EXHIBIT 5

TECHNICAL TEST REPORT

FCC PART 15, SUBPART C
TEST REPORT

for

CHARGE PORT

Model: CP7200

Prepared for

GENERAL MOTORS CORPORATION
ADVANCED TECHNOLOGY VEHICLES
3050 WEST LOMITA BOULEVARD
TORRANCE, CALIFORNIA 90509

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: MAY 26, 1998

	REPORT BODY	APPENDICES			TOTAL
		A	*B*	*C*	
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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 procedure described in the test specification 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.

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

Device Tested: Charge Port
Model: CP7200
S/N: Prototype

Modifications: The EUT was not modified during the testing.

Manufacturer: General Motors Corporation Advanced Technology Vehicles
3050 Lomita Boulevard
Torrance, California 90509-2923

Test Date: May 21, 1998

Test Specifications: EMI requirements
FCC Title 47, Part 15, Subpart C section 15.249
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	Radiated RF Emissions, 10 kHz - 9160 MHz.	Complies with the limits of sections **15.205, 15.209 and 15.249** of FCC Title 47, Part 15, Subpart C
2	Conducted RF emissions, 450 kHz - 30 MHz	The EUT is a battery powered device; therefore, this test was not performed.

1. **PURPOSE**

This document is a qualification test report based on the Electromagnetic Interference (EMI) test performed on the Charge Port Model: CP7200. 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 limits of sections **15.205, 15.207, 15.209**, and **15.249.**

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.

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

General Motors Corporation Advanced Technology Vehicles

E. Michael Steele Sr. Systems Engineer

Compatible Electronics, Inc.

Arnold Gaffud	Test Engineer
Kyle Fujimoto	Test Engineer
Scott McCutchan	Lab Manager

2.4 Date Test Sample was Received

The test sample was received on May 21, 1998.

2.5 Disposition of the Test Sample

The test sample was returned to General Motors Corporation Advanced Technology Vehicles on May 21, 1998.

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
NVLAP	National Voluntary Laboratory Accreditation Program

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 1996	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 THE TEST SAMPLE

4.1 Description of Test Configuration - EMI

The Charge Port Model: CP7200 (EUT) was connected to the Standard Charge Module via its slot receptacle. The EUT was also connected to the Conversion Box, Communications Test Box, and Electric Vehicle Battery via its output, signal, and power ports, respectively. The Communications Test Box was also connected to the Delco-Remy Battery via its DC power port. During this test, the power transfer was disabled, leaving only the RF communications link active. The accessories were powered off. The cables were moved to maximize the emissions. The final 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 and as described in section 4.1.1.

4.1.1 **Cable Construction and Termination**

Cable 1

This is a 6 foot unshielded round cable connecting the communication test box to cable #6. It has a banana connector at the communication test box end and an 8 pin plastic connector at the cable #6 end. The cable was bundled with cables #2 - #5 to a length of 0.5 meters. The cables were also wrapped in foil with the entire test box chassis.

Cable 2

This is a 3 foot unshielded round cable connecting the communication test box to the battery positive terminal. It has a banana connector at each end. The cable was bundled with cables #1, #3, #4, and #5 to a length of 0.5 meters. The cables were also wrapped in foil with the entire test box chassis.

Cable 3

This is a 3 foot unshielded round cable connecting the communication test box to the battery negative terminal. It has a banana connector at each end. The cable was bundled with cables #1, #2, #4, and #5 to a length of 0.5 meters. The cables were also wrapped in foil with the entire test box chassis.

Cable 4

This is a 6 foot unshielded round cable connecting cable #6 to the battery positive terminal. It has an 8 pin plastic connector at the cable #6 end and a banana connector at the battery end. The cable was bundled with cables #1, #2, #3, and #5 to a length of 0.5 meters. The cables were also wrapped in foil with the entire test box chassis.

Cable 5

This is a 6 foot unshielded round cable connecting cable #6 to the battery negative terminal. It has an 8 pin plastic connector at the cable #6 end and a banana connector at the battery end. The cable was bundled with cables #1, #2, #3, and #6 to a length of 0.5 meters. The cables were also wrapped in foil with the entire test box chassis.

Cable 6

This is a 1 foot unshielded round cable connecting the EUT to cables #1, #4, and #5. It was hard wired at the EUT end and has an 8 pin plastic connector at the other end.

Cable 7

This is a 5 foot unshielded round cable connecting the charge module to its ground fault circuit interrupter module. It is hard wired at both ends. The cable is bundled to a length of 0.5 meters.

Cable 8

This is a 3 foot braid shielded round cable connecting the EUT to the charge module. It has an inductive paddle at the EUT end, and is hard wired at the charge module end. The shield of the cable was grounded to the chassis via the connector.

Cable 9

This is a 4 foot braid shielded unterminated round cable. It was hard wired at the EUT end and has a Cannon G24 metallic connector at one end.

