



# TEST REPORT

Report Number: C21T00009-SRD03-V01

Applicant	Shanghai Sunmi Technology Co.,Ltd.
Product Name	Wireless data POS System
Model Name	T5930
Brand Name	SUNMI
FCC ID	2AH25V2

Industrial Internet Innovation Center (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in FCC Part15, ANSI C63.10, KDB 558074.

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Approved by

熊增新

Issue Date

2021-04-14

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



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11. Report No.: C21T00009-SRD03-V01 is the replacement of Report No.: C21T00009-SRD03-V00, and the previous Report No.: C21T00009-SRD03-V00 has been invalid.

### **Test Laboratory:**

Industrial Internet Innovation Center (Shanghai) Co., Ltd.  
Add: Building 4, No. 766 Jingang Rd, Pudong, Shanghai, China  
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### Revision Version

Report Number	Revision	Date	Memo
C21T00009-SRD03-V00	00	2021-04-06	Initial creation of test report
C21T00009-SRD03-V01	01	2021-04-14	The statements and summary have been modified



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## 1. Test Laboratory

### 1.1. Testing Location

Company Name	Industrial Internet Innovation Center (Shanghai) Co., Ltd.
Address	Building 4, No. 766 Jingang Rd, Pudong, Shanghai, China
FCC Registration No.	CN1177

### 1.2. Testing Environment

Normal Temperature	15°C~35°C
Relative Humidity	30%RH~60%RH
Supply Voltage	120V/60Hz

### 1.3. Project Information

Project Leader	Lu Fang
Testing Start Date	2021-03-09
Testing End Date	2021-04-08



## 2. Client Information

### 2.1. Applicant Information

Company Name	Shanghai Sunmi Technology Co., Ltd.
Address	Room 505, KIC Plaza, No.388 Song Hu Road, Yang Pu District, Shanghai, China
Telephone	+86 18721763396

### 2.2. Manufacturer Information

Company Name	Shanghai Sunmi Technology Co., Ltd.
Address	Room 505, KIC Plaza, No.388 Song Hu Road, Yang Pu District, Shanghai, China
Telephone	+86 18721763396

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

#### 3.1. About EUT

Product Name	Wireless data POS System
Model name	T5930
Supported Radio Technology and Bands	GSM850/GSM900/GSM1800/GSM1900 WCDMA Band I/ II/IV/V LTE Band 2/3/4/7/17/28 BT4.0,BLE WLAN 802.11b/g/n WLAN 802.11a/n GPS L1
Hardware Version	V3
Software Version	ZAP1522_769_DEV_dailybuild_20181205071714_userdebug_DCC
WLAN Frequency	2412MHz-2462MHz
WLAN Channel	Ch1-11
WLAN type of modulation	802.11b: DSSS
FCC ID	2AH25V2
Extreme Temperature	-15°C~55°C
Nominal Voltage	7.60 V
Extreme High Voltage	8.70V
Extreme Low Voltage	6.80V

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

EUT ID*	SN or IMEI	HW Version	SW Version	Date of receipt
N02(Main supply)	861741048621948	V3	ZAP1522_769_DEV_dailybuild_20181205071714_userdebug_DCC	2020-01-29
N08(Main supply)	861741048621921	V3	ZAP1522_769_DEV_dailybuild_20181205071714_userdebug_DCC	2020-01-29
N05(Secondary supply)	861741048621863	V3	ZAP1522_769_DEV_dailybuild_20181205071714_userdebug_DCC	2020-01-29

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



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

AE ID*	Description	Model	SN/Remark
AE1	RF cable	---	AE1

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



## 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: 15.205 Restricted bands of operation; 15.209 Radiated emission limits, general requirements; 15.247 Operation within the bands 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz.	2018-10-01
ANSI C63.10	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices	2013
KDB 558074	Guidance for Performing Compliance Measurements on Frequency Hopping Spread Spectrum systems (DSS) Operating Under §15.247	v05r02

### 4.2. Reference Information from client

Antenna gain Information of the test sample provided by Shanghai Sunmi Technology Co., Ltd.

Maximum of Antenna Gain: 0.41 dBi

## 5. Test Summary

### 5.1. Summary of Test Results

Measurement Items	Sub-clause of Part15C	Verdict
Maximum Peak Output Power	15.247(a)	Pass
Peak Power Spectral Density	15.247(e)	Pass
Occupied 6dB Bandwidth	15.247(d)	Pass
Band Edges Compliance	15.247(b)	Pass
Transmitter Spurious Emission-Conducted	15.247	Pass
Transmitter Spurious Emission-Radiated	15.209,15.247	Pass
AC Powerline Conducted Emission	15.107,15.207	Pass

Note: please refer to Annex A in this test report for the detailed test results.

#### 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	25°C
Voltage	Vnom	7.60 V
Humidity	Hnom	48%
Air Pressure	Anom	1010hPa



## 5.2. Statements

The T5930, manufactured by Shanghai Sunmi Technology Co., Ltd. is a variant product for testing.

This project is a variant project based on the original report I18D00236-SRD03, We changed the power level setting of 802.11n 20MHz mode, tested the power of 802.11n 20MHz mode, and retested the PSD and spurious test items in the worst mode. At the same time, We tested the worst case radiation data, and the test data of the worst mode was recorded in the report. The rest of the data are reference prototype report data.

Industrial Internet Innovation Center (Shanghai) Co., Ltd. only performed test cases which identified with Pass/Fail/Inc result in section 5.1.

Industrial Internet Innovation Center (Shanghai) Co., Ltd. has verified that the compliance of the tested device specified in section 3 of this test report is successfully evaluated according to the procedure and test methods as defined in type certification requirement listed in section 4 of this test report.

