



FCC PART 15.247

TEST REPORT

For

Chengdu Vantron Technology, Ltd.

No. 5 GaoPeng Road, Hi-Tech Zone, Chengdu, SiChuan 610045, China

FCC ID: 2AAGEVTM2M-TC

| | |
|--|---|
| Report Type: Original Report | Product Type: M2M Gateway |
| Test Engineer: | Leon Chen |
| Report Number: | R2SC130723050-00B |
| Report Date: | 2013-12-04 |
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Chengdu Vantron Technology, Ltd.*'s product, model number: *VT-M2M-TC (FCC ID: 2AAGEVTM2M-TC)* (the "EUT") in this report was a *M2M Gateway*, which was measured approximately: 16.0 cm (L) x 10.2 cm (W) x 5.2 cm (H), rated input voltage: DC 12V from adapter.

Adapter Information: GPE
MODEL: GPE652-120500D
INPUT: 100-240Vac, 50/60Hz, 1.5A
OUTPUT: DC 12V, 5000mA

** All measurement and test data in this report was gathered from production sample serial number: 130723050 (Assigned by BACL Dongguan). The EUT was received on 2013-07-26.*

Objective

This report is prepared on behalf of *Chengdu Vantron Technology, Ltd.* accordance with Part 2-Subpart J, Part 15-Subparts A, B and C of the Federal Communications Commission rules.

The tests were performed in order to determine the compliance of the EUT with FCC Part 15-Subpart C, section 15.203, 15.205, 15.207, 15.209 and 15.247 rules.

Related Submittal(s)/Grant(s)

FCC Part 15C DTS submissions with FCC ID: *2AAGEVTM2M-TC* for Wifi.
FCC Part 27 PCB submissions with FCC ID: *2AAGEVTM2M-TC*.
FCC Part 22H & 24E PCB submissions with FCC ID: *2AAGEVTM2M-TC*.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

All emissions measurement was performed and Bay Area Compliance Laboratories Corp. (Dongguan).

EUT Exercise Software

The software "X-CTU.exe" was used for testing, which was provided by manufacturer. The worst condition (maximum power) was setting by the software as following table:

| | | | | |
|-----------------------|-------------------------|---------|---------|---------|
| Test Software Version | X-CTU.exe | | | |
| Test Frequency | 2405MHz | 2440MHz | 2475MHz | 2480MHz |
| Power Level Setting | Max. Output Power Level | | | |

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.69 Pulongcun, Puxinhu Industrial Zone, Tangxia, Dongguan, Guangdong, China

Test site at Bay Area Compliance Laboratories Corp. (Dongguan) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 02, 2012. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 273710. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, Bay Area Compliance Laboratories Corp. (Dongguan) is an ISO/IEC 17025 accredited laboratory, and is accredited by National Voluntary Laboratory Accredited Program (Lab Code 500069-0).



The current scope of accreditations can be found at <http://ts.nist.gov/standards/scopes/5000690.htm>

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in testing mode, which was provided by manufacturer. For Zigbee mode were tested with Channel 2405MHz, 2440MHz, 2475MHz and 2480MHz.

EUT Exercise Software

The test was performed under “X-CTU.exe” which was provided by the manufacturer.

Equipment Modifications

No modification was made to the EUT tested.

