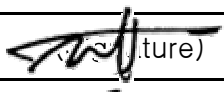


 ESTECH Co., Ltd. Rm 1015, World Venture Center II, 426-5 Gasan-dong, Guncheon-gu, Seoul, 158-803, Korea	   		Electromagnetic Interference Test Report

Test Report for FCC

Report Number		ESTF150604-001			
Applicant	Company name	LG Electronics USA			
	Address	1000 Sylvan Avenue Englewood Cliffs, NJ 07632			
	Telephone	201-266-2420			
Product	Product name	DLP PROJECTION Monitor			
	Model No.	56DC1D-UC	Manufacturer	LG Electronics Inc.	
	Serial No.	NONE	Country of origin	KOREA	
Test date	2006-03-24 ~ 2006-03-31		Date of issue	1-Apr-06	
Testing location	ESTECH. Co., Ltd. 97-1 Hoiuk-Ri Majang-Myon, Icheon-city, KyungKi-Do, Korea				
Standard	FCC PART 15 2005 , ANSI C 63.4 2003 , ICES-003				
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	Engineer J.H.Kim  (Signature)				
Reviewed by	Manager Engineer J.M.Yang  (Signature)				
Abbreviation	OK, Pass = Passed, Fail = Failed, N/A = not applicable				
* Note - Basic model : 56DC1D Addition Models : Z56DC1D,56DC1D - 56DC1D-UC,Z56DC1D and 56DC1D are same product,only model name is different. - 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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Appendix 1. Spectral diagram

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 : Rm 1015, World Venture Center II, 426-5, Gasan-dong, Geumcheon-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

NONE : DLP PROJECTION Monitor
 Model Number : 56DC1D-UC
 Serial Number : NONE
 Manufacturer : LG Electronics Inc.
 Country of origin : KOREA
 Rating : INPUT:AC120V / 60Hz, 210W
 Receipt Date : 2006-03-24

2.2 General descriptions of EUT

MODEL	Z56DC1D	Z62DC1D
Horizontal Size (inches)	58.1	63.3
Height (inches)	36.7	40.1
Depth (inches)	17.5	19.5
Weight (lbs.)	57.3	90.4
Power requirement	AC120V ~ 60Hz	
Television System	NTSC-M, ATSC, 64 & 256 QAM	
Program Coverage	VHF 2 ~ 13, UHF 14 ~ 69, CATV 1 ~ 135, CADTV 1 ~ 135, DTV 2 ~ 69	
Power Consumption (W)	210W	
Antenna	75 ohm External Terminal for VHF/UHF	
Audio Output (W)	15Wx2	
Supplied Accessories	Remote Control, 2 size AA batteries, D-sub 15 pin Cable, Power Cord	

Monitor Display Specifications (RGB-PC or HDMI/DVI Mode)

Resolution	Horizontal Frequency(KHz)	Vertical Frequency(Hz)
640x350	31.468	70.09
640x480	31.469	59.94
	37.861	72.80
	37.500	75.00
800x600	35.156	56.25
	37.879	60.31
	48.077	72.18
1024x768	46.875	75.00
	48.363	60.00
	56.476	70.06
	60.023	75.02

← RGB-PC
Mode Only

Using Freq. : 25MHz, 4MHz, 18.43MHz, 24MHz, 24.576MHz, 27MHz, 10MHz, 14.3MHz

3. Test Standards

Test Standard : FCC PART 15 (2005) & ICES-003

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 (2003)

