

FCC Verification

According to FCC Part 15

Applicant Name : SAMSUNG TECHWIN CO., LTD.

Address : #42 Seongju-Dong, Changwon-Shi,
Kyungsangnam-Do, Korea

Telephone : +82-70-7147-8376

Declares that Product : CCD Camera

Model Name : SCB-2010N

Report Number : 2011020059

This device complies with Part 15 of the FCC rules. Operations is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

Test Laboratory:

CTK Co., Ltd.

386-1, Ho-Dong, Cheoin-gu, Yongin-si, Gyunggi-do, 449-100, Korea

Design **ation Number : KR0025**

Tel : +82-31-339-9970

Fax **: +82-31-339-9855**

Responsible Party:

Company Name : _____

Company Address : _____

Phone : _____

Fax : _____

Name : _____

Signature : _____



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EMC TEST REPORT For FCC

Test Report No. : 2011020059
Date of Issue : February 21, 2011
Model/Type No. : SCB-2010N
Kind of Product : CCD Camera
Applicant : SAMSUNG TECHWIN CO., LTD.
Applicant Address : #42 Seongju-Dong, Changwon-Shi, Kyungsangnam-Do, Korea
Manufacturer : 1. SAMSUNG TECHWIN CO., LTD.
2. TIANJIN SAMSUNG TECHWIN OPTO-ELECTRONICS CO., LTD.
Manufacturer Address : 1. #42 Seongju-Dong, Changwon-Shi, Kyungsangnam-Do, Korea
2. #No. 11 Wei Liu road Micro-electronic industrial park
Teda Tianjin China
Contact Person : Mr. Kang-Min Kim
Telephone : +82-70-7147-8376
Received Date : February 15, 2011
Test Date : February 21, 2011
Test Results : ☒ In Compliance ☐ Not in Compliance

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

Tested by

Hye-Young, Lee
EMC Test Engineer
Date: February 21, 2011

Reviewed by

James Hong
EMC Technical Manager
Date: February 21, 2011



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REPORT REVISION HISTORY

Date	Revision	Page No
February 21, 2011	Issued (2011020059)	All

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1.0 General Product Description

1.0.1 Tested Equipment

- ☒ Unless otherwise indicated, all tests were conducted on Model SCB-2010N.
- ☐ Tests performed on Model _____ were considered to be representative of Model(s) _____.

1.0.2 Equipment Size, Mobility and Identification

Dimensions: Approx. 52.0(W) by 52.0(H) by 40.4(D) ☒ mm ☐ inch
Mobility: ☐ Table-top ☐ Floor-standing ☒ Built-in ☐ Portable
Serial No.: Prototype

1.0.3 Electrical Ratings

[AC/DC ADAPTER]	Input:	110 - 240 Vac, 50/60 Hz, 0.2 A
	Output:	12 Vdc, 0.5 A
[EUT]	Input:	12 Vdc
	Output:	-

1.0.4 Test Voltage & Frequency

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

Voltage: 120 Vac (Mains of AC/DC ADAPTER)
Frequency: 60 Hz

1.0.5 Clock & Other Frequencies Utilized

28.6363 MHz

1.1 Model Differences

Not applicable

1.2 Device Modifications

The following modifications were necessary for compliance:

Not applicable



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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.
COLOR VIDEO MONITOR	HITRON SYSTEMS INC.	CVM1574FP	M9040051
AC/DC ADAPTER	Dream Electronic Co., Ltd.	DAD1250DKA	-

☒ Cable Description

#	Description	Ferrite Core	Length (m)	Other Details
1	AC/DC ADAPTER Power Cable, Unshielded	No	0.8	Connect to AC Power
2	EUT DC Input Cable, Unshielded	Yes	1.8	Between an AC/DC ADAPTER and the EUT
3	COLOR VIDEO MONITOR Power Cable, Unshielded	No	1.8	Connect to AC Power
4	BNC Cable, Shielded	Yes	4.0	Between a COLOR VIDEO MONITOR and the EUT

