Test Report
Application for Certification
On Behalf Of
Delta Electronics, Inc.

Monitor

Model : DE-570XX
(XX=A~Z)

FCC ID : H79DE-570

Prepared For:
Delta Electronics, Inc.
9F, No. 144, Min Chuan E. Rd., Sec. 3,
Taipei, Taiwan, R. O. C.

Report By :Global EMC Standard Tech. Corp.
No.3 Pau-Tou-Tsuo Valley, Chia-Pau
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TABLE OF CONTENTS

GESTEK 13-F010

1. Test Report Certification

Applicant : Delta Electronics, Inc.

Manufacturer : Delta Electronics, Inc.

EUT Description : Monitor

(A) FCC ID : N/A

(B) Model No. : DE-570XX (XX=A~Z)

(C) Serial No. : ProtoType

(D) Power Supply : AC 100-240V~47-63HZ 2A

(E) Test 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 : Mar. 18, 1998

Final Test Date : Mar. 30 , 1998

Documented by : Christine Fun

Test Engineer : MASON DIA

Approve & Authorized Signer : TERRY CHUNG

This test data shown below is traceable to NIST.

2. General Information

2.1 Production Description

Description	: Monitor
Model Number	: DE-570XX (XX=A~Z)
Serial Number	: Prototype
Applicant	: Delta Electronics, Inc.
Address	: 9F, No. 144, Min Chuan E. Rd., Sec. 3, Taipei, Taiwan, R. O. C.
Manufacturer	: Delta Electronics, Inc
Address	: 9F, No. 144, Min Chuan E. Rd., Sec. 3, Taipei, Taiwan, R. O. C.
FCC ID.	: H79DE-570
CRT	: PHILIPS, M36EDR323X131 / 2F01 Serial No.51623501
CRT BOARD	: DELTA, EBA1-0, DE-570U-1
MAIN BOARD	: DELTA, DE-570U, EBA1-0-0P
POWER CORD	: Shielded , Detachable, 1.8m

Test Mode : Mode 1. : Resolution: 1024 x 768, H-sync: 68.8K, V-sync: 85Hz

Mode 2. : Resolution:640 x 480, H-sync: 31.5K, V-sync: 60Hz

Note: The data show in this test report reflects the worst-case data for each operation mode.

2.2 Tested System Details

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

☒ Host Personal Computer

System Model Number	: Vectra VL Series 4 5 /100
Serial Number	: SG65100126
System FCC ID	: B94VECTRA500T
Manufacturer	: HP
Floppy Disk Driver	: Manufacturer: SONY
3.5" #1	Model: MPF920-f, Serial No.: 10046245
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
Switching Power Supply	: Manufacturer: ASTEC
	Model: VL202-3515
	Serial No.:2999313120
Power Cord	: Non-Shielded, Detachable, 1.5m

☒ Monitor (EUT)

Model Number	: DE-570BA
Serial Number	: Prototype
FCC ID	: N/A
Manufacturer	: DELTA Electronic Inc.
Data Cable	: Shielded, Undetachable, 1.5m WITH ONE BONDED FERRITE CORE
Power Cord	: Shielded, Detachable, 1.8m

☒ Keyboard

Model Number	: E03633WLTW-C
Serial Number	: N/A
FCC ID	: CIGE03633
Manufacturer	: HP
Data Cable	: Sheiled, Undetachable, 1.2 m

☒ Mouse

Model Number	: M-CQ38
Serial Number	: LZA63420497
FCC ID	: DZLM04
Manufacturer	: LOGITECH
Data Cable	: Shielded, Undetachable, 1.5m

☒ Printer

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

Model Number	: 1414
Serial Number	: 960018052
FCC ID	: IFAXDM1414
Manufacturer	: ACEEX
Adaptor & Power Cord	: Non-Shielded, Detachable, 1.5m
Data Cable	: Shielded, Detachable, 1.2m

☒ Modem

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

2.3 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.

2.4 Test Facility

Site Description	:	Aug. 10, 1995 File on Federal Communication Commission FCC Engineering Laboratory 7435 Oakland Mills Road Columbia, MD 21046 Reference 31040/SIT1300F2
Name of firm	:	Global EMC Standard Tech. Corp.
Site location	:	No. 3 Pau-Tou Valley, Chia-Pau Tsuen, Lin Kou Tsiang, Taipei Country, Taiwan, R.O.C.

