



FCC TEST REPORT

For

Shenzhen HDKing Electronics Co.,Ltd

Baby Monitor

Test Model: BM06A_V

Additional Model No.: Please Refer to Page 6

Prepared for : Shenzhen HDKing Electronics Co.,Ltd
Address : Room 101 Building 1, Huasen Factory, No. 142 Honghu Road,
Yanluo Street, Baoan District, Shenzhen, China

Prepared by : Shenzhen LCS Compliance Testing Laboratory Ltd.
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Date of receipt of test sample : November 23, 2023
Number of tested samples : 2
Sample No. : A231107045-1, A231107045-2
Serial number : Prototype
Date of Test : November 23, 2023 ~ December 11, 2023
Date of Report : December 11, 2023





FCC TEST REPORT
FCC CFR 47 PART 15 C(15.247)

Report Reference No. : LCSA11213005EA

Date of Issue : December 11, 2023

Testing Laboratory Name : Shenzhen LCS Compliance Testing Laboratory Ltd.

Address : 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China

Testing Location/ Procedure : Full application of Harmonised standards
Partial application of Harmonised standards
Other standard testing method

Applicant's Name : Shenzhen HDKing Electronics Co.,Ltd

Address : Room 101 Building 1, Huasen Factory, No. 142 Honghu Road, Yanluo Street, Baoan District, Shenzhen, China

Test Specification

Standard : FCC CFR 47 PART 15 C(15.247)

Test Report Form No : LCSEMC-1.0

TRF Originator : Shenzhen LCS Compliance Testing Laboratory Ltd.

Master TRF : Dated 2011-03

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EUT Description : Baby Monitor

Trade Mark : N/A

Test Model : BM06A_V

Ratings : Please Refer to Page 6

Result : Positive

Compiled by:

Ling Zhu

Ling Zhu/ Administrator

Supervised by:

Cary Luo

Cary Luo/ Technique principal

Approved by:

Gavin Liang

Gavin Liang/ Manager





FCC -- TEST REPORT

| | |
|---|---|
| Test Report No. : LCSA11213005EA | <u>December 11, 2023</u> Date of issue |
|---|---|

| | |
|--------------------------|---|
| Test Model..... | : BM06A_V |
| EUT..... | : Baby Monitor |
| Applicant..... | : Shenzhen HDKing Electronics Co.,Ltd |
| Address..... | : Room 101 Building 1, Huasen Factory, No. 142 Honghu Road, Yanluo Street, Baoan District, Shenzhen, China |
| Telephone..... | : / |
| Fax..... | : / |
| Manufacturer..... | : DONGGUAN HDKING SMART TECHNOLOGY CO.,LTD |
| Address..... | : Room 201, Building 3, No.47, Shachong Road, Shatou, Changan Town, Dongguan, Guangdong, China |
| Telephone..... | : / |
| Fax..... | : / |
| Factory..... | : DONGGUAN HDKING SMART TECHNOLOGY CO.,LTD |
| Address..... | : Room 201, Building 3, No.47, Shachong Road, Shatou, Changan Town, Dongguan, Guangdong, China |
| Telephone..... | : / |
| 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.





Revision History

| Revision | Issue Date | Revisions | Revised By |
|----------|-------------------|---------------|-------------|
| 000 | December 11, 2023 | Initial Issue | Gavin Liang |
| | | | |
| | | | |





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1. GENERAL INFORMATION

1.1. Description of Device (EUT)

| | | |
|----------------------|---|--|
| EUT | : | Baby Monitor |
| Test Model | : | BM06A_V |
| Additional Model No. | : | BM07, BM08, BM09, BM10, BM11, BM12, BM13, BM02C, DM20, DM22, BM06C, BM06A, BM06A_Pro, BM06_Pro, BM06B, BM06B_Pro, BM08 Pro, BM07 Pro, BM06-V |
| Model Declaration | : | PCB board, structure and internal of these model(s) are the same, So no additional models were tested |
| Power Supply | : | For Adapter Model: QL010-0502000U Input: 100-240V~, 50/60Hz, 0.45A Output: 5.0V==2.0A For Adapter Model: QL010-0501500U Input: 100-240V~, 50/60Hz, 0.45A Output: 5.0V==1.5A |
| Hardware Version | : | V1.0 |
| Software Version | : | / |
| Lora | : | |
| Frequency Range | : | 906MHz-922MHz (906MHz, 910MHz, 914MHz, 918MHz, 922MHz) |
| Channel Number | : | 5 channels |
| Modulation Type | : | GFSK |
| Antenna Description | : | External Antenna, 0.32dBi(Max.) |



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1.2. Support Equipment List

| Manufacturer | Description | Model | Serial Number | Certificate |
|--------------|---------------|----------------|---------------|-------------|
| --- | AC/DC ADAPTER | QL010-0502000U | --- | FCC |
| --- | AC/DC ADAPTER | QL010-0501500U | --- | FCC |

1.3. External I/O Cable

| I/O Port Description | Quantity | Cable |
|----------------------|----------|-------|
| Type-C USB Port | 1 | N/A |

1.4. Description of Test Facility

NVLAP Accreditation Code is 600167-0.

FCC Designation Number is CN5024.

CAB identifier is CN0071.

CNAS Registration Number is L4595.

Test Firm Registration Number: 254912.

The 3m-Semi anechoic test site fulfils CISPR 16-1-4 according to ANSI C63.4:2014 and CISPR 16-1-4:2010 SVSWR requirement for radiated emission above 1GHz.

1.5. Statement of the 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 CISPR 16 – 4 “Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements” and is documented in the LCS 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.

1.6. Measurement Uncertainty

| Test Item | Frequency Range | Uncertainty | Note |
|--------------------------------|-----------------|-------------|------|
| Radiation Uncertainty | 9KHz~30MHz | ±3.10dB | (1) |
| | 30MHz~200MHz | ±2.96dB | (1) |
| | 200MHz~1000MHz | ±3.10dB | (1) |
| | 1GHz~26.5GHz | ±3.80dB | (1) |
| | 26.5GHz~40GHz | ±3.90dB | (1) |
| Conduction Uncertainty | 150kHz~30MHz | ±1.63dB | (1) |
| Power disturbance | 30MHz~300MHz | ±1.60dB | (1) |
| Output power | 1GHz-40GHz | ±0.57dB | (1) |
| Power Spectral Density | 1GHz-40GHz | ±1.2dB | (1) |
| Occupied Channel Bandwidth | 1GHz-40GHz | ±5% | (1) |
| Conducted RF Spurious Emission | 9kHz-40GHz | ±1.80dB | (1) |

(1). This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.



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1.7. Description of Test Modes

The system was configured for testing in engineering mode, which was provided by manufacturer. This test was performed with EUT in X, Y, Z position and the worst case was found when EUT in X position.

Worst-case mode and channel used for 150 KHz-30 MHz power line conducted emissions was determined to be TX GFSK mode (Middle Frequency).

Pre-test AC conducted emission at both voltage AC 120V/60Hz and AC 240V/60Hz, recorded worst case.

Test Frequency and Modulation:

| | Frequency(MHz) | Modulation | Power Level Setting | data rate | Duty Cycle (%) |
|-------------------|----------------|------------|---------------------|-----------|----------------|
| Lowest Frequency | 906 | GFSK | Default | Default | 100 |
| Middle Frequency | 914 | GFSK | Default | Default | 100 |
| Highest Frequency | 922 | GFSK | Default | Default | 100 |





2. TEST METHODOLOGY

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

The radiated testing was performed at an antenna-to-EUT distance of 3 meters. All radiated and conducted emissions measurement was performed at Shenzhen LCS Compliance Testing Laboratory Ltd.

2.1. EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

2.2. EUT Exercise

The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements.

According to FCC's request, Test Procedure KDB558074 D01 15.247 Meas Guidance v05r02 is required to be used for this kind of FCC 15.247 digital modulation device.

According to its specifications, the EUT must comply with the requirements of the Section 15.203, 15.205, 15.207, 15.209 and 15.247 under the FCC Rules Part 15 Subpart C.

2.3. General Test Procedures

2.3.1 Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 6.2.1 of ANSI C63.10-2013 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using Quasi-peak and average detector modes.

2.3.2 Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane below 1GHz and 1.5 m above ground plane above 1GHz. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 6.3 of ANSI C63.10-2013.

2.4. Test Sample

The application provides 2 samples to meet requirement;

| Sample Number | Description |
|------------------------|---------------------------------------|
| Sample 1(A231107045-1) | Engineer sample – continuous transmit |
| Sample 2(A231107045-2) | Normal sample – Intermittent transmit |



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3. SYSTEM TEST CONFIGURATION

3.1. Justification

The system was configured for testing in a continuous transmits condition.

3.2. EUT Exercise Software

The system was configured for testing in a continuous transmits condition and change test channels by software provided by applicant.

3.3. Special Accessories

N/A.

3.4. Block Diagram/Schematics

Please refer to the related document

3.5. Equipment Modifications

Shenzhen LCS Compliance Testing Laboratory Ltd. has not done any modification on the EUT.

3.6. Test Setup

Please refer to the test setup photo.



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4. SUMMARY OF TEST RESULTS

| Applied Standard: FCC Part 15 Subpart C | | | | |
|---|--|-------------|-----------|------------------------------|
| FCC Rules | Description of Test | Test Sample | Result | Remark |
| §15.247(a)(2) | 6dB Bandwidth | Sample 1 | Compliant | Appendix A.1 |
| §15.247(b) | Maximum Peak Conducted Output Power | Sample 1 | Compliant | Appendix A.2 |
| §15.247(e) | Power Spectral Density | Sample 1 | Compliant | Appendix A.3 |
| §15.247(d) | Band edge measurements and Conducted Spurious Emissions | Sample 1 | Compliant | Appendix A.4 Appendix A.5 |
| §15.209, §15.205, §15.247(d) | Radiated Spurious Emissions and Emissions at Restricted Band | Sample 2 | Compliant | Note 1 |
| §15.207(a) | Conducted Emissions | Sample 2 | Compliant | Note 1 |
| §15.203 | Antenna Requirements | Sample 1 | Compliant | Note 1 |
| §15.247(i)§1.1310 §15.247(i)§2.1091 | RF Exposure | N/A | Compliant | Note 2 |

Remark:

- Note 1 – Test results inside test report. The operation frequency of the product is far from the restricted band, and the influence on the restricted band is not counted;
- Note 2 – Test results in other test report (RF Exposure Evaluation);



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5. TEST RESULT

5.1. 6 dB Spectrum Bandwidth Measurement

5.1.1. Standard Applicable

According to §15.247(a) (2): For digital modulation systems, the minimum 6 dB bandwidth shall be at least 500 kHz.

5.1.2. Measuring Instruments and Setting

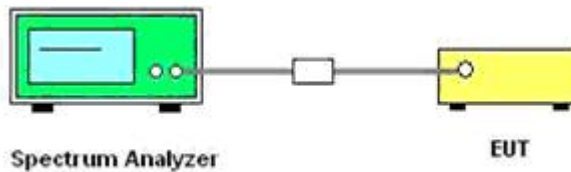
Please refer to equipment list in this report. The following table is the setting of the Spectrum Analyzer.

| Spectrum Parameter | Setting |
|--------------------|----------------------------|
| Attenuation | Auto |
| RBW | 100KHz |
| VBW | $\geq 3 \times \text{RBW}$ |
| Span Frequency | $> \text{RBW}$ |
| Detector | Peak |
| Trace | Max Hold |
| Sweep Time | Auto |

5.1.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer in peak hold mode.
2. Set RBW/VBW = 100 KHz/ 300KHz (for 6dB bandwidth measurement)
Set RBW = 1%~5% OBW; $\text{VBW} \geq 3 \times \text{RBW}$ (for occupied bandwidth measurement).
3. Measured the 6dB bandwidth and 99% occupied bandwidth by related function of the spectrum analyzer.