1.4 Test Software

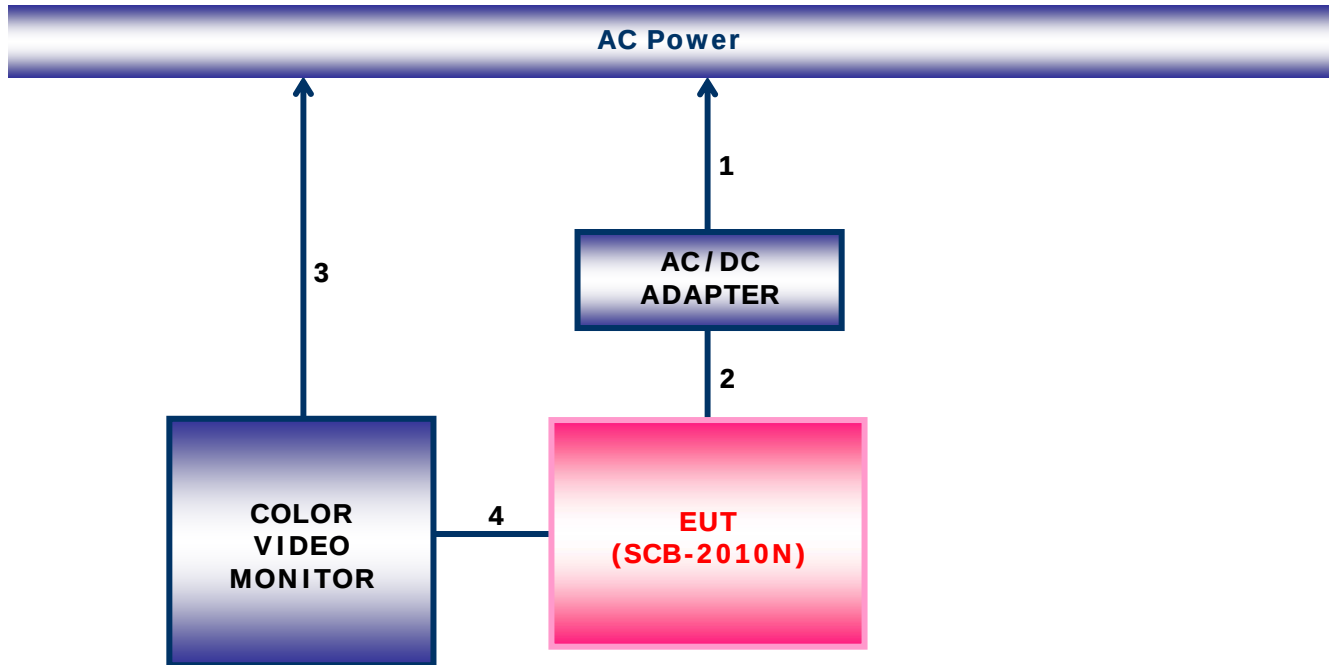
- ☐ EMC Test V 1.0
☐ Display Test Patterns – V1.5
☐ Ping.exe
☒ Not applicable

1.5 EUT Operating Mode(s)

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

- ☐ Standby ☐ Scrolling 'H'
☐ Display circles pattern ☐ Read / Write
☒ Practice operation – Monitoring the EUT's video signal.

1.6 Configuration





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1.7 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.

1.8 Test Facility

The measurement facility is located at 386-1, Ho-dong, Cheoin-gu, Yongin-si, Gyeonggi-do, 449-100, Korea. The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

1.9 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 C63.4-2003 7.2.3, 7.2.4, 8.3.1.1, 8.3.1.2



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1.10 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Logo
USA	FCC	3 m & 10 m OATS, 3 m & 10 m SAC and Conducted Test Site to perform FCC Part 15/18 measurements	 805871
JAPAN	VCCI	10 m OATS and Conducted Test Site	 R-948, C-986, T-1843
KOREA	KCC	EMI (10 m OATS, 10 m SAC and Conducted Test Site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and Interruptions)	 No. 51, KR0025



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2.0 Emissions Test Regulations

The emissions tests were performed according to following regulations:

