# TEST REPORT

## No. I17D00262-SRD03

***For***

**Client : Shanghai Sunmi Technology Co.,Ltd.**

**Production : POS System**

**Model Name : W5920**

**FCC ID: 2AH25V1SNFC**

**Hardware Version: 2.0**

**Software Version: 1.1.0**

**Issued date: 2018-01-12**

**Note:**

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of ECIT Shanghai.

**Test Laboratory:**

ECIT Shanghai, East China Institute of Telecommunications

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**Revision Version**

| Report Number | Revision | Date | Memo |
|---|---|---|---|
| I17D00262-SRD03 | 00 | 2018-01-12 | Initial creation of test report |

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# 1. Test Laboratory

## 1.1. Testing Location

| | |
|---|---|
| Company Name: | ECIT Shanghai, East China Institute of Telecommunications |
| Address: | 7-8F, G Area, No. 668, Beijing East Road, Huangpu District, Shanghai, P. R. China |
| Postal Code: | 200433 |
| Telephone: | (+86)-021-63843300 |
| Fax: | (+86)-021-63843301 |

## 1.2. Testing Environment

| | |
|---|---|
| Normal Temperature: | 15-35℃ |
| Extreme Temperature: | -10/+55℃ |
| Relative Humidity: | 20-75% |

## 1.3. Project data

| | |
|---|---|
| Project Leader: | Zhou Yan |
| Testing Start Date: | 2017-12-14 |
| Testing End Date: | 2018-01-05 |

## 1.4. Signature

**Shi Hongqi**
**(Prepared this test report)**

**Ding Li**
**(Reviewed this test report)**

**Zheng Zhongbin**
**Director of the laboratory**
**(Approved this test report)**

# 2. Client Information

## 2.1. Applicant Information

| | |
|---|---|
| Company Name: | Shanghai Sunmi Technology Co.,Ltd. |
| Address: | Room 605, Block 7, KIC Plaza, No.388 Song Hu Road, Yang Pu District, Shanghai, China |
| Postcode: | 200433 |
| Telephone: | 18721763396 |

## 2.2. Manufacturer Information

| | |
|---|---|
| Company Name: | Shanghai Sunmi Technology Co.,Ltd. |
| Address: | Room 605, Block 7, KIC Plaza, No.388 Song Hu Road, Yang Pu District, Shanghai, China |
| Postcode: | 200433 |
| Telephone: | 18721763396 |

# 3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

## 3.1. About EUT

| | |
|---|---|
| EUT Description | Wireless data POS System |
| Model name | W5920 |
| WLAN Frequency | 2412MHz-2462MHz |
| WLAN Channel | Channel1-Channel11 |
| WLAN type of modulation | 802.11b:DSSS<br>802.11g/n: OFDM |
| Extreme Temperature | -10/+55℃ |
| Nominal Voltage | 3.6 V |
| Extreme High Voltage | 4.2 V |
| Extreme Low Voltage | 3.5 V |

## 3.2. Internal Identification of EUT used during the test

| EUT ID* | SN or IMEI | HW Version | SW Version | Date of receipt |
|---|---|---|---|---|
| N02 | 865150030317082 | 2.0 | 1.1.0 | 2017-11-24 |

*EUT ID: is used to identify the test sample in the lab internally.

## 3.3. Internal Identification of AE used during the test

| AE ID* | Description | SN |
|---|---|---|
| AE1 | RF cable | --- |

*AE ID: is used to identify the test sample in the lab internally.

# 4. Reference Documents

## 4.1. Reference Documents for testing

The following documents listed in this section are referred for testing.

| Reference | Title | Version |
|---|---|---|
| FCC Part15 | 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. | Jun,2016 Edition |
| ANSI 63.10 | Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9KHz to 40GHz | 2013 |

# 5. Summary of Test Results

A brief summary of the tests carried out is shown as following.

| Measurement Items | Sub-clause of Part15C | Sub-clause of IC | Verdict |
|---|---|---|---|
| Transmitter Spurious Emission-Radiated | 15.247,15.209, | / | P |
| AC Powerline Conducted Emission | 15.107,15.207 | / | P |

Please refer to part 5 for detail.

The measurements are according to Public notice KDB558074 and ANSI C63.4.

Terms used in Verdict column

| | |
|---|---|
| P | Pass, the EUT complies with the essential requirements in the standard. |
| NP | Not Perform, the test was not performed by ECIT. |
| NA | Not Applicable, the test was not applicable. |
| F | Fail, the EUT does not comply with the essential requirements in the standard. |

Test Conditions

| | |
|---|---|
| Tnom | Normal temperature |
| Tmin | Low Temperature |
| Tmax | High Temperature |
| Vnom | Normal Voltage |
| Vmin | Low Voltage |
| Vmax | High Voltage |
| Hnom | Norm Humidity |
| Anom | Norm Air Pressure |

For this report, all the test case listed above are tested under Normal Temperature and Normal Voltage, and also under norm humidity, the specific conditions as following:

| | | |
|---|---|---|
| Temperature | Tnom | 22℃ |
| Voltage | Vnom | 3.6V |
| Humidity | Hnom | 48% |
| Air Pressure | Anom | 1010hPa |

## 5.1. Notes

All reported tests were carried out on a sample equipment to demonstrate limited compliance with section 3.

The test results of this test report relate exclusively to the item(s) tested as specified in section 5.

## 5.2. Statements

The W5920, supporting GSM /WCDMA /BT/BLE/WIFI/GPS/NFC, manufactured by Shanghai Sunmi Technology Co.,Ltd.. is a variant product for testing.

We only test worst-case of RSE and AC Power line ,The other test cases please refer to the prototype report No: CCISE170603504, which was prepared by Shenzhen Zhongjian Nanfang Testing Co.,Ltd

ECIT has verified that the compliance of the tested device specified in section 5 of this test report is successfully evaluated according to the procedure and test methods as defined in type certification requirement listed in section 5 of this test report.

# 6. Test result

## 6.1. Transmitter Spurious Emission-Radiated

### 6.1.1 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 25.205(a), must also comply with the radiated emission limits specified in 15.209(a)(see 15.205(c)). The measurement is according to ANSI C63.10 clause 11.11 and 11.12.

### 6.1.2 Limit in restricted band:

| Frequency of emission(MHz) | Field strength(uV/m) | Field strength(dBuV/m) |
|---|---|---|
| 30~88 | 100 | 40 |
| 88~216 | 150 | 43.5 |
| 216~960 | 200 | 46 |
| Above 960 | 500 | 54 |

### 6.1.3 Test procedures

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, 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 C63.4-2013 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 testing, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emission from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

| Frequency of emission (MHz) | RBW/VBW | Sweep Times (s) |
|---|---|---|

| | | |
|---|---|---|
| 30~1000 | 100KHz/300KHz | 5 |
| 1000~4000 | 1MHz/1MHz | 15 |
| 4000~18000 | 1MHz/1MHz | 40 |
| 18000~26500 | 1MHz/1MHz | 20 |

**802.11b/g mode**

| Mode | Channel | Frequency Range | Test Results | Conclusion |
|---|---|---|---|---|
| 802.11b | Power | 2.38GHz~2.45GHz | Fig 1. | P |
| | Power | 2.45GHz~2.5GHz | Fig 2. | P |
| | 1 | 30MHz~1GHz | Fig 3. | P |
| | | 1GHz~3GHz | Fig 4. | P |
| | | 3GHz~18GHz | Fig 5. | P |
| 802.11g | Power | 2.38GHz~2.45GHz | Fig 6. | P |
| | Power | 2.45GHz~2.5GHz | Fig 7. | P |
| | 1 | 30MHz~1GHz | Fig 8. | P |
| | | 1GHz~3GHz | Fig 9. | P |
| | | 3GHz~18GHz | Fig 10. | P |

**802.11n mode**

| Mode | Channel | Frequency Range | Test Results | Conclusion |
|---|---|---|---|---|
| 802.11n(20MHz) | Power | 2.38GHz~2.45GHz | Fig 11. | P |
| | Power | 2.45GHz~2.5GHz | Fig 12. | P |
| | 1 | 30MHz~1GHz | Fig 13. | P |
| | | 1GHz~3GHz | Fig 14. | P |
| | | 3GHz~18GHz | Fig 15. | P |
| 802.11n(40MHz) | Power | 2.38GHz~2.45GHz | Fig 16. | P |
| | Power | 2.45GHz~2.5GHz | Fig 17. | P |

| | | | | |
|---|---|---|---|---|
| | 3 | 30MHz~1GHz | Fig 18. | P |
| | | 1GHz~3GHz | Fig 19. | P |
| | | 3GHz~18GHz | Fig 20. | P |

**Conclusion: PASS**

**Note:**

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.

