



FCC 47 CFR PART 15 SUBPART C

TEST REPORT

For

Applicant: SHENZHEN LI RUI ELECTRONIC CO.,LTD

Address: 4F, Block 4, B Area of Yintian Xifa Industrial Zone, Bao An District, Shenzhen, China

Product Name: MID

Model Name: N90, 97D02, 97D01, 97A01

Brand Name: N/A

FCC ID: Z2Z-97D

Report No.: MOST111201F2

Date of Issue: December. 13, 2011

Issued by : Most Technology Service Co., Ltd.

Address : No.5, 2nd Langshan Road, North District, Hi-tech Industrial Park, Nanshan, Shenzhen, Guangdong, China

Tel : 86-755-8617 0306

Fax : 86-755-8617 0310

The report consists 55 pages in total. It may be duplicated completely for legal use with the approval of the applicant. It should not be reproduced except in full, without the written approval of our laboratory. The client should not use it to claim product endorsement by MOST. The test results in the report only apply to the tested sample. The test report shall be invalid without all the signatures of testing engineers, reviewer and approver.

TABLE OF CONTENTS

| | |
|---|----------|
| 1. VERIFICATION OF CONFORMITY | 3 |
| 2. GENERAL INFORMATION..... | 3 |
| 2.1 Product Information | 3 |
| 2.2 Objective | 3 |
| 2.3 Test Standards and Results..... | 3 |
| 2.4 Environmental Conditions..... | 3 |
| 3. TEST FACILITY | 3 |
| 3.1 TEST FACILITY..... | 3 |
| 3.2 GENERAL TEST PROCEDURES | 3 |
| 3.3 FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS..... | 3 |
| 4. TEST EQUIPMENT LIST | 3 |
| 5. 47 CFR Part 15 C 15.247 Requirements..... | 3 |
| 5.1 6dB Bandwidth | 3 |
| 5.2 Peak Output Power | 3 |
| 5.3 Conducted Spurious Emission | 3 |
| 5.4 Band Edge | 3 |
| 5.5 Power Spectral Density (PSD)..... | 3 |
| 5.7 Radiated Emission | 3 |
| APPENDIX 1..... | 3 |
| PHOTOGRAPHS OF TEST SETUP | 3 |
| APPENDIX 2..... | 3 |
| PHOTOGRAPHS OF EUT | 3 |

1. VERIFICATION OF CONFORMITY

Equipment Under Test: MID
Brand Name: N/A
Model Number: N90
Series Number: 97D02, 97D01, 97A01
Model Difference description: Only the the appearance and model name are different.
FCC ID: Z2Z-N90
Applicant: SHENZHEN LI RUI ELECTRONIC CO.,LTD
4F, Block 4, B Area of Yintian Xifa Industrial Zone, Bao An District,
Shenzhen, China
Manufacturer: SHENZHEN LI RUI ELECTRONIC CO.,LTD
4F, Block 4, B Area of Yintian Xifa Industrial Zone, Bao An District,
Shenzhen, China
Technical Standards: 47 CFR Part 15 Subpart C
File Number: MOST111201F2
Date of test: December. 1, 2011- December. 8, 2011
Deviation: None
Condition of Test Sample: Normal
Test Result: PASS

The above equipment was tested by *Most Technology Service Co., Ltd.* for compliance with the requirements set forth in FCC rules and the Technical Standards mentioned above. This said equipment in the configuration described in this report shows the maximum emission levels emanating from equipment and the level of the immunity endurance of the equipment are within the compliance requirements.

The test results of this report relate only to the tested sample identified in this report.

Tested by (+ signature):



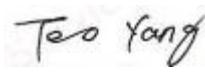
Zhang Ling December. 13, 2011

Review by (+ signature):



July Wen December. 13, 2011

Approved by (+ signature):



Terry Yang December. 13 , 2011

2. GENERAL INFORMATION

2.1 Product Information

| | |
|-------------------------------|--|
| Description: | MID |
| Brand Name: | N/A |
| Model Name: | N90 |
| Series Number: | 97D02, 97D01, 97A01 |
| Model Difference description: | Only the the appearance and model name are different. |
| Power Supply: | DC: 7.4V by Li-ion Battery; DC: 12V by AC Adapter(100V-240V 50/60Hz); |
| Frequency Range: | IEEE 802.11b/g/n: 2412MHz - 2462MHz |
| Number of Channels: | IEEE 802.11b/g mode: 11 Channels IEEE 802.11n Standard-40 MHz Channel mode: 7 Channels |
| Modulation Technique: | IEEE 802.11b mode: DSSS (1, 2, 5.5 and 11 Mpbs) IEEE 802.11g mode: OFDM (6, 9, 12, 18, 24, 36, 48 and 54 Mpbs) IEEE 802.11n Standard-40 MHz Channel mode: OFDM (13.5, 27, 40.5, 54, 81, 108, 121.5, 135Mbps) |
| Antenna Type: | Internal |
| Antenna Gain: | 0.5 dBi |
| Temperature Range: | -20°C ~ +50°C |

NOTE:

1. For a more detailed features description about the EUT, please refer to User's Manual.

2.2 Objective

The objective of the report is to perform tests according to 47 CFR Part 15 Subpart C for the EUT FCC ID Certification:

| No. | Identity | Document Title |
|-----|---------------------------------|-------------------------|
| 1 | 47 CFR Part 15(10-1-05 Edition) | Radio Frequency Devices |

2.3 Test Standards and Results

Test items and the results are as bellow:

| No. | Section | Description | Result | Date of Test |
|-----|-------------------------------|-----------------------------|--------|--------------|
| 1 | 15.247(a)(2) | 6dB Bandwidth | PASS | 2011-12-06 |
| 2 | 15.247(b)(3) | Peak Output Power | PASS | 2011-12-06 |
| 3 | 15.247(d) | conducted spurious emission | PASS | 2011-12-06 |
| 4 | 15.247(d) | Band Edge | PASS | 2011-12-06 |
| 5 | 15.247(e) | Power Spectral Density | PASS | 2011-12-06 |
| 6 | 15.207 | Conducted Emission | PASS | 2011-12-08 |
| 7 | 15.247(d) 15.205 15.209 | Radiated Emission | PASS | 2011-12-08 |

Note: 1. The test result judgment is decided by the limit of measurement standard
2. The information of measurement uncertainty is available upon the customer's request.

2.4 Environmental Conditions

During the measurement the environmental conditions were within the listed ranges:

- Temperature: 15-35°C
- Humidity: 30-60 %
- Atmospheric pressure: 86-106 kPa

3. TEST FACILITY

3. 1 TEST FACILITY

Test Site: Most Technology Service Co., Ltd.

Location: No.5, Langshan 2nd Rd, North Hi-Tech Industrial park, Nanshan, Shenzhen, Guangdong, China

Description: There is one 3m semi-anechoic an area test sites and two line conducted labs for final test. The Open Area Test Sites and the Line Conducted labs are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4:2009 and CISPR 16 requirements. The FCC Registration Number is **490827**.
The **CNAS** Registration Number is **CNAS L3573**.

Site Filing: The site description is on file with the Federal Communications Commission, 7435 Oakland Mills Road, Columbia, MD 21046.

Instrument Tolerance: All measuring equipment is in accord with ANSI C63.4:2009 and CISPR 16 requirements that meet industry regulatory agency and accreditation agency requirement.

Ground Plane: Two conductive reference ground planes were used during the Line Conducted Emission, one in vertical and the other in horizontal. The dimensions of these ground planes are as below. The vertical ground plane was placed distancing 40 cm to the rear of the wooden test table on where the EUT and the support equipment were placed during test. The horizontal ground plane projected 50 cm beyond the footprint of the EUT system and distanced 80 cm to the wooden test table. For Radiated Emission Test, one horizontal conductive ground plane extended at least 1m beyond the periphery of the EUT and the largest measuring antenna, and covered the entire area between the EUT and the antenna. It has no holes or gaps having longitudinal dimensions larger than one-tenth of a wavelength at the highest frequency of measurement up to 1GHz.

3.2 GENERAL TEST PROCEDURES

Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4:2009, Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4:2009.

3.3 FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

| MHz | MHz | MHz | GHz |
|--------------------------|-----------------------|-----------------|------------------|
| 0.090 0.110 | 16.42 - 16.423 | 399.9 - 410 | 4.5 - 5.15 |
| ¹ 0.495 0.505 | 16.69475 - 16.69525 | 608 - 614 | 5.35 - 5.46 |
| 2.1735 2.1905 | 16.80425 - 16.80475 | 960 - 1240 | 7.25 - 7.75 |
| 4.125 - 4.128 | 25.5 - 25.67 | 1300 - 1427 | 8.025 - 8.5 |
| 4.17725 - 4.17775 | 37.5 - 38.25 | 1435 - 1626.5 | 9.0 - 9.2 |
| 4.20725 - 4.20775 | 73 - 74.6 | 1645.5 - 1646.5 | 9.3 - 9.5 |
| 6.215 - 6.218 | 74.8 - 75.2 | 1660 - 1710 | 10.6 - 12.7 |
| 6.26775 - 6.26825 | 108 - 121.94 | 1718.8 - 1722.2 | 13.25 - 13.4 |
| 6.31175 - 6.31225 | 123 - 138 | 2200 - 2300 | 14.47 - 14.5 |
| 8.291 - 8.294 | 149.9 - 150.05 | 2310 - 2390 | 15.35 - 16.2 |
| 8.362 8.366 | 156.52475 - 156.52525 | 2483.5 - 2500 | 17.7 - 21.4 |
| 8.37625 - 8.38675 | 156.7 - 156.9 | 2655 - 2900 | 22.01 - 23.12 |
| 8.41425 - 8.41475 | 162.0125 - 167.17 | 3260 - 3267 | 23.6 - 24.0 |
| 12.29 - 12.293 | 167.72 - 173.2 | 3332 - 3339 | 31.2 - 31.8 |
| 12.51975 - 12.52025 | 240 - 285 | 3345.8 - 3358 | 36.43 - 36.5 |
| 12.57675 - 12.57725 | 322 - 335.4 | 3600 - 4400 | (²) |
| 13.36 13.41 | | | |

¹ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

² Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasipeak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

4. TEST EQUIPMENT LIST

Instrumentation: The following list contains equipment used at MOST for testing. The equipment conforms to the CISPR 16-1/ANSI C63.2 Specifications for Electromagnetic Interference and Field Strength Instrumentation from 10 kHz to 1.0 GHz or above.

| No. | Equipment | Manufacturer | Model No. | S/N | Calculator due date |
|-----|--------------------------------------|-------------------|----------------|-------------|---------------------|
| 1 | Test Receiver | Rohde & Schwarz | ESCI | 100492 | 2012/03/14 |
| 2 | Spectrum Analyzer | Agilent | E7405A | US44210471 | 2012/03/14 |
| 3 | L.I.S.N. | Rohde & Schwarz | ENV216 | 100093 | 2012/03/14 |
| 4 | Coaxial Switch | Anritsu Corp | MP59B | 6200283933 | 2012/03/14 |
| 5 | Terminator | Hubersuhner | 50Ω | No.1 | 2012/03/14 |
| 6 | RF Cable | SchwarzBeck | N/A | No.1 | 2012/03/14 |
| 7 | Test Receiver | Rohde & Schwarz | ESPI | 101202 | 2012/03/14 |
| 8 | Bilog Antenna | Sunol | JB3 | A121206 | 2012/03/14 |
| 9 | Horn Antenna | TRC | N/A | N/A | 2012/03/14 |
| 10 | Cable | Resenberger | N/A | NO.1 | 2012/03/14 |
| 11 | Cable | SchwarzBeck | N/A | NO.2 | 2012/03/14 |
| 12 | Cable | SchwarzBeck | N/A | NO.3 | 2012/03/14 |
| 13 | DC Power Filter | DuoJi | DL2×30B | N/A | 2012/03/14 |
| 14 | Single Phase Power Line Filter | DuoJi | FNF 202B30 | N/A | 2012/03/14 |
| 15 | 3 Phase Power Line Filter | DuoJi | FNF 402B30 | N/A | 2012/03/14 |
| 16 | Test Receiver | Rohde & Schwarz | ESCI | 100492 | 2012/03/14 |
| 17 | Absorbing Clamp | Luthi | MDS21 | 3635 | 2012/03/14 |
| 18 | Coaxial Switch | Anritsu Corp | MP59B | 6200283933 | 2012/03/14 |
| 19 | AC Power Source | Kikusui | AC40MA | LM003232 | 2012/03/14 |
| 20 | Test Analyzer | Kikusui | KHA1000 | LM003720 | 2012/03/14 |
| 21 | Line Impedence Network | Kikusui | LIN40MA-PCR-L | LM002352 | 2012/03/14 |
| 22 | ESD Tester | Kikusui | KES4021 | LM003537 | 2012/03/14 |
| 23 | EMCPRO System | EM Test | UCS-500-M4 | V0648102026 | 2012/03/14 |
| 24 | Signal Generator | IFR | 2032 | 203002/100 | 2012/03/14 |
| 25 | Amplifier | A&R | 150W1000 | 301584 | 2012/03/14 |
| 26 | CDN | FCC | FCC-801-M2-25 | 47 | 2012/03/14 |
| 27 | CDN | FCC | FCC-801-M3-25 | 107 | 2012/03/14 |
| 28 | EM Injection Clamp | FCC | F-203I-23mm | 403 | 2012/03/14 |
| 29 | RF Cable | MIYAZAKI | N/A | No.1/No.2 | 2012/03/14 |
| 30 | Universal Radio Communication Tester | ROHDE&SCHWARZ | CMU200 | 0304789 | 2012/03/14 |
| 31 | Telecommunication Antenna | European Antennas | PSA 75301R/170 | 0304213 | 2012/03/14 |

NOTE: Equipments listed above have been calibrated and are in the period of validation.

