



# FCC Test Report

APPLICANT : Positioning Universal Inc  
EQUIPMENT : GPS TRACK  
MODEL NAME : FT7000MW  
FCC ID : 2AHRH-FT7000MW  
STANDARD : 47 CFR Part 15 Subpart B  
CLASSIFICATION : Certification  
TEST DATE(S) : Feb. 12, 2022

We, Sporton International Inc. (Kunshan), would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI C63.4-2014 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. (Kunshan), the test report shall not be reproduced except in full.

Reviewed by: Jason Jia / Supervisor

Approved by: Alex Wang / Manager



**Sporton International Inc. (Kunshan)**

No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300  
People's Republic of China



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## REVISION HISTORY

| REPORT NO. | VERSION | DESCRIPTION             | ISSUED DATE   |
|------------|---------|-------------------------|---------------|
| FC1D2402   | Rev. 01 | Initial issue of report | Mar. 07, 2022 |
|            |         |                         |               |
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|            |         |                         |               |

## SUMMARY OF TEST RESULT

| Report Section | FCC Rule | Description           | Limit           | Result         | Remark                                   |
|----------------|----------|-----------------------|-----------------|----------------|------------------------------------------|
| -              | 15.107   | AC Conducted Emission | < 15.107 limits | Not Applicable | -                                        |
| 3.1            | 15.109   | Radiated Emission     | < 15.109 limits | PASS           | Under limit<br>5.46 dB at<br>530.520 MHz |

Not Applicable means after assessing, test items are not necessary to carry out.

**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

**Positioning Universal Inc**

4660 La Jolla Village Drive, Suite 1100, San Diego, CA92122

### 1.2. Manufacturer

**Positioning Universal Inc**

4660 La Jolla Village Drive, Suite 1100, San Diego, CA92122

### 1.3. Product Feature of Equipment Under Test

| Product Feature                 |                                                                         |
|---------------------------------|-------------------------------------------------------------------------|
| Equipment                       | GPS TRACK                                                               |
| Model Name                      | FT7000MW                                                                |
| FCC ID                          | 2AHRH-FT7000MW                                                          |
| IMEI                            | Radiation: 015678004023434                                              |
| EUT supports Radios application | GSM/LTE Category M1<br>WLAN 2.4GHz 802.11b/g/n HT20<br>Bluetooth LE/GPS |
| HW Version                      | P2.2                                                                    |
| SW Version                      | A0.18.1                                                                 |

**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. Product Specification of Equipment Under Test

| Standards-related Product Specification |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Tx Frequency</b>                     | GSM850: 824 MHz ~ 849 MHz<br>GSM1900: 1850MHz ~ 1910MHz<br>LTE Band 2 : 1850 MHz ~ 1910 MHz<br>LTE Band 4 : 1710 MHz ~ 1755 MHz<br>LTE Band 5 : 824 MHz ~ 849 MHz<br>LTE Band 12 : 699 MHz ~ 716 MHz<br>LTE Band 13 : 777 MHz ~ 787 MHz<br>LTE Band 25 : 1850 MHz ~ 1915 MHz<br>LTE Band 26 : 814 MHz ~ 849 MHz<br>LTE Band 66 : 1710 MHz ~ 1780 MHz<br>LTE Band 85: 698 MHz ~ 716 MHz<br>802.11b/g/n: 2400 MHz ~ 2483.5 MHz<br>Bluetooth: 2400 MHz ~ 2483.5 MHz                               |
| <b>Rx Frequency</b>                     | GSM850: 869 MHz ~ 894 MHz<br>GSM1900: 1930 MHz ~ 1990 MHz<br>LTE Band 2 : 1930 MHz ~ 1990 MHz<br>LTE Band 4 : 2110 MHz ~ 2155 MHz<br>LTE Band 5 : 869 MHz ~ 894 MHz<br>LTE Band 12 : 729 MHz ~ 746 MHz<br>LTE Band 13 : 746 MHz ~ 756 MHz<br>LTE Band 25 : 1930 MHz ~ 1995 MHz<br>LTE Band 26 : 859 MHz ~ 894 MHz<br>LTE Band 66 : 2110 MHz~ 2180 MHz<br>LTE Band 85: 728 MHz ~ 746 MHz<br>802.11b/g/n: 2400 MHz ~ 2483.5 MHz<br>Bluetooth: 2400 MHz ~ 2483.5 MHz<br>GPS : 1559 MHz ~ 1610 MHz |
| <b>Antenna Type</b>                     | WWAN : PIFA Antenna<br>WLAN : PCB Antenna<br>Bluetooth : PCB Antenna<br>GPS: Chip Antenna                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Type of Modulation</b>               | GPRS: GMSK<br>EDGE(MCS 0-4): GMSK / (MCS 5-9): 8PSK<br>LTE: QPSK / 16QAM<br>802.11b : DSSS (DBPSK / DQPSK / CCK)<br>802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)<br>Bluetooth LE : GFSK<br>GPS : BPSK                                                                                                                                                                                                                                                                                        |

