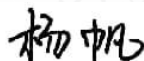


**Industrial Internet Innovation Center (Shanghai) Co.,Ltd.****SRD TEST REPORT**

|                    |                                    |
|--------------------|------------------------------------|
| <b>PRODUCT</b>     | Smart POS System                   |
| <b>BRAND</b>       | SUNMI                              |
| <b>MODEL</b>       | T6F10                              |
| <b>APPLICANT</b>   | Shanghai Sunmi Technology Co.,Ltd. |
| <b>FCC ID</b>      | 2AH25T6F10LA                       |
| <b>ISSUE DATE</b>  | February 26, 2024                  |
| <b>STANDARD(S)</b> | FCC Part15C                        |

Prepared by: *Tao Lingyan*Reviewed by: *Yang Fan*Approved by: *Zhang Min***CAUTION:**

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## 1. Summary of Test Report

### 1.1 Test Standard(s)

| No. | Test Standard | Title                                                                                                                                                                                                                    | Version |
|-----|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| 1   | FCC Part15C   | FCC CFR 47, Part 15, Subpart C:<br>15.205 Restricted bands of operation;<br>15.209 Radiated emission limits, general requirements;<br>15.247 Operation within the bands 902-928MHz,<br>2400-2483.5MHz, and 5725-5850MHz. | --      |

### 1.2 Reference Documents

| No. | Test Standard                              | Title                                                                                                                      | Version |
|-----|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|---------|
| 1   | ANSI C63.10                                | American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices                             | 2013    |
| 2   | KDB 558074 D01 15.247 Meas Guidance v05r02 | Guidance for Performing Compliance Measurements on Frequency Hopping Spread Spectrum systems (DSS) Operating Under §15.247 | --      |

Note: KDB 558074 D01 15.247 Meas Guidance v05r02 is not A2LA certified.

### 1.3 Summary of Test Results

| No. | Measurement Items                       | FCC Rules            | Verdict                       |
|-----|-----------------------------------------|----------------------|-------------------------------|
| 1   | Maximum Peak Output Power               | 15.247(b)            | Pass <sup>Note 2,Note 3</sup> |
| 2   | 20dB Occupied Bandwidth                 | 15.247(a)            | Pass <sup>Note 2</sup>        |
| 3   | 99% Occupied Bandwidth                  | 15.247(a)            | Pass <sup>Note 2</sup>        |
| 4   | Band Edges Compliance                   | 15.247 (d)           | Pass <sup>Note 2</sup>        |
| 5   | Time Of Occupancy (Dwell Time)          | 15.247(a)            | Pass <sup>Note 2</sup>        |
| 6   | Carrier Frequency Separation            | 15.247(a)            | Pass <sup>Note 2</sup>        |
| 7   | Number Of Hopping Channels              | 15.247(a)            | Pass <sup>Note 2</sup>        |
| 8   | Transmitter Spurious Emission-Conducted | 15.247(d)            | Pass <sup>Note 2</sup>        |
| 9   | Transmitter Spurious Emission-Radiated  | 15.247,15.209,15.205 | Pass <sup>Note 2,Note 3</sup> |
| 10  | AC Powerline Conducted Emission         | 15.207               | Pass <sup>Note 2</sup>        |
| 11  | Antenna requirement                     | 15.203/15.247(c)     | Pass <sup>Note 4</sup>        |

**NOTE 1:**

The T6F10 manufactured by Shanghai Sunmi Technology Co.,Ltd. is a variant product for testing. This project is a variant project based on the original report 23T04I30131-SRD01-V01 with below changes:

**Software Modifications:**

-subtract eu bands

**Hardware Modifications:**

-Band changes: YES

WCDMA reduced by B6/B19

LTE reduced by B8/B18/B19/B20/B26/B34/B39/B40; B41(200M)->B41(120M);

These changes do not affect the RF performance of other frequency bands.

-Components on PCB changes: Yes

-LCD changes: Please refer to the following difference chart

-Camera changes: Please refer to the following difference chart

| Type of Service             | Configuration type  | Scanner | Front Camera | Rear Camera | Flash Lamp | LCD (Just different manufacturers)                   |
|-----------------------------|---------------------|---------|--------------|-------------|------------|------------------------------------------------------|
| Original                    | High Configuration  | Yes     | Yes          | 5M AF+flash | Yes        | SHENZHEN DJN PHOTOELECTRIC TECHNOLOGY CO., LTD (DJN) |
| Original                    | Basic Configuration | NO      | Yes          | 5M AF+flash | Yes        | CPT Technology ( Group ) Co.,Ltd (Hua Ying)          |
| Variant (Based on Original) | Low Configuration   | NO      | NO           | 2M FF       | NO         | CPT Technology ( Group ) Co.,Ltd (Hua Ying)          |

-Other changes: PCBA Change.

According to the Product Change Description We tested the worst mode of conducted power and radiated spurious emission in the original report, and the test data of the worst mode was recorded in this report.

Industrial Internet Innovation Center (Shanghai) Co., Ltd. only performed test cases which identified with Pass/Fail/Inc result in section 1.3.

Industrial Internet Innovation Center (Shanghai) Co., Ltd. has verified that the compliance of the tested device specified in section 4 of this test report is successfully evaluated according to the procedure and test methods as defined in type certification requirement listed in section 1 of this test report.

**NOTE 2:**

The test data is reported by reference to 23T04I30131-SRD01-V01.

**NOTE 3:**

The test data in this report is validation data for the worst mode.

**NOTE 4:**

Bluetooth used a FPC antenna with max Gain 2.21dBi that complied with 15.203 Requirements.

**Note:**

a. All the test data for each data were verified, but only the worst case was reported.

b. The GFSK,  $\pi/4$  DQPSK and 8DPSK were set in DH5 for GFSK, 2-DH5 for  $\pi/4$  DQPSK, 3-DH5 for 8DPSK.

**1.4 Data Provided by Applicant**

| No. | Item(s)             | Data     |
|-----|---------------------|----------|
| 1   | Antenna gain of EUT | 2.21 dBi |

Note: The data of antenna gain is provided by the Antenna specification may affect the validity of the test results in this report, and the impact and consequences of this shall be undertaken by the customer.

