

EMC TEST REPORT

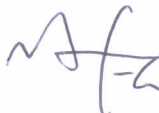
Project No.	LBE20144953	Issue No.	1
Applicant	Name of organization	Samsung Electronics Co., Ltd.	
	Address	19 Chapin Rd., Building D, Pine Brook, New Jersey, United States, 07058	
	Date of application	September 11, 2014	
EUT	Type of device	Class B personal computers and peripherals	
	Equipment authorization	☐ Declaration of Conformity ☒ Certification ☐ Verification	
	FCC ID	A3LSLM4530NX	
	Kind of product	Printer	
	Model No.	ProXpress M4530NX	
	Variant Model No.	SL-M4530NX, ProXpress M4530ND, SL-M4530ND	
	Manufacturer	Samsung Electronics Co., Ltd. (Maetan-dong) 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 443-742, Korea	
Applied Standards		47 CFR Part 15, Subpart B / ANSI C63.4-2009	
		ICES-003 Issue 5	
Test Period	September 19, 2014 ~ September 30, 2014		
Issue date	November 05, 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 : In Gue Park 		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.
Issue 1	The applicant's address is changed

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
☒	Conducted Disturbance (Mains Port)	47 CFR Part 15 Subpart B / ANSI C63.4-2009 (☐ Class A, ☒ Class B)	Complied
☒	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.

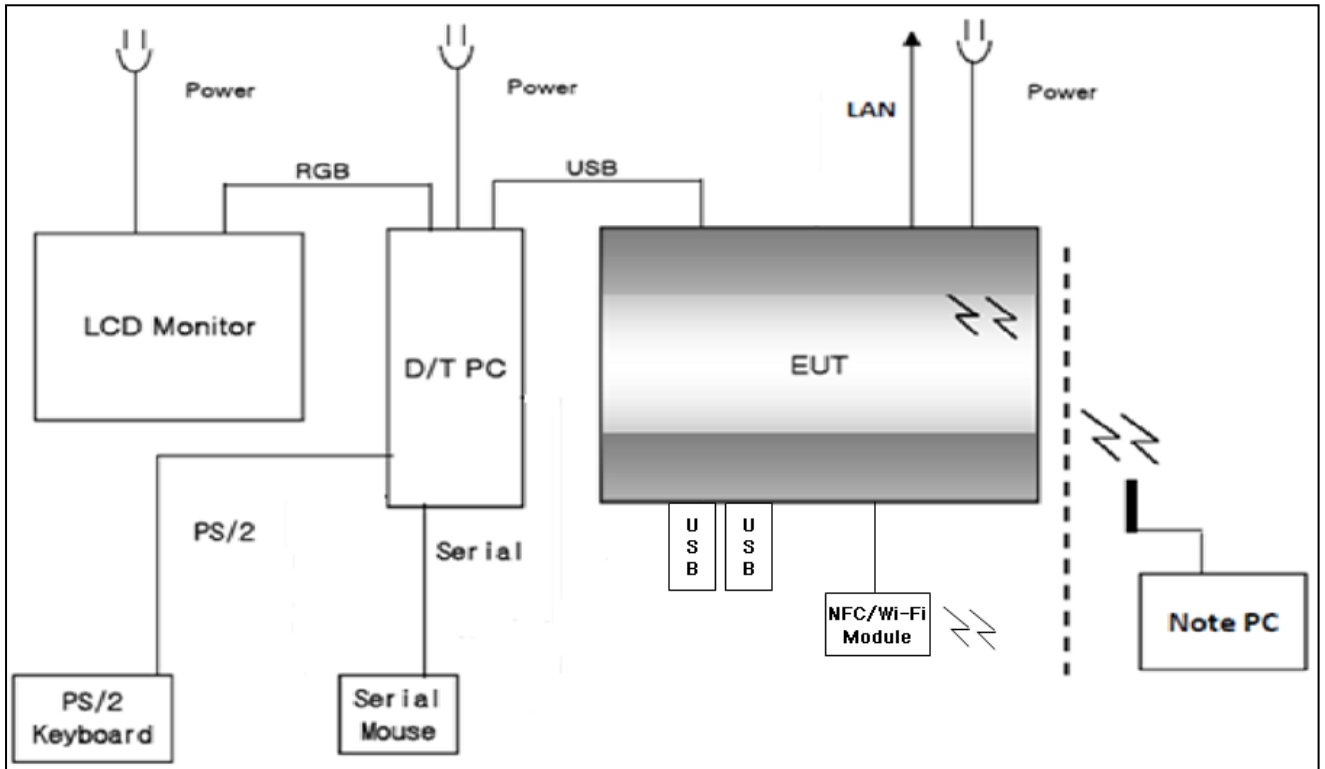
The following is a listing of the EUT and peripherals utilized during the performance of EMC test:

Description	Model No.	Serial No.	Manufacturer	Fcc ID / DoC
Printer	ProXpress M4530NX	-	SAMSUNG	A3LSLM4530NX
D/T PC	ZCP30	Z41698DY700026X	SAMSUNG	DoC
LCD Monitor	UE19D4000	PV421101103020F	SAMSUNG	DoC
PS/2 Keyboard	SKG-2000PB	Z5A3485	SAMSUNG	DoC
Serial Mouse	-	-	RadioShack	DoC
USB Memory	16 GB USB	-	Transcend	DoC
USB Memory	16 GB USB	-	Transcend	DoC
NFC/Wi-Fi Module	SL-NWE001X	-	SAMSUNG	Option
SCF(Second Cassette Feeder)	SL-SCF4500	—	Samsung	Option

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 PC
Power	1.8	No	-	For Monitor
USB	1.8	Yes	-	From EUT to PC
PS/2	1.8	Yes	-	From PC to Keyboard
Serial	1.8	Yes	-	From PC to Serial mouse
LAN	2.0	No	-	From EUT to Local Area Network
RGB	1.8	Yes	2	From PC to Monitor

4.1.3 Test arrangement



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)	Wi-Fi Communication + NFC Test
Operating Mode 2 (Test mode)	USB Printing
Operating Mode 3 (Test mode)	Network Printing
Operating Mode 4 (Test mode)	Standby

4.3 Details of Sampling

Customer selected, single unit.

4.4 Clock Frequencies

Kind of Clocks	Frequency[MHz]	Kind of Clocks	Frequency[MHz]
Main CPU	1 000	UI CPU	16
ETHERNET	125	DDR3	600

4.5 EUT Description

The following features describe EUT represented by this report:

Item	Specification and Description
Processor	1 GHz Dual Core CPU
Standard System memory	1 GB DDR3
Speed	45ppm (A4)
Power Rating	110 VAC ~ 127 VAC, 8.5 A, 50/60 Hz
Power Consumption	Power Save : 1.5 Watts Standby : 15 Watts Printing : 900 Watts
Interfaces	Hi-Speed USB 2.0, Gigabit Ethernet, Direct USB, Wi-Fi, Wi-Fi Direct, NFC
Modes of Operation	Standby, Printing
Intended Class for Emissions	Class B

4.6 Test configuration and condition

Item	Model Name	P/N	Manufacturer
SMPS	PSPN-TYPE4-V1	JC44-00091C	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. The EUT's Wi-Fi option connected to the PC's Wi-Fi function and NFC tag reading during the test.

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

- Test Voltage : AC 120 V, 60 Hz

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)	± 3.12 dB
Radiated Disturbance (Below 1 GHz)	Horizontal	± 4.90 dB
	Vertical	± 4.65 dB
Radiated Disturbance (Above 1 GHz)	Horizontal	± 5.45 dB
	Vertical	± 5.43 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 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	ESIB-26	R&S	100147	2014-04-16	12
Two-Line V-Network	ENV216	R&S	101369	2013-11-17	12
Two-Line V-Network	ESH3-Z5	R&S	100260	2014-01-15	12
Test Software	EMC32	R&S	Ver 8.53.0	-	-

5.1.2 Temperature and humidity condition

Test date	September 30, 2014	Test engineer		In Gue Park	
Climate condition	Ambient temperature	24.1 °C	Relative humidity		38 %
	Atmospheric pressure	101.0 kPa			
Test place	Shielded Room #8				

