

## **CE REPORT**

(CLASS B)

**EUT : INDUSTRIAL PANEL PC**

**MODEL : IPPC-950T, IPPC-950T-T**

**IPPC-920T, IPPC-920T-T**

**SRT REPORT # CE9C25**

### **PREPARED FOR :**

**ADVANTECH CO., LTD.**

**FL. 4, NO. 108-3, MING-CHUAN ROAD,**

**SHING-TIEN CITY, TAIPEI,**

**TAIWAN, R. O. C.**

### **PREPARED BY :**

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**1. TEST REPORT CERTIFICATION****APPLICANT** : ADVANTECH CO., LTD.**ADDRESS** : FL. 4, NO. 108-3, MING-CHUAN ROAD,

SHING-TIEN CITY, TAIPEI,

TAIWAN, R.O.C.

**EUT DESCRIPTION** : INDUSTRIAL PANEL PC

(A) POWER SUPPLY : 100-230V

(B) MODEL : IPPC-950T, IPPC-950T-T, IPPC-920T, IPPC-920T-T

**FINAL TEST DATE** : 04/01/1999**MEASUREMENT PROCEDURE USED :**

EN50081 - 1

EN50082 - 2

EN55022/CISPR 22

IEC 801-2

EN61000 - 3 - 2

IEC 801-3

EN61000 - 3 - 3

IEC 801-4

**We hereby show that :**

The measurement shown in the attachment were made in accordance with the procedures indicated, and the energy emitted by the equipment was found to be within the limits applicable.

**TESTING ENGINEER** : *Hill Chou* DATE *4/1/99*

Hill Chou

**SUPERVISOR** : *Jesse Ho* DATE *4/1/99*

Jesse Ho

**APPROVED BY** : *Johnson Ho* DATE *4/1/99*

Johnson Ho

## 2. TEST STATEMENT

### 2.1 TEST STATEMENT

To whom it may concern,

This letter is to explain the test condition of this project.  
The EUT be tested as the following status.

Mode 950 series CPU : Pentium MMX – 233MHz

Clock chip : 66MHz

Mode 920 series CPU : Pentium MMX – 200MHz

Clock chip : 66MHz

Mode 950 Resolution : 1024 \* 768

Mode 920 Resolution : 800 \* 600

The data was shown in this report reflects the worst – case  
data for the condition as listed above.

Please disregard any other oricessir(s) speed shown in this user  
manual.

### 2.2 DEPARTURE FROM DOCUMENT POLICIES, PROCEDURE OR SPECIFICATIONS, THE STATEMENT

A. Did have

Any departure from document policies & procedures or from  
specifications.

Yes \_\_\_\_\_, No ☒ \_\_\_\_\_

If yes, the description as below.

B. The certificate and report shall not be reproduced except in full,  
without the written approval of SRT laboratory.

C. The report must not be used by the client to claim product  
endorsement by NVLAP or any agency the government.

SRT LAB. MODEL #: IPPC-950T, IPPC-950T-T, IPPC-920T, IPPC-920T-T REPORT #: CE9C25

### 3. EUT MODIFICATIONS

The following accessories were added to the EUT during testing :

No modifications by SRT lab.

#### 4. CONDUCTED POWER LINE TEST

##### 4.1 TEST EQUIPMENT

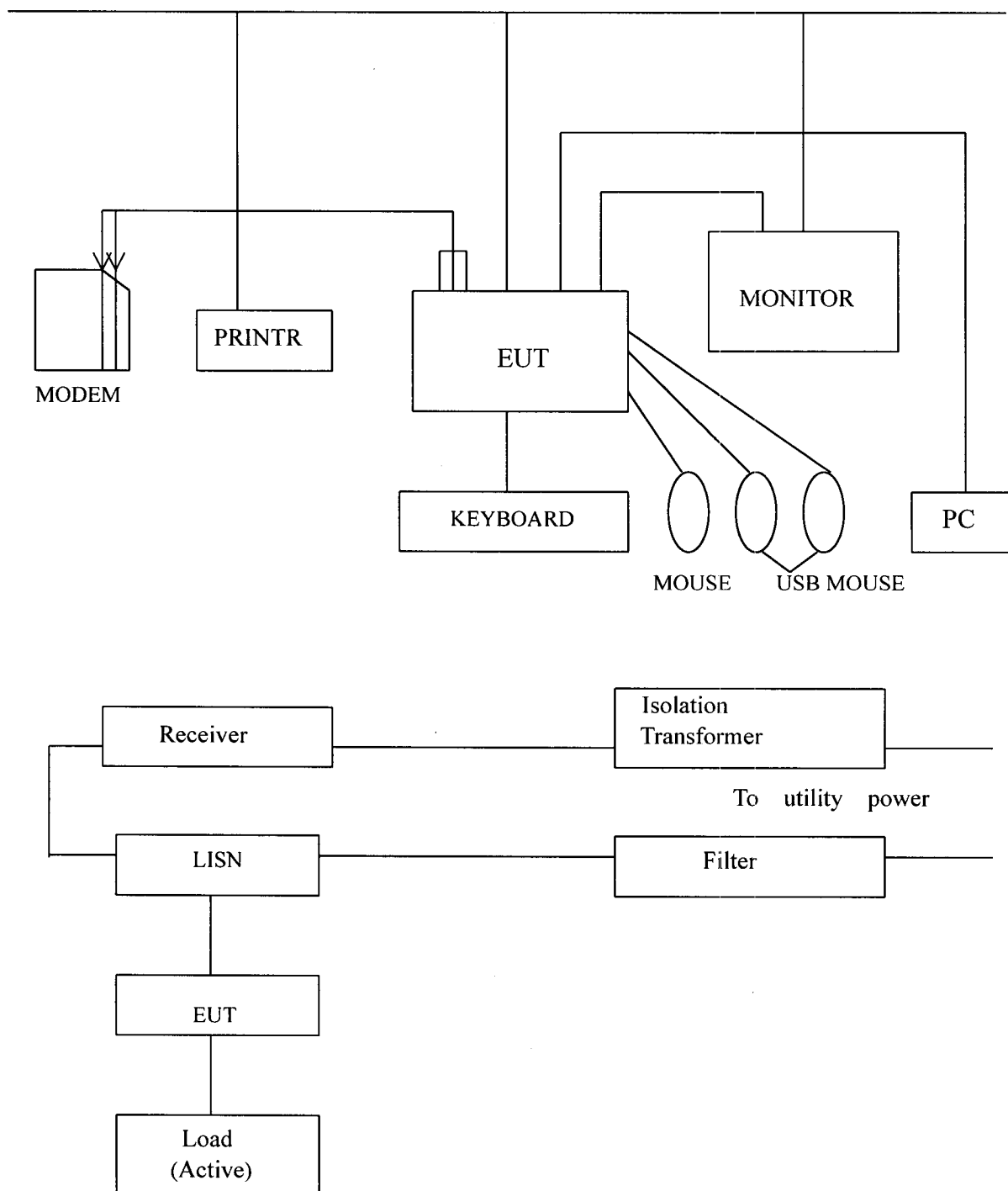
The following test equipment were used during the conducted power line test :

EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DATE OF CAL. & CAL. CENTER	DUE DATE	FINAL TEST
SPECTRUM ANALYZER	9 KHz TO 1 GHz	HP	8590L/ 3624A01317	AUGUST 1998 ETC	1Y	
EMI TEST RECEIVER	9 KHz TO 30 MHz	ROHDE & SCHWARZ	ESHS30/ 826003/008	AUGUST 1998 ETC	1Y	√
LISN	50 uH, 50 ohm	SOLAR ELECTRONICS	9252-50- R24-BNC/ 951315	AUGUST 1998 ETC	1Y	√
LISN	50uH, 50 ohm	SOLAR ELECTRONICS	9252-50- R24-BNC/ 951318	AUGUST 1998 ETC	1Y	√
SIGNAL GENERATOR	9 KHz TO 1080 MHz	ROHDE & SCHWARZ	SMY01/ 841104/019	APRIL 1999 ETC	1Y	√
POWER CONVERTER	0 TO 300 VAC VAC 47-500 Hz	AFC	AFC-1KW/ 850510	MARCH 1999 SRT	1Y	√

##### 4.2 TEST PROCEDURE

The EUT was tested according to EN55022. The frequency spectrum from 0.15 MHz to 30 MHz was investigated. The LISN used was 50 ohm / 50 uHenry as specified by EN55022. Cables and peripherals were moved to find the maximum emission levels for each frequency.

#### 4.3 TEST SETUP





#### 4.4 CONFIGURATION OF THE EUT

The EUT was configured according to EN55022. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.

##### A. EUT

DEVICE	MANUFACTURER	MODEL #	REMARK
INDUSTRIAL PANEL PC	ADVANTECH CO., LTD.	IPPC-950T, IPPC-950T-T, IPPC-920T, IPPC-920T-T,	

##### B. INTERNAL DEVICES

DEVICE	MANUFACTURER	MODEL #	REMARK
MAIN BOARD	ADVANTECH	PCA-5868	
POWER SUPPLY	SKYNET	SNP-8086	
FDD(3.5")	YE0DATA	YD-702J-6037J	
HDD	IBM	DKLA-23240	
CD ROM	TOSHIBA	XM-1702B	
DISPIAY	TOSHIBA	LTM12C275A	

## C. PERIPHERALS

DEVICE	MANUFACTURER	MODEL # SERIAL #	REMARK	CABLE
MONITOR	PHILIPS	14B1320W		POWER-UNS DATA-S
PRINTER	HP	2225C		POWER-UNS DATA-S
MODEM	SMARTEAM	103/212A		POWER-UNS DATA-S
MODEM	SMARTEAM	103/212A		POWER-UNS DATA-S
KEYBOARD	NMB	RT6856TW		DATA-UNS
MOUSE	LOGITECH	CC-93-9F		DATA-UNS
USB MOUSE	ABIT	97M32U		DATA-S
USB MOUSE	ABIT	97M32U		DATA-S

## REMARK :

- (1). Cable - uns : Unshielded  
                  s : Shielded
- (2). Cables - All 1m or greater in length - bundled according  
                  to regulations.

**4.5 EUT OPERATING CONDITION**

Operating condition is according to EN55022.

1. EUT power on.
2. "H" pattern sent to the following peripherals :
  - printer
  - monitor
  - modem \* 2

3. Test with cpu

Mode 950 series CPU : Pentium MMX – 233MHz

Clock chip : 66MHz

Mode 920 series CPU : Pentium MMX – 200MHz

Clock chip : 66MHz

4. Mode 950 Resolution : 1024 \* 768  
 Mode 920 Resolution : 800 \* 600

**4.6 CONDUCTED POWER LINE EMISSION LIMIT****CLASS A :**

FREQUENCY RANGE (MHz)	QUASI PEAK	AVERAGE
0.15 - 0.5	79dBuV	66dBuV
0.5 - 5.0	73dBuV	60dBuV
5.0 - 30.0	73dBuV	60dBuV

**CLASS B :**

FREQUENCY RANGE (MHz)	QUASI PEAK	AVERAGE
0.15 - 0.5	66 - 56dBuV	56-46dBuV
0.5 - 5.0	56dBuV	46dBuV
5.0 - 30.0	60 dBuV	50dBuV

**NOTE** : In the above table, the tighter limit applies at the band edges.

**4.7 CONDUCTED POWER LINE TEST RESULT**

The frequency spectrum from 0.15 MHz to 30 MHz was investigated. All readings are QUASI-PEAK values & AVERAGE with a resolution bandwidth of 9 KHz.

Temperature : 28 C

Humidity : 78 %RH

**QUASI - PEAK**

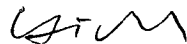
FREQUENCY (MHz)	LINE1 (dBuV)	LINE2 (dBuV)	LIMIT (dBuV)
0.19	50.2	48.1	64.9
0.32	36.3	29.1	61.2
0.51	29.7	25.4	56.0
1.09	17.3	13.8	56.0
3.15	19.0	15.5	56.0

**AVERAGE**

FREQUENCY (MHz)	LINE1 (dBuV)	LINE2 (dBuV)	LIMIT (dBuV)
0.19	40.5	37.1	54.9
0.32	31.2	21.4	51.2
1.09	13.8	8.70	46.0
2.81	12.8	10.8	46.0
11.3	29.8	27.3	50.0
18.0	21.5	18.9	50.0

- REMARKS :**
- (1). \* = Measurement does not apply for this frequency
  - (2). Uncertainty in conducted emission measured is <+/-2dB
  - (3). Any departure from specification : N/A
  - (4). CPU : Pentium MMX - 233MHz Clock chip: 66MHz
  - (5). Resolution : 1024 \* 768
  - (6). IPPC-950T

SIGNED BY TESTING ENGINEER :



**4.7 CONDUCTED POWER LINE TEST RESULT**

The frequency spectrum from 0.15 MHz to 30 MHz was investigated. All readings are QUASI-PEAK values & AVERAGE with a resolution bandwidth of 9 KHz.

Temperature : 28 C

Humidity : 78 %RH

**QUASI-PEAK**

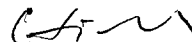
FREQUENCY (MHz)	LINE1 (dBuV)	LINE2 (dBuV)	LIMIT (dBuV)
0.19	49.8	48.2	64.9
0.32	36.2	29.0	61.2
0.51	29.7	25.3	56.0
1.09	17.4	13.8	56.0
3.15	18.0	17.6	56.0

**AVERAGE**

FREQUENCY (MHz)	LINE1 (dBuV)	LINE2 (dBuV)	LIMIT (dBuV)
0.19	40.4	37.2	54.8
0.32	31.1	21.5	51.2
1.09	13.8	8.70	46.0
2.81	12.8	10.8	46.0
6.52	18.9	17.5	50.0
11.3	29.7	27.3	50.0
18.0	21.5	18.9	50.0

- REMARKS :**
- (1). \* = Measurement does not apply for this frequency
  - (2). Uncertainty in conducted emission measured is  $\pm 2$ dB
  - (3). Any departure from specification : N/A
  - (4). CPU : Pentium MMX - 233MHz Clock chip: 66MHz
  - (5). Resolution : 1024 \* 768
  - (6). IPPC-950T-T

SIGNED BY TESTING ENGINEER :



**4.7 CONDUCTED POWER LINE TEST RESULT**

The frequency spectrum from 0.15 MHz to 30 MHz was investigated. All readings are QUASI-PEAK values & AVERAGE with a resolution bandwidth of 9 KHz.

Temperature : 28 C

Humidity : 78 %RH

**QUASI-PEAK**

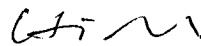
FREQUENCY (MHz)	LINE1 (dBuV)	LINE2 (dBuV)	LIMIT (dBuV)
0.19	49.8	45.5	64.8
0.32	36.9	11.3	61.0
0.52	29.4	23.2	56.0
3.19	14.1	22.0	56.0
7.92	36.8	33.4	60.0

**AVERAGE**

FREQUENCY (MHz)	LINE1 (dBuV)	LINE2 (dBuV)	LIMIT (dBuV)
0.19	41.3	33.5	54.8
0.52	25.7	21.9	46.0
1.11	17.1	14.0	46.0
7.67	25.7	23.1	50.0
12.6	25.3	22.6	50.0

- REMARKS** :
- (1). \* = Measurement does not apply for this frequency
  - (2). Uncertainty in conducted emission measured is  $\leq \pm 2\text{dB}$
  - (3). Any departure from specification : N/A
  - (4). CPU : Pentium MMX - 200MHz Clock chip: 66MHz
  - (5). Resolution : 800 \* 600
  - (6). IPPC-920T

SIGNED BY TESTING ENGINEER :



**4.7 CONDUCTED POWER LINE TEST RESULT**

The frequency spectrum from 0.15 MHz to 30 MHz was investigated. All readings are QUASI-PEAK values & AVERAGE with a resolution bandwidth of 9 KHz.

Temperature : 28 C

Humidity : 78 %RH

**QUASI - PEAK**

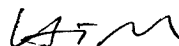
FREQUENCY (MHz)	LINE1 (dBuV)	LINE2 (dBuV)	LIMIT (dBuV)
0.19	49.8	45.4	64.8
0.32	37.2	11.1	61.0
0.52	30.2	23.0	56.0
3.15	23.7	*	56.0
9.05	*	24.5	60.0

**AVERAGE**

FREQUENCY (MHz)	LINE1 (dBuV)	LINE2 (dBuV)	LIMIT (dBuV)
0.19	41.0	33.5	54.8
0.52	25.8	21.7	46.0
3.15	15.3	*	46.0
7.63	26.3	23.5	50.0
12.6	25.3	22.6	50.0

- REMARKS :**
- (1). \* = Measurement does not apply for this frequency
  - (2). Uncertainty in conducted emission measured is <+/-2dB
  - (3). Any departure from specification : N/A
  - (4). CPU : Pentium MMX - 200MHz Clock chip: 66MHz
  - (5). Resolution : 800 \* 600
  - (6). IPPC-920T-T

SIGNED BY TESTING ENGINEER :



**5. RADIATED EMISSION TEST****5.1 TEST EQUIPMENT**

The following test equipment were used during the radiated emission test :

EQUIPMENT / FACILITIES	SPECIFICAT-IONS	MANUFACTUR-ER	MODEL # / SERIAL #	DATE OF CAL. & CAL. CENTER	DUE DATE	FINAL TEST
RECEIVER	20 MHz TO 1000 MHz	R & S	ESVS30/ 841977/003	APRIL 1999 ETC	1Y	√
SPECTRUM ANALYZER	100 Hz TO 1500 MHz	HP	8568B/ 3019A05294	OCT. 1998 ETC	1Y	
SPECTRUM ANALYZER	9 KHz TO 22 GHz	HP	8593E/ 3322A00670	APRIL 1999 ETC	1Y	
SPECTRUM ANALYZER	100 Hz TO 1000 MHz	IFR	A-7550/ 2684/1248	JULY 1998 ETC	1Y	
SIGNAL GENERATOR	9 KHz TO 1080 MHz	ROHDE & SCHWARZ	SMY01/ 841104/019	APRIL 1999 ETC	1Y	√
DIPOLE ANTENNA	28 MHz TO 1000 MHz	EMCO	3121C/ 9003-534	MARCH 1999 SRT	1Y	
DIPOLE ANTENNA	28 MHz TO 1000 MHz	EMCO	3121C/ 9611-1239	SEP. 1998 SRT	1Y	
BI-LOG ANTENNA	26 MHz TO 2000 MHz	EMCO	3142/ 9608-1073	SEP. 1998 SRT	1Y	√
BI-LOG ANTENNA	26 MHz TO 1100 MHz	EMCO	3143/ 9509-1152	SEP. 1998 SRT	1Y	
PRE-AMPLIFIER	0.1 MHz TO 1300 MHz	HP	8447D/ 2944A08402	APRIL 1999 ETC	1Y	
PRE-AMPLIFIER	0.1 MHz TO 1300 MHz	HP	8447D/ 2944A06412	AUGUST 1998 ETC	1Y	
HORN ANTENNA	1 GHz TO 18 GHz	EMCO	3115/ 9012-3619	JAN. 1999 EMCO	1Y	

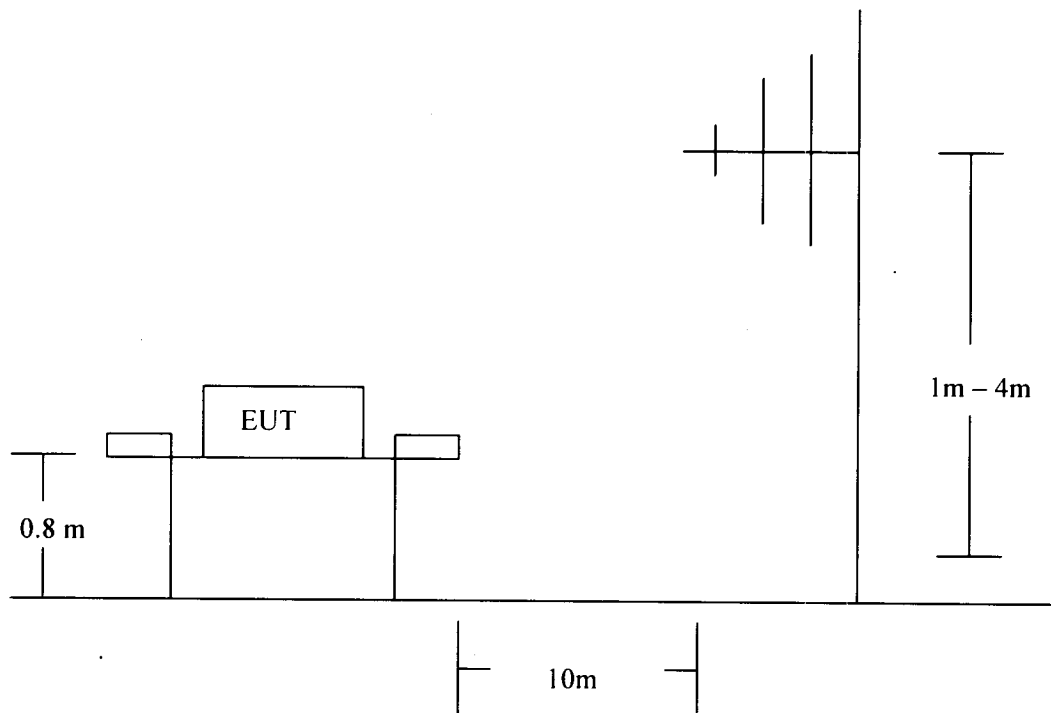


## 5.2 TEST PROCEDURE

The EUT was tested according to EN55022. The radiated test was performed at SRT lab's open site. This site is on file with the FCC laboratory division, reference 31040/SIT.

The frequency spectrum from 30 MHz 2 GHz was investigated. Measurement were made at 10 meters with an adjustable dipole antenna or peripherals, cables, EUT orientation, and antenna height were varied to find the maximum emission for each frequency.

## 5.3 TEST SET-UP



**5.4 CONFIGURATION OF THE THE EUT**

Same as section 4.4 of this report.

**5.5 EUT OPERATING CONDITION**

Same as section 4.5 of this report.

**5.6 RADIATED EMISSION LIMIT**

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below :

**CLASS B**

FREQUENCY (MHz)	DISTANCE (m)	FIELDS STRENGTH (dBuV/m)
30 - 230	10	30
230 - 1000	10	37

**CLASS A**

FREQUENCY (MHz)	DISTANCE (m)	FIELDS STRENGTH (dBuV/m)
30 - 230	10	40
230 - 1000	10	47

- NOTE :** 1. In the emission tables above, the tighter limit applies at the band edges.
2. Distance refers to the distance between measuring instrument, antenna, and the closest point of any part of the device or system.

**5.7 RADIATED EMISSION TEST RESULT**

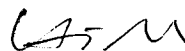
The frequency spectrum from 30 MHz to 2 GHz was investigated. Under 1 GHz, all readings are QUASI-PEAK values with a resolution bandwidth of 120 KHz. Above 1 GHz, all readings are PEAK or AVERAGE values with a resolution bandwidth of 1 MHz. Measurement were made at 10 meters.

Temperature : 28 CHumidity : 78 %RH

FREQ. (MHz)	CABLE LOSS (dB)	ANT. FACTOR (dB)	READING (dBuV)		EMISSION (dBuV)		LMTS (dBuV)
			HORIZ	VERT	HORIZ	VERT	
45.56	0.4	9.60	9.700	10.80	19.70	20.80	30
65.07	0.8	8.90	15.80	19.90	25.50	29.60	30
71.56	0.8	8.60	20.10	16.00	29.50	25.40	30
84.58	0.7	8.10	20.60	15.80	29.40	24.60	30
195.2	1.2	11.5	12.50	13.00	25.20	25.70	30
864.0	2.9	25.2	5.400	4.700	33.50	32.80	37

- REMARKS :**
- (1). \*= Measurement does not apply for this frequency.
  - (2). Uncertainty in radiated emission measured is  $\pm 4$ dB
  - (3). Any departure from specification : N/A
  - (4). Sample calculation  
 $20 \log (\text{emission}) \text{ uV/m} = \text{cable loss(dB)} + \text{factor(dB)} + \text{reading(dBuV/m)}$
  - (5). CPU : Pentium MMX – 233MHz      Clock chip: 66MHz
  - (6). Resolution : 1024 \* 768
  - (7). IPPC-950T

SIGNED BY TESTING ENGINEER :



**5.7 RADIATED EMISSION TEST RESULT**

The frequency spectrum from 30 MHz to 2 GHz was investigated. Under 1 GHz, all readings are QUASI-PEAK values with a resolution bandwidth of 120 KHz. Above 1 GHz, all readings are PEAK or AVERAGE values with a resolution bandwidth of 1 MHz. Measurement were made at 10 meters.

