

EMC TEST REPORT

Project No.	LBE080224	Issue No.	3
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 16, 2008	
EUT Equipment Under Test	Type of device	Class B personal computers and peripherals	
	Equipment authorization	☐ Declaration of Conformity ☒ Certification ☐ Verification	
	FCC ID	A3LFA05BCLX3170FN	
	Kind of product	COLOR LASER MFP	
	Model No.	CLX-3170FN	
	Manufacturer	Variant Model No. CLX-3175FN, CLX-3170N, CLX-3170 CLX-3175N, CLX-3175 Samsung Electronics Co.,Ltd. 259, Gongdan-Dong, Gumi-City, Gyeongsangbuk-Do, 730-030 Korea Samsung Electronics(Shandong) Digital Printing Co., Ltd. 264209, Samsung Road, Weihai Hi-Tech IDZ, Shandong Province, China	
Applied Standards		FCC Part 15, Subpart B / ANSI C63.4-2003	
Test Period		January 16,2008 ~ February 13, 2008	
Issue date		February 13, 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 : Young Hun Cheong		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.



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

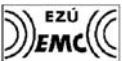
2.1 Test facility

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
	Elektrotechnický Zkušební Ústav	Reg. No.: 001
	IC(Industry Canada)	Assigned Code: 5871

3. Test Setup 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 LASER MFP	CLX-3170FN	-	Samsung	A3LFA05BCLX3170FN
Note PC	-	-	DELL	Doc
AC Adapter	PA-1650-05D	-	DELL	-
USB Mouse	M-UAE96	LZK63204664	Logitech	Doc
Headset	-	-	COSY	Doc
Telephone	SP-F201	B20G709186	Samsung	-

3.2 EUT operating mode

To achieve compliance applied standard and/or specification, the following mode(s) were considered and tested fully except radiated emission testing for configuration 2 and 3

Operating Mode 1	Stand-by
Operating Mode 2	Network Printing
Operating Mode 3	ADF COPY Printing
Operating Mode 4	FAX TX
Operating Mode 5	FAX RX Printing
Operating Mode 6	USB Printing

3.3 Details of Sampling

Customer selected, three units.

- Unit 1 : SSE080053-1 (SMPS manufacturer : Samsung Electro-Mechanics)
- Unit 2 : SSE080053-2 (SMPS manufacturer : Sungho Electronics)
- Unit 3 : SSE080053-3 (SMPS manufacturer : Suntronix)

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	1.8	No	For EUT
Power	1.8	No	For Note PC
USB	1.8	Yes	From Note PC to the EUT From Note PC to USB Mouse
Headset	1.0	Yes	From headset to Note PC
PS/2	1.8	Yes	For PC
TEL	2.0	No	From EUT to K/P system
TEL	2.0	No	From EUT to Telephone

3.5 EUT Description

The following features describe EUT represented by this report:

Item	Specification	Remarks
Processor	Chorus3(360MHz)	-
Standard System memory	128MB(DDR2)	-
Resolution	Up to 2400x600 dpi effective output	-
Paper Handling	Paper Tray(standard) 150 Sheets	-
Power Rating	110~127 VAC, 8A, 50/60 Hz	-
Power Consumption	Average : 350W Power save mode : Less than 17W	-
Printer Language	SPL-C	-
Interfaces	USB2.0, Ethernet 10/100 Tx Base	-
OS compatibility	Windows 2000/XP/2003/Vista Various Linux 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, Copy ,FAX	-
Intended Class for Emissions	Class B	-

3.6 Clock Frequencies

Kind of Clocks	Frequency[MHz]
Main Source Clock	12 MHz
Video Clock	12 MHz
CPU Internal Cloc	360 MHz
USB Device	12 MHz
MAC	25 MHz
FAX	28.224 MHz
DDR2 Clock	166 MHz
CIS(Contact Image Sensor)	4.3 MHz

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 three different SMPS boards were used for testing to show compliance with relevant standard.

- **Configuration 1 : SMPS Board manufactured by Sungho Electronics**
- **Configuration 2 : SMPS Board manufactured by Samsung Electro-Mechanics**
- **Configuration 3 : SMPS Board manufactured by Suntronix**

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(μ V)	
	Quasi-peak	Average
0,15 to 0,50	79	66
0,50 to 30	73	60

Note 1: 1 μ V 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(μ V)	
	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 μ V 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 instrumentation used in the Conducted disturbance test was as follows:

Test instrumentation	Model name	Manufacturer	Serial or Firmware (No./Ver.)	Calibration	
				Date	Interval (Month)
Test Software	EMC 32	R&S	Ver 4.40.0	N/A	N/A
Measuring receiver	ESCI	R&S	100368	2007-06-01	12
Artificial mains network	ENV216	R&S	100116	2007-09-13	12
Artificial mains network	ESH3-Z5	R&S	100262	2007-09-03	12

4.1.2 Temperature and humidity condition

Test date	Feb 12, 2008 ~ Feb 13,2008	Test engineer		Young Hun, Cheong	
Climate condition	Ambient temperature	23.6 ℃	Relative humidity		34 %
	Atmospheric pressure	102.3 kPa			
Test place	Shielded Room #1				

4.1.3 Photograph of Test Setup



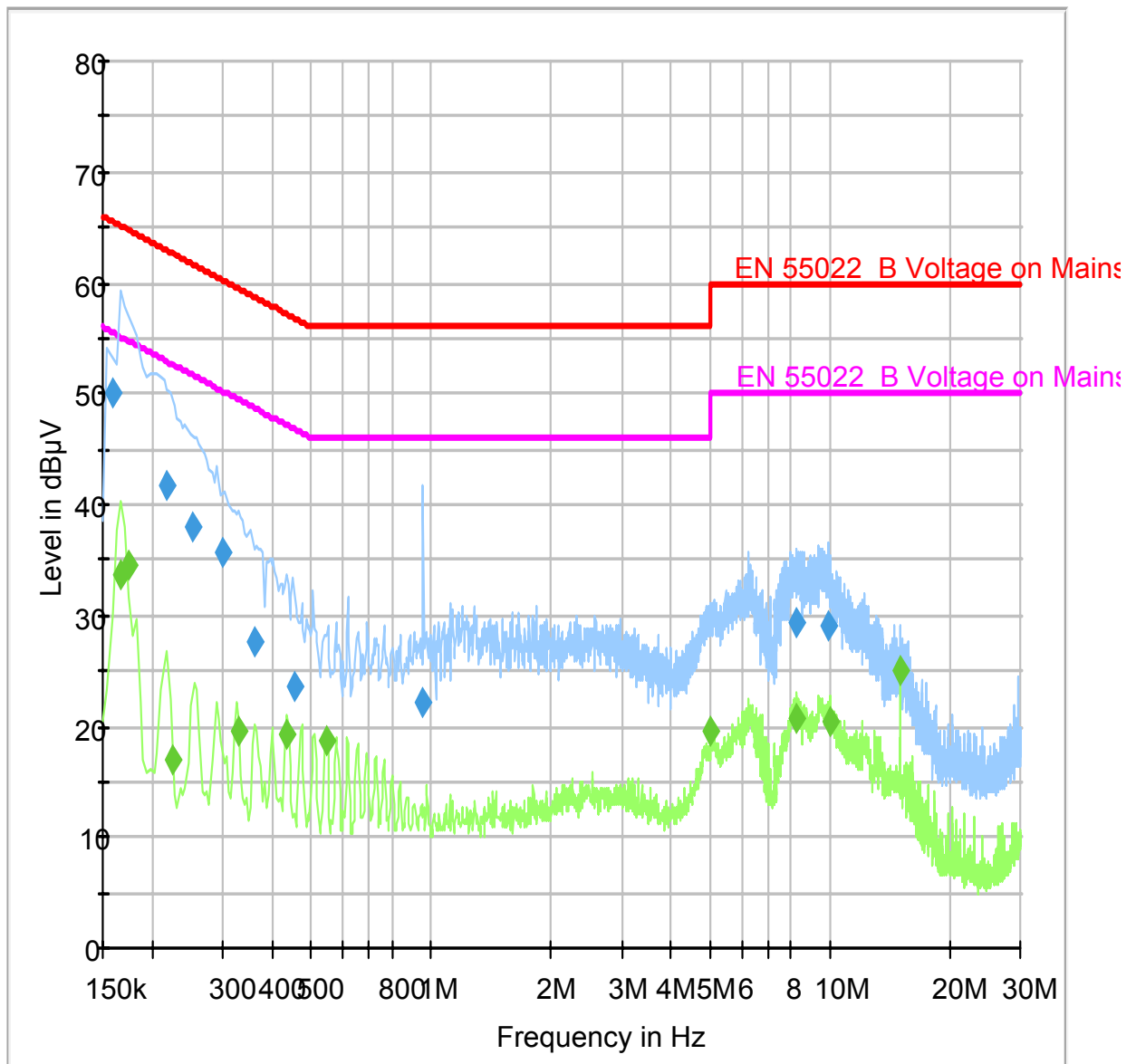
Front



Rear

4.1.4 Test results

- Configuration 1 : ADF COPY Printing



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

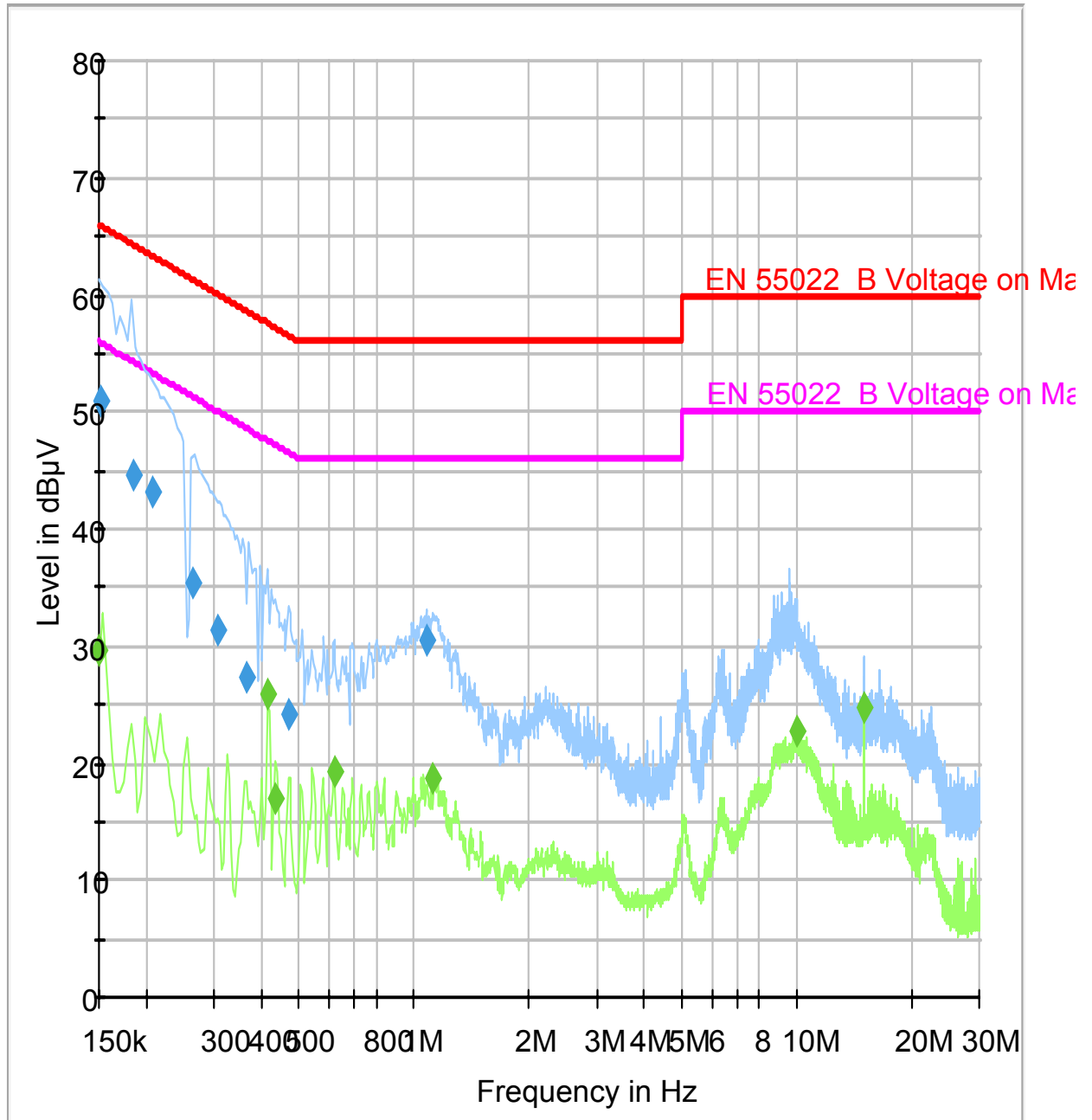
Test Results (Quasi-Peak and Average)

