Testing Laboratory
1190

FCC TEST REPORT

CERTIFICATION

according to

47 CFR FCC Rules and Regulations Part 15 Subpart B,
Class B Digital Device

Equipment	: TransferJet USB Adapter
Model No.	: TJM35420UX
FCC ID	: CJ6UPA5144TJ
Filing Type	: Certification
Applicant	: **TOSHIBA CORPORATION** 1-1, Shibaura 1-chome, Minato-ku, Tokyo, 105-8001, Japan

- The test result refers exclusively to the test presented test model / sample.
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- **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. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.

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History of this test report

Original Report Issue Date: Apr. 01, 2014

■ No additional attachment.

□ Additional attachment were issued as following record:

Report No.	Issue Date	Description

Certificate No. : FC3O0357

CERTIFICATE OF COMPLIANCE

Testing Laboratory
1190

CERTIFICATION

according to

47 CFR FCC Rules and Regulations Part 15 Subpart B,
Class B Digital Device

Equipment : TransferJet USB Adapter

Model No. : TJM35420UX

FCC ID : CJ6UPA5144TJ

Applicant : **TOSHIBA CORPORATION**
1-1, Shibaura 1-chome, Minato-ku,
Tokyo, 105-8001, Japan

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** in both radiated and conducted emission **Class B** limits.
The product sample received on **Oct. 03, 2013** and completely tested on **Oct. 25, 2013** at **SPORTON International Inc.** LAB.

Kero Kuo
Engineering Supervisor

SPORTON International Inc.

No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.

1. General Description of Equipment under Test

1.1. Applicant

TOSHIBA CORPORATION

1-1, Shibaura 1-chome, Minato-ku, Tokyo, 105-8001, Japan

1.2. Manufacturer

GOOD WAY TECHNOLOGY CO., LTD.

3F, No. 135, Ln. 235, Baociao Rd., Sindian Dist., New Taipei City 231, Taiwan, R.O.C.

1.3. Basic Description of Equipment under Test

Equipment	:	TransferJet USB Adapter
Model No.	:	TJM35420UX
Trade Name	:	TOSHIBA
Power Supply Type	:	From host system

1.4. Feature of Equipment under Test

Please refer to user manual.

1.5. Modification of EUT

None.

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 under test were performed the following test modes:

Test Items	Function Type
AC Conducted Emission	Mode 1. SEND DATA
Radiated Emissions	Mode 1. SEND DATA

c. Frequency range investigated: Conduction 150 kHz to 30 MHz, Radiation 30 MHz to 23 GHz.

2.2. Description of Test System

<For conducted and radiated emission below 1GHz >

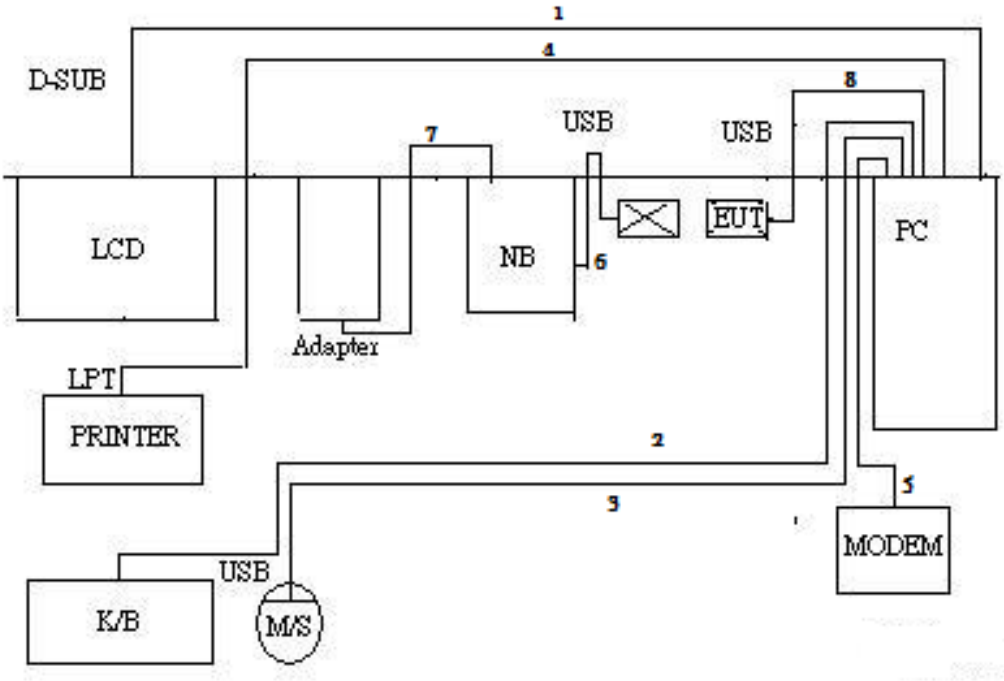
No.	Description	Manufacturer	Model	FCC ID	Signal Cable Description
1	PC	DELL	DCTA	DOC	-
2	LCD Monitor”19”	DELL	E198WFPF	DOC	D-SUB Cable, D-Shielded, 1.8m
3	Keyboard	DELL	SK-8175	DOC	USB Cable, AL-F-Shielded, 1.8m
4	Mouse	DELL	MOC5UO	DOC	USB Cable, AL-F-Shielded, 1.8m
5	Printer	HP	C2642A	B94C2642X	LPT Cable, D-Shielded, 1.2m
6	Modem	ACEEX	DM1414	IFAXDM1414	RS-232 Cable, D-Shielded, 1.15m
7	Notebook	DELL	E5520	DOC	-
8	TransferJet Micro USB Adapter	TOSHIBA	TJM35420MU	-	USB Cable, D-Shielded, 1.0m

