# CE EMC TEST REPORT

**REPORT NO. :** CE941006H04B

**MODEL NO. :** PAP2T, PAP2T-XX

**RECEIVED :** Dec. 19, 2005

**TESTED :** Dec. 20 to 27, 2005

**ISSUED :** Dec. 28, 2005

**APPLICANT :** Cisco-Linksys LLC

**ADDRESS :** 121 Theory Drive Irvine, CA 92617 (USA)

**ISSUED BY :** Advance Data Technology Corporation

**LAB LOCATION :** No. 81-1, Lu Liao Keng, 9 Ling, Wu Lung Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien, Taiwan



0536
ILAC MRA

Lab Code: 200376-0

No. 2177-01

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# 1 CERTIFICATION

| | |
|---|---|
| **PRODUCT:** | Internet Phone Adapter |
| **BRAND NAME:** | Linksys |
| **MODEL NO:** | PAP2T, PAP2T-XX |
| **TESTED:** | Dec. 20 to 27, 2005 |
| **TEST ITEM:** | ENGINEERING SAMPLE |
| **APPLICANT:** | Cisco-Linksys LLC |
| **STANDARDS:** | CISPR 22: 1997+A1:2000+A2:2002, Class B |

| | |
|---|---|
| EN 55022:1998+A1:2000 +A2:2003, Class B | EN 55024:1998+A1:2001 +A2:2003 |
| EN 61000-3-2: 2000, Class A (see note* below) | IEC 61000-4-2:2001 |
| EN 61000-3-3: 1995+A1: 2001 | IEC 61000-4-3:2002+A1:2002 |
| | IEC 61000-4-4:2004 |
| | IEC 61000-4-5:2001 |
| | IEC 61000-4-6:2003+A1:2004 |
| | IEC 61000-4-8:2001 |
| | IEC 61000-4-11:2004 |

The above equipment (Model: PAP2T) has been tested by **Advance Data Technology Corporation**, and found compliance with the requirement of the above standards.

Approval signature – on next page

**CERTIFICATION -** Continued

The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

**PREPARED BY** : Betty Liu , **DATE:** *Dec. 28, 2005*
( Betty Liu )

**TECHNICAL ACCEPTANCE** : Ivan Peng , **DATE:** *Dec. 28, 2005*
Responsible for EMI
( Ivan Peng )

**TECHNICAL ACCEPTANCE** : Mitch Jen , **DATE:** *Dec. 28, 2005*
Responsible for EMS
(Mitch Jen )

**APPROVED BY** : May Chen , **DATE:** *Dec. 28, 2005*
( May Chen, Deputy Manager )

Note *: The power consumption of EUT is 5.375W/5.387W, which is less than 75W and no limits apply. Therefore it is deemed to comply with EN 61000-3-2: 2000 without any testing.

# 2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

| EMISSION | | | |
|---|---|---|---|
| **Standard** | **Test Type** | **Result** | **Remarks** |
| EN55022:1998+A1: 2000+A2:2003, Class B | Conducted Test | **PASS** | Meets Class B Limit<br>Minimum passing margin is -8.56 dB at 0.150 MHz |
| | Telecommunication Ports Conducted Test | **PASS** | Meets Class A Limit<br>Minimum passing margin is -10.73 dB at 10.000 MHz |
| | Radiated Test | **PASS** | Meets Class B Limit<br>Minimum passing margin is -2.4 dB at 752.87 MHz |
| EN61000-3-2:2000, Class A | Harmonic current emissions | **PASS** | The power consumption of EUT is less than 75W and no limits apply |
| EN61000-3-3:1995 + A1:2001 | Voltage fluctuations & flicker | **PASS** | Meets the requirements. |

| IMMUNITY (EN 55024:1998+A1:2001+A2:2003) | | | |
|---|---|---|---|
| **Standard** | **Test Type** | **Result** | **Remarks** |
| IEC 61000-4-2: 2001 | Electrostatic discharge immunity test | **PASS** | Meets the requirements of Performance Criterion A |
| IEC 61000-4-3: 2002 +A1:2002 | Radiated, radio-frequency, electromagnetic field immunity test | **PASS** | Meets the requirements of Performance Criterion A |
| IEC 61000-4-4: 2004 | Electrical fast transient / burst immunity test. | **PASS** | Meets the requirements of Performance Criterion B |
| IEC 61000-4-5: 2001 | Surge immunity test | **PASS** | Meets the requirements of Performance Criterion A |
| IEC 61000-4-6: 2003 A1:2004 | Immunity to conducted disturbances, induced by radio-frequency fields | **PASS** | Meets the requirements of Performance Criterion A |
| IEC 61000-4-8: 2001 | Power frequency magnetic field immunity test. | **PASS** | Meets the requirements of Performance Criterion A |
| IEC 61000-4-11:2004 | Voltage dips, short interruptions and voltage variations immunity tests | **PASS** | Meets the requirements of<br>Voltage Dips:<br>1. >95% reduction - Performance Criterion A<br>2. 30% reduction - Performance Criterion A<br>Voltage Interruptions:<br>1. >95% reduction - Performance Criterion C |

## 2.1 MEASUREMENT UNCERTAINTY

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

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

| Measurement | Value |
|---|---|
| Conducted emissions | 2.53 dB |
| Radiated emissions (30MHz-1GHz) | 3.46 dB |

# 3 GENERAL INFORMATION

## 3.1 GENERAL DESCRIPTION OF EUT

| | |
|---|---|
| **PRODUCT** | Internet Phone Adapter |
| **MODEL NO.** | PAP2T, PAP2T-XX |
| **POWER SUPPLY** | Power Adapter, Class II |
| **DATA CABLE SUPPLIED** | NA |
| **I/O PORT** | Ethernet port x 1<br>Phone port x 2<br>Power port x 1 |

**Note:**

1. The EUT has two different model names which are identical to each other in all aspects except for the followings:

| Brand | Model No. |
|---|---|
| Linksys | PAP2T |
| | PAP2T-XX<br>(X could be 0~9 or A~Z for different marketing) |

From the above models, model: **PAP2T** was selected as representative model for the test and its data was recorded in this report.

2. The EUT must be supplied with a power adapter and there were two models could be chosen as following:

| **Adapter 1** | | |
|---|---|---|
| Brand | Model No. | Spec. |
| Linksys | PSM11R-050 | Input : AC100-240V, 0.3A, 50~60Hz<br>Output : DC5V, 2.0A Max<br>(Cable: 1.8m/unshielded/ without core) |
| **Adapter 2** | | |
| Brand | Model No. | Spec. |
| Linksys | LS50V20A | Input : AC100-240V, 0.3A, 50~60Hz<br>(Cable: 0.4m/unshielded/ without core)<br>Output : DC5V, 2.0A Max<br>(Cable: 1.8m/unshielded/ without core) |

3. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

## 3.2 DESCRIPTION OF TEST MODE

The EUT was tested under the following test modes, and its data were recorded in this report:

| Test Mode | Adapter | Description |
|---|---|---|
| Mode 1 | PSM11R-050 | Ethernet (10Mbps) + Phone 1 & 2 |
| Mode 2 | LS50V20A | Ethernet (10Mbps) + Phone 1 & 2 |

## 3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a kind of IT equipment and, according to the specifications of the manufacturers, must comply with the requirements of the following standards:

CISPR 22: 1997+A1:2000+A2:2002, Class B

EN 55022:1998+A1:2000 +A2:2003, Class B

EN 61000-3-2: 2000, Class A

EN 61000-3-3: 1995+A1: 2001

EN 55024:1998+A1:2001 +A2:2003

IEC 61000-4-2:2001

IEC 61000-4-3:2002+A1:2002

IEC 61000-4-4:2004

IEC 61000-4-5:2001

IEC 61000-4-6:2003+A1: 2004

IEC 61000-4-8:2001

IEC 61000-4-11:2004

All tests have been performed and recorded as per the above standards.

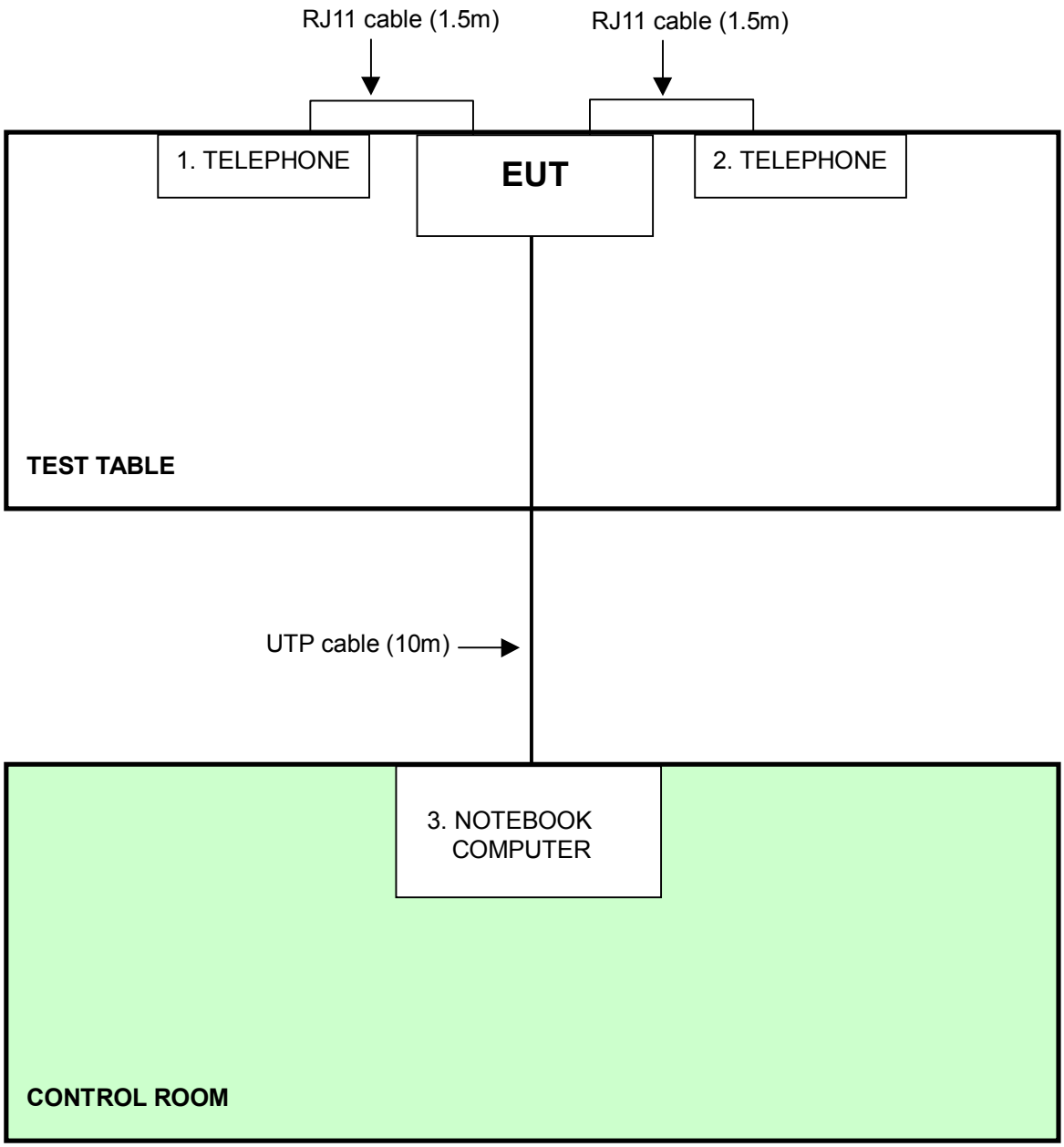
## 3.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

| No. | Product | Brand | Model No. | Serial No. | FCC ID |
|---|---|---|---|---|---|
| 1 | TELEPHONE | Romeo | TE-812 | 97286141 | NA |
| 2 | TELEPHONE | Romeo | TE-812 | 97280926 | NA |
| 3 | NOTEBOOK COMPUTER | DELL | Latitude C600/C500 | 6DRV601 | DoC |

| No. | Signal cable description |
|---|---|
| 1 | 1.5 m nonshielded telephone wire, terminated with RJ11 connector, w/o core. |
| 2 | 1.5 m nonshielded telephone wire, terminated with RJ11 connector, w/o core. |
| 3 | NA |

Note: 1. All power cords of the above support units are unshielded (1.8m).




**NOTE:** 1. Support units 3 were kept in the control room during the test.
2. Please refer to the photos of test configuration in Item 6 also.

# 4 EMISSION TEST

## 4.1 CONDUCTED EMISSION MEASUREMENT

### 4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

**TEST STANDARD: EN55022**

| FREQUENCY (MHz) | Class A (dBuV) | | Class B (dBuV) | |
|---|---|---|---|---|
| | Quasi-peak | Average | Quasi-peak | Average |
| 0.15 - 0.5 | 79 | 66 | 66 - 56 | 56 - 46 |
| 0.50 - 5.0 | 73 | 60 | 56 | 46 |
| 5.0 - 30.0 | 73 | 60 | 60 | 50 |

**NOTE**: (1) The lower limit shall apply at the transition frequencies.

(2) The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.

(3) All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

### 4.1.2 TEST INSTRUMENTS

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | CALIBRATED UNTIL |
|---|---|---|---|
| ROHDE & SCHWARZ Test Receiver | ESCS 30 | 847124/029 | Dec. 14, 2006 |
| Line-Impedance Stabilization Network(for EUT) | ENV-216 | 100072 | Oct. 05, 2006 |
| KYORITSU LISN (for peripheral) | KNW-407 | 8/1395/12 | Jul. 19, 2006 |
| RF Cable (JETBAO) | RG233/U | Cable_CA_01 | Jul. 19, 2006 |
| Terminator(for KYORITSU) | 50 | 1 | Oct. 08, 2006 |
| Software | Cond-V2e | NA | NA |

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in ADT Shielded Room No. A.
3. The VCCI Con A Registration No. is C-817.

## 4.1.3 TEST PROCEDURE

a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.

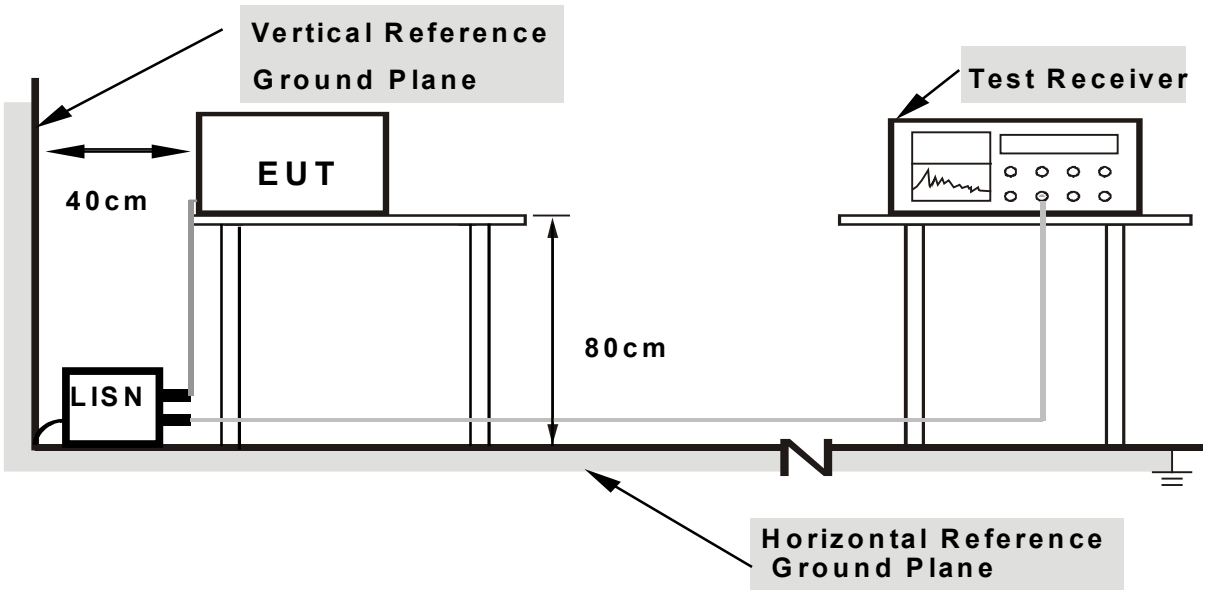
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

c. The frequency range from 150 kHz to 30 MHz was searched. Emission levels over 10dB under the prescribed limits could not be reported.

