



## Shenzhen Huaxia Testing Technology Co., Ltd

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Report Template Version: V04  
Report Template Revision Date: 2018-07-06

# TEST REPORT

**Report No.:** CQASZ20211001758E-01  
**Applicant:** Shenzhen DO Intelligent Technology Co., Ltd  
**Address of Applicant:** 11th Floor, 3# Building, Guole Tech Park, Lirong Road, Dalang, Longhua District, Shenzhen, China  
**Equipment Under Test (EUT):**  
**EUT Name:** Smart Watch  
**Model No.:** GT01  
**Test Model No.:** GT01  
**Brand Name:** IDO  
**FCC ID:** 2AHFT336  
**Standards:** 47 CFR Part 15, Subpart C  
**Date of Receipt:** 2021-10-13  
**Date of Test:** 2021-10-13 to 2021-10-22  
**Date of Issue:** 2021-10-29  
**Test Result:** **PASS\***

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

**Tested By:** Timo Lei  
( Timo Lei )

**Reviewed By:** Rock Huang  
( Rock Huang )

**Approved By:** Jack Ai  
( Jack Ai )



## 1 Version

### Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20211001758E-01	Rev.01	Initial report	2021-10-29

Note: The wireless part of the product has not been modified, only some components have been added and the parameters of some components have been modified.

## 2 Test Summary

Test Item	Test Requirement	Test method	Result
AC Power Line Conducted Emission	47 CFR Part 15, Subpart C Section 15.207	ANSI C63.10 2013	PASS
Radiated Spurious Emissions	47 CFR Part 15, Subpart C Section 15.205/15.209	ANSI C63.10 2013	PASS

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## 4 General Information

### 4.1 Client Information

Applicant:	Shenzhen DO Intelligent Technology Co., Ltd
Address of Applicant:	11th Floor, 3# Building, Guole Tech Park, Lirong Road, Dalang, Longhua District, Shenzhen, China
Manufacturer:	Shenzhen DO Intelligent Technology Co., Ltd
Address of Manufacturer:	11th Floor, 3# Building, Guole Tech Park, Lirong Road, Dalang, Longhua District, Shenzhen, China
Factory:	Shenzhen DO Intelligent Technology Co., Ltd
Address of Factory:	11th Floor, 3# Building, Guole Tech Park, Lirong Road, Dalang, Longhua District, Shenzhen, China

### 4.2 General Description of EUT

Product Name:	Smart Watch
Model No.:	GT01
Test Model No.:	GT01
Trade Mark:	IDO
Hardware Version:	GT01-A_MB_V1.1
Software Version:	V12
Operation Frequency:	2402MHz~2480MHz
Bluetooth Version:	V5.0
Modulation Type:	GFSK
Transfer Rate:	1Mbps
Number of Channel:	40
Product Type:	<input type="checkbox"/> Mobile <input checked="" type="checkbox"/> Portable <input type="checkbox"/> Fix Location
Test Software of EUT:	sscom5.13.1 (manufacturer declare)
Antenna Type:	Monopole Antenna
Antenna Gain:	-1.93dBi
EUT Power Supply:	lithium battery:DC3.8V 210mAh, Charge by DC5V

Note:

Model No.: GT01

Only the model GT01 was tested, since the electrical circuit design, layout, components used and internal wiring were identical for the above models, with difference being model name.

### 4.3 Test Environment

<b>Operating Environment:</b>	
<b>Radiated Emissions:</b>	
Temperature:	25.6 °C
Humidity:	56 % RH
Atmospheric Pressure:	1009mbar
<b>RF Conducted Test Record:</b>	
Temperature:	25.1 °C
Humidity:	53 % RH
Atmospheric Pressure:	1009mbar
<b>Test mode:</b>	
Transmitting mode:	Use test software to set the lowest frequency, the middle frequency and the highest frequency keep transmitting of the EUT. Note: In the process of transmitting of EUT, the duty cycle >98%.

### 4.4 Description of Support Units

The EUT has been tested with associated equipment below.

1) Support equipment

Description	Manufacturer	Model No.	Certification	Supplied by
PC	Lenovo	ThinkPad E450c	FCC ID	CQA

2) Cable

Cable No.	Description	Manufacturer	Cable Type/Length	Supplied by
/	/	/	/	/

## 4.5 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate.

The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities.

The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the **Shenzhen Huaxia Testing Technology Co., Ltd.** quality system acc. to DIN EN ISO/IEC 17025.

Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for CQA laboratory is reported:

No.	Item	Uncertainty	Notes
1	Radiated Emission (Below 1GHz)	±5.12dB	(1)
2	Radiated Emission (Above 1GHz)	±4.60dB	(1)
3	Conducted Disturbance (0.15~30MHz)	±3.34dB	(1)
4	Radio Frequency	$3 \times 10^{-8}$	(1)
5	Duty cycle	0.6 %.	(1)
6	Occupied Bandwidth	1.1%	(1)
7	RF conducted power	0.86dB	(1)
8	RF power density	0.74	(1)
9	Conducted Spurious emissions	0.86dB	(1)
10	Temperature test	0.8°C	(1)
11	Humidity test	2.0%	(1)
12	Supply voltages	0.5 %.	(1)
13	time	0.6 %.	(1)
14	Frequency Error	5.5 Hz	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

## 4.6 Test Location

**Shenzhen Huaxia Testing Technology Co., Ltd,**

1F., Block A of Tongsheng Technology Building, Huahui Road, Dalang Street, Longhua District, Shenzhen, China

## 4.7 Test Facility

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

- **CNAS (No. CNAS L5785)**

CNAS has accredited Shenzhen Huaxia Testing Technology 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. 4742.01)**

Shenzhen Huaxia Testing Technology Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 4742.01.

- **FCC Registration No.: 522263**

Shenzhen Huaxia Testing Technology Co., Ltd., Shenzhen 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. Registration No.:522263

## 4.8 Deviation from Standards

None.

## 4.9 Other Information Requested by the Customer

None.



