# Certificate of Conformity

The products

**EUT : DC TO DC POWER Module**
**Trade Name : ----**
**Model No. : picoPSU-90-XLP**

which produced by

**Ituner Networks Corp.**
**47801 Fremont Bvd., Fremont, CA 94538, USA**

Regulation Applied: FCC Rules and Regulations Part 15 Subpart B (2009); Class B

I HEREBY CERTIFY THAT: The data shown in this report were made in accordance with the procedures given in ANSI C63.4 and the energy emitted by the device was founded to be within the limits applicable. I assume full responsibility for accuracy and completeness of these data.

Signature
Will Yauo
Manager of EMC Testing Department II
Electronics Testing Center, Taiwan

Report Number : 10-11-RBF-186-02
Date of Issue: Dec. 06, 2010

**Note: 1. The result of the testing report relate only to the item tested.**
**2. The testing report shall not be reproduced expect in full, without the written approval of ETC.**

ELECTRONICS TESTING CENTER, TAIWAN
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# FCC CLASS B EMI TEST REPORT

# of

E.U.T. : DC TO DC POWER Module

Model No. : picoPSU-90-XLP

for

APPLICANT : Ituner Networks Corp.

ADDRESS : 47801 Fremont Bvd., Fremont, CA 94538, USA

**Test Performed by**


**ELECTRONICS TESTING CENTER, TAIWAN**

NO. 34. LIN 5. DINGFU TSUEN, LINKOU SHIANG

TAIPEI COUNTY, TAIWAN, 24442, R.O.C.

Tel : (02)26023052 Fax : (02)26010910

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Report Number : 10-11-RBF-186-02

# TEST REPORT CERTIFICATION

| | |
|---|---|
| Applicant | : Ituner Networks Corp.<br>47801 Fremont Bvd., Fremont, CA 94538, USA |
| Manufacture | : Eastern Electronics Co., Ltd.<br>NO.4 Shin-Long Road, Kwei-Shan Industrial Area<br>Tao-Yuan, Taiwan R.O.C. |
| Description of Device | : |
| a) Type of EUT | : DC TO DC POWER Module |
| b) Trade Name | : ---- |
| c) Model No. | : picoPSU-90-XLP |
| d) Power Supply | : I/P:100-240V, 50-60Hz, 0.8A<br>O/P:12V, 5A |
| Regulation Applied | : FCC Rules and Regulations Part 15 Subpart B (2009); |

I HEREBY CERTIFY THAT : The data shown in this report were made in accordance with the procedures given in ANSI-63.4 and the energy emitted by the device was founded to be within the limits applicable. I assume full responsibility for accuracy and completeness of these data.

Note : 1. The results of the testing report relate only to the items tested.
2. The testing report shall not be reproduced except in full, without the written approval of ETC.

| | | |
|---|---|---|
| Date Test Item Received | : | Nov. 22, 2010 |
| Date Test Campaign Completed | : | Nov. 29, 2010 |
| Date of Issue | : | Dec. 06, 2010 |

Test Engineer :

(Chris Wu, Engineer )

Check By :

( Charles Wang, Supervisor )

Approve & Authorized :

Will Yauo, Manager
EMC Dept. II of ELECTRONICS
TESTING CENTER, TAIWAN

## Table of Contents Page

# 1. GENERAL INFORMATION

## 1.1 Product Description

a) Type of EUT : DC TO DC POWER Module

b) Trade Name : ----

c) Model No. : picoPSU-90-XLP

d) Power Supply : I/P:100-240V, 50-60Hz, 0.8A
O/P:12V, 5A

## 1.2 Tested System Details

The Tested System Detail equipment, plus description of all cables used in the tested system are:

| Description | Manufacturer | Model | Cable |
|---|---|---|---|
| DC TO DC POWER Module * | Eastern Electronics Co., Ltd. | picoPSU-90-XLP | 1.8m Non-shielded AC Adaptor Power Cord<br>0.8m Non-shielded AC Adaptor DC output cable with 1 core |

*EUT Submitted for test.

## 1.3 Test Methodology

Both conducted and radiated testing were performed according to the procedures in FCC/ANSI C63.4, Radiated testing was performed at an antenna to EUT distance of 10 meters.

## 1.4 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data is located on the roof top of Building at NO. 34. LIN 5. DINGFU TSUEN, LINKOU SHIANG TAIPEI COUNTY, TAIWAN, 24442, R.O.C.
This site has been fully described in a report submitted to your office, and accepted in a letter dated Aug. 05, 2008.
Open Area Test Site Industry Canada Number: IC 2949A-1.

# 2. PRODUCT LABELING AND USER INFORMATION

## 2.1 Class Definition

Class A Digital Device: A digital device which is marketed for use in commercial or business environment; exclusive of a device which is market for use by the general public, or which is intended to be used in the home.