## 4.1.4 DEVIATION FROM TEST STANDARD

No deviation

## 4.1.5 TEST SETUP




**Note: 1.Support units were connected to second LISN.**
**2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes**

For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

## 4.1.6 EUT OPERATING CONDITIONS

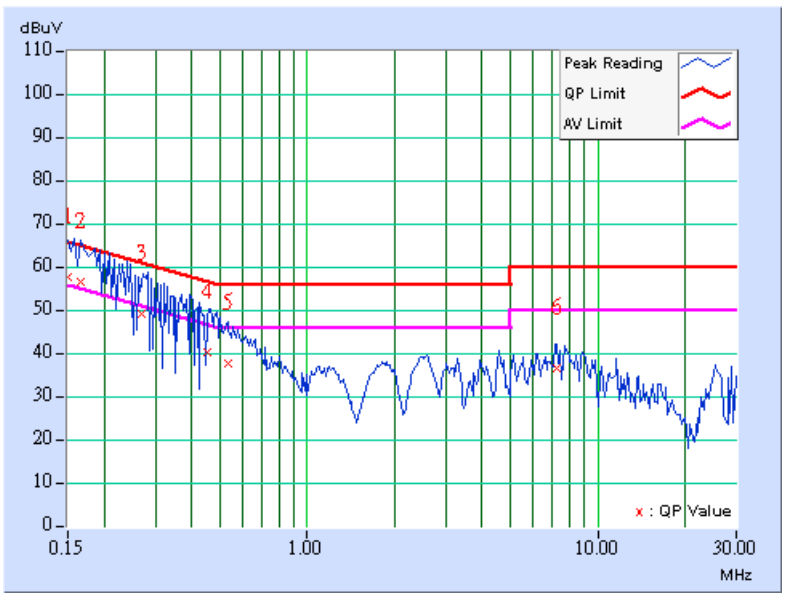
1. Turn on the power of all equipment.
2. Support unit 3 (notebook) runs a test program “ping.exe” to link of EUT.
3. Support unit 1 (telephone) and support unit 2 (telephone) communicates with each other via EUT.
4. Repeat steps 2-3.

## 4.1.7 TEST RESULTS (MODE 1)

| | | | |
|---|---|---|---|
| **EUT** | Internet Phone Adapter | **MODEL** | PAP2T |
| **TEST MODE** | Mode 1 | **PHASE** | Line (L) |
| **INPUT POWER** | 230Vac, 50 Hz | **6dB BANDWIDTH** | 9 kHz |
| **ENVIRONMENTAL CONDITIONS** | 25 deg. C, 55 % RH, 974 hPa | **TESTED BY** | Mike Hsieh |

| No | Freq. | Corr. Factor | Reading Value | | Emission Level | | Limit | | Margin | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | [dB (uV)] | | [dB (uV)] | | [dB (uV)] | | (dB) | |
| | [MHz] | (dB) | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| **1** | **0.150** | **0.60** | **56.84** | **33.36** | **57.44** | **33.96** | **66.00** | **56.00** | **-8.56** | **-22.04** |
| 2 | 0.166 | 0.60 | 55.67 | 28.71 | 56.27 | 29.31 | 65.18 | 55.18 | -8.91 | -25.87 |
| 3 | 0.270 | 0.60 | 48.28 | - | 48.88 | - | 61.11 | 51.11 | -12.23 | - |
| 4 | 0.452 | 0.61 | 39.39 | - | 40.00 | - | 56.85 | 46.85 | -16.85 | - |
| 5 | 0.535 | 0.62 | 36.94 | - | 37.56 | - | 56.00 | 46.00 | -18.44 | - |
| 6 | 7.203 | 1.01 | 35.81 | - | 36.82 | - | 60.00 | 50.00 | -23.18 | - |

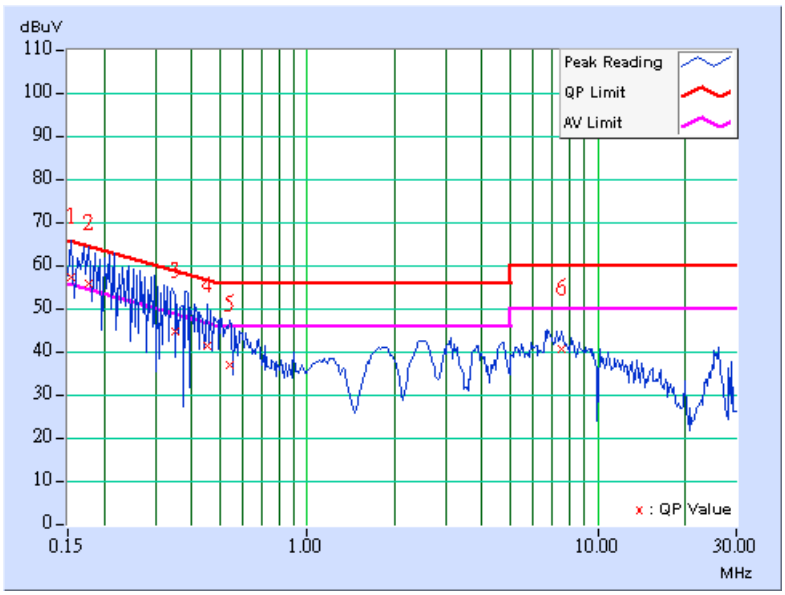
**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.



| | | | |
|---|---|---|---|
| **EUT** | Internet Phone Adapter | **MODEL** | PAP2T |
| **TEST MODE** | Mode 1 | **PHASE** | Neutral (N) |
| **INPUT POWER** | 230Vac, 50 Hz | **6dB BANDWIDTH** | 9 kHz |
| **ENVIRONMENTAL CONDITIONS** | 25 deg. C, 55 % RH, 974 hPa | **TESTED BY** | Mike Hsieh |

| No | Freq. | Corr. Factor | Reading Value [dB (uV)] | | Emission Level [dB (uV)] | | Limit [dB (uV)] | | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | [MHz] | (dB) | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 1 | 0.154 | 0.40 | 56.51 | 31.55 | 56.91 | 31.95 | 65.79 | 55.79 | -8.88 | -23.84 |
| 2 | 0.177 | 0.40 | 55.03 | 29.20 | 55.43 | 29.60 | 64.61 | 54.61 | -9.18 | -25.01 |
| 3 | 0.350 | 0.40 | 43.89 | - | 44.29 | - | 58.97 | 48.97 | -14.68 | - |
| 4 | 0.455 | 0.42 | 40.58 | - | 41.00 | - | 56.79 | 46.79 | -15.79 | - |
| 5 | 0.541 | 0.45 | 36.11 | - | 36.56 | - | 56.00 | 46.00 | -19.44 | - |
| 6 | 7.535 | 1.04 | 39.76 | - | 40.80 | - | 60.00 | 50.00 | -19.20 | - |

**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.

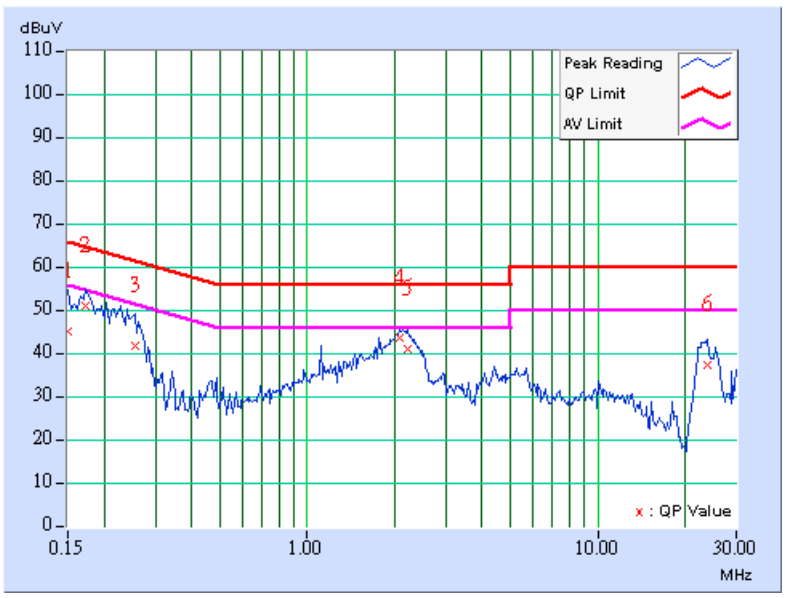


## 4.1.8 TEST RESULTS (MODE 2)

| | | | |
|---|---|---|---|
| **EUT** | Internet Phone Adapter | **MODEL** | PAP2T |
| **TEST MODE** | Mode 2 | **PHASE** | Line (L) |
| **INPUT POWER** | 230Vac, 50 Hz | **6dB BANDWIDTH** | 9 kHz |
| **ENVIRONMENTAL CONDITIONS** | 25 deg. C, 55 % RH, 974 hPa | **TESTED BY** | Mike Hsieh |

| No | Freq. | Corr. Factor | Reading Value [dB (uV)] | | Emission Level [dB (uV)] | | Limit [dB (uV)] | | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | [MHz] | (dB) | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 1 | 0.150 | 0.60 | 43.74 | - | 44.34 | - | 66.00 | 56.00 | -21.66 | - |
| 2 | 0.172 | 0.60 | 49.88 | - | 50.48 | - | 64.88 | 54.88 | -14.40 | - |
| 3 | 0.255 | 0.60 | 40.59 | - | 41.19 | - | 61.58 | 51.58 | -20.39 | - |
| 4 | 2.072 | 0.71 | 42.17 | - | 42.88 | - | 56.00 | 46.00 | -13.12 | - |
| 5 | 2.215 | 0.72 | 39.74 | - | 40.46 | - | 56.00 | 46.00 | -15.54 | - |
| 6 | 23.879 | 1.38 | 36.04 | - | 37.42 | - | 60.00 | 50.00 | -22.58 | - |

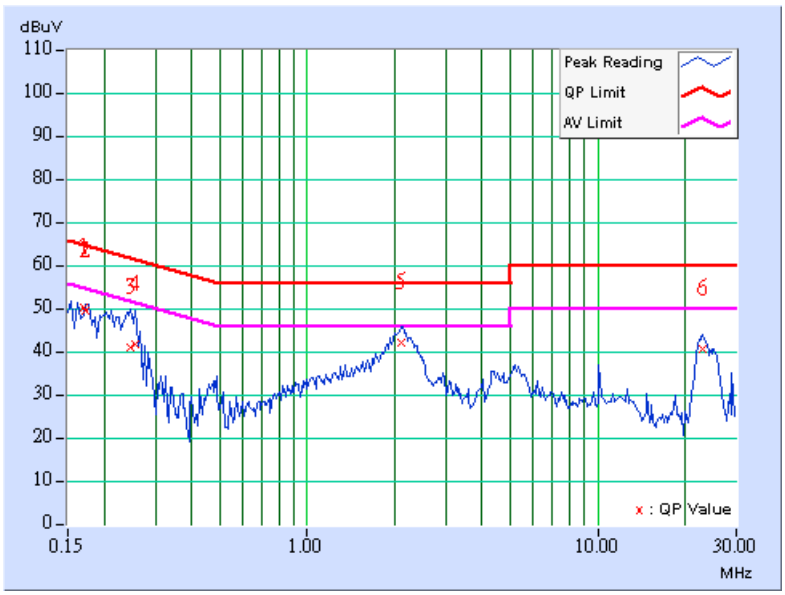
**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.



| | | | |
|---|---|---|---|
| **EUT** | Internet Phone Adapter | **MODEL** | PAP2T |
| **TEST MODE** | Mode 2 | **PHASE** | Neutral (N) |
| **INPUT POWER** | 230Vac, 50 Hz | **6dB BANDWIDTH** | 9 kHz |
| **ENVIRONMENTAL CONDITIONS** | 25 deg. C, 55 % RH, 974 hPa | **TESTED BY** | Mike Hsieh |

| No | Freq. | Corr. Factor | Reading Value [dB (uV)] | | Emission Level [dB (uV)] | | Limit [dB (uV)] | | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | [MHz] | (dB) | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 1 | 0.171 | 0.40 | 48.49 | - | 48.89 | - | 64.89 | 54.89 | -16.00 | - |
| 2 | 0.173 | 0.40 | 47.95 | - | 48.35 | - | 64.83 | 54.83 | -16.48 | - |
| 3 | 0.248 | 0.40 | 39.31 | - | 39.71 | - | 61.84 | 51.84 | -22.13 | - |
| 4 | 0.256 | 0.40 | 40.14 | - | 40.54 | - | 61.55 | 51.55 | -21.01 | - |
| 5 | 2.119 | 0.61 | 40.63 | - | 41.24 | - | 56.00 | 46.00 | -14.76 | - |
| 6 | 23.066 | 1.72 | 38.89 | - | 40.61 | - | 60.00 | 50.00 | -19.39 | - |

**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.



## 4.2 CONDUCTED EMISSION MEASUREMENT AT TELECOMMUNICATION PORTS

### 4.2.1 LIMIT OF CONDUCTED COMMON MODE DISTURBANCE AT TELECOMMUNICATION PORTS

#### FOR CLASS A EQUIPMENT

| FREQUENCY (MHz) | Voltage Limit (dBuV) | | Current Limit (dBuA) | |
|---|---|---|---|---|
| | Quasi-peak | Average | Quasi-peak | Average |
| 0.15 - 0.5 | 97 - 87 | 84 - 74 | 53 - 43 | 40 - 30 |
| 0.5 - 30.0 | 87 | 74 | 43 | 30 |

#### FOR CLASS B EQUIPMENT

| FREQUENCY (MHz) | Voltage Limit (dBuV) | | Current Limit (dBuA) | |
|---|---|---|---|---|
| | Quasi-peak | Average | Quasi-peak | Average |
| 0.15 - 0.5 | 84 - 74 | 74 - 64 | 40 - 30 | 30 - 20 |
| 0.5 - 30.0 | 74 | 64 | 30 | 20 |

**NOTE:** (1) The limits decrease linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

### 4.2.2 TEST INSTRUMENTS

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | CALIBRATED UNTIL |
|---|---|---|---|
| ROHDE & SCHWARZ Test Receiver | ESCS 30 | 847124/029 | Dec. 14, 2006 |
| ROHDE & SCHWARZ LISN (for EUT) | ESHS-Z5 | 848773/004 | Oct. 05, 2006 |
| KYORITSU LISN (for peripheral) | KNW-407 | 8/1395/12 | Jul. 19, 2006 |
| ROHDE & SCHWARZ ISN ( w. 60dB LCL Type II Adapter) | ENY 41 | 838119/024 | Jan. 10, 2006 |
| ROHDE & SCHWARZ ISN | ENY 22 | 837497/019 | Jan. 10, 2006 |
| RF Cable (JETBAO) | RG233/U | Cable_CA_01 | Jul. 02, 2006 |
| CURRENT PROBE | SMZ 11 | 18001 | Jul. 13, 2006 |
| Capacitive Voltage Probe | CVP 2200 | 18312 | Jul. 13, 2006 |
| RF- ABSORBING CLAMP | KEMA 801 | 16617 | NA |

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
4. The test was performed in ADT Shielded Room No. A.
5. The VCCI Con A Registration No. is C-817.

## 4.2.3 TEST PROCEDURE

a. The EUT was placed 0.4 meters from the conducting wall of the shielded room and connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN.

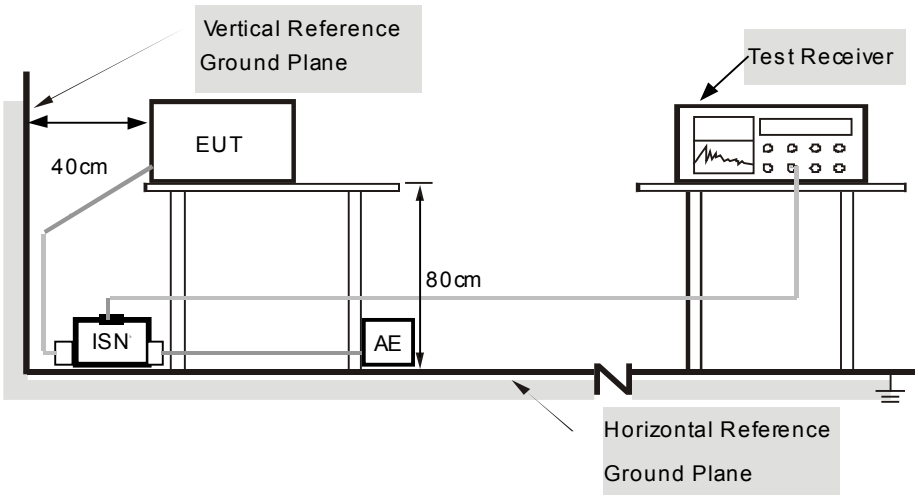
b. Voltage at the measurement port of the ISN was detected, the reading was corrected by adding the voltage division factor of the ISN, and was compared to the voltage limits.

c. The disturbance levels and the frequencies of at least six highest disturbances were recorded from each telecommunication port which comprises the EUT.