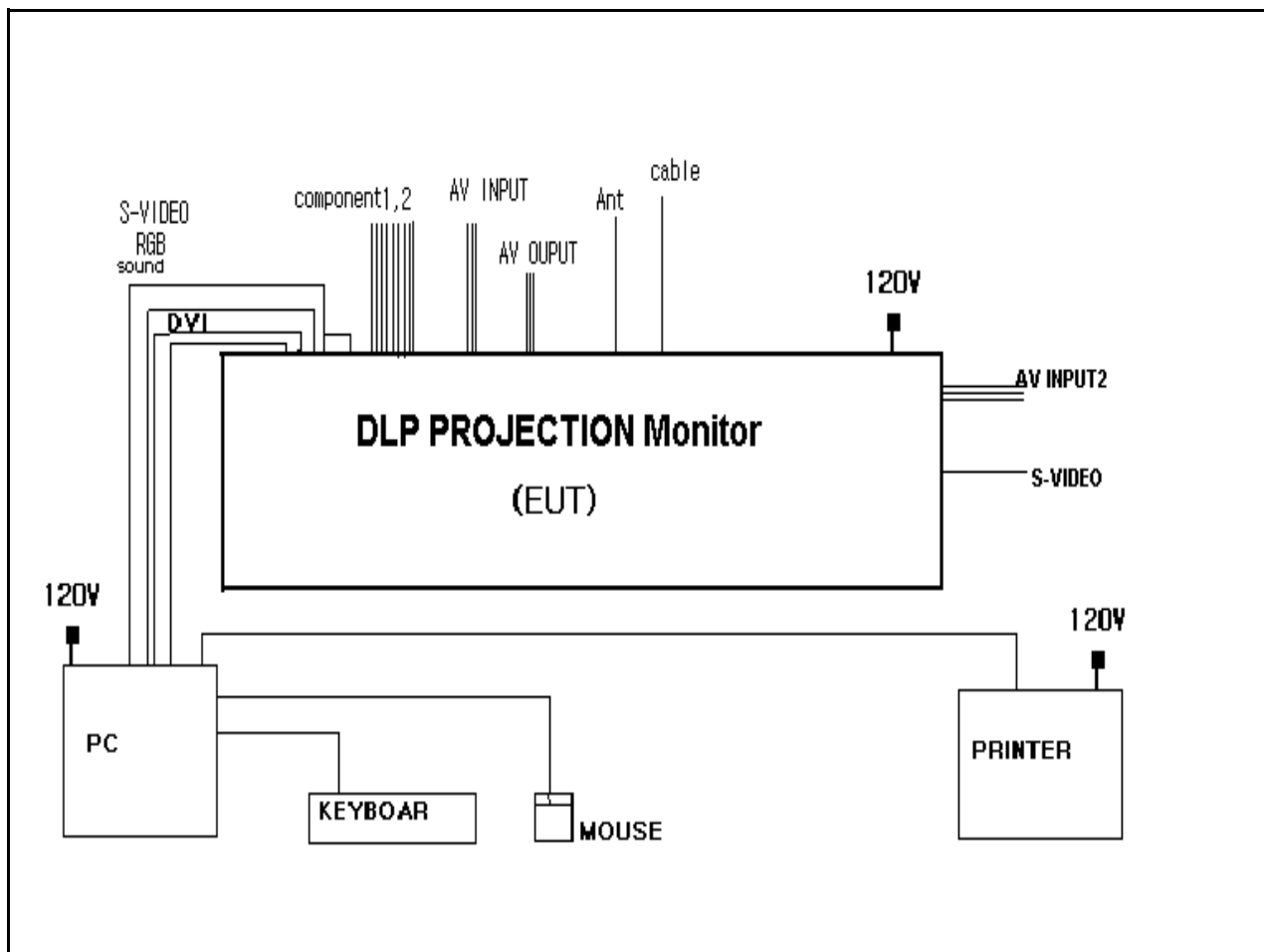
This standard sets forth uniform methods of measurement of radio-frequency (RF) signals and noise emitted from both unintentional and intentional emitters of RF energy in the frequency range 9 kHz to 40 GHz. Methods for the measurement of radiated and AC power-line conducted radio noise are covered and may be applied to any such equipment unless otherwise specified by individual equipment requirements. These methods cover measurement of certain devices 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 methods 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 highest level of emission
- * After setting as test arrangement diagram, we tested the EUT under continuous displaying "H" character and playing Audio out /Video

4.2 Configuration and Peripherals



4.3 EUT and Support equipment

Equipment Name	Model Name	S/N	Manufacturer	Remark (FCC ID)
DLP PROJECTION Monitor	56DC1D-UC	NONE	LG Electronics Inc.	EUT
PERSONAL COMPUTER	HP Pavilion m000	KRF35200YM	HP	-
KEYBOARD	SEM-DT35VS	31001238	Samsung Electro-mechanics Co., Ltd.	-
MOUSE	X08-71118	2896557	Microsoft	-
Printer	LQ-570H	B1021095782	Trigem Computer Inc.	-

