

Test Report

Applicant: Active Healthcare Solutions Ltd

Product Name: DAB radio with FM

Brand Name: N/A

Model No.: AC-02

Date of Receipt : Mar.01,2021

Date of Test: Mar.02-03,2021

Date of Report: Mar.04, 2021

Prepared by: Shenzhen Most Technology Service Co., Ltd.

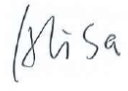
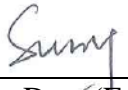

The testing has been performed on the submitted samples and found in compliance with the council FCC Rules and Regulations Part 15 Subpart B.

Shenzhen Most Technology Service Co., Ltd.
No.5, 2nd Langshan Road, North District, Hi-tech Industry Park,
Nanshan, Shenzhen, Guangdong, China

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TEST REPORT VERIFICATION

Report Number	MTEC21030301	
Applicant	Active Healthcare Solutions Ltd	
	72 Leonard St, London, UK EC2A 4QX	
Manufacturer	King Champion Industries Ltd.	
	Flat B, 12/F., Yeung Yiu Chung (No.8) Ind. Bldg., 20 Wang Hoi Road, Kowloon Bay, Hong Kong.	
Product	Product Name	DAB radio with FM
	Model No.	AC-02
	Power Supply	DC 6V by Batteries DC 5.9V by Adapter
Test Result	The EUT was found compliant with the requirement(s) of the standards.	
Standard	FCC Rules and Regulations Part 15 Subpart B Class B.	
<p>*Note</p> <p>The above device has been tested by Shenzhen Most Technology Service Co., Ltd. To determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The test record, data evaluation & Equipment Under Test (EUT) configurations represented are contained in this test report and Shenzhen Most Technology Service Co., Ltd. Is assumed full responsibility for the accuracy and completeness of test. Also, this report shows that the EUT is technically compliant with the requirement of the above standards.</p> <p>This report applies to above tested sample only. This report shall not be reproduced except in full, without written approval of Shenzhen Most Technology Service Co., Ltd., this document may be altered or revised by Shenzhen Most Technology Service Co., Ltd., personal only, and shall be noted in the revision of the document.</p>		
Prepared by		
	Alisa Luo(Engineer)	
Reviewed by		
	Sunny Deng(Engineer)	
Approved by		
	Yvette Zhou(Manager)	



1. GENERAL INFORMATION

1.1. Description of Device (EUT)

Description	:	DAB radio with FM
Model Number	:	AC-02
Remark	:	N/A

1.2. Operational Mode(s) of EUT

Order Number	:	Test Mode(s)
1	:	Running

1.3. Test Voltage(s) of EUT

Order Number	:	Test Voltage(s)
1	:	DC 6V by Batteries
2	:	DC 5.9V by Adapter

2. LABORATORY INFORMATION

2.1. Laboratory Name

Shenzhen Most Technology Service Co., Ltd.

2.2. Location

No.5, 2nd Langshan Road, North District, Hi-tech Industrial Park, Nanshan, Shenzhen, Guangdong, China

2.3. Test facility

- 3m Anechoic Chamber : Nov. 28, 2012 File on Federal Communication Commission
Registration Number:490827
- Shielding Room : Nov. 28, 2012 File on Federal Communication Commission
Registration Number:490827
- EMC Lab. : Accredited by TUV Rheinland Shenzhen
Audit Report: UA 50149851
Mar. 12, 2009
- Accredited by Industry Canada
Registration Number: 7103A-1
Oct. 22, 2012
- Accredited by TIMCO
Registration Number: Q1460
March 28, 2010

2.4. Measurement Uncertainty

No.	Item	Uncertainty
1.	Uncertainty for Conducted Disturbance Test	1.25dB
2.	Uncertainty for Radiated Disturbance Test	3.15dB

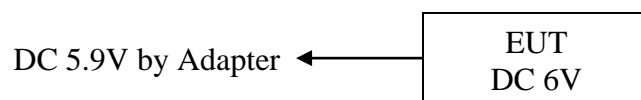
3. SUMMARY OF TEST RESULTS

EMISSION			
Test Item	Standard	Limits	Results
Conducted disturbance at mains terminals	FCC Part 15	Class B	PASS
Radiated disturbance	FCC Part 15	Class B	PASS
N/A is an abbreviation for Not Applicable.			

4. BLOCK DIAGRAM OF TEST SETUP

The equipments are installed test to meet ANSI C63.4:2014 requirement and operating in a manner which tends to maximize its emission characteristics in a normal application. EUT was tested in normal configuration (Please See following Block diagrams)

4.1. Block Diagram of connection between EUT and simulation-EMI



(EUT: DAB radio with FM)

5. TEST INSTRUMENT USED

5.1. For Conducted Disturbance at Mains Terminals Emission Test

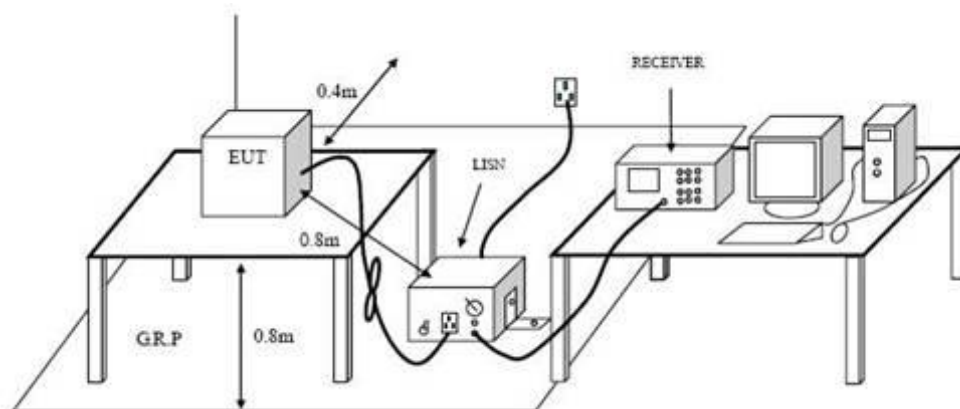
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESCI	100492	Mar. 06, 20	1 Year
2.	L.I.S.N.	Rohde & Schwarz	ENV216	100093	Mar. 06, 20	1 Year
3.	Coaxial Switch	Anritsu Corp	MP59B	6200283933	Mar. 06, 20	1 Year
4.	Terminator	Hubersuhner	50Ω	No.1	Mar. 06, 20	1 Year
5.	RF Cable	SchwarzBeck	N/A..	No.1	Mar. 06, 20	1 Year

5.2. For Radiation Test (In Anechoic Chamber)

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESPI	101202	Mar. 06, 20	1 Year
2.	Bilog Antenna	Sunol	JB3	A121206	Mar. 06, 20	1 Year
3.	Cable	Resenberger	N/A.	NO.1	Mar. 06, 20	1 Year
4.	Cable	SchwarzBeck	N/A..	NO.2	Mar. 06, 20	1 Year
5.	Cable	SchwarzBeck	N/A.	NO.3	Mar. 06, 20	1 Year
6.	DC Power Filter	DuoJi	DL2×30B	N/A.	N/A..	N/A..
7.	Single Phase Power Line Filter	DuoJi	FNF 202B30	N/A.	N/A.	N/A.
8.	3 Phase Power Line Filter	DuoJi	FNF 402B30	N/A.	N/A.	N/A.

6. CONDUCTED DISTURBANCE AT MAINS TERMINALS TEST

6.1. Configuration of Test System



6.2. Test Standard

FCC Subpart 15 B Section 15.107

6.3. Power Line Conducted Disturbance at Mains Terminals Limit

Frequency (MHz)	Maximum RF Line Voltage	
	Quasi-Peak Level dB(μ V)	Average Level dB(μ V)
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.

6.4. Test Procedure

The EUT was placed on a non-metallic table, 80cm above the ground plane. The EUT Power connected to the power mains through a line impedance stabilization network (L.I.S.N. 1#). This provided a 50-ohm coupling impedance for the EUT (Please refer to the block diagram of the test setup and photographs). The other peripheral devices power cord connected to the power mains through a line impedance stabilization network (L.I.S.N.#2). Both sides of power line were checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.4:2014 on conducted Disturbance test.

