EMC TEST REPORT

Project No.	LBE20121715	**Issue No.**	0
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	March 27, 2012	
EUT	**Type of device**	Class B personal computers and peripherals	
	Equipment authorization	☐ Declaration of Conformity ☒ Certification ☐ Verification	
	FCC ID	**A3LCLP680DW**	
	Kind of product	**Color Printer**	
	Model No.	**CLP-680DW**	
		Variant Model No.	CLP-680ND
	Manufacturer	**Samsung Electronics Co., Ltd.** 259, Gongdan-Dong, Gumi-City, Gyeongsangbuk-Do, Korea 730-030 **Samsung Electronics (Shandong) Digital Printing Co., Ltd.** 264209, Samsung Road, Weihai Hi-Tech. IDZ, Shandong Province, P.R.China **Weihai Shin Heung Digital Electronics Co., Ltd.** 98, Samsung Road, Weihai Hi-Tech. IDZ, Shandong Province, P.R.China **Intops : Intops (Weihai) Electronics Co., Ltd.** Keji Road-268-1 , Weihai Hi-Tech,Industries Development Zone , Shandong Province , CHINA	
Applied Standards		FCC Part 15, Subpart B / ANSI C63.4-2009	
Test Period		April 21, 2012 ~ April 23, 2012	
Issue date		April 23, 2012	

Test result : **Complied**

The equipment under test has found to be compliant with the applied standards.
The result is not applied the uncertainty concept.
This mean that the result is applied the original (standard) limit.
(Refer to the attached test result for more detail.)

Tested by : Young Ju Ryu	**Reviewed by** : Tae Young Jang
Y. J. Ryu	

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 CS & Environment center.

SAMSUNG

416 Maetan 3-Dong, Yeongtong-Gu, Suwon-Si, Gyeonggi-Do, 443-742 Korea
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1. Report information

1.1 Revision history

No.	Revised detailed information
Issue 0	There are no revisions and this version is basic test report.

1.2 Sample calculation

1.2.1 Conducted disturbance (at 10 MHz)

- Class B limit = 60 dBµV (Quasi-peak limit)
- Level (50 dBµV) = Meter Reading (40.2 dBµV) + factor (9.8 dB, AMN factor 9.7 dB + Cable loss 0.1 dB)
- Margin (10 dB) = Limit (60 dBµV) – Level (50 dBµV) = 10 dB below limit

1.2.2 Radiated disturbance (at 100 MHz)

- Class B limit = 30 dBµV/m at 10 m
- Level (20 dBµV/m)
  = Meter Reading (40 dBµV) + factor (- 20 dB (1/m), antenna factor + cable loss – amplifier gain)
- Margin (10 dB) = Limit (30 dBµV/m) – Level (20 dBµV/m) = 10 dB below limit

2. Summary of test results

2.1 Emission

The EUT has been tested according to the following specifications:

Applied	Test type	Applied standard	Result
☒	Conducted Disturbance (Mains Port)	FCC Part 15 Subpart B / ANSI C63.4-2009	Complied
☒	Radiated Disturbance		Complied

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3. General Information

3.1 Test facility

The CS & Environment center 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 CS & Environment center is operated as testing laboratory in accordance with the requirements of ISO/IEC 17025:2005.

4. Test Setup configuration

4.1 Test Peripherals

The cables used for these peripherals are either permanently attached by the peripheral manufacturer or coupled with an assigned cable as defined below.
The following is a listing of the EUT and peripherals utilized during the performance of EMC test:

Seq	Description	Model No.	Serial No.	Manufacturer	Fcc ID / DoC
A	COLOR PRINTER	CLP-680DW	-	Samsung	EUT
B	PC	D410	CN-0P6928-36521-518-0019	Dell	DoC
C	Adapter (For PC)	LA65NS1-00	CN-0YD637-71615-83C-0A0A	Liteon	DoC
D	USB Mouse	MOARUO	0827010021	PRIMAX electronics	DoC
E	Headset	-	-	ACTTO	-

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4.2 EUT operating mode

To achieve compliance applied standard specification, the following mode(s) were made during compliance testing:

Operating Mode 1	Stand-by
Operating Mode 2	USB printing

4.3 Details of Sampling

Customer selected, single unit.

4.4 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;

No.	Connected cable	Length [m]	Shielded [Y/N]	Note
1	Power	1.5	No	For EUT
2	Power	1.0	No	For PC
3	USB	1.8	Yes	From EUT to PC
4	LAN	2.0	No	From EUT to HUB
5	USB	1.0	Yes	From PC to Mouse
6	Headset	1.0	No	From PC to Headset

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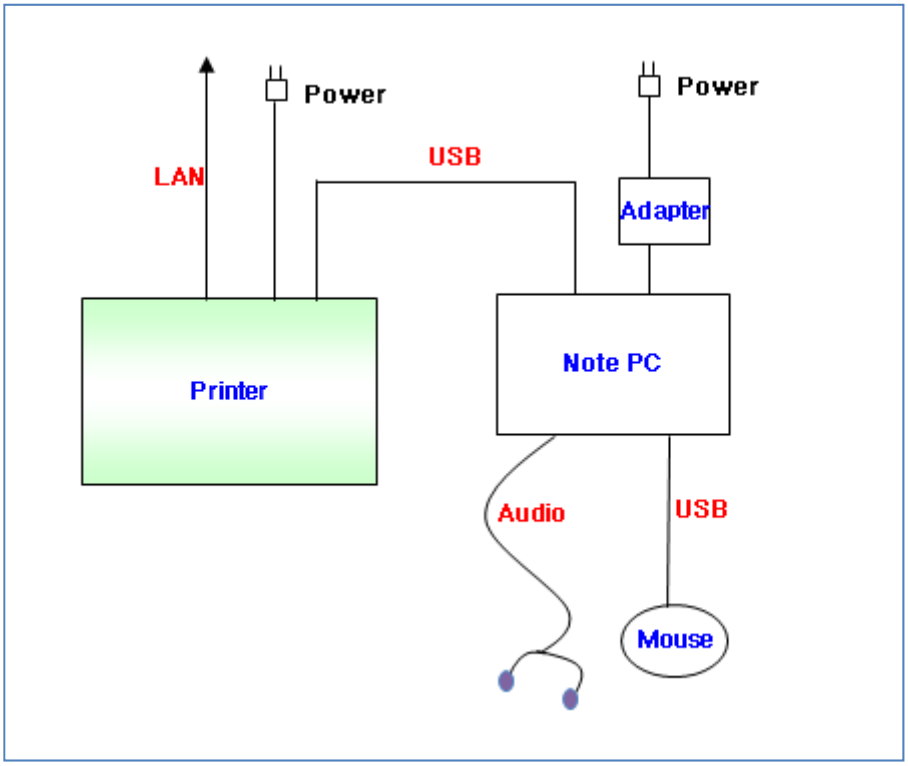
4.5 Test arrangement



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4.6 EUT Description

The following features describe EUT represented by this report:

Item	Specification and Description
Processor	CHORUS3N (533 MHz)
Standard System memory	512 MB DDR3 on all configurations (Default)
Resolution	Effective 2 400 x 600 dpi
Speed	24/24PPM (Color/Mono)
Paper Handling	Paper Tray(standard) 250 Sheets 2nd Tray(optional) 520 Sheets Bypass Tray 50 Sheets
Power Rating	93.5 VAC ~ 137 VAC, 6 A, 50 Hz / 60 Hz
Power Consumption	Power save mode : 1.5 Watts Stand by mode : 10 Watts Printing simplex : 850 Watts
Printer Language	SPLC, PCL5Ce, PCL6C, PS3, PDF V1.7
Interfaces	USB 2.0, Network(Gigabit), WI-FI
OS compatibility	Windows 95/98/2000/NT4.0/Win-ME/XP/Longhorn/XP 64bit/ Citrix MAC OS 8, 9, X 10.2, X 10.3 & Higher Unix/Linux
Modes of Operation	USB Printing, Network Printing, Duplex Printing
Intended Class for Emissions	Class B

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4.7 Clock Frequencies

Kind of Clocks	Frequency[MHz]	Kind of Clocks	Frequency[MHz]
CPU internal clock	**533**	DDR3 clock	377
Video clock	27.3	Main source clock	12
USB device clock	12		

4.8 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.

