

# FCC&IC TEST REPORT

Report No.....: AB26040097FW02  
FCC ID.....: **2BU9W-Q41-S**  
IC.....: **35337-Q41S**  
Applicant.....: Shenzhen Gwell Times Technology Co., Ltd.  
Address.....: 28th Floor, Building C, Minzhi Stock Commerce Center,  
North Station Community, Longhua District, Shenzhen, PR. China  
Manufacturer.....: Shenzhen Gwell Times Technology Co., Ltd.  
Address.....: 28th Floor, Building C, Minzhi Stock Commerce Center,  
North Station Community, Longhua District, Shenzhen, PR. China  
Product Name.....: Smart Battery Camera  
Trade Mark.....: /  
Test Model.....: Q41-S  
Additional Model(s).....: See section 1.1  
Standard.....: FCC 47 CFR Part 15 Subpart C (Part 15.247)  
RSS-Gen Issue 5;RSS-247 Issue 4  
RSS-Gen Amendment 1 (2019-03);  
RSS-Gen Amendment 2 (2021-02)  
Date of Receipt.....: 2026.04.08  
Date of Test Date.....: 2026.04.08-2026.04.15  
Date of Issue.....: 2026.04.15  
Test Result.....: Pass

|                                              |             |                                                                                       |
|----------------------------------------------|-------------|---------------------------------------------------------------------------------------|
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Address.....: 101, Building B, Tuori New Energy Industrial Park, High-tech Park,  
Tianliao Community, Yutang Street, Guangming District, Shenzhen  
City, Guangdong Province, China

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**Aibo Standard Technology (Shenzhen) Co., Ltd.**

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## FCC & IC TEST REPORT

|                          |                                                                                                                           |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------|
| EUT.....                 | : Smart Battery Camera                                                                                                    |
| Test Model.....          | : Q41-S                                                                                                                   |
| <b>Applicant.....</b>    | <b>: Shenzhen Gwell Times Technology Co., Ltd.</b>                                                                        |
| Address.....             | : 28th Floor, Building C, Minzhi Stock Commerce Center,<br>North Station Community, Longhua District, Shenzhen, PR. China |
| <b>Manufacturer.....</b> | <b>: Shenzhen Gwell Times Technology Co., Ltd.</b>                                                                        |
| Address.....             | : 28th Floor, Building C, Minzhi Stock Commerce Center,<br>North Station Community, Longhua District, Shenzhen, PR. China |

|                    |                 |
|--------------------|-----------------|
| <b>Test Result</b> | <b>Positive</b> |
|--------------------|-----------------|

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

**REPORT VERSION**

| Version No. | Issue Date | Description   |
|-------------|------------|---------------|
| 01          | 2026.04.15 | Initial Issue |

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# 1. GENERAL INFORMATION

## 1.1. GENERAL DESCRIPTION OF EUT

|                                                      |                                                                                                                                                                                                         |                     |
|------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| Product Name:                                        | Smart Battery Camera                                                                                                                                                                                    |                     |
| Trade Mark:                                          | /                                                                                                                                                                                                       |                     |
| Test Model:                                          | Q41-S                                                                                                                                                                                                   |                     |
| Additional Model(s):                                 | 807,807-A,807-C,810-A,810-C,808-A,808-C,812-A,812-C,813-A,813-C808,809,810,812,813,815,816,817,818,819,820,821,QB214S,QB215S,QB216S,Q42-S                                                               |                     |
| Model Difference:                                    | All models are the same circuit and RF module, except the model name.                                                                                                                                   |                     |
| Hardware Version:                                    | GVW_271_CNa_M                                                                                                                                                                                           |                     |
| Software Version:                                    | /                                                                                                                                                                                                       |                     |
| Power Supply:                                        | DC 5V/0.5A                                                                                                                                                                                              |                     |
| Battery                                              | DC 3.6V/5000mAh                                                                                                                                                                                         |                     |
| EUT Supports Function:<br>(Provided by the customer) | 2.4GHz ISM Bands:                                                                                                                                                                                       | IEEE 802.11b/g/n/ax |
| Test Sample(s) Number:                               | AB26040097-01 (Engineer Sample)<br>AB26040097-01 (Normal Sample)                                                                                                                                        |                     |
| Radio Specification Subject to this Report           |                                                                                                                                                                                                         |                     |
| Radio Specification:                                 | IEEE 802.11b/g/n/ax                                                                                                                                                                                     |                     |
| Frequency Range:                                     | 2412MHz~2462MHz for IEEE 802.11b/g/n/ax(HT20)<br>2422MHz~2452MHz for IEEE 802.11n(HT40)                                                                                                                 |                     |
| Modulation Type:                                     | IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK)<br>IEEE 802.11g: OFDM (64-QAM, 16-QAM, QPSK, BPSK)<br>IEEE 802.11n/ax-HT20: OFDM (64-QAM, 16-QAM, QPSK, BPSK)<br>IEEE 802.11n: OFDM (64-QAM, 16-QAM, QPSK, BPSK) |                     |
| Channel Spacing:                                     | 5MHz                                                                                                                                                                                                    |                     |
| Channel Number(s):                                   | 11 Channels for IEEE 802.11b/g/n/ax(HT20)<br>7 Channels for IEEE 802.11n(HT40)                                                                                                                          |                     |
| Antenna Type:                                        | External Antenna                                                                                                                                                                                        |                     |
| Antenna Gain:                                        | 2.25dBi(Max.)                                                                                                                                                                                           |                     |

## 1.2. DESCRIPTION OF SUPPORT EQUIPMENT

| Description       | Manufacturer | Model | Serial Number              | Supplied by |
|-------------------|--------------|-------|----------------------------|-------------|
| Serial port board | ---          | ---   | /                          | Applicant   |
| Computer          | ACER         | N22C5 | NXEGXCN0022400<br>3D943400 | Applicant   |

**1.3. DESCRIPTION OF EXTERNAL I/O**

| I/O Port Description   | Quantity | Cable       |
|------------------------|----------|-------------|
| USB extension cableUSB | 1        | 1m,shielded |

#### 1.4. GENERAL DESCRIPTION OF APPLIED STANDARDS

The tests were performed according to following standards:

**FCC Rules Part 15.247** - Frequency Hopping, Direct Spread Spectrum and Hybrid Systems that are in operation within the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz.

**IEEE/ANSI/USEMCSC C63.10-2020+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024-** American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

**RSS-Gen Issue 5**-General Requirements for Compliance of Radio Apparatus

**RSS-247 Issue 4**-Digital Transmission Systems (DTSs),Frequency Hopping Systems (FHSs)and Licence-Exempt Local Area Network(LE-LAN) Devices

**RSS-Gen Amendment 1 (March 2019)**- A minor amendment has been made to section 3.6 Related documents to add a reference to Radio Standards Specification (RSS-HAC), Hearing Aid Compatibility and Volume Control, which shall be used in conjunction with applicable RsS(s).

**RSS-Gen Amendment 2 (February 2021)**-Radio Standards Procedure RSP-102, Special Authorization Procedure for Terminal, Radio, Broadcasting and Interference-Causing Equipment to be Certified, Registered or Deemed in Compliance With Technical Equipment Standards, replaces section 2.9 of this document.

#### 1.5. DESCRIPTION OF TEST FACILITY

**Test Lab:** Aibo Standard Technology (Shenzhen) Co., Ltd.

**Address:** 101, Building B, Tuori New Energy Industrial Park, High-tech Park, Tianliao Community, Yutang Street, Guangming District, Shenzhen City, Guangdong Province, China

Tel.: +(86) 0755 85250797

E-mail: aibo@aibonorm.com

Website: www.Aibonorm.com

The test facility is recognized, certified, or accredited by the following organizations:

##### **A2LA-Lab Certificate No.: 7514.01**

Aibo Standard Technology (Shenzhen) Co., Ltd. has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

##### **FCC Accredited Lab.**

Designation Number: CN1411

Test Firm Registration Number: 567066

##### **ISED Wireless Device Testing Laboratories**

Company Number: 33924

CAB identifier: CN0185

## 1.6. MEASUREMENT UNCERTAINTY

The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.

| Items                                        | Measurement Uncertainty |
|----------------------------------------------|-------------------------|
| Power Line Conducted Emission (9kHz~150kHz)  | ±3.62dB                 |
| Power Line Conducted Emission (150kHz~30MHz) | ±3.38dB                 |
| Radiated Emission (9kHz~30MHz)               | ±3.10dB                 |
| Radiated Emission (30MHz~1GHz)               | ±4.90dB                 |
| Radiated Emission (1GHz~18GHz)               | ±3.88dB                 |
| Radiated Emission (8GHz~40GHz)               | ±5.32dB                 |
| RF Conducted Power                           | ±0.57dB                 |
| Conducted Spurious Emissions                 | ±1.60dB                 |
| RF Frequency                                 | ±6.0 x 10 <sup>-7</sup> |

Note: All measurement uncertainty values are shown with a coverage factor of k = 2 to indicate a 95 % level of confidence.

## 1.7. ENVIRONMENTAL CONDITIONS

During the measurement the environmental conditions were within the listed ranges:

|                     |                |
|---------------------|----------------|
| Normal Temperature: | +15°C ~ +35°C  |
| Lative Humidity     | 20 % ~ 75 %    |
| Air Pressure        | 98KPa ~ 101KPa |

## 1.8. DESCRIPTION OF TEST MODES

| Operation Frequency List |                 |
|--------------------------|-----------------|
| Channel Number           | Frequency (MHz) |
| <b>1</b>                 | <b>2412</b>     |
| 2                        | 2417            |
| <b>3</b>                 | <b>2422</b>     |
| 4                        | 2427            |
| 5                        | 2432            |
| <b>6</b>                 | <b>2437</b>     |
| 7                        | 2442            |
| 8                        | 2447            |
| <b>9</b>                 | <b>2452</b>     |
| 10                       | 2457            |
| <b>11</b>                | <b>2462</b>     |

For portable device, radiated emission was verified over X, Y, Z Axis, and shown the worst case in this report. The following operating modes were applied for the related test items. Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data packets and antenna ports (if EUT with antenna diversity architecture), only the result of the worst case was recorded in the report.

| List of Test Modes |                                                                            |
|--------------------|----------------------------------------------------------------------------|
| Test Mode(s)       | Description                                                                |
| TM1                | Keep the EUT works in continuously transmitting mode (IEEE 802.11b)        |
| TM2                | Keep the EUT works in continuously transmitting mode (IEEE 802.11g)        |
| TM3                | Keep the EUT works in continuously transmitting mode (IEEE 802.11n(HT20))  |
| TM4                | Keep the EUT works in continuously transmitting mode (IEEE 802.11n(H40))   |
| TM5                | Keep the EUT works in continuously transmitting mode (IEEE 802.11ax(HT20)) |

### Power setting during the test:

During testing, Channel & Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

| Frequency                                           | 2412MHz | 2437MHz | 2462MHz |
|-----------------------------------------------------|---------|---------|---------|
| RF Power Parameter(s) for IEEE 802.11b/g/n/ax(HT20) | Default | Default | Default |
| Frequency                                           | 2422MHz | 2437MHz | 2452MHz |
| RF Power Parameter(s) for IEEE 802.11n(HT40)        | Default | Default | Default |

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations and data rate. Following data rate was (were) selected for the final test as listed below:

| Mode                  | Worst-case data rates |
|-----------------------|-----------------------|
| IEEE 802.11b          | 1Mbps                 |
| IEEE 802.11g          | 6Mbps                 |
| IEEE 802.11n/ax(HT20) | MCS0                  |
| IEEE 802.11 n(HT40)   | MCS0                  |

## 2. SUMMARY OF TEST RESULT

| Test Cases                                                            |                                                        |        |               |
|-----------------------------------------------------------------------|--------------------------------------------------------|--------|---------------|
| FCC&IC Rule                                                           | Description of Test Item(s)                            | Result | Test Engineer |
| Part 15.203                                                           | Antenna Requirement                                    | Pass   | Jacey Fu      |
| Part 15.247(b)(3)<br>RSS-247 6.3.2                                    | Maximum Peak Conducted Output Power                    | Pass   | Jacey Fu      |
| Part 15.247(a)(2)<br>RSS-247 6.3.1<br>RSS-Gen 6.7                     | 6dB Bandwidth& Occupied Bandwidth                      | Pass   | Jacey Fu      |
| Part 15.247(e)<br>RSS-247 6.3.1                                       | Power Spectral Density                                 | Pass   | Jacey Fu      |
| Part 15.247(d)<br>RSS-Gen 8.9, 8.10<br>RSS-247 6.6                    | Conducted Band Edges Measurement                       | Pass   | Jacey Fu      |
| Part 15.205, 15.209,<br>15.247(d)<br>RSS-Gen 8.9, 8.10<br>RSS-247 6.6 | Radiated Emissions and Radiated Band Edges Measurement | Pass   | He Chen       |
| Part 15.207<br>RSS-Gen 8.8                                            | Power Line Conducted Emissions                         | Pass   | He Chen       |

