ESTECH Co., Ltd. 3rd Fl., Chungdam Bldg., 119-1 Chungdam-dong, Kangnamgu, Seoul	MIC KOLAS VCI FC	Electromagnetic Interference Test Report

Compliance Test Report for FCC

Report Number		ESTF150402-001			
Applicant	Company name	LG Electronics USA			
	Address	2000 Millbrook Dr Lincolnshire, IL 60069 United states			
	Telephone	847-941-8373			
Product	Product name	Plasma Monitor			
	Model No.	MU-42PZ90XV	Manufacturer	LG Electronics Inc.	
	Serial No.	206KT00009	Country of origin	KOREA	
Test date	2004-02-13		Date of issue	2004-02-20	
Testing location	ESTECH. Co., Ltd. 97-1 Hoiuk-Ri Majang-Myon, Icheon-city, KyungKi-Do, Korea				
Standard	FCC PART 15 2002 , ANSI C 63.4 2001				
Test item	■ Conducted Emission	☐ Class A	■ Class B	Test result	OK
	■ Radiated Emission	☐ Class A	■ Class B	Test result	OK
Measurement facility registration number		94696			
Tested by	Senior Engineer J.M. Yang		(Signature)		
Reviewed by	Director T.K. Lee		(Signature)		
Abbreviation	OK, Pass = Passed, Fail = Failed, N/A = not applicable				

* Note

- This test report is not permitted to copy partly without our permission
- This test result is dependent on only equipment to be used
- This test result based on a single evaluation of one sample of the above mentioned

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1. Laboratory Information

1.1 General

This EUT (Equipment Under Test) has been shown to be capable of compliance with the applicable technical standards and is tested in accordance with the measurement procedures as indicated in this report.
ESTECH Lab attests to accuracy of test data. All measurement reported herein were performed by ESTECH Co., Ltd.
ESTECH Lab assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

1.2 Test Lab.

Corporation Name : ESTECH Co. Ltd

Head Office : 3 rd Fl., Chungdam Bldg., 119-1 Chungdam-dong Kangnam-gu , Seoul, Korea
(Safety & Telecom. Test Lab)

EMC Test Lab : 58-1 Osan-Ri, GaNam-Myon, YeoJoo-Gun, KyungKi-Do, Korea
97-1 Hoiuk-Ri Majang-Myon, Icheon-city, KyungKi-Do, Korea

1.3 Official Qualification(s)

MIC : Granted Accreditation from Ministry of Information & Communication for EMC, Safety and Telecommunication

KOLAS : Accredited Lab By Korea Laboratory Accreditation Schema base on CENELEC requirements

FCC : Filed Laboratory at Federal Communications Commission

VCCI : Granted Accreditation from Voluntary Control Council for Interference from ITE

2. Description of EUT

2.1 Summary of Equipment Under Test

Product	: Plasma Monitor
Model Number	: MU-42PZ90XV
Serial Number	: 206KT00009
Manufacturer	: LG Electronics Inc.
Country of origin	: KOREA
Rating	: AC110V / 60Hz
Receipt Date	: 2004-02-13

2.2 General descriptions of EUT

The plasma display panel is composed of up to 2.2 million cells. A few cell defects normally occur in the manufacturing process, meaning that several colored dots visible on the screen should be acceptable. This also occurs in other manufacturers' products and the dots appearing does not mean that this product is defective. Thus a few cell defects are not sufficient cause for the display to be exchanged or returned. Please note that our production technology is designed to minimize cell defects.

- Width(inches / mm) : 40.7 / 1033
- Height(inches / mm) : 24.5 / 622
- Depth(inches / mm) : 3.2 / 81
- Weight(pounds / kg) : 78.2 / 35.5
- Power requirement : AC100-240V ~50 / 60Hz
- Resolution : 1280 × 1024 (Dot)

3. Test Standards

Test Standard : FCC PART 15 (2002)

This Standard sets out the regulations under which an intentional, unintentional, or incidental radiator may be operated without an individual license. It also contains the technical specifications, administrative requirements and other conditions relating to the marketing of Part 15 devices.

