# Certificate

Issue Date: May 21, 2012
Ref. Report No. ISL-12HE131FA

Product Name : PCIe-PoE Card Series
Models : **PCIe-PoE4+; PCIe-PoE2+**
Applicant : **Neousys Technology Inc.**
Address : 15F., No.868-3, Zhongzheng Rd., Zhonghe Dist., New Taipei City 23586, Taiwan(R.O.C.)

We, **International Standards Laboratory**, hereby certify that:

The device bearing the trade name and model specified above has been shown to comply with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified. (refer to Test Report if any modifications were made for compliance).

**Standards:**

FCC CFR Title 47 Part 15 Subpart B: 2010- Section 15.107 and 15.109
ANSI C63.4-2009
Industry Canada Interference-Causing Equipment Standard ICES-003 Issue 4: 2004
**Class A**

I attest to the accuracy of data and all measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

**International Standards Laboratory**

Jim Chu / Director

☒ **Hsi-Chih LAB**:
No. 65, Gu Dai Keng St., Hsichih District,
New Taipei City 22117, Taiwan
Tel: 886-2-2646-2550; Fax: 886-2-2646-4641

# FCC TEST REPORT

of

# CFR 47 Part 15 Subpart B Class A

Product : **PCIe-PoE Card Series**

Models: **PCIe-PoE4+; PCIe-PoE2+**

Applicant: **Neousys Technology Inc.**

Address: **15F., No.868-3, Zhongzheng Rd., Zhonghe Dist., New Taipei City 23586, Taiwan(R.O.C.)**

Test Performed by:


**International Standards Laboratory**
<Hsi-Chih LAB>
*Site Registration No.
BSMI:SL2-IN-E-0037; SL2-R1/R2-E-0037; TAF: 1178;
IC: IC4067A-1; VCCI: R-341,C-354, T-1749, G-443; NEMKO: ELA 113A
*Address:
No. 65, Gu Dai Keng St.
Hsichih District, New Taipei City 22117, Taiwan
*Tel: 886-2-2646-2550; Fax: 886-2-2646-4641


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Issue Date : **May 21, 2012**

This report totally contains 23 pages including this cover page and contents page.

**Contents of Report**

# 1. General

## 1.1 Certification of Accuracy of Test Data

| | |
|---|---|
| **Standards:** | FCC CFR Title 47 Part 15 Subpart B: 2010- Section 15.107 and 15.109<br>ANSI C63.4-2009<br>Industry Canada Interference-Causing Equipment Standard ICES-003 Issue 4: 2004 |
| **Equipment Tested:** | PCIe-PoE Card Series |
| **Models:** | PCIe-PoE4+; PCIe-PoE2+ |
| **Applicant:** | Neousys Technology Inc. |
| **Sample received Date:** | May 3, 2012 |
| **Final test Date:** | refer to the date of test data |
| **Test Site:** | International Standards Laboratory<br>OATS 01; Chamber 01; Conduction 01 |
| **Test Distance:** | 10M; 3M (above1GHz) |
| **Temperature:** | refer to each site test data |
| **Humidity:** | refer to each site test data |
| **Input power:** | Conduction input power: AC 120 V / 60 Hz<br>Radiation input power: AC 120 V / 60 Hz |
| **Test Result:** | **PASS** |
| **Report Engineer:** | Winnie Huang |
| **Test Engineer:** | Louis Yu |
| **Approved By:** | Eddy Hsiung |

### 1.2 Description of EUT

# EUT

| | |
|---|---|
| Product Name | PCIe-PoE Card Series |
| Condition | Pre-Production |
| Model Number(s) | PCIe-PoE4+; PCIe-PoE2+ |
| Serial Number | N/A |
| Power Supply | From Personal Computer Power Supply |
| LAN Port | four 8-pins (10/100/1000M bps) |
| Maximum Operating Frequency | 1GHz |

Radiated、Radiated　Above1GHz、Conduction LISN test configurations are listed below.
We present the worst case test data (Configurations: 1) in the report.

| Configurations | Model |
|---|---|
| 1 | PCIe-PoE4+ |
| 2 | PCIe-PoE2+ |

Model Difference

| Model | Port |
|---|---|
| PCIe-PoE4+ | 4 |
| PCIe-PoE2+ | 2 |

EMI Noise Source

| Crystal |
|---|
| 25MHz(X1), 25MHz(X2), 25MHz(X3), 25MHz(X4) |

EMI Solution
N/A

## 1.3 Description of Support Equipment

| Unit | Model<br>Serial No. | Brand | Power Cord | FCC ID |
|---|---|---|---|---|
| Personal Computer | LI945G5C<br>S/N: A70427-0369 | Lemel | N/A | FCC DOC |
| Keyboard | SK-8110, S/N:<br>MY-05N456-38843-2BK-3315 | DELL | N/A | FCC DOC |
| Mouse | MO71KC<br>S/N: N/A | DELL | N/A | FCC DOC |
| 17” LCD Monitor | VA703B | View Sonic | Non-shielded, Detachable | FCC DOC |
| Modem | DM1414<br>S/N: 0301000557 | Aceex | Non-shielded, Without Grounding Pin | IFAXDM1414 |
| Printer | LQ-300+II<br>S/N: G88Y109612 | EPSON | Non-shielded, Detachable | FCC DOC |
| Camera Gigabit Ethernet | acA2500-14gc<br>S/N:21134009 | BASLER | N/A | FCC DOC |
| Camera Gigabit Ethernet | acA1600-20gm<br>S/N:21137422 | BASLER | N/A | FCC DOC |
| Camera Gigabit Ethernet | acA640-100gc<br>S/N:21011292 | BASLER | N/A | FCC DOC |
| PoE Network Camera | FCS-1091<br>S/N:07122400144 | LevelOne | N/A | FCC DOC |

