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

FCC/IC 5G WIFI TEST REPORT

PRODUCT	Wireless data POS System
BRAND	SUNMI
MODEL	T5820
FCC ID	2AH25T5820
IC	22621-T5820
APPLICANT	Shanghai Sunmi Technology Co.,Ltd.
ISSUE DATE	February 23, 2023
STANDARD(S)	FCC Part15, RSS-247 Issue 2, RSS-Gen Issue 5

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

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1. Summary of Test Report

1.1 Test Standard(s)

No.	Test Standard(s)	Title	Version
1	FCC Part15	Title 47 of the Code of Federal Regulations; Chapter I Part 15 - Radio frequency devices	2020
2	RSS-247 Issue 2	Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices	2017
3	RSS-Gen Issue 5	General Requirements for Compliance of Radio Apparatus	2021

1.2 Reference Documents

No.	Reference	Title	Version
1	ANSI 63.10	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2013
2	KDB 789033	Information Infrastructure (U-NII) Devices - Part 15, Subpart E	2017
3	KDB 905462	COMPLIANCE MEASUREMENT PROCEDURES FOR UNLICENSED-NATIONAL INFORMATION INFRASTRUCTURE DEVICES OPERATING IN THE 5250-5350 MHz AND 5470-5725 MHz BANDS INCORPORATING DYNAMIC FREQUENCY SELECTION	2016

1.3 Summary of Test Results

Measurement Items	Sub-clause of Part15C	Sub-clause of IC	Verdict
Maximum Output Power	15.407(a)	RSS-247 6.2	Pass (Note 2)
Power Spectral Density	15.407(a)	RSS-247 6.2	Pass (Note 2)
99% Occupied Bandwidth	15. 407(a)	RSS-Gen 6.7	Pass (Note 2)
Occupied 26dB Bandwidth	15. 407(a)	RSS-247 6.2	Pass (Note 2)
Band edge compliance	15.407(b)	RSS-247 6.2	Pass (Note 2)
Transmitter spurious emissions radiated	15.407(b)	RSS-247 6.2	Pass
Spurious emissions radiated < 30 MHz	15.209 & 15.407(b)	RSS-247 6.2 RSS-Gen 8.9,8.10	Pass (Note 2)
Spurious emissions conducted < 30 MHz	15.407(b)	RSS-247 6.2	Pass (Note 2)
Frequency Stability	15.407(g)	RSS-Gen 8.11	Pass (Note 2)
Transmit Power Control	15.407(h)	RSS-247 6.2	N/A

AC Powerline Conducted Emission	15.207	RSS-Gen 8.8	Pass (Note 2)

Note 1:

The T5820, manufactured by Shanghai Sunmi Technology Co.,Ltd. is a variant product for testing.

This project is a variant project based on the original report I22I30121-SRD04-V00, original FCC ID 2AH25T5820C, IC 22621-T5820C. T5820 the detail differences description as below:

Type of Certification	Configuration type	NFC function	Cradle(Pogo PIN)	AC adapter	Panel dimension
Parent	High configuration	Yes	Yes	input ： 5V/2A	5.0 inch
Variant (Based on Parent)	Basic configuration	No	No	input ： 5V/1A	4.95 inch

The above differences do not affect the RF performance, The report data was derived from the original reported and RSE tested worst mode is placed in the report. Verify the power of the variant product, and the test results meet the limit requirements.

Industrial Internet Innovation Center (Shanghai) Co., Ltd. only performed test cases which identified with Pass/Fail/Inc result in section 1.

Industrial Internet Innovation Center (Shanghai) Co., Ltd. has verified that the compliance of the tested device specified in section 4 of this test report is successfully evaluated according to the procedure and test methods as defined in type certification requirement listed in section 1.3 of this test report.

Note 2:

The test verdict of this item come form the original report.

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

b.The DC and low frequency voltages' measurement uncertainty is ±2%.

c. Activate simultaneous transmission in all possible configurations during the testing.

1.4 Data Provided by Applicant

No.	Item(s)	Data
1	Antenna gain of EUT	3.31 dBi
Note: The data of 1.4 is provided by the customer may affect the validity of the test results in this report, and the impact and consequences of this shall be undertaken by the customer.		

2. General Information of The Laboratory

2.1 Testing Laboratory

Lab Name	Industrial Internet Innovation Center (Shanghai) Co.,Ltd.
Address	Building 4，No. 766，Jingang Road，Pudong，Shanghai，China
Telephone	021-68866880
FCC Registration No.	958356
FCC Designation No.	CN1177
IC Designation No.	10766A

2.2 Laboratory Environmental Requirements

Temperature	15℃~35℃
Relative Humidity	25%RH~75%RH
Atmospheric Pressure	101kPa

2.3 Project Information

Project Manager	Gao Hongning
Test Date	October 20, 2022 to January 19, 2023

3. General Information of The Customer

3.1 Applicant

Company	Shanghai Sunmi Technology Co.,Ltd.
Address	Room 505, No.388, Song Hu Road, Yang Pu District, Shanghai, China
Telephone	13510126210

3.2 Manufacturer

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

4. General Information of The Product

4.1 Product Description for Equipment under Test (EUT)

Product	Wireless data POS System
Model	T5820
Date of Receipt	S02aa:October 20,2022
EUT ID*	S02aa
SN/IMEI	S02aa: 860450060011182 860450060011190
Supported Radio Technology and Bands	GSM850/GSM900/DCS1800/PCS1900 WCDMA Band I/II/IV/V/VIII LTE Band 1/2/3/4/5/7/12/17/28/38/41 WLAN 802.11 b/g/n WLAN 802.11 a/n/ac BT5.1 BR/EDR, BLE GPS/Glonass/BDS
HVIN	T5820
Hardware Version	V01
Software Version	XQT530_V004_20220923
FCC ID	2AH25T5820
IC	22621-T5820
NOTE： EUT ID is the internal identification code of the laboratory.	

