

# Test Report

Verified code: 226774

Report No.: E202407050641-7

Customer: Huizhou Desay SV Automotive Co., Ltd.

Address: No 103, Hechang 5th Road West, Zhongkai National Hi-tech Industrial Development Zone, Huizhou City, 516006 Guangdong, P.R. China

Sample Name: Multimedia Player Assembly

Sample Model: TR4314/40

Receive Sample Date: Jul.09,2024

Test Date: Jul.16,2024 ~ Aug.30,2024

Reference Document: 47 CFR, FCC Part 2.1091 Radio frequency radiation exposure evaluation: mobile devices

Test Result: Pass

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GRG METROLOGY & TEST GROUP CO., LTD.

Issued Date: 2024-10-23

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REPORT ISSUED HISTORY

| Report Version | Report No.      | Description    | Compile Date |
|----------------|-----------------|----------------|--------------|
| 1.0            | E202407050641-7 | Original Issue | 2024-10-11   |

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## 1. GENERAL DESCRIPTION OF EUT

### 1.1 APPLICANT

Name: Huizhou Desay SV Automotive Co., Ltd.

Address: No 103, Hechang 5th Road West, Zhongkai National Hi-tech Industrial Development Zone, Huizhou City, 516006 Guangdong, P.R. China

### 1.2 MANUFACTURER

Name: Huizhou Desay SV Automotive Co., Ltd.

Address: No 103, Hechang 5th Road West, Zhongkai National Hi-tech Industrial Development Zone, Huizhou City, 516006 Guangdong, P.R. China

### 1.3 FACTORY

Name : Huizhou Desay SV Automotive Co., Ltd.

Address : No 103, Hechang 5th Road West, Zhongkai National Hi-tech Industrial Development Zone, Huizhou City, 516006 Guangdong, P.R. China

### 1.4 BASIC DESCRIPTION OF EQUIPMENT UNDER TEST

Equipment: Multimedia Player Assembly

Model No.: TR4314/40

Adding Model: TR4334/40

Model difference description: The models are the same as function: RAM, RF module, storage capacity, Bluetooth chip, GNSS chip, FM, AM and DAB chip, Ethernet function, only the mounting bracket are different.

Trade Mark:



Great Wall

FCC ID: 2AEQTTR431440

Power supply: DC 12V, 15A.

Frequency Band: 2402MHz - 2480MHz for Bluetooth GFSK, Pi/4DQPSK, 8DPSK  
5180MHz-5240MHz & 5745MHz~5825MHz for IEEE 802.11a/n HT20/ac  
VHT20;  
5190MHz-5230MHz & 5755MHz~5795MHz for IEEE 802.11n HT40/ac VHT40;  
5210MHz & 5775MHz for IEEE 802.11ac VHT80  
Bluetooth GFSK:8.14 dBm  
Bluetooth  $\pi/4$ -DQPSK:9.81dBm  
Bluetooth 8DPSK:10.19dBm

Transmit Power: U-NII-1:  
12.91dBm for IEEE 802.11a  
11.83dBm for IEEE 802.11n HT20  
12.09dBm for IEEE 802.11ac VHT20

4.59dBm for IEEE 802.11n HT40  
4.50dBm for IEEE 802.11acVHT40  
4.01dBm for IEEE 802.11ac VHT80  
U-NII-3:  
11.16dBm for IEEE 802.11a  
11.55dBm for IEEE 802.11n HT20  
11.48dBm for IEEE 802.11acVHT20  
11.78dBm for IEEE 802.11n HT40  
11.73dBm for IEEE 802.11acVHT40  
9.71dBm for IEEE 802.11ac VHT80

Modulation type: GFSK&Pi/4DQPSK&8DPSK for Bluetooth,  
OFDM for IEEE 802.11a/n/ac mode  
Bluetooth:

Antenna Specification: Antenna 1: 1.3dBi gain (Max)  
5G WIFI: 5150MHz – 5250MHz  
Antenna 2: 1.6dBi gain (Max)  
5G WIFI: 5725MHz – 5850MHz  
Antenna 2: 1.6dBi gain (Max)

Temperature Range: -40°C ~+85°C

Hardware Version: HW001

Software Version: SW001

Sample No: E202407050641-0002, E202407050641-0003

Note: 1.The EUT antenna gain is provided by the applicant. This report is made solely on the basis of such data and/or information. We accept no responsibility for the authenticity and completeness of the above data and information and the validity of the results and/or conclusions.

