



**COMPATIBLE  
ELECTRONICS**

FCC ID: AAL-TC-925

**EXHIBIT 5**  
*TECHNICAL TEST REPORT*



*FCC SUBPART C  
TEST REPORT*

*for*

900 MHZ CORDLESS PHONE

Model: TC-925

Prepared for:

CASIO PHONEMATE, INC.  
P.O. BOX 2914  
TORRANCE, CALIFORNIA 90509-2914

Prepared by: Kyle Fujimoto

KYLE FUJIMOTO

Approved by: Scott McCutchan

SCOTT McCUTCHAN

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

DATE: JUNE 30, 1998

	REPORT BODY	APPENDICES		TOTAL
		A	B	
PAGES	42	9	7	58

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2	Plot Map And Layout of Test Site

**GENERAL REPORT SUMMARY**

This electromagnetic emission and immunity 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 in any form unless done so in full.

The immunity data included in this report are not covered by NVLAP accreditation. This report must not be used to claim product endorsement by NVLAP or any other agency of the U.S. Government.

Device Tested: 900 MHz Cordless Phone  
Model: TC-925  
S/N: N/A

Modifications: The EUT was not modified in order to meet the specifications.

Manufacturer: Casio Phonemate, Inc.  
P.O. Box 2914  
Torrance, California 90509-2914

Test Dates: June 7 and 8, 1998

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

**SUMMARY OF TEST RESULTS**

TEST	DESCRIPTION	RESULTS
1	Radiated RF Emissions, 10 kHz - 10000 MHz.	Complies with the limits of sections <b>15.205, 15.209 and 15.249</b> of FCC Title 47, Part 15, Subpart C
2	Radiated RF Emissions, 30 MHz - 1000 MHz	Complies with the limits of section <b>15.205</b> FCC Title 47, Part 15, Subpart C
3	Conducted RF emissions, 450 kHz - 30 MHz	Complies with the limits of section <b>15.207</b> of FCC Title 47, Part 15, Subpart C.



## 1. PURPOSE

This document is a qualification test report based on the Electromagnetic Interference (EMI) tests performed on the 900 MHz Cordless Phone Model: TC-925. 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 900 MHz Cordless Phone, referred to as EUT hereafter, are within the specification limits defined by FCC Title 47, Part 15, Subpart C, sections **15.205, 15.207, and 15.249**.

## 2. ADMINISTRATIVE DATA

## 2.1 Location of Testing

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

## 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

Casio Phonemate, Inc.

Lananh T. Tran Casio Phonemate, Inc.

Compatible Electronics, Inc.

Brian Voegele      Test Engineer  
Kirit Ramani      Test Engineer  
Kyle Fujimoto      Test Engineer  
Scott McCutchan    Lab Manager

#### 2.4 Date Test Sample was Received

The test sample was received on June 7, 1998.

## 2.5 Disposition of the Test Sample

The test sample has not yet been returned to Casio Phonemate, Inc.

## 2.6 Abbreviations and Acronyms

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

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



### 3. APPLICABLE DOCUMENTS

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

SPEC	TITLE
FCC Title 47, Part 15 1997	FCC Rules - Radio frequency devices (including digital devices).
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

The components of the EUT were tested separately.

#### Specifics of the EUT and Peripherals Tested

**Handset being tested:** The 900 MHz Cordless Phone -- Handset Model: TC-925 (EUT) was placed on the wooden table and tested in three orthogonal axis. The low (channel 1), medium (channel 10), and high (channel 20) channels were tested. The handset was transmitting to and receiving from the 900 MHz Cordless Phone -- Base. The EUT was investigated for emissions while off hook. The radiated data was taken in this mode of operation. All initial investigations were performed with the EMI receiver in manual mode scanning the frequency range continuously. The cables were bundled and routed as shown in the photographs in Appendix A.

**Base being tested:** The 900 MHz Cordless Phone -- Base Model: TC-925 (EUT) was placed on the wooden table. The low (channel 1), medium (channel 10), and high (channel 20) channels were tested. The base was connected to a line simulator and AC adapter via its RJ-11 and power ports, respectively. The line simulator was connected to the Comdial telephone. The base was transmitting and receiving from the 900 MHz Cordless Phone -- Handset. The 900 MHz Cordless Phone -- Handset was also used to dial out a number on the simulator that caused the Comdial telephone to ring. The conducted as well as radiated data was taken in this mode of operation. All initial investigations were performed with the EMI receiver in manual mode scanning the frequency range continuously. The cables were bundled and routed as shown in the photographs in Appendix A.

#### 4.1.1 **Cable Construction and Termination**

##### **HANDSET BEING TESTED**

There are no cables when the handset is being tested

##### **BASE BEING TESTED**

###### **Cable 1**

This is a 5 foot unshielded cable connecting the base to the line simulator. It has an RJ-11 connector at the line simulator end and is hard wired into the base. The cable was bundled to a length of 1 meter.

###### **Cable 2**

This is a 5 foot unshielded cable connecting the telephone to the line simulator. It has an RJ-11 connector at the line simulator end and is hard wired into the telephone. The cable was bundled to a length of 1 meter.

###### **Cable 3**

This is a 6 foot unshielded round cable connecting the base to the AC adapter. It has a 1/8" power jack at the base end and is hard wired into the AC adapter.

**5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT****5.1 EUT and Accessory List**

EQUIPMENT	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	FCC ID
900 MHz Cordless Phone – Base (EUT)	CASIO PHONEMATE, INC.	TC-925	N/A	AAL-TC-925
CLASS 2 TRANSFORMER	CASIO PHONEMATE, INC.	TC-925	N/A	N/A
LINE SIMULATOR	TELTON	TLS-3	N/A	N/A
PHONE	COMDIAL	M/N-80	N/A	N/A
900 MHz Cordless Phone – Handset (EUT)	CASIO PHONEMATE, INC.	TC-925	N/A	AAL-TC-925

**5.2 Test Equipment**

EQUIPMENT TYPE	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	CAL. DATE	CAL. CYCLE
Spectrum Analyzer	Hewlett Packard	8566B	2729A04566	July 2, 1997	1 Year
Preamplifier	Com Power	PA-102	1017	February 16, 1998	1 Year
Quasi-Peak Adapter	Hewlett Packard	85650A	2521A00924	June 16, 1997	1 Year
RF Attenuator	Com-Power	A-410	1602	November 25, 1997	1 Year
LISN	Com Power	LI-200	1764	January 3, 1998	1 Year
LISN	Com Power	LI-200	1771	January 3, 1998	1 Year
LISN	Com Power	LI-200	1775	January 3, 1998	1 Year
LISN	Com Power	LI-200	1780	January 3, 1998	1 Year
Biconical Antenna	Com Power	AB-100	1548	March 24, 1998	1 Year
Log Periodic Antenna	Com Power	AL-100	1012	February 13, 1998	1 Year
Antenna Mast	Com Power	AM-100	N/A	N/A	N/A
Turntable	Com Power	TT-100	N/A	N/A	N/A
Computer	Hewlett Packard	HP98561A	2522A05178	N/A	N/A
Printer	Hewlett Packard	2225A	2723500869	N/A	N/A
Plotter	Hewlett Packard	7440A	8726K38417	N/A	N/A
Microwave Amplifier	Com-Power	PA-122	001	March 31, 1998	N/A
Horn Antenna	Antenna Research	DRG-118/A	1053	December 8, 1995	N/A



## **6. TEST SITE DESCRIPTION**

### **6.1 Test Facility Description**

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

### **6.2 EUT Mounting, Bonding and Grounding**

For all tests, the EUT was mounted on a 1.0 by 1.5 by 0.8 meter high non-conductive table, which was placed on 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 Emissions Tests

#### 7.1.1 Conducted Emissions Test

The spectrum analyzer was used as a measuring meter along with the quasi-peak adapter. The data was collected with the spectrum analyzer in the peak detect mode with the "Max Hold" feature activated. The quasi-peak detector 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 spectrum analyzer offset was adjusted accordingly to read the actual data measured. The LISN output was read by the spectrum analyzer. The output of the second LISN was terminated by a 50 ohm termination. The effective measurement bandwidth used for the conducted emissions 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 initial test data was taken in manual mode while scanning the frequency ranges of 150 kHz to 30 MHz. The conducted emissions from the EUT were maximized for operating mode as well as cable placement. Once a predominant frequency (within 12 dB of the limit) was found, it was more closely examined with the spectrum analyzer span adjusted to 1 MHz.

