

TEST REPORT

FCC ID. :	2A7O2-V5	
Test Report No..... :	TCT220812E028	
Date of issue..... :	Sep. 22, 2022	
Testing laboratory :	SHENZHEN TONGCE TESTING LAB	
Testing location/ address:	2101 & 2201, Zhenchang Factory Renshan Industrial Zone, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, 518103, People's Republic of China	
Applicant's name..... :	Shenzhen Lessmore Innovation Technology Ltd	
Address..... :	2206, Taojing Business Building, Longhua New District, Shenzhen, China	
Manufacturer's name ... :	Shenzhen Lessmore Innovation Technology Ltd	
Address..... :	2206, Taojing Business Building, Longhua New District, Shenzhen, China	
Standard(s) :	FCC CFR Title 47 Part 15 Subpart C	
Product Name..... :	Vertical Lamp	
Trade Mark :	N/A	
Model/Type reference..... :	V5	
Rating(s)..... :	AC 120V/60Hz Rechargeable Li-ion Battery DC 7.4V	
Date of receipt of test item :	Aug. 12, 2022	
Date (s) of performance of test..... :	Aug. 12, 2022 ~ Sep. 22, 2022	
Tested by (+signature) ... :	Aaron MO	
Check by (+signature).... :	Beryl ZHAO	
Approved by (+signature):	Tomsin	

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1. General Product Information

1.1.EUT description

Product Name.....:	Vertical Lamp
Model/Type reference.....:	V5
Sample Number.....:	TCT220812E028-0101
Operation Frequency	117.31kHz ~ 174.36kHz
Modulation Technology	Load modulation
Max. Wireless Output Power:	5W
Antenna Type.....:	Inductive loop coil Antenna
Rating(s).....:	AC 120V/60Hz Rechargeable Li-ion Battery DC 7.4V

1.2.Model(s) list

None.

2. Test Result Summary

Requirement	CFR 47 Section	Result
Antenna requirement	§15.203	PASS
AC Power Line Conducted Emission	§15.207	PASS
Spurious Emission	§15.209(a)(f)	PASS

Note:

1. PASS: Test item meets the requirement.
2. Fail: Test item does not meet the requirement.
3. N/A: Test case does not apply to the test object.
4. The test result judgment is decided by the limit of test standard.

3. General Information

3.1. Test environment and mode

Operating Environment:		
Condition	Conducted Emission	Radiated Emission
Temperature:	25.3 °C	24.9 °C
Humidity:	56 % RH	45 % RH
Atmospheric Pressure:	1010 mbar	1010 mbar
Test Mode:		
Engineering mode:	Mode 1: Charging + Lighting + Wireless charging (5W) + Full Load(10W)	
	Mode 2: Lighting + Wireless charging (5W) + Full Load(10W)	
Remark:	All modes were tested, and the worse mode(Mode 1) is reported only.	

The sample was placed 0.8m for the measurement below above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case(Z axis) are shown in Test Results of the following pages.

3.2. Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Equipment	Model No.	Serial No.	FCC ID	Trade Name
Mobile Phone	SM-G9350	R28HA2ER3GT	/	SAMSUNG

Note:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

4. Facilities and Accreditations

4.1. Facilities

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

- FCC - Registration No.: 645098

SHENZHEN TONGCE TESTING LAB

Designation Number: CN1205

The testing lab has been registered and fully described in a report with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.

- IC - Registration No.: 10668A-1

SHENZHEN TONGCE TESTING LAB

CAB identifier: CN0031

The testing lab has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing.

4.2. Location

SHENZHEN TONGCE TESTING LAB

Address: 2101 & 2201, Zhenchang Factory Renshan Industrial Zone, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, 518103, People's Republic of China

TEL: +86-755-27673339

4.3. Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

No.	Item	MU
1	Conducted Emission	± 3.10 dB
2	RF power, conducted	± 0.12 dB
3	Spurious emissions, conducted	± 0.11 dB
4	All emissions, radiated(<1 GHz)	± 4.56 dB
5	All emissions, radiated(1 GHz - 18 GHz)	± 4.22 dB
6	All emissions, radiated(18 GHz- 40 GHz)	± 4.36 dB

5. Test Results and Measurement Data

5.1. Antenna requirement

Standard requirement:

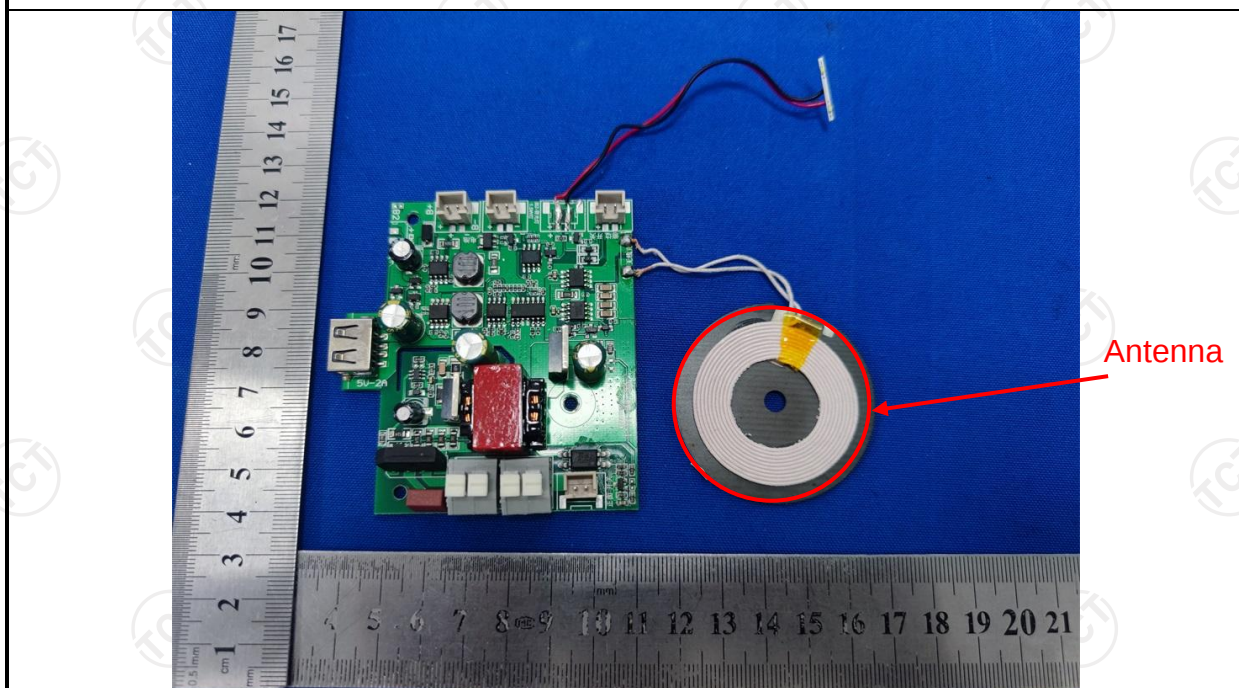
FCC Part15 C Section 15.203

15.203 requirement:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

E.U.T Antenna:

The antenna is inductive loop coil antenna which permanently attached.