## 4.2.4 DEVIATION FROM TEST STANDARD

No deviation

## 4.2.5 TEST SETUP




Note: 1. Support units were connected to second LISN.

2. Both of LISNs (AMN) and ISN are 80 cm from EUT and at least 80 cm from other units and other metal planes support units.

For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

NOTE:

a. The methods of conformance testing were selected according to the Alternative 1 (EN 55022: 1998+A1:2000+A2:2003, section: 9.5.1.1) or Alternative 2 (EN 55022: 1998+A1:2000+A2:2003, section: 9.5.1.2) of measurement method using an ISN with a longitudinal conversion loss (LCL) as defined in rule.

b. When measurements were performed on a single unscreened balanced pair, an adequate ISN for two wires were used; when performed on unscreened cables containing two balanced pairs, an adequate ISN for four wires were used.

c. The communication function of EUT was executed and ISN was connected between EUT and associated equipment and the ISN was connected directly to reference ground plane.

## 4.2.6 EUT OPERATING CONDITIONS

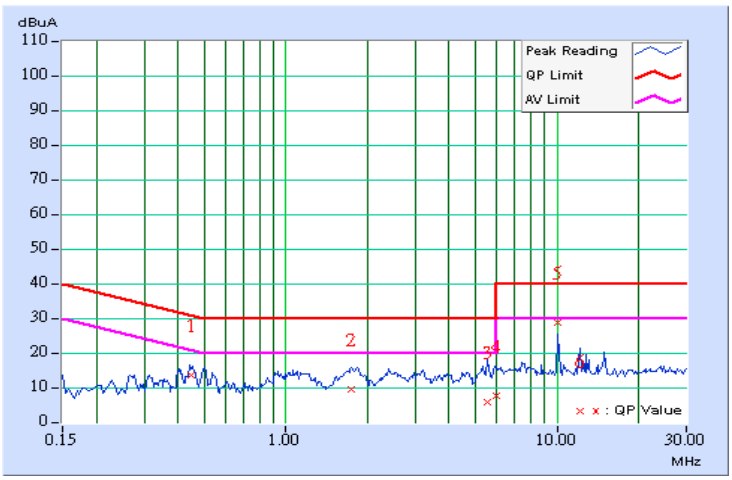
Same as 4.1.6.

## 4.2.7 TEST RESULTS(MODE 1)

| | | | |
|---|---|---|---|
| **EUT** | Internet Phone Adapter | **MODEL** | PAP2T |
| **TEST MODE** | Mode 1 | **INPUT POWER (SYSTEM)** | 230Vac, 50 Hz |
| **TELECOM PORT** | 10Mbps (Current) | **6dB BANDWIDTH** | 9 kHz |
| **ENVIRONMENTAL CONDITIONS** | 27 deg. C, 55 % RH, 974 hPa | **TESTED BY :** Mike Hsieh | |

| No | Freq. | Corr. Factor | Reading Value [dB (uV)] | | Emission Level [dB (uV)] | | Limit [dB (uV)] | | Margin (dB) | | Margin with 10dB relaxation (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | [MHz] | (dB) | Q.P. | AV. | Q.P. | AV. | Q.P. | A.V. | Q.P. | A.V. | Q.P. | AV. |
| 1 | 0.449 | 0.21 | 12.91 | - | 13.12 | - | 30.90 | 20.90 | -17.78 | - | * | * |
| 2 | 1.744 | 0.47 | 8.84 | - | 9.31 | - | 30.00 | 20.00 | -20.69 | - | * | * |
| 3 | 5.531 | 0.62 | 5.14 | - | 5.76 | - | 30.00 | 20.00 | -24.24 | - | * | * |
| 4 | 6.003 | 0.63 | 7.19 | - | 7.82 | - | 40.00 | 30.00 | -32.18 | - | -42.18 | - |
| 5 | 10.002 | 0.71 | 28.15 | - | 28.86 | - | 40.00 | 30.00 | -11.14 | - | -21.14 | - |
| 6 | 12.105 | 0.71 | 2.64 | - | 3.35 | - | 40.00 | 30.00 | -36.65 | - | -46.65 | - |

REMARKS:
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.
7. According to Note 3 of Table 4 of CISPR 22/EN 55022, a relaxation of 10 dB over the frequency range of 6MHz to 30MHz is allowed for high speed services having significant spectral density in this band. However, this relaxation is restricted to the common mode disturbance converted by the cable from the wanted signal. "*": There is no relaxation of 10dB.

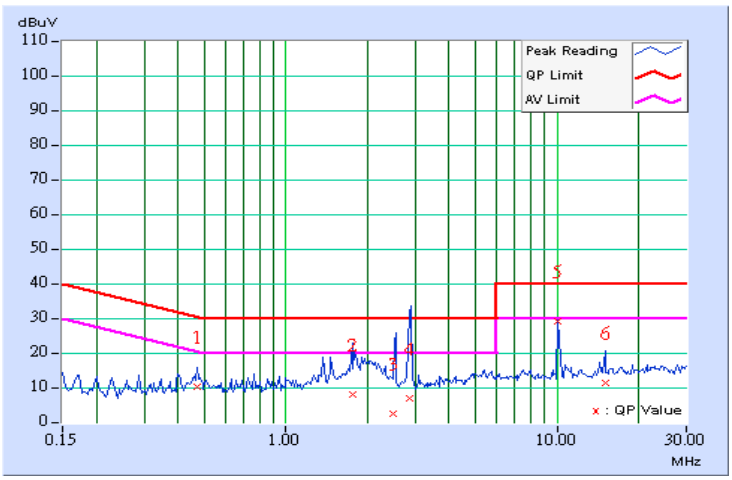


## 4.2.8 TEST RESULTS(MODE 2)

| | | | |
|---|---|---|---|
| **EUT** | Internet Phone Adapter | **MODEL** | PAP2T |
| **TEST MODE** | Mode 2 | **INPUT POWER (SYSTEM)** | 230Vac, 50 Hz |
| **TELECOM PORT** | 10Mbps (Current) | **6dB BANDWIDTH** | 9 kHz |
| **ENVIRONMENTAL CONDITIONS** | 25 deg. C, 50 % RH, 974 hPa | **TESTED BY :**Mike Hsieh | |

| No | Freq. | Corr. Factor | Reading Value [dB (uV)] | | Emission Level [dB (uV)] | | Limit [dB (uV)] | | Margin (dB) | | Margin with 10dB relaxation (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | [MHz] | (dB) | Q.P. | AV. | Q.P. | AV. | Q.P. | A.V. | Q.P. | A.V. | Q.P. | AV. |
| 1 | 0.470 | 0.22 | 9.78 | - | 10.00 | - | 30.51 | 20.51 | -20.51 | - | * | * |
| 2 | 1.759 | 0.47 | 7.42 | - | 7.89 | - | 30.00 | 20.00 | -22.11 | - | * | * |
| 3 | 2.489 | 0.51 | 1.98 | - | 2.49 | - | 30.00 | 20.00 | -27.51 | - | * | * |
| 4 | 2.863 | 0.53 | 6.26 | - | 6.79 | - | 30.00 | 20.00 | -23.21 | - | * | * |
| **5** | **10.000** | **0.71** | **28.56** | **-** | **29.27** | **-** | **40.00** | **30.00** | **-10.73** | **-** | **-20.73** | **-** |
| 6 | 15.063 | 0.72 | 10.93 | - | 11.65 | - | 40.00 | 30.00 | -28.35 | - | -38.35 | - |

REMARKS:
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.
7. According to Note 3 of Table 4 of CISPR 22/EN 55022, a relaxation of 10 dB over the frequency range of 6MHz to 30MHz is allowed for high speed services having significant spectral density in this band. However, this relaxation is restricted to the common mode disturbance converted by the cable from the wanted signal. "*": There is no relaxation of 10dB.



## 4.3 RADIATED EMISSION MEASUREMENT

### 4.3.1 LIMITS OF RADIATED EMISSION MEASUREMENT

**TEST STANDARD: EN55022**

| FREQUENCY (MHz) | Class A (at 10m) | Class B (at 10m) |
|---|---|---|
| | dBuV/m | dBuV/m |
| 30 - 230 | 40 | 30 |
| 230 - 1000 | 47 | 37 |

**NOTE**: (1) The lower limit shall apply at the transition frequencies.
(2) Emission level (dBuV/m) = 20 log Emission level (uV/m).
(3) All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

### 4.3.2 TEST INSTRUMENTS

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | CALIBRATED UNTIL |
|---|---|---|---|
| *ADVANTEST Spectrum Analyzer | R3271A | 85060311 | July 07, 2006 |
| *HP Pre_Amplifier | 8449B | 3008A01922 | Oct. 02, 2006 |
| *ROHDE & SCHWARZ Test Receiver | ESVS 30 | 841977/002 | Oct. 08, 2006 |
| *CHASE Broadband Antenna | CBL6111C | 2730 | Jun. 08, 2006 |
| *Schwarzbeck Horn_Antenna | BBHA9120-D1 | D123 | Sep. 23, 2006 |
| Schwarzbeck Horn_Antenna | BBHA 9170 | BBHA9170153 | Jan. 31, 2006 |
| SCHWARZBECK Biconical Antenna | VHBA9123 | 459 | Jun. 26, 2006 |
| SCHWARZBECK Periodic Antenna | UPA6108 | 1148 | Jun. 26, 2006 |
| *RF Switches | MP59B | 6100175593 | Jul. 19, 2006 |
| *RF Cable(CHASE) | 9913-30M N-N Cable | STBCAB-30M-1GHz-021 | Jul. 19, 2006 |
| *Software | ADT_Radiated_V 5.14 | NA | NA |
| *CHANCE MOST Antenna Tower | AT-100 | CM-A007 | NA |
| *CHANCE MOST Turn Table | TC-008 | CM-T007 | NA |
| *CORCOM AC Filter | MRI2030 | 024/019 | NA |
| Ferrite Clamp | FC18 | 910091 | Dec. 01, 2006 |

Note: 1. The calibration interval of the above test instruments is 12 months (36 months for Periodic Antenna) and the calibrations are traceable to NML/ROC and NIST/USA.
2. * = These equipment are used for the final measurement.
3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The test was performed in ADT Open Site No. B.
5. The VCCI Site Registration No. is R-847.
6. The FCC Site Registration No. is 92753.
7. The CANADA Site Registration No. is IC 4824-2.

## 4.3.3 TEST PROCEDURE

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10-meter open field site. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarization of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the turn table was turned from 0 degrees to 360 degrees to find the maximum reading.

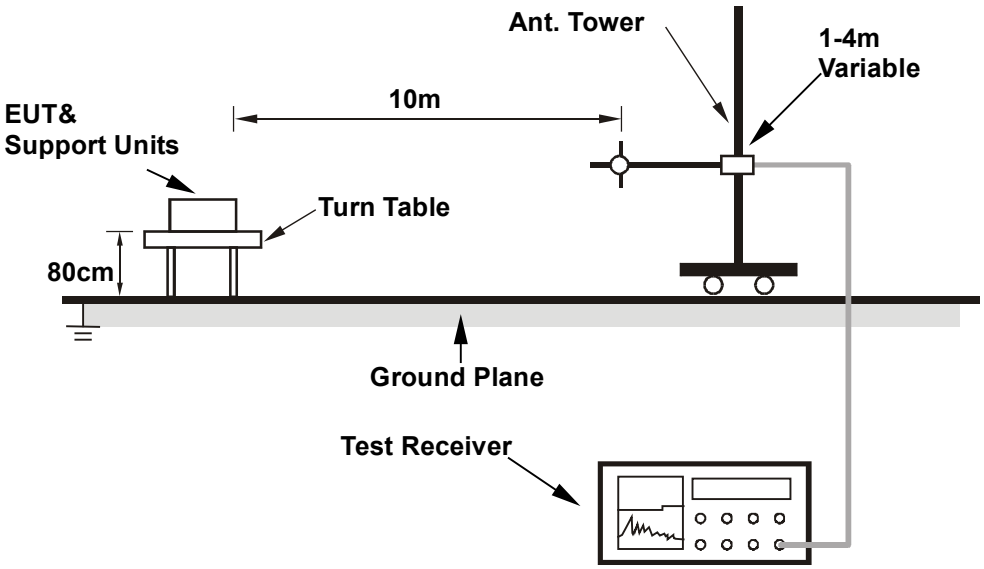
e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

f. If the emission level of the EUT in peak mode was 10 dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be re-tested one by one using the quasi- peak method or average method as specified and then reported In Data sheet peak mode and QP mode.

## 4.3.4 DEVIATION FROM TEST STANDARD

No deviation

## 4.3.5 TEST SETUP




For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

## 4.3.6 EUT OPERATING CONDITIONS

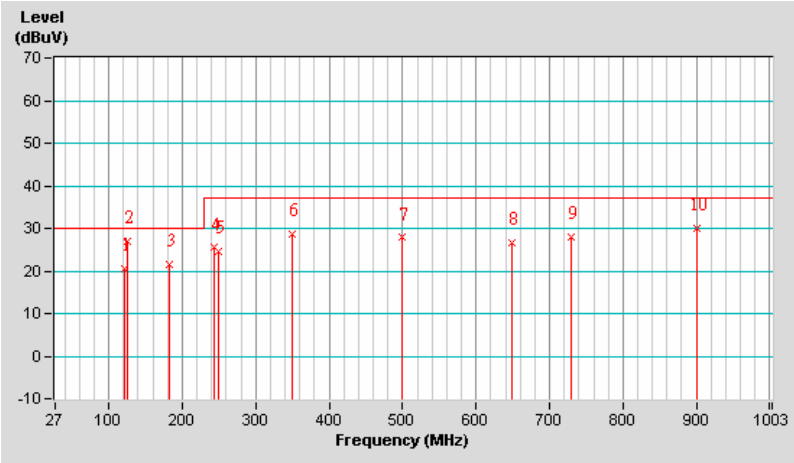
Same as 4.1.6

## 4.3.7 TEST RESULTS (MODE 1)

| EUT | Internet Phone Adapter | MODEL | PAP2T |
|---|---|---|---|
| TEST MODE | Mode 1 | INPUT POWER (SYSTEM) | 230Vac, 50Hz |
| FREQUENCY RANGE | 30-1000 MHz | DETECTOR FUNCTION & BANDWIDTH | Quasi-Peak, 120kHz |
| ENVIRONMENTAL CONDITIONS | 16 deg. C, 66 % RH, 974 hPa | TESTED BY | Mike Hsieh |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 10 M | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| No. | Freq. (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV) | Correction Factor (dB/m) |
| 1 | 121.51 | 20.50 QP | 30.00 | -9.50 | 4.00 H | 220 | 8.30 | 12.20 |
| 2 | 125.01 | 26.90 QP | 30.00 | -3.10 | 4.00 H | 57 | 14.50 | 12.40 |
| 3 | 182.27 | 21.60 QP | 30.00 | -8.40 | 4.00 H | 77 | 11.10 | 10.50 |
| 4 | 243.02 | 25.50 QP | 37.00 | -11.50 | 4.00 H | 195 | 11.80 | 13.70 |
| 5 | 250.02 | 24.70 QP | 37.00 | -12.30 | 4.00 H | 301 | 10.50 | 14.20 |
| 6 | 350.03 | 28.60 QP | 37.00 | -8.40 | 3.73 H | 123 | 11.40 | 17.20 |
| 7 | 500.02 | 27.80 QP | 37.00 | -9.20 | 2.33 H | 190 | 6.40 | 21.50 |
| 8 | 648.06 | 26.60 QP | 37.00 | -10.40 | 1.42 H | 24 | 2.40 | 24.20 |
| 9 | 729.07 | 28.00 QP | 37.00 | -9.00 | 1.17 H | 80 | 2.50 | 25.50 |
| 10 | 900.00 | 30.00 QP | 37.00 | -7.00 | 1.01 H | 134 | 2.30 | 27.70 |