5. 47 CFR Part 15 C 15.247 Requirements

5.1 6dB Bandwidth

5.1.1 Definition

Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

5.1.2 Test Description

The EUT is powered by the Battery, is coupled to the Spectrum Analyzer (SA) through the Attenuator/DC Block. The path loss as the factor is calibrated to correct the reading. During the measurement, the EUT is activated and is set to operate at maximum power. The RF load attached to the EUT antenna terminal is 50Ohm.

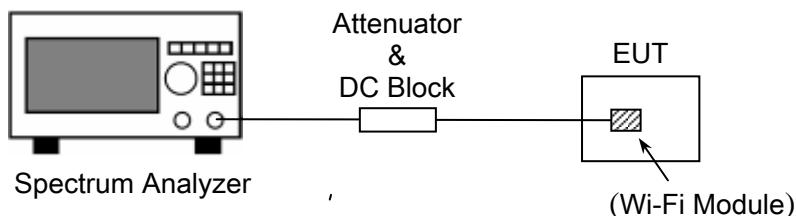


Figure 1: RF Test Setup

5.1.3 Test Result

The lowest, middle and highest channels are selected to perform testing to record the 6 dB bandwidth of the Module.

802.11b Test Mode

| Channel | Frequency (MHz) | 6 dB Bandwidth (MHz) | Limits (kHz) | Result |
|---------|-----------------|----------------------|--------------|--------|
| Low | 2412 | 9.8 | ≥ 500 | PASS |
| Middle | 2437 | 9.3 | | PASS |
| High | 2462 | 9.7 | | PASS |

802.11g Test Mode

| Channel | Frequency (MHz) | 6 dB Bandwidth (MHz) | Limits (kHz) | Result |
|---------|-----------------|----------------------|--------------|--------|
| Low | 2412 | 16.3 | ≥ 500 | PASS |
| Middle | 2437 | 16.5 | | PASS |

| Channel | Frequency (MHz) | 6 dB Bandwidth (MHz) | Limits (kHz) | Result |
|---------|-----------------|----------------------|--------------|--------|
| High | 2462 | 16.2 | | PASS |

802.11n-40MHz Test Mode

| Channel | Frequency (MHz) | 6 dB Bandwidth (MHz) | Limits (kHz) | Result |
|---------|-----------------|----------------------|--------------|--------|
| Low | 2422 | 36.4 | ≥ 500 | PASS |
| Middle | 2437 | 36.7 | | PASS |
| High | 2462 | 36.1 | | PASS |

5.2 Peak Output Power

5.2.1 Definition

For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power.

5.2.2 Test Description

See section 5.1.2 of this report.

5.2.3 Test Result

The EUT operates at maximum output power mode. The lowest, middle and highest channels are selected to perform testing to verify the conducted RF output peak power of the Module.

802.11b Test Mode

| Channel | Frequency (MHz) | Measured Output Peak Power | | Limit | Verdict |
|---------|-----------------|----------------------------|--------|-------|---------|
| | | dBm | W | | |
| Low | 2412 | 11.32 | 0.0136 | 1.00 | PASS |
| Middle | 2437 | 11.64 | 0.0146 | | PASS |
| High | 2462 | 10.93 | 0.0124 | | PASS |

802.11g Test Mode

| Channel | Frequency (MHz) | Measured Output Peak Power | | Limit | Verdict |
|---------|-----------------|----------------------------|--------|-------|---------|
| | | dBm | W | | |
| Low | 2412 | 11.58 | 0.0144 | 1.00 | PASS |
| Middle | 2437 | 11.19 | 0.0132 | | PASS |
| High | 2462 | 11.32 | 0.0136 | | PASS |

802.11n-40MHz Test Mode

| Channel | Frequency (MHz) | Measured Output Peak Power | | Limit | Verdict |
|---------|-----------------|----------------------------|--------|-------|---------|
| | | dBm | W | | |
| Low | 2422 | 10.83 | 0.0121 | 1.00 | PASS |
| Middle | 2437 | 11.19 | 0.0132 | | PASS |
| High | 2462 | 11.08 | 0.0128 | | PASS |

5.3 Conducted Spurious Emission

5.3.1 Definition

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

5.3.2 Test Description

See section 5.1.2 of this report.

5.3.3 Test Result

The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the spurious emissions.

| Channel | Frequency (MHz) | Fundamental Level (dBm) | Emission Level Limit (dBm) |
|-------------------|-----------------|-------------------------|----------------------------|
| 802.11b Low | 2412 | 11.32 | -8.68 |
| 802.11b Mid | 2437 | 11.64 | -8.36 |
| 802.11b High | 2462 | 10.93 | -9.07 |
| 802.11g Low | 2412 | 11.58 | -8.42 |
| 802.11g Mid | 2437 | 11.19 | -8.81 |
| 802.11g High | 2462 | 11.32 | -8.68 |
| 802.11 n-40M Low | 2422 | 10.83 | -9.17 |
| 802.11 n-40M Mid | 2437 | 11.19 | -8.81 |
| 802.11 n-40M High | 2462 | 11.08 | -8.92 |

| NO. | Frequency | Measurement Bandwidth | Emission Level (dBm) | Limit | Margin |
|---------------------------------------|-----------|-----------------------|----------------------|-------|--------|
| | | | | dBm | dB |
| TX:802.11 b Low Channel | | | | | |
| 1 | <1000 | 100 | \ | -8.68 | >20 |
| 2 | 4824 | 100 | -37.78 | -8.68 | >20 |
| 3 | 7236 | 100 | \ | -8.68 | >20 |
| 4 | 9648 | 100 | \ | -8.68 | >20 |
| 5 | 12060 | 100 | \ | -8.68 | >20 |
| 6 | other | 100 | \ | -8.68 | >20 |
| TX: 802.11 b Middle Channel | | | | | |
| 1 | <1000 | 100 | \ | -8.36 | >20 |
| 2 | 4874 | 100 | -37.31 | -8.36 | >20 |
| 3 | 7311 | 100 | \ | -8.36 | >20 |
| 4 | 9748 | 100 | \ | -8.36 | >20 |
| 5 | 12185 | 100 | \ | -8.36 | >20 |
| 6 | other | 100 | \ | -8.36 | >20 |
| TX: 802.11 b High Channel | | | | | |
| 1 | <1000 | 100 | \ | -9.07 | >20 |
| 2 | 4924 | 100 | -36.75 | -9.07 | >20 |
| 3 | 7386 | 100 | \ | -9.07 | >20 |
| 4 | 9848 | 100 | \ | -9.07 | >20 |
| 5 | 12310 | 100 | \ | -9.07 | >20 |
| 6 | other | 100 | \ | -9.07 | >20 |
| Measurement uncertainty:±3.2dB | | | | | |

| NO. | Frequency | Measurement Bandwidth | Emission Level (dBm) | Limit | Margin |
|---------------------------------------|-----------|-----------------------|----------------------|-------|--------|
| | MHz | KHz | dBm | dBm | dB |
| TX:802.11 g Low Channel | | | | | |
| 1 | <1000 | 100 | \ | -8.42 | >20 |
| 2 | 4824 | 100 | -37.12 | -8.42 | >20 |
| 3 | 7236 | 100 | \ | -8.42 | >20 |
| 4 | 9648 | 100 | \ | -8.42 | >20 |
| 5 | 12060 | 100 | \ | -8.42 | >20 |
| 6 | other | 100 | \ | -8.42 | >20 |
| TX: 802.11 g Middle Channel | | | | | |
| 1 | <1000 | 100 | \ | -8.81 | >20 |
| 2 | 4874 | 100 | -38.49 | -8.81 | >20 |
| 3 | 7311 | 100 | \ | -8.81 | >20 |
| 4 | 9748 | 100 | \ | -8.81 | >20 |
| 5 | 12185 | 100 | \ | -8.81 | >20 |
| 6 | other | 100 | \ | -8.81 | >20 |
| TX: 802.11 g High Channel | | | | | |
| 1 | <1000 | 100 | \ | -8.68 | >20 |
| 2 | 4924 | 100 | -37.64 | -8.68 | >20 |
| 3 | 7386 | 100 | \ | -8.68 | >20 |
| 4 | 9848 | 100 | \ | -8.68 | >20 |
| 5 | 12310 | 100 | \ | -8.68 | >20 |
| 6 | other | 100 | \ | -8.68 | >20 |
| Measurement uncertainty:±3.2dB | | | | | |

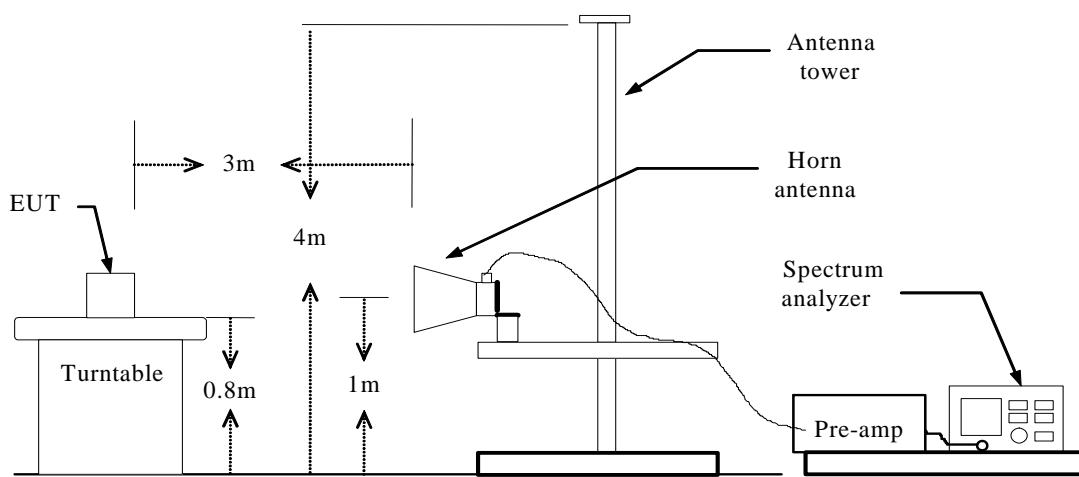
| NO. | Frequency | Measurement Bandwidth | Emission Level (dBm) | Limit | Margin |
|--|-----------|-----------------------|----------------------|-------|--------|
| | MHz | KHz | dBm | dBm | dB |
| TX:802.11 n-40MHz Low Channel | | | | | |
| 1 | <1000 | 100 | \ | -9.17 | >20 |
| 2 | 4844 | 100 | -38.15 | -9.17 | >20 |
| 3 | 7266 | 100 | \ | -9.17 | >20 |
| 4 | 9688 | 100 | \ | -9.17 | >20 |
| 5 | 12110 | 100 | \ | -9.17 | >20 |
| 6 | other | 100 | \ | -9.17 | >20 |
| TX: 802.11 n-40MHz Middle Channel | | | | | |
| 1 | <1000 | 100 | \ | -8.81 | >20 |
| 2 | 4874 | 100 | -37.45 | -8.81 | >20 |
| 3 | 7311 | 100 | \ | -8.81 | >20 |
| 4 | 9748 | 100 | \ | -8.81 | >20 |
| 5 | 12185 | 100 | \ | -8.81 | >20 |
| 6 | other | 100 | \ | -8.81 | >20 |
| TX: 802.11 n-40MHz High Channel | | | | | |
| 1 | <1000 | 100 | \ | -8.92 | >20 |
| 2 | 4924 | 100 | -38.32 | -8.92 | >20 |
| 3 | 7386 | 100 | \ | -8.92 | >20 |
| 4 | 9848 | 100 | \ | -8.92 | >20 |
| 5 | 12310 | 100 | \ | -8.92 | >20 |
| 6 | other | 100 | \ | -8.92 | >20 |
| Measurement uncertainty:±3.2dB | | | | | |

5.4 Band Edge

5.4.1 Definition

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

5.4.2 Test Description



5.4.3 Test Result

The EUT operates at continuous transmit test mode. The peak and average test data of the lowest and highest channels are tested to verify the band edge emissions.

| Test Mode | | Channel Marked Frequency | Limit (dBuv/m) | Test Result Highest Emission (dBuv/m) | | | |
|--------------------|--------------|--------------------------|-------------------------|---------------------------------------|---------|------------|---------|
| | | | | Vertical | | Horizontal | |
| | | | | Peak | Average | Peak | Average |
| 802.11 b | Low Channel | 2300MHz | 74(Peak) 54(Average) | 58.96 | 40.84 | 58.89 | 44.81 |
| | | 2390MHz | | 60.85 | 41.99 | 59.18 | 45.92 |
| | High Channel | 2483.5MHz | | 61.15 | 45.86 | 64.95 | 45.89 |
| | | 2500MHz | | 57.01 | 41.74 | 59.21 | 44.78 |
| 802.11 g | Low Channel | 2300MHz | 74(Peak) 54(Average) | 59.88 | 41.99 | 61.77 | 44.74 |
| | | 2390MHz | | 64.01 | 43.41 | 65.58 | 42.99 |
| | High Channel | 2483.5MHz | | 6211 | 44.88 | 65.48 | 46.07 |
| | | 2500MHz | | 59.42 | 41.18 | 59.26 | 43.99 |
| 802.11 n -40MHz | Low Channel | 2300MHz | 74(Peak) 54(Average) | 59.09 | 41.24 | 58.97 | 44.85 |
| | | 2390MHz | | 61.22 | 42.63 | 64.85 | 45.47 |
| | High Channel | 2483.5MHz | | 64.78 | 44.04 | 65.39 | 43.02 |
| | | 2500MHz | | 61.55 | 41.21 | 60.89 | 42.08 |

5.5 Power Spectral Density (PSD)

5.5.1 Definition

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

5.5.2 Test Description

See section 5.1.2 of this report.

5.5.3 Test Result

The lowest, middle and highest channels are tested to verify the power spectral density.