5.2. Conducted Emission

5.2.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.207														
Test Method:	ANSI C63.10: 2013														
Frequency Range:	150 kHz to 30 MHz														
Receiver setup:	RBW=9 kHz, VBW=30 kHz, Sweep time=auto														
Limits:	<table><tr><th rowspan="2">Frequency range (MHz)</th><th colspan="2">Limit (dBuV)</th></tr><tr><th>Quasi-peak</th><th>Average</th></tr><tr><td>0.15-0.5</td><td>66 to 56*</td><td>56 to 46*</td></tr><tr><td>0.5-5</td><td>56</td><td>46</td></tr><tr><td>5-30</td><td>60</td><td>50</td></tr></table>	Frequency range (MHz)	Limit (dBuV)		Quasi-peak	Average	0.15-0.5	66 to 56*	56 to 46*	0.5-5	56	46	5-30	60	50
Frequency range (MHz)	Limit (dBuV)														
	Quasi-peak	Average													
0.15-0.5	66 to 56*	56 to 46*													
0.5-5	56	46													
5-30	60	50													
Test Setup:	Reference Plane <i>Remark:</i> E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m														
Test Mode:	Refer to item 3.1														
Test Procedure:	1. The E.U.T is connected to an adapter through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2013 on conducted measurement.														
Test Result:	PASS														

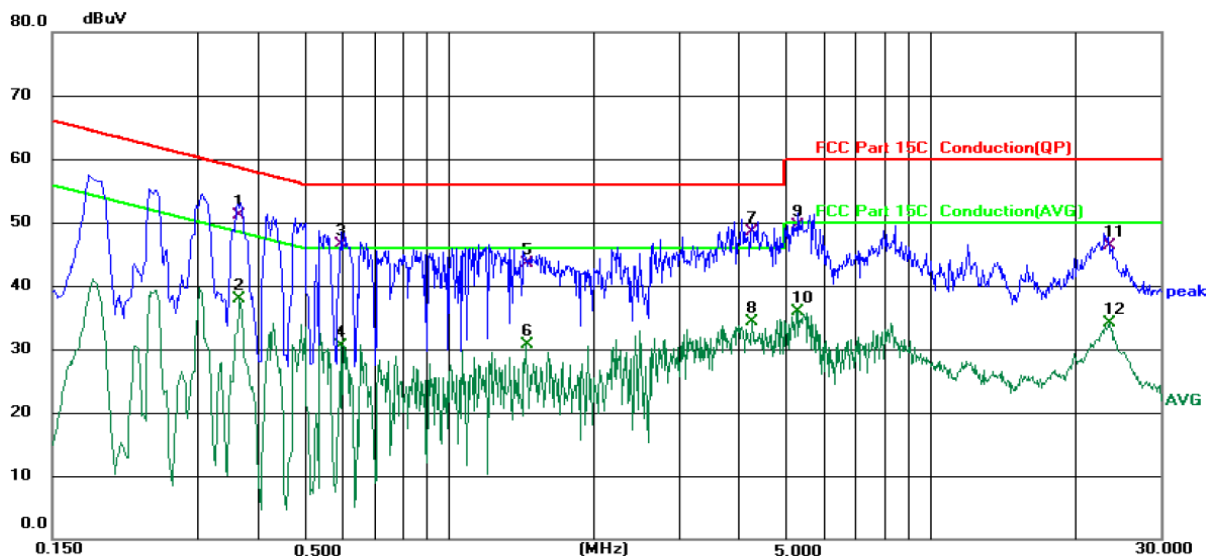
5.2.2. Test Instruments

Conducted Emission Shielding Room Test Site (843)				
Equipment	Manufacturer	Model	Serial Number	Calibration Due
EMI Test Receiver	R&S	ESCI3	100898	Jul. 03, 2023
Line Impedance Stabilisation Newtork(LISN)	Schwarzbeck	NSLK 8126	8126453	Feb. 24, 2023
Line-5	TCT	CE-05	/	Jul. 03, 2023
EMI Test Software	Shurple Technology	EZ-EMC	/	/

5.2.3. Test data

Please refer to following diagram for individual

Conducted Emission on Line Terminal of the power line (150 kHz to 30MHz)



Site 844 Shielding Room

Phase: **L1**

Temperature: 25.3 (°C)

Humidity: 56 %

Limit: FCC Part 15C Conduction(QP)

Power: AC 120 V/60 Hz

No.	Mk.	Freq. MHz	Reading Level dBμV	Correct Factor dB	Measure- ment dBμV	Limit dBμV	Over dB	Detector	Comment
1	*	0.3659	40.96	10.21	51.17	58.59	-7.42	QP	
2		0.3659	27.65	10.21	37.86	48.59	-10.73	AVG	
3		0.5936	36.49	10.10	46.59	56.00	-9.41	QP	
4		0.5936	20.40	10.10	30.50	46.00	-15.50	AVG	
5		1.4417	33.36	10.08	43.44	56.00	-12.56	QP	
6		1.4417	20.58	10.08	30.66	46.00	-15.34	AVG	
7		4.2538	38.45	10.08	48.53	56.00	-7.47	QP	
8		4.2538	24.13	10.08	34.21	46.00	-11.79	AVG	
9		5.3100	39.42	10.17	49.59	60.00	-10.41	QP	
10		5.3100	25.75	10.17	35.92	50.00	-14.08	AVG	
11		23.5300	35.74	10.50	46.24	60.00	-13.76	QP	
12		23.5300	23.53	10.50	34.03	50.00	-15.97	AVG	

Note:

Freq. = Emission frequency in MHz

Reading level (dBμV) = Receiver reading

Corr. Factor (dB) = LISN factor + Cable loss

Measurement (dBμV) = Reading level (dBμV) + Corr. Factor (dB)

Limit (dBμV) = Limit stated in standard

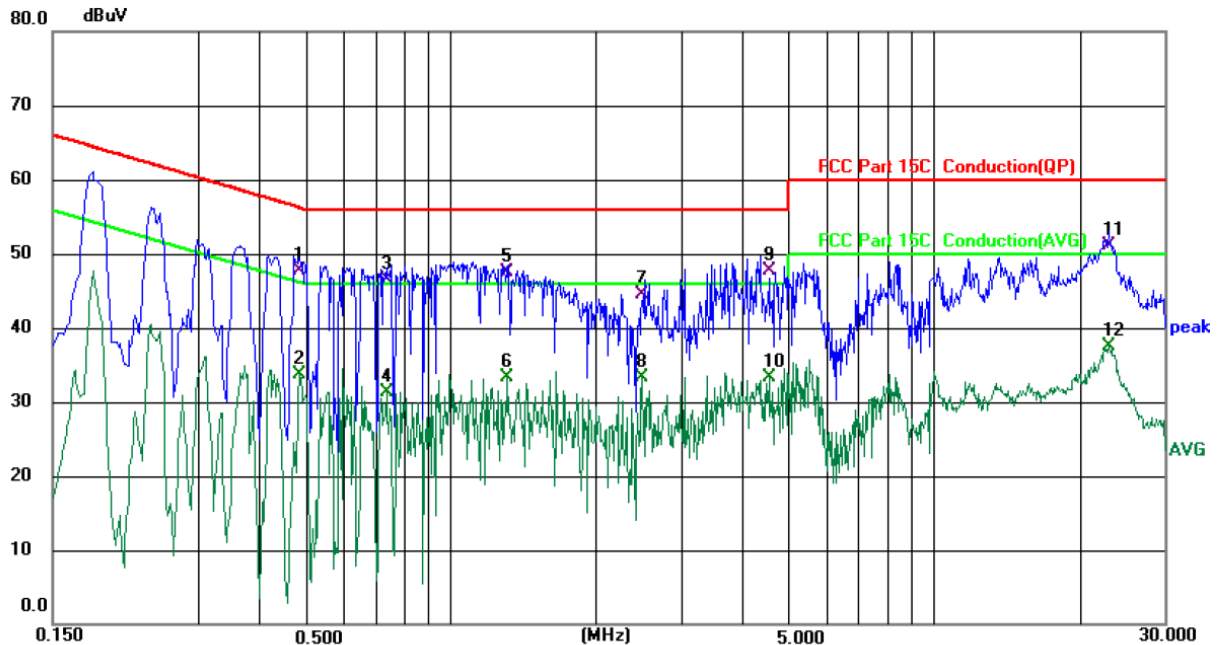
Margin (dB) = Measurement (dBμV) – Limits (dBμV)

Q.P. =Quasi-Peak

AVG =average

* is meaning the worst frequency has been tested in the frequency range 150 kHz to 30MHz

Conducted Emission on Neutral Terminal of the power line (150 kHz to 30MHz)



Site 844 Shielding Room

Phase: **N**

Temperature: 25.3 (°C)

Humidity: 56 %

Limit: FCC Part 15C Conduction(QP)

