

## EMC TEST REPORT

### For

Prepared for :  
Address :

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Number of tested samples : 1  
Serial number : Prototype  
Date of Test : August 08, 2019 ~ August 30, 2019  
Date of Report : September 03, 2019



**EMC TEST REPORT****ETSI EN 301 489-17 V3.1.1(2017-02)**

ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements; Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU and the essential requirements of article 6 of Directive 2014/30/EU

**Report Reference No. .... : LCS190725062AEA**

**Date Of Issue ..... : September 03, 2019**

**Testing Laboratory Name..... : Shenzhen LCS Compliance Testing Laboratory Ltd.**

**Address..... : 101, 601, Xingyuan Industrial Park, Tongda Road, Bao' an Avenue, Bao' an District, Shenzhen, Guangdong, China**

**Testing Location/ Procedure..... : Full application of Harmonised standards ☒  
Partial application of Harmonised standards ☐  
Other standard testing method ☐**

**Applicant's Name..... : Dongguan Xing Yue Electronic co., Ltd**

**Address..... : #98 LiWu Swan Industrial District, Qiao Tou Town, Dong Guan City, Guang Dong, China**

**Test Specification**

**Standard..... : ETSI EN 301 489-1 V2.1.1 (2017-02)  
ETSI EN 301 489-17 V3.1.1(2017-02)**

**Test Report Form No. .... : LCSEMC-1.0**

**TRF Originator ..... : Shenzhen LCS Compliance Testing Laboratory Ltd.**

**Master TRF..... : Dated 2017-06**

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**Test Item Description. .... : True wireless earbuds**

**Trade Mark ..... : N/A**

**Test Model..... : XO-9606-1**

**Ratings..... : DC 3.7V by Battery(35mAh)  
Recharge Voltage: DC 5V**

**Result ..... : Positive**

**Compiled by:**

*Camille Li*

Camille Li / File administrators

**Supervised by:**

*Aking Jin*

Aking Jin/ Technique principal

**Approved by:**

*Gavin Liang*

Gavin Liang/ Manager

## EMC -- TEST REPORT

**Test Report No. : LCS190725062AEA**September 03, 2019

Date of issue

Test Model..... : XO-9606-1

EUT..... : True wireless earbuds

**Applicant..... :**

Address..... :

Telephone..... :

Fax..... :

**Manufacturer..... :**

Address..... :

Telephone..... :

Fax..... :

**Factory..... :**

Address..... :

Telephone..... :

Fax..... : /

**Test Result****Positive**

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

## Revision History

Revision	Issue Date	Revisions	Revised By
000	September 03, 2019	Initial Issue	Gavin Liang

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## 1. GENERAL INFORMATION

### 1.1. Product Description for Equipment Under Test (EUT)

EUT	: True wireless earbuds
Test Model	: XO-9606-1
Additional Model No.	: N/A
Model Declaration	: PCB board, structure and internal of these model(s) are the same, So no additional models were tested.
Power Supply	: DC 3.7V by Battery(35mAh) Recharge Voltage: DC 5V
Hardware Version	: /
Software Version	: /
Bluetooth	
Frequency Range	: 2.402-2.480GHz
Channel Number	: 79 channels for Bluetooth V5.0 (BDR/EDR)
Channel Spacing	: 1MHz for Bluetooth V5.0 (BDR/EDR)
Modulation Type	: GFSK, $\pi/4$ -DQPSK for Bluetooth V5.0 (BDR/EDR)
Bluetooth Version	: V5.0
Antenna Description	: PCB Antenna, 0dBi (Max.)

### 1.2. Objective

ETSI EN 301 489-1	ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements; Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU and the essential requirements of article 6 of Directive 2014/30/EU
ETSI EN 301 489-17	ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for Broadband Data Transmission Systems; Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU

The objective is to determine compliance with ETSI EN 301 489-1 V2.1.1 (2017-02) and ETSI EN 301 489-17 V3.1.1(2017-02) .

### 1.3. Related Submittal(s)/Grant(s)

No Related Submittals.

### 1.4. Test Methodology

All measurements contained in this report were conducted with ETSI EN 301 489-1 V2.1.1 (2017-02) and ETSI EN 301 489-17 V3.1.1(2017-02) , EN 55032:2015, EN 55035:2017.

### 1.5. Description of Test Facility

FCC Registration Number is 254912.

Industry Canada Registration Number is 9642A-1.

EMSD Registration Number is ARCB0108.

UL Registration Number is 100571-492.

TUV SUD Registration Number is SCN1081.

TUV RH Registration Number is UA 50296516-001.

NVLAP Accreditation Code is 600167-0.

FCC Designation Number is CN5024.

CAB identifier: CN0071

### 1.6. Support equipment List

Manufacturer	Description	Model	Serial Number	Certificate
Lenovo	Notebook	B470	WB05067151	CE
Lenovo	AC/DC ADAPTER	ADP-90DD B	36001941	CE

### 1.7. External I/O

I/O Port Description	Quantity	Cable
--	--	--



### 1.8. Measurement Uncertainty

Item	MU	Remark
Uncertainty for Power point Conducted Emissions Test	2.42dB	
Uncertainty for Radiation Emission test in 3m chamber (30MHz to 1GHz)	3.54dB	Polarize: V
	4.1dB	Polarize: H
Uncertainty for Radiation Emission test in 3m chamber (1GHz to 25GHz)	2.08dB	Polarize: H
	2.56dB	Polarize: V
Uncertainty for radio frequency	0.01ppm	
Uncertainty for conducted RF Power	0.65dB	
Uncertainty for temperature	0.2℃	
Uncertainty for humidity	1%	
Uncertainty for DC and low frequency voltages	0.06%	

### 1.9. Description Of Test Modes

There was 3 test Modes. TM1 to TM3 were shown below:

TM1: Operate in BT mode.

TM2: Charging mode.

TM3: Idle mode.

\*\*\*Note:

All test modes were tested, but we only recorded the worst case in this report.



## 2. SUMMARY OF TEST RESULTS

Rule	Description of Test Items	Result
§7.1	Reference to clauses EN 301 489-1 §8.4 AC mains power input/output ports	Compliant
§7.1	Reference to clauses EN 301 489-1 §8.3 DC power input/output ports	N/A
§7.1	Reference to clauses EN 301 489-1 §8.2 Enclosure of ancillary equipment measured on a stand alone basis	Compliant
§7.1	Reference to clauses EN 301 489-1 §8.5 Harmonic current emissions (AC mains input port)	N/A
§7.1	Reference to clauses EN 301 489-1 §8.6 Voltage fluctuations and flicker (AC mains input port)	N/A
§7.1	Reference to clauses EN 301 489-1 §8.7 Telecommunication ports	N/A
§7.2	Reference to clauses EN 301 489-1 §9.3 Electrostatic discharge (EN 61000-4-2)	Compliant
§7.2	Reference to clauses EN 301 489-1 §9.2 Radio frequency electromagnetic field (80 MHz to 6 000 MHz)(EN 61000-4-3)	Compliant
§7.2	Reference to clauses EN 301 489-1 §9.4 Fast transients, common mode (EN 61000-4-4)	N/A
§7.2	Reference to clauses EN 301 489-1 §9.8 Surges (EN 61000-4-5)	N/A
§7.2	Reference to clauses EN 301 489-1 §9.5 Radio frequency, common mode (EN 61000-4-6)	N/A
§7.2	Reference to clauses EN 301 489-1 §9.6 Transients and surges in the vehicular environment (ISO 7637-2)	N/A
§7.2	Reference to clauses EN 301 489-1 §9.7 Voltage dips and interruptions (EN 61000-4-11)	N/A

