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FCC&IC TEST REPORT

Report No.....: AB25060001FW07
FCC ID.....: 2BQHD-DGEN1
IC ID.....: 34121-DGEN1
Applicant.....: Freedom Factory Inc
Address.....: 4 Peddlers Row 295, Newark, Delaware 19702 USA
Manufacturer.....: Freedom Factory Inc
Address.....: 4 Peddlers Row 295, Newark, Delaware 19702 USA
Product Name.....: dGEN1
Trade Mark.....: Freedom Factory
Test Model.....: dGEN1
Additional Model(s).....: /
Standard.....: FCC 47 CFR Part 15 Subpart C (Part 15.225)
Date of Receipt.....: 2025.04.15
Date of Test Date.....: 2025.04.15-2025.08.26
Date of Issue.....: 2025.08.26
Test Result.....: Pass

Compiled by:
(Printed Name + Signature) Huaijie Li

Huaijie Li

Supervised by:
(Printed Name + Signature) Jay Liu

Jay Liu

Approved by:
(Printed Name + Signature) Mic Cheng

Mic Cheng

Testing Laboratory Name.....: Aibo Standard Technology (Shenzhen) Co., Ltd.

Address.....: 101, Building B, Tuori New Energy Industrial Park, High-tech Park,
Tianliao Community, Yutang Street, Guangming District, Shenzhen
City, Guangdong Province, China

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FCC&IC TEST REPORT

| | |
|---------------------------------|------------------------------------|
| Test Report No.: AB25060001FW01 | <u>2025.08.26</u> Date of issue |
|---------------------------------|------------------------------------|

| | |
|--------------------------|--|
| EUT..... | : dGEN1 |
| Test Model..... | : dGEN1 |
| Applicant..... | : Freedom Factory Inc |
| Address..... | : 4 Peddlers Row 295, Newark, Delaware 19702 USA |
| Telephone..... | : +1(726)842-5475 |
| Fax..... | : / |
| Manufacturer..... | : Freedom Factory Inc |
| Address..... | : 4 Peddlers Row 295, Newark, Delaware 19702 USA |
| Telephone..... | : +1(726)842-5475 |
| Fax..... | : / |
| | |

| | |
|--------------------|-----------------|
| Test Result | Positive |
|--------------------|-----------------|

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

REPORT VERSION

| Version No. | Issue Date | Description |
|-------------|------------|---------------|
| 01 | 2025.08.26 | Initial Issue |

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1. GENERAL INFORMATION

1.1. GENERAL DESCRIPTION OF EUT

| | |
|---|--|
| Product Name: | dGEN1 |
| Trade Mark: | Freedom Factory |
| Test Model: | dGEN1 |
| Additional Model(s): | / |
| Model Difference: | / |
| Hardware Version: | S891_MB_V2 |
| Software Version: | / |
| Power Supply: | DC 3.87V by battery(4500mAh) or DC 5V 1A from AC/DC adapter |
| Test Sample(s) Number: | AB25060001-01 (Engineer Sample) AB25060001-02 (Normal Sample) |
| Radio Specification Subject to this Report | |
| Modulation Technology: | NFC |
| Modulation Type: | ASK |
| Operating Frequency: | 13.56MHz |
| Number of Channel: | 1 |
| Antenna Type: | Loop antenna |
| Antenna Gain: | -0.52dBi(Max.) |

1.2. DESCRIPTION OF SUPPORT EQUIPMENT

| Description | Manufacturer | Model | Serial Number | Supplied by |
|---------------|--------------|-----------|-----------------|-------------|
| AC/DC Adapter | Xiaomi | MDY-11-EX | SA62212LA04358J | Applicant |

1.3. DESCRIPTION OF EXTERNAL I/O

| I/O Port Description | Quantity | Cable |
|----------------------|----------|------------------|
| USB Type-C Interface | 1 | 0.8m, unshielded |
| Earphone Jack | 1 | N/A |

1.4. GENERAL DESCRIPTION OF APPLIED STANDARDS

The tests were performed according to following standards:

[FCC Rules Part 15.225](#) - Operation within the band 13.110-14.010 MHz.

1.5. DESCRIPTION OF TEST FACILITY

Test Lab: Aibo Standard Technology (Shenzhen) Co., Ltd.

Address: 101, Building B, Tuori New Energy Industrial Park, High-tech Park, Tianliao Community, Yutang Street, Guangming District, Shenzhen City, Guangdong Province, China

Tel.: +(86) 0755 85250797

E-mail: Aibonorm@aibonorm.com

Website: www.Aibonorm.com

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

A2LA-Lab Certificate No.: 7514.01

Aibo Standard Technology (Shenzhen) Co., Ltd. has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

FCC Accredited Lab.

Designation Number: CN1411

Test Firm Registration Number: 567066

ISED Wireless Device Testing Laboratories

CAB identifier: CN0185

1.6. MEASUREMENT UNCERTAINTY

The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.

| Items | Measurement Uncertainty |
|--|-------------------------|
| Power Line Conducted Emission (9kHz~150kHz) | ±3.62dB |
| Power Line Conducted Emission (150kHz~30MHz) | ±3.38dB |
| Radiated Emission (9kHz~30MHz) | ±3.10dB |
| Radiated Emission (30MHz~1GHz) | ±4.90dB |
| Radiated Emission (1GHz~18GHz) | ±3.88dB |
| Radiated Emission (8GHz~40GHz) | ±5.32dB |
| RF Conducted Power | ±0.57dB |
| Conducted Spurious Emissions | ±1.60dB |
| RF Frequency | ±6.0 x 10 ⁻⁷ |

Note: All measurement uncertainty values are shown with a coverage factor of k = 2 to indicate a 95 % level of confidence.

