Report No.: SZEM200900949103
Page: 1 of 8

RF Exposure Evaluation Report

Application No.:	SZEM2009009491CR
Applicant:	Harman International Industries, Inc.
Address of Applicant:	8500 Balboa Boulevard, Northridge, California, 91329, United States
Manufacturer:	Harman International Industries, Inc.
Address of Manufacturer:	8500 Balboa Boulevard, Northridge, California, 91329, United States
Factory:	Please refer to section 4.1
Address of Factory:	Please refer to section 4.1

Equipment Under Test (EUT):

Product Name:	Sactionals StealthTech Sound + Charge Center Channel
Model No.:	EE4034
FCC ID:	APILOVESAC
Standards:	47 CFR Part 1.1307
	47 CFR Part 1.1310
	47 CFR Part 2.1091
Date of Receipt:	2020-09-21
Date of Test:	2020-11-16 to 2021-01-29
Date of Issue:	2021-02-01

Test Result :	**PASS***

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

Keny Xu
EMC Laboratory Manager

No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgsgroup.com.cn
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2 Version

Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
01		2021-02-01		Original

Authorized for issue by:				
		Benson Wang		
		Benson Wang/Project Engineer		
		Eric Fu		
		Eric Fu/Reviewer		

3 Contents

4 General Information

4.1 General Description of EUT

Power Supply:	AC 100-240V 50/60Hz;
For BT:	
Bluetooth Version:	V5.0 Dual mode
Modulation Type:	GFSK, pi/4DQPSK, 8DPSK
Number of Channels:	79
Channel Spacing:	1MHz
Spectrum Spread Technology:	Frequency Hopping Spread Spectrum (FHSS)
Antenna Type:	PIFA Antenna
Antenna Gain:	3dBi
For BLE:	
Operation Frequency:	2402MHz to 2480MHz
Bluetooth Version:	V5.0 Dual mode
Data Rate:	Only support 1M/bit
Modulation Type:	GFSK
Number of Channels:	40
Channel Spacing:	2MHz
Antenna Type:	PIFA Antenna
Antenna Gain:	3dBi

For SWM908SD module:

Operation Frequency:	Band	Mode	Frequency Range(MHz)	Number of channels
	Band I	802.11a	5180-5240	4
	Band II-A	802.11a	5260-5320	4
	Band II-C	802.11a	5500-5700	11
	Band III	802.11a	5745-5825	5
Modulation Type:	802.11a: OFDM (64QAM, 16QAM, QPSK, BPSK)			
Channel Spacing:	802.11a: 20MHz			
DFS Function:	Master with Radar detection			
Antenna Type:	Integral Antenna			
Antenna Gain:	1dBi			

Factory:

1.Shenzhen 3Nod Digital Technology Co., Ltd

2. Guangxi 3Nod Digital Technology Co., Ltd.

3. THREE LINK TECHNOLOGY CO., LTD

4. Pingxiang 3Nod Digital Technology CO., LTD.

Address of Factory:

1. 401, ZONE 101A, WORKSHOP 15, ZHONGFU ROAD, TANGXIAYONG COMMUNITY, YANLUOSTREET, BAOAN DISTRICT, SHENZHEN CITY, GUANGDONG PROVINCE, P.R.C.

2. The B02 Plant Building of 3nod Smart Industrial Part in Beihai Industrial Park, East of Jilin Road, North of Longtoujiang Reservoir, Guangxi, P. R. China

3. Lot CN09-1, Yen Phong Industrial Zone (Expand zone), Yen Trung commune, Yen Phong District, Bac Ninh province, Viet Nam.

4. Building A2 of Hongmu Yuanmu Trading Center Phase 1, Pingxiang Wantong Logistics Park,Nanshan Economic Development Zone, Chongzuo City, Guangxi Zhuang Autonomous Region, P.R.C

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:

• **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 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 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.

• **Innovation, Science and Economic Development Canada**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0006.

IC#: 4620C.

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: 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 BT/BLE:

Antenna Gain: 3dBi

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 2.00 in linear scale.

Output Power Into Antenna & RF Exposure Evaluation Distance:

Max Conducted Output Power (including tune-up tolerance) (dBm)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm^2)	Limit	MPE Ratios	Result
6.48	4.45	0.0018	1.0	0.0018	PASS

SWM908SD module:

Antenna: 1dBi

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 1.26 in linear scale.

Output Power Into Antenna & RF Exposure Evaluation Distance:

Max Conducted Output Power (including tune-up tolerance) (dBm)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm^2)	Limit	MPE Ratios	Result
14	25.119	0.0063	1.0	0.006	PASS

exposure conditions for simultaneous transmission operations

The EUT has two modules: Bluetooth module and SWM908SD module, they can simultaneous transmission at the same time.

So, Simultaneous transmission SAR test is not required, because the Max. sum of the MPE ratios is 0.0018+0.0063=0.0081<1.

- End of the Report -