FCC TEST REPORT

FCC ID:2AB4QN4

Product Name:	Water leak host panel
Trademark:	OAK,
Model Number:	N4
Prepared For:	SHENZHEN OAK ELECTRONIC TECH. CO., LTD
Address:	Room 403, Huafeng Xinan Business Building, 45th Zone, Baoan District, Shenzhen, China
Prepared By:	Shenzhen BCTC Technology Co., Ltd.
Address:	NO.101, Yousong Road, Longhua New District, Shenzhen, Guangdong, P.R.China
Report No.:	BCTC-151216660

TABLE OF CONTENT

Shenzhen BCTC Technology Co., Ltd.

Applicant	:	SHENZHEN OAK ELECTRONIC TECH. CO., LTD
Address	:	Room 403, Huafeng Xinan Business Building, 45th Zone, Baoan District, Shenzhen, China
Manufacturer	:	SHENZHEN OAK ELECTRONIC TECH. CO., LTD
Address	:	Room 403, Huafeng Xinan Business Building, 45th Zone, Baoan District, Shenzhen, China
EUT	:	Water leak host panel
Model Number	:	N4
Trademark:	:	OAK,
Test Date	:	Dec. 25 - Dec. 30, 2015
Date of Report	:	Jan. 4, 2016
Test Result:	:	The equipment under test was found to be compliance with the requirements of the standards applied.

Test Procedure Used:

FCC Part 15 B: 2014

ANSI C63.4:2014

Prepared by(Engineer): Alyssa Jiu

Reviewer(Supervisor): Jade Yang

Approved & Authorized Signer(Manager): Carson.Zhang

SHENZHEN BCTC TECHNOLOGY CO., LTD. APPROVED

This test report is based on a single evaluation of one sample of above mentioned products. It is not permitted to be duplicated in extracts without written approval of Shenzhen BCTC Technology Co., Ltd.

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

EUT	:	Water leak host panel
Model Number	:	N4
Trademark	:	OAK,
Model Difference	:	N/A
Power Supply	:	DC 12V from adapter
Work Frequency	:	433.92MHz
Adapter	:	Model:KT10W120100USD I/P:AC 100-240V 50/60Hz 0.4A O/P: DC 12V 1A

1.2. Tested System Details

TX Part:
Manufacturer: SHENZHEN OAK ELECTRONIC TECH. CO., LTD
Model: WS01

1.3. Test Uncertainty

Conducted Emission Uncertainty	:	±2.66dB
Radiated Emission Uncertainty	:	±4.26dB

1.4. Independent Operation Modes

Test Mode	Description
Mode 1	RX Mode(433.92MHz)

This product for 433.92MHz is receiver only.

1.5. Test Facility

Site Description

Name of Firm	:	Shenzhen BCTC Technology Co., Ltd.
Site Location	:	NO.101, Yousong Road, Longhua New District, Shenzhen, Guangdong, P.R.China
Lab Qualifications	:	Certificated by Industry Canada Registration No.: 12655A Date of registration: January 19, 2015 Certificated by FCC, USA Registration No.: 187086 Date of registration: November 28, 2014 Certificated by CNAS China Registration No.: CNAS L6046 Date of registration: February 3, 2013

2. TEST INSTRUMENT USED

For Conducted Emission at the mains terminals Test

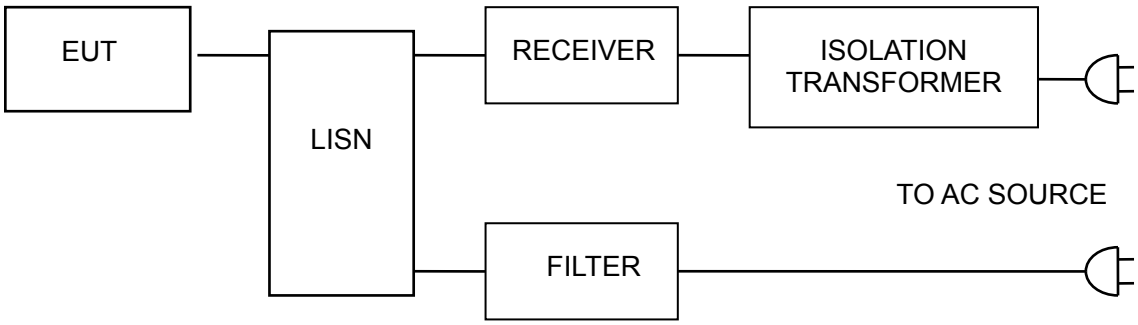
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
843 Shielded Room	ChengYu	843 Room	843	Aug. 25, 2015	Aug. 24, 2016
EMI Receiver	R&S	ESCI	101421	Aug. 27, 2015	Aug. 26, 2016
LISN	Schwarzbeck	NSLK8127	8127739	Sep. 07, 2015	Sep. 06, 2016
Attenuator	R&S	ESH3-Z2	BCTC021E	Aug. 25, 2015	Aug. 24, 2016
843 Cable 1#	FUJIKURA	843C1#	001	Aug. 25, 2015	Aug. 24, 2016

For Radiated Emission Test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Test Receiver	R&S	ESPI	101318	2015.06.07	2016.06.06
System Simulator	Agilent	E5515C	GB43130252	2015.06.07	2016.06.06
Power Splitter	Weinschel	1506A	NW534	2015.06.07	2016.06.06
Bilog Antenna	TESEQ	CBL6111D	31216	2015.07.06	2016.07.05
Loop antenna	ARA	PLA-1030/B	1029	2015.06.07	2016.06.06
Spectrum Analyzer	Agilent	E4411B	MY4511235	2015.07.06	2016.07.05
Signal Amplifier	SONOMA	313	187022	2015.07.06	2016.07.05
Signal Amplifier	Agilent	8449B	3008A00213	2015.07.06	2016.07.05
RF Cable	R&S	R203	R20X	2015.07.06	2016.07.05
MULTI-DEVICE Controller	ETS-LINDGREEN	31250	126821	N/A	N/A
Horn Antenna	EM	EM-AH-10180	2011071402	2015.07.06	2016.07.05
Horn Antenna	Schwarzbeck	BBHA 9170	9170-181	2015.07.06	2016.07.05
Spectrum Analyzer	Agilent	8593E	3911A03928	2015.07.06	2016.07.05
Spectrum Analyzer	Agilent	E4407B	MY45108040	2015.07.06	2016.07.05
Signal Amplifier	DAZE	ZN3380B	11235	2015.08.25	2016.08.24
High Pass filter	KANGMAI	WHKX1.0/1.5G-10SS	40	2015.08.25	2016.08.24
Filter	COM-MW	ZBSF-C836.5-25-X	BCTC042	2015.08.25	2016.08.24
Filter	COM-MW	ZBSF-C1747.5-75-X2	BCTC045	2015.08.25	2016.08.24
Filter	COM-MW	ZBSF-C1880-60-X2	BCTC047	2015.08.25	2016.08.24
DC Power Supply	LongWei	PS-305D	010965682	2015.07.06	2016.07.05
Constant temperature and humidity box	GF	GTH-800-40-2P	MAA9906-012	2015.06.07	2016.06.06
Universal radio communication tester	R&S	CMU200	115295	2015.08.25	2016.08.24
Splitter	Agilent	11435B	1125162	2015.07.06	2016.07.05

