SAMSUNG ELECTRONICS

EMC TEST REPORT

Project No. : LBE031577

Product : COLOR MONITOR

Model No. : CK32PS

Date of test :July. 25 ~ 30 , 2003

Issued Date : August. 7, 2003

Tested by:

Tae Young, JANG / Test Engineer

Reviewed by:

No Cheon, PARK / Manager of EMC Lab.

Authorized by:

Kyu Baek, CHUNG / Chief of EMC Lab.

SAMSUNG ELECTRONICS Co., Ltd.
EMC Test Laboratory
416 Maetan-3 Dong, Paldal-Ku, Suwon City, Kyungki-Do, Korea,442-742
Tel. : 81-31-200-2185 Fax. : 81-31-200-2189

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1. Introduction & Summary

1.1 Description of the EUT

Applicant	SAMSUNG ELECTRONICS Co., Ltd.
Project Number	LBE031577
Equipment Under Test	COLOR MONITOR
Trade Name	SAMSUNG
Model Number	CK32PS
Variant Model	-
Operating Frequency	60Hz
FCC ID Number	A3LCK32PS
Mains input	120V

1.2 Test facility

The EMI/EMS measurement facilities used to collect the tested data are located at 416 Maetan 3 Dong, Paldal-Ku, Suwon City, Kyungki Do, Korea.

The sites are constructed in conformance with the requirements of ANSI C63.4 and CISPR 16-1 & 16-2.
SAMSUNG Electronics 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).

Measured in Semi-anechoic chamber #1 that is FCC Registration Number 98856.

1.3 Test equipment

Equipment	Model No.	Serial No.	Makers	Last calibration and Interval
Spectrum analyzer	E7405A	MY42000109	Agilent	03/04/18, 12Months
	Firmware versions : Rev.29.9.86			
Quasi-peak adapter	85650A	2521A00687	H.P	02/10/09, 12Months
10dB Attenuator	8491B	58226	Agilent	37537
RF Relais Matrix	PSU	861206/024	R & S	N/A
Measurement Software	EP5CE	-	TOYO	N/A
RF Selector	NS4900	0303-015	TOYO	N/A
Measurement Software	EP5RE	-	TOYO	N/A
Field strength meter	ESCS30	839809/022	R & S	03/06/27, 12Months
	Firmware versions : Main 1.08, OTP 02.01, GRA 02.03			
Field strength meter	ESCS30	100104	R & S	03/01/17, 12Months
L.I.S.N	ESH3-Z5	100261	R & S	03/07/16, 12Months
Bi-Log Antenna	CBL6112B	2766	SCHAFFNER	03/06/20, 12Months
EMC Analyzer	E7405A	US41110272	Agilent	03/06/14, 12Months
Amplifier	8447D	2944A10430	Agilent	2003-07-25

2. Test Set-up

2.1 Test mode

The EUT was tested in the following operating modes for the tests mention in this report:

Description of Testing operating mode & Tested Resolution

Operating Mode	Resolutions	Refresh rates	Colors
"H" Pattern display	1280x768	Horizontal F.: 70kHz	32bits
		Vertical F. : 85Hz	

Measured each about 2 input(PC VIDEO INPUT mode & Digital Video Interface)of EUT.
Further details of cabling and configuration are shown in the test system configuration.
The EUT exercise program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to typical use.

2.2 Justification

The system was configured for testing in typical fashion use. Cable were attached to each of the available I/O Ports.
The mode of operation utilized for testing was selected to best simulate typical EUT use.

