# FCC TEST REPORT

For

Sanway Professional Audio Equipment Co., Limited.

| | |
|---|---|
| Product Name: | Class-D Active Amplifier Module |
| Trademark | |
| Model Number: | D3<br>D1-450, D1-650, D1-800, D1-450D, D1-600D, D1-800D, D2S, D2S-SUB8, D2S-SUB4, D2S-TWO, D2L, D2L-SUB8, D2L-SUB4, D2L-TWO. |
| Prepared For:<br><br>Address: | Sanway Professional Audio Equipment Co., Limited.<br><br>JinLe Industrial Park, Ping Bu Avenue, HuaDu District 510800, Guangzhou China. |
| Prepared By:<br><br>Address: | Shenzhen BCTC Technology Co., Ltd.<br><br>NO.101, Yousong Road, Longhua New District, Shenzhen, Guangdong, P.R.China |
| Report No.: | BCTC-160505452E |

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# Shenzhen BCTC Technology Co., Ltd.

| | | |
|---|---|---|
| Applicant | : | Sanway Professional Audio Equipment Co., Limited. |
| Address | : | JinLe Industrial Park, Ping Bu Avenue, HuaDu District 510800, Guangzhou China. |
| Manufacturer | : | Guangzhou City Huadu District Shiling Sanway Audio Factory |
| Address | : | Building E, JinLe Industrial Park, Yanger Village, Shiling Town, Huadu District 510800, Guangzhou, China. |
| EUT | : | Power bank |
| Model Number | : | D3<br>D1-450, D1-650, D1-800, D1-450D, D1-600D, D1-800D, D2S, D2S-SUB8, D2S-SUB4, D2S-TWO, D2L, D2L-SUB8, D2L-SUB4, D2L-TWO. |
| Trademark: | : | |
| Test Date | : | May 16 - May 24, 2016 |
| Date of Report | : | May 24, 2016 |
| **Test Result:** | | The equipment under test was found to be compliance with the requirements of the standards applied. |

Test Procedure Used:

FCC Part 15 B: 2014

ANSI C63.4:2014

Prepared by(Engineer): Amy. Li

Reviewer(Supervisor): Jade Yang

Approved & Authorized Signer(Manager):

*This test report is based on a single evaluation of one sample of above mentioned products. It is not permitted to be duplicated in extracts without written approval of Shenzhen BCTC Technology Co., Ltd.*

# 1. GENERAL INFORMATION

## 1.1. Description of Device (EUT)

| | | |
|---|---|---|
| EUT | : | Class-D Active Amplifier Module |
| Trademark | : | |
| Model Number | : | D3<br>D1-450, D1-650, D1-800, D1-450D, D1-600D, D1-800D, D2S, D2S-SUB8, D2S-SUB4, D2S-TWO, D2L, D2L-SUB8, D2L-SUB4, D2L-TWO. |
| Trademark | : | N/A |
| Model Difference | : | The product is different for model number and outlook color. |
| Power Supply | : | AC90V-135V(110V) 50Hz/60Hz 3600W |
| Work Frequency | : | N/A |

Note: D3 was selected as the test model and the datas have been recorded in this report.

## 1.2. Tested System Details

None.

## 1.3. Test Uncertainty

| | | |
|---|---|---|
| Conducted Emission Uncertainty | : | ±2.66dB |
| Radiated Emission Uncertainty | : | ±4.26dB |

## 1.4. Test Facility

Site Description

| | | |
|---|---|---|
| Name of Firm | : | Shenzhen BCTC Technology Co., Ltd. |
| Site Location | : | NO.101, Yousong Road, Longhua New District, Shenzhen, Guangdong, P.R.China |
| Lab Qualifications | : | Certificated by Industry Canada<br>Registration No.: 12655A<br>Date of registration: January 19, 2015<br><br>Certificated by FCC, USA<br>Registration No.: 187086<br>Date of registration: November 28, 2014<br><br>Certificated by CNAS China<br>Registration No.: CNAS L6046<br>Date of registration: February 3, 2013 |