The final data was collected under program control by the HP 93153B computer in several overlapping sweeps by running the spectrum analyzer at a minimum scan rate of 10 seconds per octave.

### **SECTION 7.1.1.1**

## ***CONDUCTED EMISSIONS DATA SHEETS FOR THE BASE***

100-15A

**FCC ID: AAL-TC-925**

**MEASUREMENT NOTES:**

CASIO PHONEMATE, INC.  
CORDLESS TELEPHONE (BASE)  
M/N: TC-925

FCC-B 110VAC BLACK LEAD 7 Jun 1996 14:02:48

15 highest Peaks above -50 dB of Limit Line #2  
peak criteria = 2 dB

PEAK#	FREQ (MHz)	(dBuV)	DELTA
1	.4873	41.6	-6.4
2	.5278	41.5	-6.5
3	.4732	41.4	6.6
4	.5160	41	-7.0
5	.4977	40.8	-7.2
6	.5456	40.2	-7.8
7	.5911	39.6	9.4
8	.607	38.4	-9.6
9	.6216	38.3	9.7
10	.7731	37.8	10.1
11	.7742	37.2	10.5
12	.6340	36.7	11.1
13	.6209	36.5	11.5
14	.8438	36	-12.4
15	.6386	36	-12.0

**MEASUREMENTS**

TEST ENGINEER: *Mark Resor*  
KIRK: *Mark*

COMPATIBLE ELECTRONICS INC.  
EMISSION LEVEL [dB<sub>UV</sub>]

7 Jun 1998 14:02:48

h<sup>ρ</sup><sub>100</sub>

FCC PT 15 CLASS A & B CONDUCTED  
CASIO PHONEMATE, INC.  
CORDLESS TELEPHONE (BASE)  
M/N: TC-925  
FCC-B 110VAC BLACK LEAD

FCC ID: AAL-TC-925

PAGE 15B

CLASS A

60

40

20

.45

CLASS B

10

30

FREQUENCY [MHz]

**FCC ID: AAL-TC-925**

MEASUREMENTS

CHIEF COMPUTER, INC.  
COMMUNICATIONS DIVISION  
M/N: 10-925  
FCC ID: AAL-TC-925

16. High 1000 Hz 12 dB

-12.7 to -13.0 dB

PEAK#	FREQ (MHz)	ADCD	PERC
1	2.923	36.2	-12.7
2	16.12	35.3	-12.7
3	29.41	35.1	-12.9
4	36.43	31	-13.0
5	36.47	31	-13.0
6	37.50	31	-13.0
7	37.54	31	-13.0
8	37.58	31	-13.0
9	37.62	31	-13.1
10	4.757	34.8	-13.1
11	2.012	34.9	-13.1
12	2.839	34.9	-13.1
13	37.59	34.9	-13.1
14	37.67	34.8	-13.1
15	37.70	34.8	-13.2

MEASUREMENTS

TEST ENGINEER: Kirit Ramani  
KIRIT RAMANI

COMPATIBLE ELECTRONICS INC.  
EMISSION LEVEL [dB<sub>UV</sub>]

100  
*hP*

7 Jun 1998 14:20:35

FCC PT 15 CLASS A & B CONDUCTED

CASIO PHONEMATE, INC.  
CORDLESS TELEPHONE (BASE)  
M/N: TC-925  
FCC-B 110VAC WHITE LEAD

80

60

40

20

.45

1

FREQUENCY [MHz]

10

30

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FCC ID: AAL-TC-925

**7.1.2****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 below 1 GHz, and the Com Power Microwave Amplifier Model: PA-122 was used for frequencies from 30 MHz to 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. The quasi-peak adapter was used only for those readings which are marked accordingly on the data sheets. The measurement bandwidths and transducers used for the radiated emissions test were:

<b>FREQUENCY RANGE</b>	<b>EFFECTIVE MEASUREMENT BANDWIDTH</b>	<b>TRANSDUCER</b>
10 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 10 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 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.

### **SECTION 7.1.2.1**

## ***RADIATED EMISSIONS DATA (SPURIOUS AND HARMONICS) FOR THE HANDSET***

FCC ID: AAL-TC-925

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Test location: Compatible Electronics  
 Customer : CASIO PHONEMATE, INC. Date : 6/8/1998  
 Manufacturer : SAME Time : 18.45  
 EUT name : CORDLESS TELEPHONE ANSWERING SYSTEM  
 Model : TC-925  
 Specification: Fcc\_B Test distance: 3.0 mtrs Lab : D  
 Distance correction factor( $20 \log(\text{test/spec})$ ) : 0.00  
 Test Mode : SPURIOUS EMISSIONS TEST - HANDSET UNIT  
 30 MHz TO 300 MHz - BICONICAL ANTENNA - VERITCAL

Tested By : BRIAN VOEGELE  
 BRIAN VOEGELE

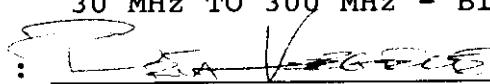
Pol	Freq MHz	Rdng dBuV	Cable loss dB	Ant factor dB	Amp gain dB	Cor'd rdg = R dBuV	limit = L dBuV/m	Delta R-L dB
1V	64.80	46.60	0.70	10.27	38.76	18.81	40.00	-21.19
2V	108.80	42.20	0.94	10.23	38.68	14.69	43.50	-28.81
3V	120.80	42.30	0.98	10.95	38.92	15.32	43.50	-28.18
4V	156.79	40.30	1.25	14.02	38.60	16.97	43.50	-26.53
5V	194.81	37.10	1.40	15.55	38.92	15.13	43.50	-28.37
6V	268.78	35.30	1.68	18.75	38.68	17.05	46.00	-28.95

FCC ID: AAL-TC-925

Page: 2 of 4

Test location: Compatible Electronics  
 Customer : CASIO PHONEMATE, INC. Date : 6/8/1998  
 Manufacturer : SAME Time : 19.25  
 EUT name : CORDLESS TELEPHONE ANSWERING SYSTEM  
 Model : TC-925  
 Specification: Fcc\_B Test distance: 3.0 mtrs Lab : D  
 Distance correction factor( $20 \log(\text{test/spec})$ ) : 0.00  
 Test Mode : SPURIOUS EMISSIONS TEST - HANDSET UNIT  
 30 MHz TO 300 MHz - BICONICAL ANTENNA - HORIZONTAL