The EUT was measured all testing with toner cartridge.

Two different types of SMPS, Dongyang and Sungho, were applied during test.
Each SMPS was installed for testing, tested and reported.

- Configuration 1 : Dongyang SMPS was applied.

- Configuration 2 : Sungho SMPS was applied.

- Test Voltage : AC 120 V, 60 Hz

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4.9 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.)

4.9.1 Emission

Test type		Measurement uncertainty (C.L. 95 %, k = 2)
Conducted disturbance	Main terminal	3.30 dB
Radiated Disturbance (Below 1 GHz)	Horizontal	5.26 dB
	Vertical	5.27 dB
Radiated Disturbance (Above 1 GHz)	Horizontal	3.40 dB
	Vertical	3.12 dB

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5. Results of individual test

5.1 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 the mains ports of class B ITE

Frequency range Limits MHz	Resolution Bandwidth	Limits dBµV	
		Quasi-peak	Average
0.15 to 0.50	9 kHz	66 to 56	56 to 46
0.50 to 5	9 kHz	56	46
5 to 30	9 kHz	60	50
NOTE 1 The lower limit shall apply at the transition frequency NOTE 2 The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.			

5.1.1 Test instrumentation

Test instrumentation	Model name	Manufacturer	Serial or Firmware (No./Ver.)	Calibration	
				Date	Interval (Month)
Measuring receiver	ESIB 26	R&S	100287	2011-07-30	12
Artificial mains network	ENV216	R&S	100456	2011-09-28	12
Artificial mains network	ESH3-Z5	R&S	831887/004	2011-07-27	12
Test Software	EMC32	R&S	Ver 5.20.1	-	-

5.1.2 Temperature and humidity condition

Test date	April 23, 2012	**Test engineer**	Young Ju Ryu	
Climate condition	**Ambient temperature**	22.3 ℃	**Relative humidity**	30 %
	Atmospheric pressure	100.3 kPa		
Test place	Shielded Room #1			

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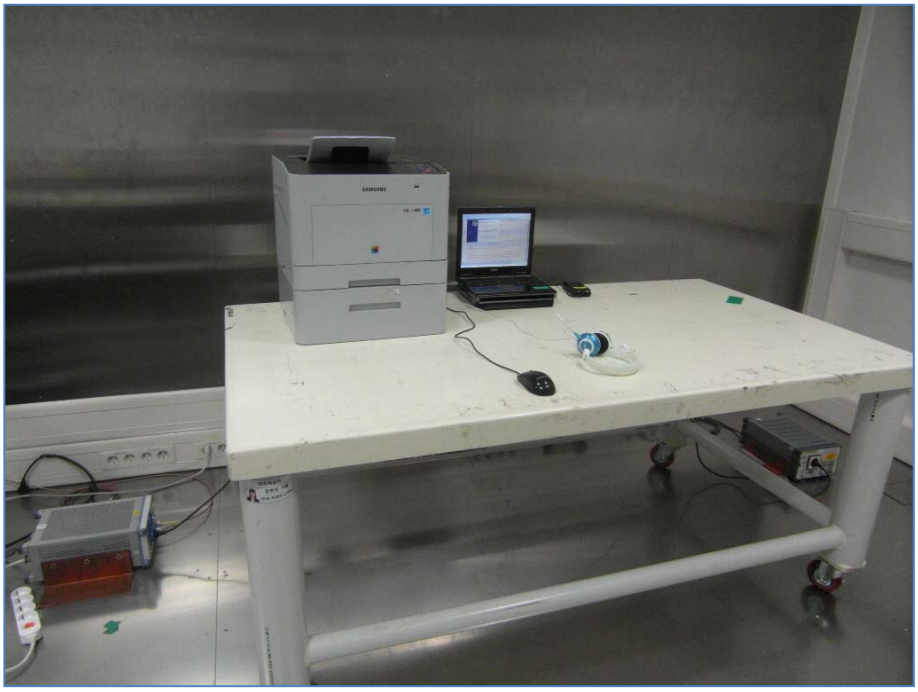
5.1.3 Photograph of Test Setup



Front

Rear

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5.1.4 Test results (mains port)

- **Configuration 1 : Dongyang SMPS, Stand-by mode**

Hardware Setup: Voltage with ENV 2-Line-LISN - [EMI conducted]

Subrange 1

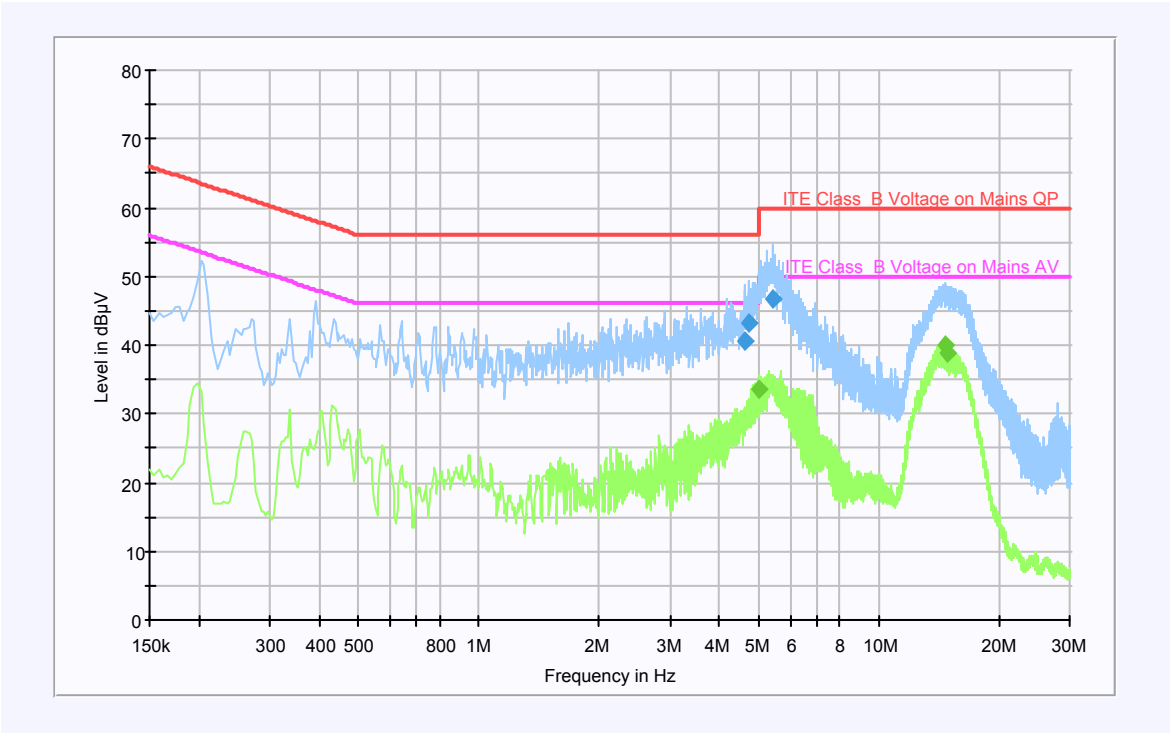
Frequency Range:	150 kHz – 30 MHz
Receiver:	ESIB
Transducer:	ENV216 / Receiver-2-Line-LISN ENV216

Scan Setup: B_ENV 2-Line-LISN fin [EMI conducted]

Hardware Setup:	Voltage with ENV 2-Line-LISN
Level Unit:	dB μ V

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
150 kHz – 30 MHz	Quasi Peak; Average	9 kHz	15 s	ESIB

Test Graph



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

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Test Results (Quasi-Peak and Average)

Quasi-peak final measurement results table

Frequency (MHz)	Quasi-Peak (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
4.604	40.7	N	9.7	15.3	56.0
4.732	43.2	N	9.7	12.8	56.0
5.444	46.7	L1	9.7	13.3	60.0

Average final measurement results table

Frequency (MHz)	Average (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
4.988	33.7	L1	9.7	12.3	46.0
14.648	40.1	N	10.0	9.9	50.0
14.900	38.9	N	10.0	11.1	50.0

Note) Level (Quasi-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)

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- **Configuration 1 : Dongyang SMPS, USB printing mode**

Hardware Setup: Voltage with ENV 2-Line-LISN - [EMI conducted]

