

RF EXPOSURE Test Report

Report No. : MTi250807016-0108E4
Date of issue : 2025-12-19
Applicant : Tinyphoton (Wuhan) Technology Co., Ltd.
Product : DWARF mini Smart Telescope
Model(s) : CCT1D1DM0100
FCC ID : 2BK4Y-CCT1D1DM0100

Shenzhen Microtest Co., Ltd.

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Test Result Certification		
Applicant	Tinyphoton (Wuhan) Technology Co., Ltd.	
Applicant Address	2101 Huigushikong, No.4 Luoyu East Road, Wuhan, Hubei, China.	
Manufacturer	Meca (Wuhan) Technology Co., Ltd.	
Manufacturer Address	Room 06, 21st Floor, Building 1, Huigu Shikong, No. 206, Old Wuhuang Highway, East Lake New Technology Development Zone, Wuhan City, Hubei Province, China	
Factory	Meca (Wuhan) Technology Co., Ltd.	
Factory Address	Room 06, 21st Floor, Building 1, Huigu Shikong, No. 206, Old Wuhuang Highway, East Lake New Technology Development Zone, Wuhan City, Hubei Province, China	
Product description		
Product name	DWARF mini Smart Telescope	
Trademark	DWARFLAB	
Model name	CCT1D1DM0100	
Series Model(s)	N/A	
Standards	47 CFR Part 2.1091	
Test method	KDB 447498 D01 v06	
Testing Information		
Date of test	2025-09-16 to 2025-12-19	
Test Result	Pass	
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Reviewed by:	David Lee	<i>David Lee</i>
Approved by:	Lewis Lian	<i>Lewis Lian</i>

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

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.

2 Measurement Result

BLE:

Operation Frequency: 2402-2480MHz
 2.4G WIFI:
 Operation Frequency: 2412~2462MHz
 5G WIFI
 Operation Frequency: 5150 MHz to 5250 MHz
 5.8G WIFI
 Operation Frequency: 5725 MHz to 5850 MHz
 Power density limited: 1mW/ cm²
 Antenna Type: FPC Antenna

Antenna gain:
 2.4G: 1.5dBi
 U-NII-1: 4.3dBi
 U-NII-3: 3.4dBi
 R=20cm
 $mW=10^{(dBm/10)}$
 Antenna gain Numeric
 2.4G
 $10^{(dBi/10)}=10^{(1.5/10)}=1.41$
 5G
 $10^{(dBi/10)}=10^{(4.3/10)}=2.69$
 5.8G
 $10^{(dBi/10)}=10^{(3.4/10)}=2.19$

BLE:

Channel Freq. (MHz)	modulation	conducted power	Tune-up power (dBm)	Max		Antenna		Evaluation result (mW/cm ²)	Power density Limits (mW/cm ²)
		(dBm)		tune-up power (dBm)	(mW)	Gain (dBi)	Numeric		
2402	GFSK-1M	5.77	5±1	6	3.981	1.5	1.41	0.0011	1
2440		5.93	5±1	6	3.981	1.5	1.41	0.0011	1
2480		4.22	4±1	5	3.162	1.5	1.41	0.0009	1
2402	GFSK-2M	5.77	5±1	6	3.981	1.5	1.41	0.0011	1
2440		5.94	5±1	6	3.981	1.5	1.41	0.0011	1
2480		4.10	4±1	5	3.162	1.5	1.41	0.0009	1

2.4G WIFI

Channel Freq. (MHz)	modulation	conducted power	Tune-up power (dBm)	Max		Antenna	Evaluation result at 20cm	Power density Limits (mW/cm ²)
		(dBm)		tune-up power (dBm)	(mW)		Power density(mW/cm ²)	
2412	802.11b	14.70	14±1	15	31.623	1.41	0.00889	1
2437		14.93	14±1	15	31.623	1.41	0.00889	1
2462		13.83	13±1	14	25.12	1.41	0.00706	1
2412	802.11g	10.51	10±1	11	12.589	1.41	0.00354	1
2437		10.43	10±1	11	12.589	1.41	0.00354	1
2462		9.44	9±1	10	10.000	1.41	0.00281	1
2412	802.11n H20	12.07	12±1	13	19.953	1.41	0.00561	1
2437		11.96	11±1	12	15.849	1.41	0.00445	1
2462		11.14	11±1	12	15.849	1.41	0.00445	1

5G WIFI: UNII-1

Channel Freq. (MHz)	modulation	conducted power	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	11a	12.13	12±1	13	19.953	2.69	0.01068	1
5200	11a	12.47	12±1	13	19.953	2.69	0.01068	1
5240	11a	12.44	12±1	13	19.953	2.69	0.01068	1
5180	11n (HT20)	11.81	11±1	12	15.849	2.69	0.00849	1
5200	11n (HT20)	12.08	12±1	13	19.953	2.69	0.01068	1
5240	11n (HT20)	12.03	12±1	13	19.953	2.69	0.01068	1
5190	11n (HT40)	10.43	10±1	11	12.589	2.69	0.00674	1
5230	11n (HT40)	11.3	11±1	12	15.849	2.69	0.00849	1
5180	11ac (HT20)	10.88	10±1	11	12.589	2.69	0.00674	1
5200	11ac (HT20)	11.11	11±1	12	15.849	2.69	0.00849	1
5240	11ac (HT20)	11.19	11±1	13	19.953	2.69	0.01068	1
5190	11ac (HT40)	10.42	10±1	11	12.589	2.69	0.00674	1
5230	11ac (HT40)	11.34	11±1	12	15.849	2.69	0.00849	1
5210	11ac (HT80)	10.02	10±1	11	12.589	2.69	0.00674	1

5G WIFI: UNII-3

Channel Freq. (MHz)	modulation	conducted power	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	11a	9.49	9±1	10	10.000	2.19	0.00435	1
5785	11a	8.58	8±1	9	7.943	2.19	0.00346	1
5825	11a	8.28	8±1	9	7.943	2.19	0.00346	1
5745	11n (HT20)	8.98	8±1	9	7.943	2.19	0.00346	1
5785	11n (HT20)	7.84	7±1	8	6.310	2.19	0.00275	1
5825	11n (HT20)	7.92	7±1	8	6.310	2.19	0.00275	1
5755	11n (HT40)	7.97	7±1	8	6.310	2.19	0.00275	1
5795	11n (HT40)	7.27	7±1	8	6.310	2.19	0.00275	1
5745	11ac (HT20)	9.14	9±1	10	10.000	2.19	0.00435	1
5785	11ac (HT20)	8.26	8±1	9	7.943	2.19	0.00346	1
5825	11ac (HT20)	8.06	8±1	9	7.943	2.19	0.00346	1
5755	11ac (HT40)	8.03	8±1	9	7.943	2.19	0.00346	1
5795	11ac (HT40)	8.65	8±1	9	7.943	2.19	0.00346	1
5775	11ac (HT80)	8.25	8±1	9	7.943	2.19	0.00346	1

Conclusion:

The device can transmitter simultaneously.

BLE+5G WIFI=0.0011+0.01068=0.01178

For the max result: 0.01178≤ 1.0, No SAR is required.

Statement

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