## 1.4 Software for Controlling Support Unit

Test programs exercising various part of EUT were used. The programs were executed as follows:

A. Read and write to the disk drives.
B. Send H pattern to the parallel port device (Printer)
C. Send H pattern to the serial port device (Modem)
D. Send H pattern to the video port device (Monitor)
E. PC receive the Camera Gigabit Ethernet signal through the EUT with pylon Viewer.exe
F. PC receive the PoE Network Camera signal through the EUT with Internet Explorer.exe
G. Repeat the above steps.

| | Filename | Issued Date |
|---|---|---|
| Monitor | Intel EMCTEST.exe | 9/04/2000 |
| Modem | Intel EMCTEST.exe | 9/04/2000 |
| Printer | Wordpad.exe | 11/11/1999 |
| Camera Gigabit Ethernet | pylon Viewer.exe | 3/05/2012 |
| PoE Network Camera | Internet Explorer.exe | 4/30/2011 |

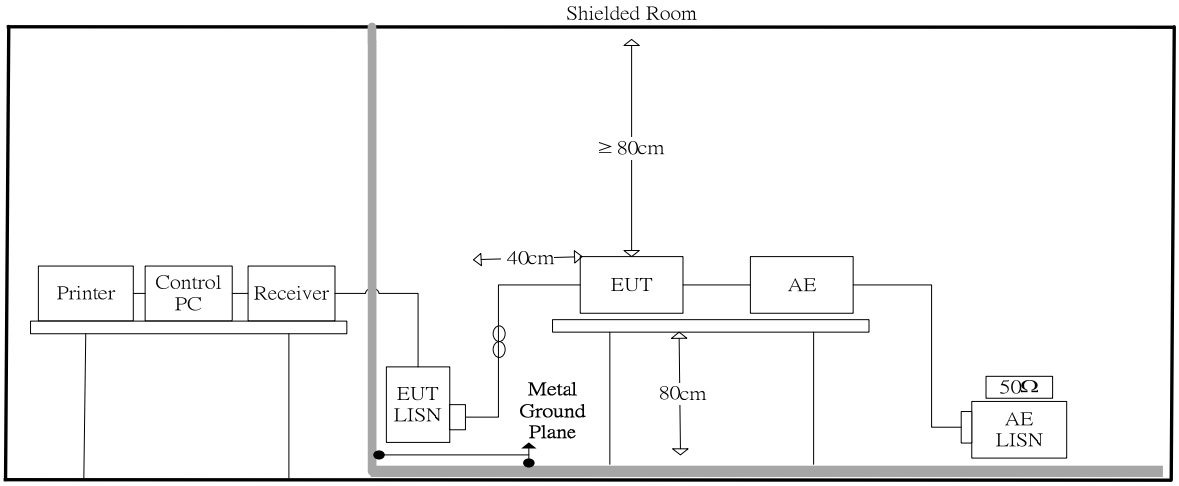
## 1.5 I/O Cable Condition of EUT and Support Units

| Description | Path | Cable Length | Cable Type | Connector Type |
|---|---|---|---|---|
| AC Power Cord | 110V (~240V) to PC SPS | 1.8M | Non-shielded, Detachable | Metal Head |
| Keyboard Data Cable | Keyboard to PC PS2 port | 1.8M | Shielded, Un-detachable | Metal Head |
| Mouse Data Cable | Mouse to PC PS2 port | 1.8M | Shielded, Un-detachable | Metal Head |
| LCD Monitor Data Cable | LCD Monitor D-Sub Port to PC D-Sub Port | 1.88M | Non-shielded, Detachable | Metal Head |
| Modem Data Cable | Modem to PC COM port | 1.5M | Shielded, Detachable | Metal Head |
| Printer Data Cable | Printer to PC Parallel port | 1.5M | Shielded, Detachable | Metal Head |
| LAN Data Cable*3 | EUT LAN port to Camera Gigabit Ethernet LAN Port | 10M | Non-shielded, Detachable | RJ-45, with Plastic Head |
| LAN Data Cable | EUT LAN Port to PoE Network Camera LAN Port | 10M | Non-shielded, Detachable | RJ-45, with Plastic Head |

# 2. Powerline Conducted Emissions

## 2.1 Test Setup and Procedure

### 2.1.1 Test Setup




### 2.1.2 Test Procedure

The measurements are performed in a 3.5m x 3.4m x 2.5m shielded room, which referred as Conduction 01 test site, or a 3m x 3m x 2.3m test site, which referred as Conduction 02 test site. The EUT was placed on non-conduction 1.0m x 1.5m table, which is 0.8 meters above an earth-grounded.

Power to the EUT was provided through the LISN which has the Impedance (50ohm/50uH) vs. Frequency Characteristic in accordance with the standard. Power to the LISNs were filtered to eliminate ambient signal interference and these filters were bonded to the ground plane. Peripheral equipment required to provide a functional system (support equipment) for EUT testing was powered from the second LISN through a ganged, metal power outlet box which is bonded to the ground plane at the LISN.

The interconnecting cables were arranged and moved to get the maximum measurement. Both the line of power cord, hot and neutral, were measured.

The highest emissions were analyzed in details by operating the spectrum analyzer in fixed tuned mode to determine the nature of the emissions and to provide information which could be useful in reducing their amplitude.

