Testing Laboratory
1190

FCC TEST REPORT

47 CFR FCC Rules and Regulations Part 15 Subpart B,

Class B Digital Device and Canada Standard ICES-003 Issue 5

Equipment	:	Wireless cable modem
Model No.	:	CG4500BD
Filing Type	:	Certification
FCC ID	:	PY313300237
Applicant	:	**NETGEAR Inc.** 350 East Plumeria Drive, San Jose, CA 95134, USA

Statement

- The test result refers exclusively to the test presented test model / sample.
- Without written approval of SPORTON International Inc., the test report shall not be reproduced except in full.
- Certificate or Test Report must not be used by the applicant to claim the product in this test report endorsement by TAF or any agency of U.S. government.

SPORTON International Inc.

No.8, Lane 724, Bo-ai St., Jhubei City, Hsinchu County 302, Taiwan, R.O.C.

Table of Contents

History of this test report

Report No.	Version	Issue Date	Description
FC380101	Rev.01	Aug. 13, 2013	Initial issue of report

Certificate No. : CB10208043

CERTIFICATE OF COMPLIANCE

Testing Laboratory
1190

47 CFR FCC Rules and Regulations Part 15 Subpart B,

Class B Digital Device and Canada Standard ICES-003 Issue 5

Equipment : Wireless cable modem

Model No. : CG4500BD

Applicant : **NETGEAR Inc.**
350 East Plumeria Drive, San Jose, CA 95134, USA

I **HEREBY** CERTIFY THAT :

The measurements shown in this test report were made in accordance with the procedures given in **ANSI C63.4 - 2009** and the energy emitted by this equipment was ***passed*** **CISPR PUB. 22** and **FCC Part 15** and **Canada Standard ICES-003** in both radiated and conducted emission **Class B** limits.
The test was carried out on ***Jun. 17, 2013*** at **SPORTON International Inc.** LAB.

Jack Deng
Engineering Manager

SPORTON International Inc.
No.8, Lane 724, Bo-ai St., Jhubei City, Hsinchu County 302, Taiwan, R.O.C.

1. General Description of Equipment under Test

1.1. Applicant

NETGEAR Inc.

350 East Plumeria Drive, San Jose, CA 95134, USA

1.2. Manufacturer

MAINTEK COMPUTER

233 Jinfeng Ra., Suzhou, Jiangsu, PRC

1.3. Basic Description of Equipment under Test

Equipment	:	Wireless cable modem
Model No.	:	CG4500BD
RJ45 Cable	:	Non-Shielded, 1.5 m
Associated with interface cables		
RJ45 Cable	:	Non-Shielded, 20 m
RJ45 Cable x3	:	Non-Shielded, 1 m
Coaxial Cable	:	D-Shielded, 20 m
Data Cable Type	:	Please see section 2.2 of this test report for details
Power Supply Type	:	From Adapter
AC Power Cord	:	Wall-Mount, 2 pin
DC Power Cable	:	Non-Shielded, 1.8 m, 2 pin

The EUT Contains TX Module FCC IDs: PY3UPWL6031H2 for 2.4GHz and PY3UPWL6031H5 for 5GHz.

1.4. Feature of Equipment under Test

Adapter : NETGEAR / SAS030F1 NA / P/N: 332-10643-01

INPUT : 100V-120V ~ 47-63Hz, 0.9A

OUTPUT : 12.0V, 2.5A

Adapter : NETGEAR / P030WF120B 11200-6LF/ P/N: 332-10200-02

INPUT : 100V-240V ~ 50-60Hz, 1.0A

OUTPUT : 12.0V, 2.5A

Adapter : NETGEAR / SAS030F1 NA 30.0W / P/N: 332-10451-01

INPUT : 100V-120V ~ 47-63Hz, 0.9A

OUTPUT : 12.0V, 2.5A

Please refer to user manual for others.

2. Test Configuration of Equipment under Test

2.1. Test Manner

a. During testing, the personal computer and equipment positions were varied according to ANSI C63.4-2009 and configuration operated in a manner which tended to maximize its emission characteristics in a typical application.

b. The equipment of this report is almost same as the original report, Report No. FD341803, the only difference is additional a RJ45 cable. The EMI test was performed according the worse case of original tests. The equipment under test were performed the following test modes:

Test Items	Function Type
AC Conducted Emission	Mode 1. LAN: 1Gbps + WLAN(2.4G+5G), Adaptor: P030WF120B
Radiated Emissions	Mode 1. LAN: 1Gbps + WLAN(2.4G+5G), Adaptor: P030WF120B **< above 1GHz >** The Radiated above 1GHz test data was same as original report, it was reported as final data.

c. Frequency range investigated: Conduction 150 kHz to 30 MHz, Radiation 30 MHz to 12,000 MHz.

2.2. Description of Test System

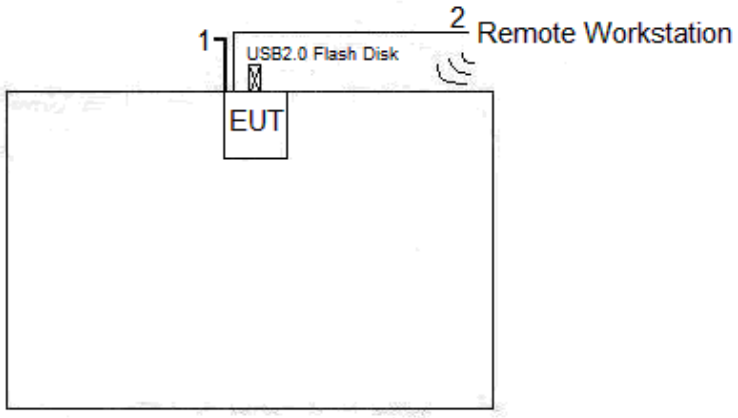
<Conducted and Radiated below 1GHz>

No.	Peripheral	Manufacturer	Model Number	FCC ID	Cable / Spec. Description	Placed
1	USB2.0 Flash Disk	TRANSCEND	JetFlash V85	DoC	N/A	Local
2	Notebook	DELL	P15F /E5520	DoC	N/A	Remote
3	Personal Computer x3	DELL	DCTA	DoC	N/A	Remote
4	LCD Monitor x3	DELL	E198WFPF	DoC	D-SUB Cable, D-Shielded, 1.8m	Remote
5	Keyboard x3	DELL	SK-8175	DoC	USB Cable, AL-F-Shielded, 1.8m	Remote
6	Mouse x3	DELL	MOC5UO	DoC	USB Cable, AL-F-Shielded, 1.8m	Remote
7	Wireless USB Adapter	TOTOLINK	N500UD	DoC	N/A	Remote
8	Emulator	CASA	C2200	N/A	Coaxial Cable, D-Shielded, 20m	Remote

<Radiated above 1GHz>

No.	Peripheral	Manufacturer	Model Number	FCC ID	Cable / Spec. Description	Placed
1	USB2.0 Flash Disk	TRANSCEND	JetFlash V85	DoC	N/A	Local
2	Notebook	DELL	PP05L (D600)	DoC	N/A	Remote
3	Personal Computer x3	DELL	DCTA (T3500)	DoC	N/A	Remote
4	LCD Monitor x3	DELL	2408WFPB	DoC	D-SUB Cable, D-Shielded, 1.8m	Remote
5	Keyboard x3	DELL	SK-8175	DoC	USB Cable, AL-F-Shielded, 1.8m	Remote
6	Mouse x3	DELL	MOC5UO	DoC	USB Cable, AL-F-Shielded, 1.8m	Remote
7	Wireless USB Adapter	TOTOLINK	N500UD	DoC	N/A	Remote
8	Emulator	CASA	C2200	N/A	Coaxial Cable, D-Shielded, 20m	Remote

2.3. Connection Diagram of Test System



1. These RJ45 cables are floating.
2. These cables (included RJ45 & Coaxial cable) are connected from the EUT to the remote workstation.

