FCC TEST REPORT

Product	:	Door Bell
Trade mark	:	Kenxen
Model/Type reference	:	DB100C, DB100W
Serial Number	:	N/A
Report Number	:	EED32I002128
FCC ID	:	2AEBDDB100C
Date of Issue	:	Aug. 31, 2016
Test Standards	:	47 CFR Part 15 Subpart B (2015)
Test result	:	PASS

Prepared for:

Kenxen Electronic (SZ) Limited
Building A13, Zone D. Minzhu western Industrial Area. Shajing Town. Baoan District. Shenzhen, Guangdong Province. China.

Prepared by:

Centre Testing International Group Co., Ltd.
Hongwei Industrial Zone, Bao'an 70 District,
Shenzhen, Guangdong, China
TEL: +86-755-3368 3668
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Compiled by: Reviewed by:

Approved by: Date: Aug. 31, 2016

Sheek Luo
Lab supervisor

Check No.: 2384342123

2 Version

Version No.	Date	Description
00	Aug. 31, 2016	Original

3 Test Summary

Test Item	Test Requirement	Test method	Result
Radiated Emission	47 CFR Part 15B	ANSI C63.4-2014	PASS
Conducted Emission (150KHz to 30MHz)	47 CFR Part 15B	ANSI C63.4-2014	N/A*

Remark:

The tested sample and the sample information are provided by the client.

* The device is battery operated and not connected to AC mains, so the conducted emission is not applicable.

Model No.: DB100C, DB100W

Only the model DB100C was tested, electrical circuit design, layout, components used and internal wiring were identical for the above models, Only different is model name.

4 Contents

5 General Information

5.1 Client Information

Applicant:	Kenxen Electronic (SZ) Limited
Address of Applicant:	Building A13, Zone D. Minzhu western Industrial Area. Shajing Town. Baoan District. Shenzhen, Guangdong Province. China.
Manufacturer:	Kenxen Electronic (SZ) Limited
Address of Manufacturer:	Building A13, Zone D. Minzhu western Industrial Area. Shajing Town. Baoan District. Shenzhen, Guangdong Province. China.
Factory:	Kenxen Electronic (SZ) Limited
Address of Factory:	Building A13, Zone D. Minzhu western Industrial Area. Shajing Town. Baoan District. Shenzhen, Guangdong Province. China.

5.2 General Description of EUT

Product Name:	Door Bell
Model No.:	DB100C, DB100W
Test Model No.:	DB100C
Trade Mark:	Kenxen
Power Supply:	DC 3.0V (Two 1.5V AA batteries)

5.3 Product Specification subjective to this standard

Frequency Range:	433MHz
EUT Function:	The Door Bell receiving 433MHz control signal from the corresponding transmitter to generate the music to alert the user someone is visiting
Test voltage:	DC 3V
Sample Received Date:	Jul. 26, 2016
Sample tested Date:	Jul. 26, 2016 to Aug. 10, 2016

5.4 Test Environment and Mode

Operating Environment:	
Temperature:	25°C
Humidity:	48%
Atmospheric Pressure:	1010mbar
Test mode:	
Normal Operation mode:	Receive control signal and play music.

5.5 Description of Support Units

The EUT has been tested with associated equipment below.

Associated equipment name		Manufacture	Model	Supplied by
AE1	controller	Quhwa	QH-860A	Client

5.6 Test Location

All tests were performed at:
Centre Testing International Group Co., Ltd.
Hongwei Industrial Zone, Bao'an 70 District, Shenzhen, Guangdong, China 518101
Telephone: +86 (0) 755 3368 3668 Fax:+86 (0) 755 3368 3385
No tests were sub-contracted.

5.7 Test Facility

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

CNAS-Lab Code: L1910

Centre Testing International Group Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories..

A2LA-Lab Cert. No. 3061.01

Centre Testing International Group Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

FCC-Registration No.: 886427

Centre Testing International Group Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Registration 886427.

IC-Registration No.: 7408A-2

The 3m Alternate Test Site of Centre Testing International Group Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 7408A-2 .

IC-Registration No.: 7408B-1

The 10m Alternate Test Site of Centre Testing International Group Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 7408B-1.

NEMKO-Aut. No.: ELA503

Centre Testing International Group Co., Ltd. has been assessed the quality assurance system, the testing facilities, qualifications and testing practices of the relevant parts of the organization. The quality assurance system of the Laboratory has been validated against ISO/IEC 17025 or equivalent. The laboratory also fulfils the conditions described in Nemko Document NLA-10.

VCCI

The Radiation 3 &10 meters site of Centre Testing International Group Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-4096.

Main Ports Conducted Interference Measurement of Centre Testing International Group Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: C-4563.

Telecommunication Ports Conducted Disturbance Measurement of Centre Testing International Group Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: T-2146.

The Radiation 3 meters site of Centre Testing International Group Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-758

5.8 Deviation from Standards

None.

5.9 Abnormalities from Standard Conditions

None.

5.10 Other Information Requested by the Customer

None.

5.11 Measurement Uncertainty (95% confidence levels, k=2)

No.	Item	Measurement Uncertainty
1	Radio Frequency	7.9×10^{-8}
2	Radiated Spurious emission	4.5dB (30MHz-1GHz)
		4.8dB (1GHz-12.75GHz)
3	Conduction emission	3.6dB (9kHz to 150kHz)
		3.2dB (150kHz to 30MHz)
4	Temperature	0.64°C
5	Humidity	2.8%
6	DC power voltages	0.025%