802.11b Test Mode

| Channel | Frequency (MHz) | PSD (dBm) | Limits(dBm) | Result |
|---------|-----------------|-----------|-------------|--------|
| Low | 2412 | -11.45 | ≤ 8 | PASS |
| Middle | 2437 | -10.75 | | PASS |
| High | 2462 | -9.63 | | PASS |

802.11g Test Mode

| Channel | Frequency (MHz) | PSD (dBm) | Limits(dBm) | Result |
|---------|-----------------|-----------|-------------|--------|
| Low | 2412 | -15.34 | ≤ 8 | PASS |
| Middle | 2437 | -16.73 | | PASS |
| High | 2462 | -15.61 | | PASS |

802.11n-40MHz Test Mode

| Channel | Frequency (MHz) | PSD (dBm) | Limits(dBm) | Result |
|---------|-----------------|-----------|-------------|--------|
| Low | 2422 | -15.38 | ≤ 8 | PASS |
| Middle | 2437 | -14.41 | | PASS |
| High | 2462 | -15.83 | | PASS |

5.6 Conducted Emission

5.6.1 Definition

According to FCC section 15.207, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN).

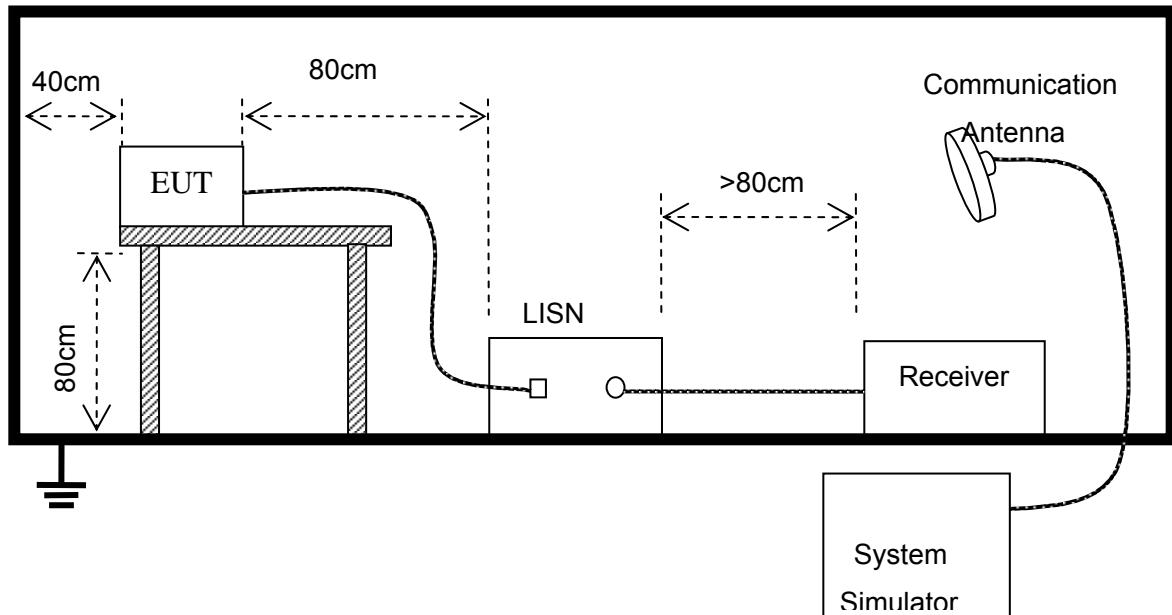
| Frequency | Maximum RF Line Voltage | |
|---------------|-------------------------|----------------|
| | Q.P. (dBuV) | Average (dBuV) |
| 150kHz-500kHz | 66-56 | 56-46 |
| 500kHz-5MHz | 56 | 46 |
| 5MHz-30MHz | 60 | 50 |

Note:

1. The lower limit shall apply at the transition frequency.
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz

5.6.2 Test Description

The EUT is powered by the Battery charged with the AC Adapter which is powered by 120V, 60Hz AC mains supply. The path loss as the factor is calibrated to correct the reading. During the measurement, the EUT is activated and is set to operate at maximum power.



5.6.3 Test Result

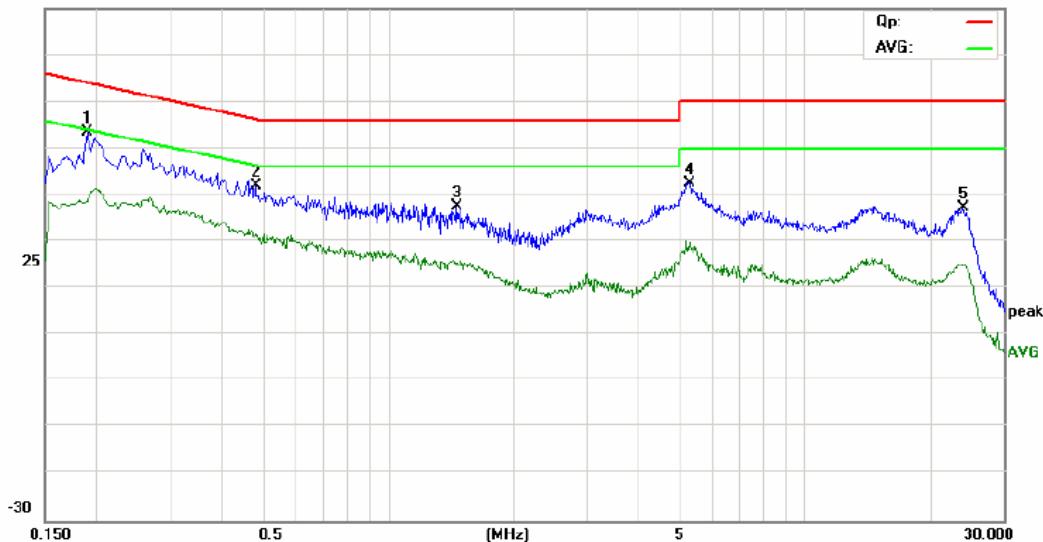


Address: No.5, Langshan 2nd Rd., North Hi-Tech Industrial park
Guangdong, China
Tel: 0755-86170306 Fax: 0755-86170310

Conducted Emission Measurement

File :N90 Data :#13 Date: 2011/12/06 Time: 23:08:49

80.0 dBuV



Site site #1

Phase: L1

Temperature: 26

Limit: FCC Part15 B Class B QP

Power: AC 120V/60Hz

Humidity: 60 %

EUT: MID

M/N: N90

Mode: WIFI

Note: HWT-24W-120200

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | Detector | Comment |
|-----|-----|---------|---------------|----------------|--------------|-------|--------|----------|---------|
| | | MHz | dBuV | dB | dBuV | dB | | | |
| 1 | * | 0.1900 | 42.14 | 11.40 | 53.54 | 64.04 | -10.50 | peak | |
| 2 | | 0.4820 | 31.84 | 10.12 | 41.96 | 56.30 | -14.34 | peak | |
| 3 | | 1.4580 | 27.93 | 9.54 | 37.47 | 56.00 | -18.53 | peak | |
| 4 | | 5.2580 | 30.66 | 11.85 | 42.51 | 60.00 | -17.49 | peak | |
| 5 | | 23.9340 | 28.11 | 9.00 | 37.11 | 60.00 | -22.89 | peak | |

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



Address: No.5, Langshan 2nd Rd., North Hi-Tech Industrial park
Guangdong, China
Tel: 0755-86170306 Fax: 0755-86170310

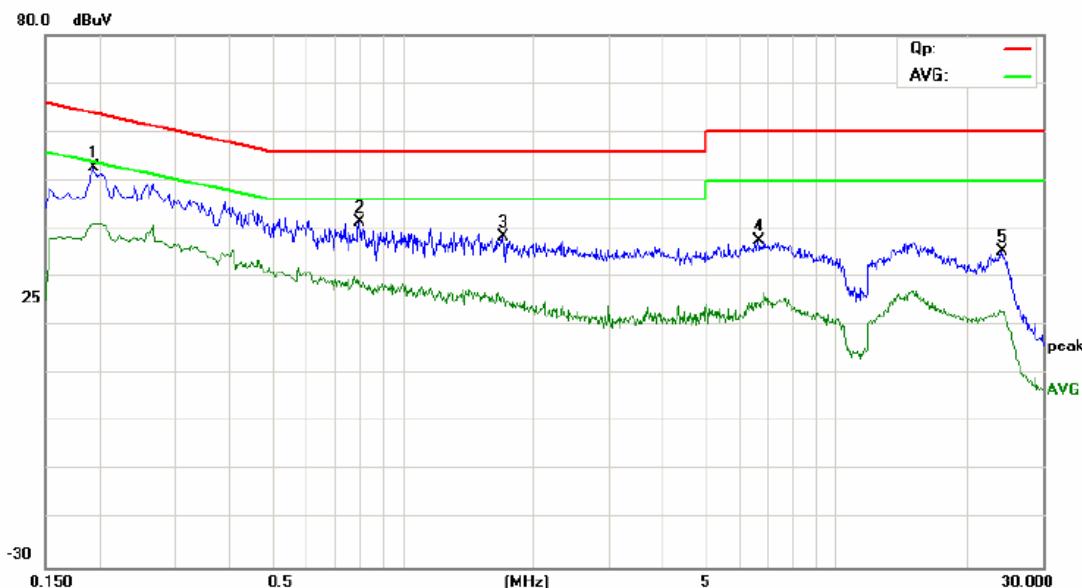
Conducted Emission Measurement

File : N90

Data : #14

Date: 2011/12/06

Time: 23:11:09



Site: site #1

Phase: *N*

Temperature: 26

Limit: FCC Part15 B Class B QP

Power: AC 120V/60Hz

Humidity: 60 %

EUT: MID

M/N: N90

Mode: WIFI

Note: HWT-24W-120200

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure- ment | Limit | Over | |
|-----|-----|---------|---------------|----------------|------------------|-------|----------|---------|
| | | MHz | dBuV | dB | dBuV | dB | Detector | Comment |
| 1 | * | 0.1940 | 40.98 | 11.64 | 52.62 | 63.86 | -11.24 | peak |
| 2 | | 0.7940 | 31.28 | 10.00 | 41.28 | 56.00 | -14.72 | peak |
| 3 | | 1.7060 | 29.13 | 9.29 | 38.42 | 56.00 | -17.58 | peak |
| 4 | | 6.6060 | 26.48 | 11.04 | 37.52 | 60.00 | -22.48 | peak |
| 5 | | 24.0460 | 26.42 | 9.00 | 35.42 | 60.00 | -24.58 | peak |

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



Address: No.5, Langshan 2nd Rd., North Hi-Tech Industrial park
Guangdong, China
Tel: 0755-86170306 Fax: 0755-86170310

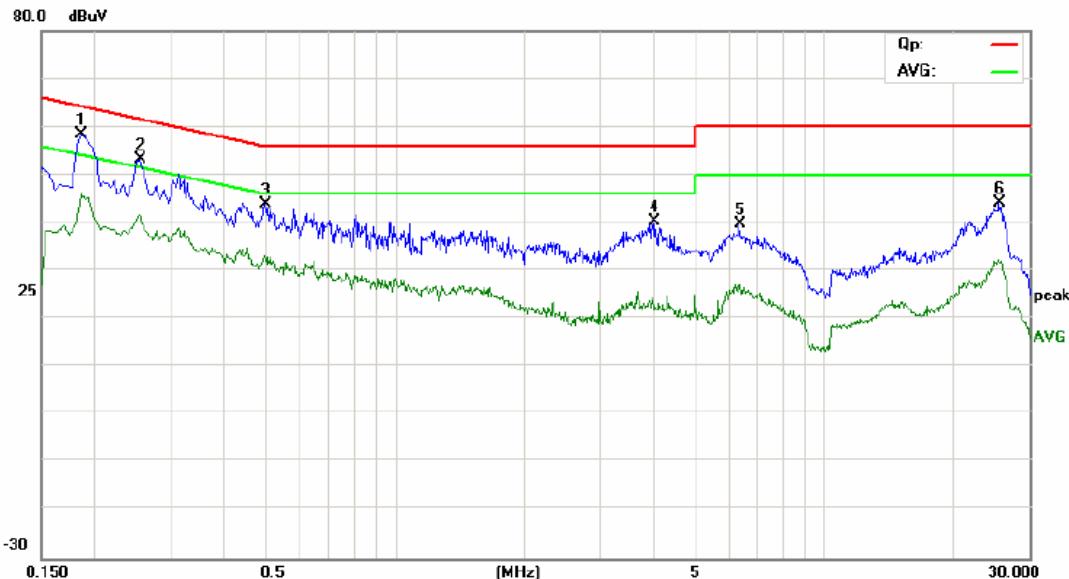
Conducted Emission Measurement

File : N90

Data : #20

Date: 2011/12/06

Time: 23:24:32



Site site #1

Phase: L1

Temperature: 26

Limit: FCC Part15 B Class B QP

Power: AC 120V/60Hz

Humidity: 60 %

EUT: MID

M/N: N90

Mode: WIFI

Note: SAW24-120-2000

| No. | Mk. | Reading | Correct | Measure- | Limit | Over | | |
|-----|-----|---------|---------|----------|-------|-------|----------|---------|
| | | Freq. | Level | Factor | dBuV | dB | Detector | Comment |
| 1 | * | 0.1860 | 47.18 | 11.16 | 58.34 | 64.21 | -5.87 | peak |
| 2 | | 0.2540 | 41.57 | 11.64 | 53.21 | 61.63 | -8.42 | peak |
| 3 | | 0.4980 | 33.79 | 10.01 | 43.80 | 56.03 | -12.23 | peak |
| 4 | | 4.0020 | 29.13 | 11.00 | 40.13 | 56.00 | -15.87 | peak |
| 5 | | 6.3340 | 28.39 | 11.20 | 39.59 | 60.00 | -20.41 | peak |
| 6 | | 25.5700 | 35.00 | 9.00 | 44.00 | 60.00 | -16.00 | peak |

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



Address: No.5, Langshan 2nd Rd., North Hi-Tech Industrial park
Guangdong, China
Tel: 0755-86170306 Fax: 0755-86170310

