

Compliance Test Report for FCC

Report Number		ESTF150307-002			
Applicant	Company name	DG Lab Co., Ltd.			
	Address	3FL MYUNGJI B/D 997-3, HWAGOK 6DONG, GANGSEO-GU, SEOUL, KOREA			
	Telephone	82-0502-878-5522			
Product	Product name	Digital Audio Player			
	Model No.	PAR800M4	Manufacturer	DG Lab Co., Ltd.	
	Serial No.	NONE	Country of origin	Korea	
Test date	2003-07-10 ~ 2003-07-10		Date of issue	2003-07-11	
Test 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 is certified that the above mentioned products have been tested for the sample provided by client - No part of this document may be duplicated or reproduced by any means without the express written permission of the Estech Co., Ltd.					

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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 attests to accuracy of test data. All measurement reported herein were performed by ESTECH Co., Ltd.

ESTECH 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)

Filed Laboratory at Federal Communications Commission

2. Description of EUT

2.1 Summary of Equipment Under Test

Product : Digital Audio Player

Model Number : PAR800M4
OEM Brand – PoGo! Products Inc.

Serial Number : NONE

Manufacturer : DG Lab Co., Ltd.

Country of origin : Korea

Rating : DC 1.5V Battery or PC Power using

Receipt Date : 2003-07-10

2.2 General descriptions of EUT

Digital Audio Player

- Memory : Built-in Memory (64MB/128MB)
- Interface : USB 1.1
- Download Speed : Max 12Mbps(depending on computer)
- Playback Time : Approximately 10 Hrs (AAA Battery 1EA)
- Output Frequency : 20Hz ~ 20KHz
- Supported OS : Windows 98/SE, Windows ME/2000/XP

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 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.