Frequency (MHz)	Quasi-Peak (dB μ V)	Line	Factor (dB)	Margin (dB)	Limit (dB μ V)
0.158 500	50.2	N	9.6	15.4	65.5
0.216 500	41.7	N	9.6	21.3	63.0
0.253 500	37.9	N	9.6	23.8	61.6
0.300 500	35.6	N	9.6	24.6	60.2
0.361 500	27.5	N	9.6	31.2	58.7
0.452 500	23.5	L1	9.6	33.4	56.8
0.946 500	22.1	N	9.7	33.9	56.0
8.195 500	29.5	N	9.9	30.5	60.0

Frequency (MHz)	Average (dB μ V)	Line	Factor (dB)	Margin (dB)	Limit (dB μ V)
0.166 500	33.6	L1	9.6	21.6	55.1
0.174 500	34.4	L1	9.6	20.4	54.7
0.224 500	17.0	N	9.6	35.7	52.7
0.328 500	19.6	N	9.6	29.9	49.5
0.434 500	19.4	L1	9.6	27.8	47.2
0.543 500	18.8	L1	9.6	27.2	46.0
4.999 500	19.6	L1	9.8	26.4	46.0
8.214 500	20.7	N	9.9	29.3	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)

- Configuration 1 : FAX RX Printing



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

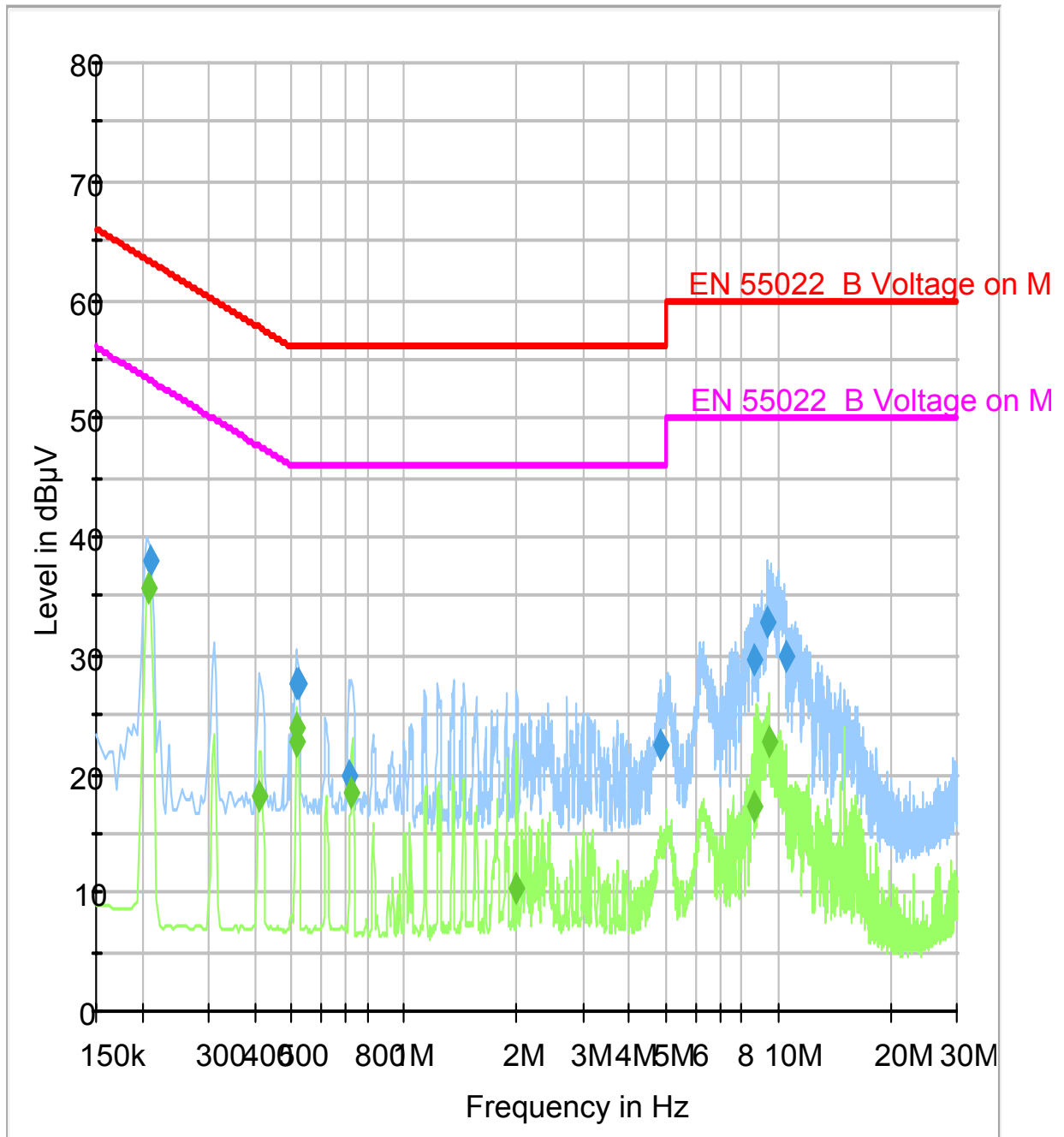
Test Results (Quasi-Peak and Average)

Frequency (MHz)	QuasiPeak (dB μ V)	Line	Factor (dB)	Margin (dB)	Limit (dB μ V)
0.151 000	50.8	L1	9.6	15.2	65.9
0.185 500	44.7	L1	9.6	19.5	64.2
0.206 500	43.1	L1	9.6	20.3	63.3
0.263 500	35.4	L1	9.6	26.0	61.3
0.306 500	31.3	L1	9.6	28.7	60.1
0.366 500	27.3	L1	9.6	31.3	58.6
0.470 500	24.3	N	9.6	32.2	56.5
1.083 500	30.6	L1	9.7	25.4	56.0

Frequency (MHz)	Average (dB μ V)	Line	Factor (dB)	Margin (dB)	Limit (dB μ V)
0.150 000	29.8	L1	9.6	26.2	56.0
0.415 500	25.8	L1	9.6	21.8	47.5
0.434 500	16.9	L1	9.6	30.3	47.2
0.618 500	19.3	L1	9.6	26.7	46.0
1.120 500	18.7	L1	9.7	27.3	46.0
9.984 500	22.8	L1	9.9	27.2	50.0
15.000 500	24.8	N	10.1	25.2	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)

- Configuration 1 : FAX TX



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

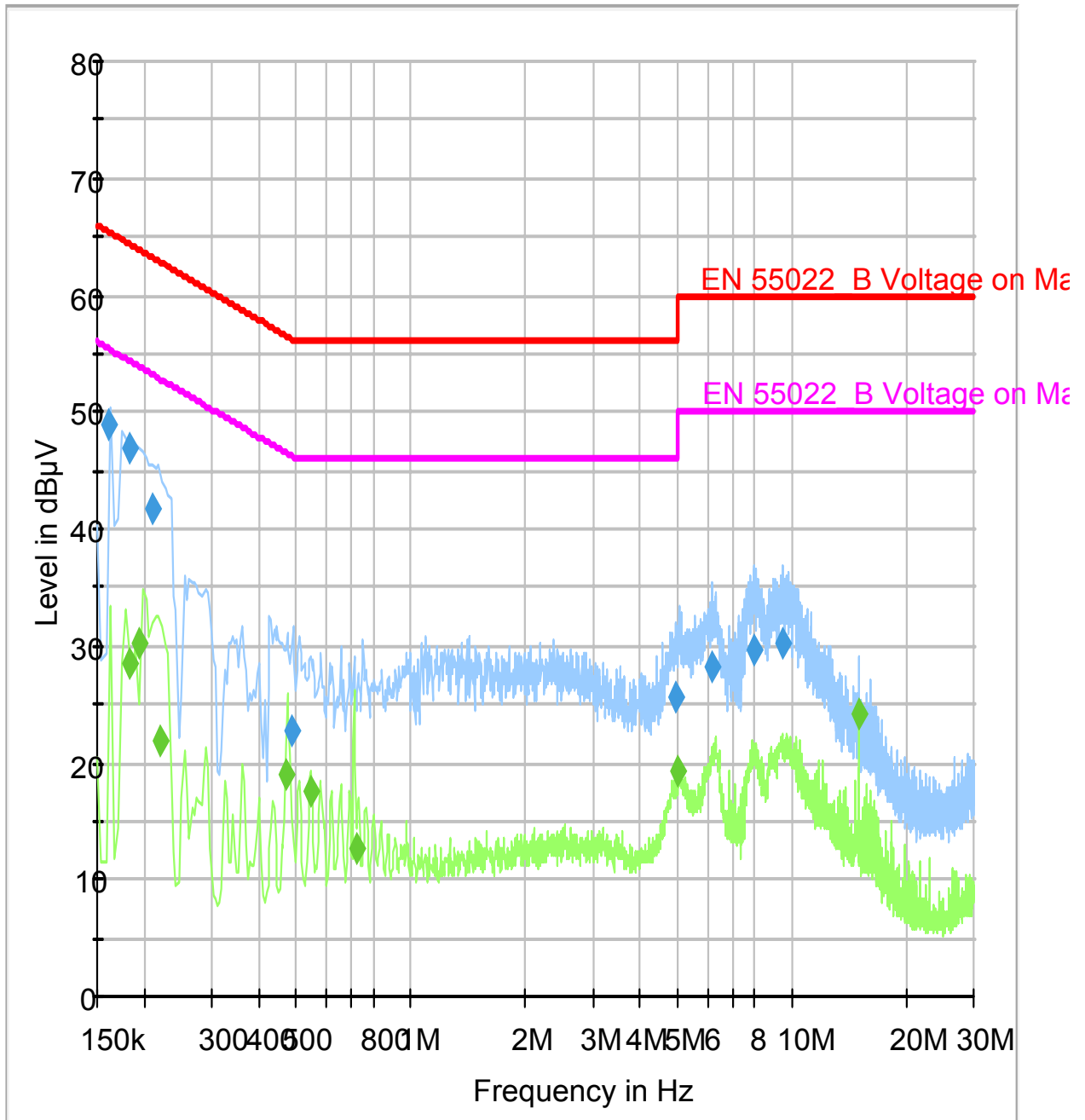
Test Results (Quasi-Peak and Average)

Frequency (MHz)	QuasiPeak (dB μ V)	Line	Factor (dB)	Margin (dB)	Limit (dB μ V)
0.208 500	38.0	L1	9.6	25.2	63.3
0.518 500	27.7	N	9.6	28.3	56.0
0.520 500	27.7	N	9.6	28.3	56.0
0.709 500	19.9	N	9.6	36.1	56.0
4.864 500	22.5	L1	9.8	33.5	56.0
8.637 500	29.8	L1	9.9	30.2	60.0
9.354 500	32.9	N	9.9	27.1	60.0
10.482 500	29.8	L1	9.9	30.2	60.0

