



**Test Report
Application for
Certification
On Behalf Of
Great Computer Corp.**

**LaserPro
Model No.: L-50, L-25, L-12**

**Prepared for:
Great Computer Corp.
4F., No. 236, Fu-Te 2nd Rd., Hsi Chih
Taipei Hsien, Taiwan, R.O.C.**



**Report By : Global EMC Standard Tech. Corp.
No.3 Pau-Tou-Tsuo Valley, Chia-Pau
Tsuen, Lin Kou Hsiang, Taipei Country,
Taiwan, R.O.C.
Tel : (02) 2603-5321
Fax : (02) 2603-5325**

Test results given in this report only relate to the specimen(s) tested, calibrated or measured.
This report shall not be reproduced other than in full without the written consent of Gestek.

TABLE OF CONTENTS

	Page
Description	3
1. Test Report Certification	4
2. General Information	4
2.1 Production Description	4
2.2 RESULTS:	5
2.3 Tested System Details	6
2.4 Test Methodology	7
2.5 Test Facility	8
3. Conducted Emission Test	8
3.1 Test Equipments	8
3.2 Block Diagram of Test Setup	9
3.3 Conducted Emission Limit	9
3.4 EUT Configuration on Measurement	10
3.5 EUT Exercise Software	10
3.6 Conducted Emission Data	14
4. Radiation Emission	14
4.1 Test Equipment	14
4.2 Test Setup	15
4.3 Radiated Emission Limit	16
4.4 EUT Configuration	16
4.5 Operating Condition of EUT	16
4.6 Radiated Emission Data	70
5. EMI Reduction Method During Compliance Testing	71
Appendix A	71
FCC ID	73
Appendix B	73
Circuit (Block) Diagram	74
Appendix C	74
User Manual	74

1. Test Report Certification

Applicant : Great Computer Corp.

Manufacturer : Great Computer Corp.

EUT Description :

LASER ENGRAVER WITH SERIAL & PARALLEL INTERFACE

(A) FCC ID

:LO4GRC-LASER

(B) Model No.

: L-50, L-25, L-12

(C) Serial No.

: ProtoType

(D) Tested Power Supply

: 110V/60Hz

MEASUREMENT PROCEDURE USED :

☒ CFR 47, Part 15 Radio Frequency Device Subpart B Unintentional Radiators Class
B :1996

☐ CISPR 22 Limits and methods of measurement of radio disturbance characteristics
of information technology equipment: 1993

☒ ANSI C63.4 Methods of Measurements of Radio-Noise Emissions from Low-Voltage
Electrical and Electronic Equipment in the range of 9kHz to
40GHz. :1992

THE MEASUREMENT SHOWN IN THE ATTACHMENT WERE MADE IN
ACCORDANCE WITH THE PROCEDURES INDICATED, AND THE MAXIMUM
ENERGY EMITTED BY THE EQUIPMENT WAS FOUND TO BE WITHIN THE FCC
LIMITS APPLICABLE.

NVLAP[®]

Sample Received Date : Sept. 07, 1998

Final Test Date : Oct. 12, 1998

Documented by : Candy Liu

Test Engineer :

Jack Huang
JACK HUANG

Approve & Authorized Signer :

Raymond Chang
RAYMOND CHANG

This test data shown below is traceable to National or international standard such as NIST/USA, etc.
The laboratory's NVLAP accreditation in no way constitutes or implies product certification, approval,
or endorsement by NVLAP or the United States government.

2. General Information

2.1 Production Description

Description : LaserPro / *LASER ENGRAVER WITH SERIAL INPUT AND PARALLEL OUTPUT PORTS*

Model Number : L-50, L-25, L-12

Serial Number : ProtoType

Applicant : Great Computer Corp.

Address : 4F., No. 236, Fu-Te 2nd Rd., Hsi Chih
Taipei Hsien, Taiwan, R.O.C.

Manufacturer : Great Computer Corp.

Address : 4F., No. 236, Fu-Te 2nd Rd., Hsi Chih
Taipei Hsien, Taiwan, R.O.C.

FCC ID : LO4GRC-LASER

Power Cord : Non-Shielded, Detachable, 1.8m, 10/5A

2.2 RESULTS:

The EUT(s) met the FCC Part 15 Class B requirements.

The Worst Emission data was found as following,

	Worst Emission Frequency (MHz)	Emission Level	Limit	Height of Antenna, Angel of Turntable
Conduction Mode 1	3.01077	57.5uV, Line 2	250uV	N/A
Radiation Mode 1	71.485	34.06[dB(uV/m)], Vertical	40[dB(uV/m)]	1M, 180°

(2). The EUT have a series of model numbers that the different listed as bellows.

Model (Model No.)	Total Maximum Output Power	Laser Power Supply	Laser Power connector board	Laser	Cooling	Input Rating Input Frequency
L-50 (Mode 1)	50W CO ₂	SP-500(2PCS)	PC00043A Laser 50W	SYNRAD 48-5(W)	Water-cooled	100-220V, 50/60Hz
L-25 (Mode 2)	25W CO ₂	SP-500(1PCS)	PC00041B Laser 10W/25W	SYNRAD 48-2(W)	Air cooled DC-24V(Fan)*4	
L-12 (Mode 3)	12W CO ₂	SP-300(1PCS)	PC00041B Laser 10W/25W	SYNRAD 48-1(W)	Air cooled DC-24V(Fan)*4	

(3). Note: The data that show in this test report reflects the worst-case data as above.

2.3 Tested System Details

The FCC IDs/Types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards, which have grants) are:

- ☒ EUT : LaserPro
Model No. : L-50, L-25, L-12
Power Cord : Manufacturer: Great Computer Corp.
Data Cord : Non-shielded, Detachable, 1.8m
: Shielded, Detachable, 1.8m
- ☒ Host Personal Computer
System Model Number : Vectra VL Series 4 5 /100
Serial Number : SG65100127
System FCC ID : B94VECTRA500T
Manufacturer : HP
Floppy Disk Driver : Manufacturer: SONY
3.5" #1 Model: MPF920-f
Serial No.: 10046242
Hard Disk : Manufacturer: Seagate
Model No.: ST31276A
Serial No.: 38700-509A
Disk Ctrl Card : On Board
I/O Card : On Board
VGA Card : Gainward, S3 Trio32/64
FCC ID: ICUVGA-GW407, Serial No.: GFE21966
Switching Power Supply: Manufacturer: ASTEC
Model: VL202-3515
Serial No.:2999313021
Power Cord : Non-Shielded, Detachable, 1.8m

- ☒ Monitor M01-005
Model Number : C562DU
Serial Number : 544FA000E00130
FCC ID : GKR562DU
Manufacturer : ATEC
Data Cable : Shielded, Undetachable, 1.5m
Power Cord : Shielded, Detachable, 1.8m
- ☒ Keyboard K01-025
Model Number : 5140
Serial Number : A73281203
FCC ID : E5XKBM10510
Manufacturer : BTC
Data Cable : Sheiled, Undetachable, 1.2 m
- ☒ Printer P01-011
Model Number : C2642A(DJ-400)
Serial Number : MY7951C4J5
FCC ID : B94C2642X
Manufacturer : HP
Data Cable : Shielded, Detachable, 1.8m
Adaptor & Power Cord : AC 110V, 60Hz To DC 30V
: Non-Shielded, Detachable, 1.9m
- ☒ Modem M03-011
Model Number : 1414
Serial Number : 960018041
FCC ID : IFAXDM1414
Manufacturer : ACEEX
Adaptor & Power Cord : Non-Shielded, Detachable, 1.5m
Data Cable : Shielded, Detachable, 1.2m
- ☒ Mouse M02-033
Model Number : MUS3M
Serial Number : N/A
FCC ID : JKGMUS2S01
Manufacturer : Tremon Enterpnses Co., Ltd.
Data Cable : Shielded, Undetachable, 1.5m

2.4 Test Methodology

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4-1992.