### 3. LINE CONDUCTED EMISSION

#### 3.1. Conducted Emission Limit

ETSI EN 301 489-1 V2.1.1 (2017-02)/EN 55032

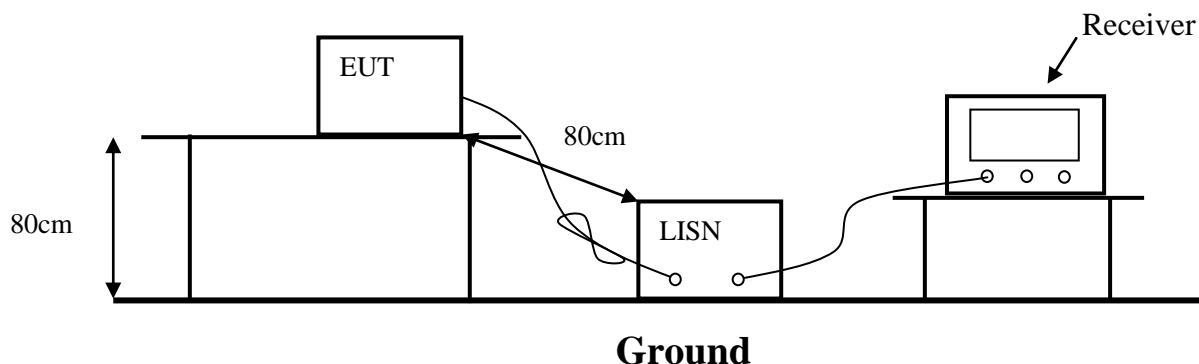
##### Limits for Line Conducted Emission

Frequency (MHz)	Limit (dB $\mu$ V)	
	Quasi-peak Level	Average Level
0.15~0.50	66.0 ~ 56.0 *	56.0 ~ 46.0 *
0.50~5.00	56.0	46.0
5.00~30.00	60.0	50.0

NOTE1-The lower limit shall apply at the transition frequencies.

NOTE2-The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.

#### 3.2. Test Configuration



The setup of EUT is according with per ETSI EN 301 489-1 measurement procedure. The specification used was with the ETSI EN 301 489-1 limits.

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.

The EUT received DC 5V charging power from the notebook which received power through a LISN supplying power of AC 230V/50Hz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	30MHz~1000MHz
(IF)RB	9kHz

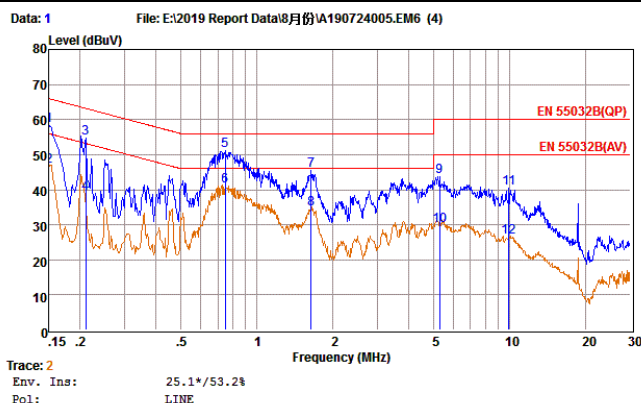
All data was recorded in the Quasi-peak and average detection mode.

Marked on both the 6 highest Quasi-Peak & 6 highest Average emissions points of the EUT.

### 3.3. Test Data

For pre-scan, the worst test case is TM1, and the test data was show as follow:

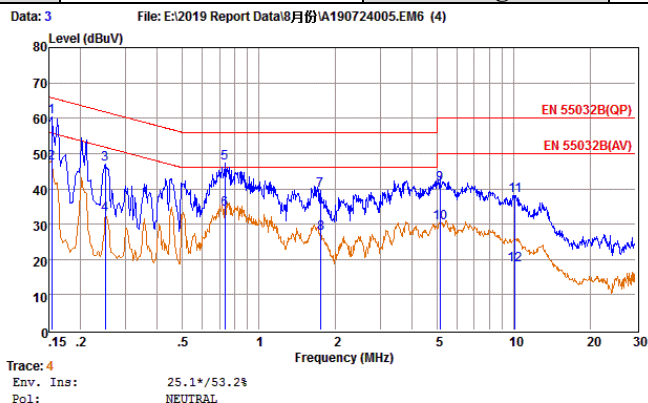
Model No.	XO-9606-1	Test Mode	TM1
Environmental Conditions	25.1℃, 53.2% RH	Test Engineer	Scent Hu
Pol	Line	Test Voltage	AC 230V/50Hz



	Freq	Reading	LISNFac	CabLos	Aux2Fac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dB	
1	0.15	38.75	9.57	0.02	10.00	58.34	66.00	-7.66	QP
2	0.15	26.96	9.57	0.02	10.00	46.55	55.99	-9.44	Average
3	0.21	35.06	9.63	0.03	10.00	54.72	63.18	-8.46	QP
4	0.21	19.37	9.63	0.03	10.00	39.03	53.18	-14.15	Average
5	0.75	31.36	9.64	0.04	10.00	51.04	56.00	-4.96	QP
6	0.75	21.48	9.64	0.04	10.00	41.16	46.00	-4.84	Average
7	1.64	25.70	9.64	0.05	10.00	45.39	56.00	-10.61	QP
8	1.64	14.95	9.64	0.05	10.00	34.64	46.00	-11.36	Average
9	5.28	24.01	9.65	0.06	10.00	43.72	60.00	-16.28	QP
10	5.28	10.01	9.65	0.06	10.00	29.72	50.00	-20.28	Average
11	9.91	20.75	9.69	0.08	10.00	40.52	60.00	-19.48	QP
12	9.91	6.70	9.69	0.08	10.00	26.47	50.00	-23.53	Average

Remarks: 1. Measured = Reading + LISNFac + Cable Loss + Aux2 Fac.  
2. The emission levels that are 20dB below the official limit are not reported.

Model No.	XO-9606-1	Test Mode	TM1
Environmental Conditions	25.1℃, 53.2% RH	Test Engineer	Scent Hu
Pol	Neutral	Test Voltage	AC 230V/50Hz



	Freq	Reading	LISNFac	CabLos	Aux2Fac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dB	
1	0.15	40.58	9.69	0.02	10.00	60.29	65.78	-5.49	QP
2	0.15	27.46	9.69	0.02	10.00	47.17	55.77	-8.60	Average
3	0.25	27.22	9.60	0.03	10.00	46.85	61.78	-14.93	QP
4	0.25	13.15	9.60	0.03	10.00	32.78	51.77	-18.99	Average
5	0.74	27.75	9.63	0.04	10.00	47.42	56.00	-8.58	QP
6	0.74	14.47	9.63	0.04	10.00	34.14	46.00	-11.86	Average
7	1.74	19.99	9.63	0.05	10.00	39.67	56.00	-16.33	QP
8	1.75	7.58	9.63	0.05	10.00	27.26	46.00	-18.74	Average
9	5.14	21.64	9.66	0.06	10.00	41.36	60.00	-18.64	QP
10	5.14	10.50	9.66	0.06	10.00	30.22	50.00	-19.78	Average
11	10.13	18.37	9.72	0.08	10.00	38.17	60.00	-21.83	QP
12	10.13	-1.26	9.72	0.08	10.00	18.54	50.00	-31.46	Average

Remarks: 1. Measured = Reading + LISNFac + Cable Loss + Aux2 Fac.  
2. The emission levels that are 20dB below the official limit are not reported.

Note: For conducted emission test, a power supply of 230VAC and 120VAC were used for testing respectively, and only recorded the worst case of 230VAC.

