

EMC TEST REPORT

Project No.	LBE20143330	Issue No.	0
Applicant	Name of organization	Samsung Electronics Co., Ltd.	
	Address	(Maetan dong) 129, Samsung-ro, Yeongtong-Gu, Suwon-Si, Gyeonggi-Do 443-742 Korea	
	Date of application	April 9, 2014	
EUT	Type of device	Class B personal computers and peripherals	
	Equipment authorization	<input type="checkbox"/> Declaration of Conformity <input checked="" type="checkbox"/> Certification <input type="checkbox"/> Verification	
	FCC ID	A3LSLC2620DW	
	Kind of product	Printer	
	Model No.	ProXpress C2620DW	
	Variant Model No.	-	
	Manufacturer	1) Samsung Electronics Suzhoz Computer Co., Ltd. 318 Fangzhou Road , Suzhou Industrial Park, Jiangsu Province, China 2) Samsung Electronics (Shandong) Digital Printing Co., Ltd. Samsung Road, Weihai Hi-Tech. IDZ, Weihai City, Shandong Province, China 3) Weihai Xinxing Digital Electronics Co., Ltd. 98, Jinzhou Road, Weihai Hi-Tech Industries Development Zone 4) Intops (Weihai) Electronics Company Ltd. No.268-1, Keji Road, Weihai Hi-tech IDZ, Shandong Province,P.R.China	
Applied Standards	47 CFR Part 15, Subpart B / ANSI C63.4-2009		
	ICES-003 Issue 5		
Test Period	April 9, 2014 ~ April 11, 2014		
Issue date	June 2, 2014		
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 : Su Young Son		Reviewed by : Min Gon Kim	
			
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.			
			
(Maetan dong) 129, Samsung-ro, Yeongtong-Gu, Suwon-Si, Gyeonggi-Do 443-742 Korea Tel: 82-31-277-7752, Fax: 82-31-277-7753			

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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)

- Limit = 60 dB μ V (Quasi-peak limit)
- Level (50 dB μ V) = Meter Reading (40.2 dB μ V) + Factor (9.8 dB = AMN factor 9.7 dB + Cable loss 0.1 dB)
- Margin (10 dB) = Limit (60 dB μ V) - Level (50 dB μ V) = 10 dB below limit

1.2.2 Radiated disturbance (at 100 MHz)

- Limit = 30 dB μ V/m at 10 m
- Level (20 dB μ V/m)
 - = Meter Reading (40 dB μ V) + Factor (- 20 dB (1/m) = antenna factor + cable loss – amplifier gain)
- Margin (10 dB) = Limit (30 dB μ V/m) - Level (20 dB μ V/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
<input checked="" type="checkbox"/>	Conducted Disturbance (Mains Port)	47 CFR Part 15 Subpart B / ANSI C63.4-2009 (<input type="checkbox"/> Class A, <input checked="" type="checkbox"/> Class B)	Complied
<input checked="" type="checkbox"/>	Radiated Disturbance		Complied

- Note : These results are deemed satisfactory evidence of compliance with ICES-003 of the Canadian Interference – Causing Equipment Regulations

3. General Information

3.1 Test facility

The CS & Environment center is located on Samsung Electronics Co., Ltd. at (Maetan dong) 129, Samsung-ro, Yeongtong-Gu, Suwon-Si, Gyeonggi-Do 443-742 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 configuration

4.1.1 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.

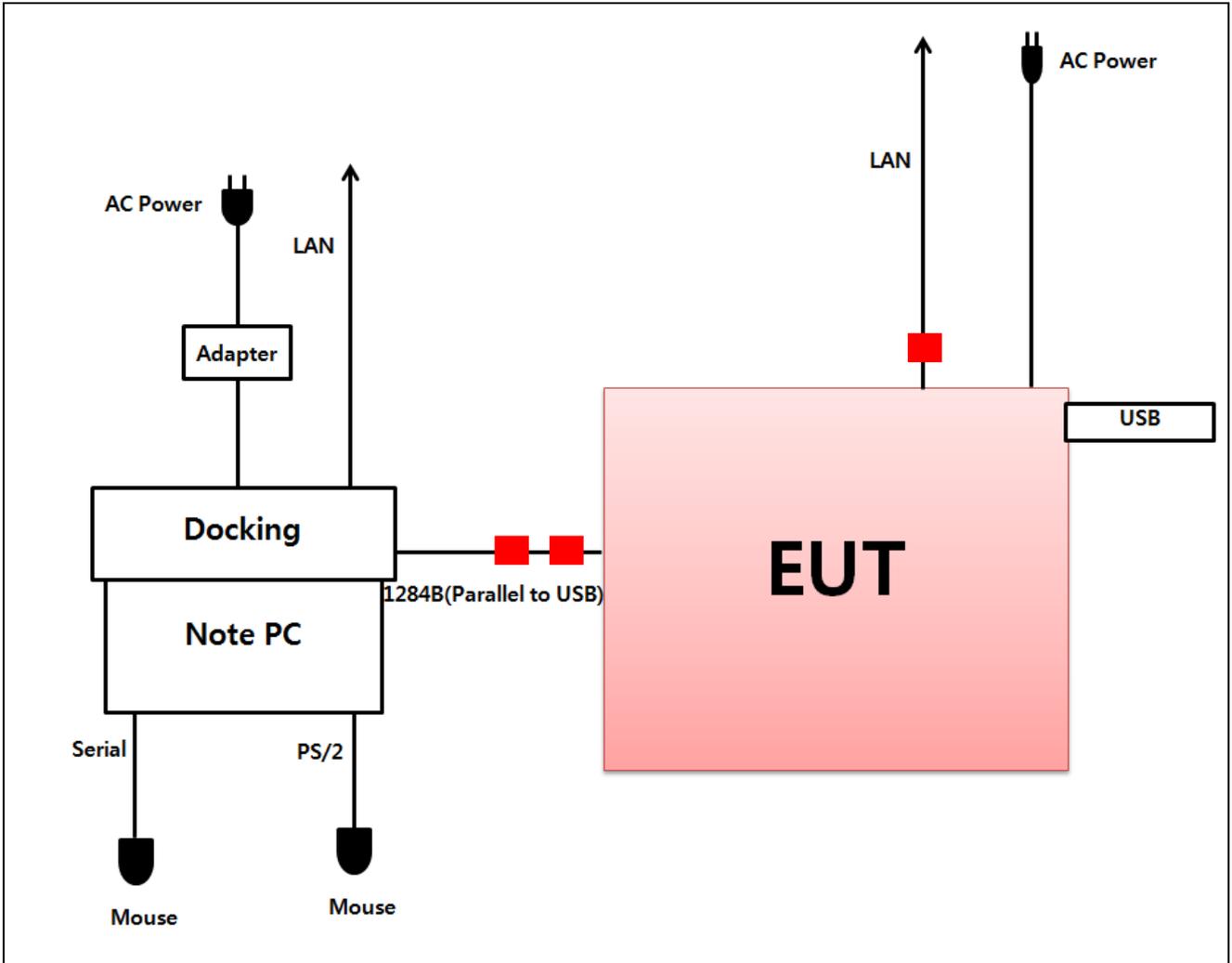
The following is a listing of the EUT and peripherals utilized during the performance of EMC test:

Description	Model No.	Serial No.	Manufacturer	Fcc ID / DoC
Printer	ProXpress C2620DW	-	SAMSUNG	A3LSLC2620DW
Note PC	PP18L	27182225373	DELL	DoC
Docking	PD01X	CN-OHD026-48643-83K-2196	DELL	DoC
PS/2 Mouse	M-S48a	LZA00153189	Logitech	DoC
Serial Mouse	-	-	RadioShack	DoC
USB Memory	16 GB USB	-	Transcend	DoC
Telephone	SP-F209	KKAR213552	SAMSUNG	DoC

4.1.2 Test cables

Connected cable	Length [m]	Shielded [Y/N]	Number of Ferrite Core	Note
Power	1.8	No	-	For EUT
Power	1.8	No	-	For Note PC
USB(1284B)	1.8	Yes	2	From EUT to PC
PS/2	1.8	Yes	-	From PC to Mouse
Serial	1.8	Yes	-	From PC to Serial
LAN	2.0	No	1	From EUT to Local Area Network
LAN	2.0	No	-	From PC to Local Area Network

4.1.3 Test arrangement



■ : Ferrite Core

4.2 EUT operating mode

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

Operating Mode 1 (Test mode)	Standby
Operating Mode 2 (Test mode)	USB Printing
Operating Mode 3 (Test mode)	Network Printing

4.3 Details of Sampling

Customer selected, single unit.

4.4 Clock Frequencies

Kind of Clocks	Frequency[MHz]	Kind of Clocks	Frequency[MHz]
CPU	533	DDR3	377
Main Source	12	USB Device	12

4.5 EUT Description

The following features describe EUT represented by this report:

Item	Specification and Description
Processor	533MHz Dual CPU
Standard System memory	512MB DDR3 on all configurations (Default) 1GB(max) Customer Installable Option
Resolution	Up to 9600 x 600 dpi
Speed	26/26PPM (Color/Mono)
Paper Handling	Paper Tray(standard) 250 Sheets 2nd Paper Tray (optional) 520 Sheets Bypass Tray 50 Sheets
Power Rating	110VAC ~ 127ACV, 8A, 50/60 Hz
Power Consumption	Power save mode : 2.5 Watts Standby mode : 20 Watts Printing simplex : 850 Watts
Printer Language	PCL5C/6, PostScript 3, PDF V1.7, SPL-C (Samsung Print Language)
Interfaces	Hi-Speed USB 2.0, Gigabit Ethernet, Direct USB, Wireless 802.11 b/g/n, WiFi Direct
OS compatibility	Windows (32/64-bit) 2000/XP/2003/2008 Server/Vista, Windows 7, Windows 8, Various Linux OS, Mac OS X 10.3 ~ 10.9
Modes of Operation	Standby, USB Printing, Wireless Printing, Network Printing
Intended Class for Emissions	Class B

4.6 Test configuration and condition

Item	Model Name	P/N	Manufacturer
SMPS #1	PSPN-Type3R-V1	JC44-00222A	SUNG HO Electronics
SMPS #2	PSPN-Type3R-V1	JC44-00222A	DONG YANG E&P

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 connected to a remote PC through the Ethernet port with Unshielded Twisted Pair Ethernet cable.