## 6. Measurement Results

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

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

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

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

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

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 25 %, Max. = 75 %
Shielding effectiveness	> 100 dB
Electrical insulation	> 10 kΩ
Ground system resistance	< 0.5 Ω
VSWR	Between 0 and 6 dB, from 1GHz to 18GHz
Site Attenuation Deviation	Between -4 and 4 dB,30MHz to 1GHz
Uniformity of field strength	Between 0 and 6 dB, from 80MHz to 3000 MHz

## 6.1. Output Power-Conducted

### 6.1.1 Measurement Limit and method:

Standard	Limit(dBm)
FCC 47 Part 15.247(b)	<30

### 6.1.2 Test procedure

The measurement is according to ANSI C63.10 clause 11.2

1. The output power of EUT was connected to the spectrum analyzer. The path loss was compensated to the results for each measurement.
2. Enable EUT transmitter maximum power continuously.
3. Set RBW  $\geq$  OBW(1MHz), VBW  $\geq$  3RBW(3MHz).
4. Span : 80MHz
5. Detector: Peak/RMS.
6. Trace mode: Max Hold
7. Spectrum Analyzer setting : Meas—channel PWR ACP—CP/ACP Config—channel bandwidth—20/40MHz

### 6.1.3 Maximum Peak Output Power-conducted

Measurement Results

802.11n mode

Mode	Data Rate(Index)	Teat Result(dBm)		
		2412MHz(Ch1)	2437MHz(Ch6)	2462MHz(Ch11)
802.11n(20MHz)	MCS0	/	/	17.22
	MCS1	/	/	17.35
	MCS2	/	/	17.40
	MCS3	/	/	17.55
	MCS4	/	/	17.15
	MCS5	/	/	17.22
	MCS6	/	/	17.16
	MCS7	17.55	17.48	17.53



#### 6.1.4 Maximum Peak Output Power-conducted

##### Measurement Results:

##### 802.11n mode

Mode	Test Result(dBm)		
	2412MHz (Ch1)	2437MHz (Ch6)	2462MHz (Ch11)
802.11n(20MHz)	12.13	12.21	12.15

## 6.2. Peak Power Spectral Density

### 6.2.1 Measurement Limit:

Standard	Limit
FCC 47 Part 15.247(e)	< 8dBm/3 KHz

### 6.2.2 Test procedures

The measurement is according to ANSI C63.10 clause 11.10.

1. The output power of EUT was connected to the spectrum analyzer. The path loss was compensated to the results for each measurement.
2. Enable EUT transmitter maximum power continuously.
3. Set analyzer center frequency to DTS channel center frequency.
4. Set the span to 1.5 times the DTS bandwidth.
5. Set the RBW to  $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$ .
6. Set the VBW  $\geq [3 \times \text{RBW}]$ .
7. Detector = peak.
8. Sweep time = auto couple.
9. Trace mode = max hold.
10. Allow trace to fully stabilize.
11. Use the peak marker function to determine the maximum amplitude level within the RBW.
12. If measured value exceeds requirement, then reduce RBW (but no less than 3 kHz) and repeat.

**Measurement Results:**

<p>Power Spectral Density(dBm/3kHz) (802.11b, Ch1)</p>	<p>-4.09</p>	<p>Power Spectral Density(dBm/3kHz) (802.11b, Ch6)</p>	<p>-4.13</p>
<p>Date: 8.APR.2021 16:29:10</p>		<p>Date: 8.APR.2021 16:30:24</p>	
<p>Power Spectral Density (dBm/3kHz) (802.11b, Ch11)</p>	<p>-6.137</p>	<p>/</p>	<p>/</p>
<p>Date: 8.APR.2021 16:30:29</p>		<p>/</p>	



### 6.3. Transmitter Spurious Emission-conducted

#### 6.3.1 Measurement Limit:

Standard	Limit
FCC 47 Part 15.247(d)	20dB below peak output power in 100KHz

#### 6.3.2 Test procedures

This measurement is according to ANSI C63.10 clause 11.11.

1. The output power of EUT was connected to the spectrum analyzer. The path loss was compensated to the results for each measurement.
2. Enable EUT transmitter maximum power continuously.

Reference level measurement

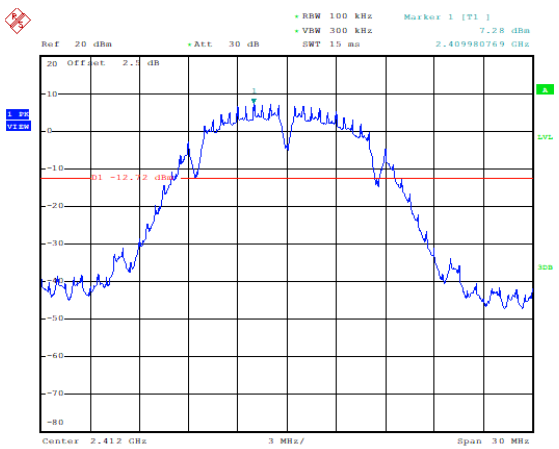
3. Set instrument center frequency to DTS channel center frequency.
4. Set the span to  $\geq 1.5$  times the DTS bandwidth.
5. Set the RBW = 100 kHz.
6. Set the VBW  $\geq [3 \times \text{RBW}]$ .
7. Detector = peak.
8. Sweep time = auto couple.
9. Trace mode = max hold.
10. Allow trace to fully stabilize.
11. Use the peak marker function to determine the maximum PSD level.

Emission level measurement

12. Set the center frequency and span to encompass frequency range to be measured.
13. Set the RBW = 100 kHz.
14. Set the VBW  $\geq [3 \times \text{RBW}]$ .
15. Detector = peak.
16. Sweep time = auto couple.
17. Trace mode = max hold.
18. Allow trace to fully stabilize.
19. Use the peak marker function to determine the maximum amplitude level.

