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1.GENERAL INFORMATION

1.1 APPLICANT : ASTECH TECHNOLOGY CO., LTD.

6F-4, No. 351, Chung-Shan Rd., Sec. 2,

Chung-Ho City, Taipei, Taiwan R.O.C.

1.2 MANUFACTURER : Same as item 1.1

1.3 DESCRIPTION OF EUT

Kind of Equipment : COMPACT SIZE FLAT-PANEL INDUSTRIAL WORKSTATION

Model No. : AMB-610

Trade Name : ASTECH

Power Cord : Non-shielded

Data Cable : Shielded

Power Supply Type : Switching

* ISA-Bus
* 19" Rack panel mounting
* 9.4" color TFT LCD display, color STN_DD LCD, B/W LCD or EL display
* 14-slot passive backplane or mother-board
* Card hold-down clamp protects cards against vibration

1.4 DESCRIPTION OF THE SUPPORT EQUIPMENTS

SUPPORT UNIT 1. --- KEYBOARD (DELL)

Model No. : SK-710W

Data Cable : Shielded

FCC ID : GYUR29SK

SUPPORT UNIT 2. --- DISPLAY MONITOR (HP)

Model No. : D2807A

Power Supply Type : Switching

Power Cord : Non-shielded

Data Cable : Shielded

SUPPORT UNIT 3. --- MODEM (DATATRONICS)

Model No. : 1200CK

Power Supply Type : Linear, AC Adapter

Power Cord : Non-shielded

Data Cable : Shielded, 110cm Length, Metallic connector,
except the phone line

FCC ID : E2O5OV1200CK

SUPPORT UNIT 4. --- Printer (HEWLETT PACKARD)

Model No. : 2225C

Power Supply Type : Linear, AC Adapter

Power Cord : Non-shielded

Data Cable : Shielded, 137cm Length, Metallic connector

FCC ID : DSI6XU2225

SUPPORT UNIT 5. --- MODEM (SMARTLINK)

Model No. : 2400EM

Power Supply Type : Linear

Data Cable : Shielded

FCC ID : FI747H2400M

SUPPORT UNIT 6. --- MOUSE (ACER)

Model No. : M-S34

Data Cable : Non-shielded

FCC ID : DZL210472

1.5 MEASUREMENT PROCEDURE

European Standard EN 55022

1.6 TESTED FOR COMPLIANCE WITH

European Standard EN 55022

1.7 FREQUENCY RANGE INVESTIGATED:

Conduction 150 kHz TO 30 MHz

Radiation 30 MHz TO 1000 MHz

1.8 PLACE OF MEASUREMENT

SPORTON INTERNATIONAL INC.

No.3 ,Lane 238, Kang Lo Street, Nei Hwu District,

Taipei 11424, Taiwan R.O.C.

TEL: (02) 631-4739 FAX: (02) 631-9740

1.9 DATE OF MEASUREMENT

Aug. 02 1996

2.CONDUCTED POWERLINE TEST

2.1 CONDUCTED EMISSION TEST, POWER LEADS, 150 kHz TO 30 MHz

Conducted Emissions were measured from 150 kHz to 30 MHz, with a bandwidth of 10 kHz, on the 230 VAC power and return leads of the EUT according to the methods defined in European Standard EN 55022 Clause 9. The EUT was placed on a non-metallic stand in a shielded room 0.8 meters above the ground plane, as shown in FIGURE 1. The interface cables and equipment positioning were varied within limits of reasonable applications to determine the position producted maximum conducted emissions.

THE FOLLOWING TEST INSTRUMENTATION WAS USED:

INSTRUMENT	MFR.	MODEL	CAL. DATE
SPECTRUM MONITOR	R&S	EZM	N/A
TEST RECEIVER	R&S	ESH3	JULY 27,1996
LISN	KYORITSU	KNW 242C	NOV 05,1995
PLOTTER	HP	7475A	N/A
COIL POWER LINE FILTER	CORCOM	CDSRW2030A6-C	N/A
SHIELDED ROOM	SPORTON	N/A	N/A

2.2 MEASURING INSTRUMENTS

(A) Test Receiver

Attenuation	0 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
Step MHz	0.007 MHz
IF Bandwidth	10 kHz

2.3 TEST LAYOUT

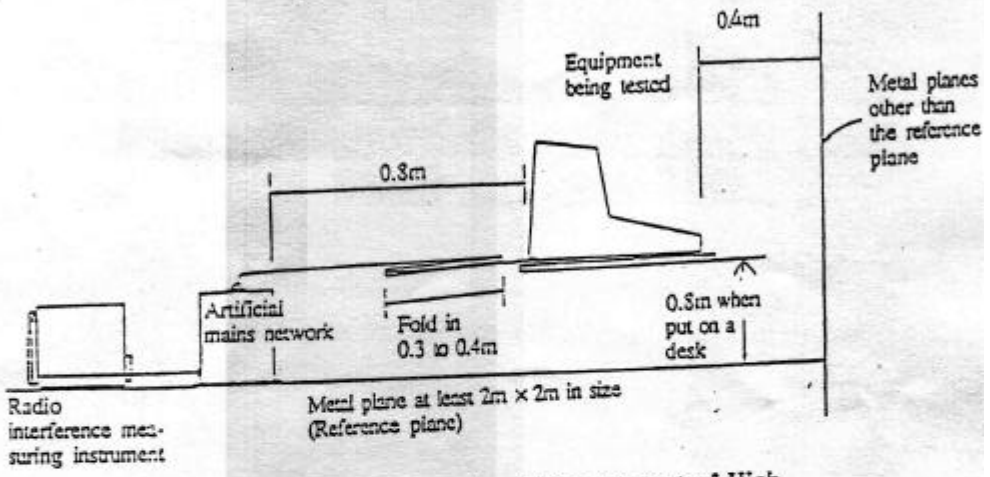


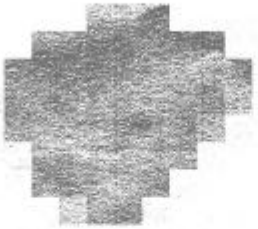
Fig. Installation Example of Measurement of High Frequency Voltage at Mains Terminals (when the fererence plane is a horizontal floor)