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

- Test Voltage : AC 120 V, 60 Hz

Two different types of SMPS, Sung ho and Dong yang were applied
During testing Each SMPS was installed for testing, tested and reported.

- Configuration 1 : SMPS #1 was applied.
- Configuration 2 : SMPS #2 was applied.

4.7 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.)

4.7.1 Emission

Test type		Measurement uncertainty (C.L. 95 %, k = 2)
Conducted disturbance	Main terminal (ENV216)	2.95 dB
Radiated Disturbance (Below 1 GHz)	Horizontal	4.69 dB
	Vertical	4.83 dB
Radiated Disturbance (Above 1 GHz)	Horizontal	5.47 dB
	Vertical	5.45 dB

5. Results of individual test

5.1 Conducted disturbance

The EUT was directly powered from one LISN(Two-Line V-Network) for the measurements. The support equipment power cables were connected to a second LISN(Two-Line V-Network). Both conducted lines are measured in Quasi-Peak and C/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 dB μ V	
		Quasi-peak	C/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.

If the reading on the measuring receiver shows fluctuations close to the limit, the reading shall be observed for at least 15 seconds at each measurement frequency, the highest reading shall be recorded, with the exception of any brief isolated high reading (which shall be ignored).

5.1.1 Test instrumentation

Test instrumentation	Model name	Manufacturer	Serial or Firmware (No./Ver.)	Calibration	
				Date	Interval (Month)
EMI TEST RECEIVER	ESU	R&S	100482	2013-08-29	12
Two-Line V-Network	ENV216	R&S	101369	2013-11-17	12
Two-Line V-Network	ENV216	R&S	101366	2013-07-28	12
Test Software	EMC32	R&S	Ver 8.53.0	-	-

5.1.2 Temperature and humidity condition

Test date	April 11, 2014	Test engineer	Su Young Son		
Climate condition	Ambient temperature	23.9 °C	Relative humidity	36 %	
	Atmospheric pressure	101.3 kPa			
Test place	Shielded Room #8				

5.1.3 Photograph of Test Setup



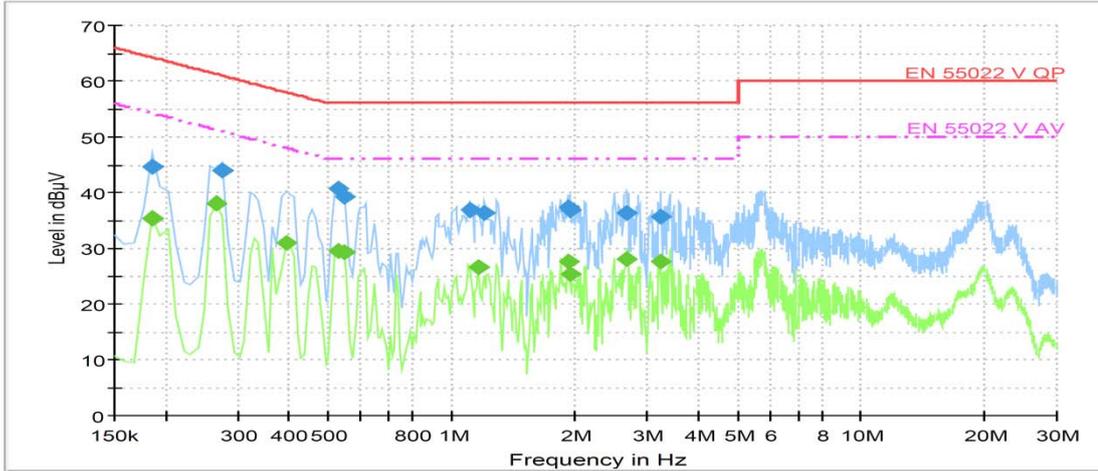
Front



Rear

5.1.4 Test results (mains port)

- Configuration 1 : Standby



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.186000	44.6	5000.0	9.000	On	N	10.1	19.60	64.20
0.276000	44.0	5000.0	9.000	On	L1	10.0	17.00	60.90
0.528000	40.7	5000.0	9.000	On	L1	10.0	15.30	56.00
0.546000	39.4	5000.0	9.000	On	N	10.0	16.60	56.00
1.113000	36.8	5000.0	9.000	On	L1	9.8	19.20	56.00
1.203000	36.3	5000.0	9.000	On	N	9.8	19.70	56.00
1.923000	37.4	5000.0	9.000	On	L1	9.8	18.60	56.00
1.941000	36.7	5000.0	9.000	On	L1	9.8	19.30	56.00
2.679000	36.3	5000.0	9.000	On	L1	9.7	19.70	56.00
3.237000	35.7	5000.0	9.000	On	L1	9.7	20.30	56.00

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.186000	35.5	5000.0	9.000	On	N	10.1	18.80	54.20
0.267000	38.1	5000.0	9.000	On	L1	10.0	13.10	51.20
0.393000	31.0	5000.0	9.000	On	L1	10.0	17.00	48.00
0.528000	29.6	5000.0	9.000	On	L1	10.0	16.40	46.00
0.546000	29.3	5000.0	9.000	On	L1	10.0	16.70	46.00
1.158000	26.6	5000.0	9.000	On	N	9.8	19.40	46.00
1.923000	27.5	5000.0	9.000	On	L1	9.8	18.50	46.00
1.941000	25.3	5000.0	9.000	On	N	9.7	20.70	46.00
2.679000	28.1	5000.0	9.000	On	L1	9.7	17.90	46.00
3.237000	27.6	5000.0	9.000	On	L1	9.7	18.40	46.00

Note1) Two graphs measured for both Live(L1) and Neutral(N) of the LISN are combined into one graph.

'Final Result 1' is Quasi-peak final measurement results table and 'Final Result 2' is C/Average final measurement results table.

Note2) Level (Quasi-Peak and/or C/Average) = Meter Reading + Factor(Corr.)

Note3) Line = Polarity of input power (Live or Neutral)

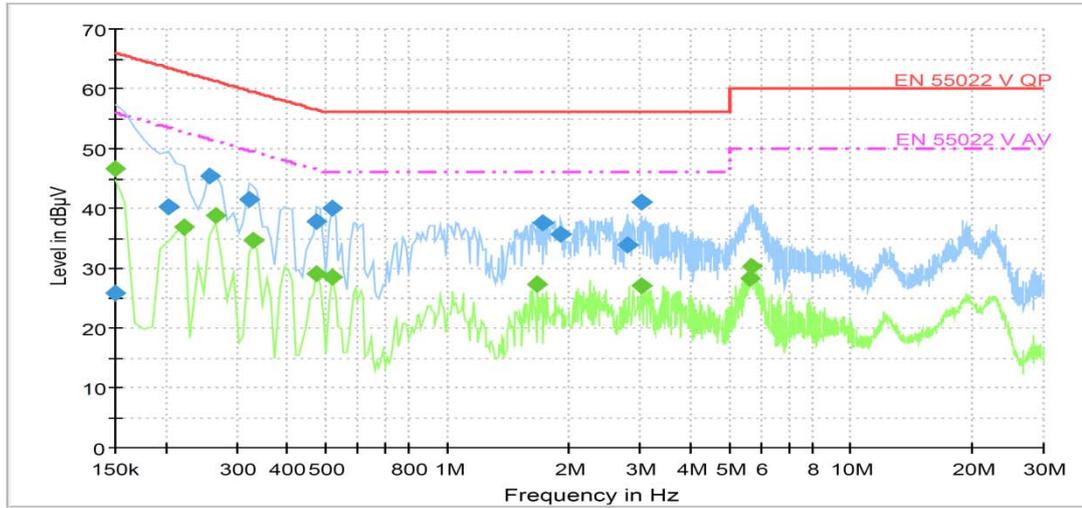
N : Abbreviation of Neutral Polarity, L1 : Abbreviation of Live Polarity,

Note4) Factor = LISN Insertion Loss + Cable Loss

Note5) Margin = Limit – Level (Quasi-Peak and/or C/Average)

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- Configuration 1 : USB Printing



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	25.8	5000.0	9.000	On	N	9.9	40.20	66.00
0.204000	40.2	5000.0	9.000	On	N	10.0	23.20	63.40
0.258000	45.3	5000.0	9.000	On	N	10.0	16.20	61.50
0.321000	41.4	5000.0	9.000	On	N	10.0	18.30	59.70
0.474000	37.9	5000.0	9.000	On	L1	10.0	18.50	56.40
0.519000	40.1	5000.0	9.000	On	L1	10.0	15.90	56.00
1.716000	37.5	5000.0	9.000	On	N	9.8	18.50	56.00
1.905000	35.6	5000.0	9.000	On	N	9.7	20.40	56.00
2.787000	33.8	5000.0	9.000	On	L1	9.7	22.20	56.00
3.012000	41.0	5000.0	9.000	On	N	9.7	15.00	56.00

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	46.7	5000.0	9.000	On	L1	9.9	9.30	56.00
0.222000	36.8	5000.0	9.000	On	L1	10.0	15.90	52.70
0.267000	38.9	5000.0	9.000	On	N	10.0	12.40	51.20
0.330000	34.7	5000.0	9.000	On	L1	10.0	14.70	49.50
0.474000	29.0	5000.0	9.000	On	L1	10.0	17.40	46.40
0.519000	28.6	5000.0	9.000	On	L1	10.0	17.40	46.00
1.671000	27.3	5000.0	9.000	On	L1	9.8	18.70	46.00
3.021000	27.1	5000.0	9.000	On	L1	9.7	18.90	46.00
5.631000	28.4	5000.0	9.000	On	L1	9.7	21.60	50.00
5.694000	30.4	5000.0	9.000	On	L1	9.7	19.60	50.00

Note1) Two graphs measured for both Live(L1) and Neutral(N) of the LISN are combined into one graph.