Temperature : 28 CHumidity : 78 %RH

FREQ. (MHz)	CABLE LOSS (dB)	ANT. FACTOR (dB)	READING (dBuV)		EMISSION (dBuV)		LMTS (dBuV)
			HORIZ	VERT	HORIZ	VERT	
45.56	0.4	9.60	9.700	11.20	19.70	21.20	30
65.07	0.8	8.90	15.80	19.80	25.50	29.50	30
71.56	0.8	8.60	20.00	16.00	29.40	25.40	30
84.58	0.7	8.10	20.70	15.80	29.50	24.60	30
195.2	1.2	11.5	12.50	13.00	25.20	25.70	30
864.0	2.9	25.2	5.400	4.700	33.50	32.80	37

- REMARKS** :
- (1). \*= Measurement does not apply for this frequency.
  - (2). Uncertainty in radiated emission measured is <+/-4dB
  - (3). Any departure from specification : N/A
  - (4). Sample calculation  

$$20 \log (\text{emission}) \text{ uV/m} = \text{cable loss(dB)} + \text{factor(dB)} + \text{reading(dBuV/m)}$$
  - (5). CPU : Pentium MMX – 233MHz Clock chip: 66MHz
  - (6). Resolution : 1024 \* 768
  - (7). IPPC-950T-T

SIGNED BY TESTING ENGINEER : 

**5.7 RADIATED EMISSION TEST RESULT**

The frequency spectrum from 30 MHz to 2 GHz was investigated. Under 1 GHz, all readings are QUASI-PEAK values with a resolution bandwidth of 120 KHz. Above 1 GHz, all readings are PEAK or AVERAGE values with a resolution bandwidth of 1 MHz. Measurement were made at 10 meters.

Temperature : 28 C

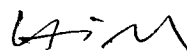
Humidity : 78 %RH

FREQ. (MHz)	CABLE LOSS (dB)	ANT. FACTOR (dB)	READING (dBuV)		EMISSION (dBuV)		LMTS (dBuV)
			HORIZ	VERT	HORIZ	VERT	
200.4	1.2	11.8	13.00	14.50	26.00	27.50	30
220.4	1.2	12.0	13.60	14.70	26.80	27.90	30
300.6	1.6	12.9	13.00	14.00	27.50	28.50	37
576.0	2.0	19.9	11.00	10.50	32.90	32.40	37
601.2	2.1	20.3	13.20	7.700	35.60	30.10	37

- REMARKS** :
- (1). \*= Measurement does not apply for this frequency.
  - (2). Uncertainty in radiated emission measured is <+/-4dB
  - (3). Any departure from specification : N/A
  - (4). Sample calculation  

$$20 \log (\text{emission}) \text{ uV/m} = \text{cable loss(dB)} + \text{factor(dB)} + \text{reading(dBuV/m)}$$
  - (5). CPU : Pentium MMX – 200MHz Clock chip: 66MHz
  - (6). Resolution : 800 \* 600
  - (7). IPPC-920T

SIGNED BY TESTING ENGINEER :



## 5.7 RADIATED EMISSION TEST RESULT

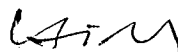
The frequency spectrum from 30 MHz to 2 GHz was investigated. Under 1 GHz, all readings are QUASI-PEAK values with a resolution bandwidth of 120 KHz. Above 1 GHz, all readings are PEAK or AVERAGE values with a resolution bandwidth of 1 MHz. Measurement were made at 10 meters.

Temperature : 28 CHumidity : 78 %RH

FREQ. (MHz)	CABLE LOSS (dB)	ANT. FACTOR (dB)	READING (dBuV)		EMISSION (dBuV)		LMTS (dBuV)
			HORIZ	VERT	HORIZ	VERT	
200.4	1.2	11.8	13.00	14.60	26.00	27.60	30
220.4	1.2	12.0	13.60	14.60	26.80	27.80	30
300.6	1.6	12.9	13.00	14.00	27.50	28.50	37
576.0	2.0	19.9	11.00	10.50	32.90	32.40	37
601.2	2.1	20.3	13.30	7.700	35.70	30.10	37

- REMARKS** :
- (1). \*= Measurement does not apply for this frequency.
  - (2). Uncertainty in radiated emission measured is  $\pm 4$  dB
  - (3). Any departure from specification : N/A
  - (4). Sample calculation  
 $20 \log (\text{emission}) \text{ uV/m} = \text{cable loss(dB)} + \text{factor(dB)} + \text{reading(dBuV/m)}$
  - (5). CPU : Pentium MMX – 200MHz      Clock chip: 66MHz
  - (6). Resolution : 800 \* 600
  - (7). IPPC-920T-T

SIGNED BY TESTING ENGINEER :



## 6. HARMONICS TEST

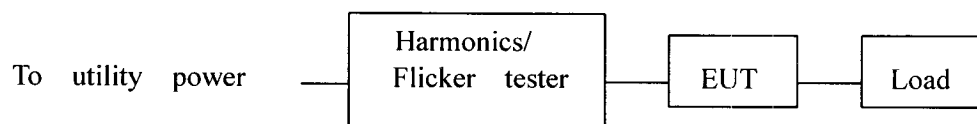
### 6.1 TEST EQUIPMENT

EQUIPMENT / FACILITIES	MANUFACTURER	MODEL # / SERIAL #
MAIN UNIT	HP	6843A
CONTROL PC	IBM	350-P75

### 6.2 TEST PROCEDURE

According to EN61000-3-2

### 6.3 TEST SET-UP



### 6.4 CONFIGURATION OF THE EUT

The same as 4.4

### 6.5 EUT OPERATION CONDITION

The same as 4.5

**6.6 LIMIT**

EVEN HARMONIC		ODD HARMONIC	
HARMONICS ORDER	LIMIT (Amp.)	HARMONICS ORDER	LIMIT (Amp.)
2	1.08	3	2.30
4	0.43	5	1.14
6	0.30	7	0.77
$8 < n < 40$	$0.23 * 8 / n$	9	0.40
		11	0.33
		13	0.21
		$15 < n < 39$	$0.15 * 8 / n$

**6.7 SUMMARY OF TEST RESULT**

- Temperature : 28 C
- Humidity : 78 %RH

Final test result : Pass



## 7. VOLTAGE FLUCTUATIONS

### 7.1 TEST EQUIPMENT

EQUIPMENT / FACILITIES	MANUFACTURER	MODEL # / SERIAL#
MAIN UNIT	HP	6843A
CONTROL PC	IBM	350-P75

### 7.2 TEST PROCEDURE

According to EN61000-3-3

### 7.3 TEST SET-UP

The same as 6.3

### 7.4 CONFIGURATION OF THE EUT

The same as 4.4

### 7.5 EUT OPERATION CONDITION

The same as 4.5

**7.6 LIMIT**

Short-term flicker (Pst) : Pst : 1.0

Long-term flicker (Plt) : Plt : 0.65

Relative steady-state voltage change (Dc) :  $Dc \leq 3\%$

Relative voltage change characteristic (D(t)) :  $D(t) > 3\%$

Maximum relative voltage change (Dmax) :  $Dmax \leq 4\%$

**7.7 SUMMARY OF TEST RESULT**

- Temperature : 28 C
- Humidity : 78 %RH

Final test result : Pass

## 8. ELECTROSTATIC DISCHARGE IMMUNITY TEST

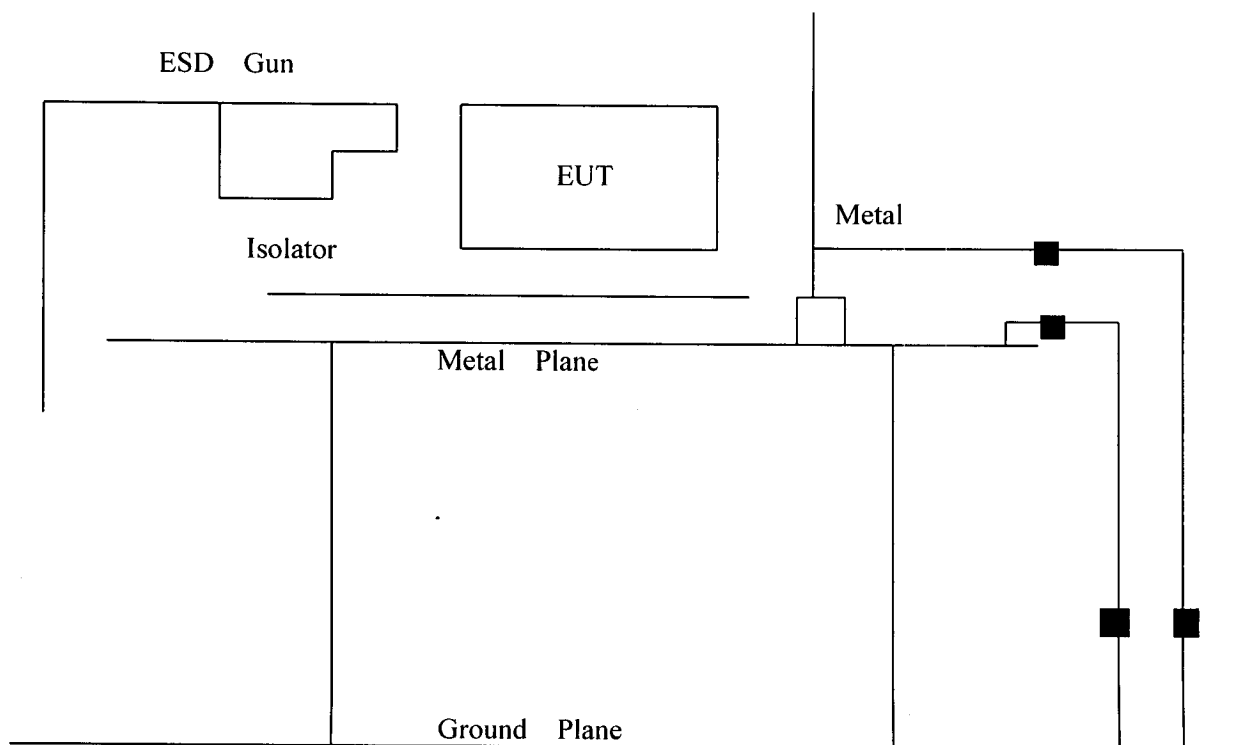
### 8.1 TEST EQUIPMENT

EQUIPMENT / FACILITIES	MANUFACTURER	MODEL # / SERIAL #
ESD MAIN UNIT	HAEFELY	PSD25B
ESD GUN	HAEFELY	AIR DISCHARGE
ESD GUN	HAEFELY	DIRECTLY
ESD GUN	HAEFELY	PESD 16000
VERTICAL PANEL	SRT	SRT ESD 1

### 8.2 TEST PROCEDURE

According to IEC801-2

### 8.3 TEST SET-UP



**8.4 CONFIGURATION OF THE EUT**

The same as 4.4

**8.5 EUT OPERATION CONDITION**

The same as 4.5

**8.6 TEST CONDITION / PERFORMANCE CRITERIA**

- Source voltage and frequency : 220V/50Hz, single phase
- R-C network : 330ohm, 150Pf
- Test level :
  - Air discharge : 2, 4, 6, 8, 15KV
  - Contact discharge : 2, 4, 6KV
- Number of test : 12 Discharge / Level
- Time between test : 1 Sec

Performance criteria

- (A). Normal performance within the specification.
- (B). Temporary degradation or loss function or performance which is self-recoverable.
- (C). Temporary degradation or loss function or performance which requires operator intervention system result.
- (D). Degradation or loss function which is not recoverable due to damage of EUT or software, or loss of data.

**8.7 SUMMARY OF TEST RESULT**

Temperature : 28 C

Humidity : 78 %RH

SEVERITY LEVEL	p rEN55024- b REQUIREMENT		PERFORMANCE VERIFICATION		
CONUPLING MODEL	AIR DISCHARGE	CONTACT DISCHARGE	AIR DISCHARGE	CONTACT DISCHARGE	TEST RESULT
2	A	A	A	A	PASS
4	A	A	A	A	PASS
6	A	A	A	A	PASS
8	A	NR	A	NR	PASS
15	A	NR	A	NR	PASS

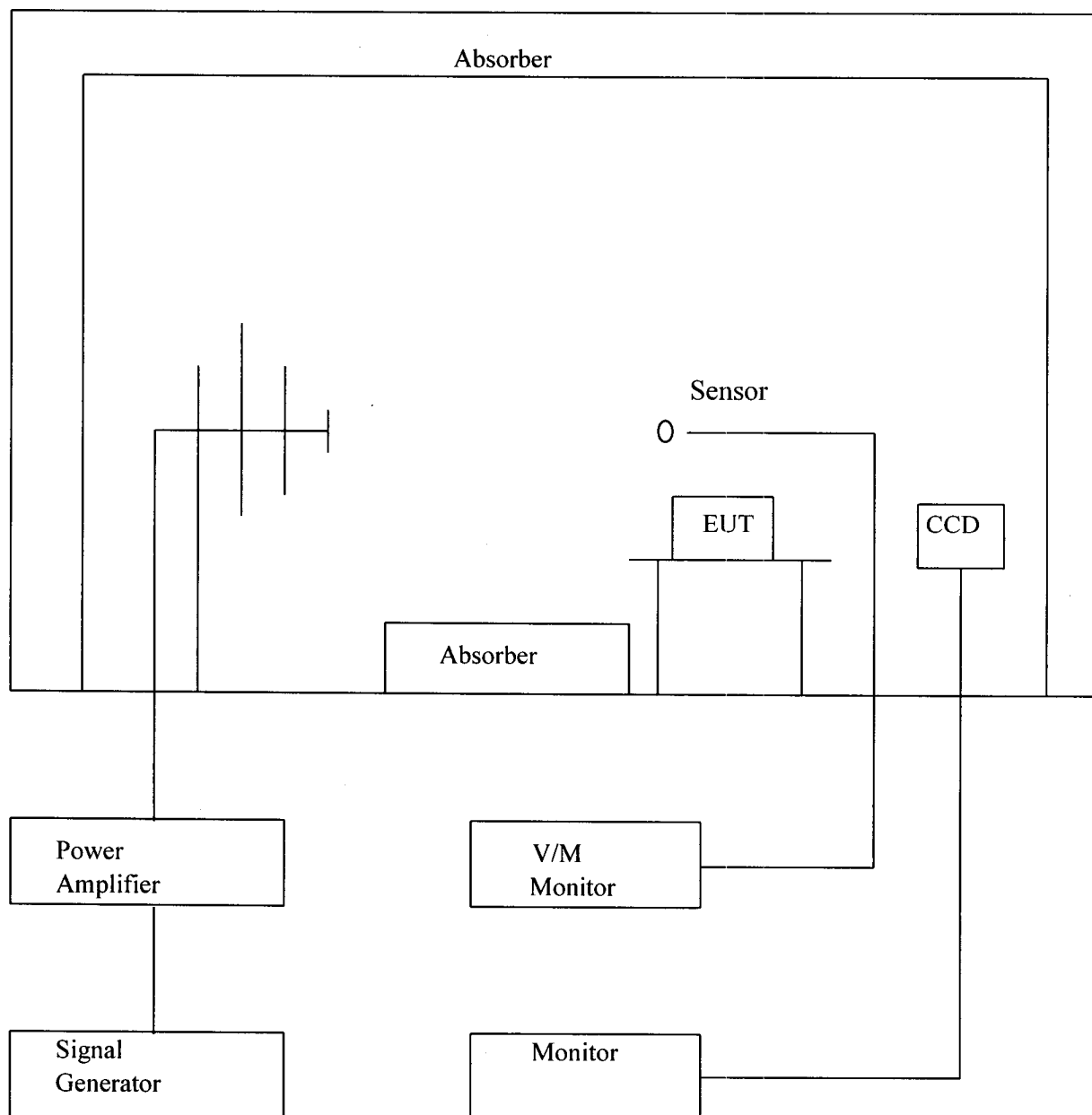
**9. RADIATED IMMUNITY TEST****9.1 TEST EQUIPMENT**

EQUIPMENT / FACILITIES	MANUFACTURER	MODEL # / SERIAL #
SIGNAL GENERATOR	Rohde & Schwarz	SMY01
POWER AMPLIFIER	AMPLIFIER RESEARCH	30W1000M7
ANTENNA	ENI	A-300
ANTENNA	EMCO	3143
FIELD SERSOR	EMCO	3143
VOLTAGE MONITOR	AMPLIFIER RESEARCH	FP2000
POWER AMPLIFIER	AMPLIFER RESEARCH	150A100A
POWER AMPLIFIER	AMPLIFER RESEARCH	100W1000M1
ANECHOIC CHAMBER	SRT	SRT03

**9.2 TEST PROCEDURE**

According to IEC801-3

## 9.3 TEST SET-UP



example of test set - up for table - top equipment

**9.4 CONFIGURATION OF THE EUT**

The same as 4.4

**9.5 EUT OPERATION CONDITION**

The same as 4.5

**9.6 TEST CONDITION / PERFORMANCE CRITERIA**

- Source voltage and frequency : 220V/50Hz, Single phase
- Sweeping frequency : 27MHz - 500MHz
- Test level : 10V/m, the frequency step is 1%
- The four sides of EUT are tested (front, rear, left, right)
- Antenna polarity : Horizontal and vertical polarization

- (A). Normal performance within the specification.
- (B). Temporary degradation or loss function or performance which is self-recoverable.
- (C). Temporary degradation or loss function or performance which requires operator intervention system result.
- (D). Degradation or loss function which is not recoverable due to damage of EUT or software, or loss of data.

**9.7 SUMMARY OF TEST RESULT**

- Temperature : 23 C
- Humidity : 55 %
- Frequency range : 27MHz - 500MHz
- Severity level : 10V/m
- Severity level : 10V/m
- prEN55024-b requipment : A
- Performance verification : A
- Test result : Pass

## 10. ELECTRICAL FAST TRANSIENT / BURST IMMUNITY TEST

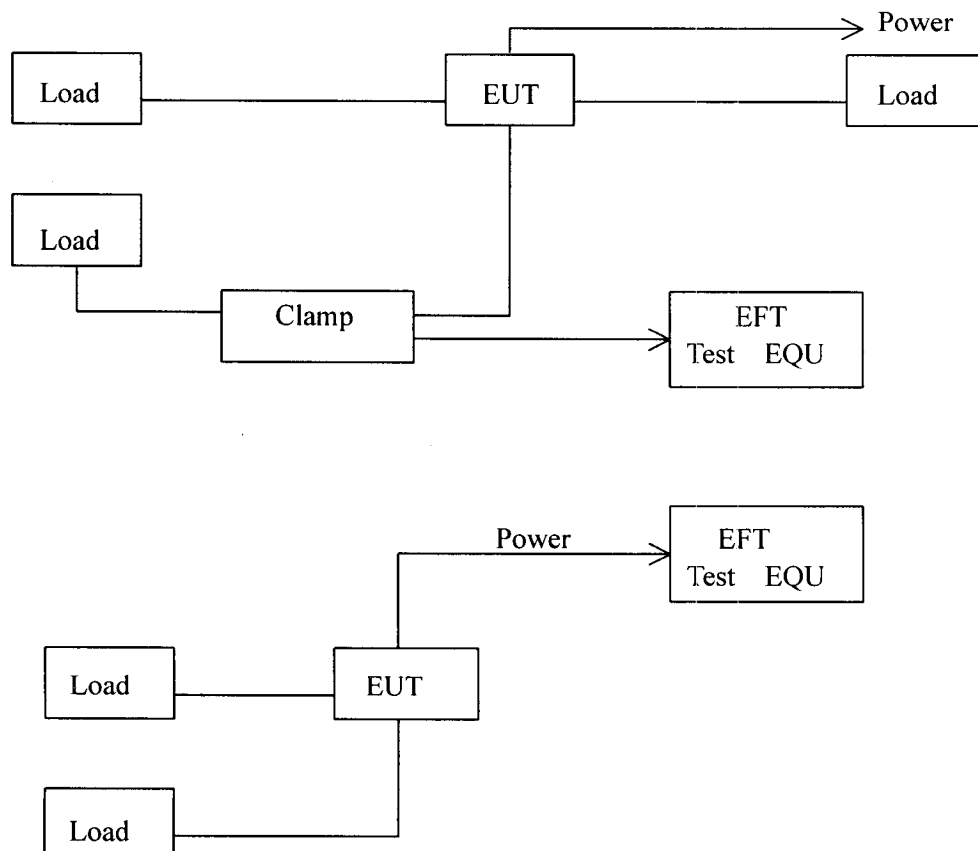
### 10.1 TEST EQUIPMENT

EQUIPMENT / FACILITIES	MANUFACTURER	MODEL # / SERIAL #
CONTROL UNIT	HAEFELY	P90.1
BURST-TESTER	HAEFELY	PEFT.1
HV-UNIT	HAEFELY	PHV41.24A
COUPLING-CLAMP	HAEFELY	IP4A
ADAPTER SET	HAEFELY	N/A

### 10.2 TEST PROCEDURE

According to IEC801-4

### 10.3 TEST SET-UP





#### 10.4 CONFIGURATION OF THE EUT

The same as 4.4

#### 10.5 EUT OPERATION CONDITION

The same as 4.5

#### 10.6 TEST CONDITION / PERFORMANCE CRITERIA

- Source voltage and frequency : 220V/50Hz, single phase
- Pulse risetime and duration : 5ns / 50ns
- Pulse repetition : 5KHz
- Polarity : Positive / Negative. LEA
- Burst duration and period : 15ms / 300ms
- Test duration : 2 Min
- Time between test : 10Sec
- Severity levels : +/-0.5KV, +/-1KV, +/-2KV
- Coupling of power line : L, N, PE, L+N, L+PE+N, L+PE, N+PE
- Coupling of data line

- (A). Normal performance within the specification.
- (B). Temporary degradation or loss function or performance which is self-recoverable.
- (C). Temporary degradation or loss function or performance which requires operator intervention system result.
- (D). Degradation or loss function which is not recoverable due to damage of EUT or software, or loss of data.

