



ADVANCE DATA TECHNOLOGY CORP.
EMC & SAFETY TESTING LABORATORY

Certificate of Compliance

We hereby certify that:

The product : INDUSTRIAL WORKSTATION

Trade Name : ADVANTECH

Model No. : AWS-843HTP-T, AWS-843HTP
AWS-843T-T, AWS-843T
AWS-843TP-T, AWS-843TP

Applicant : ADVANTECH CO., LTD.

one sample of the designation has been tested in our facility from Dec. 16, to Dec. 21, 1998. The test record, data evaluation and Equipment Under Test (EUT) configuration represented in our report no. **CE87121502**, are in compliance with the following standards:

EN 55022:1994+A1: 1995+A2: 1997, Class B
EN 61000-3-3: 1995

EN 50082-2: 1995
EN 61000-4-2: 1995
EN 61000-4-3: 1996
EN 61000-4-4: 1995
EN 61000-4-6: 1996
EN 61000-4-8: 1993
ENV 50204: 1995

Mike Su

Mike Su / Project Manager



Issue Date: Dec. 29, 1998



EMC

TEST REPORT

REPORT NO. : CE87121502
MODEL NO. : AWS-843HTP-T, AWS-843HTP
AWS-843T-T, AWS-843T
AWS-843TP-T, AWS-843TP
DATE OF TEST : Dec. 16 ~ Dec. 21, 1998

PREPARED FOR : ADVANTECH CO., LTD.

ADDRESS : FL. 4, NO. 108-3, MING-CHUAN ROAD,
SHING-TIEN CITY TAIPEI HSIEN, TAIWAN

PREPARED BY: ADVANCE DATA TECHNOLOGY CORPORATION



Accredited Laboratory

11F, NO.1, SEC.4, NAN-KING EAST RD.,
TAIPEI, TAIWAN, R.O.C.

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1.

CERTIFICATION

Issue date: Dec. 23, 1998

Product : INDUSTRIAL WORKSTATION
Trade Name : ADVANTECH
Model No. : AWS-843HTP-T, AWS-843HTP
 AWS-843T-T, AWS-843T
 AWS-843TP-T, AWS-843TP
Applicant : ADVANTECH CO., LTD.
Standard : EN 55022:1994+A1: 1995+A2: 1997, **EN 50082-2:1995**
 Class A **EN 61000-4-2: 1995**
 EN 61000-3-3: 1995 **EN 61000-4-3: 1996**
 EN 61000-4-4: 1995
 EN 61000-4-6: 1996
 EN 61000-4-8: 1993
 ENV 50204: 1995

We hereby certify that one sample of the designation has been tested in our facility from Dec. 16 to Dec. 21, 1998. The test record, data evaluation and Equipment Under Test (EUT) configurations represent herein are true and accurate representation of the measurements of the sample's EMC characteristics under the conditions herein specified.

TESTED BY: Johnny Liu , DATE: 12/23/98
(Emission) (Johnny Liu)

TESTED BY: S. S. Wang , DATE: 12/23/98
(Immunity) (S. S. Wang)

CHECKED BY: Ariel Hsieh , DATE: 12/23/98
(Ariel Hsieh)

APPROVED BY: Mike Su , DATE: 12/23/98
(Mike Su)

ADVANCE DATA TECHNOLOGY CORPORATION**NVLAQ®**

Accredited Laboratory



2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Product : INDUSTRIAL WORKSTATION
Model No. : AWS-843HTP-T, AWS-843HTP
AWS-843T-T, AWS-843T
AWS-843TP-T, AWS-843TP
Power Supply Type : Switching
Power Cord : Nonshielded (1.8m)

Note: The EUT is a PC-based industrial workstation with industrial grade high brightness 10.4" color TFT/STN LCD display. It is specifically designed for used within factories and other harsh industrial environments. It can be rack mounted or panel mounted. It also provides 8 PCI/ISA slots. A special version is also available for baby AT motherboards.

The EUT has six model names, which are identical to each other in all aspects except for the following:

MODEL NO.	BACK PLANE	LCD DISPLAY	TOUCH SCREEN	VGA CARD
AWS-843HTP-T	PCI + ISA	10.4" TFT 800*600 Color	YES	PCA-6654L
AWS-843HTP	PCI + ISA	10.4" TFT 800*600 Color	NO	PCA-6654L
AWS-843T-T	ISA	10.4" TFT 640*480 Color	YES	PCA-6653
AWS-843T	ISA	10.4" TFT 640*480 Color	NO	PCA-6653
AWS-843TP-T	PCI + ISA	10.4" TFT 640*480 Color	YES	PCA-6654L
AWS-843TP	PCI + ISA	10.4" TFT 640*480 Color	NO	PCA-6654L

From the above models, models: AWS-843HTP-T and AWS-843T-T were selected as the representative for the test, and both their data are recorded as MODE 1 & MODE 2 in this report.



The EUT was tested with the following configuration:

	MODE 1	MODE 2
EUT MODEL NO.	AWS-843HTP-T	AWS-843T-T
CPU	INTEL PENTIUM 233 MMX (66.6*3.5)	INTEL PENTIUM 200 MMX (66.6*3)
CPU CARD	ADVANTECH, model: PCA-6159	
BACK PLANE	ADVANTECH model: PCA-6107P2	ADVANTECH model: PCA-6108
LCD DISPLAY	TOSHIBA, TFT 10.4" model: LTM-10C273 (800*600)	TOSHIBA, TFT 10.4" model: LTM-10C209A (640*480)
VGA CARD	ADVANTECH model: PCA-6654L	ADVANTECH model: PCA-6653
CHASSIS	ADVANTECH, model: AWS-843T	
HDD	SEAGATE, model: ST34321A, 4.3G	
FDD	YE-DATA, model: YD-702J-6037J	
CD-ROM	TOSHIBA, model: XM-1702B, 24X	
POWER SUPPLY	SKYNET, model: ADT-925C, 260W	
TOUCH SCREEN FOUNCTION	ELO, model: 00274HL	

For more detailed features description, please refer to manufacturer's specification or User's Manual.

2.2 GENERAL DESCRIPTION OF APPLIED STANDARD

The EUT is an office equipment and is classified as a light industry equipment. According to the manufacturer's request, the EUT was tested with the requirements of the following standards:

EN 55022: 1994+A1: 1995+A2: 1997, Class A
EN 61000-3-3:1995

EN 50082-2:1995
EN 61000-4-2:1995
EN 61000-4-3:1996
EN 61000-4-4:1995
EN 61000-4-6:1996
EN 61000-4-8:1993
ENV 50204:1995

All tests are performed and recorded as per above standards.



2.3 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories are used to form representative test configuration during the tests.

FOR EMISSION TEST

No	Product	Brand	Model No.	Serial No.	I/O Cable
1	MONITOR	ADI	PD-959	730020U00100373	Shielded Signal (1.2m) Nonshielded Power (1.8m)
2	KEYBOARD	BTC	5140	765020079	Shielded Signal (1.6m)
3	PRINTER	HP	2225C+	3123S97230	Shielded Signal (2.0m) Nonshielded Power (2.1m)
4	MOUSE	DEXIN	A2P800A	80110011	Shielded Signal (1.5m)
5	MODEM	ACEEX	1414	980020508	Shielded Signal (1.2m) Nonshielded Power (2.0m)

FOR IMMUNITY TEST

No	Product	Brand	Model No.	Serial No.	I/O Cable
1	MONITOR	ACER	7234e	9174302003	Shielded Signal (1.5m) Nonshielded Power (1.8m)
2	KEYBOARD	HP	C3753A	C3753-60223	Shielded Signal (1.8m)
3	PRINTER	HP	C2145A	SG59N16035	Shielded Signal (1.5m) Nonshielded Power (1.8m)
4	MOUSE	COMPAQ	13H6690	23-D365100	Shielded Signal (1.8m)
5	MODEM	GVC	F-1128V1R6	96-191-113003	Shielded Signal (1.25m) Nonshielded Power (1.5m)

2.4 TEST SETUP

Please refer to the photos of test configuration in Item 6.



3. TEST INSTRUMENTS

3.1 TEST INSTRUMENTS (EMISSION)

RADIATED EMISSION MEASUREMENT

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
HP Spectrum Analyzer	8590L	3544A01176	April 28, 1999
HP Preamplifier	8447D	2944A08485	May 1, 1999
ROHDE & SCHWARZ TEST RECEIVER	ESMI	839013/007 839379/002	Aug. 27, 1999
SCHWARZBECK Tunable Dipole Antenna	VHA 9103 UHA 9105	E101051 E101055	Nov. 25, 1999
CHASE BILOG Antenna	CBL6112A	2221	Aug. 10, 1999
EMCO Turn Table	1060	1115	N/A
SHOSHIN Tower	AP-4701	A6Y005	N/A
Open Field Test Site	Site 5	ADT-R05	Aug. 9, 1999

Note: 1. The measurement uncertainty is less than ± 3 dB, which is calculated as per NAMA's document NIS81.

2. The calibration interval of the above test instruments is 12 months.
And the calibrations are traceable to NML/ROC and NIST/USA.

CONDUCTED EMISSION MEASUREMENT

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
ROHDE & SCHWARZ Test Receiver	ESHS30	828765/002	July 29, 1999
ROHDE & SCHWARZ Artificial Mains Network	ESH2-Z5	828075/003	July 27, 1999
EMCO-L.I.S.N.	3825/2	90031627	July 27, 1999
Shielded Room	Site 5	ADT-C05	N/A

Note: 1. The measurement uncertainty is less than ± 2.6 dB, which is calculated as per NAMA's document NIS81.