The bandwidth of test receiver is set at 9 kHz.

The frequency range from 150kHz to 30MHz is checked. The test result are reported on Section 6.5.

6.5. Conducted Disturbance at Mains Terminals Test Results

Test Results: PASS

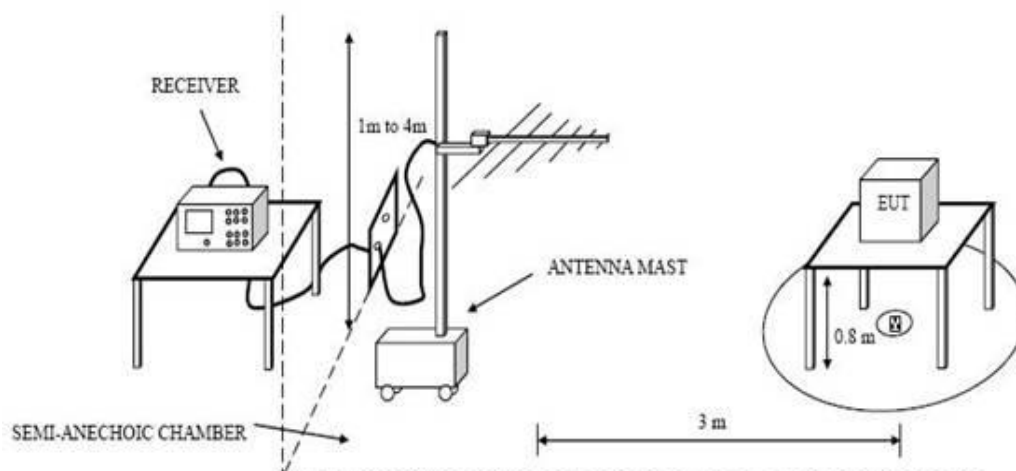
If the average limit is met when using a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.

Emission Level= Correct Factor + Reading Level.

The test data and the scanning waveform are attached within Appendix I.

7. RADIATED DISTURBANCE TEST

7.1. Configuration of Test System



7.2. Test Standard

FCC Subpart 15 B Section 15.109

7.3. Radiated Disturbance Limit

Frequency (MHz)	Distance (Meters)	Field Strengths Limits (dB μ V/m)	
30 ~ 88	3	40.0	
88~216	3	43.5	
216~960	3	46.0	
960 ~ 1000	3	54.0	
1000-18000	3	74(Peak)	54(AV)

Note: 1. Emission level (dB) μ V = 20 log Emission level μ V/m
 2. The lower limit shall apply at the transition frequencies.
 3. Distance refers to the distance in meters between the test antenna and the closed point of any part of the EUT.

7.4. Test Procedure

The EUT was placed on a non-metallic table, 80 cm above the ground plane inside a semi-anechoic chamber. An antenna was located 3m from the EUT on an adjustable mast. A pre-scan was first performed in order to find prominent radiated emissions. For final emissions measurements at each frequency of interest, the EUT were rotated and the antenna height was varied between 1m and 4m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.4:2014 on Radiated Disturbance test.

The bandwidth setting on the test receiver is 120 kHz.

The frequency range from 30MHz to 1000MHz is checked. The test result are reported on Section 7.5

7.5. Radiated Disturbance Test Results

Test Results: PASS

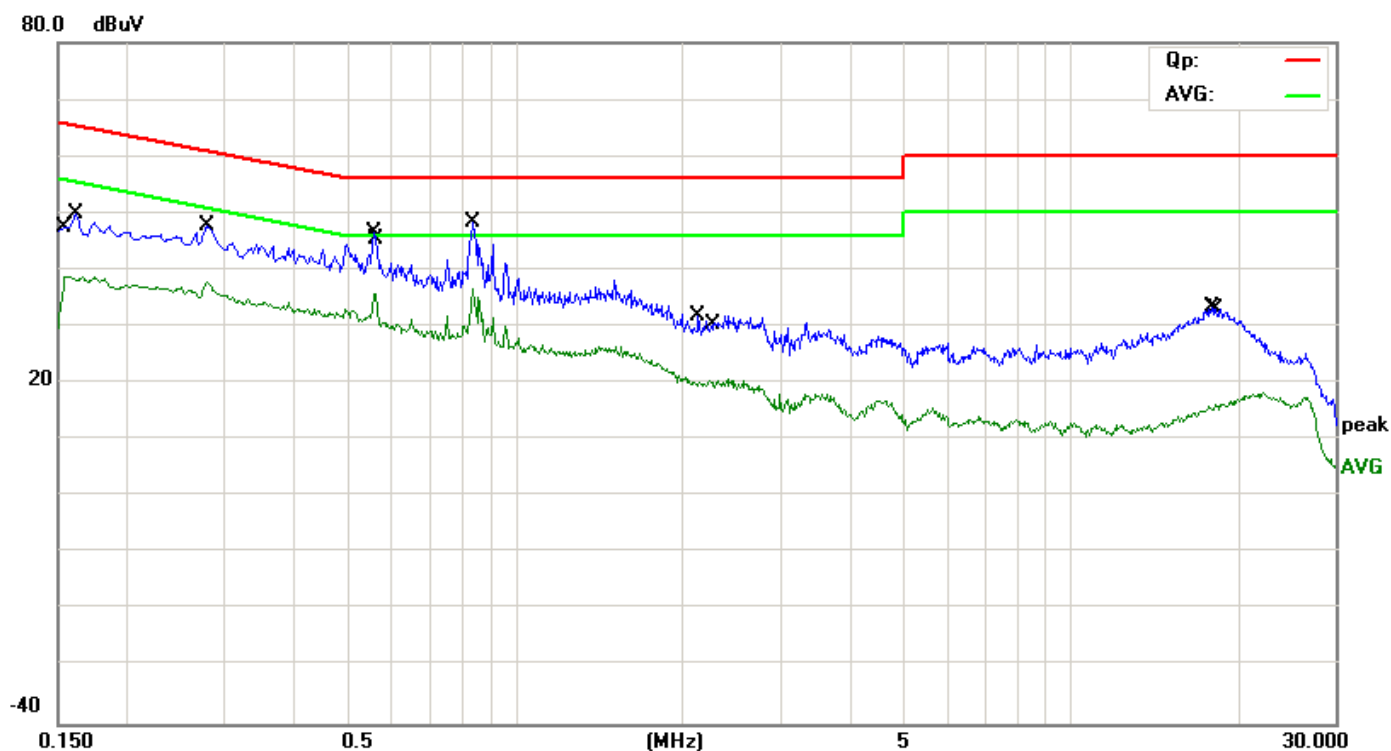
Emission Level= Correct Factor + Reading Level.

All reading are Quasi-Peak values.

The test data and the scanning waveform are attached within Appendix II.