5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT

5.1 EUT and Accessory List

EQUIPMENT TYPE	MANU-FACTURER	MODEL	SERIAL NUMBER	FCC ID
CHARGE PORT (EUT)	GM CORPORATION ADVANCED TECHNOLOGY VEHICLES	CP7200	PROTOTYPE	NZM7030TR
COMMUNICATION TEST BOX (WITH GFCI)	GM CORPORATION ADVANCED TECHNOLOGY VEHICLES	N/A	N/A	N/A
STANDARD CHARGE MODULE	GM CORPORATION ADVANCED TECHNOLOGY VEHICLES	P200	006	N/A
12 VOLT VEHICLE BATTERY	DELCO-REMY	N/A	N/A	N/A

5.2 EMI Test Equipment

EQUIPMENT TYPE	MANU-FACTURER	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	2925S33268	N/A	N/A
Plotter	Hewlett Packard	7440A	8726K38417	N/A	N/A
Microwave Amplifier	Com-Power	PA-122	001	March 31, 1998	1 Year
Horn Antenna	Antenna Research	DRG-118/A	1053	December 8, 1995	N/A
Loop Antenna	Com-Power	AL-130	25309	February 5, 1998	1 Year

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

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

The EUT was grounded only through the safety ground of the test box.

7. TEST PROCEDURES

The following sections describe the test methods and the specifications for the tests.

7.1 RF Emissions

7.1.1 Radiated Emissions Test

The HP 8566B spectrum analyzer was used as a measuring meter along with the HP 85650A quasi-peak adapter. Amplifiers were used to increase the sensitivity of the instrument. The Com Power Preamplifier PA-102 was used for frequencies from 30 MHz – 1000 MHz, and the Com-Power Preamplifier PA-122 was used for frequencies above 1000 MHz. 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 HP 85650A quasi-peak adapter was used only for those readings which are marked accordingly on the data sheets. The effective measurement bandwidths used for the radiated emissions test were 200 Hz for frequencies between 10 kHz and 150 kHz, 9 kHz for frequencies between 150 kHz and 30 MHz, 120 kHz for frequencies between 30 MHz and 1000 MHz, and 1 MHz for frequencies above 1000 MHz.

Broadband loop, biconical, log periodic, and horn antennas were used as transducers during the measurement. The loop antenna was used from 10 kHz - 30 MHz, the biconical antenna was used from 30 MHz to 300 MHz, the log periodic antenna was used from 300 MHz to 1 GHz, and the horn antenna was used from 1 GHz to 9.16 GHz. The frequency spans were wide (10 kHz - 150 kHz, 150 kHz - 540 kHz, 540 kHz - 1.6 MHz, 1.6 MHz - 10 MHz, 10 MHz, 30 MHz, 30 MHz to 88 MHz, 88 MHz to 216 MHz, 216 to 300 MHz, 300 MHz to 1 GHz, 1 GHz to 2 GHz, and 2 GHz to 9.16 GHz) during preliminary investigations. The final data was taken with a frequency span of 1 MHz. Furthermore, the frequency span was reduced during the preliminary investigations as deemed necessary.

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. The six highest emissions for the fundamental and harmonics are listed in Table 1. The six highest emissions for the spurious emissions are listed in Table 2.

7.1.2 **RF Emissions Test Results**

Table 1.0 RADIATED EMISSION RESULTS (FUNDAMENTAL AND HARMONICS)
CHARGE PORT Model: CP7200

Frequency MHz	Meter* Reading dBuV/m	Effective Gain ** dB	Antenna Factor ** dB/m	Distance Factor dB	Corrected Reading dBuV/m	Spec. Limit dBuV/m	Delta dB
914.959	95.5	33.2	23.2	0	85.5	94.0	-8.5
914.949	92.8	33.2	23.2	0	82.8	94.0	-11.2
		NO	OTHER	HARMONICS	FOUND		

Notes:

* The complete emissions data is given in Appendix A of this report.

** The effective factor includes the cable loss. The correction factors for the antenna and effective gain are attached in Appendix C of this report.

RF Emissions Test Results (con't)

Table 2.0 RADIATED EMISSION RESULTS (SPURIOUS)
CHARGE PORT Model: CP7200

Frequency MHz	Meter* Reading dBuV/m	Effective Gain ** dB	Antenna Factor ** dB/m	Distance Factor dB	Corrected Reading dBuV/m	Spec. Limit dBuV/m	Delta dB
	NO SPURIOUS EMISSIONS FOUND						

Notes:

* The complete emissions data is given in Appendix A of this report.

** The effective factor includes the cable loss. The correction factors for the antenna and effective gain are attached in Appendix C of this report.

8. CONCLUSIONS

The Charge Port Model: CP7200 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.**

APPENDIX A

RADIATED AND CONDUCTED EMISSIONS DATA SHEETS

COMPATIBLE ELECTRONICS

FCC ID: NZM7030TR

RADIATED EMISSIONS

COMPANY NAME: GM Corp. Advanced Technology Vehicles DATE: 5-21-98

EUT: CHARGE PORT EUT S/N: CP6519-A9818001O1

EUT MODEL: CP7200 LOCATION: ■ BREA ☐ SILVERADO ☐ AGOURA

SPECIFICATION: FCC CLASS: _____ TEST DISTANCE: 3m LAB: O

ANTENNA: ☐ LOOP ☐ BICONICAL ■ LOG ■ HORN POLARIZATION: ■ VERT ☐ HORIZ

■ QUALIFICATION ☐ ENGINEERING ☐ MFG. AUDIT ENGINEER: Arnold Gaffud

NOTES:

Frequency (MHz)	Peak Reading (dBuV)	Quasi-Peak (dBuV)	Antenna Height (meters)	Azimuth (degrees)	Antenna Factor (dB)	Effective Gain (dB)	* Corrected Reading (dBuV)	Delta ** (dB)	Spec Limit (dBuV)
914.959	95.6	-	1.0	145	23.2	33.2	85.6	-8.4	94.0

* **CORRECTED READING** = METER READING + ANTENNA FACTOR - EFFECTIVE GAIN

** **DELTA** = CORRECTED READING - SPECIFICATION LIMIT

COMPATIBLE ELECTRONICS

FCC ID: NZM7030TR

RADIATED EMISSIONS

COMPANY NAME: GM Corp. Advanced Technology Vehicles DATE: 5-21-98

EUT: CHARGE PORT EUT S/N: CP65A-A9818000101

EUT MODEL: CP7200 LOCATION: ■ BREA ☐ SILVERADO ☐ AGOURA

SPECIFICATION: FCC CLASS: _____ TEST DISTANCE: 3m LAB: O

ANTENNA: ☐ LOOP ☐ BICONICAL ■ LOG ■ HORN POLARIZATION: ☐ VERT ■ HORIZ

■ QUALIFICATION ☐ ENGINEERING ☐ MFG. AUDIT ENGINEER: Arnold Gaffud

NOTES:

Frequency (MHz)	Peak Reading (dBuV)	Quasi-Peak (dBuV)	Antenna Height (meters)	Azimuth (degrees)	Antenna Factor (dB)	Effective Gain (dB)	* Corrected Reading (dBuV)	Delta ** (dB)	Spec Limit (dBuV)
914.914	92.9	—	1.0	90	23.2	33.2	82.9	-11.1	94.0

