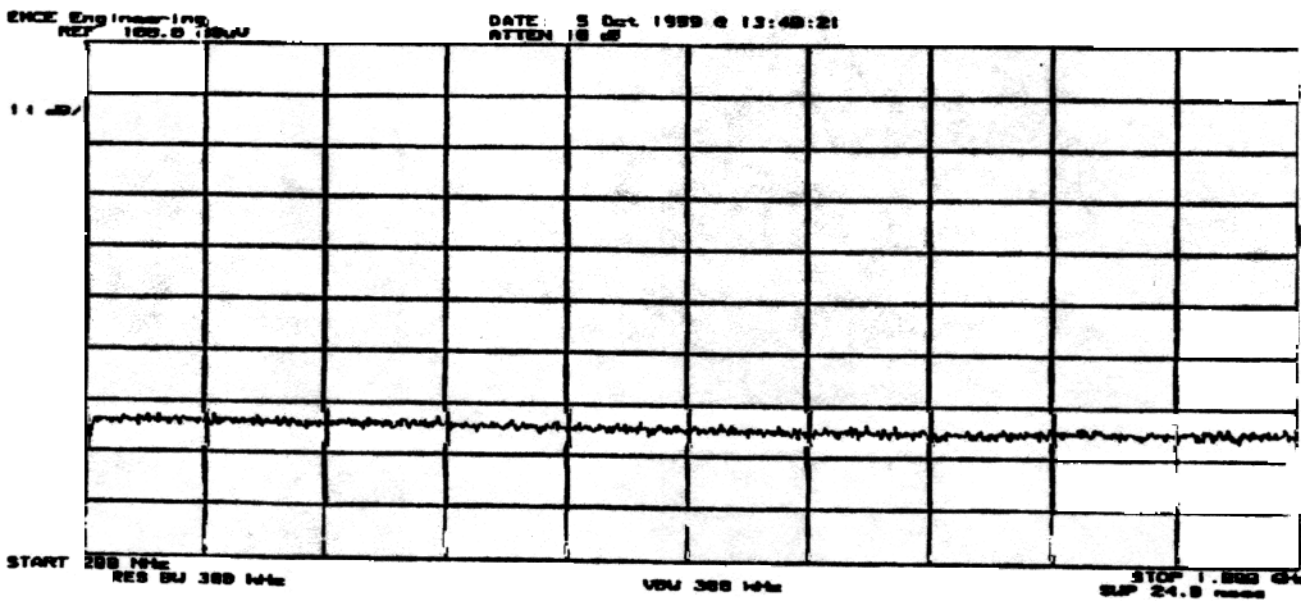
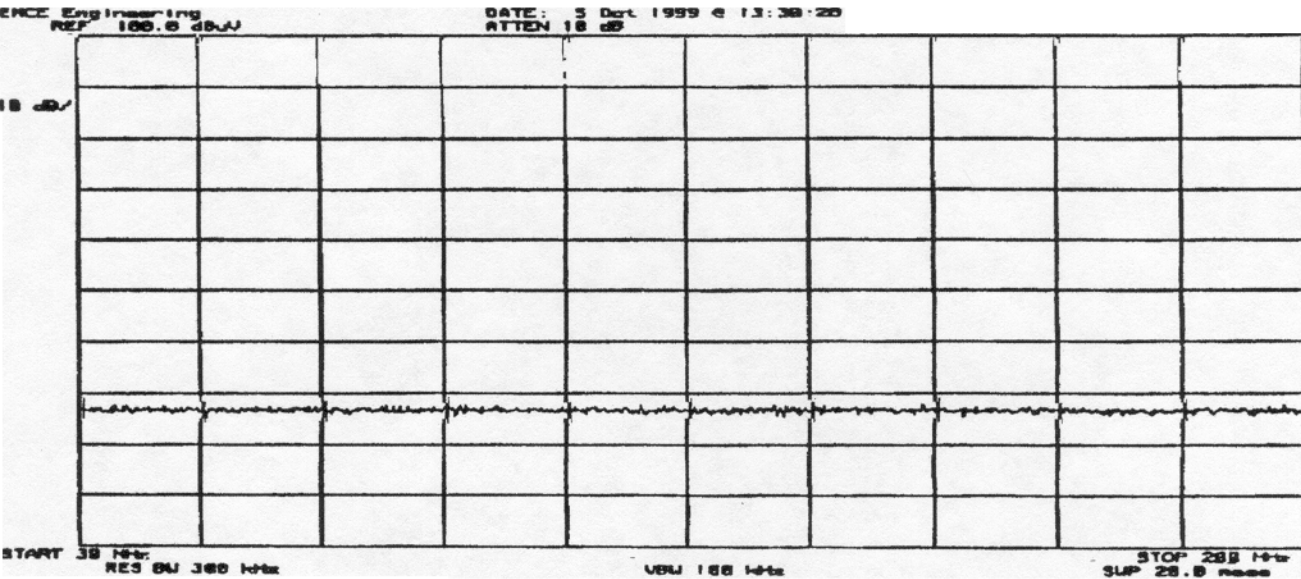