2. The calibration interval of the above test instruments is 12 months.
And the calibrations are traceable to NML/ROC and NIST/USA.

CURRENT HARMONICS, VOLTAGE FLUCTUATION AND FLICKER MEASUREMENT

Description & Manufacturer	Model no.	Serial No.	Calibrated Until
KeyTek, Power Arb Waveform Generator	EP72HF	9508346	May 28, 1999
KIKUSUI AC SWITCHING POWER SUPPLY	PCR 4000L	9508355	May 28, 1999

Note: 1. The calibration interval of the above test instruments is 12 months.
And the calibrations are traceable to NML/ROC and NIST/USA.



3.2 TEST INSTRUMENTS (IMMUNITY)

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
KeyTek, ESD Test System	2000	9105240/41	Aug. 9, 1999
KeyTek, ESD Simulator	MZ-15/EC	92022232	April 15, 1999
ROHDE & SCHWARZ Signal Generator	SMY01	840490/009	Sept. 30, 1999
KALMUS Power Amplifier	LA1000V	091995-1	N/A
KALMUS Power Amplifier	757LC	091995-2	N/A
HOLADAY Field Probe	HI-4422	89915	Oct. 27, 1999
EMCO BiconiLog Antenna	3141	1001	N/A
FCC Coupling Decoupling Network	FCC-801- MODE:3-25	48	N/A
FCC Coupling Decoupling Network	FCC-801- MODE:2-25	20	N/A
FISCHER CUSTOM COMMUNICATIONS EM Injection Clamp	FCC-203I	50	N/A
FCC Coupling Decoupling Network	FCC-801- MODE:1-25	17	N/A
BOONTON RF Voltage Meter	9200B	331801AE	Sept. 29, 1998
COMTEST Compact Full Anechoic Chamber (7x3x3 m)	CFAC	ADT-S01	Aug. 4, 1999
KeyTek, EFT Generator	CE-40	9508257	Sept. 8, 1999
KeyTek, Capacitive Clamp	CE-40-CCL	9508259	Sept. 8, 1999
HAEFELY Magnetic Field Tester	MAG 100.1	083794-06	N/A
COMBINOVA Magnetic Field Meter	MFM10	224	Aug. 26, 1999

Note: The calibration interval of the above test instruments is 12 months.

And the calibrations are traceable to NML/ROC and NIST/USA.



3.3 LIMITS OF CONDUCTED AND RADIATED EMISSION

LIMIT OF RADIATED EMISSION OF EN 55022

FREQUENCY (MHz)	Class A (at 10m)	Class B (at 10m)
	dBuV/m	dBuV/m
30 - 230	40	30
230 - 1000	47	37

- Note: (1) The lower limit shall apply at the transition frequencies.
- (2) Emission level (dBuV/m) = 20 log Emission level (uV/m).
- (3) All emanation from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

LIMIT OF CONDUCTED EMISSION OF EN 55022

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

- Note: (1) The lower limit shall apply at the transition frequencies.
- (2) The limit decreases linearly with the logarithm of the frequency in the range 0.15 to 0.50 MHz
- (3) All emanation from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.



4. TEST RESULTS (EMISSION)

4.1 RADIO DISTURBANCE

Product Family Standard : EN 55022:1994+A1: 1995+A2: 1997, Class A
Frequency Range : 0.15 - 30 MHz (Conducted Emission)
30 - 1000 MHz (Radiated Emission)
Input Voltage : 230 Vac, 50 Hz
Temperature : 20 °C
Humidity : 66 %
Atmospheric Pressure : 1003 mbar

TEST RESULT	Remarks
PASS	Minimum passing margin of conducted emission: -29.2 dB at 25.052 MHz Minimum passing margin of radiated emission: -3.3 dB at 225.21 MHz

4.1.1 EUT OPERATION CONDITION

1. Turn on the power of all equipment.
2. EUT runs a test program to enable all functions.
3. EUT reads and writes messages from FDD and HDD.
4. EUT sends "H" messages to monitor and monitor displays "H" patterns on screen.
5. EUT sends "H" messages to modem.
6. EUT sends "H" messages to printer, and the printer prints them on paper.
7. Repeat steps 3-7.



4.1.2 TEST DATA OF CONDUCTED EMISSION (A)

EUT: INDUSTRIAL WORKSTATION

MODEL: AWS-843HTP-T

MODE: 1

6 dB Bandwidth: 10 kHz

Freq.	L Level		N Level		Limit		Margin [dB (μV)]			
[MHz]	[dB (μV)]		[dB (μV)]		[dB (μV)]		L		N	
	QP	AV	QP	AV	QP	AV	QP	AV	QP	AV
0.150	42.5	-	43.7	-	79.0	66.0	-36.5	-	-35.3	-
0.177	38.8	-	44.3	-	79.0	66.0	-40.2	-	-34.7	-
0.948	27.2	-	26.2	-	73.0	60.0	-45.8	-	-46.8	-
6.794	39.5	-	39.7	-	73.0	60.0	-33.5	-	-33.3	-
17.570	30.6	-	39.2	-	73.0	60.0	-42.4	-	-33.8	-
25.052	40.2	-	43.8	-	73.0	60.0	-32.8	-	-29.2	-

- Remarks:
1. "*": Undetectable
 2. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 3. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 4. The emission levels of other frequencies were very low against the limit.
 5. Margin value = Emission level - Limit value

ADT CO. Shielded Room 5
EN 55022 CLASS A

16. Dec 98 16:33

EUT: AWS-843HTP-T
Test Spec: LISN : L

Report No. CE 87121502

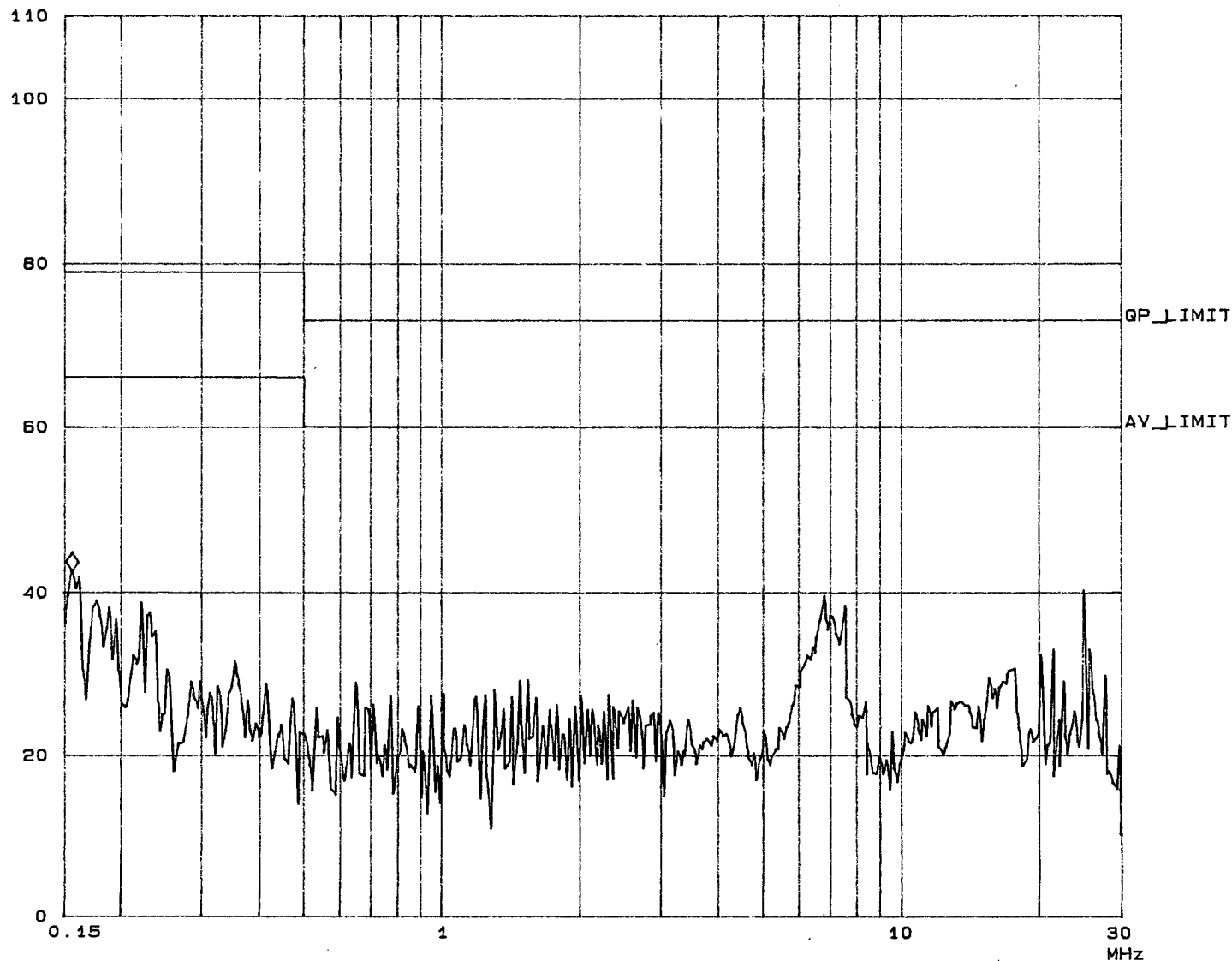
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Tested by Johnny Liu