Radiated testing was performed at an antenna to EUT distance of 3 meters.

2.5 Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	23-30
Humidity (%RH)	25-75	50-65
Barometric pressure (mbar)	860-1060	950-1000

FCC Site Description : Aug. 10, 1995 /Aug. 25, 1998 File on

Federal Communication Commission

FCC Engineering Laboratory

7435 Oakland Mills Road

Columbia, MD 21046

Reference 31040/SIT1300F2

NVLAP Lab Code : 200085-0

United States Department of commerce

National Institute of Standards and Technology

National Voluntary Laboratory Accreditation Program

Name of firm : Global EMC Standard Tech. Corp.

Site location : No. 3 Pau-Tou Valley, Chia-Pau Tsuen, Lin Kou

Hsiang, Taipei County, Taiwan, R.O.C.

3. Conducted Emission Test

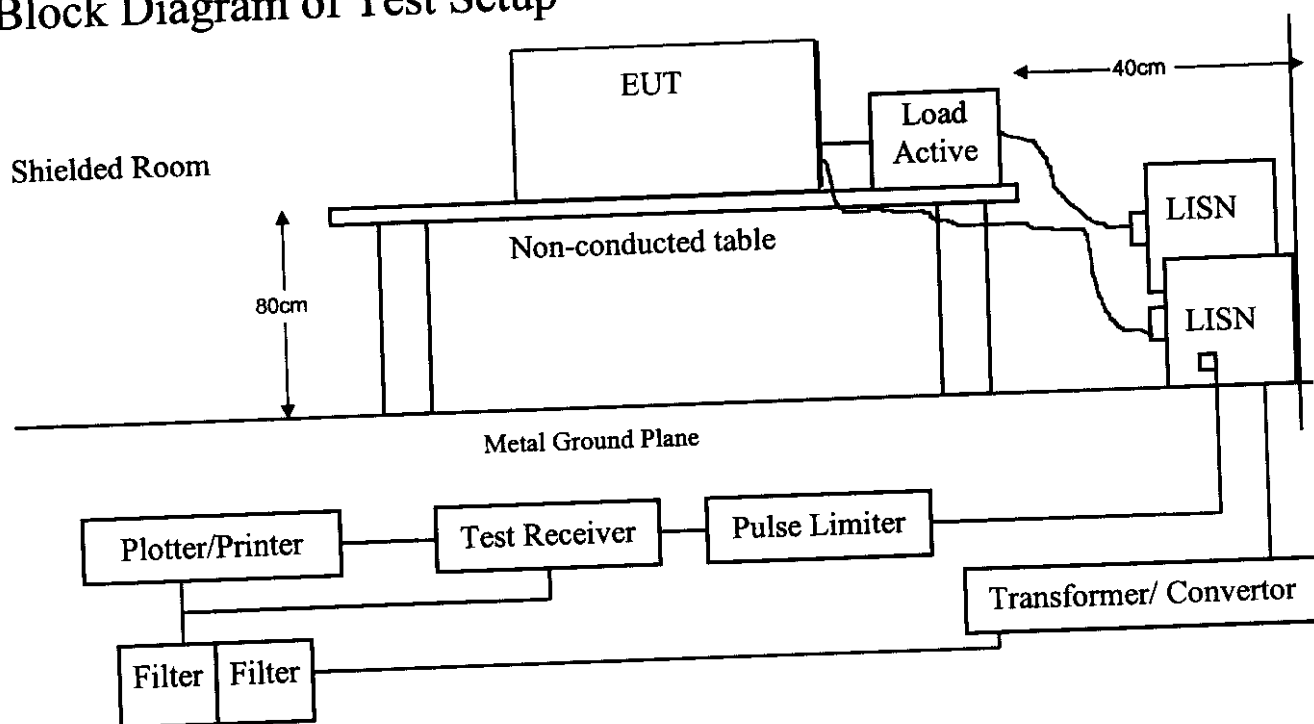
3.1 Test Equipments

The following test equipments are used during the conducted power line tests:

Instrument	Manufacturer	Type /Serial No.	Last Calibration	Location	C.E.
Test Receiver	Rohde & Schwarz	ESHS 30 / 8281091010	Dec. 24, 1997	Shield Room #1	✓
L.I.S.N.	Kyoritsu	KNW-407	Oct.03, 1998	Shield Room #1	✓
L.I.S.N.	Solar	8012-50-R24 / 90038	Jun. 02, 1998	Shield Room #1	
L.I.S.N.	EMCO	3825/2 / 91111-1902	Aug.10,1998	Shield Room #1	
L.I.S.N.	Rohde & Schwarz	ESH3-Z5 / 840567/002	Oct. 02, 1998	Shield Room #1	✓
L.I.S.N.	Schwarzbeck	NNLK 8121	Apr. 10, 1998	Shield Room #1	
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	Jan. 11, 1998	Shield Room #1	✓

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

3.2 Block Diagram of Test Setup



Note: This is a representative setup diagram for Table-top EUT.
For Floor-standing EUT, the table will be removed with all others setup condition remain the same.

3.3 Conducted Emission Limit

3.3.1 FCC Limits

Frequency	Maximum RF Line Voltage			
	Class A		Class B	
MHz	uV	dBuV	uV	dBuV
0.45 - 1.705	1000	60.0	250	48.0
1.705 - 30	3000	69.5	250	48.0

Remarks : 1. RF Line Voltage (dBuV) = $20 \log$ RF Line Voltage (uV)
 2. In the Above Table, the tighter limit applies at the band edges.

3.3.2 CISPR Limits

Frequency	Maximum RF Line Voltage dB(uV)			
	Class A		Class B	
MHz	QUASI-PEAK	AVERAGE	QUASI-PEAK	AVERAGE
0.15 - 0.50	79	66	66-56	56-46
0.50-5.0	73	60	56	46
5.0 - 30	73	60	60	50

Remarks : In the Above Table, the tighter limit applies at the band edges.

3.4 EUT Configuration on Measurement

The equipments which is listed 3.2 are installed on Conducted Power Line Test to meet the Commission requirement and operating in a manner which tends to maximize its emission characteristics in a normal application.

The device under test, installed in a representative system as described in section 3.2, was placed on a non-conductive table whose total height equaled 80 CM. Powered from one LISN which signal output to receiver, and the other peripherals was powered from another LISN which signal output was terminated by 50Ω.

