

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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Revision History

[illegible]



CERTIFICATE OF COMPLIANCE

according to

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

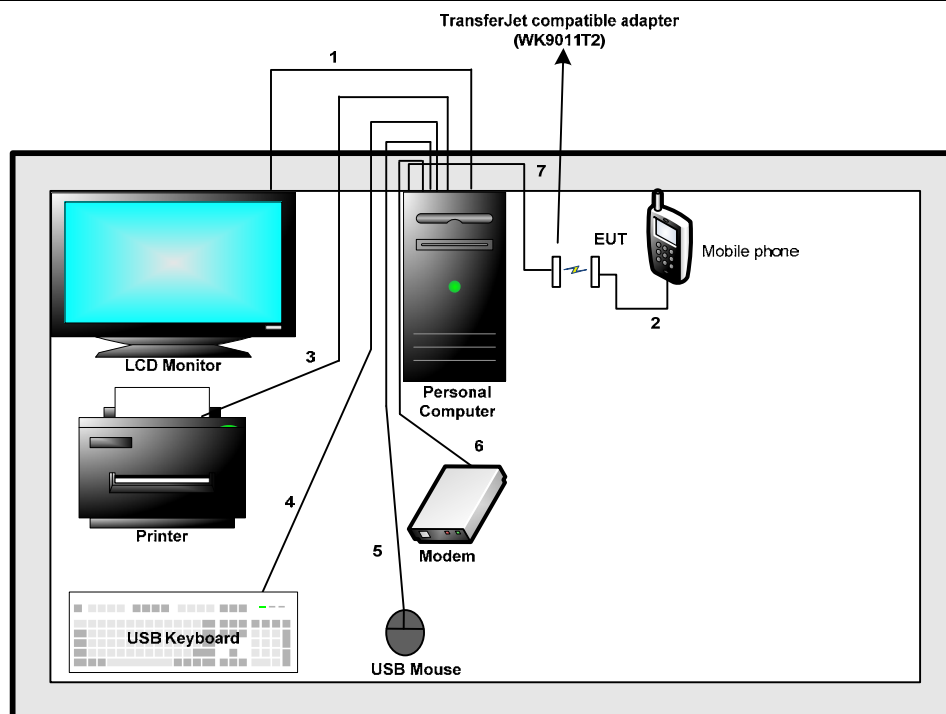
| No. | Description | Manufacturer | Model | FCC ID | Signal Cable Description |
|------------------|--------------------------------|--------------|-----------|------------|---------------------------------|
| For Local | | | | | |
| 1 | Personal Computer | Lenovo | C61 | DoC | --- |
| 2 | LCD Monitor "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)