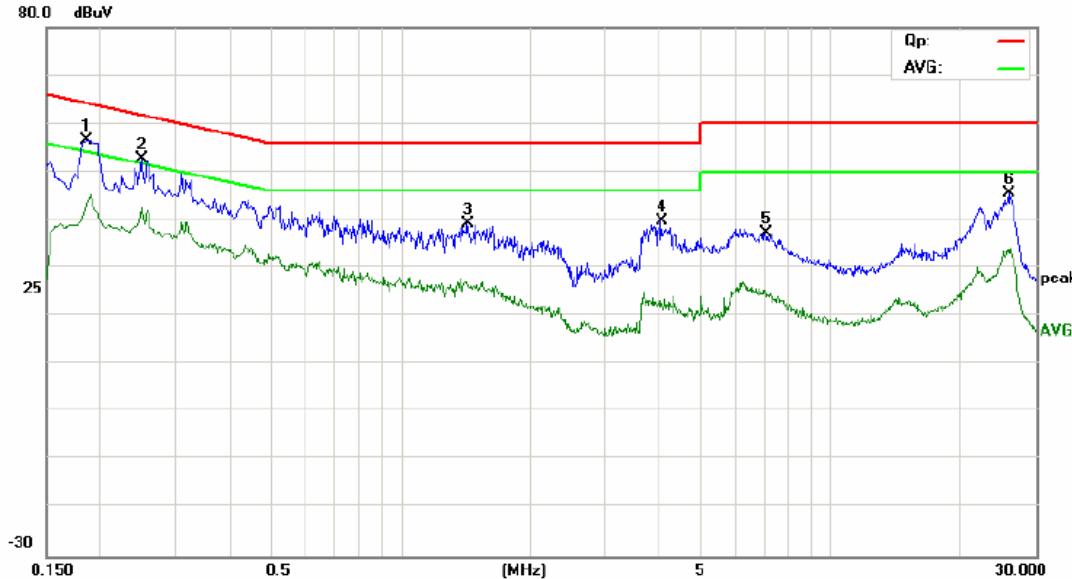
Conducted Emission Measurement

File : N90

Data #21

Date: 2011/12/06

Time: 23:26:29



Site site #1

Phase: *L1*

Temperature: 26

Limit: FCC Part15 B Class B QP

Power: AC 120V/60Hz

Humidity: 60 %

EUT: MID

M/N: N90

Mode: CAMERA

Note: SAW24-120-2000

| No. | Mk. | Reading | | Correct Factor | Measure- ment | Limit | Over | Detector | Comment |
|-----|-----|---------|-------|----------------|------------------|-------|--------|----------|---------|
| | | MHz | dBuV | | | | | | |
| 1 | * | 0.1860 | 45.33 | 11.16 | 56.49 | 64.21 | -7.72 | peak | |
| 2 | | 0.2500 | 41.00 | 11.67 | 52.67 | 61.76 | -9.09 | peak | |
| 3 | | 1.4300 | 29.48 | 9.57 | 39.05 | 56.00 | -16.95 | peak | |
| 4 | | 4.0300 | 28.64 | 11.03 | 39.67 | 56.00 | -16.33 | peak | |
| 5 | | 7.0580 | 26.45 | 10.77 | 37.22 | 60.00 | -22.78 | peak | |
| 6 | | 25.8740 | 36.45 | 9.00 | 45.45 | 60.00 | -14.55 | peak | |

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

5.7 Radiated Emission

5.7.1 Definition

According to FCC section 15.247(d), radiated emission outside the frequency band attenuation below the general limits specified in § 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

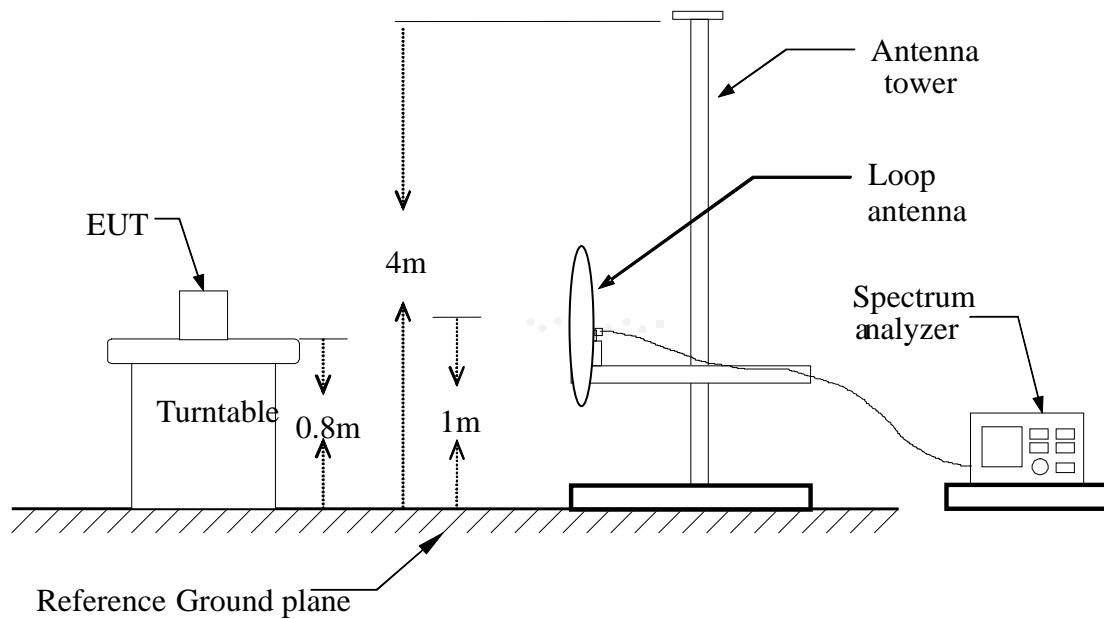
According to FCC section 15.209 (a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

| Frequency (MHz) | Field Strength (μ V/m) | Measurement Distance (m) |
|-----------------|-----------------------------|--------------------------|
| 0.009 - 0.490 | $2400/F(\text{kHz})$ | 300 |
| 0.490 - 1.705 | $24000/F(\text{kHz})$ | 30 |
| 1.705 - 30.0 | 30 | 30 |
| 30 - 88 | 100 | 3 |
| 88 - 216 | 150 | 3 |
| 216 - 960 | 200 | 3 |
| Above 960 | 500 | 3 |

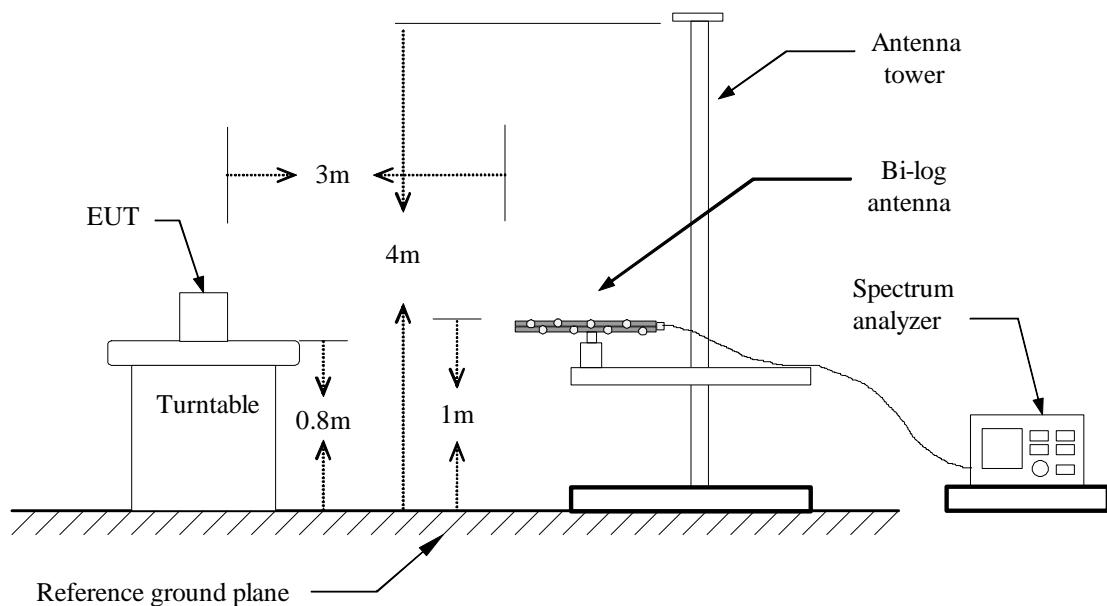
As shown in FCC section 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector. When average radiated emission measurements are specified in this part, including emission measurements below 1000MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit for the frequency being investigated unless a different peak emission limit is otherwise specified in the rules.

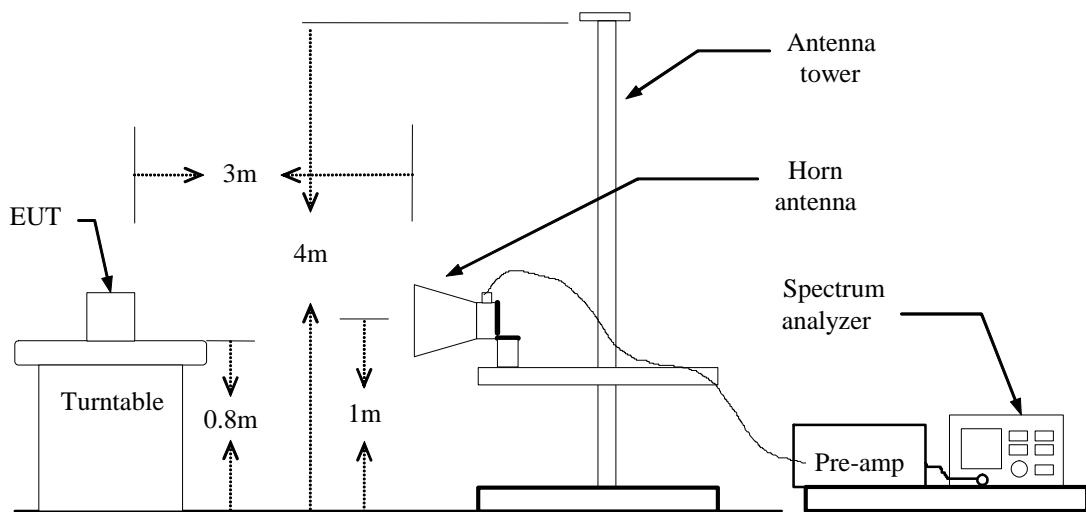
5.7.2 Test Description

A. Test Setup:



Blow 1GHz:



Above 1GHz:**B. Test procedures**

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Set the spectrum analyzer in the following setting as:
 - Below 1GHz: RBW=100 kHz / VBW=300 kHz / Sweep=AUTO
 - Above 1GHz : (a) PEAK: RBW=VBW=1MHz / Sweep=AUTO
 - (b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO
7. Repeat above procedures until the measurements for all frequencies are complete.

5.7.3 Test Result

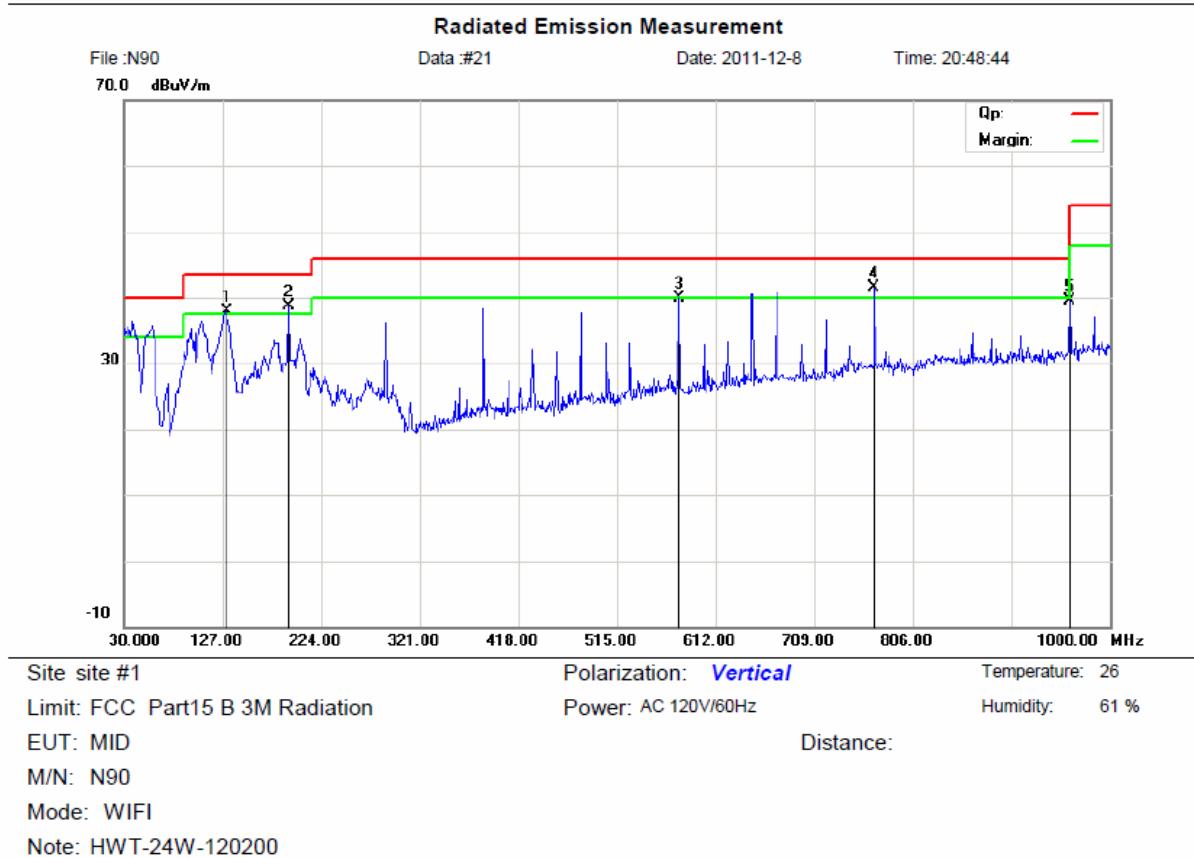
Form 9 KHz to 30MHz:

| Freq. (MHz) | Ant. Pol H/V | Peak Reading (dBuV) | AV Reading (dBuV) | Ant. / CL CF (dB) | Actual Fs | | Peak Limit (dBuV/m) | AV Limit (dBuV/m) | AV Margin (dB) |
|----------------|-----------------|---------------------------|-------------------------|-------------------------|------------------|----------------|---------------------------|-------------------------|----------------------|
| | | | | | Peak (dBuV/m) | AV (dBuV/m) | | | |
| N/A | H | | | | | | | | >20 |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| N/A | V | | | | | | | | >20 |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

Note: No test data was detected in below 30MHz.