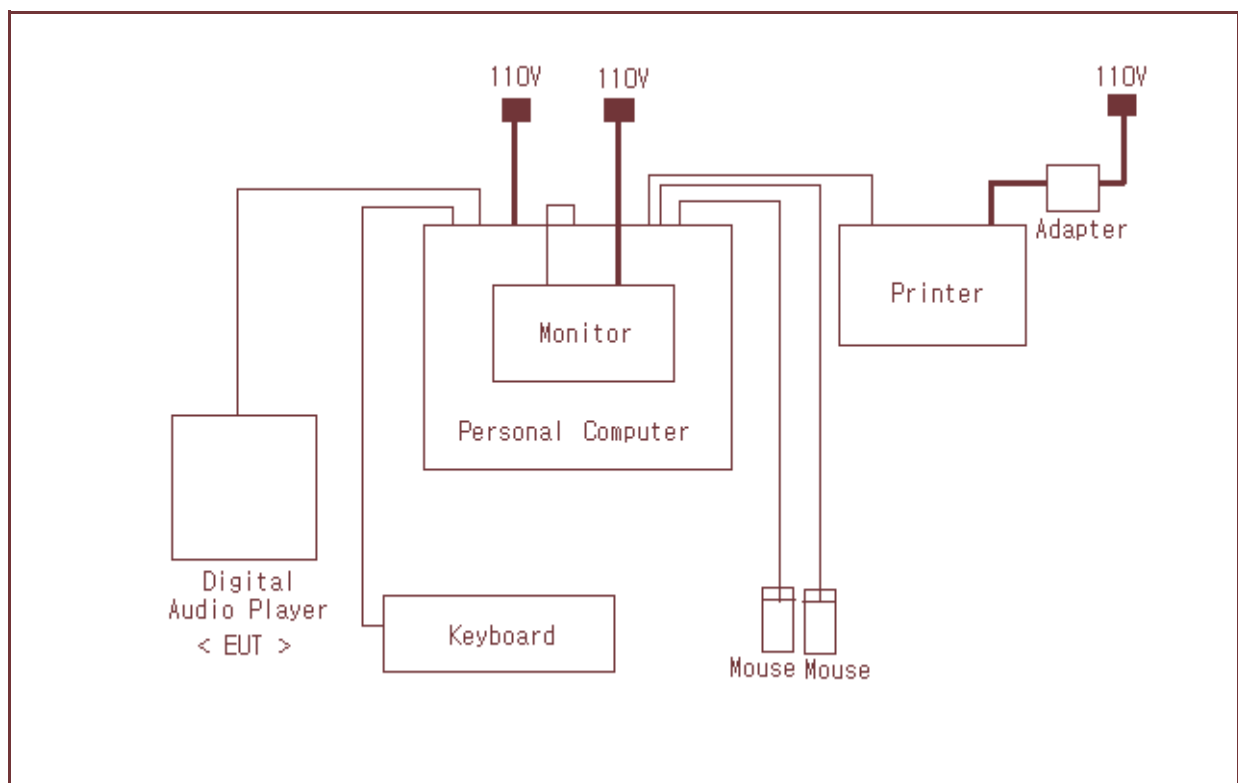
★ Testing EUT Under connecting PC

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 test EUT under audio out and "H" character display

4.2 Configuration and Peripherals



4.3 EUT and Support equipment

Equipment Name	Model Name	S/N	Manufacturer	Remark (FCC ID)
Digital Audio Player	PAR800M4	NONE	DG Lab Co., Ltd.	EUT
Personal Computer	DHS(OptiPlex GX50)	NONE	Dell Computer	—
Mouse	X05-51692	9404461-10000	Microsoft Corporation	—
Mouse	MSW-5	NONE	A4TECH	—
Printer	C6414J	TH18M149P2	HP	—
Keyboard	SEM-DT35	32006555	Samsung Electro-	—
Adapter	C6409-60152	NONE	YOKOGAWA	—
Monitor	FS740	045CJ64DD100	Campaq Computer	—

4.4 Cable Connecting

Start Equipment		End Equipment		Cable Standard		Remark
Name	I/O port	Name	I/O port	Length	Shielded	
Digital Audio Player	USB	Personal Computer	USB	2.0	Y	—
Personal Computer	VIDEO	Monitor	VIDEO	2.0	Y	—
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	—
Personal Computer	Serial	Mouse	Serial	2.0	Y	—
Printer	Power	Adapter	—	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	1720302	2004.2.7
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) : 29 °C
 Humidity (%) : 48 %

5.3 Test data

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 μ V/m)
50.05	15.10	H	2.2	12.57	1.0	40.0	28.70	-11.30
56.57	13.10	H	2.2	12.42	1.1	40.0	26.62	-13.38
122.30	10.80	H	2.1	12.06	1.7	43.5	24.55	-18.95
125.04	9.50	H	2.3	12.10	1.7	43.5	23.30	-20.20
159.76	12.40	H	1.8	13.98	1.9	43.5	28.30	-15.20
271.32	14.70	H	1.5	12.50	2.5	46.0	29.71	-16.29
276.98	14.10	H	1.5	12.62	2.5	46.0	29.26	-16.74
282.66	20.40	H	1.6	12.87	2.6	46.0	35.85	-10.15
288.28	10.50	H	1.5	12.99	2.6	46.0	26.09	-19.91
293.95	14.20	H	1.5	13.08	2.6	46.0	29.90	-16.10
305.25	11.10	H	1.5	13.30	2.7	46.0	27.12	-18.88
316.58	14.00	H	1.5	13.55	2.8	46.0	30.32	-15.68
339.19	14.90	H	1.4	14.06	2.8	46.0	31.79	-14.21
384.47	9.40	H	1.4	14.98	3.1	46.0	27.45	-18.55
Remark	H : Horizontal, V : Vertical							