'Final Result 1' is Quasi-peak final measurement results table and 'Final Result 2' is C/Average final measurement results table.

Note2) Level (Quasi-Peak and/or C/Average) = Meter Reading + Factor(Corr.)

Note3) Line = Polarity of input power (Live or Neutral)

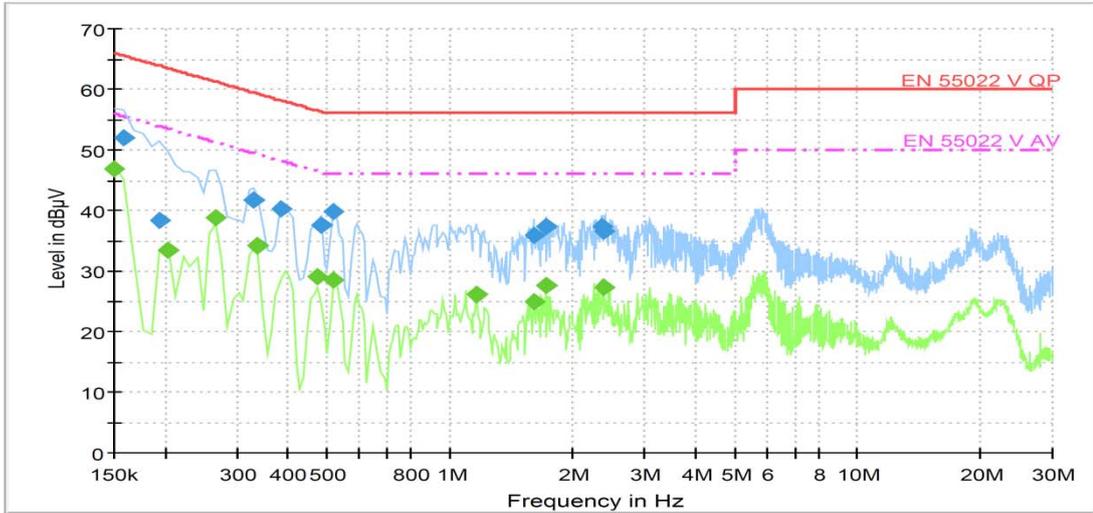
N : Abbreviation of Neutral Polarity, L1 : Abbreviation of Live Polarity,

Note4) Factor = LISN Insertion Loss + Cable Loss

Note5) Margin = Limit – Level (Quasi-Peak and/or C/Average)

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- Configuration 1 : Network Printing



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.159000	51.9	5000.0	9.000	On	L1	10.1	13.60	65.50
0.195000	38.2	5000.0	9.000	On	N	10.0	25.60	63.80
0.330000	41.6	5000.0	9.000	On	L1	10.0	17.80	59.50
0.384000	40.2	5000.0	9.000	On	N	10.0	18.00	58.20
0.483000	37.6	5000.0	9.000	On	L1	10.0	18.70	56.30
0.519000	39.7	5000.0	9.000	On	L1	10.0	16.30	56.00
1.608000	35.8	5000.0	9.000	On	N	9.8	20.20	56.00
1.716000	37.4	5000.0	9.000	On	N	9.8	18.60	56.00
2.355000	37.2	5000.0	9.000	On	L1	9.7	18.80	56.00
2.382000	36.7	5000.0	9.000	On	N	9.7	19.30	56.00

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	46.8	5000.0	9.000	On	L1	9.9	9.20	56.00
0.204000	33.3	5000.0	9.000	On	N	10.0	20.10	53.40
0.267000	38.9	5000.0	9.000	On	N	10.0	12.30	51.20
0.339000	34.2	5000.0	9.000	On	L1	10.0	15.00	49.20
0.474000	28.9	5000.0	9.000	On	N	10.0	17.50	46.40
0.519000	28.6	5000.0	9.000	On	N	10.0	17.40	46.00
1.158000	26.2	5000.0	9.000	On	L1	9.8	19.80	46.00
1.608000	24.8	5000.0	9.000	On	N	9.8	21.20	46.00
1.716000	27.7	5000.0	9.000	On	L1	9.8	18.30	46.00
2.382000	27.3	5000.0	9.000	On	L1	9.7	18.70	46.00

Note1) Two graphs measured for both Live(L1) and Neutral(N) of the LISN are combined into one graph.

'Final Result 1' is Quasi-peak final measurement results table and 'Final Result 2' is C/Average final measurement results table.

Note2) Level (Quasi-Peak and/or C/Average) = Meter Reading + Factor(Corr.)

Note3) Line = Polarity of input power (Live or Neutral)

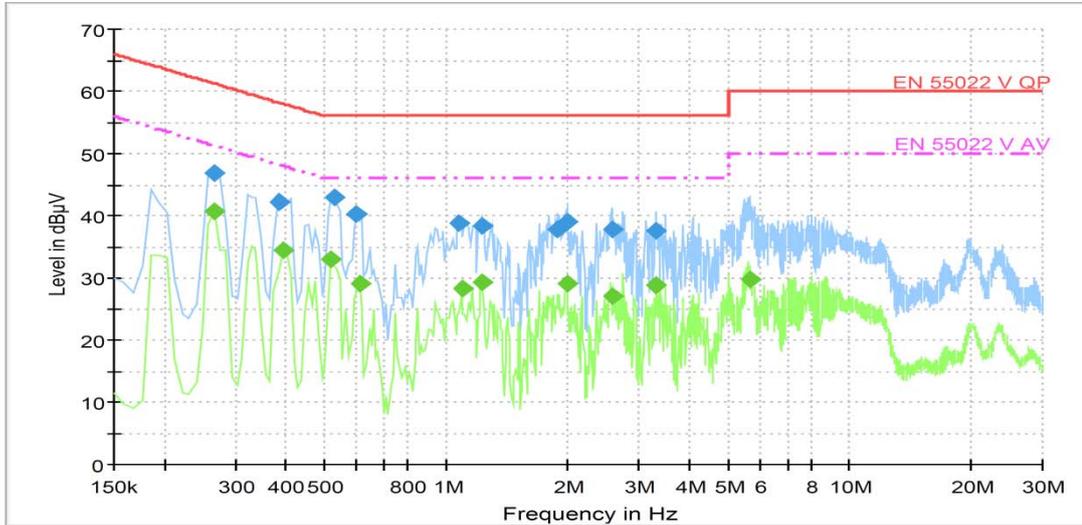
N : Abbreviation of Neutral Polarity, L1 : Abbreviation of Live Polarity,

Note4) Factor = LISN Insertion Loss + Cable Loss

Note5) Margin = Limit – Level (Quasi-Peak and/or C/Average)

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- Configuration 2 : Standby



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.267000	46.7	5000.0	9.000	On	L1	10.0	14.50	61.20
0.384000	42.2	5000.0	9.000	On	N	10.0	16.00	58.20
0.528000	42.9	5000.0	9.000	On	N	10.0	13.10	56.00
0.600000	40.2	5000.0	9.000	On	L1	10.0	15.80	56.00
1.077000	38.8	5000.0	9.000	On	N	9.8	17.20	56.00
1.230000	38.4	5000.0	9.000	On	L1	9.8	17.60	56.00
1.887000	37.8	5000.0	9.000	On	L1	9.8	18.20	56.00
1.986000	39.0	5000.0	9.000	On	L1	9.7	17.00	56.00
2.571000	37.8	5000.0	9.000	On	N	9.7	18.20	56.00
3.300000	37.5	5000.0	9.000	On	L1	9.7	18.50	56.00

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.267000	40.8	5000.0	9.000	On	L1	10.0	10.40	51.20
0.393000	34.3	5000.0	9.000	On	L1	10.0	13.70	48.00
0.519000	32.9	5000.0	9.000	On	L1	10.0	13.10	46.00
0.609000	29.0	5000.0	9.000	On	L1	10.0	17.00	46.00
1.095000	28.3	5000.0	9.000	On	L1	9.8	17.70	46.00
1.230000	29.3	5000.0	9.000	On	N	9.8	16.70	46.00
1.986000	29.1	5000.0	9.000	On	N	9.7	16.90	46.00
2.571000	27.1	5000.0	9.000	On	L1	9.7	18.90	46.00
3.300000	28.9	5000.0	9.000	On	N	9.7	17.10	46.00
5.658000	29.8	5000.0	9.000	On	L1	9.7	20.20	50.00

Note1) Two graphs measured for both Live(L1) and Neutral(N) of the LISN are combined into one graph.

'Final Result 1' is Quasi-peak final measurement results table and 'Final Result 2' is C/Average final measurement results table.

Note2) Level (Quasi-Peak and/or C/Average) = Meter Reading + Factor(Corr.)