5.1.3 Photograph of Test Setup



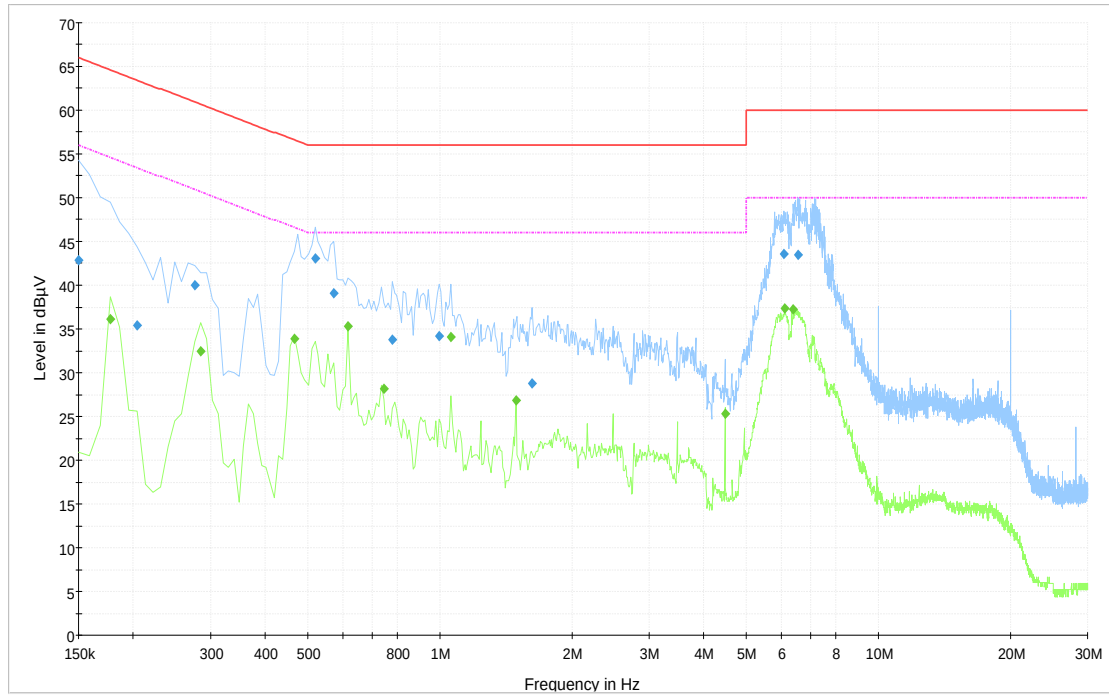
Front



Rear

5.1.4 Test results (mains port)

- Operating Mode : 1



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

Test Results (Quasi-Peak and C/Average)

Quasi-peak final measurement results table

Frequency (MHz)	Level ¹⁾ Quasi-Peak (dBμV)	Line ²⁾	Factor ³⁾ (dB)	Margin ⁴⁾ (dB)	Limit (dBμV)
0.150	42.8	N	9.9	23.2	66.0
0.204	35.4	L1	10.0	28.1	63.4
0.276	40.0	N	9.7	21.0	60.9
0.519	43.1	L1	9.9	12.9	56.0
0.573	39.1	L1	9.9	16.9	56.0
0.780	33.8	L1	9.8	22.2	56.0
0.996	34.1	N	9.9	21.9	56.0
1.626	28.8	L1	9.8	27.2	56.0
6.099	43.5	L1	9.7	16.5	60.0
6.567	43.5	N	9.8	16.5	60.0

C/Average final measurement results table

Frequency (MHz)	Level ¹⁾ C/Average (dBμV)	Line ²⁾	Factor ³⁾ (dB)	Margin ⁴⁾ (dB)	Limit (dBμV)
0.177	36.1	L1	9.9	18.5	54.6
0.285	32.4	L1	9.7	18.3	50.7
0.465	33.8	L1	9.9	12.8	46.6
0.618	35.3	L1	9.9	10.7	46.0
0.744	28.1	L1	9.8	17.9	46.0
1.059	34.1	N	9.8	11.9	46.0
1.491	26.9	N	9.8	19.1	46.0
4.470	25.4	L1	9.7	20.6	46.0
6.108	37.3	L1	9.7	12.7	50.0

Note1) Level (Quasi-Peak and/or C/Average) = Meter Reading + Factor

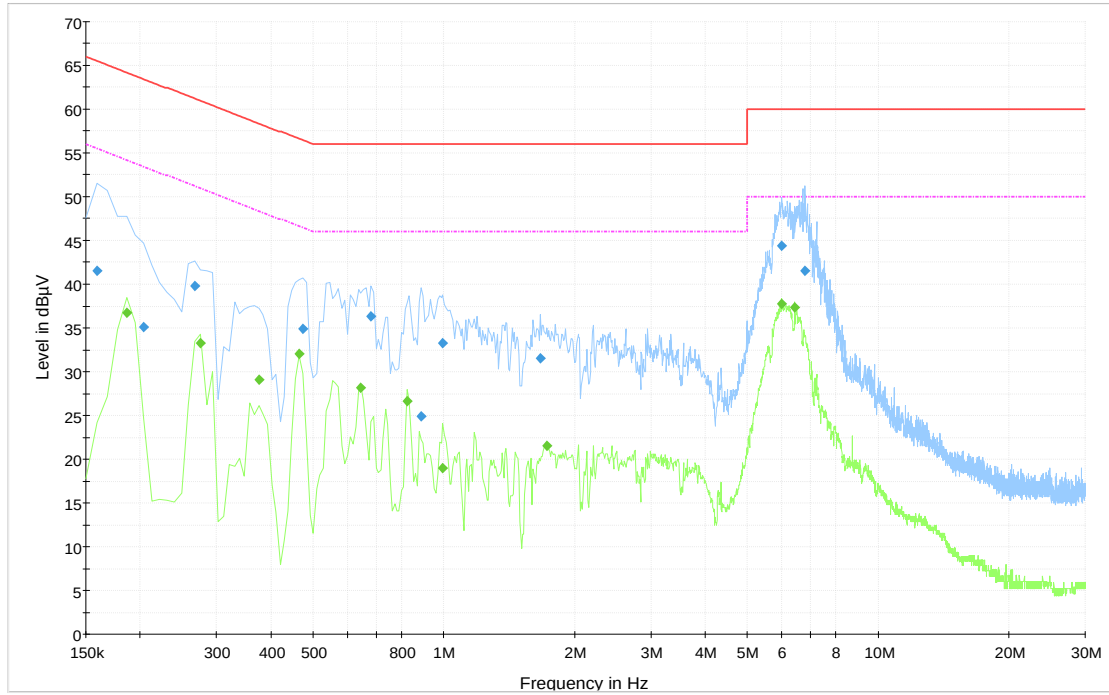
Note2) Line = Polarity of input power (Live or Neutral)

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

Note3) Factor = LISN Insertion Loss + Cable Loss

Note4) Margin = Limit – Level (Quasi-Peak and/or C/Average)

Note5) C/Average = CISPR-Average

- Operating Mode : 2

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

Test Results (Quasi-Peak and C/Average)

Quasi-peak final measurement results table

Frequency (MHz)	Level ¹⁾ Quasi-Peak (dBμV)	Line ²⁾	Factor ³⁾ (dB)	Margin ⁴⁾ (dB)	Limit (dBμV)
0.159	41.6	L1	9.9	24.0	65.5
0.204	35.1	L1	10.0	28.4	63.4
0.267	39.8	N	9.7	21.4	61.2
0.474	34.9	N	10.0	21.5	56.4
0.681	36.4	N	9.9	19.6	56.0
0.888	24.9	N	9.9	31.1	56.0
0.996	33.3	N	9.9	22.8	56.0
1.671	31.5	N	9.8	24.5	56.0
6.009	44.4	N	9.8	15.6	60.0
6.792	41.5	L1	9.7	18.5	60.0

C/Average final measurement results table

Frequency (MHz)	Level ¹⁾ C/Average (dBμV)	Line ²⁾	Factor ³⁾ (dB)	Margin ⁴⁾ (dB)	Limit (dBμV)
0.186	36.7	N	10.0	17.5	54.2
0.276	33.3	N	9.7	17.7	50.9
0.375	29.1	N	9.9	19.3	48.4
0.465	32.1	L1	9.9	14.5	46.6
0.645	28.2	N	9.9	17.8	46.0
0.825	26.6	N	9.9	19.4	46.0
0.996	19.0	L1	9.8	27.0	46.0
1.725	21.5	N	9.8	24.5	46.0
6.000	37.8	L1	9.7	12.2	50.0

