EMC TEST REPORT

Project No.	LBE20121924	**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	March 20, 2012	
EUT	**Type of device**	Class B personal computers and peripherals	
	Equipment authorization	☐ Declaration of Conformity ☒ Certification ☐ Verification	
	FCC ID	**A3LSCX4655FN**	
	Kind of product	**Mono Laser MFP**	
	Model No.	**SCX-4655FN**	
		Variant Model No.	SCX-4650, SCX-4650N, SCX-4650F, SCX-4655F
	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		March 21, 2012 ~ March 27, 2012	
Issue date		April 26, 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 : Sung Jin Sim	**Reviewed by** : Tae Young Jang

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.
Issue 1	Some contents, table of contents at 2 page was modified on this report. The modified content is to include the section page numbers.

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

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	MFP	SCX-4655FN	-	Samsung	EUT
B	PC	NT-P530	ZSV293BZ600309F	Samsung	DoC
C	Adapter (For PC)	ADP-60ZH D	CNBA4400242ABZ0415E0476	Delta	DoC
D	USB keyboard	SK-8115	CN-0J4636-71616-4C1-0U2D	Dell	DoC
E	USB mouse	Moaruo	0740007944	Primax Electronics	DoC
F	Telephone	SP-F209K	-	Samsung	-

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	ADF copy printing
Operating Mode 3	Network printing
Operating Mode 4	Fax Tx

4.3 Details of Sampling

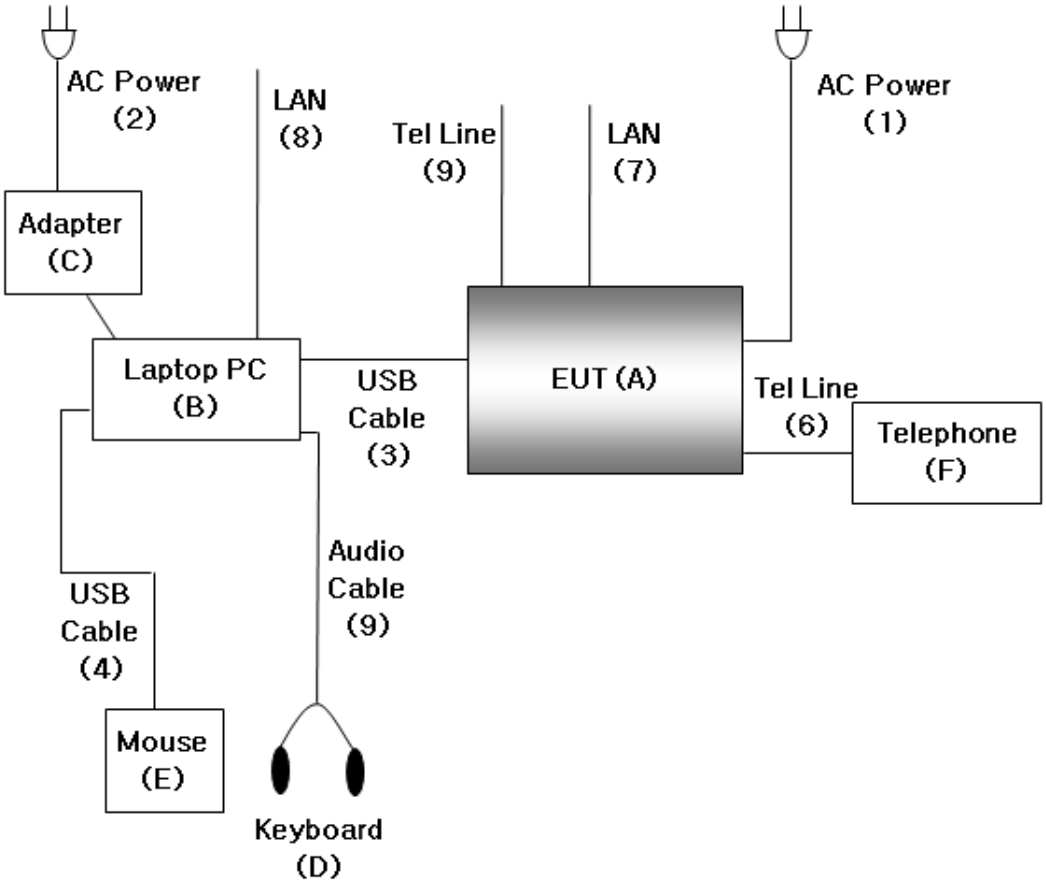
Customer selected, single unit.

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	1.0	No	For EUT
2	Power	1.8	No	For PC
3	1284B	2.0	Yes	From EUT to PC
4	USB	1.8	Yes	From EUT to mouse
5	USB	1.8	Yes	From EUT to keyboard
6	Tel	2.0	No	From EUT to telephones
7	LAN	2.0	Yes	From EUT to HUB
8	LAN	2.0	Yes	From PC to HUB
9	Tel	3.0	N	From EUT to keyphone system

4.5 Test arrangement



4.6 EUT Description

The following features describe EUT represented by this report:

Item	Specification and Description
Processor	CHORUS3-N(433Mhz)
Standard System memory	128MB DDR2 SDRAM
Resolution	Addressable 1200 x 1200 dpi
Copy Quality mode	Text > Scan: 300x300dpi , Printing : 600x600dpi @ ADF Scan: 600x300dpi , Printing : 600x600dpi @ Platen Text/Photo > Scan: 300x300dpi , Printing : 600x600dpi @ ADF Scan: 600x300dpi , Printing : 600x600dpi @ Platen Photo > Scan: 600x300dpi , Printing : 600x600dpi @ ADF Scan: 600x600dpi , Printing : 600x600dpi @ Platen
Paper Handling	250-sheet Cassette @ 75g/㎡, 1-sheet @ Special Paper
Power Rating	110-127 VAC, 6A 50/60 Hz
Power Consumption	Power Save mode: 1.5W Printing Mode : 450W Ready Mode : 65W Off Mode : 0.45W
Printer Language	SPL
Interfaces	High speed USB2.0, Ethernet 10/100 Base TX wired LAN
OS compatibility	Windows 2000/XP(32/64bits)/Vista(32/64bits)/2003 Server(32/64bits)/ 2008 Server(32/64bits)/7(32/64bits)/2008 Server R2(64bits) Mac OS X 10.4 ~ 10.6 RedHat Enterprise Linux WS 4, 5 (32/64 bit) Fedora 5, 6, 7, 8, 9, 10, 11, 12, 13 (32/64 bit) SuSE Linux 10.1 (32 bit) OpenSuSE 10.2, 10.3, 11.0, 11.1, 11.2 (32/64 bit) Mandriva 2007, 2008, 2009, 2009.1, 2010 (32/64 bit) Ubuntu 6.06, 6.10, 7.04, 7.10, 8.04, 8.10, 9.04, 9.10, 10.04 (32/64 bit) SuSE Linux Enterprise Desktop 10, 11 (32/64 bit) Debian 4.0, 5.0 (32/64 bit) Sun Solaris 9,10 (x86, SPARC) HP-UX 11.0, 11i v1, 11i v2, 11i v3 (PA-RISC, Itanium) IBM AIX 5.1, 5.2, 5.3, 5.4
Modes of Operation	USB Printing, Network Printing, Platen Scan, Platen Copy, ADF Scan, ADF Copy, FAX
Intended Class for Emissions	Class B

4.7 Clock Frequencies

Kind of Clocks	Frequency[MHz]	Kind of Clocks	Frequency[MHz]
CPU internal clock	**433**	DDR2 clock	300
Video clock	22.43	Main source clock	12
USB device clock	12	CIS	4

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.

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

The EUT was measured all testing with toner cartridge.

- Test Voltage : AC 120 V, 60 Hz

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

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	March 21, 2012	**Test engineer**	Sung Jin Sim	
Climate condition	**Ambient temperature**	22.8 ℃	**Relative humidity**	29 %
	Atmospheric pressure	102.1 kPa		
Test place	Shielded Room #1			

