

Test Report
Application for Certification
Class II Permissive Change
On Behalf Of
Ya Hsin Industrial Co., Ltd.

Switching Power Supply
Model No.: YS-6XXXYZ

XXX=250, 230, 200, 170, 145

Y=A, B, C, Z=P or blank (detail as following)

YS-6250A, YS-6250C, YS-6250D, X25, YS-6230A, YS-6230C,
YS-6230D, YS-6200A, YS-6200C, YS-6200D, X20, YS-6170A,
YS-6145A, YS-6145C, YS-6145D

FCC ID: KN8YS-6XXXYZ

Prepared for:
Ya Hsin Industrial Co., Ltd.
No. 346, Sec. 2, Wan Shou Rd., Kwei Shan Hsiang
Taoyuan Hsiwn, 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.
This report must not be use to claim product endorsement by NVLAP or any agency of the U.S. Government.

TABLE OF CONTENTS

	Description	Page
1.	Test Report Certification	3
2.	General Information	4
2.1	Production Description	4
2.2	Tested System Details	6
2.3	Test Methodology	8
2.4	Test Facility	8
3.	Conducted Power Line Test	9
3.1	Test Equipments	9
3.2	Block Diagram of Test Setup	9
3.3	Conducted Powerline Emission Limit	10
3.4	EUT Configuration on Measurement	10
3.5	EUT Exercise Software	11
3.6	Conducted Emission Data	11
4.	Radiation Emission Test	17
4.1	Test Equipment	17
4.2	Test Setup	17
4.3	Radiated Emission Limit	18
4.4	EUT Configuration	19
4.5	Operating Condition of EUT	19
4.6	Radiated Emission Data	19
5.	Photographs	30
5.1	Test Photographs	30
6.	EMI Reduction Method During Compliance Testing	58
	Appendix A	59
	Circuit (Block) Diagram	59
	Appendix B	60
	FCC ID	60
	Appendix C	62
	User Manual	62

G7448.5016

1. Test Report Certification

Applicant : Ya Hsin Industrial Co., Ltd.

Manufacturer : Ya Hsin Industrial Co., Ltd.

EUT Description : Switching Power Supply

(A) FCC ID : KN8YS-6XXXYZ

(B) Model No. : YS-6250A, YS-6250C, YS-6250D, X25, YS-6230A, YS-6230C,
YS-6230D, YS-6200A, YS-6200C, YS-6200D, X20, YS-6170A,
YS-6145A, YS-6145C, YS-6145D

(C) Serial No. : ProtoType

(D) Power : 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 ABOVE
LIMITS APPLICABLE.

The logo for NVLAP (National Voluntary Laboratory Accreditation Program) is displayed. It features the letters "NVLAP" in a bold, sans-serif font, with a registered trademark symbol (®) to the upper right of the "P". Below the letters is a stylized graphic element resembling a checkmark or a signature.

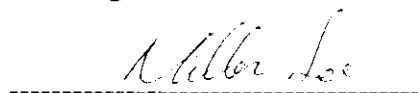
Sample Received Date : June 02, 1998

Final Test Date : June 18, 1998

Documented by : May Tseng

Test Engineer :

Approve & Authorized Signer :

A handwritten signature in cursive script, appearing to read "Miller Lee", is written over a horizontal dashed line.

MILLER LEE

A handwritten signature in cursive script, appearing to read "Terry Chung", is written over a horizontal dashed line.

TERRY CHUNG

General Info

2. General Information

2.1 Production Description

Description : Switching Power Supply

Model Number : YS-6250A, YS-6250C, YS-6250D, X25, YS-6230A, YS-6230C, YS-6230D, YS-6200A, YS-6200C, YS-6200D, X20, YS-6170A, YS-6145A, YS-6145C, YS-6145D

Serial Number : ProtoType

Applicant : Ya Hsin Industrial Co., Ltd.

Address : No. 346, Sec. 2, Wan Shou Rd., Kwei Shan Hsiang
Taoyuan Hsien, Taiwan, R.O.C.

Manufacturer : Ya Hsin Industrial Co., Ltd.

Address : Heng-Si Rd., Xin Cheng Center, Shi Jie Zhen,
Dong Guan City, Guang Dong Province, China

FCC ID : KN8YS-6XXXYZ

* This product apply for Class II permissive change is because it change the transformer type.

Added 170 WATTAGE RATING.

Output	Model No.	Input Rating	Output Rating
250W	YS-6250A YS-6250C YS-6250D X25	100-120/200-240Vac	+3.3Vdc/14A, +5V dc/25A, +12Vdc/25A, -5V dc/0.5A, -12Vdc/0.8A, +5Vsb/0.1A or 0.72A or 1.0A
230W	YS-6230A YS-6230C YS-6230D	100-120/200-240Vac	+3.3Vdc/14A, +5V dc/23A, +12Vdc/7.0A, -5V dc/0.5A, -12Vdc/0.8A, +5Vsb/0.1A or 0.72A or 1.0A
200W	YS-6200A YS-6200C YS-6200D X20	100-120/200- 240VAC	+3.3Vdc/14A, +5V dc/20A, +12Vdc/6.0A, -5V dc/0.5A, -12Vdc/0.8A, +5Vsb/0.1A or 0.72A or 1.0A
170W	YS-6170A	100-120/200-240Vac	+3.3Vdc/6A, +5V dc/17A, +12Vdc/4.0A, -5V dc/0.5A, -12Vdc/0.8A, +5Vsb/0.1A or 0.72A or 1.0A
145W	YS-6145A YS-6145C YS-6145D	100-120/200-240Vac	+3.3Vdc/8A, +5V dc/15A, +12Vdc/3.5A, -5V dc/0.5A, -12Vdc/0.8A, +5Vsb/0.1A or 0.72A or 1.0A

Test Mode:

Mode 1: YS-6250D

Mode 2: YS-6230D

Mode 3: YS-6200D

Mode 4: YS-6170A

Mode 5: YS-6145D

- Note: 1. The device under test is a series of switching power supply, which have different power rating and fan position, all with same circuit but different component rating. Every different model had been investigated to find the maximum emission situation. The data shown in this test report reflects the worst-case data for each operation mode list above.
2. Model YS-xxxy, y can be A, C, D, for different chassis type. A type is for 8cm fan located on side of unit, B type is for 9cm fan located on top of unit and D type is for 8cm fan located on side of unit and provided vents on the top.
3. Model X25 is the same as YS-6250y, model X20 is the same as YS-6200y. They have different product names because marketing requirement.

2.2 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:

☒ Host Personal Computer

PC Chassis : CHENBRO GROUP
Motherboard : ASUS, P2L97-B, (FCC Doc) ✓
CPU : Intel Pentium II 266MHz
Floppy Disk Driver : Teac, FD-235HF
3.5" #1 Serial No.: 8057067
HDD : Quantum, 2550AT, Serial No.: 294717115684Y
CD-ROM : Panasonic, CR-586-B
FCC ID: IUO9TB064CRB, Serial No.: 8213DBB99869
Disk Ctrl Card : On board
I/O Card : On board
VGA Card : Gainward, S3 Trio32/64
FCC ID: ICUVGA-GW407, Serial No.: GFE21960
Switching Power Supply : YS-6250A, YS-6250C, YS-6250D, X25, YS-6230A, YS-
(EUT) 6230C, YS-6230D, YS-6200A, YS-6200C, YS-6200D, X20,
YS-6170A, YS-6145A, YS-6145C, YS-6145D
Power Cord : Non-Shielded, Detachable, 1.5m

☒ Monitor M01-010

Model Number : SyncMaster 700p
Serial Number : H3MH903296Y
Manufacturer : SAMSUNG
FCC ID : A3LCGH760
檢磁No. : 3872A230
Data Cable : Shielded, Undetachable, 1.5m
Power Cord : Shielded, Detachable, 1.5m

☒ Keyboard K01-026

Model Number : 5140
Serial Number : A73281205
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

☒ Earphone E01-007 ~ 011

Model Number : PH-12B
Serial Number : N/A
Manufacturer : PRO2 International Corp.
Power Cord : N/A
Data Cable : Non-Shielded, Undetachable, 1.2 m

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 10 meters.

2.4 Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	24-27
Humidity (%RH)	25-75	45-65
Barometric pressure (mbar)	860-1060	950-1000

FCC Site Description : Aug. 10, 1995 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
Tsiang, Taipei Country, Taiwan, R.O.C.

