FCC PART 15C REPORT FOR CERTIFICATION
On Behalf of

The Art of Utility AB

Defunc HOME SMALL

Model Number: D2061

Additional Model: D2062

FCC ID: 2AKFED206

Applicant :	The Art of Utility AB
Address:	Upplandsgatan 7, 111 23, Stockholm, Sweden
Prepared By:	EST Technology Co., Ltd.
	Chilingxiang, Qishantou, Santun, Houjie, Dongguan, Guangdong, China
Tel: 86-769-83081888-808	

Report Number:	ESTE-R2112191-1
Date of Test:	Dec. 10~28, 2022
Date of Report:	Jan. 06, 2023

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EST Technology Co., Ltd.

Applicant: **Address:**	The Art of Utility AB Upplandsgatan 7, 111 23, Stockholm, Sweden
Manufacturer: **Address:**	Topalong Intelligent Technology (Dongguan) Co., Ltd 3rd Floor, No. 2 Building, Shijing Stech park, Dongcheng district, Dongguan city, Guangdong province, PRC
Factory: **Address:**	Topalong Intelligent Technology (Dongguan) Co., Ltd 3rd Floor, No. 2 Building, Shijing Stech park, Dongcheng district, Dongguan city, Guangdong province, PRC
E.U.T:	Defunc HOME SMALL
Model Number:	D2061
Additional Model:	D2062 (They are identical except model name and appearance of color)
Power Supply:	DC 20V From Adapter Input AC 100-240V, 50/60Hz
Trade Name:	Defunc Serial No.: ------
Date of Receipt:	Dec. 10, 2022 Date of Test: Dec. 10~28, 2022
Test Specification:	FCC Part 15 Subpart C (15.247) ANSI C63.10:2013 FCC KDB 558074 D01 15.247 Meas Guidance v05r02
Test Result:	The device described above is tested by EST Technology Co., Ltd. The measurement results were contained in this test report and EST Technology Co., Ltd. was assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliance with the FCC Rules and Regulations Part 15 Subpart C requirements. This report applies to above tested sample only and shall not be reproduced in part without written approval of EST Technology Co., Ltd. **Date:** Jan. 06, 2023

Prepared by:	Reviewed by:	Approved by:
Ring Yang / Assistant	Seven Wang / Engineer	Iceman Hu / Manager

Other Aspects: This report base on the previous report with report number: ESTE-R2112191, Remove the magnetic ring on the product and the shielding copper foil on the module. And updated manufacturer and factory information.

Abbreviations: OK/P=passed fail/F=failed n.a/N=not applicable E.U.T=equipment under tested

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 EST Technology Co., Ltd.

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

Product Name	:	Defunc HOME SMALL
Model Number	:	D2061
Software Version	:	4.5.328155
Hardware Version	:	V18
Operation frequency	:	2412MHz~2462MHz
Number of channel	:	IEEE 802.11b/g/n HT20: 11 Channels
Modulation Type	:	DSSS OFDM
Sample Type	:	Mass production

Note: For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.

1.2. Antenna Information

Ant No.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	-	-	Internal	-	3.12

Note: This information is provided by the applicant

1.3. Information of RF Cable

Cable Loss(dB)	Provided by
1.0	The Art of Utility AB
Note: 1.The customer declared the loss value of the RF Cable, and the test results of this report only apply to the sample as received. 2. This information is provided by the applicant.	

2. SUMMARY OF TEST

2.1. Summary of test result

No.	Description of Test Item	FCC Standard Section	Results
1	6dB Bandwidth	15.247(a)(2)	N/A
2	Maximum Peak Output Power	15.247(b)(3)	N/A
3	Power Spectral Density	15.247(e)	N/A
4	Conducted Band Edge	15.247(d)	N/A
5	Conducted Spurious Emissions	15.247(d)	N/A
6	Radiated Spurious Emissions and Band Edge	15.205 15.209 15.247(d)	PASS
7	AC Power Line Conducted Emissions	15.207	PASS
8	Antenna Requirement	15.203	N/A

Note:“N/A” denotes test is not applicable in this test report.

2.2. Test Facilities

EMC Lab : Certificated by CNAS, CHINA
Registration No.: L5288
This Certificate is valid until: November 12, 2023

Certificated by FCC, USA
Designation Number: CN1215
This Certificate is valid until: January 31, 2024

Certificated by A2LA, USA
Registration No.: 4366.01
This Certificate is valid until: January 31, 2024

Certificated by Industry Canada
CAB identifier No.: CN0035
This Certificate is valid until: January 31, 2024

Certificated by VCCI, Japan
Registration No.:C-14103; T-20073; R-13663; R-20103; G-20097
Date of registration: Apr. 20, 2020
This Certificate is valid until: Apr. 19, 2023

Certificated by TUV Rheinland, Germany
Registration No.: UA 50413872 0001
Date of registration: July 31, 2018

Certificated by Intertek
Registration No.: 2011-RTL-L2-64
Date of registration: November 08, 2018

Name of Firm : EST Technology Co., Ltd.

Site Location : Chilingxiang, Qishantou, Santun, Houjie, Dongguan, Guangdong, China

2.3. Measurement uncertainty

Test Item	Uncertainty
Uncertainty for Conduction emission test	±3.48dB
Uncertainty for spurious emissions test (Below 30MHz)	±1.62 dB
Uncertainty for spurious emissions test (30MHz-1GHz)	±4.60 dB(Polarize: H)
	±4.68 dB(Polarize: V)
Uncertainty for spurious emissions test (1GHz to 25GHz)	±4.96dB
Uncertainty for radio frequency	7×10^{-8}
Uncertainty for conducted RF Power	1.08dB
Uncertainty for Power density test	0.26dB

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

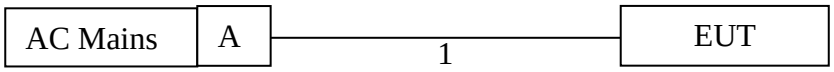
2.4. Assistant equipment used for test

Item	Equipment	Brand	Model Name/Type No.	FCC ID	Series No.
A	Adapter	-	J652-2003000IX	-	-

Item	Shielded Type	Ferrite Core	Length	Note
1	NO	NO	1.5m	DC Cable

2.5. Block Diagram

For radiated emissions test: EUT was placed on a turn table, which is 0.8 (or 1.5) meter high above ground. EUT was beset into 2.4G WIFI test mode by software before test.



AC 120V/60Hz

(EUT: Defunc HOME SMALL)

2.6. Test Mode

The test mode was selected for the final test as listed below.

Test Item	Mode	Date Rate	Test Channel
Radiated Spurious Emissions(Below 1GHz)	IEEE 802.11b	1Mbps	Low/Middle/High
	IEEE 802.11g	6Mbps	Low/Middle/High
	IEEE 802.11n HT20	MCS0	Low/Middle/High
Radiated Spurious Emissions(Above 1GHz)	IEEE 802.11b	1Mbps	Low/Middle/High
	IEEE 802.11g	6Mbps	Low/Middle/High
	IEEE 802.11n HT20	MCS0	Low/Middle/High
Radiated Band Edge	IEEE 802.11b	1Mbps	Low/Middle/High
	IEEE 802.11g	6Mbps	Low/Middle/High
	IEEE 802.11n HT20	MCS0	Low/Middle/High
AC Power Line Conducted Emissions	IEEE 802.11b	1Mbps	Low/Middle/High
	IEEE 802.11g	6Mbps	Low/Middle/High
	IEEE 802.11n HT20	MCS0	Low/Middle/High

Note: In radiated measurement,the EUT had been pre-scan on the positioned of each 3 axis(X,Y,Z), the worst case was found when positioned on **X-plane.**

2.7. Power Setting of Test Software

Software Name	CMD		
Frequency(MHz)	2412	2437	2462
IEEE 802.11b Setting	Defualt	Defualt	Defualt
IEEE 802.11g Setting	Defualt	Defualt	Defualt
IEEE 802.11n HT20 Setting	Defualt	Defualt	Defualt

Note: This information is provided by the applicant.

2.8. Channel List

IEEE 802.11b/802.11g/802.11n HT20					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	6	2437	11	2462
2	2417	7	2442		
3	2422	8	2447		
4	2427	9	2452		
5	2432	10	2457		

2.9. Test Equipment List

For conducted emission test						
Equipment	Manufacturer	Model No.	Serial No.	Calibration Body	Last Cal.	Next Cal.
EMI Test Receiver	Rohde & Schwarz	ESHS30	EST-E001	LISAI	June 13,22	1 Year
Artificial Mains Network	Rohde & Schwarz	ENV216	EST-E002	LISAI	June 13,22	1 Year
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	EST-E078	LISAI	June 13,22	1 Year
Test Software	Audix	e3-6.111221a	N/A	N/A	N/A	N/A

For radiated emission test(9kHz-30MHz)						
Equipment	Manufacturer	Model No.	Serial No.	Calibration Body	Last Cal.	Next Cal.
EMI Test Receiver	Rohde & Schwarz	ESR7	EST-E047	LISAI	June 13,22	1 Year
Active Loop Antenna	SCHWAREBECK	FMZB 1519B	EST-E054	LISAI	June 13,22	1 Year
Test Software	Audix	e3-6.111221a	N/A	N/A	N/A	N/A
9kHz-30MHz Cable	N/A	EST-001	N/A	N/A	N/A	N/A

For radiated emissions test (30MHz-1000MHz)						
Equipment	Manufacturer	Model No.	Serial No.	Calibration Body	Last Cal.	Next Cal.
EMI Test Receiver	Rohde & Schwarz	ESR7	EST-E047	LISAI	June 13,22	1 Year
Bilog Antenna	Teseq	CBL 6111D	EST-E034	LISAI	June 13,22	1 Year
Test Software	Audix	e3-6.111221a	N/A	N/A	N/A	N/A
30-1000MHz Cable	N/A	EST-002	N/A	N/A	N/A	N/A

For radiated emission test(Above 1000MHz)						
Equipment	Manufacturer	Model No.	Serial No.	Calibration Body	Last Cal.	Next Cal.
Horn Antenna	SCHWARZBECK	BBHA9120D	EST-E031	LISAI	June 13,22	1 Year
Horn Antenna	Com-Power	AHA-840	EST-E133	LISAI	June 13,22	1 Year
Low Noise Amplifier	RF	TRLA-010180G45N	EST-E142	LISAI	June 13,22	1 Year
Spectrum Analyzer	Rohde &Schwarz	FSV40	EST-E069	LISAI	June 13,22	1 Year
Test Software	Audix	e3-6.111221a	N/A	N/A	N/A	N/A
Above 1GHz Cable	N/A	EST-003	N/A	N/A	N/A	N/A

3. RADIATED SPURIOUS EMISSIONS AND BAND EDGE

3.1. Limit

All the emissions appearing within 15.205 restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

15.205 Restricted frequency band

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	([2])

15.209 Limit

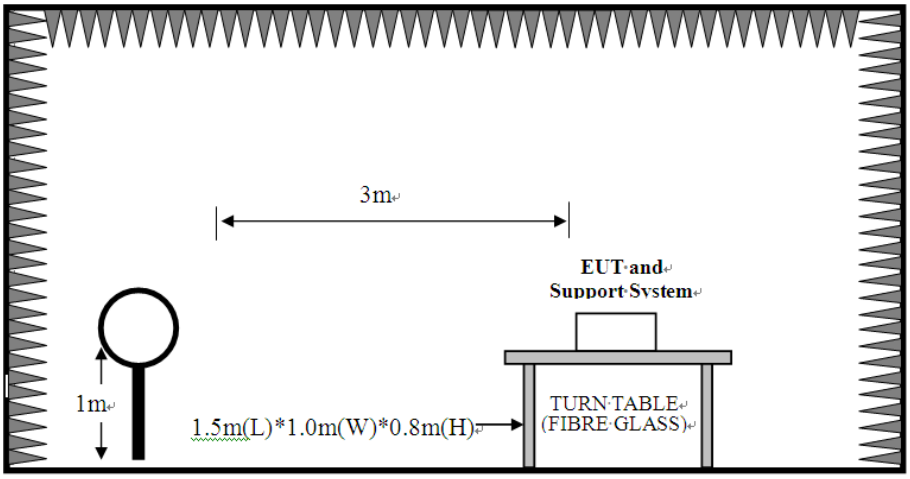
Frequency (MHz)	Field Strength(μV/m)	Distance(m)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Note:

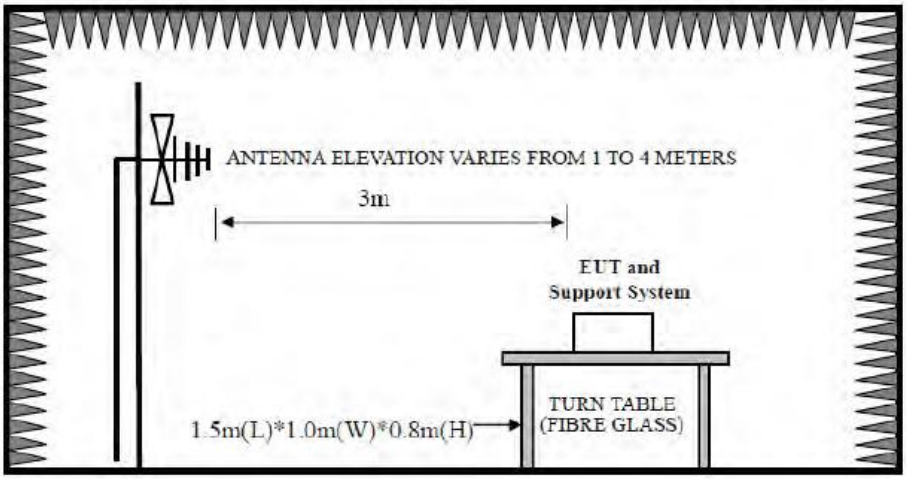
(1) Emission level dBμV = 20 log Emission level μV/m.
(2) The smaller limit shall apply at the cross point between two frequency bands.
(3) Distance is the distance in meters between the measuring instrument,antenna and the closest point of any part of the device or system.

3.2. Test Setup

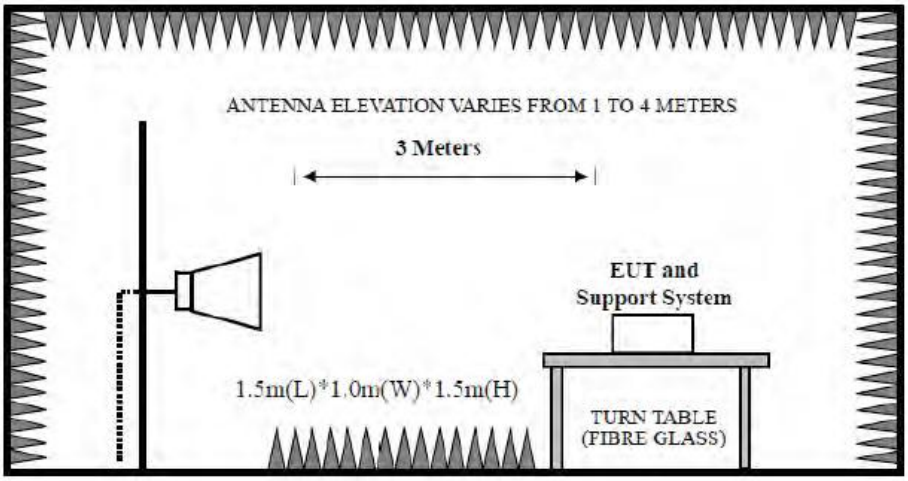
9kHz~30MHz



30~1000MHz



Above 1GHz



3.3. Spectrum Analyzer Setting

For 9KHz-150KHz

Spectrum Parameters	Setting
RBW	300Hz(for Peak&AVG)/CISPR 200Hz(for QP)
VBW	300Hz(for Peak&AVG)/CISPR 200Hz(for QP)
Start frequency	9KHz
Stop frequency	150KHz
Sweep Time	Auto
Detector	PEAK/QP/AVG
Trace Mode	Max Hold

For 150KHz-30MHz

Spectrum Parameters	Setting
RBW	9KHz
VBW	9KHz
Start frequency	150KHz
Stop frequency	30MHz
Sweep Time	Auto
Detector	QP
Trace Mode	Max Hold

For 30MHz-1GHz

Spectrum Parameters	Setting
RBW	120KHz
VBW	300KHz
Start frequency	30MHz
Stop frequency	1GHz
Sweep Time	Auto
Detector	QP
Trace Mode	Max Hold

For Above 1GHz

Spectrum Parameters	Setting	
RBW	1MHz	
VBW	PEAK Measurement	AVG Measurement
	3MHz	Duty cycle≥98%,VBW=10Hz
		Duty cycle＜98%,VBW≥1/T
Start frequency	1GHz	
Stop frequency	25GHz	
Sweep Time	Auto	
Detector	PEAK	
Trace Mode	Max Hold	

Note :T is the on-time time of the duty cycle,when EUT transmit continuously with maximum output power,unit is seconds. reference section 2.8 for the on-time time.