# 2. TEST INSTRUMENT USED

## For Conducted Emission at the mains terminals Test

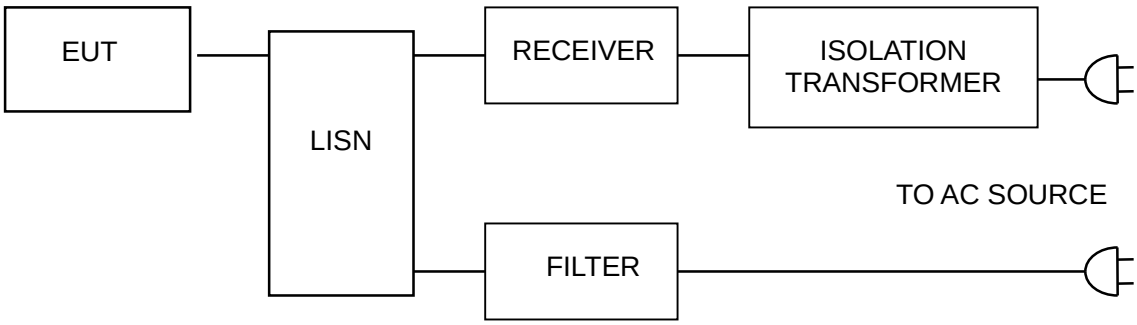
| Conducted Emission Test ( A --- site ) | | | | | |
|---|---|---|---|---|---|
| **Equipment** | **Manufacturer** | **Model#** | **Serial#** | **Last Cal.** | **Next Cal.** |
| 843 Shielded Room | ChengYu | 843 Room | 843 | Aug. 25, 2015 | Aug. 24, 2016 |
| EMI Receiver | R&S | ESCI | 101421 | Aug. 27, 2015 | Aug. 26, 2016 |
| LISN | Schwarzbeck | NSLK8127 | 8127739 | Sep. 07, 2015 | Sep. 06, 2016 |
| Attenuator | R&S | ESH3-Z2 | BCTC021E | Aug. 25, 2015 | Aug. 24, 2016 |
| 843 Cable 1# | FUJIKURA | 843C1# | 001 | Aug. 25, 2015 | Aug. 24, 2016 |

## For Radiated Emission Test

| Radiation Emission Test (966 chamber) | | | | | |
|---|---|---|---|---|---|
| **Equipment** | **Manufacturer** | **Model#** | **Serial#** | **Last Cal.** | **Next Cal.** |
| 966 chamber | ChengYu | 966 Room | 966 | Aug. 25, 2015 | Aug. 24, 2016 |
| Spectrum Analyzer | Agilent | E4407B | MY45109572 | Aug. 27, 2015 | Aug. 26, 2016 |
| Amplifier | Schwarzbeck | BBV9743 | 9743-119 | Aug. 25, 2015 | Aug. 24, 2016 |
| Amplifier | Schwarzbeck | BBV9718 | 9718-270 | Aug. 25, 2015 | Aug. 24, 2016 |
| Log-periodic Antenna | Schwarzbeck | VULB9160 | VULB9160-3369 | Sep. 07, 2015 | Sep. 06, 2016 |
| EMI Receiver | R&S | ESCI | 101421 | Aug. 27, 2015 | Aug. 26, 2016 |
| Horn Antenna | Schwarzbeck | BBHA9120D | 9120D-1275 | Aug. 25, 2015 | Aug. 24, 2016 |
| 966 Cable 1# | CHENGYU | 966 | 004 | Aug. 25, 2015 | Aug. 24, 2016 |
| 966 Cable 2# | CHENGYU | 966 | 003 | Aug. 25, 2015 | Aug. 24, 2016 |

# 3. CONDUCTED EMISSION AT THE MAINS TERMINALS TEST

## 3.1. Block Diagram Of Test Setup




## 3.2. Test Standard

FCC PART 15 B

## 3.3. Power Line Conducted Emission Limit

| Frequency MHz | Limits dB(μV) | |
|---|---|---|
| | Quasi-peak Level | Average Level |
| 0.15 ~ 0.50 | 66 ~ 56* | 56 ~ 46* |
| 0.50 ~ 5.00 | 56 | 46 |
| 5.00 ~ 30.00 | 60 | 50 |

Notes: 1. *Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.

## 3.4. EUT Configuration on Test

The following equipments are installed on conducted emission test to meet FCC PART 15 B requirement and operating in a manner which tends to maximize its emission characteristics in a normal application.

## 3.5. Operating Condition of EUT

3.5.1 Setup the EUT and simulators as shown in Section 3.1.
3.5.2 Turn on the power of all equipments.
3.5.3 Let the EUT work in test modes and test it.

## 3.6. Test Procedure

The EUT is put on the ground and connected to the AC mains through a Artificial Mains Network (AMN). This provided a 50ohm coupling impedance for the tested equipments. Both sides of AC line are checked to find out the maximum conducted emission levels according to the **FCC PART 15 B** regulations during conducted emission test.

The bandwidth of the test receiver (R&S Test Receiver ESCI) is set at 10KHz.

