

# FCC Test Report

Report No.: AGC01040240602FR02

FCC ID	:	2ACN7HW851		
APPLICATION PURPOSE	:	Original Equipment		
PRODUCT DESIGNATION	:	Heart Rate Armband		
BRAND NAME	:	N/A		
MODEL NAME	:	HW851, HW850, HW851E, HW851S, HW851V, HW8		
APPLICANT	:	ShenZhen Fitcare Electronics Co., Ltd.		
DATE OF ISSUE	:	Jun. 18, 2024		
STANDARD(S)	:	FCC Part 15 Subpart C §15.249		
<b>REPORT VERSION</b>	:	V 1.0		
Attestation of Global Compliance (Shenzhen) Co., Ltd				





#### **REPORT REVISE RECORD**

Report Version	Revise Time	Issued Date	Valid Version	Notes	
V1.0	/	Jun. 18, 2024	Valid	Initial Release	



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presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc01@agccert.com.



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# **1. GENERAL INFORMATION**

Applicant	ShenZhen Fitcare Electronics Co., Ltd.	
Address	6th floor(south), Building A, Dingxin Science Park, Honglang North 2nd Road, Bao'an, Shenzhen 518100, China	
Manufacturer	ShenZhen Fitcare Electronics Co., Ltd.	
Address 6th floor(south), Building A, Dingxin Science Park, Honglang North 2nd F Bao'an, Shenzhen 518100, China		
Factory	ShenZhen Fitcare Electronics Co., Ltd.	
Address	6th floor(south), Building A, Dingxin Science Park, Honglang North 2nd Road, Bao'an, Shenzhen 518100, China	
Product Designation	Heart Rate Armband	
Brand Name	N/A	
Test Model	HW851	
Series Model(s) HW850, HW851E, HW851S, HW851V, HW8		
Difference Description All the same except for the model, item No., or color, or decorations		
Date of receipt of test item	Jun. 07, 2024	
Date of test	Jun. 07, 2024 to Jun. 18, 2024	
Deviation	None	
Condition of Test Sample	Normal	
Report Template	AGCRT-JP-SRD/RF	

Note: The test results of this report relate only to the tested sample identified in this report.

Prepared By

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Thea Huang (Project Engineer)

Jun. 18, 2024

**Reviewed By** 

Calvin Liu (Reviewer)

Jun. 18, 2024

Approved By

2ha

Max Zhang (Authorized Officer)

Jun. 18, 2024



# **2. PRODUCT INFORMATION**

#### 2.1 PRODUCT TECHNICAL DESCRIPTION

Hardware Version	V1.0
Software Version	V1.0.4
Equipment Specification	ANT+
Frequency Band	2400MHz-2483.5MHz
Operation Frequency	2457MHz
Modulation Type	GFSK
Number of channels	1 Channel
Field Strength of Fundamental	91.67dBuV/m(Average)@3m
Antenna Designation	Ceramic Antenna
Antenna Gain	1.6dBi
Power Supply	DC 3.7V by battery or DC 5V by adapter

#### 2.2 TEST FREQUENCY LIST

Frequency Band	Channel Number	Frequency
2400~2483.5MHz	01	2457MHz



#### 2.3 RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for **FCC ID: 2ACN7HW851** filing to comply with Part 2, Part 15 of the Federal Communication Commission rules.

#### 2.4 TEST METHODOLOGY

The tests were performed according to following standards:

No.	Identity	Document Title	
1	FCC 47 CFR Part 2	Frequency allocations and radio treaty matters; general rules and regulations	
2	FCC 47 CFR Part 15	Radio Frequency Devices	
3	ANSI C63.10-2013	American National Standard for Testing Unlicensed Wireless Devices	

#### 2.5 SPECIAL ACCESSORIES

Not available for this EUT intended for grant.

#### 2.6 EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

#### 2.7 ANTENNA REQUIREMENT

#### **Standard Requirement**

#### 15.203 requirement:

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, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

#### **EUT Antenna:**

The non-detachable antenna inside the device cannot be replaced by the user at will. The gain of the antenna is 1.6dBi.

