

EMC TEST REPORT For FCC



Test Report No. : CTK01-F134
Date of Issue : October 30, 2001
Model/Type No: : Digimax220SE
Kind of Product : Digital Camera
Applicant : Samsung Techwin Co.,Ltd.
Applicant Address : #145-3, Sandaewon 1-Dong, Sunghnam-Shi, Kyonggi-Do, Korea
Manufacturer : Samsung Techwin Co.,Ltd.
Manufacturer Address : #145-3, Sandaewon 1-Dong, Sunghnam-Shi, Kyonggi-Do, Korea
Contact Person : Mr. G. S. Kim (Manager)
Telephone : +82-31-740-8253
Received Date : August 24, 2001
Test period : Start: Aug. 25, 2001 End: Sep. 25, 2001
Test Results : **In Compliance** **Not in Compliance**

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

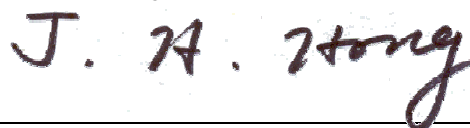
CERTITEK Standards Laboratory Co., Ltd. is accredited by Korea Laboratory Accreditation Scheme (KOLAS) which signed the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA) for the above test item(s) and test method(s).

Tested by



Michael Jang
EMC Test Engineer
Date: October 30, 2001

Reviewed by



James Hong
EMC Technical Manager
Date: October 30, 2001



REPORT REVISION HISTORY

Date	Revision	Page No
October 30, 2001	(CTK01-F134) Issued	All

This report shall not be reproduced except in full, without the written approval of CERTiTEK Standards Laboratory Co., Ltd. This document may be altered or revised by CERTiTEK Standards Laboratory Co., Ltd. personnel only, and shall be noted in the revision section of the document. Any alteration of this document not carried out by CERTiTEK Standards Laboratory Co., Ltd. will constitute fraud and shall nullify the document.



TABLE OF CONTENTS

1.0 General Product Description	4
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.....	6
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

The product is Digital Camera.

1.0.1 Tested Equipment

- Unless otherwise indicated, all tests were conducted on Model Digimax220SE.
- Tests performed on Model _____ were considered to be representative of Model(s) _____.

1.0.2 Equipment Size, Mobility and Identification

Dimensions: 4.51 by 2.78 by 1.72 cm in
Mobility: Hand-Held Table-top Floor-standing
Serial No.: -

1.0.3 Electrical Ratings

Input: 1. EUT : DC 6.0V
2. Adaptor : AC 100-250V

Output: 1. EUT : Not applicable
2. Adaptor : DC 6.0V, 2A

1.0.4 Test Voltage & Frequency (Using the Adaptor)

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

HOST-CPU : 5.00MHz
SUB-CPU : 4.19MHz
TG : 36.0MHz
Image Processor : 12.0MHz, 13.5MHz

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
Adaptor	Ault Korea	PW115KA0600N01	01371A	-
Notebook Computer	I & B COM	Slim 5360	MB0VAA111100094	DOC
Monitor	Samsung	750P	P013H1DN301661	DOC
MOUSE (Serial type)	Microsoft	BASM1	4475951-20000	DOC
KEYBOARD	World Com Mart	KB120	-	D840902 MIC
HEADSET	CAMAC	CMK-C3	-	-
PRINTER	Hewlett Packard	C4530A	US7A91703J	DOC

Cable Description

#	Description	Ferrited	Length (m)	Other Details
1	USB cable, Shielded	Yes	1.8	Connect to notebook
2	Video cable, Shielded	Yes	1.8	-
3	DC Output, Unshielded	Yes	1.5	Connect to DC Input
4	AC power cable, Unshielded	No	1.8	Connect to AC power
5	Monitor cable, Shielded	Yes	1.8	Connect to notebook
6	Printer cable, Shielded	No	1.8	Connect to notebook
7	Mouse cable, Shielded	No	2.0	Serial Type
8	Headset cable, Unshielded	No	2.0	-
9	Keyboard cable, Shielded	No	2.0	PS/2 Type
10	Line in cable, Unshielded	No	2.0	-
11	AC Power, Unshielded	No	1.8	Connect to AC Power from Monitor
12	AC Power, Unshielded	No	1.8	Connect to AC Power from notebook adaptor
13	AC Power, Unshielded	No	1.8	Connect to AC Power from printer
14	S-Video cable, Shielded	No	1.2	For Video port

n/a = not available

1.4 Test Software

Pinging

Name

- USB Mass Storage Driver & Adobe PhotoDeluxe home edition

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 - Downloading 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 C63.4-1992 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	10 meter Open Area Test Site and EMS (ESD, RS, EFT/Burst, Surge)	 No. 51, KR0025
International	KOLAS	EMC	

