chapter, shall ensure that these special accessories are provided with the equipment. The instruction manual for such devices shall include appropriate instructions on the first page of the text concerned with the installation of the device that these special accessories supplied with the equipment.
- (c) Accessory items that can be readily obtained from multiple retail Outlets are not considered to be special accessories and not required to be marketed with the equipment. The manual included with the equipment must specify what additional components or accessories are required to be used in order to ensure compliance with this part, and it is the responsibility of the User to provide and use those components and accessories.

## 8.3 CLASS A EQUIPMENT (NOT APPLICABLE IN THIS REPORT)

### FCC NOTICE

This equipment has been tested and found to comply with the limits for a Class A digital device, Pursuant to Part 15 of the FCC Rules. These limits are designed to provide a reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference in which case the User will be required to correct the interference at his own expense.

Any changes or modifications not expressly approved by the manufacturer could void the User's authority to operate the equipment.

## 8.4 SOME OR ALL OF THE FOLLOWING STATEMENTS MAY BE REQUIRED

CAUTION See Section 2.6 of this Report

Shielded I/O cables must be used when operating this equipment.

A shielded power cable must be used when operating this equipment.

## 8.5 CLASS B EQUIPMENT, AS APPLICABLE:

### FCC NOTICE

This equipment has been tested and found to comply with the limits for a Class B digital device, Pursuant to Part 15 of the FCC Rules. These limits are designed to provide a reasonable protection against harmful interference when the equipment is operated in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the User is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Any changes or modifications not expressly approved by the manufacturer could void the User's authority to operate the equipment.

## 8.6 SOME OR ALL OF THE FOLLOWING STATEMENTS MAY BE REQUIRED

### CAUTION—See section 2.6 of this report

**Shielded I/O cables must be used when operating this equipment.**

**A shielded power cable must be used when operating this equipment.**

## 8.8 AVIS DE CONFORMITE AUX NORMES DU MINISTERE DES INDUSTRIE CANADA:

Cet equipment ne depasse pas les limites de Classe B d'emmission de bruits radioelectriques pour les appareils numerriques tels que perscrites par le Reglement sur le brouillage des receptions radio et tele, ce qui obligerait le proprietarie ou l'operateur a pendre les dispositions necessaires pour en eliminer les causes.

## 8.9 AVIS DE CONFORMITE AUX NORMES DU MINISTERE DES INDUSTRIE CANADA:

Cet equipment ne depasse pas les limites de Classe B d'emmission de bruits radioelectriques pour les appareils numerriques tels que perscrites par le Reglement sur le brouillage des receptions radio et tele, ce qui obligerait le proprietarie ou l'operateur a pendre les dispositions necessaires pour en eliminer les causes.

## 8.10 AVIS DE CONFORMITE AUX NORMES DU MINISTERE DES INDUSTRIE CANADA:

Cet equipment ne depasse pas les limites de Classe B d'emmission de bruits radioelectriques pour les appareils numerriques tels que perscrites par le Reglement sur le brouillage des receptions radio et tele, ce qui obligerait le proprietarie ou l'operateur a pendre les dispositions necessaires pour en eliminer les causes.

## 8.13 Label Drawing

The following statement must appear on the EUT product to which this report applies:

**THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS. (1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE, AND (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED, INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRABLE OPERATION.**

Where a device is constructed in two or more sections connected by wires and marketed together, the statement specified above is required to be affixed only to the main control unit. Paragraph 15.19 (a) (4) refers

When the device is so small or for such use that it is not practicable to place the statement specified above, paragraph 15.19 (a) (5) applies.