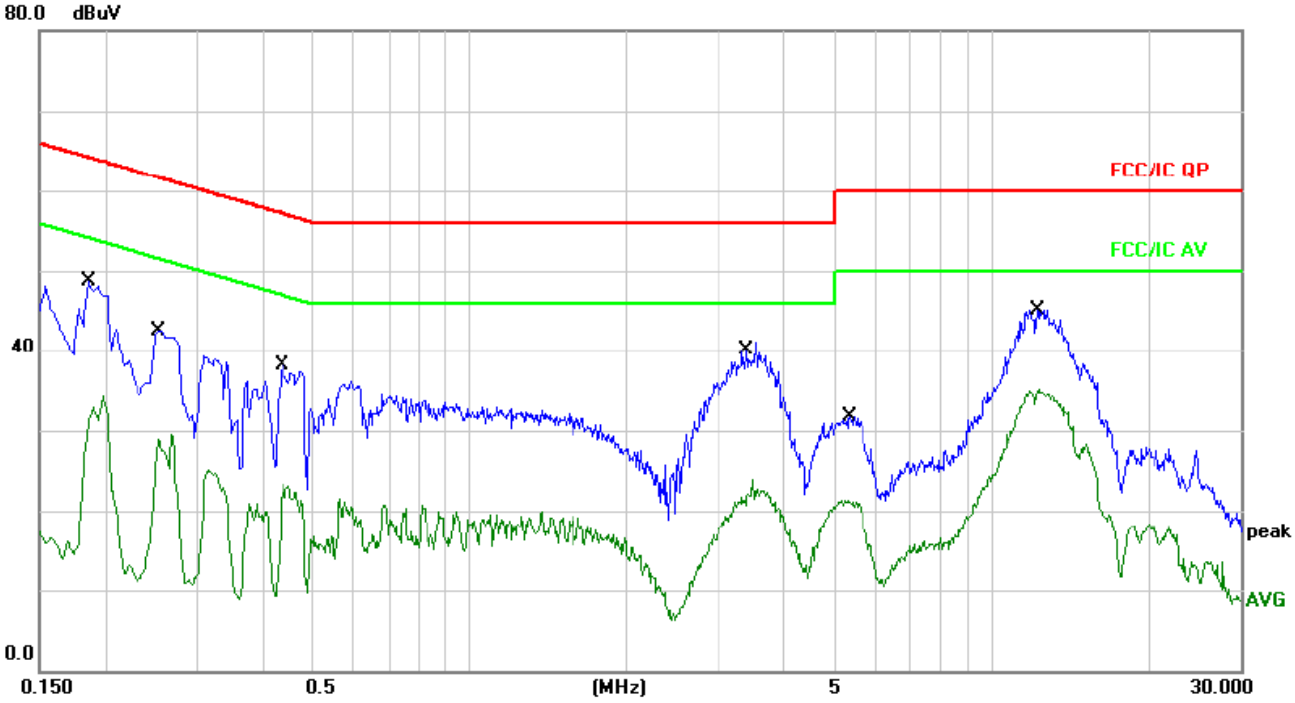
The frequency range from 150 KHz to 30 MHz is investigated.

## 3.7. Test Result

PASS

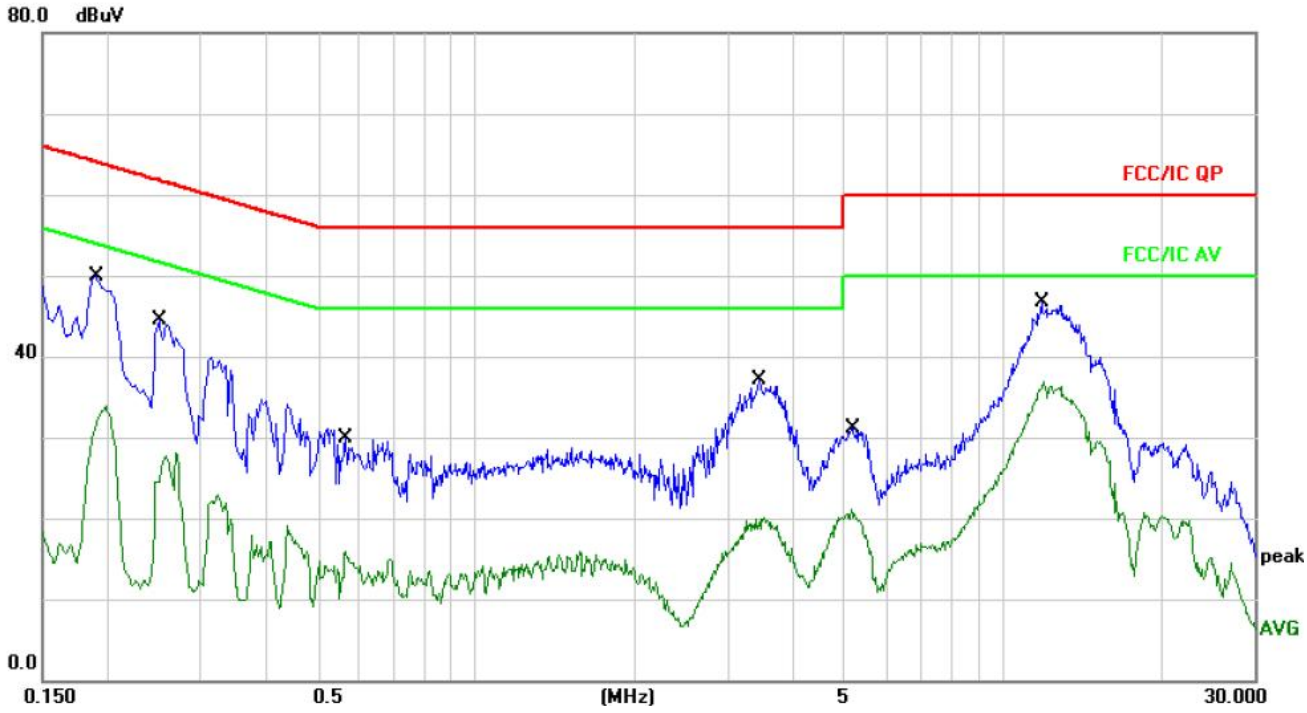
Please refer to the following page.