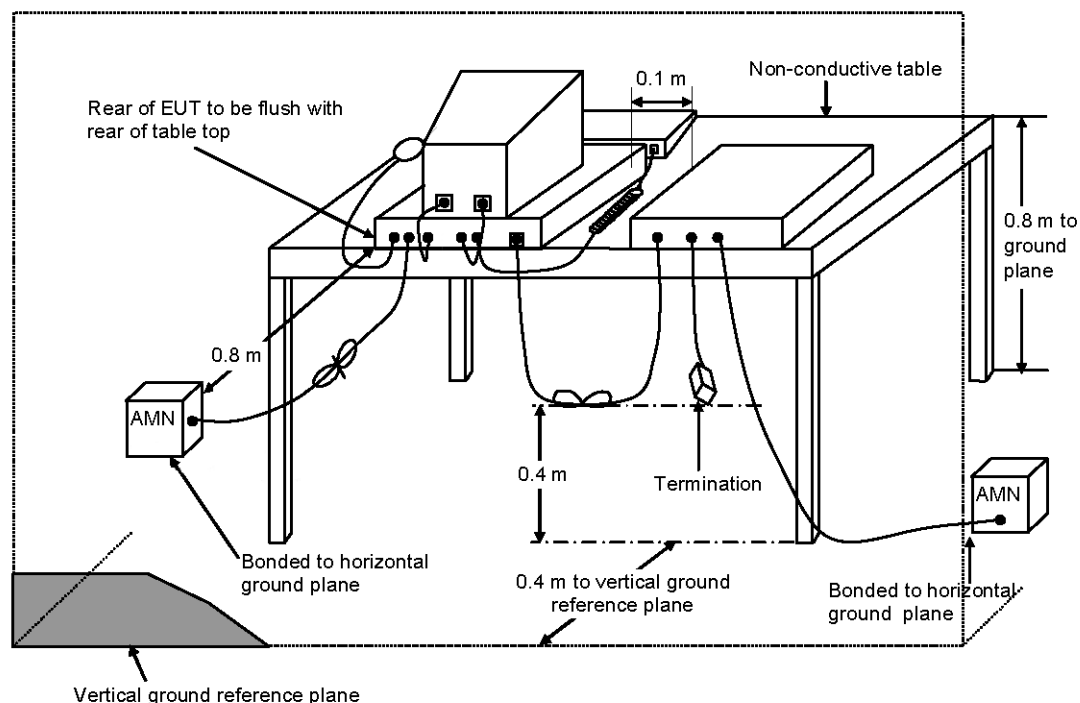
5. Test of Conducted Powerline

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

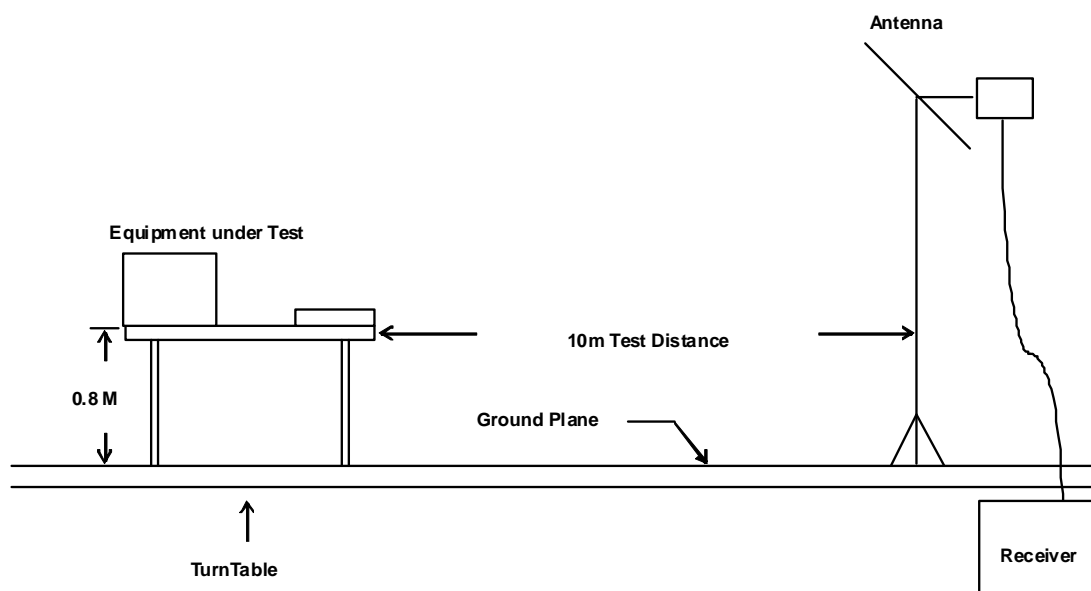
Radiated emissions from 30 MHz to 23,000 MHz were measured with a bandwidth of 120 kHz for 30 MHz to 1000 MHz and 1 MHz for above 1GHz according to the methods defines in ANSI C63.4-2009. The EUT was placed on a nonmetallic stand, 0.8 meter above the ground plane, as shown in section 6.2. The interface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

