

FCC Part 15C Measurement and Test Report

For

Shenzhen Fitcare Electronics Co., Ltd

6th Floor(south), Building A, Dingxin Science Park, 67 District, Bao'an,

Shenzhen, China

FC	C ID: 2ACN7WS804		
FCC Rule(s):	FCC Part 15.249		
Product Description:	Body Scale		
Tested Model:	<u>WS804</u>		
Report No.:	STR16118254I-2		
Tested Date:	2016-11-25 to 2016-12-09		
Issued Date:	<u>2016-12-09</u>		
Tested By:	Terry Su / Engineer Terry Su		
Reviewed By:	Terry Su / EngineerTerry SuSilin Chen / EMC ManagerSilin ChenJandy So / PSQ ManagerJumlyso		
Approved & Authorized By:	Jandy So / PSQ Manager		
Prepared By:			
Shenzhen SEM.Test Technology Co., Ltd.			
1/F, Building A, Hongwei Industrial Park, Liuxian 2nd Road,			
Bao'an District, Shenzhen, P.R.C. (518101)			
Tel.: +86-755-33663308 Fax.: +86-755-33663309 Website: www.semtest.com.cn			

Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior permitted by Shenzhen SEM.Test Technology Co., Ltd.



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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information	
Applicant:	Shenzhen Fitcare Electronics Co., Ltd
Address of applicant:	6th Floor(south), Building A, Dingxin Science Park,
	67 District, Bao'an, Shenzhen, China
Manufacturer:	Shenzhen Fitcare Electronics Co., Ltd
Address of manufacturer:	6th Floor(south), Building A, Dingxin Science Park,
	67 District, Bao'an, Shenzhen, China

General Description of EUT	
Product Name:	Body Scale
Trade Name:	1
Model No.:	WS804
	JJ04556, JJ04557, JJ04558, JJ04559, JJ04560,
Adding Model(s):	WS802, WS803, WS805, WS806
Rated Voltage:	DC 3V
	·

Note: The test data is gathered from a production sample, provided by the manufacturer. The appearance of others models listed in the report is different from main-test model WS804, but the circuit and the electronic construction do not change, declared by the manufacturer.

Technical Characteristics of EUT		
Frequency Range:	2457MHz	
Max. Field Strength:	81.53dBuV/m (3m)	
Modulation:	GFSK	
Antenna Type:	Integral	
Antenna Gain:	-0.6dBi	
Lowest Internal Frequency of EUT:	32.768KHz	

1.2 Test Standards

The following report is prepared on behalf of the Shenzhen Fitcare Electronics Co., Ltd in accordance with FCC Part 15, Subpart B, Subpart C, and section 15.107, 15.203, 15.205, 15.207, 15.209 and 15.249 of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC Part 15, Subpart C, and section 15.107,15.203, 15.205, 15.207, 15.209 and 15.249 of the Federal Communication Commissions rules.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which results in lowering the emission, should be checked to ensure compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard for Testing Unlicensed Wireless Devices, and ANSI C63.4-2014, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

1.4 Test Facility

FCC – Registration No.: 934118

Shenzhen SEM.Test Technology Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files and the Registration is 934118.

Industry Canada (IC) Registration No.: 11464A

The 3m Semi-anechoic chamber of Shenzhen SEM.Test Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A.

CNAS Registration No.: L4062

Shenzhen SEM.Test Technology Co., Ltd. is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L4062. All measurement facilities used to collect the measurement data are located at 1/F, Building A, Hongwei Industrial Park, Liuxian 2nd Road, Bao'an District, Shenzhen, P.R.C (518101).



1.5 EUT Setup and Test Mode

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements. All testing shall be performed under maximum output power condition, and to measure its highest possible emissions level, more detailed description as follows:

Test Mode List		
Test Mode	Description	Remark
TM1	First Channel	2457MHz

Special Cable List and Details

Special Cable List and Details				
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite	
/	/	/	/	

Auxiliary Equipment List and Details			
Description Manufacturer Model Serial Number			
/	/	/	/

1.6 Measurement Uncertainty

Measurement uncertainty			
Parameter	Conditions	Uncertainty	
RF Output Power	Conducted	± 0.42 dB	
Occupied Bandwidth	Conducted	$\pm 1.5\%$	
Conducted Spurious Emission	Conducted	±2.17dB	
Conducted Emissions	Conducted	± 2.88 dB	
Transmitter Spurious Emissions	Radiated	± 5.1 dB	