#### 10.7 SUMMARY OF TEST RESULT

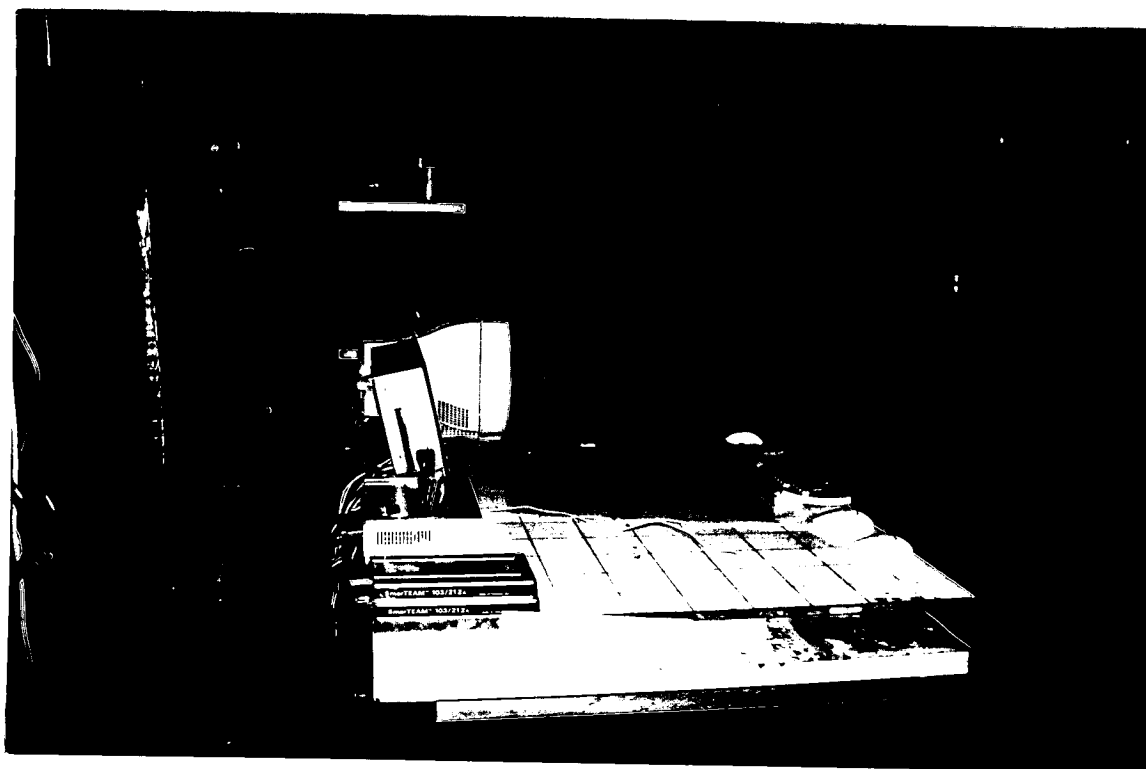
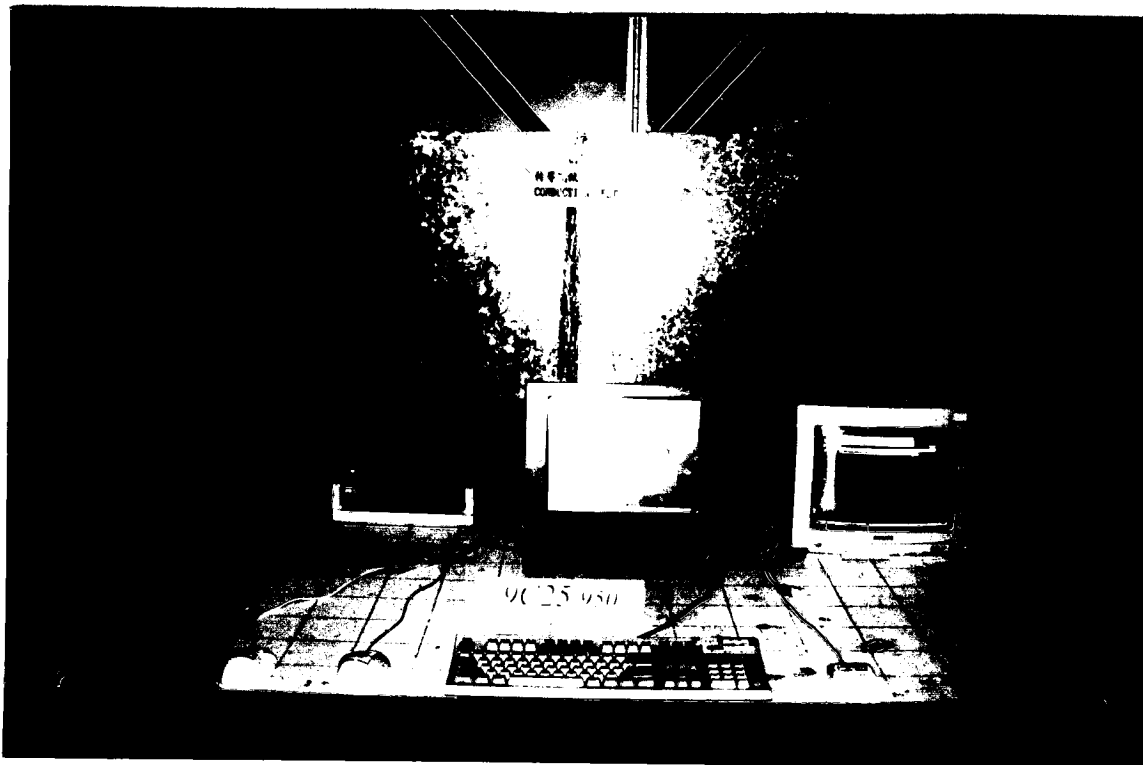
Temperature : 28 C

Humidity : 78 %RH

SEVERITY LEVEL (KV)	p rEN55024- b REQUIREMENT (criteria)	PERFORMANGE VERIFICATION (criteria)	TEST RESULTS
+/-0.5KV	A	A	PASS
+/-1KV	A	A	PASS
+/-2KV	A	A	PASS

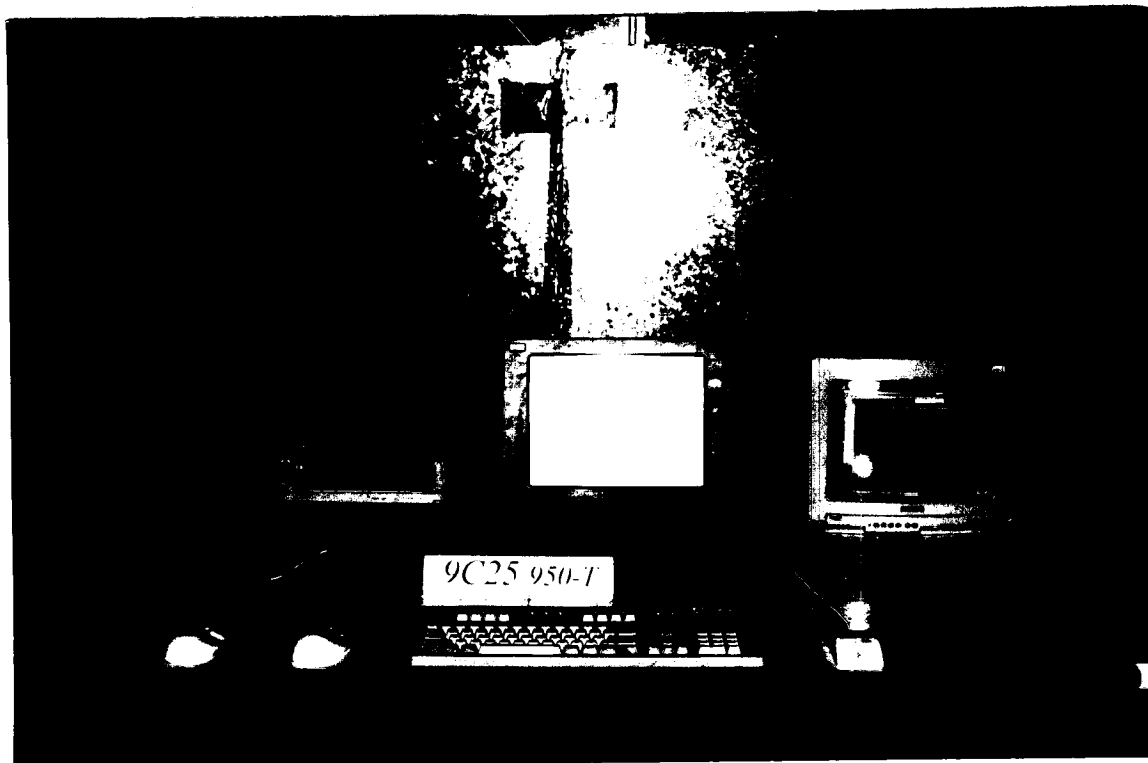
## 11. PHOTOS OF TESTING

- A. Conducted test front view (IPPC-950T)
- B. Conducted test back view



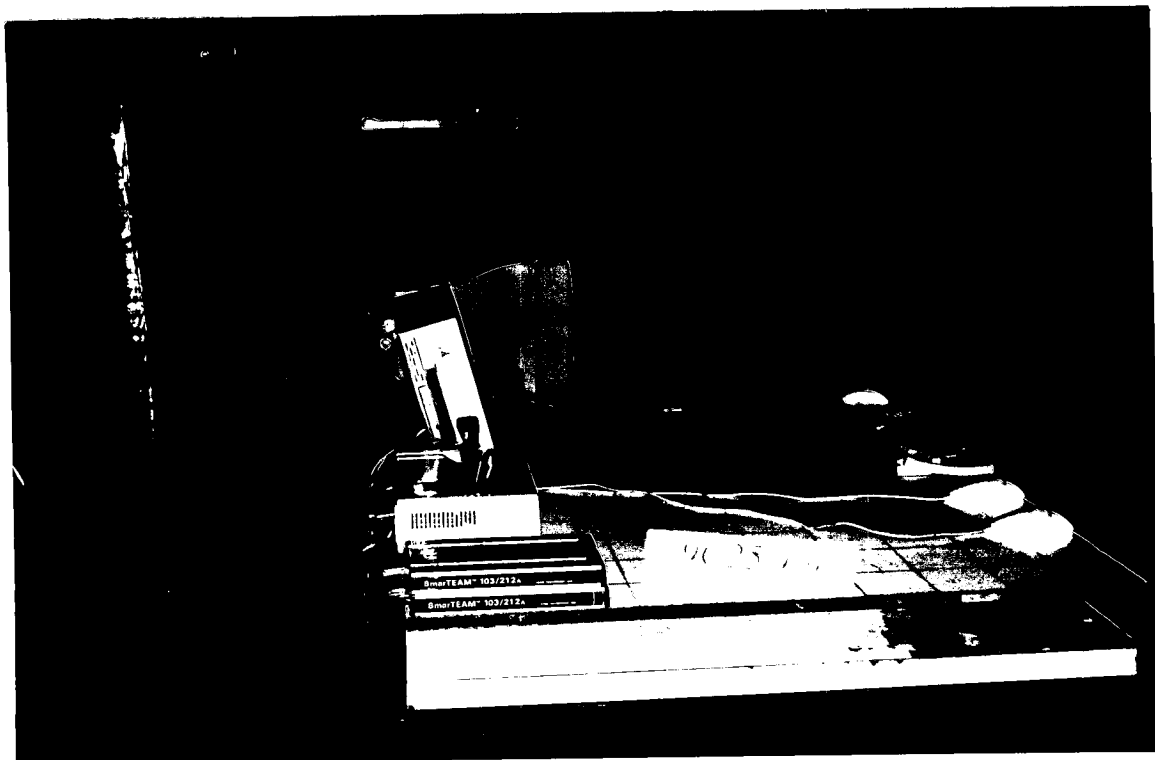
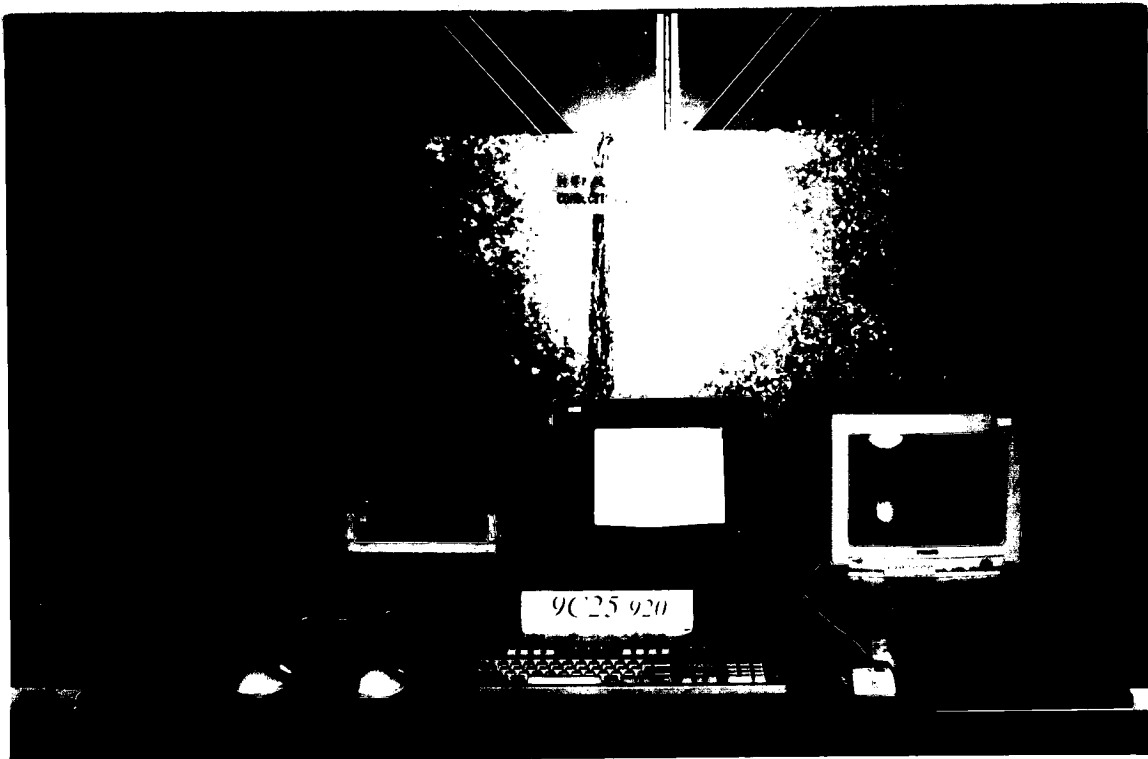
# 11. PHOTOS OF TESTING

- C. Conducted test front view (IPPC-950T-T)
- D. Conducted test back view



# 11. PHOTOS OF TESTING

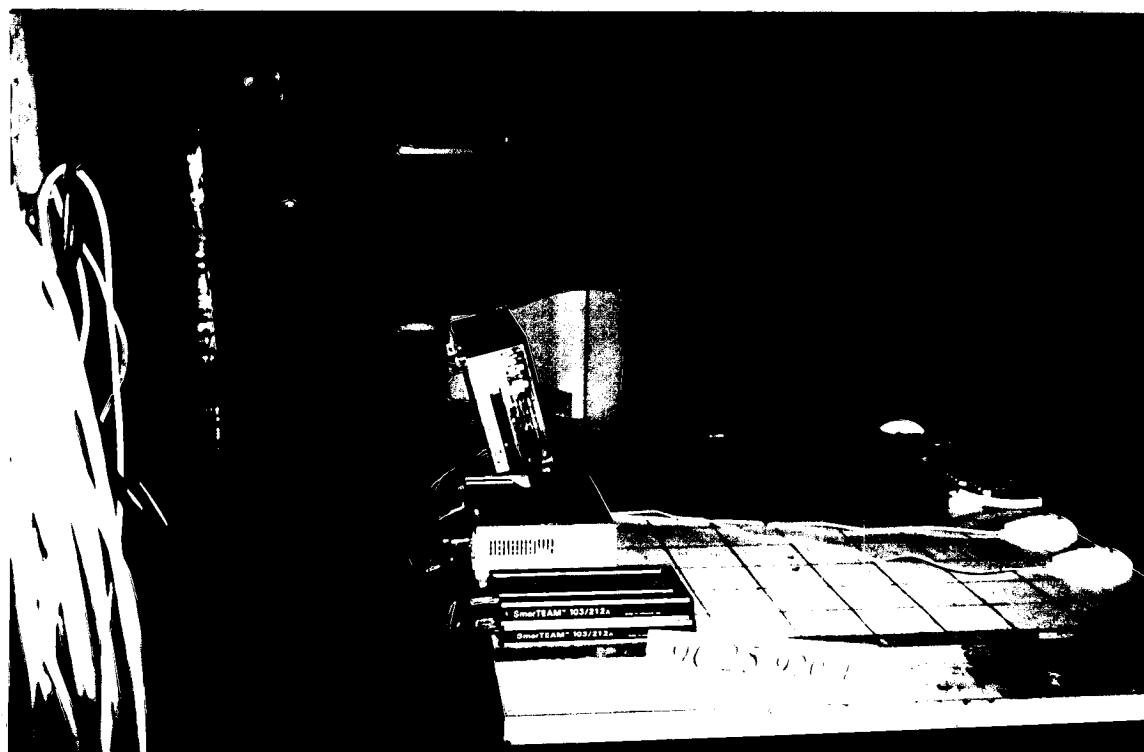
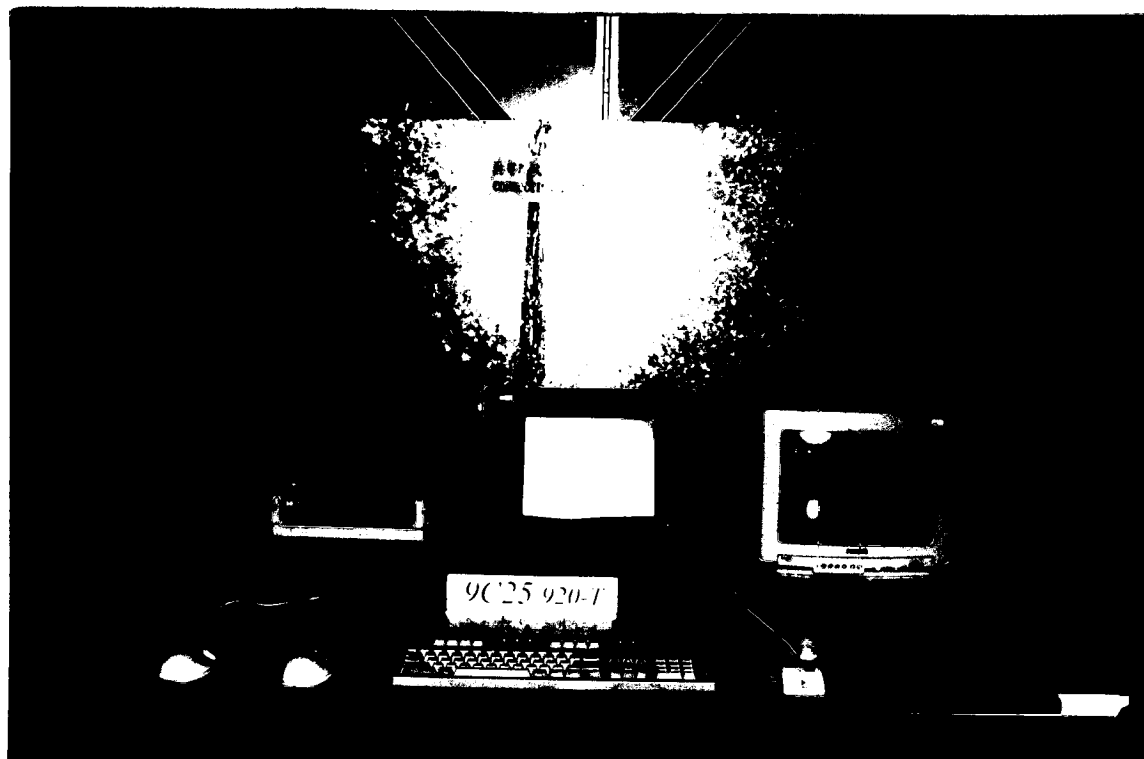
- E. Conducted test front view (IPPC-920T)
- F. Conducted test back view



# 11. PHOTOS OF TESTING

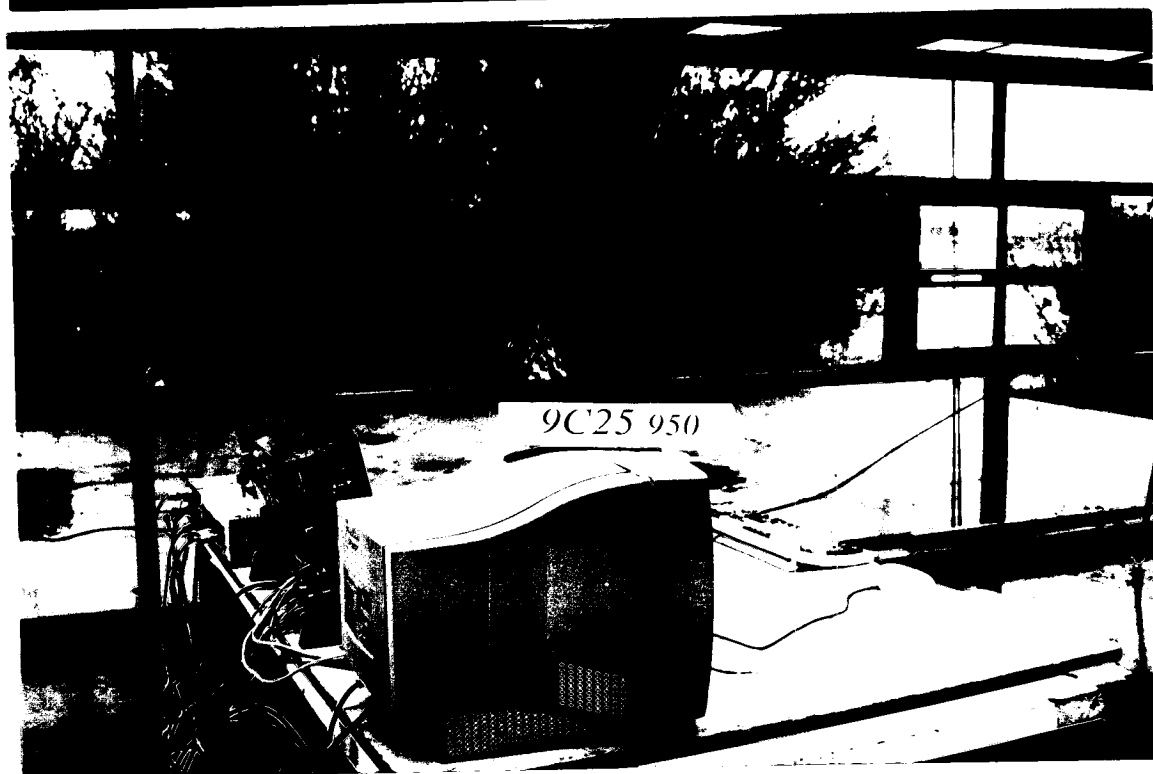
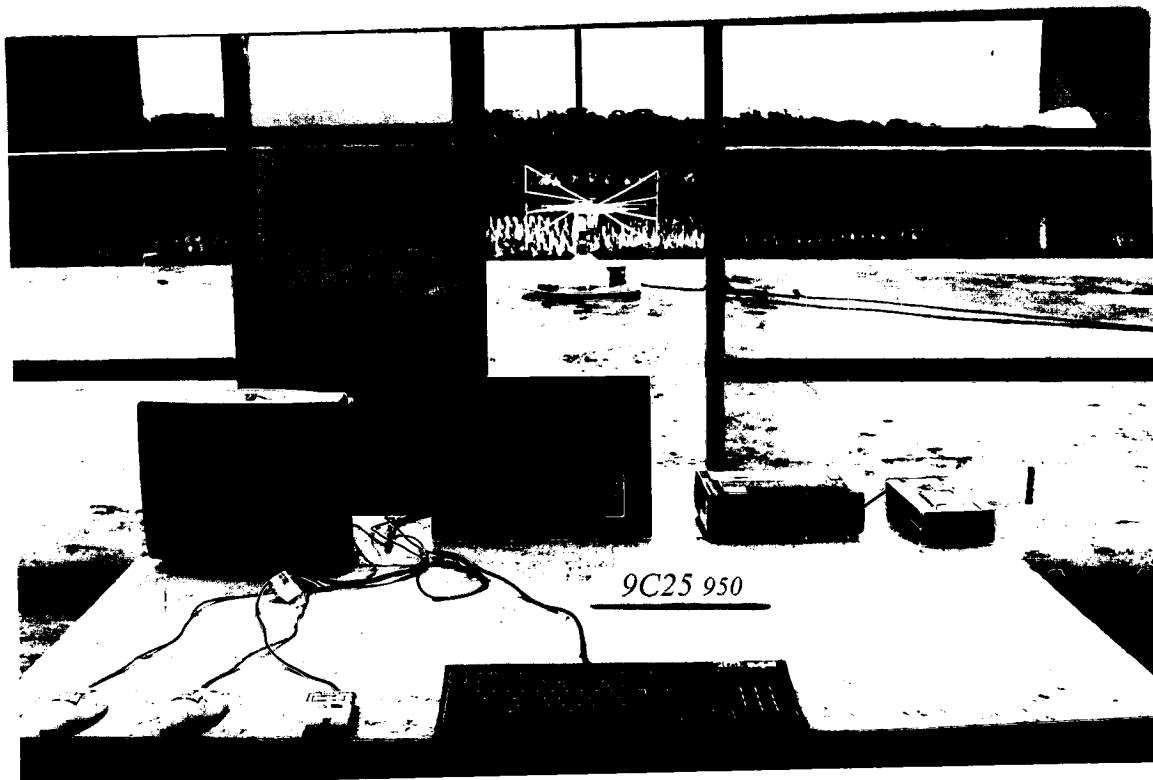
G. Conducted test front view (IPPC-920T-T)

H. Conducted test back view



## 11. PHOTOS OF TESTING

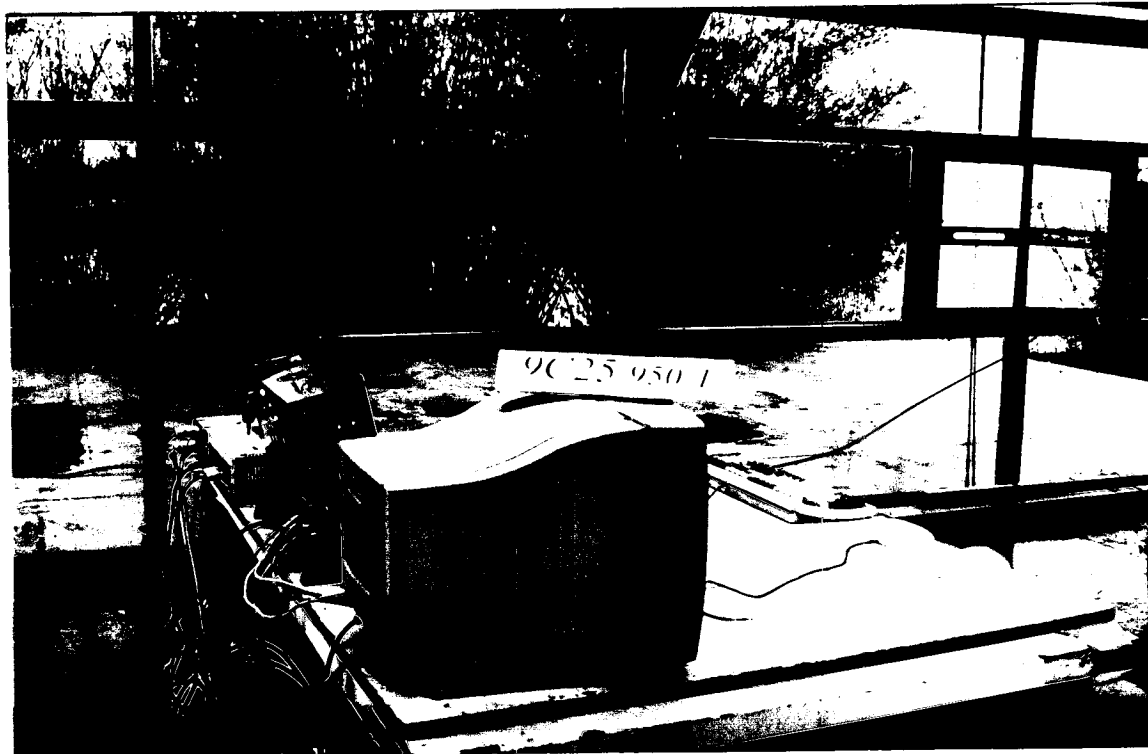
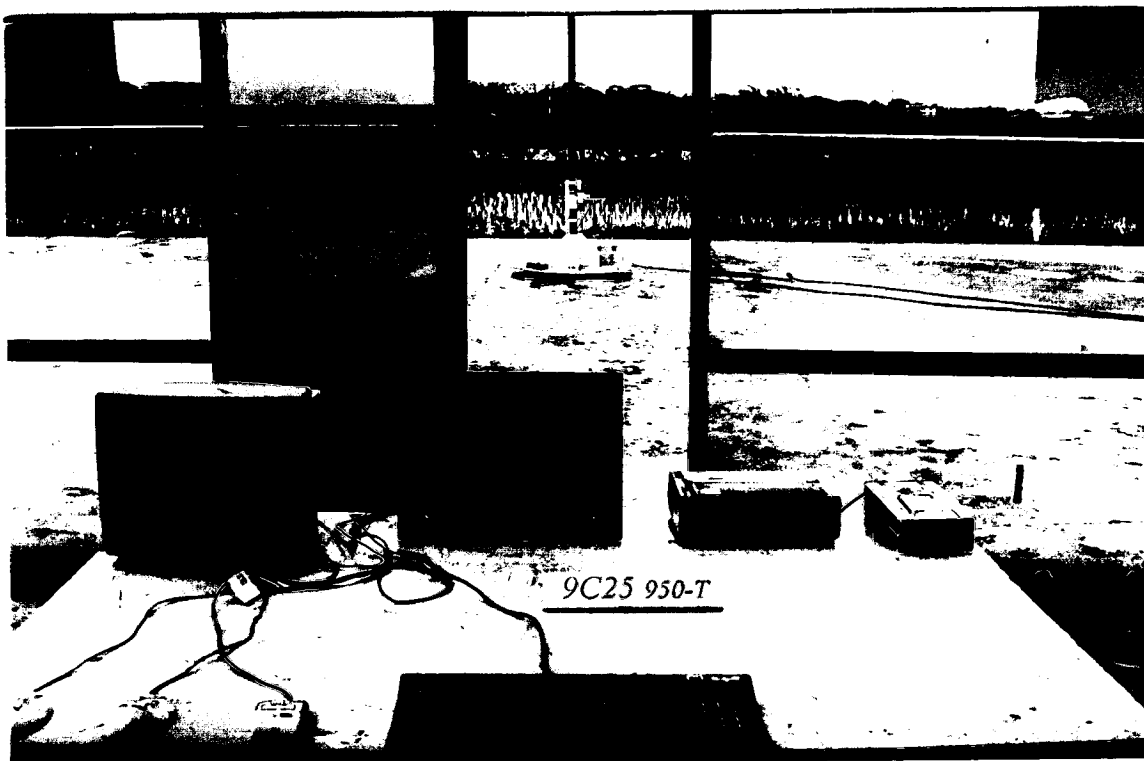
- I. Open site test front view (IPPC-950T)
- J. Open site test back view