2.4 TEST PROCEDURES

1. The EUT was put on a desk 80cm height from ground metal plane and 40cm from the conducting wall of the shielding room and it was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. The LISN provides 50 ohm coupling impedance for the measuring instrument.
4. The CISPR states that a 50 ohm, 50 microhenry L.I.S.N should be used.
5. Both sides of AC line were checked for maximum conducted interference.
6. The frequency range from 150 kHz to 30 MHz was searched.
7. Set the test-receiver system (R/S reveiver ESH3) to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
8. If the emission level of the EUT in peak mode was 6 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported otherwise the emissions which do not have 6 dB margin will be retested one by one using the quasi-peak method and reported.

2.5 CONFIGURATION OF EQUIPMENT UNDER TEST

a. The DELL keyboard, HP monitor, HP printer, SMARTLINK modem, ACER mouse DATATRONICS modem were connected to the ASTECH PC. During testing, the interface cables and equipment positions were varied according to European Standard EN 55022.

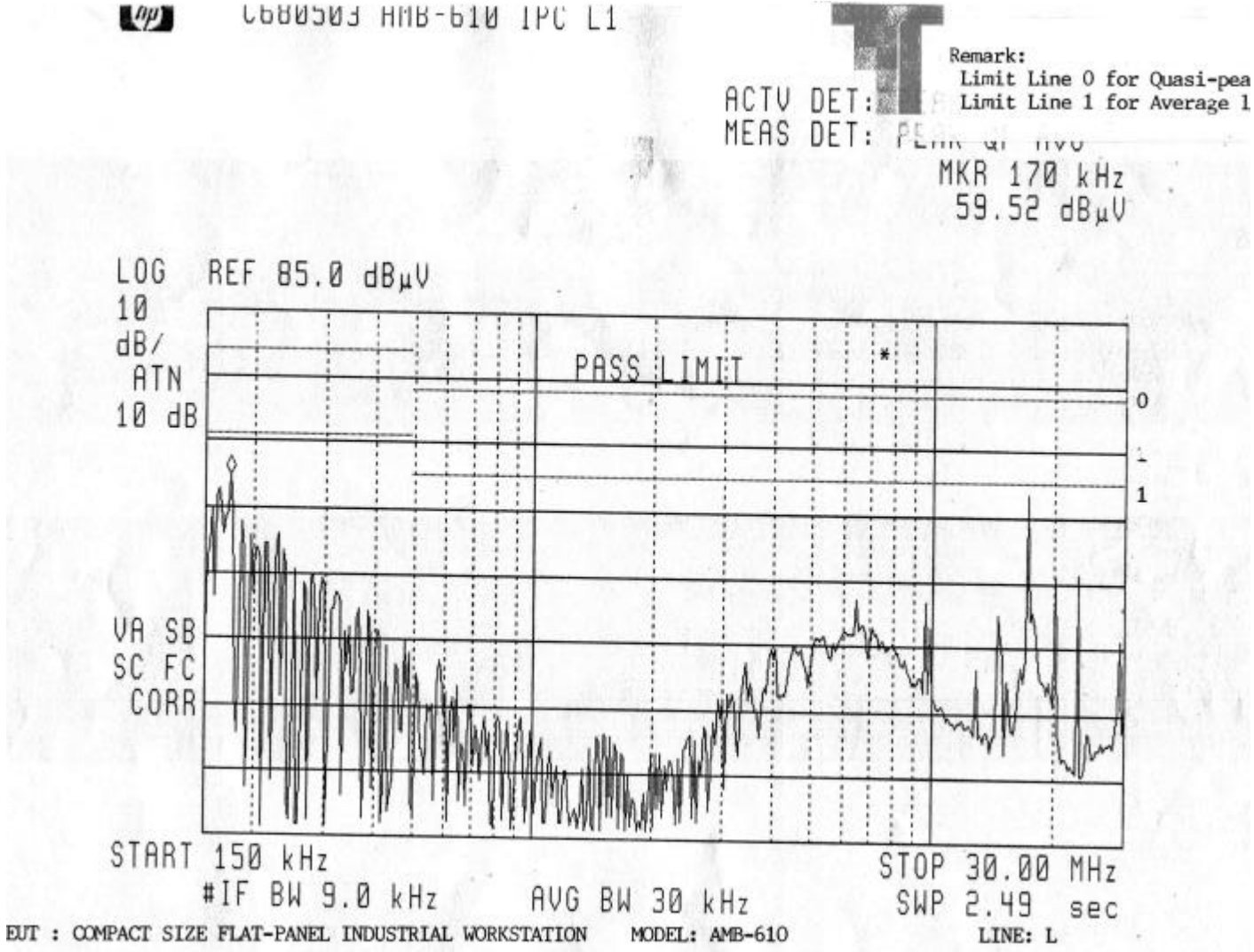


3. SOFTWARE

3.0 A basic language program which generates a complete line of continuously repeating "H" pattern is used as the software.

The program was executed as follows:

1. Turn on the power of all equipment.
2. PC reads test program from floppy disk drive and run it.
3. PC sends "H" messages to monitor, and monitor display "H" patterns on screen
4. PC sends "H" messages to printer, then printer prints it on paper.
5. PC sends "H" messages to modem.
6. Repeat to step 2 to 5.



EUT : COMPACT SIZE FLAT-PANEL INDUSTRIAL WORKSTATION MODEL: AMB-610 LINE: L

Equipment meets the technical specifications of European Standard EN55022 CLASS A.