#### 2.8 DUTY CYCLE

The maximum achievable duty cycles for all modes were determined based on measurements performed on a spectrum analyzer in zero-span mode with RBW=8MHz, VBW=50MHz. The RBW and VBW were both greater than 50/T, where T is the minimum transmission duration, and the number of sweep points across T was greater than 100. The duty cycles are as follows:

Test Mode	Frequency	Duty Cycle
ТХ	2457MHz	95.68%

Agilent Spect		zer - Swept SA	<b>V</b>						
LXI R	RF	50 Ω AC		SENSE:P		ALIGN AUTO	02:53:04 PM		Frequency
Center F	req 2.	45700000	00 GHz	Tain Face F		Type: Log-Pwr	TRACE	<b>1</b> 23456	rrequericy
			PNO: Fast IFGain:Low				DET	NNNNN	
			IFGain:Low	/ Atten: 50 ui					Auto Tune
							Mkr3 5.8	520 ms	Autorune
10 dB/div	Ref 2	20.00 dBm	ì				-2.9	6 dBm	
Log									
10.0						l			Center Freq
0.00				∆ <b>1</b>		A 43			2.457000000 GHz
				— Y———					2.457000000 GH2
-10.0		ŕ							
-20.0									
									Start Freq
-30.0									2.457000000 GHz
-40.0				<mark>/</mark>		<mark> </mark>		<mark>;</mark>	
-50.0									
									Stop Freq
-60.0	— — — <mark>.</mark>								2.457000000 GHz
-70.0									2.457000000 0112
Center 2.	45700	0000 GHz					Sp	oan 0 Hz	CF Step
Res BW 8	8 MHz		#V	BW 50 MHz		Sweep 8	3.000 ms (1	001 pts)	8.000000 MHz
							`		Auto Man
MKR MODE T	RC SCL	;	× 3.297 ms	۲ -3.01 dBn	FUNCTION	FUNCTION WIDTH	FUNCTION	VALUE	
2 N			5.424 ms	-3.01 dBn -2.68 dBn					
3 N *	1 t		5.520 ms	-2.96 dBn					Freq Offset
4									0 Hz
5								=	
6									
8									
9									
10									
11								~	
							-1		
MSG						STATU	IS		

#### Test Graphs of Duty Cycle



# **3. TEST ENVIRONMENT**

#### **3.1 ADDRESS OF THE TEST LABORATORY**

Laboratory: Attestation of Global Compliance (Shenzhen) Co., Ltd.

Address: 1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

#### **3.2 TEST FACILITY**

The test facility is recognized, certified, or accredited by the following organizations:

#### CNAS-Lab Code: L5488

Attestation of Global Compliance (Shenzhen) Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025: 2017 General Requirements) for the Competence of Testing and Calibration Laboratories.

#### A2LA-Lab Cert. No.: 5054.02

Attestation of Global Compliance (Shenzhen) Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

#### FCC-Registration No.: 975832

Attestation of Global Compliance (Shenzhen) 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 with Registration 975832.

#### IC-Registration No.: 24842 (CAB identifier: CN0063)

Attestation of Global Compliance (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the Certification and Engineering Bureau of Industry Canada. The acceptance letter from the IC is maintained in our files with Registration 24842.



#### **3.3 ENVIRONMENTAL CONDITIONS**

	NORMAL CONDITIONS	EXTREME CONDITIONS			
Temperature range (°C)	15 - 35	-10 - 45			
Relative humidty range	20 % - 75 %	20 % - 75 %			
Pressure range (kPa)	86 - 106	86 - 106			
Power supply					
Note: The Extreme Temperature and Extreme Voltages declared by the manufacturer.					

#### **3.4 MEASUREMENT UNCERTAINTY**

The reported uncertainty of measurement y ±U, where expended uncertainty U is based on a standard

uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%.

Item	Measurement Uncertainty
Uncertainty of Conducted Emission for AC Port	$U_c = \pm 2.9 \text{ dB}$
Uncertainty of Radiated Emission below 1GHz	$U_c = \pm 3.9 \text{ dB}$
Uncertainty of Radiated Emission above 1GHz	$U_c = \pm 4.9 \text{ dB}$
Uncertainty of total RF power, conducted	$U_c = \pm 0.8 \text{ dB}$
Uncertainty of RF power density, conducted	$U_c = \pm 2.6 \text{ dB}$
Uncertainty of spurious emissions, conducted	U <sub>c</sub> = ±2 %
Uncertainty of Occupied Channel Bandwidth	U <sub>c</sub> = ±2 %