2.3 Test equipment setup

The explanation of measuring equipment setup when respective function is used in any frequency band is as following:

Frequency Band [MHz]	Equipment	Detector function	Resolution Bandwidth	Video Bandwidth
0.15 to 30	EMI Test receiver	Quasi-Peak	9kHz	-
30 to 1000	Spectrum analyzer	Peak	100kHz	1MHz
	EMI Test receiver	Quasi-Peak	120kHz	-
Above 1000	EMI Test receiver	Peak	1MHz	1MHz

2.4 Tested System Details

1) Configuration of EUT and peripherals

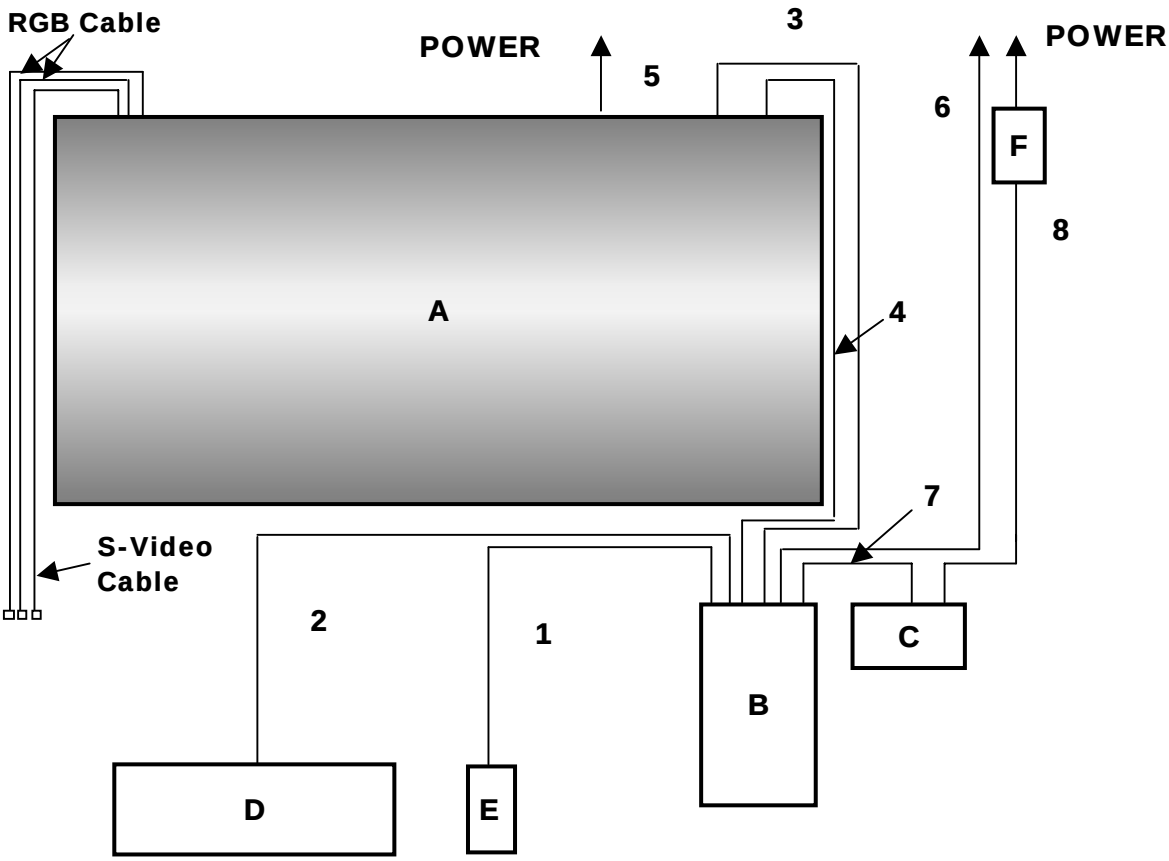
Mark	Item	Model No.	Serial No.	Manufacturer	FCC ID
A	COLOR MONITOR	CK32PS	-	Samsung	A3LCK32PS
B	Personal Computer	M6050	812092FRC01962	Samsung	-
C	Printer	BJC-50	CLG001000275	Canon	-
D	PS/2 Keyboard	SKR-2283S	9030501302	Sejin	-
E	PS/2 Mouse	M-S34-6MD	LZA74704728	Samsung	-
F	AC Adapter	K30088	CLG001000275	Canon	For Printer

