



# FCC RF Test Report

APPLICANT : vivo Mobile Communication Co., Ltd.  
EQUIPMENT : Mobile Phone  
BRAND NAME : vivo  
MODEL NAME : V2145  
FCC ID : 2AUCY-V2145  
STANDARD : FCC Part 15 Subpart C §15.209  
CLASSIFICATION : (DCD) Part 15 Low Power Transmitter Below 1705 kHz  
TEST DATE(S) : Mar. 30, 2022 ~ Apr. 04, 2022

We, Sporton International Inc. (ShenZhen), would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. (ShenZhen), the test report shall not be reproduced except in full.

Jason Jia

Approved by: Jason Jia



**Sporton International Inc. (ShenZhen)**

**1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen, 518055**

**People's Republic of China**



## Table of Contents

|                                                           |           |
|-----------------------------------------------------------|-----------|
| <b>History of this test report.....</b>                   | <b>3</b>  |
| <b>Summary of Test Result.....</b>                        | <b>4</b>  |
| <b>1 General Description .....</b>                        | <b>5</b>  |
| 1.1 Applicant.....                                        | 5         |
| 1.2 Manufacturer .....                                    | 5         |
| 1.3 Product Feature of Equipment Under Test .....         | 5         |
| 1.4 Modification of EUT .....                             | 5         |
| 1.5 Test Location .....                                   | 6         |
| 1.6 Test Software .....                                   | 6         |
| 1.7 Applied Standards .....                               | 6         |
| <b>2 Test Configuration of Equipment Under Test .....</b> | <b>7</b>  |
| 2.1 Test Mode .....                                       | 7         |
| 2.2 Connection Diagram of Test System .....               | 8         |
| <b>3 Test Result .....</b>                                | <b>9</b>  |
| 3.1 20dB and 99% Occupied Bandwidth Measurement .....     | 9         |
| 3.2 Radiated Emission Measurement .....                   | 14        |
| 3.3 AC Conducted Emission Measurement .....               | 24        |
| 3.4 Antenna Requirements.....                             | 28        |
| <b>4 List of Measuring Equipment.....</b>                 | <b>29</b> |
| <b>5 Uncertainty of Evaluation .....</b>                  | <b>30</b> |
| <b>Appendix A. Setup Photographs</b>                      |           |



## History of this test report

| Report No. | Version | Description             | Issued Date   |
|------------|---------|-------------------------|---------------|
| FR212202E  | 01      | Initial issue of report | Apr. 26, 2022 |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
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|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |

## Summary of Test Result

| Report Clause | Ref Std. Clause | Test Items             | Result (PASS/FAIL) | Remark                                   |
|---------------|-----------------|------------------------|--------------------|------------------------------------------|
| 3.1           | 2.1049          | 20dB Bandwidth         | Reporting Only     | -                                        |
| 3.1           | 2.1049          | 99% Occupied Bandwidth | Reporting Only     | -                                        |
| 3.2           | 15.209          | Radiated Emission      | Pass               | Under limit<br>11.00 dB at<br>59.100 MHz |
| 3.3           | 15.207          | AC Conducted Emission  | Pass               | Under limit<br>10.44 dB at<br>0.650 MHz  |
| 3.4           | 15.203          | Antenna Requirements   | Pass               | -                                        |

**Declaration of Conformity:**

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

**Comments and Explanations:**

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.



# 1 General Description

## 1.1 Applicant

**vivo Mobile Communication Co., Ltd.**

No.1, vivo Road, Chang'an, Dongguan,Guangdong,China

## 1.2 Manufacturer

**vivo Mobile Communication Co., Ltd.**

No.1, vivo Road, Chang'an, Dongguan,Guangdong,China

## 1.3 Product Feature of Equipment Under Test

| Product Feature        |                                                                                                         |
|------------------------|---------------------------------------------------------------------------------------------------------|
| Equipment              | Mobile Phone                                                                                            |
| Brand Name             | vivo                                                                                                    |
| Model Name             | V2145                                                                                                   |
| FCC ID                 | 2AUCY-V2145                                                                                             |
| IMEI Code              | Conducted: 868488069970729<br>Conduction: 868488069969903<br>Radiation: 868488069970414/868488069970406 |
| HW Version             | MP_0.1                                                                                                  |
| SW Version             | PD2185BF_EX_A_12.0.9.2.W30.V000L1                                                                       |
| WPT Frequency Range    | 125 ~ 146KHz                                                                                            |
| WPT Type of Modulation | ASK                                                                                                     |
| WPT Antenna Type       | Loop Antenna                                                                                            |
| EUT Stage              | Production Unit                                                                                         |

**Remark:** The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

## 1.4 Modification of EUT

No modifications are made to the EUT during all test items.



## 1.5 Test Location

Sporton International Inc. (Shenzhen) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.01.

|                           |                                                                                                                                                                         |                            |                                       |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------------------------------------|
| <b>Test Firm</b>          | Sporton International Inc. (Shenzhen)                                                                                                                                   |                            |                                       |
| <b>Test Site Location</b> | 1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen, 518055 People's Republic of China<br>TEL: +86-755-86379589<br>FAX: +86-755-86379595 |                            |                                       |
| <b>Test Site No.</b>      | <b>Sporton Site No.</b>                                                                                                                                                 | <b>FCC Designation No.</b> | <b>FCC Test Firm Registration No.</b> |
|                           | CO01-SZ<br>TH01-SZ                                                                                                                                                      | CN1256                     | 421272                                |

|                           |                                                                                                                                                                                           |                            |                                       |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------------------------------------|
| <b>Test Firm</b>          | Sporton International Inc. (Shenzhen)                                                                                                                                                     |                            |                                       |
| <b>Test Site Location</b> | 101, 1st Floor, Block B, Building 1, No. 2, Tengfeng 4th Road, Fenghuang Community, Fuyong Street, Baoan District, Shenzhen City Guangdong Province China 518103<br>TEL: +86-755-33202398 |                            |                                       |
| <b>Test Site No.</b>      | <b>Sporton Site No.</b>                                                                                                                                                                   | <b>FCC Designation No.</b> | <b>FCC Test Firm Registration No.</b> |
|                           | 03CH05-SZ                                                                                                                                                                                 | CN1256                     | 421272                                |

## 1.6 Test Software

| Item | Site      | Manufacture | Name | Version       |
|------|-----------|-------------|------|---------------|
| 1.   | 03CH05-SZ | AUDIX       | E3   | 6.2009-8-24al |
| 2.   | CO01-SZ   | AUDIX       | E3   | 6.120613b     |

## 1.7 Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ FCC Part 15 Subpart C §15.209, §15.207
- ♦ FCC KDB 414788 D01 Radiated Test Site v01r01.
- ♦ ANSI C63.10-2013

**Remark:** All test items were verified and recorded according to the standards and without any deviation during the test.

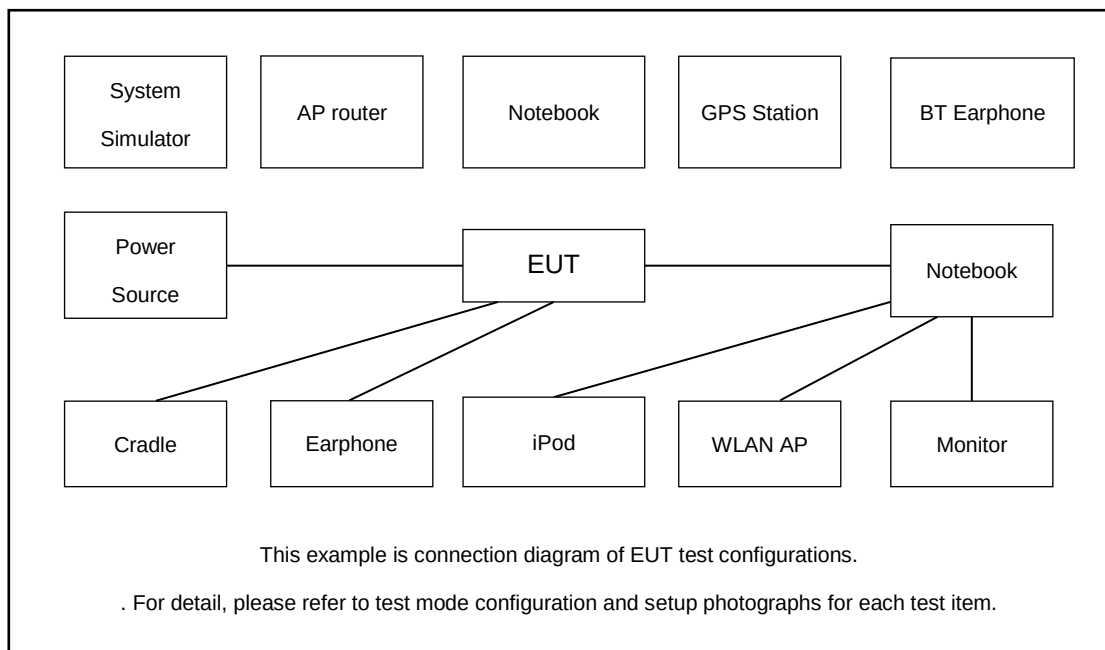
## 2 Test Configuration of Equipment Under Test

### 2.1 Test Mode

- a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (9 kHz to the 1000 MHz). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (Z plane) were recorded in this report, and the worst mode of radiated spurious emissions recorded in this report
- b. AC power line Conducted Emission was tested under maximum output power.