Frequency (MHz)	Average (dB μ V)	Line	Factor (dB)	Margin (dB)	Limit (dB μ V)
0.207 500	35.6	L1	9.6	17.7	53.3
0.409 500	18.1	N	9.6	29.5	47.7
0.515 500	24.0	L1	9.6	22.0	46.0
0.516 500	22.8	N	9.6	23.2	46.0
0.719 500	18.3	N	9.6	27.7	46.0
2.001 500	10.3	N	9.7	35.7	46.0
8.664 500	17.2	N	9.9	32.8	50.0
9.447 500	22.8	L1	9.9	27.2	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)

- Configuration 1 : Network Printing



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

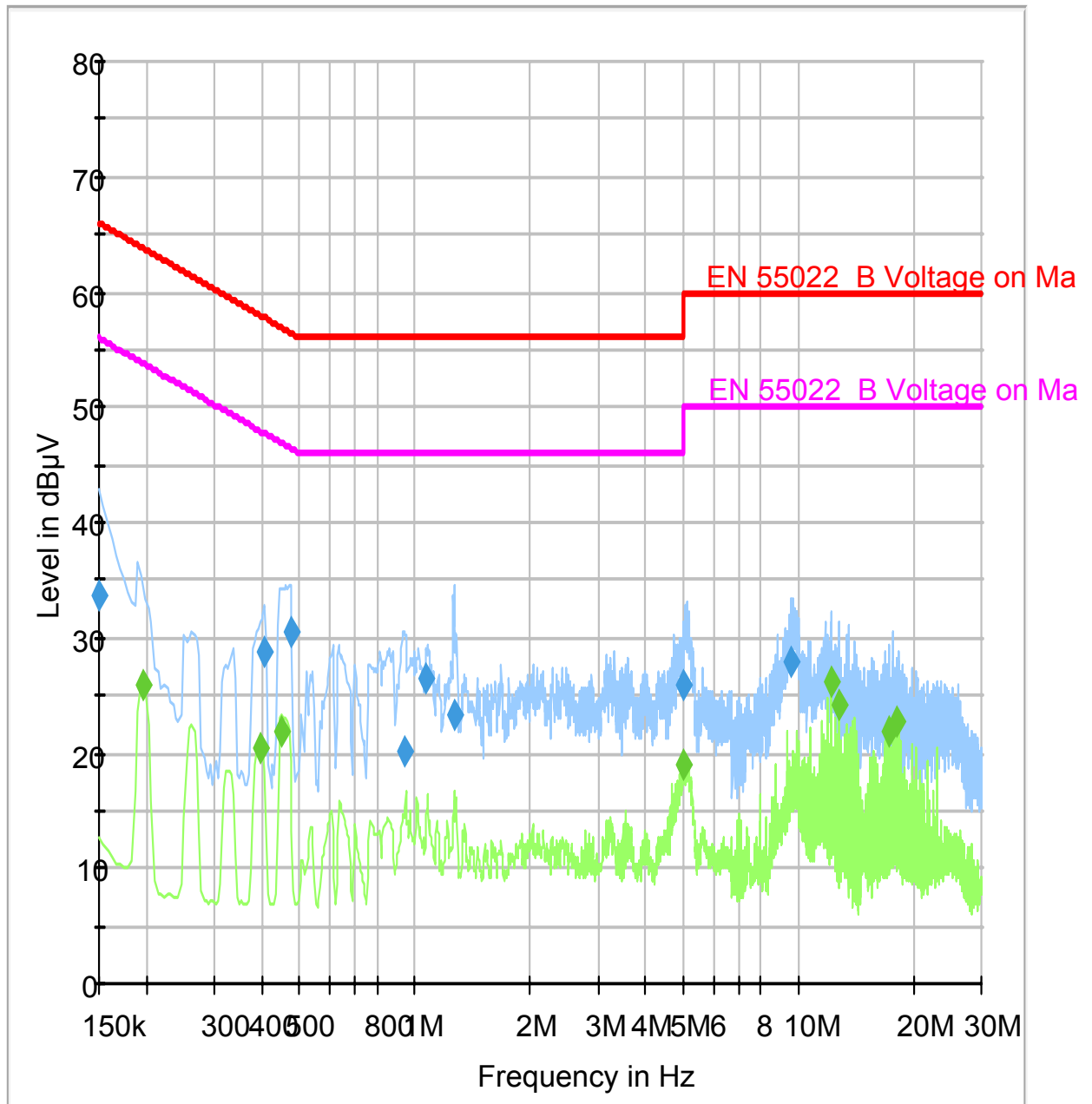
Test Results (Quasi-Peak and Average)

Frequency (MHz)	QuasiPeak (dB μ V)	Line	Factor (dB)	Margin (dB)	Limit (dB μ V)
0.160 500	48.9	N	9.6	16.6	65.4
0.181 500	46.8	L1	9.6	17.6	64.4
0.210 500	41.8	L1	9.6	21.4	63.2
0.486 500	22.7	N	9.6	33.5	56.2
4.971 500	25.6	N	9.8	30.4	56.0
6.185 500	28.2	L1	9.9	31.8	60.0
7.927 500	29.7	L1	9.9	30.3	60.0
9.431 500	30.1	L1	9.9	29.9	60.0

Frequency (MHz)	Average (dB μ V)	Line	Factor (dB)	Margin (dB)	Limit (dB μ V)
0.183 500	28.5	N	9.6	25.8	54.3
0.193 500	30.1	L1	9.6	23.8	53.9
0.218 500	21.9	L1	9.6	31.0	52.9
0.471 500	18.9	L1	9.6	27.5	46.5
0.544 500	17.6	N	9.6	28.4	46.0
0.717 500	12.7	L1	9.7	33.3	46.0
4.999 500	19.4	N	9.8	26.6	46.0
15.000 500	24.2	N	10.1	25.8	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)

- Configuration 1 : Stand-by



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

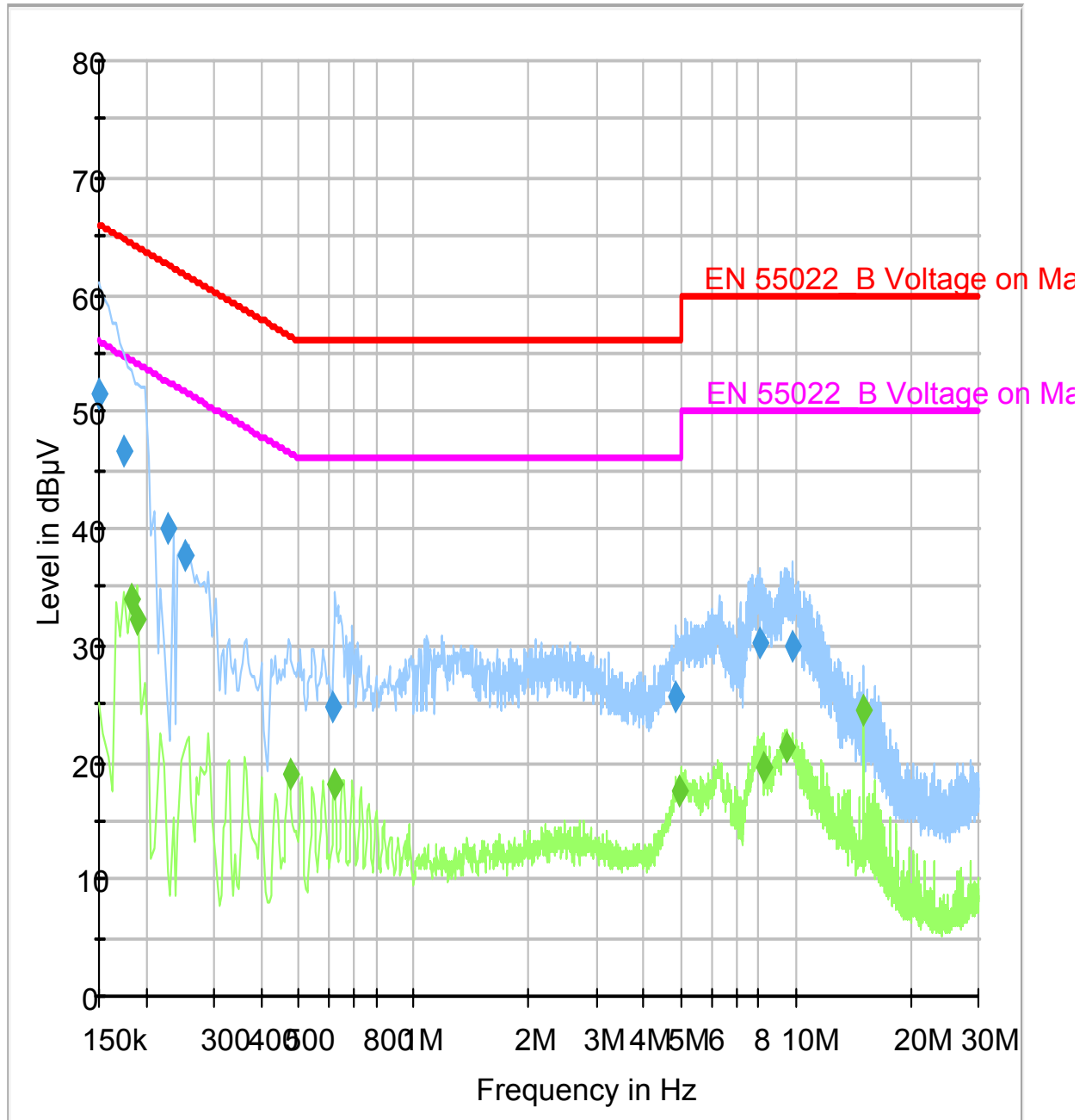
Test Results (Quasi-Peak and Average)

Frequency (MHz)	QuasiPeak (dB μ V)	Line	Factor (dB)	Margin (dB)	Limit (dB μ V)
0.150 000	33.8	L1	9.6	32.2	66.0
0.406 500	28.7	N	9.6	29.1	57.7
0.473 500	30.5	L1	9.6	25.9	56.5
0.940 500	20.2	N	9.7	35.8	56.0
1.072 500	26.5	N	9.7	29.5	56.0
1.262 500	23.2	N	9.7	32.8	56.0
4.998 500	25.8	L1	9.8	30.2	56.0
9.591 500	28.0	L1	9.9	32.0	60.0

Frequency (MHz)	Average (dB μ V)	Line	Factor (dB)	Margin (dB)	Limit (dB μ V)
0.194 500	25.9	N	9.6	27.9	53.8
0.394 500	20.3	N	9.6	27.7	48.0
0.450 500	21.8	L1	9.6	25.0	46.9
4.998 500	19.0	L1	9.8	27.0	46.0
12.198 500	26.2	L1	10.0	23.8	50.0
12.808 500	24.2	L1	10.0	25.8	50.0
17.313 500	21.7	L1	10.1	28.3	50.0
17.984 500	22.7	L1	10.1	27.3	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)