## 4.10 Equipment List


Test Equipment	Manufacturer	Model No.	Instrument No.	Calibration Date	Calibration Due Date
EMI Test Receiver	R&S	ESR7	CQA-005	2021/9/16	2024/9/15
Spectrum analyzer	R&S	FSU26	CQA-038	2021/9/16	2024/9/15
Preamplifier	MITEQ	AMF-6D-02001800-29-20P	CQA-036	2021/9/10	2022/9/9
Loop antenna	Schwarzbeck	FMZB1516	CQA-060	2021/9/11	2024/10/10
Bilog Antenna	R&S	HL562	CQA-011	2021/9/10	2022/9/9
Horn Antenna	R&S	HF906	CQA-012	2021/9/10	2022/9/9
Horn Antenna	Schwarzbeck	BBHA 9170	CQA-088	2021/9/10	2022/9/9
Coaxial Cable (Above 1GHz)	CQA	N/A	C007	2021/9/10	2022/9/9
Coaxial Cable (Below 1GHz)	CQA	N/A	C013	2021/9/10	2022/9/9
Antenna Connector	CQA	RFC-01	CQA-080	2021/9/10	2022/9/9
RF cable(9KHz~40GHz)	CQA	RF-01	CQA-079	2021/9/10	2022/9/9
Power divider	MIDWEST	PWD-2533-02-SMA-79	CQA-067	2021/9/10	2022/9/9
EMI Test Receiver	R&S	ESR7	CQA-005	2021/9/10	2022/9/9
LISN	R&S	ENV216	CQA-003	2021/9/10	2022/9/9
Coaxial cable	CQA	N/A	CQA-C009	2021/9/10	2022/9/9
DC power	KEYSIGHT	E3631A	CQA-028	2021/9/10	2022/9/9

Note:

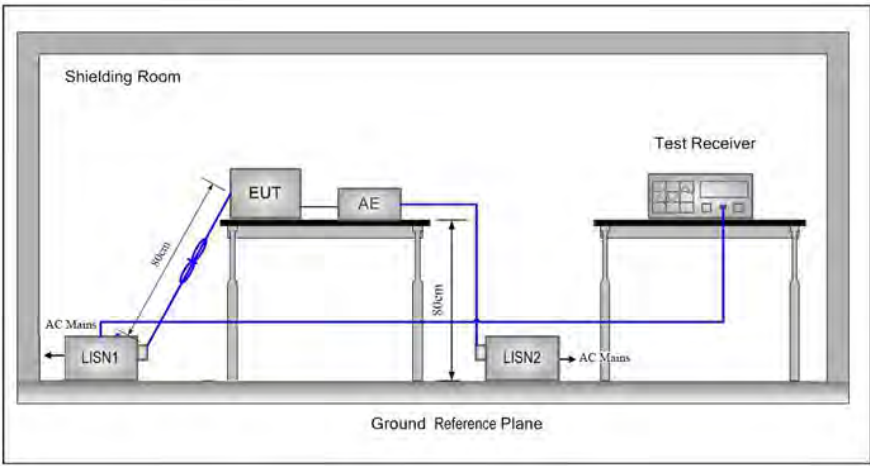
The temporary antenna connector is soldered on the PCB board in order to perform conducted tests and this temporary antenna connector is listed in the equipment list.

## 5 Test results and Measurement Data

### 5.1 Antenna Requirement

<p><b>Standard requirement:</b></p>	<p>47 CFR Part 15C Section 15.203 /247(c)</p>
<p>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.</p> <p>15.247(b) (4) requirement:          The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.</p>	
<p><b>EUT Antenna:</b></p>	
<p>The antenna is Monopole Antenna. The best case gain of the antenna is -1.93dBi.</p>	

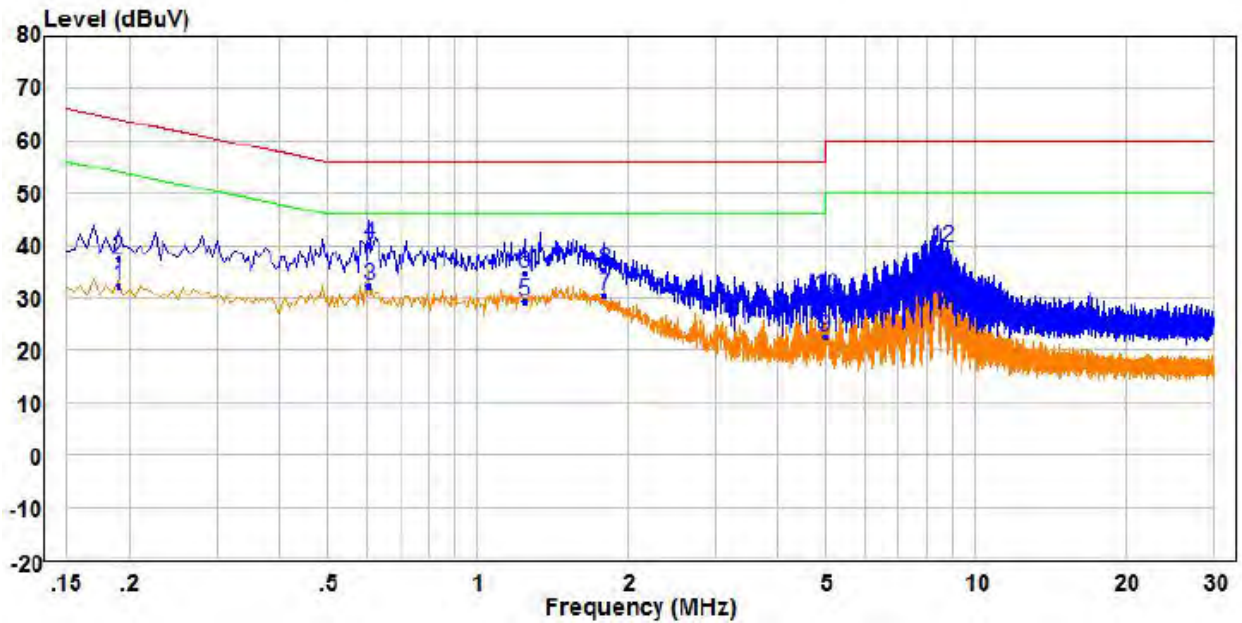
## 5.2 Conducted Emissions

Test Requirement:	47 CFR Part 15C Section 15.207		
Test Method:	ANSI C63.10: 2013		
Test Frequency Range:	150kHz to 30MHz		
Limit:	Frequency range (MHz)	Limit (dBuV)	
		Quasi-peak	Average
	0.15-0.5	66 to 56*	56 to 46*
	0.5-5	56	46
	5-30	60	50
* Decreases with the logarithm of the frequency.			
Test Procedure:	<ol style="list-style-type: none"> <li>1) The mains terminal disturbance voltage test was conducted in a shield room.</li> <li>2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a <math>50\Omega/50\mu\text{H} + 5\Omega</math> line impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.</li> <li>3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,</li> <li>4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.</li> <li>5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2013 on conducted measurement.</li> </ol>		
Test Setup:			

Exploratory Test Mode:	Non-hopping transmitting mode with all kind of modulation and all kind of data type at the lowest, middle, high channel.
Final Test Mode:	MAX MPE of Wi-Fi(2.4G)&Z-wave&SRF(319.5) &MAX MPELTE
Test Voltage:	AC 120V/60Hz
Test Results:	Pass

**Measurement Data**

Live line:



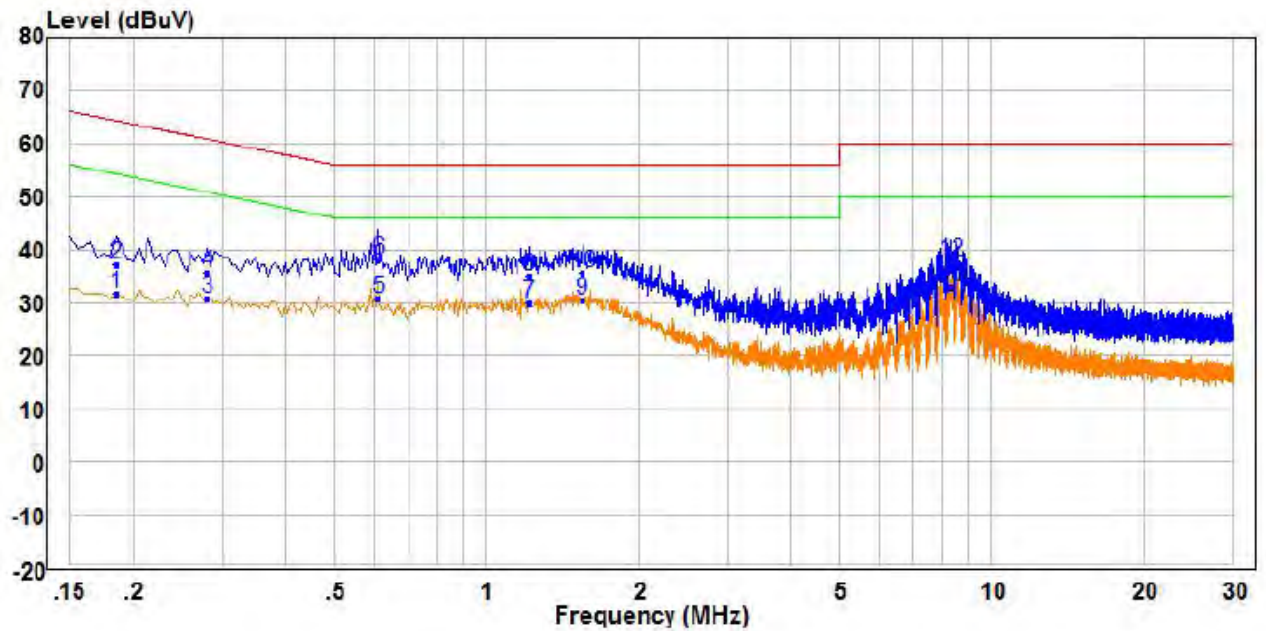
	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
	MHz	dBuV	dB	dBuV	dBuV	dB		
1	0.190	22.75	9.49	32.24	54.04	-21.80	Average	Line
2	0.190	27.85	9.49	37.34	64.04	-26.70	QP	Line
3 PP	0.605	22.69	9.71	32.40	46.00	-13.60	Average	Line
4 QP	0.605	30.45	9.71	40.16	56.00	-15.84	QP	Line
5	1.240	19.86	9.52	29.38	46.00	-16.62	Average	Line
6	1.240	25.06	9.52	34.58	56.00	-21.42	QP	Line
7	1.800	20.80	9.53	30.33	46.00	-15.67	Average	Line
8	1.800	25.66	9.53	35.19	56.00	-20.81	QP	Line
9	4.995	12.79	9.74	22.53	46.00	-23.47	Average	Line
10	4.995	20.54	9.74	30.28	56.00	-25.72	QP	Line
11	8.540	19.80	9.75	29.55	50.00	-20.45	Average	Line
12	8.540	29.78	9.75	39.53	60.00	-20.47	QP	Line

Remark:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level = Receiver Reading + LISN Factor + Cable Loss.

3. If the Peak value under Average limit, the Average value is not recorded in the report.

Neutral line:



	Read	Limit	Over			Remark	Pol/Phase		
Freq	Level	Factor	Level	Line	Limit				
MHz	dBuV	dB	dBuV	dBuV	dB				
1	0.185	22.17	9.48	31.65	54.26	-22.61	Average	Neutral	
2	0.185	27.71	9.48	37.19	64.26	-27.07	QP	Neutral	
3	0.280	21.31	9.48	30.79	50.82	-20.03	Average	Neutral	
4	0.280	26.25	9.48	35.73	60.82	-25.09	QP	Neutral	
5	PP	0.610	20.93	9.72	30.65	46.00	-15.35	Average	Neutral
6	QP	0.610	28.24	9.72	37.96	56.00	-18.04	QP	Neutral
7		1.215	20.08	9.72	29.80	46.00	-16.20	Average	Neutral
8		1.215	25.25	9.72	34.97	56.00	-21.03	QP	Neutral
9		1.550	20.69	9.72	30.41	46.00	-15.59	Average	Neutral
10		1.550	25.78	9.72	35.50	56.00	-20.50	QP	Neutral
11		8.285	22.95	9.85	32.80	50.00	-17.20	Average	Neutral
12		8.285	27.85	9.85	37.70	60.00	-22.30	QP	Neutral

Remark:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level = Receiver Reading + LISN Factor + Cable Loss.
3. If the Peak value under Average limit, the Average value is not recorded in the report.

5.2.1 Spurious Emissions					
Test Requirement:	47 CFR Part 15C Section 15.209 and 15.205				
Test Method:	ANSI C63.10 2013				
Test Site:	Measurement Distance: 3m (Semi-Anechoic Chamber)				
Receiver Setup:	Frequency	Detector	RBW	VBW	Remark
	0.009MHz-0.090MHz	Peak	10kHz	30kHz	Peak
	0.009MHz-0.090MHz	Average	10kHz	30kHz	Average
	0.090MHz-0.110MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
	0.110MHz-0.490MHz	Peak	10kHz	30kHz	Peak
	0.110MHz-0.490MHz	Average	10kHz	30kHz	Average
	0.490MHz -30MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
	30MHz-1GHz	Quasi-peak	100 kHz	300kHz	Quasi-peak
	Above 1GHz	Peak	1MHz	3MHz	Peak
		Peak	1MHz	10Hz	Average
Limit:	Frequency	Field strength (microvolt/meter)	Limit (dBuV/m)	Remark	Measurement distance (m)
	0.009MHz-0.490MHz	2400/F(kHz)	-	-	300
	0.490MHz-1.705MHz	24000/F(kHz)	-	-	30
	1.705MHz-30MHz	30	-	-	30
	30MHz-88MHz	100	40.0	Quasi-peak	3
	88MHz-216MHz	150	43.5	Quasi-peak	3
	216MHz-960MHz	200	46.0	Quasi-peak	3
	960MHz-1GHz	500	54.0	Quasi-peak	3
	Above 1GHz	500	54.0	Average	3
<p>Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.</p>					