5.1.3 Photograph of Test Setup

Front

Rear

5.1.4 Test results (mains port)

- **Stand-by mode**

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

Subrange 1

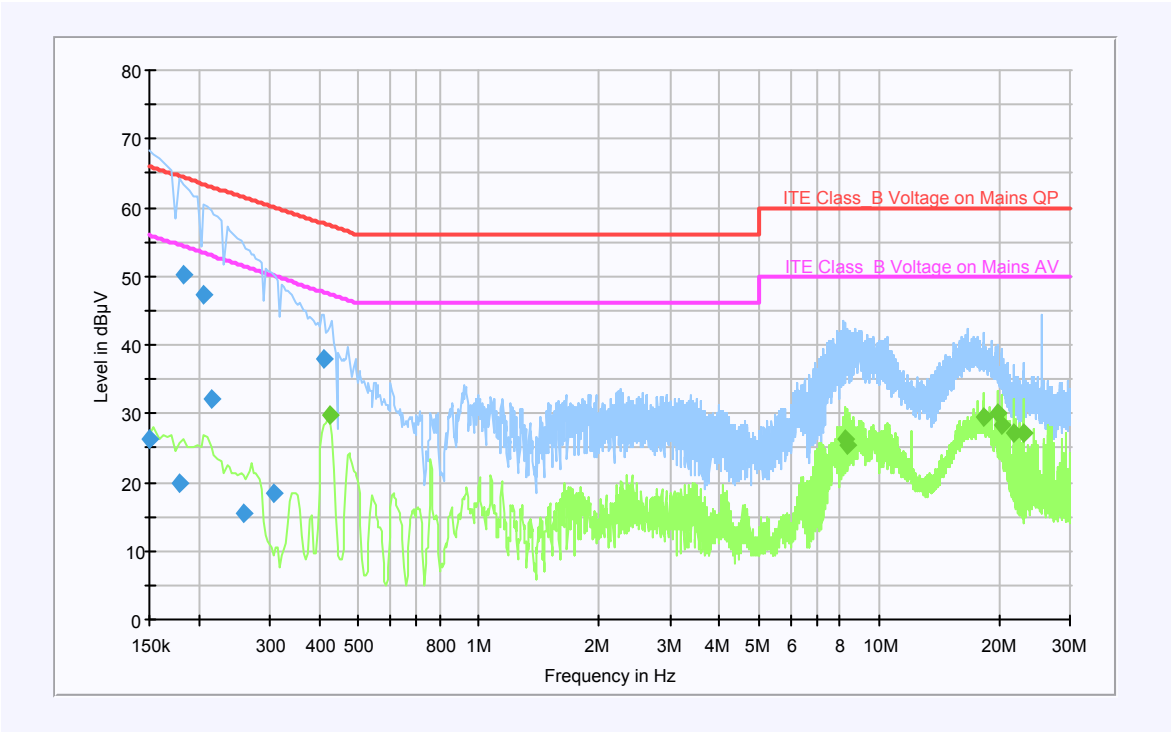
Frequency Range:	150 kHz – 30 MHz
Receiver:	ESIB
Transducer:	ENV216 / Receiver-2-Line-LISN ENV216

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.

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	26.2	L1	9.7	39.8	66.0
0.178	19.8	L1	9.7	44.8	64.6
0.182	50.3	L1	9.7	14.1	64.4
0.206	47.3	L1	9.7	16.1	63.4
0.214	32.2	L1	9.7	30.8	63.0
0.258	15.5	L1	9.7	46.0	61.5
0.306	18.4	L1	9.7	41.7	60.1
0.410	38.1	L1	9.7	19.5	57.6

Average final measurement results table

Frequency (MHz)	Average (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.422	29.8	L1	9.7	17.6	47.4
8.252	26.1	L1	9.8	23.9	50.0
8.320	25.5	L1	9.8	24.5	50.0
18.240	29.6	N	10.1	20.4	50.0
19.708	30.1	N	10.1	19.9	50.0
20.256	28.4	N	10.0	21.6	50.0
21.660	27.2	L1	10.0	22.8	50.0
23.128	27.1	L1	10.2	22.9	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)

- **ADF copy printing mode**

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

Subrange 1

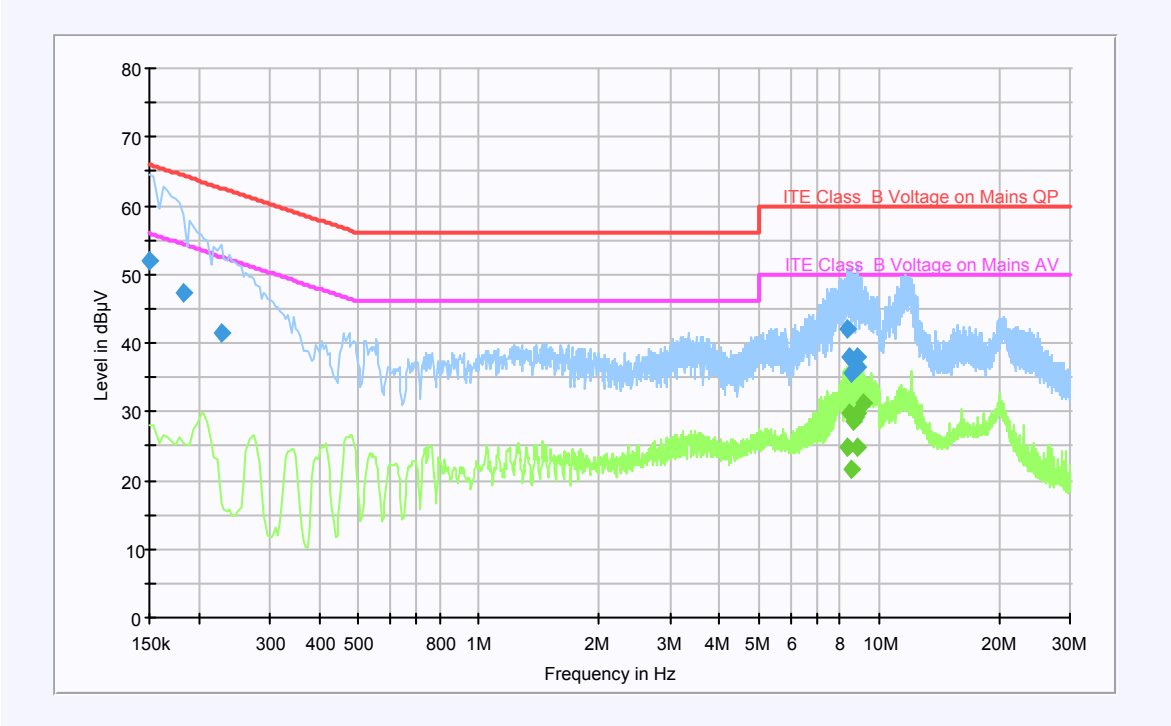
Frequency Range:	150 kHz – 30 MHz
Receiver:	ESIB
Transducer:	ENV216 / Receiver-2-Line-LISN ENV216

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.

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	52.1	L1	9.7	13.9	66.0
0.182	47.2	N	9.7	17.2	64.4
0.226	41.4	L1	9.7	21.2	62.6
8.372	41.9	L1	9.8	18.1	60.0
8.436	38.1	N	9.8	21.9	60.0
8.512	35.7	L1	9.8	24.3	60.0
8.784	36.5	L1	9.8	23.5	60.0
8.856	38.1	N	9.8	21.9	60.0

Average final measurement results table

Frequency (MHz)	Average (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
8.372	24.8	N	9.8	25.2	50.0
8.436	29.9	N	9.8	20.1	50.0
8.508	21.6	N	9.8	28.4	50.0
8.576	28.6	L1	9.8	21.4	50.0
8.708	29.3	L1	9.8	20.7	50.0
8.784	29.7	L1	9.8	20.3	50.0
8.856	25.0	N	9.8	25.0	50.0
9.116	31.2	L1	9.8	18.8	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)

- **Network printing mode**

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

Subrange 1

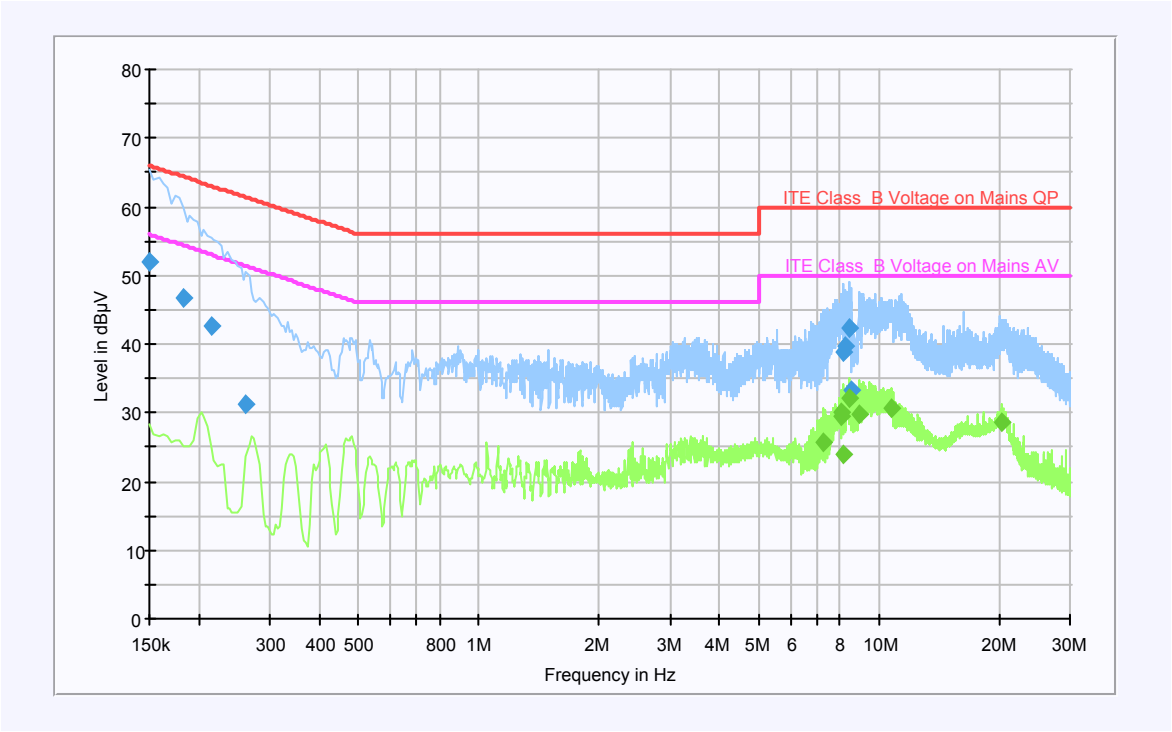
Frequency Range:	150 kHz – 30 MHz
Receiver:	ESIB
Transducer:	ENV216 / Receiver-2-Line-LISN ENV216

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.