- Configuration 1 : USB Printing



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

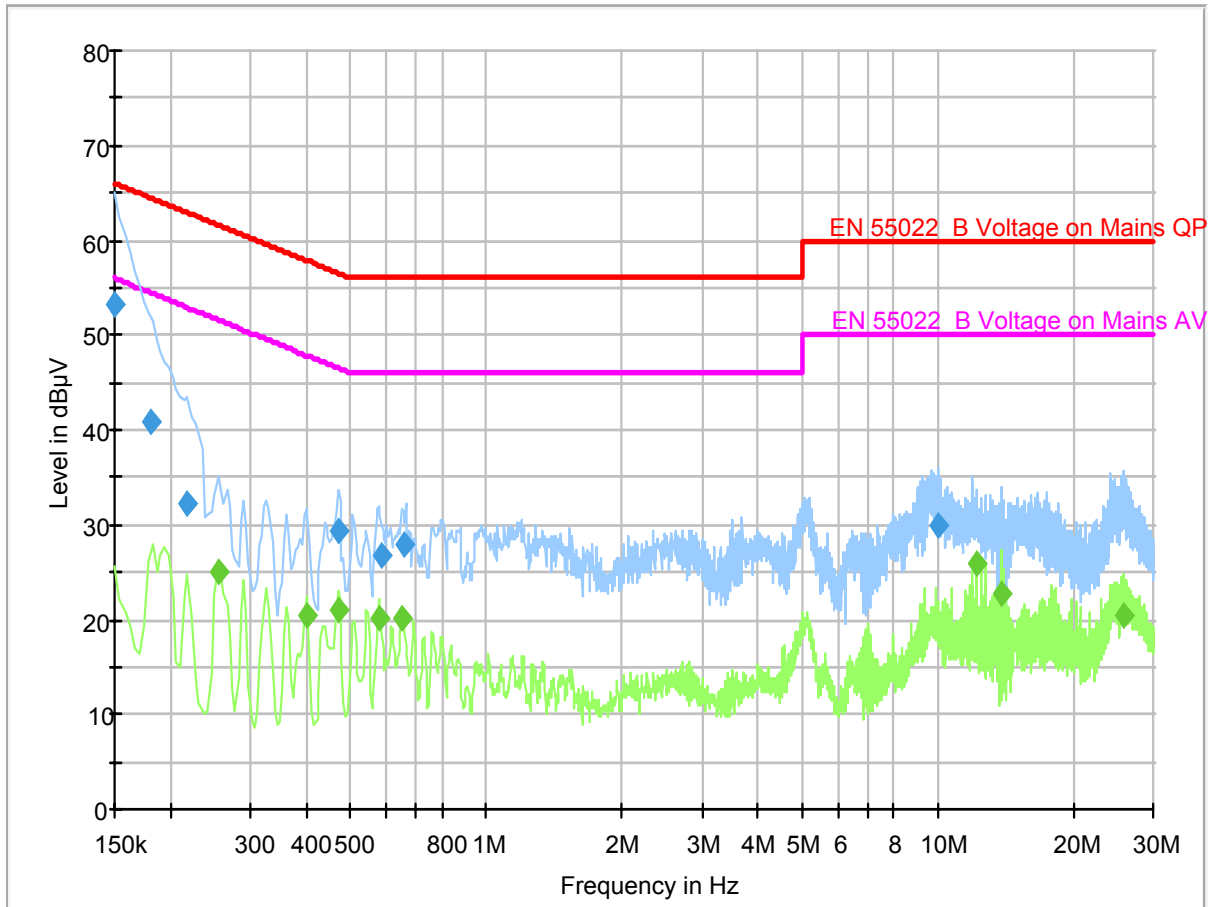
Test Results (Quasi-Peak and Average)

Frequency (MHz)	QuasiPeak (dB μ V)	Line	Factor (dB)	Margin (dB)	Limit (dB μ V)
0.150 000	51.4	N	9.6	14.6	66.0
0.174 500	46.6	N	9.6	18.2	64.7
0.226 500	39.9	L1	9.6	22.7	62.6
0.251 500	37.7	L1	9.6	24.0	61.7
0.616 500	24.8	L1	9.6	31.2	56.0
4.854 500	25.6	N	9.8	30.4	56.0
8.030 500	30.1	N	9.9	29.9	60.0
9.756 500	29.9	L1	9.9	30.1	60.0

Frequency (MHz)	Average (dB μ V)	Line	Factor (dB)	Margin (dB)	Limit (dB μ V)
0.181 500	34.0	L1	9.6	20.4	54.4
0.188 500	32.3	L1	9.6	21.9	54.1
0.473 500	18.9	L1	9.6	27.6	46.5
0.618 500	18.2	L1	9.6	27.8	46.0
4.976 500	17.5	L1	9.8	28.5	46.0
8.229 500	19.5	N	9.9	30.5	50.0
9.474 500	21.4	N	9.9	28.6	50.0
15.000 500	24.3	N	10.1	25.7	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)

- Configuration 2 : ADF COPY Printing (Worst Mode)



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

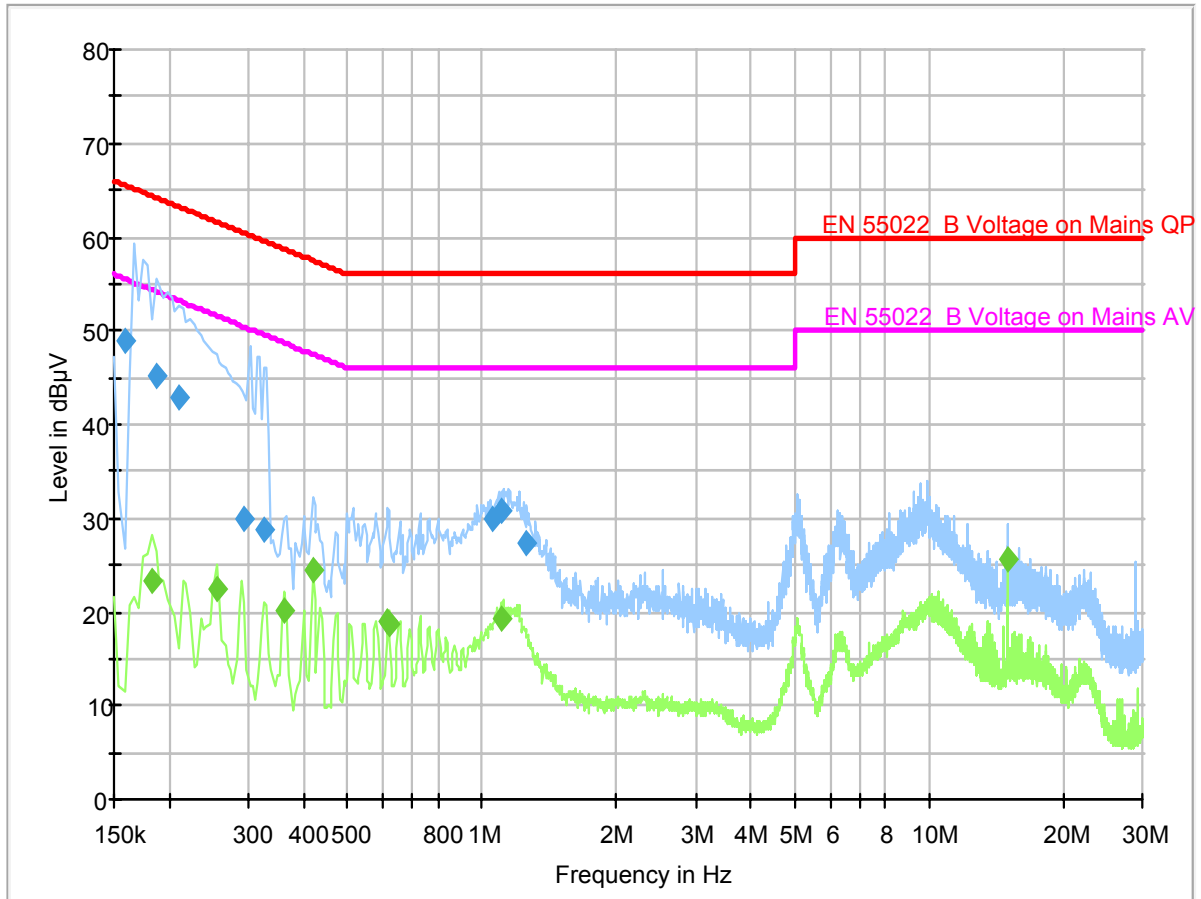
Test Results (Quasi-Peak and Average)

Frequency (MHz)	Quasi-Peak (dB μ V)	Line	Factor (dB)	Margin (dB)	Limit (dB μ V)
0.150 000	53.2	L1	9.6	12.8	66.0
0.180 500	40.9	L1	9.6	23.6	64.5
0.216 500	32.3	N	9.6	30.6	63.0
0.469 500	29.5	L1	9.6	27.0	56.5
0.585 500	26.9	L1	9.6	29.1	56.0
0.654 500	27.9	L1	9.7	28.1	56.0
9.985 500	29.9	L1	9.9	30.1	60.0
0.150 000	53.2	L1	9.6	12.8	66.0

Frequency (MHz)	Average (dB μ V)	Line	Factor (dB)	Margin (dB)	Limit (dB μ V)
0.254 500	24.9	L1	9.6	26.7	51.6
0.398 500	20.5	L1	9.6	27.4	47.9
0.471 500	21.1	L1	9.6	25.4	46.5
0.580 500	20.2	L1	9.6	25.8	46.0
0.653 500	20.2	L1	9.7	25.8	46.0
12.136 500	26.0	L1	10.0	24.0	50.0
13.831 500	22.6	L1	10.0	27.4	50.0
25.959 500	20.5	L1	10.3	29.5	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)

- Configuration 3 : ADF COPY Printing (Worst Mode)



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)	Quasi-Peak (dB μ V)	Line	Factor (dB)	Margin (dB)	Limit (dB μ V)
0.158 500	49.0	N	9.6	16.5	65.5
0.186 500	45.2	N	9.6	19.0	64.2
0.208 500	42.8	N	9.6	20.5	63.3
0.294 500	30.0	N	9.6	30.4	60.4
0.325 500	28.7	N	9.6	30.9	59.6
1.049 500	30.0	L1	9.7	26.0	56.0
1.108 500	30.9	L1	9.7	25.1	56.0
1.254 500	27.4	L1	9.7	28.6	56.0

Frequency (MHz)	Average (dB μ V)	Line	Factor (dB)	Margin (dB)	Limit (dB μ V)
0.183 500	23.2	L1	9.6	31.1	54.3
0.254 500	22.4	L1	9.6	29.3	51.6
0.360 500	20.1	L1	9.6	28.6	48.7
0.417 500	24.6	L1	9.6	22.9	47.5
0.614 500	18.9	L1	9.6	27.1	46.0
0.619 500	18.8	L1	9.6	27.2	46.0
1.109 500	19.3	L1	9.7	26.7	46.0
15.000 500	25.5	N	10.1	24.5	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)

4.2 Radiated disturbance

Of those disturbances above ($L - 20\text{dB}$), 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($\mu\text{V}/\text{m}$)	
	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 $\mu\text{V}/\text{m}$ 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

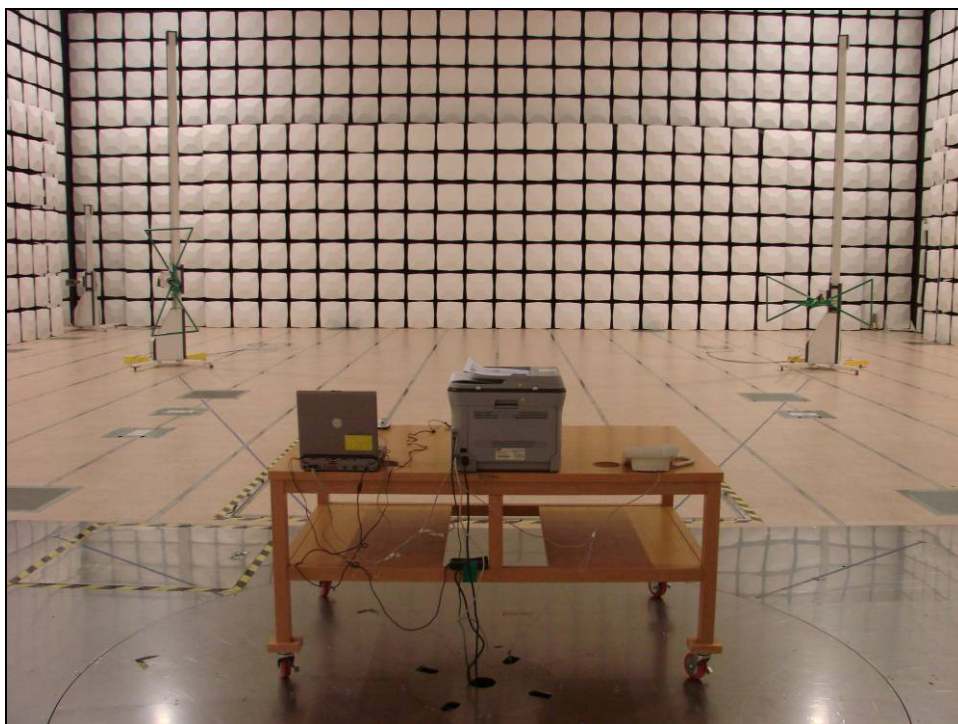
4.2.2 Temperature and humidity condition