No.	Description	Manufacturer	Model	Serial No.	Cal Date	Due Date
SEMT-1072	Spectrum Analyzer	Agilent	E4407B	MY41440400	2016-06-04	2017-06-03
SEMT-1031	Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/035	2016-06-04	2017-06-03
SEMT-1007	EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2016-06-04	2017-06-03
SEMT-1008	Amplifier	Agilent	8447F	3113A06717	2016-06-04	2017-06-03
SEMT-1043	Amplifier	C&D	PAP-1G18	2002	2016-06-04	2017-06-03
SEMT-1011	Broadband Antenna	Schwarz beck	VULB9163	9163-333	2016-06-04	2017-06-03
SEMT-1042	Horn Antenna	ETS	3117	00086197	2016-06-04	2017-06-03
SEMT-1121	Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170582	2016-06-04	2017-06-03
SEMT-1069	Loop Antenna	Schwarz beck	FMZB 1516	9773	2016-06-04	2017-06-03
SEMT-1001	EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2016-06-04	2017-06-03
SEMT-1003	L.I.S.N	Schwarz beck	NSLK8126	8126-224	2016-06-04	2017-06-03
SEMT-1002	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2016-06-04	2017-06-03

1.7 Test Equipment List and Details

2. SUMMARY OF TEST RESULTS

FCC Rules	Description of Test Item	Result
§ 15.203	Antenna Requirement	Compliant
§15.205	Restricted Band of Operation	Compliant
§ 15.207(a)	Conducted Emission	N/A
§ 15.209(a)(f)	Radiated Spurious Emissions	Compliant
§15.249(a)	Field Strength of Emissions	Compliant
§15.249(d)	Out of Band Emission	Compliant
§15.215 (c)	Emission Bandwidth	Compliant

N/A: not applicable



3. Antenna Requirements

3.1 Standard Applicable

According to FCC Part 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

3.2 Test Result

This product has an integral antenna, fulfill the requirement of this section.



4. Radiated Emissions

4.1 Standard Applicable

According to \$15.249(a), the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental Frequency	Field strength of fundamental	Field strength of Harmonics
	(milli-volts/meter)	(micro-volts/meter)
902-928 MHz	50	500
2400-2483.5 MHz	50	500
5725-5875 MHz	50	500
24.0-24.25 GHz	250	2500

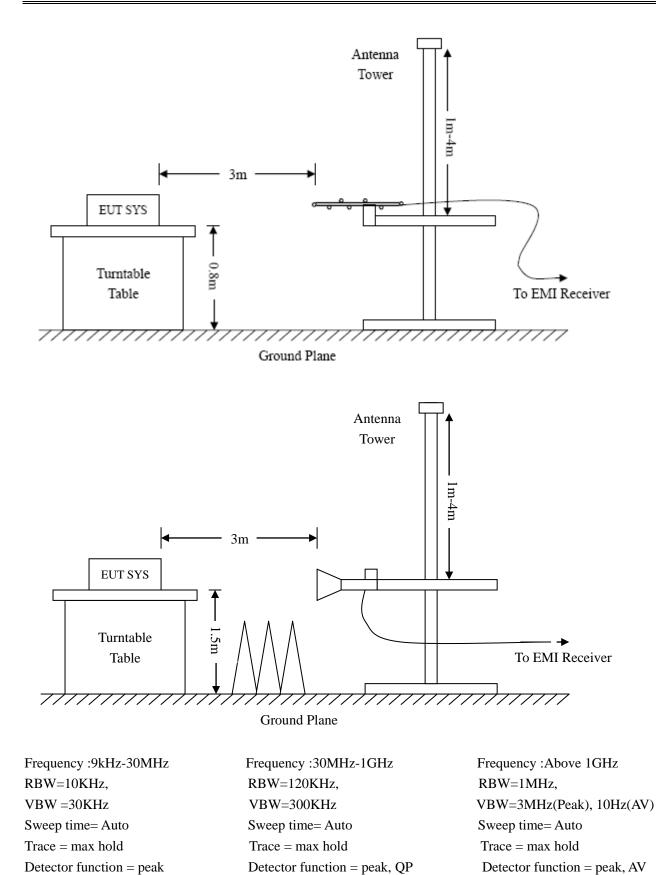
(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in §15.35 for limiting peak emissions apply. Spurious Radiated Emissions measurements starting below or at the lowest crystal frequency.

