



## EMC TEST REPORT For FCC



Test Report No. : CTK02-F170

Date of Issue : February 27, 2003

Model/Type No: : Digimax V3 and Digimax 3500 super

Kind of Product : Digital Camera

Applicant : Samsung Techwin Co.,Ltd.

Applicant Address : #145-3, Sandaewon 1-Dong, Sungnam-Shi, Kyonggi-Do, Korea

Manufacturer : 1. Samsung Techwin Co.,Ltd.  
2. TIANJIN SAMSUNG OPTO-ELECTRONICS Co., Ltd.

Manufacturer Address : 1. #145-3, Sandaewon 1-Dong, Sungnam-Shi, Kyonggi-Do, Korea  
2. No.7, Pingchang Rd, Nankai Dist., Tianjin, P.R.

Contact Person : Mr. G. S. Kim (Manager)

Telephone : +82-31-740-8253

Received Date : December 16, 2002

Test period : Start: February 18, 2003 End: February 25, 2003

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

Joon Pak  
EMC Test Engineer  
Date: February 27, 2003

Reviewed by

James Hong  
EMC Technical Manager  
Date: February 27, 2003



## REPORT REVISION HISTORY

Date	Revision	Page No
February 27, 2003	Issued (CTK02-F170)	All

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## 1.0 General Product Description

### 1.0.1 Tested Equipment

- Unless otherwise indicated, all tests were conducted on Model Digimax V3 and Digimax 3500 super.
- Tests performed on Model Digimax V3 were considered to be representative of Model(s) Digimax 3500 super.

### 1.0.2 Equipment Size, Mobility and Identification

Dimensions: 105.5 by 54.6 by 38.0  mm  in  
Mobility:  Hand-Held  Table-top  Floor-standing  
 -  
Serial No.: Not applicable

### 1.0.3 Electrical Ratings

Input: Adaptor - AC 100-250V, 50/60Hz  
EUT - DC 5.0V  
Output: Adaptor - DC 5.0V, 2.0A  
EUT - Not applicable

### 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: AC 120V  
Frequency: 60Hz

### 1.0.5 Clock & Other Frequencies Utilized

DSP : 13.5MHz  
HOST CPU : 5.00MHz  
TG&CDS&AGC : 45.00MHz

## 1.1 Model Differences

Digimax V3 and Digimax 3500 super are identical to each other only except for model designation for the marketing purposes.

## 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 (for EUT)	Ault Korea	PW115KA0500N52	13101005	-
Adaptor (for notebook)	LISHIN INTERNATIONAL	LSE8902A2060	BJJKJH	-
Notebook PC	I & B COM	Slim 5360	MB0VAA111100094	-
Keyboard (PS/2)	World Com Mart	KB120	-	D840902
Mouse (Serial type)	Microsoft	BASM1	4475951-20000	DoC
CCTV Monitor	KEC	TPM-233-02	-	-

Cable Description

#	Description	Ferrited	Length (m)	Other Details
1	AC power cable, Unshielded	No	1.8	Connect to AC power
2	AC power cable, Unshielded	No	1.5	Connect to AC power
3	AC power cable, Unshielded	No	1.5	Connect to AC power
4	DC output cable, Shielded	Yes	1.5	Between the adaptor and EUT
5	DC output cable, Unshielded	Yes	1.5	Between the adaptor and notebook
6	USB cable, Shielded	Yes	1.0	Between the EUT and notebook
7	Keyboard cable, Shielded	No	1.5	PS/2 type
8	Mouse cable, Shielded	No	2.1	Serial type
9	A/V port cable, Unshielded	Yes	1.3	Between the EUT and CCTV notebook

n/a = not available

### 1.4 Test Software

- Pinging
- Name : Digimax V4 Installer

### 1.5 EUT Operating Mode(s)

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

- Test program (H-Pattern)
- Standby
- Practice operation - USB downloading mode
- Test program (color bar)
- Test program (customer specific)
- AV output monitoring mode (Used to EMI test-data)