3. Conducted Power Line Test

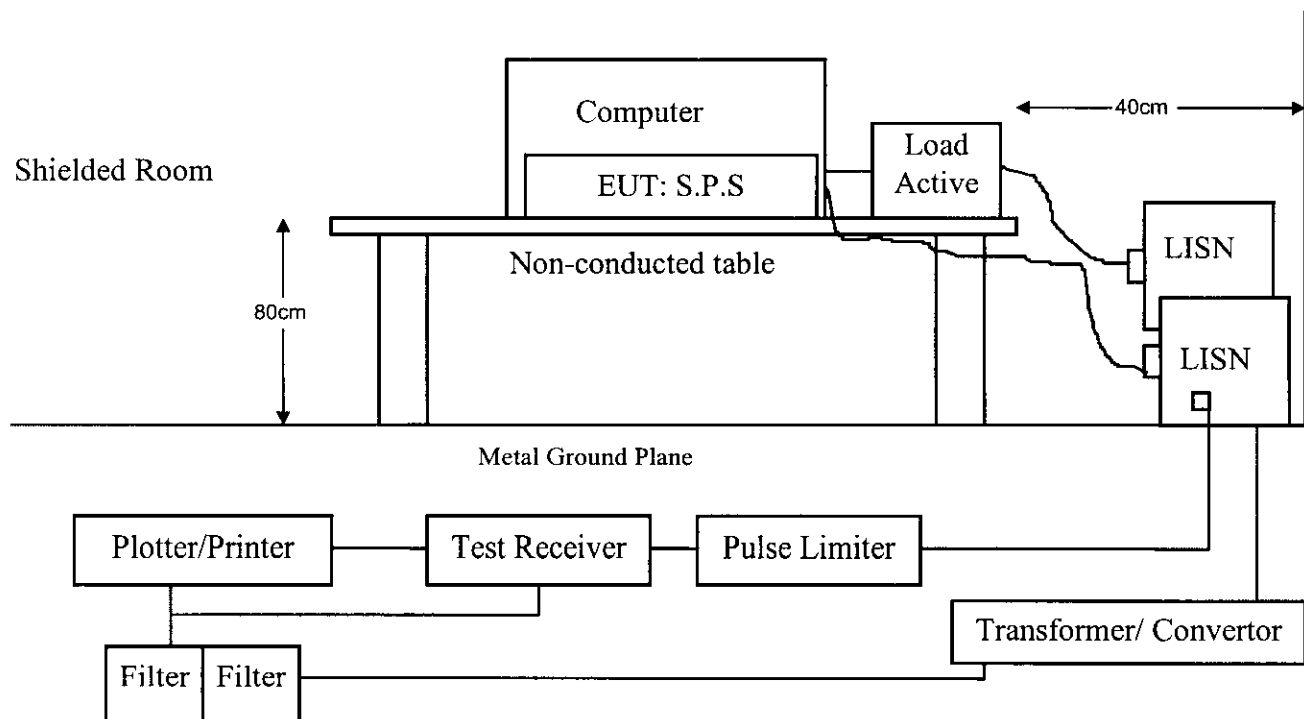
3.1 Test Equipments

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	Dec. 24, 1997	Shield Room #1	✓
L.I.S.N.	Kyoritsu	KNW-407	Jul.1997	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	Jul.1997	Shield Room #1	
L.I.S.N.	Rohde & Schwarz	ESH3-Z5 / 840567/002	Jun. 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



3.3 Conducted Powerline 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.

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 the VGA 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 **0.15 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: $< \pm 2.0 \text{ dB}$

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

CONDUCTED EMISSION DATA

Date of Test	:	Jun. 16, 1998	Temperature	:	25.1 °C
EUT	:	S.P.S.	Humidity	:	59 %
Test Mode	:	Mode 1	Display Pattern	:	H/P

FREQUENCY MHz	READING LEVEL dBuV				LIMITS	
	LINE1 QP	LINE1 AV	LINE2 QP	LINE2 AV	QP	AV
0.15065	36.3	*	39.0	*	66.0	56.0
0.30430	45.1	*	45.4	*	60.1	50.1
0.50714	43.6	43.3	43.7	43.4	56.0	46.0
1.52394	38.3	*	38.4	*	56.0	46.0
8.93624	30.3	*	31.1	*	60.0	50.0
15.99932	32.1	*	31.6	*	60.0	50.0

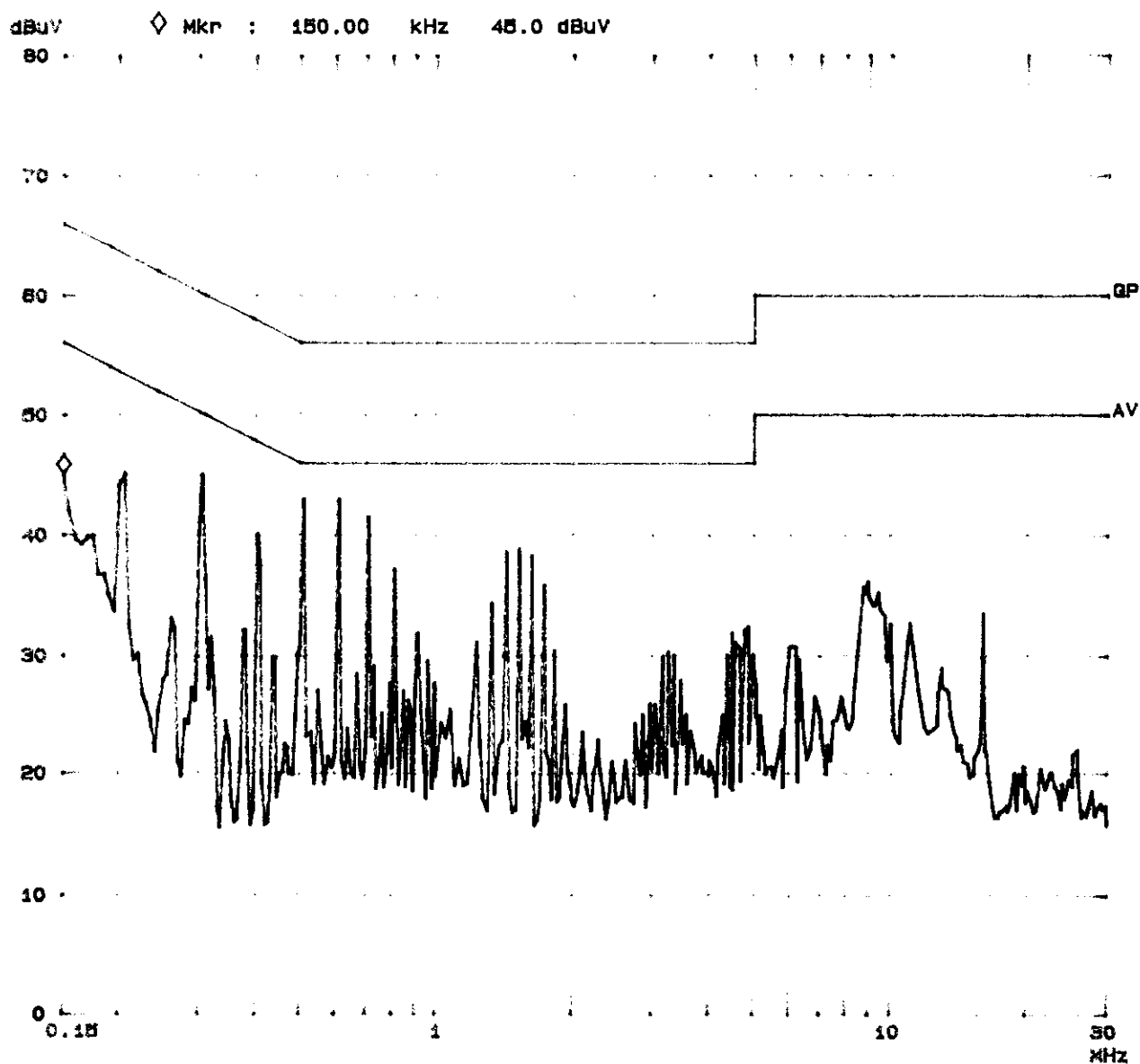
Remarks : 1. All readings are Quasi-peak and average values.

2. “ * ” means that the quasi-peak reading level is lower then the average limits, it is not necessary to measure the average level.

Attached 2 individual pages of scan curve data sheets.

ROHDE&SCHWARZ ESHS30
GESTEK, Power Line Conducted Emission

EUT: S.P.S.
Manuf: Ya Hsin
Op Cond: FULL SYSTEM
Operator: MILLER
Test Spec: CISPR_22 CLASS B
Comment: Line 1
M/N: YS-8280Y

