

FCC PART 15 B TEST REPORT

For

Shenzhen Xinguodu Technology Co., Ltd.

17B JinSong Mansion, Terra Industrial & Trade Park Chegongmiao, Futian District, Shenzhen,
Guangdong, China, 518040

FCC ID: XDQN5

| | |
|--|---|
| Report Type: Original Report | Product Type: POS Terminal |
| Report Number: | RDG171215002-00 |
| Report Date: | 2017-12-26 |
| Reviewed By: | Jerry Zhang EMC Manager  |
| Test Laboratory: | Bay Area Compliance Laboratories Corp. (Dongguan) No.69 Pulongcun, Puxinhu Industry Area, Tangxia, Dongguan, Guangdong, China Tel: +86-769-86858888 Fax: +86-769-86858891 www.baclcorp.com.cn |

Note: This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.(Dongguan).

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GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

| | | |
|--|--------------------|--|
| EUT Name: | | POS Terminal |
| EUT Model: | | N5 |
| FCC ID: | | XDQN5 |
| Rated Input Voltage: | | DC5V from adapter |
| Adapter Information | Model Name: | ADS-12CG-06 05010EPCU |
| | Input: | AC100-240V 50/60Hz Max. 0.3A |
| | Output: | DC5V, 2.0A |
| External Dimension: | | Length (18.6cm)*Width (8.2cm)*High (6.4cm) |
| Serial Number: | | 171215002 |
| EUT Received Date: | | 2017.12.18 |
| The Highest operation frequency | | 2480MHz |

Objective

This test report is prepared on behalf of *Shenzhen Xinguodu Technology Co., Ltd.* in accordance with Part 2, Subpart J, and Part 15-Subparts A and B of the Federal Communications Commission's rules.

The objective of the manufacturer is to determine the compliance of EUT with FCC Part 15 B Class B.

Related Submittal(s)/Grant(s)

FCC Part 15C DSS submissions with FCC ID: XDQN5.
FCC Part 15C DTS submissions with FCC ID: XDQN5.
FCC Part 22H, 24E, 27 PCB submissions with FCC ID: XDQN5.
FCC Part 15C DXX submissions with FCC ID: XDQN5.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2014, 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 radiated and conducted emissions measurement was performed at Bay Area Compliance Laboratories Corp. (Dongguan).

Measurement Uncertainty

| Parameter | Measurement Uncertainty |
|-----------------------------------|--|
| Unwanted Emissions, radiated | 30M~200MHz: 4.58 dB for Horizontal, 4.59 dB for Vertical 200M~1GHz: 4.83 dB for Horizontal, 5.85 dB for Vertical 1G~6GHz: 4.45 dB, 6G~13GHz: 5.23 dB |
| Temperature | $\pm 1^{\circ}\text{C}$ |
| Humidity | $\pm 5\%$ |
| AC Power Lines Conducted Emission | 3.12 dB (150 kHz to 30 MHz) |

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 Industry Area, Tangxia, Dongguan, Guangdong, China.

The test site has been approved by the FCC under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 897218, the FCC Designation No. : CN1220.

The test site has been registered with ISED Canada under ISED Canada Registration Number 3062D.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in operating and downloading mode:

EUT Exercise Software

The software “winthrax.exe” was used during test.

Equipment Modifications

No modification was made to the EUT tested.

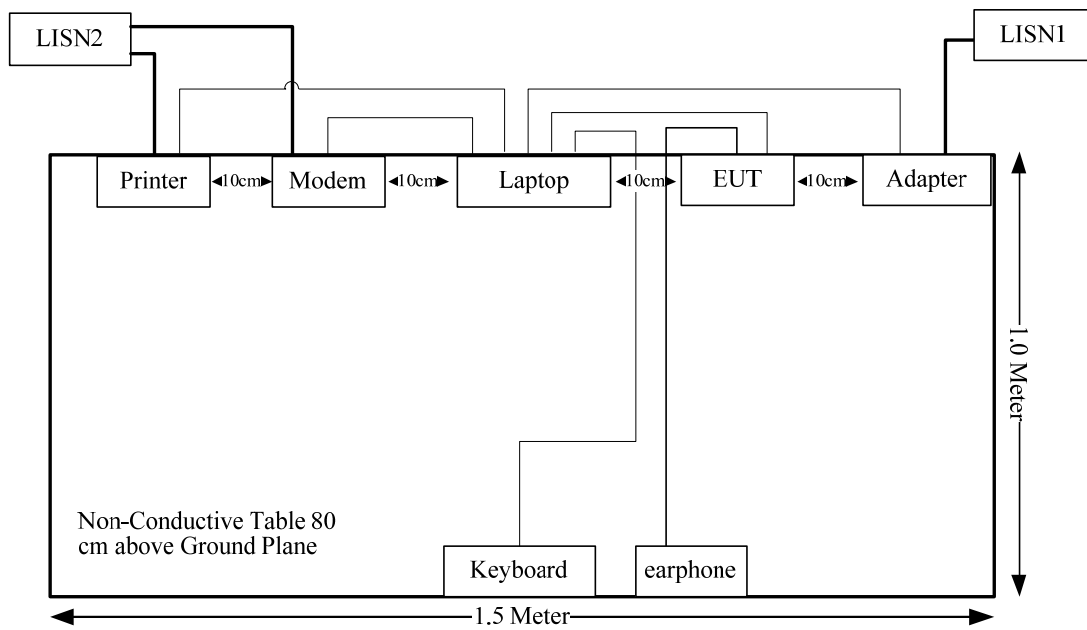
Local Support Equipment List and Details

