RED

BT RF TEST REPORT

Prepared for :

Prepared for :

Prepared By : **Shenzhen WST Testing Co., Ltd.**
87 Guangshen Road, Baocheng 11st Zone, Xin'an Street, Bao'an, Shenzhen, Guangdong, China

Date of Test: **Oct. 23, 2018 ~ Oct. 31, 2018**
Date of Report: **Oct. 31, 2018**
Report Number: **WST18N100255-2ER**

TEST RESULT CERTIFICATION

Applicant's name .....

Address :

Manufacture's Name .

Address :

Product description

Trade Mark: N/A

Product name : True Wireless Stereo Bluetooth Speaker

Model and/ or type reference BS-124T

Standards : ETSI EN 300 328 V2.1.1 (2016-11)

This device described above has been tested by WST, and the test results show that the equipment under test (EUT) is in compliance with the 2014/53/EU RED Directive requirements. And it is applicable only to the tested sample identified in the report.

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Date of Test :

Date (s) of performance of tests ..... : Oct. 23, 2018 ~ Oct. 31, 2018

Date of Issue : Oct. 31, 2018

Test Result : **Pass**

Testing Engineer : (Sam Tan)

Technical Manager : (John Li)

Authorized Signatory : (Michael Ling)

Contents

Test Summary

ETSI EN 300 328 V2.1.1:

Harmonized Standard EN300 328 The following essential requirements and test specifications are relevant to the presumption of conformity under Article 3.2 of the RED Directive				
No	**Test Parameter**	**Clause No**	**Condition**	**Results**
Transmitter Parameters				
1	RF Output Power	4.3.1.2 or 4.3.2.2	Apply all equipment	PASS
2	Power Special Density	4.3.2.3	Only for modulations other than FHSS	PASS
3	Duty Cycle ,Tx-Sequence, Tx-gap	4.3.1.3 or 4.3.2.4	Only for non-adaptive equipment	Only for≥10dBm and no-adaptive
4	Accumulated Transmit time, Frequency Occupation & Hopping Sequence	4.3.1.4	Only for FHSS equipment	Only for≥10dBm and no-adaptive
5	Hopping Frequency Separation	4.3.1.5	Only for FHSS	Only for≥10dBm and no-adaptive
6	Medium Utilisation	4.3.1.6 or 4.3.2.5	Only for non-adaptive equipment	Only for≥10dBm and no-adaptive
7	Adaptive	4.3.1.7 or 4.3.2.6	Only for adaptive equipment	Only for≥10dBm and no-adaptive
8	Occupied Channel Bandwidth	4.3.1.8 or 4.3.2.7	Apply all equipment	PASS
9	Transmitter unwanted emissions in the OOB domain	4.3.1.9 or 4.3.2.8	Apply all equipment	PASS
10	Transmitter unwanted emissions in the spurious domain	4.3.1.10 or 4.3.2.9	Apply all equipment	PASS
11	Receiver spurious emissions	4.3.1.11 or 4.3.2.10	Apply all equipment	PASS
12	Receiver Blocking	4.3.1.12 or 4.3.2.11	Only for adaptive equipment	Only for≥10dBm and no-adaptive
13	Geo-location capability	4.3.1.13 or 4.3.2.12	Only for equipment with geo-location capability	N/A
Note: N/A is an abbreviation for Not Applicable and means this test item is not applicable for this device according to the technology characteristic of device.				

1 General Information

1.1 Responsible Testing Laboratory

Shenzhen WST Testing Co., Ltd.

Address: 87 Guangshen Road, Baocheng 11st Zone, Xin'an Street, Bao'an, Shenzhen, Guangdong, China

1.2 General Description of EUT

Product:	True Wireless Stereo Bluetooth Speaker	
Model No.(EUT):	BS-124T	
Family Model No.:	N/A	
Trade Mark:	N/A	
Hardware Version:	V1.0	
Software Version:	V1.0	
Antenna Type:	PCB Antenna for BT; Max Gain: 0dBi.	
Device Operating Configurations :		
Modulation Mode:	**Bluetooth: GFSK, π/4DQPSK , 8-DPSK**	
	Bluetooth	**2402-2480MHz**

1.3 Description of family model numbers

Between the present Model Number: BS-124T

and the other family Model Number: N/A

There are identical as following：

Printed Circuit Board (PCB); Hardware; Software; Enclosure; Internal structure;

There is difference as following：

Model Number and Skin color

1.4 Accessories of EUT

Description	Manufacturer	Model number	Parameter	
/	/	/	/	/

1.5 Block diagram of EUT configuration for test

EUT

The test software was used to control EUT work in Continuous TX mode, and select test channel, wireless mode as below table.

Tested mode for Classic mode , channel, information		
Mode	**Channel**	**Frequency (MHz)**
GFSK hopping on Tx Mode	CH0 to CH78	2402 to 2480
π/4 QPSK hopping on Tx Mode	CH0 to CH78	2402 to 2480
8-DPSK hopping on Tx Mode	CH0 to CH78	2402 to 2480
GFSK hopping off Tx Mode	CH0	2402
	CH39	2441
	CH78	2480
π/4 QPSK hopping off Tx Mode	CH0	2402
	CH39	2441
	CH78	2480
8-DPSK hopping off Tx Mode	CH0	2402
	CH39	2441
	CH78	2480

Note:

For π/4 QPSK its same modulation type with 8-DPSK, and based exploratory test, there is no significant difference of that two types test result, after the preliminary scan, 8-DPSK will have higher emission, so except output power, all other items final test were only performed with the worse case 8-DPSK and GFSK.

1.6 Test environment conditions

During the measurement the environmental conditions were within the listed ranges:

	Normal Conditions	Extreme Conditions
Temperature range	21-25℃	-20℃ and 55℃
Humidity range	40-75%	40-75%
Pressure range	86-106kPa	86-106kPa
Power supply	DC3.7V	3.33V and 4.07V (0.9 and 1.1 times of nominal voltage)
Note1: The Extreme temperature range and extreme voltages are declared by the manufacturer.		