<For radiated emission above 1GHz>

No.	Description	Manufacturer	Model	FCC ID	Signal Cable Description
1	PC	DELL	DCTA	DoC	-
2	LCD Monitor”19”	DELL	U2410	DoC	D-SUB Cable, D-Shielded, 1.8m
3	Keyboard	DELL	SK-8175	DoC	USB Cable, AL-F-Shielded, 1.8m
4	Mouse	DELL	MOC5UO	DoC	USB Cable, AL-F-Shielded, 1.8m
5	Printer	HP	C2642A	B94C2642X	LPT Cable, D-Shielded, 1.2m
6	Modem	ACEEX	DM1414	IFAXDM1414	RS-232 Cable, D-Shielded, 1.15m
7	Notebook	DELL	PP05L	DoC	-
8	TransferJet Micro USB Adapter	TOSHIBA	TJM35420MU	-	USB Cable, D-Shielded, 1.0m

2.3. Connection Diagram of Test System

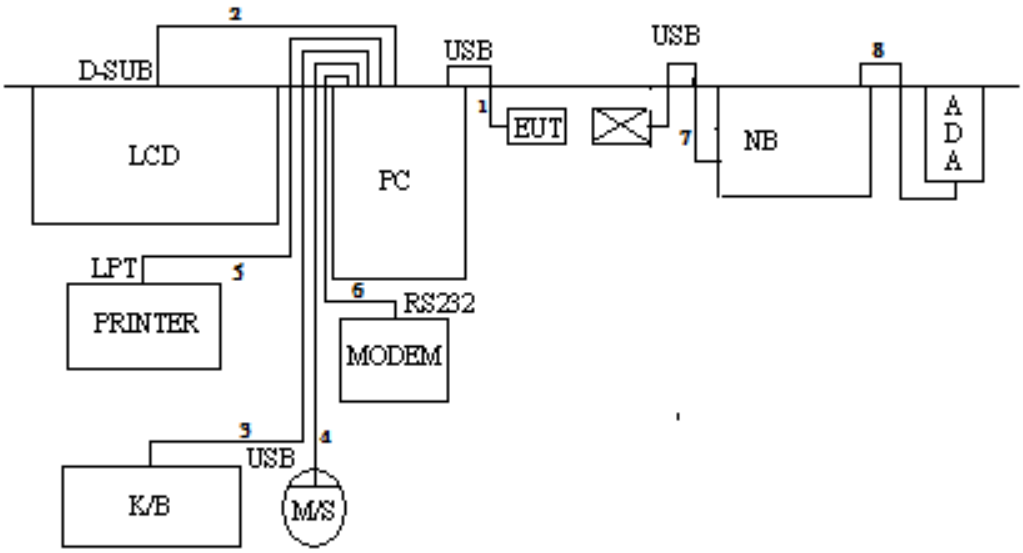
< Conducted Emission >



1. The D-DUB cable is connected from the PC to the support unit 2.
2. The USB cable is connected from the PC to the support unit 3.
3. The I/O cable is connected from the PC to the support unit 4.
4. The I/O cable is connected from the PC to the support unit 5.
5. The I/O cable is connected from the PC to the support unit 6.
6. The USB cable is connected from the Notebook to the support unit 8.
7. The I/O cable is connected from the Notebook to the Adapter.
8. The USB cable is connected from the PC to the EUT.

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

< Radiated Emission >



1. The USB cable is connected from the PC to the EUT.
2. The D-SUB cable is connected from the PC to the support unit 2.
3. The USB cable is connected from the PC to the support unit 3.
4. The USB cable is connected from the PC to the support unit 4.
5. The I/O cable is connected from the PC to the support unit 5.
6. The RS232 cable is connected from the EUT to the support unit 6.
7. The USB cable is connected from the Notebook to the support unit 8.
8. The I/O cable is connected from the Notebook to the Adapter.

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

3. Test Software

Two executive programs, “EMITEST.exe & EMCTEST.exe” under WIN XP, which generate a complete line of continuously repeating “H” pattern were used as the test software.

The program was executed as follows :

a. Turn on the power of all equipment.
b. The PC reads the test program from the hard disk drive and runs it.
c. The PC sends "H" pattern to the monitor, and the monitor displays "H" patterns on the screen.
d. The PC sends "H" messages to the printer, and then the printer prints them on the paper.
e. The PC sends signal messages to the modem.
f. The PC sends signal messages to the internal Hard Disk, and the Hard Disk reads and writes the message.
g. Repeat the steps from c to f.
h. Executed “TJetUSBTransfer“ to link with the NB to keep transmitting and receiving data via EUT.

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, OS01-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. Uncertainty of Test Site

Test Items	Test Site No.	Uncertainty	Remark
Conducted Emissions	CO01-NH	± 2.62dB	Confidence levels of 95%
Radiated Emissions below 1GHz	OS01-NH	± 2.80dB	Confidence levels of 95%
Radiated Emissions above 1GHz	03CH04-HY	± 4.78dB	Confidence levels of 95%

4.3. Test Voltage

AC 120V / 60Hz

4.4. Measurement Procedure

ANSI C63.4-2009

4.5. Test in Compliance with

CISPR PUB. 22 and Part 15 Subpart B
15.107 Conducted Emission
15.109 Radiated Emission

4.6. Frequency Range Investigated

a. Conducted emission test: from 150 kHz to 30 MHz

b. Radiated emission test: from 30 MHz to 23 GHz

4.7. Test Distance

c. The test distance of radiated emission test from antenna to EUT is 10 M (from 30MHz~1000MHz).

d. The test distance of radiated emission test from antenna to EUT is 3 M (from 1GHz~ 9GHz).

e. The test distance of radiated emission test from antenna to EUT is 1 M (from 9GHz~ 23GHz).