Subrange 1

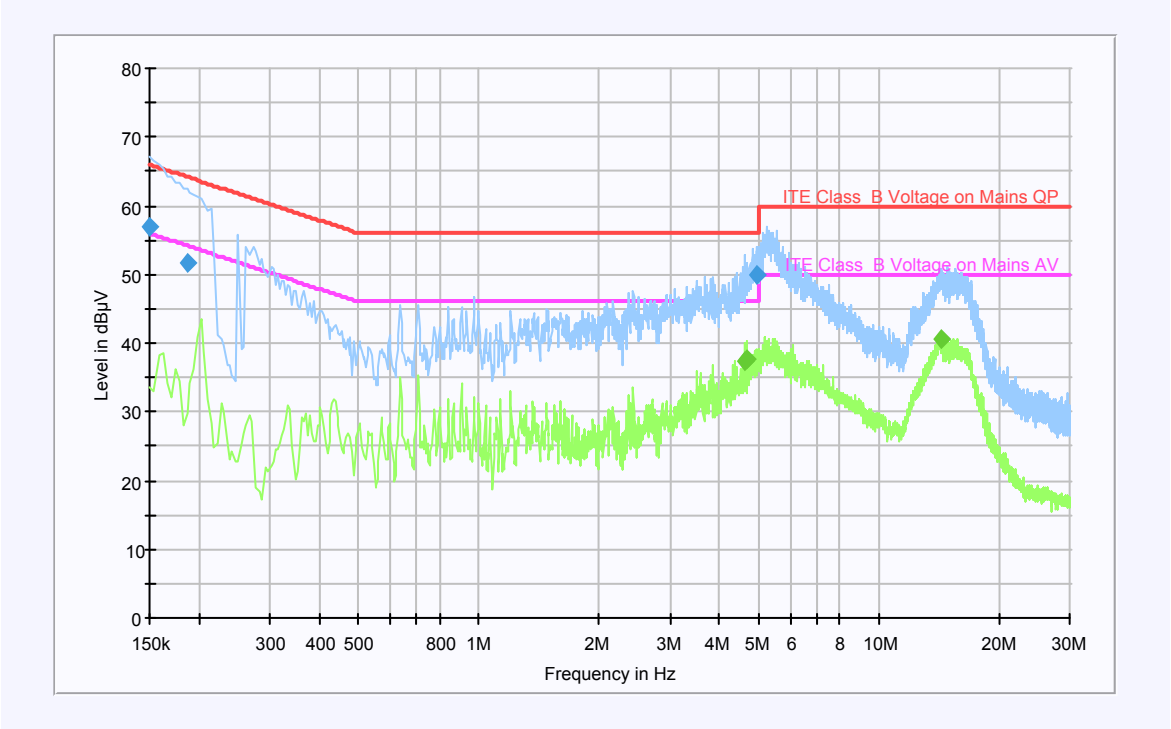
Frequency Range:	150 kHz – 30 MHz
Receiver:	ESIB
Transducer:	ENV216 / Receiver-2-Line-LISN ENV216

Scan Setup: B_ENV 2-Line-LISN fin [EMI conducted]

Hardware Setup:	Voltage with ENV 2-Line-LISN
Level Unit:	dB μ V

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
150 kHz – 30 MHz	Quasi Peak; Average	9 kHz	15 s	ESIB

Test Graph



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

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Test Results (Quasi-Peak and Average)

Quasi-peak final measurement results table

Frequency (MHz)	Quasi-Peak (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.150	56.8	L1	9.7	9.2	66.0
0.186	51.7	L1	9.7	12.5	64.2
4.972	50.0	L1	9.7	6.0	56.0

Average final measurement results table

Frequency (MHz)	Average (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
4.632	37.4	N	9.7	8.6	46.0
4.696	37.6	N	9.7	8.4	46.0
14.324	40.6	N	10.0	9.4	50.0

Note) Level (Quasi-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)

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- **Configuration 2 : Sungho SMPS, Stand-by mode**

Hardware Setup: Voltage with ENV 2-Line-LISN - [EMI conducted]

Subrange 1

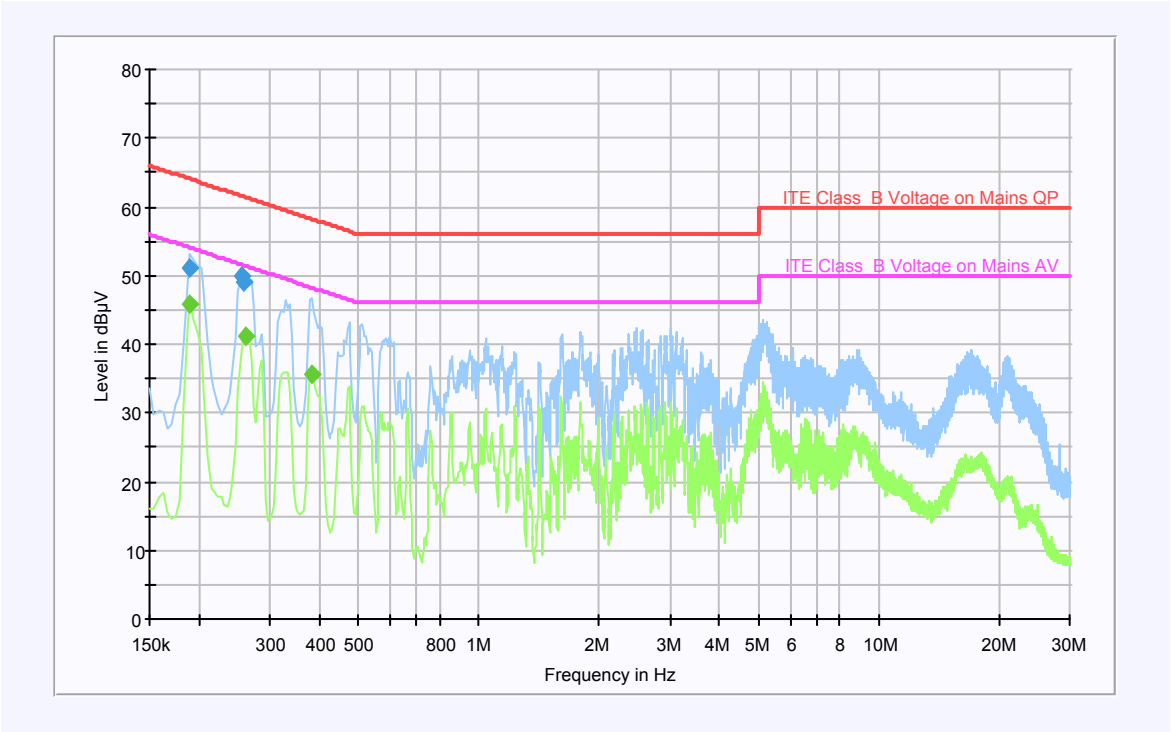
Frequency Range:	150 kHz – 30 MHz
Receiver:	ESIB
Transducer:	ENV216 / Receiver-2-Line-LISN ENV216

Scan Setup: B_ENV 2-Line-LISN fin [EMI conducted]

Hardware Setup:	Voltage with ENV 2-Line-LISN
Level Unit:	dB μ V

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
150 kHz – 30 MHz	Quasi Peak; Average	9 kHz	15 s	ESIB

Test Graph



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

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Test Results (Quasi-Peak and Average)

Quasi-peak final measurement results table

Frequency (MHz)	Quasi-Peak (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.190	51.2	L1	9.7	12.8	64.0
0.254	49.8	L1	9.7	11.8	61.6
0.258	49.1	N	9.7	12.4	61.5

Average final measurement results table

Frequency (MHz)	Average (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.190	45.9	N	9.7	8.1	54.0
0.262	41.3	L1	9.7	10.1	51.4
0.382	35.5	N	9.7	12.7	48.2

Note) Level (Quasi-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)

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- **Configuration 2 : Sungho SMPS, USB Printing mode**

Hardware Setup: Voltage with ENV 2-Line-LISN - [EMI conducted]