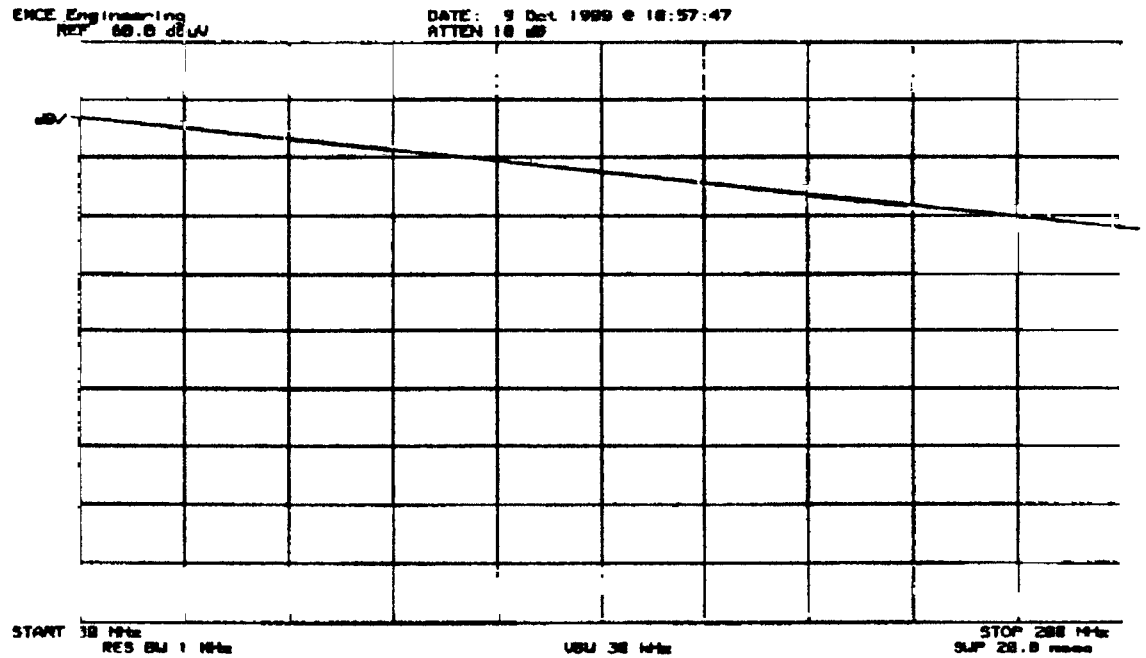
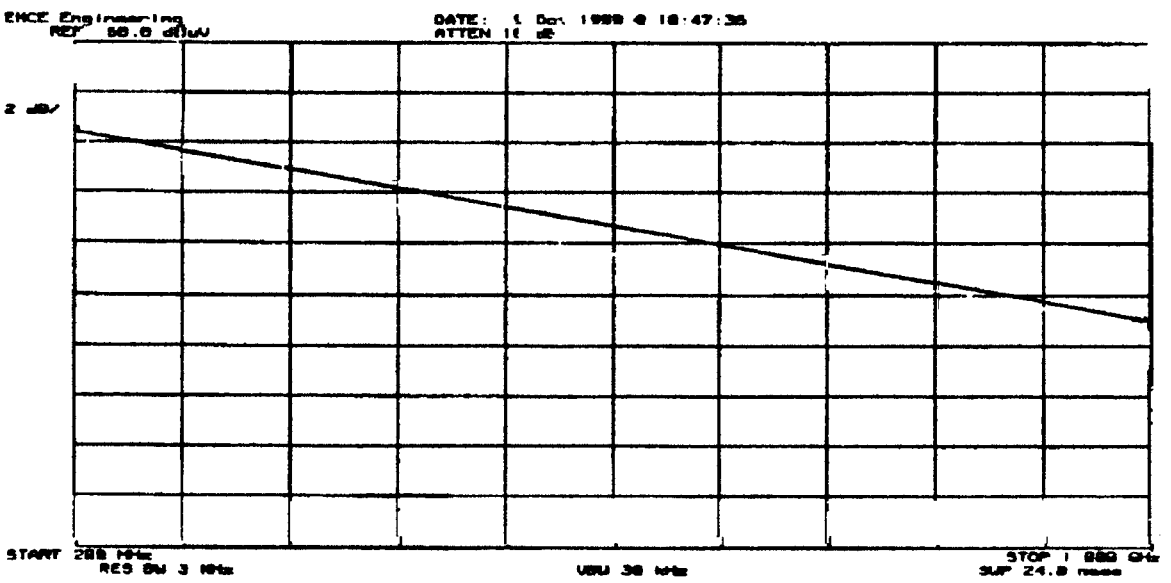