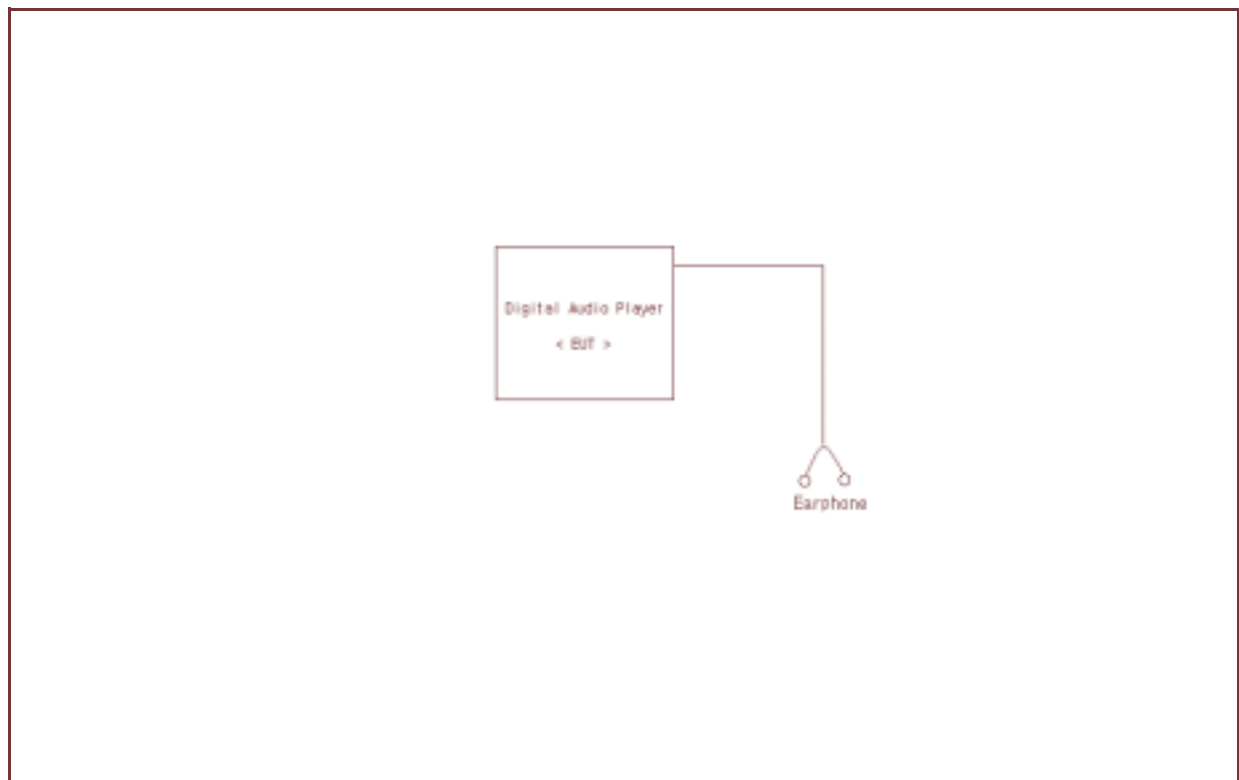
★ We test only EUT

6. Measurement Condition

6.1 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
- * Only, after the docking unit install to EUT, we test EUT under connecting earphone and audio out.

6.2 Configuration and Peripherals



6.3 EUT and Support equipment

Equipment Name	Model Name	S/N	Manufacturer	Remark (FCC ID)
Digital Audio Player	PAR800M4	NONE	DG Lab Co., Ltd.	EUT
Earphone	NONE	NONE	NONE	—
Docking Unit	NONE	NONE	DG Lab Co., Ltd.	—

6.4 Cable Connecting

Start Equipment		End Equipment		Cable Standard		Remark
Name	I/O port	Name	I/O port	Length	Shielded	
Digital Audio Player	USB	Docking Unit	USB	0.0	Y	—
Digital Audio Player	Earphone	Earphone	—	2.0	Y	—

7. 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.

7.1 Measurement equipments

Equipment Name	Type	Manufacturer	Serial No.	Next Calibration date
Receiver	ESPC	Rohde & Schwarz	845296/021	2004.6.17
Spectrum Analyzer	R3261B	ADVANTEST	1720302	2004.2.7
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	–

7.2 Environmental Condition

Test Place : Open site(3m)
 Temperature (°C) : 29 °C
 Humidity (%) : 48 %

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 μ V/m)
50.02	16.40	V	1.0	12.57	1.0	40.0	30.00	-10.00
88.19	18.40	H	2.1	8.75	1.4	43.5	28.56	-14.94
122.31	11.30	V	1.0	12.06	1.7	43.5	25.05	-18.45
125.04	9.10	H	2.3	12.10	1.7	43.5	22.90	-20.60
159.76	12.30	H	1.8	13.98	1.9	43.5	28.20	-15.30
208.00	9.80	H	1.7	10.57	2.2	43.5	22.59	-20.91
293.92	14.10	H	1.6	13.08	2.6	46.0	29.80	-16.20
316.58	11.10	H	1.2	13.55	2.8	46.0	27.42	-18.58
339.18	13.50	H	1.5	14.06	2.8	46.0	30.39	-15.61
Remark	H : Horizontal, V : Vertical							

8. 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.

