**Shenzhen General Testing & Inspection Technology Co.,Ltd.**

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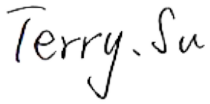
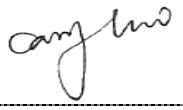
# TEST REPORT

| | |
|---|---|
| **Report No. ·····:** | **GTI20182001F** |
| **FCC ID·····:** | **NKS-S597** |
| **Applicant·····:** | **PeopleNet Communications Corporation** |
| Address·····: | 4400 Baker Road, Minnetonka, Minnesota, United States |
| Manufacturer·····: | STONKAM CO.,LTD. |
| Address·····: | 5/F., #3 Building, Huangzhou Industrial Park, Chebei Rd., Tianhe Dist., 510665 Guangzhou, China |
| **Product Name·····:** | **DVR S597** |
| Trade Mark·····: | N/A |
| Model/Type reference·····: | E-006-0597 |
| Listed Model(s) ·····: | N/A |
| **Standard·····:** | **47 CFR FCC Part 15 Subpart B - Unintentional Radiators** |
| Date of receipt of test sample…: | 2018-10-23 |
| Date of testing……..: | 2018-10-24 to 2018-11-05 |
| Date of issue……....: | 2018-11-06 |
| **Result……:** | **PASS** |

| | | |
|---|---|---|
| Compiled by:<br>(Printed name+signature) | Terry Su |  |
| Supervised by:<br>(Printed name+signature) | Cary Luo |  |
| Approved by:<br>(Printed name+signature) | Walter Chen |  |

| | |
|---|---|
| **Testing Laboratory Name .....** | **Shenzhen General Testing & Inspection Technology Co.,Ltd.** |
| Address..... | 1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, Shenzhen, Guangdong, China |

## Table of Contents Page

# 1. TEST SUMMARY

## 1.1. Test Standards

The tests were performed according to following standards:
47 CFR FCC Part 15 Subpart B: Unintentional Radiators.
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 40GHz.

## 1.2. Report version

| Revised No. | Date of issue | Description |
|---|---|---|
| 01 | 2018-11-06 | Original |
| | | |
| | | |
| | | |

## 1.3. Test Description

| FCC CFR Title 47 FCC Part 15 Subpart B | | | |
|---|---|---|---|
| **Test Item** | **Standard Section** | **Result** | **Test Engineer** |
| Conducted Emissions Test | 15.107 | N/A | N/A |
| Radiated Emission Test | 15.109 | Pass | Will Chen |

Note: “N/A” is no application.
The measurement uncertainty is not included in the test result.

## 1.4. Test Facility

**Address of the report laboratory**

**Shenzhen General Testing & Inspection Technology Co., Ltd.**

Add: 1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, Shenzhen, Guangdong, China

**Laboratory accreditation**

The test facility is recognized, certified, or accredited by the following organizations:

**CNAS-Lab Code: L5365**
Shenzhen General Testing & Inspection Technology Co.,Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories.

**A2LA-Lab Cert. No.: CN1208**
Shenzhen General Testing & Inspection Technology Co.,Ltd. EMC Laboratory has been accredited by A2LA fortechnical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

**IC Registration No.: 9783A-1**

The 3m alternate test site of Shenzhen General Testing & Inspection Technology Co.,Ltd.EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration NO.: 9783A on Jan, 2016.

**FCC-Registration No.: 951311**

Shenzhen General Testing & Inspection Technology Co.,Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 951311, Aug 26, 2017

## 1.5. Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01" Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 2 " and is documented in the Shenzhen General Testing & Inspection Technology Co., Ltd. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Below is the best measurement capability for Shenzhen General Testing & Inspection Technology Co., Ltd.

| Test Items | Measurement Uncertainty | Notes |
|---|---|---|
| Conducted Emissions 9kHz~30MHz | 3.20 dB | (1) |
| Radiated Emissions 30~1000MHz | 4.70 dB | (1) |
| Radiated Emissions 1~18GHz | 5.00 dB | (1) |
| Radiated Emissions 18~40GHz | 5.54 dB | (1) |

**Note: (**1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

## 1.6. Environmental conditions

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

| | |
|---|---|
| Normal Temperature: | 25°C |
| Lative Humidity | 55 % |
| Air Pressure | 989 hPa |