## 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	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
- EN 55011:1998 +A1:1999
  - Group 1
  - Class A
  - Group 2
  - Class B
- EN 55013:1990 +A12:1994 +A13:1996 +A14:1999
- EN 55013:2001
- EN 55014-1:1993 +A1:1997 +A2:1999
  - Household appliances and similar
  - Portable tools
  - Semiconductor devices
- EN 55014-1:2000
- EN 55014-2:1997
- EN 55015:1996 +A1:1997 +A2:1999
- EN 55015:2000
- EN 55020:1994 +A11:1996 +A13:1999 +A14:1999
- EN 55020:1994 +A11:1996 +A12:1999 +A13:1999 +A14:1999
- EN 55022:1994 +A1:1995 +A2:1997
  - Class A
  - Class A
  - Class B
  - Class B
- EN 55022:1998 +A1:2000
- EN 61000-3-2:1995 +A1:1998 +A2:1998
- EN 61000-3-2:1995 +A1:1998 +A2:1998 +A14:2000
- EN 61000-3-2:2000
- EN 61000-3-3:1995
- VCCI V-3/99.05 : 1999
  - Class A
  - Class A
  - Class B
  - Class B
- FCC Part 15 SUBPART B
  - Class A
  - Class B
- AS 3548 (1992)
  - Class A
  - Class B
- CISPR 22 (1997)
  - Class A
  - Class B





## 2.1 Conducted Voltage Emissions

### Test Date

February 18, 2003

### Test Location

EMI-CE: Shielded Room

### Test Instruments

<input checked="" type="checkbox"/> Field Strength Meter	Rohde & Schwarz	ESHS30	828144/002
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### Test Accessories

<input type="checkbox"/> LISN	EMCO	3825/2	9206-1971
<input checked="" type="checkbox"/> LISN	EMCO	3825/2	9409-2246
<input checked="" 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 8.6 dBuV at 0.27 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

February 18, 2003

### 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

- |                                                          |                 |        |            |
|----------------------------------------------------------|-----------------|--------|------------|
| <input checked="" type="checkbox"/> Field Strength Meter | Rohde & Schwarz | ESVS30 | 826638/008 |
|----------------------------------------------------------|-----------------|--------|------------|

### Test Accessories

- |                                                             |                 |         |            |
|-------------------------------------------------------------|-----------------|---------|------------|
| <input checked="" type="checkbox"/> ULTRA Broadband Antenna | Rohde & Schwarz | HL562   | 361324/014 |
| <input type="checkbox"/> Biconical Antenna                  | Schwarzbeck     | BBA9106 | 41-00201   |
| <input type="checkbox"/> Biconical Antenna                  | EMCO            | 3110B   | 9607-2564  |
| <input type="checkbox"/> 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