## 2. General Information of The Laboratory

### 2.1 Testing Laboratory

|                      |                                                            |
|----------------------|------------------------------------------------------------|
| Lab Name             | Industrial Internet Innovation Center (Shanghai) Co.,Ltd.  |
| Address              | Building 4, No. 766, Jingang Road, Pudong, Shanghai, China |
| Telephone            | 021-68866880                                               |
| FCC Registration No. | 708870                                                     |
| FCC Designation No.  | CN1364                                                     |

### 2.2 Laboratory Environmental Requirements

|                      |              |
|----------------------|--------------|
| Temperature          | 15°C~35°C    |
| Relative Humidity    | 25%RH~75%RH  |
| Atmospheric Pressure | 86kPa~106kPa |

### 2.3 Project Information

|                 |                                       |
|-----------------|---------------------------------------|
| Project Manager | Gao Hongning                          |
| Test Date       | December 22, 2023 to January 18, 2024 |

### 3. General Information of The Customer

#### 3.1 Applicant

|           |                                                              |
|-----------|--------------------------------------------------------------|
| Company   | Shanghai Sunmi Technology Co.,Ltd.                           |
| Address   | Room 505,No.388,Song Hu Road,Yang Pu District,Shanghai,China |
| Telephone | 18826519551                                                  |

#### 3.2 Manufacturer

|           |                                                              |
|-----------|--------------------------------------------------------------|
| Company   | Shanghai Sunmi Technology Co.,Ltd.                           |
| Address   | Room 505,No.388,Song Hu Road,Yang Pu District,Shanghai,China |
| Telephone | 18826519551                                                  |

## 4. General Information of The Product

### 4.1 Product Description for Equipment under Test

|                                                                                                                                                                                                                         |                                                                                                                                                                                             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product Name                                                                                                                                                                                                            | Smart POS System                                                                                                                                                                            |
| Model name                                                                                                                                                                                                              | T6F10                                                                                                                                                                                       |
| Date of Receipt                                                                                                                                                                                                         | S01aa/ S02aa /S04aa/S05aa:<br>December 22,2023                                                                                                                                              |
| EUT ID*                                                                                                                                                                                                                 | S01aa/ S02aa /S04aa/S05aa                                                                                                                                                                   |
| SN/IMEI                                                                                                                                                                                                                 | S01aa: P303D3BM10026<br>S02aa: P303D3BM10050<br>S04aa: P303D3BM10008<br>S05aa: P303D3BM10029                                                                                                |
| Supported Radio Technology and Bands                                                                                                                                                                                    | GSM850/GSM900/GSM1800/GSM1900<br>WCDMA Band I/II/IV/V/VIII<br>LTE Band 1/2/3/4/5/7/28/38/41<br>BT 5.0 BR/EDR/BLE<br>WLAN 802.11b,g,n<br>WLAN 802.11a,n,ac<br>GPS/Galileo/GLONASS/BDS<br>NFC |
| Hardware Version                                                                                                                                                                                                        | V1.0(LA)                                                                                                                                                                                    |
| Software Version                                                                                                                                                                                                        | V3.0.1                                                                                                                                                                                      |
| FCC ID                                                                                                                                                                                                                  | 2AH25T6F10LA                                                                                                                                                                                |
| Power Rating                                                                                                                                                                                                            | DC 7.7V form battery, DC 5V form adapter                                                                                                                                                    |
| NOTE1: EUT ID is the internal identification code of the laboratory.<br>NOTE2: Samples in the test report are provided by the customer. The test results are only applicable to the samples received by the laboratory. |                                                                                                                                                                                             |

### 4.2 Internal Identification of AE used during the test

| AE ID* | Description | Model              | SN/Remark |
|--------|-------------|--------------------|-----------|
| AE1    | RF Cable    | N/A                | N/A       |
| CD01   | Adapter     | TPA-141A050200UU01 | N/A       |
| CH02   | Adapter     | UC13US             | N/A       |
| CI02   | Adapter     | TPA-23A050200UU01  | N/A       |
| UA09   | USB Cable   | N/A                | N/A       |

|      |         |      |                                                     |
|------|---------|------|-----------------------------------------------------|
| BA12 | Battery | HPPA | ICON ENERGY SYSTEM (SHENZHEN) CO., LTD.             |
| BB07 | Battery | HPPA | Guangdong Highpower New Energy Technology Co., Ltd. |

NOTE1: AE ID is the internal identification code of the laboratory.

NOTE2: By verifying that BA12+CI02 is the worst battery and adapter combination, this battery and adapter are used in all tests.

### 4.3 Additional Information

|                      |                            |
|----------------------|----------------------------|
| Bluetooth Frequency  | 2402MHz-2480MHz            |
| Bluetooth Channel    | Ch0-78                     |
| Bluetooth Modulation | GFSK; $\pi/4$ DQPSK; 8DPSK |

Test frequency list:

|               |             |      |      |      |
|---------------|-------------|------|------|------|
| GFSK          | Channel     | 0    | 39   | 78   |
|               | Freq. (MHz) | 2402 | 2441 | 2480 |
| $\pi/4$ DQPSK | Channel     | 0    | 39   | 78   |
|               | Freq. (MHz) | 2402 | 2441 | 2480 |
| 8DPSK         | Channel     | 0    | 39   | 78   |
|               | Freq. (MHz) | 2402 | 2441 | 2480 |

Note: This report is for BT only.

## 5. Test Configuration Information

### 5.1 Laboratory Environmental Conditions

#### 5.1.1 Permanent Facilities

|                        |                          |         |         |
|------------------------|--------------------------|---------|---------|
| Relative Humidity      | Min. = 45 %, Max. = 55 % |         |         |
| Atmospheric Pressure   | 101kPa                   |         |         |
| Temperature            | Normal                   | Minimum | Maximum |
|                        | 25°C                     | -10°C   | 50°C    |
| Working Voltage of EUT | Normal                   | Minimum | Maximum |
|                        | 7.7V                     | 6.0V    | 8.8V    |

### 5.2 Test Equipments Utilized

#### 5.2.1 Conducted Test System

| No. | Name                                        | Model         | S/N               | SW Version              | HW Version | Manufacturer | Cal. Date  | Cal. Interval |
|-----|---------------------------------------------|---------------|-------------------|-------------------------|------------|--------------|------------|---------------|
| 1   | Test Software                               | TS1120        | 10727             | V3.2.22                 | N/A        | Tonsce nd    | N/A        | N/A           |
| 2   | Automatic control unit                      | JS0806-2      | 2218060623        | N/A                     | N/A        | Tonsce nd    | 2023-05-06 | 1 Year        |
| 3   | Wireless communication comprehensive tester | CMW500        | 164865            | V3.8.12                 | N/A        | R&S          | 2023-07-26 | 1 Year        |
| 4   | Spectrum Analyzer                           | FSQ40         | 200063            | V4.75                   | N/A        | R&S          | 2023-10-16 | 1 Year        |
| 5   | Analog Signal Generator                     | SMF           | 104770            | V3.0.13.0-2.20.530.15.4 | N/A        | R&S          | 2023-10-16 | 1 year        |
| 6   | Vector Signal Generator                     | SMCV100B      | 103691            | V5.00.122.24            | N/A        | R&S          | 2023-07-27 | 1 Year        |
| 7   | Programmable Power Supply                   | Keithley 2303 | 4039070           | N/A                     | N/A        | Keithley     | 2023-06-23 | 1 Year        |
| 8   | Temperature box                             | B-TF-107C     | BTF107C-201804107 | N/A                     | N/A        | Boyi         | 2023-06-28 | 1 Year        |
| 9   | Network test unit AP                        | GT-AXE11000   | N2IG0X401637KWF   | V3.0.0.4.386_45940      | N/A        | ASUS         | N/A        | N/A           |
| 10  | Vector Signal Generator                     | SMBV100A      | 257904            | V4.15.125.49            | N/A        | R&S          | 2023-10-16 | 1 Year        |