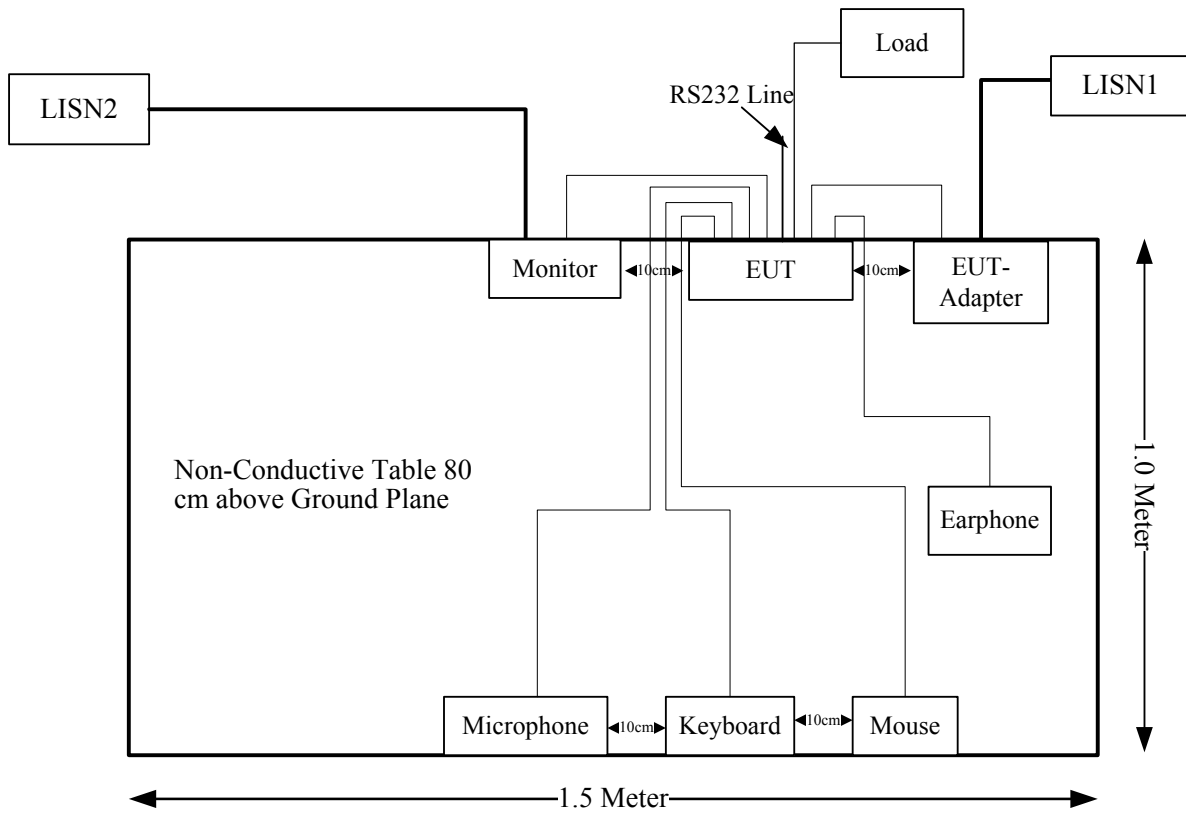
Support Equipment List and Details

| Manufacturer | Description | Model | Serial Number |
|--------------|-------------|---------|------------------------------|
| DELL | Monitor | 1708FPt | CN-OF534H-71618-B6C-BJWQ-AOO |
| DELL | Keyboard | SK-8115 | CN-0J4628-71616-52H-0RT6 |
| DELL | Mouse | MO56UOA | F0Y02P7Y |
| Keenion | Microphone | KM-206 | / |
| / | Earphone | / | / |

External Cable

| Cable Description | Shielding Type | Ferrite Core | Length (m) | From Port | To |
|---------------------|----------------|--------------|------------|-----------|-------------|
| Keyboard Line | Yes | No | 2.0 | EUT | Keyboard |
| Mouse Line | Yes | No | 1.8 | EUT | Mouse |
| VGA Line | Yes | Yes | 1.8 | EUT | Monitor |
| Ethernet Line | Yes | No | 10 | EUT | Load |
| RS232 Line | No | No | 2 | EUT | / |
| Earphone Line | No | No | 1.0 | EUT | Earphone |
| Microphone Line | No | No | 2.2 | EUT | Microphone |
| EUT-Adapter DC Line | No | No | 2.0 | EUT | EUT-Adapter |

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

| FCC Rules | Description of Test | Result |
|-------------------------------------|--|-----------------|
| FCC §15.247 (i) & §1.1310 & §2.1091 | Maximum Permissible Exposure | Compliance |
| §15.203 | Antenna Requirement | Compliance |
| §15.207 (a) | AC Line Conducted Emissions | Compliance |
| §15.247(d) | Spurious Emissions at Antenna Port | Compliance |
| §15.205, §15.209, §15.247(d) | Spurious Emissions | Compliance |
| §15.247 (a)(2) | 6 dB Emission Bandwidth | Not applicable* |
| §15.247(b)(3) | Maximum conducted output power | Not applicable* |
| §15.247(d) | 100 kHz Bandwidth of Frequency Band Edge | Not applicable* |
| §15.247(e) | Power Spectral Density | Not applicable* |

Note: * Please refer to the certified Zigbee module with FCC ID: MCQ-XBS2C.

FCC §15.247 (i) & §1.1310 & §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to subpart 15.247(i) and subpart §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

| (B) Limits for General Population/Uncontrolled Exposure | | | | |
|---|-------------------------------|-------------------------------|-------------------------------------|--------------------------|
| Frequency Range (MHz) | Electric Field Strength (V/m) | Magnetic Field Strength (A/m) | Power Density (mW/cm ²) | Averaging Time (minutes) |
| 0.3–1.34 | 614 | 1.63 | *(100) | 30 |
| 1.34–30 | 824/f | 2.19/f | *(180/f ²) | 30 |
| 30–300 | 27.5 | 0.073 | 0.2 | 30 |
| 300–1500 | / | / | f/1500 | 30 |
| 1500–100,000 | / | / | 1.0 | 30 |

f = frequency in MHz; * = Plane-wave equivalent power density;

According to §1.1310 and §2.1091 RF exposure is calculated.

Per 447498 D01 General RF Exposure Guidance v05r01, simultaneous transmission MPE test exclusion applies when the sum of the MPE ratios for all simultaneous transmitting antennas incorporated in a host device, based on the calculated/estimated, numerically modeled or measured field strengths or power density, is ≤ 1.0 .