Fast Scan Settings (3 Ranges)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preampl	OpRge
150k	450k	3k	10k	PK	0.05ms	10dB	BLN OFF	60dB
450k	5M	3k	10k	PK	0.05ms	10dB	BLN OFF	60dB
5M	30M	3k	10k	PK	0.05ms	10dB	BLN OFF	60dB

dBuV ◇ Mkr : 156.00 kHz 42.5 dBuV



ADT CO. Shielded Room 5
EN 55022 CLASS A

16. Dec 98 16:28

EUT: AWS-843HTP-T
Test Spec: LISN : N

Report No. CE871-1502

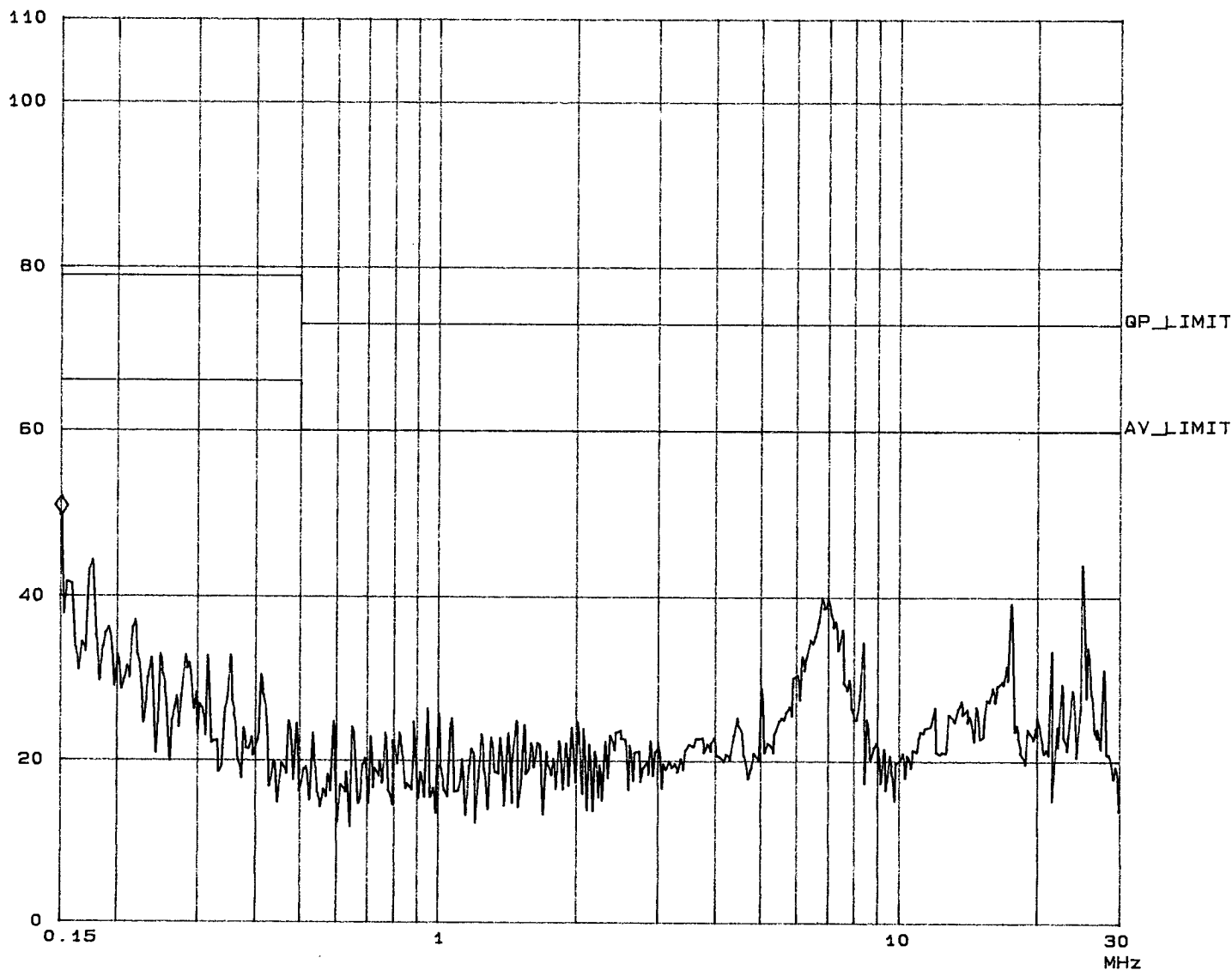
Page 11-2

Tested by Johnny-Liu

Fast Scan Settings (3 Ranges)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpAmp
150k	450k	3k	10k	PK	0.05ms	10dB	BLN OFF	60dB
450k	5M	3k	10k	PK	0.05ms	10dB	BLN OFF	60dB
5M	30M	3k	10k	PK	0.05ms	10dB	BLN OFF	60dB

dBuV ◇ Mkr : 150.00 kHz 49.8 dBuV





4.1.3 TEST DATA OF CONDUCTED EMISSION (B)

EUT: INDUSTRIAL WORKSTATION

MODEL: AWS-843T-T

MODE: 2

6 dB Bandwidth: 10 kHz

Freq.	L Level		N Level		Limit		Margin [dB (μV)]			
[MHz]	[dB (μV)]		[dB (μV)]		[dB (μV)]		L		N	
	QP	AV	QP	AV	QP	AV	QP	AV	QP	AV
0.162	45.9	-	46.2	-	79.0	66.0	-33.1	-	-32.8	-
0.222	43.0	-	43.1	-	79.0	66.0	-36.0	-	-35.9	-
2.271	33.2	-	29.1	-	73.0	60.0	-39.8	-	-43.9	-
7.061	41.0	-	39.2	-	73.0	60.0	-32.0	-	-33.8	-
16.292	39.8	-	29.7	-	73.0	60.0	-33.2	-	-43.3	-
25.736	32.1	-	30.8	-	73.0	60.0	-40.9	-	-42.2	-

- Remarks:
1. "*": Undetectable
 2. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 3. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 4. The emission levels of other frequencies were very low against the limit.
 5. Margin value = Emission level - Limit value

ADT CO. Shielded Room 5
EN55022 CLASS A

16. Dec 98 15: 47

EUT: AWS-843T-T
Test Spec: LISN : L

Report No. CE 87121502

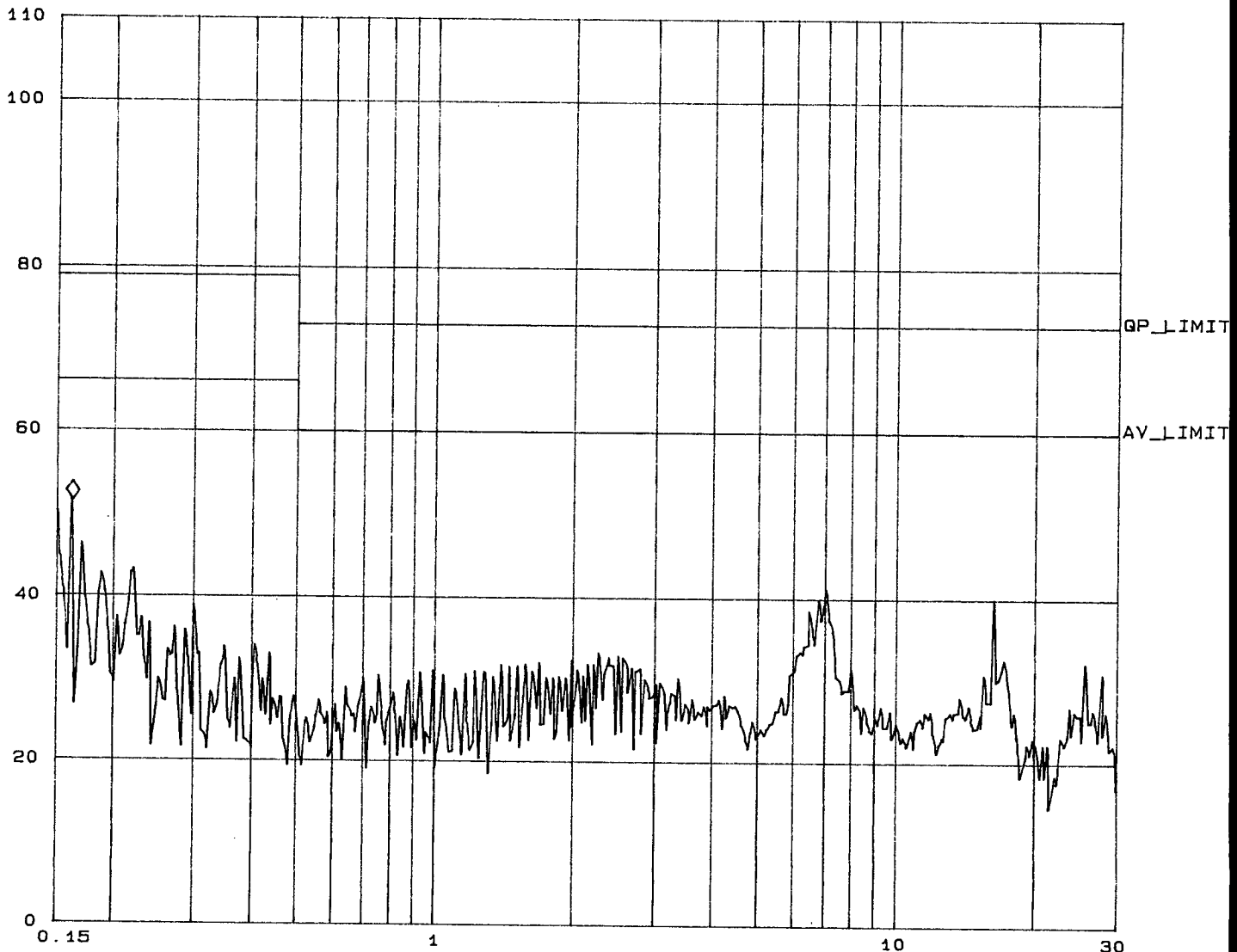
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Tested by Johnny-Liu