### 5.2.2 Radiated Emission Test System

| No. | Name                                 | Model           | S/N      | SW Version | HW Version   | Manufacturer | Cal. Date                | Cal. Interval |
|-----|--------------------------------------|-----------------|----------|------------|--------------|--------------|--------------------------|---------------|
| 1   | Universal Radio Communication Tester | CMU200          | 123126   | V5.2.1     | B12          | R&S          | 2023-10-16               | 1 Year        |
| 2   | Universal Radio Communication Tester | CMW500          | 104178   | V3.7.20    | 1206.0600.00 | R&S          | 2023-10-16               | 1 Year        |
| 3   | EMI Test Receiver                    | ESU40           | 100307   | V5.1-24-3  | 01           | R&S          | 2022-12-19               | 1 Year        |
| 4   | TRILOG Broadband Antenna             | VULB9163        | 01345    | N/A        | N/A          | Schwarzbeck  | 2023-03-23               | 1 Year        |
| 5   | Double-ridged Waveguide Antenna      | ETS-3117        | 00135890 | N/A        | N/A          | ETS          | 2022-03-09               | 2 Years       |
| 6   | EMI Test Software                    | EMC32 V10.35.02 | N/A      | N/A        | N/A          | R&S          | N/A                      | N/A           |
| 7   | Horn Antenna                         | 3160-09         | LM6321   | N/A        | N/A          | R&S          | 2023-07-16               | 1 Year        |
| 8   | Horn Antenna                         | 3160-10         | LM5942   | N/A        | N/A          | R&S          | 2023-07-16               | 1 Year        |
| 9   | Loop Antenna                         | AL-130R         | 121083   | N/A        | N/A          | COM-POWER    | 2023/9/13                | 1 Year        |
| 10  | Preamplifier                         | SCU08F1         | 8320024  | N/A        | N/A          | R&S          | 2023/10/16               | 1 Year        |
| 11  | Preamplifier                         | SCU18           | 10155    | N/A        | N/A          | R&S          | 2023/10/16               | 1 Year        |
| 12  | Preamplifier                         | SCU26           | 10025    | N/A        | N/A          | R&S          | 2023/10/16               | 1 Year        |
| 13  | Preamplifier                         | SCU40           | 10020    | N/A        | N/A          | R&S          | 2023/10/16               | 1 Year        |
| 14  | 2-Line V-Network                     | ENV216          | 101380   | N/A        | N/A          | R&S          | 2022-12-29<br>2023-12-19 | 1 Year        |
| 15  | EMI Test Software                    | EMC32 V10.35.02 | N/A      | N/A        | N/A          | R&S          | N/A                      | N/A           |
| 16  | Test Receiver                        | ESCI            | 101235   | V5.1-24-3  | 0            | R&S          | 2022-12-29<br>2023-12-19 | 1 Year        |

### 5.2.3 Test Environment

**Shielding Room1** (6.0 meters×3.0 meters×2.7 meters) did not exceed following limits along the conducted RF performance testing:

|                          |                            |
|--------------------------|----------------------------|
| Temperature              | Min. = 15 °C, Max. = 35 °C |
| Relative humidity        | Min. = 20 %, Max. = 75 %   |
| Shielding effectiveness  | > 100 dB                   |
| Ground system resistance | < 0.5 Ω                    |
| Temperature              | Min. = 15 °C, Max. = 35 °C |

**Control room** did not exceed following limits along the EMC testing:

|                          |                            |
|--------------------------|----------------------------|
| Temperature              | Min. = 15 °C, Max. = 35 °C |
| Relative humidity        | Min. = 30 %, Max. = 60 %   |
| Shielding effectiveness  | > 100 dB                   |
| Electrical insulation    | > 10 kΩ                    |
| Ground system resistance | < 0.5 Ω                    |

**Fully-anechoic chamber1** (9.8 meters×6.7 meters×6.7 meters) did not exceed following limits along the EMC testing:

|                            |                                        |
|----------------------------|----------------------------------------|
| Temperature                | Min. = 15 °C, Max. = 35 °C             |
| Relative humidity          | Min. = 25 %, Max. = 75 %               |
| Shielding effectiveness    | > 100 dB                               |
| Electrical insulation      | > 10 kΩ                                |
| Ground system resistance   | < 0.5 Ω                                |
| VSWR                       | Between 0 and 6 dB, from 1GHz to 18GHz |
| Site Attenuation Deviation | Between -4 and 4 dB, 30MHz to 1GHz     |

### 5.3 Measurement Uncertainty

Measurement Uncertainty of Conduction test

| Measurement Items                    | Range          | Confidence Level | Calculated Uncertainty |
|--------------------------------------|----------------|------------------|------------------------|
| 20dB Emission Bandwidth              | 2400–2483.5MHz | 95%              | ±1.9%                  |
| Carrier Frequency Separation         | 2400–2483.5MHz | 95%              | ±1.9%                  |
| Maximum Power Spectral Density Level | 2400–2483.5MHz | 95%              | ±0.98 dB               |
| Number of Hopping Channel            | 2400–2483.5MHz | 95%              | ±1.9%                  |
| Time of Occupancy                    | 2400–2483.5MHz | 95%              | ±0.11%                 |

|                                 |                |     |                                          |
|---------------------------------|----------------|-----|------------------------------------------|
| Max Peak Conducted Output Power | 2400–2483.5MHz | 95% | ±0.98 dB                                 |
| Band-edge Spurious Emission     | 2400–2483.5MHz | 95% | ±1.21dB                                  |
| Conducted RF Spurious Emission  | 9kHz-40GHz     | 95% | 9kHz-7GHz:±1.21dB<br>7GHz-40GHz: ±3.31dB |

**Measurement Uncertainty of Radiation test**

| Measurement Items                   | Uncertainty(dB) |
|-------------------------------------|-----------------|
| Radiated Emission 30MHz-1000MHz     | ±5.10           |
| Radiated Emission 1000MHz-18000MHz  | ±5.66           |
| Radiated Emission 18000MHz-40000MHz | ±5.22           |
| AC Powerline Conducted Emission     | ±4.38           |