Test Setup:

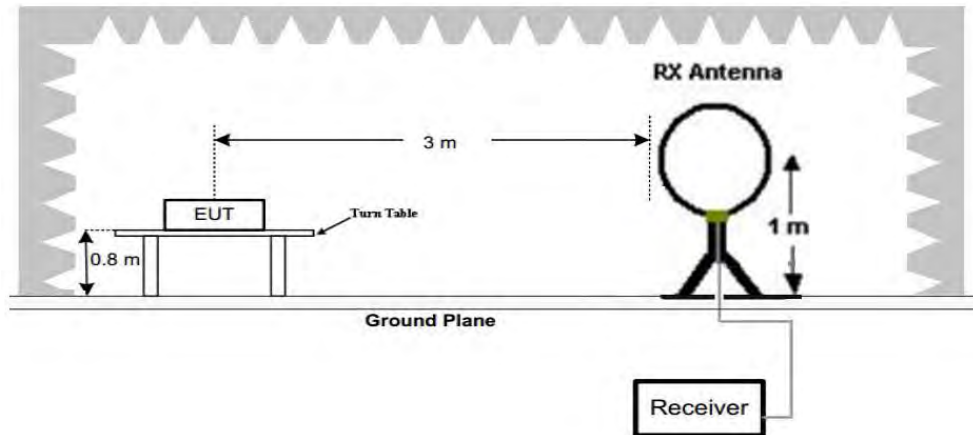


Figure 1. Below 30MHz

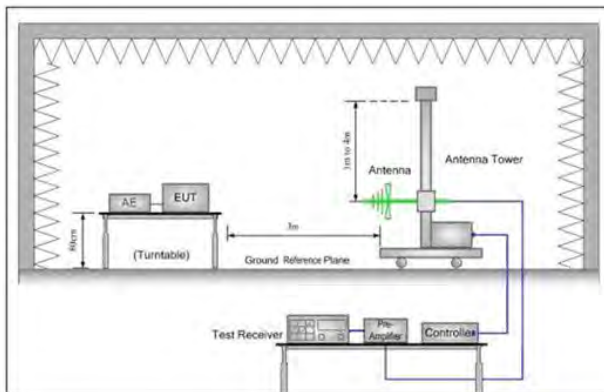


Figure 2. 30MHz to 1GHz

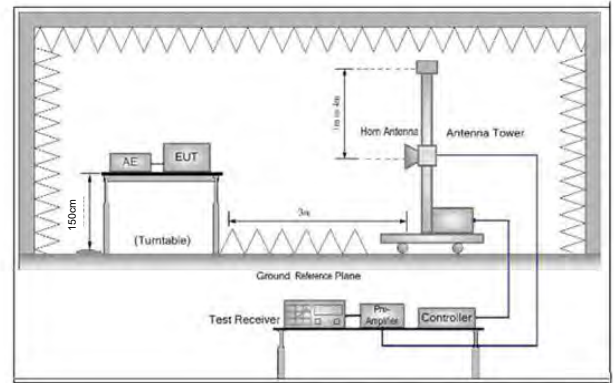


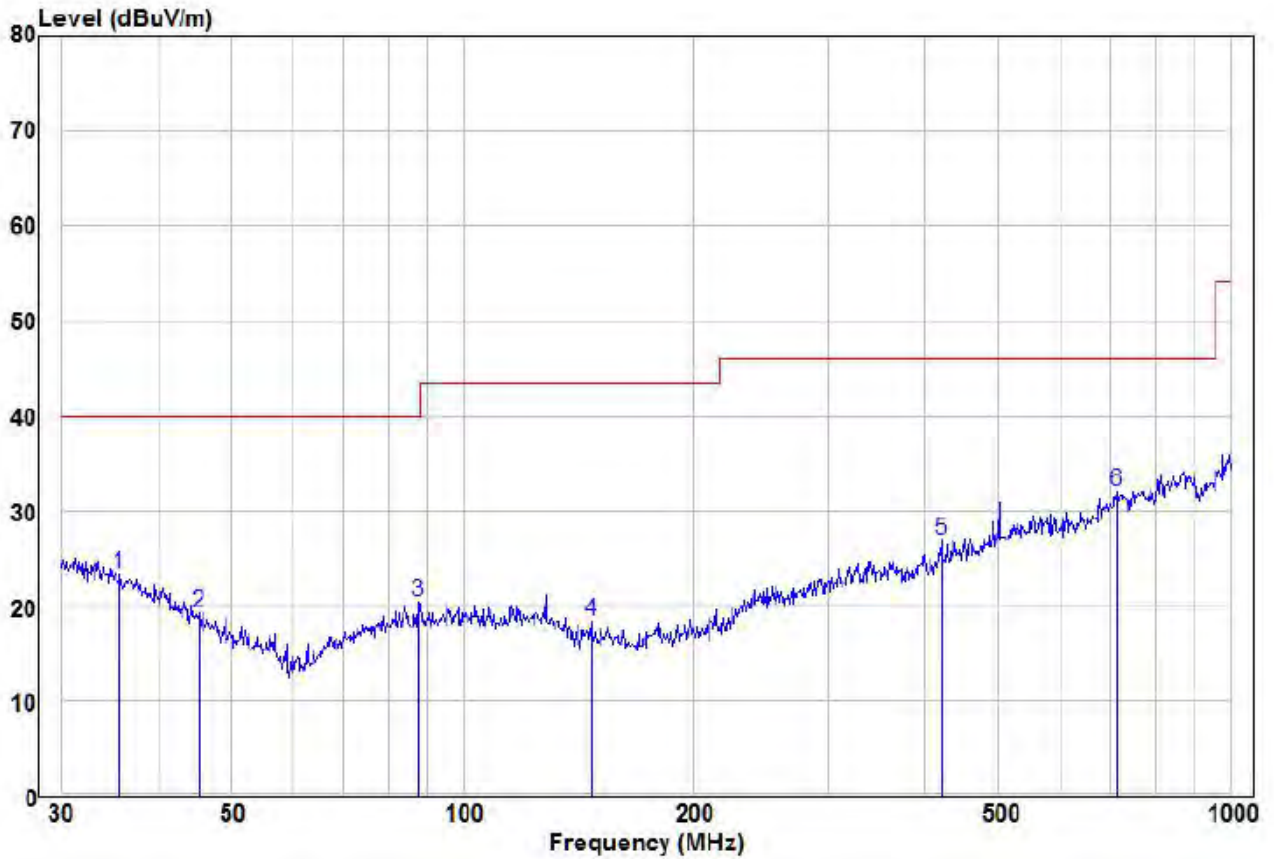
Figure 3. Above 1 GHz

<p>Test Procedure:</p>	<p>a. 1) Below 1G: The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.</p> <p>2) Above 1G: The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.</p> <p>Note: For the radiated emission test above 1GHz:  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.</p> <p>b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.</p> <p>c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the</p>
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	<p>measurement.</p> <p>d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.</p> <p>e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</p> <p>f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.</p> <p>g. Test the EUT in the lowest channel (2402MHz),the middle channel (2440MHz),the Highest channel (2480MHz)</p> <p>h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.</p> <p>i. Repeat above procedures until all frequencies measured was complete.</p>
<p>Exploratory Test Mode:</p>	<p>Transmitting with GFSK modulation. Transmitting mode.</p>
<p>Final Test Mode:</p>	<p>Through Pre-scan, find the 2DH5 of data type and <math>\pi/4</math>DQPSK modulation is the worst case. For below 1GHz part, through pre-scan, the worst case is the lowest channel. Only the worst case is recorded in the report.</p>
<p>Test Results:</p>	<p>Pass</p>