Subrange 1

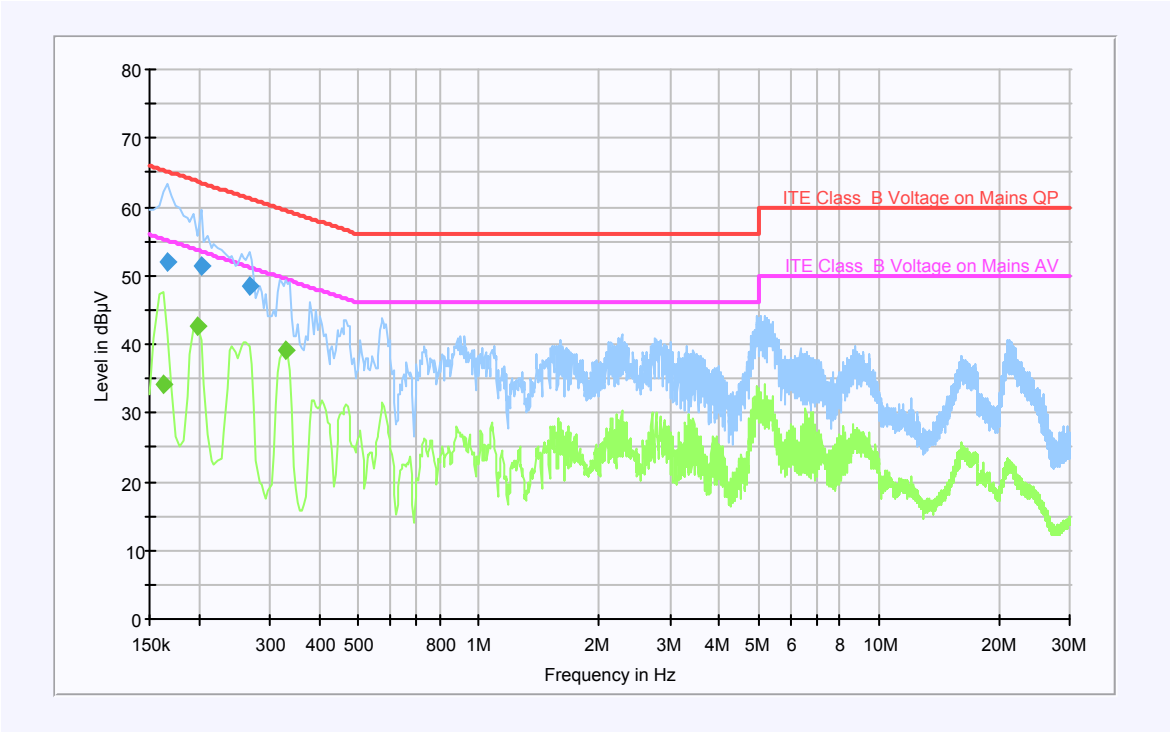
Frequency Range:	150 kHz – 30 MHz
Receiver:	ESIB
Transducer:	ENV216 / Receiver-2-Line-LISN ENV216

Scan Setup: B_ENV 2-Line-LISN fin [EMI conducted]

Hardware Setup:	Voltage with ENV 2-Line-LISN
Level Unit:	dB μ V

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
150 kHz – 30 MHz	Quasi Peak; Average	9 kHz	15 s	ESIB

Test Graph



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

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Test Results (Quasi-Peak and Average)

Quasi-peak final measurement results table

Frequency (MHz)	Quasi-Peak (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.166	52.1	N	9.7	13.1	65.2
0.202	51.4	N	9.7	12.1	63.5
0.266	48.5	N	9.7	12.7	61.2

Average final measurement results table

Frequency (MHz)	Average (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.162	34.0	L1	9.7	21.4	55.4
0.198	42.7	L1	9.7	11.0	53.7
0.330	39.0	N	9.7	10.5	49.5

Note) Level (Quasi-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)

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5.2 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 m and elevated between 1 m and 4 m.
Both vertical and horizontal antenna polarizations were measured.
Above GHz, peak detector function mode was used with resolution bandwidth of 1 MHz and a video bandwidth of 1 MHz.
If the peak measured value complies with the average limit, it is unnecessary to perform an average measurement.

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

Frequency range Limits MHz	Resolution Bandwidth	Quasi-peak Limits dBµV/m
		Class B
30 to 230	120 kHz	30
230 to 1000	120 kHz	37
NOTE 1 The lower limit shall apply at the transition frequency NOTE 2 Additional provisions may be required for cases where interference occurs.		

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Peak measurements were made over the changeable frequency range 1 GHz to 6 GHz in accordance with internal maximum operating frequency at a measurement distance of 3 m for the following antenna and turntable arrangements:

Antenna Height (cm)	Antenna Polarisation	Turntable position (degrees)
100 ~ 400	**Horizontal, Vertical**	**Continuous**

Above 1 GHz, peak detector function mode is used with a resolution bandwidth of 1 MHz and a video bandwidth of 1 MHz.

Limits for above 1GHz radiated disturbance of ITE at a measuring distance of 3 m

Class	Limits - dB(μV/m)	
	Peak	Average
B	**74**	**54**
Average limit 500, 20 log 500 = 53.979 dB ≒ 54 dB		

Antenna height was adjusted to maximum radiated position to be parallel from EUT to antenna centre.
Measurements within 20 dB of the limit were then maximized by adjusting turntable position.
Final measurements were made using a average detector.

Results checked manually; and points close to the limit line were re-measured.

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5.2.1 Test instrumentation

Test instrumentation	Model name	Manufacturer	Serial or Firmware (No./Ver.)	Calibration	
				Date	Interval (Month)
EMI Test Receiver	ESU	R&S	100084	2011-10-10	12
EMI Test Receiver	ESCI	R&S	100370	2011-05-29	12
Bi-log Antenna	CBL6112D	SCHAFFNER	22248	2012-02-16	24
Bi-log Antenna	CBL6112D	SCHAFFNER	27627	2011-10-07	24
Amplifier	310N	SONOMA	251673	2011-12-19	12
Amplifier	310N	SONOMA	251675	2012-01-31	12
Ant. Mast	MA4000	inn-co	-	-	-
Ant. Mast	MA4000	inn-co	-	-	-
Mast Controller	CO2000	inn-co	-	-	-
RF selector	NS4900	TOYO	-	-	-
EMI Test Receiver	ESIB	R&S	832672/002	2011-11-11	12
Horn antenna	HF907	R&S	100016	2011-06-15	24
Preamplifier	SCU18	R&S	10001	2011-05-03	12
Test Software	EP5/RE	TOYO	Ver 3.10.20	-	-

5.2.2 Temperature and humidity condition

Test date	April 21, 2012	**Test engineer**	Young Ju Ryu	
Climate condition	**Ambient temperature**	23.0 ℃	**Relative humidity**	28 %
	Atmospheric pressure	101.6 kPa		
Test place	10 m Semi-Anechoic Chamber			

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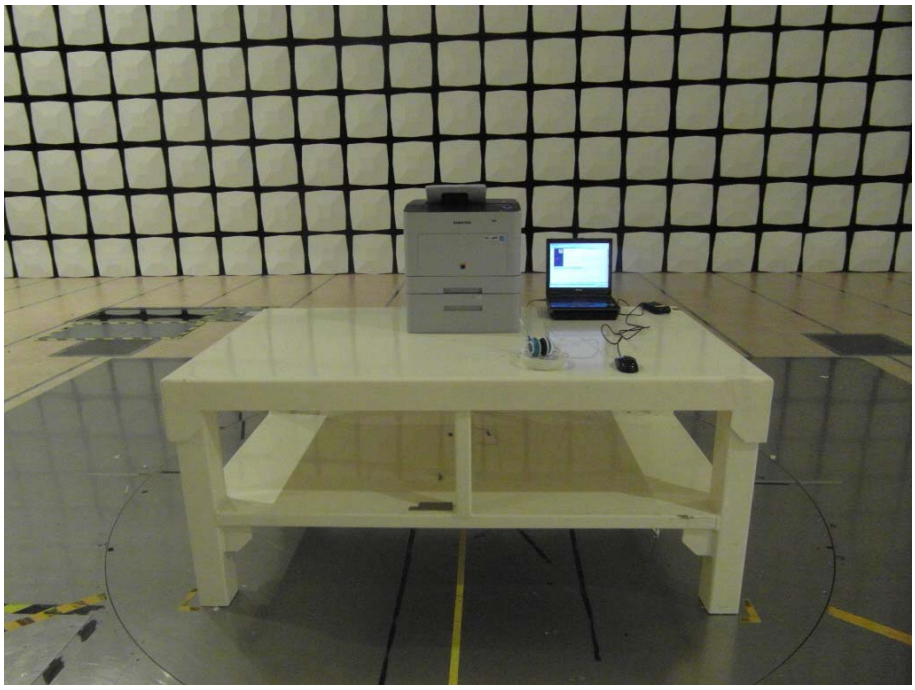
5.2.3 Photograph of Test Setup



