



TEST REPORT

Applicant Name : Grandstream Networks, Inc.
Address : 126 Brookline Ave., 3rd Floor Boston, MA 02215, USA
Report Number : SZ1210914-52933E-EM-00
FCC ID: YZZGAC2570

Test Standard (s)
FCC PART 15B, CLASS B

Sample Description

Product Type: Enterprise Conference Phone
Model No.: GAC2570
Trade Mark: GRANDSTREAM
Date Received: 2021-09-14
Report Date: 2022-03-04

| | |
|--------------|-------|
| Test Result: | Pass* |
|--------------|-------|

* In the configuration tested, the EUT complied with the standards above.

Prepared and Checked By:

Approved By:

Black Ding

Candy Li

Black Ding
Engineer

Candy Li
EMC Engineer

Note: This report may contain data that are not covered by the A2LA accreditation and are marked with an asterisk "★".

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Test Report Declaration

Applicant : Grandstream Networks ,Inc.
Manufacturer : Grandstream Networks, Inc.
Product : Enterprise Conference Phone
Model No. : GAC2570
Trade Mark : GRANDSTREAM

Measurement Procedure Used:

FCC Rules and Regulations Part 15 Subpart B Class B ANSI C63.4: 2014

The device described above is tested by Shenzhen Accurate Technology Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart B Class B limits both radiated and conducted emissions. The measurement results are contained in this test report and Shenzhen Accurate Technology Co., Ltd. is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Shenzhen Accurate Technology Co., Ltd.

1. TEST RESULTS SUMMARY

| Test Items | Test Standard | Test Results |
|--------------------------------------|-------------------------------|--------------|
| Conducted Emission (150kHz-30MHz) | FCC Part 15 Subpart B Class B | Pass |
| Radiated Emission (30-1000MHz) | FCC Part 15 Subpart B Class B | Pass |
| Radiated Emission (Above 1000MHz) | FCC Part 15 Subpart B Class B | Pass |

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

Rating : POE 48V

Remark(s) : The EUT highest operating frequency is 5850MHz, the radiated emission measurement shall be made up to 30GHz

Sample Number : SZ1210914-52933E-EM-S1

POE Adapter : Model: G0720-480-050
Input: AC 100-240V, 50/60Hz, 0.75A, MAX
Output: DC 48V, 0.5A, 24.0W

2.2. Test mode

Test mode: Normal working

2.3. General disclaimer

1. Each test item follows test standard and with no deviation.
2. The test results presented in this report relate only to the object tested. The information supplied by the customer can affect the validity of results.

2.4. Accessory and Auxiliary Equipment

Notebook : Manufacturer: Dell
M/N: Latitude E5430
S/N: 11429208685

IP Phone : Manufacturer: Grandstream
M/N: GXP2130
S/N: 20EYZK2KA013E117

USB disk : Manufacturer: Sandisk
M/N: Unknown
S/N: Unknown

Earphone : Manufacturer: Unknown
M/N: Unknown
S/N: Unknown

2.5. Description of Test Facility

Name of Firm : Shenzhen Accurate Technology Co., Ltd.

Site Location : 1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China

2.6. Measurement Uncertainty

Radiated emission expanded uncertainty (30MHz-1000MHz) : $U=4.28dB, k=2$

Radiated emission expanded uncertainty (1GHz-18GHz) : $U=4.98dB, k=2$

Radiated emission expanded uncertainty (18GHz-26.5GHz) : $U=5.06dB, k=2$

Radiated emission expanded uncertainty (26.5GHz-40GHz) : $U=4.72dB, k=2$

Conduction Emission Expanded Uncertainty (150kHz-30MHz) : $U=2.72dB, k=2$

3. MEASURING DEVICE AND TEST EQUIPMENT

3.1. For Conducted Emission Test

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|------|--|-------------------|-----------|------------|------------|---------------|
| 1. | Rohde & Schwarz | EMI Test Receiver | ESCI | 100784 | 2021/12/13 | 2022/12/12 |
| 2. | Rohde & Schwarz | R & S | ENV216 | 101314 | 2021/12/13 | 2022/12/12 |
| 3. | Anritsu Corp | 50 Coaxial Switch | MP59B | 6100237248 | 2021/12/13 | 2022/12/12 |
| 4. | Conducted Emission Test Software: e3 19821b (V9) | | | | | |

3.2. For Radiated Emission Measurement (Below 1GHz)

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|------|---|------------------|-----------|------------|------------|---------------|
| 1. | Rohde & Schwarz | Test Receiver | ESR | 102725 | 2021/12/13 | 2022/12/12 |
| 2. | SONOMA INSTRUMENT | Amplifier | 310 N | 186131 | 2021/11/09 | 2022/11/08 |
| 3. | Schwarzbeck | Bilog Antenna | VULB9163 | 9163-323 | 2021/07/06 | 2024/07/05 |
| 4. | Unknown | RF Coaxial Cable | No.12 | N040 | 2021/12/14 | 2022/12/13 |
| 5. | Unknown | RF Coaxial Cable | No.13 | N300 | 2021/12/14 | 2022/12/13 |
| 6. | Unknown | RF Coaxial Cable | No.14 | N800 | 2021/12/14 | 2022/12/13 |
| 7. | Radiated Emission Test Software: e3 19821b (V9) | | | | | |