4.2 Internal Identification of AE used during the test

AE ID*	Description	Model	SN/Remark
AE1	RF Cable	N/A	N/A

4.3 Additional Information

WLAN Frequency	UNII 1: 5150MHz-5250MHz UNII 2A: 5250MHz-5350MHz UNII 2C: 5470MHz-5725MHz
Occupied Channel Bandwidth	20 MHz: 802.11 a/n/ac 40 MHz: 802.11 n/ac 80 MHz: 802.11 ac
WLAN type of modulation	OFDM

5. Test Configuration Information

5.1 Laboratory Environmental Conditions

Relative Humidity	Min. = 45 %, Max. = 55 %		
Atmospheric Pressure	101kPa		
Temperature	Normal	Minimum	Maximum
	25℃	0℃	45℃
Working Voltage of EUT	Normal	Minimum	Maximum
	7.2V	6.8V	8.4V

5.2 Test Equipments Utilized

5.2.1 Conducted Test System

No.	Name	Model	S/N	Manufacturer	Cal. Date	Cal. Interval
1	Programmable P ower Supply	Keithley 2303	4039070	Starpoint	July 12, 2022	1 Year
2	Vector Signal Generator	SMBV100A	257904	R&S	February 21, 2022	1 Year
3	Temperature box	B-TF-107C	BTF107C-201804107	Boyi	June 30, 2022	1 Year
4	Spectrum Analyz er	FSQ40	200063	R&S	October 19,2022	1 year
5	USB Wideband Power Senser	U2021XA	MY56410009	Keysight	February 21, 2022	1 Year
6	Simultaneous Sampling DQA	U2531A	TW56183514	Agilent	March 02, 2022	1 Year
7	Vector Signal Generator	SMU200A	104684	R&S	August 23, 2022	1 Year
8	Wireless communication comprehensive tester	CMW270	100919	R&S	August 22, 2022	1 Year
9	Eagle Test Software	Eagle V3.3	N/A	ECIT	N/A	N/A
10	Talent Microwave Band Rejection Filter	Filter	191016001	N/A	N/A	N/A

5.2.2 Radiated Emission Test System

No.	Name	Model	S/N	Manufacturer	Cal. Date	Cal. Interval
1	Universal Radio Communication Tester	CMU200	123123	R&S	October 17,2022	1Year
2	Universal Radio Communication Tester	CMW500	104178	R&S	October 17,2022	1Year
3	EMI Test Receiver	ESU40	100307	R&S	February 23, 2022	1 Year
4	TRILOG Broadband Antenna	VULB9163	VULB9163-515	Schwarzbeck	March 11, 2022	1 Year
5	Double- ridged Waveguide Antenna	ETS-3117	00135890	ETS	March 9, 2022	2 Years
6	2-Line V-Network	ENV216	101380	R&S	February 21, 2022	1 Year
7	EMI Test Software	EMC32 V9.15.00	N/A	R&S	N/A	N/A

5.2.3 Test Environment

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

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

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

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

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

Temperature	Min. = 15 ℃, 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

5.3 Measurement Uncertainty

Item(s)	Range	Confidence Level	Calculated Uncertainty
Peak Output Power-Conducted	2402MHz-2480MHz	95%	0.544dB
Peak Power Spectral Density	2402MHz-2480MHz	95%	0.544dB
6dB Bandwidth	2402MHz-2480MHz	95%	62.04Hz
Frequency Band Edges-Conducted	2390MHz-2488.5MHz	95%	0.544dB
Conducted Emission	9KHz-30MHz	95%	0.89dB

Item(s)	Range	Confidence Level	Calculated Uncertainty
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
AC Power line Conducted Emission	0.15MHz-30MHz	95%	3.66 dB

6. Measurement Results

6.1 Maximum conducted output power

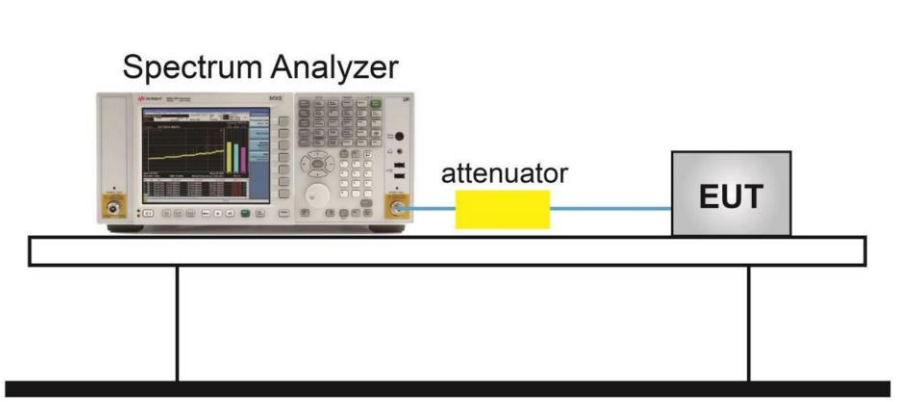
6.1.1 Measurement Limit and Method

Standard	Limit (dBm)	EIRP Limit (dBm)
FCC 47 Part 15.247(b)(3)	<30	<36
RSS-247 5.4(d)	<30	<36