| Test Items                                                                                                                                                                                                                                                                      | Function Type                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>20dB and 99% Occupied Bandwidth</b>                                                                                                                                                                                                                                          | Mode 1: WPT Charger(Charged DUT Battery 90%)(Charged DUT on status) + Battery 1<br>Mode 2: WPT Charger charge (Charged DUT off status) + Battery 1<br>Mode 3: WPT Charger(Charged DUT Battery 90%)(Charged DUT on status) + USB Cable 1(Charging from Adapter 1) + Battery 1<br>Mode 4: WPT Charger charge (Charged DUT off status + USB Cable 1(Charging from Adapter 1) + Battery 1                                          |
| <b>AC Conducted Emission</b>                                                                                                                                                                                                                                                    | Mode 1: WPT Charger(Charged DUT Battery 90%)(Charged DUT on status) + USB Cable 1(Charging from Adapter 1) + Battery 1<br>Mode 2: WPT Charger charge (Charged DUT off status) + USB Cable 1(Charging from Adapter 1) + Battery 1                                                                                                                                                                                               |
| <b>Radiated Emission</b>                                                                                                                                                                                                                                                        | Mode 1: WPT Charger(Charged DUT Battery 20%/50%/90%) (Charged DUT on status) + Battery 1<br>Mode 2: WPT Charger(worse Battery Level) (Charged DUT off status) + Battery 1<br>Mode 3: WPT Charger(Charged DUT Battery (50%)) (Charged DUT on status) + USB Cable 1(Charging from Adapter 1) + Battery 1<br>Mode 4: WPT Charger(worse Battery Level) (Charged DUT off status) + USB Cable 1(Charging from Adapter 1) + Battery 1 |
| <b>Remark:</b><br>1. The worst case of conducted emission is mode 2; only the test data of it was reported.<br>2. The worst case of radiated emission is mode 3; only the test data of it was reported.<br>3. The tests were performed with Adapter1, Battery1 and USB Cable 1. |                                                                                                                                                                                                                                                                                                                                                                                                                                |

## 2.2 Connection Diagram of Test System



### 3 Test Result

#### 3.1 20dB and 99% Occupied Bandwidth Measurement

##### 3.1.1 Limit of 20dB and 99% Occupied Bandwidth

Reporting only

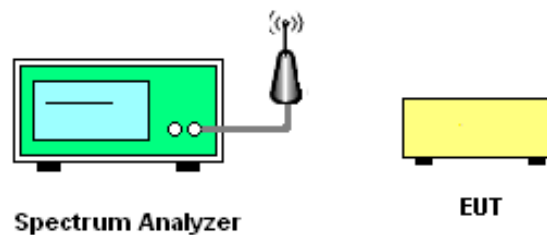
##### 3.1.2 Measuring Instruments

See list of measuring equipment of this test report.

##### 3.1.3 Test Procedures

1. The 20dB bandwidth is measured with a spectrum analyzer connected via a receiver antenna placed near the EUT while wirelessly charging a charging board.
2. Use the following spectrum analyzer settings for 99 % Bandwidth measurement.
3. Measure and record the results in the test report.

##### 3.1.4 Test Setup



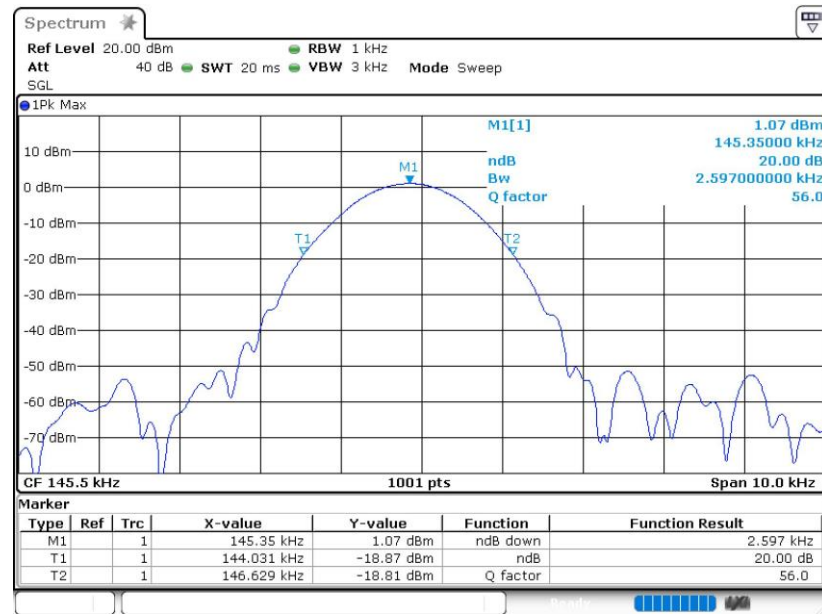


### 3.1.5 Test Result of 20dB and 99% Bandwidth

|                 |              |                     |         |
|-----------------|--------------|---------------------|---------|
| Test Engineer : | Zhang Xue Yi | Temperature :       | 24~26°C |
|                 |              | Relative Humidity : | 50~53%  |