$P_{Mea}$ is the field strength recorded from the instrument.

The measurement results are obtained as described below:

ARpi = Cable loss + Antenna Gain-Preamplifier gain

Result = $P_{Mea}$ + Cable loss + Antenna Gain-Preamplifier gain = $P_{Mea}$ + ARpi .

**802.11b mode**

**Ch1 30MHz~1GHz**

| Frequency(MHz) | Result(dBuV/m) | ARpl (dB) | PMea(dBuV/m) | Polarity |
|---|---|---|---|---|
| 34.923228 | 13.73 | -21.9 | 35.63 | V |
| 35.66272 | 15.49 | -21.8 | 37.29 | V |
| 40.6976 | 19.93 | -20.6 | 40.53 | V |
| 149.190312 | 16.08 | -27.9 | 43.98 | V |
| 271.221184 | 22.53 | -22.6 | 45.13 | V |
| 896.343328 | 23.1 | -9.9 | 33 | H |

**Ch1 1GHz~3GHz (Peak)**

| Frequency(MHz) | Result(dBuV/m) | ARpl (dB) | PMea(dBuV/m) | Polarity |
|---|---|---|---|---|
| 2691.871923 | 55.03 | 7.9 | 47.13 | H |
| 2731.888654 | 54.4 | 7.8 | 46.6 | V |
| 2789.344423 | 54.78 | 7.8 | 46.98 | V |
| 2831.446153 | 54.97 | 8.1 | 46.87 | H |
| 2872.302115 | 55.67 | 8.6 | 47.07 | H |
| 2931.321346 | 55.45 | 8.7 | 46.75 | V |

**Ch1 1GHz~3GHz (Average)**

| Frequency(MHz) | Result(dBuV/m) | ARpl (dB) | PMea(dBuV/m) | Polarity |
|---|---|---|---|---|
| 2691.871923 | 42.59 | 7.9 | 34.69 | H |
| 2731.888654 | 42.58 | 7.8 | 34.78 | V |
| 2789.344423 | 42.85 | 7.8 | 35.05 | V |
| 2831.446153 | 42.86 | 8.1 | 34.76 | H |
| 2872.302115 | 43.37 | 8.6 | 34.77 | H |
| 2931.321346 | 43.68 | 8.7 | 34.98 | V |

**Ch1 3GHz~18GHz (Peak)**

| Frequency(MHz) | Result(dBuV/m) | ARpl (dB) | PMea(dBuV/m) | Polarity |
|---|---|---|---|---|
| 3619.119267 | 52.47 | -2.7 | 55.17 | H |
| 7235.810133 | 55.7 | 4.6 | 51.1 | V |
| 16126.13293 | 58.18 | 24.3 | 33.88 | H |
| 16454.27233 | 58.81 | 25.8 | 33.01 | H |
| 16830.36373 | 59.2 | 26.9 | 32.3 | V |
| 17397.54627 | 61.1 | 27.7 | 33.4 | H |

**Ch1 3GHz~18GHz (Average)**

| Frequency(MHz) | Result(dBuV/m) | ARpl (dB) | PMea(dBuV/m) | Polarity |
|---|---|---|---|---|
| 7235.810133 | 43.49 | 4.6 | 38.89 | V |
| 16126.13293 | 46.1 | 24.3 | 21.8 | H |
| 16454.27233 | 46.19 | 25.8 | 20.39 | H |
| 16830.36373 | 47.4 | 26.9 | 20.5 | V |
| 17397.54627 | 48.38 | 27.7 | 20.68 | H |

**802.11g**

**Ch1 30MHz~1GHz (Peak)**

| Frequency(MHz) | Result(dBuV/m) | ARpl (dB) | PMea(dBuV/m) | Polarity |
|---|---|---|---|---|
| 34.879896 | 13.76 | -21.9 | 35.66 | V |
| 36.54974 | 11.78 | -21.5 | 33.28 | V |

| | | | | |
|---|---|---|---|---|
| 149.166816 | 23.37 | -27.9 | 51.27 | H |
| 271.18534 | 19.87 | -22.6 | 42.47 | H |
| 876.360632 | 22.9 | -9.9 | 32.8 | H |
| 945.028372 | 23.63 | -9.2 | 32.83 | H |

**Ch1 1GHz~3GHz (Peak)**

| Frequency(MHz) | Result(dBuV/m) | ARpl (dB) | PMea(dBuV/m) | Polarity |
|---|---|---|---|---|
| 2592.244231 | 54.53 | 7.3 | 47.23 | H |
| 2682.251539 | 54.97 | 7.8 | 47.17 | V |
| 2739.432115 | 54.67 | 7.7 | 46.97 | V |
| 2837.309615 | 54.6 | 8.2 | 46.4 | V |
| 2917.753077 | 55.54 | 8.8 | 46.74 | H |
| 2995.341539 | 55.69 | 9 | 46.69 | V |

**Ch1 1GHz~3GHz (Average)**

| Frequency(MHz) | Result(dBuV/m) | ARpl (dB) | PMea(dBuV/m) | Polarity |
|---|---|---|---|---|
| 2592.244231 | 42.2 | 7.3 | 34.9 | H |
| 2682.251539 | 42.58 | 7.8 | 34.78 | V |
| 2739.432115 | 42.58 | 7.7 | 34.88 | V |
| 2837.309615 | 42.77 | 8.2 | 34.57 | V |
| 2917.753077 | 43.47 | 8.8 | 34.67 | H |
| 2995.341539 | 43.59 | 9 | 34.59 | V |

**Ch1 3GHz~18GHz (Peak)**

| Frequency(MHz) | Result(dBuV/m) | ARpl (dB) | PMea(dBuV/m) | Polarity |
|---|---|---|---|---|
| 3618.5612 | 51.72 | -2.7 | 54.42 | V |
| 7235.8504 | 57.22 | 4.6 | 52.62 | V |
| 14837.2212 | 55.34 | 20.3 | 35.04 | V |
| 15546.59567 | 56.52 | 22.5 | 34.02 | V |
| 16484.5816 | 59.09 | 26.2 | 32.89 | V |

| | | | | |
|---|---|---|---|---|
| 17495.69633 | 60.92 | 28.4 | 32.52 | H |

**Ch1 3GHz~18GHz (Average)**

| Frequency(MHz) | Result(dBuV/m) | ARpl (dB) | PMea(dBuV/m) | Polarity |
|---|---|---|---|---|
| 7235.8504 | 39.52 | 4.6 | 34.92 | V |
| 14837.2212 | 42.59 | 20.3 | 22.29 | V |
| 15546.59567 | 44.22 | 22.5 | 21.72 | V |
| 16484.5816 | 46.78 | 26.2 | 20.58 | V |
| 17495.69633 | 48.87 | 28.4 | 20.47 | H |

**802.11n-20MHz**

**Ch1 30MHz~1GHz (Peak)**

| Frequency(MHz) | Result(dBuV/m) | ARpl (dB) | PMea(dBuV/m) | Polarity |
|---|---|---|---|---|
| 34.177016 | 12.71 | -22 | 34.71 | V |
| 36.103292 | 14.12 | -21.6 | 35.72 | V |
| 47.43806 | 12.37 | -20 | 32.37 | H |
| 616.82278 | 19.11 | -13.6 | 32.71 | V |
| 856.137208 | 22.52 | -10.3 | 32.82 | V |
| 943.023684 | 23.61 | -9.2 | 32.81 | H |

**Ch1 1GHz~3GHz (Peak)**

| Frequency(MHz) | Result(dBuV/m) | ARpl (dB) | PMea(dBuV/m) | Polarity |
|---|---|---|---|---|
| 2599.557308 | 54.28 | 7.3 | 46.98 | V |
| 2733.588269 | 56.07 | 7.8 | 48.27 | V |
| 2855.538077 | 56.09 | 8.4 | 47.69 | V |
| 2897.780769 | 55.69 | 8.9 | 46.79 | V |
| 2961.4575 | 55.65 | 8.7 | 46.95 | V |
| 2997.833654 | 56.62 | 9 | 47.62 | V |

**Ch1 1GHz~3GHz (Average)**

| Frequency(MHz) | Result(dBuV/m) | ARpl (dB) | PMea(dBuV/m) | Polarity |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| 2599.557308 | 42.08 | 7.3 | 34.78 | V |
| 2733.588269 | 42.64 | 7.8 | 34.84 | V |
| 2855.538077 | 43.08 | 8.4 | 34.68 | V |
| 2897.780769 | 43.55 | 8.9 | 34.65 | V |
| 2961.4575 | 43.56 | 8.7 | 34.86 | V |
| 2997.833654 | 43.57 | 9 | 34.57 | V |