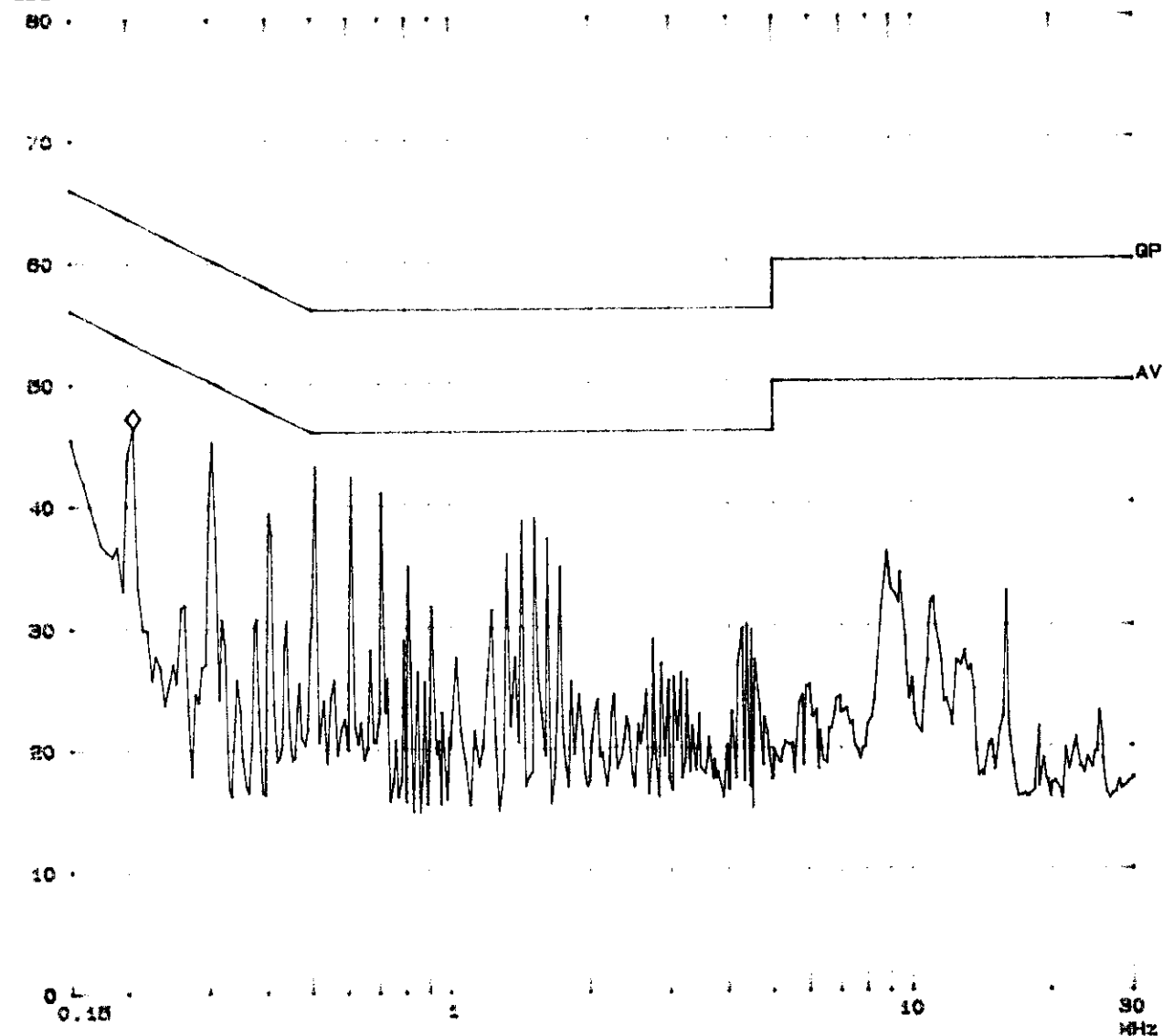


ROHDE&SCHWARZ ESHS30

GESTEK, Power Line Conducted Emission

EUT: S.P.S.
Manuf: Ys Hsin
Op Cond: FULL SYSTEM
Operator: MILLER
Test Spec: CISPR_22 CLASS B
Comment: Line 2
M/N: YS-6250Y

dBuV ◇ Mkr : 205.00 kHz 46.4 dBuV



CONDUCTED EMISSION DATA

Date of Test	: Jun. 16, 1998	Temperature	: 25.1 °C
EUT	: S.P.S.	Humidity	: 59 %
Test Mode	: Mode 2	Display Pattern	: H/P

FREQUENCY		READING LEVEL dBuV				LIMITS	
MHz	LINE1 QP	LINE1 AV	LINE2 QP	LINE2 AV	QP	AV	
0.20288	45.0	*	46.6	*	63.5	53.5	
0.30422	45.2	*	45.5	*	60.1	50.1	
0.50768	43.9	43.8	44.0	43.7	56.0	46.0	
1.52603	38.7	*	38.6	*	56.0	46.0	
8.80031	31.4	*	30.9	*	60.0	50.0	
15.99990	32.3	*	31.3	*	60.0	50.0	

Remarks : 1. All readings are Quasi-peak and average values.

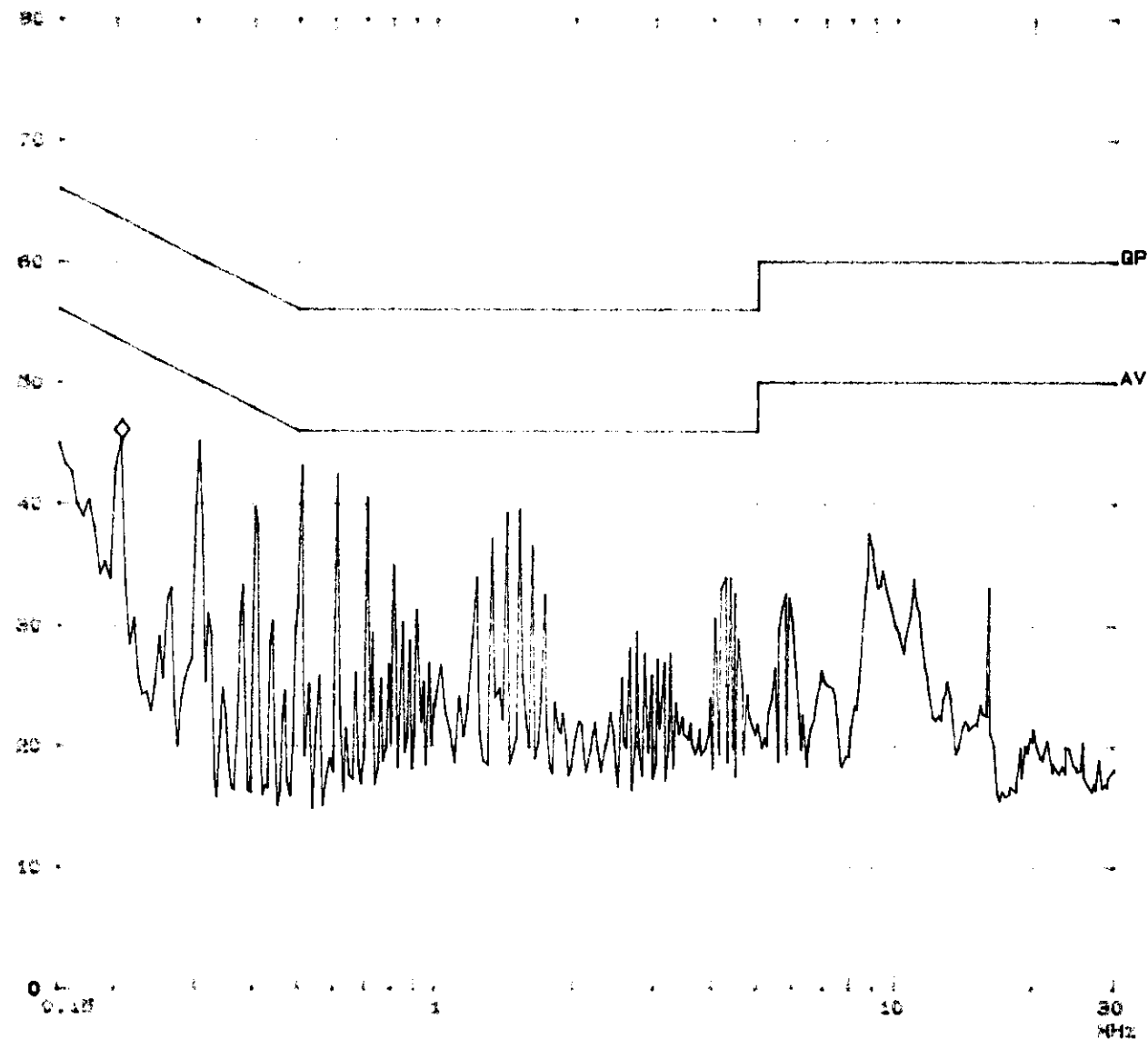
2. “ * ” means that the quasi-peak reading level is lower then the average limits, it is not necessary to measure the average level.

Attached 2 individual pages of scan curve data sheets.

ROHDE&SCHWARZ ESHS30
GESTEK, Power Line Conducted Emission

EUT: S.P.S.
Manuf: Ya Hein
Op Cond: FULL SYSTEM
Operator: MILLER
Test Spec: CISPR_22 CLASS B
Comment: Line 1
M/N: Y8-6230Y