Note: Above support unit on behalf of the meaning, please refer to section 2.2.

3. Test Software

During the test, the following programs under Win XP from remote workstation were executed:

<for remote PC>

- Executed "ping.exe" to link with the EUT to receive and transmit data by RJ45 cable & WLAN.
- Remote PC link with the EUT to receive and transmit data via remote Emulator by Coaxial cable.

<for remote NB>

- Executed "ping.exe" to link with the EUT to receive and transmit data by WLAN.

4. General Information of Test

4.1. Test Facility

Test Site：SPORTON INTERNATIONAL INC.

Test Site Location : No. 3, Lane 238, Kang Lo Street, Nei Hwu District, Taipei 11424, Taiwan, R.O.C.
TEL : 886-2-2631-4739
FAX : 886-2-2631-9740

Test Site No. : CO01-NH, OS02-NH

Test Site Location : No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.
TEL : 886-3-327-3456
FAX : 886-3-318-0055

Test Site No. : 03CH04-HY

4.2. Test Voltage

AC 120V / 60Hz

4.3. Measurement Procedure

ANSI C63.4-2009

4.4. Test in Compliance with

CISPR PUB. 22 and FCC Part 15 and Canada Standard ICES-003 Issue 5
15.107 Conducted Emission
15.109 Radiated Emission

4.5. Frequency Range Investigated

a. Conducted emission test: from 150 kHz to 30 MHz
b. Radiated emission test: from 30 MHz to 12,000 MHz

4.6. Test Distance

a. The test distance of radiated emission test from antenna to EUT is 10 M (from 30MHz~1000MHz).
b. The test distance of radiated emission test from antenna to EUT is 3 M (from 1GHz~ 9GHz).
c. The test distance of radiated emission test from antenna to EUT is 1 M (from 9GHz~ 12GHz).

5. Test of Conducted Powerline

Conducted Emissions were measured from 150 kHz to 30 MHz with a bandwidth of 9 kHz and return leads of the EUT according to the methods defined in ANSI C63.4-2009 Section 3.1. The EUT was placed on a nonmetallic stand in a shielded room 0.8 meter above the ground plane as shown in section 5.3. The interface cables and equipment positioning were varied within limits of reasonable applications to determine the position produced maximum conducted emissions.

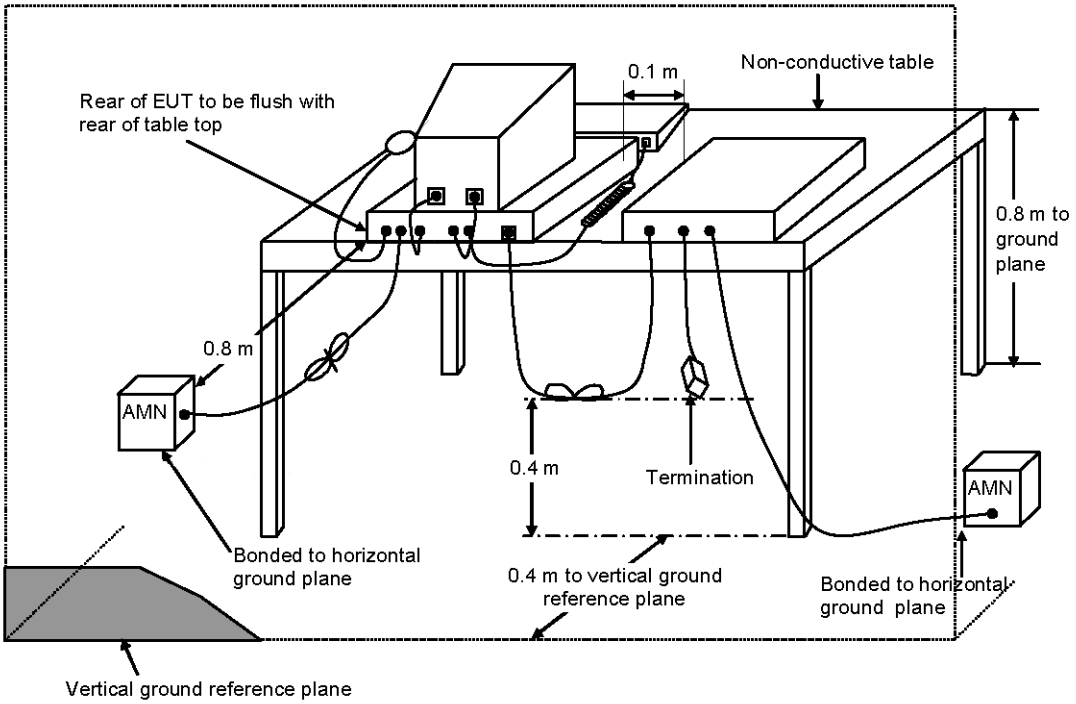
5.1. Description of Major Test Instruments

Test Receiver Parameters	Setting
Test Receiver	R&S ESCS 30
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz
Signal Input	9 kHz - 2.75 GHz

5.2. Test Procedures

a. The EUT was placed on a desk 0.8 meters height from the metal ground plane and 0.4 meter from the conducting wall of the shielding room and it was kept at least 0.8 meters from any other grounded conducting surface.
b. Connect EUT to the power mains through a line impedance stabilization network (LISN).
c. All the support units are connect to the other LISN.
d. The LISN provides 50 ohm coupling impedance for the measuring instrument.
e. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
f. Both sides of AC line were checked for maximum conducted interference.
g. The frequency range from 150 kHz to 30 MHz was searched.
h. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

5.3. Typical Test Setup Layout of Conducted Powerline



a. AMN is 80 cm from the EUT and at least 80 cm from other units and other metal planes.
b. EUT is connected to one artificial mains network (AMN).
c. All other units of a system are powered from a second AMN. A multiple outlet strip can be used for multiple mains cords.
d. Rear of EUT to be flushed with rear of table top.
e. Peripherals shall be placed at a distance of 10 cm from each other and from the controller, except for the monitor which, if this is an acceptable installation practice, shall be placed directly on the top of the controller.
f. If cables, which hang closer than 40 cm to the horizontal metal ground plane, cannot be shortened to appropriate length, the excess shall be folded back and forth forming a bundle 30 cm to 40 cm long.
g. Mains cords and signal cables shall be positioned for their entire lengths, as far as possible, at 40 cm from the vertical reference plane.
h. Cables of hand operated devices, such as keyboards, mice, etc. shall be placed as for normal usage.