3. Conducted Power Line Test

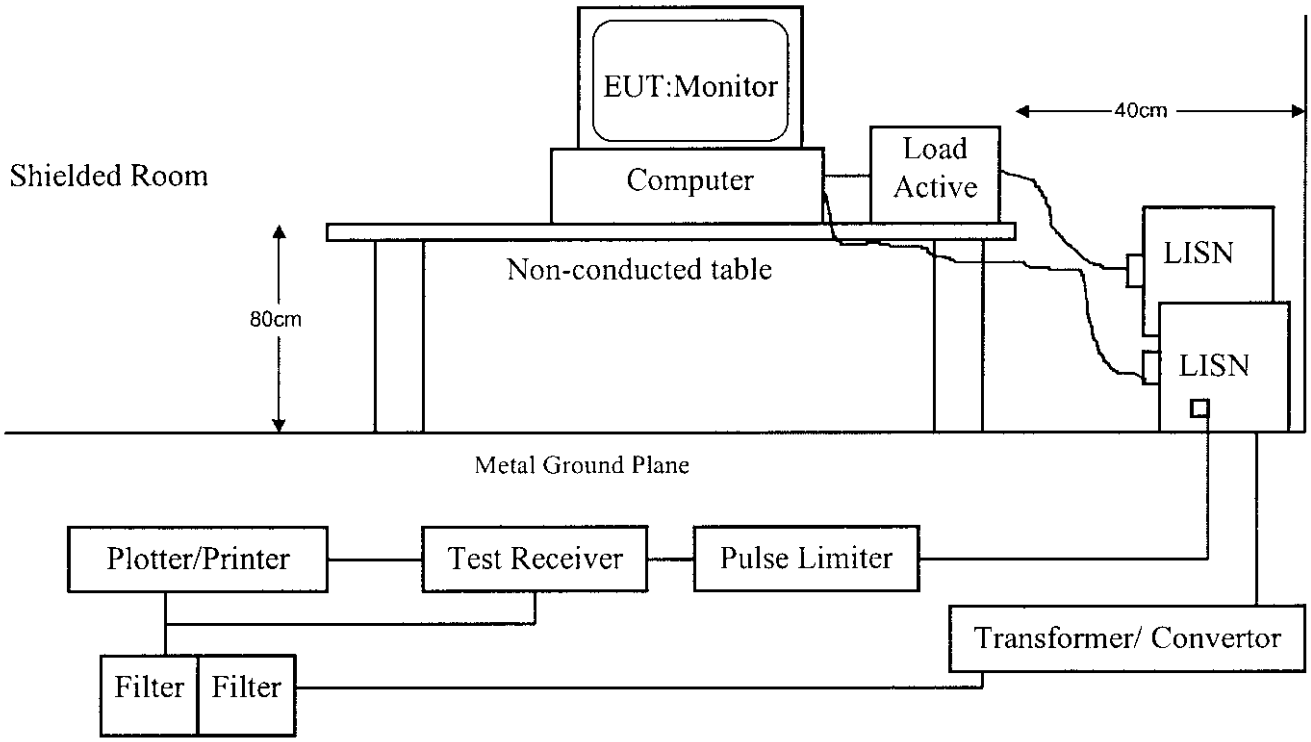
3.1 Test Equipments

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	Sep.1997	Shield Room #1	V
L.I.S.N.	Kyoritsu	KNW-407	Jul.1997	Shield Room #1	
L.I.S.N.	Solar	8012-50-R24 / 90038	N/A(Peripheral use)	Shield Room #1	V
L.I.S.N.	EMCO	3825/2 / 91111-1902	Jul.1997	Shield Room #1	
L.I.S.N.	Rohde & Schwarz	ESH3-Z5 / 840567/002	Jan.1998	Shield Room #1	V
L.I.S.N.	Schwarzbeck	NNLK 8121	Apr. 1998	Shield Room #1	
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	N/A	Shield Room #1	V

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

3.2 Block Diagram of Test Setup



3.3 Conducted Powerline Emission Limit

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.

3.4 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.

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 and setup to appropriated resolution .

3.5.4 PC sent "H" Pattern to Monitor.

3.5.5 PC sent "H" Pattern to Printer Port.

3.5.6 PC sent "H" Pattern to Modem Port.

3.5.7 Repeat the above procedure 3.5.4 to 3.5.6

3.6 Conducted Emission Data

The measurement range of conducted emission which is from **0.45 MHz to 30 MHz** was investigated. 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.