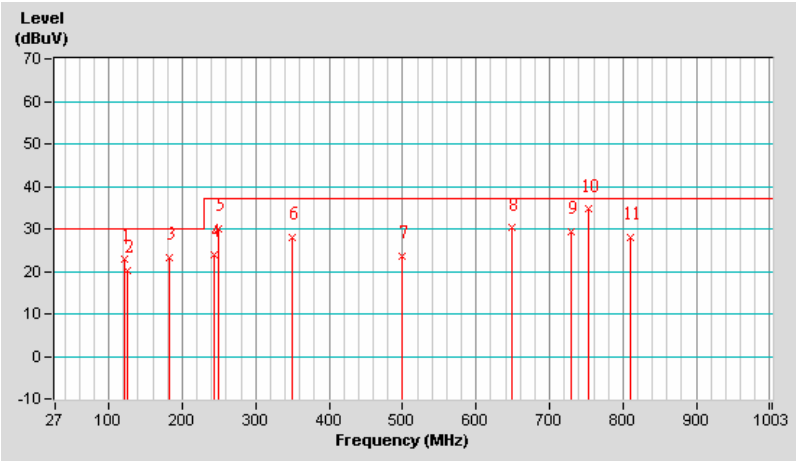
**REMARKS**: 1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.



| | | | |
|---|---|---|---|
| **EUT** | Internet Phone Adapter | **MODEL** | PAP2T |
| **TEST MODE** | Mode 1 | **INPUT POWER (SYSTEM)** | 230Vac, 50Hz |
| **FREQUENCY RANGE** | 30-1000 MHz | **DETECTOR FUNCTION & BANDWIDTH** | Quasi-Peak, 120kHz |
| **ENVIRONMENTAL CONDITIONS** | 16 deg. C, 66 % RH, 974 hPa | **TESTED BY** | Mike Hsieh |

| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 10 M | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| No. | Freq. (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV) | Correction Factor (dB/m) |
| 1 | 121.51 | 23.00 QP | 30.00 | -7.00 | 1.00 V | 0 | 10.90 | 12.20 |
| 2 | 125.00 | 20.20 QP | 30.00 | -9.80 | 1.00 V | 227 | 7.80 | 12.40 |
| 3 | 182.27 | 23.20 QP | 30.00 | -6.80 | 1.00 V | 250 | 12.70 | 10.50 |
| 4 | 243.03 | 23.80 QP | 37.00 | -13.20 | 1.00 V | 19 | 10.10 | 13.70 |
| 5 | 250.02 | 30.10 QP | 37.00 | -6.90 | 1.00 V | 186 | 15.90 | 14.20 |
| 6 | 350.00 | 27.90 QP | 37.00 | -9.10 | 1.00 V | 3 | 10.70 | 17.20 |
| 7 | 500.02 | 23.60 QP | 37.00 | -13.40 | 1.00 V | 183 | 2.10 | 21.50 |
| 8 | 648.07 | 30.20 QP | 37.00 | -6.80 | 3.25 V | 41 | 6.00 | 24.20 |
| 9 | 729.07 | 29.20 QP | 37.00 | -7.80 | 2.71 V | 21 | 3.70 | 25.50 |
| **10** | **752.87** | **34.60 QP** | **37.00** | **-2.40** | **2.33 V** | **322** | **8.20** | **26.40** |
| 11 | 810.07 | 28.00 QP | 37.00 | -9.00 | 2.33 V | 214 | 1.20 | 26.80 |

**REMARKS**: 1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

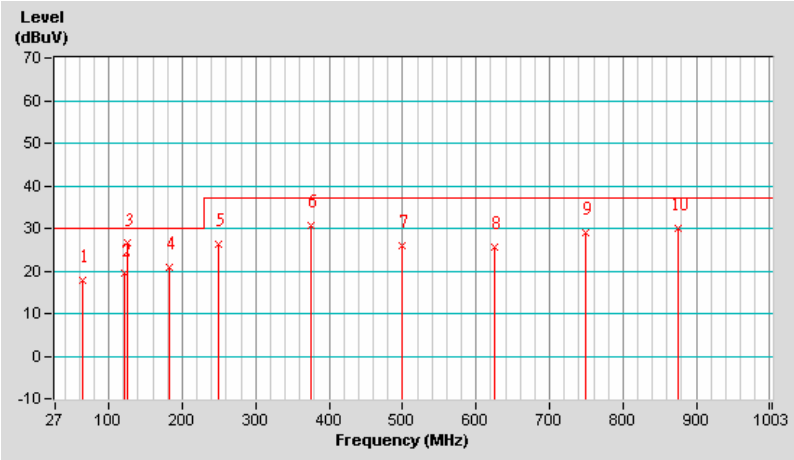


## 4.3.8 TEST RESULTS (MODE 2)

| | | | |
|---|---|---|---|
| **EUT** | Internet Phone Adapter | **MODEL** | PAP2T |
| **TEST MODE** | Mode 2 | **INPUT POWER (SYSTEM)** | 230Vac, 50Hz |
| **FREQUENCY RANGE** | 30-1000 MHz | **DETECTOR FUNCTION & BANDWIDTH** | Quasi-Peak, 120kHz |
| **ENVIRONMENTAL CONDITIONS** | 16 deg. C, 66 % RH, 974 hPa | **TESTED BY** | Mike Hsieh |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 10 M | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| No. | Freq. (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV) | Correction Factor (dB/m) |
| 1 | 64.00 | 17.90 QP | 30.00 | -12.10 | 4.00 H | 294 | 10.30 | 7.60 |
| 2 | 121.51 | 19.40 QP | 30.00 | -10.60 | 4.00 H | 136 | 7.20 | 12.20 |
| 3 | 125.00 | 26.50 QP | 30.00 | -3.50 | 4.00 H | 193 | 14.10 | 12.40 |
| 4 | 182.27 | 21.00 QP | 30.00 | -9.00 | 4.00 H | 155 | 10.50 | 10.50 |
| 5 | 250.02 | 26.20 QP | 37.00 | -10.80 | 3.01 H | 36 | 12.10 | 14.20 |
| 6 | 375.03 | 30.80 QP | 37.00 | -6.20 | 1.58 H | 57 | 12.60 | 18.30 |
| 7 | 500.02 | 26.00 QP | 37.00 | -11.00 | 1.00 H | 19 | 4.50 | 21.50 |
| 8 | 625.00 | 25.70 QP | 37.00 | -11.30 | 1.01 H | 24 | 1.90 | 23.80 |
| 9 | 750.00 | 28.90 QP | 37.00 | -8.10 | 1.00 H | 0 | 2.50 | 26.40 |
| 10 | 875.00 | 30.10 QP | 37.00 | -6.90 | 1.00 H | 255 | 2.10 | 27.90 |

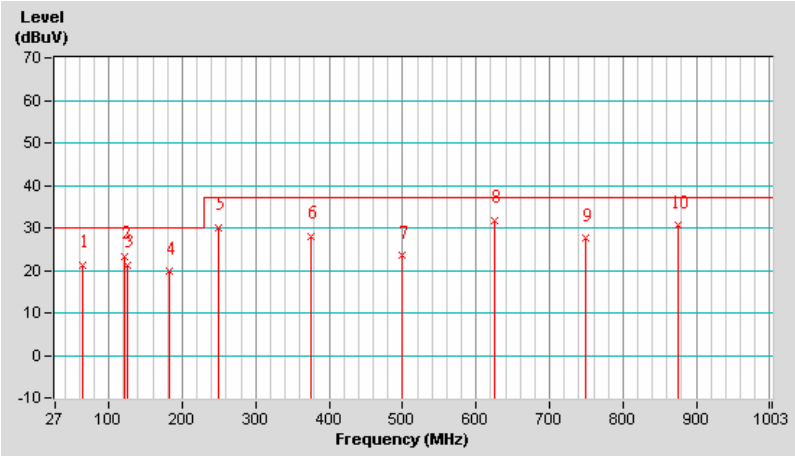
**REMARKS**: 1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.



| | | | |
|---|---|---|---|
| **EUT** | Internet Phone Adapter | **MODEL** | PAP2T |
| **TEST MODE** | Mode 2 | **INPUT POWER (SYSTEM)** | 230Vac, 50Hz |
| **FREQUENCY RANGE** | 30-1000 MHz | **DETECTOR FUNCTION & BANDWIDTH** | Quasi-Peak, 120kHz |
| **ENVIRONMENTAL CONDITIONS** | 16 deg. C, 66 % RH, 974 hPa | **TESTED BY** | Mike Hsieh |

| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 10 M | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| No. | Freq. (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV) | Correction Factor (dB/m) |
| 1 | 64.03 | 21.40 QP | 30.00 | -8.60 | 1.00 V | 141 | 13.70 | 7.60 |
| 2 | 121.51 | 23.20 QP | 30.00 | -6.80 | 1.00 V | 112 | 11.00 | 12.20 |
| 3 | 125.00 | 21.30 QP | 30.00 | -8.70 | 1.00 V | 0 | 8.90 | 12.40 |
| 4 | 182.26 | 19.70 QP | 30.00 | -10.30 | 1.00 V | 121 | 9.20 | 10.50 |
| 5 | 250.02 | 30.20 QP | 37.00 | -6.80 | 1.00 V | 191 | 16.00 | 14.20 |
| 6 | 375.00 | 27.90 QP | 37.00 | -9.10 | 1.00 V | 286 | 9.60 | 18.30 |
| 7 | 500.02 | 23.40 QP | 37.00 | -13.60 | 1.00 V | 322 | 2.00 | 21.50 |
| 8 | 625.00 | 31.80 QP | 37.00 | -5.20 | 2.79 V | 239 | 8.00 | 23.80 |
| 9 | 750.00 | 27.50 QP | 37.00 | -9.50 | 2.47 V | 252 | 1.10 | 26.40 |
| 10 | 875.00 | 30.60 QP | 37.00 | -6.40 | 2.12 V | 228 | 2.60 | 27.90 |

**REMARKS**: 1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.



## 4.4 HARMONICS CURRENT MEASUREMENT

## 4.4.1 LIMITS OF HARMONICS CURRENT MEASUREMENT

**TEST STANDARD: EN61000-3-2**

| Limits for Class A equipment | |
|---|---|
| Harmonics Order n | Max. permissible harmonics current A |
| Odd harmonics | |
| 3 | 2.30 |
| 5 | 1.14 |
| 7 | 0.77 |
| 9 | 0.40 |
| 11 | 0.33 |
| 13 | 0.21 |
| 15<=n<=39 | 0.15x15/n |
| Even harmonics | |
| 2 | 1.08 |
| 4 | 0.43 |
| 6 | 0.30 |
| 8<=n<=40 | 0.23x8/n |

| Limits for Class D equipment | | |
|---|---|---|
| Harmonics Order n | Max. permissible harmonics current per watt mA/W | Max. permissible harmonics current A |
| Odd Harmonics only | | |
| 3 | 3.4 | 2.30 |
| 5 | 1.9 | 1.14 |
| 7 | 1.0 | 0.77 |
| 9 | 0.5 | 0.40 |
| 11 | 0.35 | 0.33 |
| 13 | 0.30 | 0.21 |
| 15<=n<=39 | 3.85/n | 0.15x15/n |
| | | |
| | | |
| | | |
| | | |
| | | |

**NOTE:** 1. The classifications of equipment are defined in Section 5 of EN 61000-3-2:2000.

2. The above limits for all equipment except for lighting equipment are for all applications having an active input power > 75 W. No limits apply for equipment with an active input power up to and including 75 W.

## 4.4.2 TEST INSTRUMENTS

| Description & Manufacturer | Model No. | Serial No. | Calibrated Until |
|---|---|---|---|
| EMC PARTNER<br>EMC Emission Tester | HAR1000 | 086 | Jan. 12, 2006 |

**NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. The test was performed in EMS room.

## 4.4.3 TEST PROCEDURE

a. The EUT was placed on the top of a wooden table 0.8 meters above the ground and operated to produce the maximum harmonic components under normal operating conditions for each successive harmonic component in turn.

b. The classification of EUT is according to section 5 of EN 61000-3-2: 2000.

The EUT is classified as follows:

Class A: Balanced three-phase equipment, Household appliances excluding equipment as Class D, Tools excluding portable tools, Dimmers for incandescent lamps, audio equipment, equipment not specified in one of the three other classes.

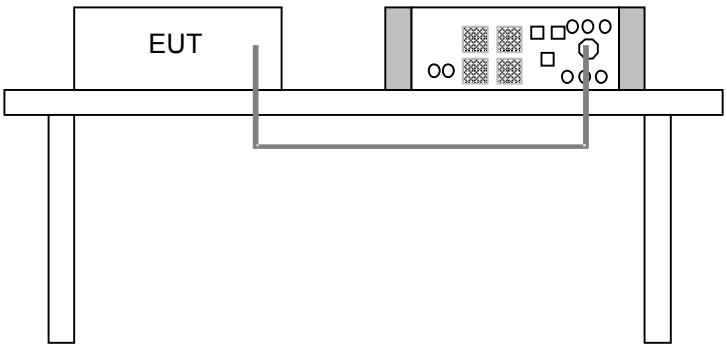
Class B: Portable tools.; Arc welding equipment which is not professional equipment

Class C: Lighting equipment.

Class D: Equipment having a specified power less than or equal to 600 W of the following types: Personal computers and personal computer monitors and television receivers.

c. The correspondent test program of test instrument to measure the current harmonics emanated from EUT is chosen. The measure time shall be not less than the time necessary for the EUT to be exercised.

## 4.4.4 TEST SETUP




For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

## 4.4.5 EUT OPERATING CONDITIONS

Same as 4.1.6.

## 4.4.6 TEST RESULTS (MODE 1)

| | | | |
|---|---|---|---|
| **EUT** | Internet Phone Adapter | **MODEL** | PAP2T |
| **TEST MODE** | Mode 1 | **POWER FREQUENCY** | 50.220 Hz |
| **FUNDAMENTAL VOLTAGE/AMPERE** | 229.7 Vrms / 0.062 Arms | **POWER FACTOR** | 0.380 |
| **POWER CONSUMPTION** | 5.375 W | **ENVIRONMENTAL CONDITIONS** | 16 deg. C, 50 % RH, 974 hPa |
| **TESTED BY** | Mitch Jen | | |

1. Limits are not specified for equipment with a rated power of 75W or less (other than lighting equipment).
2. According to EN 61000-3-2: 2000 the manufacturer shall specify the power of the apparatus. This value shall be used for establishing limits.

   The specified power shall be within +/-10% of the measured power.

## 4.4.7 TEST RESULTS (MODE 2)

| | | | |
|---|---|---|---|
| **EUT** | Internet Phone Adapter | **MODEL** | PAP2T |
| **TEST MODE** | Mode 2 | **POWER FREQUENCY** | 50.235 Hz |
| **FUNDAMENTAL VOLTAGE/AMPERE** | 229.7 Vrms / 0.054 Arms | **POWER FACTOR** | 0.433 |
| **POWER CONSUMPTION** | 5.387 W | **ENVIRONMENTAL CONDITIONS** | 16 deg. C, 50 % RH, 974 hPa |
| **TESTED BY** | Mitch Jen | | |

1. Limits are not specified for equipment with a rated power of 75W or less (other than lighting equipment).
2. According to EN 61000-3-2: 2000 the manufacturer shall specify the power of the apparatus. This value shall be used for establishing limits.

   The specified power shall be within +/-10% of the measured power.

## 4.5 VOLTAGE FLUCTUATION AND FLICKER MEASUREMENT

### 4.5.1 LIMITS OF VOLTAGE FLUCTUATION AND FLICKER MEASUREMENT

**TEST STANDARD: EN61000-3-3**

| TEST ITEM | LIMIT | NOTE |
|---|---|---|
| $P_{st}$ | 1.0 | $P_{st}$ means short-term flicker indicator. |
| $P_{lt}$ | 0.65 | $P_{lt}$ means long-term flicker indicator. |
| $T_{dt}$ (ms) | 500 | $T_{dt}$ means maximum time that dt exceeds 3.3 %. |
| $d_{max}$ (%) | 4% | $d_{max}$ means maximum relative voltage change. |
| dc (%) | 3.3% | dc means relative steady-state voltage change |

### 4.5.2 TEST INSTRUMENTS

| Description & Manufacturer | Model No. | Serial No. | Calibrated Until |
|---|---|---|---|
| EMC PARTNER<br>EMC Emission Tester | HAR1000 | 086 | Jan. 12, 2006 |

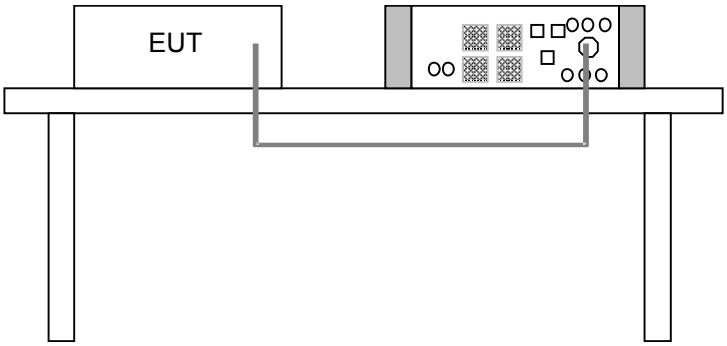
**NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in EMS room.