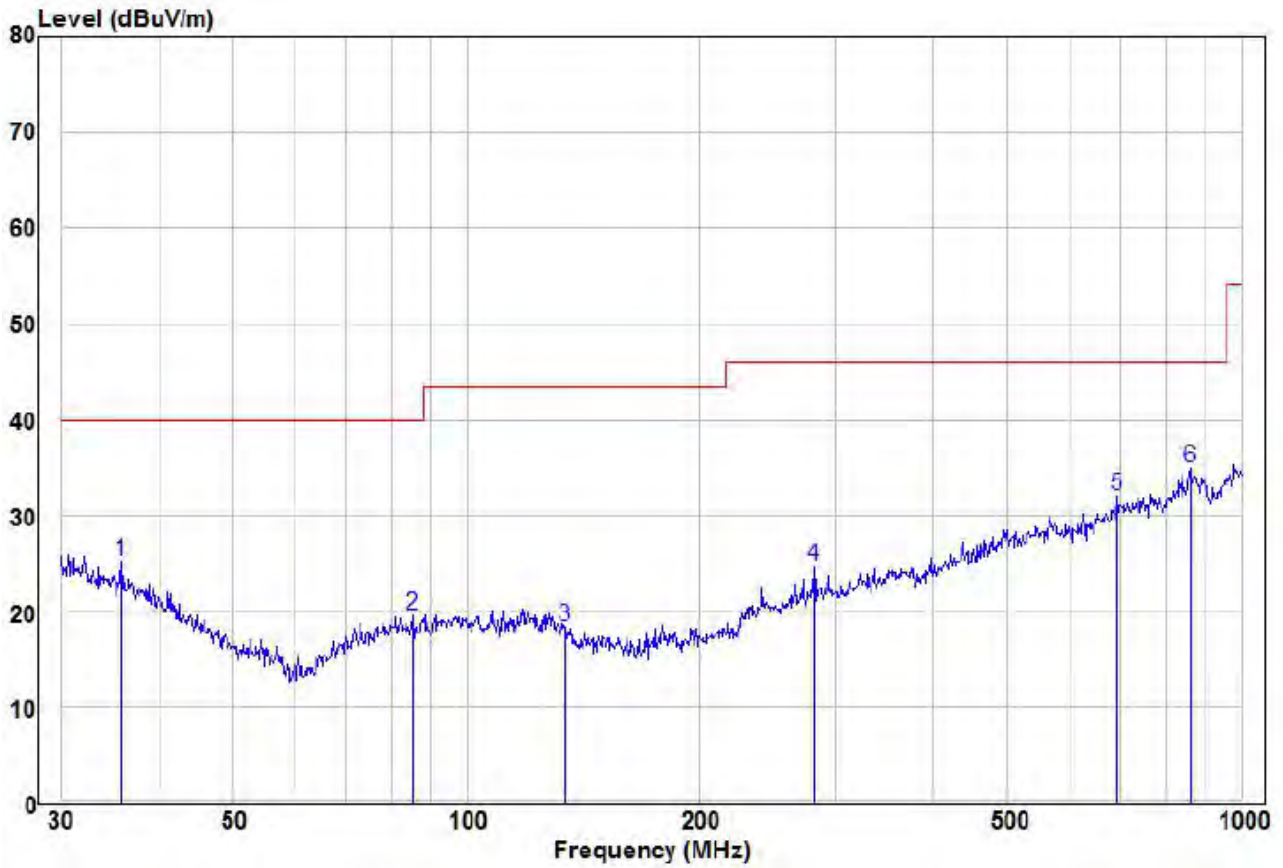


Radiated Emission below 1GHz		
30MHz~1GHz, the worst case		
Test mode:	Transmitting mode	Vertical



	Read Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
	MHZ	dBuV	dB/m	dBuV/m	dBuV/m	dB		
1	35.75	9.07	14.33	23.40	40.00	-16.60	Peak	VERTICAL
2	45.38	9.01	10.27	19.28	40.00	-20.72	Peak	VERTICAL
3	87.42	10.46	9.96	20.42	40.00	-19.58	Peak	VERTICAL
4	146.89	10.06	8.34	18.40	43.50	-25.10	Peak	VERTICAL
5	420.58	11.16	15.80	26.96	46.00	-19.04	Peak	VERTICAL
6 pp	711.67	10.89	21.17	32.06	46.00	-13.94	Peak	VERTICAL

30MHz~1GHz, the worst case		
Test mode:	Transmitting mode	Horizontal



	Read Freq	Read Level	Factor	Limit Level	Over Limit	Remark	Pol/Phase
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	35.87	10.89	14.29	25.18	40.00	-14.82 Peak	HORIZONTAL
2	85.30	9.65	9.91	19.56	40.00	-20.44 Peak	HORIZONTAL
3	134.09	9.08	9.39	18.47	43.50	-25.03 Peak	HORIZONTAL
4	281.01	11.62	13.10	24.72	46.00	-21.28 Peak	HORIZONTAL
5	691.99	11.16	20.94	32.10	46.00	-13.90 Peak	HORIZONTAL
6	860.04	10.98	24.01	34.99	46.00	-11.01 Peak	HORIZONTAL