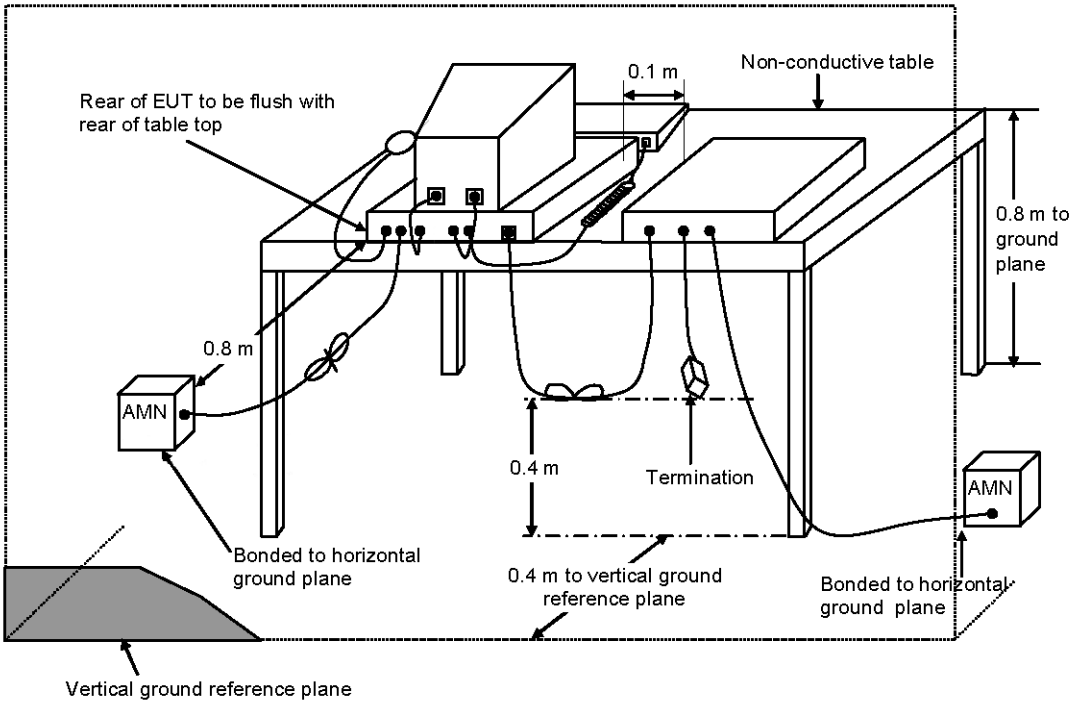
5. Test of Conducted Powerline

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, Clause 7. The EUT was placed on a nonmetallic stand in a shielded room 0.8 meters 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 producing maximum conducted emissions.

5.1. Test Procedures

a. The EUT was warmed up for 15 minutes before testing started.
b. 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.
c. Connect EUT to the power mains through a line impedance stabilization network (LISN).
d. All the support units are connect to the other LISN.
e. The LISN provides 50 ohm coupling impedance for the measuring instrument.
f. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
g. Both sides of AC line were checked for maximum conducted interference.
h. The frequency range from 150 kHz to 30 MHz was searched.
i. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

5.2. Typical Test Setup Layout of Conducted Powerline

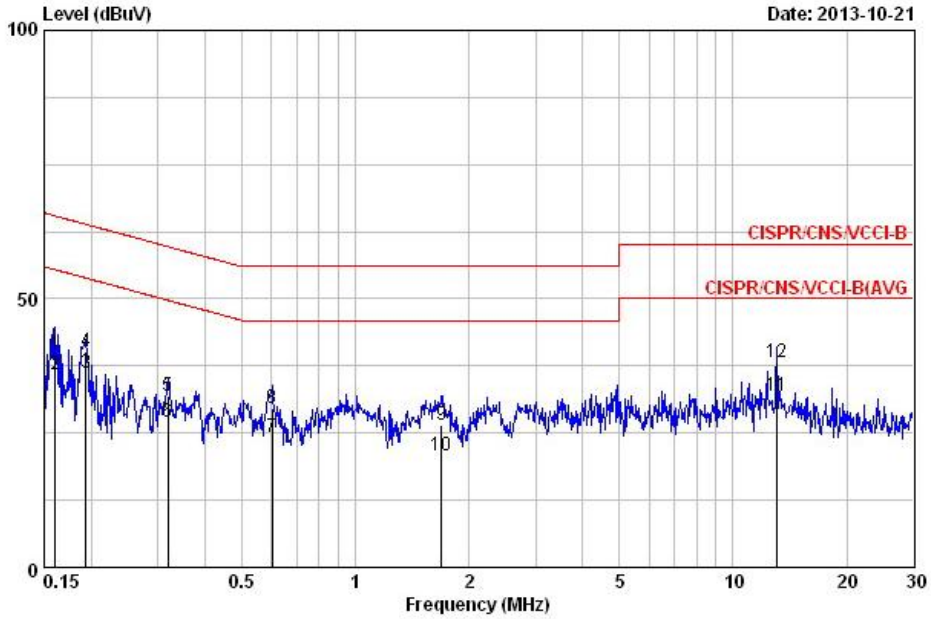


a. AMN is 80 cm from the EUT and at least 80 cm from other units and other metal planes.
b. EUT is connected to one artificial mains network (AMN).
c. All other units of a system are powered from a second AMN. A multiple outlet strip can be used for multiple mains cords.
d. Rear of EUT to be flushed 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.