## 1.5. Modification of EUT

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

## 1.6. Test Location

Sporton International Inc. (Kunshan) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

|                    |                                                                                                                                                                          |                     |                                   |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-----------------------------------|
| Test Firm          | Sporton International Inc. (Kunshan)                                                                                                                                     |                     |                                   |
| Test Site Location | No. 1098, Pengxi North Road, Kunshan Economic Development Zone<br>Jiangsu Province 215300 People's Republic of China<br>TEL : +86-512-57900158<br>FAX : +86-512-57900958 |                     |                                   |
| Test Site No.      | Sporton Site No.                                                                                                                                                         | FCC Designation No. | FCC Test Firm<br>Registration No. |
|                    | 03CH02-KS                                                                                                                                                                | CN1257              | 314309                            |

## 1.7. Test Software

| Item | Site      | Manufacturer | Name | Version      |
|------|-----------|--------------|------|--------------|
| 1.   | 03CH02-KS | AUDIX        | E3   | 6.2009-8-24a |

## 1.8. Applicable Standards

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

- ♦ 47 CFR Part 15 Subpart B
- ♦ ANSI C63.4-2014

**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

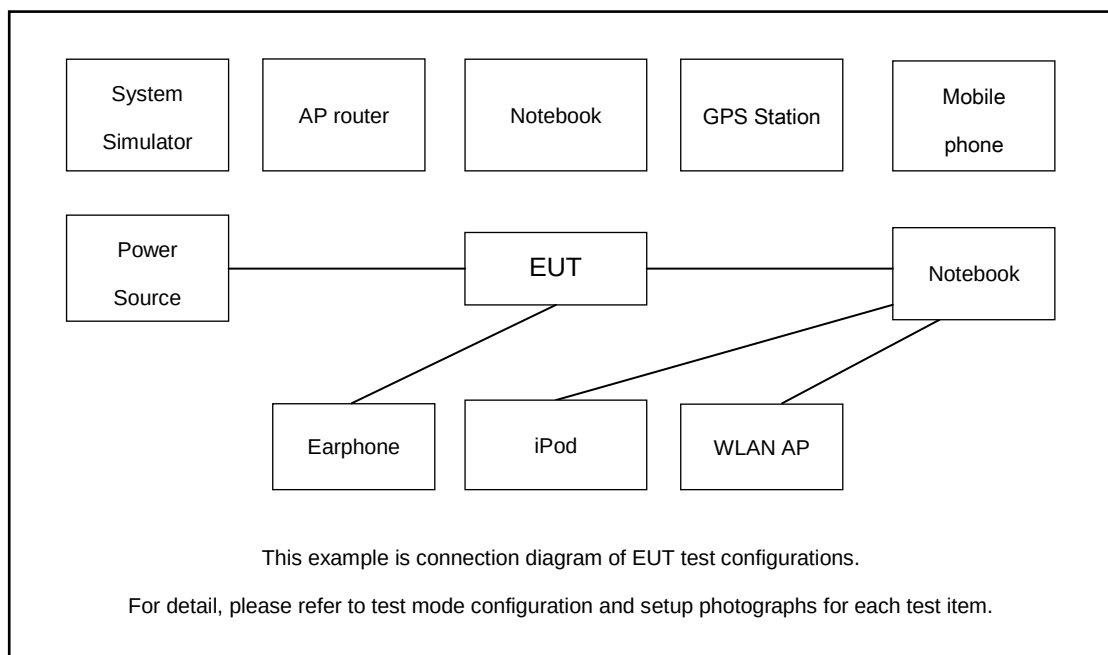
The EUT has been associated with peripherals pursuant to ANSI C63.4-2014 and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

Frequency range investigated: radiation emission (30MHz to the 5th harmonic of the highest frequency or to 40 GHz, whichever is lower).

