TEST REPORT

Report No.:	BCTC2106496119E
Applicant:	Synergy Innovations Group Limited
Product Name:	Smart Watch
Model/Type Ref.:	SB1427H
Tested Date:	2021-06-03 to 2021-06-23
Issued Date:	2021-07-22

Shenzhen BCTC Testing Co., Ltd.

Product Name:	Smart Watch
Trademark:	Oplayer®
Model/Type Ref.:	SB1427H SB1427HZT, SB1427H-W, SB1427, SW78, SB1427HZ
Prepared For:	Synergy Innovations Group Limited
Address:	Units 18D-18E, Hanking Centre, 23 Deng Liang Road, Nanshan District, Shenzhen, Guangdong 518054, China
Manufacturer:	Synergy Innovations Group Limited
Address:	Units 18D-18E, Hanking Centre, 23 Deng Liang Road, Nanshan District, Shenzhen, Guangdong 518054, China
Prepared By:	Shenzhen BCTC Testing Co., Ltd.
Address:	1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Tangwei, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Sample Received Date:	2021-06-03
Sample tested Date:	2021-06-03 to 2021-06-2
Issue Date:	2021-07-22
Report No.:	BCTC2106496119E
Test Standards:	EN 55032:2015+A11:2020, EN 55035:2017+A11:2020
Test Results:	PASS

Tested by:

Lei Chen

Lei Chen/Project Handler

Approved by:

Zero Zhou/Reviewer

The test report is effective only with both signature and specialized stamp. This result(s) shown in this report refer only to the sample(s) tested. Without written approval of Shenzhen BCTC Testing Co., Ltd, this report can't be reproduced except in full. The tested sample(s) and the sample information are provided by the client.

TABLE OF CONTENT

(Note: N/A means not applicable)

1. VERSION

Report No.	Issue Date	Description	Approved
BCTC2106496119E	2021-07-22	Original	Valid

2. TEST SUMMARY

The Product has been tested according to the following specifications:

EMISSION		
Standard	**Test Item**	**Test result**
EN 55032	Conducted emissions from the AC mains power ports	Pass
EN 55032	Asymmetric mode conducted emissions	N/A[1]
EN 55032	Conducted differential voltage emissions	N/A[1]
EN 55032	Radiated emissions	Pass

IMMUNITY (EN 55035)		
Standard	**Test Item**	**Test result**
IEC 61000-4-2	Electrostatic discharge (ESD)	Pass
IEC 61000-4-3	Continuous RF electromagnetic field disturbances(RS)	Pass
IEC 61000-4-4	Electrical fast transients/burst (EFT)	N/A[1]
IEC 61000-4-5	Surges	N/A[1]
IEC 61000-4-6	Continuous induced RF disturbances (CS)	N/A[1]
IEC 61000-4-6	Broadband impulse noise disturbances, repetitive	N/A[2]
IEC 61000-4-6	Broadband impulse noise disturbances, isolated	N/A[2]
IEC 61000-4-8	Power frequency magnetic field (PFMF)	N/A[3]
IEC 61000-4-11	Voltage dips and interruptions (DIPS)	N/A[1]

Remark:
1. The EUT is a powered by USB port.
2. Applicable only to CPE xDSL ports.
3. The Product doesn’t contain any device susceptible to magnetic fields.
4. The EUT is powered by the DC only, the test item is not applicable.

3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Test item	Value (dB)
Conducted Emission (150kHz-30MHz)	3.20
Radiated Emission(30MHz~1GHz)	4.80
Radiated Emission(1GHz~6GHz)	4.90

4. PRODUCT INFORMATION AND TEST SETUP

4.1 Product Information

Ratings: USB: DC5V
Battery: DC3.7V

Model difference: All models are identical except for the appearance color and model name, the test model is SB1427H and the test results are applicable to other models.

4.2 Test Setup Configuration

See test photographs attached in EUT TEST SETUP PHOTOGRAPHS for the actual connections between Product and support equipment.

4.3 Support Equipment

No	Device Type	Brand	Model	Series No.	Data Cable	Power Cord
1.	---	---	---	---	---	---

Notes:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

4.4 Test Mode

Test item	Test Mode	Test Voltage
Conducted emissions from the AC mains power ports (150KHz-30MHz) Class B	Charging	AC230V/50Hz
Radiated emissions(30MHz-6GHz) Class B	Charging	AC230V/50Hz
	Working	DC 3.7V*
Electrostatic discharge (ESD) ☒HCP & VCP: ±4kV ☒Air Discharge: ±8kV ☒Contact Discharge: ±4kV	Charging	AC230V/50Hz
	Working	DC 3.7V
Continuous RF electromagnetic field disturbances(RS) ☒80MHz-6000MHz , 3V/m,80% Front, Rear, Left, Right H/V	Charging	AC230V/50Hz
	Working	DC 3.7V
All test mode were tested and passed, only Conducted Emissions, Radiated Emissions shows (*) is the worst case mode which were recorded in this report.		

5. TEST FACILITY AND TEST INSTRUMENT USED

5.1 Test Facility

All measurement facilities used to collect the measurement data are located at Shenzhen BCTC Testing Co., Ltd. Address: 1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Tangwei, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China. The site and apparatus are constructed in conformance with the requirements of ANSI C63.4 and CISPR 16-1-1 other equivalent standards.

5.2 Test Instrument Used

Conducted emissions Test					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
Receiver	R&S	ESR3	102075	May 28, 2021	May 27, 2022
LISN	R&S	ENV216	101375	May 28, 2021	May 27, 2022
ISN	HPX	ISN T800	S1509001	May 28, 2021	May 27, 2022
Software	Frad	EZ-EMC	EMC-CON 3A1	\	\

Radiated emissions Test (966 chamber)					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
966 chamber	ChengYu	966 Room	966	Jun. 06. 2020	Jun. 05, 2023
Receiver	R&S	ESRP	101154	May 28, 2021	May 27, 2022
Receiver	R&S	ESR3	102075	May 28, 2021	May 27, 2022
Amplifier	Schwarzbeck	BBV9718	9718-309	May 28, 2021	May 27, 2022
Amplifier	Schwarzbeck	BBV9744	9744-0037	May 28, 2021	May 27, 2022
TRILOG Broadband Antenna	schwarzbeck	VULB 9163	VULB9163-942	May 28, 2021	May 27, 2022
Horn Antenna	SCHWARZBECK	BBHA9120D	1541	May 28, 2021	May 27, 2022
Software	Frad	EZ-EMC	FA-03A2 RE	\	\

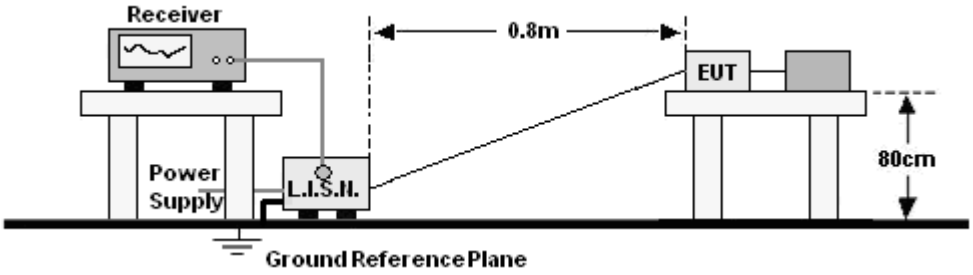
Electrostatic discharge Test					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
ESD Tester	KIKUSUI	KES4201A	UH002321	May 31, 2021	May 30, 2022