2. The model TR4314/40 was recorded in this report.

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## 2. LABORATORY

### 2.1 LABORATORY

The tests & measurements refer to this report were performed by Shenzhen EMC Laboratory of GRG METROLOGY & TEST GROUP CO., LTD.

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### 2.2 ACCREDITATIONS

Our laboratories are accredited and approved by the following approval agencies according to GB/T 27025(ISO/IEC 17025:2017)

**USA** A2LA(Certificate #2861.01)

The measuring facility of laboratories has been authorized or registered by the following approval agencies.

**Canada** ISED (Company Number: 24897, CAB identifier:CN0069)

**USA** FCC (Registration Number: 759402, Designation Number:CN1198)

Copies of granted accreditation certificates are available for downloading from our web site,

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### 3. LIMITS FOR GENERAL POPULATION/UNCONTROLLED EXPOSURE

#### General

According to the KDB 447498 D04 Interim General RF Exposure Guidance v01, General frequency and separation-distance dependent MPE-based effective radiated power (ERP) thresholds are in Table 4.1 to support an exemption from further evaluation from 300 kHz through 100 GHz.

TABLE 4.1—THRESHOLDS FOR SINGLE RF SOURCES SUBJECT TO ROUTINE ENVIRONMENTAL EVALUATION

| RF Source Frequency  |   |           | Minimum Distance   |   |                    | Threshold ERP   |
|--|---|-----------|--------------------|---|--------------------|-----------------|
| $f_L$ MHz  |   | $f_H$ MHz | $\lambda_L / 2\pi$ |   | $\lambda_H / 2\pi$ | W               |
| 0.3  | – | 1.34      | 159 m              | – | 35.6 m             | $1,920 R^2$     |
| 1.34   | – | 30        | 35.6 m             | – | 1.6 m              | $3,450 R^2/f^2$ |
| 30   | – | 300       | 1.6 m              | – | 159 mm             | $3.83 R^2$      |
| 300  | – | 1,500     | 159 mm             | – | 31.8 mm            | $0.0128 R^2 f$  |
| 1,500  | – | 100,000   | 31.8 mm            | – | 0.5 mm             | $19.2 R^2$      |
| Subscripts L and H are low and high; $\lambda$ is wavelength.<br>From § 1.1307(b)(3)(i)(C), modified by adding Minimum Distance columns. |   |           |                    |   |                    |                 |

For mobile devices that are not exempt per Table 4.1 at distances from 20 cm to 40 cm and in 0.3 GHz to 6 GHz, evaluation of compliance with the exposure limits in §1.1310 is necessary if the ERP of the device is greater than  $ERP_{20\text{cm}}$  in Formula (4.1).

Formula (4.1):

$$P_{\text{th}} (\text{mW}) = ERP_{20 \text{ cm}} (\text{mW}) = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases}$$



#### 4. CALCULATION METHOD

Predication of MPE limit at a given distance

$EIRP(dBm) = \text{Maximum Tune-up Output power (dBm)} + \text{Maximum antenna gain(dBi)}$

$ERP(dBm) = EIRP(dBm) - 2.15$

R=minimum distance to the center of radiation of the antenna

From the EUT RF output power, the minimum mobile separation distance,  $d=20\text{cm}$ , as well as the maximum gain of the used as following information, the RF power ERP can be obtained.

**Table 1 Antenna Specification**

| Mode              | Antenna type | Internal Identification | Maximum antenna gain |
|-------------------|--------------|-------------------------|----------------------|
| Bluetooth         | PCB antenna  | Antenna 1               | 1.3dBi               |
| 5GHz WiFi U-NII-1 | PCB antenna  | Antenna 2               | 1.6dBi               |
| 5GHz WiFi U-NII-3 | PCB antenna  | Antenna 2               | 1.6dBi               |