Test date	Jan 16, 2008	Test engineer	Young Hun Cheong	
Climate condition	Ambient temperature	22.3 ℃	Relative humidity	33 %
	Atmospheric pressure	100.9 kPa		
Test place	Semi-Anechoic Chamber			

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



Front

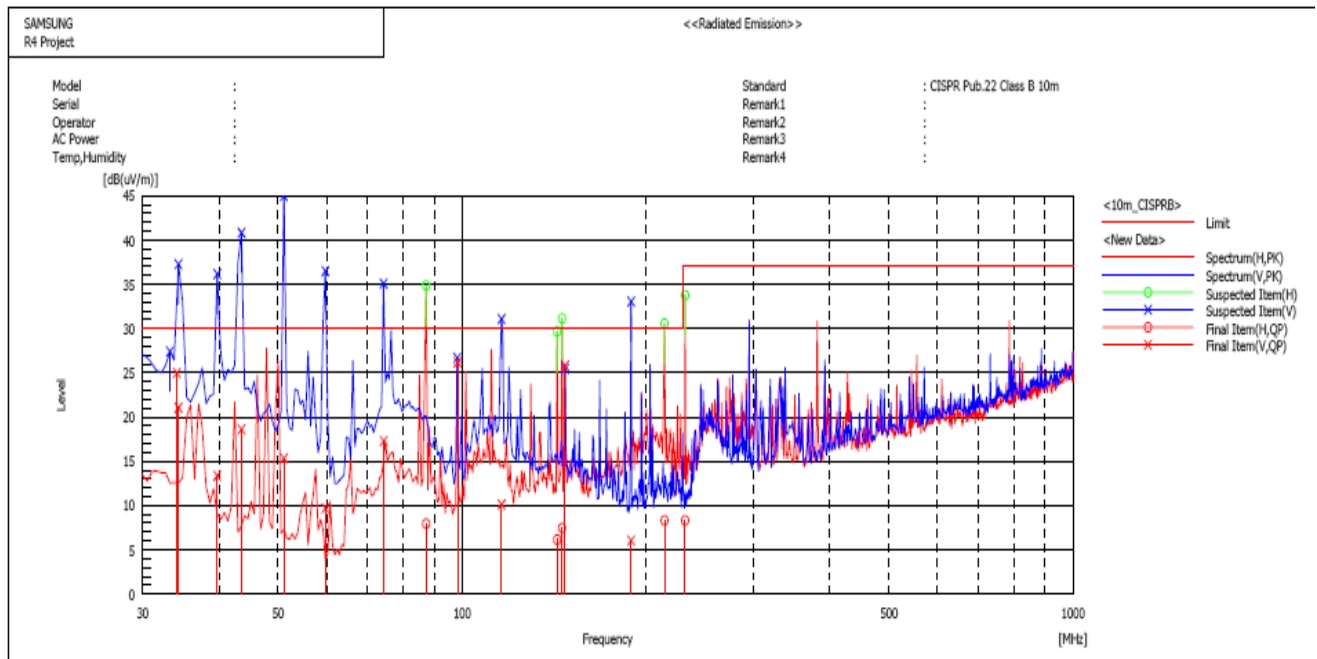


Rear

4.2.4 Test results (30 MHz ~ 1 GHz)

- Configuration 1 : ADF COPY Printing

Test Graph and Results



Final Result

No.	Frequency (P)	Reading	c.f	Result	Limit	Margin	Height	Angle	System	Remark
	[MHz]	[dB(uV)]	[dB(1/m)]	QP [dB(uV/m)]	[dB(uV/m)]	QP [dB]	[cm]	[deg]		
1	34,131	V	40.5	-15.5	25.0	30.0	5.0	115.0	359.6	2
2	34,329	V	36.7	-15.6	21.1	30.0	8.9	200.0	51.2	2
3	39,739	V	31.8	-18.4	13.4	30.0	16.6	300.0	356.4	2
4	43,527	V	39.0	-20.4	18.6	30.0	11.4	200.0	188.1	2
5	51,102	V	39.0	-23.7	15.3	30.0	14.7	100.0	84.9	2
6	59,760	V	34.7	-25.0	9.7	30.0	20.3	300.0	107.3	2
7	74,369	V	41.8	-24.5	17.3	30.0	12.7	200.0	211.0	2
8	87,355	H	29.5	-21.6	7.9	30.0	22.1	400.0	357.8	1
9	98,292	V	45.7	-19.5	26.2	30.0	3.8	162.0	81.3	2
10	116,032	V	28.0	-17.9	10.1	30.0	19.9	100.0	176.5	2
11	143,086	H	24.4	-18.3	6.1	30.0	23.9	200.0	0.7	1
12	145,792	H	26.0	-18.5	7.5	30.0	22.5	400.0	0.7	1
13	147,445	V	44.7	-18.9	25.8	30.0	4.2	100.0	192.2	2
14	189,078	V	26.7	-20.7	6.0	30.0	24.0	100.0	351.9	2
15	214,509	H	28.3	-20.0	8.3	30.0	21.7	300.0	302.8	1
16	231,824	H	26.5	-18.2	8.3	37.0	28.7	300.0	162.0	1

Note) Receiving antenna polarization : Horizontal and/or Vertical

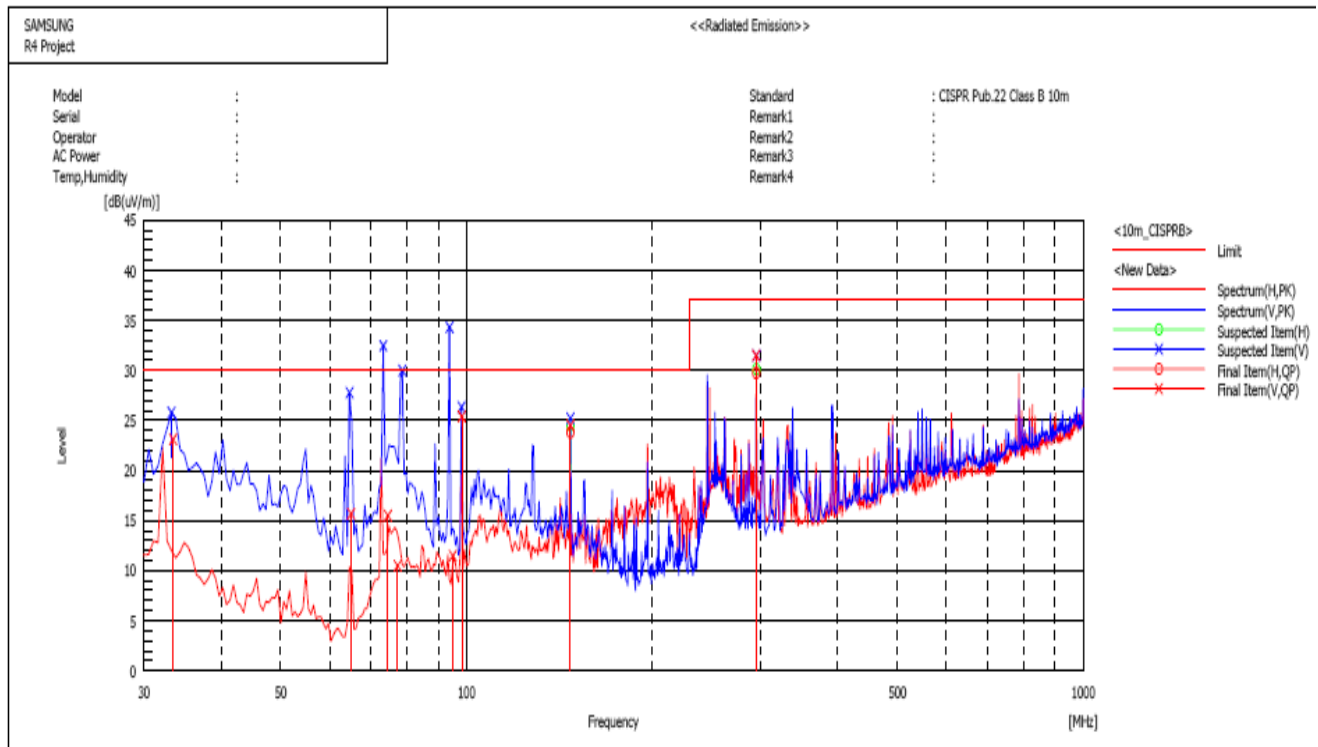
Test Distance : 10m, Antenna Height : 1 to 4 meters

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

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

- Configuration 1 : FAX RX Printing

Test Graph and Results



Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(t/m)]	Result QP [dB(uV/m)]	Limit [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	System	Remark
1	33,428	V	38,3	-15,2	23,1	30,0	6,9	165,0	12,7	2	
2	65,000	V	40,7	-25,0	15,7	30,0	14,3	100,0	359,6	2	
3	74,572	V	40,0	-24,5	15,5	30,0	14,5	400,0	289,4	2	
4	77,347	V	34,3	-23,8	10,5	30,0	19,5	374,0	216,9	2	
5	95,041	V	31,5	-20,0	11,5	30,0	18,5	100,0	294,5	2	
6	98,309	V	44,9	-19,5	25,4	30,0	4,6	142,0	89,6	2	
7	147,450	V	43,4	-18,9	24,5	30,0	5,5	131,0	187,5	2	
8	147,450	H	42,4	-18,6	23,8	30,0	6,2	395,0	205,8	1	
9	294,895	H	44,1	-14,4	29,7	37,0	7,3	400,0	182,9	1	
10	294,900	V	46,3	-14,8	31,5	37,0	5,5	107,0	187,5	2	