1.7. ENVIRONMENTAL CONDITIONS

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

| | |
|---------------------|----------------|
| Normal Temperature: | +15°C ~ +35°C |
| Lative Humidity | 20 % ~ 75 % |
| Air Pressure | 98KPa ~ 101KPa |

1.8. DESCRIPTION OF TEST MODES

The EUT only have one channel.

| CHANNEL | FREQUENCY (MHz) |
|---------|-----------------|
| 1 | 13.56 |

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports

The worst case was found when positioned on X axis for radiated emission. Following channel(s) was (were) selected for the final test as listed below:

| EUT CONFIGURE MODE | APPLICABLE TO | | | | DESCRIPTION |
|-----------------------|---------------|----|-----|----|------------------------------|
| | RE | FT | PLC | BW | |
| A | √ | √ | √ | √ | DC5V from Host Unit with NFC |

Where RE: Radiated Emission

FT: Frequency tolerance

PLC: Power Line Conducted Emission

BW: 20dB Bandwidth

For portable device, radiated emission was verified over X, Y, Z Axis, and shown the worst case in this report. The following operating modes were applied for the related test items. Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data packets and antenna ports (if EUT with antenna diversity architecture), only the result of the worst case was recorded in the report.

| EUT CONFIGURE MODE | TESTED CHANNEL | TESTED FREQUENCY (MHZ) | MODULATION TYPE | AXIS |
|--------------------------|----------------|---------------------------|-----------------|------|
| A | 1 | 13.56 | ASK | X |

2. SUMMARY OF TEST RESULT

| Test Cases | | | |
|-------------------------------|-------------------------------|--------|---------------|
| FCC&IC Rule | Description of Test Item(s) | Result | Test Engineer |
| Part 15.207 RSS-Gen 8.8 | Power Line Conducted Emission | Pass | Chen He |
| Part 15.215(c) | 20dB Bandwidth | Pass | Chen He |
| Part 15.225(e) | Frequency tolerance | Pass | Chen He |
| Part 15.225(a)&(b)&(c)&(d) | Radiated Emissions | Pass | Chen He |
| Part 15.203 | Antenna Requirement | Pass | Chen He |

3. MEASUREMENT INSTRUMENTS LIST

| Item | Test Equipment | Manufacturer | Model No. | Serial No. | Cal. Date | Cal. Until |
|------|-------------------------------------|--------------|----------------|--------------|------------|------------|
| 1 | Loop Antenna | Schwarzbeck | FMZB 1519 | 1519-025 | 02/19/2025 | 02/18/2026 |
| 2 | Power Amplifier | HZEMC | HPA-9K0133 | HYP A23029 | 02/19/2025 | 02/18/2026 |
| 3 | Broadband Antenna | Schwarzbeck | VULB 9168 | 01763 | 02/19/2025 | 02/18/2026 |
| 4 | Attenuator | PRM | ATT50-6-3 | ATT50-6-3 | 01/20/2025 | 01/19/2026 |
| 5 | Spectrum Analyzer | R&S | FSV40-N | 101365 | 01/20/2025 | 01/19/2026 |
| 6 | Horn Antenna | Schwarzbeck | BBHA 9120 D | 02786 | 02/19/2025 | 02/18/2026 |
| 7 | Horn Antenna | Schwarzbeck | ZLB7-18-40G-77 | 072410839 | 02/19/2025 | 02/18/2026 |
| 8 | Power Amplifier | HZEMC | PA0118-43 | HYP A23030 | 02/19/2025 | 02/18/2026 |
| 9 | Power Amplifier | HZEMC | PA01840-45 | HYP A23031 | 02/19/2025 | 02/18/2026 |
| 10 | EMI Test Receiver | R&S | ESCI | 101196 | 01/20/2025 | 01/19/2026 |
| 11 | LISN | R&S | ENV216 | 102374 | 01/20/2025 | 01/19/2026 |
| 12 | Pulse Limiter | Schwarzbeck | ESH3-Z2 | 0357.8810.54 | 01/20/2025 | 01/19/2026 |
| 13 | MXA Signal Analyzer | Keysight | N9020A | MY52091389 | 01/20/2025 | 01/19/2026 |
| 14 | Power Sensor | Agilent | U2021XA | MY54110007 | 01/31/2025 | 01/30/2026 |
| 15 | Power Sensor | Agilent | U2021XA | MY54110009 | 01/31/2025 | 01/30/2026 |
| 16 | MXG Vector Signal Generator | Agilent | N5182A | MY47070153 | 01/20/2025 | 01/19/2026 |
| 17 | Analog Signal Source | Keysight | N5173B | MY60403029 | 01/20/2025 | 01/19/2026 |
| 18 | Vector Signal Generator | R&S | SMCV100B | 106103 | 01/20/2025 | 01/19/2026 |
| 19 | WIDEBAND RADIO COMMUNICATION TESTER | R&S | CMW500 | 118780 | 01/20/2025 | 01/19/2026 |
| 20 | DC POWER SUPPLY | MAISHENG | MT-305DS | 2021040016 | 02/28/2025 | 02/27/2026 |
| 21 | Const Temp. & Humidity Chamber | GRT | GR-HWX-150L | GR25010601 | 01/20/2025 | 01/19/2026 |

| Test Software | | |
|---|----------|----------|
| Software name | Model | Version |
| Conducted Emission Measurement Software | FASLAB | V4.1 |
| Radiated Emission Measurement Software | FASLAB | V4.1 |
| Bluetooth and WIFI Test System | MTS 8310 | V3.0.0.0 |

4. ANTENNA REQUIREMENT

1) Standard Requirement

15.203 requirement:

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, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

2) Conclusion

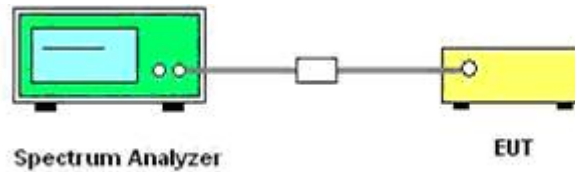
Antenna in the interior of the equipment and no consideration of replacement. It complies with the standard requirement.

5. 20DB BANDWIDTH AND OCCUPIED BANDWIDTH

5.1. LIMIT

None; for reporting purposes only.