2 Measurement uncertainty

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

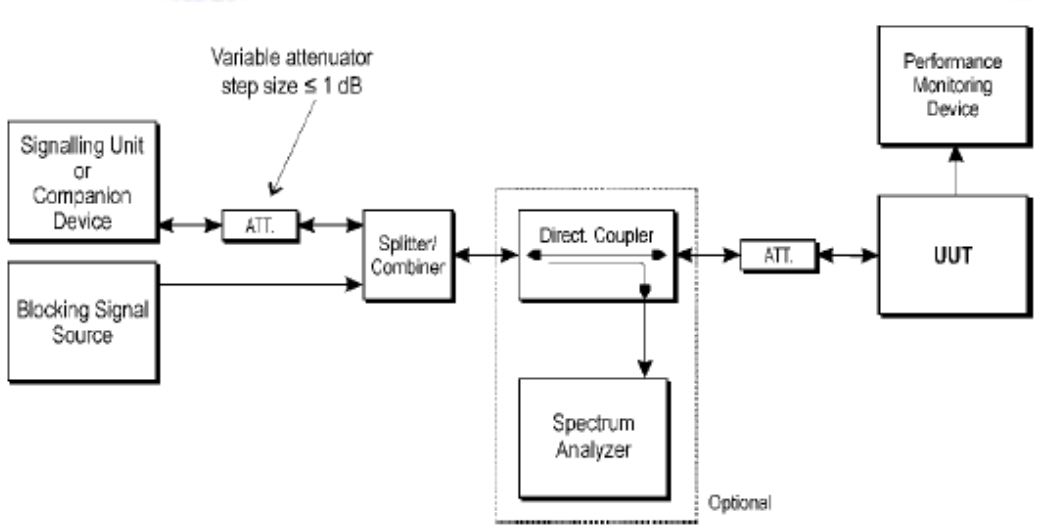
Test Item	Uncertainty
Occupied Channel Bandwidth	±1%
Uncertainty for radio frequency	1×10-9
RF Output power, conducted	±0.6dB
Power Spectral Density, Conducted	±1.2dB
Unwanted Emissions, Conducted	±0.6dB
Temperature	±0.2℃
Humidity	±1%
DC and Low frequency voltage	±0.5%
Time	±1%
Duty Cycle	±1%
Uncertainty for Unwanted Emission, Radiated (30MHz-1GHz)	2.12 dB (Polarize: V)
	2.42 dB (Polarize: H)
Uncertainty for Unwanted Emission, Radiated (1GHz to 13GHz)	2.08dB(Polarize: V)
	2.16dB (Polarize: H)

3 RF Output Power

3.1 Test equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Spectrum analyzer	R&S	FSU26	1166.1660.2(	2018/10/18	1 Year
2	Wideband Radio Communication tester	R&S	CMW500	155523	2017/12/20	1 Year
3	Vector Signal Generator	Agilent Technologies Inc	E8267D	MY5209874	2017/12/20	1 Year
4	Vector Signal Generator	Agilent Technologies Inc	N5182A	MY4818073	2017/12/20	1 Year
5	Power sensor	Agilent Technologies Inc	U2021XA	1457313	2018/10/21	1 Year
6	Power sensor	Agilent Technologies Inc	U2021XA	1457313	2018/10/21	1 Year
7	DC Power Source	MATRIS	MPS-3005L-3	D813058W	2018/10/21	1 Year
8	Attenuator	Mini-Circuits	BW-S10W2	101109	2018/10/21	1 Year
9	RF Cable	Micable	C10-01-01-1	100309	2018/10/21	1 Year
10	Test Software	JS Tonscend	JS1120-2	Ver.2.5	N/A	1 Year
11	USB Data acquisition	Agilent Technologies Inc	U2531A	TW5504350	N/A	1 Year
12	Auto control Unit	JS Tonscend	JS0806-2	158060010	N/A	1 Year

3.2 Block diagram of test setup



3.3 Limits

The RF output power is defined as the mean equivalent isotropically radiated power (e.i.r.p.) of the equipment during a transmission burst.

The maximum RF output power for adaptive Frequency Hopping equipment shall be equal to or less than 20 dBm.

3.4 Test Procedure

Connect each EUT's antenna output to power sensor by RF cable and attenuator.

3.5 Test Result

Test Conditions		EUT Mode	Numbers of burst	Measured Highest Pburst Values (dBm)	Antenna Gain (dBi)	RF Output Power (dBm)
Volt	Volt					
DC3.7V	Noraml	GFSK	10	2.14	0	2.14
		4pi QPSK	10	1.89	0	1.89
		8-DPSK	10	1.42	0	1.42
DC3.33V	55℃	GFSK	10	1.68	0	1.68
		4pi QPSK	10	1.43	0	1.43
		8-DPSK	10	1.25	0	1.25
DC3.33V	-20℃	GFSK	10	1.51	0	1.51
		4pi QPSK	10	1.38	0	1.38
		8-DPSK	10	1.24	0	1.24
DC4.07V	55℃	GFSK	10	1.47	0	1.47
		4pi QPSK	10	1.34	0	1.34
		8-DPSK	10	1.20	0	1.20
DC4.07V	-20℃	GFSK	10	1.31	0	1.31
		4pi QPSK	10	1.12	0	1.12
		8-DPSK	10	1.09	0	1.09
Note:RF Output power = Measured Highest Pburst Values + Antenna Gain						

4 Power Special Density

N/A (Not Applicable)

Only for modulations other than FHSS.

5 Duty Cycle ,Tx-Sequence, Tx-gap

N/A (Not Applicable)

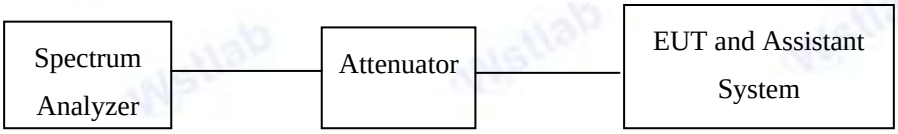
Only for non-adaptive equipment.

6 Dwell time and Minimum Frequency Occupation

6.1 Test equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Spectrum analyzer	R&S	FSU	1166.1660.26	2018/10/21	1 Y
2	Attenuator	Mini-Circuits	BW-S10W2	101109	2018/10/21	1 Y
3	RF Cable	Micable	C10-01-01-1	100309	2018/10/21	1 Y

6.2 Block diagram of test setup



6.3 Limits

The Dwell Time is the time that a particular hopping frequency would be occupied by the transmitter during a single hop. The equipment itself is not required to transmit on this hopping frequency during the Dwell Time.

For this Adaptive frequency hopping systems, the maximum accumulated dwell time on any hopping frequency shall be 400 ms within any period of 400 ms multiplied by the minimum number of hopping frequencies (79) that have to be used.

The Minimum Frequency Occupation Time shall be equal to one dwell time within a period not exceeding four times the product of the dwell time per hop and the number of hopping frequencies in use.

