

APPLICATION FOR CERTIFICATION

On Behalf of  
Microtek International Inc.  
PC Digital Camera

Model : PCC-1

FCC ID : EF9PCC-1

Prepared for : Microtek International Inc.  
No. 6 Industry East Road 3  
Science-Based Industrial Park,  
Hsinchu, Taiwan, R.O.C.

Prepared By : Taiwan Tokin EMC Eng. Corp.  
9th Fl., No. 38, Fushing N. Rd.,  
Taipei, Taiwan, R.O.C.

Tel: (02) 2609-9301, (02) 2609-2133

File Number : ATM-G98091  
Report Number : TTEMF-F98059  
Date of Test : Feb. 22/24, 1998  
Date of Report : Apr. 23, 1998

## TABLE OF CONTENTS

Description	Page
Test Report Certification	
<b>1. GENERAL INFORMATION .....</b>	<b>1.-1</b>
1.1. Description of Device (EUT).....	1.-1
1.2. Tested System Details.....	1.-2
1.3. Description of Test Facility .....	1.-3
<b>2. POWERLINE CONDUCTED TEST.....</b>	<b>2.-1</b>
2.1. Test Equipment .....	2.-1
2.2. Block Diagram of Test Setup.....	2.-1
2.3. Conducted Powerline Emission Limit (CLASS B) .....	2.-2
2.4. EUT Configuration on Measurement .....	2.-2
2.5. Operating Condition of EUT .....	2.-2
2.6. Test Procedure .....	2.-3
2.7. Line Conducted RF Voltage Measurement Results.....	2.-4
<b>3. RADIATED EMISSION TEST .....</b>	<b>3.-1</b>
3.1. Test Equipment .....	3.-1
3.2. Block Diagram of Test Setup.....	3.-1
3.3. Radiation Limit (CLASS B) .....	3.-2
3.4. EUT Configuration on Measurement .....	3.-3
3.5. Operating Condition of EUT .....	3.-3
3.6. Test Procedure .....	3.-3
3.7. Radiated Emission Noise Measurement Results .....	3.-4
<b>4. DEVIATION TO TEST SPECIFICATIONS .....</b>	<b>4.-1</b>
<b>5. PHOTOGRAPHS .....</b>	<b>5.-1</b>
5.1. Photos of Powerline Conducted Measurement.....	5.-1
5.2. Photos of Radiated Measurement at Open Field Test Site .....	5.-2

## TEST REPORT CERTIFICATION

Applicant : Microtek International Inc.  
Manufacturer : Microtek International Inc.  
FCC ID : EF9PCC-1  
EUT Description : PC Digital Camera  
(A) MODEL NO. : PCC-1  
(B) SERIAL NO. : N/A  
(C) POWER SUPPLY : DC 5V

## Measurement Procedure Used:

FCC RULES AND REGULATIONS PART 15 SUBPART B CLASS B OCTOBER 1996  
AND FCC / ANSI C63.4-1992

The device described above was tested by TAIWAN TOKIN EMC ENG. CORP. to determine the maximum emission levels emanating from the device. The maximum emission levels were compared to the FCC Part 15B Class B limits both radiated and conducted emissions.

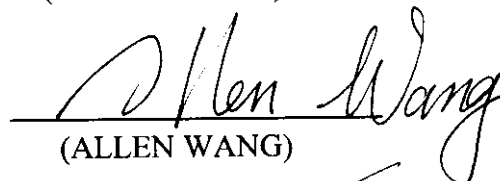
The measurement results are contained in this test report and TAIWAN TOKIN EMC ENG. CORP. is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliant with the FCC official limits. TAIWAN TOKIN EMC ENG. CORP. recommends that this data was submitted for FCC certification purposes if a 3dB margin below FCC limits is obtained. This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Taiwan Tokin EMC Eng. corp.