Continuous RF electromagnetic field disturbances Test					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
Power meter	Keysight	E4419B	GB42421440	May 28, 2021	May 27, 2022
Power sensor	Keysight	E9 300A	US39211305	May 28, 2021	May 27, 2022
Power sensor	Keysight	E9 300A	US39211659	May 28, 2021	May 27, 2022
Amplifier	SKET	HAP_801000M-250W	\	May 28, 2021	May 27, 2022
Amplifier	SKET	HAP_0103G-75W	\	May 28, 2021	May 27, 2022
Amplifier	SKET	HAP_0306G-50W	\	May 28, 2021	May 27, 2022
Stacked double Log.-Per. Antenna	Schwarzbeck	STLP 9129	077	\	\
Field Probe	Narda	EP-601	80256	Jul. 07, 2020	Jul. 06, 2021
Signal Generator	Agilent	N5181A	MY50143748	May 28, 2021	May 27, 2022
Software	SKET	EMC-S	1.2.0.18	\	\

6. CONDUCTED EMISSIONS

6.1 Block Diagram Of Test Setup

For mains ports:



6.2 Limit

Limits for Conducted emissions at the mains ports of Class B MME

Frequency range (MHz)	Limits dB(μV)	
	Quasi-peak	Average
0,15 to 0,50	66 to 56*	56 to 46*
0,50 to 5	56	46
5 to 30	60	50

Notes: 1. *Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.

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6.3 Test procedure

For mains ports:

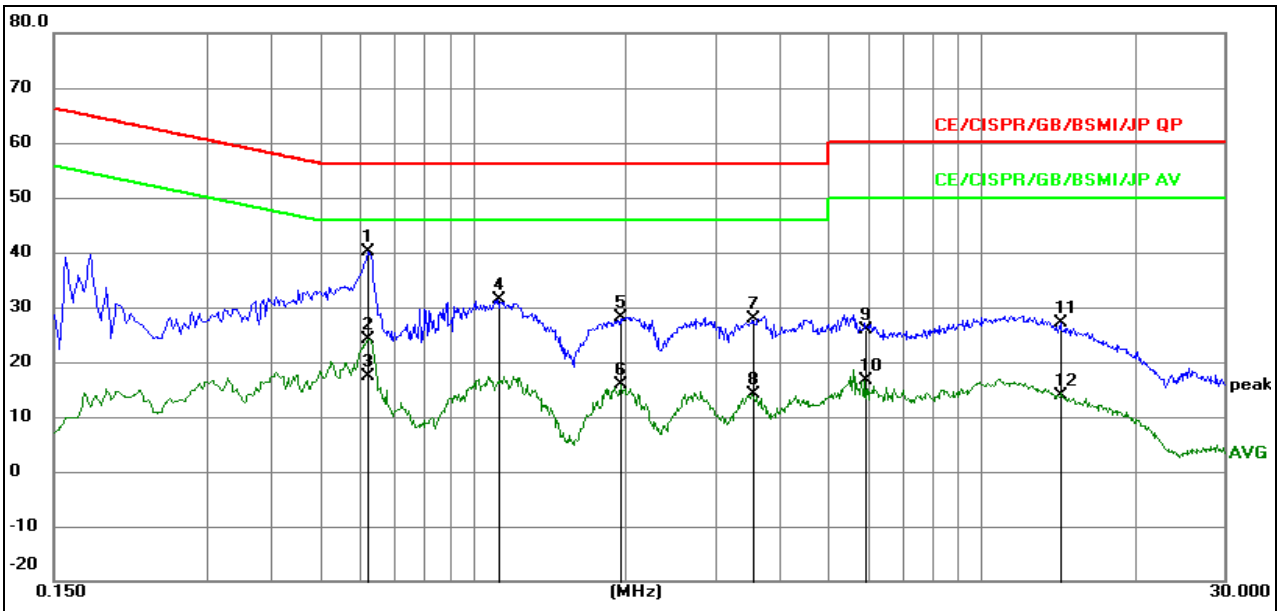
a. The Product was placed on a nonconductive table 0. 8 m above the horizontal ground reference plane, and 0.4 m from the vertical ground reference plane, and connected to the main through Line Impedance Stability Network (L.I.S.N).

b. The RBW of the receiver was set at 9 kHz in 150 kHz ~ 30MHz with Peak and AVG detector in Max Hold mode. Run the receiver's pre-scan to record the maximum disturbance generated from Product in all power lines in the full band.

c. For each frequency whose maximum record was higher or close to limit, measure its QP and AVG values and record.

6.4 Test Result

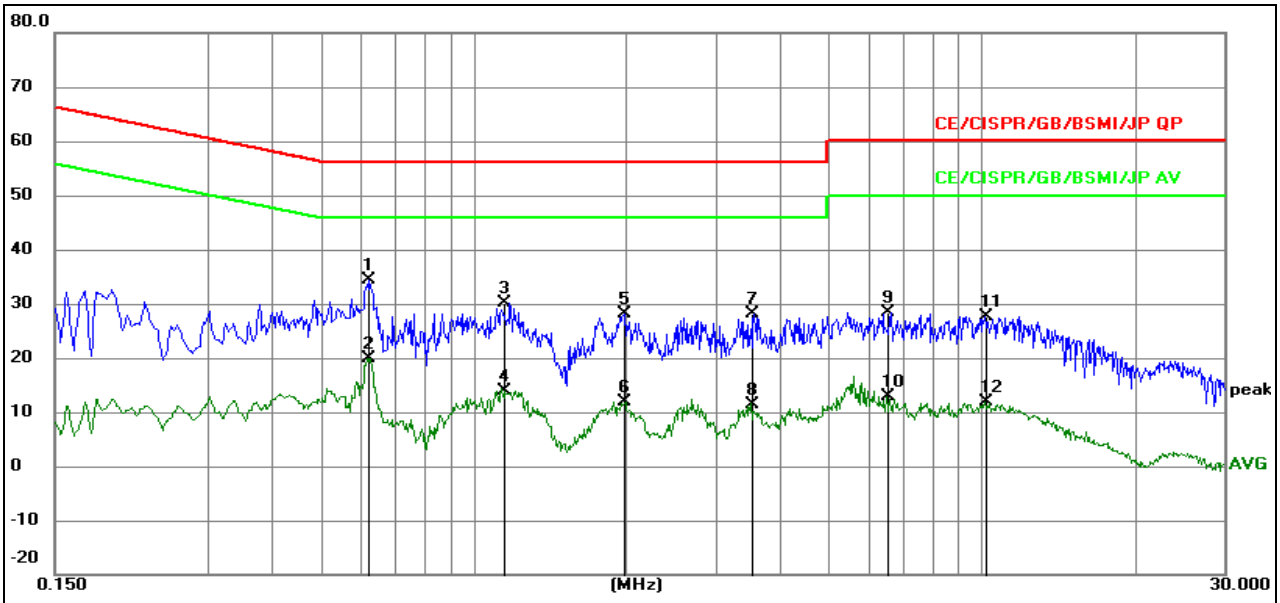
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Phase :	L
Test Mode	Charging	Remark:	N/A



Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz		dB	dBuV	dBuV	dB	Detector
1	*	0.6225	30.24	9.92	40.16	56.00	-15.84	QP
2		0.6225	14.17	9.92	24.09	46.00	-21.91	AVG
3		0.6225	7.46	9.92	17.38	46.00	-28.62	AVG
4		1.1220	21.69	9.57	31.26	56.00	-24.74	QP
5		1.9545	18.52	9.59	28.11	56.00	-27.89	QP
6		1.9545	6.19	9.59	15.78	46.00	-30.22	AVG
7		3.5475	18.22	9.70	27.92	56.00	-28.08	QP
8		3.5475	4.54	9.70	14.24	46.00	-31.76	AVG
9		5.9100	16.10	9.76	25.86	60.00	-34.14	QP
10		5.9100	6.94	9.76	16.70	50.00	-33.30	AVG
11		14.3430	17.31	9.70	27.01	60.00	-32.99	QP
12		14.3430	4.18	9.70	13.88	50.00	-36.12	AVG