4. RADIATED DISTURBANCE

4.1. Radiated Emission Limit

ETSI EN 301 489-1 V2.1.1 (2017-02)/EN 55032 Class B

Limits for radiated disturbance Blow 1GHz

FREQUENCY (MHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMIT (dBμV/m)
30 ~ 230	3	40
230 ~ 1000	3	47

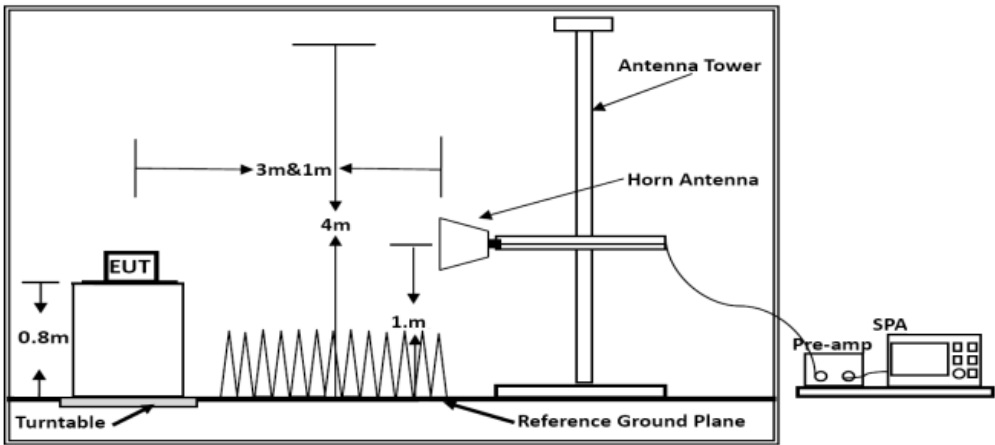
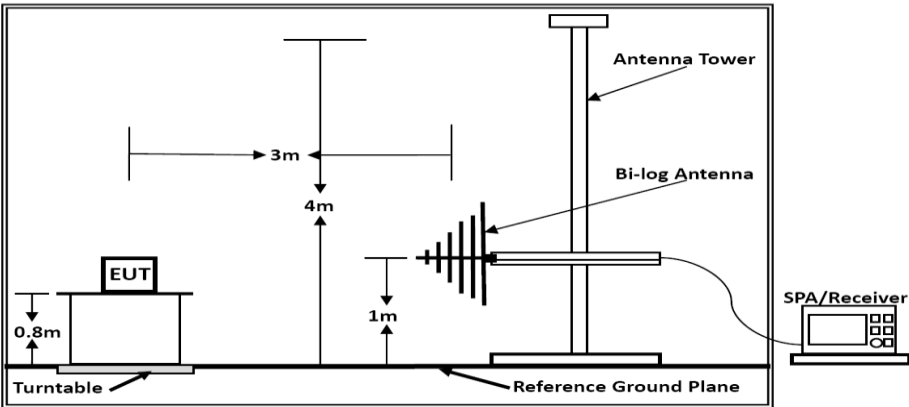
Note: (1) The smaller limit shall apply at the combination point between two frequency bands. (2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the EUT.

Limits for radiated disturbance Above 1GHz

FREQUENCY (MHz)	DISTANCE (Meters)	Average Limit (dBμV/m)	Peak Limit (dBμV/m)
1000-3000	3	50	70
3000-6000	3	54	74

Note: The lower limit applies at the transition frequency.

4.2. Test Configuration



Above 1000MHz

#### 4.3. Test Procedure

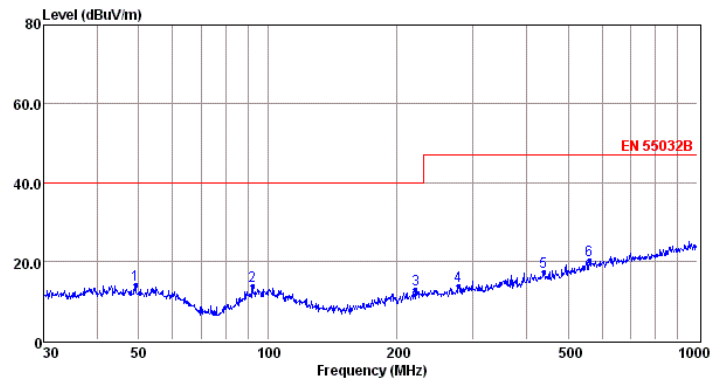
Please refer to ETSI EN 301 489-1 Clause 8.2.3 and EN 55032 Annex A.2 for the measurement methods.

#### 4.4. Test Data

The worst test mode of the EUT was TM1, and its test data was showed as the follow:

<b>Model No.</b>	XO-9606-1	<b>Test Mode</b>	TM1
<b>Environmental Conditions</b>	24.1°C, 54.7% RH	<b>Detector Function</b>	Quasi-peak
<b>Pol</b>	Vertical	<b>Distance</b>	3m
<b>Test Engineer</b>	Scent Hu		

Data: 2 File: E:\2019 Test Report\8月份\190724005.EM6 (2)

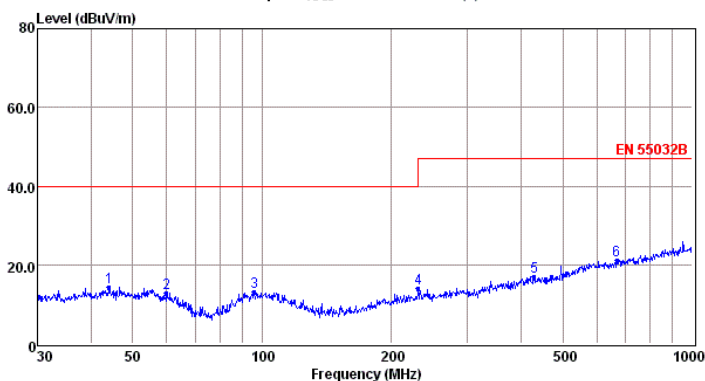
Env./Ins: 24.1°C/54.7%  
pol: VERTICAL

	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	49.19	0.28	0.35	13.30	13.93	40.00	-26.07	QP
2	92.14	0.80	0.56	12.30	13.66	40.00	-26.34	QP
3	220.62	0.61	0.95	11.23	12.79	40.00	-27.21	QP
4	278.07	-0.07	1.01	12.61	13.55	47.00	-33.45	QP
5	438.66	0.44	1.27	15.55	17.26	47.00	-29.74	QP
6	560.69	1.14	1.43	17.71	20.28	47.00	-26.72	QP

Note: 1. All readings are Quasi-peak values.  
 2. Measured= Reading + Antenna Factor + Cable Loss  
 3. The emission that are 20db below the official limit are not reported

<b>Model No.</b>	XO-9606-1	<b>Test Mode</b>	TM1
<b>Environmental Conditions</b>	23.7°C, 54.1% RH	<b>Detector Function</b>	Quasi-peak
<b>Pol</b>	Horizontal	<b>Distance</b>	3m
<b>Test Engineer</b>	Scent Hu		

Data: 1 File: E:\2019 Test Report\8月份\190724005.EM6 (2)

Env./Ins: 24.1°C/54.7%  
pol: HORIZONTAL

	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	44.12	0.23	0.41	13.56	14.20	40.00	-25.80	QP
2	59.86	-0.28	0.49	12.70	12.91	40.00	-27.09	QP
3	95.76	-0.24	0.58	12.89	13.23	40.00	-26.77	QP
4	230.91	1.25	0.98	11.69	13.92	47.00	-33.08	QP
5	429.52	0.28	1.28	15.51	17.07	47.00	-29.93	QP
6	668.14	0.57	1.71	18.70	20.98	47.00	-26.02	QP

