# FCC PART 15B, CLASS B

# MEASUREMENT AND TEST REPORT

For

## Nusoft Corporation

3F.-1, No. 880, Zhongzheng Rd., Zhonghe Dist., New Taipei City 23586, Taiwan

**FCC ID: 2AGVZNAP-570**

| **Report Type:** | **Product Type:** |
|---|---|
| Original Report | Nusoft Wireless AP Router |

| | |
|---|---|
| **Report Number:** | RSZ151201817-00A |
| **Report Date:** | 2017-02-16 |
| **Reviewed By:** | Oscar Ye<br>Engineer |
| **Prepared By:** | Bay Area Compliance Laboratories Corp. (Kunshan)<br>No.248 Chenghu Road, Kunshan, Jiangsu province, China<br>Tel: +86-0512-86175000<br>Fax: +86-0512-88934268<br>www.baclcorp.com.cn |

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# GENERAL INFORMATION

## Product Description for Equipment under Test (EUT)

The *Nusoft Corporation's* product, model number: *NAP-570 (FCC ID: 2AGVZNAP-570)* in this report was a *Nusoft Wireless AP Router*, which was measured approximately: 205 mm (L) x205 mm (W) x 50 mm (H), rated with input voltage: DC12V from adapter. The highest operation frequency is 5825MHz.

Adapter information:
Model: PA1015-120HUB150
Input: 100-240V~ 50/60Hz 0.4A
Output: 12V, 1.5A

** All measurement and test data in this report was gathered from production sample serial number 15120112 (Assigned by BACL, Kunshan). The EUT supplied by the applicant was received on 2016-08-17.*

## Objective

This test report is prepared on behalf of *Nusoft Corporation* in accordance with Part 2-Subpart J, Part 15-Subparts A and B of the Federal Communication Commissions rules.

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

## Related Submittal(s)/Grant(s)

FCC Part 15.247 DTS and Part 15E NII submissions with FCC ID: 2AGVZNAP-570.

## 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 emissions measurement was performed at Bay Area Compliance Laboratories Corp. (Kunshan). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

## Measurement Uncertainty

| Item | | Uncertainty |
|---|---|---|
| AC Power Lines Conducted Emissions | | ±3.26 dB |
| Radiated emission | 30MHz~1GHz | ±5.91dB |
| | Above 1G | ±4.92dB |

## Test Facility

The test site used by Bay Area Compliance Laboratories Corp. (Kunshan) to collect test data is located on the No.248 Chenghu Road, Kunshan, Jiangsu province, China.

Test site at Bay Area Compliance Laboratories Corp. (Kunshan) 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 November 06, 2014. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2014.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 815570. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

# SYSTEM TEST CONFIGURATION (FCC §15.27)

## Justification

The system was configured for testing in normal condition.

## EUT Exercise Software

No exercise software was used.

## Equipment Modifications

No modification was made to the EUT tested.

## Support Equipment List and Details

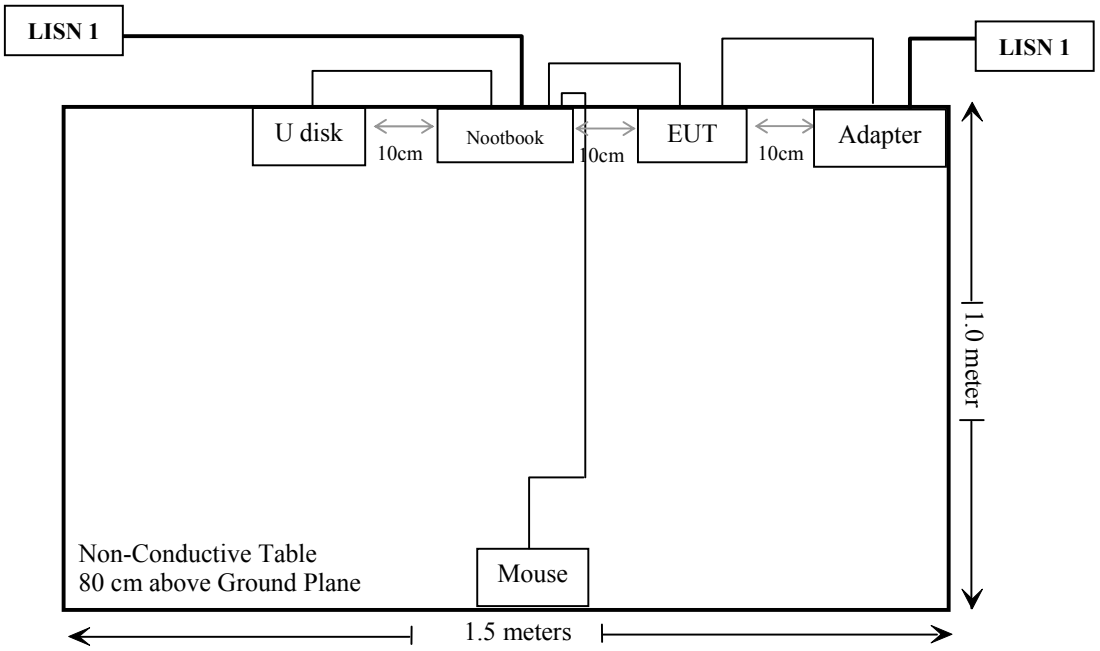
| Manufacturer | Description | Model | Serial Number |
|---|---|---|---|
| Lenovo | Notebook | T400 | R8-LXAXE 09/12 |
| DELL | Mouse | MOC5UO | G1900NKD |
| Lenovo | Adapter | 92P1158 | PA-1650-161 |
| HUAWEI | POE | PoE35-54A | 2102220369ARG6001801 |
| Kingston | U disk | 4 GB | N/A |

