

RF EXPOSURE Test Report

Report No. : MTi250724027-0106E3
Date of issue : 2025-10-11
Applicant : TRSHUA Technology (SZ) Co., Ltd.
Product : Intelligent fault diagnosis instrument
Model(s) : P2302, P2303, P2305, P2306, P2308, P2309,
P2302A
FCC ID : 2BRN5-P2302

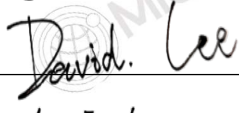
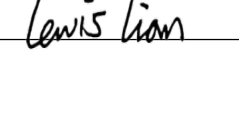
Shenzhen Microtest Co., Ltd.

TEST REPORT

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Test Result Certification		
Applicant	TRSHUA Technology (SZ) Co., Ltd.	
Applicant Address	TRSHUA, 1st Floor, Room 111, Comprehensive Building, No. 2070 Jincheng Road, Haoyi Community, Shajing Subdistrict, Bao'an District, Shenzhen, China	
Manufacturer	TRSHUA Technology (SZ) Co., Ltd.	
Manufacturer Address	TRSHUA, 1st Floor, Room 111, Comprehensive Building, No. 2070 Jincheng Road, Haoyi Community, Shajing Subdistrict, Bao'an District, Shenzhen, China	
Factory	TRSHUA Technology (SZ) Co., Ltd.	
Factory Address	TRSHUA, 1st Floor, Room 111, Comprehensive Building, No. 2070 Jincheng Road, Haoyi Community, Shajing Subdistrict, Bao'an District, Shenzhen, China	
Product description		
Product name	Intelligent fault diagnosis instrument	
Trademark	TRSHUA&BITCRUISER	
Model name	P2302	
Series Model(s)	P2303, P2305, P2306, P2308, P2309, P2302A	
Standards	47 CFR Part 2.1091	
Test method	KDB 447498 D01 v06	
Testing Information		
Date of test	2025-08-12 to 2025-10-11	
Test Result	Pass	
Prepared by:	James Qin	
Reviewed by:	David Lee	
Approved by:	Lewis Lian	

1 RF EXPOSURE EVALUATION

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) Radiation as specified in §1.1307(b)

Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	*900/f ²	6
30-300	61.4	0.163	1.0	6
300-1,500			f/300	6
1,500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
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
300-1,500			f/1500	30
1,500-100,000			1.0	30

f = frequency in MHz * = Plane-wave equivalent power density

MPE Calculation Method

Friis transmission formula: $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2)$

Where

P_d = Power density in mW/cm²

P_{out} = output power to antenna in mW

G = Numeric gain of the antenna relative to isotropic antenna

$\pi = 3.1415926$

R = distance between observation point and center of the radiator in cm(20cm)

P_d the limit of MPE, 1mW/cm². If we know the maximum gain of the antenna and total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

2 Measurement Result

2.4GWiFi:

Operation Frequency: WIFI 802.11n HT20: 2412-2462MHz

Power density limited: 1mW/ cm²

5GWiFi:

802.11n: 20 MHz

802.11ac: 80MHz

Antenna Type: FPC antenna;

Antenna gain:

2.4G: ANT0: 3.23dBi; ANT1: 5.14dBi; Directional gain: 7.25dBi;

5G: ANT0: 2.29dBi; ANT1: 3.74dBi; Directional gain: 6.06dBi;

R=20cm

mW=10^{^(dBi/10)}

2.4G: antenna 0 gain Numeric=10^{^(dBi/10)}= 10^{^(3.23/10)}= 2.10

2.4G: antenna 1 gain Numeric=10^{^(dBi/10)}= 10^{^(5.14/10)}= 3.27

5G: antenna0 gain Numeric=10^{^(dBi/10)}= 10^{^(2.29/10)}= 1.69

5G: antenna1 gain Numeric=10^{^(dBi/10)}= 10^{^(3.74/10)}= 2.37

2.4G Wi-Fi and 5G Wi-Fi can be used simultaneously.