#### 3.5 LIST OF EQUIPMENTS USED

• R	RF Conducted Test System						
Used	Equipment No.	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
$\boxtimes$	AGC-ER-E036	Spectrum Analyzer	Agilent	N9020A	MY49100060	2024-05-24	2025-05-23
$\boxtimes$	AGC-ER-E062	Power Sensor	Agilent	U2021XA	MY54110007	2024-02-01	2025-01-31
$\boxtimes$	AGC-ER-E063	Power Sensor	Agilent	U2021XA	MY54110009	2024-02-01	2025-01-31
$\boxtimes$	AGC-EM-A001	6dB Attenuator	Eeatsheep	LM-XX-6-5W	N/A	2023-09-21	2025-09-20
	AGC-ER-E083	Signal Generator	Agilent	E4421B	US39340815	2024-05-23	2025-05-22
$\boxtimes$	N/A	RF Connection Cable	N/A	1#	N/A	Each time	N/A
$\boxtimes$	N/A	RF Connection Cable	N/A	2#	N/A	Each time	N/A

● F	Radiated Spurious Emission						
Used	Equipment No.	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
$\square$	AGC-EM-E046	EMI Test Receiver	R&S	ESCI	10096	2024-02-01	2025-01-31
	AGC-EM-E116	EMI Test Receiver	R&S	ESCI	100034	2024-05-24	2025-05-23
$\boxtimes$	AGC-EM-E061	Spectrum Analyzer	Agilent	N9010A	MY53470504	2024-05-28	2025-05-27
$\boxtimes$	AGC-EM-E086	Loop Antenna	ZHINAN	ZN30900C	18051	2024-03-05	2026-03-04
$\boxtimes$	AGC-EM-E001	Wideband Antenna	SCHWARZBECK	VULB9168	D69250	2023-05-11	2025-05-10
$\boxtimes$	AGC-EM-E029	Broadband Ridged Horn Antenna	ETS	3117	00034609	2024-03-31	2025-03-30
$\boxtimes$	AGC-EM-E082	Horn Antenna	SCHWARZBECK	BBHA 9170	#768	2023-09-24	2025-09-23
$\boxtimes$	AGC-EM-E146	Pre-amplifier	ETS	3117-PA	00246148	2022-08-04	2024-08-03
$\boxtimes$	AGC-EM-A119	2.4GHz Filter	SongYi	N/A	N/A	2024-05-23	2025-05-22
$\boxtimes$	AGC-EM-A138	6dB Attenuator	Eeatsheep	LM-XX-6-5W	N/A	2023-06-09	2025-06-08
	AGC-EM-A139	6dB Attenuator	Eeatsheep	LM-XX-6-5W	N/A	2023-06-09	2025-06-08

• A	AC Power Line Conducted Emission						
Used	Equipment No.	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
	AGC-EM-E045	EMI Test Receiver	R&S	ESPI	101206	2024-05-28	2025-05-27
	AGC-EM-A130	6dB Attenuator	Eeatsheep	LM-XX-6-5W	DC-6GZ	2023-06-09	2025-06-08
	AGC-EM-E023	AMN	R&S	100086	ESH2-Z5	2024-05-28	2025-05-27



<ul> <li>Tes</li> </ul>	st Software				
Used	Equipment No.	Test Equipment	Manufacturer	Model No.	Version Information
	AGC-EM-S001	CE Test System	R&S	ES-K1	V1.71
$\boxtimes$	AGC-EM-S003	RE Test System	FARA	EZ-EMC	V.RA-03A
	AGC-EM-S004	RE Test System	Tonscend	TS <sup>+</sup> Ver2.1(JS32-RE)	4.0.0.0
$\square$	AGC-ER-S012	BT/WIFI Test System	Tonscend	JS1120-2	2.6
$\square$	AGC-EM-S011	RSE Test System	Tonscend	TS+-Ver2.1(JS36-RSE)	4.0.0.0



# **4. SYSTEM TEST CONFIGURATION**

#### **4.1 EUT CONFIGURATION**

The EUT configuration for testing is installed on RF field strength measurement to meet the Commission's requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

### 4.2 EUT EXERCISE

The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

#### 4.3 CONFIGURATION OF TESTED SYSTEM

Radiated Emission Configure:



#### 4.4 EQUIPMENT USED IN TESTED SYSTEM

The Following Peripheral Devices And Interface Cables Were Connected During The Measurement:

☐ Test Accessories Come From The Laboratory

No.	Equipment	Manufacturer	Model No.	Specification Information	Cable
1	Control Box		USB-TTL		

☑ Test Accessories Come From The Manufacturer

No.	Equipment	Manufacturer	Model No.	Specification Information	Cable
1	Heart Rate Armband	ShenZhen Fitcare Electronics Co., Ltd.	HW851		0.69m unshielded



#### 4.5 SUMMARY OF TEST RESULTS

Item	FCC Rules	Description Of Test	Result
1	§15.203	Antenna Equipment	Pass
2	§15.249(a)	Field Strength of Fundamental	Pass
3	§15.209, §15.249	Radiated Emission& Band Edge	Pass
4	§15.215	20dB Bandwidth	Pass
9	§15.207	AC Power Line Conducted Emission	Not applicable

Note: The SRD function cannot transmit when charging.