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Phase :	N
Test Mode	Charging	Remark:	N/A



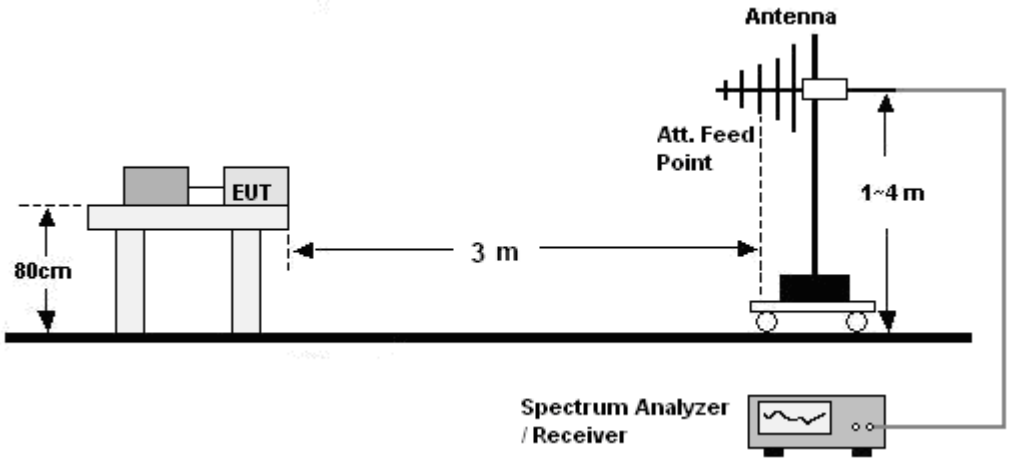
Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz		dB	dBuV	dBuV	dB	Detector
1	*	0.6173	24.45	9.94	34.39	56.00	-21.61	QP
2		0.6173	10.03	9.94	19.97	46.00	-26.03	AVG
3		1.1534	20.45	9.57	30.02	56.00	-25.98	QP
4		1.1534	4.37	9.57	13.94	46.00	-32.06	AVG
5		1.9801	18.52	9.59	28.11	56.00	-27.89	QP
6		1.9801	2.32	9.59	11.91	46.00	-34.09	AVG
7		3.5092	18.38	9.70	28.08	56.00	-27.92	QP
8		3.5092	1.80	9.70	11.50	46.00	-34.50	AVG
9		6.4882	18.56	9.74	28.30	60.00	-31.70	QP
10		6.4882	3.10	9.74	12.84	50.00	-37.16	AVG
11		10.1254	17.95	9.69	27.64	60.00	-32.36	QP
12		10.1254	2.26	9.69	11.95	50.00	-38.05	AVG

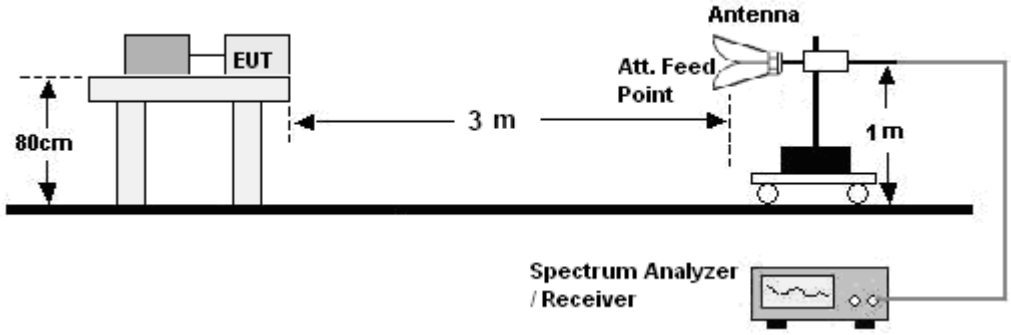
7. RADIATED EMISSIONS TEST

7.1 Block Diagram Of Test Setup

30MHz ~ 1GHz:



Above 1GHz:



7.2 Limits

Limits for radiated disturbance of Class B MME

Frequency (MHz)	Quasi-peak limits at 3m dB(μV/m)
30-230	40
230-1000	47

Frequency (GHz)	limit above 1G at 3m dB(μV/m)	
	Average	peak
1-3	50	70
3-6	54	74

Note: The lower limit shall apply at the transition frequencies.

7.3 Test Procedure

30MHz ~ 1GHz:

a. The Product was placed on the nonconductive turntable 0.8 m above the ground in a semi anechoic chamber.

b. Set the spectrum analyzer/receiver in Peak detector, Max Hold mode, and 120 kHz RBW. Record the maximum field strength of all the pre-scan process in the full band when the antenna is varied between 1~4 m in both horizontal and vertical, and the turntable is rotated from 0 to 360 degrees.

c. For each frequency whose maximum record was higher or close to limit, measure its QP value: vary the antenna's height and rotate the turntable from 0 to 360 degrees to find the height and degree where Product radiated the maximum emission, then set the test frequency analyzer/receiver to QP Detector and specified bandwidth with Maximum Hold Mode, and record the maximum value.

Above 1GHz:

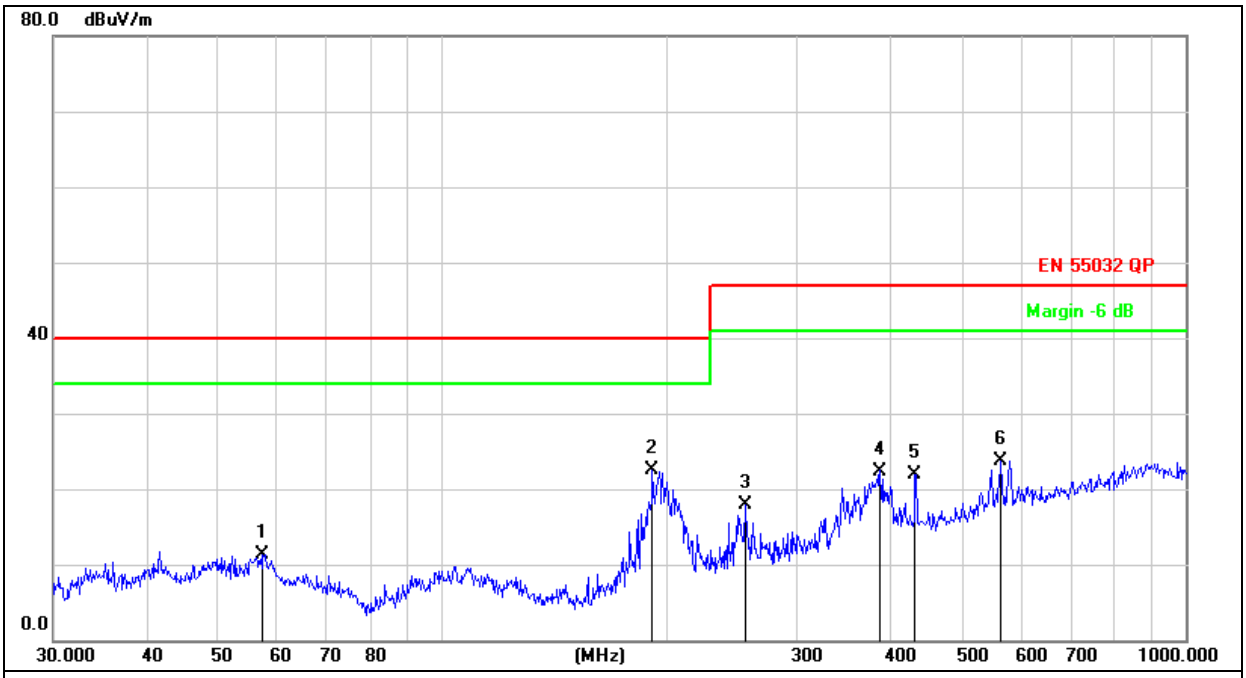
a. The Product was placed on the non-conductive turntable 0.8 m above the ground in a full anechoic chamber.

