

FCC EMC Test Report

according to

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

Equipment : TransferJet compatible adapter
Model No. : TJM35420LT
FCC ID : ZVZ420L1TJ
Filing Type : Certification
**Applicant : Toshiba Corporation, Semiconductor &
Storage Products Co., Memory Div.,
Memory Application Engineering Dept.
2-5-1, Kasama, Sakae-Ku, Yokohama,
247-8585, Japan**

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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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**SPORTON International Inc.**



CERTIFICATE OF COMPLIANCE

according to

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

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FCC ID : ZVZ420L1TJ
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2-5-1, Kasama, Sakae-Ku, Yokohama,
247-8585, 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 PUB22 and FCC Part 15 Subpart B** in both radiated and conducted emission **Class B** limits.

The sample received on **Oct. 30, 2014** and completely tested on **Nov. 15, 2014** at SPORTON LAB.

Kero Kuo / Assistant Manager



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, Semiconductor & Storage Products Co., Memory Div.,
Memory Application Engineering Dept.**

2-5-1, Kasama, Sakae-Ku, Yokohama, 247-8585, 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 compatible adapter

Model No. : TJM35420LT

Trade Name : TOSHIBA

Power Supply Type : From host system

The maximum operating frequency : 4488MHz

1.4 Feature of Equipment under Test

Please refer to user manual.

2. Test Configuration of Equipment under Test

2.1 Test Manner

- a. The EUT has been associated with supporting units and peripherals pursuant 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	Description of test modes
Radiated Emissions Below 1GHz	Mode 1. Transmit data
	Mode 2. Receiver data
	For operating mode 2 was the worst case and it is recorded in this test report.
Radiated Emissions Above 1GHz	Mode 1. Receiver data

- c. Frequency range investigated: Radiated 30 MHz to 23,000 MHz

2.2 Description of Test System

< EMI >

For radiated emission below 1GHz

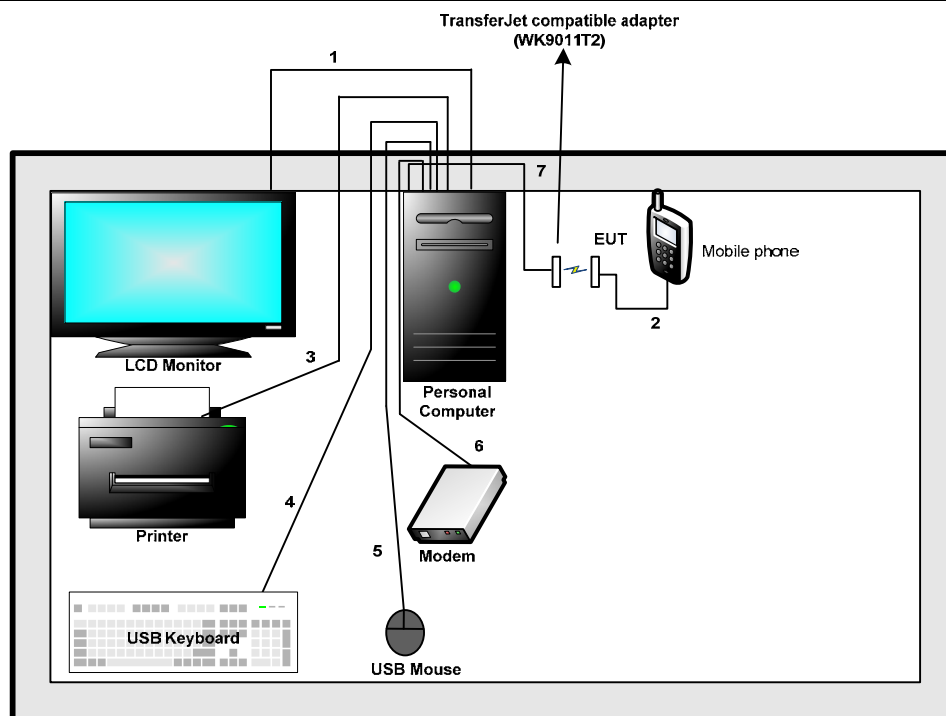
No.	Description	Manufacturer	Model	FCC ID	Signal Cable Description
For Local					
1	Personal Computer	Lenovo	C61	DoC	---
2	LCD Monitor "19"	DELL	E198WFPF	DoC	D-SUB Cable, D-Shielded, 1.8m
3	(USB) Keyboard	Lenovo	KU-0225	DoC	USB Cable, AL-F-Shielded, 1.8m
4	(USB) Mouse	Lenovo	M-U0025-O	DoC	USB Cable, AL-F-Shielded, 1.8m
5	Printer (DJ400)	HP	C2642A	B94C2642X	LPT Cable, D-Shielded, 1.2m
6	Modem	ACEEX	DM1414	IFAXDM1414	RS-232 Cable, D-Shielded, 1.15m
7	Mobile phone	APPLE	A1530	NA	---
8	TransferJet compatible adapter	TOSHIBA	WK9011T2	NA	USB Cable, D-Shielded, 1.0m