4.4 Cable Connecting

Start Equipment		End Equipment		Cable Standard		Remark
Name	I/O port	Name	I/O port	Length	Shielded	
DLP PROJECTION Monitor	RGB	PERSONAL COMPUTER	RGB	2	Shielded	-
DLP PROJECTION Monitor	SOUND-IN	PERSONAL COMPUTER	SOUND-OUT	2	Shielded	-
DLP PROJECTION Monitor	DVI	PERSONAL COMPUTER	DVI	2	Shielded	-
DLP PROJECTION Monitor	S-VIDEO	PERSONAL COMPUTER	S-VIDEO	2	Shielded	-
DLP PROJECTION Monitor	AV INPUT1*3PORT	-	-	2	Shielded	-
DLP PROJECTION Monitor	AV INPUT2*3PORT	-	-	2	Shielded	-
DLP PROJECTION Monitor	S-VIDEO	-	-	2	Shielded	-
DLP PROJECTION Monitor	AV OUTPUT*3PORT	-	-	2	Shielded	-
DLP PROJECTION Monitor	COMPONENT1 INPUT*5PORT	-	-	2	Shielded	-
DLP PROJECTION Monitor	COMPONENT2 INPUT*5PORT	-	-	2	Shielded	-
DLP PROJECTION Monitor	ANTENNA IN	-	-	2	Shielded	-
DLP PROJECTION Monitor	CABLE IN	-	-	2	Shielded	-
DLP PROJECTION Monitor	USB	MOUSE	USB	2	Shielded	-
DLP PROJECTION Monitor	USB	KEYBOARD	USB	2	Shielded	-
DLP PROJECTION Monitor	PARALLEL	PRINTER	PARALLEL	2	Shielded	-

5. Measurement of radiated disturbance

Above 30 MHz Electric Field strength was measured in accordance with FCC Part 15 (2005) & ICES-003. The test setup was made according to ANSI C 63.4 (2003) 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
TEST Receiver	ESVS10	Rohde & Schwarz	838562/002	2007. 1. 23
Spectrum Analyzer	R3261C	ADVANTEST	61720116	2006. 4. 10
LogBicon Antenna	VULB 9160	S/B	3107	2006. 5. 02
Horn Antenna	BBHA 9120 D	SCHWARZBECK	352	2006. 4. 06
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 °C
 Humidity (%) : 51 %

5.3 Test data

Test Date : 28-Mar-06

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Position (V/H)	Height (m)	Correction Factor		Result Value		
				Ant Factor (dB)	Cable (dB)	Limit (dB μ V/m)	Result (dB μ V/m)	Margin (dB)
47.26	16.20	H	2.7	12.77	1.0	40.0	29.98	-10.02
70.21	17.10	H	2.6	10.99	1.3	40.0	29.37	-10.63
121.83	12.60	H	2.0	12.05	1.7	43.5	26.34	-17.16
163.16	16.90	H	1.9	13.91	2.0	43.5	32.80	-10.70
210.50	16.10	H	1.7	10.58	2.3	43.5	28.93	-14.57
216.00	15.90	H	1.5	10.72	2.3	43.5	28.89	-14.61
240.01	16.40	V	1.0	11.71	2.4	46.0	30.51	-15.49
279.30	15.90	H	1.1	12.67	2.5	46.0	31.12	-14.88
306.52	15.60	H	1.0	13.33	2.7	46.0	31.66	-14.34
371.22	14.20	H	1.0	14.65	3.0	46.0	31.88	-14.12
445.50	16.10	V	1.0	16.29	3.3	46.0	35.70	-10.30
500.00	9.10	V	1.0	17.06	3.6	46.0	29.71	-16.29
600.00	10.10	H	1.0	19.16	4.0	46.0	33.21	-12.79
648.00	11.00	H	1.0	19.60	4.1	46.0	34.69	-11.31
811.09	9.70	V	1.0	21.84	4.7	46.0	36.25	-9.75
902.21	8.20	H	1.0	22.62	4.9	46.0	35.68	-10.32
Remark	H : Horizontal, V : Vertical TEST MODE ; Resolution 1024 * 768 (75Hz) at RGB mode (Worse Case)							