Front (Below 1GHz)

Rear (Below 1GHz)

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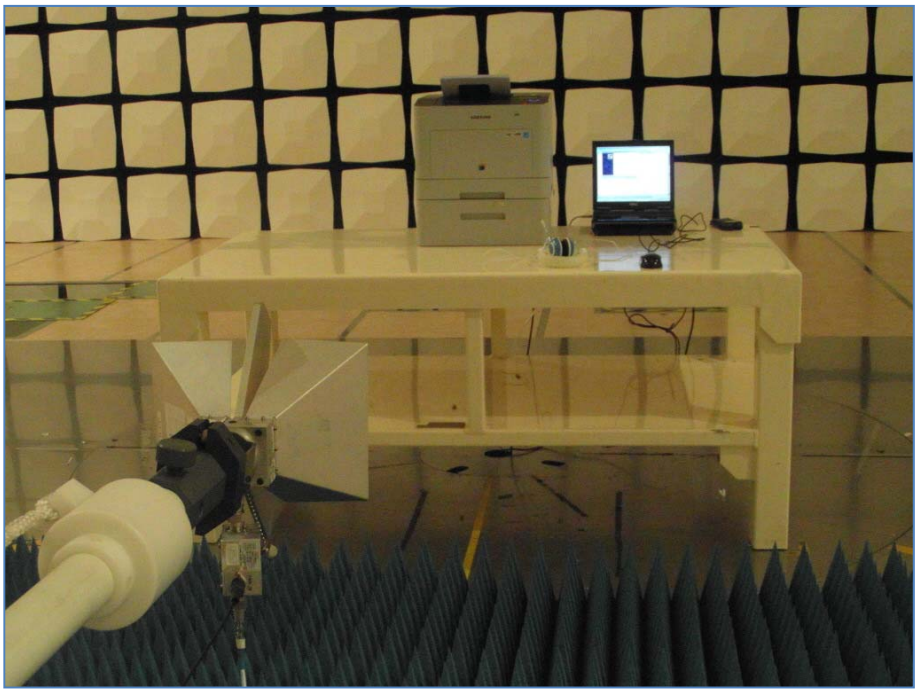
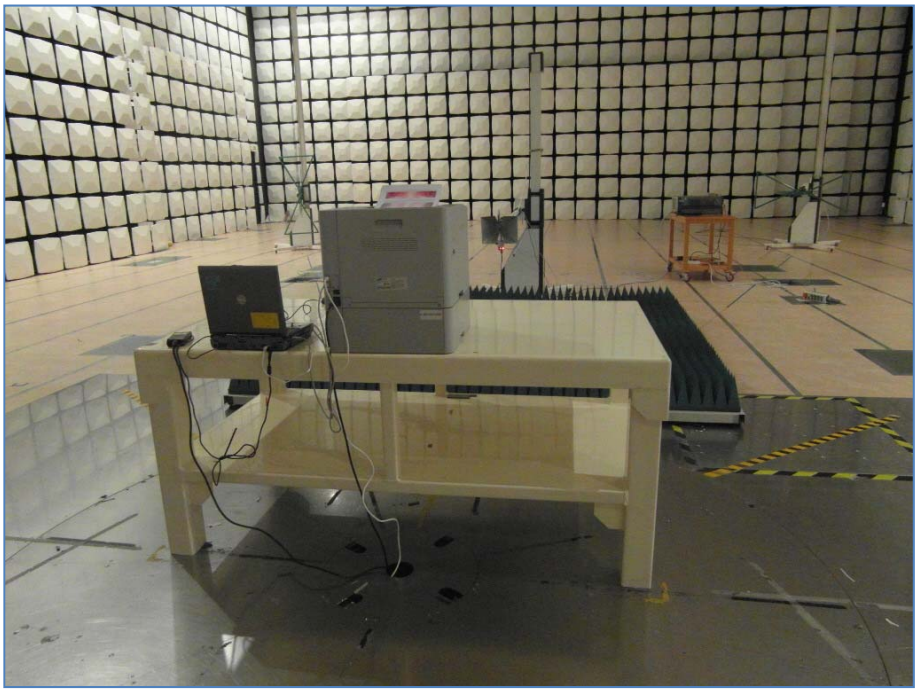


Front (above 1GHz)



Rear (above 1GHz)

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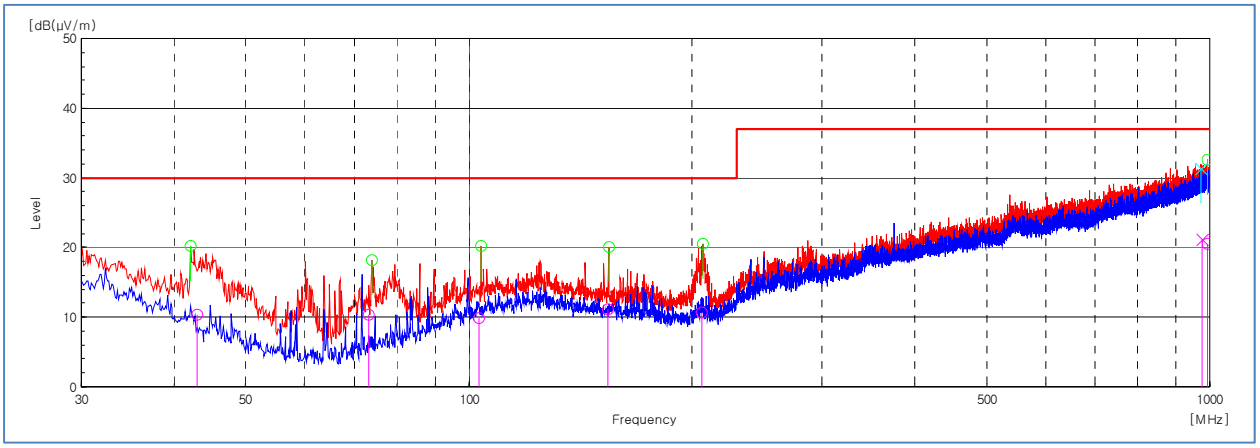
5.2.4 Test results

5.2.4.1 30 MHz to 1GHz test results

- **Configuration 1 : Dongyang SMPS, Stand-by Mode**

Test Graph and Results



Frequency [MHz]	Pol.	Reading QP [dB(μV)]	Factor [dB(1/m)]	Level QP [dB(μV /m)]	Limit [dB(μV /m)]	Margin QP [dB]	Height [cm]	Angle [deg]
42.987	H	29.5	-19.1	10.4	30	19.6	400	288.3
73.235	H	33.9	-23.6	10.3	30	19.7	400	72.3
103.213	H	27.7	-17.9	9.8	30	20.2	400	25
154.122	H	29.4	-18.2	11.2	30	18.8	400	118.9
206.135	H	29.4	-18.7	10.7	30	19.3	400	81.2
974.912	V	21.3	-0.1	21.2	37	15.8	200	64.9
993.887	H	20.6	-0.1	20.5	37	16.5	300	180.1

Note) Receiving antenna polarization : Horizontal and/or Vertical
Test Distance : 10 m, Antenna Height : 1 m to 4 m
Level QP (Quasi-Peak) = Reading QP + Factor (Antenna Factor + Cable Loss - Amp. Gain)
Margin QP (Quasi-Peak) = Limit – Level QP