For radiation emission above 1GHz

No.	Description	Manufacturer	Model	FCC ID	Signal Cable Description
For Local					
1	Personal Computer	Hp Compaq	DC7700	DoC	---
2	LCD Monitor "24"	DELL	U2410f	DoC	D-SUB Cable, D-Shielded, 1.8m
3	(USB) Keyboard	DELL	SK-8175	DoC	USB Cable, AL-F-Shielded, 1.8m
4	(USB) Mouse	DELL	MOC5UO	DoC	USB Cable, AL-F-Shielded, 1.8m
5	Printer (DJ400)	HP	C2642A	B94C2642X	LPT Cable, D-Shielded, 1.2m
6	Modem	ACEEX	DM1414	IFAXDM1414	RS-232 Cable, D-Shielded, 1.15m
7	Mobile phone	APPLE	A1530	NA	---
8	TransferJet compatible adapter	TOSHIBA	WK9011T2	NA	USB Cable, D-Shielded, 1.0m

2.3 Test Configuration

Test Setup Diagram - Radiated Test



1. D-SUB Cable was connected from support unit 1 to the support unit 2
2. USB Cable was connected from EUT to the support unit 7
3. LPT Cable was connected from support unit 1 to the support unit 5
4. USB Cable was connected from support unit 1 to the support unit 3
5. USB Cable was connected from support unit 1 to the support unit 4
6. RS-232 Cable was connected from support unit 1 to the support unit 6
7. USB Cable was connected from support unit 1 to the support unit 8

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

3. Test Software

< EMI >

Two executive programs, "Burn In Test.exe" and "EMITEST.exe" under WIN 7, which generate a string 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 read the test program from the hard disk to drive and run it.
- c. The PC sent "H" pattern to the monitor, and the monitor displayed "H" patterns on the screen.
- d. The PC sent "H" messages to the printer, and then the printer printed them on the paper.
- e. The PC sent signal messages to the modem.
- f. The PC sent signal messages to the internal hard disk, and the hard disk read and wrote the message.
- g. Repeat the steps from c to f.

At the same time, the following program was executed:

- The PC executed "TJetUSBTransfer" to transmitting and receiving data with Mobile phone via TransferJet compatible adapter (WK9011T2) and EUT.

4. General Information of Test

4.1 Test Facility

For conducted emission and radiated emission below 1GHz

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

For radiated emission above 1GHz

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 : 886-3-327-0973
Test Site No. : 03CH04-HY

4.2 Uncertainty of Test Site

Test Items	Test Site No.	Uncertainty	Remark
Radiated Emissions below 1GHz	OS01-NH	± 2.8dB	Confidence levels of 95%
Radiated Emissions above 1GHz	03CH04-HY	± 4.7dB	Confidence levels of 95%

4.3 Test Voltage

120VAC / 60Hz

4.4 Standard for Methods of Measurement

ANSI C63.4-2009

4.5 Test in Compliance with

CISPR PUB. 22 and FCC Rules and Regulations Part 15 Subpart B

4.6 Frequency Range Investigated

- a. Radiated emission test: from 30 MHz to 23 GHz
- The test distance of radiated emission test from antenna to EUT is 10 M (from 30 MHz~ 1 GHz)
 - The test distance of radiated emission test from antenna to EUT is 3 M (from 1 GHz~ 9 GHz)
 - The test distance of radiated emission test from antenna to EUT is 1 M (from 9 GHz~ 23 GHz)