Power: AC 120 V/60 Hz

No.	Mk.	Freq. MHz	Reading Level dBμV	Correct Factor dB	Measure- ment dBμV	Limit dBμV	Over dB	Detector	Comment
1		0.4858	37.48	10.16	47.64	56.24	-8.60	QP	
2		0.4858	23.64	10.16	33.80	46.24	-12.44	AVG	
3		0.7378	36.43	10.10	46.53	56.00	-9.47	QP	
4		0.7378	21.27	10.10	31.37	46.00	-14.63	AVG	
5		1.3140	37.37	10.12	47.49	56.00	-8.51	QP	
6		1.3140	23.10	10.12	33.22	46.00	-12.78	AVG	
7		2.4940	34.40	10.12	44.52	56.00	-11.48	QP	
8		2.4940	23.15	10.12	33.27	46.00	-12.73	AVG	
9	*	4.5700	37.45	10.17	47.62	56.00	-8.38	QP	
10		4.5700	23.04	10.17	33.21	46.00	-12.79	AVG	
11		23.0579	40.65	10.46	51.11	60.00	-8.89	QP	
12		23.0579	26.96	10.46	37.42	50.00	-12.58	AVG	

Note:

Freq. = Emission frequency in MHz

Reading level (dBμV) = Receiver reading

Corr. Factor (dB) = LISN factor + Cable loss

Measurement (dBμV) = Reading level (dBμV) + Corr. Factor (dB)

Limit (dBμV) = Limit stated in standard

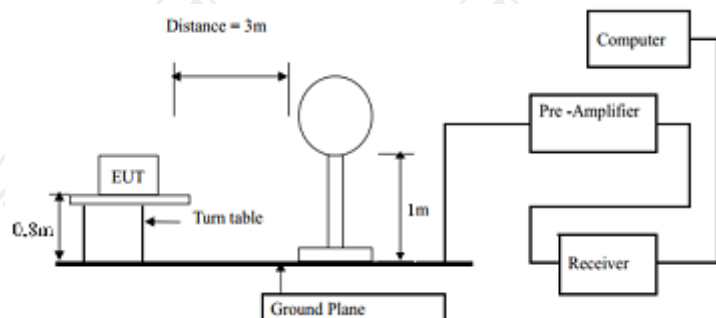
Margin (dB) = Measurement (dBμV) – Limits (dBμV)

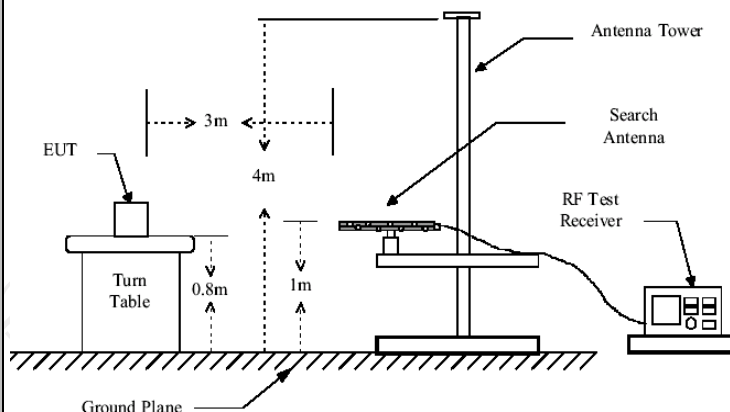
Q.P. =Quasi-Peak AVG =average

* is meaning the worst frequency has been tested in the frequency range 150 kHz to 30MHz

5.3. Radiated Spurious Emission Measurement

5.3.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.209				
Test Method:	ANSI C63.10: 2013				
Frequency Range:	9 kHz to 25 GHz				
Measurement Distance:	3 m				
Antenna Polarization:	Horizontal & Vertical				
Operation mode:	Refer to item 3.1				
Receiver Setup:	Frequency	Detector	RBW	VBW	Remark
	9kHz- 150kHz	Quasi-peak	200Hz	1kHz	Quasi-peak Value
	150kHz- 30MHz	Quasi-peak	9kHz	30kHz	Quasi-peak Value
	30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak Value
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
		Peak	1MHz	10Hz	Average Value
Limit:					
	Frequency	Field Strength (microvolts/meter)		Measurement Distance (meters)	
	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	
Test setup:	For radiated emissions below 30MHz				
					
	30MHz to 1GHz				



Test Procedure:

1. For the radiated emission test below 1GHz:
The EUT was placed on a turntable with 0.8 meter above ground. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high PASS filter are used for the test in order to get better signal level.
2. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
3. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
4. Use the following spectrum analyzer settings:
 - (1) Span shall wide enough to fully capture the emission being measured;
 - (2) Set RBW=120 kHz for $f < 1$ GHz; VBW $\geq$ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
 - (3) Set RBW = 1 MHz, VBW= 3MHz for $f \geq 1$ GHz for peak measurement.

For average measurement: VBW = 10 Hz, when duty cycle is no less than 98 percent. VBW $\geq 1/T$, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

Test mode:

Refer to section 3.1 for details

Test results:

PASS

5.3.2. Test Instruments

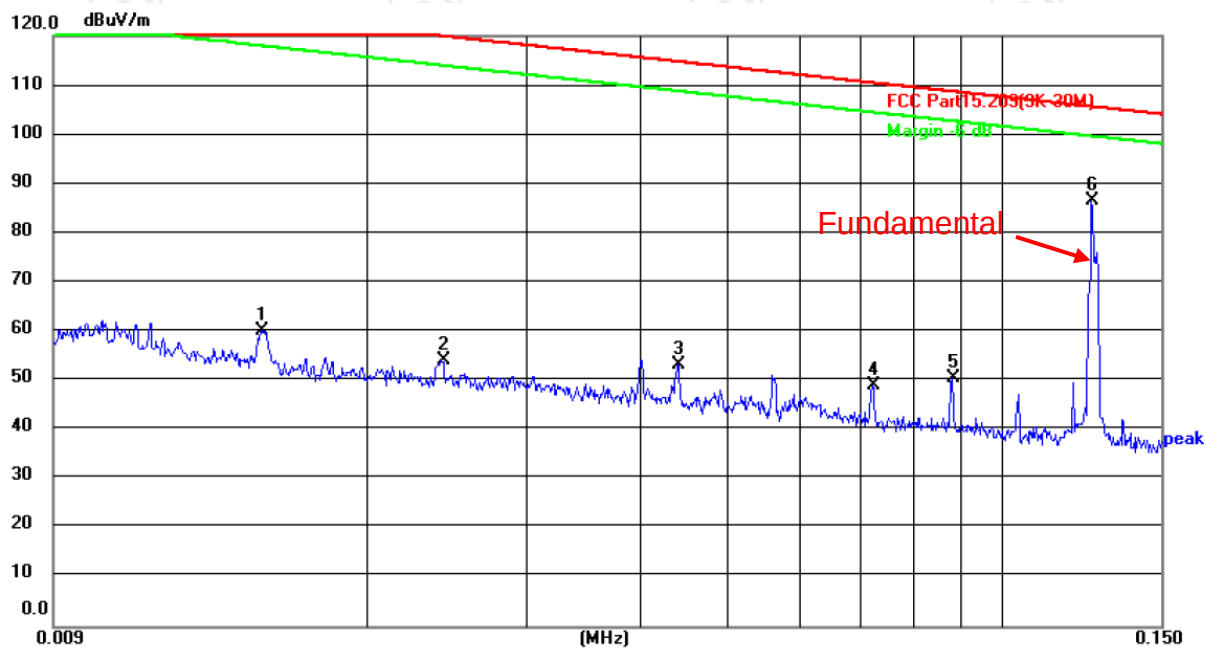
Radiated Emission Test Site (966)				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
EMI Test Receiver	R&S	ESIB7	100197	Jul. 03, 2023
Spectrum Analyzer	R&S	FSQ40	200061	Jul. 03, 2023
Pre-amplifier	SKET	LNPA_0118G-45	SK2021012102	Feb. 24, 2023
Pre-amplifier	SKET	LNPA_1840G-50	SK202109203500	Feb. 24, 2023
Pre-amplifier	HP	8447D	2727A05017	Jul. 03, 2023
Loop antenna	Schwarzbeck	FMZB1519B	00191	Jun. 11, 2024
Broadband Antenna	Schwarzbeck	VULB9163	340	Jul. 05, 2024
Horn Antenna	Schwarzbeck	BBHA 9120D	631	Jul. 05, 2024
Horn Antenna	Schwarzbeck	BBHA 9170	00956	Apr. 10, 2023
Antenna Mast	Keleto	RE-AM	/	/
Coaxial cable	SKET	RC-18G-N-M	/	Feb. 24, 2024
Coaxial cable	SKET	RC_40G-K-M	/	Feb. 24, 2024
EMI Test Software	Shurple Technology	EZ-EMC	/	/

