SGS-CSTC Standards Technical Services Co., Ltd.

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RF Exposure Evaluation Report

Application No:	SZEM1404001700RF
Applicant:	CANARY CONNECT INC.
Manufacturer:	CANARY CONNECT INC.
Factory:	SKY LIGHT Electronic (ShenZhen) Limited
Product Name:	Canary
Model No.(EUT):	CAN100, CAN100XXYY 'XX' means Region (X= alphabet A-Z), 'YY' means Color (Y= alphabet A-Z)
Trade Mark:	Canary
FCC ID:	2ACDL-C100
Standards:	47 CFR Part 1.1307(2013)
	47 CFR Part 1.1310(2013)
Date of Receipt:	2014-04-22
Date of Test:	2014-05-04 to 2014-08-04
Date of Issue:	2014-08-18
Test Result :	**PASS***

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

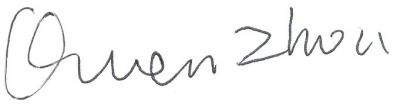
Authorized Signature:

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		2014-08-18		Original

Authorized for issue by:				
Tested By		 **(Owen Zhou) /Project Engineer**		2014-08-04 **Date**
Prepared By		 **(Molinda Li) /Clerk**		2014-08-18 **Date**
Checked By		 **(Emen Li) /Reviewer**		2014-08-19 **Date**

3 Contents

4 General Information

4.1 Client Information

Applicant:	CANARY CONNECT INC.
Address of Applicant:	96 Spring Street 7th Floor, New York, NY 10012, USA
Manufacturer:	CANARY CONNECT INC.
Address of Manufacturer:	96 Spring Street 7th Floor, New York, NY 10012, USA
Factory:	SKY LIGHT Electronic (ShenZhen) Limited
Address of Factory:	No. 5&6 Building, JinBi Industrial Area, HuangTian, BaoAn, Shenzhen, China.

4.2 General Description of EUT

Product Name:	Canary
Model No.:	CAN100, CAN100XXYY, 'XX' means Region (X= alphabet A-Z), 'YY' means Color (Y= alphabet A-Z)
Trade Mark:	Canary
For WIFI mode:	
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(HT20): OFDM (64QAM, 16QAM,QPSK,BPSK)
Sample Type:	Fixed production
Antenna Type:	Integral
Antenna Gain:	3.5dBi
Power Supply:	Supply by adapter through USB port
For BLE mode:	
Operation Frequency:	2402MHz~2480MHz
Bluetooth Version:	4.0
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)
Modulation Type:	GFSK
Number of Channel:	40
Test Software of EUT:	manufacturer declare
Sample Type:	manufacturer declare
Antenna Type	Integral
Antenna Gain	0dBi

Power Supply:	Supply by adapter through USB port
Test Voltage:	AC 120V 60Hz
AC Adapter:	
MODEL:	PA03-050200U-U
INPUT:	100-240V~50/60Hz 0.3A
OUTPUT:	5V ⎓ 2A
USB cable:	200cm (Unshielded)
Audio cable:	105cm (Unshielded)
Remark:	Only the model CAN100USBK was tested, since the electrical circuit design, PCB layout, components used and internal wiring were identical for the above models, only different on model name and color..

4.3 Test Location

All tests were performed at:
SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch E&E Lab
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.

- **VCCI**

  The 3m Semi-anechoic chamber, Full-anechoic Chamber and Shielded Room (7.5m x 4.0m x 3.0m) of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-2197, G-416, 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 of SGS-CSTC Standards Technical Services Co., Ltd. have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1 & 4620C-2.

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: Pd = (Pout*G)/(4* Pi * R 2)

Where

Pd = power density in mW/cm2

Pout = 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

Pd id 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 BLE mode

Antenna Gain: 0dBi

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 1.0 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
Highest	2480	1.56	1.432	0.000285	1.0	PASS

Note: Refer to report No. SZEM140400170001 for EUT test Max Conducted Peak Output Power value.

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

For WIFI mode

Antenna Gain: 3.5dBi

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 1.995 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
Middle	2437	16.43	98.40	0.04383	1.0	PASS

Note: Refer to report No. SZEM140400170002 for EUT test Max Conducted Peak Output Power value.

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