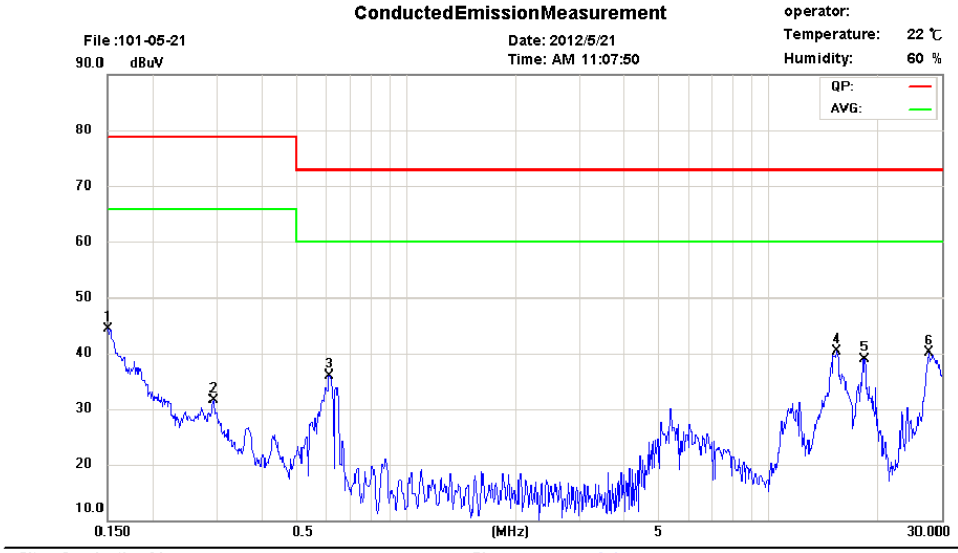
### 2.1.3 EMI Receiver/Spectrum Analyzer Configuration (for the frequencies tested)

| | |
|---|---|
| Frequency Range: | 150KHz~30MHz |
| Detector Function: | Quasi-Peak / Average Mode |
| Resolution Bandwidth: | 9KHz |

## 2.2 Conduction Test Data: Configuration 1

### Table 2.2.1 Power Line Conducted Emissions (Hot)

Test LAB:International Standards Laboratory (Hsichih Site)
Tel:886-2-26462550
Fax:886-2-26464641




Site: Conduction 01
Limit: CISPR22 Class A Conduction
Company:
EUT Model:
Execute Program:
Note:

Phase: L1
Power:
Witness:

| No. | Frequency MHz | LISN Loss dB | Cable Loss dB | QP Correct dBuV | QP Limit dBuV | QP Margin dB | AVG Correct dBuV | AVG Limit dBuV | AVG Margin dB | Note |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.1503 | 0.29 | 0.01 | 37.66 | 79.0 | -41.3 | 32.18 | 66.0 | -33.8 | |
| 2 | 0.2938 | 0.28 | 0.02 | 24.28 | 79.0 | -54.7 | 20.06 | 66.0 | -45.9 | |
| 3 | 0.6170 | 0.3 | 0.05 | 20.44 | 73.0 | -52.5 | 12.56 | 60.0 | -47.4 | |
| 4 | 15.3750 | 0.99 | 0.24 | 31.57 | 73.0 | -41.4 | 22.81 | 60.0 | -37.1 | |
| 5 | 18.2500 | 1.11 | 0.27 | 29.23 | 73.0 | -43.7 | 24.94 | 60.0 | -35.0 | |
| 6 | 27.5750 | 1.55 | 0.32 | 33.23 | 73.0 | -39.7 | 23.47 | 60.0 | -36.5 | |

Note:
Margin = Corrected Amplitude - Limit
Corrected Amplitude = Receiver Reading + LISN Loss + Cable Loss
A margin of -8dB means that the emission is 8dB below the limit
**The frequency spectrum graph is for final peak graph, and the attached table is for QP/AVG test result.**
**If peak data can pass, it will be shown in "QP/AVG Correct" column, if not, QP/AVG data will instead.**
**The CISPR 22 limits would be applied to all FCC Part 15 devices.**

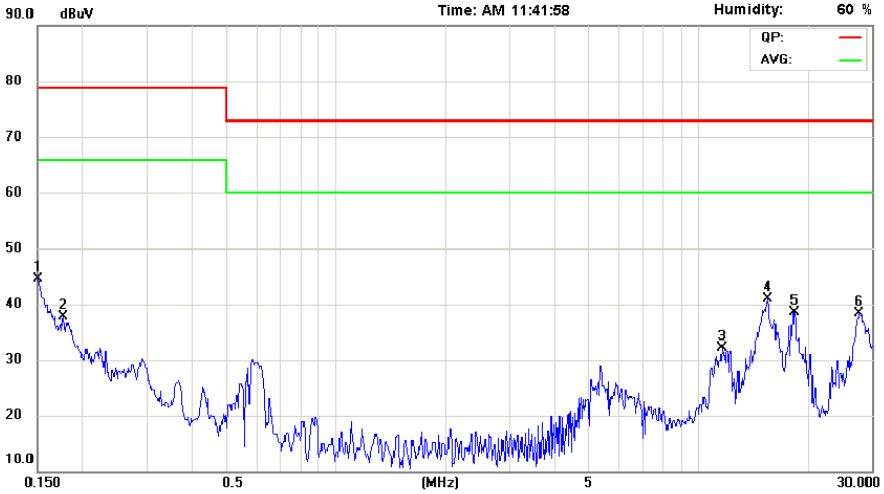
## Table 2.2.2 Power Line Conducted Emissions (Neutral)

Test LAB:International Standards Laboratory (Hsichih Site)
Tel:886-2-26462550
Fax:886-2-26464641

**ConductedEmissionMeasurement**

operator:
Temperature: 22 ℃
Humidity: 60 %

File :101-05-21
Date: 2012/5/21
Time: AM 11:41:58




Site: Conduction 01
Limit: CISPR22 Class A Conduction
Company:
EUT Model:
Execute Program:
Note:

Phase: N
Power:
Witness:

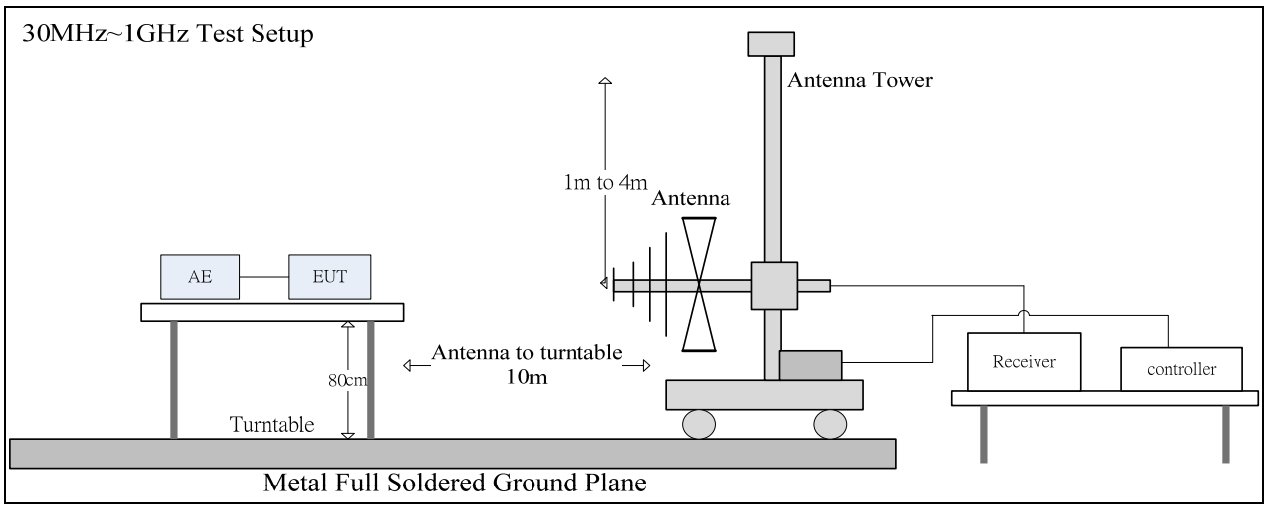
| No. | Frequency MHz | LISN Loss dB | Cable Loss dB | QP Correct dBuV | QP Limit dBuV | QP Margin dB | AVG Correct dBuV | AVG Limit dBuV | AVG Margin dB | Note |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.1500 | 0.13 | 0.01 | 37.90 | 79.0 | -41.1 | 31.98 | 66.0 | -34.0 | |
| 2 | 0.1762 | 0.13 | 0.01 | 28.06 | 79.0 | -50.9 | 22.13 | 66.0 | -43.8 | |
| 3 | 11.5750 | 0.59 | 0.23 | 20.51 | 73.0 | -52.4 | 11.74 | 60.0 | -48.2 | |
| 4 | 15.4250 | 0.76 | 0.24 | 31.12 | 73.0 | -41.8 | 22.46 | 60.0 | -37.5 | |
| 5 | 18.2500 | 0.88 | 0.27 | 28.76 | 73.0 | -44.2 | 24.60 | 60.0 | -35.4 | |
| 6 | 27.7250 | 1.02 | 0.32 | 31.95 | 73.0 | -41.0 | 22.33 | 60.0 | -37.6 | |

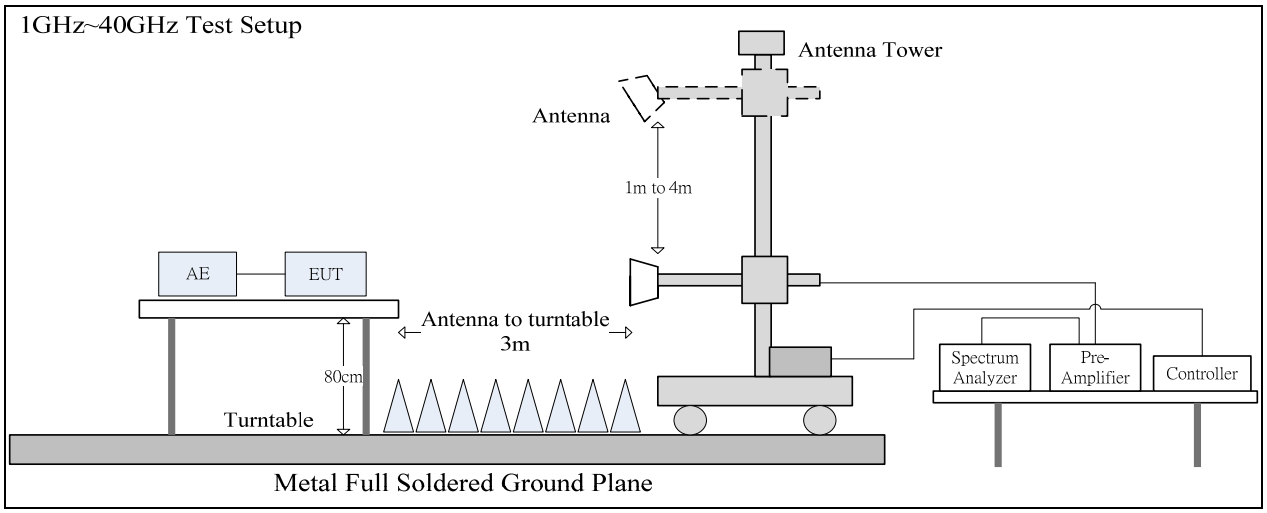
Note:
Margin = Corrected Amplitude - Limit
Corrected Amplitude = Receiver Reading + LISN Loss + Cable Loss
A margin of -8dB means that the emission is 8dB below the limit
**The frequency spectrum graph is for final peak graph, and the attached table is for QP/AVG test result. If peak data can pass, it will be shown in "QP/AVG Correct" column, if not, QP/AVG data will instead. The CISPR 22 limits would be applied to all FCC Part 15 devices.**

# 3. Radiated Emissions

## 3.1 Test Setup and Procedure

### 3.1.1 Test Setup




### 3.1.2 Test Procedure

The radiated emissions test will then be repeated on the open site or chamber to measure the amplitudes accurately and without the multiple reflections existing in the shielded room. The EUT and support equipment are set up on the turntable of one of 10 meter open field sites or 10 meter chamber. Desktop EUT are set up on a wooden stand 0.8 meter above the ground or floor-standing arrangement shall be placed on the horizontal ground reference plane. The test volume for a height of up to 30 cm may be obstructed by absorber placed on the ground plane.