b. Set the spectrum analyzer/receiver in Peak detector, Max Hold mode, and 1MHz RBW. Record the maximum field strength of all the pre-scan process in the full band when the antenna is varied in both horizontal and vertical, and the turntable is rotated from 0 to 360 degrees.

c. For each frequency whose maximum record was higher or close to limit, measure its AV value: rotate the turntable from 0 to 360 degrees to find the degree where Product radiated the maximum emission, then set the test frequency analyzer/receiver to AV value and specified bandwidth with Maximum Hold Mode, and record the maximum value.

7.4 Test Results

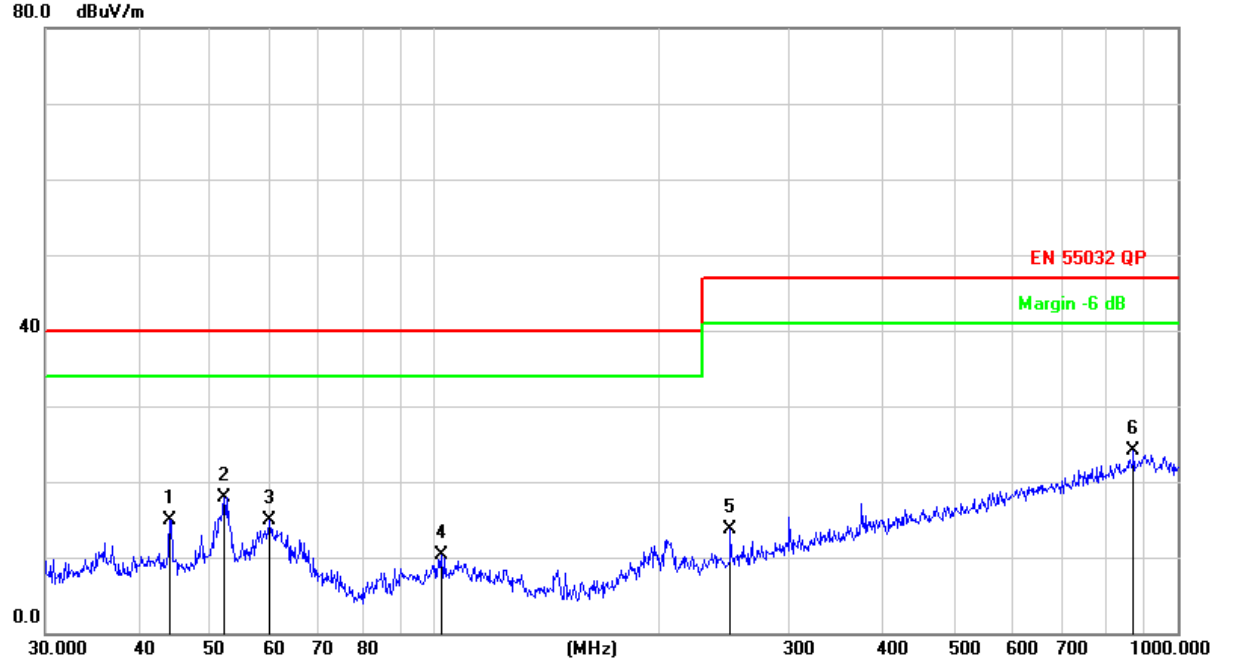
Temperature:	26℃	Relative Humidity:	54%
Pressure:	101KPa	Polarization :	Horizontal
Test Mode	Working	Remark:	N/A



Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		57.3923	25.82	-14.51	11.31	40.00	-28.69	QP
2	*	191.7450	38.32	-15.83	22.49	40.00	-17.51	QP
3		255.6231	31.84	-14.02	17.82	47.00	-29.18	QP
4		387.9920	32.41	-10.01	22.40	47.00	-24.60	QP
5		432.5457	30.91	-8.99	21.92	47.00	-25.08	QP
6		564.6389	29.67	-5.94	23.73	47.00	-23.27	QP

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Polarization :	Vertical
Test Mode	Working	Remark:	N/A



Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		44.1202	29.53	-14.59	14.94	40.00	-25.06	QP
2	*	52.2079	32.21	-14.21	18.00	40.00	-22.00	QP
3		60.0691	29.60	-14.68	14.92	40.00	-25.08	QP
4		102.3597	25.83	-15.62	10.21	40.00	-29.79	QP
5		250.3012	27.95	-14.22	13.73	47.00	-33.27	QP
6		872.1832	24.59	-0.55	24.04	47.00	-22.96	QP

Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.

8. IMMUNITY TEST OF GENERAL THE PERFORMANCE CRITERIA

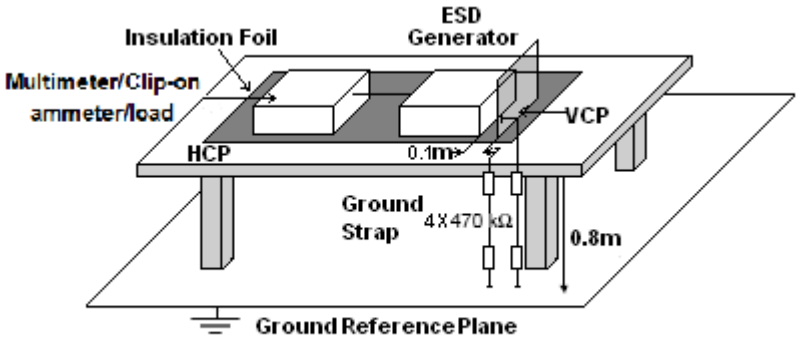
Product Standard	EN 55035:2017+A11:2020 clause 5
CRITERION A	The equipment shall continue to operate as intended without operator intervention. No degradation of performance, loss of function or change of operating state is allowed below a performance level specified by the manufacturer when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.
CRITERION B	During the application of the disturbance, degradation of performance is allowed. However, no unintended change of actual operating state or stored data is allowed to persist after the test. After the test, the equipment shall continue to operate as intended without operator intervention; no degradation of performance or loss of function is allowed, below a performance level specified by the manufacturer, when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level (or the permissible performance loss), or recovery time, is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.
CRITERION C	Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer’s instructions. A reboot or re-start operation is allowed. Information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

9. ELECTROSTATIC DISCHARGE (ESD)

9.1 Test Specification

Test Port	:	Enclosure port
Discharge Impedance	:	330 ohm / 150 pF
Discharge Mode	:	Single Discharge
Discharge Period	:	one second between each discharge

9.2 Block Diagram of Test Setup



9.3 Test Procedure

a. Electrostatic discharges were applied only to those points and surfaces of the Product that are accessible to users during normal operation.

b. The test was performed with at least ten single discharges on the pre-selected points in the most sensitive polarity.

c. The time interval between two successive single discharges was at least 1 second.

d. The ESD generator was held perpendicularly to the surface to which the discharge was applied and the return cable was at least 0.2 meters from the Product.