Class B Digital Device : A digital device which is marketed for use in a residential environment notwithstanding use in a commercial, business of industrial environment. Example of such devices that are marketed for the general public.

Note : A manufacturer may also qualify a device intended to be marketed in a commercial, business, or industrial environment as a Class B digital device, and in fact is encouraged to do so, provided the device complies with the technical specifications for a Class B Digital Device. In the event that a particular type of device has been found to repeatedly cause harmful interference to radio communications, the Commission may classify such a digital device as a Class B Digital Device, Regardless of its intended use.

## 2.2 Class Limitations

**(1) Conducted Emission Requirement**

For unintentional device, according to FCC §15.107(a) Line Conducted Emission Limits class A is as following:

| Frequency MHz | Quasi Peak dB μ V | Average dB μ V |
|---|---|---|
| 0.15 - 0.5 | 79 | 66 |
| 0.5 - 30.0 | 73 | 60 |

For unintentional device, according to FCC §15.107(a) Line Conducted Emission Limits class B is as following:

| Frequency MHz | Quasi Peak dB μ V | Average dB μ V |
|---|---|---|
| 0.15 - 0.5 | 66-56 | 56-46 |
| 0.5 - 5.0 | 56 | 46 |
| 5.0 - 30.0 | 60 | 50 |

**(2) Radiated Emission Requirement**

For unintentional device, according to FCC §15.109(a), the field strength of radiated emissions from unintentional radiators at a distance of 10 meters shall not exceed the following values:

| Frequency MHZ | Distance Meters | Radiated dBuV/m | Radiated uV/m |
|---|---|---|---|
| 30 - 88 | 10 | 39.0 | 90 |
| 88 - 216 | 10 | 43.5 | 150 |
| 216 - 960 | 10 | 46.4 | 210 |
| Above 960 | 10 | 49.5 | 300 |

For unintentional device, according to FCC §15.109(a), the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

| Frequency MHZ | Distance Meters | Radiated dBuV/m | Radiated uV/m |
|---|---|---|---|
| 30 - 88 | 3 | 40.0 | 100 |
| 88 - 216 | 3 | 43.5 | 150 |
| 216 - 960 | 3 | 46.0 | 200 |
| Above 960 | 3 | 54.0 | 500 |

For unintentional device, according to CISPR Line Radiated Emission Limits class A is as following:

| Frequency Range | Distance Meters | Emissions dBuV/m |
|---|---|---|
| 30 - 230 | 10 | 40 |
| 230 - 1000 | 10 | 47 |

For unintentional device, according to CISPR Line Radiated Emission Limits class B is as following:

| Frequency MHz | Distance Meters | Radiated dBμV/m |
|---|---|---|
| 30 to 230 | 10 | 30 |
| 230 to 1000 | 10 | 37 |

## 2.3 Labeling Requirement

**(1) FCC labeling Requirement**

The device shall bear the following statement in a conspicuous location on the device.

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

(2) This device must accept any interference received, including interference that may cause undesired operation.

**(2) Industry Canada labeling Requirement**

Each unit of digital apparatus is required to be provided with a written notice indicating compliance with ICES-003. The notice must be in the form of a label that is affixed to the unit. While this notice may be combined with that required by the FCC, it must clearly indicate compliance with Canadian ICES-003.

Suggested text for the notice indicating compliance with this Standard:

This Class [*] digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe [*] est conforme à la norme NMB-003 du Canada.

[*] Insert either "A" or "B" but not both as appropriate for the equipment requirements.

The requirements of ICES-003 will be satisfied by the appearance of the notice in either English or French (the two official languages of Canada).

## 2.4 User Information

For a Class A digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual.

The Federal Communications Commission Radio Frequency Interference Statement includes the following paragraph.

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 in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction may cause harmful interference to radio communication. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-- Reorient or relocate the receiving antenna.

-- Increase the separation between the equipment and receiver.

-- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-- Consult the dealer or an experienced radio / TV technician for help.

# 3. SYSTEM TEST CONFIGURATION

## 3.1 Justification

The system was configured for testing in EUT is working.

The EUT was rotated to obtain the maximum level of radiated emissions .The antenna was varied in height above ground to obtain the maximum signal strength. The antenna height was varied from 1 to 4 meters.

All test results are listing on chapter 5 and 6.

## 3.2 Configuration of Tested System

Please Refer to Page 8 & 9.