AMPLIFIER GAIN for HPC 8447D





$$y = 2.3 * \log(f/30e6) + 1.3$$



$$y = 10.6 * \log(f/200e6) + 3.8$$

Graph of coax cable loss for 75 feet of RG - 214.

APPENDIX C

Certifications

EMCE FCC Facility Certifications

EMCE NVLAP Accreditation

Spectrum Analyzer Calibration Data Sheet

Quasi-Peak Adapter Calibration Data Sheet

FEDERAL COMMUNICATIONS COMMISSION

Laboratory Division
7435 Oakland Mills Road
Columbia, MD. 21046

June 07, 1999

Registration Number: 90567

EMCE Engineering, Inc.
44370 S. Grimmer Blvd.
Fremont, CA 94538

Attention: Stephen Sawyer

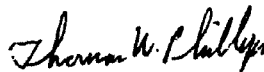
Re: Measurement facility located at Fremont
3 & 10 meter site
Date of Listing: June 07, 1999

Gentlemen

Your submission of the description of the subject measurement facility has been reviewed and found to be in compliance with the requirements of Section 2.948 of the FCC Rules. The description has, therefore, been placed on file and the name of your organization added to the Commission's list of facilities whose measurement data will be accepted in conjunction with applications for Certification under Parts 15 or 18 of the Commission's Rules. Please note that this filing must be updated for any changes made to the facility, and at least every three years from the date of listing the data on file must be certified as current.

If requested, the above mentioned facility has been added to our list of those who perform these measurement services for the public on a fee basis. An up-to-date list of such public test facilities is available on the Internet on the FCC Website at WWW.FCC.GOV, Electronic Filing, OET Equipment Authorization Electronic Filing.