Test Method : ANSI C 63.4 (2001)

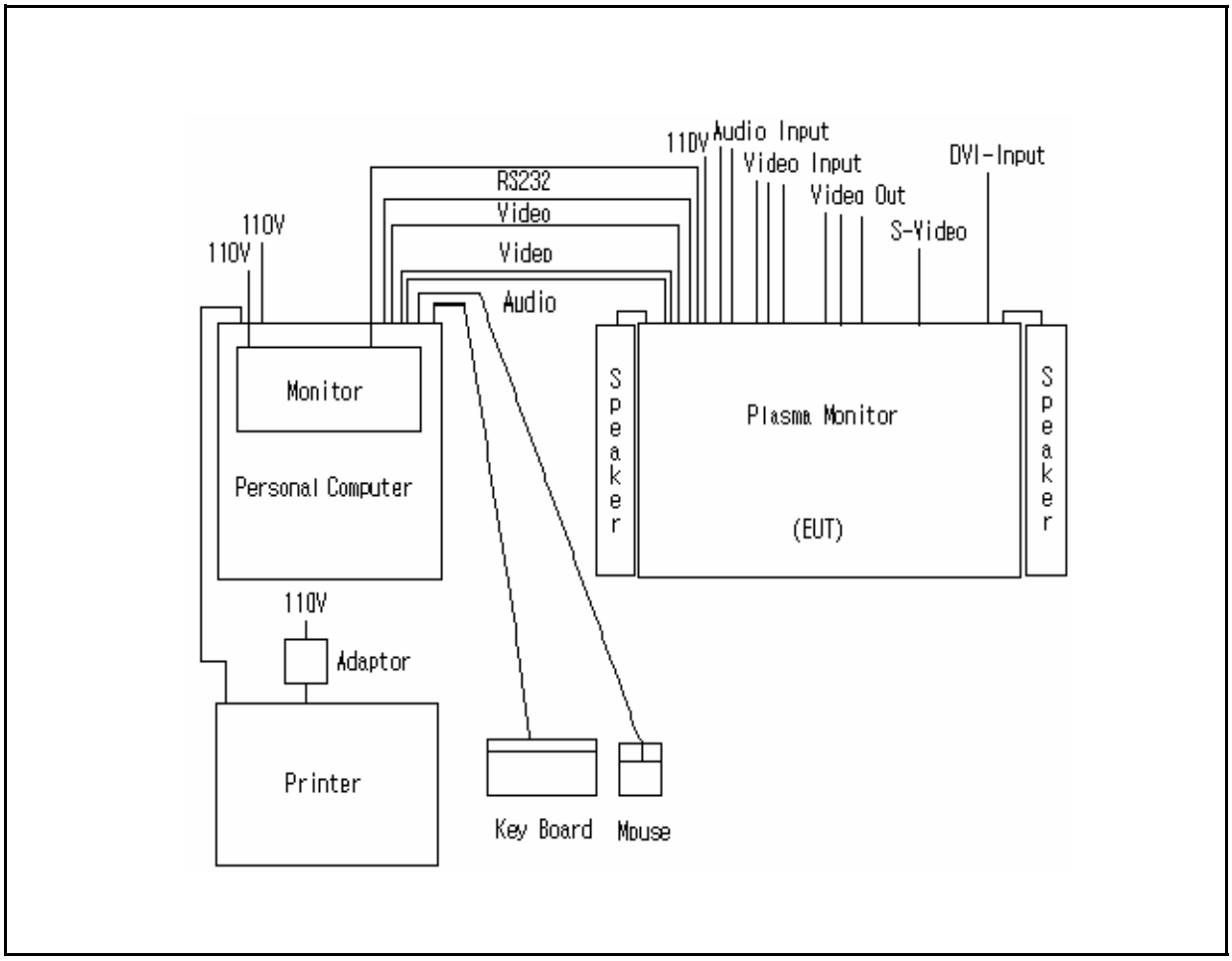
This standard sets forth uniform methods of measurement of radio-frequency (RF) signals and noise emitted from both unintentional and intentional emitters of RF energy in the frequency range 9 kHz to 40 GHz. Methods for the measurement of radiated and AC power-line conducted radio noise are covered and may be applied to any such equipment unless otherwise specified by individual equipment requirements. These methods cover measurement of certain decides that deliberately radiate energy, such as intentional emitters, but does not cover licensed transmitters. This standard is not intended for certification/approval of avionic equipment or for industrial, scientific, and medical (ISM) equipment These method apply to the measurement of individual units or systems comprised of multiple units