5.3.3. Test Data

Please refer to following diagram for individual
9KHz-30MHz

9KHz-150KHz:

Coaxial:



Site

Polarization: **Coaxial**

Temperature: 24(°C)

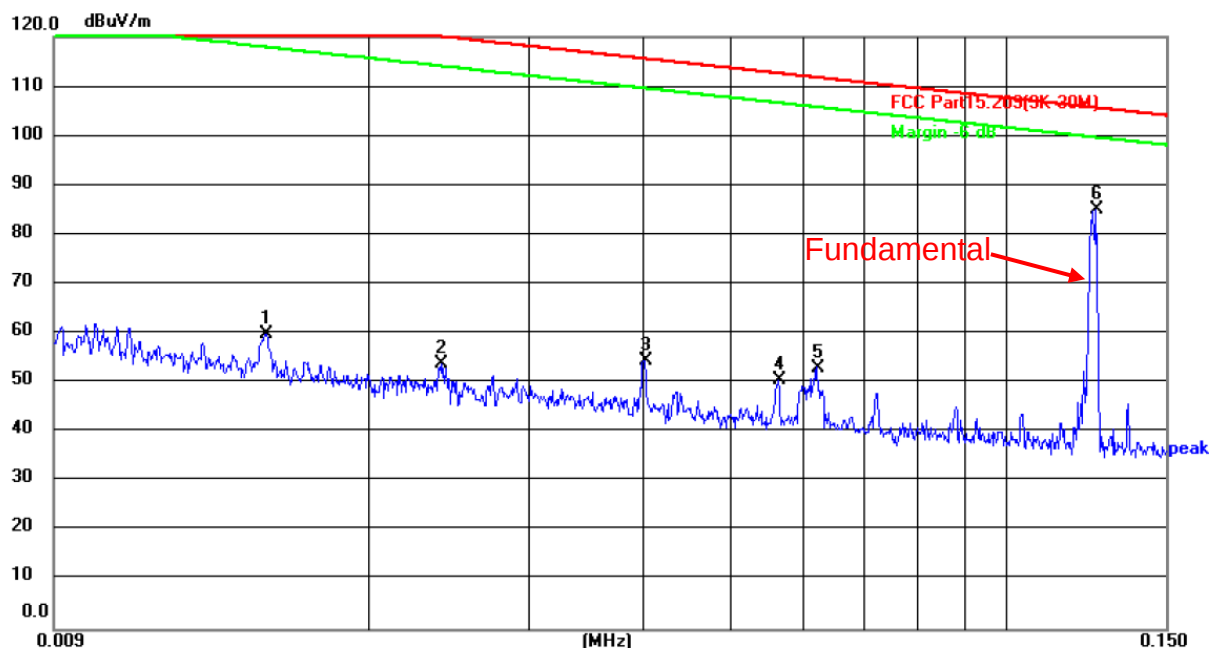
Limit: FCC Part15.209(9K-30M)

Power:

Humidity: 52 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	0.0152	39.49	20.67	60.16	123.97	-63.81	peak	P	
2	0.0241	33.76	20.54	54.30	119.96	-65.66	peak	P	
3	0.0439	32.57	20.56	53.13	114.76	-61.63	peak	P	
4	0.0720	28.02	21.05	49.07	110.46	-61.39	peak	P	
5	0.0881	29.67	21.01	50.68	108.70	-58.02	peak	P	
6 *	0.1256	66.21	20.32	86.53	105.62	-19.09	peak	P	

Coplanar:



Site

Polarization: **Coplanar**

Temperature: 24(°C)

Limit: FCC Part15.209(9K-30M)

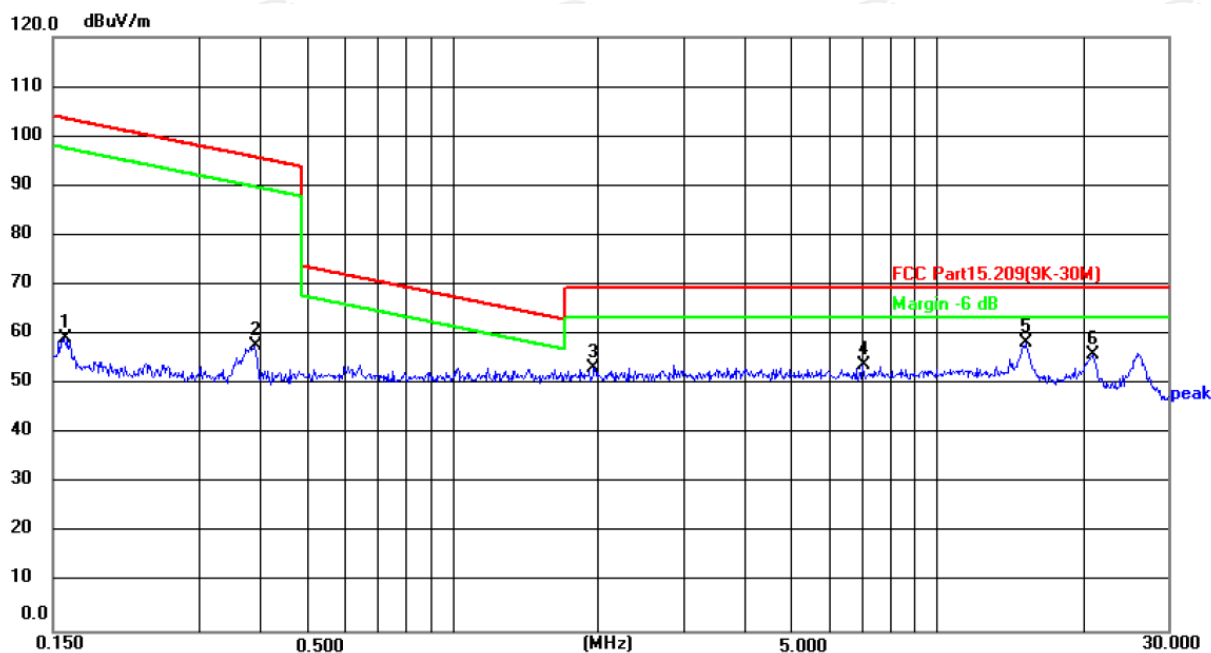
Power:

Humidity: 52 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	0.0154	39.32	20.67	59.99	123.85	-63.86	peak	P	
2	0.0240	33.36	20.54	53.90	120.00	-66.10	peak	P	
3	0.0401	33.93	20.54	54.47	115.54	-61.07	peak	P	
4	0.0562	29.79	20.76	50.55	112.61	-62.06	peak	P	
5	0.0620	32.22	20.88	53.10	111.76	-58.66	peak	P	
6 *	0.1256	64.84	20.32	85.16	105.62	-20.46	peak	P	

150KHz-30MHz:

Coaxial:



Site

Polarization: **Coaxial**

Temperature: 24(°C)