Note3) Line = Polarity of input power (Live or Neutral)

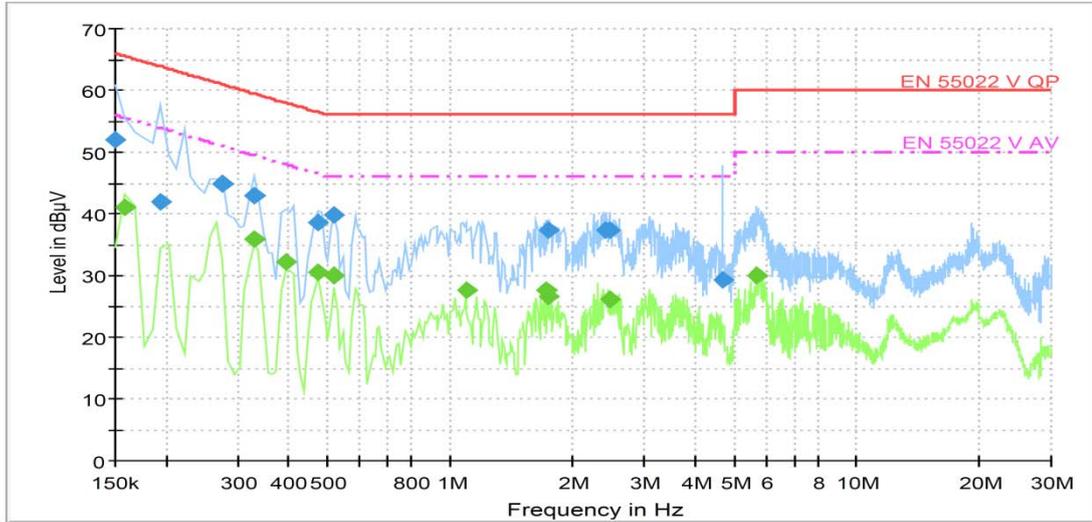
N : Abbreviation of Neutral Polarity, L1 : Abbreviation of Live Polarity,

Note4) Factor = LISN Insertion Loss + Cable Loss

Note5) Margin = Limit – Level (Quasi-Peak and/or C/Average)

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- Configuration 2 : Network Printing



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	52.0	5000.0	9.000	On	N	9.9	14.00	66.00
0.195000	41.8	5000.0	9.000	On	N	10.0	22.00	63.80
0.276000	44.8	5000.0	9.000	On	N	10.0	16.10	60.90
0.330000	42.9	5000.0	9.000	On	N	10.0	16.60	59.50
0.474000	38.6	5000.0	9.000	On	L1	10.0	17.90	56.40
0.519000	39.8	5000.0	9.000	On	L1	10.0	16.20	56.00
1.734000	37.3	5000.0	9.000	On	N	9.8	18.70	56.00
2.427000	37.2	5000.0	9.000	On	N	9.7	18.80	56.00
2.463000	37.3	5000.0	9.000	On	N	9.7	18.70	56.00
4.695000	29.3	5000.0	9.000	On	N	9.8	26.70	56.00

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.159000	40.9	5000.0	9.000	On	N	10.1	14.60	55.50
0.330000	35.9	5000.0	9.000	On	N	10.0	13.60	49.50
0.393000	32.1	5000.0	9.000	On	L1	10.0	15.90	48.00
0.474000	30.4	5000.0	9.000	On	N	10.0	16.00	46.40
0.519000	29.9	5000.0	9.000	On	L1	10.0	16.10	46.00
1.095000	27.5	5000.0	9.000	On	L1	9.8	18.50	46.00
1.716000	27.7	5000.0	9.000	On	L1	9.8	18.30	46.00
1.734000	26.6	5000.0	9.000	On	L1	9.8	19.40	46.00
2.472000	26.2	5000.0	9.000	On	N	9.7	19.80	46.00
5.694000	30.0	5000.0	9.000	On	L1	9.7	20.00	50.00

Note1) Two graphs measured for both Live(L1) and Neutral(N) of the LISN are combined into one graph.

'Final Result 1' is Quasi-peak final measurement results table and 'Final Result 2' is C/Average final measurement results table.

Note2) Level (Quasi-Peak and/or C/Average) = Meter Reading + Factor(Corr.)

Note3) Line = Polarity of input power (Live or Neutral)

N : Abbreviation of Neutral Polarity, L1 : Abbreviation of Live Polarity,

Note4) Factor = LISN Insertion Loss + Cable Loss

Note5) Margin = Limit – Level (Quasi-Peak and/or C/Average)

---End of page---

5.2 Radiated disturbance

Of those disturbances above ($L - 20$ 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 3 meters and elevated between 1 and 4 meters. Both vertical and horizontal antenna polarizations were measured.

Below 1 GHz, peak detector function mode for prescan was used with resolution bandwidth of 120 kHz and a video bandwidth of 300 kHz and sweep method.

The sweep time for prescan set below 200 ms up and final measurement with quasi-peak detector evaluated for suspected frequencies points, which are detected from prescan measurement.

Final measurements consisted of 3 steps.

First step, frequency fine tuning to find exact disturbance frequency.

Second step, rechecking to search for maximum height and azimuth for interference from EUT

In final step, there are conducted measuring with quasi-peak detector for points

which are detected from 1st step & 2nd step.

Limits of Radiated disturbance of ITE at a measuring distance of 3 m

Frequency MHz	Limit values dB(μ V/m) Quasi-peak	
	Class A	Class B
30 to 88	49.5	40.0
88 to 216	54.0	43.5
216 to 960	56.9	46.0
Above 960	60.0	54.0

Peak measurements were made over the changeable frequency range 1 GHz to 40 GHz or 5th 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 1 GHz radiated disturbance of ITE at a measuring distance of 3 m

Class	Limits - dB(μ V/m)	
	Peak	C/Average
A	80	60
B	74	54
Average limit 500, $20 \log 500 = 53.979 \text{ dB} \approx 54 \text{ dB}$		

Measurements within 20 dB of the limit were then maximized by adjusting turntable position. Final measurements were made using a C/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	ESIB-26	R&S	100019	2014-01-21	12
BILOG Antenna	CBL 6143A	TESEQ	30262	2013-05-21	24
Preamplifier	310N	SONOMA	282362	2013-11-13	12
Double-Ridged Waveguide Horn Antenna	HF906	R&S	100028	2012-08-13	24
Test Software	EP5/RE	TOYO	Ver 3.10.20	-	-

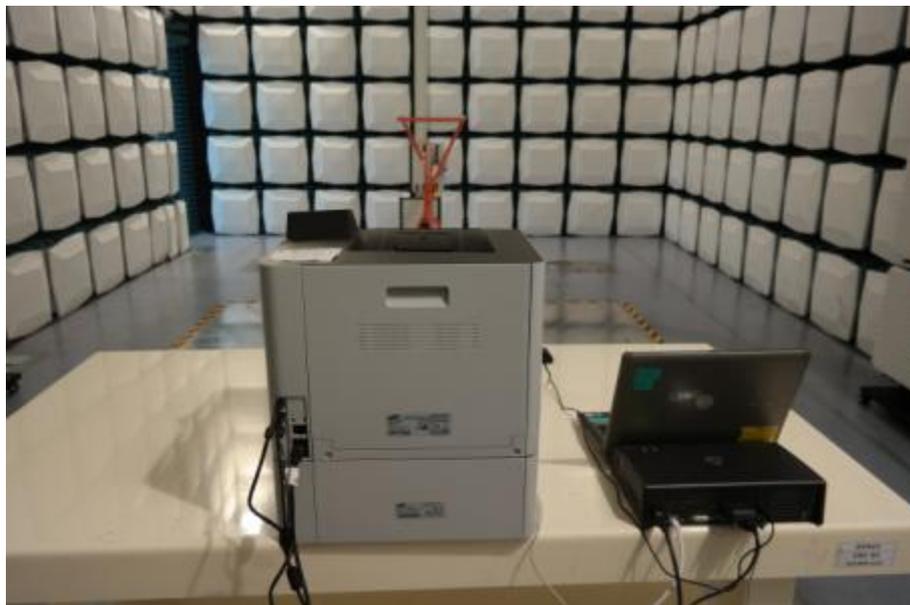
5.2.2 Temperature and humidity condition

Test date	April 9~10, 2014	Test engineer	Su Young Son	
Climate condition	Ambient temperature	21.0 °C / 22.0 °C	Relative humidity	36 %/ 38 %
	Atmospheric pressure	101.1kPa /101.0 kPa		
Test place	3 m Semi-Anechoic Chamber			

5.2.3.1 Photograph of Test Setup (30 MHz ~ 1 000 MHz)



Front



Rear

5.2.3.2 Photograph of Test Setup (Above 1 GHz)



Front



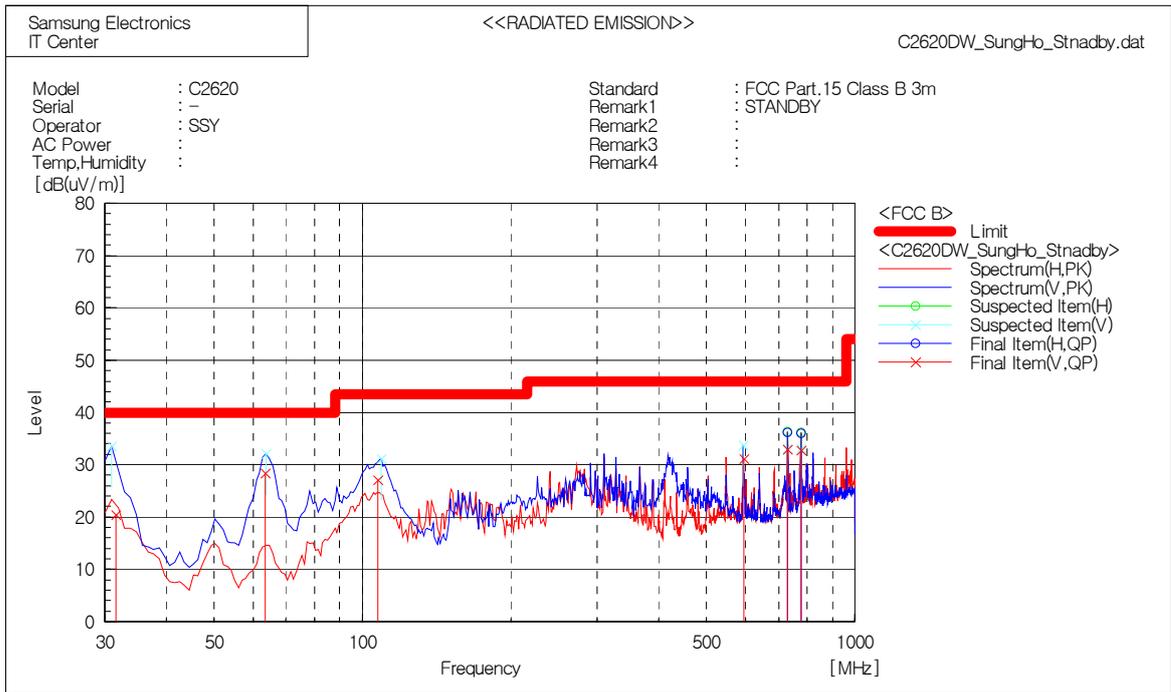
Rear

5.2.4 Test results

5.2.4.1 30 MHz ~ 1 000 MHz results

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Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]
1	31.630	V	37.5	-17.0	20.5	40.0	19.5	120.0	2.0
2	63.600	V	52.1	-23.8	28.3	40.0	11.7	104.0	242.0
3	107.337	V	45.0	-17.9	27.1	43.5	16.4	102.0	314.0
4	594.231	V	40.7	-9.6	31.1	46.0	14.9	106.0	74.0
5	731.062	V	40.8	-7.9	32.9	46.0	13.1	199.0	141.0
6	731.062	H	44.1	-7.9	36.2	46.0	9.8	100.0	159.0
7	777.026	H	43.6	-7.5	36.1	46.0	9.9	198.0	35.0
8	777.026	V	40.2	-7.5	32.7	46.0	13.3	102.0	75.0