## 3.3 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

| Measurement | Frequency | Uncertainty |
|---|---|---|
| Conducted emissions | 150kHz ~ 30MHz | 2.45(Mains) |
| Conducted emission at telecommunication ports | 150kHz ~ 30MHz | 2.22(Voltage) |
| | | 2.88(Current) |
| Radiated emissions | 30MHz ~ 1GHz | 3.90(30MHz≦f≦300MHz) |
| | | 3.95(300MHz＜f≦1GHz) |
| | Above 1GHz | 4.42(1GHz≦f≦18GHz) |

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

## 3.4 Description of Test Mode

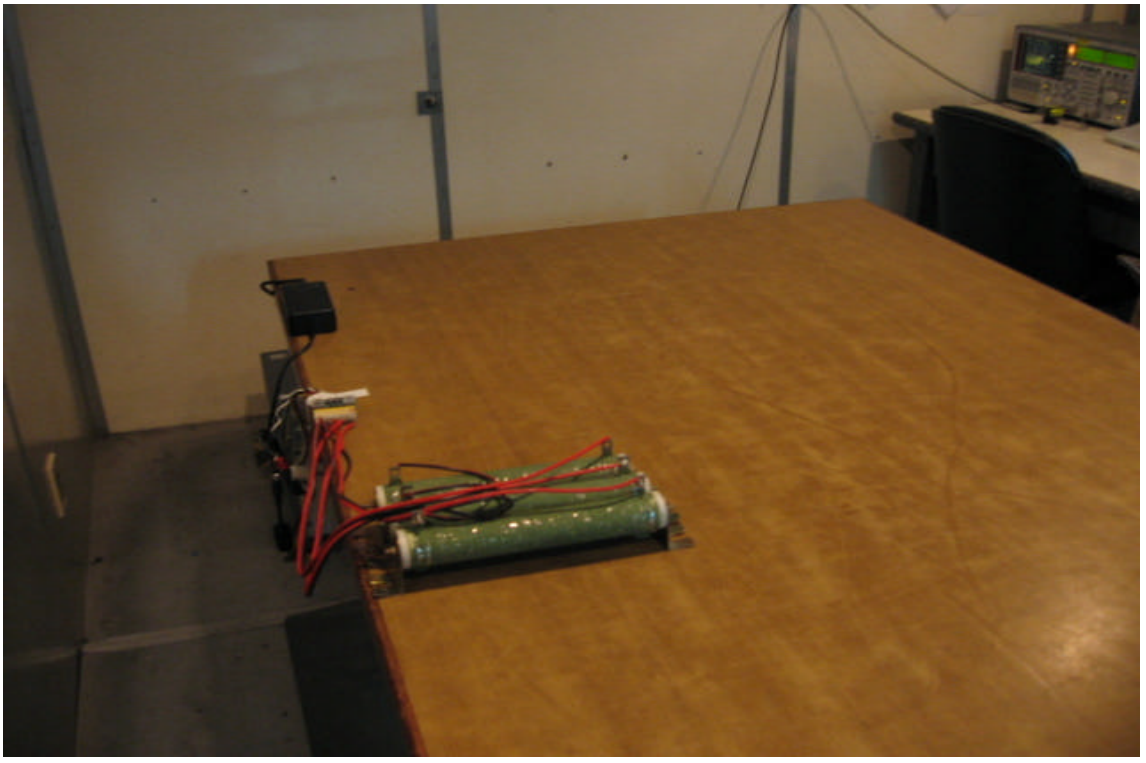
The EUT is designed with DC 12V radiated emission evaluation, DC 12V had been covered during the pre-test. The worst radiated emission data was found at DC 12V and recorded in the applied test report.

The EUT has been pre-tested under following modes, and mode 1 is the worst case for final emission test.

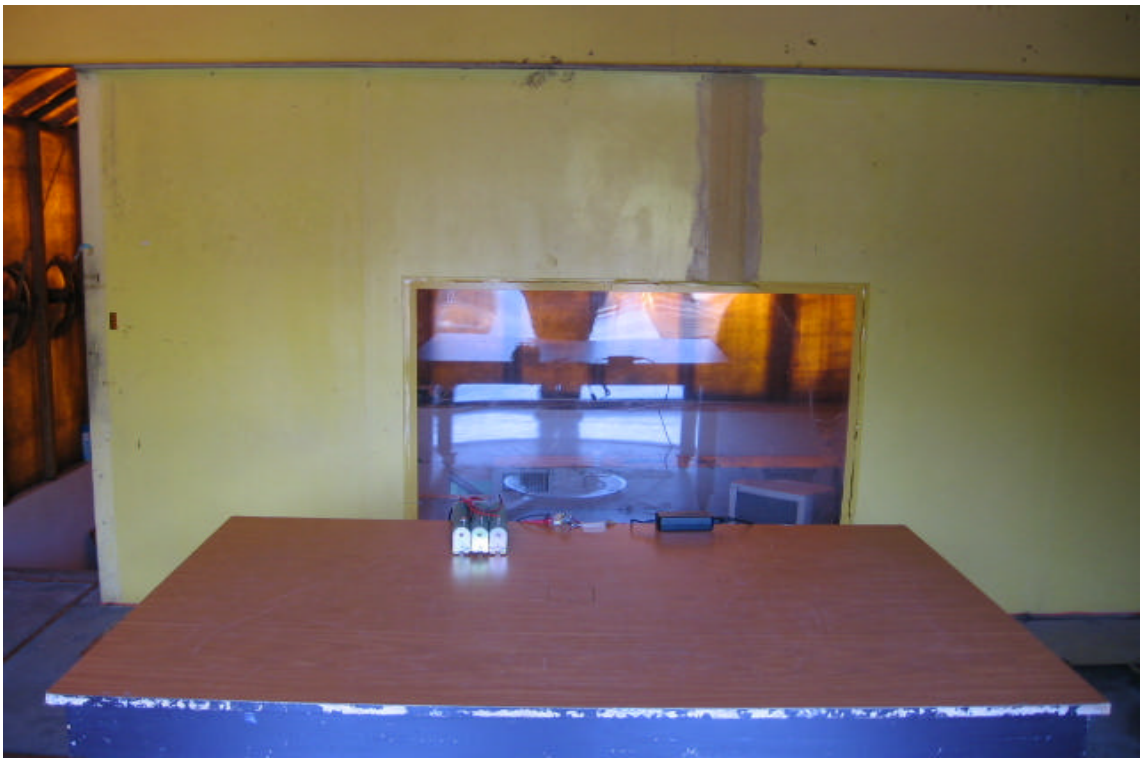
| Test Mode | Test condition |
|---|---|
| 1 | Operation Mode:Full Load(Working) |