Note) Receiving antenna polarization : Horizontal and/or Vertical

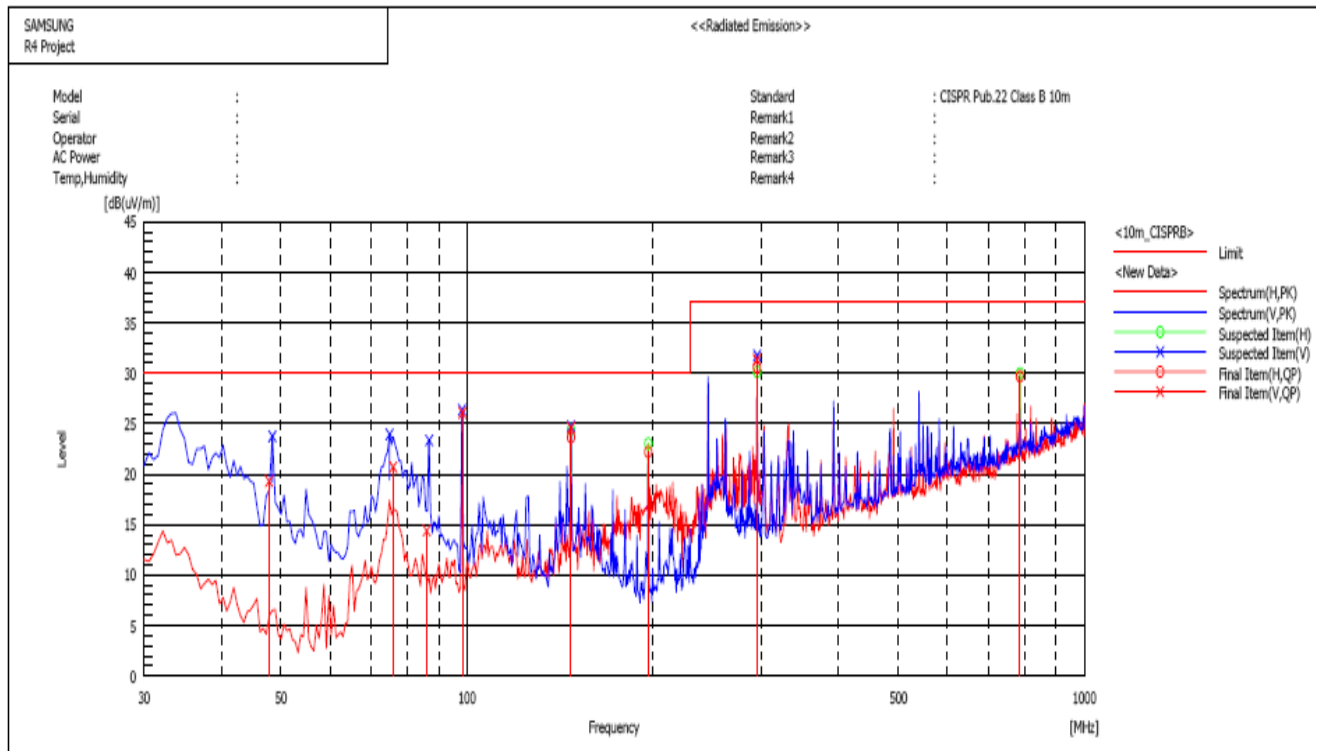
Test Distance : 10m, Antenna Height : 1 to 4 meters

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

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

- Configuration 1 : FAX TX

Test Graph and Results



Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(μV)]	c.f [dB(1/m)]	Result QP [dB(μV/m)]	Limit [dB(μV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	System	Remark
1	47,799	V	41,7	-22,4	19,3	30,0	10,7	134,0	270,3	2	
2	75,941	V	44,9	-24,2	20,7	30,0	9,3	117,0	28,9	2	
3	86,043	V	36,1	-21,7	14,4	30,0	15,6	105,0	343,5	2	
4	98,298	V	45,6	-19,5	26,1	30,0	3,9	153,0	93,1	2	
5	147,439	H	42,3	-18,6	23,7	30,0	6,3	400,0	195,7	1	
6	147,439	V	43,5	-18,9	24,6	30,0	5,4	103,0	176,3	2	
7	196,597	H	42,1	-19,9	22,2	30,0	7,8	399,0	339,9	1	
8	294,900	V	46,1	-14,8	31,3	37,0	5,7	100,0	180,4	2	
9	294,900	H	45,0	-14,4	30,6	37,0	6,4	302,0	14,8	1	
10	786,402	H	34,6	-4,9	29,7	37,0	7,3	216,0	208,9	1	

Note) Receiving antenna polarization : Horizontal and/or Vertical

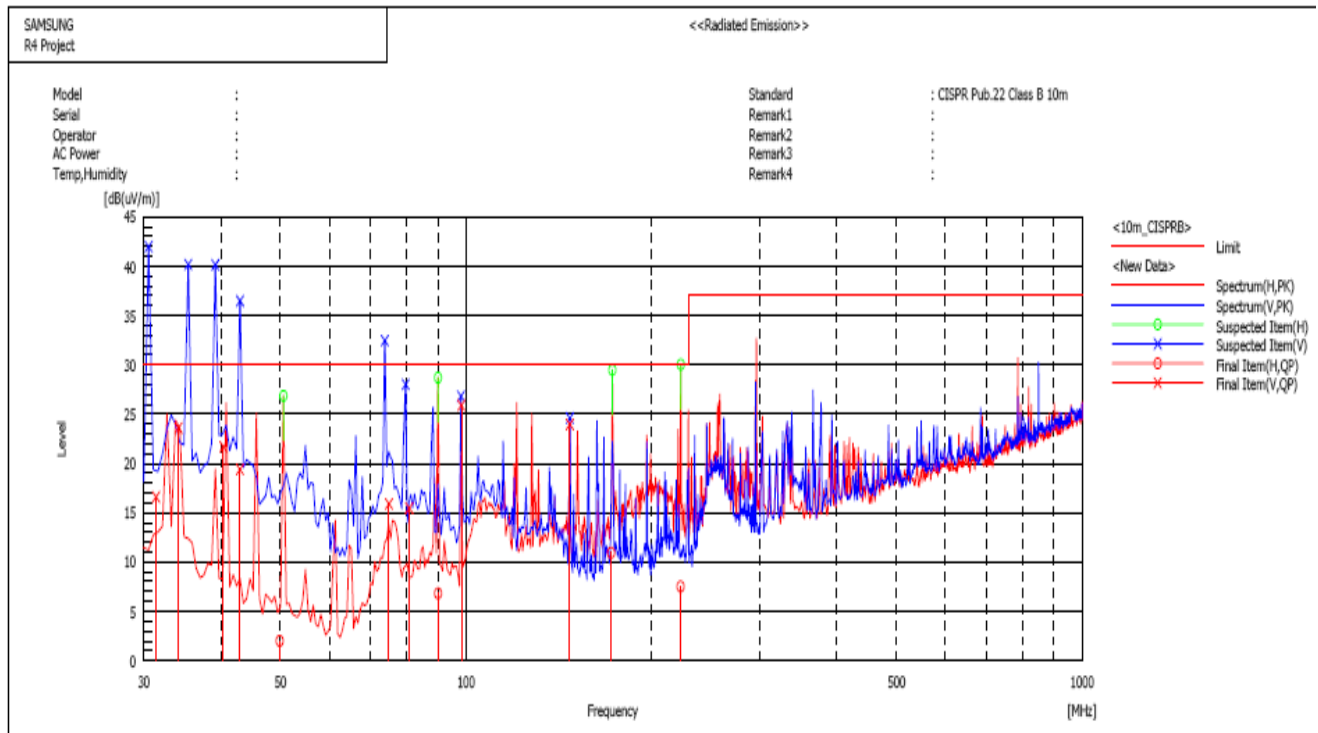
Test Distance : 10m, Antenna Height : 1 to 4 meters

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



Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(μV)]	c.f [dB(t/m)]	Result QP [dB(μV/m)]	Limit [dB(μV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	System	Remark
1	31.415	V	30.8	-14.2	16.6	30.0	13.4	200.0	188.0	2	
2	34.142	V	39.1	-15.5	23.6	30.0	6.4	112.0	7.3	2	
3	40.381	V	40.4	-18.7	21.7	30.0	8.3	100.0	346.7	2	
4	42.967	V	39.5	-20.1	19.4	30.0	10.6	156.0	355.8	2	
5	49.839	H	24.7	-22.7	2.0	30.0	28.0	400.0	337.7	1	
6	74.972	V	40.3	-24.4	15.9	30.0	14.1	279.0	256.8	2	
7	80.881	V	38.4	-22.9	15.5	30.0	14.5	200.0	12.7	2	
8	90.117	H	27.7	-20.9	6.8	30.0	23.2	400.0	15.4	1	
9	98.293	V	45.4	-19.5	25.9	30.0	4.1	114.0	68.4	2	
10	147.445	V	42.9	-18.9	24.0	30.0	6.0	102.0	195.7	2	
11	172.021	H	30.5	-19.6	10.9	30.0	19.1	300.0	280.6	1	
12	222.980	H	27.1	-19.6	7.5	30.0	22.5	251.0	49.0	1	

Note) Receiving antenna polarization : Horizontal and/or Vertical

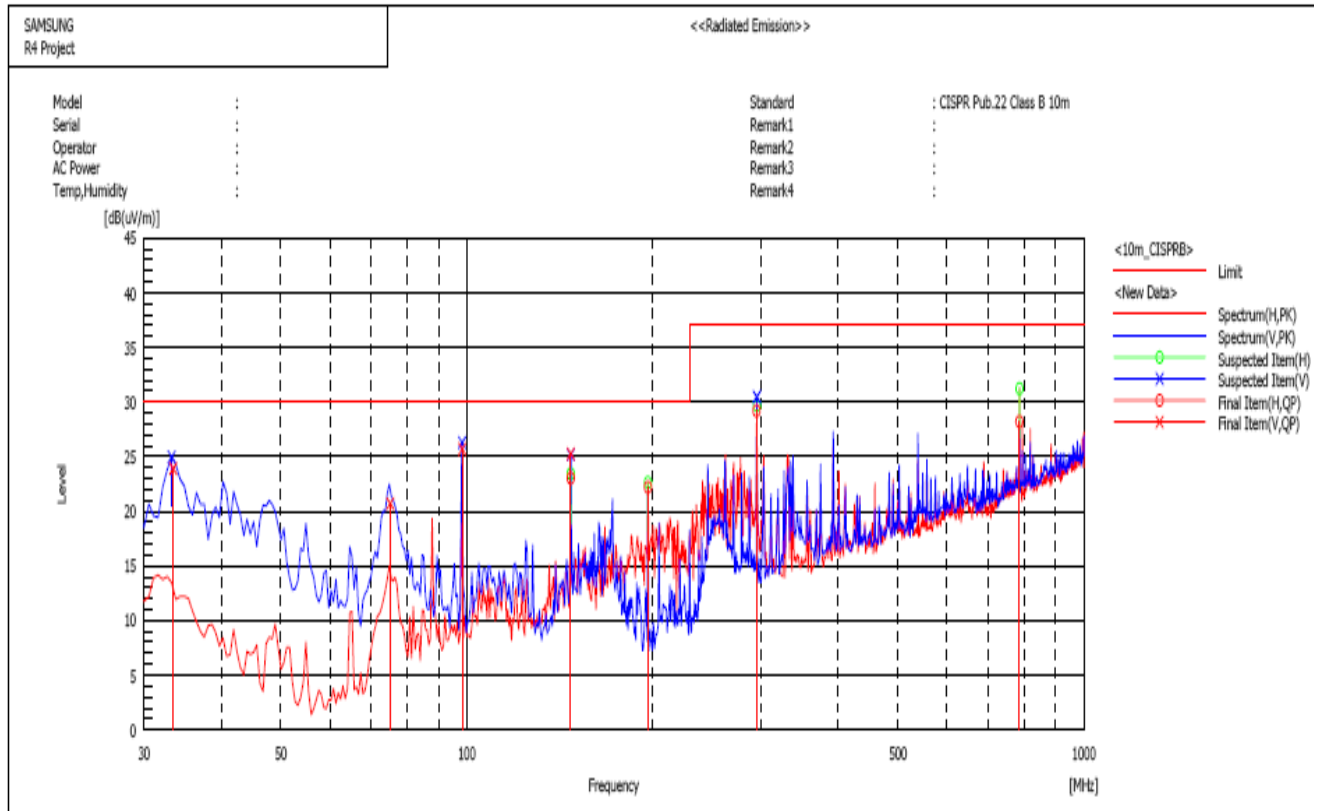
Test Distance : 10m, Antenna Height : 1 to 4 meters

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

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

- Configuration 1 : Stand-by

Test Graph and Results



Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	System	Remark
1	33.449	V	39.1	-15.2	23.9	30.0	6.1	129.0	215.0	2	
2	75.167	V	45.1	-24.4	20.7	30.0	9.3	131.0	0.3	2	
3	98.298	V	45.2	-19.5	25.7	30.0	4.3	168.0	82.1	2	
4	147.445	V	44.2	-18.9	25.3	30.0	4.7	100.0	186.7	2	
5	147.450	H	41.6	-18.6	23.0	30.0	7.0	400.0	220.7	1	
6	196.602	H	42.1	-19.9	22.2	30.0	7.8	376.0	3.0	1	
7	294.895	H	43.6	-14.4	29.2	37.0	7.8	275.0	27.5	1	
8	786.444	H	33.1	-4.9	28.2	37.0	8.8	219.0	201.5	1	

