



TEST REPORT

Applicant Name : Address :

Report Number : FCC ID: Seeed Technology Co., Ltd 9F, G3 Building, TCL International E City, Zhongshanyuan Road, Nanshan District, Shenzhen, Guangdong Province, P.R.C SZNS211025-54608E-00A Z4T-RESERVER-A

Test Standard (s)

FCC PART 15.247

Sample Description

Product:	reServer-X86-A1135
Trademark:	Seeed Studio
Tested Model:	reServer-I51135(64G+512G/z)
Multiple Product and	reServer-X86-A1115, reServer-I31115(xx+yy/z);
Model:	reServer-X86-A1125, reServer-I31125(xx+yy/z)
	reServer-X86-A1135, reServer-I51135(xx+yy/z)
	(Note: xx: DDR, 8G/16G/32G/64G
	yy: SSD, 128G/256G/512G; z: wifi module)
Date Received:	2021-10-20
Date of Test:	2021-10-22 to 2022-04-18
Report Date:	2022-04-18

Test Result:

Pass*

* In the configuration tested, the EUT complied with the standards above. **Prepared and Checked By:** Approved By:

Ting Lü EMC Engineer

Candy . Li

Candy Li EMC Engineer

Note: This report may contain data that are not covered by the A2LA accreditation and are marked with an asterisk "* ".

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GENERAL INFORMATION

Product	reServer-X86-A1135				
Trademark	Seeed Studio				
Tested Model	reServer-I51135(64G+512G/	z)			
	reServer-X86-A1115	reServer-I31115(xx+yy/z)			
	reServer-X86-A1125	reServer-I31125(xx+yy/z)			
Multiple Product and Model	reServer-X86-A1135	reServer-I51135(xx+yy/z)			
	(Note: xx: DDR, 8G/ 128G/256G/512G; z: wifi mo	16G/32G/64G; yy: SSD, odule)			
Model difference	Please refer to the DoS letter				
Frequency Range	Bluetooth: 2402~2480MHz				
Maximum conducted Peak output power	Bluetooth: 3.27dBm				
Modulation Technique	Bluetooth: GFSK, π/4-DQPSK, 8DPSK				
Antenna Specification*	External Antenna: 2.13dBi (p	provided by the applicant)			
Voltage Range	DC 12V from adapter.				
Sample serial number	SZNS211025-54608E-RF-S1				
Sample/EUT Status	Good condition				
	Model: HA-1600-12				
Adapter 1 information	n Input: 100-240V~1.7A 50/60Hz,				
	Output: DC 12V, 5A				
Adapter 2 information	Model: PA-1061-81				
Adapter 2 mormation	$\begin{array}{c} \text{Input: 100-240V} \\ \text{Output: DC 12V 5A 60W} \end{array}$				
	5 alpati D C 12 , 511, 00 fr				

Product Description for Equipment under Test (EUT)

Objective

This test report is in accordance with Part 2-Subpart J, Part 15-Subparts A and C of the Federal Communication Commission rules.

The tests were performed in order to determine compliance with FCC Part 15, Subpart C, section 15.203, 15.205, 15.207, 15.209 and 15.247 rules.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

All emissions measurement was performed at Shenzhen Accurate Technology Co., Ltd. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Measurement Uncertainty

Parameter		Uncertainty		
Occupied Channel Bandwidth		5%		
RF Fre	quency	$0.082^{*10^{-7}}$		
RF output pov	ver, conducted	0.73dB		
Unwanted Emis	ssion, conducted	1.6dB		
AC Power Lines Conducted Emissions		2.72dB		
	9kHz - 30MHz	2.66dB		
	30MHz - 1GHz	4.28dB		
Emissions, Radiated	1GHz - 18GHz	4.98dB		
Radiated	18GHz - 26.5GHz	5.06dB		
	26.5GHz - 40GHz	4.72dB		
Temperature		1°C		
Hum	idity	6%		
Supply voltages		0.4%		

Note: The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

Test Facility

The test site used by Shenzhen Accurate Technology Co., Ltd. to collect test data is located on the 1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China.

The test site has been approved by the FCC under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No.: 708358, the FCC Designation No.: CN1189. Accredited by American Association for Laboratory Accreditation (A2LA) The Certificate Number is 429 7.01.

Listed by Innovation, Science and Economic Development Canada (ISEDC), the Registration Number is 5077A.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in an engineering mode and support modes as below, which provided by manufacturer.

