

MPE REPORT

FCC ID: 2AT9B-AV1337W

Date of issue: Jan. 27, 2021

Report number:	MTi20101905-1E3
Sample description:	Car multimedia player
Model(s):	CAR910W, J1CA9W, DCPA91W, DCPA901W, AVM2409W
Applicant:	MAXMADE AUTO ELECTRONICS CO., LTD.
Address:	Building 2, GIEC Industrial Park, Puzai Road, Pingdi, Longgang District, Shenzhen, China
Date of test:	Nov. 12, 2020 to Jan. 27, 2021

Shenzhen Microtest Co., Ltd.

<http://www.mtitest.com>

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TEST RESULT CERTIFICATION	
Applicant's name:	MAXMADE AUTO ELECTRONICS CO., LTD.
Address:	Building 2, GIEC Industrial Park, Puzai Road, Pingdi, Longgang District, Shenzhen, China
Manufacture's name:	MAXMADE AUTO ELECTRONICS CO., LTD.
Address:	Building 2, GIEC Industrial Park, Puzai Road, Pingdi, Longgang District, Shenzhen, China
Product name:	Car multimedia player
Trademark:	Dual, Jensen, Axxera
Model and/or type reference:	CAR910W
Serial model:	J1CA9W, DCPA91W, DCPA901W, AVM2409W
RF exposure procedures:	KDB 447498 D01 v06

This device described above has been tested by Shenzhen Microtest Co., Ltd and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

Tested by:

Demi Mu

Jan. 27, 2021

Reviewed by:

Leo Su

Jan. 27, 2021

Approved by:

Tom Xue

Jan. 27, 2021



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

WIFI:

Operation Frequency:

U-NII-1: 5150 MHz to 5250 MHz,

U-NII-3: 5725 MHz to 5850 MHz

Power density limited: 1mW/ cm²

Antenna Type: FPC Antenna;

WIFI antenna gain: 0.56dBi

BT antenna gain: 3.64dBi

R=20cm

$mW=10^{(dBm/10)}$

antenna gain Numeric= $10^{(dBi/10)}=10^{(0.56/10)}=1.14$

5GWiFi : UNII-1

Frequency (MHz)	Modulation mode	conduct ed power	Tune- up powe r	Max		Anten na	Evaluation result at 20cm	Power density Limits
		(dBm)	(dBm)	tune-up power		Gain	Power density(mW/cm2)	(mW/cm2)
				(dBm)	(mW)	Numer ic		
		Ant A	Ant A	Ant A	Ant A	Ant A	Ant A	
5180	11a	11.58	11±1	12	15.849	1.14	0.0036	1
5200	11a	10.43	11±1	12	15.849	1.14	0.0036	1
5240	11a	10.74	11±1	12	15.849	1.14	0.0036	1
5180	11n (HT20)	11.41	11±1	12	15.849	1.14	0.0036	1
5200	11n (HT20)	10.07	11±1	12	15.849	1.14	0.0036	1
5240	11n (HT20)	11.28	11±1	12	15.849	1.14	0.0036	1
5190	11n (HT40)	13.92	14±1	15	31.623	1.14	0.0072	1
5230	11n (HT40)	14.03	14±1	15	31.623	1.14	0.0072	1
5180	11ac (HT20)	12.37	12±1	13	19.953	1.14	0.0045	1
5200	11ac (HT20)	11.57	12±1	13	19.953	1.14	0.0045	1
5240	11ac (HT20)	11.53	12±1	13	19.953	1.14	0.0045	1
5190	11ac (HT40)	10.57	10±1	11	12.589	1.14	0.0028	1
5230	11ac (HT40)	10.85	10±1	11	12.589	1.14	0.0028	1
5210	11ac (HT80)	14.16	14±1	15	31.623	1.14	0.0072	1



UNII-3

Frequency (MHz)	Modulation mode	conduct ed power	Tune- up powe r	Max		Anten na	Evaluation result at 20cm	Power density Limits
		(dBm)	(dBm)	tune-up power		Gain Numer ic	Power density(mW/cm2)	(mW/cm2)
				(dBm)	(mW)			
		Ant A	Ant A	Ant A	Ant A	Ant A	Ant A	
5745	11a	6.79	7±1	8	6.310	1.14	0.0014	1
5785	11a	7.10	7±1	8	6.310	1.14	0.0014	1
5825	11a	7.47	7±1	8	6.310	1.14	0.0014	1
5745	11n (HT20)	7.72	8±1	9	7.943	1.14	0.0018	1
5785	11n (HT20)	8.89	8±1	9	7.943	1.14	0.0018	1
5825	11n (HT20)	8.13	8±1	9	7.943	1.14	0.0018	1
5755	11n (HT40)	7.98	7±1	8	6.310	1.14	0.0014	1
5795	11n (HT40)	6.95	7±1	8	6.310	1.14	0.0014	1
5745	11ac (HT20)	7.64	8±1	9	7.943	1.14	0.0018	1
5785	11ac (HT20)	7.12	8±1	9	7.943	1.14	0.0018	1
5825	11ac (HT20)	8.74	8±1	9	7.943	1.14	0.0018	1
5755	11ac (HT40)	7.02	8±1	9	7.943	1.14	0.0018	1
5795	11ac (HT40)	7.62	8±1	9	7.943	1.14	0.0018	1
5775	11ac (HT80)	8.52	8±1	9	7.943	1.14	0.0018	1

BR+EDR:

Channel Freq. (MHz)	modulation	conducted power	Tune- up power	Max		Antenna		Evaluation result	Power density Limits
		(dBm)	(dBm)	tune-up power		Gain		(mW/cm2)	(mW/cm2)
				(dBm)	(mW)	(dBi)	Numeric		
2402	GFSK	4.273	5±1	6	3.981	3.64	2.31	0.0018	1
2441		5.576	5±1	6	3.981	3.64	2.31	0.0018	1
2480		5.452	5±1	6	3.981	3.64	2.31	0.0018	1
2402	π/4- DQPSK	4.431	5±1	6	3.981	3.64	2.31	0.0018	1
2441		4.806	5±1	6	3.981	3.64	2.31	0.0018	1
2480		5.695	5±1	6	3.981	3.64	2.31	0.0018	1
2402	8DPSK	4.913	5±1	6	3.981	3.64	2.31	0.0018	1
2441		5.158	5±1	6	3.981	3.64	2.31	0.0018	1
2480		5.023	5±1	6	3.981	3.64	2.31	0.0018	1

Conclusion:

For the max result: $0.0072+0.0018+0.0018=0.0108 \leq 1.0$, for 1g SAR, No SAR is required.

----END OF REPORT----