For the initial measurements, the receiving antenna is varied from 1-4 meter height and is changed in the vertical plane from vertical to horizontal polarization at each frequency. The highest emissions between 30 MHz to 1000 MHz were analyzed in details by operating the spectrum analyzer and/or EMI receiver in quasi-peak mode to determine the precise amplitude of

of the emissions. The highest emissions between 1 GHz to 40 GHz were analyzed in details by operating the spectrum analyzer in peak and average mode to determine the precise amplitude of the emissions.

Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the antenna in the cone of radiation from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response. At the highest amplitudes observed, the EUT is rotated in the horizontal plane while changing the antenna polarization in the vertical plane to maximize the reading. The interconnecting cables were arranged and moved to get the maximum measurement. Once the maximum reading is obtained, the antenna elevation and polarization will be varied between specified limits to maximize the readings.

The highest internal source of an EUT is defined as the highest frequency generated or used within the EUT or on which the EUT operates or tunes. If the highest frequency of the internal sources of the EUT is less than 108 MHz, the measurement shall only be made up to 1 GHz. If the highest frequency of the internal sources of the EUT is between 108 MHz and 500 MHz, the measurement shall only be made up to 2 GHz. If the highest frequency of the internal sources of the EUT is between 500 MHz and 1 GHz, the measurement shall only be made up to 5 GHz. If the highest frequency of the internal sources of the EUT is above 1 GHz, the measurement shall be made up to 6 times the highest frequency or 40 GHz, whichever is less. Spectrum Analyzer Configuration (for the frequencies tested).

### 3.1.3 Spectrum Analyzer Configuration (for the frequencies tested)

| | |
|---|---|
| Frequency Range: | 30MHz--1000MHz |
| Detector Function: | Quasi-Peak Mode |
| Resolution Bandwidth: | 120KHz |

| | |
|---|---|
| Frequency Range: | Above 1000MHz |
| Detector Function: | Peak/Average Mode |
| Resolution Bandwidth: | 1MHz |

## 3.2 Radiation Test Data: Configuration 1

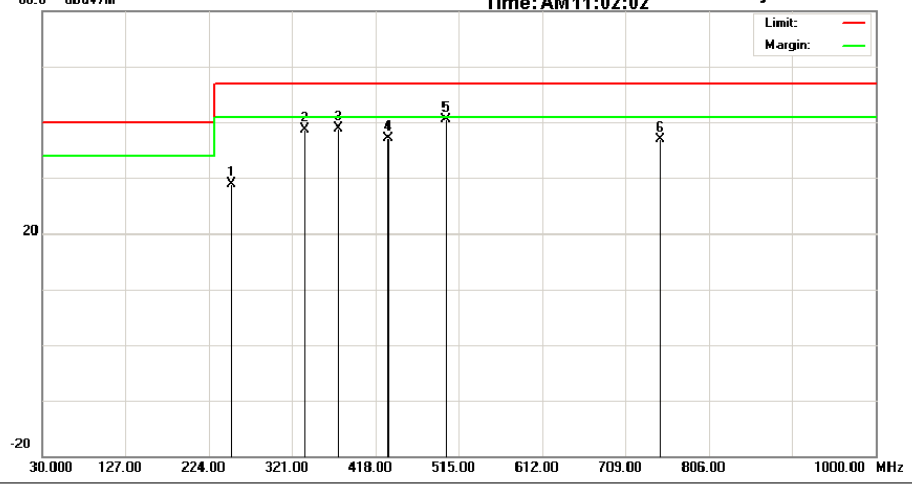
### Table 3.2.1 Radiated Emissions (Horizontal)

Test LAB:International Standards Laboratory (Hsichih Site)
Tel:886-2-26462550
Fax:886-2-26464641

Radiated Emission Measurement

Operator:
Temperature: 27 ℃
Humidity: 70 %

File:101-05-08
Data :#7
Date: 2012/5/8
Time: AM11:02:02




Site : OATS 01
Condition : CISPR22 ClassA 10M Radiation
Company:
EUT Model:
Execute Program:
Note :

Polarization: *Horizontal*
Power:
Witness:

| No. | Frequency (MHz) | RX_R (dBuV/m) | Ant_F (dB) | Cab_L (dB) | PreAmp (dB) | Emission (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Ant.Pos (cm) | Tab.Pos (deg.) | Detector |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 249.6400 | 15.98 | 11.4 | 1.58 | 0 | 28.96 | 47.00 | -18.04 | 289 | 105 | QP |
| 2 | 335.4800 | 22.89 | 14.04 | 1.85 | 0 | 38.78 | 47.00 | -8.22 | 120 | 182 | QP |
| 3 | 374.2900 | 21.91 | 14.93 | 1.98 | 0 | 38.82 | 47.00 | -8.18 | 297 | 105 | QP |
| 4 | 431.6700 | 18.56 | 16.42 | 2.14 | 0 | 37.12 | 47.00 | -9.88 | 305 | 57 | QP |
| 5 | 499.8600 | 20.21 | 17.9 | 2.31 | 0 | 40.42 | 47.00 | -6.58 | 100 | 358 | QP |
| 6 | 749.2100 | 13.47 | 20.59 | 2.88 | 0 | 36.94 | 47.00 | -10.06 | 148 | 26 | QP |