## External I/O Cable

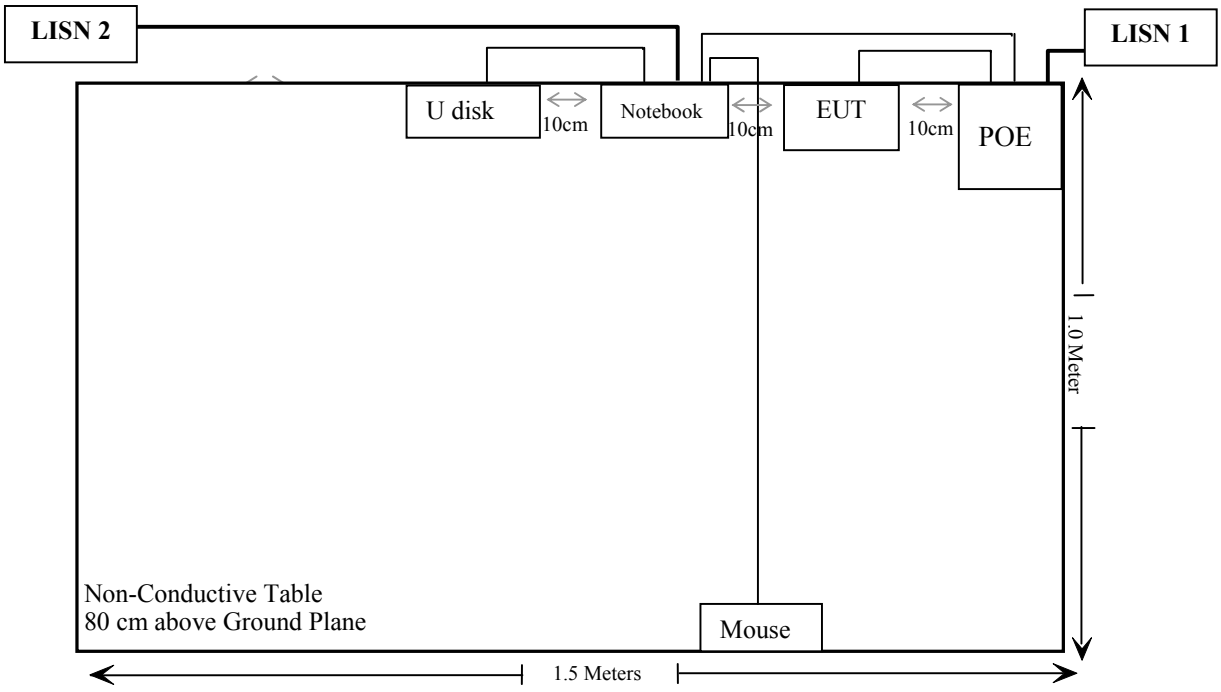
| Cable Description | Length (m) | From/Port | To |
|---|---|---|---|
| Un-Shielding Detachable USB Cable | 1.5 | PC | U disk |
| Un-Shielding Detachable USB Cable | 1.5 | PC | Mouse |
| Un-shielding Detachable RJ45 Cable | 1.0 | EUT | PC |
| Un-shielding Detachable AC Cable | 0.9 | Adapter | LISN 1 |
| Un-shielding Un-detachable DC Cable | 0.9 | Adapter | EUT |
| Un-shielding detachable RJ45 cable | 1.0 | POE | EUT |
| Un-shielding detachable RJ45 cable | 3.0 | POE | Notebook |