* **CORRECTED READING** = METER READING + ANTENNA FACTOR - EFFECTIVE GAIN

** **DELTA** = CORRECTED READING - SPECIFICATION LIMIT

COMPATIBLE ELECTRONICS — FCC ID: NZM7030TR — PAGE 1 of 1

RADIATED EMISSIONS

COMPANY NAME: GM Corp. Advanced Technology Vehicles DATE: 5-21-98

EUT: CHARGE PORT EUT S/N: CP6519-A981800101

EUT MODEL: CP7200 LOCATION: ■ BREA ☐ SILVERADO ☐ AGOURA

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

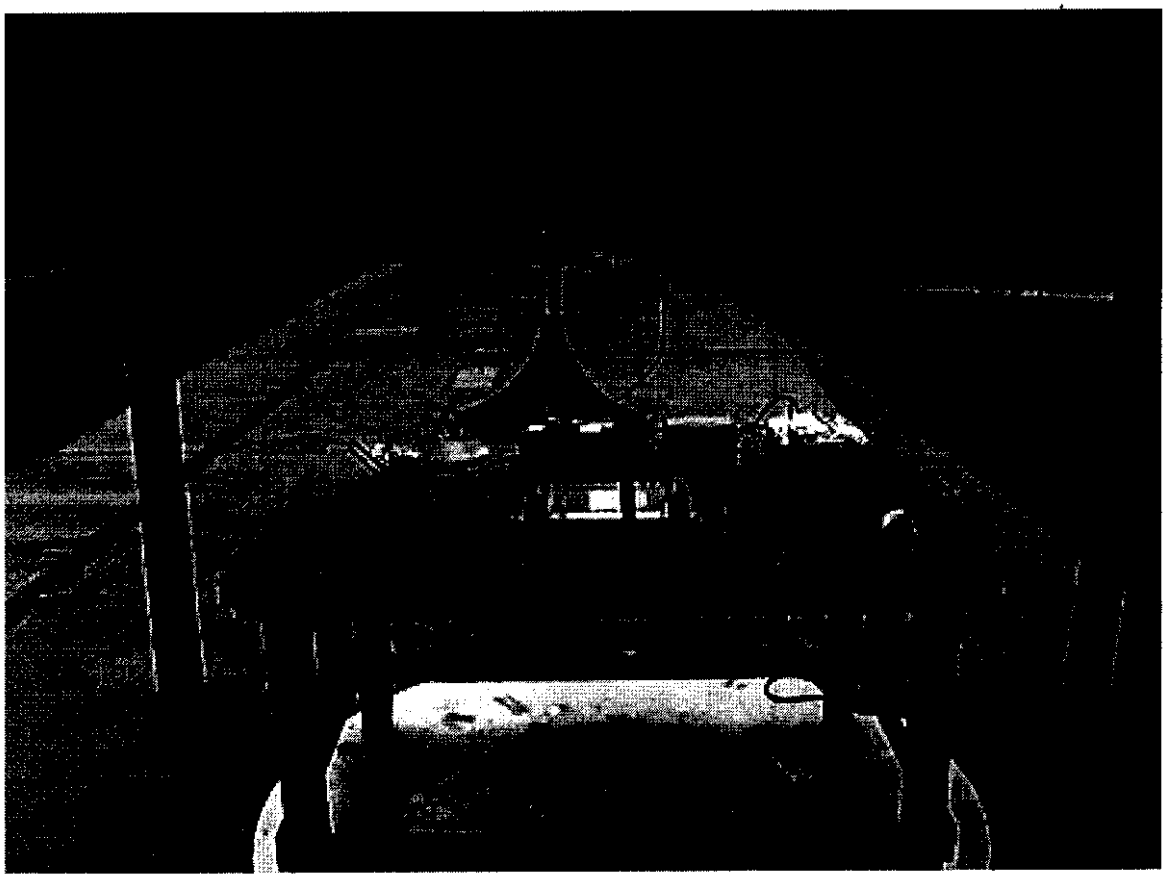
ANTENNA: ■ LOOP ■ BICONICAL ■ LOG ■ HORN POLARIZATION: ■ VERT ■ HORIZ

■ QUALIFICATION ☐ ENGINEERING ☐ MFG. AUDIT ENGINEER: Arnold Gaffud

NOTES: SPURIOUS EMISSIONS

Frequency (MHz)	Peak Reading (dBuV/m)	Quasi-Peak (dBuV/m)	Antenna Height (meters)	Azimuth (degrees)	Delta * (dB)	Corrected Limit (dBuV/m)	Comments
	NO EMISSIONS FOUND						

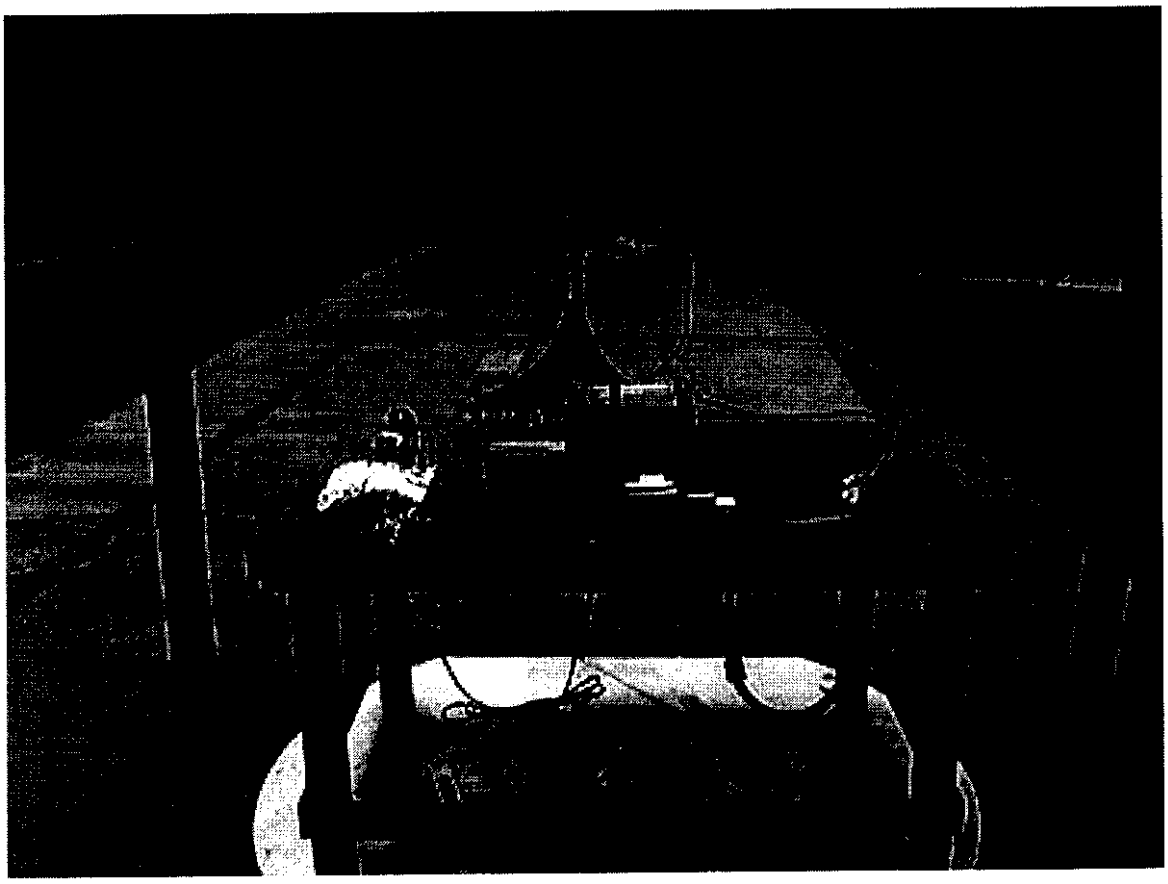
* DELTA = METER READING - CORRECTED LIMIT



FRONT VIEW

GENERAL MOTORS CORPORATION ADVANCED TECHNOLOGY VEHICLES
CHARGE PORT
Model: CP7200
TEST SETUP FOR RADIATED EMISSIONS - 5-21-98

PHOTOGRAPHS SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



REAR VIEW

GENERAL MOTORS CORPORATION ADVANCED TECHNOLOGY VEHICLES
CHARGE PORT
Model: CP7200
TEST SETUP FOR RADIATED EMISSIONS - 5-21-98