5.4 Test data

Test Date : 28-Mar-06

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Position (V/H)	Height (m)	Correction Factor		Result Value		
				Ant Factor (dB)	Cable (dB)	Limit (dB μ V/m)	Result (dB μ V/m)	Margin (dB)
47.01	13.80	V	1.0	12.77	1.0	40.0	27.58	-12.42
70.69	16.30	H	2.4	11.00	1.3	40.0	28.58	-11.42
120.12	13.30	H	1.8	12.03	1.7	43.5	27.01	-16.49
163.61	13.80	H	1.5	13.91	2.0	43.5	29.71	-13.79
201.01	16.20	H	1.5	10.40	2.2	43.5	28.79	-14.71
210.01	17.20	V	1.0	10.57	2.3	43.5	30.02	-13.48
240.00	17.20	H	1.1	11.71	2.4	46.0	31.31	-14.69
264.76	11.90	H	1.0	12.24	2.5	46.0	26.61	-19.39
336.01	10.80	H	1.0	13.99	2.8	46.0	27.61	-18.39
445.01	10.90	H	1.0	16.29	3.3	46.0	30.49	-15.51
500.00	9.10	H	1.0	17.06	3.6	46.0	29.71	-16.29
600.02	13.20	V	1.0	19.16	4.0	46.0	36.31	-9.69
648.00	11.20	V	1.0	19.60	4.1	46.0	34.89	-11.11
764.01	8.10	H	1.0	21.44	4.5	46.0	34.02	-11.98
811.09	7.50	V	1.0	21.84	4.7	46.0	34.05	-11.95
Remark	H : Horizontal, V : Vertical TEST MODE ; Resolution 1024 * 768 (75Hz) at DVI mode (Worse Case)							

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 (2005) & ICES-003. The test setup was made according to ANSI C 63.4 (2003) 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	2007. 2. 27
LISN	NNLA8120A	Schwarzbeck	NONE	2007. 2. 27
TEST Receiver	ESPI7	Rohde & Schwarz	100185	2006. 8. 22
Pulse Limiter	ESH3Z2	Rohde & Schwarz	NONE	2006. 6. 15

6.2 Environmental Condition

Test Place : Shield Room
 Temperature (°C) : 19 °C
 Humidity (%) : 49 %

6.3 Test data

Test Date : 28-Mar-06

Frequency (MHz)	Correction Factor		Line (H/N)	Quasi-peak Value			Average Value		
	Lisn (dB)	Cable (dB)		Limit (dB μ V)	Reading (dB μ V)	Result (dB μ V)	Limit (dB μ V)	Reading (dB μ V)	Result (dB)
0.15	0.07	0.0	H	66.00	58.68	58.75	56.00	46.63	46.70
0.17	0.07	0.0	H	64.82	42.13	42.22	54.82	—	—
0.18	0.07	0.0	N	64.39	35.37	35.46	54.39	—	—
0.20	0.07	0.0	H	63.78	41.55	41.65	53.78	36.96	37.06
0.24	0.07	0.1	H	62.03	38.12	38.25	52.03	37.58	37.71
0.24	0.07	0.1	N	61.99	39.53	39.66	51.99	—	—
0.29	0.07	0.1	N	60.55	30.91	31.07	50.55	27.80	27.96
0.29	0.07	0.1	H	60.52	30.11	30.27	50.52	27.01	27.17
0.34	0.07	0.1	N	59.25	31.41	31.60	49.25	29.87	30.06
11.45	0.43	0.7	H	60.00	30.01	31.10	50.00	—	—
11.69	0.44	0.7	N	60.00	30.75	31.86	50.00	—	—
12.20	0.47	0.7	N	60.00	30.28	31.44	50.00	—	—
23.86	0.79	0.9	N	60.00	37.90	39.57	50.00	36.62	38.29
Remark	H : Hot Line, N : Neutral Line								



ESTECH Co., Ltd.

Rm 1015, World Venture Center II,
426-5 Gasan-dong, Guncheon-gu,
Seoul, 158-803, Korea