APPENDIX I

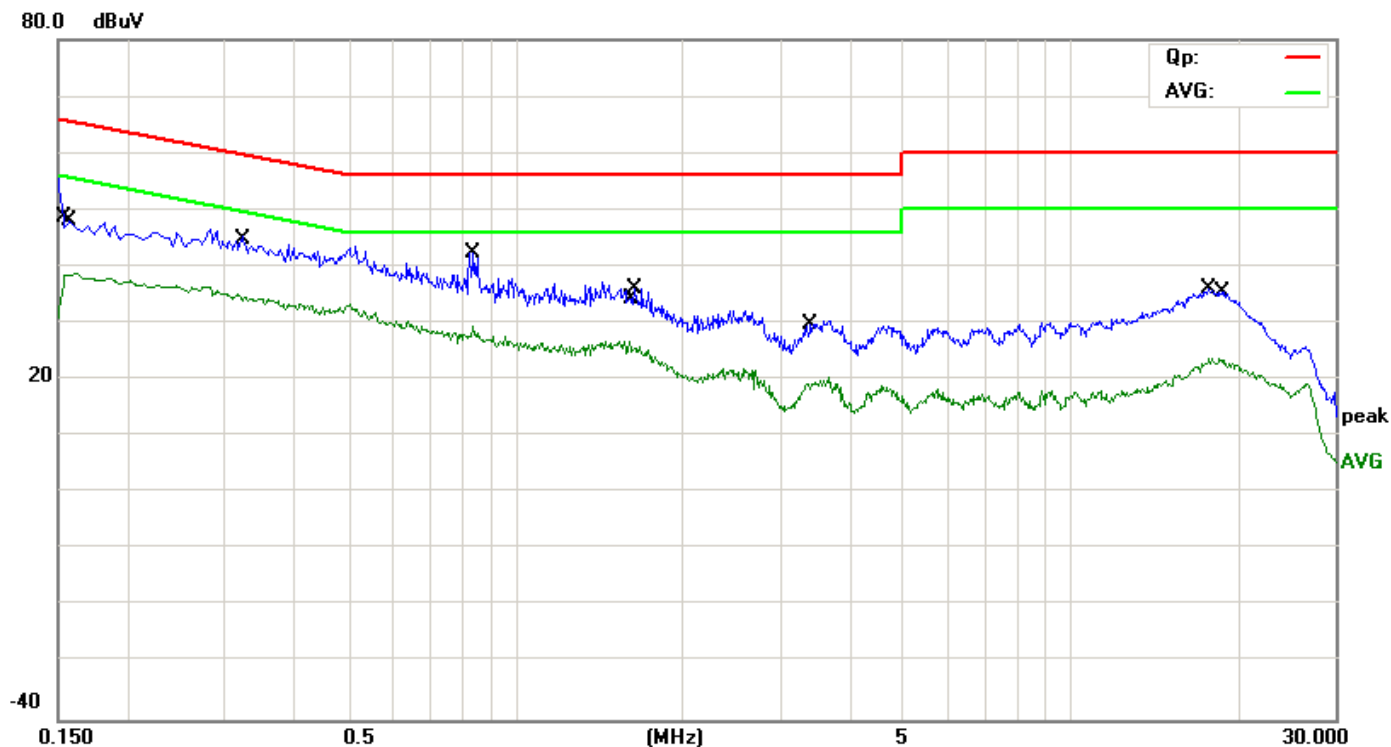
EUT:	DAB radio with FM	M/N:	AC-02
Mode:	Running	Phase:	L
Test by:	jaya	Power:	DC 5.9V by Adapter
Temperature: / Humidity	23.0°C/ 53.0%	Test date:	2021-03-02



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1540	29.18	9.60	38.78	55.78	-17.00	AVG	
2		0.1620	40.28	9.61	49.89	65.36	-15.47	QP	
3		0.2780	38.22	9.59	47.81	60.88	-13.07	QP	
4		0.2780	28.32	9.59	37.91	50.88	-12.97	AVG	
5		0.5580	36.81	9.59	46.40	56.00	-9.60	QP	
6		0.5660	23.68	9.59	33.27	46.00	-12.73	AVG	
7	*	0.8420	38.65	9.60	48.25	56.00	-7.75	QP	
8		0.8420	27.19	9.60	36.79	46.00	-9.21	AVG	
9		2.1340	22.27	9.60	31.87	56.00	-24.13	QP	
10		2.2340	10.40	9.60	20.00	46.00	-26.00	AVG	
11		18.0220	23.48	9.72	33.20	60.00	-26.80	QP	
12		18.3220	6.62	9.72	16.34	50.00	-33.66	AVG	

*:Maximum data x:Over limit !:over margin

EUT:	DAB radio with FM	M/N:	AC-02
Mode:	Running	Phase:	N
Test by:	jaya	Power:	DC 5.9V by Adapter
Temperature: / Humidity	23.0°C/ 53.0%	Test date:	2021-03-02

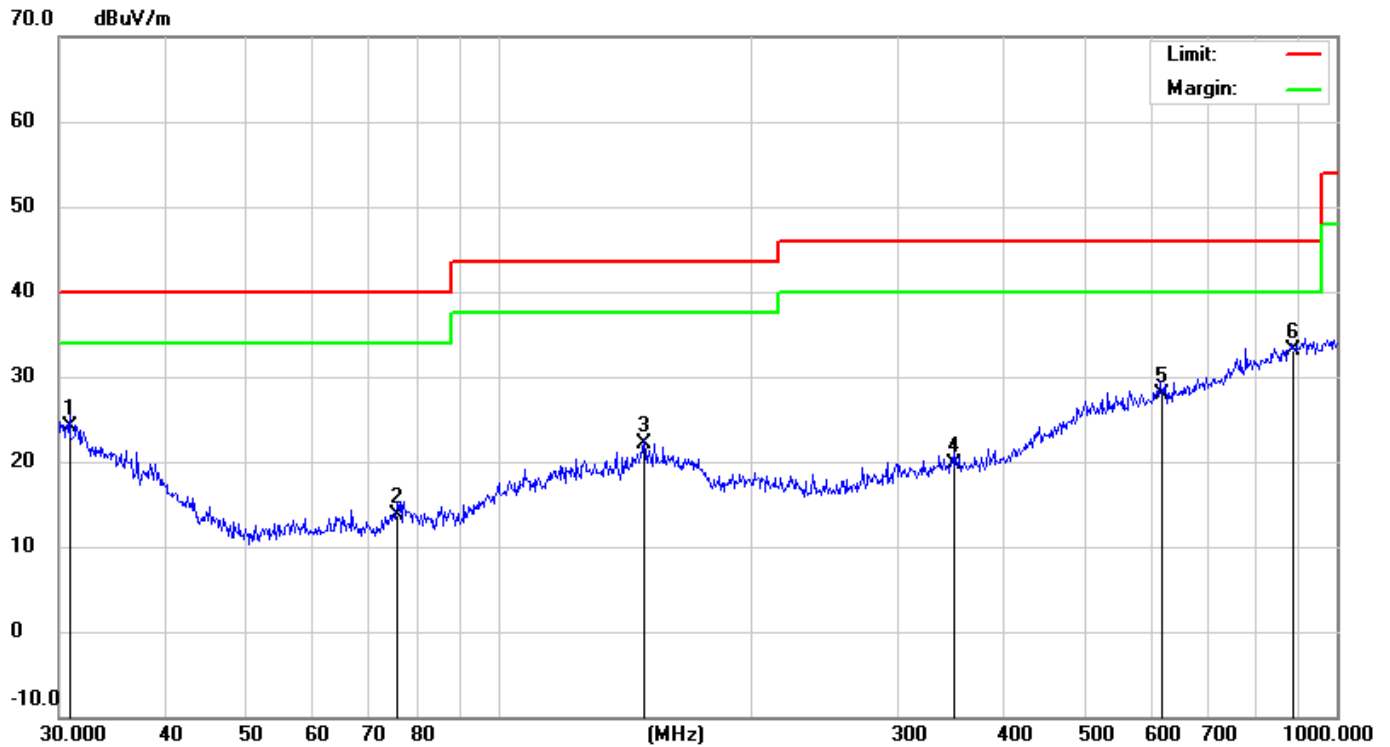


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1548	28.83	9.60	38.43	55.74	-17.31	AVG	
2		0.1580	38.37	9.60	47.97	65.57	-17.60	QP	
3		0.3260	34.44	9.59	44.03	59.55	-15.52	QP	
4		0.3268	24.91	9.59	34.50	49.53	-15.03	AVG	
5	*	0.8420	32.86	9.60	42.46	56.00	-13.54	QP	
6		0.8420	19.78	9.60	29.38	46.00	-16.62	AVG	
7		1.6020	17.17	9.60	26.77	46.00	-19.23	AVG	
8		1.6380	26.53	9.60	36.13	56.00	-19.87	QP	
9		3.3580	9.71	9.61	19.32	46.00	-26.68	AVG	
10		3.4100	20.18	9.61	29.79	56.00	-26.21	QP	
11		17.7620	25.99	9.72	35.71	60.00	-24.29	QP	
12		18.5900	13.98	9.72	23.70	50.00	-26.30	AVG	

