



RF EXPOSURE Test Report

Report No.: MTi240809004-01E3

Date of issue: 2024-09-12

Applicant: Shenzhen Mingda Tongda Technology Co., Ltd

Product: Wireless Carplay

Model(s): A1

FCC ID: 2BKT5-A1

Shenzhen Microtest Co., Ltd.

<http://www.mtitest.com>



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Test Result Certification	
Applicant:	Shenzhen Mingda Tongda Technology Co., Ltd
Address:	508, Building D, Shunxing Industrial Zone, No. 140 Zhongxing Road, Bantian Street, Longgang District, Shenzhen
Manufacturer:	Shenzhen Mingda Tongda Technology Co., Ltd
Address:	508, Building D, Shunxing Industrial Zone, No. 140 Zhongxing Road, Bantian Street, Longgang District, Shenzhen
Product description	
Product name:	Wireless Carplay
Trademark:	ikos
Model name:	A1
Serial Model:	N/A
Standards:	47 CFR 2.1091
Test procedure:	KDB 447498 D01 v06
Date of Test	
Date of test:	2024-09-05 to 2024-09-12
Test result:	Pass

Test Engineer	:	<i>James Qin</i>
		(James Qin)
Reviewed By	:	<i>David. Lee</i>
		(David Lee)
Approved By	:	<i>Leon Chen</i>
		(Leon Chen)



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

π = 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.

Measurement Result

2.4G WIFI:

Operation Frequency: WIFI 802.11b/g/n HT20/ax20: 2412-2462MHz,

802.11n HT40/ax40: 2422-2452MHz,

ANT Gain: -1.22 dBi

Power density limited: 1mW/ cm²

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/cm ²)	(mW/cm ²)
				(dBm)	(mW)	Numeric		
2412	802.11b	19.55	19±1	20	100.000	-1.22	0.01502	1
2437		20.13	20±1	21	125.893	-1.22	0.01891	1
2462		19.64	19±1	20	100.000	-1.22	0.01502	1
2412	802.11g	16.84	16±1	17	50.119	-1.22	0.00753	1
2437		16.86	16±1	17	50.119	-1.22	0.00753	1
2462		16.29	16±1	17	50.119	-1.22	0.00753	1
2412	802.11n H20	17.20	17±1	18	63.096	-1.22	0.00948	1
2437		16.67	16±1	17	50.119	-1.22	0.00753	1
2462		16.31	16±1	17	50.119	-1.22	0.00753	1
2422	802.11n H40	16.97	16±1	17	50.119	-1.22	0.00753	1
2437		16.68	16±1	17	50.119	-1.22	0.00753	1
2452		16.76	16±1	17	50.119	-1.22	0.00753	1
2412	802.11ax H20	17.88	17±1	18	63.096	-1.22	0.00948	1
2437		17.50	17±1	18	63.096	-1.22	0.00948	1
2462		16.91	16±1	17	50.119	-1.22	0.00753	1
2422	802.11ax H40	17.41	17±1	18	63.096	-1.22	0.00948	1
2437		17.29	17±1	18	63.096	-1.22	0.00948	1
2452		17.36	17±1	18	63.096	-1.22	0.00948	1

5G WiFi: UNII-1:

Operation Frequency: 802.11a/n(HT20)/ac(HT20)/ax(HE20):

U-NII Band 1: 5180MHz to 5240MHz;

U-NII Band 3: 5745MHz to 5825MHz;

802.11n(HT40)/ac(HT40)/ax(HE40):

U-NII Band 1: 5190MHz to 5230MHz;

U-NII Band 3: 5755MHz to 5795MHz;

ANT Gain:

U-NII Band 1: -1.58 dBi

U-NII Band 3: 1.22dBi

Power density limited: 1mW/ cm²

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/cm ²)	(mW/cm ²)
				(dBm)	(mW)	Numeric		
5180	11a	14.44	14±1	15	31.623	-1.58	0.00437	1
5200	11a	14.10	14±1	15	31.623	-1.58	0.00437	1
5240	11a	13.65	13±1	14	25.119	-1.58	0.00347	1
5180	11n(HT20)	14.03	14±1	15	31.623	-1.58	0.00437	1
5200	11n(HT20)	14.01	14±1	15	31.623	-1.58	0.00437	1
5240	11n(HT20)	14.70	14±1	15	31.623	-1.58	0.00437	1
5190	11n(HT40)	14.70	14±1	15	31.623	-1.58	0.00437	1
5230	11n(HT40)	14.83	14±1	15	31.623	-1.58	0.00437	1
5180	11ac(HT20)	14.17	14±1	15	31.623	-1.58	0.00437	1
5200	11ac(HT20)	14.37	14±1	15	31.623	-1.58	0.00437	1
5240	11ac(HT20)	14.56	14±1	15	31.623	-1.58	0.00437	1
5190	11ac(HT40)	14.10	14±1	15	31.623	-1.58	0.00437	1
5230	11ac(HT40)	14.03	14±1	15	31.623	-1.58	0.00437	1
5180	11ax(HT20)	14.90	14±1	15	31.623	-1.58	0.00437	1
5200	11ax(HT20)	14.20	14±1	15	31.623	-1.58	0.00437	1
5240	11ax(HT20)	14.55	14±1	15	31.623	-1.58	0.00437	1
5190	11ax(HT40)	13.75	13±1	14	25.119	-1.58	0.00347	1
5230	11ax(HT40)	14.14	14±1	15	31.623	-1.58	0.00437	1



5G WiFi: UNII-3

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/cm ²)	(mW/cm ²)
				(dBm)	(mW)	Numeric		
5745	11a	7.13	7±1	8	6.310	1.22	0.00166	1
5785	11a	7.62	7±1	8	6.310	1.22	0.00166	1
5825	11a	8.12	8±1	9	7.943	1.22	0.00209	1
5745	11n(HT20)	7.06	7±1	8	6.310	1.22	0.00166	1
5785	11n(HT20)	7.79	7±1	8	6.310	1.22	0.00166	1
5825	11n(HT20)	8.22	8±1	9	7.943	1.22	0.00209	1
5755	11n(HT40)	7.58	7±1	8	6.310	1.22	0.00166	1
5795	11n(HT40)	7.54	7±1	8	6.310	1.22	0.00166	1
5745	11ac(HT20)	6.83	6±1	7	5.012	1.22	0.00132	1
5785	11ac(HT20)	7.75	7±1	8	6.310	1.22	0.00166	1
5825	11ac(HT20)	8.16	8±1	9	7.943	1.22	0.00209	1
5755	11ac(HT40)	7.11	7±1	8	6.310	1.22	0.00166	1
5795	11ac(HT40)	7.81	7±1	8	6.310	1.22	0.00166	1
5745	11ax(HT20)	6.99	6±1	7	5.012	1.22	0.00132	1
5785	11ax(HT20)	7.81	7±1	8	6.310	1.22	0.00166	1
5825	11ax(HT20)	8.54	8±1	9	7.943	1.22	0.00209	1
5755	11ax(HT40)	7.35	7±1	8	6.310	1.22	0.00166	1
5795	11ax(HT40)	7.47	7±1	8	6.310	1.22	0.00166	1



Conclusion:

SIMULTANEOUS TRANSMISSIONS

When a number of sources at different frequencies, and/or broadband sources, contribute to the total exposure, it becomes necessary to weigh each contribution relative to the MPE. To comply with the MPE, the fraction of the MPE in terms of E2, H2 (or power density) incurred within each frequency interval should be determined and the sum of all such fractions should not exceed unity. In order to ensure compliance with the MPE for a controlled environment, the sum of the ratios of the power density to the corresponding MPE should not exceed unity. That is

$$\sum_{i=1}^n \frac{S_i}{MPE_i} \leq 1$$

Simultaneous transmit:

Operating Band	The MPE ratio
2.4G WIFI	0.01891
5G WIFI	0.00437

2.4G WIFI+5G WIFI=0.01891+0.00437=0.02328

For the max result: $0.02328 \leq 1.0$ SAR, No SAR is required.

----END OF REPORT----