# 2. GENERAL INFORMATION

## 2.1. Client Information

| | |
|---|---|
| Applicant: | PeopleNet Communications Corporation |
| Address: | 4400 Baker Road, Minnetonka, Minnesota, United States |
| Manufacturer: | STONKAM CO.,LTD. |
| Address: | 5/F., #3 Building, Huangzhou Industrial Park, Chebei Rd., Tianhe Dist., 510665 Guangzhou, China |

## 2.2. General Description of EUT

| | |
|---|---|
| Product Name: | DVR S597 |
| Model/Type reference: | E-006-0597 |
| Marketing Name: | N/A |
| Listed Model(s): | N/A |
| Power supply: | 12Vdc from Li-ion Battery |
| Hardware version: | Rev 1.502 |
| Software version: | DV423V1.0.0 |

## 2.3. Accessory Equipment information

| **Equipment Information** | | | |
|---|---|---|---|
| **Name** | **Model** | **S/N** | **Manufacturer** |
| / | / | / | / |
| **Cable Information** | | | |
| **Name** | **Shielded Type** | **Ferrite Core** | **Length** |
| / | / | / | / |

## 2.4. Description of Test Modes

| Test mode | Camera |
|---|---|
| 1 | ■ |

Note:

1. ■ is operation mode.

| Test item | Test mode |
|---|---|
| Conducted emission | N/A |
| Radiated emission | Mode 1 |

## 2.5. Measurement Instruments List

| Conducted Emission | | | | | |
|---|---|---|---|---|---|
| Item | Test Equipment | Manufacturer | Model No. | Serial No. | Calibrated until |
| 1 | LISN | R&S | ENV216 | 101112 | Jan. 04, 2019 |
| 2 | LISN | R&S | ENV216 | 101113 | Jan. 04, 2019 |
| 3 | EMI Test Receiver | R&S | ESCI | 100920 | Jan. 04, 2019 |
| 4 | UNIVERSAL RADIO COMMUNICATION | Rohde & Schwarz | CMU200 | 114694 | Jan. 04, 2019 |

| Radiated Emission | | | | | |
|---|---|---|---|---|---|
| Item | Test Equipment | Manufacturer | Model No. | Serial No. | Calibrated until |
| 1 | Log-Bicon Antenna | Schwarzbeck | CBL6141A | 4180 | Jan. 04, 2019 |
| 2 | Spectrum Analyzer | HP | 8563E | 02052 | Jan. 04, 2019 |
| 3 | Horn Antenna | Schwarzbeck | BBHA 9120D | 648 | Jan. 04, 2019 |
| 4 | Pre-Amplifier | HP | 8447D | 1937A03050 | Jan. 04, 2019 |
| 5 | Pre-Amplifier | EMCI | EMC051835 | 980075 | Jan. 04, 2019 |
| 6 | EMI Test Receiver | R&S | ESCI | 100658 | Jan. 04, 2019 |
| 7 | Antenna Mast | UC | UC3000 | N/A | N/A |
| 8 | Turn Table | UC | UC3000 | N/A | N/A |
| 9 | UNIVERSAL RADIO COMMUNICATION | Rohde & Schwarz | CMU200 | 114694 | Jan. 04, 2019 |

The Cal. Interval was one year.