| Test Items                                                                                                                                                                                                                                                                                                                                                     | Function Type                                                                                                                                                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Radiated Emissions                                                                                                                                                                                                                                                                                                                                             | Mode 1: LTE Band 26 Rx(Middle CH) + Internal Antenna + Bluetooth Idle + WLAN Idle + GPS On + Run OTG Function(Micro B Connect to USB Disk) + Power From DC Adapter 12V |
|                                                                                                                                                                                                                                                                                                                                                                | Mode 2: LTE Band 85 Rx(Low CH) + External Antenna + Bluetooth Idle + WLAN Idle + GPS On + Run OTG Function(Micro B Connect to USB Disk) + Power From DC Adapter 24V    |
|                                                                                                                                                                                                                                                                                                                                                                | Mode 3: LTE Band 13 Rx(Middle CH) + Internal Antenna + Bluetooth Idle + WLAN Idle + GPS On + Run OTG Function(Micro B Connect to USB Disk) + Power From DC Adapter 12V |
| <b>Remark:</b> <ol style="list-style-type: none"><li>1. The worst case of RE is mode 3; only the test data of this mode is reported.</li><li>2. Pre-scanned Low/Middle/High channel, the worst channel was recorded in this report.</li><li>3. The device supports two kinds of WWAN Antenna which are Internal Antenna (PIFA) and External Antenna.</li></ol> |                                                                                                                                                                        |



## 2.2.Connection Diagram of Test System



The EUT has been associated with peripherals pursuant to ANSI C63.4-2014 and configuration operated in a manner tended to maximize its emission characteristics in a typical application

## 2.3. Support Unit used in test configuration and system

| Item | Equipment               | Trade Name | Model Name    | FCC ID     | Data Cable     | Power Cord                                                 |
|------|-------------------------|------------|---------------|------------|----------------|------------------------------------------------------------|
| 1.   | System Simulator        | Anritsu    | MT8821C/8820C | N/A        | N/A            | Unshielded, 1.8m                                           |
| 2.   | Vector Signal Generator | R&S        | SMBV100A      | 258305     | N/A            | N/A                                                        |
| 3.   | WLAN AP                 | D-link     | DIR-655       | KA21R655B1 | N/A            | Unshielded, 1.8m                                           |
| 4.   | WLAN AP                 | TP-Link    | TL-WDR5600    | N/A        | N/A            | Unshielded, 1.8m                                           |
| 5.   | Notebook                | Lenovo     | V130-14IKB004 | N/A        | N/A            | AC I/P:<br>Unshielded, 1.8 m<br>DC O/P:<br>Shielded, 1.8 m |
| 6.   | Notebook                | Lenovo     | S730-13IWL    | N/A        | N/A            | AC I/P:<br>Unshielded, 1.8 m<br>DC O/P:<br>Shielded, 1.8 m |
| 7.   | Hard Disk               | Lenovo     | F310          | DoC        | Shielded, 1.2m | N/A                                                        |
| 8.   | Phone                   | MOTO       | XT1952-1      | N/A        | N/A            | N/A                                                        |
| 9.   | WWAN Antenna            | N/A        | N/A           | N/A        | N/A            | N/A                                                        |
| 10.  | GPS Antenna             | N/A        | N/A           | N/A        | N/A            | N/A                                                        |
| 11.  | Adapter                 | N/A        | N/A           | N/A        | N/A            | N/A                                                        |
| 12.  | DC Power                | GWINSTEK   | PLR36-10      | N/A        | N/A            | Unshielded,1.8m                                            |

## 2.4. EUT Operation Test Setup

The EUT was in GSM or LTE idle mode during the testing. The EUT was synchronized to the BCCH, and is in continuous receiving mode by setting system simulator's paging reorganization.

At the same time, the EUT was attached to the Mobile phone via Bluetooth function or WLAN AP, and the following programs installed in the EUT were programmed during the test..