## 11. PHOTOS OF TESTING

K. Open site test front view (IPPC-950T-T)

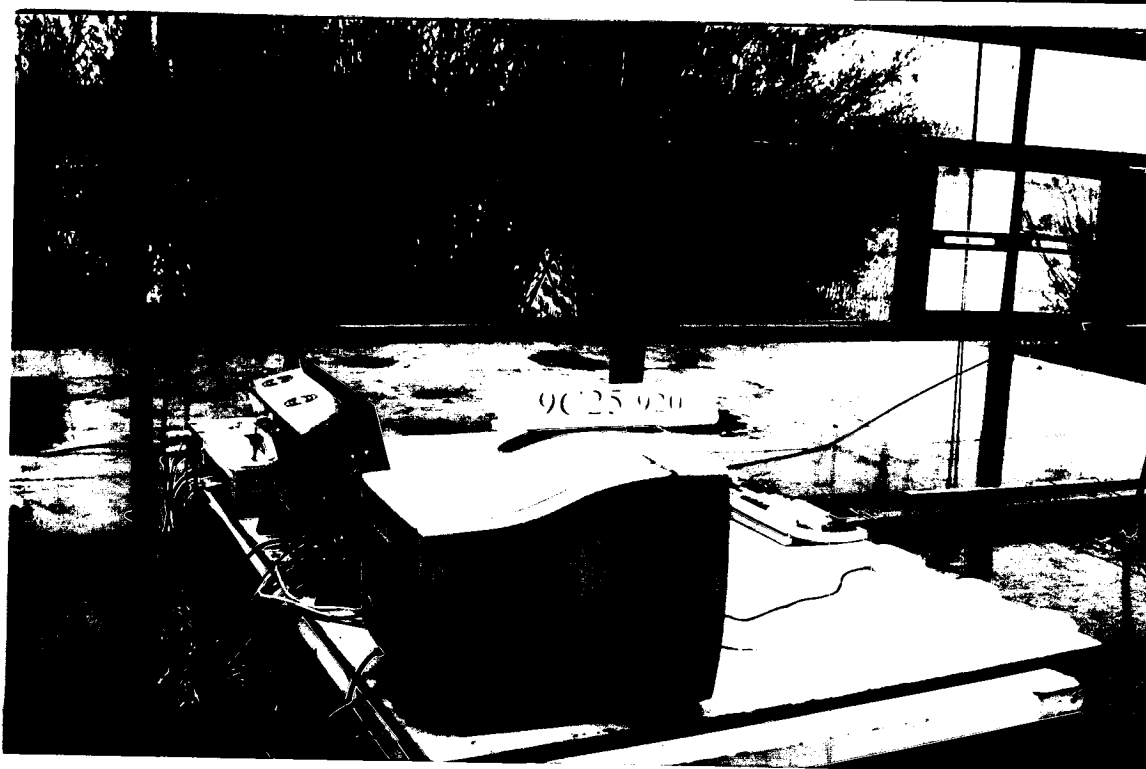
L. Open site test back view



# **11. PHOTOS OF TESTING**

M. Open site test front view (IPPC-920T)

N. Open site test back view

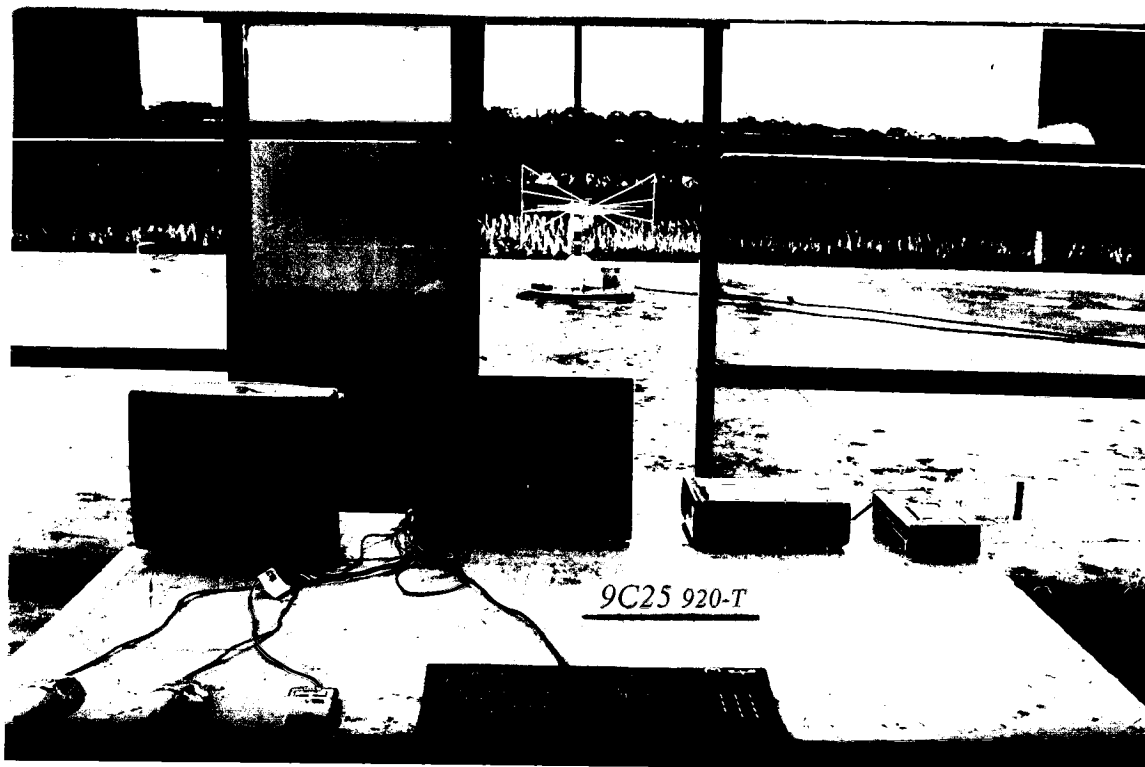




## 11. PHOTOS OF TESTING

O. Open site test front view (IPPC-920T-T)

P. Open site test back view



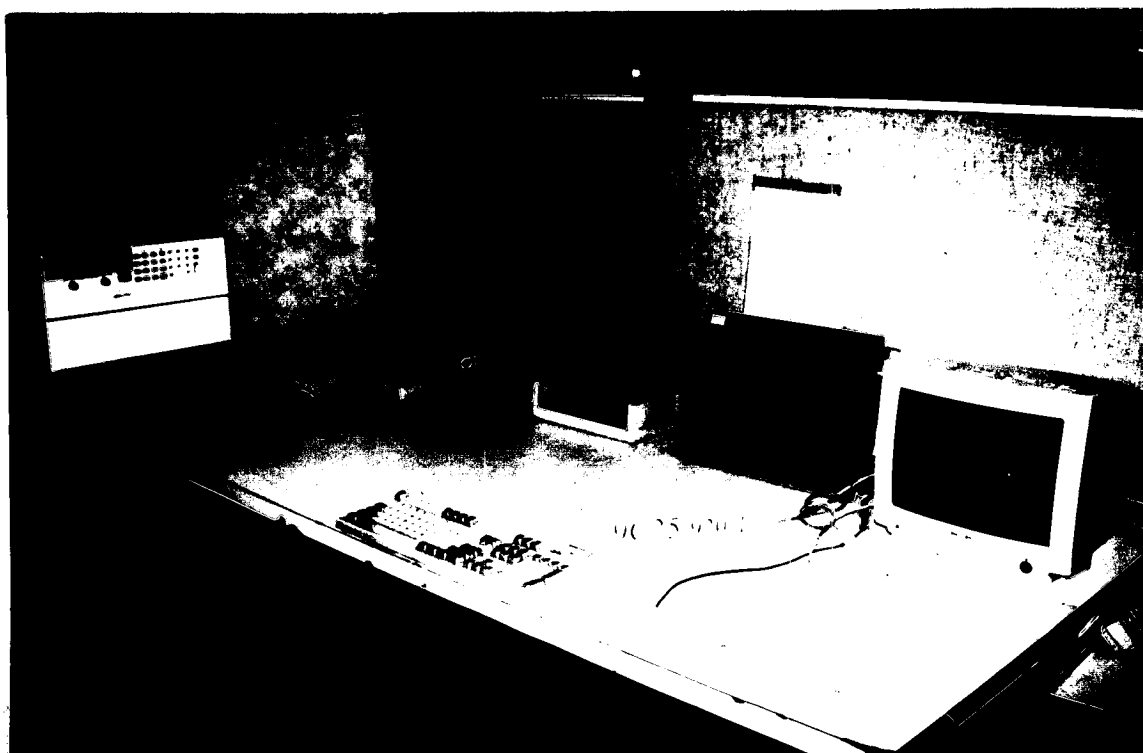
# 11. PHOTOS OF TESTING

- Q. Harmonics test view (IPPC-950T)
- R. Harmonics test view (IPPC-950T-T)



## 11. PHOTOS OF TESTING

- S. Harmonics test view (IPPC-920T)
- T. Harmonics test view (IPPC-920T-T)



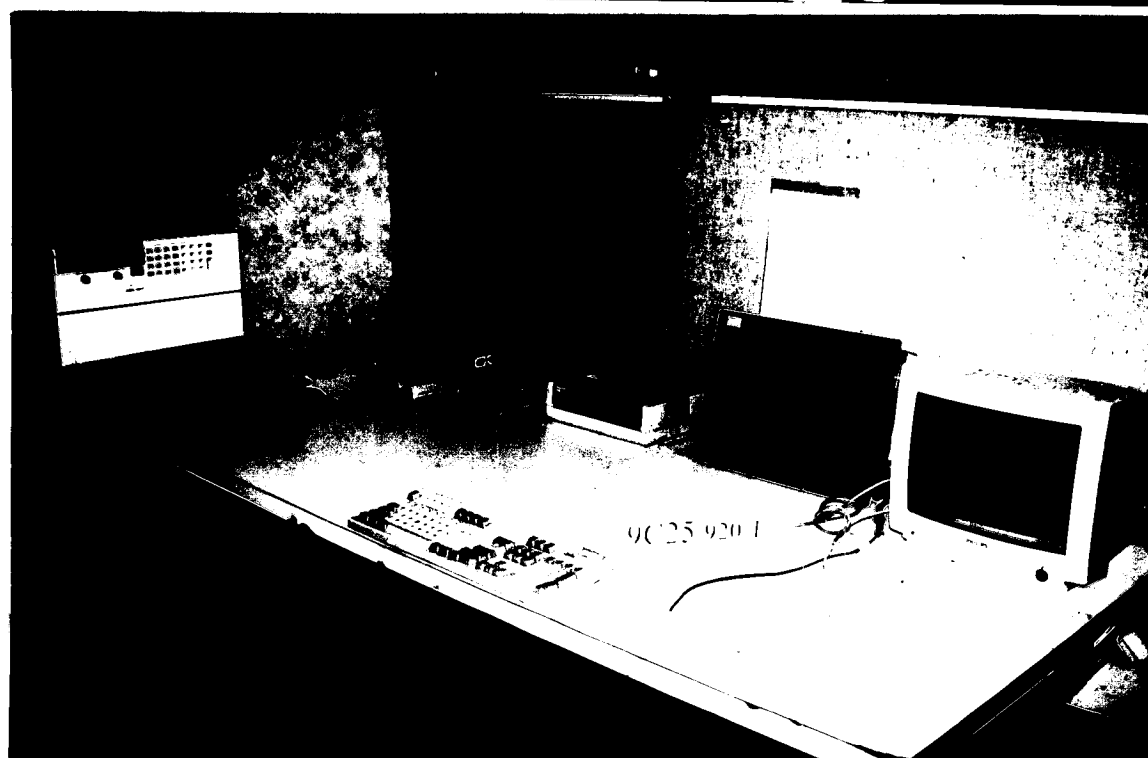
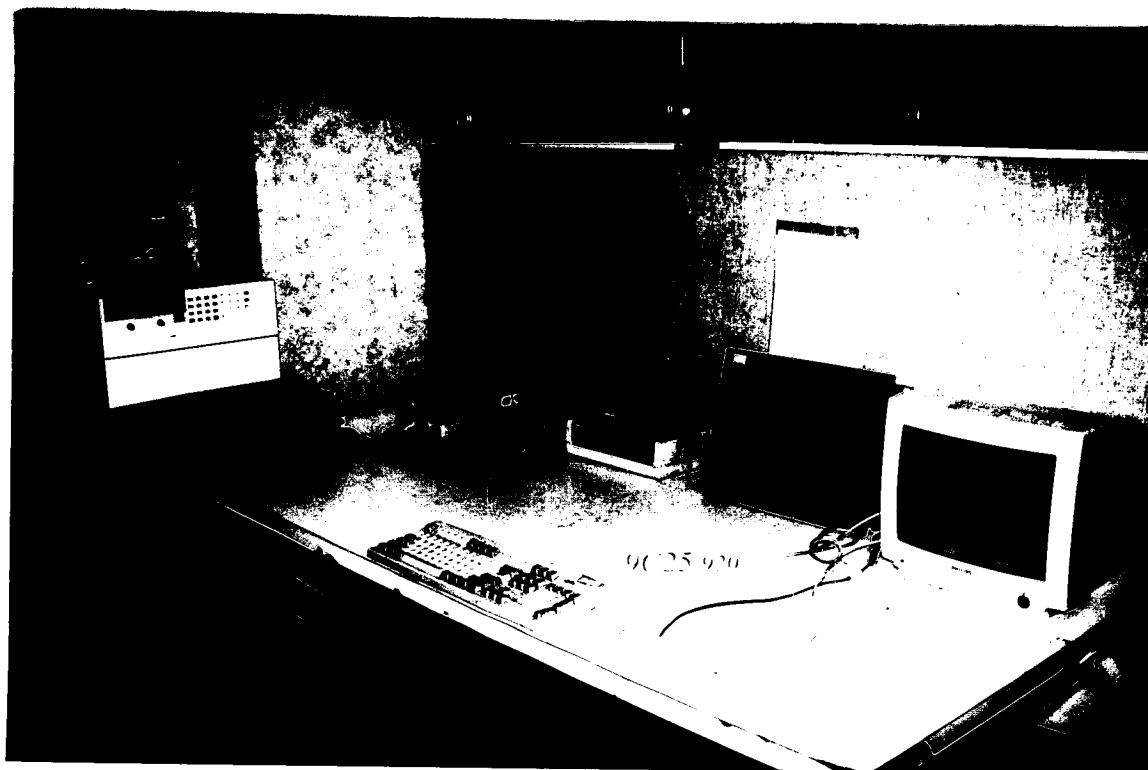
## 11. PHOTOS OF TESTING

- U. Voltage fluctuations view (IPPC-950T)
- V. Voltage fluctuations view (IPPC-950T-T)



# 11. PHOTOS OF TESTING

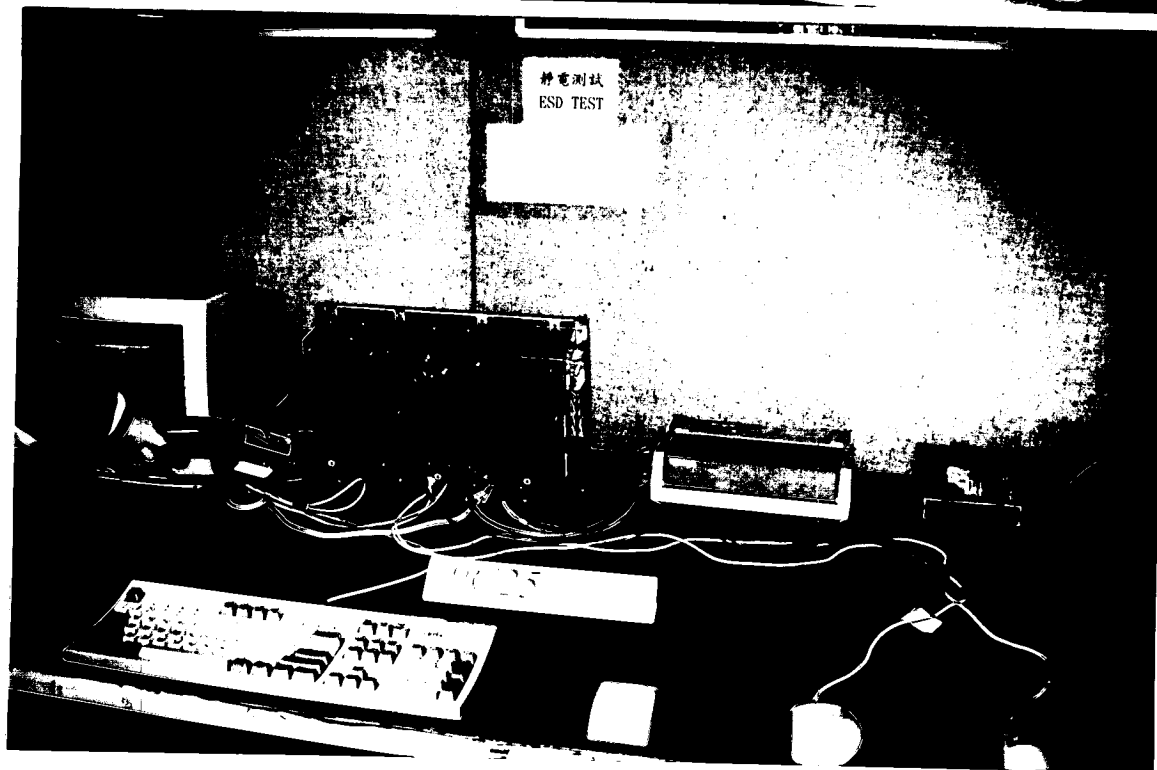
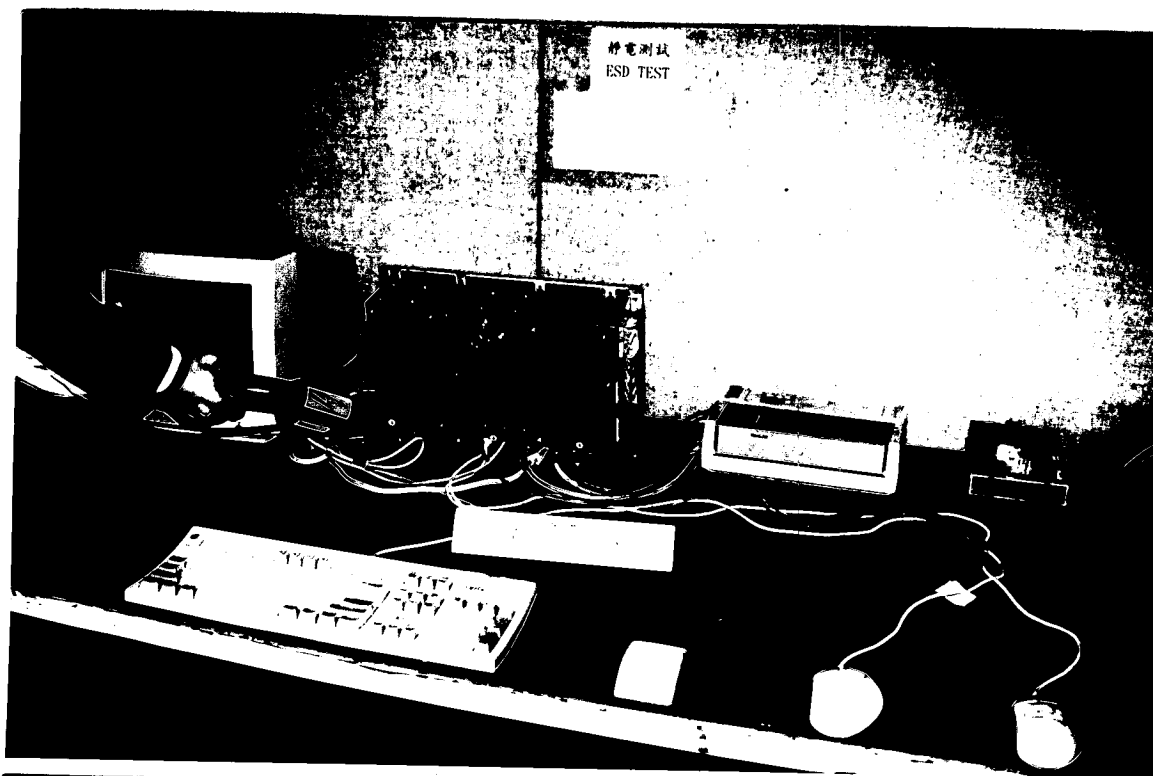
- W. Voltage fluctuations view (IPPC-920T)
- X. Voltage fluctuations view (IPPC-920T-T)