Tested By

  
 BRIAN VOEGELE

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
1H	64.80	42.80	0.70	10.27	38.76	15.01	40.00	-24.99
2H	108.80	39.40	0.94	10.23	38.68	11.89	43.50	-31.61
3H	120.80	45.20	0.98	10.95	38.92	18.22	43.50	-25.28
4H	156.80	37.90	1.25	14.02	38.60	14.57	43.50	-28.93
5H	194.81	37.50	1.40	15.55	38.92	15.53	43.50	-27.97
6H	268.81	35.70	1.68	18.76	38.68	17.46	46.00	-28.54

FCC ID: AAL-TC-925

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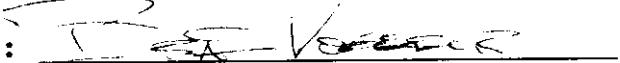
Test location: Compatible Electronics  
 Customer : CASIO PHONEMATE, INC. Date : 6/8/1998  
 Manufacturer : SAME Time : 20.03  
 EUT name : CORDLESS TELEPHONE ANSWERING SYSTEM  
 Model : TC-925  
 Specification: Fcc\_B Test distance: 3.0 mtrs Lab : D  
 Distance correction factor( $20 \log(\text{test/spec})$ ) : 0.00  
 Test Mode : SPURIOUS EMISSIONS TEST - HANDSET UNIT  
 300 MHz TO 1000 MHz - LOG PERIODIC ANTENNA - VERTICAL

Tested By : 1 K. Voegele  
BRIAN VOEGELE

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
1V	363.02	48.70	1.93	15.68	38.74	27.57	46.00	-18.43
2V	445.84	62.30	2.18	15.77	38.22	42.03	46.00	-3.97
3V	463.19	60.40	2.28	15.72	38.33	40.06	46.00	-5.94

FCC ID: AAL-TC-925

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Test location: Compatible Electronics  
 Customer : CASIO PHONEMATE, INC. Date : 6/8/1998  
 Manufacturer : SAME Time : 20.37  
 EUT name : CORDLESS TELEPHONE ANSWERING SYSTEM  
 Model : TC-925  
 Specification: Fcc\_B Test distance: 3.0 mtrs Lab : D  
 Distance correction factor( $20 \times \log(\text{test/spec})$ ) : 0.00  
 Test Mode : SPURIOUS EMISSIONS TEST - HANDSET UNIT  
 300 MHz TO 1000 MHz - LOG PERIODIC ANTENNA - HORIZONTAL  
 Tested By :   
 BRIAN VOEGELE

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
1H	363.03	49.00	1.93	15.69	38.74	27.87	46.00	-18.13
2H	445.84	46.40	2.18	15.77	38.22	26.13	46.00	-19.87
3H	463.24	46.30	2.28	15.72	38.33	25.96	46.00	-20.04



**COMPATIBLE  
ELECTRONICS**

FCC ID: AAL-TC-925

**RADIATED EMISSIONS**

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COMPANY NAME: CASIO PHONEMATE, INC.

DATE: 6-8-98

EUT: Cassess Telephone Answering System EUT S/N: \_\_\_\_\_

EUT MODEL: TC-925

LOCATION:  BREA  SILVERADO  AGOURA

SPECIFICATION: FCC

CLASS: \_\_\_\_\_ TEST DISTANCE: 3M LAB: D

ANTENNA:  LOOP  BICONICAL  LOG  HORN

POLARIZATION:  VERT  HORIZ

QUALIFICATION  ENGINEERING  MFG. AUDIT  ENGINEER: Bob Veegele

NOTES: TEST FREQUENCY = 9kHz to 30MHz.

— HANSET UNIT —

Frequency (kHz)	Peak Reading (dBuV)	Avg. <input type="checkbox"/> Q.P. <input type="checkbox"/> (dBuV)	Antenna Height (meters)	Azimuth (degrees)	Distance Factor (dB)	Antenna Gain (dB)	* Corrected Reading (dBuV)	Delta ** (dB)	Spec Limit (dBuV)
<p>NO EMISSIONS WERE FOUND</p>									

\* CORRECTED READING = METER READING - DISTANCE FACTOR - ANTENNA GAIN

\*\* DELTA = CORRECTED READING - SPECIFICATION LIMIT

BREA (714) 579-0500

SILVERADO (714) 589-0700

AGOURA (818) 597-0600



## **COMPATIBLE ELECTRONICS**

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## *RADIATED EMISSIONS*

COMPANY NAME: CASIO DATE: 6/7/98

**DATE:** 6/7/98

**EUT:** CORDLESS TELEPHONE      **EUT S/N:** \_\_\_\_\_

**EUT MODEL:** TC-925 **LOCATION:**  BREA  SILVERADO  AGOURA

**SPECIFICATION:** FCC **CLASS:** B **TEST DISTANCE:** 3m **LAB:** D

**ANTENNA:**  LOOP  BICONICAL  LOG  HORN      **POLARIZATION:**  VERT  HORIZ

QUALIFICATION  ENGINEERING  MFG. AUDIT      ENGINEER: Kiran Reveri

NOTES: Chann. #1 Hand set

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

\*\* DELTA = CORRECTED READING - SPECIFICATION LIMIT

BREA (714) 579-0500

SILVERADO (714) 589-0700

AGOURA (818) 597-0600



## **COMPATIBLE ELECTRONICS**

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## *RADIATED EMISSIONS*

COMPANY NAME: CASIO

**DATE:** 6/7/98

**EUT:** CORPLESS

**EUT S/N:**

**EUT MODEL:** TC-925

LOCATION:  BREA  SILVERADO  AGOURA

**SPECIFICATION:** F.CC

CLASS: \_\_\_\_\_

## TEST D

INSTANCE: 3

LAB: D

ANTENNA:  LOOP  BICONICAL  LOG  HORN

**POLARIZATION:**  VERT  HORIZ

QUALIFICATION  ENGINEERING  MFG. AUDIT

**ENGINEER:** Wirt Rasmussen

NOTES: Channel # i Handset

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

\*\* DELTA = CORRECTED READING - SPECIFICATION LIMIT

BREA (714) 579-0500

SILVERADO (714) 589-0700

AGOURA (818) 597-0600



## **COMPATIBLE ELECTRONICS**

ECC ID: AAL-TC-925

PAGE \_\_\_\_\_ of \_\_\_\_\_

## *RADIATED EMISSIONS*

**COMPANY NAME:** CASIC **DATE:** 6/7/98

**DATE:** 6/7/98

**EUT:** CORDLESS TELEPHONE      **EUT S/N:** \_\_\_\_\_

**EUT MODEL:** TC-925 **LOCATION:**  BREA  SILVERADO  AGOURA

**SPECIFICATION:** FCC **CLASS:** B **TEST DISTANCE:** 3 m **LAB:** D

**ANTENNA:**  LOOP  BICONICAL  LOG  HORN **POLARIZATION:**  VERT  HORIZZ

QUALIFICATION  ENGINEERING  MFG. AUDIT **ENGINEER:** B.M. Kumar

NOTES: Channel 115 Hand set

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

\*\* DELTA = CORRECTED READING - SPECIFICATION LIMIT

BREA (714) 579-0500

SILVERADO (714) 589-0700

AGOURA (818) 597-0600



# COMPATIBLE ELECTRONICS

FCC ID: AAL-TC-925

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## *RADIATED EMISSIONS*

**COMPANY NAME:** CASIO **DATE:** 6/7/98

**DATE:** 6/7/98

**EUT S/N:**

**EUT MODEL:** 10-978 **LOCATION:**  BREA  SILVERADO  AGOURA

**SPECIFICATION:** 5000 **CLASS:** 15 **TEST DISTANCE:** 3 m **LAB:** 1

**ANTENNA:**  LOOP  BICONICAL  LOG  HORN **POLARIZATION:**  VERT  HORIZ

QUALIFICATION  ENGINEERING  MFG. AUDIT **ENGINEER:** *Rajesh Kumar*

NOTES: ~~skinned~~ #15 ~~flame set~~

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

\*\* DELTA = CORRECTED READING - SPECIFICATION LIMIT

BREA (714) 579-0500

SILVERADO (714) 589-0700

AGOURA (818) 597-0600



## **COMPATIBLE ELECTRONICS**

FCC ID: AAL-TC-925

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## *RADIATED EMISSIONS*

**COMPANY NAME:** C P S E C      **DATE:** 6/17/98

**DATE:** 6/7/98

**EUT:** CORDLESS TELEPHONE      **EUT S/N:**

EUT S/N:

**EUT MODEL:** 70-425 **LOCATION:**  BREA  SILVERADO  AGOURA

**SPECIFICATION:** FCC **CLASS:** B **TEST DISTANCE:** 3 m **LAB:** D

**ANTENNA:**  LOOP  BICONICAL  LOG  HORN      **POLARIZATION:**  VERT  HORIZ

QUALIFICATION  ENGINEERING  MFG. AUDIT **ENGINEER:** *Kishore Kumar*

NOTES: Channel 430 Hand set

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

\*\* DELTA = CORRECTED READING - SPECIFICATION LIMIT

BREA (714) 579-0500

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AGOURA (818) 597-0600



# **COMPATIBLE ELECTRONICS**

FCC ID: AAL-TC-925

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## ***RADIATED EMISSIONS***

**COMPANY NAME:** C.P. S. C. **DATE:** 6/7/98

**DATE:** 6/7/98

**EUT:** CORDLESS TELEPHONE      **EUT S/N:**

**EUT MODEL:** 7C-5125 **LOCATION:**  BREA  SILVERADO  AGOURA

**SPECIFICATION:** CCC **CLASS:** B **TEST DISTANCE:** 3m **LAB:** D

**ANTENNA:**  LOOP  BICONICAL  LOG  HORN      **POLARIZATION:**  VERT  HORIZ

QUALIFICATION  ENGINEERING  MFG. AUDIT      ENGINEER: K. L. Raveen

NOTES: ~~Chambers~~ # 30 Hand set

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

\*\* DELTA = CORRECTED READING - SPECIFICATION LIMIT

BREA (714) 579-0500

SILVERADO (714) 589-0700

AGOURA (818) 597-0600

**SECTION 7.1.2.2*****RADIATED EMISSIONS DATA (SPURIOUS AND  
HARMONICS) FOR THE BASE***

Page: 1 of 1

Test location: Compatible Electronics  
 Customer : CASIO PHONEMATE, INC. Date : 6/ 7/1998  
 Manufacturer : CASIO PHONEMATE, INC. Time : 13.37  
 EUT name : CORDLESS TELEPHONE (BASE) Model: TC-925  
 Specification: Fcc\_B Test distance: 3.0 mtrs Lab: D  
 Distance correction factor(20\*log(test/spec)) : 0.00  
 Test Mode : SPURIOUS EMISSIONS TEST - BASE

Pol	Freq	Rdng	Cable	Ant	Amp	Cor'd	limit	Delta
	MHz	dBuV	loss	factor	gain	rdg = R	= L	R-L
			dB	dB	dB	dBuV	dBuV/m	dB
1V	53.81	46.70	0.64	11.20	38.96	19.57	40.00	-20.43
2V	56.46	51.90	0.66	10.98	38.94	24.61	40.00	-15.39
3V	58.25	52.70	0.68	10.84	38.92	25.30	40.00	-14.70
4V	60.06	54.10	0.70	10.69	38.90	26.60	40.00	-13.40
5V	60.95	54.50	0.70	10.61	38.87	26.94	40.00	-13.06
6V	61.83	52.50	0.70	10.54	38.85	24.89	40.00	-15.11
7V	68.08	52.10	0.70	9.97	38.66	24.12	40.00	-15.88
8V	82.02	55.90	0.72	8.76	38.32	27.06	40.00	-12.94
9V	131.13	54.70	1.05	11.84	38.90	28.69	43.50	-14.81
10V	163.91	52.80	1.31	14.24	38.60	29.76	43.50	-13.74
11H	60.05	51.60	0.70	10.70	38.90	24.10	40.00	-15.90
12H	73.81	50.10	0.70	9.42	38.49	21.73	40.00	-18.27
13H	114.75	53.10	0.96	10.58	38.79	25.85	43.50	-17.65
14H	131.13	55.60	1.05	11.84	38.90	29.58	43.50	-13.92
15H	163.92	51.50	1.31	14.25	38.60	28.46	43.50	-15.04
16H	245.81	56.90	1.57	16.98	38.62	36.83	46.00	-9.17
17H	262.20	55.40	1.65	18.17	38.65	36.57	46.00	-9.43
18H	294.98	48.10	1.78	20.90	38.62	32.16	46.00	-13.84
19V	327.74	48.80	1.86	14.11	38.77	26.00	46.00	-20.00
20V	589.88	49.30	2.98	18.15	38.42	32.01	46.00	-13.99
21H	327.74	56.00	1.86	14.11	38.77	33.20	46.00	-12.80
22H	344.12	55.30	1.89	14.18	38.86	32.50	46.00	-13.50
23H	360.51	55.00	1.92	15.40	38.77	33.55	46.00	-12.45
24H	451.71	54.40	2.21	15.44	38.22	33.83	46.00	-12.17



## **COMPATIBLE ELECTRONICS**

FCC ID: AAL-TC-925

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## RADIATED EMISSIONS

COMPANY NAME: CASIO PHONEMATE, INC. DATE: 6-8-98

**EUT:** Customer Telephone Answering System **EUT S/N:**

EUT MODEL: TC-925 LOCATION:  BREA  SILVERADO  AGOURA

SPECIFICATION: FCC CLASS: 1 TEST DISTANCE: 3M LAB: D

ANTENNA:  LOOP  BICONICAL  LOG  HORN

QUALIFICATION  ENGINEERING  MEG. AUDIT  ENGINEER: *RAJ DEEPLAKH*

NOTES: TEST FREQUENCY RANGE = 9kHz to 30MHz

## —BASE UNIT—

\* CORRECTED READING = METER READING - DISTANCE FACTOR - ANTENNA GAIN

\*\* DELTA = CORRECTED READING - SPECIFICATION LIMIT

BREA (714) 579-0500

SILVERADO (714) 589-0700

AGOURA (818) 597-0600



## **COMPATIBLE ELECTRONICS**

FCC ID: AAL-TC-925

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## RADIATED EMISSIONS

**COMPANY NAME:** CASE **DATE:** 6/7/98

**DATE:** 6/7/98

**EUT S/N:**

**EUT MODEL:** 1C-9925 **LOCATION:**  BREA  SILVERADO  AGOURA

**SPECIFICATION:** FCC **CLASS:** R **TEST DISTANCE:** 3m **LAB:** A

**ANTENNA:**  LOOP  BICONICAL  LOG  HORN      **POLARIZATION:**  VERT  HORIZ

POLARIZATION:  VERT  HORIZ

QUALIFICATION  ENGINEERING  MEG. AUDIT ENGINEER: *Walt* *Reardon*

**NOTES:** Channel A1 Base

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

\*\* DELTA = CORRECTED READING - SPECIFICATION LIMIT

BREA (714) 579-0500

SILVERADO (714) 589-0700

AGOURA (818) 597-0600



# COMPATIBLE ELECTRONICS

FCC ID: AAL-TC-925

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## *RADIATED EMISSIONS*

**COMPANY NAME:** CASCO

DATE: 6/7/98

**EUT:** GOODNESS, TELEPHONE

EUT S/N:

**EUT MODEL:** 70-925

LOCATION:  BREA  SILVERADO  AGOURA

**SPECIFICATION:**

**CLASS:** 11

**TEST DISTANCE:** 30

LAB: 30

ANTENNA:  LOOP  BICONICAL  LOG  HORN

POLARIZATION:  VERT  HORIZ

□ QUALIFICATION □ ENGINEERING □ MEG AUDIT

NOTES: Channel #1 Reuse

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

\*\* DELTA = CORRECTED READING - SPECIFICATION LIMIT

BREA (714) 579-0500

SILVERADO (714) 589-0700

AGOURA (818) 597-0600



# COMPATIBLE ELECTRONICS

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## **RADIATED EMISSIONS**

**COMPANY NAME:** CP BJC **DATE:** 6/7/98

**DATE:** 6/7/98

**EUT MODEL:** 70 725 **LOCATION:**  BREA  SILVERADO  AGOURA

**SPECIFICATION:** FCC **CLASS:** B **TEST DISTANCE:** 3 m **LAB:** D

**ANTENNA:**  LOOP  BICONICAL  LOG  HORN      **POLARIZATION:**  VERT  HORIZ

QUALIFICATION  ENGINEERING  MFG. AUDIT **ENGINEER:** Mr. S. I. Ravinder

NOTES: Channel 415 Beta

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

\*\* DELTA = CORRECTED READING - SPECIFICATION LIMIT

**BREA (714) 579-0500**

~~SILVERADO (714) 589-0700~~

AGOURA (818) 597-0600



## **COMPATIBLE ELECTRONICS**

FCC ID: AAL-TC-925

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## RADIATED EMISSIONS

**COMPANY NAME:** CASIO **DATE:** 6/7/96

**DATE:** 6/7/96

**EUT:** CORDLESS TELEPHONE      **EUT S/N:**

EUT MODEL: 70-1128 LOCATION:  BREA  SILVERADO  AGOURA

**SPECIFICATION:** 450 **CLASS:** B **TEST DISTANCE:** 60 in **LAB:** D

**ANTENNA:**  LOOP  BICONICAL  LOG  HORN      **POLARIZATION:**  VERT  HORIZ

POLARIZATION:  VERT  HORIZ

QUALIFICATION  ENGINEERING  MEG. AUDIT **ENGINEER:** Robert Rautenbach

ENGINEER: *Robert Remini*

NOTES: channel 4 is being

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

\*\* DELTA = CORRECTED READING - SPECIFICATION LIMIT

BREA (714) 579-0500

SILVERADO (714) 589-0700

AGOURA (818) 597-0600



## **COMPATIBLE ELECTRONICS**

FCC ID: AAL-TC-925

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## RADIATED EMISSIONS

COMPANY NAME: CASIO

DATE: 6/7/98

**EUT:** CABLELESS TELEPHONE

EUT S/N:

**EUT MODEL:** 1C-9325

LOCATION:  BREA  SILVERADO  AGOURA

**SPECIFICATION:**

CLASS: 15 TEST DISTANCE: 3m LAB: D

TEST DISTANCE: 3cm LAB: D

ANTENNA:  LOOP  BICONICAL  LOG  HORN

POLARIZATION:  VERT  HORIZ

QUALIFICATION  ENGINEERING  MFG. AUDIT

ENGINEER: *John Berlin*

NOTES: Channel #30 Rose

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

\*\* DELTA = CORRECTED READING - SPECIFICATION LIMIT

BREA (714) 579-0500

SILVERADO (714) 589-0700

AGOURA (818) 597-0600



## **COMPATIBLE ELECTRONICS**

FCC ID: AAL-TC-925

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## ***RADIATED EMISSIONS***

**COMPANY NAME:** CASIE **DATE:** 6/7/98

**DATE:** 6/7/98

**EUT MODEL:** T-1428 **LOCATION:**  BREA  SILVERADO  AGOURA

**SPECIFICATION:** FCC **CLASS:** B **TEST DISTANCE:** 3m **LAB:** D

**ANTENNA:**  LOOP  BICONICAL  LOG  HORN      **POLARIZATION:**  VERT  HORIZ

QUALIFICATION  ENGINEERING  MFG. AUDIT      ENGINEER: *K. S. R. Venkatesh*

NOTES: Channel # 30 Bense

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

\*\* DELTA = CORRECTED READING - SPECIFICATION LIMIT

BREA (714) 579-0500

SILVERADO (714) 589-0700

AGOURA (818) 597-0600



## 8. CONCLUSIONS

The 900 MHz Cordless Phone Model: TC-925 meets all of the specification limits defined in FCC Title 47, Part 15, Subpart C, sections 15.205, 15.207, 15.209 and 15.249 specification limits defined in FCC Title 47, Part 15, Subpart B.