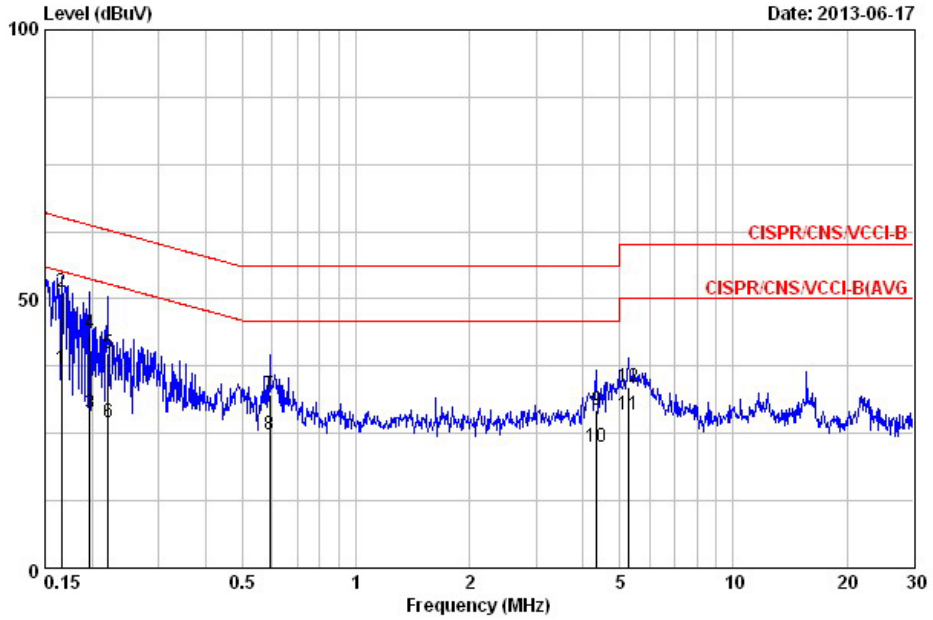
5.4. Test Result of AC Powerline Conducted Emission

Test Mode	Mode 1	**Test Site No.**	CO01-NH
Test Frequency	0.15 MHz ~ 30 MHz	**Test Engineer**	Willy
Temperature	25 ℃	**Relative Humidity**	54 %

Note: 1. Corrected Reading (dBμV) = LISN Factor + Cable Loss + Read Level = Level
2. All emissions not reported here are more than 10 dB below the prescribed limit.

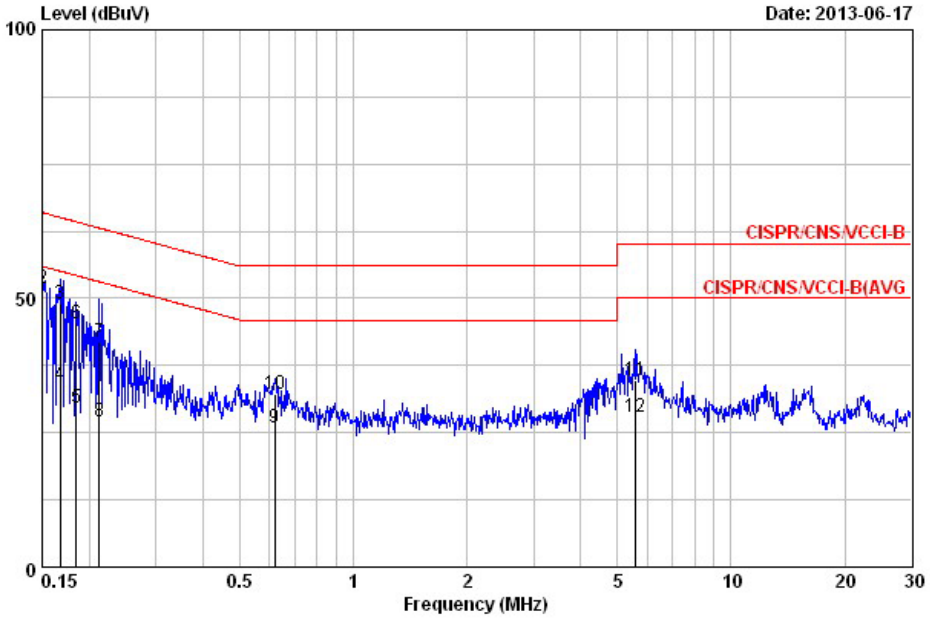
■ The test was passed at the minimum margin that marked by the frame in the following data

Line



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.166	36.90	-18.27	55.16	26.63	10.17	0.10	AVERAGE
2 @	0.166	51.36	-13.81	65.16	41.09	10.17	0.10	QP
3	0.198	28.72	-25.00	53.71	18.45	10.17	0.10	AVERAGE
4	0.198	43.47	-20.25	63.71	33.20	10.17	0.10	QP
5	0.221	39.96	-22.83	62.79	29.69	10.17	0.10	QP
6	0.221	27.05	-25.74	52.79	16.78	10.17	0.10	AVERAGE
7	0.592	32.13	-23.87	56.00	21.85	10.18	0.10	QP
8	0.592	24.81	-21.19	46.00	14.53	10.18	0.10	AVERAGE
9	4.338	29.44	-26.56	56.00	18.99	10.24	0.21	QP
10	4.338	22.41	-23.59	46.00	11.96	10.24	0.21	AVERAGE
11	5.277	28.51	-21.49	50.00	18.02	10.26	0.23	AVERAGE
12	5.277	33.48	-26.52	60.00	22.99	10.26	0.23	QP

Neutral



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.150	37.00	-19.00	56.00	26.76	10.14	0.10	AVERAGE
2 @	0.150	51.89	-14.11	66.00	41.65	10.14	0.10	QP
3	0.168	48.99	-16.09	65.08	38.75	10.14	0.10	QP
4	0.168	33.83	-21.25	55.08	23.59	10.14	0.10	AVERAGE
5	0.184	29.64	-24.64	54.28	19.40	10.14	0.10	AVERAGE
6	0.184	45.40	-18.88	64.28	35.16	10.14	0.10	QP
7	0.213	41.92	-21.17	63.10	31.68	10.14	0.10	QP
8	0.213	27.03	-26.06	53.10	16.79	10.14	0.10	AVERAGE
9	0.621	25.96	-20.04	46.00	15.72	10.14	0.10	AVERAGE
10	0.621	32.15	-23.85	56.00	21.91	10.14	0.10	QP
11	5.594	34.74	-25.26	60.00	24.28	10.23	0.24	QP
12	5.594	28.05	-21.95	50.00	17.59	10.23	0.24	AVERAGE

6. Test of Radiated Emission

Radiated emissions from 30 MHz to 12,000 MHz were measured with a bandwidth of 120 kHz for 30 MHz to 1000 MHz and 1 MHz for above 1GHz according to the methods defines in ANSI C63.4-2009. The EUT was placed on a nonmetallic stand, 0.8 meter above the ground plane, as shown in section 6.3. The interface cables and equipment positions were varied within limits of reasonable applications to determine the positions producing maximum radiated emissions.