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

## 6 Test Results

### 6.1 Peak Output Power-Conducted

#### 6.1.1 Measurement Limit

| Standard              | Limit (dBm)                          |
|-----------------------|--------------------------------------|
| FCC 47 Part 15.247(b) | GFSK:≤30, pi/4-DQPSK and 8DPSK≤20.97 |

#### 6.1.2 Test Condition

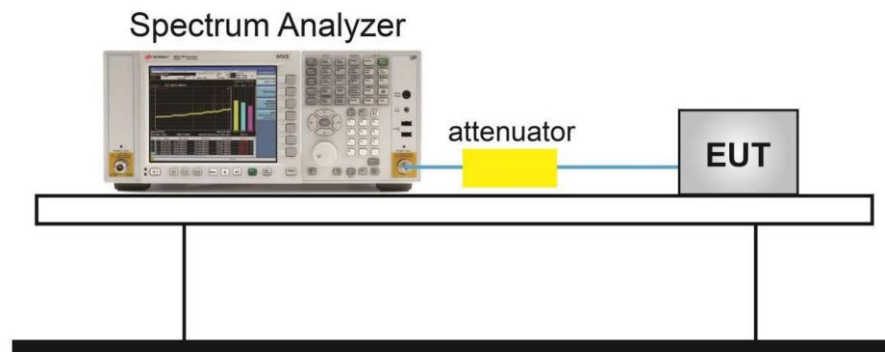
| Hopping Mode | RBW  | VBW   | Span | Sweeptime |
|--------------|------|-------|------|-----------|
| Hopping OFF  | 3MHz | 10MHz | 9MHz | Auto      |

#### 6.1.3 Test Procedure

The measurement is according to ANSI C63.10 clause 7.8.5.

- The output power of EUT was connected to the spectrum analyzer by cable and divide. The path loss was compensated to the results for each measurement.
- Enable EUT transmitter maximum power continuously.
- Use the following spectrum analyzer settings:
  - Span: Approximately five times the 20 dB bandwidth, centered on a hopping channel.
  - RBW > 20 dB bandwidth of the emission being measured.
  - VBW ≥ RBW.
  - Sweep: Auto.
  - Detector function: Peak.
  - Trace: Max hold.
- Allow trace to stabilize.
- Use the marker-to-peak function to set the marker to the peak of the emission.
- The indicated level is the peak output power, after any corrections for external attenuators and cables.
- Record the results.

#### 6.1.4 Test setup



### 6.1.5 Measurement Results

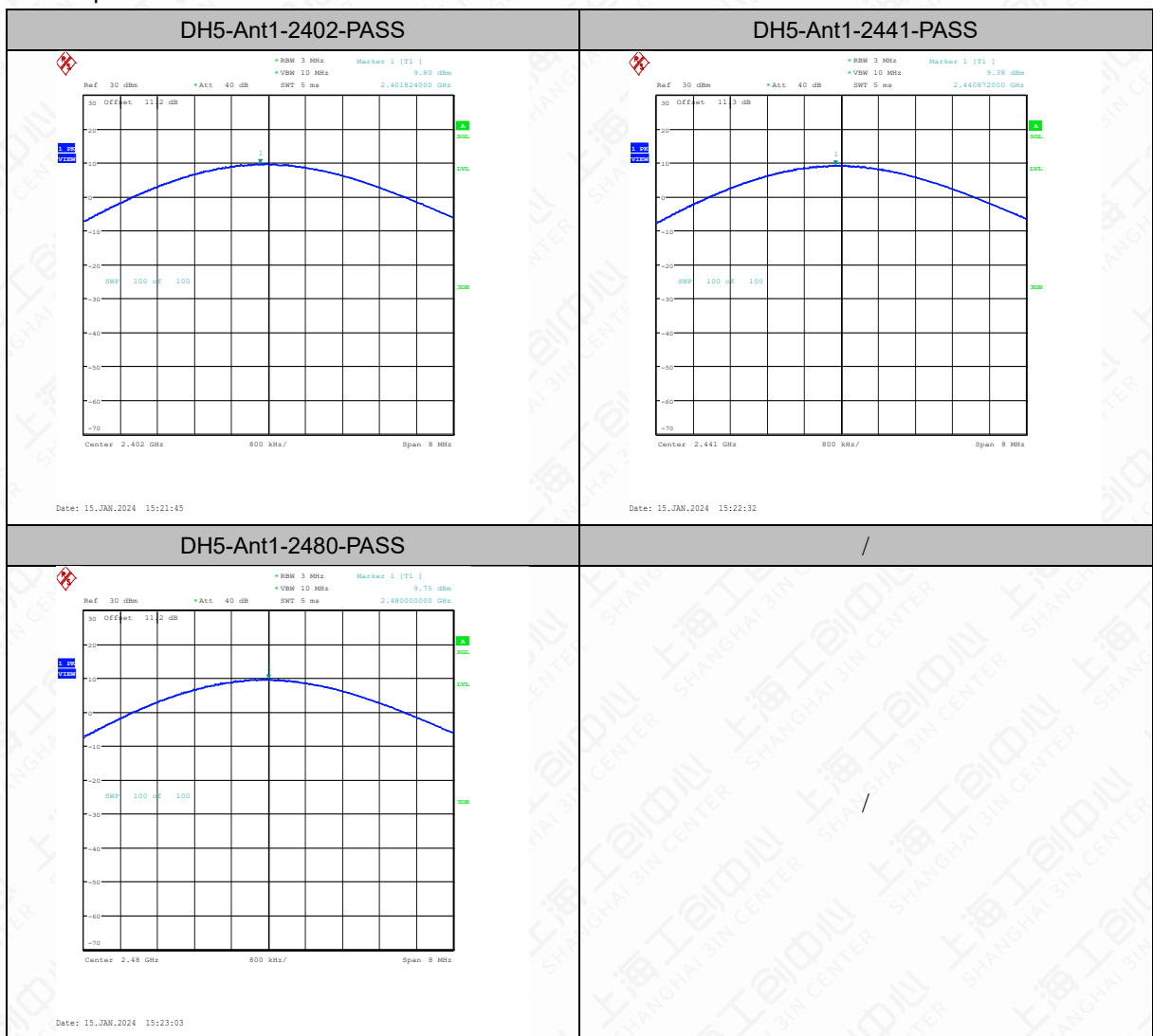
| Test Mode | Antenna | Frequency [MHz] | Original Power[dBm] | Validation Power[dBm] | d <sub>dB</sub> Note3 | Conducted Limit[dBm] | Verdict |
|-----------|---------|-----------------|---------------------|-----------------------|-----------------------|----------------------|---------|
| DH5       | Ant1    | 2402            | 9.43                | 9.8                   | 0.37                  | ≤30                  | PASS    |
| DH5       | Ant1    | 2441            | 9.25                | 9.38                  | 0.13                  | ≤30                  | PASS    |
| DH5       | Ant1    | 2480            | 9.56                | 9.75                  | 0.19                  | ≤30                  | PASS    |

Note1: Only data in worst mode is provided.