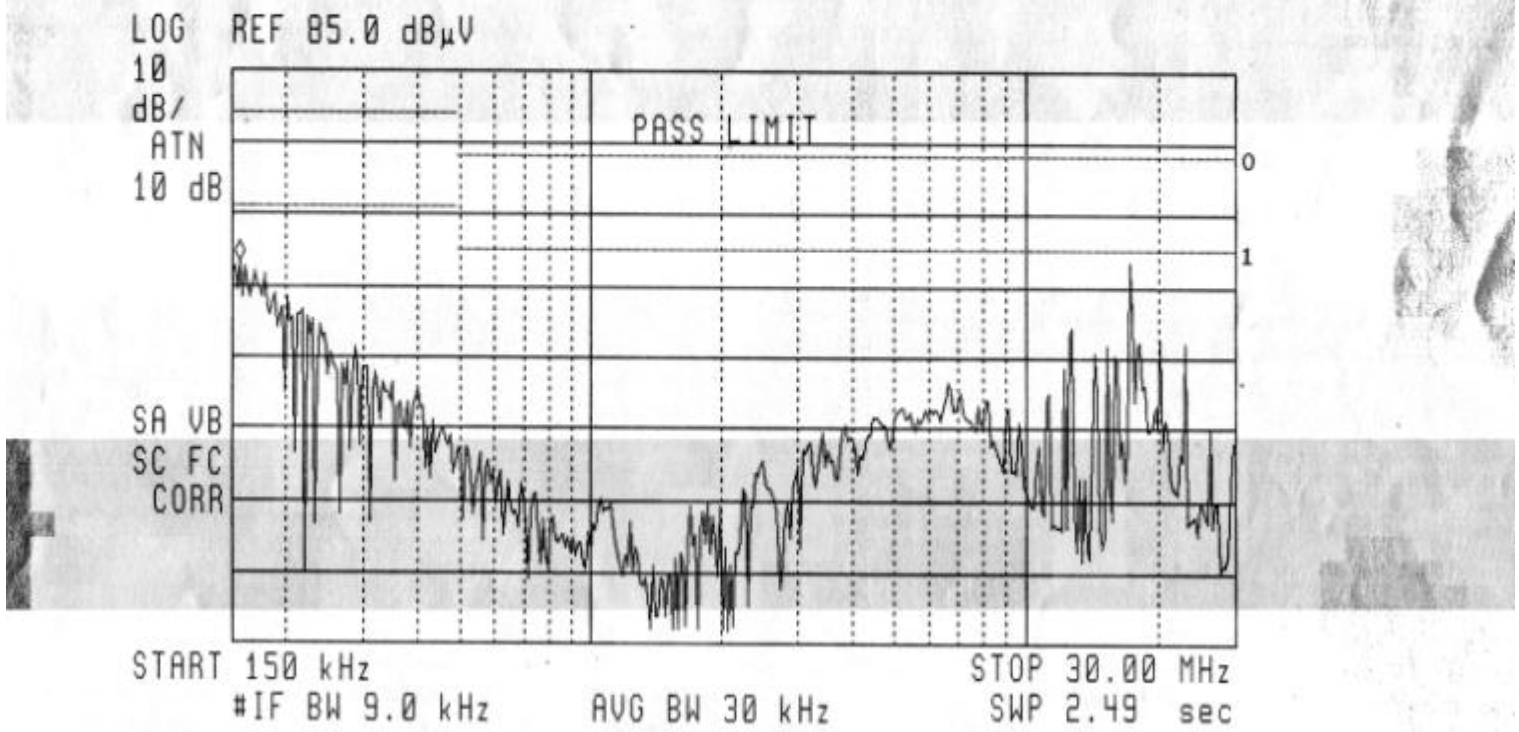
C680503 AMB-610 IPC L2

Remark:
Limit Line 0 for Quasi-peak level
Limit Line 1 for Average level

REF LEVEL
85.0 dBµV

ACTV DET: PEAI
MEAS DET: PEAI

MKR 160 kHz
58.12 dBµV



EUT: COMPACT SIZE PLAT-PANEL INDUSTRIAL WORKSTATION MODEL: AMB-610 LINE: N

Equipment meets the technical specifications of European Standard EN55022 CLASS A.

5. RADIATED EMISSIONS TEST

MEASUREMENT

RADIATED EMISSION TEST, 30 MHz to 1000 MHz

Radiated emissions from 30 MHz to 1000 MHz were measured with a bandwidth of 120 kHz according to the Methods defines in European Standard EN 55022, Clause 10. The EUT was placed on a nonmetallic stand in the open-field site, 1 meter above the ground plane, as shown in FIGURE 2. The interface cables and equipment positions were varied within limits of reasonable applications to determine the positions producting maximum radiated emissions

5.1 THE FOLLOWING TEST INSTRUMENTATION WAS USED:

INSTRUMENT	MFR.	MODEL	CAL. DATE
Spectrum Analyzer	HP	8568B	AUG 20,1995
RF. Preselector	HP	85685A	AUG 20,1995
Quasi-Peak Adapter	HP	85650A	AUG 20,1995
Antenna Mast	Sporton	N/A	N/A
Turntable	Sporton	N/A	N/A
Plotter	HP	7475A	N/A
Biconical Antenna	EMCO	3104	DEC 05,1995
Log-Period Antenna	EMCO	3146	DEC 05,1995
Dipole Antenna	EMCO	3121	DEC 02,1995

5.2 MEASURING INSTRUMENTS

(A) RF Preselector

Attenuation	0 dB
RF Gain	20 dB
Signal Input	Input 2 (for 20 MHz - 2 GHz)

(B) Spectrum Analyzer

Attenuation	0 dB
Start Frequency	30 MHz
Stop Frequency	1000 MHz
Resolution Bandwidth	1 MHz
Video Bandwidth	1 MHz
Signal Input	Input 2 (for 100 kHz - 1.5 GHz)