5.2. TEST SETUP

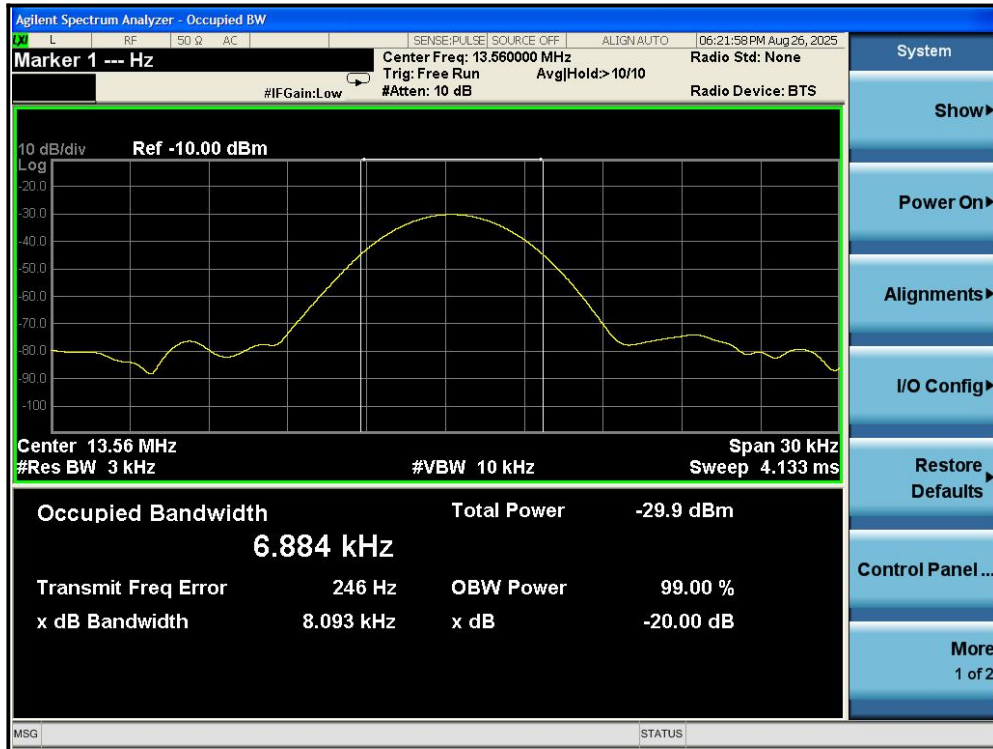


5.3. TEST PROCEDURE

- a. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- b. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
- c. Measure the frequency difference of two frequencies that were attenuated 20dB from the reference level. Record the frequency difference as the emission bandwidth.
- d. Repeat above procedures until all frequencies measured were complete.

5.4. TEST RESULT

| CHANNEL | CHANNEL FREQUENCY (MHz) | 20dB BANDWIDTH (KHz) |
|---------|-------------------------|----------------------|
| 1 | 13.56 | 8.093 |

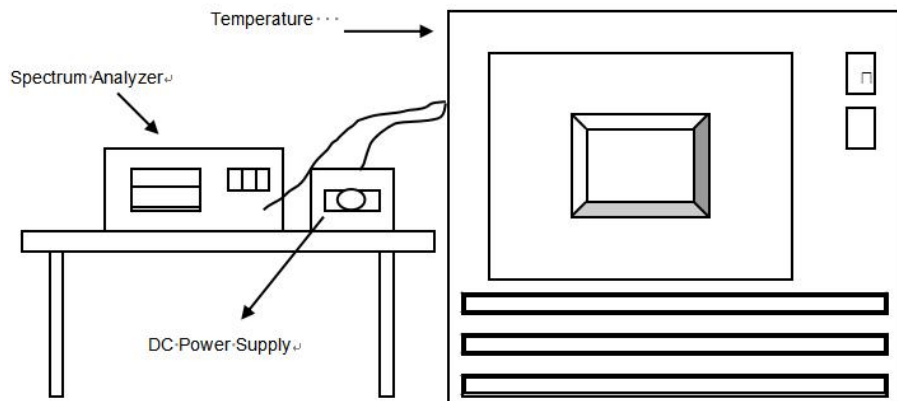


6. FREQUENCY TOLERANCE

6.1. LIMIT

The frequency tolerance of the carrier signal shall be maintained within $\pm 0.01\%$ of the operating frequency over a temperature variation of -20 degrees to 50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.

6.2. TEST SETUP



6.3. TEST PROCEDURE

- The EUT was placed inside the environmental test chamber and powered by nominal DC voltage.
- Turn the EUT on and couple its output to a spectrum analyzer.
- Turn the EUT off and set the chamber to the highest temperature specified.
- Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
- Repeat step c) and d) with the temperature chamber set to the lowest temperature.
- The test chamber was allowed to stabilize at $+20$ degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

6.4. TEST RESULT

| FREQUENCY STABILITY VERSUS TEMP. | | | | | | | | | |
|----------------------------------|------------------------|-----------------------|--------------------|-----------------------|--------------------|-----------------------|--------------------|-----------------------|--------------------|
| TEMP. (°C) | POWER SUPPLY (V) | 0 MINUTE | | 2 MINUTE | | 5 MINUTE | | 10 MINUTE | |
| | | Measured Frequency | Frequency Drift | Measured Frequency | Frequency Drift | Measured Frequency | Frequency Drift | Measured Frequency | Frequency Drift |
| | | (MHz) | % | (MHz) | % | (MHz) | % | (MHz) | % |
| 55 | DC5V | 13.55992 | -0.00059 | 13.55993 | -0.00052 | 13.55993 | -0.00052 | 13.55993 | -0.00052 |
| 50 | DC5V | 13.55994 | -0.00044 | 13.55994 | -0.00044 | 13.55994 | -0.00044 | 13.55994 | -0.00044 |
| 40 | DC5V | 13.56 | 0.00000 | 13.56001 | 0.00007 | 13.56 | 0.00000 | 13.56 | 0.00000 |
| 30 | DC5V | 13.55994 | -0.00044 | 13.55994 | -0.00044 | 13.55994 | -0.00044 | 13.55994 | -0.00044 |
| 20 | DC5V | 13.56005 | 0.00037 | 13.56005 | 0.00037 | 13.56006 | 0.00044 | 13.56005 | 0.00037 |
| 10 | DC5V | 13.55999 | -0.00007 | 13.55997 | -0.00022 | 13.55998 | -0.00015 | 13.55998 | -0.00015 |
| 0 | DC5V | 13.56002 | 0.00015 | 13.56002 | 0.00015 | 13.56003 | 0.00022 | 13.56002 | 0.00015 |
| -10 | DC5V | 13.56004 | 0.00029 | 13.56004 | 0.00029 | 13.56004 | 0.00029 | 13.56004 | 0.00029 |
| -20 | DC5V | 13.56001 | 0.00007 | 13.56001 | 0.00007 | 13.56 | 0.00000 | 13.56 | 0.00000 |

| FREQUENCY STABILITY VERSUS VOLTAGE | | | | | | | | | |
|------------------------------------|------------------------|-----------------------|--------------------|-----------------------|--------------------|-----------------------|--------------------|-----------------------|--------------------|
| TEMP. (°C) | POWER SUPPLY (V) | 0 MINUTE | | 2 MINUTE | | 5 MINUTE | | 10 MINUTE | |
| | | Measured Frequency | Frequency Drift | Measured Frequency | Frequency Drift | Measured Frequency | Frequency Drift | Measured Frequency | Frequency Drift |
| | | (MHz) | % | (MHz) | % | (MHz) | % | (MHz) | % |
| 20 | DC5V | 13.55994 | -0.00044 | 13.55994 | -0.00044 | 13.55994 | -0.00044 | 13.55994 | -0.00044 |
| | DC5V | 13.55994 | -0.00044 | 13.55994 | -0.00044 | 13.55994 | -0.00044 | 13.55994 | -0.00044 |
| | DC4.25V | 13.55994 | -0.00044 | 13.55994 | -0.00044 | 13.55994 | -0.00044 | 13.55994 | -0.00044 |