8.1 Measurement equipments

Equipment Name	Type	Manufacturer	Serial No.	Next Calibration date
LISN	ESH3-Z5	Rohde & Schwarz	838979/010	2004. 2. 7
LISN	NNLA8120A	Schwarzbeck	NONE	2004. 2. 7
TEST Receiver	ESPC	Rohde & Schwarz	845296/021	2004. 6. 17
Pulse Limiter	ESH3Z2	Rohde & Schwarz	NONE	2004. 6. 17

8.2 Environmental Condition

Test Place : Shield Room
 Temperature (°C) : 23 °C
 Humidity (%) : 59 %

8.3 Test data

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 μ V)
0.15	0.07	0.00	N	65.87	47.94	48.01	55.87		
0.16	0.07	0.01	H	65.47	47.85	47.93	55.47		
0.19	0.07	0.02	H	64.21	44.59	44.68	54.21		
0.23	0.07	0.05	H	62.43	35.50	35.62	52.43		
0.29	0.07	0.09	H	60.51	29.89	30.05	50.51		
0.35	0.07	0.13	H	58.92	29.15	29.35	48.92		
0.53	0.07	0.20	N	56.00	27.87	28.14	46.00		
0.70	0.08	0.20	N	56.00	25.27	25.55	46.00		
0.76	0.09	0.20	H	56.00	26.34	26.63	46.00		
1.41	0.10	0.24	N	56.00	23.84	24.18	46.00		
3.17	0.15	0.30	H	56.00	24.66	25.11	46.00		
5.00	0.20	0.30	H	56.00	25.29	25.79	46.00		
7.81	0.30	0.45	N	60.00	28.70	29.46	50.00		
7.93	0.30	0.46	H	60.00	26.61	27.38	50.00		
8.52	0.32	0.50	H	60.00	28.94	29.76	50.00		
16.25	0.63	0.80	N	60.00	30.08	31.51	50.00		
20.64	0.72	0.81	H	60.00	26.95	28.48	50.00		
24.79	0.81	0.90	N	60.00	28.44	30.15	50.00		
Remark	H : Hot Line, N : Neutral Line								

9. Photographs of test setup

★ Testing EUT Under connecting PC

9.1 Setup for Radiated Test : 30 ~ 1000 MHz

[Front]



[Rear]



★ Testing only EUT

9.2 Setup for Radiated Test : 30 ~ 1000 MHz

[Front]



[Rear]



9.3 Setup for Conducted Test : 0.15 ~ 30 MHz

[Front]



[Rear]



10. Photographs of EUT

[Front]