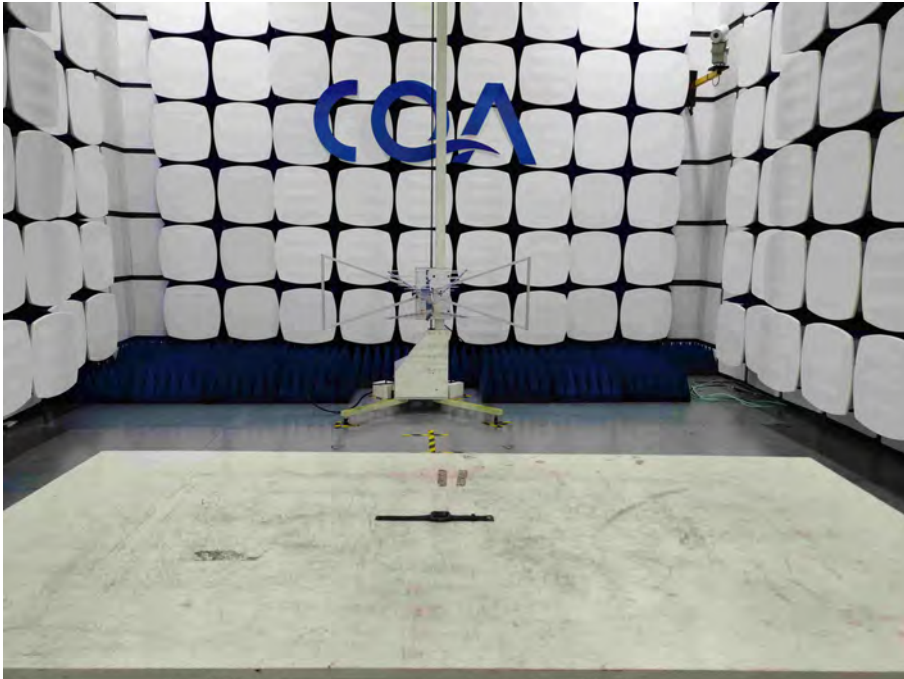
## 6 Photographs - EUT Test Setup

### 6.1 Radiated Spurious Emission

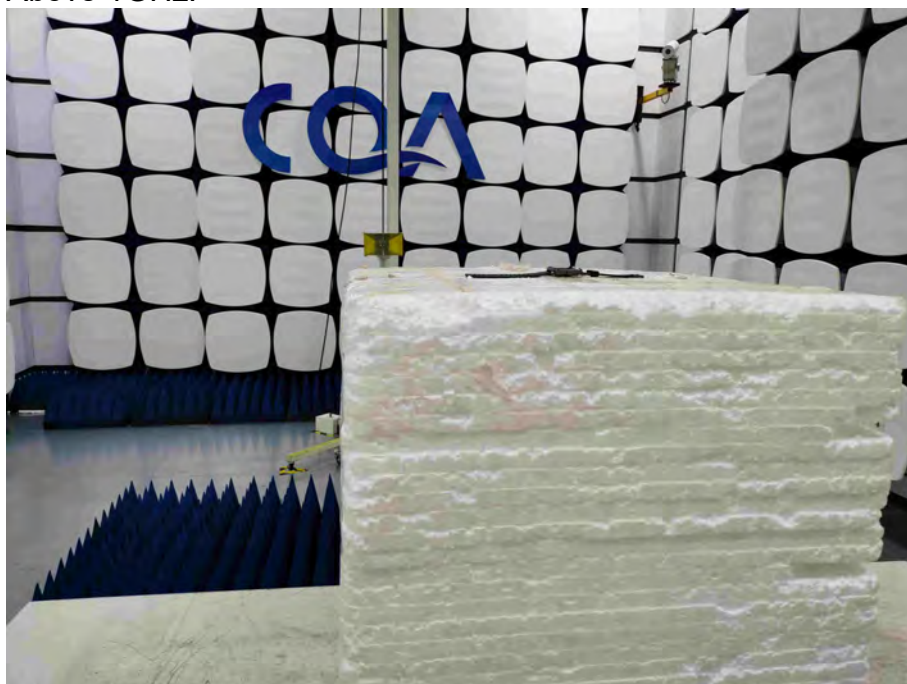
9KHz~30MHz:



30MHz~1GHz:



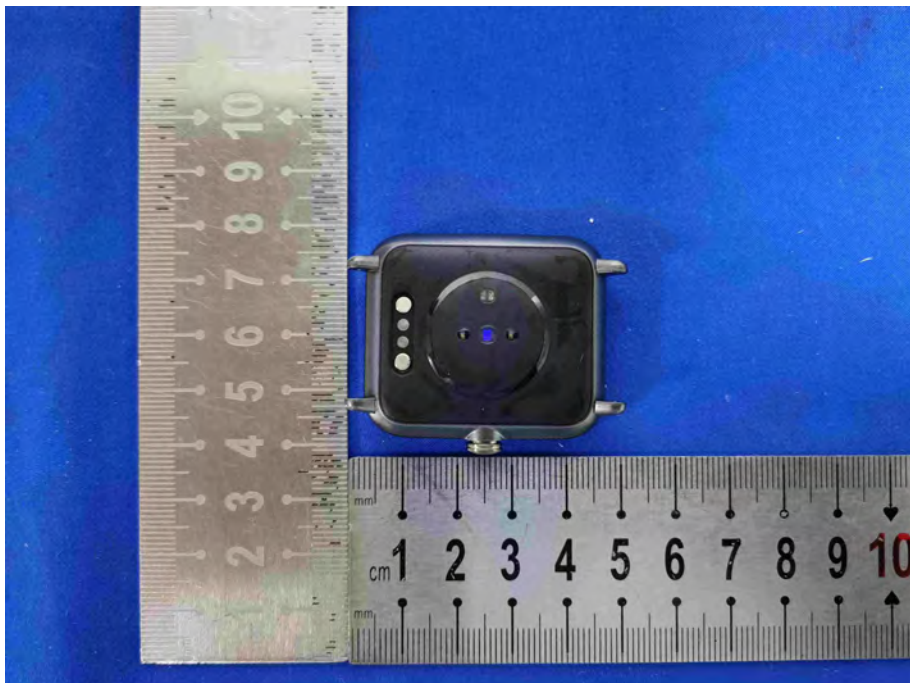
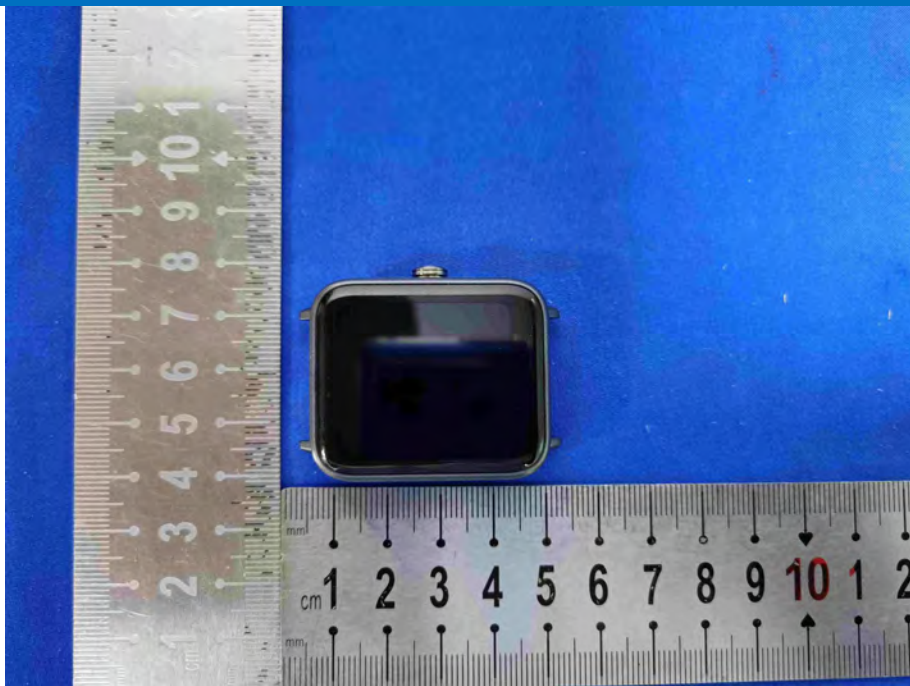
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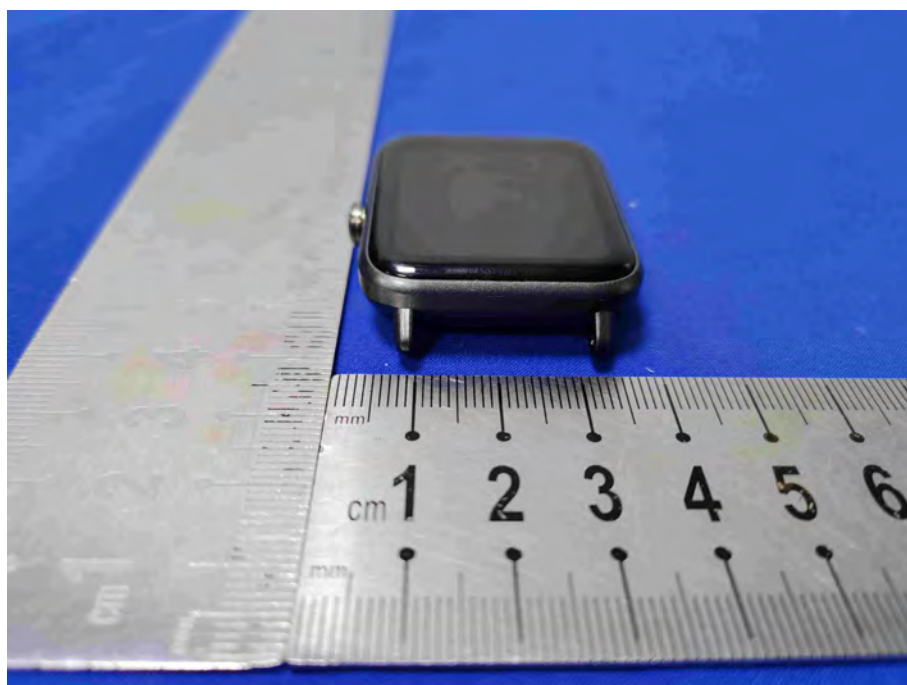
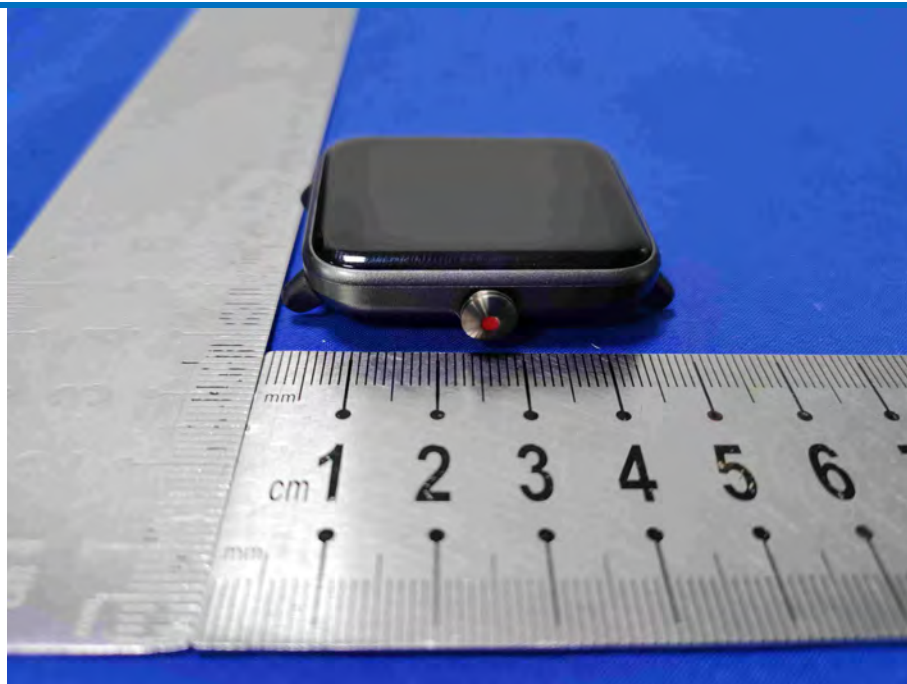


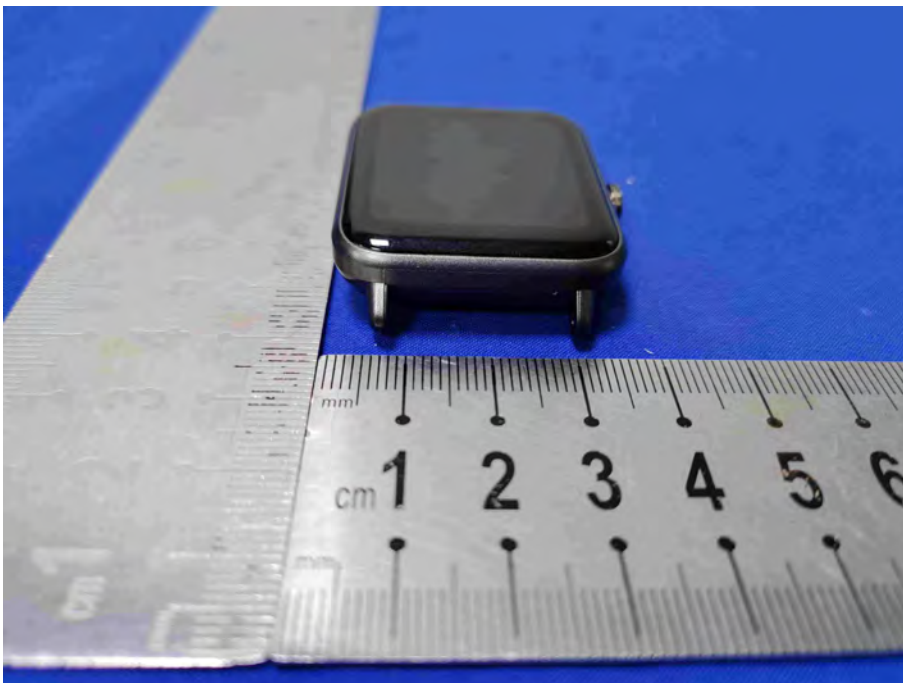
## 7 Photographs - EUT Constructional Details