Date of Test : Feb. 22/24, 1998

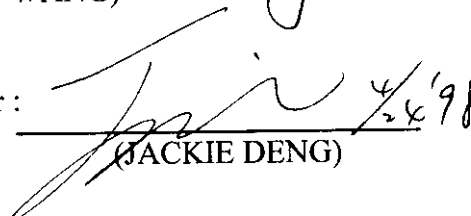
Prepared by :

  
(SHELENE HOU)

Test Engineer :

  
(ALLEN WANG)

Approve & Authorized Signer :

  
(JACKIE DENG) 4/24/98

# 1. GENERAL INFORMATION

## 1.1. Description of Device (EUT)

Description	:	PC Digital Camera
Model Number	:	PCC-1
FCC ID	:	EF9PCC-1
Applicant	:	Microtek International Inc.  No. 6 Industry East Road 3 Science-Based Industrial Park, Hsinchu, Taiwan, R.O.C.
Manufacturer	:	Microtek International Inc.  No. 6 Industry East Road 3 Science-Based Industrial Park, Hsinchu, Taiwan, R.O.C.
Exchange Connector	:	Detachable, 0.04m
Data Cable #1 (Link to PC's Printer Port)	:	Shielded, Undetachable, 1.4m
Data Cable #2 (Link to PC's Keyboard Port)	:	Shielded, Undetachable, 0.7m
Data Cable #3 (Link to Keyboard Port)	:	Shielded, Undetachable, 0.1m
Date of Test	:	Feb. 22/24, 1998

## 1.2. Tested System Details

### 1.2.1. PERSONAL COMPUTER

Model Number	:	IPV3120400
Serial Number	:	N/A
FCC ID	:	E5YM410G586IPV
Manufacturer	:	DFI
Switching Power	:	DFI, M/N DPS-200D
Supply	:	S/N D3736020
Floppy Driver	:	NEC, M/N FD1231H
3.5"	:	S/N 451799763
HDD Disk Driver	:	Quantum, M/N 1700AT TM17A012
	:	S/N 693706444367Y
Disk Ctrl Card	:	Within Mother Board
Serial/Parallel Card	:	Within Mother Board
VGA Card	:	Dataexpert Corp.
	:	M/N CP765V2, S/N E700492311
	:	FCC ID LUT-CP765
Power Cord	:	Nonshielded, Detachable, 1.8m

### 1.2.2. MONITOR

Model Number	:	PM36A
Serial Number	:	W70204674A
FCC ID	:	LLW9ZB1564
Manufacturer	:	Funai Electric Company of Taiwan
Data Cable	:	Shielded, Undetachable, 1.2m
Power Cord	:	Nonshielded, Detachable, 1.5m

### 1.2.3. KEYBOARD

Model Number	:	FDA-102A
Serial Number	:	91003
FCC ID	:	F4Z4K3FDA-102A
Manufacturer	:	Forward Electronics Co., Ltd.
Data Cable	:	Shielded, Undetachable, 1.2m

### 1.2.4. MODEM #1

Model Number	:	1414
Serial Number	:	950098201
FCC ID	:	IFAXDM1414
Manufacturer	:	Aceex
Data Cable	:	Shielded, Detachable, 1.2m
Power Adapter	:	Amigo, Model AM-91000A
	:	Nonshielded, Undetachable, 1.8m

### 1.2.5. MODEM #2

Model Number	:	1414
Serial Number	:	950098203
FCC ID	:	IFAXDM1414
Manufacturer	:	Aceex
Data Cable	:	Shielded, Detachable, 1.2m
Power Adapter	:	Amigo, Model AM-91000A
		Nonshielded, Undetachable, 1.8m

### 1.2.6. MOUSE

Model Number	:	M-S34
Serial Number	:	LZA65201997
FCC ID	:	DZL210472
Manufacturer	:	Logitech
Data Cable	:	Nonshielded, Undetachable, 1.9m

## 1.3. Description of Test Facility

Site Description (No. 2 Open Site)	:	Jul. 15, 1996 Re-file on Federal Communication Commission FCC Engineering Laboratory 7435 Oakland Mills Road Columbia, MD 21046, U.S.A.
Name of Firm	:	Taiwan Tokin EMC Eng. Corp.
Site Location	:	No. 53-11, Tin-Fu Tsun, Lin-Kou, Taipei Hsien, Taiwan, R.O.C.
NVLAP Lab Code	:	200077-0