1. Turn on GPS function to make the EUT receive continuous signals from GPS station.
2. Turn on OTG function

## 3. Test Result

### 3.1. Test of Radiated Emission Measurement

#### 3.1.1. Limit of Radiated Emission

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

<Class B Limit>

| Frequency<br>(MHz) | Field Strength<br>(microvolts/meter) | Measurement Distance<br>(meters) |
|--------------------|--------------------------------------|----------------------------------|
| 30 – 88            | 100                                  | 3                                |
| 88 – 216           | 150                                  | 3                                |
| 216 - 960          | 200                                  | 3                                |
| Above 960          | 500                                  | 3                                |

#### 3.1.2. Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

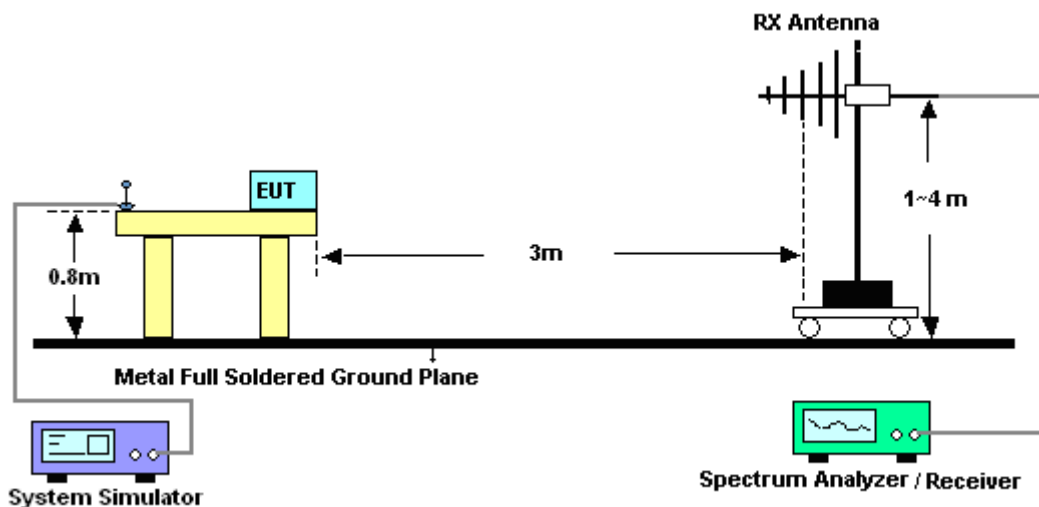
#### 3.1.3. Test Procedures

1. The EUT was placed on a turntable with 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna is a Bi-Log antenna and its height is adjusted between one to four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode (RBW=120kHz/VBW=300kHz for frequency below 1GHz; RBW=1MHz VBW=3MHz (Peak), RBW=1MHz/VBW=10Hz (Average) for frequency above 1GHz).
7. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, peak values of EUT will be reported. Otherwise, the emission will be repeated by using the quasi-peak method and reported.

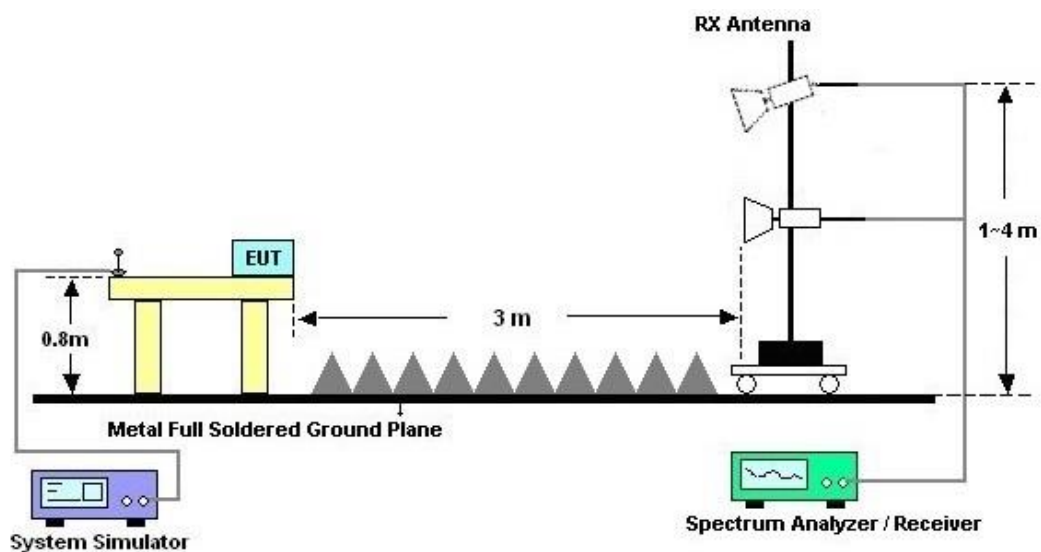
8. Emission level (dB $\mu$ V/m) = 20 log Emission level ( $\mu$ V/m)
9. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
10. Exploratory radiated emissions testing of handheld and/or body-worn devices shall include rotation of the EUT through three orthogonal axes (X/Y/Z Plane) to determine the orientation (attitude) that maximizes the emissions.