# **11. PHOTOS OF TESTING**

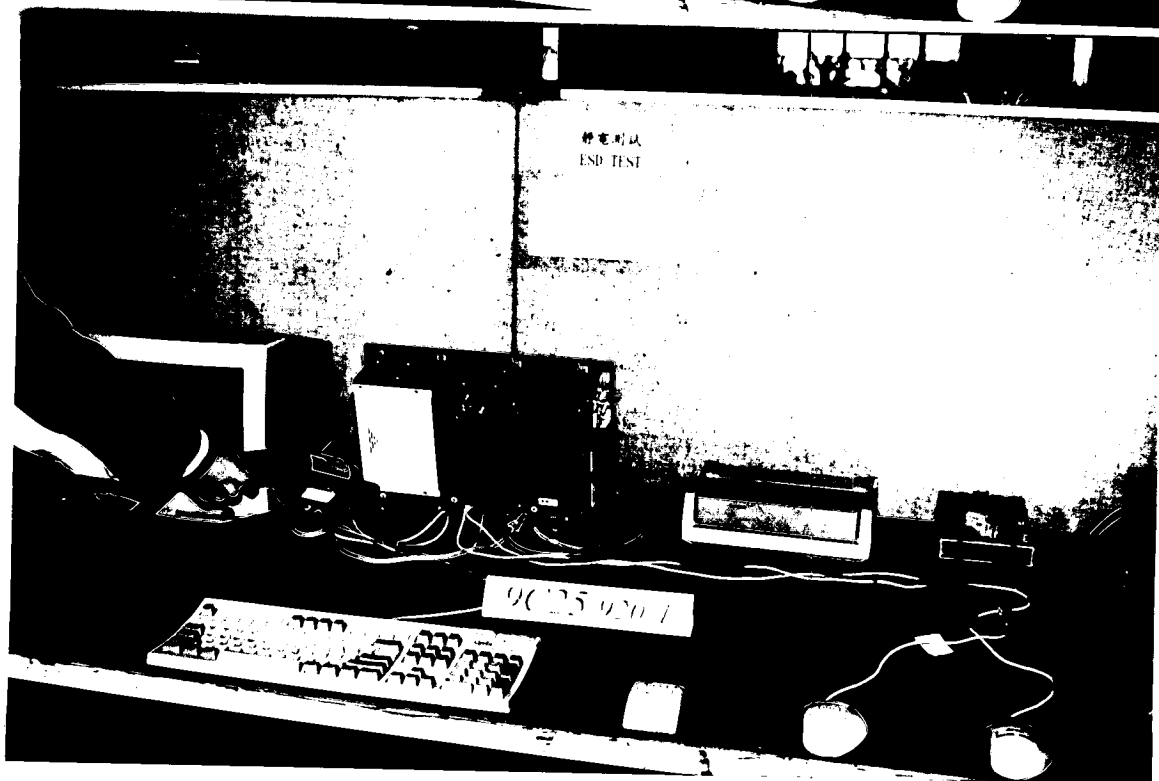
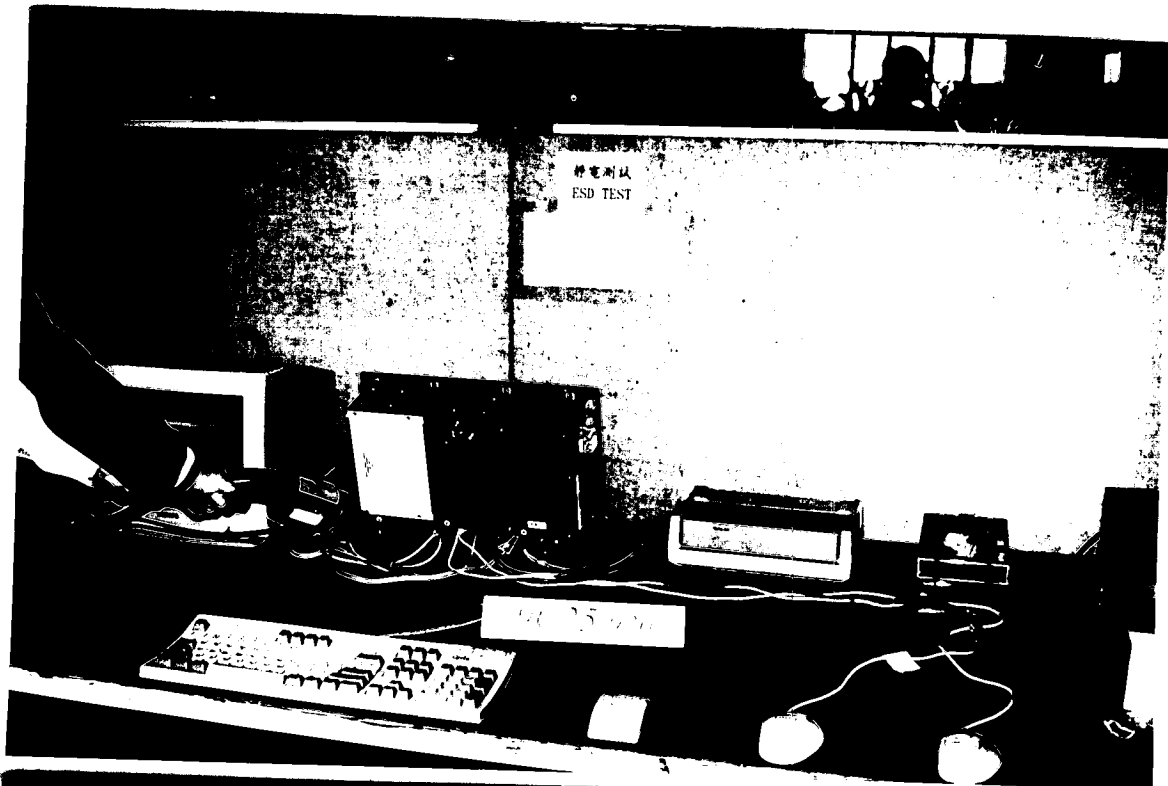
Y. Electrostatic discharge immunity test view (IPPC-950T)

Z. Electrostatic discharge immunity test view (IPPC-950T-T)



## 11. PHOTOS OF TESTING

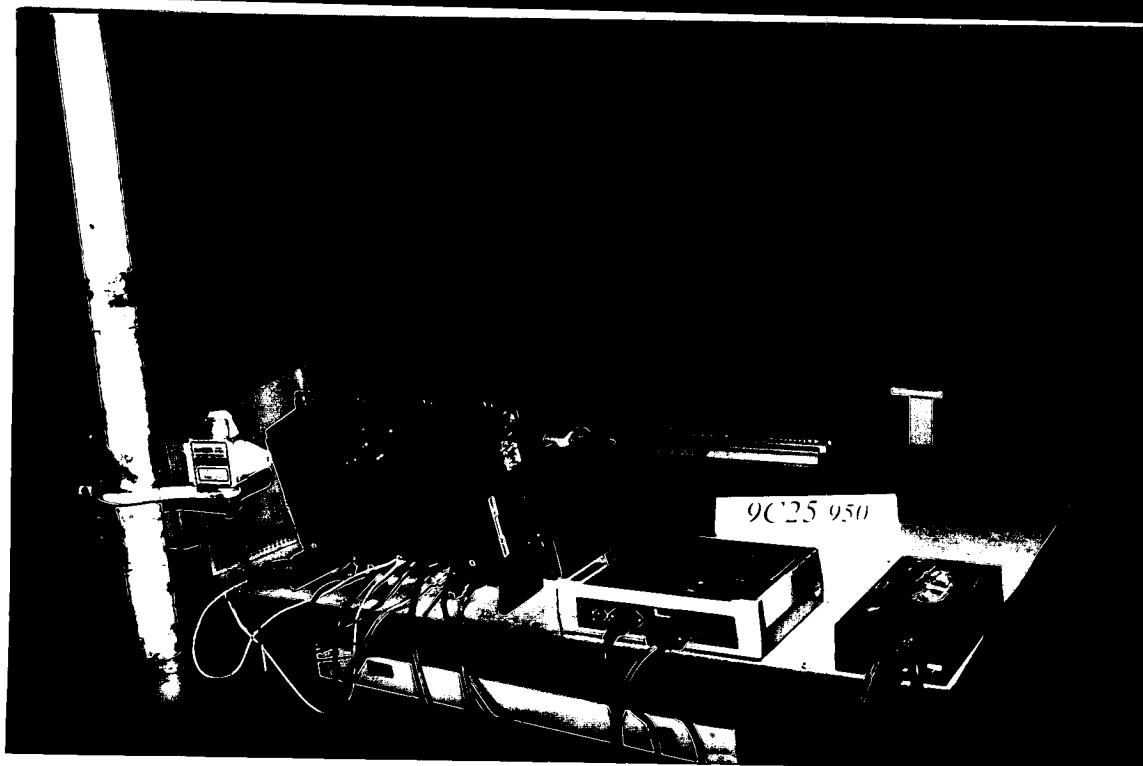
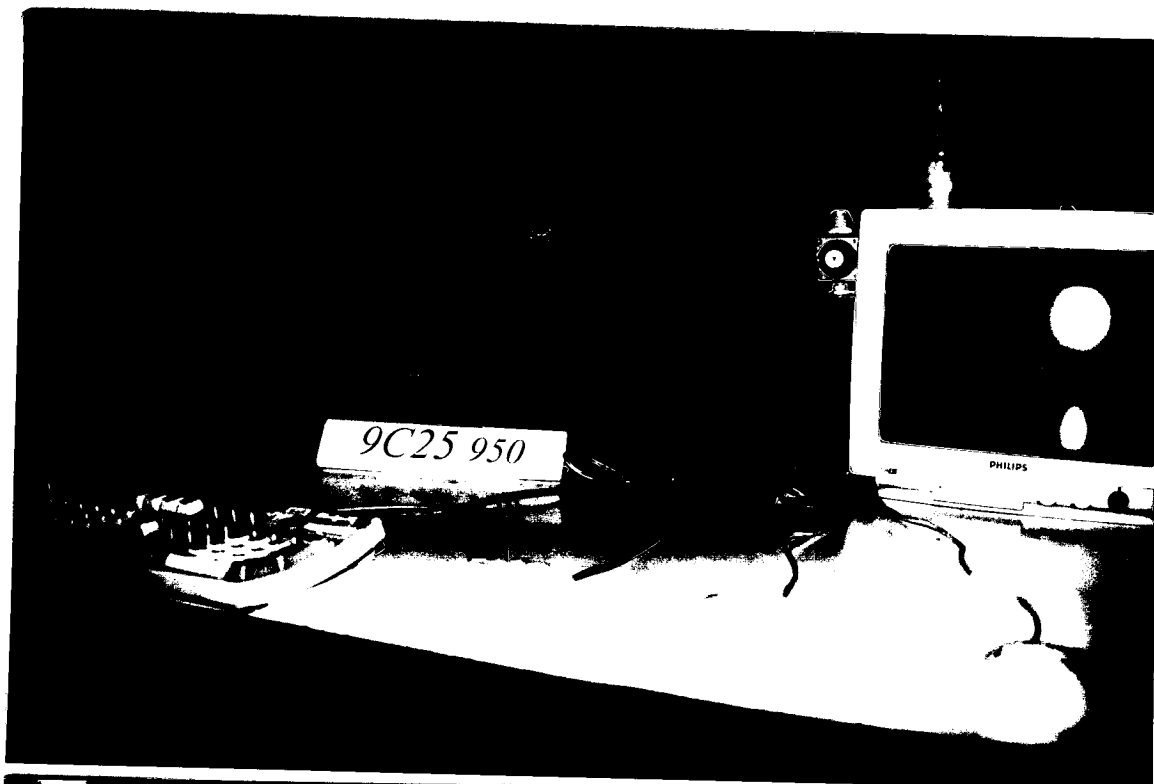
- A1. Electrostatic discharge immunity test view (IPPC-920T)
- A2. Electrostatic discharge immunity test view (IPPC-920T-T)



## 11. PHOTOS OF TESTING

A3. Radiated immunity test front view (IPPC-950T)

A4. Radiated immunity test back view

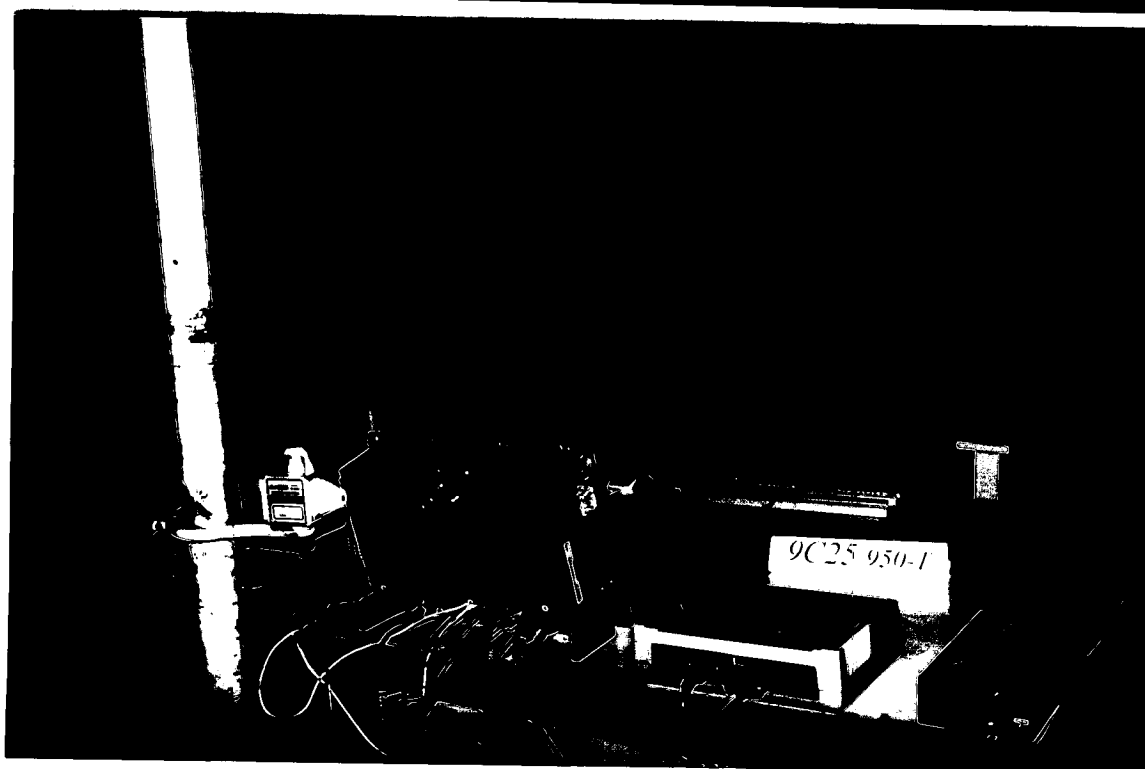
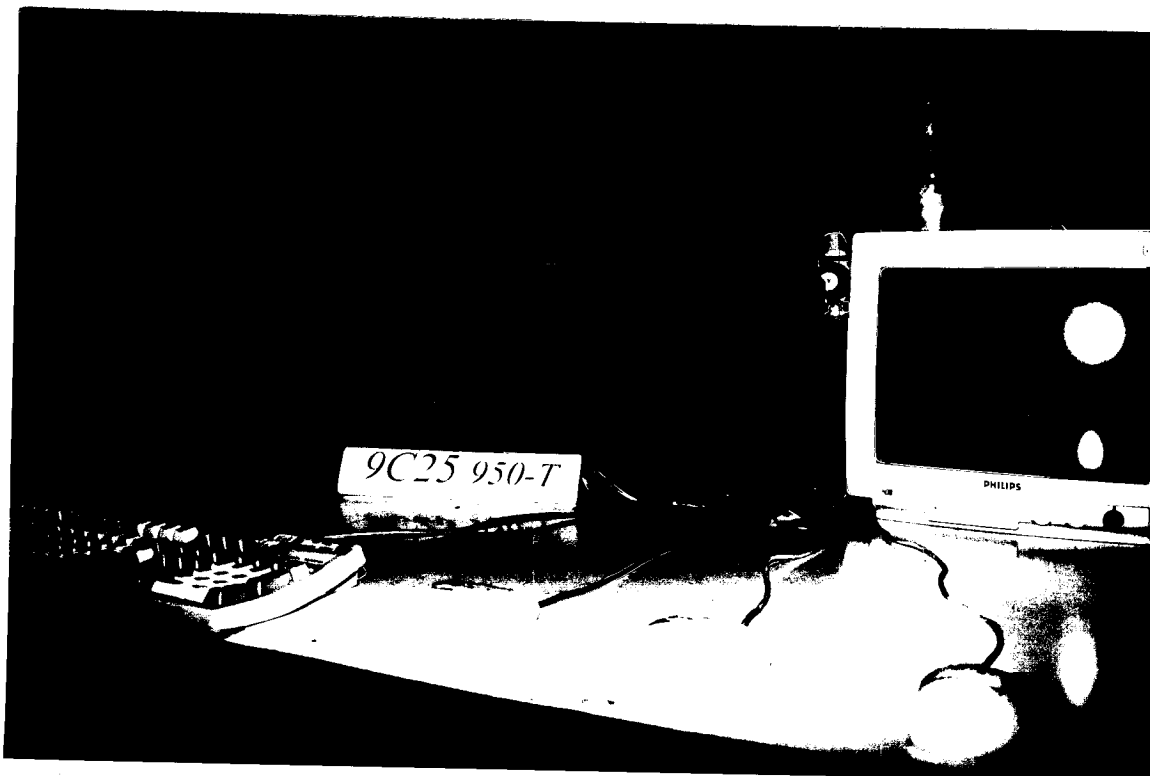




# 11. PHOTOS OF TESTING

A5. Radiated immunity test front view (IPPC-950T-T)

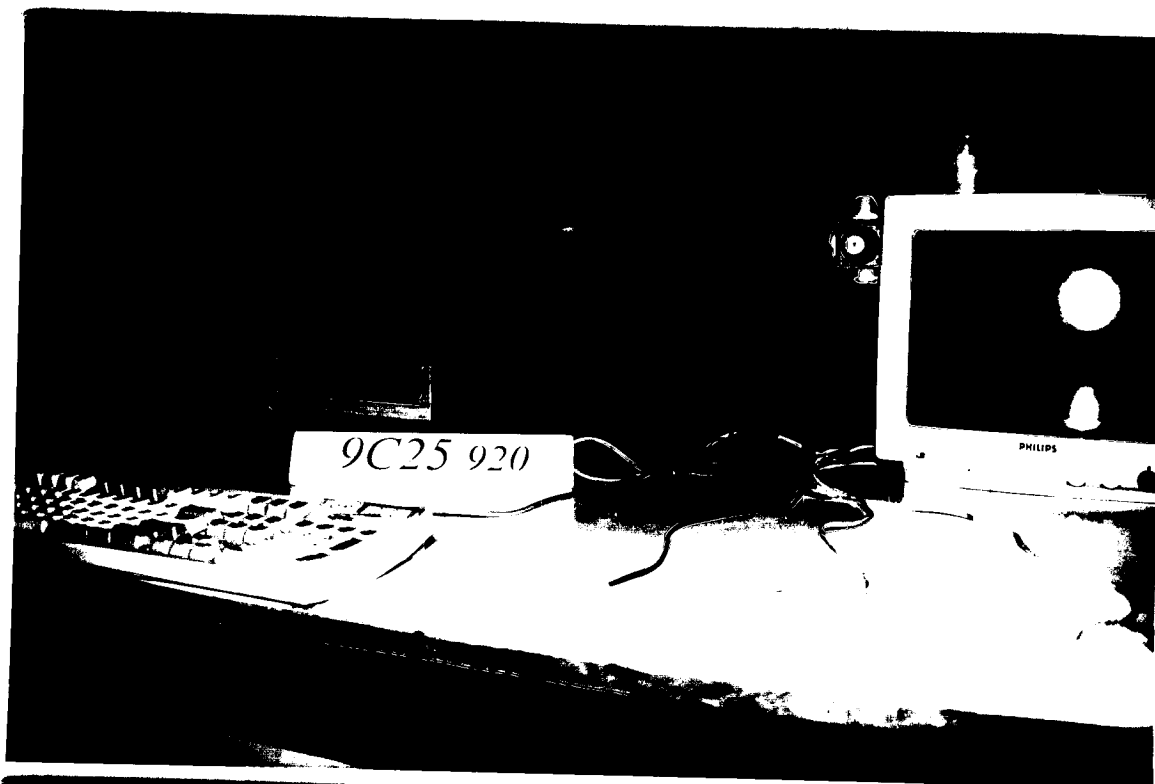
A6. Radiated immunity test back view



## 11. PHOTOS OF TESTING

A7. Radiated immunity test front view (IPPC-920T)

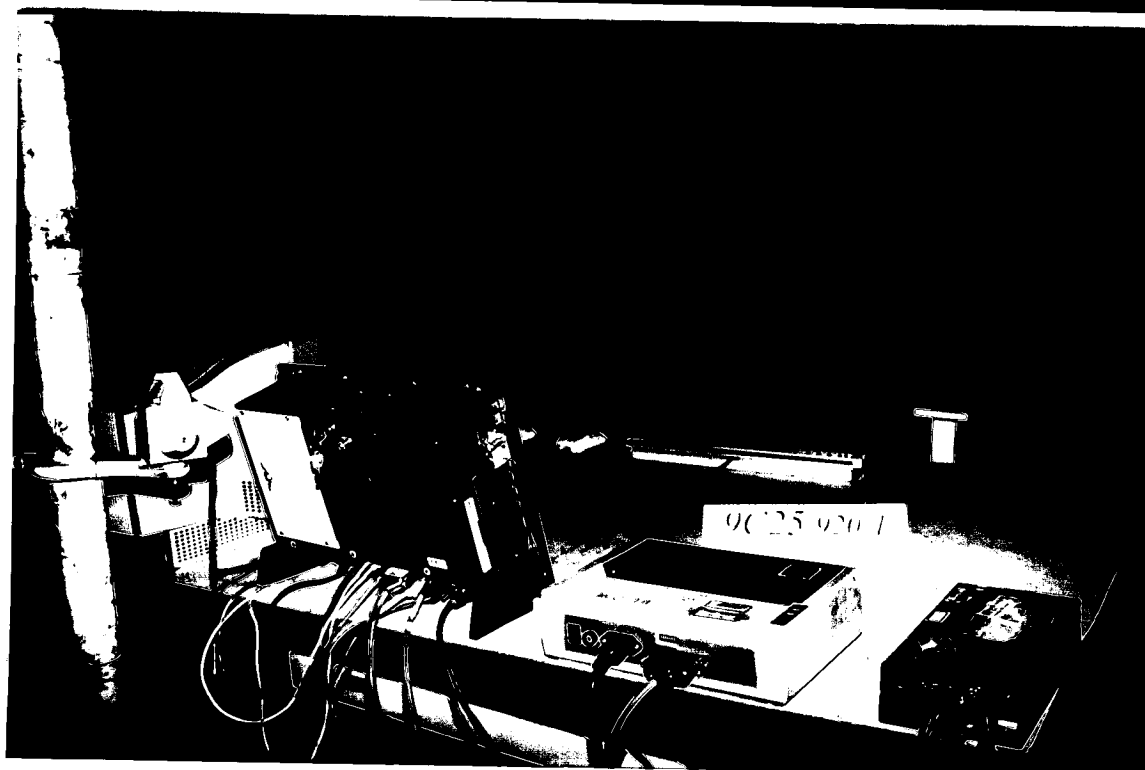
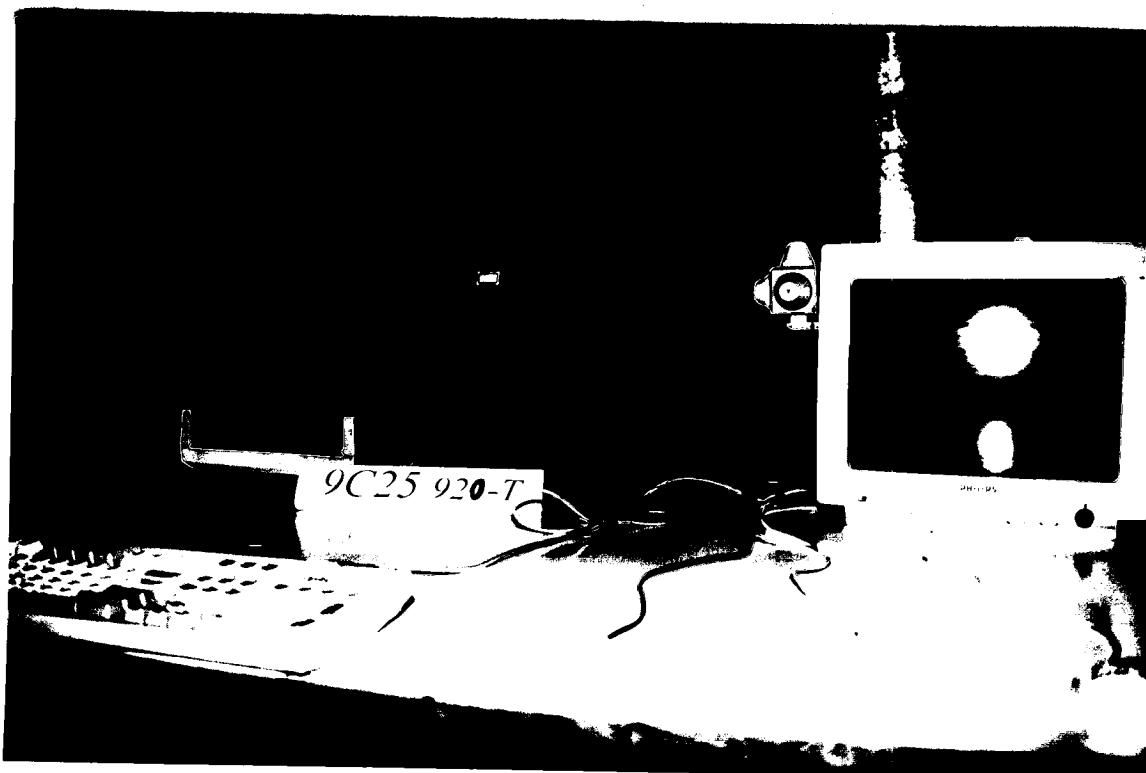
A8. Radiated immunity test back view



## 11. PHOTOS OF TESTING

A9. Radiated immunity test front view (IPPC-920T-T)