*:Maximum data x:Over limit !:over margin

APPENDIX II

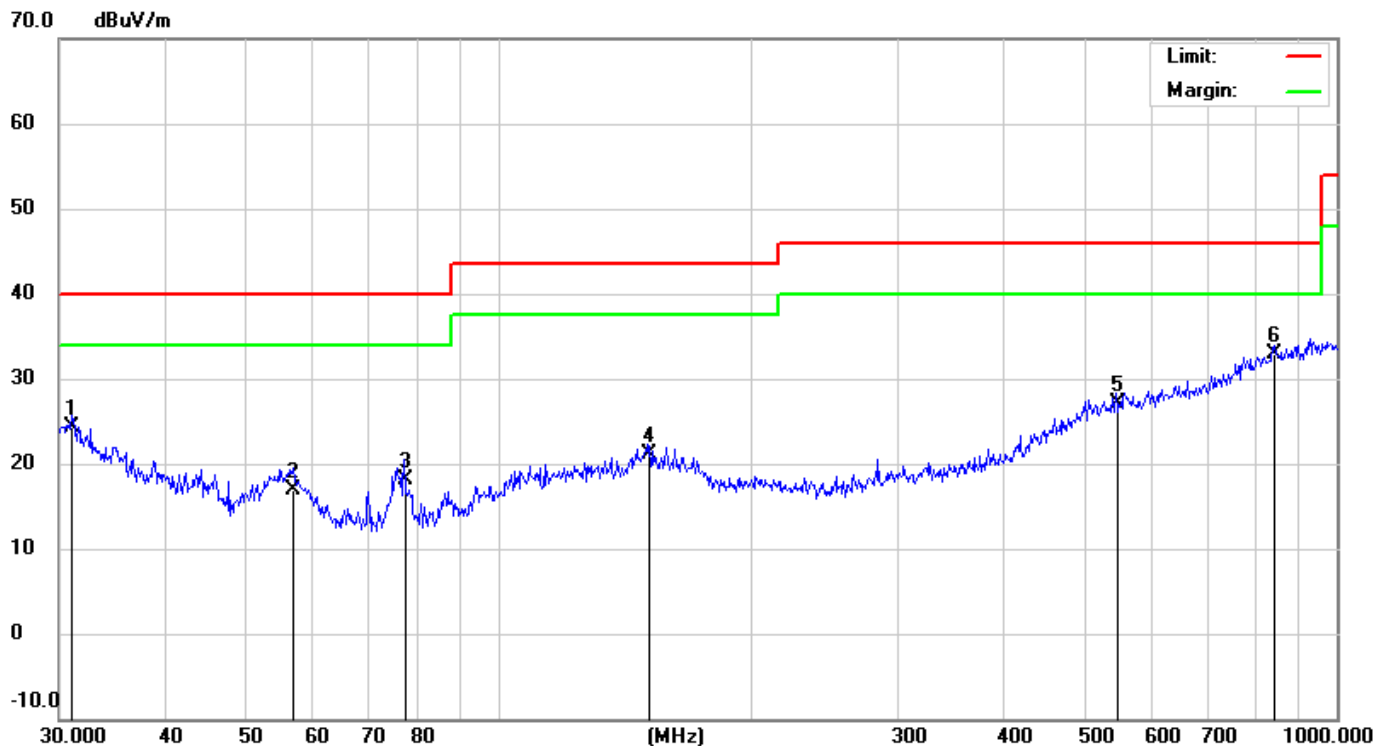
EUT:	DAB radio with FM	M/N:	AC-02
Mode:	Running	Polarization:	Horizontal
Test by:	Peter	Power:	DC 6V by Batteries
Temperature: / Humidity	22.0°C/ 53.0%	Test date:	2021-03-02



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree	
							Detector		degree	Comment
1		30.8535	3.69	20.32	24.01	40.00	-15.99	QP		
2		75.7114	3.96	9.76	13.72	40.00	-26.28	QP		
3		149.4857	4.47	17.63	22.10	43.50	-21.40	QP		
4		349.2500	3.26	16.44	19.70	46.00	-26.30	QP		
5		616.3718	3.96	24.01	27.97	46.00	-18.03	QP		
6	*	884.5029	4.23	28.83	33.06	46.00	-12.94	QP		

*:Maximum data x:Over limit !:over margin

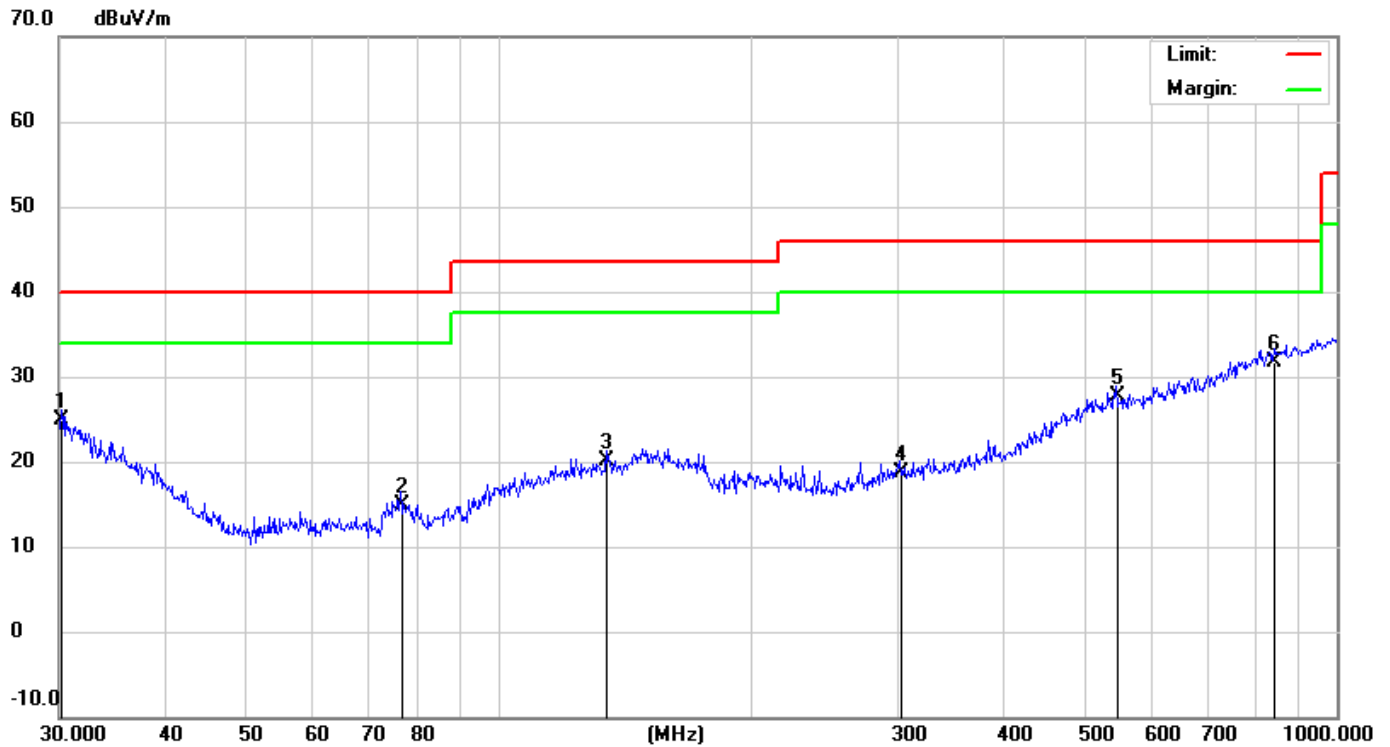
EUT:	DAB radio with FM	M/N:	AC-02
Mode:	Running	Polarization:	Vertical
Test by:	Peter	Power:	DC 6V by Batteries
Temperature: / Humidity	22.0°C / 53.0%	Test date:	2021-03-02



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Antenna Height cm	Table Degree degree	Comment
1		31.0706	4.13	20.17	24.30	40.00	-15.70	QP			
2		56.9912	8.40	8.45	16.85	40.00	-23.15	QP			
3		77.3212	8.25	9.89	18.14	40.00	-21.86	QP			
4		151.0666	3.49	17.66	21.15	43.50	-22.35	QP			
5		545.1826	3.96	23.20	27.16	46.00	-18.84	QP			
6	*	842.1296	4.48	28.36	32.84	46.00	-13.16	QP			

