EMC TEST REPORT

Project No.	LBE080273	**Issue No.**	1
Applicant	**Name of organization**	**Samsung Electronics Co., Ltd.**	
	Address	416 Maetan 3-Dong, Yeongtong-Gu, Suwon-Si, Gyeonggi-Do 443-742 Korea	
	Date of application	January 31, 2008	
EUT	**Type of device**	Class B personal computers and peripherals	
	Equipment authorization	☐ Declaration of Conformity ☒ Certification ☐ Verification	
	FCC ID	**A3LCLP310N**	
	Kind of product	**Color LBP**	
	Model No.	**CLP-310N**	
		Variant Model No.	CLP-310, CLP-315 and CLP-315N
	Manufacturer	**Samsung Electronics Co., Ltd.** 259, Gongdan-Dong, Gumi-City, Gyeong-Buk, 730-030, Korea Place:M259 **Samsung Electronics Shandong Digital Printing Co., Ltd.** 264209, Samsung Road, Weihai Hi-Tech. IDZ, Shandong Province, P.R.China	
Applied Standards		FCC Part 15, Subpart B / ANSI C63.4-2003	
Issue date		February 16, 2008	

Test result : **Complied**

The equipment under test has found to be compliant with the applied standards.
(Refer to the attached test result for more detail.)

Tested by : Kyeong Dong Kim	**Reviewed by :** No Cheon Park

This report is the test result about the sphere accredited by KOLAS which signed the Mutual Recognition Arrangement of International Laboratory Accreditation Cooperation.
The test results in this report only apply to the tested sample. This report must not be reproduced, except in full, without written permission from SEC EMC Laboratory.

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1. Summary of test results

1.1 Emission

The EUT has been tested according to the following specifications:

Applied	Test type	Applied standard	Result	Remarks
☒	Conducted Disturbance	FCC Part 15 Subpart B	Complied	Meets Class B Limit
☒	Radiated Disturbance		Complied	Meets Class B Limit

2. General Information

2.1 Test facility

The SEC EMC Laboratory is located on Samsung Electronics Co., Ltd. at 416 Maetan 3-Dong, Yeongtong-Gu, Suwon-Si, Gyeonggi-Do, South Korea.
All testing are performed in Semi-anechoic chambers conforming to the site attenuation Characteristics defined by ANSI C63.4, CISPR 22, 16-1 and 16-2. and Shielded rooms.

The SEC EMC Laboratory is operated as testing laboratory in accordance with the requirements of ISO/IEC 17025:2005.

2.2 Accreditation and listing

Laboratory Qualifications		Remarks
	KOLAS(Korea Laboratory Accreditation Scheme)	Accredited : 124
	Radio Research Laboratory	Accredited : KR0004
	FCC(Federal Communications Commission)	Accredited : KR0004
	National Voluntary Laboratory Accreditation Program	Lab Code: 200623-0
	Norges Elektriske Materiellkontroll	Accredited : ELA 195
	VCCI (Voluntary Control Council for Interference by Information Technology Equipment)	C-2421,R-2224
	China Quality Certification Center	5-053, 5-054
	TUV Rhineland	H9354285
	GOST(GOSTSTANDART)	ROSTEST
	Elektrotechnicky Zkusebni Ustav	Reg. No.: 001
	IC(Industry Canada)	Assigned Code: 5871

3. Test configuration

3.1 Test Peripherals

The following is a listing of the EUT and supporting peripherals utilized during testing.

Description	Model No.	Serial No.	Manufacturer	FCC ID and/or DoC
Color LBP	CLP-310N	-	Samsung	A3LCLP310N
Note PC	NP-P29	674E93AYC00024E	Samsung	DoC
AC Adapter	AD-9019	CNBA4400130ASE38 2CI0712	Dongguan Samsung Electro-Mechanics	For Note PC
USB Mouse	MS201U	69G1107	Monterey	DoC
Headset	-	-	Labtec	-

3.2 EUT operating mode

To achieve compliance applied standard and/or specification, the following mode(s) were considered and tested fully.

Operating Mode 1	Standby
Operating Mode 2	USB printing
Operating Mode 3	Network printing

3.3 Details of Sampling

Customer selected, two units.

- Unit 1 : SSE080118-1 (SMPS manufacturer : Samsung Electro-Mechanics)
- Unit 2 : SSE080118-2 (SMPS manufacturer : Sungho Electronics)

3.4 Used cable description

The EUT is configured, installed, arranged and operated in a manner consistent with typical applications. Interface cables/loads/devices are connected to at least one of each type of interface port of the EUT, and where practical, each cable shall be terminated in a device typical of actual usage. The type(s) of interconnecting cables to be used and the interface port (of the EUT) to which these were connected;

Connected cable	Length [m]	Shielded [Y/N]	Note
Power	1.3	No	For EUT
USB	1.8	Yes	From Note PC to the EUT From Note PC to USB Mouse
Ethernet	2.0	No	Between EUT to Hub
Headset	1.2	No	From headset to Note PC

3.5 EUT Description

The following features describe EUT represented by this report:

Item	Specification	Remarks
Processor	CHORUS3(360 MHz)	-
Standard System memory	32 MB DDR2	-
Resolution	Up to 2 400*600 dpi effective output	-
Copy Quality mode	none	-
Paper Handling	Paper Tray(standard) 150 Sheets	-
Power Rating	110~127 VAC, 8A, 50/60 Hz	-
Power Consumption	Power save mode : Less than 10 W Stand by mode : 160 Watts Printing simplex : 350 Watts	-
Printer Language	SPL-C	-
Interfaces	USB2.0 , Ethernet 10/100 Tx Base	-
OS compatibility	Windows 2000/XP/2003/Vista Various Linux OS including Red Hat 8.0~9.0, Mandrake 9.2~10.1, SuSE 8.2~9.2 and Fedora Core 1~4 Mac OS 10.3 ~10.5 and Universal Mac	-
Modes of Operation	USB Printing, Network Printing	-
Intended Class for Emissions	Class B	-

3.6 Clock Frequencies

Kind of Clocks	Frequency[MHz]	Kind of Clocks	Frequency[MHz]
Main Source	12	Video	12
CPU Internal	360	DDR RAM	166
USB Device	12	MAC	25

3.7 Test configuration and condition

The system was configured for testing in typical fashion use. Cables were attached to each of the available I/O Ports. Where applicable, peripherals were attached to the I/O cables.
The mode of operation utilized for testing was selected to best simulate typical EUT use, and two different SMPS boards were used for testing to show compliance with relevant standard.

- **Configuration 1 : SMPS Board manufactured by Samsung Electro-Mechanics**
- **Configuration 2 : SMPS Board manufactured by Sungho Electronics**

Power source for the EUT operating was supplied by CVCF made by the Voltech Corp.

- **Testing Voltage : AC 115 V, 60 Hz**

3.8 Measurement uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus: (According to CISPR 16-4 and UKAS Lab 34.)

3.8.1 Emission

Test type		Measurement uncertainty (C.L. 95 %, k = 2)
Conducted disturbance	Mains Port	± 2.8 dB
Radiated disturbance	Horizontal	± 5.1 dB
	Vertical	± 5.1 dB

4. Results of individual test

4.1 Conducted disturbance

Both conducted lines are measured in Quasi-Peak and Average mode, including the worst-case data points for each tested configuration.

The EUT measured in accordance with the methods described in standards.

Limits for conducted disturbance at mains ports of class A

Frequency range Limits MHz	Limits dB(μV)	
	Quasi-peak	Average
0,15 to 0,50	79	66
0,50 to 30	73	60

Note 1: 1 μV is regarded as 0 dB.
Note 2: If the average limit is met in the measurement with quasi-peak detector, the measurement with average detector at the same frequency is unnecessary.
Note 3: The lower limit shall apply at the transition frequency.

Limits for conducted disturbance at the mains ports of class B

Frequency range Limits MHz	Limits dB(μV)	
	Quasi-peak	Average
0,15 to 0,50	66 to 56	56 to 46
0,50 to 5	56	46
5 to 30	60	50

Note 1: 1 μV is regarded as 0 dB.
Note 2: The limits shall decreases linearly with the logarithm of the frequency in the range 150 - 500 kHz.
Note 3: If the average limit is met in the measurement with quasi-peak detector, the measurement with average detector is unnecessary.
Note 4: The lower limit shall apply at the transition frequency.

4.1.1 Test instrumentation

Test instrumentations used in the Conducted disturbance test were as follows:

Test instrumentation	Model name	Manufacturer	Serial or Firmware (No./Ver.)	Calibration	
				Date	Interval (Month)
Measuring receiver	ESCI	R&S	100368	2007-06-01	12
Artificial mains network	ENV216	R&S	100117	2007-09-03	12
Artificial mains network	ESH3-Z5	R&S	100262	2007-09-03	12
Test software	EMC32	R&S	Ver 4.00.0	N/A	N/A

4.1.2 Temperature and humidity condition

Test date	February 04, 2008	**Test engineer**	Kyeong Dong Kim	
Climate condition	**Ambient temperature**	24.0 ℃	**Relative humidity**	35 %
	Atmospheric pressure	102.0 kPa		
Test place	Shielded Room #1			

4.1.3 Photograph of Test Setup

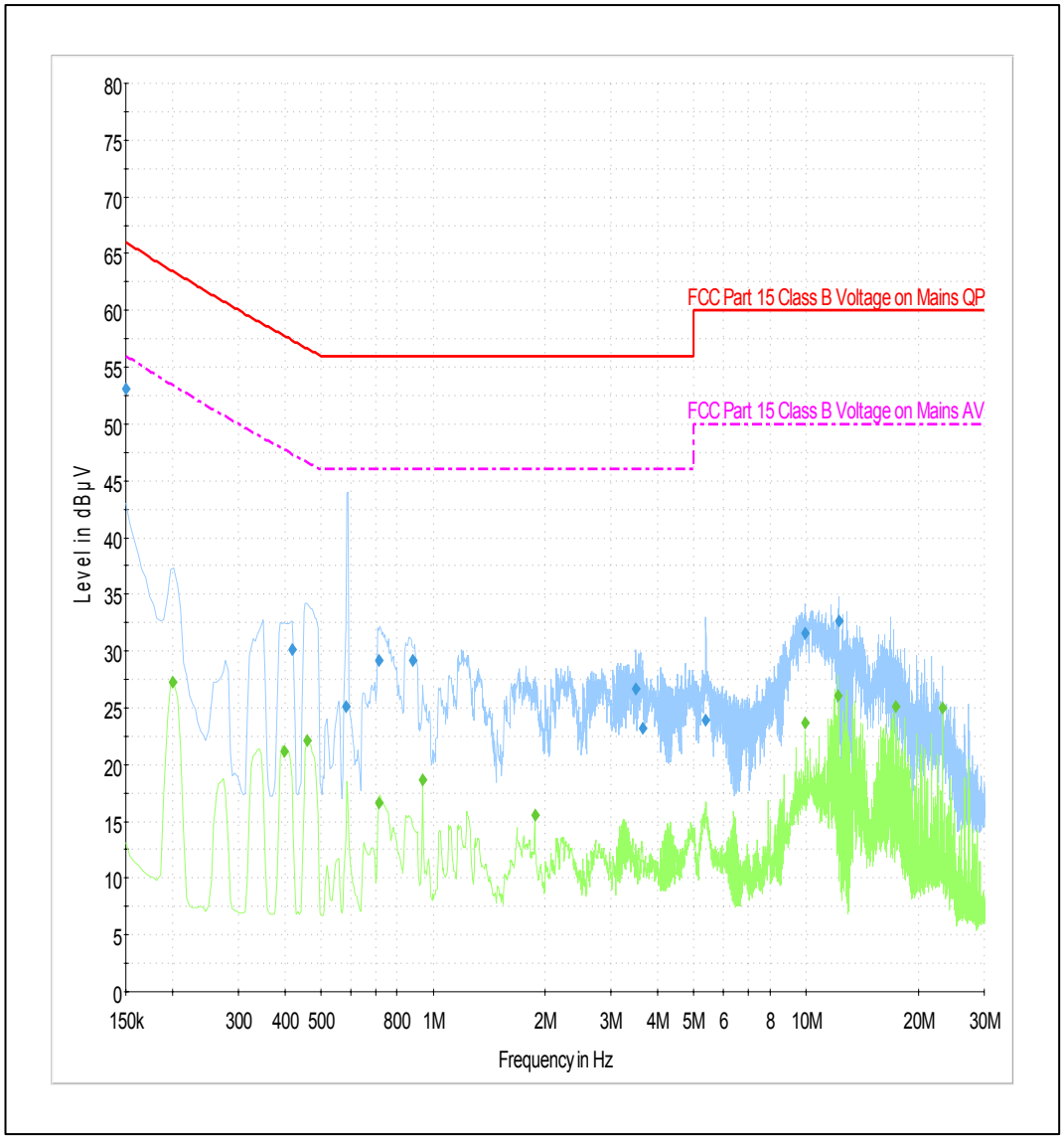
Front

Rear

4.1.4 Test results

- **Configuration 1 : Standby Mode**

Test Graph



Note) Two graphs measured for both Live(L1) and Neutral(N) of the LISN are combined into one graph.