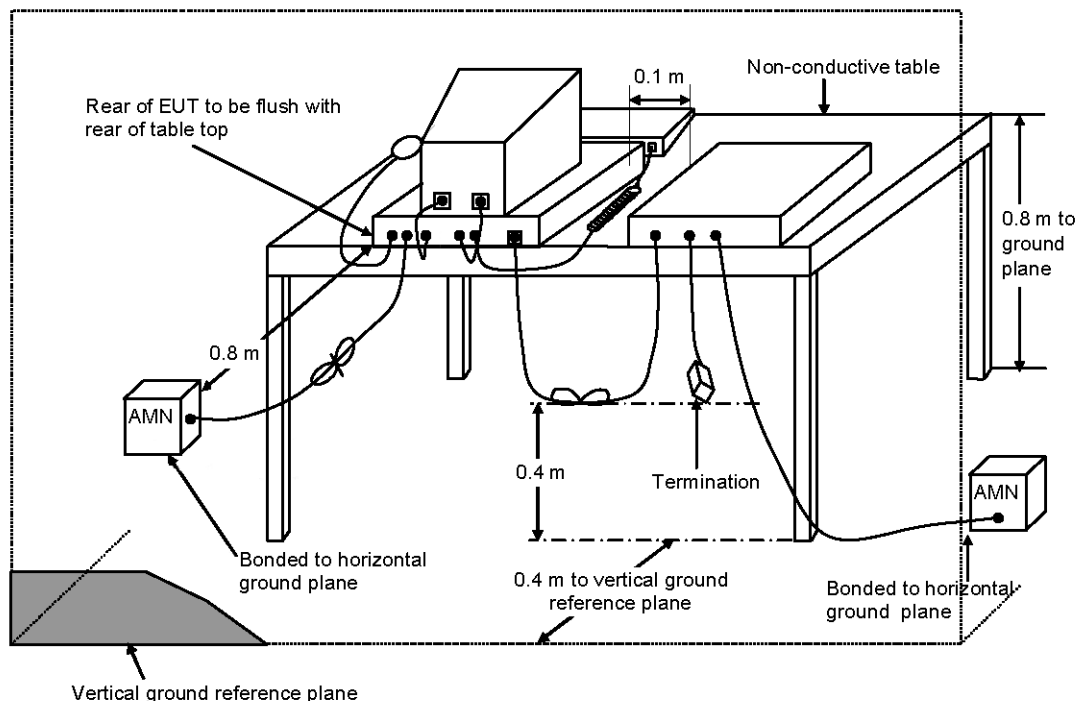
5. Test of Conducted Powerline

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 5.2. The interface cables and equipment positioning were varied within limits of reasonable applications to determine the position produced 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 connected to the other LISN.
- e. The LISN provides 50 ohm coupling impedance for the measuring instrument.
- f. The CISPR states that a 50 ohm, 50 micro henry 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

The test is not applicable for this EUT.

6. Test of Radiated Emission

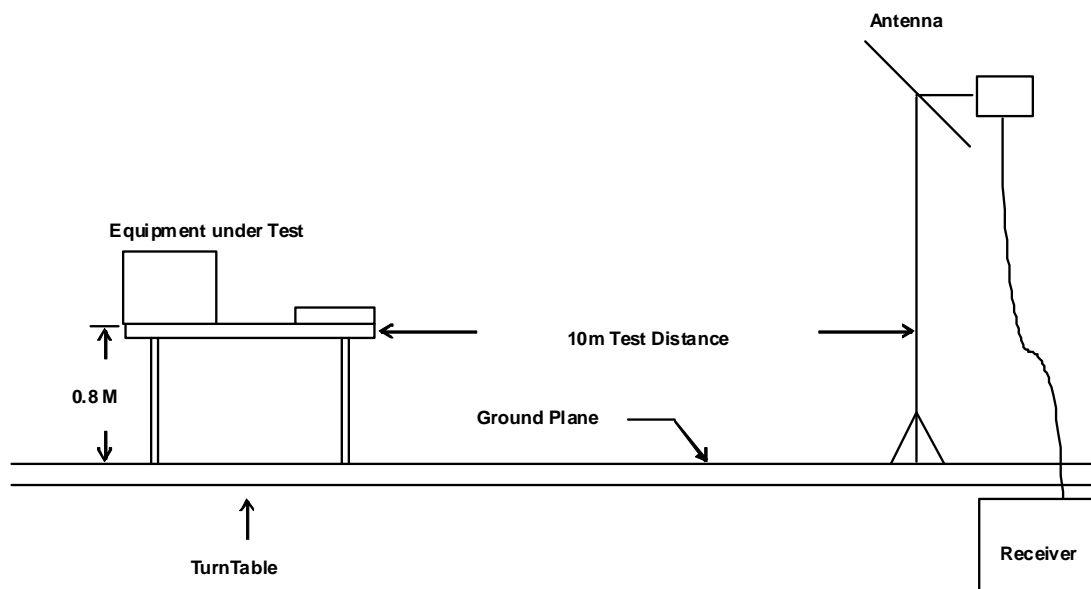
Radiated emissions from 30 MHz to 23,000 MHz were measured with a bandwidth of 120 kHz for 30 MHz to 1000 MHz and 1 MHz for above 1GHz according to the methods defines in ANSI C63.4-2009. The EUT was placed on a nonmetallic stand, 0.8 meter above the ground plane, as shown in section 6.2. The interface cables and equipment positions were varied within limits of reasonable applications to determine the positions producing maximum radiated emissions.