Sincerely,



Thomas W Phillips
Electronics Engineer

National Institute
of Standards and Technology



National Voluntary
Laboratory Accreditation Program

ISO/IEC GUIDE 25:1990
ISO 9002:1987

Scope of Accreditation



Page: 1 of 1

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS

NVLAP LAB CODE 200092-0

EMCE ENGINEERING, INC.
44366 South Grimmer Boulevard

Fremont, CA 94538-6385

Mr. Stephen A. Sawyer

Phone: 510-490-4307 Fax: 510-490-3441

E-Mail: EMCEEngrg@aolcom

NVLAP Code Designation / Description

Federal Communications Commission (FCC) Methods

12/F01	FCC Method - 47 CFR Part 15 - Digital Devices
12/F01a	Conducted Emissions, Power Lines, 450 KHz to 30 MHz
12/F01b	Radiated Emissions
12/T01	Terminal Equipment Network Protection Standards, FCC Method - 47 CFR Part 68 - Analog and Digital
12/T01a	68.302 (Par. c,d,e,f) Environmental simulation; 68.304 Leakage current limit.; 68.306 Hazardous voltage limit.; 68.308 Signal power limit.; 68.310 Longitudinal balance limit.; 68.312 On-hook impedance limit.; 68.314 Billing protection
12/T01b	68.316 Hearing Aid Compatibility: technical standards
12/T01c	68.302 Environmental simulation (Par. a,b)

December 31, 2000

Effective through

David F. Alderman
For the National Institute of Standards and Technology

United States Department of Commerce
National Institute of Standards and Technology



ISO/IEC GUIDE 25:1990
ISO 9002:1987

EMCE ENGINEERING, INC.
FREMONT, CA

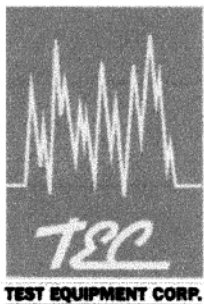
is recognized under the National Voluntary Laboratory Accreditation Program for satisfactory compliance with criteria established in Title 15, Part 285 Code of Federal Regulations. These criteria encompass the requirements of ISO/IEC Guide 25 and the relevant requirements of ISO 9002 (ANSI/ASQC Q92-1987) as suppliers of calibration or test results. Accreditation is awarded for specific services, listed on the Scope of Accreditation for:

**ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS
FCC**

December 31, 2000

David E. Alderman
For the National Institute of Standards and Technology

NVLAP Lab Code: 200092-0



CERTIFICATE OF CALIBRATION

Test Equipment Corporation does certify the below listed instrument has been calibrated to meet all manufacturer's published operating specification.

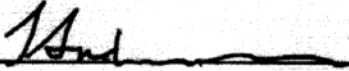
Test Equipment Corporation's calibration measurement standards have accuracy which is traceable to the National Institute of Standards and Technology to the extent allowed by the Bureau's calibration facilities.

Calibration Date: 13 December 1999

Manufacturer: Hewlett Packard Company

Model Number: 85650A

Serial Number: 00336


Test Equipment Corporation

CALIBRATION DATA SHEET NO. 9910



2232 Old Middlefield Way, Mountain View, CA 94043

Rentals and Sales of Electronic Test Equipment
(415) 964-3923 (800) 227-1995

CUSTOMER EMCE		PHONE (510) 490-4307
MANUFACTURER HP	MODEL NO. 85650A	ASSET NR. 00336
DATE RECEIVED 12-10-99	☐ REPAIR ☒ CALIBRATE	CONTACT NAME STEVE

TECHNICIAN Tom A.	TEMPERATURE 68°	TEST EQUIPMENT CORPORATION WARRANTS REPAIRS AND CALIBRATION SERVICES TO BE FREE FROM DEFECTS IN MATERIAL AND WORKMANSHIP FOR A PERIOD OF THIRTY DAYS FROM DATE OF SERVICE. LIMIT OF LIABILITY UNDER THIS WARRANTY SHALL BE REPLACEMENT OF MATERIALS AND RECALIBRATION OF THE INSTRUMENT. THIS WARRANTY SHALL EXCLUDE EQUIPMENT FAILURES DUE FROM DAMAGES CAUSED BY MISUSE, NEGLIGENCE, ABUSE, ACCIDENT, FIRE, OR OTHER ABNORMAL USE. TEST EQUIPMENT CORPORATION'S STANDARDS ARE TRACEABLE TO THE NATIONAL BUREAU OF STANDARDS. TEC'S CALIBRATION PROCEDURE CONFORMS TO ANSI/NCSS Z540-1
CALIBRATION DATE 12-13-99	RELATIVE HUMIDITY <450	
DUE DATE 12-13-00		