Below 1 GHz

Address: No.5, Langshan 2nd Rd., North Hi-Tech Industrial park
Guangdong, China
Tel: 0755-86170306 Fax: 0755-86170310



| No. | Mk. | Freq. | Reading | Correct | Measure- | Limit | Over | Antenna | Table | | |
|-----|-----|----------|---------|---------|----------|--------|--------|----------|--------|--------|---------|
| | | | Level | Factor | ment | | | | Height | Degree | Comment |
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | cm | degree | |
| 1 | ! | 130.8800 | 20.31 | 17.66 | 37.97 | 43.50 | -5.53 | peak | | 0 | |
| 2 | ! | 191.9900 | 21.92 | 16.70 | 38.62 | 43.50 | -4.88 | peak | | 0 | |
| 3 | | 576.1100 | 16.99 | 22.82 | 39.81 | 46.00 | -6.19 | peak | | 0 | |
| 4 | * | 768.1700 | 15.63 | 25.86 | 41.49 | 46.00 | -4.51 | peak | | 0 | |
| 5 | | 960.2300 | 11.55 | 28.00 | 39.55 | 54.00 | -14.45 | peak | | 0 | |

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



Address: No.5, Langshan 2nd Rd., North Hi-Tech Industrial park
Guangdong, China
Tel: 0755-86170306 Fax: 0755-86170310

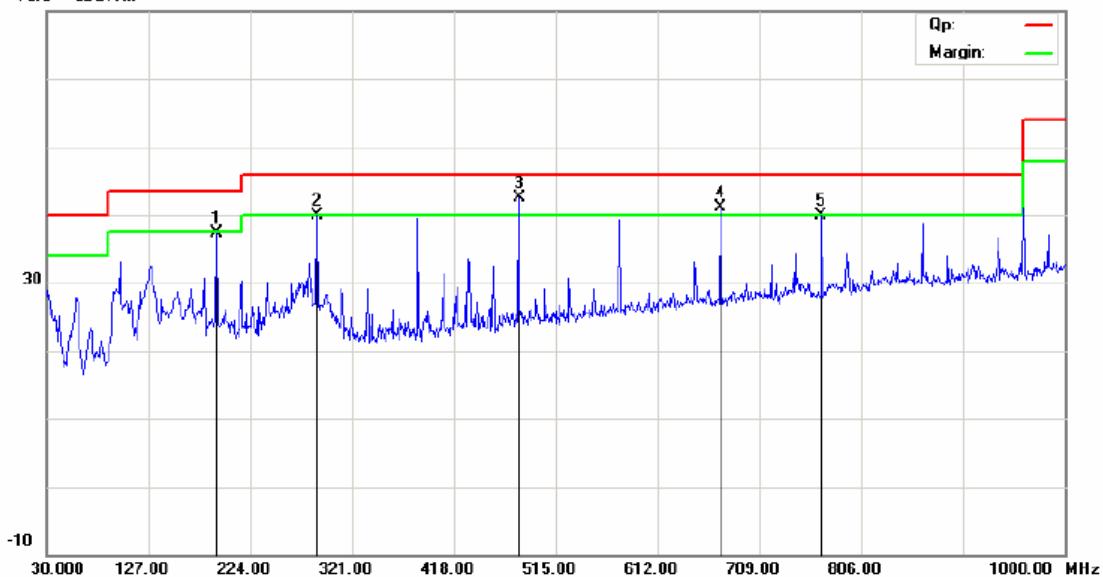
Radiated Emission Measurement

File : N90

Data #: 22

Date: 2011-12-8

Time: 20:49:59

70.0 dB μ V/m

Site: site #1

Polarization: **Horizontal**

Temperature: 26

Limit: FCC Part15 B 3M Radiation

Power: AC 120V/60Hz

Humidity: 61 %

EUT: MID

Distance:

M/N: N90

Mode: WIFI

Note: HWT-24W-120200

| No. | Mk. | Freq. | Reading | Correct | Measure- | Limit | Over | Antenna | Table | | |
|-----|-----|----------|---------|------------|----------|--------------|-------|----------|--------|--------|---------|
| | | | Level | Factor | ment | | | Height | Degree | | |
| | | | MHz | dB μ V | dB | dB μ V/m | dB | Detector | cm | degree | Comment |
| 1 | | 191.9900 | 20.60 | 16.70 | 37.30 | 43.50 | -6.20 | peak | | 0 | |
| 2 | | 288.0200 | 20.50 | 19.42 | 39.92 | 46.00 | -6.08 | peak | | 0 | |
| 3 | * | 480.0800 | 20.85 | 21.70 | 42.55 | 46.00 | -3.45 | peak | | 0 | |
| 4 | ! | 672.1400 | 16.62 | 24.52 | 41.14 | 46.00 | -4.86 | peak | | 0 | |
| 5 | | 768.1700 | 14.12 | 25.86 | 39.98 | 46.00 | -6.02 | peak | | 0 | |

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



Address: No.5, Langshan 2nd Rd., North Hi-Tech Industrial park
 Guangdong, China
 Tel: 0755-86170306 Fax: 0755-86170310

Radiated Emission Measurement

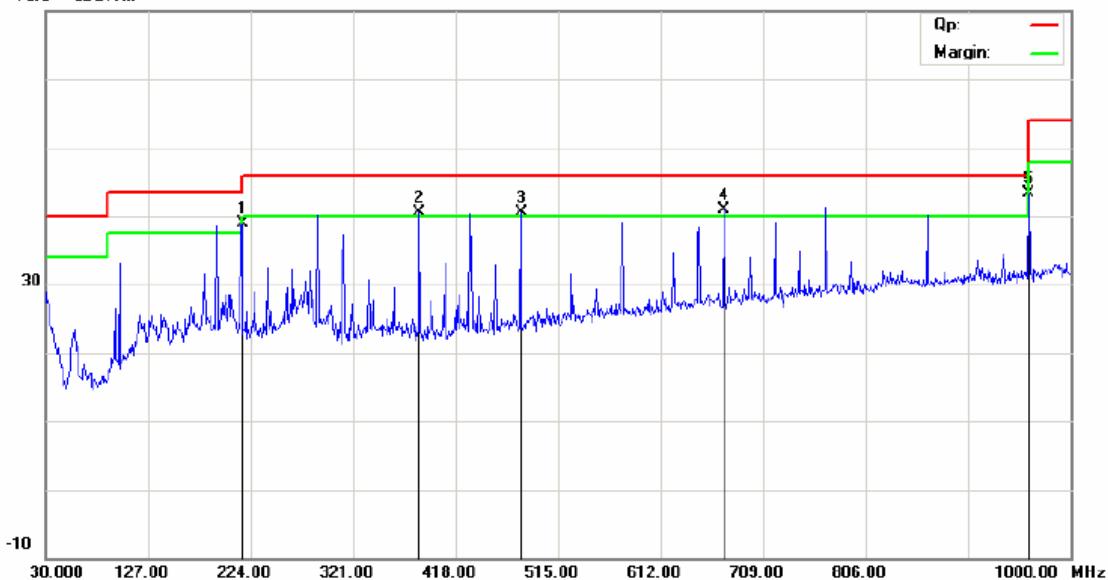
File :N90

Data :#27

Date: 2011-12-8

Time: 20:57:57

70.0 dBuV/m



Site: site #1

Polarization: **Horizontal**

Temperature: 26

Limit: FCC Part15 B 3M Radiation

Power: AC 120V/60Hz

Humidity: 61 %

EUT: MID

Distance:

M/N: N90

Mode: WIFI

Note: SAW24-120-2000

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | Antenna Height | Table Degree | Comment |
|-----|-----|----------|---------------|----------------|--------------|--------|--------|----------------|--------------|---------|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | cm | degree |
| 1 | | 216.2400 | 22.85 | 16.14 | 38.99 | 46.00 | -7.01 | peak | 0 | |
| 2 | ! | 384.0500 | 22.28 | 18.18 | 40.46 | 46.00 | -5.54 | peak | 0 | |
| 3 | ! | 480.0800 | 18.87 | 21.70 | 40.57 | 46.00 | -5.43 | peak | 0 | |
| 4 | * | 672.1400 | 16.47 | 24.52 | 40.99 | 46.00 | -5.01 | peak | 0 | |
| 5 | | 960.2300 | 15.33 | 28.00 | 43.33 | 54.00 | -10.67 | peak | 0 | |

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



Address: No.5, Langshan 2nd Rd., North Hi-Tech Industrial park
Guangdong, China
Tel: 0755-86170306 Fax: 0755-86170310

Radiated Emission Measurement

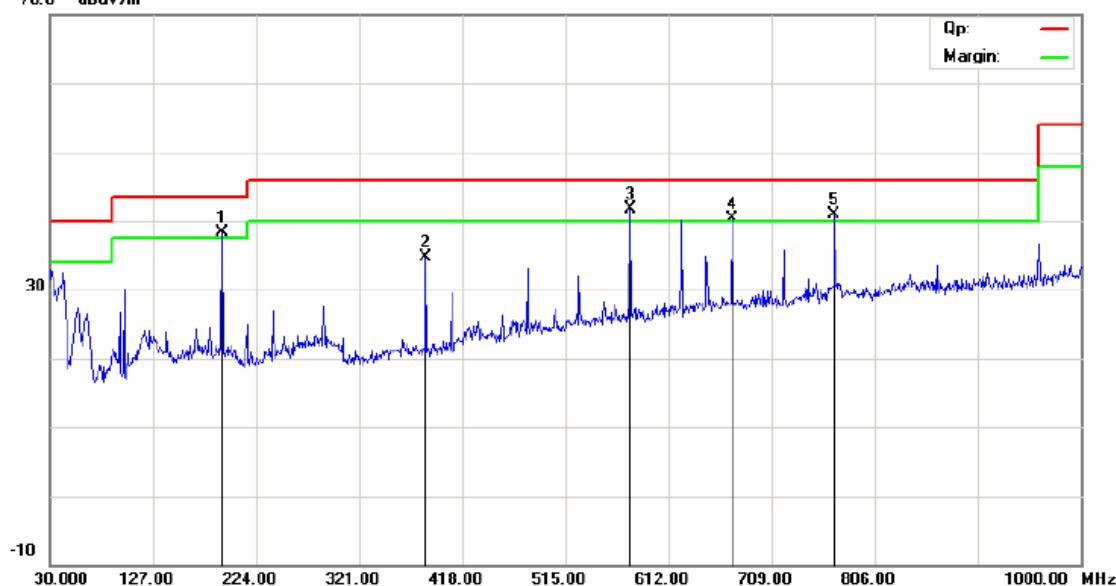
File : N90

Data #28

Date: 2011-12-8

Time: 20:59:19

70.0 dBuV/m



Site site #1

Polarization: **Vertical**

Temperature: 26

Limit: FCC Part15 B 3M Radiation

Power: AC 120V/60Hz

Humidity: 61 %

EUT: MID

Distance:

M/N: N90

Mode: WIFI

Note: SAW24-120-2000

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | Antenna Height | Table Degree |
|-----|-----|----------|---------------|----------------|--------------|--------|--------|----------------|--------------|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | cm degree |
| 1 | ! | 191.9900 | 21.64 | 16.70 | 38.34 | 43.50 | -5.16 | peak | 0 |
| 2 | | 384.0500 | 16.55 | 18.18 | 34.73 | 46.00 | -11.27 | peak | 0 |
| 3 | * | 576.1100 | 18.93 | 22.82 | 41.75 | 46.00 | -4.25 | peak | 0 |
| 4 | ! | 672.1400 | 15.83 | 24.52 | 40.35 | 46.00 | -5.65 | peak | 0 |
| 5 | ! | 768.1700 | 15.00 | 25.86 | 40.86 | 46.00 | -5.14 | peak | 0 |

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

Above 1 GHz

Operation Mode: TX/ IEEE 802.11b/CH Low **Test Date:** 2011-12-08
Temperature: 20°C **Tested by:** Habby Guo
Humidity: 70 % RH **Polarity:** Ver. / Hor.

| Freq. (MHz) | Ant. Pol H/V | Peak | AV | Ant. / CL CF | Actual Fs | | Peak | AV | AV |
|----------------|-----------------|-------------------|-------------------|-----------------|-----------|-------|------------------|----------------|-------|
| | | Reading (dBuV) | Reading (dBuV) | (dB) | | | Peak (dBuV/m) | AV (dBuV/m) | Limit |
| 4824.5 | V | 46.17 | 25.59 | 23.16 | 69.33 | 48.75 | 74.00 | 54.00 | -5.25 |
| N/A | V | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| 4824.5 | H | 47.97 | 27.07 | 23.05 | 71.02 | 50.12 | 74.00 | 54.00 | -3.88 |
| N/A | H | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown “ --- ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with “ N/A ” remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).