| Conducted Emission At The Mains Terminals Test Data | | | |
|---|---|---|---|
| Temperature: | 24.5 ℃ | Relative Humidity: | 54% |
| Pressure: | 1009hPa | Phase : | Line |
| Test Voltage : | AC120V/60Hz | Test Mode: | ON Mode |




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector | Comment |
| 1 | | 0.1860 | 38.67 | 10.06 | 48.73 | 64.21 | -15.48 | QP | |
| 2 | | 0.1860 | 24.15 | 10.06 | 34.21 | 54.21 | -20.00 | AVG | |
| 3 | | 0.2540 | 32.44 | 10.08 | 42.52 | 61.62 | -19.10 | QP | |
| 4 | | 0.2540 | 19.43 | 10.08 | 29.51 | 51.62 | -22.11 | AVG | |
| 5 | | 0.4380 | 25.94 | 10.11 | 36.05 | 57.10 | -21.05 | QP | |
| 6 | | 0.4380 | 13.27 | 10.11 | 23.38 | 47.10 | -23.72 | AVG | |
| 7 | | 3.4140 | 31.00 | 10.18 | 41.18 | 56.00 | -14.82 | QP | |
| 8 | | 3.4140 | 11.71 | 10.18 | 21.89 | 46.00 | -24.11 | AVG | |
| 9 | | 5.3220 | 21.56 | 10.13 | 31.69 | 60.00 | -28.31 | QP | |
| 10 | | 5.3220 | 11.13 | 10.13 | 21.26 | 50.00 | -28.74 | AVG | |
| 11 | * | 12.3100 | 35.07 | 10.13 | 45.20 | 60.00 | -14.80 | QP | |
| 12 | | 12.3100 | 24.89 | 10.13 | 35.02 | 50.00 | -14.98 | AVG | |

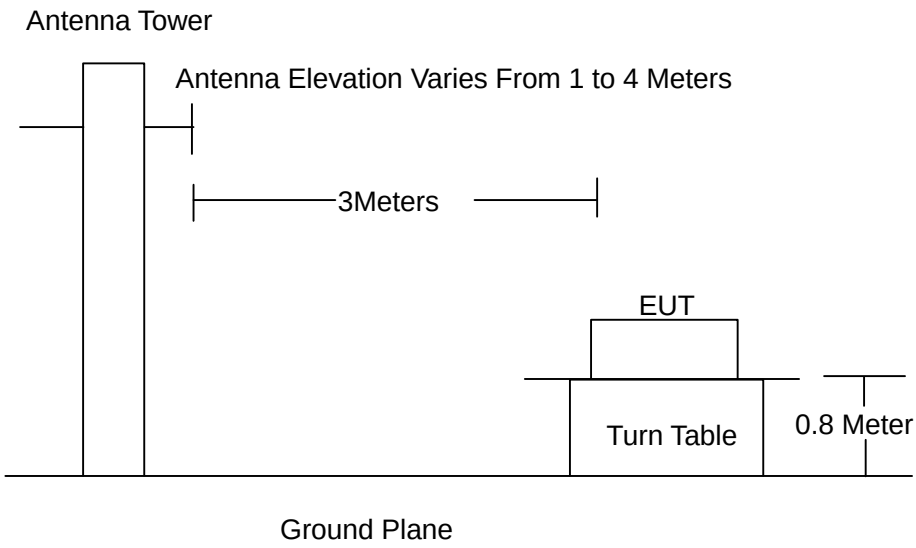
| Conducted Emission At The Mains Terminals Test Data | | | |
|---|---|---|---|
| Temperature: | 24.5 ℃ | Relative Humidity: | 54% |
| Pressure: | 1009hPa | Phase : | Neutral |
| Test Voltage : | AC120V/60Hz | Test Mode: | ON Mode |