e. Contact discharges were applied to the non-insulating coating, with the pointed tip of the generator penetrating the coating and contacting the conducting substrate.

f. Air discharges were applied with the round discharge tip of the discharge electrode approaching the Product as fast as possible (without causing mechanical damage) to touch the Product. After each discharge, the ESD generator was removed from the Product and re-triggered for a new single discharge. The test was repeated until all discharges were complete.

g. At least ten single discharges (in the most sensitive polarity) were applied to the Horizontal Coupling Plane at points on each side of the Product. The ESD generator was

positioned vertically at a distance of 0.1 meters from the Product with the discharge electrode touching the HCP.

h. At least ten single discharges (in the most sensitive polarity) were applied to the center of one vertical edge of the Vertical Coupling Plane in sufficiently different positions that the four faces of the Product were completely illuminated. The VCP (dimensions 0.5m x 0.5m) was placed vertically to and 0.1 meters from the Product

9.4 Test Results

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101kPa	Test Mode:	Charging & BT Link
Test Voltage :	DC 5V & DC 3.7V		

Discharge Method	Discharge Position	Voltage (±kV)	Min. No. of Discharge per polarity (Each Point)	Required Level	Performance Criterion
Contact Discharge	Conductive Surfaces	4	10	B	A
	Indirect Discharge HCP	4	10	B	A
	Indirect Discharge VCP	4	10	B	A
Air Discharge	Slots, Apertures, and Insulating Surfaces	8	10	B	A
Note: N/A					

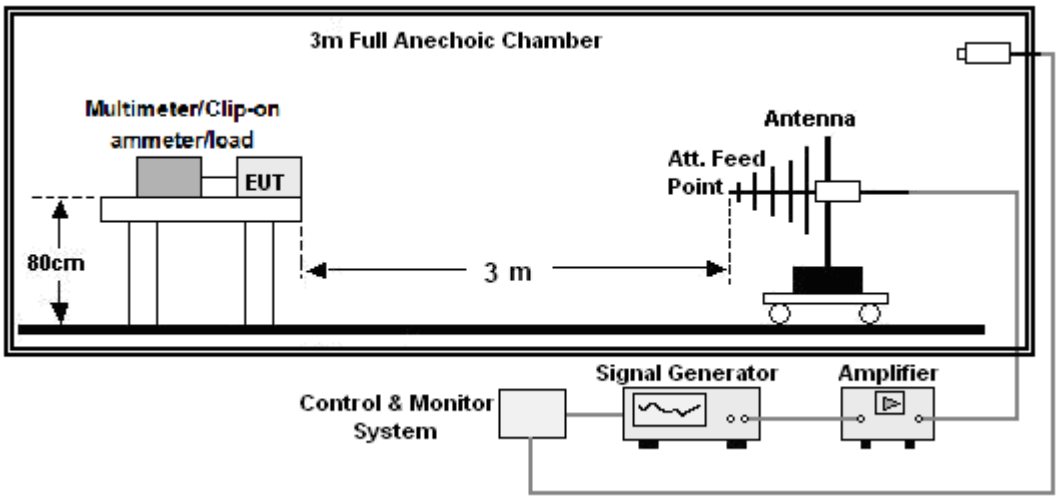
10. CONTINUOUS RF ELECTROMAGNETIC FIELD DISTURBANCES(RS)

10.1 Test Specification

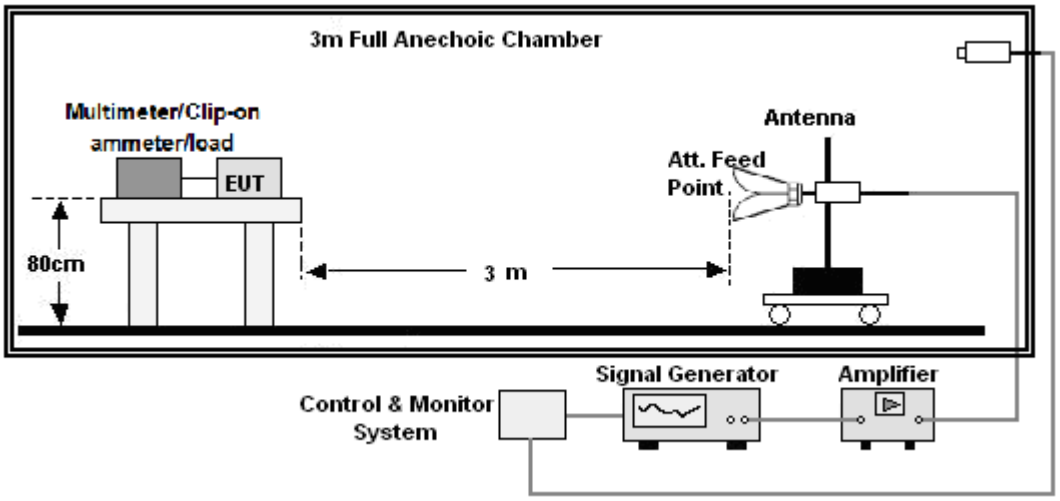
Test Port	:	Enclosure port
Step Size	:	1%
Modulation	:	1kHz, 80% AM
Dwell Time	:	1 second
Polarization	:	Horizontal & Vertical

10.2 Block Diagram of Test Setup

Below 1GHz:



Above 1GHz:



10.3 Test Procedure

a. The testing was performed in a fully-anechoic chamber. The transmit antenna was located at a distance of 3 meters from the Product.

b. The frequency range is swept from 80MHz to 1000MHz, 1800MHz, 2600MHz, 3500MHz, 5000MHz,with the signal 80% amplitude modulated with a 1 kHz sine wave, and the step size was 1%.

c. The dwell time at each frequency shall not be less than the time necessary for the EUT to be exercised and to be able to respond, but should not exceed 5 s at each of the frequencies during the scan.

d. The test was performed with the Product exposed to both vertically and horizontally polarized fields on each of the four sides.

e. For Broadcast reception function: Group 2 not apply in this test.

10.4 Test Results

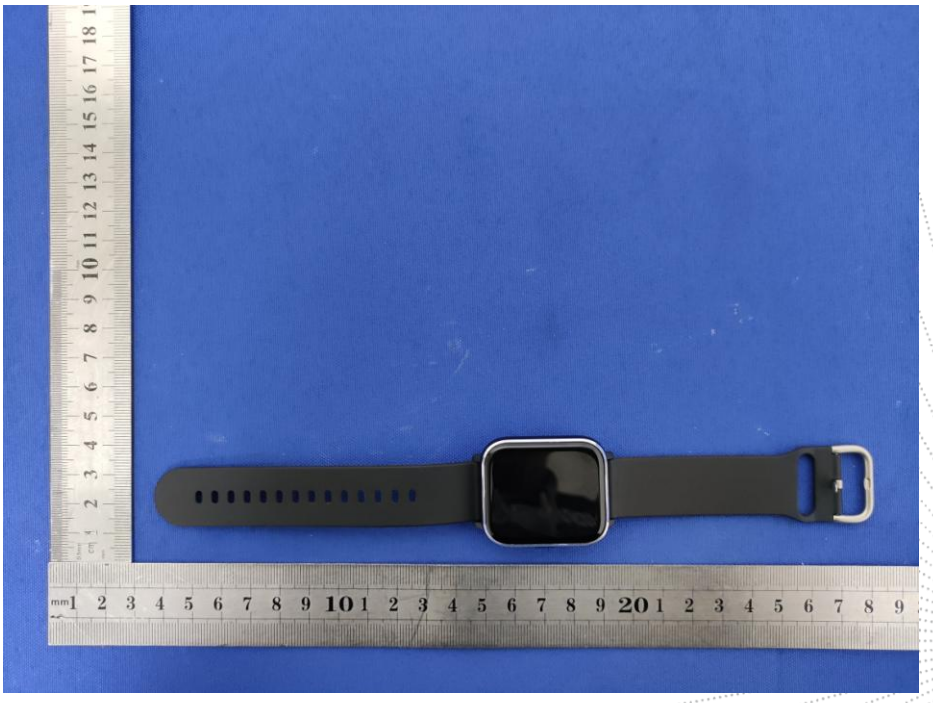
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101kPa	Test Mode:	Charging & BT Link
Test Voltage :	DC 5V & DC 3.7V		