Either SAR-based or MPE-based exemption may be considered for test exemption for fixed, mobile, or portable device exposure conditions; therefore, the contributions from each exemption in conjunction with the measured SAR (*Evaluated_k* term) shall be used to determine exemption for simultaneous transmission according to Formula (C.1) [repeated from § 1.1307(b)(3)(ii)(B)].

$$\sum_{i=1}^a \frac{P_i}{P_{th,i}} + \sum_{j=1}^b \frac{ERP_j}{ERP_{th,j}} + \sum_{k=1}^c \frac{Evaluated_k}{Exposure Limit_k} \leq 1 \quad (C.1)$$

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2.4GWiFi SISO:

ANT 1

Channel Freq. (MHz)	Modulation	conducted power	Tune-up power	Max		Antenna	Evaluation result at 20cm	Power density Limits
		(dBm)	(dBm)	tune-up power (dBm)	(mW)		Power density(mW/cm ²)	(mW/cm ²)
2412	802.11n H20	16.18	16±1	17	50.119	3.27	0.03256	1
2437		16.26	16±1	17	50.119	3.27	0.03256	1
2462		15.62	15±1	16	39.811	3.27	0.02587	1

ANT 2

Channel Freq. (MHz)	Modulation	conducted power	Tune-up power	Max		Antenna	Evaluation result at 20cm	Power density Limits
		(dBm)	(dBm)	tune-up power (dBm)	(mW)		Power density(mW/cm ²)	(mW/cm ²)
2412	802.11n H20	17.17	17±1	18	63.096	2.10	0.02641	1
2437		17.30	17±1	18	63.096	2.10	0.02641	1
2462		17.00	17±1	18	63.096	2.10	0.02641	1

MIMO

Channel Freq. (MHz)	modulation	conducted power		Tune-up power		Max				Antenna	Evaluation result at 20cm			Power density Limits
		(dBm)		(dBm)		tune-up power				Gain	Power density (mW/cm2)			(mW/cm2)
						(dBm)		(mW)		Numeric				
		Ant A	Ant B	Ant A	Ant B	Ant A	Ant B	Ant A	Ant B		Ant A	Ant B	Sum	
2412	802.11n H20	16.30	15.69	16±1	15±1	17	16	50.12	39.81	5.31	0.05294	0.04206	0.09500	1
2437		15.06	16.26	15±1	16±1	16	17	39.81	50.12	5.31	0.04206	0.05294	0.09500	1
2462		14.62	15.87	14±1	15±1	15	16	31.62	39.81	5.31	0.03341	0.04206	0.07546	1

5G WIFI: UNII-1

SISO ANT1

Channel Freq. (MHz)	modulation	conduct ed	Tune-up	Max		Antenn a	Evaluation result at 20cm	Power density
		(dBm)	(dBm)	tune-up power		Gain	Power density(mW/cm ²)	(mW/cm ²)
				(dBm)	(mW)	Numeric		
5180	11n (HT20)	11.10	11±1	12	15.849	2.37	0.00746	1
5200	11n (HT20)	11.01	11±1	12	15.849	2.37	0.00746	1
5240	11n (HT20)	11.10	11±1	12	15.849	2.37	0.00746	1
5190	11n (HT40)	8.72	8±1	19	79.433	2.37	0.03739	1
5230	11n (HT40)	9.22	9±1	10	10.000	2.37	0.00471	1
5210	11ac (HT80)	6.69	6±1	7	5.012	2.37	0.00236	1

ANT2

Channel Freq. (MHz)	modulation	conduct ed	Tune-up	Max		Antenna	Evaluation result at 20cm	Power density
		(dBm)	(dBm)	tune-up power		Gain	Power density(mW/cm ²)	(mW/cm ²)
				(dBm)	(mW)	Numeric		
5180	11n (HT20)	13.66	13±1	14	25.119	1.69	0.00847	1
5200	11n (HT20)	13.51	13±1	14	25.119	1.69	0.00847	1
5240	11n (HT20)	13.46	13±1	14	25.119	1.69	0.00847	1
5190	11n (HT40)	13.05	13±1	14	25.119	1.69	0.00847	1
5230	11n (HT40)	13.55	13±1	14	25.119	1.69	0.00847	1
5210	11ac (HT80)	9.27	9±1	10	10.000	1.69	0.00337	1

