

EMC TEST REPORT For FCC



Test Report No. : 2004050015

Date of Issue : June 4, 2004

Model/Type No. : Digimax V50

Kind of Product : Digital Camera

Applicant : Samsung Techwin Co., Ltd.

Applicant Address : 145-3 Sangdaewon 1 dong, Chungwon-ku, Sunghnam City,
Kyungki-do, Korea

Manufacturer : 1) Samsung Techwin Co., Ltd.
2) Tianjin Samsung Opto-Electronics Co., Ltd.

Manufacturer Address : 1) 42, Sungju-dong, Changwon City, Kyungnam, Korea
2) 7 Pingchang Road, Nankai Dist., Tianjin, China

Contact Person : Hyung-Moo, Huh (Engineer)

Telephone : +82-31-740-8274

Received Date : May 15, 2004

Test period : Start: May 26, 2004 End: May 26, 2004

Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

The test results presented in this report relate only to the object tested.

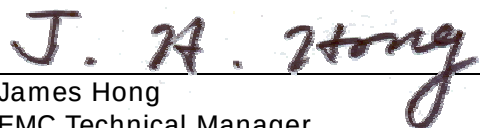
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Tested by



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EMC Test Engineer
Date: June 4, 2004

Reviewed by



James Hong
EMC Technical Manager
Date: June 4, 2004

REPORT REVISION HISTORY

Date	Revision	Page No
June 4, 2004	(2004050015) Issued	All

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TABLE OF CONTENTS

1.0 General Product Description	4
1.1 Model Differences	4
1.2 Device Modifications.....	4
1.3 EUT Configuration(s)	5
1.4 Test Software	5
1.5 EUT Operating Mode(s).....	5
1.6 Calibration Details of Equipment Used for Measurement	5
1.7 Test Facility	6
1.8 Measurement Procedure	6
1.9 Laboratory Accreditations and Listings	7
2.0 Emissions Test Regulations.....	8
2.1 Conducted Voltage Emissions	9
2.2 Radiated Electric Field Emissions.....	10
Configurations	11
APPENDIX A - TEST DATA.....	12
Conducted Voltage Emissions (Quasi-Peak reading)	12
Radiated Electric Field Emissions (Quasi-Peak reading).....	14

1.0 General Product Description

1.0.1 Tested Equipment

- ☒ Unless otherwise indicated, all tests were conducted on Model Digimax V50.
- ☐ Tests performed on Model _____ were considered to be representative of Model(s) _____.

1.0.2 Equipment Size, Mobility and Identification

Dimensions: 105.5 (W) by 54.6 (H) by 38.0 (D) ☒ mm ☐ in
Mobility: ☒ Hand-Held ☐ Table-top ☐ Floor-standing
Serial No.: Proto-type

1.0.3 Electrical Ratings

Input: Adapter – AC 100-250V, 50/60Hz
EUT - DC 5V
Output: Adapter – DC 5V, 2.0A
EUT - Not applicable

1.0.4 Test Voltage & Frequency (Using the adapter)

Unless indicated otherwise on the individual data sheet or test results, the test voltage and frequency was as indicated below.

Voltage: 120Vac
Frequency: 60Hz

1.0.5 Clock & Other Frequencies Utilized

12.0MHz, 27.0MHz, 54.0MHz, 32.768KHz

1.1 Model Differences

Not applicable

1.2 Device Modifications

The following modifications were necessary for compliance: Not applicable

1.3 EUT Configuration(s)

See Appendix A for individual test set-up configuration(s). The following peripheral devices and/or interface cables were connected during the measurement:

☒ Peripheral Devices

Device	Manufacturer	Model No.	Serial No.	FCC ID or DoC
Personal Computer	Hewlett-Packard Company	PD1059P	-	DoC
LCD monitor	TIANJIN SAMSUNG ELECTRONICS DISPLAY	176T-DZ/KOR	N372HVEX225526	DoC
Adapter(1)	Anam Instruments (Shen Zhen) Co., Ltd.	AP04214-UV	0312103885AC	-
PRINTER	Seiko Epson	Stylus Color 460	BWCE136524	DoC
Keyboard	SAMSUNG	SEM-DT35	3T011297	DoC
Serial Mouse	Microsoft	BASM1	4476266-20000	DoC
Mouse (PS/2 type)	SAMSUNG	OMS3CB	0303009875	DoC