Test Model No.: GT01

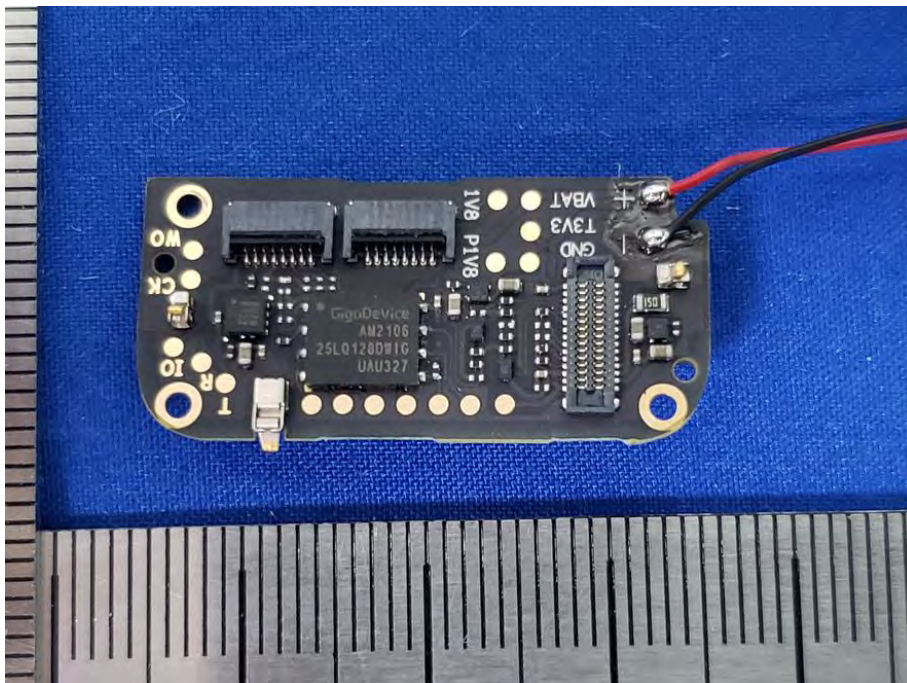
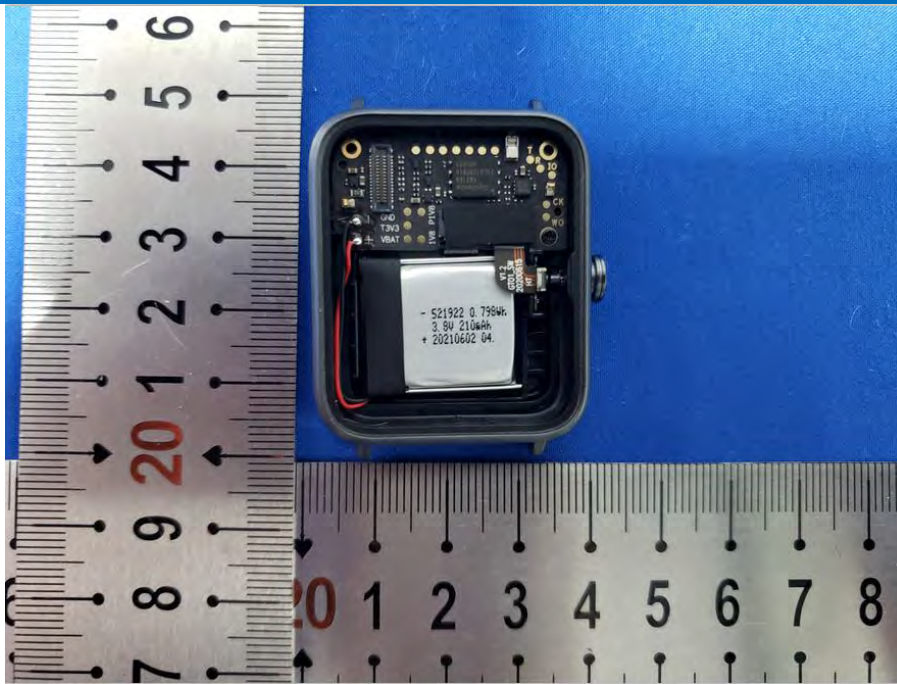


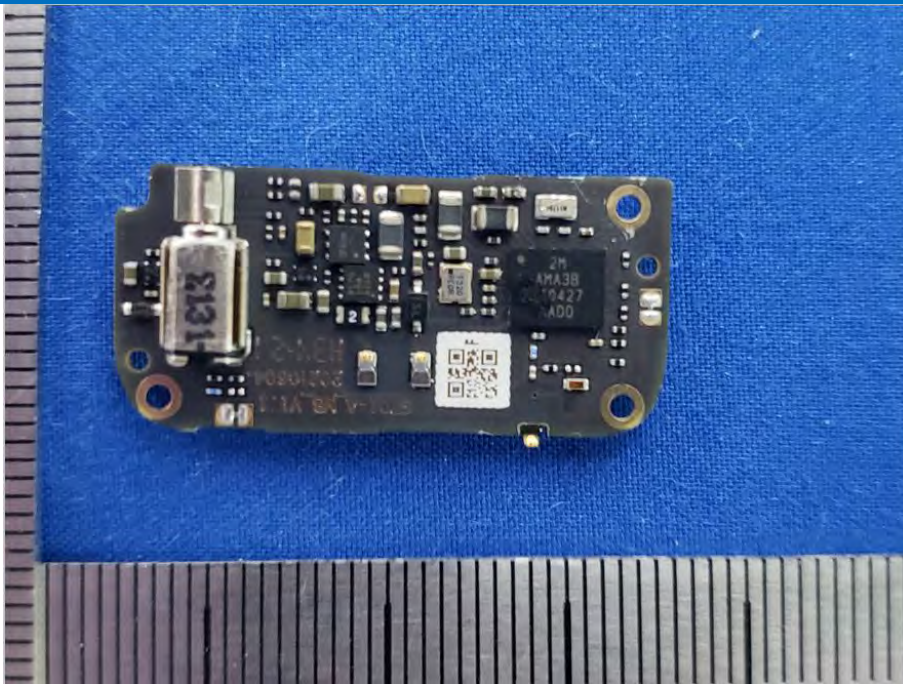














The End