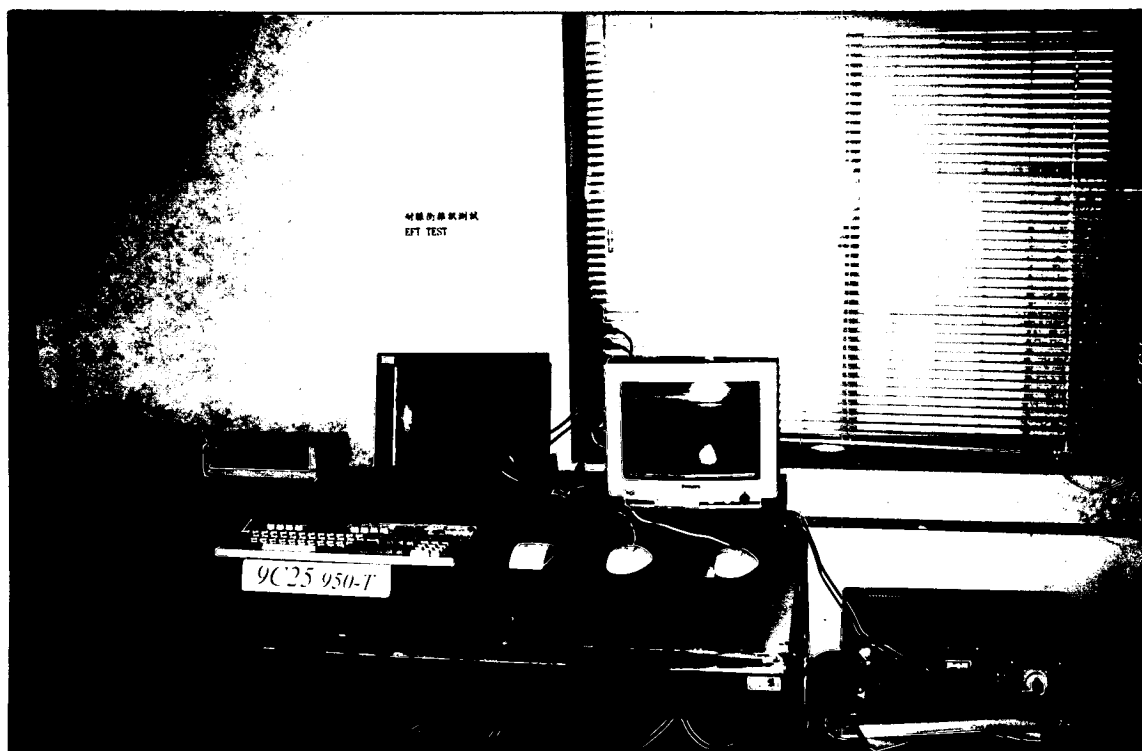
A10. Radiated immunity test back view



## 11. PHOTOS OF TESTING

A11. Electrical fast transient / burst immunity test view (IPPC-950T)

A12. Electrical fast transient / burst immunity test view (IPPC-950T-T)



## 11. PHOTOS OF TESTING

A13. Electrical fast transient / burst immunity test view (IPPC-920T)

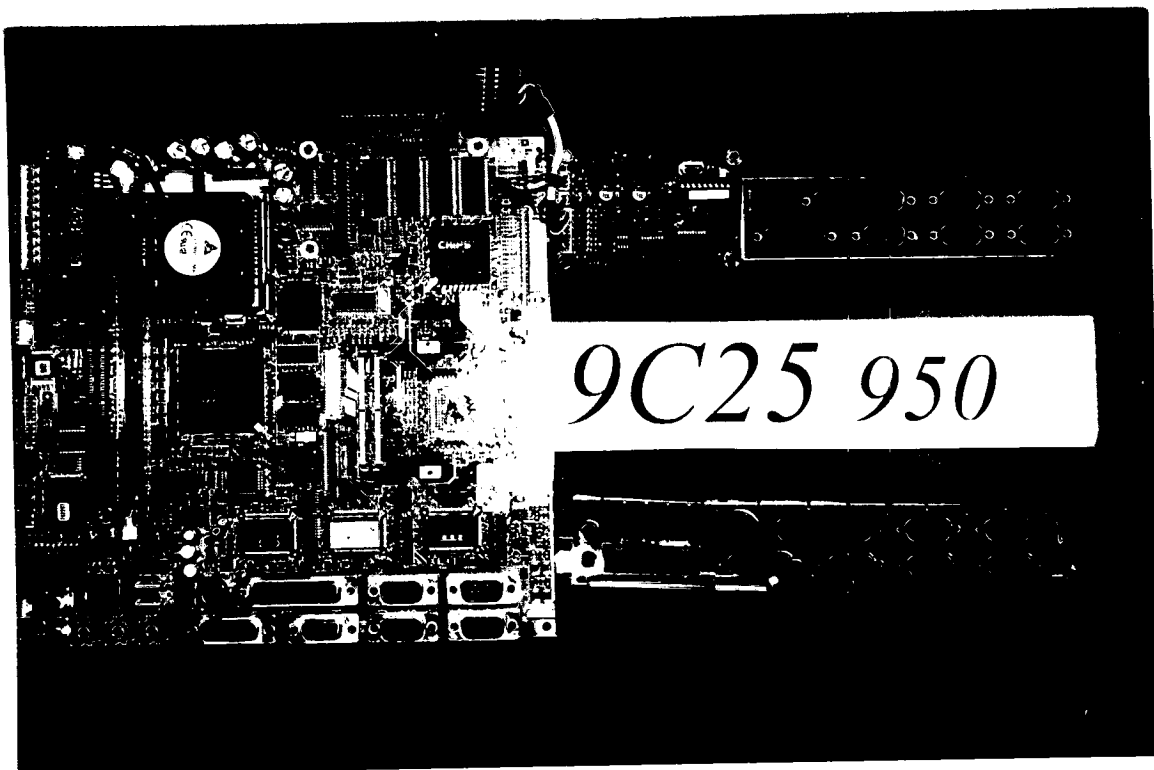
A14. Electrical fast transient / burst immunity test view (IPPC-920T-T)



**11. PHOTOS OF TESTING**

A15. Main board component side (IPPC-950T, IPPC-950T-T)

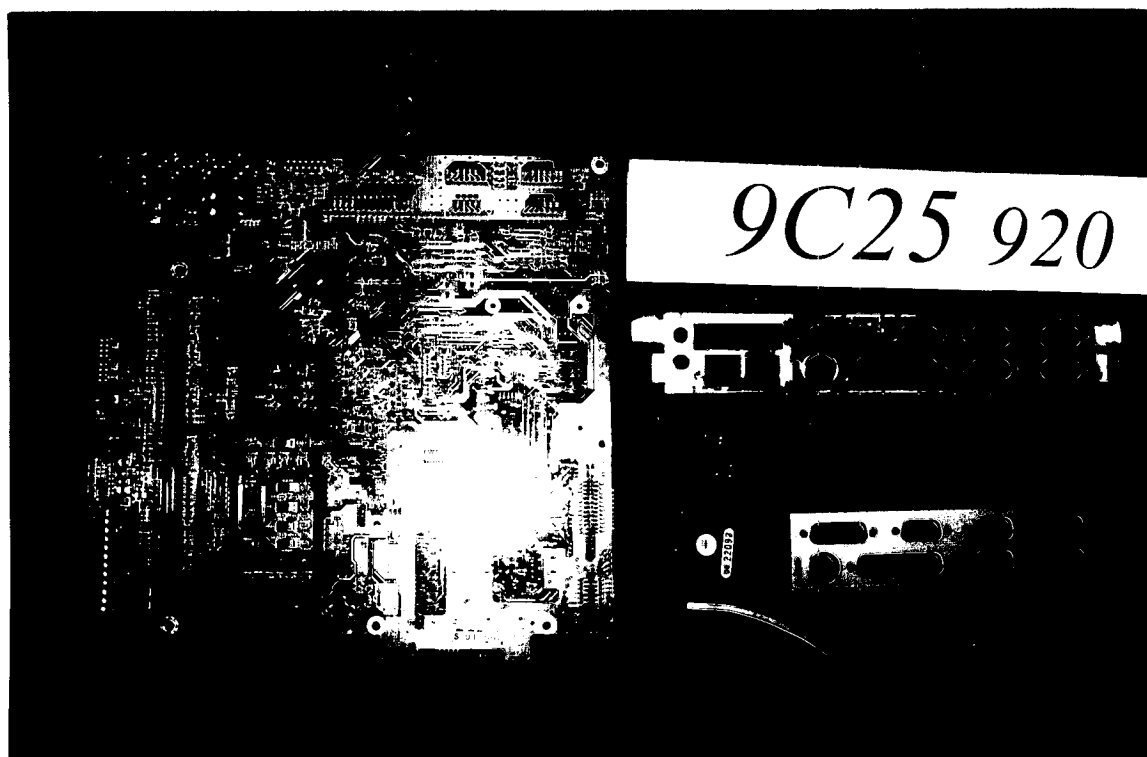
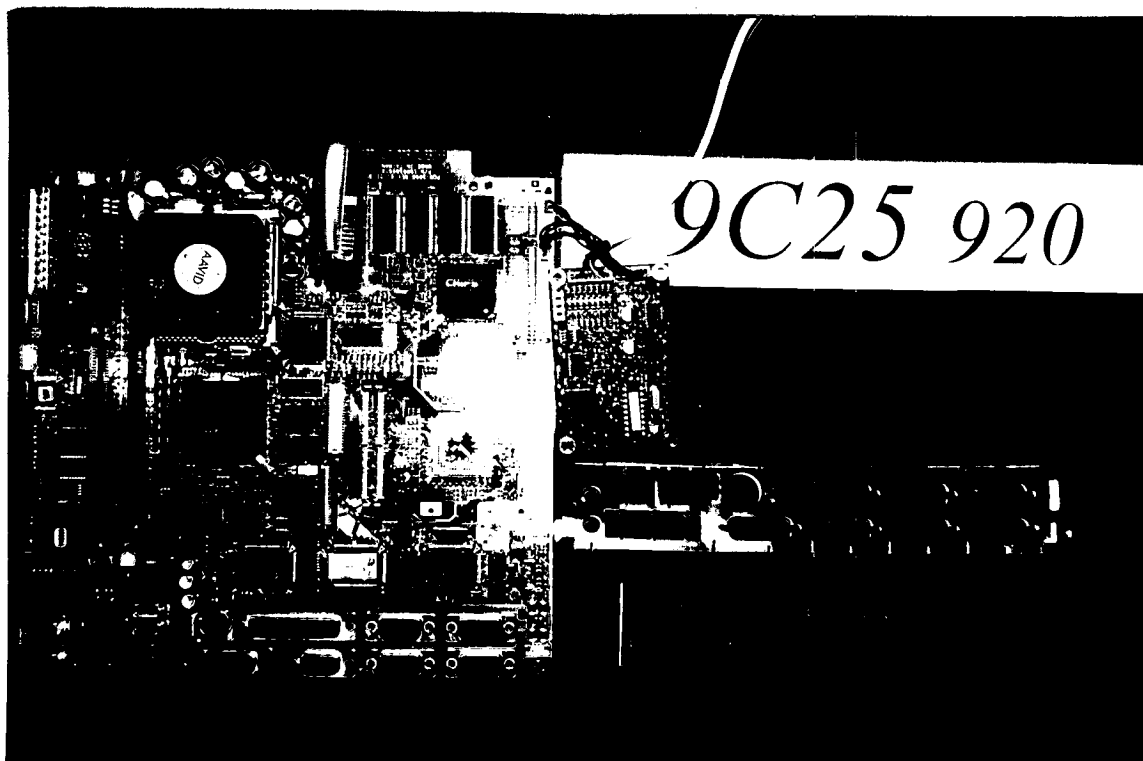
A16. Main board solder side



**11. PHOTOS OF TESTING**

A17. Main board component side (IPPC-920T, IPPC-920T-T)

A18. Main board solder side



**11. PHOTOS OF TESTING**

A19. EUT front side view (IPPC-950T)

A20. EUT back side view

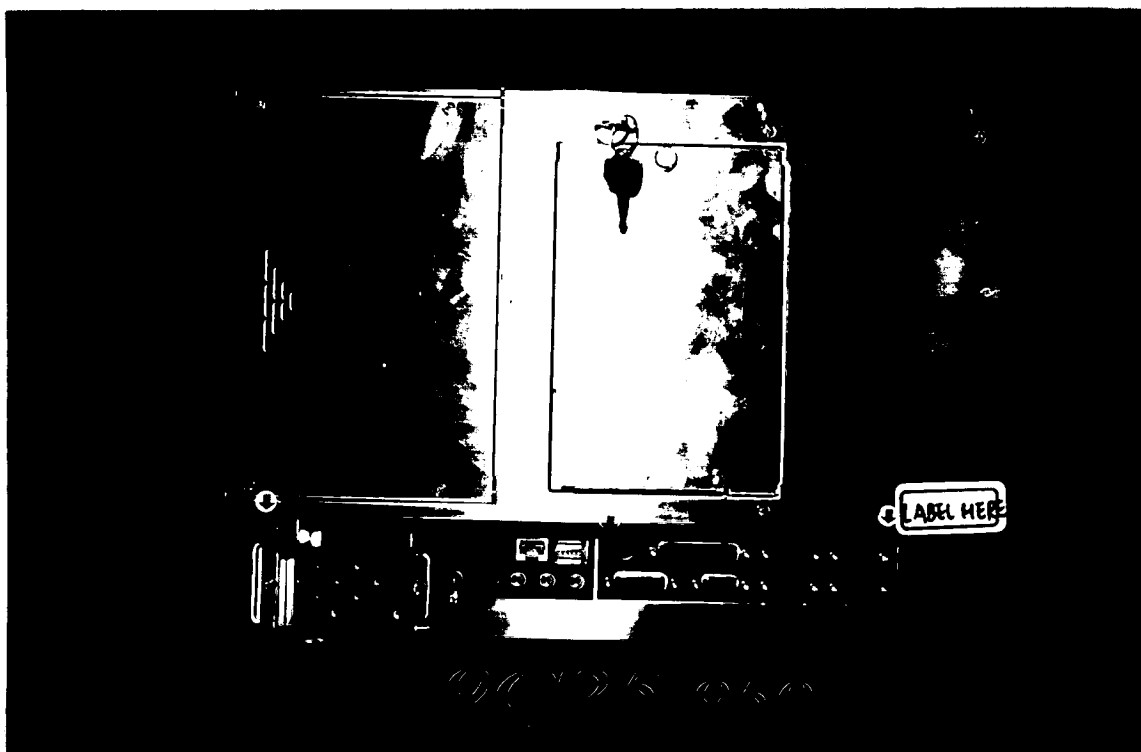




**11. PHOTOS OF TESTING**

A21. EUT front side view (IPPC-950T-T)

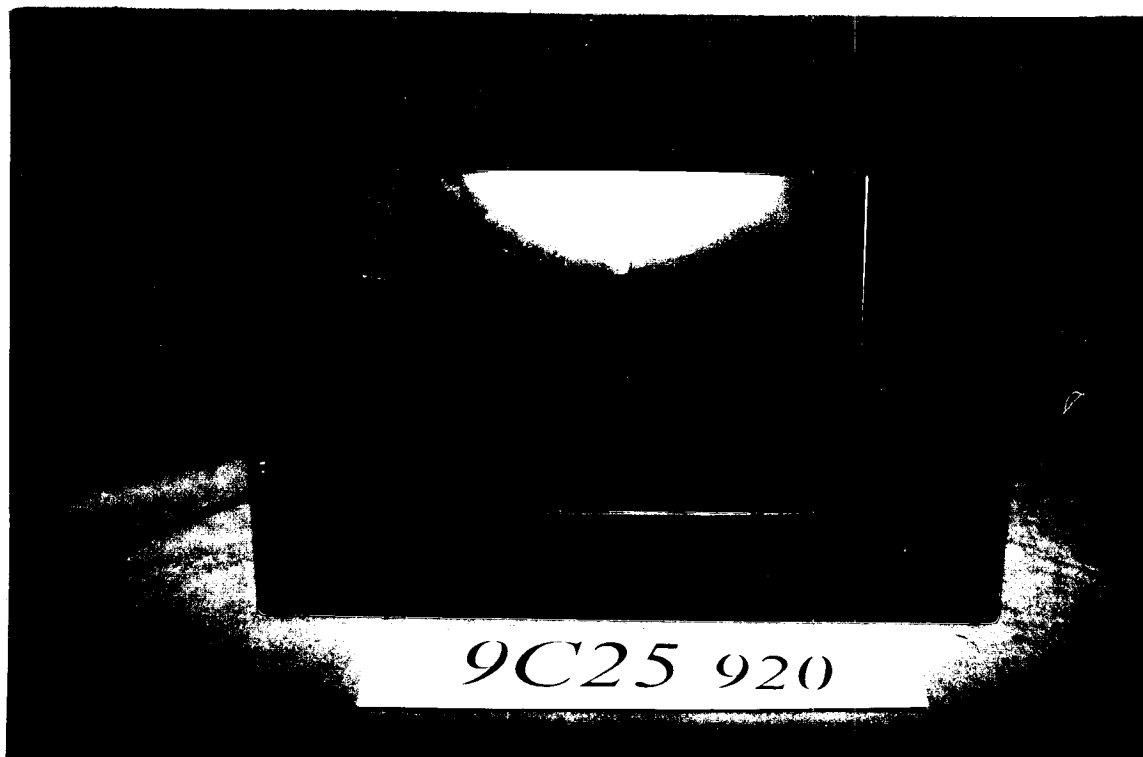
A22. EUT back side view



**11. PHOTOS OF TESTING**

A23. EUT front side view (IPPC-920T)

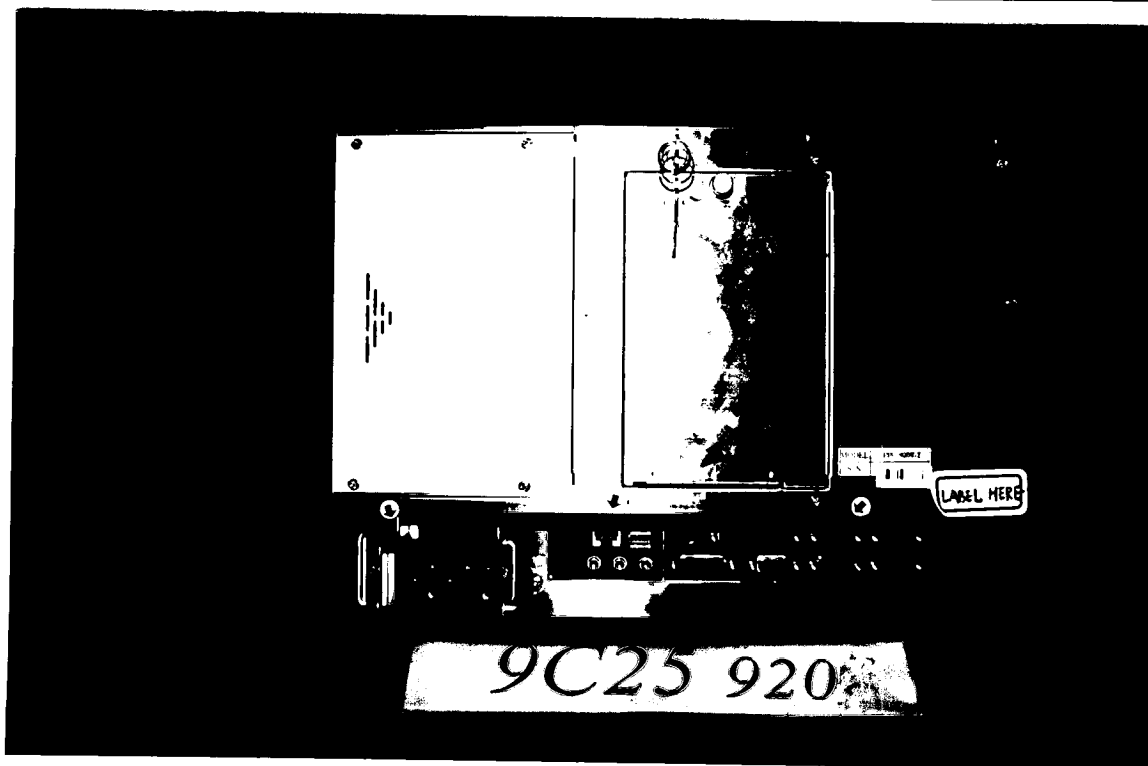
A24. EUT back side view



**11. PHOTOS OF TESTING**

A25. EUT front side view (IPPC-920T-T)

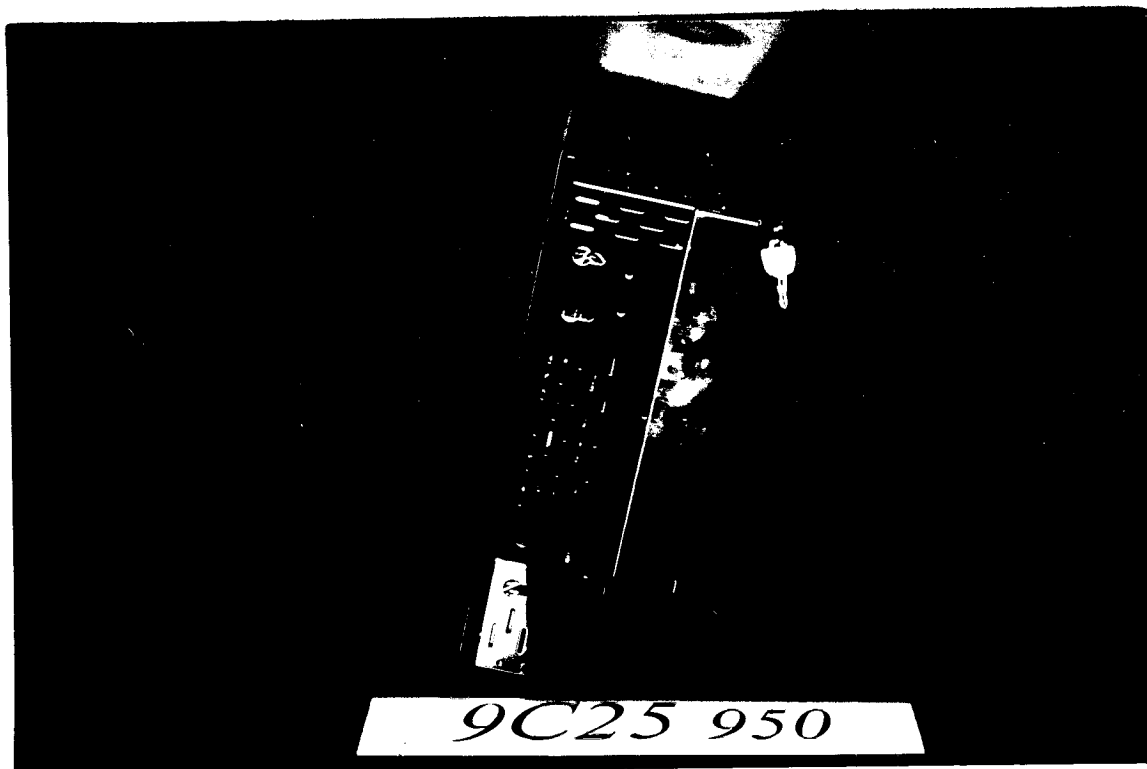
A26. EUT back side view



**11. PHOTOS OF TESTING**

A27. EUT left side view (IPPC-950T, IPPC-950T-T)

