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
Email: ee.shenzhen@sgs.com

RF Exposure Evaluation Report

Application No.:	SZEM1706006130CO
Applicant:	Anyware Solutions ApS
Address of Applicant:	Monrads Allé 9 2500 Valby, Denmark
Manufacturer:	Styromatic A/S
Address of Manufacturer:	Sintrupvej 25A, 8220 Brabrand, Denmark
Factory:	Styromatic A/S
Address of Factory:	Sintrupvej 25A, 8220 Brabrand, Denmark
EUT Name:	Anyware Smart Adaptor
Model No.:	ASA-01-2714, ASA-01-2612 ♣
♣	Please refer to section 4 of this report which indicates which model was actually tested and which were electrically identical.
FCC ID:	2AMQZASA-01
Standards:	47 CFR Part 1.1307 (2016) 47 CFR Part 1.1310 (2016)
Date of Receipt:	2017-06-16
Date of Test:	2017-06-29 to 2017-08-16
Date of Issue:	2017-08-28
Test Result :	**PASS***

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

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.

2 Version

Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
01		2017-08-28		Original

Authorized for issue by:				
		Peter Geng		
		Peter Geng /Project Engineer		
		Eric Fu		
		Eric Fu /Reviewer		

3 Contents

4 General Description of EUT

Product Name:	Anyware Smart Adaptor
Model No.:	ASA-01-2714
For BLE:	
Operation Frequency:	2402MHz~2480MHz
Bluetooth Version:	V 4.0
Modulation Type:	GFSK
Number of Channel:	40
Antenna Type:	Chip antenna
Antenna Gain:	1.9dBi
For 2.4G wifi:	
Operation Frequency:	2412MHz to 2462MHz
Channel Numbers:	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)
Antenna Type:	Chip antenna
Antenna Gain:	1.9dBi

Remark:

Model No.: ASA-01-2714, ASA-01-2612

Only the model ASA-01-2714 was tested, since the electrical circuit design, layout, components used, internal wiring and functions were identical for all the above models, only different on tread size for socket and light bulb.

4.1 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.

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.

4.2 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.

• 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 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-823, R-4188, T-1153 and C-2383 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.

• Industry Canada (IC)

Two 3m Semi-anechoic chambers and the 10m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1, 4620C-2, 4620C-3.

4.3 Deviation from Standards

None.

4.4 Abnormalities from Standard Conditions

None.

4.5 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

Remark: The Bluetooth and Wifi function can't synchronous transmission.

For BLE

Antenna : 1.9dBi

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 1.55 in linear scale

Output Power Into Antenna & RF Exposure Evaluation Distance:

Antenna	Frequency (MHz)	Max Conducted Peak Output Power (dBm)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm^2)	Limit	Result
2	2440MHz	-9.55	0.11	0.00004	1.0	PASS

Note: Refer to report No. SZEM170600613001 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 2.4G WIFI

Antenna : 1.9dBi

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 1.55 in linear scale

Output Power Into Antenna & RF Exposure Evaluation Distance:

Antenna	Frequency (MHz)	Max Conducted Peak Output Power (dBm)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm^2)	Limit	Result
1	2462MHz	12.37	17.26	0.088	1.0	PASS

Note: Refer to report No. SZEM170600613002 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 Bluetooth and Wi-Fi mode transmit simultaneously:

The worst case is: $0.088+0.00004 \approx 0.088 mW/cm^2 \leq 1 mW/cm^2$

So it is complied the requirement.