CONDUCTED EMISSION DATA

Date of Test :	Feb. 18, 1998	Temperature :	25.2 ℃
EUT :	Monitor	Humidity :	65 %
Test Mode :	Mode 1	Display Pattern :	H Pattern

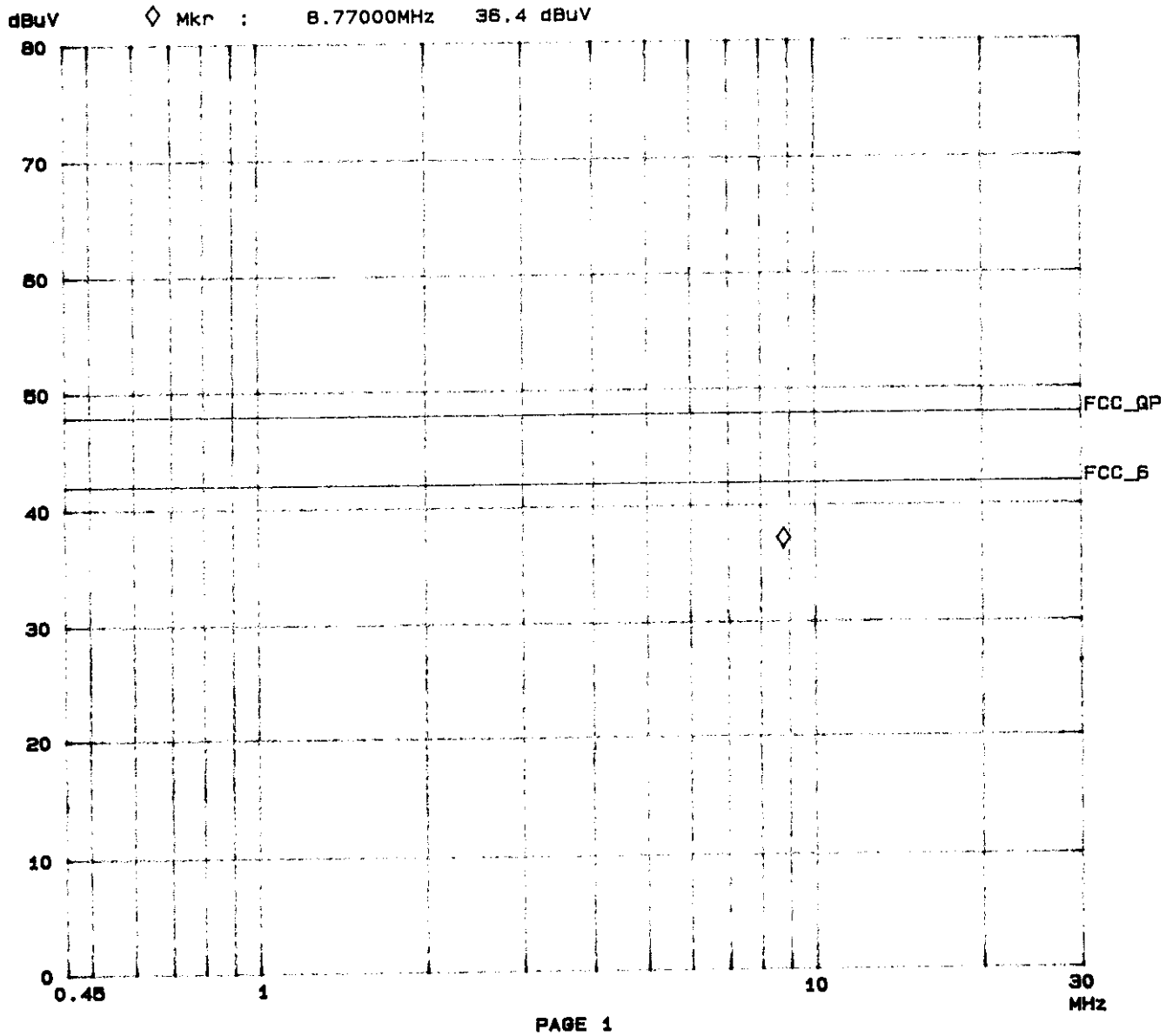
FREQUENCY	READING LEVEL				LIMITES
	LINE 1		LINE 2		
MHz	dBuV	uV	dBuV	uV	uV
0.47942	35.0	56.23	37.1	71.61	250
0.61692	35.3	58.21	34.2	51.29	250
0.96097	35.4	58.88	32.7	43.15	250
6.73061	36.0	63.10	32.0	39.81	250
9.20312	37.3	73.28	33.6	47.86	250
**10.44201	37.7	76.74	34.8	54.95	250

Remarks : 1. All readings are Quasi-peak and average values.
2. " * " means that the quasi-peak reading level is lower then the average limits, it is not necessary to measure the average level.
3. " ** " means that this data is the worse case emission level.

Attached 2 individual pages of peak scan curve data sheets.