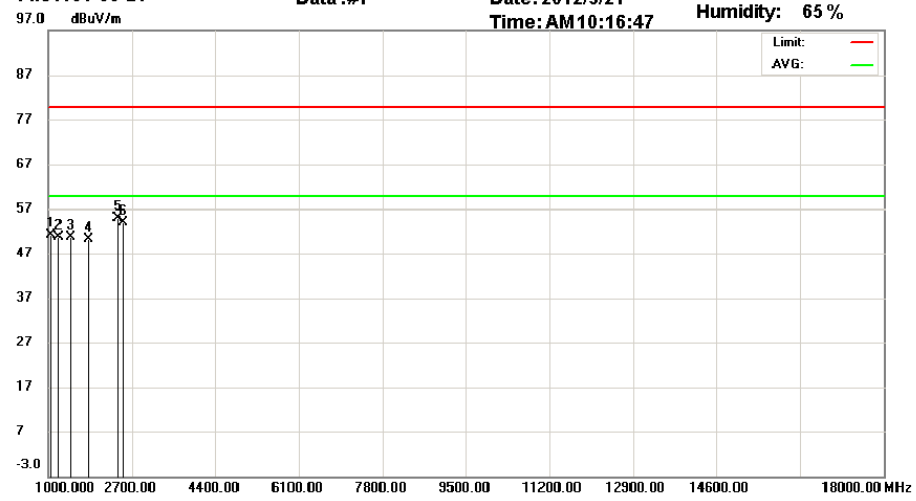
* Note:
Margin = Corrected Amplitude – Limit
Corrected Amplitude = Radiated Amplitude + Antenna Correction Factor + Cable Loss – Pre-Amplifier Gain
A margin of -8dB means that the emission is 8dB below the limit
BILOG Antenna Distance: 10 meters
**The CISPR 22 limits would be applied to all FCC Part 15 devices.**
**Below 1GHz test, if the peak measured value meets the QP limit, it is unnecessary to perform the QP measurement. measurement.**

Test LAB:International Standards Laboratory (Hsichih Site)
Tel:886-2-26462550
Fax:886-2-26464641

Radiated Emission Measurement

File :101-05-21 Data :#1 Date: 2012/5/21 Time: AM10:16:47

Operator:
Temperature: 24 ℃
Humidity: 65 %




Site : Chamber 01
Condition : FCC Class A Radiation
Company:
EUT Model:
Execute Program:
Note :

Polarization: *Horizontal*
Power:
Witness:

| Mk. | Frequency (MHz) | RX_R (dBuV/m) | Ant_F (dB) | Cab_L (dB) | PreAmp (dB) | Emission (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Ant.Pos (cm) | Tab.Pos (deg.) | Detector |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1050.130 | 75.65 | 24.49 | 3 | 51.95 | 51.19 | 80.00 | -28.81 | 145 | 83 | peak |
| 2 | 1205.260 | 74.57 | 24.77 | 3.21 | 51.99 | 50.56 | 80.00 | -29.44 | 152 | 329 | peak |
| 3 | 1450.765 | 74.00 | 25.21 | 3.55 | 52.04 | 50.72 | 80.00 | -29.28 | 100 | 153 | peak |
| 4 | 1805.200 | 71.72 | 26.58 | 3.99 | 52.1 | 50.19 | 80.00 | -29.81 | 250 | 205 | peak |
| 5 | 2400.940 | 74.04 | 28.28 | 4.64 | 52.09 | 54.87 | 80.00 | -25.13 | 295 | 178 | peak |
| 6 | 2515.520 | 72.73 | 28.55 | 4.76 | 52.08 | 53.96 | 80.00 | -26.04 | 145 | 64 | peak |

*:Maximum data x:Over limit !:over margin

* Note:
Margin = Corrected Amplitude – Limit
Corrected Amplitude = Radiated Amplitude + Antenna Correction Factor + Cable Loss – Pre-Amplifier Gain
A margin of -8dB means that the emission is 8dB below the limit
Horn Antenna Distance: 3 meters
**The CISPR 22 limits would be applied to all FCC Part 15 devices.**
**Above 1GHz test, if the peak measured value meets the average limit, it is unnecessary to perform the average measurement.**

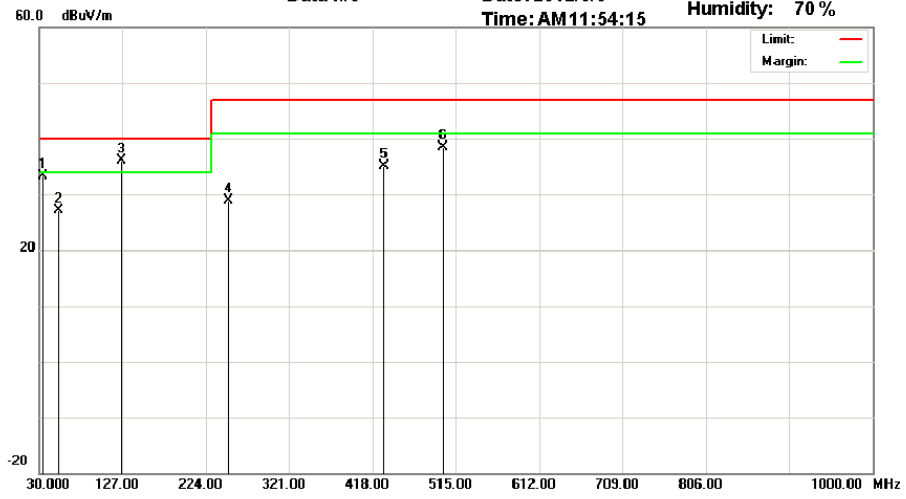
## Table 3.2.2 Radiated Emissions (Vertical)