PHOTOGRAPHS SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

APPENDIX B

TEST SETUP DIAGRAMS

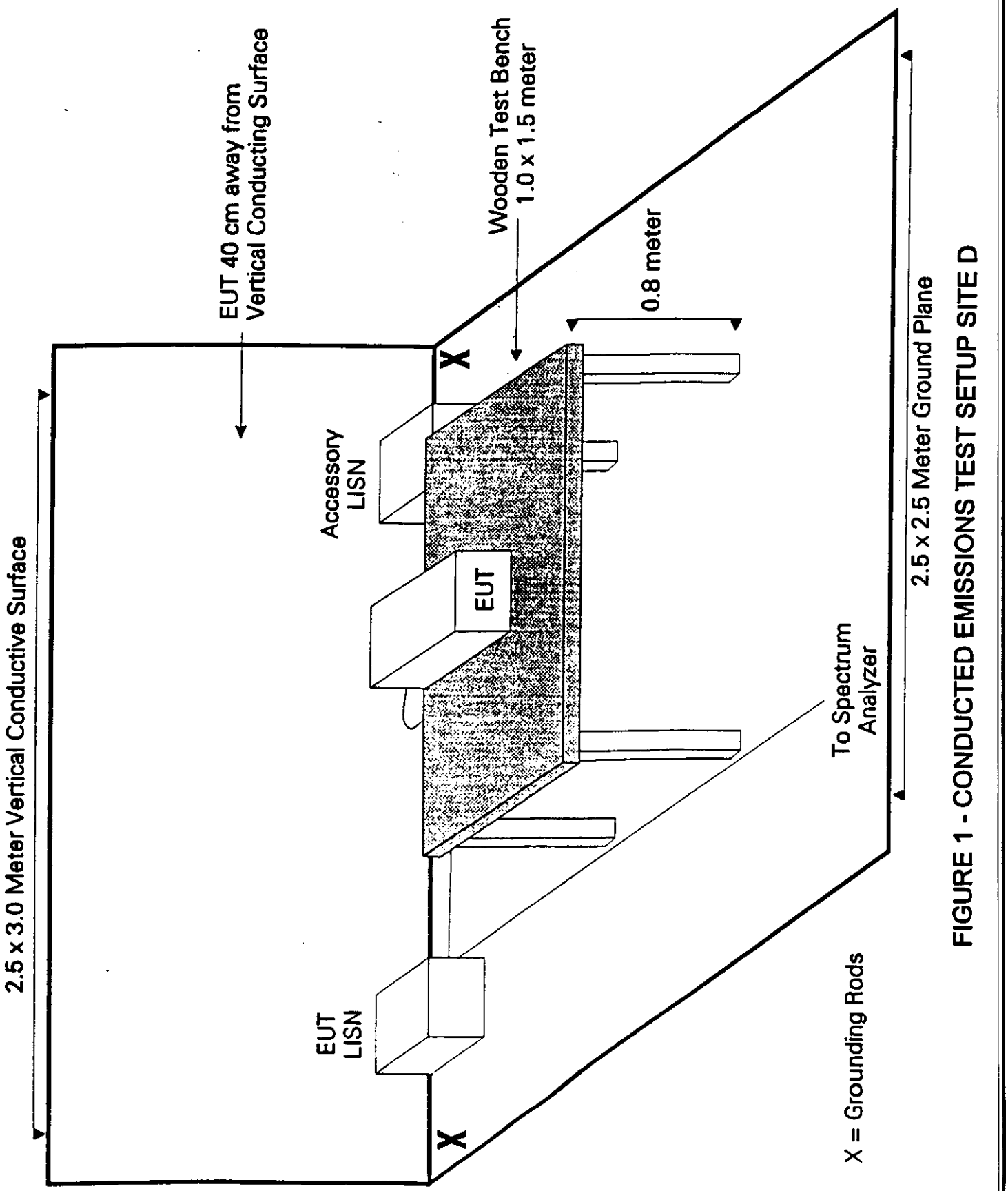