| Manufacturer | Description | Model | Serial Number |
|--------------|-------------|----------|---------------------------|
| DELL | Laptop | PP11L | QDS-BRCM1017 |
| HP | Printer | C3941A | JPTVOB2337 |
| DELL | Keyboard | SK-8115 | CN-0DJ313-716716-05A-0DSO |
| SAST | Modem | AEM-2100 | 090200213 |
| N/A | Earphone | N/A | N/A |

Support Cable List and Details

| Cable Description | Shielding Type | Ferrite Core | Length (m) | From Port | To |
|-------------------|----------------|--------------|------------|-------------------------|----------|
| Serial Cable | yes | No | 1.2 | Serial Port of Laptop | Modem |
| Parallel Cable | yes | No | 1.2 | Parallel Port of Laptop | Printer |
| Keyboard Cable | yes | No | 1.8 | USB Port of Laptop | Keyboard |
| USB Cable | No | No | 1.0 | USB Port of Laptop | EUT |
| Earphone Cable | No | No | 1.19 | EUT | Earphone |

Configuration of Test Setup

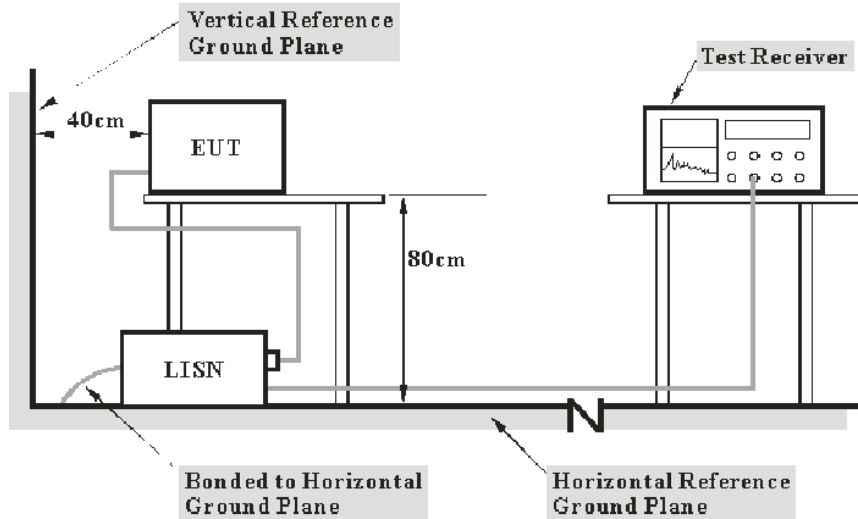


SUMMARY OF TEST RESULTS

| FCC Rules | Description of Test | Results |
|-----------|---------------------|-----------|
| §15.107 | Conducted Emissions | Compliant |
| §15.109 | Radiated Emissions | Compliant |

FCC§15.107 - CONDUCTED EMISSIONS

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 C63.4-2014 measurement procedure. The specification used was with the FCC Part 15 B Class B 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 adapter was connected to the Main LISN with 120V/60Hz AC 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 Equipment List and Details

| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date |
|--------------|--------------------|-----------|---------------|------------------|----------------------|
| R&S | EMI Test Receiver | ESCS 30 | 830245/006 | 2017-12-11 | 2018-12-11 |
| N/A | Coaxial Cable | C-NJNJ-50 | C-0200-01 | 2017-9-5 | 2018-9-5 |
| R&S | Test Software | EMC32 | Version8.53.0 | N/A | N/A |
| R&S | Two-line V-network | ENV 216 | 101614 | 2017-12-8 | 2018-12-8 |
| R&S | L.I.S.N | ESH2-Z5 | 892107/021 | 2017-9-25 | 2018-9-25 |

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

Test Procedure

During the conducted emission test, the adapter of laptop was connected to the outlet of 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:

$$V_C = V_R + A_C + VDF$$

Herein,

V_C : corrected voltage amplitude

V_R : reading voltage amplitude

A_C : attenuation caused by cable loss

VDF: voltage division factor of AMN or ISN

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 limit. The equation for margin calculation is as follows:

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

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15 B Class B.