## Block Diagram of Test Setup

*Test Set up Connect: Powered by Adapter*




*Test Set up Connect: Powered by POE*



# SUMMARY OF TEST RESULTS

| FCC Rules | Description of Test | Results |
|---|---|---|
| §15.107 | AC Line Conducted Emissions | Compliance |
| §15.109 | Radiated Emissions | Compliance |

# TEST EQUIPMENT LIST

| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date |
|---|---|---|---|---|---|
| **AC Line Conducted Emission Test** | | | | | |
| Rohde & Schwarz | EMI Test Receiver | ESCS30 | 834115/007 | 2016-11-25 | 2017-11-25 |
| Rohde & Schwarz | LISN | ESH3-Z5 | 862770/011 | 2016-10-10 | 2017-10-10 |
| Rohde & Schwarz | Pulse limiter | ESH3-Z2 | 879940/0058 | 2016-06-19 | 2017-06-18 |
| MICRO-COAX | Coaxial line | UFB-293B-1-0480-50X50 | 97F0173 | 2016-09-08 | 2017-09-08 |
| Rohde & Schwarz | CE Test software | EMC 32 | V 09.10.0 | NCR | NCR |
| **Radiated Emission Test** | | | | | |
| Sonoma Instrunent | Amplifier | 330 | 171377 | 2016-10-21 | 2017-10-21 |
| Rohde & Schwarz | EMI Test Receiver | ESCI | 100195 | 2016-11-25 | 2017-11-25 |
| Sunol Sciences | Broadband Antenna | JB3 | A090314-2 | 2016-01-09 | 2019-01-08 |
| Narda | Pre-amplifier | AFS42-00101800 | 2001270 | 2016-09-08 | 2017-09-08 |
| EMCO | Horn Antenna | 3116 | 00084159 | 2016-10-18 | 2019-10-17 |
| Rohde & Schwarz | Signal Analyzer | FSIQ26 | 100048 | 2016-11-25 | 2017-11-25 |
| ETS | Horn Antenna | 3115 | 6229 | 2016-01-11 | 2019-01-10 |
| R&S | Auto test Software | EMC32 | V 09.10.0 | NCR | NCR |
| haojintech | Coaxial Cable | Cable-1 | 001 | 2016-12-12 | 2017-12-12 |
| haojintech | Coaxial Cable | Cable-2 | 002 | 2016-12-12 | 2017-12-12 |
| haojintech | Coaxial Cable | Cable-3 | 003 | 2016-12-12 | 2017-12-12 |
| MICRO-COAX | Coaxial Cable | Cable-4 | 004 | 2016-12-12 | 2017-12-12 |
| MICRO-COAX | Coaxial Cable | Cable-5 | 005 | 2016-12-12 | 2017-12-12 |

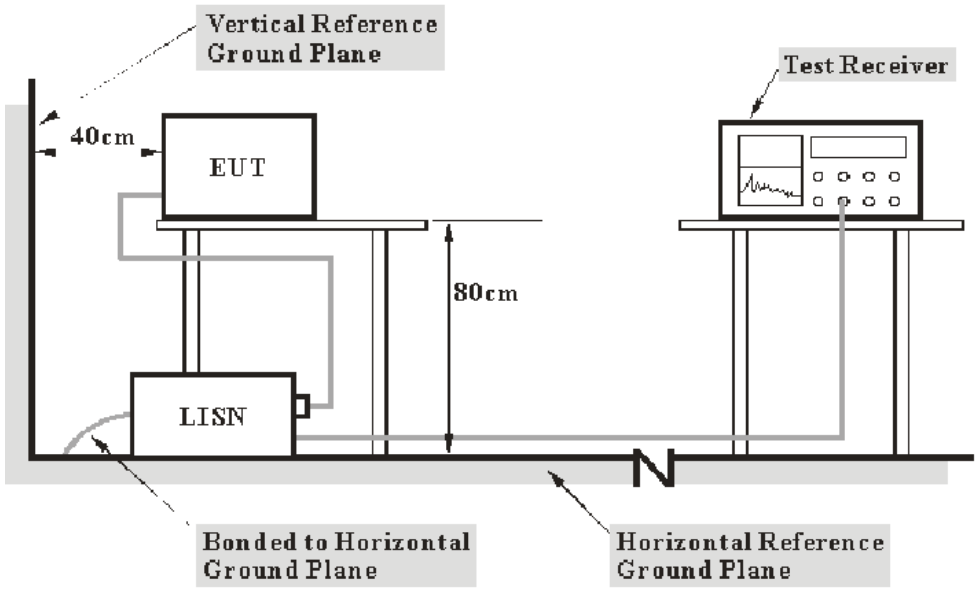
*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Kunshan) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI)

# FCC §15.107 – AC LINE CONDUCTED EMISSIONS

## Applicable Standard

According to FCC§15.107

## 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 measurement procedure of EUT setup is according with ANSI C63.4-2014. The related limit was specified in FCC Part 15.107 Class B.