MEASUREMENT STANDARDS USED DURING CALIBRATION				PARTS REPLACED
MANUFACTURER	MODEL	ASSET NUMBER	RECALL - DATE	
FLUKE	6080A	43903	12-8-00	
HP	355C	42363	11-3-00	
HP	355D	42573	11-3-00	
HP	11667A	42228	11-7-00	
HP	436A	31899	10-27-00	
HP	8482A	29645	10-27-00	
HP	83592A	31839	11-3-00	
HP	8350A	26571	11-3-00	
BAFRA TROM	PTB-100	28114	2-20-00	

COMMENTS - INCOMING

	CUSTOMER P.O. NO. DATE
	LAST CALIBRATION DATE
	INOPERATIVE
	MEETS MFG.'S SPEC. (NO ADJUSTMENT REQ.) X
	OUT OF MFG.'S SPEC.

COMMENTS - OUTGOING

	DATE
	RECEIVED BY
	COMPANY
	PAID THRU



CERTIFICATE OF CALIBRATION

Test Equipment Corporation does certify the below listed instrument has been calibrated to meet all manufacturer's published operating specification.

Test Equipment Corporation's calibration measurement standards have accuracy which is traceable to the National Institute of Standards and Technology to the extent allowed by the Bureau's calibration facilities.

Calibration Date: 13 December 1999

Manufacturer: Hewlett Packard Company

Model Number: 8568B

Serial Number: 00488


Test Equipment Corporation



CALIBRATION DATA SHEET NO. 97-14

CUSTOMER EMCE		PHONE (510) 490-4307
MANUFACTURER HP	MODEL NO. 8568B	ASSET NR. 00486
DATE RECEIVED 12-10-99	☐ REPAIR ☒ CALIBRATE	CONTACT NAME STEVE

TECHNICIAN Tom A.	TEMPERATURE 68°	TEST EQUIPMENT CORPORATION WARRANTS REPAIRS AND CALIBRATION SERVICES TO BE FREE FROM DEFECTS IN MATERIAL AND WORKMANSHIP FOR A PERIOD OF THIRTY DAYS FROM DATE OF SERVICE. LIMIT OF LIABILITY UNDER THIS WARRANTY SHALL BE REPLACEMENT OF MATERIALS AND RECALIBRATION OF THE INSTRUMENT. THIS WARRANTY SHALL EXCLUDE EQUIPMENT FAILURES DUE FROM DAMAGES CAUSED BY MISUSE, NEGLIGENCE, ABUSE, ACCIDENT, FIRE, OR OTHER ABNORMAL USE. TEST EQUIPMENT CORPORATION'S STANDARDS ARE TRACEABLE TO THE NATIONAL BUREAU OF STANDARDS. TEC'S CALIBRATION PROCEDURE CONFORMS TO ANSI/NCCL 2540-1
CALIBRATION DATE 12-13-99	RELATIVE HUMIDITY <450	
DUE DATE 12-13-00		

MEASUREMENT STANDARDS USED DURING CALIBRATION				PARTS REPLACED
MANUFACTURER	MODEL	ASSET NUMBER	RECALL - DATE	
FLUKE	6080A	43903	12-8-00	
HP	355C	42363	11-3-00	
HP	355D	42573	11-3-00	
HP	11667A	42228	11-7-00	
HP	436A	31899	10-27-00	
HP	8482A	29645	10-27-00	
HP	83592A	31839	11-3-00	
HP	8350A	26571	11-3-00	
BAFRA TROM	PTA-100	28114	2-20-00	