### 4.5.3 TEST PROCEDURE

a. The EUT was placed on the top of a wooden table 0.8 meters above the ground and operated to produce the most unfavorable sequence of voltage changes under normal operating conditions.

b. During the flick measurement, the measure time shall include that part of whole operation cycle in which the EUT produce the most unfavorable sequence of voltage changes. The observation period for short-term flicker indicator is 10 minutes and the observation period for long-term flicker indicator is 2 hours.

## 4.5.4 TEST SETUP




For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

## 4.5.5 EUT OPERATING CONDITIONS

Same as 4.1.6

## 4.5.6 TEST RESULTS (MODE 1)

| EUT | Internet Phone Adapter | MODEL | PAP2T |
|---|---|---|---|
| TEST MODE | Mode 1 | POWER FREQUENCY | 50.251 Hz |
| FUNDAMENTAL VOLTAGE/AMPERE | 229.7 Vrms / 0.062 Arms | POWER FACTOR | 0.379 |
| OBSERVATION PERIOD (TP) | 10 mins | ENVIRONMENTAL CONDITIONS | 16 deg. C, 50 % RH, 974 hPa |
| TESTED BY | Mitch Jen | | |

| TEST PARAMETER | MEASUREMENT VALUE | LIMIT | REMARKS |
|---|---|---|---|
| $P_{st}$ | 0.588 | 1.00 | Pass |
| $P_{lt}$ | 0.588 | 0.65 | Pass |
| $T_{dt}$ (ms) | 0.00 | 500 | Pass |
| $d_{max}$ (%) | 0.00 | 4% | Pass |
| dc (%) | 0.00 | 3.3% | Pass |

**NOTE**: (1) $P_{st}$ means short-term flicker indicator.
(2) $P_{lt}$ means long-term flicker indicator.
(3) $T_{dt}$ means maximum time that dt exceeds 3.3 %.
(4) $d_{max}$ means maximum relative voltage change.
(5) dc means relative steady-state voltage change.

## 4.5.7 TEST RESULTS (MODE 2)

| EUT | Internet Phone Adapter | MODEL | PAP2T |
|---|---|---|---|
| TEST MODE | Mode 2 | POWER FREQUENCY | 50.235 Hz |
| FUNDAMENTAL VOLTAGE/AMPERE | 229.7 Vrms / 0.054 Arms | POWER FACTOR | 0.430 |
| OBSERVATION PERIOD (TP) | 10 mins | ENVIRONMENTAL CONDITIONS | 16 deg. C, 50 % RH, 974 hPa |
| TESTED BY | Mitch Jen | | |

| TEST PARAMETER | MEASUREMENT VALUE | LIMIT | REMARKS |
|---|---|---|---|
| $P_{st}$ | 0.316 | 1.00 | Pass |
| $P_{lt}$ | 0.317 | 0.65 | Pass |
| $T_{dt}$ (ms) | 0.00 | 500 | Pass |
| $d_{max}$ (%) | 0.00 | 4% | Pass |
| dc (%) | 0.00 | 3.3% | Pass |

**NOTE**: (1) $P_{st}$ means short-term flicker indicator.
(2) $P_{lt}$ means long-term flicker indicator.
(3) $T_{dt}$ means maximum time that dt exceeds 3.3 %.
(4) $d_{max}$ means maximum relative voltage change.
(6) dc means relative steady-state voltage change.

# 5 IMMUNITY TEST

## 5.1 GENERAL DESCRIPTION

| **Product Standard**: | **EN 55024:1998+A1:2001+A2:2003** | |
|---|---|---|
| **Basic Standard, Specification, and Performance Criteria**: | IEC 61000-4-2 | Electrostatic Discharge - ESD:<br>8kV air discharge, 4kV Contact discharge,<br>Performance Criterion B |
| | IEC 61000-4-3 | Radio-Frequency Electromagnetic Field Susceptibility Test - RS:<br>80-1000 MHz, 3V/m, 80% AM (1kHz),<br>Performance Criterion A |
| | IEC 61000-4-4 | Electrical Fast Transient/Burst - EFT,<br>Power line: 1kV, Signal line: 0.5kV,<br>Performance Criterion B |
| | IEC 61000-4-5 | Surge Immunity Test:<br>1.2/50 us Open Circuit Voltage, 8 /20 us Short Circuit Current, Power Line - 1 kV, line to earth - 2kV,<br>Performance Criterion B |
| | IEC 61000-4-6 | Conducted Radio Frequency Disturbances Test - CS:<br>0.15-80 MHz, 3V, 80% AM, 1kHz,<br>Performance Criterion A |
| | IEC 61000-4-8 | Power Frequency Magnetic Field Test,<br>50 Hz, 1A/m,<br>Performance Criterion A |
| | IEC 61000-4-11 | Voltage Dips:<br>i) >95% reduction -0.5 period, Performance Criteria B<br>ii) 30% reduction - 25 period, Performance Criterion C<br>Voltage Interruptions:<br>i) >95% reduction - 250 period, Performance Criterion C |

## 5.2 GENERAL PERFORMANCE CRITERIA DESCRIPTION

According to Clause 7.1 of EN 55024 standard, the following describes the general performance criteria.

| | |
|---|---|
| **CRITERION A** | The equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended. |
| **CRITERION B** | After the test, the equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed, after the application of the phenomenon below a performance level specified by the manufacturer, when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance.<br>During the test, degradation of performance is allowed. However, no change of operating state if stored data is allowed to persist after the test. If the minimum performance level (or the permissible performance loss) is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended. |
| **CRITERION C** | Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions. Functions, and/or information stored in non-volatile memory, or protected by a battery backup, shall not be lost. |

## 5.3 PARTICULAR PERFORMANCE CRITERIA DESCRIPTION FOR LAN FUNCTION OF EUT

| | |
|---|---|
| **CRITERION A** | During and after the test, the EUT shall operate without:<br>- error rate beyond the figure defined by the manufacturer;<br>- requests for retry beyond the figure defined by the manufacturer;<br>- speed of data transmission rate beyond the figure defined by the manufacturer;<br>- protocol failure;<br>- loss of link |
| **CRITERION B** | Error rate, request for retry and speed of data transmission rate may be degraded during the application of the test.<br>Degradation of the performance as described in criteria A is permitted provided that the normal operation of the EUT is self-recoverable to the condition immediately before the application of the test. In these cases, operator response is permitted to re-initiate an operation. |
| **CRITERION C** | Degradation of the performance as described in criteria A and B is permitted provided that the normal operation of the EUT is self-recoverable to the condition immediately before the application of the test or can be restored after the test by the operator. |

### 5.3.1 EUT OPERATING CONDITIONS

Same as the 4.1.6

## 5.4 ELECTROSTATIC DISCHARGE IMMUNITY TEST (ESD)

### 5.4.1 TEST SPECIFICATION

| | |
|---|---|
| **Basic Standard:** | IEC 61000-4-2 |
| **Discharge Impedance:** | 330 ohm / 150 pF |
| **Discharge Voltage:** | Air Discharge – 2, 4, 8 kV (Direct)<br>Contact Discharge – 2, 4 kV (Indirect) |
| **Polarity:** | Positive / Negative |
| **Number of Discharge:** | Air Discharge: min. 20 times at each test point<br>Contact Discharge: min. 50 times at each test point |
| **Discharge Mode:** | Single Discharge |
| **Discharge Period:** | 1-second minimum |

### 5.4.2 TEST INSTRUMENTS

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | CALIBRATED UNTIL |
|---|---|---|---|
| Key Tek, ESD Simulator | MZ-15/EC | 9906323 | Feb. 20, 2006 |

**NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in ESD room A.

### 5.4.3 TEST PROCEDURE

The discharges shall be applied in two ways:

a. Contact discharges to the conductive surfaces and coupling planes:

The EUT shall be exposed to at least 200 discharges, 100 each at negative and positive polarity, at a minimum of four test points. One of the test points shall be subjected to at least 50 indirect discharges to the center of the front edge of the horizontal coupling plane. The remaining three test points shall each receive at least 50 direct contact discharges. If no direct contact test points are available, then at least 200 indirect discharges shall be applied in the indirect mode. Test shall be performed at a maximum repetition rate of one discharge per second.

b. Air discharges at slots and apertures and insulating surfaces:

On those parts of the EUT where it is not possible to perform contact discharge testing, the equipment should be investigated to identify user accessible points where breakdown may occur. Such points are tested using the air discharge method. This investigation should be restricted to those area normally handled by the user. A minimum of 10 single air discharges shall be applied to the selected test point for each such area.

The basic test procedure was in accordance with IEC 61000-4-2:

a. Electrostatic discharges were applied only to those points and surfaces of the EUT that are accessible to users during normal operation.

b. The test was performed with at least ten single discharges on the pre-selected points in the most sensitive polarity.

c. The time interval between two successive single discharges was at least 1 second.

d. The ESD generator was held perpendicularly to the surface to which the discharge was applied and the return cable was at least 0.2 meters from the EUT.

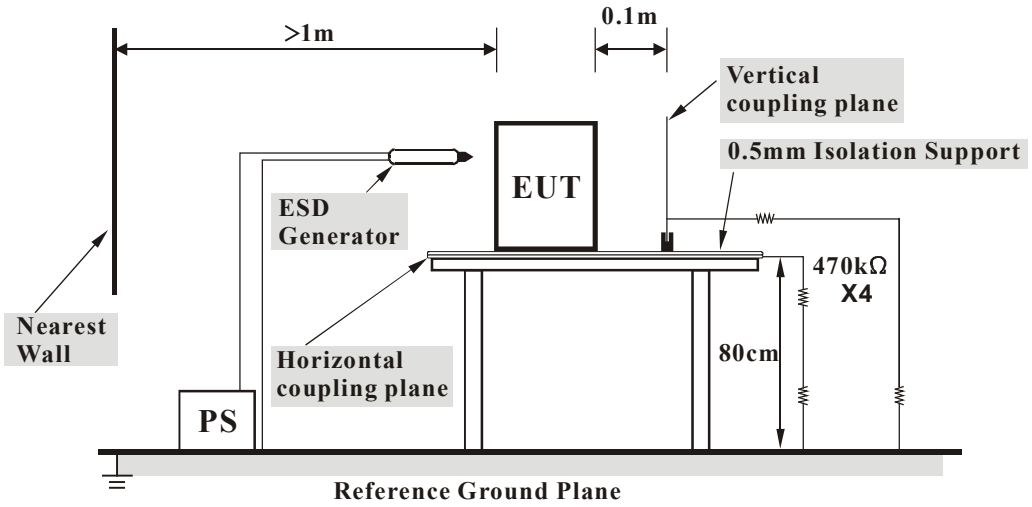
e. Contact discharges were applied to the non-insulating coating, with the pointed tip of the generator penetrating the coating and contacting the conducting substrate.

f. Air discharges were applied with the round discharge tip of the discharge electrode approaching the EUT as fast as possible (without causing mechanical damage) to touch the EUT. After each discharge, the ESD generator was removed from the EUT and re-triggered for a new single discharge. The test was repeated until all discharges were complete.

g. At least ten single discharges (in the most sensitive polarity) were applied to the **H**orizontal **C**oupling **P**lane at points on each side of the EUT. The ESD generator was positioned vertically at a distance of 0.1 meters from the EUT with the discharge electrode touching the **HCP.**

h. At least ten single discharges (in the most sensitive polarity) were applied to the center of one vertical edge of the **V**ertical **C**oupling **P**lane in sufficiently different positions that the four faces of the EUT were completely illuminated. The **VCP** (dimensions 0.5m x 0.5m) was placed vertically to and 0.1 meters from the EUT.

## 5.4.4 TEST SETUP




For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

**NOTE:**

TABLE-TOP EQUIPMENT
The configuration consisted of a wooden table 0.8 meters high standing on the **G**round **R**eference **P**lane. The **GRP** consisted of a sheet of aluminum at least 0.25mm thick, and 2.5 meters square connected to the protective grounding system. A **H**orizontal **C**oupling **P**lane (1.6m x 0.8m) was placed on the table and attached to the **GRP** by means of a cable with 940kΩ total impedance. The equipment under test, was installed in a representative system as described in section 7 of IEC 61000-4-2, and its cables were placed on the **HCP** and isolated by an insulating support of 0.5mm thickness. A distance of 1-meter minimum was provided between the EUT and the walls of the laboratory and any other metallic structure.

FLOOR-STANDING EQUIPMENT
The equipment under test was installed in a representative system as described in section 7 of IEC 61000-4-2, and its cables were isolated from the Ground Reference Plane by an insulating support of 0.1-meter thickness. The GRP consisted of a sheet of aluminum that is at least 0.25mm thick, and 2.5 meters square connected to the protective grounding system and extended at least 0.5 meters from the EUT on all sides.

## 5.4.5 TEST RESULTS (MODE 1 ~ 2)

| | | | |
|---|---|---|---|
| **EUT** | Internet Phone Adapter | **MODEL** | PAP2T |
| **TEST MODE** | Mode 1~2 | **INPUT POWER** | 230Vac, 50 Hz |
| **ENVIRONMENTAL CONDITIONS** | 21 deg. C, 60 % RH, 974 hPa | **TESTED BY** | Rock Su |

| TEST RESULTS OF DIRECT APPLICATION | | | | | |
|---|---|---|---|---|---|
| Discharge Level (kV) | Polarity (+/-) | Test Point | Contact Discharge | Air Discharge | Performance Criterion |
| 2, 4, 8 | +/- | 1 ~ 6 | NA | Note (1) | A |

**Note: No conductive surfaces found, therefore no contact discharge was executed.**

**Description of test point (Please refer to ESD test photo):**

1. Power connector
2. RJ-45 connector
3. RJ-11 connector
4. LED indicator
5. Opening
6. Reset button

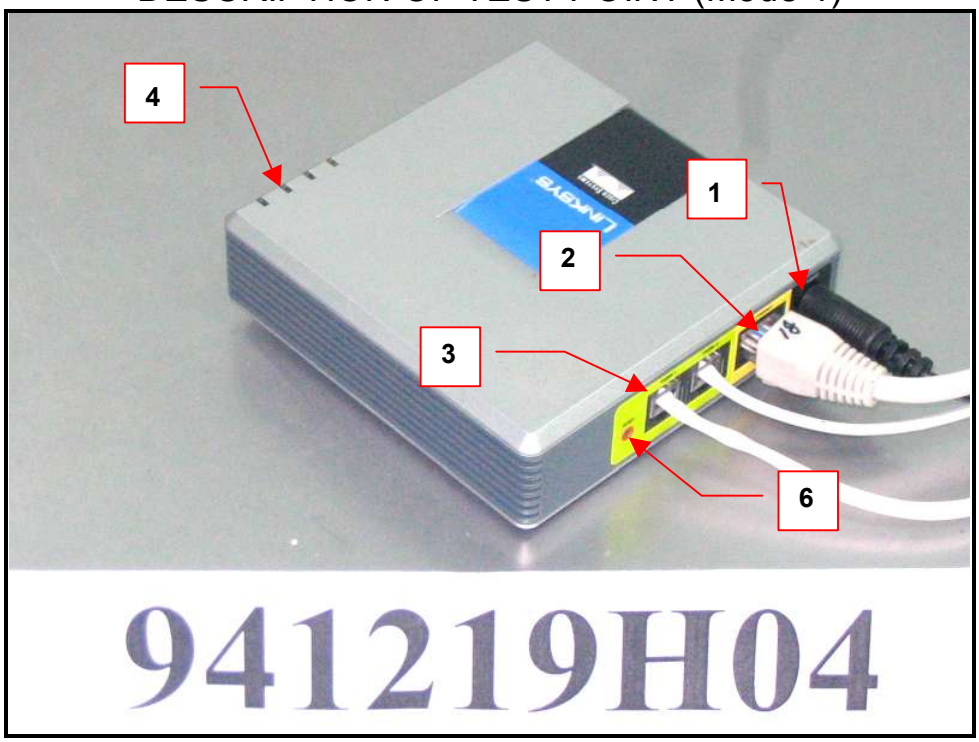
| TEST RESULTS OF INDIRECT APPLICATION | | | | | |
|---|---|---|---|---|---|
| Discharge Level (kV) | Polarity (+/-) | Test Point | Horizontal Coupling Plane | Vertical Coupling Plane | Performance Criterion |
| 2, 4 | +/- | 1 ~ 4 | Note (1) | Note (1) | A |