### 3.1.4. Test Setup of Radiated Emission

For radiated emissions from 30MHz to 1GHz

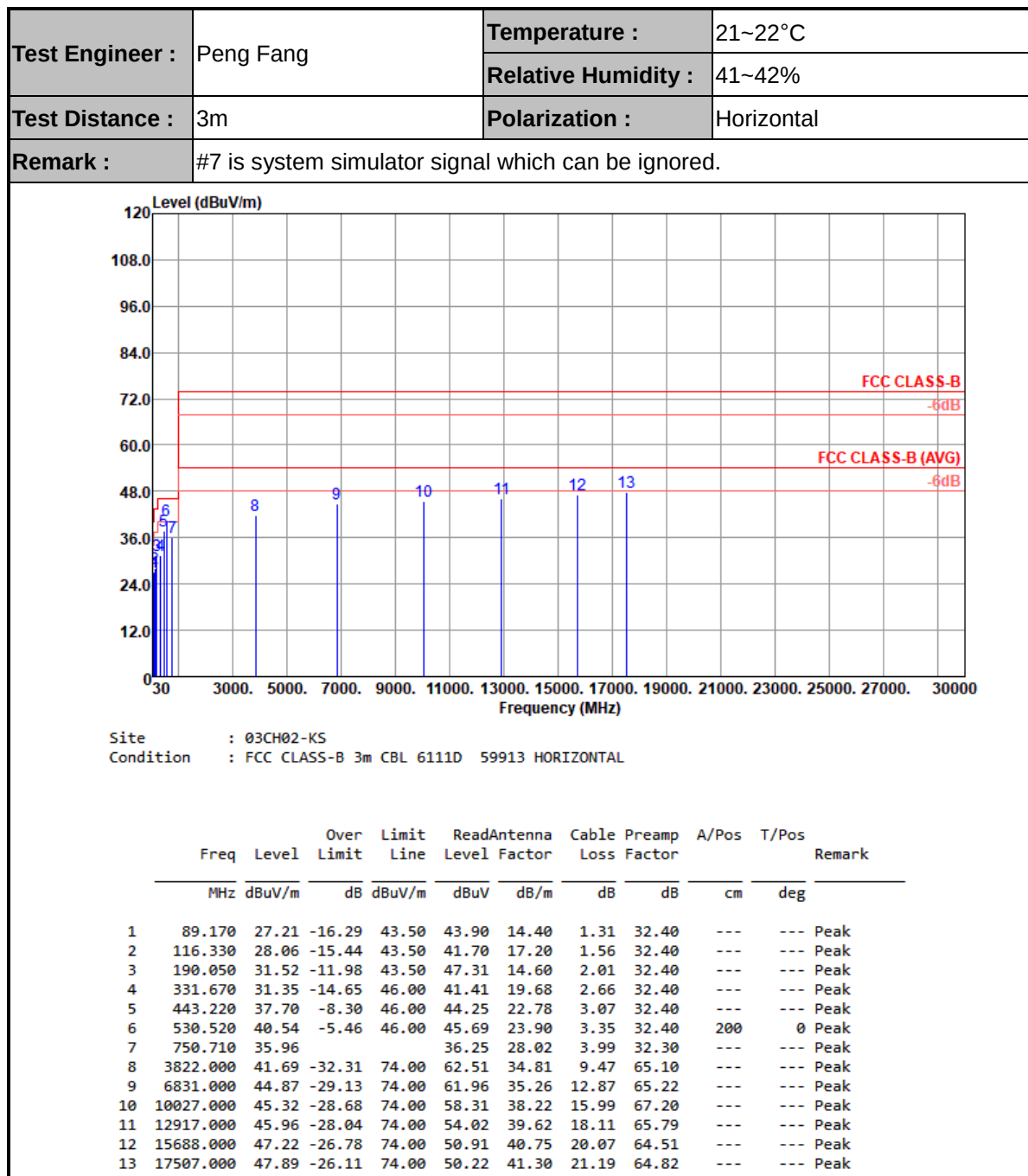


For radiated emissions above 1GHz



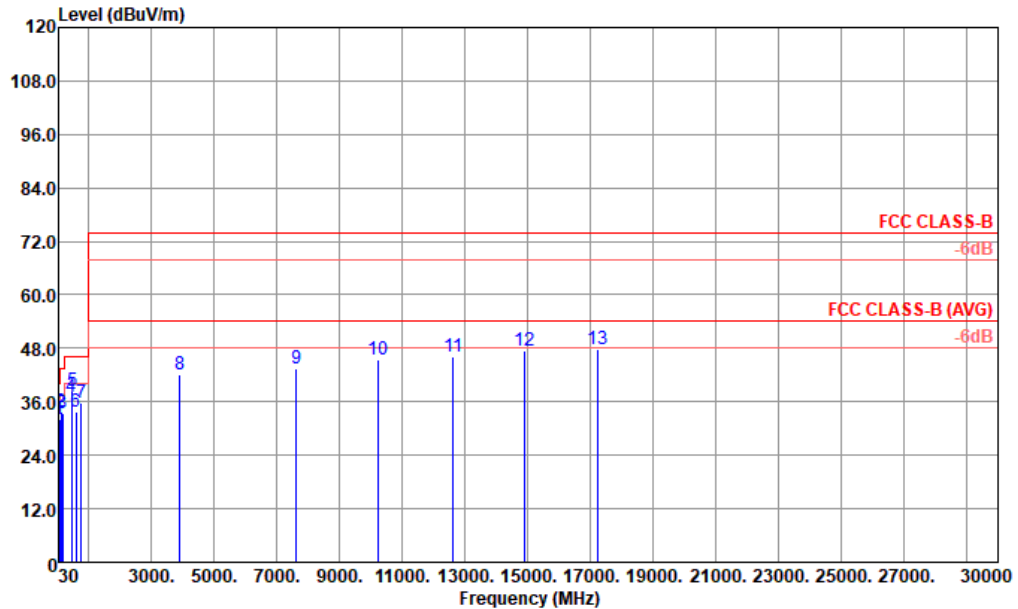


## 3.1.5. Test Result of Radiated Emission





|                 |                                                     |                     |          |
|-----------------|-----------------------------------------------------|---------------------|----------|
| Test Engineer : | Peng Fang                                           | Temperature :       | 21~22°C  |
|                 |                                                     | Relative Humidity : | 41~42%   |
| Test Distance : | 3m                                                  | Polarization :      | Vertical |
| Remark :        | #7 is system simulator signal which can be ignored. |                     |          |



Site : 03CH02-KS  
Condition : FCC CLASS-B 3m CBL 6111D 59913 VERTICAL

|    | Freq      | Level  | Over   | Limit  | ReadAntenna | Cable  | Preamp | A/Pos  | T/Pos | Remark |
|----|-----------|--------|--------|--------|-------------|--------|--------|--------|-------|--------|
|    | MHz       | dBuV/m | Limit  | Line   | Level       | Factor | Loss   | Factor |       |        |
|    |           |        | dB     | dBuV/m | dBuV        | dB/m   | dB     | dB     | cm    | deg    |