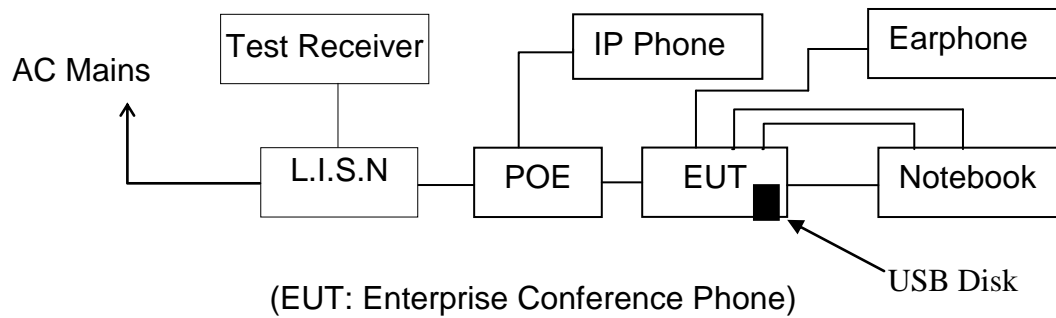
3.3. For Radiated Emission Measurement (Above 1GHz)

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|------|---|-------------------|---------------------|-----------------|------------|---------------|
| 1. | Schwarzbeck | Horn Antenna | BBHA9120D | 9120D-1067 | 2020/01/05 | 2023/01/04 |
| 2. | Schwarzbeck | Horn Antenna | BBHA9170 | 9170-359 | 2020/01/05 | 2023/01/04 |
| 3. | Rohde & Schwarz | Spectrum Analyzer | FSV40 | 101949 | 2021/12/13 | 2022/12/12 |
| 4. | A.H. Systems, inc. | Preamplifier | PAM-0118P | 135 | 2021/11/09 | 2022/11/08 |
| 5. | Quinstar | Amplifier | QLW-184055 36-J0 | 1596400100 2 | 2021/11/11 | 2022/11/10 |
| 6. | Unknown | RF Coaxial Cable | No.15 | N600 | 2021/12/14 | 2022/12/13 |
| 7. | Unknown | RF Coaxial Cable | No.16 | N650 | 2021/12/14 | 2022/12/13 |
| 8. | Radiated Emission Test Software: e3 19821b (V9) | | | | | |

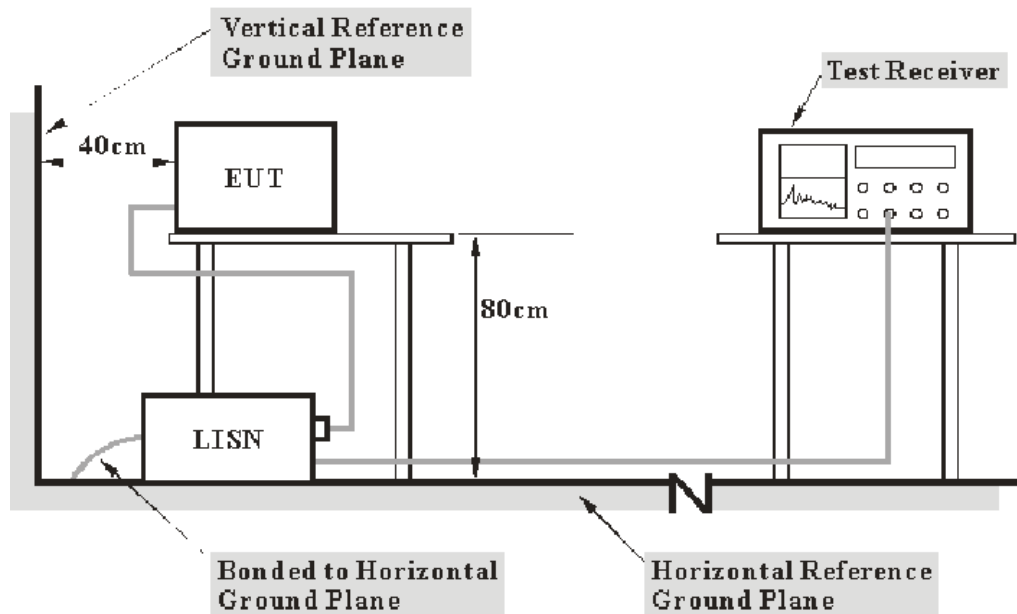
4. CONDUCTED EMISSION MEASUREMENT

4.1. Block Diagram of Test Setup

4.1.1. Block diagram of connection between the EUT and simulators



4.1.2. Test System 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.

4.2. Power Line Conducted Emission Measurement Limits (Class B)

| Frequency (MHz) | Limit dB(μ V) | |
|--------------------|--------------------|---------------|
| | Quasi-peak Level | Average Level |
| 0.15 - 0.50 | 66.0 – 56.0 * | 56.0 – 46.0 * |
| 0.50 - 5.00 | 56.0 | 46.0 |
| 5.00 - 30.00 | 60.0 | 50.0 |

NOTE1: The lower limit shall apply at the transition frequencies.
NOTE2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.

4.3. Test mode description

Test mode: normal working

4.4. Manufacturer

The following equipments are installed on Power Line Conducted Emission Measurement to meet the commission requirement and operating regulations in a manner, which tends to maximize its emission characteristics in a normal application.

4.4.1. Enterprise Conference Phone (EUT)

Model Number : GAC2570

Manufacturer : Grandstream Networks, Inc.

4.5. Operating Condition of EUT

4.5.1. Setup the EUT and simulator as shown as Section 4.1.

4.5.2. Turn on the power of all equipments.

4.5.3. Let the EUT work in test mode and measure it.

4.6. Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC lines are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.4: 2014 on Conducted Emission Measurement.