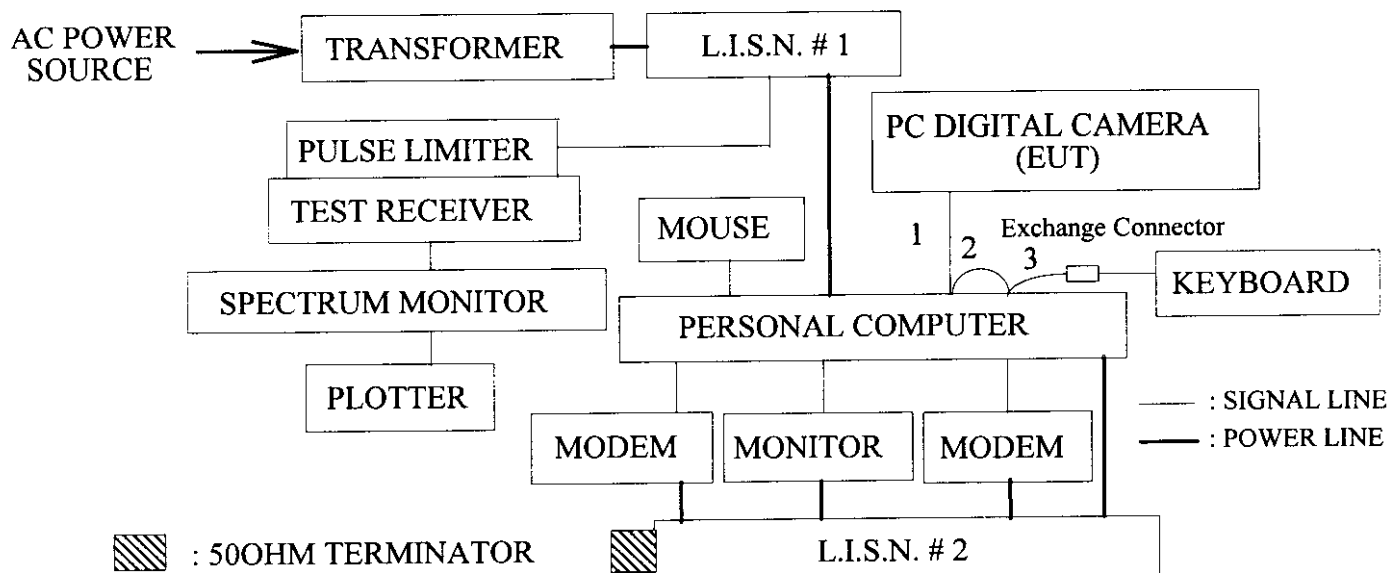
## 2. POWERLINE CONDUCTED TEST

### 2.1. Test Equipment

The following test equipments are used during the power line conducted tests :

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESH3	893044/015	Aug.01, 97'	1 Year
2.	L.I.S.N. # 1	Kyoritsu	KNW-407	8-855-9	May.01, 97'	1 Year
3.	L.I.S.N. # 2	Kyoritsu	KNW-407	8-881-13	May.01, 97'	1 Year

### 2.2. Block Diagram of Test Setup



### 2.3. Conducted Powerline Emission Limit (CLASS B)

Frequency	Maximum RF Line Voltage	
	uV	dBuV
0.45MHz ~ 30MHz	250	48

REMARKS : RF LINE VOLTAGE (dBuV) = 20 log RF LINE VOLTAGE (uV)

### 2.4. EUT Configuration on Measurement

The following equipments were installed on RF LINE VOLTAGE measurement to meet the Commission requirement and operating in a manner which tended to maximize its emission characteristics in a normal application.

#### 2.4.1. PC Digital Camera (EUT)

Model Number : PCC-1  
 Serial Number : N/A  
 FCC ID : EF9PCC-1  
 Manufacturer : Microtek International Inc.  
 Exchange Connector : Detachable, 0.04m  
 Data Cable #1 : Shielded, Undetachable, 1.4m  
 (Link to PC's Printer Port)  
 Data Cable #2 : Shielded, Undetachable, 0.7m  
 (Link to PC's Keyboard Port)  
 Data Cable #3 : Shielded, Undetachable, 0.1m  
 (Link to Keyboard Port)

2.4.2. Support Equipments : As in section 1.2.

### 2.5. Operating Condition of EUT

2.5.1. Setup the EUT and simulator as shown on 2.2.

2.5.2. Turned on the power of all equipments.

2.5.3. Setup the personal computer into self-test program by windows software driver.

2.5.4. EUT sent image to PC and displayed image on monitor screen.

2.5.5. The other peripheral devices were driven and operated in turn during all testing.



## 2.6. Test Procedure

The EUT was connected to PC, then PC Power cord connected to the power mains through a line impedance stabilization network (L.I.S.N.#1) and the other peripheral devices power cord were connected to the power mains through a line impedance stabilization network (L.I.S.N. #2). This provided a 50 ohm coupling impedance for the measuring ohm coupling impedance for the measuring equipment.(Please reference the block diagram of the test setup and photographs.)