5.1.4. Test Setup Layout



5.1.5. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

5.1.6. Test Result of 6dB Spectrum Bandwidth

PASS

Please refer to Appendix A.1

Remark: Test results including cable loss.





5.2. Maximum Peak Conducted Output Power Measurement

5.2.1. Standard Applicable

For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

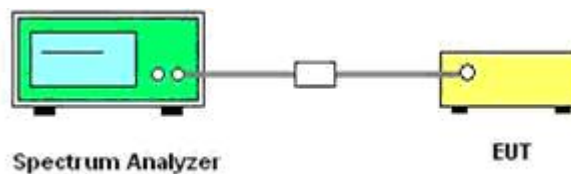
5.2.2. Test Procedures

The transmitter output (antenna port) was connected to the spectrum analyzer. According to KDB558074 D01 15.247 Meas Guidance v05r02 Section 9.1 Maximum peak conducted output power 9.1.1.

This procedure shall be used when the measurement instrument has available a resolution bandwidth that is greater than the DTS bandwidth.

- Set the RBW \geq DTS bandwidth.
- Set VBW $\geq 3 \times$ RBW.
- Set span $\geq 3 \times$ RBW
- Sweep time = auto couple.
- Detector = peak.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use peak marker function to determine the peak amplitude level.

5.2.3. Test Setup Layout



5.2.4. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

5.2.5. Test Result of Maximum Peak Conducted Output Power

PASS

Please refer to Appendix A.2

Remark:

- Test results including cable loss.



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5.3. Power Spectral Density Measurement

5.3.1. Standard Applicable

According to §15.247(e): For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

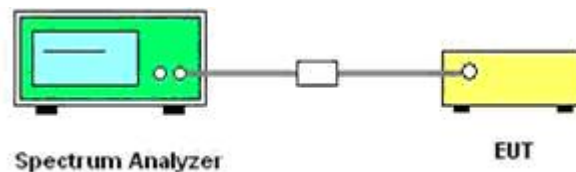
5.3.2. Measuring Instruments and Setting

Please refer to equipment list in this report. The following table is the setting of Spectrum Analyzer.

5.3.3. Test Procedures

1. Use this procedure when the maximum peak conducted output power in the fundamental emission is used to demonstrate compliance.
2. The power was monitored at the coupler port with a Spectrum Analyzer. The power level was set to the maximum level.
3. Set the RBW = 3 kHz.
4. Set the VBW $\geq 3 \times$ RBW
5. Set the span to 1.5 times the DTS channel bandwidth.
6. Detector = peak.
7. Sweep time = auto couple.
8. Trace mode = max hold.
9. Allow trace to fully stabilize.
10. Use the peak marker function to determine the maximum power level.
11. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.
12. The resulting peak PSD level shall not be greater than 8 dBm in any 3KHz band.

5.3.4. Test Setup Layout



5.3.5. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

5.3.6. Test Result of Power Spectral Density

PASS

Please refer to Appendix A.3

Remark: Test results including cable loss.





5.4. Radiated Emissions Measurement

5.4.1. Standard Applicable

According to §15.247 (d): 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)).

§ 15.205 Restricted bands of operation;

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

| MHz | MHz | MHz | GHz |
|-------------------|---------------------|---------------|-------------|
| 0.090-0.110 | 16.42-16.423 | 399.9-410 | 4.5-5.15 |
| \1\ 0.495-0.505 | 16.69475-16.69525 | 608-614 | 5.35-5.46 |
| 2.1735-2.1902 | 16.80425-16.80475 | 960-1240 | 7.25-7.75 |
| 4.125-4.128 | 25.5-25.67 | 1300-1427 | 8.025-8.5 |
| 4.17725-4.17775 | 37.5-38.25 | 1435-1626.5 | 9.0-9.2 |
| 4.20725-4.20775 | 73-74.6 | 1645.5-1646.5 | 9.3-9.5 |
| 6.215-6.218 | 74.8-75.2 | 1660-1710 | 10.6-12.7 |
| 6.26775-6.26825 | 108-121.94 | 1718.8-1722.2 | 13.25-13.4 |
| 6.31175-6.31225 | 123-138 | 2200-2300 | 14.47-14.5 |
| 8.291-8.294 | 149.9-150.05 | 2310-2390 | 15.35-16.2 |
| 8.362-8.366 | 156.52475-156.52525 | 2483.5-2500 | 17.7-21.4 |
| 8.37625-8.38675 | 156.7-156.9 | 2690-2900 | 22.01-23.12 |
| 8.41425-8.41475 | 162.0125-167.17 | 3260-3267 | 23.6-24.0 |
| 12.29-12.293 | 167.72-173.2 | 3332-3339 | 31.2-31.8 |
| 12.51975-12.52025 | 240-285 | 3345.8-3358 | 36.43-36.5 |
| 12.57675-12.57725 | 322-335.4 | 3600-4400 | (2\) |
| 13.36-13.41 | | | |

\1\ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

\2\ Above 38.6

§ 15.209 Radiated emission limits:

| Frequencies (MHz) | Field Strength (microvolts/meter) | Measurement Distance (meters) |
|-------------------|-----------------------------------|-------------------------------|
| 0.009~0.490 | 2400/F(KHz) | 300 |
| 0.490~1.705 | 24000/F(KHz) | 30 |
| 1.705~30.0 | 30 | 30 |
| 30~88 | 100 | 3 |
| 88~216 | 150 | 3 |
| 216~960 | 200 | 3 |
| Above 960 | 500 | 3 |





5.4.2. Measuring Instruments and Setting

Please refer to equipment list in this report. The following table is the setting of spectrum analyzer and receiver.

| Spectrum Parameter | Setting |
|---|---|
| Attenuation | Auto |
| Start Frequency | 1000 MHz |
| Stop Frequency | 10 th carrier harmonic |
| RB / VB (Emission in restricted band) | 1MHz / 1MHz for Peak, 1 MHz / 1/B kHz for Average |
| RB / VB (Emission in non-restricted band) | 1MHz / 1MHz for Peak, 1 MHz / 1/B kHz for Average |

| Receiver Parameter | Setting |
|------------------------|--|
| Attenuation | Auto |
| Start ~ Stop Frequency | 9kHz~150kHz / RB/VB 200Hz/1KHz for QP/AVG |
| Start ~ Stop Frequency | 150kHz~30MHz / RB/VB 9kHz/30KHz for QP/AVG |
| Start ~ Stop Frequency | 30MHz~1000MHz / RB/VB 120kHz/1MHz for QP |





5.4.3. Test Procedures

1) Sequence of testing 9 kHz to 30 MHz

Setup:

- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- If the EUT is a tabletop system, a rotatable table with 0.8 m height is used.
- If the EUT is a floor standing device, it is placed on the ground.
- Auxiliary equipment and cables were positioned to simulate normal operation conditions.
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- The measurement distance is 3 meter.
- The EUT was set into operation.

Premeasurement:

- The turntable rotates from 0° to 315° using 45° steps.
- The antenna height is 1.0 meter.
- At each turntable position the analyzer sweeps with peak detection to find the maximum of all emissions

Final measurement:

- Identified emissions during the premeasurement the software maximizes by rotating the turntable position (0° to 360°) and by rotating the elevation axes (0° to 360°).
- The final measurement will be done in the position (turntable and elevation) causing the highest emissions with QPK detector.
- The final levels, frequency, measuring time, bandwidth, turntable position, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement and the limit will be stored.

2) Sequence of testing 30 MHz to 1 GHz

Setup:

- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- If the EUT is a tabletop system, a table with 0.8 m height is used, which is placed on the ground plane.
- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.
- Auxiliary equipment and cables were positioned to simulate normal operation conditions
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- The measurement distance is 3 meter.
- The EUT was set into operation.



**Premeasurement:**

- The turntable rotates from 0° to 315° using 45° steps.
- The antenna is polarized vertical and horizontal.
- The antenna height changes from 1 to 3 meter.
- At each turntable position, antenna polarization and height the analyzer sweeps three times in peak to find the maximum of all emissions.

Final measurement:

- The final measurement will be performed with minimum the six highest peaks.
- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable position ($\pm 45^\circ$) and antenna movement between 1 and 4 meter.
- The final measurement will be done with QP detector with an EMI receiver.
- The final levels, frequency, measuring time, bandwidth, antenna height, antenna polarization, turntable angle, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement with marked maximum final measurements and the limit will be stored.

3) Sequence of testing 1 GHz to 10 GHz**Setup:**

- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- If the EUT is a tabletop system, a rotatable table with 1.5 m height is used.
- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.
- Auxiliary equipment and cables were positioned to simulate normal operation conditions
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- The measurement distance is 3 meter.
- The EUT was set into operation.

Premeasurement:

- The turntable rotates from 0° to 315° using 45° steps.
- The antenna is polarized vertical and horizontal.
- The antenna height scan range is 1 meter to 2.5 meter.
- At each turntable position and antenna polarization the analyzer sweeps with peak detection to find the maximum of all emissions.

Final measurement:

- The final measurement will be performed with minimum the six highest peaks.
- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable position ($\pm 45^\circ$) and antenna movement between 1 and 4 meter. This procedure is repeated for both antenna polarizations.
- The final measurement will be done in the position (turntable, EUT-table and antenna polarization)



Shenzhen LCS Compliance Testing Laboratory Ltd.

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Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com

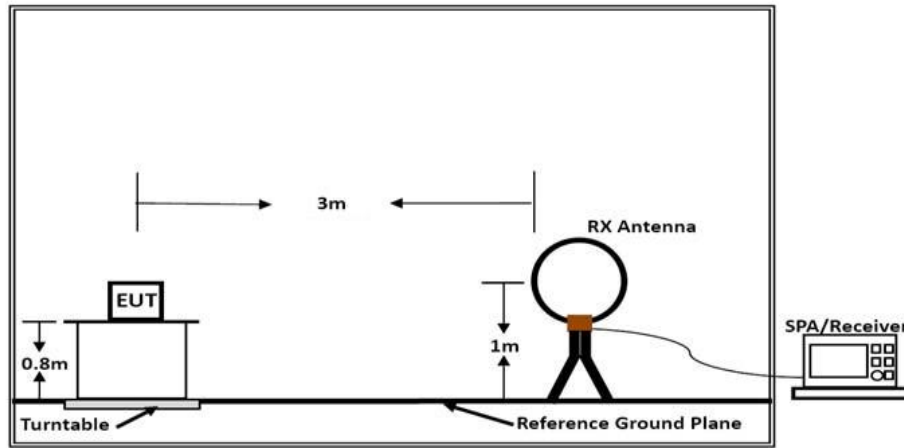
Scan code to check authenticity



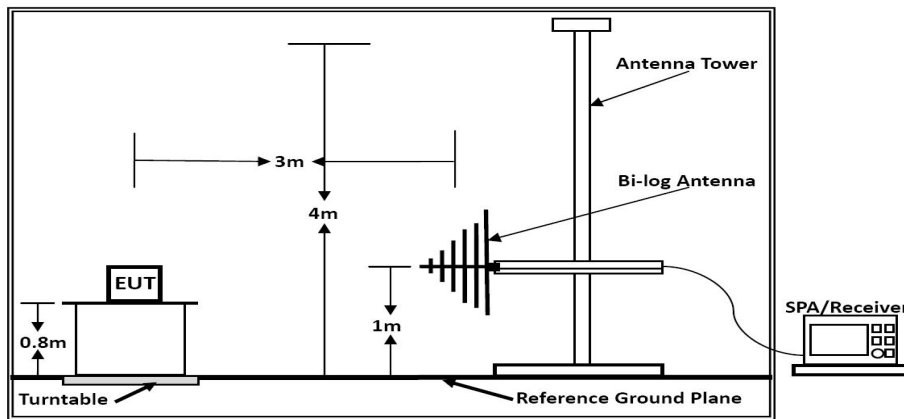
causing the highest emissions with Peak and Average detector.