Fast Scan Settings (3 Ranges)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
150k	450k	3k	10k	PK	0.05ms	10dBLN	OFF	60dB
450k	5M	3k	10k	PK	0.05ms	10dBLN	OFF	60dB
5M	30M	3k	10k	PK	0.05ms	10dBLN	OFF	60dB

dBuV ◇ Mkr : 162.00 kHz 51.6 dBuV



ADT CO. Shielded Room 5
EN55022 CLASS A

16. Dec 98 15:53

EUT: AWS-843T-T
Test Spec: LISN : N

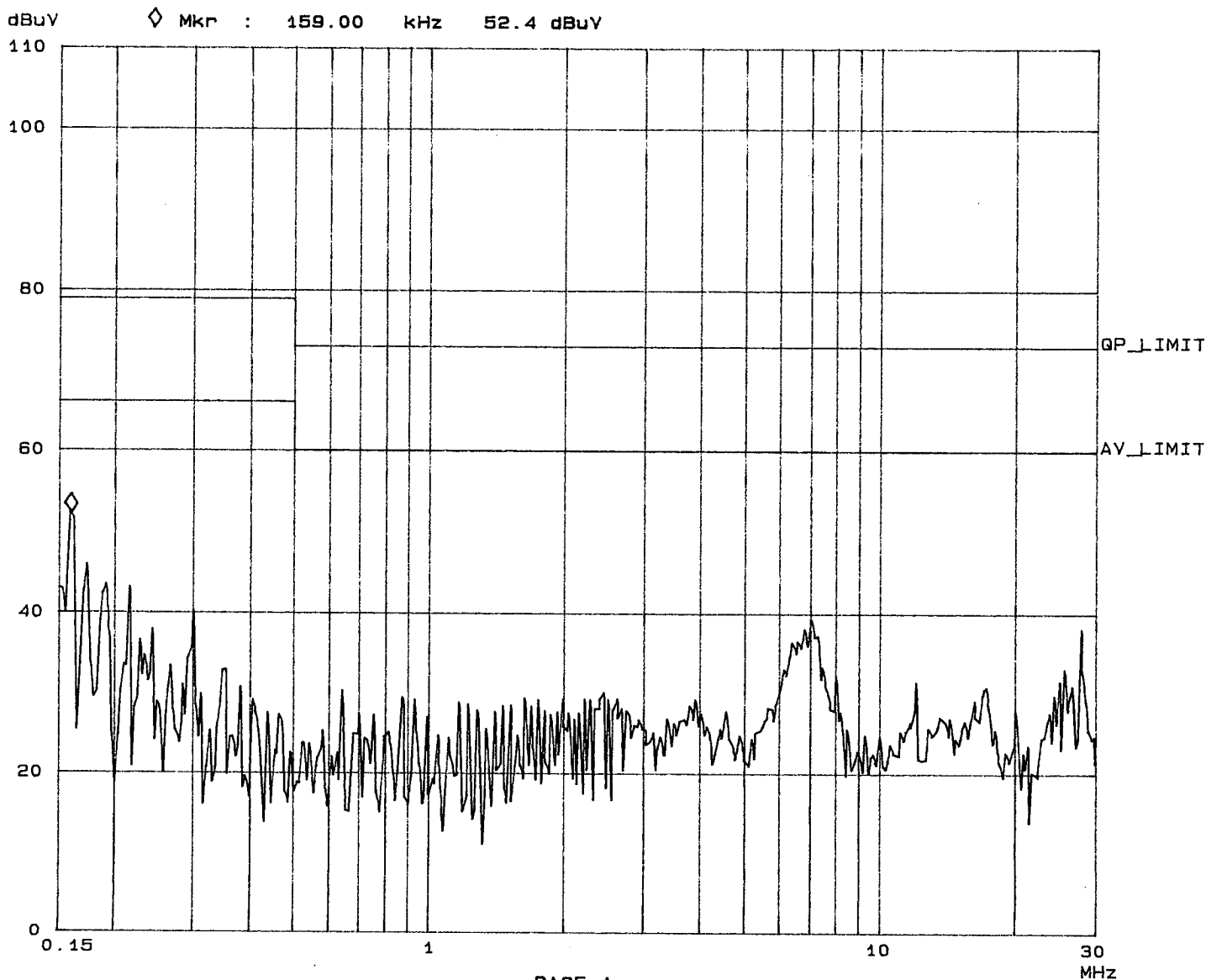
Report No. CE 87121502

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Tested by Johnny-Liu

Fast Scan Settings (3 Ranges)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preampl	OpRge
150k	450k	3k	10k	PK	0.05ms	10dBLN	OFF	60dB
450k	5M	3k	10k	PK	0.05ms	10dBLN	OFF	60dB
5M	30M	3k	10k	PK	0.05ms	10dBLN	OFF	60dB





4.1.4 TEST DATA OF RADIATED EMISSION (A)

EUT: INDUSTRIAL WORKSTATION

MODEL: AWS-843HTP-T

MODE: 1

ANT. POLARITY: Horizontal

DETECTOR FUNCTION: Quasi-peak

6 dB BANDWIDTH: 120 kHz

FREQUENCY RANGE: 30-1000 MHz

MEASURED DISTANCE: 10 M

Frequency (MHz)	Correction Factor (dB/m)	Reading Data (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
80.56	8.4	13.3	21.7	40.0	-18.3
110.80	13.7	13.2	26.9	40.0	-13.1
113.30	14.0	15.5	29.5	40.0	-10.5
120.09	14.9	14.4	29.3	40.0	-10.7
138.47	13.8	13.9	27.7	40.0	-12.3
165.12	12.0	11.3	23.3	40.0	-16.7
175.70	11.8	20.5	32.3	40.0	-7.7
186.24	11.9	11.5	23.4	40.0	-16.6
192.14	12.1	14.7	26.8	40.0	-13.2
200.56	12.4	19.6	32.0	40.0	-8.0
216.15	13.3	20.1	33.4	40.0	-6.6
264.18	16.7	13.4	30.1	47.0	-16.9
456.31	21.7	12.4	34.1	47.0	-12.9
735.38	26.6	10.2	36.8	47.0	-10.2

- REMARKS:
1. Emission level (dBuV/m) = Correction Factor (dB/m) + Meter Reading (dBuV).
 2. Correction Factor (dB/m) = Ant. Factor (dB/m) + Cable loss (dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level - Limit value



TEST DATA OF RADIATED EMISSION (A)

EUT: INDUSTRIAL WORKSTATION

MODEL: AWS-843HTP-T

MODE: 1

ANT. POLARITY: Vertical

DETECTOR FUNCTION: Quasi-peak

6 dB BANDWIDTH: 120 kHz

FREQUENCY RANGE: 30-1000 MHz

MEASURED DISTANCE: 10 M

Frequency (MHz)	Correction Factor (dB/m)	Reading Data (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
80.56	8.4	12.2	20.6	40.0	-19.4
108.66	12.8	13.9	26.7	40.0	-13.3
113.31	13.7	12.8	26.5	40.0	-13.5
125.93	15.0	9.5	24.5	40.0	-15.5
165.12	12.0	15.7	27.7	40.0	-12.3
175.70	12.0	19.5	31.5	40.0	-8.5
186.15	12.3	13.2	25.5	40.0	-14.5
195.16	12.8	14.9	27.7	40.0	-12.3
200.55	13.0	21.6	34.6	40.0	-5.4
216.14	13.6	21.1	34.7	40.0	-5.3
233.99	14.2	17.2	31.4	47.0	-15.6
401.11	20.0	8.1	28.1	47.0	-18.9
835.65	26.9	5.9	32.8	47.0	-14.2

- REMARKS:
1. Emission level (dBuV/m) = Correction Factor (dB/m) + Meter Reading (dBuV).
 2. Correction Factor (dB/m) = Ant. Factor (dB/m) + Cable loss (dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level - Limit value



4.1.5 TEST DATA OF RADIATED EMISSION (B)

EUT: INDUSTRIAL WORKSTATION

MODEL: AWS-843T-T

MODE: 2

ANT. POLARITY: Horizontal

DETECTOR FUNCTION: Quasi-peak

6 dB BANDWIDTH: 120 kHz

FREQUENCY RANGE: 30-1000 MHz

MEASURED DISTANCE: 10 M

Frequency (MHz)	Correction Factor (dB/m)	Reading Data (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
84.19	9.0	15.0	24.0	40.0	-16.0
108.98	13.5	11.3	24.8	40.0	-15.2
120.26	14.9	14.1	29.0	40.0	-11.0
124.28	14.6	13.5	28.1	40.0	-11.9
136.30	13.9	12.8	26.7	40.0	-13.3
160.37	12.0	14.6	26.6	40.0	-13.4
192.45	12.1	17.4	29.5	40.0	-10.5
200.51	12.4	21.1	33.5	40.0	-6.5
216.10	13.2	22.9	36.1	40.0	-3.9
225.21	13.7	23.0	36.7	40.0	-3.3
233.94	14.2	24.2	38.4	47.0	-8.6
260.59	16.7	19.2	35.9	47.0	-11.1
280.63	16.5	22.7	39.2	47.0	-7.8
400.90	20.4	19.7	40.1	47.0	-6.9
601.35	24.5	12.3	36.8	47.0	-10.2

