



# MPE REPORT

FCC ID: 2AT9B-AV1338

Date of issue: Dec. 12, 2020

Report number: MTi20101905-3E2

Sample description: Car multimedia player

Model(s): CAR910X, XD1CPA9, J1CA9, DCPA91, DCPA901, CAR910, XD2CPA9, J2CA9, DCPA92, DCPA902, CAR920, J1CA9X, DCPA91X, DCPA901X, AVM2209S, DCPA902X, CAR920X

Applicant: MAXMADE AUTO ELECTRONICS CO., LTD.

Address: Building 2, GIEC Industrial Park, Puzai Road, Pingdi, Longgang District, Shenzhen, China

Date of test: Nov. 11, 2020 to Dec. 12, 2020

Shenzhen Microtest Co., Ltd.

<http://www.mtitest.com>

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| <b>TEST RESULT CERTIFICATION</b> |  |
|----------------------------------|--|
| Applicant's name:                | MAXMADE AUTO ELECTRONICS CO., LTD.   |
| Address:                         | Building 2, GIEC Industrial Park, Puzai Road, Pingdi, Longgang District, Shenzhen, China   |
| Manufacturer'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:     | CAR910X  |
| Serial model:                    | XD1CPA9, J1CA9, DCPA91, DCPA901, CAR910, XD2CPA9, J2CA9, DCPA92, DCPA902, CAR920, J1CA9X, DCPA91X, DCPA901X, AVM2209S, DCPA902X, CAR920X |
| 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:

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Demi Mu

Dec. 12, 2020

Reviewed by:

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Leo Su

Dec. 12, 2020

Approved by:

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Tom Xue

Dec. 12, 2020



## 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 <sup>2</sup> ) | Averaging time (minutes) |
|--|-------------------------------|-------------------------------|-------------------------------------|--------------------------|
| <b>(A) Limits for Occupational/Controlled Exposure</b>         |                               |                               |                                     |                          |
| 0.3-3.0  | 614                           | 1.63                          | *100                                | 6                        |
| 3.0-30   | 1842/f                        | 4.89/f                        | *900/f <sup>2</sup>                 | 6                        |
| 30-300   | 61.4                          | 0.163                         | 1.0                                 | 6                        |
| 300-1,500  |                               |                               | f/300                               | 6                        |
| 1,500-100,000  |                               |                               | 5                                   | 6                        |
| <b>(B) Limits for General Population/Uncontrolled Exposure</b> |                               |                               |                                     |                          |
| 0.3-1.34   | 614                           | 1.63                          | *100                                | 30                       |
| 1.34-30  | 824/f                         | 2.19/f                        | *180/f <sup>2</sup>                 | 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<sub>d</sub>= Power density in mW/cm<sup>2</sup>

P<sub>out</sub>=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<sub>d</sub> the limit of MPE, 1mW/cm<sup>2</sup>. 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

### BR+EDR:

Operation Frequency: 2402-2480MHz

Antenna Type: FPC Antenna

Antenna gain: 2.97dBi

R=20cm

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

antenna gain Numeric= $10^{(dBi/10)} = 10^{(2.97/10)} = 1.98$

### BR+EDR:

| Channe<br>l Freq.<br>(MHz) | modulatio<br>n     | conducte<br>d power<br>(dBm) | Tune-<br>up<br>powe<br>r<br>(dBm<br>) | Max                    |       | Antenna      |             | Evaluation<br>result<br>(mW/cm2 ) | Power<br>density<br>Limits<br>(mW/cm<br>2) |  |  |
|----------------------------|--------------------|------------------------------|---------------------------------------|------------------------|-------|--------------|-------------|-----------------------------------|--|--|--|
|                            |                    |                              |                                       | tune-up power<br>(dBm) |       | Gain<br>(mW) |             |                                   |  |  |  |
|                            |                    |                              |                                       | (dBm)                  | (mW)  | (dBi)        | Nume<br>ric |                                   |  |  |  |
| 2402                       | GFSK               | 3.195                        | 4±1                                   | 5                      | 3.162 | 2.97         | 1.98        | 0.0012                            | 1  |  |  |
| 2441                       |                    | 3.965                        | 4±1                                   | 5                      | 3.162 | 2.97         | 1.98        | 0.0012                            | 1  |  |  |
| 2480                       |                    | 4.482                        | 4±1                                   | 5                      | 3.162 | 2.97         | 1.98        | 0.0012                            | 1  |  |  |
| 2402                       | $\pi/4$ -<br>DQPSK | 3.977                        | 4±1                                   | 5                      | 3.162 | 2.97         | 1.98        | 0.0012                            | 1  |  |  |
| 2441                       |                    | 4.734                        | 4±1                                   | 5                      | 3.162 | 2.97         | 1.98        | 0.0012                            | 1  |  |  |
| 2480                       |                    | 4.133                        | 4±1                                   | 5                      | 3.162 | 2.97         | 1.98        | 0.0012                            | 1  |  |  |
| 2402                       | 8DPSK              | 3.859                        | 4±1                                   | 5                      | 3.162 | 2.97         | 1.98        | 0.0012                            | 1  |  |  |
| 2441                       |                    | 4.738                        | 4±1                                   | 5                      | 3.162 | 2.97         | 1.98        | 0.0012                            | 1  |  |  |
| 2480                       |                    | 4.996                        | 4±1                                   | 5                      | 3.162 | 2.97         | 1.98        | 0.0012                            | 1  |  |  |

### Conclusion:

For the max result:  $0.0012 \leq 1.0$  for 1g SAR, No SAR is required.

----END OF REPORT----