ROHDE & SCHWARZ ESHS 30
GesTek, PowerLine Conducted Emission

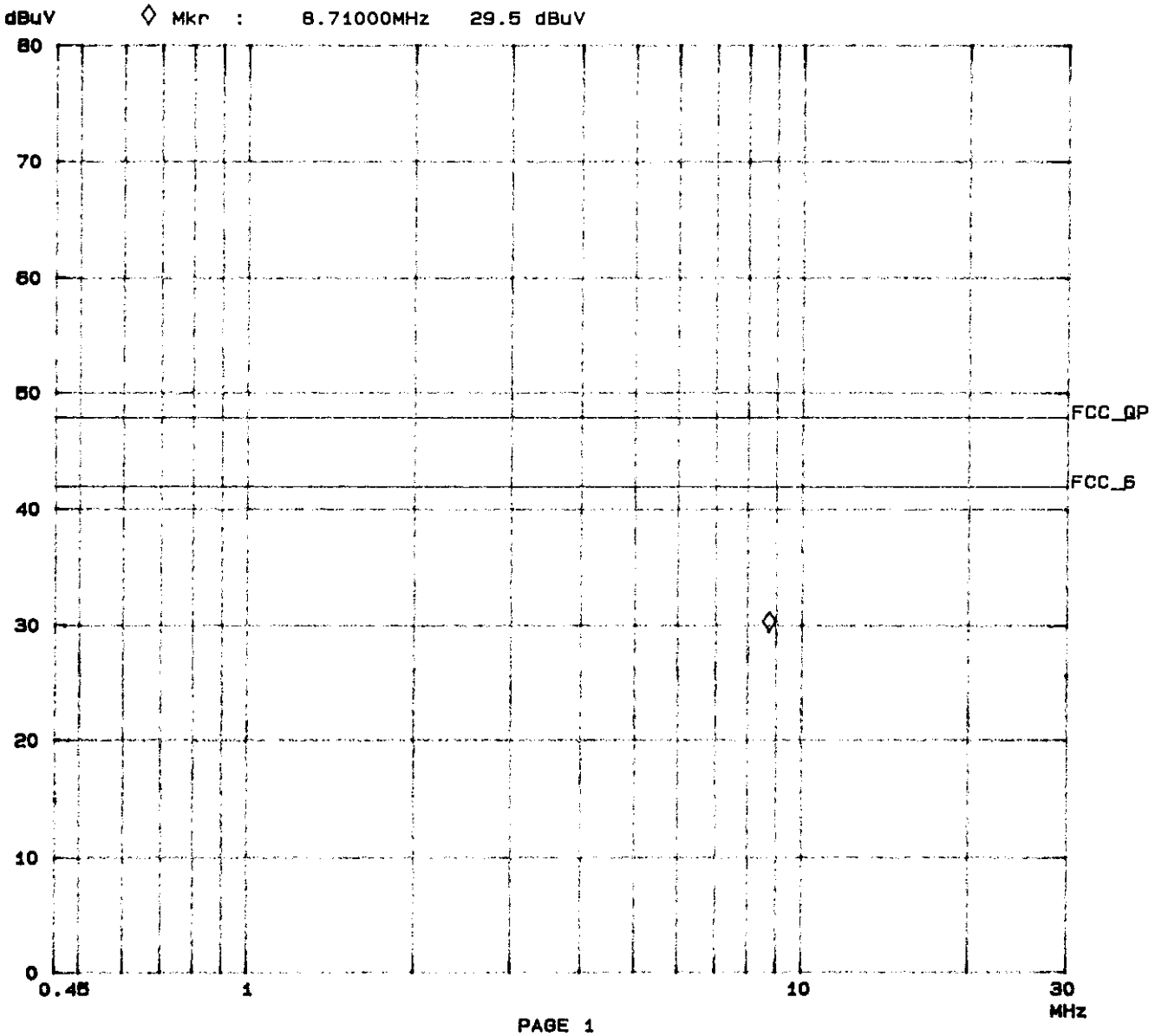
EUT:	MONITOR
Manuf:	DELTA
Op Cond:	640*480 60HZ 31.5K
Operator:	MASON
Test Spec:	FCC CLASS B
Comment:	Line 1
	M/N: DE-570 BA



ROHDE & SCHWARZ ESHS 30

GesTek, PowerLine Conducted Emission

EUT:	MONITOR
Manuf:	DELTA
Op Cond:	640*480 60HZ 31.5K
Operator:	MASON
Test Spec:	FCC CLASS B
Comment:	Line 2
	M/N: DE-570 BA



CONDUCTED EMISSION DATA

Date of Test :	Feb. 18, 1998	Temperature :	24.1 ℃
EUT :	Monitor	Humidity :	51 %
Test Mode :	Mode 2	Display Pattern :	H Pattern