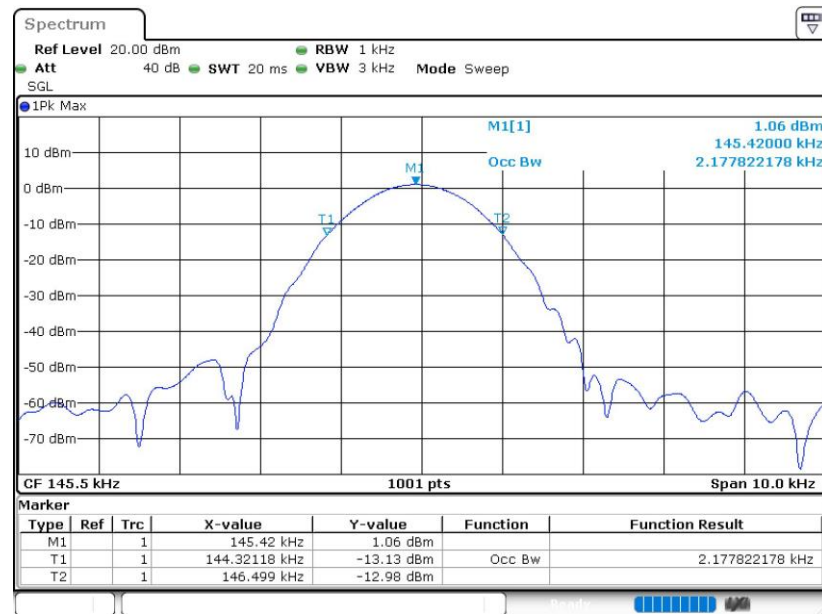
#### Mode 1

#### 20 dB Bandwidth Plot



Date: 31.MAR.2022 14:25:06

#### 99% Occupied Bandwidth Plot

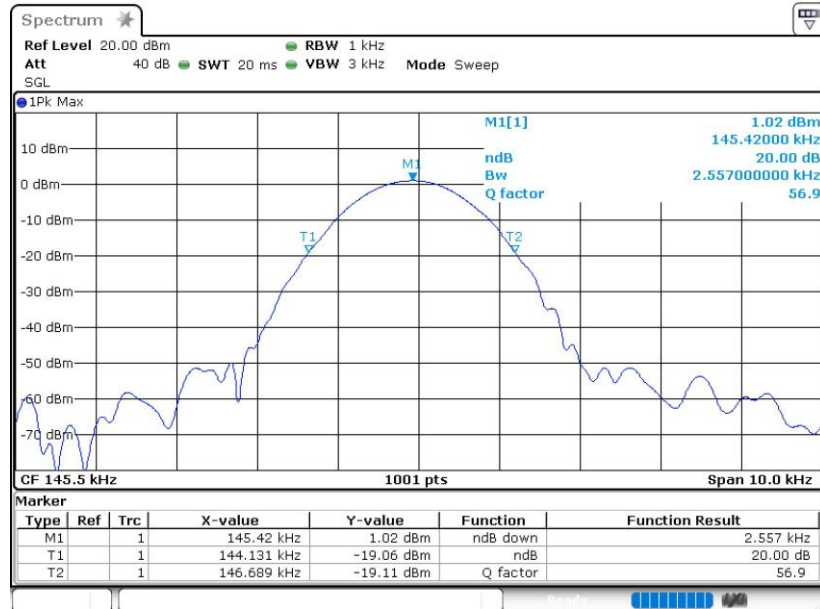


Date: 31.MAR.2022 14:24:00



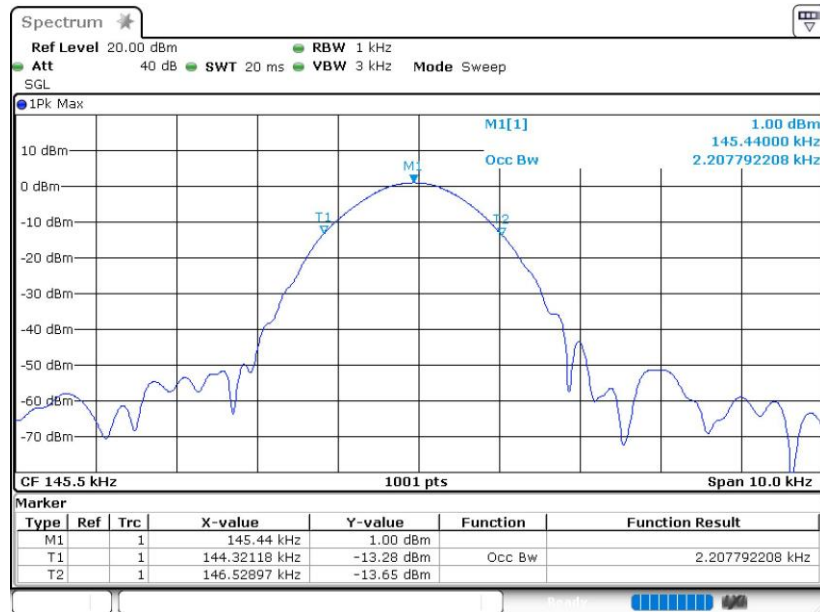
## Mode 2

### 20 dB Bandwidth Plot



Date: 31.MAR.2022 14:22:05

### 99% Occupied Bandwidth Plot

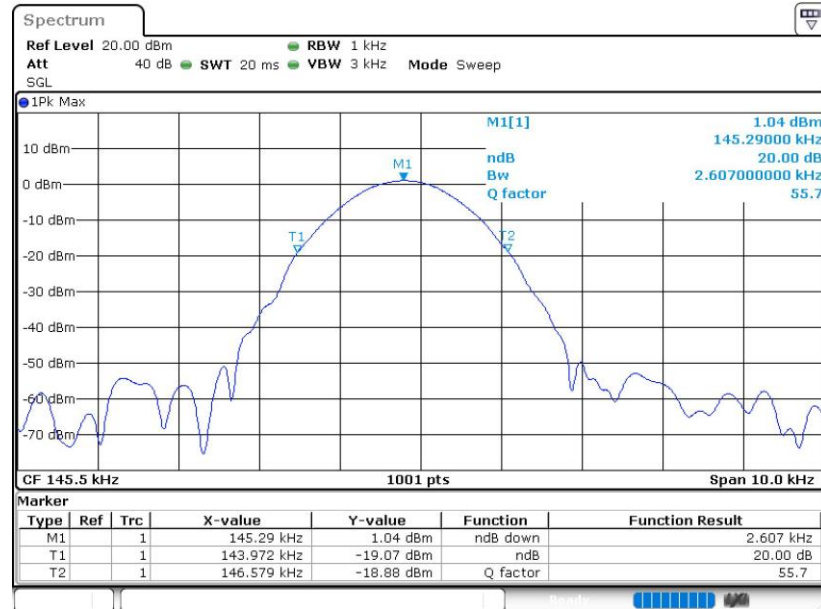


Date: 31.MAR.2022 14:22:34



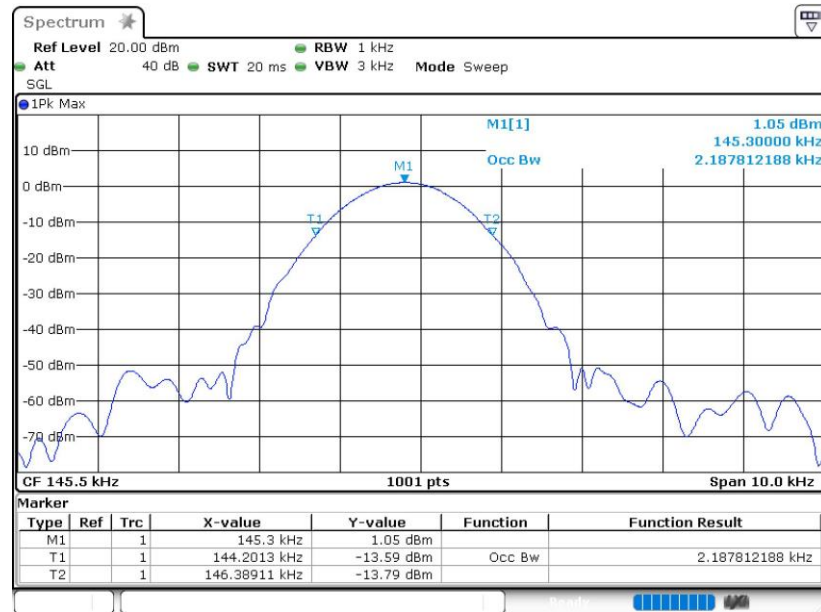
## Mode 3

## 20 dB Bandwidth Plot



Date: 31.MAR.2022 14:26:09

## 99% Occupied Bandwidth Plot

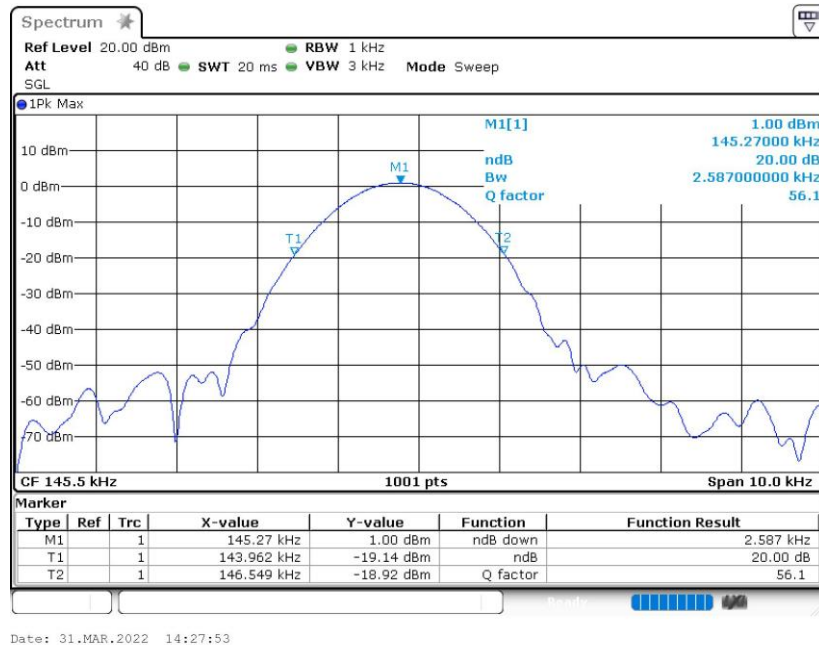


Date: 31.MAR.2022 14:26:36

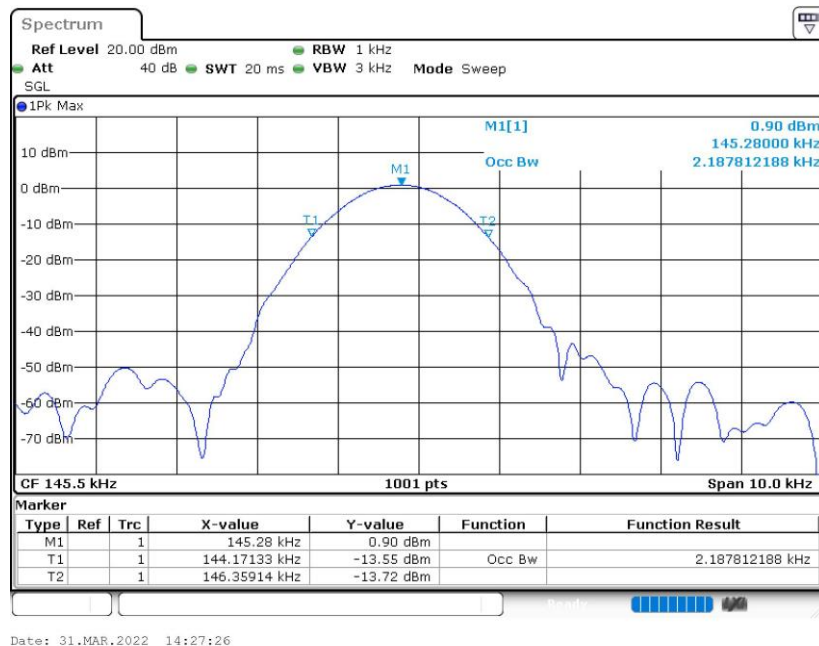


Mode 4

20 dB Bandwidth Plot



99% Occupied Bandwidth Plot



## 3.2 Radiated Emission Measurement

### 3.2.1 Limit of Radiated Emission

The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

| Frequency<br>(MHz) | Field Strength<br>(microvolts/meter) | Measurement Distance<br>(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                                |

| Receiver Parameter             | Setting             |
|--------------------------------|---------------------|
| Frequency Range: 9kHz~150kHz   | RBW 200Hz for QP    |
| Frequency Range: 150kHz~30MHz  | RBW 9kHz for QP     |
| Frequency Range: 30MHz~1000MHz | RBW 120kHz for Peak |

**Note:** The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz. Radiated emission limits in these two bands are based on measurements employing an average detector.

For radiated emissions from 9kHz to 1GHz test distance is 3m

For 9kHz ~ 30MHz

1. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
2. Distance extrapolation factor =  $40 \log (\text{specific distance} / \text{test distance})$  (dB);
3. specific line (dB $\mu$ V/m) =  $20 \log$  Emission level ( $\mu$ V/m)
4. Limit line = specific limits (dB $\mu$ V/m) + distance extrapolation factor.

### 3.2.2 Measuring Instruments

See list of measuring equipment of this test report.