FIGURE 1 - CONDUCTED EMISSIONS TEST SETUP SITE D

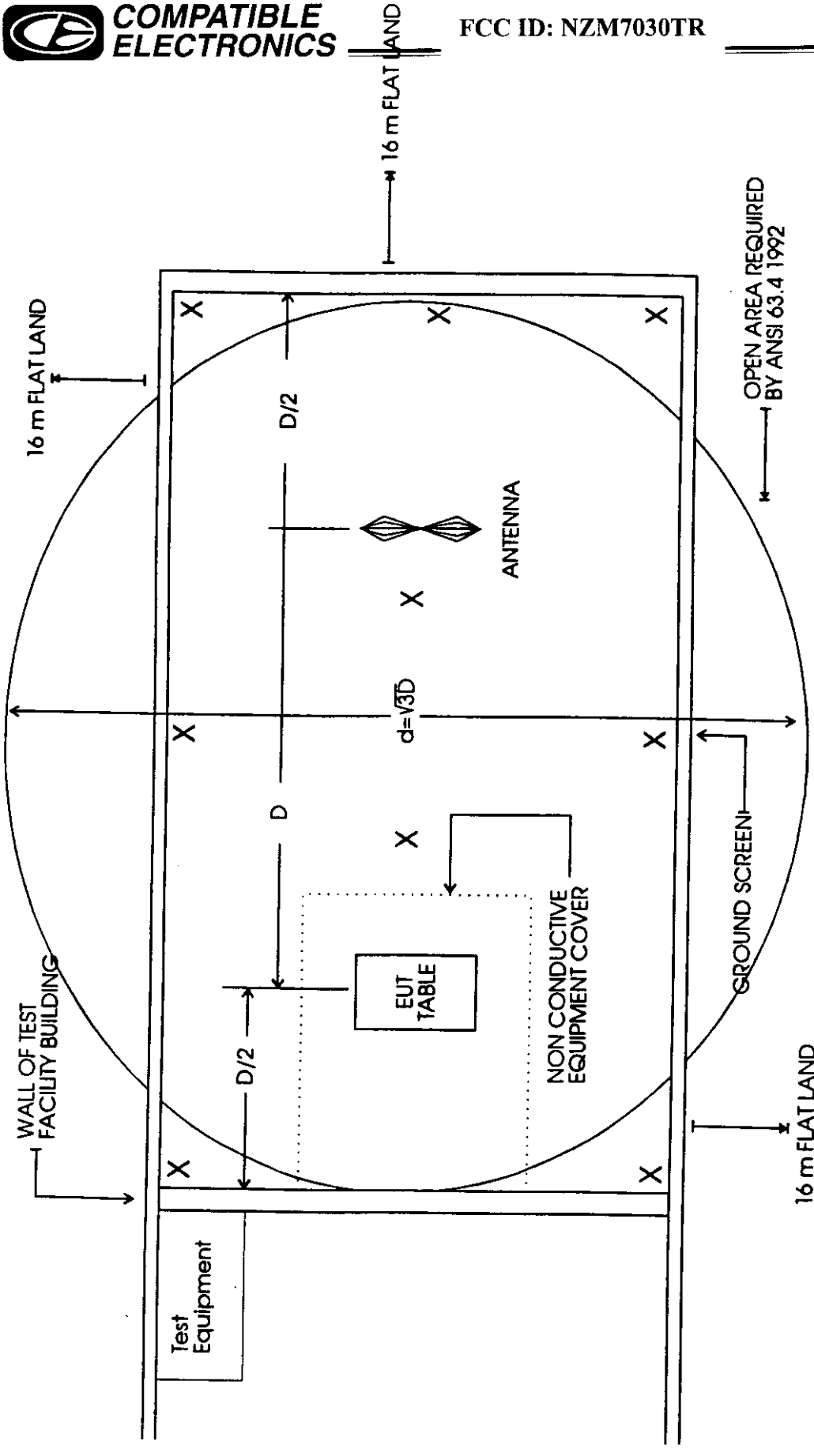
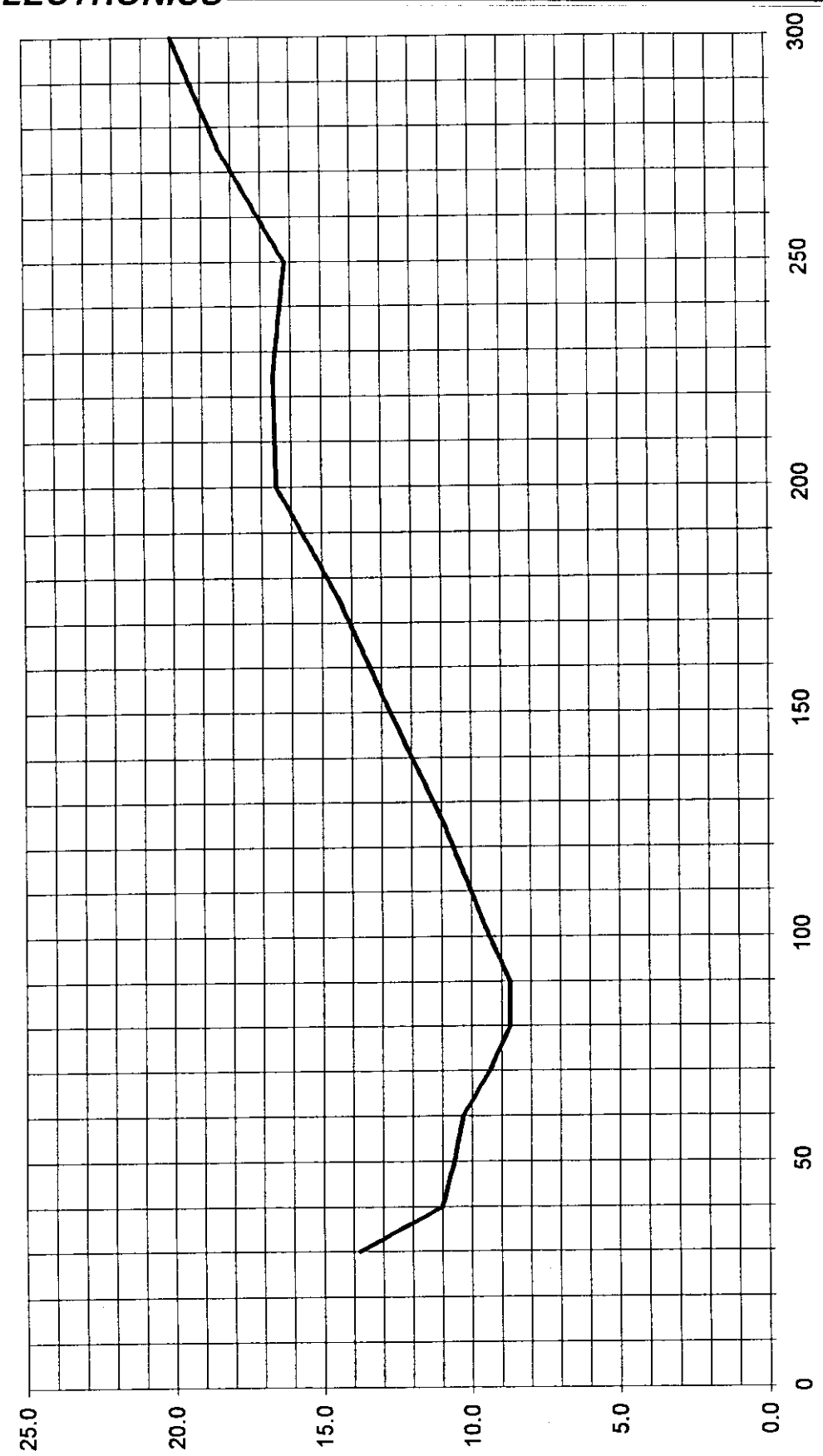


