

EMC TEST REPORT

Project No. : LBE031817

Product : **PDP TV Monitor**

Model No. : **MZ42S4**

(* Variant Model : SPP4251X/XAA)

Date of test : August 20 ~ 21, 2003

Issued Date : August 22, 2003

Tested by:

Kyung Chul, MIN / 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

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1. Introduction & Summary

1.1 Description of the EUT

Applicant	SAMSUNG ELECTRONICS Co., Ltd.
Project Number	LBE031817
Equipment Under Test	PDP TV Monitor
Trade Name	SAMSUNG
Model Number	MZ42S4
Variant Model	SPP4251
Operating Frequency	60Hz
FCC ID Number	A3LSPP4251
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

Description	Model	Manufacturer	Serial No.	Applied
TEST RECEIVER	ESI26	R & S	100067	o
RF RELAIS MATRIX	PSU	R & S	861206/024	o
10dB ATTENUATOR	8491B	Agilent	58226	o
LISN	ESH3-Z5	R & S	847265/028	o
TEST SOFTWARE	EP5CE	TOYO	-	o
TEST RECEIVER	ESCS30	R & S	100104	o
SPECTRUM ANALYZER	E7405A	Agilent	US41110272	o
BI-LOG ANTENNA	CBL6112B	SCHAFFNER	2766	o
RF SELECTOR	NS4900	TOYO	0303-015	o
MAST CONTROLLER	HD2000	HD	HD2000090202 7	o
TEST SOFTWARE	EP5RE	TOYO	-	o
Turn Table	DS412	HD	-	N/A
Antenna Mast	MA240	HD	240/620	N/A
Preamplifier	310	SONOMA Instrument	185821	o

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	1280x1024	Horizontal F.:63.98kHz Vertical F. : 60.02Hz	32bits

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

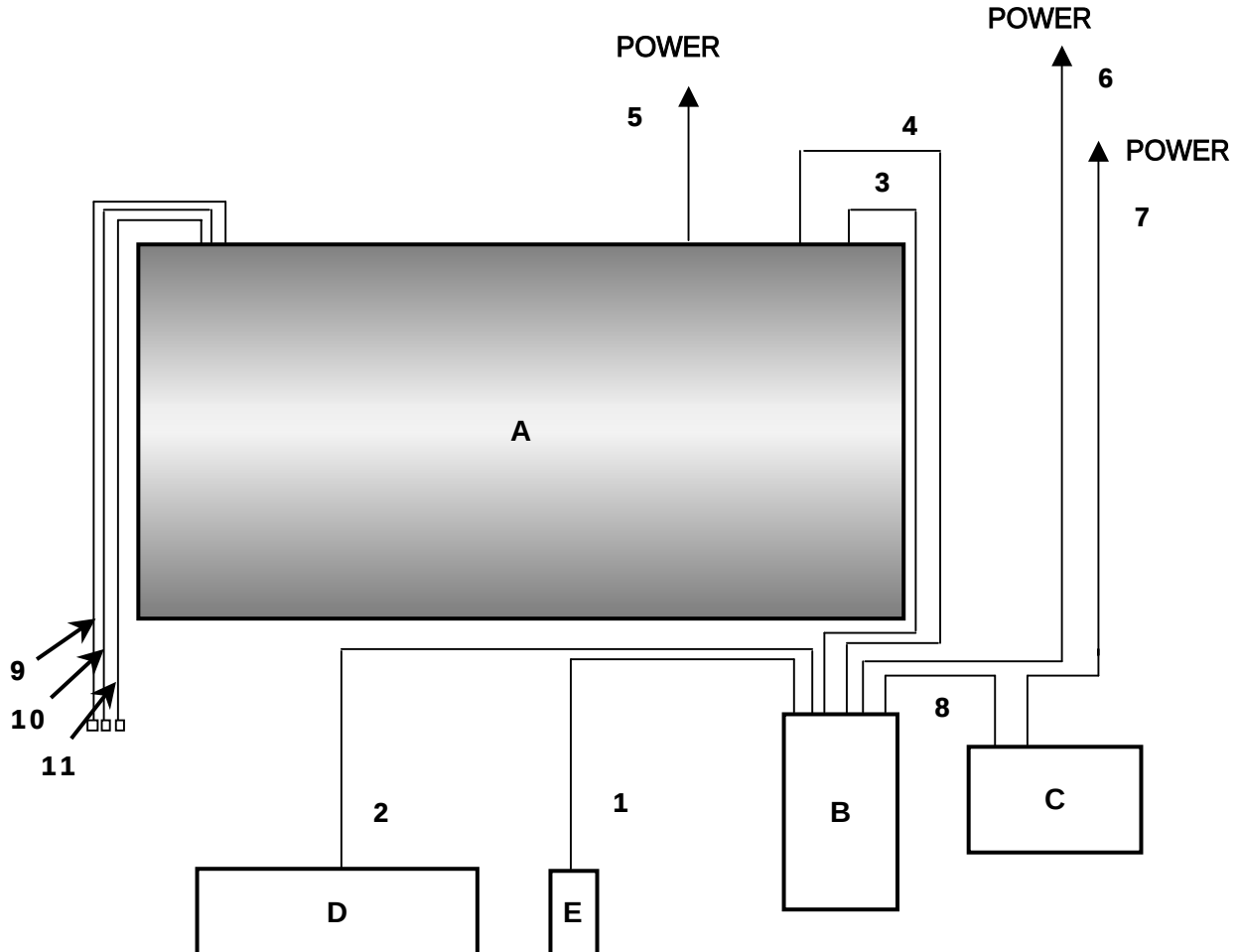
Mark	Item	Model No.	Serial No.	Manufacturer
A	PDP TV Monitor	MZ42S4	-	Samsung
B	Personal Computer	M6200	450092DN101415	Samsung
C	Printer	K10158	CLG001000275	Canon
D	PS/2 Keyboard	SEM-DC8L	DT003859	Samsung
E	PS/2 Mouse	M-S48a	LZA00153252	Samsung
F	AC Adapter(Printer)	K30088	CLG001000275	Canon

* 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)	1.8	N	
6	AC Power Cable(PC)	1.8	N	
7	AC Power Cable(Printer)	1.8	N	
8	Printer Cable	1.5	Y	
9	A/V In Cable	1.2	N	
10	S-Video In Cable	1.2	N	
11	BNC Cable	1.2	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

Configure 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

Operating Mode : PC Video Input

LISN Mode: Live

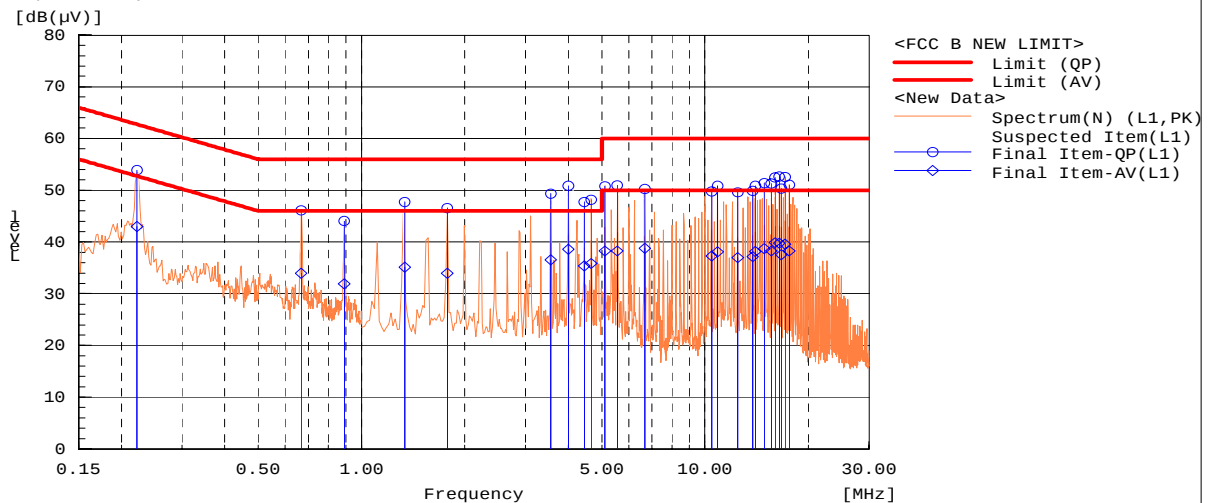
Samsung
- EMC Site -

<<Conducted Emission>>

20 August, 2003 16:29

Model : MZ42S4
 Project Num :
 Operator : KC.MIN
 OP Mode : ANALOG
 Temp, Humidity :

Standard : FCC Class B
 Remark1 : 120V, 60Hz
 Remark2 :
 Remark3 :
 Remark4 :