* DOC : FCC Declaration of Conformity

2) Used Cable Description

No.	Item	Length[m]	Shielded(Y/N)	Remark
1	PS/2 Mouse Cable	1.8	N	
2	PS/2 Keyboard Cable	1.6	N	
3	Video Cable(Analog)	1.5	Y	
4	Video Cable(Digital)	1.5	Y	
5	AC Power Cable(Monitor)	1.2	N	
6	AC Power Cable(PC)	1.8	N	
7	Printer Cable	1.6	Y	
8	AC Power Cable(Printer)	1.8	N	

2.5 System Block Diagram of Test Configuration



2.6 Test rule and Procedure

FCC Rule Part 15, Subpart B : Unintentional Radiators
Test Procedure : ANSI C63.4-1992

2.7 Test Summary

Test item	Test Procedure	Result
AC POWERLINE CONDUCTED EMISSION	ANSI C63.4-1992	Pass
RADIATED EMISSION	ANSI C63.4-1992	Pass

* N/A : Test not applicable

3. Test Results

3.1 AC POWERLINE CONDUCTED EMISSION MEASUREMENT

3.1.1 Test Procedure

Configurate the EUT System in accordance with ANSI C63.4-1992 section 7 and 12.2.
Connect the EUT's AC line cord to the EUT port of LISN.
All input terminals are terminated in the proper impedance.
The output ports are connected to the cable provided with the device and the ending port are terminated in the proper impedance.

Using a calibrated coaxial cable, the TEST RECEIVER is connected to the measuring port of the LISN for EUT. To the find out an EUT condition procedures the maximum emission, the position of cables, EUT operations mode are the position of cables, EUT operations mode are checked under normal usage of EUT.
Then, the emission are scanned from 0.15MHz to 30MHz relative to the limit are recorded.

3.1.2 Test Results

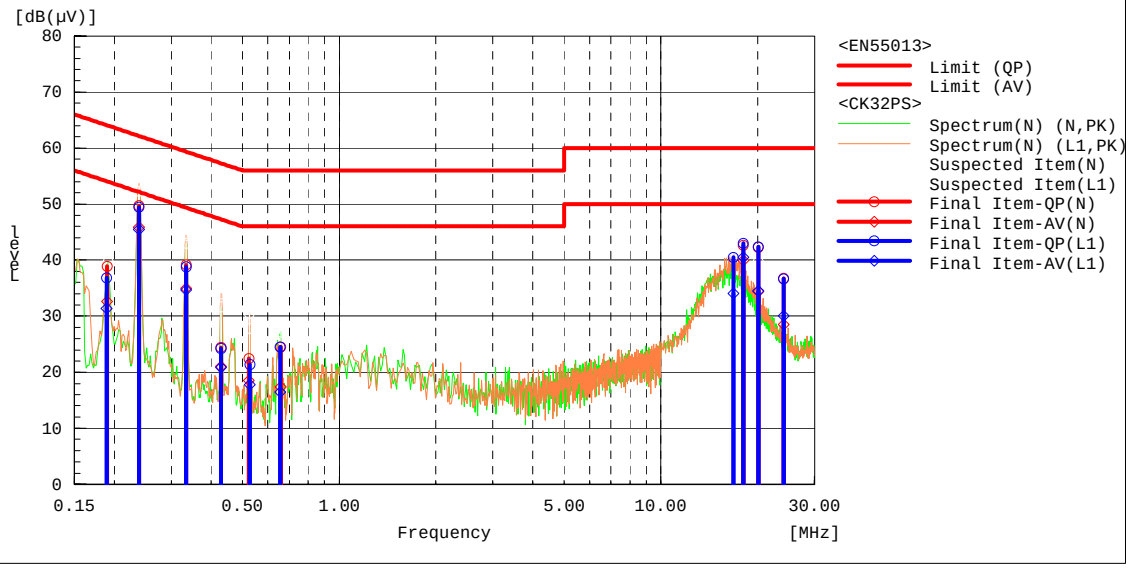
Samsung
- EMC Site -

<<Conducted Emission>>

31 July,2003 16:41
CK32PS.dat

Model : CK32PS
Project Num :
Operator : DM.LEE
OP Mode :
Temp,Humidity :