The measurement method SA-1 is made according to KDB 789033 E

1. Set span to encompass the entire emission bandwidth (EBW) (or, alternatively, the entire 99% occupied bandwidth) of the signal.
2. Set RBW=1MHz
3. Set VBW≥3MHz
4. Number of points in sweep ≥ 2 × span / RBW. (This ensures that bin-to-bin spacing is ≤ RBW/2, so that narrowband signals are not lost between frequency bins.)
5. Sweep time = auto.
6. Detector = power averaging (rms), if available. Otherwise, use sample detector mode.
7. If transmit duty cycle < 98%, use a video trigger with the trigger level set to enable triggering only on full power pulses. Transmitter must operate at maximum power control level for the entire duration of every sweep. If the EUT transmits continuously (i.e., with no off intervals) or at duty cycle ≥ 98%, and if each transmission is entirely at the maximum power control level, then the trigger shall be set to “free run.”
8. Trace average at least 100 traces in power averaging (rms) mode.
9. Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument’s band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at 1 MHz intervals extending across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the spectrum.

6.1.2 Test setup



6.1.3 Test Result Channel Power

Original Test Result Channel Power

Test Mode	Tx power level	Frequency [MHz]	Channel Power [dBm]	Duty Cycle [%]	DC Factor[dBm]	Result [dBm]	EIRP [dBm]
11A	19	5180	15.24	97.20	0.12	15.36	18.67
11A	19	5200	14.33	96.53	0.15	14.48	17.79
11A	19	5240	14.01	97.22	0.12	14.13	17.44
11A	19	5260	13.31	96.53	0.15	13.46	16.77
11A	19	5280	13.48	96.53	0.15	13.63	16.94
11A	19	5320	13.37	96.53	0.15	13.52	16.83
11A	19	5500	12.61	96.53	0.15	12.76	16.07
11A	19	5580	12.70	96.53	0.15	12.85	16.16
11A	19	5700	12.84	96.53	0.15	12.99	16.3
11N20SISO	19	5180	13.93	96.30	0.16	14.09	17.4
11N20SISO	19	5200	13.32	96.30	0.16	13.48	16.79
11N20SISO	19	5240	12.95	96.30	0.16	13.11	16.42
11N20SISO	19	5260	13.13	96.30	0.16	13.29	16.6
11N20SISO	19	5280	13.47	96.30	0.16	13.63	16.94
11N20SISO	19	5320	13.19	97.01	0.13	13.32	16.63
11N20SISO	19	5500	12.56	97.01	0.13	12.69	16
11N20SISO	19	5580	12.50	97.01	0.13	12.63	15.94
11N20SISO	19	5700	12.73	97.01	0.13	12.86	16.17
11N40SISO	19	5190	13.46	92.86	0.32	13.78	17.09
11N40SISO	19	5230	12.70	94.20	0.26	12.96	16.27
11N40SISO	19	5270	13.20	94.20	0.26	13.46	16.77
11N40SISO	19	5310	13.50	94.20	0.26	13.76	17.07
11N40SISO	19	5510	11.92	92.86	0.32	12.24	15.55
11N40SISO	19	5550	11.96	94.20	0.26	12.22	15.53
11N40SISO	19	5670	12.67	94.20	0.26	12.93	16.24
11AC20SISO	19	5180	13.95	97.04	0.13	14.08	17.39
11AC20SISO	19	5200	13.54	97.04	0.13	13.67	16.98
11AC20SISO	19	5240	13.24	97.04	0.13	13.37	16.68
11AC20SISO	19	5260	13.22	96.32	0.16	13.38	16.69
11AC20SISO	19	5280	13.36	97.06	0.13	13.49	16.8
11AC20SISO	19	5320	12.94	97.04	0.13	13.07	16.38
11AC20SISO	19	5500	12.35	96.32	0.16	12.51	15.82
11AC20SISO	19	5580	12.39	97.06	0.13	12.52	15.83
11AC20SISO	19	5700	12.68	96.32	0.16	12.84	16.15
11AC40SISO	19	5190	13.97	92.86	0.32	14.29	17.6
11AC40SISO	19	5230	13.36	92.86	0.32	13.68	16.99
11AC40SISO	19	5270	13.05	94.20	0.26	13.31	16.62
11AC40SISO	19	5310	13.45	94.20	0.26	13.71	17.02

11AC40SISO	19	5510	12.00	92.86	0.32	12.32	15.63
11AC40SISO	19	5550	11.81	94.20	0.26	12.07	15.38
11AC40SISO	19	5670	12.58	94.20	0.26	12.84	16.15
11AC80SISO	19	5210	13.03	86.49	0.63	13.66	16.97
11AC80SISO	19	5290	13.38	89.19	0.50	13.88	17.19
11AC80SISO	19	5530	11.83	89.19	0.50	12.33	15.64
11AC80SISO	19	5610	12.33	88.89	0.51	12.84	16.15