Frequency	Position	Field Strength (V/m)	Required Level	Performance Criterion
80 - 1000MHz, 1800MHz, 2600MHz, 3500MHz, 5000MHz	Front, Right, Back, Left	3	A	A
Note: N/A				

11. EUT PHOTOGRAPHS

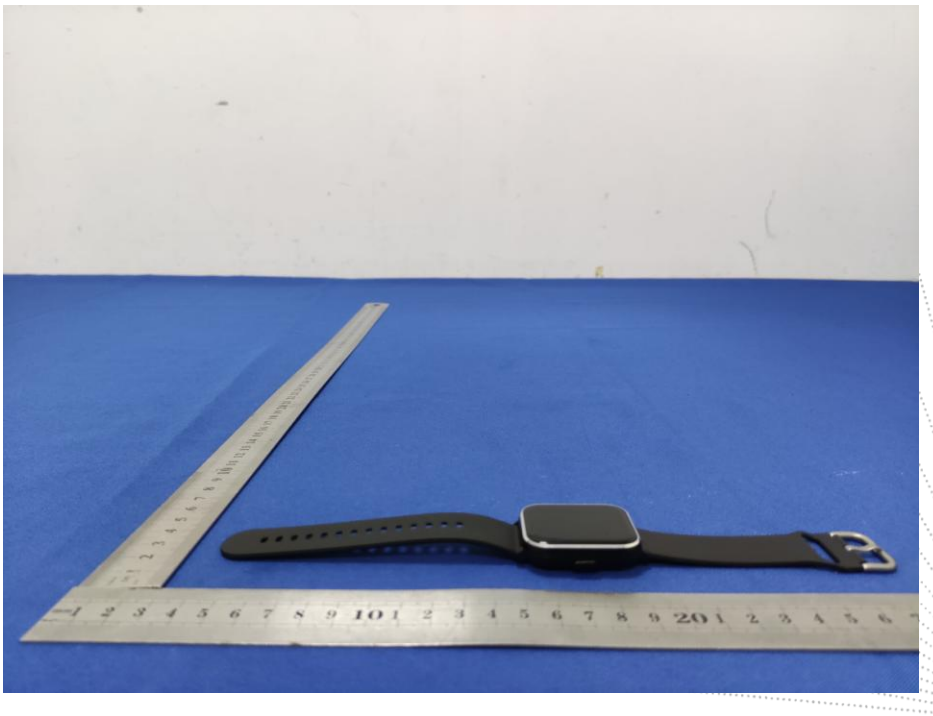
EUT Photo 1

EUT Photo 2

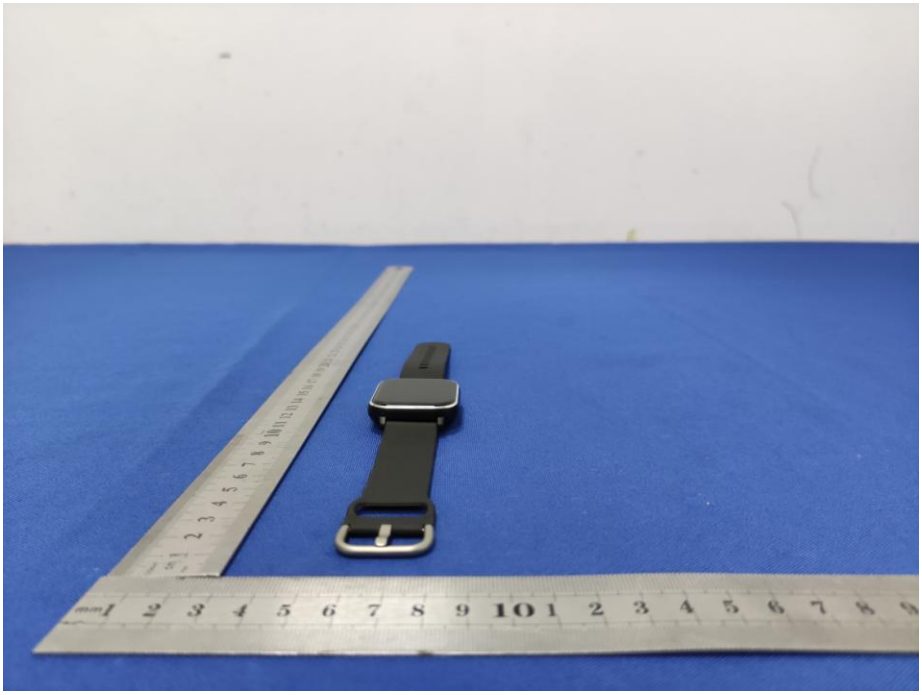


EUT Photo 3

EUT Photo 4



EUT Photo 5



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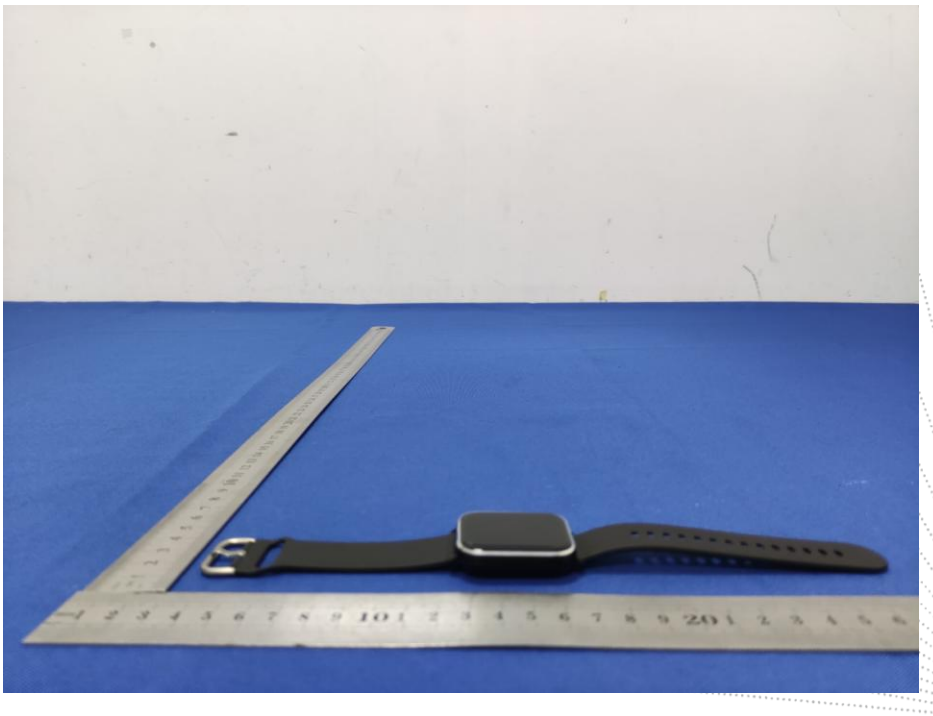