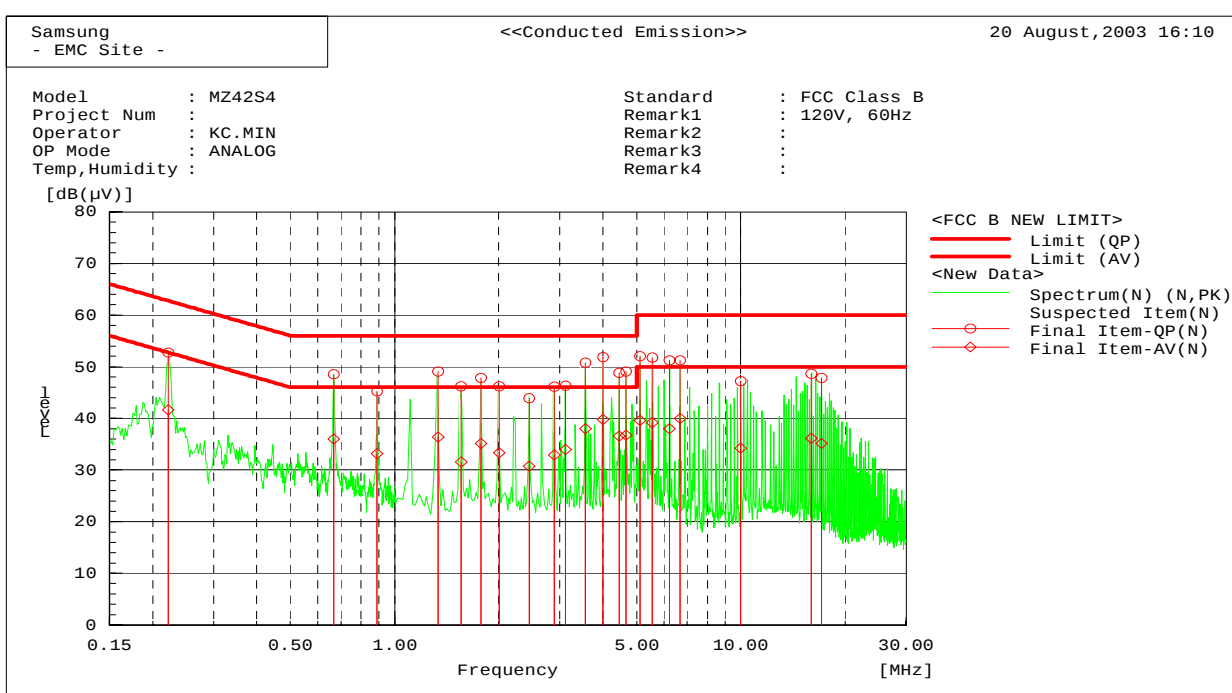


Final Result

--- L1 Phase ---										
No.	Frequency	Reading	Reading	c.f	Result	Result	Limit	Limit	Margin	Margin
	[MHz]	QP	AV		QP	AV	QP	AV	QP	AV
		[dB(μV)]	[dB(μV)]	[dB]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB]	[dB]
1	0.2222	43.6	32.7	10.3	53.9	43.0	62.7	52.7	8.8	9.7
2	0.6667	35.8	23.6	10.3	46.1	33.9	56.0	46.0	9.9	12.1
3	0.8888	33.8	21.6	10.3	44.1	31.9	56.0	46.0	11.9	14.1
4	1.3339	37.4	24.8	10.3	47.7	35.1	56.0	46.0	8.3	10.9
5	1.7781	36.2	23.7	10.3	46.5	34.0	56.0	46.0	9.5	12.0
6	3.5559	39.1	26.2	10.3	49.4	36.5	56.0	46.0	6.6	9.5
7	4.0000	40.5	28.3	10.3	50.8	38.6	56.0	46.0	5.2	7.4
8	4.4448	37.4	25.1	10.3	47.7	35.4	56.0	46.0	8.3	10.6
9	4.6671	37.8	25.4	10.4	48.2	35.8	56.0	46.0	7.8	10.2
10	5.1117	40.4	27.9	10.4	50.8	38.3	60.0	50.0	9.2	11.7
11	5.5556	40.5	27.8	10.4	50.9	38.2	60.0	50.0	9.1	11.8
12	6.6670	39.7	28.3	10.5	50.2	38.8	60.0	50.0	9.8	11.2
13	10.4458	39.2	26.6	10.6	49.8	37.2	60.0	50.0	10.2	12.8
14	10.8898	40.3	27.4	10.6	50.9	38.0	60.0	50.0	9.1	12.0
15	12.4454	38.9	26.3	10.7	49.6	37.0	60.0	50.0	10.4	13.0
16	13.7789	39.2	26.5	10.7	49.9	37.2	60.0	50.0	10.1	12.8
17	14.0010	40.1	27.5	10.7	50.8	38.2	60.0	50.0	9.2	11.8
18	14.8899	40.6	27.9	10.8	51.4	38.7	60.0	50.0	8.6	11.3
19	15.5561	40.5	27.5	10.8	51.3	38.3	60.0	50.0	8.7	11.7
20	16.0014	41.7	29.1	10.8	52.5	39.9	60.0	50.0	7.5	10.1
21	16.4454	41.8	29.0	10.8	52.6	39.8	60.0	50.0	7.4	10.2
22	16.6679	39.5	26.8	10.8	50.3	37.6	60.0	50.0	9.7	12.4
23	17.1120	41.6	28.7	10.9	52.5	39.6	60.0	50.0	7.5	10.4
24	17.5569	40.2	27.4	10.9	51.1	38.3	60.0	50.0	8.9	11.7

Operating Mode : PC Video Input

LISN Mode: Neutral



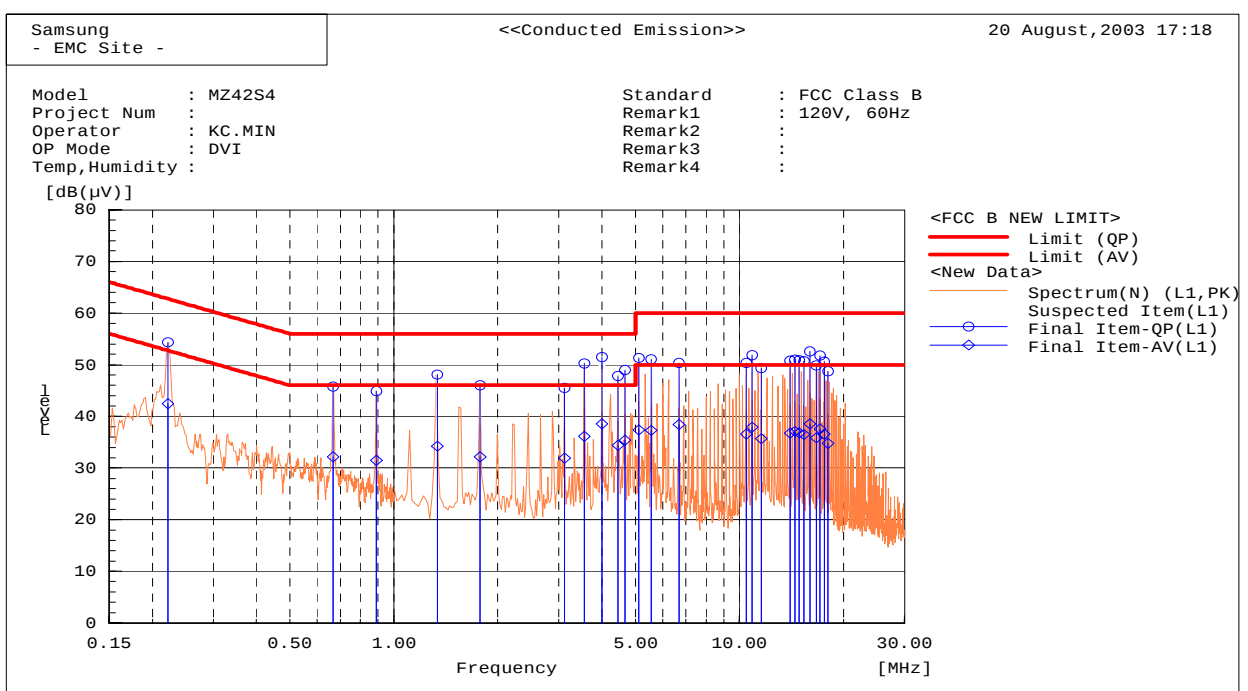
Final Result

--- N Phase ---

No.	Frequency	Reading QP	Reading AV	c.f	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV
	[MHz]	[dB(μV)]	[dB(μV)]	[dB]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB]	[dB]
1	0.22227	42.5	31.5	10.2	52.7	41.7	62.7	52.7	10.0	11.0
2	0.66669	38.3	25.7	10.3	48.6	36.0	56.0	46.0	7.4	10.0
3	0.88886	35.0	22.8	10.3	45.3	33.1	56.0	46.0	10.7	12.9
4	1.33376	38.8	26.1	10.3	49.1	36.4	56.0	46.0	6.9	9.6
5	1.55632	35.9	21.2	10.3	46.2	31.5	56.0	46.0	9.8	14.5
6	1.77817	37.5	24.8	10.3	47.8	35.1	56.0	46.0	8.2	10.9
7	2.00037	35.9	23.0	10.3	46.2	33.3	56.0	46.0	9.8	12.7
8	2.44478	33.6	20.4	10.3	43.9	30.7	56.0	46.0	12.1	15.3
9	2.88901	35.8	22.6	10.3	46.1	32.9	56.0	46.0	9.9	13.1
10	3.11157	36.0	23.6	10.3	46.3	33.9	56.0	46.0	9.7	12.1
11	3.5558	40.5	27.6	10.3	50.8	37.9	56.0	46.0	5.2	8.1
12	4.00039	41.6	29.5	10.3	51.9	39.8	56.0	46.0	4.1	6.2
13	4.44498	38.5	26.2	10.3	48.8	36.5	56.0	46.0	7.2	9.5
14	4.66718	38.7	26.3	10.4	49.1	36.7	56.0	46.0	6.9	9.3
15	5.11159	41.7	29.2	10.4	52.1	39.6	60.0	50.0	7.9	10.4
16	5.55564	41.3	28.8	10.4	51.7	39.2	60.0	50.0	8.3	10.8
17	6.22262	40.8	27.6	10.4	51.2	38.0	60.0	50.0	8.8	12.0
18	6.66702	40.8	29.5	10.4	51.2	39.9	60.0	50.0	8.8	10.1
19	16.0014	38.0	25.4	10.7	48.7	36.1	60.0	50.0	11.3	13.9
20	17.11243	37.1	24.4	10.7	47.8	35.1	60.0	50.0	12.2	14.9
21	10.00063	36.7	23.7	10.5	47.2	34.2	60.0	50.0	12.8	15.8

Operating Mode : Digital Video Interface

LISN Mode: Live



Final Result

--- L1 Phase ---

No.	Frequency	Reading QP	Reading AV	c.f	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV
	[MHz]	[dB(μV)]	[dB(μV)]	[dB]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB]	[dB]
1	0.22223	44.1	32.2	10.3	54.4	42.5	62.7	52.7	8.3	10.2
2	0.6666	35.5	21.9	10.3	45.8	32.2	56.0	46.0	10.2	13.8
3	0.88886	34.6	21.2	10.3	44.9	31.5	56.0	46.0	11.1	14.5
4	1.33394	37.8	24.0	10.3	48.1	34.3	56.0	46.0	7.9	11.7
5	1.77835	35.8	21.9	10.3	46.1	32.2	56.0	46.0	9.9	13.8
6	3.11175	35.2	21.6	10.3	45.5	31.9	56.0	46.0	10.5	14.1
7	3.5558	39.9	25.8	10.3	50.2	36.1	56.0	46.0	5.8	9.9
8	4.00021	41.1	28.2	10.3	51.4	38.5	56.0	46.0	4.6	7.5
9	4.44498	37.5	24.1	10.3	47.8	34.4	56.0	46.0	8.2	11.6
10	4.66718	38.6	25.0	10.4	49.0	35.4	56.0	46.0	7.0	10.6
11	5.11141	40.9	26.9	10.4	51.3	37.3	60.0	50.0	8.7	12.7
12	5.55582	40.6	26.8	10.4	51.0	37.2	60.0	50.0	9.0	12.8
13	6.66721	39.9	27.9	10.5	50.4	38.4	60.0	50.0	9.6	11.6
14	10.44589	39.7	26.0	10.6	50.3	36.6	60.0	50.0	9.7	13.4
15	10.89038	41.3	27.3	10.6	51.9	37.9	60.0	50.0	8.1	12.1
16	11.55532	38.7	25.0	10.6	49.3	35.6	60.0	50.0	10.7	14.4
17	14.00101	40.0	26.0	10.7	50.7	36.7	60.0	50.0	9.3	13.3
18	14.44589	40.2	26.3	10.8	51.0	37.1	60.0	50.0	9.0	12.9
19	14.88998	40.0	26.0	10.8	50.8	36.8	60.0	50.0	9.2	13.2
20	15.33447	39.9	25.7	10.8	50.7	36.5	60.0	50.0	9.3	13.5
21	16.001	41.7	27.8	10.8	52.5	38.6	60.0	50.0	7.5	11.4
22	16.66794	39.1	25.0	10.8	49.9	35.8	60.0	50.0	10.1	14.2
23	17.11243	40.8	26.6	10.9	51.7	37.5	60.0	50.0	8.3	12.5
24	17.55691	39.7	25.6	10.9	50.6	36.5	60.0	50.0	9.4	13.5
25	18.0014	37.8	23.9	10.9	48.7	34.8	60.0	50.0	11.3	15.2