**Ch1 3GHz~18GHz (Peak)**

| Frequency(MHz) | Result(dBuV/m) | ARpl (dB) | PMea(dBuV/m) | Polarity |
|---|---|---|---|---|
| 13426.39727 | 53.05 | 17.3 | 35.75 | H |
| 14319.366 | 54.08 | 20 | 34.08 | H |
| 15480.5916 | 56.54 | 22.7 | 33.84 | H |
| 16198.72427 | 58.39 | 25.1 | 33.29 | V |
| 16801.7358 | 59.8 | 27 | 32.8 | H |
| 17589.8292 | 61.59 | 28.7 | 32.89 | V |

**Ch1 3GHz~18GHz(Average)**

| Frequency(MHz) | Result(dBuV/m) | ARpl (dB) | PMea(dBuV/m) | Polarity |
|---|---|---|---|---|
| 14319.366 | 42.11 | 20 | 22.11 | H |
| 15480.5916 | 44.19 | 22.7 | 21.49 | H |
| 16198.72427 | 46.2 | 25.1 | 21.1 | V |
| 16801.7358 | 47.28 | 27 | 20.28 | H |
| 17589.8292 | 49.06 | 28.7 | 20.36 | V |

**802.11n-40MHz**

**Ch3 30MHz~1GHz (Peak)**

| Frequency(MHz) | Result(dBuV/m) | ARpl (dB) | PMea(dBuV/m) | Polarity |
|---|---|---|---|---|
| 34.887284 | 19.07 | -21.9 | 40.97 | V |
| 40.693004 | 30.75 | -20.6 | 51.35 | V |
| 67.7995 | 27.77 | -24.3 | 52.07 | V |

| | | | | |
|---|---|---|---|---|
| 149.142012 | 32.69 | -27.9 | 60.59 | H |
| 176.30342 | 24.23 | -25.5 | 49.73 | H |
| 271.182948 | 20.15 | -22.6 | 42.75 | V |

**Ch3 1GHz~3GHz (Peak)**

| Frequency(MHz) | Result(dBuV/m) | ARpl (dB) | PMea(dBuV/m) | Polarity |
|---|---|---|---|---|
| 1794.4224 | 48.85 | 1.4 | 47.45 | H |
| 1946.6352 | 48.19 | 1.7 | 46.49 | H |
| 2089.724 | 49.3 | 2.5 | 46.8 | H |
| 2627.178846 | 54.16 | 7.5 | 46.66 | V |
| 2714.149231 | 54.69 | 7.8 | 46.89 | H |
| 2776.856538 | 54.66 | 7.8 | 46.86 | V |

**Ch3 1GHz~3GHz (Average)**

| Frequency(MHz) | Result(dBuV/m) | ARpl (dB) | PMea(dBuV/m) | Polarity |
|---|---|---|---|---|
| 2627.178846 | 42.21 | 7.5 | 34.71 | H |
| 2714.149231 | 42.44 | 7.8 | 34.64 | V |
| 2776.856538 | 42.66 | 7.8 | 34.86 | V |

**Ch3 3GHz~18GHz (Peak)**

| Frequency(MHz) | Result(dBuV/m) | ARpl (dB) | PMea(dBuV/m) | Polarity |
|---|---|---|---|---|
| 3634.140533 | 46.66 | -2.4 | 49.06 | H |
| 4846.270933 | 56.6 | -0.1 | 56.7 | H |
| 7259.955867 | 52.05 | 4.7 | 47.35 | V |
| 11007.32013 | 52.27 | 14.3 | 37.97 | H |
| 13502.75373 | 54.3 | 18.1 | 36.2 | H |
| 16510.88667 | 59.94 | 26.3 | 33.64 | V |

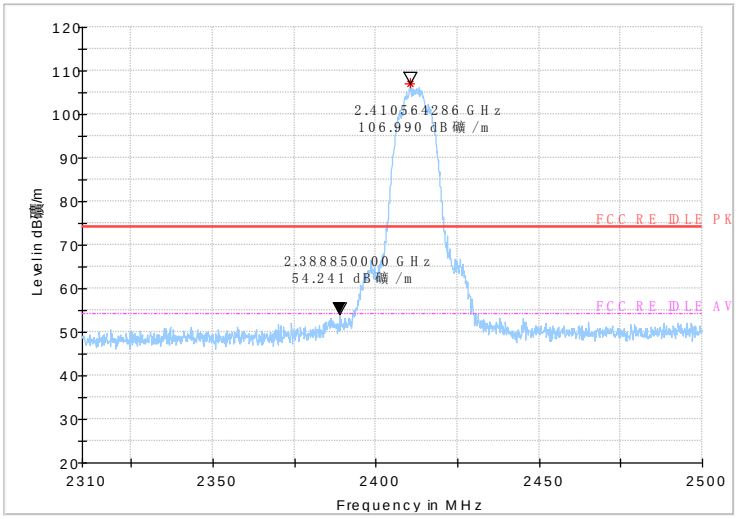
**Ch3 3GHz~18GHz (Average)**

| Frequency(MHz) | Result(dBuV/m) | ARpl (dB) | PMea(dBuV/m) | Polarity |
|---|---|---|---|---|
| 4846.270933 | 35.72 | -0.1 | 35.82 | H |

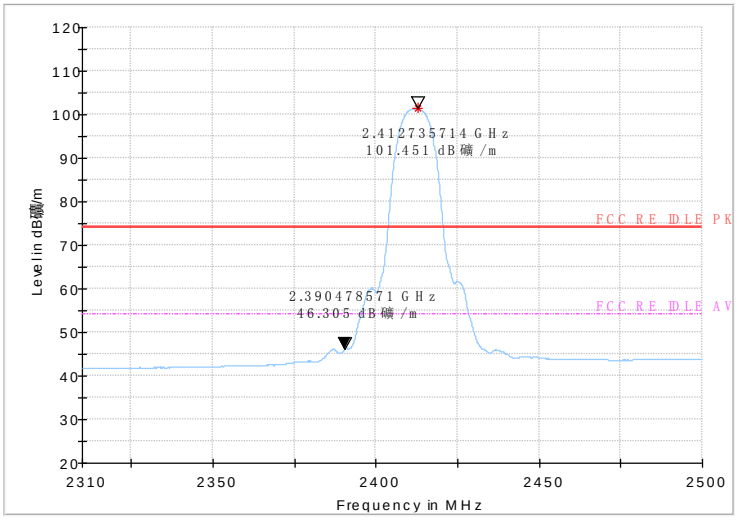
| | | | | |
|---|---|---|---|---|
| 13502.75373 | 41.49 | 18.1 | 23.39 | H |
| 16510.88667 | 46.89 | 26.3 | 20.59 | V |