--- The final levels, frequency, measuring time, bandwidth, turntable position, EUT-table position, antenna polarization, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement with marked maximum final measurements and the limit will be stored.

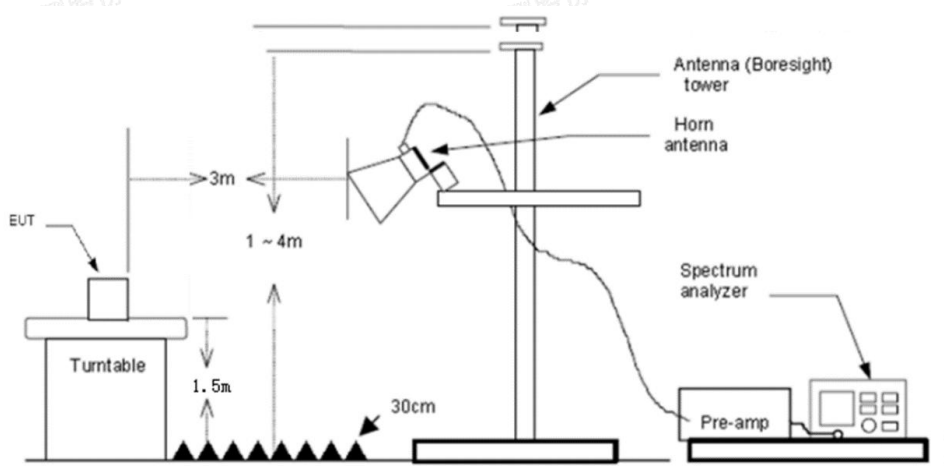
5.4.4. Test Setup Layout



Below 30MHz



Below 1GHz





5.4.5. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

5.4.6. Results of Radiated Emissions (9 KHz~30MHz)

| | | | |
|---------------|-----------|----------------|---------|
| Temperature | 23.8°C | Humidity | 52.1% |
| Test Engineer | Taylor Hu | Configurations | TX Mode |

| Freq. (MHz) | Level (dBuV) | Over Limit (dB) | Over Limit (dBuV) | Remark |
|-------------|--------------|-----------------|-------------------|----------|
| - | - | - | - | See Note |

Note:

The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.

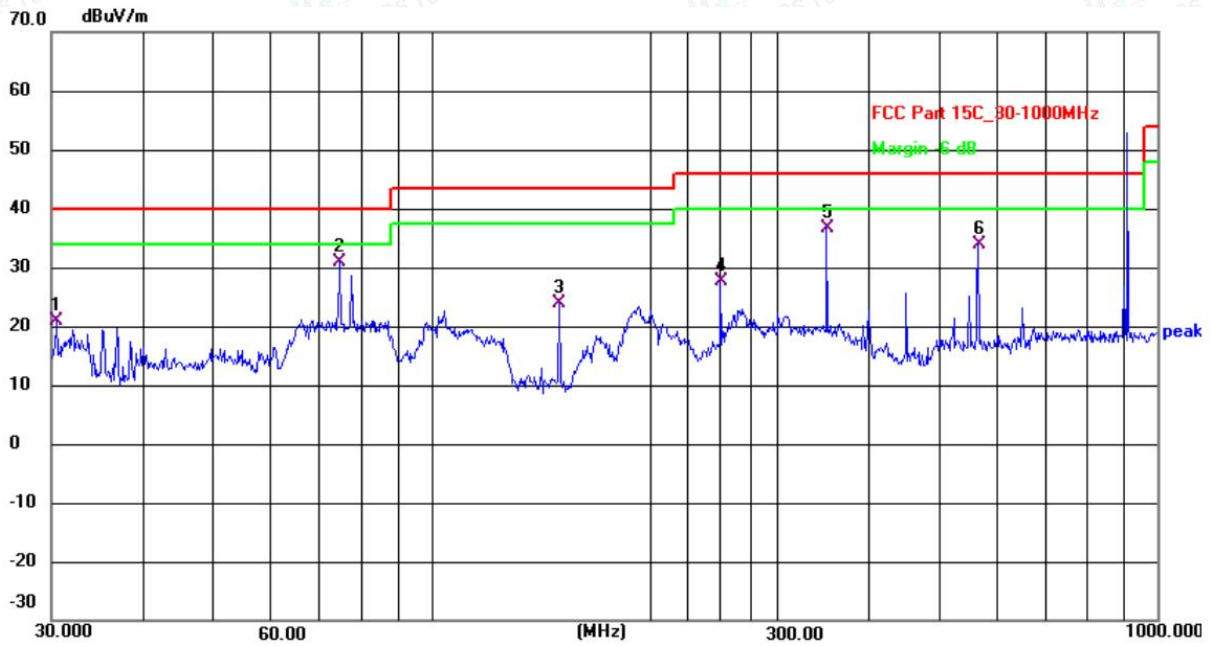
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);
Limit line = specific limits (dBuV) + distance extrapolation factor.

5.4.7. Results of Radiated Emissions (30MHz~1GHz)

| | | | |
|---------------|-----------|----------------|---------|
| Temperature | 23.8°C | Humidity | 52.1% |
| Test Engineer | Taylor Hu | Configurations | TX Mode |



906 MHz
Horizontal

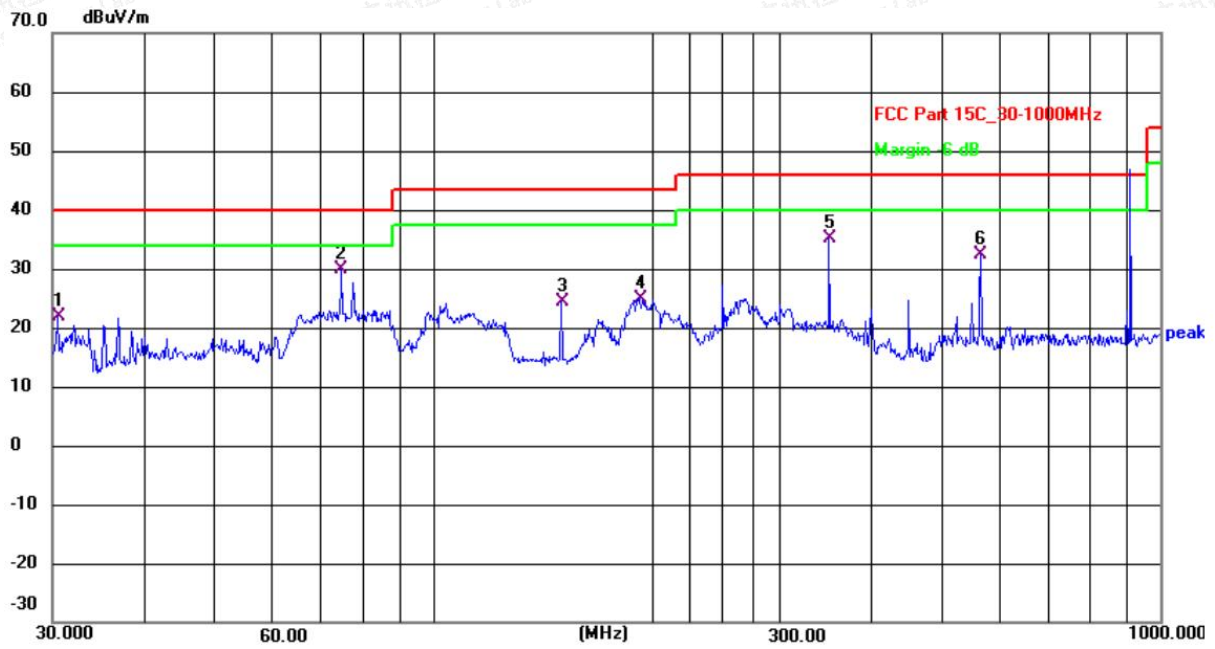


| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1 | 30.5306 | 39.39 | -18.39 | 21.00 | 40.00 | -19.00 | QP |
| 2 | 74.9191 | 50.51 | -19.67 | 30.84 | 40.00 | -9.16 | QP |
| 3 | 150.0108 | 43.82 | -19.82 | 24.00 | 43.50 | -19.50 | QP |
| 4 | 250.3012 | 43.27 | -15.61 | 27.66 | 46.00 | -18.34 | QP |
| 5 | 350.4768 | 51.59 | -14.87 | 36.72 | 46.00 | -9.28 | QP |
| 6 | 566.6223 | 44.99 | -11.18 | 33.81 | 46.00 | -12.19 | QP |





Vertical

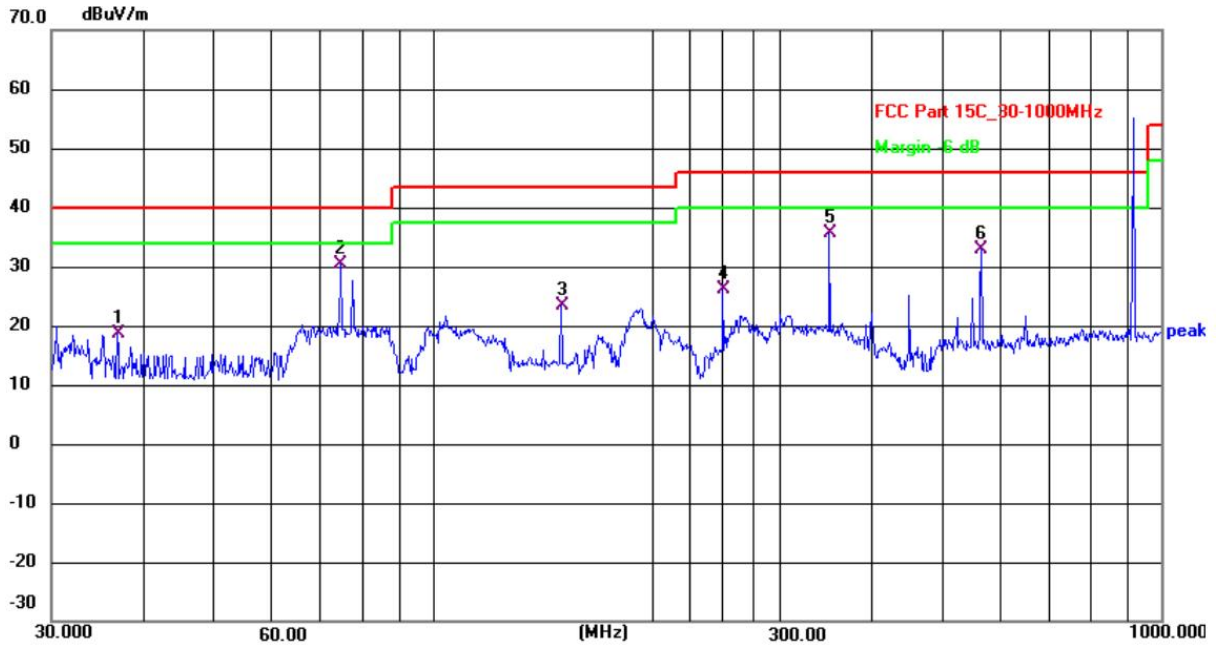


| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1 | 30.5306 | 40.39 | -18.39 | 22.00 | 40.00 | -18.00 | QP |
| 2 | 74.9191 | 49.51 | -19.67 | 29.84 | 40.00 | -10.16 | QP |
| 3 | 150.0108 | 44.32 | -19.82 | 24.50 | 43.50 | -19.00 | QP |
| 4 | 192.4185 | 42.24 | -17.35 | 24.89 | 43.50 | -18.61 | QP |
| 5 | 350.4767 | 50.09 | -14.87 | 35.22 | 46.00 | -10.78 | QP |
| 6 | 566.6221 | 43.49 | -11.18 | 32.31 | 46.00 | -13.69 | QP |





