

RF EXPOSURE REPORT



Report No.: 16071451-FCC-H

Applicant	Spiio Inc.	
Product Name	Plant sensor	
Model No.	Green wall sensor	
Serial No.	N/A	
Test Standard	FCC 2.1091: 2016	
Test Date	March 24 to June 13, 2017	
Issue Date	June 14, 2017	
Test Result	☒ Pass ☐ Fail	
Equipment complied with the specification ☒		
Equipment did not comply with the specification ☐		
		
Loren Luo Test Engineer	David Huang Checked By	
This test report may be reproduced in full only Test result presented in this test report is applicable to the tested sample only		

Issued by:

SIEMIC (SHENZHEN-CHINA) LABORATORIES

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Laboratories Introduction

SIEMIC, headquartered in the heart of Silicon Valley, with superior facilities in US and Asia, is one of the leading independent testing and certification facilities providing customers with one-stop shop services for Compliance Testing and Global Certifications.



In addition to testing and certification, SIEMIC provides initial design reviews and compliance management throughout a project. Our extensive experience with China, Asia Pacific, North America, European, and International compliance requirements, assures the fastest, most cost effective way to attain regulatory compliance for the global markets.

Accreditations for Conformity Assessment

Country/Region	Scope
USA	EMC, RF/Wireless, SAR, Telecom
Canada	EMC, RF/Wireless, SAR, Telecom
Taiwan	EMC, RF, Telecom, SAR, Safety
Hong Kong	RF/Wireless, SAR, Telecom
Australia	EMC, RF, Telecom, SAR, Safety
Korea	EMI, EMS, RF, SAR, Telecom, Safety
Japan	EMI, RF/Wireless, SAR, Telecom
Singapore	EMC, RF, SAR, Telecom
Europe	EMC, RF, SAR, Telecom, Safety

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1. Report Revision History

Report No.	Report Version	Description	Issue Date
16071451-FCC-H	NONE	Original	June 14, 2017

2. Customer information

Applicant Name	Spiio Inc.
Applicant Add	470 Ramona St., Palo Alto, CA 94301 USA
Manufacturer	DYXY Shenzhen
Manufacturer Add	F4, C2 Huifu industrial district, Shanglilang Pingji Road, Buji Town, ShenZhen City

3. Test site information

Lab performing tests	SIEMIC (Shenzhen-China) LABORATORIES
Lab Address	Zone A, Floor 1, Building 2 Wan Ye Long Technology Park South Side of Zhoushi Road, Bao' an District, Shenzhen, Guangdong China 518108
FCC Test Site No.	718246
IC Test Site No.	4842E-1
Test Software	Labview of SIEMIC version 2.0

4. Equipment under Test (EUT) Information

Description of EUT:	Plant sensor
Main Model:	Green wall sensor
Serial Model:	N/A
Equipment Category :	DTS
Antenna Gain:	2.24dBi
Antenna Type:	PCB antenna
Port:	N/A
Input Power:	Battery: Rated: 3.6V
Trade Name :	N/A
FCC ID:	2AML3SPIIO-SENSOR-1
Type of Modulation:	802.11b/g/n: DSSS, OFDM
RF Operating Frequency (ies):	802.11b/g/n(20M): 2412-2462 MHz
Number of Channels:	802.11b/g/n(20M): 11CH
Date EUT received:	March 23, 2017
Test Date(s):	March 24 to June 13, 2017

5. FCC §2.1091 - Maximum Permissible exposure (MPE)

6.1 Applicable Standard

According to §1.1307(b)(1), systems operating under the provisions of this 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.

According to §1.1310 and §2.1091 RF exposure is calculated.

Limits for General Population/Uncontrolled Exposure

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)
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

* = Plane-wave equivalent power density

6.2 Test Result

Type	Test mode	CH	Freq (MHz)	Conducted Power (dBm)	Tune Up Power (dBm)
Output power	802.11b	Low	2412	14.82	14±1
		Mid	2437	14.93	14±1
		High	2462	13.98	14±1
	802.11g	Low	2412	11.88	11±1
		Mid	2437	11.51	11±1
		High	2462	10.73	11±1
	802.11n (20M)	Low	2412	10.37	10±1
		Mid	2437	10.24	10±1
		High	2462	9.67	10±1

Predication of MPE limit at a given distance

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

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

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

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain.

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

For the antenna manufacturer provide only used limited to ERP/EIRP or radiated spurious emission test. The MPE evaluation as below:

Maximum output power at antenna input terminal: 15 (dBm)

Maximum output power at antenna input terminal: 31.623(mW)

Prediction distance: >20 (cm)

Predication frequency: 2437 (MHz) Mid frequency

Antenna Gain (typical): 2.24 (dBi)

Antenna Gain (typical): 1.675 (numeric)

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The worst case is power density at predication frequency at 20 cm: 0.01054 (mW/cm²)

MPE limit for general population exposure at prediction frequency: 1.0 (mW/cm²)

0.01054 (mW/cm²) < 1.0 (mW/cm²)

Result: Pass