**Note: Only the worst case is written in the report.**

**Test graphs as below:**

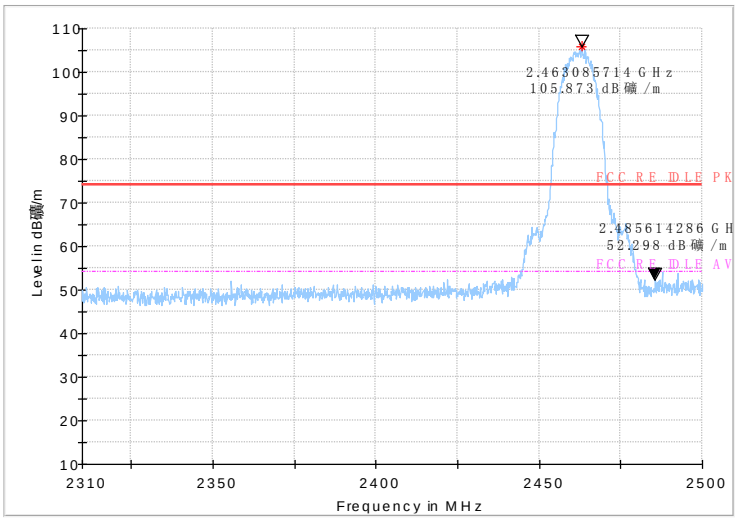



**Peak detector**

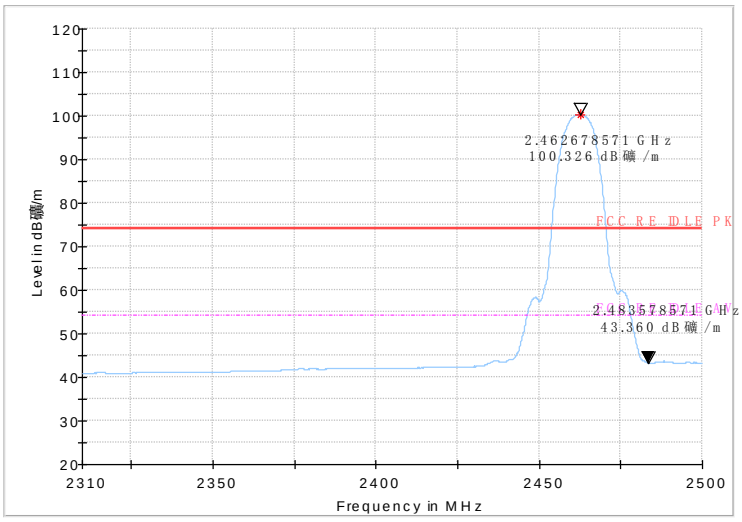



**AV detector**

**Fig 1. Radiated emission (Power): 802.11b, low channel**




**Peak detector**




**AV detector**

**Fig 2. Radiated emission (Power): 802.11b, high channel**

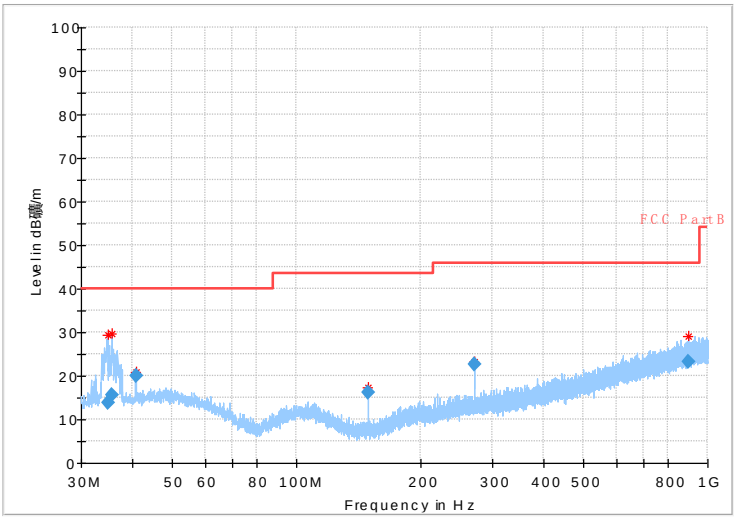



**Fig 3. Radiated Spurious Emission (802.11b,Ch1,30MHz~1GHz)**

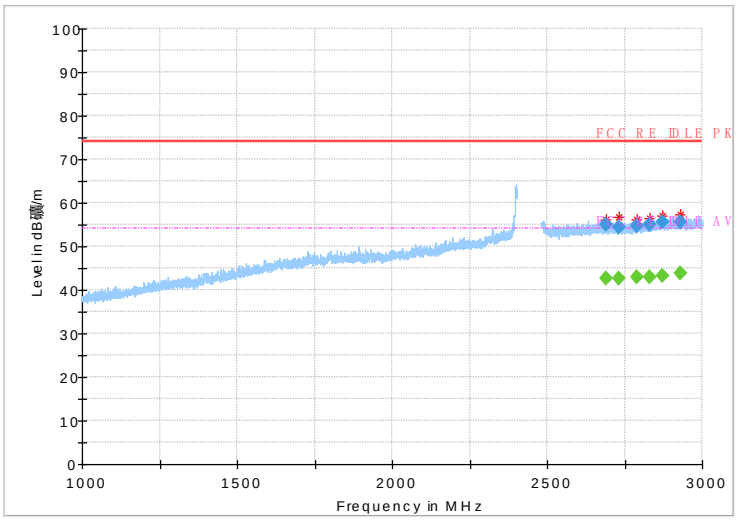



**Fig 4. Radiated Spurious Emission (802.11b,Ch1,1GHz~3GHz)**

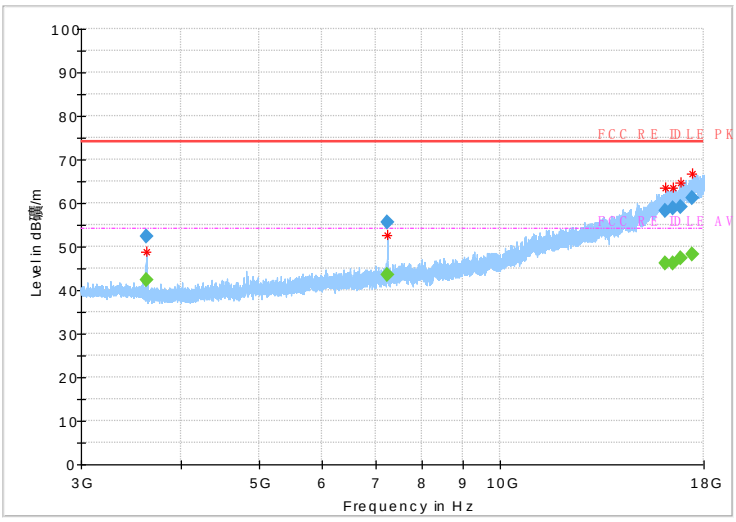
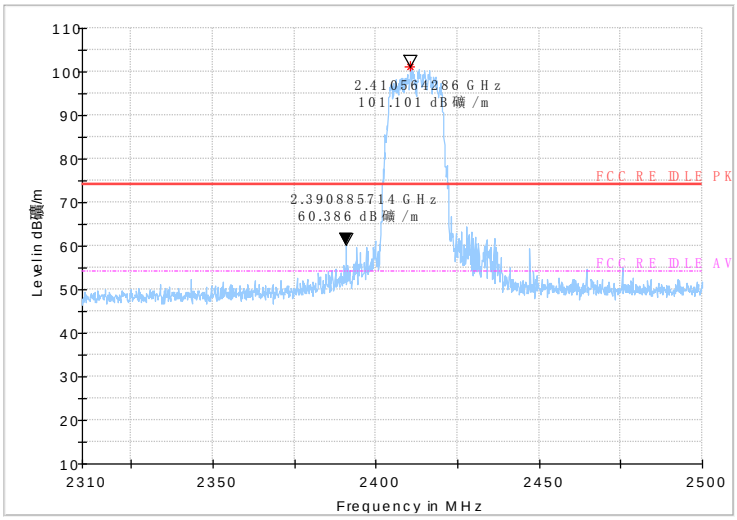
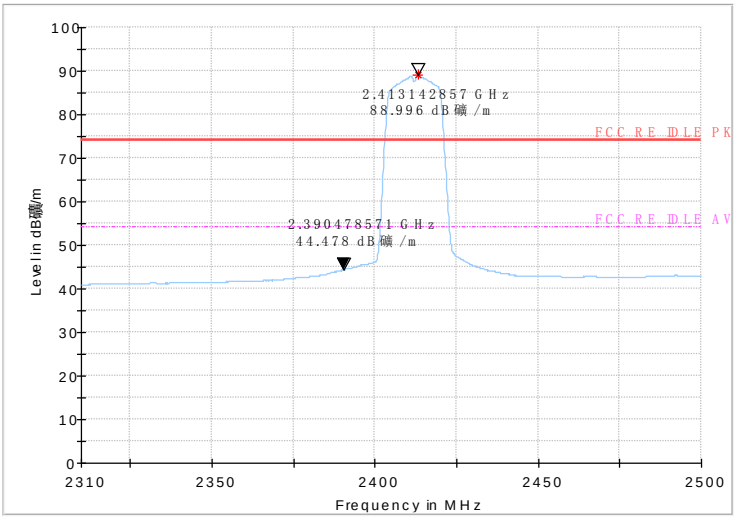