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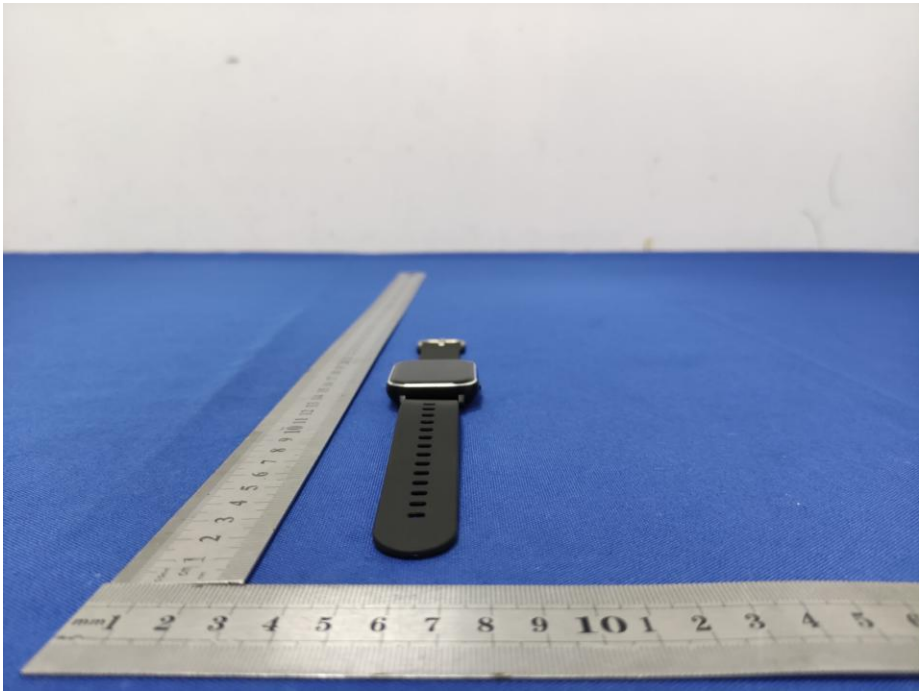

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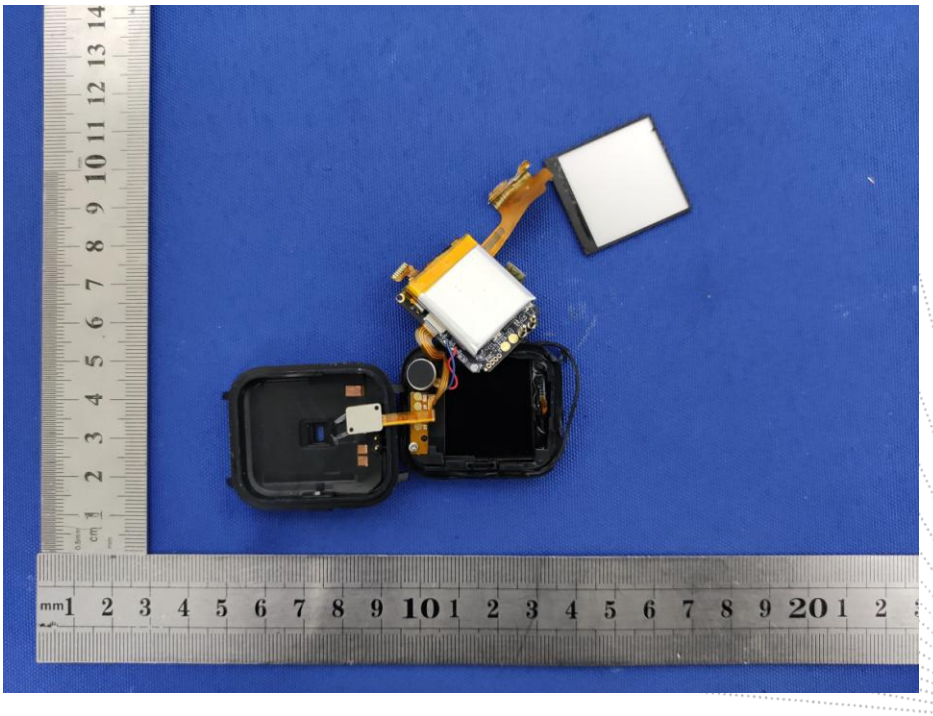

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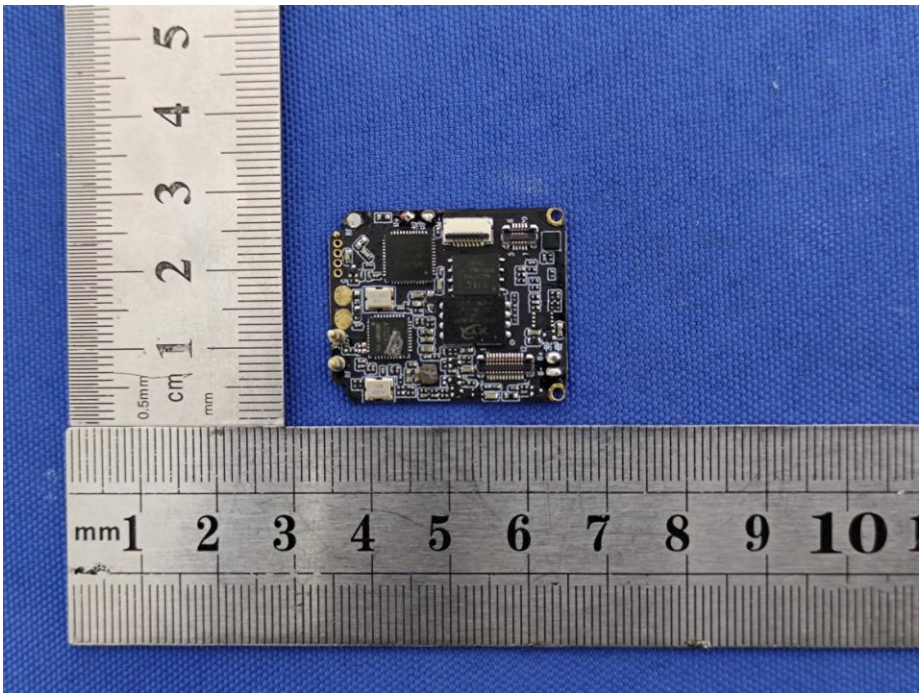