3.4. Test Procedure

a. EUT was placed on a turn table, which is 0.8 meter high above ground for below 1GHz test, and which is 1.5 meter high above ground for above 1GHz test.
b. EUT is set 3 meters away from the receiving antenna, which is mounted on a antenna tower.
c. Set the EUT transmit continuously with maximum output power.
d. The turn table can rotate 360 degrees to determine the position of the maximum emission level.
e. The antenna can be moved up and down between 1 meter and 4 meters to find out the maximum emission level. Both horizontal and vertical polarization of the antenna are set on test.
f. Spectrum analyzer setting parameters in accordance with section 8.3.
g. Repeat above procedures until all channels were measured.
h. Record the results in the test report.

Note:

1. For emissions above 1GHz, if peak level comply with average limit, then the average level is deemed to comply with average limit.
2. The frequency 2412MHz/2422MHz/2437MHz/2452MHz/2462MHz are fundamental frequency,which no limit, the limit on plots is automatically generated by the software, it's not fundamental limit, we can't remove it.
3. IEEE 802.11b, IEEE 802.11g, IEEE 802. 11nH20 all have been tested, only worst case 802.11n HT20 is recorded.

3.5. Test Result

Radiated Emissions Below 1GHz

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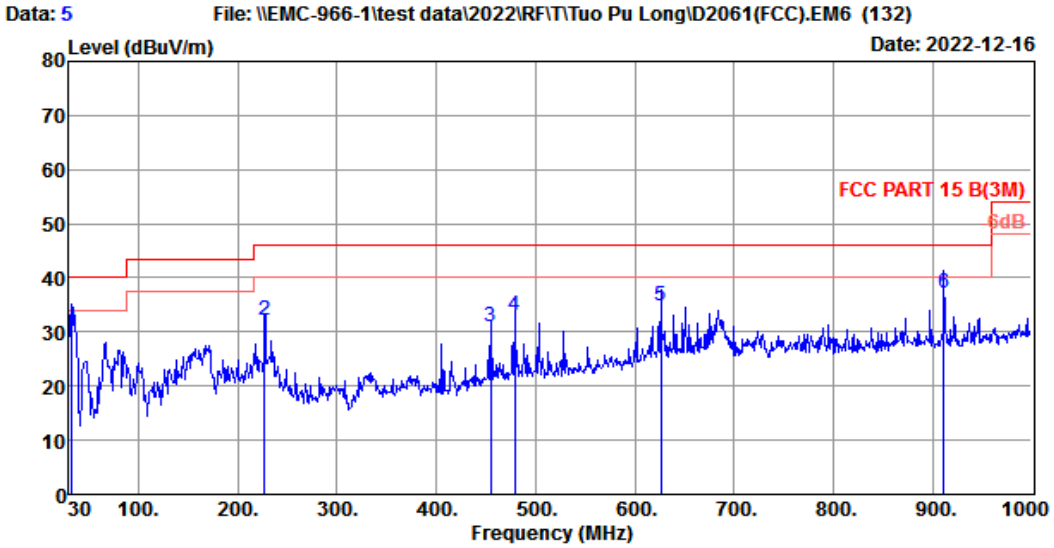

Site no. : 1# 966 Chamber Data no. : 5
Dis. / Ant. : 3m 37062 Ant. pol. : VERTICAL
Limit : FCC PART 15 B(3M)
Env. / Ins. : Temp:23.9℃,Humi:52.3%;Press:101.82KPa
Engineer : X
EUT : Defunc HOME SMALL
Power : DC 20V From Adapter Input AC 120V/60Hz
M/N : D2061
Test Mode : TX Mode

	Freq. (MHz)	ANT Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	32.9100	16.80	0.60	12.78	30.18	40.00	9.82	QP
2	226.9100	10.66	1.45	20.21	32.32	46.00	13.68	QP
3	454.8600	17.80	2.05	11.12	30.97	46.00	15.03	QP
4	479.1100	18.48	2.08	12.44	33.00	46.00	13.00	QP
5	626.5500	21.39	2.38	11.11	34.88	46.00	11.12	QP
6	911.7300	24.52	2.82	9.85	37.19	46.00	8.81	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. Margin= Limit - Emission Level.
3. The emission levels that are 20dB below the official limit are not reported.

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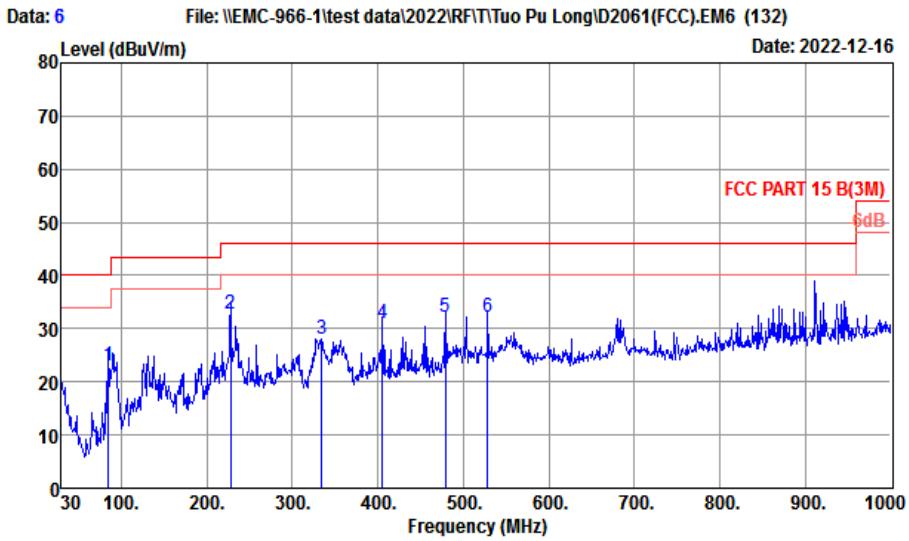

Site no. : 1# 966 Chamber Data no. : 6
Dis. / Ant. : 3m 37062 Ant. pol. : HORIZONTAL
Limit : FCC PART 15 B(3M)
Env. / Ins. : Temp:23.9℃,Humi:52.3%;Press:101.82KPa
Engineer : X
EUT : Defunc HOME SMALL
Power : DC 20V From Adapter Input AC 120V/60Hz
M/N : D2061
Test Mode : TX Mode

	Freq. (MHz)	ANT Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	85.2900	8.90	0.94	13.07	22.91	40.00	17.09	QP
2	227.8800	10.64	1.43	20.62	32.69	46.00	13.31	QP
3	334.5800	15.19	1.72	11.23	28.14	46.00	17.86	QP
4	405.3900	17.05	1.73	12.28	31.06	46.00	14.94	QP
5	479.1100	18.48	2.08	11.64	32.20	46.00	13.80	QP
6	528.5800	19.28	2.11	10.84	32.23	46.00	13.77	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. Margin= Limit - Emission Level.
3. The emission levels that are 20dB below the official limit are not reported.

Note:

1. The amplitude of 9KHz to 30MHz spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.
2. All channels had been pre-test,only the worst case was reported.

Radiated Emissions Above 1G

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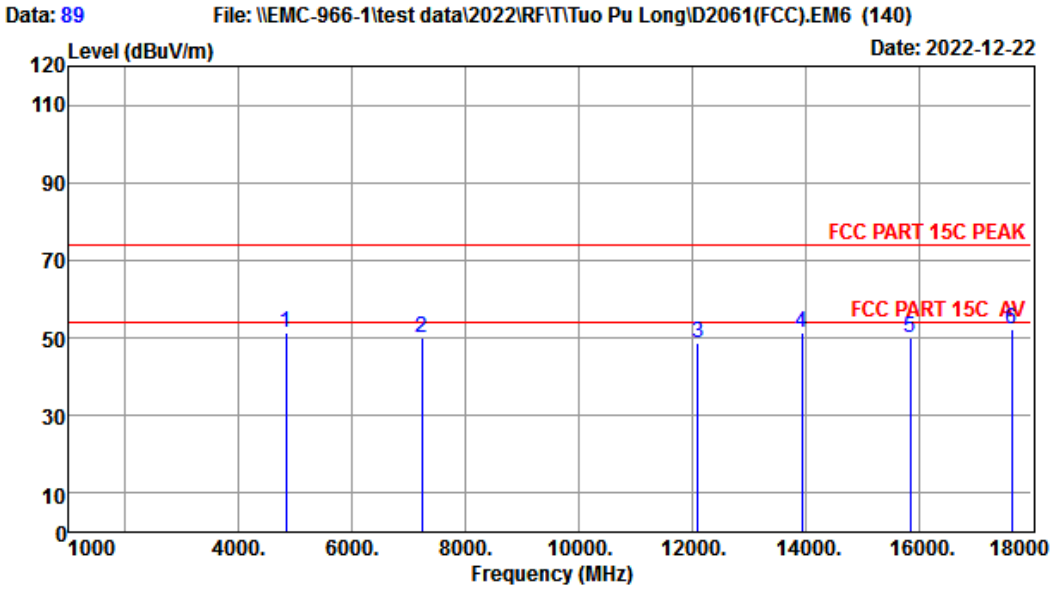

Site no. : 1# 966 Chamber Data no. : 89
Dis. / Ant. : 3m BBHA9120D 1-18G 2208 Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : Temp:20.1℃;Humi:51%;Press:101.52kPa
Engineer : JBR
EUT : Defunc HOME SMALL
Power : DC 20V From Adapter Input AC 120V/60Hz
M/N : D2061
Test Mode : IEEE 802.11n HT20 TX 2412MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	4824.00	32.43	4.91	45.43	49.45	51.36	74.00	22.64	Peak
2	7236.00	36.19	6.27	44.98	42.51	49.99	74.00	24.01	Peak
3	12101.00	38.89	8.31	43.11	34.57	48.66	74.00	25.34	Peak
4	13937.00	39.98	9.05	41.88	34.24	51.39	74.00	22.61	Peak
5	15858.00	38.04	9.61	44.71	37.00	49.94	74.00	24.06	Peak
6	17643.00	40.42	10.53	43.91	35.14	52.18	74.00	21.82	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
2. Margin= Limit - Emission Level.
3. The emission levels that are 20dB below the official limit are not reported.

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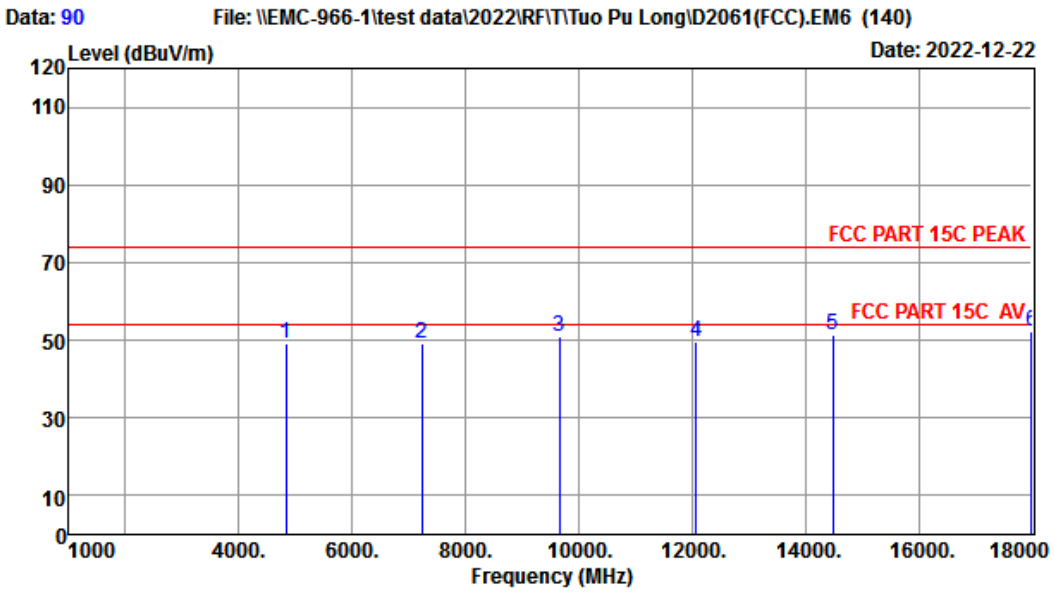

Site no. : 1# 966 Chamber Data no. : 90
Dis. / Ant. : 3m BBHA9120D 1-18G 2208 Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : Temp:20.1℃;Humi:51%;Press:101.52kPa
Engineer : JBR
EUT : Defunc HOME SMALL
Power : DC 20V From Adapter Input AC 120V/60Hz
M/N : D2061
Test Mode : IEEE 802.11n HT20 TX 2412MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	4824.00	32.43	4.91	45.43	47.32	49.23	74.00	24.77	Peak
2	7236.00	36.19	6.27	44.98	41.55	49.03	74.00	24.97	Peak
3	9653.00	38.13	7.46	44.57	39.78	50.80	74.00	23.20	Peak
4	12067.00	38.86	8.29	43.13	35.56	49.58	74.00	24.42	Peak
5	14481.00	39.76	9.27	43.06	35.52	51.49	74.00	22.51	Peak
6	18000.00	41.60	10.71	43.75	33.65	52.21	74.00	21.79	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
2. Margin= Limit - Emission Level.
3. The emission levels that are 20dB below the official limit are not reported.

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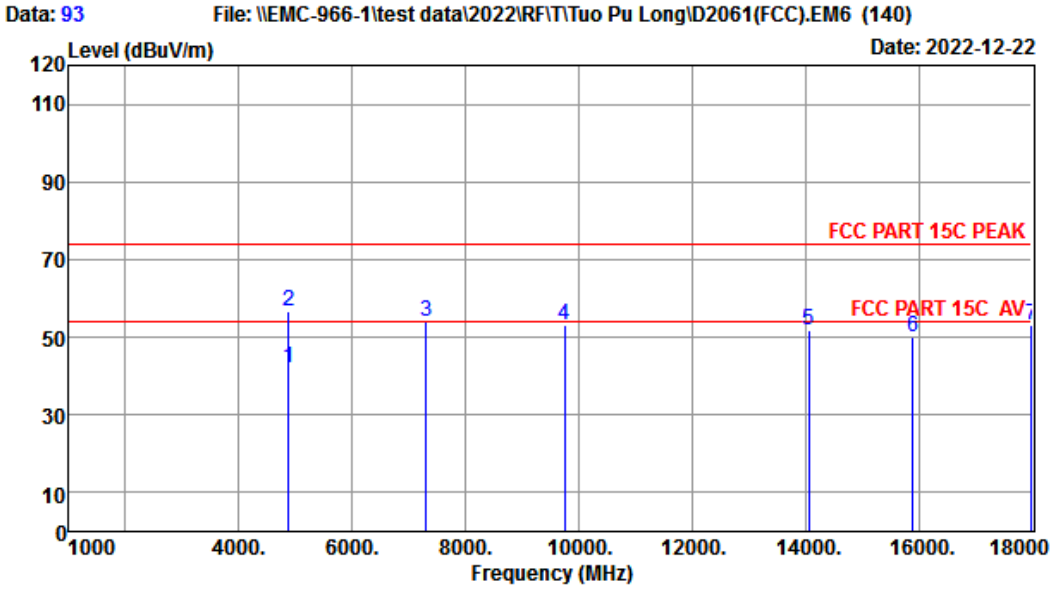

Site no. : 1# 966 Chamber Data no. : 93
Dis. / Ant. : 3m BBHA9120D 1-18G 2208 Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : Temp:20.1℃;Humi:51%;Press:101.52kPa
Engineer : JBR
EUT : Defunc HOME SMALL
Power : DC 20V From Adapter Input AC 120V/60Hz
M/N : D2061
Test Mode : IEEE 802.11n HT20 TX 2437MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	4874.00	32.54	4.93	45.41	40.22	42.28	54.00	11.72	Average
2	4874.00	32.54	4.93	45.41	54.42	56.48	74.00	17.52	Peak
3	7311.00	36.25	6.33	44.97	46.30	53.91	74.00	20.09	Peak
4	9755.00	38.15	7.52	44.55	42.01	53.13	74.00	20.87	Peak
5	14056.00	39.97	9.14	42.09	34.67	51.69	74.00	22.31	Peak
6	15892.00	37.98	9.62	44.70	37.34	50.24	74.00	23.76	Peak
7	18000.00	41.60	10.71	43.75	34.40	52.96	74.00	21.04	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
2. Margin= Limit - Emission Level.
3. The emission levels that are 20dB below the official limit are not reported.