Note1) Level (Quasi-Peak and/or C/Average) = Meter Reading + Factor

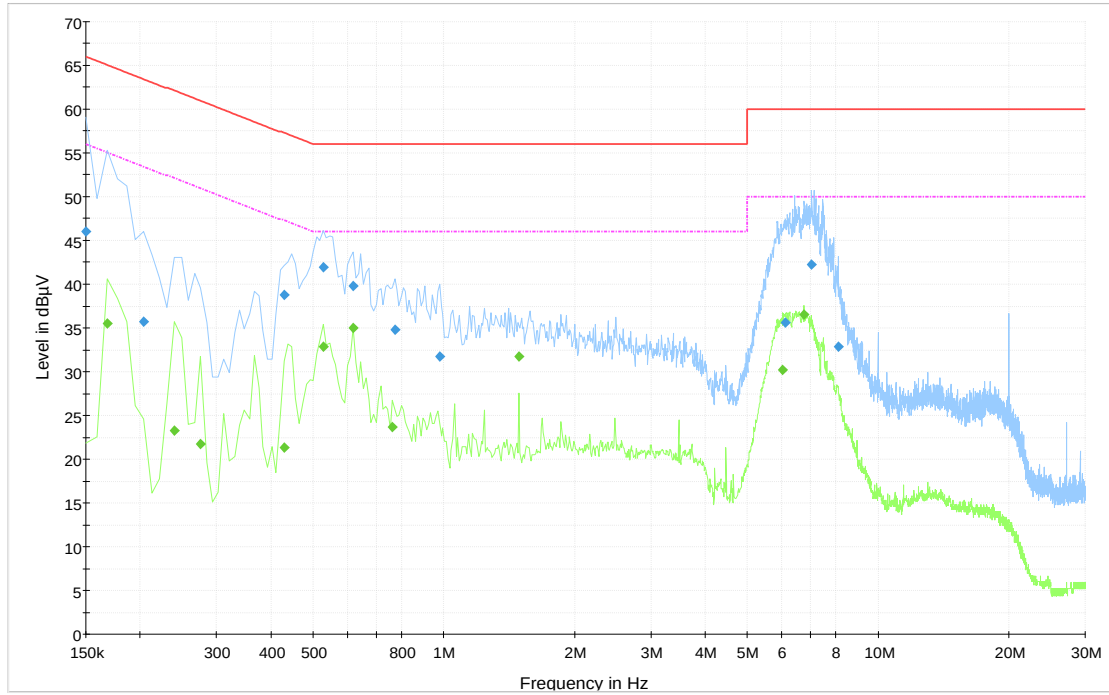
Note2) Line = Polarity of input power (Live or Neutral)

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

Note3) Factor = LISN Insertion Loss + Cable Loss

Note4) Margin = Limit – Level (Quasi-Peak and/or C/Average)

Note5) C/Average = CISPR-Average

- Operating Mode : 3

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

Test Results (Quasi-Peak and C/Average)

Quasi-peak final measurement results table

Frequency (MHz)	Level ¹⁾ Quasi-Peak (dBμV)	Line ²⁾	Factor ³⁾ (dB)	Margin ⁴⁾ (dB)	Limit (dBμV)
0.150	46.1	N	9.9	19.9	66.0
0.204	35.7	N	10.0	27.7	63.4
0.429	38.8	L1	9.9	18.5	57.3
0.528	42.0	L1	9.9	14.0	56.0
0.618	39.8	L1	9.9	16.2	56.0
0.771	34.8	N	9.9	21.2	56.0
0.978	31.8	L1	9.8	24.2	56.0
6.117	35.7	N	9.8	24.3	60.0
7.035	42.3	L1	9.7	17.8	60.0
8.097	32.9	N	9.8	27.1	60.0

C/Average final measurement results table

Frequency (MHz)	Level ¹⁾ C/Average (dBμV)	Line ²⁾	Factor ³⁾ (dB)	Margin ⁴⁾ (dB)	Limit (dBμV)
0.168	35.6	L1	9.9	19.5	55.1
0.240	23.3	L1	9.7	28.8	52.1
0.276	21.8	N	9.7	29.2	50.9
0.429	21.3	N	10.0	26.0	47.3
0.528	32.9	L1	9.9	13.1	46.0
0.618	35.0	N	9.9	11.0	46.0
0.762	23.7	N	9.9	22.3	46.0
1.491	31.8	L1	9.8	14.2	46.0
6.036	30.3	N	9.8	19.7	50.0

Note1) Level (Quasi-Peak and/or C/Average) = Meter Reading + Factor

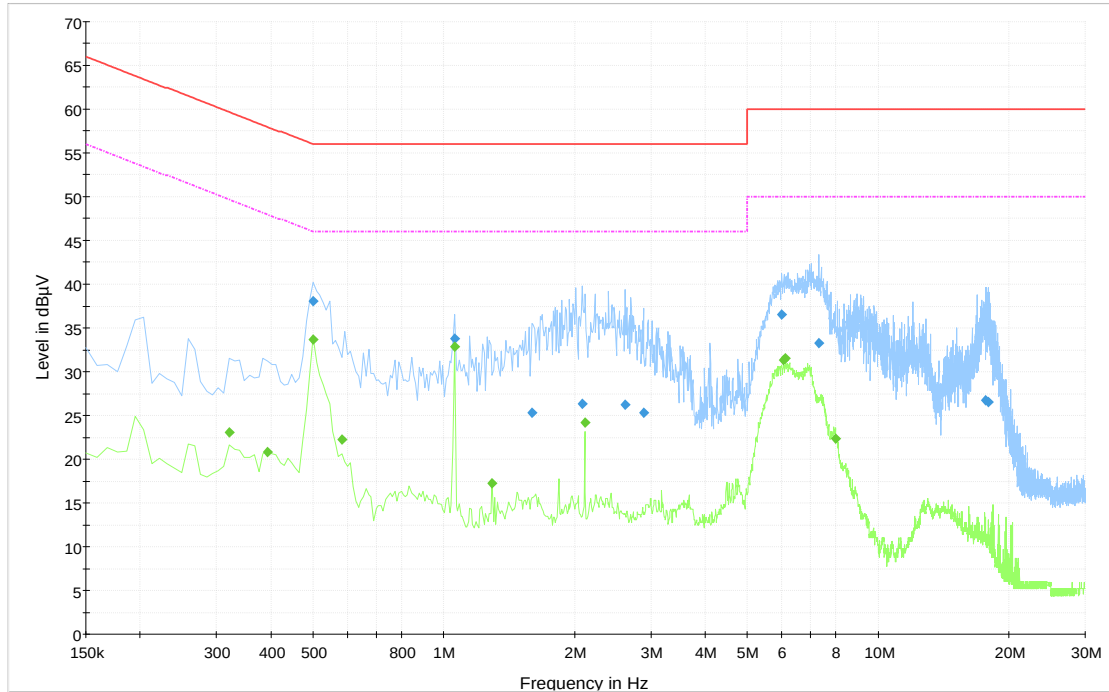
Note2) Line = Polarity of input power (Live or Neutral)

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

Note3) Factor = LISN Insertion Loss + Cable Loss

Note4) Margin = Limit – Level (Quasi-Peak and/or C/Average)

Note5) C/Average = CISPR-Average

- Operating Mode : 4

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

Test Results (Quasi-Peak and C/Average)

Quasi-peak final measurement results table

Frequency (MHz)	Level ¹⁾ Quasi-Peak (dBμV)	Line ²⁾	Factor ³⁾ (dB)	Margin ⁴⁾ (dB)	Limit (dBμV)
0.501	38.1	L1	9.9	17.9	56.0
1.059	33.8	N	9.8	22.2	56.0
1.599	25.3	N	9.8	30.7	56.0
2.085	26.4	N	9.8	29.6	56.0
2.616	26.2	L1	9.7	29.8	56.0
2.886	25.3	N	9.8	30.7	56.0
6.009	36.6	L1	9.7	23.4	60.0
7.314	33.2	N	9.8	26.8	60.0
17.655	26.8	N	9.7	33.2	60.0
17.916	26.5	N	9.7	33.5	60.0

C/Average final measurement results table

Frequency (MHz)	Level ¹⁾ C/Average (dBμV)	Line ²⁾	Factor ³⁾ (dB)	Margin ⁴⁾ (dB)	Limit (dBμV)
0.321	23.0	N	9.8	26.6	49.7
0.393	20.8	L1	9.9	27.2	48.0
0.501	33.6	N	10.0	12.4	46.0
0.582	22.2	N	10.0	23.8	46.0
1.059	32.8	N	9.8	13.2	46.0
1.293	17.3	N	9.8	28.7	46.0
2.112	24.2	L1	9.7	21.8	46.0
6.063	31.3	L1	9.7	18.7	50.0
6.126	31.6	L1	9.7	18.4	50.0

Note1) Level (Quasi-Peak and/or C/Average) = Meter Reading + Factor

Note2) Line = Polarity of input power (Live or Neutral)

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

Note3) Factor = LISN Insertion Loss + Cable Loss

Note4) Margin = Limit – Level (Quasi-Peak and/or C/Average)

Note5) C/Average = CISPR-Average

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(μV/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(μV/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)
Antenna Mast	AM 4.0	Maturo	AM4.0/061/2410908	-	-
Antenna Mast	AM 4.0	Maturo	AM4.0/060/2410908	-	-
Controller	MCU	Maturo	MCU/100/2410908	-	-
Controller	HD100	HD	100/723	-	-
Preamplifier	317	SONOMA	282424	2013-11-13	12
Preamplifier	317	SONOMA	282425	2013-11-13	12
Preamplifier	ESV-Z3	R&S	815111	2014-04-10	12
BILOG Antenna	CBL6112D	TESEQ	36997	2013-11-06	24
BILOG Antenna	CBL6112D	TESEQ	25513	2012-11-27	24
Horn Antenna	HF906	R&S	100027	2013-05-31	24
EMI Test Receiver	ESU-26	R&S	100364	2014-05-15	12
EMI Test Receiver	ESU	R&S	100482	2014-06-16	12
EMI Test Receiver	ESIB-26	R&S	100355	2014-02-17	12
Test Software	EP5/RE	TOYO	Ver 3.10.20	-	-