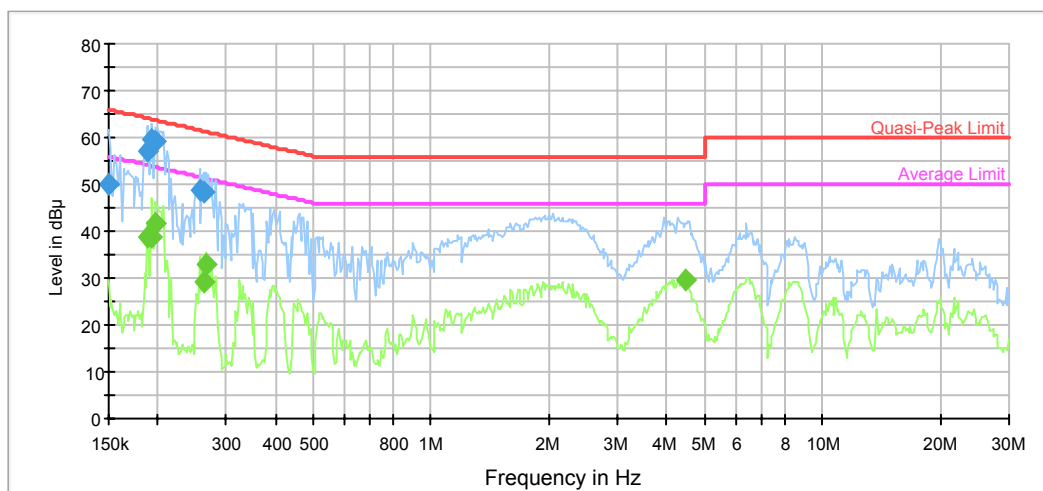
Test Data**Environmental Conditions**

| | |
|---------------------------|---------|
| Temperature: | 24 °C |
| Relative Humidity: | 45% |
| ATM Pressure: | 100 kPa |

The testing was performed by Loren Zhong on 2017-12-20.

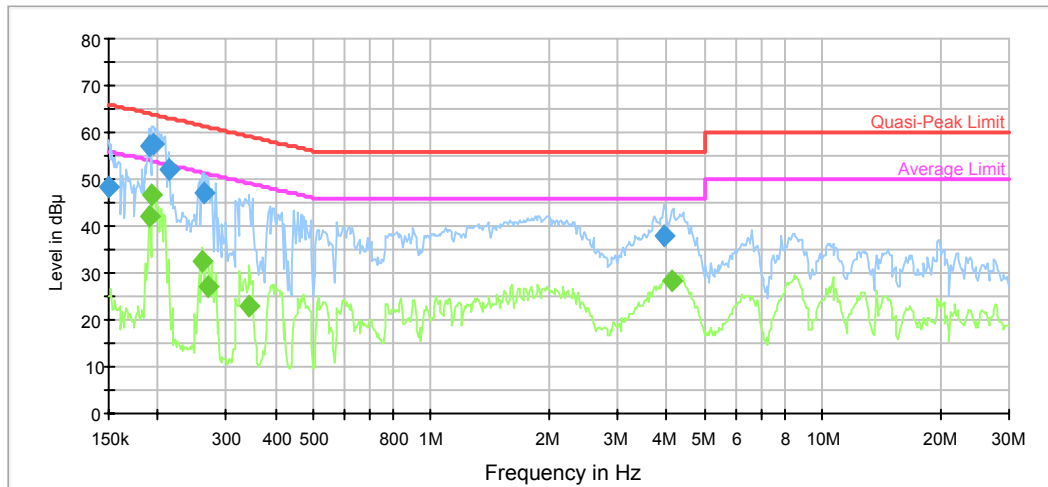
Test Mode: Downloading

AC120V, 60Hz, Line:



| Frequency (MHz) | QuasiPeak (dBμV) | Bandwidth (kHz) | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) | Comment |
|-----------------|------------------|-----------------|------|------------|-------------|--------------|------------|
| 0.150000 | 50.2 | 9.000 | L1 | 11.2 | 15.8 | 66.0 | Compliance |
| 0.188994 | 57.0 | 9.000 | L1 | 10.7 | 7.1 | 64.1 | Compliance |
| 0.193566 | 59.5 | 9.000 | L1 | 10.7 | 4.4 | 63.9 | Compliance |
| 0.196675 | 59.1 | 9.000 | L1 | 10.7 | 4.6 | 63.7 | Compliance |
| 0.255827 | 48.8 | 9.000 | L1 | 10.3 | 12.8 | 61.6 | Compliance |
| 0.262017 | 48.6 | 9.000 | L1 | 10.3 | 12.8 | 61.4 | Compliance |

| Frequency (MHz) | Average (dBμV) | Bandwidth (kHz) | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) | Comment |
|-----------------|----------------|-----------------|------|------------|-------------|--------------|------------|
| 0.188994 | 38.6 | 9.000 | L1 | 10.7 | 15.5 | 54.1 | Compliance |
| 0.193566 | 38.9 | 9.000 | L1 | 10.7 | 15.0 | 53.9 | Compliance |
| 0.196675 | 41.6 | 9.000 | L1 | 10.7 | 12.1 | 53.7 | Compliance |
| 0.262017 | 29.0 | 9.000 | L1 | 10.3 | 22.4 | 51.4 | Compliance |
| 0.266226 | 32.7 | 9.000 | L1 | 10.3 | 18.5 | 51.2 | Compliance |
| 4.469698 | 29.4 | 9.000 | L1 | 9.8 | 16.6 | 46.0 | Compliance |

AC120V, 60Hz, Neutral:

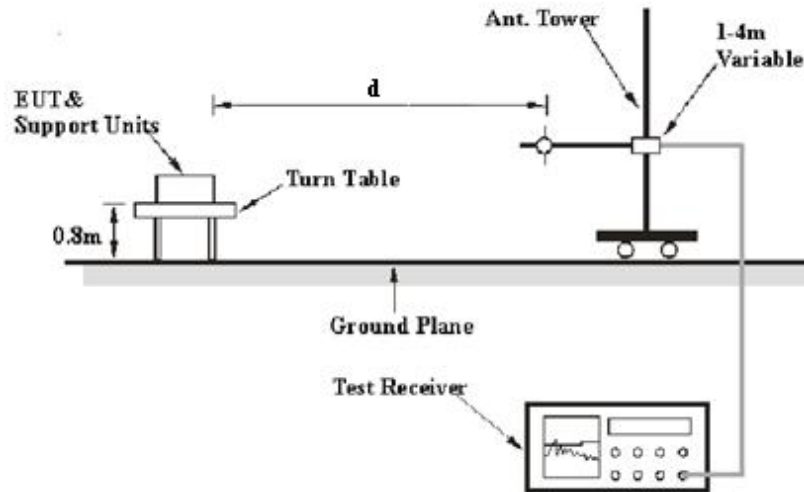
| Frequency (MHz) | QuasiPeak (dB μ V) | Bandwidth (kHz) | Line | Corr. (dB) | Margin (dB) | Limit (dB μ V) | Comment |
|-----------------|------------------------|-----------------|------|------------|-------------|--------------------|------------|
| 0.150000 | 48.2 | 9.000 | N | 11.2 | 17.8 | 66.0 | Compliance |
| 0.190505 | 57.1 | 9.000 | N | 10.7 | 6.9 | 64.0 | Compliance |
| 0.195114 | 57.6 | 9.000 | N | 10.7 | 6.2 | 63.8 | Compliance |
| 0.212988 | 52.0 | 9.000 | N | 10.5 | 11.1 | 63.1 | Compliance |
| 0.262017 | 47.0 | 9.000 | N | 10.3 | 14.4 | 61.4 | Compliance |
| 3.934683 | 37.8 | 9.000 | N | 9.8 | 18.2 | 56.0 | Compliance |

| Frequency (MHz) | Average (dB μ V) | Bandwidth (kHz) | Line | Corr. (dB) | Margin (dB) | Limit (dB μ V) | Comment |
|-----------------|----------------------|-----------------|------|------------|-------------|--------------------|------------|
| 0.190505 | 42.2 | 9.000 | N | 10.7 | 11.8 | 54.0 | Compliance |
| 0.193566 | 46.6 | 9.000 | N | 10.7 | 7.3 | 53.9 | Compliance |
| 0.259937 | 32.4 | 9.000 | N | 10.3 | 19.0 | 51.4 | Compliance |
| 0.270502 | 27.0 | 9.000 | N | 10.3 | 24.1 | 51.1 | Compliance |
| 0.343548 | 22.9 | 9.000 | N | 10.1 | 26.2 | 49.1 | Compliance |
| 4.127365 | 28.4 | 9.000 | N | 9.8 | 17.6 | 46.0 | Compliance |