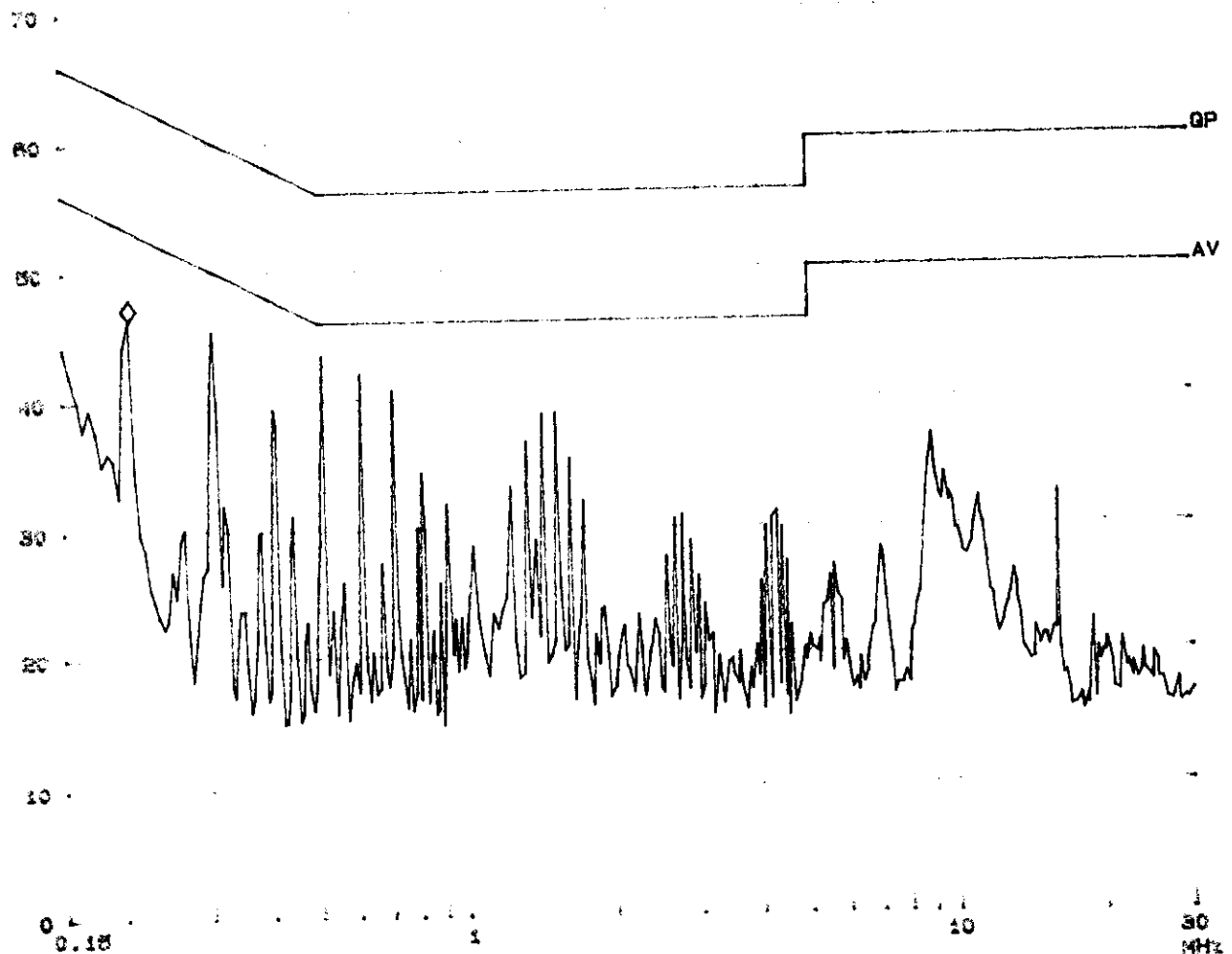
3BuV ◇ Mkr : 205.00 kHz 45.2 dBuV



ROHDE&SCHWARZ ESHS30
GESTEK, Power Line Conducted Emission

EUT: S.P.S.
Manuf: Ya Hsin
Op Cond: FULL SYSTEM
Operator: MILLER
Test Spec: CISPR_22 CLASS B
Comment: Line 2
M/N: YS-6230Y

dBuV ◇ Mkr : 205.00 kHz 46.4 dBuV
90 .



CONDUCTED EMISSION DATA

Date of Test	:	Jun. 16, 1998	Temperature	:	25.1 °C
EUT	:	S.P.S.	Humidity	:	59 %
Test Mode	:	Mode 3	Display Pattern	:	H/P

FREQUENCY	READING LEVEL dBuV				LIMITS	
MHz	LINE1 QP	LINE1 AV	LINE2 QP	LINE2 AV	QP	AV
0.20258	45.1	*	46.3	*	63.5	53.5
0.30385	45.1	*	45.5	*	60.1	50.1
0.50752	43.9	43.6	43.7	43.4	56.0	46.0
1.52554	38.6	*	38.4	*	56.0	46.0
4.37493	33.4	*	29.0	*	56.0	46.0
16.00047	31.9	*	31.4	*	60.0	50.0

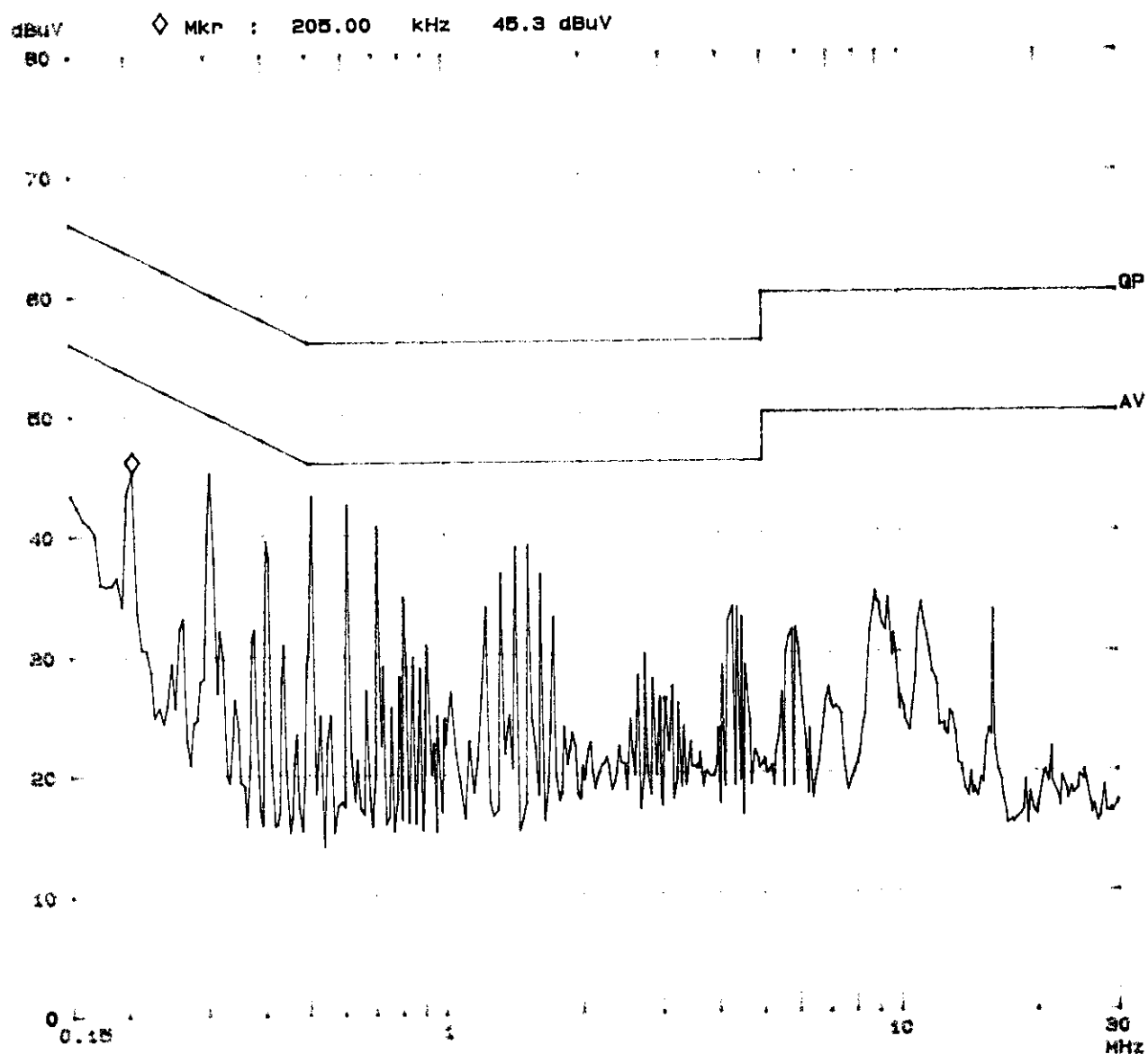
Remarks : 1. All readings are Quasi-peak and average values.

2. “ * ” means that the quasi-peak reading level is lower then the average limits, it is not necessary to measure the average level.

Attached 2 individual pages of scan curve data sheets.

ROHDE&SCHWARZ ESHS30
GESTEK, Power Line Conducted Emission

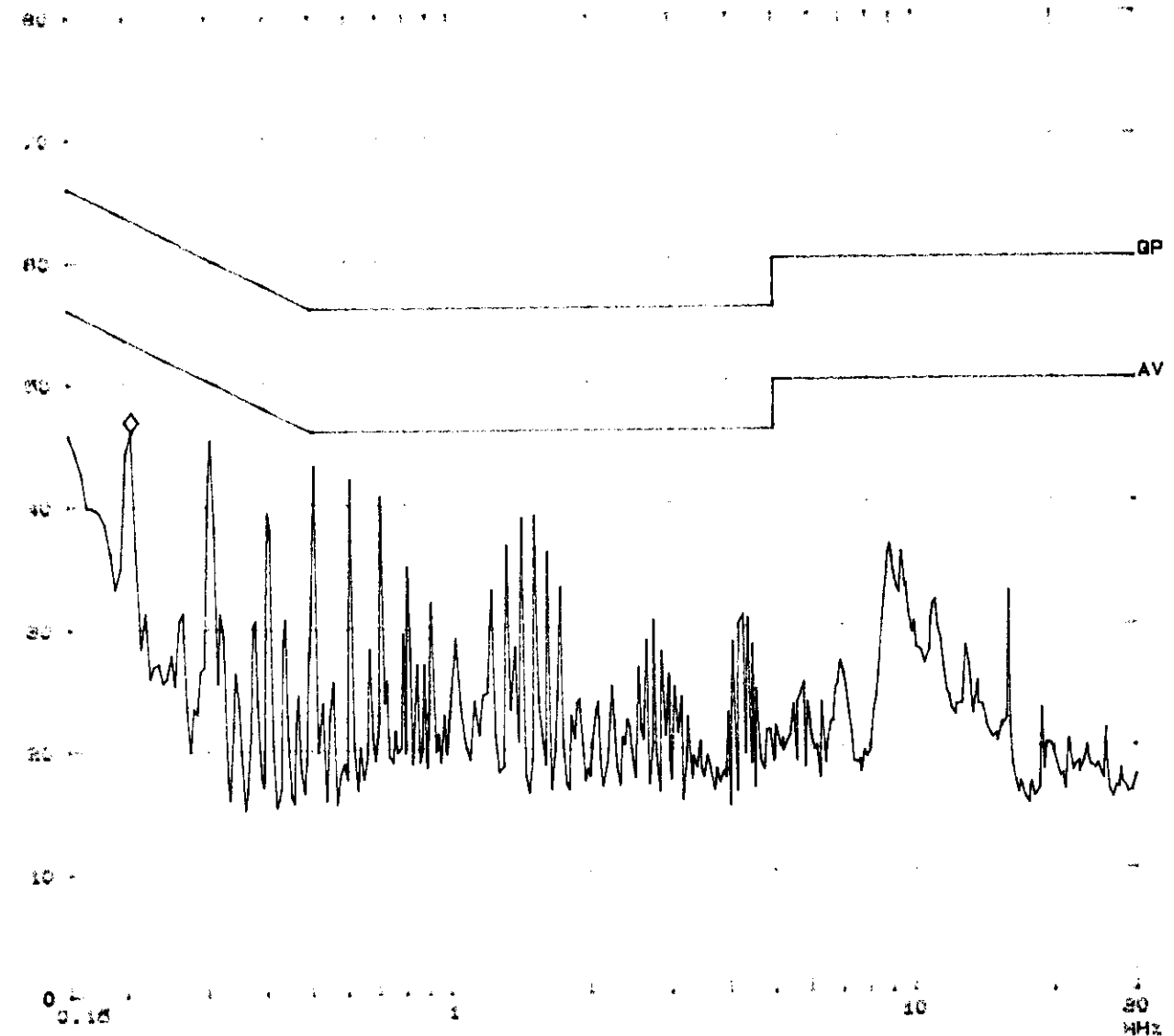
EUT: S.P.B.
Manuf: Ya Hsin
Op Cond: FULL SYSTEM
Operator: MILLER
Test Spec: CISPR_22 CLASS B
Comment: Line 1
M/N: YS-8200Y