# 4. MEASUREMENT PHOTOS

## 4.1 Conducted Measurement Photos



## 4.2 Radiated Measurement Photos

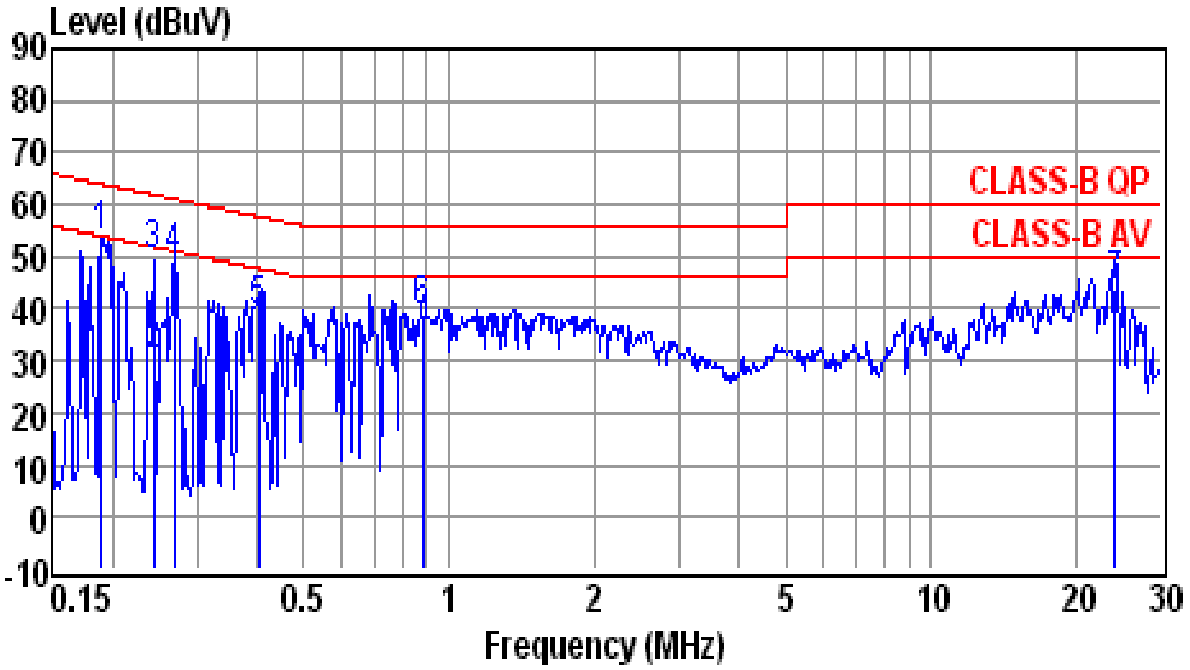


# 5. CONDUCTED EMISSION DATA

## 5.1 Standard Applicable

The initial setup in collecting conducted data is a spectrum analyzer peak scan of the measurement range. Significant peaks are then marked as shown on following data pages, and these signals are the quasi-peaked.