## 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

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

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

## Corrected Factor & Margin Calculation

The Corrected factor is calculated by adding LISN VDF (Voltage Division Factor), Cable Loss and Transient Limiter Attenuation. The basic equation is as follows:

Correction Factor = LISN VDF + Cable Loss + Transient Limiter Attenuation

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 7 dB below the limit. The equation for margin calculation is as follows:

Margin = Limit – Corrected Amplitude

## Test Results Summary

According to the recorded data in following table,

Refer to CISPR16-4-2:2011 and CISPR 16-4-1:2009, the measured level is in compliance with the limit if

$$L_m + U_{(Lm)} \leq L_{lim} + U_{cispr}$$

In BACL, $U_{(Lm)}$ is less than $U_{cispr}$, if $L_m$ is less than $L_{lim}$, it implies that the EUT complies with the limit.

## Test Data

### Environmental Conditions

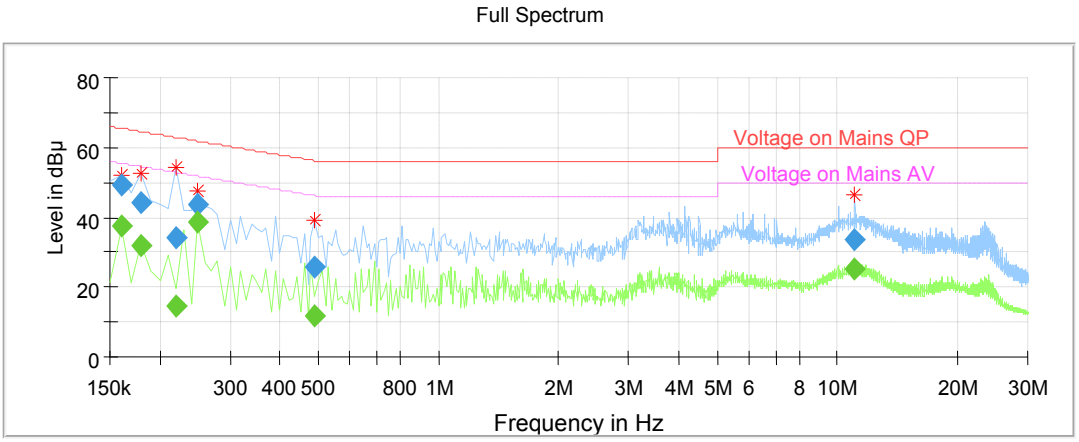
| | |
|---|---|
| **Temperature:** | 23 ℃ |
| **Relative Humidity:** | 54 % |
| **ATM Pressure:** | 101.0 kPa |