5.2.2 Temperature and humidity condition

Test date	September 19, 2014	Test engineer		In Gue Park	
Climate condition	Ambient temperature	23.2 °C		Relative humidity	40 %
	Atmospheric pressure	100.7 kPa			
Test place	10 m Semi-Anechoic Chamber				

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

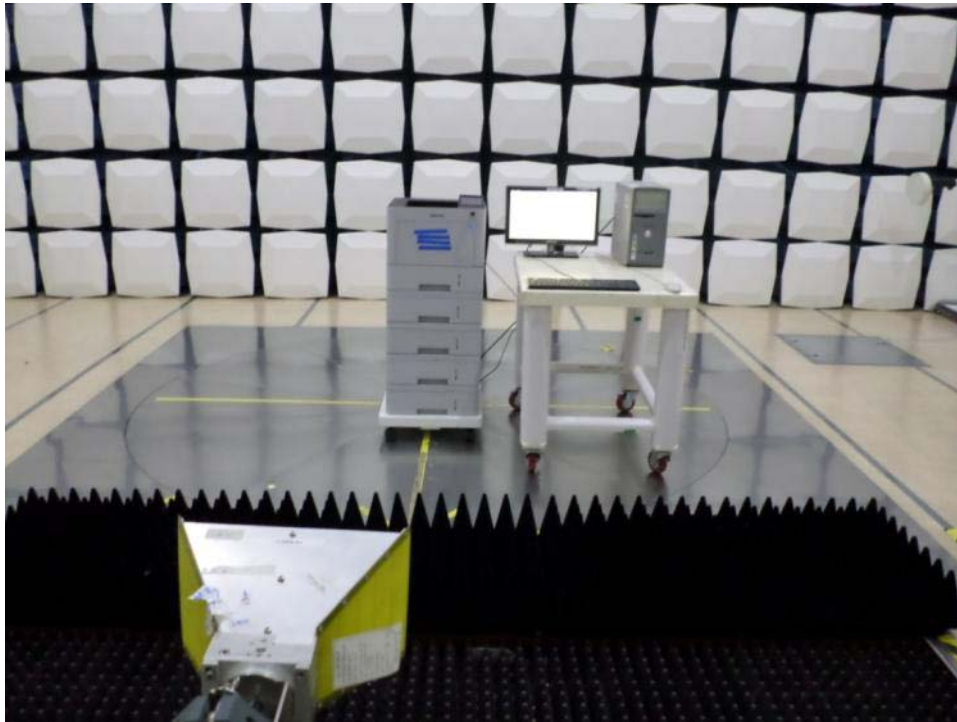


Front

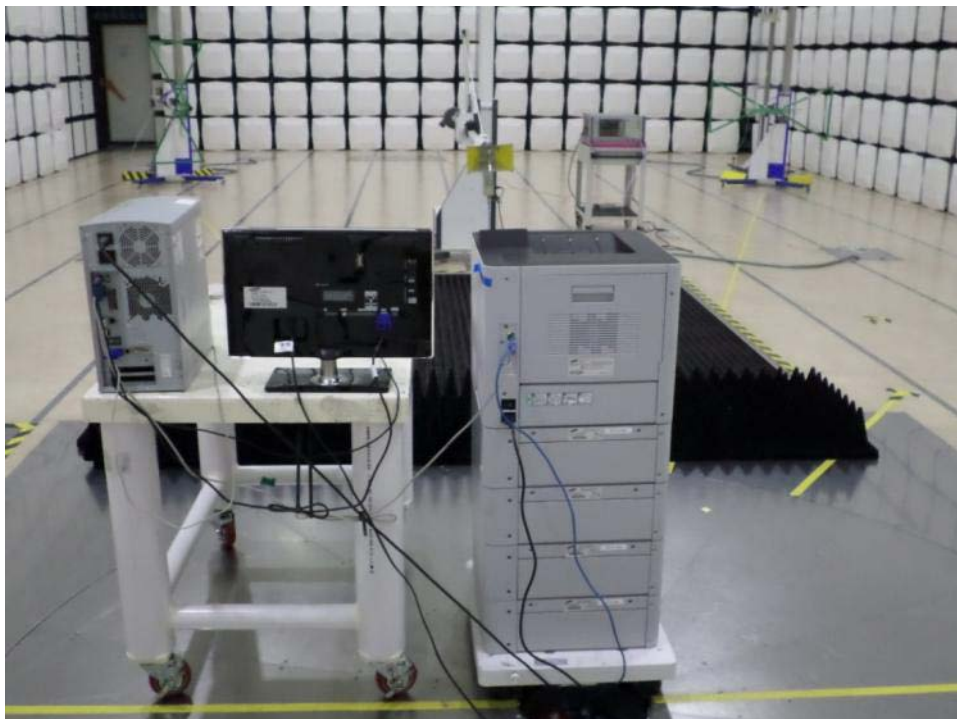


Rear

5.2.3.2 Photograph of Test Setup (Above 1 GHz)



Front

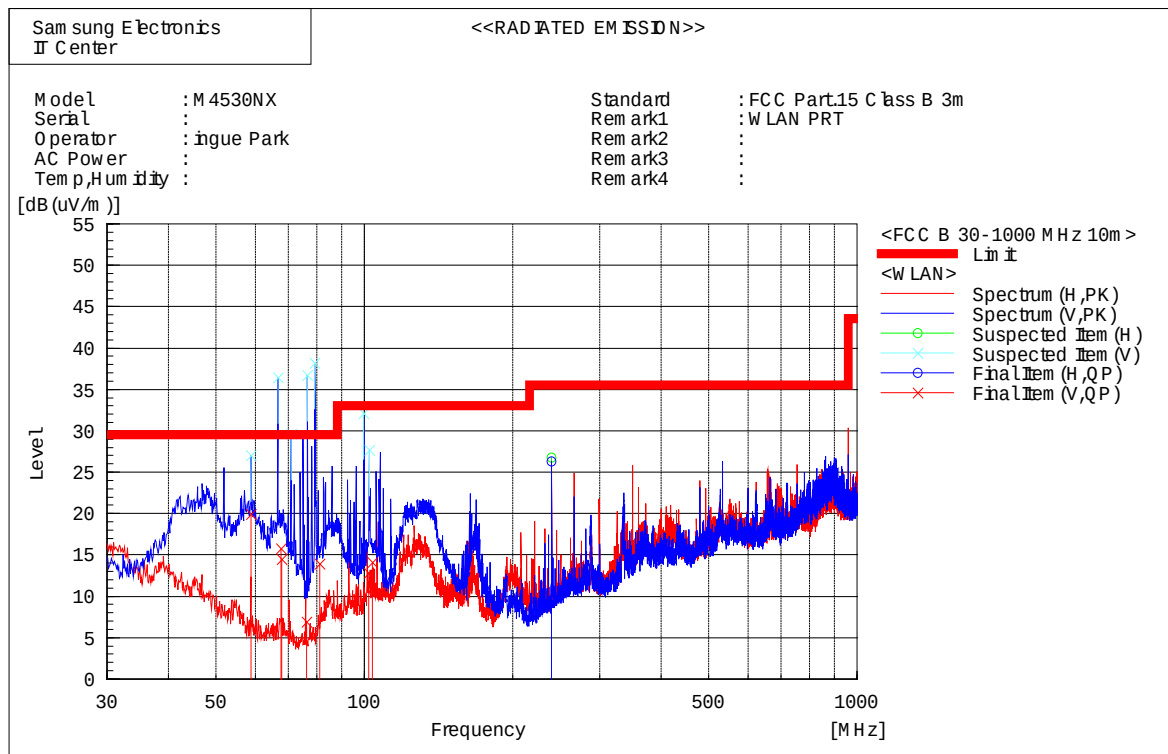


Rear

5.2.4 Test results

5.2.4.1 30 MHz ~ 1 000 MHz results

- Operating Mode : 1



Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(μV)]	c.f [dB(1/m)]	Result QP [dB(μV/m)]	Limit QP [dB(μV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	System
1	58.858	V	51.6	-31.7	19.9	29.5	9.6	400.0	64.0	2
2	67.760	V	47.0	-31.3	15.7	29.5	13.8	124.0	71.0	2
3	67.950	V	45.8	-31.3	14.5	29.5	15.0	120.0	86.0	2
4	76.235	V	37.2	-30.3	6.9	29.5	22.6	121.0	151.0	2
5	81.138	V	43.3	-29.4	13.9	29.5	15.6	298.0	111.0	2
6	101.836	V	38.5	-25.6	12.9	33.0	20.1	271.0	137.0	2
7	103.799	V	39.5	-25.4	14.1	33.0	18.9	322.0	151.0	2
8	239.981	H	48.6	-22.3	26.3	35.5	9.2	315.0	134.0	1