2.0 Emissions Test Regulations

The emissions tests were performed according to following regulations:

EN 50081-1 /1992

EN 55011 /1998

Group 1

Group 2

Class A

Class B

EN 55013 /A12:1994

EN 55014 /1987

Household appliances and similar

Portable tools

Semiconductor devices

EN 55014 /A2:1990

EN 55014 /1993

Household appliances and similar

Portable tools

Semiconductor devices

EN 55015 /1987

EN 55015 /A1:1990

EN 55015 /1993

EN 55022 /A1:1995

Class A

Class B

EN 55022 /1998

Class A

Class B

EN 61000-3-2 /1995 (EN 60555 Part 2 /4.87)

EN 61000-3-3 /1995 (EN 60555 Part 3 /4.87)

BS

VCCI V-3/99.05 : 1999

Class A

Class B

FCC Part 15 SUBPART B

Class A

Class B

AS 3548 (1992)

Class A

Class B

CISPR 11 (1990)

Group 1

Group 2

Class A

Class B

CISPR 22 (1993)

Class A

Class B

2.1 Conducted Voltage Emissions

Test Date

September 22, 2001

Test Location

EMI-CE: Shielded Room

Test Instruments

<input checked="" type="checkbox"/> Field Strength Meter	Rohde Schwarz	ESHS30	828144/002
--	---------------	--------	------------

Test Accessories

<input checked="" type="checkbox"/> LISN	EMCO	3825/2	9206-1971
<input checked="" type="checkbox"/> LISN	EMCO	3825/2	9409-2246
<input type="checkbox"/> LISN	EMCO	3825/2	9607-2574
<input checked="" type="checkbox"/> 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 7.1 dB μ V at 1.99 MHz
 NOT MET limit exceeded by maximum of ____ dB μ V at ____ MHz
 NOT APPLICABLE

Remarks

See Appendix A for test data.

2.2 Radiated Electric Field Emissions

Test Date

September 22, 2001

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 R & S HL562 361324/014
 Biconical Antenna Schwarzbeck BBA9106 41-00201
 Biconical Antenna EMCO 3110B 9607-2564
 Log-periodic Antenna EMCO 3146 9607-4567

