



RF EXPOSURE EVALUATION REPORT

Application No.: GZCR2107020705LM
Applicant: Gardyn, Inc.
Address of Applicant: 8120 Woodmont Avenue, Suite #640, Bethesda, MD 20614, U.S.A.
Manufacturer: Dongguan He Andong Plastic Products Co.,
Address of Manufacturer: Guangdong province dongguan city fenggang town tangli village fenghuang wai xing feng road E building factory
Factory: Dongguan He Andong Plastic Products Co.,
Address of Factory: Guangdong province dongguan city fenggang town tangli village fenghuang wai xing feng road E building factory
Equipment Under Test (EUT):
EUT Name: Indoor Garden
Model No.: GH-A01
Trade mark: GARDYN
Standard(s) : 47 CFR Part 1.1307, Part 1.1310
Date of Receipt: 2019-09-26
Date of Test: 2019-10-22 to 2019-12-10
Date of Issue: 2019-12-13 (for the original report GZEM190901605904)
2020-11-26 (for the copy report GZEM190901605908)
2021-03-31 (for copy report GZEM190901605912)
2021-09-06 (for the report GZEM190901605916)

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

Kobe Jian
EMC Laboratory Manager



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

Report No.: GZEM190901605916

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EMC-TRF-03 Rev 1.0

Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2019-12-13		Original
02		2020-11-26		Copy report: Supplemented the Molex connector (part Number: 43501W9-NP-B3) and photo of it
03		2021-03-31		Copy report: Changed manufacturer information, factory information, EUT Name, Added trade mark, Alternative pumps.
04		2021-09-06		Copy report: Add alternative components IC+ MOSFET+ power switch+ Temperature and humidity sensor and update Address of Applicant & label

Authorized for issue by:				
		Kevin Zhang		
		Kevin Zhang /Project Engineer		
		Ricky Liu		
		Ricky_Liu /Reviewer		



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Guangzhou Branch Testing Center EEC Laboratory

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Member of the SGS Group (SGS SA)

2 Test Summary

Radio Spectrum Technical Requirement				
Item	Standard	Method	Requirement	Result
RF Exposure	47 CFR Part 1.1307, Part 1.1310	CFR 47 Part 1.1310	CFR 47 Part 1.1310	Pass

Remark for the report GZEM190901605908:

This report **GZEM190901605908** was an additional report copied from the **GZEM190901605904** original report, in which the Molex connector (part Number: 43501W9-NP-B3) and photo of it were supplemented which did not affect the RF characterise.

Therefore original data was kept in this report GZEM190901605908.

Remark for the report GZEM190901605912:

This report **GZEM190901605912** was a supplement report based on original report **GZEM190901605908**, only Changed manufacturer information, factory information, EUT Name, Added trade mark, Alternative pumps.

1. Changed manufacturer information, factory information, EUT Name, Added trade mark
2. Alternative pumps.

Considering the changes, And evaluation base on the technical information of the same RF module and interior circuit. So, no further testing in this report.

According to FCC Part 2 section 2.1043(b)(1), it is ok to update test report by adding new pumps without filing with the Commission.

FCC Part 2 section 2.1043(b)(1):

A Class I permissive change includes those modifications in the equipment which do not degrade the characteristics reported by the manufacturer and accepted by the Commission when certification is granted. No filing with the Commission is required for a Class I permissive change.

Therefore original data was kept in this report GZEM190901605912.



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Remark for this report GZEM190901605916:

This report GZEM190901605916 was a supplement report based on original report GZEM190901605912, only added alternative components IC(U3)+ 3 types MOSFET+ power switch+ Temperature as below and humidity sensor and update Address of Applicant & label.

Sample	U3	MOSFET	Temperature & humidity sensor	power switch
M5	LM60430DRPKR (1Mhz)	TSM038N03PQ33	DHT20	HS9
M3	LM60430DRPKR (1Mhz)	RQ3E150GNTB	DHT20	HS9
M4	LM60430ARPKR (400Khz)	RQ3E180BNTB	DHT20	HS9

Evaluation base on the technical information of the same RF module and interior circuit, there is no need further testing in this report.

Therefore original data was kept in this report GZEM190901605916.