Test LAB:International Standards Laboratory (Hsichih Site)
Tel:886-2-26462550
Fax:886-2-26464641

Radiated Emission Measurement

Operator:
Temperature: 27 ℃
Humidity: 70 %

File :101-05-08
Data :#8
Date: 2012/5/8
Time: AM11:54:15




Site : OATS 01
Condition : CISPR22 ClassA 10M Radiation
Company:
EUT Model:
Execute Program:
Note :

Polarization: *Vertical*
Power:
Witness:

| No. | Frequency (MHz) | RX_R (dBuV/m) | Ant_F (dB) | Cab_L (dB) | PreAmp (dB) | Emission (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Ant.Pos (cm) | Tab.Pos (deg.) | Detector |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 33.5600 | 14.15 | 18.54 | 0.61 | 0 | 33.30 | 40.00 | -6.70 | 153 | 313 | QP |
| 2 | 51.4700 | 18.55 | 7.81 | 0.74 | 0 | 27.10 | 40.00 | -12.90 | 113 | 185 | QP |
| 3 | 125.8800 | 21.09 | 13.98 | 1.11 | 0 | 36.18 | 40.00 | -3.82 | 100 | 289 | QP |
| 4 | 249.6200 | 15.98 | 11.4 | 1.58 | 0 | 28.96 | 47.00 | -18.04 | 384 | 325 | QP |
| 5 | 431.4500 | 16.56 | 16.42 | 2.14 | 0 | 35.12 | 47.00 | -11.88 | 100 | 28 | QP |
| 6 | 499.7700 | 18.21 | 17.9 | 2.31 | 0 | 38.42 | 47.00 | -8.58 | 260 | 97 | QP |

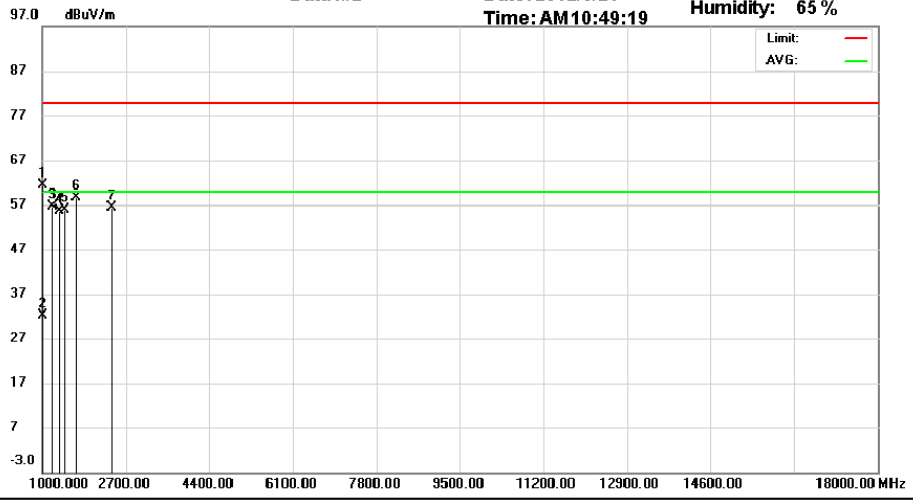
* Note:
Margin = Corrected Amplitude – Limit
Corrected Amplitude = Radiated Amplitude + Antenna Correction Factor + Cable Loss – Pre-Amplifier Gain
A margin of -8dB means that the emission is 8dB below the limit
BILOG Antenna Distance: 10 meters
**The CISPR 22 limits would be applied to all FCC Part 15 devices.**
**Below 1GHz test, if the peak measured value meets the QP limit, it is unnecessary to perform the QP measurement. measurement.**

Test LAB:International Standards Laboratory (Hsichih Site)
Tel:886-2-26462550
Fax:886-2-26464641

Radiated Emission Measurement

Operator:
Temperature: 24 ℃
Humidity: 65 %

File :101-05-21 Data :#2 Date: 2012/5/21 Time: AM10:49:19




Site : Chamber 01
Condition : FCC Class A Radiation
Company:
EUT Model:
Execute Program:
Note :

Polarization: *Vertical*
Power:
Witness:

| Mk. | Frequency (MHz) | RX_R (dBuV/m) | Ant_F (dB) | Cab_L (dB) | PreAmp (dB) | Emission (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Ant.Pos (cm) | Tab.Pos (deg.) | Detector |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1010.650 | 86.07 | 24.42 | 2.94 | 51.94 | 61.49 | 80.00 | -18.51 | 151 | 178 | peak |
| 2 | 1010.650 | 56.73 | 24.42 | 2.94 | 51.94 | 32.15 | 60.00 | -27.85 | 151 | 178 | AVG |
| 3 | 1205.728 | 80.70 | 24.77 | 3.21 | 51.99 | 56.69 | 80.00 | -23.31 | 192 | 170 | peak |
| 4 | 1345.900 | 79.28 | 25.02 | 3.41 | 52.02 | 55.69 | 80.00 | -24.31 | 100 | 26 | peak |
| 5 | 1450.314 | 79.26 | 25.21 | 3.55 | 52.04 | 55.98 | 80.00 | -24.02 | 100 | 310 | peak |
| 6 | 1660.270 | 80.87 | 25.97 | 3.81 | 52.08 | 58.57 | 80.00 | -21.43 | 295 | 194 | peak |
| 7 | 2394.620 | 75.45 | 28.27 | 4.63 | 52.09 | 56.26 | 80.00 | -23.74 | 100 | 271 | peak |