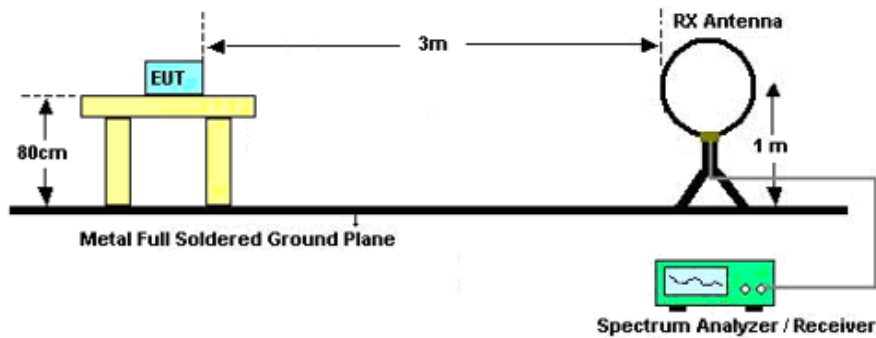
### 3.2.3 Measuring Instrument Setting

Follow the guidelines in ANSI C63.10-2013 with respect to maximizing the emission by rotating the EUT, measuring the emission for three EUT orthogonal planes, and adjusting the measurement

antenna height and polarization. A pre-amp and a high pass filter are used for this test in order to get the good signal level.

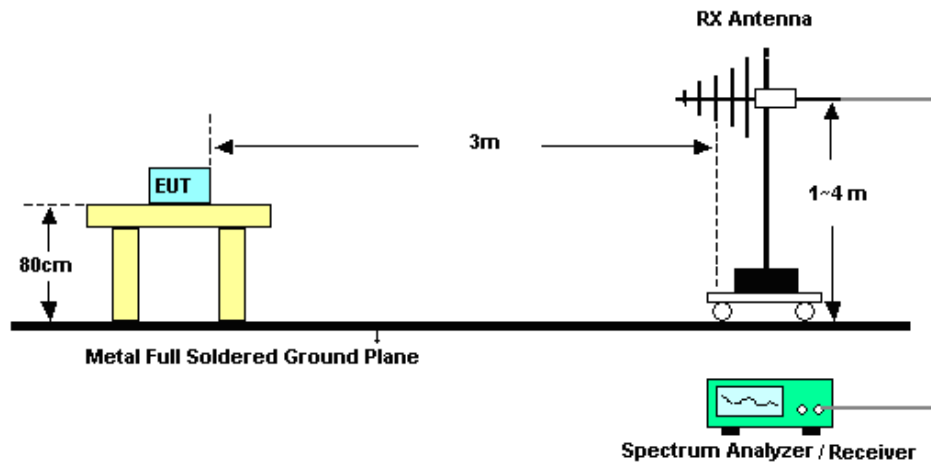
### 3.2.4 Test Setup of Radiated Emission

**For radiated emissions below 30MHz**

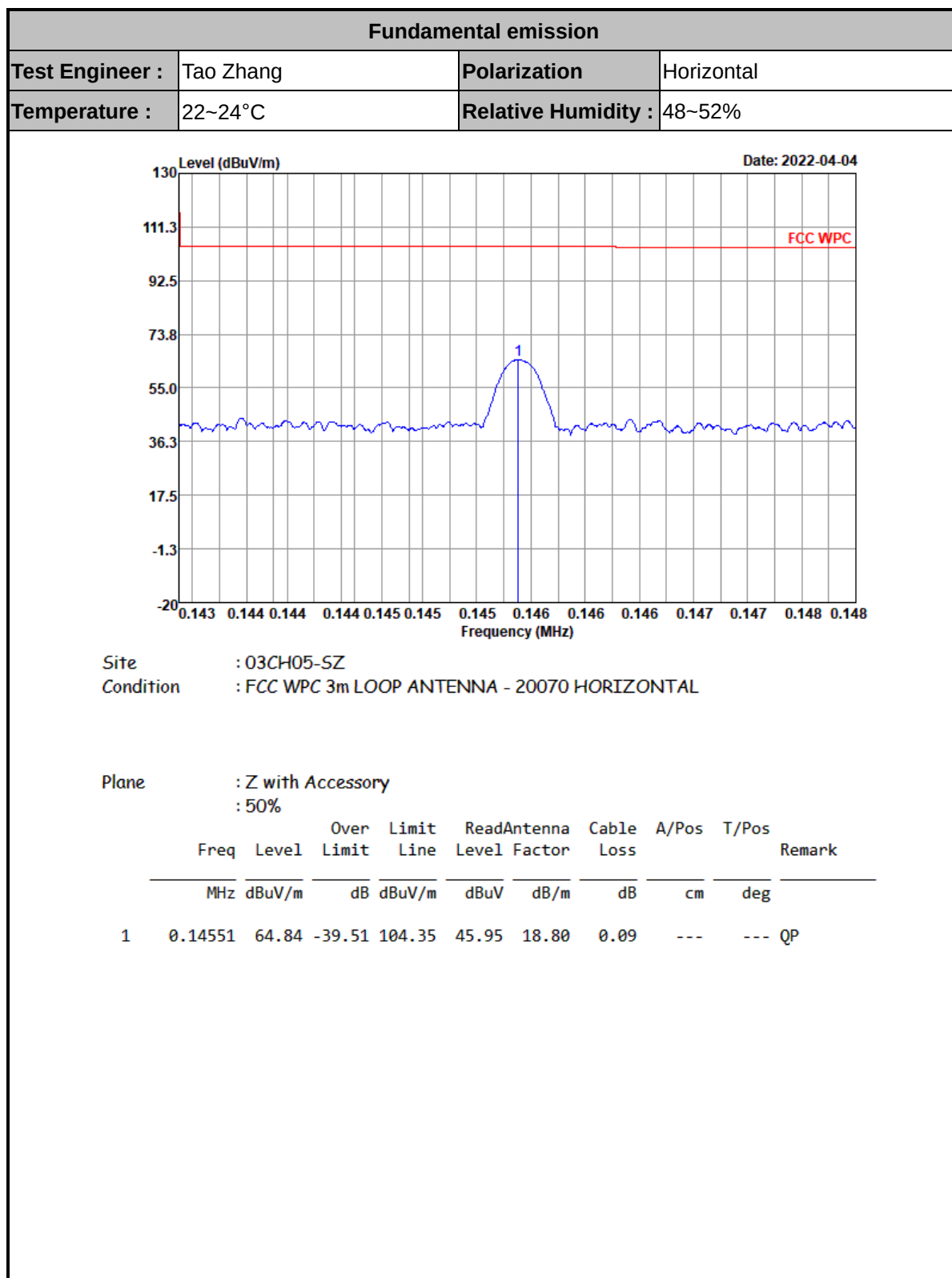


**Note:** There is a comparison data of both open-field test site and alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result came out very similar.

**For radiated emissions above 30MHz**



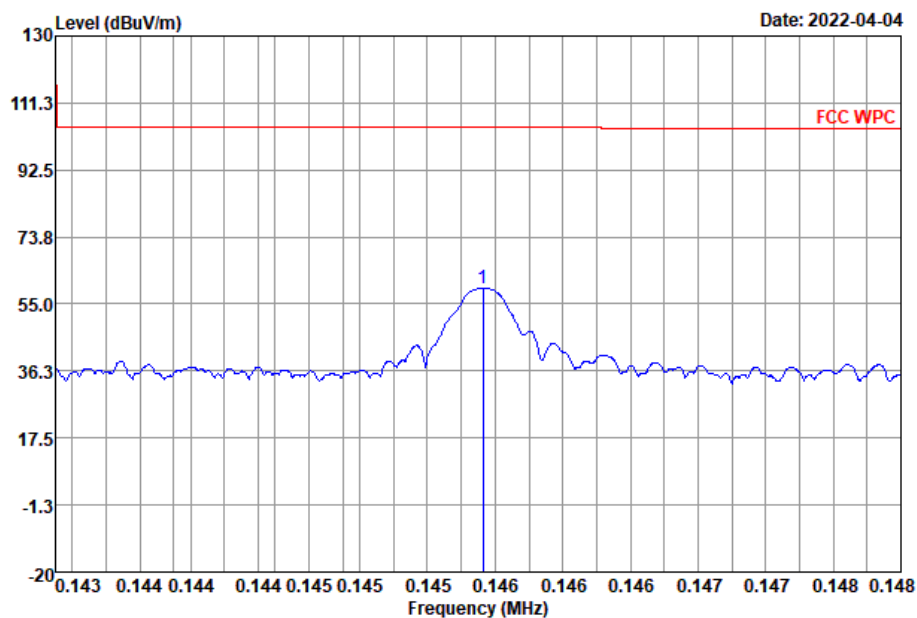
### 3.2.5 Test Result of Radiated Emission (9kHz ~ 30MHz)