6.1 Test Procedures

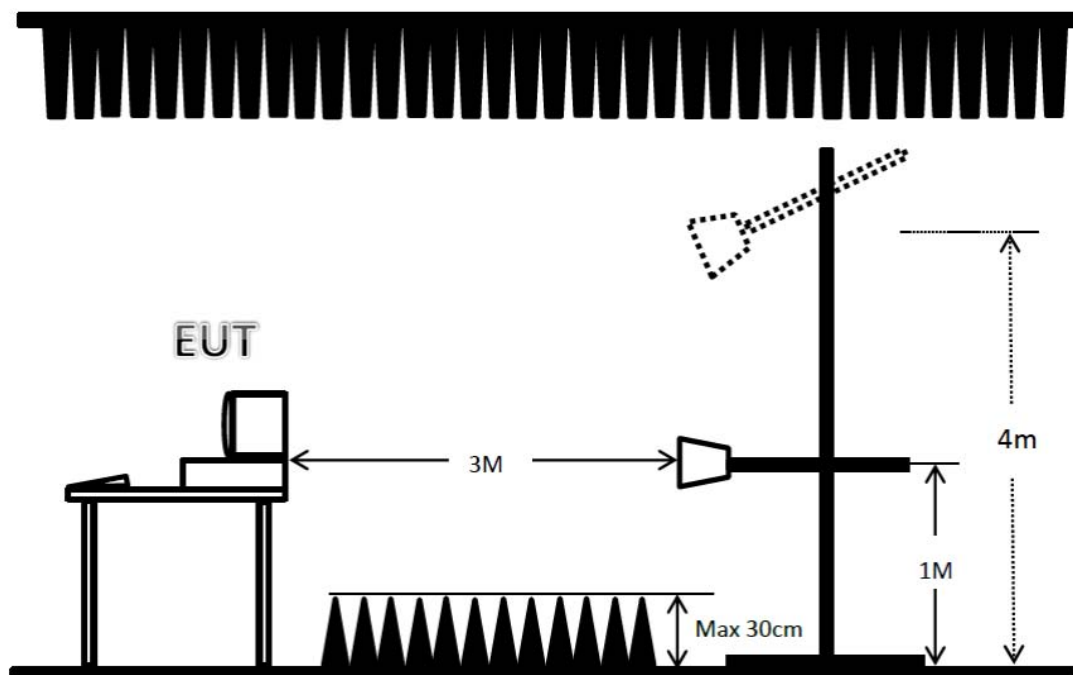
- a. The EUT was placed on a rotatable table top 0.8 meter above ground.
- b. The EUT was set 10/3/1m from the interference-receiving antenna which was mounted on the top of a variable height antenna tower.
- c. The table was rotated 360 degrees to determine the position of the highest radiation.
- d. 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. 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.