6.1. Description of Major Test Instruments

For Below 1GHz

Amplifier Parameters	Setting
Amplifier	BURGEON BPA-530
RF Gain	30 dB
Signal Input	0.01 MHz - 3 GHz

Test Receiver Parameters	Setting
Test Receiver	R&S ESCI
Resolution Bandwidth	120 kHz
Frequency Band	9 kHz - 3 GHz
Quasi-Peak Detector	ON for Quasi-Peak Mode
	OFF for Peak Mode

For above 1GHz

Amplifier Parameters	Setting
Amplifier	AGILENT 8449B
RF Gain	35 dB
Signal Input	1 GHz - 26.5 GHz

Spectrum Analyzer Parameters	Setting
Spectrum Analyzer	R&S FSP40
Attenuation	10 dB
Start Frequency	1 GHz
Stop Frequency	12 GHz
Resolution Bandwidth	1 MHz
Video Bandwidth	3 MHz
Signal Input	1 GHz - 40 GHz

6.2. Test Procedures

a. The EUT was placed on a rotatable table top 0.8 meter above ground.

b. The EUT was set 1m/3m(above 1GHz)/10m(below 1GHz) from the interference-receiving antenna which was mounted on the top of a variable height antenna tower.

c. The table was rotated 360 degrees to determine the position of the highest radiation.

d. The antenna is a half wave dipole and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.

e. For each suspected emission the EUT was arranged to its worst case and then tune the antenna tower (from 1 M to 4 M) and turn table (from 0 degree to 360 degrees) to find the maximum reading.

f. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

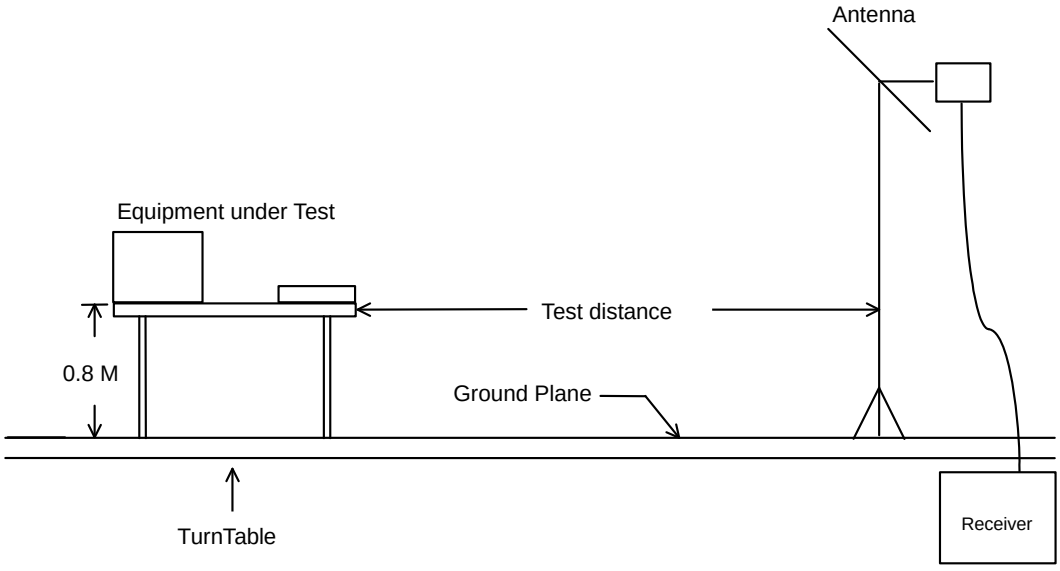
g. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method and reported.

h. The FCC Part 15.109 (g) permit parties seeking to authorize a digital device to choose to demonstrate that the device complies with either the Part 15 standards or the international standards found in Publication 22 of the International Special Committee on Radio Interference (CISPR).

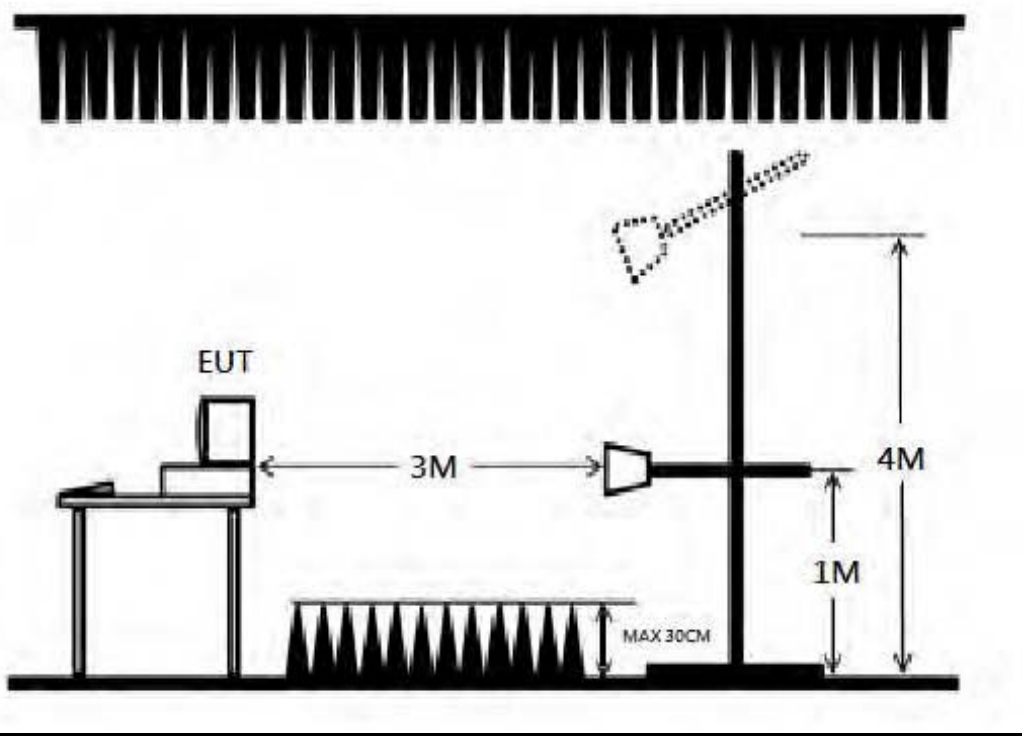
i. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