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4 General Information

4.1 Details of E.U.T.

Power Supply:	DC 24 V powered by AC/DC adapter as below: Model: FY1802407500 Input: AC 100-240 V, 50/60 Hz, 2.6 A Max Output: DC 24 V, 7500 mA
Rated Power:	180W
Test Voltage:	AC 120 V, 60 Hz
Cable:	DC input ports for main unit For AC/DC adapter: AC mains (unshielded, 0.8 m) DC output cables (unshielded, 1.5m)
For BT	
Antenna Gain	0 dBi
Antenna Type	PCB Antenna
Channel Spacing	2MHz
Modulation Type	GFSK
Number of Channels	40
Operation Frequency	2402MHz to 2480MHz
For Wi-Fi	
Antenna Gain	0 dBi
Antenna Type	PCB Antenna
Channel Spacing	5MHz
Modulation Type	802.11b: DSSS (CCK, DQPSK, DBPSK) 802.11g/n: OFDM (64QAM, 16QAM, QPSK, BPSK)
Number of Channels	802.11b/g/n(HT20):11
Operation Frequency	802.11b/g/n(HT20): 2412MHz to 2462MHz

4.2 Description of Support Units

The EUT has been tested as an independent unit.

4.3 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou Branch EMC Laboratory,
198 Kezhu Road, Sciencetech Park, Guangzhou Economic & Technology Development District,
Guangzhou, China 510663

Tel: +86 20 82155555 Fax: +86 20 82075059

No tests were sub-contracted.



4.4 Test Facility

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

● **NVLAP (Lab Code: 200611-0)**

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 200611-0.

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.

● **ACMA**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our NVLAP accreditation.

● **SGS UK(Certificate No.: 32), SGS-TUV SAARLAND and SGS-FIMKO**

Have approved SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory as a supplier of EMC TESTING SERVICES and SAFETY TESTING SERVICES.

● **CNAS (Lab Code: L0167)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been assessed and in compliance with CNAS-CL01:2018 accreditation criteria for testing laboratories (identical to

ISO/IEC 17025:2017 General Requirements) for the Competence of Testing Laboratories.

● **FCC Recognized 2.948 Listed Test Firm(Registration No.: 282399)**

SGS-CSTC Standards Technical Services 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. Registration 282399, May 31, 2002.

● **FCC Recognized Accredited Test Firm(Registration No.: 486818)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been accredited 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: CN5016, Test Firm Registration Number: 486818, Jul 13, 2017.

● **Industry Canada (Registration No.: 4620B, CAB identifier: CN0052)**

SGS-CSTC Standards Technical Services Co., Ltd., has been registered by Innovation Science and Economic Development Canada for Wireless Device Testing laboratories to test to Canadian radio equipment requirements. Registration No. 4620B, CAB identifier: CN0052.

● **VCCI (Registration No.: R-12460, C-12584, G-10449 and T-11179)**

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.: R-12460, C-12584, G-10449 and T-11179 respectively.

● **CBTL (Lab Code: TL129)**

SGS-CSTC Standards Technical Services Co., Ltd., E&E Laboratory has been assessed and fully comply with the requirements of ISO/IEC 17025:2005, the Basic Rules, IECEE 01 and Rules of procedure IECEE 02, and the relevant IECEE CB-Scheme Operational documents.



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4.5 Deviation from Standards

None

4.6 Abnormalities from Standard Conditions

None



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5 Radio Spectrum Technical Requirement

5.1 RF Exposure

5.1.1 Test Requirement:

CFR 47 Part 1.1310

Limit:

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 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
(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
300-1,500			f/1500	30
1,500-100,000			1.0	30
f = frequency in MHz				
* = Plane-wave equivalent power density				

According to IEEE C95.3:2002 section 5.5.1.1, The power density S at a point on the axis at a distance d from a transmitting antenna is given by the Friis free-space transmission formula

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

S = power density (mW/cm²)
P = the net power delivered to the antenna (mW)
G = gain of the antenna in linear scale
d = distance between observation point and center of the radiator (cm)



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5.1.2 Conclusion

For Bluetooth

Frequency (MHz)	Antenna Gain (Numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
2402	1.000	6.518	4.485	0.00089	1	Complies
2442	1.000	7.783	6.002	0.00119	1	Complies
2480	1.000	7.77	5.984	0.00119	1	Complies

For 2.4 GHz Wi-Fi

Frequency (MHz)	Antenna Gain (Numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
11B						
2412	1.000	23.64	231.206	0.04600	1	Complies
2442	1.000	24.02	252.348	0.05020	1	Complies
2462	1.000	24.18	261.818	0.05209	1	Complies
11G						
2412	1.000	24.15	260.016	0.05173	1	Complies
2442	1.000	24.29	268.534	0.05342	1	Complies
2462	1.000	24.48	280.543	0.05581	1	Complies
11N						
2412	1.000	22.85	192.752	0.03835	1	Complies
2442	1.000	23.31	214.289	0.04263	1	Complies
2462	1.000	23.3	213.796	0.04253	1	Complies

The Bluetooth and Wi-Fi can be transmitted together, the result is

$$0.00119/1 + 0.05581/1 = 0.057 < 1.0$$

So SAR report is not required.



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6 Photographs

6.1 EUT Constructional Details

Refer to Appendix - Photographs of EUT Constructional Details for GZCR2107020705LM

--End of Report--



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