**Fig 5. Radiated Spurious Emission (802.11b,Ch1,3GHz~18GHz)**

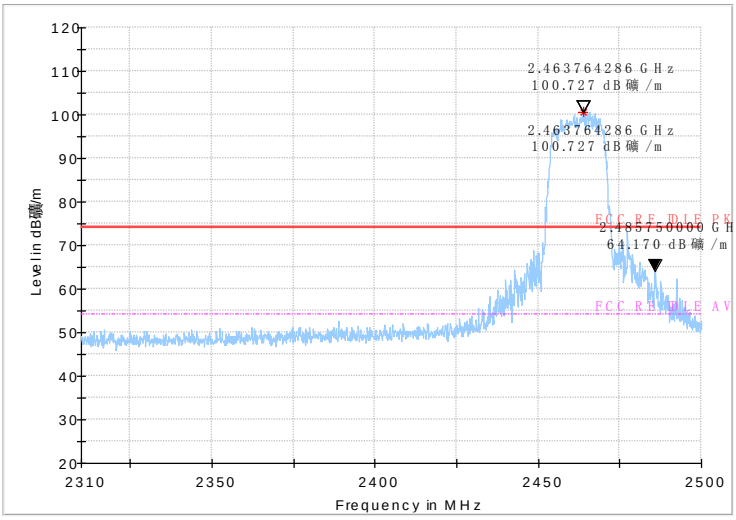



**Peak detector**

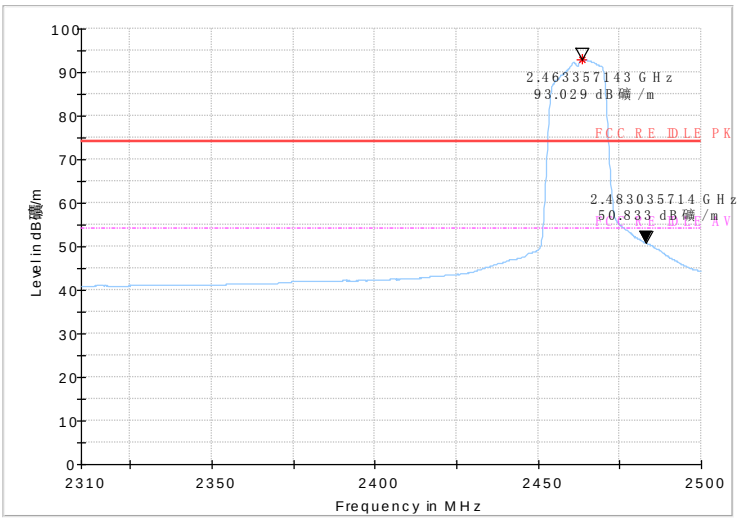



**AV detector**

**Fig 6. Radiated emission (Power): 802.11g, low channel**




**Peak detector**




**AV detector**

**Fig 7. Radiated emission (Power): 802.11g, high channel**

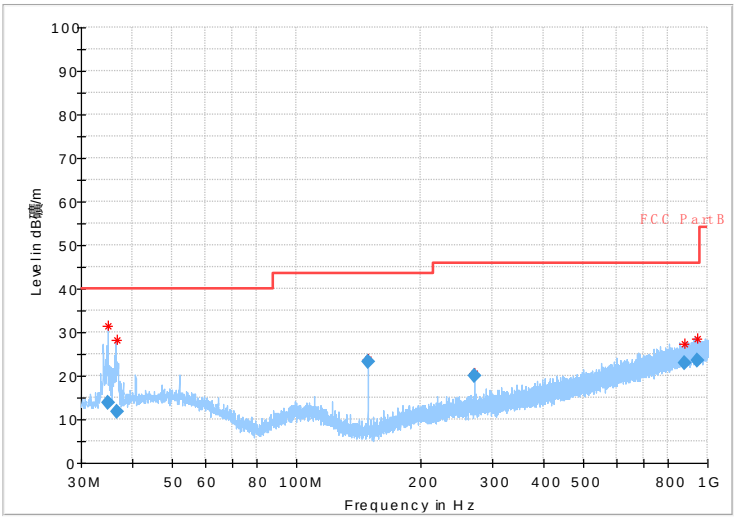



**Fig 8. Radiated Spurious Emission (802.11g,Ch1,30MHz~1GHz)**

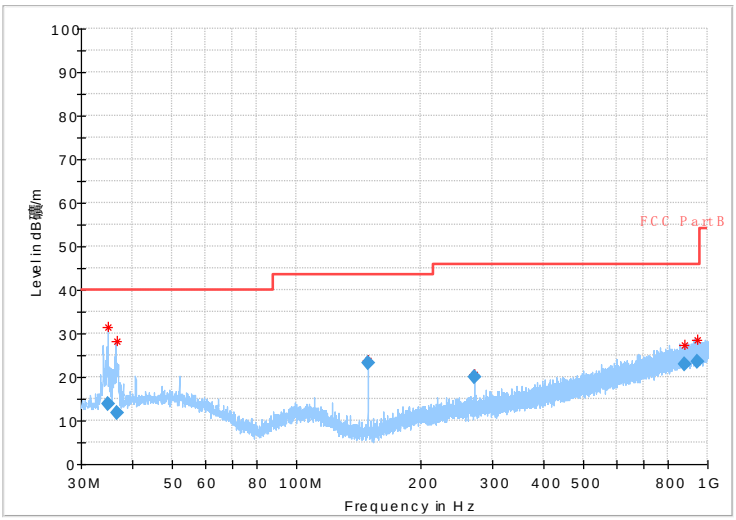



**Fig 9. Radiated Spurious Emission (802. 1g,Ch11,1GHz~3GHz)**

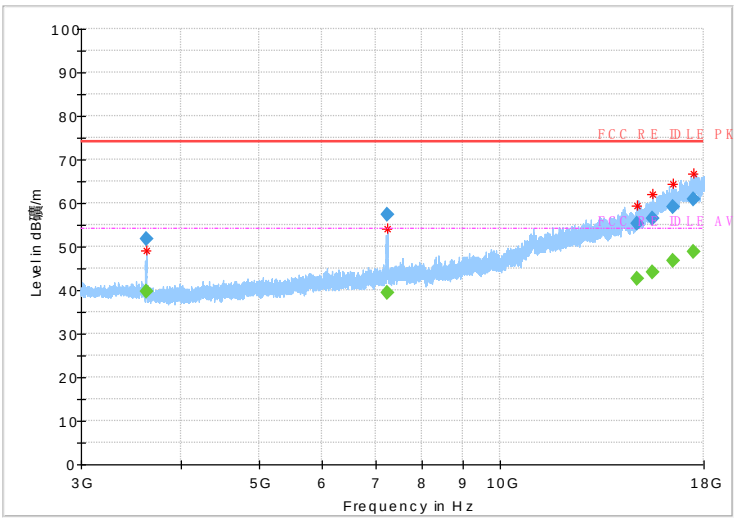
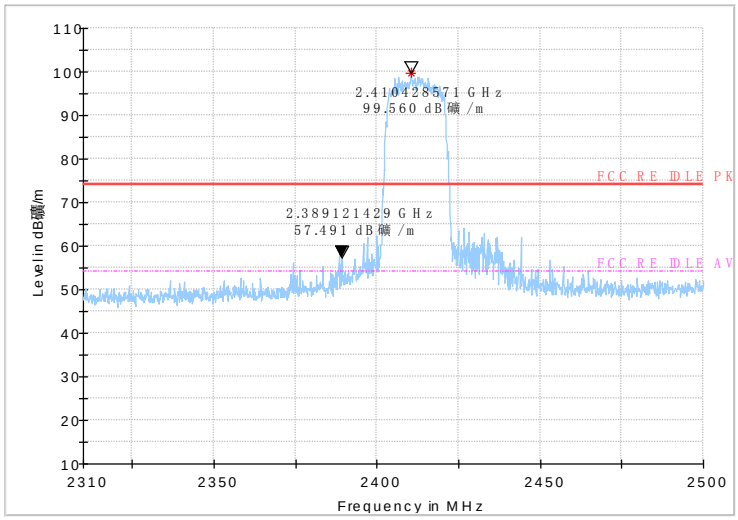
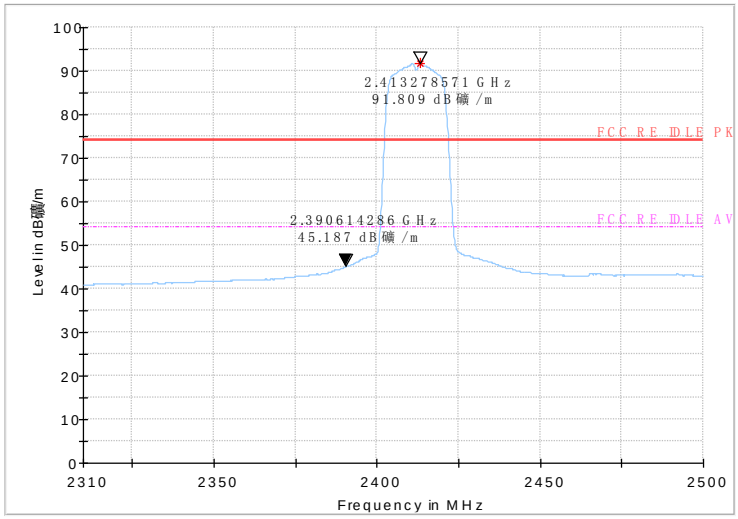