7. RADIATED EMISSIONS AND RADIATED BAND EDGES MEASUREMENT

7.1. LIMIT

According to §15.225, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

The field strength of any emissions shall not exceed the following limits:

- (a) 15.848mV/m(84dBuV/m) at 30m, within the band 13.553-13.567 MHz;
- (b) 334uV/m(50.5dBuV/m) at 30m, within the band 13.410-13.553 MHz and 13.567-13.710MHz;
- (c) 106uV/m(40.5dBuV/m) at 30m, within the band 13.110-13.410 MHz and 13.710-14.010MHz;

| Limits of Spurious Emissions | | | | |
|------------------------------|----------------------------------|----------------|------------|--------------------------|
| Frequency | Field strength (microvolt/meter) | Limit (dBuV/m) | Remark | Measurement distance (m) |
| 0.009MHz~0.490MHz | 2400/F(kHz) | --- | --- | 300 |
| 0.490MHz~1.705MHz | 24000/F(kHz) | --- | --- | 30 |
| 1.705MHz~30MHz | 30 | --- | --- | 30 |
| 30MHz~88MHz | 100 | 40.0 | Quasi-peak | 3 |
| 88MHz~216MHz | 150 | 43.5 | Quasi-peak | 3 |
| 216MHz~960MHz | 200 | 46.0 | Quasi-peak | 3 |
| 960MHz~1GHz | 500 | 54.0 | Quasi-peak | 3 |
| Above 1GHz | 500 | 54.0 | Average | 3 |

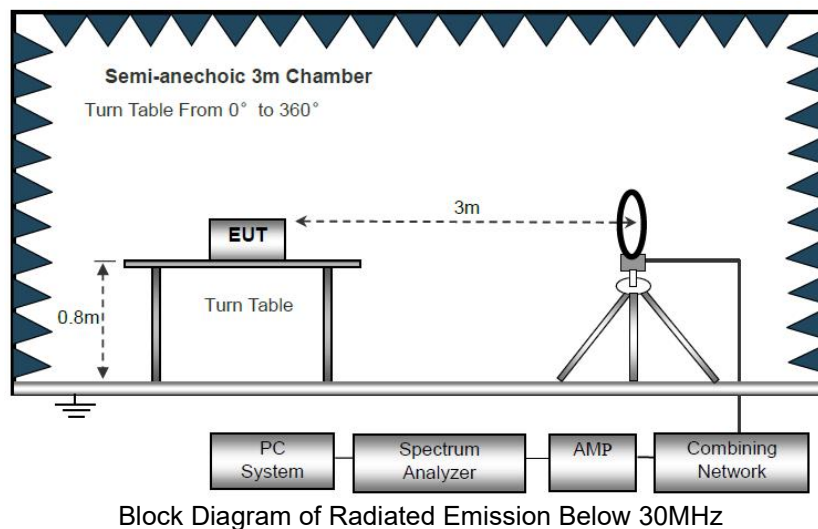
Remark:

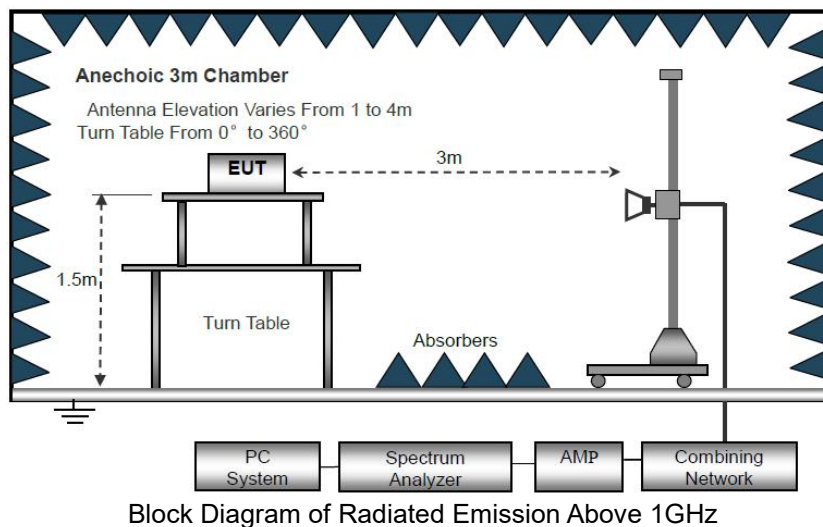
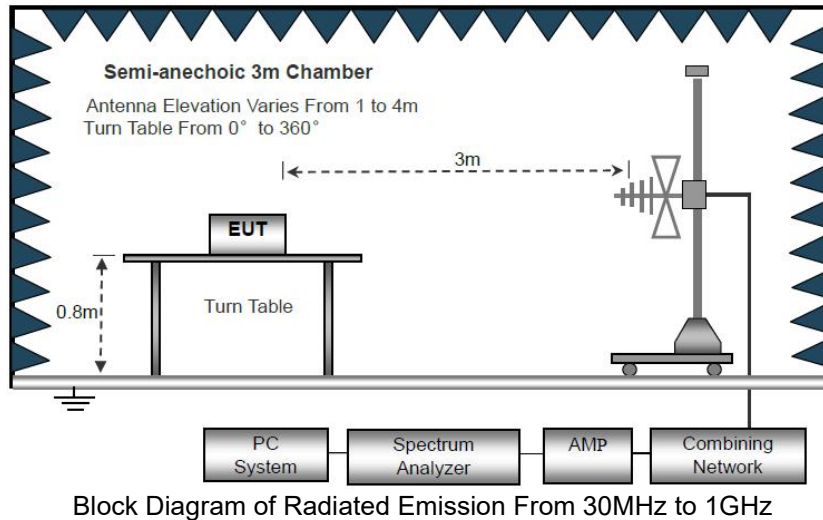
- a) The lower limit shall apply at the transition frequencies.
- b) Emission level (dBuV/m) = 20*log Emission level (uV/m).
- c) For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.
- d) The measured field strength was extrapolated to distance 30 meters, using the formula that the limit of field strength varies as the inverse distance square (40dB per decade of distance)

Example:

$$\begin{aligned}
 13.56\text{MHz} &= 15848\text{uV/m} & 30\text{m} \\
 &= 84\text{dBuV/m} & 30\text{m} \\
 &= 84+20\log(30/3)^2 & 3\text{m} \\
 &= 124\text{dBuV/m}
 \end{aligned}$$

7.2. TEST SETUP





7.3. TEST PROCEDURE

- Below 1GHz measurement the EUT is placed on a turntable which is 0.8m above ground plane, and above 1GHz measurement EUT was placed on a low permittivity and low loss tangent turn table which is 1.5m above ground plane.
- Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0 degree to 360 degree to acquire the highest emissions from EUT.
- And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- Repeat above procedures until all frequency measurements have been completed.
- Radiated emission test frequency band from 9KHz to 25GHz.
- The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and record the worst case in this report.