(C) Quasi-Peak Adaptor

Resolution Bandwidth	120 kHz
Frequency Band	30 MHz - 1 GHz
Quasi-Peak Detector	ON for Quasi-Peak Mode
	OFF for Peak Mode

5.3 TEST LAYOUT

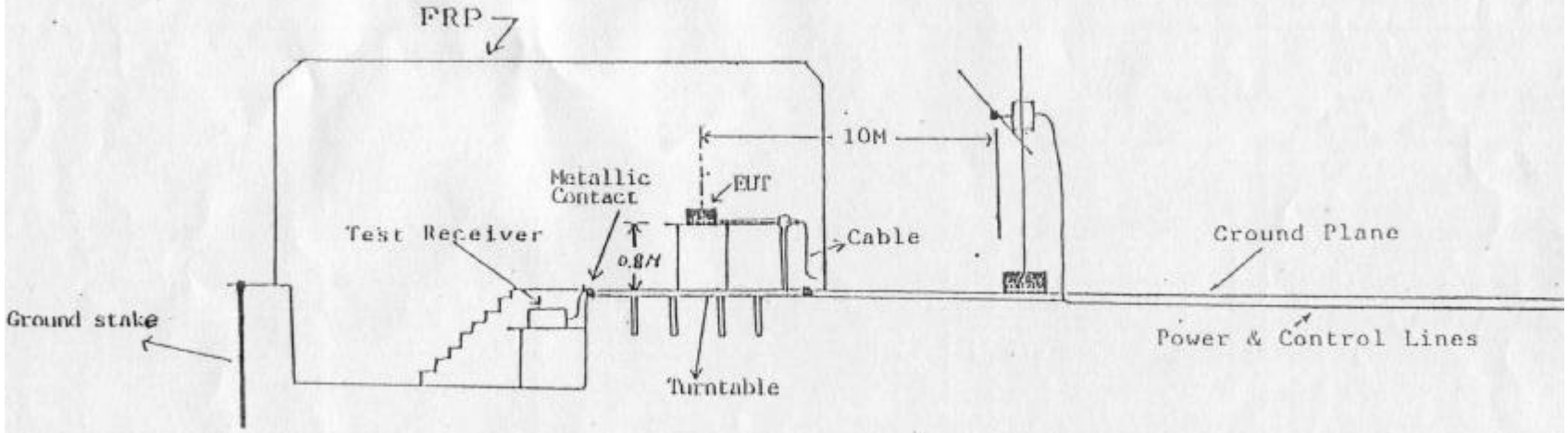


FIGURE : Typical Test Setup for Radiated Emissions

5.4 TEST PROCEDURE

1. The EUT was placed on a rotatable table top one meter above ground.
2. The EUT was set 10 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna is a half wave dipole and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.
5. For each suspected emission the EUT was arranged to its worst case and then tune the antenna tower (form 1M to 4M) and turn table (from 0 degree to 360 degrees) to find the maximum reading.
6. Set the test-receiver system (HP 8568B) to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
7. If the emission level of the EUT in peak mode was 6 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported otherwise the emissions which do not have 6 dB margin will be repeated one by one using the quasi-peak method and reported.

5.5 CONFIGURATION OF EQUIPMENT UNDER TEST

Same as item 2.5

5.6 SOFTWARE

Same as item 3.0

6. PHOTOS OF RADIATED EMISSION TEST CONFIGURATION

FRONT VIEW

REAR VIEW

7. TEST RESULT OF RFI FIELD STRENGTH

7.1 HORIZONTAL POLARIZATION

EUT: COMPACT SIZE FLAT-PANEL INDUSTRIAL WORKSTATION MODEL: AMB-610

Test Distance: 10M Antenna Polarity: HORIZONTAL Date: 02 Aug. 1996

Freq. (MHz)	Antenna Factor (dB)	Cable Loss (dB)	Read. At 10M (dBuV)	Limits At 10M (dBuV)	(uV)	Emission Level At 10M (dBuV)	(uV)	Margin (dB)
33.40	17.00	0.91	7.33	40.00	100	25.24	18.28	-14.76
42.58	12.80	1.14	21.55	40.00	100	35.49	59.50	-5.51
57.71	6.20	1.20	18.25	40.00	100	25.65	19.16	-14.35
66.00	6.05	1.48	19.27	40.00	100	26.80	21.88	-13.20
69.10	6.40	1.30	27.40	40.00	100	35.10	56.89	-5.90
110.24	10.40	1.91	14.09	40.00	100	26.40	20.89	-13.60
128.94	11.24	2.30	18.76	40.00	100	32.30	41.21	-7.70
157.67	10.50	2.10	24.30	40.00	100	36.90	69.98	-3.10
167.00	10.00	1.98	14.39	40.00	100	26.37	20.82	-13.63
176.37	9.00	2.00	21.92	40.00	100	32.92	44.26	-7.08
186.40	9.00	2.20	21.33	40.00	100	32.53	42.32	-7.47
200.00	9.10	2.30	15.02	40.00	100	26.42	20.94	-13.58
233.00	11.29	2.60	15.66	47.00	224	29.55	30.03	-17.45
299.00	13.60	2.90	8.30	47.00	224	24.80	17.38	-22.20

Remarks : 1. Equipment meets the technical specifications of European Standard EN 55022

2. Emission level (dBuV/m)=20log Emission level (uV/m)

3. Sample Calculation AT 299.00 MHz

Corrected Reading= 13.60 + 2.90 + 8.30 = 24.80 (dBuV/m)