5.3. Test Result of AC Powerline Conducted Emission

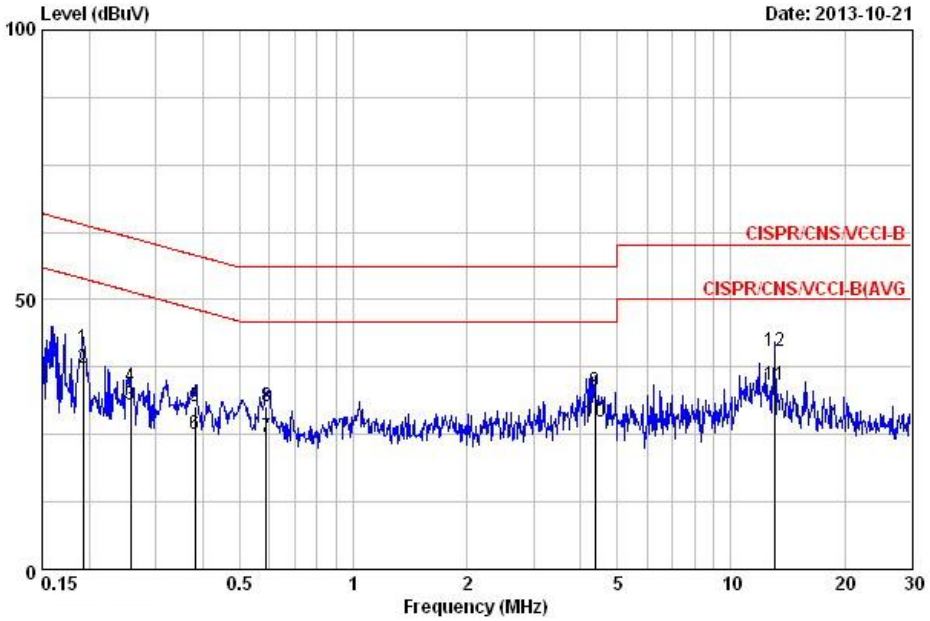
Test Mode	Mode 1	**Test Site No.**	CO01-NH
Test Frequency	0.15 MHz ~ 30 MHz	**Test Engineer**	Eddie
Temperature	24 ℃	**Relative Humidity**	53 %
Note: 1. Corrected Reading (dBμV) = LISN Factor + Cable Loss + Read Level = Level			
2. All emissions not reported here are more than 10 dB below the prescribed 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	0.161	39.53	-25.89	65.43	29.29	10.14	0.10	QP
2	0.161	36.02	-19.40	55.43	25.78	10.14	0.10	AVERAGE
3	0.193	36.21	-17.68	53.89	25.97	10.14	0.10	AVERAGE
4	0.193	40.12	-23.77	63.89	29.88	10.14	0.10	QP
5	0.318	31.78	-27.98	59.75	21.54	10.14	0.10	QP
6	0.318	26.98	-22.78	49.75	16.74	10.14	0.10	AVERAGE
7	0.601	24.29	-21.71	46.00	14.04	10.14	0.10	AVERAGE
8	0.601	29.73	-26.27	56.00	19.48	10.14	0.10	QP
9	1.689	26.39	-29.61	56.00	16.04	10.17	0.18	QP
10	1.689	20.82	-25.18	46.00	10.47	10.17	0.18	AVERAGE
11	13.017	31.86	-18.14	50.00	21.31	10.35	0.20	AVERAGE
12	13.017	38.19	-21.81	60.00	27.64	10.35	0.20	QP

Neutral



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.192	41.03	-22.90	63.93	30.76	10.17	0.10	QP
2	0.192	37.19	-16.74	53.93	26.92	10.17	0.10	AVERAGE
3	0.258	30.56	-20.95	51.51	20.29	10.17	0.10	AVERAGE
4	0.258	33.83	-27.68	61.51	23.56	10.17	0.10	QP
5	0.381	30.25	-28.00	58.25	19.98	10.17	0.10	QP
6	0.381	25.09	-23.16	48.25	14.82	10.17	0.10	AVERAGE
7	0.587	24.57	-21.43	46.00	14.29	10.18	0.10	AVERAGE
8	0.587	30.27	-25.73	56.00	19.99	10.18	0.10	QP
9	4.361	33.11	-22.89	56.00	22.67	10.24	0.20	QP
10	4.361	27.22	-18.78	46.00	16.78	10.24	0.20	AVERAGE
11 @	13.013	34.06	-15.94	50.00	23.49	10.37	0.20	AVERAGE
12	13.013	40.58	-19.42	60.00	30.01	10.37	0.20	QP

6. Test of Radiated Emission

Radiated emissions below 1 GHz were measured with a bandwidth of 120 kHz for 30 MHz to 1,000 MHz and bandwidth of 1 MHz for above 1 GHz to 5th harmonic of highest frequency according to the methods defines in ANSI C63.4, Clause 8. 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. Test Procedures

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

b. The EUT was set 1/3m(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.

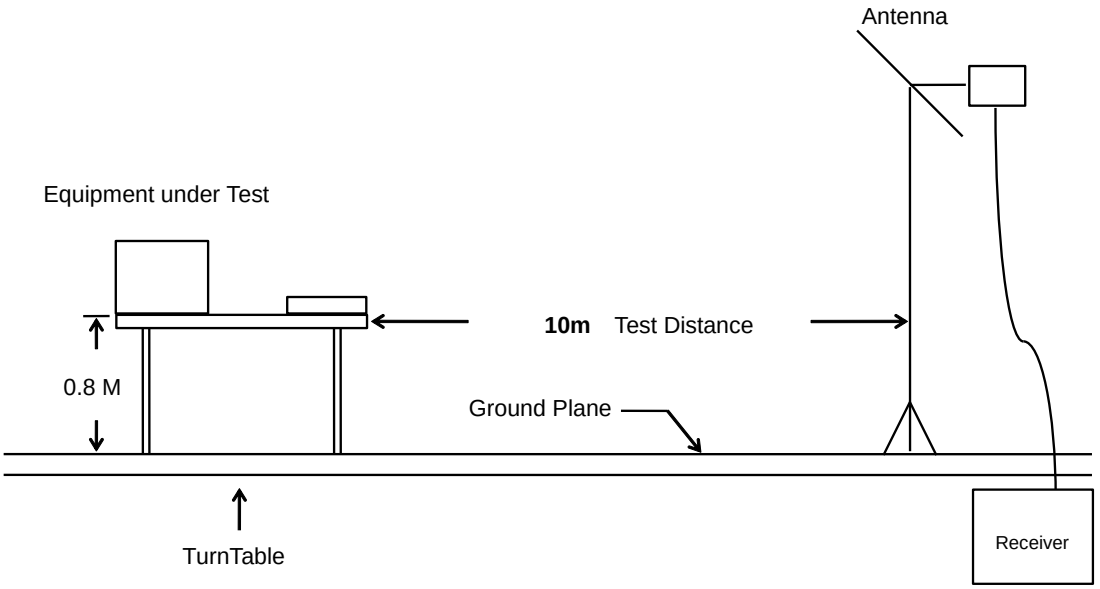
h. The FCC Part 15.109 (g) permit parties seeking to authorize a digital device to choose to demonstrate that the device complies with either the Part 15 standards or the international standards found in Publication 22 of the International Special Committee on Radio Interference (CISPR).