3. CONDUCTED EMISSION AT THE MAINS TERMINALS TEST

3.1. Block Diagram Of Test Setup



3.2. Test Standard

FCC PART 15 B

3.3. Power Line Conducted Emission Limit

Frequency MHz	Limits dB(μV)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66 ~ 56*	56 ~ 46*
0.50 ~ 5.00	56	46
5.00 ~ 30.00	60	50

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

3.4. EUT Configuration on Test

The following equipments are installed on conducted emission test to meet FCC PART 15 B requirement and operating in a manner which tends to maximize its emission characteristics in a normal application.

3.5. Operating Condition of EUT

3.5.1 Setup the EUT and simulators as shown in Section 3.1.
3.5.2 Turn on the power of all equipments.
3.5.3 Let the EUT work in test modes and test it.

3.6. Test Procedure

The EUT is put on the ground and connected to the AC mains through a Artificial Mains Network (AMN). This provided a 50ohm coupling impedance for the tested equipments. Both sides of AC line are checked to find out the maximum conducted emission levels according to the **FCC PART 15 B** regulations during conducted emission test.

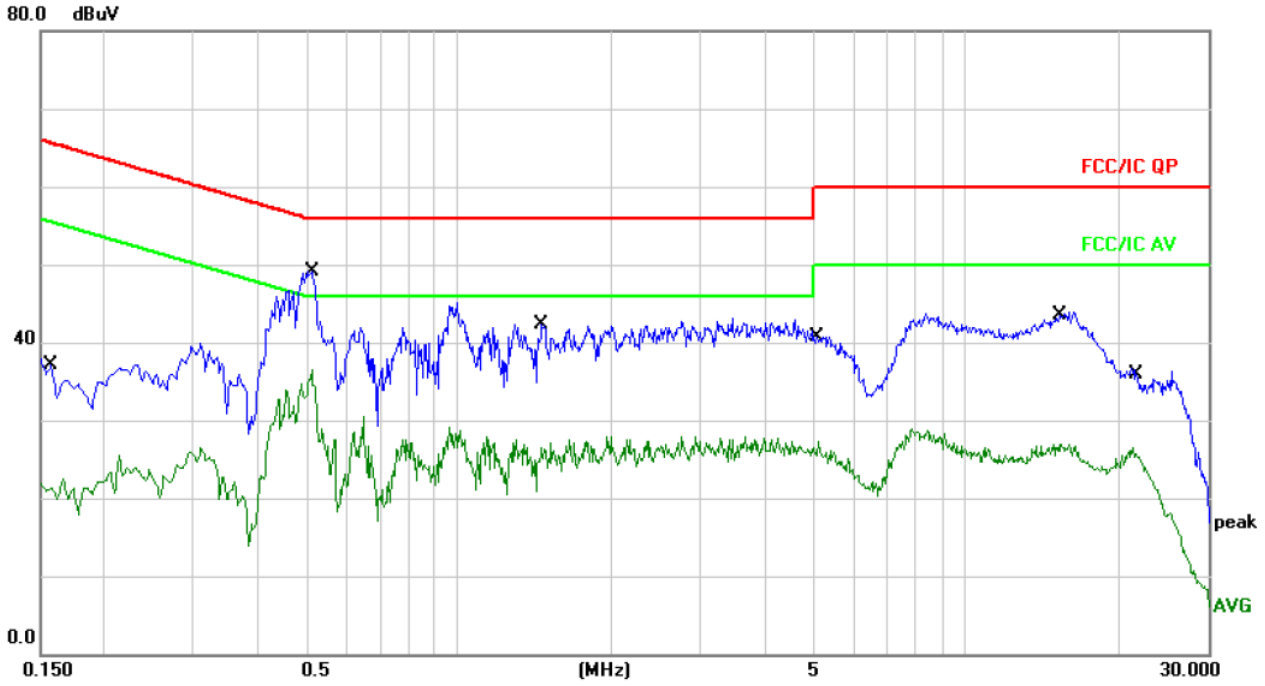
The bandwidth of the test receiver (R&S Test Receiver ESCI) is set at 10KHz.

The frequency range from 150 KHz to 30 MHz is investigated.