- | | | |
|--|--|--|
| ☐ EN 61000-6-3:2007 | | |
| ☐ EN 61000-6-4:2007 | | |
| ☐ EN 55011:2007 +A2:2007 | ☐ Group 1
☐ Class A | ☐ Group 2
☐ Class B |
| ☐ EN 55013:2001 +A1:2003 +A2:2006 | | |
| ☐ EN 55014-1:2006 | | |
| ☐ EN 55014-1:2006 +A1:2009 | | |
| ☐ EN 55015:2006 +A1:2007 +A2:2009 | | |
| ☐ EN 61204-3:2000 | ☐ Class A | ☐ Class B |
| ☐ EN 61131-2:2007 | | |
| ☐ EN 61326-1:2006 | ☐ Class A | ☐ Class B |
| ☐ EN 55022:2006 +A1:2007 | ☐ Class A | ☐ Class B |
| ☐ EN 61000-3-2:2006 | | |
| ☐ EN 61000-3-3:1995 +A1:2001 +A2:2005 | | |
| ☐ VCCI V-3/2010.04 | ☐ Class A | ☐ Class B |
| ☐ AS/NZS CISPR22:2006 | ☐ Class A | ☐ Class B |
| ☒ FCC Part 15 Subpart B | ☒ Class A | ☐ Class B |
| ☒ CISPR 22:2006 | ☒ Class A | ☐ Class B |



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2.1 Conducted Voltage Emissions

Test Date

February 21, 2011

Test Location

Shielded Room

Test Equipment

	Name of Equipment	Manufacturer	Model No.	Serial No.	Due Date
☒	EMI Test Receiver	Rohde & Schwarz	ESCI3	100032	2012-02-09
☒	LISN	Rohde & Schwarz	ENV216	101235	2011-08-13
☒	LISN	Rohde & Schwarz	ENV216	101236	2011-08-13
☐	EMI Test Receiver	Rohde & Schwarz	ESHS30	828144/002	2011-03-08
☐	LISN	Rohde & Schwarz	ENV216	101150	2012-02-10
☐	LISN	EMCO	3825/2	9607-2575	2011-07-09
☐	EMI Test Receiver	Rohde & Schwarz	ESHS30	862024/001	2011-03-08
☐	LISN	Rohde & Schwarz	ESH3-Z5	100207	2011-11-15
☐	ISN	TESEQ GMBH	ISN T8	25191	2011-12-30
☐	ISN	TESEQ GMBH	ENY81-CA6	101553	2011-11-25

Frequency Range of Measurement

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Results

The requirements are: ☒ MET ☐ NOT MET ☐ NOT APPLICABLE

Frequency (MHz)	Measured Data (dBμV)	Margin (dB)	Remark
2.5035	57.2	15.8	Quasi-peak

Remarks

See Appendix A for test data.



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2.2 Radiated Electric Field Emissions

Test Date

February 21, 2011

Test Location

Testing was performed at a test distance of:

- ☐ 10 m OATS ☐ 3 m OATS
☒ 10 m SAC ☐ 3 m SAC

Test Equipment

	Name of Equipment	Manufacturer	Model No.	Serial No.	Due Date
☐	EMI Test Receiver	Rohde & Schwarz	ESVS30	826638/008	2011-07-12
☒	EMI Test Receiver	Rohde & Schwarz	ESCI7	100814	2011-12-13
☒	ULTRA Broadband Antenna	Rohde & Schwarz	HL562	361324/014	2011-11-18
☒	AMPLIFIER	Sonoma Instrument Co.	310	291721	2011-03-31
☐	EMI Test Receiver	Rohde & Schwarz	ESCI7	100816	2011-12-15
☐	Double Ridged Guide Antenna	ETS-Lindgren	3115	00078894	2011-12-18
☐	PREAMPLIFIER	Agilent Technologies	8449B	3008A02307	2011-11-16

Frequency Range of Measurement

- ☒ 30 MHz to 1 GHz
☐ 1 GHz to ___ GHz

Instrument Settings

- ☒ IF Band Width: 120 kHz
☐ IF Band Width: 1 MHz

Test Results

The requirements are: ☒ MET ☐ NOT MET ☐ NOT APPLICABLE

Frequency (MHz)	Measured Data (dB μ V/m)	Margin (dB)	Remark
515.552	31.0	16.0	Quasi-peak

Remarks

See Appendix B for test data.