Note1) (P) : Abbreviation of Antenna Polarity

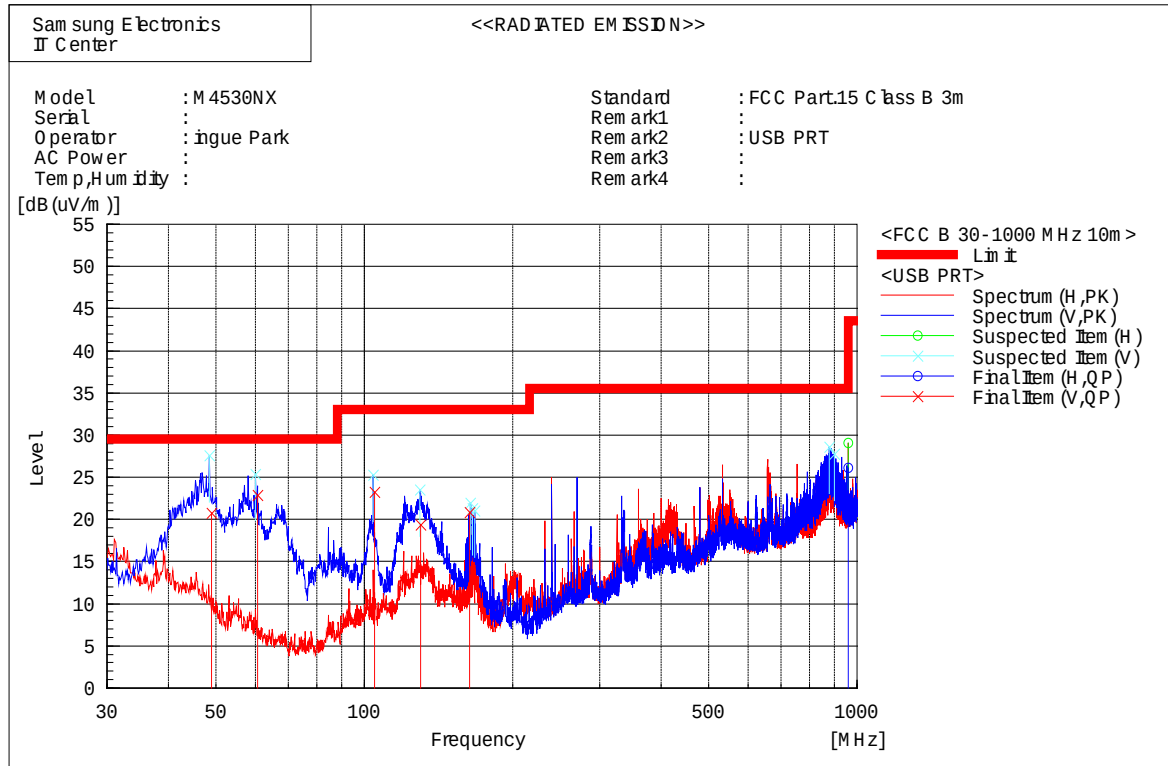
Note2) Reading QP : Received raw Quasi-peak signal

Note3) c.f = Factor = Antenna factor + Cable loss – Amplifier gain

Note4) Result QP = Level QP = Reading QP + Factor, Real signal Quasi-peak level

Note5) Margin QP = Limit – Level QP

QP : Abbreviation of Quasi-peak

- Operating Mode : 2**Final Result**

No.	Frequency [MHz]	(P)	Reading QP [dB(μV)]	c.f [dB(1/m)]	Result QP [dB(μV/m)]	Limit QP [dB(μV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	System
1	48.841	V	49.3	-28.5	20.8	29.5	8.7	149.0	115.0	2
2	60.612	V	54.6	-31.7	22.9	29.5	6.6	209.0	311.0	2
3	104.776	V	48.6	-25.3	23.3	33.0	9.7	206.0	228.0	2
4	129.911	V	43.7	-24.3	19.4	33.0	13.6	306.0	175.0	2
5	163.393	V	47.1	-26.2	20.9	33.0	12.1	100.0	242.0	2
6	960.851	H	34.4	-8.3	26.1	43.5	17.4	220.0	99.0	1

Note1) (P) : Abbreviation of Antenna Polarity

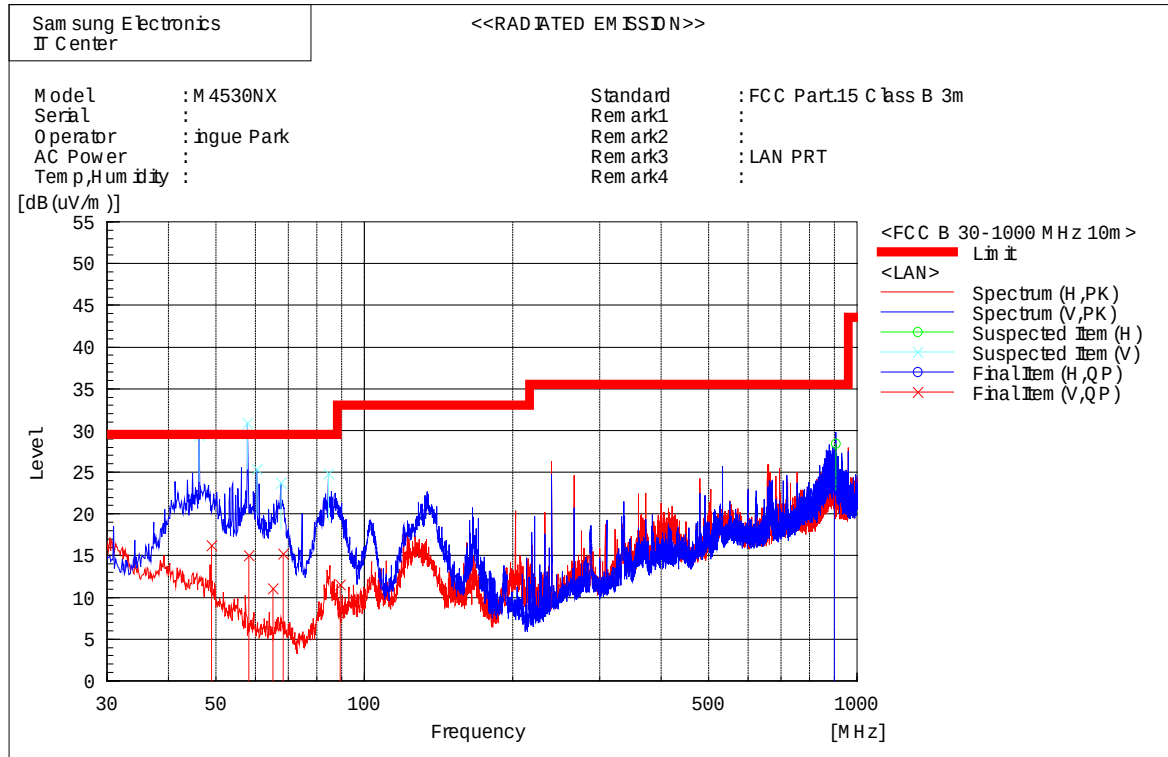
Note2) Reading QP : Received raw Quasi-peak signal

Note3) c.f = Factor = Antenna factor + Cable loss – Amplifier gain

Note4) Result QP = Level QP = Reading QP + Factor, Real signal Quasi-peak level

Note5) Margin QP = Limit – Level QP

QP : Abbreviation of Quasi-peak

- Operating Mode : 3**Final Result**

No.	Frequency [MHz]	(P)	Reading QP [dB(μV)]	c.f [dB(1/m)]	Result QP [dB(μV/m)]	Limit QP [dB(μV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	System
1	48.934	V	44.8	-28.5	16.3	29.5	13.2	100.0	191.0	2
2	58.228	V	46.7	-31.6	15.1	29.5	14.4	293.0	310.0	2
3	65.234	V	42.6	-31.5	11.1	29.5	18.4	300.0	63.0	2
4	68.433	V	46.5	-31.3	15.2	29.5	14.3	107.0	69.0	2
5	89.288	V	39.2	-27.6	11.6	33.0	21.4	215.0	143.0	2
6	899.875	H	32.9	-9.1	23.8	35.5	11.7	100.0	59.0	1

