



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

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Report No.: SZEM170800865003
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RF Exposure Evaluation Report

Application No.:	SZEM1708008650CR
Applicant:	Canary Connect Inc
Address of Applicant:	606W 28th street 7th floor, New York, NY10001
Manufacturer:	Canary Connect Inc
Address of Manufacturer:	606W 28th street 7th floor, New York, NY10001
Factory:	SKY LIGHT Electronic (Shenzhen) Limited
Address of Factory:	No. 6 Building, Jinbi Industrial Area, Huangtian Community, Xixiang Street, Bao'an District, Shenzhen City, Guangdong Province, China
Equipment Under Test (EUT):	
EUT Name:	Canary
Model No.:	CAN400XXYY (XX represent Region from A-Z, YY represent Color from A-Z) *
*	Please refer to section 4.1 of this report which indicates which model was actually tested and which were electrically identical.
Trade mark:	Canary
FCC ID:	2ACDL-C400
Standards:	47 CFR Part 1.1307 47 CFR Part 1.1310 KDB447498D01 General RF Exposure Guidance v06
Date of Receipt:	2017-08-16
Date of Test:	2017-08-25 to 2017-09-01
Date of Issue:	2017-09-06
Test Result :	PASS*

* In the configuration tested, the EUT complied with the standards specified above.



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.

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2 Version

Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2017-09-06		Original

Authorized for issue by:			
		 _____ Leo Li /Project Engineer	
		 _____ Eric Fu /Reviewer	

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4 General Information

4.1 General Description of EUT

Product Name:	Canary
Model No.:	CAN400USBK
Trade mark:	Canary
Power Supply:	DC 5V from adapter input AC 120V/60Hz Adapter Model:CAN100USAPT2 Input:AC 100-240V 50/60Hz 0.35A Output:DC 5V 200mA
For BLE:	
Frequency Range:	2402MHz to 2480MHz
Bluetooth Version:	V4.0
Modulation Type:	GFSK
Number of Channels:	40
Sample Type:	Portable production
Antenna Type:	On-board antenna
Antenna Gain:	1.5dBi
For 2.4G:	
Type of Modulation:	IEEE for 802.11b: DSSS (CCK, DQPSK, DBPSK) IEEE for 802.11g: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE for 802.11nHT20: OFDM (64QAM, 16QAM, QPSK, BPSK)
Operating Frequency:	IEEE 802.11b/g/nHT20: 2412MHz to 2462MHz
Channel Number:	IEEE 802.11b/g, IEEE 802.11nHT20: 11 Channels
Channels Step:	Channels with 5MHz step
Sample Type:	Portable production
Antenna Type:	PIFA
Antenna Gain:	1.8dBi

Remark:

Model No.: CAN400XXYY (XX represent Region from A-Z, YY represent Color from A-Z)

Only the model CAN400USBK 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 Color and Region.

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 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 –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.

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

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.

5.1.3 EUT RF Exposure Evaluation

1) exposure conditions for standalone operations

For Bluetooth

Antenna Gain: 1.5dBi

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 1.41 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	MPE Ratios	Result
Middle	2440	3.96	2.49	0.0007	1.0	0.001	PASS

Note: Refer to report No. SZEM170800865001 for EUT test Max Conducted Peak Output Power value.

The distancer (5th column) calculated from the Fries transmission formula is far greater than 20 cm separation requirement.

For 2.4G

Antenna Gain: 1.8dBi

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 1.51 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	MPE Ratios	Result
Highest	2462	21.21	132.13	0.0397	1.0	0.04	PASS

Note: Refer to Appendix B of Test Report SZEM170800865002 for EUT test Max Conducted Peak Output Power value.

The distancer (5th column) calculated from the Fries transmission formula is far greater than 20 cm separation requirement.

2) exposure conditions for simultaneous transmission operations

Simultaneous transmission MPE test is not required,because the WiFi and BLE can't be transmitting simultaneously