914 MHz
Horizontal

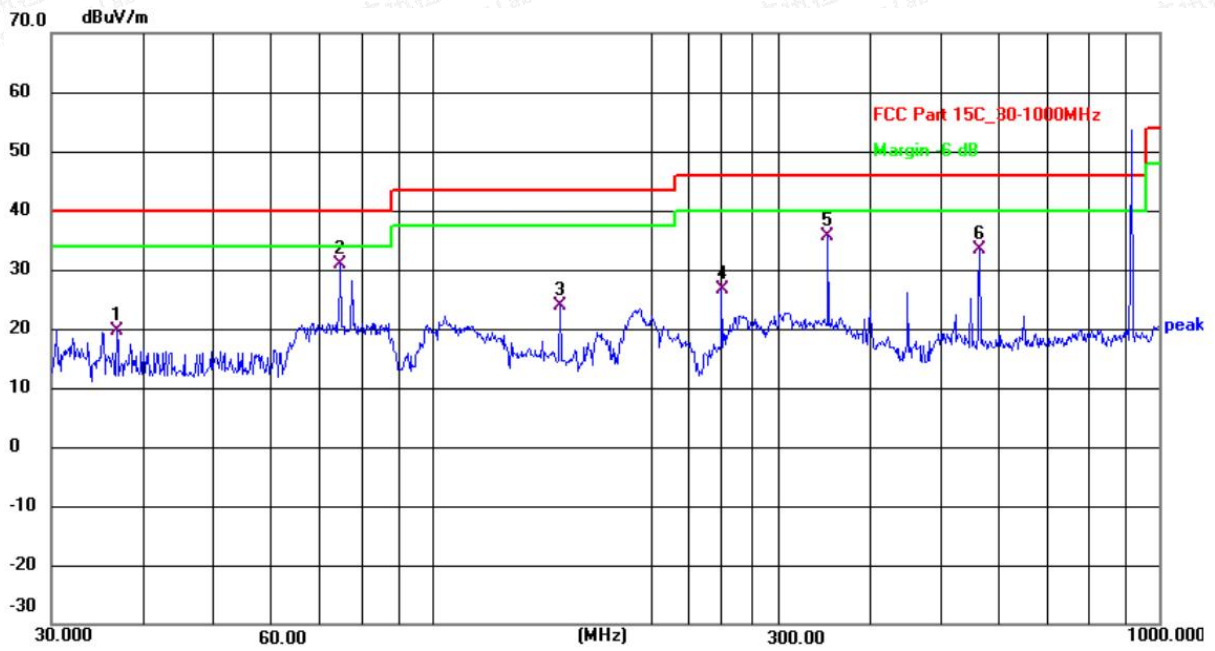


| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1 | 36.8953 | 36.37 | -17.69 | 18.68 | 40.00 | -21.32 | QP |
| 2 | 74.9191 | 50.01 | -19.67 | 30.34 | 40.00 | -9.66 | QP |
| 3 | 150.0108 | 43.32 | -19.82 | 23.50 | 43.50 | -20.00 | QP |
| 4 | 250.3011 | 41.77 | -15.61 | 26.16 | 46.00 | -19.84 | QP |
| 5 | 350.4767 | 50.59 | -14.87 | 35.72 | 46.00 | -10.28 | QP |
| 6 | 566.6221 | 43.99 | -11.18 | 32.81 | 46.00 | -13.19 | QP |





Vertical

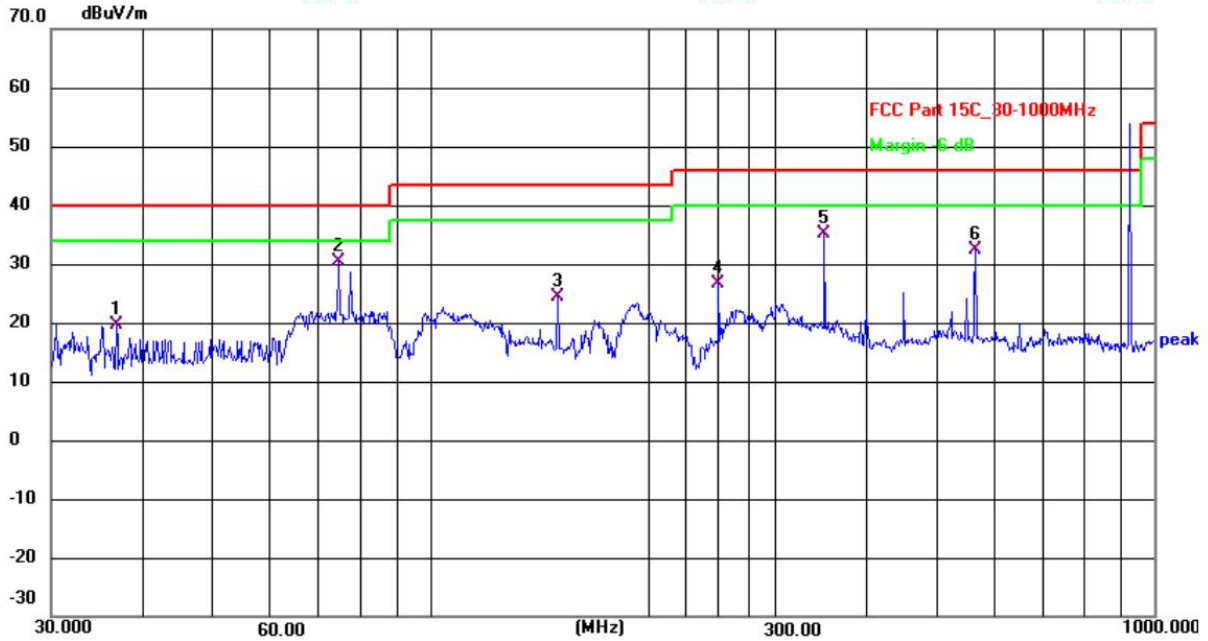


| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1 | 36.8952 | 37.38 | -17.70 | 19.68 | 40.00 | -20.32 | QP |
| 2 | 74.9191 | 50.51 | -19.67 | 30.84 | 40.00 | -9.16 | QP |
| 3 | 150.0107 | 43.82 | -19.82 | 24.00 | 43.50 | -19.50 | QP |
| 4 | 250.3010 | 42.27 | -15.61 | 26.66 | 46.00 | -19.34 | QP |
| 5 | 350.4766 | 50.59 | -14.87 | 35.72 | 46.00 | -10.28 | QP |
| 6 | 566.6221 | 44.49 | -11.18 | 33.31 | 46.00 | -12.69 | QP |





922 MHz
Horizontal

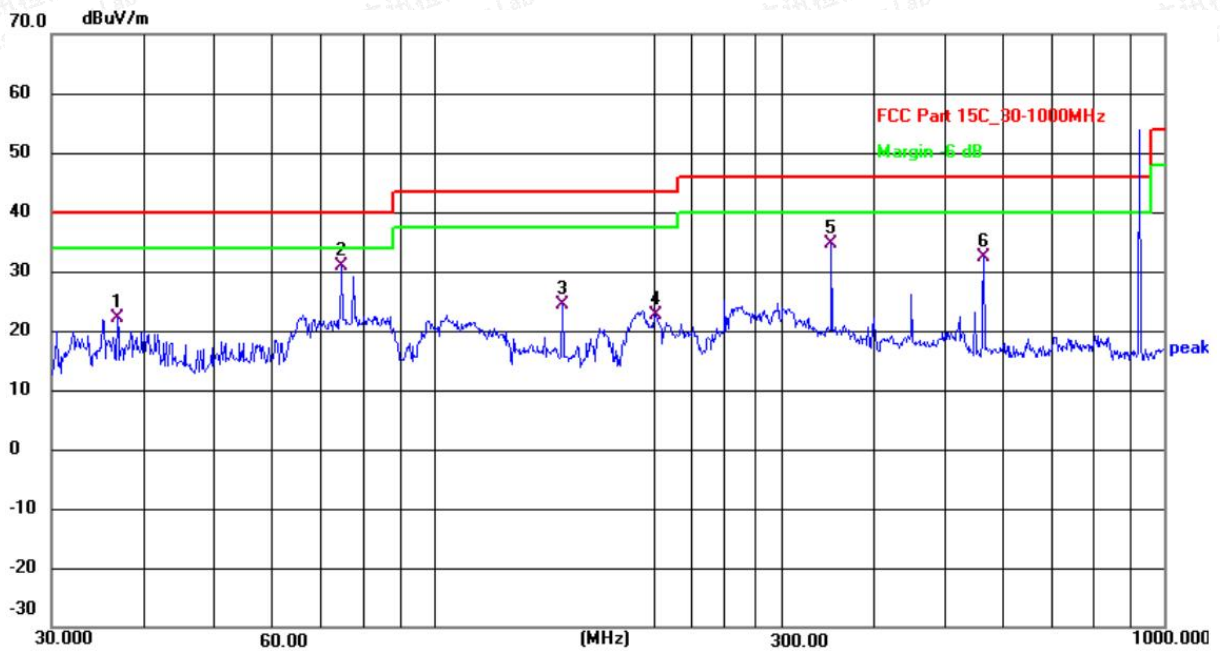


| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1 | 36.8952 | 37.38 | -17.70 | 19.68 | 40.00 | -20.32 | QP |
| 2 | 74.9191 | 50.01 | -19.67 | 30.34 | 40.00 | -9.66 | QP |
| 3 | 150.0107 | 44.32 | -19.82 | 24.50 | 43.50 | -19.00 | QP |
| 4 | 250.3009 | 42.27 | -15.61 | 26.66 | 46.00 | -19.34 | QP |
| 5 | 350.4766 | 50.09 | -14.87 | 35.22 | 46.00 | -10.78 | QP |
| 6 | 566.6221 | 43.49 | -11.18 | 32.31 | 46.00 | -13.69 | QP |





Vertical



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1 | 36.8952 | 39.88 | -17.70 | 22.18 | 40.00 | -17.82 | QP |
| 2 | 74.9191 | 50.51 | -19.67 | 30.84 | 40.00 | -9.16 | QP |
| 3 | 150.0107 | 44.32 | -19.82 | 24.50 | 43.50 | -19.00 | QP |
| 4 | 201.3930 | 40.04 | -17.36 | 22.68 | 43.50 | -20.82 | QP |
| 5 | 350.4766 | 49.59 | -14.87 | 34.72 | 46.00 | -11.28 | QP |
| 6 | 566.6221 | 43.49 | -11.18 | 32.31 | 46.00 | -13.69 | QP |

Note:

- 1). Pre-scan all modes and recorded the worst case results in this report.
- 2). Emission level (dBuV/m) = 20 log Emission level (uV/m).
- 3). Level = Reading + Factor, Margin = Level – Limit, Factor = Antenna Factor + Cable Loss - Preamp Factor

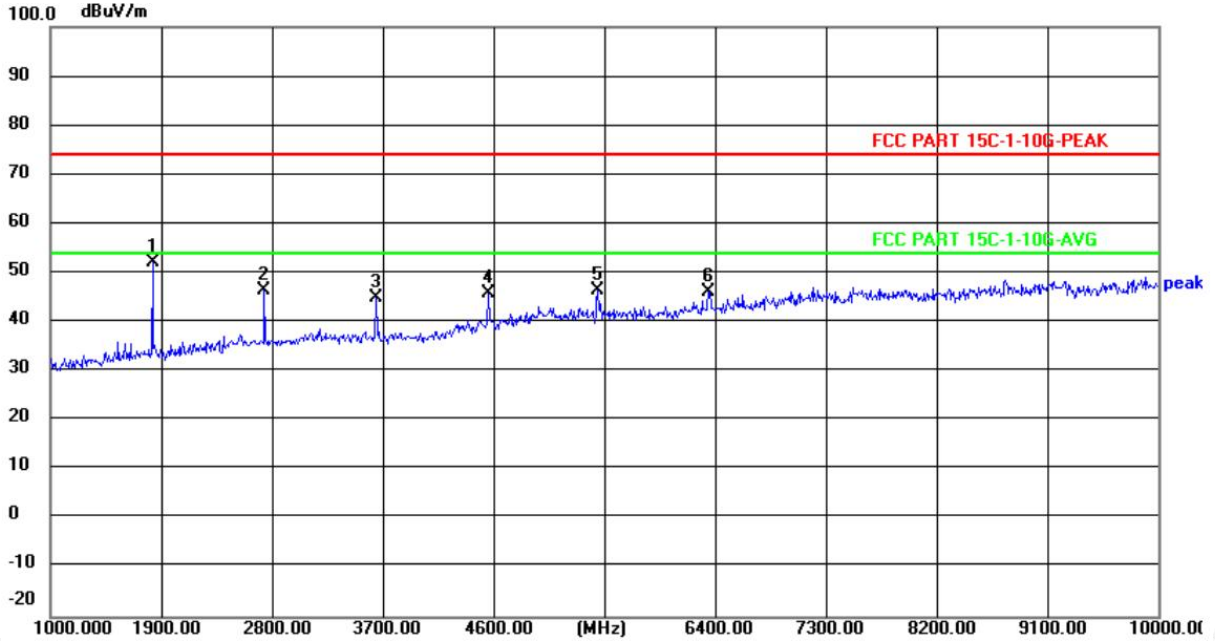




5.4.8. Results for Radiated Emissions (1 GHz~10 GHz)

| | | | |
|---------------|-----------|----------------|---------|
| Temperature | 23.8°C | Humidity | 52.5% |
| Test Engineer | Taylor Hu | Configurations | TX Mode |

906MHz
Horizontal

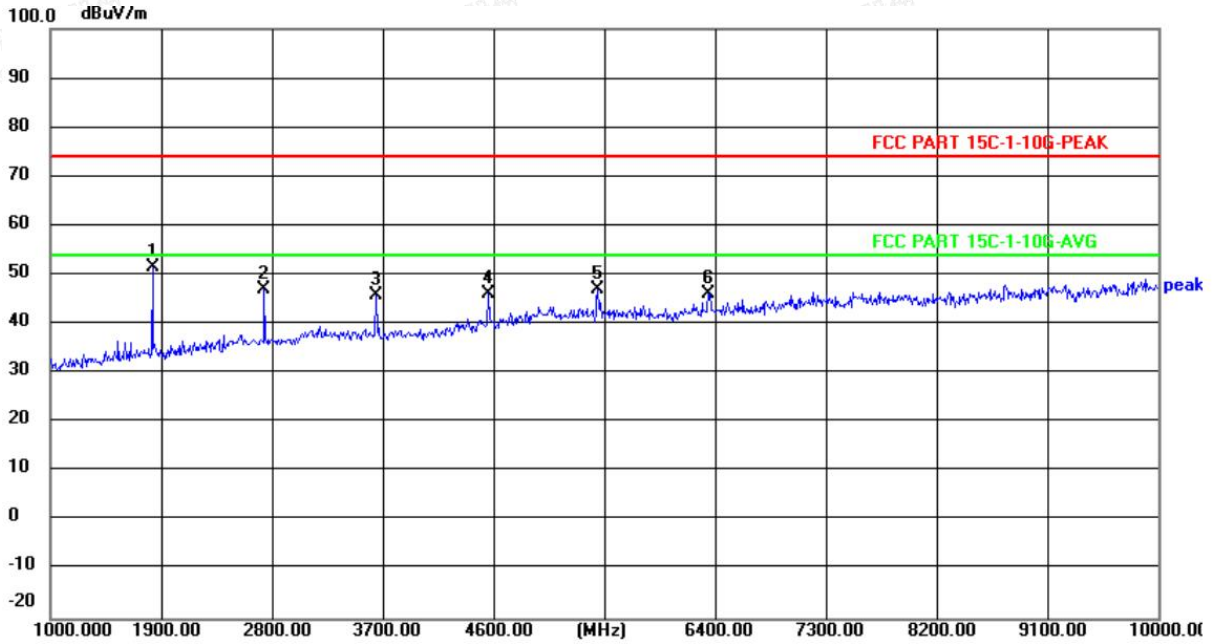


| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1 | 1828.000 | 66.04 | -14.01 | 52.03 | 74.00 | -21.97 | peak |
| 2 | 2737.000 | 56.93 | -10.51 | 46.42 | 74.00 | -27.58 | peak |
| 3 | 3646.000 | 53.98 | -9.16 | 44.82 | 74.00 | -29.18 | peak |
| 4 | 4555.000 | 52.05 | -6.31 | 45.74 | 74.00 | -28.26 | peak |
| 5 | 5446.000 | 49.85 | -3.30 | 46.55 | 74.00 | -27.45 | peak |
| 6 | 6346.000 | 48.29 | -2.14 | 46.15 | 74.00 | -27.85 | peak |





Vertical

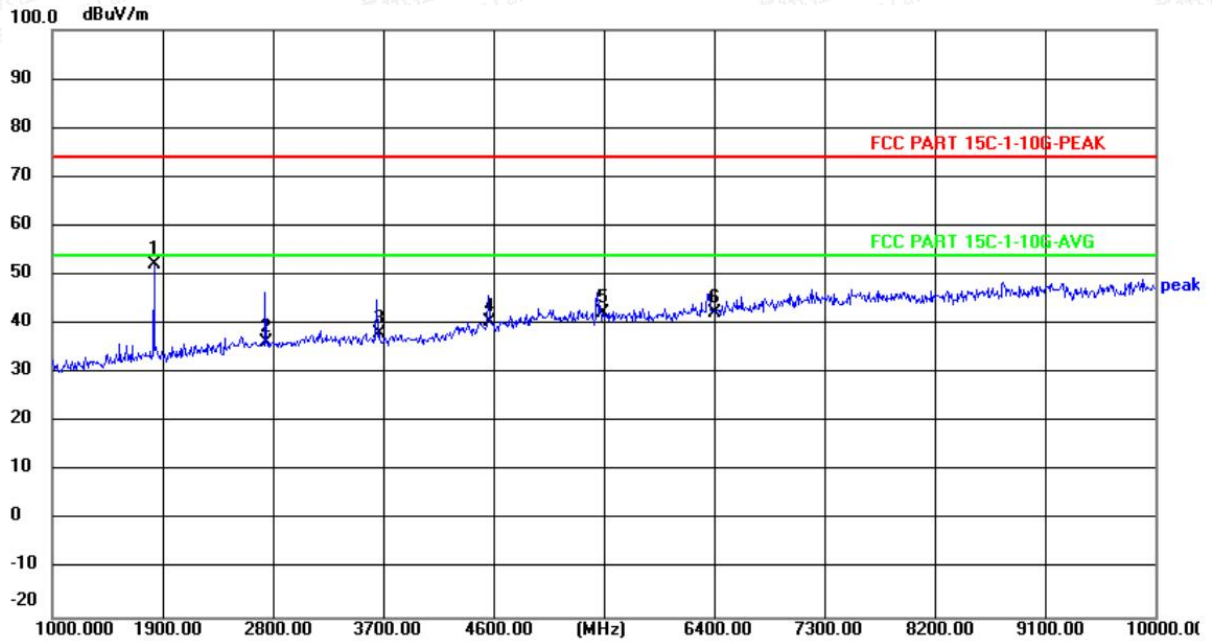


| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1 | 1828.000 | 65.54 | -14.01 | 51.53 | 74.00 | -22.47 | peak |
| 2 | 2737.000 | 57.43 | -10.51 | 46.92 | 74.00 | -27.08 | peak |
| 3 | 3646.000 | 54.98 | -9.16 | 45.82 | 74.00 | -28.18 | peak |
| 4 | 4555.000 | 52.55 | -6.31 | 46.24 | 74.00 | -27.76 | peak |
| 5 | 5446.000 | 50.35 | -3.30 | 47.05 | 74.00 | -26.95 | peak |
| 6 | 6346.000 | 48.29 | -2.14 | 46.15 | 74.00 | -27.85 | peak |





914MHz
Horizontal

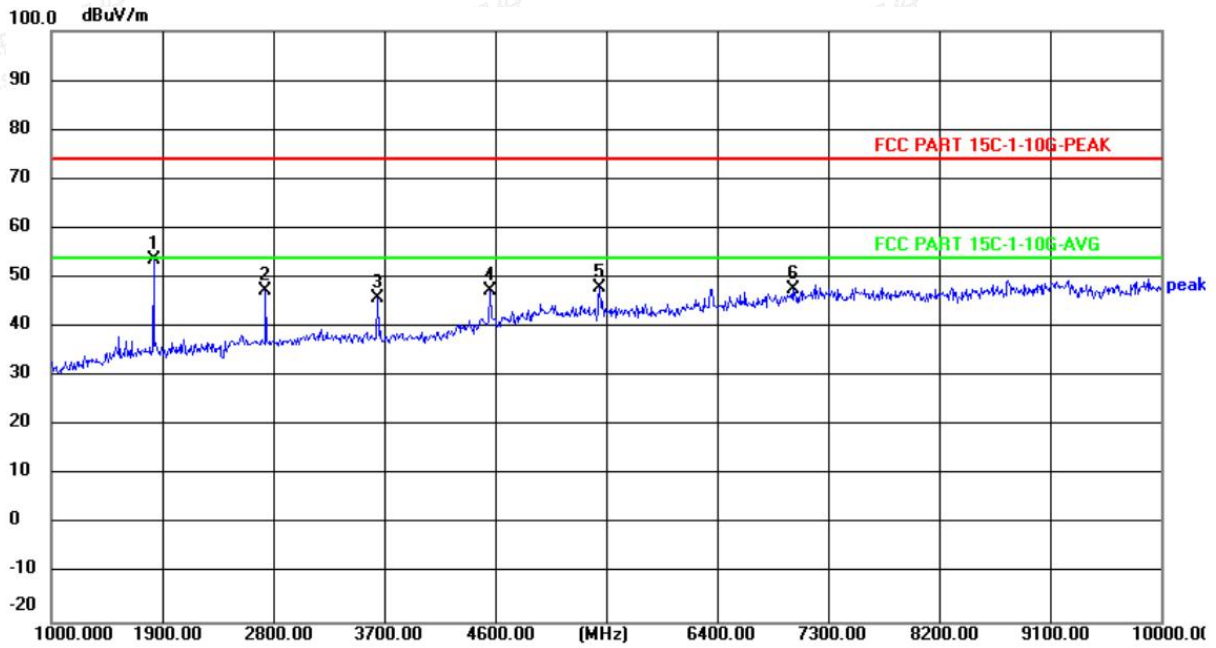


| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1 | 1828.000 | 66.04 | -14.01 | 52.03 | 74.00 | -21.97 | peak |
| 2 | 2742.000 | 46.72 | -10.50 | 36.22 | 74.00 | -37.78 | peak |
| 3 | 3656.000 | 47.26 | -9.15 | 38.11 | 74.00 | -35.89 | peak |
| 4 | 4570.000 | 46.82 | -6.23 | 40.59 | 74.00 | -33.41 | peak |
| 5 | 5484.000 | 45.43 | -3.24 | 42.19 | 74.00 | -31.81 | peak |
| 6 | 6398.000 | 44.08 | -1.91 | 42.17 | 74.00 | -31.83 | peak |