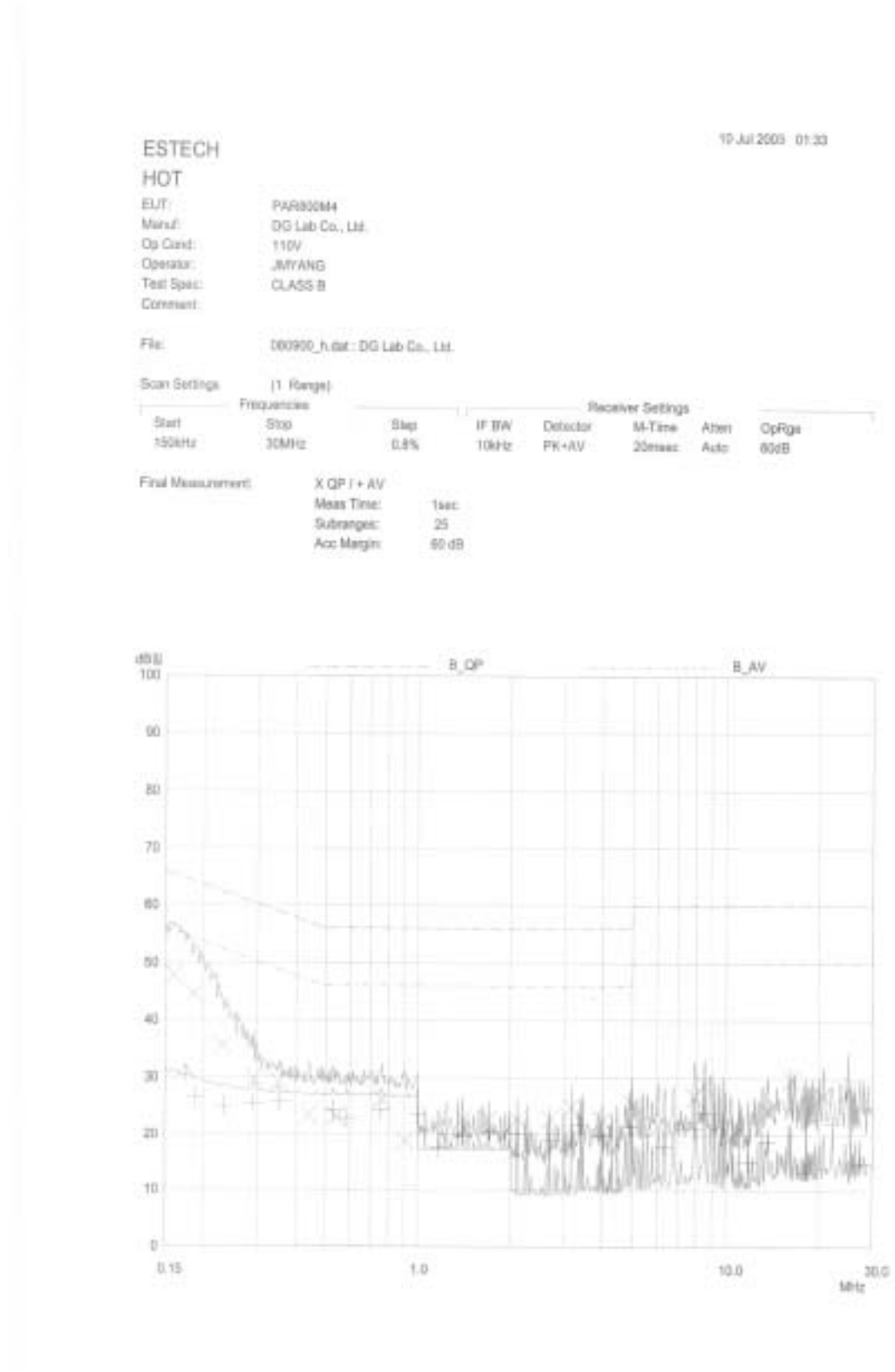


[Rear]