Operating Mode : Digital Video Interface

LISN Mode: Neutral

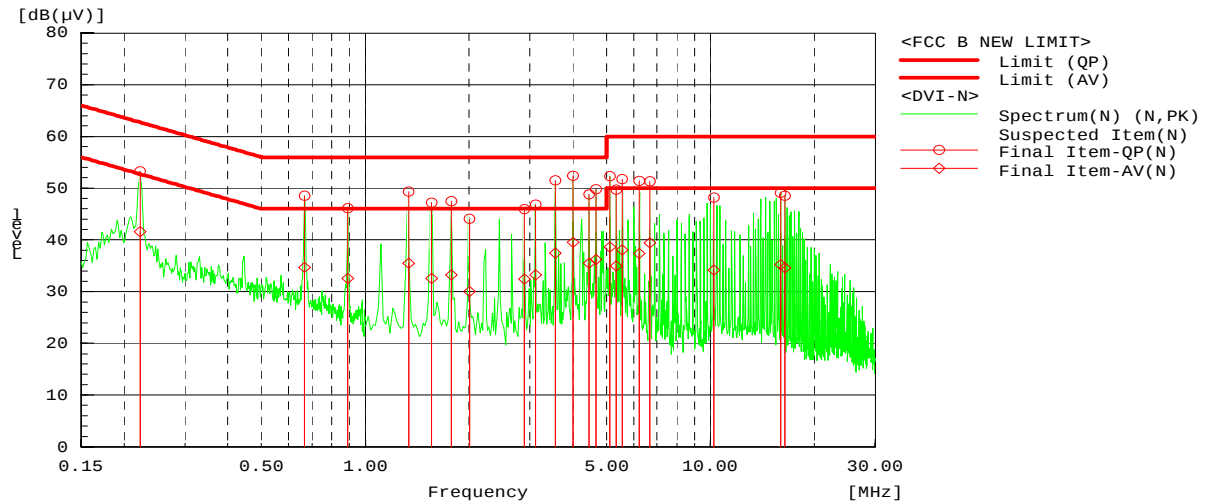
Samsung
- EMC Site -

<<Conducted Emission>>

20 August, 2003 16:53
DVI-N.dat

Model : MZ42S4
Project Num :
Operator : KC.MIN
OP Mode : DVI
Temp, Humidity :

Standard : FCC Class B
Remark1 : 120V, 60Hz
Remark2 :
Remark3 :
Remark4 :



Final Result

--- N Phase ---

No.	Frequency	Reading QP	Reading AV	c.f	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV
	[MHz]	[dB(μV)]	[dB(μV)]	[dB]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB]	[dB]
1	0.22232	43.0	31.4	10.2	53.2	41.6	62.7	52.7	9.5	11.1
2	0.6667	38.2	24.3	10.3	48.5	34.6	56.0	46.0	7.5	11.4
3	0.88886	35.8	22.2	10.3	46.1	32.5	56.0	46.0	9.9	13.5
4	1.33394	39.1	25.2	10.3	49.4	35.5	56.0	46.0	6.6	10.5
5	1.55596	36.9	22.2	10.3	47.2	32.5	56.0	46.0	8.8	13.5
6	1.77799	37.1	23.0	10.3	47.4	33.3	56.0	46.0	8.6	12.7
7	2.00055	33.7	19.7	10.3	44.0	30.0	56.0	46.0	12.0	16.0
8	2.88937	35.7	22.1	10.3	46.0	32.4	56.0	46.0	10.0	13.6
9	3.11157	36.6	22.9	10.3	46.9	33.2	56.0	46.0	9.1	12.8
10	3.55598	41.2	27.1	10.3	51.5	37.4	56.0	46.0	4.5	8.6
11	4.00057	42.1	29.2	10.3	52.4	39.5	56.0	46.0	3.6	6.5
12	4.4448	38.5	25.2	10.3	48.8	35.5	56.0	46.0	7.2	10.5
13	4.667	39.4	25.8	10.4	49.8	36.2	56.0	46.0	6.2	9.8
14	5.11177	41.8	28.2	10.4	52.2	38.6	60.0	50.0	7.8	11.4
15	5.33362	39.3	24.6	10.4	49.7	35.0	60.0	50.0	10.3	15.0
16	5.55582	41.4	27.7	10.4	51.8	38.1	60.0	50.0	8.2	11.9
17	6.22262	41.0	26.9	10.4	51.4	37.3	60.0	50.0	8.6	12.7
18	6.66721	40.9	29.0	10.4	51.3	39.4	60.0	50.0	8.7	10.6
19	16.001	38.4	24.5	10.7	49.1	35.2	60.0	50.0	10.9	14.8
20	16.44549	37.8	23.9	10.7	48.5	34.6	60.0	50.0	11.5	15.4
21	10.22345	37.7	23.7	10.5	48.2	34.2	60.0	50.0	11.8	15.8

3.2 RADIATED EMISSION MEASUREMENT

3.2.1 Test Procedure

Configure the EUT System in accordance with ANSI C63.4-1992 section 8 and 12.2.

Power cords for the EUT System are connected to 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.

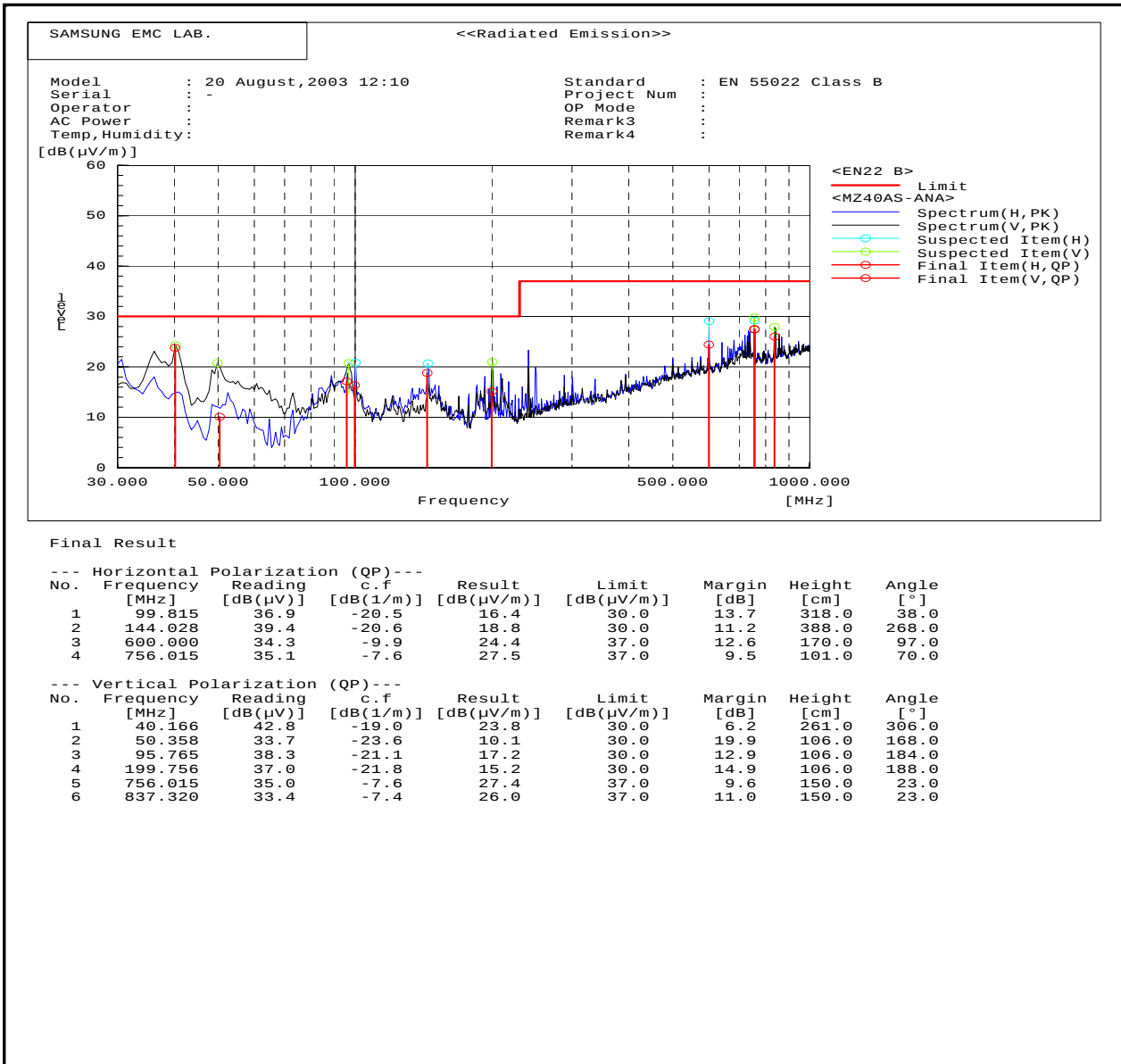
The spectrum analyzer is scanned from 30MHz to 2,000MHz.