6.4 Test Procedure

Refer to ETSI EN 300328 V2.1.1 clause 5.4.11.2.1

6.5 Test Result

Minimum Frequency Occupation

Channel	Modulation	Frequency occupation times(N)	Limit(N)	Result
LCH	GFSK	4	≥1	Pass
	8DPSK	4		Pass
HCH	GFSK	4		Pass
	8DPSK	4		Pass

Accumulated Dwell Time

Channel	Modulation	Accumulated Transmit times(N)	Limit(N)	Result
LCH	GFSK	373.68	400	Pass
	8DPSK	372.82	400	Pass
HCH	GFSK	368.38	400	Pass
	8DPSK	376.17	400	Pass

7 Hopping Sequence

7.1 Test equipment

Same with 6.1

7.2 Block diagram of test setup

Same with 6.2

7.3 Limit

Adaptive Frequency Hopping systems shall be capable of operating over a minimum of 70 % of the specified band (2400MHz-2483.5MHz)

The hopping sequence(s) shall contain at least N hopping frequencies at all times, where N is 15 or 15 divided by the minimum Hopping Frequency Separation in MHz, whichever is the greater.

7.4 Test Procedure

Connect EUT's antenna output to spectrum analyzer by RF cable and an attenuator.

Set the spectrum analyzer as follows:

Start frequency:	2400MHz
Stop Frequency:	2483.5MHz
RBW:	1 % of the Span
VBW:	3* RBW
Detector Mode:	RMS
Sweep time:	Auto
Trace Mode	Max Hold

When the trace has completed, indentify the number of hopping frequencies used by the hopping sequence.

Using the lowest and highest -20 dB points from the total spectrum envelope obtained in step 5, and verified whether the system uses 70 % of the band specified.

7.5 Test result

EUT Set Mode	Hopping sequence Result	EUT Set Mode	hopping sequence Result
GFSK	79	8-DPSK	79
Limit: >15 Conclusion: Pass			

EUT Set Mode	Operation band (-20dB band)(MHz)	EUT Set Mode	Operation band (-20dB band)(MHz)
GFSK	96.39	8-DPSK	97.25
Limit: > 70%*(2400-2483.5MHz)=58.45MHz Conclusion: Pass			

8 Hopping Frequency Separation

8.1 Test equipment

Same with 6.1

8.2 Block diagram of test setup

Same with 6.2

8.3 Limits

For adaptive frequency hopping systems the minimum hopping frequency separation shall be 100 KHz.

8.4 Test Procedure

Connect EUT's antenna output to spectrum analyzer by RF cable and attenuator.

Configure EUT work in normal hopping mode.

Set the spectrum analyzer as follows:

Centre Frequency:	Centre of the two adjacent hopping frequencies
Frequency Span:	Sufficient to see the complete power envelope of both hopping frequencies
RBW:	1 % of the Span
VBW:	3 × RBW
Detector Mode:	Max Peak
Sweep time:	Auto
Trace Mode:	Max Hold

When the trace has completed, Use the marker-delta function to determine the Hopping Frequency Separation between the peaks of the two adjacent hopping frequencies.

8.5 Test Result

EUT Set Mode	Hopping Frequency Separation (MHz)	EUT Set Mode	Hopping Frequency Separation (MHz)
GFSK	1.003	8-DPSK	1.003
Limit: >100KHz Conclusion: Pass			

9 Medium Utilisation

N/A (Not Applicable)

This requirement only applies to non-adaptive equipment, and this reported device is adaptive device.

10 Adaptivity

N/A (Not Applicable)

This requirement does not apply for equipment with a maximum RF Output power level of less than 10 dBm e.i.r.p, and this reported device's maximum e.i.r.p is 2.14Bm.

11 Occupied Channel Bandwidth

11.1 Test equipment

Same with 6.1

11.2 Block diagram of test setup

Same with 6.2

11.3 Limits

The Occupied Channel Bandwidth for each hopping frequency shall fall completely within the band 2400MHz to 2483.5MHz for this device.

11.4 Test Procedure

Connect EUT's antenna output to spectrum analyzer by RF cable and attenuator.

Configure EUT work in lowest and highest hopping frequency.

Set the spectrum analyzer as follows:

Centre Frequency:	The centre frequency of the channel under test
Frequency Span:	2 × Occupied Channel Bandwidth
RBW:	~ 1 % of the span without going below 1 %
VBW:	3 × RBW
Detector Mode:	RMS
Sweep time:	1s
Trace Mode:	Max Hold

When the trace has completed, Use the 99% bandwidth function of the spectrum analyzer to measure the Occupied channel bandwidth of the EUT.

11.5 Test Result

EUT Set Mode	CH	Lowe 99% bandwidth frequency(MHz)	Upper 99% bandwidth frequency(MHz)	99% Bandwidth(MHz)
GFSK	CH0	2401.475	---	0.775
	CH39	---	---	0.736
	CH78	---	2480.539	0.742
8-DPSK	CH0	2401.521	---	1.160
	CH39	---	---	1.143
	CH78	---	2480.752	1.124
Limit: within the band 2400MHz to 2483.5MHz			Conclusion: Pass	

12 Transmitter unwanted emissions in the out-of-band

12.1 Test equipment

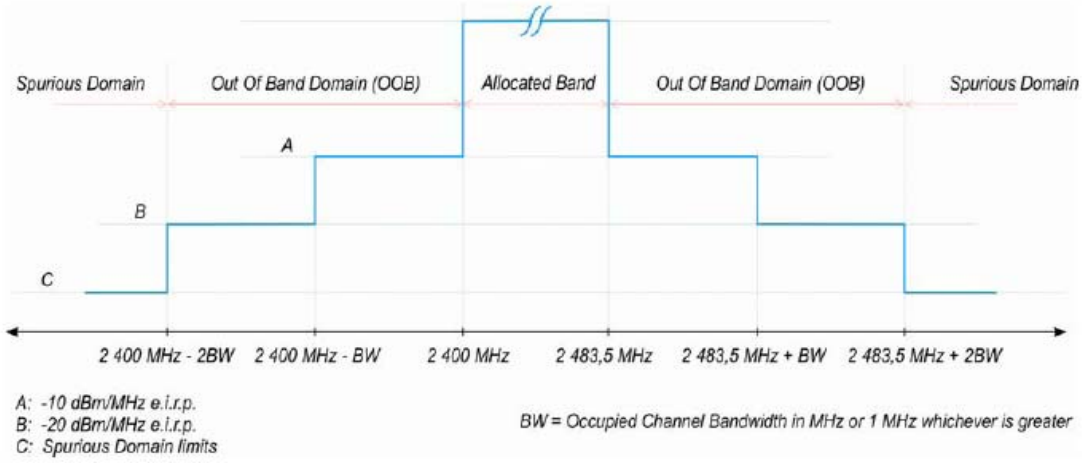
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Spectrum analyzer	R&S	FSU	1166.1660.26	2018/10/21	1 Y
2	Attenuator	Mini-Circuits	BW-S10W2	101109	2018/10/21	1 Y
3	RF Cable	Micable	C10-01-01-1	100309	2018/10/21	1 Y
4	Temperature controller	Dongguan Bell	BE-TH-150M3	201208153364	2018/10/21	1 Y

12.2 Block diagram of test setup

Same with 6.2

12.3 Limits

The transmitter unwanted emissions in the out-of-band domain but outside the allocated band, shall not exceed the values provided by the mask below:



12.4 Test Procedure

These measurements have to be performed at normal environmental conditions and shall be repeated at the extremes of the operating temperature range.