## **APPENDIX A**

### ***TEST SETUP DIAGRAMS AND PHOTOS***

114 OLINDA DRIVE, BREA, CALIFORNIA 92823 PHONE: (714) 579-0500 FAX: (714) 579-1850

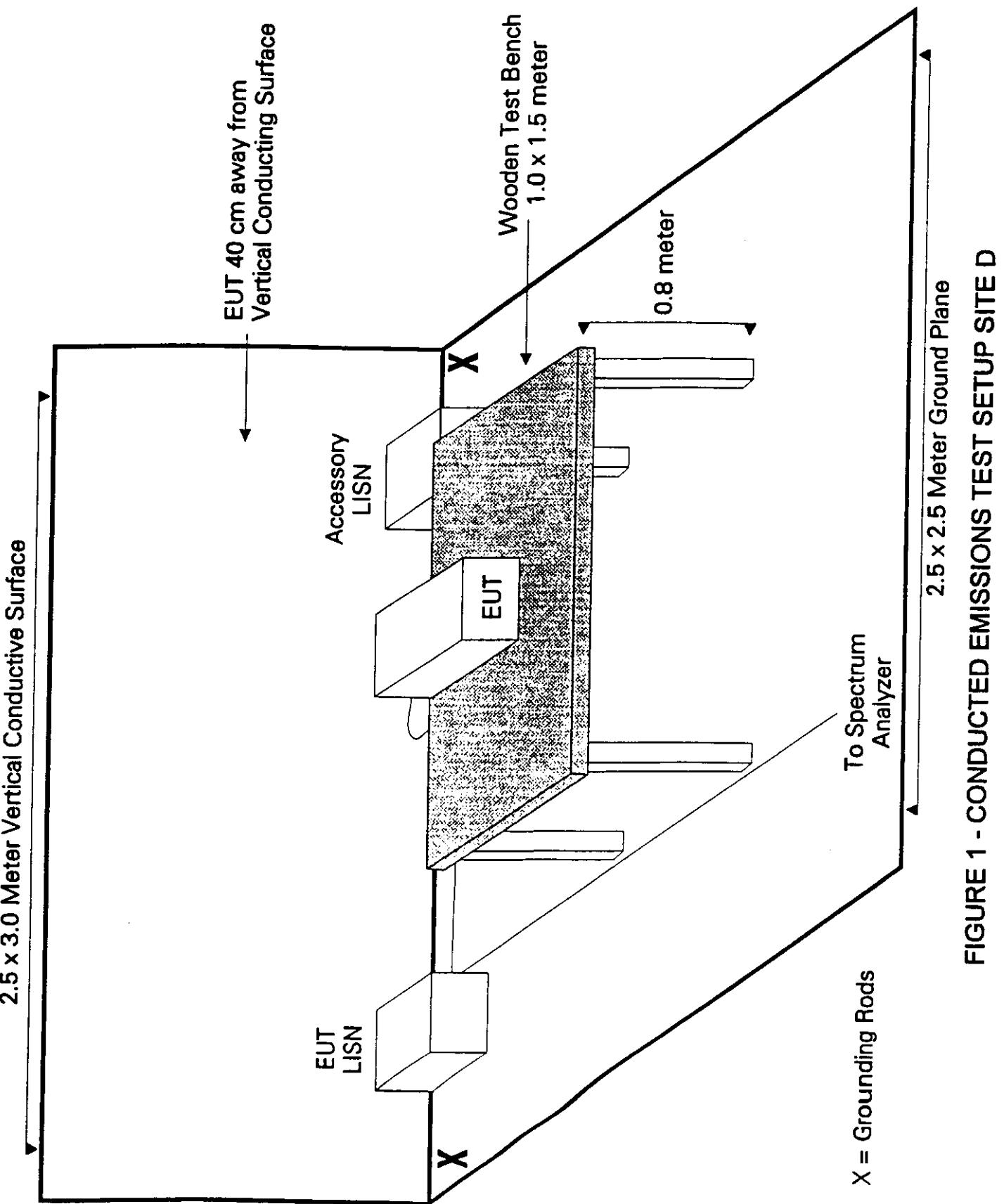


FIGURE 1 - CONDUCTED EMISSIONS TEST SETUP SITE D

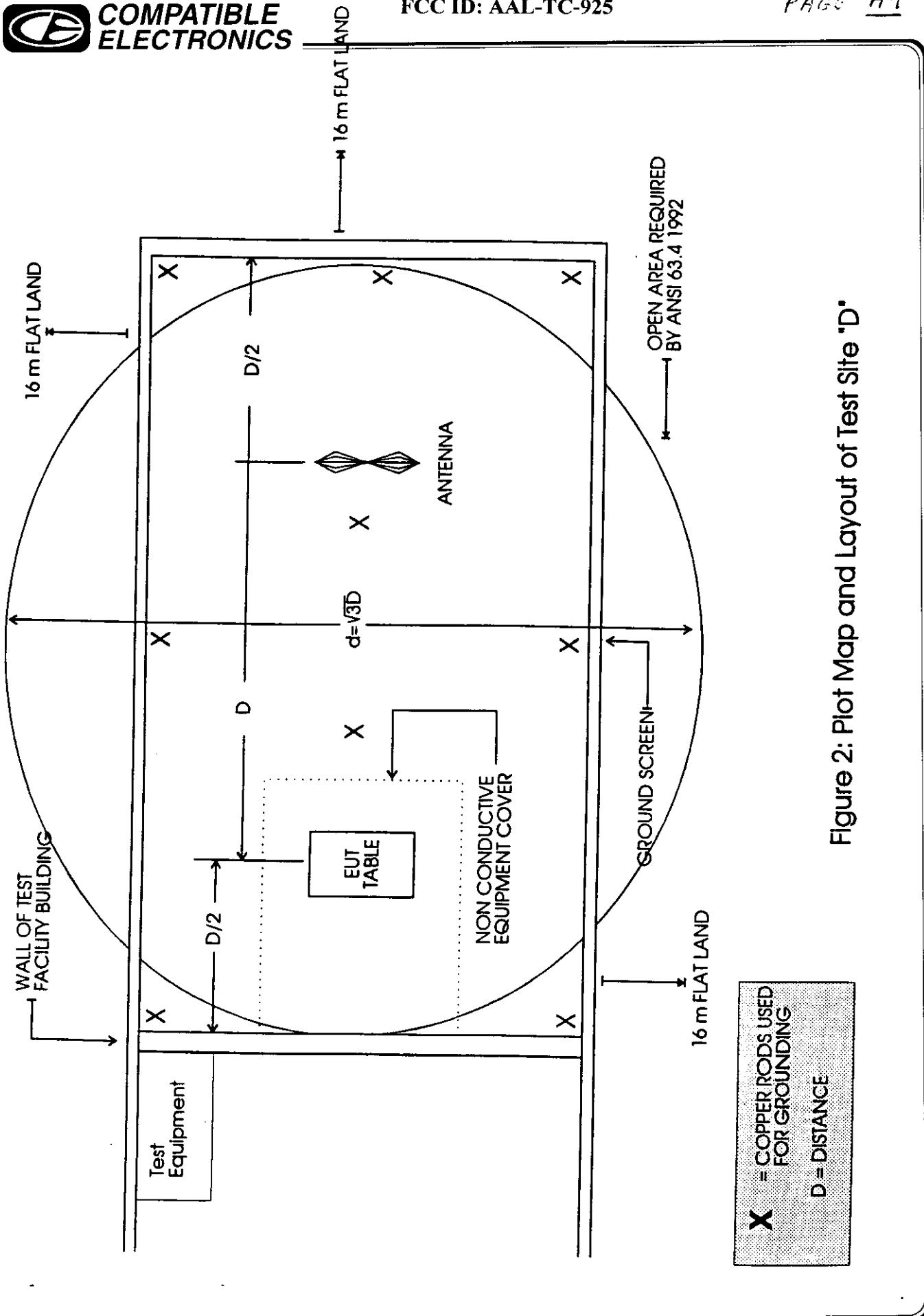


Figure 2: Plot Map and Layout of Test Site 'D'