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector | Comment |
| 1 | | 0.1900 | 39.87 | 10.06 | 49.93 | 64.03 | -14.10 | QP | |
| 2 | | 0.1900 | 23.77 | 10.06 | 33.83 | 54.03 | -20.20 | AVG | |
| 3 | | 0.2500 | 34.46 | 10.08 | 44.54 | 61.75 | -17.21 | QP | |
| 4 | | 0.2500 | 18.01 | 10.08 | 28.09 | 51.75 | -23.66 | AVG | |
| 5 | | 0.5660 | 19.57 | 10.12 | 29.69 | 56.00 | -26.31 | QP | |
| 6 | | 0.5660 | 5.77 | 10.12 | 15.89 | 46.00 | -30.11 | AVG | |
| 7 | | 3.4420 | 26.97 | 10.18 | 37.15 | 56.00 | -18.85 | QP | |
| 8 | | 3.4420 | 9.86 | 10.18 | 20.04 | 46.00 | -25.96 | AVG | |
| 9 | | 5.1660 | 20.94 | 10.14 | 31.08 | 60.00 | -28.92 | QP | |
| 10 | | 5.1660 | 10.91 | 10.14 | 21.05 | 50.00 | -28.95 | AVG | |
| 11 | | 11.8260 | 36.55 | 10.13 | 46.68 | 60.00 | -13.32 | QP | |
| 12 | * | 11.8260 | 26.84 | 10.13 | 36.97 | 50.00 | -13.03 | AVG | |

# 4. RADIATION EMISSION TEST

## 4.1. Block Diagram of Test Setup




## 4.2. Test Standard

FCC PART 15 B

## 4.3. Radiation Limit

| FREQUENCY (MHz) | DISTANCE (Meters) | FIELD STRENGTHS LIMITS (dBμV/m) |
|---|---|---|
| 30 ~ 88 | 3 | 40.0 |
| 88 ~ 216 | 3 | 43.5 |
| 216 ~ 960 | 3 | 46.0 |
| 960 ~ 1000 | 3 | 54.0 |

## 4.4. EUT Configuration on Test

The FCC PART 15 B regulations test method must be used to find the maximum emission during radiated emission test.
The configuration of EUT is the same as used in conducted emission test. Please refer to Section 2.2.

## 4.5. Operating Condition of EUT

Same as conducted emission test, which is listed in Section 2.2 except the test set up replaced as Section 4.1.

## 4.6. Test Procedure

The EUT and its simulators are placed on a turned table that is 0.8 meter above the ground. The turned table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna that is mounted on the antenna tower. The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated biconical and log periodical antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna is set on test. In order to find the maximum emission levels, the interface cable must be manipulated according to FCC PART 15 B on radiated emission test.
The bandwidth setting on the field strength meter (R&S Test Receiver ESCI) is set at 120KHz below 1GHz, set at 1MHz above 1GHz
The frequency range from 30MHz to 1000MHz is checked.

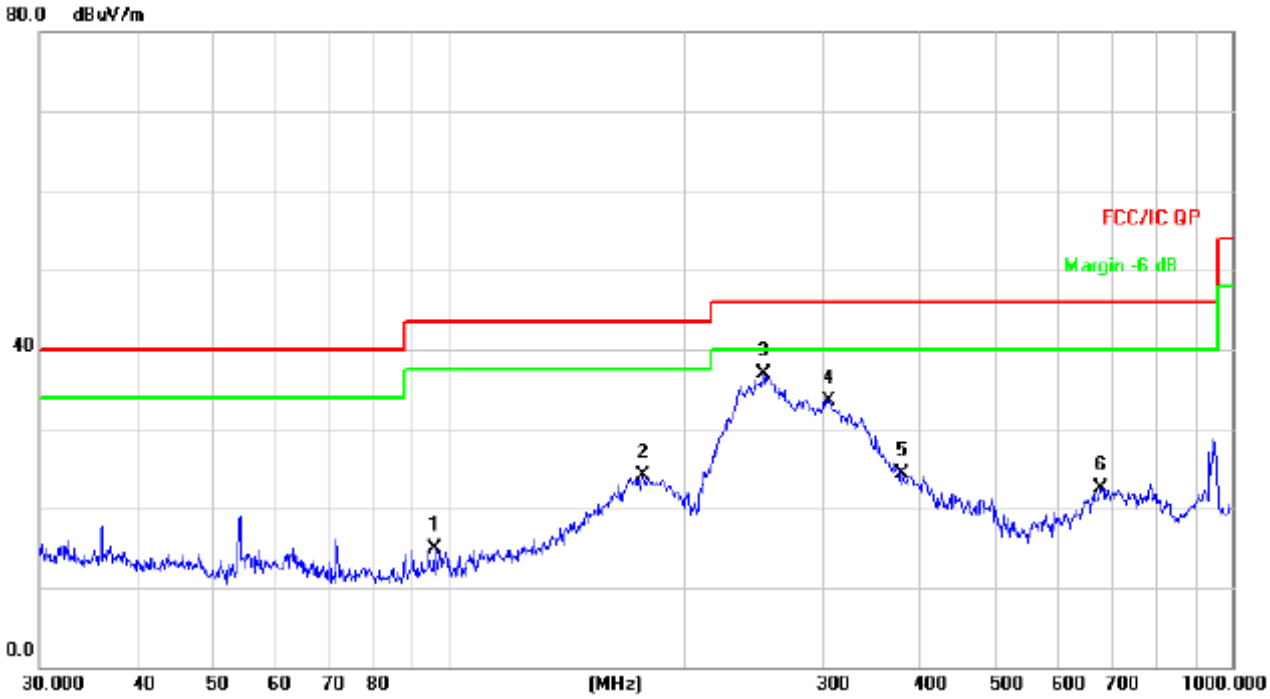
The highest frequency of the internal sources of the EUT was 1.3GHz, so the measurement was only made up to 6GHz.