Connect EUT's antenna output to spectrum analyzer by RF cable and attenuator.

Configure EUT work in normal hopping mode.

Follow the test procedure description in EN 300 328 V2.1.1, measure out each bands e.i.r.p emissions.

12.5 Test Result

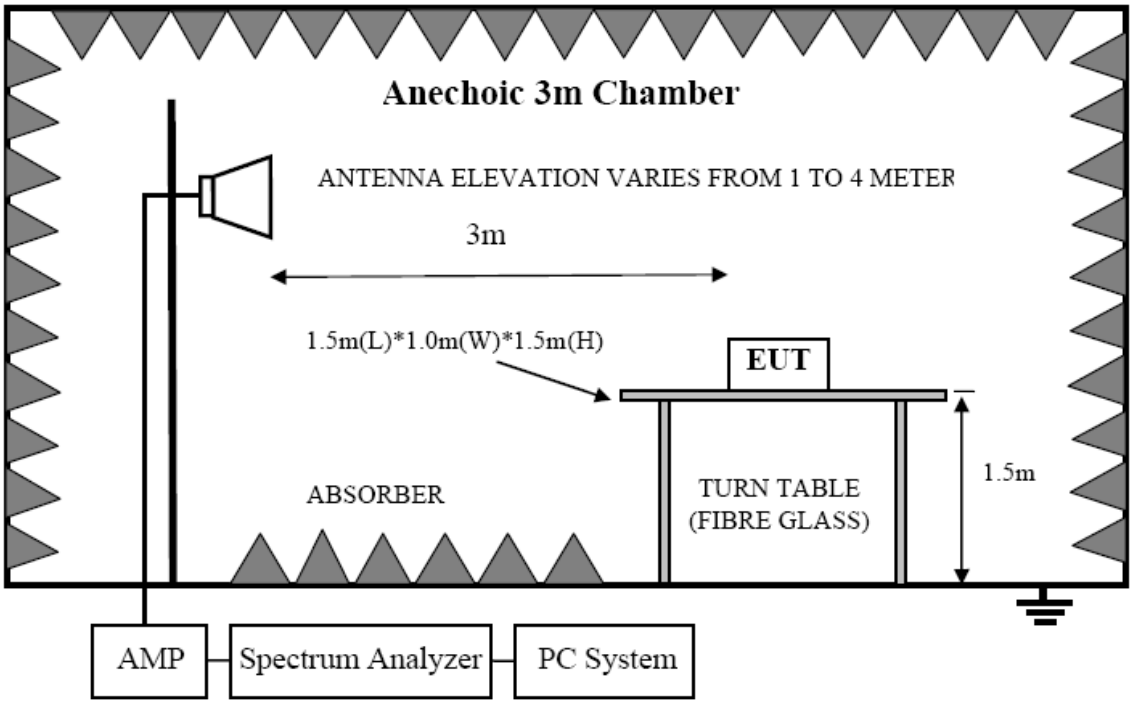
EUT Mode and basic information	Segment (Center Frquency)	Results Maximum Measured Level (dBm)	Limit(dBm)	Conclusion
Test condition: Normal				
GFSK: BW=1MHz	2484MHz	-54.65	-10	PASS
	2485MHz	-39.02	-20	PASS
	2399.5MHz	-54.85	-10	PASS
	2398.5MHz	-43.13	-20	PASS
8-DPSK BW=1.157MHz	2400MHz-BW to 2400MHz	-56.62	-10	PASS
	2400-2BW to 2400-BW	-54.48	-20	PASS
	2483.5MHz to 2483.5MHz+BW	-51.40	-10	PASS
	2483.5MHz+BW to 2483.5MHz+2BW	-57.24	-20	PASS
Test condition: -20℃				
GFSK: BW=1MHz	2484MHz	-48.75	-10	PASS
	2485MHz	-57.56	-20	PASS
	2399.5MHz	-42.79	-10	PASS
	2398.5MHz	-48.96	-20	PASS
8-DPSK BW=1.157MHz	2400MHz-BW to 2400MHz	-57.43	-10	PASS
	2400-2BW to 2400-BW	-51.80	-20	PASS
	2483.5MHz to 2483.5MHz+BW	-50.00	-10	PASS
	2483.5MHz+BW to 2483.5MHz+2BW	-61.33	-20	PASS
Test condition: 55℃				
GFSK: BW=1MHz	2484MHz	-60.88	-10	PASS
	2485MHz	-51.90	-20	PASS
	2399.5MHz	-53.08	-10	PASS
	2398.5MHz	-55.51	-20	PASS
8-DPSK BW=1.157MHz	2400MHz-BW to 2400MHz	-44.77	-10	PASS
	2400-2BW to 2400-BW	-47.07	-20	PASS
	2483.5MHz to 2483.5MHz+BW	-51.51	-10	PASS
	2483.5MHz+BW to 2483.5MHz+2BW	-50.50	-20	PASS

13 Transmitter unwanted emissions in the spurious

13.1 Test equipment

EMI Test Receiver	R&S	ESU8	100316	2018/10/21	1Year
Spectrum analyzer	R&S	FSU26	1166.1660.26	2018/10/21	1Year
Trilog Broadband Antenna	Schwarzbeck	VULB9163	9163-462	2018/05/30	1 Year
Active Loop antenna	Schwarzbeck	FMZB-1519	1519-038	2018/10/21	1 Year
Double Ridged Horn Antenna	R&S	HF907	100276	2018/10/21	1 Year
Pre-amplifier	A.H.	PAM-0118	360	2018/08/18	1 Year
RF Cable	HUBSER	CP-X2	W11.03	2018/10/21	1Year
RF Cable	HUBSER	CP-X1	W12.02	2018/10/21	1 Year
MI Cable	HUBSER	C10-01-01-1M	1091629	2018/10/21	1 Year
Test software	Audix	E3	V 6.11111b	/	/

13.2 Block diagram of test setup



13.3 Limits

The transmitter unwanted emissions in the spurious domain shall not exceed the values given in below table.