Test Results (Quasi-Peak and Average)

Frequency [MHz]	Line	Bandwidth [kHz]	Factor [dB]	Quasi-Peak [dBuV]	Margin [dB]	Limit [dBuV]
0.150	N	9.0	9.6	53.1	12.9	66.0
0.420	N	9.0	9.6	30.1	27.3	57.4
0.584	N	9.0	9.6	25.2	30.8	56.0
0.715	L1	9.0	9.7	29.2	26.8	56.0
0.884	L1	9.0	9.7	29.2	26.8	56.0
3.486	L1	9.0	9.8	26.6	29.4	56.0
3.635	L1	9.0	9.8	23.2	32.8	56.0
5.375	N	9.0	9.8	24.0	36.0	60.0
9.939	L1	9.0	9.9	31.6	28.4	60.0
12.199	L1	9.0	10	32.7	27.3	60.0

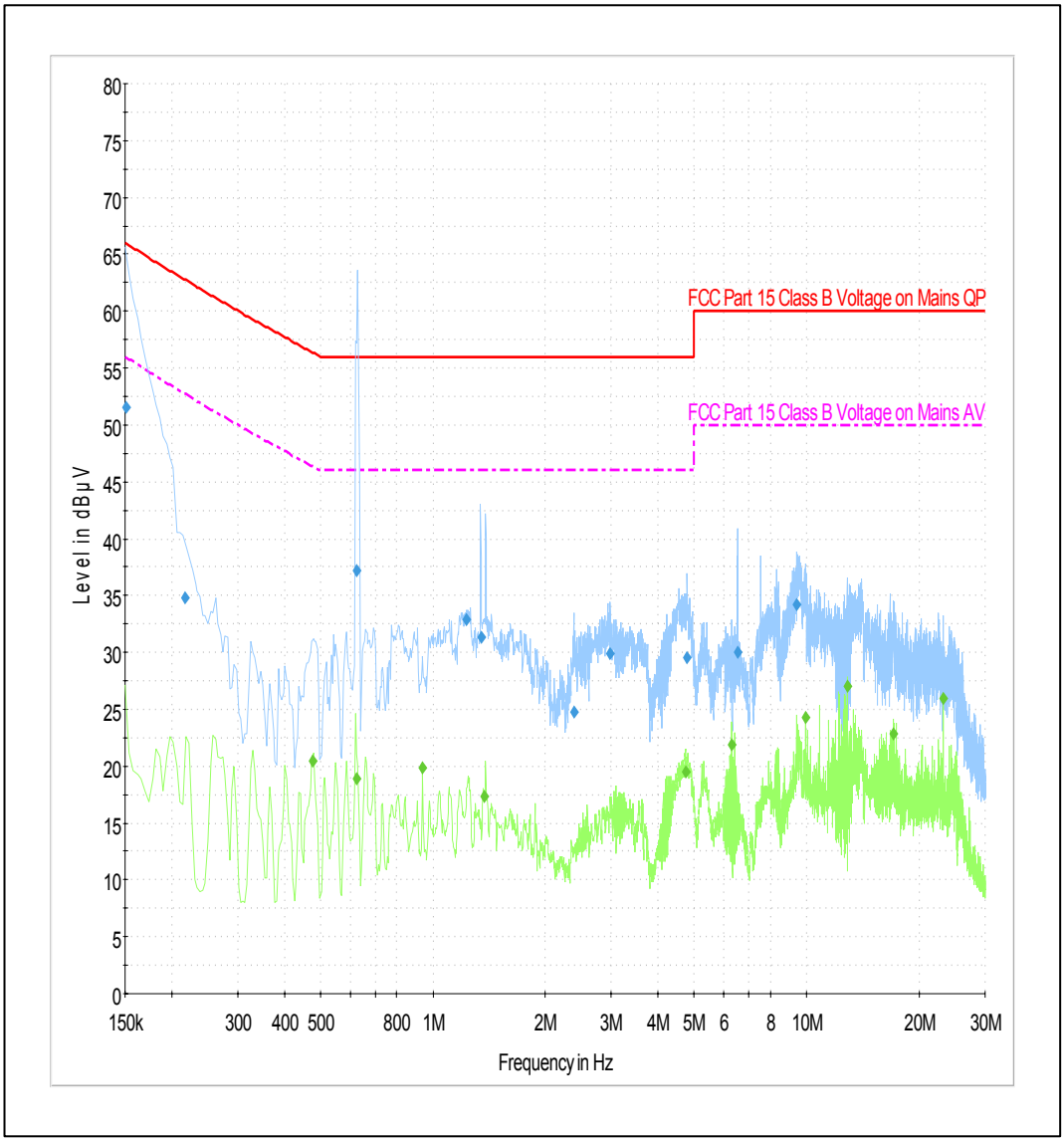
Frequency [MHz]	Line	Bandwidth [kHz]	Factor [dB]	Average [dBuV]	Margin [dB]	Limit [dBuV]
0.201	N	9.0	9.6	27.2	26.2	53.4
0.398	N	9.0	9.6	21.2	26.6	47.8
0.459	N	9.0	9.6	22.2	24.5	46.7
0.715	L1	9.0	9.7	16.6	29.4	46.0
0.937	L1	9.0	9.7	18.6	27.4	46.0
1.874	L1	9.0	9.7	15.5	30.5	46.0
9.939	L1	9.0	9.9	23.7	26.3	50.0
12.138	N	9.0	10.0	26.1	23.9	50.0
17.313	N	9.0	10.1	25.1	24.9	50.0
23.129	L1	9.0	10.3	25.0	25.0	50.0

Note) Level (Qausi-Peak and/or Average) = Meter Reading(Quasi-Peak and/or Average) + Factor (LISN Insertion Loss + Cable Loss)

Margin = Limit – Level (Quasi-Peak and/or Average)

- **Configuration 1 : USB Printing Mode**

Test Graph



Note) Two graphs measured for both Live(L1) and Neutral(N) of the LISN are combined into one graph.

Test Results (Quasi-Peak and Average)

Frequency [MHz]	Line	Bandwidth [kHz]	Factor [dB]	Quasi-Peak [dBuV]	Margin [dB]	Limit [dBuV]
0.151	L1	9.0	9.6	51.5	14.5	65.9
0.217	N	9.0	9.6	34.9	27.9	62.8
0.624	L1	9.0	9.6	37.1	18.9	56.0
1.228	L1	9.0	9.7	32.8	23.2	56.0
1.343	L1	9.0	9.7	31.3	24.7	56.0
2.388	L1	9.0	9.7	24.8	31.2	56.0
2.981	N	9.0	9.7	29.9	26.1	56.0
4.785	N	9.0	9.8	29.5	26.5	56.0
6.531	L1	9.0	9.9	30.0	30.0	60.0
9.411	L1	9.0	9.9	34.3	25.7	60.0

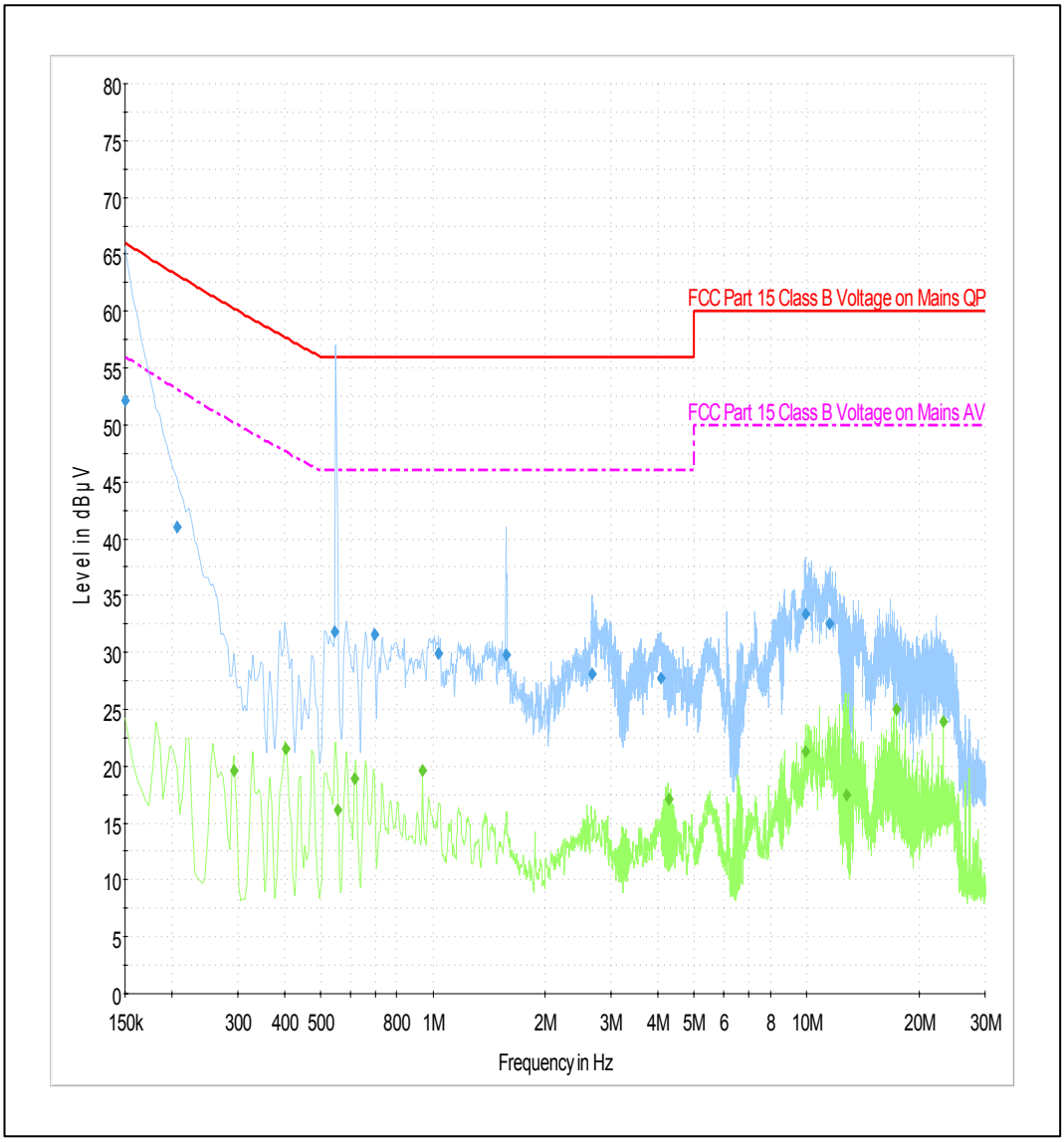
Frequency [MHz]	Line	Bandwidth [kHz]	Factor [dB]	Average [dBuV]	Margin [dB]	Limit [dBuV]
0.476	L1	9.0	9.6	20.4	25.9	46.4
0.623	L1	9.0	9.6	18.9	27.1	46.0
0.937	N	9.0	9.7	19.9	26.1	46.0
1.373	N	9.0	9.7	17.4	28.6	46.0
4.739	L1	9.0	9.8	19.4	26.6	46.0
6.307	L1	9.0	9.9	21.9	28.1	50.0
9.939	N	9.0	9.9	24.2	25.8	50.0
12.810	L1	9.0	10.0	27.0	23.0	50.0
17.009	L1	9.0	10.1	22.9	27.1	50.0
23.129	L1	9.0	10.3	25.9	24.1	50.0

Note) Level (Qausi-Peak and/or Average) = Meter Reading(Quasi-Peak and/or Average) + Factor (LISN Insertion Loss + Cable Loss)

Margin = Limit – Level (Quasi-Peak and/or Average)

- **Configuration 1 : Network Printing Mode**

Test Graph



Note) Two graphs measured for both Live(L1) and Neutral(N) of the LISN are combined into one graph.