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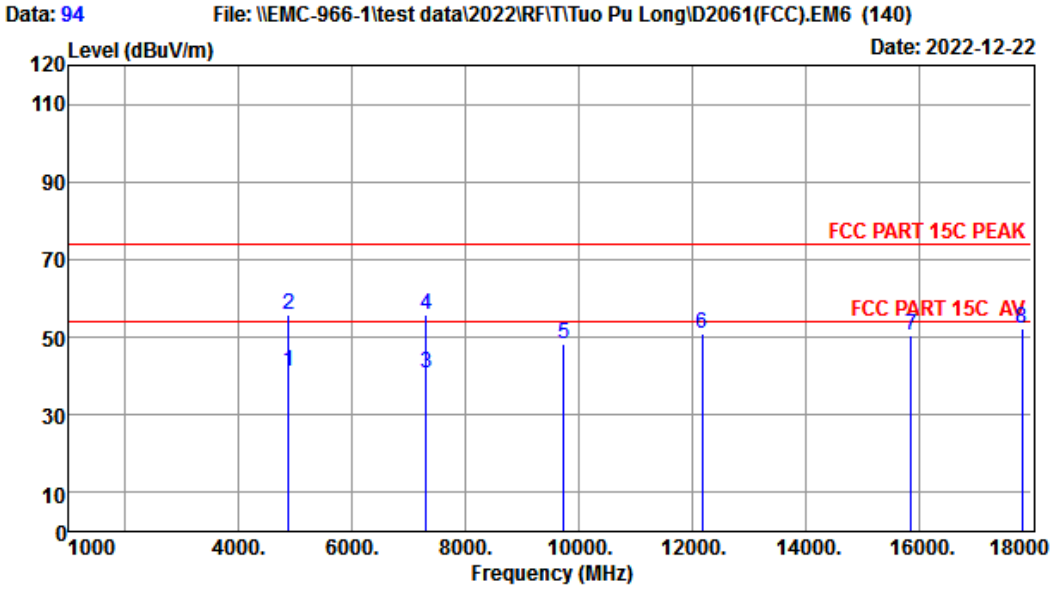

Site no. : 1# 966 Chamber Data no. : 94
Dis. / Ant. : 3m BBHA9120D 1-18G 2208 Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : Temp:20.1℃;Humi:51%;Press:101.52kPa
Engineer : JBR
EUT : Defunc HOME SMALL
Power : DC 20V From Adapter Input AC 120V/60Hz
M/N : D2061
Test Mode : IEEE 802.11n HT20 TX 2437MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	4874.00	32.54	4.93	45.41	39.17	41.23	54.00	12.77	Average
2	4874.00	32.54	4.93	45.41	53.92	55.98	74.00	18.02	Peak
3	7311.00	36.25	6.33	44.97	33.18	40.79	54.00	13.21	Average
4	7311.00	36.25	6.33	44.97	48.10	55.71	74.00	18.29	Peak
5	9738.00	38.15	7.51	44.56	37.00	48.10	74.00	25.90	Peak
6	12186.00	38.97	8.36	43.05	36.68	50.96	74.00	23.04	Peak
7	15875.00	38.01	9.61	44.70	37.55	50.47	74.00	23.53	Peak
8	17830.00	41.04	10.62	43.83	34.35	52.18	74.00	21.82	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
2. Margin= Limit - Emission Level.
3. The emission levels that are 20dB below the official limit are not reported.

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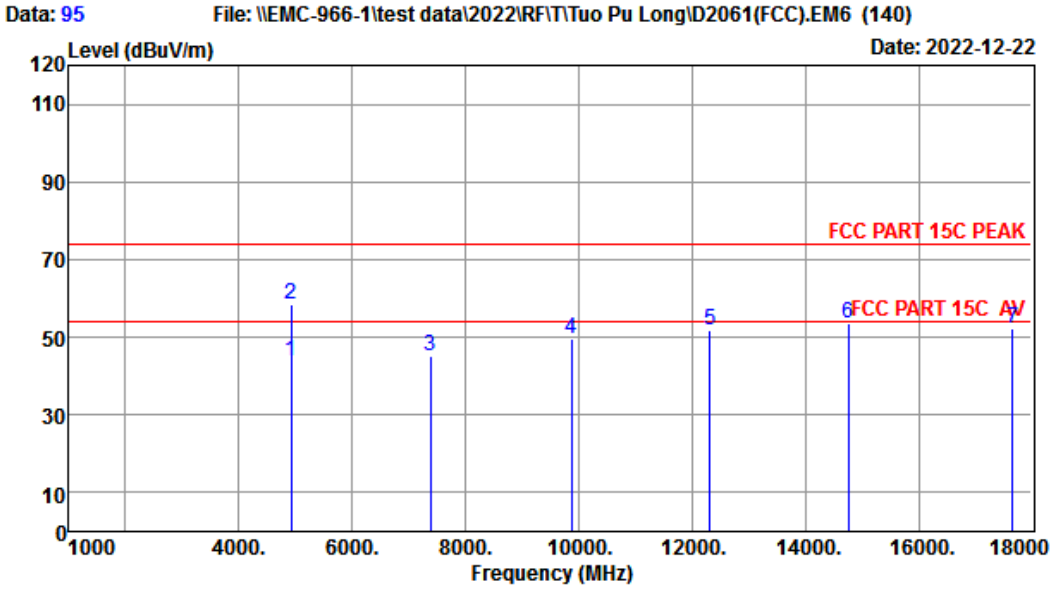

Site no. : 1# 966 Chamber Data no. : 95
Dis. / Ant. : 3m BBHA9120D 1-18G 2208 Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : Temp:20.1℃;Humi:51%;Press:101.52kPa
Engineer : JBR
EUT : Defunc HOME SMALL
Power : DC 20V From Adapter Input AC 120V/60Hz
M/N : D2061
Test Mode : IEEE 802.11n HT20 TX 2462MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	4924.00	32.64	4.96	45.39	41.67	43.88	74.00	30.12	Peak
2	4924.00	32.64	4.96	45.39	56.05	58.26	74.00	15.74	Peak
3	7386.00	36.31	6.39	44.95	37.58	45.33	74.00	28.67	Peak
4	9874.00	38.17	7.59	44.53	38.20	49.43	74.00	24.57	Peak
5	12322.00	39.09	8.44	42.96	37.33	51.90	74.00	22.10	Peak
6	14753.00	39.62	9.35	43.69	38.36	53.64	74.00	20.36	Peak
7	17660.00	40.48	10.54	43.91	35.15	52.26	74.00	21.74	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
2. Margin= Limit - Emission Level.
3. The emission levels that are 20dB below the official limit are not reported.

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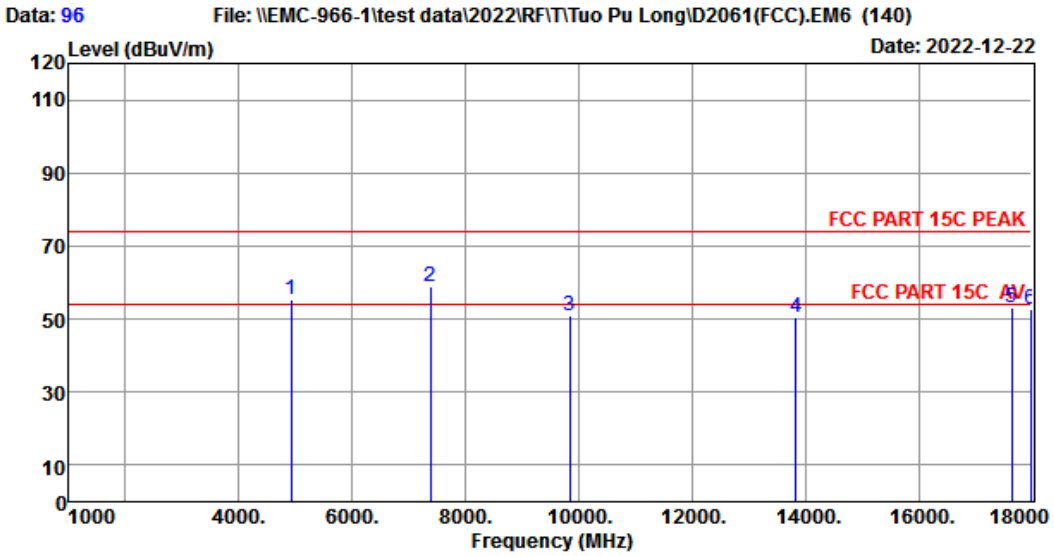

Site no. : 1# 966 Chamber Data no. : 96
Dis. / Ant. : 3m BBHA9120D 1-18G 2208 Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : Temp:20.1℃;Humi:51%;Press:101.52kPa
Engineer : JBR
EUT : Defunc HOME SMALL
Power : DC 20V From Adapter Input AC 120V/60Hz
M/N : D2061
Test Mode : IEEE 802.11n HT20 TX 2462MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	4924.00	32.64	4.96	45.39	52.99	55.20	74.00	18.80	Peak
2	7386.00	36.31	6.39	44.95	51.27	59.02	74.00	14.98	Peak
3	9840.00	38.17	7.57	44.54	39.81	51.01	74.00	22.99	Peak
4	13835.00	39.95	8.94	41.95	33.62	50.56	74.00	23.44	Peak
5	17643.00	40.42	10.53	43.91	36.20	53.24	74.00	20.76	Peak
6	17983.00	41.54	10.70	43.76	34.43	52.91	74.00	21.09	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
2. Margin= Limit - Emission Level.
3. The emission levels that are 20dB below the official limit are not reported.

Note:

1. The amplitude of 18GHz to 25GHz spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.

Radiated Band Edge

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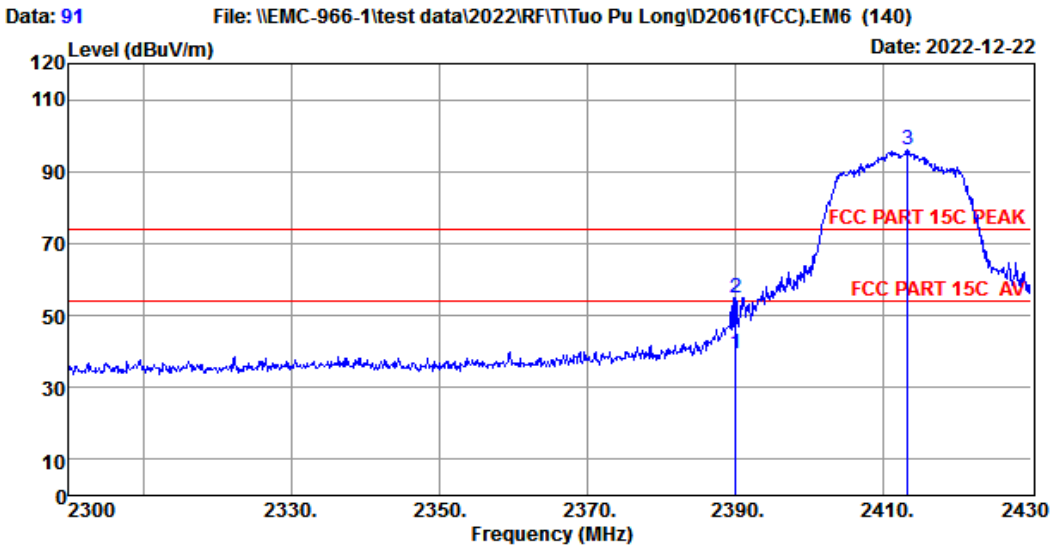

Site no. : 1# 966 Chamber Data no. : 91
Dis. / Ant. : 3m BBHA9120D 1-18G 2208 Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : Temp:20.1℃;Humi:51%;Press:101.52kPa
Engineer : JBR
EUT : Defunc HOME SMALL
Power : DC 20V From Adapter Input AC 120V/60Hz
M/N : D2061
Test Mode : IEEE 802.11n HT20 TX 2412MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2390.00	27.43	3.47	46.48	45.17	39.59	54.00	14.41	Average
2	2390.00	27.43	3.47	46.48	60.40	54.82	74.00	19.18	Peak
3	2413.23	27.50	3.48	46.47	101.42	95.93	74.00	-21.93	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
2. Margin= Limit - Emission Level.
3. The emission levels that are 20dB below the official limit are not reported.

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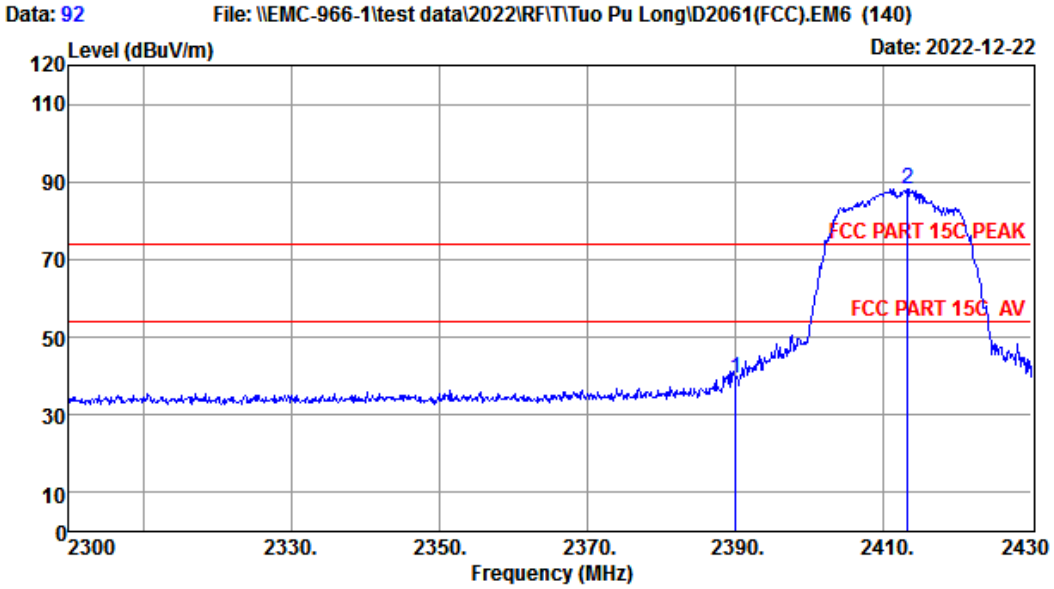

Site no. : 1# 966 Chamber Data no. : 92
Dis. / Ant. : 3m BBHA9120D 1-18G 2208 Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : Temp:20.1℃;Humi:51%;Press:101.52kPa
Engineer : JBR
EUT : Defunc HOME SMALL
Power : DC 20V From Adapter Input AC 120V/60Hz
M/N : D2061
Test Mode : IEEE 802.11n HT20 TX 2412MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2390.00	27.43	3.47	46.48	44.82	39.24	74.00	34.76	Peak
2	2413.23	27.50	3.48	46.47	93.82	88.33	74.00	-14.33	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
2. Margin= Limit - Emission Level.
3. The emission levels that are 20dB below the official limit are not reported.