4. Measurement Condition

4.1 EUT Operation.

* The EUT was in the following operation mode during all testing
* The operational conditions of the EUT was determined by the manufacturer according to the typical use of the EUT with respect to the expected hightest level of emission
* After seting as test arrangment diagram, we test EUT under continuous displaying "H" character and playing Audio/Video

4.2 Configuration and Peripherals



4.3 EUT and Support equipment

Equipment Name	Model Name	S/N	Manufacturer	Remark (FCC ID)
Plasma Monitor	MU-42PZ90XV	206KT00009	LG Electronics Inc.	EUT
Speaker	AP-42SA12	402MJO1848	LG Electronics Inc.	-
Personal Computer	OptiplexGX50	NONE	DELL	-
Monitor	D8897	CN11104168	Hewlett Packad	-
Keyboard	SEM-DT35	32006557	Samsung Electro-Mechanics Co., Ltd.	-
Mouse	M-S48a	HCA31409057	Logitech	-
Printer	C6414J	TH18M149P2	Hewlett Packad	-
Adaptor	C6409-60152	C1H14B	YOKOGAWA	-

4.4 Cable Connecting

Start Equipment		End Equipment		Cable Standard		Remark
Name	I/O port	Name	I/O port	Length	Shielded	
Plasma Monitor	RGB Input	Personal Computer	Video out	4.0	Y	-
Plasma Monitor	Audio-in	Personal Computer	Audio-out	2.0	N	-
Plasma Monitor	RS-232C	Personal Computer	Serial	2.0	Y	-
Plasma Monitor	RGB Output	Monitor	RGB Input	2.0	N	-
Plasma Monitor	S-Video	-	-	2.0	N	-
Plasma Monitor	DVI	-	-	2.0	Y	-
Plasma Monitor	Audio Input	-	-	2.0	N	-
Plasma Monitor	Component	-	-	2.0	Y	-
Plasma Monitor	Video Input	-	-	2.0	Y	-
Plasma Monitor	Video Output	-	-	2.0	Y	-
Plasma Monitor	External Speaker	Speaker	-	2.0	N	-
Personal Computer	PS/2 Keyboard	Keyboard	PS/2 Keyboard	2.0	N	-
Personal Computer	PS/2 Mouse	Mouse	PS/2 Mouse	2.0	N	-
Personal Computer	Parallel	Printer	Parallel	2.0	Y	-

5. Measurement of radiated disturbance

Above 30 MHz Electric Field strength was measured in accordance with FCC Part 15 (2002) & ANSI C 63.4 (2001). The test setup was made according to FCC Part 15 (2002) & ANSI C 63.4 (2001) on an open test site, which allows a 3m distance measurement. The EUT was placed in the center of wooden turntable. The height of this table was 0.8m. The measurement was conducted with both horizontal and vertical antenna polarization. The turntable has fully rotated. For further description of the configuration refer to the picture of the test set-up.