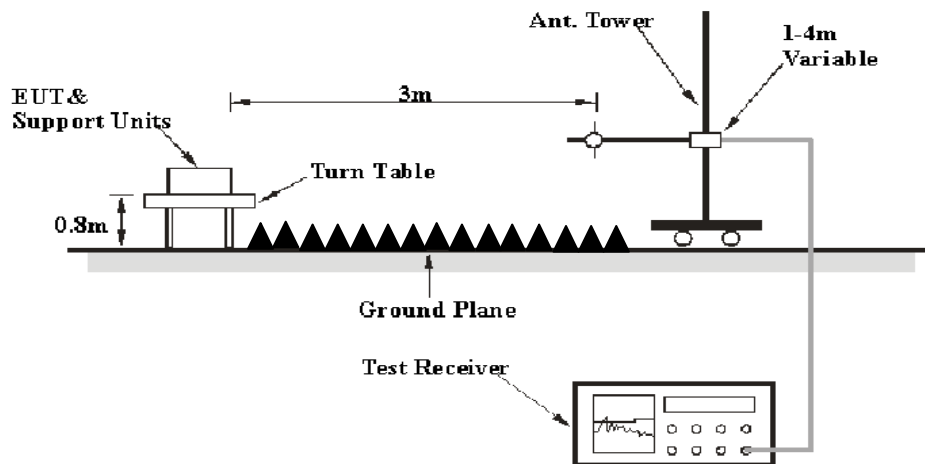
FCC §15.109 - RADIATED SPURIOUS EMISSIONS

EUT Setup

Below 1GHz:



Above 1GHz:



The radiated emission Below 1GHz tests were performed in the 10 meters chamber test site, above 1GHz tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.4-2014. The specification used was the FCC Part 15.109 Class B limits.

EMI Test Receiver Setup

The system was investigated from 30 MHz to 13.0 GHz.

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

| Frequency Range | RBW | Video B/W | IF B/W | Measurement |
|-------------------|---------|-----------|---------|-------------|
| 30 MHz – 1000 MHz | 120 kHz | 300 kHz | 120 kHz | QP |
| Above 1 GHz | 1 MHz | 3 MHz | / | Peak |
| | 1 MHz | 10 Hz | / | AVG |

Test Procedure

During the radiated emissions, the adapter of laptop 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.

The data was recorded in the Quasi-peak detection mode for below 1 GHz, peak and average detection mode above 1 GHz.

Test Equipment List and Details

| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date |
|----------------|-------------------|----------------------------|---------------|------------------|----------------------|
| R&S | EMI Test Receiver | ESCI | 100224 | 2017-09-01 | 2018-08-31 |
| Sunol Sciences | Antenna | JB3 | A060611-1 | 2017-11-10 | 2020-11-10 |
| HP | Amplifier | 8447D | 2727A05902 | 2017-09-05 | 2018-09-05 |
| Agilent | Spectrum Analyzer | E4440A | SG43360054 | 2017-12-08 | 2018-12-08 |
| ETS-Lindgren | Horn Antenna | 3115 | 000 527 35 | 2016-01-05 | 2019-01-04 |
| MITEQ | Amplifier | AFS42-00101800-2 5-S-42 | 2001271 | 2017-09-05 | 2018-09-05 |
| N/A | Coaxial Cable | C-NJNJ-50 | C-0400-01 | 2017-09-05 | 2018-09-05 |
| N/A | Coaxial Cable | C-NJNJ-50 | C-0075-01 | 2017-09-05 | 2018-09-05 |
| N/A | Coaxial Cable | C-NJNJ-50 | C-1000-01 | 2017-09-05 | 2018-09-05 |
| N/A | Coaxial Cable | C-SJSJ-50 | C-0800-01 | 2017-09-05 | 2018-09-05 |
| Farad | Test Software | EZ-EMC | V1.1.4.2 | N/A | N/A |

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

Corrected Amplitude & Margin Calculation

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

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

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

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

Test Data

Environmental Conditions

| | |
|---------------------------|-------------|
| Temperature: | 24~27 °C |
| Relative Humidity: | 45~65 % |
| ATM Pressure: | 100~101 kPa |