Note: 1. All readings are Quasi-peak values.  
 2. Measured= Reading + Antenna Factor + Cable Loss  
 3. The emission that are 20db below the official limit are not reported

<b>Test Mode:</b> TM1(above 1GHz)	<b>Tested by:</b> Scent Hu
<b>Test voltage:</b> DC 3.7V	<b>Test Distance:</b> 3m
<b>Detector Function:</b> Peak+AV	<b>Test Results:</b> Passed

Frequency MHz	Emission Level dB $\mu$ V/m		Limits dB $\mu$ V/m		Margin dB $\mu$ V/m		Polarization
	Peak	AV	Peak	AV	Peak	AV	
1284.93	54.89	38.28	70.00	50.00	-15.11	-11.72	H
1830.92	56.86	32.64	70.00	50.00	-13.14	-17.36	H
2159.21	53.62	36.88	70.00	50.00	-16.38	-13.12	H
3251.64	54.39	40.00	74.00	54.00	-19.61	-14.00	H
4477.08	52.29	34.48	74.00	54.00	-21.71	-19.52	H
5701.77	52.26	33.67	74.00	54.00	-21.74	-20.33	H
1285.15	54.58	37.85	70.00	50.00	-15.42	-12.15	V
1831.03	57.29	32.67	70.00	50.00	-12.71	-17.33	V
2160.30	53.78	37.27	70.00	50.00	-16.22	-12.73	V
3251.43	53.50	40.55	74.00	54.00	-20.50	-13.45	V
4477.65	53.30	34.65	74.00	54.00	-20.70	-19.35	V
5701.50	53.10	33.54	74.00	54.00	-20.90	-20.46	V



## 5. GENERAL PERFORMANCE CRITERIA FOR IMMUNITY TEST

### 5.1. Performance criteria for Continuous phenomena applied to Transmitter (CT)

For equipment of type II or type III that requires a communication link that is maintained during the test, it shall be verified by appropriate means supplied by the manufacturer that the communication link is maintained during each individual exposure in the test sequence.

Where the EUT is a transmitter, tests shall be repeated with the EUT in standby mode to ensure that any unintentional transmission does not occur.

### 5.2. Performance criteria for Transient phenomena applied to Transmitter (TT)

For equipment of type II or type III that requires a communication link that is maintained during the test, this shall be verified by appropriate means supplied by the manufacturer during each individual exposure in the test sequence. Where the EUT is a transmitter, tests shall be repeated with the EUT in standby mode to ensure that any unintentional transmission does not occur.

### 5.3. Performance criteria for Continuous phenomena applied to Receiver (CR)

For equipment of type II or III that requires a communication link that is maintained during the test, it shall be verified by appropriate means supplied by the manufacturer that the communication link is maintained during each individual exposure in the test sequence. Where the EUT is a transceiver, under no circumstances shall the transmitter operate unintentionally during the test.

### 5.4. Performance criteria for Transient phenomena applied to Receiver (TR)

For equipment of type II or type III that requires a communication link that is maintained during the test, this shall be verified by appropriate means supplied by the manufacturer during each individual exposure in the test sequence. Where the EUT is a transceiver, under no circumstances shall the transmitter operate unintentionally during the test.

**Performance criteria for ETSI EN 301 489-17 V3.1.1 (2017-02)**

Criteria	During test	After test
A	Shall operate as intended. May show degradation of performance(see note 1). Shall be no loss of function. Shall be no unintentional transmissions.	Shall operate as intended. Shall be no degradation of performance (see note 2). Shall be no loss of function. Shall be no loss of stored data or user programmable functions.
B	May show loss of function (one or more). May show degradation of performance(see note 1). No unintentional transmissions.	Functions shall be self-recoverable. Shall operate as intended after recovering. Shall be no degradation of performance (see note 2). Shall be no loss of stored data or user programmable functions.
C	May be loss of function (one or more).	Functions shall be recoverable by the operator. Shall operate as intended after recovering. Shall be no degradation of performance (see note 2).

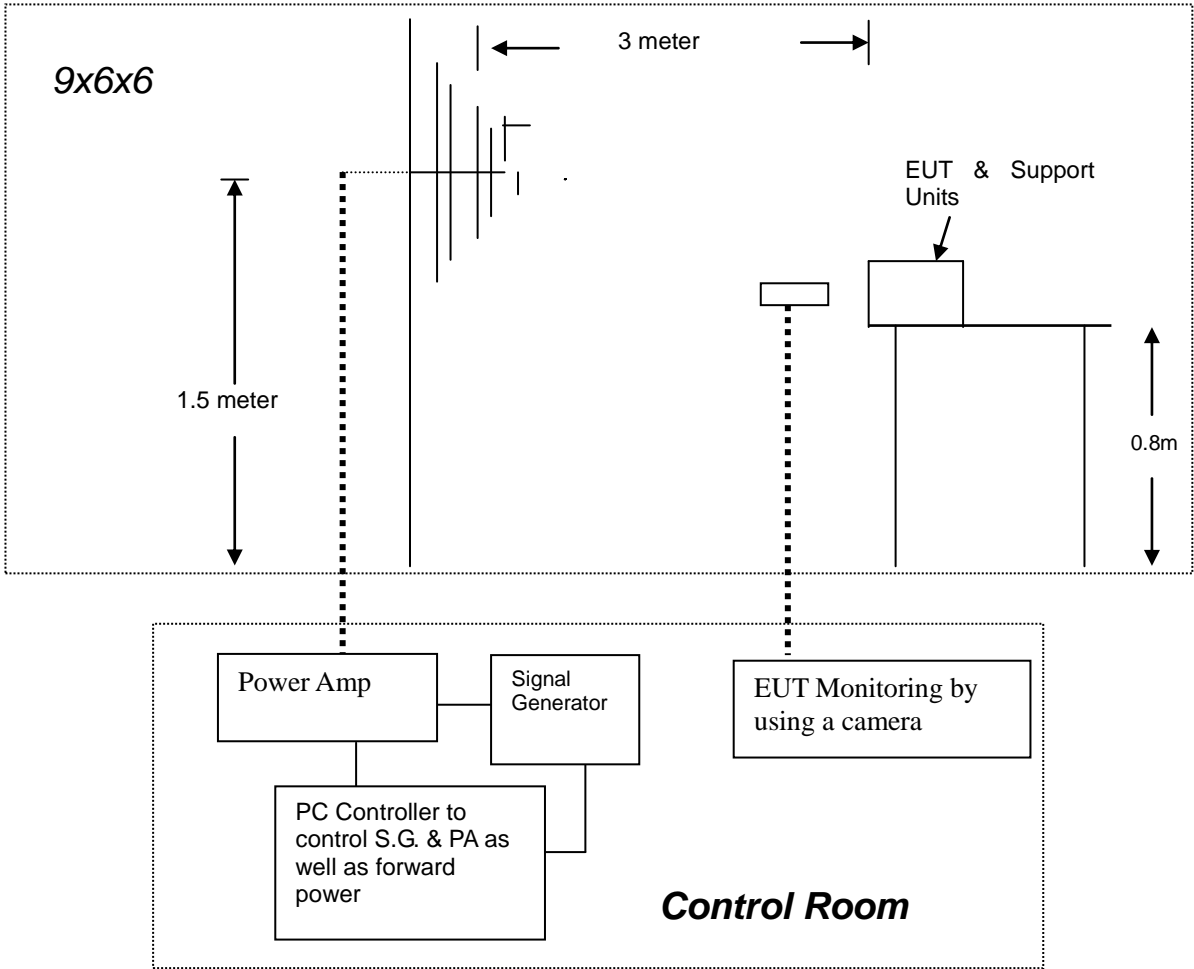
NOTE 1: Degradation of performance during the test is understood as a degradation to a level not below a minimum performance level specified by the manufacturer for the use of the apparatus as intended. In some cases the specified minimum performance level may be replaced by a permissible degradation of performance. If the minimum performance level or the permissible performance degradation is not specified by the manufacturer then either of these may be derived from the product description and documentation (including leaflets and advertising) and what the user may reasonably expect from the apparatus if used as intended.