# 5. DESCRIPTION OF TEST MODES

Summary table of Test Cases				
Test Item	Data Rate / Modulation			
iest nem	ANT+ / GFSK			
Radiated&Conducted Test Cases	Mode 1: ANT+ Tx_2457MHz			
AC Conducted Emission	AC Conducted Emission Not applicable			
Note:				
1. Only the result of the worst case was recorded in the report, if no other cases.				

The battery is full-charged during the test.

For Radiated Emission, 3axis were chosen for testing for each applicable mode.

For Conducted Test method, a temporary antenna connector is provided by the manufacture.

2. 3. 4. 5. This device does not need software control, the manufacturer has written the program into the chip, and it

can be launched after power-on.

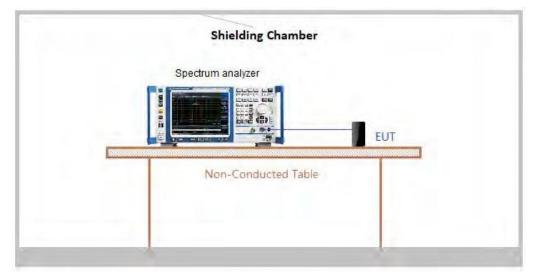


#### 6. 20 DB BANDWIDTH

#### **6.1 MEASUREMENT PROCEDURE**

- 1. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
- 2. Set to the maximum power setting and enable the EUT transmit continuously.
- 3. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 30 kHz. Set the Video bandwidth (VBW) = 100 kHz. In order to make an accurate measurement.
- For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) is set 1-5% of the emission bandwidth and set the Video bandwidth (VBW) ≥ 3 \* RBW.
- 5. Measure and record the results in the test report.

#### 6.2 MEASUREMENT SETUP (BLOCK DIAGRAM OF CONFIGURATION)





#### **6.3 MEASUREMENT RESULTS**

Test Data of Occupied Bandwidth and -20dB Bandwidth					
Test Mode	Test Channel (MHz)	99% Occupied Bandwidth (MHz)	-20dB Bandwidth (MHz)	Limits (MHz)	Pass or Fail
GFSK	2457	1.0271	1.128	N/A	Pass

#### 02:50:50 PM Jun 18, 2024 Radio Std: None Frequency Center Freq: 2.457000000 GHz Trig: Free Run Avg|Hold:>10/10 #Atten: 10 dB Center Freg 2.457000000 GHz #IFGain:Low Radio Device: BTS Ref 20.00 dBm 0 dB/div \_og **Center Freq** 2.457000000 GHz Center 2.457 GHz #Res BW 30 kHz Span 3 MHz Sweep 4.133 ms CF Step 300.000 kHz #VBW 100 kHz Man <u>Auto</u> Occupied Bandwidth **Total Power** 5.32 dBm 1.0271 MHz **Freq Offset** Transmit Freq Error 5.593 kHz **OBW Power** 99.00 % 0 Hz x dB Bandwidth 1.128 MHz x dB -20.00 dB STATUS

#### **Test Graphs of Occupied Bandwidth**



# 7. RADIATED EMISSION

### 7.1 LIMITS OF RADIATED EMISSION TEST

15.249 Limit in the below table has to be followed:

Fundamental Frequency	Field Strength of Fundamental	Field Strength of Harmonics
	(millivolts/meter)	(microvolts/meter)
900-928MHz	50	500
2400-2483.5MHz	50	500
5725-5875MHz	50	500
24.0-24.25GHz	250	2500

15.209 Limit in the below table has to be followed:

Frequency Distance		Field	Field Strengths Limit	
(MHz)	Meters	μ <b>V/m</b>	dB(µV)/m	
0.009 ~ 0.490	300	2400/F(kHz)		
0.490 ~ 1.705	30	24000/F(kHz)		
1.705 ~ 30	30	30		
30 ~ 88	3	100	40.0	
88 ~ 216	3	150	43.5	
216 ~ 960	3	200	46.0	
960 ~ 1000	3	500	54.0	
Above 1000	3	Other:74.0 dB(µV)/m	n (Peak) 54.0 dB(µV)/m	
		(Average)		

Remark: (1) Emission level dB  $\mu$  V = 20 log Emission level  $\mu$  V/m

(2) The smaller limit shall apply at the cross point between two frequency bands.