The bandwidth of test receiver is set at 9kHz.

The frequency range from 150kHz to 30MHz is checked.

4.7. Data Explain

Over Limit (dB) = Level (dB μ V) - Limit (dB μ V)

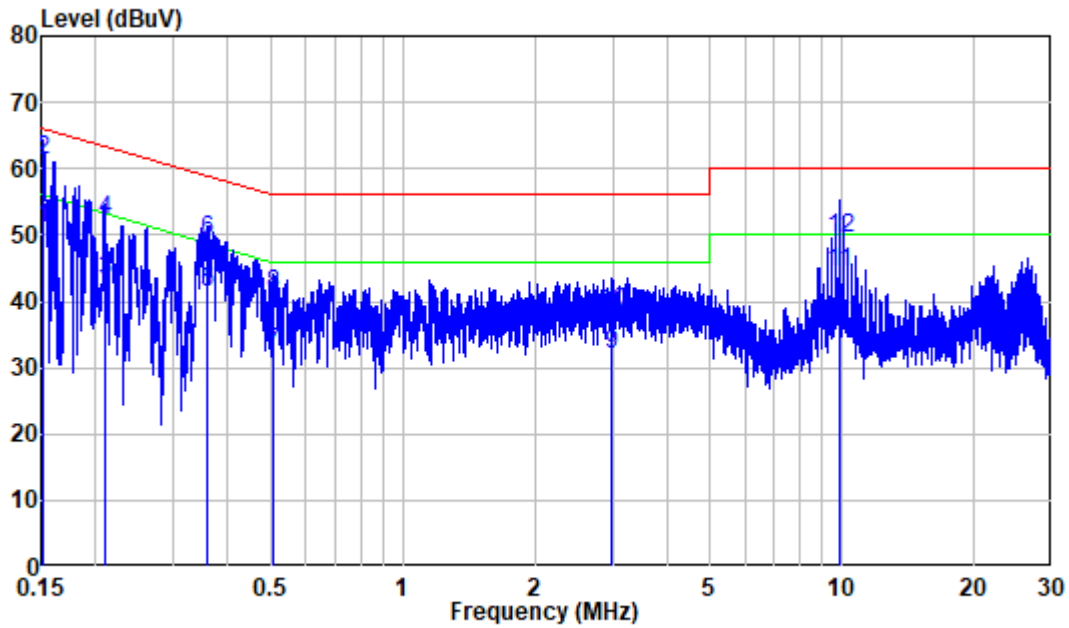
4.8. Power Line Conducted Emission Measurement Results

PASS.

The frequency range from 150kHz to 30MHz is checked.

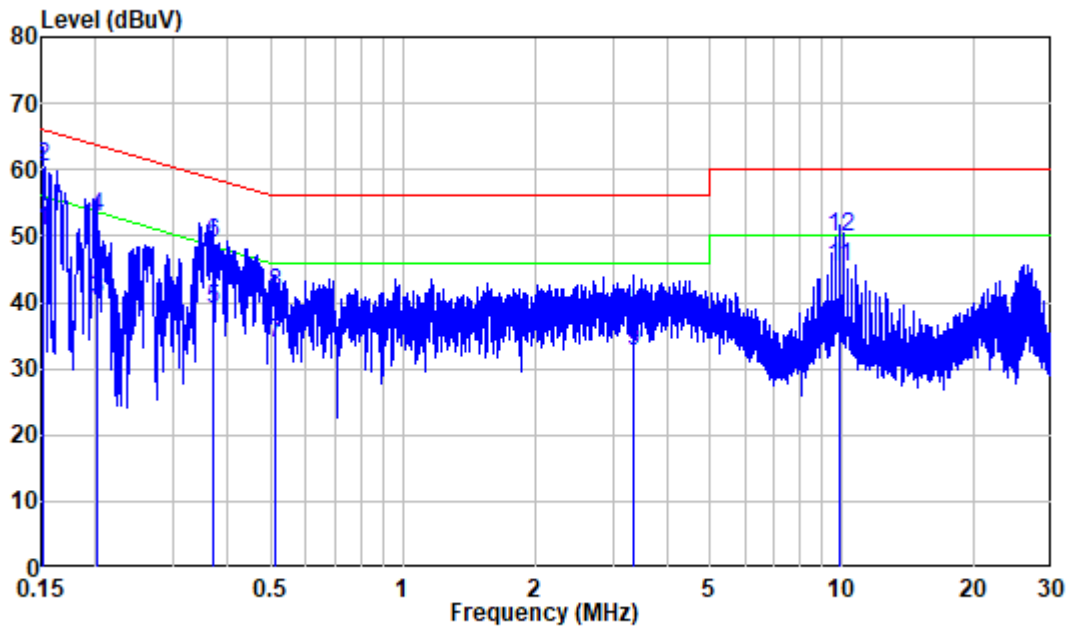
All data was recorded in the Quasi-peak and average detection mode.

The spectral diagrams are attached as below.