Both sides of A.C. line were checked for maximum conducted interference. In order to find the maximum emission, the relative positions simulators of the interface cables should be manipulated according to FCC ANSI C63.4-1992 during conducted measurement.

The bandwidth of the field strength meter (R & S Test Receiver ESH3) was set at 10KHz.

The frequency range from 450KHz to 30MHz was checked.

All the test results are listed in section 2.7.

## 2.7. Line Conducted RF Voltage Measurement Results

The frequency range from 450KHz to 30 MHz was investigated.

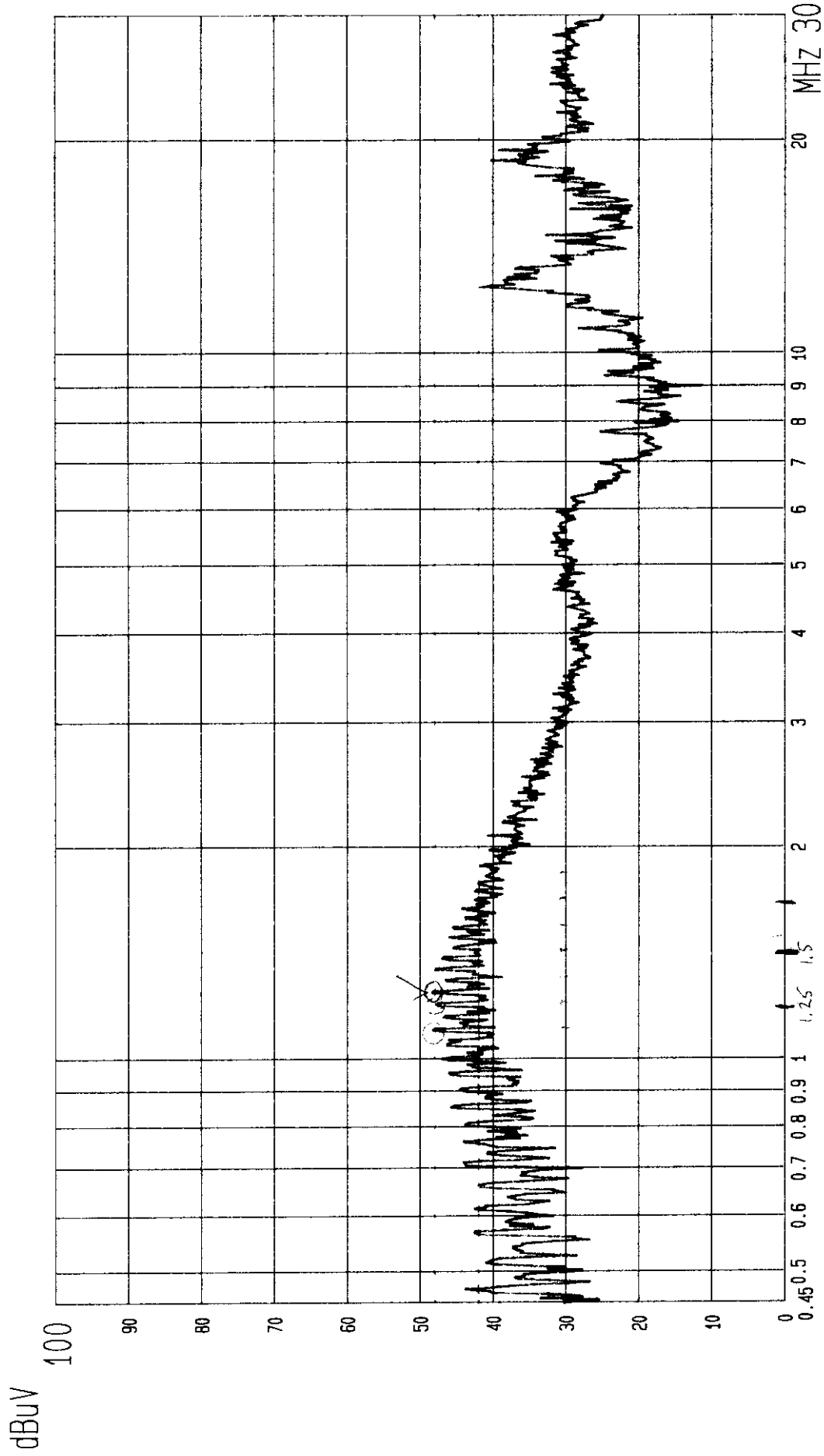
All emissions not reported below are too low against the prescribed limits.