(3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

Note: All modes were tested for restricted band radiated emission, the test records reported below are the worst result compared to other modes.



#### 7.2 MEASUREMENT PROCEDURE

- 1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
- 2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
- 3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
- 4. For each suspected emission, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
- 5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
- 6. For emissions above 1GHz, use 1MHz RBW and 3MHz VBW for peak reading. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
- 7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.
- 8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
- 9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
- 10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High Low scan is not required in this case.



The following table is the setting of spectrum analyzer and receiver.

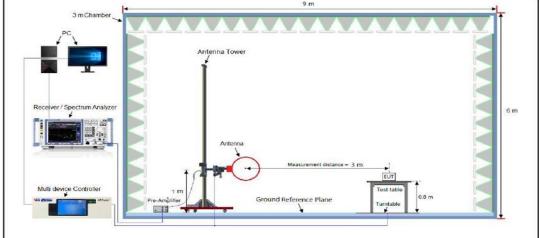
Spectrum Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP
Start ~Stop Frequency	1GHz~26.5GHz
	1MHz/3MHz for Peak, 1MHz/3MHz for Average

Receiver Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP

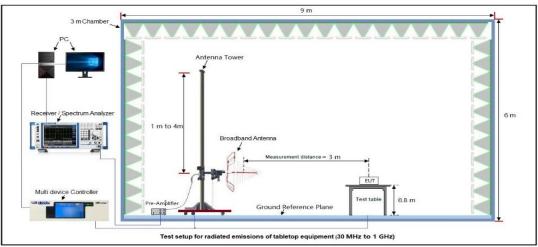


#### 7.3 MEASUREMENT SETUP (BLOCK DIAGRAM OF CONFIGURATION)

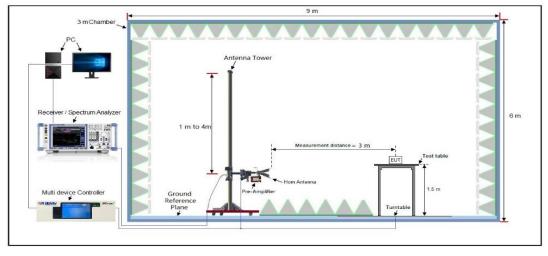
RADIATED EMISSION TEST SETUP 9KHz-30MHz



RADIATED EMISSION TEST SETUP 30MHz-1000MHz



RADIATED EMISSION TEST SETUP ABOVE 1000MHz



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#### 7.4 MEASUREMENT RESULT

#### FIELD STRENGTH OF FUNDAMENTAL

EUT	Heart Rate Armband	Model Name	HW851
Temperature	23.6°C	Relative Humidity	59.1%
Pressure	985hPa	Test Voltage	Normal Voltage
Test Modulation	GFSK	Polarization	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type			
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type			
2457	43.27	49.05	92.32	114.00	-21.68	peak			
2457	42.62	49.05	91.67	94.00	-2.33	AVG			
Remark:	Remark:								
Factor = Ante	Factor = Antenna Factor + Cable Loss – Pre-amplifier.								

EUT	Heart Rate Armband	Model Name	HW851
Temperature	23.6°C	Relative Humidity	59.1%
Pressure	985hPa	Test Voltage	Normal Voltage
Test Modulation	GFSK	Polarization	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type		
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type		
2457	41.25	49.05	90.30	114.00	-23.70	peak		
2457	2457 40.52 49.05 89.57 94.00 -4.43 AVG							
Remark:	Remark:							
Factor = Ante	enna Factor + C	able Loss – Pi	re-amplifier.					



#### **RADIATED EMISSION BELOW 30MHZ**

The amplitude of spurious emissions from 9kHz to 30MHz which are attenuated more than 20 dB below the permissible value need not be reported.