## Fundamental emission

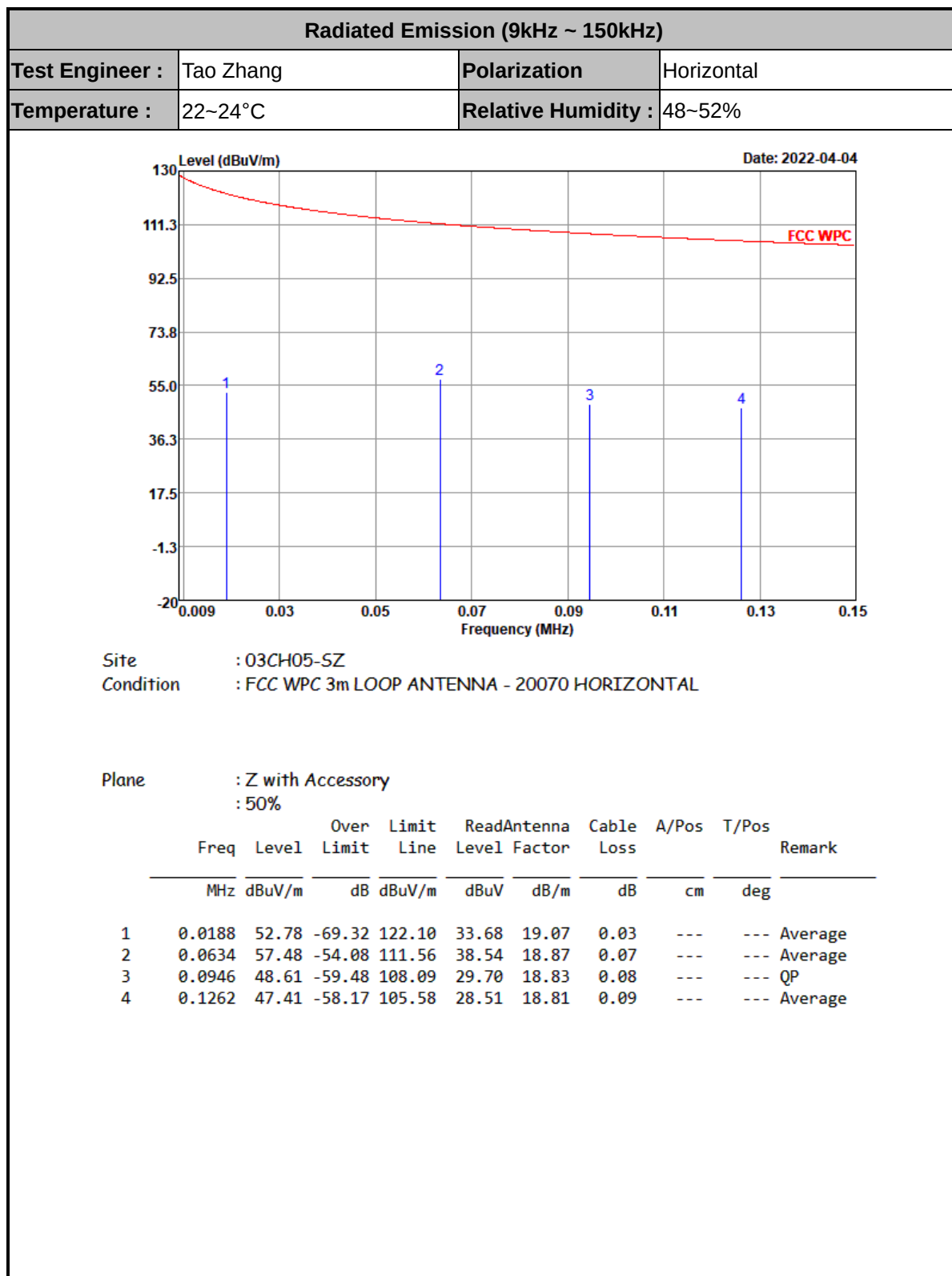
|                 |           |                     |          |
|-----------------|-----------|---------------------|----------|
| Test Engineer : | Tao Zhang | Polarization        | Vertical |
| Temperature :   | 22~24°C   | Relative Humidity : | 48~52%   |



Site : 03CH05-SZ  
Condition : FCC WPC 3m LOOP ANTENNA - 20070 VERTICAL

Plane : Z with Accessory  
: 50%

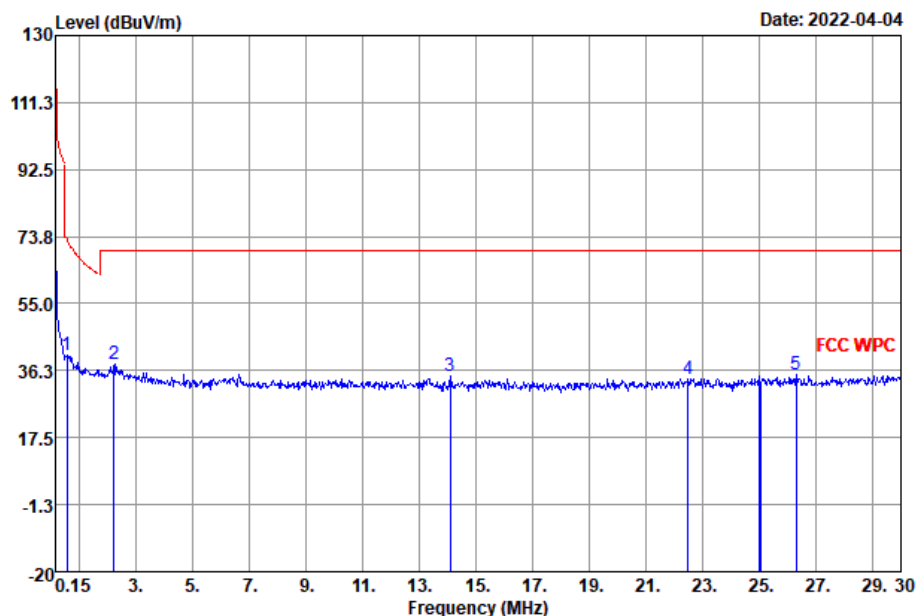
|   | Freq    | Level  | Over<br>Limit | Limit<br>Line | ReadAntenna<br>Level Factor | Cable<br>Loss | A/Pos | T/Pos | Remark |
|---|---------|--------|---------------|---------------|-----------------------------|---------------|-------|-------|--------|
|   | MHz     | dBuV/m | dB            | dBuV/m        | dBuV                        | dB/m          | dB    | cm    | deg    |
| 1 | 0.14553 | 59.37  | -44.98        | 104.35        | 40.48                       | 18.80         | 0.09  | ---   | QP     |





## Radiated Emission (150kHz ~ 30MHz)

|                 |           |                     |            |
|-----------------|-----------|---------------------|------------|
| Test Engineer : | Tao Zhang | Polarization        | Horizontal |
| Temperature :   | 22~24°C   | Relative Humidity : | 48~52%     |