3.7. Test Result

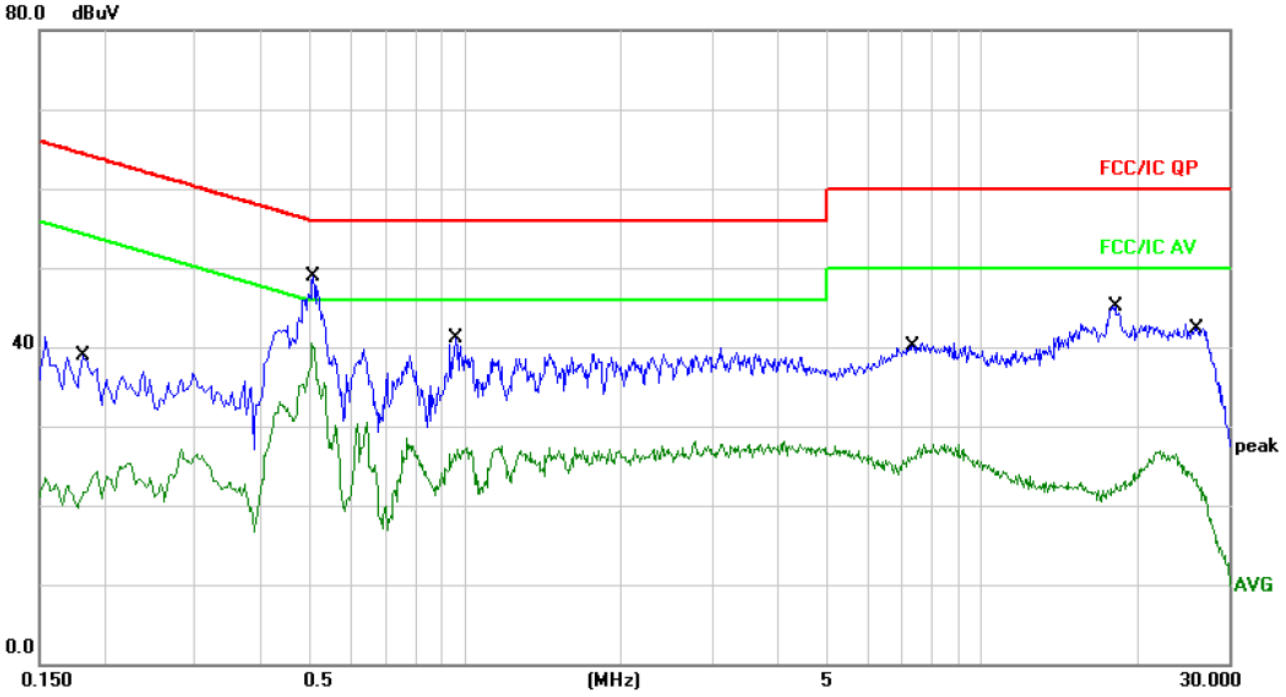
PASS
Please refer to the following page.

Conducted Emission At The Mains Terminals Test Data			
Temperature:	24.5 ℃	Relative Humidity:	54%
Pressure:	1009hPa	Phase :	Line
Test Voltage :	AC 120V/60Hz	Test Mode:	ON Mode



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1580	27.00	10.05	37.05	65.56	-28.51	QP	
2		0.1580	12.44	10.05	22.49	55.56	-33.07	AVG	
3	*	0.5140	39.05	10.12	49.17	56.00	-6.83	QP	
4		0.5140	20.40	10.12	30.52	46.00	-15.48	AVG	
5		1.4620	32.11	10.17	42.28	56.00	-13.72	QP	
6		1.4620	17.40	10.17	27.57	46.00	-18.43	AVG	
7		5.1300	30.66	10.14	40.80	60.00	-19.20	QP	
8		5.1300	17.09	10.14	27.23	50.00	-22.77	AVG	
9		15.2500	33.78	10.15	43.93	60.00	-16.07	QP	
10		15.2500	16.84	10.15	26.99	50.00	-23.01	AVG	
11		21.7220	26.09	10.18	36.27	60.00	-23.73	QP	
12		21.7220	15.19	10.18	25.37	50.00	-24.63	AVG	

Conducted Emission At The Mains Terminals Test Data			
Temperature:	24.5 ℃	Relative Humidity:	54%
Pressure:	1009hPa	Phase :	Neutral
Test Voltage :	AC 120V/60Hz	Test Mode:	ON Mode

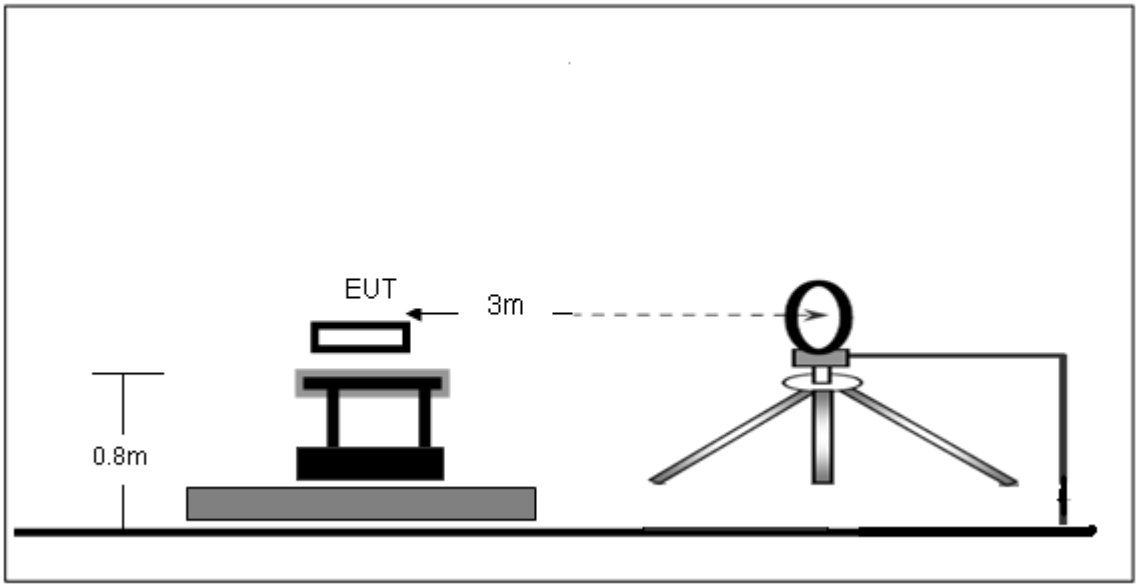


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1819	28.80	10.06	38.86	64.39	-25.53	QP	
2		0.1819	12.04	10.06	22.10	54.39	-32.29	AVG	
3		0.5100	38.76	10.12	48.88	56.00	-7.12	QP	
4	*	0.5100	29.83	10.12	39.95	46.00	-6.05	AVG	
5		0.9620	30.91	10.16	41.07	56.00	-14.93	QP	
6		0.9620	17.04	10.16	27.20	46.00	-18.80	AVG	
7		7.3300	30.00	10.10	40.10	60.00	-19.90	QP	
8		7.3300	17.29	10.10	27.39	50.00	-22.61	AVG	
9		18.1180	34.99	10.16	45.15	60.00	-14.85	QP	
10		18.1180	12.59	10.16	22.75	50.00	-27.25	AVG	
11		26.2139	32.10	10.20	42.30	60.00	-17.70	QP	
12		26.2139	12.30	10.20	22.50	50.00	-27.50	AVG	