Frequency range	Maximum power, e.r.p. (≤ 1 GHz) e.i.r.p. (> 1 GHz)	Bandwidth
30 MHz to 47 MHz	-36 dBm	100 kHz
47 MHz to 74 MHz	-54 dBm	100 kHz
74 MHz to 87,5 MHz	-36 dBm	100 kHz
87,5 MHz to 118 MHz	-54 dBm	100 kHz
118 MHz to 174 MHz	-36 dBm	100 kHz
174 MHz to 230 MHz	-54 dBm	100 kHz
230 MHz to 470 MHz	-36 dBm	100 kHz
470 MHz to 862 MHz	-54 dBm	100 kHz
862 MHz to 1 GHz	-36 dBm	100 kHz
1 GHz to 12,75 GHz	-30 dBm	1 MHz

13.4 Test Procedure

(1) EUT was placed on a non-metallic table, 1.5m above the ground plane inside a semi-anechoic chamber.

(2) Test antenna was located 3m from the EUT on an adjustable mast, and the antenna used as below table.

Test frequency range	Test antenna used
30MHz-1GHz	Trilog Broadband Antenna
1GHz-12.75GHz	Double Ridged Horn Antenna

(3) Set EUT work in fixed channel transmitting mode.

(4) All the emissions from 30MHz to 12.75GHz at 3m distance was measured and recorded with receive antenna in both vertical and horizontal and varied from 1 m to 4 m. in height above the reference ground plane, and rotating the True Wireless Stereo Bluetooth Speaker obtain the maximum signal strength., the test spectrum analyser was set as below

Frequency band	RBW	VBW	Detector mode
30MHz-1GHz	100KHz	300KHz	Peak
1GHz-12.75GHz	1MHz	3MHz	Peak

Note: For harmonic emissions test a appropriate high pass filter was inserted in the input port of AMP.

(5) A correction values from a verified site calibration was used to calculate the spurious emissions of EUT.

13.5 Test result

EUT mode	Frequency	Spurious emissions level (dBm)	Limit	Conclusion
GFSK CH0	42.06MHz	-57.12	-36	PASS
	4.804GHz	-58.25	-30	PASS
GFSK CH78	42.12MHz	-50.77	-36	PASS
	4.960GHz	-44.99	-30	PASS
8-DPSK CH0	42.02MHz	-58.89	-36	PASS
	4.804GHz	-45.76	-30	PASS
8-DPSK CH78	34.36MHz	-58.37	-36	PASS
	4.960GHz	-54.25	-30	PASS
Test frequency band： 30MHz-1GHz and 1GHz-12.75GHz				

14 Receiver Spurious emissions

14.1 Test equipment

Same with 13.1

14.2 Block diagram of test setup

Same with 13.2

14.3 Limits

The spurious emissions of the receiver shall not exceed the values given in below table.

Frequency range	Maximum power e.r.p. (≤ 1 GHz) e.i.r.p. (> 1 GHz)	Measurement bandwidth
30 MHz to 1 GHz	-57 dBm	100 kHz
1 GHz to 12,75 GHz	-47 dBm	1 MHz

14.4 Test Procedure

Connect EUT's antenna output to spectrum analyzer by RF cable and attenuator.

Configure EUT work in testing mode.

Follow the test procedure description in EN 300 328 V2.1.1, measure out the transmitter unwanted spurious emissions.

14.5 Test result

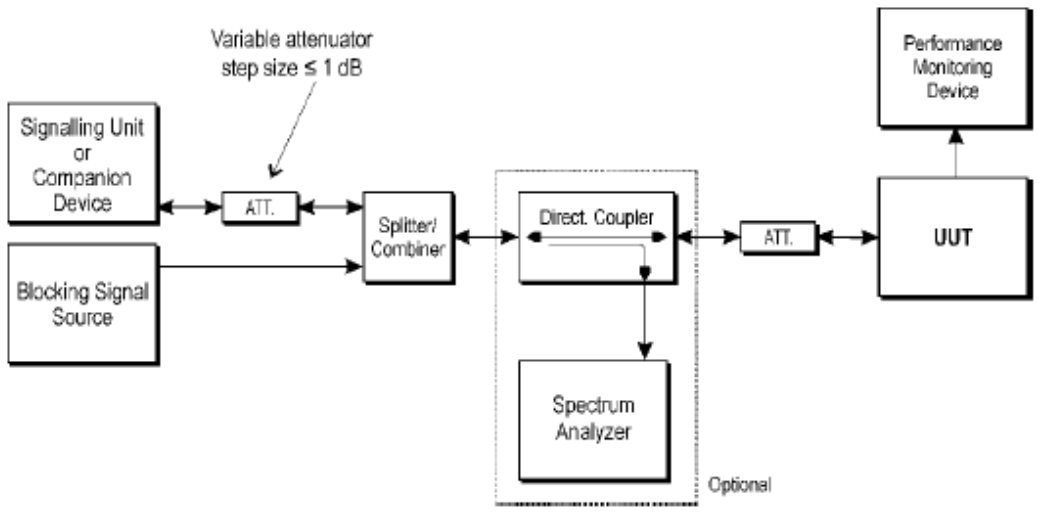
EUT mode	Frequency	Spurious emissions level (dBm)	Limit	Conclusion
Rx Mode	40.98MHz	-66.02	-57	PASS
	4.904GHz	-56.87	-47	PASS
Test frequency band：30MHz-1GHz and 1GHz-12.75GHz				

15 Receiver Blocking

15.1 Test equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Spectrum analyzer	R&S	FSU26	1166.1660.2(	2018/10/18	
2	Wideband Radio Communication tester	R&S	CMW500	155523	2018/10/21	1 Year
3	Vector Signal Generator	Agilent Technologies Inc	E8267D	MY5209874	2018/10/21	1 Year
4	Vector Signal Generator	Agilent Technologies Inc	N5182A	MY4818073	2018/10/21	1 Year
5	Power sensor	Agilent Technologies Inc	U2021XA	1457313	2018/10/21	1 Year
6	Power sensor	Agilent Technologies Inc	U2021XA	1457313	2018/10/21	1 Year
7	DC Power Source	MATRIS	MPS-3005L-3	D813058W	2018/10/21	1 Year
8	Attenuator	Mini-Circuits	BW-S10W2	101109	2018/10/21	1 Year
9	RF Cable	Micable	C10-01-01-1	100309	2018/10/21	1 Year
10	Test Software	JS Tonscend	JS1120-2	Ver.2.5	N/A	1 Year
11	USB Data acquisition	Agilent Technologies Inc	U2531A	TW5504350	N/A	1 Year
12	Auto control Unit	JS Tonscend	JS0806-2	158060010	N/A	1 Year