Vertical

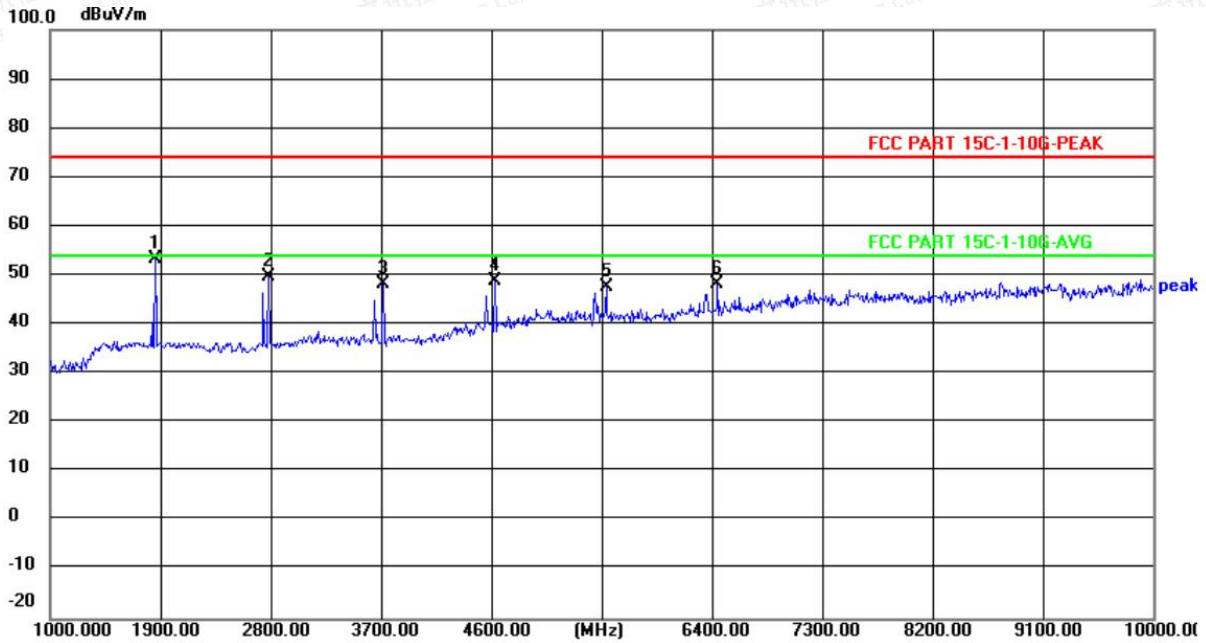


| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1 | 1828.000 | 67.54 | -14.01 | 53.53 | 74.00 | -20.47 | peak |
| 2 | 2737.000 | 57.93 | -10.51 | 47.42 | 74.00 | -26.58 | peak |
| 3 | 3646.000 | 54.98 | -9.16 | 45.82 | 74.00 | -28.18 | peak |
| 4 | 4555.000 | 53.55 | -6.31 | 47.24 | 74.00 | -26.76 | peak |
| 5 | 5446.000 | 51.35 | -3.30 | 48.05 | 74.00 | -25.95 | peak |
| 6 | 7012.000 | 47.91 | -0.19 | 47.72 | 74.00 | -26.28 | peak |





922MHz
Horizontal

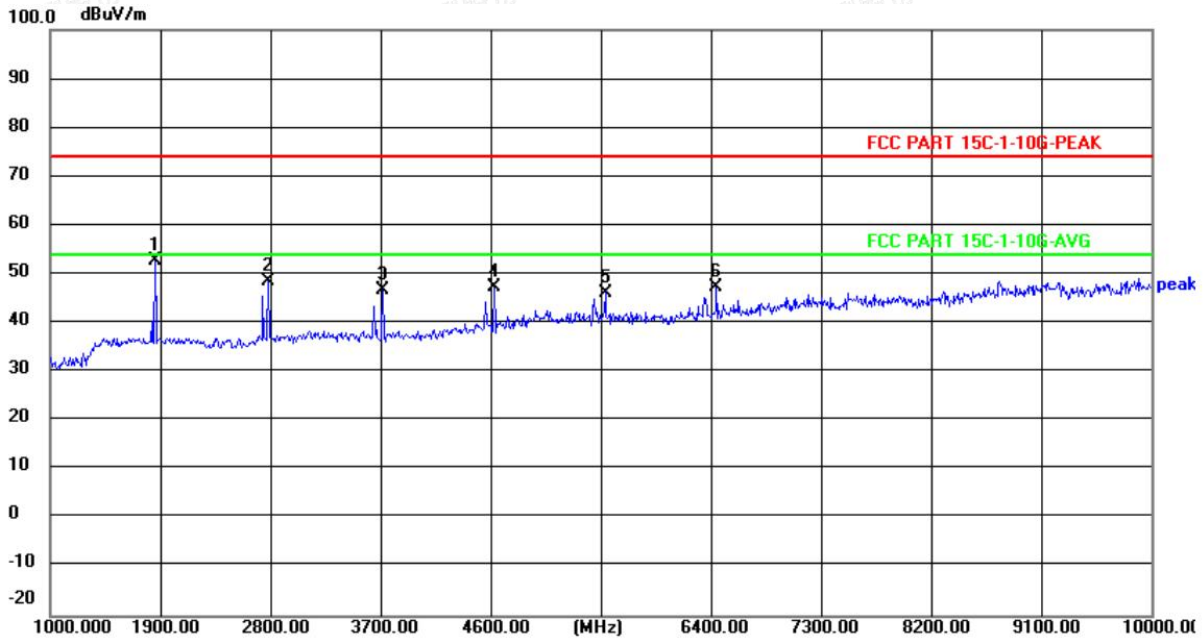


| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1 | 1855.000 | 67.21 | -13.87 | 53.34 | 74.00 | -20.66 | peak |
| 2 | 2782.000 | 59.99 | -10.35 | 49.64 | 74.00 | -24.36 | peak |
| 3 | 3718.000 | 57.19 | -9.03 | 48.16 | 74.00 | -25.84 | peak |
| 4 | 4627.000 | 54.94 | -5.96 | 48.98 | 74.00 | -25.02 | peak |
| 5 | 5536.000 | 51.03 | -3.23 | 47.80 | 74.00 | -26.20 | peak |
| 6 | 6445.000 | 49.93 | -1.69 | 48.24 | 74.00 | -25.76 | peak |





Vertical



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1 | 1855.000 | 66.71 | -13.87 | 52.84 | 74.00 | -21.16 | peak |
| 2 | 2782.000 | 58.99 | -10.35 | 48.64 | 74.00 | -25.36 | peak |
| 3 | 3718.000 | 55.69 | -9.03 | 46.66 | 74.00 | -27.34 | peak |
| 4 | 4627.000 | 53.44 | -5.96 | 47.48 | 74.00 | -26.52 | peak |
| 5 | 5536.000 | 49.53 | -3.23 | 46.30 | 74.00 | -27.70 | peak |
| 6 | 6445.000 | 48.93 | -1.69 | 47.24 | 74.00 | -26.76 | peak |

Notes:

- 1). Measuring frequencies from 9 KHz~10th harmonic or 10GHz (which is less), at least have 20dB margin found between lowest internal used/generated frequency to 30MHz.
- 2). Radiated emissions measured in frequency range from 9 KHz~10th harmonic or 10GHz (which is less) were made with an instrument using Peak detector mode. Due to the measure PK emission level less than the AV limit value. No necessary to take down the AV emission level.
- 3). Data of measurement within this frequency range shown “ --- ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 4). Measured Level = Reading Level + Factor, Margin = Measured Level – Limit,
Factor = Antenna Factor + Cable Loss - Preamp Factor





5.5. Band edge Measurements and Conducted Spurious Emissions Test

5.5.1. Standard Applicable

According to §15.247 (d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

5.5.2. Measuring Instruments and Setting

Please refer to section 6 of equipment list in this report. The following table is the setting of the spectrum analyzer.

| Spectrum Parameter | Setting |
|---|---------------|
| Detector | Peak |
| Attenuation | Auto |
| RB / VB (Emission in restricted band) | 100KHz/300KHz |
| RB / VB (Emission in non-restricted band) | 100KHz/300KHz |

5.5.3. Test Procedures

The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz

The spectrum from 30 MHz to 26.5GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

5.5.4. Test Setup Layout

This test setup layout is the same as that shown in section 5.1.4.

5.5.5. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

5.5.6. Test Results of Conducted Spurious Emissions

PASS

Please refer to Appendix A.4 for band edge measurements;

Please refer to Appendix A.5 for conducted spurious emission.

Remark:

- 1). Test results including cable loss;
- 2). “---“means that the fundamental frequency not for 15.209 limits requirement.
- 3). Not recorded emission from 9 KHz to 30 MHz as emission level at least 20dBc lower than emission limit.



5.6. AC Power line conducted emissions

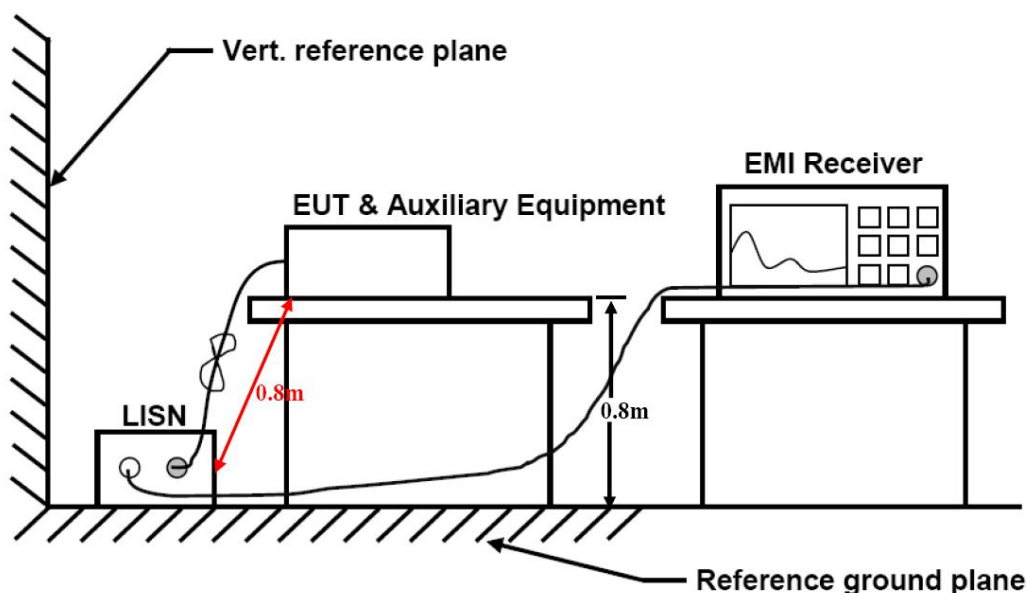
5.6.1 Standard Applicable

According to §15.207 (a): For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed 250 microvolts (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range are listed as follows:

| Frequency Range (MHz) | Limits (dBµV) | |
|-----------------------|---------------|----------|
| | Quasi-peak | Average |
| 0.15 to 0.50 | 66 to 56 | 56 to 46 |
| 0.50 to 5 | 56 | 46 |
| 5 to 30 | 60 | 50 |

* Decreasing linearly with the logarithm of the frequency

5.6.2 Block Diagram of Test Setup



5.6.3 Test Results

| | | | |
|---------------|-----------|----------------|---------|
| Temperature | 23.3°C | Humidity | 53.3% |
| Test Engineer | Taylor Hu | Configurations | TX Mode |

PASS.