## 4.7. Test Result

PASS

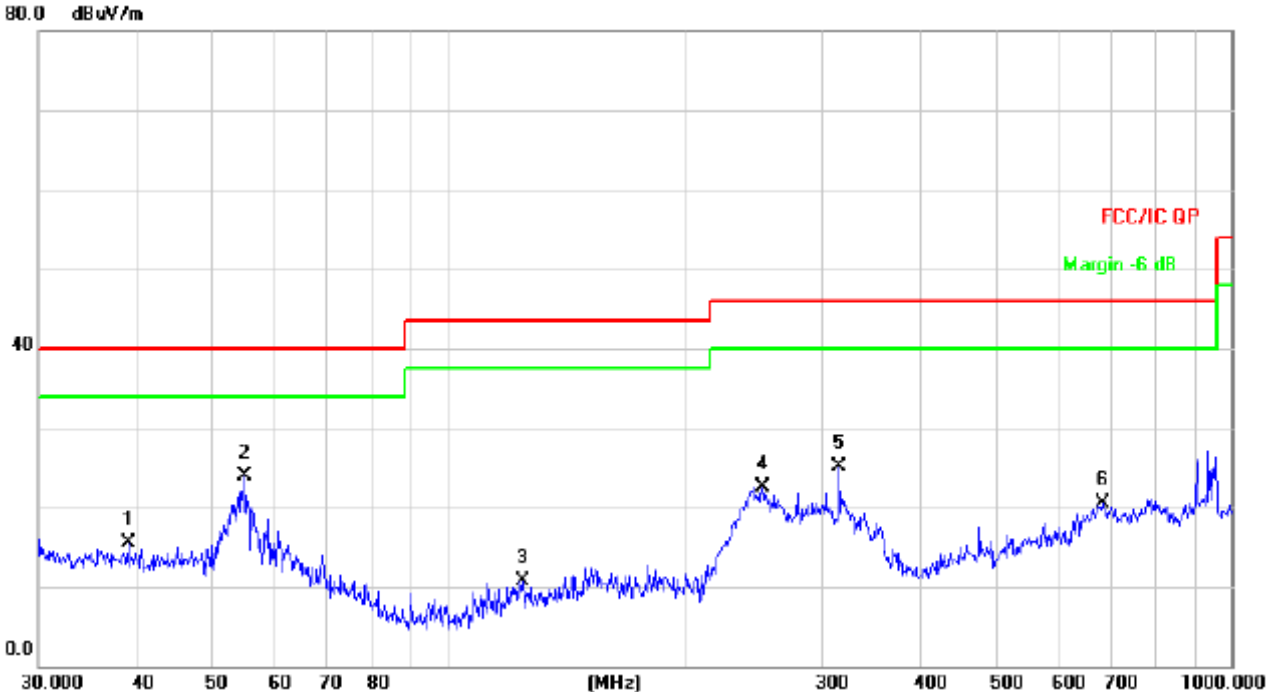
Please refer to the following page.

| Radiation Emission Test Data | | | |
|---|---|---|---|
| Temperature: | 24.5 ℃ | Relative Humidity: | 54% |
| Pressure: | 1009hPa | Phase : | Horizontal |
| Test Voltage : | AC120V/60Hz | Test Mode: | ON Mode |




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | Antenna Height | Table Degree | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB/m | dBuV/m | dBuV/m | dB | Detector | cm | degree | Comment |
| 1 | | 95.7622 | 31.88 | -16.93 | 14.95 | 43.50 | -28.55 | QP | | | |
| 2 | | 176.8878 | 38.21 | -14.07 | 24.14 | 43.50 | -19.36 | QP | | | |
| 3 | * | 252.0627 | 50.98 | -14.14 | 36.84 | 46.00 | -9.16 | QP | | | |
| 4 | | 305.6800 | 45.98 | -12.44 | 33.54 | 46.00 | -12.46 | QP | | | |
| 5 | | 378.5843 | 35.09 | -10.70 | 24.39 | 46.00 | -21.61 | QP | | | |
| 6 | | 679.9600 | 27.29 | -4.69 | 22.60 | 46.00 | -23.40 | QP | | | |

| Radiation Emission Test Data | | | |
|---|---|---|---|
| Temperature: | 24.5 ℃ | Relative Humidity: | 54% |
| Pressure: | 1009hPa | Phase : | Vertical |
| Test Voltage : | AC120V/60Hz | Test Mode: | ON Mode |