15.2 Block diagram of test setup



15.3 Limits

Table 7: Receiver Blocking parameters receiver category 2 equipment

Wanted signal mean power from companion device (dBm)	Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 2)	Type of blocking signal
P_{min} + 6 dB	2 380 2 503,5	-57	CW
P_{min} + 6 dB	2 300 2 583,5	-47	CW
NOTE 1: P_{min} is the minimum level of the wanted signal (in dBm) required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal. NOTE 2: The levels specified are levels in front of the UUT antenna. In case of conducted measurements, the levels have to be corrected by the actual antenna assembly gain.			

Performance Criteria:
The minimum performance criterion shall be a PER less than or equal to 10 %.

15.4 Test Procedure

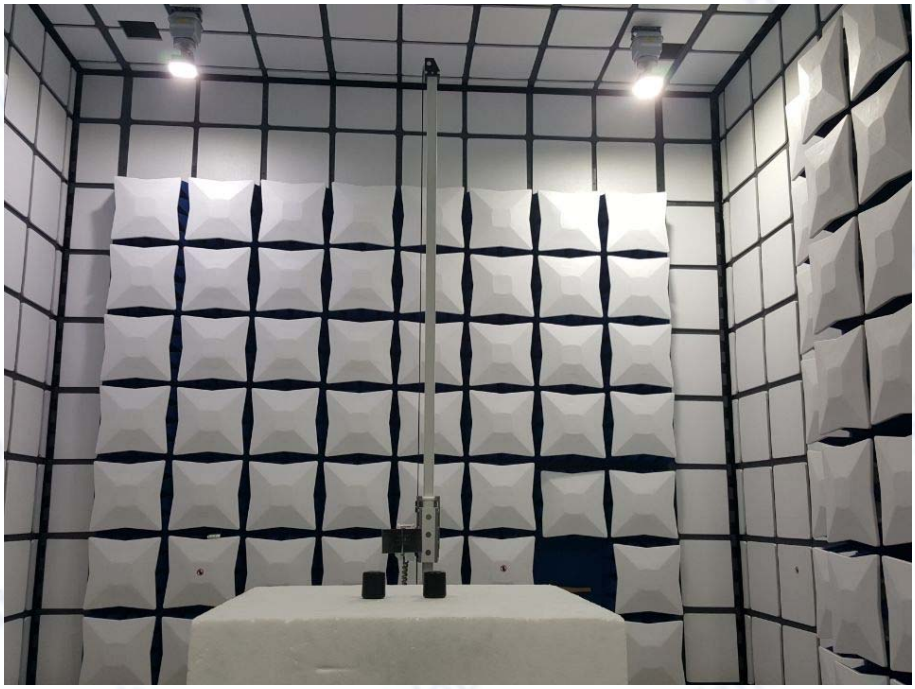
Refer to ETSI EN 300328 V2.1.1 clause 5.4.11.2.1

15.5 Test Result

Test Mode	Test Channel	Pmin [dBm]	Wanted signal Level[dBm	Freq [MHz]	CW Level [dBm]	PER [%]	Limit [%]	Verdict
GFSK	2402	-50.8	-44.8	2583.5	-47	2.70	<=10	PASS
GFSK	2402	-50.8	-44.8	2503.5	-57	1.84	<=10	PASS
GFSK	2402	-50.8	-44.8	2380	-57	0.99	<=10	PASS
GFSK	2402	-50.8	-44.8	2300	-47	0.99	<=10	PASS
GFSK	2480	-51.4	-45.4	2583.5	-47	0.20	<=10	PASS
GFSK	2480	-51.4	-45.4	2503.5	-57	0.10	<=10	PASS
GFSK	2480	-51.4	-45.4	2380	-57	0.10	<=10	PASS
GFSK	2480	-51.4	-45.4	2300	-47	0.20	<=10	PASS
8DPSK	2402	-52.8	-46.8	2583.5	-47	2.70	<=10	PASS
8DPSK	2402	-52.8	-46.8	2503.5	-57	1.84	<=10	PASS
8DPSK	2402	-52.8	-46.8	2380	-57	0.99	<=10	PASS
8DPSK	2402	-52.8	-46.8	2300	-47	0.99	<=10	PASS
8DPSK	2480	-52.4	-46.4	2583.5	-47	0.20	<=10	PASS
8DPSK	2480	-52.4	-46.4	2503.5	-57	0.10	<=10	PASS
8DPSK	2480	-52.4	-46.4	2380	-57	0.10	<=10	PASS
8DPSK	2480	-52.4	-46.4	2300	-47	0.20	<=10	PASS