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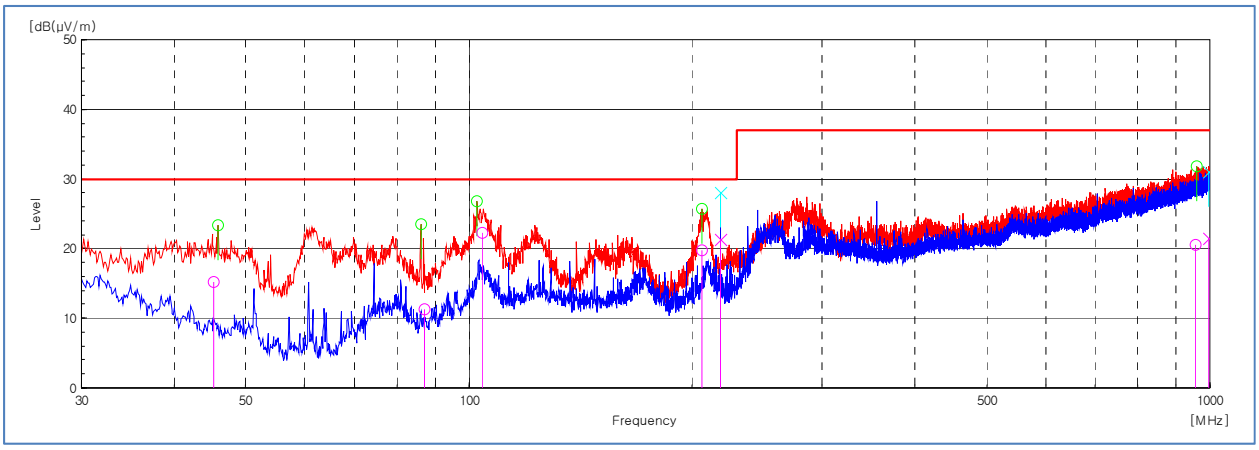
- **Configuration 1 : Dongyang SMPS, USB Printing Mode**

Test Graph and Results



Frequency [MHz]	Pol.	Reading QP [dB(µV)]	Factor [dB(1/m)]	Level QP [dB(µV /m)]	Limit [dB(µV /m)]	Margin QP [dB]	Height [cm]	Angle [deg]
45.211	H	35.3	-20.1	15.2	30	14.8	400	12.8
86.987	H	32.1	-20.8	11.3	30	18.7	400	40.3
104.354	H	39.9	-17.7	22.2	30	7.8	400	2.7
206.268	H	38.5	-18.7	19.8	30	10.2	400	35.1
218.423	V	40.6	-19.2	21.4	30	8.6	101	285.1
958.112	H	21.4	-0.9	20.5	37	16.5	400	63.7
997.887	V	21	0.5	21.5	37	15.5	201	270.7

Note) Receiving antenna polarization : Horizontal and/or Vertical
Test Distance : 10 m, Antenna Height : 1 m to 4 m
Level QP (Quasi-Peak) = Reading QP + Factor (Antenna Factor + Cable Loss - Amp. Gain)
Margin QP (Quasi-Peak) = Limit – Level QP

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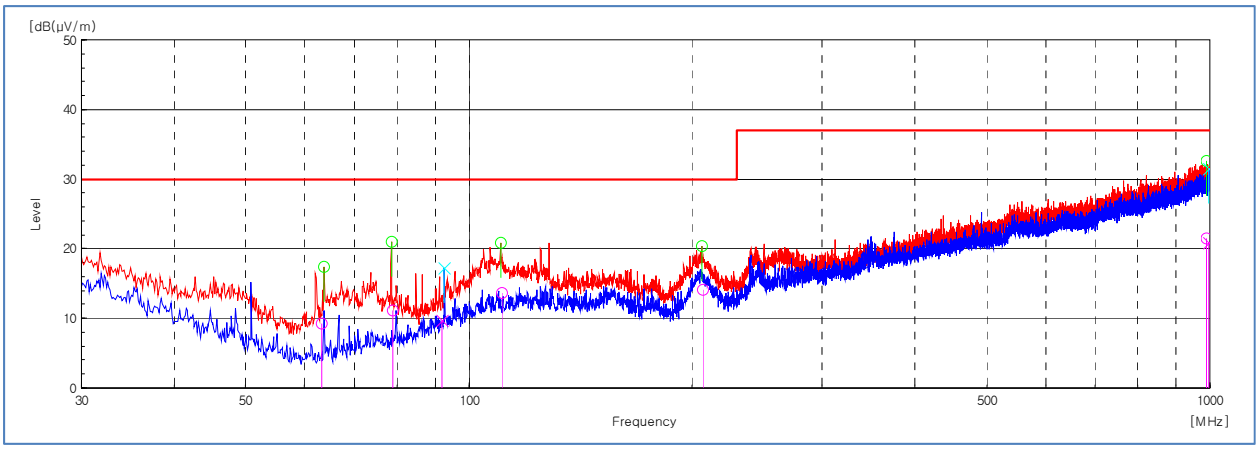
- **Configuration 2 : Sungho SMPS, Stand-by Mode**

Test Graph and Results



Frequency [MHz]	Pol.	Reading QP [dB(µV)]	Factor [dB(1/m)]	Level QP [dB(µV /m)]	Limit [dB(µV /m)]	Margin QP [dB]	Height [cm]	Angle [deg]
63.213	H	33.6	-24.3	9.3	30	20.7	299	350.7
78.978	H	33.6	-22.5	11.1	30	18.9	299	287.8
92.112	V	29.6	-19.9	9.7	30	20.3	201	238.6
110.865	H	30.6	-17	13.6	30	16.4	299	282.9
206.986	H	32.8	-18.7	14.1	30	15.9	400	353.2
989.213	H	21.7	-0.2	21.5	37	15.5	299	58.3
997.123	V	20.5	0.4	20.9	37	16.1	100	88.1

Note) Receiving antenna polarization : Horizontal and/or Vertical
Test Distance : 10 m, Antenna Height : 1 m to 4 m
Level QP (Quasi-Peak) = Reading QP + Factor (Antenna Factor + Cable Loss - Amp. Gain)
Margin QP (Quasi-Peak) = Limit – Level QP

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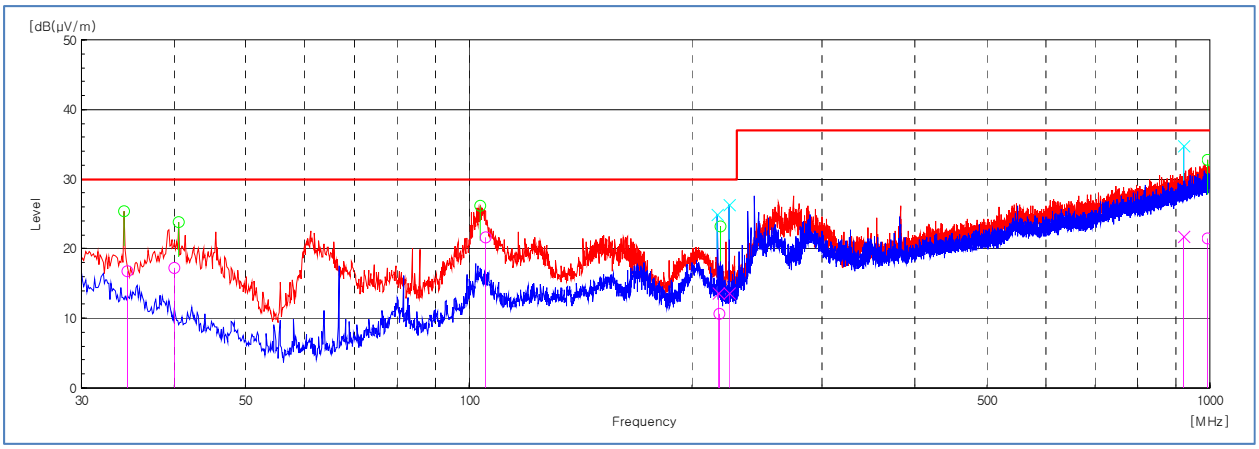
- **Configuration 2 : Sungho SMPS, USB Printing Mode**

Test Graph and Results



Frequency [MHz]	Pol.	Reading QP [dB(µV)]	Factor [dB(1/m)]	Level QP [dB(µV /m)]	Limit [dB(µV /m)]	Margin QP [dB]	Height [cm]	Angle [deg]
34.553	H	31.6	-14.8	16.8	30	13.2	400	219.3
40.057	H	35	-17.7	17.3	30	12.7	400	247.2
105.387	H	39.2	-17.6	21.6	30	8.4	400	321.5
216.889	V	33.1	-19.4	13.7	30	16.3	201	57.3
218.037	H	29.5	-18.9	10.6	30	19.4	400	311.9
224.875	V	32.1	-18.4	13.7	30	16.3	201	57.3
920.778	V	23	-1.2	21.8	37	15.2	201	237.1
992.122	H	21.6	-0.1	21.5	37	15.5	400	256.2

