RF EXPOSURE REPORT

Report No.: 15020148-FCC-H1
Supersede Report No.: N/A

Applicant	Jiangsu SWR Science & Technology Co.,Ltd
Product Name	SenseDisc Data Logger
Main Model	SD00
Test Standard	FCC 2.1093
Test Date	April 11 to April 15, 2015
Issue Date	April 17, 2015
Test Result	☑ Pass ☐ Fail
Equipment complied with the specification	☑
Equipment did not comply with the specification	☐

Deon Dai	Herve Idoko	
Deon Dai Test Engineer	Herve Idoko Checked By	

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Test result presented in this test report is applicable to the tested sample only

Issued by:
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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
15020148-FCC-H1	NONE	Original	April 17, 2015

2 Customer information

Applicant Name	Jiangsu SWR Science & Technology Co.,Ltd
Applicant Add	NO.14 Junnong Road,Qinhuai District ,Nanjing,Jiangsu Province,China
Manufacturer	Jiangsu SWR Science & Technology Co.,Ltd
Manufacturer Add	NO.14 Junnong Road,Qinhuai District ,Nanjing,Jiangsu Province,China

3 Test site information

Lab performing tests	SIEMIC (Nanjing-China) Laboratories
Lab Address	2-1 Longcang Avenue Yuhua Economic and Technology Development Park, Nanjing, China
FCC Test Site No.	986914
IC Test Site No.	4842B-1
Test Software	Labview of SIEMIC version 1.0

4 Equipment under Test (EUT) Information

Description of EUT:	SenseDisc Data Logger
Main Model:	SD00
Serial Model:	SD0010, SD0020, SD0030, SD0040, SD0050
Date EUT received:	March 20, 2015
Test Date(s):	April 11 to April 15, 2015
Antenna Gain:	Bluetooth&BLE: 2 dBi
Output Max power	Bluetooth: 0.994 dBm (1.26mW) BLE: -0.093 dBm (0.98mW)
Type of Modulation:	Bluetooth: GFSK&π/4-DQPSK&8DPSK BLE: GFSK
RF Operating Frequency (ies):	Bluetooth&BLE: 2402-2480 MHz(TX/RX)
Number of Channels:	Bluetooth: 79 BLE: 40
Port:	USB Port, Sensor Port*7
Input Power:	Adapter: Model: XHY050100UCB Input: AC 100-240V 50/60Hz 0.3A MAX Output: DC 5V 1.0A Battery: 3.7V 1800mAh
Trade Name :	SenseDisc
FCC ID:	2AEEJ-SD

Note: the difference between these models please refer to 6. DECLARATION OF SIMILARITY.

5 FCC §2.1093 - RF Exposure

Standard Requirement:

According to §15.247 (i) and §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.

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at *test separation distances* ≤ 50 mm are determined by:

[(*max. power of channel, including tune-up tolerance, mW*)/(*min. test separation distance, mm*)] · [$\sqrt{f_{(GHz)}}$] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR,[16] where

- $f_{(GHz)}$ is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation[17]
- The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum *test separation distance* is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum *test separation distance* is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

Routine SAR evaluation refers to that specifically required by § 2.1093, using measurements or computer simulation. When routine SAR evaluation is not required, portable transmitters with output power greater than the applicable low threshold require SAR evaluation to qualify for TCB approval.

Test Result:

Type	Test mode	CH	Freq (MHz)	Conducted Power (dBm)	Tune Up Power (dBm)
Output power	Bluetooth (GFSK)	Low	2402	0.474	0±1
		Mid	2441	0.994	
		High	2480	0.784	
	Bluetooth (π/4-DQPSK)	Low	2402	-0.819	-1±1
		Mid	2441	-0.429	
		High	2480	-0.359	
	Bluetooth (8DPSK)	Low	2402	-0.452	-1±1
		Mid	2441	-0.082	
		High	2480	-0.031	
	BLE	Low	2402	-0.554	-1±1
		Mid	2441	-0.093	
		High	2480	-0.269	

One antenna is available for the EUT (Bluetooth/BLE antenna).

BT Mode (GFSK Mode):

The maximum average output power(turn-up power) in low channel of Bluetooth is 1 dBm=1.26mW

The calculation results= 1.26/5*√ 2.402= 0.39< 3

The maximum average output power(turn-up power) in middle channel of Bluetooth is 1 dBm=1.26mW

The calculation results= 1.26/5*√ 2.441= 0.39< 3

The maximum average output power(turn-up power) in high channel of Bluetooth is 1 dBm=1.26 mW

The calculation results= 1.26/5*√ 2.480= 0.40< 3

BLE Mode:

The maximum average output power(turn-up power) in low channel of Ble is 0 dBm=1 mW

The calculation results= 1/5*√ 2.402= 0.31< 3

The maximum average output power(turn-up power) in middle channel of Ble is 0 dBm=1mW

The calculation results= 1/5*√ 2.441= 0.31< 3

The maximum average output power(turn-up power) in high channel of Ble is 0 dBm=1 mW

The calculation results=1/5*√ 2.480= 0.31< 3

According to KDB 447498, no stand-alone required for Bluetooth antenna, and no simultaneous SAR measurement is required , please refer to SAR report.

Test Result: Pass

6 DECLARATION OF SIMILARITY

Five Models of SenseDisc							
Sensors			Models				
No.	Name	SD00	SD0010 Basic	SD0020 Advanced	SD0030 Physics	SD0040 Biochemistry	SD0050 Environment
			(yellow)	(orange)	(grey)	(blue)	(green)
1	Voltage sensor						
2	Current sensor						
3	Temperature sensor						
4	Motion sensor						
5	Force sensor						
6	Photogate sensor						
7	Sound level sensor						
8	Air pressure sensor						
9	Humidity sensor						
10	Light sensor						
11	DO sensor						
12	pH sensor						
13	Conductivity sensor						
14	Heart rate sensor						
15	Thermocouple sensor						
16	mV sensor						
17	UV sensor						
18	UI						
Built-in sensors	GPS						
	Ambient temperature						
	Barometer						
	Accelerometer(3 Axis)						

For our business issue and marketing requirement, we would like to list different model numbers on the FCC reports and certification as following:modelSD00, model SD0010, model SD0020, model SD0030, model SD0040 model SD0050.The five models have the same Circuits, and PCB. The difference of these models are have different sensor and color, the different sensor does not affect the RF power . FCC ID：2AEEJ-SD

Client's signature 

Client's name / title Ningjiang Xiao /Manager

Contact information / address Jiangsu SWR Science & Technology Co.,Ltd

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