Test Results (Quasi-Peak and Average)

Frequency [MHz]	Line	Bandwidth [kHz]	Factor [dB]	Quasi-Peak [dBuV]	Margin [dB]	Limit [dBuV]
0.150	N	9.0	9.6	52.1	13.9	66.0
0.207	N	9.0	9.6	41.0	22.2	63.2
0.547	L1	9.0	9.6	31.8	24.2	56.0
0.696	L1	9.0	9.7	31.6	24.4	56.0
1.032	L1	9.0	9.7	29.9	26.1	56.0
1.572	N	9.0	9.7	29.8	26.2	56.0
2.663	L1	9.0	9.7	28.1	27.9	56.0
4.067	L1	9.0	9.8	27.7	28.3	56.0
9.916	L1	9.0	9.9	33.3	26.7	60.0
11.531	L1	9.0	10	32.5	27.5	60.0

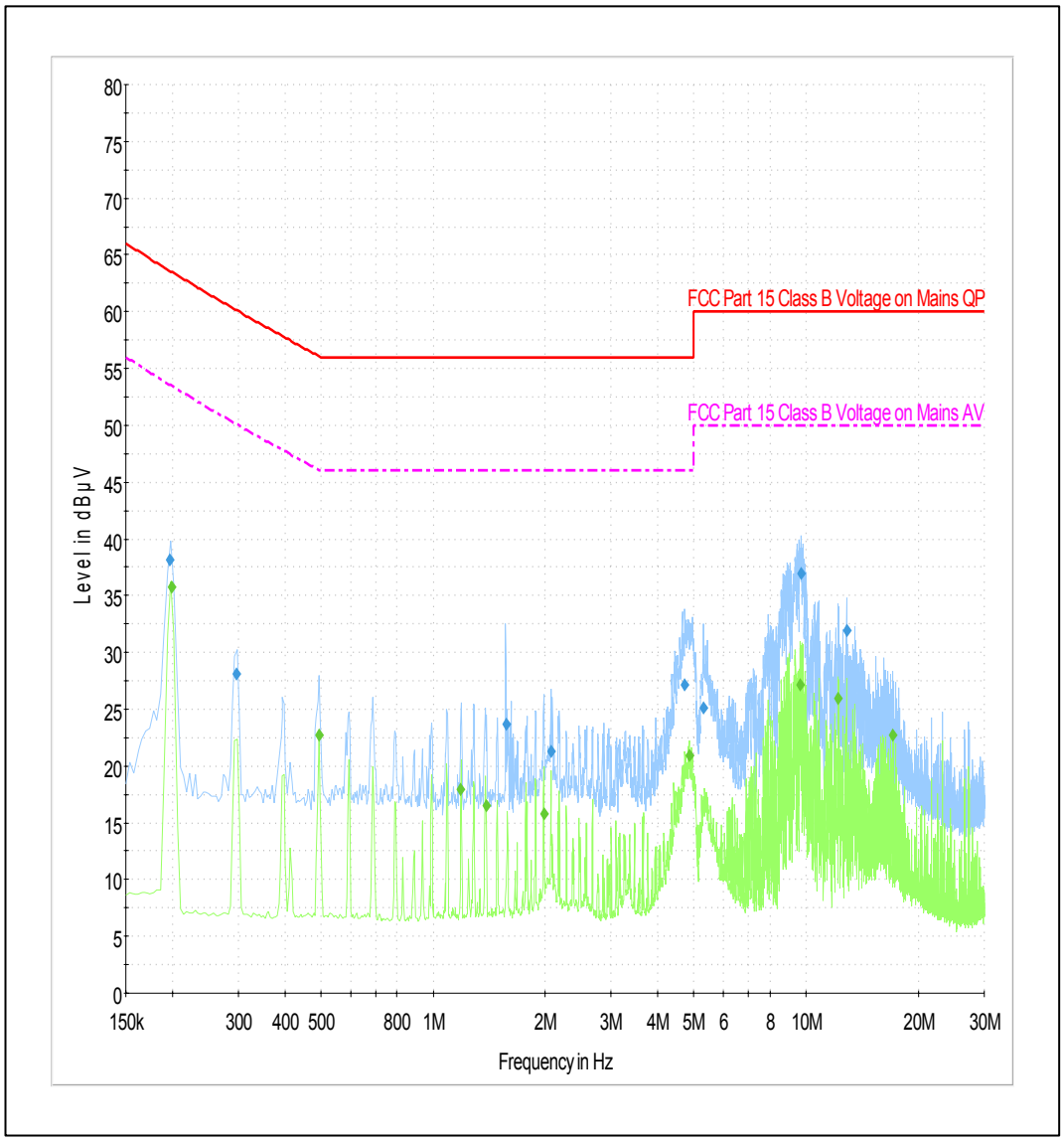
Frequency [MHz]	Line	Bandwidth [kHz]	Factor [dB]	Average [dBuV]	Margin [dB]	Limit [dBuV]
0.294	N	9.0	9.6	19.7	30.5	50.2
0.403	N	9.0	9.6	21.5	26.2	47.7
0.555	L1	9.0	9.6	16.1	29.9	46.0
0.618	L1	9.0	9.6	18.9	27.1	46.0
0.937	L1	9.0	9.7	19.6	26.4	46.0
4.263	N	9.0	9.8	17.1	28.9	46.0
9.942	L1	9.0	9.9	21.2	28.8	50.0
12.786	N	9.0	10.0	17.5	32.5	50.0
17.313	L1	9.0	10.1	24.9	25.1	50.0
23.129	L1	9.0	10.3	23.9	26.1	50.0

Note) Level (Qausi-Peak and/or Average) = Meter Reading(Quasi-Peak and/or Average) + Factor (LISN Insertion Loss + Cable Loss)

Margin = Limit – Level (Quasi-Peak and/or Average)

- **Configuration 2 : Standby Mode**

Test Graph



Note) Two graphs measured for both Live(L1) and Neutral(N) of the LISN are combined into one graph.

Test Results (Quasi-Peak and Average)

Frequency [MHz]	Line	Bandwidth [kHz]	Factor [dB]	Quasi-Peak [dBuV]	Margin [dB]	Limit [dBuV]
0.197	L1	9.0	9.6	38.2	25.4	63.6
0.297	N	9.0	9.6	28.1	32.1	60.1
1.572	L1	9.0	9.7	23.7	32.3	56.0
2.067	N	9.0	9.7	21.3	34.7	56.0
4.727	N	9.0	9.8	27.1	28.9	56.0
5.298	L1	9.0	9.8	25.1	34.9	60.0
9.695	N	9.0	9.9	37.0	23.0	60.0
12.810	N	9.0	10.0	32.0	28.0	60.0

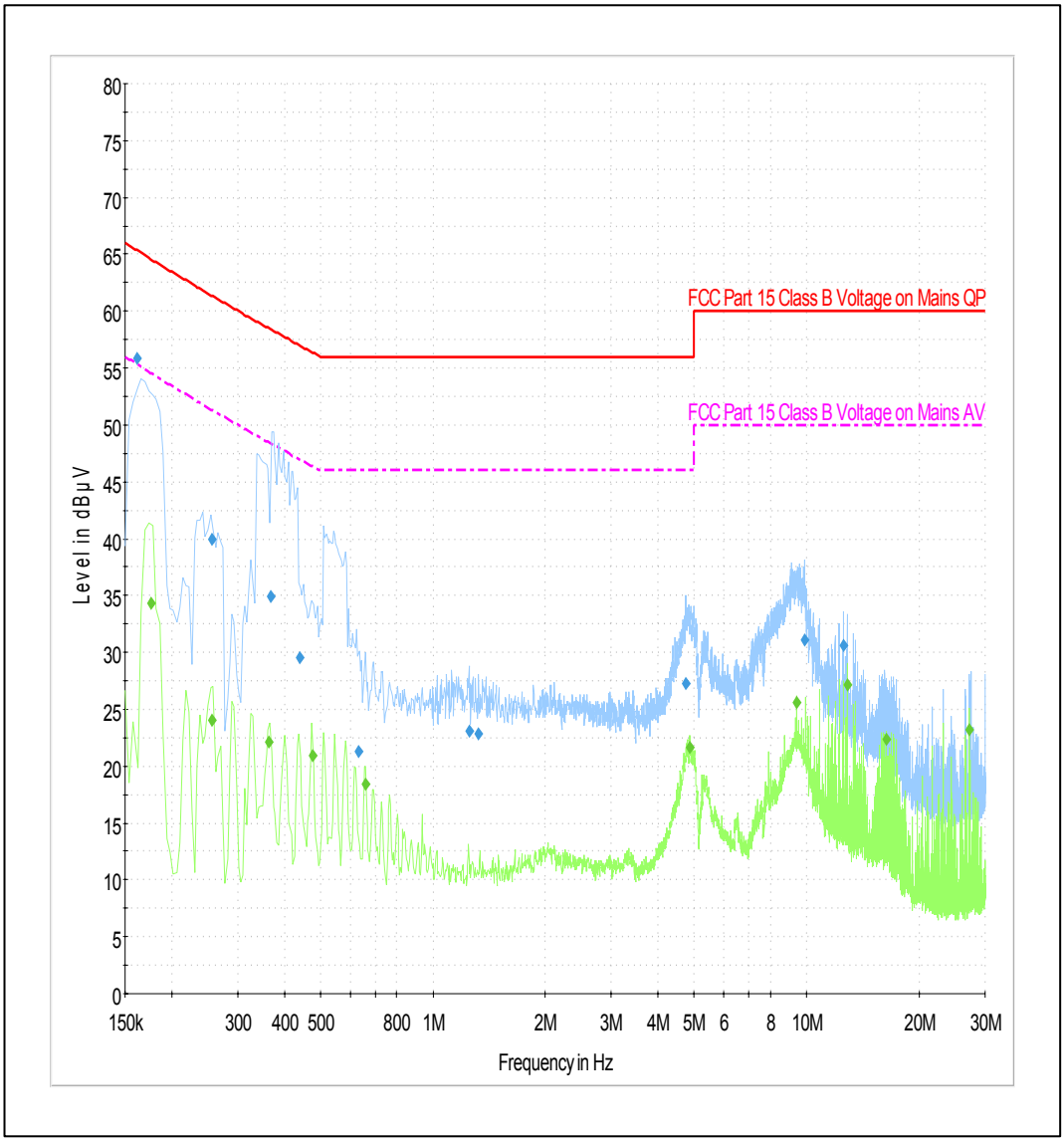
Frequency [MHz]	Line	Bandwidth [kHz]	Factor [dB]	Average [dBuV]	Margin [dB]	Limit [dBuV]
0.199	L1	9.0	9.6	35.8	17.7	53.5
0.495	N	9.0	9.6	22.7	23.4	46.1
1.187	N	9.0	9.7	18.0	28.0	46.0
1.388	N	9.0	9.7	16.5	29.5	46.0
1.981	N	9.0	9.7	15.8	30.2	46.0
4.860	L1	9.0	9.8	21.0	25.0	46.0
9.606	N	9.0	9.9	27.2	22.8	50.0
12.138	L1	9.0	10.0	26.0	24.0	50.0
17.008	L1	9.0	10.1	22.7	27.3	50.0

Note) Level (Qausi-Peak and/or Average) = Meter Reading(Quasi-Peak and/or Average) + Factor (LISN Insertion Loss + Cable Loss)

Margin = Limit – Level (Quasi-Peak and/or Average)

- **Configuration 2 : USB Printing Mode**

Test Graph



Note) Two graphs measured for both Live(L1) and Neutral(N) of the LISN are combined into one graph.