5.1 Measurement equipments

Equipment Name	Type	Manufacturer	Serial No.	Next Calibration date
Receiver	ESPC	Rohde & Schwarz	845296/021	2004. 6. 17
Spectrum Analyzer	R3261B	ADVANTEST	01720302	2005. 2. 12
LogBicon Antenna	VULB 9160	S/B	3107	2004. 6. 13
Turn Table	2087	EMCO	2129	-
Antenna Mast	2070-01	EMCO	9702-203	-
ANT Mast Controller	2090	EMCO	1535	-
Turn Table Controller	2090	EMCO	1535	-

5.2 Environmental Condition

Test Place : Open site(3m)

Temperature (°C) : 7 ℃

Humidity (%) : 39 %

5.3 Test data

Measurement Distance : 3 m

Frequency (MHz)	Reading (dBμV)	Position (V/H)	Height (m)	Correction Factor		Result Value		
				Ant Factor (dB)	Cable (dB)	Limit (dBμV/m)	Result (dBμV/m)	Margin (dBμV/m)
32.00	21.40	V	1.0	12.26	0.9	40.0	34.55	-5.45
46.09	18.90	H	2.9	12.76	1.0	40.0	32.67	-7.33
47.74	17.20	H	2.9	12.77	1.0	40.0	30.99	-9.01
56.94	18.40	V	1.0	12.42	1.1	40.0	31.93	-8.07
79.56	17.20	H	2.6	9.95	1.3	40.0	28.45	-11.55
111.77	16.70	V	1.0	11.10	1.6	43.5	29.41	-14.09
144.01	14.60	H	1.9	13.40	1.9	43.5	29.87	-13.63
155.19	12.30	H	1.8	13.94	1.9	43.5	28.15	-15.35
190.84	20.70	H	1.7	11.12	2.2	43.5	34.00	-9.50
218.67	16.80	H	1.5	10.78	2.3	43.5	29.87	-13.63
259.61	21.40	H	1.3	12.14	2.4	46.0	35.95	-10.05
271.00	10.10	V	1.0	12.49	2.5	46.0	25.10	-20.90
346.07	10.10	H	1.2	14.22	2.9	46.0	27.18	-18.82
420.03	19.20	H	1.3	15.70	3.2	46.0	38.10	-7.90
490.03	18.40	V	1.0	16.98	3.5	46.0	38.89	-7.11
547.71	9.60	H	1.1	17.87	3.7	46.0	31.16	-14.84
700.02	12.70	V	1.0	20.14	4.3	46.0	37.12	-8.88
770.01	13.10	V	1.6	21.51	4.5	46.0	39.13	-6.87
840.04	14.10	V	1.6	22.02	4.8	46.0	40.92	-5.08
Remark	H : Horizontal, V : Vertical							

6. Measurement of conducted disturbance

The continuous disturbance voltage of AC Mains in the frequency from 0.15 to 30 MHz was measured in accordance to FCC Part 15 (2002) & ANSI C 63.4 (2001) The test setup was made according to FCC Part 15 (2002) & ANSI C 63.4 (2001) in a shielded. The EUT was placed on a non-conductive table at least 80 above the ground plan. A grounded vertical reference plane was positioned in a distance of 40cm from the EUT. The distance from the EUT to other metal surfaces was at least 0.8m. The EUT was only earthen by its power cord through the line impedance stabilizing network. The power cord has been bundled to a length of 1.0m.. The test receiver with Quasi Peak detector complies with CISPR 16.

6.1 Measurement equipments

Equipment Name	Type	Manufacturer	Serial No.	Next Calibration date
LISN	ESH3-Z5	Rohde & Schwarz	838979/010	2005. 2. 12
LISN	NNLA8120A	Schwarzbeck	NONE	2005. 2. 12
TEST Receiver	ESPC	Rohde & Schwarz	845296/021	2004. 6. 17
Pulse Limiter	ESH3Z2	Rohde & Schwarz	NONE	2004. 6. 17