Verified Power

Test Mode	Frequency[MHz]	Set Power	Channel Powert [dBm]	Duty Cycle [%]	DC Factor [dBm]	Result [dBm]	EIRP [dBm]
11A	5180	19	15.07	97.20	0.12	15.19	18.50
11A	5200	19	14.03	97.20	0.12	14.15	17.46
11A	5240	19	13.93	96.53	0.15	14.08	17.39
11A	5260	19	13.07	97.20	0.12	13.19	16.50
11A	5280	19	13.10	97.20	0.12	13.22	16.53
11A	5320	19	13.09	97.20	0.12	13.21	16.52
11A	5500	19	12.15	96.53	0.15	12.30	15.61
11A	5580	19	12.19	97.22	0.12	12.31	15.62
11A	5700	19	12.05	97.20	0.12	12.17	15.48
11N20SISO	5180	19	13.56	96.30	0.16	13.72	17.03
11N20SISO	5200	19	13.07	97.01	0.13	13.20	16.51
11N20SISO	5240	19	12.72	97.01	0.13	12.85	16.16
11N20SISO	5260	19	12.33	97.01	0.13	12.46	15.77
11N20SISO	5280	19	12.11	96.30	0.16	12.27	15.58
11N20SISO	5320	19	12.43	96.30	0.16	12.59	15.90
11N20SISO	5500	19	11.98	97.01	0.13	12.11	15.42
11N20SISO	5580	19	12.00	97.01	0.13	12.13	15.44
11N20SISO	5700	19	12.03	96.30	0.16	12.19	15.50
11N40SISO	5190	19	12.17	94.20	0.26	12.43	15.74
11N40SISO	5230	19	12.43	94.20	0.26	12.69	16.00
11N40SISO	5270	19	12.06	94.20	0.26	12.32	15.63
11N40SISO	5310	19	12.27	92.86	0.32	12.59	15.90
11N40SISO	5510	19	11.85	94.20	0.26	12.11	15.42
11N40SISO	5550	19	11.19	92.75	0.33	11.52	14.83
11N40SISO	5670	19	11.29	94.20	0.26	11.55	14.86
11AC20SISO	5180	19	13.03	96.32	0.16	13.19	16.50
11AC20SISO	5200	19	12.89	96.32	0.16	13.05	16.36
11AC20SISO	5240	19	12.77	96.32	0.16	12.93	16.24
11AC20SISO	5260	19	12.82	96.32	0.16	12.98	16.29
11AC20SISO	5280	19	12.61	97.06	0.13	12.74	16.05
11AC20SISO	5320	19	12.42	96.32	0.16	12.58	15.89

11AC20SISO	5500	19	11.91	97.06	0.13	12.04	15.35
11AC20SISO	5580	19	12.05	97.04	0.13	12.18	15.49
11AC20SISO	5700	19	11.88	96.32	0.16	12.04	15.35
11AC40SISO	5190	19	13.68	92.86	0.32	14.00	17.31
11AC40SISO	5230	19	13.02	92.86	0.32	13.34	16.65
11AC40SISO	5270	19	12.13	92.86	0.32	12.45	15.76
11AC40SISO	5310	19	12.51	92.86	0.32	12.83	16.14
11AC40SISO	5510	19	11.90	94.29	0.26	12.16	15.47
11AC40SISO	5550	19	11.61	92.86	0.32	11.93	15.24
11AC40SISO	5670	19	11.29	94.20	0.26	11.55	14.86
11AC80SISO	5210	19	12.52	88.89	0.51	13.03	16.34
11AC80SISO	5290	19	12.25	86.49	0.63	12.88	16.19
11AC80SISO	5530	19	11.33	89.19	0.50	11.83	15.14
11AC80SISO	5610	19	11.65	89.19	0.50	12.15	15.46

Note 1：

The Duty Cycle Factor is compensated in the graph.

Using the MTK platform software set by default by the customer.

Note 2:

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

6.2 Transmitter Spurious Emission

6.2.1 Measurement Limit and Method

Standard	Limit(dBμV/m)	
FCC 47 CFR Part 15.209 & 15.407(b)(9),(10)	Peak	74
	Average	54
RSS-Gen 8.9,8.10 RSS-247 6.2.1.2	Peak	74
	Average	54

The measurement is made according to KDB 789033

Set the spectrum analyzer in the following:

Below 1GHz:

a) Follow the requirements in II.G.3. “General Requirements for Unwanted Emissions Measurements.”

b) Compliance shall be demonstrated using CISPR quasi-peak detection; however, peak detection is permitted as an alternative to quasi-peak detection.

Detector: Peak and Quasi-Peak

RBW=100kHz / VBW=300kHz / Sweep=AUTO

Above 1GHz (detector: Peak):

a) Follow the requirements in II.G.3, “General Requirements for Unwanted Emissions Measurements.”

b) Maximum emission levels are measured by setting the analyzer as follows:

(i) RBW = 1 MHz.

(ii) VBW ≥ 3 MHz.

(iii) Detector = Peak.

(iv) Sweep time = auto.

(v) Trace mode = max hold.

(vi) Allow sweeps to continue until the trace stabilizes. Note that if the transmission is not continuous, the time required for the trace to stabilize will increase by a factor of approximately 1/x, where x is the duty cycle. For example, at 50% duty cycle, the measurement time will increase by a factor of two relative to measurement time for continuous transmission.