Standard : EN55013
Remark1 :
Remark2 :
Remark3 :
Remark4 :



Final Result

--- N Phase ---

No.	Frequency [MHz]	Reading QP [dB(μV)]	Reading AV [dB(μV)]	c.f [dB]	Result QP [dB(μV)]	Result AV [dB(μV)]	Limit QP [dB(μV)]	Limit AV [dB(μV)]	Margin QP [dB]	Margin AV [dB]
1	0.18983	28.7	22.5	10.2	38.9	32.7	64.0	54.0	25.1	21.3
2	0.23867	39.4	35.5	10.3	49.7	45.8	62.1	52.1	12.4	6.3
3	0.33467	28.8	24.7	10.3	39.1	35.0	59.3	49.3	20.2	14.3
4	0.42838	14.1	10.7	10.3	24.4	21.0	57.3	47.3	32.9	26.3
5	0.52387	12.2	8.2	10.3	22.5	18.5	56.0	46.0	33.5	27.5
6	0.65786	14.2	7.0	10.3	24.5	17.3	56.0	46.0	31.5	28.7
7	18.05471	31.9	29.2	10.7	42.6	39.9	60.0	50.0	17.4	10.1
8	20.06112	31.4	23.6	10.8	42.2	34.4	60.0	50.0	17.8	15.6
9	24.06954	25.9	17.6	10.9	36.8	28.5	60.0	50.0	23.2	21.5

--- L1 Phase ---

No.	Frequency [MHz]	Reading QP [dB(μV)]	Reading AV [dB(μV)]	c.f [dB]	Result QP [dB(μV)]	Result AV [dB(μV)]	Limit QP [dB(μV)]	Limit AV [dB(μV)]	Margin QP [dB]	Margin AV [dB]
1	0.18878	26.6	21.2	10.2	36.8	31.4	64.1	54.1	27.3	22.7
2	0.23819	39.1	35.2	10.3	49.4	45.5	62.2	52.2	12.8	6.7
3	0.33391	28.5	24.4	10.3	38.8	34.7	59.4	49.4	20.6	14.7
4	0.42913	13.9	10.6	10.3	24.2	20.9	57.3	47.3	33.1	26.4
5	0.52646	11.1	7.5	10.3	21.4	17.8	56.0	46.0	34.6	28.2
6	0.6544	14.2	6.2	10.3	24.5	16.5	56.0	46.0	31.5	29.5
7	16.79619	29.7	23.2	10.8	40.5	34.0	60.0	50.0	19.5	16.0
8	18.05551	32.1	29.6	10.9	43.0	40.5	60.0	50.0	17.0	9.5
9	20.06072	31.4	23.6	10.9	42.3	34.5	60.0	50.0	17.7	15.5
10	24.07475	25.5	18.9	11.1	36.6	30.0	60.0	50.0	23.4	20.0