# 3. EMC EMISSION TEST

## 3.1. Radiated Emission

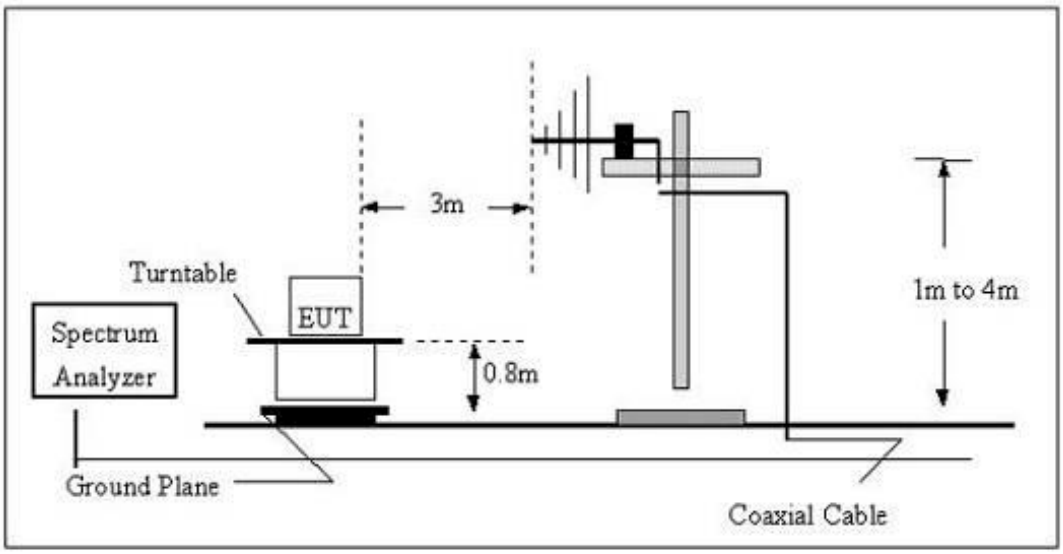
**LIMIT**

**FCC CFR Title 47 Part 15 Subpart B Section 15.109:**

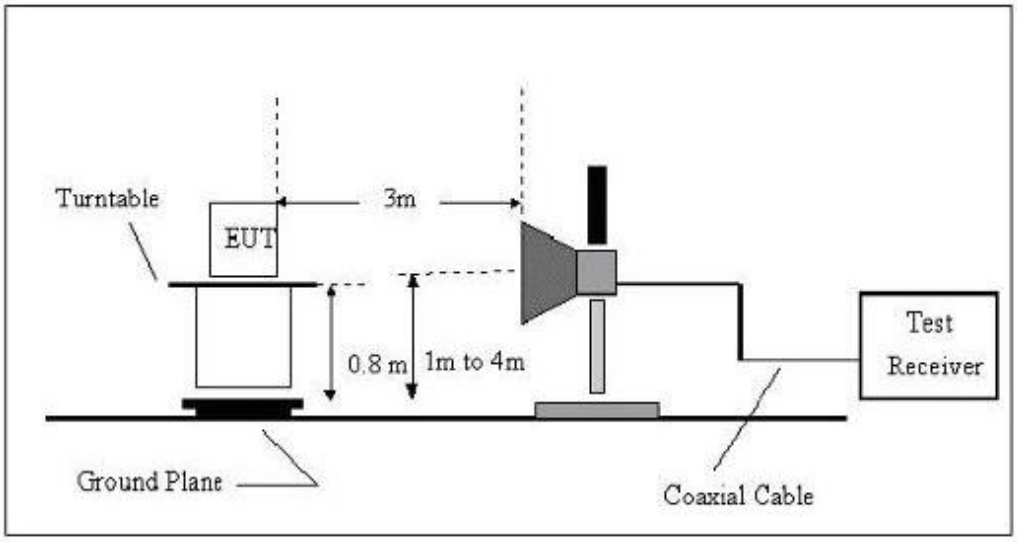
| Frequency | Limit (dBuV/m @3m) | Value |
|---|---|---|
| 30MHz-88MHz | 40.00 | Quasi-peak |
| 88MHz-216MHz | 43.50 | Quasi-peak |
| 216MHz-960MHz | 46.00 | Quasi-peak |
| 960MHz-1GHz | 54.00 | Quasi-peak |
| Above 1GHz | 54.00 | Average |
| | 74.00 | Peak |

**TEST CONFIGURATION**

**(B) Radiated Emission Test Set-Up Frequency below 1 GHz**



**(B) Radiated Emission Test Set-Up Frequency above 1GHz**




## TEST PROCEDURE

1. The EUT was tested according to ANSI C63.4:2014.
2. The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated360 degrees to determine the position of the maximum emission level.
3. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.
4. The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. Thisis repeated for both horizontal and vertical polarization of the antenna.
5. Use the following spectrum analyzer settings

Span shall wide enough to fully capture the emission being measured;

1) Below 1GHz, RBW=120KHz, VBW=300KHz, Sweep=auto, Detector function=peak, Trace=max hold;
2) If the emission level of the EUT measured by the peak detectoris 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
3) Above 1GHz, RBW=1MHz, VBW=3MHz