6.2 Environmental Condition

Test Place : Shield Room

Temperature (°C) : 19℃

Humidity (%) : 21 %

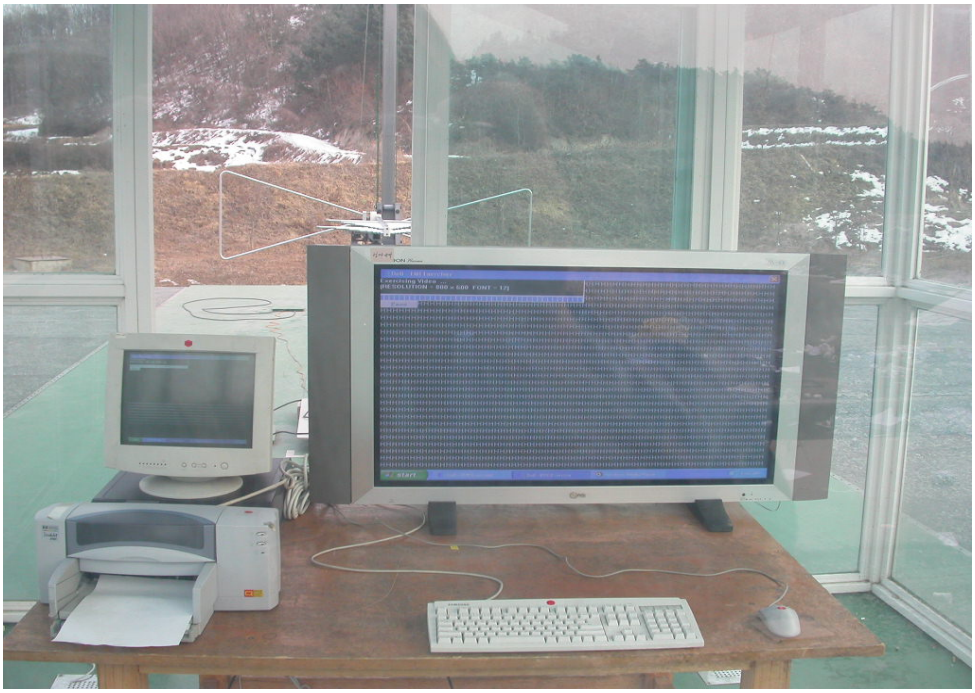
6.3 Test data

Frequency (MHz)	Correction Factor		Line (H/N)	Quasi-peak Value			Average Value		
	Lisn (dB)	Cable (dB)		Limit (dBμV)	Reading (dBμV)	Result (dBμV)	Limit (dBμV)	Reading (dBμV)	Result (dBμV)
0.150	0.07	0.0	N	66.00	50.14	50.21	56.00	42.33	42.40
0.170	0.07	0.0	H	64.94	46.90	46.98	54.94	29.09	29.17
0.192	0.07	0.0	H	63.95	48.26	48.36	53.95	39.95	40.05
0.275	0.07	0.1	N	60.97	41.12	41.27	50.97	28.24	28.39
0.281	0.07	0.1	H	60.77	42.80	42.96	50.77	24.39	24.55
0.293	0.07	0.1	H	60.44	46.78	46.95	50.44	26.08	26.25
0.577	0.08	0.2	H	56.00	33.06	33.34	46.00	27.75	28.03
0.756	0.09	0.2	N	56.00	33.48	33.77	46.00	31.32	31.61
0.960	0.09	0.2	H	56.00	35.40	35.69	46.00	37.91	38.20
3.464	0.15	0.3	H	56.00	39.50	39.95	46.00	34.00	34.45
3.842	0.17	0.3	H	56.00	39.22	39.69	46.00	35.45	35.92
4.997	0.20	0.3	H	56.00	34.10	34.60	46.00	32.03	32.53
11.264	0.42	0.7	N	60.00	43.24	44.31	50.00	27.81	28.88
11.722	0.45	0.7	H	60.00	38.18	39.29	50.00	33.87	34.98
14.536	0.59	0.8	N	60.00	35.06	36.43	50.00	30.07	31.44
16.381	0.63	0.8	H	60.00	33.26	34.69	50.00	24.65	26.08
18.609	0.67	0.8	N	60.00	30.58	32.05	50.00	28.12	29.59
20.152	0.70	0.8	N	60.00	34.26	35.77	50.00	28.52	30.03
Remark	H : Hot Line, N : Neutral Line								

7. Photographs of test setup

7.1 Setup for Radiated Test : 30 ~ 1000 MHz

[Front]