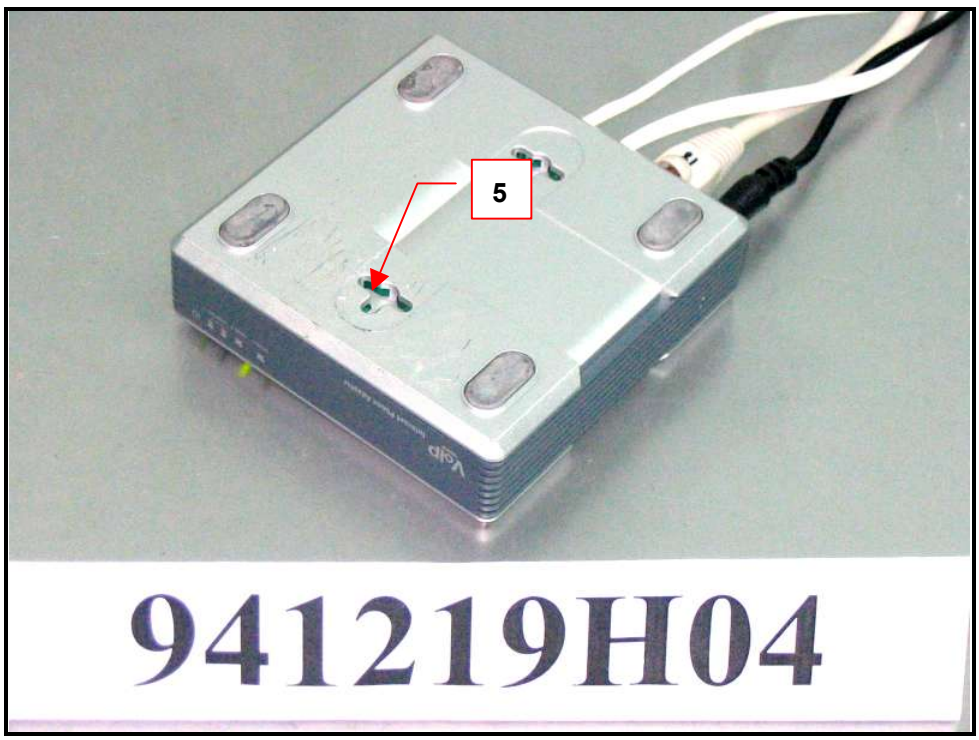
**Description of test point:**

1. Front side 2. Right side 3. Left side 4. Rear side

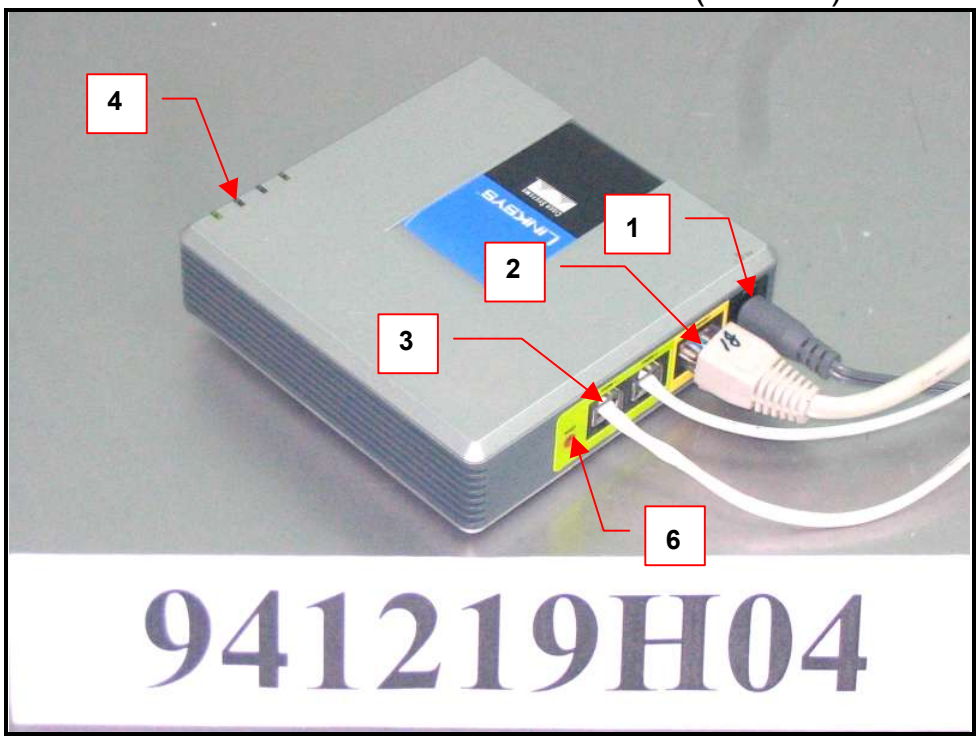
**NOTES**:(1) There was no change compared with the initial operation during the test.

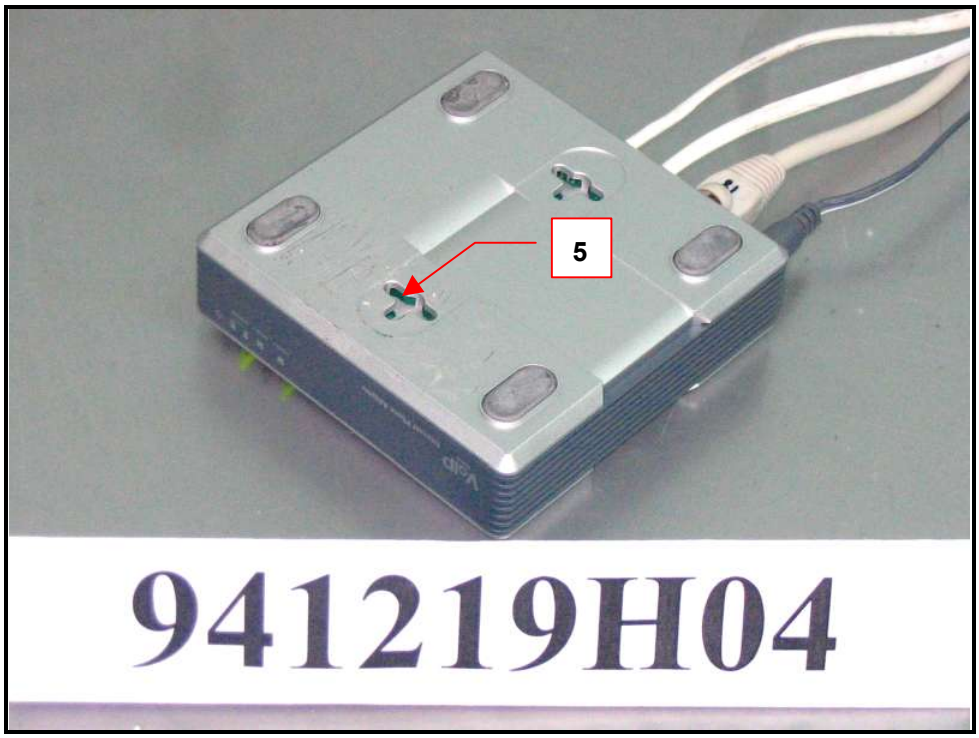
DESCRIPTION OF TEST POINT (Mode 1)



# DESCRIPTION OF TEST POINT (Mode 2)



## 5.5 RADIATED, RADIO-FREQUENCY, ELECTROMAGNETIC FIELD IMMUNITY TEST (RS)

### 5.5.1 TEST SPECIFICATION

| | |
|---|---|
| **Basic Standard:** | IEC 61000-4-3 |
| **Frequency Range:** | 80 MHz - 1000 MHz |
| **Field Strength:** | 3 V/m |
| **Modulation:** | 1kHz Sine Wave, 80%, AM Modulation |
| **Frequency Step:** | 1 % of fundamental |
| **Polarity of Antenna:** | Horizontal and Vertical |
| **Test Distance:** | 3 m |
| **Antenna Height:** | 1.5m |
| **Dwell Time:** | 3 seconds |

### 5.5.2 TEST INSTRUMENTS

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | CALIBRATED UNTIL |
|---|---|---|---|
| AR Power Amplifier | 150W1000M3 | 311567 | NA |
| AR Power Amplifier | 60S1G3M1 | 304334 | NA |
| AR LOG ANTENNA | AT5080ANT | 309740 | NA |
| Schwarzbeck Antenna (Horn) | BBHA9120-D1 | D123 | Sep. 25, 2006 |
| BOONTON RF Voltage Meter | 4232A-01 | 93801 | Jan. 30, 2006 |
| R&S Signal Generator | SML03 | 101159 | Feb. 01, 2006 |
| Electric Field Probe | FP6001 | 30817 | Aug. 19, 2006 |

**NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Chamber Room No. B.

## 5.5.3 TEST PROCEDURE

The test procedure was in accordance with IEC 61000-4-3

a. The testing was performed in a fully-anechoic chamber. The transmit antenna was located at a distance of 3 meters from the EUT.

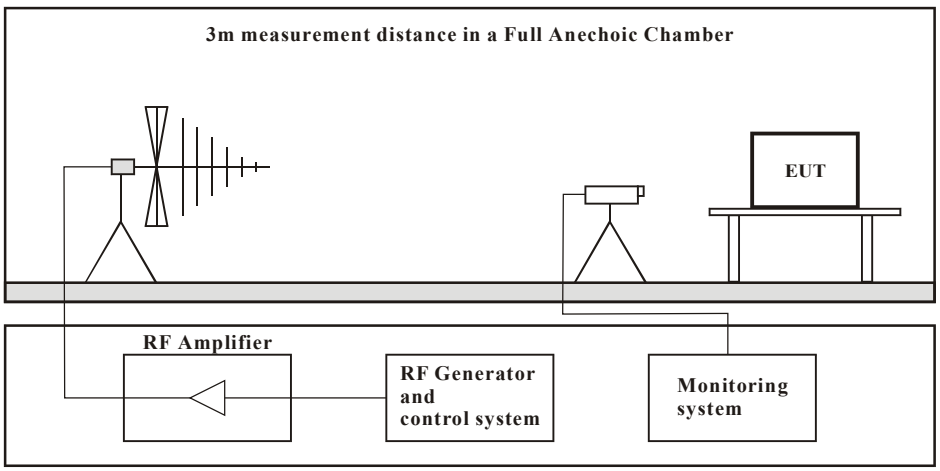
b. The frequency range is swept from 80 MHz to 1000 MHz, with the signal 80% amplitude modulated with a 1kHz sine wave. The rate of sweep did not exceed 1.5 x 10 -3 decade/s. Where the frequency range is swept incrementally, the step size was 1% of fundamental.

c. The dwell time at each frequency shall be not less than the time necessary for the EUT to be able to respond.

d. The field strength level was 3V/m.

e. The test was performed with the EUT exposed to both vertically and horizontally polarized fields on each of the four sides.

## 5.5.4 TEST SETUP




For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

**NOTE:**

TABLETOP EQUIPMENT
The EUT installed in a representative system as described in section 7 of IEC 61000-4-3 was placed on a non-conductive table 0.8 meters in height. The system under test was connected to the power and signal wire according to relevant installation instructions.

FLOOR STANDING EQUIPMENT
The EUT installed in a representative system as described in section 7 of IEC 61000-4-3 was placed on a non-conductive wood support 0.1 meters in height. The system under test was connected to the power and signal wire according to relevant installation instructions.

## 5.5.5 TEST RESULTS (MODE 1 ~ 2)

| | | | |
|---|---|---|---|
| **EUT** | Internet Phone Adapter | **MODEL** | PAP2T |
| **TEST MODE** | Mode 1~2 | **INPUT POWER** | 230Vac, 50 Hz |
| **ENVIRONMENTAL CONDITIONS** | 23 deg. C, 50 % RH, 974 hPa | **TESTED BY** | Anderson Chen |

| Frequency (MHz) | Result | Polarity | Azimuth | Field Strength (V/m) | Obser-vation | Performanc e Criterion |
|---|---|---|---|---|---|---|
| 80 -1000 | PASS | V&H | 0 | 3 | Note | A |
| 80 -1000 | PASS | V&H | 90 | 3 | | |
| 80 -1000 | PASS | V&H | 180 | 3 | | |
| 80 -1000 | PASS | V&H | 270 | 3 | | |

**NOTE**: There was no change compared with the initial operation during the test.

## 5.6 ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST (EFT)

### 5.6.1 TEST SPECIFICATION

| | |
|---|---|
| **Basic Standard:** | IEC 61000-4-4 |
| **Test Voltage:** | Power Line - 1 kV<br>Signal/Control Line - 0.5kV |
| **Polarity:** | Positive/Negative |
| **Impulse Frequency:** | 5 kHz |
| **Impulse Waveshape :** | 5/50 ns |
| **Burst Duration:** | 15 ms |
| **Burst Period:** | 300 ms |
| **Test Duration:** | Not less than 1 min. |

### 5.6.2 TEST INSTRUMENTS

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | CALIBRATED UNTIL |
|---|---|---|---|
| EMC PARTNER, TRANSIENT | TRA1Z332N | 683 | Oct. 13, 2006 |
| EMS Simulator | MX-15/EC | 9906323 | Feb. 28, 2006 |
| EMC PARTNER, CDN-UTP8 | CDN-UTP8 | 012 | Oct. 22, 2006 |
| Adapter (EMCPartner) | NA | SU1ADA-002 | Dec.24.2006 |

**NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in EMS room B.

### 5.6.3 TEST PROCEDURE

a. Both positive and negative polarity discharges were applied.

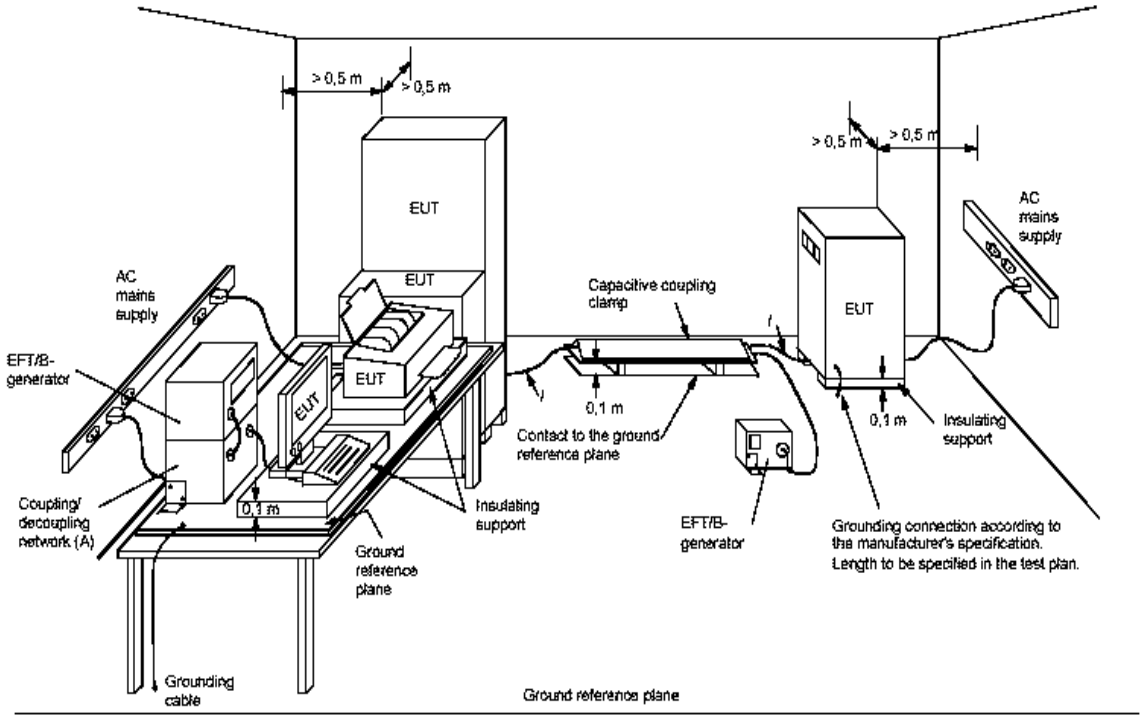
b. The length of the “hot wire” from the coaxial output of the EFT generator to the terminals on the EUT should not exceed 1 meter.

c. The duration time of each test sequential was 1 minute.

d. The transient/burst waveform was in accordance with IEC 61000-4-4, 5/50ns.