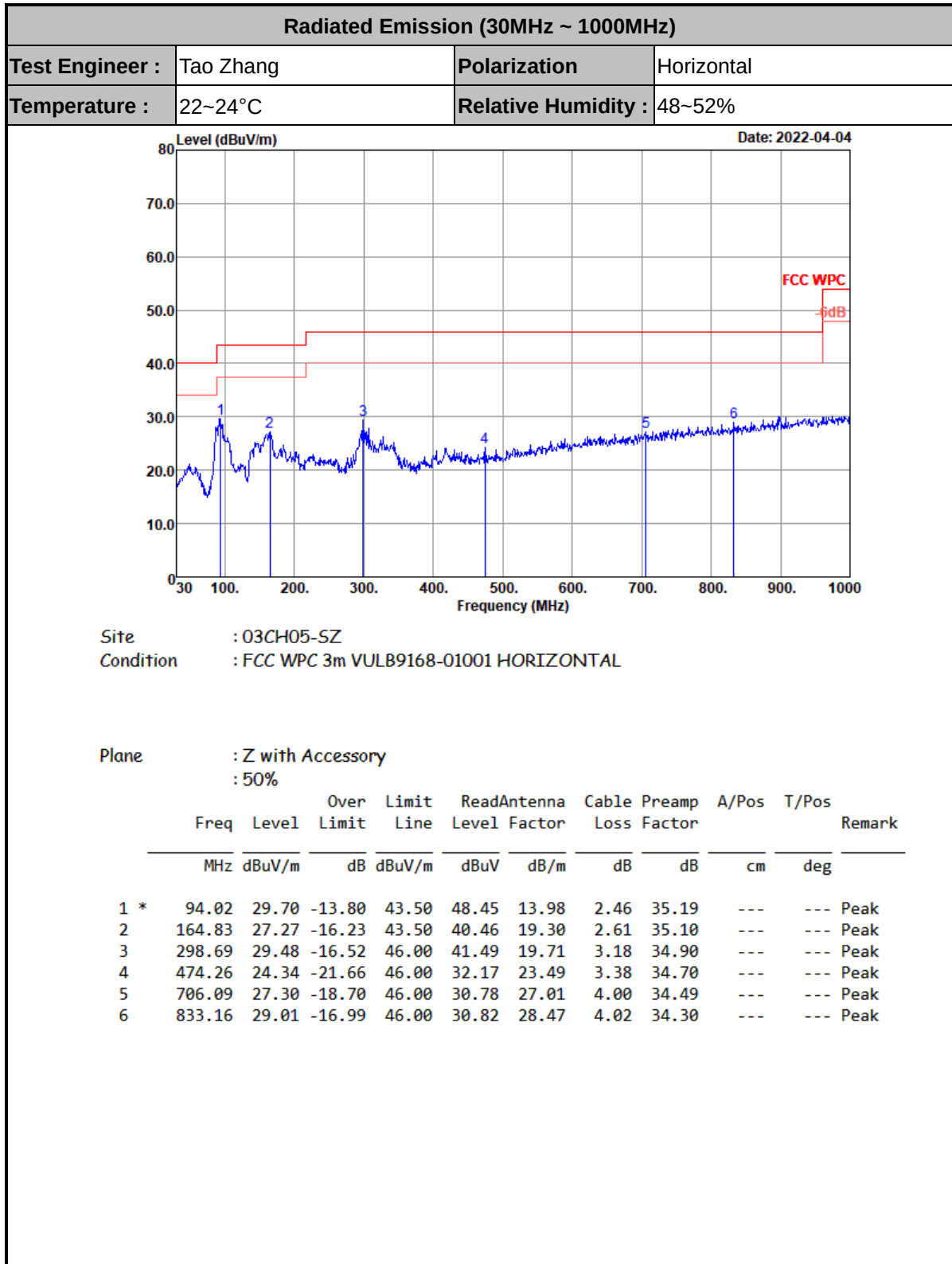
Site : 03CH05-SZ

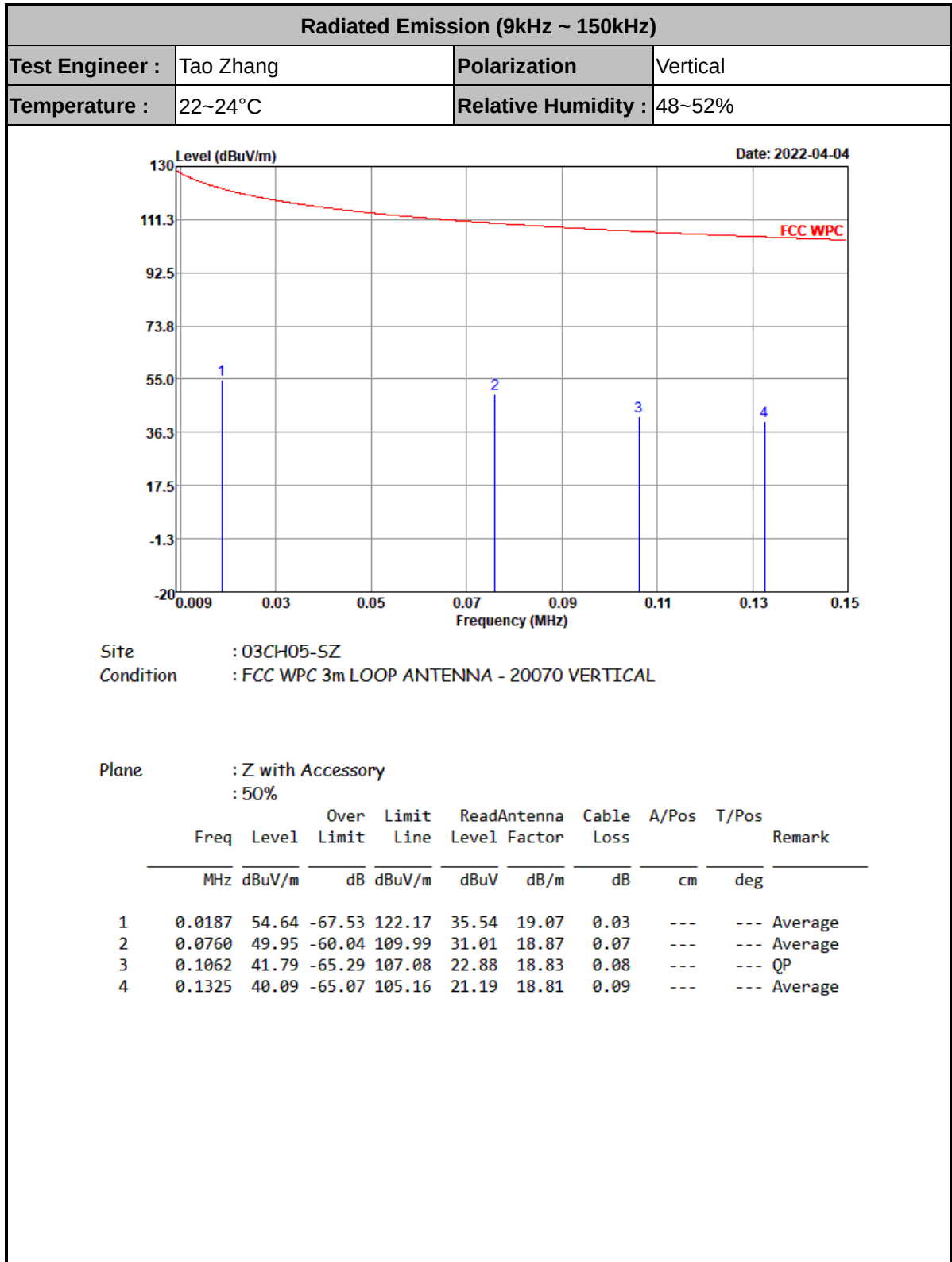
Condition : FCC WPC 3m LOOP ANTENNA - 20070 HORIZONTAL

Plane : Z with Accessory

: 50%

|   | Freq    | Level  | Over Limit | Limit Line | ReadAntenna Level | Antenna Factor | Cable Loss | A/Pos | T/Pos | Remark |
|---|---------|--------|------------|------------|-------------------|----------------|------------|-------|-------|--------|
|   | MHz     | dBuV/m | dB         | dBuV/m     | dBuV              | dB/m           | dB         | cm    | deg   |        |
| 1 | 0.5681  | 40.51  | -32.01     | 72.52      | 21.55             | 18.76          | 0.20       | ---   | ---   | QP     |
| 2 | 2.2220  | 37.88  | -32.12     | 70.00      | 18.73             | 18.90          | 0.25       | ---   | ---   | QP     |
| 3 | 14.0800 | 34.81  | -35.19     | 70.00      | 15.86             | 18.52          | 0.43       | ---   | ---   | QP     |
| 4 | 22.4890 | 33.94  | -36.06     | 70.00      | 14.32             | 19.09          | 0.53       | ---   | ---   | QP     |
| 5 | 26.3050 | 35.00  | -35.00     | 70.00      | 15.31             | 19.11          | 0.58       | ---   | ---   | QP     |







## Radiated Emission (150kHz ~ 30MHz)

Test Engineer : Tao Zhang

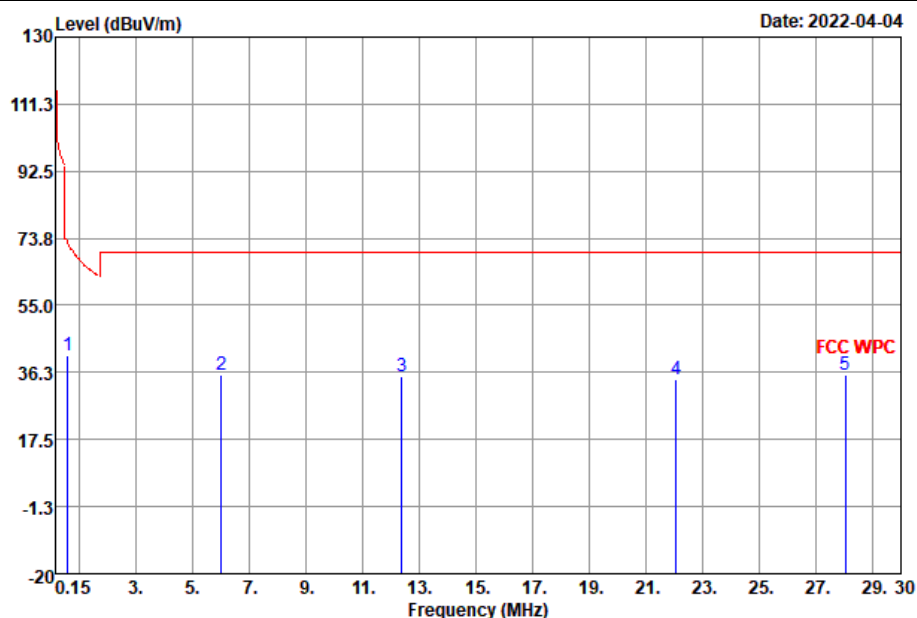
Polarization

Vertical

Temperature : 22~24°C

Relative Humidity :

48~52%



Site : 03CH05-SZ

Condition : FCC WPC 3m LOOP ANTENNA - 20070 VERTICAL

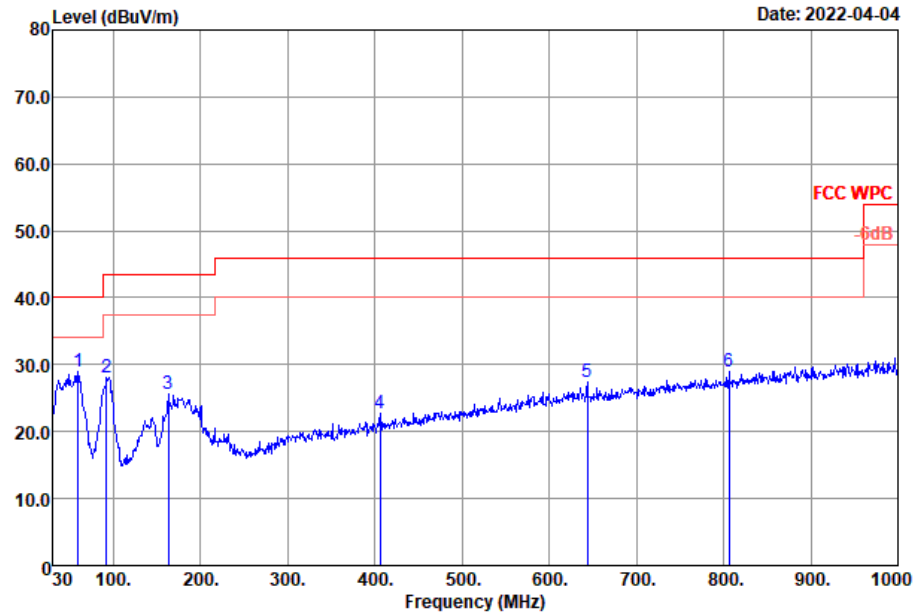
Plane : Z with Accessory  
: 50%

|   | Freq    | Level  | Over Limit | Limit Line | ReadAntenna Level | Cable Factor | A/Pos | T/Pos | Remark |
|---|---------|--------|------------|------------|-------------------|--------------|-------|-------|--------|
|   | MHz     | dBuV/m | dB         | dBuV/m     | dBuV              | dB/m         | dB    | cm    | deg    |
| 1 | 0.5718  | 40.98  | -31.48     | 72.46      | 22.02             | 18.76        | 0.20  | ---   | QP     |
| 2 | 5.9960  | 35.74  | -34.26     | 70.00      | 16.73             | 18.67        | 0.34  | ---   | QP     |
| 3 | 12.3840 | 35.20  | -34.80     | 70.00      | 16.16             | 18.63        | 0.41  | ---   | QP     |
| 4 | 22.0570 | 34.44  | -35.56     | 70.00      | 14.83             | 19.08        | 0.53  | ---   | QP     |
| 5 | 28.0500 | 35.36  | -34.64     | 70.00      | 15.76             | 19.00        | 0.60  | ---   | QP     |