ROHDE&SCHWARZ ESHS30
GESTEK, Power Line Conducted Emission

EUT: S.P.S.
Manuf: Ya Hein
Op Cond: FULL SYSTEM
Operator: MILLER
Test Spec: CISPR_22 CLASS B
Comment: Line 2
M/N: Y8-6200Y

dBuV ◇ Mkr : 205.00 kHz 46.0 dBuV



CONDUCTED EMISSION DATA

Date of Test	:	Jun. 16, 1998	Temperature	:	25.1 °C
EUT	:	S.P.S.	Humidity	:	59 %
Test Mode	:	Mode 4	Display Pattern	:	H/P

FREQUENCY MHz	READING LEVEL dBuV				LIMITS	
	LINE1 QP	LINE1 AV	LINE2 QP	LINE2 AV	QP	AV
0.203420	45.4	*	46.3	*	63.4	53.4
0.305110	45.2	*	45.3	*	60.1	50.1
0.508400	44.1	43.3	43.4	43.5	56.0	46.0
1.424390	38.9	*	38.6	*	56.0	46.0
4.274590	34.1	*	30.1	*	56.0	46.0
16.00055	31.6	*	31.8	*	60.0	50.0

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.

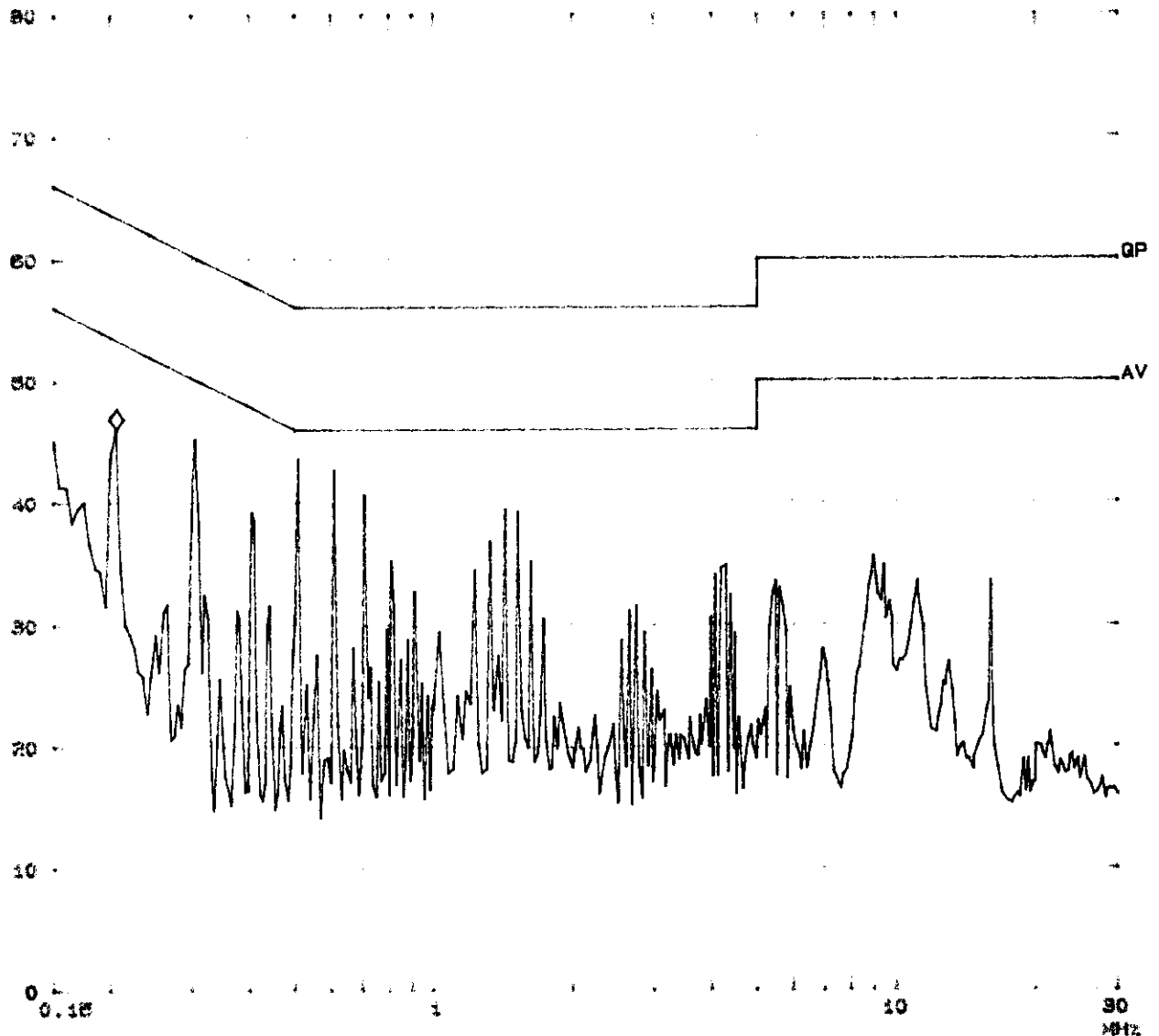
Attached 2 individual pages of scan curve data sheets.

ROHDE&SCHWARZ ESHS30

GESTEK, Power Line Conducted Emission

EUT: S.P.S.
Manuf: Ya Hein
Op Cond: FULL SYSTEM
Operator: MILLER
Test Spec: CISPR_22 CLASS B
Comment: Line 1
M/N: YS-B170Y