Note1) (P) : Abbreviation of Antenna Polarity

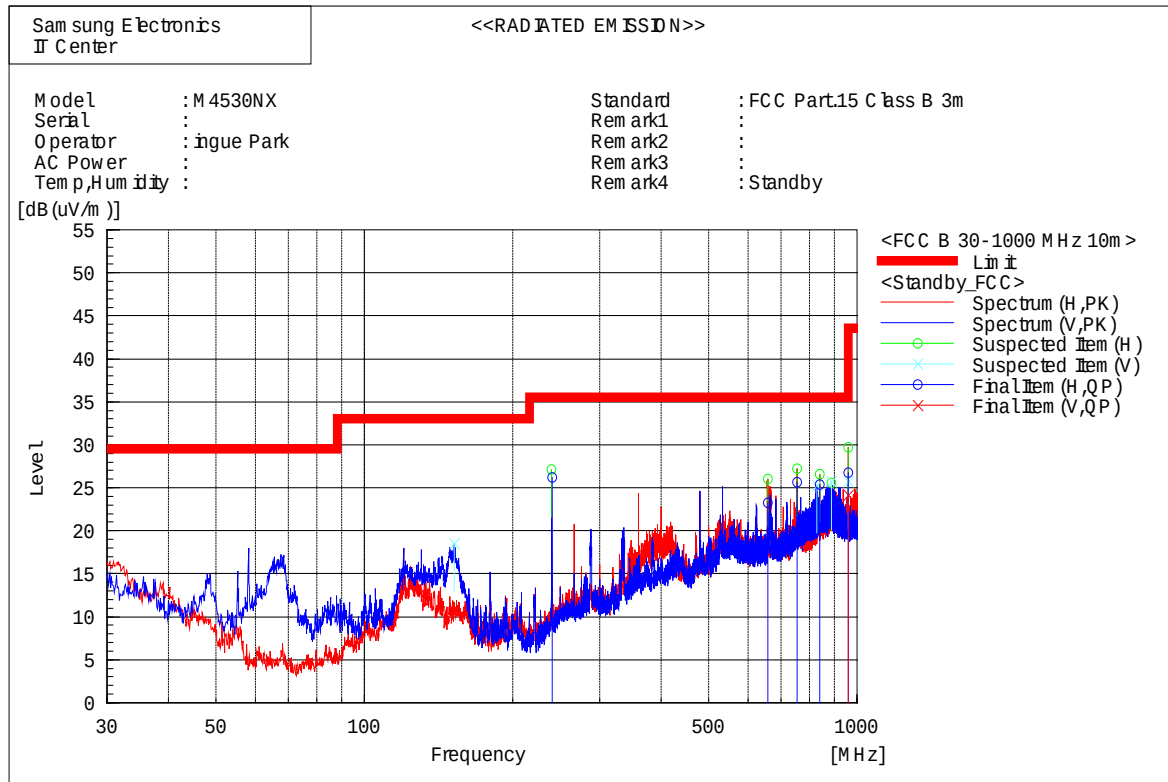
Note2) Reading QP : Received raw Quasi-peak signal

Note3) c.f = Factor = Antenna factor + Cable loss – Amplifier gain

Note4) Result QP = Level QP = Reading QP + Factor, Real signal Quasi-peak level

Note5) Margin QP = Limit – Level QP

QP : Abbreviation of Quasi-peak

- Operating Mode : 4**Final Result**

No.	Frequency [MHz]	(P)	Reading QP [dB(μV)]	c.f [dB(1/m)]	Result QP [dB(μV/m)]	Limit QP [dB(μV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	System
1	240.637	H	48.4	-22.2	26.2	35.5	9.3	348.0	312.0	1
2	658.964	H	35.3	-12.0	23.3	35.5	12.2	244.0	169.0	1
3	756.746	H	36.1	-10.4	25.7	35.5	9.8	154.0	261.0	1
4	840.559	H	35.0	-9.6	25.4	35.5	10.1	163.0	275.0	1
5	960.234	V	35.2	-11.0	24.2	43.5	19.3	332.0	185.0	2
6	960.852	H	35.1	-8.3	26.8	43.5	16.7	209.0	304.0	1

Note1) (P) : Abbreviation of Antenna Polarity

Note2) Reading QP : Received raw Quasi-peak signal

Note3) c.f = Factor = Antenna factor + Cable loss – Amplifier gain

Note4) Result QP = Level QP = Reading QP + Factor, Real signal Quasi-peak level

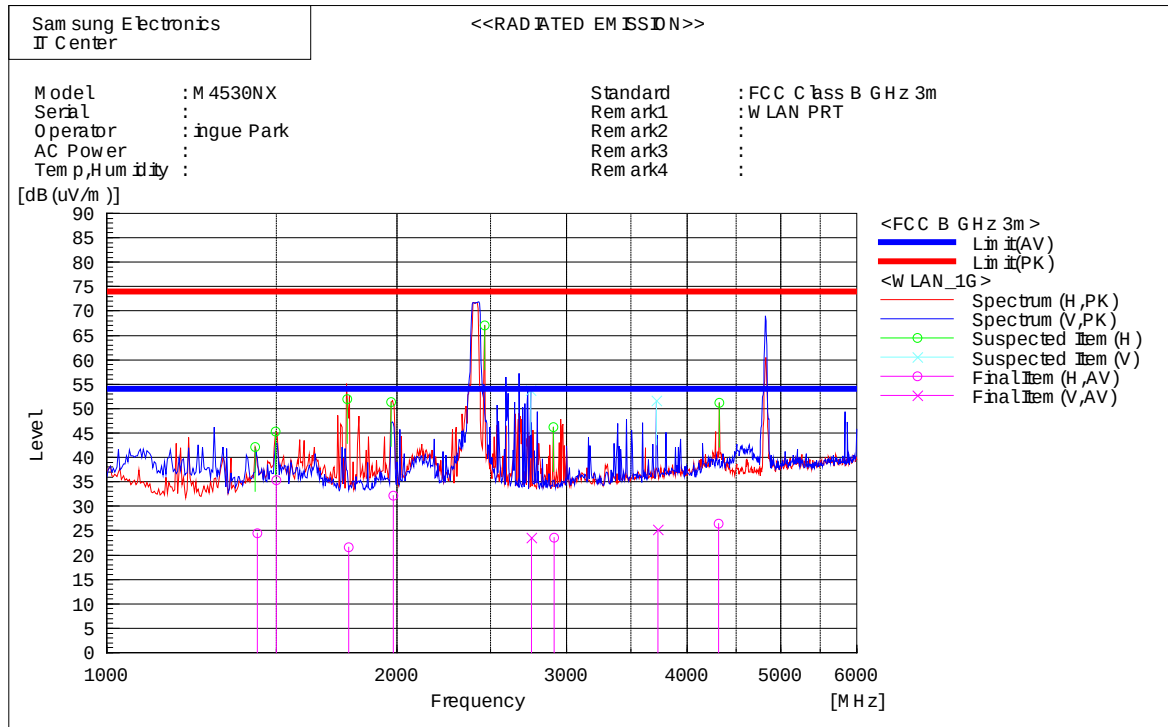
Note5) Margin QP = Limit – Level QP

QP : Abbreviation of Quasi-peak

5.2.4.2 Above 1 GHz results

- Operating Mode : 1

Test Graph and Results



Peak Measurement

Frequency [MHz]	(P) ¹⁾	Reading PK ²⁾ [dB(uV)]	Factor ³⁾ [dB(1/m)]	Level PK ⁴⁾ [dB(uV/m)]	Limit [dB(uV/m)]	Margin PK ⁵⁾ [dB]	Height [cm]	Angle [deg]
1 424.850	H	53.3	-11.2	42.1	74.0	31.9	107.0	4.0
1 496.994	H	56.7	-11.4	45.3	74.0	28.7	130.0	28.0
1 777.555	H	61.7	-9.7	52.0	74.0	22.0	121.0	3.0
1 973.948	H	61.1	-9.7	51.4	74.0	22.6	204.0	47.0
2 466.934	H	74.9	-7.8	67.1	74.0	6.9	102.0	355.0
2 751.503	V	60.4	-6.6	53.8	74.0	20.2	100.0	8.0
2 907.816	H	52.4	-6.2	46.2	74.0	27.8	100.0	3.0
3 715.431	V	55.5	-3.9	51.6	74.0	22.4	224.0	350.0
4 322.645	H	54.6	-3.5	51.1	74.0	22.9	112.0	1.0

Note1) (P) : Abbreviation of Antenna Polarity

Note2) Reading PK : Received raw Peak signal

Note3) Factor = Antenna factor + Cable loss – Amplifier gain

Note4) Level PK = Reading PK + Factor, Real signal Peak level

Note5) Margin PK = Limit – Level PK

PK : Abbreviation of Peak

C/Average Measurement

Frequency [MHz]	(P) ¹⁾	Reading C/AV ²⁾ [dB(uV)]	Factor ³⁾ [dB(1/m)]	Level C/AV ⁴⁾ [dB(uV/m)]	Limit [dB(uV/m)]	Margin C/AV ⁵⁾ [dB]	Height [cm]	Angle [deg]
1 433.127	H	35.7	-11.3	24.4	54.0	29.6	105.0	4.0
1 500.140	H	46.8	-11.5	35.3	54.0	18.7	127.0	27.0
1 783.026	H	31.3	-9.7	21.6	54.0	32.4	119.0	2.0
1 981.864	H	41.9	-9.7	32.2	54.0	21.8	201.0	46.0
2 759.700	V	30.1	-6.6	23.5	54.0	30.5	100.0	9.0
2 913.006	H	29.7	-6.2	23.5	54.0	30.5	100.0	4.0
3 729.109	V	29.1	-3.9	25.2	54.0	28.8	224.0	349.0
4 311.613	H	29.8	-3.4	26.4	54.0	27.6	110.0	2.0