6.2 Typical Test Setup Layout of Radiated Emission

< Below 1GHz >



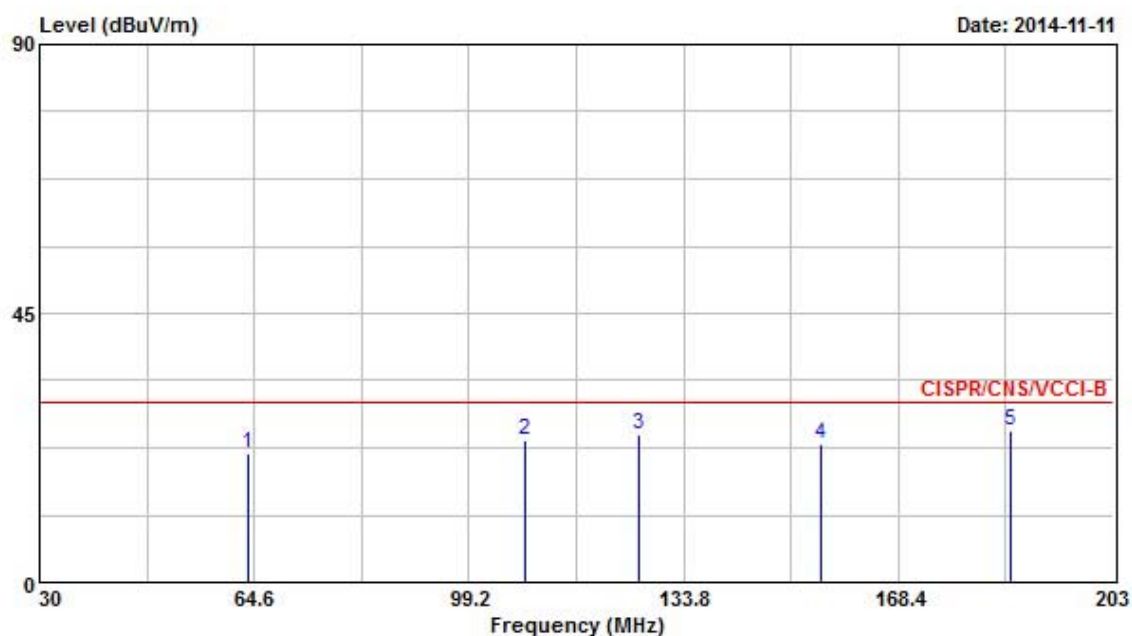
< Above 1GHz >



6.3 Test Result of Radiated Emission (Below 1GHz)

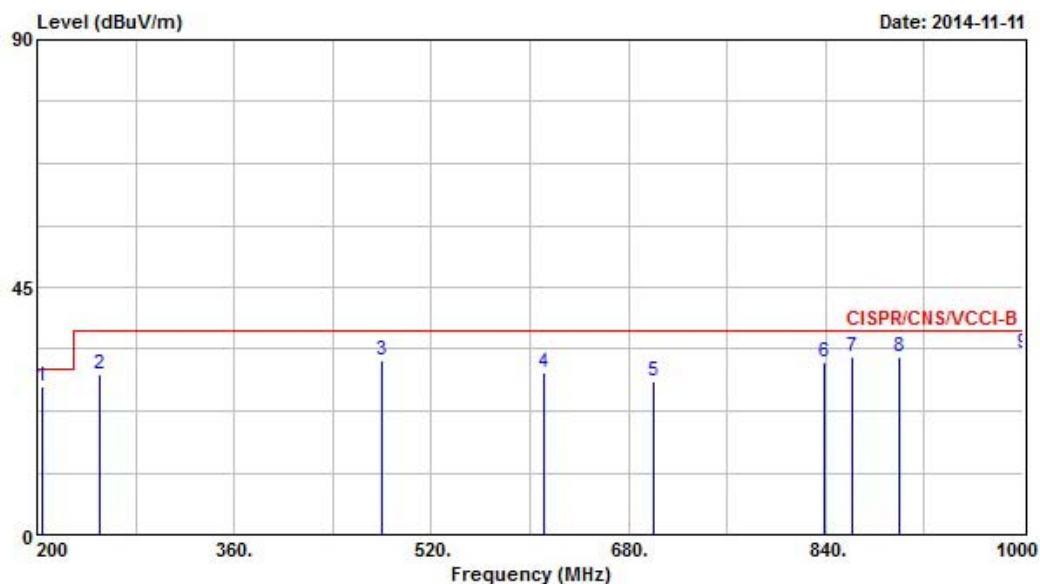
Test mode	Mode 2	Test Site No.	OS01-NH
Test frequency	30 MHz ~ 1000 MHz	Test Engineer	Louis
Temperature	28 °C	Relative Humidity	54 %
Note: 1. Emission level (dBμV/m) = 20 log Emission level (μV/m)			
2. Corrected Reading : Probe Factor + Cable Loss + Read Level – Preamp Factor = Level			
■The test was passed at the minimum margin that marked by the frame in the following data			