*:Maximum data x:Over limit !:over margin

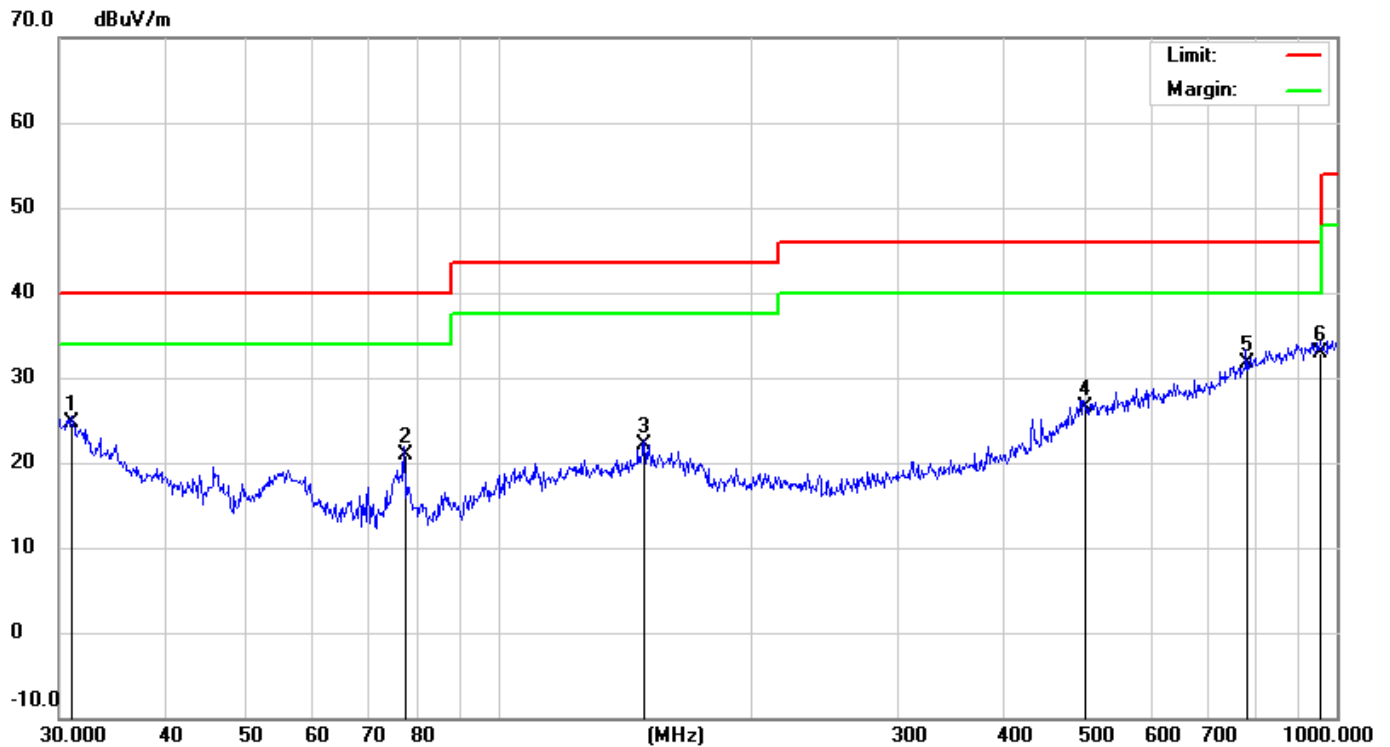
EUT:	DAB radio with FM	M/N:	AC-02
Mode:	Running	Polarization:	Horizontal
Test by:	Peter	Power:	DC 5.9V by Adapter
Temperature: / Humidity	22.0°C/ 53.0%	Test date:	2021-03-02



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Antenna Height cm	Table Degree degree	Comment
1		30.2111	4.12	20.76	24.88	40.00	-15.12	QP			
2		76.5121	5.12	9.82	14.94	40.00	-25.06	QP			
3		134.5592	3.85	16.25	20.10	43.50	-23.40	QP			
4		301.4224	3.26	15.53	18.79	46.00	-27.21	QP			
5		545.1826	4.46	23.20	27.66	46.00	-18.34	QP			
6	*	842.1296	3.36	28.36	31.72	46.00	-14.28	QP			

*:Maximum data x:Over limit !:over margin

EUT:	DAB radio with FM	M/N:	AC-02
Mode:	Running	Polarization:	Vertical
Test by:	Peter	Power:	DC 5.9V by Adapter
Temperature: / Humidity	22.0°C / 53.0%	Test date:	2021-03-02



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Antenna Height cm	Table Degree	Comment
1		31.0706	4.46	20.17	24.63	40.00	-15.37	QP			
2		77.3212	11.01	9.89	20.90	40.00	-19.10	QP			
3		149.4857	4.47	17.63	22.10	43.50	-21.40	QP			
4		499.4247	3.85	22.67	26.52	46.00	-19.48	QP			
5		779.6068	4.46	27.33	31.79	46.00	-14.21	QP			
6	*	955.4381	3.36	29.55	32.91	46.00	-13.09	QP			

*:Maximum data x:Over limit !:over margin

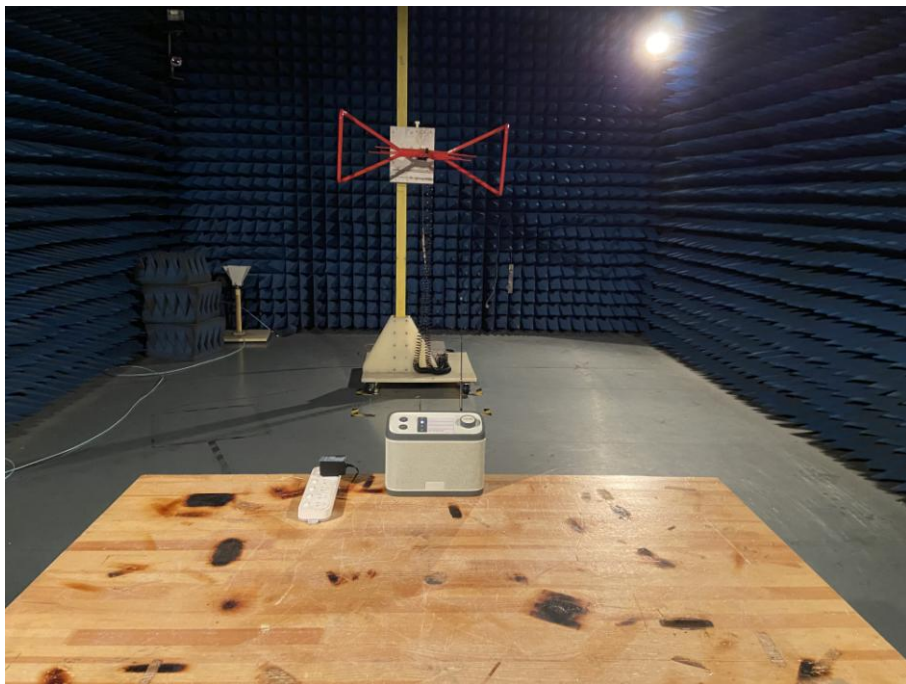
APPENDIX III

(Test Photos of the EUT)

Conducted Test Setup Photograph



Radiated Test Setup Photograph



APPENDIX IV

(Photos of the EUT)