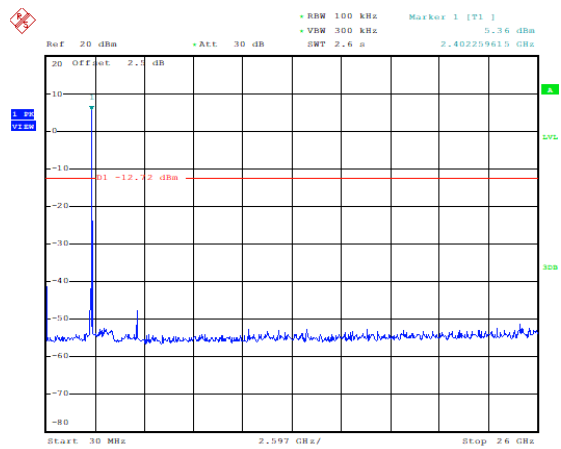
**Measurement Results:**

**Conducted Spurious Emission (802.11b, Ch1)**



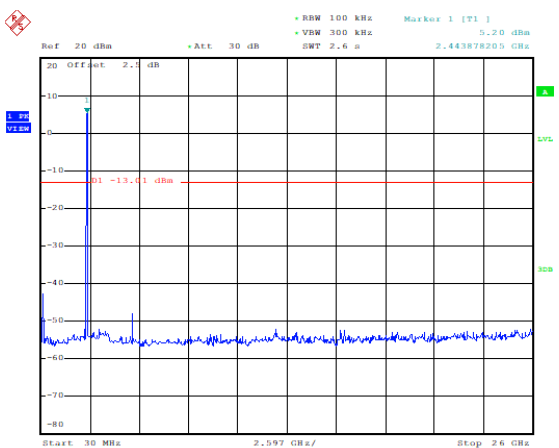
Date: 8.APR.2021 16:35:18

**Conducted Spurious Emission (802.11b, Ch1, 30MHz~26GHz)**



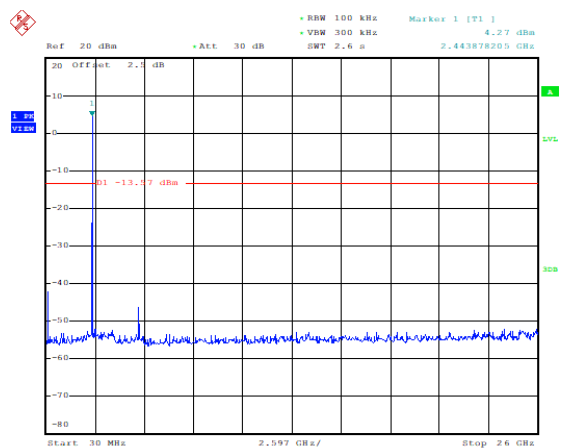
Date: 8.APR.2021 16:36:26

**Conducted Spurious Emission (802.11b, Ch6)**



Date: 8.APR.2021 16:41:06

**Conducted Spurious Emission (802.11b, Ch11)**



Date: 8.APR.2021 16:44:32

## 6.4. Transmitter Spurious Emission-Radiated

### 6.4.1 Measurement Limit:

Standard	Limit
FCC 47 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.

### 6.4.2 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

### 6.4.3 Test procedures

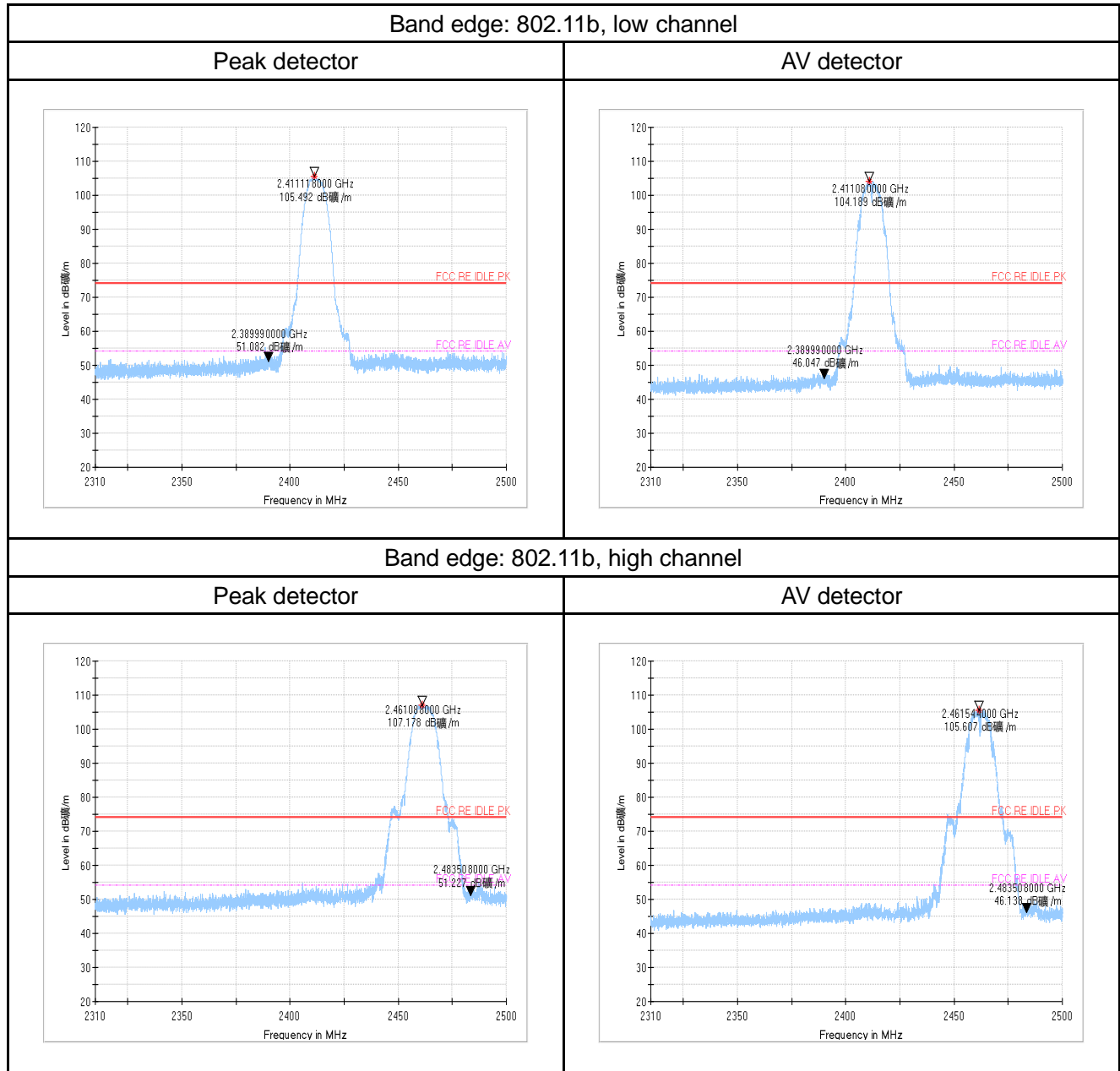
Portable, small, lightweight, or modular devices that may be handheld, worn on the body, or placed on a table during operation shall be positioned on a nonconducting platform, the top of which is 80 cm above the reference ground plane. The preferred area occupied by the EUT arrangement is 1 m by 1.5 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/3MHz	15
4000~18000	1MHz/3MHz	40
18000~26500	1MHz/3MHz	20