6.1 Test Procedures

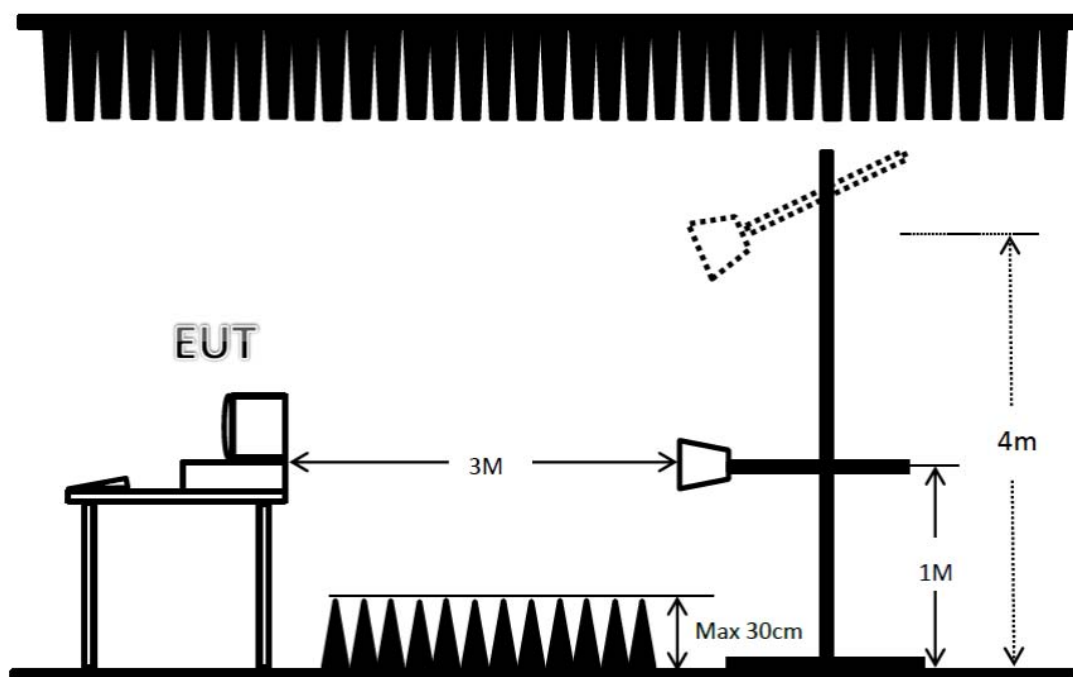
- a. The EUT was placed on a rotatable table top 0.8 meter above ground.
- b. The EUT was set 10/3/1m from the interference-receiving antenna which was mounted on the top of a variable height antenna tower.
- c. The table was rotated 360 degrees to determine the position of the highest radiation.
- d.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