*The testing was performed by Layne Li on 2017-02-10.*

*Tested mode: communication with PC*

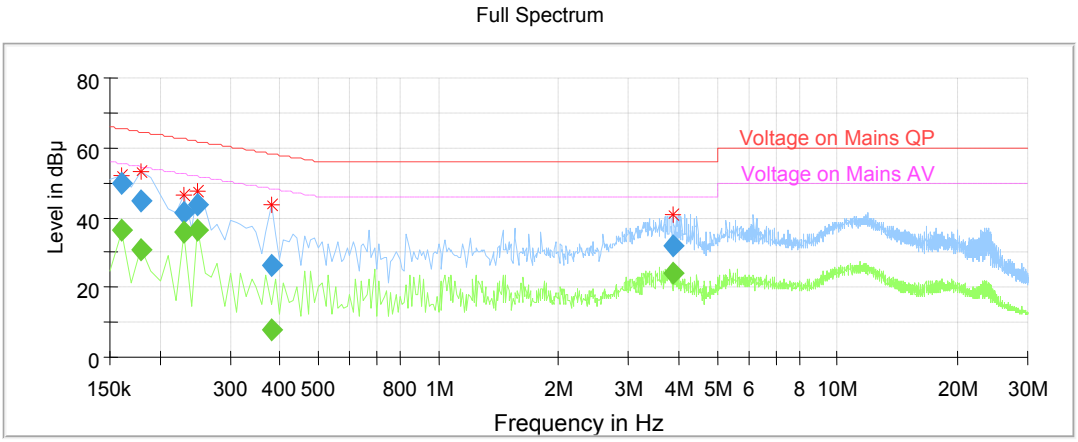
***Powered by Adapter***

**AC 120V/60 Hz, Line**




| Frequency (MHz) | QuasiPeak (dBµV) | Average (dB µ V) | Bandwidth (kHz) | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) | Comment |
|---|---|---|---|---|---|---|---|---|
| 0.160000 | --- | 37.63 | 9.000 | L1 | 10.1 | 17.83 | 55.46 | Compliance |
| 0.160000 | 49.39 | --- | 9.000 | L1 | 10.1 | 16.07 | 65.46 | Compliance |
| 0.180000 | --- | 31.88 | 9.000 | L1 | 10.0 | 22.61 | 54.49 | Compliance |
| 0.180000 | 44.47 | --- | 9.000 | L1 | 10.0 | 20.02 | 64.49 | Compliance |
| 0.220000 | --- | 14.77 | 9.000 | L1 | 10.0 | 38.05 | 52.82 | Compliance |
| 0.220000 | 33.90 | --- | 9.000 | L1 | 10.0 | 28.92 | 62.82 | Compliance |
| 0.250000 | --- | 38.44 | 9.000 | L1 | 10.0 | 13.32 | 51.76 | Compliance |
| 0.250000 | 43.62 | --- | 9.000 | L1 | 10.0 | 18.14 | 61.76 | Compliance |
| 0.490000 | --- | 12.00 | 9.000 | L1 | 10.1 | 34.17 | 46.17 | Compliance |
| 0.490000 | 25.99 | --- | 9.000 | L1 | 10.1 | 30.18 | 56.17 | Compliance |
| 11.080000 | --- | 25.42 | 9.000 | L1 | 10.1 | 24.58 | 50.00 | Compliance |
| 11.080000 | 33.43 | --- | 9.000 | L1 | 10.1 | 26.57 | 60.00 | Compliance |