### 3. MEASUREMENT INSTRUMENTS LIST

| Item | Test Equipment                      | Manufacturer    | Model No.      | Serial No.   | Cal. Date  | Cal. Until |
|------|-------------------------------------|-----------------|----------------|--------------|------------|------------|
| 1    | Loop Antenna                        | Schwarzbeck     | FMZB 1519      | 1519-025     | 01/18/2026 | 01/17/2028 |
| 2    | ESCI EMI TEST RECEIVER              | ROHDE & SCHWARZ | ESPI 7         | /            | 01/20/2026 | 01/19/2027 |
| 3    | Power Amplifier                     | HZEMC           | HPA-9K0133     | HYP A23029   | 01/20/2026 | 01/19/2027 |
| 4    | Broadband Antenna                   | Schwarzbeck     | VULB 9168      | 01763        | 01/29/2026 | 01/28/2028 |
| 5    | Attenuator                          | PRM             | ATT50-6-3      | ATT50-6-3    | 01/20/2026 | 01/19/2027 |
| 6    | Spectrum Analyzer                   | R&S             | FSV40-N        | 101365       | 01/20/2026 | 01/19/2027 |
| 7    | Horn Antenna                        | Schwarzbeck     | BBHA 9120 D    | 02786        | 02/19/2026 | 02/18/2028 |
| 8    | Horn Antenna                        | Schwarzbeck     | ZLB7-18-40G-77 | 072410839    | 02/19/2026 | 02/18/2028 |
| 9    | Power Amplifier                     | HZEMC           | PA0118-43      | HYP A23030   | 01/20/2026 | 01/19/2027 |
| 10   | Power Amplifier                     | HZEMC           | PA01840-45     | HYP A23031   | 01/20/2026 | 01/19/2027 |
| 11   | EMI Test Receiver                   | R&S             | ESCI           | 101196       | 01/20/2026 | 01/19/2027 |
| 12   | LISN                                | R&S             | ENV216         | 102374       | 01/20/2026 | 01/19/2027 |
| 13   | Pulse Limiter                       | Schwarzbeck     | ESH3-Z2        | 0357.8810.54 | 01/20/2026 | 01/19/2027 |
| 14   | MXA Signal Analyzer                 | Keysight        | N9020A         | MY52091389   | 01/20/2026 | 01/19/2027 |
| 15   | Power Sensor                        | Agilent         | U2021XA        | MY54110007   | 01/20/2026 | 01/19/2027 |
| 16   | Power Sensor                        | Agilent         | U2021XA        | MY54110009   | 01/20/2026 | 01/19/2027 |
| 17   | MXG Vector Signal Generator         | Agilent         | N5182A         | MY47070153   | 01/20/2026 | 01/19/2027 |
| 18   | Analog Signal Source                | Keysight        | N5173B         | MY60403029   | 01/20/2026 | 01/19/2027 |
| 19   | Vector Signal Generator             | R&S             | SMCV100B       | 106103       | 01/20/2026 | 01/19/2027 |
| 20   | WIDEBAND RADIO COMMUNICATION TESTER | R&S             | CMW500         | 118780       | 01/20/2026 | 01/19/2027 |
| 21   | DC POWER SUPPLY                     | MAISHENG        | MT-305DS       | 2021040016   | 02/28/2026 | 02/27/2027 |
| 22   | Const Temp. & Humidity Chamber      | GRT             | GR-HWX-150L    | GR25010601   | 01/20/2026 | 01/19/2027 |
| 23   | Test Cable                          | N/A             | AB-E-148       | N/A          | 01/20/2026 | 01/19/2027 |

| Test Software                           |          |          |
|-----------------------------------------|----------|----------|
| Software name                           | Model    | Version  |
| Conducted Emission Measurement Software | FASLAB   | V4.1     |
| Radiated Emission Measurement Software  | FASLAB   | V4.1     |
| Bluetooth and WIFI Test System          | MTS 8310 | V3.0.0.0 |

## 4. ANTENNA REQUIREMENT

### 1) Standard Requirement

#### 15.203 requirement:

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, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

#### 15.247(b) (4) requirement:

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6dBi.

### 2) Conclusion

Antenna in the interior of the equipment and no consideration of replacement. The gain of the antenna is 2.25dBi (Max.). It complies with the standard requirement.

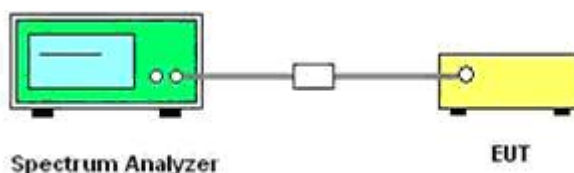
## 5. CONDUCTED OUTPUT POWER

### 5.1. LIMIT

According to 15.247(b)(3) and RSS-247 6.3.2. For systems using digital modulation in the 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the 1 Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

### 5.2. TEST SETUP

#### ☒ Using a Spectrum Analyzer for Testing:



#### ☐ Using a Broadband Power Meter for Testing:



### 5.3. TEST PROCEDURE

#### ☒ Using a Spectrum Analyzer for Testing:

Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

a) Use the following spectrum analyzer settings:

- 1) Set the RBW  $\geq$  DTS bandwidth, centered on the test channel.
- 2) Set VBW  $\geq 3 \times$  RBW.
- 3) Set Span  $\geq 3 \times$  RBW.
- 4) Sweep: Auto.
- 5) Detector = power averaging (rms)
- 6) Trace: Max hold.

b) Allow trace to stabilize.

c) Use the marker-to-peak function to set the marker to the peak of the emission.

d) The indicated level is the peak output power, after any corrections for external attenuators and cables.

e) A plot of the test results and setup description shall be included in the test report.

☐ **Using a Broadband Power Meter for Testing:**

Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the broadband power meter.

#### **5.4. TEST RESULT**

**Pass.**

Please refer to the Appendix for 2.4G WIFI RF Conducted Test Data.

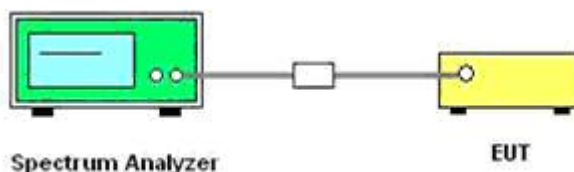
Note: The test results including the cable lose.

## 6. 6DB BANDWIDTH AND OCCUPIED BANDWIDTH

### 6.1. LIMIT

According to 15.247(a)(2) and RSS-247 6.3.1, RSS-Gen 6.7, Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

### 6.2. TEST SETUP



### 6.3. TEST PROCEDURE

Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

Use the following spectrum analyzer settings:

#### For 6dB Bandwidth Measurement:

- a) Span = approximately 1.5 to 5 times the OBW, centered on the test channel.
- b) RBW = shall be in the range of 1% to 5% of the OBW but not less than 100 kHz..
- c) VBW  $\geq 3 \times$  RBW
- d) Sweep = auto;
- e) Detector function = peak
- f) Trace = max hold
- g) All the trace to stabilize, use the marker-to-peak function to set the marker to the peak of the emission, use the marker-delta function to measure and record the 6dB down bandwidth of the emission.

#### For 99% Occupied Bandwidth Measurement:

- a) Span = approximately 1.5 to 5 times the OBW, centered on the test channel.
- b) RBW = 1% to 5% of the OBW.
- c) VBW  $\geq 3 \times$  RBW
- d) Sweep = auto;
- e) Detector function = peak
- f) Trace = max hold
- g) Use the 99% power bandwidth function of the instrument to measure the Occupied Bandwidth and recoded.

### 6.4. TEST RESULT

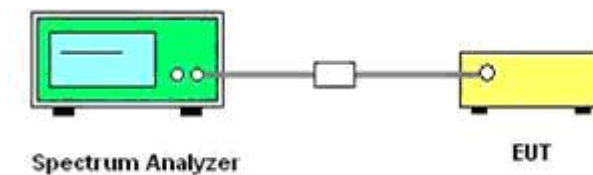
Please refer to the Appendix for 2.4G WIFI RF Conducted Test Data.

## 7. POWER SPECTRAL DENSITY

### 7.1. LIMIT

According to 15.247(e) and RSS-247 6.3.1, RSS-Gen 6.7, For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission.

### 7.2. TEST SETUP



### 7.3. TEST PROCEDURE

Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

Use the following spectrum analyzer settings:

- Set analyzer center frequency to DTS channel center frequency.
- Set the span to 1.5 times the DTS bandwidth.
- Set the RBW to:  $3\text{KHz} \leq \text{RBW} \leq 100\text{KHz}$ .
- Set the VBW  $\geq 3 \times \text{RBW}$ .
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum amplitude level within the RBW.
- If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

### 7.4. TEST RESULT

**Pass.**

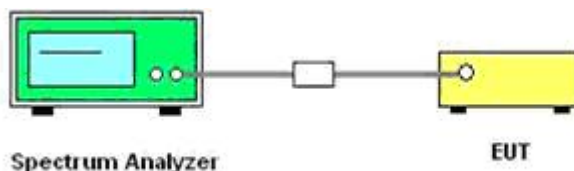
Please refer to the Appendix for 2.4G WIFI RF Conducted Test Data.

## 8. CONDUCTED BAND EDGES MEASUREMENT

### 8.1. LIMIT

According to §15.247(d) and RSS-Gen 8.9, 8.10, RSS-247 6.6, In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30dB instead of 20dB. Attenuation below the general limits specified in § 15.209(a) is not required. 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)).

### 8.2. TEST SETUP



### 8.3. TEST PROCEDURE

- Remove the antenna from the EUT and connect to the spectrum analyzer via a low loss RF cable.
- Set the spectrum analyzer to any one measured frequency within its operating range.
- Set RBW = 100kHz, VBW = 300kHz, Sweep = Auto, Detector = Peak.
- Measure the highest amplitude appearing on spectral display and set it as a reference level.
- Set a convenient frequency span including 100 kHz bandwidth from band edge. Measure the emission and marking the edge frequency.
- Measure the spurious emissions with frequency range from 9kHz to 26.5GHz.

### 8.4. TEST RESULT

**Pass.**

Please refer to the Appendix for 2.4G WIFI RF Conducted Test Data.

## 9. RADIATED EMISSIONS AND RADIATED BAND EDGES MEASUREMENT

### 9.1. LIMIT

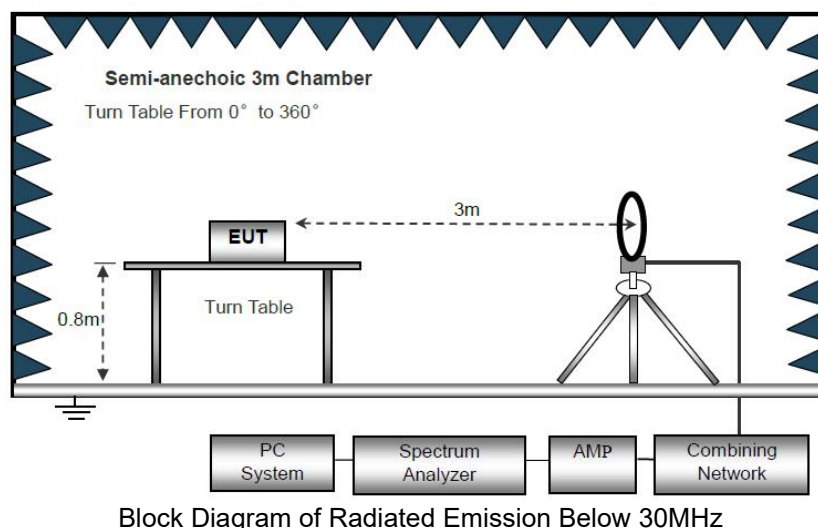
According to §15.247(d) and RSS-Gen 8.9, 8.10, RSS-247 6.6, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

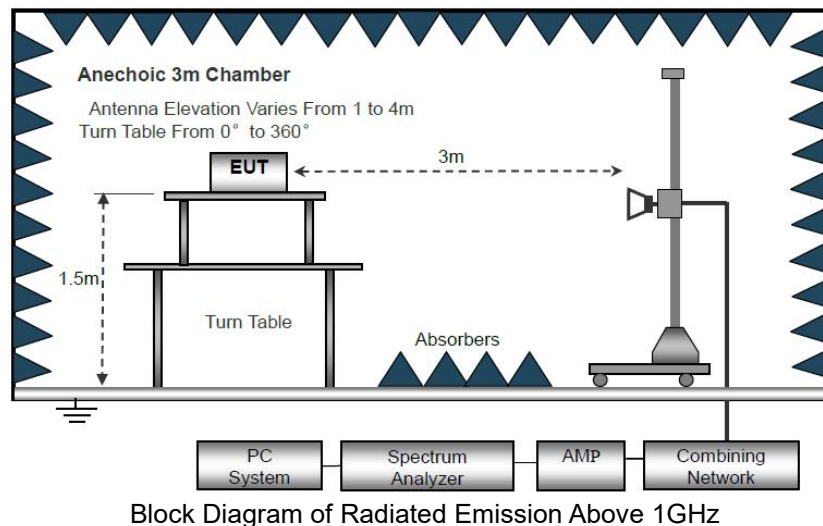
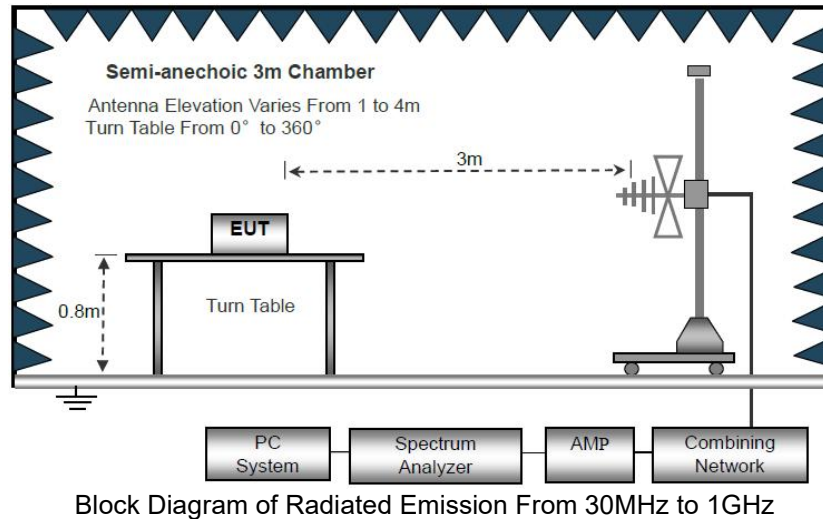
| Limits of Spurious Emissions |                                  |                |            |                          |
|------------------------------|----------------------------------|----------------|------------|--------------------------|
| Frequency                    | Field strength (microvolt/meter) | Limit (dBμV/m) | Remark     | Measurement distance (m) |
| 0.009MHz~0.490MHz            | 2400/F(kHz)                      | ---            | ---        | 300                      |
| 0.490MHz~1.705MHz            | 24000/F(kHz)                     | ---            | ---        | 30                       |
| 1.705MHz~30MHz               | 30                               | ---            | ---        | 30                       |
| 30MHz~88MHz                  | 100                              | 40.0           | Quasi-peak | 3                        |
| 88MHz~216MHz                 | 150                              | 43.5           | Quasi-peak | 3                        |
| 216MHz~960MHz                | 200                              | 46.0           | Quasi-peak | 3                        |
| 960MHz~1GHz                  | 500                              | 54.0           | Quasi-peak | 3                        |
| Above 1GHz                   | 500                              | 54.0           | Average    | 3                        |

#### Remark:

- The lower limit shall apply at the transition frequencies.
- Emission level (dBμV/m) =  $20 \times \log$  Emission level (uV/m).
- For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.
- Spurious Radiated Emissions measurements starting below or at the lowest crystal frequency.