Note2:The verified power is still in the tune-up power range and meets the requirements of KDB484596 D01 data reference. The power listed in the original certificate still applies to this case.

Note3:  $d_{dB} = |\text{Verified}_{dB} - \text{original}_{dB}|$

Test Graphs:



## 6.2 Radiated Emission

### 6.2.1 Measurement Limit

| Standard                               | Limit                        |
|----------------------------------------|------------------------------|
| FCC 47 CFR Part 15.247, 15.205, 15.209 | 20dB below peak output power |

In addition, 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)).

Limit in restricted band

| Frequency of emission (MHz) | Field strength (mV/m) | Field strength (dBuV/m) |
|-----------------------------|-----------------------|-------------------------|
| 0.009~0.49                  | 2400/F (kHz)          | 129-94                  |
| 0.49~1.705                  | 24000/F (kHz)         | 74-63                   |
| 1.705~30                    | 30                    | 70                      |
| 30~88                       | 100                   | 40                      |
| 88~216                      | 150                   | 43.5                    |
| 216~960                     | 200                   | 46                      |
| Above 960                   | 500                   | 54                      |

### 6.2.2 Test Method

Portable, small, lightweight, or modular devices that may be handheld, worn on the body, or placed on a table during operation shall be positioned on a non-conducting platform, the top of which is 80 cm above the reference ground plane. The preferred area occupied by the EUT arrangement is 1 m by 1.5 m. For emissions testing at or below 1 GHz, the table height shall be 80 cm above the reference ground plane. For emission measurements above 1 GHz, the table height shall be 1.5 m. but it may be larger or smaller to accommodate various sized EUTs. For testing purposes, ceiling- and wall-mounted devices also shall be positioned on a tabletop (see also ANSI C63.10-2013 section 6.3.4 and 6.3.5). In making any tests involving handheld, body-worn, or ceiling-mounted equipment, it is essential to recognize that the measured levels may be dependent on the orientation (attitude) of the three orthogonal axes of the EUT. Thus, exploratory tests as specified in 8.3.1 shall be carried out for various axes orientations to determine the attitude having maximum or near-maximum emission level.

The EUT was placed on a non-conductive table. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

#### Test Settings – Below 1GHz (Quasi-Peak Field Strength Measurements)

1. Set the center frequency and span to encompass frequency range to be measured.
2. Set the RBW = 100 kHz.
3. Set the VBW = 300 kHz.
4. Detector = quasi-peak.
5. Sweep time = auto couple.
6. Trace mode = max hold.
7. Trace was allowed to stabilize.

#### Test Settings – Above 1GHz (Peak Field Strength Measurements)

1. Set the center frequency and span to encompass frequency range to be measured.
2. Set the RBW = 1MHz.
3. Set the VBW = 3MHz.
4. Detector = peak
5. Trace mode = max hold
6. Sweep time = auto
7. Trace (RMS) averaging was performed over at least 100 traces.

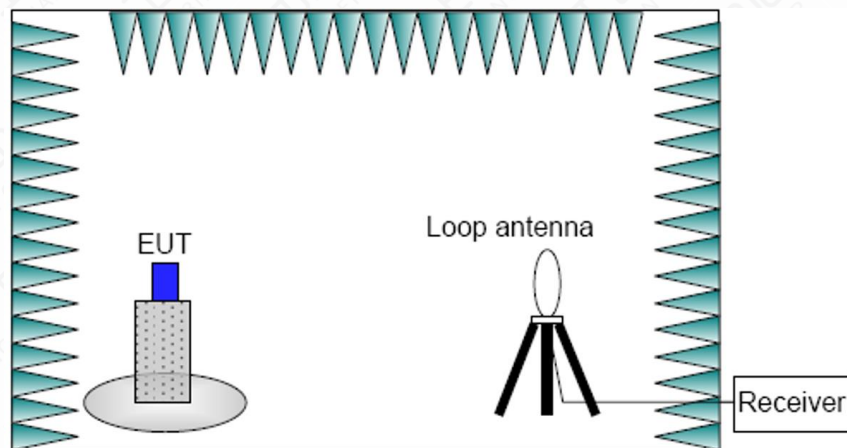
#### Test Settings – Above 1GHz (Average Field Strength Measurements)

1. Set the center frequency and span to encompass frequency range to be measured.
2. Set the RBW = 1MHz.
3. Set the VBW = 3MHz.
4. Detector = power average (RMS).
5. Number of measurement points = 1001 (Number of points must be  $\geq 2 \times \text{span} \backslash \text{RBW}$ )
6. Sweep time = auto
7. Trace (RMS) averaging was performed over at least 100 traces.

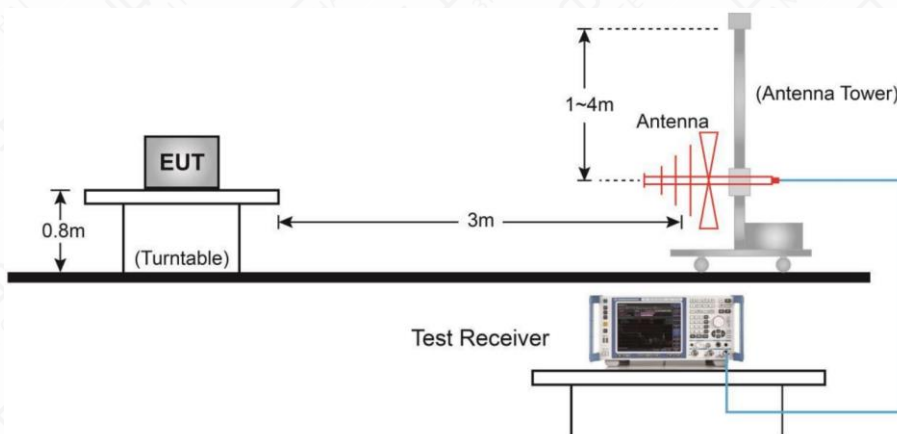
| Frequency of emission | RBW/VBW       | Sweep Time (s) |
|-----------------------|---------------|----------------|
| 0.009~30              | 9KHz/30KHz    | Auto           |
| 30~1000               | 100KHz/300KHz | 5              |
| 1000~4000             | 1MHz/3MHz     | 15             |
| 4000~18000            | 1MHz/3MHz     | 40             |
| 18000~26500           | 1MHz/3MHz     | 20             |