6.3. Typical Test Setup Layout of Radiated Emission

For Below 1GHz



For above 1GHz



6.4. Test Result of Radiated Emission for Below 1GHz

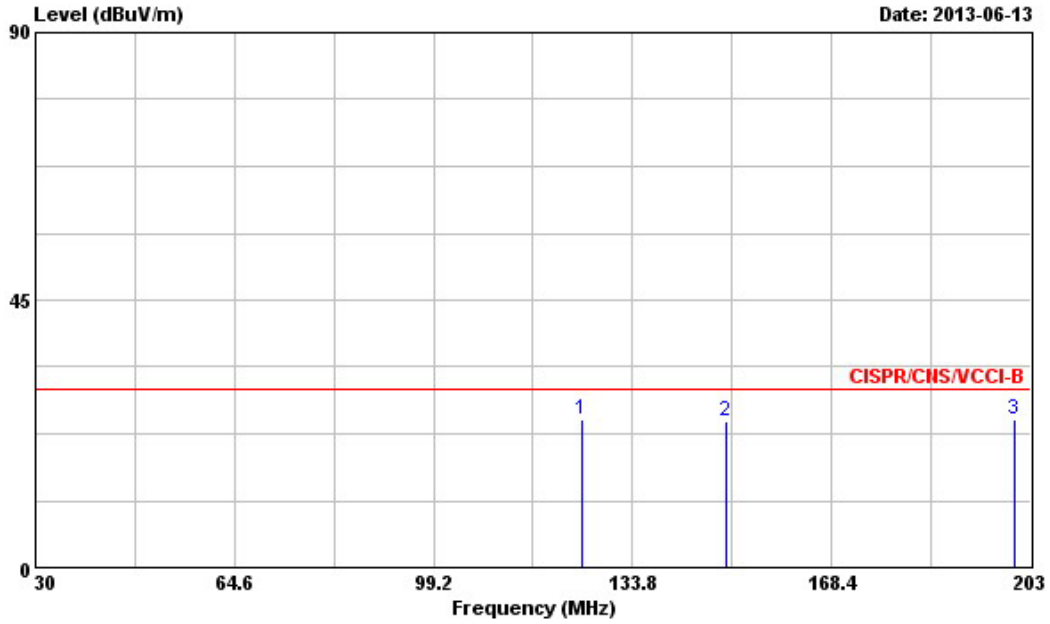
Test mode	Mode 1	**Test Site No.**	OS02-NH
Test frequency	30 MHz ~ 1000 MHz	**Test Engineer**	Chas
Temperature	30 ℃	**Relative Humidity**	64 %

Note: 1. Emission level (dBμV/m) = 20 log Emission level (μV/m)

2. Corrected Reading : Antenna Factor + Cable Loss + Read Level – Preamp Factor = Level

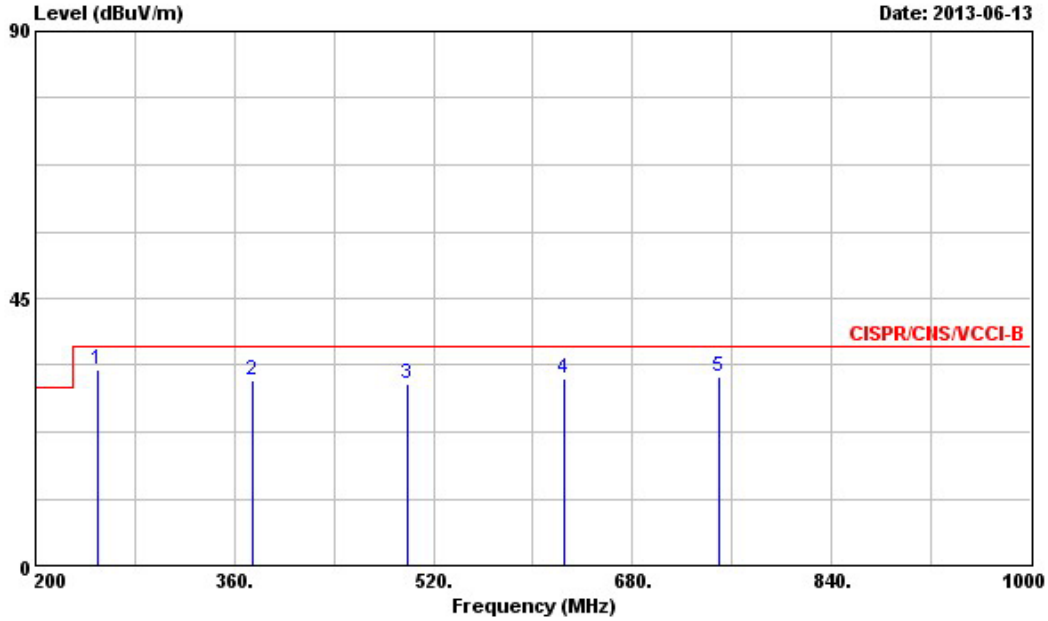
■ **The test was passed at the minimum margin that marked by the frame in the following data**

Vertical



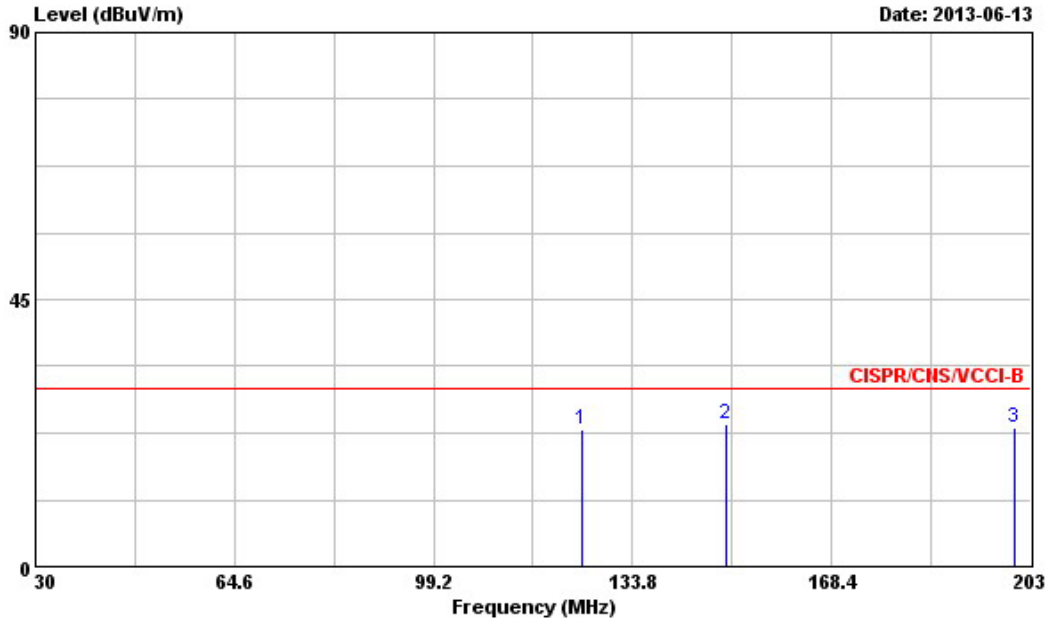
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 @	125.000	24.78	-5.22	30.00	42.55	12.30	1.47	31.54	QP	---	---
2	150.000	24.60	-5.40	30.00	43.91	10.59	1.58	31.48	Peak	---	---
3	200.060	24.75	-5.25	30.00	45.13	9.18	1.78	31.34	Peak	---	---