Calculated Formulary:

Predication of MPE limit at a given distance

$S = PG/4\pi R^2$ = power density (in appropriate units, e.g. mW/cm²);

P = power input to the antenna (in appropriate units, e.g., mW);

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

Calculated Data:

| RF module | Frequency band | Antenna Gain | | Conducted Power | | Duty cycle | Evaluation distance | Power Density | MPE Limit | MPE Ratios |
|-----------------------------|----------------|--------------|-----------|-----------------|------|------------|---------------------|-----------------------|-----------------------|------------|
| | (MHz) | (dBi) | (numeric) | (dBm) | (mW) | (%) | (cm) | (mW/cm ²) | (mW/cm ²) | (%) |
| WIFI | 2412-2462 | 2.5 | 1.78 | 20.68 | 117 | 100 | 20 | 0.041 | 1 | 4.14 |
| Zigbee | 2405-2480 | 2.5 | 1.78 | 7.99 | 6.3 | 100 | 20 | 0.002 | 1 | 0.22 |
| 3G | 1850.2-1909.8 | 2.4 | 1.74 | 29.20 | 832 | 50 | 20 | 0.144 | 1.00 | 14.38 |
| Total sum of MPE ratios (%) | | | | | | | | | | 18.74 |

Note:

* For 3G module, the worst case for MPE was chosen.

Result: 18.74 % < 1, the device meet FCC MPE at 20 cm distance.

FCC §15.203 - ANTENNA REQUIREMENT**Applicable Standard**

According to § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the user of a standard antenna jack or electrical connector is prohibited. The structure and application of the EUT were analyzed to determine compliance with section §15.203 of the rules. §15.203 state that the subject device must meet the following criteria:

- a. Antenna must be permanently attached to the unit.
- b. Antenna must use a unique type of connector to attach to the EUT.

Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.

Antenna Connector Construction

The EUT has three external antennas for transceiver, which are used unique type of connectors to attach to the EUT, and complied with 15.203, please refer to the internal photos and following table:

| RF Module | Ant manufacturer | Ant Model Name | Ant Conector Type | Max. Antenna Gain |
|-----------|------------------|----------------|-------------------|--------------------------------|
| WIFI | Norminson | NW001 | SMA(Male) | 2400-2500MHz:2.5dBi |
| Zigbee | Norminson | NW001 | SMA(Male) | 2400-2500MHz: 2.5dBi |
| 3G | Norminson | NG026 | SMA(Male) | GSM850/WCDMA BAND V : -3.3dBi |
| | | | | GSM1900/WCDMA BAND II : 2.4dBi |
| | | | | AWS1700: 2.4 dBi |

Result: Compliance.

FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS

Applicable Standard

FCC§15.207

Measurement Uncertainty

Compliance or non-compliance with a disturbance limit shall be determined in the following manner:

If U_{lab} is less than or equal to U_{cisp} of Table 1, then:

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

If U_{lab} is greater than U_{cisp} of Table 1, then:

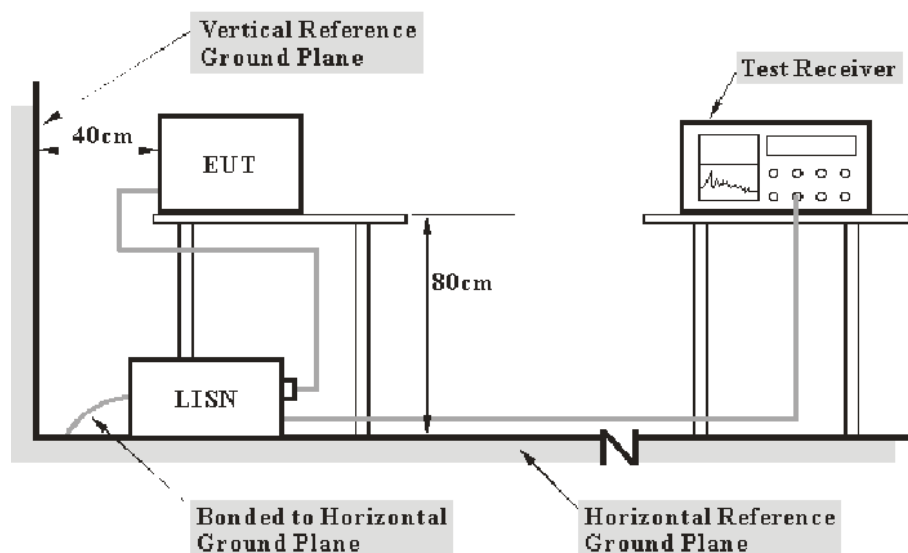
- compliance is deemed to occur if no measured disturbance level, increased by $(U_{lab} - U_{cisp})$, exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level, increased by $(U_{lab} - U_{cisp})$, exceeds the disturbance limit.