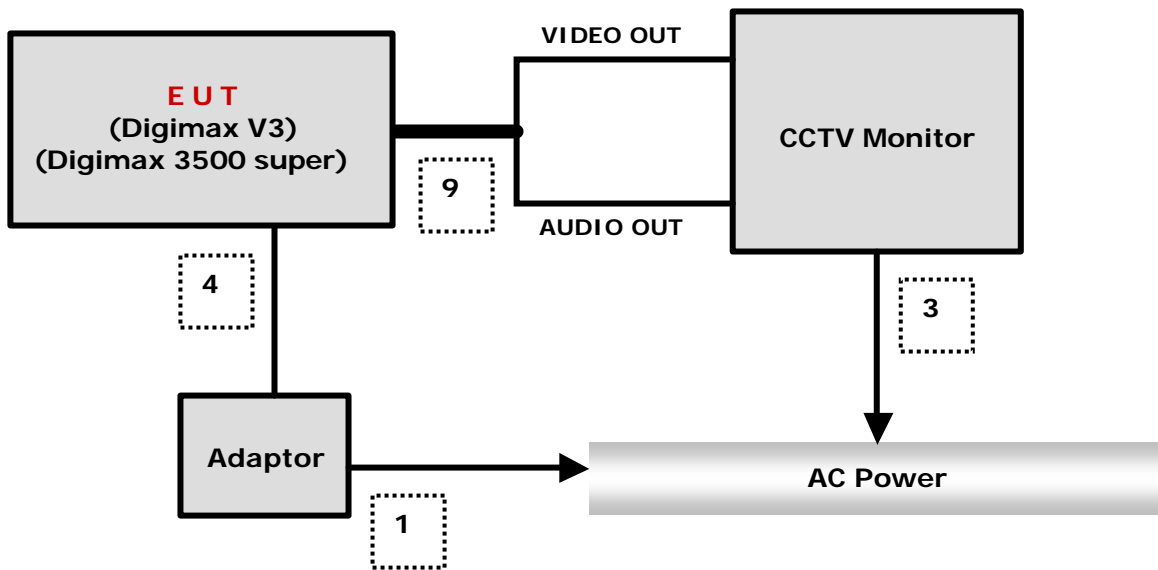
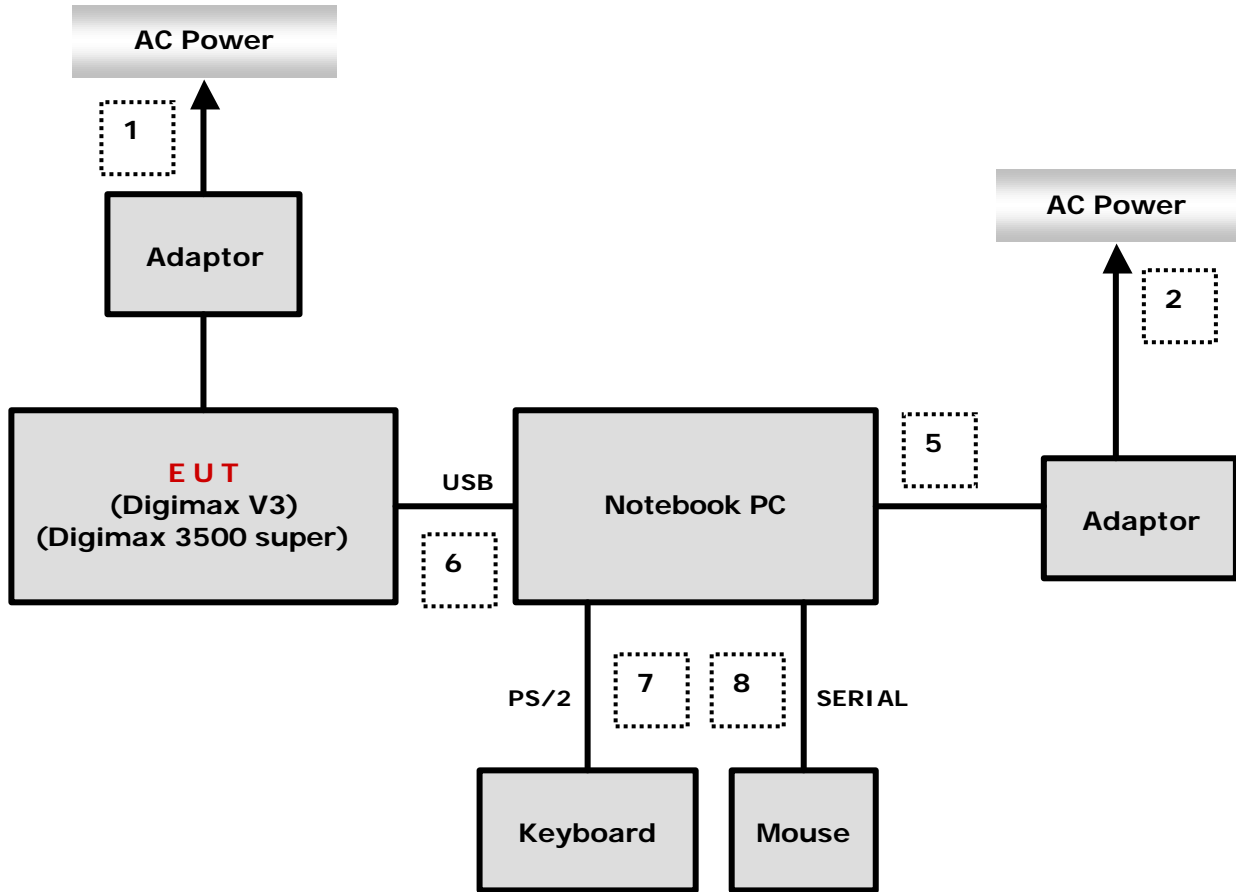
The requirements are:

- MET minimum margin is 3.56 dB (uV/m) at 473.32 MHz
- NOT MET limit exceeded by maximum of \_\_\_\_ dB(uV/m) at \_\_\_\_ MHz
- NOT APPLICABLE

### Remarks

See Appendix A for test data

**Configuration**

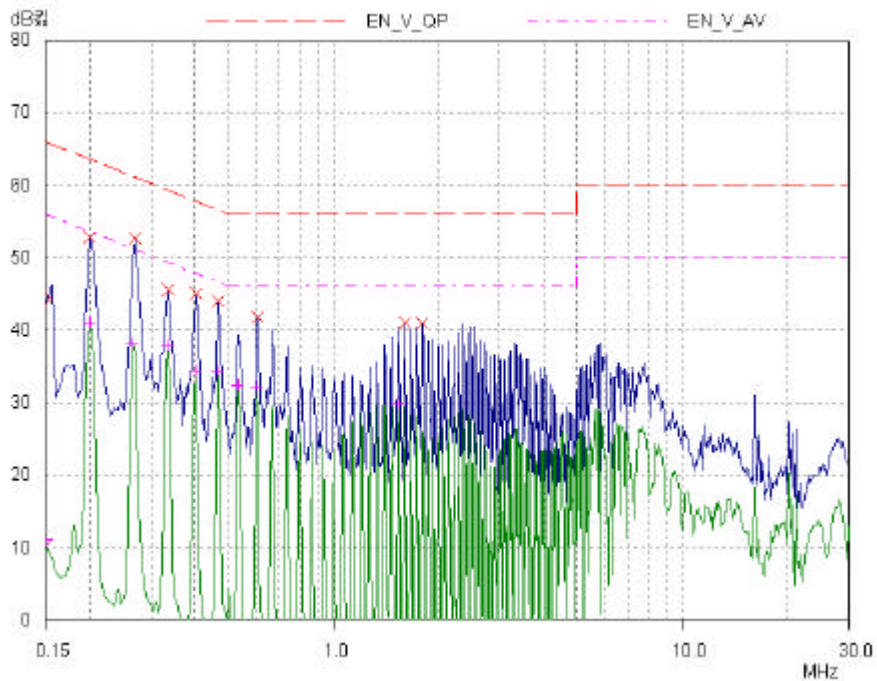
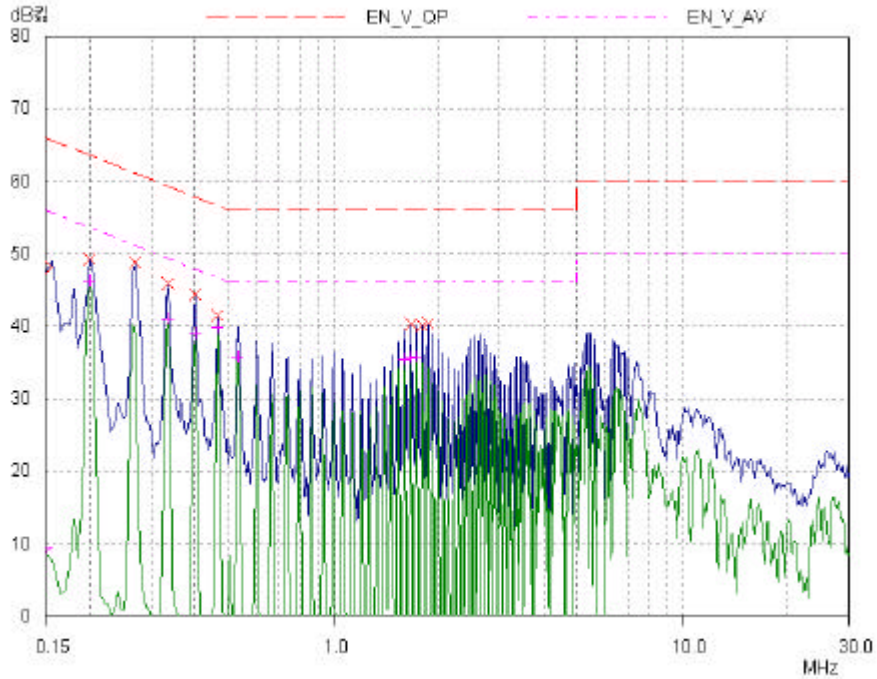




