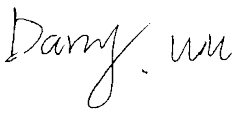






TEST REPORT

Report No.:	E20190710414501-2	Application No.:	E20190710414501
Applicant:	Huizhou Desay SV Automotive Co., Ltd.		
Address:	NO.103, Hechang 5th Road West, Zhongkai National Hi-tech Industrial Development Zone, Huizhou, Guangdong, P.R. China		
Sample Description:	Car Radio		
Model:	Radio Ultra Low Touch DAB		
Adding Model:	Radio Ultra Low Touch		
Test Specification:	KDB 447498 D01 General RF Exposure Guidance v06 FCC Part 2 §2.1091		
Test Date:	2019-08-16 to 2019-10-24		
Issue Date:	2019-11-05		
Test Result:	PASS		
Prepared By:	Reviewed By:	Approved By:	
Darry Wu / Test Engineer	Jimmy Xie / Technical Manager	Ryan Zhu / Manager	
			
Date:2019-11-05	Date:2019-11-05	Date:2019-11-05	
Other Aspects:			
/			
Abbreviations: ok / P = passed; fail / F = failed; n.a. / N = not applicable			
The test result in this test report refers exclusively to the presented test sample. This report shall not be reproduced except in full, without the written approval of GRGT.			

DIRECTIONS OF TEST

1. This company carries out test task according to the national regulation of verifications which can be traced to National Primary Standards and BIPM.
2. The test report merely corresponds to the test sample. It is not permitted to copy extracts of these test result without the written permission of the test laboratory.
3. If there is any objection concerning the test, the client should inform the laboratory within 15 days from the date of receiving the test report.

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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, 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, Guangdong, P.R. China

1.3. FACTORY

Factory 1

Name : Huizhou Desay SV Automotive Co., Ltd.
Address : NO.103, Hechang 5th Road West, Zhongkai National Hi-tech Industrial Development Zone, Huizhou, Guangdong, P.R. China

Factory 2

Name : Shinwa Precision Hungary Kft.
Address : 3534, Miskolc, Muhi u. 2/A, HUNGARY

1.4. BASIC DESCRIPTION OF EQUIPMENT UNDER TEST

Equipment: Car Radio
Model No.: Radio Ultra Low Touch DAB
Adding Model: Radio Ultra Low Touch
FCC ID: 2AEQT-2K7035130A
Trade Name: Volkswagen, DESAY SV AUTOMOTIVE
Power supply: Typical Voltage: DC +12V
Frequency Range: 2402MHz~2480MHz
Transmit Power: 6.39dBm for GFSK
4.22dBm for $\pi/4$ -DQPSK
4.78dBm for 8DPSK
Type of FHSS (GFSK for 1Mbps, $\pi/4$ -DQPSK for 2Mbps)

Modulation:

Antenna Internal antenna with 0dBi gain (Max.)

Specification:

Temperature -40 °C ~+70 °C
Range:

Hardware X02
Version:

Software X011
Version:

I/O Port : /

Note: /

2. LABORATORY AND ACCREDITATIONS

The tests and measurements refer to this report were performed by EMC Laboratory of GRG METROLOGY & TEST (SHENZHEN) CO., LTD

Add.: No.1301 Guanguang Road Xinlan Community, Guanlan Street, Longhua District Shenzhen, 518110, People's Republic of China

Telephone: +86-755-61180008

Fax: /

3. ACCREDITATIONS

Our laboratories are accredited and approved by the following approval agencies.

A2LA	Certificate Number 2861.01
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4. Evaluation method

Exposure category: General population/uncontrolled environment

EUT Type: Production Unit

Device Type: Mobile Device

Systems operating under the provisions of FCC 47 CFR section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission’s guidelines.

In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as mobile device whereby a distance of 0.2m normally can be maintained between the user and the device, and below RF Permissible Exposure limit shall comply with.

In accordance with KDB447498D01 for Simultaneous transmission MPE test exclusion applies when the sum of the MPE ratios for all simultaneous transmitting antennas incorporated in a host device, based on the calculated/estimated, numerically modeled or measured field strengths or power density, is ≤ 1.0. The MPE ratio of each antenna is determined at the minimum test separation distance required by the operating configurations and exposure conditions of the host device, according to the ratio of field strengths or power density to MPE limit, at the test frequency. Either the maximum peak or spatially averaged results from measurements or numerical simulations may be used to determine the MPE ratios. Spatial averaging does not apply when MPE is estimated using simple calculations based on far-field plane-wave equivalent conditions. The antenna installation and operating requirements for the host device must meet the minimum test separation distances required by all antennas, in both standalone and simultaneous transmission operations, to satisfy compliance.

5. Limits for General Population/Uncontrolled Exposure

(B) Limits for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-100,000			1.0	30

Note: f = frequency in MHz ; *Plane-wave equivalent power density

6. Calculation Method

Predication of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S=PG/4\pi R^2$$

Where: S=power density

P=power input to antenna

G=power gain of the antenna in the direction of interest relative to an isotropic radiator

R=distance to the center of radiation of the antenna

From the EUT RF output power, the minimum mobile separation distance, d=0.2m, as well as the maximum gain of the used 4.0dBi for BT and wifi, the RF power density can be obtained.

Frequency Band	Antenna type and antenna number	Maximum antenna gain
2.4GHz	BT Antenna	0 dBi

7. Estimation Result

7.1. Conducted Power Results

Bluetooth

Mode	Channel	Frequency(MHz)	Peak Conducted Output Power (dBm)
GFSK	00	2402	6.39
	39	2441	5.69
	78	2480	3.34
$\pi/4$ DQPSK	00	2402	4.22
	39	2441	3.47
	78	2480	1.07
8DPSK	00	2402	4.78
	39	2441	4.11
	78	2480	1.69

7.2. Manufacturing tolerance

Bluetooth

GFSK			
Frequency (MHz)	2402	2441	2480
Maximum Output Power(dBm)	6.0	5.0	3.0
Tolerance \pm (dB)	1.0	1.0	1.0

$\pi/4$DQPSK			
Frequency (MHz)	2402	2441	2480
Maximum Output Power(dBm)	4.0	3.0	1.0
Tolerance \pm (dB)	1.0	1.0	1.0

8DPSK			
Frequency (MHz)	2402	2441	2480
Maximum Output Power(dBm)	4.0	4.0	1.0
Tolerance \pm (dB)	1.0	1.0	1.0

7.3. Measurement Results

7.3.1. Standalone MPE

Bluetooth

Mode	Output power		Antenna Gain (dBi)	Antenna Gain (linear)	Duty Cycle	MPE (mW/cm ²)	MPE Limits (mW/cm ²)
	(dBm)	(mW)					
GFSK	7.0	5.0119	0	1.0000	100%	0.0010	1.0000
$\pi/4$ DQPSK	5.0	3.1623	0	1.0000	100%	0.0006	1.0000
8DPSK	5.0	3.1623	0	1.0000	100%	0.0006	1.0000

Remark:

1. Maximum power including tune-up tolerance;
2. MPE use distance is 20cm from manufacturer declaration of user manual.

According to KDB447498 for Transmitters used in mobile exposure conditions for simultaneous transmission operations;

The device support one BT modular and one antenna, no need consider simultaneous transmission.

8. 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-----