## Radiated Emission (30MHz ~ 1000MHz)

|                 |           |                     |          |
|-----------------|-----------|---------------------|----------|
| Test Engineer : | Tao Zhang | Polarization        | Vertical |
| Temperature :   | 22~24°C   | Relative Humidity : | 48~52%   |



Site : 03CH05-SZ  
Condition : FCC WPC 3m VULB9168-01001 VERTICAL

Plane : Z with Accessory  
: 50%

|     | Freq   | Level  | Over Limit | Limit Line | ReadAntenna Level | Cable Preamp | A/Pos | T/Pos | Remark       |
|-----|--------|--------|------------|------------|-------------------|--------------|-------|-------|--------------|
|     | MHz    | dBuV/m | dB         | dBuV/m     | dBuV              | dB/m         | dB    | dB    | cm deg       |
| 1 * | 59.10  | 29.00  | -11.00     | 40.00      | 42.25             | 19.64        | 2.23  | 35.12 | --- --- Peak |
| 2   | 92.08  | 28.09  | -15.41     | 43.50      | 46.91             | 13.95        | 2.41  | 35.18 | --- --- Peak |
| 3   | 162.89 | 25.56  | -17.94     | 43.50      | 38.75             | 19.31        | 2.60  | 35.10 | --- --- Peak |
| 4   | 406.36 | 22.72  | -23.28     | 46.00      | 32.02             | 22.18        | 3.31  | 34.79 | --- --- Peak |
| 5   | 644.01 | 27.31  | -18.69     | 46.00      | 31.66             | 26.26        | 3.89  | 34.50 | --- --- Peak |
| 6   | 806.00 | 28.95  | -17.05     | 46.00      | 31.02             | 28.27        | 3.96  | 34.30 | --- --- Peak |

Note:

- Level(dBμV/m) = Read Level(dBμV) + Antenna Factor(dB/m) + Cable Loss(dB) - Preamp Factor(dB)
- Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

### 3.3 AC Conducted Emission Measurement

#### 3.3.1 Limits of AC Conducted Emission

For equipment that 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 the limits in the following table.

| Frequency of Emission<br>(MHz) | Conducted Limit (dB $\mu$ V) |           |
|--------------------------------|------------------------------|-----------|
|                                | Quasi-Peak                   | Average   |
| 0.15-0.5                       | 66 to 56*                    | 56 to 46* |
| 0.5-5                          | 56                           | 46        |
| 5-30                           | 60                           | 50        |

\*Decreases with the logarithm of the frequency.

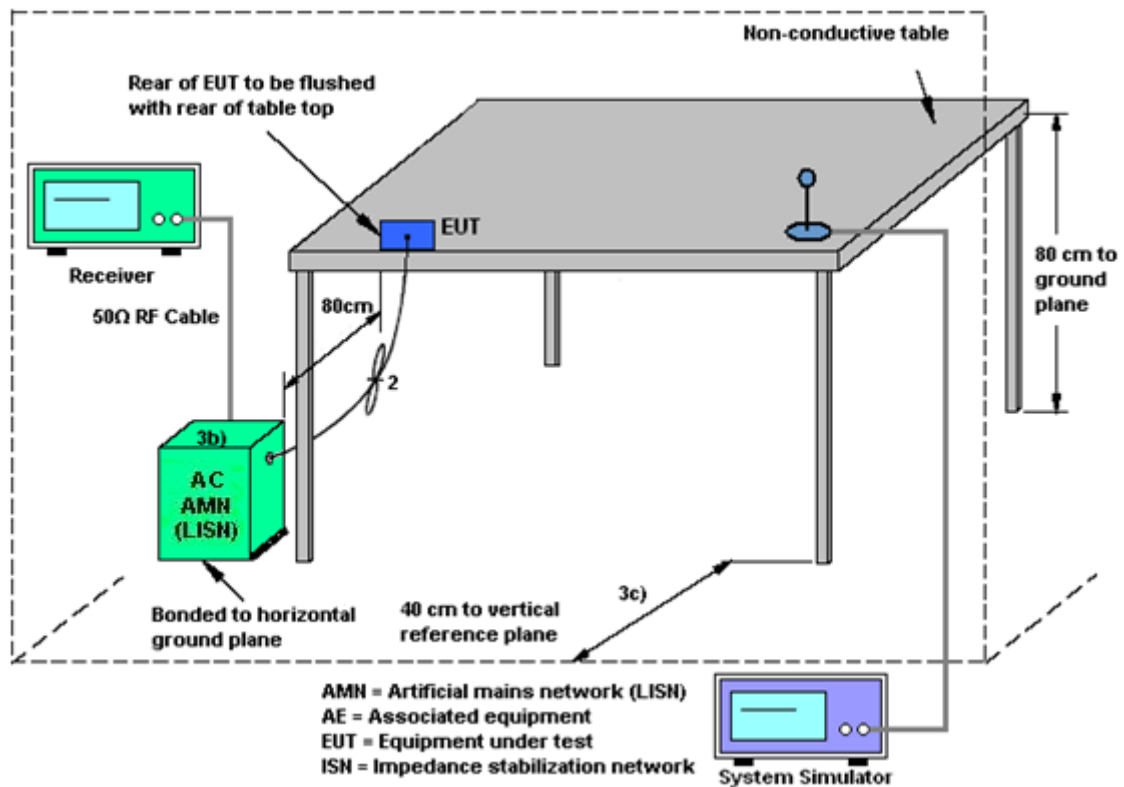
#### 3.3.2 Measuring Instruments

See list of measuring equipment of this test report.

#### 3.3.3 Test Procedure

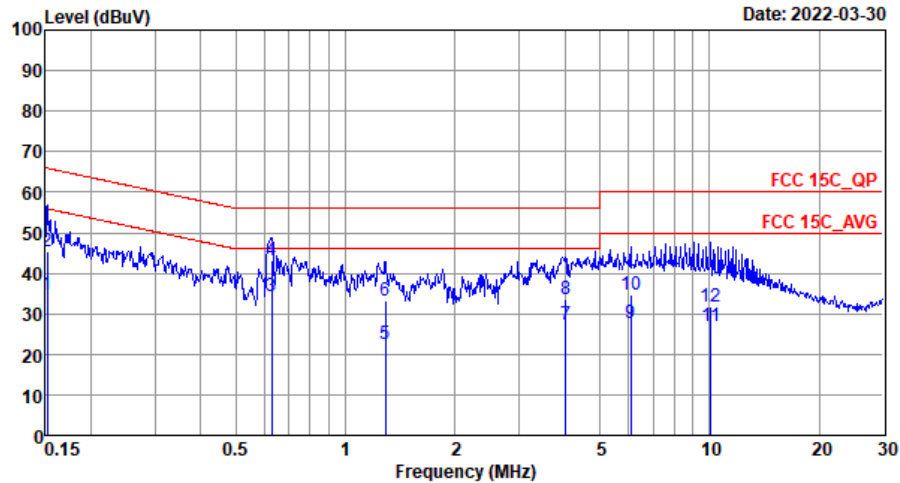
1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.

### 3.3.4 Test Setup



### 3.3.5 Test Result of AC Conducted Emission

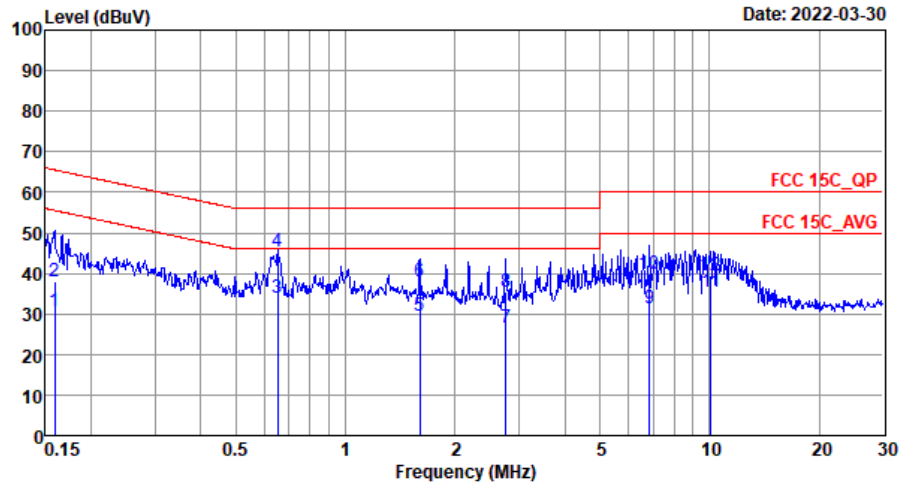
|                        |                                                                                 |                            |         |
|------------------------|---------------------------------------------------------------------------------|----------------------------|---------|
| <b>Test Engineer :</b> | Xie YuQiang                                                                     | <b>Temperature :</b>       | 22~25°C |
|                        |                                                                                 | <b>Relative Humidity :</b> | 50~55%  |
| <b>Test Voltage :</b>  | 120Vac / 60Hz                                                                   | <b>Phase :</b>             | Line    |
| <b>Remark :</b>        | All emissions not reported here are more than 10 dB below the prescribed limit. |                            |         |