## **APPENDIX B**

### ***ANTENNA FACTORS AND EFFECTIVE GAIN FACTORS***



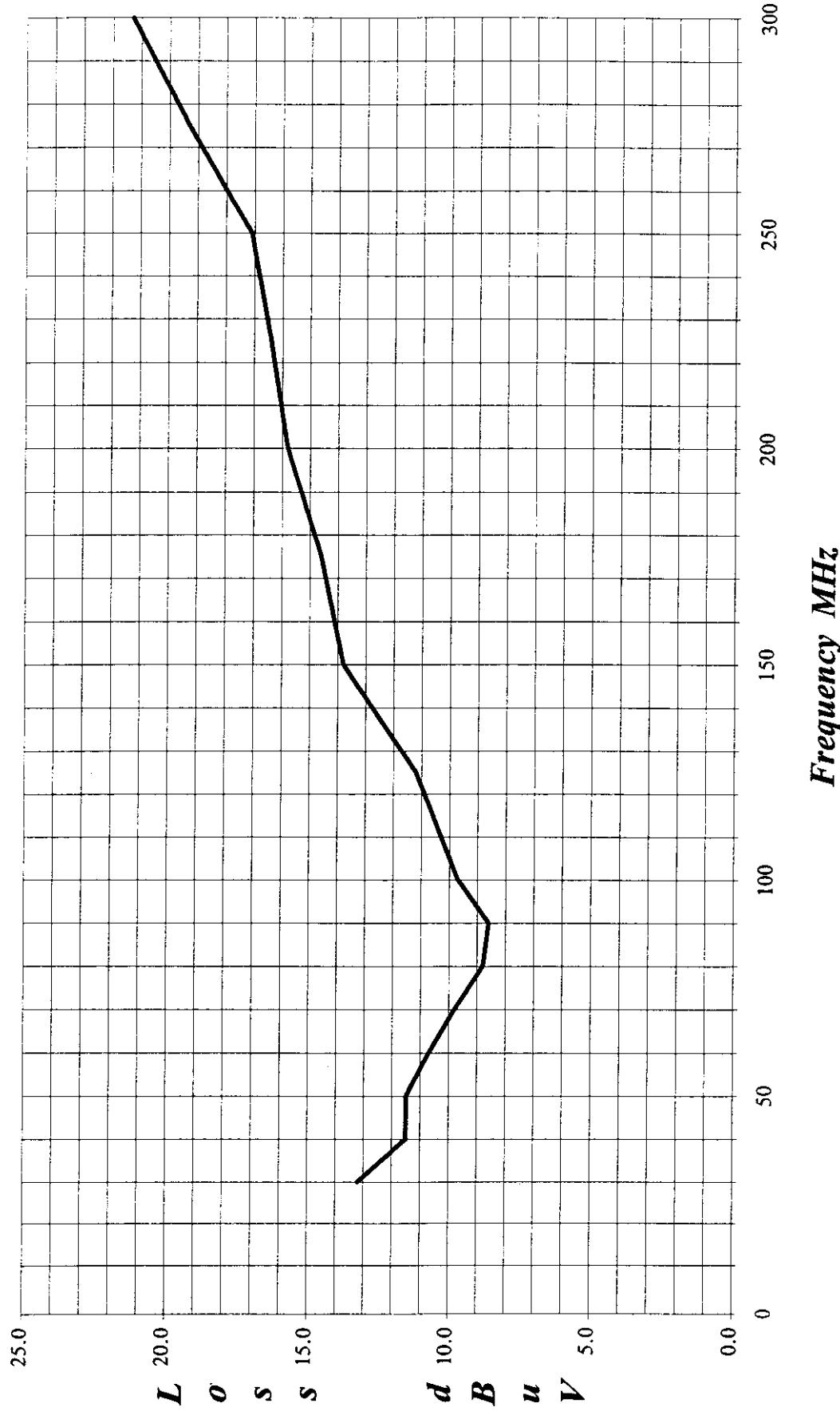
**COMPATIBLE  
ELECTRONICS**

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**LAB "D" BICONICAL ANTENNA AB-100 S/N 01548**

Cal: 3/24/98



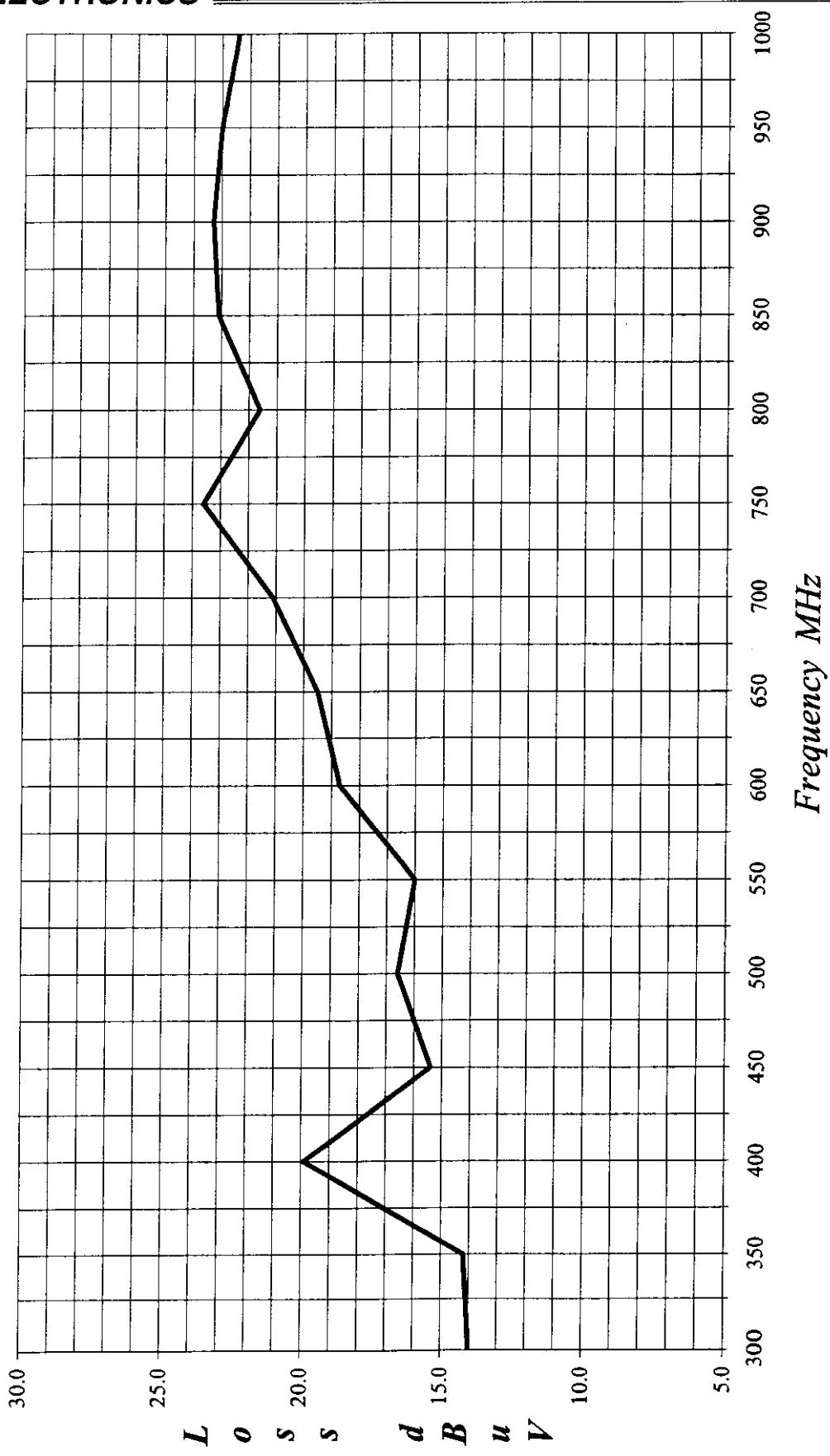


**COMPATIBLE  
ELECTRONICS**

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**LAB "D" LOG PERIODIC ANTENNA AL-100 S/N 01012**