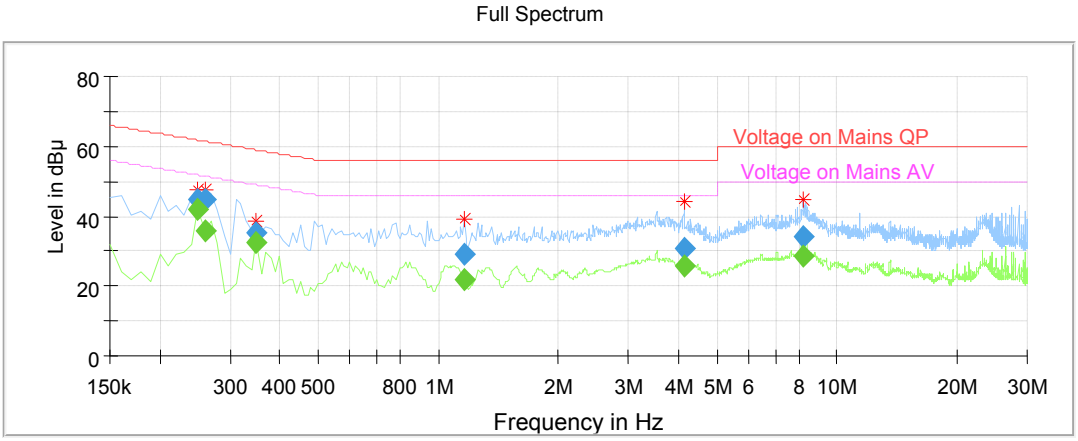
**AC 120V/60 Hz, Neutral**




| Frequency (MHz) | QuasiPeak (dBµV) | Average (dB µ V) | Bandwidth (kHz) | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) | Comment |
|---|---|---|---|---|---|---|---|---|
| 0.160000 | --- | 36.44 | 9.000 | N | 10.1 | 19.02 | 55.46 | Compliance |
| 0.160000 | 49.64 | --- | 9.000 | N | 10.1 | 15.82 | 65.46 | Compliance |
| 0.180000 | --- | 30.64 | 9.000 | N | 10.3 | 23.85 | 54.49 | Compliance |
| 0.180000 | 44.90 | --- | 9.000 | N | 10.3 | 19.59 | 64.49 | Compliance |
| 0.230000 | --- | 35.87 | 9.000 | N | 10.1 | 16.58 | 52.45 | Compliance |
| 0.230000 | 41.55 | --- | 9.000 | N | 10.1 | 20.90 | 62.45 | Compliance |
| 0.250000 | --- | 36.36 | 9.000 | N | 10.1 | 15.40 | 51.76 | Compliance |
| 0.250000 | 43.86 | --- | 9.000 | N | 10.1 | 17.90 | 61.76 | Compliance |
| 0.380000 | --- | 8.07 | 9.000 | N | 10.1 | 40.21 | 48.28 | Compliance |
| 0.380000 | 26.53 | --- | 9.000 | N | 10.1 | 31.75 | 58.28 | Compliance |
| 3.880000 | --- | 24.11 | 9.000 | N | 9.9 | 21.89 | 46.00 | Compliance |
| 3.880000 | 31.64 | --- | 9.000 | N | 9.9 | 24.36 | 56.00 | Compliance |

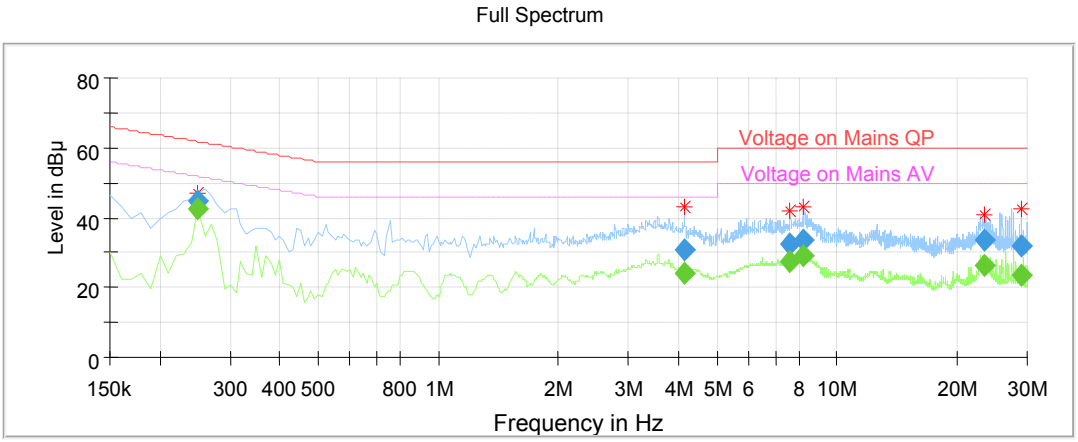
***Powered by PoE***

**AC 120V/60 Hz, Line**




| Frequency (MHz) | QuasiPeak (dBµV) | Average (dB µ V) | Bandwidth (kHz) | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) | Comment |
|---|---|---|---|---|---|---|---|---|
| 0.250000 | 44.92 | --- | 9.000 | L1 | 10.0 | 16.84 | 61.76 | Compliance |
| 0.250000 | --- | 41.83 | 9.000 | L1 | 10.0 | 9.93 | 51.76 | Compliance |
| 0.260000 | --- | 36.03 | 9.000 | L1 | 10.0 | 15.40 | 51.43 | Compliance |
| 0.260000 | 44.97 | --- | 9.000 | L1 | 10.0 | 16.46 | 61.43 | Compliance |
| 0.350000 | --- | 32.38 | 9.000 | L1 | 10.0 | 16.58 | 48.96 | Compliance |
| 0.350000 | 35.34 | --- | 9.000 | L1 | 10.0 | 23.62 | 58.96 | Compliance |
| 1.160000 | --- | 21.75 | 9.000 | L1 | 9.8 | 24.25 | 46.00 | Compliance |
| 1.160000 | 29.13 | --- | 9.000 | L1 | 9.8 | 26.87 | 56.00 | Compliance |
| 4.130000 | --- | 25.61 | 9.000 | L1 | 9.9 | 20.39 | 46.00 | Compliance |
| 4.130000 | 30.69 | --- | 9.000 | L1 | 9.9 | 25.31 | 56.00 | Compliance |
| 8.270000 | --- | 28.44 | 9.000 | L1 | 10.0 | 21.56 | 50.00 | Compliance |
| 8.270000 | 34.27 | --- | 9.000 | L1 | 10.0 | 25.73 | 60.00 | Compliance |