Appendix 1. Spectral diagram

*HOT



*NETRUL

ESTECH
NEUTRAL

10 Jul 2003 01:25

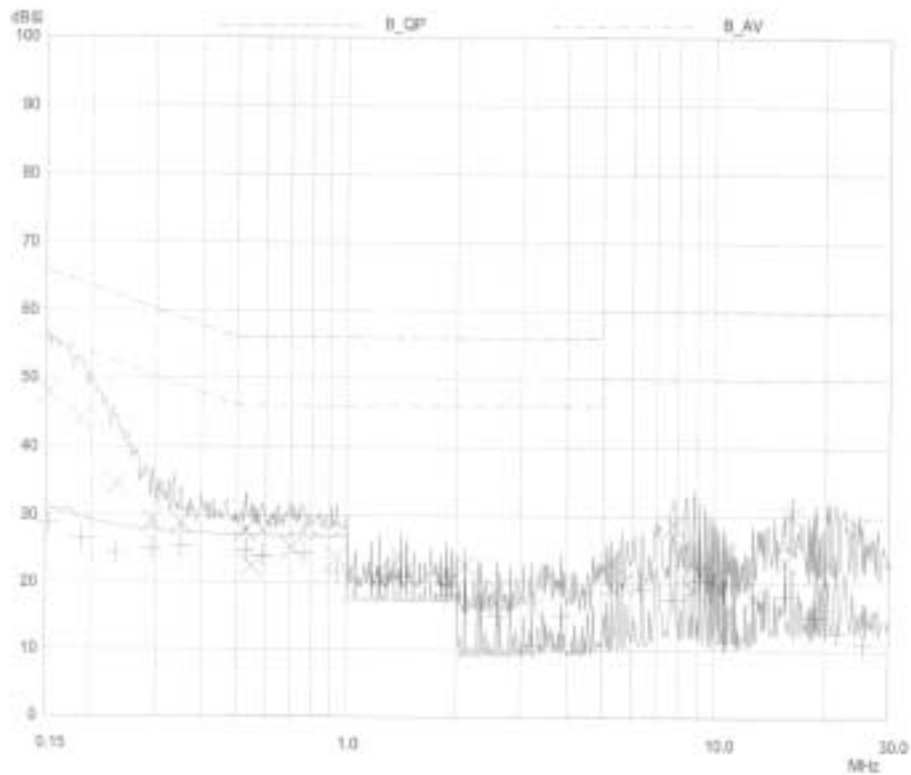
EUT: PAR800M4
Manuf: DG Lab Co., Ltd.
Op Cond: 110V
Operator: JMYANG
Test Spec: CLASS B
Comment:

File: 080600_n.dat: DG Lab Co., Ltd.

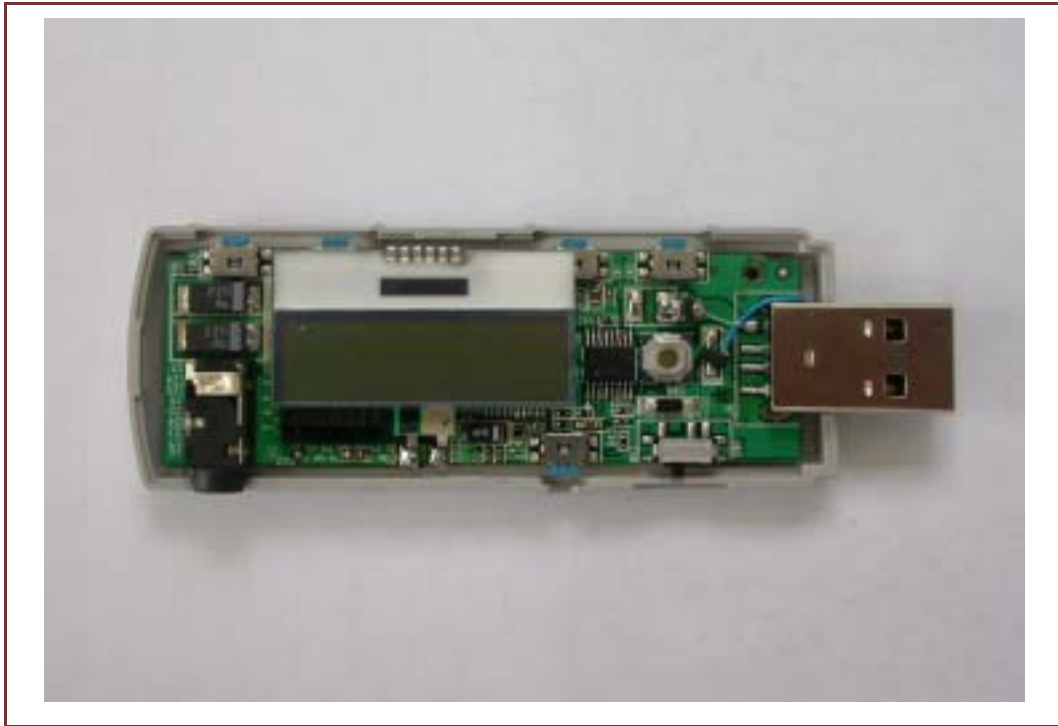
Scan Settings (1 Range)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	OpRge
150kHz	30MHz	0.5%	10kHz	PK+AV	20msec	Auto	60dB