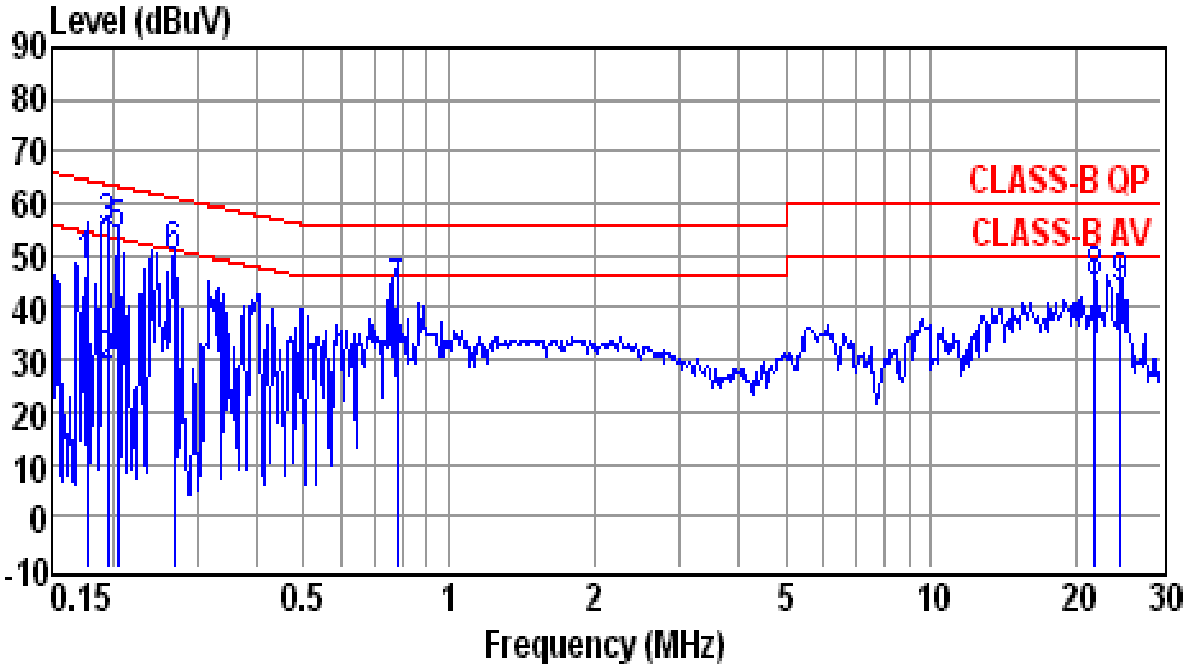
# CONDUCTED EMISSION DATA




| | | | |
|---|---|---|---|
| Site | : conducted #1 | Date | : 12-09-2010 |
| Condition | : CLASS-B QP | LISN | : NEUTRAL |
| Tem / Hum | : 23 ℃ / 56% | Test Mode | : |
| EUT | : | Power Rating | : 120V/60Hz |
| Memo | : | Memo | : |

| Freq (MHz) | Reading (dBuV) | Factor (dB) | Emission Level (dBuV) | Limit Line (dBuV) | Over Limit (dB) | Remark |
|---|---|---|---|---|---|---|
| 0.1894 | 52.79 | 0.50 | 53.29 | 64.06 | -10.77 | QP |
| 0.2442 | 30.08 | 0.50 | 30.58 | 51.95 | -21.37 | Average |
| 0.2442 | 49.60 | 0.50 | 50.10 | 61.95 | -11.85 | QP |
| 0.2687 | 48.63 | 0.50 | 49.13 | 61.16 | -12.03 | QP |
| 0.4019 | 38.62 | 0.52 | 39.14 | 57.81 | -18.67 | QP |
| 0.8803 | 38.82 | 0.55 | 39.37 | 56.00 | -16.63 | QP |
| 24.1420 | 42.98 | 1.00 | 43.98 | 60.00 | -16.02 | QP |

Note :
1. Result = Reading + Factor
2. Factor = LISN Factor + Cable Loss




| | | | |
|---|---|---|---|
| Site | : conducted #1 | Date | : 12-09-2010 |
| Condition | : CLASS-B QP | LISN | : LINE |
| Tem / Hum | : 23 ℃ / 56% | Test Mode | : |
| EUT | : | Power Rating | : 120V/60Hz |
| Memo | : | Memo | : |

| Freq (MHz) | Reading (dBuV) | Factor (dB) | Emission Level (dBuV) | Limit Line (dBuV) | Over Limit (dB) | Remark |
|---|---|---|---|---|---|---|
| 0.1777 | 47.21 | 0.50 | 47.71 | 64.59 | -16.88 | QP |
| 0.1955 | 27.70 | 0.50 | 28.20 | 53.80 | -25.60 | Average |
| 0.1955 | 54.41 | 0.50 | 54.91 | 63.80 | -8.89 | QP |
| 0.2051 | 28.40 | 0.50 | 28.90 | 53.40 | -24.50 | Average |
| 0.2051 | 53.16 | 0.50 | 53.66 | 63.40 | -9.74 | QP |
| 0.2687 | 49.04 | 0.50 | 49.54 | 61.16 | -11.62 | QP |
| 0.7793 | 41.61 | 0.55 | 42.16 | 56.00 | -13.84 | QP |
| 21.9460 | 43.43 | 1.04 | 44.47 | 60.00 | -15.53 | QP |
| 24.7900 | 42.48 | 0.98 | 43.46 | 60.00 | -16.54 | QP |

Note :
1. Result = Reading + Factor
2. Factor = LISN Factor + Cable Loss

# 6. RADIATED EMISSION DATA

## 6.1 Open Site Radiated Test Results

The following data lists the significant emission frequencies, measured levels, correction factor (includes cable and antenna corrections), the corrected reading, and the limit. The result value is quasi-peaked by R & S Test Receiver. Explanation of the Correction Factor is given in paragraph 6.2.