Test Results (Quasi-Peak and Average)

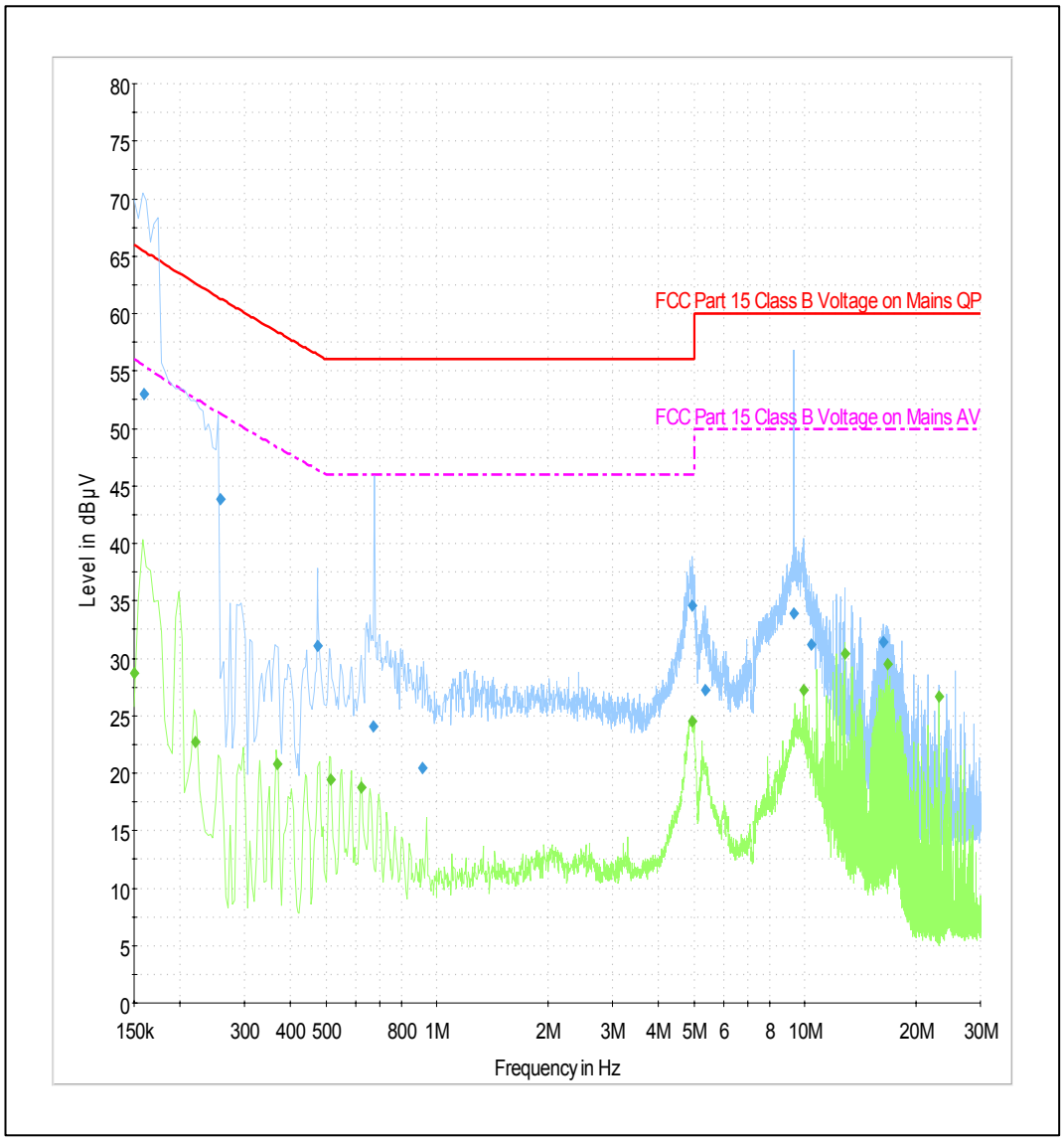
Frequency [MHz]	Line	Bandwidth [kHz]	Factor [dB]	Quasi-Peak [dBuV]	Margin [dB]	Limit [dBuV]
0.162	L1	9.0	9.6	55.8	9.5	65.3
0.257	L1	9.0	9.6	39.9	21.4	61.3
0.368	L1	9.0	9.6	34.9	23.5	58.4
0.439	L1	9.0	9.6	29.5	27.5	57.0
0.631	L1	9.0	9.6	21.3	34.7	56.0
1.251	N	9.0	9.7	23.1	32.9	56.0
1.326	N	9.0	9.7	22.9	33.1	56.0
4.748	N	9.0	9.8	27.2	28.8	56.0
9.858	N	9.0	9.9	31.1	28.9	60.0
12.504	N	9.0	10	30.7	29.3	60.0

Frequency [MHz]	Line	Bandwidth [kHz]	Factor [dB]	Average [dBuV]	Margin [dB]	Limit [dBuV]
0.177	L1	9.0	9.6	34.4	20.2	54.5
0.257	N	9.0	9.6	24.0	27.3	51.3
0.364	L1	9.0	9.6	22.2	26.3	48.5
0.476	L1	9.0	9.6	21.0	25.4	46.4
0.659	L1	9.0	9.7	18.5	27.5	46.0
4.871	N	9.0	9.8	21.7	24.3	46.0
9.389	N	9.0	9.9	25.6	24.4	50.0
12.809	N	9.0	10.0	27.1	22.9	50.0
16.336	L1	9.0	10.1	22.4	27.6	50.0
27.159	L1	9.0	10.4	23.2	26.8	50.0

Note) Level (Qausi-Peak and/or Average) = Meter Reading(Quasi-Peak and/or Average) +
Factor (LISN Insertion Loss + Cable Loss)
Margin = Limit – Level (Quasi-Peak and/or Average)

- **Configuration 2 : Network Printing Mode**

Test Graph



Note) Two graphs measured for both Live(L1) and Neutral(N) of the LISN are combined into one graph.

Test Results (Quasi-Peak and Average)

Frequency [MHz]	Line	Bandwidth [kHz]	Factor [dB]	Quasi-Peak [dBuV]	Margin [dB]	Limit [dBuV]
0.160	N	9.0	9.6	53.0	12.5	65.4
0.258	N	9.0	9.6	43.9	17.4	61.3
0.473	L1	9.0	9.6	31.0	25.4	56.4
0.672	N	9.0	9.6	24.1	31.9	56.0
0.915	L1	9.0	9.7	20.4	35.6	56.0
4.935	N	9.0	9.8	34.6	21.4	56.0
5.351	N	9.0	9.8	27.2	32.8	60.0
9.337	N	9.0	9.9	33.9	26.1	60.0
10.427	N	9.0	9.9	31.2	28.8	60.0
16.336	N	9.0	10.1	31.5	28.5	60.0

Frequency [MHz]	Line	Bandwidth [kHz]	Factor [dB]	Average [dBuV]	Margin [dB]	Limit [dBuV]
0.151	N	9.0	9.6	28.7	27.3	56.0
0.220	N	9.0	9.6	22.7	29.9	52.6
0.367	N	9.0	9.6	20.8	27.6	48.4
0.514	L1	9.0	9.6	19.4	26.6	46.0
0.623	L1	9.0	9.6	18.8	27.2	46.0
4.931	L1	9.0	9.8	24.5	21.5	46.0
9.939	N	9.0	9.9	27.2	22.8	50.0
12.809	L1	9.0	10.0	30.4	19.6	50.0
16.825	N	9.0	10.1	29.4	20.6	50.0
23.129	L1	9.0	10.3	26.7	23.3	50.0

Note) Level (Qausi-Peak and/or Average) = Meter Reading(Quasi-Peak and/or Average) + Factor (LISN Insertion Loss + Cable Loss)

Margin = Limit – Level (Quasi-Peak and/or Average)

4.2 Radiated disturbance

Of those disturbances above (*L* - 20dB), where *L* is the limit level in logarithmic units, record at least the disturbance levels and the frequencies of the six highest disturbances.
The following data lists the significant emission frequencies, measured levels, correction factors (for antenna and cables), orientation of table, polarization and height of antenna, the corrected reading, the limit, and the amount of margin. All measurements were taken utilizing quasi-peak detection unless stated otherwise.
Measurements were performed at an antenna to EUT distance of 10 meters and elevated between 1 and 4 meters. Both vertical and horizontal antenna polarizations were measured.

Limits for radiated disturbance of ITE at a measuring distance of 10 m

Frequency range Limits MHz	Quasi-peak Limits dB dB(μV/m)	
	Class A	Class B
30 to 230	40	30
230 to 1000	47	37
Note 1: The lower limit shall apply at the transition frequency. Note 2: Additional provisions may be required for cases where interference occurs. Note 3: 1 μV/m is regarded as 0 dB.		

4.2.1 Test instrumentation

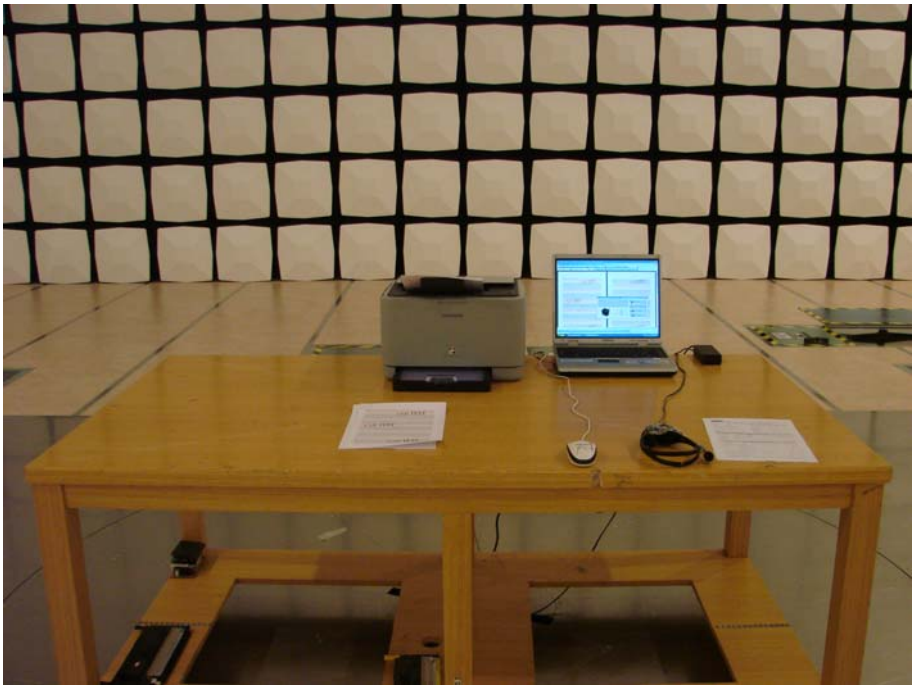
Test instrumentations used in the Radiated disturbance test were as follows:

Test instrumentation	Model name	Manufacturer	Serial or Firmware (No./Ver.)	Calibration	
				Date	Interval (Month)
Bi-con Antenna	CBL6112D	Schaffner	22602	2006-06-26	24
Bi-con Antenna	CBL6112D	Schaffner	22601	2007-04-02	24
Horn Antenna	BBHA9120B	Schwarzbeck	336	2007-03-15	24
EMI Receiver	ESIB-26	R&S	100289	2007-03-22	12
EMI Receiver	ESIB-26	R&S	100287	2007-04-10	12
Amplifier	310N	Agilent	186467	2007-03-17	12
Amplifier	310N	Agilent	251673	2007-03-17	12
Amplifier	TPA0108-40	TOYO	0433	N/A	N/A
Antenna Mast	MA4000	INN CO	-	N/A	N/A
Antenna Mast	MA4000	INN CO	-	N/A	N/A
Antenna Mast	MA2000	INN CO	-	N/A	N/A
Mast Controller	CO2000	INN CO	-	N/A	N/A
Test software	EP5/RE	TOYO	VER 3.1.20	N/A	N/A
RF Selector	NS4900	TOYO	-	N/A	N/A

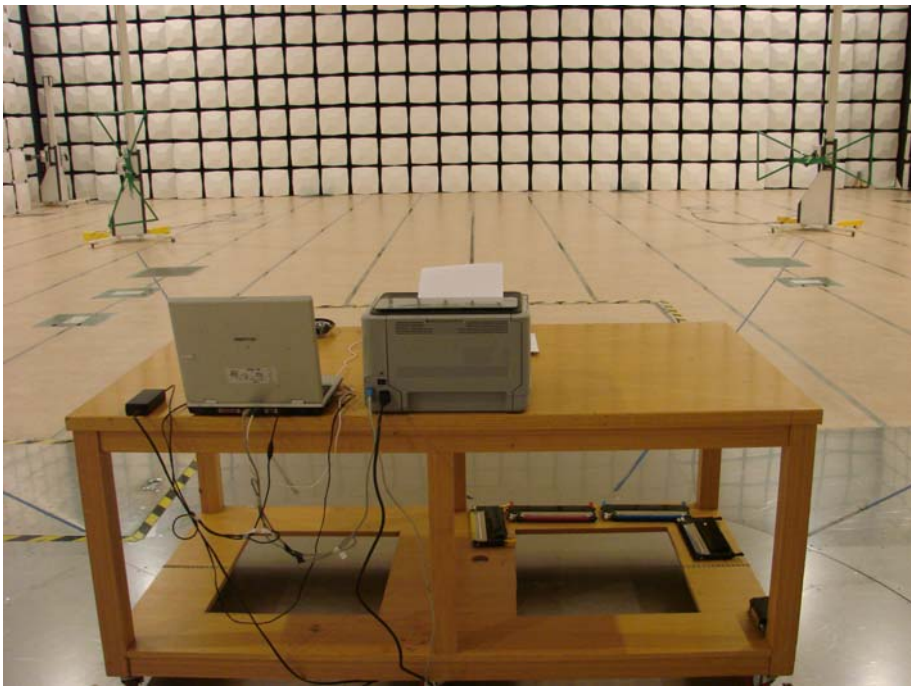
4.2.2 Temperature and humidity condition