Note) Receiving antenna polarization : Horizontal, Vertical

Test Distance : 3 m, Antenna Height : 1 to 4 meters

Result (QP) = Reading (QP) + c.f (Antenna Factor + Cable Loss - Amp. Gain)

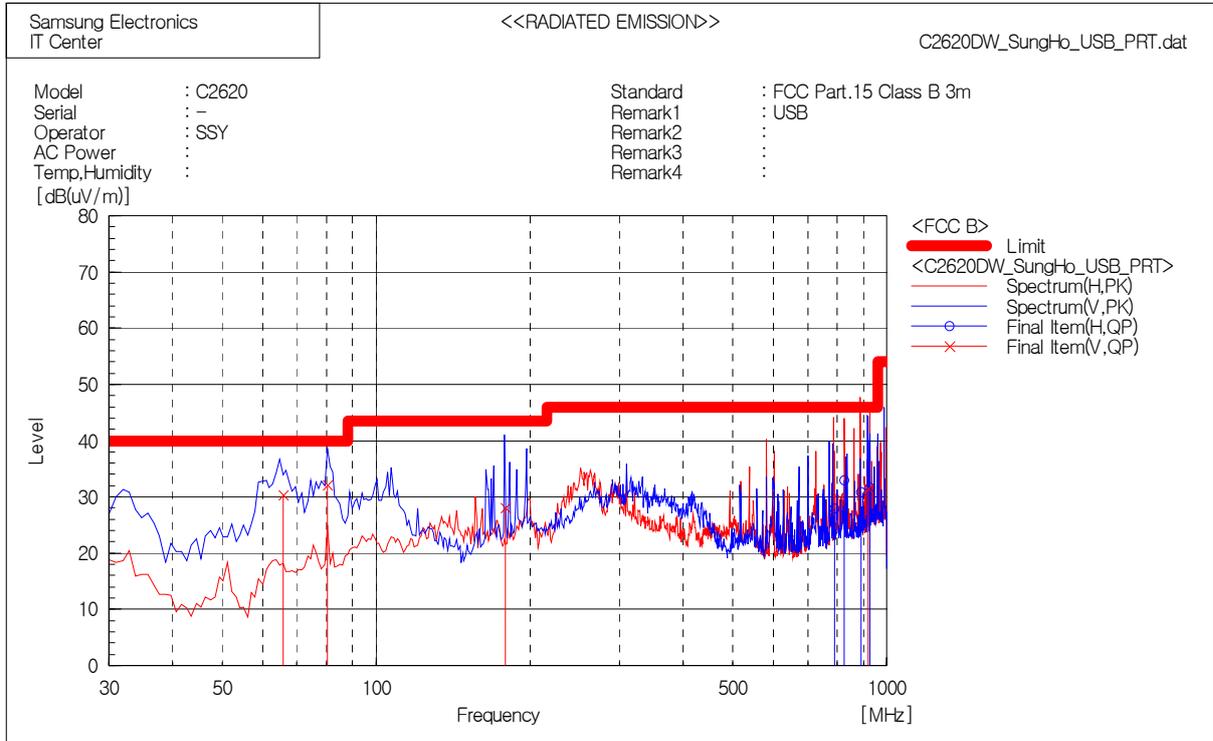
Margin (QP) = Limit - Result (QP)

QP = Quasi-Peak

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Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]
1	65.870	V	53.9	-23.6	30.3	40.0	9.7	107.0	34.0
2	80.282	V	53.9	-21.8	32.1	40.0	7.9	111.0	134.0
3	179.367	V	48.4	-20.4	28.0	43.5	15.5	154.0	301.0
4	788.718	H	35.4	-7.5	27.9	46.0	18.1	126.0	162.0
5	824.589	H	39.7	-6.8	32.9	46.0	13.1	107.0	179.0
6	889.838	H	36.9	-6.1	30.8	46.0	15.2	176.0	144.0
7	918.776	V	36.9	-5.5	31.4	46.0	14.6	175.0	82.0
8	927.617	H	36.9	-5.3	31.6	46.0	14.4	167.0	303.0

Note) Receiving antenna polarization : Horizontal, Vertical

Test Distance : 3 m, Antenna Height : 1 to 4 meters

Result (QP) = Reading (QP) + c.f (Antenna Factor + Cable Loss - Amp. Gain)

Margin (QP) = Limit - Result (QP)

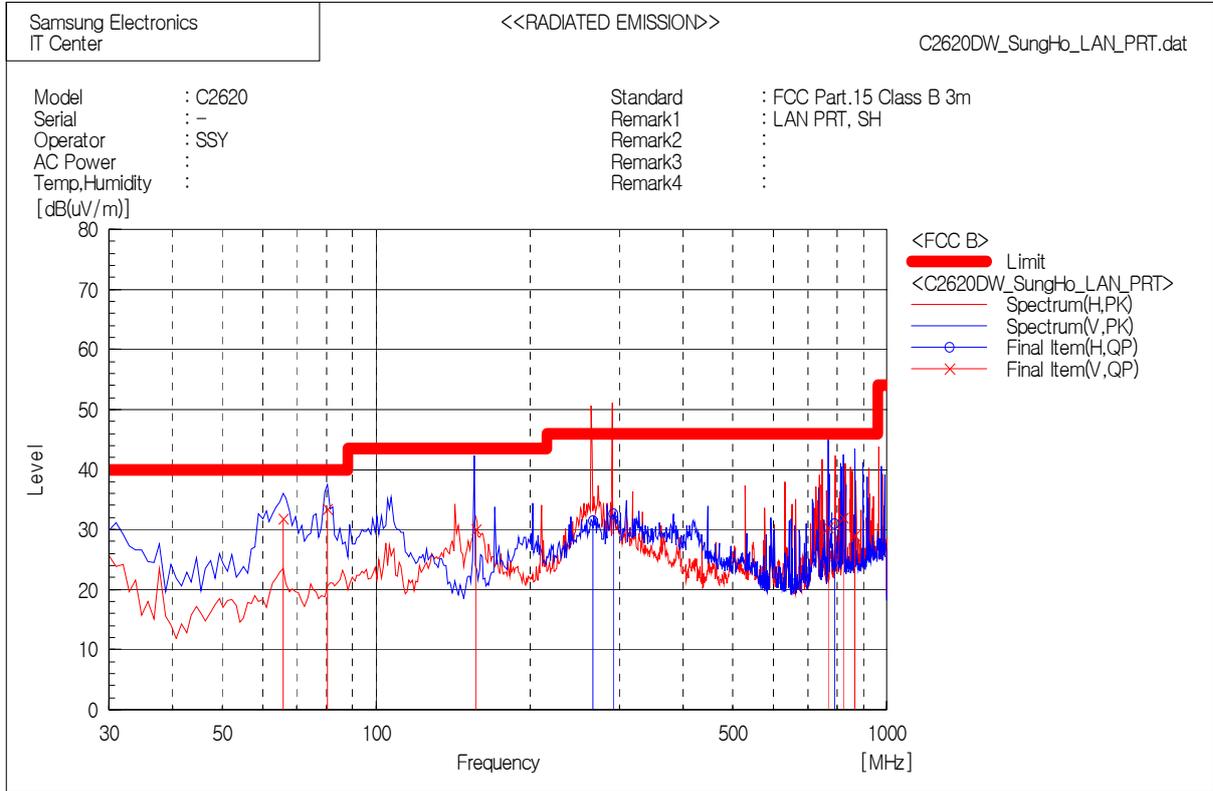
QP = Quasi-Peak

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Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]
1	65.831	V	55.5	-23.6	31.9	40.0	8.1	109.0	160.0
2	80.301	V	55.2	-21.8	33.4	40.0	6.6	121.0	127.0
3	157.170	V	48.8	-18.8	30.0	43.5	13.5	107.0	151.0
4	266.166	H	47.6	-16.2	31.4	46.0	14.6	210.0	2.0
5	290.990	H	49.2	-16.6	32.6	46.0	13.4	103.0	302.0
6	767.975	V	38.2	-7.8	30.4	46.0	15.6	157.0	163.0
7	791.202	H	38.4	-7.4	31.0	46.0	15.0	135.0	125.0
8	821.763	V	38.7	-6.7	32.0	46.0	14.0	201.0	144.0
9	867.785	V	35.2	-6.2	29.0	46.0	17.0	169.0	163.0

Note) Receiving antenna polarization : Horizontal, Vertical

Test Distance : 3 m, Antenna Height : 1 to 4 meters

Result (QP) = Reading (QP) + c.f (Antenna Factor + Cable Loss - Amp. Gain)

Margin (QP) = Limit - Result (QP)