Note) Receiving antenna polarization : Horizontal and/or Vertical
Test Distance : 10 m, Antenna Height : 1 m to 4 m
Level QP (Quasi-Peak) = Reading QP + Factor (Antenna Factor + Cable Loss - Amp. Gain)
Margin QP (Quasi-Peak) = Limit – Level QP

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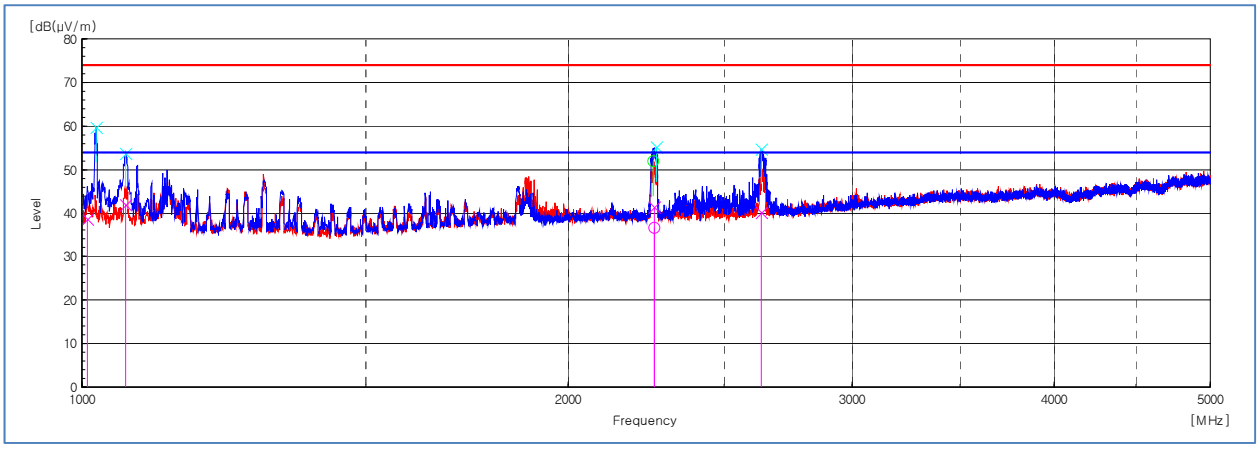
5.2.4.2 1 GHz to 5 GHz test results

- **Configuration 1 : Dongyang SMPS, Stand-by Mode**

Test Results



Peak Measurement

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]
1021	V	74.8	-15.1	59.7	74	14.3	101	2.7
1064	V	68.6	-14.8	53.8	74	20.2	101	13.2
2260.5	H	62.5	-10.5	52	74	22	101	59.4
2270.5	V	65.6	-10.5	55.1	74	18.9	101	64.2
2634.5	V	64.3	-9.6	54.7	74	19.3	101	69.8

Average Measurement

Frequency [MHz]	POL	Reading AV [dB(uV)]	Factor [dB(1/m)]	Level AV [dB(uV/m)]	Limit [dB(uV/m)]	Margin AV [dB]	Height [cm]	Angle [deg]
1007.945	V	53.7	-15.1	38.6	54	15.4	101	2.3
1064.2	V	56.7	-14.8	41.9	54	12.1	101	12.8
2260.615	H	47.1	-10.5	36.6	54	17.4	101	58.9
2260.945	V	51.8	-10.5	41.3	54	12.7	101	63.8
2637.23	V	49.7	-9.5	40.2	54	13.8	101	69.4

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Note 1) Representative operating modes were selected by customer and any emissions that do NOT exceed Average limit were not tested with average detector mode.

Note 2) Receiving antenna polarization : Horizontal and Vertical

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

Level AV (Average) = Reading AV (Average) + Factor (Antenna Factor + Cable Loss - Amp. Gain)

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

Margin AV (Average) = Limit – Level AV (Average)

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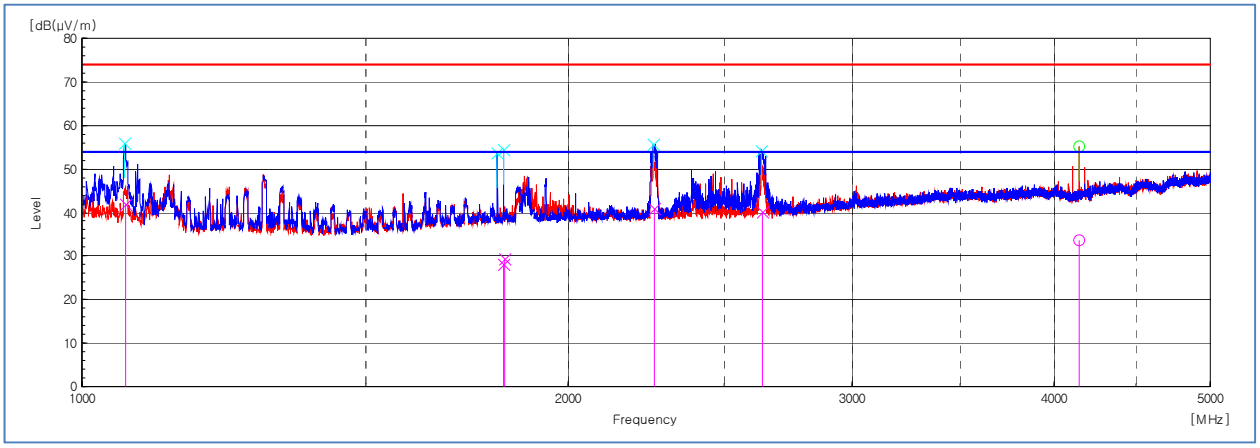
- **Configuration 1 : Dongyang SMPS, USB printing Mode**

Test Results



Peak Measurement

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]
1062	V	70.7	-14.8	55.9	74	18.1	101	350.1
1809	V	65.3	-11.7	53.6	74	20.4	101	320.5
1825	V	66.1	-11.7	54.4	74	19.6	101	286.1
2259.5	V	66.1	-10.5	55.6	74	18.4	101	63.9
2637.5	V	63.6	-9.5	54.1	74	19.9	101	73.5
4148	H	60.4	-5.3	55.1	74	18.9	100	315.4

Average Measurement

Frequency [MHz]	POL	Reading AV [dB(uV)]	Factor [dB(1/m)]	Level AV [dB(uV/m)]	Limit [dB(uV/m)]	Margin AV [dB]	Height [cm]	Angle [deg]
1064.285	V	56.8	-14.8	42	54	12	101	349.7
1823.905	V	39.8	-11.7	28.1	54	25.9	101	285.6
1828.935	V	41	-11.6	29.4	54	24.6	101	320
2260.92	V	51.3	-10.5	40.8	54	13.2	101	63.4
2637.605	V	49.7	-9.5	40.2	54	13.8	101	73
4145.285	H	39	-5.3	33.7	54	20.3	101	314.9

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Note 1) Representative operating modes were selected by customer and any emissions that do NOT exceed Average limit were not tested with average detector mode.