6 Equipment List

3M Semi/full-anechoic Chamber					
Equipment	**Manufacturer**	**Model No.**	**Serial Number**	**Cal. date (mm-dd-yyyy)**	**Cal. Due date (mm-dd-yyyy)**
3M Chamber & Accessory Equipment	TDK	SAC-3	---	06-05-2016	06-05-2019
TRILOG Broadband Antenna	SCHWARZBECK	VULB9163	9163-484	05-23-2016	05-22-2017
Microwave Preamplifier	Agilent	8449B	3008A02425	02-04-2016	02-03-2017
Horn Antenna	ETS-LINDGREN	3117	00057407	07-20-2015	07-18-2018
Loop Antenna	ETS	6502	00071730	07-30-2015	07-28-2017
Spectrum Analyzer	R&S	FSP40	100416	06-16-2016	06-15-2017
Receiver	R&S	ESCI	100435	06-16-2016	06-15-2017
Multi device Controller	maturo	NCD/070/10711 112	---	01-12-2016	01-11-2017
LISN	schwarzbeck	NNBM8125	81251547	06-16-2016	06-15-2017
LISN	schwarzbeck	NNBM8125	81251548	06-16-2016	06-15-2017
Signal Generator	Agilent	E4438C	MY45095744	04-01-2016	03-31-2017
Signal Generator	Keysight	E8257D	MY53401106	04-01-2016	03-31-2017
Temperature/ Humidity Indicator	TAYLOR	1451	1905	04-27-2016	04-26-2017
Communication test set	Agilent	E5515C	GB47050534	04-01-2016	03-31-2017
Cable line	Fulai(7M)	SF106	5219/6A	01-12-2016	01-11-2017
Cable line	Fulai(6M)	SF106	5220/6A	01-12-2016	01-11-2017
Cable line	Fulai(3M)	SF106	5216/6A	01-12-2016	01-11-2017
Cable line	Fulai(3M)	SF106	5217/6A	01-12-2016	01-11-2017
Communication test set	R&S	CMW500	152394	04-01-2016	03-31-2017
High-pass filter	Sinoscite	FL3CX03WG18 NM12-0398-002	---	01-12-2016	01-11-2017
High-pass filter	MICRO-TRONICS	SPA-F-63029-4	---	01-12-2016	01-11-2017
band rejection filter	Sinoscite	FL5CX01CA09C L12-0395-001	---	01-12-2016	01-11-2017
band rejection filter	Sinoscite	FL5CX01CA08C L12-0393-001	---	01-12-2016	01-11-2017
band rejection filter	Sinoscite	FL5CX02CA04C L12-0396-002	---	01-12-2016	01-11-2017
band rejection filter	Sinoscite	FL5CX02CA03C L12-0394-001	---	01-12-2016	01-11-2017
DC Source	LONG WEI	TPR-6420D	0371643	---	---

7 Test Results and Measurement Data

7.1 Radiated Emission

Test Requirement: 47 CFR Part 15B

Test Method: ANSI C63.4

Test site: Measurement Distance: 3m (Semi-Anechoic Chamber)

Receiver setup:

Frequency	Detector	RBW	VBW	Remark
30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak Value
Above 1GHz	Peak	1MHz	3MHz	Peak Value

Limit:

Frequency	Limit (dBμV/m @3m)	Remark
30MHz-88MHz	40.0	Quasi-peak Value
88MHz-216MHz	43.5	Quasi-peak Value
216MHz-960MHz	46.0	Quasi-peak Value
960MHz-1GHz	54.0	Quasi-peak Value
Above 1GHz	54.0	Average Value
	74.0	Peak Value

Test Procedure:

Below 1GHz test procedure as below:

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.
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.
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 measurement.
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 and the rota table table was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
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.

Above 1GHz test procedure as below:

g. Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber (Above 18GHz the distance is 1 meter).
h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case.
i. Repeat above procedures until all frequencies measured was complete.

Test Setup:

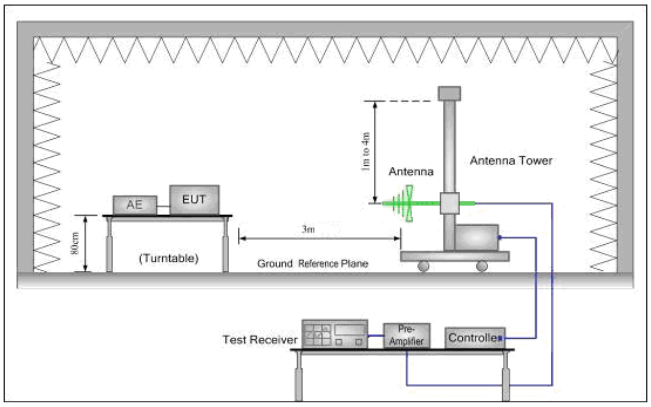


Figure 1. 30MHz to 1GHz

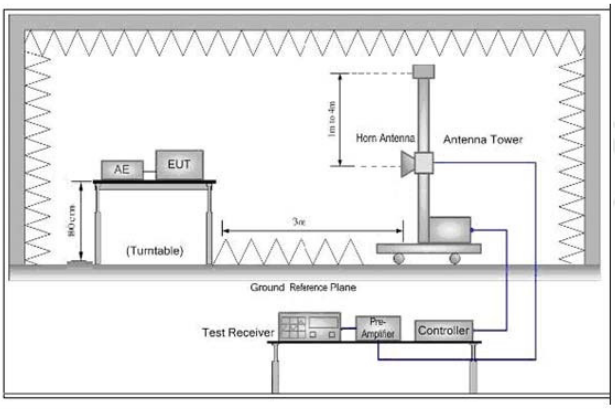


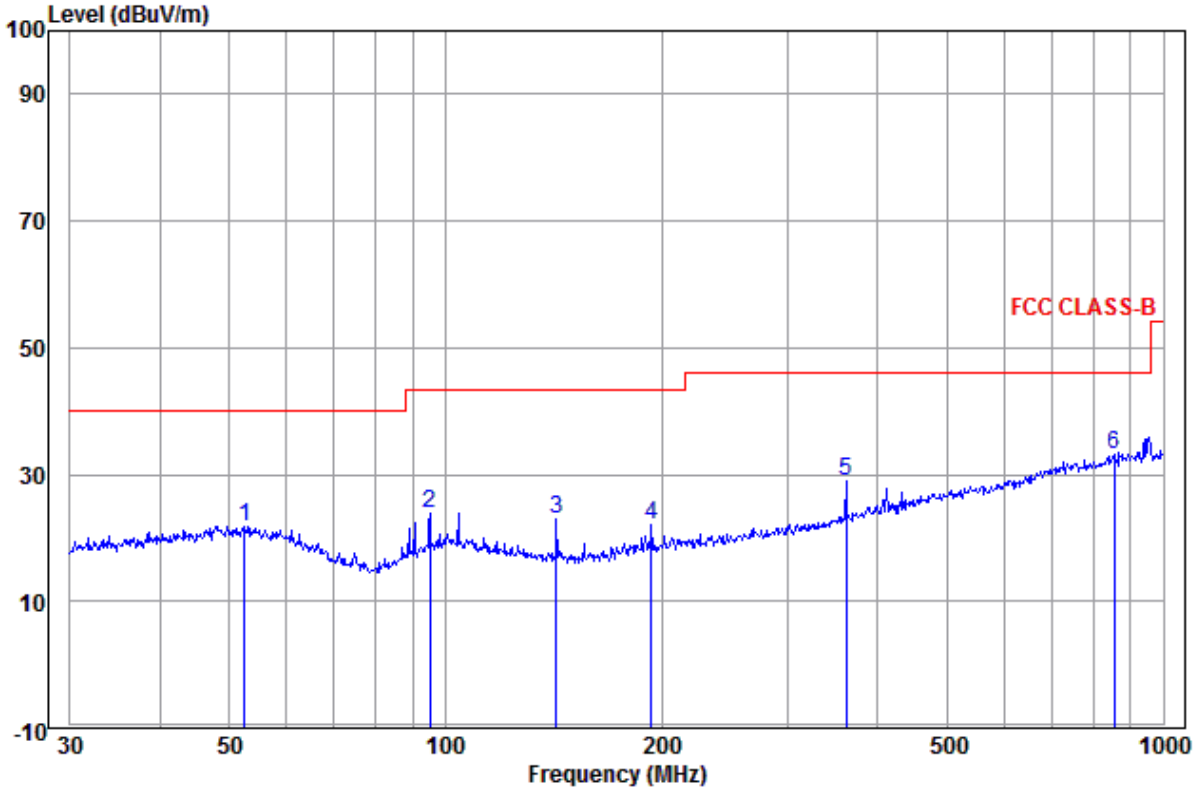
Figure 2. Above 1 GHz

Instruments Used: Refer to section 6 for details

Test Mode: Normal operation mode

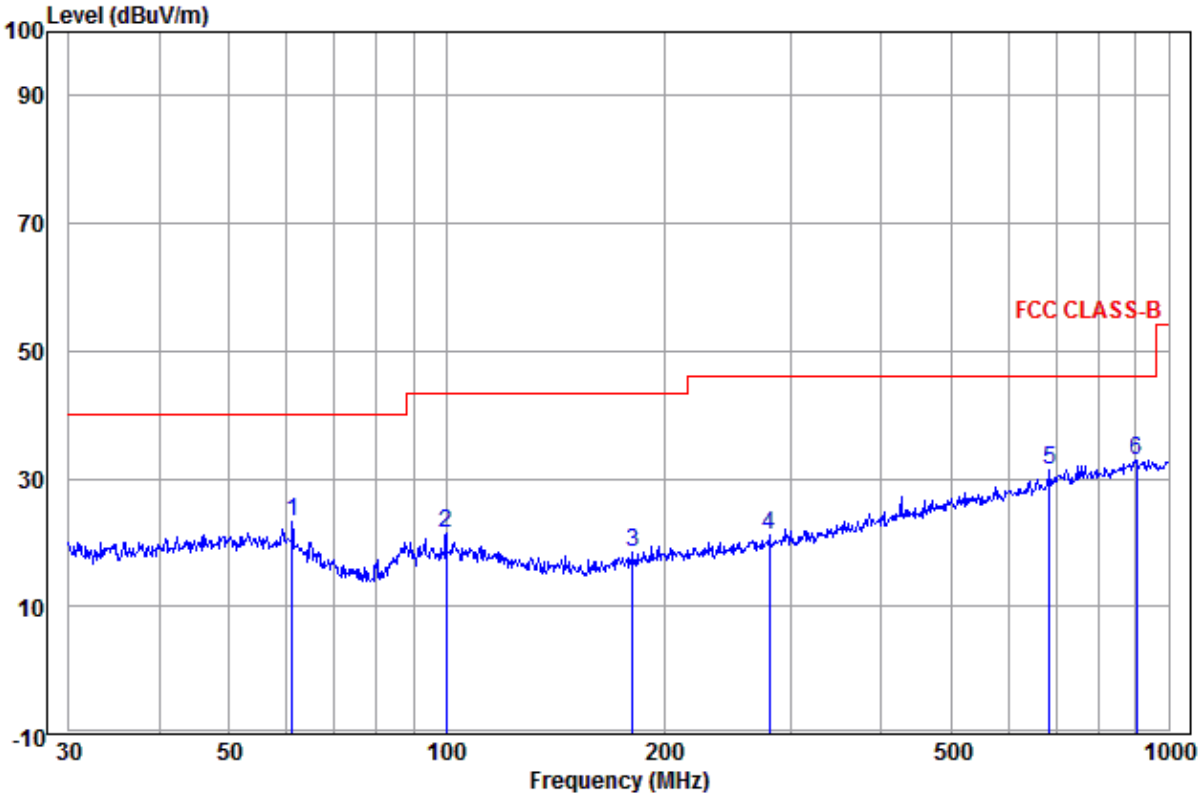
Test Results: Pass

Below 1GHz:
Horizontal



	Freq	Ant Factor	Cable Loss	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB		
1	52.575	14.74	1.41	5.69	21.84	40.00	-18.16	Horizontal	
2	95.093	12.24	1.58	9.98	23.80	43.50	-19.70	Horizontal	
3	142.824	10.12	1.58	11.33	23.03	43.50	-20.47	Horizontal	
4	193.773	11.39	2.14	8.41	21.94	43.50	-21.56	Horizontal	
5	361.714	15.17	2.73	11.05	28.95	46.00	-17.05	Horizontal	
6 pp	854.025	21.94	4.19	7.02	33.15	46.00	-12.85	Horizontal	

Vertical



	Freq	Ant Factor	Cable Loss	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB		
1	61.132	13.39	1.43	8.34	23.16	40.00	-16.84	Vertical	
2	99.878	13.18	1.57	6.69	21.44	43.50	-22.06	Vertical	
3	181.283	10.95	1.99	5.59	18.53	43.50	-24.97	Vertical	
4	280.024	13.08	2.37	5.58	21.03	46.00	-24.97	Vertical	
5	684.745	20.37	3.79	7.11	31.27	46.00	-14.73	Vertical	
6 pp	903.309	22.40	4.34	6.09	32.83	46.00	-13.17	Vertical	

Above 1GHz

Peak value:

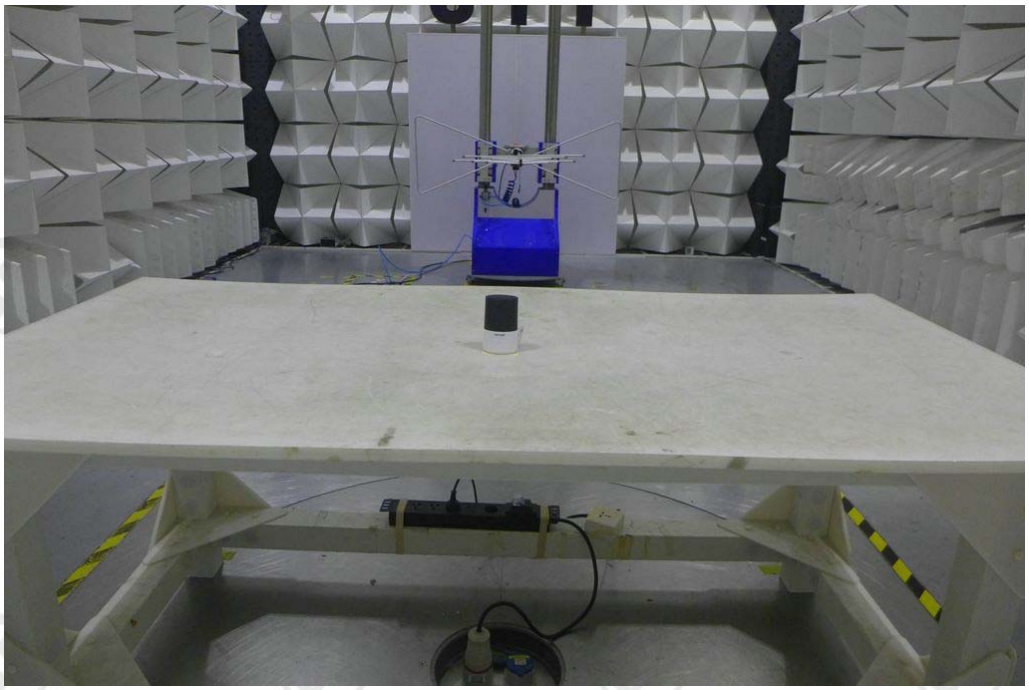
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBμV)	Level (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Result	Antenna Polaxis
1119.499	30.03	2.42	35.05	47.94	45.34	74	-28.66	Pass	H
1449.030	30.77	2.78	34.72	46.99	45.82	74	-28.18	Pass	H
1868.851	31.50	3.14	34.39	46.56	46.81	74	-27.19	Pass	H
3086.435	33.52	5.60	34.51	45.69	50.30	74	-23.70	Pass	H
3765.580	32.97	5.48	34.58	45.50	49.37	74	-24.63	Pass	H
4702.434	34.47	5.15	34.38	44.95	50.19	74	-23.81	Pass	H
1133.628	30.06	2.44	35.04	47.07	44.53	74	-29.47	Pass	V
1449.030	30.77	2.78	34.72	46.99	45.82	74	-28.18	Pass	V
2188.024	32.12	3.76	34.34	46.39	47.93	74	-26.07	Pass	V
3187.600	33.43	5.58	34.52	46.22	50.71	74	-23.29	Pass	V
3765.580	32.97	5.48	34.58	45.50	49.37	74	-24.63	Pass	V

Remark:

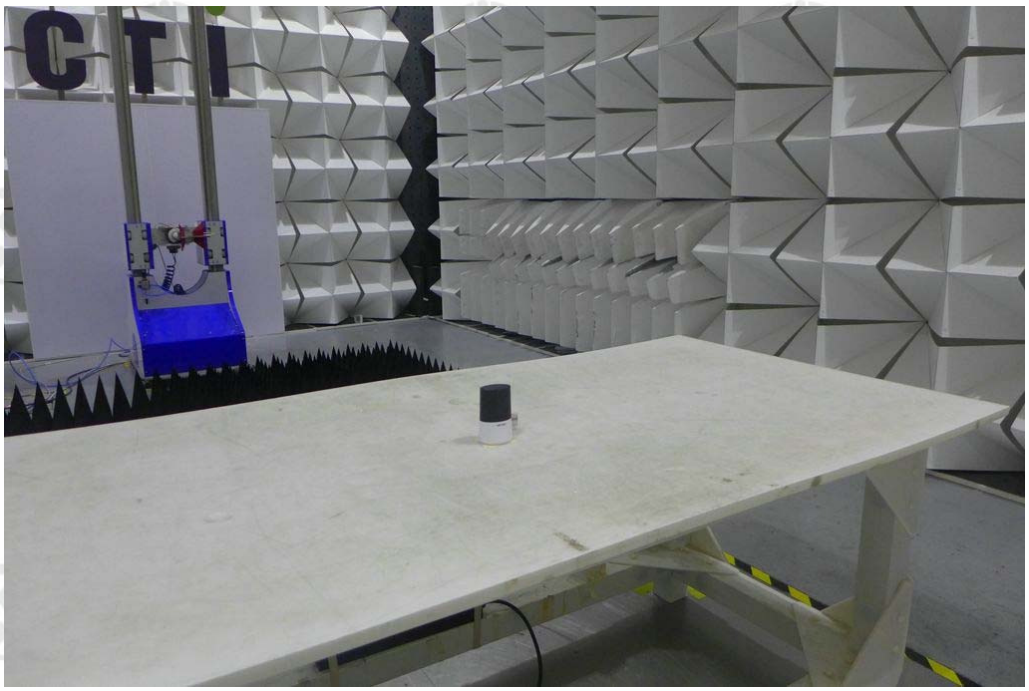
1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
   Final Test Level =Receiver Reading - Correct Factor
   Correct Factor = Preamplifier Factor– Antenna Factor–Cable Factor
2) As shown in this section, for frequencies above 1GHz, the field strength limits are based on Peak limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. So, only the peak values are measured.
3) Scan from 30MHz to 5GHz, the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

APPENDIX 1 PHOTOGRAPHS OF TEST SETUP

Test Model No.: DB100C



Radiated emission Test Setup-1 (Below 1GHz)