Frequency Range of Measurement

30 MHz to 1 GHz

Instrument Settings

IF Band Width: 120 kHz

Test Results

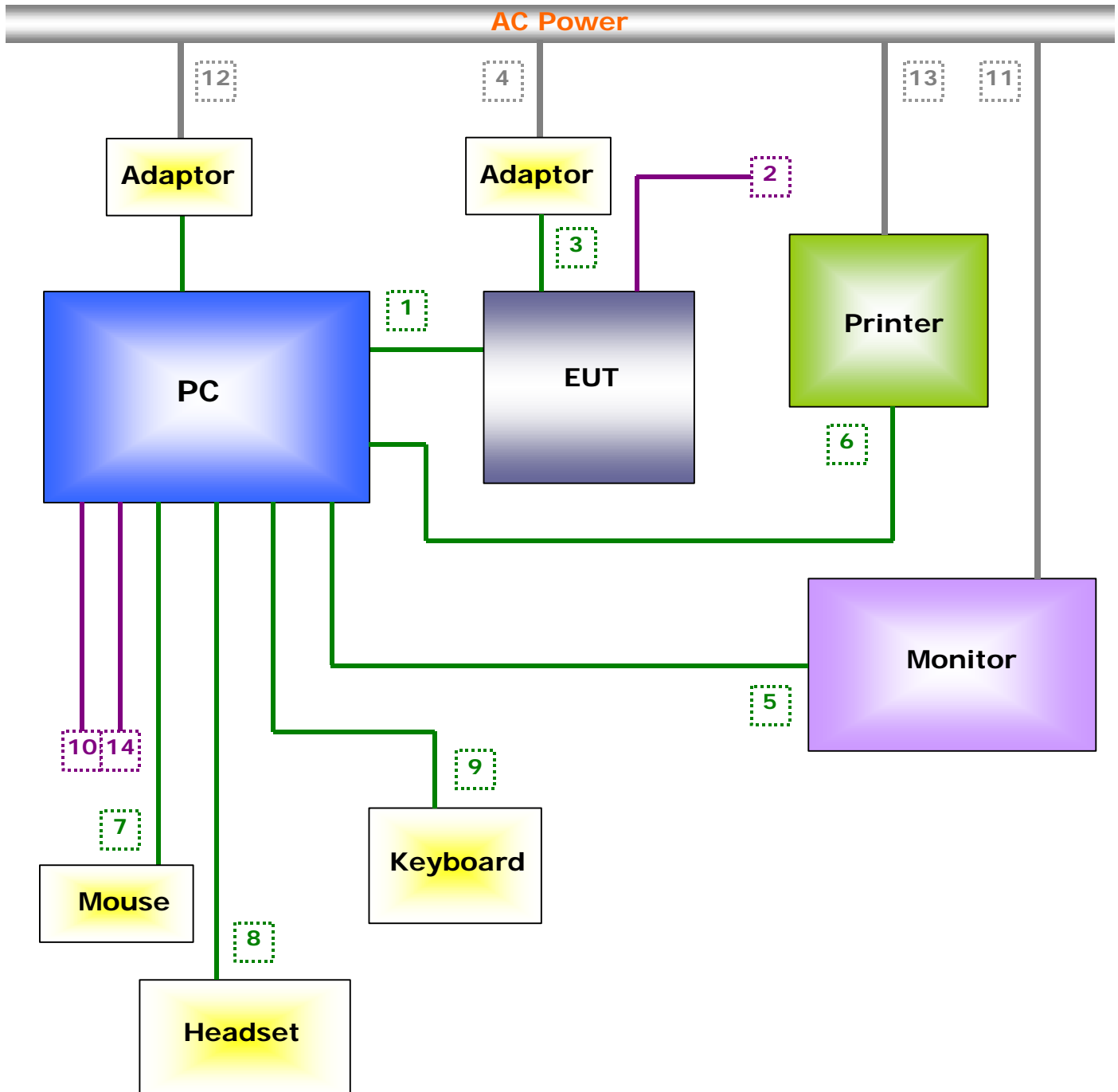
The requirements are:

- MET minimum margin is 10.20 dB ($\mu\text{V}/\text{m}$) at 36.10 MHz
 NOT MET limit exceeded by maximum of ____ dB($\mu\text{V}/\text{m}$) at ____ MHz
 NOT APPLICABLE