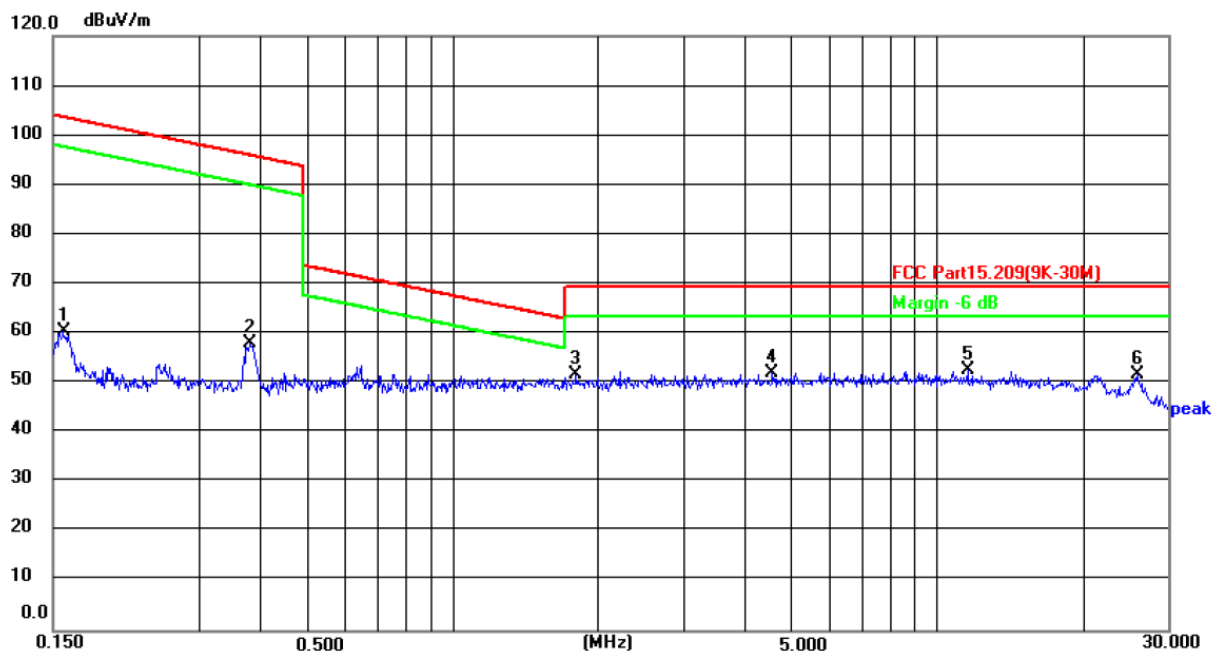
Limit: FCC Part15.209(9K-30M)

Power:

Humidity: 52 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	0.1581	38.41	20.74	59.15	103.63	-44.48	peak	P	
2	0.3913	36.50	21.28	57.78	95.75	-37.97	peak	P	
3	1.9592	28.60	24.65	53.25	69.50	-16.25	peak	P	
4	7.0248	19.38	34.49	53.87	69.50	-15.63	peak	P	
5 *	15.2261	38.50	19.81	58.31	69.50	-11.19	peak	P	
6	20.9243	36.39	19.65	56.04	69.50	-13.46	peak	P	

Coplanar:



Site

Polarization: **Coplanar**

Temperature: 24(°C)

Limit: FCC Part15.209(9K-30M)

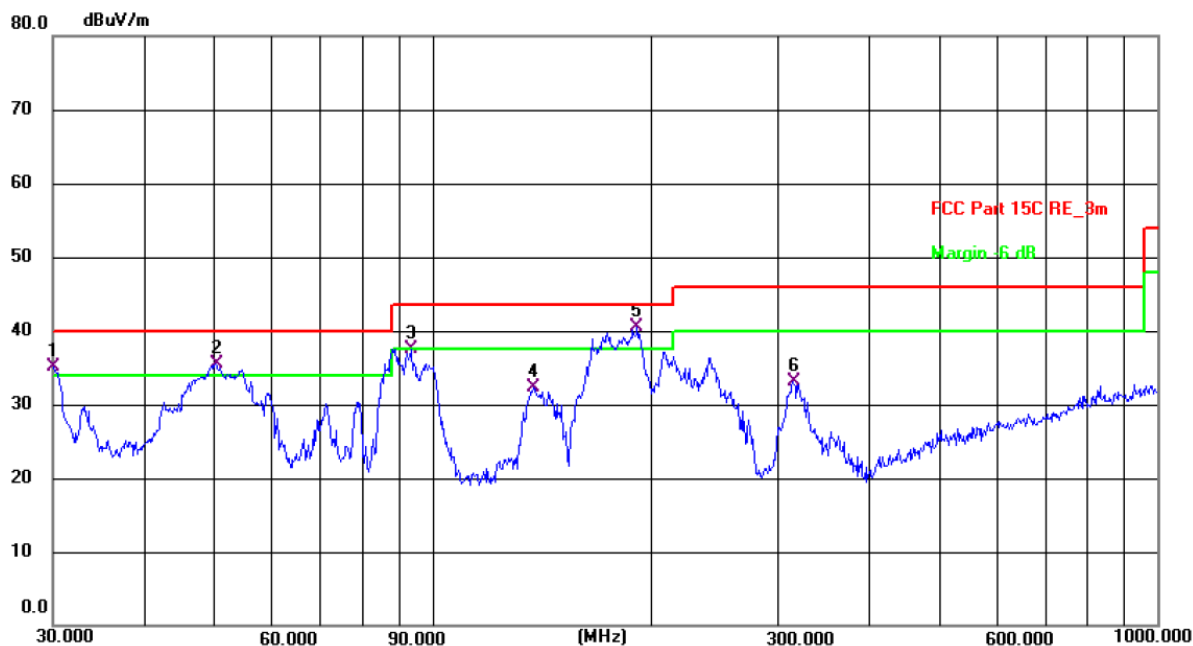
Power:

Humidity: 52 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	0.1573	39.63	20.74	60.37	103.67	-43.30	peak	P	
2	0.3811	36.68	21.26	57.94	95.98	-38.04	peak	P	
3	1.8000	27.33	24.31	51.64	69.50	-17.86	peak	P	
4	4.5734	22.16	29.80	51.96	69.50	-17.54	peak	P	
5 *	11.5594	32.61	20.18	52.79	69.50	-16.71	peak	P	
6	25.8638	31.87	19.78	51.65	69.50	-17.85	peak	P	

30MHz-1GHz

Horizontal:



Site #1 3m Anechoic Chamber

Polarization: **Horizontal**

Temperature: 24.9(C)

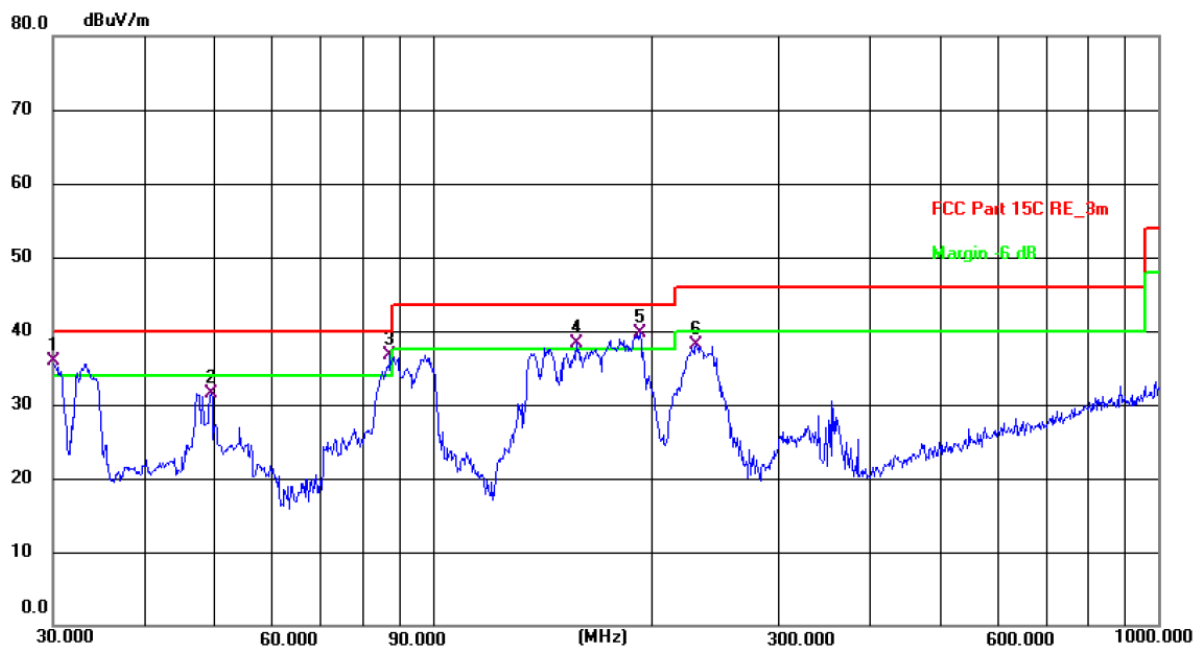
Humidity: 45 %

Limit: FCC Part 15C RE_3m

Power: AC 120 V/60 Hz

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1 !	30.0000	22.74	12.40	35.14	40.00	-4.86	QP	P	
2 !	50.2324	21.98	13.43	35.41	40.00	-4.59	QP	P	
3 !	93.4402	28.51	9.01	37.52	43.50	-5.98	QP	P	
4	137.9028	19.74	12.53	32.27	43.50	-11.23	QP	P	
5 *	191.7450	29.73	10.68	40.41	43.50	-3.09	QP	P	
6	314.3764	19.16	13.87	33.03	46.00	-12.97	QP	P	

