



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
Email: ee.shenzhen@sgs.com

Report No.: SZEM160800743705

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RF Exposure Evaluation Report

Application No.: SZEM1608007437CR
Applicant: Monument Labs, Inc.
Manufacturer: Monument Labs, Inc.
Factory Qingyuan Gadmei Electronics Technology Co., Ltd.
Product Name: Monument Photo Management Device
Model No.(EUT): 217A12
Add Model No.: 217B12, 217C12, 217D12, 217E12
Trade Mark: Monument
FCC ID: 2AJP5-MN217
Standards: 47 CFR Part 1.1307 (2015)
47 CFR Part 1.1310 (2015)
Date of Receipt: 2016-09-09
Date of Test: 2016-09-19 to 2016-10-27
Date of Issue: 2016-10-31

Test Result :	PASS*
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* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



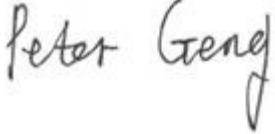
Jack Zhang
EMC Laboratory Manager

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.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. All test results in this report can be traceable to National or International Standards.

2 Version

Revision Record				
Version	Chapter	Date	Modifier	Remark
00		2016-10-31		Original

Authorized for issue by:			
Tested By	 (Peter Geng) /Project Engineer	2016-10-27	Date
Checked By	 (Eric Fu) /Reviewer	2016-10-31	Date

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4 General Information

4.1 Client Information

Applicant:	Monument Labs, Inc.
Address of Applicant:	605 N. Michigan Ave., 4th Floor, Chicago, IL 60611, USA
Manufacturer:	Monument Labs, Inc.
Address of Manufacturer:	605 N. Michigan Ave., 4th Floor, Chicago, IL 60611, USA
Factory:	Qingyuan Gadmei Electronics Technology Co., Ltd.
Address of Factory:	YinZhan Forest, QingCheng District, QingYuan City, Guangdong Province, China

4.2 General Description of EUT

Product Name:	Monument Photo Management Device
Model No.:	217A12
Trade Mark:	Monument
Antenna Type:	PIFA
Antenna Gain:	3.7dBi
Power Supply:	ADAPTER MODEL:A122-0502000UC INPUT:AC 100-240V, 50/60Hz OUTPUT:DC 5V,2000mA
For Classic:	
Operation Frequency:	2402MHz~2480MHz
Bluetooth Version:	Bluetooth 4.0 dual
Modulation Type:	GFSK, π/4DQPSK, 8DPSK
Number of Channels:	79
For BLE:	
Modulation Type:	GFSK
Number of Channel:	40



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For Wifi:	
Operation Frequency:	IEEE 802.11b/g/n(HT20): 2412MHz to 2462MHz
Channel Numbers:	IEEE 802.11b/g, IEEE 802.11n HT20: 11 Channels
Channel Separation:	5MHz
Type of Modulation:	IEEE for 802.11b: DSSS(CCK,DQPSK,DBPSK) IEEE for 802.11g: OFDM(64QAM, 16QAM, QPSK, BPSK) IEEE for 802.11n(T20) : OFDM (64QAM, 16QAM, QPSK,BPSK)

Remark:

Model No.: 217A12, 217B12, 217C12, 217D12, 217E12

Only the model 217A12 was tested, since the electrical circuit design, layout, components used, internal wiring and functions were identical for all the above models, only different on model number, package and case color. And Ethernet plug is not included for 217E12.

4.3 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.

4.4 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 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-823, R-4188, T-1153 and C-2383 respectively.

- FCC – Registration No.: 556682**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen 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. Registration No.: 556682.

- 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.

4.5 Deviation from Standards

None.

4.6 Abnormalities from Standard Conditions

None.

4.7 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 ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
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
300–1500 .....	.....	.....	f/300	6
1500–100,000 .....	.....	.....	5	6
(B) 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

F= Frequency in MHz

Friis Formula

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

Where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

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

P_d is the limit of MPE, 1 mW/cm². 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.

4.1.3 EUT RF Exposure Evaluation

For Classic:

Antenna Gain: 3.7dBi

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 2.34 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/cm²)	Limit	Result
Lowest	2402	-3.43	0.45	0.00021	1.0	PASS

Note: Refer to report No. SZEM160800743702 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.

For BLE:

Antenna Gain: 3.7dBi

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 2.34 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/cm²)	Limit	Result
Lowest	2402	7.69	5.87	0.0027	1.0	PASS

Note: Refer to report No. SZEM160800743703 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.

For Wifi:

Antenna Gain: 3.7dBi

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 2.34 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 ²)	Limit	Result
Lowest	2412	23.63	230.67	0.1074	1.0	PASS

Note: Refer to report No. SZEM160800743704 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.

1) . exposure conditions for simultaneous transmission operations

Simultaneous transmission MPE test is not required, because the Max. sum of the MPE ratios for BT and WIFI is $0.0027+0.1074=0.1101 < 1$