Temperature : 23 degree C Relative Humidity : 50% RH

Tested Engineer : T.C. Tzeng Prepared by : H.P. Yang

7.2 VERTICAL POLARIZATION

EUT: COMPACT SIZE FLAT-PANEL INDUSTRIAL WORKSTATION MODEL: AMB-610

Test Distance: 10M Antenna Polarity: VERTICAL Date: 02 Aug. 1996

Freq. (MHz)	Antenna Factor (dB)	Cable Loss (dB)	Read. At 10M (dBuV)	Limits At 10M (dBuV)	(uV)	Emission Level At 10M (dBuV)	(uV)	Margin (dB)
33.00	17.00	0.91	16.98	40.00	100	34.89	55.53	-5.11
42.92	12.80	1.14	16.31	40.00	100	30.25	32.55	-9.75
58.56	6.10	1.20	21.52	40.00	100	28.82	27.61	-11.18
69.10	6.40	1.30	27.22	40.00	100	34.92	55.72	-5.08
75.39	6.34	1.52	22.30	40.00	100	30.16	32.21	-9.84
110.24	10.40	1.91	14.00	40.00	100	26.31	20.68	-13.69
128.94	11.24	2.30	20.04	40.00	100	33.58	47.75	-6.42
157.94	10.50	2.10	25.07	40.00	100	37.67	76.47	-2.33
171.95	9.98	1.91	14.32	40.00	100	26.21	20.44	-13.79
186.40	9.00	2.20	21.21	40.00	100	32.41	41.73	-7.59
214.00	9.50	2.50	9.67	40.00	100	21.67	12.12	-18.33
233.00	11.29	2.60	10.11	47.00	224	24.00	15.85	-23.00
266.00	12.52	3.10	9.27	47.00	224	24.89	17.56	-22.11

Remarks : 1. Equipment meets the technical specifications of European Standard EN 55022

2. Emission level (dBuV/m)=20log Emission level (uV/m)

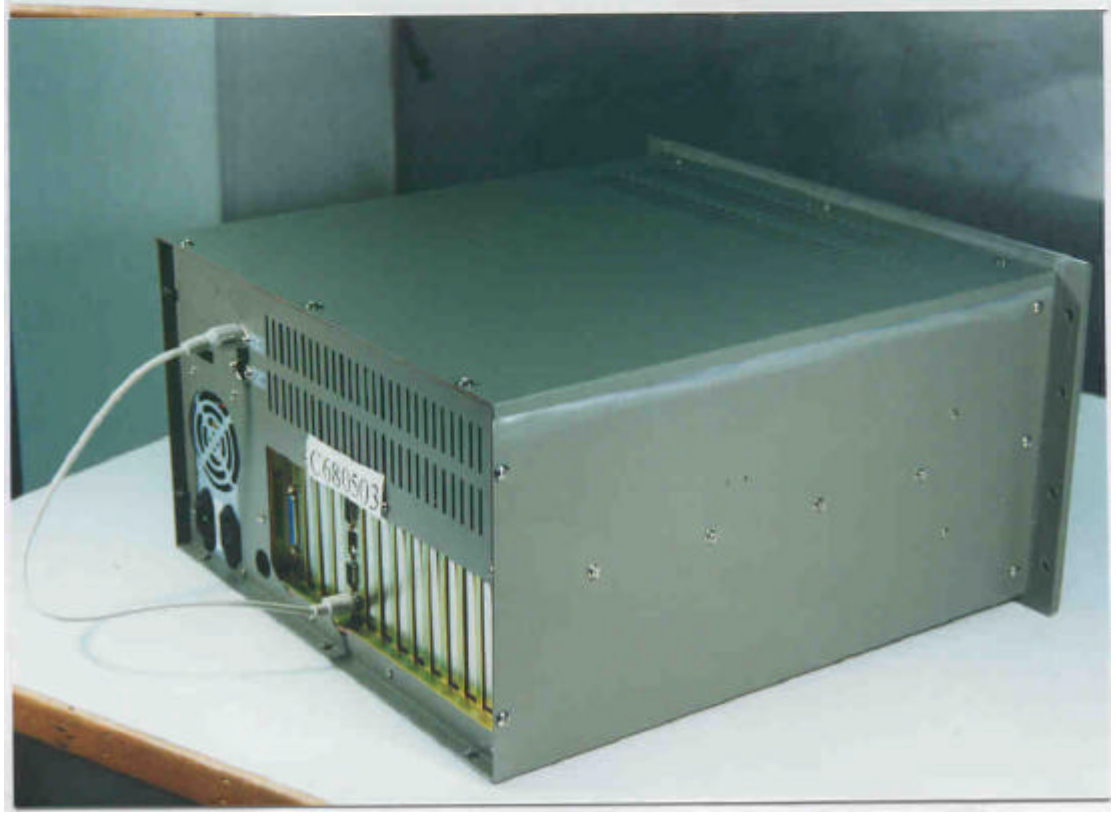
3. Sample Calculation AT 266.00 MHz

Corrected Reading= 12.52 + 3.10 + 9.27 = 24.89 (dBuV/m)