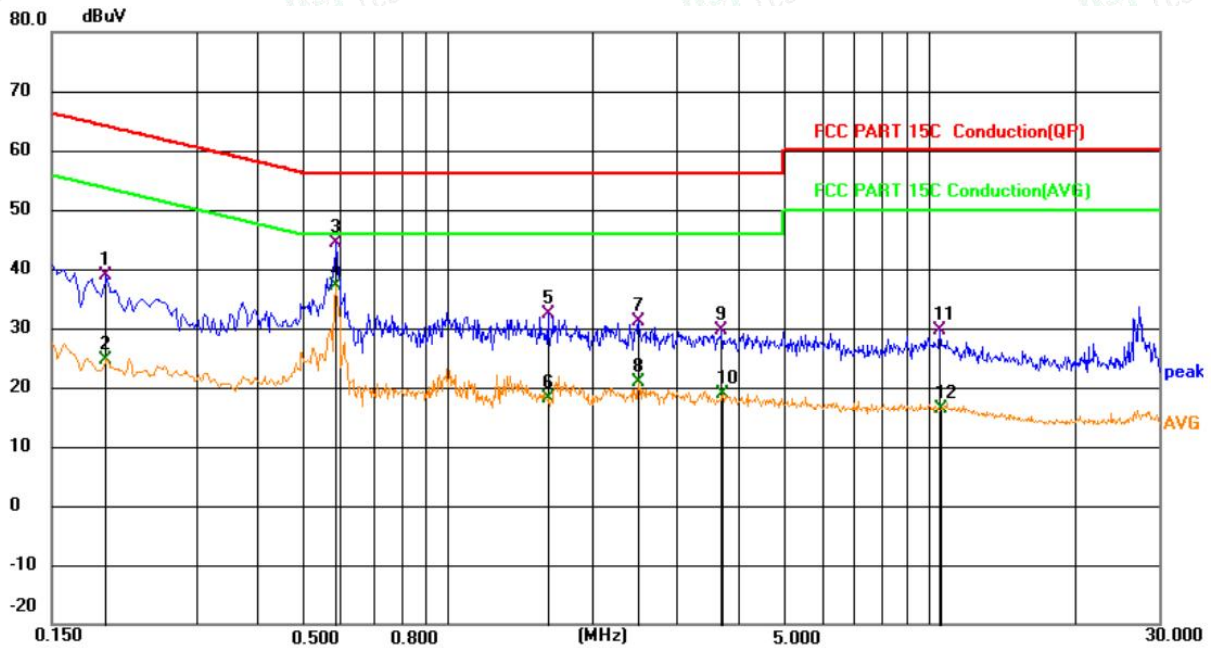
The test data please refer to following page.





AC Conducted Emission @ AC 120V/60Hz (worst case)

For Adapter Model: QL010-0502000U
Line

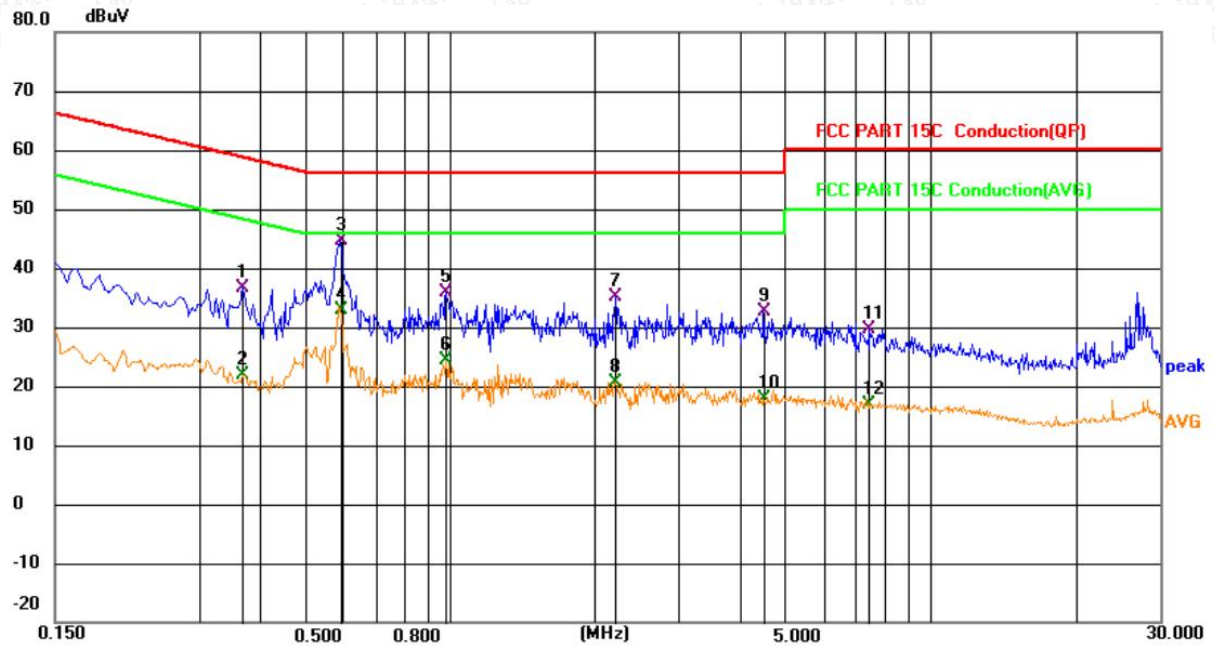


| No. | Mk. | Freq. MHz | Reading Level dBuV | Correct Factor dB | Measure- ment dBuV | Limit dBuV | Margin dB | Detector | Comment |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|--------------|----------|---------|
| 1 | | 0.1949 | 18.66 | 20.17 | 38.83 | 63.83 | -25.00 | QP | |
| 2 | | 0.1949 | 4.58 | 20.17 | 24.75 | 53.83 | -29.08 | AVG | |
| 3 | | 0.5865 | 24.10 | 20.16 | 44.26 | 56.00 | -11.74 | QP | |
| 4 | * | 0.5865 | 16.91 | 20.16 | 37.07 | 46.00 | -8.93 | AVG | |
| 5 | | 1.6169 | 12.26 | 20.17 | 32.43 | 56.00 | -23.57 | QP | |
| 6 | | 1.6169 | -2.07 | 20.17 | 18.10 | 46.00 | -27.90 | AVG | |
| 7 | | 2.4900 | 10.93 | 20.26 | 31.19 | 56.00 | -24.81 | QP | |
| 8 | | 2.4900 | 0.53 | 20.26 | 20.79 | 46.00 | -25.21 | AVG | |
| 9 | | 3.7141 | 9.51 | 20.17 | 29.68 | 56.00 | -26.32 | QP | |
| 10 | | 3.7366 | -1.40 | 20.16 | 18.76 | 46.00 | -27.24 | AVG | |
| 11 | | 10.5136 | 9.33 | 20.37 | 29.70 | 60.00 | -30.30 | QP | |
| 12 | | 10.6036 | -4.00 | 20.37 | 16.37 | 50.00 | -33.63 | AVG | |





Neutral

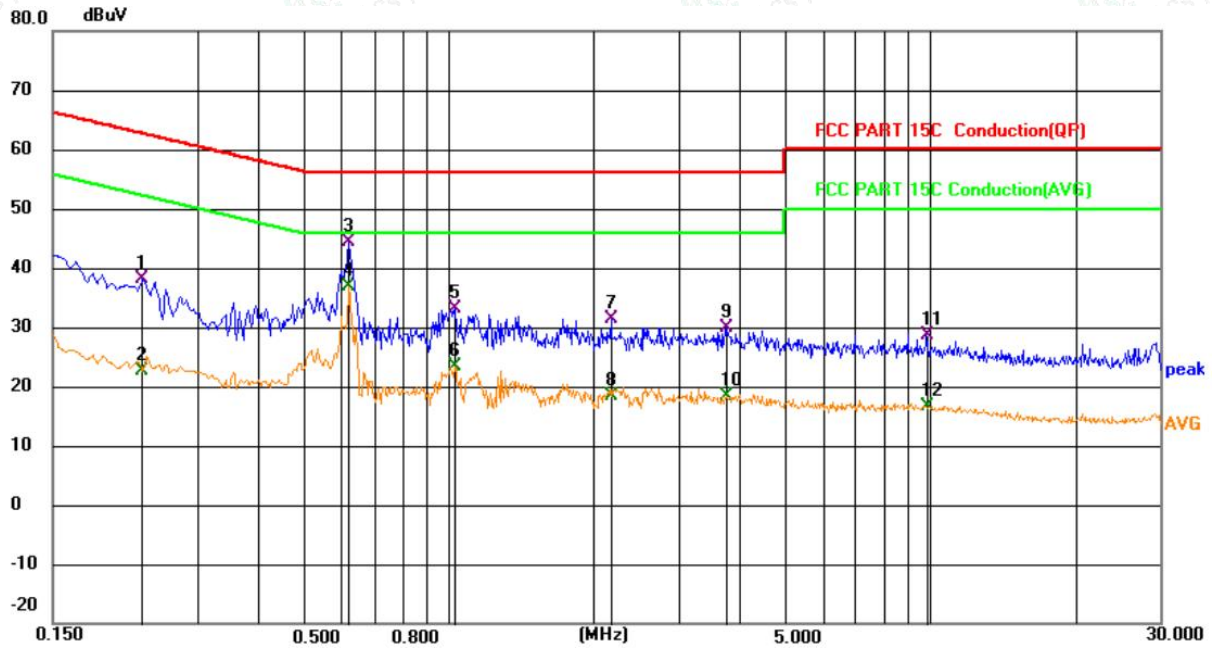


| No. | Mk. | Freq. MHz | Reading Level dBuV | Correct Factor dB | Measurement dBuV | Limit dBuV | Margin dB | Detector | Comment |
|-----|-----|--------------|--------------------------|-------------------------|---------------------|---------------|--------------|----------|---------|
| 1 | | 0.3704 | 16.59 | 20.04 | 36.63 | 58.49 | -21.86 | QP | |
| 2 | | 0.3704 | 1.80 | 20.04 | 21.84 | 48.49 | -26.65 | AVG | |
| 3 | * | 0.5909 | 24.54 | 20.05 | 44.59 | 56.00 | -11.41 | QP | |
| 4 | | 0.5909 | 12.77 | 20.05 | 32.82 | 46.00 | -13.18 | AVG | |
| 5 | | 0.9825 | 15.86 | 20.10 | 35.96 | 56.00 | -20.04 | QP | |
| 6 | | 0.9825 | 4.25 | 20.10 | 24.35 | 46.00 | -21.65 | AVG | |
| 7 | | 2.2109 | 14.79 | 20.24 | 35.03 | 56.00 | -20.97 | QP | |
| 8 | | 2.2109 | 0.49 | 20.24 | 20.73 | 46.00 | -25.27 | AVG | |
| 9 | | 4.4970 | 12.54 | 19.98 | 32.52 | 56.00 | -23.48 | QP | |
| 10 | | 4.4970 | -2.02 | 19.98 | 17.96 | 46.00 | -28.04 | AVG | |
| 11 | | 7.4805 | 9.21 | 20.45 | 29.66 | 60.00 | -30.34 | QP | |
| 12 | | 7.4805 | -3.69 | 20.45 | 16.76 | 50.00 | -33.24 | AVG | |