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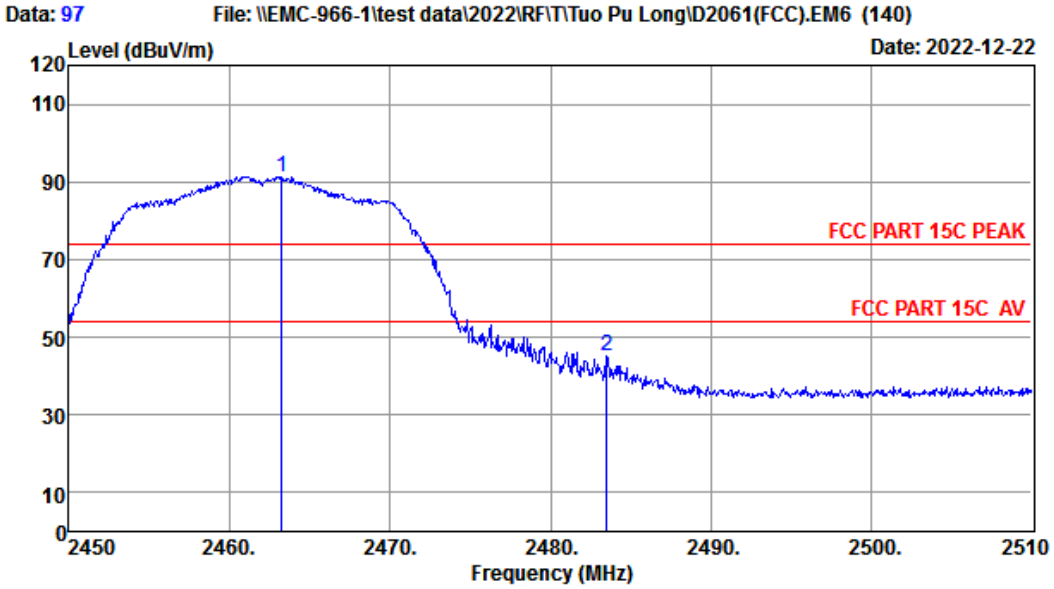

Site no. : 1# 966 Chamber Data no. : 97
Dis. / Ant. : 3m BBHA9120D 1-18G 2208 Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : Temp:20.1℃;Humi:51%;Press:101.52kPa
Engineer : JBR
EUT : Defunc HOME SMALL
Power : DC 20V From Adapter Input AC 120V/60Hz
M/N : D2061
Test Mode : IEEE 802.11n HT20 TX 2462MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2463.26	27.64	3.50	46.45	96.72	91.41	74.00	-17.41	Peak
2	2483.50	27.70	3.51	46.44	50.53	45.30	74.00	28.70	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
2. Margin= Limit - Emission Level.
3. The emission levels that are 20dB below the official limit are not reported.

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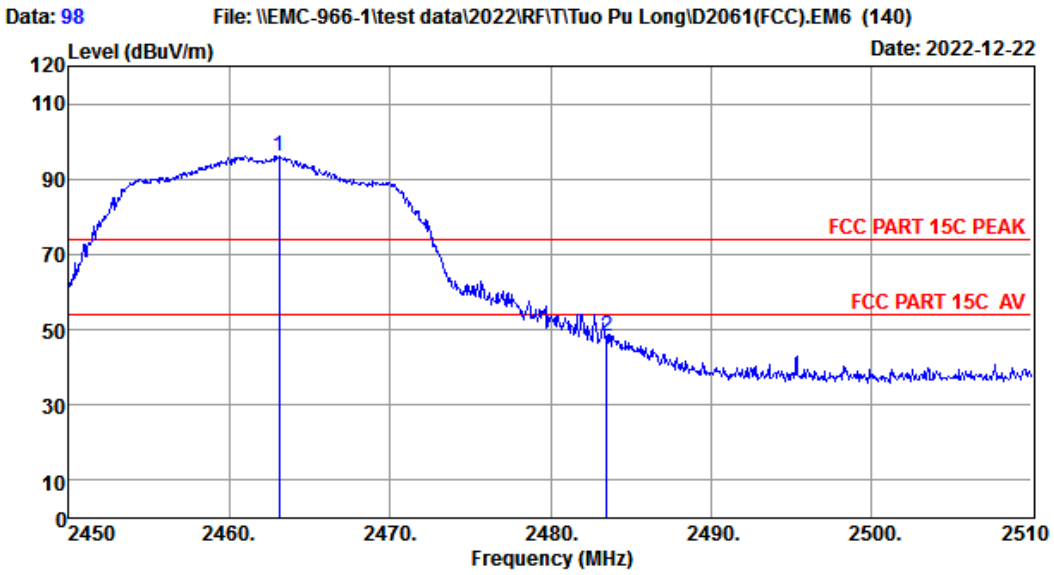



```
Site no.      : 1# 966 Chamber              Data no.  : 98
Dis. / Ant.   : 3m   BBHA9120D 1-18G 2208   Ant. pol. : VERTICAL
Limit         : FCC PART 15C PEAK
Env. / Ins.   : Temp:20.1℃;Humi:51%;Press:101.52kPa
Engineer      : JBR
EUT           : Defunc HOME SMALL
Power         : DC 20V From Adapter Input AC 120V/60Hz
M/N           : D2061
Test Mode     : IEEE 802.11n HT20 TX 2462MHz
```

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2463.08	27.64	3.50	46.45	101.42	96.11	74.00	-22.11	Peak
2	2483.50	27.70	3.51	46.44	53.67	48.44	74.00	25.56	Peak

```
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
         2. Margin= Limit - Emission Level.
         3. The emission levels that are 20dB below the official
            limit are not reported.
```

Note:

1. All channels had been pre-test,only of the worst case channels were reported.

4. AC POWER LINE CONDUCTED EMISSIONS

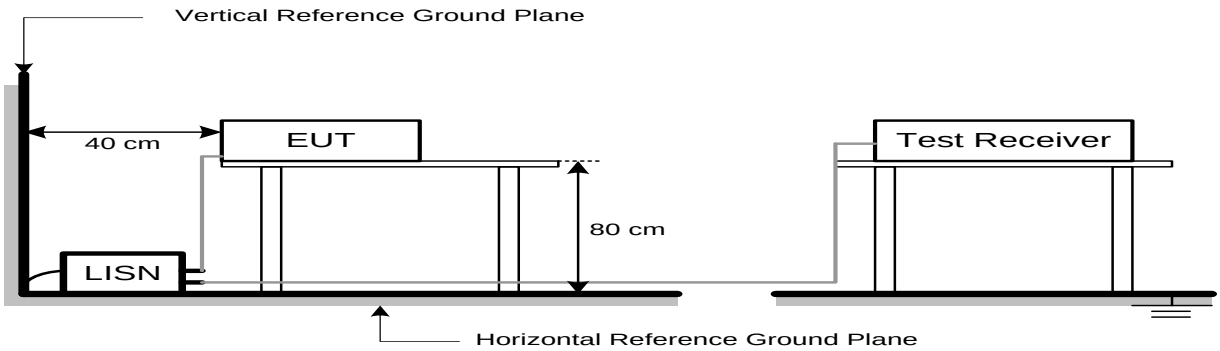
4.1. Limit

Frequency			Maximum RF Line Voltage	
			Quasi-Peak Level dB(μV)	Average Level dB(μV)
150kHz	~	500kHz	66 ~ 56*	56 ~ 46*
500kHz	~	5MHz	56	46
5MHz	~	30MHz	60	50

Note:

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

4.2. Test Setup



4.3. Spectrum Analyzer Setting

Spectrum Parameters	Setting
RBW	9KHz
VBW	9KHz
Start frequency	150KHz
Stop frequency	30MHz
Sweep Time	Auto
Detector	QP/AVG
Trace Mode	Max Hold

4.4. Test Procedure

a. The EUT was placed on a non-metallic table, 80cm above the ground plane.
b. The EUT Power connected to the power mains through a line impedance stabilization network.
c. Provides a 50 ohm coupling impedance for the EUT (Please refer the block diagram of the test setup and photographs).
d. Set the EUT transmit continuously with maximum output power.
e. Spectrum analyzer setting parameters in accordance with section 9.3.
f. The AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.10: 2013 on Conducted Emission Test.
g. Record the results in the test report.

4.5. Test Result

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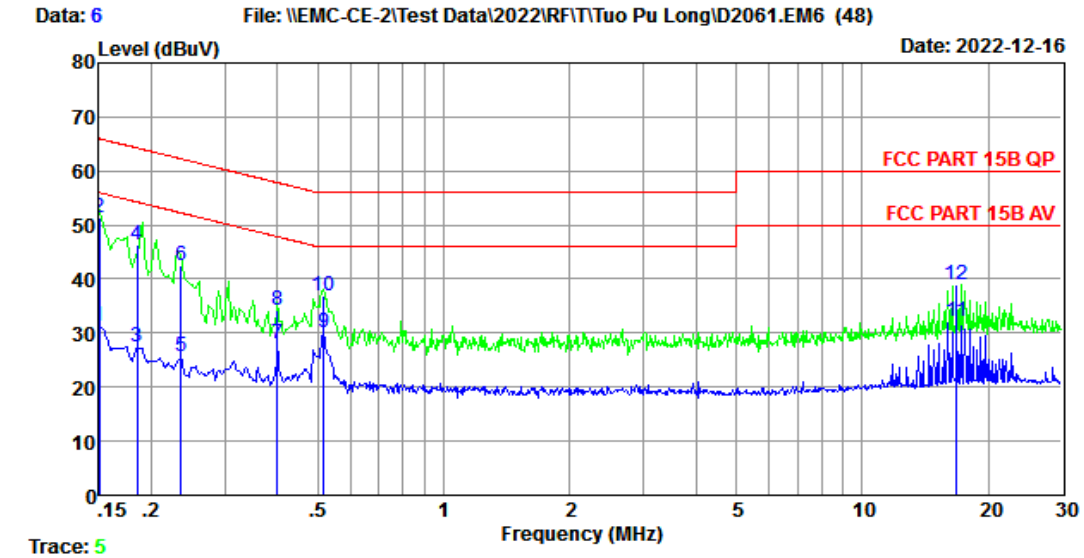

Site no : 2#CE Shield Room Data no. : 6
Env. / Ins. : Temp:22.8℃ Humi:58% Press:101.30kPa LINE Phase : LINE
Limit : FCC PART 15B QP
Engineer : ZSX
EUT : Defunc HOME SMALL
Power : DC 20V From Adapter Input AC 120V/60Hz
M/N : D2061
Test Mode : TX Mode

	Freq. (MHz)	LISN Factor (db)	Cable Loss (db)	Reading dBuV)	Emission Level (dBuv)	Limits (dBuv)	Margin (dB)	Remark
1	0.150	9.66	9.69	11.81	31.16	56.00	24.84	Average
2	0.150	9.66	9.69	32.05	51.40	66.00	14.60	QP
3	0.185	9.67	9.77	7.89	27.33	54.24	26.91	Average
4	0.185	9.67	9.77	26.83	46.27	64.24	17.97	QP
5	0.235	9.64	9.92	6.03	25.59	52.26	26.67	Average
6	0.235	9.64	9.92	22.91	42.47	62.26	19.79	QP
7	0.400	9.70	9.92	8.55	28.17	47.86	19.69	Average
8	0.400	9.70	9.92	14.58	34.20	57.86	23.66	QP
9	0.516	9.72	9.92	10.49	30.13	46.00	15.87	Average
10	0.516	9.72	9.92	17.23	36.87	56.00	19.13	QP
11	16.839	9.74	10.14	12.25	32.13	50.00	17.87	Average
12	16.839	9.74	10.14	18.94	38.82	60.00	21.18	QP

Remarks: 1. Emission Level= LISN Factor + Cable Loss + Reading.
2. Margin= Limit - Emission Level.
3. If the average limit is met when useing a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.

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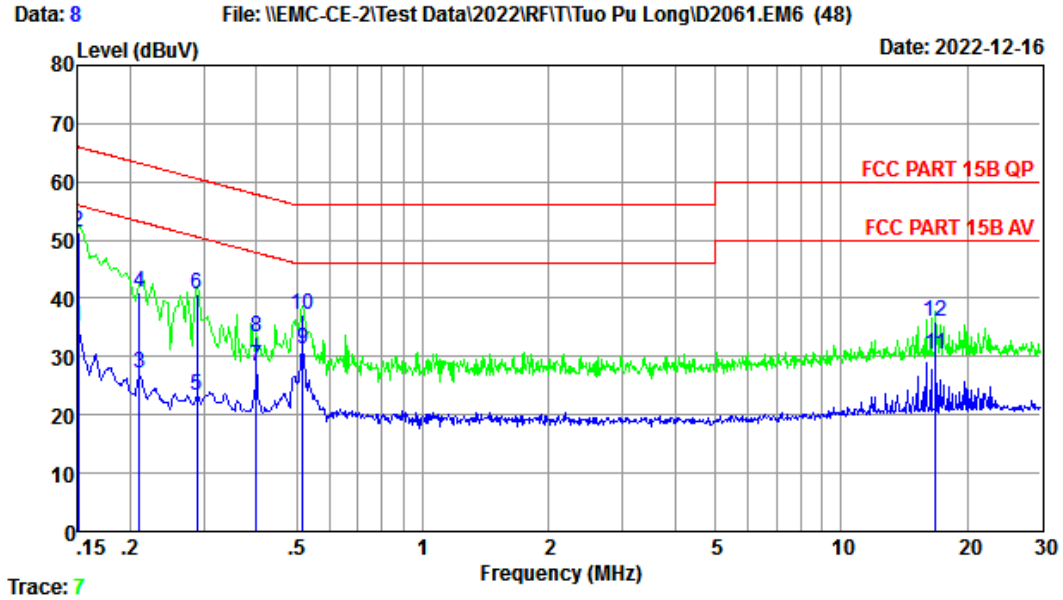


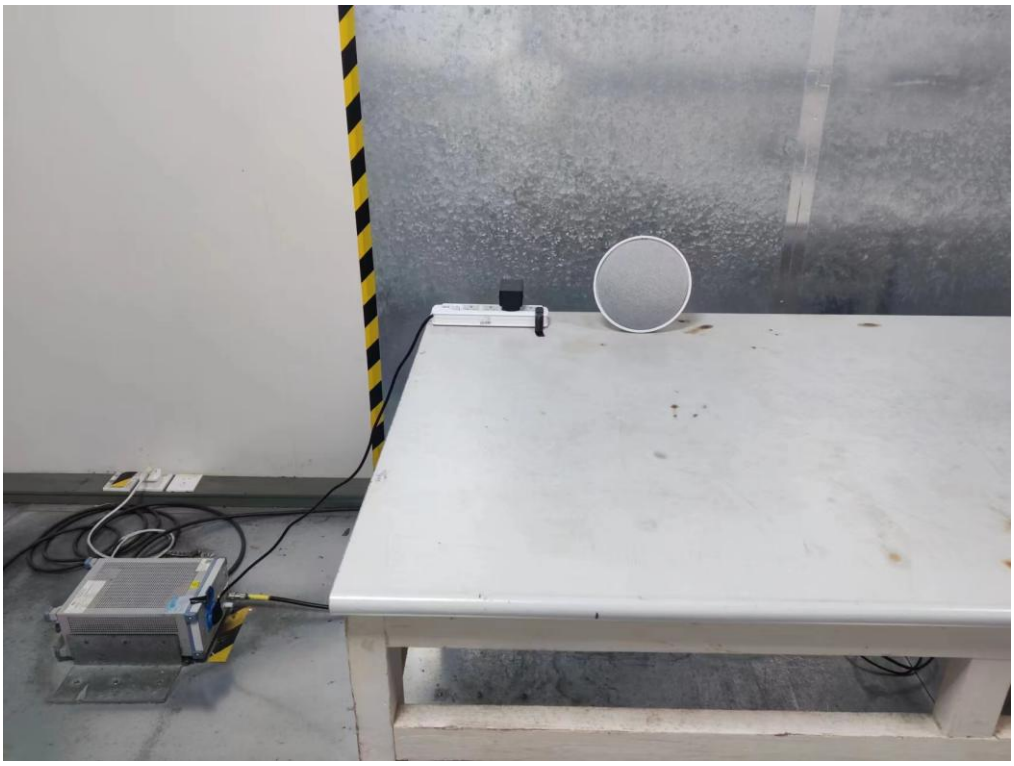
Site no : 2#CE Shield Room Data no. : 8
Env. / Ins. : Temp:22.8℃ Humi:58% Press:101.30kPa LINE Phase : NEUTRAL
Limit : FCC PART 15B QP
Engineer : ZSX
EUT : Defunc HOME SMALL
Power : DC 20V From Adapter Input AC 120V/60Hz
M/N : D2061
Test Mode : TX Mode