Limit in restricted band:

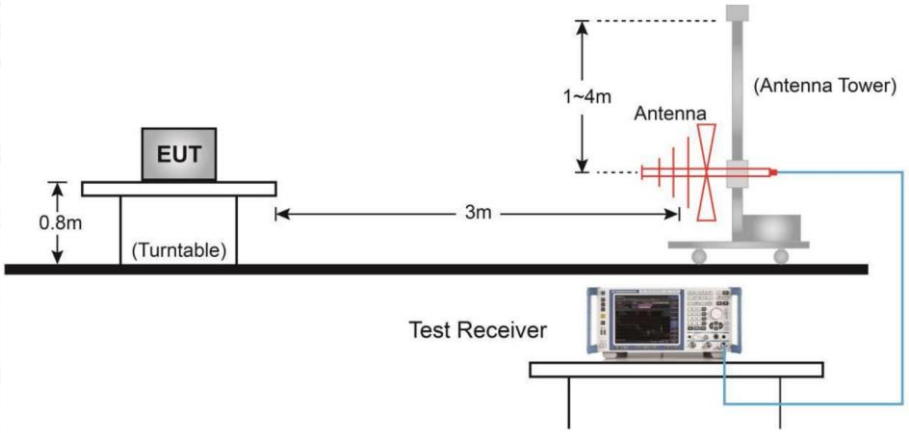
Frequency of emission (MHz)	Field strength(dBμV/m)	Measurement distance(m)
0.009-0.490	129-94	3
0.490-1.705	74-63	3
1.705-30	70	3

30-88	40.0	3
88-216	43.5	3
216-960	46.0	3
Above 960	54.0	3

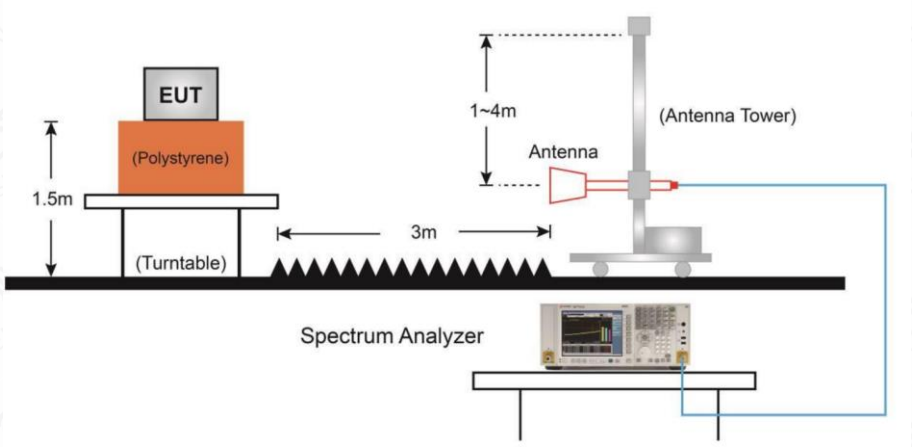
Note: for frequency range below 960MHz, the limit in 15.209 is defined in 10m test distance. The limit used above is calculated from 10m to 3m

6.5.1 Test Setup

Below 1GHz Test Setup



Above 1GHz Test Setup



Test procedures

The measurement was applied in a semi-anechoic chamber. While testing for spurious emission higher than 1GHz, if applied, the pre-amplifier would be equipped just at the output terminal of the antenna.

Tabletop devices shall be placed on a nonconducting platform with nominal top surface dimensions 1 m by 1.5 m. For emissions testing at or below 1 GHz, the table height shall be 80 cm above the reference ground plane. For emission measurements above 1 GHz, the table

height shall be 1.5 m.

The turntable rotated 360 degrees to determine the position of the maximum emission level.

The EUT was set 3 meters away from the receiving antenna which was mounted on an antenna mast. The antenna moved up and down between from 1meter to 4 meters to find out the maximum emission level.

The EUT was tested according to KDB 789033 D02: Section G.

The radiated emission was measured using the Spectrum Analyzer with the resolutions bandwidth set as:

RBW = 300 Hz, VBW = 1 kHz (9 kHz~150 kHz);

RBW = 10 kHz, VBW = 30 kHz (150 kHz~30MHz);

RBW = 100 kHz, VBW = 300 kHz (30MHz~1GHz for PK)

RBW = 1MHz, VBW = 3MHz (>1GHz for PK);

Remark:

1. Factor= Antenna Factor + Cable Loss (-Amplifier, is employed)
2. Measured level= Original Receiver Reading + Factor
3. Margin = Limit – Measured level
4. If the PK measured level is lower than AV limit, the AV test can be elided

The test data below 30MHz is more than 20dB lower than the limit value, so it is not provided in the report.

Modulation type and data rate tested (Only worst case result is given below):

U-NII-1:

Mode	Data rate	Channel
802.11a	6M	40(5200MHz)

U-NII-2a:

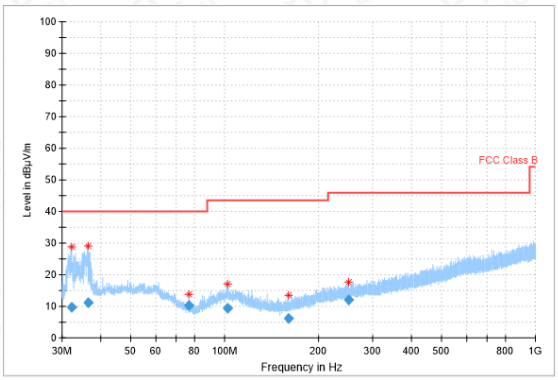
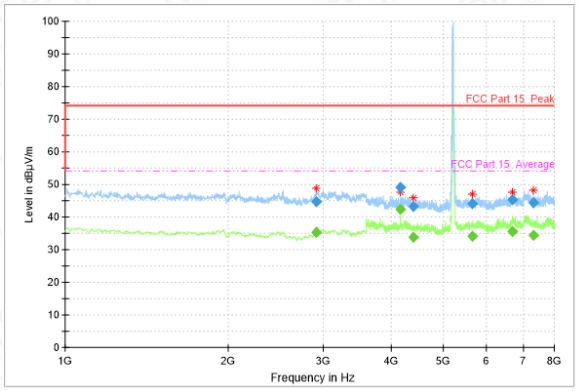
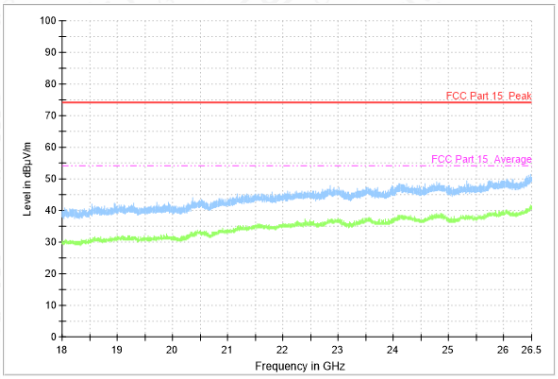
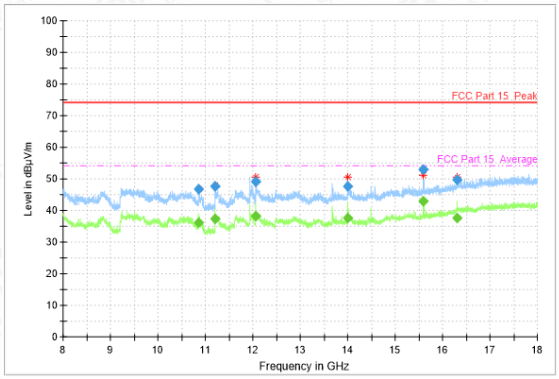
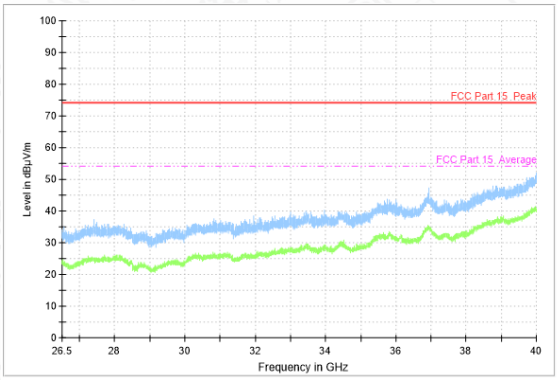
Mode	Data rate	Channel
802.11a	6M	64(5320MHz)

U-NII-2c

Mode	Data rate	Channel
802.11a	6M	100(5500MHz)

6.5.2 Measurement Results

U-NII-1

Radiated Spurious Emission (802.11a, ch40, 30MHz-1GHz)	Radiated Spurious Emission (802.11a, ch40, 1 GHz-8 GHz)
	
Radiated Spurious Emission (802.11a, ch40, 8GHz-18GHz)	**Radiated Spurious Emission (802.11a, ch40,18GHz-26.5GHz)**
	
Radiated Spurious Emission (802.11a, ch40,26.5 GHz-40 GHz)	/
	/

802.1a

Channel 40(30MHz ~1GHz)

Frequency (MHz)	Result (dB μ V/m)	ARpl (dB)	PMea (dB μ V/m)	Polarity
32.3	9.74	-14.3	24.04	V
36.4	11.29	-13.6	24.89	V
77.0	10.36	-17.6	27.96	V
102.3	9.47	-13.3	22.77	V
161.1	6.24	-16.3	22.54	V
250.0	11.94	-12.2	24.14	V

Channel 40(30MHz ~1GHz)

Frequency (MHz)	Result (dB μ V/m)	ARpl (dB)	PMea (dB μ V/m)	Polarity
2906.6	44.58	1.5	43.08	V
4159.8	48.98	1.2	47.78	V
4396.0	43.38	1.5	41.88	H
5656.0	44.14	2.3	41.84	H
6704.8	45.3	3.9	41.4	V
7324.8	44.33	4	40.33	V