Site : Shielding Room
 Condition: Line
 Mode : Normal Working

| | Freq | Factor | Read Level | Level | Limit Line | Over Limit | Remark |
|----|-------|--------|------------|-------|------------|------------|---------|
| | MHz | dB | dBuV | dBuV | dBuV | dB | |
| 1 | 0.151 | 9.90 | 41.02 | 50.92 | 55.94 | -5.02 | Average |
| 2 | 0.151 | 9.90 | 51.27 | 61.17 | 65.94 | -4.77 | QP |
| 3 | 0.209 | 9.80 | 33.23 | 43.03 | 53.24 | -10.21 | Average |
| 4 | 0.209 | 9.80 | 42.58 | 52.38 | 63.24 | -10.86 | QP |
| 5 | 0.360 | 9.80 | 31.62 | 41.42 | 48.73 | -7.31 | Average |
| 6 | 0.360 | 9.80 | 39.29 | 49.09 | 58.73 | -9.64 | QP |
| 7 | 0.505 | 9.80 | 22.62 | 32.42 | 46.00 | -13.58 | Average |
| 8 | 0.505 | 9.80 | 31.38 | 41.18 | 56.00 | -14.82 | QP |
| 9 | 2.978 | 9.93 | 22.13 | 32.06 | 46.00 | -13.94 | Average |
| 10 | 2.978 | 9.93 | 28.50 | 38.43 | 56.00 | -17.57 | QP |
| 11 | 9.867 | 10.10 | 34.20 | 44.30 | 50.00 | -5.70 | Average |
| 12 | 9.867 | 10.10 | 39.29 | 49.39 | 60.00 | -10.61 | QP |



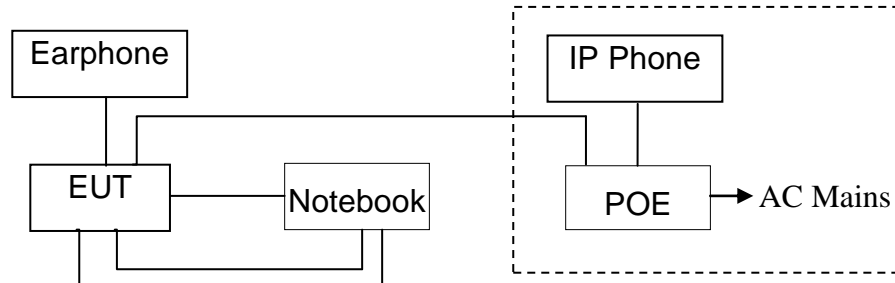
Site : Shielding Room
 Condition: Neutral
 Mode : Normal Working

| | Freq | Factor | Read Level | Level | Limit Line | Over Limit | Remark |
|----|-------|--------|------------|-------|------------|------------|---------|
| | MHz | dB | dBuV | dBuV | dBuV | dB | |
| 1 | 0.151 | 9.90 | 40.71 | 50.61 | 55.94 | -5.33 | Average |
| 2 | 0.151 | 9.90 | 50.55 | 60.45 | 65.94 | -5.49 | QP |
| 3 | 0.201 | 10.00 | 30.51 | 40.51 | 53.58 | -13.07 | Average |
| 4 | 0.201 | 10.00 | 42.88 | 52.88 | 63.58 | -10.70 | QP |
| 5 | 0.368 | 9.93 | 28.95 | 38.88 | 48.54 | -9.66 | Average |
| 6 | 0.368 | 9.93 | 39.09 | 49.02 | 58.54 | -9.52 | QP |
| 7 | 0.510 | 9.91 | 23.95 | 33.86 | 46.00 | -12.14 | Average |
| 8 | 0.510 | 9.91 | 31.57 | 41.48 | 56.00 | -14.52 | QP |
| 9 | 3.344 | 10.00 | 22.60 | 32.60 | 46.00 | -13.40 | Average |
| 10 | 3.344 | 10.00 | 28.43 | 38.43 | 56.00 | -17.57 | QP |
| 11 | 9.867 | 10.10 | 35.05 | 45.15 | 50.00 | -4.85 | Average |
| 12 | 9.867 | 10.10 | 39.70 | 49.80 | 60.00 | -10.20 | QP |

5. RADIATED EMISSION MEASUREMENT

5.1. Block Diagram of Test Setup

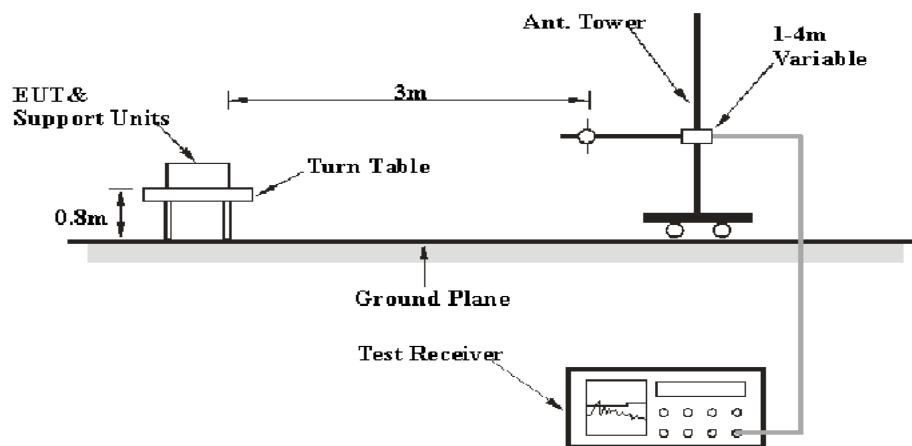
5.1.1. Block diagram of connection between the EUT and simulators