Test date	February 11, 2008	**Test engineer**	Kyeong Dong Kim	
Climate condition	**Ambient temperature**	23.5 ℃	**Relative humidity**	32 %
	Atmospheric pressure	101.8 kPa		
Test place	Semi-Anechoic Chamber			

4.2.3 Photograph of Test setup (30 MHz ~ 1 GHz)



Front

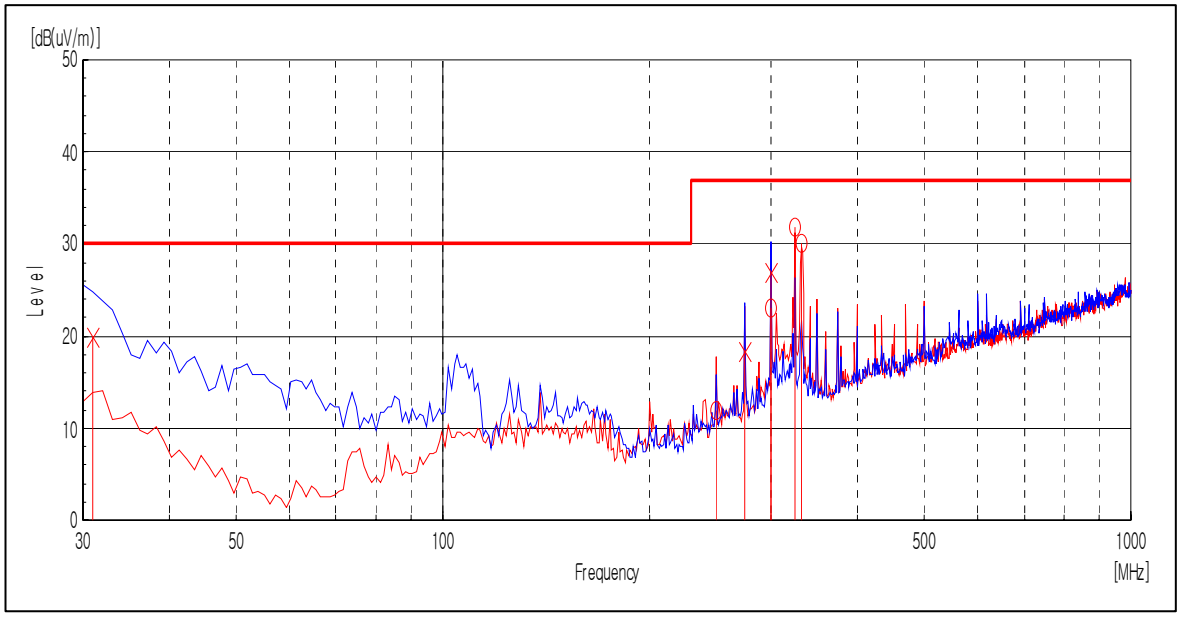


Rear

4.2.4 Test results (30 MHz ~ 1 GHz)

- **Configuration 1 : Standby Mode**

Test Graph and Results



Frequency [MHz]	Pol.	Reading QP [dB(uV)]	Factor [dB(1/m)]	Level QP [dB(uV/m)]	Limit [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]
31.04	V	34.0	-14.0	20.0	30	10.0	298	225
249.88	H	28.0	-16.1	11.9	37	25.1	350	59
274.89	V	34.0	-15.6	18.4	37	18.6	189	218
299.99	H	37.4	-14.3	23.1	37	13.9	232	0
300.01	V	41.5	-14.6	26.9	37	10.1	109	0
325.00	H	45.3	-13.5	31.8	37	5.2	246	137
332.19	H	43.5	-13.4	30.1	37	6.9	300	131

Note) Receiving antenna polarization : Horizontal and/or Vertical

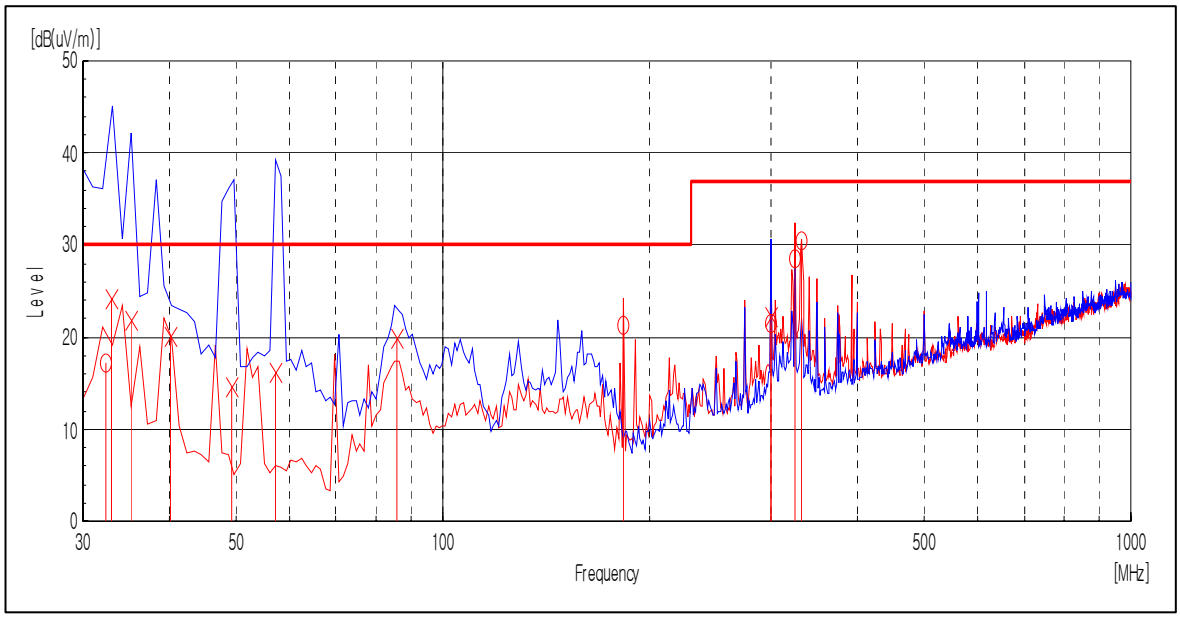
Test Distance : 10m, Antenna Height : 1 to 4 meters

Level QP(Quasi-Peak) = Reading QP + Factor(Antenna Factor + Cable Loss - Amp. Gain)

Margin QP(Qausi-Peak) = Limit – Level QP

- **Configuration 1 : USB Printing**

Test Graph and Results



Frequency [MHz]	Pol.	Reading QP [dB(uV)]	Factor [dB(1/m)]	Level QP [dB(uV/m)]	Limit [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]
32.40	H	31.5	-14.3	17.2	30	12.8	400	353
33.02	V	39.2	-15.0	24.2	30	5.8	326	2
35.21	V	38.0	-16.1	21.9	30	8.1	246	45
40.25	V	38.8	-18.6	20.2	30	9.8	400	8
49.44	V	37.7	-23.1	14.6	30	15.4	325	320
57.09	V	41.1	-24.9	16.2	30	13.8	345	325
85.63	V	41.8	-21.8	20.0	30	10.0	125	320
183.19	H	41.5	-20.3	21.2	30	8.8	146	42
299.90	V	36.9	-14.6	22.3	37	14.7	150	157
300.03	H	35.8	-14.3	21.5	37	15.5	307	0
325.01	H	45.5	-13.5	32.0	37	5.0	245	32
331.90	H	43.8	-13.4	30.4	37	6.6	281	102

Note) Receiving antenna polarization : Horizontal and/or Vertical

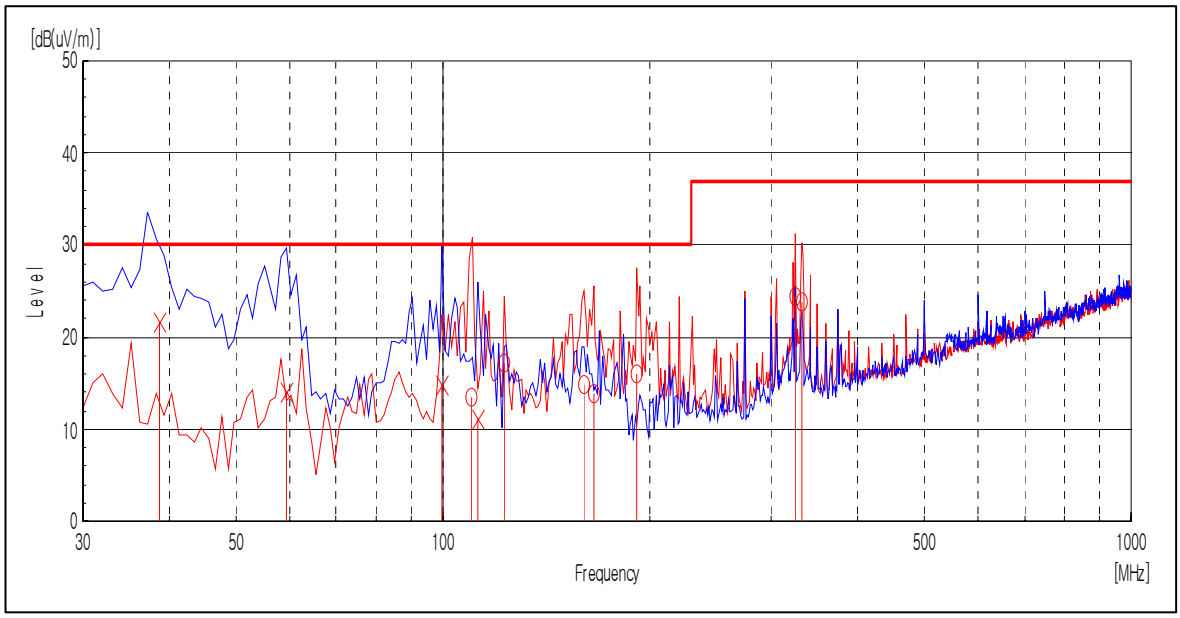
Test Distance : 10m, Antenna Height : 1 to 4 meters

Level QP(Quasi-Peak) = Reading QP + Factor(Antenna Factor + Cable Loss - Amp. Gain)

Margin QP(Qausi-Peak) = Limit – Level QP

- **Configuration 1 : Network Printing**

Test Graph and Results



Frequency [MHz]	Pol.	Reading QP [dB(uV)]	Factor [dB(1/m)]	Level QP [dB(uV/m)]	Limit [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]
38.81	V	39.6	-17.9	21.7	30	8.3	324	6
59.18	V	39.0	-25.0	14.0	30	16.0	290	60
99.82	V	34.0	-19.2	14.8	30	15.2	142	246
109.95	H	31.1	-17.7	13.4	30	16.6	400	346
112.47	V	29.3	-18.1	11.2	30	18.8	130	258
122.75	H	34.4	-17.2	17.2	30	12.8	350	249
160.26	H	34.0	-19.1	14.9	30	15.1	250	300
165.47	H	33.0	-19.2	13.8	30	16.2	270	60
191.52	H	36.0	-20.0	16.0	30	14.0	265	302
324.91	H	38.0	-13.5	24.5	37	12.5	265	50
332.20	H	37.2	-13.4	23.8	37	13.2	301	170

Note) Receiving antenna polarization : Horizontal and/or Vertical

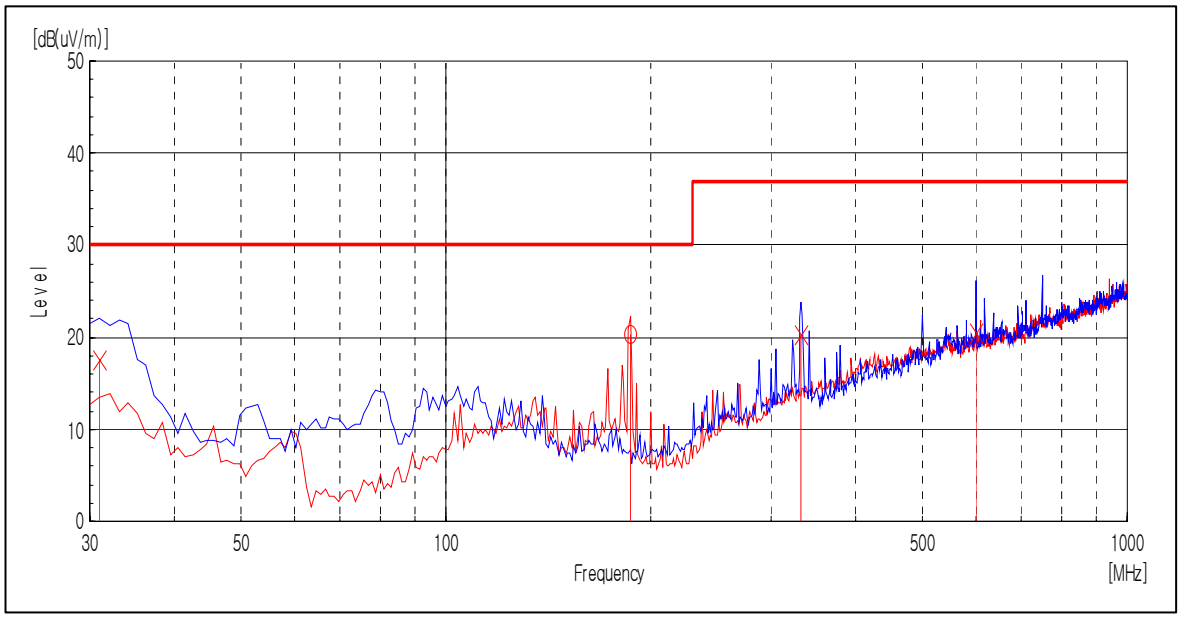
Test Distance : 10m, Antenna Height : 1 to 4 meters