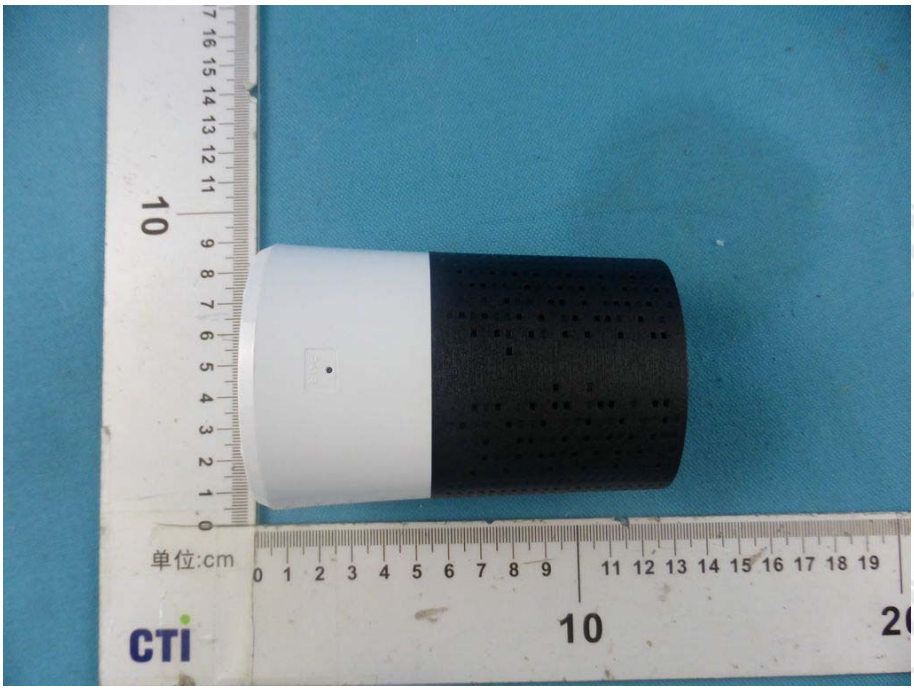


Radiated emission Test Setup-2(Above 1GHz)