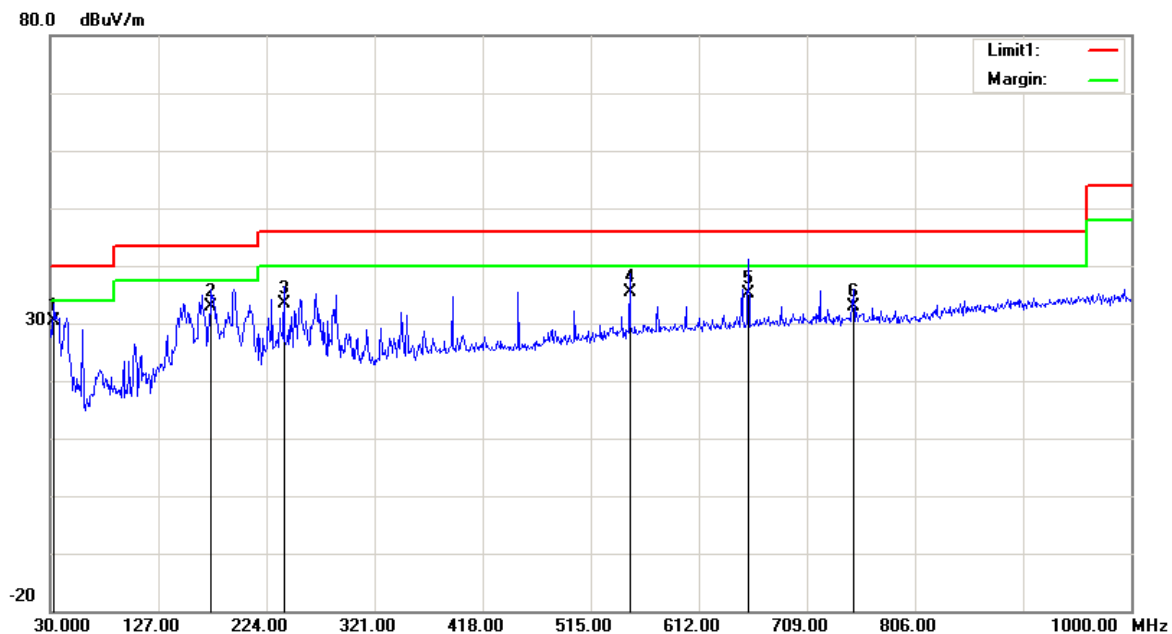
The testing was performed by Loren Zhong from 2017-12-20 to 2017-12-23.

Test Result: Compliance

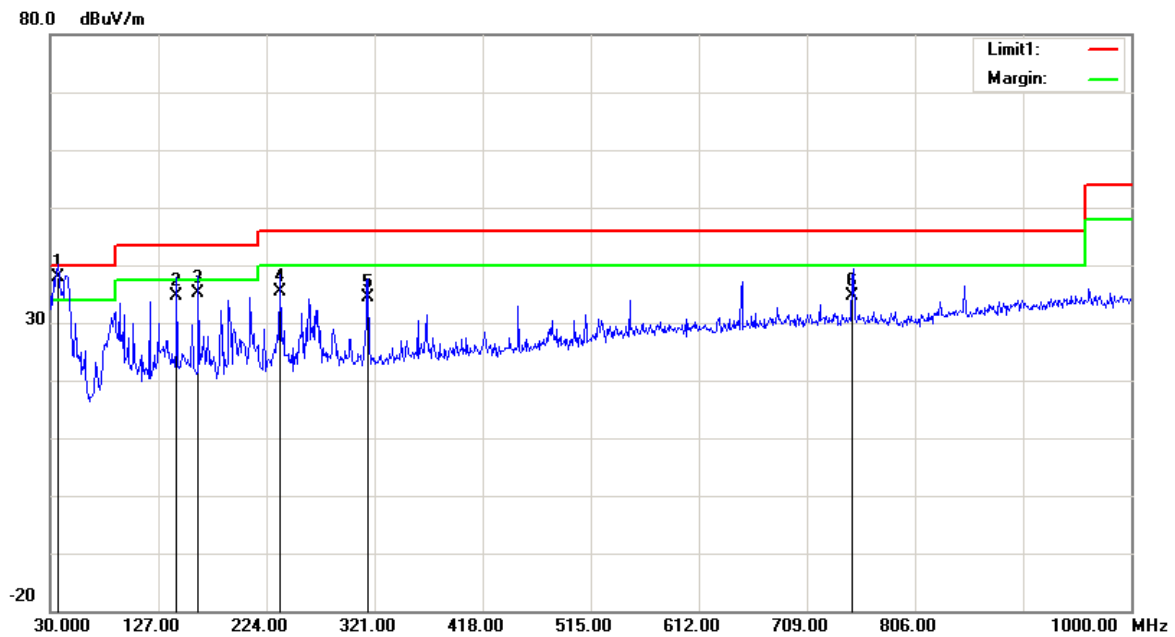
Test Mode: Downloading

1) Below 1GHz:

Horizontal



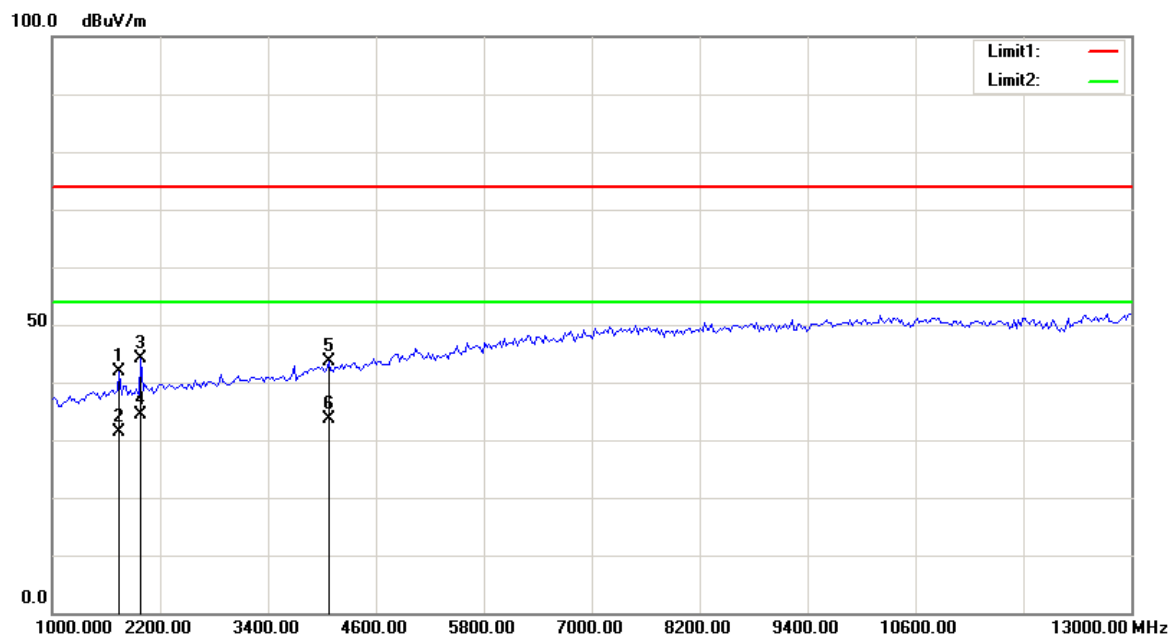
| Frequency (MHz) | Receiver Reading (dBμV) | Detector | Correction Factor (dB/m) | Cord. Amp. (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|-----------------|-------------------------|----------|--------------------------|---------------------|----------------|-------------|
| 32.9100 | 33.65 | QP | -3.25 | 30.40 | 40.00 | 9.60 |
| 174.5300 | 40.02 | QP | -7.12 | 32.90 | 43.50 | 10.60 |
| 239.5200 | 40.62 | QP | -7.32 | 33.30 | 46.00 | 12.70 |
| 549.9200 | 33.82 | QP | 1.68 | 35.50 | 46.00 | 10.50 |
| 656.6200 | 30.89 | QP | 4.21 | 35.10 | 46.00 | 10.90 |
| 750.7100 | 27.34 | QP | 5.56 | 32.90 | 46.00 | 13.10 |

Vertical

| Frequency (MHz) | Receiver Reading (dBμV) | Detector | Correction Factor (dB/m) | Cord. Amp. (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|-----------------|-------------------------|----------|--------------------------|---------------------|----------------|-------------|
| 36.7900 | 42.92 | QP | -5.12 | 37.80 | 40.00 | 2.20 |
| 143.4900 | 41.26 | QP | -6.56 | 34.70 | 43.50 | 8.80 |
| 162.8900 | 41.91 | QP | -6.71 | 35.20 | 43.50 | 8.30 |
| 236.6100 | 42.81 | QP | -7.51 | 35.30 | 46.00 | 10.70 |
| 315.1800 | 38.68 | QP | -4.18 | 34.50 | 46.00 | 11.50 |
| 749.7400 | 29.05 | QP | 5.55 | 34.60 | 46.00 | 11.40 |