3.5 EUT Exercise Software

The EUT exercise program used during conducted testing was designed to exercise the EUT in a manner similar to a typical use. The exercise sequence is listed as below:

- 3.5.1 Setup the EUT and simulators as shown on 3.2
- 3.5.2 Turn on the power of all equipments.
- 3.5.3 Boot the PC from Hard Disk to windows 95, active all devices.
- 3.5.4 Adjust to the appropriated video resolution.
- 3.5.5 PC enter to DOS program and key in A:>TYPE 201.PRN>PRN for EUT testing Program.
- 3.5.6 Run EMITEST.EXE program.
- 3.5.7 PC sent "H" Pattern to Monitor.
- 3.5.8 PC sent "H" Pattern to Printer Port.
- 3.5.9 PC sent "H" Pattern to Serial Port.
- 3.5.10 Repeat the above procedure 3.5.6 to 3.5.9

3.6 Conducted Emission Data

The measurement range of conducted emission which is from 0.45 MHz to 30 MHz was investigated. All readings are quasi-peak and average values with a resolution Bandwidth of 9 KHz. The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range for all the test modes. Then the worst modes were reported the following data pages.

The total uncertainty for this test is as follows:

- Uncertainty in the field strength measured: $< \pm 2.0$ dB

The uncertainty is calculated in accordance with NAMAS document NIS 81, and is given as 2 standard deviations.

CONDUCTED EMISSION DATA

Date of Test	:	Sept. 02, 1998	Temperature	:	27.2 °C
EUT	:	LaserPro	Humidity	:	52 %
Test Mode	:	Mode 1	Display Pattern	:	H Pattern

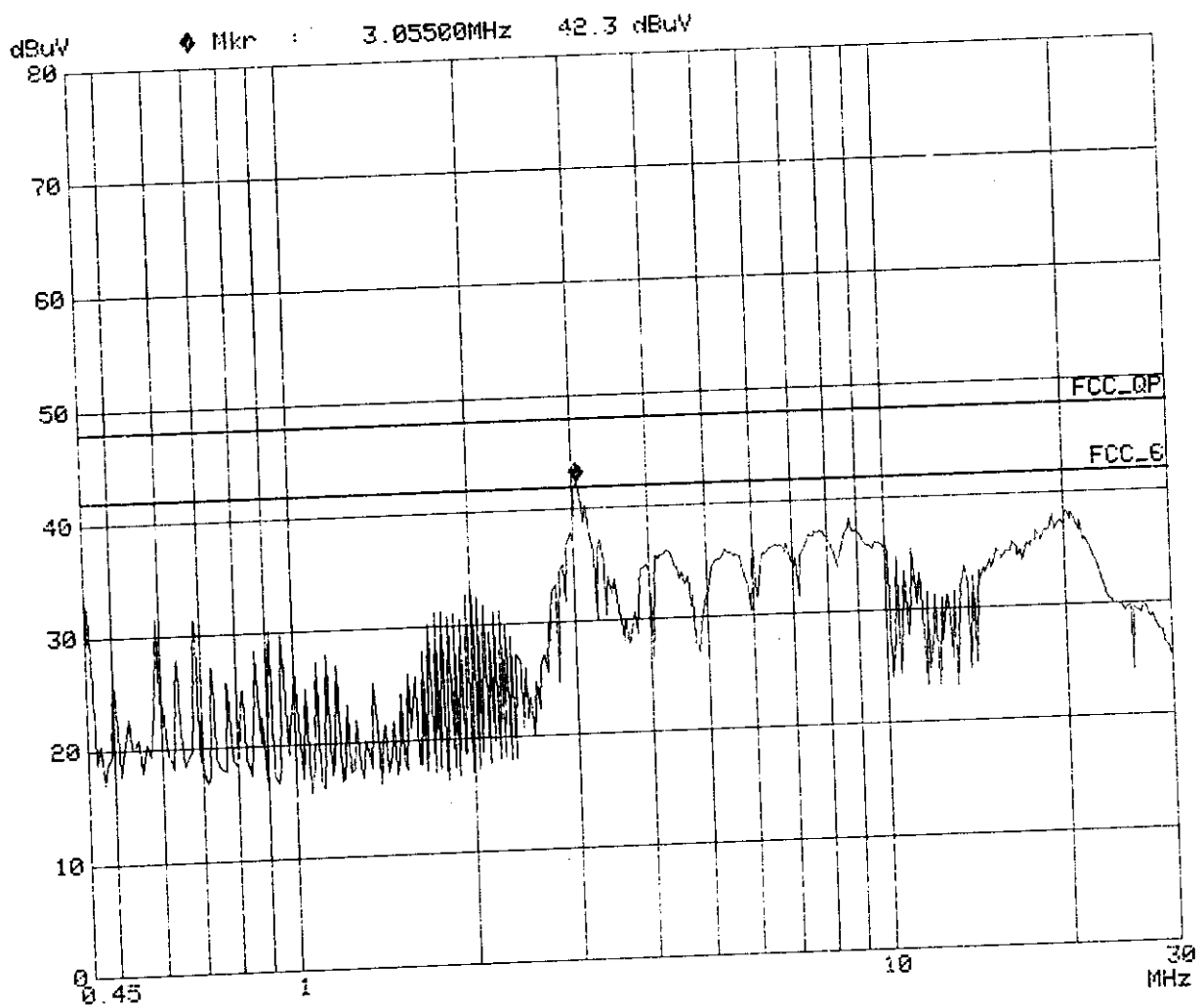
FREQUENCY	READING LEVEL				LIMITE
	LINE 1		LINE 2		
MHz	dBuV	uV	dBuV	uV	uV
0.45531	31.4	37.2	30.9	35.1	250
0.59278	25.1	18.0	30.1	32.0	250
2.00514	27.8	24.6	29.5	29.9	250
**3.01077	35.0	56.2	35.2	57.5	250
7.43608	34.7	54.3	35.0	56.2	250
20.52761	31.0	35.5	36.2	64.6	250

- Remarks :
1. All readings are Quasi-peak.
 2. “ ** ” means that this data is the worse case emission level.
 3. Deviations from the specifications: None.
 4. Final measurement = (Receiver reading) + (Correction factor if available)

Attached 2 individual pages of peak scan curve data sheets.

