RF EXPOSURE REPORT

OF

Applicant:	silex technology, Inc. 2-3-1 Hikaridai, Seika-cho, Souraku-gun, Kyoto 619-0237, Japan
Product Name:	SX-SDMAC2
Brand Name:	silex technology, Inc.
Marketing Name:	Wireless Embedded Module
Model No.:	SX-SDMAC2
Model Difference:	N/A
Report Number:	ER/2019/30124
FCC ID:	N6C-SDMAC2
FCC Rule Part	Part 2.1091
Issue Date:	Jun. 19, 2019
Date of Test:	Mar. 21, 2019 ~ Jun. 11, 2019
Date of EUT Received:	Mar. 21, 2019

We hereby certify that:

The above equipment was tested by SGS Taiwan Ltd. The test data, data evaluation in this report is in compliance with FCC Rules Part 2.

The test results of this report relate only to the tested sample identified in this report.

Tested By: Jerry Lu

Jerry Lu / Sr. Engineer

Approved By: John Yeh

John Yeh / Asst. Manager

Testing Laboratory
0513

Revision History

Report Number	Revision	Description	Effected Page	Issue Date	Revised By
ER/2019/30124	Rev.00	Initial creation of document	All	Jun. 19, 2019	Violetta Tang

Table of Contents

1 DESCRIPTION OF EQUIPMENT UNDER TEST (EUT)

General:

Product Name:	SX-SDMAC2
Brand Name:	silex technology, Inc.
Marketing Name:	Wireless Embedded Module
Model No.:	SX-SDMAC2
Model Difference:	N/A
Hardware Version:	N/A
Software Version:	N/A
Power Supply:	3.3Vdc

Radio Technology:	Bluetooth BR+EDR
Channel number:	79 channels
Modulation type:	GFSK + π/4DQPSK + 8DPSK
Transmit Power:	4dBm (Avg.)
Frequency Range:	2.402GHz – 2.480GHz
Dwell Time:	≦ 0.4s

Radio Technology:	Bluetooth LE dual mode
Frequency Range:	2402 – 2480MHz
Channel number:	40 channels
Modulation type:	GFSK
Transmit Power:	4.48dBm (Avg.)

WLAN 802.11	Frequency Range	Channels	Rated Power (Avg.) (dBm)	Modulation Technology
b	2412-2462	11	13.49 (2TX)	DSSS
g			20.32 (2TX)	OFDM
n_HT20			20.25 (MIMO)	
n_HT40	2422-2452	7	17.28 (MIMO)	
Modulation type:	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM			
Transition Rate:	802.11 b: 1/2/5.5/11 Mbps 802.11 g: 6/9/12/18/24/36/48/54 Mbps 802.11 n_20MHz: 6.5 – 144.4Mbps 802.11 n_40MHz: 13.5 – 300.0Mbps			

WLAN 802.11	Frequency Range	Channels	Rated Power (Avg.) (dBm)	Modulation Technology
a	5150~5250	4	16.81 (2TX)	OFDM
	5250~5350	4	18.94 (2TX)	
	5470~5725	11	18.65 (2TX)	
	5725-5850	5	18.96 (2TX)	
n_HT ac_VHT 20M	5150~5250	4	HT: 16.79 (MIMO-CDD)	OFDM
	5250~5350	4	HT: 18.48 (MIMO-CDD)	
	5470~5725	11	HT: 18.26 (MIMO-CDD)	
	5725-5850	5	HT: 18.49 (MIMO-CDD)	
n_HT ac_VHT 40M	5150~5250	2	HT: 17.37 (MIMO-CDD)	OFDM
	5250~5350	2	HT: 17.31 (MIMO-CDD)	
	5470~5725	5	HT: 17.36 (MIMO-CDD)	
	5725-5850	2	HT: 17.28 (MIMO-CDD)	
ac_VHT 80M	5150~5250	1	10.81 (MIMO-CDD)	OFDM
	5250~5350	1	14.81 (MIMO-CDD)	
	5470~5725	2	17.37 (MIMO-CDD)	
	5725~5850	1	16.24 (MIMO-CDD)	
Modulation type		64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 802.11ac only		
Transition Rate:		802.11 a: 6/9/12/18/24/36/48/54 Mbps 802.11 n_20MHz: 6.5 – 144.4Mbps 802.11 n_40MHz: 13.5 – 300.0Mbps 802.11 ac_20MHz: 6.5 –173.3Mbps 802.11 ac_40MHz: 13.5 –400.0Mbps 802.11 ac_80MHz: 29.3 – 866.7Mbps		

Antenna Designation

Antenna Type	Supplier	Antenna Part No.	Freq. (MHz)	Peak Antenna Gain (dBi)	Worst Antenna Gain
PCB	Unictron	H2B1PC1A1C (AA258)	2.4GHz	2.9	
PCB	Unictron	H2B1PD1A1C (AA222)	2.4GHz	2.8	
PCB	molex	146153	2.4GHz	3.25	V
Dipole	Sansei Denki	ANTDC-081A0/B0	2.4GHz	2	
Dipole	Sansei Denki	ANTDP-027A0	2.4GHz	0.8	
Dipole	Sansei Denki	ANTDP-039A0	2.4GHz	0.8	
Dipole	JOYMAX	IWF-145XMPXX	2.4GHz	4	V

Antenna Type	Supplier	Antenna Part No.	Freq. (MHz)	Peak Antenna Gain (dBi)	Worst Antenna Gain
PCB	Unictron	H2B1PC1A1C (AA258)	5GHz	4.4	
PCB	Unictron	H2B1PD1A1C (AA222)	5GHz	4.2	
PCB	molex	146153	5GHz	5	V
Dipole	Sansei Denki	ANTDC-081A0/B0	5GHz	2	V
Dipole	Sansei Denki	ANTDP-027A0	5GHz	0.8	
Dipole	Sansei Denki	ANTDP-039A0	5GHz	0.8	

2 FCC MAXIMUM PERMISSIBLE EXPOSURE (MPE)

2.1 FCC Standard Applicable

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

This is a Mobile device, the MPE is required.

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

Limits for Maximum Permissive Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Averaging Time (minute)
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
1500-15000	/	/	1.0	30

f = frequency in MHz

* = Plane-wave equipment power density

2.2 Power Density Calculation (Worst Case)

Operation Mode	Evaluation Frequency (MHz)	Operation Distance (cm)	Max. output Power (dBm)	Antenna Gain (dBi)	Max. output Power EIRP (mW)	Power Density (mW/cm^2)	Limit (mW/cm^2)	Pass / Fail
BT	2480.00	20	4.48	4.00	7.05	0.001	1.000	Pass
WLAN 2.4G	2437.00	20	20.32	4.00	270.40	0.054	1.000	Pass
WLAN 5G	5825.00	20	18.96	5.00	248.89	0.050	1.000	Pass

2.3 Collocated Power Density Calculation

Operation Mode	Power Density (mW/cm^2)	Limit (mW/cm^2)	Power Density / Limit	Σ(E- Field Strength / Limit)
BT	0.001	1.00	0.001	0.1044
WLAN 2.4G	0.054	1.00	0.054	
WLAN 5G	0.050	1.00	0.050	

Note:

1. Σ(E- Field Strength / Limit): This is a summation of [(E- Field Strength for each transmitter/antenna included in the simultaneous transmission) / (corresponding MPE limit)], for WLAN + Bluetooth.

2. Considering the WLAN and Bluetooth transmitter, the aggregated (E- Field Strength /limit) is smaller than 1, and MPE of 3 collocated transmitters is compliant

~ End of Report ~