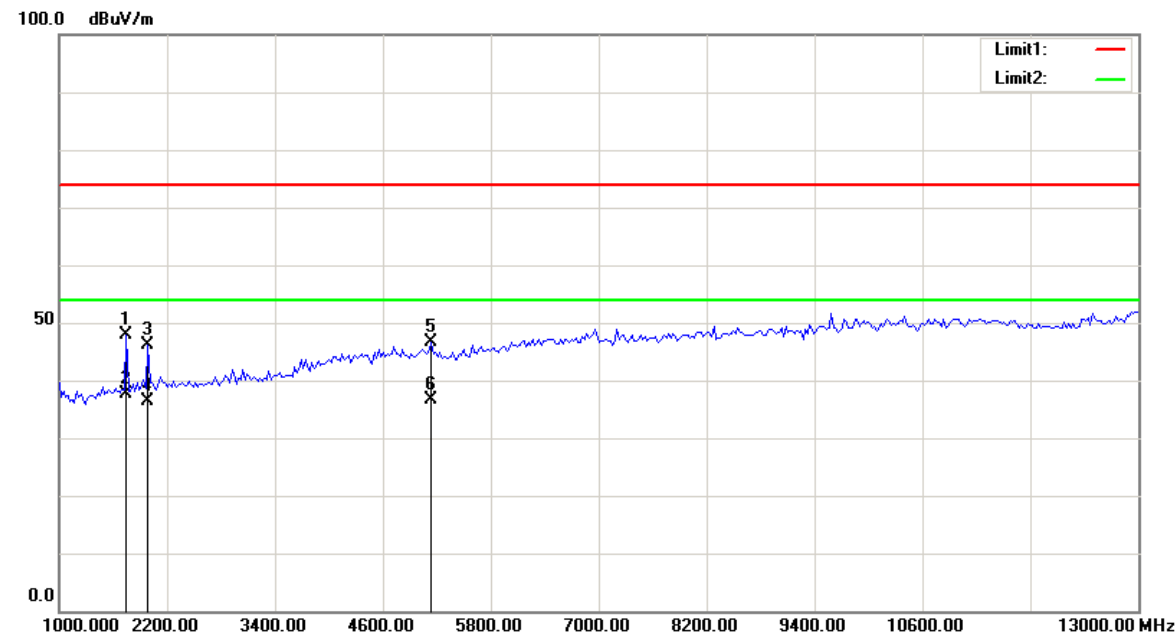
2) Above 1GHz:

Horizontal



| Frequency (MHz) | Receiver Reading (dBμV) | Detector | Correction Factor (dB/m) | Cord. Amp. (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|-----------------|-------------------------|----------|--------------------------|---------------------|----------------|-------------|
| 1745.491 | 40.53 | peak | 1.23 | 41.76 | 74.00 | 32.24 |
| 1745.491 | 30.10 | AVG | 1.23 | 31.33 | 54.00 | 22.67 |
| 1985.972 | 42.46 | peak | 1.74 | 44.20 | 74.00 | 29.80 |
| 1985.972 | 32.52 | AVG | 1.74 | 34.26 | 54.00 | 19.74 |
| 4078.156 | 34.92 | peak | 8.65 | 43.57 | 74.00 | 30.43 |
| 4078.156 | 24.99 | AVG | 8.65 | 33.64 | 54.00 | 20.36 |

Vertical



| Frequency (MHz) | Receiver Reading (dBμV) | Detector | Correction Factor (dB/m) | Cord. Amp. (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|-----------------|-------------------------|----------|--------------------------|---------------------|----------------|-------------|
| 1745.491 | 46.69 | peak | 1.23 | 47.92 | 74.00 | 26.08 |
| 1745.491 | 36.35 | AVG | 1.23 | 37.58 | 54.00 | 16.42 |
| 1985.972 | 44.42 | peak | 1.74 | 46.16 | 74.00 | 27.84 |
| 1985.972 | 34.73 | AVG | 1.74 | 36.47 | 54.00 | 17.53 |
| 5136.273 | 35.13 | peak | 11.43 | 46.56 | 74.00 | 27.44 |
| 5136.273 | 25.10 | AVG | 11.43 | 36.53 | 54.00 | 17.47 |

END OF REPORT