Vertical



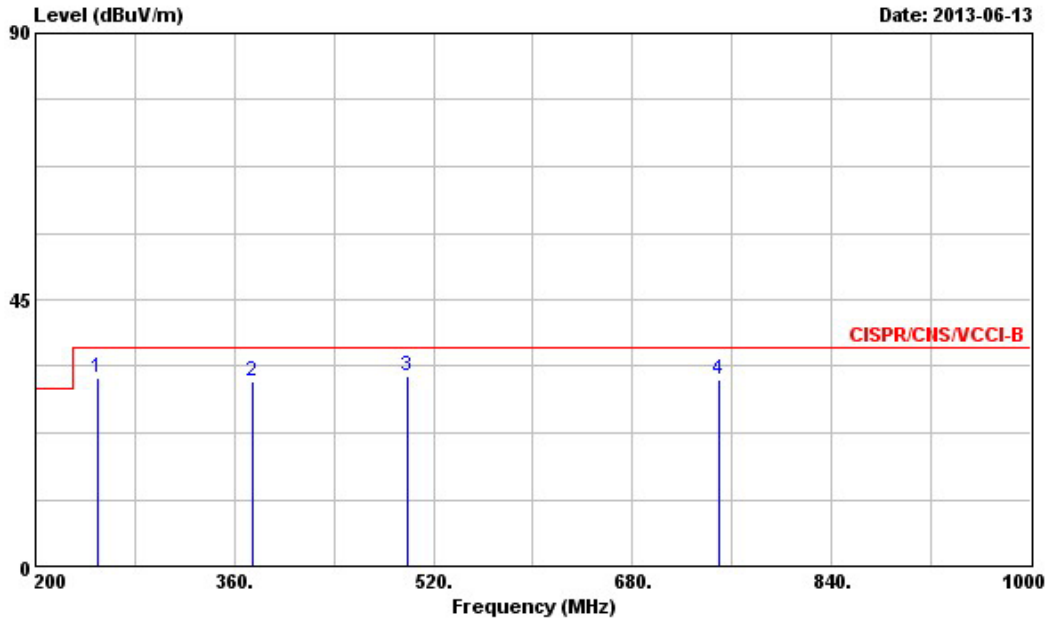
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 @	250.000	33.00	-4.00	37.00	50.00	12.34	1.96	31.30	QP	100	180
2	374.400	31.30	-5.70	37.00	45.06	15.16	2.40	31.32	Peak	---	---
3	499.200	30.51	-6.49	37.00	41.45	17.54	2.84	31.32	Peak	---	---
4	624.800	31.49	-5.51	37.00	40.75	18.89	3.14	31.29	Peak	---	---
5 @	749.600	31.83	-5.17	37.00	39.80	19.79	3.47	31.23	Peak	---	---

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	124.980	23.25	-6.75	30.00	41.02	12.30	1.47	31.54	Peak	---	---
2	150.000	24.05	-5.95	30.00	43.36	10.59	1.58	31.48	Peak	---	---
3	200.060	23.40	-6.60	30.00	43.78	9.18	1.78	31.34	Peak	---	---

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 @	249.600	31.84	-5.16	37.00	48.91	12.28	1.95	31.30	Peak	---	---
2	374.400	31.25	-5.75	37.00	45.01	15.16	2.40	31.32	Peak	---	---
3 @	499.200	32.08	-4.92	37.00	43.02	17.54	2.84	31.32	Peak	---	---
4	749.600	31.58	-5.42	37.00	39.55	19.79	3.47	31.23	Peak	---	---

6.5. Test Result of Radiated Emission for Above 1GHz

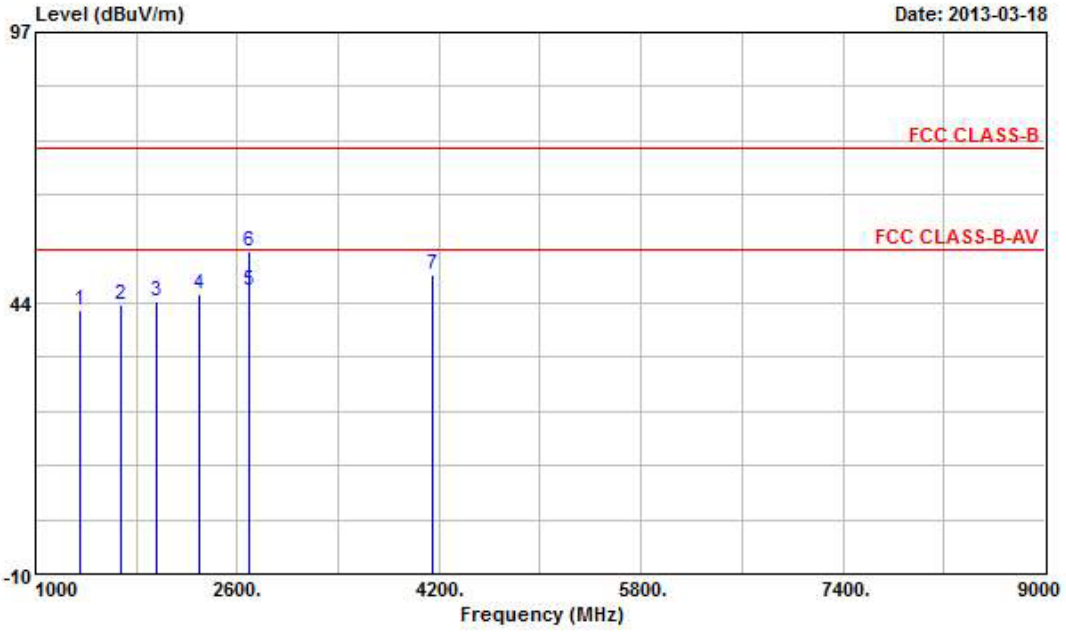
Test mode	Mode 1	**Test Site No.**	03CH04-HY
Test frequency	1 GHz ~ 12 GHz	**Test Engineer**	Kevin
Temperature	19 ℃	**Relative Humidity**	54 %

Note: 1. Emission level (dBμV/m) = 20 log Emission level (μV/m)