Level QP(Quasi-Peak) = Reading QP + Factor(Antenna Factor + Cable Loss - Amp. Gain)

Margin QP(Qausi-Peak) = Limit – Level QP

- **Configuration 2 : Standby Mode**

Test Graph and Results



Frequency [MHz]	Pol.	Reading QP [dB(uV)]	Factor [dB(1/m)]	Level QP [dB(uV/m)]	Limit [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]
31.04	V	31.5	-14.0	17.5	30	12.5	165	95
186.31	H	40.6	-20.2	20.4	30	9.6	345	131
332.20	V	33.5	-13.2	20.3	37	16.7	150	235
599.60	V	27.8	-7.2	20.6	37	16.4	255	335

Note) Receiving antenna polarization : Horizontal and/or Vertical

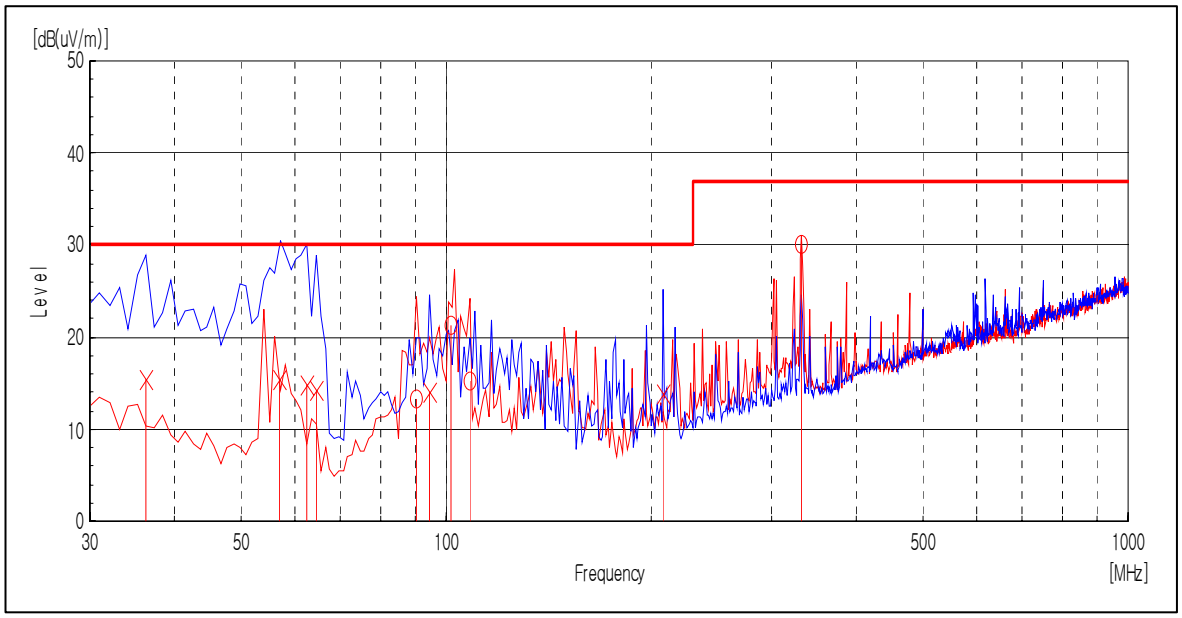
Test Distance : 10m, Antenna Height : 1 to 4 meters

Level QP(Quasi-Peak) = Reading QP + Factor(Antenna Factor + Cable Loss - Amp. Gain)

Margin QP(Qausi-Peak) = Limit – Level QP

- **Configuration 2 : USB Printing**

Test Graph and Results



Frequency [MHz]	Pol.	Reading QP [dB(uV)]	Factor [dB(1/m)]	Level QP [dB(uV/m)]	Limit [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]
36.25	V	32.1	-16.6	15.5	30	14.5	187	132
56.84	V	40.3	-24.9	15.4	30	14.6	133	132
62.31	V	39.9	-25.0	14.9	30	15.1	250	12
64.39	V	39.3	-25.0	14.3	30	15.7	356	299
90.44	H	34.0	-20.8	13.2	30	16.8	355	174
94.61	V	34.1	-20.1	14.0	30	16.0	185	241
101.61	H	39.8	-18.6	21.2	30	8.8	340	174
108.16	H	33.1	-17.9	15.2	30	14.8	340	188
208.20	V	33.6	-19.7	13.9	30	16.1	150	12
331.86	H	43.5	-13.4	30.1	37	6.9	205	145

Note) Receiving antenna polarization : Horizontal and/or Vertical

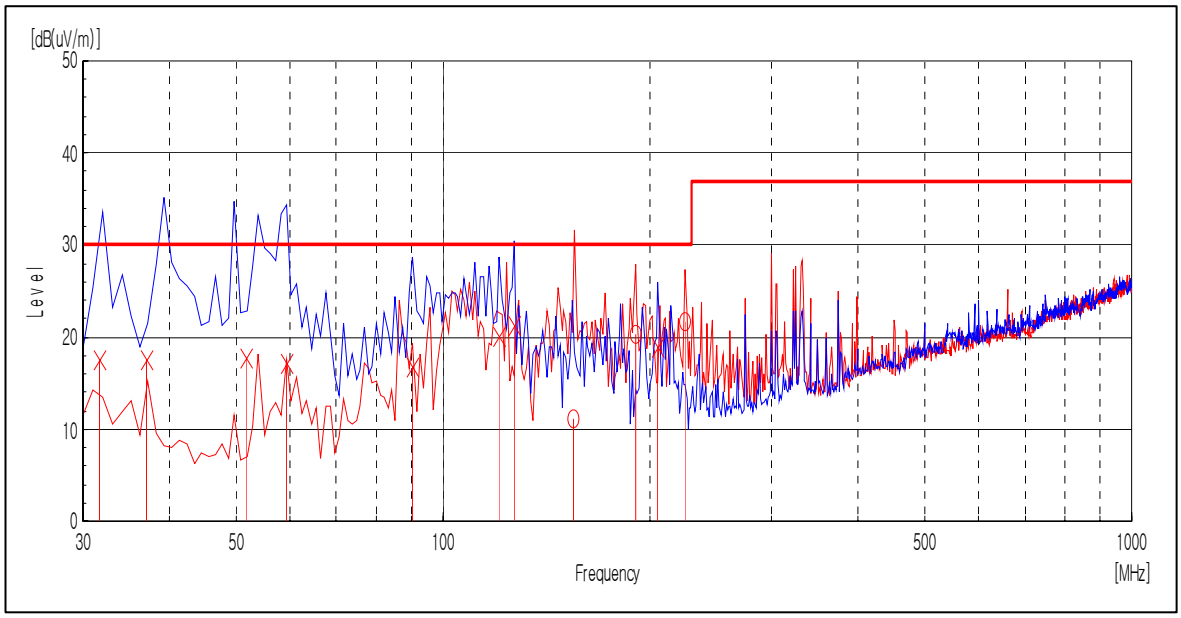
Test Distance : 10m, Antenna Height : 1 to 4 meters

Level QP(Quasi-Peak) = Reading QP + Factor(Antenna Factor + Cable Loss - Amp. Gain)

Margin QP(Qausi-Peak) = Limit – Level QP

- **Configuration 2 : Network Printing**

Test Graph and Results



Frequency [MHz]	Pol.	Reading QP [dB(uV)]	Factor [dB(1/m)]	Level QP [dB(uV/m)]	Limit [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]
31.67	V	31.8	-14.3	17.5	30	12.5	109	357
37.11	V	34.5	-17.0	17.5	30	12.5	103	81
51.84	V	41.7	-23.9	17.8	30	12.2	400	132
59.18	V	42.2	-25.0	17.2	30	12.8	209	203
90.44	V	37.7	-20.9	16.8	30	13.2	342	198
120.66	V	37.9	-17.8	20.1	30	9.9	130	212
126.91	V	39.3	-18.1	21.2	30	8.8	302	166
154.47	H	30.0	-19.0	11.0	30	19.0	339	52
190.48	H	40.4	-20.1	20.3	30	9.7	250	350
205.07	V	38.9	-20.0	18.9	30	11.1	156	11
224.87	H	40.9	-19.3	21.6	30	8.4	150	9

Note) Receiving antenna polarization : Horizontal and/or Vertical

Test Distance : 10m, Antenna Height : 1 to 4 meters

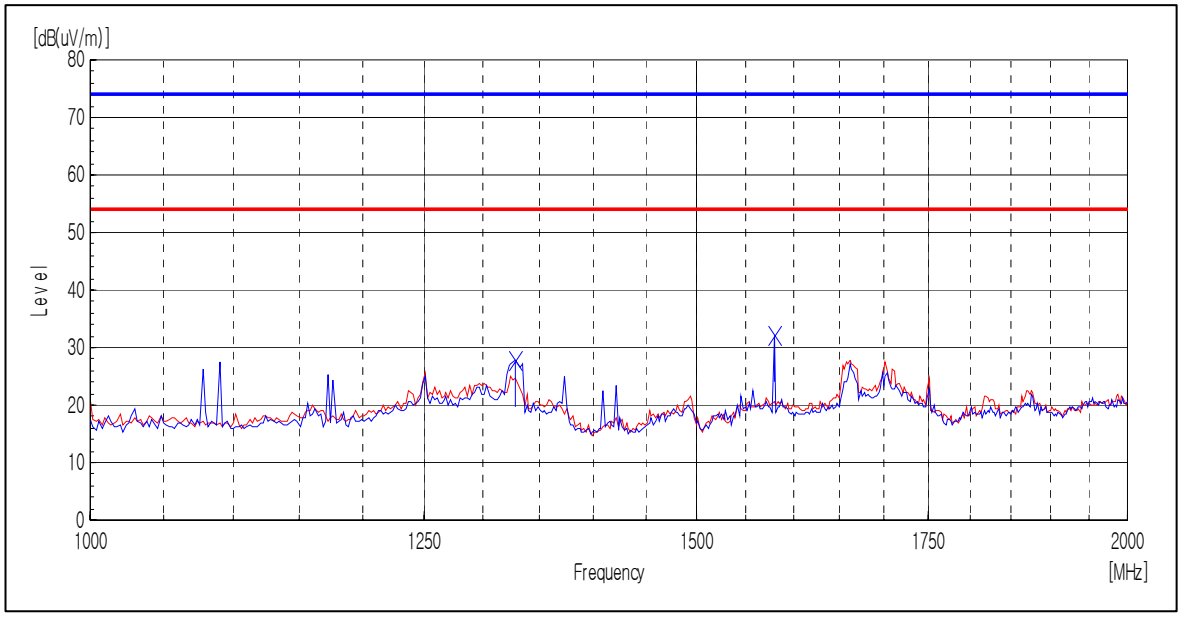
Level QP(Quasi-Peak) = Reading QP + Factor(Antenna Factor + Cable Loss - Amp. Gain)

Margin QP(Qausi-Peak) = Limit – Level QP

4.2.5 Test results (1 GHz ~ 2 GHz)

- **Configuration 1 : USB Printing**

Test Graph and Results



Frequency [MHz]	Pol.	Reading PK [dB(uV)]	Factor [dB(1/m)]	Level PK [dB(uV/m)]	Limit [dB(uV/m)]	Margin PK [dB]	Height [cm]	Angle [deg]
1328.66	V	38.7	-11.0	27.7	74	46.3	100	329
1579.16	V	42.2	-9.9	32.3	74	41.7	200	0

Note1) Representative operating mode having minimum margin below 1GHz were selected for radiated emission test above 1GHz, and any emissions that do NOT exceed Average limit were not tested with average detector mode.

