



## SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch

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# RF Exposure Evaluation Report

**Application No.:** SZEM1707007455CR  
**Applicant:** DigiLife Technologies Co., Ltd.  
**Address of Applicant:** 5F, No. 18, WenHu St., Neihu Dist. Taipei, Taiwan 114.  
**Manufacturer:** DigiLife Technologies Co., Ltd  
**Address of Manufacturer:** 5F, No. 18, WenHu St., Neihu Dist. Taipei, Taiwan 114.  
**Factory:** SHENZHEN APICAL TECHNOLOGY CO., LTD  
**Address of Factory:** 9/F.B Building, Tsinghua Unis Infoport, LangShan Road, North District, Hi-tech Industrial Park, Nanshan, Shenzhen  
**Equipment Under Test (EUT):**  
**Product Name:** Digital Video Recorder, Car Recorder, Car Camcorder, Drive Recorder, Driving Recorder  
**Model No.:** Please refer to section 4.1 ♣  
♣ Please refer to section 4.1 of this report which indicates which model was actually tested and which were electrically identical.  
**Trade mark:** HP, ROLLEI  
**FCC ID:** 2ACFIAP6181WM  
**Standards:** 47 CFR Part 1.1307  
47 CFR Part 1.1310  
**Date of Receipt:** 2017-07-18  
**Date of Test:** 2017-08-01 to 2017-08-29  
**Date of Issue:** 2018-01-26

<b>Test Result :</b>	<b>PASS*</b>
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\* In the configuration tested, the EUT complied with the standards specified above.



Keny Xu  
EMC Laboratory Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

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**2 Version**

<i>Revision Record</i>				
<i>Version</i>	<i>Chapter</i>	<i>Date</i>	<i>Modifier</i>	<i>Remark</i>
01		2018-01-26		Original

<b>Authorized for issue by:</b>				
				
		_____ Jacky Li /Project Engineer		
				
		_____ Eric Fu /Reviewer		



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## 4 General Information

### 4.1 General Description of EUT

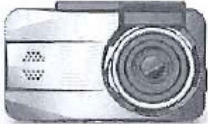


Operating Frequency:	IEEE 802.11b/g/n(HT20): 2412 MHz to 2462 MHz
Type of Modulation:	802.11b: DSSS(CCK/QPSK/BPSK) 802.11g: OFDM(BPSK/QPSK/16QAM/64QAM) 802.11n (HT20): OFDM (64QAM, 16QAM, QPSK, BPSK)
Transmit Data Rate:	802.11b: 1M/2M/5.5M/11M bps 802.11g: 6M/9M/12M/18M/24M/36M/48M/54M bps 802.11n: 6.5M/13M/19.5M/26M/39M/52M/58.5M/64M bps
Number of Channels:	802.11b/g/n (HT20): 11 Channels
Channel Separation:	5 MHz
Antenna Type and Gain:	Type : PIFA Antenna Gain :1.0dBi
Power Supply:	Charging volyage: DC 5V Car Charger: Input: DC 12/24V, 1.4A; Output: DC 5.0V, 2.1A

#### Remark:

Model No.: SP20LG-A, SP20LW-A, f860x, SP20LW-B, SP20LG-B, f870x, SP20LW-C, f850x

Only the model SP20LW-A was tested, since the electrical circuit design, layout, components used, internal wiring and functions were identical for all the above models, with only difference on with/without GPS module, with/without rear camera, and appearance.

The details as below:

Exterior	Brand Name	Model No.	Difference		Digital Video Recorder, Car Recorder, Car Camcorder, Drive Recorder, Driving Recorder
			GPS	Rear Camera	
	Difilife	SP20LW-A	With GPS & WIFI	with	
		SP20LG-A	With GPS & WIFI	option	
	hp, HP Inc.	f860x	With GPS & WIFI	with	
		f860x	With GPS & WIFI	option	
	Difilife	SP20LW-B	With GPS & WIFI	with	
		SP20LG-B	With GPS & WIFI	option	
	hp, HP Inc.	f870x	With GPS & WIFI	with	
		f870x	With GPS & WIFI	option	
	Difilife	SP20LW-C	With GPS & WIFI	with	
		SP20LW-C	With GPS & WIFI	option	
	hp, HP Inc.	f850x	With GPS & WIFI	with	
		f850x	With GPS & WIFI	option	



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### 4.2 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch

No. 1 Workshop, M-10, Middle section, Science & Technology Park, Shenzhen, Guangdong, China  
518057

Telephone: +86 (0) 755 2601 2053 Fax: +86 (0) 755 2671 0594

No tests were sub-contracted.

### 4.3 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

• **CNAS (No. CNAS L2929)**

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

• **A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

• **VCCI**

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

• **FCC –Designation Number: CN1178**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1178. Test Firm Registration Number: 406779.

• **Industry Canada (IC)**

Two 3m Semi-anechoic chambers and the 10m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1, 4620C-2, 4620C-3.



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**4.4 Deviation from Standards**

None.

**4.5 Abnormalities from Standard Conditions**

None.

**4.6 Other Information Requested by the Customer**

None.



## 5 RF Exposure Evaluation

### 5.1 RF Exposure Compliance Requirement

#### 5.1.1 Limits

According to FCC Part1.1310: 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 part1.1307(b)

**TABLE 1—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 Exposures</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
300–1500 .....	.....	.....	f/300	6
1500–100,000 .....	.....	.....	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
300–1500 .....	.....	.....	f/1500	30
1500–100,000 .....	.....	.....	1.0	30

F= Frequency in MHz

Friis Formula

Friis transmission formula:  $P_d = (P_{out} * G) / (4 * \pi * R^2)$

Where

$P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = output power to antenna in mW

G = gain of antenna in linear scale

$\pi$  = 3.1416

R = distance between observation point and center of the radiator in cm

$P_d$  is the limit of MPE, 1 mW/cm<sup>2</sup>. If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

#### 5.1.2 Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.





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**4.1.3 EUT RF Exposure Evaluation**

Antenna Gain:1. 0dBi

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 1.26 in linear scale.

Output Power Into Antenna & RF Exposure Evaluation Distance:

Channel	Frequency (MHz)	Max Conducted Peak Output Power (dBm)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )	Limit	Result
Middle	2437	23.70	234.42	0.0588	1.0	Pass

Note: Refer to report No. SZEM170700745501 for EUT test Max Conducted Peak Output Power value.

The distance r (4th column) calculated from the Fries transmission formula is far greater than 20 cm separation requirement.

Max Conducted peak output power has already take consideration of tune-up tolerance power.

- End of the Report -