	Freq. (MHz)	LISN Factor (db)	Cable Loss (db)	Reading dBuV)	Emission Level (dBuv)	Limits (dBuv)	Margin (dB)	Remark
1	0.150	9.71	9.69	15.71	35.11	56.00	20.89	Average
2	0.150	9.71	9.69	31.95	51.35	66.00	14.65	QP
3	0.211	9.53	9.84	7.74	27.11	53.18	26.07	Average
4	0.211	9.53	9.84	21.77	41.14	63.18	22.04	QP
5	0.289	9.59	9.92	3.71	23.22	50.54	27.32	Average
6	0.289	9.59	9.92	21.31	40.82	60.54	19.72	QP
7	0.400	9.64	9.92	8.76	28.32	47.86	19.54	Average
8	0.400	9.64	9.92	13.72	33.28	57.86	24.58	QP
9	0.516	9.65	9.92	11.83	31.40	46.00	14.60	Average
10	0.516	9.65	9.92	17.53	37.10	56.00	18.90	QP
11	16.839	9.77	10.14	10.58	30.49	50.00	19.51	Average
12	16.839	9.77	10.14	16.10	36.01	60.00	23.99	QP

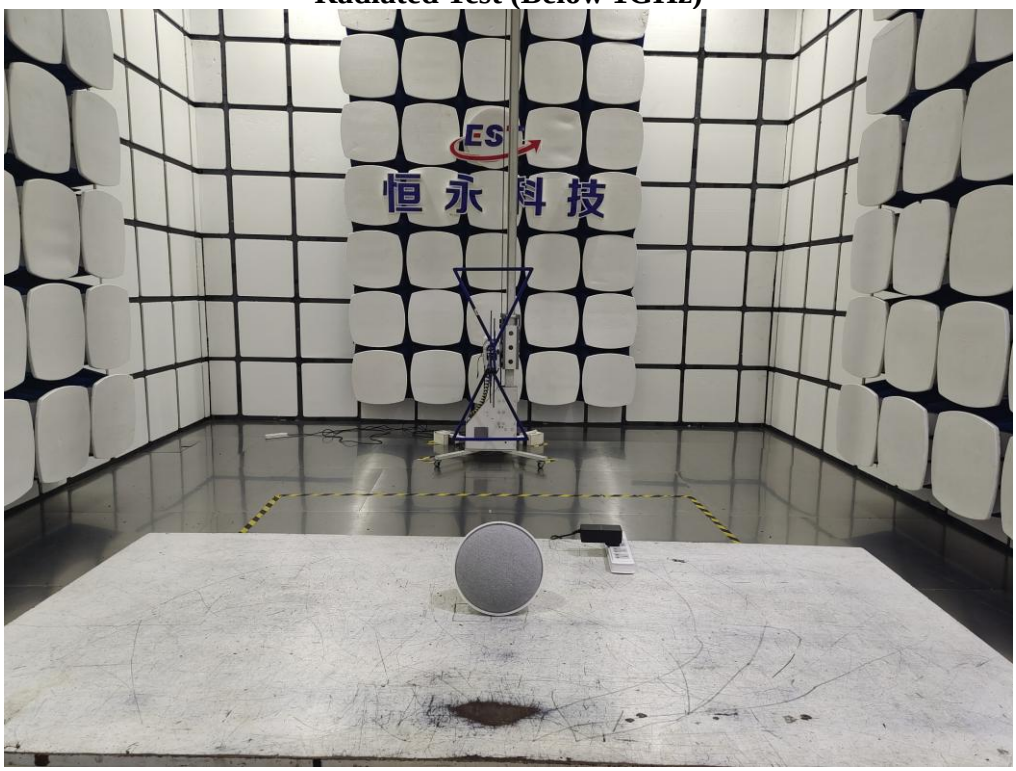
Remarks: 1. Emission Level= LISN Factor + Cable Loss + Reading.
2. Margin= Limit - Emission Level.
3. If the average limit is met when useing a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.

5. TEST SETUP PHOTO

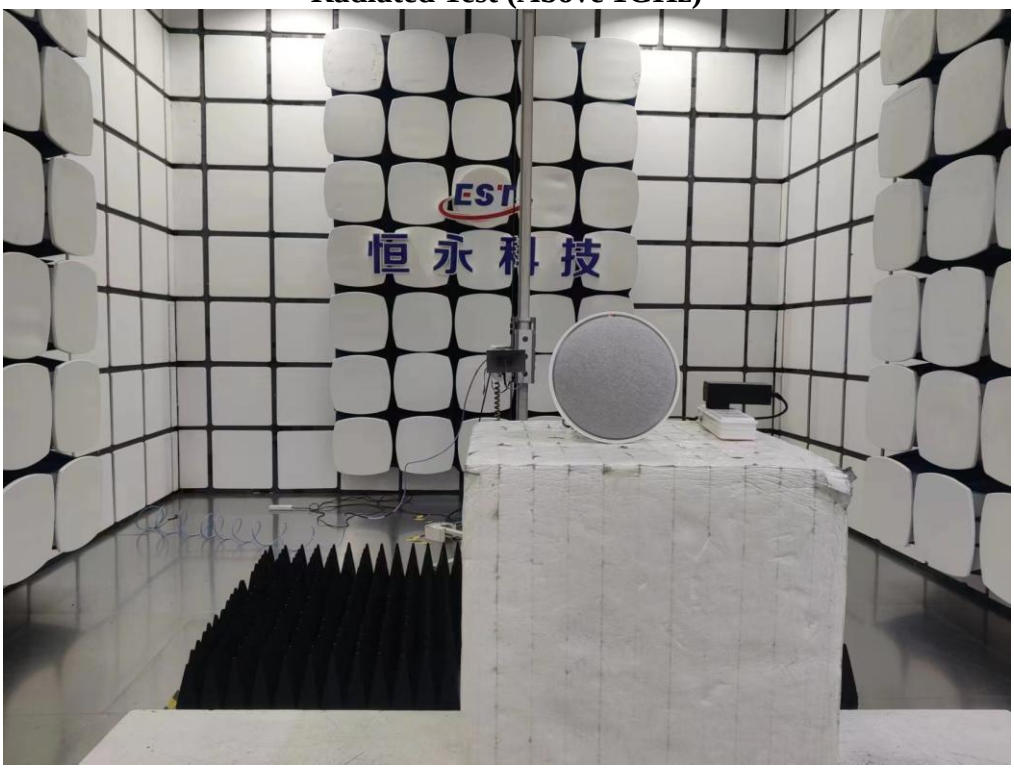
Conducted Test



Radiated Test (Below 1GHz)



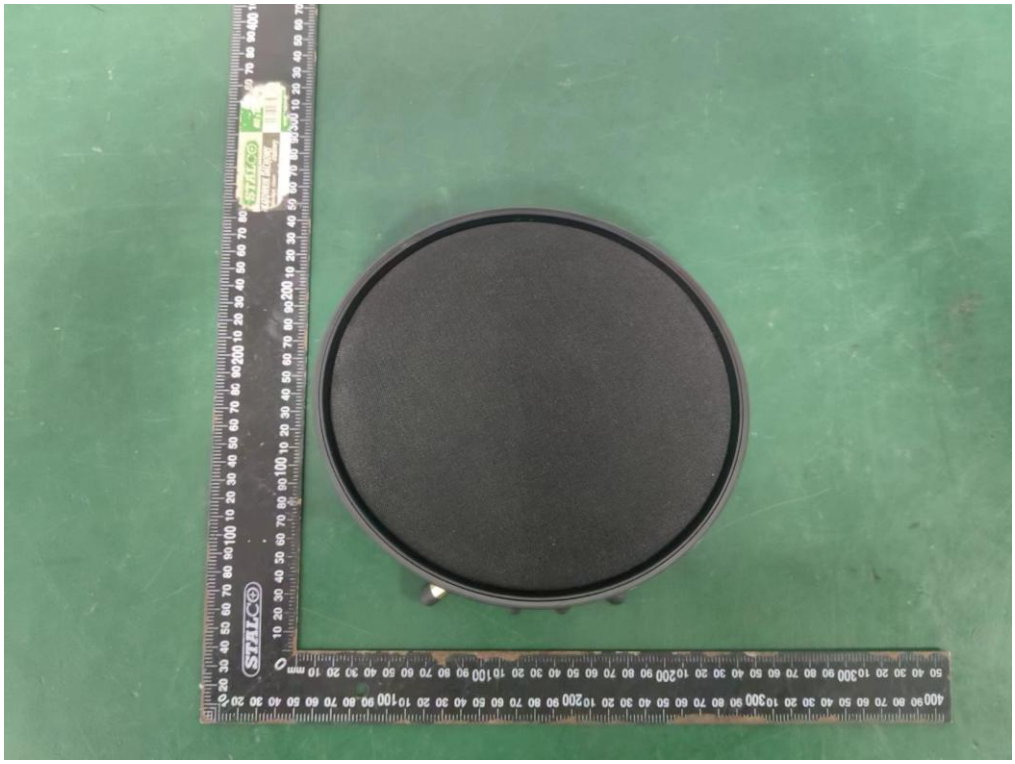
Radiated Test (Above 1GHz)