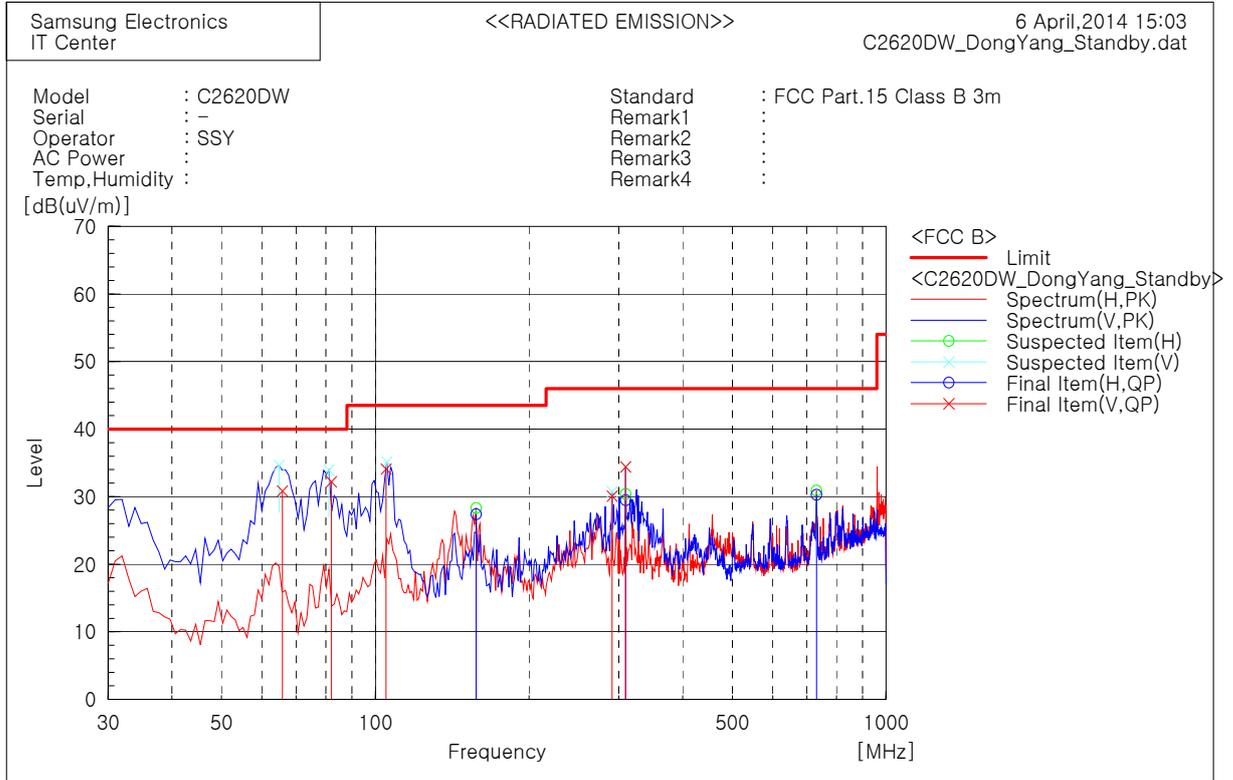
QP = Quasi-Peak

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Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]
1	65.822	V	54.5	-23.6	30.9	40.0	9.1	104.0	151.0
2	82.065	V	53.7	-21.5	32.2	40.0	7.8	101.0	357.0
3	104.953	V	52.2	-18.1	34.1	43.5	9.4	101.0	47.0
4	157.503	H	46.2	-18.8	27.4	43.5	16.1	101.0	73.0
5	290.802	V	46.7	-16.6	30.1	46.0	15.9	101.0	22.0
6	309.154	V	50.3	-15.9	34.4	46.0	11.6	101.0	351.0
7	309.154	H	45.4	-15.9	29.5	46.0	16.5	198.0	75.0
8	731.062	H	38.2	-7.9	30.3	46.0	15.7	101.0	169.0

Note) Receiving antenna polarization : Horizontal, Vertical

Test Distance : 3 m, Antenna Height : 1 to 4 meters

Result (QP) = Reading (QP) + c.f (Antenna Factor + Cable Loss - Amp. Gain)

Margin (QP) = Limit - Result (QP)

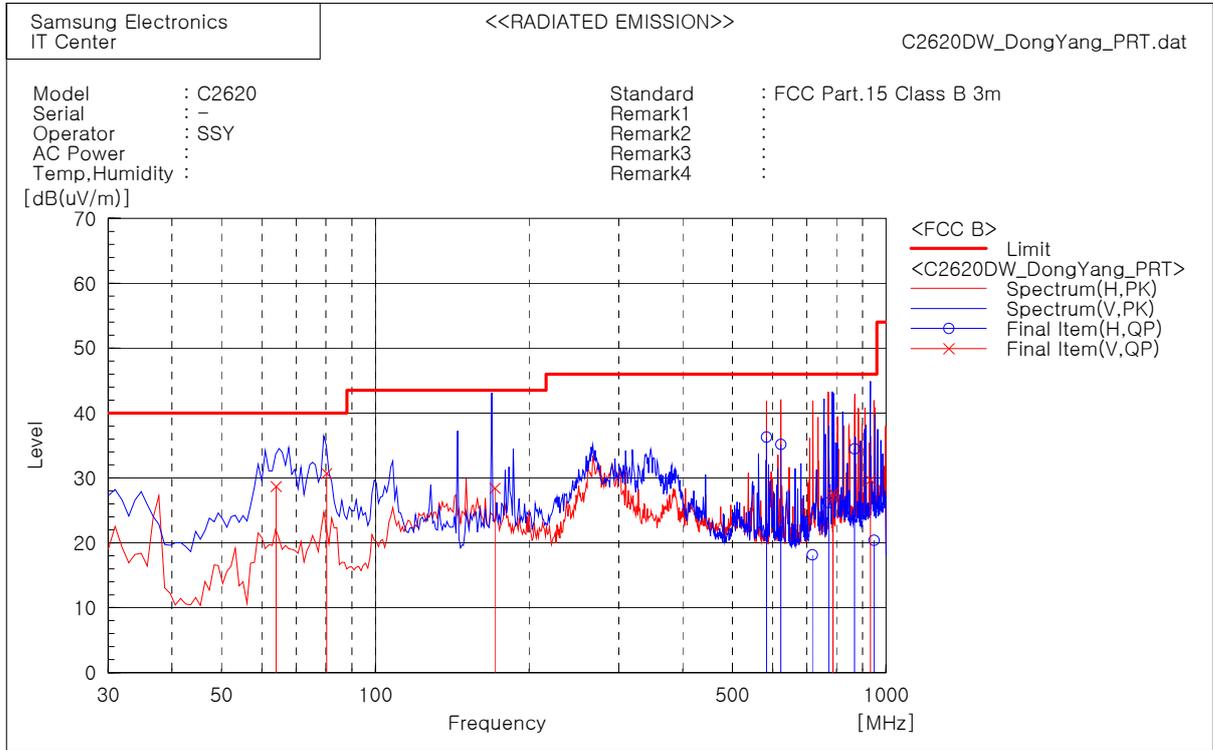
QP = Quasi-Peak

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Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]
1	80.301	V	52.5	-21.8	30.7	40.0	9.3	108.0	245.0
2	171.456	V	48.4	-20.0	28.4	43.5	15.1	252.0	278.0
3	583.391	H	46.1	-9.8	36.3	46.0	9.7	198.0	323.0
4	622.509	H	44.2	-9.0	35.2	46.0	10.8	102.0	24.0
5	772.376	H	33.9	-7.7	26.2	46.0	19.8	198.0	216.0
6	786.625	V	34.5	-7.5	27.0	46.0	19.0	132.0	132.0
7	787.642	V	35.2	-7.5	27.7	46.0	18.3	128.0	135.0
8	868.030	H	40.7	-6.2	34.5	46.0	11.5	128.0	142.0
9	931.480	V	34.9	-5.2	29.7	46.0	16.3	104.0	69.0
10	717.024	H	26.2	-8.0	18.2	46.0	27.8	196.0	130.0
11	947.557	H	25.3	-4.9	20.4	46.0	25.6	196.0	253.0
12	63.948	V	52.5	-23.8	28.7	40.0	11.3	102.0	223.0

Note) Receiving antenna polarization : Horizontal, Vertical

Test Distance : 3 m, Antenna Height : 1 to 4 meters

Result (QP) = Reading (QP) + c.f (Antenna Factor + Cable Loss - Amp. Gain)

Margin (QP) = Limit - Result (QP)

QP = Quasi-Peak

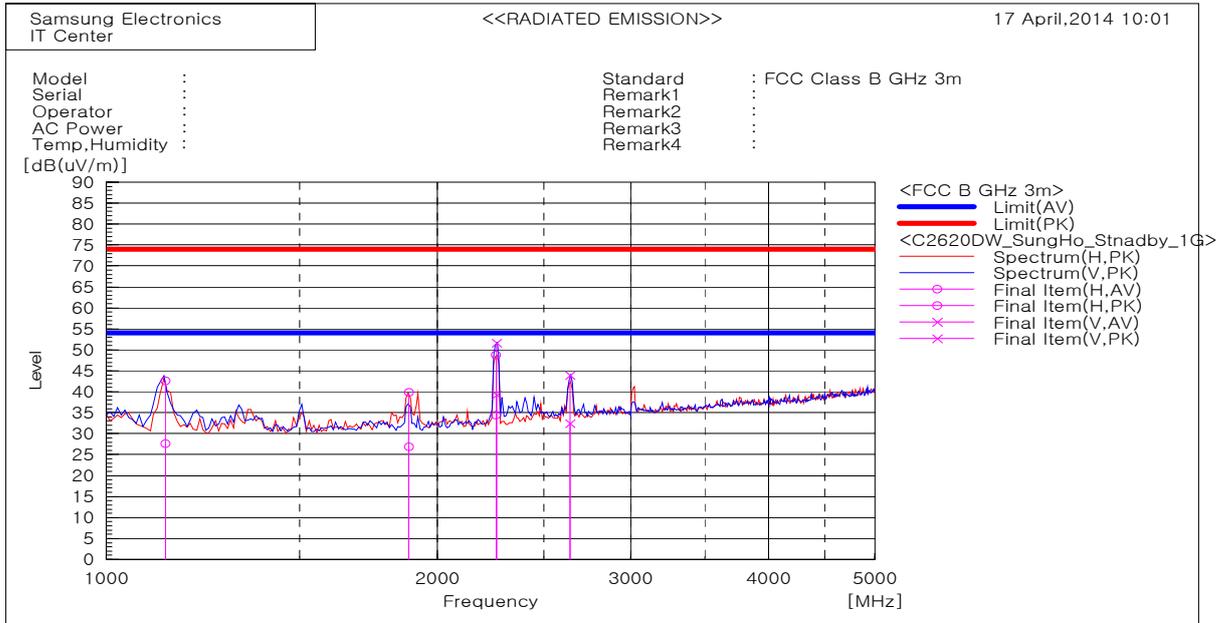
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5.2.4.2 Above 1 GHz results