### 9.2. TEST SETUP





### 9.3. TEST PROCEDURE

- Below 1GHz measurement the EUT is placed on a turntable which is 0.8m above ground plane, and above 1GHz measurement EUT was placed on a low permittivity and low loss tangent turn table which is 1.5m above ground plane.
- Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0 degree to 360 degree to acquire the highest emissions from EUT.
- And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- Repeat above procedures until all frequency measurements have been completed.
- Radiated emission test frequency band from 9KHz to 25GHz.
- The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and record the worst case in this report.

g) The distance between test antenna and EUT as following table states:

| Test Frequency range | Test Antenna Type   | Test Distance |
|----------------------|---------------------|---------------|
| 9KHz~30MHz           | Active Loop Antenna | 3             |
| 30MHz~1GHz           | Bilog Antenna       | 3             |
| 1GHz~18GHz           | Horn Antenna        | 3             |
| 18GHz~25GHz          | Horn Antenna        | 1             |

h) Setting test receiver/spectrum as following table states:

| Test Frequency range | Test Receiver/Spectrum Setting                                                                                  | Detector |
|----------------------|-----------------------------------------------------------------------------------------------------------------|----------|
| 9KHz~150KHz          | RBW=200Hz/VBW=3KHz,<br>Sweep time=Auto                                                                          | QP       |
| 150KHz~30MHz         | RBW=9KHz/VBW=100KHz,<br>Sweep time=Auto                                                                         | QP       |
| 30MHz~1GHz           | RBW=120KHz/VBW=1000KHz,<br>Sweep time=Auto                                                                      | QP       |
| 1GHz~40GHz           | Peak Value:<br>RBW=1MHz/VBW=3MHz,<br>Sweep time=Auto<br>Average Value:<br>RBW=1MHz/VBW=10Hz,<br>Sweep time=Auto | Peak     |

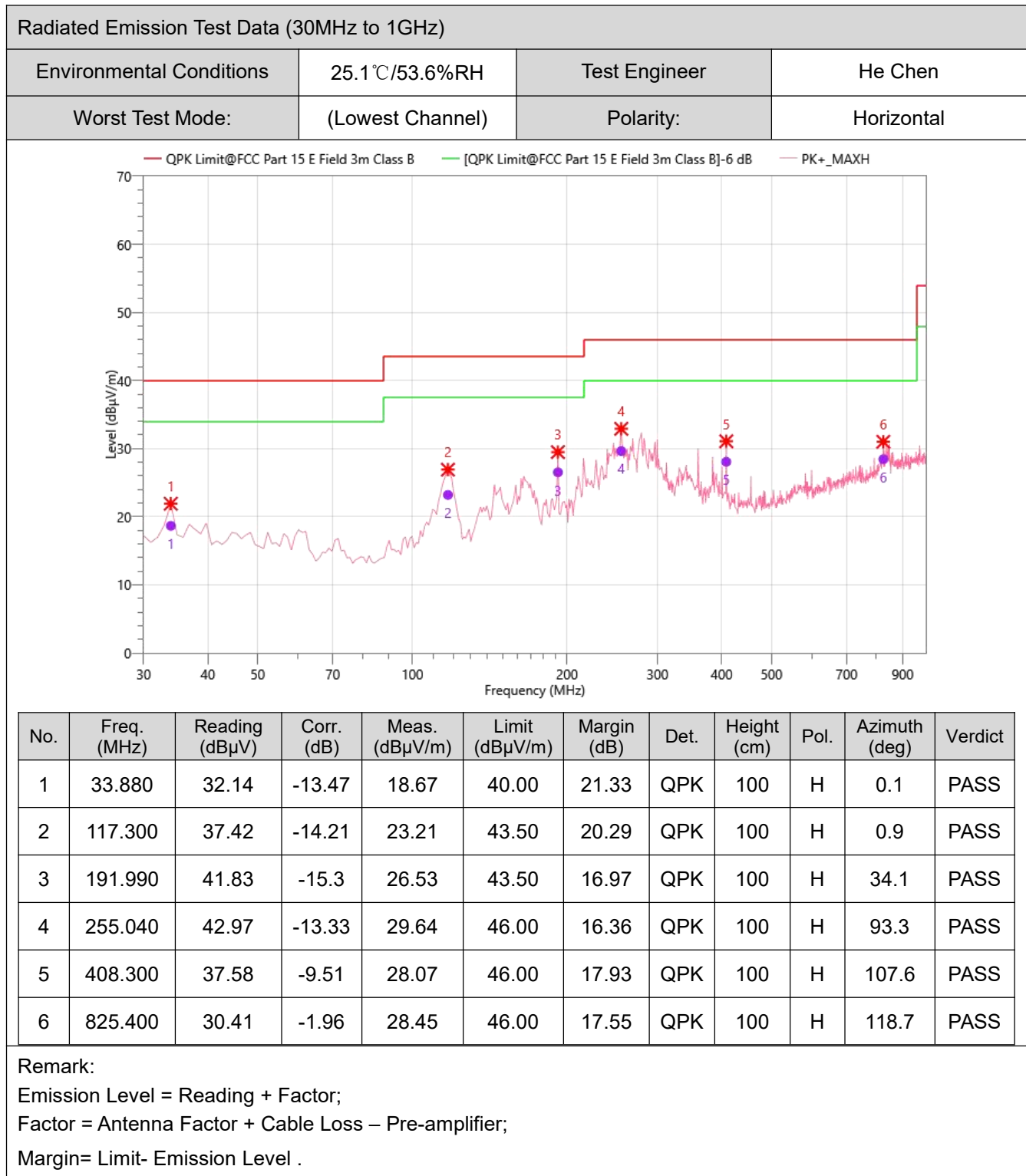
## 9.4. TEST RESULT

**Pass.**

Remark:

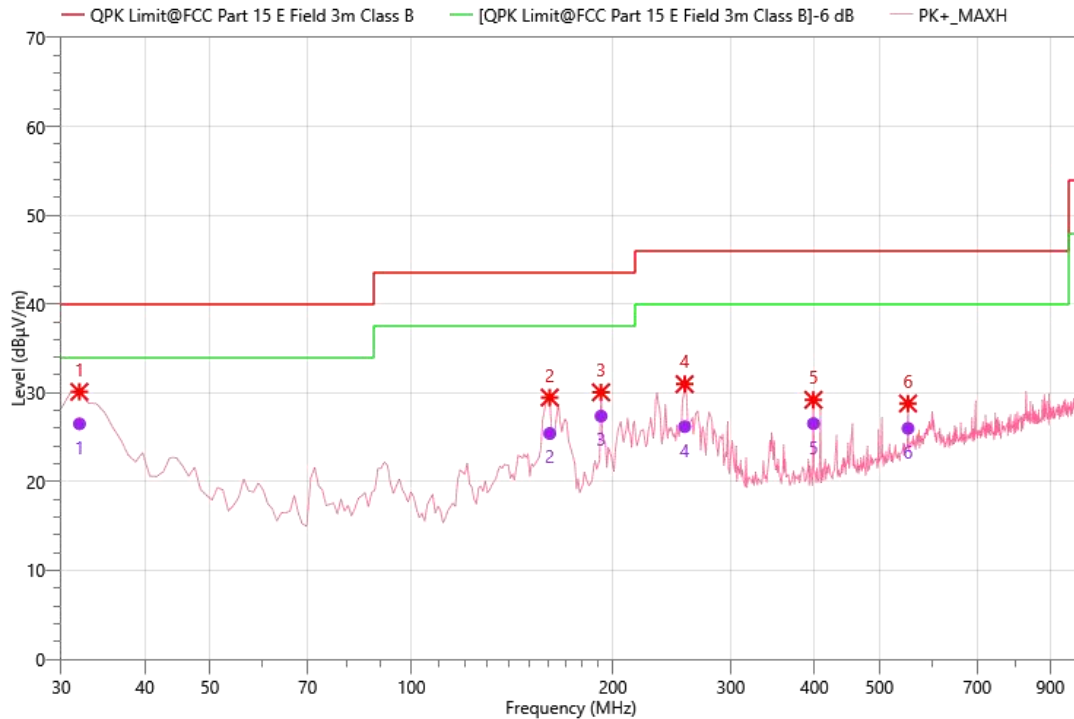
- a) Pre-scan all modes and recorded the worst case in this report.
- b) Radiated emission test from 9KHz to 10th harmonic of fundamental was verified, and the emission levels from 9kHz to 30MHz are attenuated 20dB below the limit and not recorded in report.

For Radiated Spurious Emissions 9kHz~1GHz, the worst case b mode and lowest channel in the Radiated Spurious Emissions above 1GHz was tested.



## Radiated Emission Test Data (30MHz to 1GHz)

|                          |                  |               |          |
|--------------------------|------------------|---------------|----------|
| Environmental Conditions | 25.1°C/53.6%RH   | Test Engineer | He Chen  |
| Worst Test Mode:         | (Lowest Channel) | Polarity:     | Vertical |



| No. | Freq. (MHz) | Reading (dBμV) | Corr. (dB) | Meas. (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Det. | Height (cm) | Pol. | Azimuth (deg) | Verdict |
|-----|-------------|----------------|------------|----------------|----------------|-------------|------|-------------|------|---------------|---------|
| 1   | 31.940      | 40.10          | -13.59     | 26.51          | 40.00          | 13.49       | QPK  | 100         | V    | 89.8          | PASS    |
| 2   | 160.950     | 37.41          | -11.99     | 25.42          | 43.50          | 18.08       | QPK  | 100         | V    | 222.8         | PASS    |
| 3   | 191.990     | 42.68          | -15.3      | 27.38          | 43.50          | 16.12       | QPK  | 100         | V    | 359.3         | PASS    |
| 4   | 256.010     | 39.51          | -13.32     | 26.19          | 46.00          | 19.81       | QPK  | 100         | V    | 49.0          | PASS    |
| 5   | 398.600     | 36.12          | -9.58      | 26.54          | 46.00          | 19.46       | QPK  | 100         | V    | 337.1         | PASS    |
| 6   | 551.860     | 32.24          | -6.24      | 26.00          | 46.00          | 20.00       | QPK  | 100         | V    | 30.7          | PASS    |

## Remark:

Emission Level = Reading + Factor;

Factor = Antenna Factor + Cable Loss – Pre-amplifier;

Margin= Limit- Emission Level .

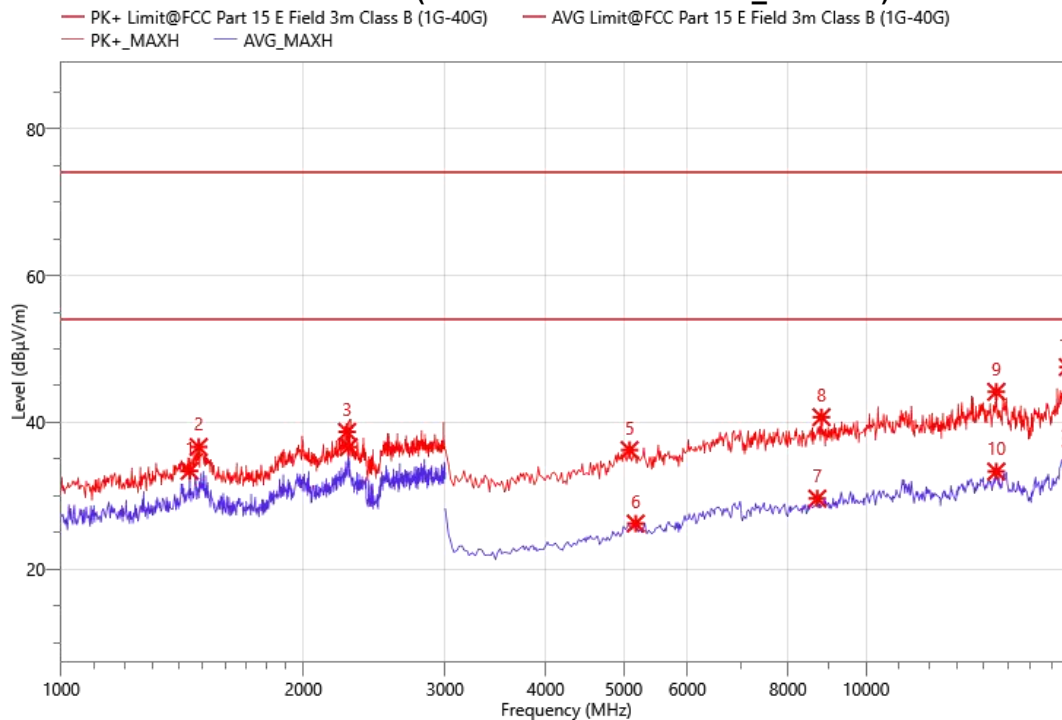
## Radiated Emission Test Data (Above 1GHz)

Environmental Conditions 23.1°C/56.0%RH

Test Engineer

He Chen

## Lowest Channel (Worst Case: IEEE 802.11b\_2412MHz)



| Frequency (MHz) | Reading (dBuV) | Correct (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector (PEAK/AVG) | Polar (H/V) |
|-----------------|----------------|----------------|-----------------|----------------|-------------|---------------------|-------------|
| 1444.000        | 44.50          | -11.1          | 33.40           | 54.00          | -20.6       | AVG                 | H           |
| 1482.000        | 47.89          | -11.23         | 36.66           | 74.00          | -37.34      | PK+                 | H           |
| 2266.000        | 47.62          | -8.9           | 38.72           | 74.00          | -35.28      | PK+                 | H           |
| 2276.000        | 45.53          | -8.9           | 36.63           | 54.00          | -17.37      | AVG                 | H           |
| 5085.000        | 48.21          | -11.97         | 36.24           | 74.00          | -37.76      | PK+                 | H           |
| 5175.000        | 38.23          | -11.99         | 26.24           | 54.00          | -27.76      | AVG                 | H           |
| 8700.000        | 34.66          | -5.03          | 29.63           | 54.00          | -24.37      | AVG                 | H           |
| 8805.000        | 45.63          | -4.91          | 40.72           | 74.00          | -33.28      | PK+                 | H           |
| 14520.000       | 42.80          | 1.37           | 44.17           | 74.00          | -29.83      | PK+                 | H           |
| 14520.000       | 31.95          | 1.37           | 33.32           | 54.00          | -20.68      | AVG                 | H           |
| 17820.000       | 41.20          | 6.34           | 47.54           | 74.00          | -26.46      | PK+                 | H           |
| 18000.000       | 30.13          | 7.7            | 37.83           | 54.00          | -16.17      | AVG                 | H           |

## Remark:

Emission Level = Reading + Factor;

Factor = Antenna Factor + Cable Loss – Pre-amplifier;

Margin=Limit. - Emission Level .

Testing is carried out with frequency rang 9kHz to the tenth harmonics. The measurements greater than 20dBbelow the limit from 18GHz to 25GHz.