Vertical:



Site #1 3m Anechoic Chamber

Polarization: **Vertical**

Temperature: 24.9(C)

Humidity: 45 %

Limit: FCC Part 15C RE_3m

Power: AC 120 V/60 Hz

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1 !	30.0000	23.46	12.40	35.86	40.00	-4.14	QP	P	
2	49.5328	17.95	13.47	31.42	40.00	-8.58	QP	P	
3 *	87.4175	28.15	8.62	36.77	40.00	-3.23	QP	P	
4 !	158.1123	25.09	13.31	38.40	43.50	-5.10	QP	P	
5 !	193.0944	29.01	10.60	39.61	43.50	-3.89	QP	P	
6	230.9067	26.44	11.62	38.06	46.00	-7.94	QP	P	

Note:

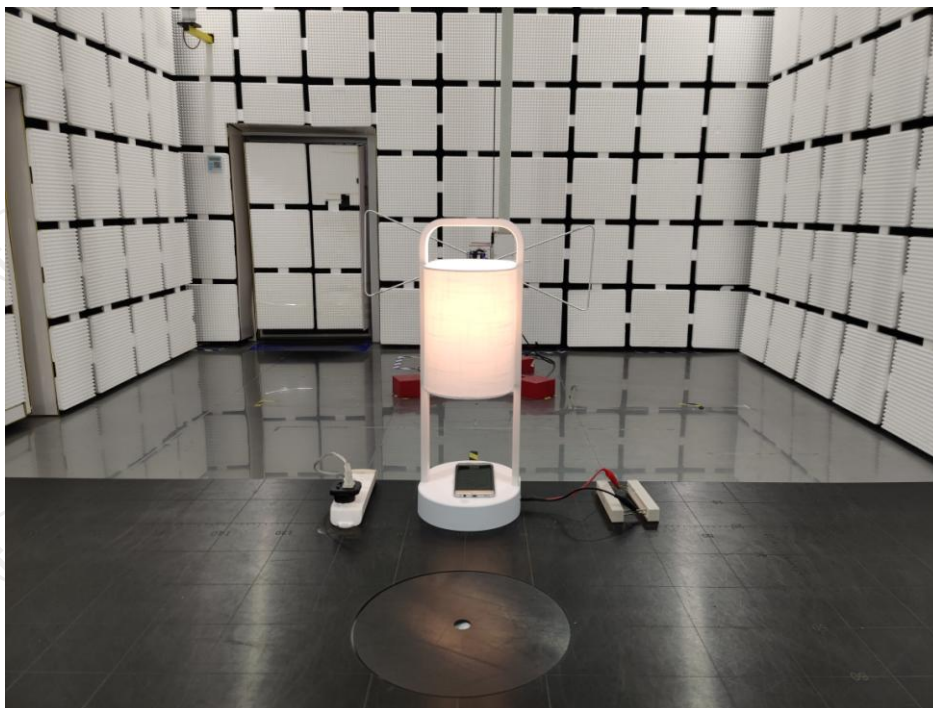
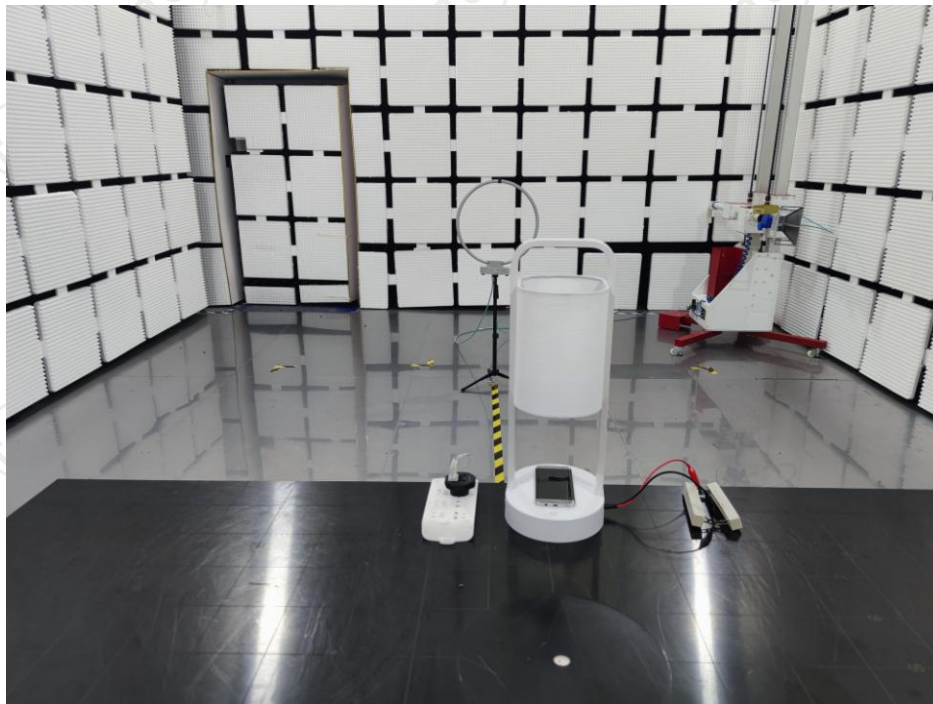
Emission Level=Peak Reading + Correction Factor; Correction Factor= Antenna Factor + Cable loss – Pre-amplifier