APPENDIX A – TEST DATA

Conducted Voltage Emissions

[HOT]

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.537000	49.2	1000.0	9.000	On	L1	10.2	23.8	73.0
0.816000	50.9	1000.0	9.000	On	L1	10.1	22.1	73.0
1.248000	52.4	1000.0	9.000	On	L1	10.0	20.6	73.0
1.536000	53.0	1000.0	9.000	On	L1	9.9	20.0	73.0
1.815000	50.8	1000.0	9.000	On	L1	9.9	22.2	73.0
2.328000	54.4	1000.0	9.000	On	L1	9.9	18.6	73.0
2.503500	57.2	1000.0	9.000	On	L1	9.9	15.8	73.0
6.616500	54.6	1000.0	9.000	On	L1	9.9	18.4	73.0
7.386000	54.9	1000.0	9.000	On	L1	9.9	18.1	73.0
8.425500	53.9	1000.0	9.000	On	L1	9.9	19.1	73.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.550500	39.7	1000.0	9.000	On	L1	10.2	20.3	60.0
0.834000	39.4	1000.0	9.000	On	L1	10.1	20.6	60.0
1.108500	39.5	1000.0	9.000	On	L1	10.0	20.5	60.0
1.531500	38.7	1000.0	9.000	On	L1	9.9	21.3	60.0
1.666500	37.1	1000.0	9.000	On	L1	9.9	22.9	60.0
2.323500	40.0	1000.0	9.000	On	L1	9.9	20.0	60.0
2.503500	43.6	1000.0	9.000	On	L1	9.9	16.4	60.0
6.751500	41.4	1000.0	9.000	On	L1	9.9	18.6	60.0
7.737000	43.3	1000.0	9.000	On	L1	9.9	16.7	60.0
8.551500	41.9	1000.0	9.000	On	L1	9.9	18.1	60.0

[NEUTRAL]

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
1.230000	47.3	1000.0	9.000	On	N	9.9	25.7	73.0
1.536000	48.4	1000.0	9.000	On	N	9.9	24.6	73.0
1.653000	45.4	1000.0	9.000	On	N	9.9	27.6	73.0
2.296500	48.7	1000.0	9.000	On	N	9.9	24.3	73.0
2.602500	52.9	1000.0	9.000	On	N	9.9	20.1	73.0
4.407000	45.8	1000.0	9.000	On	N	9.8	27.2	73.0
5.325000	46.9	1000.0	9.000	On	N	9.8	26.1	73.0
6.621000	50.8	1000.0	9.000	On	N	9.9	22.2	73.0
7.107000	51.2	1000.0	9.000	On	N	9.9	21.8	73.0
8.736000	52.2	1000.0	9.000	On	N	9.9	20.8	73.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
1.108500	33.0	1000.0	9.000	On	N	10.0	27.0	60.0
1.531500	32.6	1000.0	9.000	On	N	9.9	27.4	60.0
1.671000	31.9	1000.0	9.000	On	N	9.9	28.1	60.0
2.242500	35.4	1000.0	9.000	On	N	9.9	24.6	60.0
2.494500	39.4	1000.0	9.000	On	N	9.9	20.6	60.0
4.362000	32.0	1000.0	9.000	On	N	9.8	28.0	60.0
4.992000	33.9	1000.0	9.000	On	N	9.8	26.1	60.0
6.756000	39.8	1000.0	9.000	On	N	9.9	20.2	60.0
7.975500	42.3	1000.0	9.000	On	N	9.9	17.7	60.0
8.547000	41.0	1000.0	9.000	On	N	9.9	19.0	60.0