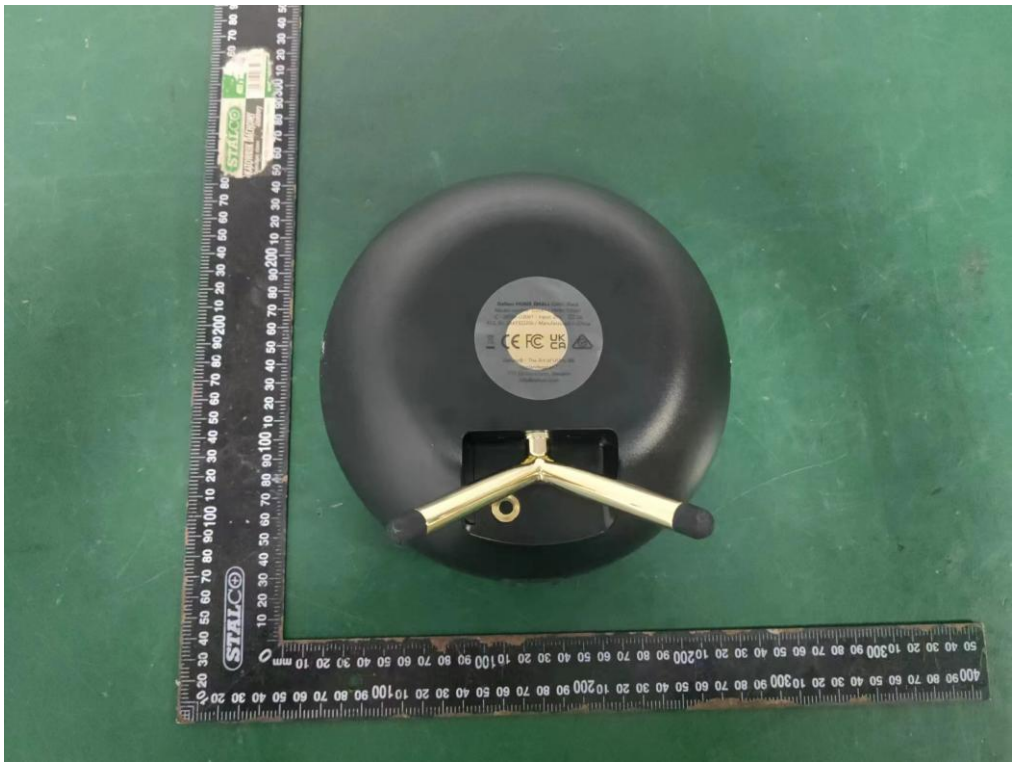


6. EUT PHOTO

External Photos

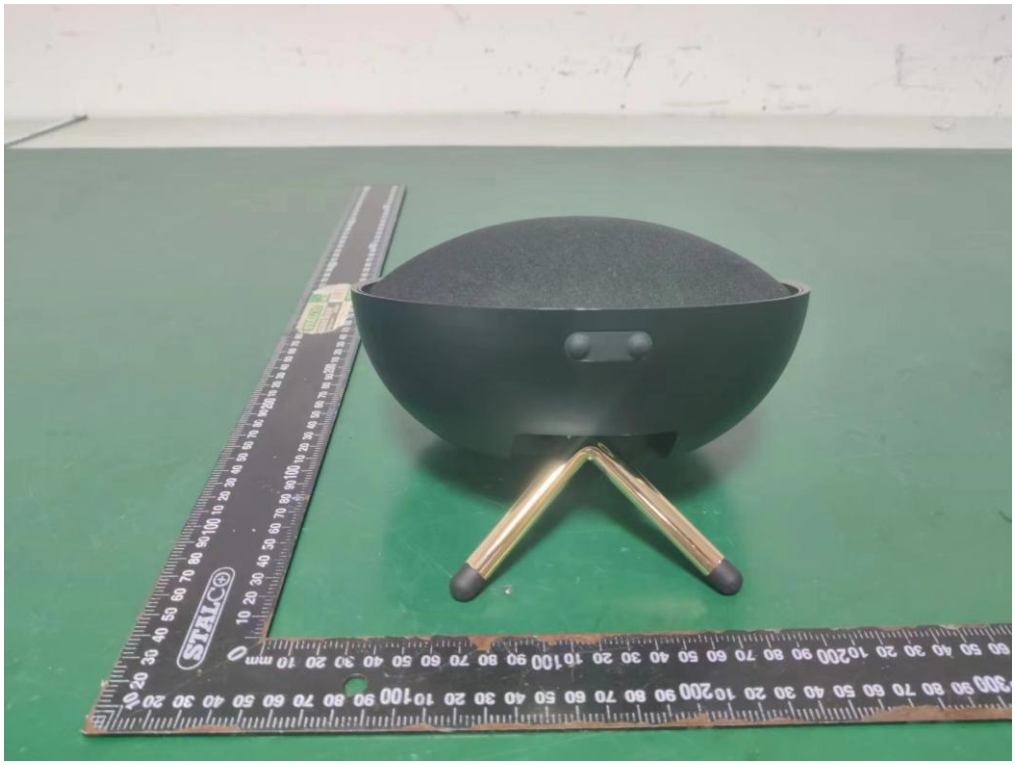
M/N: D2061

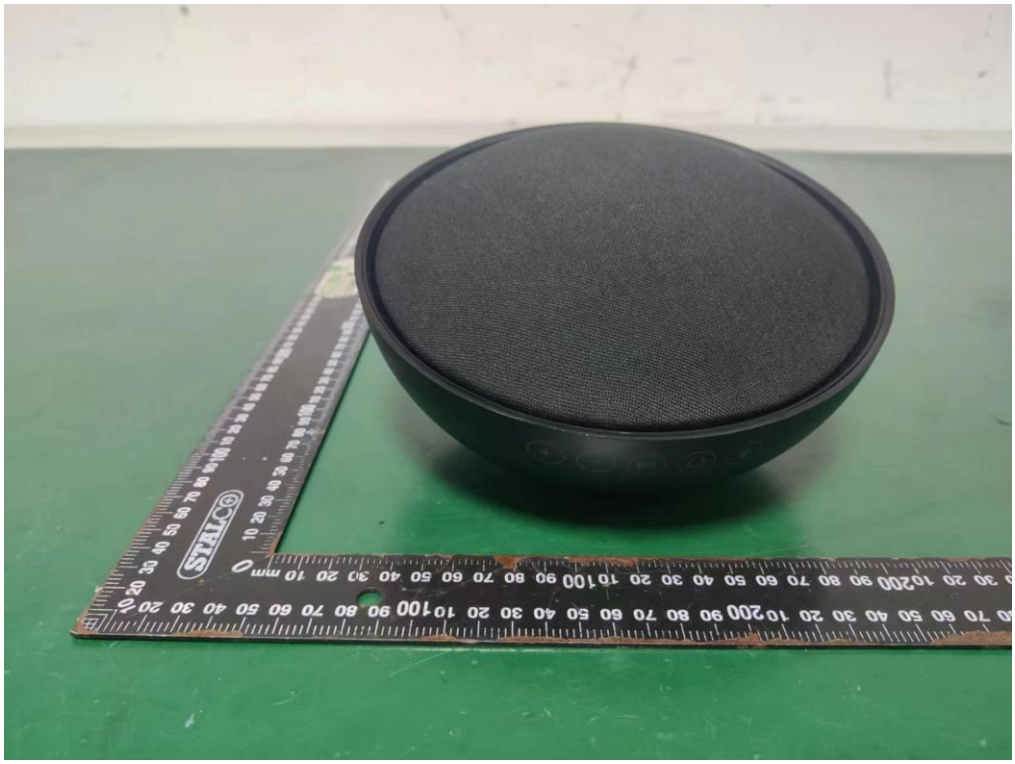




External Photos

M/N: D2061





External Photos

M/N: D2061

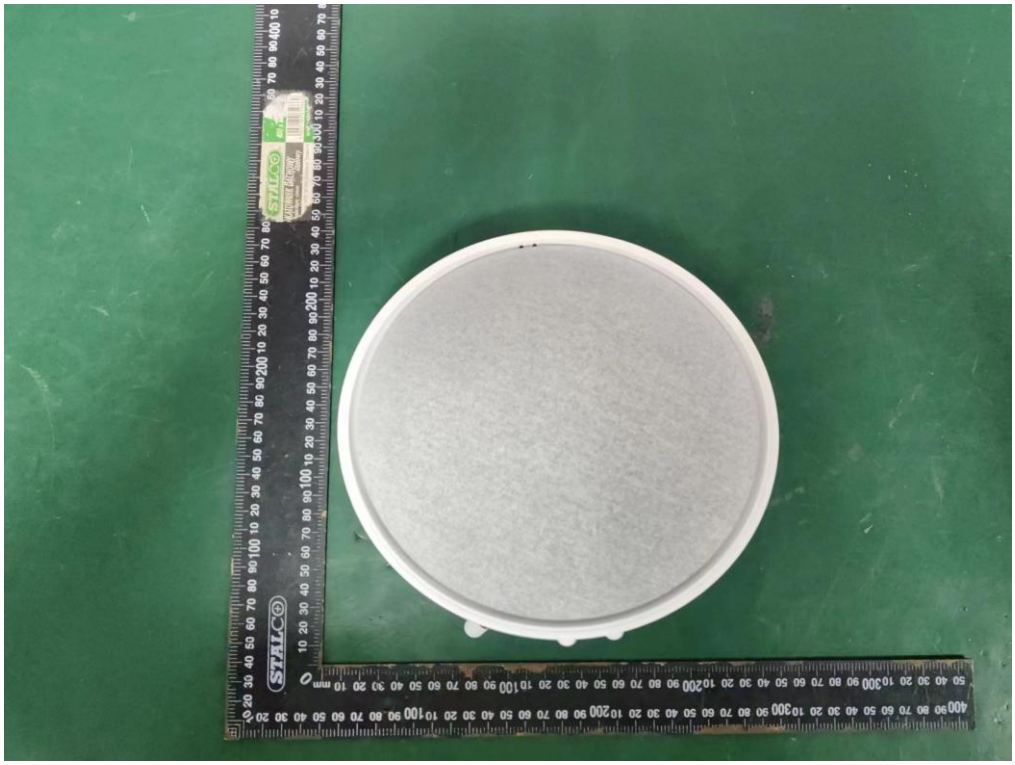
External Photos

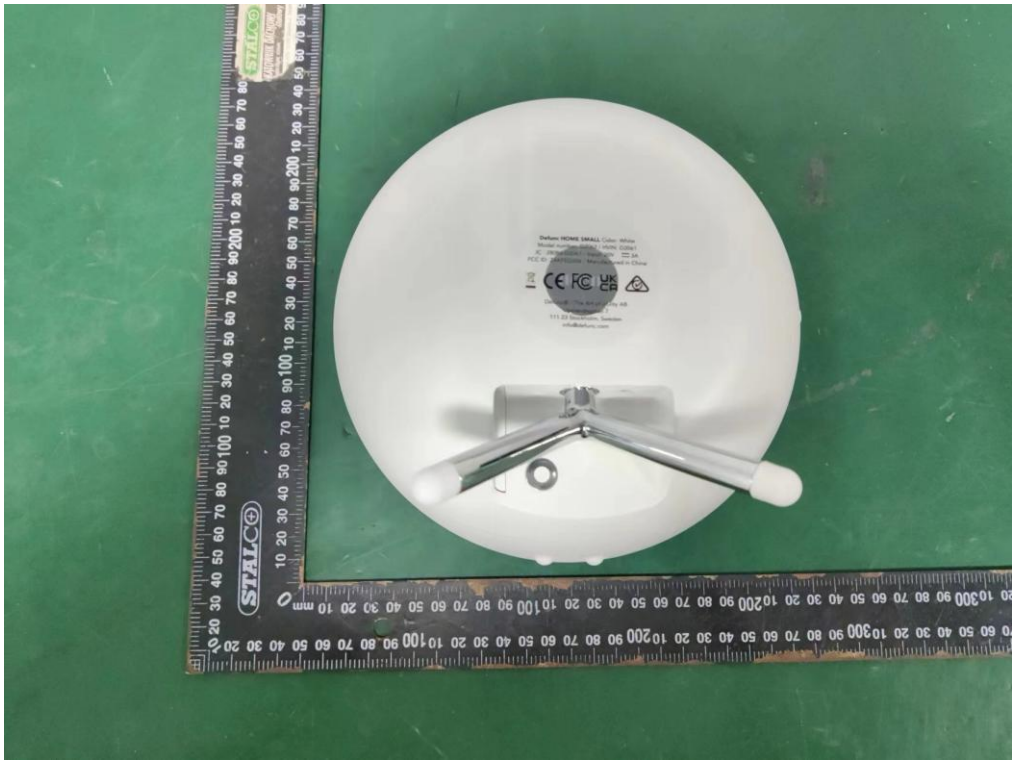
M/N: D2061

Power Supply

External Photos

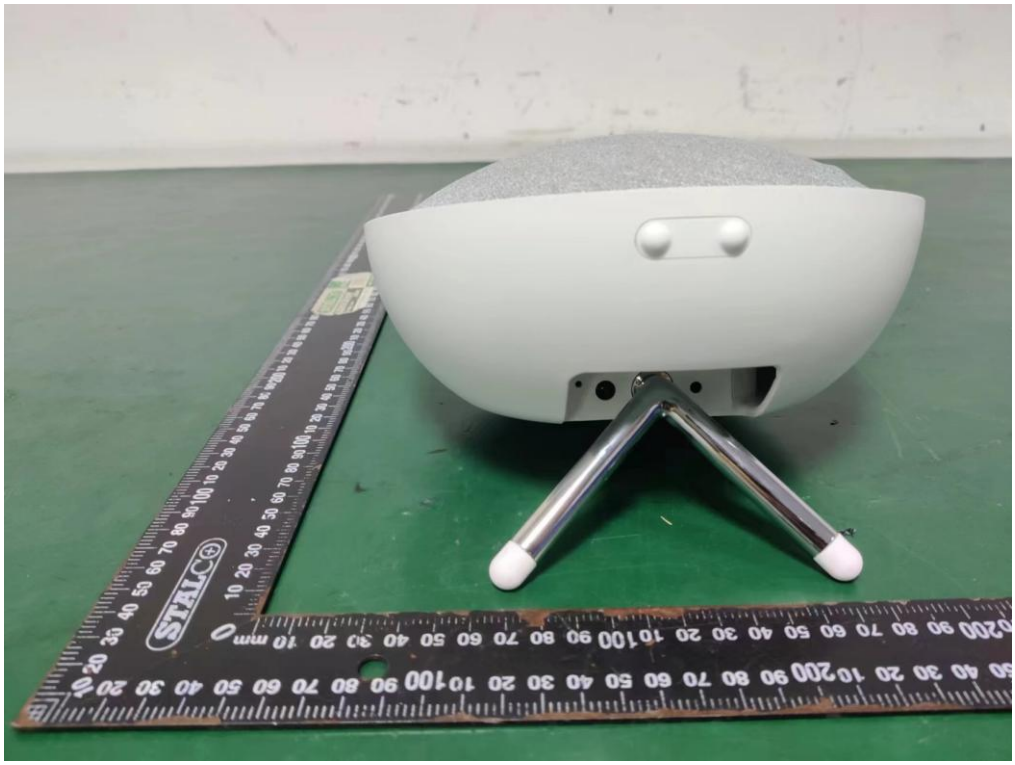
M/N: D2062





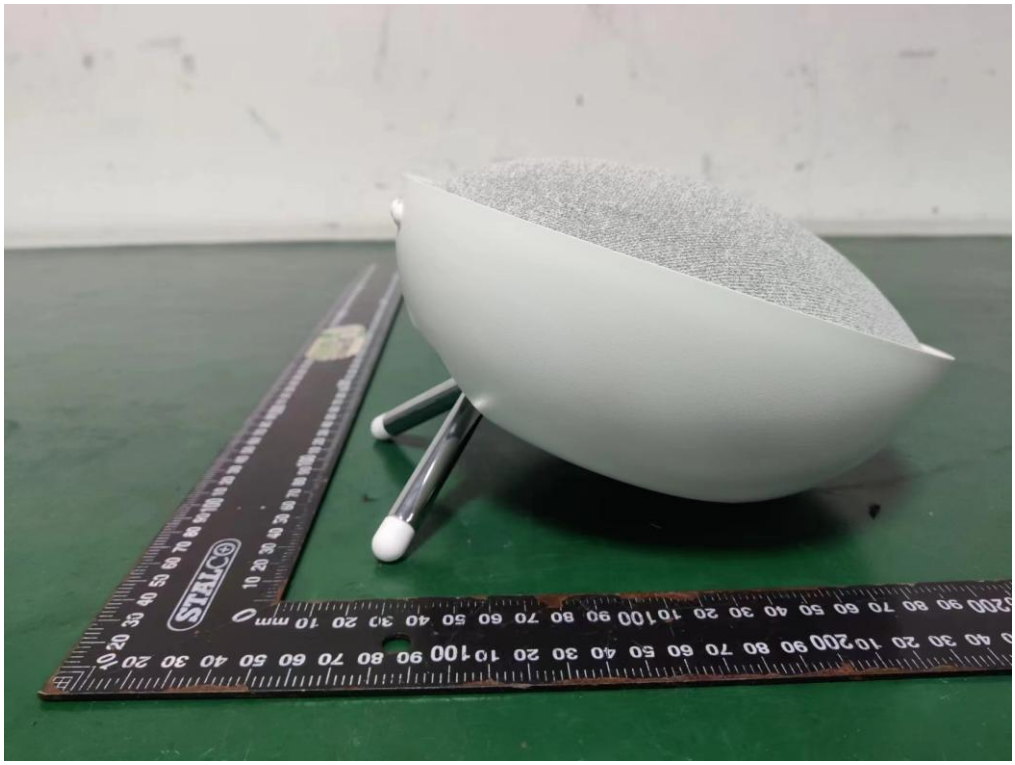
External Photos