## APPENDIX A - TEST DATA

### 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]
0.15	2.2	0.1	H	66.0	46.6	48.9	17.1	56.0	5.3	7.6	48.4
0.20	1.7	0.1	N	63.6	50.9	52.7	10.9	53.6	39.1	40.9	12.7
0.26	0.8	0.1	N	61.4	48.7	49.6	11.8	51.4	37.0	37.9	13.5
0.27	0.8	0.1	N	61.1	51.6	52.5	8.6	51.1	36.0	36.9	14.2
0.33	0.7	0.1	H	59.5	45.1	45.9	13.6	49.5	40.0	40.8	8.7
0.40	0.6	0.1	H	57.9	43.6	44.3	13.6	47.9	38.2	38.9	9.0
0.60	0.5	0.1	N	56.0	40.8	41.4	14.6	46.0	31.5	32.1	13.9
1.53	0.3	0.1	N	56.0	40.0	40.4	15.6	46.0	29.4	29.8	16.2
1.60	0.3	0.1	N	56.0	40.5	40.9	15.1	46.0	28.8	29.2	16.8
1.66	0.3	0.1	H	56.0	39.8	40.2	15.8	46.0	35.0	35.4	10.6
1.80	0.3	0.1	N	56.0	40.5	40.9	15.1	46.0	25.4	25.8	20.2
2.33	0.3	0.1	N	56.0	40.3	40.7	15.3	46.0	28.4	28.8	17.2
5.26	0.3	0.1	H	60.0	38.2	38.6	21.4	50.0	33.1	33.5	16.5
5.33	0.3	0.1	H	60.0	39.0	39.4	20.6	50.0	33.8	34.2	15.8
5.39	0.3	0.1	H	60.0	38.4	38.8	21.2	50.0	33.9	34.3	15.7
5.46	0.3	0.1	H	60.0	37.8	38.2	21.8	50.0	32.9	33.3	16.7
5.53	0.3	0.1	H	60.0	37.8	38.2	21.8	50.0	32.4	32.8	17.2
5.80	0.3	0.1	N	60.0	44.6	45.0	15.0	50.0	27.9	28.3	21.7





**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			
78.63	8.8	V	1.0	8.10	1.70	30.0	18.64	11.36
101.64	7.0	V	1.0	9.35	1.90	30.0	18.23	11.77
135.38	8.4	V	1.0	8.40	2.30	30.0	19.13	10.87
202.84	8.4	H	4.0	7.35	2.80	30.0	18.53	11.47
213.61	7.5	H	4.0	7.80	2.90	30.0	18.16	11.84
216.35	7.7	H	4.0	7.95	2.90	30.0	18.53	11.47
473.32	14.0	H	3.2	15.00	4.40	37.0	33.44	3.56
648.31	8.6	H	3.7	17.80	5.50	37.0	31.89	5.11
756.84	7.2	H	3.8	19.00	6.10	37.0	32.32	4.68
811.00	6.9	H	3.0	19.60	6.60	37.0	33.08	3.92
919.57	3.1	V	2.2	20.80	6.70	37.0	30.64	6.36
972.00	4.9	H	3.5	21.10	7.00	37.0	33.01	3.99