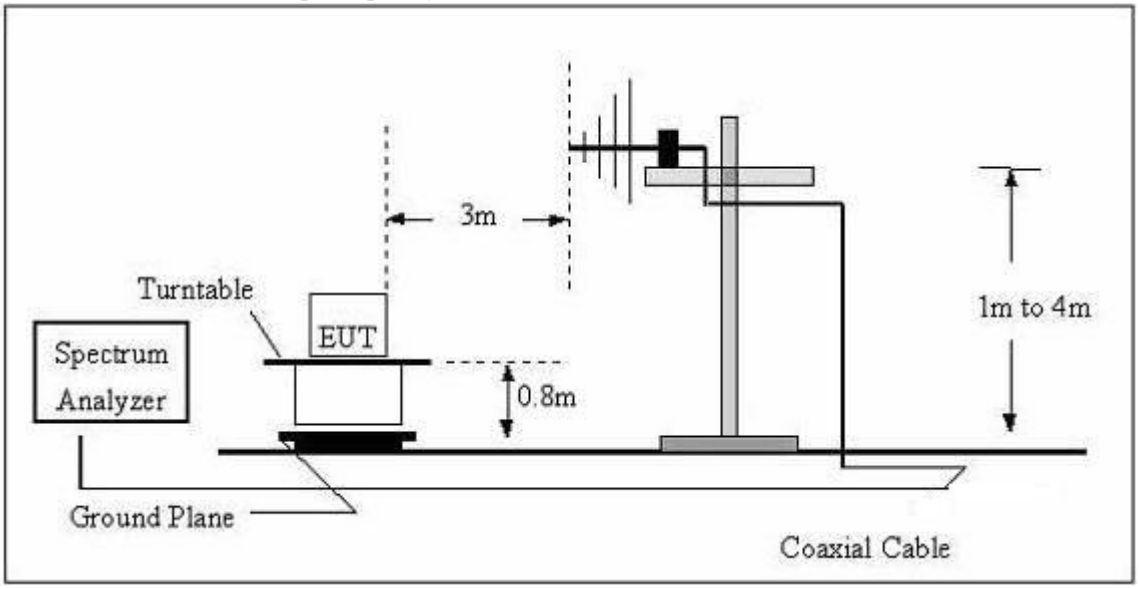
4. RADIATION EMISSION TEST

4.1. Block Diagram of Test Setup

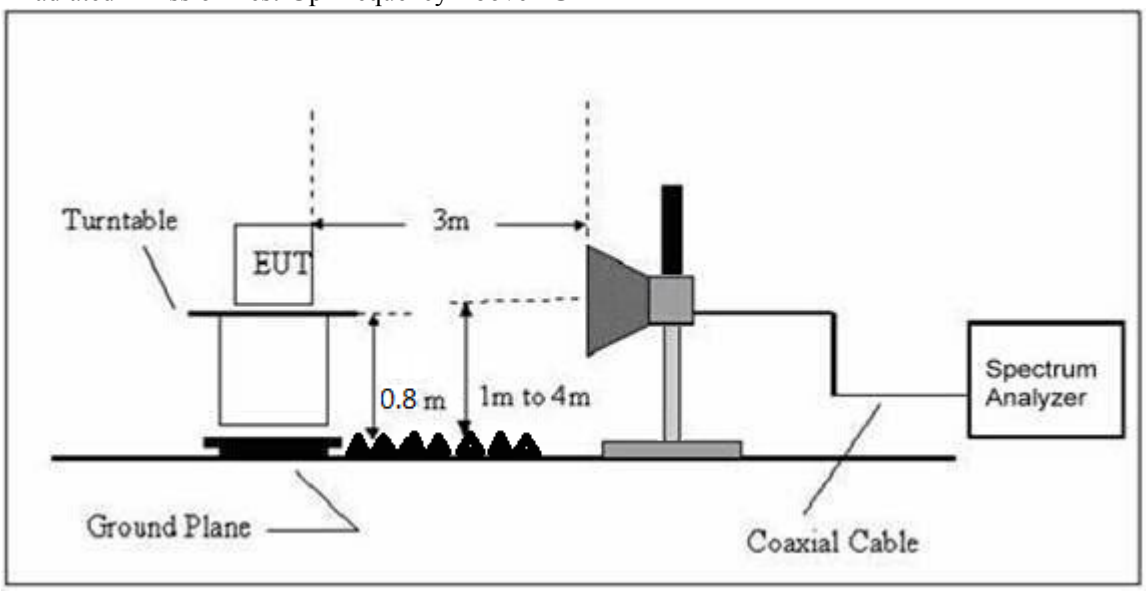
（A）Radiated Emission Test-Up Frequency Below 30MHz



（B）Radiated Emission Test-Up Frequency 30MHz~1GHz



（C）Radiated Emission Test-Up Frequency Above 1GHz



4.2. Test Standard

FCC PART 15 B

4.3. Radiation Limit

FREQUENCY (MHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMITS (dBμV/m)
30 ~ 88	3	40.0
88 ~ 216	3	43.5
216 ~ 960	3	46.0
960 ~ 1000	3	54.0

4.4. EUT Configuration on Test

The FCC PART 15 B regulations test method must be used to find the maximum emission during radiated emission test.
The configuration of EUT is the same as used in conducted emission test. Please refer to Section 2.2.

4.5. Operating Condition of EUT

Same as conducted emission test, which is listed in Section 2.2 except the test set up replaced as Section 4.1.

4.6. Test Procedure

The EUT and its simulators are placed on a turned table that is 0.8 meter above the ground. The turned table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from

the receiving antenna that is mounted on the antenna tower. The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated biconical and log periodical antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna is set on test. In order to find the maximum emission levels, the interface cable must be manipulated according to FCC PART 15 B on radiated emission test.
The bandwidth setting on the field strength meter (R&S Test Receiver ESCI) is set at 120KHz below 1GHz, set at 1MHz above 1GHz
The frequency range from 30MHz to 1000MHz is checked.

The highest frequency of the internal sources of the EUT was 433MHz, so the measurement was only made up to 6GHz.