g) The distance between test antenna and EUT as following table states:

| Test Frequency range | Test Antenna Type | Test Distance |
|----------------------|---------------------|---------------|
| 9KHz~30MHz | Active Loop Antenna | 3 |
| 30MHz~1GHz | Bilog Antenna | 3 |
| 1GHz~18GHz | Horn Antenna | 3 |
| 18GHz~25GHz | Horn Antenna | 1 |

h) Setting test receiver/spectrum as following table states:

| Test Frequency range | Test Receiver/Spectrum Setting | Detector |
|----------------------|---|----------|
| 9KHz~150KHz | RBW=200Hz/VBW=3KHz, Sweep time=Auto | QP |
| 150KHz~30MHz | RBW=9KHz/VBW=100KHz, Sweep time=Auto | QP |
| 30MHz~1GHz | RBW=120KHz/VBW=1000KHz, Sweep time=Auto | QP |
| 1GHz~40GHz | Peak Value: RBW=1MHz/VBW=3MHz, Sweep time=Auto Average Value: RBW=1MHz/VBW=10Hz, Sweep time=Auto | Peak |

7.4. TEST RESULT

Pass.

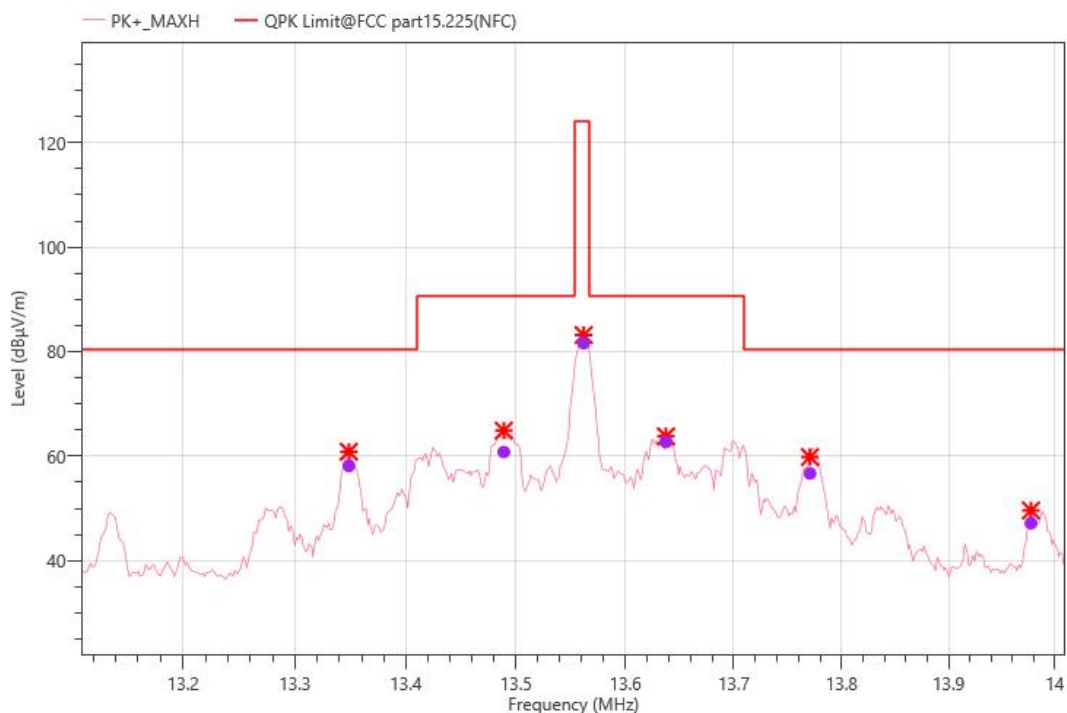
Remark:

a) Pre-scan all modes and recorded the worst case in this report.

b) Radiated emission test from 9KHz to 10th harmonic of fundamental was verified, and the emission levels from 9kHz to 30MHz are attenuated 20dB below the limit and not recorded in report.

Radiated Emission Test Data (BELOW 30MHz at 3m)

| | | | |
|--------------------------|------------------|---------------|------------|
| Environmental Conditions | 24.6°C, 53.4% RH | Test Engineer | Chen He |
| Worst Test Mode: | NFC | Polarity: | Horizontal |



| No. | Freq. (MHz) | Reading (dBμV) | Corr. (dB) | Meas. (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Det. | Pol. |
|-----|-------------|----------------|------------|----------------|----------------|-------------|------|------|
| 1 | 13.349 | 38.18 | 19.97 | 58.15 | 80.50 | 22.35 | QPK | H |
| 2 | 13.489 | 40.84 | 19.96 | 60.80 | 90.50 | 29.70 | QPK | H |
| 3 | 13.562 | 61.69 | 19.96 | 81.65 | 124.00 | 42.35 | QPK | H |
| 4 | 13.637 | 42.79 | 19.95 | 62.74 | 90.50 | 27.76 | QPK | H |
| 5 | 13.771 | 36.76 | 19.95 | 56.71 | 80.50 | 23.79 | QPK | H |
| 6 | 13.978 | 27.24 | 19.94 | 47.18 | 80.50 | 33.32 | QPK | H |

Remark:

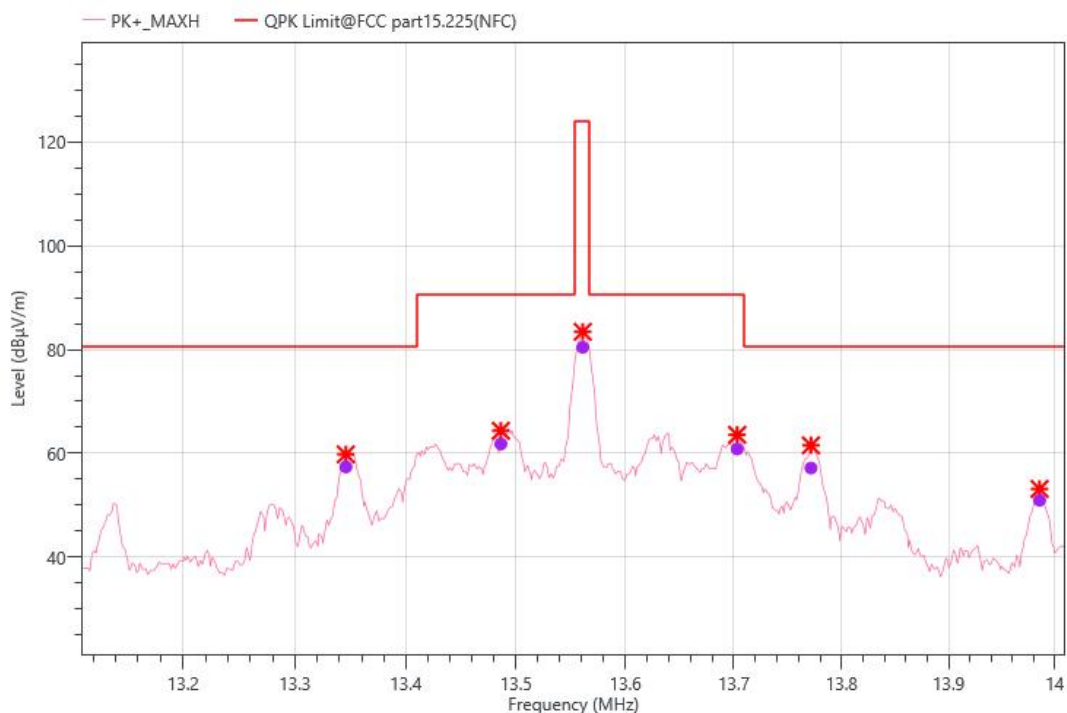
Emission Level = Reading + Factor;