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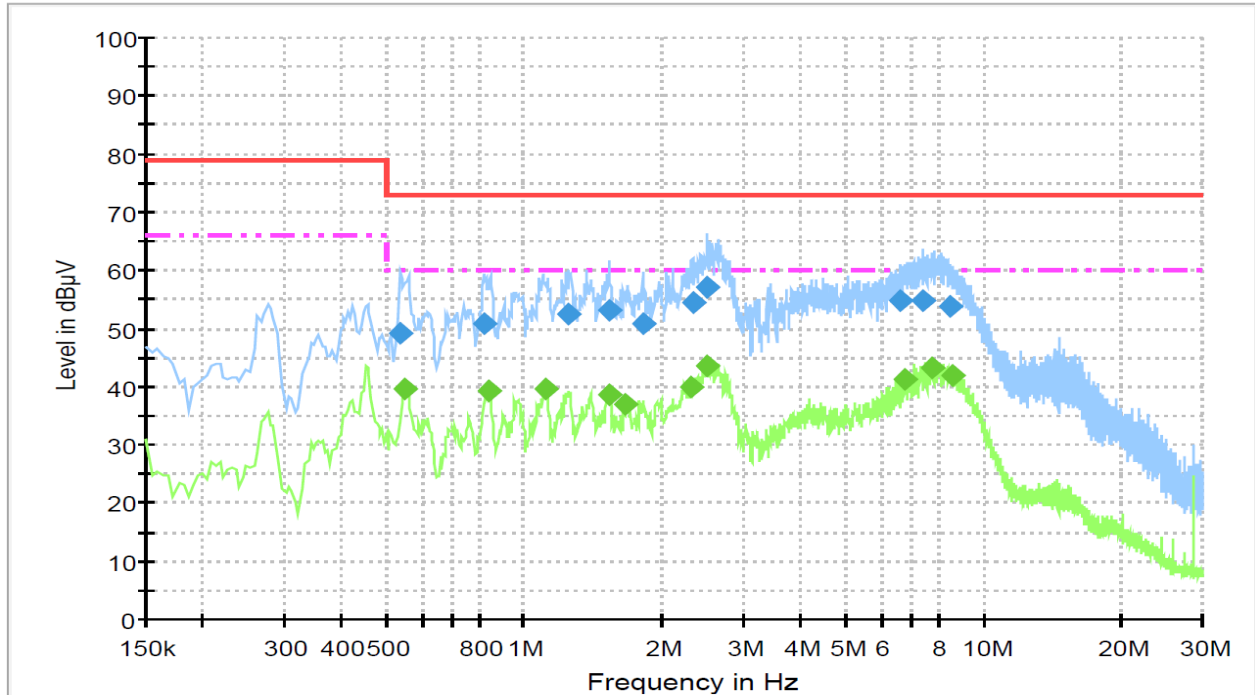
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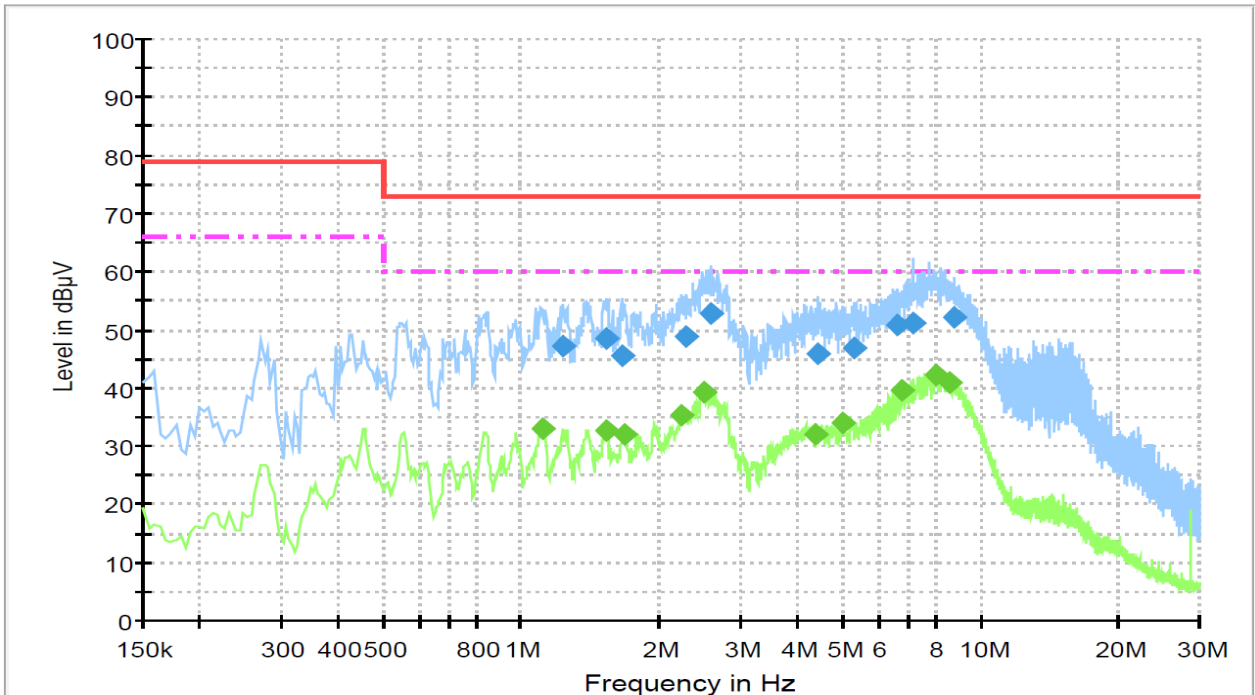
[HOT]