UT		Heart F	Rate Armbanc	ł	Model Na	me	HW85	51
emperature		23.6° (	С		Relative H	lumidity	59.1%	, )
ressure		985hPa	a		Test Volta	ge	Norma	al Voltage
est Mode		Mode 1	Mode 1 Antenna			Horizo	ontal	
32							Limit: Margir	n:
tor."	war well man	nnattalik algunretel	rystin, nyder (Laws of Sidan	2 Martin Martin Martin Martin	Burn and and a start and a			
-8 30.00			h have a second	(MHz)	3 	400	500 600 70	0 1000.00
-8			n fartin on farting to a second s			400 Limit	500 600 70 Over	0 1000.000
-8	00 40	50 60	70 80 Reading	(MHz)	300 Measure-			00 1000.000
-8	0 40 Mk.	50 60 Freq.	70 80 Reading Level	(MHz) Correct Factor	300 Measure- ment	Limit	Over	
-8 30.00 No.	0 40 Mk.	50 60 Freq. MHz	70 80 Reading Level dBuV	(MHz) Correct Factor dB	300 Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
-8 30.00 No.	0 40 Mk.	<sup>50</sup> 60 Freq. MHz 39.0245	70 80 Reading Level dBuV 6.03	(MHz) Correct Factor dB 13.48	300 Measure- ment dBuV/m 19.51	Limit dBuV/m 40.00	Over dB -20.49	Detector peak
-8 30.00 No.	0 40 Mk. 3 12 27	50 60 Freq. MHz 39.0245 20.6991	70 80 Reading Level dBuV 6.03 5.98	(MHz) Correct Factor dB 13.48 16.36	300 Measure- ment dBuV/m 19.51 22.34	Limit dBuV/m 40.00 43.50	Over dB -20.49 -21.16	Detector peak peak
-8 30.00 No. 1 2 3	0 40 Mk. 3 12 27 44	50 60 Freq. MHz 39.0245 20.6991 73.2341	70 80 Reading Level dBuV 6.03 5.98 6.07	(мнг) Correct Factor dB 13.48 16.36 14.87	300 Measure- ment dBuV/m 19.51 22.34 20.94	Limit dBuV/m 40.00 43.50 46.00	Over dB -20.49 -21.16 -25.06	Detector peak peak peak

# 

**RESULT: PASS** 



EUT				Н	eart	Ra	Heart Rate Armband				ſ	Mode	l Nan	ne			Н٧	/851		
Temperatu	ire			2:	3.6°	С					F	Relati	ve H	umi	dity	,	59.	1%		
Pressure				98	85hl	Pa					1	Fest V	/oltag	ge			No	rmal	Vo	Itage
Test Mode				M	lode	91						Anten	na				Ve	rtica	I	
72.	O dBi	uV∕m												_		_		mit:		
32			Maryunha					waluti antar	atter of the later of	2 million		Marine		ماله المريكي ا	30 A A A A A A A A A A A A A A A A A A A	4		5 X X X	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
-8 31	30.000	40	)	50	60	70	80			(MHz)			300	40	0	500	600	700	11	 200.00
						F	Rea	ding	Co	orrect	Me	easu	re-							
N	No. I	Mk.		Fre	eq.		Le	vel	Fa	actor	I	ment		Lin	nit	(	Dve	r		
				M	Ηz		dB	BuV		dB	dl	BuV/m	1	dBu	V/m		dB	[	Dete	ector
	1		59	).64	193		6	.24	17	7.10	2	3.34		40.0	00	-1	16.6	6	pe	ak
	2		148	3.96	625		6	.64	18	8.20	2	4.84		43.5	50	-1	18.6	6	pe	ak
	3		440	).19	)63		5	.49	26	6.09	3	1.58		46.0	00	-1	14.4	2	pe	ak
			<b>F</b> 4 <b>F</b>	40	326		8	.62	24	4.67	3	3.29		46.0	00	-1	12.7	1	pe	ak
	4		545	0.18	20				-											
_	4 5		545 724				7	.73		8.40		6.13		46.0	00	-	9.8	7	ре	ak

#### **RESULT: PASS**

Note: 1. Factor=Antenna Factor + Cable loss, Over=Measurement-Level.



#### **RADIATED EMISSION ABOVE 1GHZ**

EUT	Heart Rate Armband	Model Name	HW851				
Temperature	23.6°C	Relative Humidity	59.1%				
Pressure	985hPa	Test Voltage	Normal Voltage				
Test Mode	Mode 1	Antenna	Horizontal				

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4914.000	45.92	0.08	46	74	-28	peak
4914.000	38.26	0.08	38.34	54	-15.66	AVG
7371.000	42.57	2.21	44.78	74	-29.22	peak
7371.000	37.45	2.21	39.66	54	-14.34	AVG
emark:						

EUT	Heart Rate Armband	Model Name	HW851
Temperature	23.6° C	Relative Humidity	59.1%
Pressure	985hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4914.000	47.46	0.08	47.54	74	-26.46	peak
4914.000	37.59	0.08	37.67	54	-16.33	AVG
7371.000	46.41	2.21	48.62	74	-25.38	peak
7371.000	33.82	2.21	36.03	54	-17.97	AVG
emark:						
actor = Ante	enna Factor + Ca	able Loss – I	Pre-amplifier.			