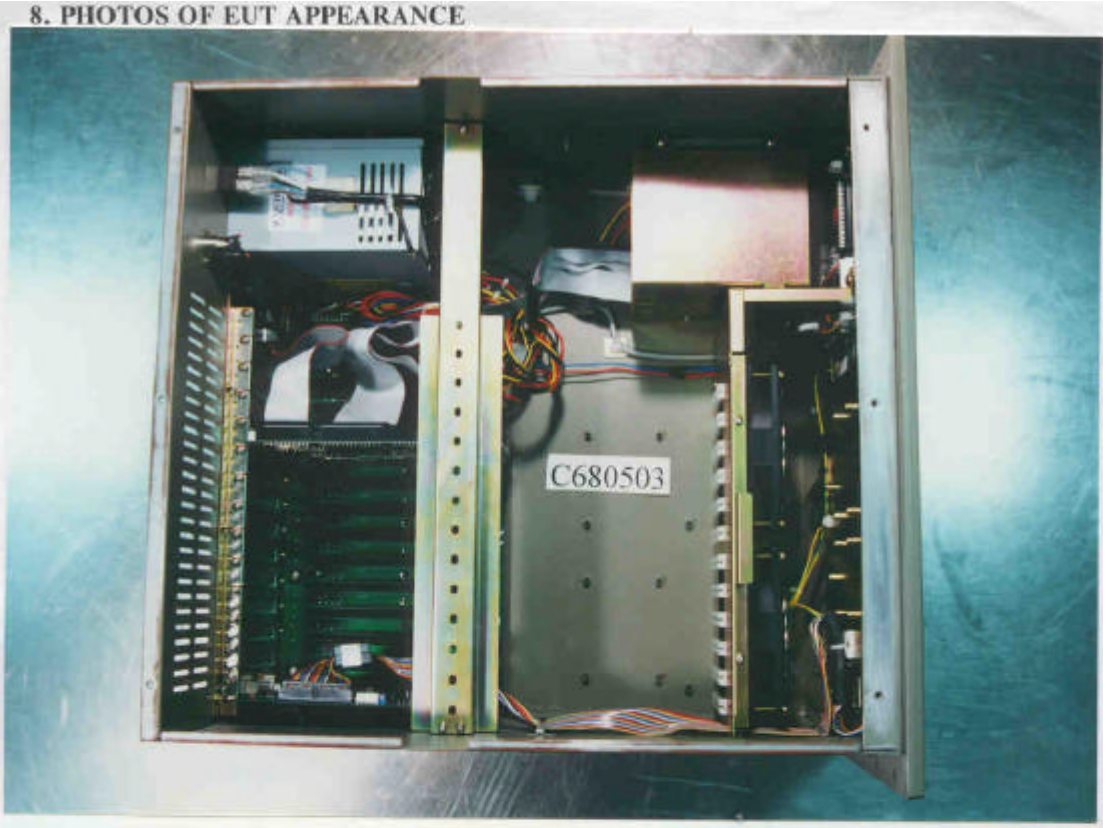
Temperature : 23 degree C Relative Humidity : 50% RH

Tested Engineer : T. C. Tseng Prepared by : H. P. Yang

8. PHOTOS OF EUT APPEARANCE



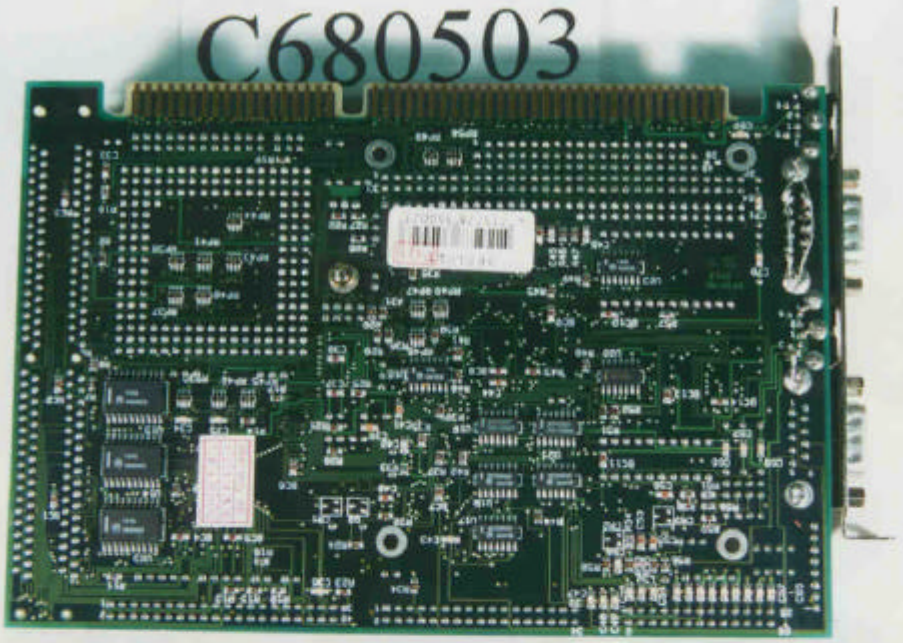
8. PHOTOS OF EUT APPEARANCE



C680503

8. PHOTOS OF EUT APPEARANCE

C680503



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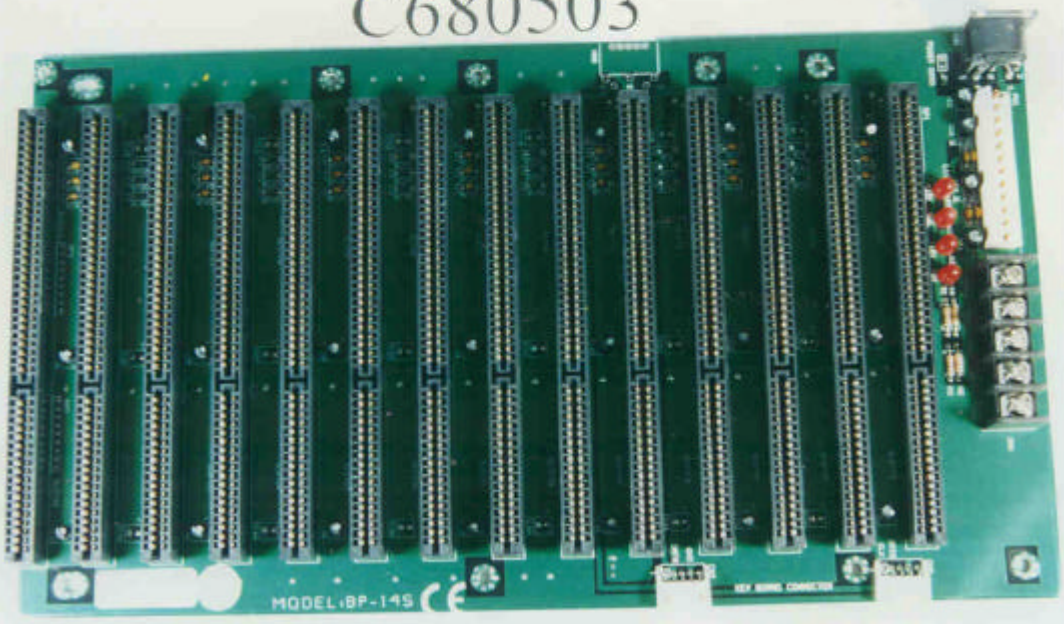
8. PHOTOS OF EUT APPEARANCE