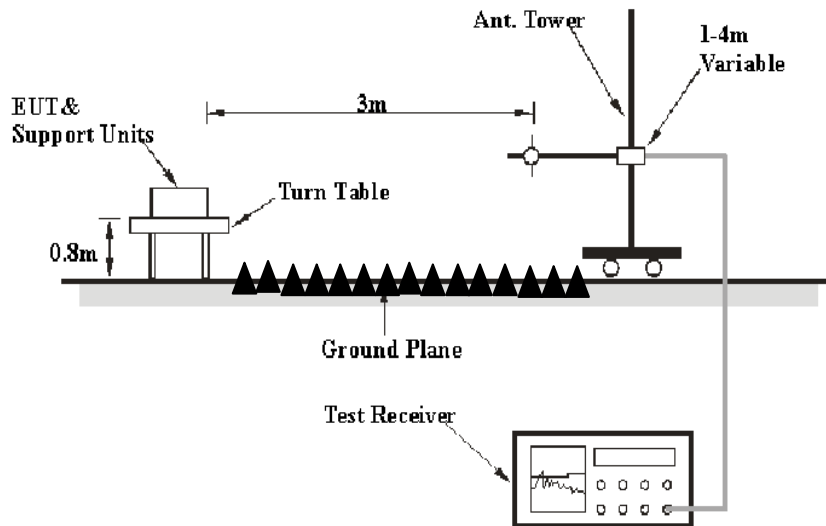
(EUT: Enterprise Conference Phone)

5.1.2. Test System Setup

Below 1GHz:



Above 1GHz:



5.2. Radiated Emission Limit (Class B)

All emanations from a class B device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified below:

Below 1GHz:

| Frequency MHz | Distance Meters | Field Strengths Limit | |
|------------------|--------------------|-----------------------|----------------------------|
| | | $\mu\text{V/m}$ | $\text{dB}(\mu\text{V/m})$ |
| 30-88 | 3 | 100 | 40.0 |
| 88-216 | 3 | 150 | 43.5 |
| 216-960 | 3 | 200 | 46.0 |
| 960-1000 | 3 | 500 | 54.0 |

Remark:

- (1) Emission level $\text{dB}(\mu\text{V}) = 20 \log$ Emission level $\mu\text{V/m}$.
- (2) The smaller limit shall apply at the cross point between two frequency bands.
- (3) Distance is the distance in meters between the measuring instrument antenna and the closest point of any part of the device or system.

Above 1GHz:

| Frequency MHz | Distance Meters | Field Strengths Limit($\text{dB}\mu\text{V/m}$) | |
|------------------|--------------------|---|---------|
| | | Peak | Average |
| Above 1000MHz | 3 | 74.0 | 54.0 |

5.3. Test mode description

Test mode: Normal working

5.4.Manufacturer

The following equipments are installed on Radiated Emission Measurement to meet the commission requirement and operating regulations in a manner, which tends to maximize its emission characteristics in a normal application.

5.4.1.Enterprise Conference Phone (EUT)

Model Number : GAC2570

Manufacturer : Grandstream Networks, Inc.

5.5.Operating Condition of EUT

5.5.1.Setup the EUT and simulator as shown as Section 5.1.

5.5.2.Turn on the power of all equipments.

5.5.3.Let the EUT work in test mode and measure it.

5.6. Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4: 2014 on radiated emission measurement.

The bandwidth of the Receiver (ESR) is set at 9kHz in 9kHz-30MHz, 120 kHz in 30-1000MHz, and 1MHz for above 1GHz.

The frequency range from 30MHz to 40GHz is investigated.

| Highest frequency generated or used in the device or on which the device operates or tunes (MHz) | Upper frequency of measurement range (MHz) |
|--|--|
| Below 1.705 | 30. |
| 1.705–108 | 1000. |
| 108–500 | 2000. |
| 500–1000 | 5000. |
| Above 1000 | 5th harmonic of the highest frequency or 40 GHz, whichever is lower. |

5.7. Data Sample

Over Limit (dB) = Level(dB μ v/m) - Limit (dB μ v/m)
 QP = Quasi-peak Reading

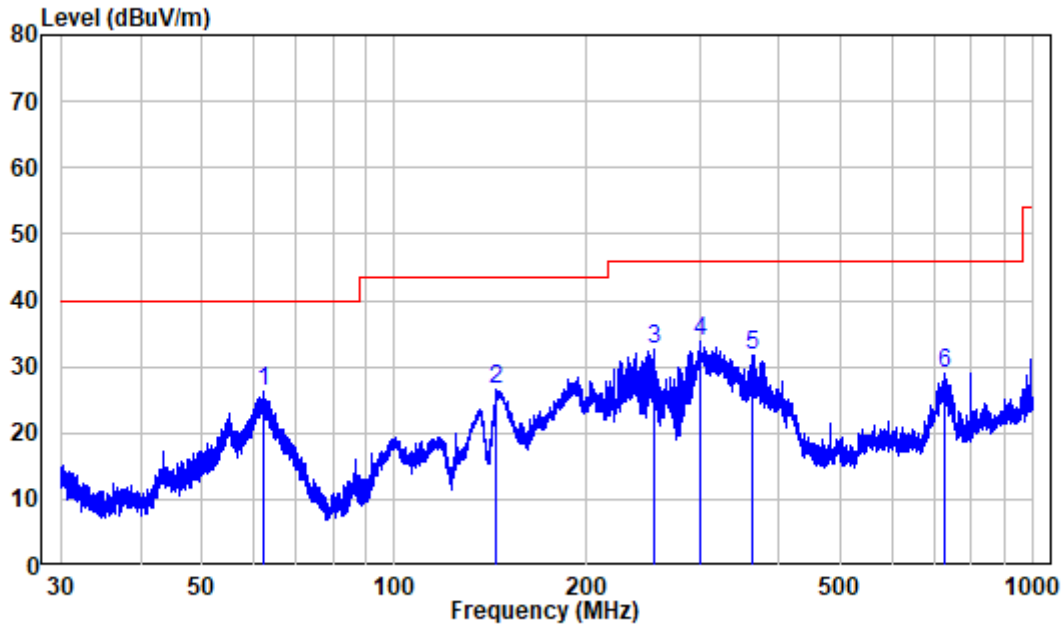
The “Over Limit” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the limit.