## 5.6.4 TEST SETUP

**Direct Coupling Test Setup**




For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

## 5.6.5 TEST RESULTS (MODE 1 ~ 2)

| EUT | Internet Phone Adapter | MODEL | PAP2T |
|---|---|---|---|
| TEST MODE | Mode 1~2 | INPUT POWER | 230Vac, 50 Hz |
| ENVIRONMENTAL CONDITIONS | 20 deg. C, 51 % RH, 974 hPa | TESTED BY | Kevin Huang |

**POWER PORT**

| VOLTAGE (kV) | TEST POINT | POLARITY (+/-) | OBSERVATION | PERFORMANCE CRITERION |
|---|---|---|---|---|
| 1 | L1 | +/- | Note (1) | B |
| 1 | L2 | +/- | Note (1) | B |
| 1 | L1-L2 | +/- | Note (1) | B |

**SIGNAL PORTS AND CONTROL PORTS**

| VOLTAGE (kV) | TEST POINT | POLARITY (+/-) | OBSERVATION | PERFORMANCE CRITERION |
|---|---|---|---|---|
| 0.5 | RJ-45 | +/- | Note (1) | B |
| 0.5 | RJ-11 | +/- | Note (1) | B |

**NOTES:**(1) The EUT found disturbance noises on telephone handset during the test, but could be self-recoverable after the test.

## 5.7 SURGE IMMUNITY TEST

## 5.7.1 TEST SPECIFICATION

| | |
|---|---|
| **Basic Standard:** | IEC 61000-4-5 |
| **Wave-Shape:** | Combination Wave<br>1.2/50 us Open Circuit Voltage<br>8 /20 us Short Circuit Current |
| **Test Voltage:** | Power Line - 0.5kV / 1 kV |
| **Surge Input/Output:** | L1-L2 |
| **Generator Source Impedance:** | 2 ohm between networks |
| **Polarity:** | Positive/Negative |
| **Phase Angle (degree):** | 0 / 90 / 180 / 270 |
| **Pulse Repetition Rate:** | 1 time / min. (maximum) |
| **Number of Tests:** | 5 positive and 5 negative at selected points |

## 5.7.2 TEST INSTRUMENTS

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | CALIBRATED UNTIL |
|---|---|---|---|
| KeyTek, EMS Simulator | EMC Pro | 9712339 | Feb. 22, 2006 |
| KeyTek, Coupler/Decoupler | CM-I/OCD | 9908190 | NA |
| KeyTek, Coupler/Decoupler | CM-TELCD | 9906197 | NA |
| Adapter (EMC Pro) | NA | SU1ADA-001 | Dec.24.2006 |

**NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in EMS room A.

## 5.7.3 TEST PROCEDURE

a. For EUT power supply:

The surge is to be applied to the EUT power supply terminals via the capacitive coupling network. Decoupling networks are required in order to avoid possible adverse effects on equipment not under test that may be powered by the same lines, and to provide sufficient decoupling impedance to the surge wave. The power cord between the EUT and the coupling/decoupling networks shall be 2 meters in length (or shorter).

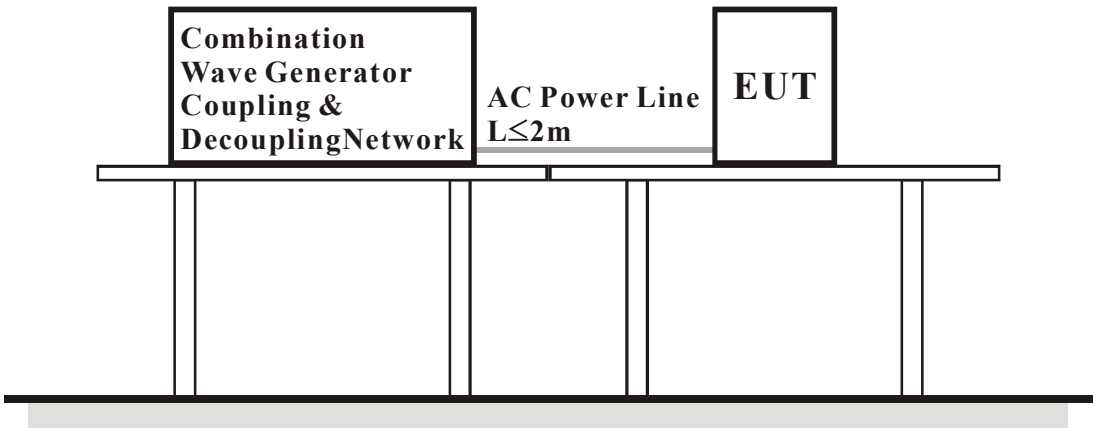
b. For test applied to unshielded unsymmetrically operated interconnection lines of EUT:

The surge is applied to the lines via the capacitive coupling. The coupling / decoupling networks shall not influence the specified functional conditions of the EUT. The interconnection line between the EUT and the coupling/decoupling networks shall be 2 meters in length (or shorter).

c. For test applied to unshielded symmetrically operated interconnection / telecommunication lines of EUT:

The surge is applied to the lines via gas arrestors coupling. Test levels below the ignition point of the coupling arrestor cannot be specified. The interconnection line between the EUT and the coupling/decoupling networks shall be 2 meters in length (or shorter).

## 5.7.4 TEST SETUP




For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

## 5.7.5 TEST RESULTS (MODE 1 ~ 2)

| EUT | Internet Phone Adapter | MODEL | PAP2T |
|---|---|---|---|
| TEST MODE | Mode 1~2 | INPUT POWER | 230Vac, 50 Hz |
| ENVIRONMENTAL CONDITIONS | 16 deg. C, 44 % RH, 974 hPa | TESTED BY | Mitch Jen |

**POWER PORT**

| VOLTAGE (kV) | TEST POINT | POLARITY (+/-) | OBSERVATION | PERFORMANCE CRITERION |
|---|---|---|---|---|
| 0.5, 1 | L1-L2 | +/- | NOTE(1) | A |

**NOTE**: (1) There was no change compared with the initial operation during the test.

## 5.8 IMMUNITY TO CONDUCTED DISTURBANCES INDUCED BY RF FIELDS (CS)

### 5.8.1 TEST SPECIFICATION

| | |
|---|---|
| **Basic Standard:** | IEC 61000-4-6 |
| **Frequency Range:** | 0.15 MHz - 80 MHz |
| **Field Strength:** | 3 V |
| **Modulation:** | 1kHz Sine Wave, 80%, AM Modulation |
| **Frequency Step:** | 1 % of fundamental |
| **Coupled Cable:** | Power Mains, Unshielded<br>Signal / Control Line |
| **Coupling Device:** | CDN-M2 (2 wires), CDN-T8, CDN-T2 |
| **Dwell Time** | 3 seconds |

### 5.8.2 TEST INSTRUMENTS

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | CALIBRATED UNTIL |
|---|---|---|---|
| R&S Signal Generator | SML 01 | 102731 | Feb. 01, 2006 |
| AR Amplifier | 75A250AM1 | 307297 | NA |
| BOONTON RF Voltage Meter | 4230 | 13302 | Nov. 13, 2006 |
| LUTHIE EM Injection Clamp | EM-101 | 35453 | NA |
| FCC CDN M2 | FCC-801-M2-16A | 03048 | Dec. 11, 2006 |
| FCC CDN M3 | FCC-801-M3-16A | 03055 | Dec. 11, 2006 |
| Fischer Custom Communications Inc Coupling Decoupling Network | FCC-801-T2 | 02025 | Oct. 05, 2006 |
| Fischer Custom Communications Inc Coupling Decoupling Network | FCC-801-T4 | 02030 | Oct. 05, 2006 |
| Fischer Custom Communications Inc Coupling Decoupling Network | FCC-801-T8 | 02036 | Oct. 05, 2006 |

**NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Chamber Room No. B.

## 5.8.3 TEST PROCEDURE

a. The EUT shall be tested within its intended operating and climatic conditions.

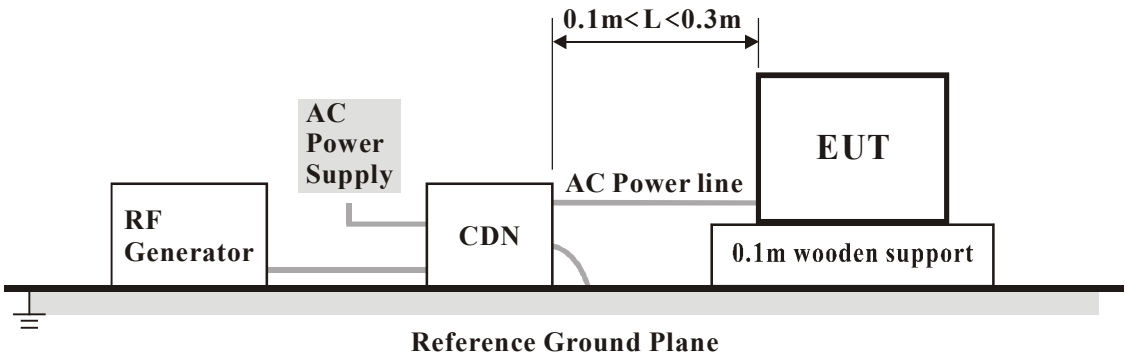
b. The test shall be performed with the test generator connected to each of the coupling and decoupling devices in turn, while the other non-excited RF input ports of the coupling devices are terminated by a 50-ohm load resistor.

c. The frequency range is swept from 150 kHz to 80 MHz, using the signal level established during the setting process and with a disturbance signal of 80 % amplitude. The signal is modulated with a 1 kHz sine wave, pausing to adjust the RF signal level or the switch coupling devices as necessary. The sweep rate shall not exceed 1.5 x $10^{-3}$ decades/s. The step size shall not exceed 1 % of the start and thereafter 1 % of the preceding frequency value where the frequency is swept incrementally.

d. The dwell time at each frequency shall not be less than the time necessary for the EUT to be exercised, and able to respond. Sensitive frequencies such as clock frequency(ies) and harmonics or frequencies of dominant interest, shall be analyzed separately.

e. Attempts should be made to fully exercise the EUT during testing, and to fully interrogate all exercise modes selected for susceptibility.

## 5.8.4 TEST SETUP




For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

**NOTE:**

FLOOR-STANDING EQUIPMENT

The equipment to be tested is placed on an insulating support of 0.1 meters height above a ground reference plane. All relevant cables shall be provided with the appropriate coupling and decoupling devices at a distance between 0.1 meters and 0.3 meters from the projected geometry of the EUT on the ground reference plane.

## 5.8.5 TEST RESULTS (MODE 1 ~ 2)

| EUT | Internet Phone Adapter | MODEL | PAP2T |
|---|---|---|---|
| TEST MODE | Mode 1~2 | INPUT POWER | 230Vac, 50 Hz |
| ENVIRONMENTAL CONDITIONS | 25 deg. C, 53 % RH, 974 hPa | TESTED BY | Duke Tseng |

**FOR MAINS POWER:**

| Frequency (MHz) | Field Strength (Vr.m.s.) | Cable | Injection Method | Obser-vation | Performance Criterion |
|---|---|---|---|---|---|
| 0.15 –80 | 3 | AC power line | CDN-M2 | Note (1) | A |

**FOR SIGNAL / CONTROL LINE:**
*** The LAN port and WAN port were tested separately.**

| Frequency (MHz) | Voltage Level (Vr.m.s.)) | Cable | Injection Method | Obser-vation | Performance Criterion |
|---|---|---|---|---|---|
| 0.15 –80 | 3 | RJ-45 | CDN-T8 | Note (2) | A |
| 0.15 –80 | 3 | RJ-11 | CDN-T2 | Note (2) | A |

**NOTE**: (1) There was no change compared with the initial operation during the test.
(2) There were disturbance noises found via phone during the test but self-recoverable after the test.

**※ According to the specification of the manufacturer this phenomena is acceptable. The manufacturer agrees to have a clear statement about this in the user's manual to avoid misunderstanding.**

## 5.9 POWER FREQUENCY MAGNETIC FIELD IMMUNITY TEST

### 5.9.1 TEST SPECIFICATION

| | |
|---|---|
| **Basic Standard:** | IEC 61000-4-8 |
| **Frequency Range:** | 50Hz |
| **Field Strength:** | 1 A/m |
| **Observation Time:** | 1 minute |
| **Inductance Coil:** | Helmholtz coil, diameter 1.5m |

### 5.9.2 TEST INSTRUMENTS

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | CALIBRATED UNTIL |
|---|---|---|---|
| BELL, Triaxial Elf Magnetic Field Meter | 4090 | NA | Dec. 10, 2006 |
| MONTENA, Helmholt Coil | HC150-360 | NA | NA |

**NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in EMS room.

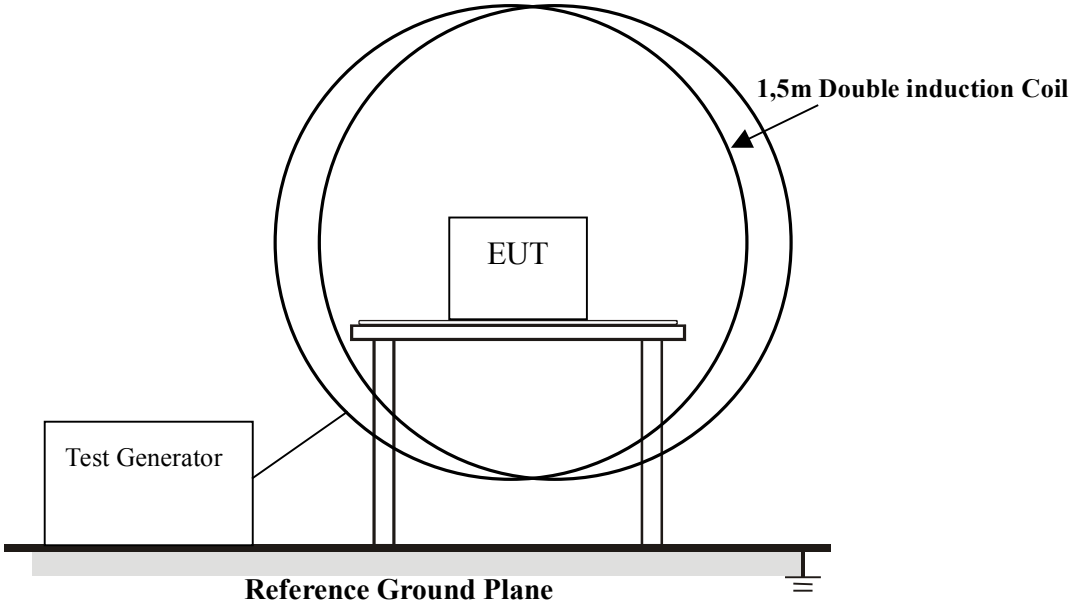
### 5.9.3 TEST PROCEDURE

a. The equipment is configured and connected to satisfy its functional requirements.

b. The power supply, input and output circuits shall be connected to the sources of power supply, control and signal.

c. The cables supplied or recommended by the equipment manufacturer shall be used. 1 meter of all cables used shall be exposed to the magnetic field.

## 5.9.4 TEST SETUP




For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

**NOTE:**

TABLETOP EQUIPMENT
The equipment shall be subjected to the test magnetic field by using the induction coil of standard dimension (diameter 1.5m). The EUT placement shall then be rotated by 90 degrees in order to expose to the test field with different orientations.

