RF EXPOSURE
Test Report

Report No.:	MTi240604003-05E4
Date of issue:	2024-07-12
Applicant:	Dongguan Huachuang Electronic Co.,Ltd.
Product:	wireless carplay adapter
Model(s):	CP10, CP11,CP12, CP13, CP15, CP16, CP17, CP18, CP19, CP21,CP20, CP22, CP23, CP25, CP26, CP27, CP28, CP29, CP30,CP11C,CP12C, CP13C, CP15C, CP16C, CP17C, CP18C, CP19C, CP21C,CP20C, CP22C, CP23C, CP25C, CP26C, CP27C, CP28C, CP29C, CP30C, CP10C
FCC ID:	2BGM4-CP

Shenzhen Microtest Co., Ltd.

http://www.mtitest.cn

Address: 101, No. 7, Zone 2, Xinxing Industrial Park, Fuhai Avenue, Xinhe Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China.
Tel: (86-755) 88850135-1349 Fax: (86-755) 88850136 Web: http://www.mtitest.cn E-mail: office@51mti.com

Instructions

1. The report shall not be partially reproduced without the written consent of the laboratory;
2. The test results of this report are only responsible for the samples submitted;
3. This report is invalid without the seal and signature of the laboratory;
4. This report is invalid if transferred, altered or tampered with in any form without authorization;
5. Any objection to this report shall be submitted to the laboratory within 15 days from the date of receipt of the report.

Test Result Certification	
Applicant:	Dongguan Huachuang Electronic Co.,Ltd.
Address:	No. 35, Rongfu Road, Shangsha Community, Chang'an Town, Dongguan, Guangdong Province
Manufacturer:	Dongguan Huachuang Electronic Co.,Ltd.
Address:	No. 35, Rongfu Road, Shangsha Community, Chang'an Town, Dongguan, Guangdong Province
Product description	
Product name:	wireless carplay adapter
Trademark:	N/A
Model name:	CP10
Series Model:	CP11,CP12, CP13, CP15, CP16, CP17, CP18, CP19, CP21,CP20, CP22, CP23, CP25, CP26, CP27, CP28, CP29, CP30,CP11C,CP12C, CP13C, CP15C, CP16C, CP17C, CP18C, CP19C, CP21C,CP20C, CP22C, CP23C, CP25C, CP26C, CP27C, CP28C, CP29C, CP30C, CP10C
Standards:	N/A
Test procedure:	KDB 447498 D01 v06
Date of Test	
Date of test:	2024-06-29 to 2024-07-10
Test result:	Pass

Test Engineer	:	Yanice Xie
		(Yanice.Xie)
Reviewed By	:	David. Lee
		(David Lee)
Approved By	:	Leon chen
		(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: $Pd= (Pout*G)\ (4*pi*R^2)$

Where

Pd= Power density in mW/cm^2

Pout=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)

Pd the limit of MPE, $1mW/cm^2$. 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

BT:

Operation Frequency: 2402-2480MHz,

Power density limited: 1mW/ cm2

Antenna gain: 2.98 dBi

R=20cm

mW=10^(dBm/10)

Antenna gain Numeric=10^(dBi/10)= 10^(2.98/10)=1.99

2.4G WiFi:

Operation Frequency:

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

WIFI 802.11n HT40: 2422-2452 MHz

Power density limited: 1mW/ cm2

Antenna gain: 2.98 dBi

R=20cm

mW=10^(dBm/10)

Antenna gain Numeric=10^(dBi/10)= 10^(2.98/10)=1.99

5GWiFi:

Operation Frequency:

802.11a: 20 MHz

802.11n: 20 MHz, 40 MHz

Antenna Type: PCB Antenna;

Antenna gain:

U-NII 1: -0.05 dBi; U-NII 3:4.21dBi

R=20cm

mW=10^(dBm/10)

U-NII 1: antenna gain Numeric=10^(dBi/10)= 10^(-0.05/10)= 0.99

U-NII 3: antenna gain Numeric=10^(dBi/10)= 10^(4.21/10)= 2.64

BT:

Channel Freq. (MHz)	modulation	conducted power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Max tune-up power (mW)	Antenna Gain (dBi)	Antenna Gain Numeric	Evaluation result (mW/cm^2)	Power density Limits (mW/cm^2)
2402	GFSK	7.11	7±1	8	6.310	2.98	1.99	0.0025	1
2441		7.23	7±1	8	6.310	2.98	1.99	0.0025	1
2480		6.37	6±1	7	5.012	2.98	1.99	0.0020	1
2402	π/4-DQPSK	8.84	8±1	9	7.943	2.98	1.99	0.0031	1
2441		8.95	8±1	9	7.943	2.98	1.99	0.0031	1
2480		7.97	7±1	8	6.310	2.98	1.99	0.0025	1
2402	8DPSK	9.24	9±1	10	10.000	2.98	1.99	0.0040	1
2441		9.43	9±1	10	10.000	2.98	1.99	0.0040	1
2480		8.46	9±1	10	10.000	2.98	1.99	0.0040	1

2.4G WIFI:

Channel Freq. (MHz)	modulation	conducted power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Max tune-up power (mW)	Antenna Gain (dBi)	Antenna Gain Numeric	Evaluation result at 20cm Power density(mW/cm2)	Power density Limits (mW/cm2)
		Ant A	Ant A	Ant A	Ant A	Ant A	Ant A	Ant A	
2412	802.11b	12.51	13±1	14	25.119	2.98	1.99	0.00992	1
2437		12.38	13±1	14	25.119	2.98	1.99	0.00992	1
2462		12.81	13±1	14	25.119	2.98	1.99	0.00992	1
2412	802.11g	14.50	14±1	15	31.623	2.98	1.99	0.01249	1
2437		14.90	14±1	15	31.623	2.98	1.99	0.01249	1
2462		14.90	14±1	15	31.623	2.98	1.99	0.01249	1
2412	802.11n H20	14.58	14±1	15	31.623	2.98	1.99	0.01249	1
2437		14.85	14±1	15	31.623	2.98	1.99	0.01249	1
2462		14.50	14±1	15	31.623	2.98	1.99	0.01249	1
2422	802.11n H40	14.94	14±1	15	31.623	2.98	1.99	0.01249	1
2437		14.68	14±1	15	31.623	2.98	1.99	0.01249	1
2452		14.44	14±1	15	31.623	2.98	1.99	0.01249	1

5G WIFI: UNII-1

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	13.28	13±1	14	25.119	0.99	0.00494	1
5200	11a	13.08	13±1	14	25.119	0.99	0.00494	1
5240	11a	12.86	13±1	14	25.119	0.99	0.00494	1
5180	11n (VHT20)	11.62	11±1	12	15.849	0.99	0.00312	1
5200	11n (VHT20)	11.35	11±1	12	15.849	0.99	0.00312	1
5240	11n (VHT20)	11.13	11±1	12	15.849	0.99	0.00312	1
5190	11n (VHT40)	12.10	13±1	14	25.119	0.99	0.00494	1
5230	11n (VHT40)	11.89	12±1	13	19.953	0.99	0.0039	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	9.24	9±1	10	10.000	2.64	0.00524	1
5785	11a	8.74	9±1	10	10.000	2.64	0.00524	1
5825	11a	9.06	9±1	10	10.000	2.64	0.00524	1
5745	11n (VHT20)	8.75	9±1	10	10.000	2.64	0.00524	1
5785	11n (VHT20)	12.98	12±1	13	19.953	2.64	0.01046	1
5825	11n (VHT20)	13.69	13±1	14	25.119	2.64	0.01317	1
5755	11n (VHT40)	9.77	9±1	10	10.000	2.64	0.00524	1
5795	11n (VHT40)	12.78	12±1	13	19.953	2.64	0.01046	1

Conclusion:

Note: BT and 2.4GWiFi/5GWiFi cannot work at the same time.

For the max result: 0.01317≤ 1.0 test exclusion threshold, No SAR is required.

----END OF REPORT----