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.

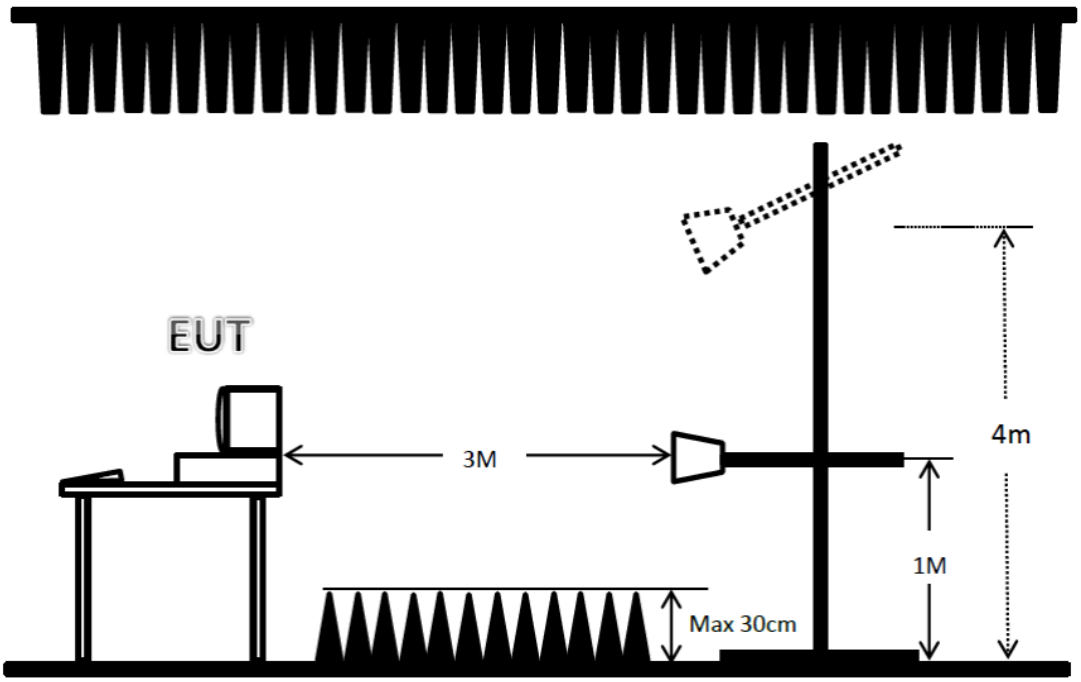
j. The main board was tested in accordance with section 15.32 of the FCC rules. Testing for radiated emissions was first performed with the main board installed in a typical enclosure but with the enclosure's cover removed so that the internal circuitry is exposed at the top and on at least two sides. And then the EUT was tested with enclosure's cover unless it pass the required limits at first condition.