#### **RESULT: PASS**

#### Note:

The amplitude of other spurious emissions from 1G to 25 GHz which are attenuated more than 20 dB below the permissible value need not be reported.

Factor = Antenna Factor + Cable loss - Amplifier gain, Margin=Emission Level-Limit.

The "Factor" value can be calculated automatically by software of measurement system.



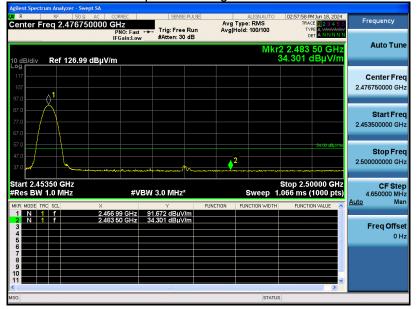
TEST RESULT FOR BAND EDGE EMISSION AT RESTRICTED BANDS								
EUT	Heart Rate Armband	Model Name	HW851					
Temperature	23.6° C	Relative Humidity	59.1%					
Pressure	985hPa	Test Voltage	Normal Voltage					
Test Mode	Mode 1	Antenna	Horizontal					

### 

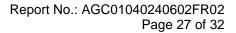
Test Graph for Peak Measurement



Test Graph for Average Measurement



#### **RESULT: PASS**



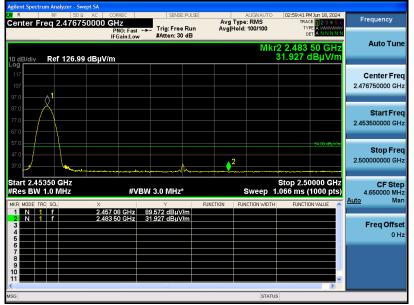


EUT	Heart Rate Armband	Model Name	HW851
Temperature	23.6° C	Relative Humidity	59.1%
Pressure	985hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Vertical



Test Graph for Peak Measurement

Test Graph for Average Measurement

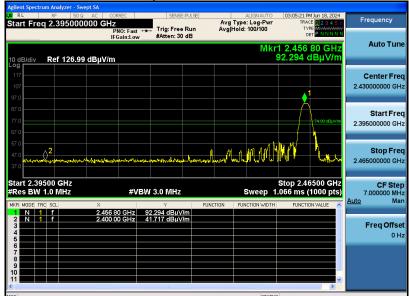


#### **RESULT: PASS**

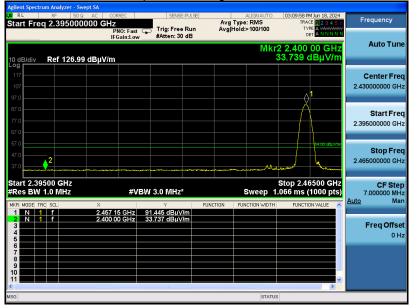


EUT	Heart Rate Armband	Model Name	HW851
Temperature	23.6° C	Relative Humidity	59.1%
Pressure	985hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Horizontal

Test Graph for Peak Measurement



Test Graph for Average Measurement



# **RESULT: PASS**

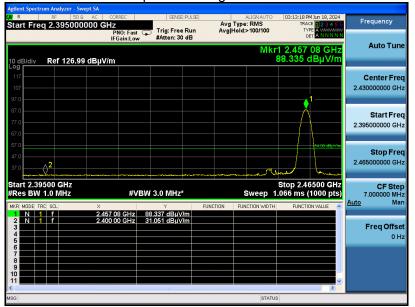


EUT	Heart Rate Armband	Model Name	HW851
Temperature	23.6°C	<b>Relative Humidity</b>	59.1%
Pressure	985hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Vertical

Test Graph for Peak Measurement



Test Graph for Average Measurement



# **RESULT: PASS**

Note: 1. Factor=Antenna Factor + Cable loss - Amplifier gain. Field Strength=Factor + Reading level 2. The factor had been edited in the "Input Correction" of the Spectrum Analyzer. So the Amplitude of test plots is equal to Reading level plus the Factor in dB. Use the A dB(μV) to represent the Amplitude. Use the F dB(μV/m) to represent the Field Strength. So A=F.