Date of Test : Feb. 24, 1998 Temperature : 18 °C

EUT : PC Digital Camera Humidity : 73 %

Frequency (MHz)	Factor dB	Measurement (dBuV)		Reading (dBuV)		Limits (dBuV)	Margin (dBuV)	
		VA	VB	VA	VB		VA	VB
0.4617	0.2	*	39.1	*	39.3	48.0	*	8.7
0.5347	0.2	38.2	*	38.4	*	48.0	9.6	*
0.9970	0.2	40.6	*	40.8	*	48.0	7.2	*
1.0939	0.2	*	45.3	*	45.5	48.0	*	2.5
<b>1.2398</b>	<b>0.2</b>	43.2	<b>45.4</b>	43.4	<b>45.6</b>	<b>48.0</b>	4.6	<b>2.4</b>
1.3371	0.2	*	44.9	*	45.1	48.0	*	2.9
5.4458	0.3	27.0	*	27.3	*	48.0	20.7	*
12.3647	0.6	40.0	38.2	40.6	38.8	48.0	7.4	9.2
18.7957	0.8	41.7	40.9	42.5	41.7	48.0	5.5	6.3

- Remark :
1. All readings are Quasi-Peak values.
  2. Factor = Insertion Loss + Cable Loss
  3. The worst emission was detected at 1.2398MHz with corrected signal level of 45.6dBuV (limit is 48dBuV) when the VB side of the EUT was connected to L.I.S.N.