6.2. Typical Test Setup Layout of Radiated Emission

< Below 1GHz >



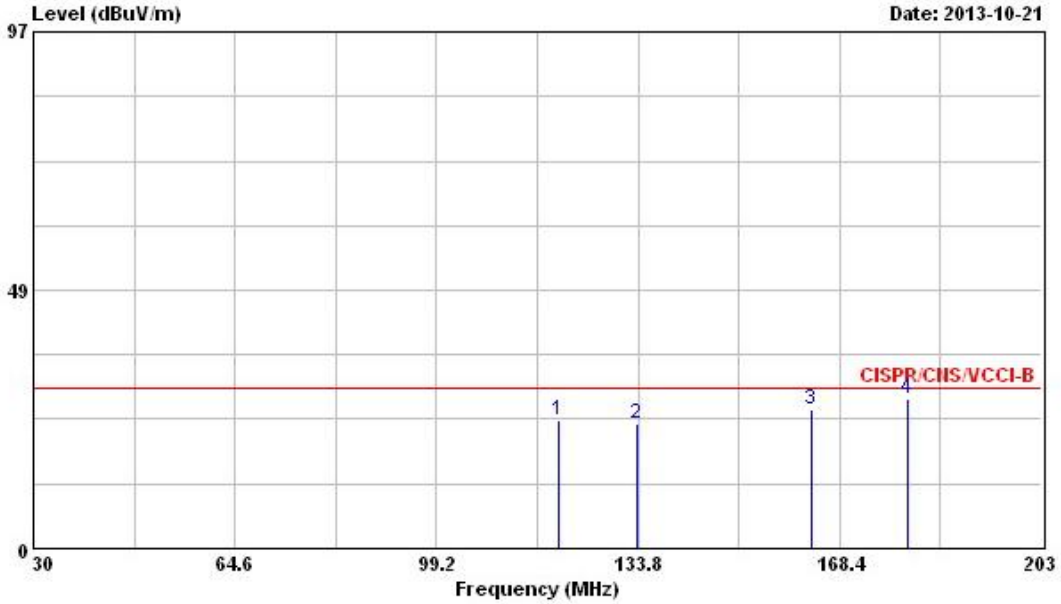
< Above 1GHz >



6.3. Test Result of Radiated Emission for Below 1GHz

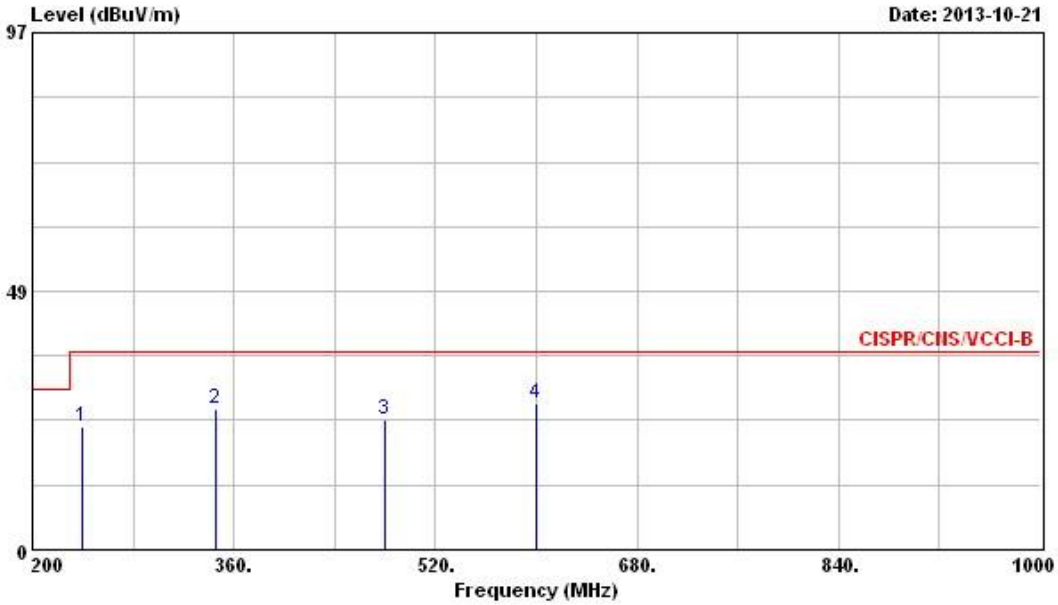
Test mode	Mode 1	**Test Site No.**	OS01-NH
Test frequency	30 MHz ~ 1000 MHz	**Test Engineer**	Louis
Temperature	25 ℃	**Relative Humidity**	55 %
Note: 1. Emission level (dBμV/m) = 20 log Emission level (μV/m)			
2. Corrected Reading : Antenna Factor + Cable Loss + Read Level – Preamp Factor = Level			
■ The test was passed at the minimum margin that marked by the frame in the following data			

Vertical



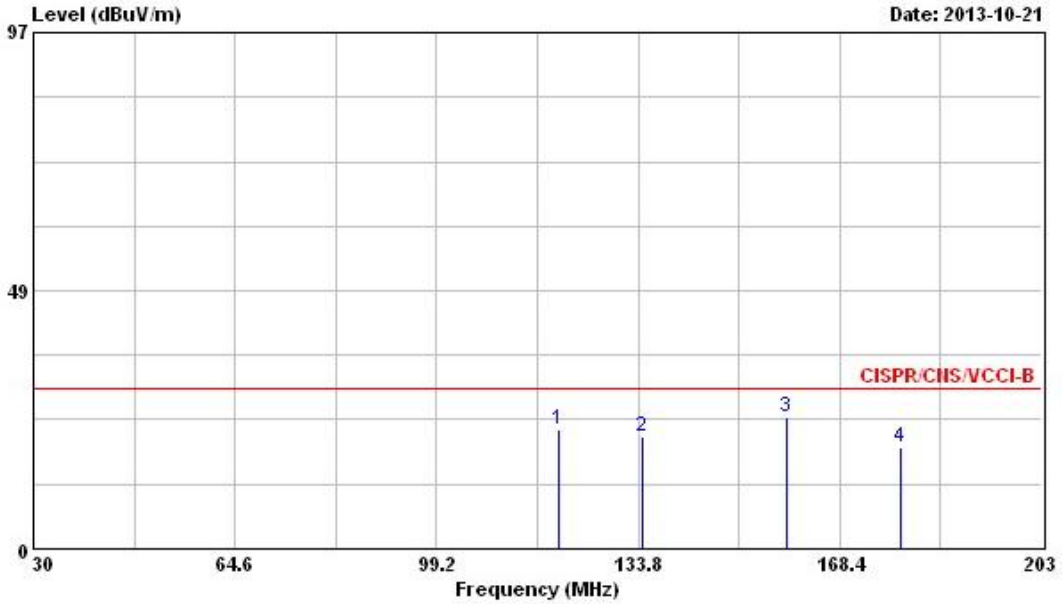
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	120.130	24.05	-5.95	30.00	35.79	11.90	1.52	25.16	QP	100	124
2	133.630	23.56	-6.44	30.00	35.58	11.48	1.60	25.10	QP	100	172
3 @	163.570	26.19	-3.81	30.00	39.52	9.84	1.78	24.95	QP	100	223
4 @	180.000	28.06	-1.94	30.00	41.86	9.20	1.87	24.87	QP	100	180