**COMPATIBLE  
ELECTRONICS**

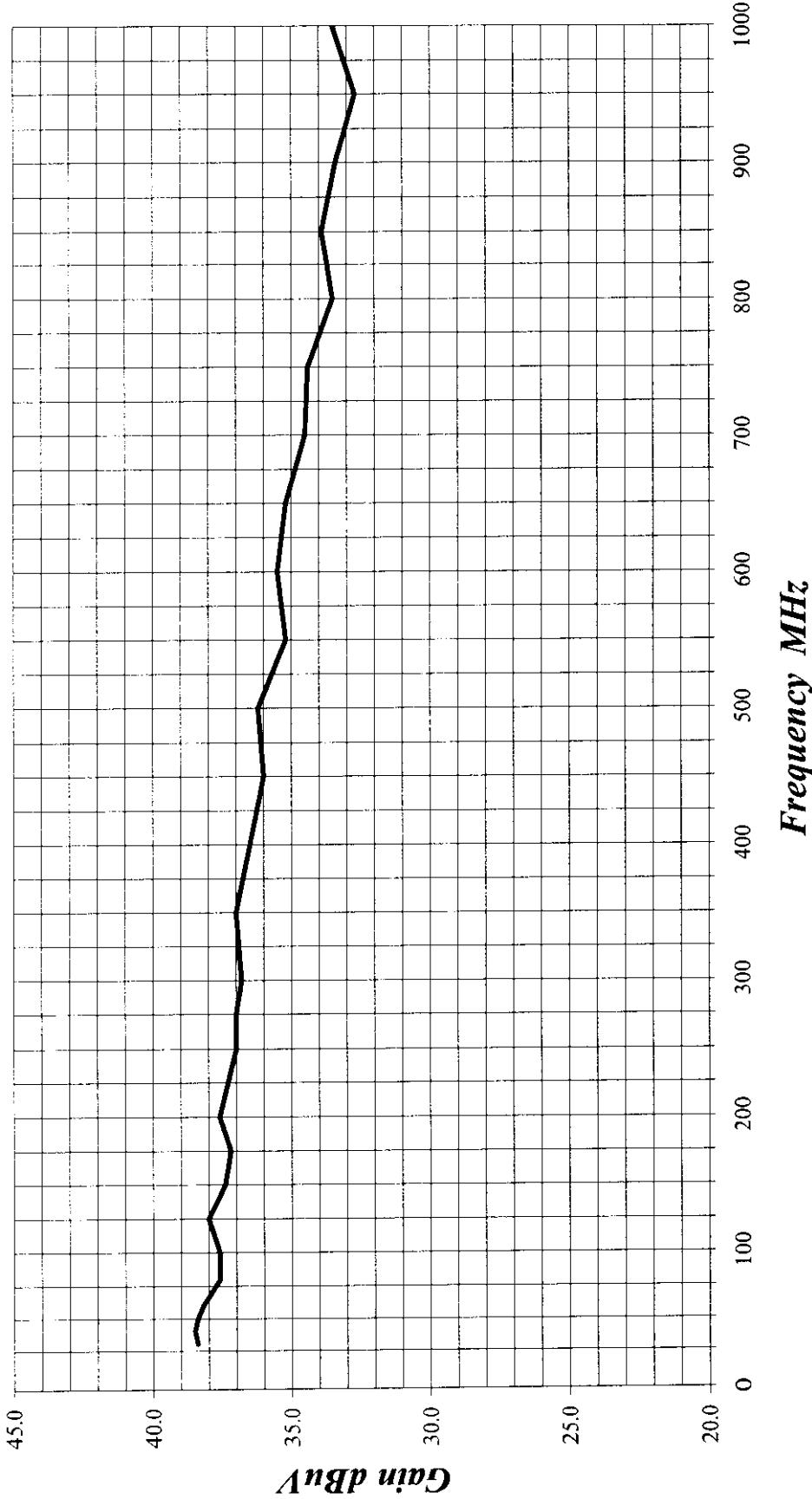
FCC ID: AAL-TC-925

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**PREAMPLIFIER EFFECTIVE GAIN AT 3 METERS PA-102 S/N:  
1017**

Lab "D" Effective: 2/16/98

Effective Gain = Preamplifier Gain - Cable Loss





**COMPATIBLE  
ELECTRONICS**

FCC ID: AAL-TC-925

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## COM-POWER PA-122

### MICROWAVE PREAMPLIFIER

S/N: 001

CALIBRATION DATE: MARCH 31, 1998

<b>FREQUENCY (GHz)</b>	<b>FACTOR (dB)</b>	<b>FREQUENCY (GHz)</b>	<b>FACTOR (dB)</b>
1.0	33.0	8.0	31.4
1.1	33.0	8.5	30.5
1.2	32.9	9.0	31.4
1.3	32.9	9.5	32.6
1.4	32.8	10.0	33.1
1.5	32.7	10.5	32.1
1.6	33.0	11.0	31.0
1.7	33.0	11.5	31.0
1.8	33.1	12.0	30.9
1.9	32.9	12.5	30.9
2.0	33.1	13.0	30.4
2.5	32.7	13.5	31.0
3.0	32.4	14.0	29.3
3.5	32.1	14.5	28.5
4.0	31.8	15.0	27.6
4.5	31.5	15.5	27.6
5.0	31.6	16.0	27.3
5.5	32.0	16.5	29.3
6.0	31.6	17.0	30.4
6.5	32.0	17.5	31.1
7.0	31.4	18.0	29.7
7.5	32.0	18.5	29.3

Com-Power Corporation		
	(714) 587-9800	
	Antenna Calibration	
Antenna Type:		Loop Antenna
Model:		AL-130
Serial Number:		25309
Calibration Date:		2/5/98
Frequency MHz	Magnetic (dB/m)	Electric dB/m
0.01	-40.5	11.0
0.02	-41.6	9.9
0.03	-40.0	11.5
0.04	-40.3	11.2
0.05	-41.6	9.9
0.06	-41.1	10.4
0.07	-41.3	10.2
0.08	-41.6	9.9
0.09	-41.7	9.8
0.1	-41.8	9.7
0.2	-44.0	7.5
0.3	-41.6	9.9
0.4	-41.7	9.8
0.5	-41.7	9.8
0.6	-41.5	10.0
0.7	-41.5	10.0
0.8	-41.6	9.9
0.9	-41.6	9.9
1	-41.1	10.4
2	-40.7	10.8
3	-40.7	10.8
4	-40.9	10.6
5	-40.1	11.4
6	-40.0	11.5
7	-40.3	11.2
8	-39.8	11.7
9	-38.8	12.7
10	-40.8	10.7
12	-41.4	10.1
14	-41.4	10.1
15	-40.9	10.6
16	-40.8	10.7
18	-41.5	10.0
20	-41.5	10.0
25	-41.2	10.3
30	-41.4	10.1
Trans. Antenna Height		2 meter
Receiving Antenna Height		2 meter



11317 Frederick Avenue, Beltsville, MD 20705

FCC ID: AAL-TC-925

## E-FIELD ANTENNA FACTOR CALIBRATION

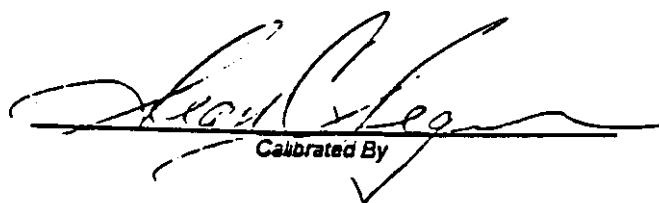
$$E(\text{dB V/m}) = V_o(\text{dB V}) + AFE(\text{dB/m})$$

Model number : DRG-118/A

Frequency GHz	AFE dB/m	Gain dBi
1	22.3	8.0
2	28.7	9.5
3	29.7	10.1
4	29.5	12.8
5	32.3	12.0
6	32.4	13.4
7	36.1	11.0
8	37.4	10.9
9	36.8	12.5
10	39.5	10.7
11	39.6	11.5
12	39.8	12.0
13	39.7	12.8
14	41.8	11.3
15	41.9	11.9
16	38.1	16.3
17	41.0	13.9
18	46.5	8.9

Serial number : 1053  
Job number : 96-092  
Remarks : 3 meter calibration  
Standards : LPD-118/A, TE-1000

Temperature : 72° F  
Humidity : 56 %  
Traceability : A01887  
Date : December 08, 1995



Calibrated By