| 1  | 68.800    | 32.12  | -7.88  | 40.00  | 51.48       | 12.00  | 1.04   | 32.40  | ---   | Peak   |
| 2  | 115.360   | 33.85  | -9.65  | 43.50  | 47.49       | 17.20  | 1.56   | 32.40  | ---   | Peak   |
| 3  | 166.770   | 33.35  | -10.15 | 43.50  | 48.28       | 15.60  | 1.87   | 32.40  | ---   | Peak   |
| 4  | 442.250   | 37.25  | -8.75  | 46.00  | 43.87       | 22.72  | 3.06   | 32.40  | ---   | Peak   |
| 5  | 480.080   | 38.30  | -7.70  | 46.00  | 44.11       | 23.40  | 3.19   | 32.40  | ---   | Peak   |
| 6  | 599.390   | 33.87  | -12.13 | 46.00  | 37.18       | 25.52  | 3.57   | 32.40  | ---   | Peak   |
| 7  | 750.710   | 35.64  |        |        | 35.93       | 28.02  | 3.99   | 32.30  | ---   | Peak   |
| 8  | 3907.000  | 42.04  | -31.96 | 74.00  | 62.72       | 34.95  | 9.59   | 65.22  | ---   | Peak   |
| 9  | 7613.000  | 43.52  | -30.48 | 74.00  | 60.30       | 35.88  | 13.77  | 66.43  | ---   | Peak   |
| 10 | 10248.000 | 45.45  | -28.55 | 74.00  | 58.01       | 38.39  | 16.13  | 67.08  | ---   | Peak   |
| 11 | 12628.000 | 46.27  | -27.73 | 74.00  | 54.46       | 39.67  | 19.95  | 65.81  | ---   | Peak   |
| 12 | 14889.000 | 47.51  | -26.49 | 74.00  | 51.72       | 41.19  | 19.41  | 64.81  | ---   | Peak   |
| 13 | 17235.000 | 47.67  | -26.33 | 74.00  | 50.19       | 41.25  | 21.10  | 64.87  | ---   | 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)