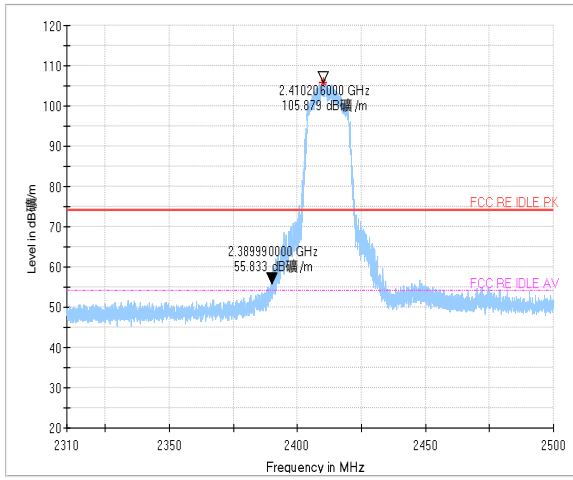
**Measurement Results:**

Main supply:

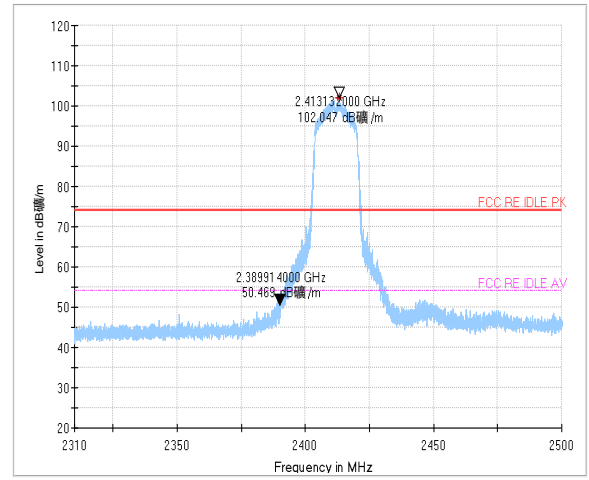


Bandedge: 802.11g, low channel

Peak detector

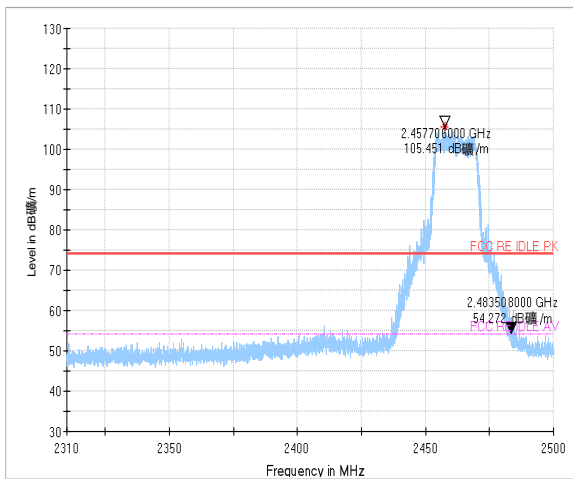


AV detector

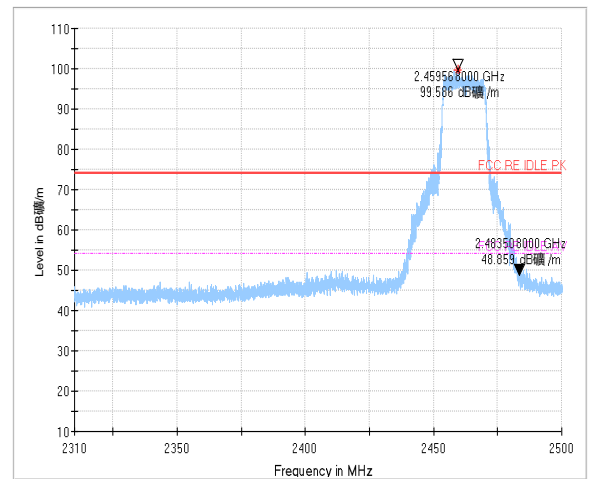


Bandedge: 802.11g, high channel

Peak detector

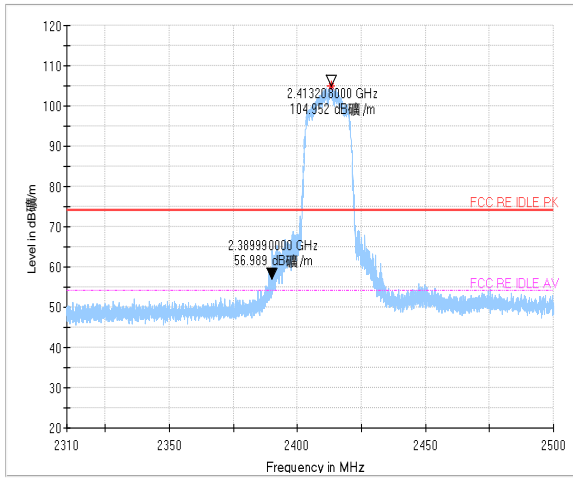


AV detector