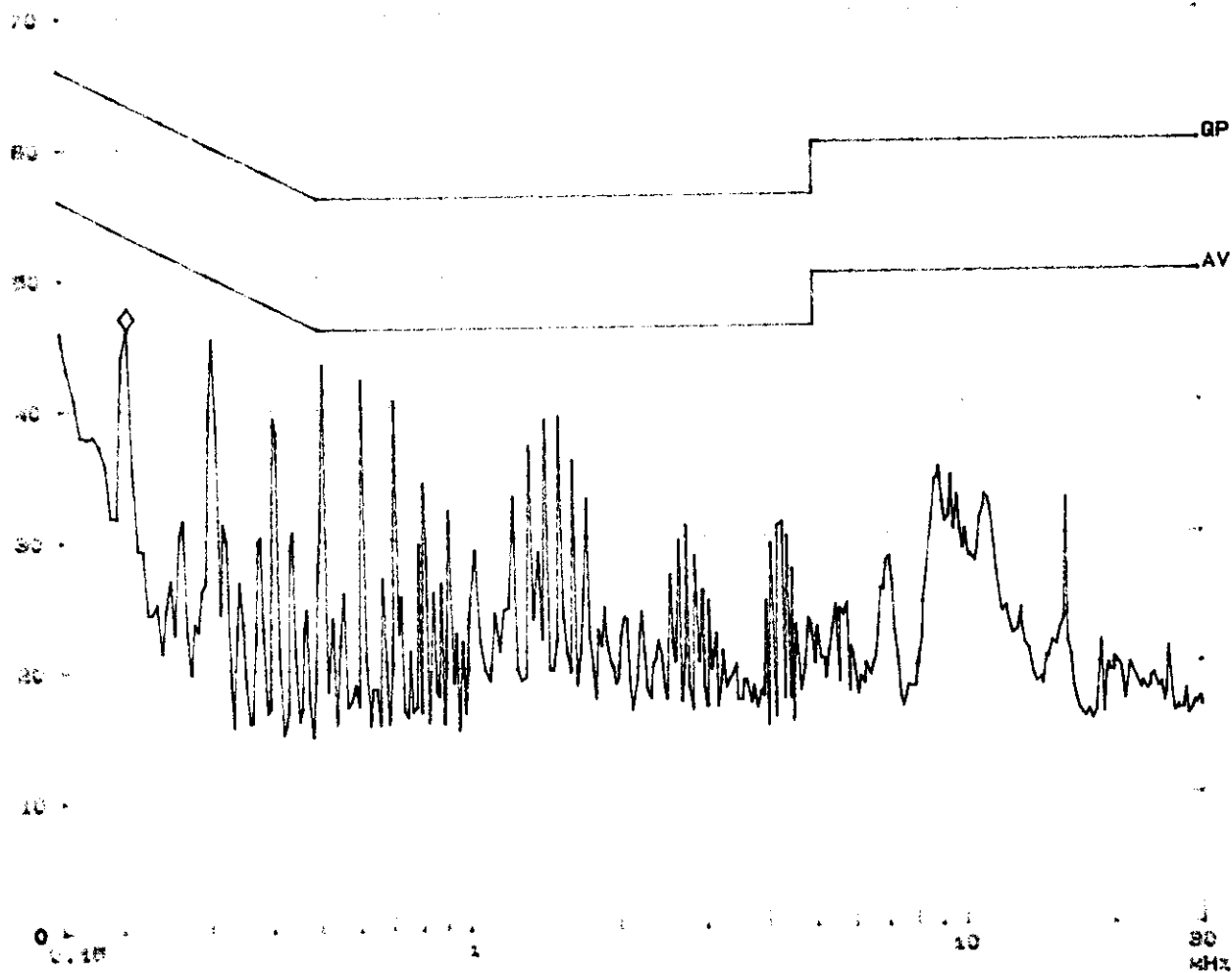
dBuV ◇ Mkr : 205.00 kHz 46.0 dBuV



ROHDE&SCHWARZ ESHS30
GESTEK, Power Line Conducted Emission

EUT: S.P.S.
Manuf: Ya Hsin
Op Cond: FULL SYSTEM
Operator: MILLER
Test Spec: CISPR_22 CLASS B
Comment: Line 2
M/N: YS-6170Y

dBuV ◇ Mkn : 205.00 kHz 46.1 dBuV
AC 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20



CONDUCTED EMISSION DATA

Date of Test	: Jun. 16, 1998	Temperature	: 25.1 °C
EUT	: S.P.S.	Humidity	: 59 %
Test Mode	: Mode 5	Display Pattern	: H/P

FREQUENCY	READING LEVEL dBuV				LIMITS	
MHz	LINE1 QP	LINE1 AV	LINE2 QP	LINE2 AV	QP	AV
0.20483	45.0	*	46.6	*	63.4	53.4
0.30481	45.2	*	45.5	*	60.1	50.1
0.50817	44.2	43.8	44.1	43.8	56.0	46.0
1.42474	38.7	*	38.3	*	56.0	46.0
4.27614	34.2	*	30.4	*	56.0	46.0
8.82361	30.7	*	31.1	*	60.0	50.0

Remarks : 1. All readings are Quasi-peak and average values.

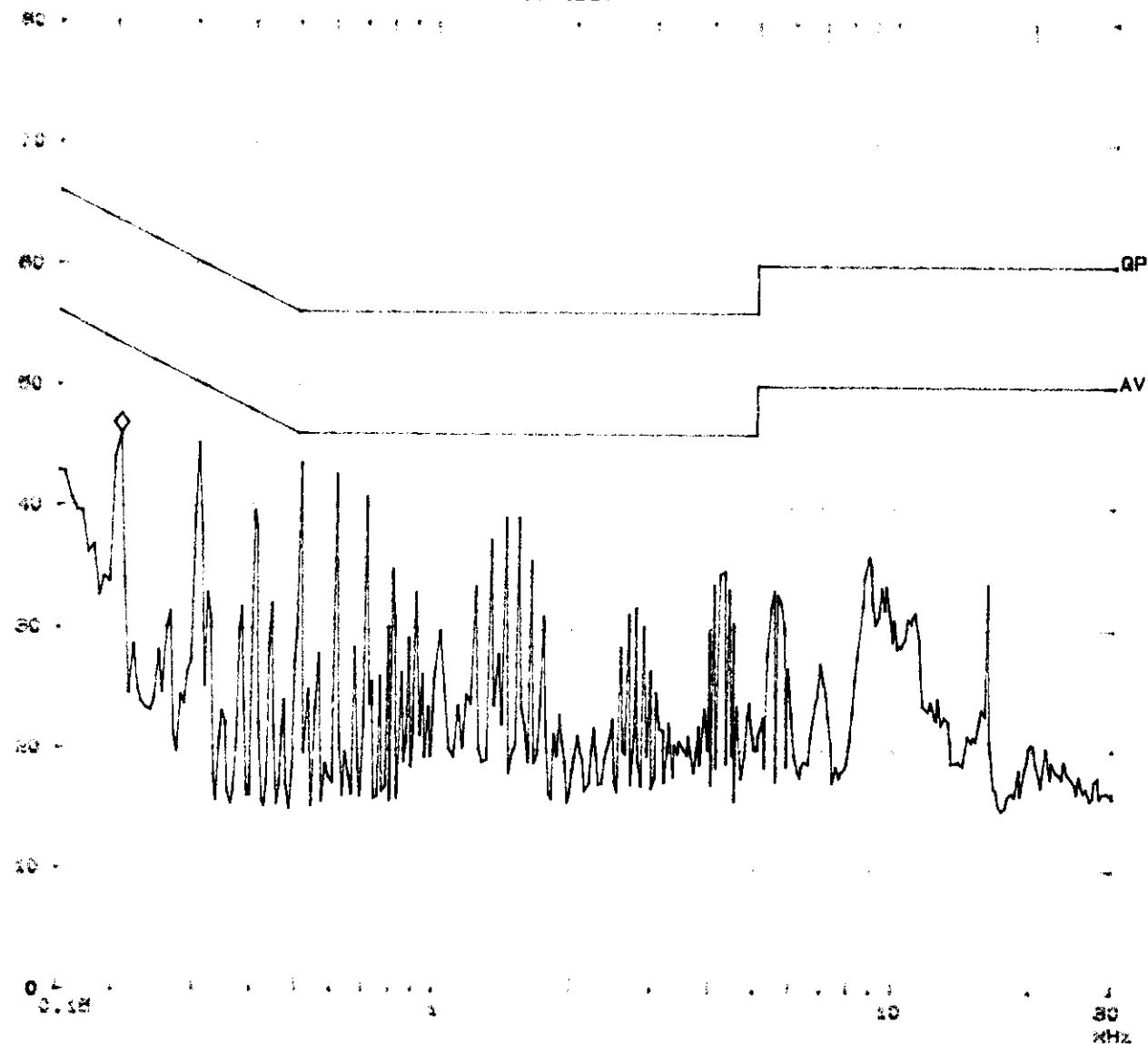
2. “ * ” means that the quasi-peak reading level is lower then the average limits, it is not necessary to measure the average level.

Attached 2 individual pages of scan curve data sheets.

ROHDE&SCHWARZ ESHS30
GESTEK, Power Line Conducted Emission

EUT: S.P.S.
Manuf: Ya Hsin
Op Cond: FULL SYSTEM
Operator: MILLER
Test Spec: CISPR_22 CLASS B
Comment: Line 1
M/N: YB-8145Y