2. Corrected Reading : Antenna Factor + Cable Loss + Read Level – Preamp Factor = Level

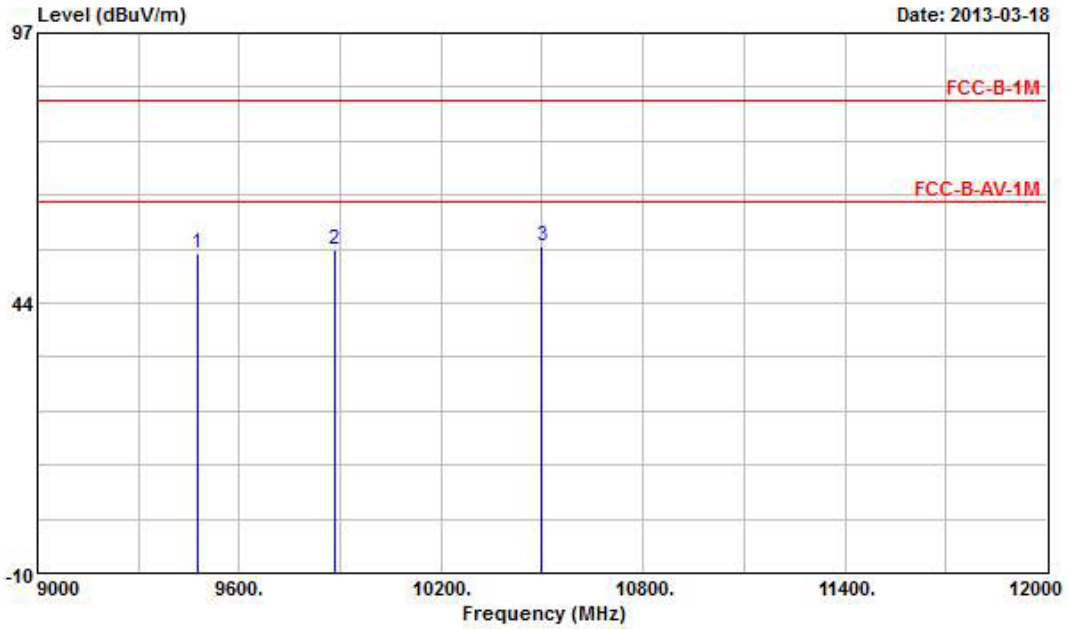
■ The test was passed at the minimum margin that marked by the frame in the following data

Vertical



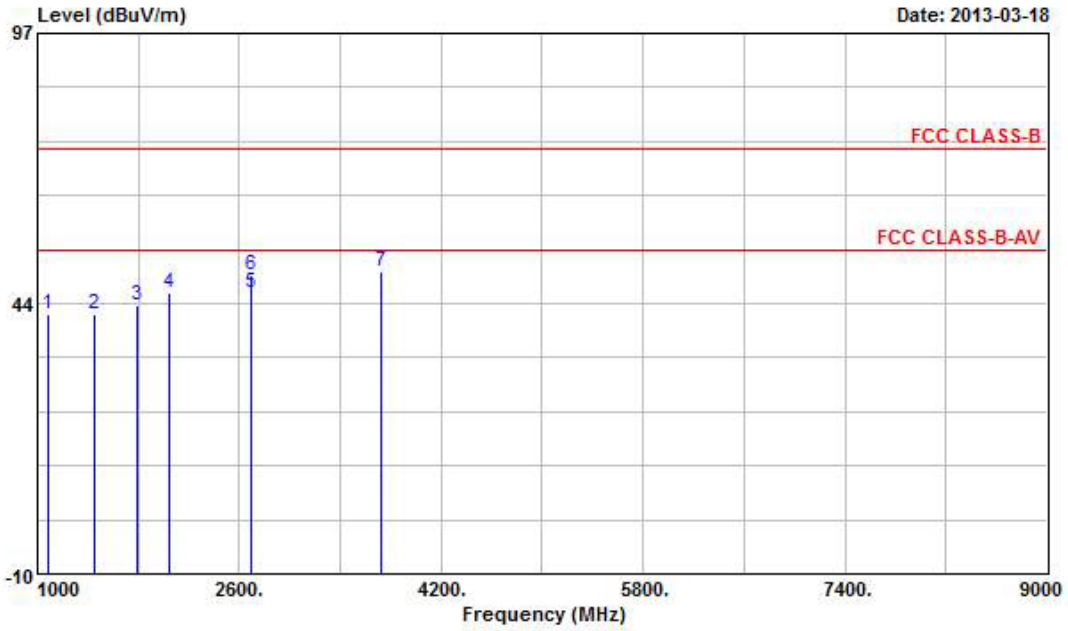
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	1348.000	42.08	-31.92	74.00	45.50	27.89	33.91	2.60	---	---	Peak
2	1676.000	43.04	-30.96	74.00	44.65	29.12	33.70	2.97	---	---	Peak
3	1966.000	44.01	-29.99	74.00	43.26	31.16	33.70	3.29	---	---	Peak
4 @	2300.000	45.37	-28.63	74.00	43.51	31.99	33.76	3.64	---	---	Peak
5 @	2700.000	45.97	-8.03	54.00	43.20	32.68	33.97	4.06	100	191	Average
6 @	2700.000	53.66	-20.34	74.00	50.89	32.68	33.97	4.06	---	---	Peak
7 @	4149.000	49.27	-24.73	74.00	43.97	33.97	34.15	5.48	---	---	Peak

Vertical



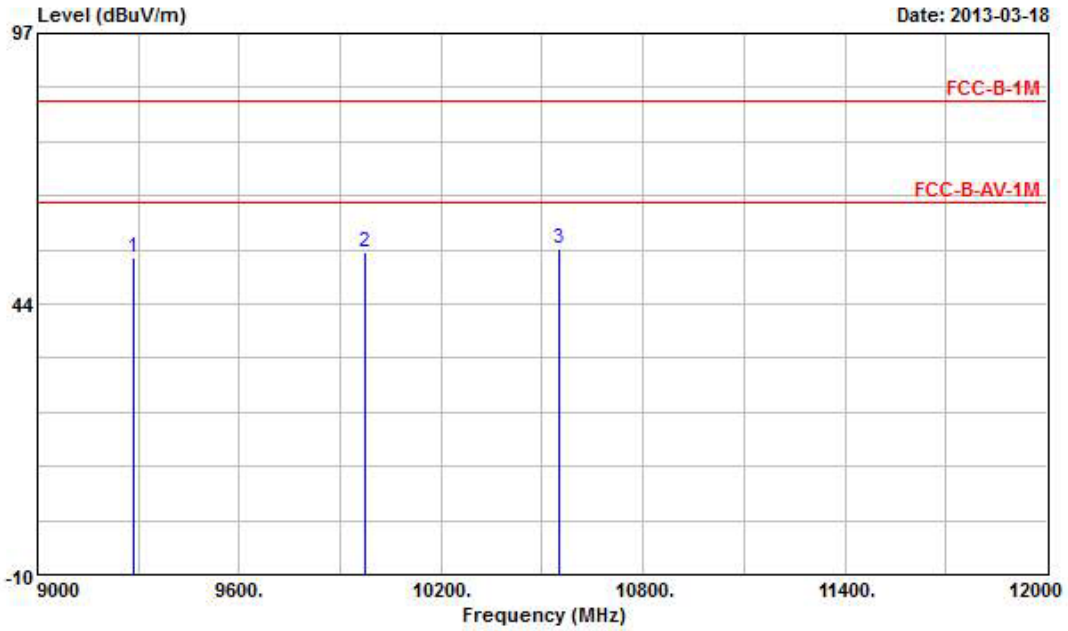
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	9478.000	53.27	-30.27	83.54	43.95	36.79	34.99	7.52	---	---	Peak
2	9886.000	54.08	-29.46	83.54	43.92	37.43	35.00	7.73	---	---	Peak
3 @	10500.000	54.68	-28.86	83.54	43.48	37.90	34.50	7.80	---	---	Peak