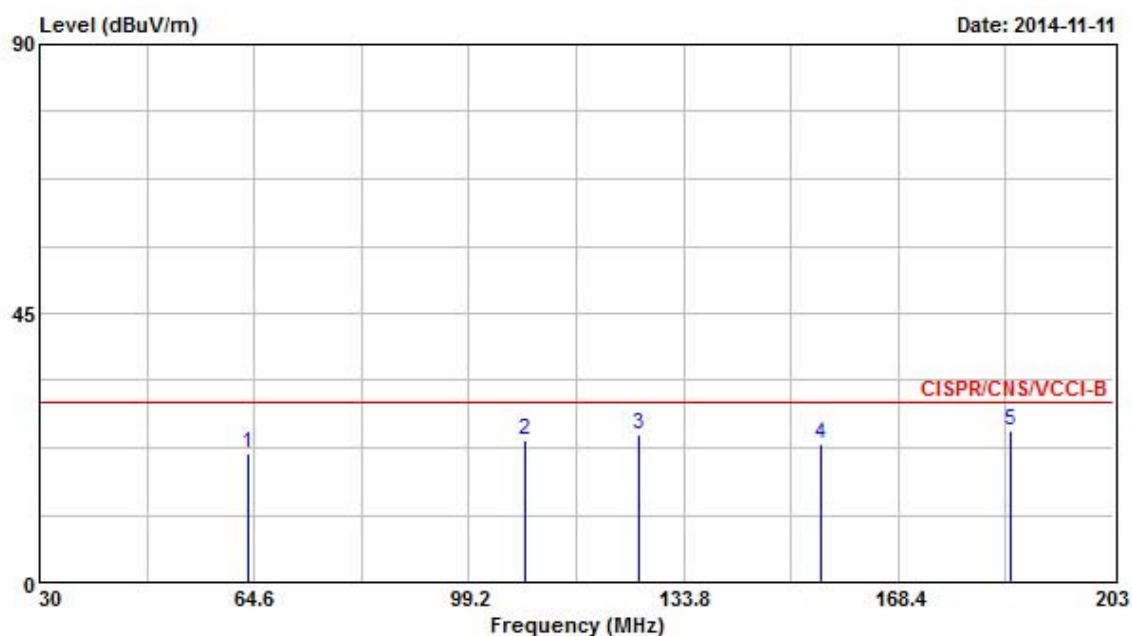
< Above 1GHz >



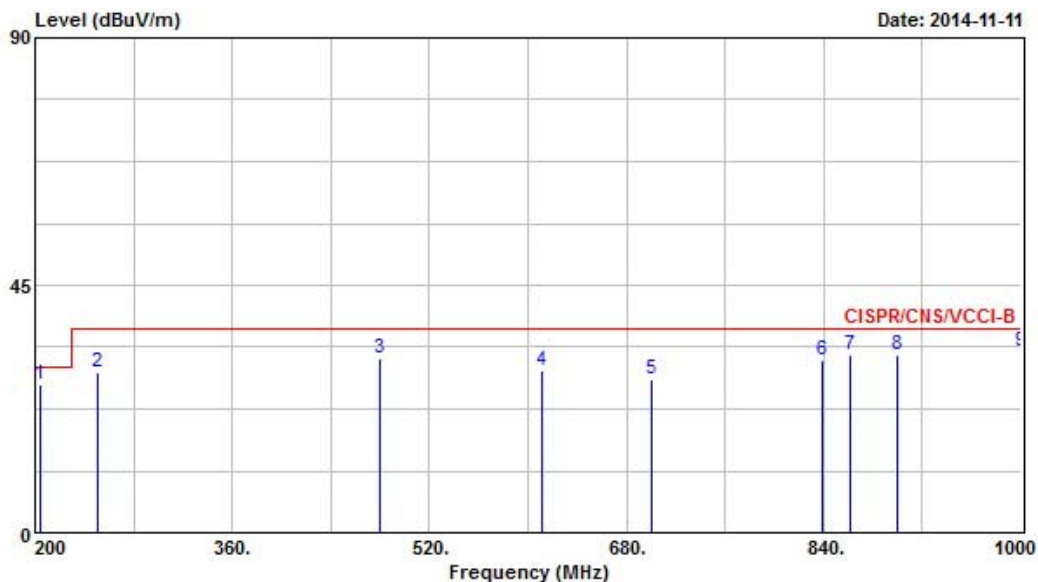
6.3 Test Result of Radiated Emission (Below 1GHz)

| | | | |
|---|-------------------|--------------------------|---------|
| 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 | | | |