5.8. Radiated Emission Measurement Result

PASS.

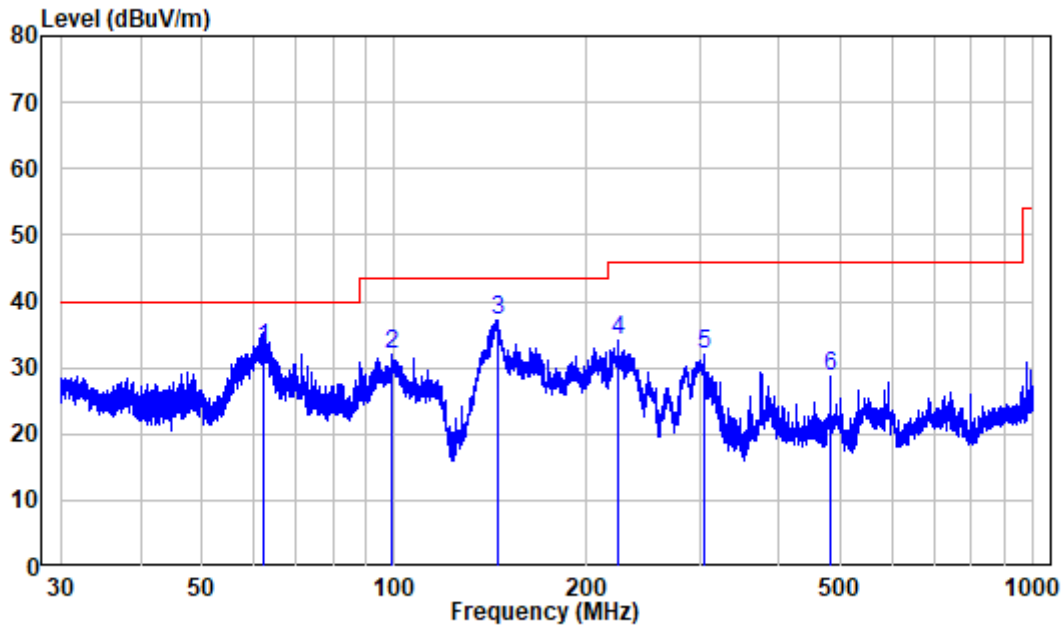
The frequency range from 30MHz to 40GHz is investigated.

The spectral diagrams are attached as below.



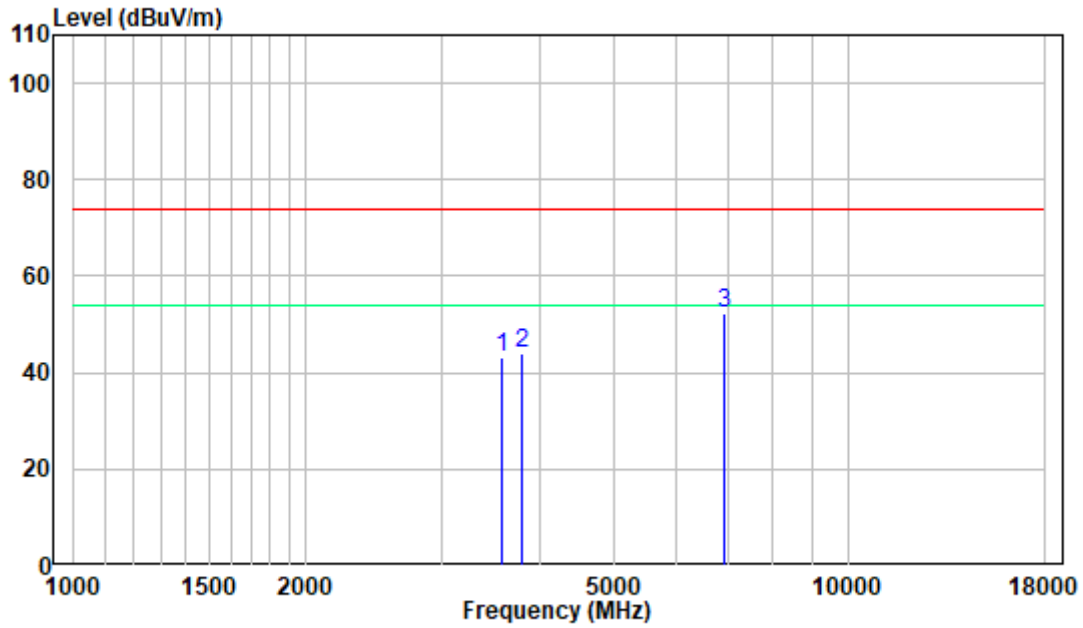
Site : chamber
 Condition: 3m HORIZONTAL
 Job No. : SZ1210914-52933E-EM
 Mode : Normal Working

| | Freq | Factor | Read Level | Level | Limit Line | Over Limit | Remark |
|---|---------|--------|------------|--------|------------|------------|--------|
| | MHz | dB/m | dBuV | dBuV/m | dBuV/m | dB | |
| 1 | 62.295 | -19.92 | 46.19 | 26.27 | 40.00 | -13.73 | Peak |
| 2 | 144.398 | -21.79 | 48.27 | 26.48 | 43.50 | -17.02 | Peak |
| 3 | 254.282 | -18.45 | 50.92 | 32.47 | 46.00 | -13.53 | Peak |
| 4 | 300.894 | -16.60 | 50.47 | 33.87 | 46.00 | -12.13 | Peak |
| 5 | 362.190 | -15.89 | 47.64 | 31.75 | 46.00 | -14.25 | Peak |
| 6 | 726.168 | -11.35 | 40.48 | 29.13 | 46.00 | -16.87 | Peak |