Vertical

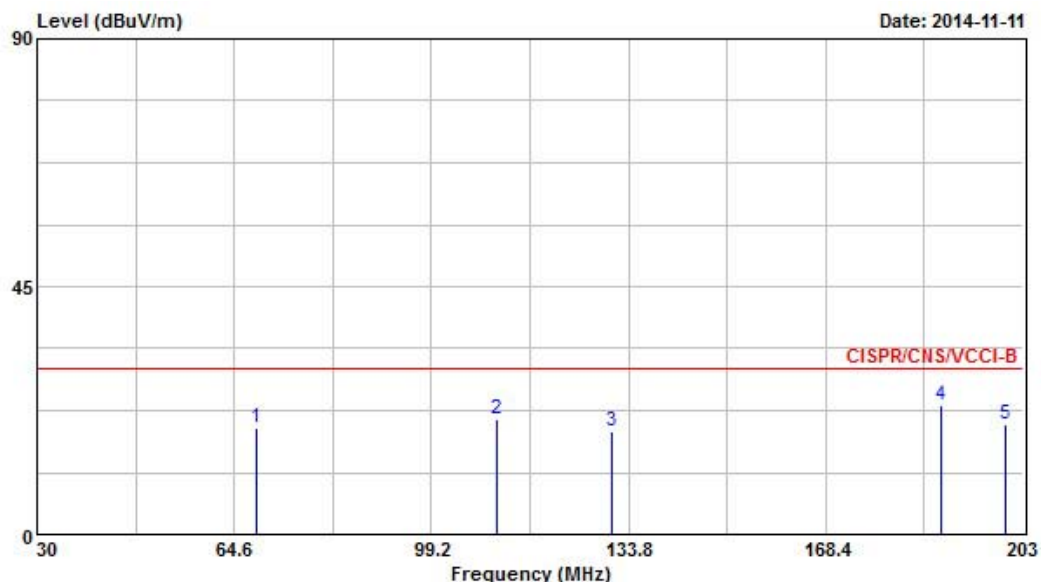


	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	63.560	21.64	-8.36	30.00	41.27	6.05	1.65	27.33	Peak	---	---
2 @	108.200	23.84	-6.16	30.00	38.23	10.90	1.91	27.20	Peak	---	---
3 @	126.530	24.61	-5.39	30.00	37.91	11.80	2.03	27.13	Peak	---	---
4	155.940	23.15	-6.85	30.00	37.14	10.78	2.24	27.01	Peak	---	---
5 @	186.570	25.40	-4.60	30.00	40.92	8.86	2.51	26.89	Peak	---	---

Vertical

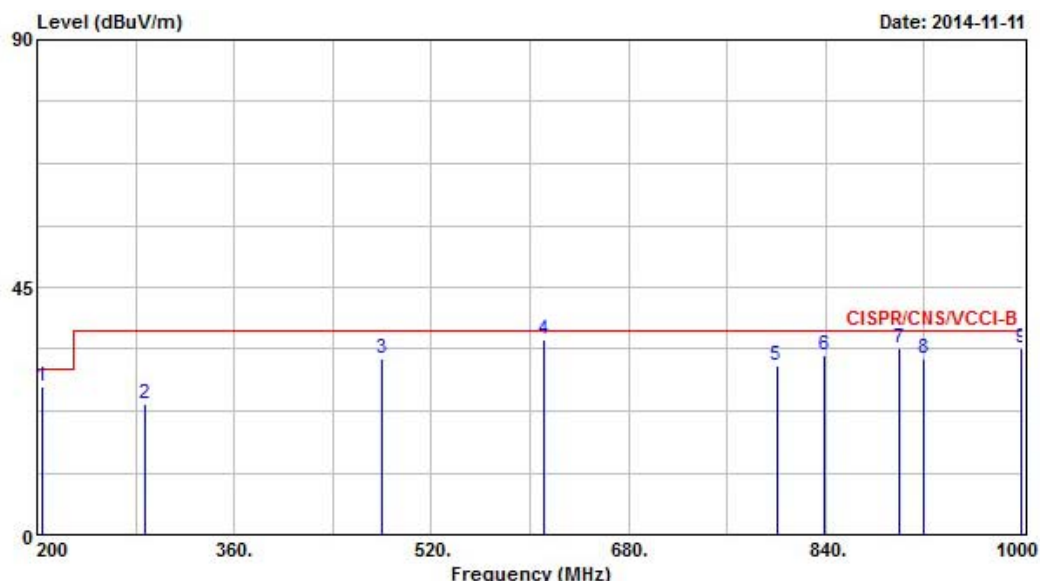


	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 @	204.400	26.79	-3.21	30.00	41.81	9.05	2.75	26.82	Peak	---	---
2	250.400	29.00	-8.00	37.00	40.39	12.36	2.96	26.71	Peak	---	---
3 @	480.000	31.68	-5.32	37.00	38.18	17.75	3.56	27.81	Peak	---	---
4	612.000	29.39	-7.61	37.00	33.20	20.10	4.18	28.09	Peak	---	---
5	700.800	27.84	-9.16	37.00	30.90	20.84	4.15	28.05	Peak	---	---
6 @	839.200	31.47	-5.53	37.00	31.86	23.19	4.19	27.77	Peak	---	---
7 @	860.800	32.25	-4.75	37.00	32.56	23.05	4.34	27.70	Peak	---	---
8 @	900.000	32.45	-4.55	37.00	31.97	23.24	4.82	27.58	Peak	---	---
9 @	1000.000	33.03	-3.97	37.00	30.57	24.78	4.97	27.29	Peak	---	---