- REMARKS:
1. Emission level (dBuV/m) = Correction Factor (dB/m) + Meter Reading (dBuV).
 2. Correction Factor (dB/m) = Ant. Factor (dB/m) + Cable loss (dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level - Limit value



TEST DATA OF RADIATED EMISSION (B)

EUT: INDUSTRIAL WORKSTATION

MODEL: AWS-843T-T

MODE: 2

ANT. POLARITY: Vertical

DETECTOR FUNCTION: Quasi-peak

6 dB BANDWIDTH: 120 kHz

FREQUENCY RANGE: 30-1000 MHz

MEASURED DISTANCE: 10 M

Frequency (MHz)	Correction Factor (dB/m)	Reading Data (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
84.19	8.5	18.9	27.4	40.0	-12.6
108.25	12.8	16.5	29.3	40.0	-10.7
120.28	15.1	18.4	33.5	40.0	-6.5
132.29	15.0	16.8	31.8	40.0	-8.2
140.32	15.0	14.8	29.8	40.0	-10.2
172.39	12.0	19.4	31.4	40.0	-8.6
180.40	12.1	16.3	28.4	40.0	-11.6
192.44	12.6	20.6	33.2	40.0	-6.8
200.50	13.0	23.5	36.5	40.0	-3.5
216.10	13.6	21.3	34.9	40.0	-5.1
225.22	13.9	19.9	33.8	40.0	-6.2
233.93	14.2	20.6	34.8	47.0	-12.2
300.77	16.3	23.6	39.9	47.0	-7.1
400.90	20.0	19.1	39.1	47.0	-7.9
601.35	24.3	6.6	30.9	47.0	-16.1

- REMARKS:
1. Emission level (dBuV/m) = Correction Factor (dB/m) + Meter Reading (dBuV).
 2. Correction Factor (dB/m) = Ant. Factor (dB/m) + Cable loss (dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level - Limit value



4.2 VOLTAGE FLUCTUATIONS AND FLICKER

Basic Standard : EN 61000-3-3
Input Voltage : 230Vac, 50Hz
Temperature : 25 °C
Humidity : 58 %
Atmospheric Pressure : 1012 mbar

TEST RESULT	Remarks
PASS	MODE 1
PASS	MODE 2

Note: The measured data are too low against the limit and therefore they are not reported.

4.2.1 EUT OPERATION CONDITION

Same as item 4.1.1.



4.2.2 TEST DATA OF VOLTAGE FLUCTUATIONS AND FLICKER (A)

EUT: INDUSTRIAL WORKSTATION

MODEL: AWS-843HTP-T

MODE: 1

Input Voltage : 230 Vrms

Observation period (Tp): 2 hour

The measured data are too low against the limit and therefore they are not reported.



4.2.3 TEST DATA OF VOLTAGE FLUCTUATIONS AND FLICKER (B)

EUT: INDUSTRIAL WORKSTATION

MODEL: AWS-843HTP-T

MODE: 2

Input Voltage : 230 Vrms

Observation period (Tp): 2 hour

The measured data are too low against the limit and therefore they are not reported.



5. TEST RESULTS (IMMUNITY)

5.1 GENERAL DESCRIPTION

Generic Standard	:	EN 50082-2: 1995	
Basic Standard and Performance Criteria	:	EN 61000-4-2	(Electrostatic Discharge, ESD, 8kV air discharge, 4kV Contact discharge, Performance Criteria B)
		EN 61000-4-3	(Radio-Frequency Electromagnetic Field Susceptibility Test, RS, 80-1000 MHz, 10V/m, 80% AM (1kHz), Performance Criteria A)
		EN 61000-4-4	(Electrical Fast Transient/Burst, EFT, Power line: 2kV, Signal line: 1kV, Performance Criteria B)
		EN 61000-4-6	(Conducted Radio Frequency Disturbances Test, CS, 0.15-80 MHz, 10V/m, 80% AM, 1kHz, Performance Criteria A)
		EN 61000-4-8	(Power Frequency Magnetic Field Test, 50 Hz, 30A/m, Performance Criteria A)
		ENV 50204	(Radio-Frequency Electromagnetic Field, Pulse modulated, 900+/-5 MHz, 10V/m, 50 % duty cycle, 200 Rep. Frequency Hz, Performance Criteria A)
Input Voltage	:	230 Vac, 50 Hz	
Temperature	:	25 °C	
Humidity	:	59 %	
Atmospheric Pressure	:	1012 mbar	

5.2 PERFORMANCE CRITERIA DESCRIPTION

- Criterion A - The apparatus shall continue to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended.
- Criterion B - The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended.
- Criterion C - Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls.

5.3 EUT OPERATION CONDITION

Same as item 4.1.1.



5.4 TEST RESULT OF ELECTROSTATIC DISCHARGE (ESD)

Basic Standard : EN 61000-4-2
Discharge Impedance : 330 ohm / 150 pF
Discharge Voltage : Air Discharge - 8 kV (Direct)
Contact Discharge - 4 kV (Direct/Indirect)
Polarity : Positive/Negative
Number of Discharge : Minimum 10 times at each test point
Discharge Mode : Single Discharge
Discharge Period : 1-second minimum

Test Result		Remarks
Criterion A	PASS	MODE 1
Criterion A	PASS	MODE 2

OBSERVATION DESCRIPTION

Direct Application			Test Result	
Discharge Level (kV)	Polarity (+/-)	Test Point	Contact Discharge	Air Discharge
8	+/-	1-7	N/A	Note 1
4	+/-	3,4,7	Note 1	N/A

Description of test point:

1. Junction of case
2. All openings
3. Metal case
4. All screws
5. Push button
6. Switch
7. All I/O devices

Indirect Application			Test Result	
Discharge Level (kV)	Polarity (+/-)	Test Point	Horizontal Coupling	Vertical Coupling
4	+/-	1 ~ 4	Note 1	Note 1

Description of test point:

1. Front side
2. Left side
3. Right side
4. Rear side

Description of test result:

Note 1: There was no change compared with initial operation during the test.



5.5 TEST RESULT OF RADIATED ELECTROMAGNETIC FIELDS (RS)

Basic Standard : EN 61000-4-3
Frequency range : 80 MHz - 1000 MHz
Field strength : 10 V/m
Modulation : 1kHz Sine Wave, 80%, AM Modulation
Frequency step : 1 % of fundamental
Polarity of Antenna : Horizontal and Vertical
Test distance : , 3 m

Test Result		Remarks
Criterion A	PASS	MODE 1
Criterion A	PASS	MODE 2

Note: Four sides of EUT are verified separately.

Description of test result:

There was no change compared with initial operation during the test.



5.6 TEST RESULT OF ELECTRICAL FAST TRANSIENT (EFT)

Basic Standard : EN 61000-4-4
Test Voltage : Power Line - 2 kV
Signal/Control Line - N/A
Polarity : Positive/Negative
Impulse Frequency : 5 kHz
Tr / Tn : 5/50 ns
Burst Duration : 15 ms
Burst Period : 300 ms
Test Duration : Not less than 1 min.

Test Result		Remarks
Criterion A	PASS	MODE 1
Criterion A	PASS	MODE 2

OBSERVATION DESCRIPTION

Test Point	Polarity	Test Level (kV)	Result
L1	+/-	2	Note 1
L2	+/-	2	Note 1
GND	+/-	2	Note 1

Description of test result:

Note 1: There was no change compared with initial operation during the test.



5.7 TEST RESULT OF CONDUCTED RADIO FREQUENCY DISTURBANCES (CS)

Basic Standard : EN 61000-4-6
Frequency range : 0.15 MHz - 80 MHz
Field strength : 10 V/m
Modulation : 1kHz Sine Wave, 80%, AM Modulation
Frequency step : 1 % of fundamental
Coupled cable : Power Mains, Unshielded
Coupling device : CDN-M3 (3 wires)

Test Result		Remarks
Criterion A	PASS	MODE 1
Criterion A	PASS	MODE 2

OBSERVATION DESCRIPTION

There was no change compared with initial operation during the test.



5.8 TEST RESULT OF POWER FREQUENCY MAGNETIC FIELD

Basic Standard : EN 61000-4-8
Frequency range : 50Hz
Field strength : 30 A/m
Observation Time : 1 minute
Inductance coil : Rectangular type, 1mx1m

Test Result		Remarks
Criterion A	PASS	MODE 1
Criterion A	PASS	MODE 2

OBSERVATION DESCRIPTION

There was no change compared with initial operation during the test.



5.9 TEST RESULT OF RADIO-FREQUENCY ELECTROMAGNETIC FIELD, PULSE MODULATED

Basic Standard : ENV 50204
Frequency range : 900 +/- 5 MHz
Field strength : 10 V/m
Modulation : 200Hz, Square Wave, 50% Duty Cycle
Dewell Time : 30 second
Polarity of Antenna : Horizontal and Vertical
Test distance : 3 m

Test Result		Remarks
Criterion A	PASS	MODE 1
Criterion A	PASS	MODE 2

Note: Four sides of EUT are verified separately.