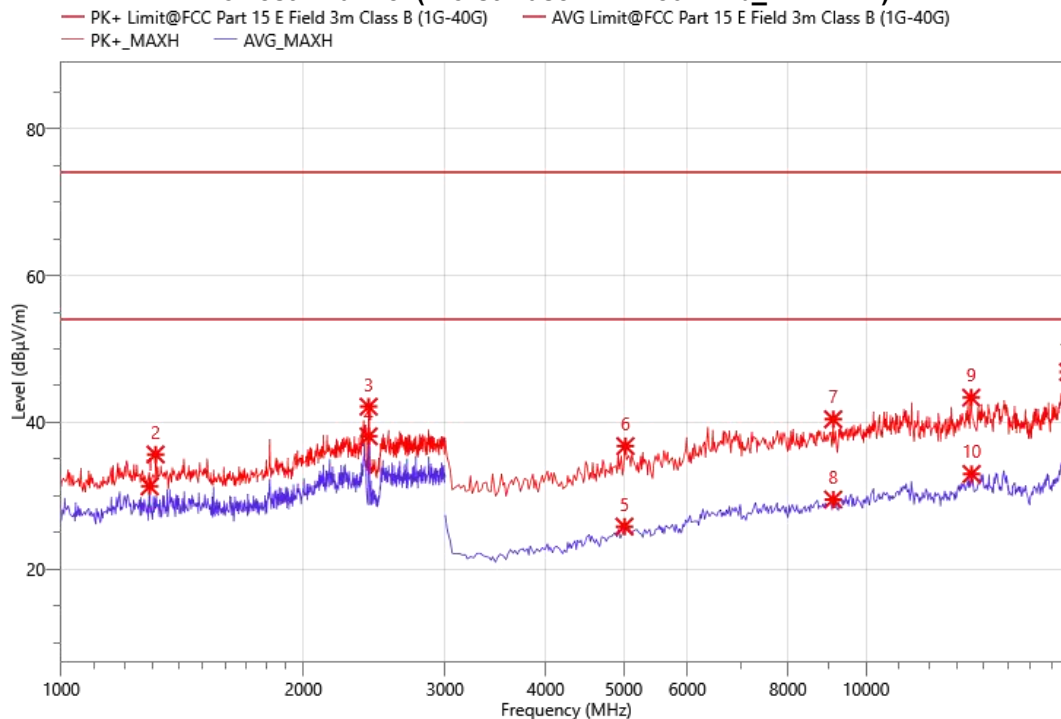
## Radiated Emission Test Data (Above 1GHz)

Environmental Conditions 23.1°C/56.0%RH

Test Engineer

He Chen

## Lowest Channel (Worst Case: IEEE 802.11b\_2412MHz)



| Frequency (MHz) | Reading (dBuV) | Correct (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector (PEAK/AVG) | Polar (H/V) |
|-----------------|----------------|----------------|-----------------|----------------|-------------|---------------------|-------------|
| 1288.000        | 42.48          | -11.18         | 31.30           | 54.00          | -22.7       | AVG                 | V           |
| 1310.000        | 46.73          | -11.09         | 35.64           | 74.00          | -38.36      | PK+                 | V           |
| 2410.000        | 51.03          | -8.88          | 42.15           | 74.00          | -31.85      | PK+                 | V           |
| 2410.000        | 46.99          | -8.88          | 38.11           | 54.00          | -15.89      | AVG                 | V           |
| 5010.000        | 37.95          | -12.13         | 25.82           | 54.00          | -28.18      | AVG                 | V           |
| 5025.000        | 48.89          | -12.11         | 36.78           | 74.00          | -37.22      | PK+                 | V           |
| 9105.000        | 44.73          | -4.29          | 40.44           | 74.00          | -33.56      | PK+                 | V           |
| 9105.000        | 33.79          | -4.29          | 29.50           | 54.00          | -24.5       | AVG                 | V           |
| 13515.000       | 42.82          | 0.56           | 43.38           | 74.00          | -30.62      | PK+                 | V           |
| 13530.000       | 32.43          | 0.56           | 32.99           | 54.00          | -21.01      | AVG                 | V           |
| 17835.000       | 40.43          | 6.44           | 46.87           | 74.00          | -27.13      | PK+                 | V           |
| 18000.000       | 29.96          | 7.7            | 37.66           | 54.00          | -16.34      | AVG                 | V           |

## Remark:

Emission Level = Reading + Factor;

Factor = Antenna Factor + Cable Loss – Pre-amplifier;

Margin=Limit. - Emission Level .

Testing is carried out with frequency rang 9kHz to the tenth harmonics. The measurements greater than 20dBbelow the limit from 18GHz to 25GHz.

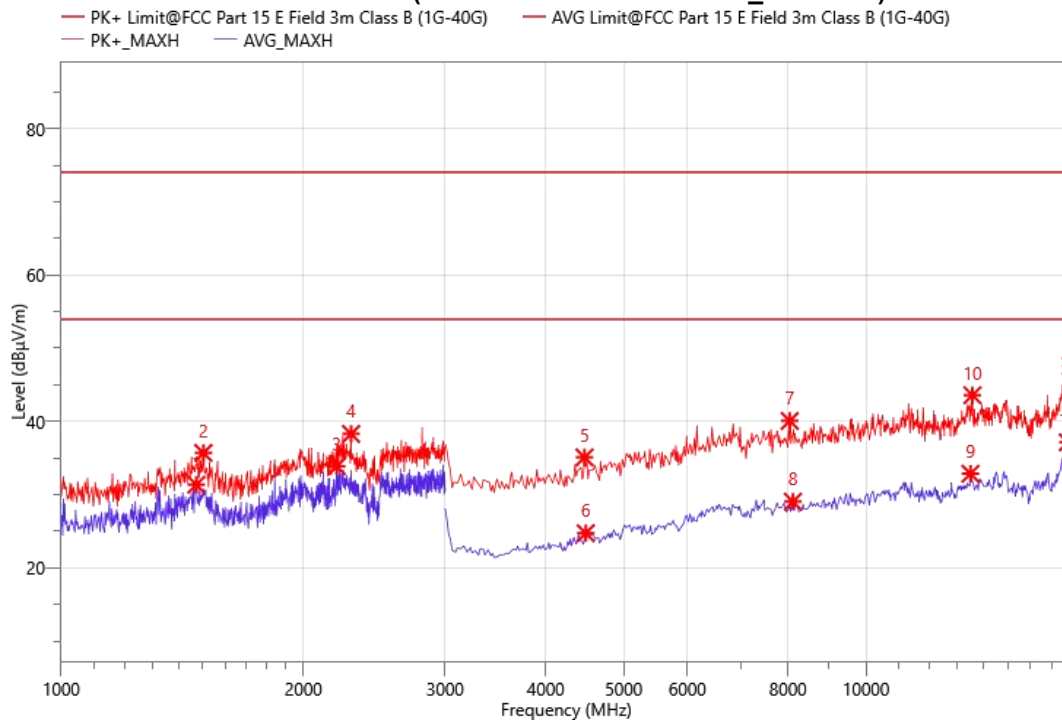
## Radiated Emission Test Data (Above 1GHz)

Environmental Conditions 23.1°C/56.0%RH

Test Engineer

He Chen

## Middle Channel (Worst Case: IEEE 802.11b\_2437MHz)



| Frequency (MHz) | Reading (dBuV) | Correct (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector (PEAK/AVG) | Polar (H/V) |
|-----------------|----------------|----------------|-----------------|----------------|-------------|---------------------|-------------|
| 1472.000        | 42.55          | -11.19         | 31.36           | 54.00          | -22.64      | AVG                 | H           |
| 1502.000        | 46.98          | -11.28         | 35.70           | 74.00          | -38.3       | PK+                 | H           |
| 2200.000        | 42.78          | -8.9           | 33.88           | 54.00          | -20.12      | AVG                 | H           |
| 2292.000        | 47.20          | -8.9           | 38.30           | 74.00          | -35.7       | PK+                 | H           |
| 4470.000        | 49.58          | -14.48         | 35.10           | 74.00          | -38.9       | PK+                 | H           |
| 4485.000        | 39.15          | -14.41         | 24.74           | 54.00          | -29.26      | AVG                 | H           |
| 8040.000        | 45.91          | -5.84          | 40.07           | 74.00          | -33.93      | PK+                 | H           |
| 8115.000        | 34.97          | -5.92          | 29.05           | 54.00          | -24.95      | AVG                 | H           |
| 13485.000       | 32.35          | 0.51           | 32.86           | 54.00          | -21.14      | AVG                 | H           |
| 13560.000       | 43.07          | 0.51           | 43.58           | 74.00          | -30.42      | PK+                 | H           |
| 17820.000       | 30.81          | 6.34           | 37.15           | 54.00          | -16.85      | AVG                 | H           |
| 17985.000       | 39.99          | 7.57           | 47.56           | 74.00          | -26.44      | PK+                 | H           |

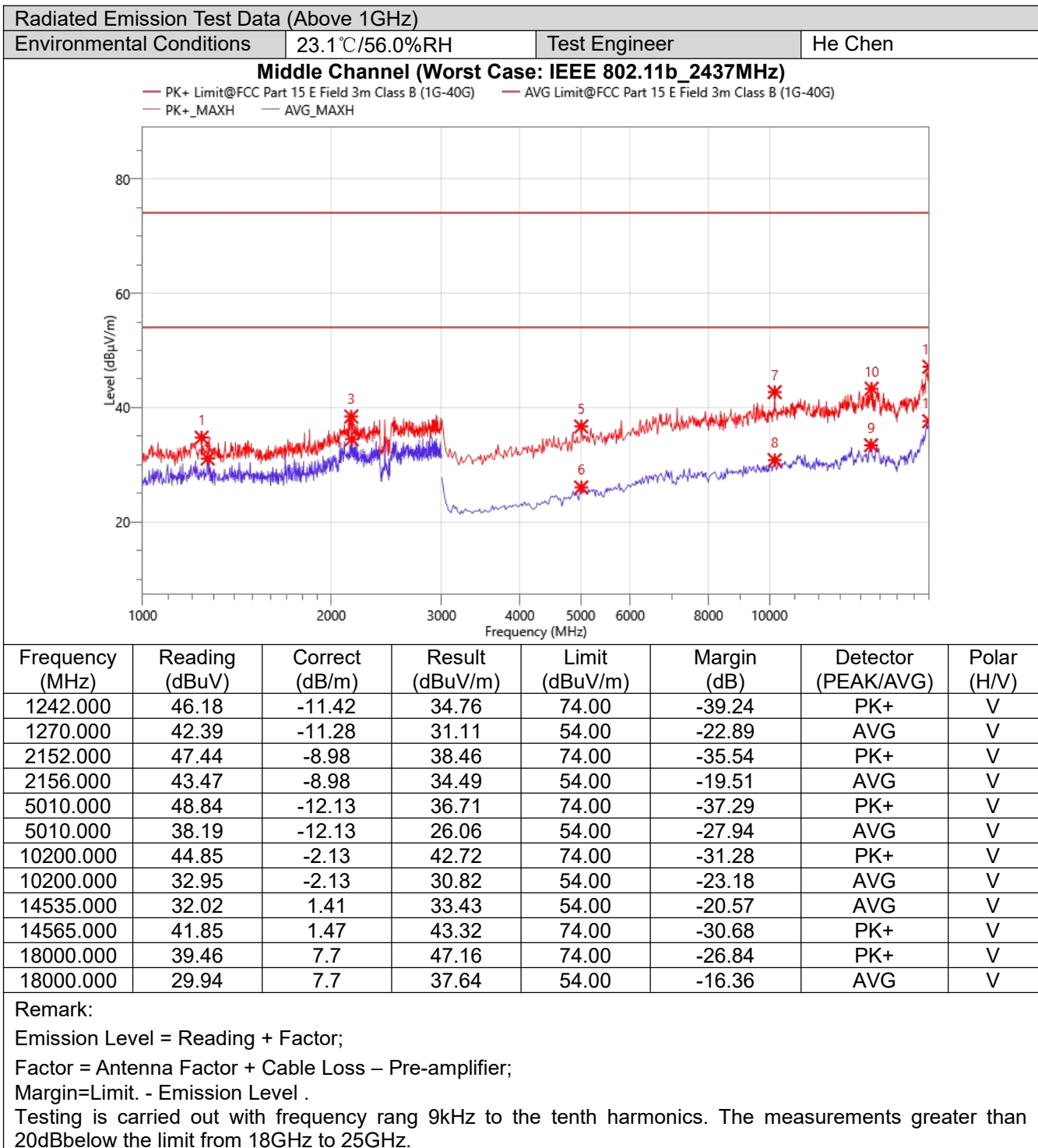
## Remark:

Emission Level = Reading + Factor;

Factor = Antenna Factor + Cable Loss – Pre-amplifier;

Margin=Limit. - Emission Level .

Testing is carried out with frequency rang 9kHz to the tenth harmonics. The measurements greater than 20dBbelow the limit from 18GHz to 25GHz.