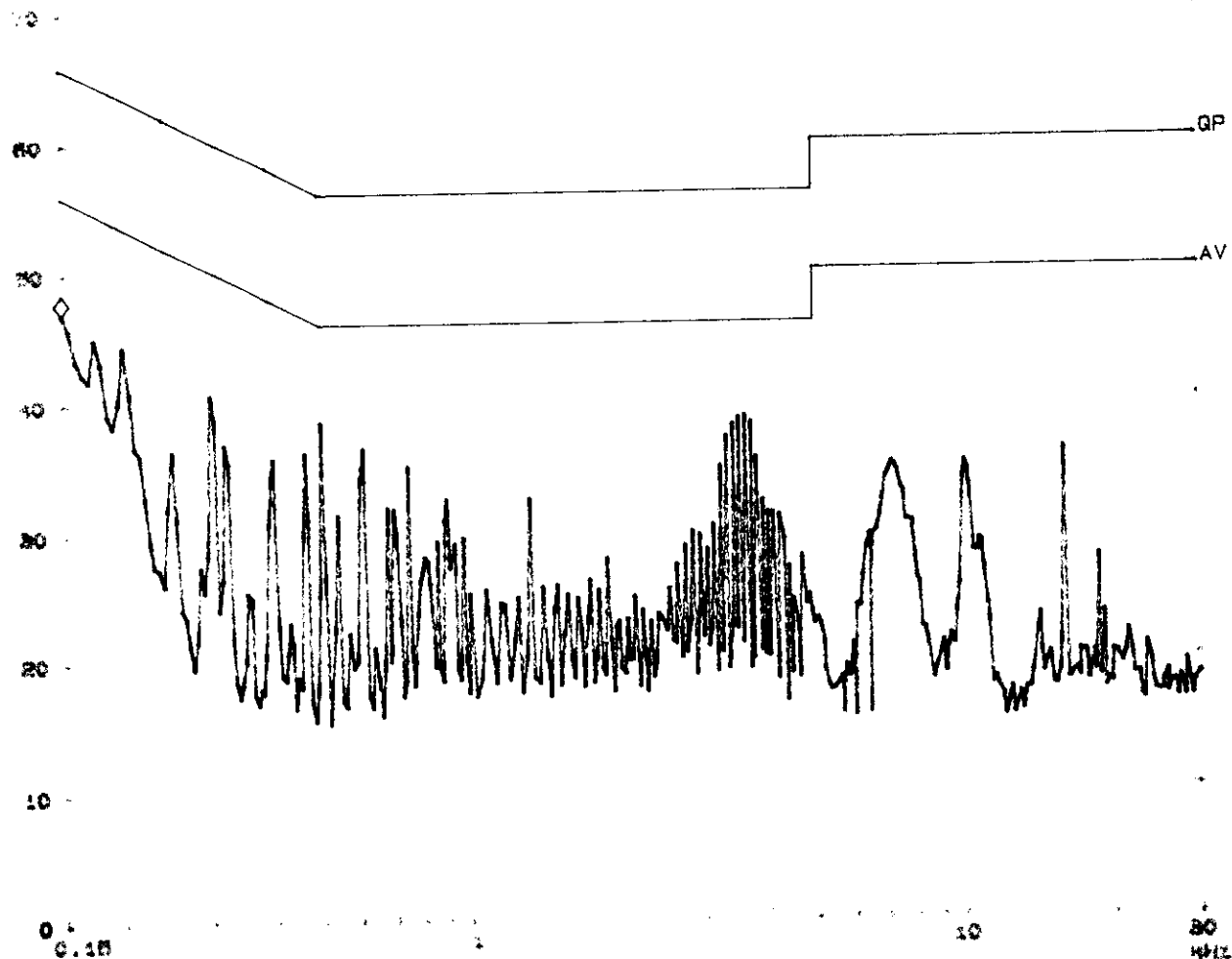
38.4V ◇ Mkr : 205.00 kHz 45.9 dBuV



ROHDE & SCHWARZ ESHS 30
GesTek, PowerLine Conducted Emission

EUT: S.P.8
Manuf: Ye Hein
Op Cond: FULL SYSTEM
Operator: MILLER
Test Spec: CISPR_22 CLASS B
Comment: Line 2
M/N: YS-8145Y

dBuV ◇ Mkr : 150.00 kHz 46.9 dBuV



4. Radiation Emission Test

4.1 Test Equipment

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

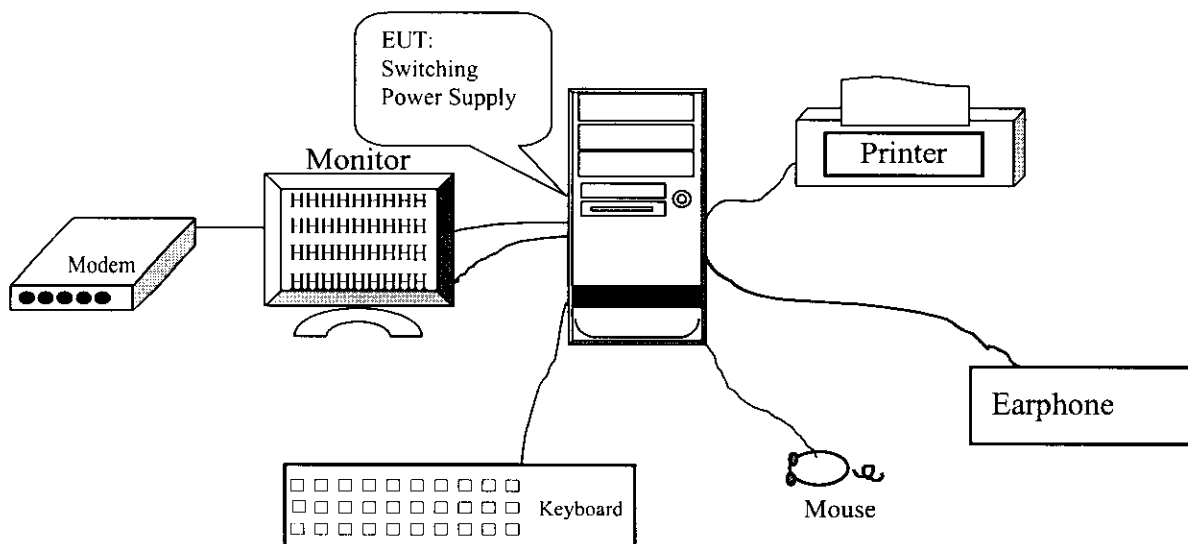
Radiated test was performed on : ☒ Site #1 ☐ Site #2

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. 11,1997	✓	
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	Jun.11,1997		

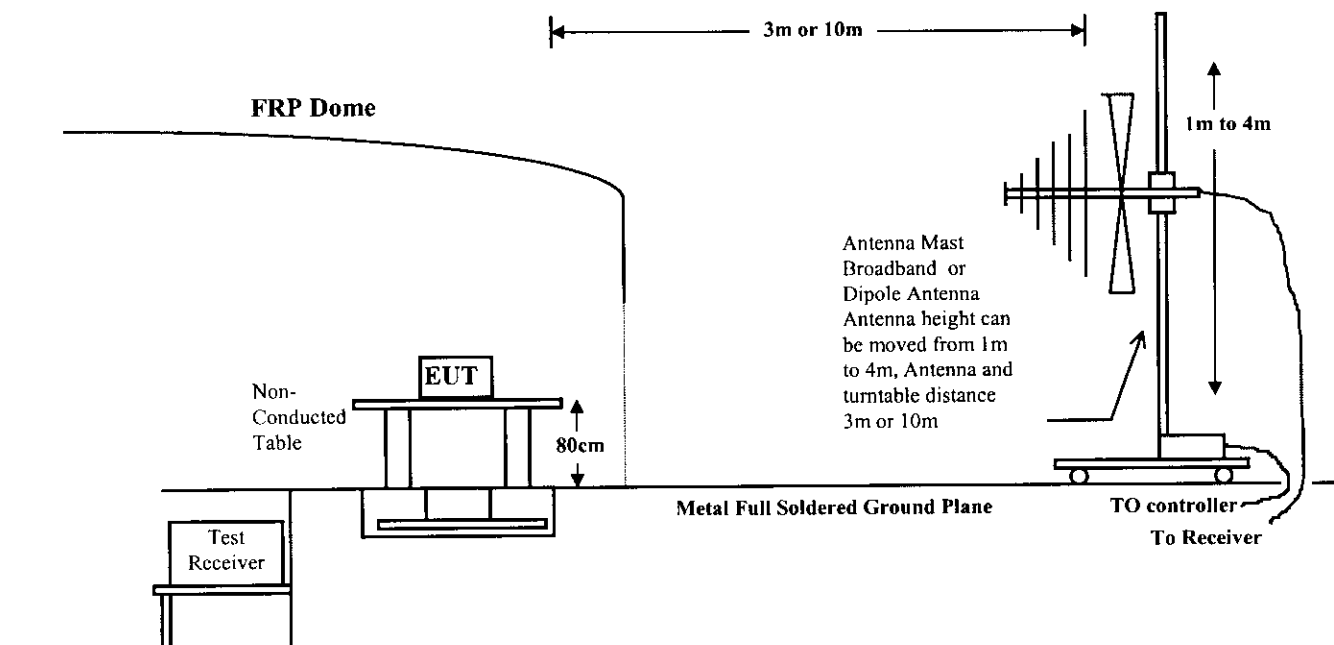
Note: All equipment upon which need to calibrated are with calibration period of 1 year.

4.2 Test Setup

4.2.1 Block Diagram of Connections between EUT and simulators



4.2.2 Open Test Site Setup Diagram



4.3 Radiated Emission Limit

4.3.1 FCC Class B Limits at 3m

Frequency	Distance	Field Strength	
MHz	Meter	$\mu\text{V}/\text{M}$	$\text{dB}\mu\text{V}/\text{M}$
30 - 88	3	100	40.0
88 - 216	3	150	43.5
216 - 960	3	200	46.0
960 - 2000	3	500	54.0

4.3.2 CISPR Class B Limits at 10m

Frequency	Distance	Field Strength
MHz	Meter	$\text{dB}(\mu\text{V}/\text{M})$
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.

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 :06-16,1998 Tue Temperature :25.1 deg/C
EUT :S.P.S. Humidity :56 %RH
Test Mode :Mode 1 Display Pattern:H Pattern

Frequency	Cable	Antenna	Reading Level	Emission Level	Limit
	Loss	Factor	Horizontal	Horizontal	
(MHz)	(dB)	(dB/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)
51.550	1.40	7.81	4.08	13.28	30.00
61.354	1.62	6.49	11.75	19.86	30.00
66.468	1.71	6.45	9.92	18.08	30.00
144.071	2.70	10.88	11.91	25.49	30.00
168.076	2.80	10.05	11.85	24.70	30.00
216.102	3.01	10.45	12.54	26.00	30.00
240.113	3.12	12.24	9.12	24.48	37.00
272.135	3.27	13.09	10.98	27.34	37.00
422.279	3.80	16.18	5.83	25.82	37.00

- Remarks: 1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. Emission Level= Reading Level + Antenna Factor + Cable loss
3. Deviations from the specifications: None.

Radiated Emission Data

Date of Test :06-16,1998 Tue Temperature :25.1 deg/C
 EUT :S.P.S. Humidity :56 %RH
 Test Mode :Mode 1 Display Pattern:H Pattern

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Level Vertical (dBuV/m)	Emission Level Vertical (dBuV/m)	Limit (dBuV/m)
41.288	1.13	13.00	6.43	20.56	30.00
61.348	1.62	6.49	12.21	20.32	30.00
133.850	2.65	11.48	4.60	18.73	30.00
168.077	2.80	10.05	8.29	21.14	30.00
186.201	2.88	9.45	9.14	21.47	30.00
200.538	2.94	9.32	4.97	17.23	30.00
216.095	3.01	10.45	12.30	25.76	30.00
229.166	3.08	11.53	6.93	21.53	30.00
234.038	3.09	11.81	5.53	20.44	37.00
288.163	3.34	13.16	8.04	24.54	37.00
322.090	3.47	13.69	7.67	24.83	37.00

Remarks: 1. All Readings below 1GHz are Quasi-Peak, above are average value.
 2. Emission Level = Reading Level + Antenna Factor + Cable loss
 3. Deviations from the specifications: None.