**AC 120V/60 Hz, Neutral**




| Frequency (MHz) | QuasiPeak (dBµV) | Average (dB µ V) | Bandwidth (kHz) | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) | Comment |
|---|---|---|---|---|---|---|---|---|
| 0.250000 | --- | 42.50 | 9.000 | N | 10.1 | 9.26 | 51.76 | Compliance |
| 0.250000 | 44.73 | --- | 9.000 | N | 10.1 | 17.03 | 61.76 | Compliance |
| 4.150000 | --- | 24.12 | 9.000 | N | 9.9 | 21.88 | 46.00 | Compliance |
| 4.150000 | 30.67 | --- | 9.000 | N | 9.9 | 25.33 | 56.00 | Compliance |
| 7.630000 | --- | 27.45 | 9.000 | N | 9.9 | 22.55 | 50.00 | Compliance |
| 7.630000 | 32.38 | --- | 9.000 | N | 9.9 | 27.62 | 60.00 | Compliance |
| 8.270000 | --- | 29.06 | 9.000 | N | 9.9 | 20.94 | 50.00 | Compliance |
| 8.270000 | 33.61 | --- | 9.000 | N | 9.9 | 26.39 | 60.00 | Compliance |
| 23.550000 | --- | 26.22 | 9.000 | N | 10.2 | 23.78 | 50.00 | Compliance |
| 23.550000 | 33.32 | --- | 9.000 | N | 10.2 | 26.68 | 60.00 | Compliance |
| 28.910000 | --- | 23.61 | 9.000 | N | 10.3 | 26.39 | 50.00 | Compliance |
| 28.910000 | 31.92 | --- | 9.000 | N | 10.3 | 28.08 | 60.00 | Compliance |

**Note:**

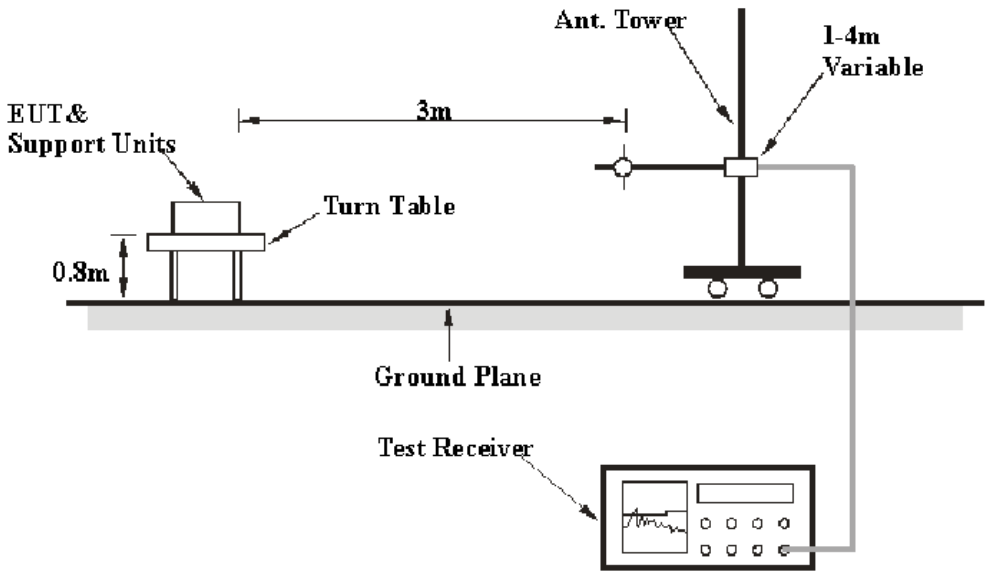
1) Corrected Amplitude = Reading + Correction Factor
2) Correction Factor = LISN VDF + Cable Loss + Transient Limiter Attenuation
3) Margin = Limit – Corrected Amplitude

# FCC §15.109 - RADIATED EMISSIONS

## Applicable Standard

According to FCC§15.109

## Test System Setup




The radiated emission tests were performed in the 3 meters chamber test site.

## EMI Test Receiver Setup

According to FCC 15.33 requirements, the EUT system was measured from 30 MHz to 30 GHz.

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

| Frequency Range | RBW | Video B/W | IF B/W | Detector |
|---|---|---|---|---|
| 30 MHz – 1000 MHz | 100 kHz | 300 kHz | 120 kHz | QP |
| Above 1 GHz | 1 MHz | 3 MHz | - | Peak |
| Above 1 GHz | 1 MHz | 10 Hz | - | Average |

## Test Procedure

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

All final data was recorded in the Quasi-peak detection mode for below 1 GHz, and Peak and Average for above 1 GHz.