## 5.9.5 TEST RESULTS (MODE 1 ~ 2)

| EUT | Internet Phone Adapter | MODEL | PAP2T |
|---|---|---|---|
| TEST MODE | Mode 1~2 | INPUT POWER | 230Vac, 50 Hz |
| ENVIRONMENTAL CONDITIONS | 16 deg. C, 44 % RH, 974 hPa | TESTED BY | Mitch Jen |

| DIRECTION | RESULTS | OBSERVATION | PERFORMANCE CRITERION |
|---|---|---|---|
| X | PASS | Note | A |
| Y | PASS | Note | A |
| Z | PASS | Note | A |

**NOTE**: There was no change compared with the initial operation during the test.

## 5.10 VOLTAGE DIP/SHORT INTERRUPTIONS/VOLTAGE VARIATIONS (DIP) IMMUNITY TEST

### 5.10.1 TEST SPECIFICATION

| | |
|---|---|
| **Basic Standard:** | IEC 61000-4-11 |
| **Test Duration Time:** | Minimum three test events in sequence |
| **Interval between Event:** | Minimum ten seconds |
| **Phase Angle (degree):** | 0 / 90 / 180 / 270 |
| **Test Cycle:** | 3 times |

### 5.10.2 TEST INSTRUMENTS

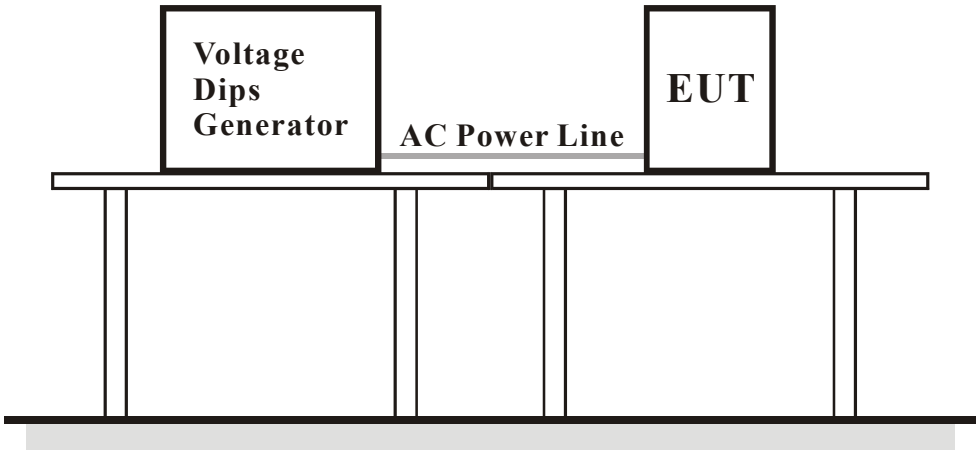
| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | CALIBRATED UNTIL |
|---|---|---|---|
| KeyTek, EMS Simulator | EMC Pro | 9712339 | Feb. 22, 2006 |

**NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in EMS room.

### 5.10.3 TEST PROCEDURE

The EUT shall be tested for each selected combination of test levels and duration with a sequence of tree dips/interruptions with intervals of 10 s minimum (between each test event). Each representative mode of operation shall be tested. Abrupt changes in supply voltage shall occur at zero crossings of the voltage waveform.

## 5.10.4 TEST SETUP




For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

## 5.10.5 TEST RESULTS (MODE 1 ~ 2)

| EUT | Internet Phone Adapter | MODEL | PAP2T |
|---|---|---|---|
| TEST MODE | Mode 1~2 | INPUT POWER | 230Vac/100Vac, 50 Hz |
| ENVIRONMENTAL CONDITIONS | 16 deg. C, 44 % RH, 974 hPa | TESTED BY | Mitch Jen |

| Input Power for testing: 230Vac, 50 Hz (Normal Voltage) | | | | |
|---|---|---|---|---|
| VOLTAGE % REDUCTION | PERIODS | RESULTS | OBSERVATION | PERFORMANCE CRITERION |
| >95 | 0.5 | PASS | Note (1) | A |
| 30 | 25 | PASS | Note (1) | A |
| >95 | 250 | PASS | Note (2) | C |

| Input Power for testing: 100Vac, 50 Hz (Minimum Voltage) | | | | |
|---|---|---|---|---|
| VOLTAGE % REDUCTION | PERIODS | RESULTS | OBSERVATION | PERFORMANCE CRITERION |
| >95 | 0.5 | PASS | Note (1) | A |
| 30 | 25 | PASS | Note (1) | A |
| >95 | 250 | PASS | Note (2) | C |

**NOTES**:(1) There was no change compared with initial operation during the test.
(2) The EUT shut down during the test but could be recovered by reset after the test.

# 6 PHOTOGRAPHS OF THE TEST CONFIGURATION

CONDUCTED EMISSION TEST (Mode 1)


# CONDUCTED EMISSION TEST (Mode 2)


# RADIATED EMISSION TEST (Mode 1)

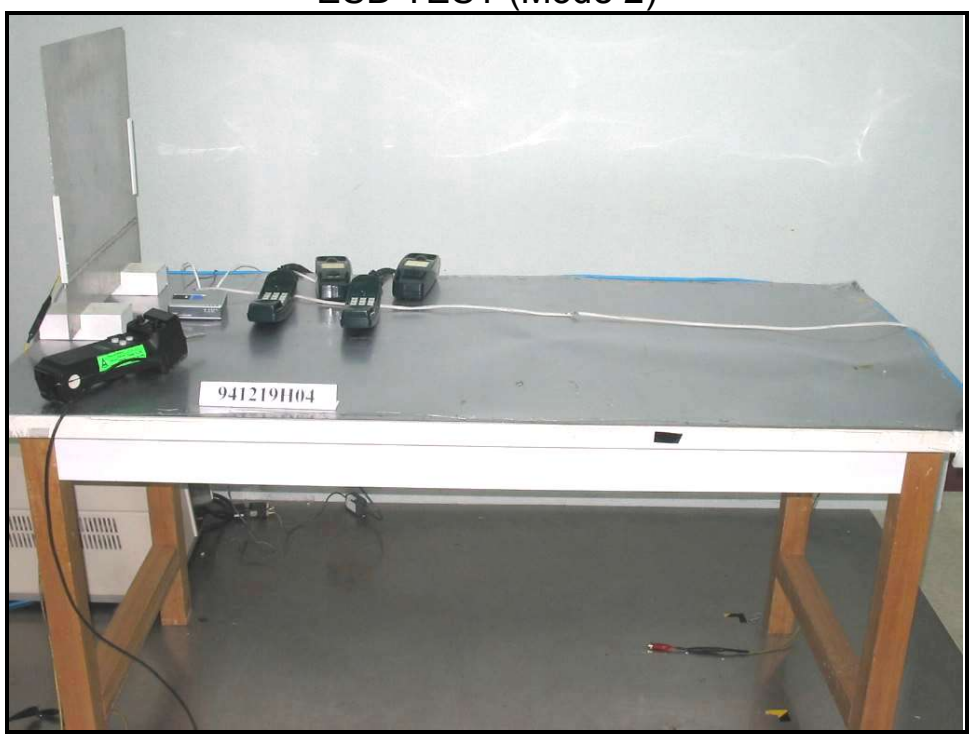

RADIATED EMISSION TEST (Mode 2)


HARMONICS EMISSION TEST & VOLTAGE FLUCTUATIONS AND FLICKER TEST (Mode 1)

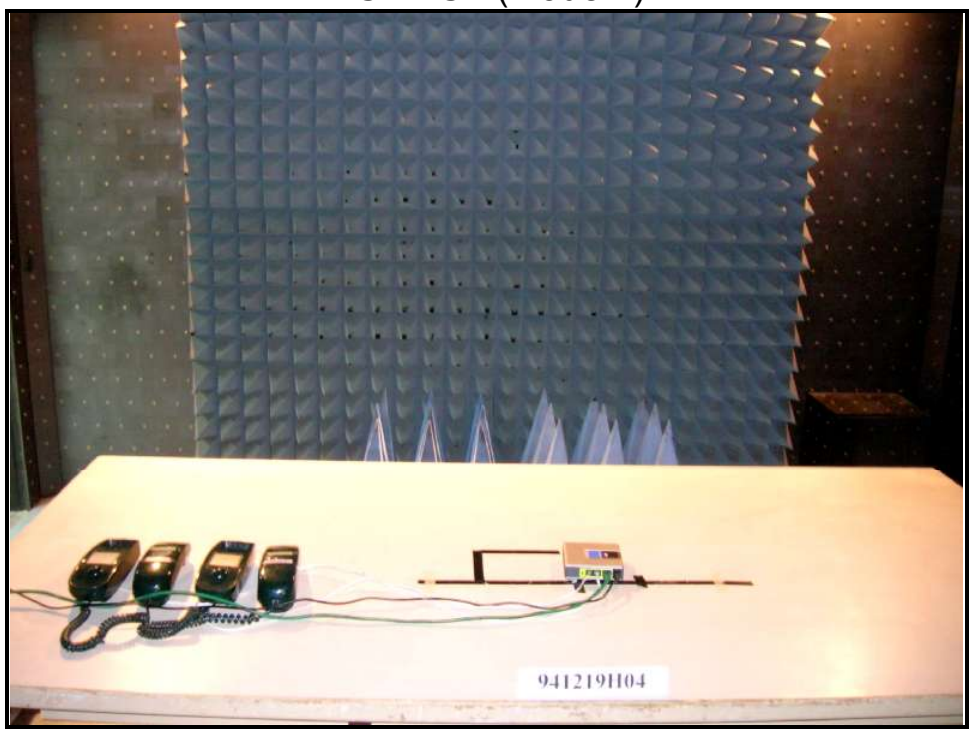

HARMONICS EMISSION TEST & VOLTAGE FLUCTUATIONS AND FLICKER TEST (Mode 2)

ESD TEST (Mode 1)

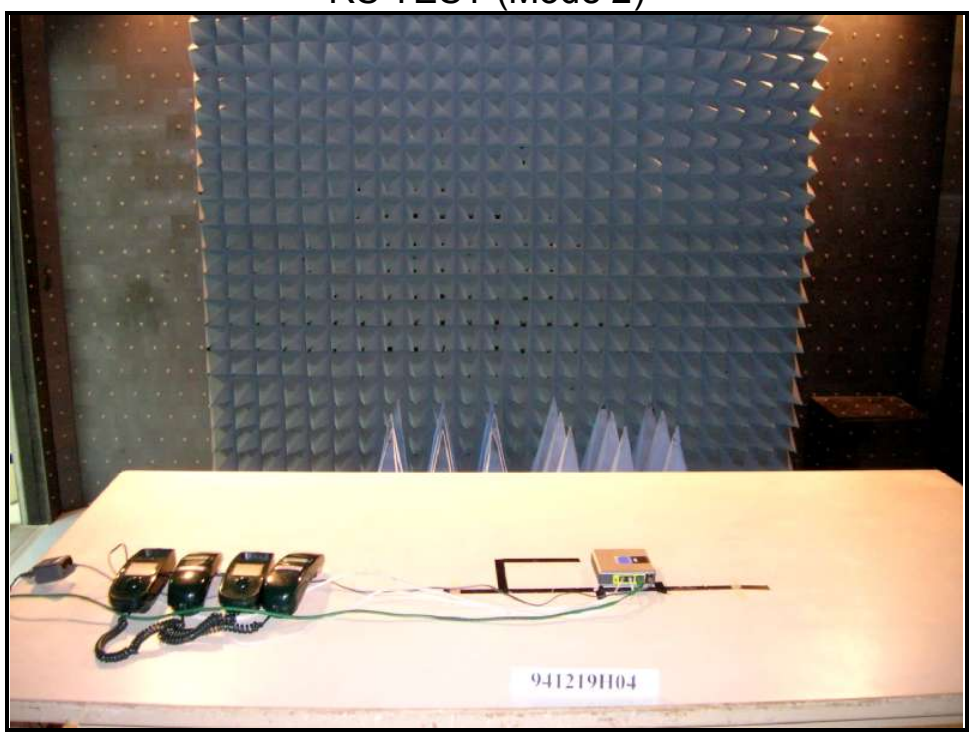

ESD TEST (Mode 2)



RS TEST (Mode 1)




RS TEST (Mode 2)



EFT TEST (Mode 1)


EFT CLAMP TEST (RJ-45)

EFT TEST (RJ-11)

EFT TEST (Mode 2)


**2 S**

EFT CLAMP TEST (RJ-45)


**T**
**S**

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EFT TEST (RJ-11)

SURGE & VOLTAGE DIPS
AND INTERRUPTIONS TEST (Mode 1)


SURGE & VOLTAGE DIPS
AND INTERRUPTIONS TEST (Mode 2)

CONDUCTED SUSCEPTIBILITY TEST (Mode 1)


CONDUCTED SUSCEPTIBILITY TEST (RJ-45)

# CONDUCTED SUSCEPTIBILITY TEST (RJ-11)

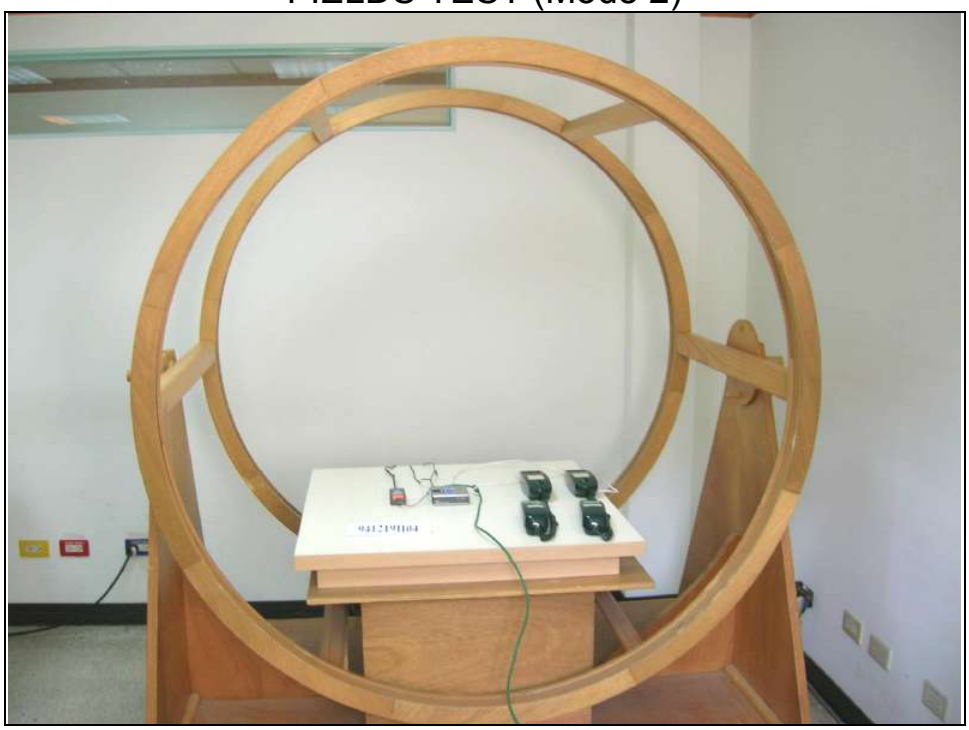
CONDUCTED SUSCEPTIBILITY TEST (Mode 2)


CONDUCTED SUSCEPTIBILITY TEST (RJ-45)

# CONDUCTED SUSCEPTIBILITY TEST (RJ-11)

POWER-FREQUENCY MAGNETIC
FIELDS TEST (Mode 1)

POWER-FREQUENCY MAGNETIC
FIELDS TEST (Mode 2)



# 7 APPENDIX - INFORMATION ON THE TESTING LABORATORIES

We, ADT Corp., were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025:

| | |
|---|---|
| **USA** | FCC, NVLAP, UL, A2LA |
| **Germany** | TUV Rheinland |
| **Japan** | VCCI |
| **Norway** | NEMKO |
| **Canada** | INDUSTRY CANADA, CSA |
| **R.O.C.** | CNLA, BSMI, DGT |
| **Netherlands** | Telefication |
| **Singapore** | PSB, GOST-ASIA (MOU) |
| **Russia** | CERTIS (MOU) |

Copies of accreditation certificates of our laboratories obtained from approval agencies can be downloaded from our web site: www.adt.com.tw/index.5/phtml.
If you have any comments, please feel free to contact us at the following:


**Linko EMC/RF Lab**:
Tel: 886-2-26052180
Fax: 886-2-26052943

**Hsin Chu EMC/RF Lab**:
Tel: 886-3-5935343
Fax: 886-3-5935342

**Hwa Ya EMC/RF/Safety/Telecom Lab**:
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**Email**: service@adt.com.tw
**Web Site**: www.adt.com.tw


The address and road map of all our labs can be found in our web site also.