3CE_CISPR 22 Class A_L1



[NEUTRAL]

3CE_CISPR 22 Class A_N





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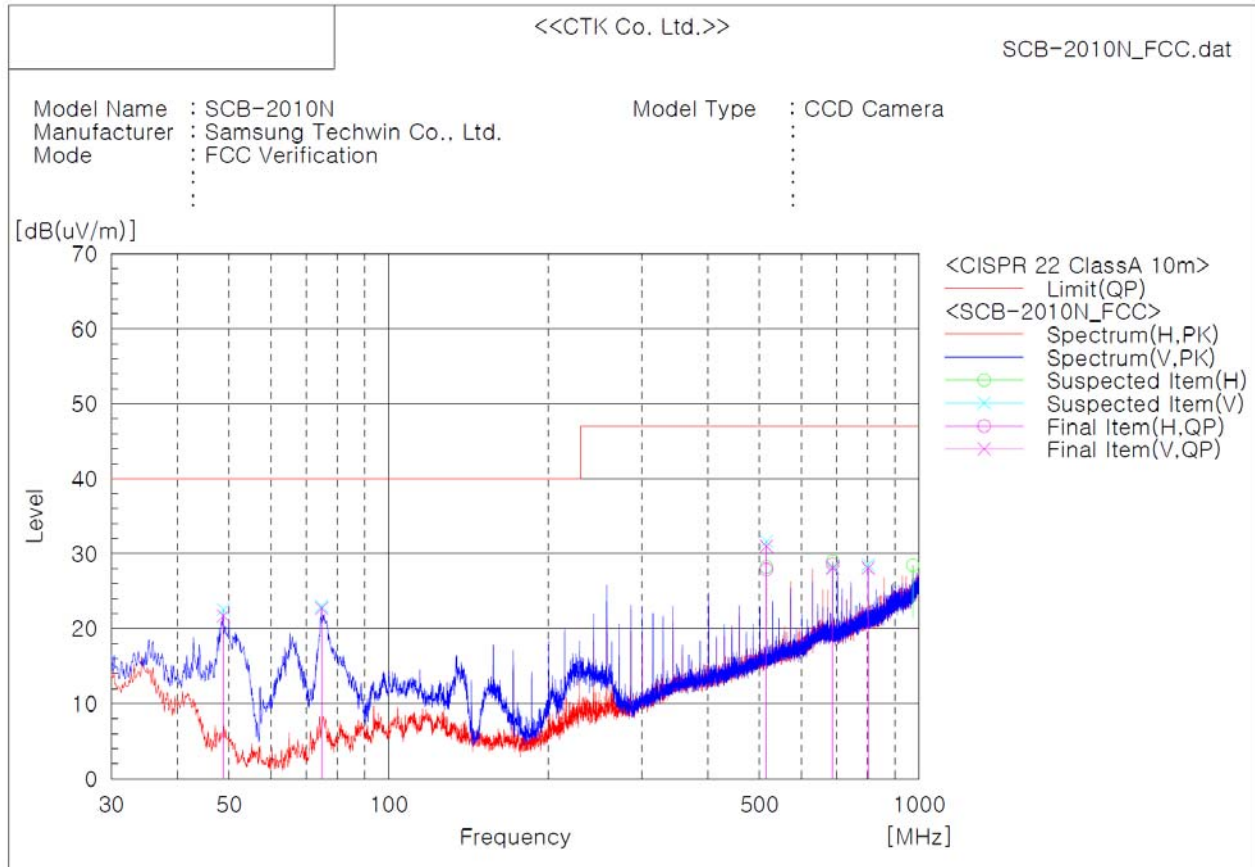
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Radiated Electric Field Emissions



Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	Remark
1	48.812	V	41.8	-20.1	21.7	40.0	18.3	100.0	175.0	
2	74.772	V	43.1	-20.4	22.7	40.0	17.3	191.0	0.0	
3	515.552	V	39.0	-8.0	31.0	47.0	16.0	100.0	99.0	
4	515.493	H	35.9	-8.0	27.9	47.0	19.1	205.0	23.0	
5	687.302	H	33.0	-4.4	28.6	47.0	18.4	205.0	175.0	
6	687.303	V	32.5	-4.4	28.1	47.0	18.9	295.0	136.0	
7	801.893	V	30.3	-2.2	28.1	47.0	18.9	400.0	201.0	
8	973.732	H	-19.2	1.9	-17.3	47.0	64.3	304.0	0.0	



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APPENDIX B - Test Setup Photos and Configuration

Conducted Voltage Emissions





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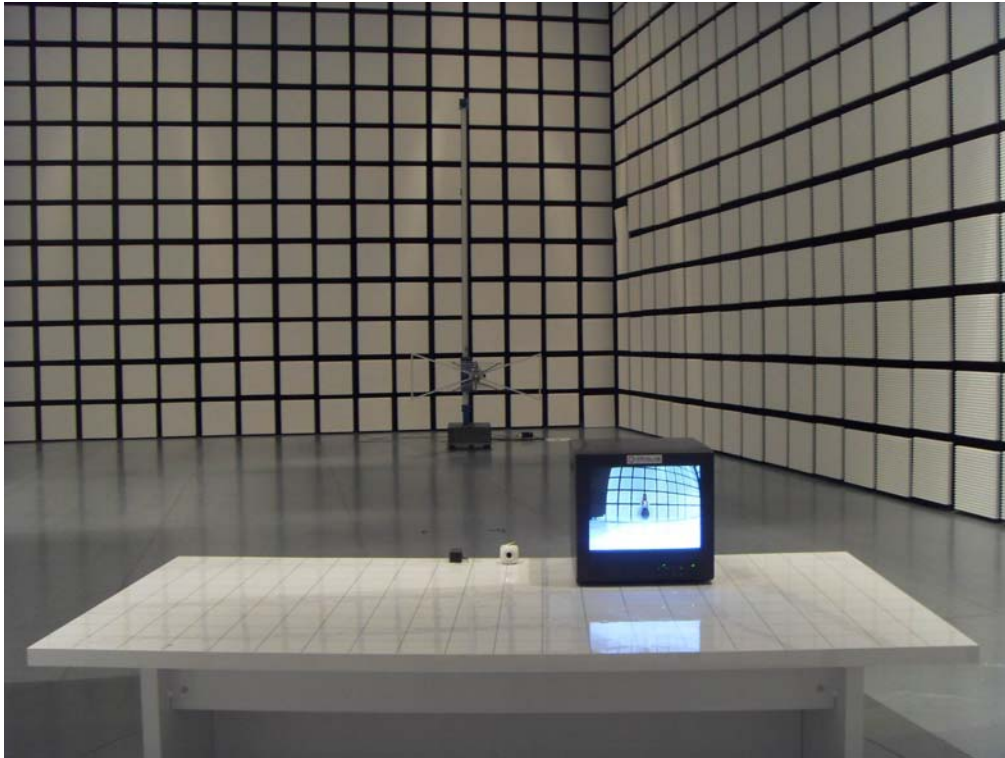
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Radiated Electric Field Emissions





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APPENDIX C – EUT Photographs