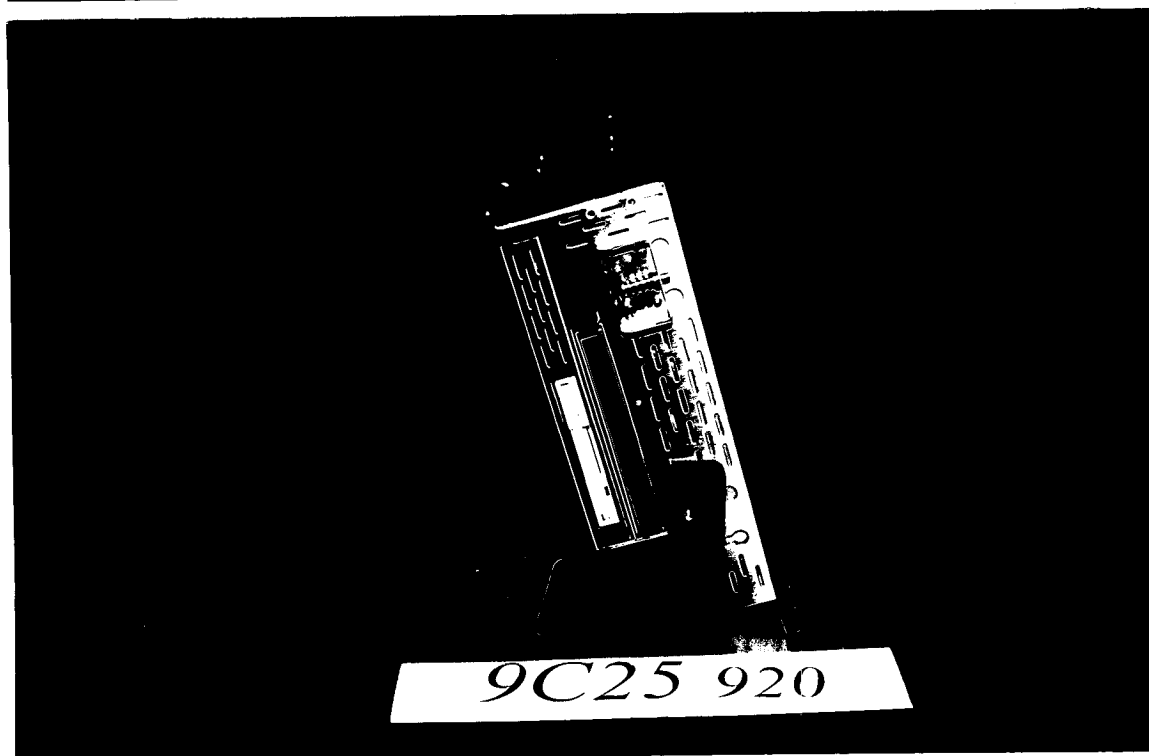
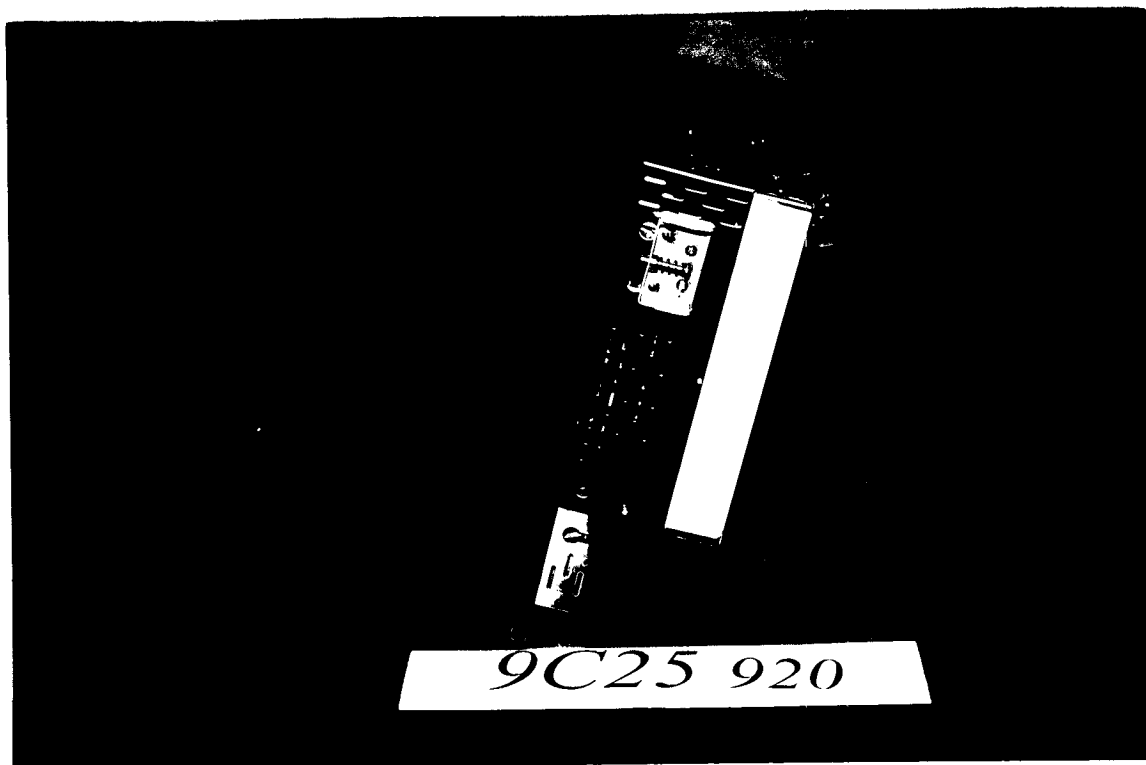
A28. EUT right side view



**11. PHOTOS OF TESTING**

A29. EUT left side view (IPPC-920T, IPPC-920T-T)

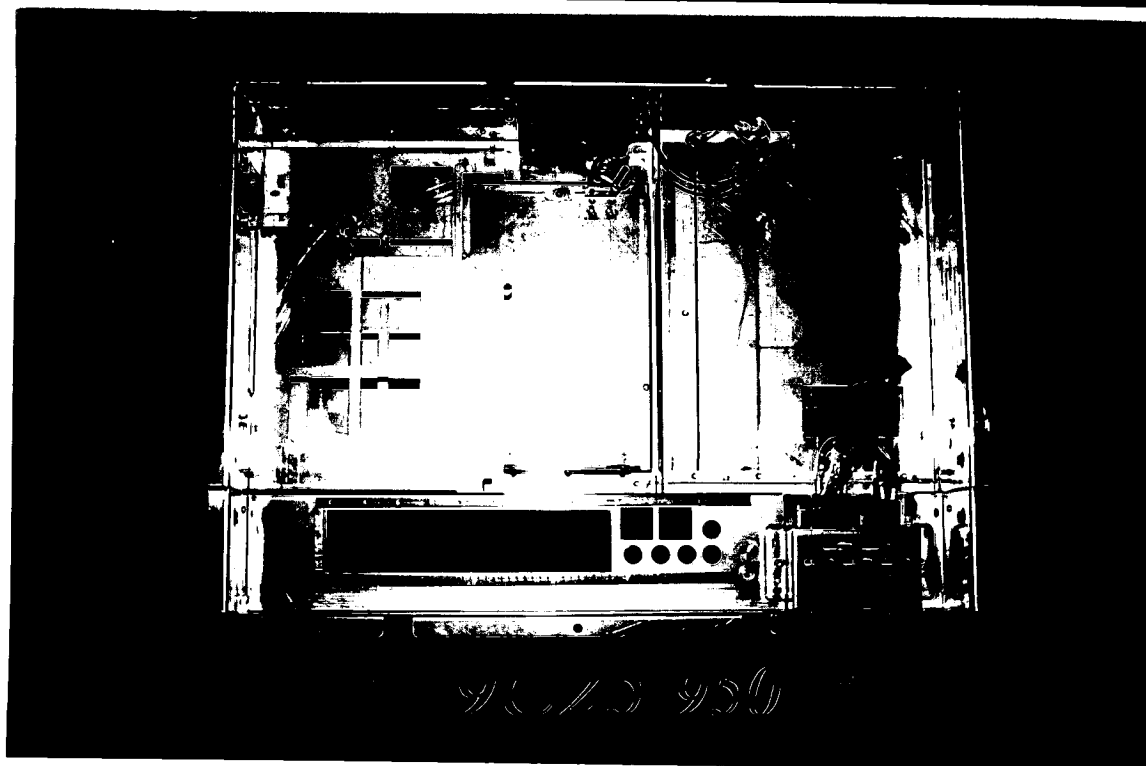
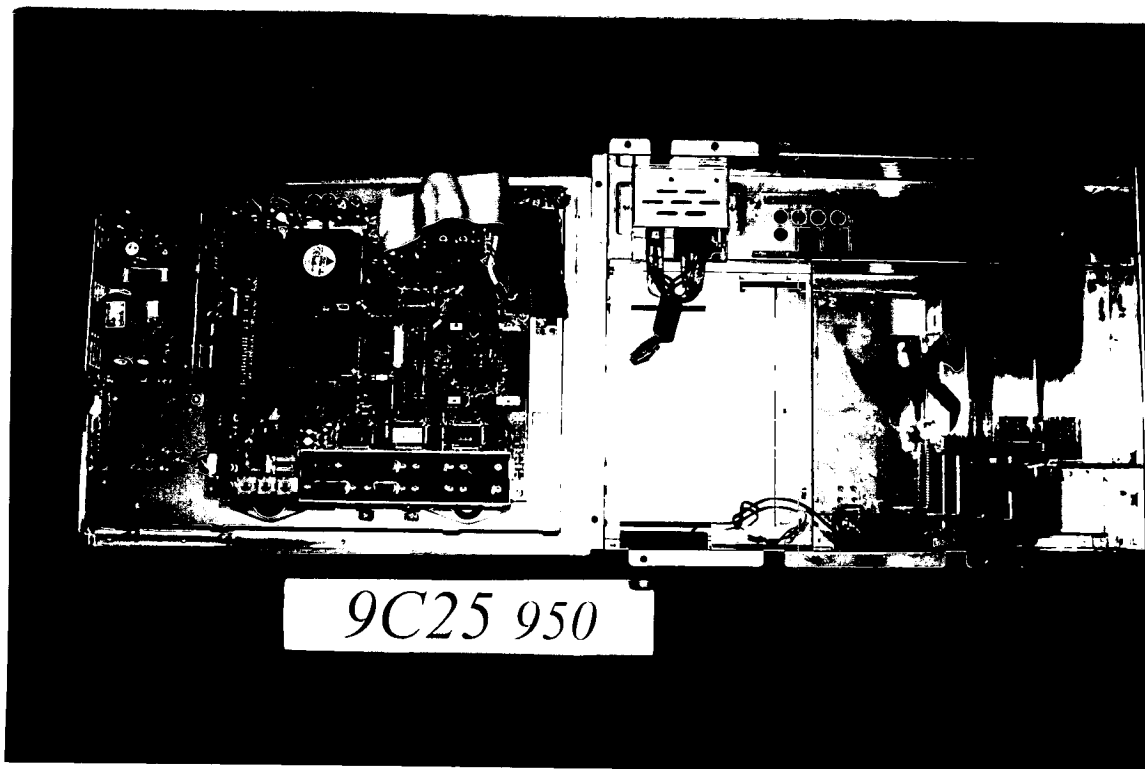
A30. EUT right side view



11. PHOTOS OF TESTING

A31. EUT top inside whole view (IPPC-950T, IPPC-950T-T)

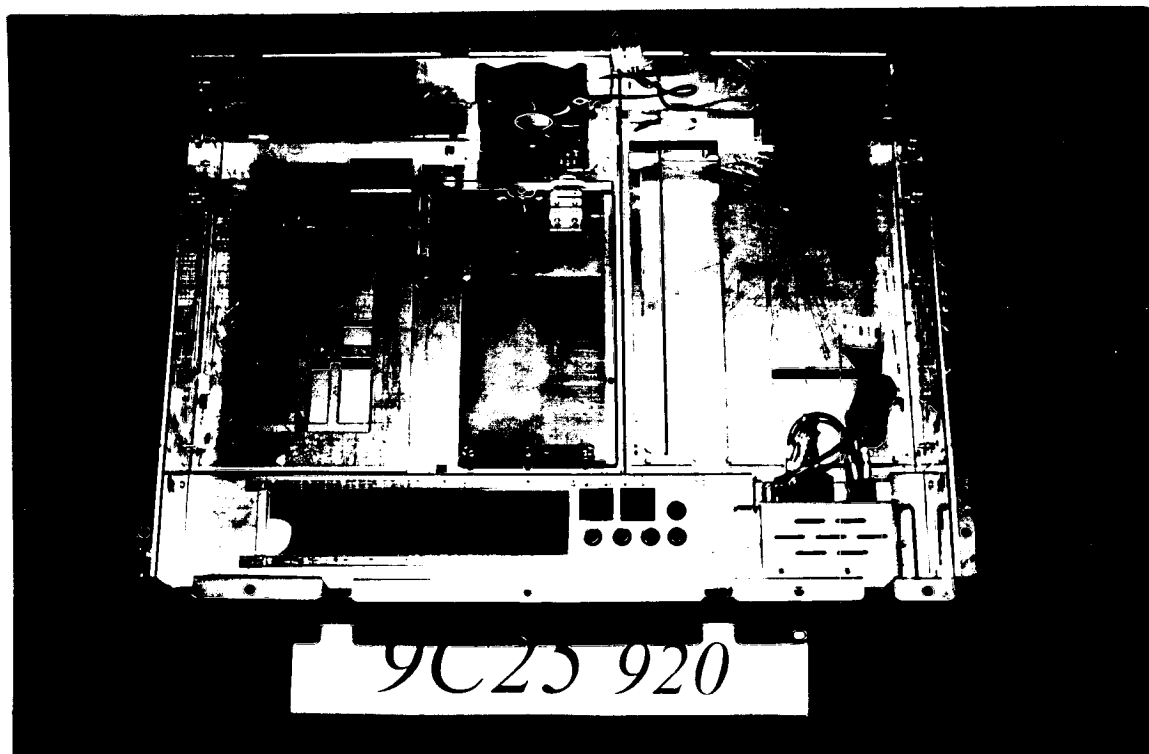
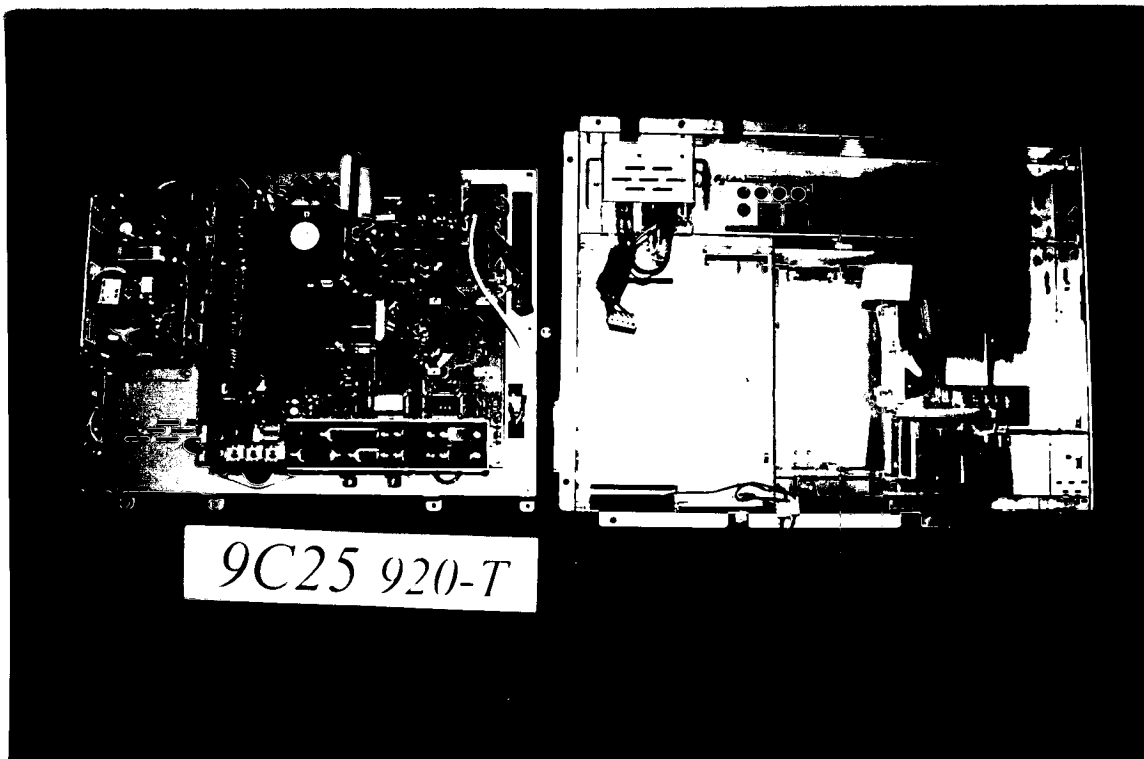
A32. EUT case inside whole view



**11. PHOTOS OF TESTING**

A33. EUT top inside whole view (IPPC-920T, IPPC-920T-T)

A34. EUT case inside whole view



**11. PHOTOS OF TESTING**

A35. Power board component side (IPPC-950T, IPPC-950T-T)

A36. Power board solder side

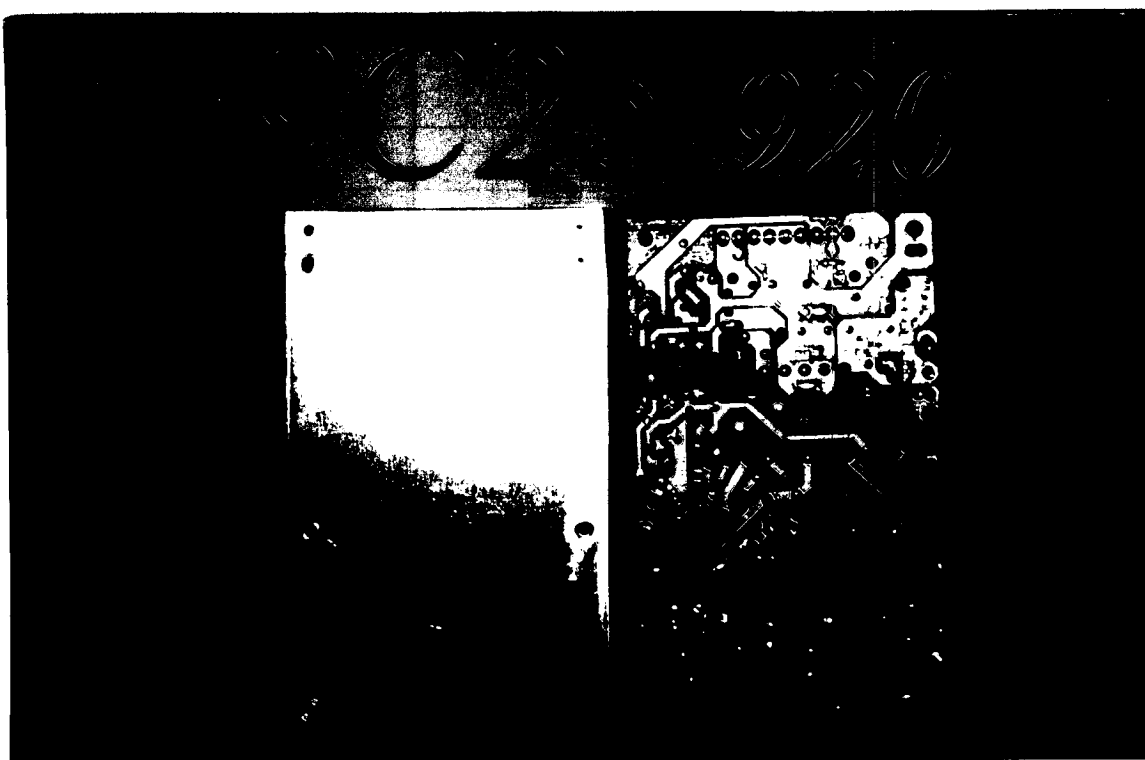




# 11. PHOTOS OF TESTING

A37. Power board component side (IPPC-920T, IPPC-920T-T)

A38. Power board solder side



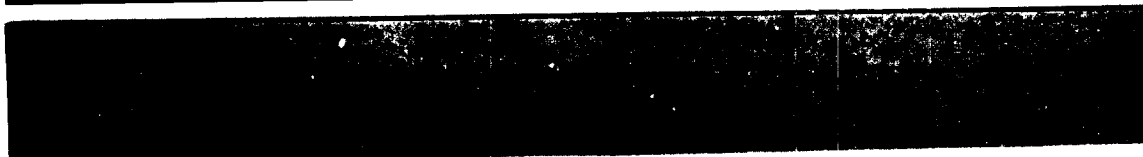
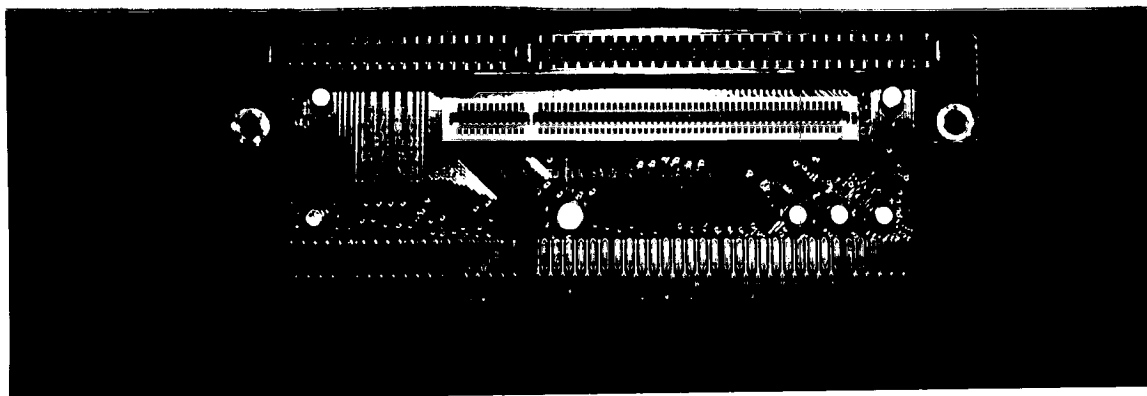
**11. PHOTOS OF TESTING**

A39. I/O board component side (IPPC-950T, IPPC-950T-T)

A40. I/O board solder side



*9C25 950*



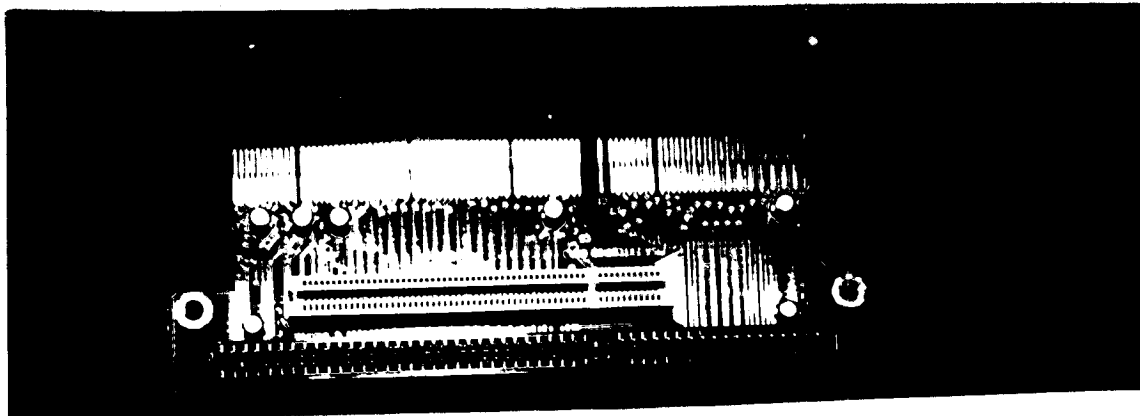
*9C25 950*



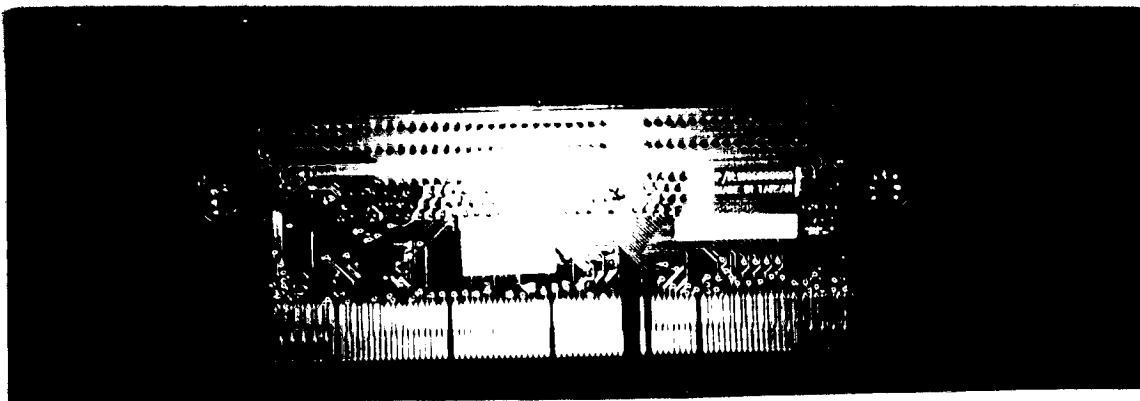
**11. PHOTOS OF TESTING**

A41. I/O board component side (IPPC-920T, IPPC-920T-T)