[Rear]

7.2 Setup for Conducted Test : 0.15 ~ 30 MHz

[Front]

[Rear]

8. Photographs of EUT

[Front]

[Rear]

Appendix 1. Spectral diagram

*HOT

13 Feb 2004 17:41

ESTECH

HOT

EUT:	MU-42PZ90XV
Manuf:	LG Electronics Inc.
Op Cond:	110V
Operator:	선임연구원 양진모
Test Spec:	CLASS B
Comment:	

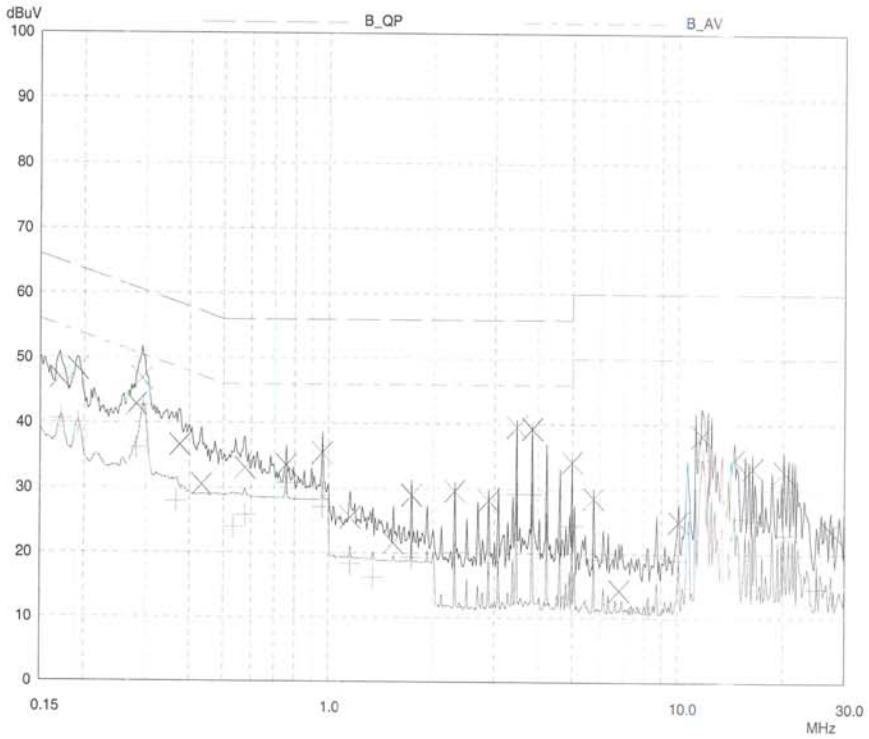
File: 0147_h.dat : LG Electronics USA

Scan Settings (1 Range)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	OpRge
150kHz	30MHz	0.8%	10kHz	PK+AV	20msec	Auto	60dB