Note2) Receiving antenna polarization : Horizontal and/or Vertical

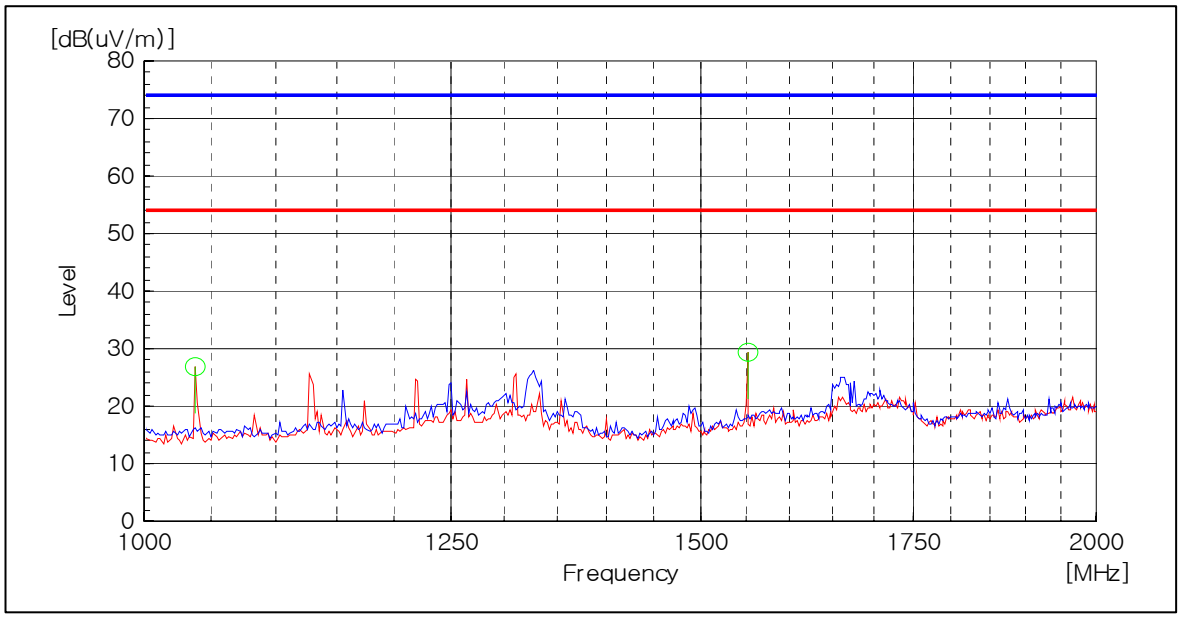
Test Distance : 3m, Antenna Height : 1 to 2 meters

Level PK(Peak) = Reading PK(Peak) + Factor(Antenna Factor + Cable Loss - Amp. Gain)

Margin PK(Peak) = Limit – Level PK(Peak)

- **Configuration 2 : USB Printing**

Test Graph and Results



Frequency [MHz]	Pol.	Reading PK [dB(uV)]	Factor [dB(1/m)]	Level PK [dB(uV/m)]	Limit [dB(uV/m)]	Margin PK [dB]	Height [cm]	Angle [deg]
1038.08	H	39.3	-12.4	26.9	54	27.1	200	328
1551.10	H	39.4	-10.0	29.4	54	24.6	200	349

Note1) Representative operating mode having minimum margin below 1GHz were selected for radiated emission test above 1GHz, and any emissions that do NOT exceed Average limit were not tested with average detector mode.

Note2) Receiving antenna polarization : Horizontal and/or Vertical

Test Distance : 3m, Antenna Height : 1 to 2 meters

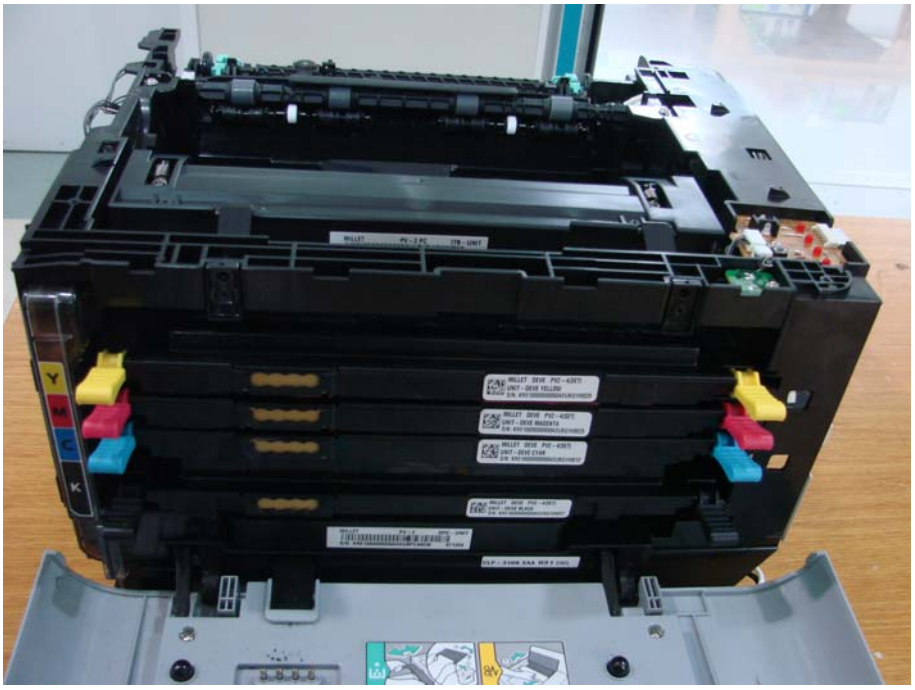
Level PK(Peak) = Reading PK(Peak) + Factor(Antenna Factor + Cable Loss - Amp. Gain)

Margin PK(Peak) = Limit – Level PK(Peak)