Figure 2: Plot Map and Layout of Test Site "D"

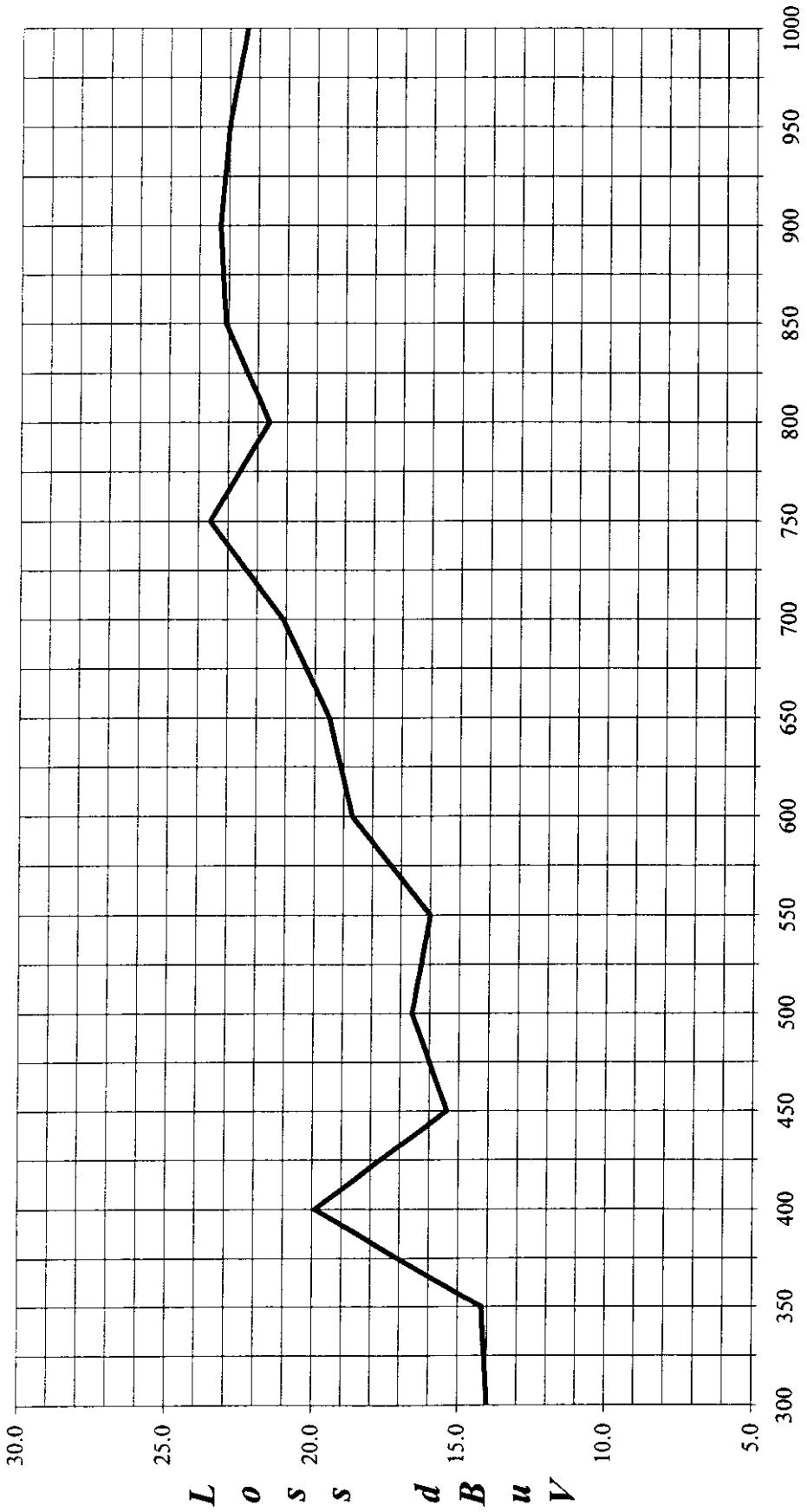
APPENDIX C

ANTENNA FACTORS AND EFFECTIVE GAIN FACTORS


LAB "D" BICONICAL ANTENNA AB-100 S/N 01548
Cal: 3/27/97
Loss dBuV
25.0
20.0
15.0
10.0
5.0
0.0
0
50
100
150
200
250
300
Frequency MHz