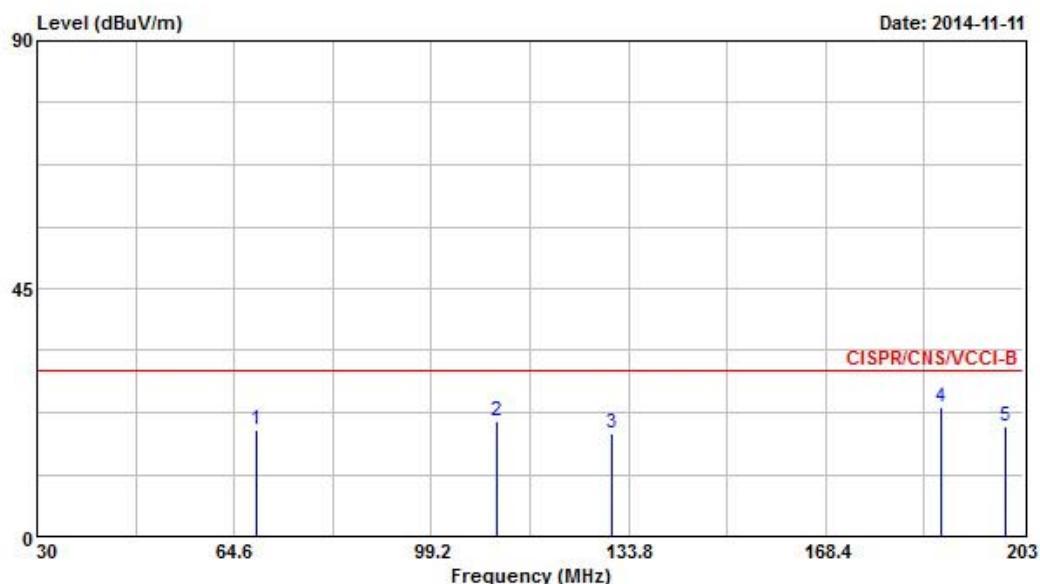
Vertical



| | 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 | --- | --- |

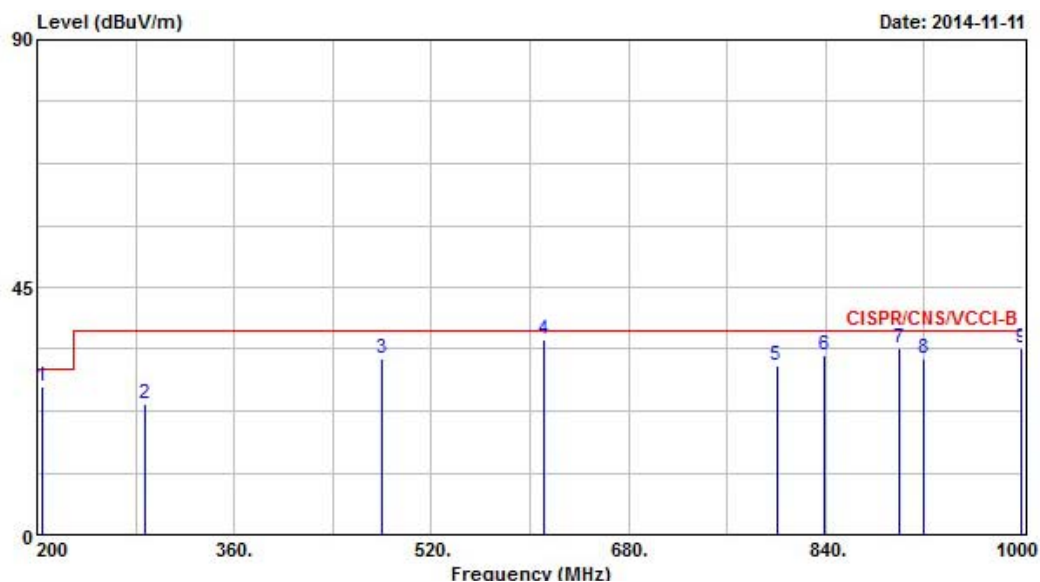
Vertical


| | 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)