FREQUENCY	READING LEVEL				LIMITES
	LINE 1		LINE 2		
MHz	dBuV	uV	dBuV	uV	uV
0.50077	26.1	20.18	28.2	25.70	250
1.31630	24.3	16.41	25.2	18.20	250
2.72587	24.2	16.22	25.8	19.50	250
8.36626	29.1	28.51	30.7	34.28	250
**20.11745	37.5	74.99	38.1	80.35	250
28.16267	34.6	53.70	35.2	57.54	250

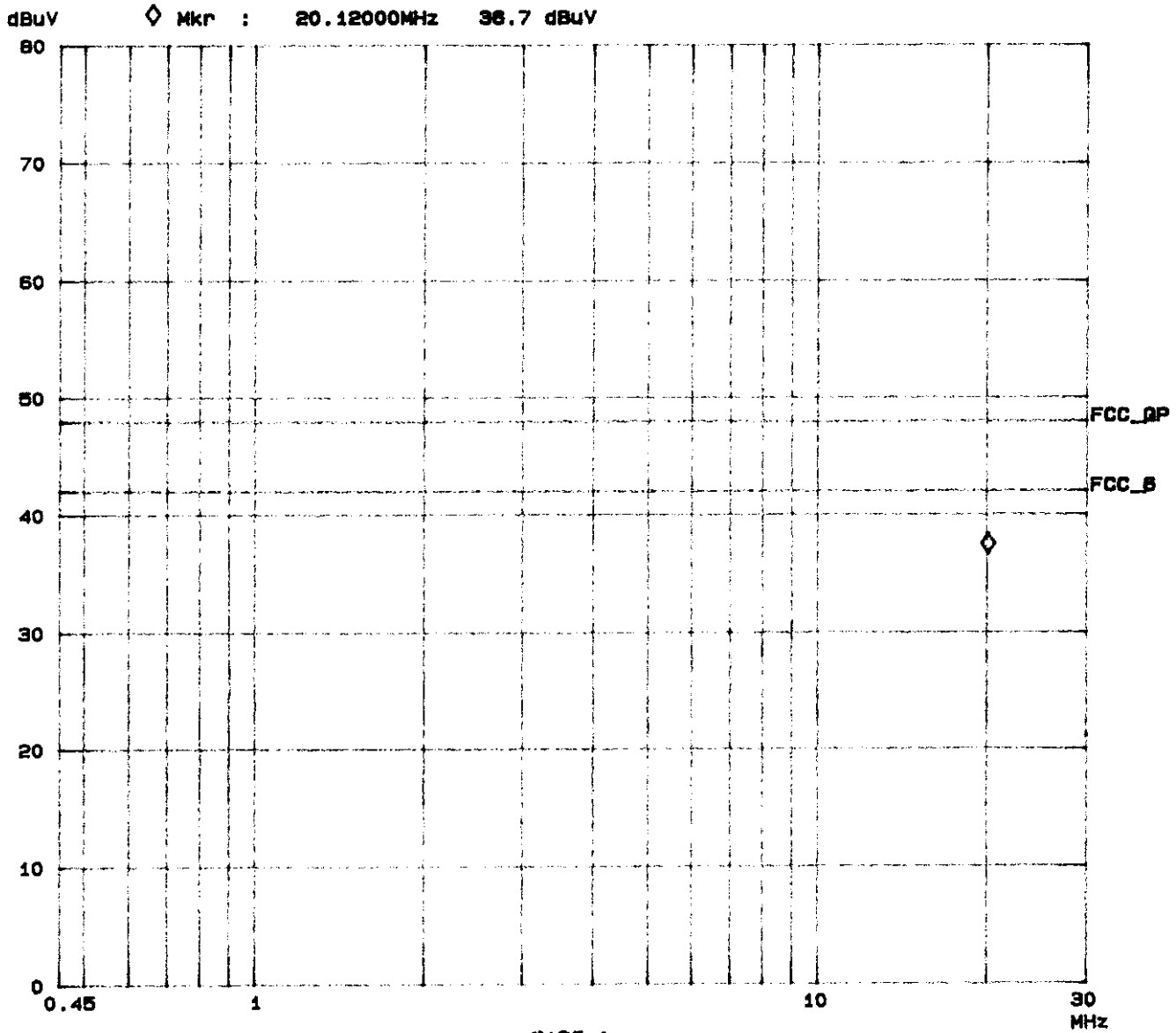
Remarks : 1. All readings are Quasi-peak and average values.
2. " * " means that the quasi-peak reading level is lower then the average limits, it is not necessary to measure the average level.
3. " ** " means that this data is the worse case emission level.