APPENDIX 2 PHOTOGRAPHS OF EUT

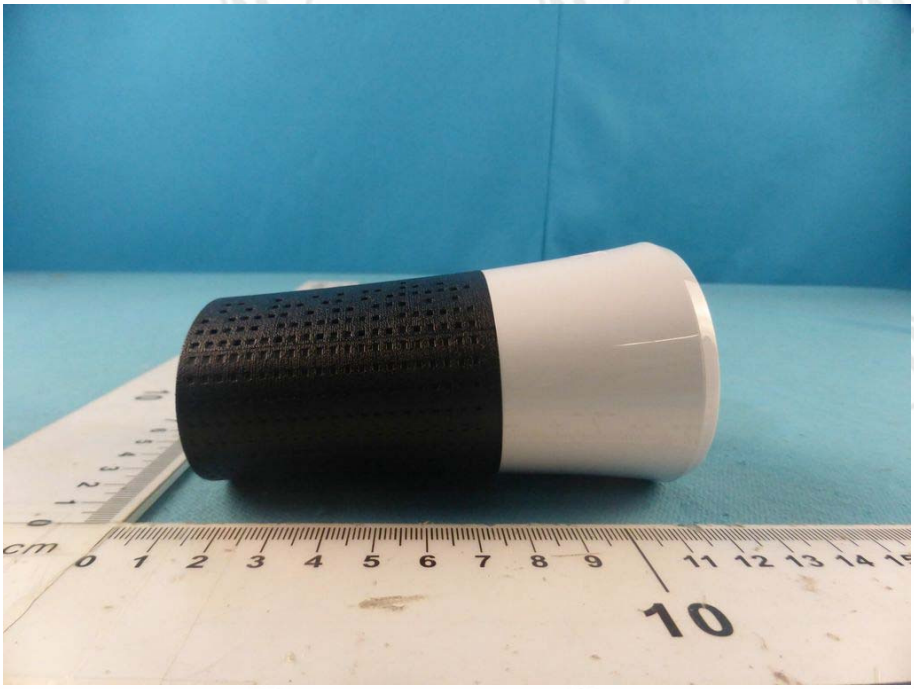
Test model No.: DB100C

View of Product-1

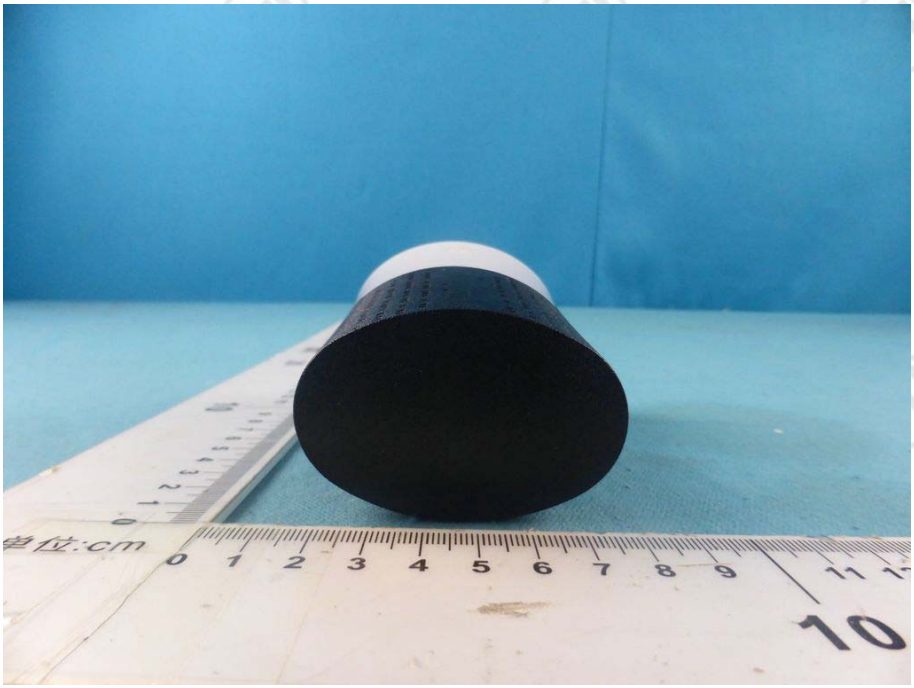


View of Product-2

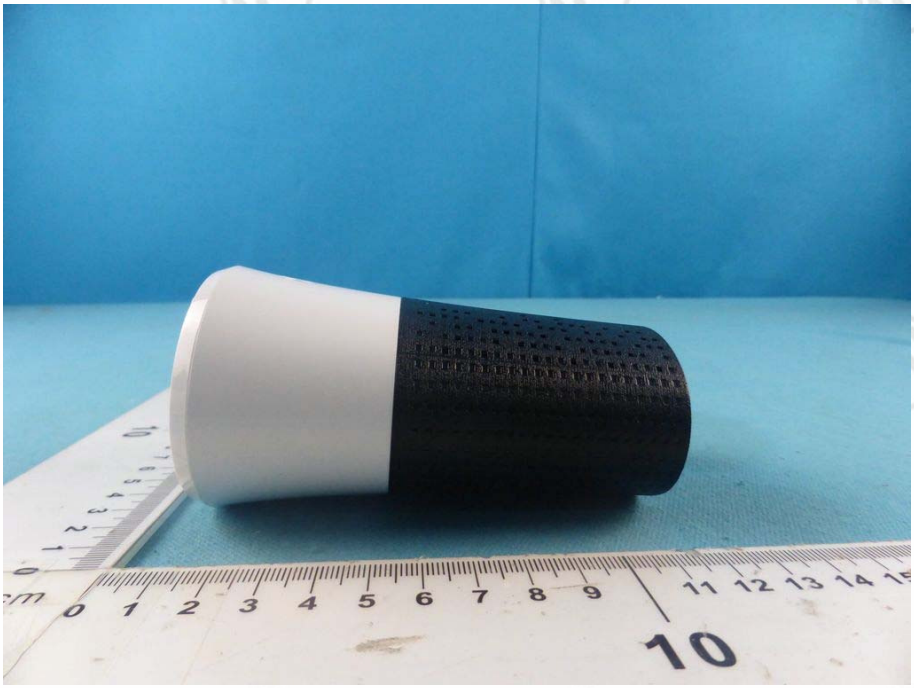
View of Product-3



View of Product-4

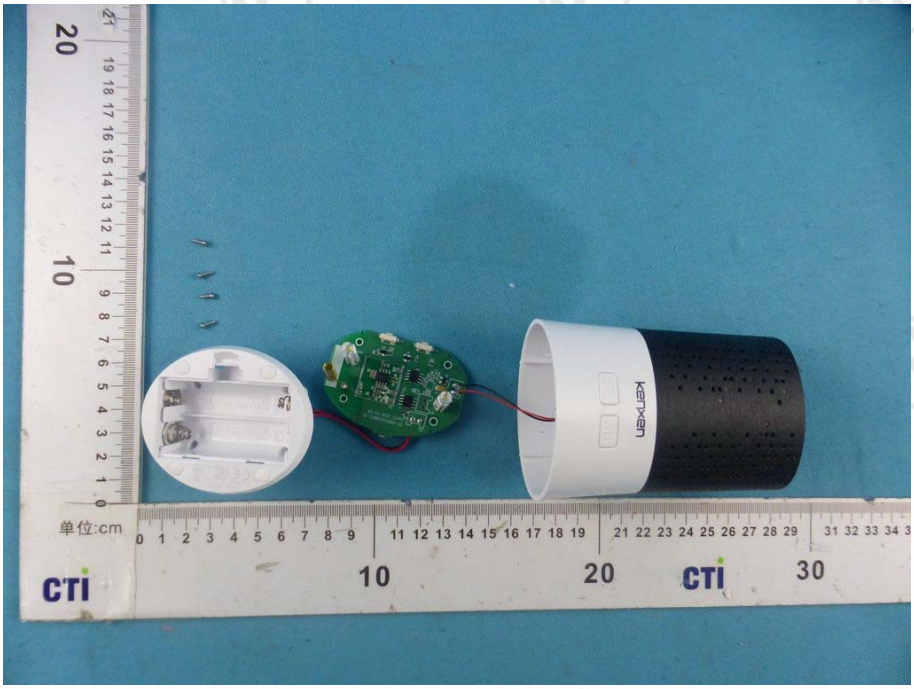