Vertical



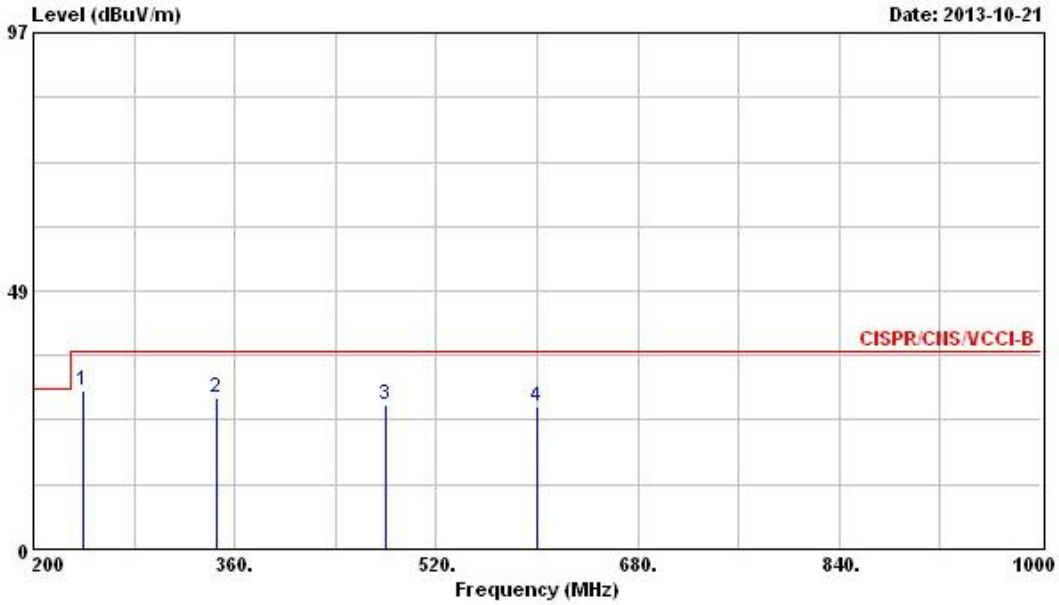
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	240.000	23.21	-13.79	37.00	36.59	11.20	2.12	26.70	QP	100	324
2	345.600	26.52	-10.48	37.00	36.59	14.28	2.53	26.88	QP	100	244
3	480.000	24.49	-12.51	37.00	31.87	17.22	3.20	27.80	QP	100	97
4	600.000	27.27	-9.73	37.00	32.66	18.70	3.96	28.05	QP	100	207

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	120.130	22.53	-7.47	30.00	36.55	11.58	1.52	27.12	QP	400	88
2	134.620	21.13	-8.87	30.00	34.79	11.80	1.60	27.06	QP	400	334
3 @	159.230	24.64	-5.36	30.00	39.23	10.63	1.75	26.97	QP	400	205
4	178.840	19.01	-10.99	30.00	34.89	9.15	1.86	26.89	QP	400	266

Horizontal

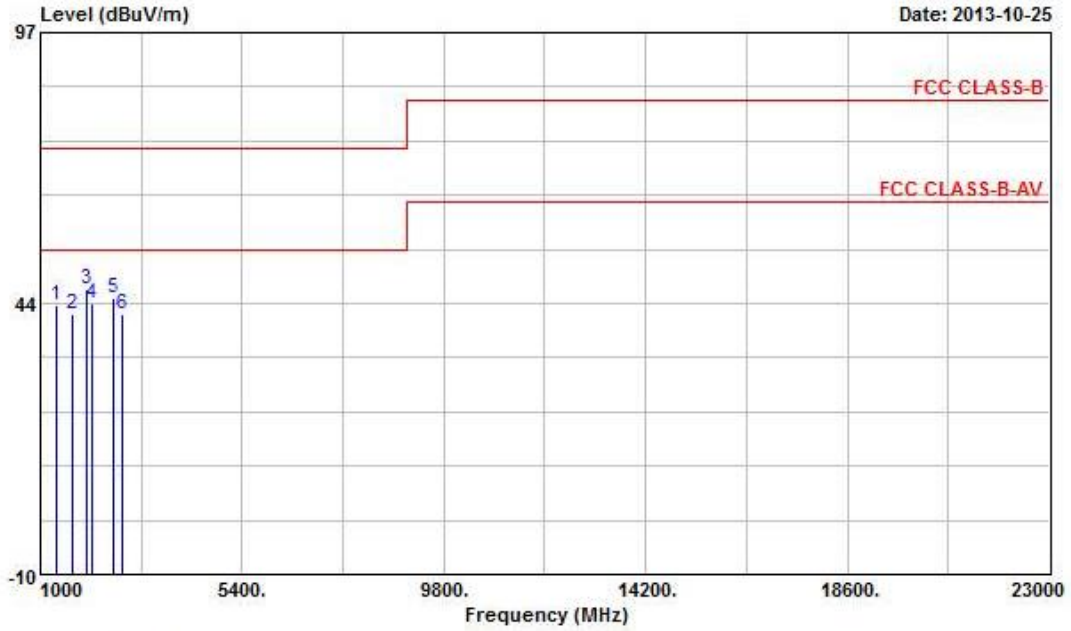


	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	240.000	29.74	-7.26	37.00	43.11	11.21	2.12	26.70	QP	400	341
2	345.600	28.44	-8.56	37.00	38.52	14.27	2.53	26.88	QP	400	228
3	480.000	27.23	-9.77	37.00	34.05	17.78	3.20	27.80	QP	300	188
4	600.000	26.90	-10.10	37.00	31.23	19.76	3.96	28.05	QP	300	214