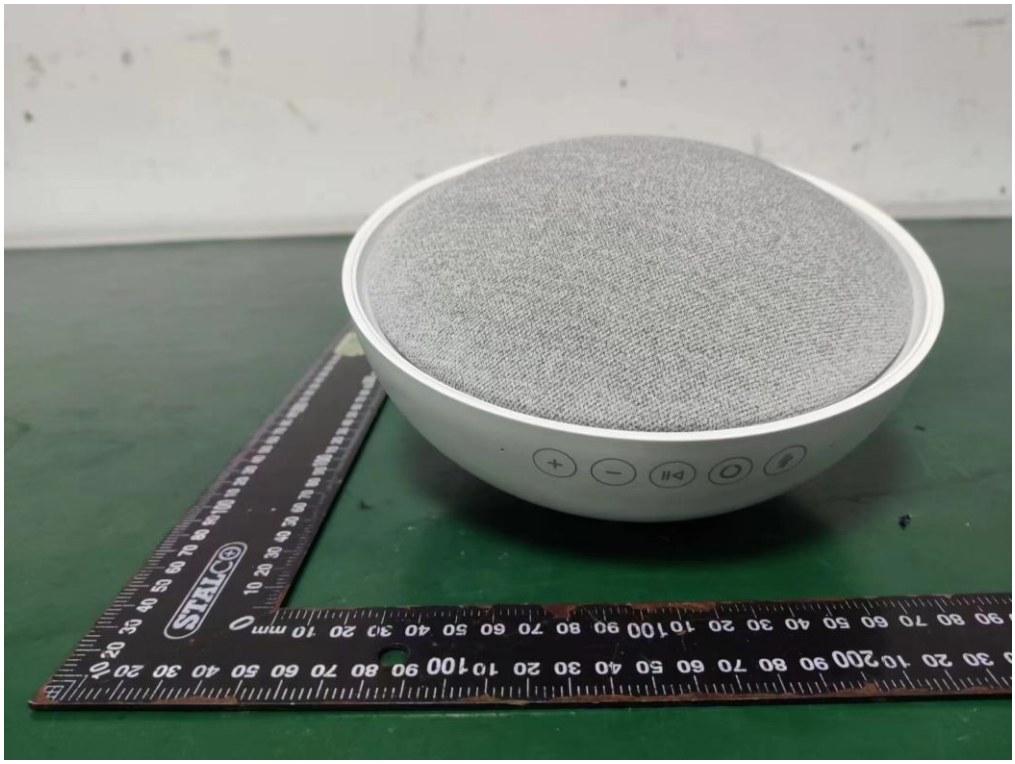
M/N: D2062



External Photos

M/N: D2062

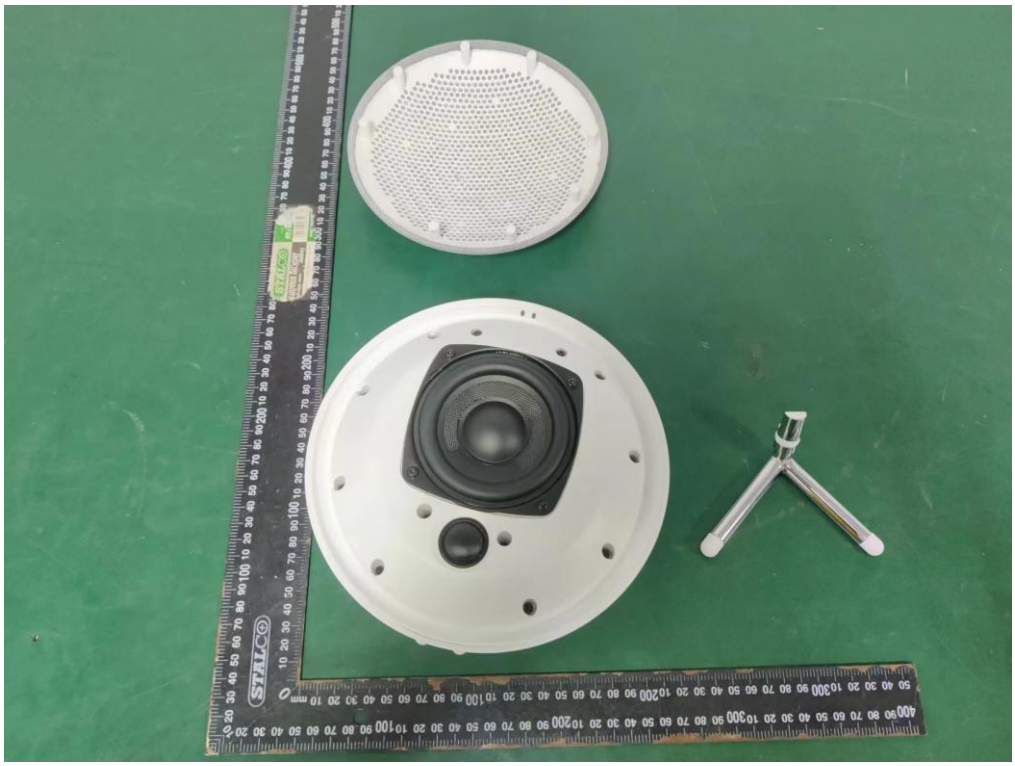


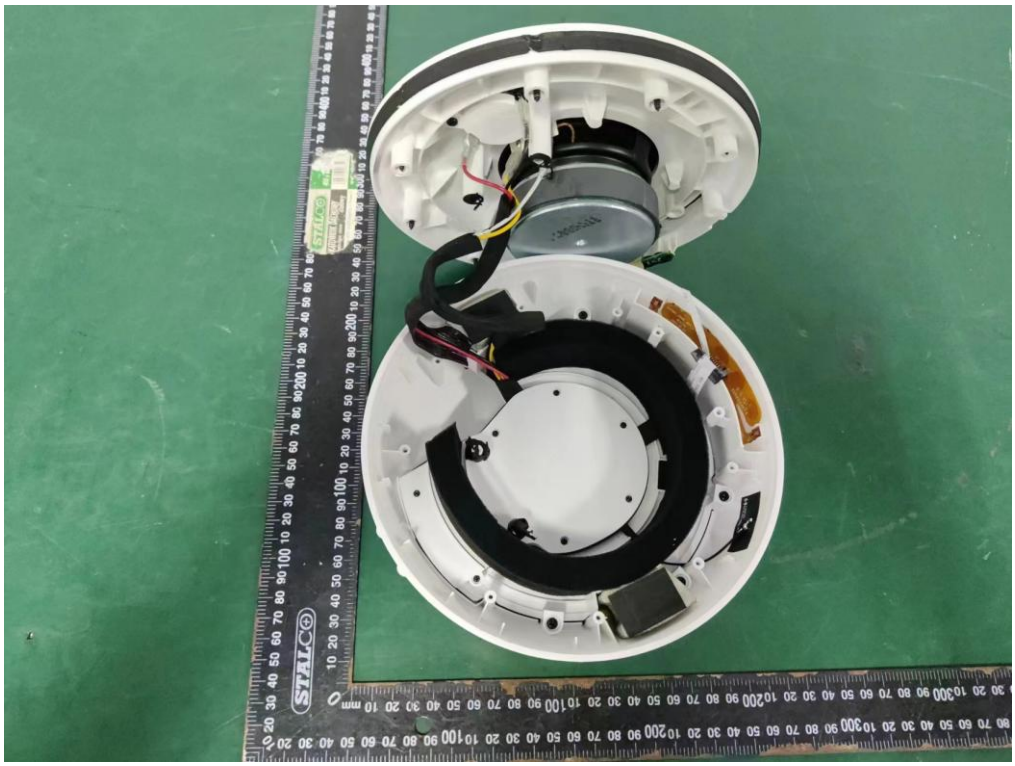


External Photos

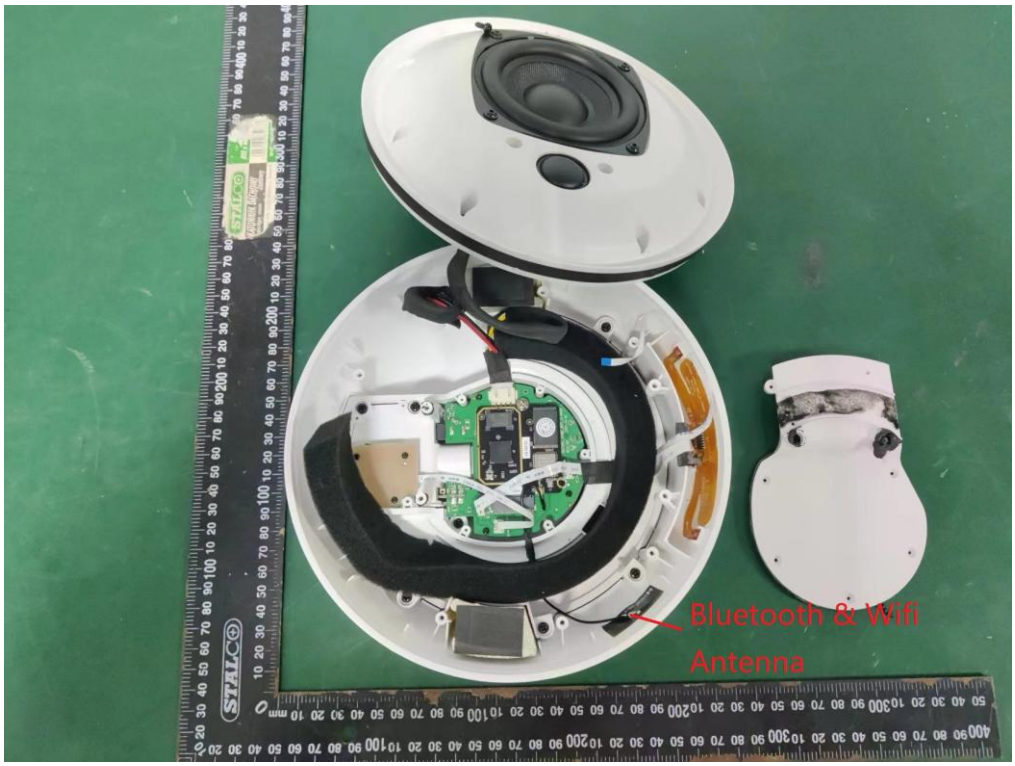
M/N: D2062

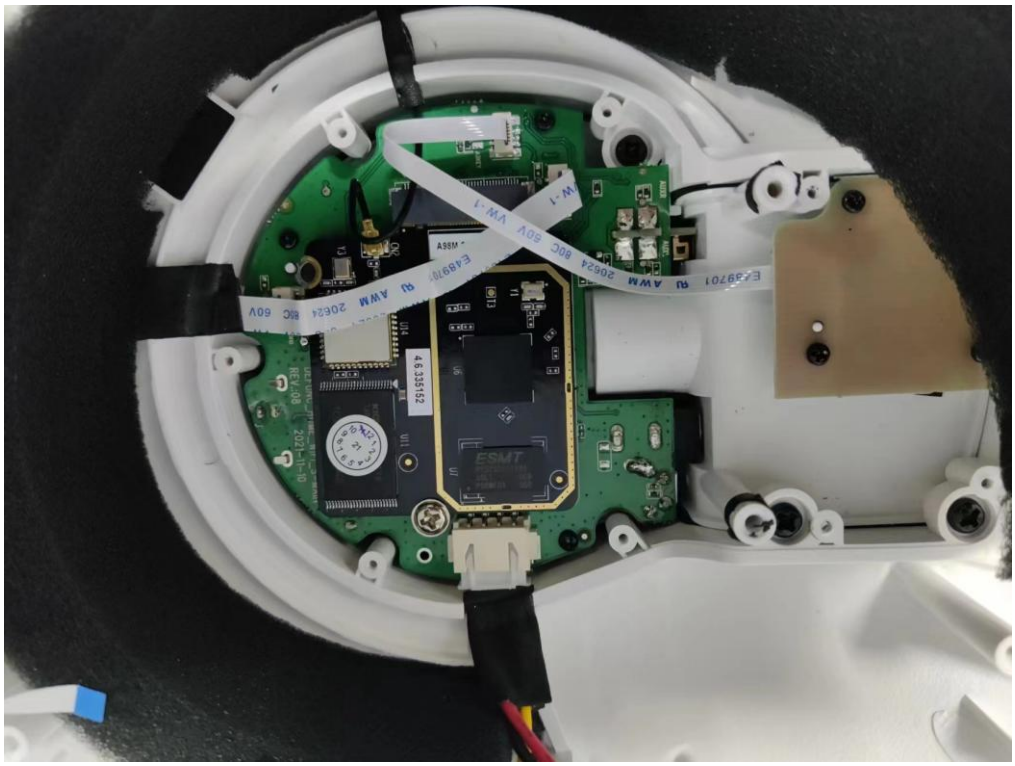
Internal Photos



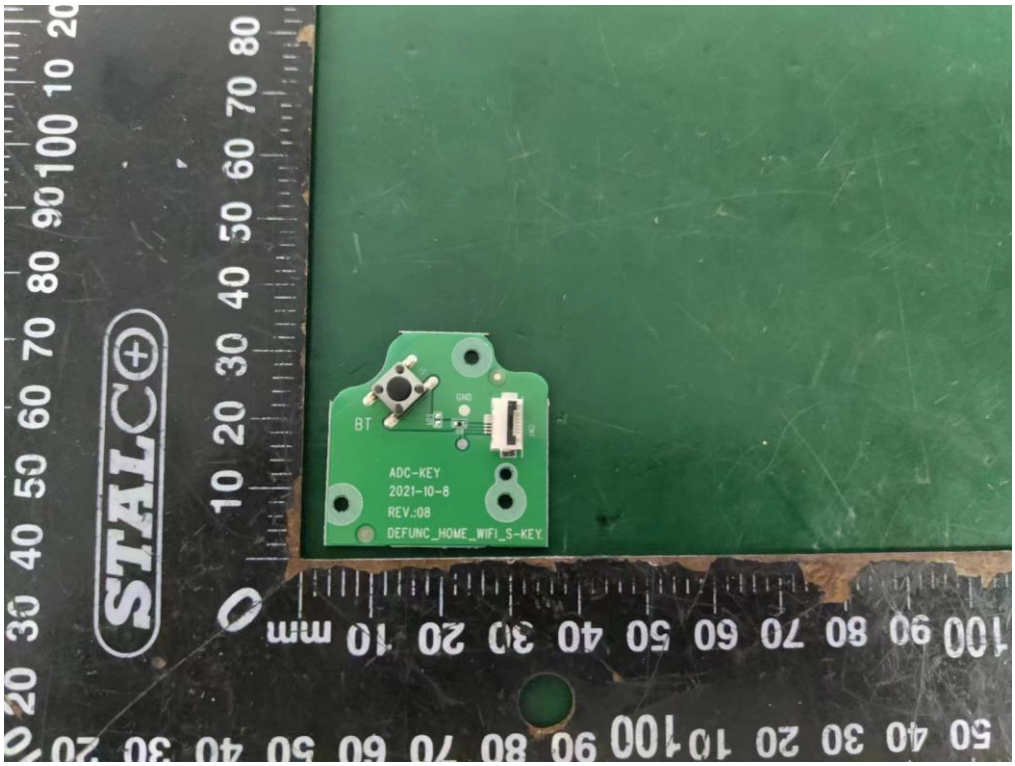


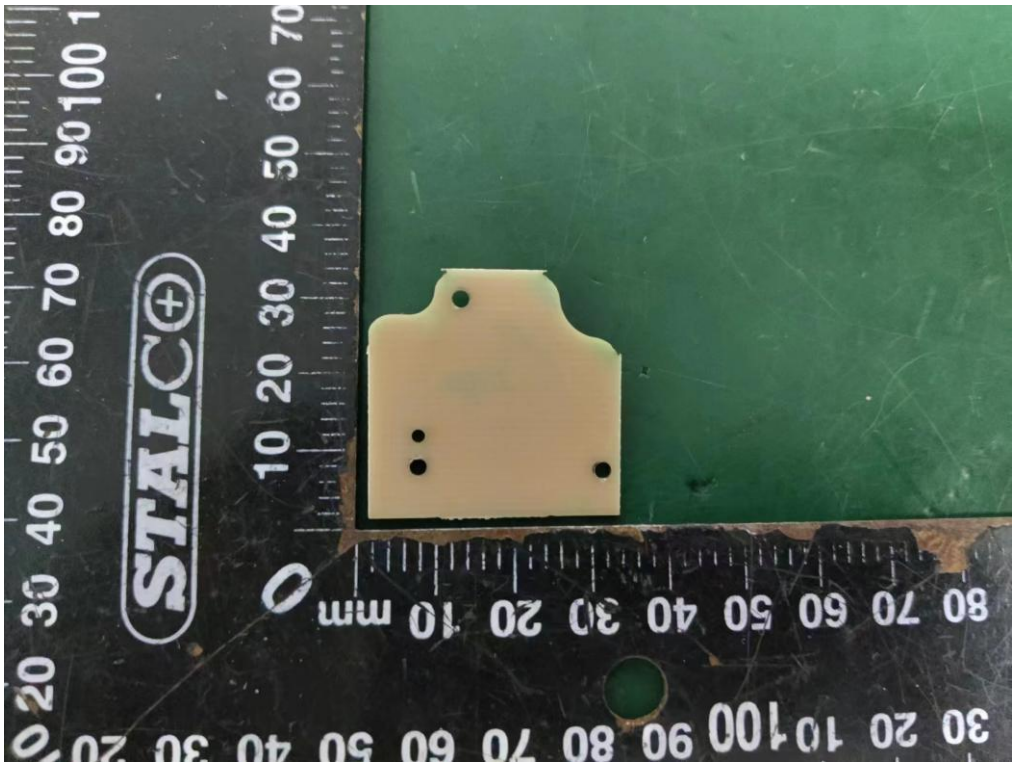
Internal Photos





Internal Photos





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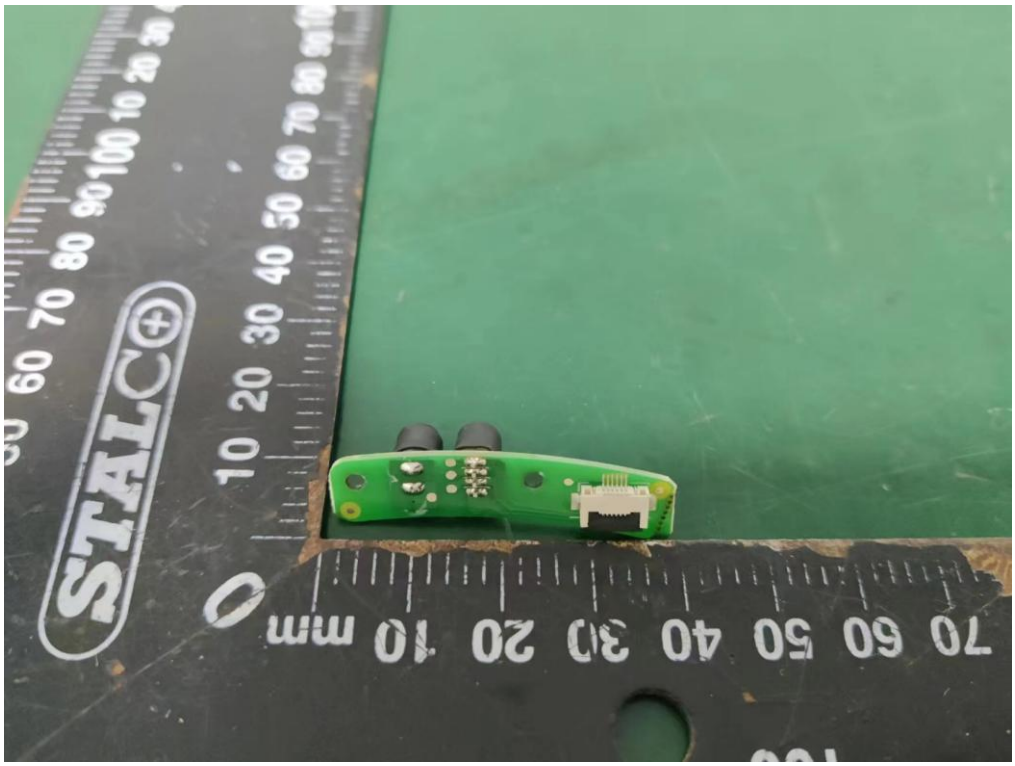