Final Measurement: X QP / + AV

Meas Time:	1sec
Subranges:	25
Acc Margin:	60 dB



*NETRUL

13 Feb 2004 17:32

ESTECH
NEUTRAL

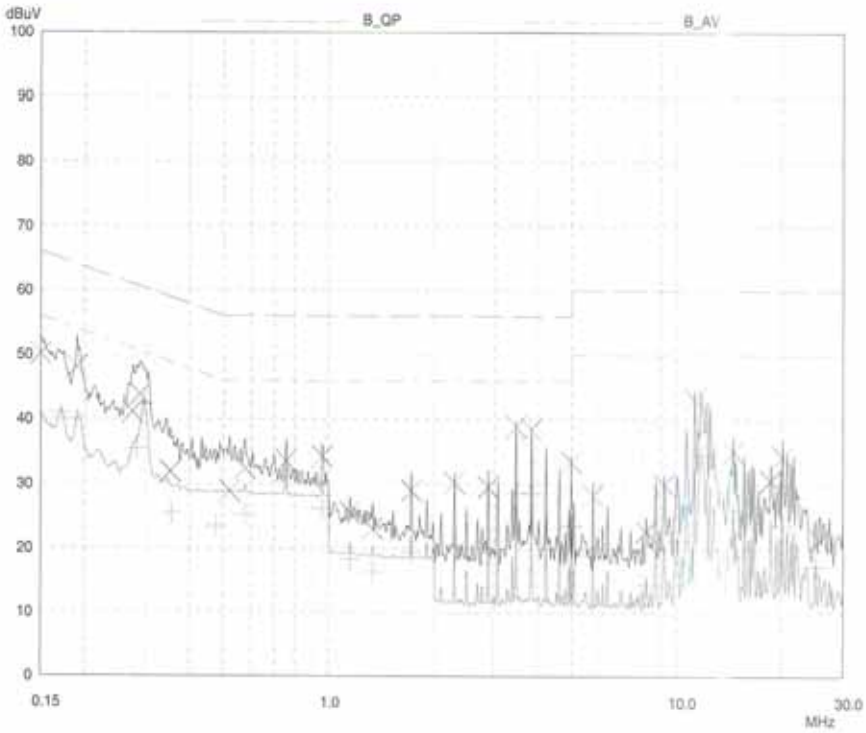
EUT:	MU-42PZ90XV
Manuf:	LG Electronics Inc.
Op Cond:	110V
Operator:	전임연구원 양진모
Test Spec:	CLASS B
Comment:	