☒ Cable Description

#	Description	Ferrite Core	Length (m)	Other Details
1	AC power cable, Unshielded	No	1.8	Connect to AC power
2	AC power cable, Unshielded	No	1.8	Connect to AC power
3	AC power cable, Unshielded	No	1.8	Connect to AC power
4	AC power cable, Unshielded	No	1.8	Connect to AC power
5	Adapter(1) Output Cable, Unshielded	Yes	1.5	Between EUT and Adapter(1)
6	Adapter(2) Output Cable, Unshielded	Yes	1.5	Between LCD Monitor and PC
7	EUT USB Cable, Shielded	Yes	1.5	Between EUT and PC
8	Monitor cable, Shielded	Yes	1.8	Between the PC and Monitor
9	Printer cable, Shielded	Yes	1.8	Between the PC and Printer
10	Serial Mouse Cable, Shielded	No	1.8	Connect to Notebook PC
11	Keyboard cable, Shielded	No	1.5	Connect to Notebook PC
12	PS/2 Mouse Cable, Shielded	No	1.5	Connect to Notebook PC

1.4 Test Software

☐ Pinging
☒ Not applicable

1.5 EUT Operating Mode(s)

Equipment under test was operated during the measurement under the following conditions:

☐ Test program (H-Pattern) ☐ Test program (color bar)
☐ Standby ☐ Test program (customer specific)
☒ Practice operation : USB downloading mode
AV output monitoring mode

1.6 Calibration Details of Equipment Used for Measurement

Test equipment and test accessories are calibrated on regular basis. The maximum time between calibrations is one year or what is recommended by the manufacturer, whichever is less. All test equipment calibrations are traceable to the Korea Research Institute of Standards and Science (KRISS), therefore, all test data recorded in this report is traceable to KRISS.

1.7 Test Facility

The measurement facility is located at 386-1, Ho-Dong, Yongin-City, Kyungki-Do, Korea 449-100. The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

1.8 Measurement Procedure

Preliminary AC power line conducted emissions tests were performed shielded room. To find worst mode, several typical mode and typical cable position were tested. Final AC power line conducted emissions test was performed shielded room. (location is same as Preliminary test)

Based on the preliminary tests of the EUT, final test was proceeded worst case test mode and cable configuration.

Preliminary radiated emissions test were performed anechoic chamber (Distance of antenna and EUT was 3 m). To find worst mode, several typical mode and typical cable position were tested and peak level and frequency were recorded.

Final radiated emissions test was performed Open Area Test Site. Based on the preliminary tests of the EUT, final test was proceeded worst case test mode and cable configuration.

* Measurement procedures was In accordance with ANSI C63.4-2001 7.2.3, 7.2.4, 8.3.1.1, 8.3.1.2

1.9 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Logo
USA	FCC	3 and 10 meter Open Area Test Sites to perform FCC Part 15/18 measurements.	 93250
JAPAN	VCCI	10 meter Open Area Test Site and one conducted site.	 R-948, C-986
KOREA	MIC	EMI (CE, RE) EMS (ESD, Burst, RS, Surge, CS, Power-Frequency Susceptibility, Voltage Dips and Short Interruptions)	 No. 51, KR0025
International	KOLAS	EMC	 NO. 119
Europe	GLAS	EMC EN 55011, EN 55022, EN 55024, EN 61326, EN 50130-4, EN 50081-1, EN 50081-2, EN 50082-1, EN 50082-2, EN 61000-6-2, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11, EN 61000-3-2, EN 61000-3-3	 No.13000796-02

2.0 Emissions Test Regulations

The emissions tests were performed according to following regulations:

- | | | |
|--|----------------------------------|---|
| ☐ EN 50081-1:1992 | ☐ Class A | ☐ Class B |
| ☐ EN 61000-6-3:2001 | ☐ Class A | ☐ Class B |
| ☐ EN 50081-2:1993 | ☐ Class A | ☐ Class B |
| ☐ EN 61000-6-4:2001 | ☐ Class A | ☐ Class B |
| ☐ EN 50083-2:2001 | | |
| ☐ EN 55011:1998 +A1:1999 | ☐ Group 1 | ☐ Group 2 |
| | ☐ Class A | ☐ Class B |
| ☐ EN 55013:1990 +A12:1994 +A13:1996 +A14:1999 | | |
| ☐ EN 55013:2001 | | |
| ☐ EN 55014-1:2000 | | |
| ☐ EN 55014-1:2000 +A1:2001 | | |
| ☐ EN 55015:2000 | | |
| ☐ EN 55015:2000 +A1:2001 | | |
| ☐ EN 55022:1994 +A1:1995 +A2:1997 | ☐ Class A | ☐ Class B |
| ☐ EN 55022:1998 | ☐ Class A | ☐ Class B |
| ☐ EN 55022:1998 +A1:2000 | ☐ Class A | ☐ Class B |
| ☐ EN 61000-3-2:1995 +A1:1998 +A2:1998 +A14:2000 | | |
| ☐ EN 61000-3-2:2000 | | |
| ☐ EN 61000-3-3:1995 | | |
| ☐ EN 61000-3-3:1995 +A1:2001 | | |
| ☐ VCCI V-3/2003.04 | ☐ Class A | ☐ Class B |
| ☐ AS/NZS 3548:1995 +A1:1997 +A2:1997 | ☐ Class A | ☐ Class B |
| ☒ FCC Part 15 Subpart B | ☐ Class A | ☒ Class B |
| ☒ CISPR 22:1997 | ☐ Class A | ☒ Class B |
| The unit was tested to CISPR 22 and complied with the alternate methods allowed by FCC under paragraphs 15.107 and 15.109. | | |
| ☐ CISPR 22:1997 +A1:2000 | ☐ Class A | ☐ Class B |

2.1 Conducted Voltage Emissions

Test Date

May 26, 2004

Test Location

EMI-CE: Shielded Room

Test Instruments

☒ Field Strength Meter	Rohde & Schwarz	ESHS30	828144/002
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Test Accessories

☒ LISN	EMCO	3825/2	9409-2246
☒ LISN	EMCO	3825/2	9607-2574
☒ Control PC	HP	Vectra 500	SG72000192

Frequency Range of Measurement

☒ 150 kHz to 30 MHz

☐ 450 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Results

The requirements are:

☒ MET	minimum margin is 6.4 dBuV (average) at 0.49 MHz
☐ NOT MET	limit exceeded by maximum of ____ dBuV at ____ MHz
☐ NOT APPLICABLE	

Remarks

See Appendix A for test data.

2.2 Radiated Electric Field Emissions

Test Date

May 26, 2004

Test Location

- ☒ EMI-OATS: Testing was performed at a test distance of 10 m
☐ EMI-OATS: Testing was performed at a test distance of 3 m

Test Instruments

☒ Field Strength Meter Rohde & Schwarz ESVS30 826638/008

Test Accessories

☒ ULTRA Broadband Antenna	Rohde & Schwarz	HL562	361324/014
☐ Bi-conical Antenna	Schwarzbeck	BBA9106	41-00201
☐ Bi-conical Antenna	EMCO	3110B	9607-2564
☐ Log-periodic Antenna	EMCO	3146	9607-4567