#### 6.2.3 Test Setup

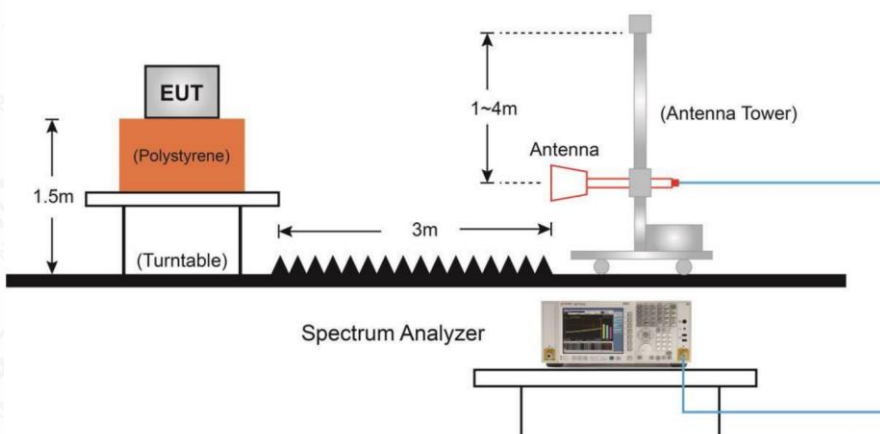
##### Below 30MHz Test Setup



### Below 1GHz Test Setup



### Above 1GHz Test Setup



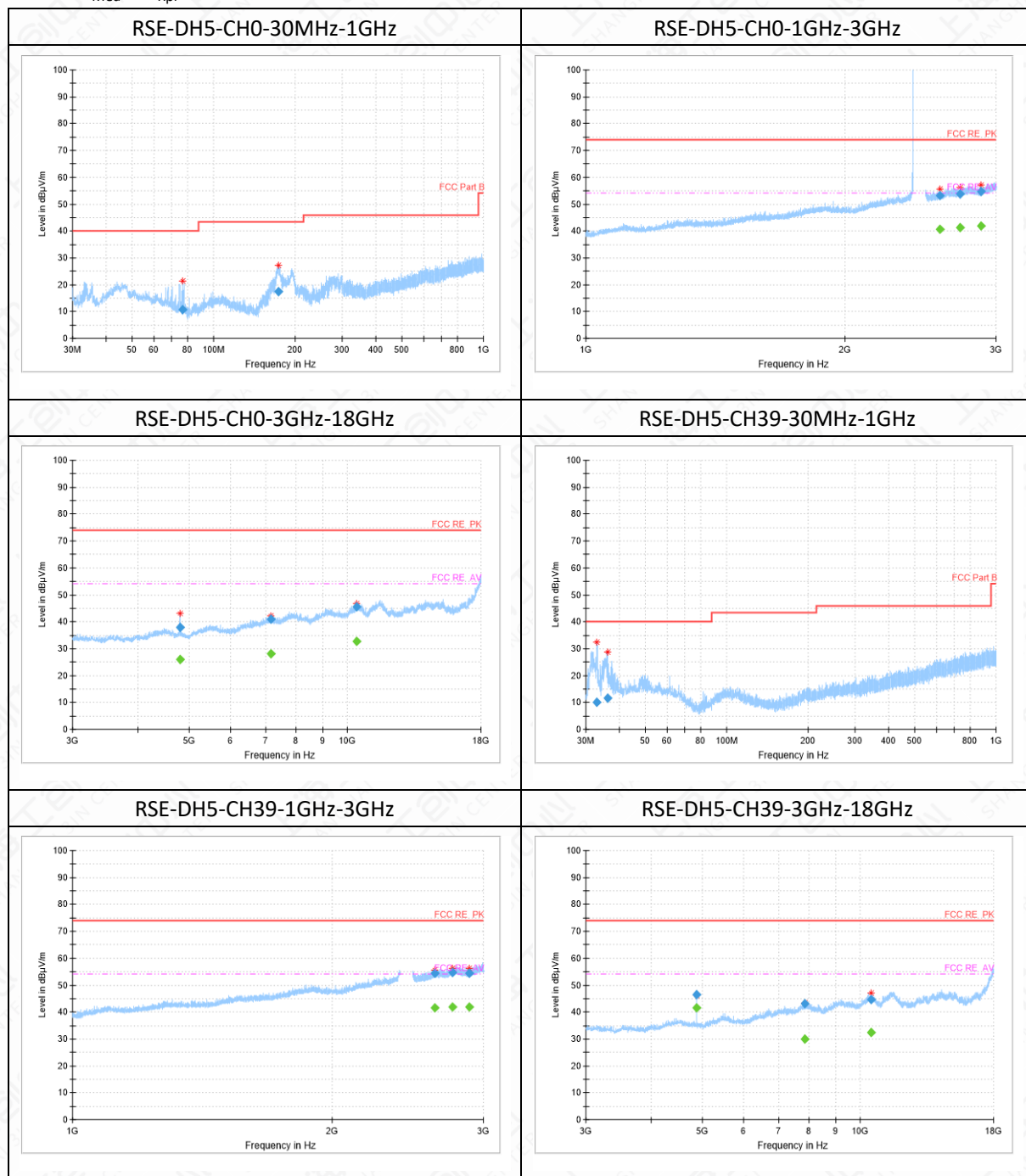
## 6.2.4 Measurement Results

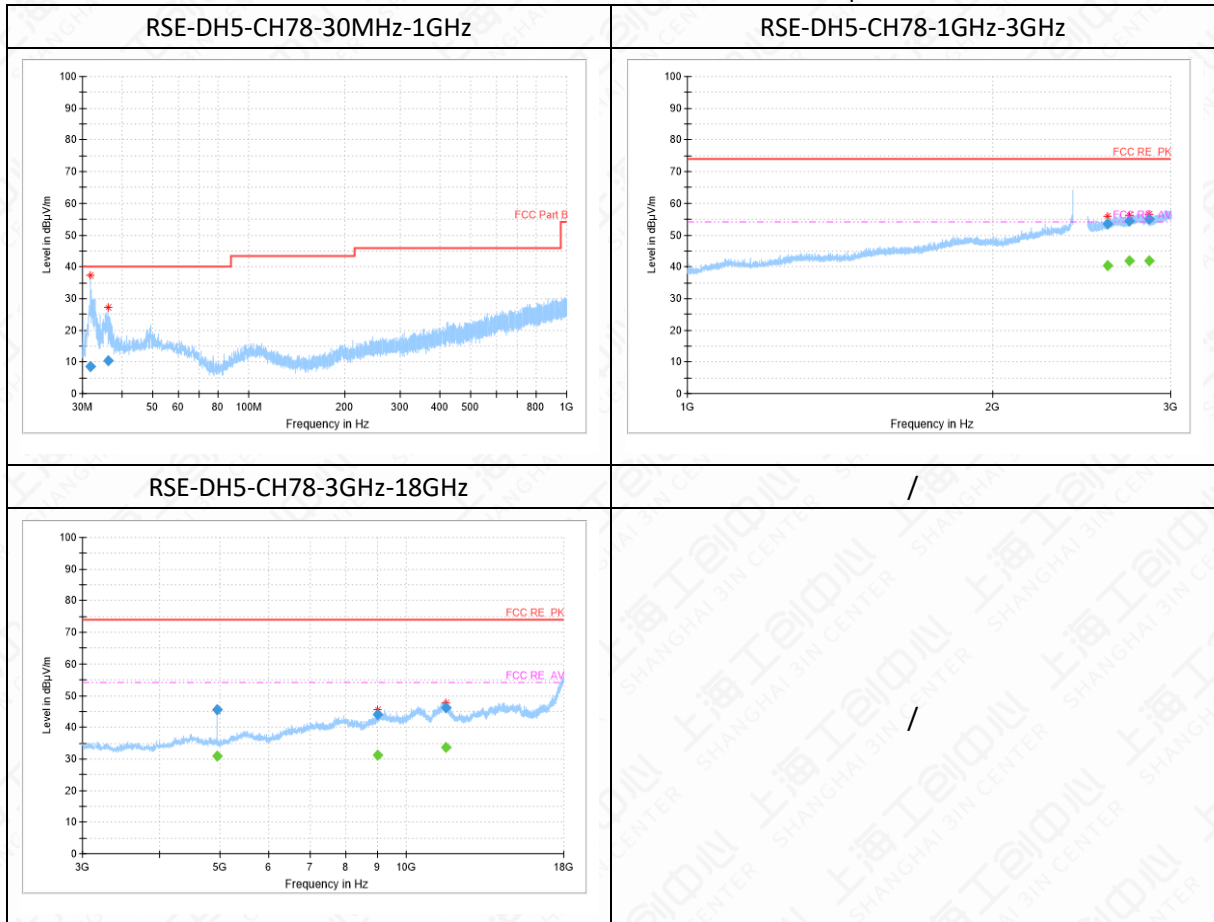
A “reference path loss” is established and  $A_{Rpi}$  is the attenuation of “reference path loss”, and including the gain of receive antenna, the gain of the preamplifier, the cable loss.

The measurement results are obtained as described below:

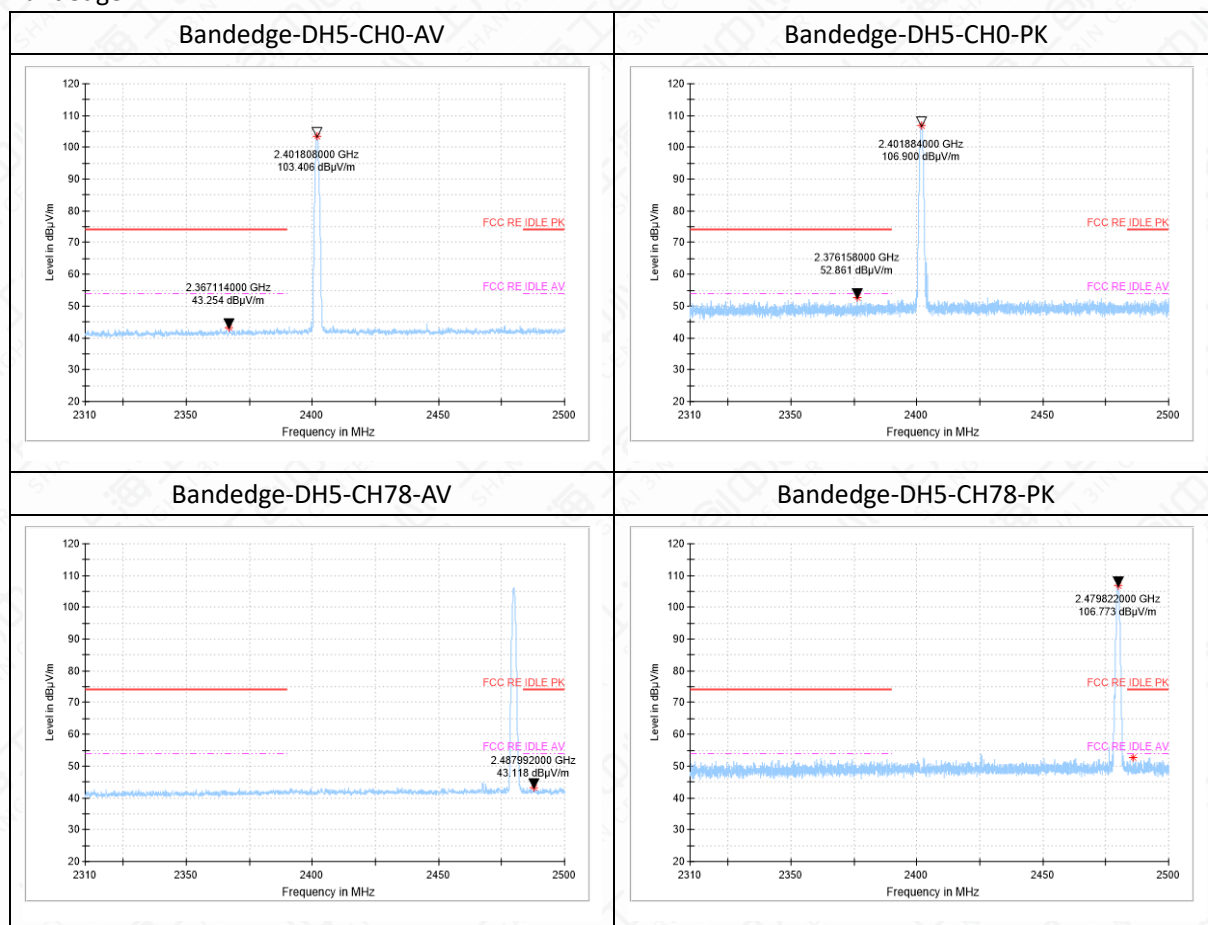
$A_{Rpi}$  = Cable loss + Antenna Factor-Preamplifier gain

Result =  $P_{Mea}$  +  $A_{Rpi}$





Bandedge:



Note:

1. The out-of- limit signal in the picture is the main frequency signal.
2. Only data in worst mode is provided.
3. Sweep the whole frequency band through the range from 30MHz to the 10th harmonic of the carrier, the Emissions in the frequency band 18GHz-26.5GHz is more than 20dB below the limit are not report.
4. The test data below 30MHz is more than 20dB lower than the limit value, so it is not provided in the report.
5. Horizontal and vertical polarity is all have been tested, the result of them is synthesized in the above data diagram.