Factor = Antenna Factor + Cable Loss – Pre-amplifier;

Margin= Limit -Emission Level .

Radiated Emission Test Data (30MHz to 1GHz)

| | | | |
|--------------------------|------------------|---------------|----------|
| Environmental Conditions | 24.6°C, 53.4% RH | Test Engineer | Chen He |
| Worst Test Mode: | NFC | Polarity: | Vertical |



| No. | Freq. (MHz) | Reading (dBμV) | Corr. (dB) | Meas. (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Det. | Pol. |
|-----|-------------|----------------|------------|----------------|----------------|-------------|------|------|
| 1 | 13.346 | 37.43 | 19.97 | 57.40 | 80.50 | 23.10 | QPK | V |
| 2 | 13.486 | 41.87 | 19.96 | 61.83 | 90.50 | 28.67 | QPK | V |
| 3 | 13.561 | 60.48 | 19.96 | 80.44 | 124.00 | 43.56 | QPK | V |
| 4 | 13.703 | 40.89 | 19.95 | 60.84 | 90.50 | 29.66 | QPK | V |
| 5 | 13.772 | 37.24 | 19.95 | 57.19 | 80.50 | 23.31 | QPK | V |
| 6 | 13.986 | 31.03 | 19.94 | 50.97 | 80.50 | 29.53 | QPK | V |

Remark:

Emission Level = Reading + Factor;

Factor = Antenna Factor + Cable Loss – Pre-amplifier;

Margin= Limit -Emission Level .

Radiated Emission Test Data (30MHz to 1GHz)

| | | | |
|--------------------------|------------------|---------------|------------|
| Environmental Conditions | 24.6°C, 53.4% RH | Test Engineer | Chen He |
| Worst Test Mode: | NFC | Polarity: | Horizontal |



| No. | Freq. (MHz) | Reading (dBμV) | Corr. (dB) | Meas. (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Det. | Pol. |
|-----|-------------|----------------|------------|----------------|----------------|-------------|------|------|
| 1 | 60.313 | 35.65 | -13.98 | 21.67 | 40.00 | 18.33 | QPK | H |
| 2 | 92.808 | 46.60 | -16.64 | 29.96 | 43.50 | 13.54 | QPK | H |
| 3 | 106.388 | 42.48 | -15.56 | 26.92 | 43.50 | 16.58 | QPK | H |
| 4 | 148.825 | 36.59 | -11.62 | 24.97 | 43.50 | 18.53 | QPK | H |
| 5 | 169.438 | 48.64 | -12.09 | 36.55 | 43.50 | 6.95 | QPK | H |
| 6 | 207.995 | 46.36 | -15.16 | 31.20 | 43.50 | 12.30 | QPK | H |

Remark:

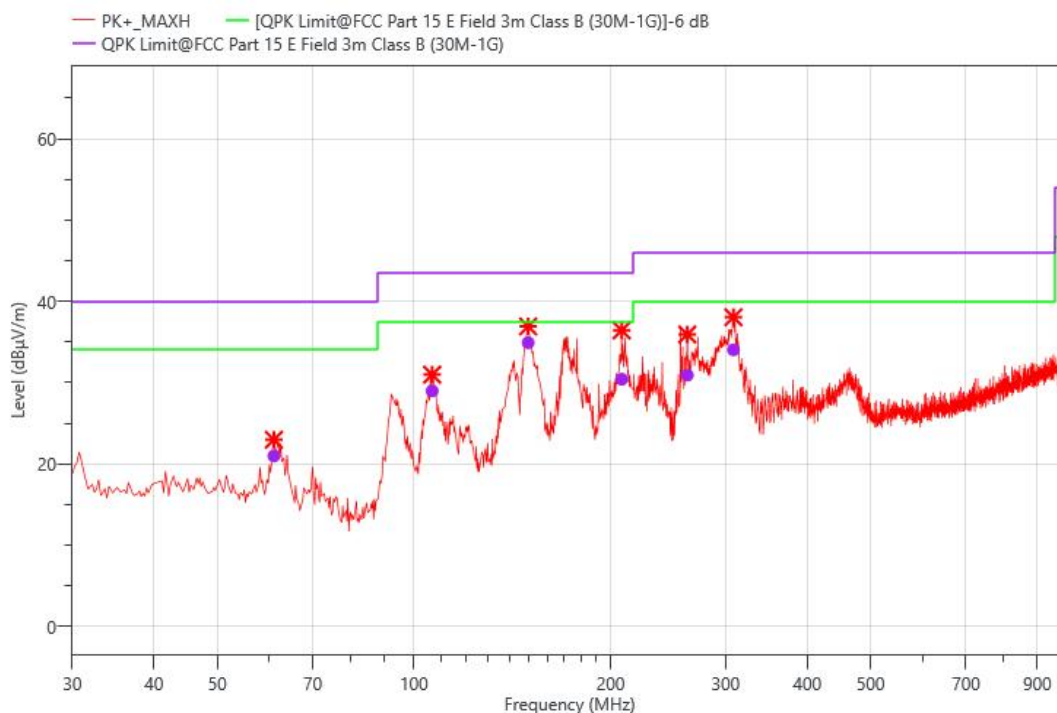
Emission Level = Reading + Factor;

Factor = Antenna Factor + Cable Loss – Pre-amplifier;

Margin= Limit -Emission Level .