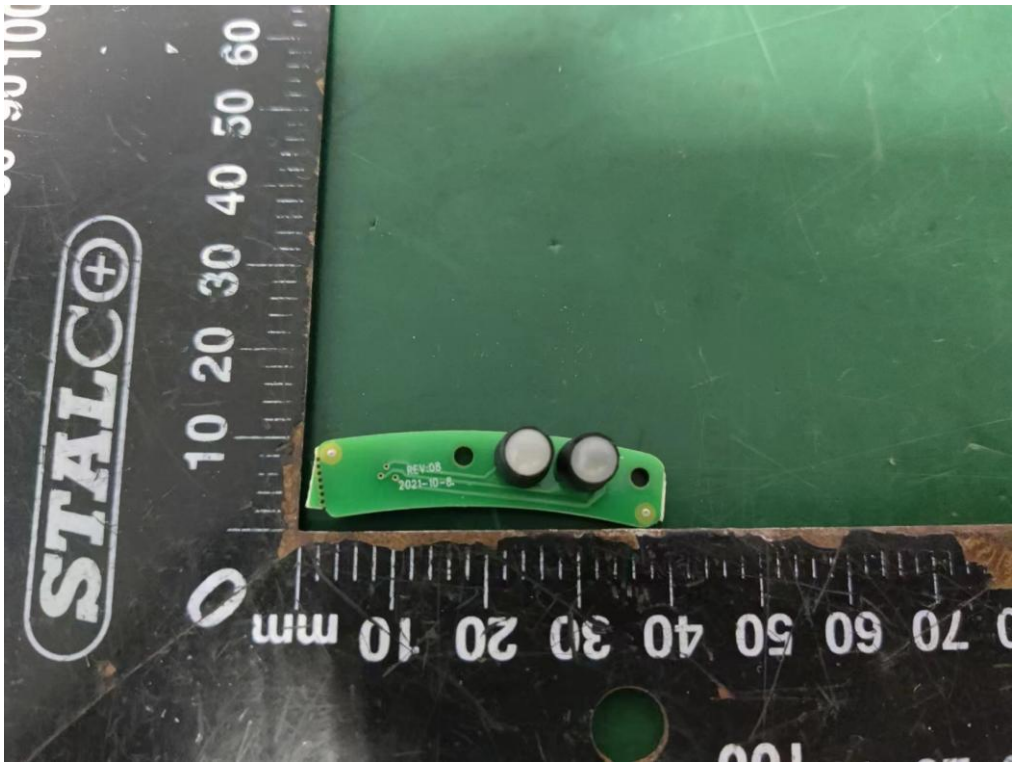

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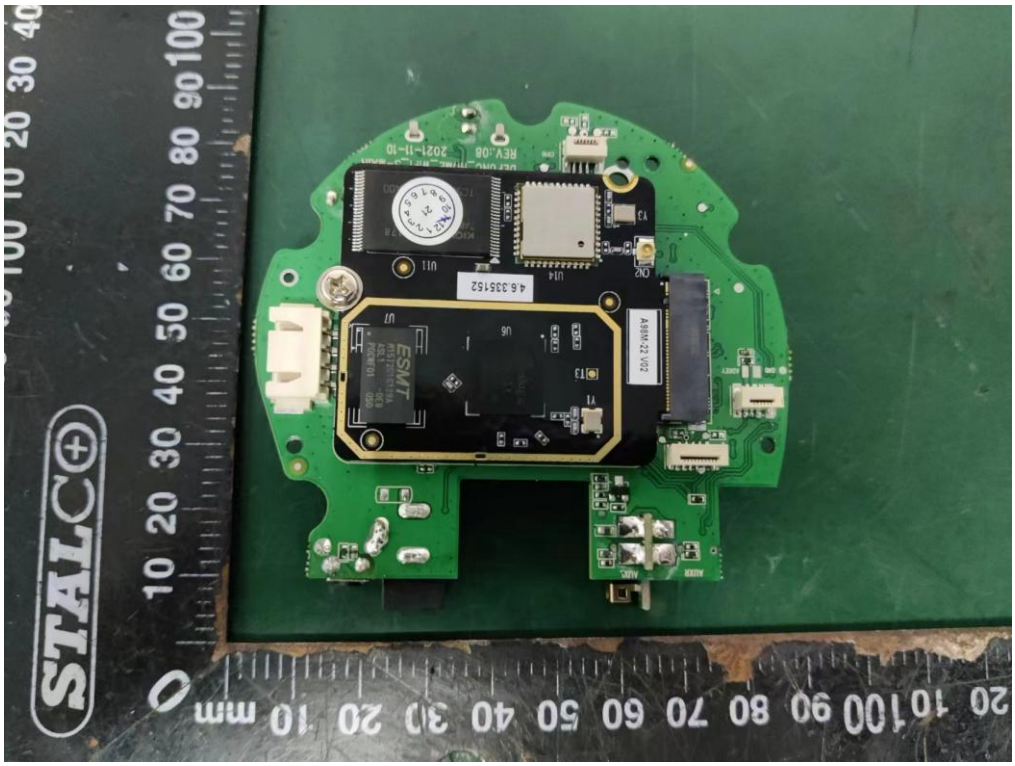

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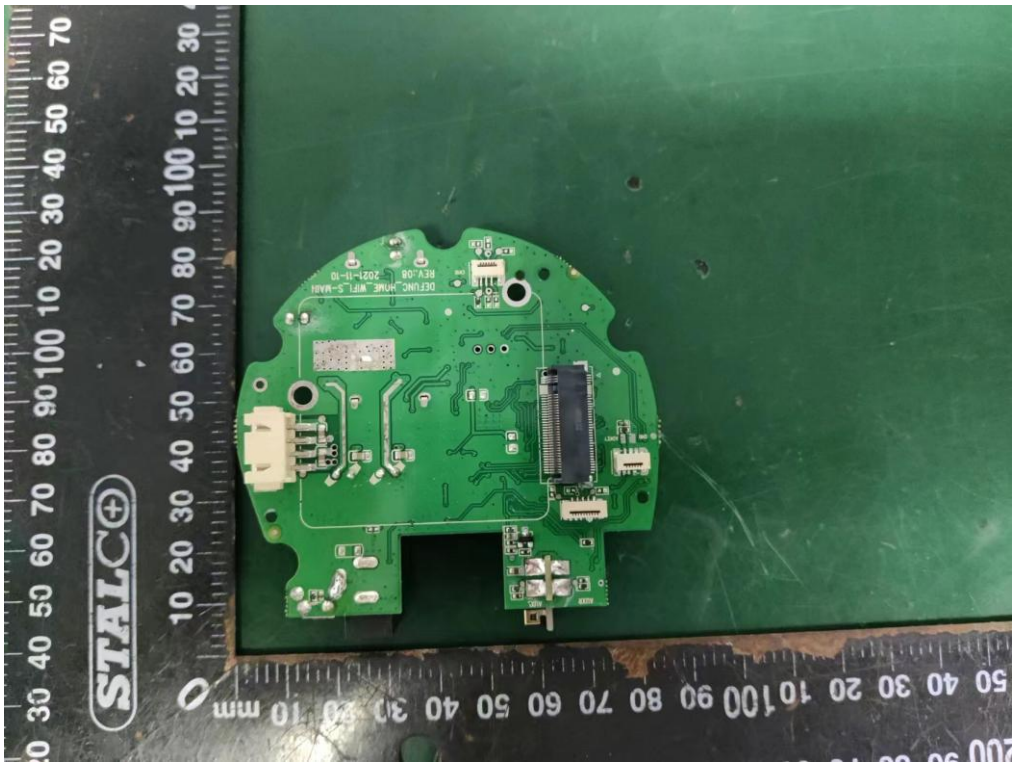

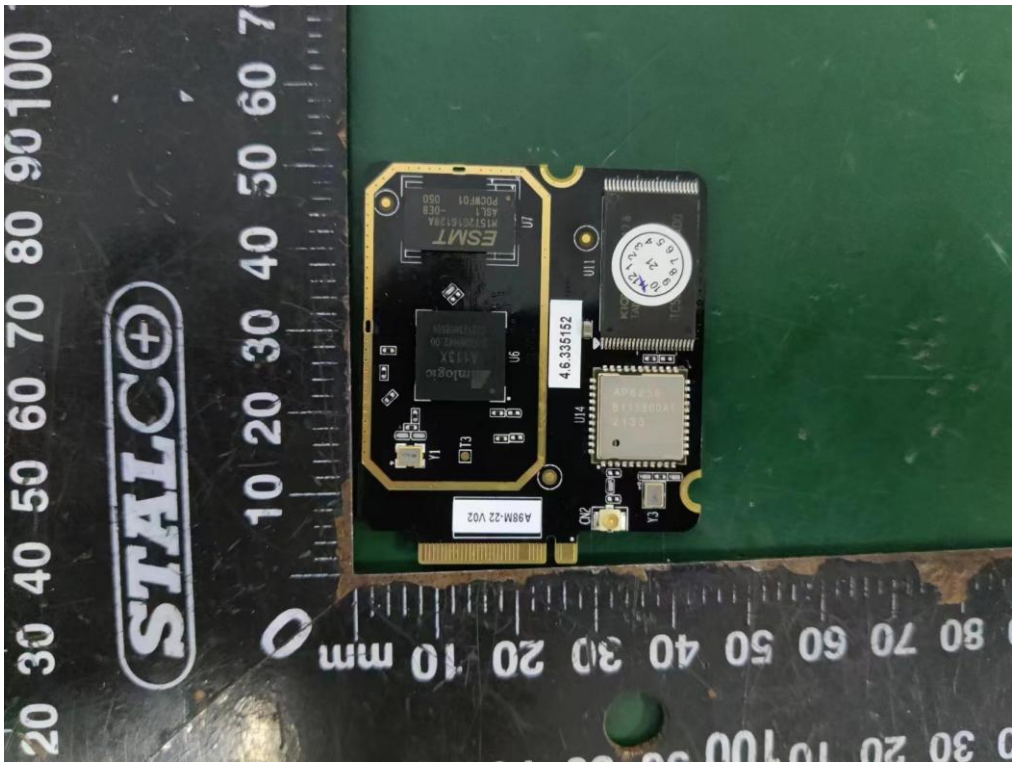

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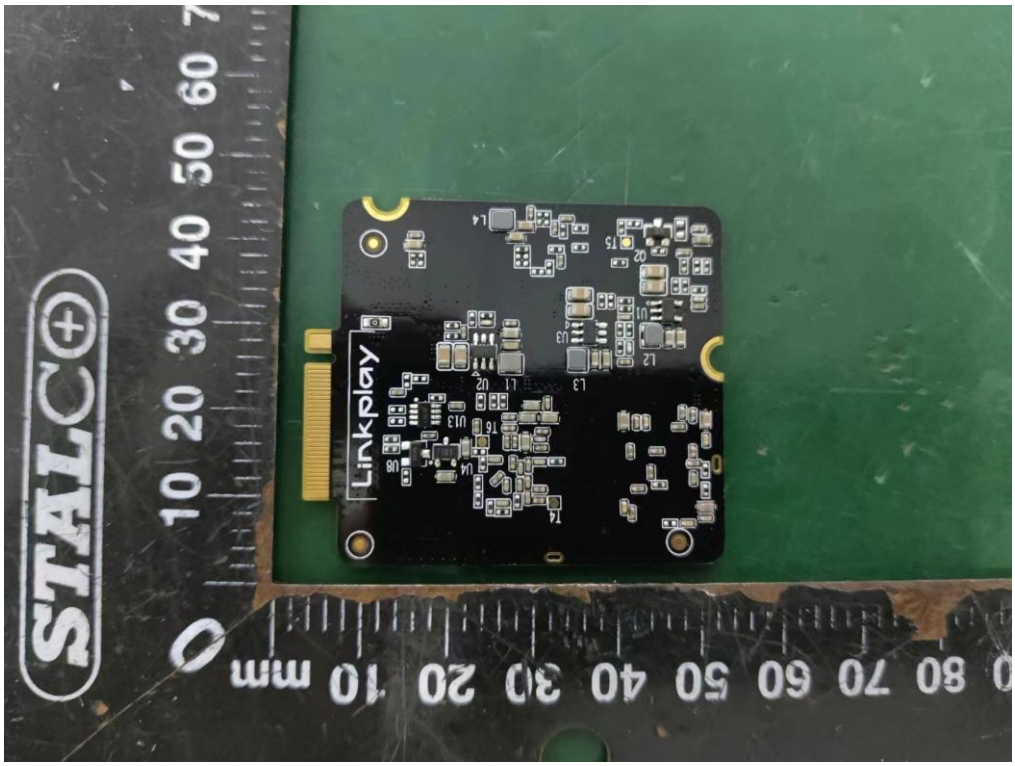
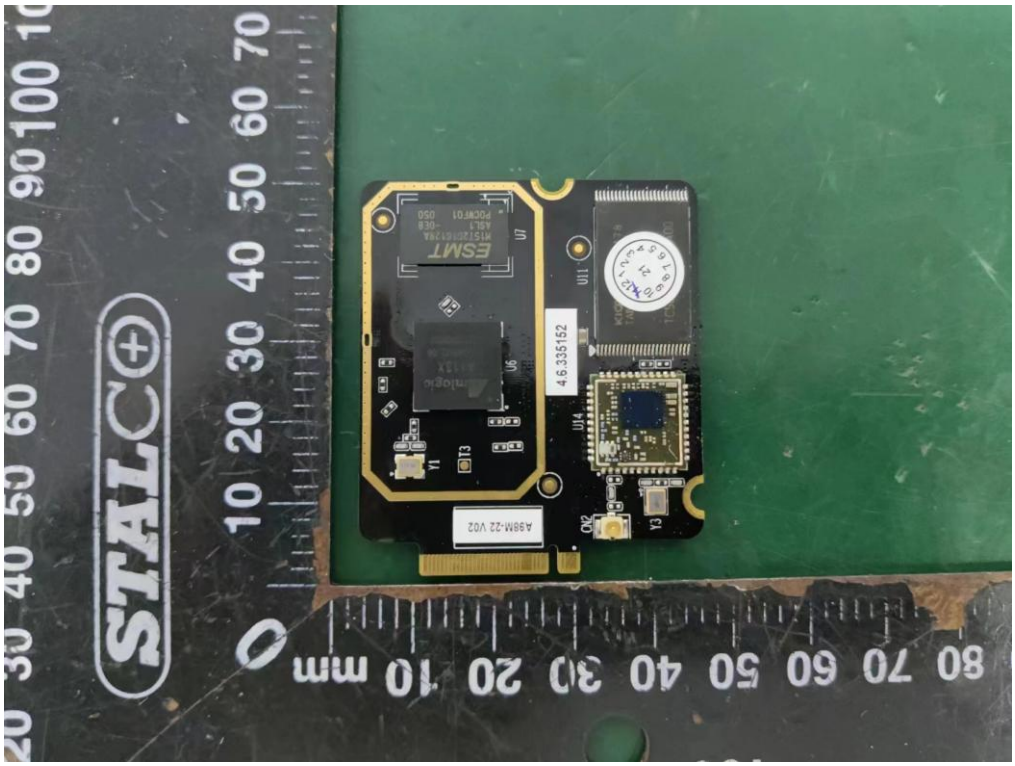
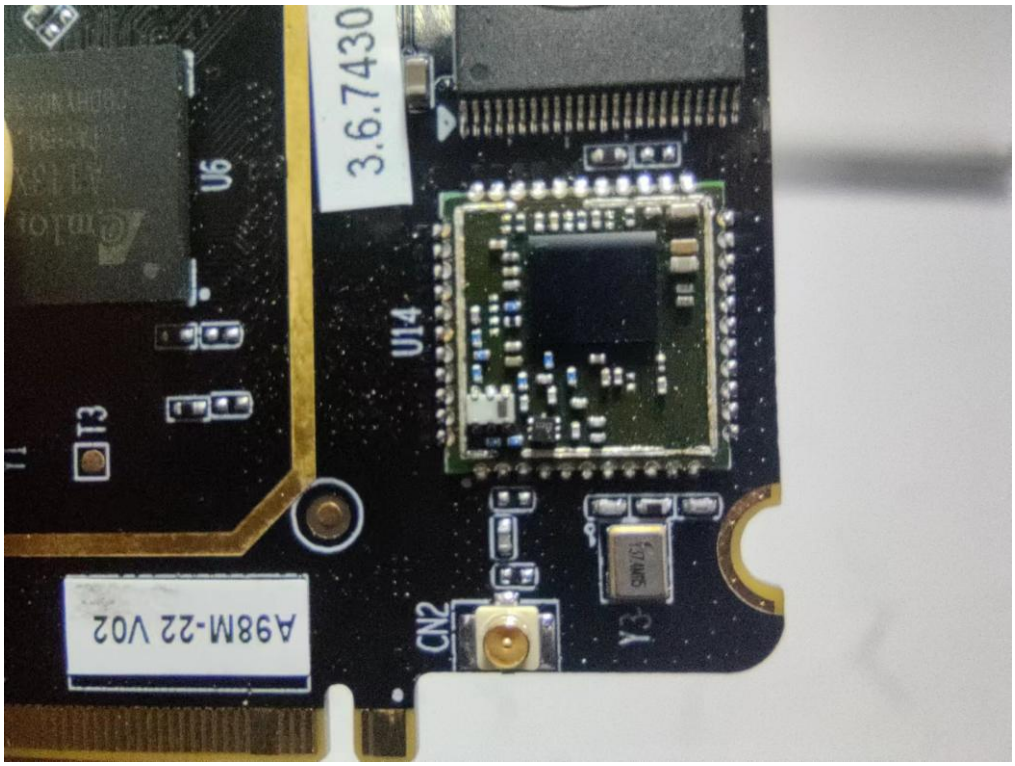




Internal Photos



End of Test Report