



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

SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240800337003

Page: 1 of 9

RF Exposure Evaluation Report

Application No.: SZCR2408003370AT
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: Zhong Shan City Richsound Electronic Industrial Ltd.
Address of Factory: No.16, East Shagang Road, Gangkou, Zhongshan, Guangdong, China.

Equipment Under Test (EUT):
EUT 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(for original report of SZEM200900949103)
Date of Test: 2020-11-16 to 2021-01-29(for original report of SZEM200900949103)
Date of Issue: 2021-02-01(for original report of SZEM200900949103)
 2024-09-13(for new report of SZCR240800337003)

Test Result :	PASS*
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* In the configuration tested, the EUT complied with the standards specified above.

Keny Xu
EMC Laboratory Manager



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 Shenzhen Branch EMC Laboratory

No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Nanshan District, Shenzhen, Guangdong, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgs.com.cn
 中国·广东·深圳市南山区科技园中区M-10栋1号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com



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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240800337003

Page: 2 of 9

2 Version

Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2024-09-13		Original

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



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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240800337003

Page: 3 of 9

3 Contents

	Page
1 COVER PAGE	1
2 VERSION	2
3 CONTENTS	3
4 GENERAL INFORMATION	4
4.1 GENERAL DESCRIPTION OF EUT	4
4.2 TEST LOCATION	6
4.3 TEST FACILITY	6
4.4 DEVIATION FROM STANDARDS	6
4.5 ABNORMALITIES FROM STANDARD CONDITIONS	7
4.6 OTHER INFORMATION REQUESTED BY THE CUSTOMER	7
5 RF EXPOSURE EVALUATION	8
5.1 RF EXPOSURE COMPLIANCE REQUIREMENT	8
5.1.1 Limits	8
5.1.2 Test Procedure	8
4.1.3 EUT RF EXPOSURE EVALUATION	9



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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



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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			

Remark:

Model No.: EE4034

The model EE4034 was only tested in original report SZEM200900949103.

This report was an additional report copied from the report SZEM200900949103, just changed the information of factory and change the supplier of capacitors in match circuit of antenna.

Therefore original data were kept in this report.



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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, Nanshan District, 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 (Member No. 1937)**

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. Shenzhen EMC laboratory 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: CN1336**

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

Designation Number: CN1336. Test Firm Registration Number: 787754.

- **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.





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

SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240800337003

Page: 7 of 9

4.5 Abnormalities from Standard Conditions

None.

4.6 Other Information Requested by the Customer

None.



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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 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.



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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 -



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