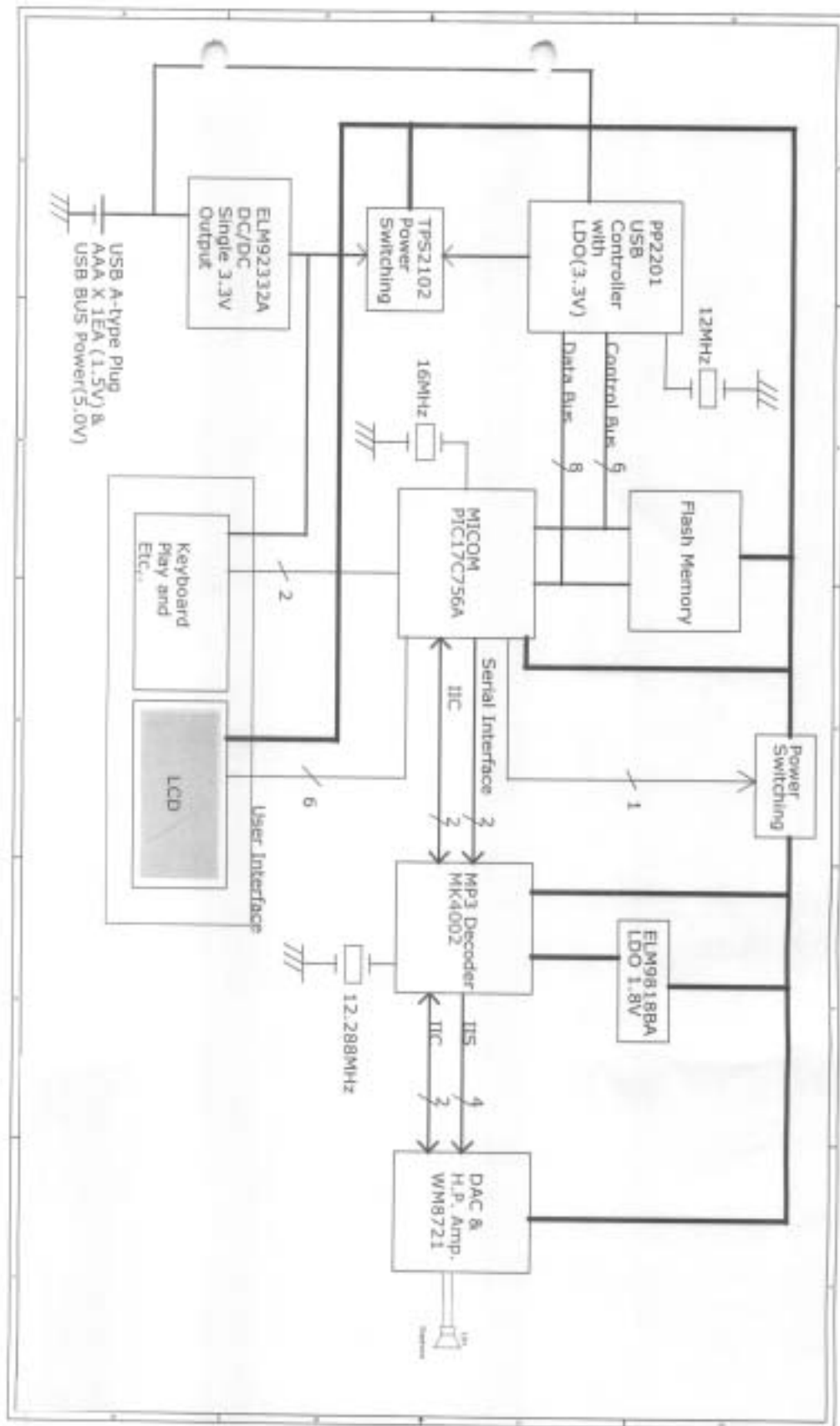
Final Measurement: X QP / + AV
Meas Time: 1sec
Subranges: 25
Acc Margin: 60 dB



Appendix 2. Photographs of EUT in side PCB



Appendix 3. Block diagram of EUT



Appendix 4. Circuit Diagram