Based on CISPR 16-4-2-2011, measurement uncertainty of conducted disturbance at mains port using AMN at Bay Area Compliance Laboratories Corp. (Dongguan) is 3.46 dB (150 kHz to 30 MHz).

Table 1 – Values of U_{cisp}

| Measurement | U_{cisp} |
|---|------------|
| Conducted disturbance at mains port using AMN (150 kHz to 30 MHz) | 3.4 dB |

EUT Setup



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

The setup of EUT is according with per ANSI C63.4-2003 measurement procedure. The specification used was with the FCC Part 15.207 limits.

The spacing between the peripherals was 10 cm.

The adapter for EUT was connected to a 120 VAC/60 Hz power source

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

| Frequency Range | IF B/W |
|------------------|--------|
| 150 kHz – 30 MHz | 9 kHz |

Test Procedure

During the conducted emission test, the adapter for EUT was connected to the first LISN and the other support equipments were connected to the outlet of the second LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

$$V_C = V_R + A_C + VDF$$

$$C_f = A_C + VDF$$

Herein,

V_C (cord. Reading): corrected voltage amplitude

V_R : reading voltage amplitude

A_C : attenuation caused by cable loss

VDF: voltage division factor of AMN

C_f : Correction Factor

The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of 7dB means the emission is 7dB below the maximum limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Equipment List and Details

| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date |
|--------------|--------------------|----------|---------------|------------------|----------------------|
| R&S | EMI TEST RECEIVER | ESCS 30 | 830245/006 | 2012-11-29 | 2013-11-28 |
| R&S | Two-line V-network | ENV216 | 3560.6550.12 | 2013-2-18 | 2014-2-17 |
| R&S | L.I.S.N | ESH3-Z5 | 100113 | 2012-11-29 | 2013-11-28 |
| BACL | Test Software | BACL-EMC | V1.0-2010 | N/A | N/A |

* Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to National Primary Standards and International System of Units (SI).

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15.207, with the worst margin reading of:

2.22 dB at 0.850 MHz in the **Neutral** conducted mode

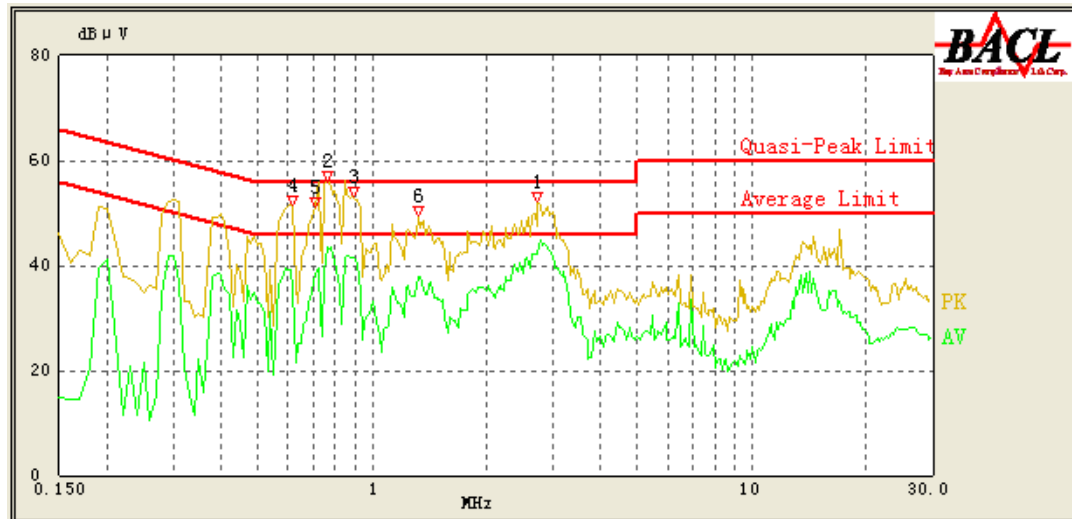
Test Data**Environmental Conditions**

| | |
|--------------------|-----------|
| Temperature: | 28.4 ° C |
| Relative Humidity: | 43 % |
| ATM Pressure: | 101.1 kPa |

The testing was performed by Leon Chen on 2013-10-22.