MIMO

Channel Freq. (MHz)	modulation	conducted power		Tune-up power		Max				Antenna	Evaluation result at 20cm			Power density Limits
		(dBm)		(dBm)		tune-up power				Gain	Power density (mW/cm2)			(mW/cm2)
						(dBm)		(mW)		Numeric				
		Ant A	Ant B	Ant A	Ant B	Ant A	Ant B	Ant A	Ant B		Ant A	Ant B	Sum	
5180	11n (HT20)	6.70	8.89	6±1	8±1	7	9	5.01	7.94	4.04	0.00403	0.00638	0.01041	1
5200		7.52	11.29	7±1	11±1	8	12	6.31	15.85	4.04	0.00507	0.01274	0.01781	1
5240		7.57	11.69	7±1	11±1	8	12	6.31	15.85	4.04	0.00507	0.01274	0.01781	1
5190	11n (HT40)	8.72	11.31	8±1	11±1	9	12	7.94	15.85	4.04	0.00638	0.01274	0.01912	1
5230		9.21	11.90	9±1	11±1	10	12	10.00	15.85	4.04	0.00804	0.01274	0.02078	1
5210	11ac (HT80)	7.78	11.82	7±1	11±1	8	12	6.31	15.85	4.04	0.00507	0.01274	0.01781	1

5G WIFI: UNII-3

SISO ANT 1

Channel Freq. (MHz)	modulation	conducted	Tune-up	Max		Antenna	Evaluation result at 20cm	Power density
		(dBm)	(dBm)	tune-up power		Gain	Power density(mW/cm ²)	(mW/cm ²)
				(dBm)	(mW)	Numeric		
5745	11n (HT20)	11.93	11±1	12	15.849	2.12	0.00669	1
5785	11n (HT20)	11.67	11±1	12	15.849	2.12	0.00669	1
5825	11n (HT20)	11.53	11±1	12	15.849	2.12	0.00669	1
5755	11n (HT40)	9.11	9±1	10	10.000	2.12	0.00422	1
5795	11n (HT40)	8.93	8±1	9	7.943	2.12	0.00336	1
5775	11ac (HT80)	8.81	8±1	9	7.943	2.12	0.00336	1

ANT2

Channel Freq. (MHz)	modulation	conduct ed	Tune-up	Max		Antenn a	Evaluation result at 20cm	Power density
		(dBm)	(dBm)	tune-up power		Gain	Power density(mW/cm ²)	(mW/cm ²)
				(dBm)	(mW)	Numeric		
5745	11n (HT20)	11.23	11±1	12	15.849	1.69	0.00534	1
5785	11n (HT20)	11.30	11±1	12	15.849	1.69	0.00534	1
5825	11n (HT20)	11.50	11±1	12	15.849	1.69	0.00534	1
5755	11n (HT40)	11.52	11±1	14	25.119	1.69	0.00847	1
5795	11n (HT40)	11.33	11±1	12	15.849	1.69	0.00534	1
5775	11ac (HT80)	7.41	7±1	8	6.310	1.69	0.00213	1

MIMO

Channel Freq. (MHz)	modulation	conducted power		Tune-up power		Max				Antenna	Evaluation result at 20cm			Power density Limits
		(dBm)		(dBm)		tune-up power				Gain	Power density (mW/cm2)			(mW/cm2)
						(dBm)		(mW)		Numeric Ant A Ant B				
		Ant A	Ant B	Ant A	Ant B	Ant A	Ant B	Ant A	Ant B		Ant A	Ant B	Sum	
5745	11n (HT20)	10.05	9.88	10±1	9±1	11	10	12.59	10.00	4.04	0.01012	0.00804	0.01816	1
5785		9.64	9.89	9±1	9±1	10	10	10.00	10.00	4.04	0.00804	0.00804	0.01607	1
5825		9.71	10.05	9±1	10±1	10	11	10.00	12.59	4.04	0.00804	0.01012	0.01816	1
5745	11n (HT40)	9.26	10.07	9±1	10±1	10	11	10.00	12.59	4.04	0.00804	0.01012	0.01816	1
5785		9.07	10.01	9±1	10±1	10	11	10.00	12.59	4.04	0.00804	0.01012	0.01816	1
5825	11ac (HT80)	7.23	9.79	7±1	9±1	8	10	6.31	10.00	4.04	0.00507	0.00804	0.01311	1

Conclusion:

For the max result: 0.095+0.03739=0.13239≤ 1.0 test exclusion threshold, No SAR is required.

Statement

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