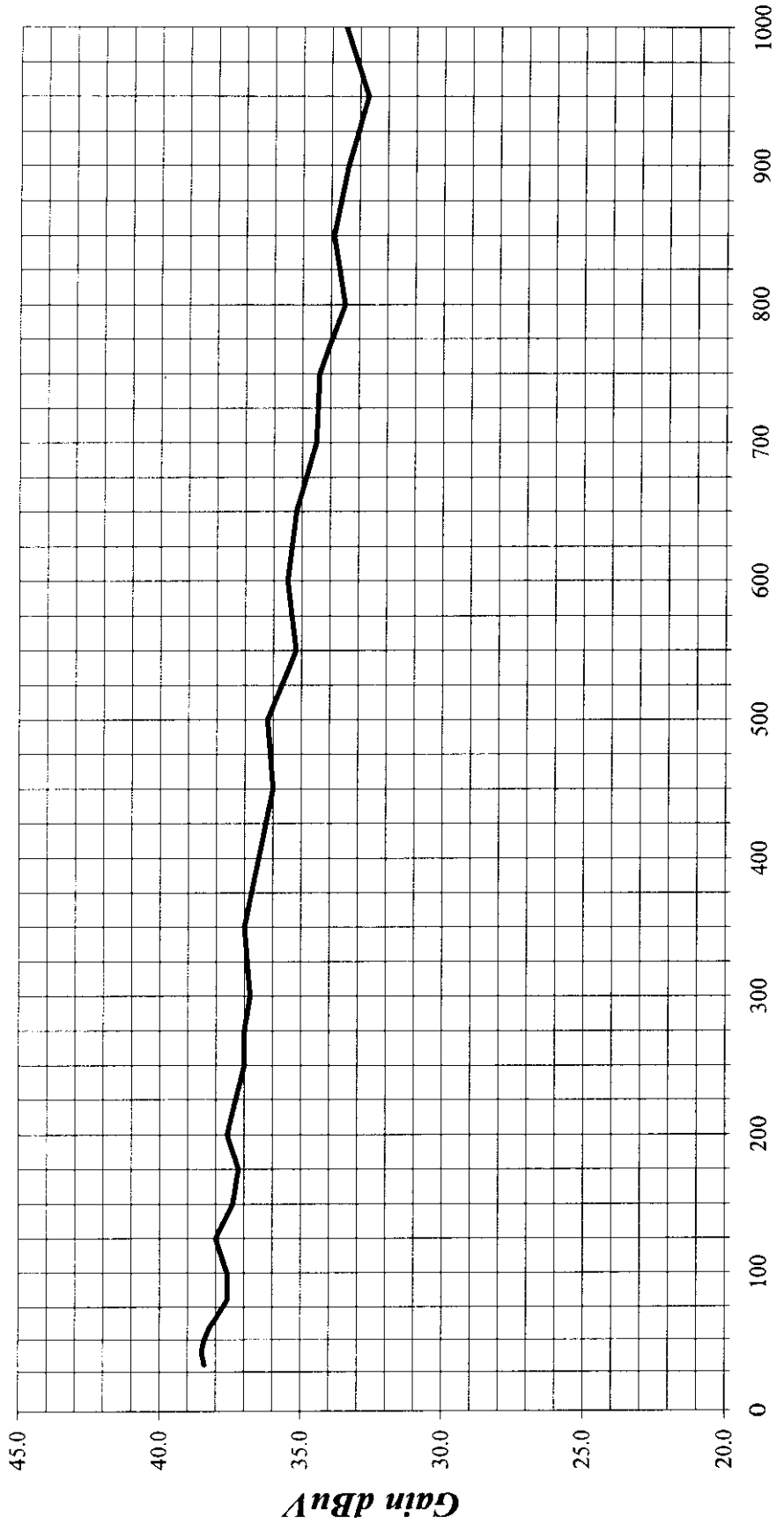
Cal: 2/13/98

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



Lab "D" Effective: 2/16/98 Effective Gain = Preamplifier Gain - Cable Loss

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



COM-POWER PA-122

MICROWAVE PREAMPLIFIER

S/N: 001

CALIBRATION DATE: MARCH 31, 1998

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
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

ANTENNA RESEARCH ASSOCIATES, INC.
11317 Frederick Avenue, Beltsville, MD 20705

FCC ID: NZM7030TR

E-FIELD ANTENNA FACTOR CALIBRATION

E(dB V/m) = Vo(dB V) + AFE(dB/m)

Model number : DRG-118/A

Frequency GHz	AFE dB/m	Gain dBi
1	22.3	8.0
2	26.7	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

FCC ID: NZM7030TR

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