Note1) (P) : Abbreviation of Antenna Polarity

Note2) Reading C/AV : Received raw C/Average signal

Note3) Factor = Antenna factor + Cable loss – Amplifier gain

Note4) Level C/AV = Reading C/AV + Factor, Real signal C/Average level

Note5) Margin C/AV = Limit – Level C/AV

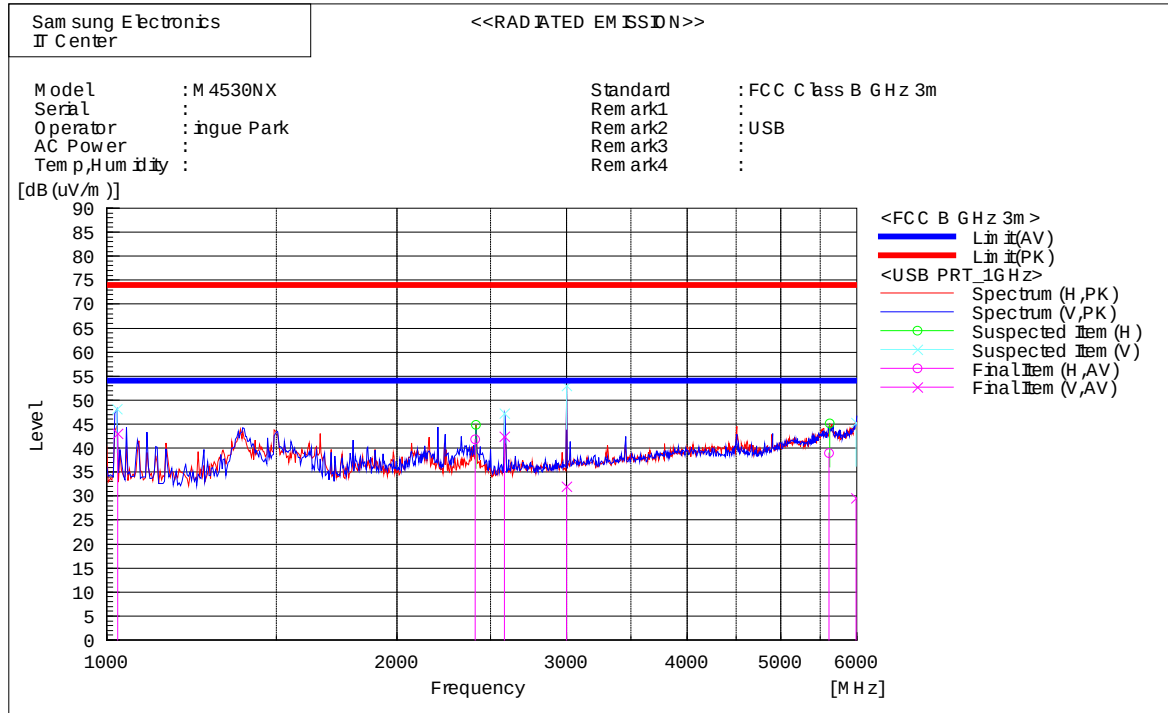
C/AV : Abbreviation of C/Average

Note6) Radiated emissions (Tx / Rx frequency and Harmonics) from the transceiver shall be ignored.

- Wi-Fi Router : Operating frequencies (2 402 ~ 2 482) MHz / Harmonics (4 804 ~ 4 964) MHz

- Operating Mode : 2

Test Graph and Results



Peak Measurement

Frequency [MHz]	(P) ¹⁾	Reading PK ²⁾ [dB(uV)]	Factor ³⁾ [dB(1/m)]	Level PK ⁴⁾ [dB(uV/m)]	Limit [dB(uV/m)]	Margin PK ⁵⁾ [dB]	Height [cm]	Angle [deg]
1 024.048	V	59.8	-11.7	48.1	74.0	25.9	100.0	120.0
2 414.830	H	52.6	-7.8	44.8	74.0	29.2	105.0	242.0
2 587.174	V	54.4	-7.2	47.2	74.0	26.8	103.0	193.0
3 000.000	V	59.0	-6.0	53.0	74.0	21.0	131.0	156.0
5 621.243	H	45.7	-0.5	45.2	74.0	28.8	139.0	330.0
5 987.976	V	44.1	1.1	45.2	74.0	28.8	116.0	274.0

Note1) (P) : Abbreviation of Antenna Polarity

Note2) Reading PK : Received raw Peak signal

Note3) Factor = Antenna factor + Cable loss – Amplifier gain

Note4) Level PK = Reading PK + Factor, Real signal Peak level

Note5) Margin PK = Limit – Level PK

PK : Abbreviation of Peak

C/Average Measurement

Frequency [MHz]	(P) ¹⁾	Reading C/AV ²⁾ [dB(uV)]	Factor ³⁾ [dB(1/m)]	Level C/AV ⁴⁾ [dB(uV/m)]	Limit [dB(uV/m)]	Margin C/AV ⁵⁾ [dB]	Height [cm]	Angle [deg]
1 025.872	V	54.9	-11.8	43.1	54.0	10.9	100.0	119.0
2 410.401	H	49.6	-7.8	41.8	54.0	12.2	104.0	243.0
2 584.228	V	49.6	-7.2	42.4	54.0	11.6	100.0	192.0
2 999.940	V	38.1	-6.0	32.1	54.0	21.9	127.0	157.0
5 617.666	H	39.4	-0.5	38.9	54.0	15.1	136.0	329.0
5 990.231	V	28.5	1.1	29.6	54.0	24.4	115.0	273.0

Note1) (P) : Abbreviation of Antenna Polarity

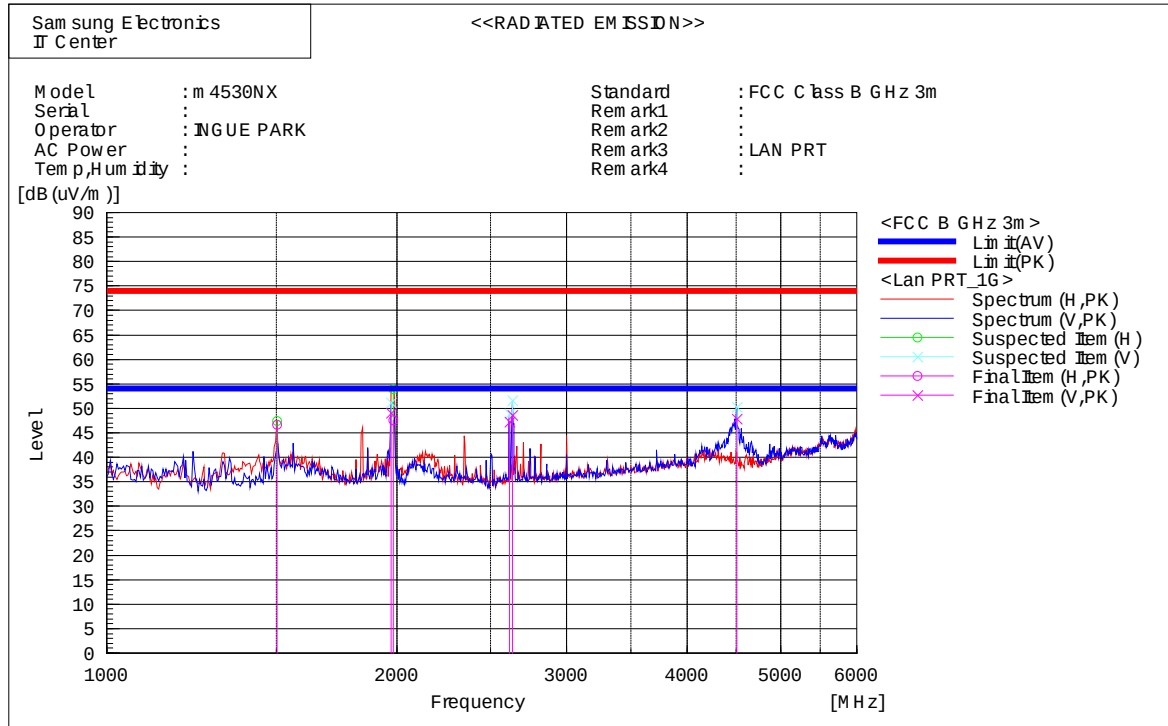
Note2) Reading C/AV : Received raw C/Average signal