A42. I/O board solder side



9C25 920

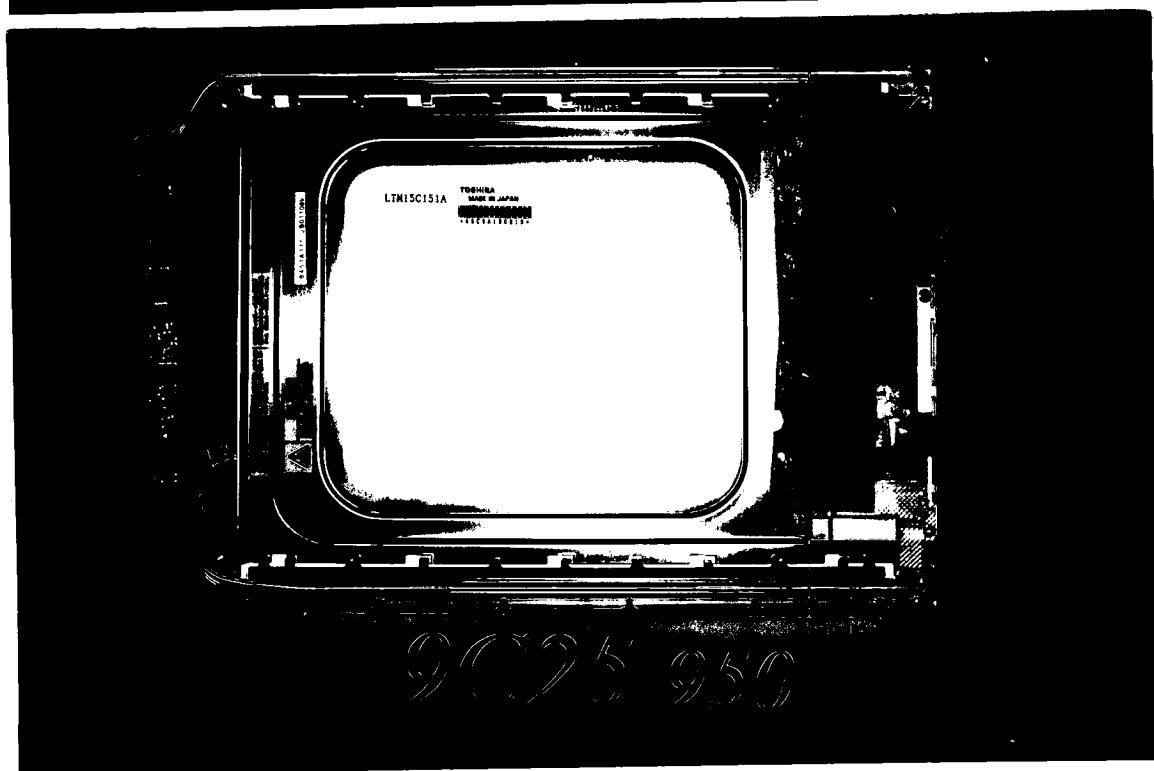
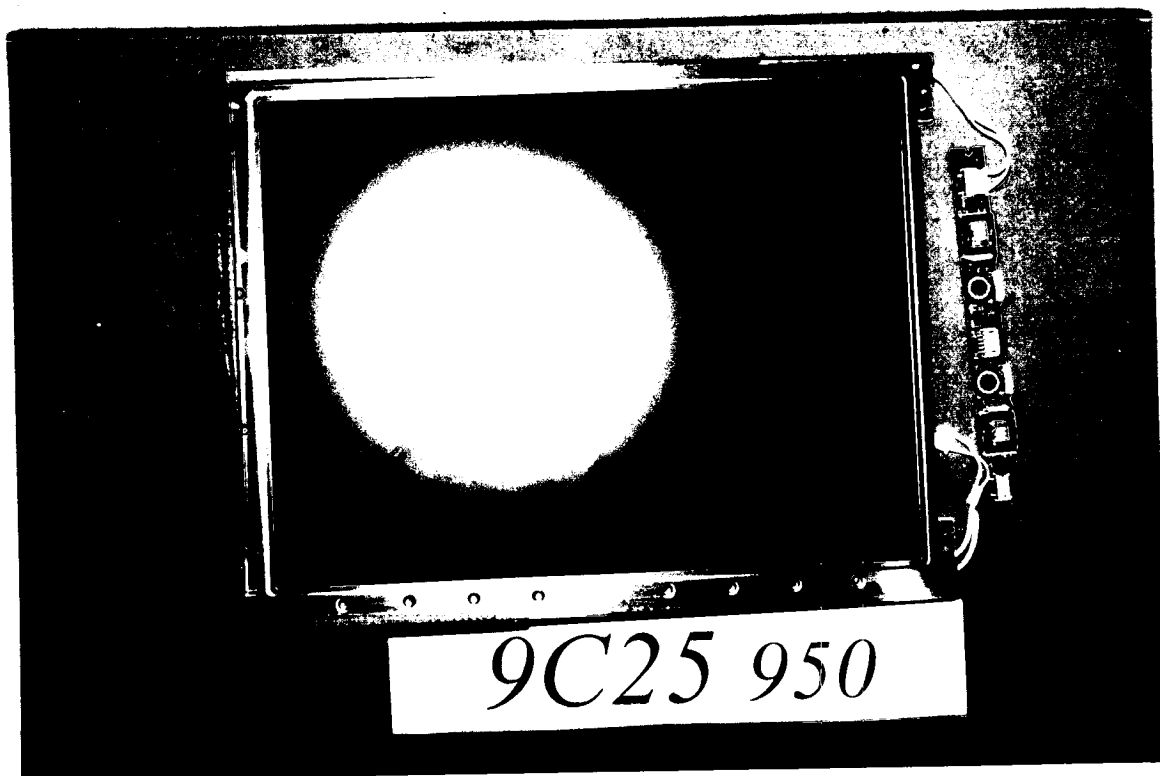


9C25 920

**11. PHOTOS OF TESTING**

A43. LCD panel component side (IPPC-950T)

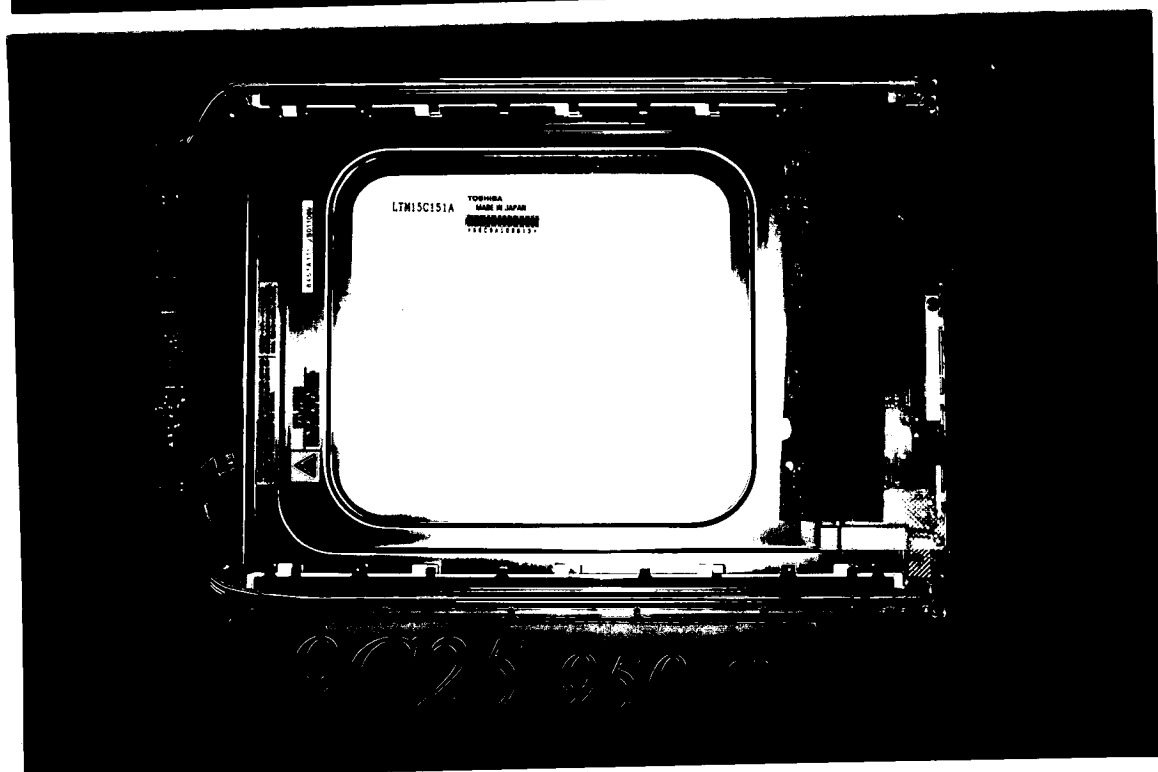
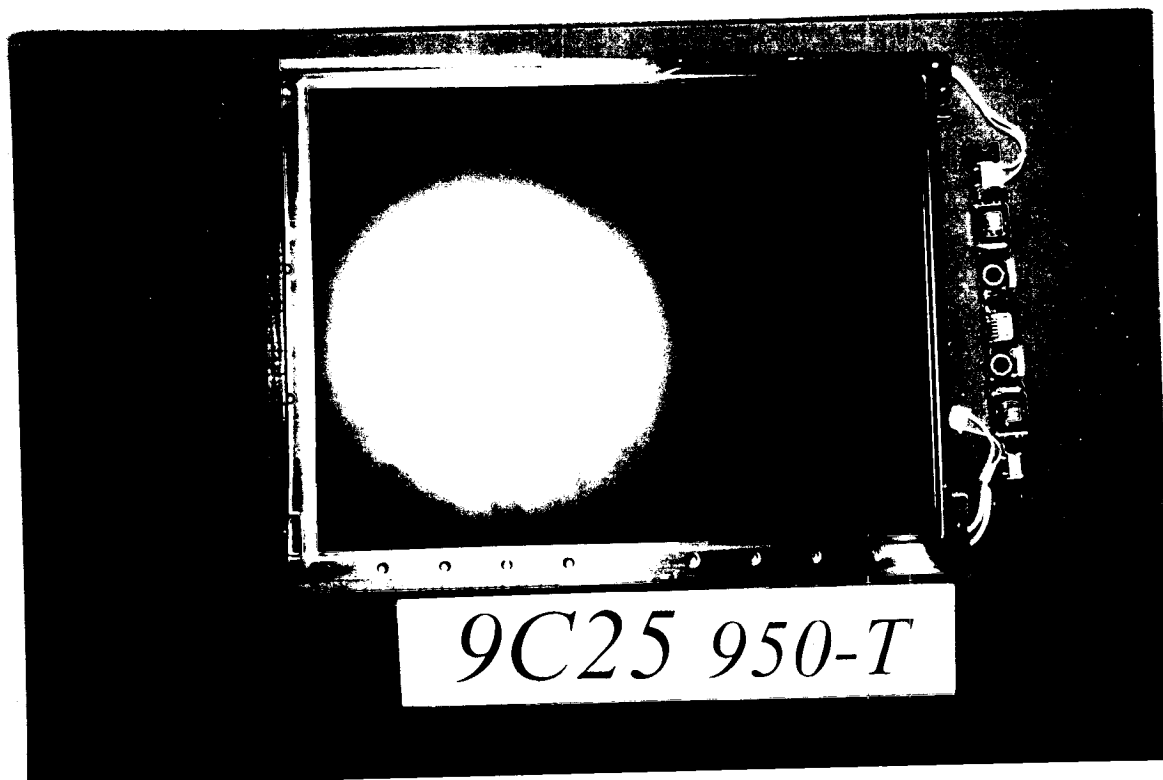
A44. LCD panel solder side



## 11. PHOTOS OF TESTING

A45. LCD panel component side (IPPC-950T-T)

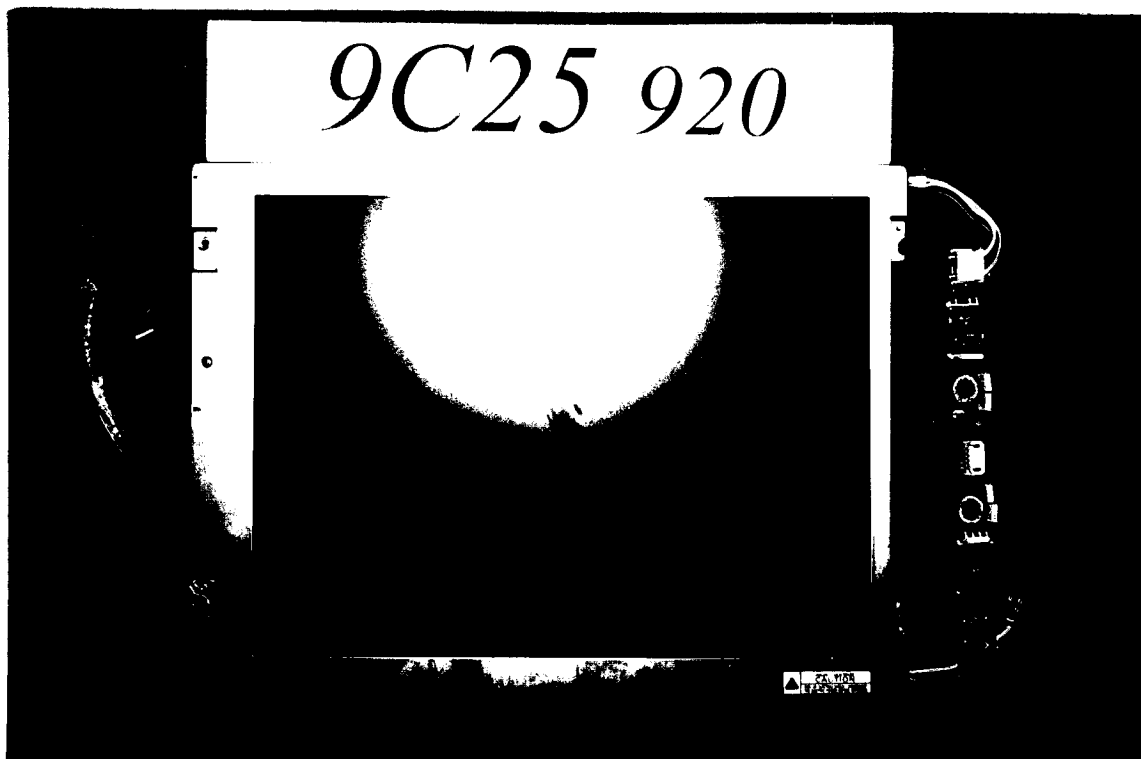
A46. LCD panel solder side



**11. PHOTOS OF TESTING**

A47. LCD panel component side (IPPC-920T)

A48. LCD panel solder side



**11. PHOTOS OF TESTING**

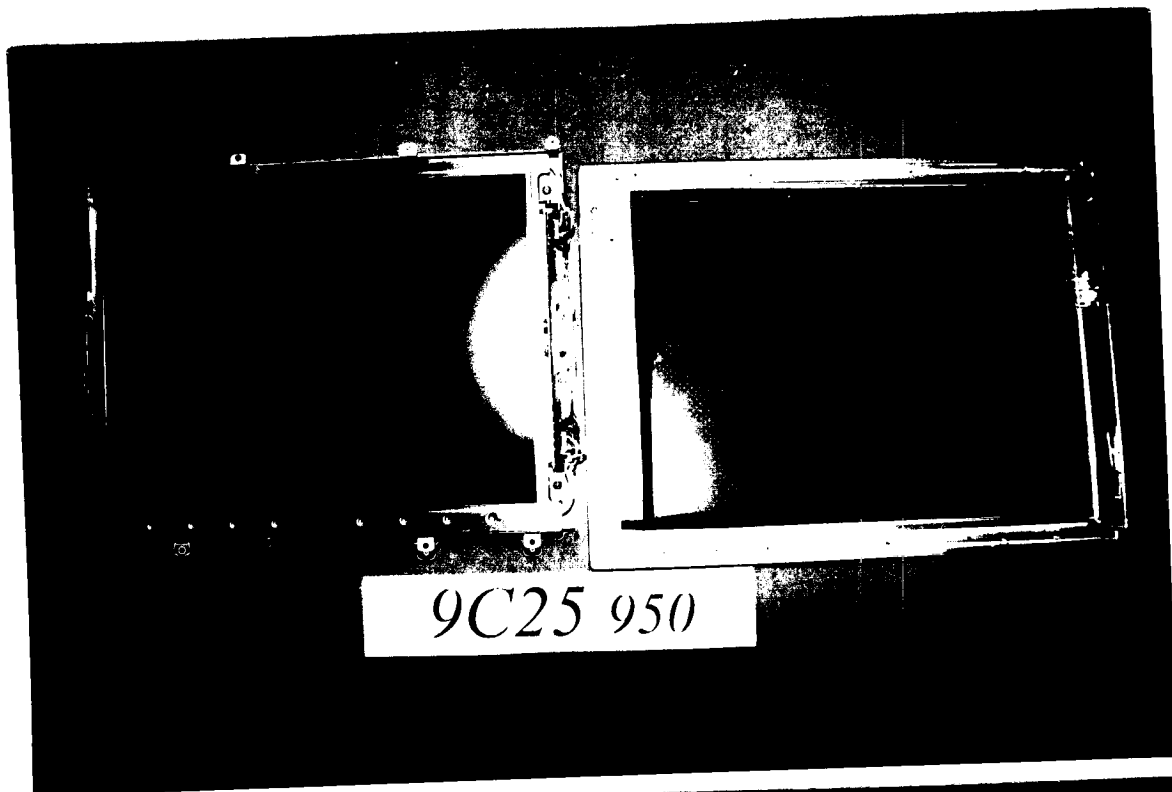
A49. LCD panel component side (IPPC-920T-T)

A50. LCD panel solder side



**11. PHOTOS OF TESTING**

- A51. LCD top inside whole view (IPPC-950T)  
A52. LCD top inside whole view (IPPC-950T-T)

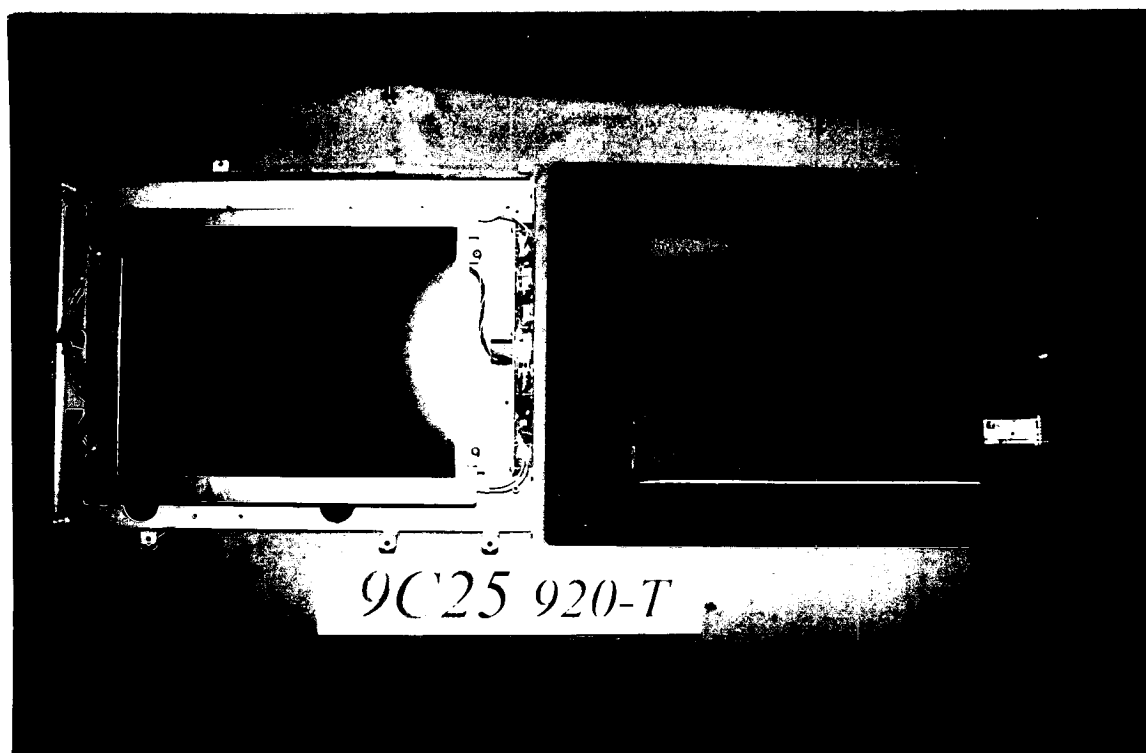
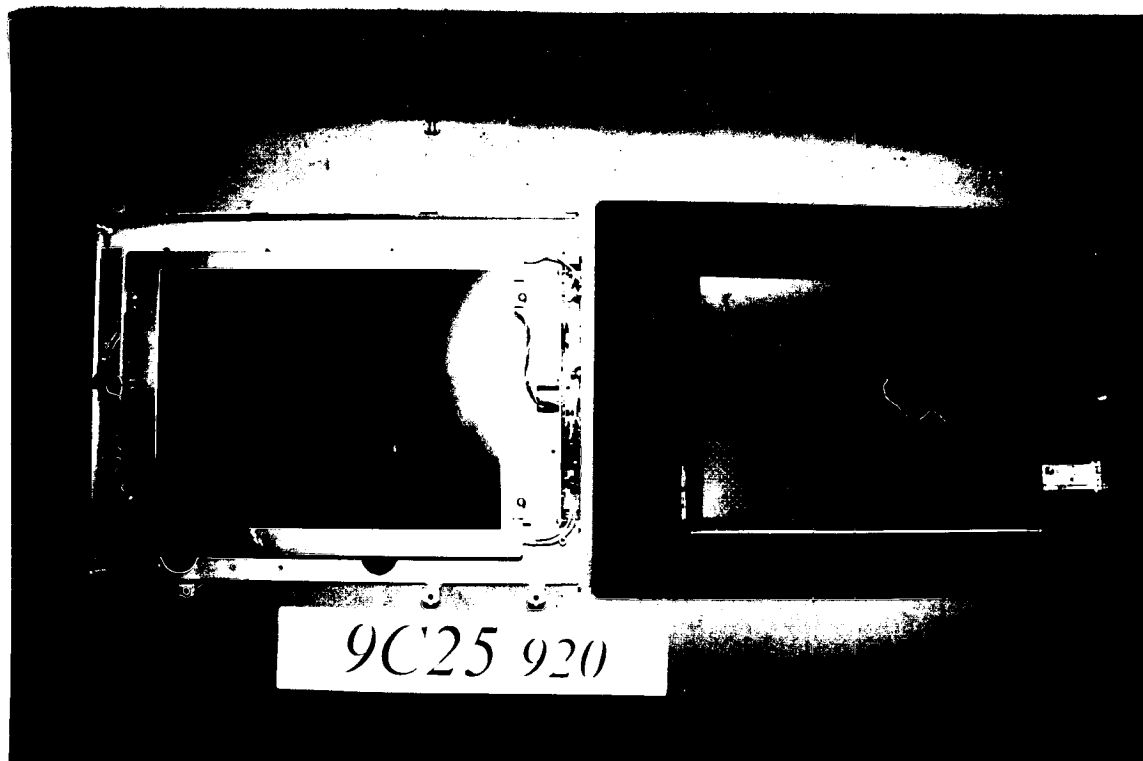




**11. PHOTOS OF TESTING**

A53. LCD top inside whole view (IPPC-920T)

A54. LCD top inside whole view (IPPC-920T-T)



**11. PHOTOS OF TESTING**

A55. HDD top view (IPPC-950T, IPPC-950T-T)

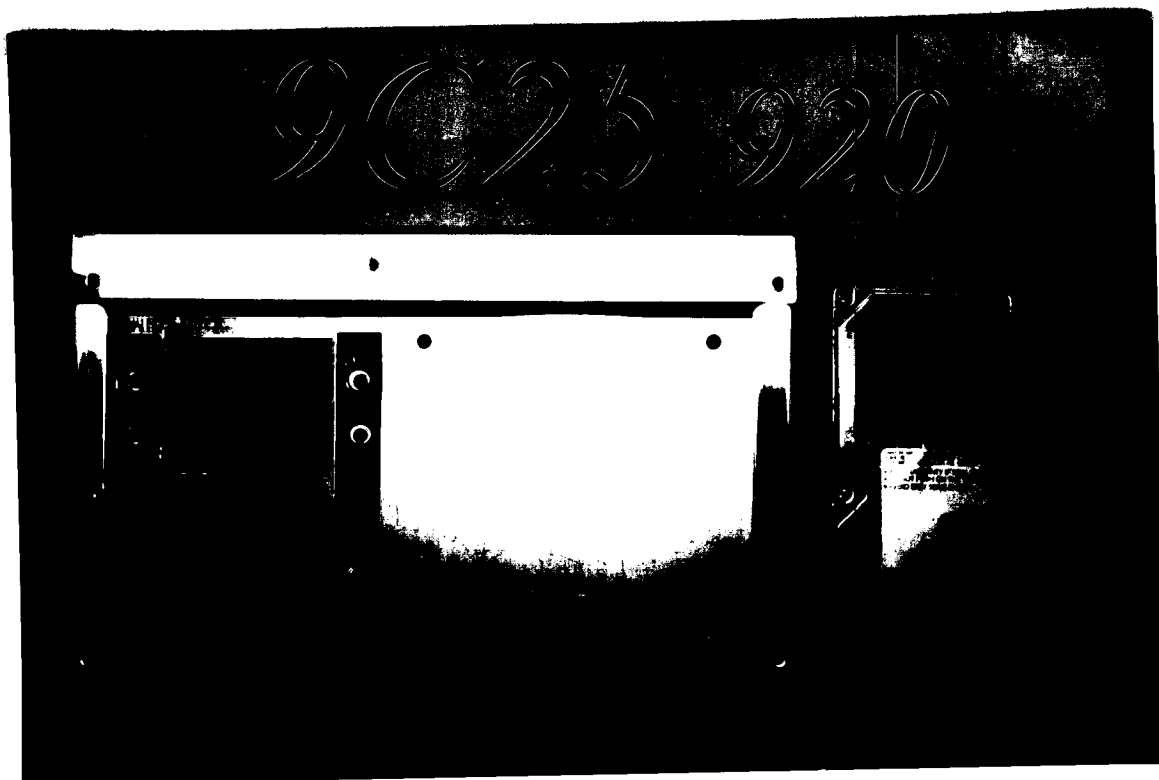
A56. HDD bottom view



**11. PHOTOS OF TESTING**

A57. HDD top view (IPPC-920T, IPPC-920T-T)

A58. HDD bottom view



**11. PHOTOS OF TESTING**

A59. FDD top view (IPPC-950T, IPPC-950T-T)

A60. FDD bottom view



**11. PHOTOS OF TESTING**

A61. FDD top view (IPPC-920T, IPPC-920T-T)

A62. FDD bottom view



**11. PHOTOS OF TESTING**

A63. CD ROM top view (IPPC-950T, IPPC-950T-T)

A64. CD ROM bottm view