For Adapter Model: QL010-0501500U
Line

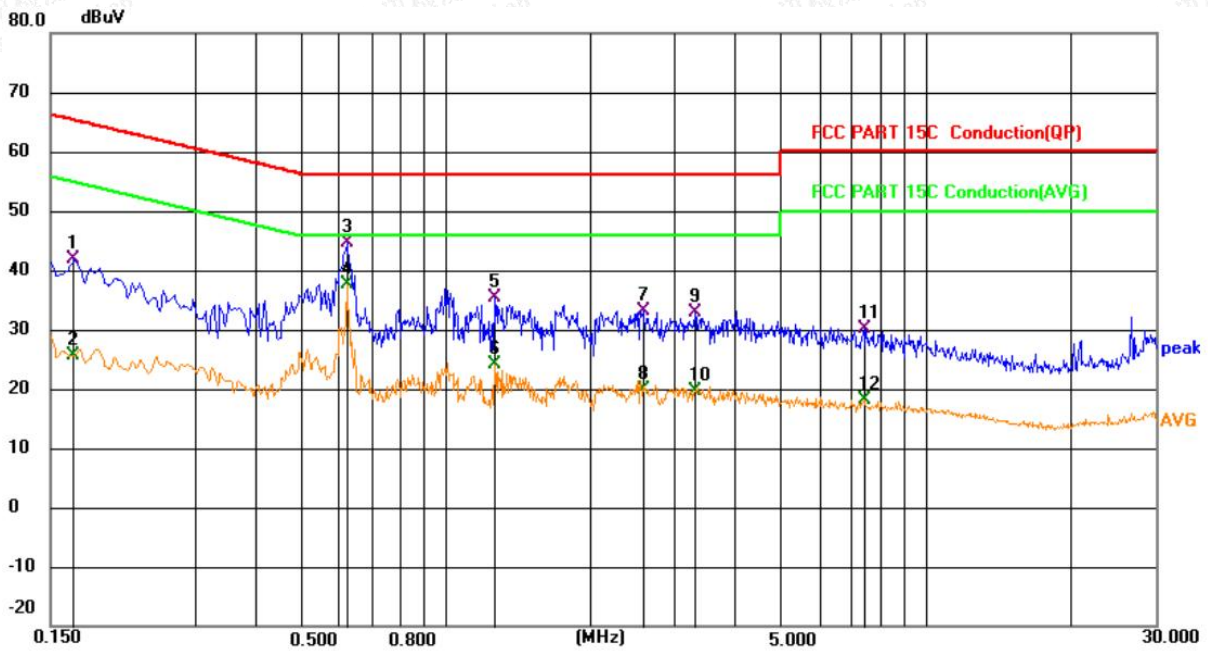


| No. | Mk. | Freq. MHz | Reading Level dBuV | Correct Factor dB | Measure- ment dBuV | Limit dBuV | Margin dB | Detector | Comment |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|--------------|----------|---------|
| 1 | | 0.2310 | 18.03 | 20.16 | 38.19 | 62.41 | -24.22 | QP | |
| 2 | | 0.2310 | 2.51 | 20.16 | 22.67 | 52.41 | -29.74 | AVG | |
| 3 | | 0.6179 | 24.16 | 20.13 | 44.29 | 56.00 | -11.71 | QP | |
| 4 | * | 0.6179 | 16.78 | 20.13 | 36.91 | 46.00 | -9.09 | AVG | |
| 5 | | 1.0275 | 13.00 | 20.14 | 33.14 | 56.00 | -22.86 | QP | |
| 6 | | 1.0275 | 3.14 | 20.14 | 23.28 | 46.00 | -22.72 | AVG | |
| 7 | | 2.1705 | 11.04 | 20.22 | 31.26 | 56.00 | -24.74 | QP | |
| 8 | | 2.1705 | -1.78 | 20.22 | 18.44 | 46.00 | -27.56 | AVG | |
| 9 | | 3.7860 | 9.71 | 20.15 | 29.86 | 56.00 | -26.14 | QP | |
| 10 | | 3.7860 | -1.81 | 20.15 | 18.34 | 46.00 | -27.66 | AVG | |
| 11 | | 9.8385 | 8.30 | 20.35 | 28.65 | 60.00 | -31.35 | QP | |
| 12 | | 9.8385 | -3.70 | 20.35 | 16.65 | 50.00 | -33.35 | AVG | |





Neutral



| No. | Mk. | Freq. MHz | Reading Level dBuV | Correct Factor dB | Measure- ment dBuV | Limit dBuV | Margin dB | Detector | Comment |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|--------------|----------|---------|
| 1 | | 0.1680 | 21.77 | 19.99 | 41.76 | 65.06 | -23.30 | QP | |
| 2 | | 0.1680 | 5.63 | 19.99 | 25.62 | 55.06 | -29.44 | AVG | |
| 3 | | 0.6225 | 24.41 | 20.16 | 44.57 | 56.00 | -11.43 | QP | |
| 4 | * | 0.6225 | 17.56 | 20.16 | 37.72 | 46.00 | -8.28 | AVG | |
| 5 | | 1.2660 | 15.14 | 20.13 | 35.27 | 56.00 | -20.73 | QP | |
| 6 | | 1.2660 | 4.06 | 20.13 | 24.19 | 46.00 | -21.81 | AVG | |
| 7 | | 2.5710 | 13.02 | 20.21 | 33.23 | 56.00 | -22.77 | QP | |
| 8 | | 2.5710 | -0.30 | 20.21 | 19.91 | 46.00 | -26.09 | AVG | |
| 9 | | 3.2955 | 12.67 | 20.14 | 32.81 | 56.00 | -23.19 | QP | |
| 10 | | 3.2955 | -0.63 | 20.14 | 19.51 | 46.00 | -26.49 | AVG | |
| 11 | | 7.4310 | 9.65 | 20.46 | 30.11 | 60.00 | -29.89 | QP | |
| 12 | | 7.4310 | -2.27 | 20.46 | 18.19 | 50.00 | -31.81 | AVG | |

***Note: 1). Pre-scan all modes and recorded the worst case results in this report GFSK mode (Middle Frequency).

2). Measurement = Reading + Correct, Margin = Measurement – Limit.
Correct Factor= Lisen Factor+Cable Factor





5.7. Antenna Requirements

5.7.1 Standard Applicable

According to antenna requirement of §15.203.

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 shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be re-placed by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of Sections 15.211, 15.213, 15.217, 15.219, or 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with Section 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this Part are not exceeded.

And according to §15.247(4)(1), system operating in the 902-928MHz bands that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum peak output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

5.7.2 Antenna Connected Construction

5.7.2.1. Standard Applicable

According to § 15.203, 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.

5.7.2.2. Antenna Connector Construction

The gains of antenna used for transmitting is 0.32dBi(Max.), and the antenna is an External Antenna and no consideration of replacement. Please see EUT photo for details.

5.7.2.3. Results: Compliance.



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Scan code to check authenticity



6. LIST OF MEASURING EQUIPMENTS

| Item | Equipment | Manufacturer | Model No. | Serial No. | Cal Date | Due Date |
|------|--------------------------|----------------|-------------|-----------------|------------|------------|
| 1 | Power Meter | R&S | NRVS | 100444 | 2023-06-09 | 2024-06-08 |
| 2 | Power Sensor | R&S | NRV-Z81 | 100458 | 2023-06-09 | 2024-06-08 |
| 3 | Power Sensor | R&S | NRV-Z32 | 10057 | 2023-06-09 | 2024-06-08 |
| 4 | Test Software | Tonscend | JS1120-2 | / | N/A | N/A |
| 5 | RF Control Unit | Tonscend | JS0806-2 | N/A | 2023-08-15 | 2024-08-14 |
| 6 | MXA Signal Analyzer | Agilent | N9020A | MY50510140 | 2023-10-18 | 2024-10-17 |
| 7 | DC Power Supply | Agilent | E3642A | N/A | 2023-10-18 | 2024-10-17 |
| 8 | EMI Test Software | AUDIX | E3 | / | N/A | N/A |
| 9 | 3m Semi Anechoic Chamber | SIDT FRANKONIA | SAC-3M | 03CH03-HY | 2023-06-09 | 2024-06-08 |
| 10 | Positioning Controller | Max-Full | MF7802BS | MF780208586 | N/A | N/A |
| 11 | Active Loop Antenna | SCHWARZBECK | FMZB 1519B | 00005 | 2021-08-29 | 2024-08-28 |
| 12 | By-log Antenna | SCHWARZBECK | VULB9163 | 9163-470 | 2021-09-12 | 2024-09-11 |
| 13 | Horn Antenna | SCHWARZBECK | BBHA 9120D | 9120D-1925 | 2021-09-05 | 2024-09-04 |
| 14 | Broadband Horn Antenna | SCHWARZBECK | BBHA 9170 | 791 | 2021-08-29 | 2024-08-28 |
| 15 | Broadband Preamplifier | SCHWARZBECK | BBV9719 | 9719-025 | 2021-08-29 | 2024-08-28 |
| 16 | EMI Test Receiver | R&S | ESR 7 | 101181 | 2023-08-15 | 2024-08-14 |
| 17 | RS SPECTRUM ANALYZER | R&S | FSP40 | 100503 | 2023-07-17 | 2024-07-16 |
| 18 | Low-frequency amplifier | SchwarzZBECK | BBV9745 | 00253 | 2023-10-18 | 2024-10-17 |
| 19 | High-frequency amplifier | JS Denki Pte | PA0118-43 | JSPA21009 | 2023-10-18 | 2024-10-17 |
| 20 | 6dB Attenuator | / | 100W/6dB | 1172040 | 2023-06-09 | 2024-06-08 |
| 21 | 3dB Attenuator | / | 2N-3dB | / | 2023-10-18 | 2024-10-17 |
| 22 | EMI Test Receiver | R&S | ESPI | 101940 | 2023-08-15 | 2024-08-14 |
| 23 | Artificial Mains | R&S | ENV216 | 101288 | 2023-06-09 | 2024-06-08 |
| 24 | 10dB Attenuator | SCHWARZBECK | MTS-IMP-136 | 261115-001-0032 | 2023-06-09 | 2024-06-08 |
| 25 | EMI Test Software | Farad | EZ | / | N/A | N/A |



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Scan code to check authenticity



7. TEST SETUP PHOTOGRAPHS OF EUT

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

8. EXTERIOR PHOTOGRAPHS OF THE EUT

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

9. INTERIOR PHOTOGRAPHS OF THE EUT

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

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