# RADIATED EMISSION DATA

Operation Mode : Full Load(Working) Ant-Pol: Horizontal

Power Supply : DC 12V

Test Date : Nov. 29, 2010 Temperature : 23 ℃ Humidity : 56 %

| Emission Frequency (MHz) | Meter Reading ( dB μ V ) | Corr'd Factor ( dB ) | Results ( dB μ V/m ) | Limit @ 3 m (dB μ V/m) | Margin ( dB ) | AH (m) | DRT degree |
|---|---|---|---|---|---|---|---|
| 101.82 | 28.9 | 11.4 | 40.3 | 43.5 | -3.2 | 1.5 | 198.4 |
| 190.38 | 23.2 | 17.6 | 40.8 | 43.5 | -2.7 | 1.4 | 203.9 |
| 193.62 | 23.2 | 18.0 | 41.2 | 43.5 | -2.3 | 1.3 | 192.8 |
| 458.26 | 20.5 | 20.4 | 40.9 | 46.0 | -5.1 | 1.5 | 211.5 |
| 466.65 | 20.8 | 20.7 | 41.5 | 46.0 | -4.5 | 1.3 | 173.4 |
| 539.47 | 19.7 | 22.4 | 42.1 | 46.0 | -3.9 | 1.4 | 185.6 |

Operation Mode : Full Load(Working) Ant-Pol: Vertical

| Emission Frequency (MHz) | Meter Reading ( dB μ V ) | Corr'd Factor ( dB ) | Results ( dB μ V/m ) | Limit @ 3 m (dB μ V/m) | Margin ( dB ) | AH (m) | DRT degree |
|---|---|---|---|---|---|---|---|
| 101.82 | 29.5 | 11.4 | 40.9 | 43.5 | -2.6 | 1.1 | 181.9 |
| 190.38 | 23.7 | 17.6 | 41.3 | 43.5 | -2.2 | 1.0 | 173.4 |
| 193.62 | 23.4 | 18.0 | 41.4 | 43.5 | -2.1 | 1.2 | 163.8 |
| 458.26 | 21.3 | 20.4 | 41.7 | 46.0 | -4.3 | 1.1 | 151.9 |
| 466.65 | 20.1 | 20.7 | 40.8 | 46.0 | -5.2 | 1.0 | 241.8 |
| 539.47 | 19.8 | 22.4 | 42.2 | 46.0 | -3.8 | 1.2 | 222.7 |

*Note :*

*1. Remark "---" means that the emissions from EUT are too weak to be measured.*

## 6.2 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the measured reading. The basic equation with a sample calculation is as follows:

Results = Meter Reading + CORR'd Factor

CORR'd Factor = AF + CF - AG

AF = Antenna Factor

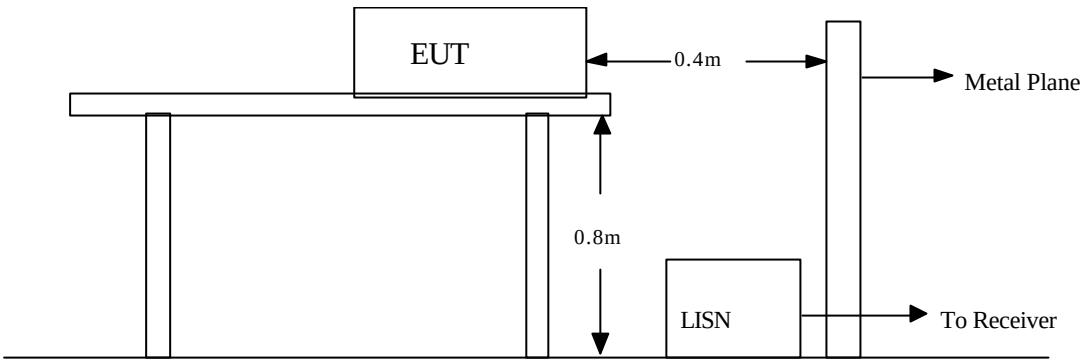
CF = Cable Attenuation Factor

AG = Amplifier Gain

# 7. TEST EQUIPMENT

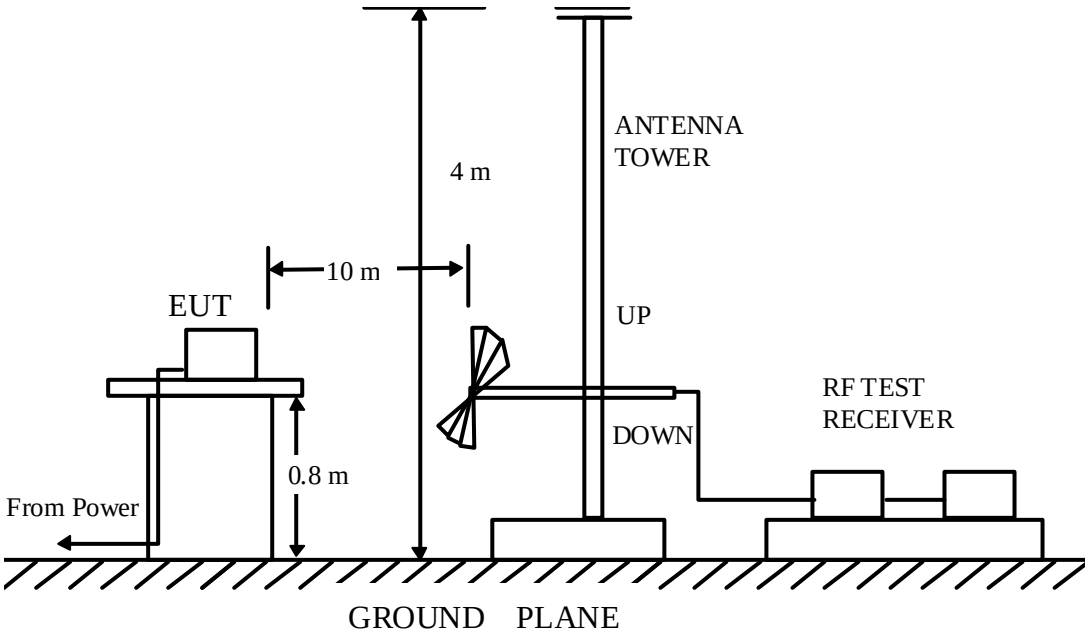
## 7.1 Test Setup

I. Conducted Test Setup Diagram




Metal floor surfaced with 30mm of insulating material

II. Open Field Test Site Setup Diagram



## 7.2 Conducted Test Equipments

The following test equipments are used during the conducted test .

| Equipment | Manufacturer | Model No. | Calibration Date | Next Cal. Date |
|---|---|---|---|---|
| EMI Test Receiver | Rohde & Schwarz | ESVS30 | 2010/05/14 | 2011/05/13 |
| LISN | EMCO | 3625/2 | 2010/02/08 | 2011/02/07 |
| LISN | Rohde & Schwarz | ESH2-Z5 | 2010/07/16 | 2011/07/15 |

## 7.3 Radiated Test Equipments

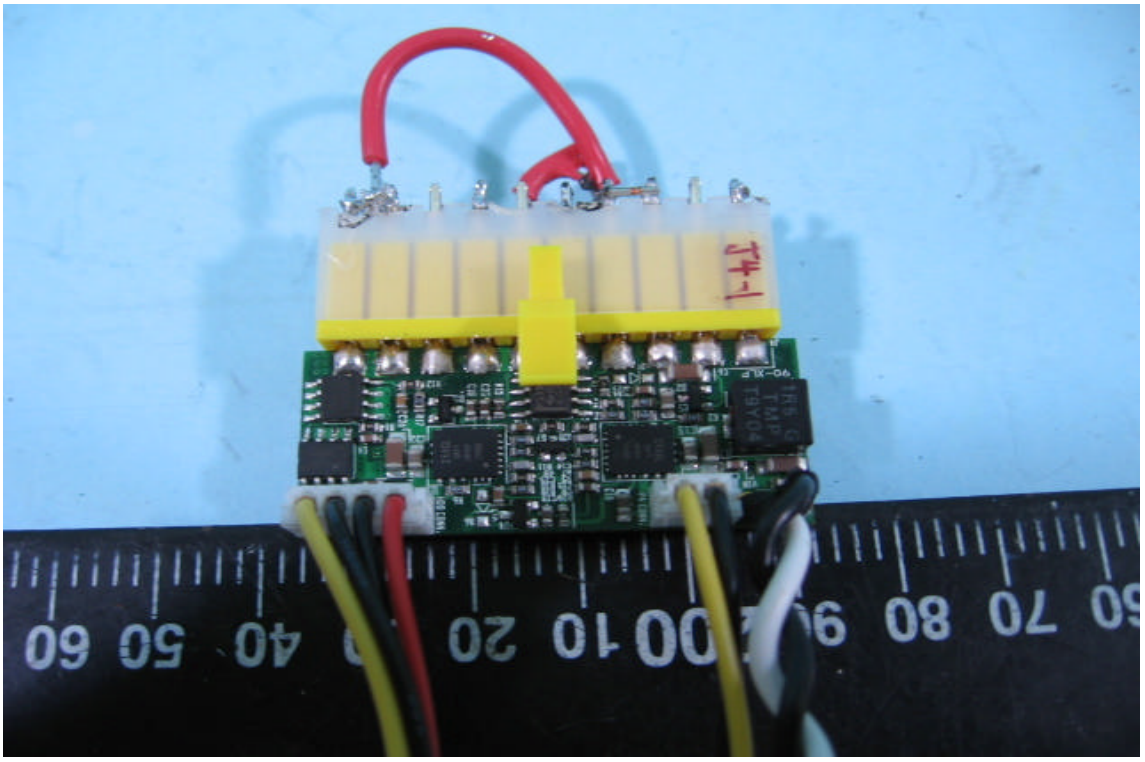
The following test equipments are used during the radiated test .