NOTE 2: No degradation of performance after the test is understood as no degradation below a minimum performance level specified by the manufacturer for the use of the apparatus as intended. In some cases the specified minimum performance level may be replaced by a permissible degradation of performance. After the test no change of actual operating data or user retrievable data is allowed.

If the minimum performance level or the permissible performance degradation is not specified by the manufacturer then either of these may be derived from the product description and documentation (including leaflets and advertising) and what the user may reasonably expect from the apparatus if used as intended.

6. RF ELECTROMAGNETIC FIELD (80 MHZ -6000 MHZ)

6.1. Test Configuration



## 6.2. Test Standard

ETSI 301 489-1, EN 301 489-17(EN 61000-4-3: 2006+A1: 2008+A2: 2010)

Test level 2 at 3V / m.

## 6.3. Severity Level

Level	Field Strength V/m
1.	1
2.	3
3.	10
X	Special

Performance criterion: A

## 6.4. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. EUT is set 3 meter away from the transmitting antenna which is mounted on an antenna tower. Both horizontal and vertical polarization of the antenna are set on test. Each of the four sides of EUT must be faced this transmitting antenna and measured individually. In order to judge the EUT performance, a CCD camera is used to monitor EUT screen. All the scanning conditions are as follows:

Condition of Test	Remarks
1. Fielded Strength	3 V/m (Severity Level 2)
2. Radiated Signal	Unmodulated
3. Scanning Frequency	80 - 6000 MHz
4. Dwell time of radiated	0.0015 decade/s
5. Waiting Time	3 Sec.

## 6.5. Test Result

RF ELECTROMAGNETIC FIELD			
Standard	<input type="checkbox"/> IEC 61000-4-3 <input checked="" type="checkbox"/> EN 61000-4-3		
Applicant	Dongguan Xing Yue Electronic co., Ltd		
EUT	True wireless earbuds	Temperature	24.3℃
M/N	XO-9606-1	Humidity	53.7%
Test Mode	TM1-TM3	Criterion	B
Test Engineer	Scent Hu		

## Bluetooth Test Result:

EUT Working Mode	Antenna Polarity	Frequency (MHz)	Field Strength (V/m)	Observation	Position	Conclusion
Operating Mode	Vertical	80--6000	3	CT,CR	Front, Right, Left, Back	Pass
	Horizontal	80--6000	3	CT,CR	Front, Right, Left, Back	Pass
Idle	Vertical	80--6000	3	See Note	Front, Right, Left, Back	Pass
	Horizontal	80--6000	3	See Note	Front, Right, Left, Back	Pass

## TM2-TM3 Test Result:

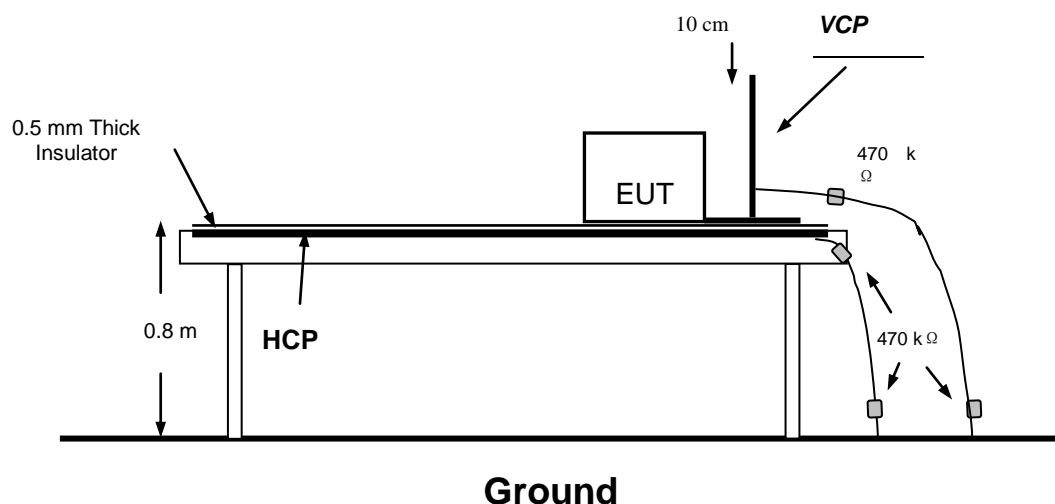
EUT Working Mode	Antenna Polarity	Frequency (MHz)	Field Strength (V/m)	Observation	Position	Conclusion
Operating Mode	Vertical	80--6000	3	See Note	Front, Right, Left, Back	Pass
	Horizontal	80--6000	3	See Note	Front, Right, Left, Back	Pass
Idle	Vertical	80--6000	3	See Note	Front, Right, Left, Back	Pass
	Horizontal	80--6000	3	See Note	Front, Right, Left, Back	Pass

\*\*\*Note: Unintentional transmission is not founded from the EUT.

## 7. ELECTROSTATIC DISCHARGE

Please refer to ETSI EN 301 489-1 and EN 61000-4-2.

### 7.1. Test Configuration



EN 61000-4-2 specifies that a tabletop EUT shall be placed on a non-conducting table which is 80 centimeters above a ground reference plane and that floor mounted equipment shall be placed on a insulating support approximately 10 centimeters above a ground plane. During the tests, the EUT is positioned over a ground reference plane in conformance with this requirement.

For tabletop equipment, a 1.5 by 1.0-meter metal sheet (HCP) is placed on the table and connected to the ground plane via a metal strap with two 470 k Ohms resistors in series. The EUT and attached cables are isolated from this metal sheet by 0.5-millimeter thick insulating material. A Vertical Coupling Plane (VCP) grounded on the ground plane through the same configuration as in the HCP is used.

## 7.2. Test Procedure

ETSI EN 301 489-1 V2.1.1 (2017-02)/ EN 61000-4-2: 2009

Test level 3 for Air Discharge at  $\pm 8$  kV

Test level 2 for Contact Discharge at  $\pm 4$  kV

### 7.2.1. Air Discharge

This test is done on a non-conductive surface. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT. After each discharge, the discharge electrode shall be removed from the EUT. The generator is then re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

### 7.2.2. Contact Discharge

All the procedure shall be same as Section 7.2.1. except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

### 7.2.3. Indirect Discharge For Horizontal Coupling Plane

At least 10 single discharges (in the most sensitive polarity) shall be applied at the front edge of each HCP opposite the center point of each unit (if applicable) of the EUT and 0.1m from the front of the EUT. The long axis of the discharge electrode shall be in the plane of the HCP and perpendicular to its front edge during the discharge.