Modulation	Packet Type (Maximum Payload)	Data Rate (Mbps)
GFSK	DH5	1
π/4-DQPSK	2DH5	2
8DPSK	3DH5	3

EUT Exercise Software

Software of "app DRTU"* provided by manufacturer.

The device was tested with the Power level is 7*.

Special Accessories

No special accessory.

Equipment Modifications

No modification was made to the EUT tested.

Manufacturer	Description	Model	Serial Number
DELL	Keyboard	L100	CN0RH66658985C018C
DELL	Mouse	MOC5UG	Unknown
PHILIPS	DP Monitor	275M7C	Unknown
DELL	HDMI Monitor	ST2310f	Unknown
ZHIKE	Solid State Drive 1	U300	USA210510105
ZHIKE	Solid State Drive 2	U300	USA210510106
BORY	NVME PCIE SSD	Unknown	800295763
Kingston Memory bank 1		9905700-E15.AO OG	Unknown
Kingston	Kingston Memory bank 2		Unknown
Unknown	Unknown M.2 PCI-E		2106H520A 128GA 18829
SCI	Earphone	SCRC-130A	Unknown
Lenovo	Notebook T430 Unk		Unknown

Support Equipment List and Details

External I/O Cable

Cable Description	Length (m)	From Port	То
Unshielded Detachable DC output Cable	1.15	Adapter 1	EUT
Unshielded Detachable DC output Cable	1.0	Adapter2	EUT
Unshielded Detachable AC power Cable	1.0	EUT	Adapter 1
Unshielded Detachable AC power Cable	1.5	EUT	Adapter 2
Shielded Detachable HDMI Cable	1.75	EUT	HDMI Monitor
Shielded Detachable DP Cable	1.75	EUT	DP Monitor
Unshielded Detachable USB Cable	1.5	EUT	Mouse
Unshielded Detachable USB Cable	1.5	EUT	Keyboard
Unshielded Detachable RJ45 Cable 1	3	Internet	EUT
Unshielded Detachable RJ45 Cable 2	3	Notebook	EUT
Unshielded Detachable earphone Cable	0.75	EUT	Earphone

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Block Diagram of Test Setup

For conducted emission:



Shenzhen Accurate Technology Co., Ltd.

For Radiated Emission:

Below 1GHz:



Above 1GHz:



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SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
FCC §15.247 (i), §2.1091	Maximum Permissible Exposure(MPE)	Compliant
§15.203	Antenna Requirement	Compliant
§15.207(a)	AC Line Conducted Emissions	Compliant
§15.205, §15.209 & §15.247(d)	Radiated Emissions	Compliant
§15.247(a)(1)	20 dB Emission Bandwidth & 99% Occupied Bandwidth	Compliant*
§15.247(a)(1)	Channel Separation Test	Compliant*
§15.247(a)(1)(iii)	Time of Occupancy (Dwell Time)	Compliant*
§15.247(a)(1)(iii)	Quantity of hopping channel Test	Compliant*
§15.247(b)(1)	Peak Output Power Measurement	Compliant* (Note*)
§15.247(d)	Band edges	Compliant*

Compliant*: This device contains one same PCBA Module Radio unit, which certified with product model of ODYSSEY-I51135(64G+512G/z), FCC ID: Z4T-ODYSSEY-A, please refers to report: SZNS211008-51520E-00A. Note: Per pre-test for all models, and the worst case about maximum emission is model of reServer-I51135(64G+512G/z), which was recorded in this report.

Note*: The EUT had been tested and verified the RF parameters consistently with the PCBA Module.