**Fig 10. Radiated Spurious Emission (802.11g,Ch1,3GHz~18GHz)**

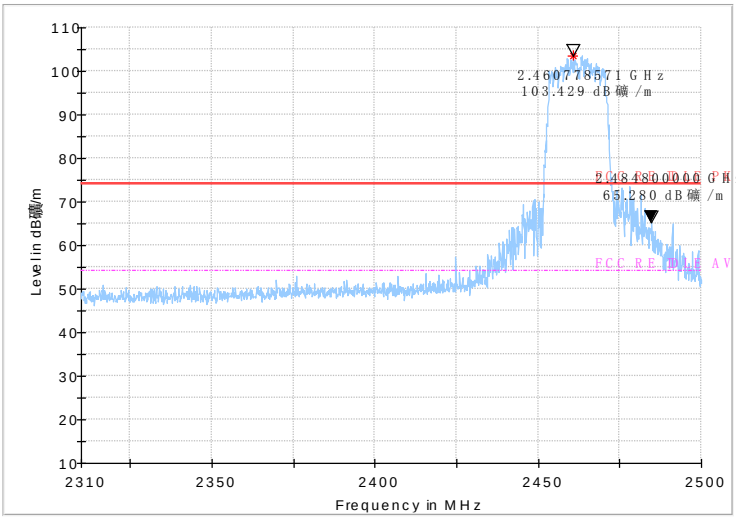



**Peak detector**

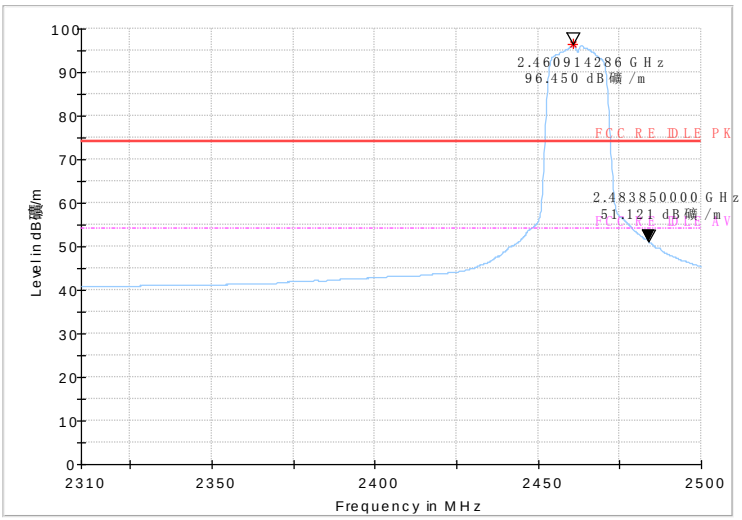



**AV detector**

**Fig 11. Radiated emission (Power): 802.11n, low channel**




**Peak detector**




**AV detector**

**Fig 12. Radiated emission (Power): 802.11n, high channel**

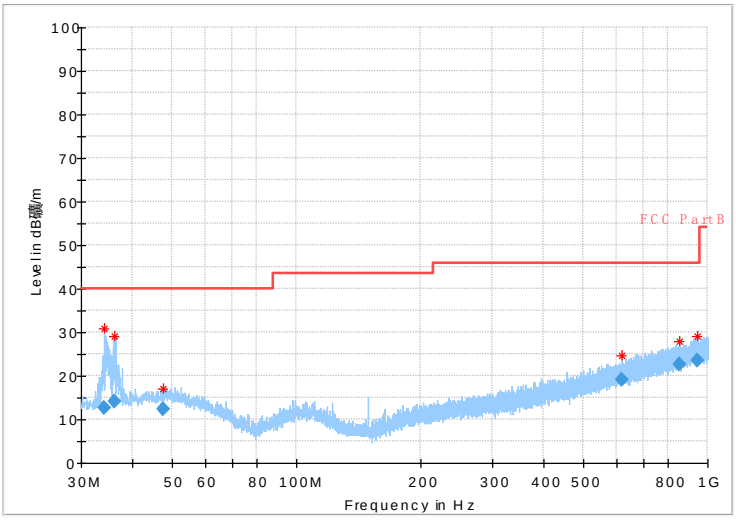



**Fig 13. Radiated Spurious Emission (802.11 n-20MHz,Ch1,30MHz~1GHz)**

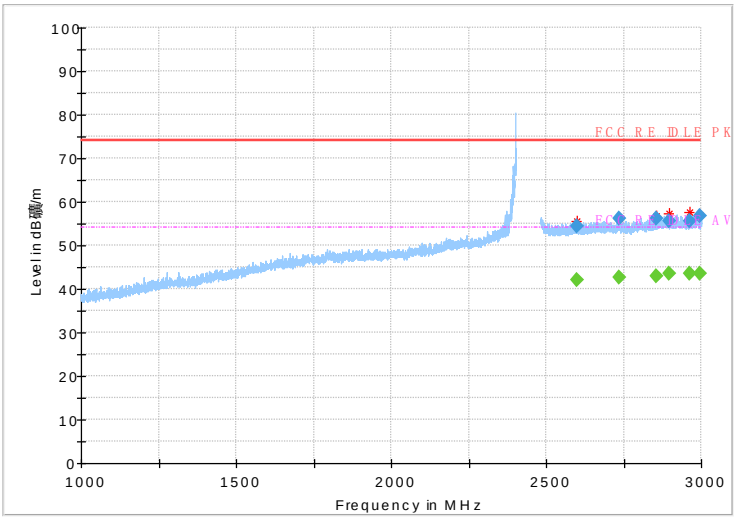



**Fig 14. Radiated Spurious Emission (802.1 n-20MHz,Ch1,1GHz~3GHz)**

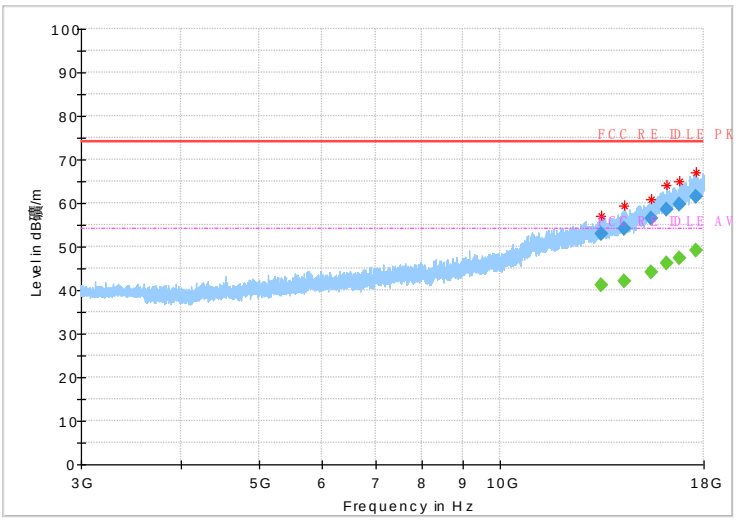
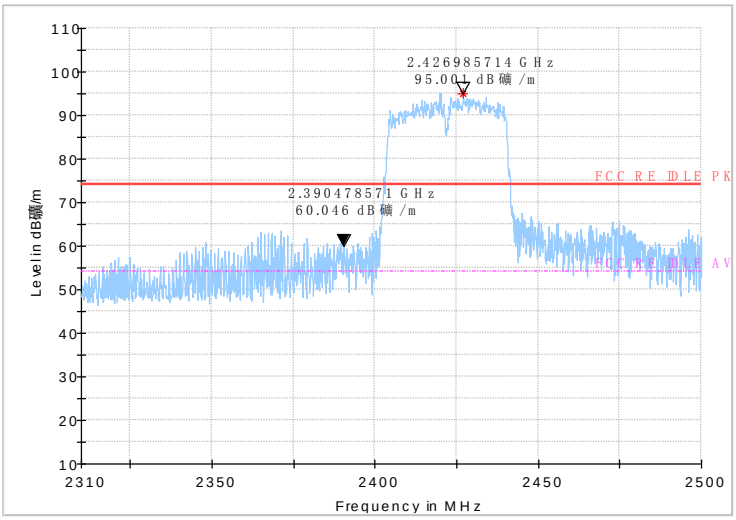
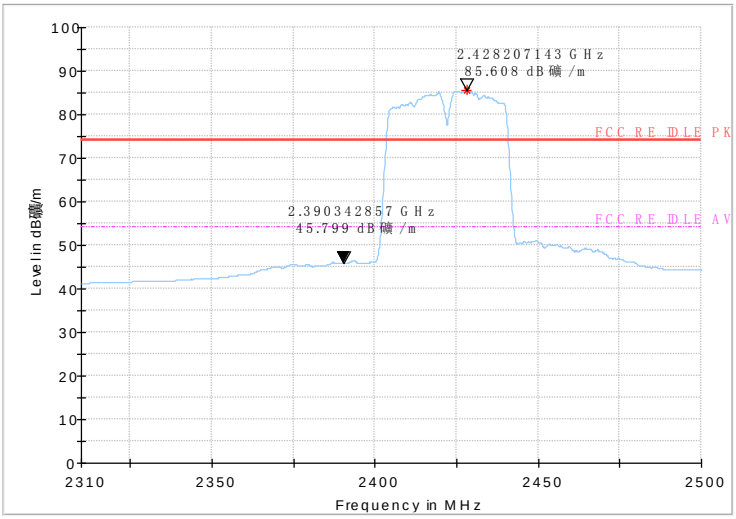