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Final Result

--- Horizontal Polarization (AV)---								
No.	Frequency [MHz]	Reading [dB(uV)]	c.f [dB(1/m)]	Result [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]	Height [cm]	Angle [deg]
1	1132.385	36.0	-8.4	27.6	54.0	26.4	100.0	190.0
2	1885.411	32.7	-5.8	26.9	54.0	27.1	100.0	109.0
3	2262.164	39.0	-4.5	34.5	54.0	19.5	100.0	102.0
--- Horizontal Polarization (PK)---								
No.	Frequency [MHz]	Reading [dB(uV)]	c.f [dB(1/m)]	Result [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]	Height [cm]	Angle [deg]
1	1132.385	51.0	-8.4	42.6	74.0	31.4	100.0	190.0
2	1885.411	45.7	-5.8	39.9	74.0	34.1	100.0	109.0
3	2262.164	53.2	-4.5	48.7	74.0	25.3	100.0	102.0
--- Vertical Polarization (AV)---								
No.	Frequency [MHz]	Reading [dB(uV)]	c.f [dB(1/m)]	Result [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]	Height [cm]	Angle [deg]
1	2263.046	43.7	-4.5	39.2	54.0	14.8	100.0	85.0
2	2639.640	35.8	-3.4	32.4	54.0	21.6	100.0	84.0
--- Vertical Polarization (PK)---								
No.	Frequency [MHz]	Reading [dB(uV)]	c.f [dB(1/m)]	Result [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]	Height [cm]	Angle [deg]
1	2263.046	56.2	-4.5	51.7	74.0	22.3	100.0	85.0
2	2639.640	47.3	-3.4	43.9	74.0	30.1	100.0	84.0

Note) Receiving antenna polarization : Horizontal, Vertical

Test Distance : 3 m, Antenna Height : 1 to 4 meters

Result (PK and/or AV) = Reading (PK and/or AV) + c.f (Antenna Factor + Cable Loss - Amp. Gain)

Margin (PK and/or AV) = Limit - Result (PK and/or AV)

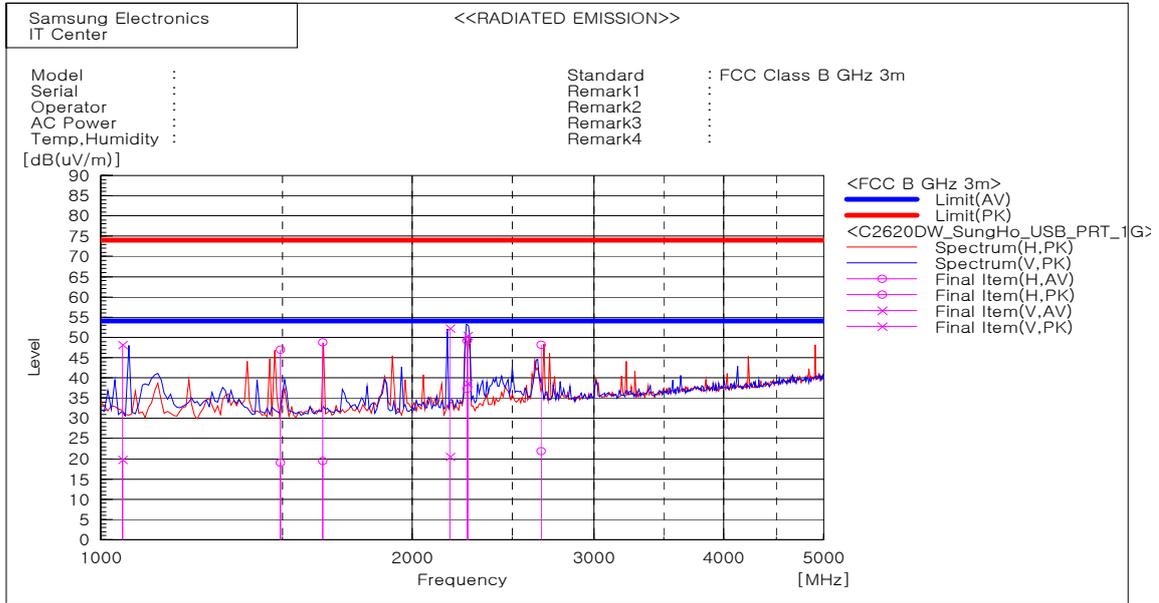
PK = Peak, AV = C/Average

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Note) Receiving antenna polarization : Horizontal, Vertical

Test Distance : 3 m, Antenna Height : 1 to 4 meters

Result (PK and/or AV) = Reading (PK and/or AV) + c.f (Antenna Factor + Cable Loss - Amp. Gain)

Margin (PK and/or AV) = Limit - Result (PK and/or AV)

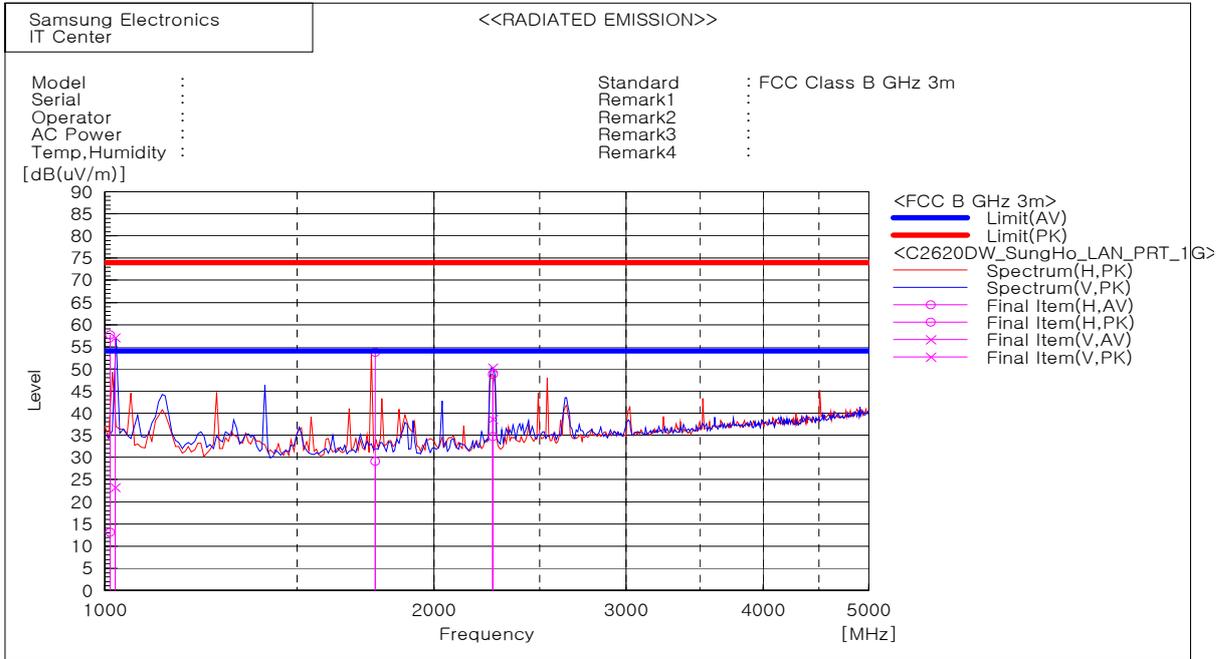
PK = Peak, AV = C/Average

---End of page---



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Final Result

--- Horizontal Polarization (AV)---

No.	Frequency [MHz]	Reading [dB(uV)]	c.f [dB(1/m)]	Result [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]	Height [cm]	Angle [deg]
1	1010.462	21.6	-8.4	13.2	54.0	40.8	100.0	244.0
2	1767.976	35.7	-6.5	29.2	54.0	24.8	100.0	136.0
3	2263.207	39.2	-4.5	34.7	54.0	19.3	100.0	113.0

--- Horizontal Polarization (PK)---

No.	Frequency [MHz]	Reading [dB(uV)]	c.f [dB(1/m)]	Result [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]	Height [cm]	Angle [deg]
1	1010.462	66.1	-8.4	57.7	74.0	16.3	100.0	244.0
2	1767.976	60.3	-6.5	53.8	74.0	20.2	100.0	136.0
3	2263.207	53.3	-4.5	48.8	74.0	25.2	100.0	113.0

--- Vertical Polarization (AV)---

No.	Frequency [MHz]	Reading [dB(uV)]	c.f [dB(1/m)]	Result [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]	Height [cm]	Angle [deg]
1	1022.340	31.7	-8.5	23.2	54.0	30.8	100.0	142.0
2	2262.886	43.1	-4.5	38.6	54.0	15.4	100.0	84.0

--- Vertical Polarization (PK)---

No.	Frequency [MHz]	Reading [dB(uV)]	c.f [dB(1/m)]	Result [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]	Height [cm]	Angle [deg]
1	1022.340	65.6	-8.5	57.1	74.0	16.9	100.0	142.0
2	2262.886	54.8	-4.5	50.3	74.0	23.7	100.0	84.0

Note) Receiving antenna polarization : Horizontal, Vertical

Test Distance : 3 m, Antenna Height : 1 to 4 meters

Result (PK and/or AV) = Reading (PK and/or AV) + c.f (Antenna Factor + Cable Loss - Amp. Gain)

Margin (PK and/or AV) = Limit - Result (PK and/or AV)