And, detecting wave 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

EUT Mode : PC Video Input

Test Distance : 10M



[1GHz ~ 2GHz] : 3m Measurement

Test Distance : 3m

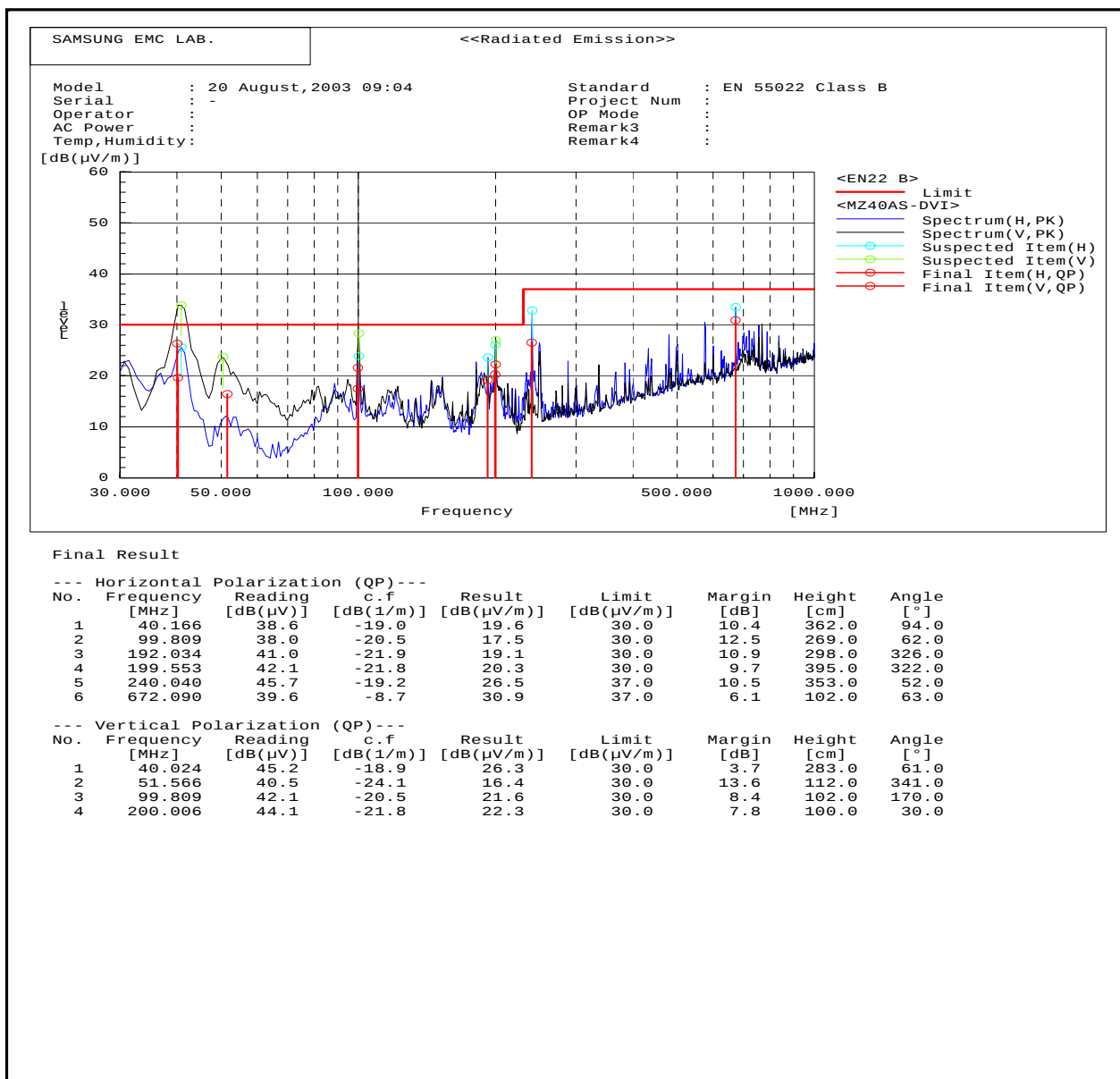
Detector Mode : Peak

: There was no found any emission during the above test.

3.2.2 Test Results

EUT Mode : Digital Video Interface

Test Distance : 10M



[1GHz ~ 2GHz] : 3m Measurement

Test Distance : 3m

Detector Mode : Peak

: There was no found any emission during the above test.

Test Set up Photographs

[AC POWERLINE CONDUCTED EMISSION MEASUREMENT]



Test Set up Photographs

[RADIATED EMISSION MEASUREMENT]



EUT Photographs

[Label and Label position]



SAMSUNG ELECTRONICS CANADA INC.
7037 Financial Drive Mississauga, Ontario L5N 6R3 CANADA

SAMSUNG ELECTRONICS AMERICA INC.
105 CHALLENGER ROAD, RIDGEFIELD PARK N. J. 07660-0511, U. S. A

Plasma DISPLAY
MODEL : SPP4251
TYPE. NO : MZ42S4
RATED INPUT
120 ~ ,60Hz 330W
CHASSIS NO.: D65A

This device complies with part 15 of the FCC Rules. Operation 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.



LISTED
77HN
E215927



LR38329

FCC ID : A3LSPP4251

Serial NO.
XXXXXXXXXXXXXXXXXXXX

Manufactured/Fabrique : XX. XX. 2003
MADE IN SUWON KOREA(SEC)
FABRIQUE EN SUWON COREE