Attached 2 individual pages of peak scan curve data sheets.

ROHDE & SCHWARZ ESHS 30

GesTek, PowerLine Conducted Emission

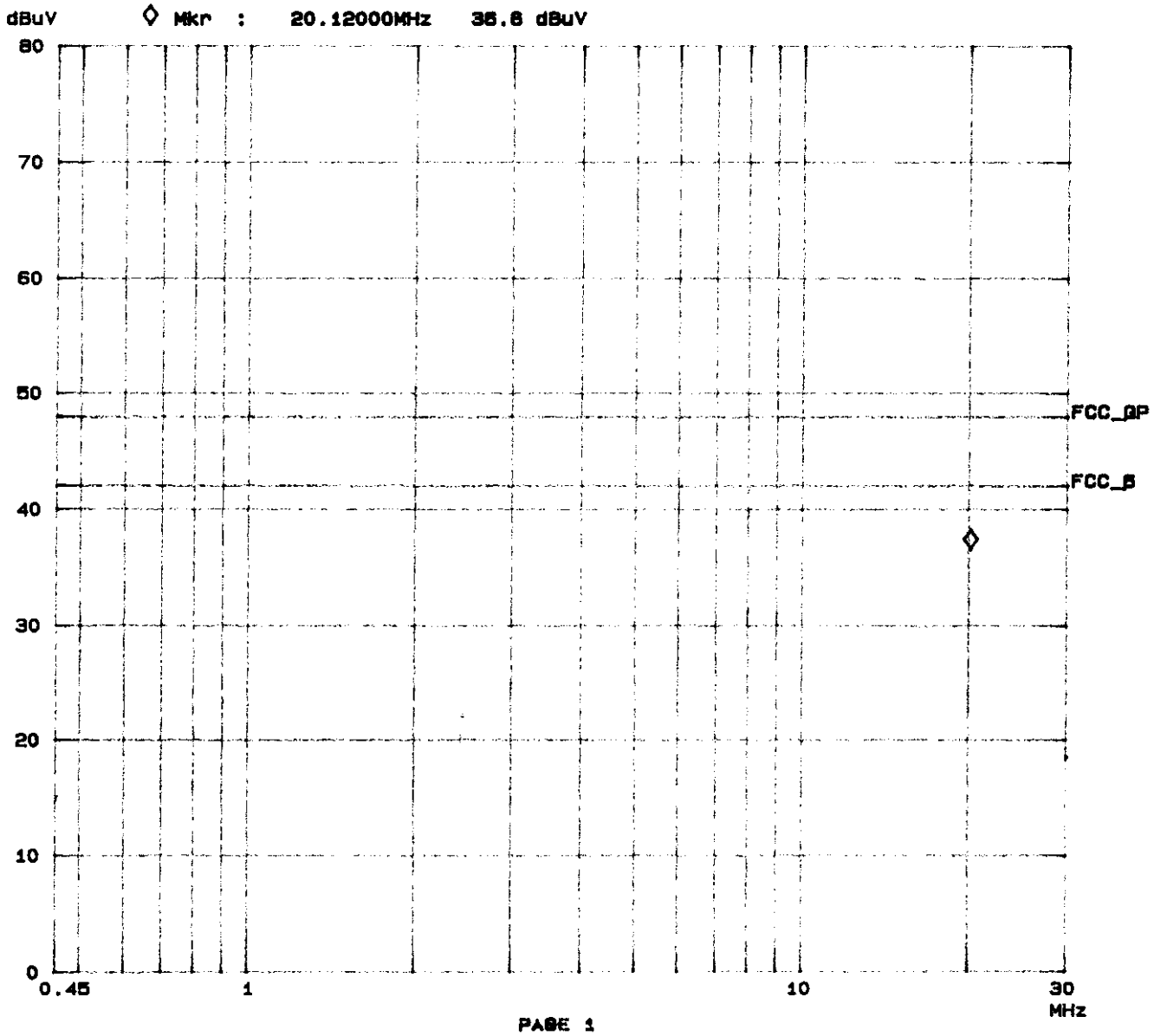
EUT: MONITOR
Manuf: DELTA
Operator: JANICE
Test Spec: FCC B
Comment: Line 1
M/N: DE-870XX



ROHDE & SCHWARZ ESHS 30

GesTek, PowerLine Conducted Emission

EUT: MONITOR
Manuf: DELTA
Operator: JANICE
Test Spec: FCC B
Comment: Line 2
M/N: DE-870XX