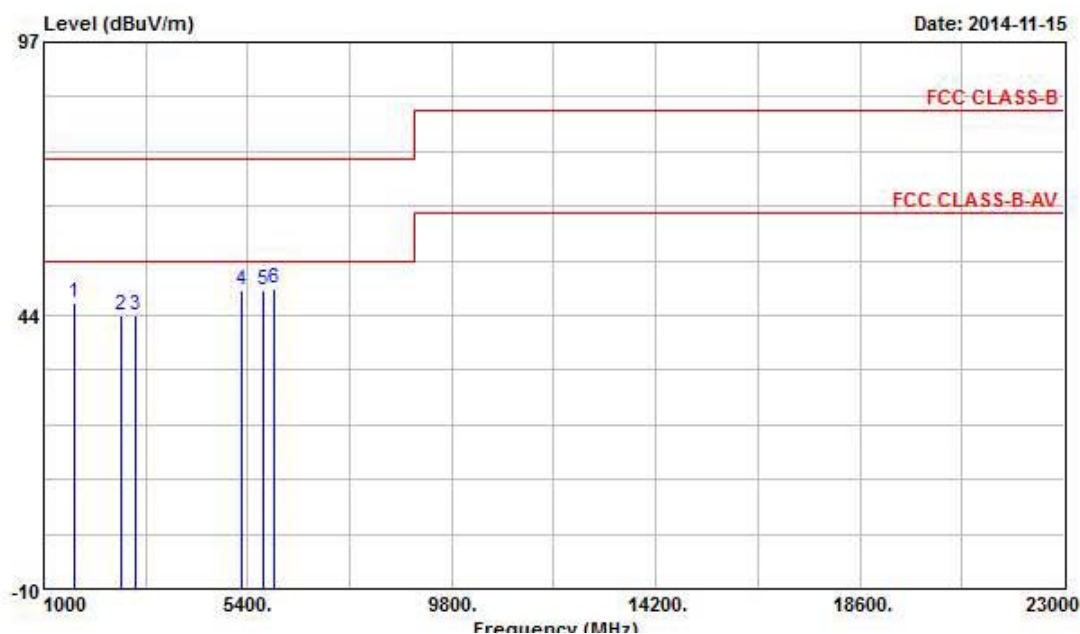
| | | | |
|-----------------------|----------------|--------------------------|--------------|
| Test mode | Mode 1 | Test Site No. | 03CH04-HY |
| Test frequency | 1 GHz ~ 23 GHz | Test Engineer | Ou Yen Liang |
| Temperature | 23 °C | Relative Humidity | 53 % |

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

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

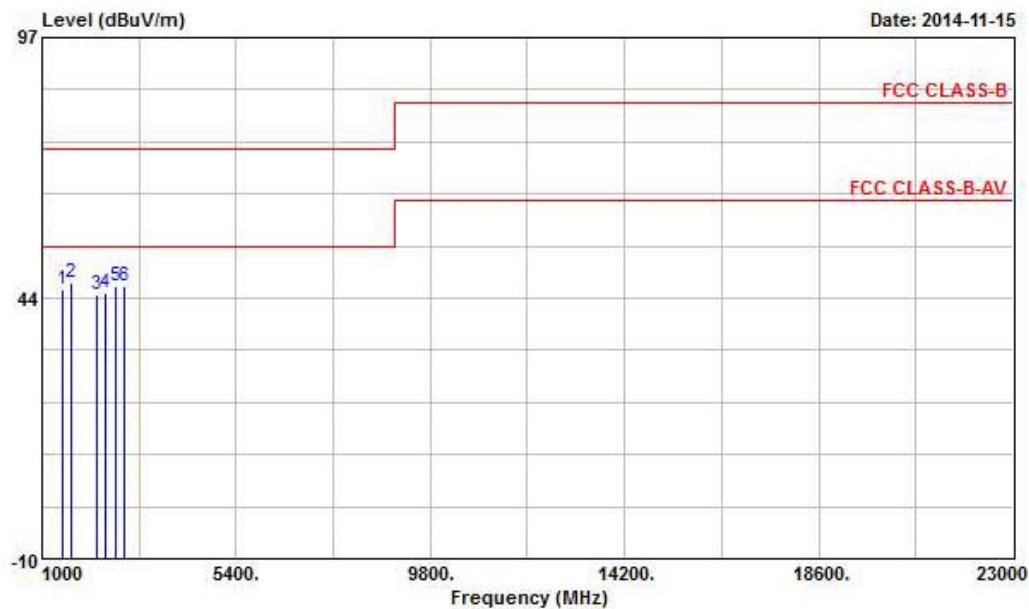
■ The test was passed at the minimum margin that marked by the frame in the following data

Vertical



| | Freq | Level | Over | Limit | Read | Antenna | Preamp | Cable | Ant | Table | |
|---|----------|--------|--------|--------|-------|---------|--------|-------|-----|-------|--------|
| | MHz | dBuV/m | Limit | Line | Level | Factor | Factor | Loss | Pos | Pos | Remark |
| | | | 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.