3.2 RADIATED EMISSION MEASUREMENT

3.2.1 Test Procedure

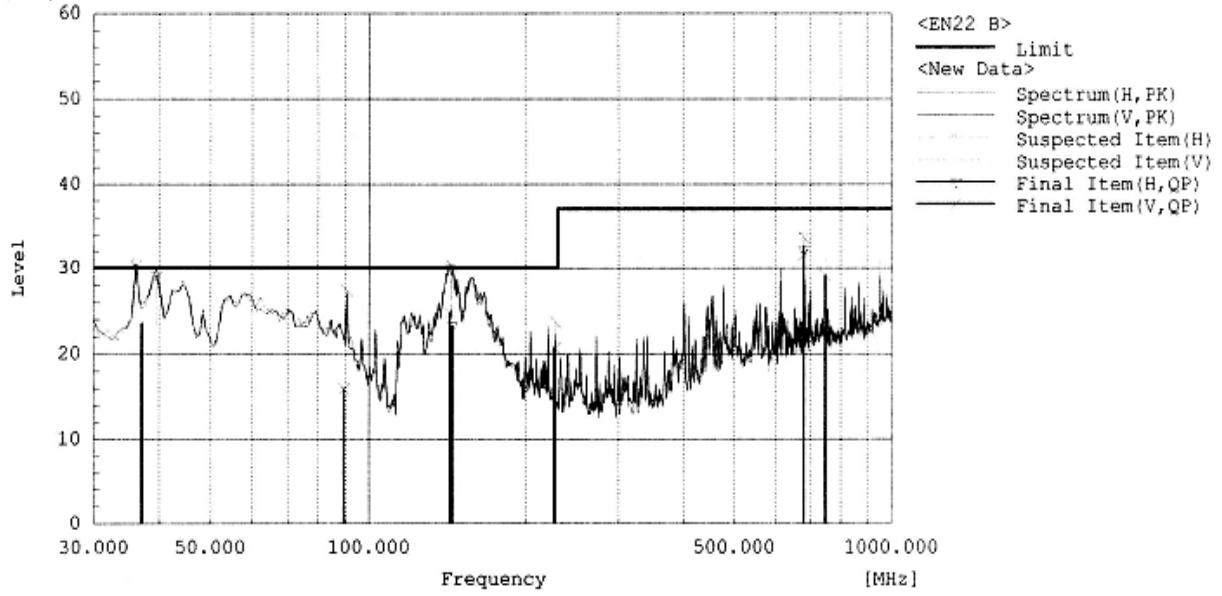
Configurate the EUT System in accordance with ANSI C63.4-1992section 8 and 12.2.
Power cords for the EUT System are connected the receptacle on the ground plane.
The output ports are connected to the cable provided with the device and the ending port of the cable are terminated in the proper impedance.
To find out the maximum emission, change the position of the cable, and the EUT operation mode under normal usage of the EUT.
The spectrum analyzer are scanned from 30MHz to 1,000MHz.
And, detecting waves mode is peak mode, Graph's result in worst arrangement state of EUT. Spectrum analyzer result did horizontal and vertical polarization maxhold.

3.2.2 Test Results

SAMSUNG EMC LAB. <<Radiated Emission>>

Model :
Serial : -
Operator :
AC Power :
Temp,Humidity:

Standard : EN 55022 Class B
Project Num :
OP Mode :
Remark3 :
Remark4 :



Final Result

--- Horizontal Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]
1	144.251	44.2	-20.9	23.3	30.0	6.7
2	679.940	40.8	-8.6	32.2	37.0	4.8

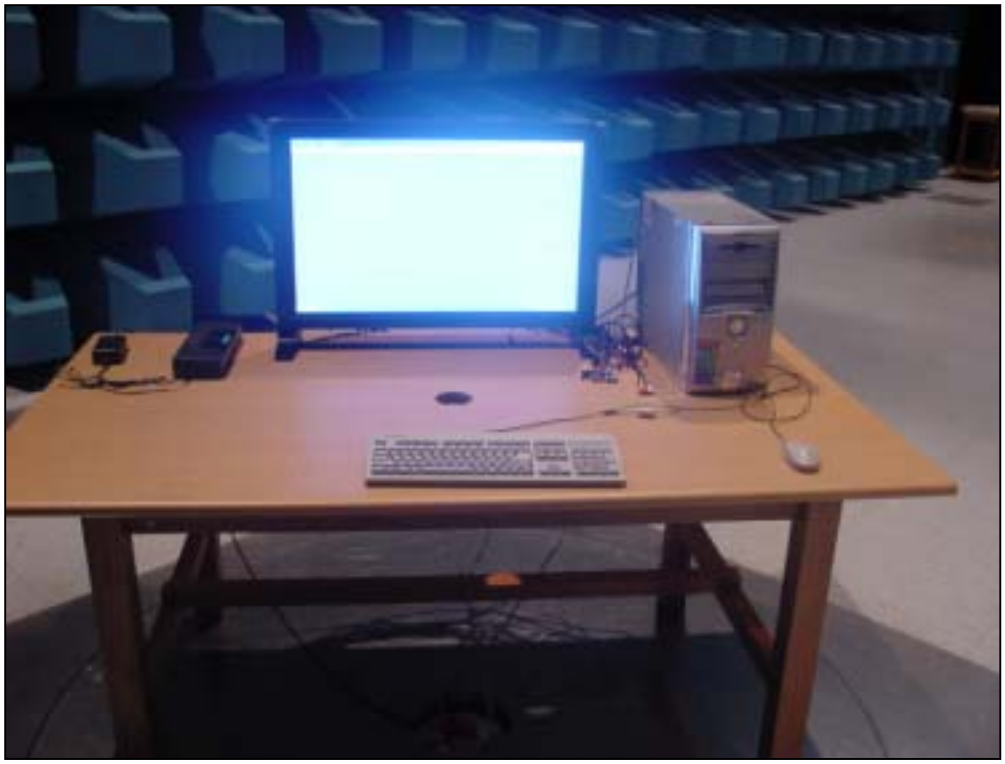
--- Vertical Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]
1	37.095	41.3	-17.8	23.5	30.0	6.5
2	89.582	38.6	-22.7	15.9	30.0	14.1
3	142.732	45.7	-20.9	24.8	30.0	5.2
4	226.958	41.5	-20.8	20.7	30.0	9.3
5	679.940	40.2	-8.6	31.6	37.0	5.4
6	747.950	36.8	-7.7	29.1	37.0	7.9