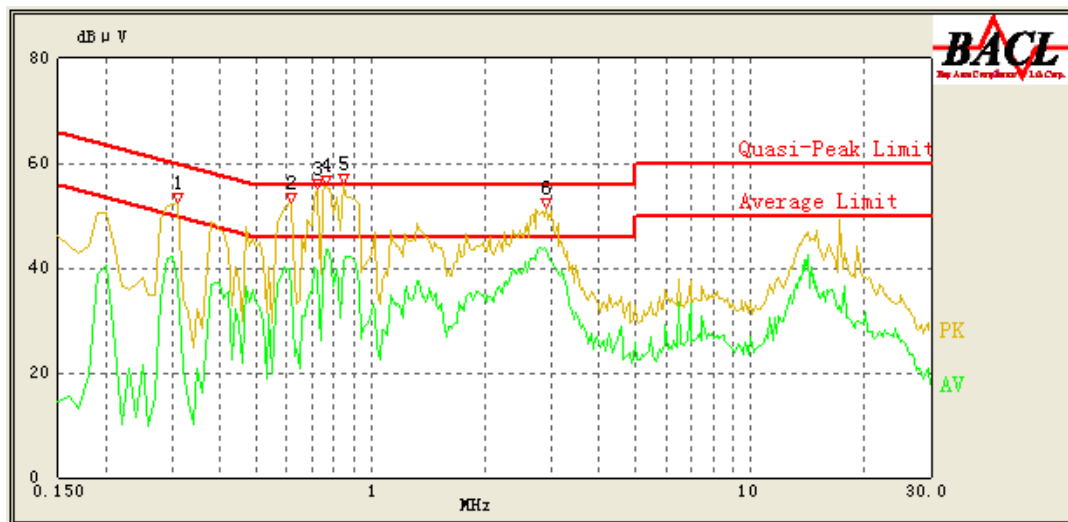
Test Mode: Transmitting

120 V, 60 Hz, Line:



| Frequency (MHz) | Cord. Reading (dBμV) | Correction Factor (dB) | Limit (dBμV) | Margin (dB) | Detector (PK/AV/QP) |
|-----------------|----------------------|------------------------|--------------|-------------|---------------------|
| 2.730 | 48.70 | 9.69 | 56.00 | 7.30 | QP |
| 2.750 | 43.66 | 9.69 | 46.00 | 2.34* | AV |
| 0.760 | 53.21 | 9.67 | 56.00 | 2.79* | QP |
| 0.760 | 43.53 | 9.67 | 46.00 | 2.47* | AV |
| 0.890 | 50.85 | 9.68 | 56.00 | 5.15 | QP |
| 0.890 | 41.56 | 9.68 | 46.00 | 4.44 | AV |
| 0.620 | 49.15 | 9.67 | 56.00 | 6.85 | QP |
| 0.620 | 35.36 | 9.67 | 46.00 | 10.64 | AV |
| 0.710 | 47.92 | 9.67 | 56.00 | 8.08 | QP |
| 0.710 | 38.28 | 9.67 | 46.00 | 7.72 | AV |
| 1.320 | 45.81 | 9.68 | 56.00 | 10.19 | QP |
| 1.320 | 37.85 | 9.68 | 46.00 | 8.15 | AV |

*Within measurement uncertainty!

120 V, 60 Hz, Neutral:

| Frequency (MHz) | Cord. Reading (dBμV) | Correction Factor (dB) | Limit (dBμV) | Margin (dB) | Detector (PK/AV/QP) |
|-----------------|----------------------|------------------------|--------------|-------------|---------------------|
| 0.310 | 49.25 | 9.68 | 59.97 | 10.72 | QP |
| 0.310 | 37.31 | 9.68 | 49.97 | 12.66 | AV |
| 0.620 | 49.49 | 9.67 | 56.00 | 6.51 | QP |
| 0.620 | 35.94 | 9.67 | 46.00 | 10.06 | AV |
| 0.720 | 52.85 | 9.67 | 56.00 | 3.15* | QP |
| 0.720 | 39.48 | 9.67 | 46.00 | 6.52 | AV |
| 0.760 | 53.51 | 9.67 | 56.00 | 2.49* | QP |
| 0.760 | 43.41 | 9.67 | 46.00 | 2.59* | AV |
| 0.850 | 53.78 | 9.68 | 56.00 | 2.22* | QP |
| 0.850 | 40.88 | 9.68 | 46.00 | 5.12 | AV |
| 2.890 | 48.60 | 9.70 | 56.00 | 7.40 | QP |
| 2.890 | 43.49 | 9.70 | 46.00 | 2.51* | AV |

*Within measurement uncertainty!

FCC §15.209, §15.205 & §15.247(d) - SPURIOUS EMISSIONS

Applicable Standard

FCC §15.247 (d); §15.209; §15.205;

Measurement Uncertainty

Compliance or non-compliance with a disturbance limit shall be determined in the following manner:

If U_{lab} is less than or equal to U_{cispr} of Table 2, then:

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

If U_{lab} is greater than U_{cispr} of Table 2, then:

- compliance is deemed to occur if no measured disturbance level, increased by $(U_{lab} - U_{cispr})$, exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level, increased by $(U_{lab} - U_{cispr})$, exceeds the disturbance limit.

