RF EXPOSURE REPORT

Report No.: DDT-B23040302-2E02

Applicant	:	Sensata Technologies (Changzhou) Co., Ltd.
Applicant Address	:	No. 18, Chuangxin Road, Xinbei District, Changzhou City, Jiangsu, China, 213031
Equipment Under Test	:	TPMS Sensor
Model No.	:	AG5PF3
Trade Mark	:	Sensata Technologies
FCC ID	:	2BAW4-AG5PF3
Manufacturer	:	Sensata Technologies (Changzhou) Co., Ltd.
Manufacturer Address	:	No. 18, Chuangxin Road, Xinbei District, Changzhou City, Jiangsu, China, 213031

Issued By: Tianjin Dongdian Testing Service Co., Ltd.

Address: Building D-1, No. 19, Weisi Road, Microelectronics Industrial Park, Development Area, Tianjin, China.

Tel: +86-22-58038033, E-mail: ddt@dgddt.com, http://www.ddttest.com

REPORT

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Test Report Declare

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Standard Used:
KDB447498 D01 General RF Exposure Guidance v06

We Declare:
The equipment described above is tested by Tianjin Dongdian Testing Service Co., Ltd. and in the configuration tested the equipment complied with the standards specified above. The test results are contained in this test report and Tianjin Dongdian Testing Service Co., Ltd is assumed of full responsibility for the accuracy and completeness of these tests.

After test and evaluation, our opinion is that the equipment provided for test compliance with the requirement of the above FCC standards.

Report No:	DDT-B23040302-2E02		
Date of Receipt:	Apr. 07, 2023	**Date of Test:**	Apr. 07, 2023 ~ Apr. 20, 2023

Prepared By: ***Approved By:***

Novak Wei Leon Li

Novak Wei/Engineer ***Leon Li /RF Manager***

Note: This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Tianjin Dongdian Testing Service Co., Ltd.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Government.

Revision History

Rev.	Revisions	Issue Date	Revised By
---	Initial issue	Apr. 20, 2023	

1. General information

1.1. Description of Equipment

EUT Description	:	TPMS Sensor
Model Number	:	AG5PF3
Serial Number	:	N/A
Hardware Version	:	01
Software Version	:	01
Sample Type	:	Vehicle Device
EUT function description	:	Please refer to user manual of this device
Power supply	:	Internal 3V DC 2032 Lithium battery power supply
Support Frequency Range	:	314.9MHz
Max. Power	:	58.6dBμV/m@3m (Test result)
Max. EIRP	:	-36.6dBm/0.0002188(mW) (Calculate result)
Max. ERP	:	-38.75dBm/0.0001134 (mW) (Calculate result)
Type of Modulation	:	FSK
TX. Antenna Gain	:	Max peak gain -24.04dbi
Antenna Type	:	Internal PCB loop antenna

Note:

$EIRP(W)=(E1*d)^2/30$

$EIRP(dBm)=10\log_{10}(EIRP(W))+30=E2+20\log(d)-104.8$

E1: Electric field strength in V/m

E2: Electric field strength in dBμV/m

d: measurement distance in m

1.2. Assess laboratory

Tianjin Dongdian Testing Service Co., Ltd.

Address: Building D-1, No. 19, Weisi Road, Microelectronics Industrial Park Development Area, Tianjin, China., 300385

Tel: +86-22-58038033, http://www.ddttest.com, Email: ddt@dgddt.com

NVLAP (National Voluntary Laboratory Accreditation Program) CODE: 500036-0

CNAS (China National Accreditation Service for Conformity Assessment) CODE: L13402

FCC Designation Number: CN5004; FCC Test Firm Registration Number: 368676

ISED (Innovation, Science and Economic Development Canada) Company Number: 27768

Conformity Assessment Body Identifier: CN0125

VCCI Facility Registration Number: C-20089, T-20093, R-20125, G-20122

2. RF Exposure Evaluation

2.1. Requirement

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 2.1093 this device has been defined as portable device whereby a distance within 0.2 m normally can be maintained between the user and the device, and below RF Permissible Exposure limit shall comply with.

Limits for General Population/Uncontrolled Exposure

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(i) 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
(ii) 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.

Note1: Occupational/controlled exposure limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure.

Note2: General population/uncontrolled exposure limits apply in situations in which the general public may be exposed, or in which persons who are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

2.2. Calculation method

$$E(V/m) = \frac{\sqrt{30 \times P \times G}}{d} \qquad \text{Power Density: } S(mW/cm^2) = \frac{E^2}{377}$$

E = Electric field (V/m)
P = Peak RF output power (mW)
G = EUT Antenna numeric gain (numeric)=
d = Separation distance between radiator and human body (m)
The formula can be changed to

We can change the formula to:

$$S = \frac{30 \times P \times G}{377 \times d^2} \quad \text{or, } d = \sqrt{\frac{30 \times P \times G}{377 \times S}}$$

From the peak EUT RF output power, the minimum mobile separation distance, d=0.005 m, as well as the gain of the used antenna, the RF power density can be obtained.

2.3. Estimation result

Mode	Band	EIRP Tune-up (dBm)	EIRP Tune-up (mW)
Transmitter Emissions	314.9MHz	-35	0.0003162

Conclusion: No SAR and evaluation of exposure required since transmitter power is below FCC threshold 1mW.

END OF REPORT