Site : CO01-SZ  
Condition: FCC 15C\_QP LISN\_20210901\_L LINE

|     | Freq  | Level | Over Limit | Limit Line | Read Level | LISN Factor | Cable Loss | Remark  |
|-----|-------|-------|------------|------------|------------|-------------|------------|---------|
|     | MHz   | dBuV  | dB         | dBuV       | dBuV       | dB          | dB         |         |
| 1   | 0.15  | 34.63 | -21.28     | 55.91      | 13.60      | 10.20       | 10.83      | Average |
| 2   | 0.15  | 45.43 | -20.48     | 65.91      | 24.40      | 10.20       | 10.83      | QP      |
| 3 * | 0.63  | 34.35 | -11.65     | 46.00      | 12.90      | 10.12       | 11.33      | Average |
| 4   | 0.63  | 43.35 | -12.65     | 56.00      | 21.90      | 10.12       | 11.33      | QP      |
| 5   | 1.29  | 22.47 | -23.53     | 46.00      | 2.10       | 10.14       | 10.23      | Average |
| 6   | 1.29  | 33.17 | -22.83     | 56.00      | 12.80      | 10.14       | 10.23      | QP      |
| 7   | 4.03  | 27.44 | -18.56     | 46.00      | 7.20       | 10.00       | 10.24      | Average |
| 8   | 4.03  | 33.54 | -22.46     | 56.00      | 13.30      | 10.00       | 10.24      | QP      |
| 9   | 6.09  | 27.82 | -22.18     | 50.00      | 7.60       | 9.96        | 10.26      | Average |
| 10  | 6.09  | 34.82 | -25.18     | 60.00      | 14.60      | 9.96        | 10.26      | QP      |
| 11  | 10.07 | 26.92 | -23.08     | 50.00      | 6.80       | 9.82        | 10.30      | Average |
| 12  | 10.07 | 31.82 | -28.18     | 60.00      | 11.70      | 9.82        | 10.30      | QP      |

|                        |                                                                                 |                            |         |
|------------------------|---------------------------------------------------------------------------------|----------------------------|---------|
| <b>Test Engineer :</b> | Xie YuQiang                                                                     | <b>Temperature :</b>       | 22~25°C |
|                        |                                                                                 | <b>Relative Humidity :</b> | 50~55%  |
| <b>Test Voltage :</b>  | 120Vac / 60Hz                                                                   | <b>Phase :</b>             | Neutral |
| <b>Remark :</b>        | All emissions not reported here are more than 10 dB below the prescribed limit. |                            |         |



Site : C001-SZ  
Condition: FCC 15C\_QP LISN\_20210901\_N NEUTRAL

|     | Freq  | Level | Over Limit | Limit Line | Read Level | LISN Factor | Cable Loss | Remark  |
|-----|-------|-------|------------|------------|------------|-------------|------------|---------|
|     | MHz   | dBuV  | dB         | dBuV       | dBuV       | dB          | dB         |         |
| 1   | 0.16  | 30.71 | -24.81     | 55.52      | 9.70       | 10.30       | 10.71      | Average |
| 2   | 0.16  | 38.01 | -27.51     | 65.52      | 17.00      | 10.30       | 10.71      | QP      |
| 3   | 0.65  | 33.76 | -12.24     | 46.00      | 12.30      | 10.23       | 11.23      | Average |
| 4 * | 0.65  | 45.56 | -10.44     | 56.00      | 24.10      | 10.23       | 11.23      | QP      |
| 5   | 1.60  | 29.57 | -16.43     | 46.00      | 9.10       | 10.23       | 10.24      | Average |
| 6   | 1.60  | 37.87 | -18.13     | 56.00      | 17.40      | 10.23       | 10.24      | QP      |
| 7   | 2.76  | 26.48 | -19.52     | 46.00      | 6.10       | 10.14       | 10.24      | Average |
| 8   | 2.76  | 35.48 | -20.52     | 56.00      | 15.10      | 10.14       | 10.24      | QP      |
| 9   | 6.84  | 31.40 | -18.60     | 50.00      | 11.10      | 10.03       | 10.27      | Average |
| 10  | 6.84  | 39.90 | -20.10     | 60.00      | 19.60      | 10.03       | 10.27      | QP      |
| 11  | 10.07 | 35.39 | -14.61     | 50.00      | 15.10      | 9.99        | 10.30      | Average |
| 12  | 10.07 | 39.39 | -20.61     | 60.00      | 19.10      | 9.99        | 10.30      | QP      |

Note:

- Level(dBμV) = Read Level(dBμV) + LISN Factor(dB) + Cable Loss(dB)
- Over Limit(dB) = Level(dBμV) – Limit Line(dBμV)



### **3.4 Antenna Requirements**

#### **3.4.1 Standard Applicable**

Except for special regulations, the Low-power Radio-frequency Devices must not be equipped with any jacket for installing an antenna with extension cable. 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 the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited.

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 rule.

#### **3.4.2 Antenna Anti-Replacement Construction**

An embedded-in antenna design is used.



## 4 List of Measuring Equipment

| Instrument                        | Manufacturer   | Model No. | Serial No.   | Characteristics | Calibration Date | Test Date     | Due Date      | Remark                |
|-----------------------------------|----------------|-----------|--------------|-----------------|------------------|---------------|---------------|-----------------------|
| Spectrum Analyzer                 | R&S            | FSV40     | 101078       | 10Hz~40GHz      | Apr. 08, 2021    | Mar. 31, 2022 | Apr. 07, 2022 | Conducted (TH01-SZ)   |
| EMI Test Receiver                 | R&S            | ESR7      | 102261       | 9kHz~7GHz       | May. 21, 2021    | Apr. 04, 2022 | May. 20, 2022 | Radiation (03CH05-SZ) |
| EXA Spectrum Analyzer             | KEYSIGHT       | N9010B    | MY59071191   | 10Hz~44GHz      | Apr. 07, 2021    | Apr. 04, 2022 | Apr. 06, 2022 | Radiation (03CH05-SZ) |
| Loop Antenna                      | R&S            | HFH2-Z2   | 100354       | 9kHz~30MHz      | Jun. 22, 2020    | Apr. 04, 2022 | Jun. 21, 2022 | Radiation (03CH05-SZ) |
| Log-periodic Antenna              | SCHWARZBECK    | VULB 9168 | 01001        | 20MHz~1.5GHz    | Mar.24, 2022     | Apr. 04, 2022 | Mar. 23, 2023 | Radiation (03CH05-SZ) |
| Amplifier                         | EM Electronics | EM330     | 060756       | 0.01Hz~3000MHz  | Apr. 07, 2021    | Apr. 04, 2022 | Apr. 06, 2022 | Radiation (03CH05-SZ) |
| AC Power Source                   | APC            | AFV-S-600 | F119050013   | N/A             | NCR              | Apr. 04, 2022 | NCR           | Radiation (03CH05-SZ) |
| Turn Table                        | EMEC           | T-200-S-1 | 060925-T     | 0~360 degree    | NCR              | Apr. 04, 2022 | NCR           | Radiation (03CH05-SZ) |
| Antenna Mast                      | EMEC           | MBS-400-1 | 060927       | 1 m~4 m         | NCR              | Apr. 04, 2022 | NCR           | Radiation (03CH05-SZ) |
| EMI Receiver                      | R&S            | ESR7      | 101630       | 9kHz~7GHz;      | Mar. 07, 2022    | Mar. 30, 2022 | Mar. 06, 2023 | Conduction (CO01-SZ)  |
| AC LISN                           | R&S            | ENV216    | 100063       | 9kHz~30MHz      | Sep. 01, 2021    | Mar. 30, 2022 | Aug. 31, 2022 | Conduction (CO01-SZ)  |
| AC LISN (for auxiliary equipment) | EMCO           | 3816/2SH  | 00103892     | 9kHz~30MHz      | Oct. 28, 2021    | Mar. 30, 2022 | Oct. 27, 2022 | Conduction (CO01-SZ)  |
| AC Power Source                   | Chroma         | 61602     | 616020000891 | 100Vac~250Vac   | Jul. 14, 2021    | Mar. 30, 2022 | Jul. 13, 2022 | Conduction (CO01-SZ)  |

NCR: No Calibration Required



## 5 Uncertainty of Evaluation

### Uncertainty of Conducted Emission Measurement (150 kHz ~ 30 MHz)

|                                                                             |       |
|-----------------------------------------------------------------------------|-------|
| Measuring Uncertainty for a Level of Confidence<br>of 95% ( $U = 2U_c(y)$ ) | 2.2dB |
|-----------------------------------------------------------------------------|-------|

### Uncertainty of Radiated Emission Measurement (9 kHz ~ 30 MHz)

|                                                                             |       |
|-----------------------------------------------------------------------------|-------|
| Measuring Uncertainty for a Level of Confidence<br>of 95% ( $U = 2U_c(y)$ ) | 2.5dB |
|-----------------------------------------------------------------------------|-------|

### Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

|                                                                             |       |
|-----------------------------------------------------------------------------|-------|
| Measuring Uncertainty for a Level of Confidence<br>of 95% ( $U = 2U_c(y)$ ) | 4.2dB |
|-----------------------------------------------------------------------------|-------|

----- THE END -----