Horizontal


	Freq	Level	Over Limit	Limit Line	ReadAntenna 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	68.580	19.24	-10.76	30.00	38.45	6.39	1.72	27.32	Peak	---	---
2	110.790	20.91	-9.09	30.00	35.13	11.06	1.92	27.20	Peak	---	---
3	130.860	18.77	-11.23	30.00	31.97	11.86	2.05	27.11	Peak	---	---
4	188.640	23.56	-6.44	30.00	39.09	8.81	2.53	26.87	Peak	---	---
5	200.060	19.93	-10.07	30.00	34.91	9.10	2.75	26.83	Peak	---	---

Horizontal



	Freq	Level	Over Limit	Limit Line	ReadAntenna 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 @	204.000	26.90	-3.10	30.00	41.91	9.06	2.75	26.82	Peak	---	---
2	288.000	23.79	-13.21	37.00	34.10	13.03	3.28	26.62	Peak	---	---
3 @	480.000	32.13	-4.87	37.00	38.63	17.75	3.56	27.81	Peak	---	---
4 @	611.200	35.45	-1.55	37.00	39.28	20.08	4.18	28.09	QP	201	185
5 @	800.000	30.71	-6.29	37.00	32.53	21.99	4.08	27.89	Peak	---	---
6 @	839.200	32.64	-4.36	37.00	33.03	23.19	4.19	27.77	Peak	---	---
7 @	900.000	33.83	-3.17	37.00	33.35	23.24	4.82	27.58	Peak	---	---
8 @	919.200	32.01	-4.99	37.00	31.01	23.64	4.88	27.52	Peak	---	---
9 @	999.200	33.89	-3.11	37.00	31.42	24.79	4.97	27.29	Peak	---	---

6.4 Test Result of Radiated Emission (Above 1GHz)

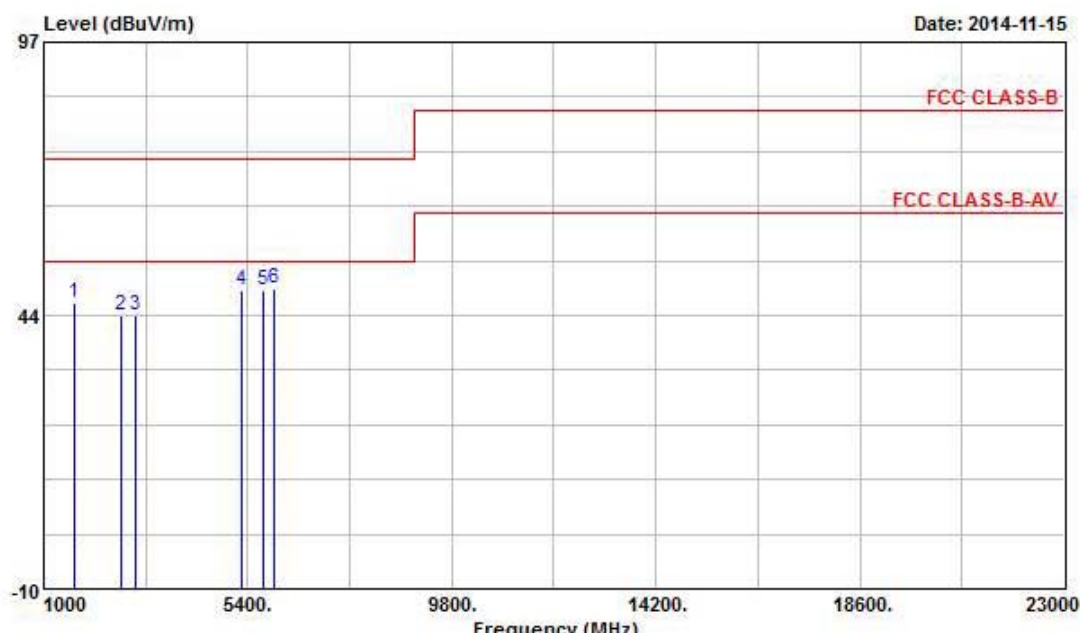
Test mode	Mode 1	Test Site No.	03CH04-HY
Test frequency	1 GHz ~ 23 GHz	Test Engineer	Ou Yen Liang
Temperature	23 °C	Relative Humidity	53 %