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	52.0	L1	9.7	14.0	66.0
0.182	46.7	L1	9.7	17.7	64.4
0.214	42.8	L1	9.7	20.2	63.0
0.262	31.3	L1	9.7	30.1	61.4
8.152	38.7	L1	9.8	21.3	60.0
8.248	39.7	L1	9.8	20.3	60.0
8.432	42.4	L1	9.8	17.6	60.0
8.508	33.4	L1	9.8	26.6	60.0

Average final measurement results table

Frequency (MHz)	Average (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
7.244	25.6	L1	9.7	24.4	50.0
8.020	30.1	N	9.8	19.9	50.0
8.088	29.5	N	9.8	20.5	50.0
8.168	23.9	N	9.8	26.1	50.0
8.432	32.2	L1	9.8	17.8	50.0
8.948	29.9	N	9.8	20.1	50.0
10.764	30.7	N	9.8	19.3	50.0
20.256	28.5	L1	10.0	21.5	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)

- **Fax Tx mode**

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

Subrange 1

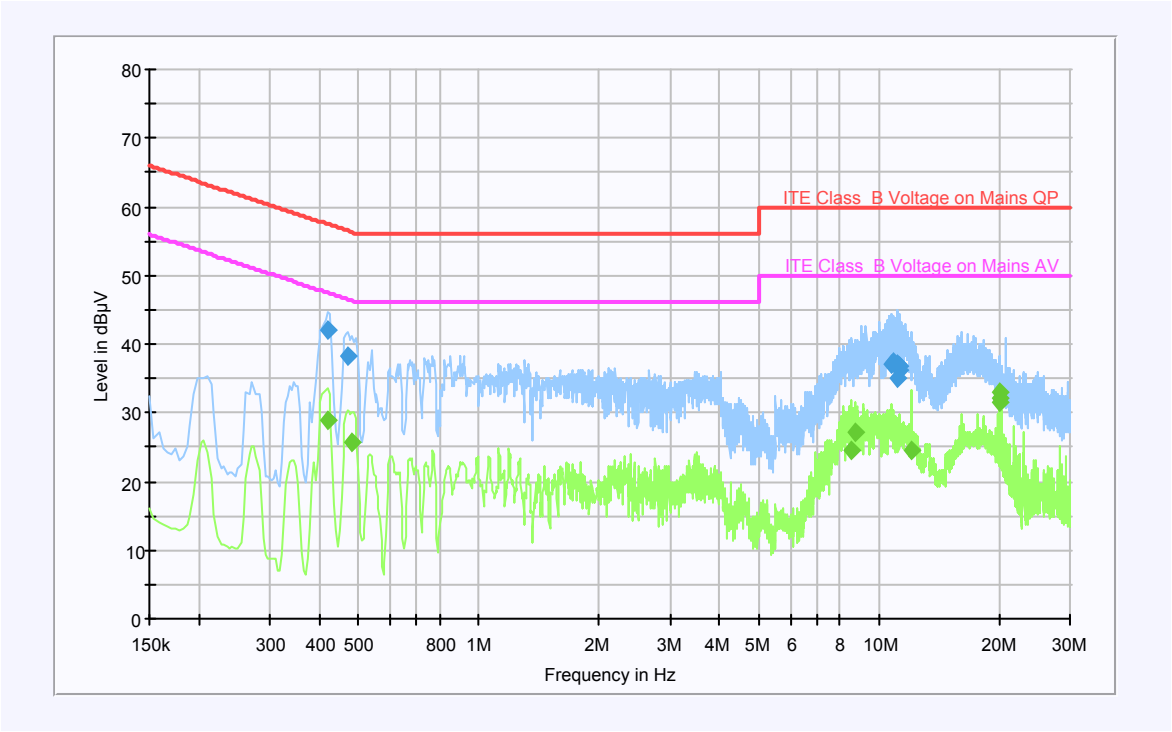
Frequency Range:	150 kHz – 30 MHz
Receiver:	ESIB
Transducer:	ENV216 / Receiver-2-Line-LISN ENV216

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.

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)
0.418	42.0	N	9.7	15.5	57.5
0.470	38.3	L1	9.7	18.2	56.5
10.712	37.0	L1	9.8	23.0	60.0
10.872	37.3	N	9.9	22.7	60.0
11.080	37.1	L1	9.9	22.9	60.0
11.124	35.0	L1	9.9	25.0	60.0
11.212	36.9	L1	9.9	23.1	60.0
11.280	36.1	L1	9.9	23.9	60.0

Average final measurement results table

Frequency (MHz)	Average (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.418	28.8	N	9.7	18.7	47.5
0.482	25.7	L1	9.7	20.6	46.3
8.508	24.5	N	9.8	25.5	50.0
8.720	27.3	N	9.8	22.7	50.0
12.000	24.4	L1	9.8	25.6	50.0
19.952	32.2	N	10.0	17.8	50.0
20.000	32.9	L1	10.0	17.1	50.0
20.048	31.6	N	10.0	18.4	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)

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.		

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.

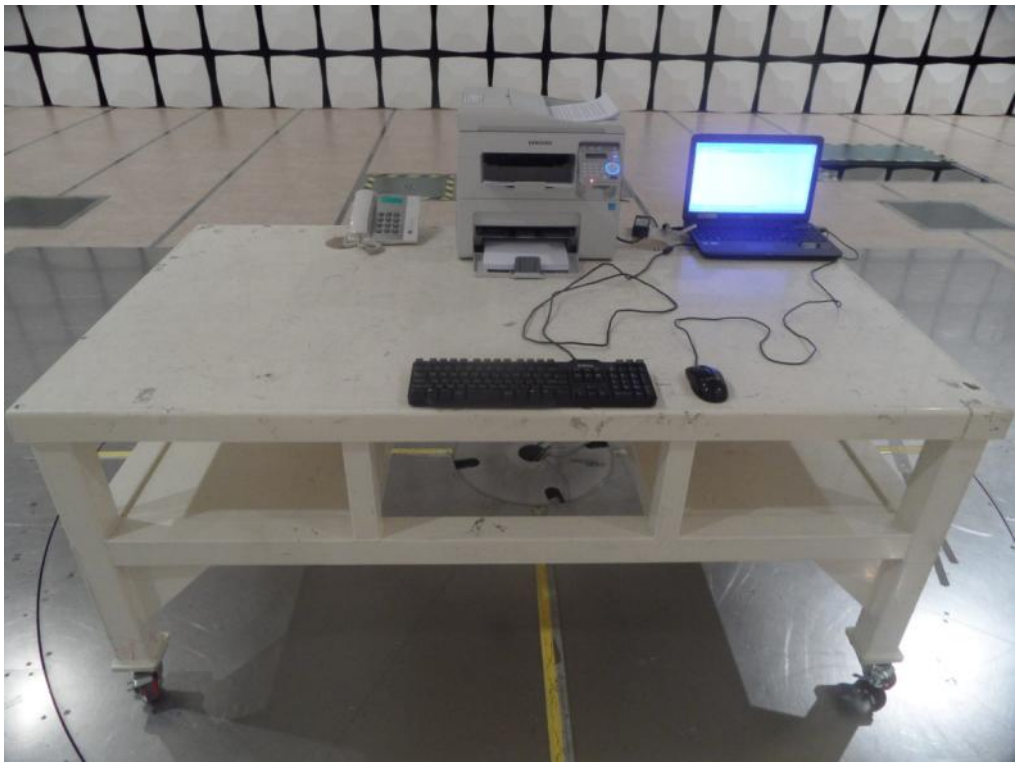
5.2.1 Test instrumentation

Test instrumentation	Model name	Manufacturer	Serial or Firmware (No./Ver.)	Calibration	
				Date	Interval (Month)
EMI Test Receiver	ESCI	R&S	100369	2011-08-03	12
EMI Test Receiver	ESCI	R&S	100370	2011-05-29	12
Bi-log Antenna	CBL6112D	SCHAFFNER	22602	2010-04-21	24
Bi-log Antenna	CBL6112D	SCHAFFNER	22604	2010-04-21	24
Amplifier	310N	SONOMA	185861	2011-04-07	12
Amplifier	310N	SONOMA	251676	2011-04-07	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	100288	2011-06-16	12
Horn antenna	HF907	R&S	100166	2010-01-20	24
Preamplifier	SCU18	R&S	10001	2011-05-03	12
Test Software	EP5/RE	TOYO	Ver 3.10.20	-	-