Radiated Emission Test Data (30MHz to 1GHz)

| | | | |
|--------------------------|------------------|---------------|----------|
| Environmental Conditions | 24.6°C, 53.4% RH | Test Engineer | Chen He |
| Worst Test Mode: | NFC | Polarity: | Vertical |



| No. | Freq. (MHz) | Reading (dBμV) | Corr. (dB) | Meas. (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Det. | Pol. |
|-----|-------------|----------------|------------|----------------|----------------|-------------|------|------|
| 1 | 61.040 | 35.04 | -14.05 | 20.99 | 40.00 | 19.01 | QPK | V |
| 2 | 106.630 | 44.49 | -15.5 | 28.99 | 43.50 | 14.51 | QPK | V |
| 3 | 149.553 | 46.49 | -11.57 | 34.92 | 43.50 | 8.58 | QPK | V |
| 4 | 207.995 | 45.59 | -15.16 | 30.43 | 43.50 | 13.07 | QPK | V |
| 5 | 262.073 | 43.74 | -12.81 | 30.93 | 46.00 | 15.07 | QPK | V |
| 6 | 308.390 | 45.27 | -11.22 | 34.05 | 46.00 | 11.95 | QPK | V |

Remark:

Emission Level = Reading + Factor;

Factor = Antenna Factor + Cable Loss – Pre-amplifier;

Margin= Limit -Emission Level .

8. POWER LINE CONDUCTED EMISSIONS

8.1. LIMIT

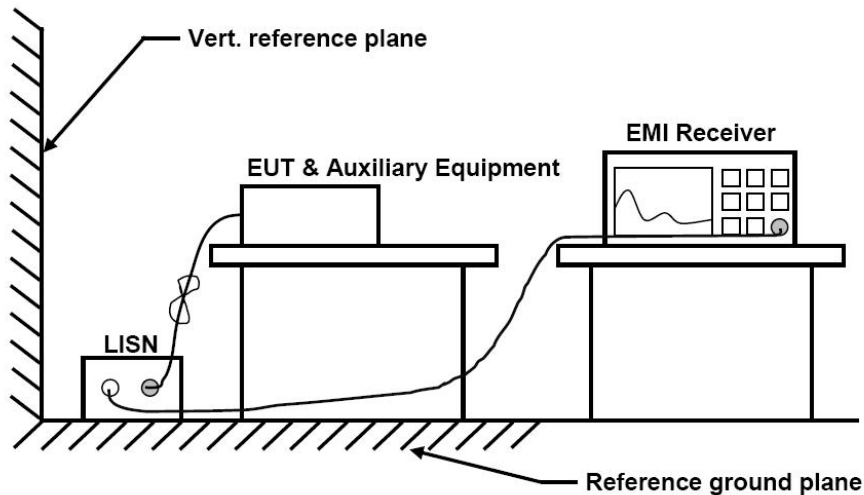
According to the rule FCC Part 15.207, Conducted emissions limit, the limit for a wireless device as below:

| Frequency Range (MHz) | Conducted emissions (dBuV) | |
|-----------------------|----------------------------|----------|
| | Quasi-peak | Average |
| 0.15~0.5 | 66 to 56 | 56 to 46 |
| 0.5~5 | 56 | 46 |
| 5~30 | 60 | 50 |

Remark:

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

8.2. TEST SETUP



8.3. TEST PROCEDURE

Test frequency range :150KHz-30MHz

- The mains terminal disturbance voltage test was conducted in a shielded room.
- The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a $50\Omega/50\mu\text{H} + 5\Omega$ linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.
- The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,
- The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and

associated equipment was at least 0.8 m from the LISN 2.

e) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.

8.4. TEST RESULT

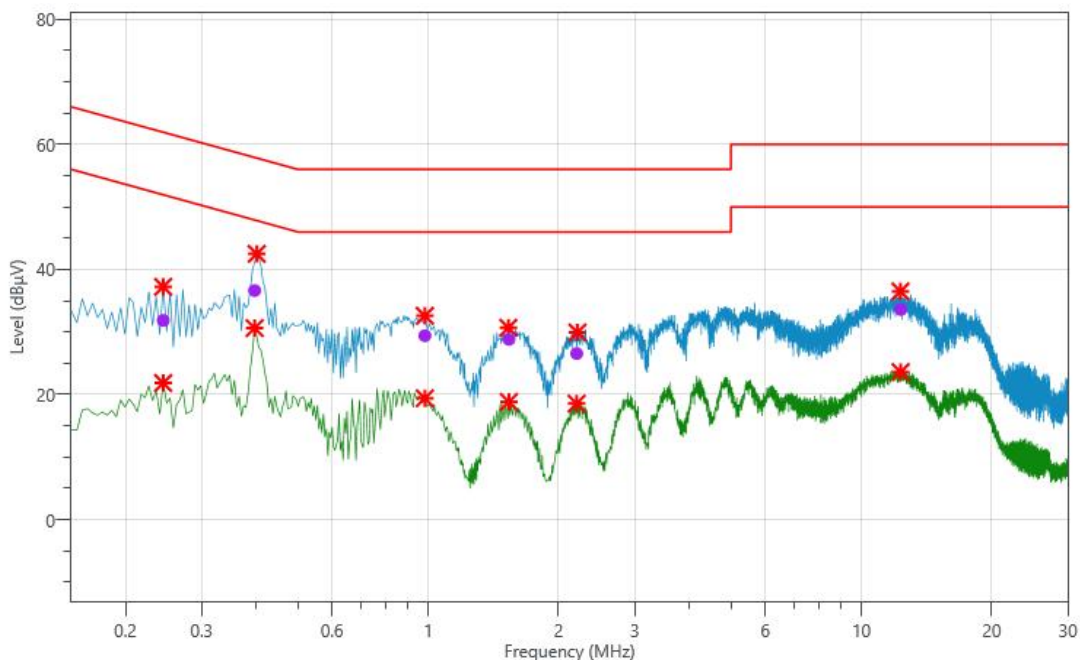
Pass.

Remark:

a) AC Power line conducted emissions pre-test both at AC 120V/60Hz and AC 240V/50Hz modes, recorded worst case.