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

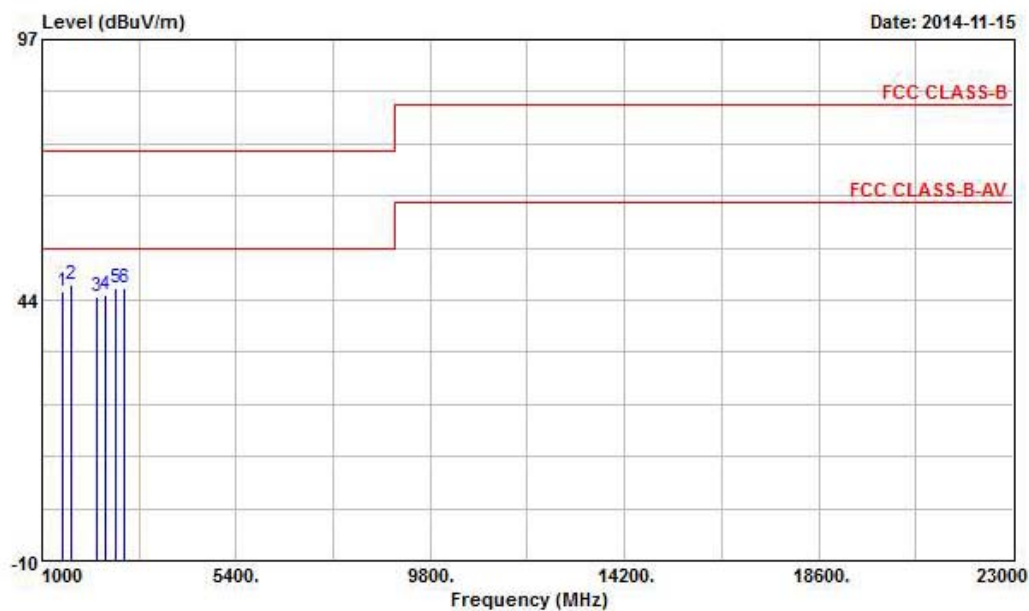
2. Corrected Reading : Antenna Factor + Cable Loss + Read Level – Preamp Factor = Level

■ 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	1652.000	46.13	-27.87	74.00	49.84	25.89	33.68	4.08	---	---	Peak
2	2660.000	43.50	-30.50	74.00	44.90	27.63	34.09	5.06	---	---	Peak
3	2974.000	43.55	-30.45	74.00	44.25	28.23	34.29	5.36	---	---	Peak
4	5286.000	48.53	-25.47	74.00	44.34	31.67	34.32	6.85	---	---	Peak
5	5733.000	48.55	-25.45	74.00	43.71	32.07	34.37	7.14	---	---	Peak
6	5985.000	48.88	-25.12	74.00	43.68	32.38	34.46	7.28	100	210	Peak

Horizontal


	Freq	Level	Over	Limit	ReadAntenna	Preamp	Cable	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Pos	Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	cm	deg	
1	1460.000	45.41	-28.59	74.00	49.63	25.72	33.83	3.88	---	Peak
2	1670.000	46.82	-27.18	74.00	50.52	25.90	33.68	4.08	---	Peak
3	2244.000	44.14	-29.86	74.00	46.57	26.68	33.76	4.64	---	Peak
4	2446.000	44.40	-29.60	74.00	46.33	27.18	33.94	4.83	---	Peak
5	2652.000	45.82	-28.18	74.00	47.29	27.60	34.09	5.02	---	Peak
6	2854.000	45.86	-28.14	74.00	46.84	28.00	34.23	5.25	---	Peak

7. List of Measuring Equipment Used

< 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. 27, 2014	Radiation (OS01-NH)
Amplifier	HP	8447D	2944A06292	0.1 MHz ~ 1.3 GHz	Apr. 21, 2014	Radiation (OS01-NH)
Spectrum Analyzer	R&S	FSP	838858/038	9 kHz ~ 7 GHz	Mar. 17, 2014	Radiation (OS01-NH)
Test Receiver	R&S	ESCS 30	100357	9 kHz ~ 2.75 GHz	Jun. 13, 2014	Radiation (OS01-NH)
Bilog Antenna	SCHAFFNER	CBL6111C	2738	30 MHz ~ 1 GHz	Mar. 06, 2014	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. 05, 2014	Radiation (OS01-NH)

※ Calibration Interval of instruments listed above is one year. NCR: Non-Calibration required.

< 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. 27, 2014	Radiation (03CH04-HY)
Amplifier	Agilent	8449B	3008A02326	1GHz ~ 26.5GHz	May 22, 2014	Radiation (03CH04-HY)
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170339	15 GHz ~ 40 GHz	Feb. 17, 2014	Radiation (03CH04-HY)
Horn Antenna	SCHWARZBECK	BBHA9120	BBHA9120D1130	1 GHz ~ 18 GHz	Sep.16, 2014	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.20 , 2013	Radiation (03CH04-HY)

Calibration Interval of instruments listed above is one year. NCR: Non-Calibration required.