**Fig 15. Radiated Spurious Emission (802.1 n-20MHz,Ch1,3GHz~18GHz)**

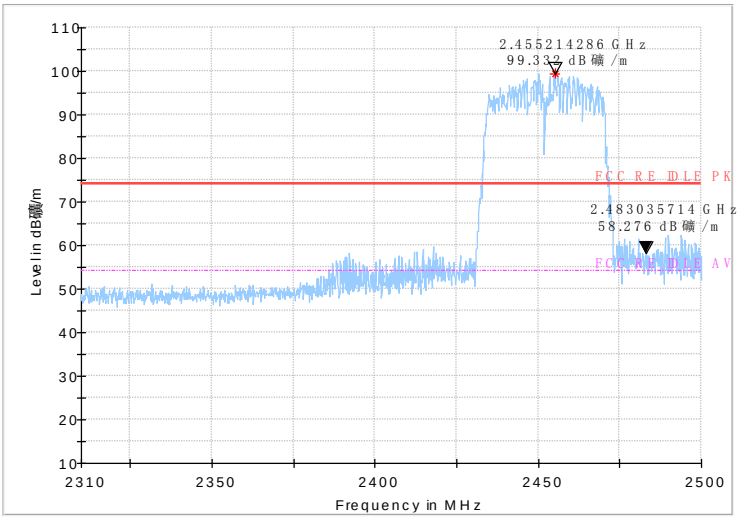



**Peak detector**

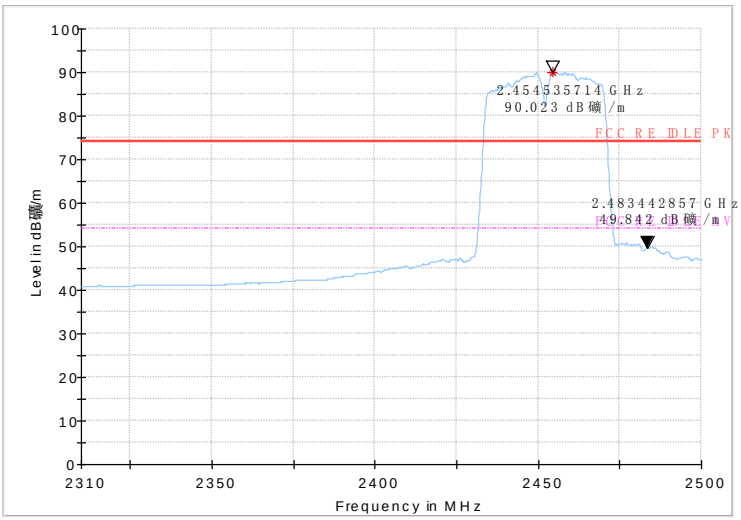



**Average detector**

**Fig 16. Radiated emission (Power): 802.11n（40M）, low channel**




**Peak detector**




**Average detector**

**Fig 17. Radiated emission (Power): 802.11n（40M）, high channel**

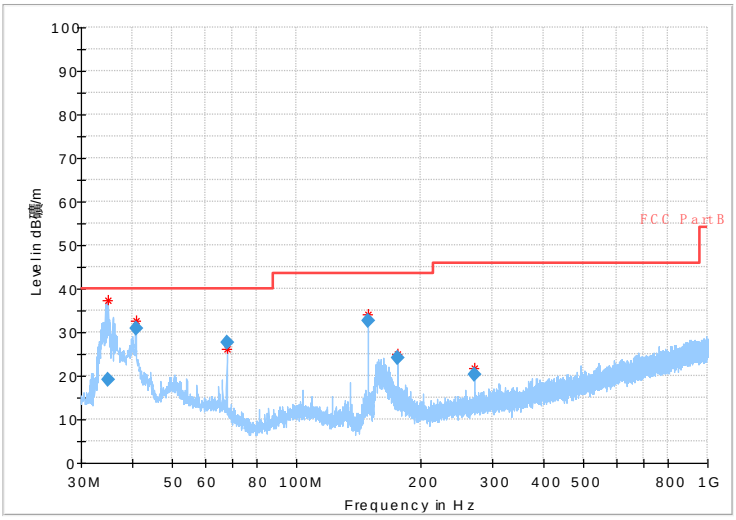



**Fig 18. Radiated Spurious Emission (802.11 n-40MHz,Ch3,30MHz~1GHz)**

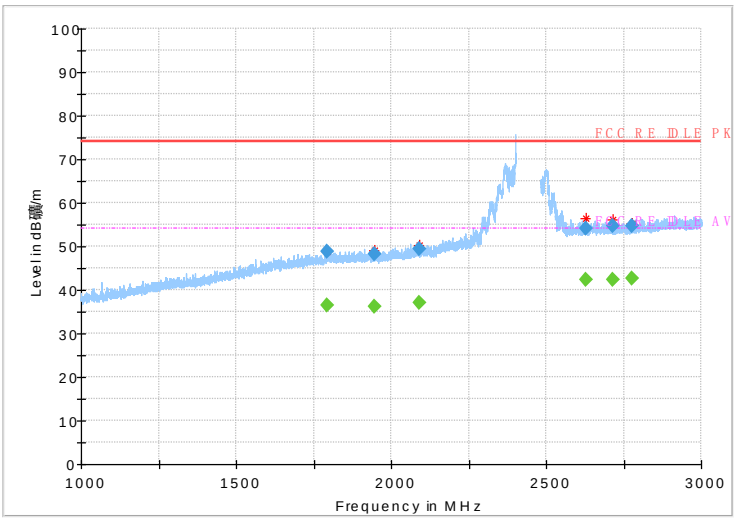



**Fig 19. Radiated Spurious Emission (802.11 n-40MHz,Ch3,1GHz~3GHz)**

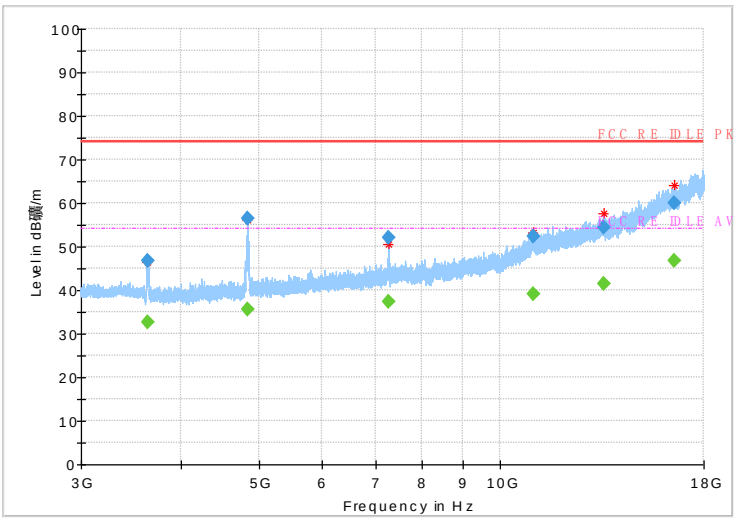
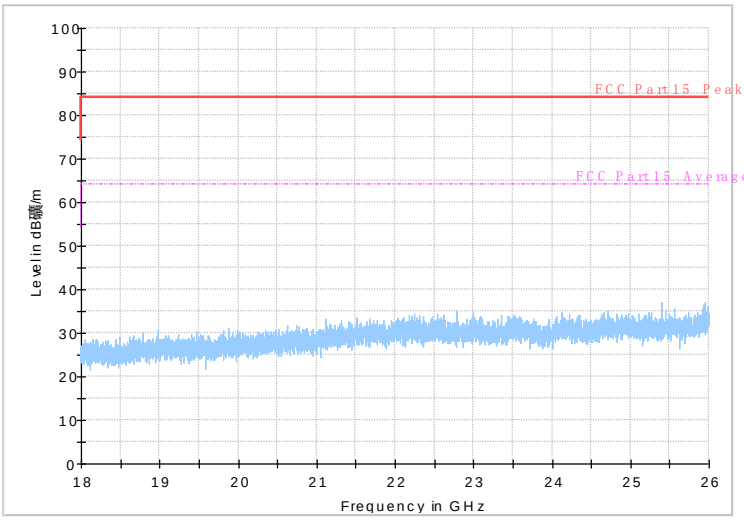


**Fig 20. Radiated Spurious Emission (802.11 n-40MHz,Ch3,3GHz~18GHz)**




**18GHz~26GHz**

## 6.2. AC Power line Conducted Emission

**Method of Measurement: See ANSI C63.10 clause 6.2**

1 The one EUT cable configuration and arrangement and mode of operation that produced the emission with the highest amplitude relative to the limit is selected for the final measurement, while applying the appropriate modulating signal to the EUT.