Appendix A: Photographs of Test Setup

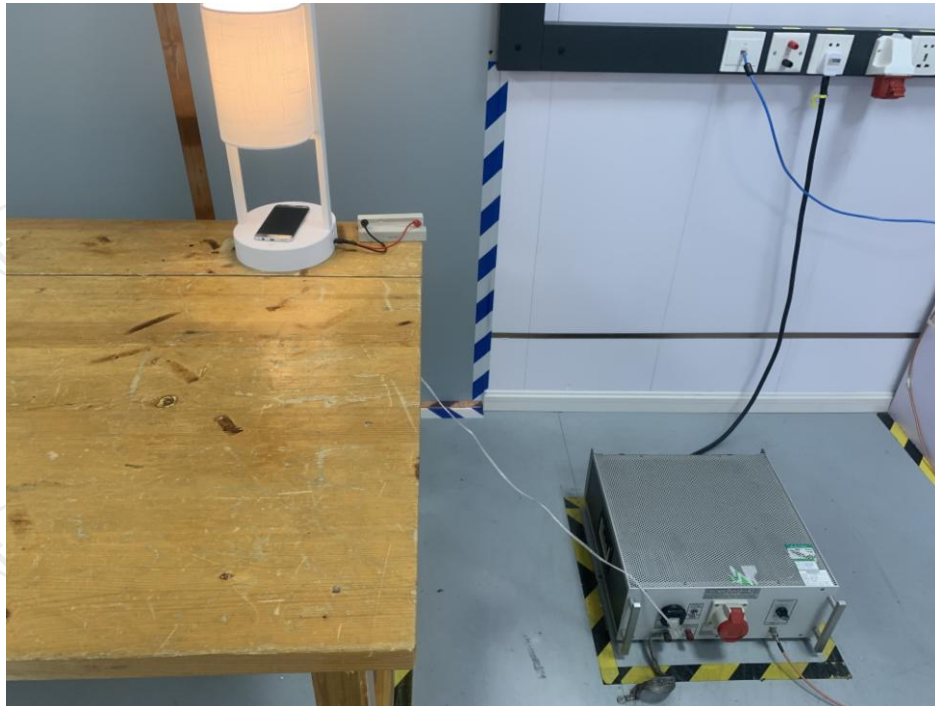
Product: Vertical Lamp

Model: V5

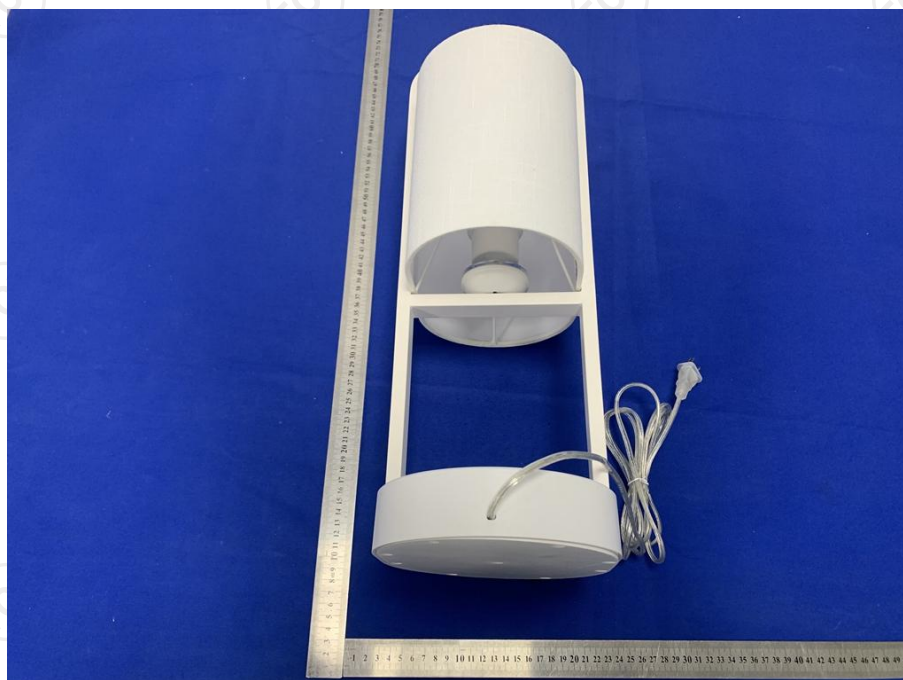
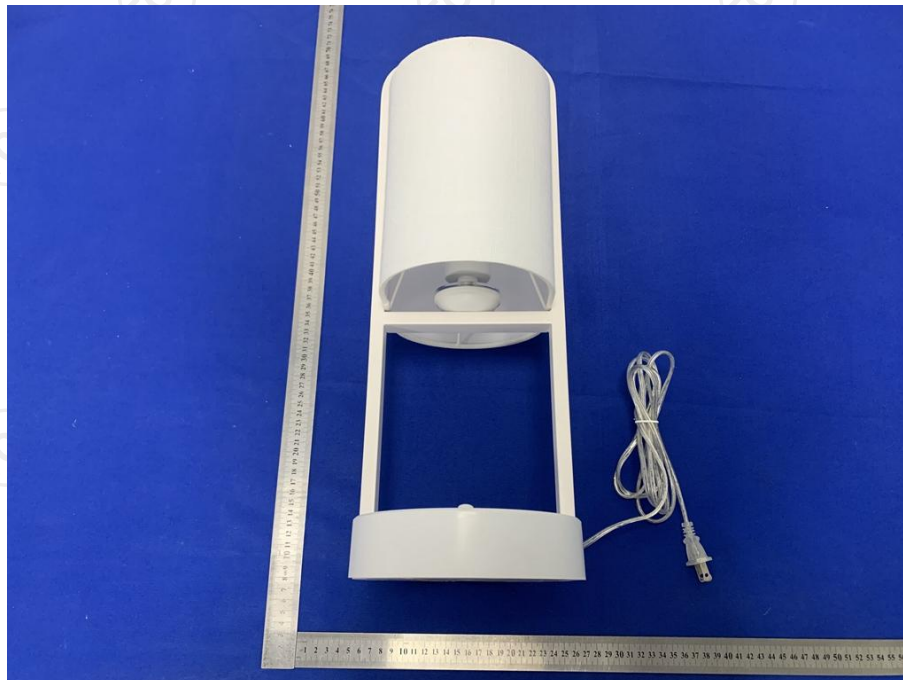
Radiated Emission

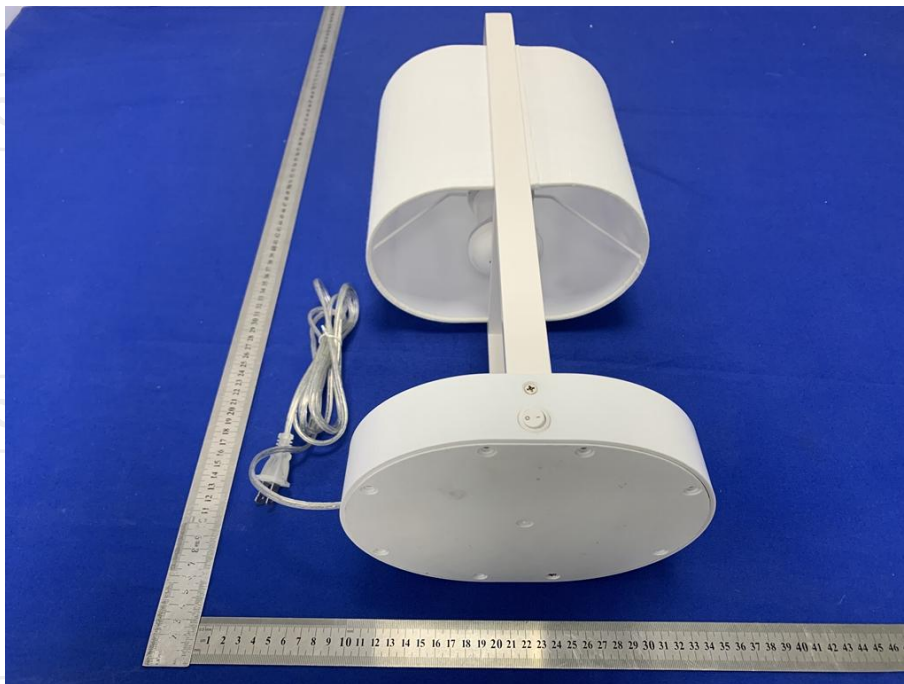
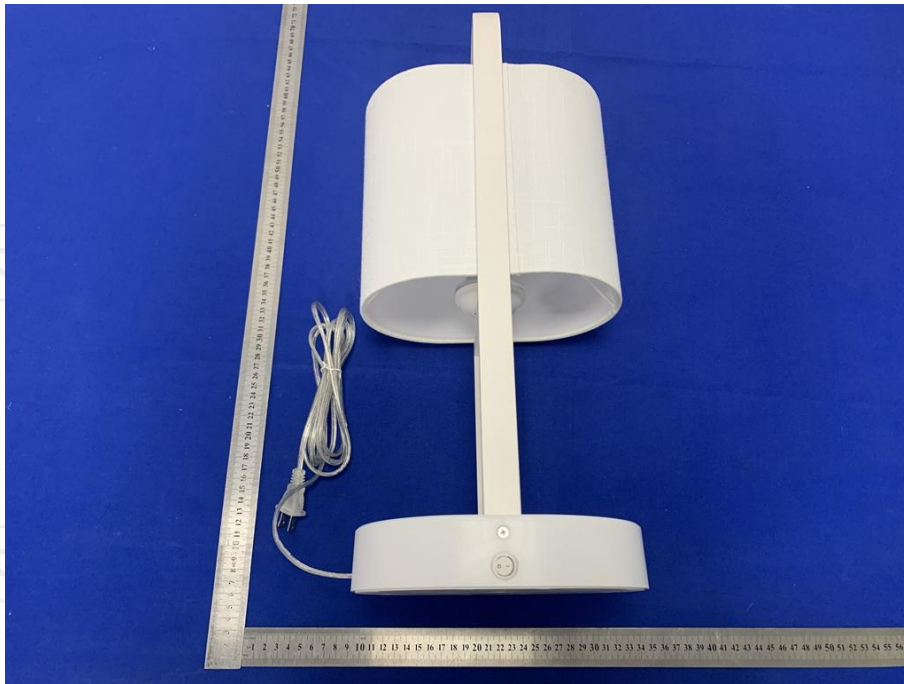