Note3) Factor = Antenna factor + Cable loss – Amplifier gain

Note4) Level C/AV = Reading C/AV + Factor, Real signal C/Average level

Note5) Margin C/AV = Limit – Level C/AV

C/AV : Abbreviation of C/Average

- Operating Mode : 3**Test Graph and Results****Peak Measurement**

Frequency [MHz]	(P) ¹⁾	Reading PK ²⁾ [dB(uV)]	Factor ³⁾ [dB(1/m)]	Level PK ⁴⁾ [dB(uV/m)]	Limit [dB(uV/m)]	Margin PK ⁵⁾ [dB]	Height [cm]	Angle [deg]
1 501.002	H	58.7	-11.4	47.3	74.0	26.7	124.0	131.0
1 973.948	V	61.0	-9.7	51.3	74.0	22.7	105.0	120.0
1 981.964	H	63.6	-9.7	53.9	74.0	20.1	129.0	145.0
2 619.239	V	56.1	-7.1	49.0	74.0	25.0	110.0	7.0
2 635.271	V	58.6	-7.0	51.6	74.0	22.4	199.0	7.0
4 503.006	V	53.8	-3.5	50.3	74.0	23.7	100.0	64.0

Note1) (P) : Abbreviation of Antenna Polarity

Note2) Reading PK : Received raw Peak signal

Note3) Factor = Antenna factor + Cable loss – Amplifier gain

Note4) Level PK = Reading PK + Factor, Real signal Peak level

Note5) Margin PK = Limit – Level PK

PK : Abbreviation of Peak

C/Average Measurement

Frequency [MHz]	(P) ¹⁾	Reading C/AV ²⁾ [dB(uV)]	Factor ³⁾ [dB(1/m)]	Level C/AV ⁴⁾ [dB(uV/m)]	Limit [dB(uV/m)]	Margin C/AV ⁵⁾ [dB]	Height [cm]	Angle [deg]
1 500.060	H	53.2	-11.5	41.7	54.0	12.3	120.0	132.0
1 977.335	H	48.0	-9.7	38.3	54.0	15.7	103.0	144.0
1 979.138	V	45.8	-9.7	36.1	54.0	17.9	128.0	121.0
2 613.087	V	50.3	-7.1	43.2	54.0	10.8	110.0	8.0
2 643.427	V	50.4	-7.0	43.4	54.0	10.6	197.0	8.0
4 499.970	V	44.7	-3.5	41.2	54.0	12.8	100.0	63.0

Note1) (P) : Abbreviation of Antenna Polarity

Note2) Reading C/AV : Received raw C/Average signal

Note3) Factor = Antenna factor + Cable loss – Amplifier gain

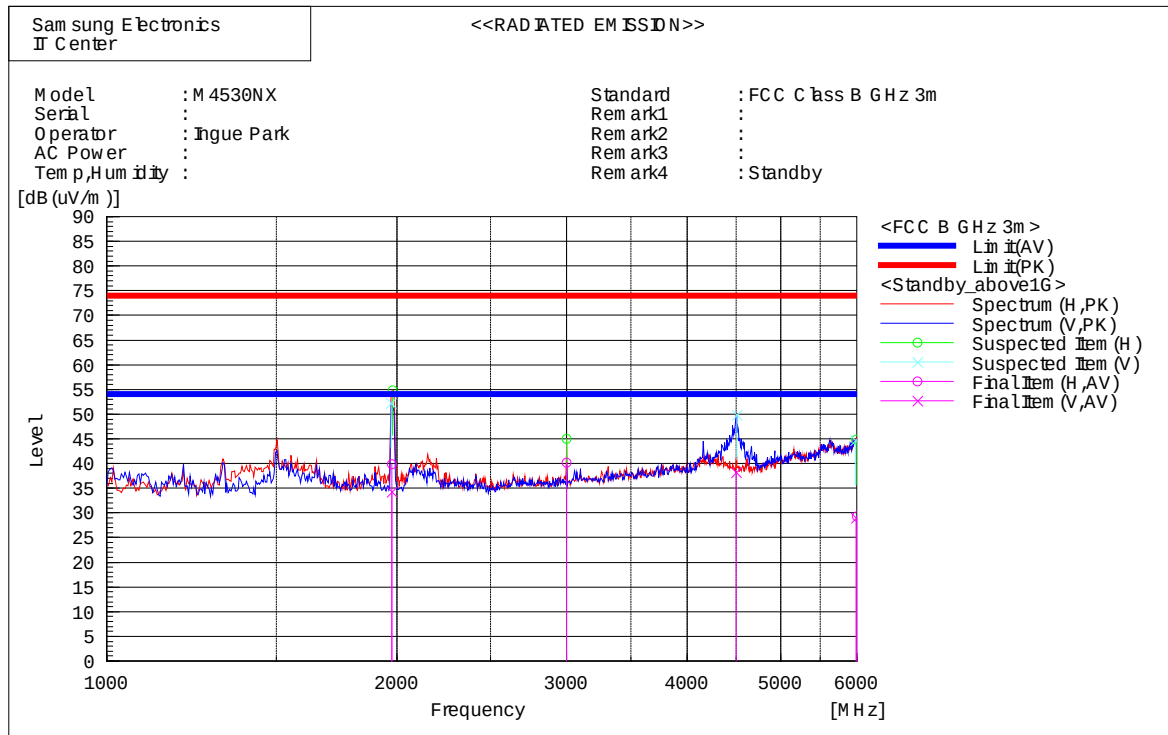
Note4) Level C/AV = Reading C/AV + Factor, Real signal C/Average level

Note5) Margin C/AV = Limit – Level C/AV

C/AV : Abbreviation of C/Average

- Operating Mode : 4

Test Graph and Results



Peak Measurement

Frequency [MHz]	(P) ¹⁾	Reading PK ²⁾ [dB(uV)]	Factor ³⁾ [dB(1/m)]	Level PK ⁴⁾ [dB(uV/m)]	Limit [dB(uV/m)]	Margin PK ⁵⁾ [dB]	Height [cm]	Angle [deg]
1 973.948	V	61.9	-9.7	52.2	74.0	21.8	113.0	116.0
1 977.956	H	64.5	-9.7	54.8	74.0	19.2	101.0	143.0
3 000.000	H	51.0	-6.0	45.0	74.0	29.0	214.0	159.0
4 503.006	V	53.4	-3.5	49.9	74.0	24.1	125.0	65.0
5 981.964	V	43.7	1.1	44.8	74.0	29.2	100.0	355.0
5 987.976	H	43.8	1.1	44.9	74.0	29.1	137.0	53.0

Note1) (P) : Abbreviation of Antenna Polarity

Note2) Reading PK : Received raw Peak signal

Note3) Factor = Antenna factor + Cable loss – Amplifier gain

Note4) Level PK = Reading PK + Factor, Real signal Peak level

Note5) Margin PK = Limit – Level PK

PK : Abbreviation of Peak

C/Average Measurement

Frequency [MHz]	(P) ¹⁾	Reading C/AV ²⁾ [dB(uV)]	Factor ³⁾ [dB(1/m)]	Level C/AV ⁴⁾ [dB(uV/m)]	Limit [dB(uV/m)]	Margin C/AV ⁵⁾ [dB]	Height [cm]	Angle [deg]
1 974.369	H	49.5	-9.7	39.8	54.0	14.2	111.0	152.0
1 975.130	V	44.0	-9.7	34.3	54.0	19.7	100.0	126.0
3 000.261	H	46.2	-6.0	40.2	54.0	13.8	211.0	158.0
4 495.281	V	41.7	-3.5	38.2	54.0	15.8	124.0	66.0
5 986.263	V	27.9	1.1	29.0	54.0	25.0	100.0	354.0
5 996.363	H	28.2	1.1	29.3	54.0	24.7	134.0	54.0

Note1) (P) : Abbreviation of Antenna Polarity

Note2) Reading C/AV : Received raw C/Average signal

Note3) Factor = Antenna factor + Cable loss – Amplifier gain

Note4) Level C/AV = Reading C/AV + Factor, Real signal C/Average level

Note5) Margin C/AV = Limit – Level C/AV

C/AV : Abbreviation of C/Average

Appendix – EUT photography



Front View



Rear View & Label Location



Right View (Inside View)

SAMSUNG

Model: **ProXpress M4530NX**

FCC ID: **A3LSLM4530NX**

Volts: **AC 110-127 V**

Hertz: **50/60 Hz**

Amps: **8.5 A**

Manufactured: **AUGUST 2014**

Samsung Electronics Co., Ltd.
Suwon, Korea, 443-742
Place: **M264**



LISTED

3UU7

US E337632

I.T.E.

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.

CAN ICES-3 (B)/NMB-3(B)

This product complies with 21 CFR Chapter 1, subchapter J.

M/C : **SL-M4530NX/XAA**



S/N : **ZDEDBJZF800001Z**

Made in China

Fabriqu  en Chine

REV.00

Label