### 7.2.4. Indirect Discharge For Vertical Coupling Plane

At least 10 single discharges (in the most sensitive polarity) shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

## 7.3. Test Data

**PASS.**

# Electrostatic Discharge Test Results

<b>Standard</b>	<input type="checkbox"/> IEC 61000-4-2 <input checked="" type="checkbox"/> EN 61000-4-2		
<b>Applicant</b>	Dongguan Xing Yue Electronic co., Ltd		
<b>EUT</b>	True wireless earbuds	<b>Temperature</b>	24.6℃
<b>M/N</b>	XO-9606-1	<b>Humidity</b>	53.1%
<b>Criterion</b>	B	<b>Pressure</b>	1021mbar
<b>Test Mode</b>	TM1-TM3	<b>Test Engineer</b>	Scent Hu

## TEST RESULT OF BLUETOOTH

Test Voltage	Coupling	Observation	Result (Pass/Fail)
±2KV, ±4kV	Contact Discharge	TT, TR	Pass
±2KV, ±4kV, ±8kV	Air Discharge	TT, TR	Pass
±2KV, ±4kV	Indirect Discharge HCP	TT, TR	Pass
±2KV, ±4kV	Indirect Discharge VCP	TT, TR	Pass

## TEST RESULT OF TM2-TM3

Test Voltage	Coupling	Result (Pass/Fail)
±2KV, ±4kV	Contact Discharge	Pass
±2KV, ±4kV, ±8kV	Air Discharge	Pass
±2KV, ±4kV	Indirect Discharge HCP	Pass
±2KV, ±4kV	Indirect Discharge VCP	Pass

Note: The EUT performance complied with performance criteria for CT&CR to MS Function and there is no any degradation of performance and function.



## 8. LIST OF MEASURING EQUIPMENT

### LINE CONDUCTED EMISSION

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	EMI Test Software	AUDIX	E3	/	N/A	N/A
2	EMI Test Receiver	R&S	ESPI	101840	2019-06-11	2020-06-10
3	Artificial Mains	R&S	ENV216	101288	2019-06-12	2020-06-11
4	10dB Attenuator	SCHWARZBEC K	MTS-IMP-136	261115-001-0032	2019-06-11	2020-06-10

### RADIATED DISTURBANCE

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	EMI Test Software	AUDIX	E3	/	N/A	N/A
2	3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	2019-06-12	2020-06-11
3	Positioning Controller	MF	MF-7082	/	2019-06-12	2020-06-11
4	By-log Antenna	SCHWARZBEC K	VULB9163	9163-470	2018-07-26	2019-07-25
5	Horn Antenna	SCHWARZBEC K	BBHA 9120D	9120D-1925	2018-07-02	2019-07-01
6	EMI Test Receiver	R&S	ESR 7	101181	2019-06-12	2020-06-11
7	RS SPECTRUM ANALYZER	R&S	FSP40	100503	2018-11-15	2019-11-14
8	AMPLIFIER	QuieTek	QTK	CHM/0809065	2018-11-15	2019-11-14
9	RF Cable-R03m	JyeBao	RG142	CB021	2019-06-12	2020-06-11
10	RF Cable-HIGH	SUHNER	SUCOFLEX 106	03CH03-HY	2019-06-12	2020-06-11

### VOLTAGE FLUCTUATION AND FLICKER/HARMONIC CURRENT EMISSIONS

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	Power Analyzer Test System	Voltech	PM6000	200006700523	2019-06-12	2020-06-11

### RF ELECTROMAGNETIC FIELD

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	RS Test Software	Tonscend	/	/	N/A	N/A
2	ESG Vector Signal Generator	Agilent	E4438C	MY42081396	2018-11-15	2019-11-14
3	3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	2019-06-12	2020-06-11
4	RF POWER AMPLIFIER	OPHIR	5225R	1052	NCR	NCR
5	RF POWER AMPLIFIER	OPHIR	5273F	1019	NCR	NCR
6	Stacked Broadband Log Periodic Antenna	SCHWARZBEC K	STLP 9128	9128ES-145	NCR	NCR
7	Stacked Mikrowellen Log.-Per Antenna	SCHWARZBEC K	STLP 9149	9149-484	NCR	NCR
8	Electric field probe	Narda S.TS./PMM	EP601	611WX80208	2019-03-25	2020-03-24

### ELECTROSTATIC DISCHARGE

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	ESD Simulator	SCHLODER	SESD 230	604035	2019-06-13	2020-06-12

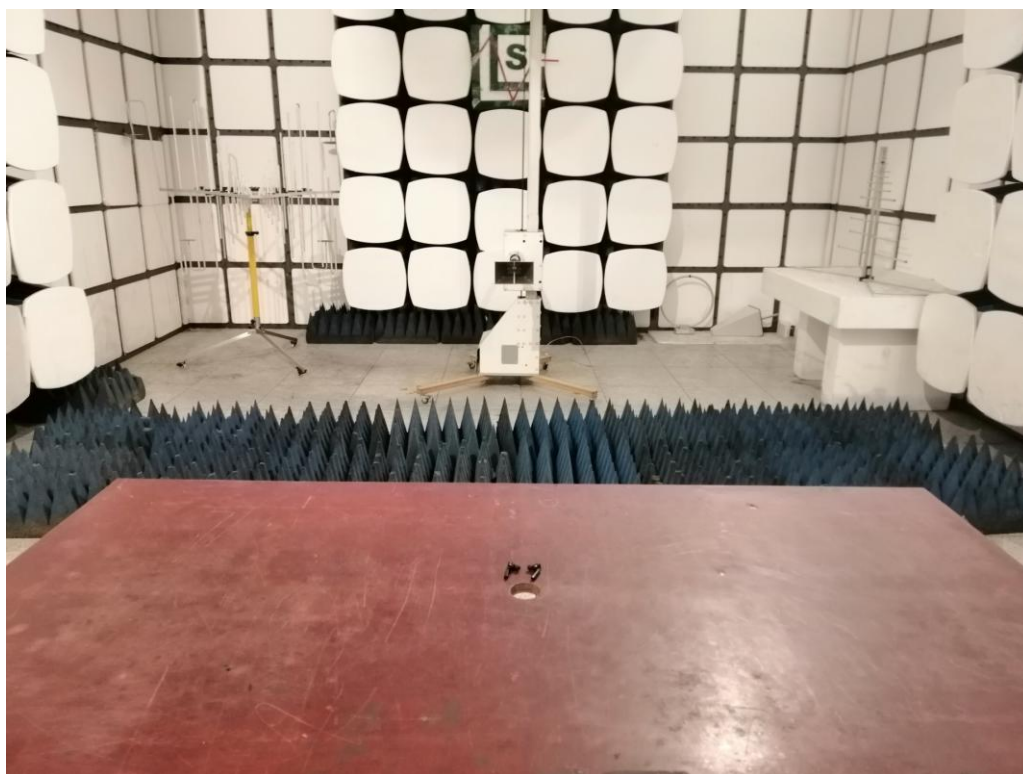
Note: All equipment is calibrated through GUANGZHOU LISAI CALIBRATION AND TEST CO.,LTD.