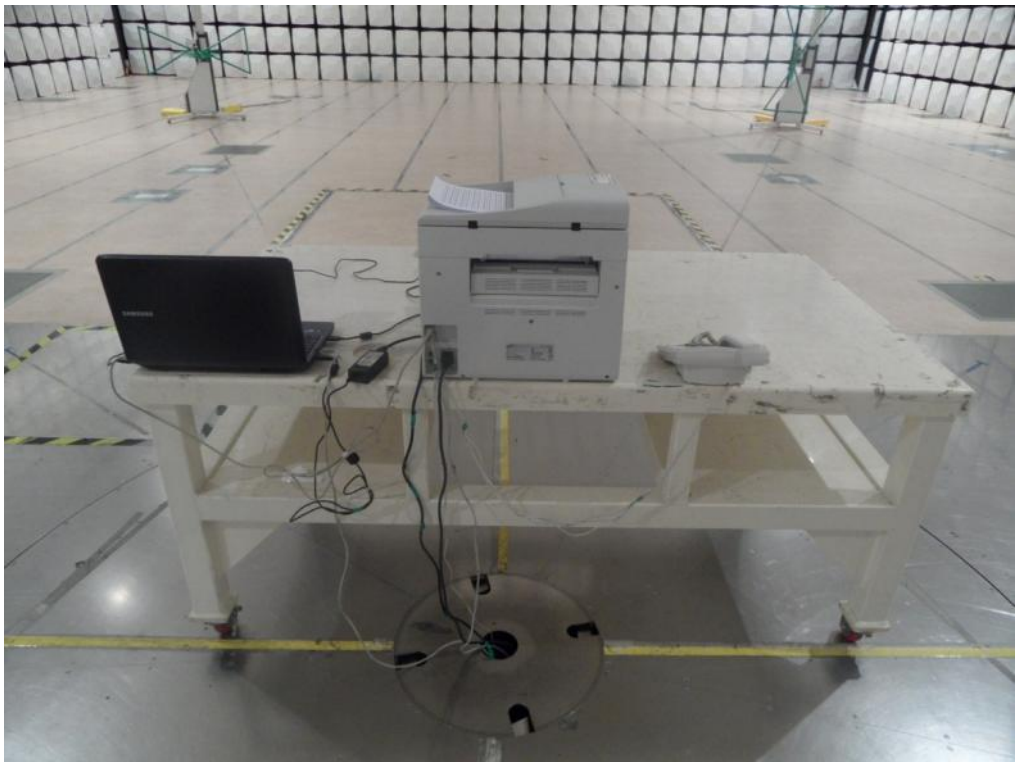
5.2.2 Temperature and humidity condition

Test date	March 26, 2012 ~ March 27, 2012	**Test engineer**	Sung Jin Sim	
Climate condition	**Ambient temperature**	23.2 ℃	**Relative humidity**	30 %
	Atmospheric pressure	101.8 kPa		
Test place	10 m Semi-Anechoic Chamber			

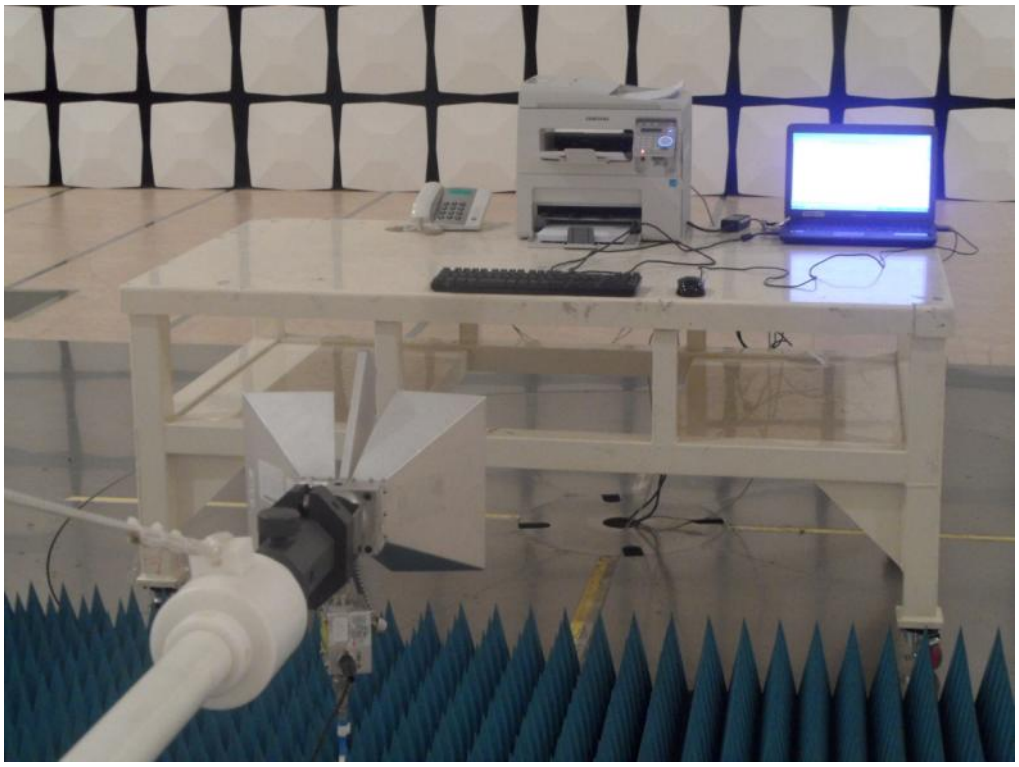
5.2.3 Photograph of Test Setup



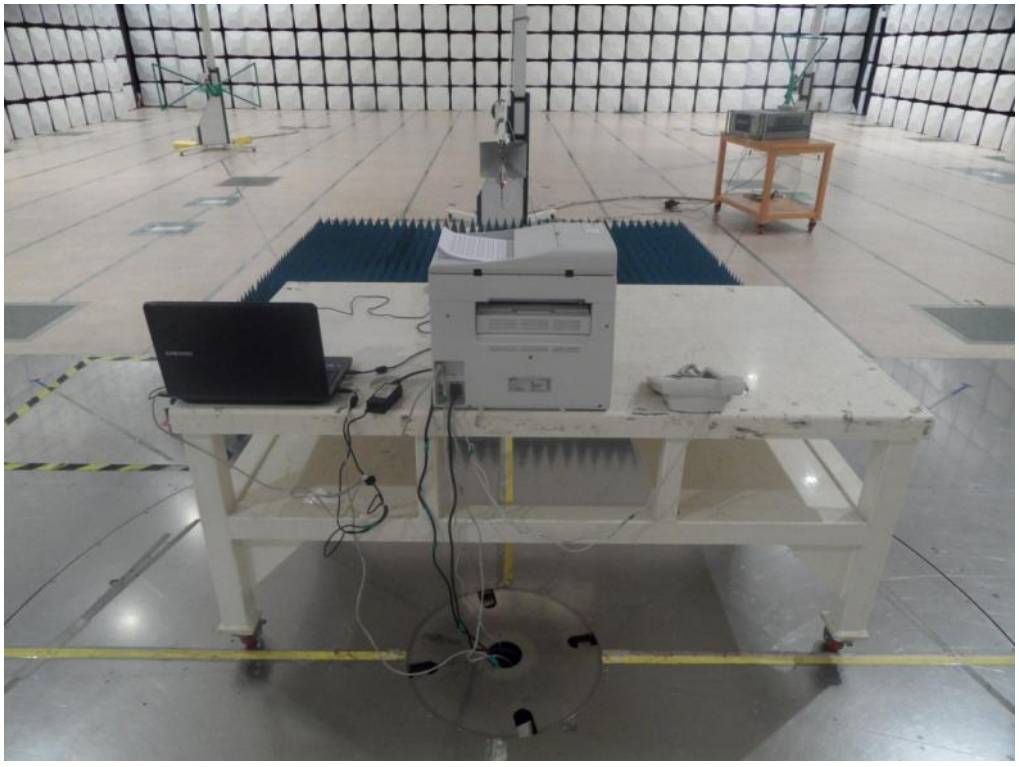
Front (Below 1GHz)



Rear (Below 1GHz)



Front (above 1GHz)



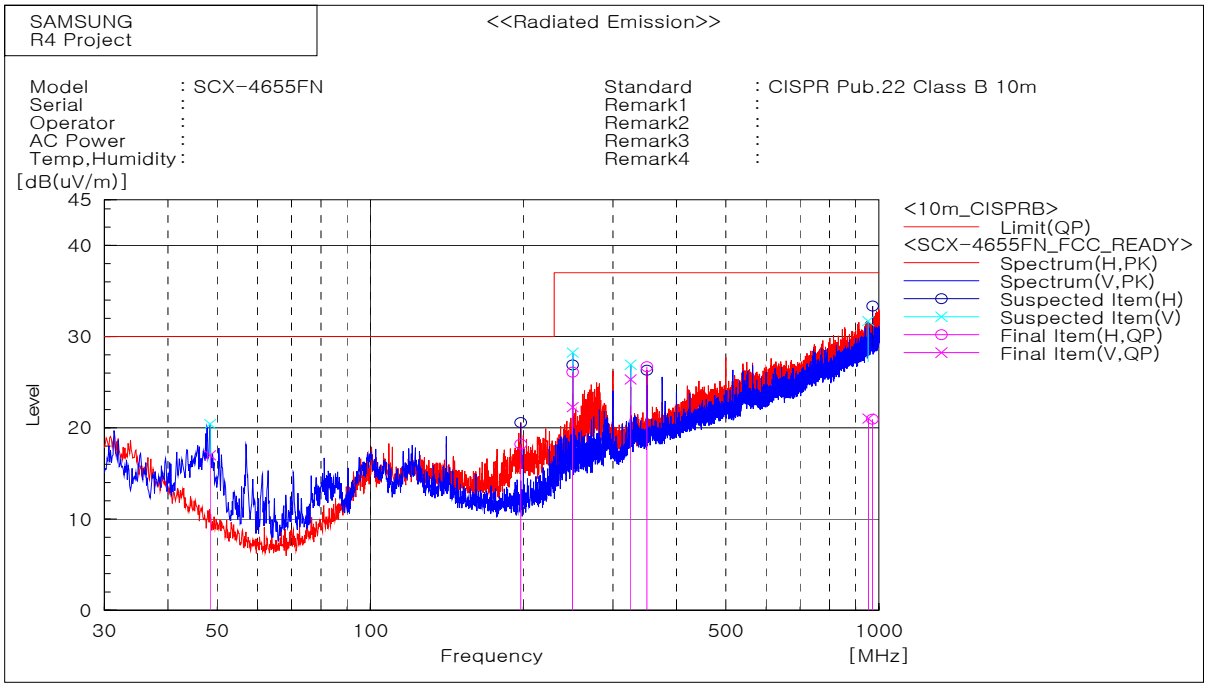
Rear (above 1GHz)