EUT External Photographs





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EUT Internal Photographs





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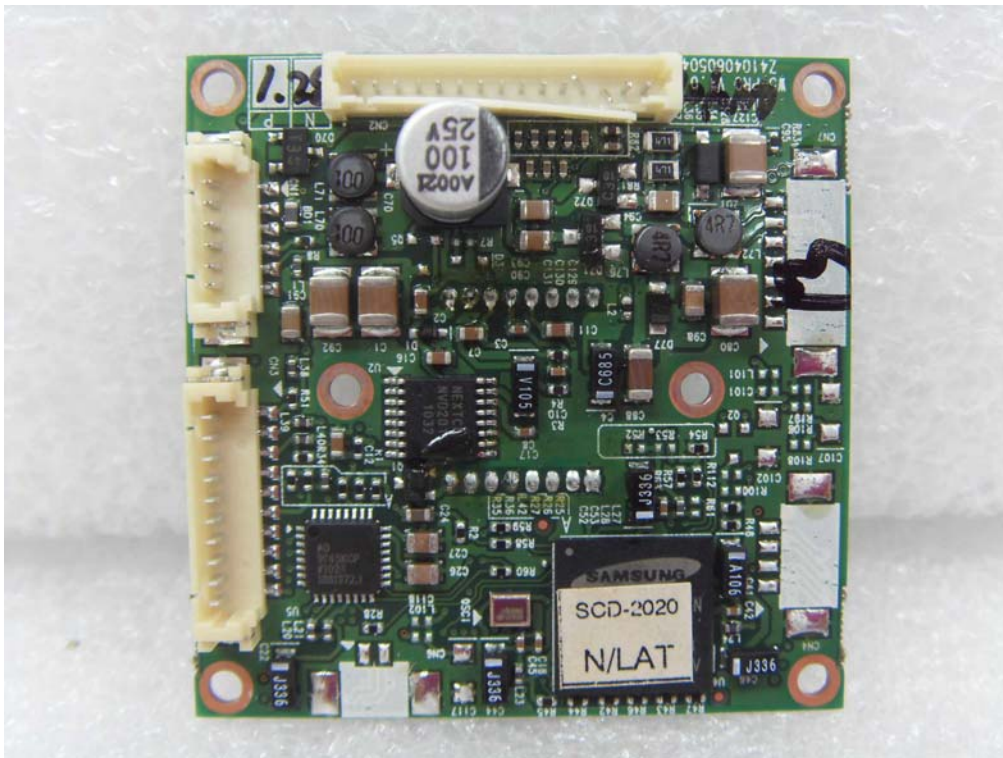
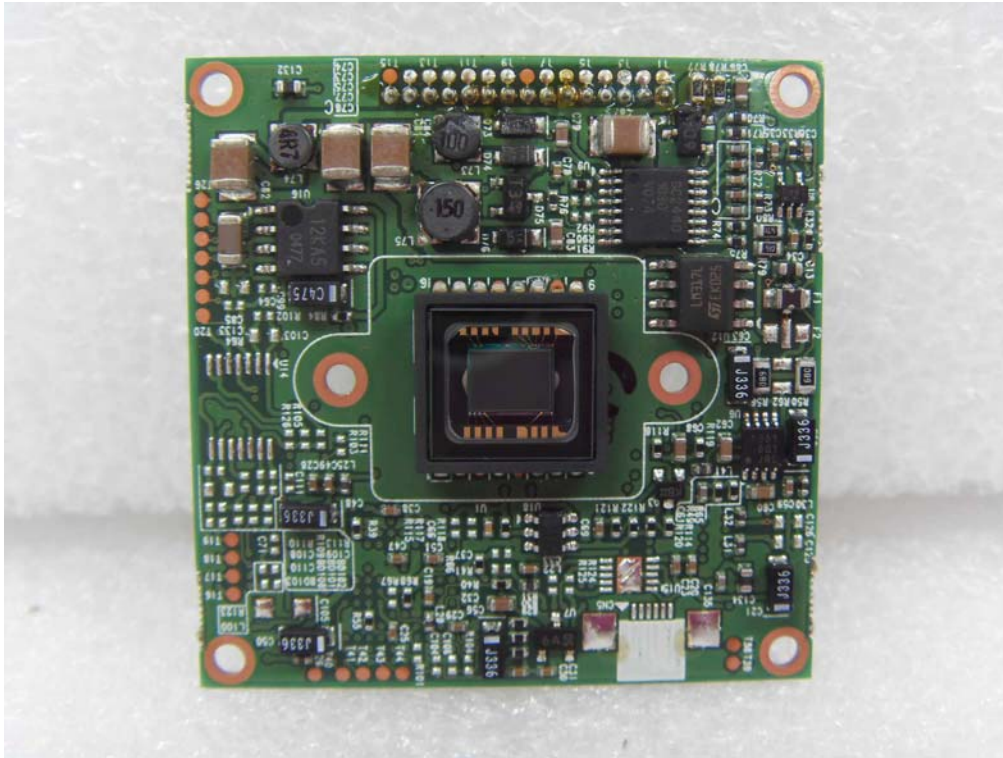
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PCB





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