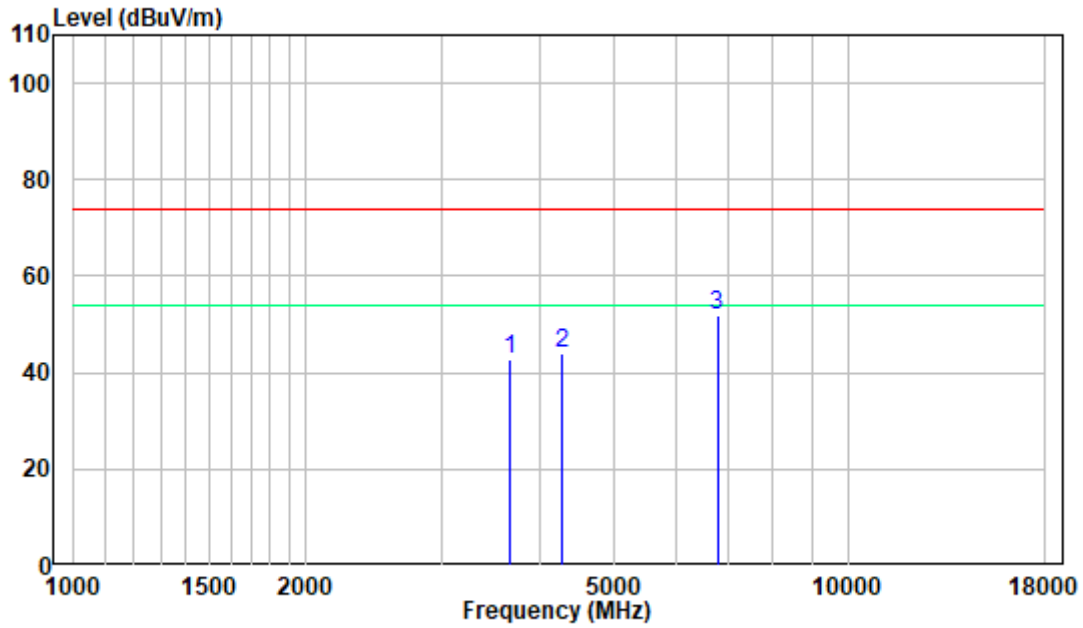
Site : chamber
 Condition: 3m VERTICAL
 Job No. : SZ1210914-52933E-EM
 Mode : Normal Working

| | Read | Limit | Over | | | | |
|------|---------|--------|--------|--------|-------|--------|------|
| Freq | Factor | Level | Level | Line | | | |
| MHz | dB/m | dBuV | dBuV/m | dBuV/m | | | |
| 1 | 62.486 | -19.96 | 52.74 | 32.78 | 40.00 | -7.22 | QP |
| 2 | 98.963 | -19.39 | 51.33 | 31.94 | 43.50 | -11.56 | Peak |
| 3 | 144.651 | -21.78 | 58.92 | 37.14 | 43.50 | -6.36 | Peak |
| 4 | 224.224 | -18.95 | 53.15 | 34.20 | 46.00 | -11.80 | Peak |
| 5 | 305.145 | -16.63 | 48.69 | 32.06 | 46.00 | -13.94 | Peak |
| 6 | 480.107 | -14.42 | 43.03 | 28.61 | 46.00 | -17.39 | Peak |



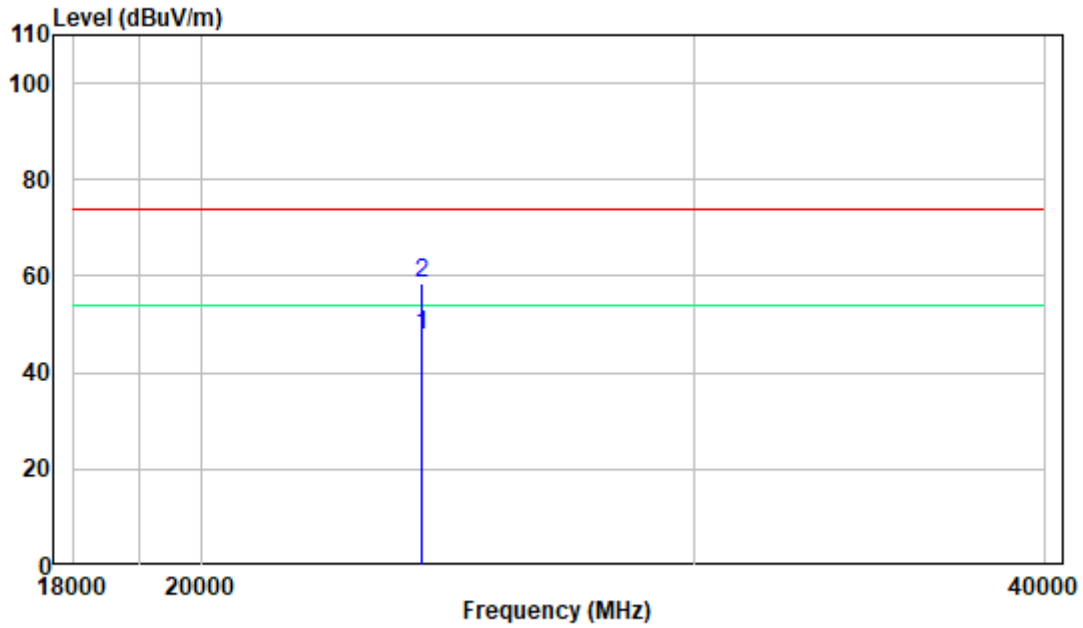
Site : chamber
 Condition: 3m HORIZONTAL
 Job No. : SZ1210914-52933E-EM
 Mode : Normal Working