ROHDE & SCHWARZ ESHS 30
GesTek, PowerLine Conducted Emission

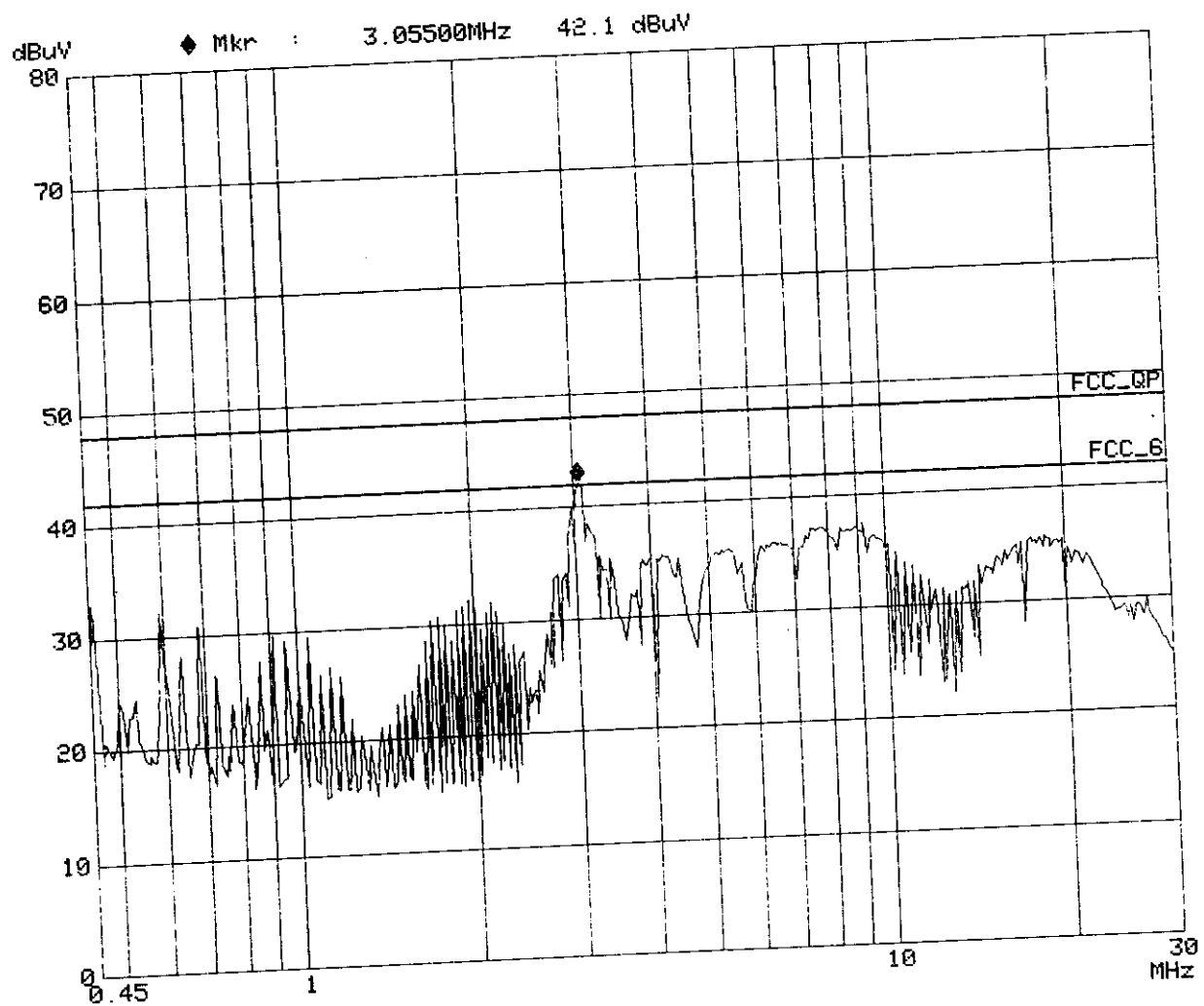
EUT: LASER PRO
Manuf: GCC
Op Cond: FULL LOAD
Operator: IVAN
Test Spec: FCC CLASS B
Comment: Line 1
M/N:L-50
Date: 02. Sep 98 14:23



ROHDE & SCHWARZ ESHS 30

GesTek, PowerLine Conducted Emission

EUT: LASER PRO
Manuf: GCC
Op Cond: FULL LOAD
Operator: IVAN
Test Spec: FCC CLASS B
Comment: Line 2
M/N:L-50
Date: 02. Sep 98 14:26



CONDUCTED EMISSION DATA

Date of Test	:	Oct.12, 1998	Temperature	:	25.3 °C
EUT	:	LaserPro	Humidity	:	49 %
Test Mode	:	Mode 2	Display Pattern	:	H Pattern

FREQUENCY	READING LEVEL				LIMITE
	LINE 1		LINE 2		
MHz	dBuV	uV	dBuV	uV	uV
0.58118	21.1	11.4	16.5	6.7	250
1.97203	12.5	4.2	15.5	6.0	250
5.69886	20.4	10.5	21.6	12.0	250
16.00032	25.4	18.6	26.4	20.9	250
**24.79595	35.3	58.2	32.4	41.7	250
28.63518	34.9	55.6	30.1	32.0	250

Remarks : 1. All readings are Quasi-peak.

2. " ** " means that this data is the worse case emission level.

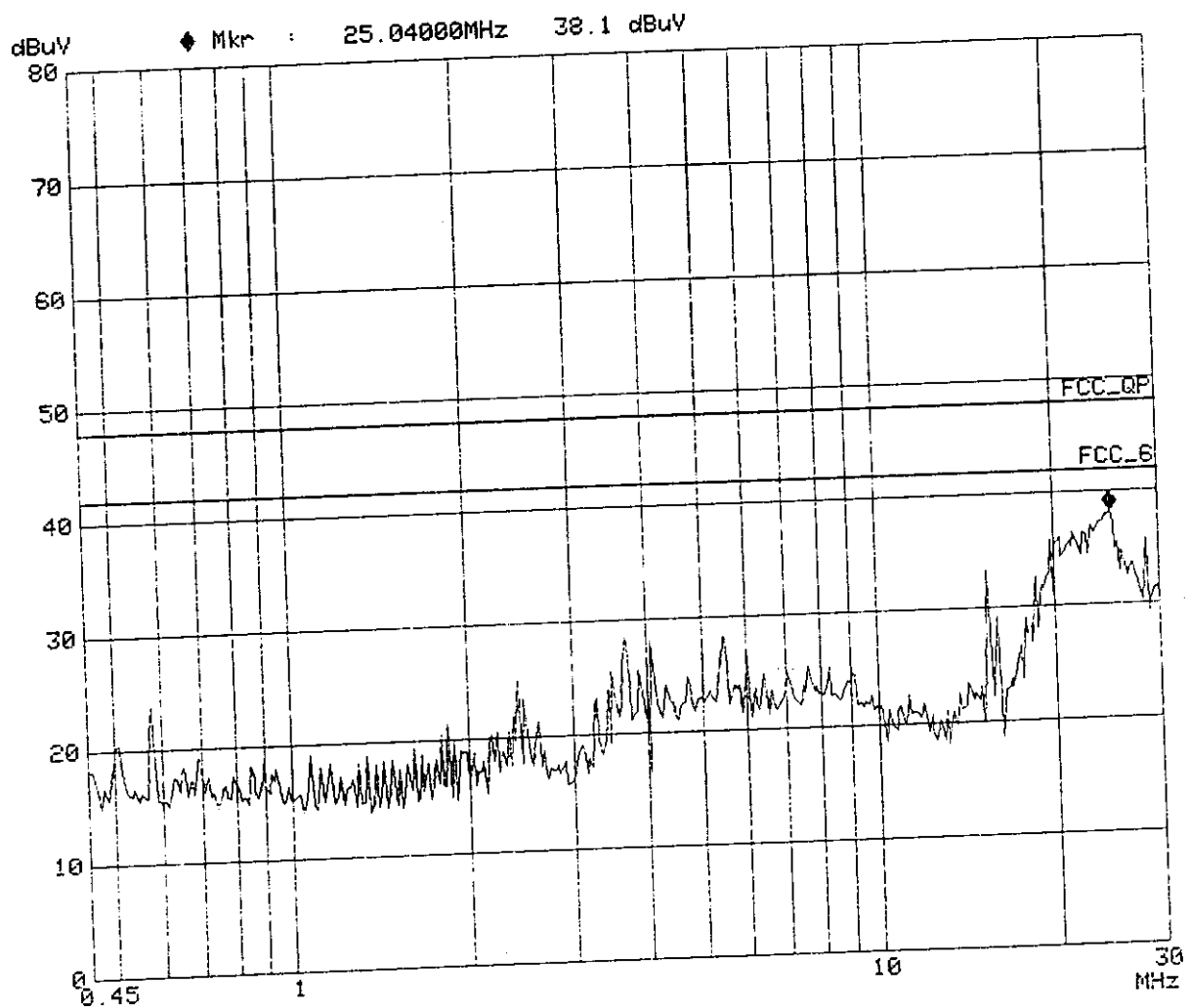
3. Deviations from the specifications: None.