Operation Mode: TX/ IEEE 802.11b/CH Mid **Test Date:** 2011-12-08
Temperature: 20°C **Tested by:** Habby Guo
Humidity: 70 % RH **Polarity:** Ver. / Hor.

| Freq. (MHz) | Ant. Pol H/V | Peak (dBuV) | AV (dBuV) | Ant. / CL CF | Actual Fs | | Peak | AV | AV |
|-----------------------|------------------------|-----------------------|---------------------|------------------------|------------------|-------|--------------------------|--------------------------|-----------------------|
| | | | | | | | Limit (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
| 4874.50 | V | 44.39 | 25.60 | 24.04 | 68.43 | 49.64 | 74.00 | 54.00 | -4.36 |
| N/A | V | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| 4874.50 | H | 46.40 | 24.41 | 23.98 | 70.38 | 48.39 | 74.00 | 54.00 | -5.61 |
| N/A | H | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown “ --- ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with “ N/A ” remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).

Operation Mode: TX/ IEEE 802.11b/CH High **Test Date:** 2011-12-08
Temperature: 20°C **Tested by:** Habby Guo
Humidity: 70 % RH **Polarity:** Ver. / Hor.

| Freq. (MHz) | Ant. Pol H/V | Peak | AV | Ant. / CL CF | Actual Fs | | Peak | AV | AV |
|----------------|-----------------|-------------------|-------------------|-----------------|-----------|----------|----------|-------|--------|
| | | Reading (dBuV) | Reading (dBuV) | | (dB) | (dBuV/m) | (dBuV/m) | Limit | Margin |
| 4924.50 | V | 44.87 | 23.78 | 24.86 | 69.73 | 48.64 | 74.00 | 54.00 | -5.36 |
| N/A | V | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| 4924.50 | H | 45.53 | 24.62 | 24.75 | 70.28 | 49.37 | 74.00 | 54.00 | -4.63 |
| N/A | H | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown “ --- ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with “ N/A ” remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).

Operation Mode: TX/ IEEE 802.11g/CH Low **Test Date:** 2011-12-08
Temperature: 20°C **Tested by:** Habby Guo
Humidity: 70 % RH **Polarity:** Ver. / Hor.

| Freq. (MHz) | Ant. Pol H/V | Peak (dBuV) | AV (dBuV) | Ant. / CL CF | Actual Fs | | Peak | AV | AV |
|-----------------------|------------------------|-----------------------|---------------------|------------------------|------------------|-------|--------------------------|--------------------------|-----------------------|
| | | | | | | | Limit (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
| 4824.5 | V | 45.57 | 22.68 | 25.16 | 70.73 | 47.84 | 74.00 | 54.00 | -6.16 |
| N/A | V | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| 4824.5 | H | 44.78 | 24.49 | 25.05 | 69.83 | 49.54 | 74.00 | 54.00 | -4.46 |
| N/A | H | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown “ --- ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with “ N/A ” remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).

Operation Mode: TX/ IEEE 802.11g/CH Mid **Test Date:** 2011-12-08
Temperature: 20°C **Tested by:** Habby Guo
Humidity: 70 % RH **Polarity:** Ver. / Hor.

| Freq. (MHz) | Ant. Pol H/V | Peak Reading (dBuV) | AV Reading (dBuV) | Ant. / CL CF (dB) | Actual Fs | | Peak | AV | AV |
|----------------|-----------------|---------------------------|-------------------------|-------------------------|-----------|----------|----------|----------|--------|
| | | | | | | | Limit | Limit | Margin |
| | | | | | (dBuV/m) | (dBuV/m) | (dBuV/m) | (dBuV/m) | (dB) |
| 4874.50 | V | 45.20 | 19.64 | 24.04 | 69.24 | 43.68 | 74.00 | 54.00 | -10.32 |
| N/A | V | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| 4874.50 | H | 45.74 | 19.73 | 23.98 | 69.72 | 43.71 | 74.00 | 54.00 | -10.29 |
| N/A | H | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown “ --- ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with “ N/A ” remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).

Operation Mode: TX/ IEEE 802.11g/CH High **Test Date:** 2011-12-08
Temperature: 20°C **Tested by:** Habby Guo
Humidity: 70 % RH **Polarity:** Ver. / Hor.

| Freq. (MHz) | Ant. Pol H/V | Peak (dBuV) | AV (dBuV) | Ant. / CL CF | Actual Fs | | Peak | AV | AV |
|----------------|-----------------|----------------|--------------|-----------------|-----------|-------|-------|-------|--------|
| | | | | | | | Limit | Limit | Margin |
| 4924.50 | V | 43.65 | 20.97 | 24.86 | 68.51 | 45.83 | 74.00 | 54.00 | -8.17 |
| N/A | V | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| 4924.50 | H | 43.28 | 20.12 | 24.75 | 68.03 | 44.87 | 74.00 | 54.00 | -9.13 |
| N/A | H | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown “ --- ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with “ N/A ” remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).

Operation Mode: TX/ IEEE 802.11n/CH Low **Test Date:** 2011-12-08
Temperature: 20°C **Tested by:** Habby Guo
Humidity: 70 % RH **Polarity:** Ver. / Hor.

| Freq. (MHz) | Ant. Pol H/V | Peak | AV | Ant. / CL CF | Actual Fs | | Peak | AV | AV |
|----------------|-----------------|-------------------|-------------------|-----------------|-----------|-------|------------------|----------------|---------------|
| | | Reading (dBuV) | Reading (dBuV) | (dB) | | | Peak (dBuV/m) | AV (dBuV/m) | Limit (dB) |
| 4824.5 | V | 45.57 | 22.68 | 25.16 | 70.73 | 47.84 | 74.00 | 54.00 | -6.16 |
| N/A | V | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| 4824.5 | H | 44.78 | 24.49 | 25.05 | 69.83 | 49.54 | 74.00 | 54.00 | -4.46 |
| N/A | H | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown “ --- ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with “ N/A ” remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).

Operation Mode: TX/ IEEE 802.11n/CH Mid **Test Date:** 2011-12-08
Temperature: 20°C **Tested by:** Habby Guo
Humidity: 70 % RH **Polarity:** Ver. / Hor.

| Freq. (MHz) | Ant. Pol H/V | Peak (dBuV) | AV (dBuV) | Ant. / CL CF | Actual Fs | | Peak | AV | AV |
|----------------|-----------------|----------------|--------------|-----------------|-----------|----------|-------|-------|--------|
| | | | | | | | Limit | Limit | Margin |
| | | | | | (dBuV/m) | (dBuV/m) | (dB) | | |
| 4874.50 | V | 45.20 | 19.64 | 24.04 | 69.24 | 43.68 | 74.00 | 54.00 | -10.32 |
| N/A | V | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| 4874.50 | H | 45.74 | 19.73 | 23.98 | 69.72 | 43.71 | 74.00 | 54.00 | -10.29 |
| N/A | H | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown “ --- ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with “ N/A ” remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).

Operation Mode: TX/ IEEE 802.11n/CH High **Test Date:** 2011-12-08
Temperature: 20°C **Tested by:** Habby Guo
Humidity: 70 % RH **Polarity:** Ver. / Hor.

| Freq. (MHz) | Ant. Pol H/V | Peak | AV | Ant. / CL CF | Actual Fs | | Peak | AV | AV |
|----------------|-----------------|-------------------|-------------------|-----------------|-----------|------------------|----------------|-------------------|-------|
| | | Reading (dBuV) | Reading (dBuV) | | (dB) | Peak (dBuV/m) | AV (dBuV/m) | Limit (dBuV/m) | |
| 4924.50 | V | 43.65 | 20.97 | 24.86 | 68.51 | 45.83 | 74.00 | 54.00 | -8.17 |
| N/A | V | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| 4924.50 | H | 43.28 | 20.12 | 24.75 | 68.03 | 44.87 | 74.00 | 54.00 | -9.13 |
| N/A | H | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

Notes:

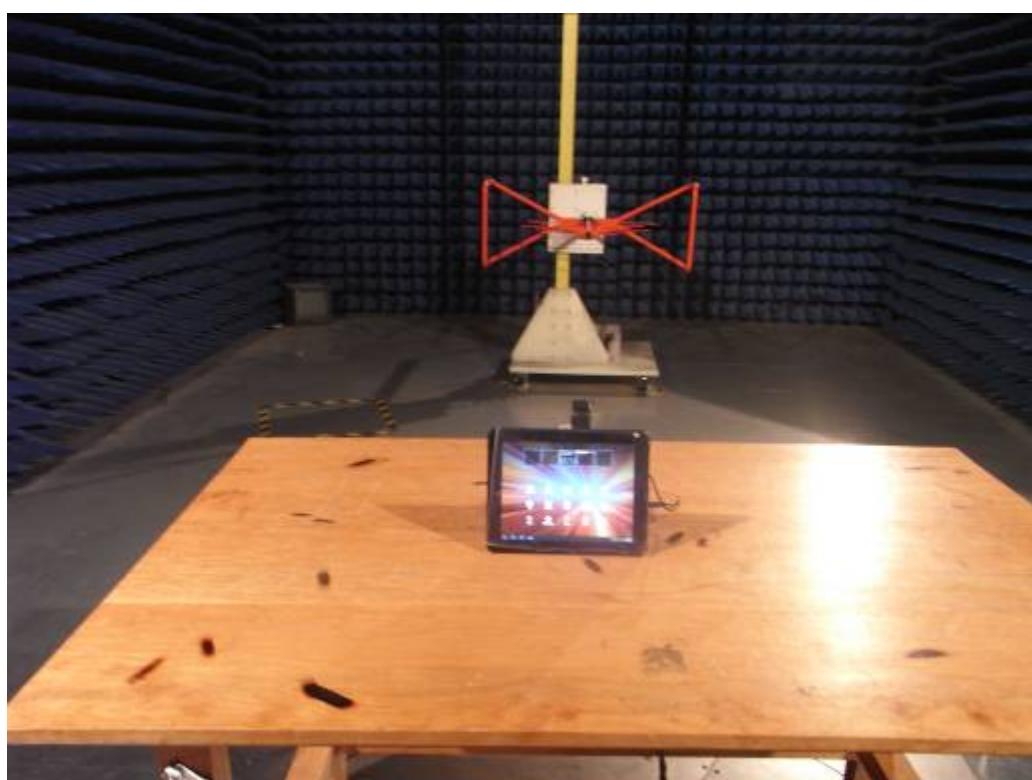
1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown “ --- ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with “ N/A ” remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).