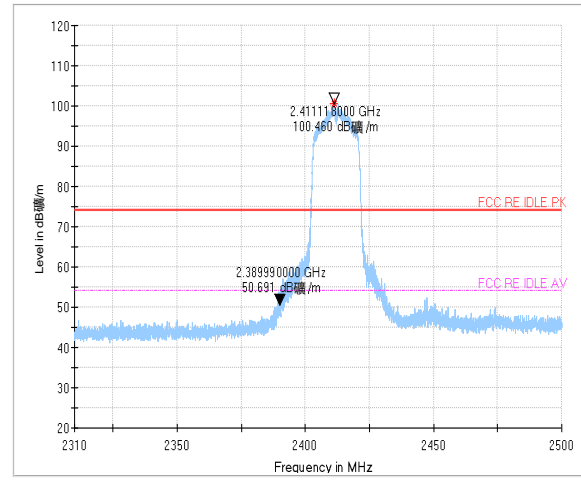


Bandedge: 802.11n-20MHz, low channel

Peak detector

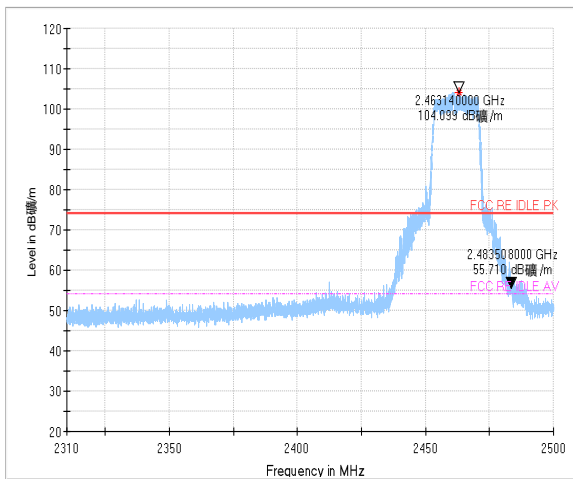


AV detector

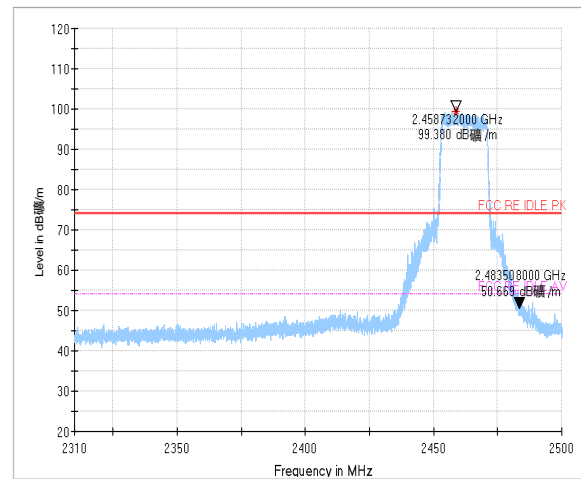


Bandedge: 802.11n-20MHz, high channel

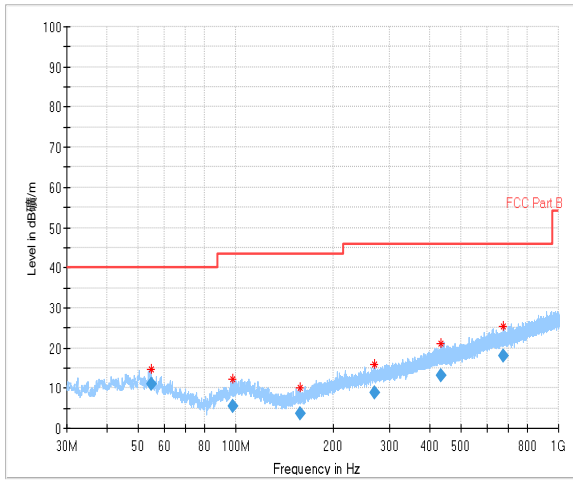
Peak detector



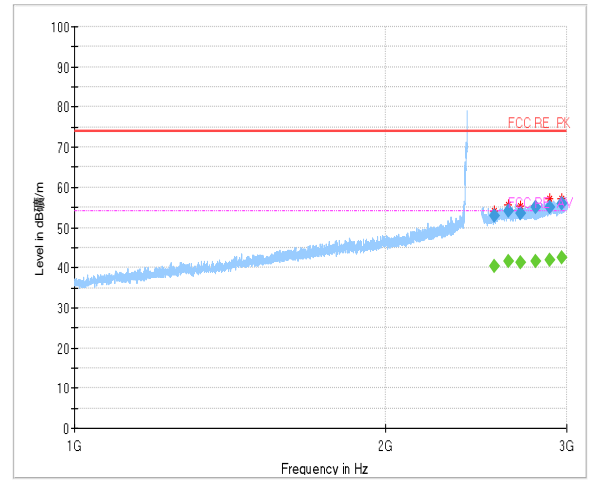
AV detector



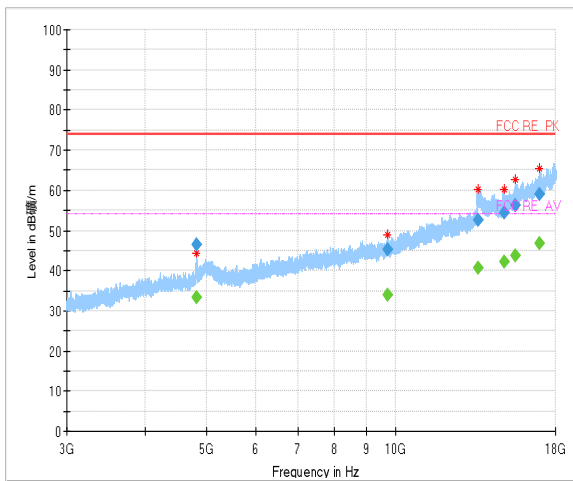