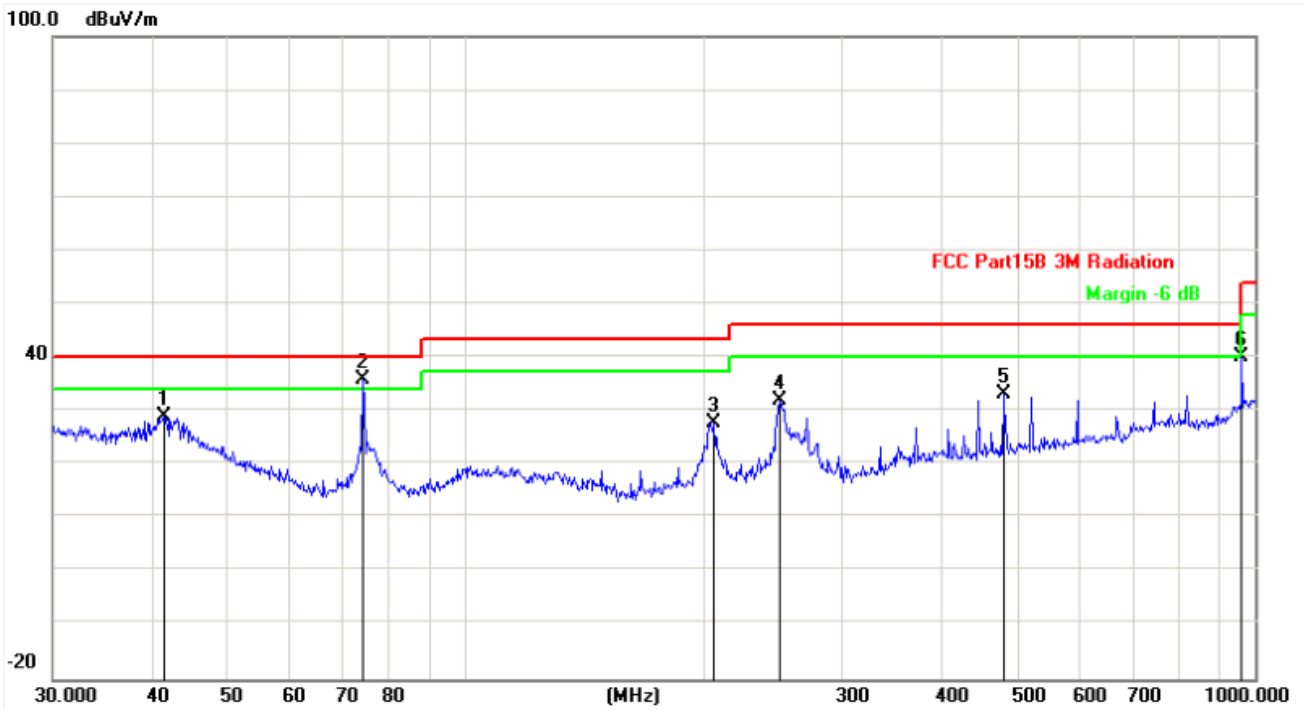
## TEST MODE:

Please refer to the clause 2.3.