File: 0147_n.dat : LG Electronics USA

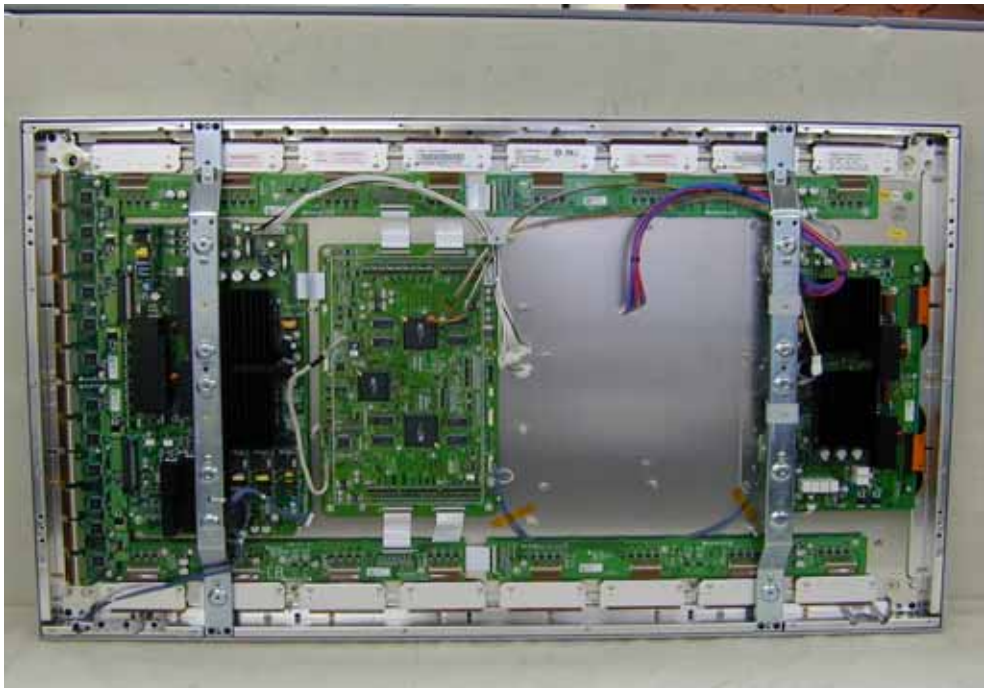
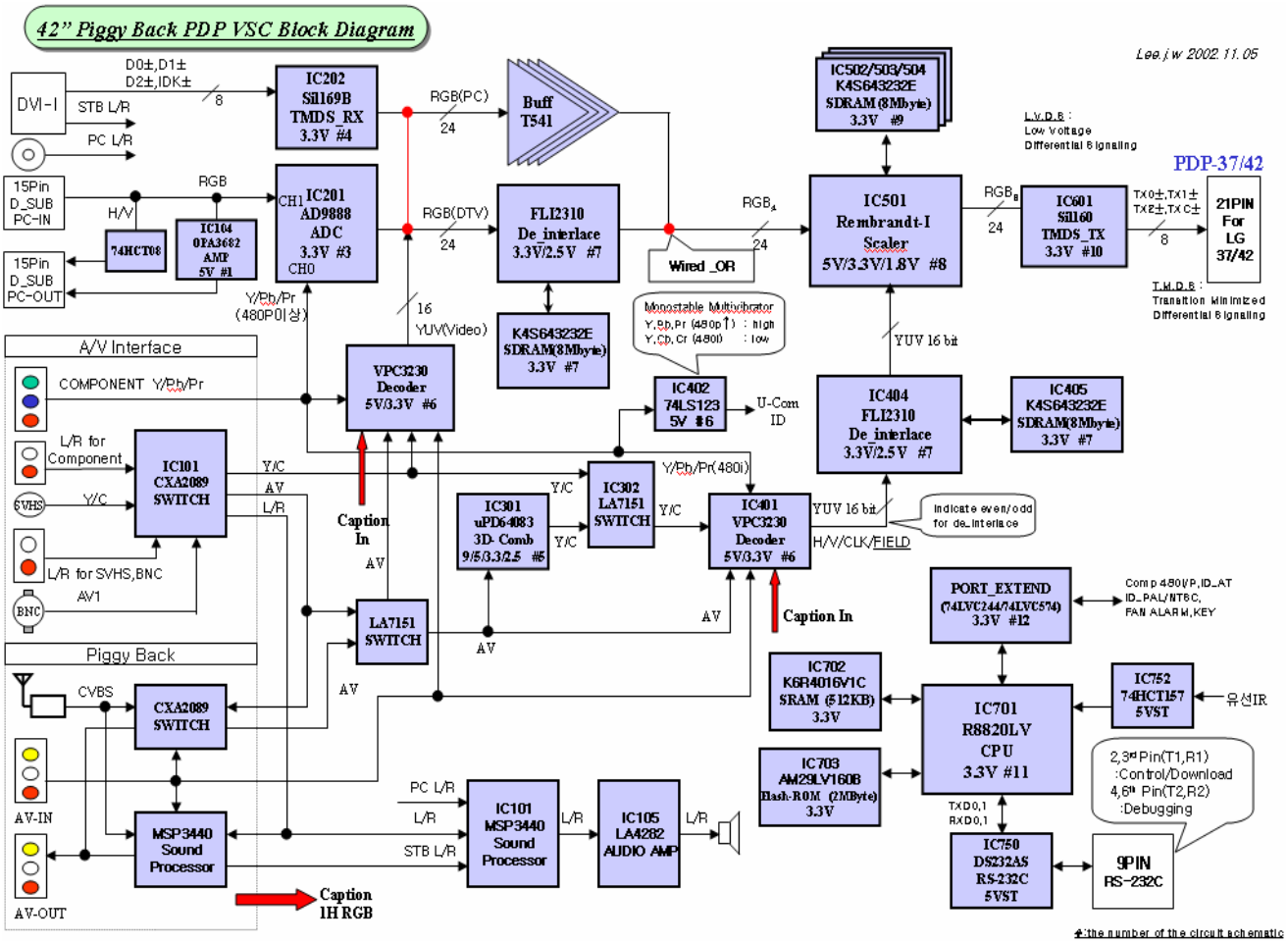
Scan Settings (1 Range)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	OpRge
150kHz	30MHz	0.8%	10kHz	PK+AV	20msec	Auto	60dB

Final Measurement: X QP / + AV
Meas Time: 1sec
Subranges: 25
Acc Margin: 60 dB



Appendix 2. Phorographs of EUT in side PCB



Appendix 3. Block diagram of EUT