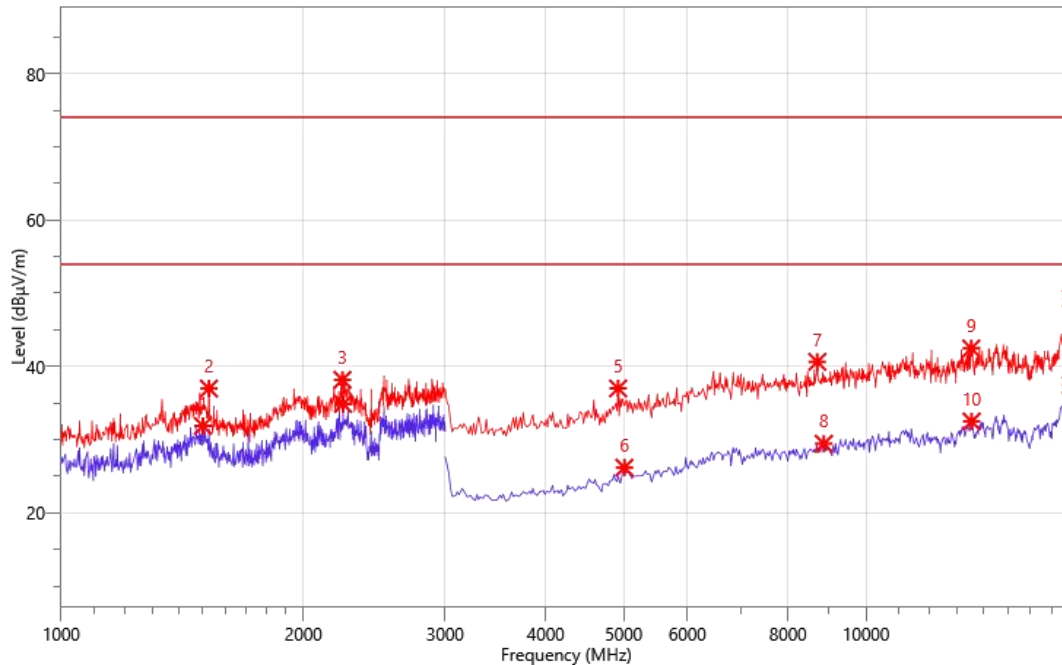
## Radiated Emission Test Data (Above 1GHz)

Environmental Conditions 23.1°C/56.0%RH

Test Engineer

He Chen

## Highest Channel (Worst Case: IEEE 802.11b\_2462MHz)

PK+ Limit@FCC Part 15 E Field 3m Class B (1G-40G) PK+ \_MAXH  
AVG Limit@FCC Part 15 E Field 3m Class B (1G-40G) AVG \_MAXH


| Frequency (MHz) | Reading (dBuV) | Correct (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector (PEAK/AVG) | Polar (H/V) |
|-----------------|----------------|----------------|-----------------|----------------|-------------|---------------------|-------------|
| 1500.000        | 43.16          | -11.28         | 31.88           | 54.00          | -22.12      | AVG                 | H           |
| 1526.000        | 48.22          | -11.24         | 36.98           | 74.00          | -37.02      | PK+                 | H           |
| 2236.000        | 47.07          | -8.9           | 38.17           | 74.00          | -35.83      | PK+                 | H           |
| 2240.000        | 43.77          | -8.9           | 34.87           | 54.00          | -19.13      | AVG                 | H           |
| 4920.000        | 49.59          | -12.59         | 37.00           | 74.00          | -37         | PK+                 | H           |
| 5010.000        | 38.32          | -12.13         | 26.19           | 54.00          | -27.81      | AVG                 | H           |
| 8700.000        | 45.66          | -5.03          | 40.63           | 74.00          | -33.37      | PK+                 | H           |
| 8865.000        | 34.42          | -4.97          | 29.45           | 54.00          | -24.55      | AVG                 | H           |
| 13515.000       | 41.90          | 0.56           | 42.46           | 74.00          | -31.54      | PK+                 | H           |
| 13530.000       | 31.93          | 0.56           | 32.49           | 54.00          | -21.51      | AVG                 | H           |
| 17985.000       | 29.89          | 7.57           | 37.46           | 54.00          | -16.54      | AVG                 | H           |
| 18000.000       | 41.57          | 7.7            | 49.27           | 74.00          | -24.73      | PK+                 | H           |

## Remark:

Emission Level = Reading + Factor;

Factor = Antenna Factor + Cable Loss – Pre-amplifier;

Margin=Limit. - Emission Level .

Testing is carried out with frequency rang 9kHz to the tenth harmonics. The measurements greater than 20dBbelow the limit from 18GHz to 25GHz.

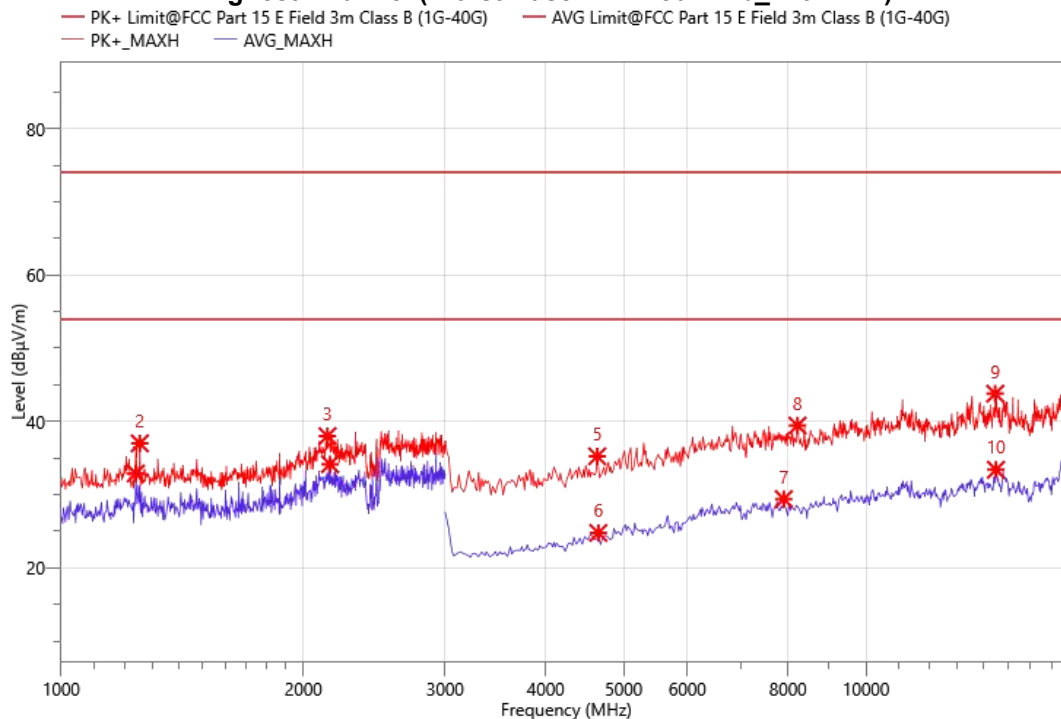
## Radiated Emission Test Data (Above 1GHz)

Environmental Conditions 23.1°C/56.0%RH

Test Engineer

He Chen

## Highest Channel (Worst Case: IEEE 802.11b\_2462MHz)



| Frequency (MHz) | Reading (dBuV) | Correct (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector (PEAK/AVG) | Polar (H/V) |
|-----------------|----------------|----------------|-----------------|----------------|-------------|---------------------|-------------|
| 1238.000        | 44.31          | -11.42         | 32.89           | 54.00          | -21.11      | AVG                 | V           |
| 1252.000        | 48.38          | -11.37         | 37.01           | 74.00          | -36.99      | PK+                 | V           |
| 2142.000        | 47.00          | -9             | 38.00           | 74.00          | -36         | PK+                 | V           |
| 2158.000        | 43.14          | -8.98          | 34.16           | 54.00          | -19.84      | AVG                 | V           |
| 4635.000        | 49.17          | -13.93         | 35.24           | 74.00          | -38.76      | PK+                 | V           |
| 4650.000        | 38.68          | -13.9          | 24.78           | 54.00          | -29.22      | AVG                 | V           |
| 7905.000        | 35.39          | -5.99          | 29.40           | 54.00          | -24.6       | AVG                 | V           |
| 8220.000        | 45.67          | -6.23          | 39.44           | 74.00          | -34.56      | PK+                 | V           |
| 14475.000       | 42.53          | 1.26           | 43.79           | 74.00          | -30.21      | PK+                 | V           |
| 14505.000       | 32.06          | 1.34           | 33.40           | 54.00          | -20.6       | AVG                 | V           |
| 18000.000       | 39.23          | 7.7            | 46.93           | 74.00          | -27.07      | PK+                 | V           |
| 18000.000       | 29.45          | 7.7            | 37.15           | 54.00          | -16.85      | AVG                 | V           |

## Remark:

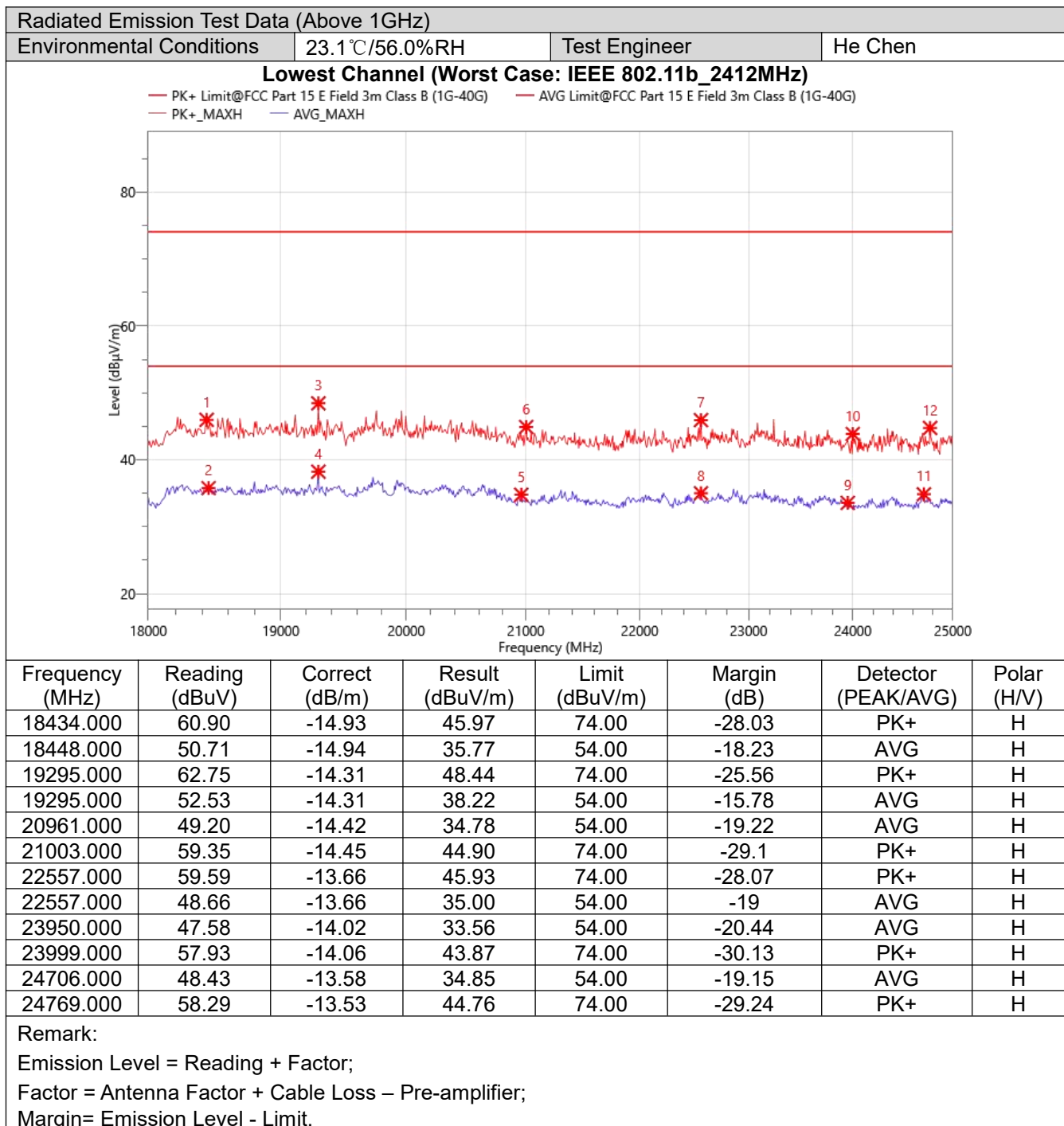
Emission Level = Reading + Factor;

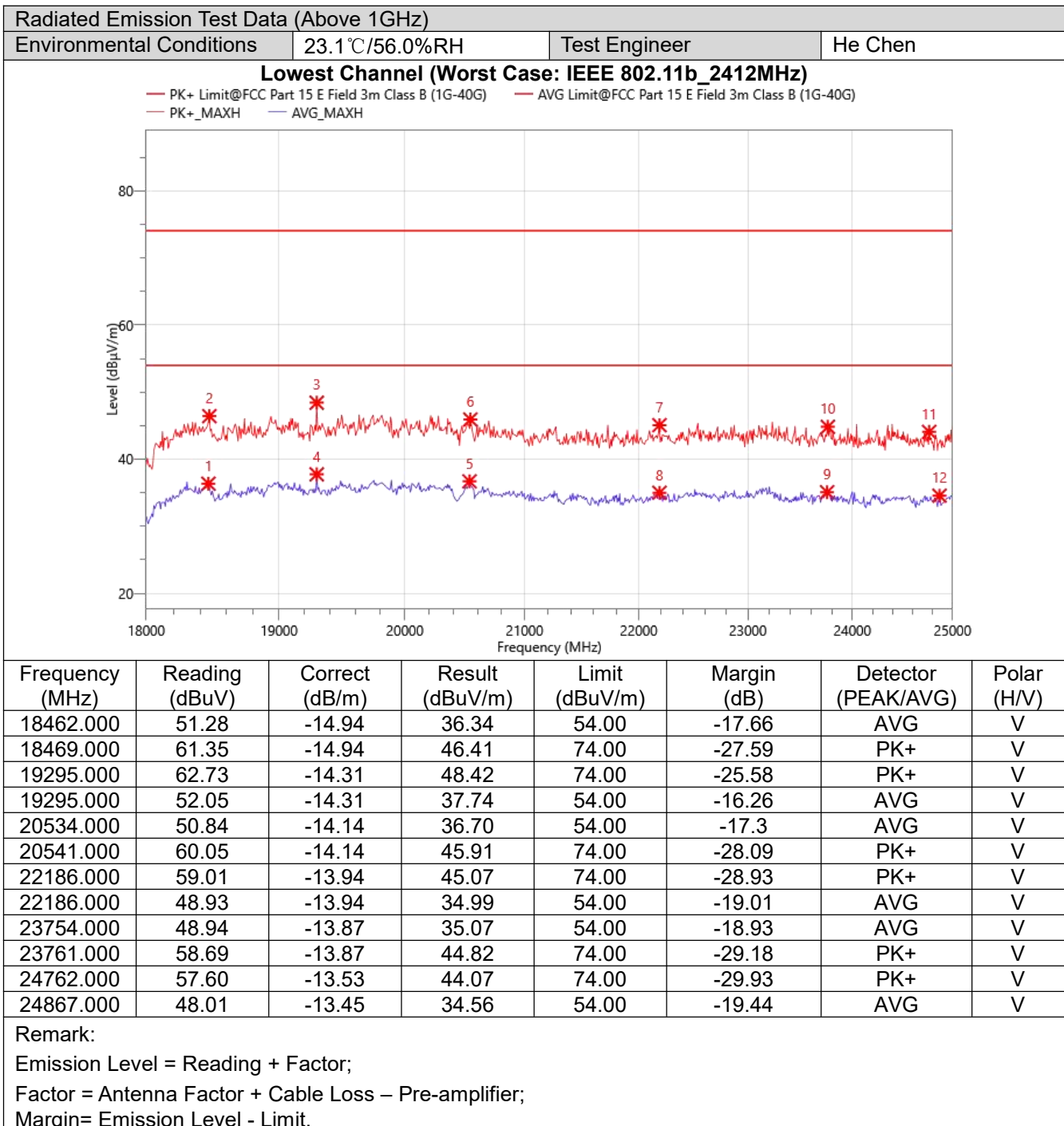
Factor = Antenna Factor + Cable Loss – Pre-amplifier;

Margin=Limit. - Emission Level .