Remarks

See Appendix A for test data

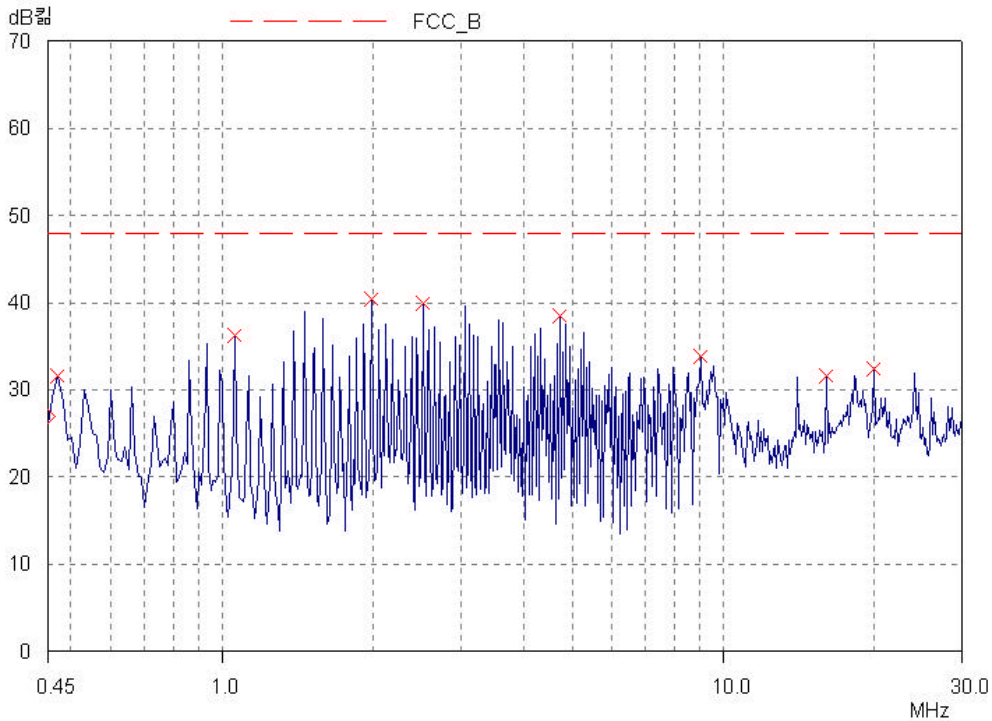
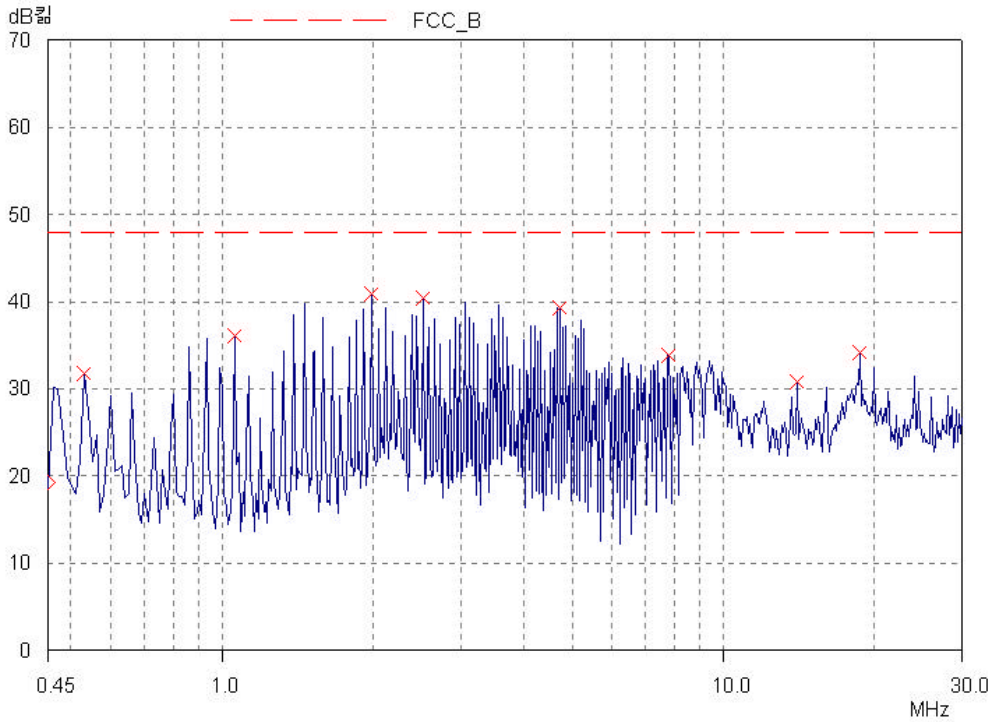
Configuration



APPENDIX A - TEST DATA

Conducted Voltage Emissions (Quasi-Peak reading)

Frequency [MHz]	Correction Factor		Line	Quasi-peak				Average			
	LISN	Cable		Limit	Reading	Result	Margin	Limit	Reading	Result	Margin
				[dBuV]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dB]
0.47	0.3	0.1	N	48.0	31.2	31.6	16.4				
0.53	0.3	0.1	L	48.0	31.4	31.8	16.2				
1.06	0.2	0.1	N	48.0	35.9	36.2	11.8				
1.99	0.3	0.1	L	48.0	40.5	40.9	7.1				
2.52	0.2	0.1	L	48.0	40.1	40.4	7.6				
4.71	0.3	0.1	L	48.0	39.0	39.4	8.6				
7.76	0.2	0.2	L	48.0	33.5	33.9	14.1				
15.99	0.2	0.2	N	48.0	31.2	31.6	16.4				
18.69	0.2	0.2	L	48.0	33.7	34.1	13.9				



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			
36.10	12.1	V	1.0	17.20	0.50	40.0	29.80	10.20
179.90	15.0	V	1.2	6.90	1.60	43.5	23.52	19.98
200.80	15.1	H	3.8	7.20	1.60	43.5	23.91	19.59
216.30	13.0	H	3.5	7.95	1.80	46.0	22.72	23.28
252.10	18.0	H	3.5	9.50	2.10	46.0	29.58	16.42
270.30	14.8	H	3.5	10.10	2.30	46.0	27.17	18.83
433.00	11.3	H	3.5	14.10	2.90	46.0	28.34	17.66
441.80	10.6	H	3.8	14.40	3.00	46.0	27.97	18.03