5.2.4 Test results

5.2.4.1 30 MHz to 1GHz test results

- **Stand-by Mode**

Test Graph and Results

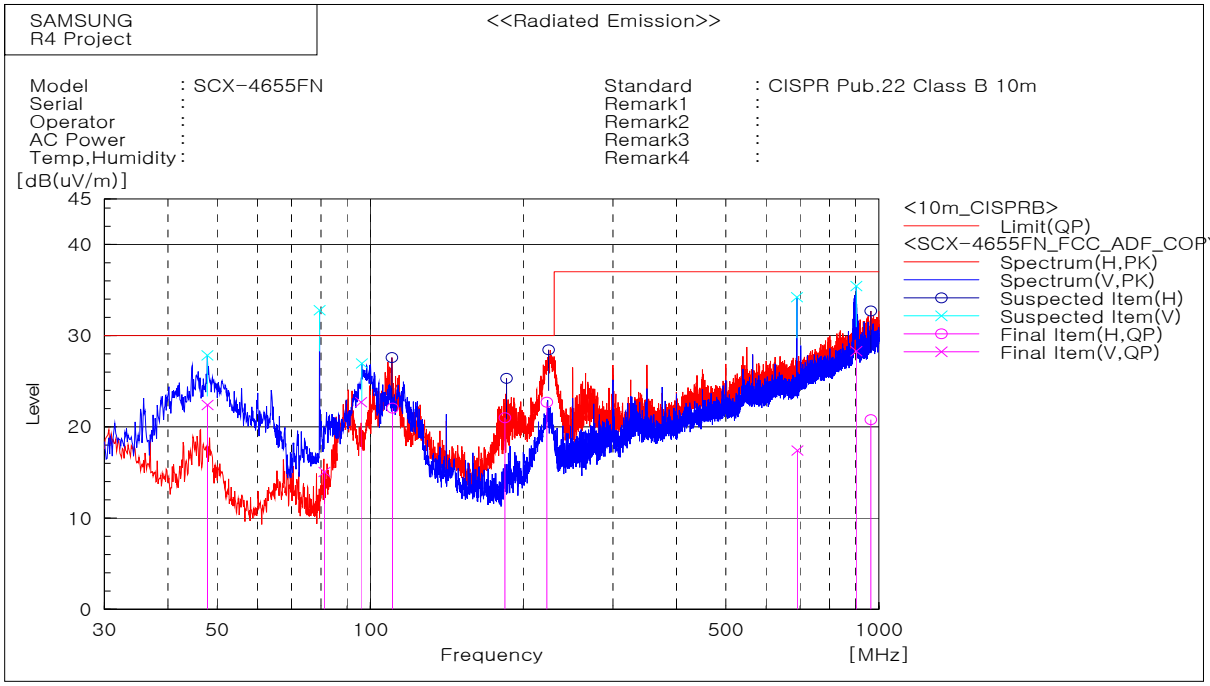


Frequency [MHz]	Pol.	Reading QP [dB(μV)]	Factor [dB(1/m)]	Level QP [dB(μV /m)]	Limit [dB(μV /m)]	Margin QP [dB]	Height [cm]	Angle [deg]
48.436	V	39.2	-22.2	17.0	30.0	13.0	202.0	328.2
197.606	H	36.8	-18.6	18.2	30.0	11.8	398.0	0.3
249.947	H	41.7	-15.6	26.1	37.0	10.9	399.0	353.9
249.975	V	38.2	-15.9	22.3	37.0	14.7	101.0	0.3
325.001	V	38.3	-13.0	25.3	37.0	11.7	100.0	107.3
349.979	H	38.9	-12.2	26.7	37.0	10.3	200.0	52.9
953.705	V	21.4	-0.4	21.0	37.0	16.0	101.0	0.3
970.998	H	21.5	-0.6	20.9	37.0	16.1	200.0	0.3

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

- **ADF copy printing Mode**

Test Graph and Results

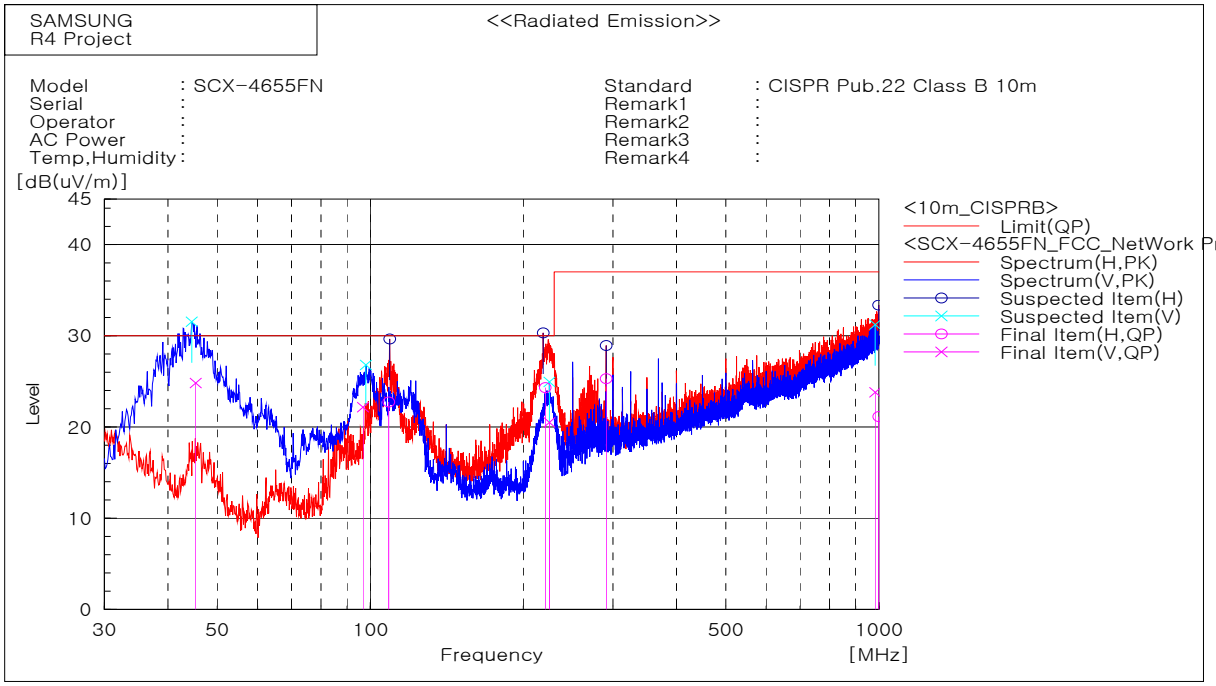


Frequency [MHz]	Pol.	Reading QP [dB(μV)]	Factor [dB(1/m)]	Level QP [dB(μV /m)]	Limit [dB(μV /m)]	Margin QP [dB]	Height [cm]	Angle [deg]
47.846	V	44.3	-21.9	22.4	30.0	7.6	201.0	357.9
81.230	V	37.4	-22.3	15.1	30.0	14.9	101.0	113.2
95.918	V	41.9	-19.2	22.7	30.0	7.3	101.0	301.3
110.620	H	39.1	-17.0	22.1	30.0	7.9	398.0	251.3
183.965	H	40.1	-19.1	21.0	30.0	9.0	299.0	0.8
222.463	H	41.0	-18.3	22.7	30.0	7.3	299.0	320.2
691.422	V	22.8	-5.4	17.4	37.0	19.6	101.0	252.3
902.757	V	30.0	-1.7	28.3	37.0	8.7	200.0	18.2
964.548	H	21.6	-0.8	20.8	37.0	16.2	102.0	231.5