Based on CISPR 16-4-2-2011, measurement uncertainty of radiated emission at a distance of 3m at Bay Area Compliance Laboratories Corp. (Dongguan) is:

30M~200MHz: 5.0 dB

200M~1GHz: 6.2 dB

1G~6GHz: 4.45 dB

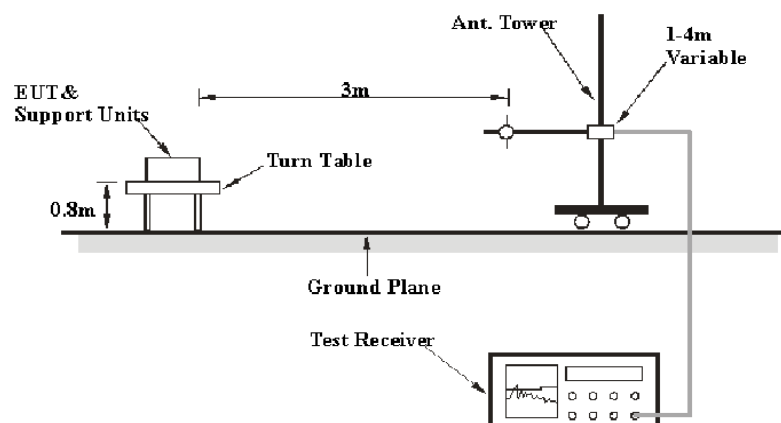
6G~18GHz: 5.23 dB

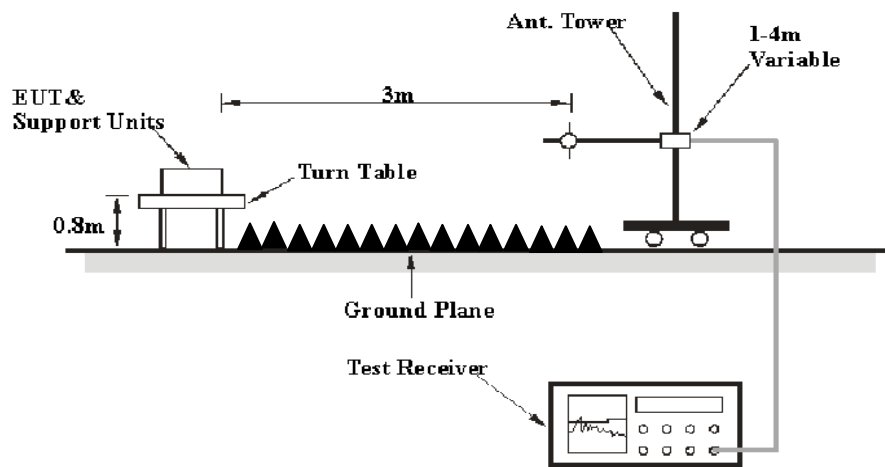
Table 2 – Values of U_{cispr}

| Measurement | U_{cispr} |
|--|-------------|
| Radiated disturbance (electric field strength at an OATS or in a SAC) (30 MHz to 1000 MHz) | 6.3 dB |
| Radiated disturbance (electric field strength in a FAR) (1 GHz to 6 GHz) | 5.2 dB |
| Radiated disturbance (electric field strength in a FAR) (6 GHz to 18 GHz) | 5.5 dB |

EUT Setup

Below 1GHz:



Above 1GHz:

The radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.4-2003. The specification used was the FCC 15.209, and FCC 15.247 limits. The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

The adapter for EUT was connected to a 120 VAC/60 Hz power source

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 25 GHz.

During the radiated emission test, the EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

| Frequency Range | RBW | Video B/W | IF B/W | Detector |
|------------------|---------|-----------|--------|----------|
| 30MHz – 1000 MHz | 120 kHz | 300 kHz | 120kHz | QP |
| Above 1 GHz | 1MHz | 3 MHz | / | PK |
| | 1MHz | 10 Hz | / | Ave. |

Test Procedure

During the radiated emission test, the adapter for EUT was connected to the first AC floor outlet and the other support equipments were connected to the second AC floor outlet.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

Data was recorded in Quasi-peak detection mode for frequency range of 30 MHz-1 GHz, peak and Average detection modes for frequencies above 1 GHz.

According to C63.4, the above 1G test result shall be extrapolated to the specified distance using an extrapolation factor of 20dB/decade from 3m to 1.5m

Distance extrapolation factor = $20 \log (3\text{m}/1.5\text{m})$ dB

Extrapolation result = Corrected Amplitude (dB μ V/m) -6dB

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Loss and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

$$\text{Corrected Amplitude} = \text{Meter Reading} + \text{Antenna Loss} + \text{Cable Loss} - \text{Amplifier Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Extrapolation result}$$

Test Equipment List and Details

| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date |
|----------------|-------------------|------------|---------------|------------------|----------------------|
| R&S | EMI TEST RECEIVER | ESCI | 100224 | 2013-5-6 | 2014-5-5 |
| Sunol Sciences | Antenna | JB3 | A060611-1 | 2011-9-6 | 2014-9-5 |
| HP | AMPLIFIER | 8447E | 2434A02181 | N/A | N/A |
| R&S | Spectrum analyzer | FSEM | DE31388 | 2013-5-7 | 2014-5-6 |
| ETS LINDGREN | horn antenna | 3115 | 000 527 35 | 2012-9-6 | 2015-9-5 |
| Mini-Circuit | Amplifier | ZVA-213-S+ | 054201245 | N/A | N/A |

* Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to National Primary Standards and International System of Units (SI).