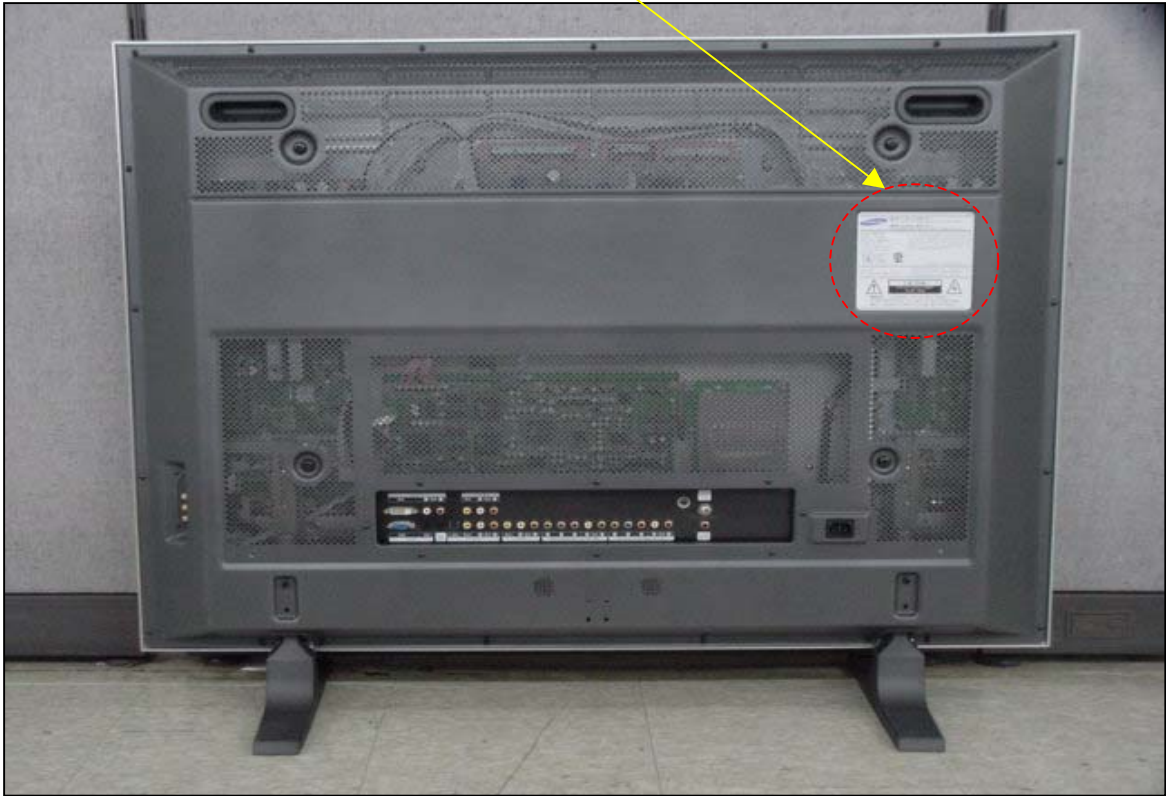


CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

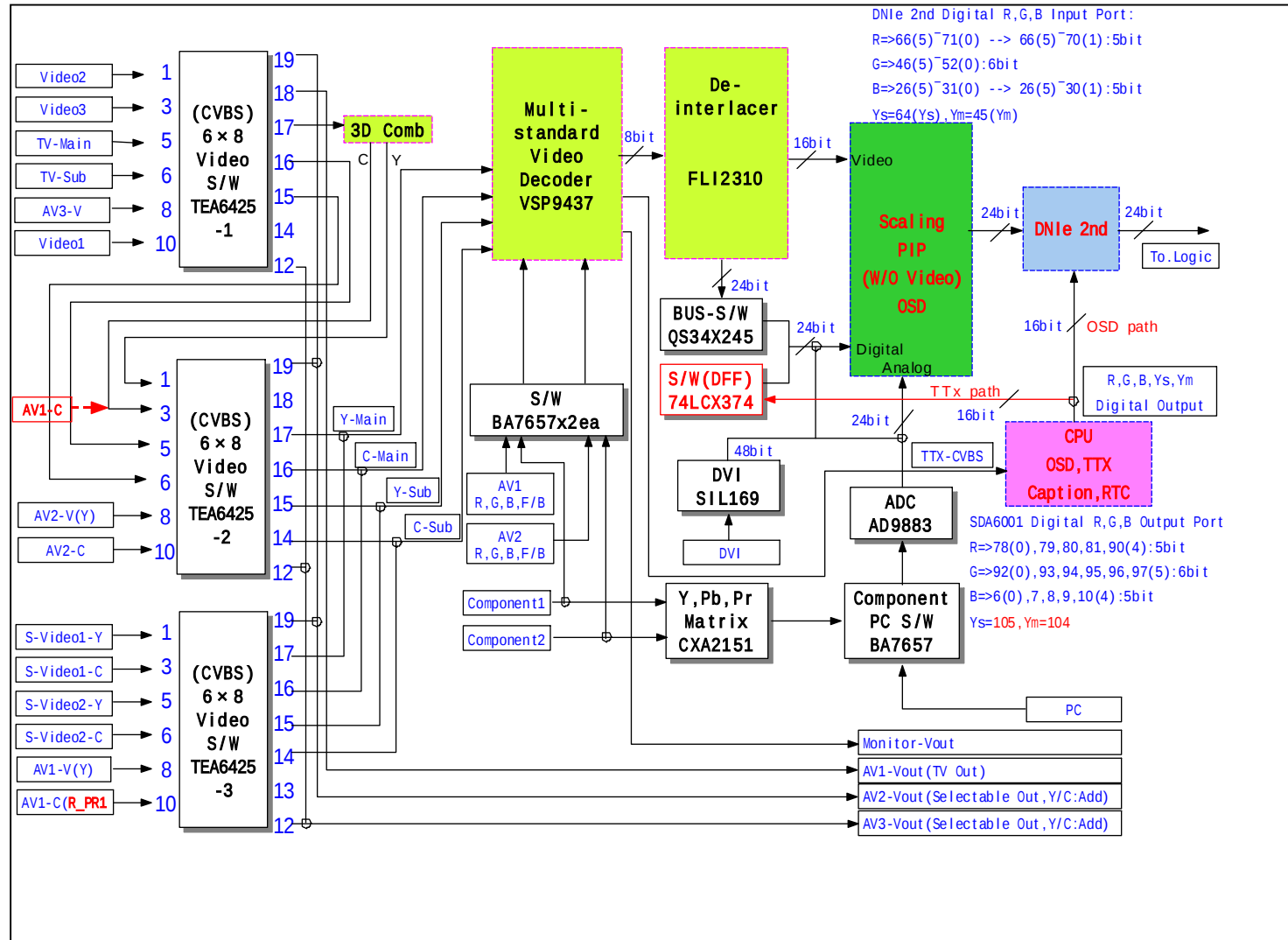


**WARNING : TO PREVENT FIRE OR SHOCK HAZARD
DO NOT OPEN EXPOSE THIS UNIT TO RAIN OR MOISTURE**

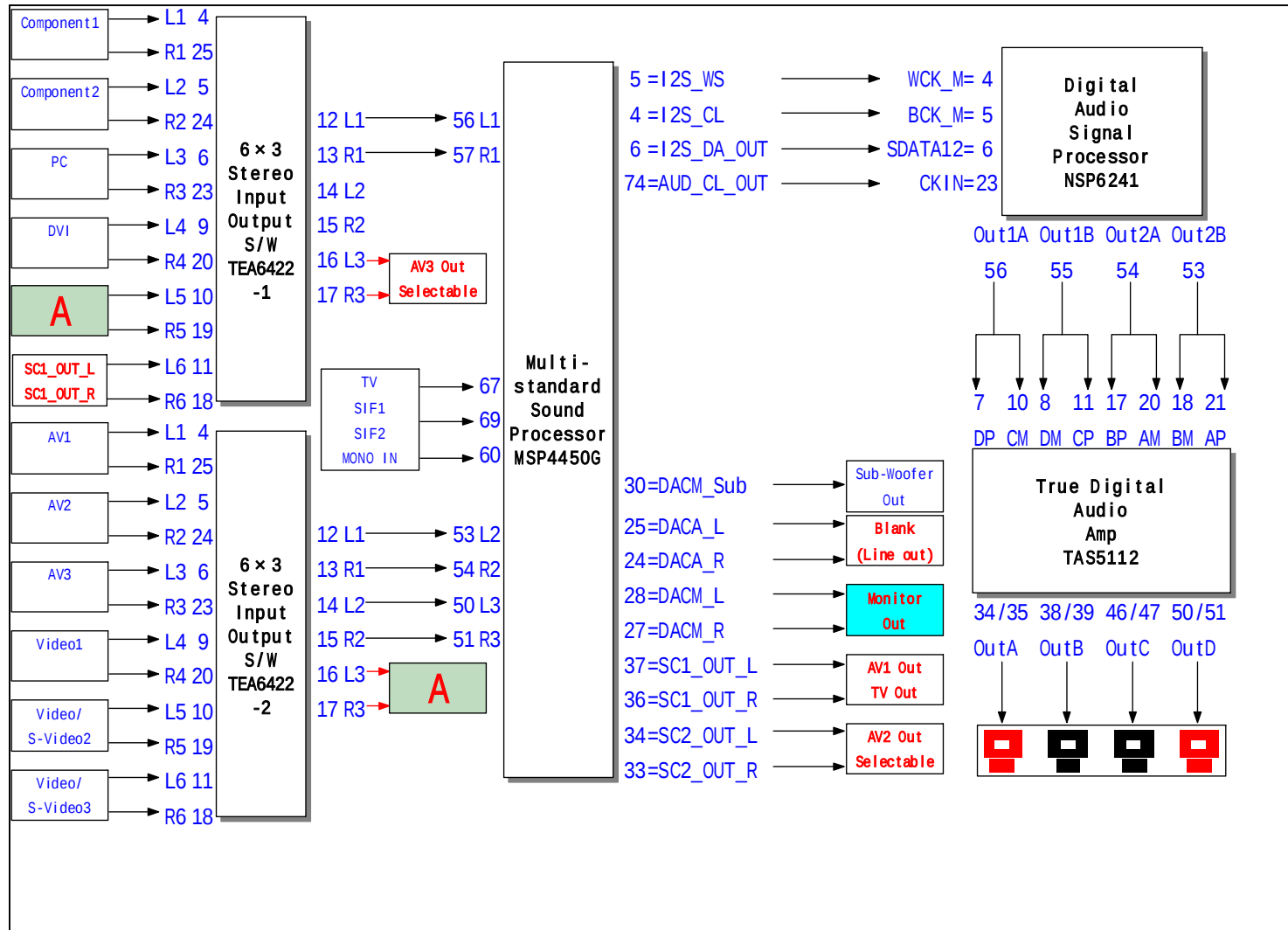
AVIS : RISQUE DE CHOC ELECTRIQUE-NE PAS OUVRIR



Block Diagram-Video Switching Part



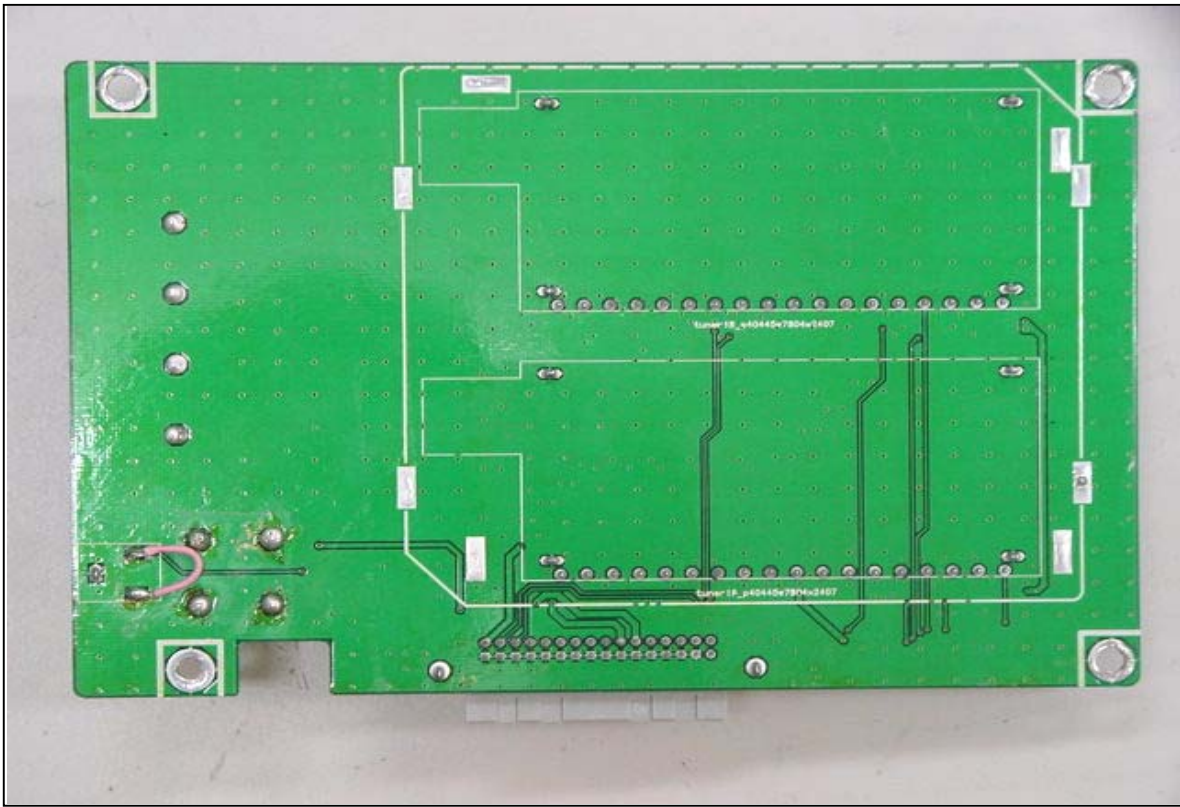
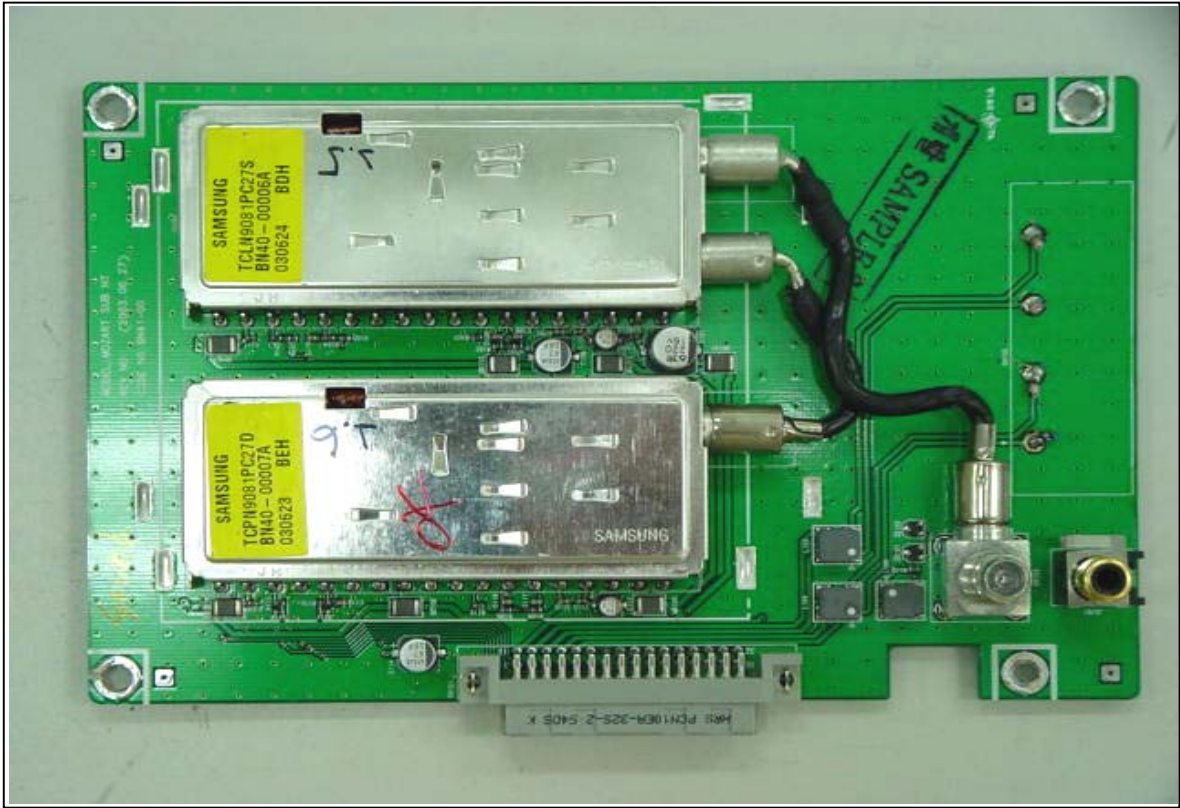
Block Diagram-Audio Switching Part