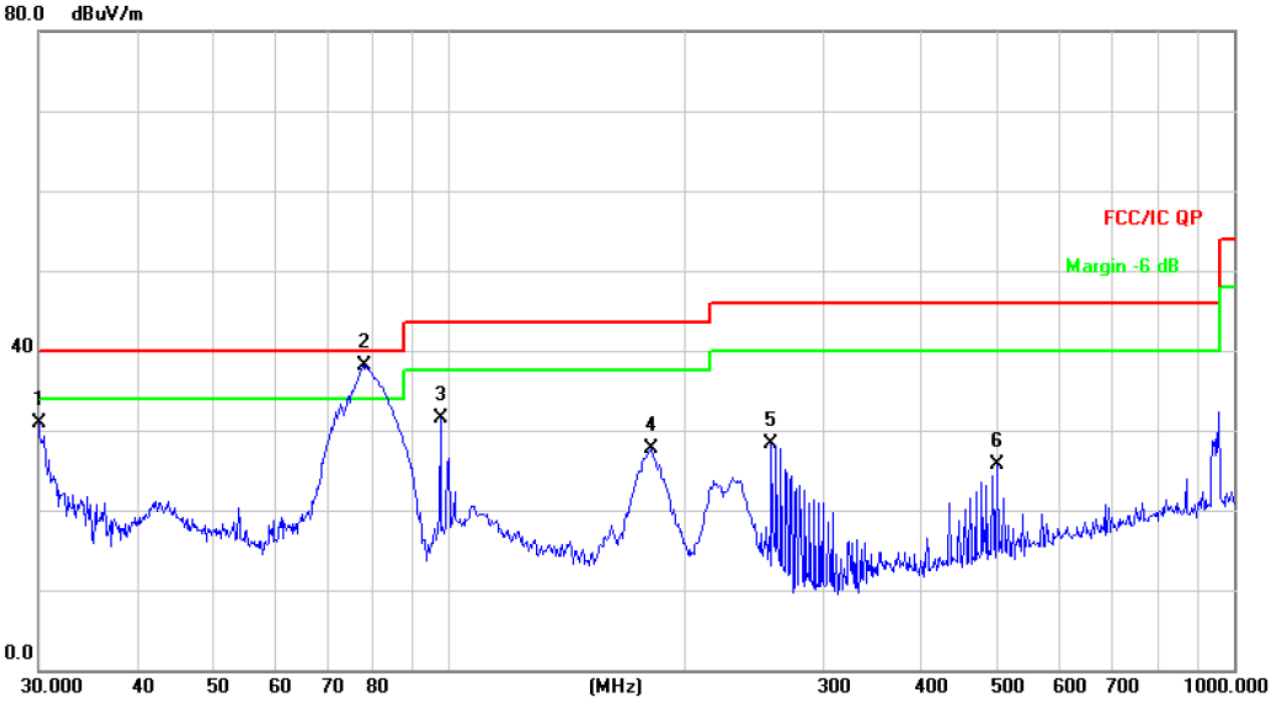
4.7. Test Result

PASS

Please refer to the following page.

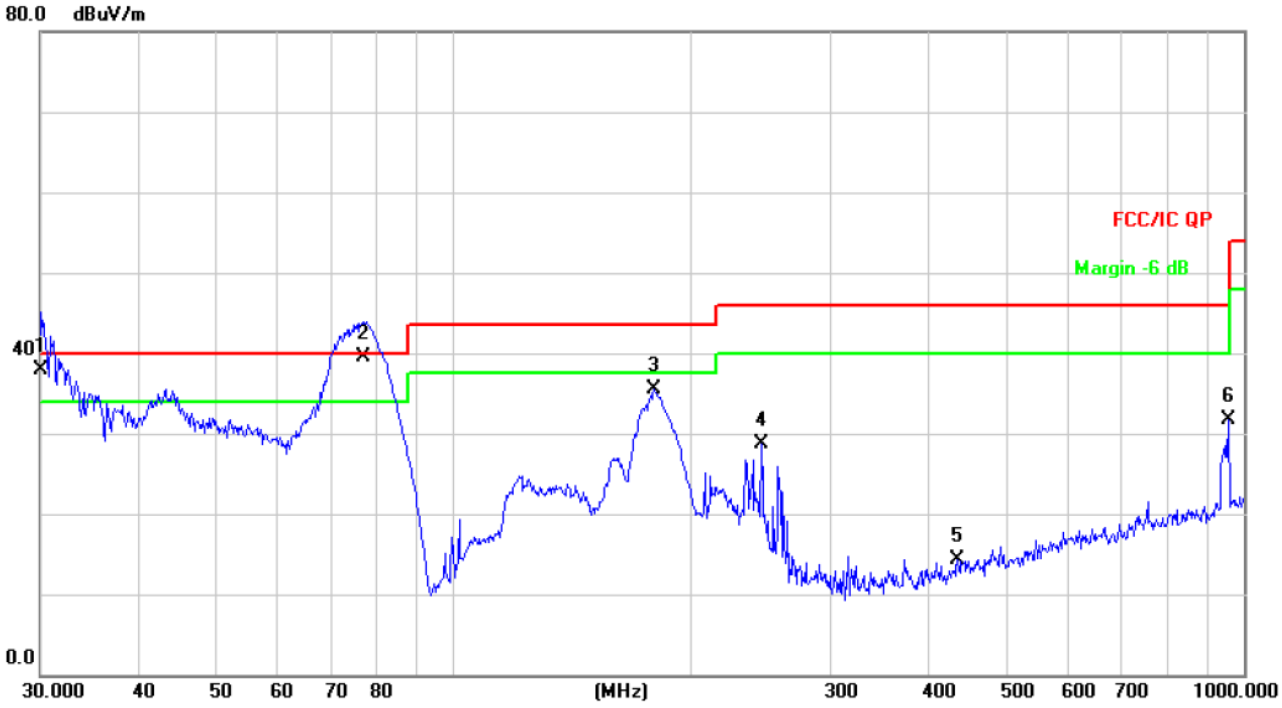
Below 1GHz

Radiation Emission Test Data			
Temperature:	24.5 ℃	Relative Humidity:	54%
Pressure:	1009hPa	Phase :	Horizontal
Test Voltage :	AC 120V/60Hz	Test Mode:	ON Mode



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		30.0000	38.94	-8.02	30.92	40.00	-9.08	peak			
2	*	78.1389	55.49	-17.43	38.06	40.00	-1.94	peak			
3		97.4560	48.24	-16.76	31.48	43.50	-12.02	peak			
4		181.2834	42.24	-14.50	27.74	43.50	-15.76	peak			
5		257.4222	42.24	-13.99	28.25	46.00	-17.75	peak			
6		499.4247	33.99	-8.22	25.77	46.00	-20.23	peak			