Note 2) Receiving antenna polarization : Horizontal and Vertical

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

Level AV (Average) = Reading AV (Average) + Factor (Antenna Factor + Cable Loss - Amp. Gain)

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

Margin AV (Average) = Limit – Level AV (Average)

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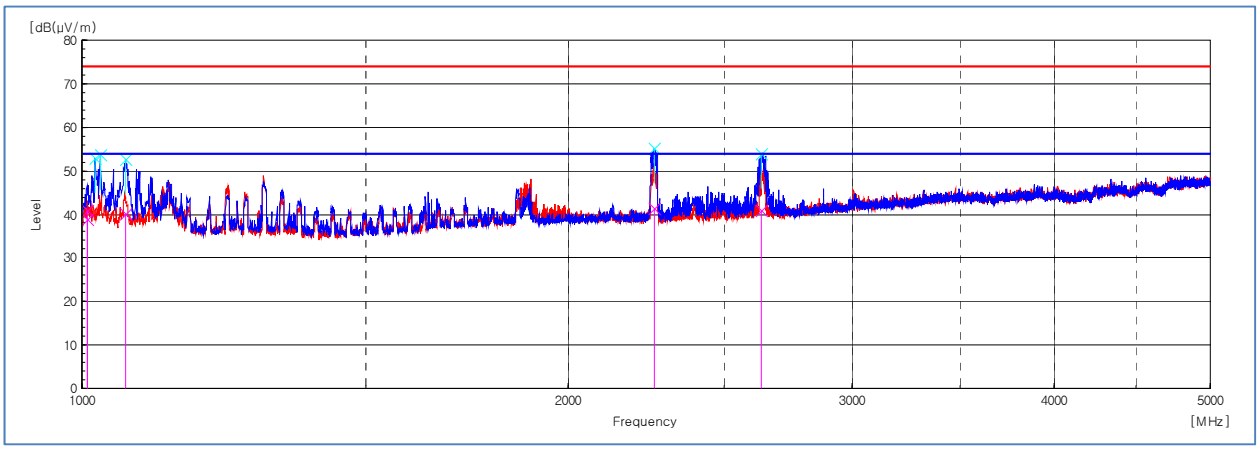
- **Configuration 2 : Sungho SMPS, Stand-by Mode**

Test Results



Peak Measurement

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]
1018.5	V	68	-15.1	52.9	74	21.1	100	45.6
1026.5	V	68.8	-15	53.8	74	20.2	100	10.6
1064	V	67.4	-14.8	52.6	74	21.4	100	15.3
2261	V	65.6	-10.5	55.1	74	18.9	100	66.4
2635	V	63.6	-9.6	54	74	20	100	72.8

Average Measurement

Frequency [MHz]	POL	Reading AV [dB(uV)]	Factor [dB(1/m)]	Level AV [dB(uV/m)]	Limit [dB(uV/m)]	Margin AV [dB]	Height [cm]	Angle [deg]
1007.935	V	54	-15.1	38.9	54	15.1	100	10.1
1007.965	V	55.9	-15.1	40.8	54	13.2	100	45.2
1064.255	V	55	-14.8	40.2	54	13.8	100	14.9
2260.92	V	51.8	-10.5	41.3	54	12.7	100	65.9
2637.495	V	50.3	-9.5	40.8	54	13.2	100	72.4

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Note 1) Representative operating modes were selected by customer and any emissions that do NOT exceed Average limit were not tested with average detector mode.

Note 2) Receiving antenna polarization : Horizontal and Vertical

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

Level AV (Average) = Reading AV (Average) + Factor (Antenna Factor + Cable Loss - Amp. Gain)

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

Margin AV (Average) = Limit – Level AV (Average)

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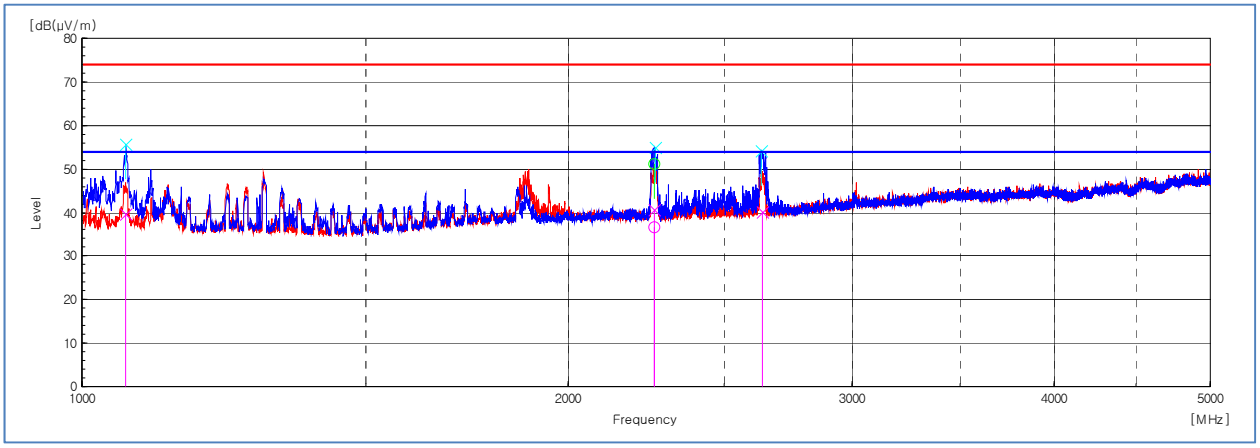
- **Configuration 2 : Sungho SMPS, USB printing Mode**

Test Results



Peak Measurement

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]
1065	V	70.6	-14.8	55.8	74	18.2	199	17.3
2263.5	H	61.7	-10.5	51.2	74	22.8	101	107.3
2264.5	V	65.3	-10.5	54.8	74	19.2	101	67.6
2637.5	V	63.8	-9.5	54.3	74	19.7	101	71.6

Average Measurement

Frequency [MHz]	POL	Reading AV [dB(uV)]	Factor [dB(1/m)]	Level AV [dB(uV/m)]	Limit [dB(uV/m)]	Margin AV [dB]	Height [cm]	Angle [deg]
1064.585	V	54.3	-14.8	39.5	54	14.5	198	17.8
2260.89	V	51.2	-10.5	40.7	54	13.3	102	67.1
2261.015	H	47.1	-10.5	36.6	54	17.4	102	106.8
2638.15	V	49.6	-9.5	40.1	54	13.9	102	71.1

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Note 1) Representative operating modes were selected by customer and any emissions that do NOT exceed Average limit were not tested with average detector mode.

Note 2) Receiving antenna polarization : Horizontal and Vertical

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

Level AV (Average) = Reading AV (Average) + Factor (Antenna Factor + Cable Loss - Amp. Gain)

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

Margin AV (Average) = Limit – Level AV (Average)

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Appendix – EUT photography

Front View

Rear View & Label location

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Top View

Bottom View

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Right View

Left View

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Inside View(Left side)

Inside View(Right side)

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Inside View(Front side)

Inside View(Rear side)

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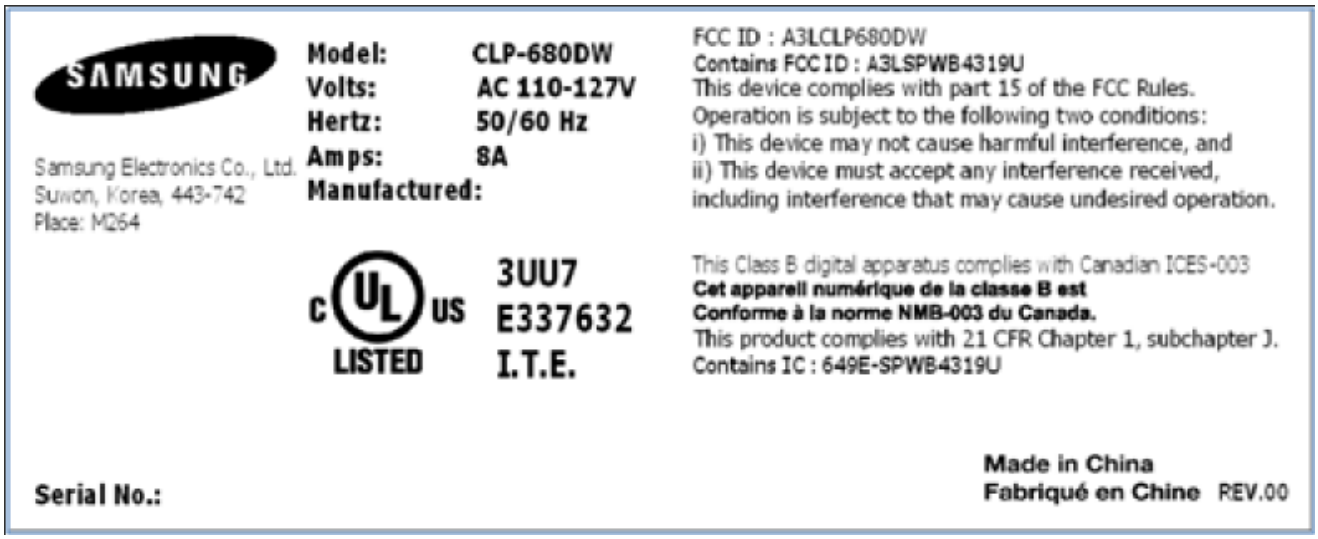

Label

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