## 9. TEST SETUP PHOTOGRAPHS

### 9.1. Photo of Radiated Emissions Measurement



Below 1GHz



Above 1GHz

## 9.2. Photo of Electrostatic Discharge Test



## 9.3. Photo of Radio-frequency, Continuous radiated disturbance



#### 9.4. Photo of Power Line Conducted Emissions Measurement





## 10. EXTERNAL AND INTERNAL PHOTOS OF THE EUT



Fig. 1



Fig. 2



Fig. 3



Fig. 4



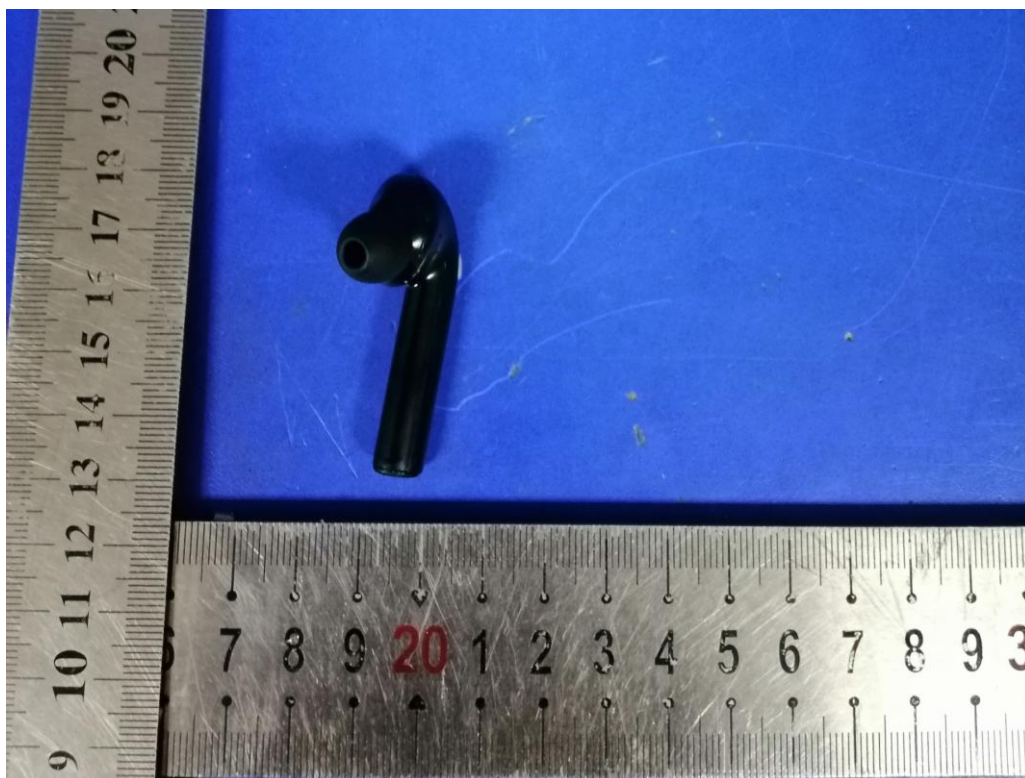


Fig. 5

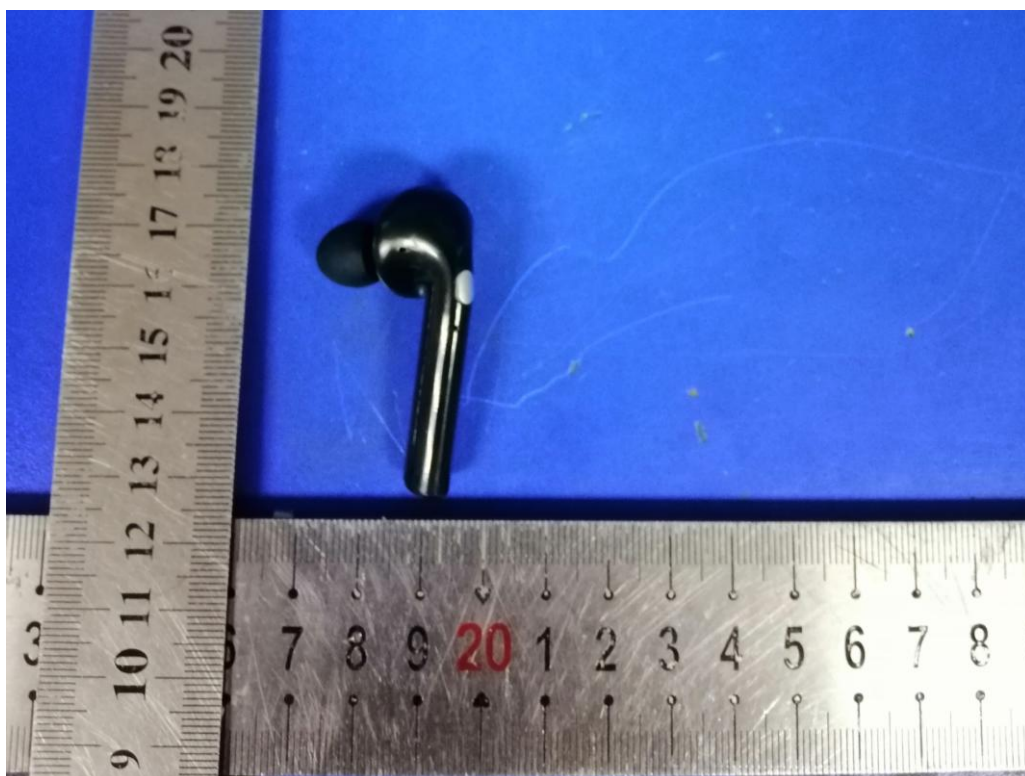


Fig. 6





Fig. 7



Fig. 8



Fig. 9



Fig. 10



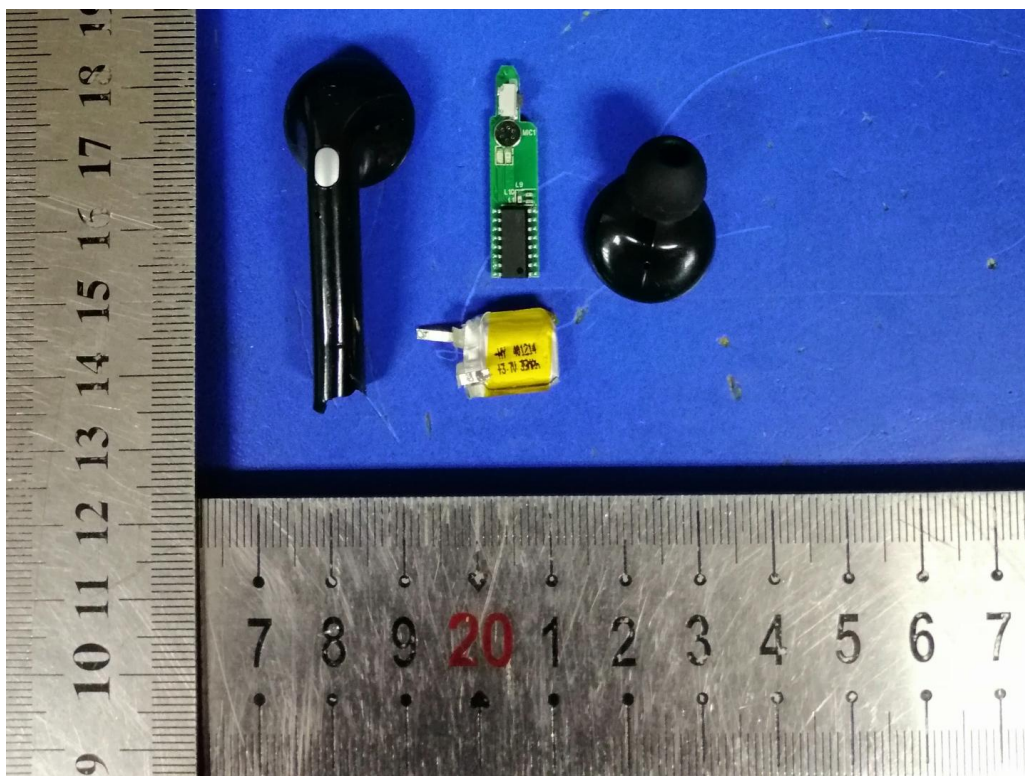


Fig. 11

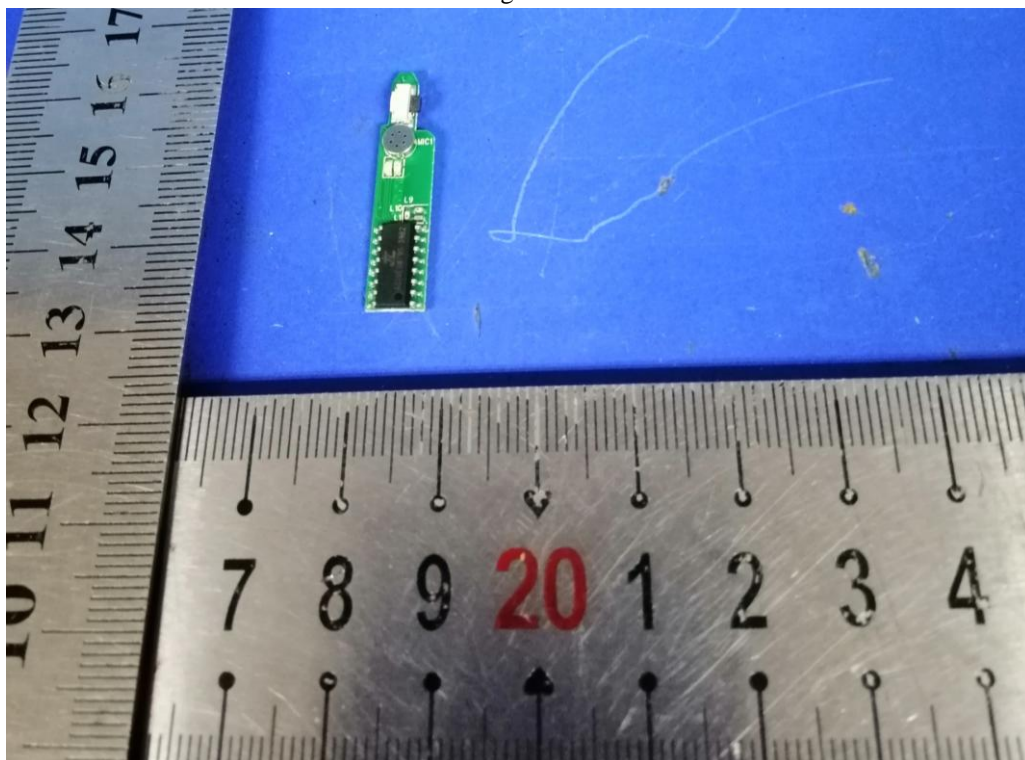


Fig. 12

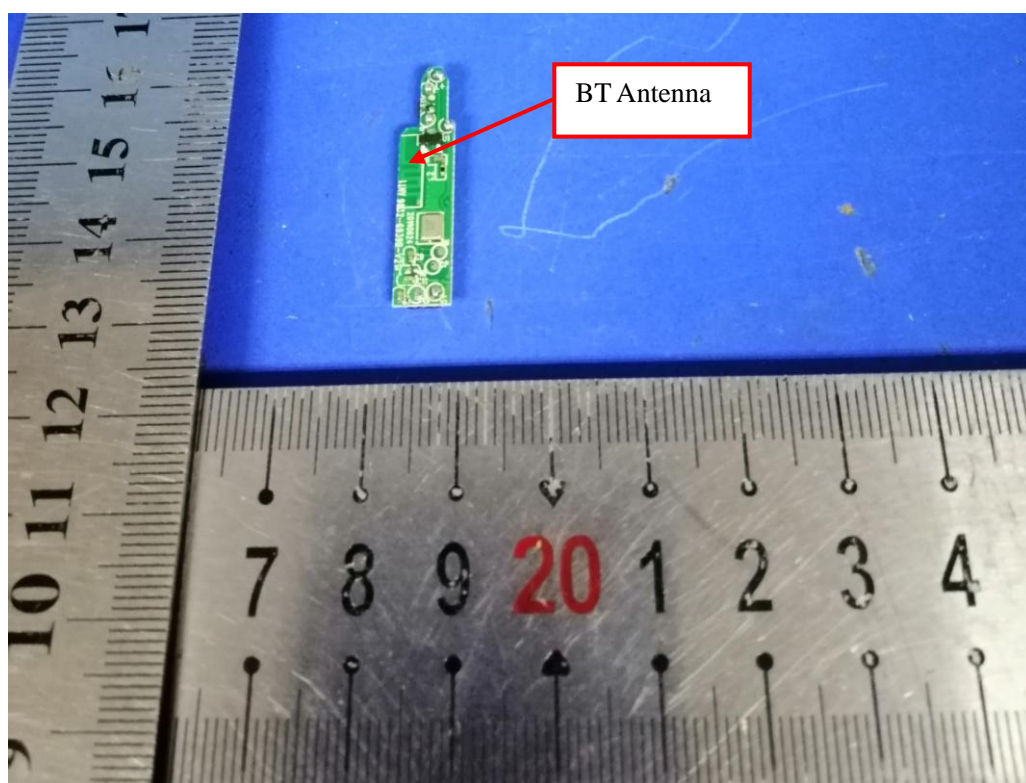


Fig. 13



Fig. 14



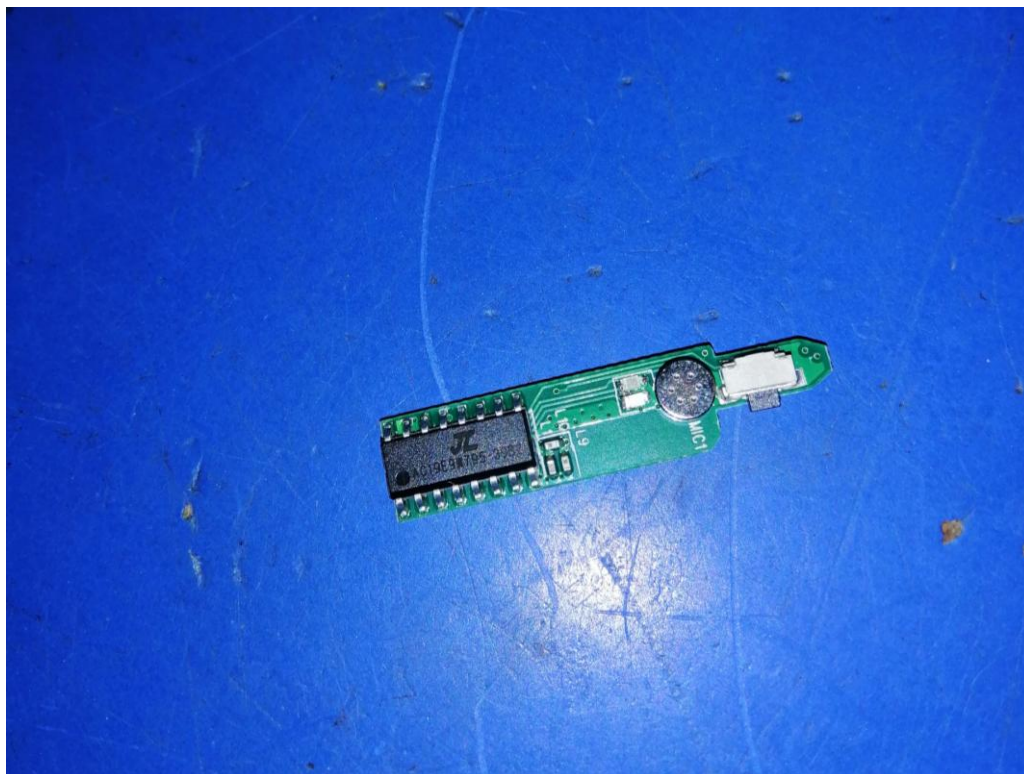


Fig. 15

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