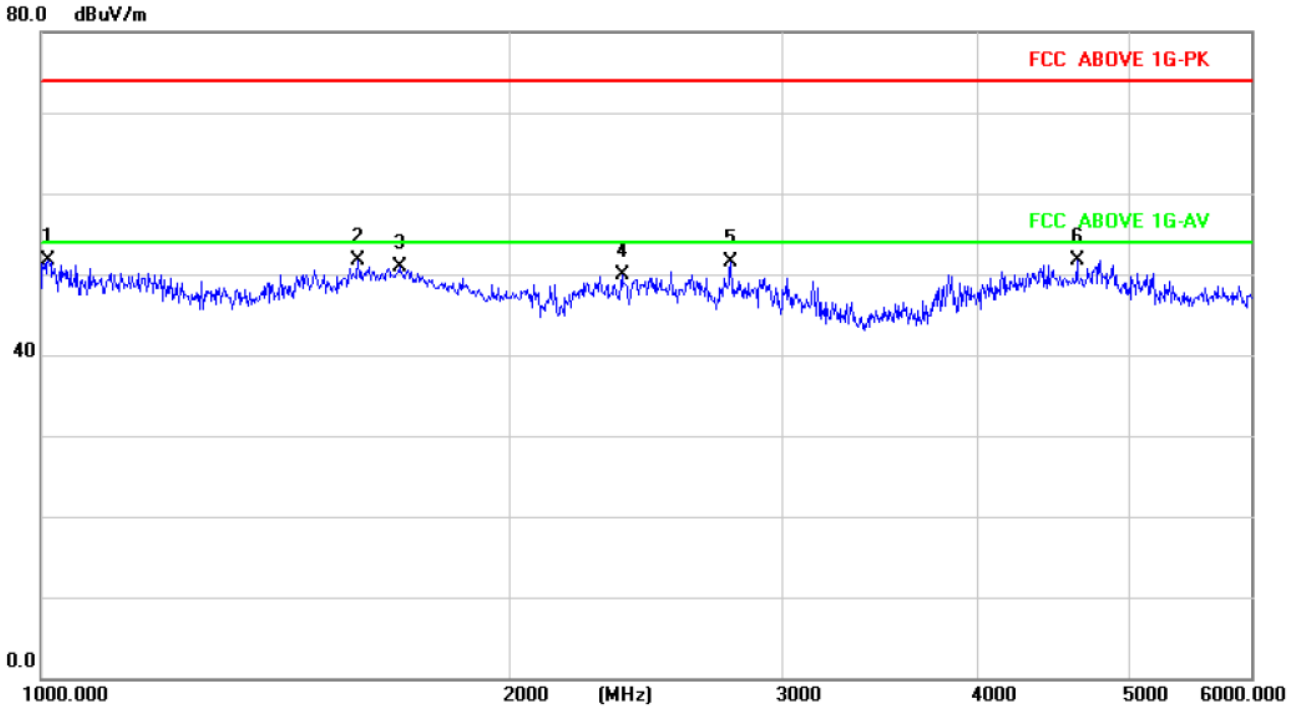
Radiation Emission Test Data			
Temperature:	24.5 ℃	Relative Humidity:	54%
Pressure:	1009hPa	Phase :	Vertical
Test Voltage :	AC 120V/60Hz	Test Mode:	ON Mode



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	!	30.0000	46.02	-8.02	38.00	40.00	-2.00	QP			
2	*	76.9100	55.60	-17.00	38.60	40.00	-1.40	QP			
3		179.3863	49.72	-14.29	35.43	43.50	-8.07	peak			
4		245.0900	43.08	-14.34	28.74	46.00	-17.26	peak			
5		434.0651	23.68	-9.36	14.32	46.00	-31.68	peak			
6		955.4381	32.15	-0.45	31.70	46.00	-14.30	peak			

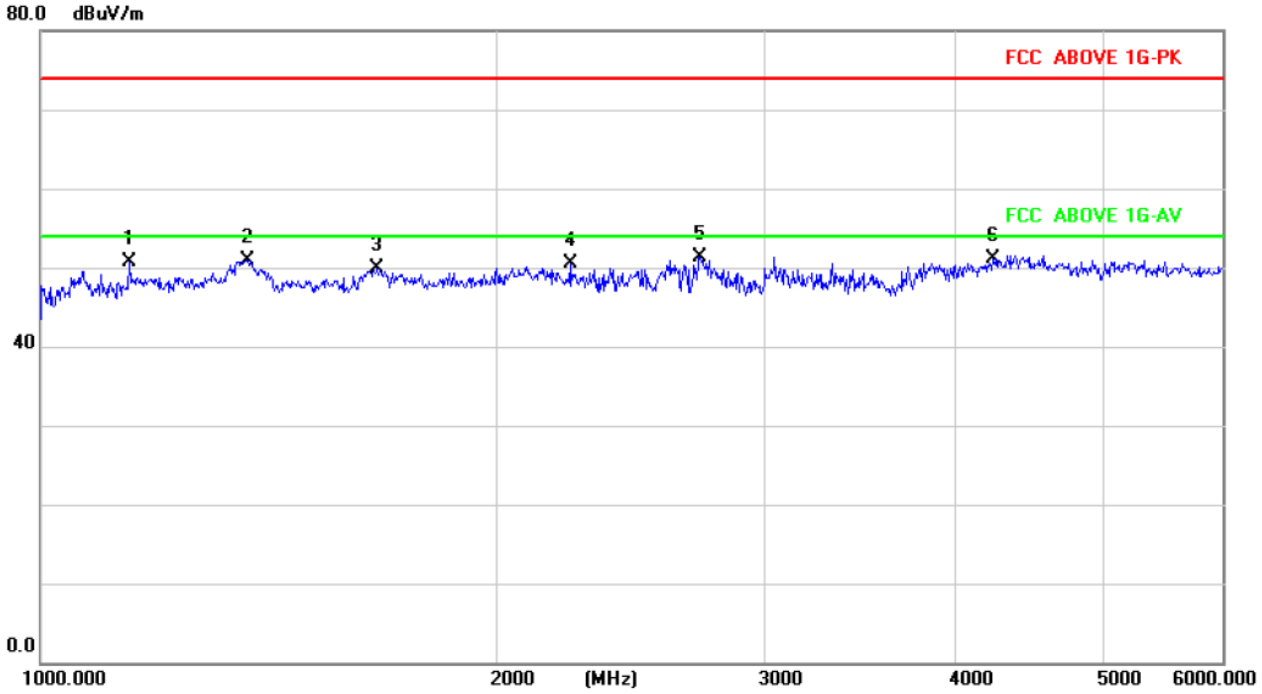
Above1GHz

Radiation Emission Test Data			
Temperature:	24.5 ℃	Relative Humidity:	54%
Pressure:	1009hPa	Phase :	Horizontal
Test Voltage :	AC 120V/60Hz	Test Mode:	ON Mode