TEST EQUIPMENT LIST

Manufacturer	Description	Model Serial Number		Calibration Date	Calibration Due Date			
Conducted Emissions Test								
Rohde& Schwarz	EMI Test Receiver	ESCI	100784	2021/02/03	2022/02/02			
R & S	L.I.S.N.	ENV216	101314	2020/12/25	2021/12/24			
Anritsu Corp	50 Ω Coaxial Switch	MP59B	6200506474	2020/12/25	2021/12/24			
Unknown	RF Coaxial Cable	N-2m	No.2	2020/12/25	2021/12/24			
	Conducted Er	nission Test Soft	ware: e3 19821b (V9)				
		Radiated Emissi	ons Test					
Rohde& Schwarz	Test Receiver	ESR	102725	2020/12/25	2021/12/24			
Rohde&Schwarz	Spectrum Analyzer	FSV40	101949	2021/5/18	2022/5/17			
SONOMA INSTRUMENT	Amplifier	310 N	186131	2020/12/25	2021/12/24			
A.H. Systems, inc.	Preamplifier	PAM-0118P	531	2021/11/9	2022/11/8			
Quinstar	Amplifier	QLW-184055 36-J0	15964001002	2020/11/28	2021/11/27			
Anritsu Corp	50 Coaxial Switch	MP59B	6100237248	2020/12/25	2021/12/24			
Schwarzbeck	Bilog Antenna	VULB9163	9163-323	2020/01/05	2023/01/04			
Schwarzbeck	Horn Antenna	BBHA9120D	9120D-1067	2020/01/05	2023/01/04			
Schwarzbeck	HORN ANTENNA	BBHA9170	9170-359	2020/01/05	2023/01/04			
Wainwright	High Pass Filter	WHKX3.6/18 G-10SS	5	2020/12/25	2021/12/24			
Unknown	RF Coaxial Cable	N-5m	No.3	2020/12/25	2021/12/24			
Unknown	RF Coaxial Cable	N-1m	No.5	2020/12/25	2021/12/24			
Unknown	RF Coaxial Cable	N-10m	No.7	2020/11/09	2021/11/08			
Unknown	RF Coaxial Cable	N-2m	No.8	2020/11/09 2021/11/				
	Radiated En	nission Test Softw	ware: e3 19821b (V	V9)				
		RF Conducted	d Test					
Rohde & Schwarz	Open Switch and Control Unit	OSP120 + OSP-B157	101244 + 100866	2021/12/13	2022/12/12			
WEINSCHEL	10dB Attenuator	5324	AU 3842	Each	time			
Unknown	RF Coaxial Cable	No.32	RF-02	Each time				

* **Statement of Traceability:** Shenzhen Accurate Technology Co., Ltd. attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

FCC §15.247 (i) & §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to subpart 15.247 (i) and subpart 2.1091 systems operating under the provisions of this section shall be operated in a manner that ensures the public is not exposed to RF energy level in excess of the communication guidelines.

Limits for General Population/Uncontrolled Exposure						
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (Minutes)		
0.3-1.34	614	1.63	*(100)	30		
1.34-30	824/f	2.19/f	*(180/f ²)	30		
30-300	27.5	0.073	0.2	30		
300-1500	/	/	f/1500	30		
1500-100,000	/	/	1.0	30		

Limits for General Population/Uncontrolled Exposure

f = frequency in MHz

* = Plane-wave equivalent power density

Result

Calculated Formulary:

Predication of MPE limit at a given distance

$$\mathbf{S} = \frac{PG}{4\pi R^2}$$

S = power density (in appropriate units, e.g. mW/cm²)

P = power input to the antenna (in appropriate units, e.g., mW). G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain.

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

Frequency	Antenna Gain		Tune up po	conducted wer	Evaluation Distance	Power Density	MPE Limit
(MHZ)	(dBi)	(numeric)	(dBm)	(mW)	(cm)	$(\mathrm{mW/cm}^2)$	(mW/cm ²)
2402-2480	2.13	1.63	3.5	2.24	20	0.0007	1

Note: 1. The tune up conducted power was declared by the applicant.

2. The BT and Wi-Fi can not transmit at the same time.

To maintain compliance with the FCC's RF exposure guidelines, place the equipment at least 20cm from nearby persons.

Result: Compliant.

FCC §15.203 – ANTENNA REQUIREMENT

Applicable Standard

According to FCC § 15.203, 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 shall be considered sufficient to comply with the provisions of this Section. 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.

Antenna Connector Construction

The EUT has one external Antenna arrangement for Bluetooth, which was used a unique coupling and the antenna gain is 2.13dBi, fulfill the requirement of this section. Please refer to the EUT photos.

Result: Compliant.

FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS

Applicable Standard

FCC §15.207(a)

EUT Setup



Support units were connected to second LISN.
 Both of LISNs (AMIN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The measurement procedure of EUT setup is according with ANSI C63.10-2013. The related limit was specified in FCC Part 15.207.

The spacing between the peripherals was 10 cm.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W		
150 kHz – 30 MHz	9 kHz		

Test Procedure

During the conducted emission test, the adapter was connected to the outlet of the LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All final data was recorded in the Quasi-peak and average detection mode.

Shenzhen Accurate Technology Co., Ltd.