Radiated Emission Data

Date of Test :06-16,1998 Tue Temperature :25.1 deg/C
 EUT :S.P.S. Humidity :56 %RH
 Test Mode :Mode 2 Display Pattern:H Pattern

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Level Horizontal (dBuV/m)	Emission Level Horizontal (dBuV/m)	Limit (dBuV/m)
42.100	1.17	12.19	1.39	14.75	30.00
51.530	1.40	7.81	5.62	14.82	30.00
66.466	1.71	6.45	10.21	18.37	30.00
133.840	2.65	11.48	5.24	19.37	30.00
144.069	2.70	10.88	10.94	24.52	30.00
168.074	2.80	10.05	10.25	23.10	30.00
216.100	3.01	10.45	12.38	25.84	30.00
240.115	3.12	12.24	11.24	26.60	37.00
272.133	3.27	13.09	11.44	27.80	37.00
422.276	3.80	16.18	6.14	26.13	37.00

Remarks: 1. All Readings below 1GHz are Quasi-Peak, above are average value.
 2. Emission Level = Reading Level + Antenna Factor + Cable loss
 3. Deviations from the specifications: None.

Radiated Emission Data

Date of Test :06-16,1998 Tue Temperature :25.1 deg/C
 EUT :S.P.S. Humidity :56 %RH
 Test Mode :Mode 2 Display Pattern:H Pattern

Frequency	Cable	Antenna	Reading Level	Emission Level	Limits
(MHz)	Loss	Factor	Vertical	Vertical	
	(dB)	(dB/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)
40.180	1.13	13.00	3.20	17.33	30.00
61.346	1.62	6.49	13.22	21.33	30.00
66.430	1.71	6.45	11.68	19.84	30.00
133.820	2.65	11.48	6.84	20.97	30.00
168.072	2.80	10.05	9.35	22.20	30.00
186.200	2.88	9.45	10.14	22.47	30.00
200.536	2.94	9.32	5.58	17.84	30.00
216.094	3.01	10.45	11.96	25.42	30.00
234.036	3.09	11.81	8.59	23.50	37.00
288.162	3.34	13.16	9.35	25.85	37.00
322.091	3.47	13.69	8.81	25.97	37.00

Remarks: 1. All Readings below 1GHz are Quasi-Peak, above are average value.
 2. Emission Level = Reading Level + Antenna Factor + Cable loss
 3. Deviations from the specifications: None.

Radiated Emission Data

Date of Test :06-16,1998 Tue Temperature :25.1 deg/C
EUT :S.P.S. Humidity :56 %RH
Test Mode :Mode 3 Display Pattern:H Pattern

Frequency	Cable	Antenna	Reading Level	Emission Level	Limit
(MHz)	Loss	Factor	Horizontal	Horizontal	
	(dB)	(dB/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)
40.150	1.13	13.00	3.41	17.54	30.00
51.550	1.40	7.81	8.36	17.56	30.00
66.463	1.71	6.45	11.29	19.45	30.00
133.854	2.65	11.48	7.47	21.60	30.00
144.067	2.70	10.88	11.02	24.60	30.00
168.073	2.80	10.05	11.46	24.31	30.00
216.102	3.01	10.45	10.94	24.40	30.00
240.116	3.12	12.24	12.61	27.97	37.00
272.134	3.27	13.09	12.34	28.70	37.00
422.275	3.80	16.18	7.45	27.44	37.00

Remarks: 1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. Emission Level = Reading Level + Antenna Factor + Cable loss
3. Deviations from the specifications: None.

Radiated Emission Data

Date of Test :06-16,1998 Tue

Temperature :25.1 deg/C

EUT :S.P.S.

Humidity :56 %RH

Test Mode :Mode 3

Display Pattern:H Pattern

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Level Vertical (dBuV/m)	Emission Level Vertical (dBuV/m)	Limit (dBuV/m)
40.915	1.13	13.00	2.02	16.15	30.00
66.453	1.71	6.45	11.57	19.73	30.00
133.333	2.64	11.63	4.79	19.06	30.00
168.072	2.80	10.05	10.23	23.08	30.00
186.200	2.88	9.45	5.80	18.13	30.00
200.601	2.94	9.32	4.18	16.44	30.00
216.091	3.01	10.45	12.18	25.64	30.00
234.108	3.09	11.81	8.96	23.87	37.00
288.163	3.34	13.16	10.65	27.15	37.00
322.093	3.47	13.69	11.45	28.61	37.00

- Remarks:
1. All Readings below 1GHz are Quasi-Peak, above are average value.
 2. Emission Level = Reading Level + Antenna Factor + Cable loss
 3. Deviations from the specifications: None.

Radiated Emission Data

Date of Test :06-16,1998 Tue Temperature :25.1 deg/C
EUT :S.P.S. Humidity :56 %RH
Test Mode :Mode 4 Display Pattern:H Pattern

Frequency	Cable	Antenna	Reading Level	Emission Level	Limit
(MHz)	Loss	Factor	Horizontal	Horizontal	
	(dB)	(dB/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)
41.250	1.13	13.00	4.23	18.36	30.00
66.462	1.71	6.45	12.31	20.47	30.00
133.855	2.65	11.48	8.43	22.56	30.00
144.064	2.70	10.88	13.04	26.62	30.00
168.076	2.80	10.05	9.97	22.82	30.00
216.101	3.01	10.45	11.12	24.58	30.00
240.117	3.12	12.24	13.34	28.70	37.00
272.137	3.27	13.09	12.52	28.88	37.00
422.278	3.80	16.18	8.76	28.75	37.00

- Remarks:
1. All Readings below 1GHz are Quasi-Peak, above are average value.
 2. Emission Level = Reading Level + Antenna Factor + Cable loss
 3. Deviations from the specifications: None.

Radiated Emission Data

Date of Test :06-16,1998 Tue Temperature :25.1 deg/C
EUT :S.P.S. Humidity :56 %RH
Test Mode :Mode 4 Display Pattern:H Pattern

Frequency	Cable	Antenna	Reading Level	Emission Level	Limit
	Loss	Factor	Vertical	Vertical	
(MHz)	(dB)	(dB/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)
41.153	1.13	13.00	3.25	17.38	30.00
66.457	1.71	6.45	12.23	20.39	30.00
133.335	2.64	11.63	6.75	21.02	30.00
168.073	2.80	10.05	11.26	24.11	30.00
186.190	2.88	9.45	6.79	19.12	30.00
200.452	2.94	9.32	7.81	20.07	30.00
216.094	3.01	10.45	12.24	25.70	30.00
234.107	3.09	11.81	9.48	24.39	37.00
288.165	3.34	13.16	11.46	27.96	37.00
322.094	3.47	13.69	12.74	29.90	37.00

Remarks: 1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. Emission Level = Reading Level + Antenna Factor + Cable loss
3. Deviations from the specifications: None.

Radiated Emission Data

Date of Test :06-16,1998 Tue Temperature :25.1 deg/C
EUT :S.P.S. Humidity :56 %RH
Test Mode :Mode 5 Display Pattern:H Pattern

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Level Horizontal (dBuV/m)	Emission Level Horizontal (dBuV/m)	Limit (dBuV/m)
41.340	1.13	13.00	6.34	20.47	30.00
66.463	1.71	6.45	13.33	21.49	30.00
133.852	2.65	11.48	9.24	23.37	30.00
144.067	2.70	10.88	12.84	26.42	30.00
168.077	2.80	10.05	8.48	21.33	30.00
216.102	3.01	10.45	11.68	25.14	30.00
240.119	3.12	12.24	14.56	29.92	37.00
272.136	3.27	13.09	13.56	29.92	37.00
422.274	3.80	16.18	8.26	28.25	37.00

Remarks: 1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. Emission Level = Reading Level + Antenna Factor + Cable loss
3. Deviations from the specifications: None.

Radiated Emission Data

Date of Test :06-16,1998 Tue Temperature :25.1 deg/C
 EUT :S.P.S. Humidity :56 %RH
 Test Mode :Mode 5 Display Pattern:H Pattern

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Level Vertical (dBuV/m)	Emission Level Vertical (dBuV/m)	Limit (dBuV/m)
41.156	1.13	13.00	5.24	19.37	30.00
66.458	1.71	6.45	13.26	21.42	30.00
133.334	2.64	11.63	7.49	21.76	30.00
168.074	2.80	10.05	12.24	25.09	30.00
186.180	2.88	9.45	8.49	20.82	30.00
200.456	2.94	9.32	7.94	20.20	30.00
216.095	3.01	10.45	11.88	25.34	30.00
234.105	3.09	11.81	10.47	25.38	37.00
288.164	3.34	13.16	12.54	29.04	37.00
322.095	3.47	13.69	13.61	30.77	37.00

- Remarks:
1. All Readings below 1GHz are Quasi-Peak, above are average value.
 2. Emission Level = Reading Level + Antenna Factor + Cable loss
 3. Deviations from the specifications: None.

6. EMI Reduction Method During Compliance Testing

No modification was made during testing.