View of Product-5

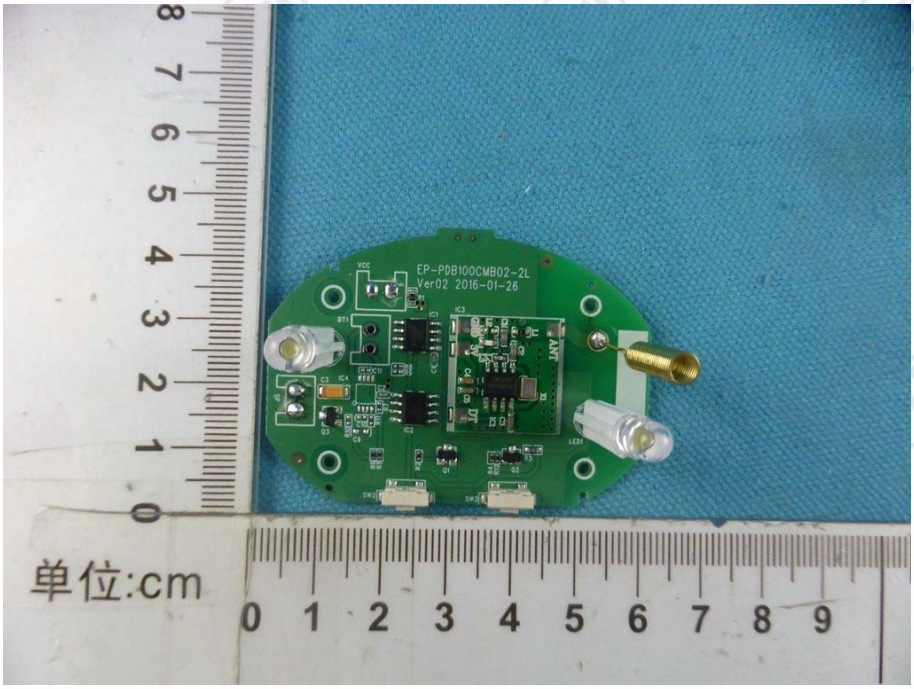


View of Product-6

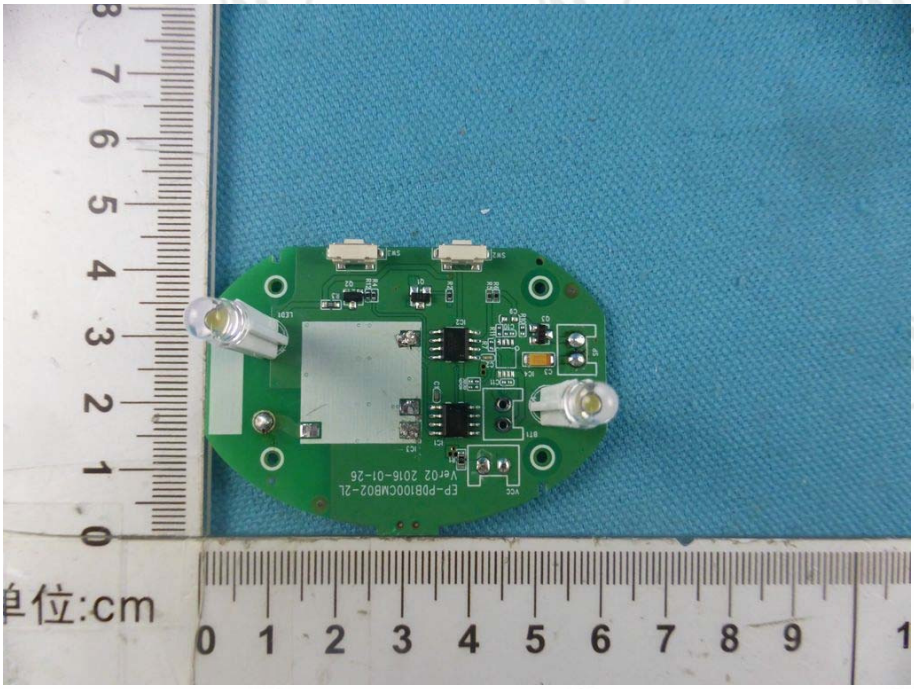
View of Product-7



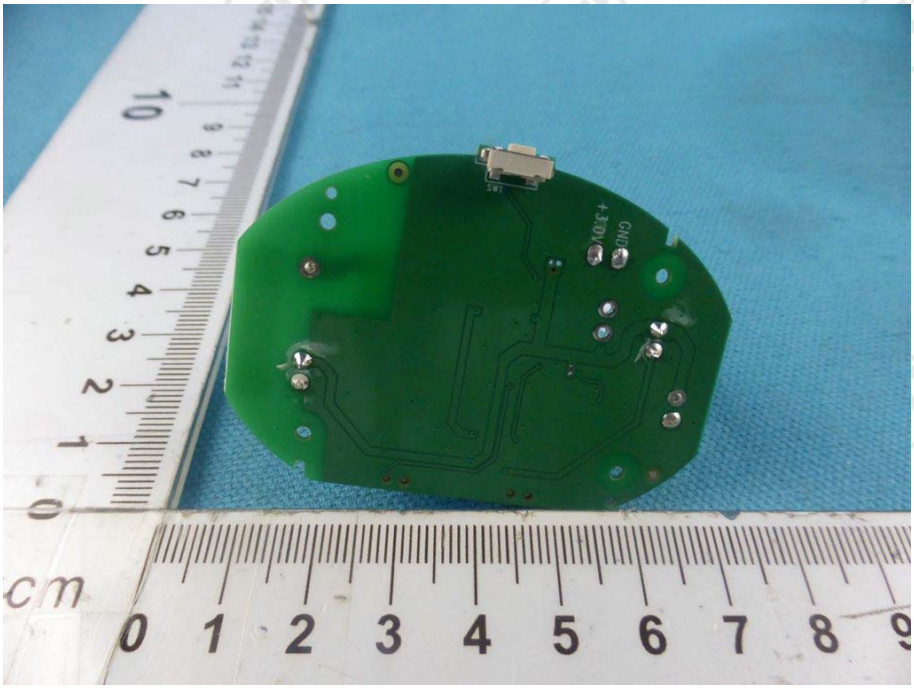
View of Product-8



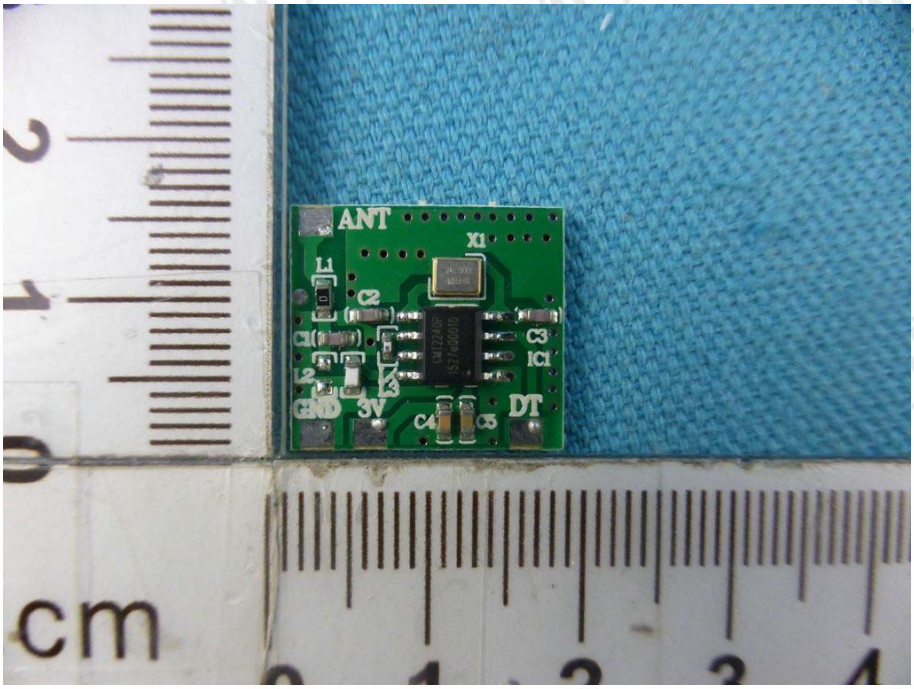
View of Product-9