4.2 Test Procedure

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.205 15.249(a) and FCC Part 15.209 Limit.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle. The spacing between the peripherals was 10 cm.



4.3 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

Corr. Ampl. = Indicated Reading + Ant. Factor + Cable Loss – Ampl. Gain

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of $-6dB\mu V$ means the emission is $6dB\mu V$ below the maximum limit. The equation for margin calculation is as follows:

Margin = Corr. Ampl. – FCC Part 15C Limit

4.4 Environmental Conditions

Temperature:	24 °C
Relative Humidity:	60 %
ATM Pressure:	1012 mbar

4.5 Summary of Test Results/Plots

According to the data below, the FCC Part 15.205, 15.209 and 15.249 standards, and had the worst margin of:

-15.72 dB at 932.2715 MHz in the Horizontal polarization, First Channel, 30 MHz to 1 GHz, 3Meters

Note: this EUT was tested in 3 orthogonal positions and the worst case position data was reported.

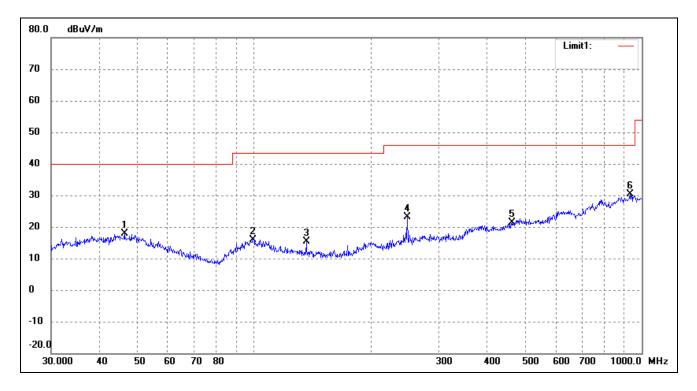


Plot of Radiated Emissions Test Data (30MHz to 1GHz)

EUT:	Body Scale
Tested Model:	WS804
Operating Condition:	Transmitting First Channel (2457MHz)
Comment:	DC 3V

Test Specification:

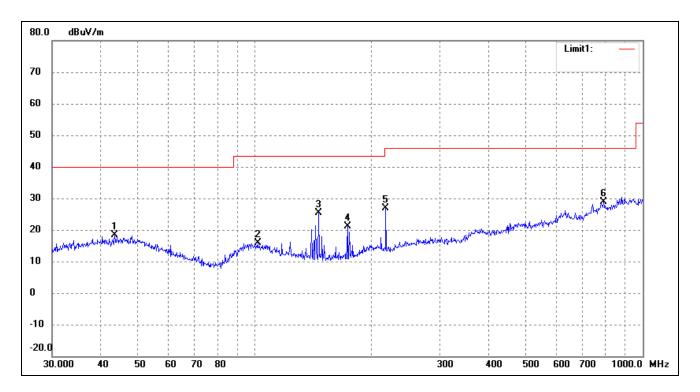
Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	()	(cm)	
1	46.3402	28.48	-10.62	17.86	40.00	-22.14	63	100	peak
2	99.5281	27.31	-11.50	15.81	43.50	-27.69	256	100	peak
3	136.4598	29.97	-14.61	15.36	43.50	-28.14	278	100	peak
4	248.5519	33.64	-10.57	23.07	46.00	-22.93	79	100	peak
5	463.9696	27.75	-6.49	21.26	46.00	-24.74	134	100	peak
6	932.2715	28.19	2.09	30.28	46.00	-15.72	222	100	peak



Test Specification: Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	()	(cm)	
1	43.5057	28.82	-10.43	18.39	40.00	-21.61	103	100	peak
2	101.6443	27.37	-11.59	15.78	43.50	-27.72	228	100	peak
3	145.8611	40.37	-14.89	25.48	43.50	-18.02	290	100	peak
4	173.2051	35.51	-14.50	21.01	43.50	-22.49	66	100	peak
5	217.5443	39.33	-12.37	26.96	46.00	-19.04	146	100	peak
6	793.3960	28.66	0.13	28.79	46.00	-17.21	304	100	peak