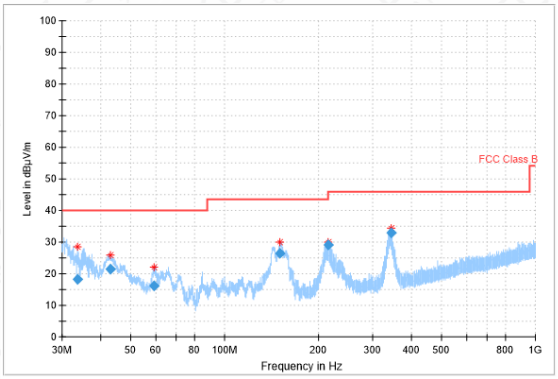
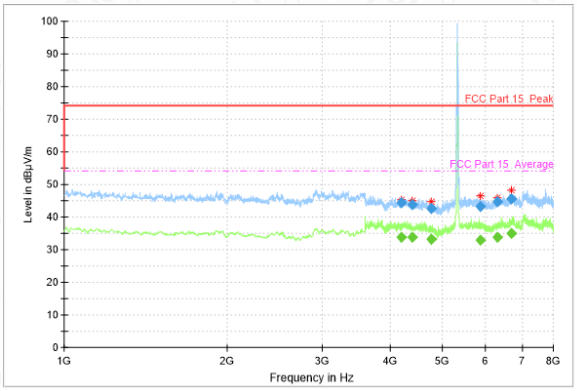
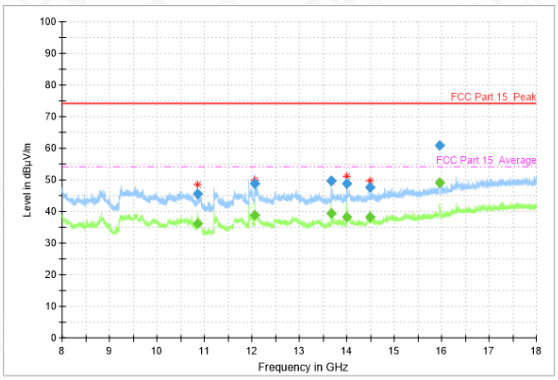
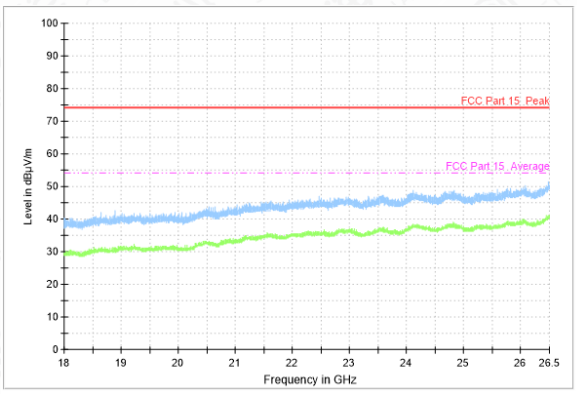
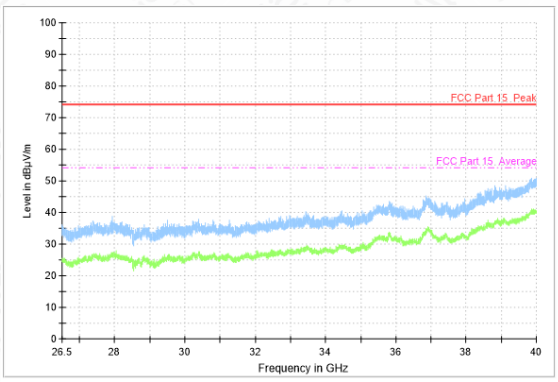
Channel 48(8GHz ~ 18GHz)

Frequency (MHz)	Result (dB μ V/m)	ARpl (dB)	PMea (dB μ V/m)	Polarity
10861.2	46.67	7	39.67	V
11202.2	47.66	7.9	39.76	H
12059.0	49.06	10.2	38.86	H
14004.6	47.64	12.4	35.24	H
15597.2	53.03	14.4	38.63	H
16302.2	49.67	16.1	33.57	V

Note:

1. The test data below 30MHz is more than 20dB lower than the limit value, so it is not provided in the report.

U-NII-2a

Radiated Spurious Emission (802.11n-20MHz, ch64, 30MHz-1GHz)	Radiated Spurious Emission (802.11n-20MHz, ch64, 1 GHz-8 GHz)
	
Radiated Spurious Emission (802.11n-20MHz, ch64, 8GHz-18GHz)	**Radiated Spurious Emission (802.11n-20MHz, ch64, 18GHz-26.5GHz)**
	
Radiated Spurious Emission (802.11n-20MHz, ch64, 26.5 GHz-40 GHz)	/
	/

802.11a

Channel 64(30MHz ~1GHz)

Frequency (MHz)	Result (dB μ V/m)	ARpl (dB)	PMea (dB μ V/m)	Polarity
33.6	18.28	-14.3	32.58	V
42.8	21.53	-12.6	34.13	V
59.1	16.27	-12.2	28.47	V
150.9	26.33	-17	43.33	H
215.5	29.02	-13.4	42.42	V
342.7	32.9	-9.8	42.7	H

Channel 64(1GHz ~ 8GHz)

Frequency (MHz)	Result (dB μ V/m)	ARpl (dB)	PMea (dB μ V/m)	Polarity
4193.0	44.38	1	43.38	V
4393.2	43.95	1.5	42.45	H
4765.0	42.67	1.5	41.17	H
5867.8	43.15	2.3	40.85	V
6305.4	44.63	3	41.63	V
6703.2	45.53	3.9	41.63	V

Channel 64(8GHz ~ 18GHz)

Frequency (MHz)	Result (dB μ V/m)	ARpl (dB)	PMea (dB μ V/m)	Polarity
10859.4	45.57	7	38.57	H
12055.8	48.8	10.2	38.6	H
13678.8	49.68	11.6	38.08	V
14003.6	48.92	12.4	36.52	V
14485.6	47.77	12.5	35.27	H
15952.4	60.86	15.1	45.76	H