Test Set up Photographs

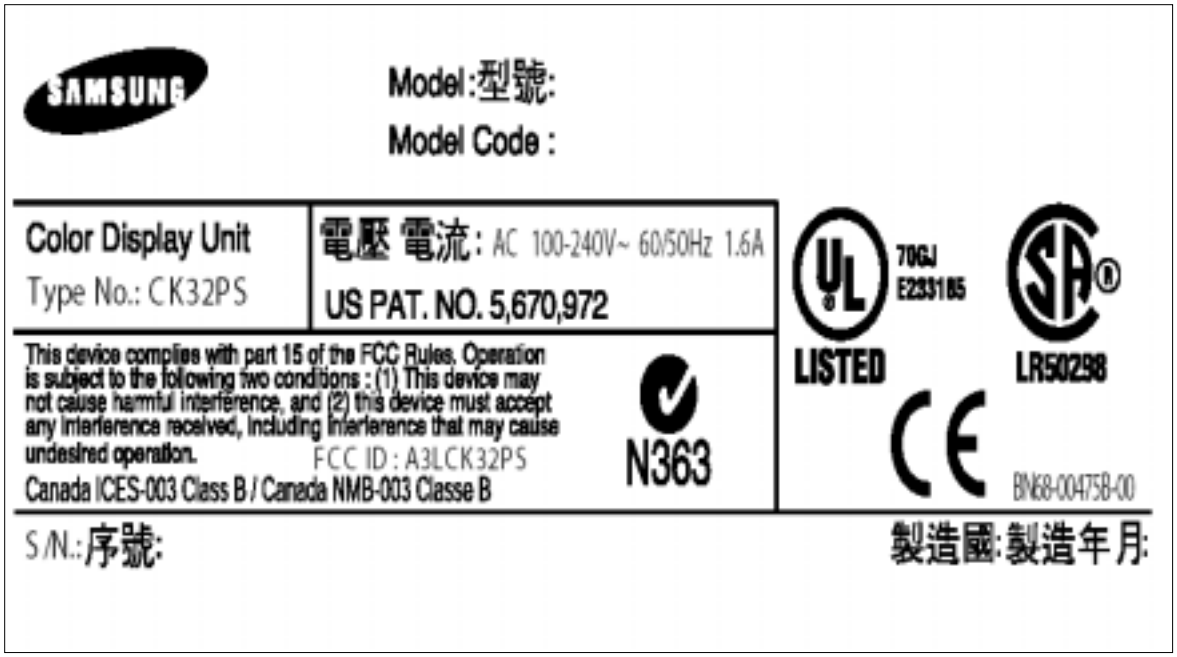
[AC POWERLINE CONDUCTED EMISSION MEASUREMENT]

[RADIATED EMISSION MEASUREMENT]



EUT Photographs

[Label and Label position]



EUT Photographs