2 If the EUT is relocated from an exploratory test site to a final test site, the highest emissions shall be remaximized at the final test location before final ac power-line conducted emission measurements are performed.

3 The final test on all current-carrying conductors of all of the power cords to the equipment that comprises the EUT (but not the cords associated with other non-EUT equipment in the system) is then performed for the full frequency range for which the EUT is being tested for compliance without further variation of the EUT arrangement, cable positions, or EUT mode of operation.

4 If the EUT is comprised of equipment units that have their own separate ac power connections, e.g., floor-standing equipment with independent power cords for each shelf that are able to connect directly to the ac power network, each current-carrying conductor of one unit is measured while the other units are connected to a second (or more) LISN(s). All units shall be separately measured. If a power strip is provided by the manufacturer, to supply all of the units making up the EUT, only the conductors in the power cord of the power strip shall be measured.

If the EUT uses a detachable antenna, these measurements shall be made with a suitable dummy load connected to the antenna output terminals; otherwise, the tests shall be made with the antenna connected and, if adjustable, fully extended. When measuring the ac conducted emissions from a device that operates between 150 kHz and 30 MHz a non-detachable antenna may be replaced with a dummy load for the measurements within the fundamental emission band of the transmitter, but only for those measurements.36 Record the six highest EUT emissions relative to the limit of each of the current-carrying conductors of the power cords of the equipment that comprises the EUT over the frequency range specified by the procuring or regulatory agency. Diagram or photograph the test setup that was used. See Clause 8 for full reporting requirements.

**Test Condition:**

| Voltage（V） | Frequency（Hz） |
|---|---|
| 120 | 60 |

**Measurement Result and limit:**

(Quasi-peak-average Limit)

| Frequency range (MHz) | Quasi-peak Limit (dBμV) | Average Limit (dBμV) | Result (dBμV) With charger 802.11b | Conclusion |
|---|---|---|---|---|
| 0.15 to 0.5 | 66 to 56 | 56 to 46 | Fig 21. | P |
| 0.5 to 5 | 56 | 46 | | |
| 5 to 30 | 60 | 50 | | |

NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

**Conclusion: Pass**

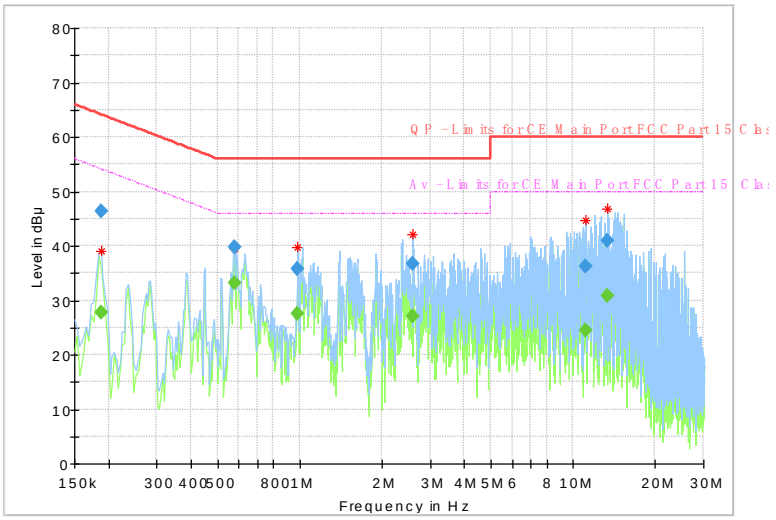



**Fig.21 AC Power line Conducted Emission**

| Frequency (MHz) | QuasiPeak (dB µ V) | Average (dB µ V) | Limit (dB µ | Margin (dB) | Meas. Time | Bandwidth (kHz) | Line | Filter | Corr. (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 0.187312 | 46.41 | --- | 64.15 | 17.74 | 1000.0 | 9.000 | N | ON | 9.6 |
| 0.187312 | --- | 27.72 | 54.15 | 26.43 | 1000.0 | 9.000 | N | ON | 9.6 |
| 0.575362 | 39.65 | --- | 56.00 | 16.35 | 1000.0 | 9.000 | L1 | ON | 9.6 |
| 0.575362 | --- | 33.27 | 46.00 | 12.73 | 1000.0 | 9.000 | L1 | ON | 9.6 |
| 0.982069 | 35.87 | --- | 56.00 | 20.13 | 1000.0 | 9.000 | L1 | ON | 9.7 |
| 0.982069 | --- | 27.63 | 46.00 | 18.37 | 1000.0 | 9.000 | L1 | ON | 9.7 |
| 2.601431 | --- | 27.11 | 46.00 | 18.89 | 1000.0 | 9.000 | L1 | ON | 9.7 |
| 2.601431 | 36.72 | --- | 56.00 | 19.28 | 1000.0 | 9.000 | L1 | ON | 9.7 |
| 11.071369 | 36.24 | --- | 60.00 | 23.76 | 1000.0 | 9.000 | N | ON | 9.8 |
| 11.071369 | --- | 24.52 | 50.00 | 25.48 | 1000.0 | 9.000 | N | ON | 9.8 |
| 13.395938 | --- | 30.76 | 50.00 | 19.24 | 1000.0 | 9.000 | L1 | ON | 9.8 |
| 13.395938 | 40.91 | --- | 60.00 | 19.09 | 1000.0 | 9.000 | L1 | ON | 9.8 |

# 7. Test Equipment and Ancillaries Used For Tests

The test equipment and ancillaries used are as follows.

**Conducted test system**

| No. | Equipment | Model | Serial Number | Manufacturer | Calibration date | Cal.interval |
|---|---|---|---|---|---|---|
| 1 | Vector Signal Analyzer | FSQ26 | 101096 | Rohde&Schwarz | 2017-05-11 | 1 Year |
| 2 | DC Power Supply | ZUP60-14 | LOC-220Z006-0007 | TDL-Lambda | 2017-05-11 | 1 Year |

**Radiated emission test system**

| No. | Equipment | Model | Serial Number | Manufacturer | Calibration date | Cal.interval |
|---|---|---|---|---|---|---|
| 1 | Universal Radio Communication Tester | CMU200 | 123123 | R&S | 2017-05-11 | 1 Year |
| 2 | EMI Test Receiver | ESU40 | 100307 | R&S | 2017-05-11 | 1 Year |
| 3 | TRILOG Broadband Antenna | VULB9163 | VULB9163-515 | Schwarzbeck | 2017-02-25 | 3 Year |
| 4 | Double-ridged Waveguide Antenna | ETS-3117 | 00135890 | ETS | 2017-01-11 | 3 Year |
| 5 | 2-Line V-Network | ENV216 | 101380 | R&S | 2017-05-11 | 1 Year |

**Anechoic chamber**

Fully anechoic chamber by Frankonia German.

# 8. 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 ℃, Max. = 35 ℃ |
| Relative humidity | Min. = 20 %, Max. = 75 % |
| Shielding effectiveness | > 100 dB |
| Ground system resistance | < 0.5 Ω |

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

| | |
|---|---|
| Temperature | Min. = 15 ℃, Max. = 35 ℃ |
| Relative humidity | Min. =25 %, Max. = 75 % |
| Shielding effectiveness | > 100 dB |
| Electrical insulation | > 10 kΩ |
| Ground system resistance | < 0.5 Ω |

**Fully-anechoic chamber1** (6.9 meters×10.9 meters×5.4 meters) did not exceed following limits along the EMC testing:

| | |
|---|---|
| Temperature | Min. = 15 ℃, Max. = 35 ℃ |
| 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 |
| Uniformity of field strength | Between 0 and 6 dB, from 80MHz to 3000 MHz |

# ANNEX A. Deviations from Prescribed Test Methods

No deviation from Prescribed Test Methods.

********** END OF REPORT **********