Frequency Range of Measurement

30 MHz to 2 GHz

Instrument Settings

IF Band Width: 120 kHz

Test Results

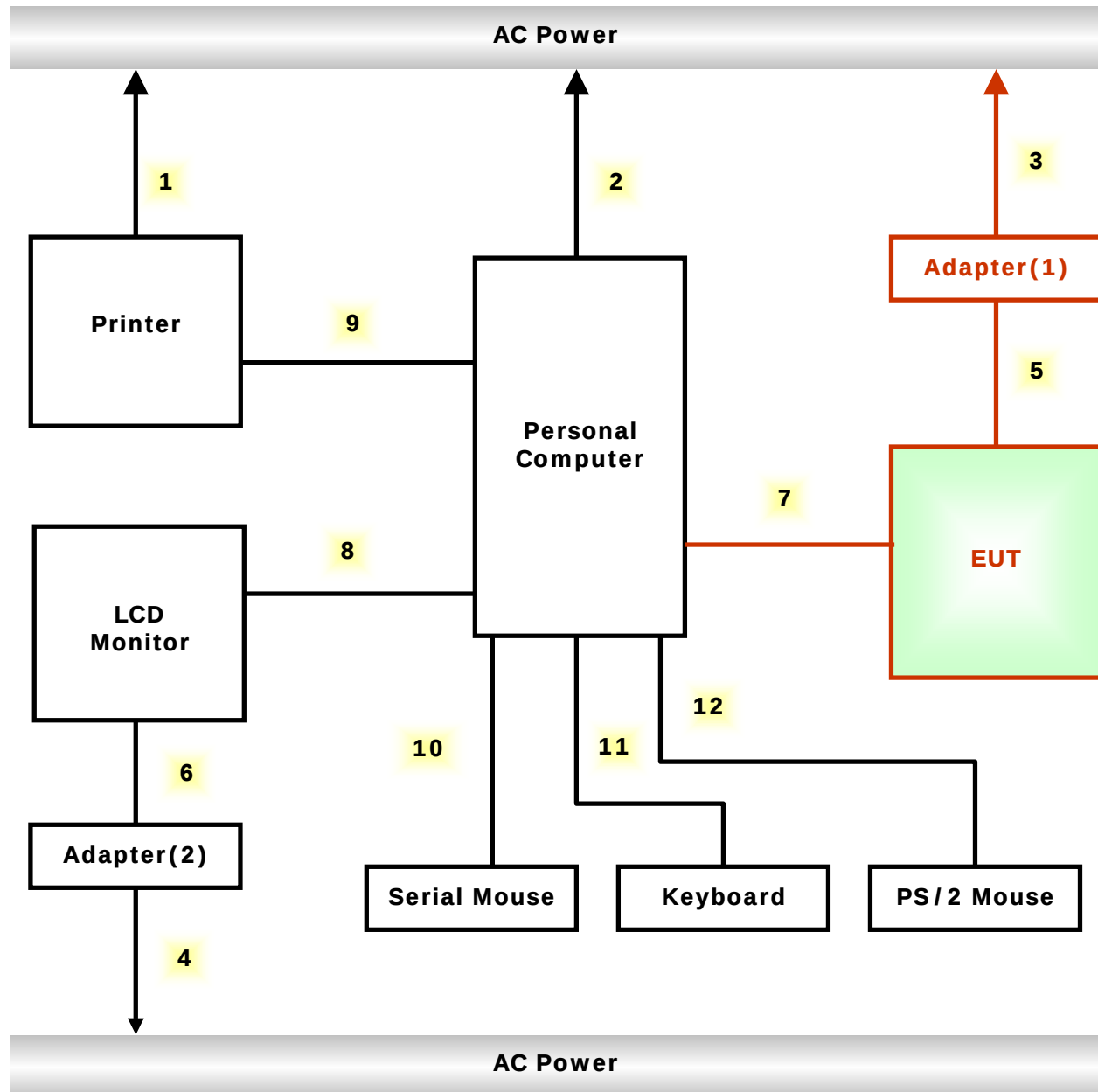
The requirements are:

- ☒ MET minimum margin is 3.4 dBuV/m at 199.42MHz
☐ NOT MET limit exceeded by maximum of ____ dBuV/m at ____ MHz
☐ NOT APPLICABLE