Frequency	Reading	Correct	Result	Limit	Margin	Polar	Detector
(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	H/V	
			First Channe	el-2457MHz			
2457	85.12	-3.59	81.53	114	-32.47	Н	РК
2457	81.57	-3.59	77.98	94	-16.02	Н	AV
4914	55.45	-3.59	51.86	74	-22.14	Н	РК
4914	43.64	-3.59	40.05	54	-13.95	Н	AV
7371	54.55	-0.52	54.03	74	-19.97	Н	РК
7371	49.09	-0.52	48.57	54	-5.43	Н	AV
2475	82.41	-3.59	78.82	114	-35.18	V	РК
2457	79.63	-3.59	76.04	94	-17.96	V	AV
4914	55.45	-3.59	51.86	74	-22.14	V	РК
4914	41.82	-3.59	38.23	54	-15.77	V	AV
7371	57.27	-0.52	56.75	74	-17.25	V	РК
7371	49.09	-0.52	48.57	54	-5.43	V	AV

Spurious Emissions Above 1GHz

Note: Testing is carried out with frequency rang 9kHz to the tenth harmonics, which above 5th Harmonics are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured. The measurements greater than 20dB below the limit from 9kHz to 30MHz.



5. Out of Band Emissions

5.1 Standard Applicable

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

5.2 Test Procedure

As the radiation test, set the Lowest and Highest Transmitting Channel, observed the outside band of 2400MHz to 2483.5MHz, than mark the higher-level emission for comparing with the FCC rules.

5.3 Environmental Conditions

Temperature:	24 °C
Relative Humidity:	60 %
ATM Pressure:	1012 mbar

5.4 Summary of Test Results/Plots

Test mode	Frequency	Limit	Result	
Test mode	MHz	dBuV / dBc	Kesuit	
	2310.00	<54 dBuV	Pass	
Lowest	2390.00	<54 dBuV	Pass	
	2400.00	<54 dBuV	Pass	
Highest	2483.50	<54 dBuV	Pass	
Highest	2500.00	<54 dBuV	Pass	

The edge emissions are below the FCC 15.209 Limits or complies with the 15.249 requirements.

Please refer to the test plots as below.



Lowest Bandedge

Vertical (Worst case)

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No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	2310.000	34.87	-1.00	33.87	54.00	-20.13	Ave Detector
	2310.000	45.54	-1.00	44.54	74.00	-29.46	Peak Detector
2	2390.000	33.69	-0.88	32.81	54.00	-21.19	Ave Detector
	2390.000	46.36	-0.88	45.48	74.00	-28.52	Peak Detector
3	2400.000	33.55	-0.86	32.69	54.00	-21.31	Ave Detector
	2400.000	47.40	-0.86	46.54	74.00	-27.46	Peak Detector



Highest Bandedge

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No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.500	34.11	-0.73	33.38	54.00	-20.62	Ave Detector
	2483.500	47.35	-0.73	46.62	74.00	-27.38	Peak Detector
2	2500.000	34.07	-0.70	33.37	54.00	-20.63	Ave Detector
	2500.000	46.97	-0.70	46.27	74.00	-27.73	Peak Detector

6. Emission Bandwidth

6.1 Standard Applicable

According to 15.215 (c), intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If a frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.

6.2 Test Procedure

According to the ANSI 63.10-2013, the emission bandwidth test method as follows.

Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

Set span = 1MHz, centered on a transmitting channel RBW \ge 1% 20dB Bandwidth, VBW \ge RBW Sweep = auto Detector function = peak Trace = max hold All the trace to stabilize, use the marker-to-peak function

All the trace to stabilize, use the marker-to-peak function to set the marker to the peak of the emission, use the marker-delta function to measure and record the 20dB down and 99% bandwidth of the emission.

6.3 Environmental Conditions

Temperature:	25 °C
Relative Humidity:	53%
ATM Pressure:	1018 mbar

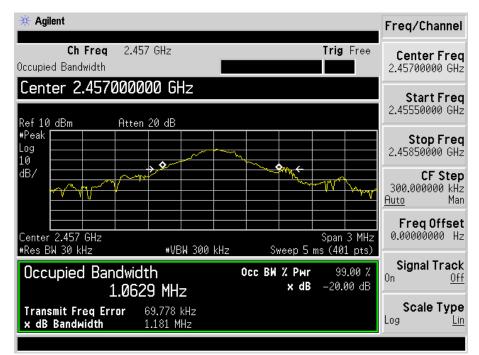
6.4 Summary of Test Results/Plots

Channel	Frequency	20dB Bandwidth	99% Bandwidth
	MHz	kHz	kHz
First Channel	2457	1181	1062.9

Please refer to the following test plots



First Channel:



***** END OF REPORT *****