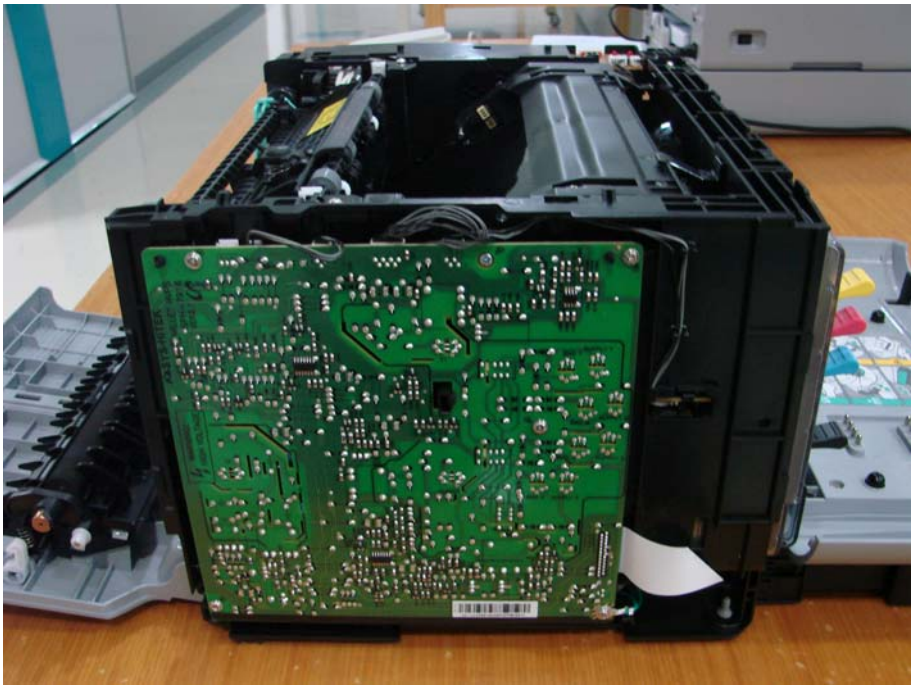
Appendix – EUT photography

Front View

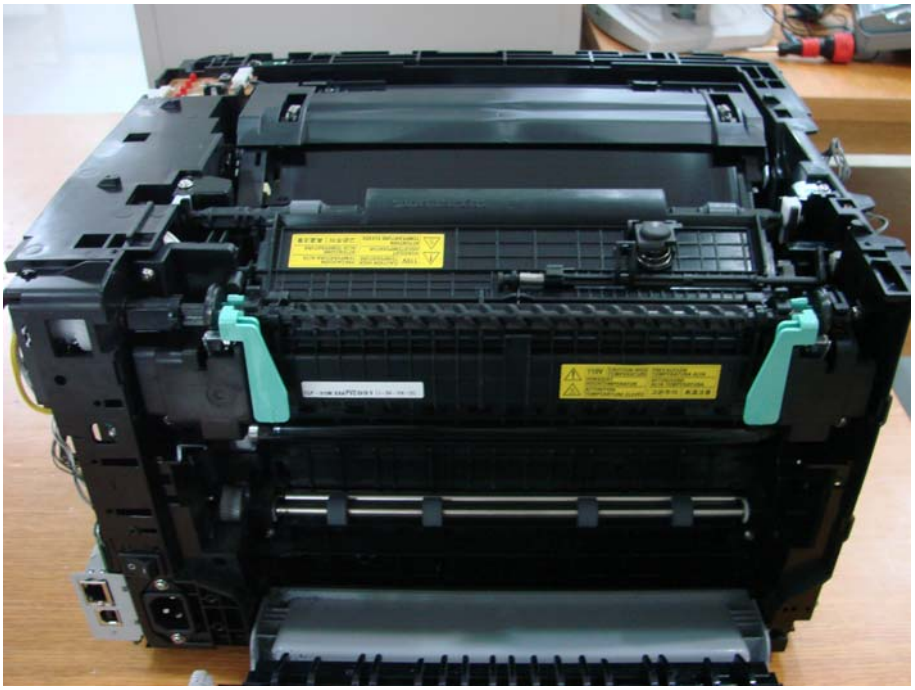
Rear View



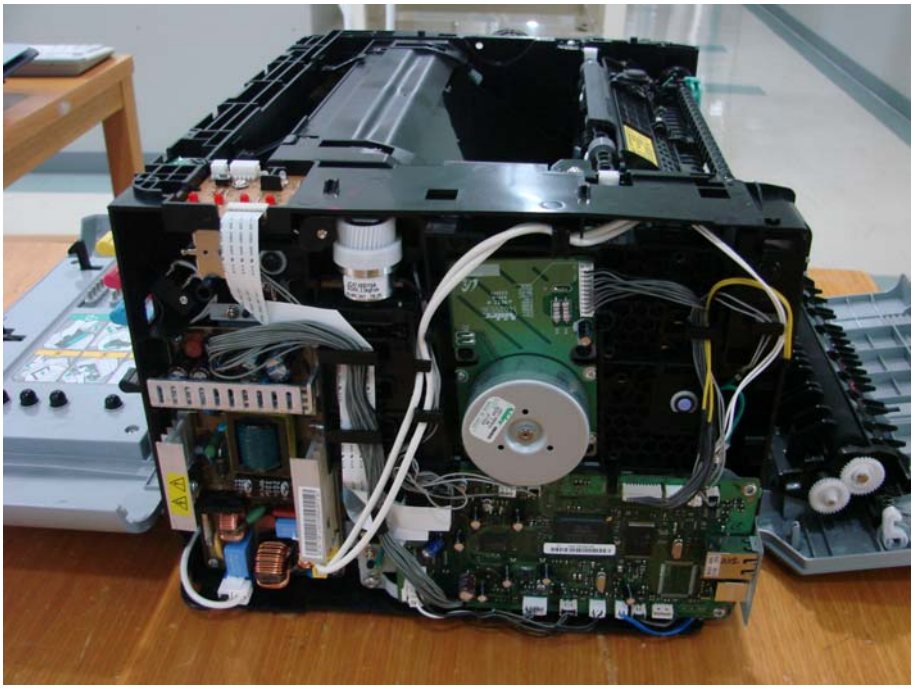
Internal View 1



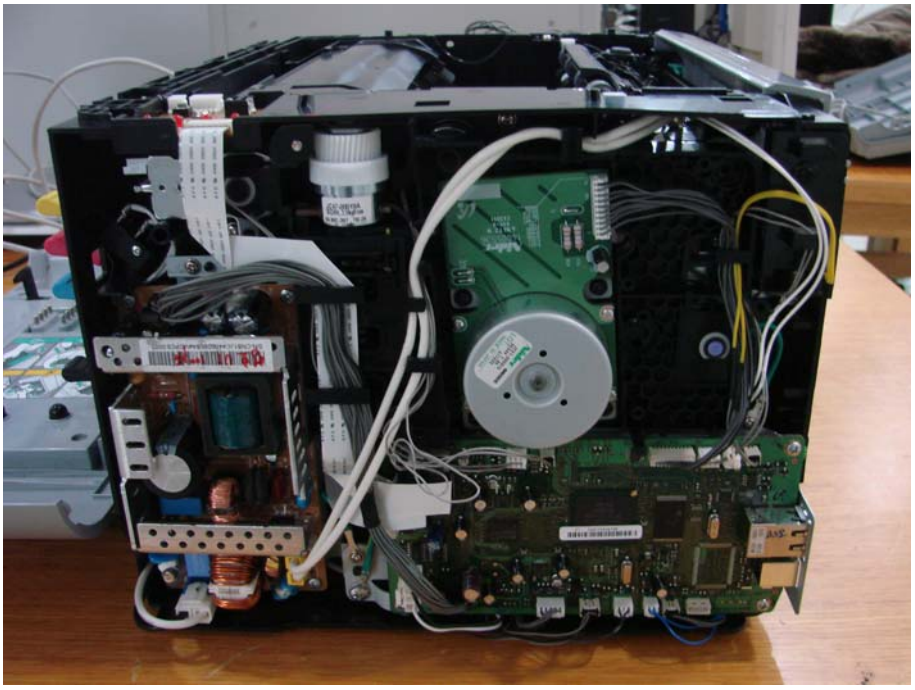
Internal View 2



Internal View 3

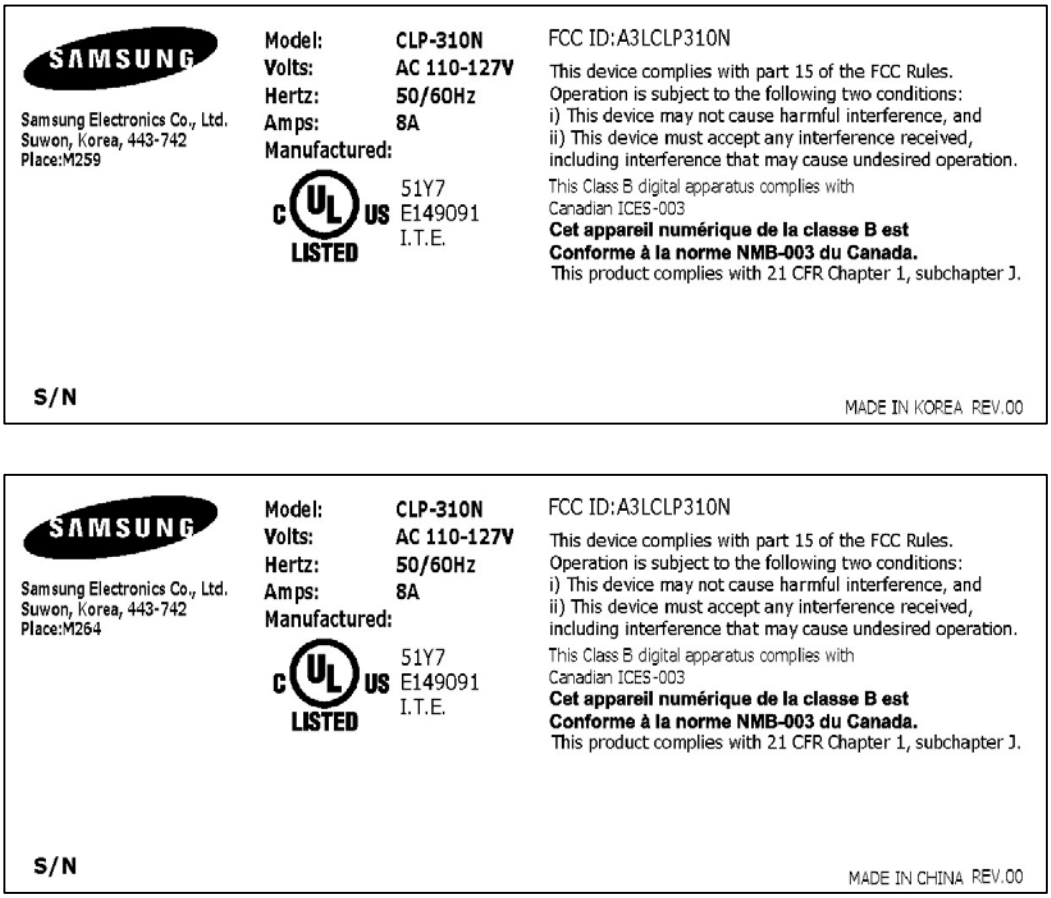


Internal View 4
(with Samsung Electro-Mechanics SMPS board)



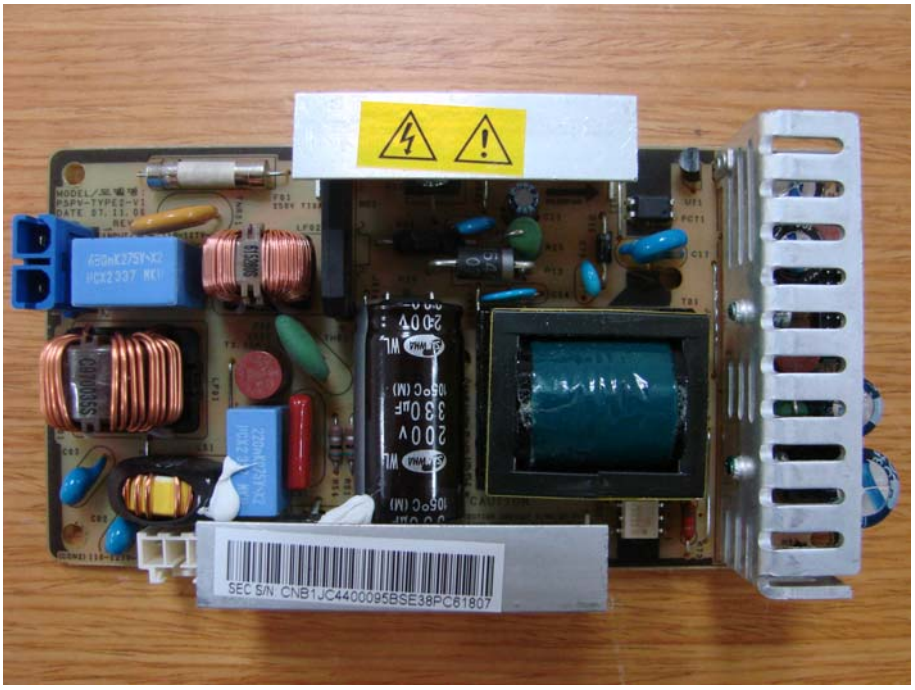
Internal View 5
(with Sungho Electronics SMPS board)

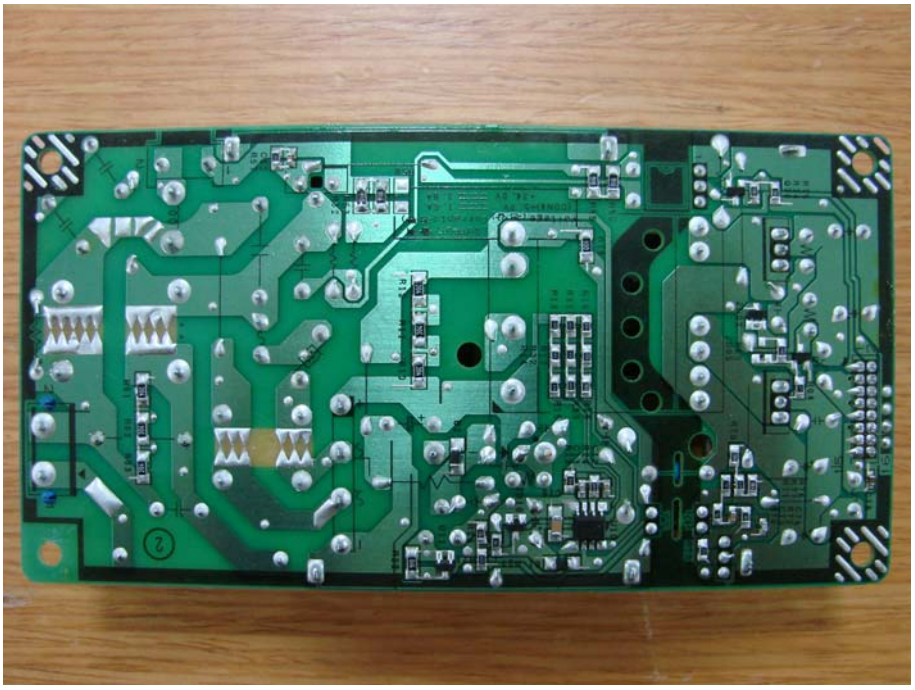
Label Location



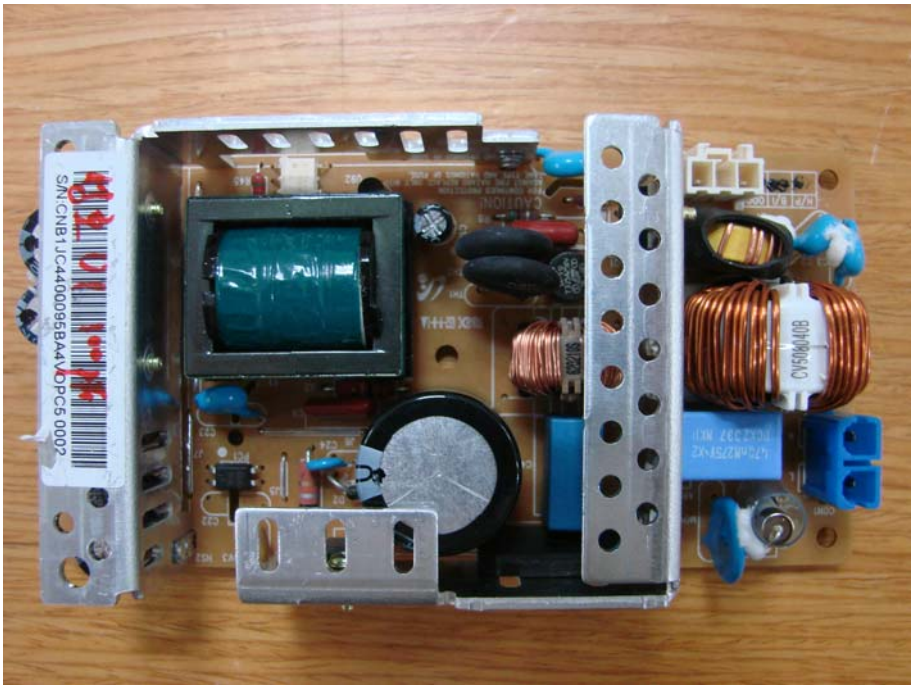
Rating Label

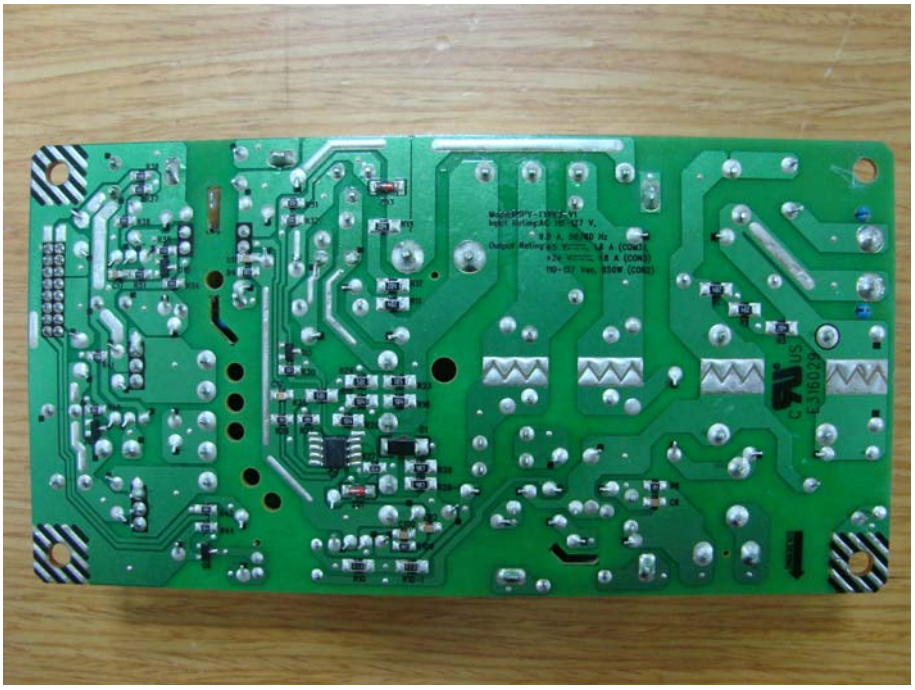
Note) Rating labels for variant models are same as above except model name.





SMPS board (Samsung Electro-Mechanics)





SMPS board (Sungho Electronics)