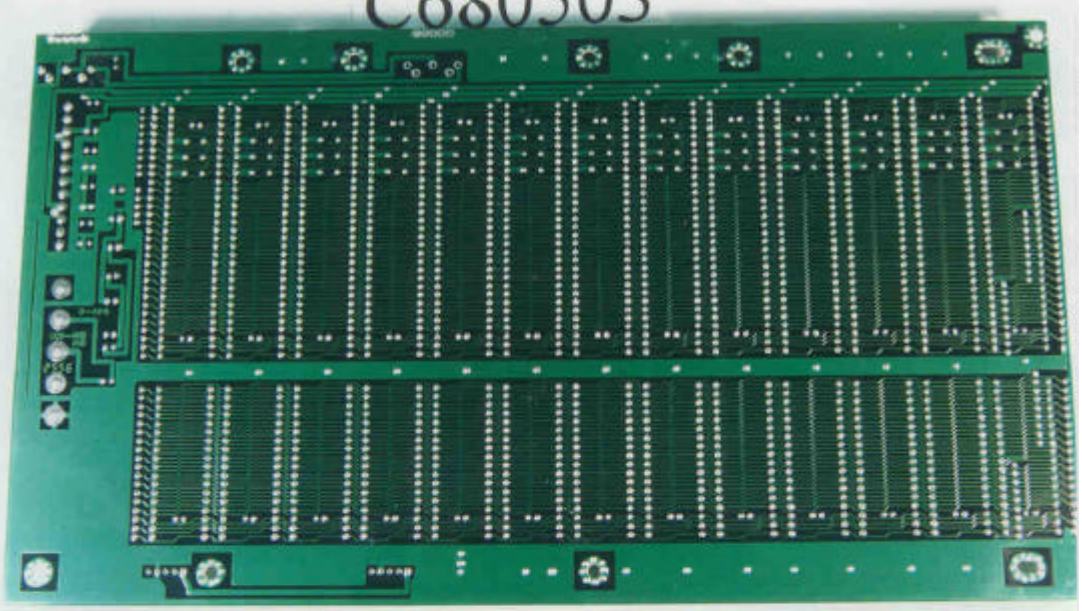
C680503

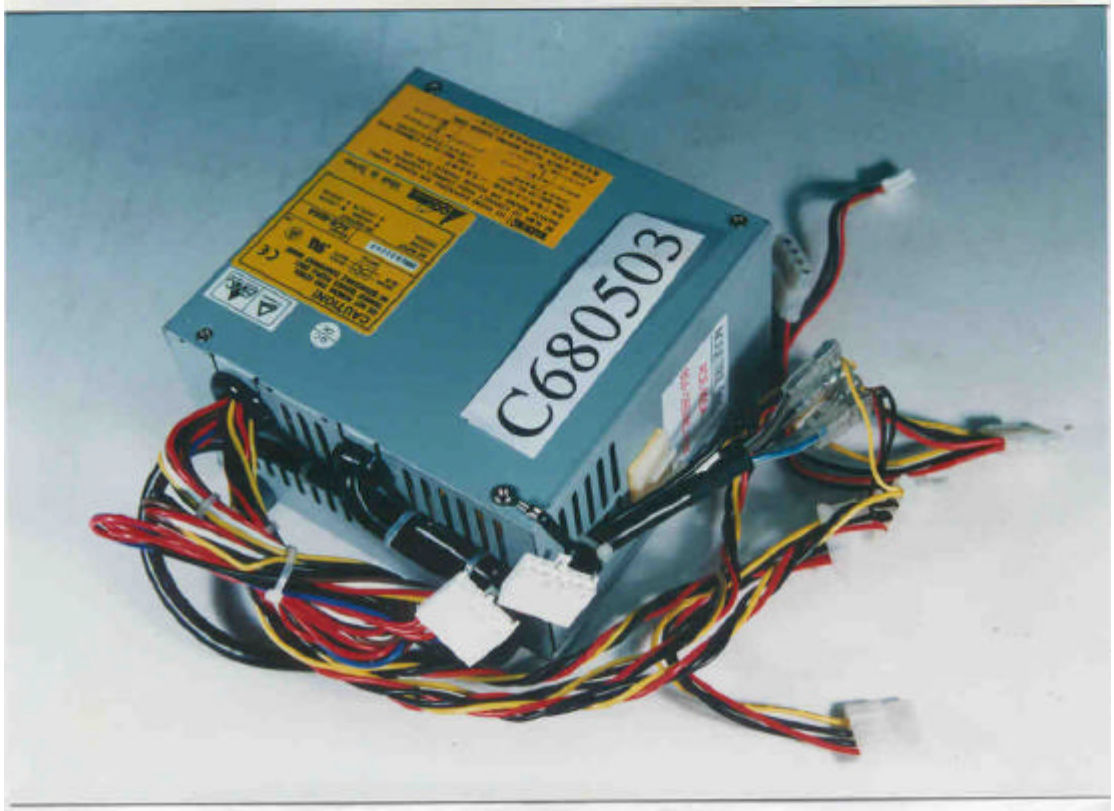
C680503



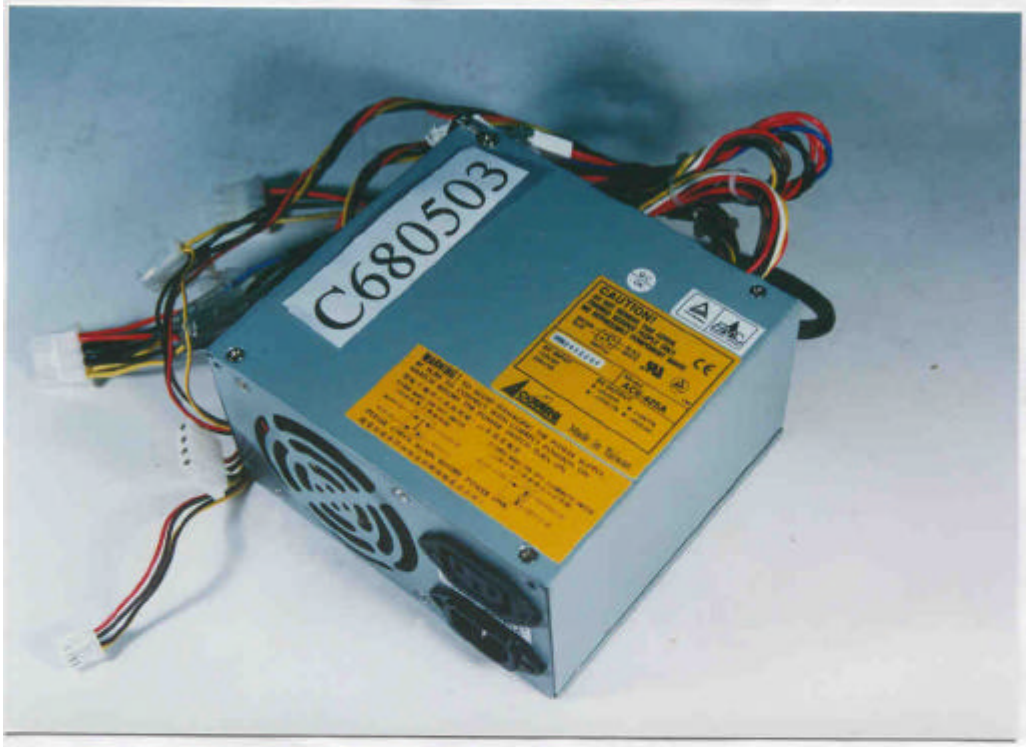
8. PHOTOS OF EUT APPEARANCE

C680503





8. PHOTOS OF EUT APPEARANCE



9.ANTENNA FACTOR & CABLE LOSS

Frequency (MHz)	Antenna Factor (dB)	Cable Loss (dB)
30.00	0.3	0.80
35.00	1.6	1.00
40.00	2.2	1.10
45.00	3.0	1.30
50.00	4.1	1.20
55.00	5.2	1.40
60.00	5.7	1.40
65.00	5.9	1.40
70.00	6.1	1.50
75.00	6.3	1.50
80.00	6.6	1.70
85.00	6.8	1.70
90.00	7.1	1.80
95.00	7.2	1.80
100.00	8.2	1.90
110.00	9.4	2.00
120.00	10.4	2.20
130.00	11.2	2.30
140.00	11.3	2.40
150.00	12.1	2.50
160.00	12.6	2.60
170.00	12.8	2.60
180.00	13.7	2.70
190.00	14.3	2.80
200.00	14.9	2.80
220.00	15.6	3.10
250.00	16.1	3.10
270.00	17.1	3.60
300.00	18.1	3.90
320.00	18.2	4.90
350.00	19.7	4.10
370.00	19.9	4.10
400.00	21.4	4.40
450.00	21.6	4.20
500.00	22.9	5.10
550.00	23.2	5.30
600.00	24.6	5.60
650.00	25.6	5.60
700.00	26.2	6.40
750.00	26.3	6.60
800.00	26.9	6.90
850.00	27.4	6.90
900.00	28.0	7.20
950.00	28.7	7.50