4. Final measurement = (Receiver reading) + (Correction factor if available)

Attached 2 individual pages of peak scan curve data sheets.

ROHDE & SCHWARZ ESHS 30
GestTek, PowerLine Conducted Emission

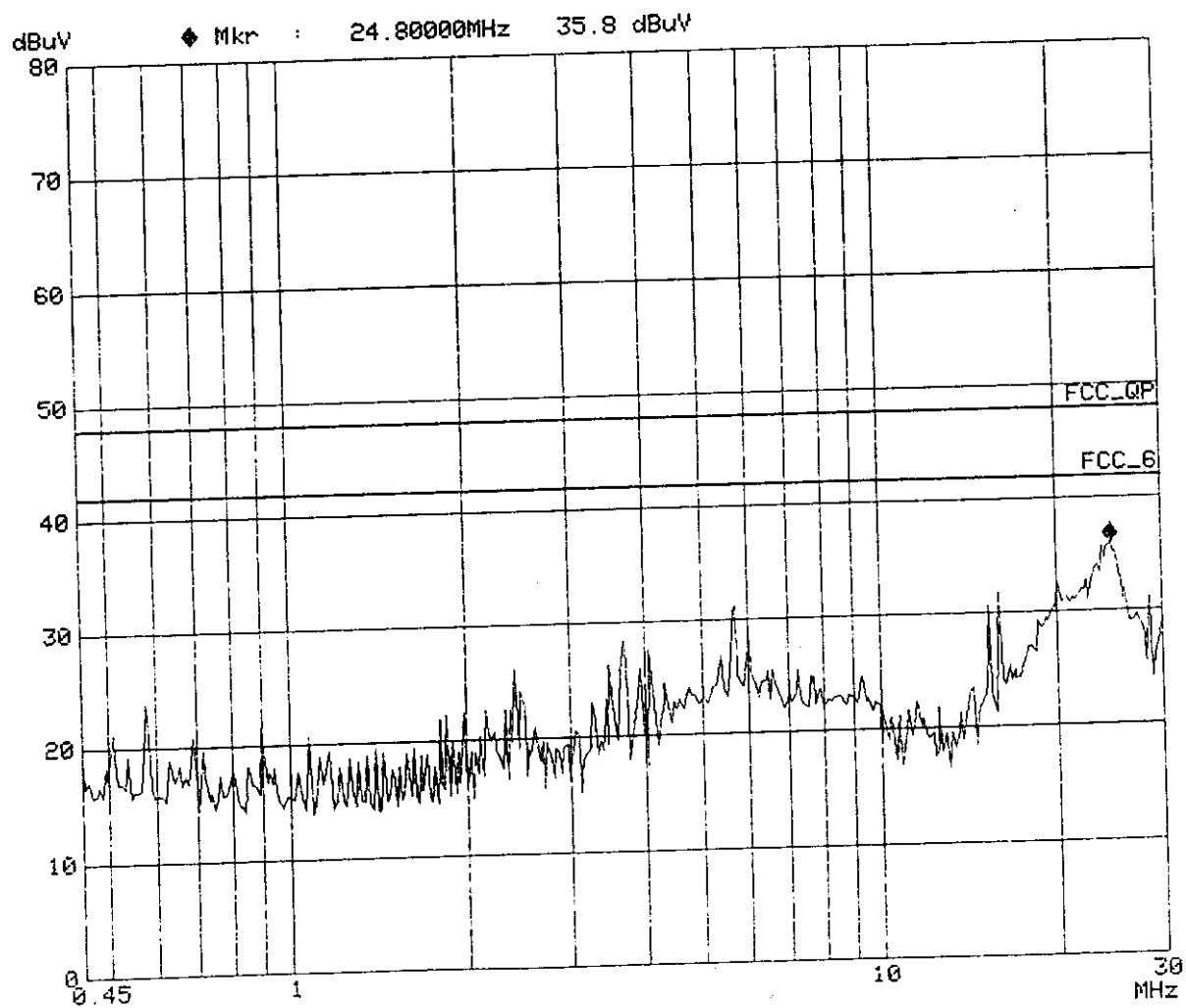
EUT: LASER PRO
Manuf: GCC
Op Cond: FULL LOAD, LOW SPEED
Operator: JACK
Test Spec: FCC CLASS B
Comment: Line 1
M/N: L-25
Date: 12. Oct 98 14:18



ROHDE & SCHWARZ ESHS 30

GesTek, PowerLine Conducted Emission

EUT: LASER PRO
Manuf: GCC
Op Cond: FULL LOAD, LOW SPEED
Operator: JACK
Test Spec: FCC CLASS B
Comment: Line 2
M/N: L-25
Date: 12. Oct 98 14:18



CONDUCTED EMISSION DATA

Date of Test	: Oct.12, 1998	Temperature	: 26.2 °C
EUT	: LaserPro	Humidity	: 50%
Test Mode	: Mode 3	Display Pattern	: H Pattern

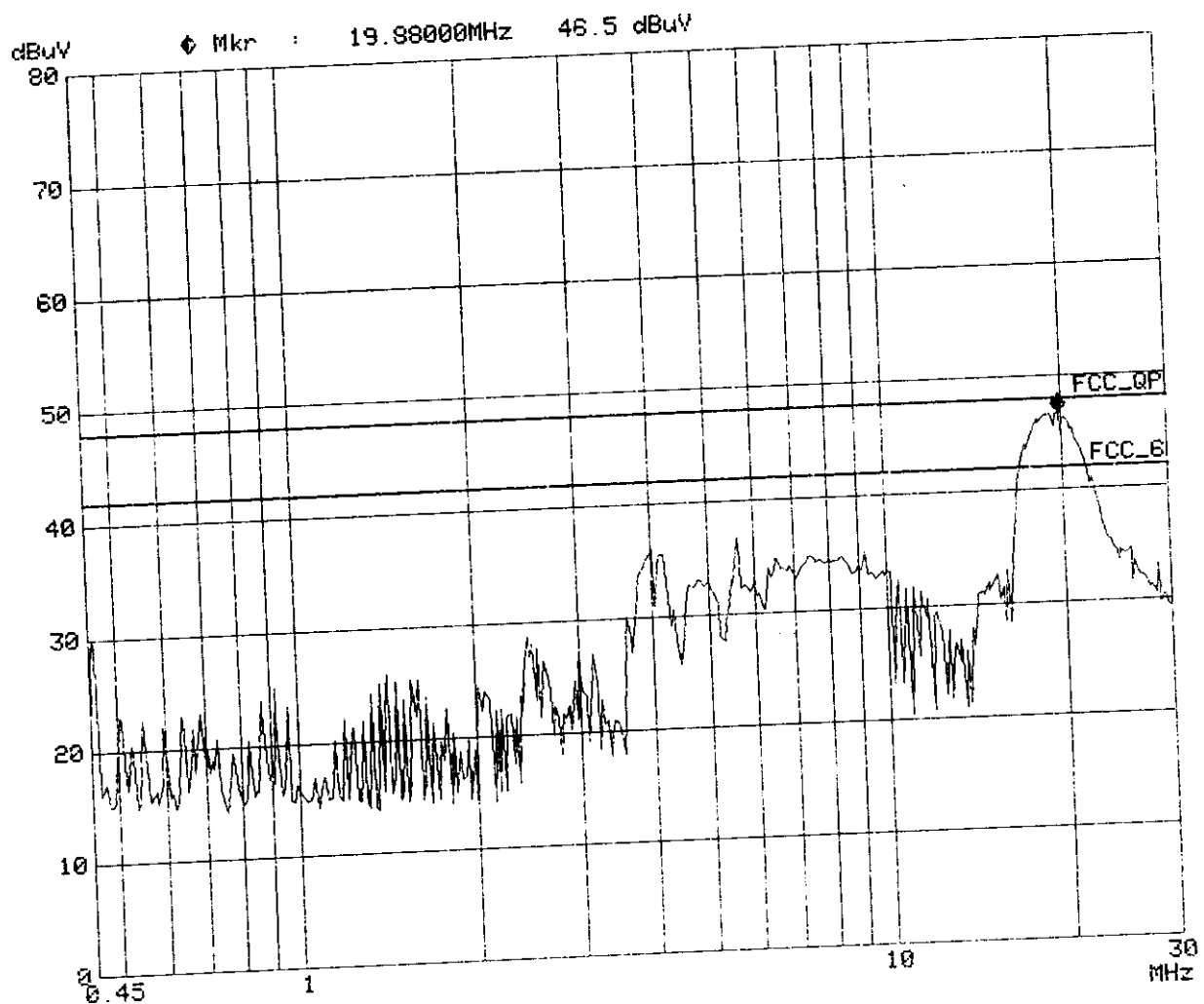
FREQUENCY	READING LEVEL				LIMITE
	LINE 1		LINE 2		
MHz	dBuV	uV	dBuV	uV	uV
0.45813	29.2	28.8	25.2	18.2	250
4.12036	33.6	47.9	27.1	22.7	250
5.63562	31.5	37.6	29.0	28.2	250
8.51530	33.3	46.2	24.0	15.9	250
**19.88203	45.3	184.1	30.2	32.4	250
30.00000	27.6	24.0	26.3	64.6	250