--- Date 24.FEB '98 Time 09:48:19

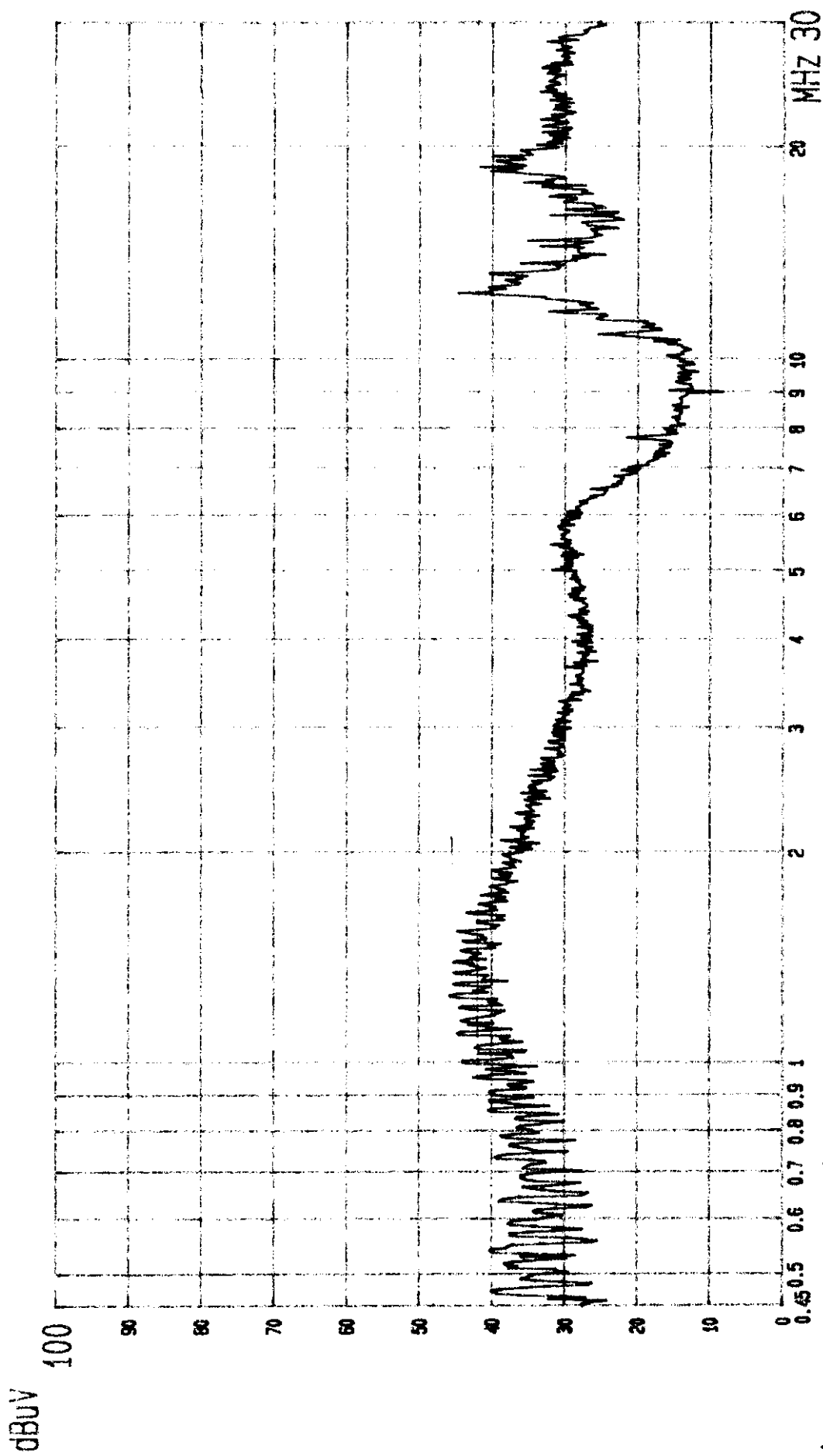
MICROTEK EUT:PC DIGITAL CAMERA

LINE:VB.

M/N: PCC-1  
(PEAK VALUE) TAIWAN TOKIN EMC.ENG.CORP.

PAGE:002.

1.1  
1.24  
1.34



--- Date 24.FEB '98 Time 09:41:31  
MICROTEK EUT:PC DIGITAL CAMERA  
LINE: VA. M/N: PCC-1  
(PEAK VALUE) TAIWAN TOKIN EMC.ENG.CORP. PAGE:001.

### 3. RADIATED EMISSION TEST

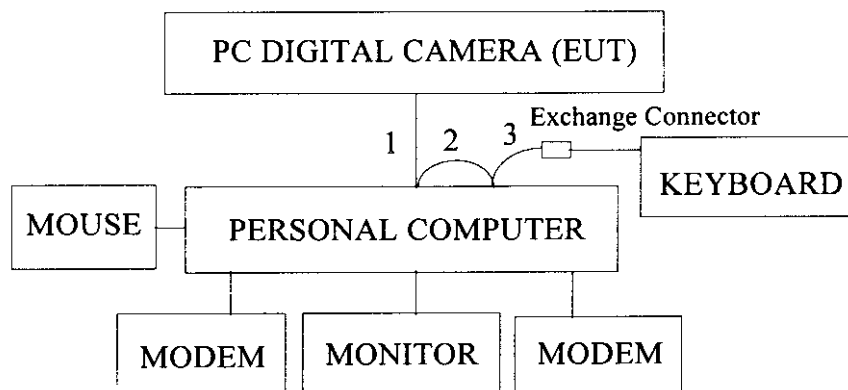
#### 3.1. Test Equipment

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

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde&Schwarz	ESVP	893202/001	Aug.04, 97'	1 Year
2.	Broadband Antenna	Chase	VBA6106A	1240	Jan.14, 98'	1 Year
3.	Broadband Antenna	Schwarzbeck	UHALP 9108-A	0139	Jan.14, 98'	1 Year