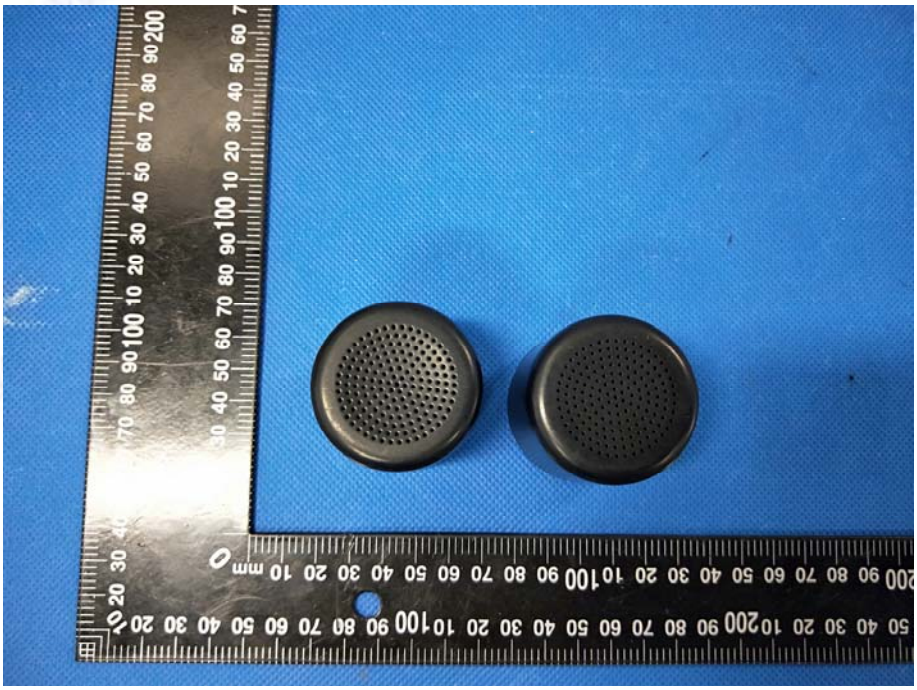
16 Test setup photograph

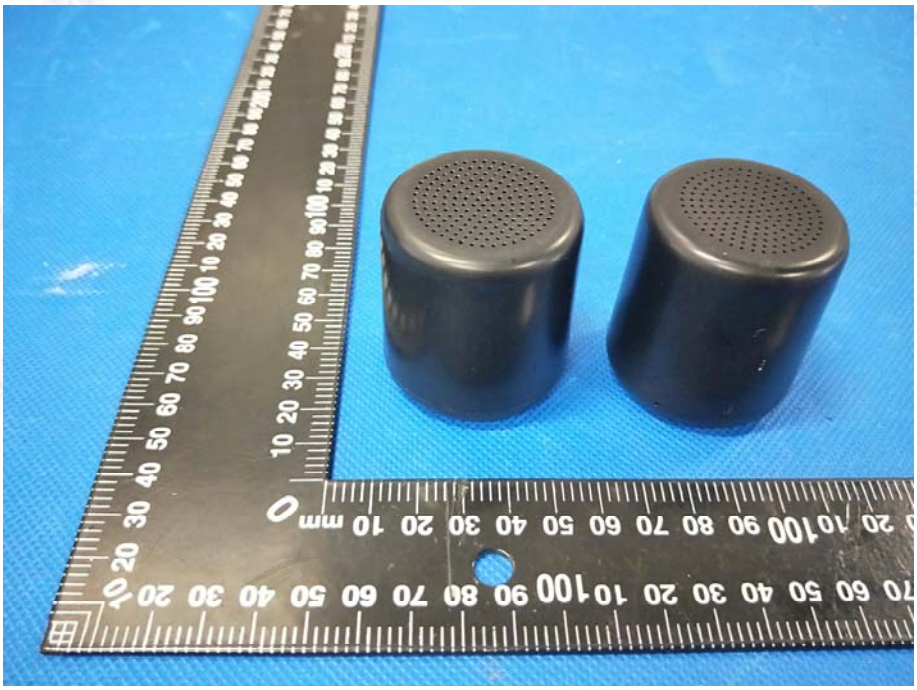
16.1 Radiated Spurious Emission test setup