*:Maximum data x:Over limit !:over margin

* Note:
Margin = Corrected Amplitude – Limit
Corrected Amplitude = Radiated Amplitude + Antenna Correction Factor + Cable Loss – Pre-Amplifier Gain
A margin of -8dB means that the emission is 8dB below the limit
Horn Antenna Distance: 3 meters
**The CISPR 22 limits would be applied to all FCC Part 15 devices.**
**Above 1GHz test, if the peak measured value meets the average limit, it is unnecessary to perform the average measurement.**

# 4. Appendix

## 4.1 Appendix A: Warning Labels

**Label Requirements**

A Class A digital device subject to certification by the FCC shall carry a warning label which includes the following statement:

*** * * W A R N I N G * * ***

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

## 4.2 Appendix B: Warning Statement

**Statement Requirements**

The operators' manual for a Class A digital device shall contain the following statements or their equivalent:

*** * * W A R N I N G * * ***

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment This equipment generates, uses, and can radiate radio frequency energy and, if not installed and uses in accordance with the instruction manual, may cause harmful interference to radio communications Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Notice: The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equivalent.

* * * * * * * * *

If the EUT was tested with special shielded cables the operators manual for such product shall also contain the following statements or their equivalent:

Shielded interface cables and/or AC power cord, if any, must be used in order to comply with the emission limits.

## 4.3 Appendix C: Test Equipment

### 4.3.1 Test Equipment List

| Location CON01 | Equipment Name | Brand | Model | S/N | Last Cal. Date | Next Cal. Date |
|---|---|---|---|---|---|---|
| Conduction | Coaxial Cable 1F-C1 | EMEC | 5D Cable | 1F-C1 | 10/25/2011 | 10/25/2012 |
| Conduction | LISN 02 | EMCO | 3825/2 | 1407 | 07/28/2011 | 07/28/2012 |
| Conduction | LISN 03 | R&S | ESH3-Z5 831.5518.52 | 828874/010 | 07/28/2011 | 07/28/2012 |
| Conduction | ISN T2 03 | FCC | FCC-TLISN-T2-02 | 20618 | 07/28/2011 | 07/28/2012 |
| Conduction | ISN T4 05 | FCC | FCC-TLISN-T4-02 | 20619 | 07/28/2011 | 07/28/2012 |
| Conduction | ISN T8 03 | FCC | FCC-TLINS-T8-02 | 20620 | 07/28/2011 | 07/28/2012 |
| Conduction | EMI Receiver 15 | ROHDE & SCHWARZ | ESCI | 101166 | 04/24/2012 | 04/24/2013 |

| Location OATS01 | Equipment Name | Brand | Model | S/N | Last Cal. Date | Next Cal. Date |
|---|---|---|---|---|---|---|
| Radiation | BILOG Antenna 10 | Sumol Sciences | JB1 | A013004-1 | 07/18/2011 | 07/18/2012 |
| Radiation | Coaxial Cable 3F-10M | EMCI | CFD400-NL | ISL-R001 | 03/16/2012 | 03/16/2013 |
| Radiation | EMI Receiver 13 | ROHDE & SCHWARZ | ESCI | 101015 | 02/22/2012 | 02/22/2013 |

| Location Chamber 01 | Equipment Name | Brand | Model | S/N | Last Cal. Date | Next Cal. Date |
|---|---|---|---|---|---|---|
| Rad. above 1Ghz | Horn Antenna 01 | EMCO | 3115 | 9504-4462 | 11/23/2011 | 11/23/2012 |
| Rad. above 1Ghz | Horn Antenna 03 | COM-Power | AH-826 | 100A | 03/15/2011 | 03/15/2013 |
| Rad. above 1Ghz | Microwave Cable-06 | HUBER SUHNER | SUCFLEX 106 | 60404/6 | 07/13/2011 | 07/13/2012 |
| Rad. above 1Ghz | Preamplifier 17 | EMCI | EMC 01630 | 980009 | 08/03/2011 | 08/03/2012 |
| Rad. above 1Ghz | Preamplifier 20 | EMCI | EMC051845 | 980084 | 10/26/2011 | 10/26/2012 |
| Rad. above 1Ghz | Spectrum Analyzer 23 | ROHDE & SCHWARZ | FSU43 | 101255 | 10/06/2011 | 10/06/2012 |

### 4.3.2 Software for Controlling Spectrum/Receiver and Calculating Test Data

| Radiation/Conduction | Filename | Version | Issued Date |
|---|---|---|---|
| Hsichih Conduction | EZ EMC | 1.1.4.2 | 2/10/2007 |
| Hsichih Radiation | EZ EMC | 1.1.4.2 | 1/24/2007 |

## 4.4 Appendix D: Uncertainty of Measurement

The measurement uncertainty refers to CISPR 16-4-2:2003. The coverage factor k = 2 yields approximately a 95 % level of confidence.

<Conduction 01> ± 3.262dB

<OATS 01 (10M)>
Horizontal
30MHz~200MHz: ±4.216 dB
200MHz~1GHz: ±4.438 dB
Vertical
30MHz~200MHz: ±4.342 dB
200MHz~1GHz: ±4.426 dB

<Chamber 01 (3M)>
1GHz~18GHz: ± 3.515dB
18GHz~26.5GHz: ± 3.424dB

## 4.5 Appendix E: Photographs of EUT Configuration Test Set Up

The Front View of Highest Conducted Set-up For EUT

The Back View of Highest Conducted Set-up For EUT

The Front View of Highest Radiated Set-up For EUT (below 1GHz)

The Back View of Highest Radiated Set-up For EUT (below 1GHz)

The Front View of Highest Radiated Set-up For EUT (above 1GHz)

The Back View of Highest Radiated Set-up For EUT (above 1GHz)