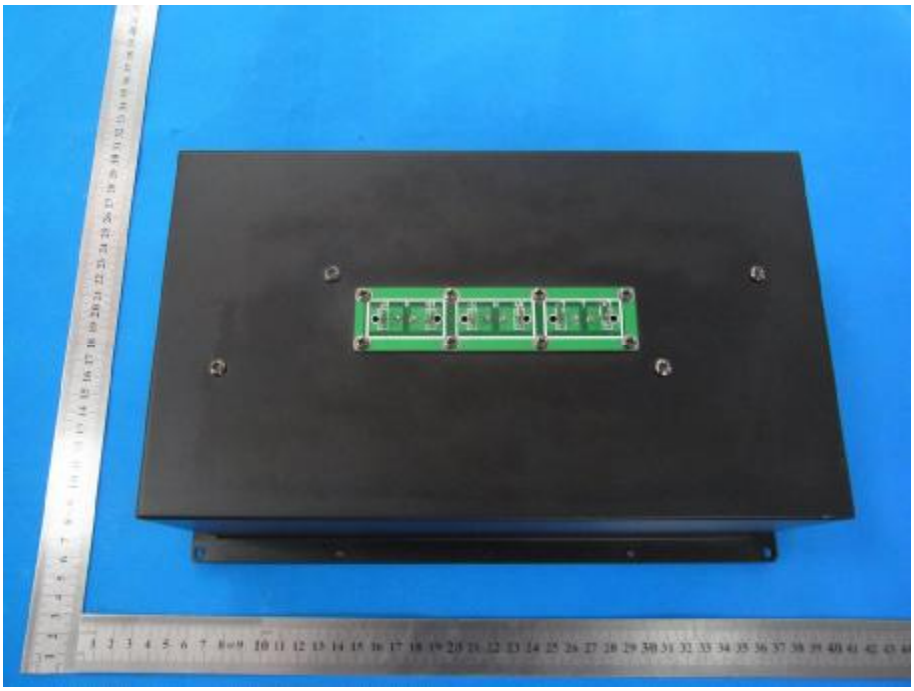

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | Antenna Height | Table Degree | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB/m | dBuV/m | dBuV/m | dB | Detector | cm | degree | Comment |
| 1 | | 39.0245 | 24.39 | -8.80 | 15.59 | 40.00 | -24.41 | QP | | | |
| 2 | * | 55.0274 | 35.02 | -11.13 | 23.89 | 40.00 | -16.11 | QP | | | |
| 3 | | 124.5690 | 25.22 | -14.43 | 10.79 | 43.50 | -32.71 | QP | | | |
| 4 | | 252.0627 | 36.69 | -14.14 | 22.55 | 46.00 | -23.45 | QP | | | |
| 5 | | 315.4808 | 37.35 | -12.18 | 25.17 | 46.00 | -20.83 | QP | | | |
| 6 | | 684.7454 | 25.17 | -4.63 | 20.54 | 46.00 | -25.46 | QP | | | |