- Remarks :
1. All readings are Quasi-peak.
 2. " ** " means that this data is the worse case emission level.
 3. Deviations from the specifications: None.
 4. Final measurement = (Receiver reading) + (Correction factor if available)

Attached 2 individual pages of peak scan curve data sheets.

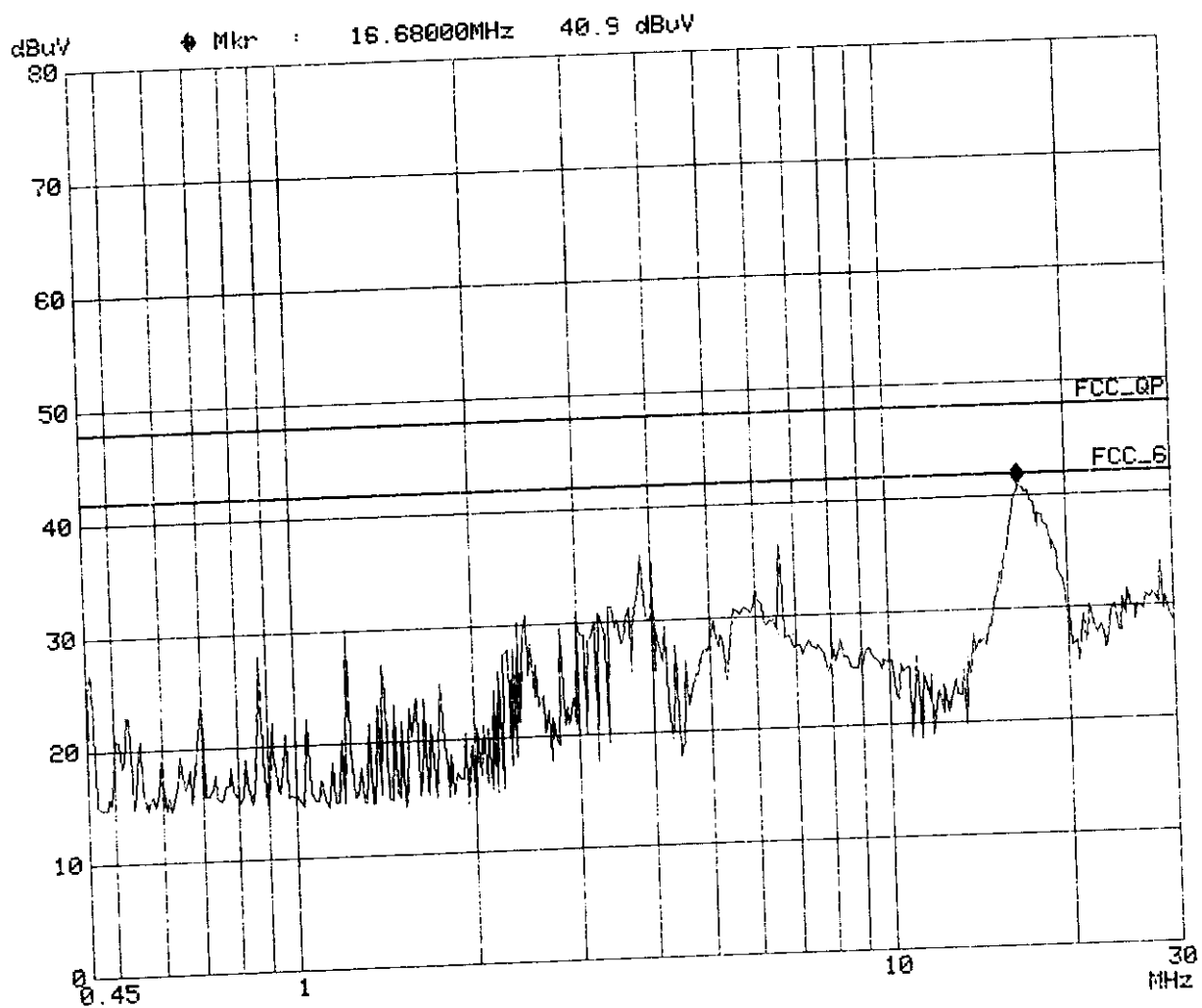
ROHDE & SCHWARZ ESHS 30
GesTek, PowerLine Conducted Emission

EUT: LASER PRO
Manuf: GCC
Op Cond: FULL LOAD, LOW SPEED
Operator: JACK
Test Spec: FCC CLASS B
Comment: Line 1
M/N: L-12
Date: 12. Oct 98 15:27



ROHDE & SCHWARZ ESHS 30
Gestek, PowerLine Conducted Emission

EUT: LASER PRO
Manuf: GCC
Op Cond: FULL LOAD, LOW SPEED
Operator: JACK
Test Spec: FCC CLASS B
Comment: Line 2
M/N: L-12
Date: 12. Oct 98 15:32



4. Radiation Emission

4.1 Test Equipment

The following test equipments are used during the radiated emission tests:

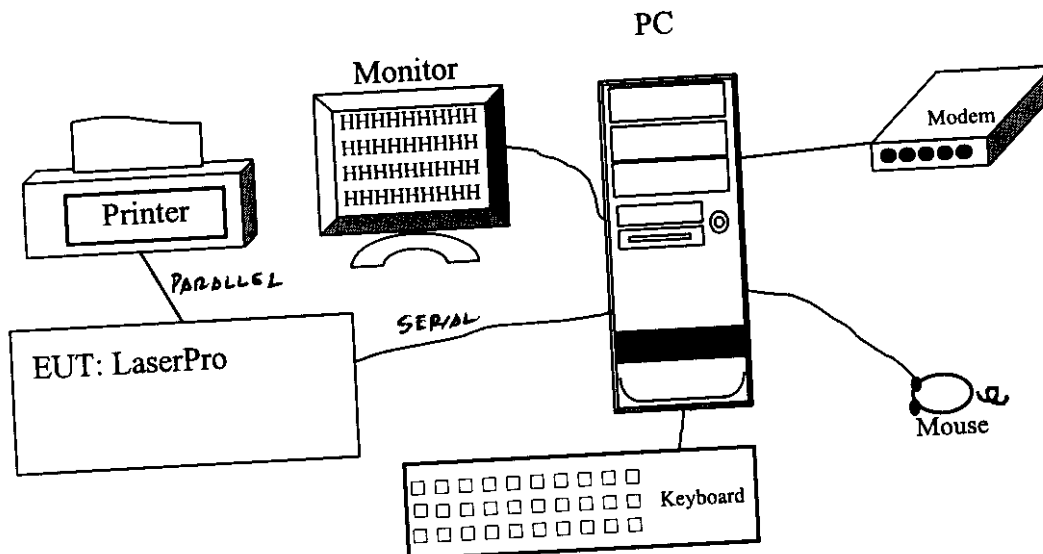
Radiated test was performed on : ☒ Site #1 ☐ Site #2

Instrument	Manufacturer	Type /Serial No.	Last Calibration	Site #1	Site #2
Test Receiver	Rohde & Schwarz	ESVS 30/829007/014	Nov. 15,1997	✓	
Spectrum Analyzer	Anristu	MA2601B/MT16442	Jun. 15,1998	✓	
Pre-Amplifier	HP	7447F/3113A04998	Nov. 16,1997	✓	
Test Receiver	Rohde & Schwarz	ESVS 10/8421122/001	Dec. 26,1997		✓
Spectrum Analyzer	HP	8568B/4315B05847	Jan. 05,1998		✓
Pre Amplifier	HP	8447D/3113A04487	Jan. 05,1998		✓
Antenna 30Mhz-2Ghz	Chase	CBL 6112/2039	May. 16,1998	✓	
Bilog Antenna	Chase	CBL6111/1380	May. 16,1998		✓
Dipole Antenna	Schwarzbeck	VHAP/719,UHAP/736	May.19,1998		

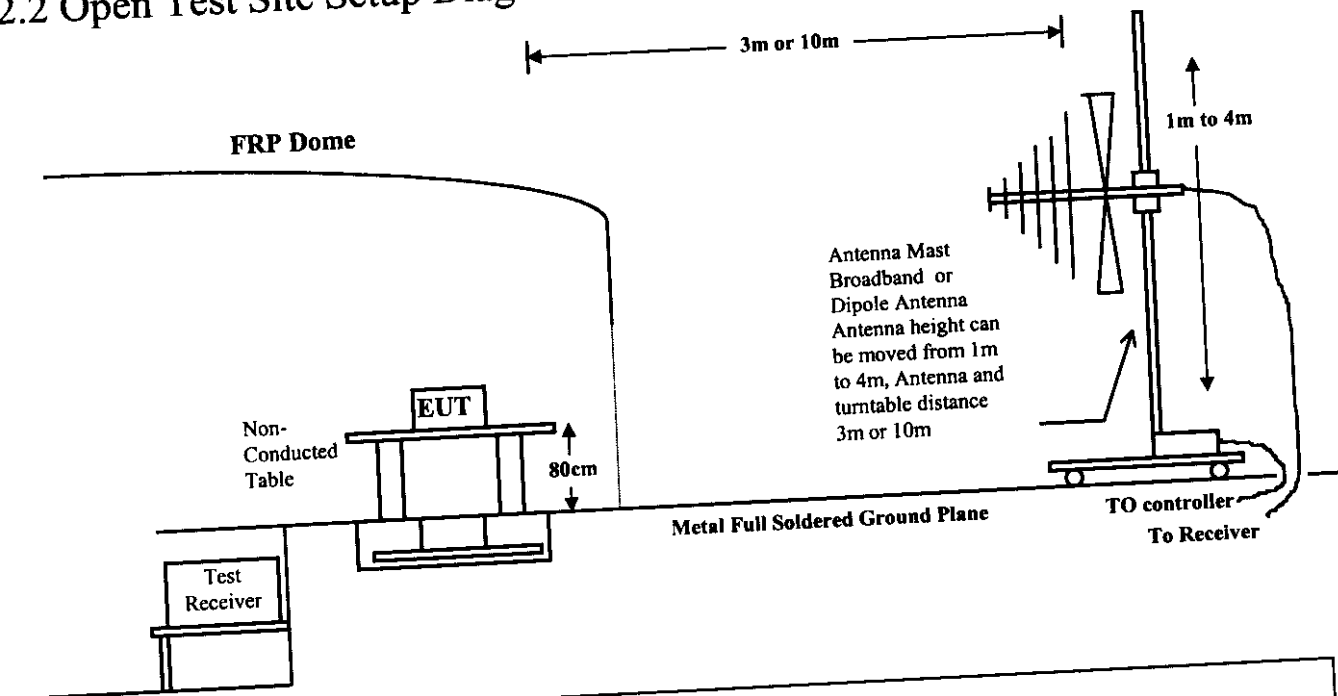
Note: All equipment upon which need to calibrated are with calibration period of 1 year.

4.2 Test Setup

4.2.1 Block Diagram of Connections between EUT and simulators



4.2.2 Open Test Site Setup Diagram



Note: This is a representative setup diagram for Table-top EUT.
For Floor-standing EUT, the table will be removed with all others setup condition remain the same.

4.3 Radiated Emission Limit

4.3.1 FCC Class B Limits at 3m

Frequency MHz	Distance Meter	Field Strength		Field Strength for Open Case	
		$\mu\text{V/M}$	$\text{dB}\mu\text{V/M}$	$\mu\text{V/M}$	$\text{dB}\mu\text{V/M}$
30 - 88	3	100	40.0	200	46.0
88 - 216	3	150	43.5	300	49.5
216 - 960	3	200	46.0	400	52.0
960 - 2000	3	500	54.0	1000	60.0

4.3.2 CISPR Class B Limits at 10m

Frequency MHz	Distance Meter	Field Strength
		$\text{dB}(\mu\text{V/M})$
30 - 230	10	30
230 - 1000	10	37

- Remark :
1. The tighter limit shall apply at the edge between two frequency bands.
 2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

4.4 EUT Configuration

The equipments which is listed 4.2.1 are installed on Radiated Emission Test to meet the Commission requirement and operating in a manner which tends to maximize its emission characteristics in a normal application.

The device under test, installed in a representative system as described in section 4.2.2, was placed on a non-conductive table whose total height equaled 80 CM. This table can be rotated 360 degree. The measurement antenna was mounted to a non-conductive mast capable of moving the antenna vertically. Antenna height was varied from 1 meter to 4 meters and the system under test was rotated from 0 degree through 360 degrees relative to the antenna position and polarization (Horizontal and Vertical). Also the I/O cable position was investigated to find the maximum emission condition.

4.5 Operating Condition of EUT

Same as Conducted Emission which is listed in 3.5.