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

- **Network printing Mode**

Test Graph and Results

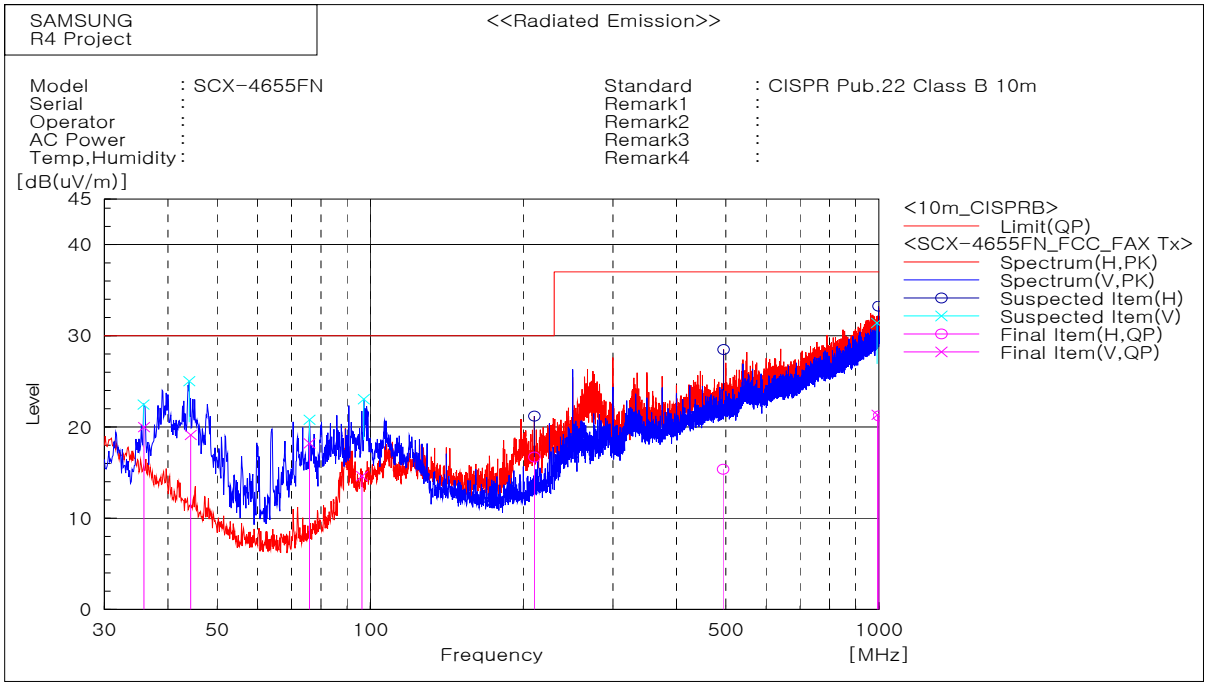


Frequency [MHz]	Pol.	Reading QP [dB(μV)]	Factor [dB(1/m)]	Level QP [dB(μV /m)]	Limit [dB(μV /m)]	Margin QP [dB]	Height [cm]	Angle [deg]
45.366	V	45.8	-21.0	24.8	30.0	5.2	400.0	277.8
96.769	V	41.2	-19.0	22.2	30.0	7.8	101.0	180.6
108.717	H	39.9	-17.2	22.7	30.0	7.3	302.0	307.3
220.780	H	42.8	-18.5	24.3	30.0	5.7	399.0	307.3
224.970	V	38.9	-18.4	20.5	30.0	9.5	101.0	318.6
290.930	H	39.5	-14.2	25.3	37.0	11.7	301.0	288.8
983.267	V	23.8	0.0	23.8	37.0	13.2	301.0	80.7
999.169	H	21.1	0.0	21.1	37.0	15.9	398.0	170.0

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

- **Fax Tx Mode**

Test Graph and Results



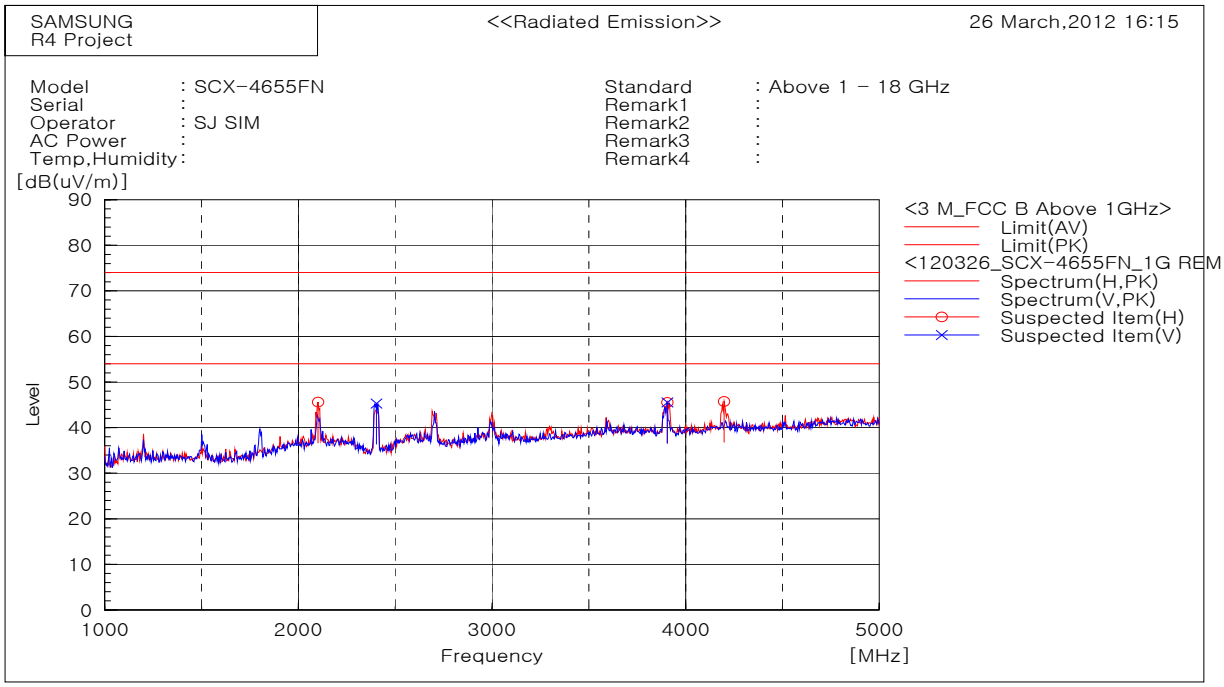
Frequency [MHz]	Pol.	Reading QP [dB(μV)]	Factor [dB(1/m)]	Level QP [dB(μV /m)]	Limit [dB(μV /m)]	Margin QP [dB]	Height [cm]	Angle [deg]
35.899	V	36.5	-16.5	20.0	30.0	10.0	102.0	250.2
44.345	V	39.7	-20.6	19.1	30.0	10.9	307.0	359.6
75.954	V	41.7	-23.5	18.2	30.0	11.8	200.0	357.8
96.308	V	33.7	-19.1	14.6	30.0	15.4	102.0	98.2
210.178	H	35.5	-18.8	16.7	30.0	13.3	299.0	294.4
493.948	H	23.8	-8.4	15.4	37.0	21.6	399.0	2.4
993.509	V	21.0	0.3	21.3	37.0	15.7	309.0	211.5
999.501	H	21.2	0.0	21.2	37.0	15.8	200.0	165.4

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

5.2.4.2 1 GHz to 5 GHz test results

- **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]
2102.205	H	50.7	-5.1	45.6	74.0	28.4	108.0	315.8
2402.806	V	52.0	-6.7	45.3	74.0	28.7	108.0	81.9
3905.812	V	46.1	-0.6	45.5	74.0	28.5	108.0	69.0
3905.812	H	46.1	-0.6	45.5	74.0	28.5	108.0	62.0
4198.397	H	44.7	1.0	45.7	74.0	28.3	108.0	57.0

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)

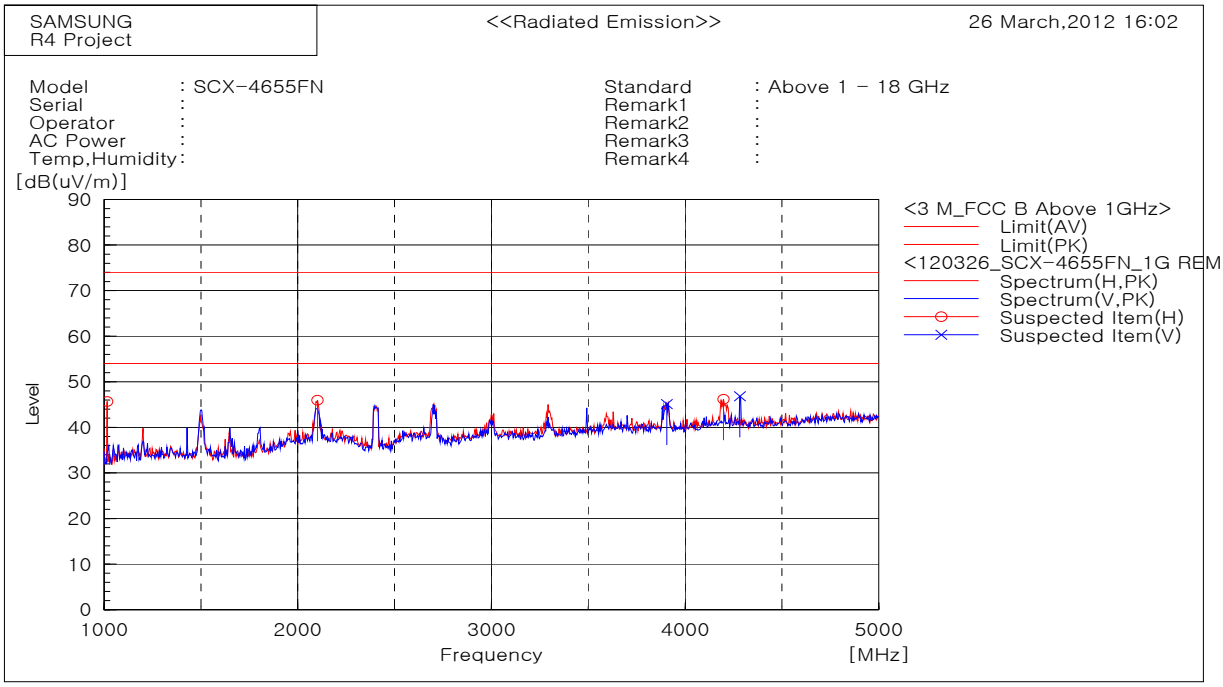
Margin PK (Peak) = Limit – Level PK (Peak)

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

Note 3) The measurement was done up to 5 GHz instead of 1 GHz to 2 GHz because of customer's request.