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		1010.808	39.40	12.22	51.62	74.00	-22.38	peak			
2		1599.100	38.91	12.70	51.61	74.00	-22.39	peak			
3		1699.545	38.21	12.78	50.99	74.00	-23.01	peak			
4		2363.266	36.15	13.77	49.92	74.00	-24.08	peak			
5		2776.810	36.88	14.64	51.52	74.00	-22.48	peak			
6	*	4635.509	32.53	19.14	51.67	74.00	-22.33	peak			

Radiation Emission Test Data			
Temperature:	24.5 ℃	Relative Humidity:	54%
Pressure:	1009hPa	Phase :	Vertical
Test Voltage :	AC 120V/60Hz	Test Mode:	ON Mode



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		1143.830	38.40	12.33	50.73	74.00	-23.27	peak			
2		1368.285	38.47	12.51	50.98	74.00	-23.02	peak			
3		1666.376	37.21	12.75	49.96	74.00	-24.04	peak			
4		2231.576	36.95	13.50	50.45	74.00	-23.55	peak			
5	*	2717.743	36.75	14.52	51.27	74.00	-22.73	peak			
6		4238.283	32.44	18.68	51.12	74.00	-22.88	peak			

5. EUT PHOTOGRAPHS

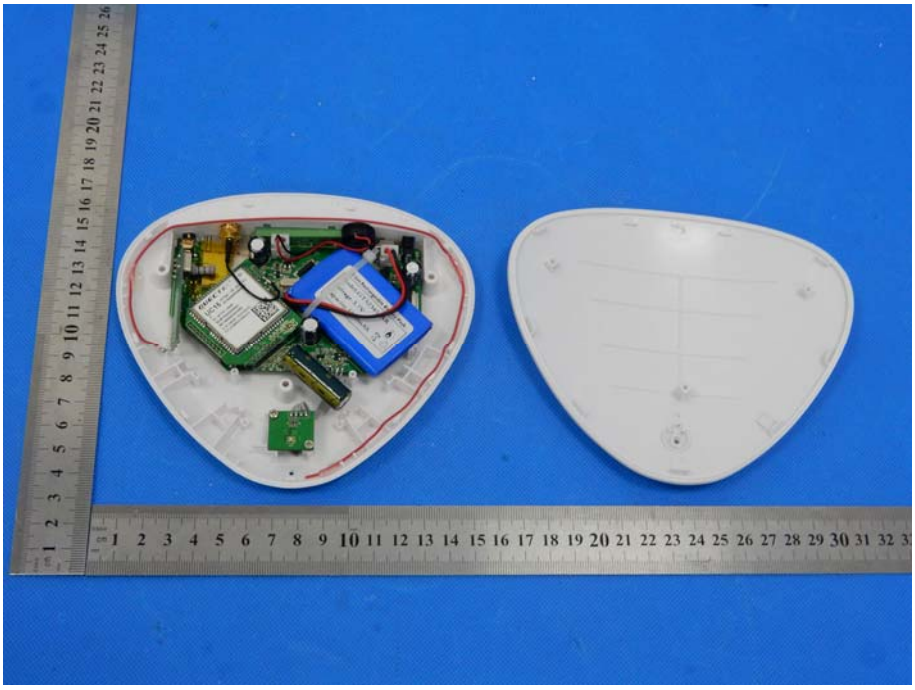
EUT Photo 1

EUT Photo 2

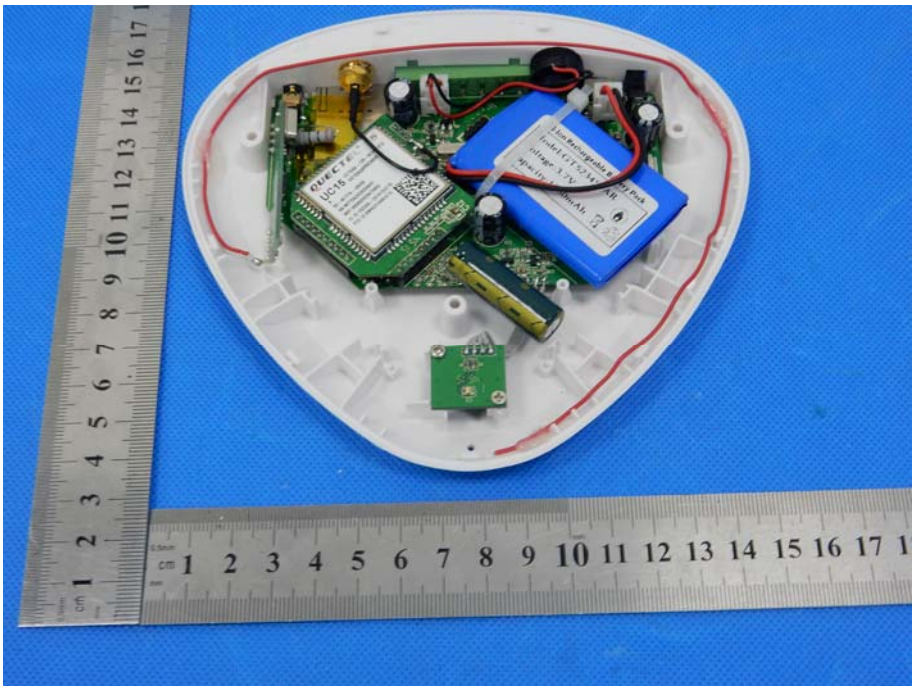
EUT Photo 3

EUT Photo 4

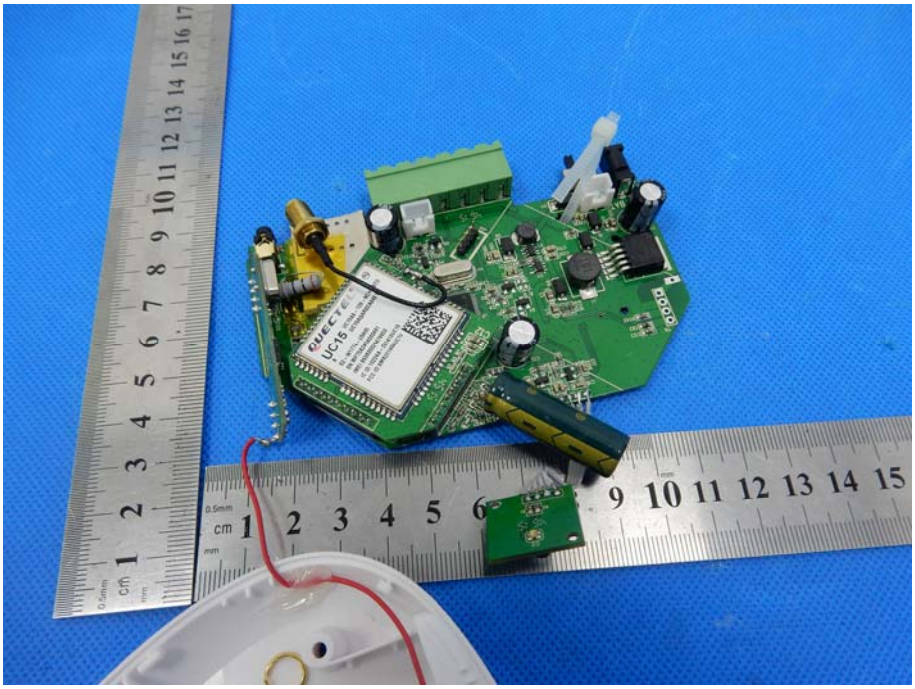
EUT Photo 5



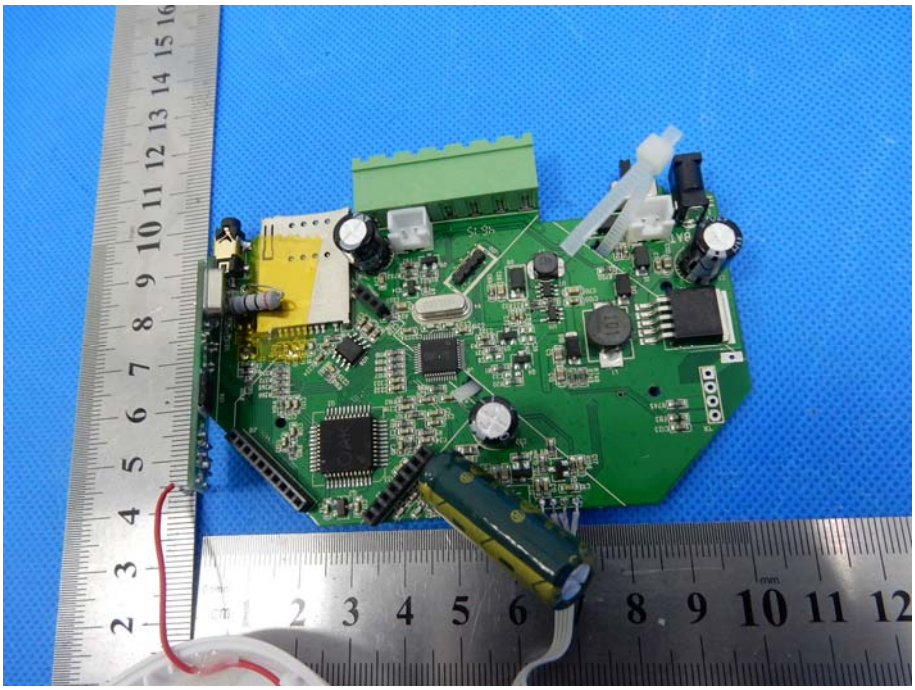
EUT Photo 6



EUT Photo 7



EUT Photo 8



6. EUT TEST PHOTOGRAPHS

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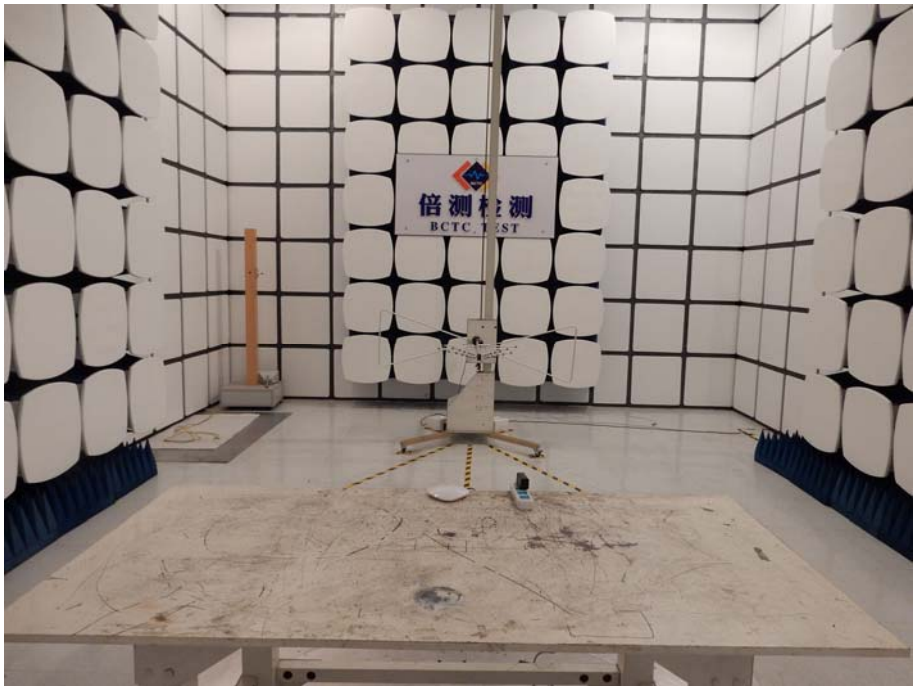

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