4. Radiation Emission Test

Gestek's FCID

4.1 Test Equipment

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

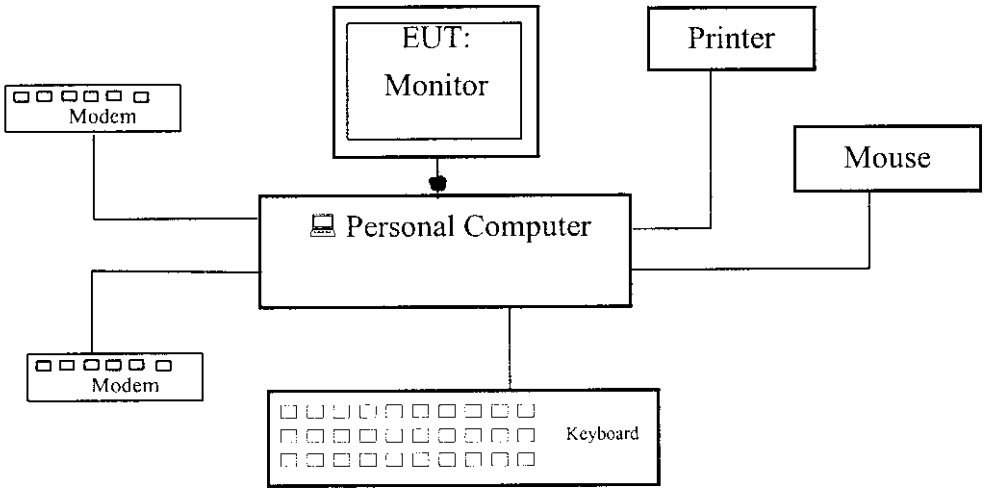
Radiated test was performed on : ☐Site #1 ☒Site #2

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

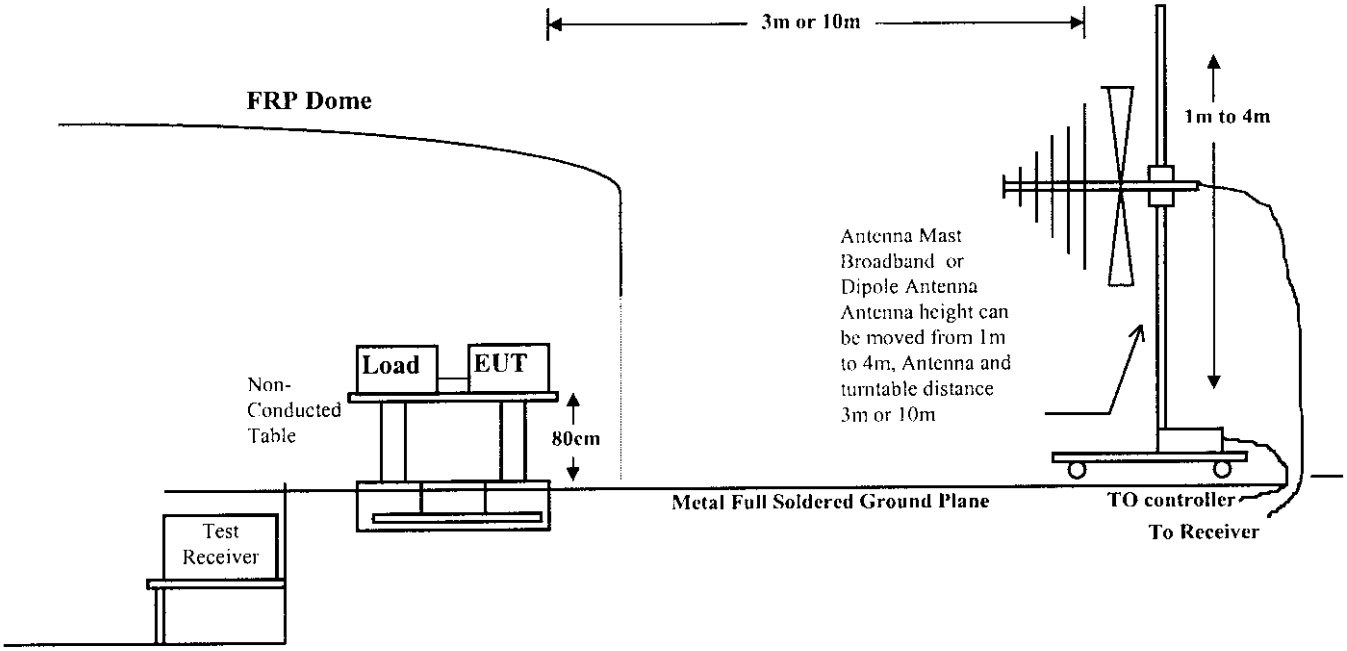
Note: All equipment upon which need to calibrated are with calibration period of 1 year.