Test Plots and Data of Conducted Emissions

| | | | |
|--------------------------|------------------|------------------|---------|
| Environmental Conditions | 24.6°C, 53.4% RH | Test Engineer | Chen He |
| Test Voltage: | AC 120V/60Hz | Test Power Line: | Live |



| No. | Freq. (MHz) | Reading (dBμV) | Corr. (dB) | Meas. (dBμV) | Limit (dBμV) | Margin (dB) | Det. | Line | PE |
|-----|-------------|----------------|------------|--------------|--------------|-------------|------|------|-----|
| 1 | 0.245 | 21.86 | 9.99 | 31.85 | 61.94 | 30.09 | QPK | L1 | GND |
| 2 | 0.245 | 11.86 | 9.99 | 21.85 | 51.94 | 30.09 | AVG | L1 | GND |
| 3 | 0.398 | 20.63 | 9.99 | 30.62 | 47.91 | 17.29 | AVG | L1 | GND |
| 4 | 0.398 | 26.63 | 9.99 | 36.62 | 57.91 | 21.29 | QPK | L1 | GND |
| 5 | 0.983 | 19.39 | 10.01 | 29.40 | 56.00 | 26.60 | QPK | L1 | GND |
| 6 | 0.983 | 9.39 | 10.01 | 19.40 | 46.00 | 26.60 | AVG | L1 | GND |
| 7 | 1.536 | 18.80 | 10.02 | 28.82 | 56.00 | 27.18 | QPK | L1 | GND |
| 8 | 1.536 | 8.80 | 10.02 | 18.82 | 46.00 | 27.18 | AVG | L1 | GND |
| 9 | 2.202 | 8.53 | 10.02 | 18.55 | 46.00 | 27.45 | AVG | L1 | GND |
| 10 | 2.202 | 16.53 | 10.02 | 26.55 | 56.00 | 29.45 | QPK | L1 | GND |
| 11 | 12.323 | 21.07 | 12.52 | 33.59 | 60.00 | 26.41 | QPK | L1 | GND |
| 12 | 12.323 | 11.07 | 12.52 | 23.59 | 50.00 | 26.41 | AVG | L1 | GND |

Remark:

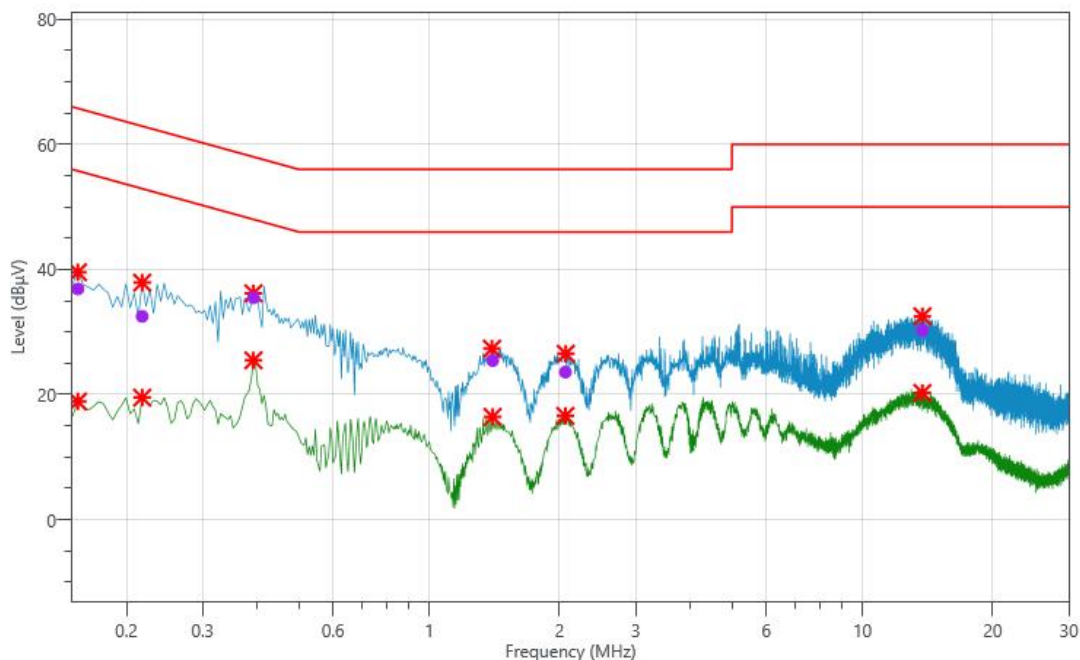
Emission Level = Reading + Correct Factor;

Correct Factor = LISN Factor + Cable Loss + Pulse Limiter Attenuation Factor

Margin= Emission Level - Limit.

Test Plots and Data of Conducted Emissions (Worst Case: Hopping Mode-GFSK)

| | | | |
|--------------------------|------------------|------------------|---------|
| Environmental Conditions | 24.6°C, 53.4% RH | Test Engineer | Chen He |
| Test Voltage: | AC 120V/60Hz | Test Power Line: | Neutral |



| No. | Freq. (MHz) | Reading (dBμV) | Corr. (dB) | Meas. (dBμV) | Limit (dBμV) | Margin (dB) | Det. | Line | PE |
|-----|-------------|----------------|------------|--------------|--------------|-------------|------|------|-----|
| 1 | 0.155 | 26.90 | 9.99 | 36.89 | 65.75 | 28.86 | QPK | N | GND |
| 2 | 0.155 | 8.90 | 9.99 | 18.89 | 55.75 | 36.86 | AVG | N | GND |
| 3 | 0.218 | 22.51 | 9.99 | 32.50 | 62.91 | 30.41 | QPK | N | GND |
| 4 | 0.218 | 9.51 | 9.99 | 19.50 | 52.91 | 33.41 | AVG | N | GND |
| 5 | 0.393 | 25.48 | 9.99 | 35.47 | 58.00 | 22.53 | QPK | N | GND |
| 6 | 0.393 | 15.48 | 9.99 | 25.47 | 48.00 | 22.53 | AVG | N | GND |
| 7 | 1.401 | 15.42 | 10.01 | 25.43 | 56.00 | 30.57 | QPK | N | GND |
| 8 | 1.401 | 6.42 | 10.01 | 16.43 | 46.00 | 29.57 | AVG | N | GND |
| 9 | 2.063 | 6.57 | 10.02 | 16.59 | 46.00 | 29.41 | AVG | N | GND |
| 10 | 2.063 | 13.57 | 10.02 | 23.59 | 56.00 | 32.41 | QPK | N | GND |
| 11 | 13.763 | 17.13 | 13.13 | 30.26 | 60.00 | 29.74 | QPK | N | GND |
| 12 | 13.763 | 7.13 | 13.13 | 20.26 | 50.00 | 29.74 | AVG | N | GND |

Remark:

Emission Level = Reading + Correct Factor;

Correct Factor = LISN Factor + Cable Loss + Pulse Limiter Attenuation Factor

Margin= Emission Level - Limit.

9. PHOTOGRAPHS OF TEST SETUP

Please refer to separated files for Test Setup Photos of the EUT.

10. EXTERNAL PHOTOGRAPHS OF THE EUT

Please refer to separated files for External Photos of the EUT.

11. INTERNAL PHOTOGRAPHS OF THE EUT

Please refer to separated files for Internal Photos of the EUT.

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