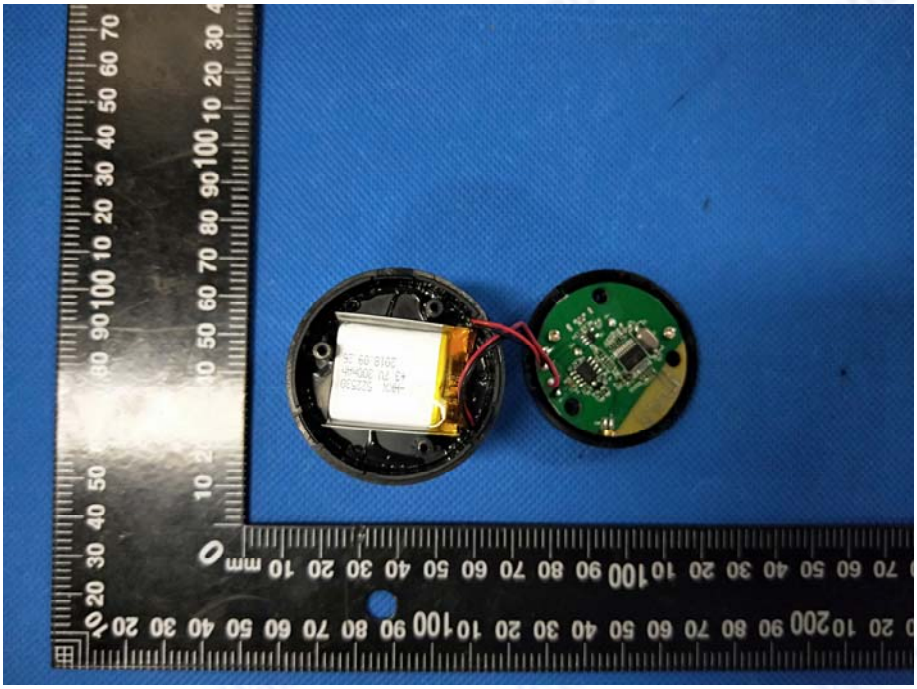
17 Photos of the EUT

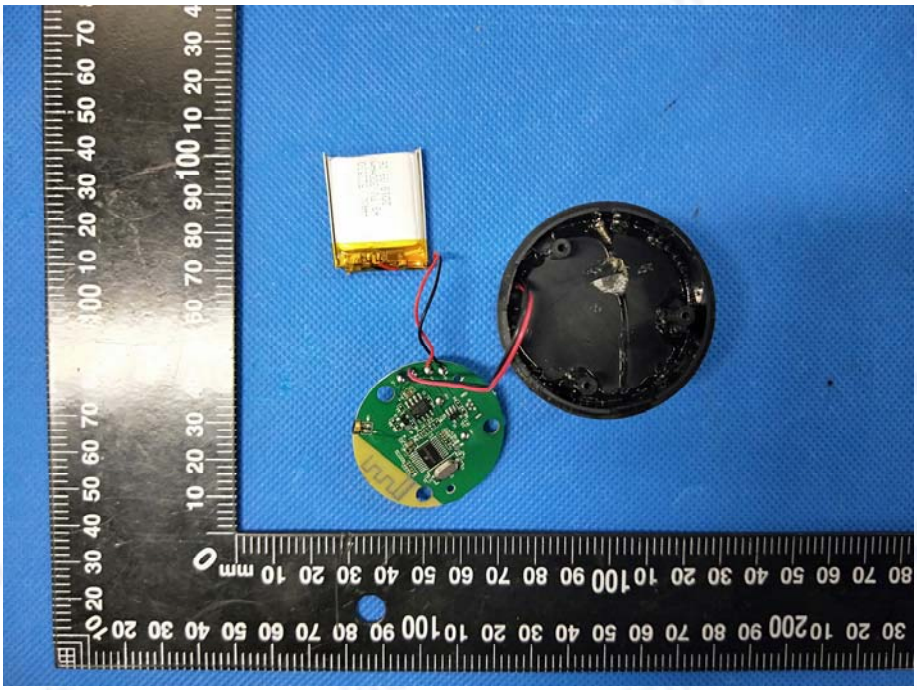
External Photos

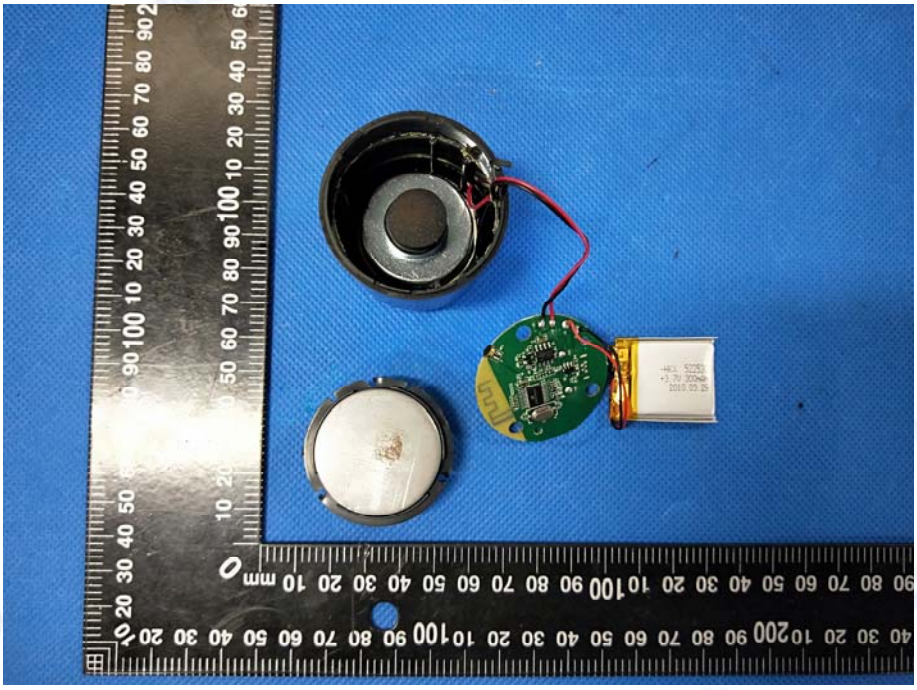


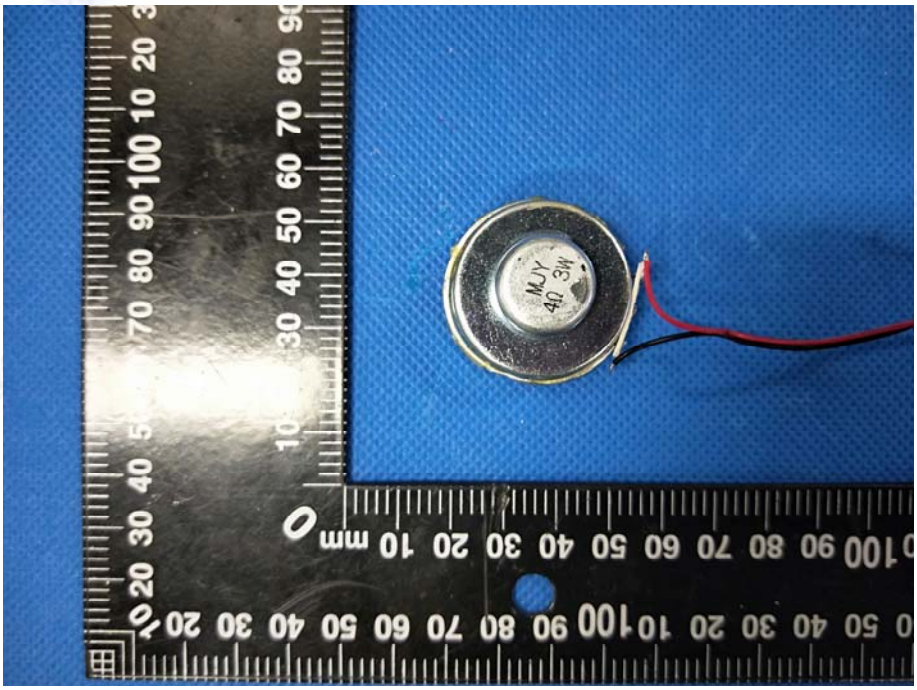


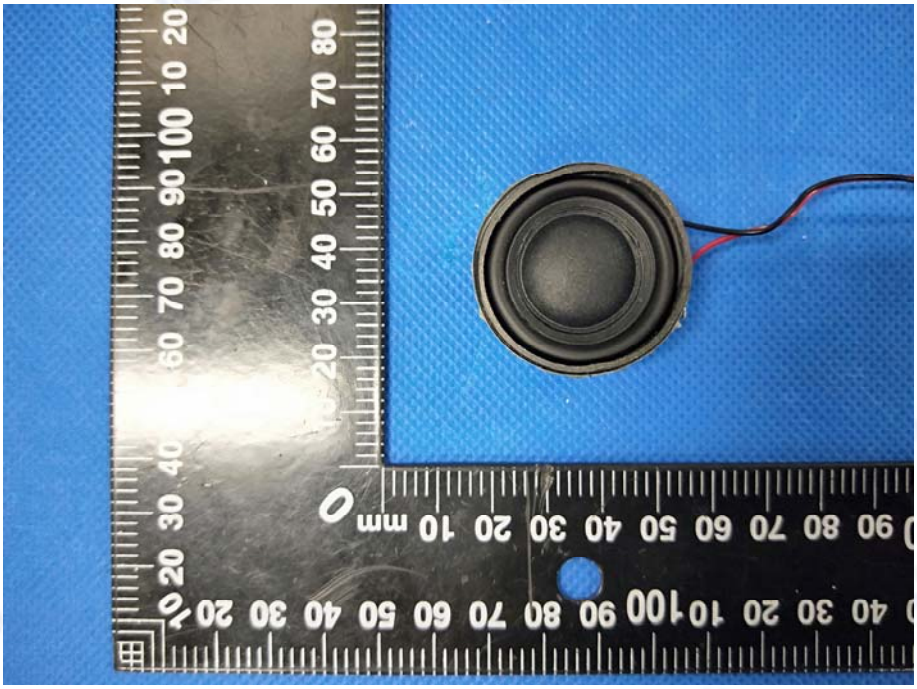
Internal Photos











.....End of Report.....