Figure 1
General Appearance of the EUT



Figure 2
General Appearance of the EUT



Figure 3
General Appearance of the EUT

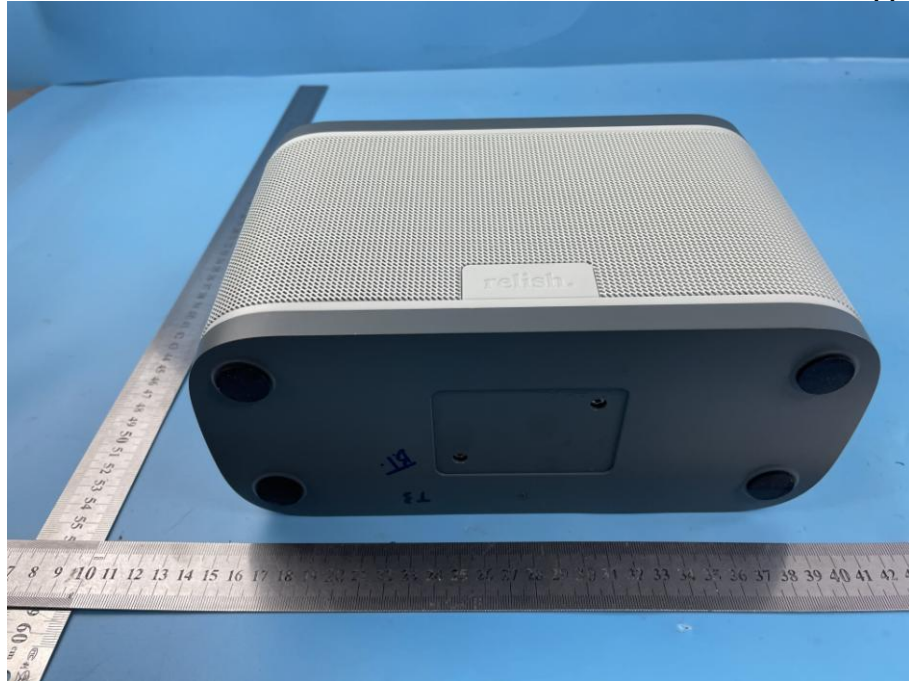


Figure 4
General Appearance of the EUT

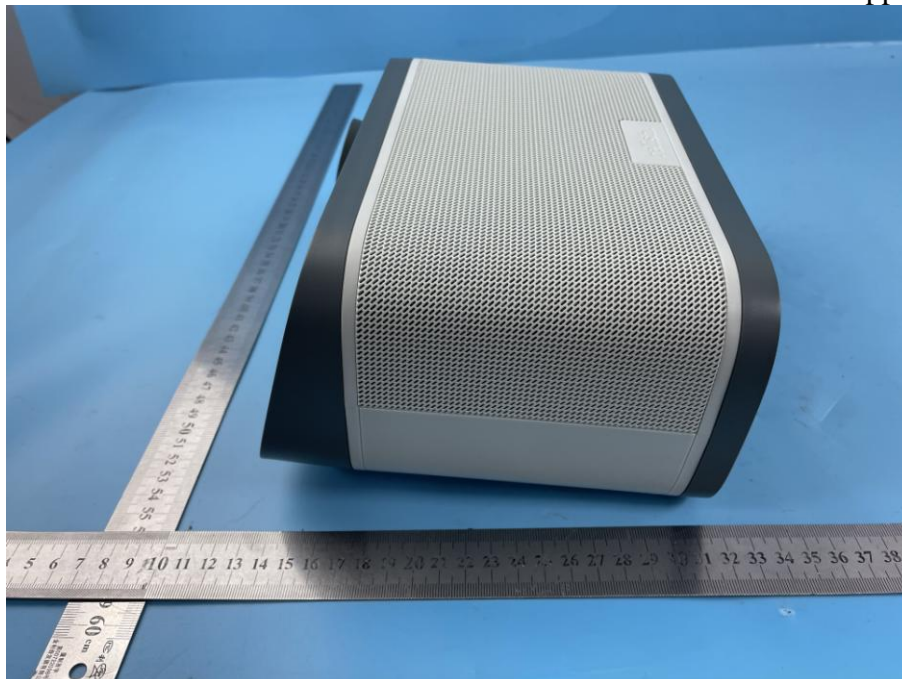


Figure 5
General Appearance of the EUT



Figure 6
Internal of the EUT

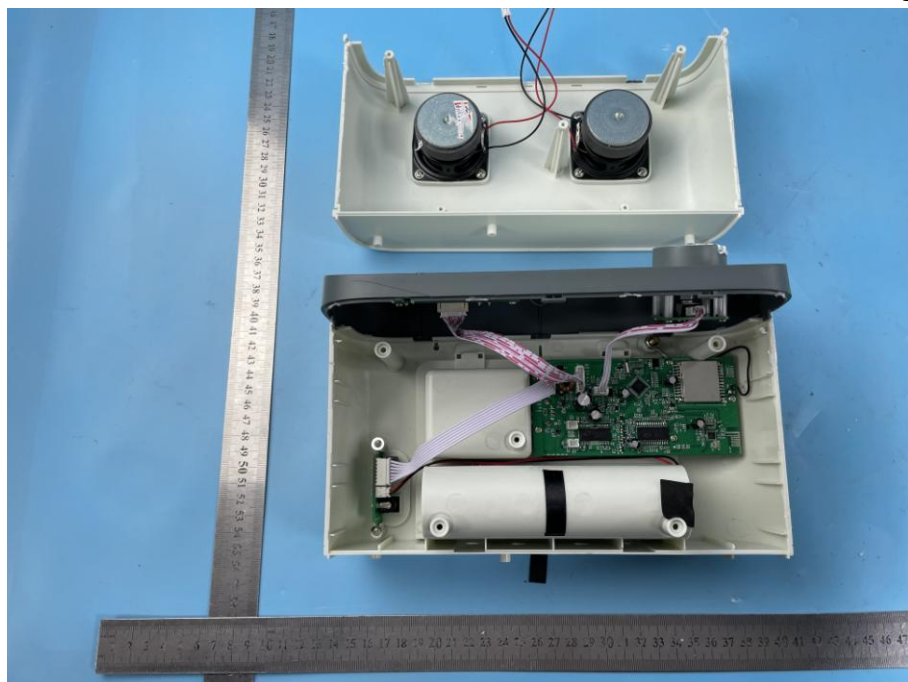


Figure 7