Note) Receiving antenna polarization : Horizontal and/or Vertical

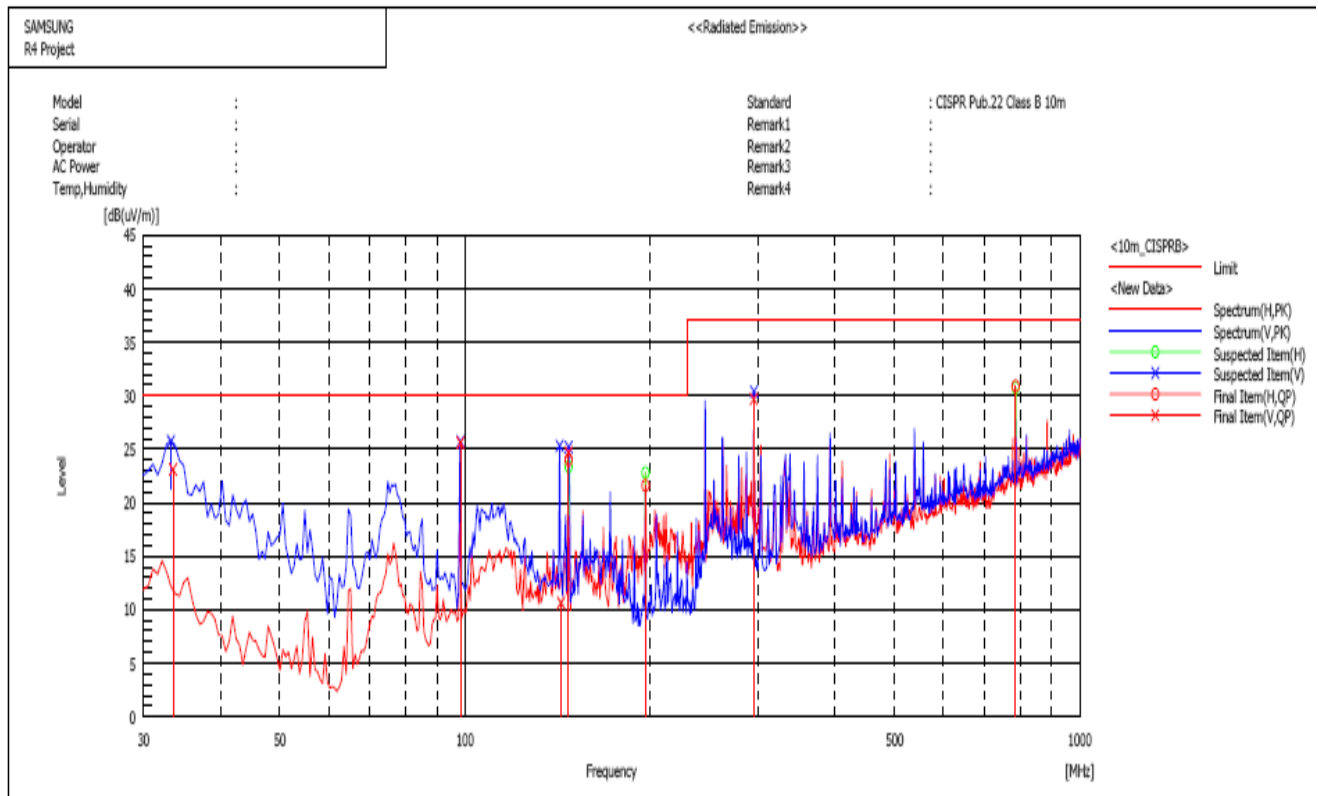
Test Distance : 10m, Antenna Height : 1 to 4 meters

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



Final Result

No.	Frequency (P)	Reading	c.f	Result	Limit	Margin	Height	Angle	System	Remark
	[MHz]	QP		QP		QP				
		[dB(μV)]	[dB(1/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB]	[cm]	[deg]		
1	33,509	V	38,3	-15,2	23,1	30,0	6,9	124,0	359,1	2
2	98,293	V	45,1	-19,5	25,6	30,0	4,4	119,0	78,9	2
3	143,240	V	29,2	-18,5	10,7	30,0	19,3	100,0	302,4	2
4	147,445	V	43,6	-18,9	24,7	30,0	5,3	112,0	154,8	2
5	147,450	H	42,6	-18,6	24,0	30,0	6,0	399,0	216,2	1
6	196,602	H	41,5	-19,9	21,6	30,0	8,4	398,0	347,8	1
7	294,895	V	44,5	-14,8	29,7	37,0	7,3	105,0	175,6	2
8	786,402	H	35,8	-4,9	30,9	37,0	6,1	153,0	212,3	1

Note) Receiving antenna polarization : Horizontal and/or Vertical

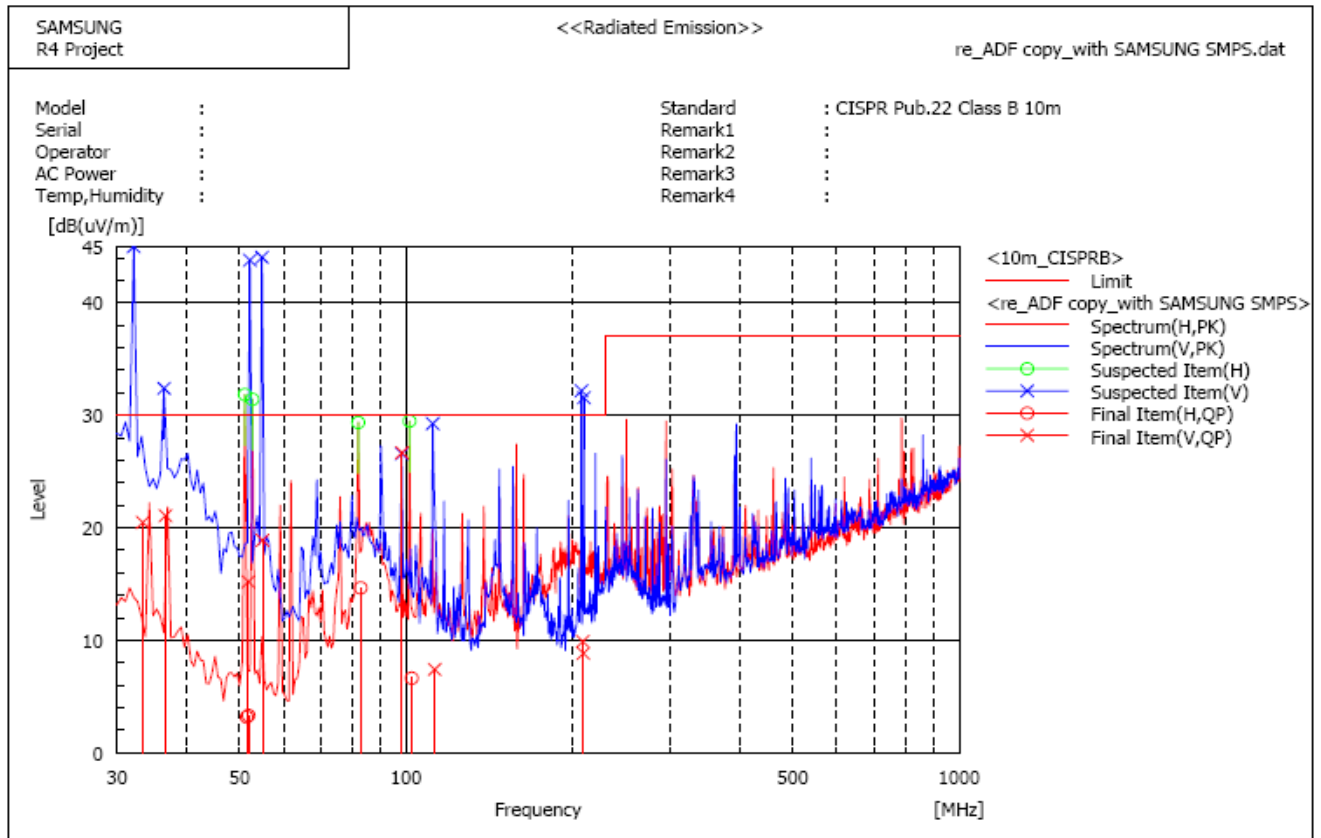
Test Distance : 10m, Antenna Height : 1 to 4 meters

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

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

- Configuration 2 : ADF COPY Printing (Worst Mode)

Test Graph and Results



Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]
1	33.401	V	35.7	-15.2	20.5	30.0	9.5	200.0	74.3
2	36.728	V	37.9	-16.8	21.1	30.0	8.9	100.0	207.6
3	51.494	H	26.3	-23.1	3.2	30.0	26.8	400.0	59.5
4	51.857	V	39.1	-23.9	15.2	30.0	14.8	100.0	13.1
5	51.884	H	26.5	-23.2	3.3	30.0	26.7	400.0	112.9
6	54.984	V	43.5	-24.6	18.9	30.0	11.1	300.0	11.0
7	82.769	H	37.5	-22.8	14.7	30.0	15.3	300.0	332.7
8	98.298	V	46.2	-19.5	26.7	30.0	3.3	100.0	69.4
9	102.372	H	25.1	-18.5	6.6	30.0	23.4	300.0	7.5
10	112.642	V	25.5	-18.1	7.4	30.0	22.6	200.0	7.4
11	208.625	V	29.6	-19.7	9.9	30.0	20.1	100.0	29.1
12	209.150	V	28.6	-19.7	8.9	30.0	21.1	200.0	2.7

Note) Receiving antenna polarization : Horizontal and/or Vertical

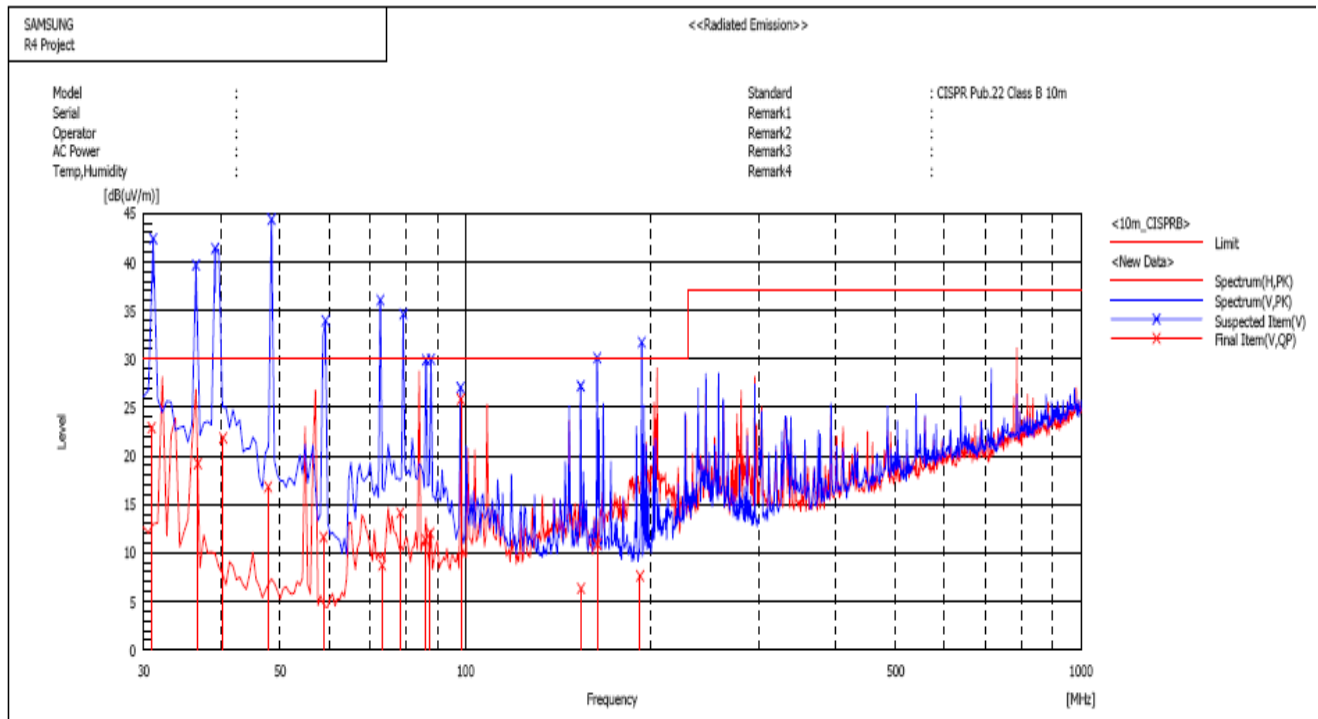
Test Distance : 10m, Antenna Height : 1 to 4 meters