- **ADF copy 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]
1016.032	H	56.8	-11.1	45.7	74.0	28.3	108.0	67.6
2102.205	H	51.1	-5.1	46.0	74.0	28.0	108.0	314.9
3905.812	V	45.7	-0.6	45.1	74.0	28.9	108.0	69.7
4198.397	H	45.2	1.0	46.2	74.0	27.8	108.0	68.1
4282.565	V	45.8	1.0	46.8	74.0	27.2	108.0	358.4

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)

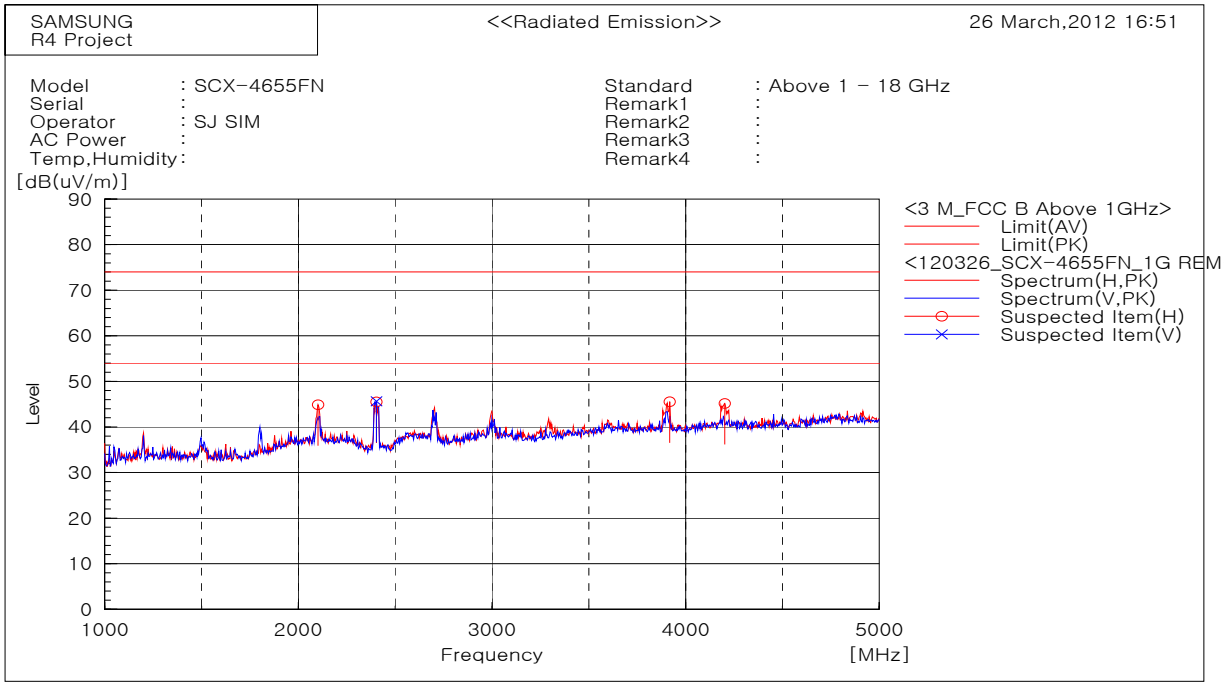
Margin PK (Peak) = Limit – Level PK (Peak)

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

Note 3) The measurement was done up to 5 GHz instead of 1 GHz to 2 GHz because of customer's request.

- **Network 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]
2102.205	H	50.0	-5.1	44.9	74.0	29.1	108.0	313.4
2402.806	V	52.3	-6.7	45.6	74.0	28.4	108.0	82.6
2402.806	H	52.2	-6.7	45.5	74.0	28.5	108.0	342.9
3917.836	H	46.1	-0.6	45.5	74.0	28.5	108.0	65.2
4202.405	H	44.2	1.0	45.2	74.0	28.8	108.0	50.3

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)

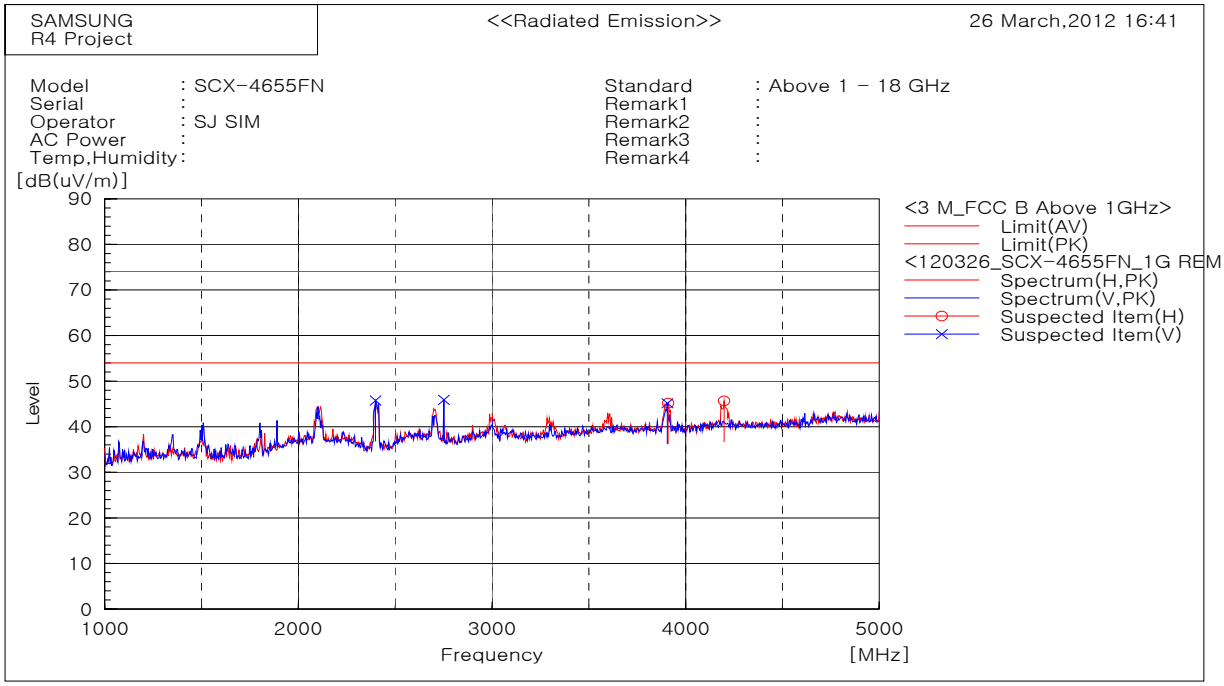
Margin PK (Peak) = Limit – Level PK (Peak)

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

Note 3) The measurement was done up to 5 GHz instead of 1 GHz to 2 GHz because of customer's request.

- **Fax Tx 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]
2398.798	V	52.5	-6.7	45.8	74.0	28.2	108.0	84.5
2751.503	V	50.0	-4.1	45.9	74.0	28.1	108.0	6.6
3905.812	V	45.7	-0.6	45.1	74.0	28.9	108.0	69.9
3909.820	H	45.8	-0.6	45.2	74.0	28.8	108.0	61.9
4198.397	H	44.7	1.0	45.7	74.0	28.3	108.0	56.9

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)