6.4. Test Result of Radiated Emission for Above 1GHz

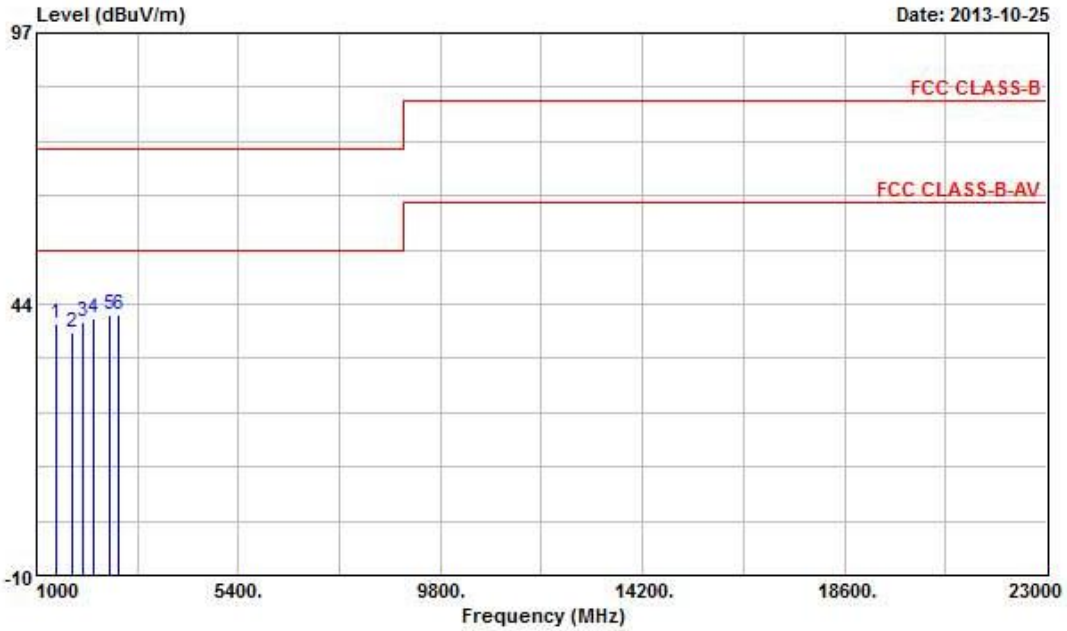
Test mode	Mode 1	**Test Site No.**	03CH04-HY
Test frequency	1 GHz ~ 23 GHz	**Test Engineer**	Alan
Temperature	21 ℃	**Relative Humidity**	50 %
Note: 1. Emission level (dBμV/m) = 20 log Emission level (μV/m)			
2. Corrected Reading : Antenna Factor + Cable Loss + Read Level – Preamp Factor = Level			
■ **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	1332.000	43.06	-30.94	74.00	49.00	25.48	34.02	2.60	---	---	Peak
2	1686.000	41.27	-32.73	74.00	46.96	24.98	33.67	3.00	---	---	Peak
3	1990.000	46.17	-27.83	74.00	50.31	26.07	33.52	3.31	100	168	Peak
4	2142.000	43.44	-30.56	74.00	46.32	27.30	33.66	3.49	---	---	Peak
5	2590.000	44.42	-29.58	74.00	46.72	27.80	34.04	3.94	---	---	Peak
6	2766.000	41.25	-32.75	74.00	42.94	28.33	34.16	4.14	---	---	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	1438.000	39.53	-34.47	74.00	45.36	25.33	33.87	2.71	---	---	Peak
2	1766.000	37.76	-36.24	74.00	43.14	25.17	33.63	3.08	---	---	Peak
3	1996.000	40.04	-33.96	74.00	44.09	26.13	33.52	3.34	---	---	Peak
4	2228.000	40.59	-33.41	74.00	42.80	27.96	33.73	3.56	---	---	Peak
5	2580.000	41.51	-32.49	74.00	43.86	27.76	34.04	3.94	---	---	Peak
6	2774.000	41.50	-32.50	74.00	43.21	28.33	34.18	4.14	---	---	Peak

7. 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)

※ Calibration Interval of instruments listed above is one year. NCR: No calibration request.

< Radiated Emission below 1GHz >

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Open Area Test Site	SPORTON	OATS-10	OS01-NH	30 MHz - 1 GHz 10m	Jul. 28, 2013	Radiation (OS01-NH)
Amplifier	HP	8447D	2944A06292	0.1 MHz - 1.3 GHz	Apr. 25, 2013	Radiation (OS01-NH)
Spectrum Analyzer	R&S	FSP	838858/038	9 kHz – 7 GHz	Mar. 12, 2013	Radiation (OS01-NH)
Test Receiver	R&S	ESCS 30	100168	9 kHz - 2.75 GHz	Feb. 23, 2013	Radiation (OS01-NH)
Bilog Antenna	SCHAFFNER	CBL6111C	2738	30 MHz ~ 1 GHz	Mar. 25, 2013	Radiation (OS01-NH)
Turn Table	EMCO	1060-1.211	9507-1805	0 ~ 360 degree	NCR	Radiation (OS01-NH)
Antenna Mast	EMCO	1051-1.2	9503-1876	1 m ~ 4 m	NCR	Radiation (OS01-NH)
RF Cable-R10m	BELDEN	RG8/U	CB001	30 MHz ~ 1 GHz	Nov. 13, 2012	Radiation (OS01-NH)

※ Calibration Interval of instruments listed above is one year. NCR: No calibration request.

< Radiated Emission above 1GHz >

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Spectrum Analyzer	R&S	FSP40	100004	9 kHz ~ 40 GHz	Mar. 11, 2013	Radiation (03CH04-HY)
Amplifier	Agilent	8449B	3008A02326	1 GHz ~ 26.5 GHz	May. 17, 2013	Radiation (03CH04-HY)
Horn Antenna	SCHWARZBECK	BBHA9120	BBHA9120D1130	1 GHz ~ 18 GHz	Sep.10, 2013	Radiation (03CH04-HY)
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170154	15 GHz ~ 40 GHz	Jan. 08, 2013	Radiation (03CH04-HY)
Turn Table	Chaintek	3000	MF7802056	0 ~ 360 degree	NCR	Radiation (03CH04-HY)
Antenna Mast	MF	MF-7802	MF780208163	1 m ~ 4 m	NCR	Radiation (03CH04-HY)
RF Cable-HIGH	SUHNER	SUCOFLEX 106	CB063-HF	1 GHz ~ 40 GHz	Nov. 21, 2012	Radiation (03CH04-HY)

※ Calibration Interval of instruments listed above is one year. NCR: NCR: No calibration request.