Components Side of the PCB

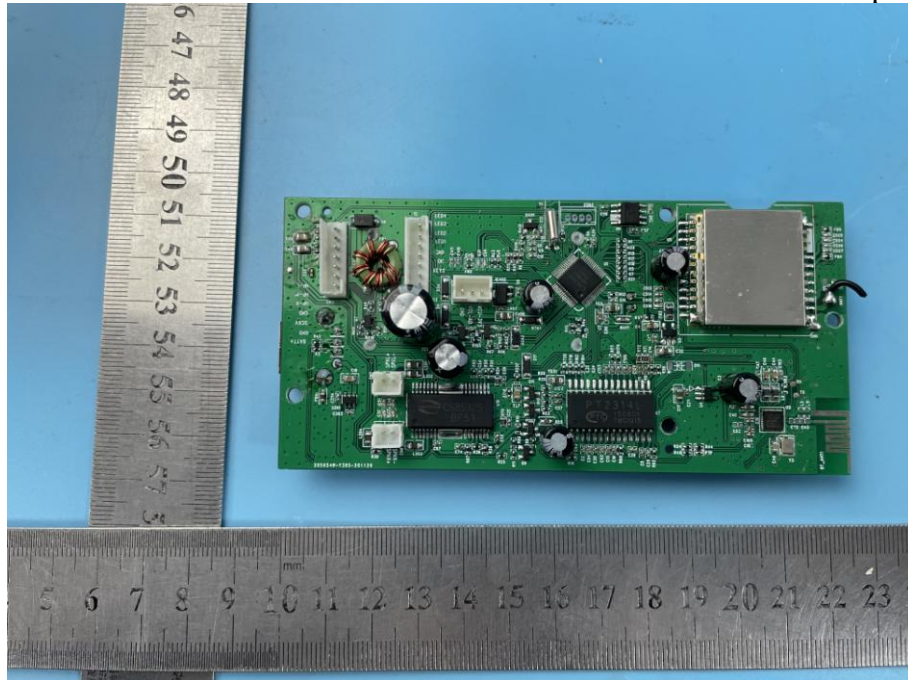


Figure 8
Components Side of the PCB

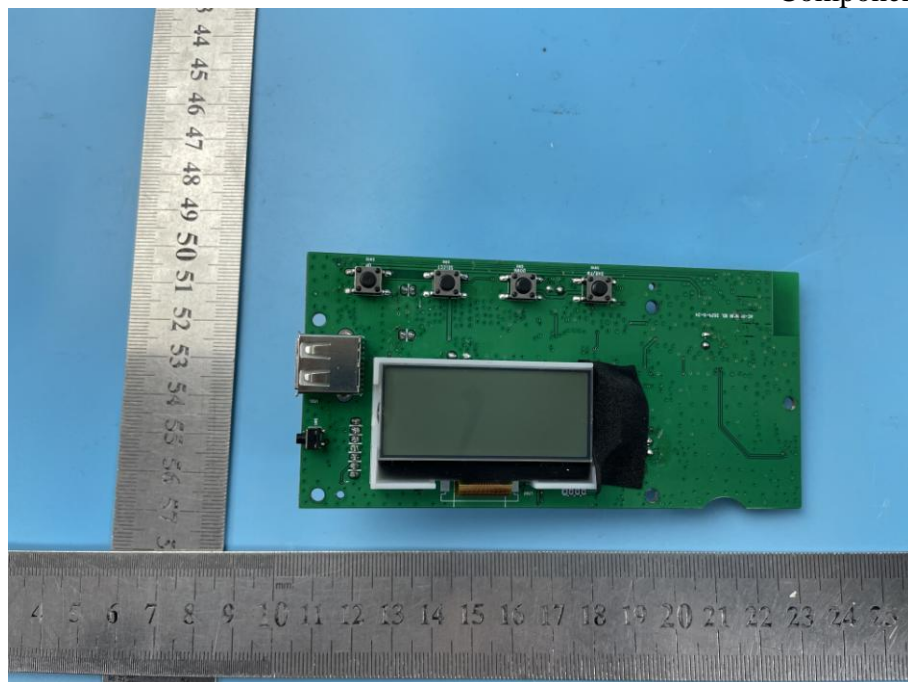


Figure 9
Components Side of the PCB

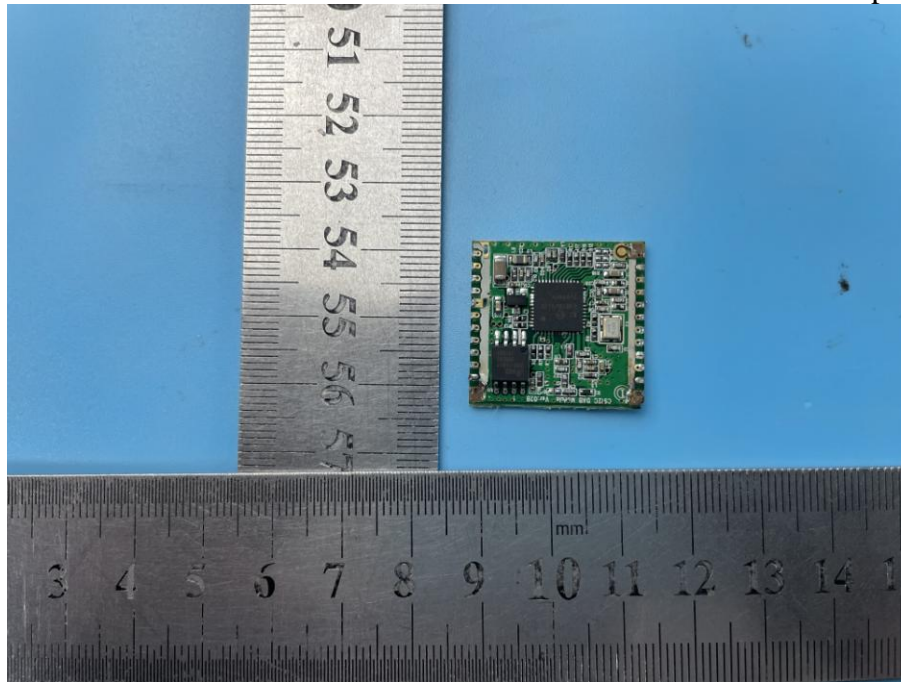


Figure 10
Components Side of the PCB

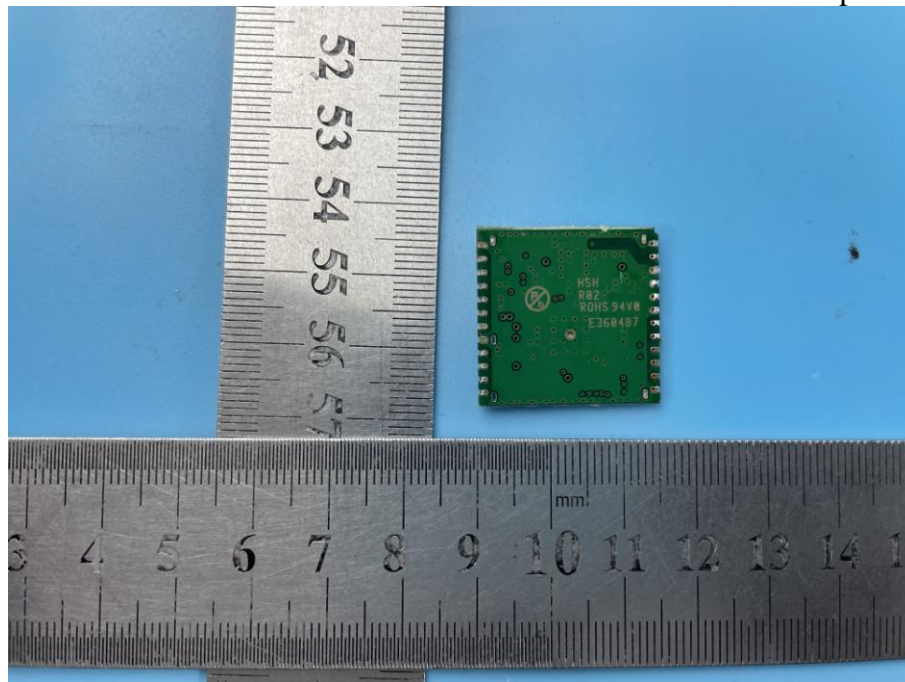


Figure 11
Components Side of the PCB

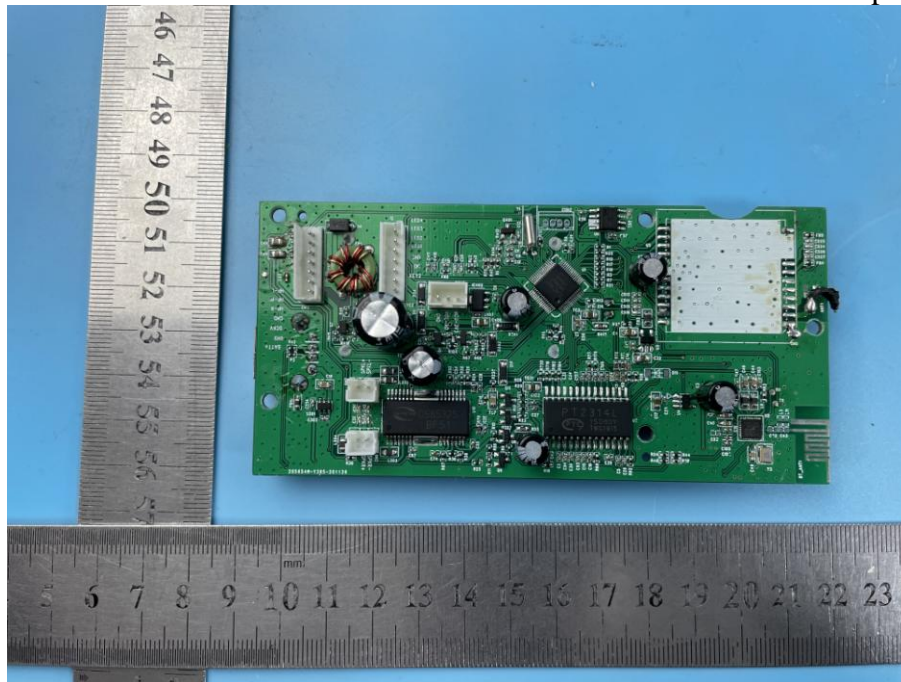