| Equipment | Manufacturer | Model No. | Calibration Date | Next Cal. Date |
|---|---|---|---|---|
| Test Receiver | Rohde & Schwarz | ESVS30 | 2010/05/14 | 2011/05/13 |
| Amplifier | HP | 8447D | 2010/05/10 | 2011/05/09 |
| Spectrum | Advantest | R3162 | 2010/03/01 | 2011/02/28 |
| Bi-Log Antenna | Schaffner | CBL 6111 | 2010/05/21 | 2011/05/20 |
| Test Receiver | Rohde & Schwarz | ESU40 | 2010/02/25 | 2011/02/24 |
| Amplifier | HP | 8449B | 2009/12/16 | 2010/12/15 |
| Horn Antenna | EMCO | 3115 | 2010/05/11 | 2011/05/10 |

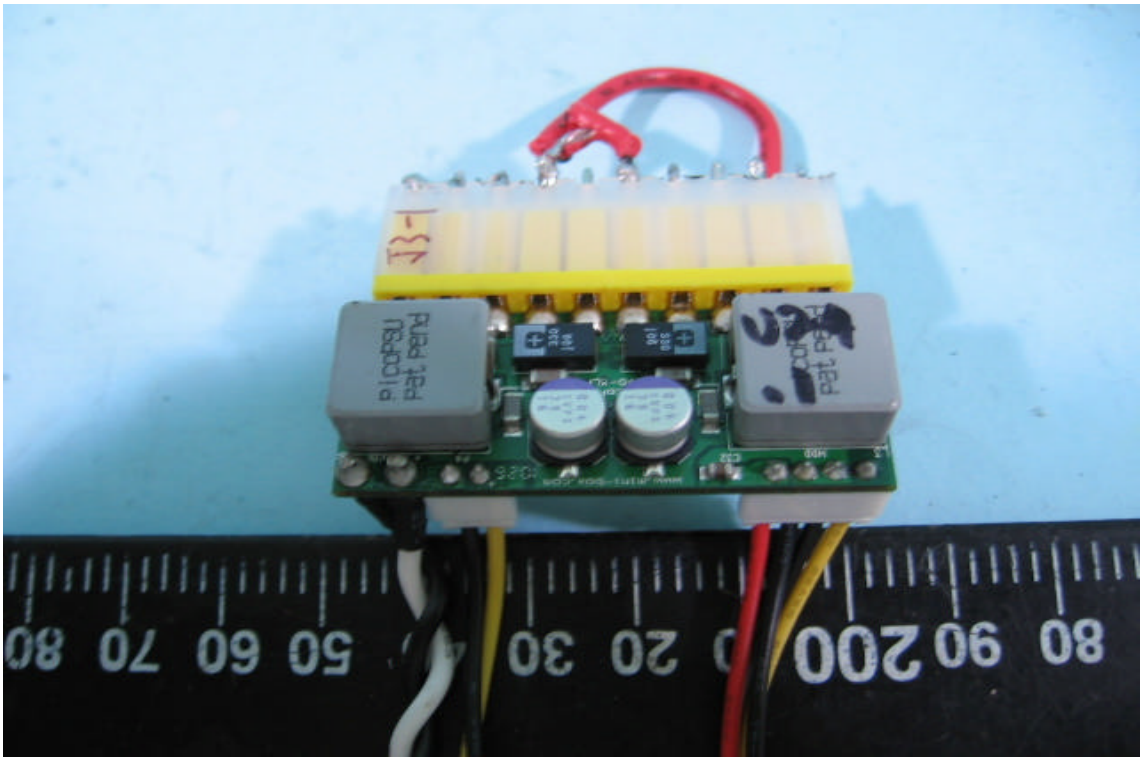
# CONSTRUCTED PHOTOS of EUT

## A) EUT

1. Top View of EUT



2. Bottom View of EUT



# CONSTRUCTED PHOTOS of EUT

## B) Adaptor

1. Top View of Adaptor

2. Side View of EUT

# CONSTRUCTED PHOTOS of EUT

3. Front View of EUT

4. Side View of EUT

# CONSTRUCTED PHOTOS of EUT

5. Rear View of EUT

6. Bottom View of EUT