COMMENTS - INCOMING

	CUSTOMER P.O. NO. DATE
	LAST CALIBRATION DATE
	INOPERATIVE
	MEETS MFG'S SPEC (NO ADJUSTMENT REQ.) ☒ X OUT OF MFG'S SPEC

COMMENTS - OUTGOING

	DATE
	RECEIVED BY
	COMPANY
	INITIALS

APPENDIX D

Test Data Sheets

Radiated Emissions

EMCE ENGINEERING, INC.
4615 ENTERPRISE COMMON
FREMONT, CA 94538

Report Number: LAR0005
Date: 2 February 2000
Page: Page 38 of 46

PERFORMED FOR: LAURUS CORP.
TEST SPECIMEN: QUADHOPPER

MODEL NUMBER: 9000
SERIAL NUMBER: 001

LOCATION: VERT POL

FINAL FCC A RADIATED RESULTS:

Freq MHz	Analyzer Reading dBuV	CF dB	Correct Reading dBuV/m	Spec Limit dBuV/m	margin dB	Ht cm	Angle Deg
81.34	30.5	-16.1	14.37	40.00	25.63	150	360
139.87	30.0	-12.0	18.04	43.50	25.46	150	360

NONE OUT OF SPECIFICATION

COMMENTS: Test Dist = 10.0 m. QP detector ON.

SAMPLE CALCULATION:

At 139.87 MHz

Analyzer Reading = 30.00 dBuV

Correction Factor, CF, = AF 12.10 dB + Cable 2.94 dB

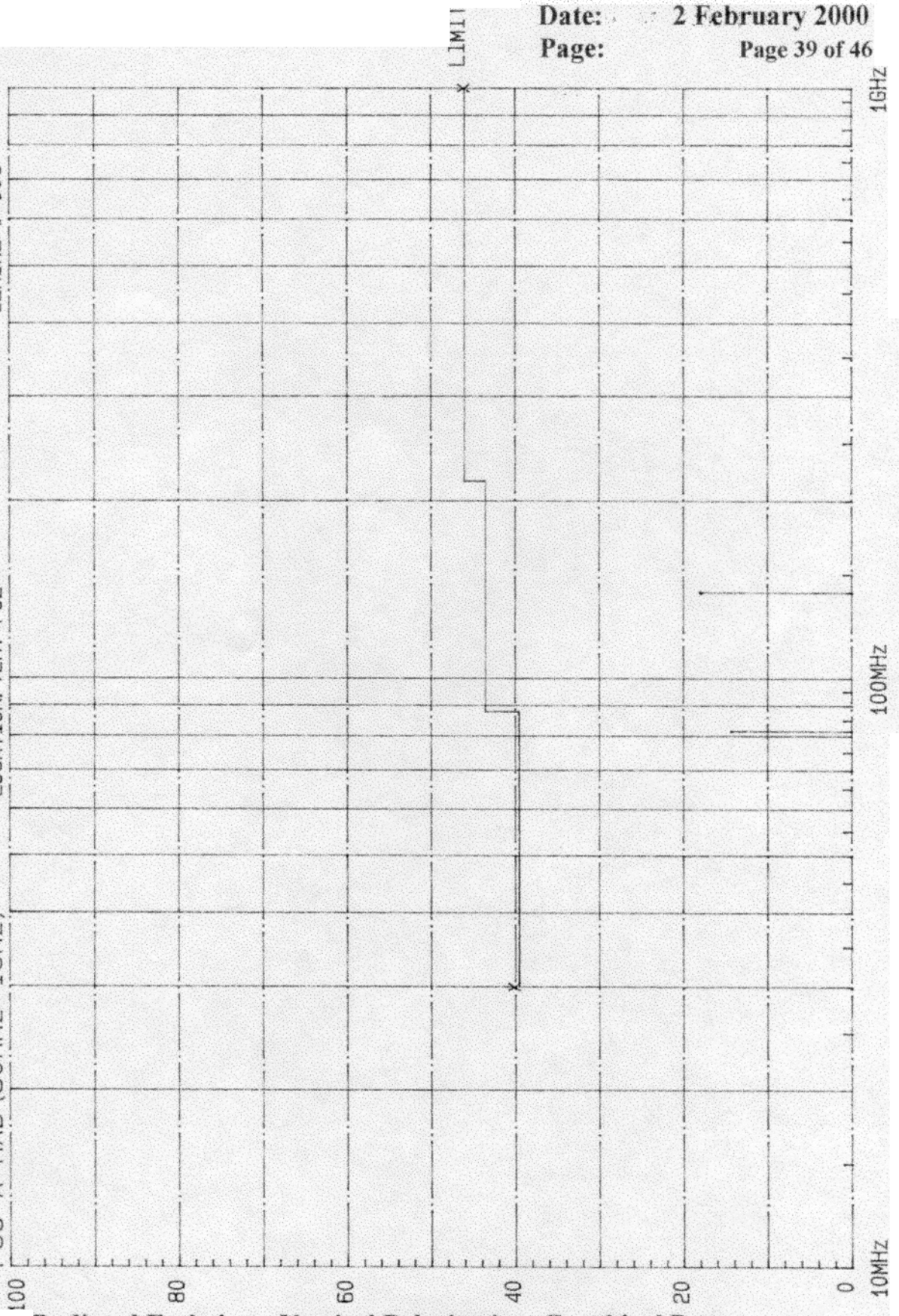
-Preamp Gain 27.00 dB = -11.96 dB

CORRECTED READING = 18.04 dBuV/m

VERIFIED BY

Don Ballard

NARROWBAND RADIATED EMI
FCC-A RAD (30MHz-1GHz)
PERFORMED FOR: LAURUS CORP.
LOCATION: VERT POL
MODEL # 9000
SERIAL # 001



Radiated Emissions, Vertical Polarization, Graphical Data.

EMCE ENGINEERING, INC.
4615 ENTERPRISE COMMON
FREMONT, CA 94538

DATE: 2/2/00
Report Number: LAR0005
FILE:
Date: 2 February 2000
Page: Page 40 of 46

PERFORMED FOR: LAURUS CORP.
TEST SPECIMEN: QUADHOPPER

MODEL NUMBER: 9000
SERIAL NUMBER: 001

LOCATION: HORIZ POL

FINAL FCC A RADIATED RESULTS:

	Analyzer Reading dBuV	CF dB	Correct Reading dBuV/m	Spec Limit dBuV/m	margin dB	Ht cm	Angle Deg
139.89	23.7	-12.0	11.74	43.50	31.76	150	360
157.76	23.1	-12.3	10.75	43.50	32.75	150	360

NONE OUT OF SPECIFICATION

COMMENTS: Test Dist = 10.0 m. QP detector ON.

SAMPLE CALCULATION:

At 157.76 MHz

Analyzer Reading = 23.10 dBuV

Correction Factor, CF, = AF 11.48 dB + Cable 3.17 dB

-Preamp Gain 27.00 dB = -12.35 dB

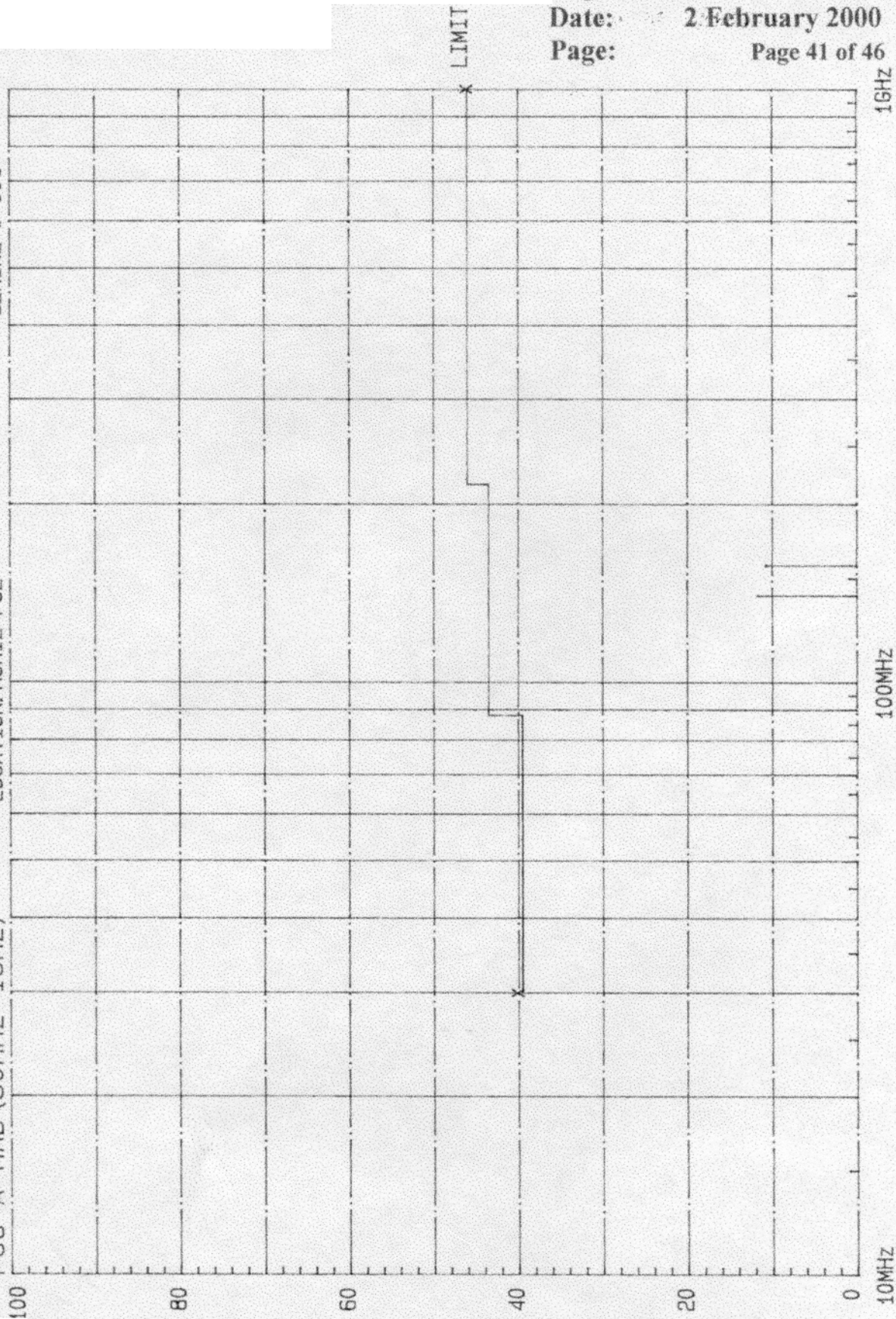
CORRECTED READING = 10.75 dBuV/m

VERIFIED BY

Don Baller

Radiated Emissions, Horizontal Polarization, Tabular Data.

NARROWBAND RADIATED EMI
FCC-A RAD (30MHz-1GHz)
PERFORMED FOR: LAURIUS CORP.
LOCATION: HORIZ POL
MODEL # 9000
SERIAL # 001



Radiated Emissions, Horizontal Polarization, Graphical Data

APPNDIX E

PHOTOGRAPHS OF TEST SETUPS

APPENDIX F

VERIFICATION LABELING AND COMPLIANCE INFORMATION

Labeling Requirements

Product authorizations under Verification shall have a label as follows:

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 undesired operation.

The label shall be located in a conspicuous location on the device.

Retention of Records

For each product subject to Verification, the responsible party shall maintain the records listed below:

- A) A record of the original design drawings and specifications and all changes that have been made that may affect compliance with the FCC requirements.
- B) A record of the procedures used for production inspection and testing (if tests were performed) to insure the continuous conformance required. (Statistical production line emission testing is not required).

A record of the measurements made on an appropriate test site that demonstrates compliance with the applicable regulations.