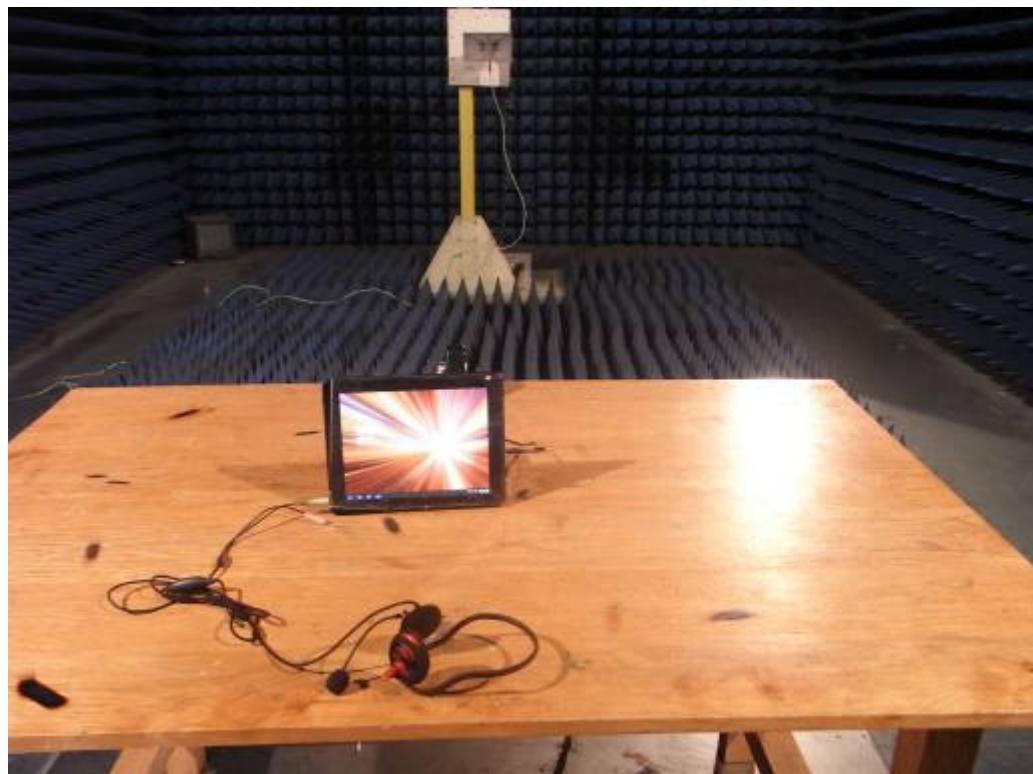
APPENDIX 1
PHOTOGRAPHS OF TEST SETUP

CE TEST SETUP



RE TEST SETUP





APPENDIX 2
PHOTOGRAPHS OF EUT

FRONT VIEW OF SAMPLE



BACK VIEW OF SAMPLE



LEFT VIEW OF SAMPLE



RIGHT VIEW OF SAMPLE



TOP VIEW OF SAMPLE



BOTTOM VIEW OF SAMPLE



PHOTO OF POWER SUPPLY -MODEL 1



PHOTO OF POWER SUPPLY -MODEL 2



PHOTO OF THE ENTIRE SAMPLE



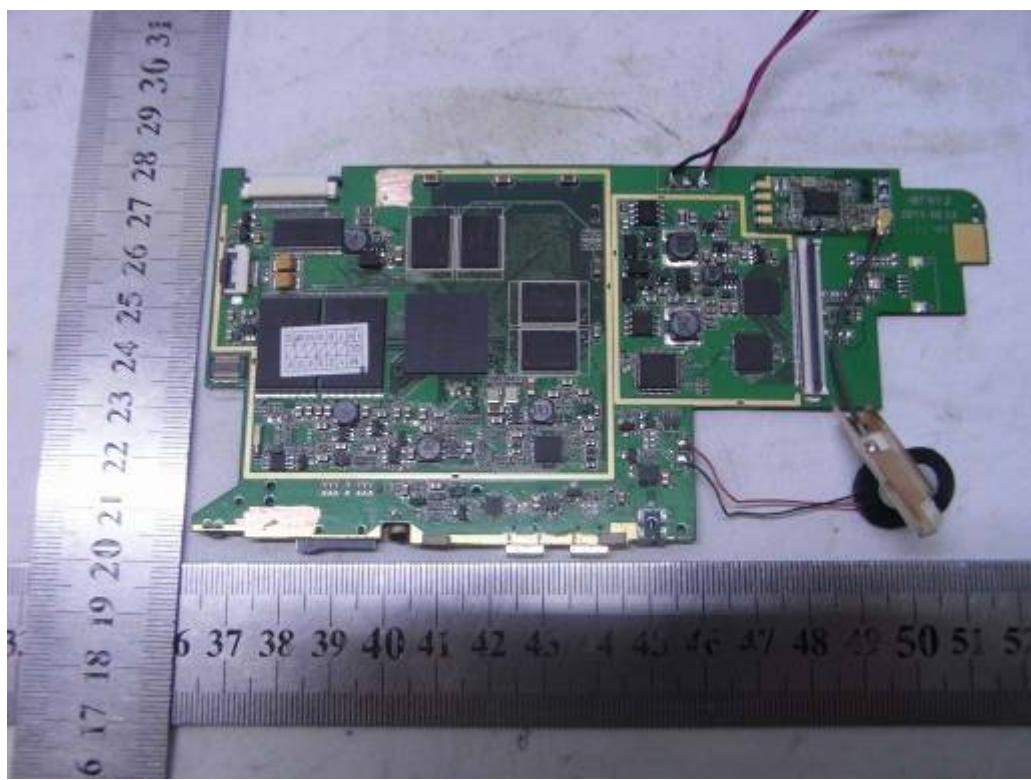
PHOTO OF BATTERY



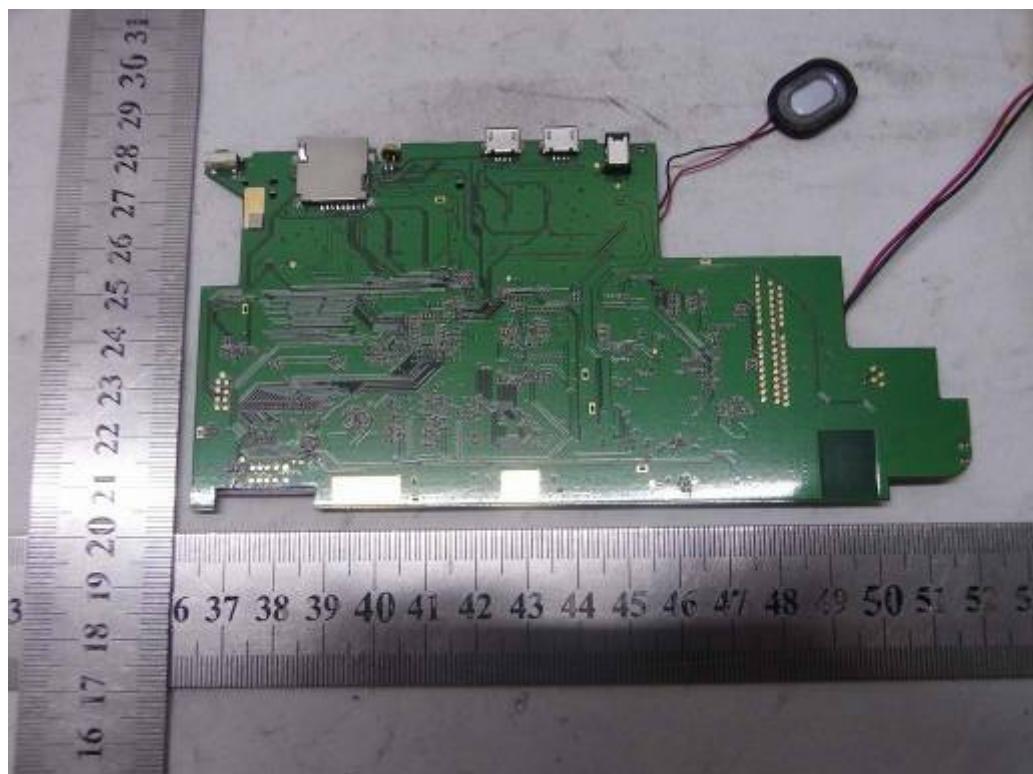
INTERNAL PHOTO OF SAMPLE – 1



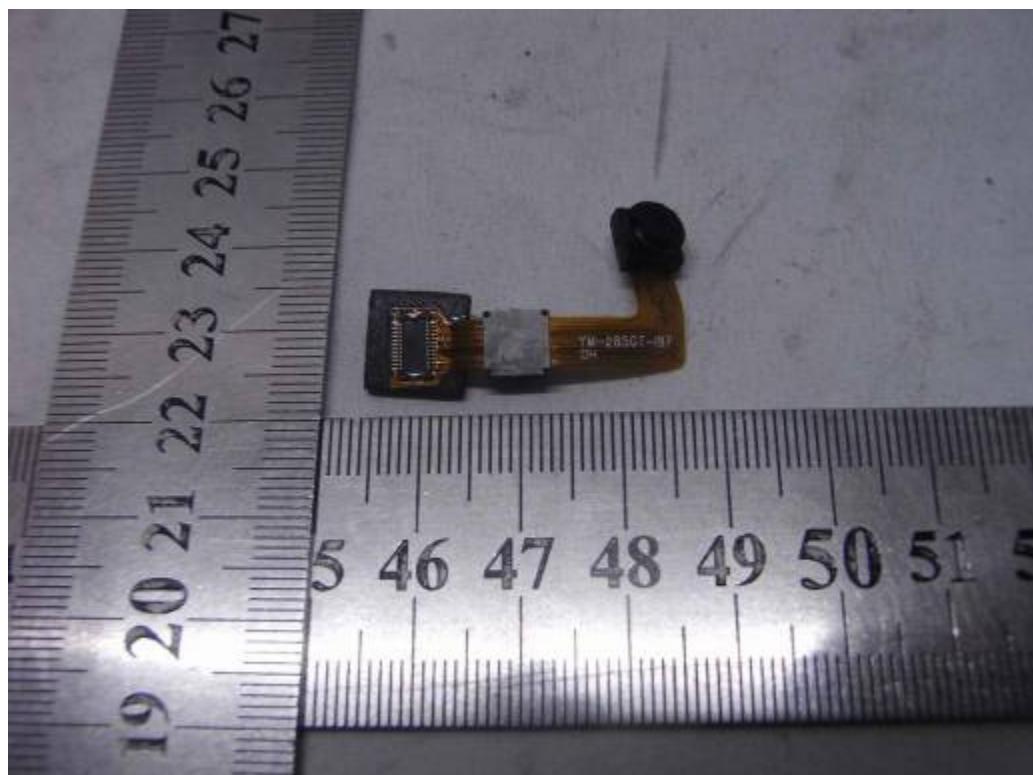
INTERNAL PHOTO OF SAMPLE -2