## TEST RESULTS

**30MHz-1GHz**

| Polarization | Horizontal |
|---|---|



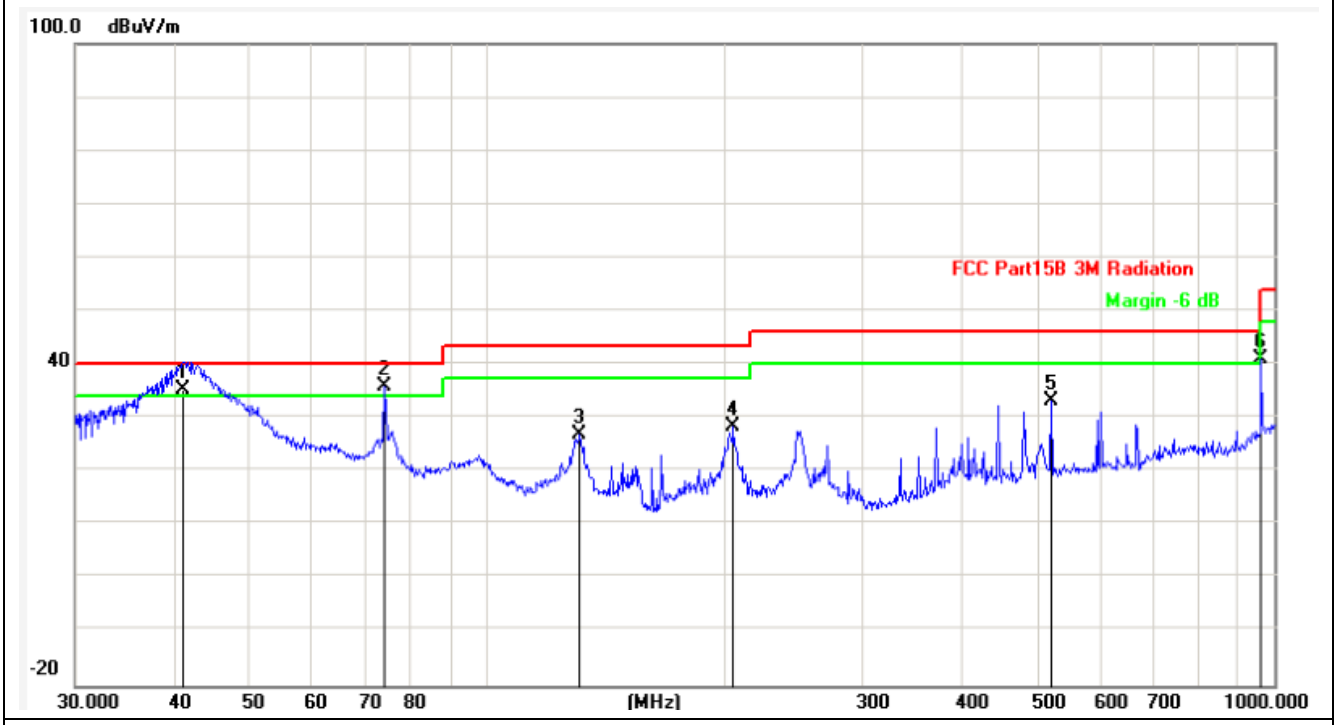

| No. | Frequency (MHz) | Factor (dB/m) | Reading (dBuV) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 41.4215 | -8.62 | 37.58 | 28.96 | 40.00 | -11.04 | QP |
| 2 | 74.1351 | -18.23 | 54.04 | 35.81 | 40.00 | -4.19 | QP |
| 3 | 206.3976 | -14.11 | 41.93 | 27.82 | 43.50 | -15.68 | QP |
| 4 | 250.3012 | -15.54 | 47.53 | 31.99 | 46.00 | -14.01 | QP |
| 5 | 480.5276 | -9.24 | 42.47 | 33.23 | 46.00 | -12.77 | QP |
| 6 | 962.1623 | -0.45 | 40.70 | 40.25 | 54.00 | -13.75 | QP |

Remark:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value

| Polarization | Vertical |
|---|---|




| No. | Frequency (MHz) | Factor (dB/m) | Reading (dBuV) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 41.1320 | -8.55 | 44.05 | 35.50 | 40.00 | -4.50 | QP |
| 2 | 74.1351 | -18.23 | 54.19 | 35.96 | 40.00 | -4.04 | QP |
| 3 | 131.2965 | -14.62 | 41.69 | 27.07 | 43.50 | -16.43 | QP |
| 4 | 205.6751 | -14.14 | 42.65 | 28.51 | 43.50 | -14.99 | QP |
| 5 | 520.8882 | -8.25 | 41.47 | 33.22 | 46.00 | -12.78 | QP |
| 6 | 962.1623 | -0.45 | 41.64 | 41.19 | 54.00 | -12.81 | QP |