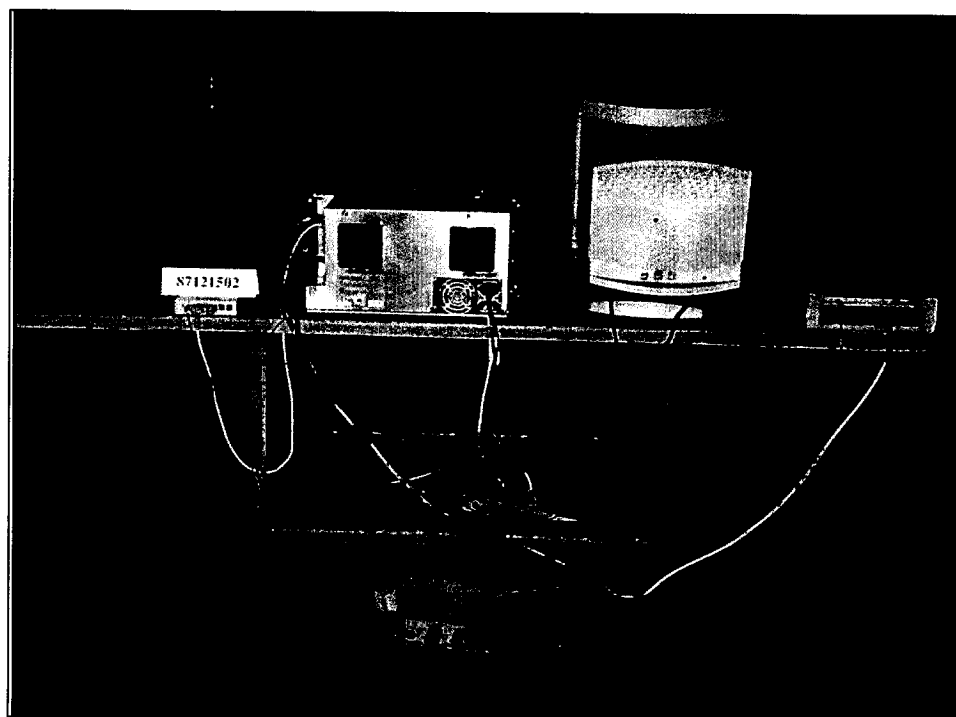
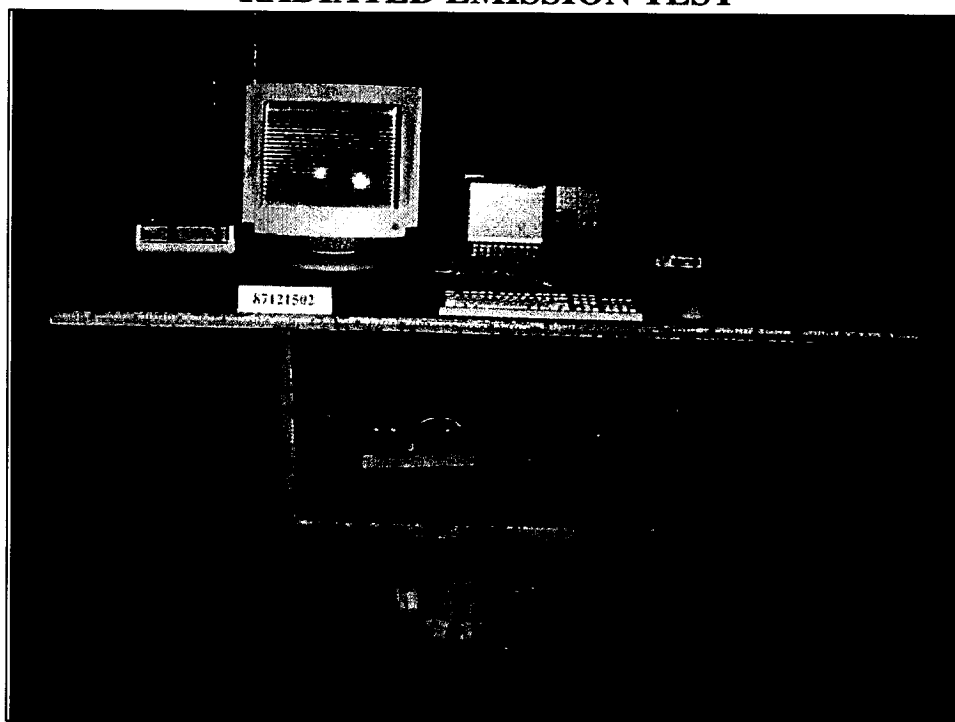
OBSERVATION DESCRIPTION

There was no change compared with initial operation during the test.



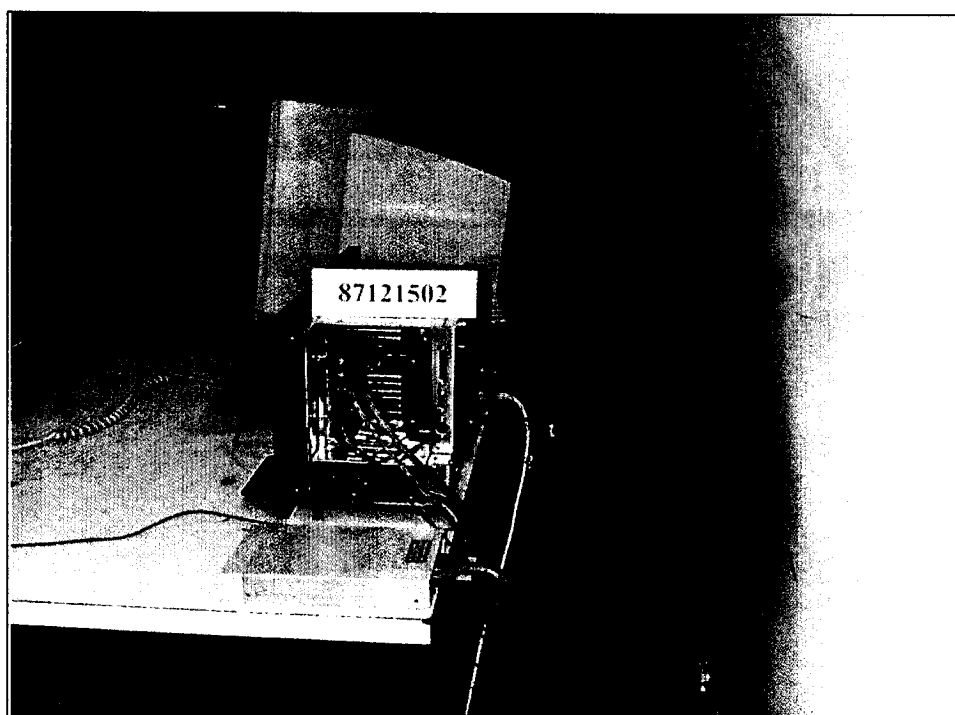
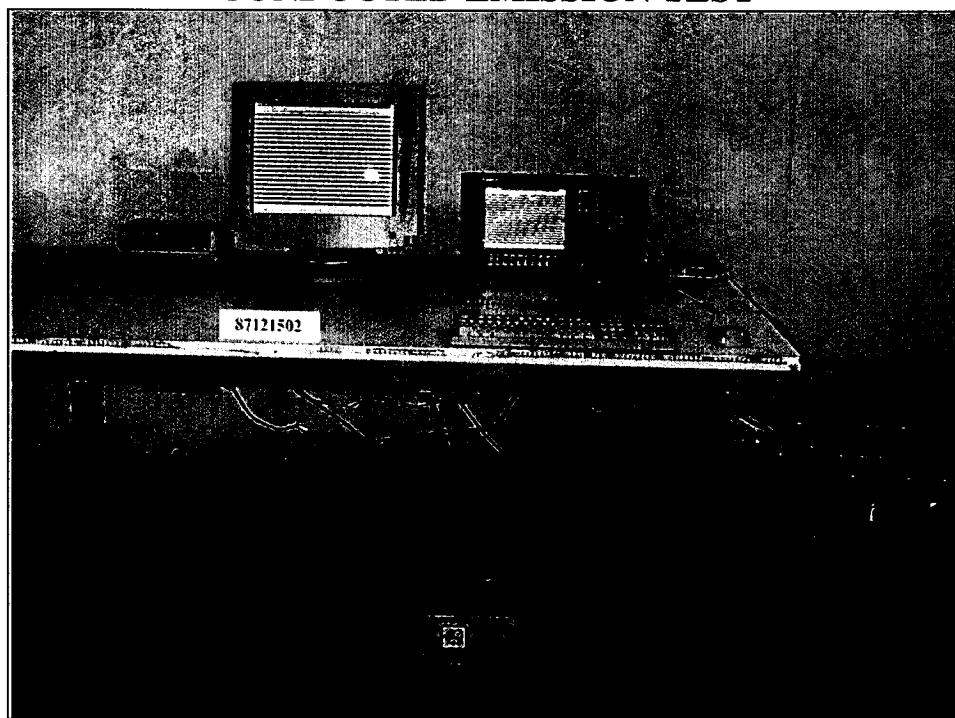
6. PHOTOGRAPHS OF THE TEST CONFIGURATION