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Title 47, Part 15, Section 15.205, 15.209 and 15.247, with the worst margin reading of:

3.76 dB at 2483.5 MHz in the Vertical polarization

Test Data**Environmental Conditions**

| | |
|---------------------------|-----------|
| Temperature: | 24.1°C |
| Relative Humidity: | 54 % |
| ATM Pressure: | 101.4 kPa |

The testing was performed by Leon Chen on 2013-11-05

Mode: Transmitting

| Frequency (MHz) | Receiver | | Rx Antenna | | Cable loss (dB) | Amplifier Gain (dB) | Corrected Amplitude (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|---------------------|-------------------|------------------------|----------------|----------------|-----------------------|---------------------------|------------------------------------|-------------------|----------------|
| | Reading (dBμV) | Detector (PK/QP/AV) | Polar (H/V) | Factor (dB) | | | | | |
| Frequency: 2405 MHz | | | | | | | | | |
| 2405 | 55.27 | PK | H | 25.65 | 3.91 | 0.00 | 84.83 | N/A | N/A |
| 2405 | 53.01 | AV | H | 25.65 | 3.91 | 0.00 | 82.57 | N/A | N/A |
| 2405 | 64.83 | PK | V | 25.65 | 3.91 | 0.00 | 94.39 | N/A | N/A |
| 2405 | 62.34 | AV | V | 25.65 | 3.91 | 0.00 | 91.90 | N/A | N/A |
| 2390 | 27.73 | PK | V | 25.61 | 3.84 | 0.00 | 57.18 | 74.00 | 16.82 |
| 2390 | 13.7 | AV | V | 25.61 | 3.84 | 0.00 | 43.15 | 54.00 | 10.85 |
| 4810 | 32.25 | PK | V | 30.61 | 4.69 | 27.26 | 40.29 | 74.00 | 33.71 |
| 4810 | 17.86 | AV | V | 30.61 | 4.69 | 27.26 | 25.90 | 54.00 | 28.10 |
| 7215 | 31.52 | PK | V | 34.12 | 6.52 | 26.32 | 45.84 | 74.00 | 28.16 |
| 7215 | 17.68 | AV | V | 34.12 | 6.52 | 26.32 | 32.00 | 54.00 | 22.00 |
| 9620 | 31.43 | PK | V | 35.99 | 8.73 | 26.17 | 49.98 | 74.00 | 24.02 |
| 9620 | 17.45 | AV | V | 35.99 | 8.73 | 26.17 | 36.00 | 54.00 | 18.00 |
| 3002.15 | 40.68 | PK | V | 27.21 | 7.42 | 27.48 | 47.83 | 74.00 | 26.17 |
| 3002.15 | 37.52 | AV | V | 27.21 | 7.42 | 27.48 | 44.67 | 54.00 | 9.33 |
| 725.03 | 36.6 | QP | V | 21.01 | 3.27 | 22.32 | 38.56 | 46.00 | 7.44 |
| Frequency:2440 MHz | | | | | | | | | |
| 2440 | 51.55 | PK | H | 25.74 | 3.99 | 0.00 | 81.28 | N/A | N/A |
| 2440 | 49.32 | AV | H | 25.74 | 3.99 | 0.00 | 79.05 | N/A | N/A |
| 2440 | 63.57 | PK | V | 25.74 | 3.99 | 0.00 | 93.30 | N/A | N/A |
| 2440 | 61.24 | AV | V | 25.74 | 3.99 | 0.00 | 90.97 | N/A | N/A |
| 1526.32 | 34.25 | PK | V | 23.65 | 3.04 | 26.98 | 33.96 | 74.00 | 40.04 |
| 1526.32 | 18.68 | AV | V | 23.65 | 3.04 | 26.98 | 18.39 | 54.00 | 35.61 |
| 4880 | 32.58 | PK | V | 30.79 | 4.75 | 27.26 | 40.86 | 74.00 | 33.14 |
| 4880 | 18.12 | AV | V | 30.79 | 4.75 | 27.26 | 26.40 | 54.00 | 27.60 |
| 7320 | 31.68 | PK | V | 34.37 | 6.72 | 26.53 | 46.24 | 74.00 | 27.76 |
| 7320 | 17.62 | AV | V | 34.37 | 6.72 | 26.53 | 32.18 | 54.00 | 21.82 |
| 9760 | 31.63 | PK | V | 36.32 | 8.58 | 25.63 | 50.90 | 74.00 | 23.10 |
| 9760 | 17.35 | AV | V | 36.32 | 8.58 | 25.63 | 36.62 | 54.00 | 17.38 |
| 3002.25 | 40.85 | PK | V | 27.21 | 7.42 | 27.48 | 48.00 | 74.00 | 26.00 |
| 3002.25 | 37.69 | AV | V | 27.21 | 7.42 | 27.48 | 44.84 | 54.00 | 9.16 |
| 725.03 | 36.7 | QP | V | 21.01 | 3.27 | 22.32 | 38.66 | 46.00 | 7.34 |