Figure 12
Components Side of the PCB

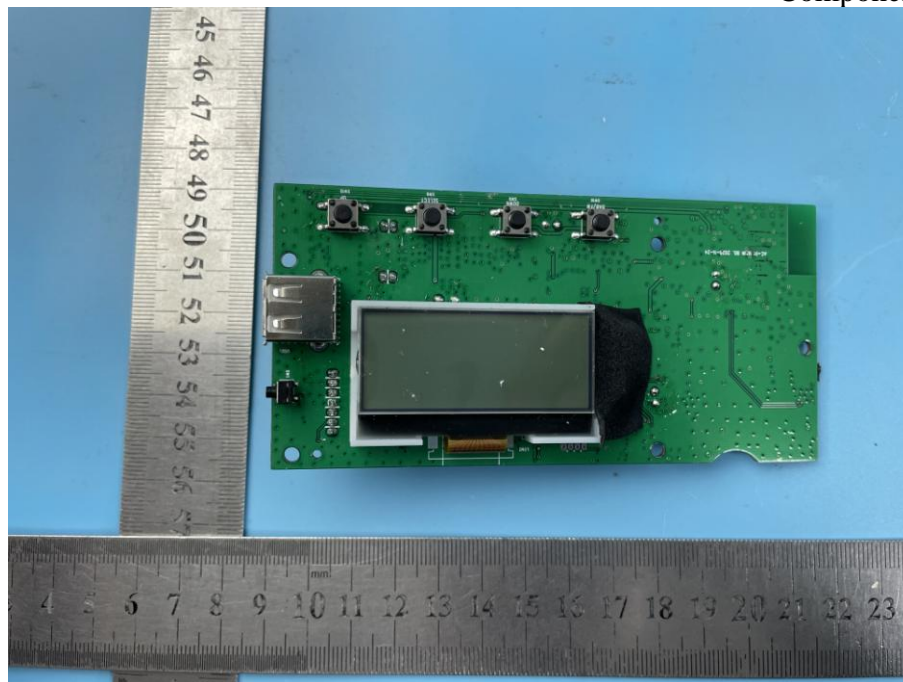


Figure 13
Components Side of the PCB

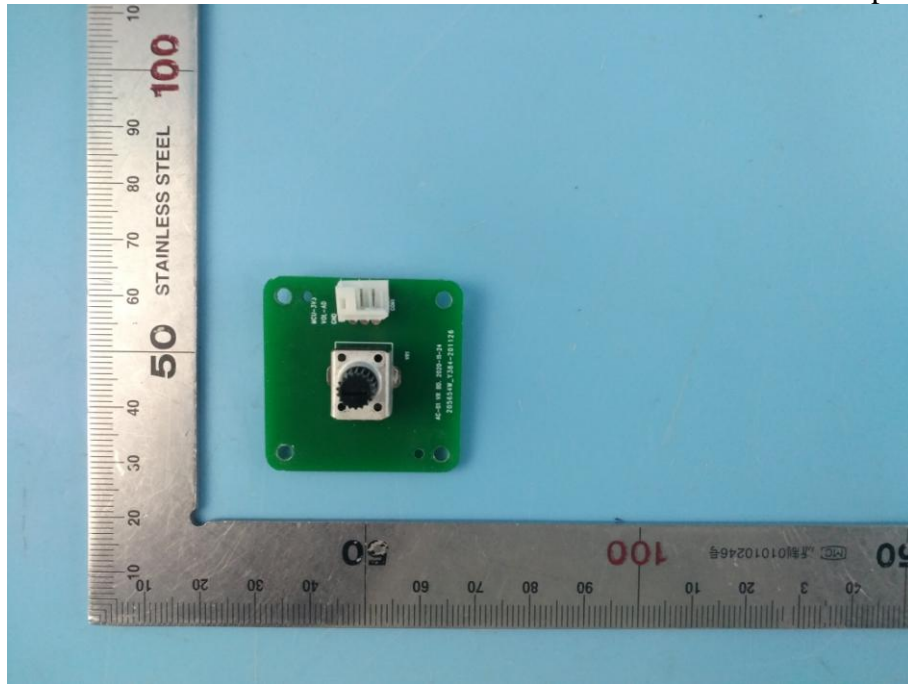


Figure 14
Components Side of the PCB

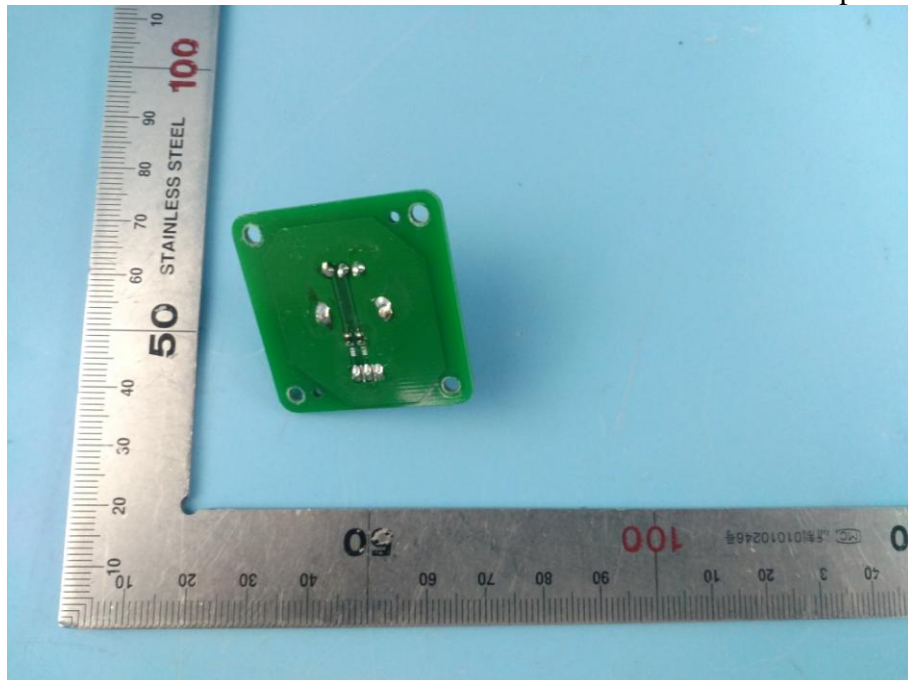


Figure 15
Components Side of the PCB

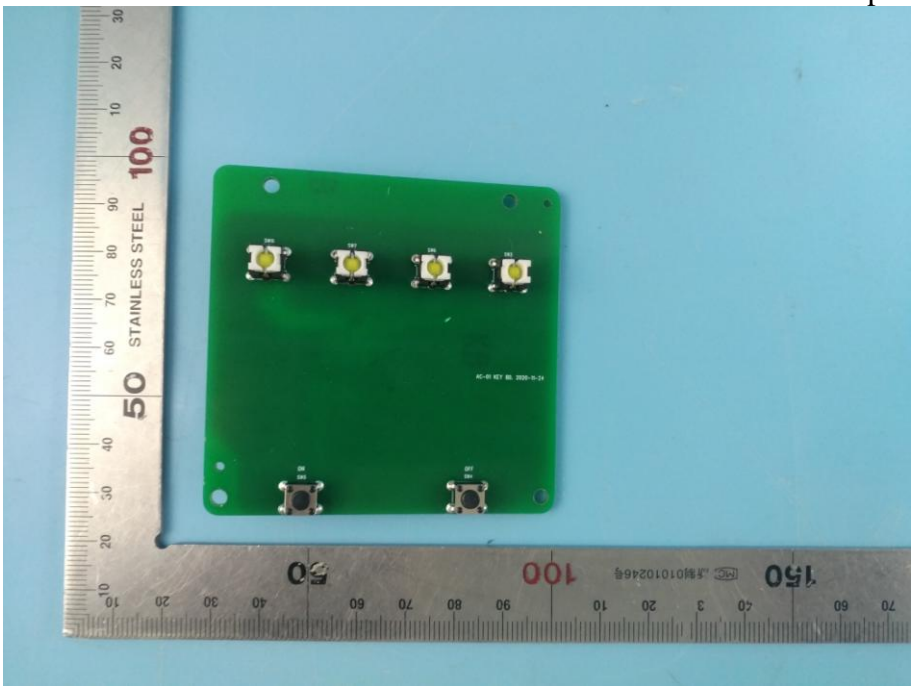


Figure 16
Components Side of the PCB