Testing is carried out with frequency rang 9kHz to the tenth harmonics. The measurements greater than 20dBbelow the limit from 18GHz to 25GHz.

### 18-25G:





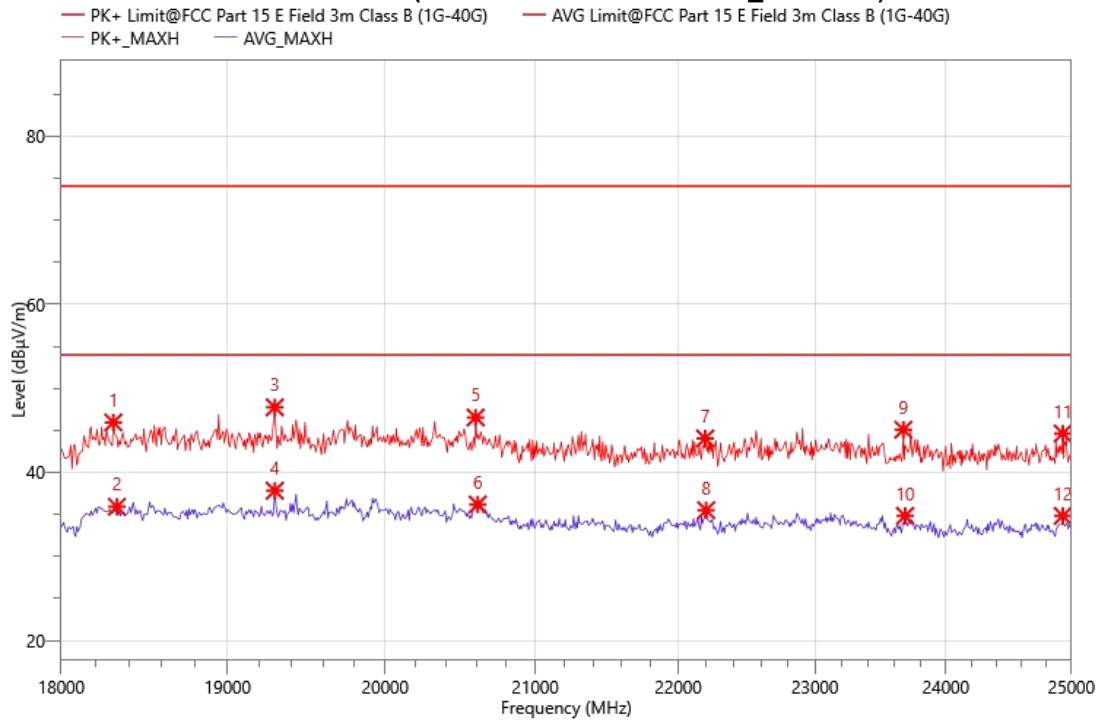
## Radiated Emission Test Data (Above 1GHz)

Environmental Conditions 23.1°C/56.0%RH

Test Engineer

He Chen

## Middle Channel (Worst Case: IEEE 802.11b\_2437MHz)



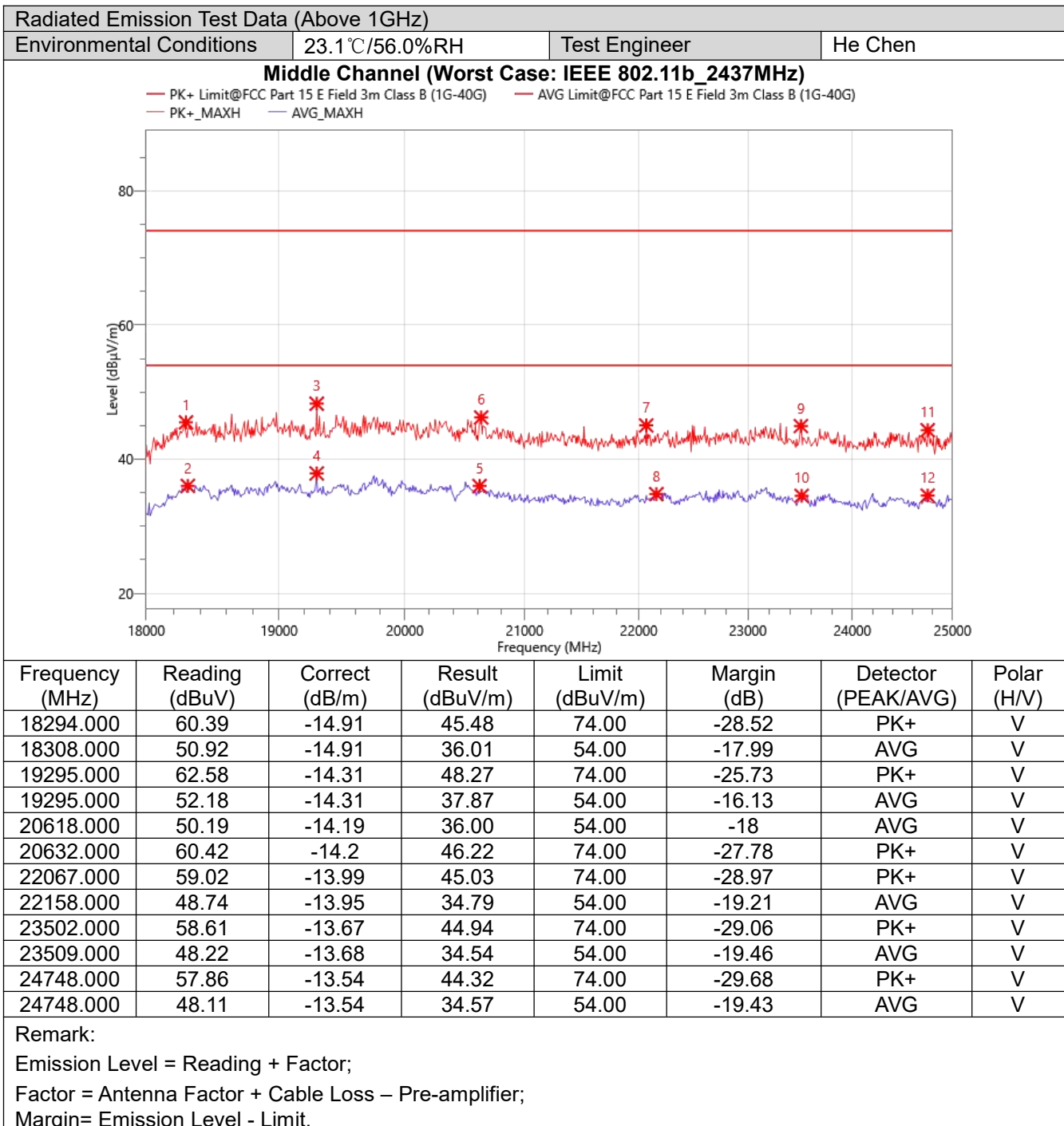
| Frequency (MHz) | Reading (dBuV) | Correct (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector (PEAK/AVG) | Polar (H/V) |
|-----------------|----------------|----------------|-----------------|----------------|-------------|---------------------|-------------|
| 18308.000       | 60.86          | -14.91         | 45.95           | 74.00          | -28.05      | PK+                 | H           |
| 18329.000       | 50.83          | -14.92         | 35.91           | 54.00          | -18.09      | AVG                 | H           |
| 19295.000       | 62.05          | -14.31         | 47.74           | 74.00          | -26.26      | PK+                 | H           |
| 19295.000       | 52.13          | -14.31         | 37.82           | 54.00          | -16.18      | AVG                 | H           |
| 20597.000       | 60.71          | -14.18         | 46.53           | 74.00          | -27.47      | PK+                 | H           |
| 20611.000       | 50.37          | -14.19         | 36.18           | 54.00          | -17.82      | AVG                 | H           |
| 22193.000       | 57.98          | -13.94         | 44.04           | 74.00          | -29.96      | PK+                 | H           |
| 22200.000       | 49.43          | -13.93         | 35.50           | 54.00          | -18.5       | AVG                 | H           |
| 23670.000       | 58.88          | -13.8          | 45.08           | 74.00          | -28.92      | PK+                 | H           |
| 23684.000       | 48.65          | -13.82         | 34.83           | 54.00          | -19.17      | AVG                 | H           |
| 24930.000       | 58.01          | -13.39         | 44.62           | 74.00          | -29.38      | PK+                 | H           |
| 24930.000       | 48.21          | -13.39         | 34.82           | 54.00          | -19.18      | AVG                 | H           |

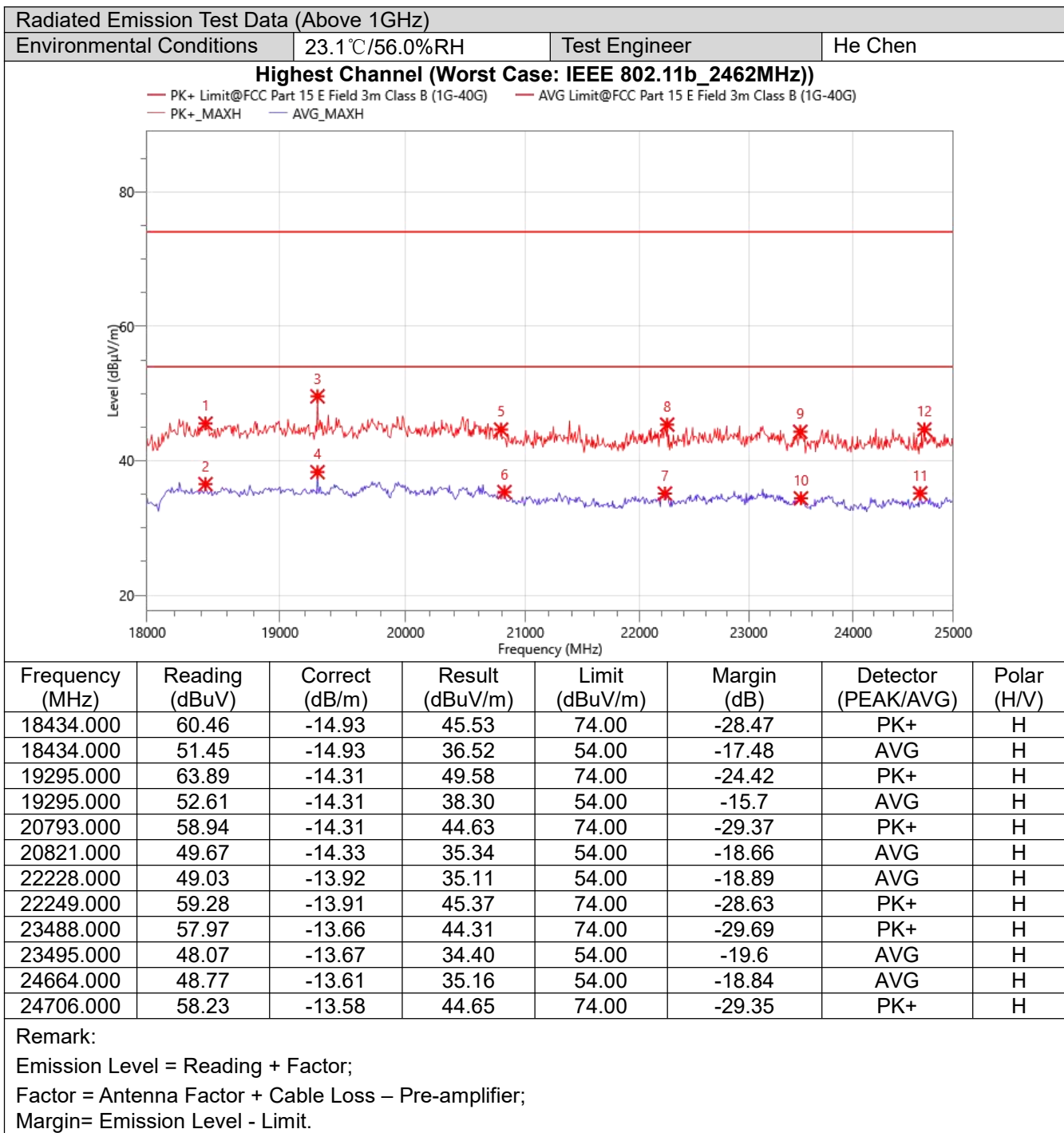
Remark:

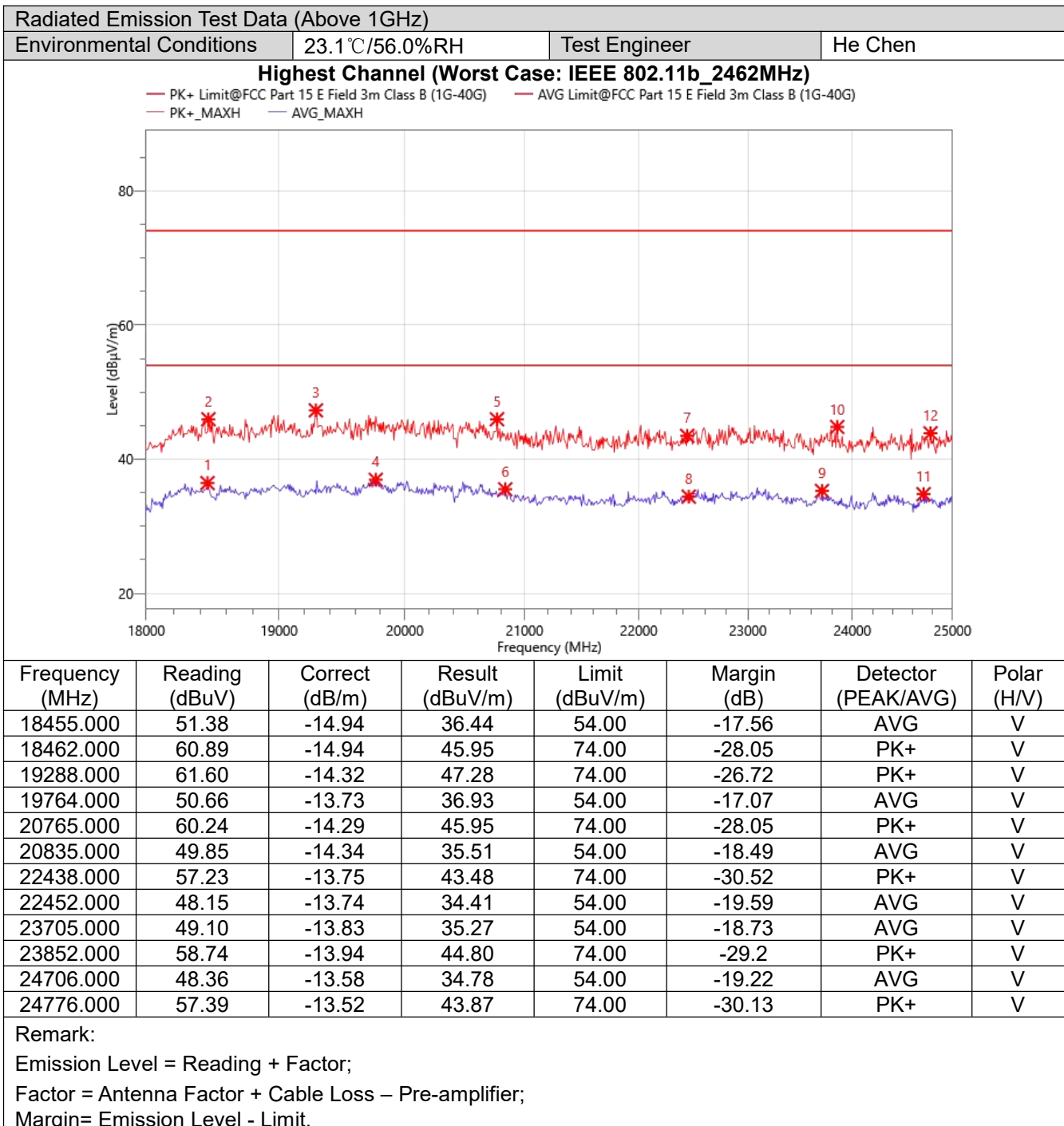
Emission Level = Reading + Factor;

Factor = Antenna Factor + Cable Loss – Pre-amplifier;

Margin= Emission Level - Limit.