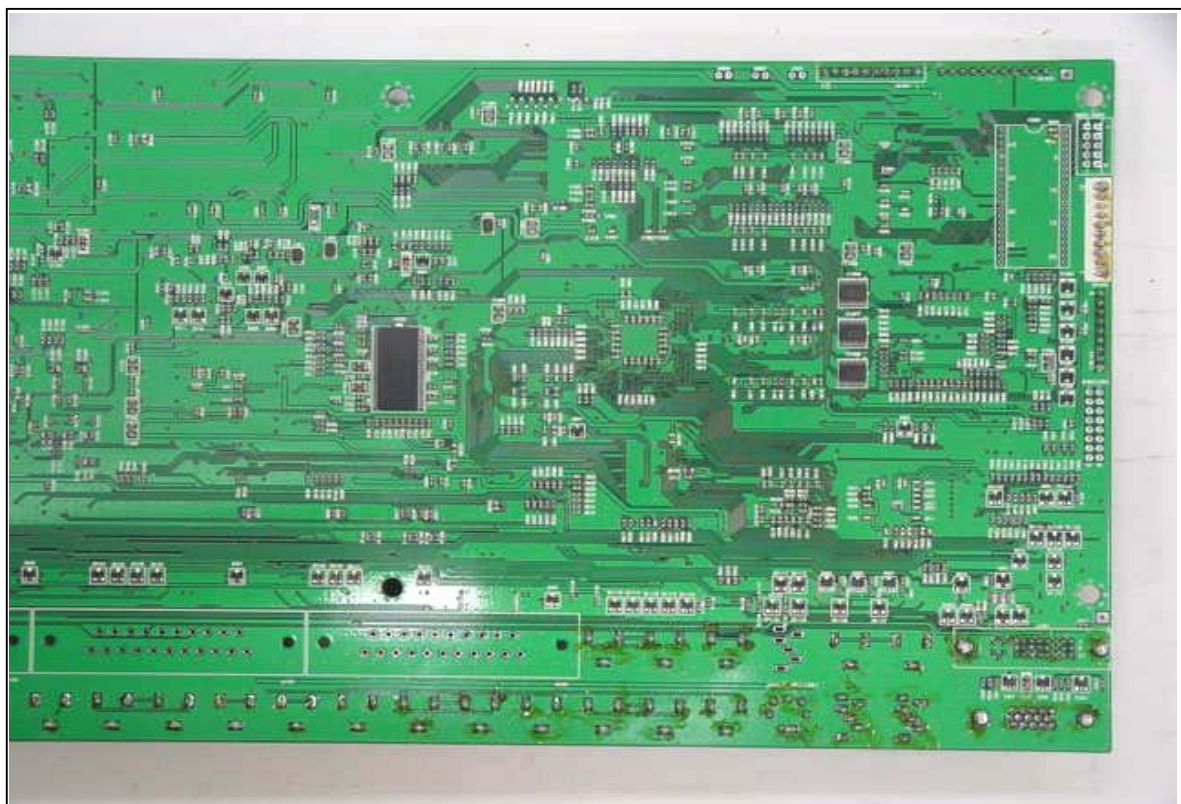
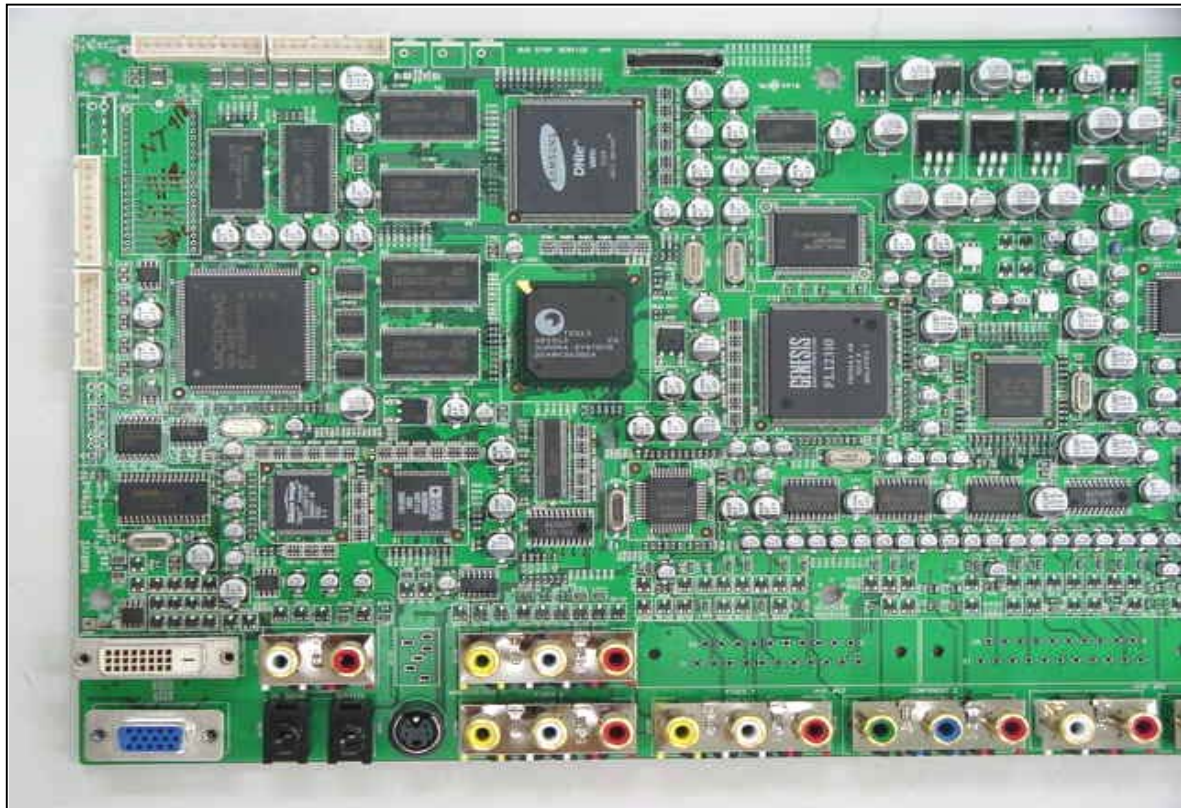
EUT Photographs