| | Freq | Factor | Read Level | Level | Limit Line | Over Limit | Remark |
|---|----------|--------|------------|--------|------------|------------|--------|
| | MHz | dB/m | dBuV | dBuV/m | dBuV/m | dB | |
| 1 | 3589.039 | -2.63 | 45.60 | 42.97 | 74.00 | -31.03 | |
| 2 | 3799.394 | -2.23 | 46.05 | 43.82 | 74.00 | -30.18 | |
| 3 | 6939.496 | 7.21 | 45.19 | 52.40 | 74.00 | -21.60 | |



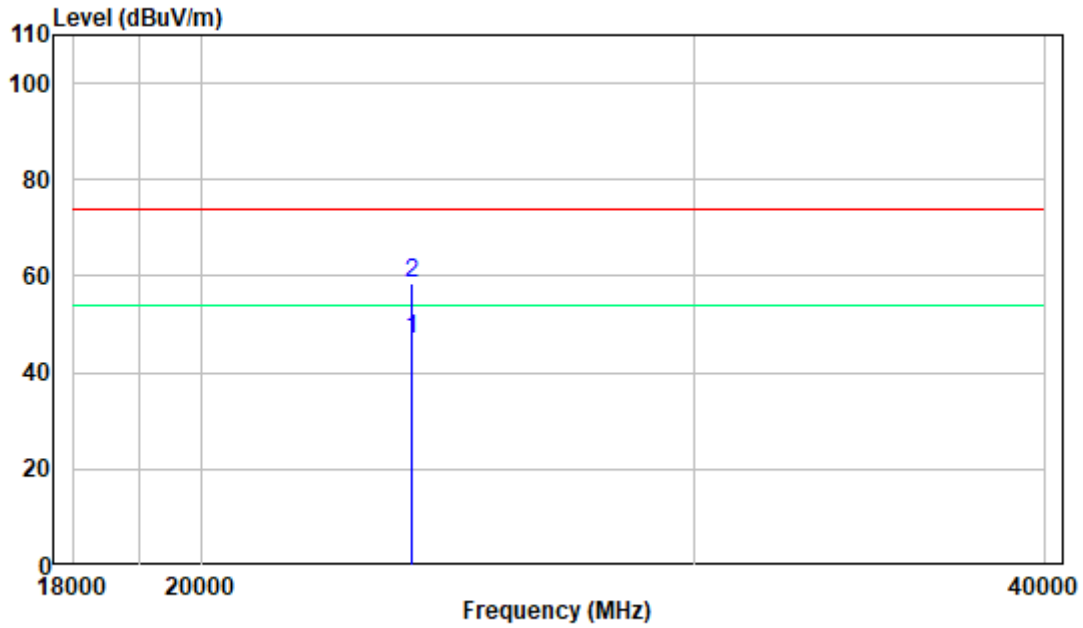
Site : chamber
 Condition: 3m VERTICAL
 Job No. : SZ1210914-52933E-EM
 Mode : Normal Working

| | Freq | Factor | Read Level | Level | Limit Line | Over Limit | Remark |
|---|----------|--------|------------|--------|------------|------------|--------|
| | MHz | dB/m | dBuV | dBuV/m | dBuV/m | dB | |
| 1 | 3670.498 | -2.49 | 45.08 | 42.59 | 74.00 | -31.41 | |
| 2 | 4280.317 | -1.25 | 45.33 | 44.08 | 74.00 | -29.92 | |
| 3 | 6790.104 | 6.61 | 45.35 | 51.96 | 74.00 | -22.04 | |



Site : chamber
 Condition: 3m Horizontal
 Job No. : SZ1210914-52933E-EM
 Mode : Normal Working

| | Freq | Factor | Read Level | Level | Limit Line | Over Limit | Remark |
|---|-----------|--------|------------|--------|------------|------------|---------|
| | MHz | dB/m | dBuV | dBuV/m | dBuV/m | dB | |
| 1 | 23981.260 | 12.19 | 35.41 | 47.60 | 54.00 | -6.40 | Average |
| 2 | 23981.260 | 12.19 | 46.48 | 58.67 | 74.00 | -15.33 | Peak |



Site : chamber
 Condition: 3m Vertical
 Job No. : SZ1210914-52933E-EM
 Mode : Normal Working

| | Freq | Factor | Read Level | Level | Limit Line | Over Limit | Remark |
|---|-----------|--------|------------|--------|------------|------------|---------|
| | MHz | dB/m | dBuV | dBuV/m | dBuV/m | dB | |
| 1 | 23785.260 | 11.48 | 35.62 | 47.10 | 54.00 | -6.90 | Average |
| 2 | 23785.260 | 11.48 | 47.16 | 58.64 | 74.00 | -15.36 | Peak |

----- THE END OF TEST REPORT -----