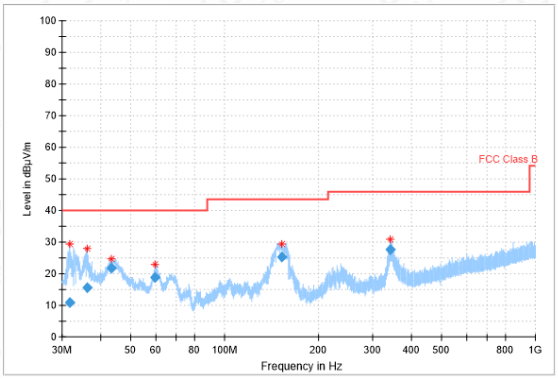
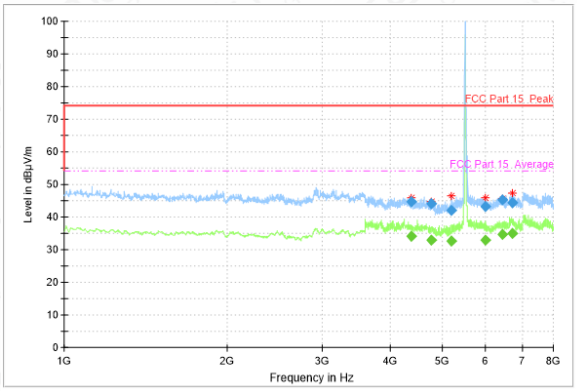
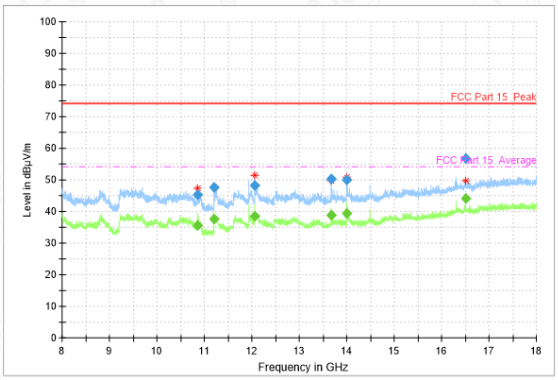
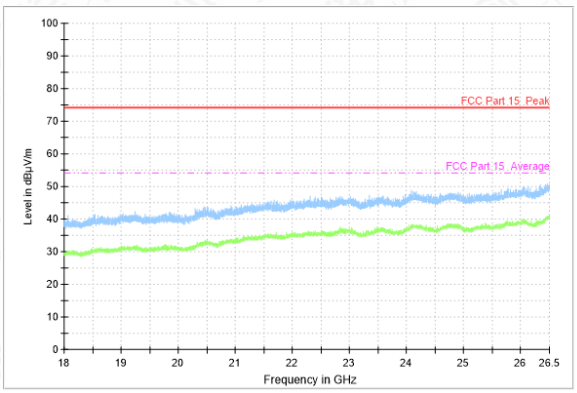
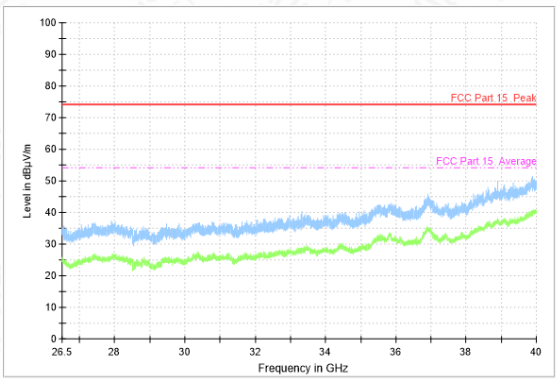
Channel 64(8GHz ~ 18GHz)(Average)

Frequency (MHz)	Result (dB μ V/m)	ARpl (dB)	PMea (dB μ V/m)	Polarity
15952.4	49.17	15.1	34.07	H

Note:

1. The test data below 30MHz is more than 20dB lower than the limit value, so it is not provided in the report.

U-NII-2c

Radiated Spurious Emission (802.11a, ch100, 30MHz-1GHz)	Radiated Spurious Emission (802.11a, ch100, 1 GHz-8 GHz)
	
Radiated Spurious Emission (802.11a, ch100, 8GHz-18GHz)	**Radiated Spurious Emission (802.11a, ch100, 18GHz-26.5GHz)**
	
Radiated Spurious Emission (802.11a, ch100, 26.5 GHz-40 GHz)	/
	/

802.11a

Channel 100(30MHz ~1GHz)

Frequency (MHz)	Result (dB μ V/m)	ARpl (dB)	PMea (dB μ V/m)	Polarity
31.8	10.85	-14.4	25.25	V
36.1	15.49	-13.7	29.19	V
43.3	21.62	-12.6	34.22	V
59.8	18.7	-12.3	31	V
152.9	25.16	-17	42.16	H
342.1	27.62	-9.8	37.42	H

Channel 100(1GHz ~ 8GHz)

Frequency (MHz)	Result (dB μ V/m)	ARpl (dB)	PMea (dB μ V/m)	Polarity
4376.2	44.61	1.3	43.31	H
4769.4	44.22	1.6	42.62	H
5194.4	42	2.7	39.3	V
6002.8	43.27	1.9	41.37	H
6446.6	45.3	2.9	42.4	H
6713.8	44.44	3.8	40.64	V

Channel 100(8GHz ~ 18GHz)

Frequency (MHz)	Result (dB μ V/m)	ARpl (dB)	PMea (dB μ V/m)	Polarity
10864.8	45.2	7	38.2	H
11201.0	47.56	7.9	39.66	H
12061.0	48.34	10.2	38.14	V
13675.0	50.44	11.6	38.84	V
14003.2	50	12.4	37.6	H
16506.8	56.69	16.8	39.89	V

Channel 100(8GHz ~ 18GHz)(Average)

Frequency (MHz)	Result (dB μ V/m)	ARpl (dB)	PMea (dB μ V/m)	Polarity
16506.8	44	16.8	27.2	V

Note:

1. The test data below 30MHz is more than 20dB lower than the limit value, so it is not provided in the report.

Annex A: Revised History

Version	Revised Content
V00	Initial
V01	Update 1.3 section note
V02	Update 1.3 section note
V03	Add test results of the power

Annex B: Accreditation Certificate

Accredited Laboratory

A2LA has accredited

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

Shanghai, People's Republic of China

for technical competence in the field of

Electrical Testing

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

Presented this 12th day of April 2021.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 3682.01
Valid to February 28, 2023

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

END OF REPORT