1000.00	28.7	7.80

10. LIST OF MEASURING EQUIPMENT USED

INSTRUMENT		MFR	MODEL	CHARACTERISTICS	CAL. DATE
01	Spectrum Analyzer	HP	8568B	100Hz - 1500MHz	AUG 20,1995
02	Quasi-Peak Adapter	HP	85650A	100Hz - 1500MHz	AUG 20,1995
03	RF. Preselector	HP	85685A	20 Hz - 2000MHz	AUG 20,1995
04	Test Receiver	R&S	ESVP	20 Hz - 1300MHz	JUL 27,1996
05	Test Receiver	R&S	ESH3	9kHz - 30 MHz	JUL 27,1996
06	Spectrum Monitor	R&S	EZM	N/A	JUL 27,1996
07	LISN	KYORITSU	KNW 242C	50 ohm / 50 uH	JUL 05,1996
08	Signal Generator	R&S	SMH	100kHz - 2000MHz	JUN 25,1996
09	Antenna Mast	EMCO	1050	N/A	N/A
10	Turntable	Sporton	N/A	N/A	N/A
11	Wooden Table	Sporton	N/A	N/A	N/A
12	Plotter	HP	7475A	N/A	N/A
13	Biconical Antenna	EMCO	3104	20MHz - 200MHz	DEC 05,1995
14	Log-Period Antenna	EMCO	3146	200MHz - 1000MHz	DEC 05,1995
15	Dipole Antenna	EMCO	3121	28 MHz - 1000MHz	DEC 02,1995
16	Loop Antenna	R&S	N/A	10 KHz - 30 MHz	OCT 23,1995
17	Shielding Room	Sporton	N/A	8m x 4.8m x 4.8m	N/A
18	Spectrum Analyzer	HP	8594A	9 KHz - 2.9 GHz	MAR 02,1996