Transd Factor & Margin Calculation

The Transd factor is calculated by adding LISN VDF (Voltage Division Factor), Cable Loss. The basic equation is as follows:

Transd Factor = LISN VDF + Cable Loss

The "**Over limit**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, an Over limit of -7 dB means the emission is 7 dB below the limit. The equation for calculation is as follows:

Over Limit = Level – Limit Level = Read Level + Factor

Test Data

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	64 %
ATM Pressure:	101.0 kPa

The testing was performed by Bin Duan on 2021-11-18.

EUT operation mode: Transmitting

Report No.: SZNS211025-54608E-00A

Adapter 1: AC 120V/60 Hz, Line



Site	:	Shielding Room
Condition	:	Line
Mode	:	BT
Model	:	reServer-I51135 (64G+512G/z)

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
1	0.167	9.86	37.88	47.74	55.13	-7.39	Average
2	0.167	9.86	45.76	55.62	65.13	-9.51	QP
3	0.221	9.80	30.49	40.29	52.78	-12.49	Average
4	0.221	9.80	38.65	48.45	62.78	-14.33	QP
5	0.308	9.80	21.67	31.47	50.04	-18.57	Average
6	0.308	9.80	29.13	38.93	60.04	-21.11	QP
7	0.554	9.81	20.77	30.58	46.00	-15.42	Average
8	0.554	9.81	23.08	32.89	56.00	-23.11	QP
9	4.635	9.98	7.32	17.30	46.00	-28.70	Average
10	4.635	9.98	16.06	26.04	56.00	-29.96	QP
11	7.476	10.07	8.09	18.16	50.00	-31.84	Average
12	7.476	10.07	12.91	22.98	60.00	-37.02	QP

AC 120V/60 Hz, Neutral



```
Site : Shielding Room
Condition: Neutral
Mode : BT
Model : reServer-I51135 (64G+512G/z)
```

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
1	0.159	9.92	34.38	44.30	55.50	-11.20	Average
2	0.159	9.92	43.58	53.50	65.50	-12.00	QP
3	0.205	10.00	30.88	40.88	53.39	-12.51	Average
4	0.205	10.00	39.39	49.39	63.39	-14.00	QP
5	0.327	9.95	21.61	31.56	49.51	-17.95	Average
6	0.327	9.95	26.13	36.08	59.51	-23.43	QP
7	1.641	9.92	10.32	20.24	46.00	-25.76	Average
8	1.641	9.92	15.08	25.00	56.00	-31.00	QP
9	4.926	10.05	11.10	21.15	46.00	-24.85	Average
10	4.926	10.05	18.22	28.27	56.00	-27.73	QP
11	5.638	10.06	11.97	22.03	50.00	-27.97	Average
12	5.638	10.06	20.41	30.47	60.00	-29.53	QP

Adapter 2: AC 120V/60 Hz, Line



```
Site : Shielding Room
Condition: Line
Mode : BT
Model : reServer-I51135 (64G+512G/z)
```

			Read		Limit	0ver	
	Freq	Factor	Level	Level	Line	Limit	Remark
	MHZ	dB	dBuV	dBuV	dBuV	dB	
1	0.179	9.84	30.57	40.41	54.54	-14.13	Average
2	0.179	9.84	37.16	47.00	64.54	-17.54	QP
3	0.243	9.80	29.39	39.19	52.01	-12.82	Average
4	0.243	9.80	33.28	43.08	62.01	-18.93	QP
5	0.308	9.80	24.32	34.12	50.02	-15.90	Average
6	0.308	9.80	28.77	38.57	60.02	-21.45	QP
7	1.972	9.92	13.98	23.90	46.00	-22.10	Average
8	1.972	9.92	20.83	30.75	56.00	-25.25	QP
9	2.475	9.92	15.25	25.17	46.00	-20.83	Average
10	2.475	9.92	21.70	31.62	56.00	-24.38	QP
11	16.705	10.11	21.94	32.05	50.00	-17.95	Average
12	16.705	10.11	26.14	36.25	60.00	-23.75	QP

AC 120V/60 Hz, Neutral



Site : Shielding Room Condition: Neutral Mode : BT Model : reServer-I51135 (64G+512G/z)