Radiated Spurious Emission  
(802.11n-20MHz, Ch11,30MHz~1GHz)



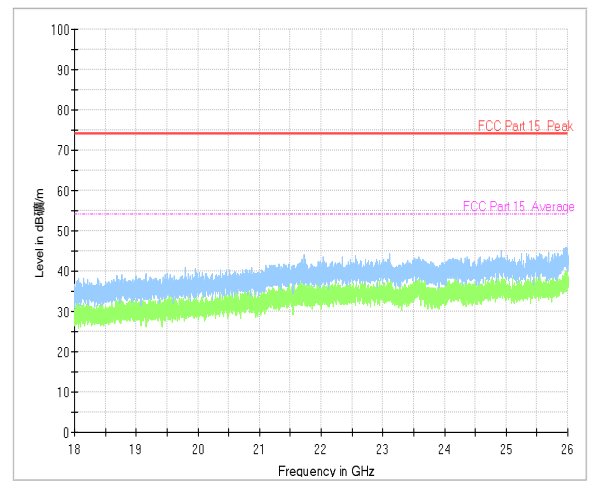
Radiated Spurious Emission  
(802.11n-20MHz, Ch11,1GHz~3GHz)



Radiated Spurious Emission  
(802.11n-20MHz, Ch11, 3GHz~18GHz)



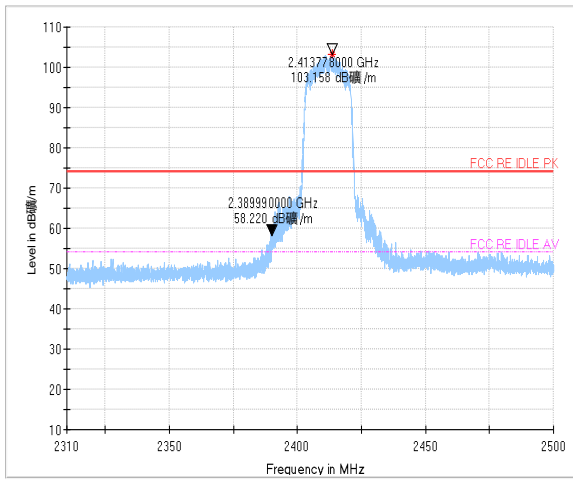
All channel



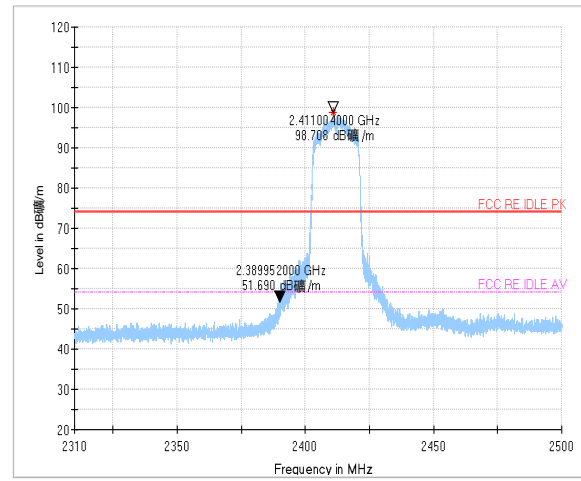
Secondary supply:

Bandedge: 802.11n-20MHz low channel

Peak detector

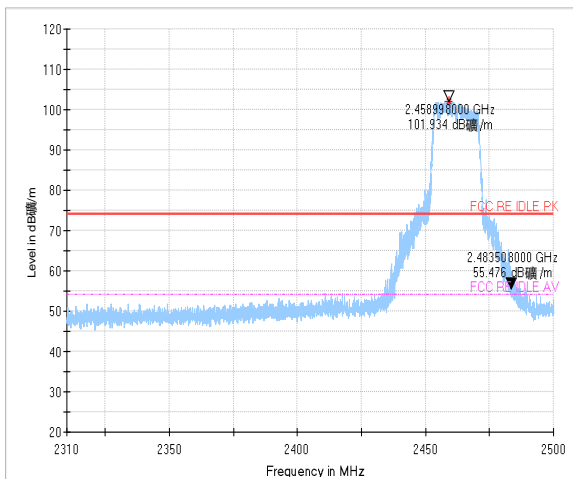


AV detector

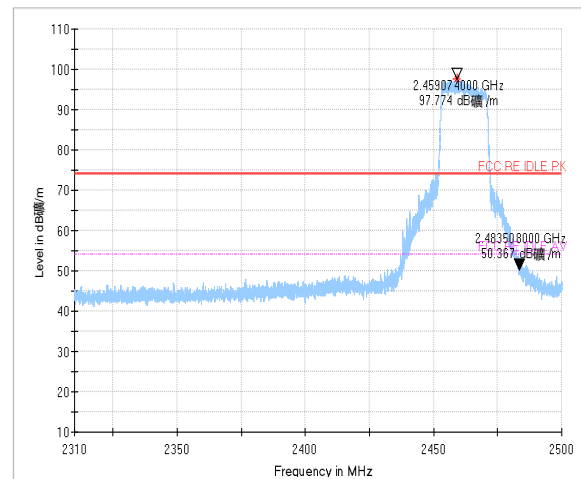


Bandedge: 802.11n-20MHz, high channel

Peak detector

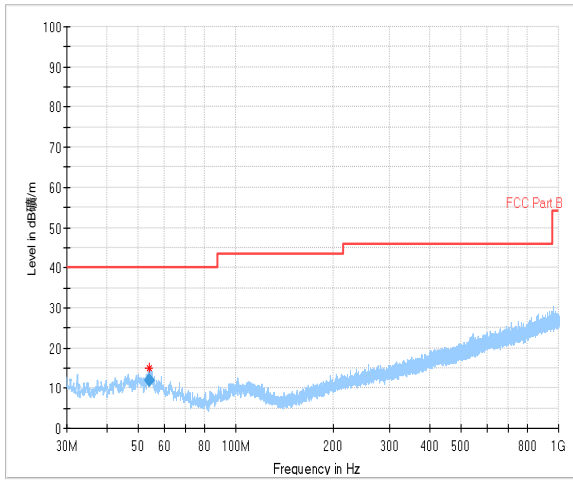


AV detector

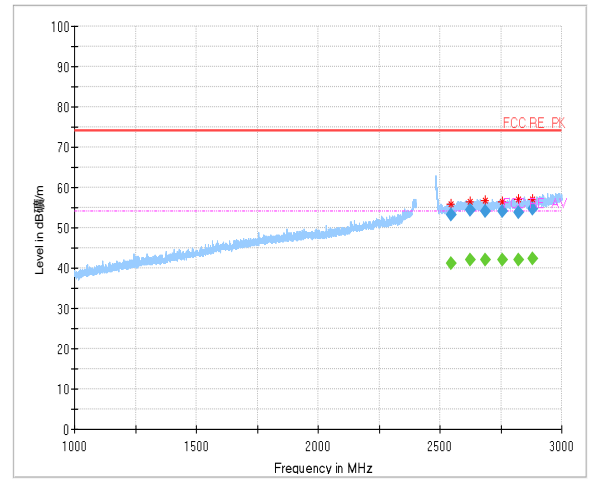




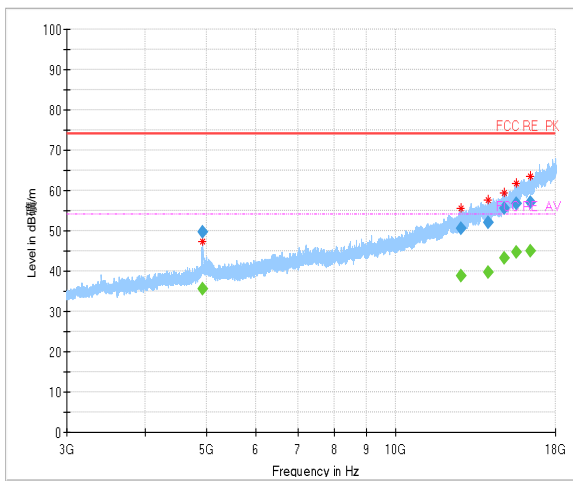
Radiated Spurious Emission  
(802.11n-20MHz, Ch11,30MHz~1GHz)



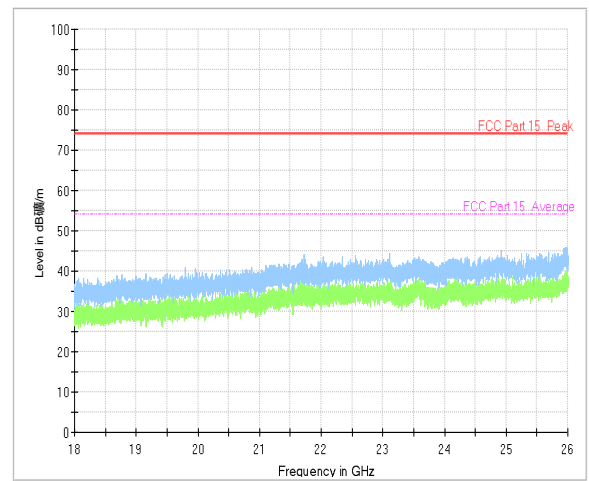
Radiated Spurious Emission  
(802.11n-20MHz, Ch11,1GHz~3GHz)



Radiated Spurious Emission  
(802.11n-20MHz, Ch11, 3GHz~18GHz)



All channel



**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:

$$AR_{pi} = \text{Cable loss} + \text{Antenna Gain} - \text{Preamplifier gain}$$

$$\text{Result} = P_{Mea} + \text{Cable loss} + \text{Antenna Gain} - \text{Preamplifier gain} = P_{Mea} + AR_{pi}$$



Main supply:  
802.11n-20MHz  
Ch11 30MHz~1GHz

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
2586.8	54.36	17.1	37.26	H
2673.8	53.92	17.3	36.62	V
2752.9	54.21	17.4	36.81	H
2850.0	54.61	17.9	36.71	H
2920.3	55.46	18.4	37.06	V
2969.0	55.55	18.9	36.65	V
2586.8	54.36	17.1	37.26	H