## 4. List of Measuring Equipment

| Instrument                | Manufacturer | Model No.  | Serial No.   | Characteristics     | Calibration Date | Test Date     | Due Date      | Remark                |
|---------------------------|--------------|------------|--------------|---------------------|------------------|---------------|---------------|-----------------------|
| EMI Test Receiver         | R&S          | ESR7       | 101403       | 9kHz~7GHz;Max 30dBm | Oct. 16, 2021    | Feb. 12, 2022 | Oct. 15, 2022 | Radiation (03CH02-KS) |
| EXA Spectrum Analyzer     | Keysight     | N9010A     | MY55370528   | 10Hz-44G,MAX 30dB   | Oct. 16, 2021    | Feb. 12, 2022 | Oct. 15, 2022 | Radiation (03CH02-KS) |
| Bilog Antenna             | TeseQ        | CBL6111D   | 44483        | 30MHz-1GHz          | Dec. 22, 2021    | Feb. 12, 2022 | Dec. 21, 2022 | Radiation (03CH02-KS) |
| Double Ridge Horn Antenna | ETS-Lindgren | 3117       | 75957        | 1GHz~18GHz          | Oct. 30, 2021    | Feb. 12, 2022 | Oct. 29, 2022 | Radiation (03CH02-KS) |
| SHF-EHF Horn              | Com-power    | AH-840     | 101070       | 18GHz~40GHz         | Jan. 05, 2022    | Feb. 12, 2022 | Jan. 04, 2023 | Radiation (03CH02-KS) |
| Amplifier                 | MITEQ        | EM18G40GGA | 060728       | 18~40GHz            | Jan. 05, 2022    | Feb. 12, 2022 | Jan. 04, 2023 | Radiation (03CH02-KS) |
| Amplifier                 | SONOMA       | 310N       | 187289       | 9KHz-1GHz           | Apr. 13, 2021    | Feb. 12, 2022 | Apr. 12, 2022 | Radiation (03CH02-KS) |
| Amplifier                 | Keysight     | 83017A     | MY53270316   | 500MHz~26.5G Hz     | Oct. 16, 2021    | Feb. 12, 2022 | Oct. 15, 2022 | Radiation (03CH02-KS) |
| AC Power Source           | Chroma       | 61601      | 616010002473 | N/A                 | NCR              | Feb. 12, 2022 | NCR           | Radiation (03CH02-KS) |
| Turn Table                | MF           | MF7802     | N/A          | 0~360 degree        | NCR              | Feb. 12, 2022 | NCR           | Radiation (03CH02-KS) |
| Antenna Mast              | MF           | MF7802     | N/A          | 1 m~4 m             | NCR              | Feb. 12, 2022 | NCR           | Radiation (03CH02-KS) |

NCR: No Calibration Required

## 5. Uncertainty of Evaluation

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

|                                                                            |       |
|----------------------------------------------------------------------------|-------|
| Measuring Uncertainty for a Level of Confidence<br>of 95% ( $U = 2Uc(y)$ ) | 4.9dB |
|----------------------------------------------------------------------------|-------|

### Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

|                                                                            |       |
|----------------------------------------------------------------------------|-------|
| Measuring Uncertainty for a Level of Confidence<br>of 95% ( $U = 2Uc(y)$ ) | 5.0dB |
|----------------------------------------------------------------------------|-------|

### Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

|                                                                            |       |
|----------------------------------------------------------------------------|-------|
| Measuring Uncertainty for a Level of Confidence<br>of 95% ( $U = 2Uc(y)$ ) | 5.1dB |
|----------------------------------------------------------------------------|-------|