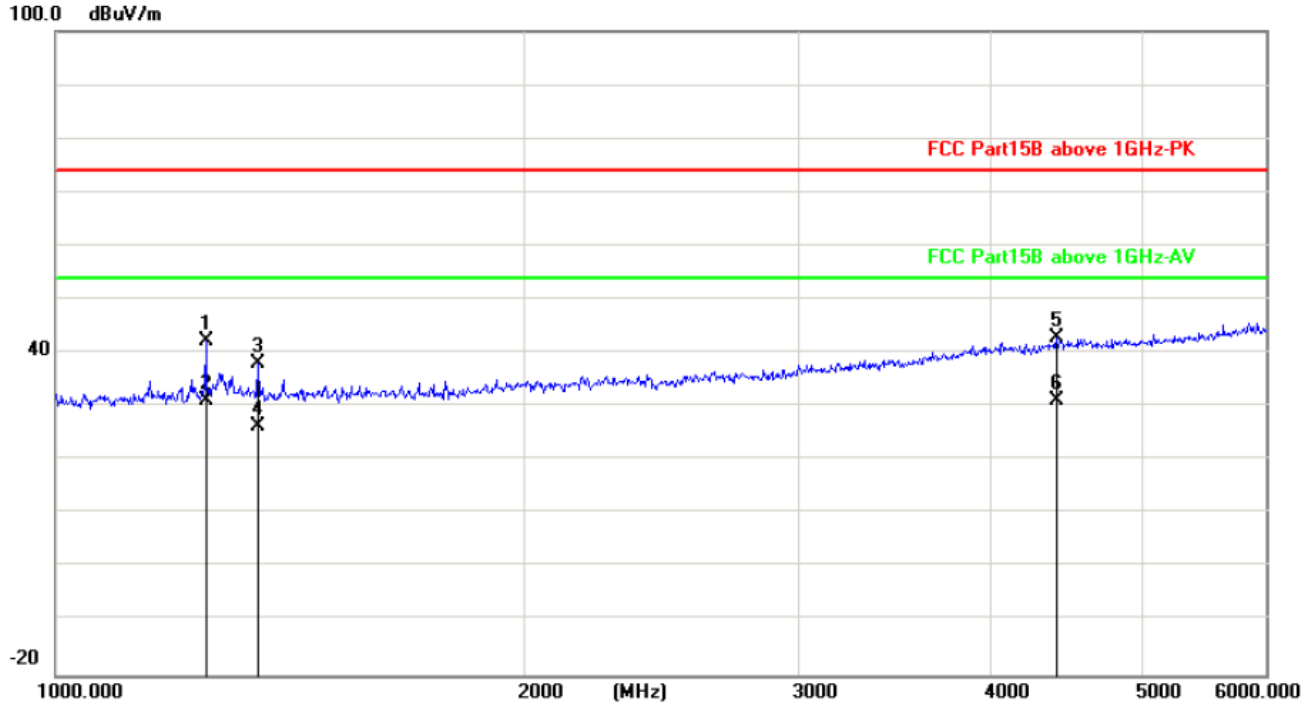
Remark:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value