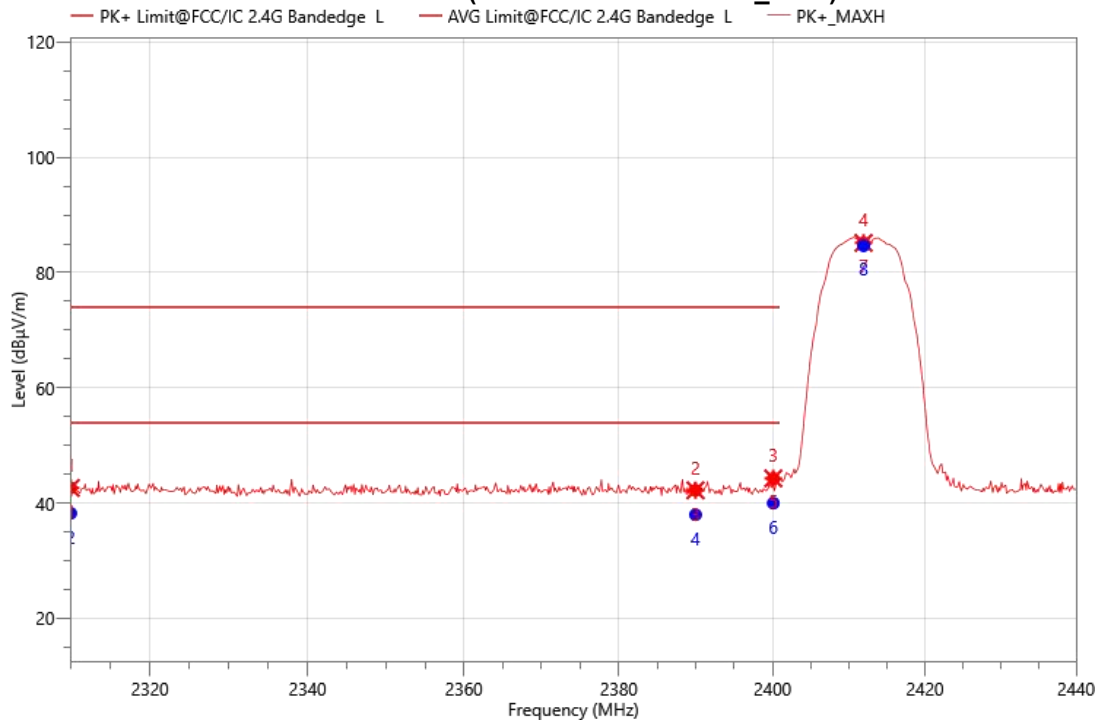




### Radiated Band Edges Test Data

|                          |                |               |         |
|--------------------------|----------------|---------------|---------|
| Environmental Conditions | 23.1°C/56.0%RH | Test Engineer | He Chen |
|--------------------------|----------------|---------------|---------|

#### Lowest Channel (Worst Case: 802.11b\_2412)



| Frequency (MHz) | Reading (dBuV) | Correct (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector (PEAK/AVG) | Polar (H/V) |
|-----------------|----------------|----------------|-----------------|----------------|-------------|---------------------|-------------|
| 2310.000        | 46.26          | -3.62          | 42.64           | 74.00          | 31.36       | PK+                 | H           |
| 2310.000        | 41.87          | -3.62          | 38.25           | 54.00          | 15.75       | AVG                 | H           |
| 2389.950        | 45.90          | -3.67          | 42.23           | 74.00          | 31.77       | PK+                 | H           |
| 2389.950        | 41.67          | -3.67          | 38.00           | 54.00          | 16.00       | AVG                 | H           |
| 2400.090        | 47.98          | -3.68          | 44.30           | 74.00          | 29.70       | PK+                 | H           |
| 2400.090        | 43.68          | -3.68          | 40.00           | 54.00          | 14.00       | AVG                 | H           |

#### Remark:

Emission Level = Reading + Factor;

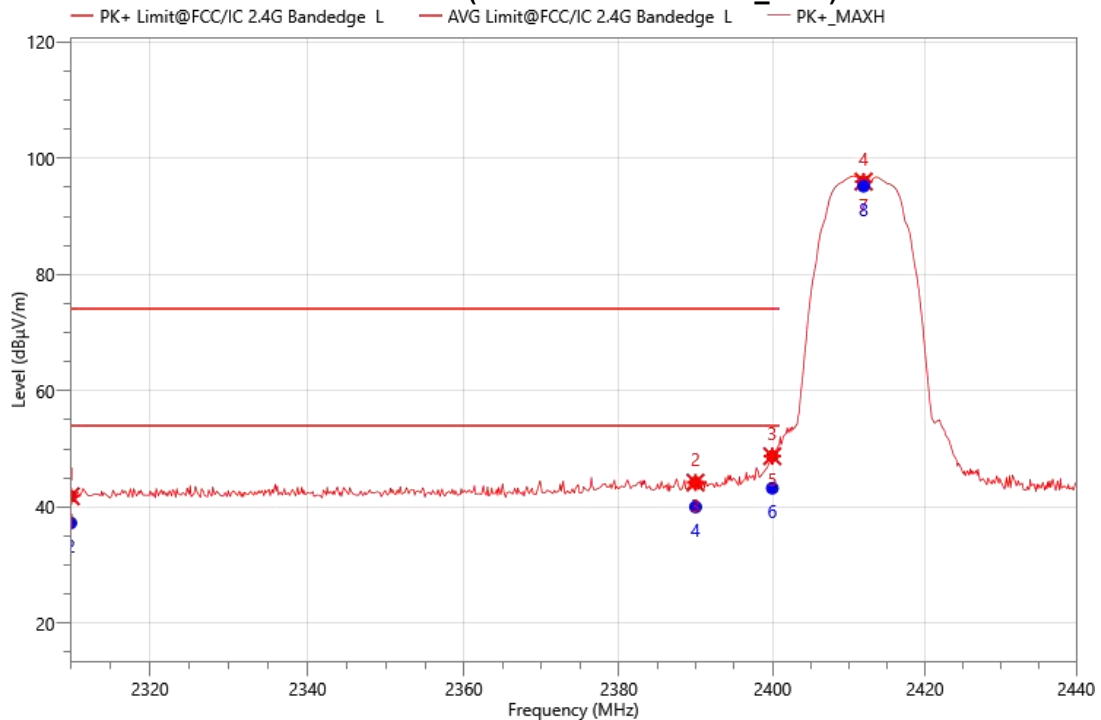
Factor = Antenna Factor + Cable Loss – Pre-amplifier;

Margin= Emission Level - Limit.

### Radiated Band Edges Test Data

|                          |                |               |         |
|--------------------------|----------------|---------------|---------|
| Environmental Conditions | 23.1°C/56.0%RH | Test Engineer | He Chen |
|--------------------------|----------------|---------------|---------|

#### Lowest Channel (Worst Case: 802.11b\_2412)



| Frequency (MHz) | Reading (dBuV) | Correct (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector (PEAK/AVG) | Polar (H/V) |
|-----------------|----------------|----------------|-----------------|----------------|-------------|---------------------|-------------|
| 2310.000        | 45.47          | -3.62          | 41.85           | 74.00          | 32.15       | PK+                 | V           |
| 2310.000        | 40.87          | -3.62          | 37.25           | 54.00          | 16.75       | AVG                 | V           |
| 2389.950        | 47.87          | -3.67          | 44.20           | 74.00          | 29.80       | PK+                 | V           |
| 2389.950        | 43.67          | -3.67          | 40.00           | 54.00          | 14.00       | AVG                 | V           |
| 2399.960        | 52.42          | -3.68          | 48.74           | 74.00          | 25.26       | PK+                 | V           |
| 2399.960        | 46.92          | -3.68          | 43.24           | 54.00          | 10.76       | AVG                 | V           |

#### Remark:

Emission Level = Reading + Factor;

Factor = Antenna Factor + Cable Loss – Pre-amplifier;

Margin= Emission Level - Limit.

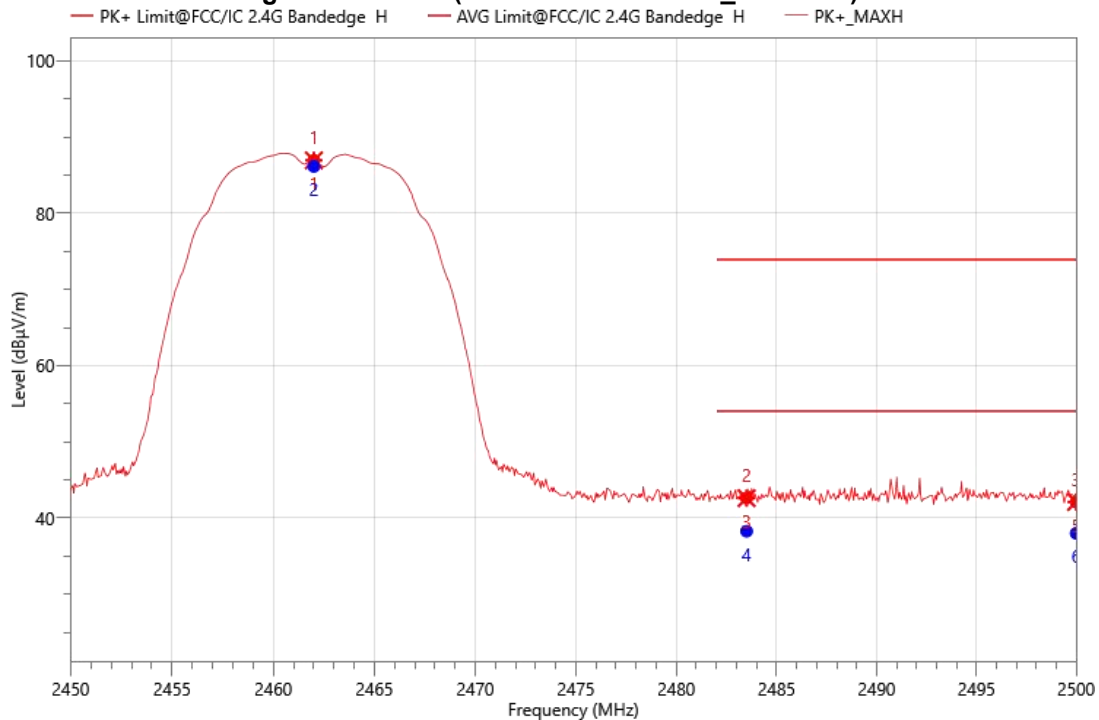
### Radiated Band Edges Test Data

Environmental Conditions 23.1°C/56.0%RH

Test Engineer

He Chen

#### Highest Channel (Worst Case: 802.11b\_2462MHz)



| Frequency (MHz) | Reading (dBuV) | Correct (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector (PEAK/AVG) | Polar (H/V) |
|-----------------|----------------|----------------|-----------------|----------------|-------------|---------------------|-------------|
| 2483.500        | 46.15          | -3.54          | 42.61           | 74.00          | 31.39       | PK+                 | H           |
| 2483.500        | 41.81          | -3.54          | 38.27           | 54.00          | 15.73       | AVG                 | H           |
| 2500.000        | 45.60          | -3.5           | 42.10           | 74.00          | 31.90       | PK+                 | H           |
| 2500.000        | 41.50          | -3.5           | 38.00           | 54.00          | 16.00       | AVG                 | H           |

Remark:

Emission Level = Reading + Factor;

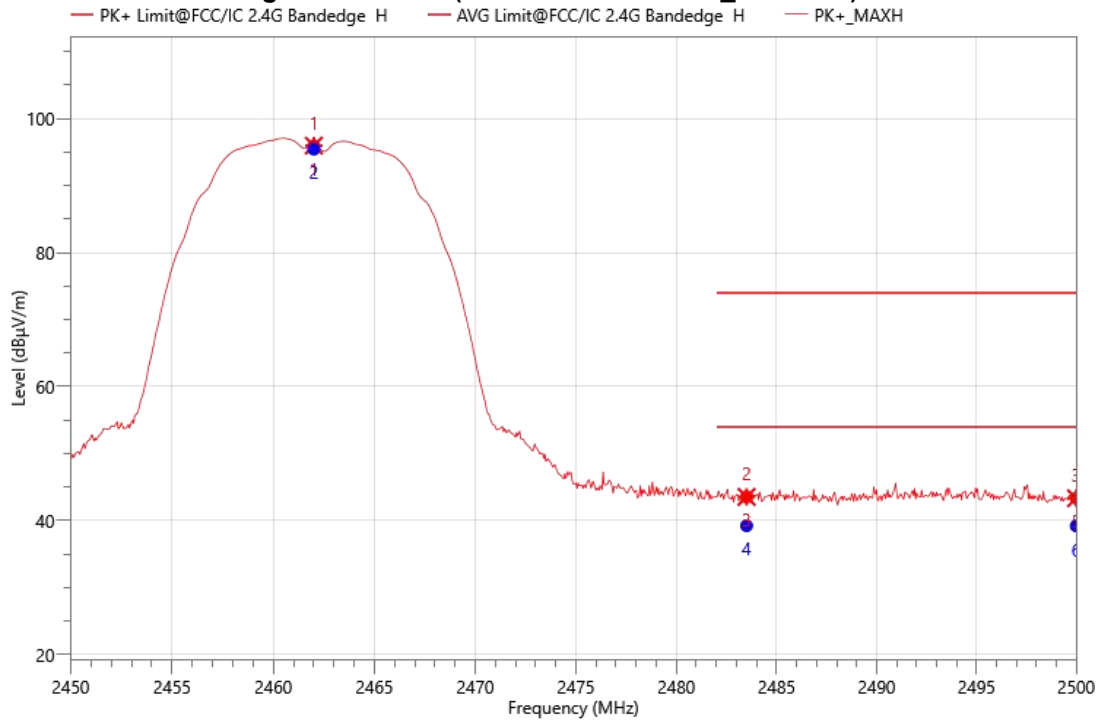
Factor = Antenna Factor + Cable Loss – Pre-amplifier;

Margin= Emission Level - Limit.