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

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

- Configuration 3 : ADF COPY Printing (Worst Mode)

Test Graph and Results



Final Result

No.	Frequency (P)	Reading	c.f	Result	Limit	Margin	Height	Angle	System	Remark
	[MHz]	[dB(μV)]	[dB(1/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB]	[cm]	[deg]		
1	30,912	V 36,9	-14,0	22,9	30,0	7,1	186,0	74,6	2	
2	36,734	V 36,0	-16,8	19,2	30,0	10,8	300,0	132,6	2	
3	40,391	V 40,5	-18,7	21,8	30,0	8,2	400,0	35,0	2	
4	47,783	V 39,2	-22,4	16,8	30,0	13,2	100,0	78,0	2	
5	58,777	V 36,6	-25,0	11,6	30,0	18,4	300,0	274,6	2	
6	73,208	V 33,4	-24,7	8,7	30,0	21,3	200,0	198,6	2	
7	78,316	V 37,7	-23,6	14,1	30,0	15,9	200,0	137,4	2	
8	86,048	V 33,0	-21,7	11,3	30,0	18,7	400,0	90,3	2	
9	87,650	V 33,4	-21,4	12,0	30,0	18,0	300,0	155,4	2	
10	98,293	V 45,3	-19,5	25,8	30,0	4,2	102,0	65,4	2	
11	154,116	V 25,5	-19,2	6,3	30,0	23,7	100,0	356,9	2	
12	163,829	V 30,2	-19,3	10,9	30,0	19,1	200,0	111,4	2	
13	192,241	V 28,4	-20,8	7,6	30,0	22,4	100,0	14,3	2	

Note) Receiving antenna polarization : Horizontal and/or Vertical

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

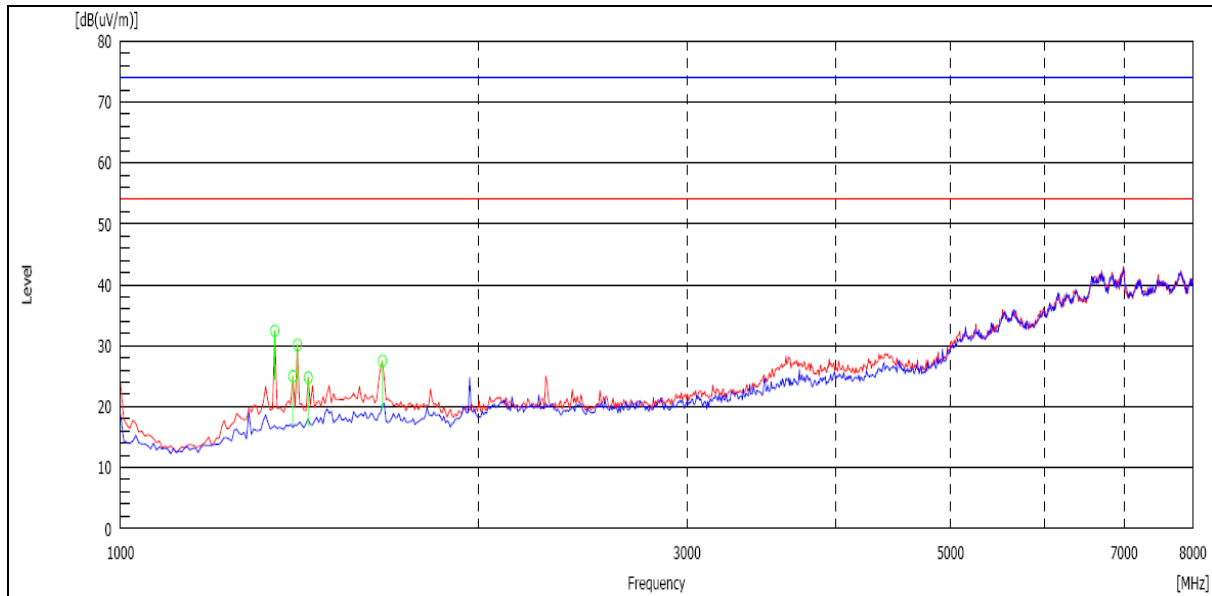
Level QP(Quasi-Peak) = Reading QP + Factor(Antenna Factor + Cable Loss - Amp. Gain)

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

4.2.5 Test results (1 GHz ~ 8 GHz)

- Configuration 2 : ADF COPY Printing (Worst Mode)

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]
1348.69	H	43.3	-10.9	32.4	74	30.7	100.0	12.6
1408.81	H	40.8	-10.7	30.1	74	33.2	100.0	68.3
1661.32	H	36.9	-9.4	27.5	74	37.1	200.0	166.5
1396.79	H	35.7	-10.7	25.0	74	38.3	100.0	68.3
1438.87	H	35.3	-10.5	24.8	74	38.7	200.0	321.3

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



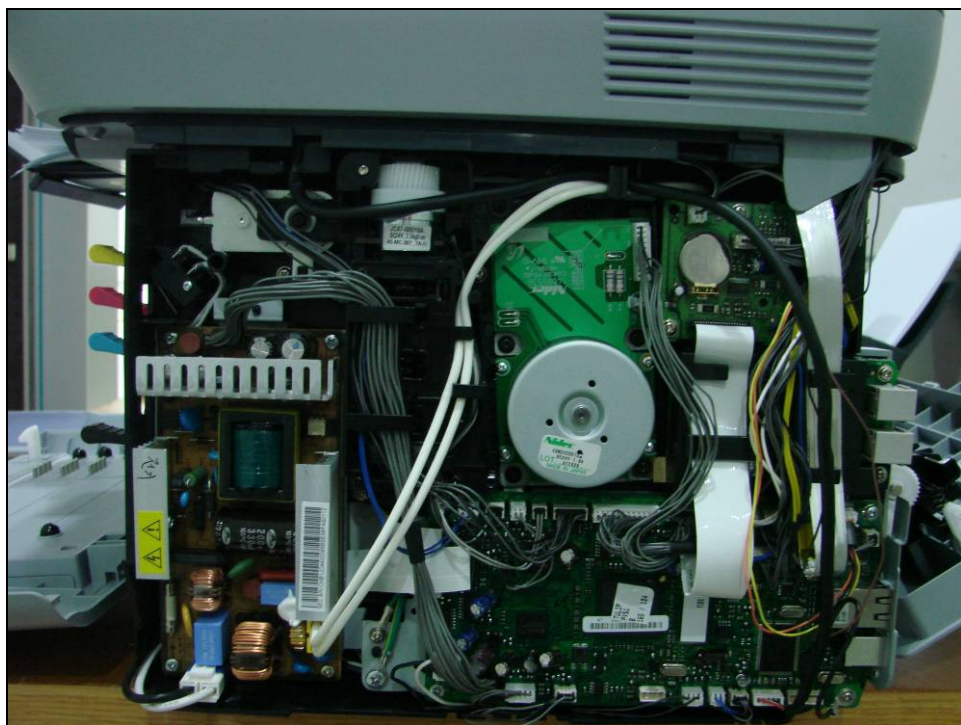
Front View



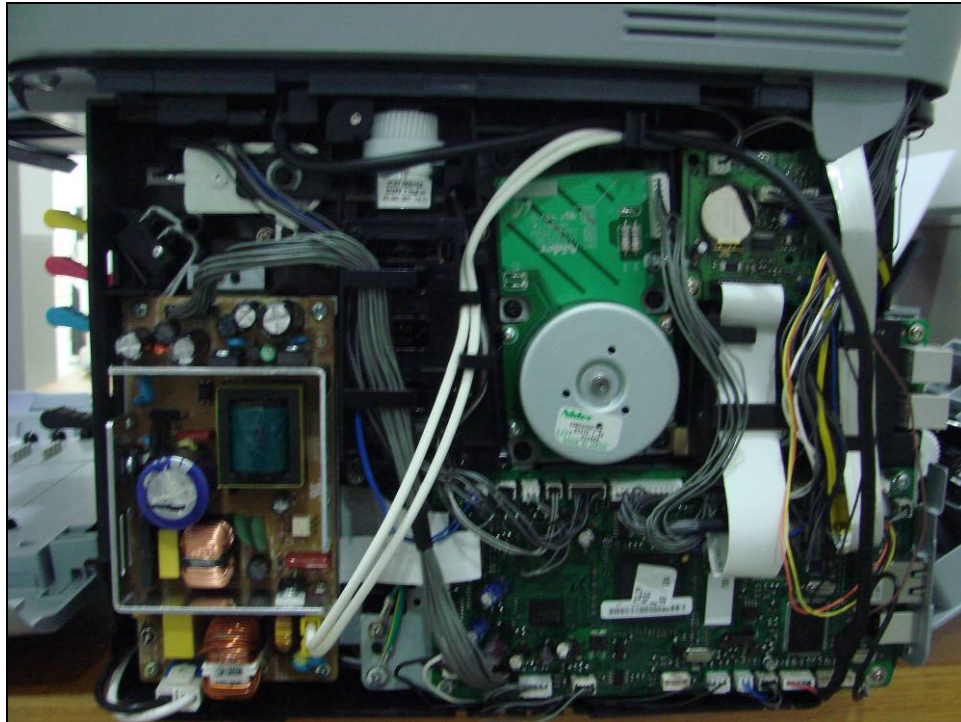
Rear View



Internal View 1
(Sung-ho SMP board)



Internal View 2
(Samsung Electro-Mechanics SMP board)



Internal View 3
(Sun Koera SMP board)



Label Location

 Samsung Electronics Co., Ltd. Suwon, Korea, 443-742 Place:M264	Model: CLX-3170FN Volts: AC 110-127V Hertz: 50/60Hz Amps: 8A Manufactured:	This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: i) This device may not cause harmful interference, and ii) This device must accept any interference received, including interference that may cause undesired operation. FCC ID: A3LFA05BCLX3170FN This product complies with 21 CFR Chapter 1, subchapter J. This Class B digital apparatus complies with Canadian ICES-003 Cet appareil numérique de la class B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada. Cet appareil numérique de la classe B est Conforme à la norme NMB-003 du Canada. IC: 649E-CLX3170FN
	 51Y7 US E149091 I.T.E.	Serial No.

 Samsung Electronics Co., Ltd. Suwon, Korea, 443-742 Place:M259	Model: CLX-3170FN Volts: AC 110-127V Hertz: 50/60Hz Amps: 8A Manufactured:	This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: i) This device may not cause harmful interference, and ii) This device must accept any interference received, including interference that may cause undesired operation. FCC ID: A3LFA05BCLX3170FN This product complies with 21 CFR Chapter 1, subchapter J. This Class B digital apparatus complies with Canadian ICES-003 Cet appareil numérique de la class B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada. Cet appareil numérique de la classe B est Conforme à la norme NMB-003 du Canada. IC: 649E-CLX3170FN
	 51Y7 US E149091 I.T.E.	Serial No.

Rating Label

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