**1GHz-6GHz**

| Polarization | Horizontal |
|---|---|



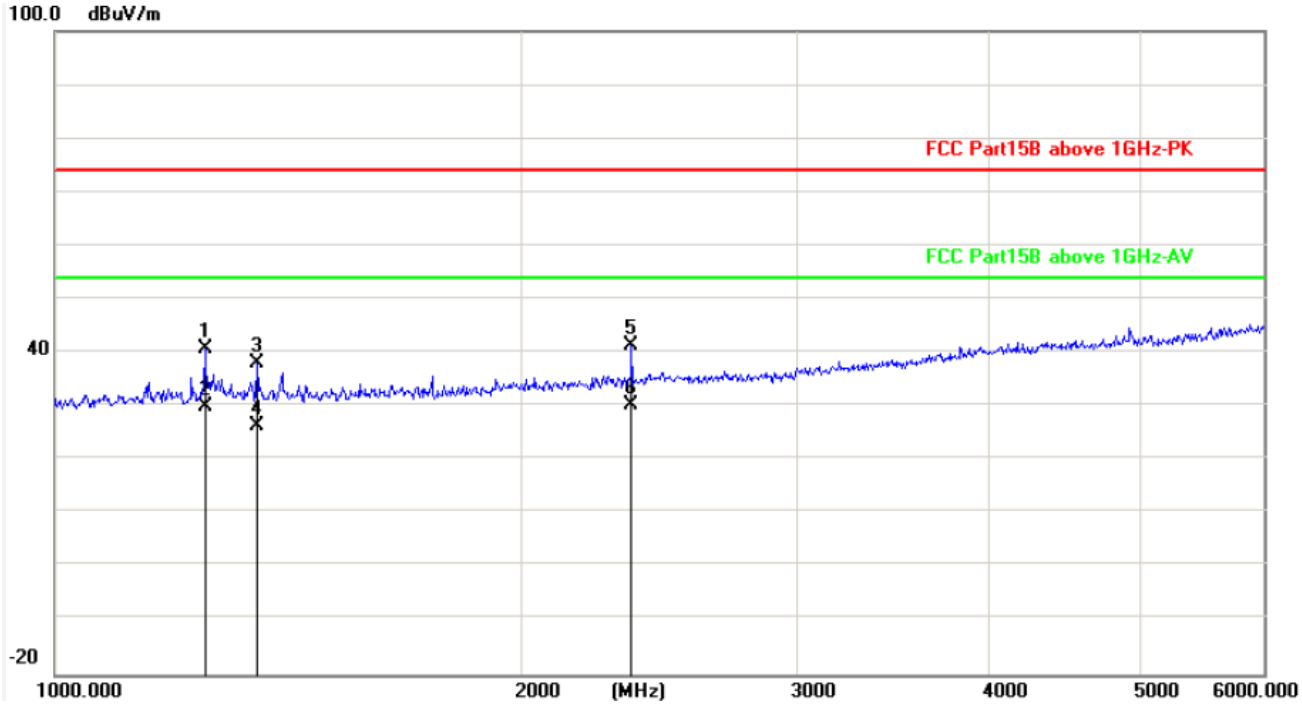

| No. | Frequency (MHz) | Factor (dB/m) | Reading (dBuV) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 1248.794 | -8.88 | 51.21 | 42.33 | 74.00 | -31.67 | peak |
| 2 | 1248.794 | -8.88 | 40.08 | 31.20 | 54.00 | -22.80 | AVG |
| 3 | 1348.811 | -8.51 | 46.44 | 37.93 | 74.00 | -36.07 | peak |
| 4 | 1348.811 | -8.51 | 34.91 | 26.40 | 54.00 | -27.60 | AVG |
| 5 | 4400.794 | -1.06 | 44.04 | 42.98 | 74.00 | -31.02 | peak |
| 6 | 4400.794 | -1.06 | 32.26 | 31.20 | 54.00 | -22.80 | AVG |

Remark:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value

| Polarization | Vertical |
|---|---|




| No. | Frequency (MHz) | Factor (dB/m) | Reading (dBuV) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 1248.794 | -8.88 | 49.64 | 40.76 | 74.00 | -33.24 | peak |
| 2 | 1248.794 | -8.88 | 38.98 | 30.10 | 54.00 | -23.90 | AVG |
| 3 | 1348.811 | -8.51 | 46.43 | 37.92 | 74.00 | -36.08 | peak |
| 4 | 1348.811 | -8.51 | 35.01 | 26.50 | 54.00 | -27.50 | AVG |
| 5 | 2350.597 | -6.02 | 47.49 | 41.47 | 74.00 | -32.53 | peak |
| 6 | 2350.597 | -6.02 | 36.22 | 30.20 | 54.00 | -23.80 | AVG |

Remark:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value

## 3.2. Conducted Emission (AC Mains)

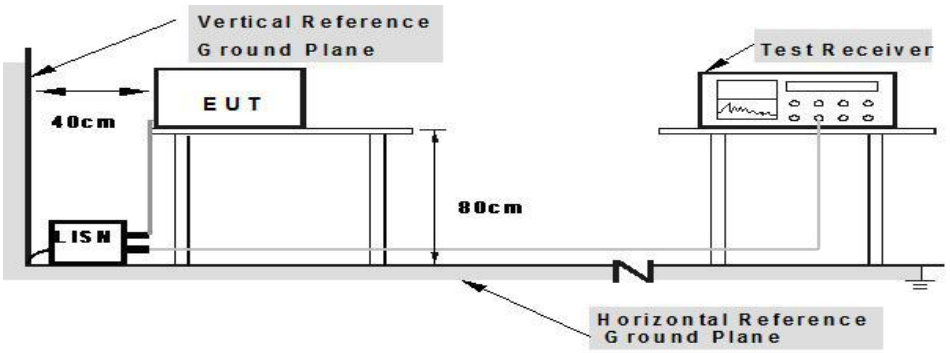
**LIMIT**

**FCC CFR Title 47 Part 15 Subpart B Section 15.107:**

| Frequency range (MHz) | Limit (dBuV) | |
|---|---|---|
| | Quasi-peak | Average |
| 0.15-0.5 | 66 to 56* | 56 to 46* |
| 0.5-5 | 56 | 46 |
| 5-30 | 60 | 50 |

* Decreases with the logarithm of the frequency.

**TEST CONFIGURATION**




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

**TEST PROCEDURE**

1. The EUT was setup according to ANSI C63.4-2014.
2. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface.
3. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment.
4. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs)
5. Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.
6. The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.
7. Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHzusing a receiver bandwidth of 9 kHz.
8. During the above scans, the emissions were maximized by cable manipulation.

**TEST MODE**

Please refer to the clause 2.3.

**TEST RESULTS**

No Applicable.

# 4. EUT TEST PHOTOS

Reference to the document No.: Test Photographs 1.

# 5. PHOTOGRAPHS OF EUT CONSTRUCTIONAL

Reference to the document No.: External Photographs and Internal Photographs.

************************THE END*************************