| Frequency: 2475 MHz | | | | | | | | | |
|---------------------|-------|----|---|-------|------|-------|-------|-------|-------|
| 2475 | 54.23 | PK | H | 25.84 | 3.85 | 0.00 | 83.92 | N/A | N/A |
| 2475 | 52.07 | AV | H | 25.84 | 3.85 | 0.00 | 81.76 | N/A | N/A |
| 2475 | 65.71 | PK | V | 25.84 | 3.85 | 0.00 | 95.40 | N/A | N/A |
| 2475 | 63.34 | AV | V | 25.84 | 3.85 | 0.00 | 93.03 | N/A | N/A |
| 2483.5 | 30.25 | PK | V | 25.86 | 3.80 | 0.00 | 59.91 | 74.00 | 14.09 |
| 2483.5 | 14.56 | AV | V | 25.86 | 3.80 | 0.00 | 44.22 | 54.00 | 9.78 |
| 1524.63 | 34.62 | PK | V | 23.65 | 3.05 | 26.99 | 34.33 | 74.00 | 39.67 |
| 1524.63 | 18.76 | AV | V | 23.65 | 3.05 | 26.99 | 18.47 | 54.00 | 35.53 |
| 4950 | 32.52 | PK | V | 30.97 | 4.68 | 27.27 | 40.90 | 74.00 | 33.10 |
| 4950 | 18.43 | AV | V | 30.97 | 4.68 | 27.27 | 26.81 | 54.00 | 27.19 |
| 7425 | 31.52 | PK | V | 34.62 | 6.92 | 26.61 | 46.45 | 74.00 | 27.55 |
| 7425 | 17.46 | AV | V | 34.62 | 6.92 | 26.61 | 32.39 | 54.00 | 21.61 |
| 9900 | 31.34 | PK | V | 36.66 | 8.44 | 25.50 | 50.94 | 74.00 | 23.06 |
| 9900 | 17.26 | AV | V | 36.66 | 8.44 | 25.50 | 36.86 | 54.00 | 17.14 |
| 3002.16 | 40.68 | PK | V | 27.21 | 7.42 | 27.48 | 47.83 | 74.00 | 26.17 |
| 3002.16 | 37.69 | AV | V | 27.21 | 7.42 | 27.48 | 44.84 | 54.00 | 9.16 |
| 725.03 | 36.9 | QP | V | 21.01 | 3.27 | 22.32 | 38.86 | 46.00 | 7.14 |
| Frequency: 2480 MHz | | | | | | | | | |
| 2480 | 50.23 | PK | H | 25.85 | 3.82 | 0.00 | 79.90 | N/A | N/A |
| 2480 | 48.06 | AV | H | 25.85 | 3.82 | 0.00 | 77.73 | N/A | N/A |
| 2480 | 61.37 | PK | V | 25.85 | 3.82 | 0.00 | 91.04 | N/A | N/A |
| 2480 | 59.02 | AV | V | 25.85 | 3.82 | 0.00 | 88.69 | N/A | N/A |
| 2483.5 | 30.44 | PK | V | 25.86 | 3.80 | 0.00 | 60.10 | 74.00 | 13.90 |
| 2483.5 | 20.58 | AV | V | 25.86 | 3.80 | 0.00 | 50.24 | 54.00 | 3.76* |
| 4960 | 32.51 | PK | V | 31.00 | 4.70 | 27.27 | 40.94 | 74.00 | 33.06 |
| 4960 | 18.12 | AV | V | 31.00 | 4.70 | 27.27 | 26.55 | 54.00 | 27.45 |
| 7440 | 32.15 | PK | V | 34.66 | 6.95 | 26.56 | 47.20 | 74.00 | 26.80 |
| 7440 | 17.57 | AV | V | 34.66 | 6.95 | 26.56 | 32.62 | 54.00 | 21.38 |
| 9920 | 31.62 | PK | V | 36.71 | 8.41 | 25.50 | 51.24 | 74.00 | 22.76 |
| 9920 | 17.15 | AV | V | 36.71 | 8.41 | 25.50 | 36.77 | 54.00 | 17.23 |
| 3002.21 | 40.25 | PK | V | 27.21 | 7.42 | 27.48 | 47.40 | 74.00 | 26.60 |
| 3002.21 | 37.45 | AV | V | 27.21 | 7.42 | 27.48 | 44.60 | 54.00 | 9.40 |
| 725.04 | 36.7 | QP | V | 21.01 | 3.27 | 22.32 | 38.66 | 46.00 | 7.34 |

**Within measurement uncertainty!*

******* END OF REPORT *******