# 5. EUT PHOTOGRAPHS

**EUT Photo 1**




**EUT Photo 2**



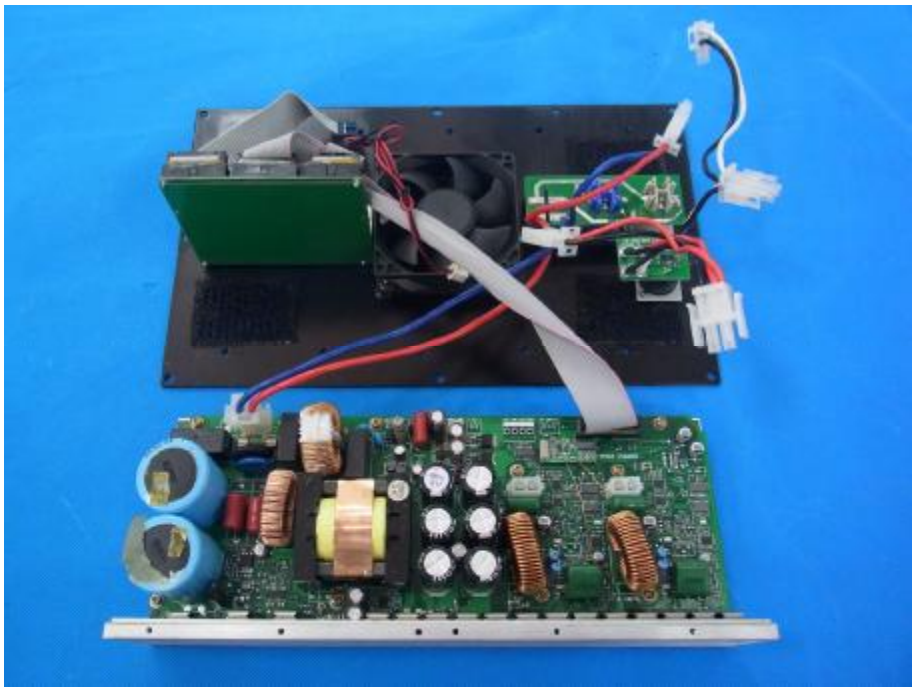
**EUT Photo 3**



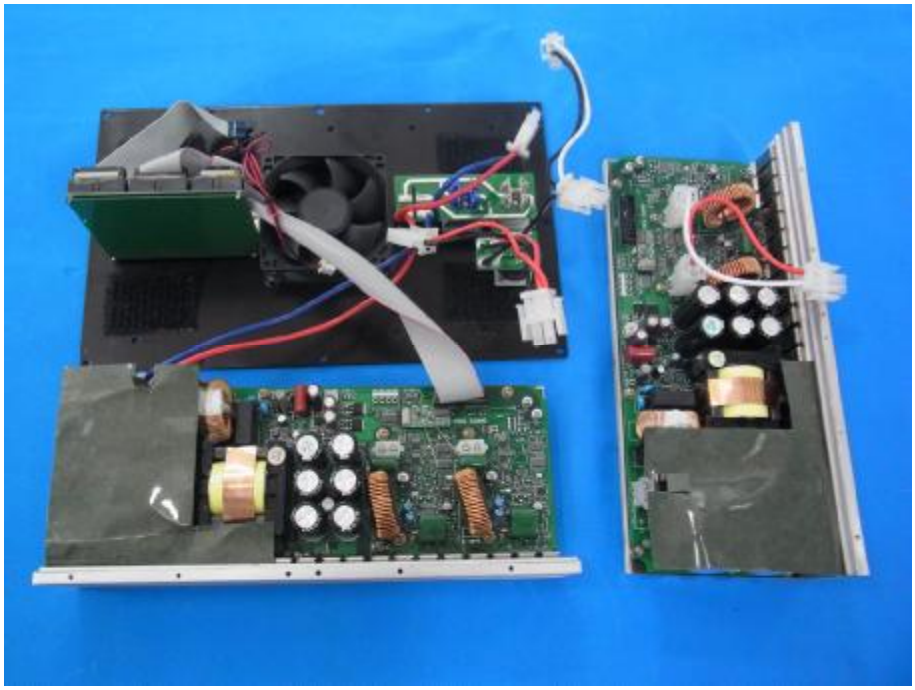
**EUT Photo 4**



**EUT Photo 5**



**EUT Photo 6**

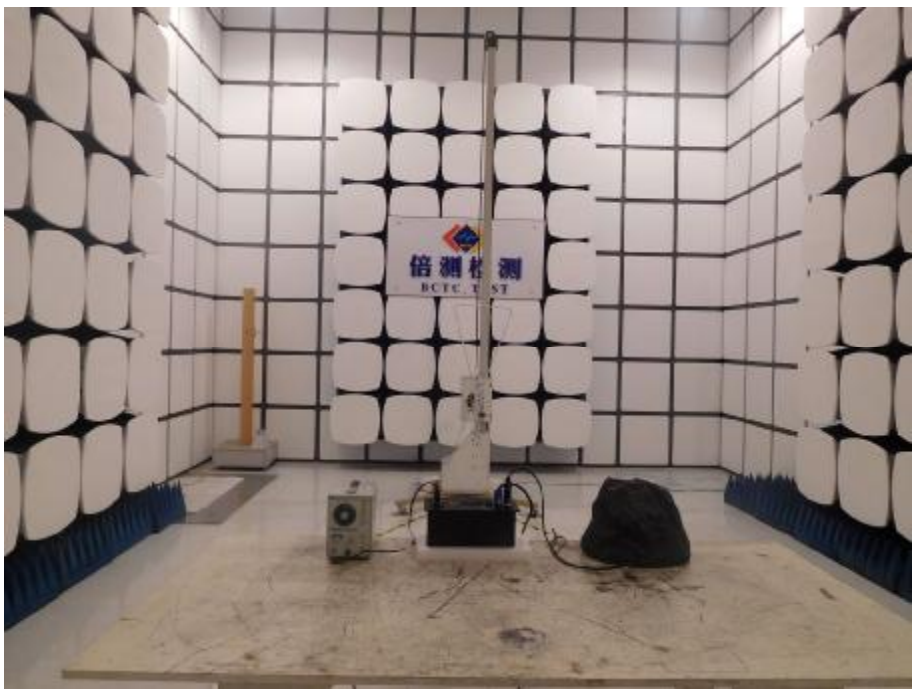


# 6. EUT TEST PHOTOGRAPHS

**CE**



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**※※※※※ END OF REPORT ※※※※※**