## 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:

Corrected Amplitude = Meter Reading + Antenna Factor + Cable Loss - 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:

Margin = Limit – Corrected Amplitude

## Test Results Summary

According to the recorded data in following table

Refer to CISPR16-4-2:2011 and CISPR 16-4-1:2009, the measured level complies with the limit if

$$L_m + U_{(Lm)} \leq L_{lim} + U_{cispr}$$

In BACL., $U_{(Lm)}$ is less than $U_{cispr}$, if $L_m$ is less than $L_{lim}$, it implies that the EUT complies with the limit.

## Test Data

### Environmental Conditions

| | |
|---|---|
| **Temperature:** | 23 ℃ |
| **Relative Humidity:** | 54 % |
| **ATM Pressure:** | 101.0 kPa |

*The testing was performed by Layne Li on 2017-02-10.*

*Tested mode: communication with PC*

***Powered by Adapter***

| Frequency (MHz) | Receiver | | Turntable Degree | Rx Antenna | | Corrected Factor (dB/m) | Corrected Amplitude (dBuV/m) | FCC Part 15B | |
|---|---|---|---|---|---|---|---|---|---|
| | Reading (dBµV) | Detector (PK/QP/Ave.) | | Height (m) | Polar (H / V) | | | Limit (dBuV/m) | Margin (dB) |
| 129.03 | 53.00 | QP | 345 | 1.1 | V | -14.70 | 38.30 | 43.5 | 5.20 |
| 192.47 | 48.86 | QP | 290 | 1.8 | H | -12.15 | 36.71 | 43.5 | 6.79 |
| 268.01 | 48.20 | QP | 352 | 1.3 | H | -11.97 | 36.23 | 46 | 9.77 |
| 328.16 | 46.63 | QP | 346 | 1.1 | H | -10.37 | 36.26 | 46 | 9.74 |
| 367.94 | 46.38 | QP | 337 | 1.1 | H | -9.46 | 36.92 | 46 | 9.08 |
| 650.01 | 44.38 | QP | 351 | 1.0 | V | -3.74 | 40.64 | 46 | 5.36 |
| 1432.11 | 53.88 | PK | 223 | 1.5 | H | -10.06 | 43.82 | 74 | 30.18 |
| 1432.11 | 36.76 | Ave. | 223 | 1.5 | H | -10.06 | 26.70 | 54 | 27.30 |
| 1432.11 | 51.93 | PK | 327 | 1.4 | V | -10.06 | 41.87 | 74 | 32.13 |
| 1432.11 | 35.20 | Ave. | 327 | 1.4 | V | -10.06 | 25.14 | 54 | 28.86 |

***Powered by PoE***

| Frequency (MHz) | Receiver | | Turntable Degree | Rx Antenna | | Corrected Factor (dB/m) | Corrected Amplitude (dBuV/m) | FCC Part 15B | |
|---|---|---|---|---|---|---|---|---|---|
| | Reading (dBµV) | Detector (PK/QP/Ave.) | | Height (m) | Polar (H / V) | | | Limit (dBuV/m) | Margin (dB) |
| 33.44 | 39.20 | QP | 267 | 1.0 | V | -6.01 | 33.19 | 40 | 6.81 |
| 67.62 | 39.74 | QP | 127 | 1.1 | V | -16.89 | 22.85 | 40 | 17.15 |
| 192.47 | 47.77 | QP | 296 | 1.8 | H | -12.15 | 35.62 | 43.5 | 7.88 |
| 340.18 | 48.47 | QP | 95 | 1.0 | H | -10.37 | 38.10 | 46 | 7.9 |
| 397.47 | 48.78 | QP | 84 | 1.1 | H | -9.46 | 39.32 | 46 | 6.68 |
| 419.48 | 47.97 | QP | 118 | 1.1 | H | -8.34 | 39.63 | 46 | 6.37 |
| 1251.30 | 53.99 | PK | 356 | 2.3 | H | -10.66 | 43.33 | 74 | 30.67 |
| 1251.30 | 36.51 | Ave. | 356 | 2.3 | H | -10.66 | 25.85 | 54 | 28.15 |
| 1251.30 | 52.26 | PK | 66 | 1.9 | V | -10.66 | 41.60 | 74 | 32.40 |
| 1251.30 | 35.50 | Ave. | 66 | 1.9 | V | -10.66 | 24.84 | 54 | 29.16 |

**Note:**

1) Corrected Amplitude = Meter Reading + Correction Factor
2) Correction Factor = Antenna Factor + Cable Loss - Amplifier Gain
3) Margin = Limit – Corrected Amplitude
4) The emission more than20dB below the limit was not required to be recorded.

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