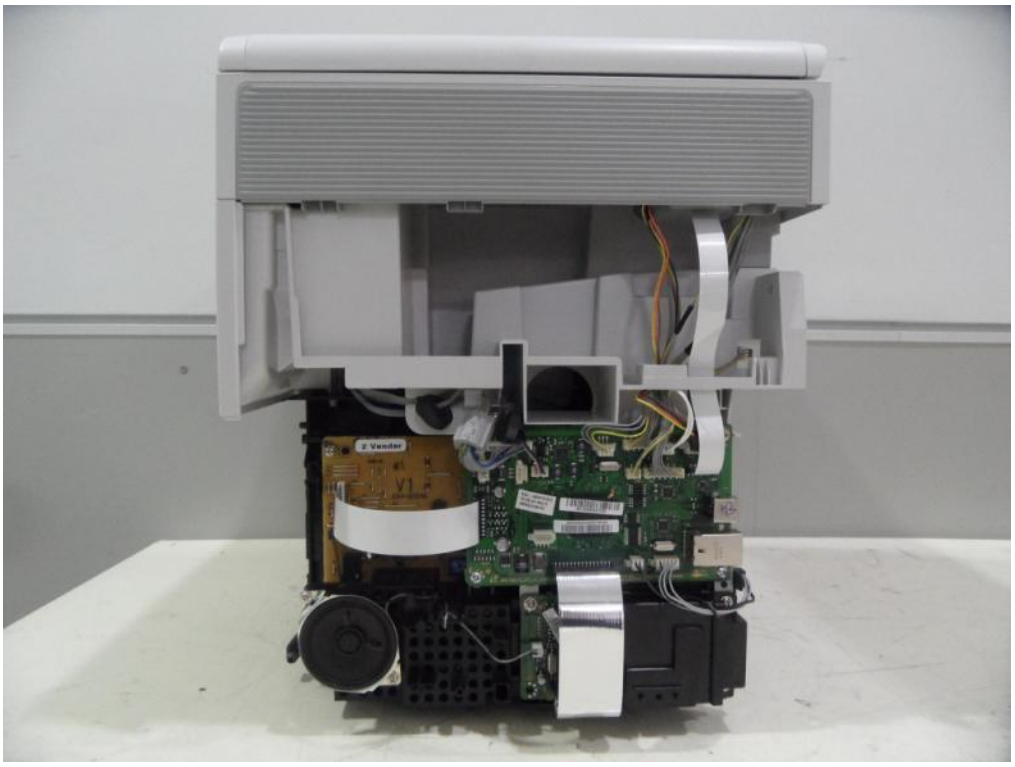
Note 3) The measurement was done up to 5 GHz instead of 1 GHz to 2 GHz because of customer's request.

Appendix – EUT photography

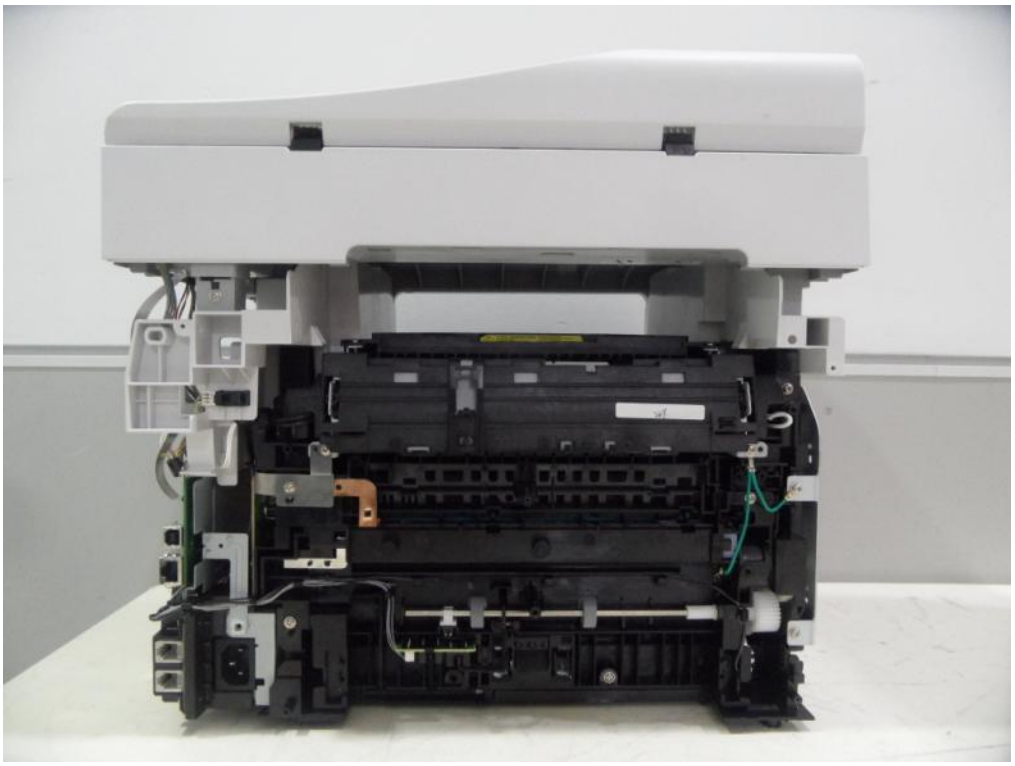
Front View

Rear View & Label location

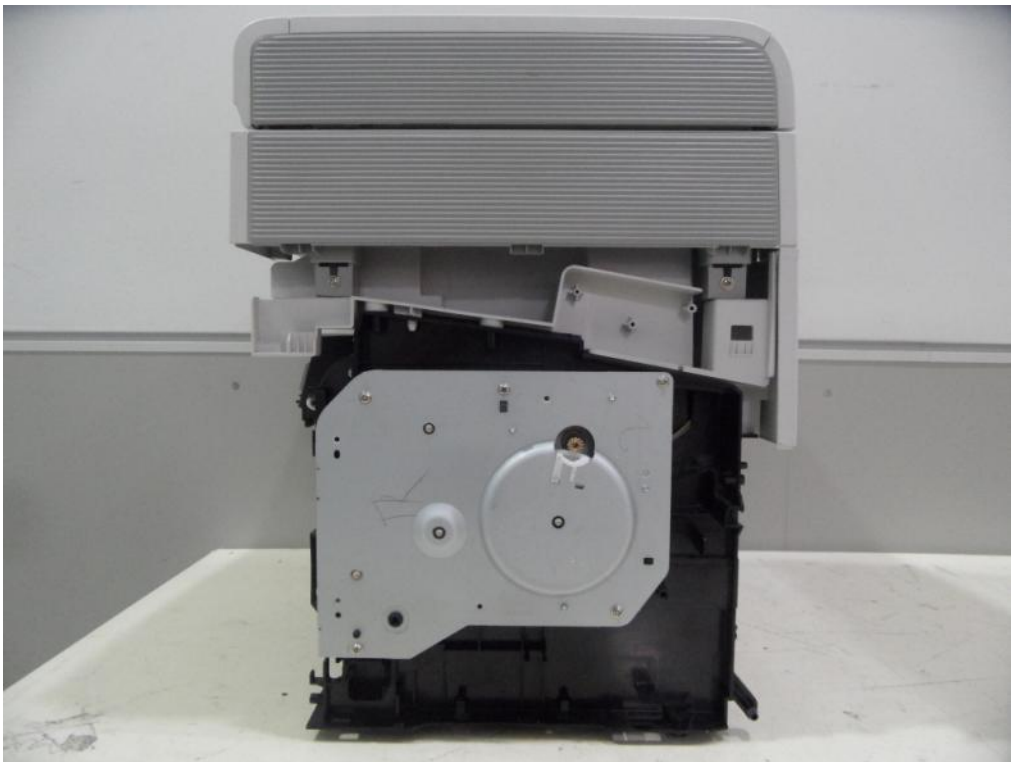
Inside View(Front)



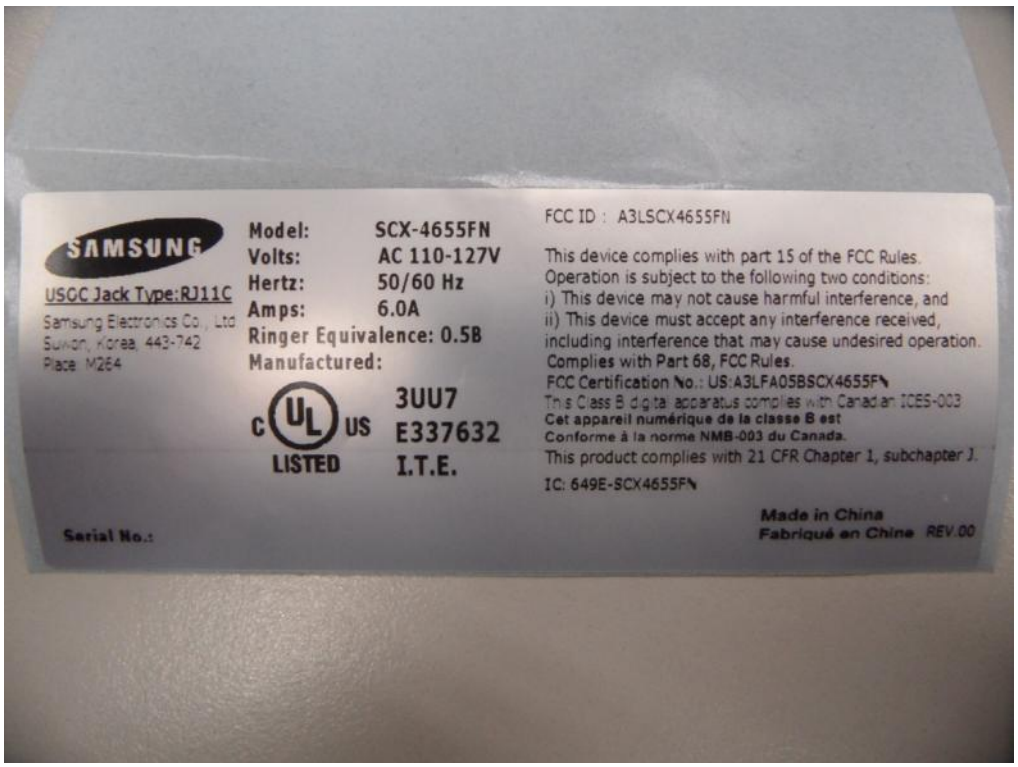
Inside View(Leftside)



Inside View(Rear)



Inside View(Rightside)



Label