# 8. AC Power Line Conducted Emission Test

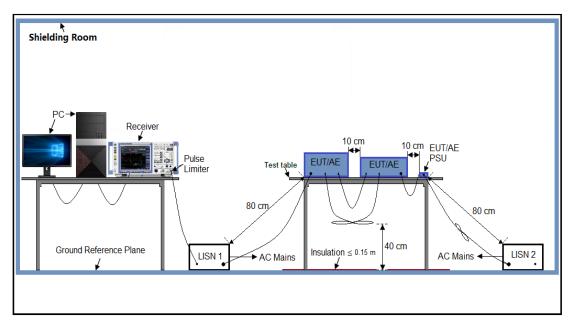
#### 8.1 Measurement Limit

En anna an	Maximum RF Line Voltage		
Frequency	Q.P. (dBµV)	Average (dBµV)	
150kHz~500kHz	66-56	56-46	
500kHz~5MHz	56	46	
5MHz~30MHz	60	50	

Note:

- 1. The lower limit shall apply at the transition frequency.
- 2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz

#### 8.2 Measurement Setup (Block Diagram of Configuration)





### 8.3 Preliminary Procedure of Line Conducted Emission Test

- 1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
- 2. Support equipment, if needed, was placed as per ANSI C63.10.
- 3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
- 4. All support equipment received AC120V/60Hz power from a LISN, if any.
- 5. The EUT received DC 5V power from adapter which received AC120V/60Hz power from a LISN.
- 6. The test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 7. Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
- 8. During the above scans, the emissions were maximized by cable manipulation.
- 9. The test mode(s) were scanned during the preliminary test.

Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

#### 8.4 Final Procedure of Line Conducted Emission Test

- 1. EUT and support equipment was set up on the test bench as per step 2 of the preliminary test.
- A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less -2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.
- 3. The test data of the worst case condition(s) was reported on the Summary Data page.

#### **8.5 Measurement Results**

N/A Note: The SRD function cannot transmit when charging



# APPENDIX A: PHOTOGRAPHS OF TEST SETUP

Refer to the Report No.: AGC01040240602AP01

# APPENDIX B: PHOTOGRAPHS OF TEST EUT

Refer to the Report No.: AGC01040240602AP02

-----END OF REPORT-----



# Conditions of Issuance of Test Reports

1. All samples and goods are accepted by the Attestation of Global Compliance (Shenzhen) Co., Ltd (the "Company") solely for testing and reporting in accordance with the following terms and conditions. The company provides its services on the basis that such terms and conditions constitute express agreement between the company and any person, firm or company requesting its services (the "Clients").

2. Any report issued by Company as a result of this application for testing services (the "Report") shall be issued in confidence to the Clients and the Report will be strictly treated as such by the Company. It may not be reproduced either in its entirety or in part and it may not be used for advertising or other unauthorized purposes without the written consent of the Company. The Clients to whom the Report is issued may, however, show or send it, or a certified copy thereof prepared by the Company to its customer, supplier or other persons directly concerned. The Company will not, without the consent of the Clients, enter into any discussion or correspondence with any third party concerning the contents of the Report, unless required by the relevant governmental authorities, laws or court orders.

3. The Company shall not be called or be liable to be called to give evidence or testimony on the Report in a court of law without its prior written consent, unless required by the relevant governmental authorities, laws or court orders.

4. In the event of the improper use of the report as determined by the Company, the Company reserves the right to withdraw it, and to adopt any other additional remedies which may be appropriate.

5. Samples submitted for testing are accepted on the understanding that the Report issued cannot form the basis of, or be the instrument for, any legal action against the Company.

6. The Company will not be liable for or accept responsibility for any loss or damage however arising from the use of information contained in any of its Reports or in any communication whatsoever about its said tests or investigations.

7. Clients wishing to use the Report in court proceedings or arbitration shall inform the Company to that effect prior to submitting the sample for testing.

8. The Company is not responsible for recalling the electronic version of the original report when any revision is made to them. The Client assumes the responsibility to providing the revised version to any interested party who uses them.

9. Subject to the variable length of retention time for test data and report stored hereinto as otherwise specifically required by individual accreditation authorities, the Company will only keep the supporting test data and information of the test report for a period of six years. The data and information will be disposed of after the aforementioned retention period has elapsed. Under no circumstances shall we provide any data and information which has been disposed of after retention period. Under no circumstances shall we be liable for damage of any kind, including (but not limited to) compensatory damages, lost profits, lost data, or any form of special, incidental, indirect, consequential or punitive damages of any kind, whether based on breach of contract of warranty, tort (including negligence), product liability or otherwise, even if we are informed in advance of the possibility of such damages.