**Table 2 Transmit Power**

| Mode              |                | Maximum Output Power (dBm) | Maximum Tune-up Output power (dBm) |
|-------------------|----------------|----------------------------|------------------------------------|
| Bluetooth DH5     |                | 8.14                       | $8.50 \pm 1.00$                    |
| Bluetooth 2DH5    |                | 9.81                       | $10.00 \pm 1.00$                   |
| Bluetooth 3DH5    |                | 10.19                      | $10.50 \pm 1.00$                   |
| 5GHz WiFi U-NII-1 | 802.11a        | 12.91                      | $13.00 \pm 1.00$                   |
|                   | 802.11n HT20   | 11.83                      | $12.00 \pm 1.00$                   |
|                   | 802.11ac VHT20 | 12.09                      | $12.50 \pm 1.00$                   |
|                   | 802.11n HT40   | 4.59                       | $5.00 \pm 1.00$                    |
|                   | 802.11ac VHT40 | 4.50                       | $5.00 \pm 1.00$                    |
|                   | 802.11ac VHT80 | 4.01                       | $4.50 \pm 1.00$                    |
| 5GHz WiFi U-NII-3 | 802.11a        | 11.16                      | $11.50 \pm 1.00$                   |
|                   | 802.11n HT20   | 11.55                      | $12.00 \pm 1.00$                   |
|                   | 802.11ac VHT20 | 11.48                      | $11.50 \pm 1.00$                   |
|                   | 802.11n HT40   | 11.78                      | $12.00 \pm 1.00$                   |
|                   | 802.11ac VHT40 | 11.73                      | $12.00 \pm 1.00$                   |
|                   | 802.11ac VHT80 | 9.71                       | $10.00 \pm 1.00$                   |

## 5. ESTIMATION RESULT

### 5.1 MEASUREMENT RESULTS

#### STANDALONE MPE

| Mode              | Frequency (MHz) | Maximum Tune-up Output power (dBm) | Antenna Gain (dBi) | Maximum Tune-up EIRP (dBm) | ERP (dBm) | Maximum Tune-up ERP (W) | Threshold ERP(W) |
|-------------------|-----------------|------------------------------------|--------------------|----------------------------|-----------|-------------------------|------------------|
| BT                | 2402- 2480      | 10.50                              | 1.3                | 11.80                      | 9.65      | 0.009                   | 0.768            |
| 5GHz WiFi U-NII-1 | 5150-5250       | 13.00                              | 1.6                | 14.60                      | 12.45     | 0.018                   | 0.768            |
| 5GHz WiFi U-NII-3 | 5725-5850       | 12.00                              | 1.6                | 13.60                      | 11.45     | 0.014                   | 0.768            |

Remark:

1. RF Exposure use distance is 20cm from manufacturer declaration of user manual.
2. Threshold ERP(W)=  $19.2R^2(W)=19.2*0.2*0.2(W)=0.768(W)$ .
3. ERP(dBm)=EIRP(dBm)-2.15

#### For Simultaneous transmission:

$\sum$  MPE ratios= MPE ratio(BT)+ MPE ratio(5G wifi-U-NII-1);

$\sum$  MPE ratios= MPE ratio(BT)+ MPE ratio(5G wifi-U-NII-3);

#### Maximum Simultaneous transmission MPE Ratio for BT and RLAN(5G wifi)

| Maximum MPE ratio (BT) | Maximum MPE ratio (5G wifi-U-NII-1) | $\sum$ MPE ratios | Limit | Results |
|------------------------|-------------------------------------|-------------------|-------|---------|
| 0.012                  | 0.023                               | 0.035             | 1.000 | Pass    |

Note:

1. The bluetooth and wifi support simultaneous.
2. ERP<sub>j</sub>: the available maximum time-averaged power or the ERP, whichever is greater, of fixed, mobile, or portable RF source j.
3. ERP<sub>th,j</sub>: exemption threshold ERP for fixed, mobile, or portable RF source j, at a distance of at least  $\lambda/2\pi$ , according to the applicable § 1.1307(b)(3)(i)(C) Table 1 formula at the location in question.
4. Maximum MPE Ratio (BT) = Maximum Tune-up ERP(BT) / Threshold ERP =  $0.009W/0.768W = 0.012$ ;
5. Maximum MPE Ratio (5G wifi-U-NII-1) = Maximum Tune-up ERP (5G wifi-U-NII-1) / Threshold ERP =  $0.018W/0.768W = 0.023$  ;
6.  $\sum$  MPE ratios= Maximum MPE Ratio (BT)+ Maximum MPE Ratio (5G wifi-U-NII-1) =  $0.012+0.023=0.035<1$ .

The result is pass.

## 6. CONCLUSION

The measurement results comply with the FCC Limit per 47 CFR 2.1091 for the uncontrolled RF Exposure of mobile device.

----- End of Report -----