4.2 Test Setup

4.2.1 Block Diagram of Connections between EUT and simulators



4.2.2 Open Test Site Setup Diagram



4.3Radiated Emission Limit

4.3.1FCC Class B Limits at 3m

Frequency	Distance	Field Strength	
MHz	Meter	uV/M	dBuV/M
30 - 88	3	100	40.0
88 - 216	3	150	43.5
216 -960	3	200	46.0
960 - 2000	3	500	54.0

4.3.2CISPR Class B Limits at 10m

Frequency	Distance	Field Strength
MHz	Meter	dB(uV/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

he 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.

4.5 Operating Condition of EUT

Same as Conducted Power Line Test 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 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 :03-30,1998
EUT :MONITOR
Test Mode :Mode 1
Temperature :25.2 deg/C
Humidity :65 %RH
Display Pattern:H Pattern

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Reading Level Horizontal (dBuV/m)	Emission Level Horizontal (dBuV/m)	Emission Level Horizontal (uV/m)	Limits (uV/m)
54.600	1.44	6.81	21.31	29.56	30.07	100
67.240	1.76	5.52	21.14	28.41	26.35	100
* 86.590	2.21	7.58	22.82	32.60	42.67	100
198.951	2.94	8.89	24.21	36.04	63.38	150
232.114	3.09	10.76	16.29	30.13	32.11	200
243.429	3.14	11.43	18.00	32.57	42.51	200
265.270	3.24	12.09	21.58	36.91	70.03	200
283.668	3.32	12.46	14.27	30.05	31.82	200
298.428	3.39	12.75	21.74	37.88	78.31	200
364.747	3.61	14.77	19.76	38.15	80.78	200

Remarks: 1. All Readings below 1GHz are Quasi-Peak, above are average value.
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 :03-30,1998 Temperature :25.2 deg/C
EUT :MONITOR Humidity :65 %RH
Test Mode :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)	Limits (uV/m)
* 57.276	1.53	5.93	25.28	32.74	43.38	100
66.217	1.71	5.48	19.67	26.86	22.03	100
113.428	2.55	10.53	17.04	30.12	32.06	150
122.889	2.60	11.07	13.63	27.29	23.15	150
171.824	2.82	9.30	13.12	25.24	18.28	150
198.954	2.94	8.89	21.14	32.97	44.51	150
265.268	3.24	12.09	16.42	31.75	38.66	200
298.427	3.39	12.75	18.36	34.50	53.07	200
336.296	3.52	13.97	10.89	28.38	26.23	200

Remarks: 1. All Readings below 1GHz are Quasi-Peak, above are average value.
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 :03-30,1998 Temperature :24.1 deg/C
EUT :MONITOR Humidity :51 %RH
Test Mode :Mode 2 Display Pattern:H Pattern

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Reading Level Horizontal (dBuV/m)	Emission Level Horizontal (dBuV/m)	Emission Level Horizontal (uV/m)	Limits (uV/m)
54.240	1.44	7.20	20.44	29.08	28.45	100
86.360	2.21	7.58	18.84	28.62	26.98	100
132.638	2.64	11.09	17.27	31.01	35.51	150
165.794	2.78	9.75	15.89	28.43	26.39	150
* 198.953	2.94	8.89	26.33	38.16	80.91	150
232.111	3.09	10.76	14.17	28.01	25.15	200
243.433	3.14	11.43	14.98	29.55	30.03	200
265.269	3.24	12.09	21.17	36.50	66.80	200
275.624	3.29	12.30	14.04	29.63	30.31	200
298.430	3.39	12.75	21.14	37.28	73.08	200
300.725	3.40	13.03	14.95	31.38	37.05	200
331.587	3.50	13.84	14.38	31.72	38.56	200
364.747	3.61	14.77	20.25	38.64	85.47	200

Remarks: 1. All Readings below 1GHz are Quasi-Peak, above are average value.
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 :03-30,1998
EUT :MONITOR
Test Mode :Mode 2

Temperature :24.1 deg/C
Humidity :51 %RH
Display Pattern:H Pattern

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Reading Level Vertical (dBuV/m)	Emission Level Vertical (dBuV/m)	(uV/m)	Limits (uV/m)
55.940	1.49	6.36	21.02	28.87	27.76	100
67.800	1.76	5.52	22.40	29.67	30.46	100
* 84.540	2.16	7.33	25.03	34.52	53.20	100
132.637	2.64	11.09	20.93	34.67	54.11	150
198.955	2.94	8.89	23.87	35.70	60.95	150
265.265	3.24	12.09	13.88	29.21	28.86	200
298.430	3.39	12.75	17.49	33.63	48.01	200

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