### Radiated Band Edges Test Data

|                          |                |               |         |
|--------------------------|----------------|---------------|---------|
| Environmental Conditions | 23.1°C/56.0%RH | Test Engineer | He Chen |
|--------------------------|----------------|---------------|---------|

#### Highest Channel (Worst Case: 802.11b\_2462MHz)



| Frequency (MHz) | Reading (dBuV) | Correct (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector (PEAK/AVG) | Polar (H/V) |
|-----------------|----------------|----------------|-----------------|----------------|-------------|---------------------|-------------|
| 2483.500        | 47.09          | -3.54          | 43.55           | 74.00          | 30.45       | PK+                 | V           |
| 2483.500        | 42.79          | -3.54          | 39.25           | 54.00          | 14.75       | AVG                 | V           |
| 2500.000        | 46.85          | -3.5           | 43.35           | 74.00          | 30.65       | PK+                 | V           |
| 2500.000        | 42.72          | -3.5           | 39.22           | 54.00          | 14.78       | AVG                 | V           |

#### Remark:

Emission Level = Reading + Factor;

Factor = Antenna Factor + Cable Loss – Pre-amplifier;

Margin= Emission Level - Limit.

## 10. POWER LINE CONDUCTED EMISSIONS

### 10.1. LIMIT

According to the rule FCC Part 15.207 and RSS-Gen 8.8, Conducted emissions limit, the limit for a wireless device as below:

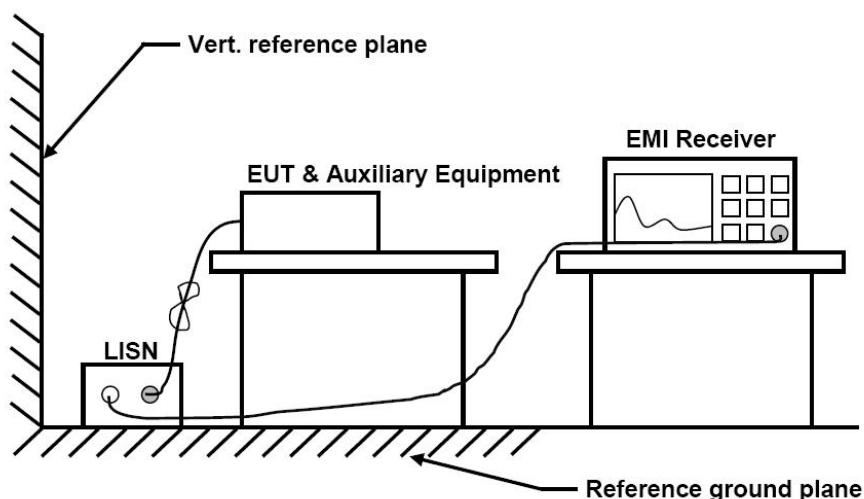
| Frequency Range (MHz) | Conducted emissions (dBuV) |          |
|-----------------------|----------------------------|----------|
|                       | Quasi-peak                 | Average  |
| 0.15~0.5              | 66 to 56                   | 56 to 46 |
| 0.5~5                 | 56                         | 46       |
| 5~30                  | 60                         | 50       |

Remark:

a) The lower limit shall apply at the transition frequencies.

b) The limit decreases linearly with the logarithm of the frequency in the range 0.15 to 0.50MHz.

### 10.2. TEST SETUP



### 10.3. TEST PROCEDURE

Test frequency range :150KHz-30MHz

- The mains terminal disturbance voltage test was conducted in a shielded room.
- The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a  $50\Omega/50\mu\text{H} + 5\Omega$  linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.
- The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,
- The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal

ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.

e) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.

#### 10.4. TEST RESULT

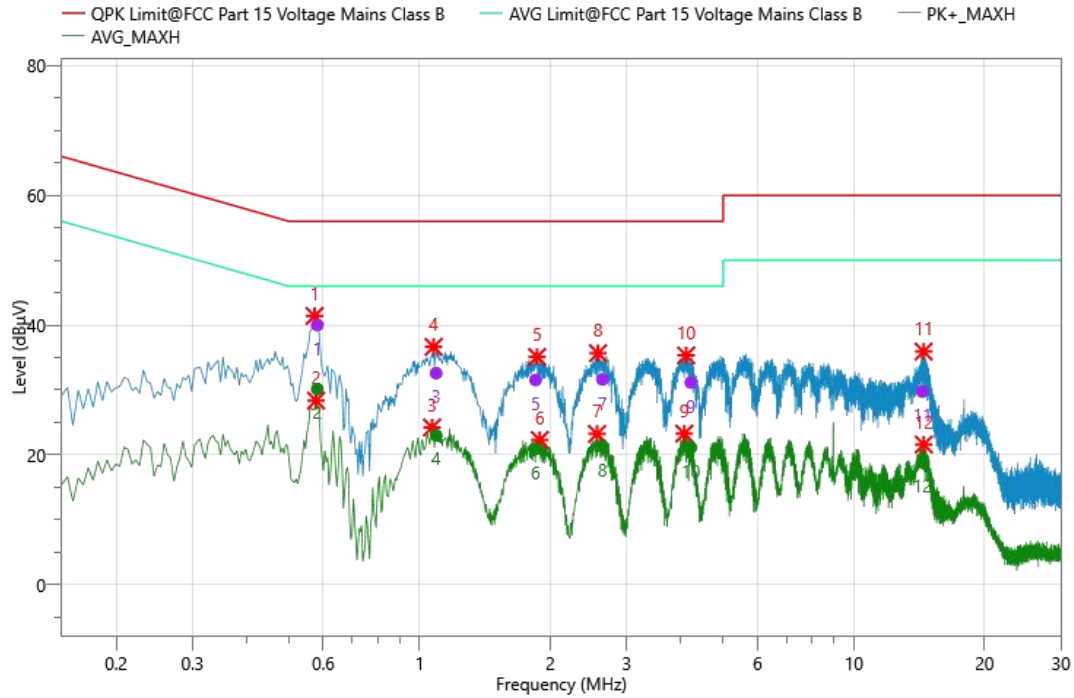
**Pass.**

Remark:

For AC line conducted emissions, the maximum peak output power ax20 mode and Middle Channel channel was tested.

## Test Plots and Data of Conducted Emissions (ax20, Middle Channel)

|                          |                |                  |         |
|--------------------------|----------------|------------------|---------|
| Environmental Conditions | 22.7°C/56.1%RH | Test Engineer    | He Chen |
| Test Voltage:            | AC 120V/60Hz   | Test Power Line: | Line    |



| No. | Freq. (MHz) | Reading (dBμV) | Corr. (dB) | Meas. (dBμV) | Limit (dBμV) | Margin (dB) | Det. | Line | PE  |
|-----|-------------|----------------|------------|--------------|--------------|-------------|------|------|-----|
| 1   | 0.581       | 29.88          | 10.13      | 40.01        | 56.00        | 15.99       | QPK  | L1   | GND |
| 2   | 0.581       | 20.01          | 10.13      | 30.14        | 46.00        | 15.86       | AVG  | L1   | GND |
| 3   | 1.091       | 22.34          | 10.25      | 32.59        | 56.00        | 23.41       | QPK  | L1   | GND |
| 4   | 1.091       | 12.75          | 10.25      | 23.00        | 46.00        | 23.00       | AVG  | L1   | GND |
| 5   | 1.849       | 21.22          | 10.32      | 31.54        | 56.00        | 24.46       | QPK  | L1   | GND |
| 6   | 1.849       | 10.57          | 10.32      | 20.89        | 46.00        | 25.11       | AVG  | L1   | GND |
| 7   | 2.637       | 21.23          | 10.4       | 31.63        | 56.00        | 24.37       | QPK  | L1   | GND |
| 8   | 2.637       | 10.89          | 10.4       | 21.29        | 46.00        | 24.71       | AVG  | L1   | GND |
| 9   | 4.213       | 20.56          | 10.6       | 31.16        | 56.00        | 24.84       | QPK  | L1   | GND |
| 10  | 4.213       | 10.52          | 10.6       | 21.12        | 46.00        | 24.88       | AVG  | L1   | GND |
| 11  | 14.377      | 16.88          | 12.89      | 29.77        | 60.00        | 30.23       | QPK  | L1   | GND |
| 12  | 14.377      | 5.92           | 12.89      | 18.81        | 50.00        | 31.19       | AVG  | L1   | GND |

## Remark:

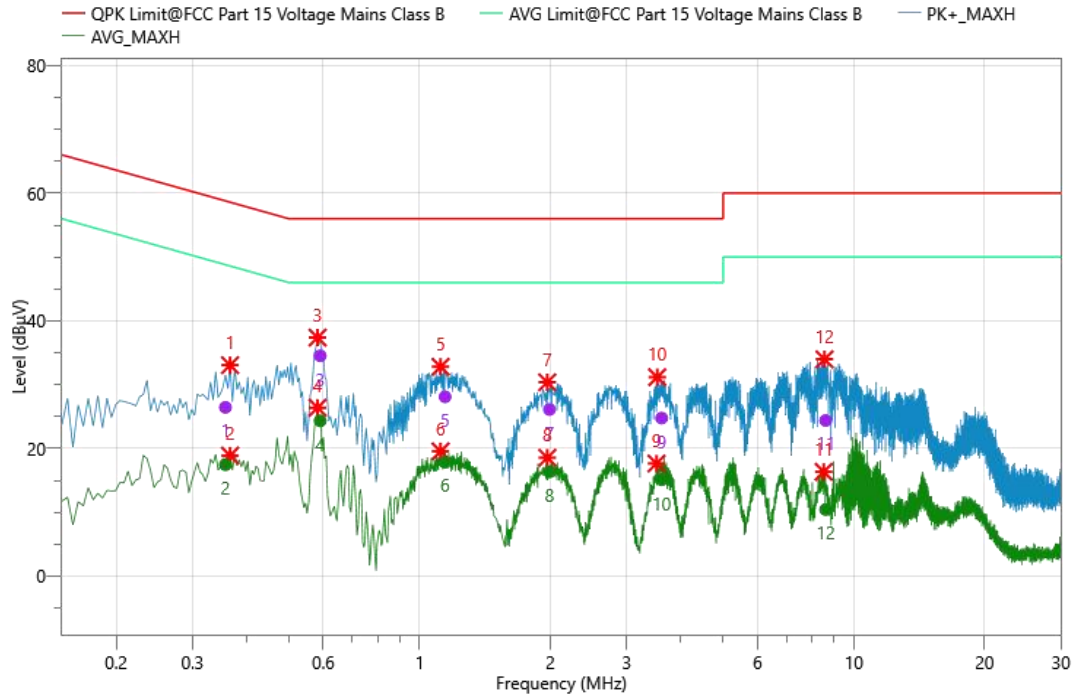
Emission Level = Reading + Correct Factor;

Correct Factor = LISN Factor + Cable Loss + Pulse Limiter Attenuation Factor

Margin= Limit- Emission Level .

## Test Plots and Data of Conducted Emissions(ax20, Middle Channel)

|                          |               |                  |         |
|--------------------------|---------------|------------------|---------|
| Environmental Conditions | 22.7℃/56.1%RH | Test Engineer    | He Chen |
| Test Voltage:            | AC 120V/60Hz  | Test Power Line: | Neutral |



| No. | Freq. (MHz) | Reading (dBμV) | Corr. (dB) | Meas. (dBμV) | Limit (dBμV) | Margin (dB) | Det. | Line | PE  |
|-----|-------------|----------------|------------|--------------|--------------|-------------|------|------|-----|
| 1   | 0.357       | 16.37          | 10.09      | 26.46        | 58.80        | 32.34       | QPK  | N    | GND |
| 2   | 0.357       | 7.38           | 10.09      | 17.47        | 48.80        | 31.33       | AVG  | N    | GND |
| 3   | 0.590       | 24.40          | 10.13      | 34.53        | 56.00        | 21.47       | QPK  | N    | GND |
| 4   | 0.590       | 14.21          | 10.13      | 24.34        | 46.00        | 21.66       | AVG  | N    | GND |
| 5   | 1.144       | 17.86          | 10.25      | 28.11        | 56.00        | 27.89       | QPK  | N    | GND |
| 6   | 1.144       | 7.62           | 10.25      | 17.87        | 46.00        | 28.13       | AVG  | N    | GND |
| 7   | 1.991       | 15.79          | 10.33      | 26.12        | 56.00        | 29.88       | QPK  | N    | GND |
| 8   | 1.991       | 6.02           | 10.33      | 16.35        | 46.00        | 29.65       | AVG  | N    | GND |
| 9   | 3.608       | 14.29          | 10.49      | 24.78        | 56.00        | 31.22       | QPK  | N    | GND |
| 10  | 3.608       | 4.62           | 10.49      | 15.11        | 46.00        | 30.89       | AVG  | N    | GND |
| 11  | 8.612       | 13.17          | 11.23      | 24.40        | 60.00        | 35.60       | QPK  | N    | GND |
| 12  | 8.612       | -0.78          | 11.23      | 10.45        | 50.00        | 39.55       | AVG  | N    | GND |

## Remark:

Emission Level = Reading + Correct Factor;

Correct Factor = LISN Factor + Cable Loss + Pulse Limiter Attenuation Factor

Margin= Limit- Emission Level .

## 11. PHOTOGRAPHS OF TEST SETUP

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

## 12. EXTERNAL PHOTOGRAPHS OF THE EUT

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

## 13. INTERNAL PHOTOGRAPHS OF THE EUT

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

\*\*\*\*\*THE END\*\*\*\*\*