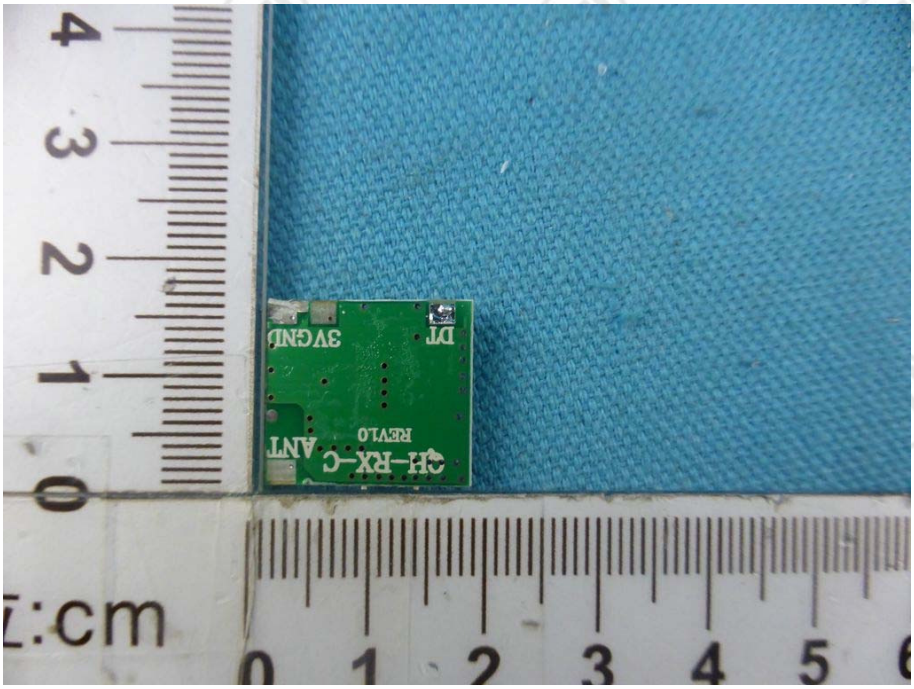
View of Product-10



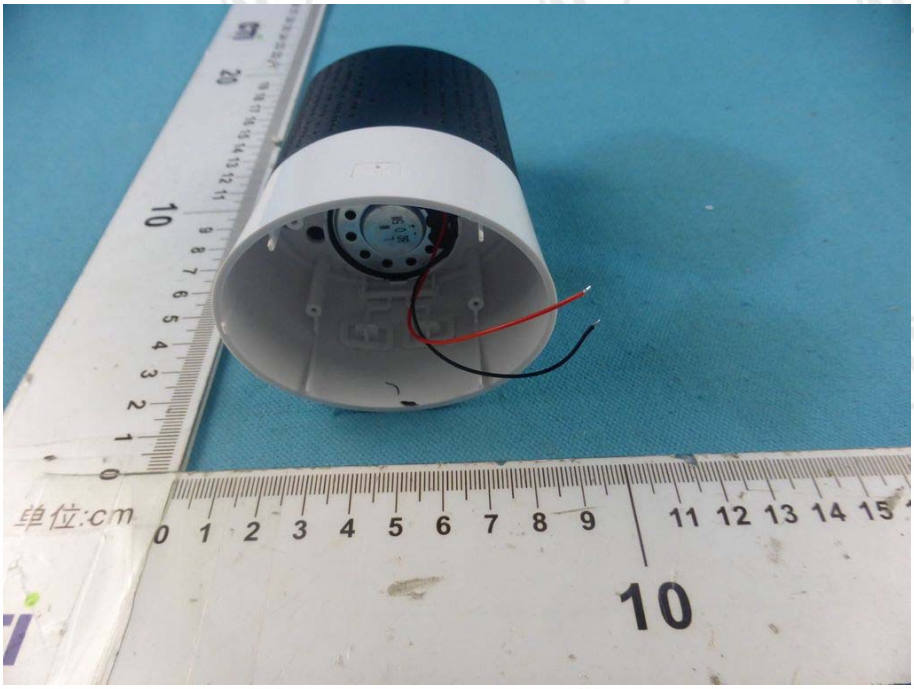
View of Product-11



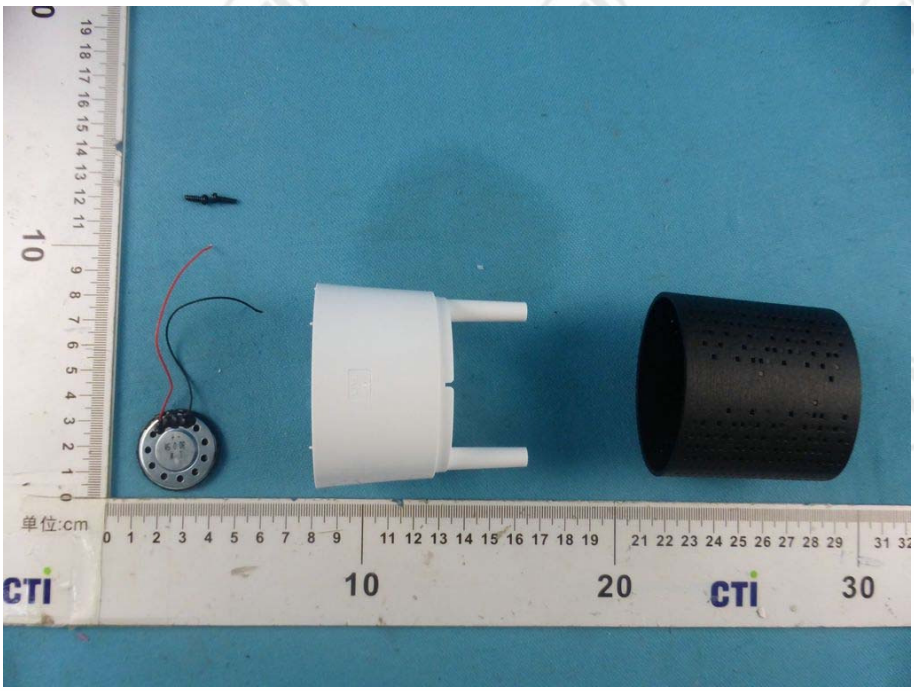
View of Product-12



View of Product-13



View of Product-14



View of Product-15

*** End of Report ***