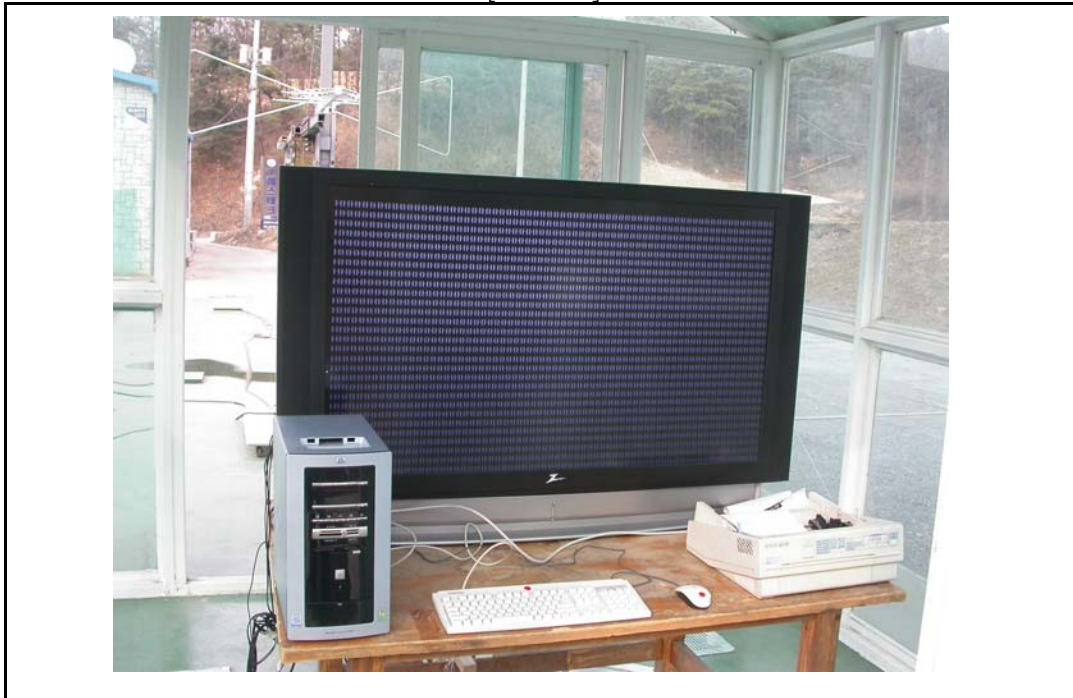


Electromagnetic Interference Test Report

7. Photographs of test setup

7.1 Setup for Radiated Test : 30 ~ 1000 MHz

[Front]

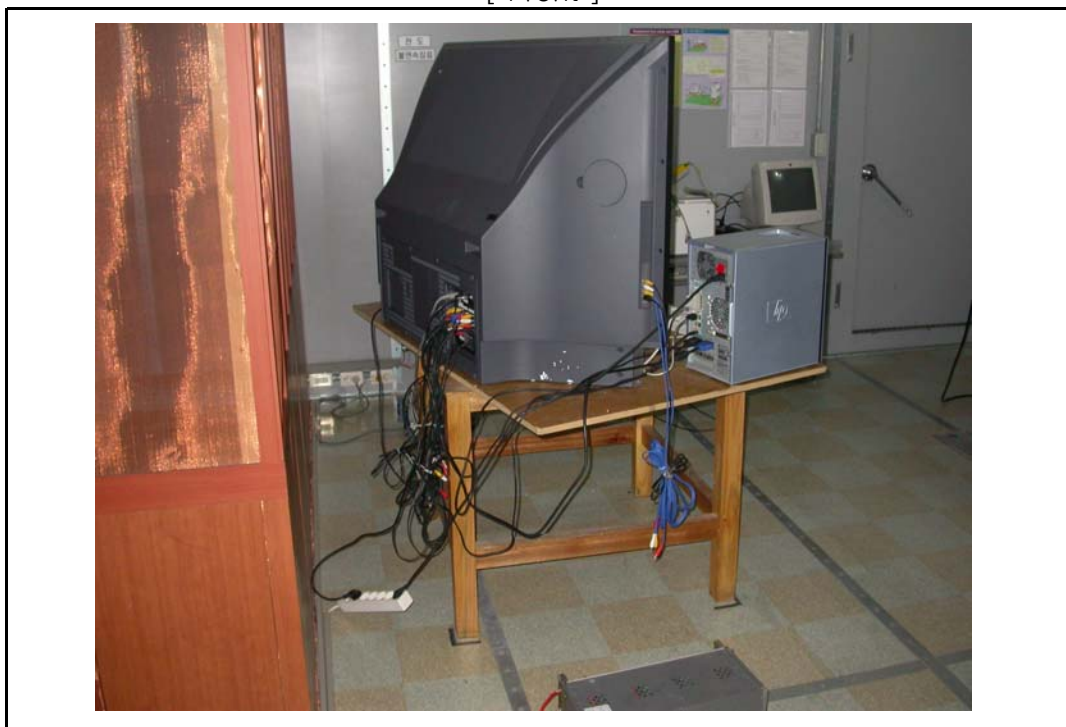


[Rear]