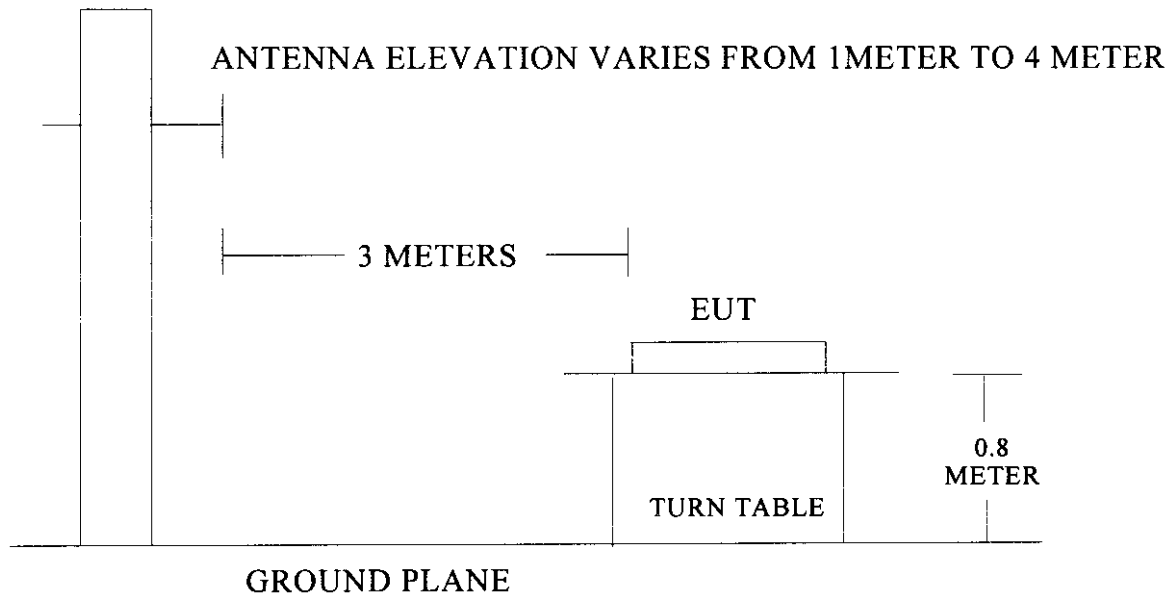
#### 3.2. Block Diagram of Test Setup

##### 3.2.1. Block Diagram of connection between EUT and simulators



### 3.2.2. Open Field Test Site Setup Diagram

#### ANTENNA TOWER



### 3.3. Radiation Limit (CLASS B)

FREQUENCY	DISTANCE	FIELD STRENGTHS LIMITS	
		uV/M	dBuV/M
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0

- Remark :
- (1) Emission level (dBuV/M) = 20 log Emission level (uV/M)
  - (2) The tighter limit applies at the edge between two frequency bands.
  - (3) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

### 3.4. EUT Configuration on Measurement

The configuration of EUT and its simulators are same as those used in conducted measurement. Please refer to 2.4.

### 3.5. Operating Condition of EUT

Same as conducted measurement which is listed in 2.5.

### 3.6. Test Procedure

The EUT and its simulators were placed on a turn table which was 0.8 meter above ground. The turn table rotated 360 degrees to determine the position of the maximum emission level. EUT was set 3 meters away from the receiving antenna which was mounted on a antenna tower. The antenna moved up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated biconical and log periodical antenna) and dipole antenna were used as receiving antenna. Both horizontal and vertical polarization of the antenna were set on measurement. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4-1992 on radiated measurement.

The bandwidth setting on the field strength meter (R&S TEST RECEIVER ESVP) was 120KHz.

The frequency range from 30MHz to 1000MHz was checked.

All the test results are listed in section 3.7.

### 3.7. Radiated Emission Noise Measurement Results

The frequency spectrum from 30 MHz to 1000 MHz was investigated. All the emissions not reported below are too low against the FCC CLASS B limit..