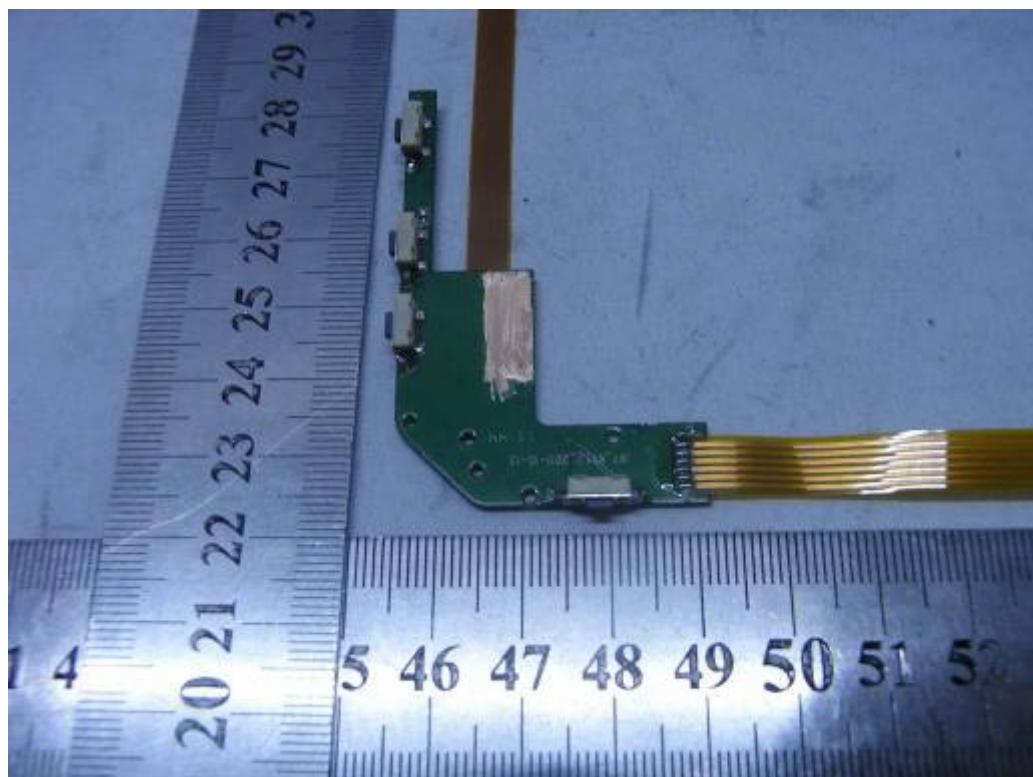
INTERNAL PHOTO OF SAMPLE -3



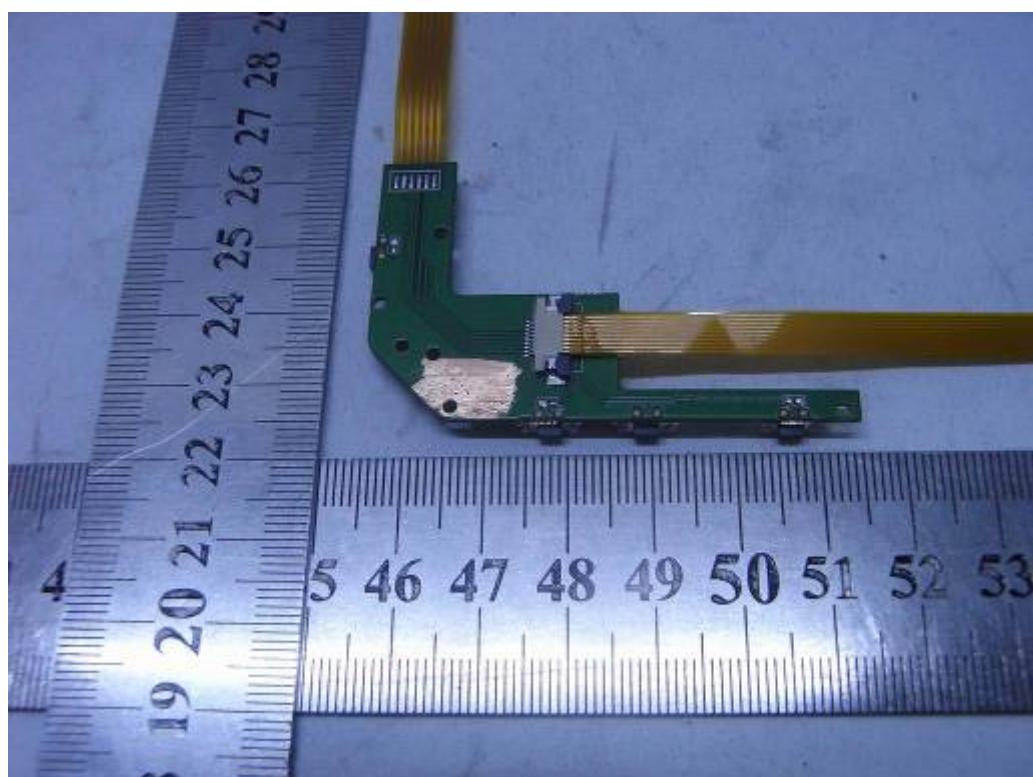
INTERNAL PHOTO OF SAMPLE -4



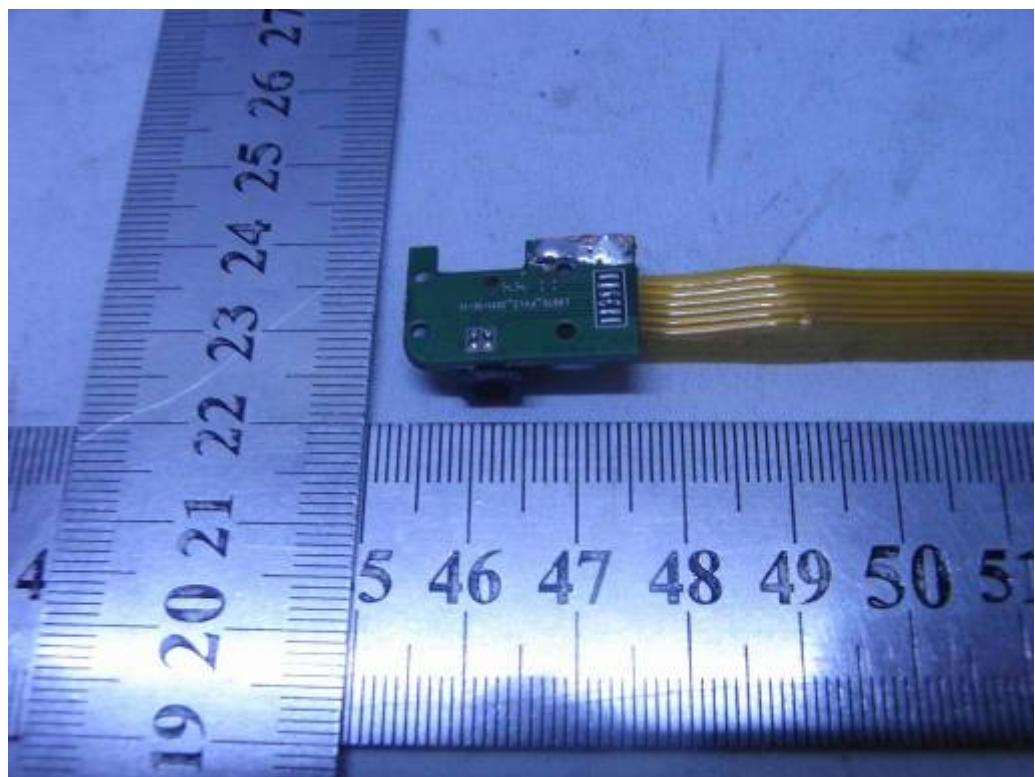
INTERNAL PHOTO OF SAMPLE -5



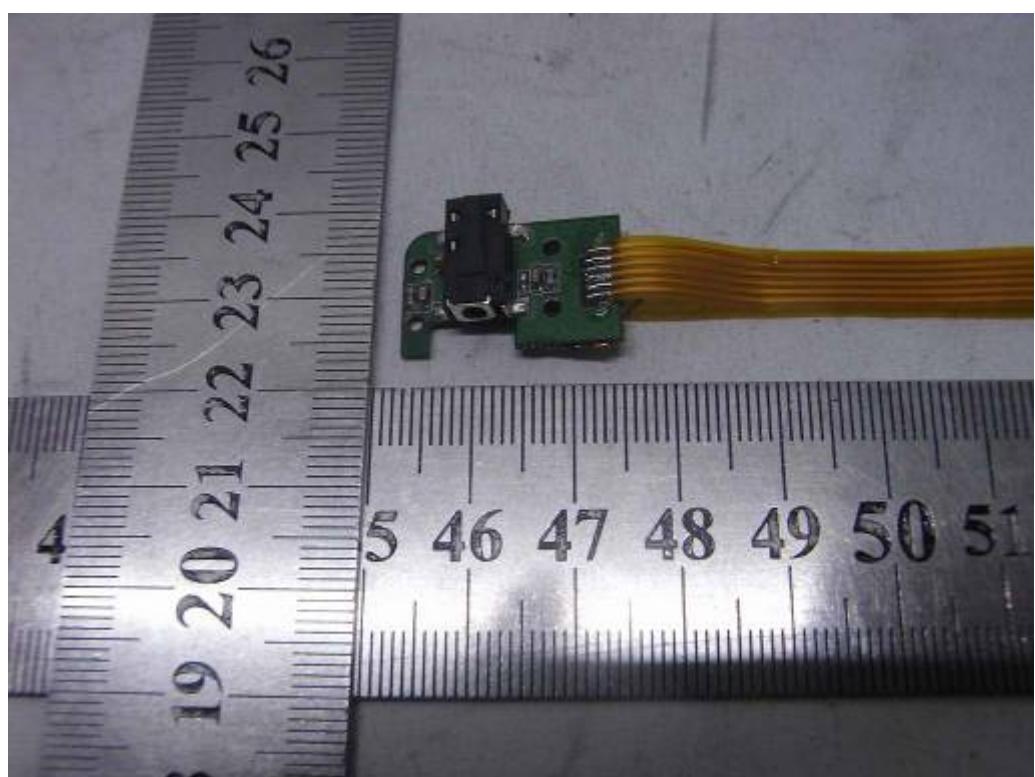
INTERNAL PHOTO OF SAMPLE -6



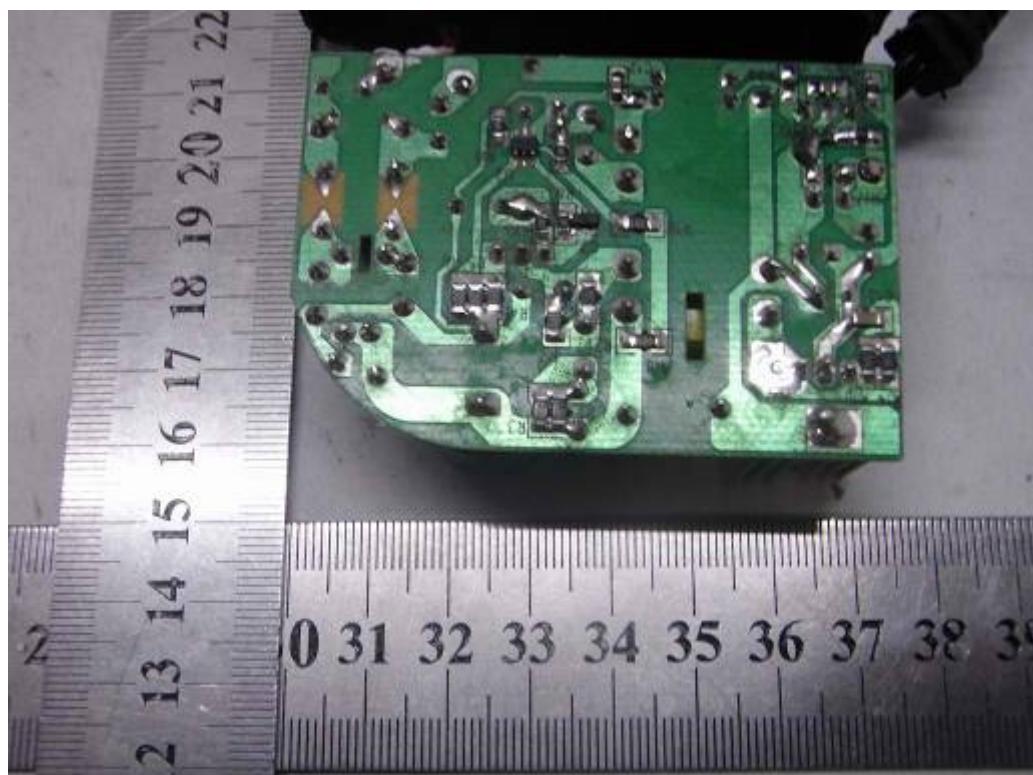
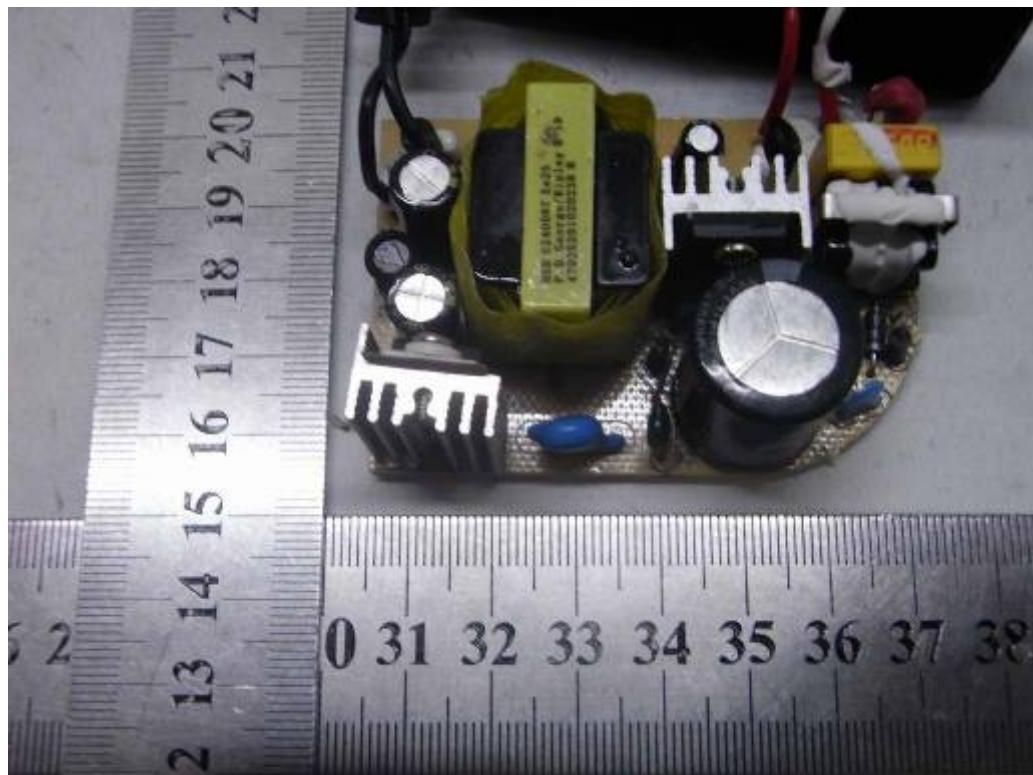
INTERNAL PHOTO OF SAMPLE -7



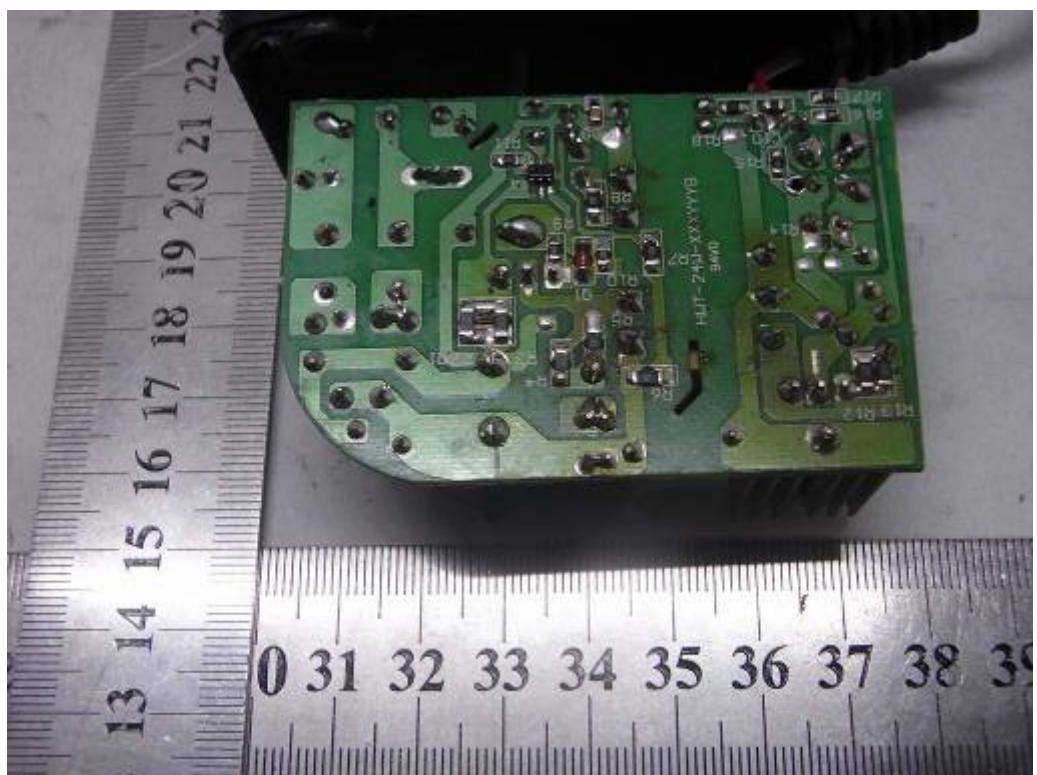
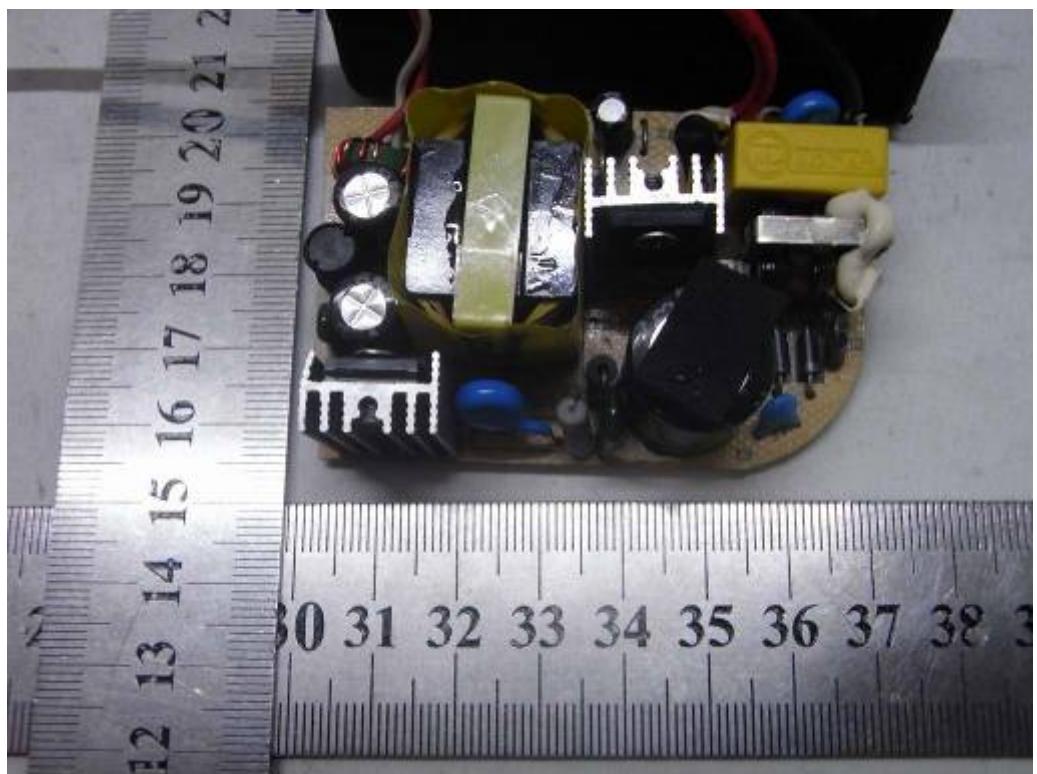
INTERNAL PHOTO OF SAMPLE -8



INTERNAL PHOTO OF POWER SUPPLY-1



INTERNAL PHOTO OF POWER SUPPLY-2



-----END OF REPORT-----