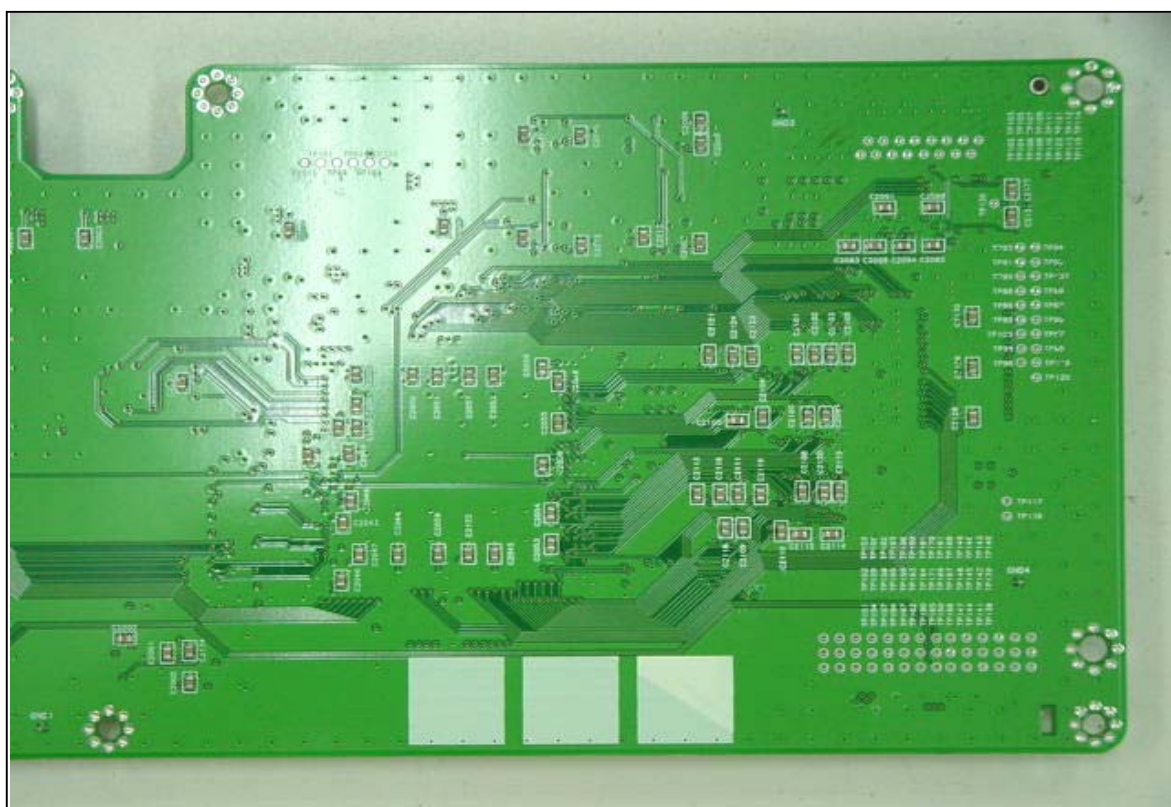
EUT Photographs



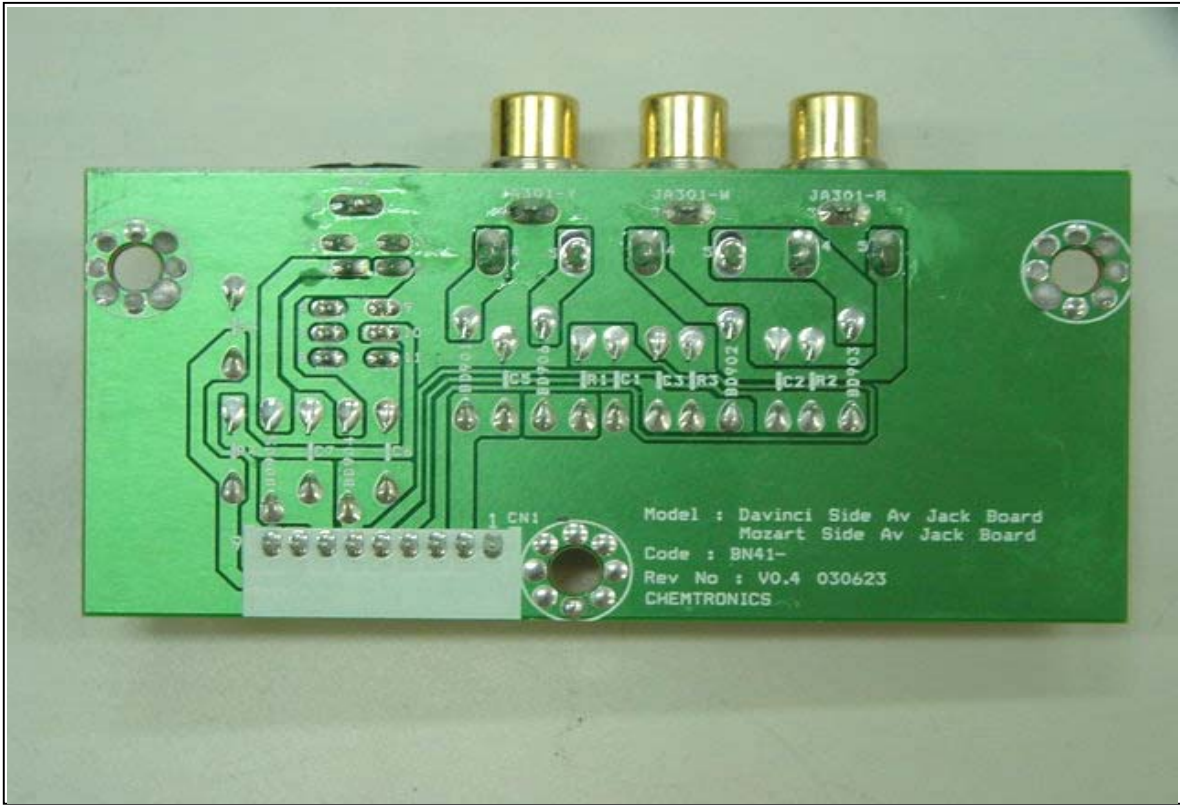
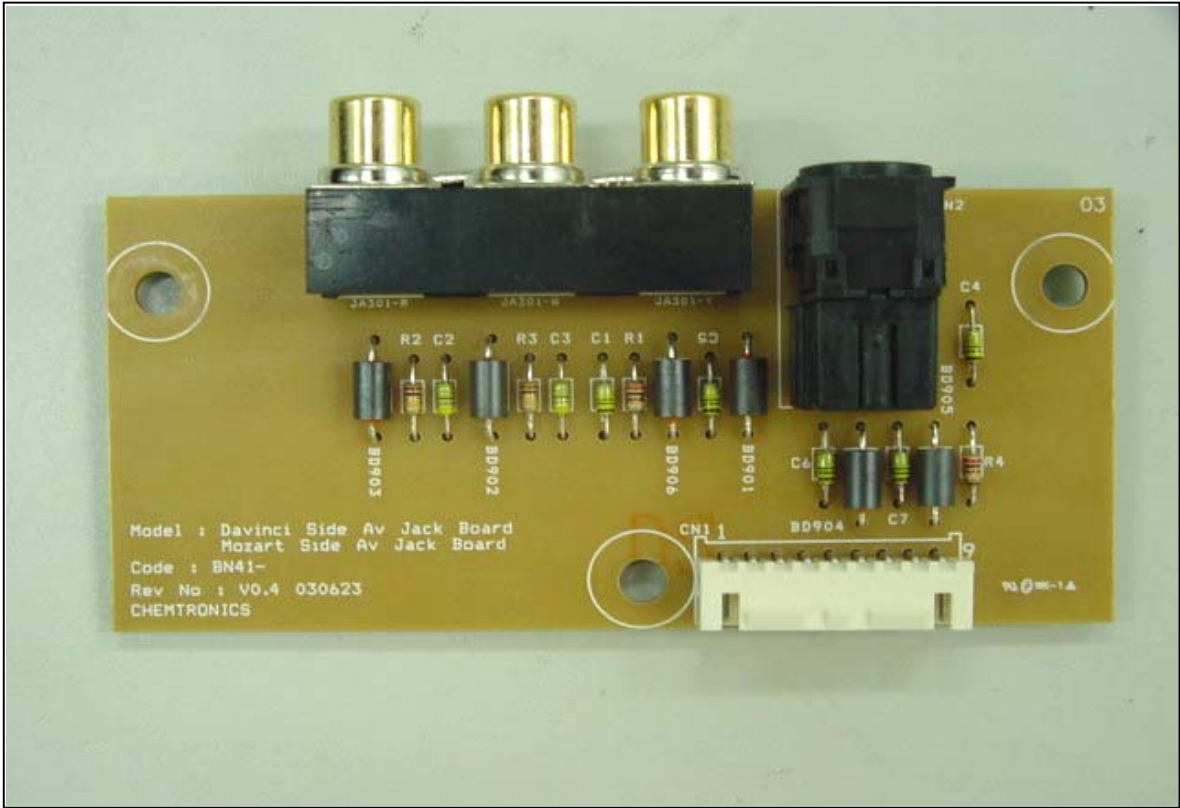
EUT Photographs



EUT Photographs



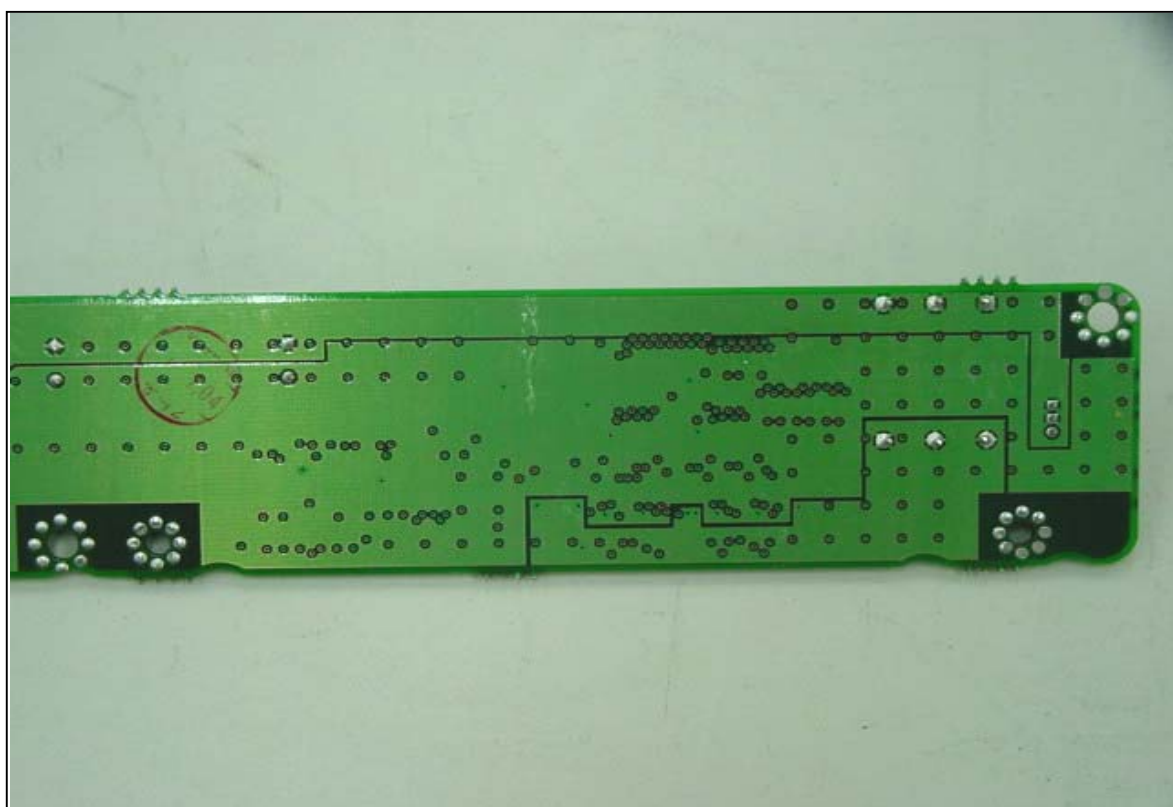
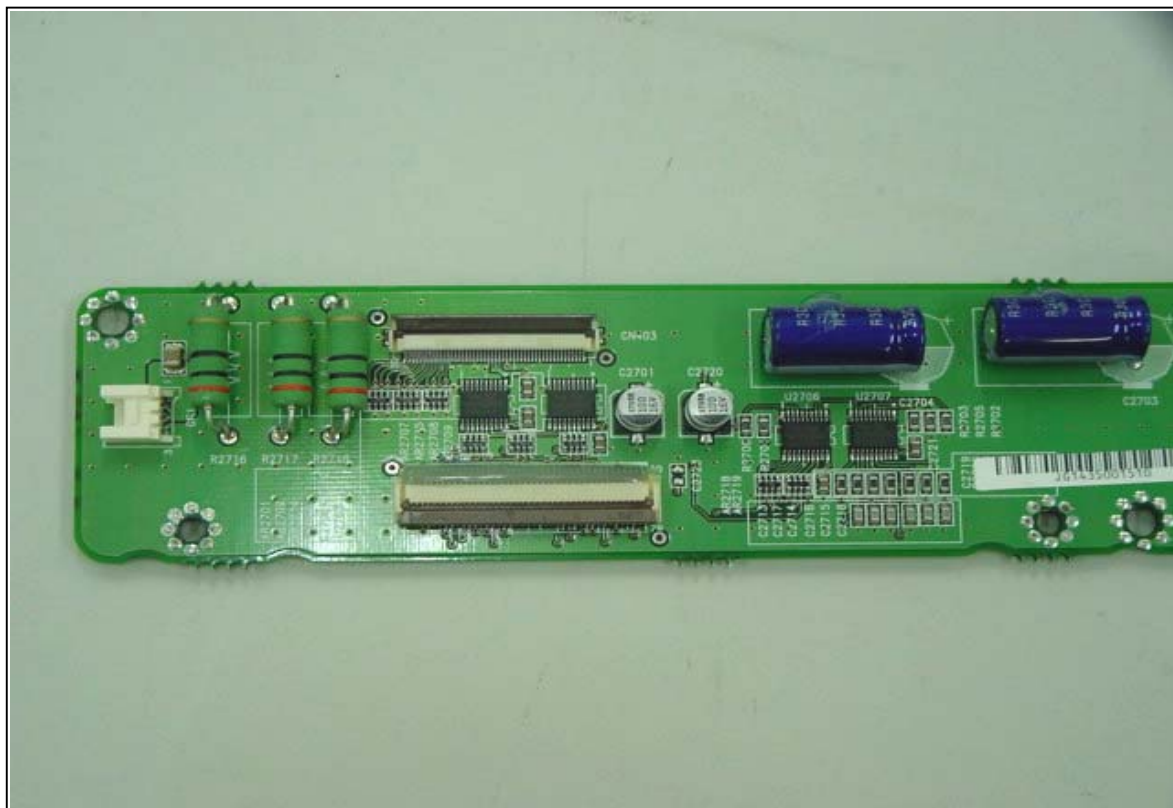
EUT Photographs