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
1	0.168	9.94	29.51	39.45	55.07	-15.62	Average
2	0.168	9.94	38.93	48.87	65.07	-16.20	QP
3	0.270	9.97	30.38	40.35	51.13	-10.78	Average
4	0.270	9.97	28.61	38.58	61.13	-22.55	QP
5	0.325	9.95	20.21	30.16	49.57	-19.41	Average
6	0.325	9.95	24.05	34.00	59.57	-25.57	QP
7	0.556	9.91	4.47	14.38	46.00	-31.62	Average
8	0.556	9.91	11.07	20.98	56.00	-35.02	QP
9	2.636	9.97	12.11	22.08	46.00	-23.92	Average
10	2.636	9.97	21.50	31.47	56.00	-24.53	QP
11	15.666	10.08	18.51	28.59	50.00	-21.41	Average
12	15.666	10.08	24.24	34.32	60.00	-25.68	QP

FCC §15.205, §15.209 & §15.247(d) – RADIATED EMISSIONS

Applicable Standard

FCC §15.205; §15.209; §15.247(d)

EUT Setup

Below 1 GHz:



Above 1GHz:



The radiated emission tests were performed in the 3 meters, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC 15.209 and FCC 15.247 limits.

EMI Test Receiver & Spectrum Analyzer Setup

Frequency Range	RBW	Video B/W	IF B/W	Measurement
30 MHz – 1000 MHz	100 kHz	300 kHz	120 kHz	QP
Abova 1 CHz	1 MHz	3 MHz	/	PK
ADOVE I GHZ	1 MHz	10 Hz	/	Average

The EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All final data was recorded in Quasi-peak detection mode for frequency range of 30 MHz -1 GHz and peak and Average detection modes for frequencies above 1 GHz.

Factor & Margin Calculation

The Factor is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain. The basic equation is as follows:

Factor = Antenna Factor + Cable Loss - Amplifier Gain

The "**Over Limit/Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, an Over Limit/margin of -7dB means the emission is 7dB below the limit. The equation for calculation is as follows:

Over Limit = Result / Corrected Amplitude – Limit Result / Corrected Amplitude = Read Level + Factor

Test Data

Environmental Conditions

Temperature:	23-25 ℃
Relative Humidity:	49-64 %
ATM Pressure:	101.0 kPa

The testing was performed by Chao Mo on 2021-11-16 for below 1GHz and by Chao Mo on 2021-11-22 for above 1GHz.

EUT operation mode: Transmitting (Scan with GFSK, \pi/4-DQPSK, 8DPSK mode, the worst case is GFSK as below)

30MHz-1GHz:

Adapter 1:

Horizontal:



Site :	chamber
Condition:	3m HORIZONTAL
Job No. :	SZNS211025-54608E-RF
Test Mode:	BT
Note :	Adapter 1#

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	148.51	-21.63	57.90	36.27	43.50	-7.23	Peak
2	243.70	-18.64	53.10	34.46	46.00	-11.54	Peak
3	296.96	-16.77	55.21	38.44	46.00	-7.56	Peak
4	561.18	-11.96	45.85	33.89	46.00	-12.11	Peak
5	699.92	-11.37	47.22	35.85	46.00	-10.15	Peak
6	899.75	-8.12	45.21	37.09	46.00	-8.91	Peak





Site :	chamber
Condition:	3m VERTICAL
Job No. :	SZNS211025-54608E-RF
Test Mode:	BT
Note :	Adapter 1#

			Read		Limit	0ver	
	Freq	Factor	Level	Level	Line	Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	31.80	-20.15	53.38	33.23	40.00	-6.77	Peak
2	73.71	-22.03	53.23	31.20	40.00	-8.80	Peak
3	148.51	-21.63	57.18	35.55	43.50	-7.95	Peak
4	555.56	-12.20	46.87	34.67	46.00	-11.33	Peak
5	742.58	-11.14	48.09	36.95	46.00	-9.05	Peak
6	896.60	-8.25	47.57	39.32	46.00	-6.68	Peak

Adapter 2:





Site :	chamber
Condition:	3m HORIZONTAL
Job No. :	SZNS211025-54608E-RF
Test Mode:	BT
Note :	Adapter 2#

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	99.01	-19.37	45.48	26.11	43.50	-17.39	Peak
2	148.51	-21.63	56.21	34.58	43.50	-8.92	Peak
3	300.24	-16.59	51.32	34.73	46.00	-11.27	Peak
4	408.95	-15.32	52.13	36.81	46.00	-9.19	Peak
5	699.92	-11.37	47.38	36.01	46.00	-9.99	Peak
6	899.75	-8.12	45.21	37.09	46.00	-8.91	Peak





Site :	chamber			
Condition:	3m VERTICAL			
Job No. :	SZNS211025-54608E-RF			
Test Mode:	ВТ			
Note :	Adapter 2#			