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	1078.000	41.55	-32.45	74.00	45.49	28.05	34.30	2.31	---	---	Peak
2	1446.000	41.41	-32.59	74.00	44.65	27.83	33.81	2.73	---	---	Peak
3	1796.000	42.99	-31.01	74.00	43.63	29.96	33.70	3.10	---	---	Peak
4 @	2038.000	45.56	-28.44	74.00	44.44	31.47	33.71	3.36	---	---	Peak
5 @	2700.000	45.59	-8.41	54.00	42.82	32.68	33.97	4.06	---	---	Average
6 @	2700.000	49.14	-24.86	74.00	46.37	32.68	33.97	4.06	---	---	Peak
7 @	3729.000	49.68	-24.32	74.00	45.37	33.34	34.16	5.13	---	---	Peak

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	9284.000	52.65	-30.89	83.54	43.44	36.71	34.92	7.42	---	---	Peak
2	9974.000	53.86	-29.68	83.54	43.51	37.57	35.00	7.78	---	---	Peak
3 @	10550.000	54.30	-29.24	83.54	43.05	37.92	34.47	7.80	---	---	Peak

7. Modification of EUT

None.

8. List of Measuring Equipment Used

Conducted Emission

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Receiver	R&S	ESCS 30	100357	9 kHz ~ 2.75 GHz	Nov. 22, 2012	Conduction (CO01-NH)
LISN	SCHAFFNER	NNB41	04/10053	9 kHz ~ 30 MHz	Nov. 20, 2012	Conduction (CO01-NH)
Power Filter	CORCOM	MR12030	N/A	30A*2	NCR	Conduction (CO01-NH)
RF Cable-CON	Suhner Switzerland	RG223/U	CB004	9 kHz ~ 30 MHz	Dec. 12, 2012	Conduction (CO01-NH)

Note: Calibration Interval of instruments listed above is one year.
NCR: NO CALIBRATION REQUEST.

Radiation Emission

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Open Area Test Site	SPORTON	OATS-10	OS02-NH	30 MHz - 1 GHz 10m, 3m	Dec. 31, 2012	Radiation (OS02-NH)
Amplifier	BURGEON	BPA-530	100203	0.01 MHz - 3 GHz	Jun. 04, 2013	Radiation (OS02-NH)
Receiver	R&S	ESCI	100497	9 kHz – 3 GHz	Apr. 26, 2013	Radiation (OS02-NH)
Bilog Antenna	CHASE	CBL6122B	2884	30 MHz - 2 GHz	Feb. 10, 2013	Radiation (OS02-NH)
Turn Table	EMCO	2080	9508-1805	0 - 360 degree	NCR	Radiation (OS02-NH)
Antenna Mast	ETS	2075-2	2385	1 m - 4 m	NCR	Radiation (OS02-NH)
RF Cable-R10m	MIYAZAKI	5DFB	CB044	30 MHz - 1 GHz	Sep. 14, 2012	Radiation (OS02-NH)

Note: Calibration Interval of instruments listed above is one year.
NCR: NO CALIBRATION REQUEST.

Radiation Emission Above 1GHz

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Spectrum Analyzer	R&S	FSP40	100593	9 kHz ~ 40 GHz	Sep. 14, 2012	Radiation
Amplifier	Agilent	8449B	3008A02120	1 GHz ~ 26.5 GHz	Aug. 16, 2012	Radiation
RF Cable-HIGH	SUHNER	SUCOFLEX 106	CB063-HF	1 GHz ~ 40 GHz	Nov. 21, 2012	Radiation
Horn Antenna	ETS	3117	00075954	1 GHz ~ 18 GHz	Oct. 31, 2012	Radiation

Note: Calibration Interval of instruments listed above is one year.

9. Uncertainty of Test Site

Uncertainty of Conducted Emission Measurement from 150kHz to 30MHz

Contribution	Uncertainty of x_i		$u(x_i)$
	dB	Probability Distribution	
Receiver reading	0.20	Normal(k=2)	0.10
Cable loss	0.19	Normal(k=2)	0.10
AMN insertion loss	2.50	Rectangular	0.63
Receiver Spec	1.50	Rectangular	0.43
Site imperfection	1.75	Rectangular	1.01
Mismatch	+0.44/-0.46	U-shape	0.32
combined standard uncertainty Uc(y)			**1.31**
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)			**2.62**

Uncertainty of Radiated Emission Measurement from 30MHz to 1000MHz

Contribution	Uncertainty of x_i		$u(x_i)$
	dB	Probability Distribution	
Receiver reading	0.27	Normal(k=2)	0.14
Antenna factor calibration	0.92	Normal(k=2)	0.46
Cable loss calibration	0.16	Normal(k=2)	0.08
Pre Amplifier Gain calibration	0.17	Normal(k=2)	0.09
RCV/SPA specification	2.50	Rectangular	0.72
Antenna Factor Interpolation for Frequency	1.00	Rectangular	0.29
Site imperfection	1.99	Rectangular	1.15
Mismatch	+0.50/-0.54	U-shaped	0.37
combined standard uncertainty Uc(y)			**1.52**
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)			**3.04**

Uncertainty of Radiated Emission Measurement from 1GHz to 18GHz

Input quantity	X_i	Uncertainty of x_i		$u(x_i)$	c_i	$c_i\ u(x_i)$
		dB	Probability distribution function	dB		dB
Receiver reading	V_r	± 0.1	k=1	0.10	1	0.10
Attenuation: antenna-receiver	L_c	± 0.1	k=2	0.05	1	0.05
Receiver corrections:	δ RC	± 1.0	k=2	0.50	1	0.50
Antenna factor	AF	± 1.3	k=2	0.65	1	0.65
Horn antenna corrections:						
AF frequency interpolation	δAF_f	± 0.5	Rectangular	0.29	1	0.29
AF height deviations	δAF_h	± 0.5	Rectangular	0.29	1	0.29
Directivity difference	δ Adir	± 1.0	Rectangular	0.58	1	0.58
Phase centre location	δA_{ph}	± 1.0	Rectangular	0.58	1	0.58
Cross-polarization	δA_{cp}	± 0.9	Rectangular	0.52	1	0.52
Mismatch: antenna-receiver	δ M	+0.9/-1.0	U-shaped	0.67	1	0.67
Site corrections						
Site imperfections	δ SA	± 4.0	Triangular	1.63	1	1.63
Measurement system repeatability	R	± 1.53	Rectangular	0.884	1	0.884
Cable loss	C	± 0.24	Rectangular	0.139	1	0.139
Preamplifier factor	PA	± 0.17	Rectangular	0.099	1	0.099
				$u_c(y)=$		**2.39**
				$2\ u_c(y)=$		**4.78**