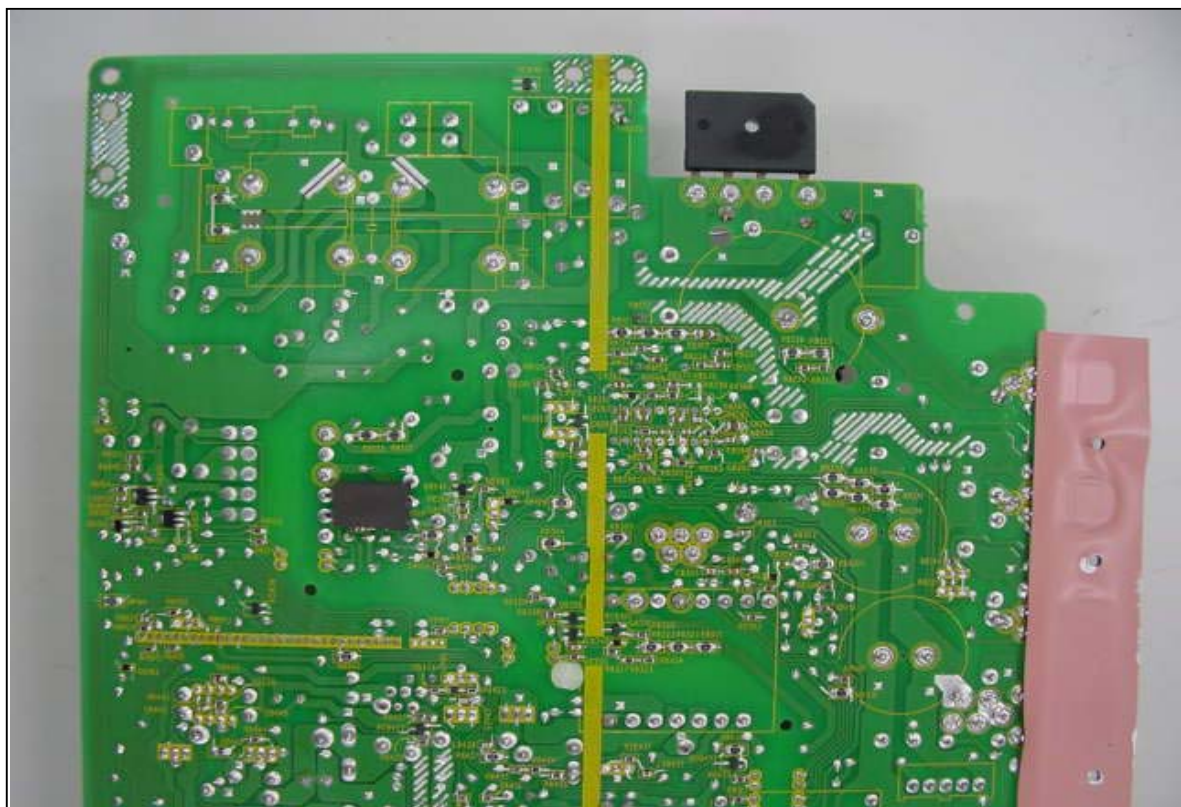
EUT Photographs



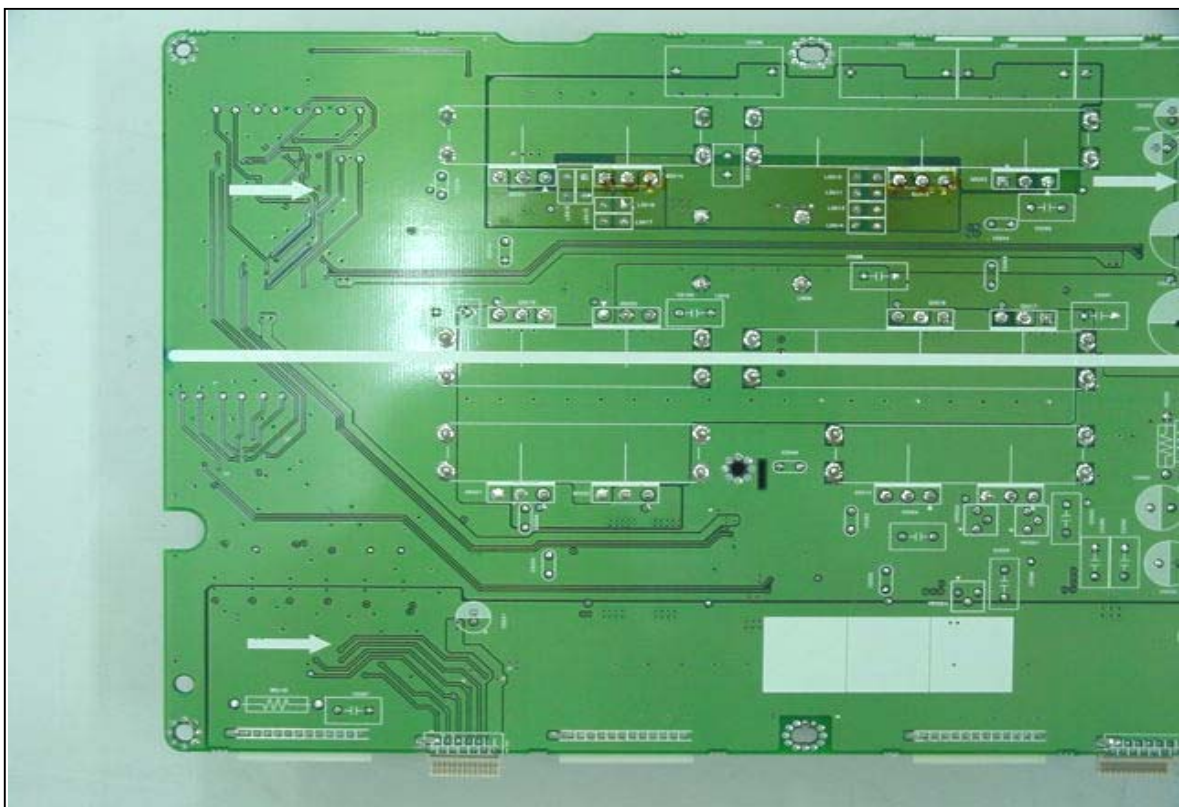
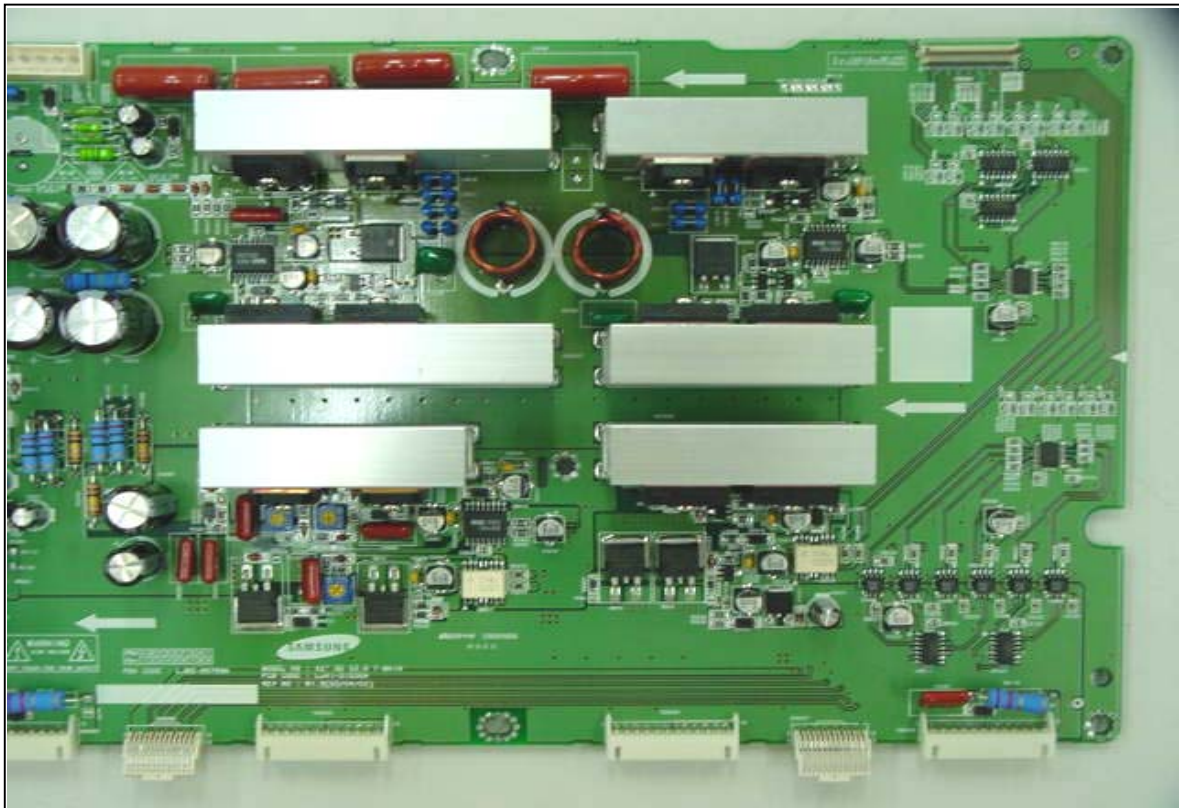
EUT Photographs



EUT Photographs



EUT Photographs



EUT Photographs