			Read		Limit	0ver	
	Freq	Factor	Level	Level	Line	Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	49.12	-17.28	46.27	28.99	40.00	-11.01	Peak
2	99.01	-19.37	52.04	32.67	43.50	-10.83	Peak
3	148.51	-21.63	55.22	33.59	43.50	-9.91	Peak
4	297.09	-16.77	49.28	32.51	46.00	-13.49	Peak
5	572.87	-11.46	50.53	39.07	46.00	-6.93	Peak
6	897.00	-8.24	47.72	39.48	46.00	-6.52	Peak

F	Receiver		T	Rx Antenna		Corrected	Corrected	T	Manala
(MHz)	Reading (dBµV)	PK/QP/Ave.	Degree	Height (m)	Polar (H/V)	Factor (dB/m)	Amplitude (dBµV/m)	(dBµV/m)	(dB)
	Low channel								
2310	50.82	PK	73	1.4	Н	-6.84	43.98	74	-30.02
2310	49.34	РК	158	1.9	V	-6.84	42.5	74	-31.5
2390	53.34	РК	155	1.9	Н	-6.44	46.9	74	-27.1
2390	51.8	РК	237	2.0	V	-6.44	45.36	74	-28.64
4804	41.32	PK	155	1.6	Н	2.81	44.13	74	-29.87
4804	40.55	РК	156	1.4	V	2.81	43.36	74	-30.64
			М	iddle ch	annel				
4882	40.8	PK	357	1.6	Н	3.04	43.84	74	-30.16
4882	39.09	РК	40	2.0	V	3.04	42.13	74	-31.87
			H	ligh cha	nnel				
2483.5	52.07	РК	217	1.7	V	-5.96	46.11	74	-27.89
2483.5	50.99	РК	109	1.3	V	-5.96	45.03	74	-28.97
2500	49.21	РК	73	1.4	Н	-5.88	43.33	74	-30.67
2500	48.04	PK	209	1.5	V	-5.88	42.16	74	-31.84
4960	40.51	PK	343	2.1	Н	3.29	43.8	74	-30.2
4960	39.15	PK	325	1.1	V	3.29	42.44	74	-31.56

Above 1GHz:

Note:

Factor = Antenna factor (RX) + Cable Loss – Amplifier Factor

Absolute Level (Corrected Amplitude) = Factor + Reading

Margin = Absolute Level (Corrected Amplitude) – Limit The other spurious emission which is in the noise floor level was not recorded.

The test result of peak was 20dB below to the limit of peak, which can be compliant to the average limit, so just peak value was recorded.

1-18GHz

Pre-scan plots:

Low Channel

Horizontal:



Vertical:



Version 11: 2021-11-09

18-25GHz

Pre-scan plots:

Low Channel

Horizontal:



Vertical:



FCC §15.247(b) (1) - PEAK OUTPUT POWER MEASUREMENT

Applicable Standard

According to §15.247(b) (1), for frequency hopping systems operating in the 2400–2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. And for all other frequency hopping systems in the 2400–2483.5 MHz band: 0.125 watts.

Test Procedure

- 1. Place the EUT on a bench and set in transmitting mode.
- 2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to one test equipment.
- 3. Add a correction factor to the display.



Test Data

Environmental Conditions

Temperature:	23 °C
Relative Humidity:	55 %
ATM Pressure:	101.0 kPa

The testing was performed by Key Pei on 2022-04-18.

EUT operation mode: Transmitting

Test Result: Compliant.

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
		2402	1.67	<=20.97	PASS
DH1	Ant1	2441	1.70	<=20.97	PASS
		2480	1.62	Result[dBm] Limit[dBm] Verdia 1.67 <=20.97	PASS
	Ant1	2402	3.05	<=20.97	PASS
2DH1		2441	2.94	<=20.97	PASS
		2480	hannelResult[dBm]Limit[dB 2402 1.67 $<=20.9'$ 2441 1.70 $<=20.9'$ 2480 1.62 $<=20.9'$ 2402 3.05 $<=20.9'$ 2441 2.94 $<=20.9'$ 2480 2.90 $<=20.9'$ 2480 2.90 $<=20.9'$ 2402 3.18 $<=20.9'$ 2402 3.18 $<=20.9'$ 2441 3.31 $<=20.9'$ 2480 3.38 $<=20.9'$	<=20.97	PASS
	Ant1	2402	3.18	<=20.97	PASS
3DH1		2441	3.31	<=20.97	PASS
		2480	3.38	<=20.97	PASS

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

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