Date of Test : Apr. 22, 1998 Temperature : 20 °C

EUT : PC Digital Camera Humidity : 72 %

Frequency MHz	Antenna Factor dB/m	Cable Loss dB	Meter Reading		Emission Level		Margin dBuV/m
			Horizontal dBuV		Horizontal dBuV/m	Limits dBuV/m	
42.256	19.57	1.84	6.10		27.51	40.00	12.49
57.273	12.83	2.11	10.60		25.54	40.00	14.46
71.581	11.99	2.35	11.20		25.54	40.00	14.46
114.546	18.96	2.97	3.00		24.93	43.50	18.57
121.700	19.65	3.07	6.70		29.42	43.50	14.08
128.862	20.15	3.14	5.20		28.49	43.50	15.01
143.179	20.75	3.44	6.40		30.59	43.50	12.91
150.370	21.00	3.47	3.70		28.17	43.50	15.33
171.815	21.51	3.76	4.50		29.77	43.50	13.73
193.260	22.03	3.99	4.30		30.32	43.50	13.18
221.930	22.35	4.29	3.10		29.74	46.00	16.26
* 239.827	22.56	4.49	7.80		34.85	46.00	11.15
319.997	13.63	5.36	14.10		33.09	46.00	12.91
360.000	15.11	5.76	7.60		28.47	46.00	17.53
399.997	17.02	6.08	4.70		27.80	46.00	18.20
439.993	17.18	6.51	2.40		26.09	46.00	19.91
480.003	17.38	6.95	2.40		26.73	46.00	19.27
501.152	17.66	7.14	1.60		26.40	46.00	19.60
533.348	18.45	7.47	5.60		31.52	46.00	14.48
600.005	19.17	7.79	- 1.10		25.86	46.00	20.14
680.000	19.89	8.25	- 2.40		25.74	46.00	20.26
715.903	20.68	8.46	- 0.40		28.74	46.00	17.26

- Remark :
1. All reading are Quasi-Peak values.
  2. The worst emission was detected at 239.827MHz with corrected signal level of 34.85dBuV/m (limit was 46dBuV/m) when the antenna was at horizontal polarization and was at 1.8m high and the turn table was at 250 ° .
  3. 0 ° is the table front facing the antenna. Degree is calculated from 0 ° clockwise facing the antenna.



Date of Test : Apr. 22, 1998 Temperature : 20 °C  
EUT : PC Digital Camera Humidity : 72 %

Frequency MHz	Antenna Factor dB/m	Cable Loss dB	Meter Reading		Emission Level		Margin dBuV/m
			Vertical dBuV		Vertical dBuV/m	Limits dBuV/m	
35.000	21.88	1.60	7.10		30.58	40.00	9.42
* 40.000	19.26	1.77	15.00		36.03	40.00	3.97
69.993	13.21	2.35	14.10		29.66	40.00	10.34
85.907	15.93	2.53	10.60		29.06	40.00	10.94
114.544	18.32	2.97	4.20		25.49	43.50	18.01
128.865	19.53	3.14	5.90		28.57	43.50	14.93
139.617	18.92	3.33	11.30		33.55	43.50	9.95
143.179	19.19	3.44	9.80		32.43	43.50	11.07
162.575	21.33	3.66	- 3.10		21.89	43.50	21.61
180.005	21.73	3.82	- 3.00		22.55	43.50	20.95
232.697	21.86	4.38	8.50		34.74	46.00	11.26
239.999	23.44	4.49	8.10		36.03	46.00	9.97
314.994	14.13	5.28	4.50		23.91	46.00	22.09
329.305	14.23	5.41	3.30		22.94	46.00	23.06
343.632	14.85	5.64	0.30		20.79	46.00	25.21
397.326	16.06	6.01	2.60		24.67	46.00	21.33
458.183	16.48	6.81	4.40		27.69	46.00	18.31
501.145	18.24	7.14	2.60		27.98	46.00	18.02
565.572	19.04	7.71	- 2.90		23.85	46.00	22.15
615.689	19.95	7.89	- 3.00		24.84	46.00	21.16
672.957	19.72	8.21	- 3.00		24.93	46.00	21.07

- Remark :
1. All reading are Quasi-Peak values.
  2. The worst emission was detected at 40.000MHz with corrected signal level of 36.03dBuV/m (limit was 40dBuV/m) when the antenna was at vertical polarization and was at 1m high and the turn table was at 140 ° .
  3. 0 ° is the table front facing the antenna. Degree is calculated from 0 ° clockwise facing the antenna.

#### **4. DEVIATION TO TEST SPECIFICATIONS**

**【 NONE 】**