Remarks

See Appendix A for test data

Configuration

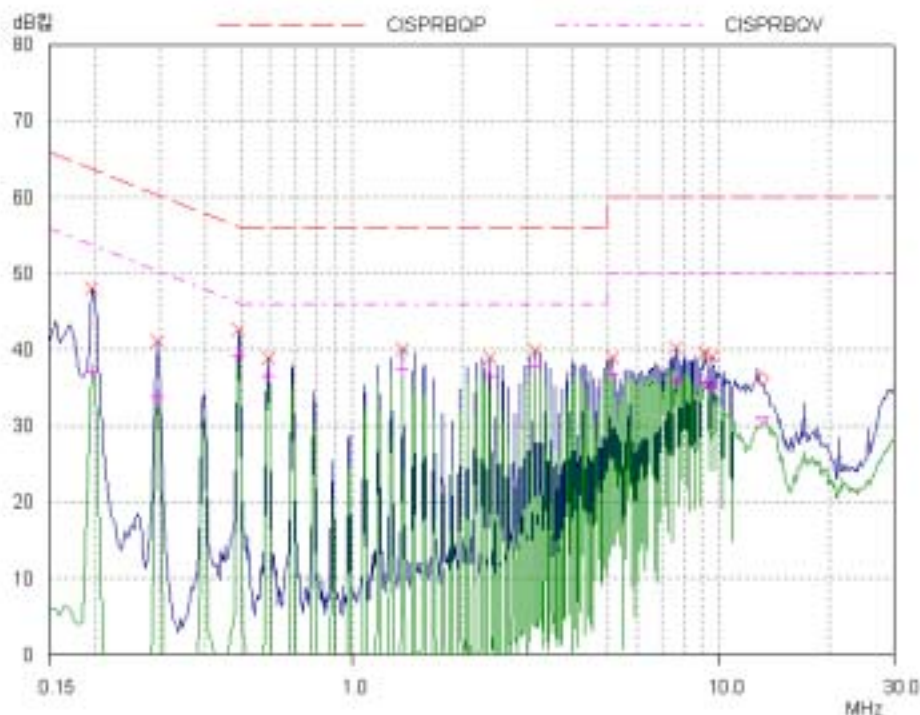
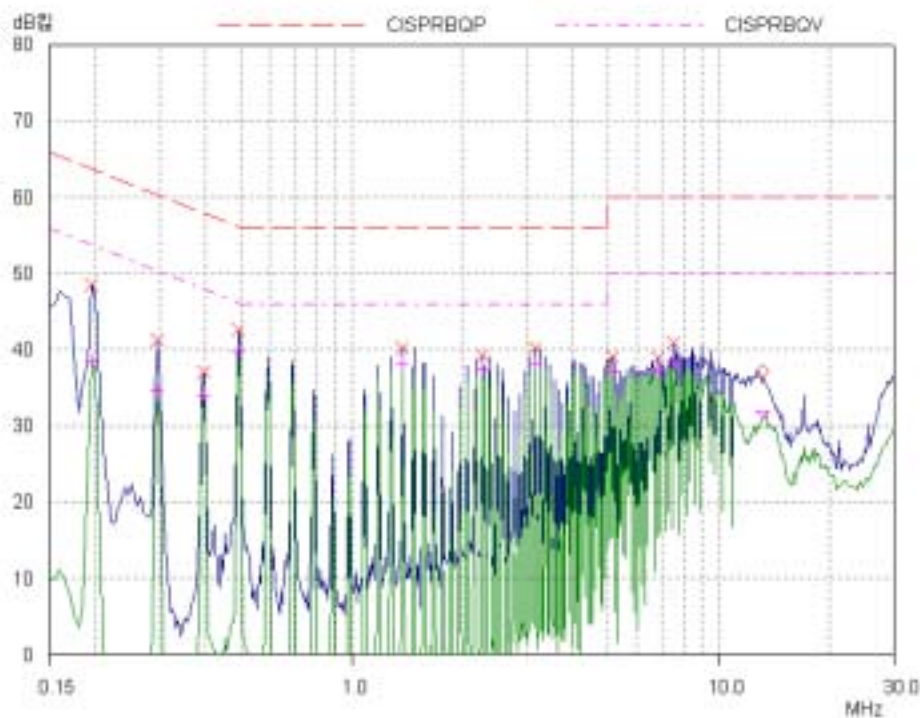


APPENDIX A – TEST DATA

Conducted Voltage Emissions (Quasi-Peak reading)

Frequency [MHz]	Correction Factor		Line	Quasi-peak				Average			
				Limit	Reading	Result	Margin	Limit	Reading	Result	Margin
	LISN	Cable		[dBuV]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dB]
0.49	0.5	0.1	L	56.2	42.0	42.6	13.6	46.2	39.2	39.8	6.4
0.59	0.5	0.1	N	56.0	38.3	38.9	17.1	46.0	36.0	36.6	9.4
1.38	0.3	0.1	L	56.0	39.8	40.2	15.8	46.0	37.6	38.0	8.0
2.26	0.3	0.1	L	56.0	38.9	39.3	16.7	46.0	37.1	37.5	8.5
2.36	0.3	0.1	N	56.0	38.5	38.9	17.1	46.0	36.2	36.6	9.4
3.15	0.3	0.1	L	56.0	39.8	40.2	15.8	46.0	37.6	38.0	8.0
7.47	0.3	0.2	L	60.0	40.4	40.9	19.1	50.0	38.0	38.5	11.5

* If the average limit is met when a quasi-peak detector is used, the EUT shall be deemed to meet both limit and measurement with the average detector is unnecessary.



Radiated Electric Field Emissions (Quasi-Peak reading)

Frequency [MHz]	Reading [dBuV / m]	Pol.	Height [m]	Correction Factor		Limits [dBuV / m]	Result [dBuV / m]	Margin [dB]
				Antenna	Cable			
192.04	15.1	V	1.0	7.0	2.7	30.0	24.8	5.2
199.42	16.7	H	4.0	7.2	2.7	30.0	26.6	3.4
297.35	12.3	H	4.0	10.9	3.6	37.0	26.8	10.2
480.33	12.3	V	1.0	15.2	4.4	37.0	31.9	5.1
497.83	12.6	H	3.1	15.6	4.7	37.0	32.9	4.1
513.54	12.3	V	1.0	15.7	4.8	37.0	32.8	4.2
721.81	7.2	V	2.0	18.8	5.9	37.0	31.9	5.1
756.84	7.5	V	1.5	19.0	6.1	37.0	32.6	4.4
865.31	6.4	V	1.0	20.2	6.6	37.0	33.2	3.9