**Ch11 1GHz~3GHz (Peak)**

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
2586.8	41.26	17.1	24.16	H
2752.9	41.39	17.4	23.99	H
2850.0	42.07	17.9	24.17	H
2920.3	42.17	18.4	23.77	V
2969.0	42.6	18.9	23.7	V

**Ch11 1GHz~3GHz (Average)**

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
2586.8	41.26	17.1	24.16	H
2752.9	41.39	17.4	23.99	H
2850.0	42.07	17.9	24.17	H
2920.3	42.17	18.4	23.77	V
2969.0	42.6	18.9	23.7	V

**Ch11 3GHz~18GHz**

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
4928.7	46.96	3.1	43.86	H
13557.7	52.92	18.1	34.82	V
14915.6	54.51	22.2	32.31	V
15567.9	56.43	24.3	32.13	V
16973.1	59.06	28.1	30.96	V
17755.1	59.07	28.9	30.17	H

**Ch11 3GHz~18GHz (Average)**

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
14915.6	42.37	22.2	20.17	V
15567.9	43.94	24.3	19.64	V
16973.1	47.3	28.1	19.2	V
17755.1	46.14	28.9	17.24	H

**Secondary supply:****Ch11 30MHz~1GHz**

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
54.2	11.85	-15.8	27.65	V

**Ch11 1GHz~3GHz**

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
2546.9	53.26	16.5	36.76	H
2625.9	54.31	17.3	37.01	V
2683.9	54.07	17.3	36.77	H
2756.1	54.06	17.4	36.66	H
2822.2	53.87	17.7	36.17	H

**Ch11 1GHz~3GHz (Average)**

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
2625.9	41.92	17.3	24.62	V
2683.9	41.93	17.3	24.63	H
2756.1	41.98	17.4	24.58	H
2881.8	42.41	18.2	24.21	V

**Ch11 3GHz~18GHz**

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
4926.7	49.72	3.1	46.62	V
12737.4	50.46	17	33.46	V
14043.5	51.99	18.8	33.19	H
14908.4	55.63	22.3	33.33	V
15592.4	56.78	24.6	32.18	H
16397.7	57.15	25.5	31.65	H

**Ch11 3GHz~18GHz (Average)**

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
14908.4	43.09	22.3	20.79	V
15592.4	44.81	24.6	20.21	H



16397.7	45.05	25.5	19.55	H
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**Note: Only the worst case is written in the report.**

## 7. Test Equipment List

### 7.1. Conducted Test System

Item	Equipment Name	Type	Serial Number	Manufacturer	Cal. Date	Cal. interval
1	Vector Signal Analyzer	FSQ26	101091	R&S	2020-05-10	1 year
2	DC Power Supply	ZUP60-14	LOC-220Z006-0007	TDL-Lambda	2020-05-10	1 year
3	Eagle Test Software	Eagle V3.1 FCC BT/WIFI	N/A	ECIT	N/A	N/A

### 7.2. Radiated Emission Test System

Item	Equipment Name	Type	Serial Number	Manufacturer	Cal. Date	Cal. interval
1	Universal Radio Communication Tester	CMU200	123123	R&S	2020-05-10	1 year
2	EMI Test Receiver	ESU40	100307	R&S	2020-05-10	1 year
3	TRILOG Broadband Antenna	VULB9163	VULB9163-515	Schwarzbeck	2020-02-28	2 years
4	Double-ridged Waveguide Antenna	ETS-3117	00135890	ETS	2020-02-28	2 years
5	2-Line V-Network	ENV216	101380	R&S	2020-05-10	1 year
6	EMI Test Software	EMC32 V 9.15.00	N/A	R&S	N/A	N/A

### 7.3. Climate chamber

Item	Equipment Name	Type	Serial Number	Manufacturer	Cal. Date	Cal. interval
1	Climate chamber	UT333 BT	C191995461	UNI-T	2020-05-10	1 year

Anechoic chamber

Fully anechoic chamber by ETS.

## Annex A: Measurement Uncertainty

Measurement uncertainty for all the testing in this report are within the limit specified in 3IN documents .  
The detailed measurement uncertainty is defined in 3IN documents.

Measurement Items	Range	Confidence Level	Calculated Uncertainty
Peak Output Power-Conducted	2412MHz-2462MHz	95%	0.544dB
Peak Power Spectral Density	2412MHz-2462MHz	95%	0.502dB
Conducted Emission	30MHz-2GHz	95%	0.90dB
Conducted Emission	2GHz-3.6GHz	95%	0.88dB
Conducted Emission	3.6GHz-8GHz	95%	0.96dB
Conducted Emission	8GHz-20GHz	95%	0.94dB
Conducted Emission	20GHz-22GHz	95%	0.88dB
Conducted Emission	22GHz-26GHz	95%	0.86dB
Transmitter Spurious Emission-Radiated	9KHz-30MHz	95%	5.66dB
Transmitter Spurious Emission-Radiated	30MHz-1000MHz	95%	4.98dB
Transmitter Spurious Emission-Radiated	1000MHz -18000MHz	95%	5.06dB
Transmitter Spurious Emission-Radiated	18000MHz -40000MHz	95%	5.20dB

## Annex B: Accreditation Certificate



### Accredited Laboratory

A2LA has accredited

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

Shanghai, People's Republic of China

for technical competence in the field of

**Electrical Testing**

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



Presented this 6th day of May 2019.



Vice President, Accreditation Services  
For the Accreditation Council  
Certificate Number 3682.01  
Valid to April 30, 2021  
Revised February 17, 2021

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

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