RADIATED EMISSION TEST



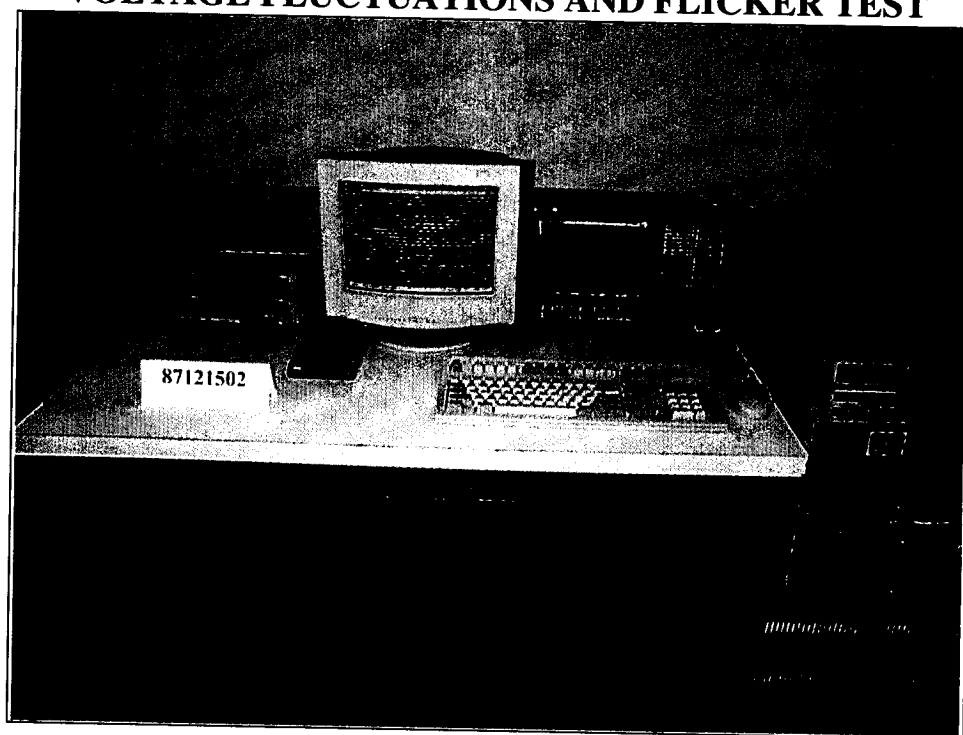


CONDUCTED EMISSION TEST



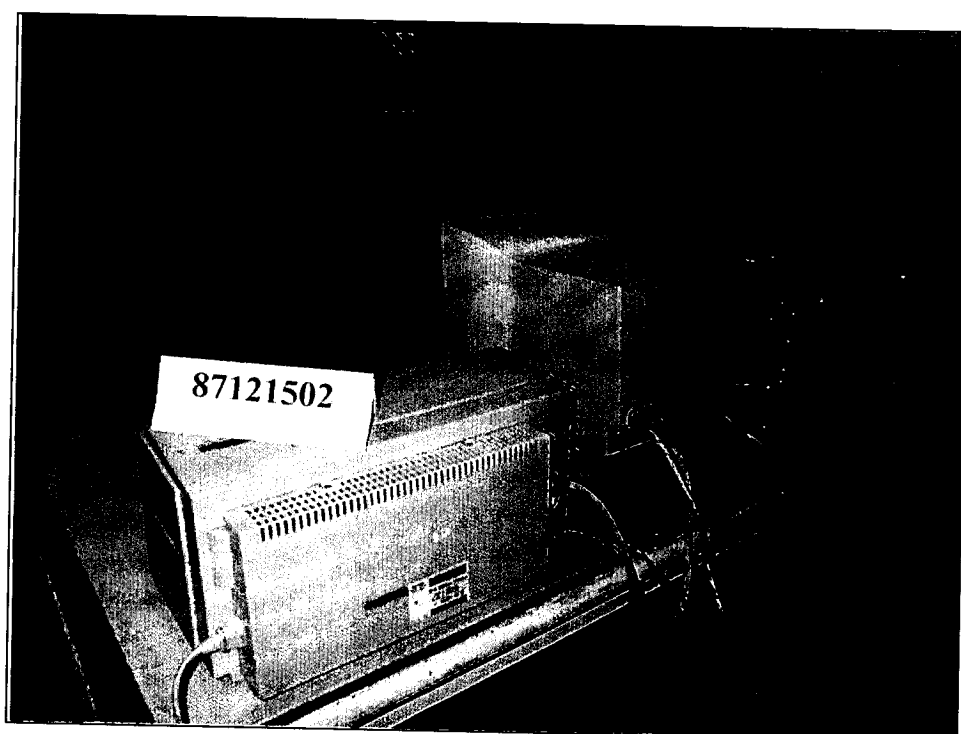
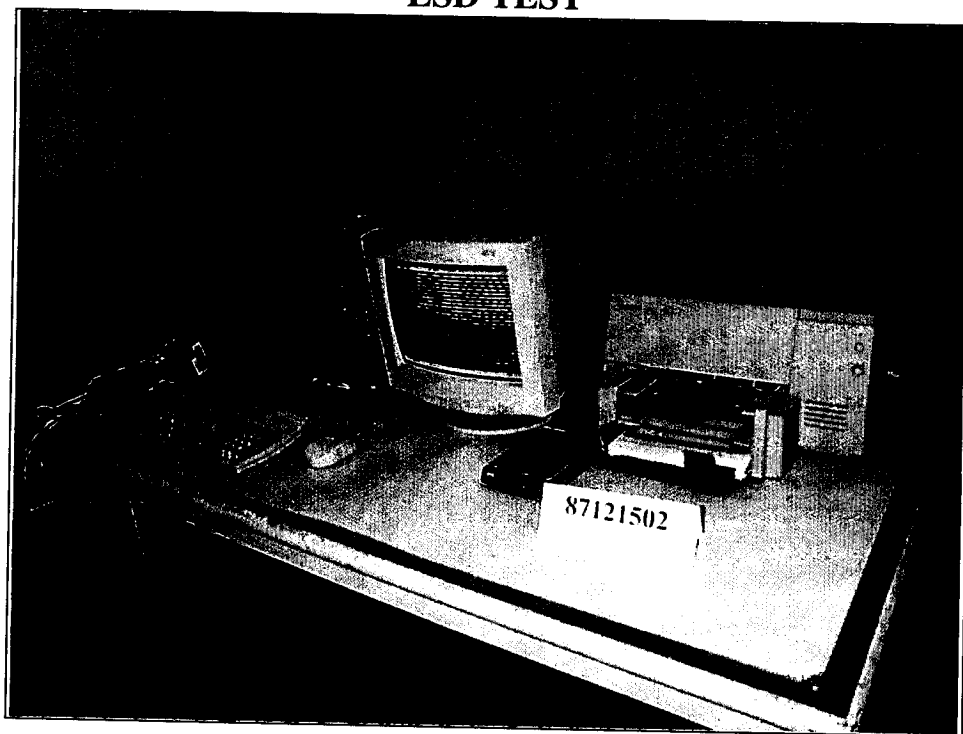


VOLTAGE FLUCTUATIONS AND FLICKER TEST



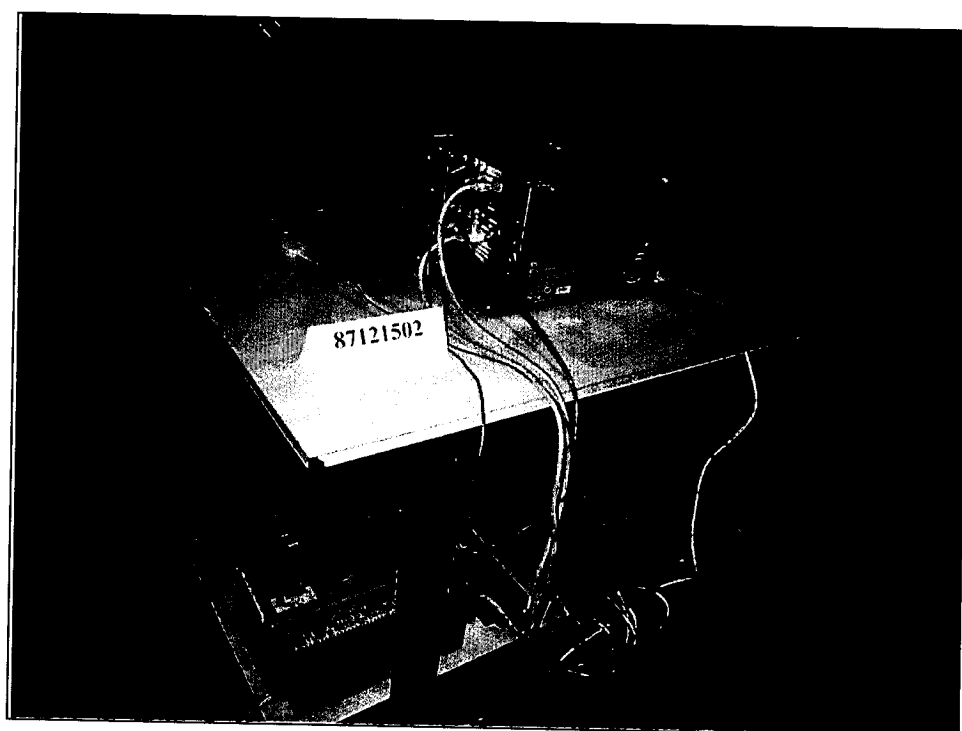
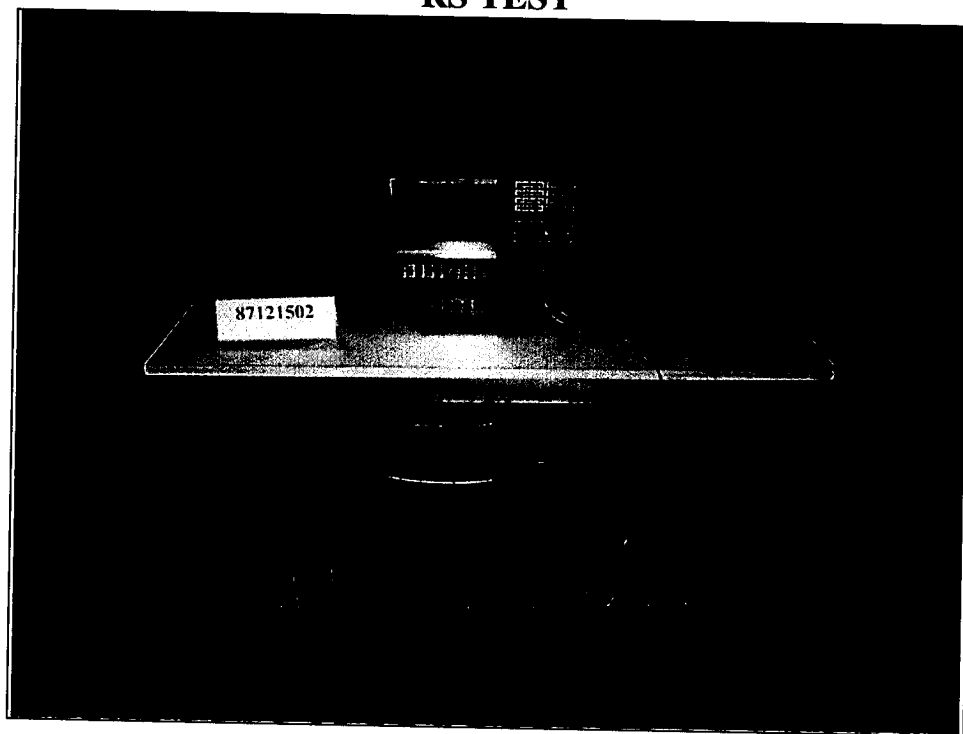