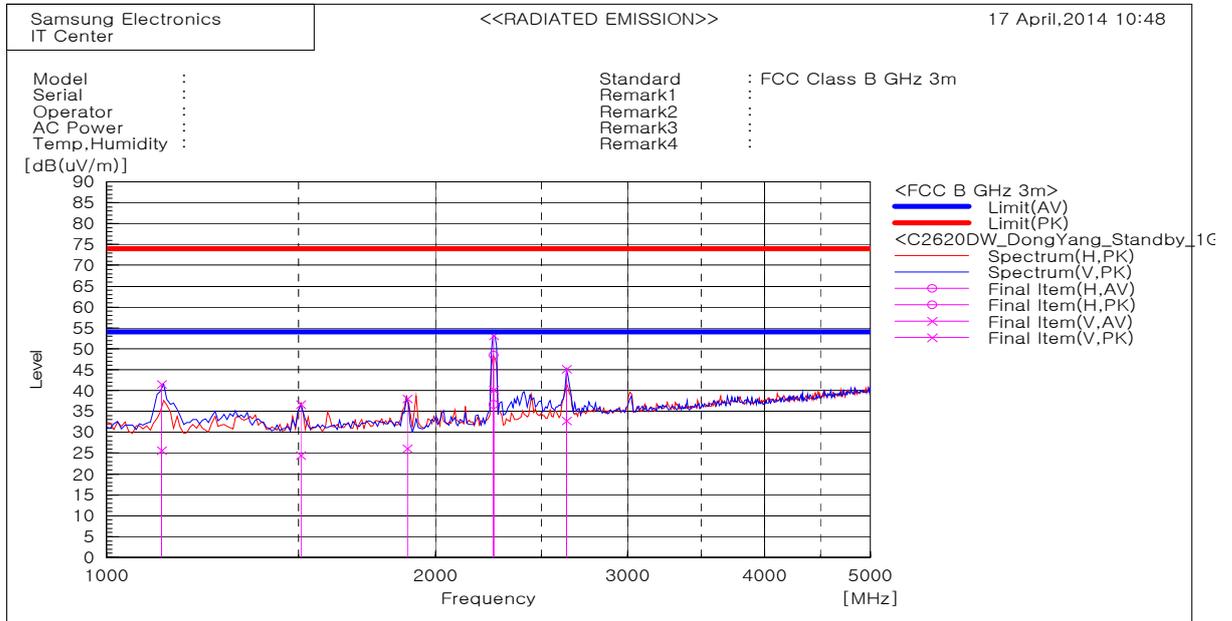
PK = Peak, AV = C/Average

---End of page---



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Final Result

--- Horizontal Polarization (AV)---

No.	Frequency [MHz]	Reading [dB(uV)]	c.f [dB(1/m)]	Result [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]	Height [cm]	Angle [deg]
1	2260.802	41.2	-4.5	36.7	54.0	17.3	100.0	155.0

--- Horizontal Polarization (PK)---

No.	Frequency [MHz]	Reading [dB(uV)]	c.f [dB(1/m)]	Result [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]	Height [cm]	Angle [deg]
1	2260.802	53.0	-4.5	48.5	74.0	25.5	100.0	155.0

--- Vertical Polarization (AV)---

No.	Frequency [MHz]	Reading [dB(uV)]	c.f [dB(1/m)]	Result [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]	Height [cm]	Angle [deg]
1	1123.728	34.1	-8.5	25.6	54.0	28.4	100.0	90.0
2	1506.653	32.2	-7.7	24.5	54.0	29.5	100.0	124.0
3	1883.407	31.9	-5.8	26.1	54.0	27.9	100.0	74.0
4	2260.241	44.7	-4.5	40.2	54.0	13.8	100.0	85.0
5	2637.235	36.1	-3.4	32.7	54.0	21.3	100.0	81.0

--- Vertical Polarization (PK)---

No.	Frequency [MHz]	Reading [dB(uV)]	c.f [dB(1/m)]	Result [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]	Height [cm]	Angle [deg]
1	1123.728	50.0	-8.5	41.5	74.0	32.5	100.0	90.0
2	1506.653	44.4	-7.7	36.7	74.0	37.3	100.0	124.0
3	1883.407	43.9	-5.8	38.1	74.0	35.9	100.0	74.0
4	2260.241	57.7	-4.5	53.2	74.0	20.8	100.0	85.0
5	2637.235	48.5	-3.4	45.1	74.0	28.9	100.0	81.0

Note) Receiving antenna polarization : Horizontal, Vertical

Test Distance : 3 m, Antenna Height : 1 to 4 meters

Result (PK and/or AV) = Reading (PK and/or AV) + c.f (Antenna Factor + Cable Loss - Amp. Gain)

Margin (PK and/or AV) = Limit - Result (PK and/or AV)

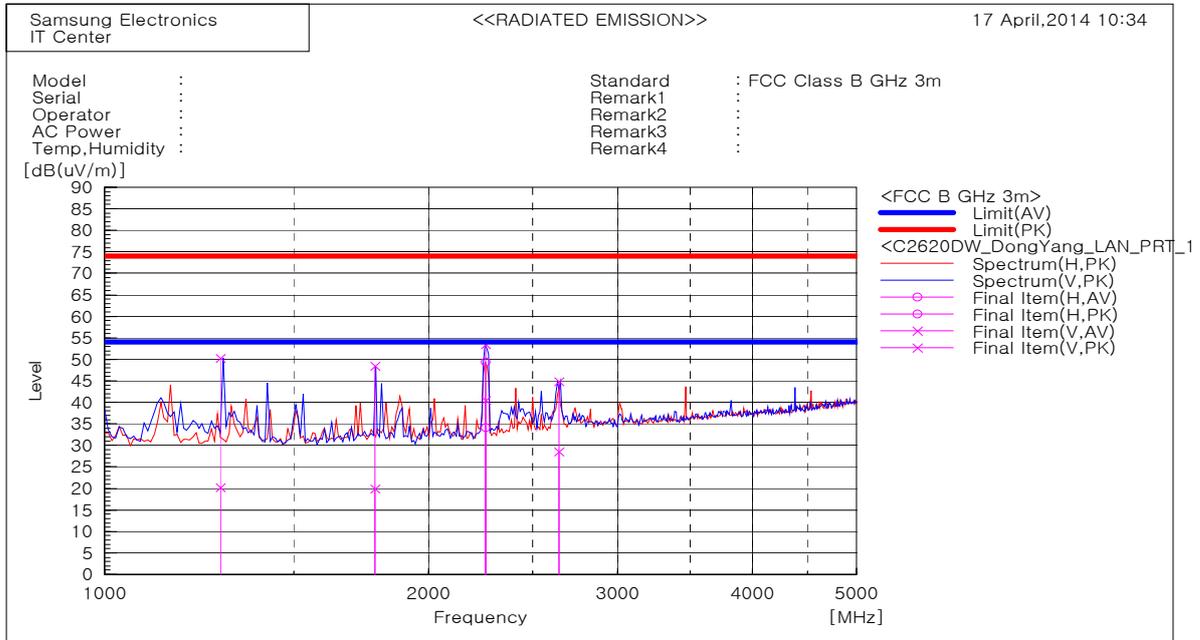
PK = Peak, AV = C/Average

---End of page---



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Final Result

--- Horizontal Polarization (AV)---								
No.	Frequency [MHz]	Reading [dB(uV)]	c.f [dB(1/m)]	Result [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]	Height [cm]	Angle [deg]
1	2260.160	38.6	-4.5	34.1	54.0	19.9	100.0	124.0
--- Horizontal Polarization (PK)---								
No.	Frequency [MHz]	Reading [dB(uV)]	c.f [dB(1/m)]	Result [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]	Height [cm]	Angle [deg]
1	2260.160	53.9	-4.5	49.4	74.0	24.6	100.0	124.0
--- Vertical Polarization (AV)---								
No.	Frequency [MHz]	Reading [dB(uV)]	c.f [dB(1/m)]	Result [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]	Height [cm]	Angle [deg]
1	1280.922	28.4	-8.2	20.2	54.0	33.8	100.0	233.0
2	1783.848	26.4	-6.4	20.0	54.0	34.0	100.0	226.0
3	2260.401	45.0	-4.5	40.5	54.0	13.5	100.0	85.0
4	2646.614	31.8	-3.3	28.5	54.0	25.5	100.0	73.0
--- Vertical Polarization (PK)---								
No.	Frequency [MHz]	Reading [dB(uV)]	c.f [dB(1/m)]	Result [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]	Height [cm]	Angle [deg]
1	1280.922	58.5	-8.2	50.3	74.0	23.7	100.0	233.0
2	1783.848	54.8	-6.4	48.4	74.0	25.6	100.0	226.0
3	2260.401	57.9	-4.5	53.4	74.0	20.6	100.0	85.0
4	2646.614	48.1	-3.3	44.8	74.0	29.2	100.0	73.0

Note) Receiving antenna polarization : Horizontal, Vertical

Test Distance : 3 m, Antenna Height : 1 to 4 meters

Result (PK and/or AV) = Reading (PK and/or AV) + c.f (Antenna Factor + Cable Loss - Amp. Gain)

Margin (PK and/or AV) = Limit - Result (PK and/or AV)

PK = Peak, AV = C/Average

---End of page---

Appendix – EUT photography



Front View



Rear View & Label Location



Right View (Inside View)

	Model: ProXpress C2620DW	FCC ID : A3LSLC2620DW
	Volts: AC 110-127 V	Contains FCC ID : A3LSPWB4319U
	Hertz: 50/60 Hz	This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
	Amps: 8 A	i) This device may not cause harmful interference, and
	Manufactured:	ii) This device must accept any interference received, including interference that may cause undesired operation.
Samsung Electronics Co., Ltd.	 3UU7	CAN ICES-3 (B)/NMB-3(B)
Suwon, Korea, 443-742	US E337632	This product complies with 21 CFR Chapter 1, subchapter J.
Place: M264	LISTED I.T.E.	Contains IC : 649E-SPWB4319U
M/C :		
		
S/N : Z8JUBJZF200001Z		
		Made in China
		Fabriqué en Chine
		REV.00

Label