7.2 Setup for Conducted Test : 0.15 ~ 30 MHz

[Front]



[Rear]



8. Photographs of EUT

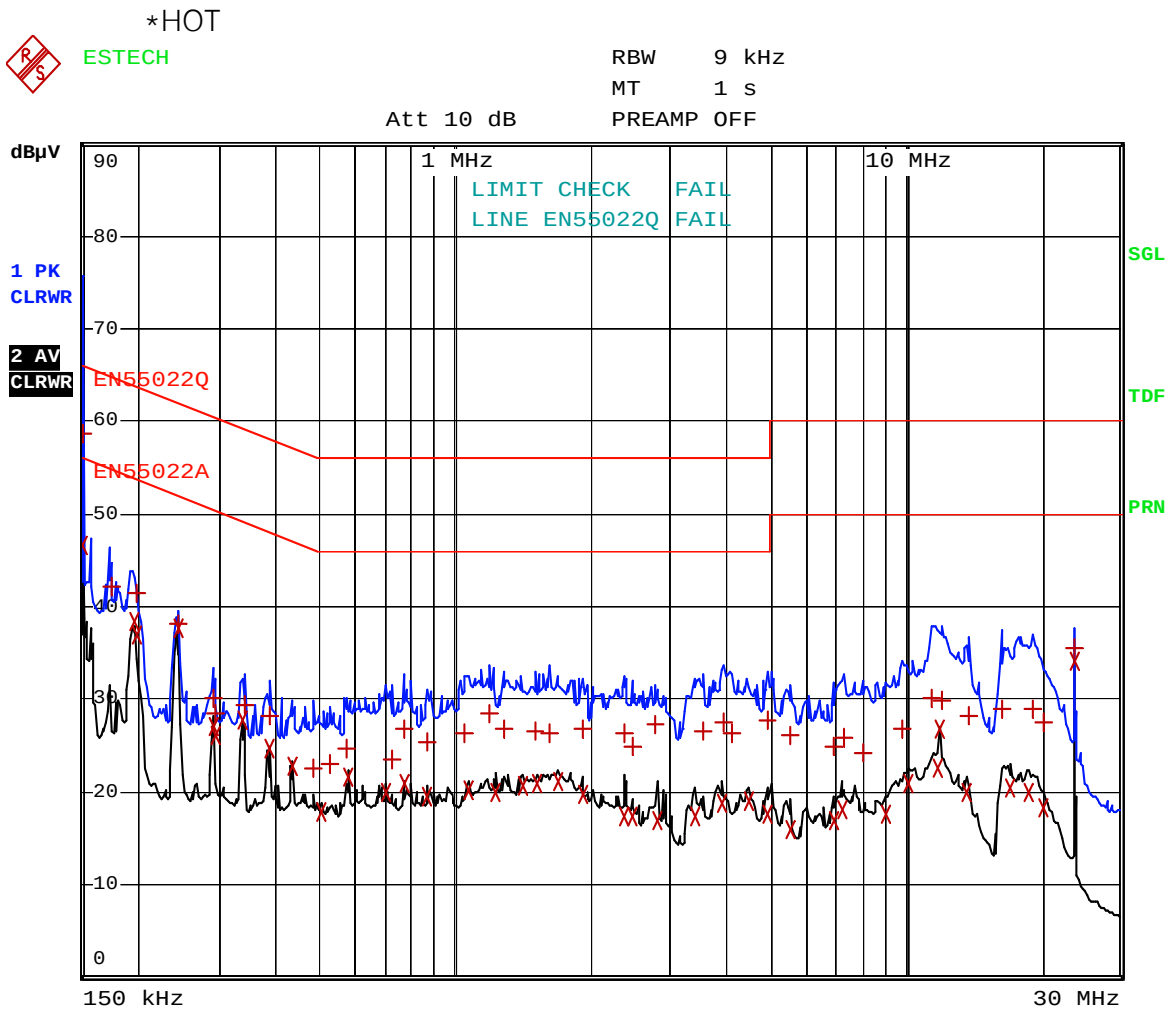
[Front]



[Rear]



Appendix 1. Spectral diagram



Comment: 56DC1D-UC HOT

Date: 28.MAR.2006 14:31:50

*NEUTRAL



ESTECH

RBW 9 kHz

MT 1 s

Att 10 dB

PREAMP OFF