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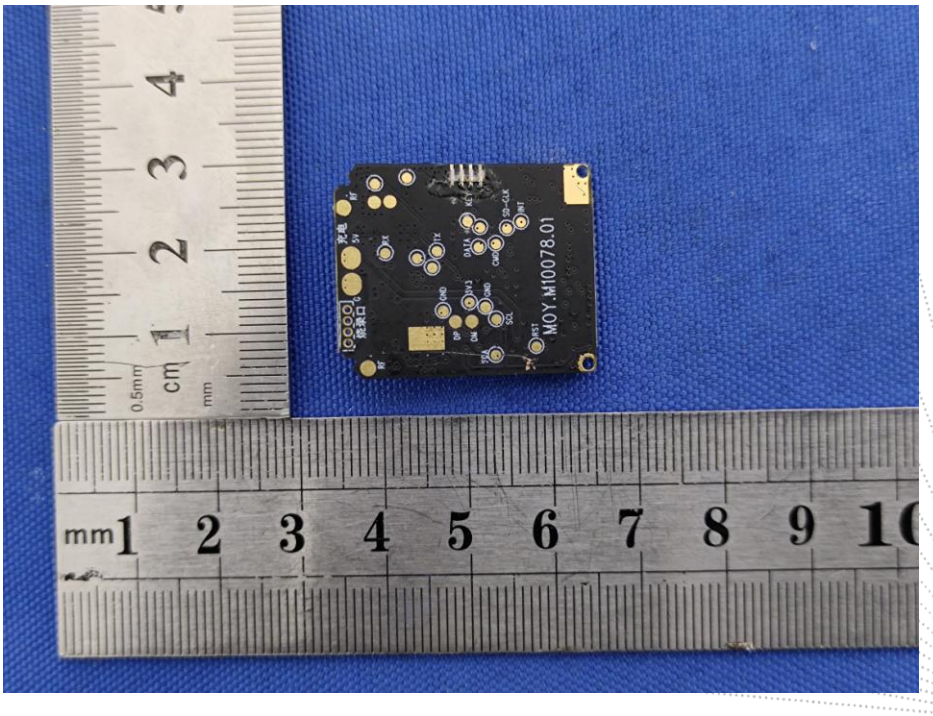
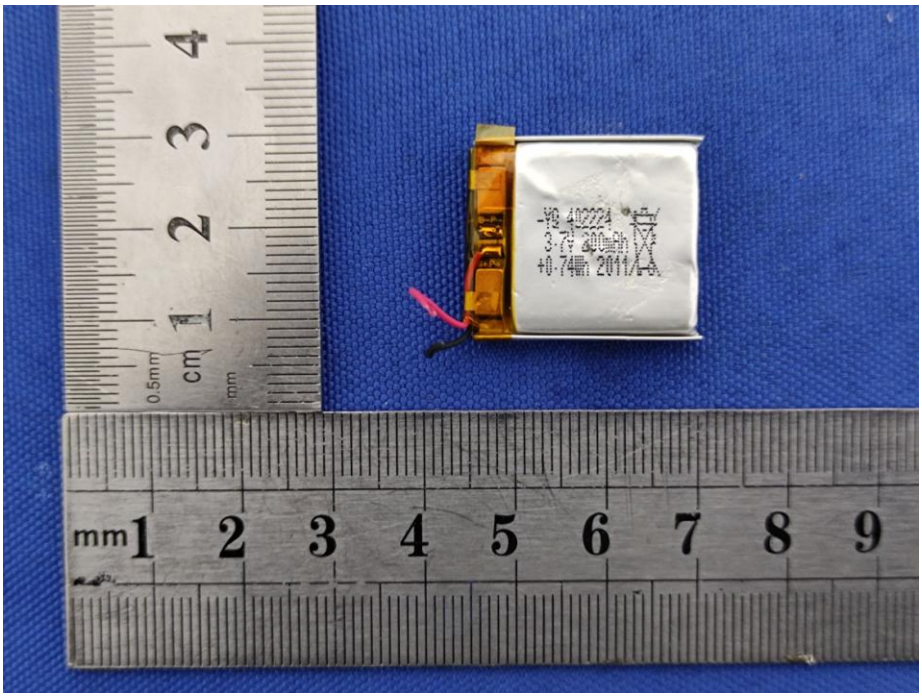


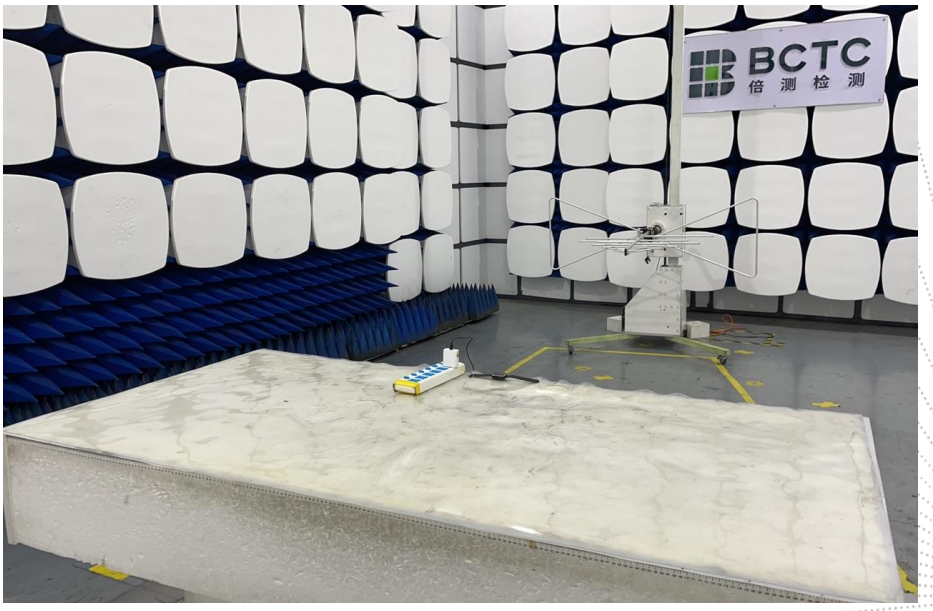
EUT Photo 11



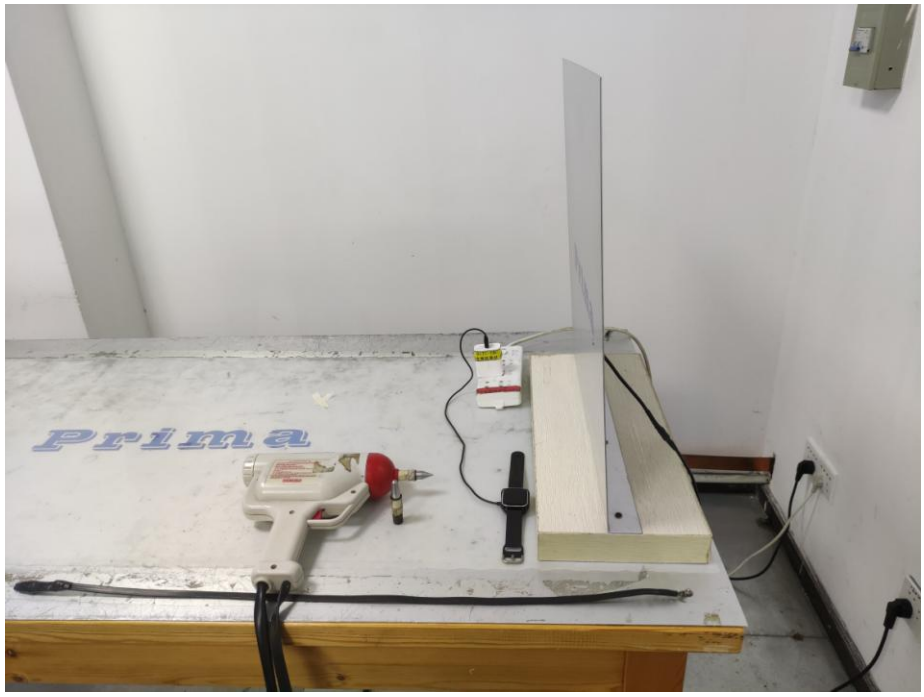
12. EUT TEST SETUP PHOTOGRAPHS

Conducted emissions

Radiated emissions



ESD



RS

STATEMENT

1.The equipment lists are traceable to the national reference standards.

2.The test report can not be partially copied unless prior written approval is issued from our lab.

3.The test report is invalid without stamp of laboratory.

4.The test report is invalid without signature of person(s) testing and authorizing.

5.The test process and test result is only related to the Unit Under Test.

6.The quality system of our laboratory is in accordance with ISO/IEC17025.

7.If there is any objection to report, the client should inform issuing laboratory within 15 days from the date of receiving test report.

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※※※※※ **END** ※※※※※