RSE-DH5-CH0-30MHz-1GHz

| Frequency (MHz) | QuasiPeak(dBμV/m) | ARpl (dB) | PMea (dBμV/m) | Margin(dB) | Limit(dBμV/m) | Polarity |
|-----------------|-------------------|-----------|---------------|------------|---------------|----------|
| 76.8            | 10.77             | -18       | 28.77         | 29.23      | 40.00         | H        |
| 174.4           | 17.37             | -15       | 32.37         | 26.13      | 43.50         | H        |

RSE-DH5-CH0-1GHz-3GHz

| Frequency (MHz) | MaxPeak(dBμV/m) | ARpl (dB) | PMea (dBμV/m) | Margin(dB) | Limit(dBμV/m) | Polarity |
|-----------------|-----------------|-----------|---------------|------------|---------------|----------|
|-----------------|-----------------|-----------|---------------|------------|---------------|----------|

|        |       |    |       |       |       |   |
|--------|-------|----|-------|-------|-------|---|
| 2579.7 | 53.13 | 16 | 37.13 | 20.87 | 74.00 | V |
| 2725.6 | 53.68 | 17 | 36.68 | 20.32 | 74.00 | H |
| 2881.6 | 54.78 | 18 | 36.78 | 19.22 | 74.00 | H |

## RSE-DH5-CH0-1GHz-3GHz

| Frequency (MHz) | Average(dBμV/m) | ARpl (dB) | PMea (dBμV/m) | Margin(dB) | Limit(dBμV/m) | Polarity |
|-----------------|-----------------|-----------|---------------|------------|---------------|----------|
| 2579.7          | 40.54           | 16        | 24.54         | 13.46      | 54.00         | V        |
| 2725.6          | 41.42           | 17        | 24.42         | 12.58      | 54.00         | H        |
| 2881.6          | 41.84           | 18        | 23.84         | 12.16      | 54.00         | H        |

## RSE-DH5-CH0-3GHz-18GHz

| Frequency (MHz) | MaxPeak(dBμV/m) | ARpl (dB) | PMea (dBμV/m) | Margin(dB) | Limit(dBμV/m) | Polarity |
|-----------------|-----------------|-----------|---------------|------------|---------------|----------|
| 4802.9          | 37.87           | -7        | 44.87         | 36.13      | 74.00         | V        |
| 7161.1          | 40.87           | -2        | 42.87         | 33.13      | 74.00         | H        |
| 10422.6         | 45.59           | 4         | 41.59         | 28.41      | 74.00         | H        |

## RSE-DH5-CH0-3GHz-18GHz

| Frequency (MHz) | Average(dBμV/m) | ARpl (dB) | PMea (dBμV/m) | Margin(dB) | Limit(dBμV/m) | Polarity |
|-----------------|-----------------|-----------|---------------|------------|---------------|----------|
| 4802.9          | 26.07           | -7        | 33.07         | 27.93      | 54.00         | V        |
| 7161.1          | 28.23           | -2        | 30.23         | 25.77      | 54.00         | H        |
| 10422.6         | 32.85           | 4         | 28.85         | 21.15      | 54.00         | H        |

## RSE-DH5-CH78-30MHz-1GHz

| Frequency (MHz) | QuasiPeak(dBμV/m) | ARpl (dB) | PMea (dBμV/m) | Margin(dB) | Limit(dBμV/m) | Polarity |
|-----------------|-------------------|-----------|---------------|------------|---------------|----------|
| 31.7            | 8.49              | -16       | 24.49         | 31.51      | 40.00         | V        |
| 36.2            | 10.25             | -15       | 25.25         | 29.75      | 40.00         | V        |

## RSE-DH5-CH78-1GHz-3GHz

| Frequency (MHz) | MaxPeak(dBμV/m) | ARpl (dB) | PMea (dBμV/m) | Margin(dB) | Limit(dBμV/m) | Polarity |
|-----------------|-----------------|-----------|---------------|------------|---------------|----------|
| 2596.0          | 53.37           | 16        | 37.37         | 20.63      | 74.00         | V        |
| 2732.4          | 54.44           | 18        | 36.44         | 19.56      | 74.00         | H        |
| 2855.0          | 54.95           | 18        | 36.95         | 19.05      | 74.00         | H        |

**RSE-DH5-CH78-1GHz-3GHz**

| Frequency (MHz) | Average(dBμV/m) | ARpl (dB) | PMea (dBμV/m) | Margin(dB) | Limit(dBμV/m) | Polarity |
|-----------------|-----------------|-----------|---------------|------------|---------------|----------|
| 2596.0          | 40.3            | 16        | 24.3          | 13.70      | 54.00         | V        |
| 2732.4          | 41.76           | 18        | 23.76         | 12.24      | 54.00         | H        |
| 2855.0          | 41.94           | 18        | 23.94         | 12.06      | 54.00         | H        |

**RSE-DH5-CH78-3GHz-18GHz**

| Frequency (MHz) | MaxPeak(dBμV/m) | ARpl (dB) | PMea (dBμV/m) | Margin(dB) | Limit(dBμV/m) | Polarity |
|-----------------|-----------------|-----------|---------------|------------|---------------|----------|
| 4960.4          | 45.53           | -5        | 50.53         | 28.47      | 74.00         | H        |
| 8993.5          | 44.09           | 1         | 43.09         | 29.91      | 74.00         | V        |
| 11614.8         | 46.27           | 5         | 41.27         | 27.73      | 74.00         | V        |

**RSE-DH5-CH78-3GHz-18GHz**

| Frequency (MHz) | Average(dBμV/m) | ARpl (dB) | PMea (dBμV/m) | Margin(dB) | Limit(dBμV/m) | Polarity |
|-----------------|-----------------|-----------|---------------|------------|---------------|----------|
| 4960.4          | 30.94           | -5        | 35.94         | 23.06      | 54.00         | H        |
| 8993.5          | 31.3            | 1         | 30.3          | 22.70      | 54.00         | V        |
| 11614.8         | 33.54           | 5         | 28.54         | 20.46      | 54.00         | V        |

## Annex A: Revised History

| Version | Revised Content |
|---------|-----------------|
| V00     | Initial         |

## Annex B: Accreditation Certificate



### Accredited Laboratory

A2LA has accredited

## INDUSTRIAL INTERNET INNOVATION CENTER (SHANGHAI) CO., LTD.

Shanghai, People's Republic of China

for technical competence in the field of

### Electrical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).



Presented this 20<sup>th</sup> day of September 2023.



Mr. Trace McInturff, Vice President, Accreditation Services  
For the Accreditation Council  
Certificate Number 3682.01  
Valid to February 28, 2025

For the tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation.

**END OF REPORT**