

RF EXPOSURE REPORT

Report No.: 20230717G08965X-W3

Product Name: Automotive Driving Recorder

Model No.: GS5101

Serial Model No.: GS5101D, GS5111, GS5111D

FCC ID: 2A3TQ-GS5101

IC: 27991-GS5101

Applicant: Lumileds (Shanghai) Management Co.,Ltd

Address: No.19-20, Lane 299, Wenshui Road, Jing An District, Shanghai, P.R.China

Dates of Testing: 07/28/2023 - 08/03/2023

Issued by: CCIC Southern Testing Co., Ltd.

Electronic Testing Building, No. 43 Shahe Road, Xili Street,

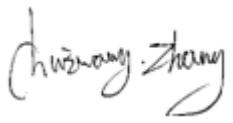
Lab Location: Nanshan District, Shenzhen, Guangdong, China.

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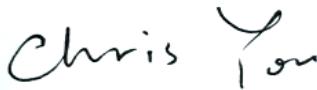
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Test Report

Product: Automotive Driving Recorder
Brand Name: Philips
Trade Name: Philips
Applicant: Lumileds (Shanghai) Management Co.,Ltd
Applicant Address: No.19-20, Lane 299, Wenshui Road, Jing An District, Shanghai, P.R.China
Manufacturer: Lumileds (Shanghai) Management Co.,Ltd
Manufacturer Address: No.19-20, Lane 299, Wenshui Road, Jing An District, Shanghai, P.R.China
Test Standards: 47 CFR Part 2.1091
RSS-102 issue 5 March 2015
Test Result: Pass

Tested by:  2023.08.04

Chuiwang Zhang, Test Engineer

Reviewed by:  2023.08.04

Chris You, Senior Engineer

Approved by:  2023.08.04

Yang Fan, Manager

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Change History		
Issue	Date	Reason for change
1.0	2023.08.04	First edition

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	Automotive Driving Recorder
Device Type	Fixed devices
HVIN	GS5101
Frequency Range	WLAN2.4GHz 802.11b/g/n (HT20/HT40)
Modulation Type	DSSS (802.11b), OFDM (802.11g/n)
Antenna Type	Internal Antenna
Antenna Gain	2.66dBi

Note 1: Model Difference: Only model difference, other unchanged.

1.2. EUT Description

EUT has been tested according to the following standards.

No.	Identity	Document Title
1	47 CFR Part 1	Practice and Procedure
2	47 CFR Part 2	Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
2	RSS-102 Issue 5	Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)
3	KDB 447498 D01 General RF Exposure Guidance v06	RF Exposure Procedures and Equipment Authorization Policies for Mobile and Portable Devices
4	OET Bulletin 65 Edition 97-01	Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields

1.3. Laboratory Facilities

FCC-Registration No.: 406086

CCIC Southern Testing Co., Ltd EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Designation Number: CN1283, valid time is until Sep. 30th, 2023.

ISED Registration: 11185A

CCIC Southern Testing Co., Ltd. EMC Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 11185A on Aug. 04, 2016, valid time is until Sep. 30th, 2023.

CAB number: CN0064

A2LA Code: 5721.01

CCIC-SET is a third party testing organization accredited by A2LA according to ISO/IEC 17025. The accreditation certificate number is 5721.01.

1.4. Laboratory Location

Company Name:	CCIC Southern Testing Co., Ltd.	
Address:	Electronic Testing Building, No. 43 Shahe Road, Xili Street, District, Shenzhen, Guangdong, China	Nanshan

2. Technical Requirements Specification in CFR Title 47 Part 2.1091

2.1. Evaluation method

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).

Table 1 to § 1.1310(e)(1) - 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)
(i) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*(100)	< 6
3.0-30	1824/f	4.89/f	*(900/f ²)	< 6
30-300	61.4	0.163	1.0	< 6
300-1500	/	/	f/300	< 6
1500-100,000	/	/	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
300-1500	/	/	f/1500	< 30
1500-100,000	/	/	1.0	< 30

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

2.2. Predication of MPE limit at a given distance

Refer to formulas on page 19 of OET Bulletin 65, Edition 97-01.

$$S = \frac{PG}{4\pi R^2}$$

Where:

S = power density (in appropriate units, e.g. mW/cm²)

P = power input to the antenna (in appropriate units, e.g., mW)

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

R = distance to the centre of radiation of the antenna (appropriate units, e.g., cm)

2.3. Evaluation Results

Worst-Case mode Conducted Output Power Results for WLAN

Operation Mode	Frequency (MHz)	Maximum Output power (dBm)	Max Tune up power (dBm)	Max Tune up power (mW)
802.11b	2412	15.18	15±1	39.81

Calculation results: Worst-Case mode

Operation Mode	Antenna Gain (dBi)	Antenna Gain (numeric)	Distance (cm)	Result (mW/cm2)	Power Density (mW/cm2)
802.11b	2.66	1.36	20	0.015	1.00

2.4. Conclusion

According to the KDB 447498 D01 General RF Exposure Guidance v06 section 7.2 determine the device is exclusion from SAR test.

3. Technical Requirements Specification in RSS-102 issue 5

3.1. Evaluation method

RF exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm, except when the device operates as follows:

- below 20 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 1 W (adjusted for tune-up tolerance);
- at or above 20 MHz and below 48 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $22.48/f^{0.5}$ W (adjusted for tune-up tolerance), where f is in MHz;
- at or above 48 MHz and below 300 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 0.6 W (adjusted for tune-up tolerance);
- at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $1.31 \times 10^{-2} f^{0.6834}$ W (adjusted for tune-up tolerance), where f is in MHz;
- at or above 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 5 W (adjusted for tune-up tolerance).

Table 1 to § RSS-102, 2.5.2 - Limits for RF Exposure Evaluation

Frequency Range (MHz)	Exemption Limits (W)
0.3-3.0	1
3.0-30	$22.48/f^{0.5}$
30-300	0.6
300-1500	$1.31 \times 10^{-2} f^{0.6834}$
1500-100,000	5

Note: f = frequency in MHz.

3.2. Evaluation Results

Worst-Case mode Conducted Output Power Results for WLAN

Operation Mode	Frequency (MHz)	Output Power (dBm)	Tune-up tolerance (dBm)	Gain	E.I.R.P (dBm)
WIFI802.11b	2412	15.18	15 ± 1	2.66dBi	18.66

Calculation results: Worst-Case mode

Operation Mode	Max. Tune-up power (dBm)	Distance (cm)	Max. Power (mW)	Exemption Limits (mW)	Results
WIFI802.11b	18.66	20	73.45	2684.03	PASS

3.3. Conclusion

According to the RSS-102 issue 5 Radio Frequency (RF) Exposure Compliance section 2.5.2 determine the device is exclusion from SAR test.

** END OF REPORT **