ESD TEST



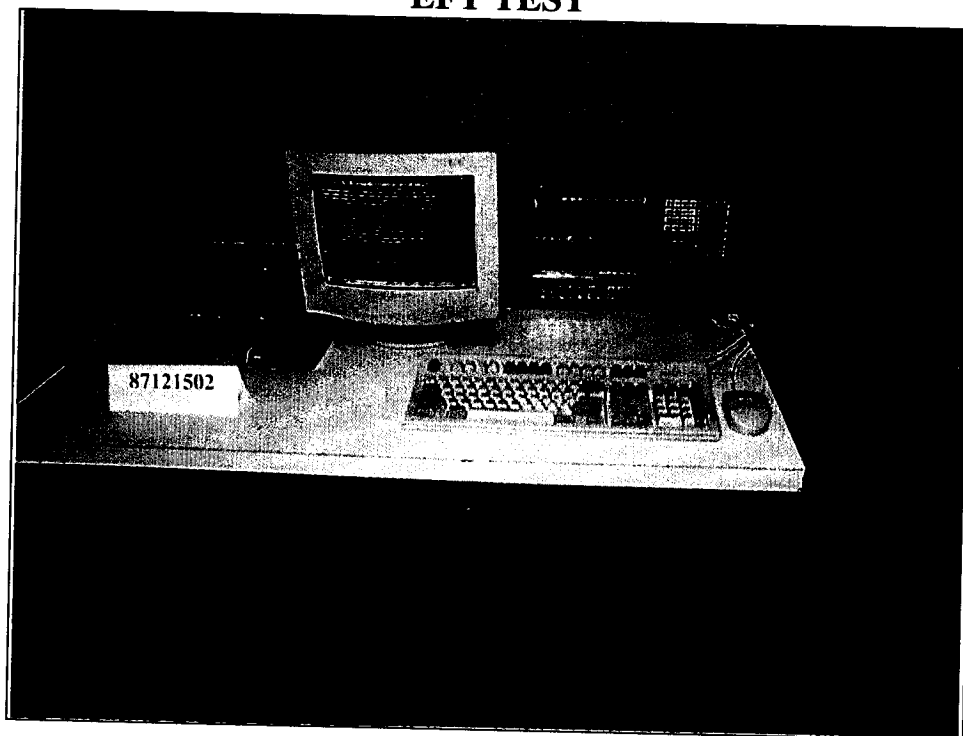


RS TEST

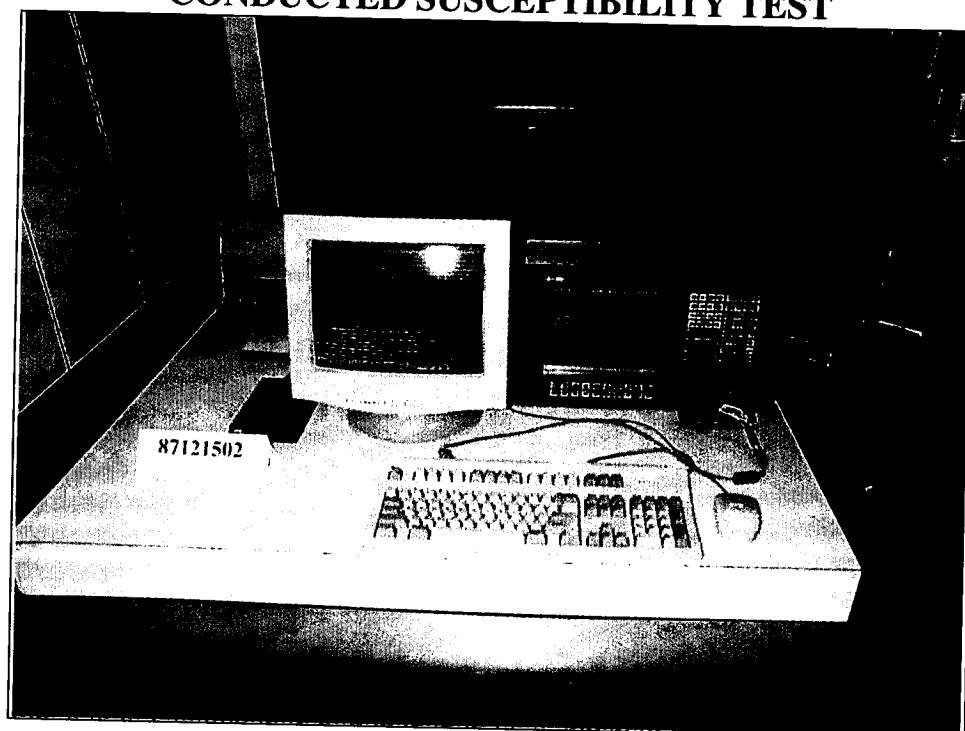




EFT TEST

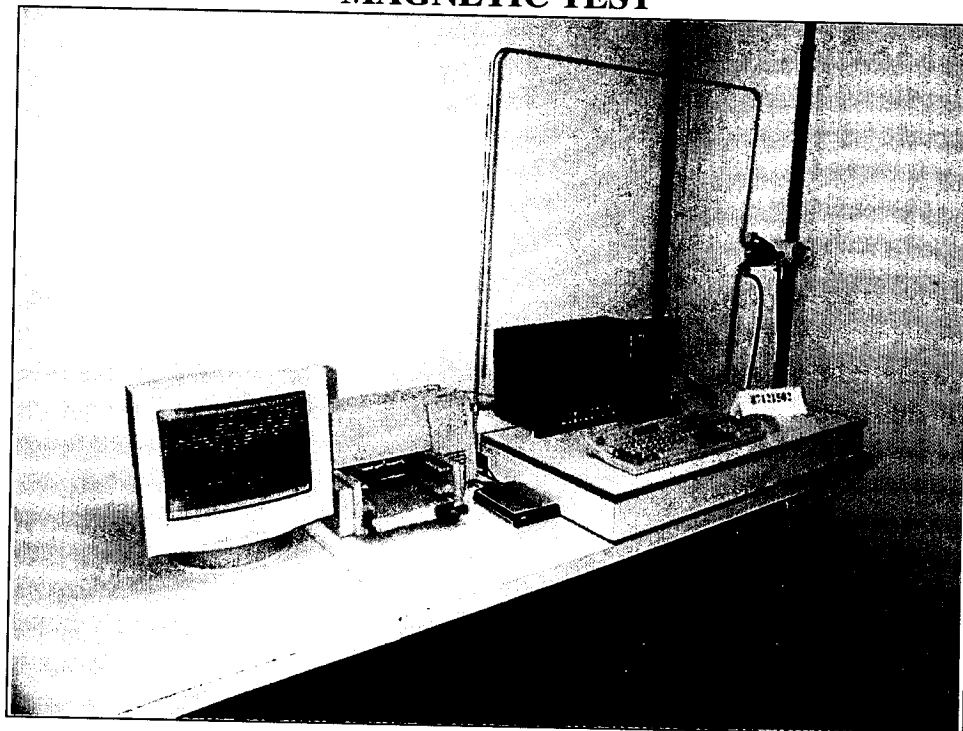


CONDUCTED SUSCEPTIBILITY TEST





MAGNETIC TEST





7. APPENDIX - INFORMATION OF THE TESTING LABORATORY

Information of the testing laboratory

We, ADT Corp., is founded in 1988, to provide our best service in EMC and Safety consultation. Our laboratory is accredited by the following approval agencies according to ISO/IEC Guide 25 or EN 45001:

- | | |
|---------------|---------------------|
| ● USA | FCC, UL, NVLAP |
| ● Germany | TUV Rheinland |
| | TUV Product Service |
| ● Japan | VCCI |
| ● New Zealand | RFS |
| ● Norway | NEMKO |
| ● U.K. | INCHCAPE, SGS |
| ● R.O.C. | BCIQ |

Enclosed please find some certificates of our laboratory obtained from approval agencies. If you have any comments, please feel free to contact us with the following:

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Fax: 886-35-935342

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