4.6 Radiated Emission Data

The measurement range of radiated emission which is from 30 MHz to 1 GHz was investigated. All readings are quasi-peak, average, and peak values with a resolution Bandwidth of 120 KHz. The initial step in collecting radiated emission data is a spectrum analyzer peak scan of the measurement range for all the test modes. Then the worst modes were reported the following data pages.

The total uncertainty for this test is as follows:

- Uncertainty in the field strength measured (3m antenna distance): $< \pm 4$ dB
- Uncertainty in the field strength measured (10m antenna distance): $< \pm 4$ dB

The uncertainty is calculated in accordance with NAMAS document NIS 81, and is given as 2 standard deviations.

Radiated Emission Data

Date of Test : 09-02,1998 Wed

Temperature :27 deg/C

EUT :LaserPro

Humidity :65 %RH

Working Cond.:Mode 1

Display Pattern:H Pattern

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Reading Level Horizontal (dBuV/m)	Emission Level Horizontal (dBuV/m)	Limit (uV/m)	Limit (uV/m)
56.163	1.12	6.70	12.02	19.84	9.82	100
*71.482	1.24	6.52	21.45	29.21	28.86	100
136.116	1.75	11.40	4.12	17.26	7.30	150
180.000	2.00	9.50	9.61	21.11	11.37	150
269.992	2.66	12.78	11.09	26.53	21.20	200
422.274	3.69	16.97	12.62	33.29	46.17	200

- Remarks:
1. All Readings are Quasi-Peak and average values.
 2. " * ", means this data is worse case emission level.
 3. Emission Level = Reading Level + Antenna Factor + Cable loss
 4. Deviations from the specifications: None.

Radiated Emission Data

Date of Test :09-02,1998 Wed

Temperature :27 deg/C

EUT :LaserPro

Humidity :65 %RH

Working Cond.:Mode 1

Display Pattern:H Pattern

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Reading Level Vertical (dBuV/m)	Emission Level Vertical (dBuV/m)	(uV/m)	Limit (uV/m)
48.494	1.08	9.85	17.94	28.87	27.76	100
*71.485	1.24	6.52	26.30	34.06	50.44	100
125.288	1.57	12.22	10.26	24.06	15.95	150
150.342	1.96	10.76	9.01	21.73	12.20	150
180.000	2.00	9.50	11.25	22.75	13.73	150
270.000	2.66	12.78	11.69	27.13	22.72	200
425.984	3.71	17.00	9.94	30.65	34.09	200

- Remarks: 1. All Readings are Quasi-Peak and average values.
 2. " * ", means this data is worse case emission level.
 3. Emission Level = Reading Level + Antenna Factor + Cable loss
 4. Deviations from the specifications: None.

Radiated Emission Data

Date of Test :10-12,1998 Mon

Temperature :27 deg/C

EUT :LaserPro

Humidity :65 %RH

Working Cond.:Mode 2

Display Pattern:H Pattern

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Reading Level Horizontal (dBuV/m)	Emission Level Horizontal (dBuV/m)	Limit (uV/m)	Limit (uV/m)
30.257	0.90	20.10	2.50	23.50	14.96	100
56.295	1.52	6.70	8.59	16.81	6.93	100
123.185	2.13	12.36	2.57	17.06	7.13	150
250.042	3.10	12.46	8.36	23.92	15.70	200
286.954	3.39	13.00	4.65	21.04	11.27	200
*450.000	4.70	17.20	9.57	31.47	37.45	200

- Remarks:
1. All Readings are Peak & average values.
 2. " * ", means this data is worse case emission level.
 3. Emission Level = Reading Level + Antenna Factor + Cable loss.
 4. Deviations from the specifications: None.

Radiated Emission Data

Date of Test :10-12,1998 Mon

Temperature :27 deg/C

EUT :LaserPro

Humidity :65 %RH

Working Cond.:Mode 2

Display Pattern:H Pattern

Frequency	Cable	Antenna	Reading Level	Emission Level	Limit
	Loss	Factor	Vertical	Vertical	
[MHz]	[dB]	[dB/m]	[dB(uV)]	[dB(uV/m)]	(uV/m) (uV/m)
*33.435	1.09	18.72	14.05	33.86	49.33 100
33.435	1.09	18.72	13.47	33.28	46.14 100
60.256	1.60	6.10	8.35	16.05	6.35 100
69.560	1.60	6.30	13.83	21.73	12.20 100
79.365	1.79	7.40	22.83	32.02	39.92 100
123.325	2.13	12.36	10.13	24.62	17.02 150
163.638	2.43	10.31	10.56	23.30	14.62 150
249.875	3.10	12.46	8.93	24.49	16.77 200
640.924	5.68	19.41	2.44	27.54	23.81 200

- Remarks:
1. All Readings are Peak & average values.
 2. " * ", means this data is worse case emission level.
 3. Emission Level = Reading Level + Antenna Factor + Cable loss-
 4. Deviations from the specifications: None.

Radiated Emission Data

Date of Test :10-12,1998 Mon

Temperature :27 deg/C

EUT :LaserPro

Humidity :65 %RH

Working Cond.:Mode 3

Display Pattern:H Pattern

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Reading Level Horizontal (dBuV/m)	Emission Level Horizontal (dBuV/m)	Limit (uV/m)
*30.924	0.90	20.10	4.37	25.37	18.56
35.190	0.82	17.34	2.67	20.83	11.01
56.280	1.12	6.70	7.98	15.80	6.17
79.624	1.39	7.40	11.66	20.45	10.54
116.352	1.49	12.22	2.46	16.17	6.44
123.300	1.54	12.36	2.33	16.24	6.48
211.530	2.27	10.59	2.96	15.82	6.18

- Remarks:
1. All Readings are Quasi-Peak and average values.
 2. " * ", means this data is worse case emission level.
 3. Emission Level = Reading Level + Antenna Factor + Cable loss
 4. Deviations from the specifications: None.

Radiated Emission Data

Date of Test :10-12,1998 Mon

Temperature :27 deg/C

EUT :LaserPor

Humidity :65 %RH

Working Cond.:Mode 3

Display Pattern:H Pattern

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Reading Level Vertical (dBuV/m)	Emission Level Vertical (dBuV/m)	(uV/m)	Limit (uV/m)
33.380	0.86	18.72	4.05	23.63	15.19	100
*81.120	1.40	7.70	22.66	31.76	38.71	100
116.084	1.48	12.10	8.85	22.42	13.22	150
122.550	1.54	12.36	4.59	18.50	8.41	150
186.254	2.06	9.65	6.64	18.35	8.27	150
215.130	2.29	10.79	3.76	16.84	6.95	150
321.459	3.03	13.68	5.10	21.81	12.32	200

- Remarks:
1. All Readings are Quasi-Peak and average values.
 2. " * ", means this data is worse case emission level.
 3. Emission Level = Reading Level + Antenna Factor + Cable loss
 4. Deviations from the specifications: None.

5. EMI Reduction Method During Compliance Testing

1. Added EMI filter to input of AC power. The EMI filter specification were listed as follows.
 - ◆ Filter Model No. : 10CA1
 - ◆ Manufacturer : TAISHING
 - ◆ VDE FILE No. : 12251-4730-1002
2. Added a core to flat cable. The core specification were listed as follows.
 - ◆ Core Model Number: BFS 33.5*12*6.5
 - ◆ Manufacturer : CHILISIN