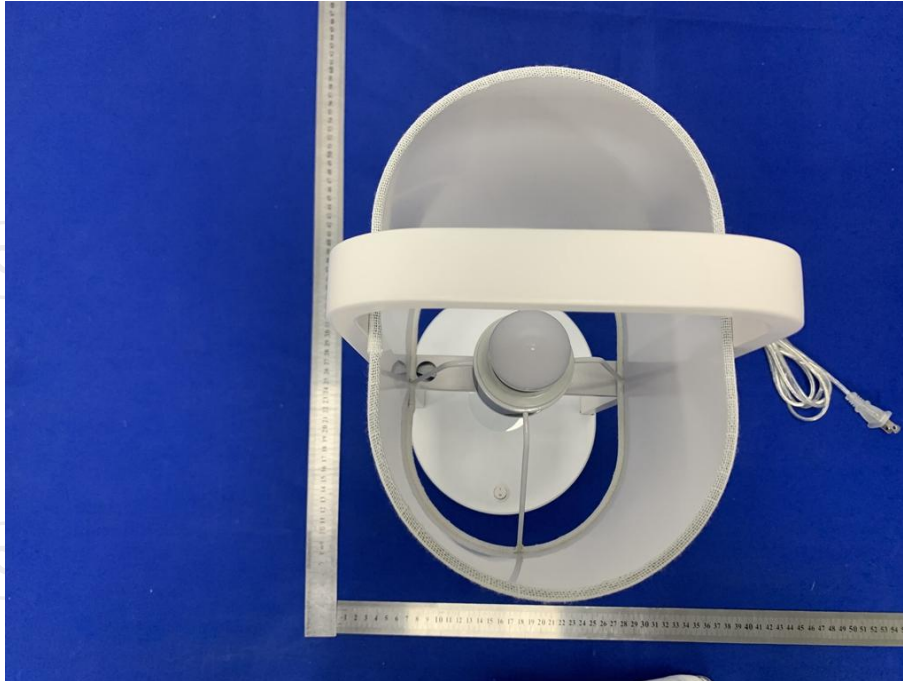
Conducted Emission



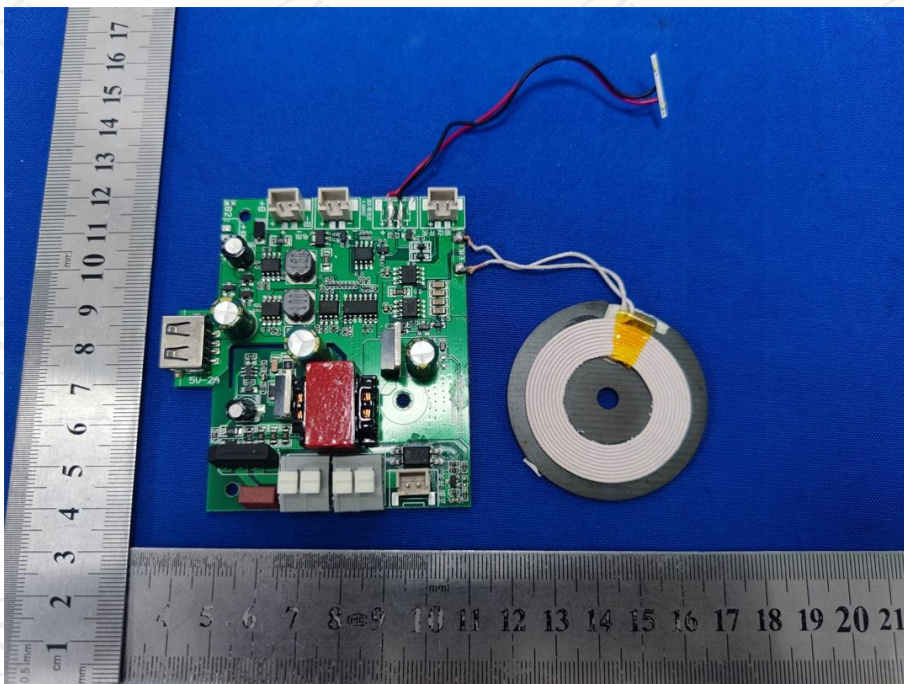
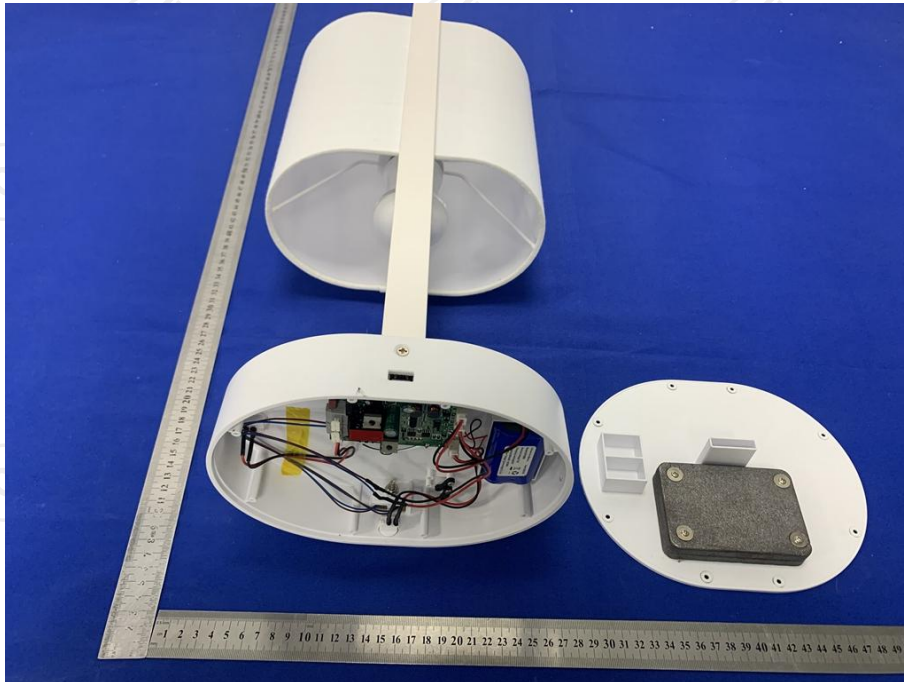
Appendix B: Photographs of EUT
Product: Vertical Lamp
Model: V5
External Photos

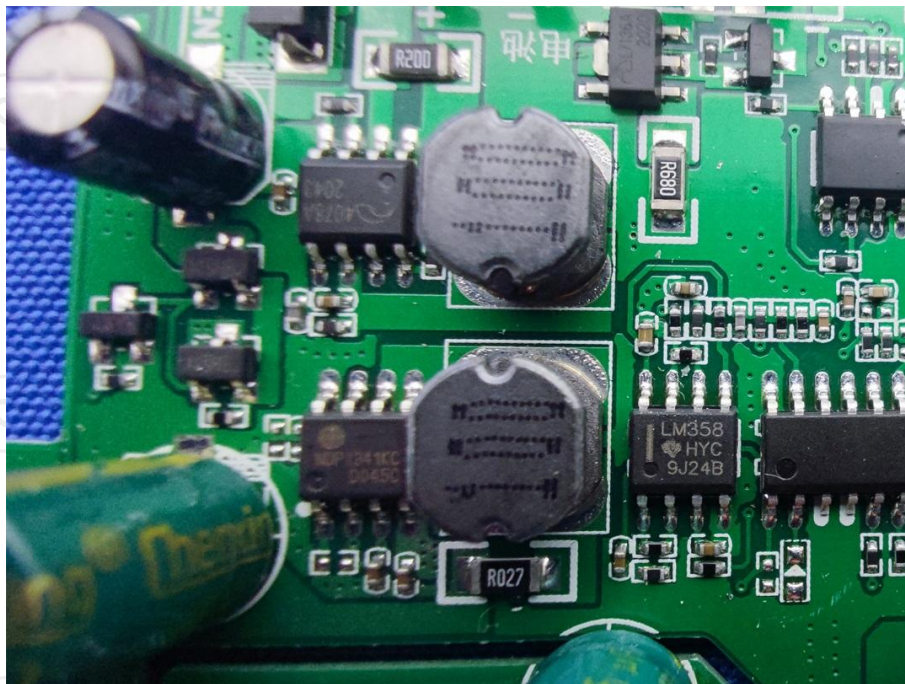
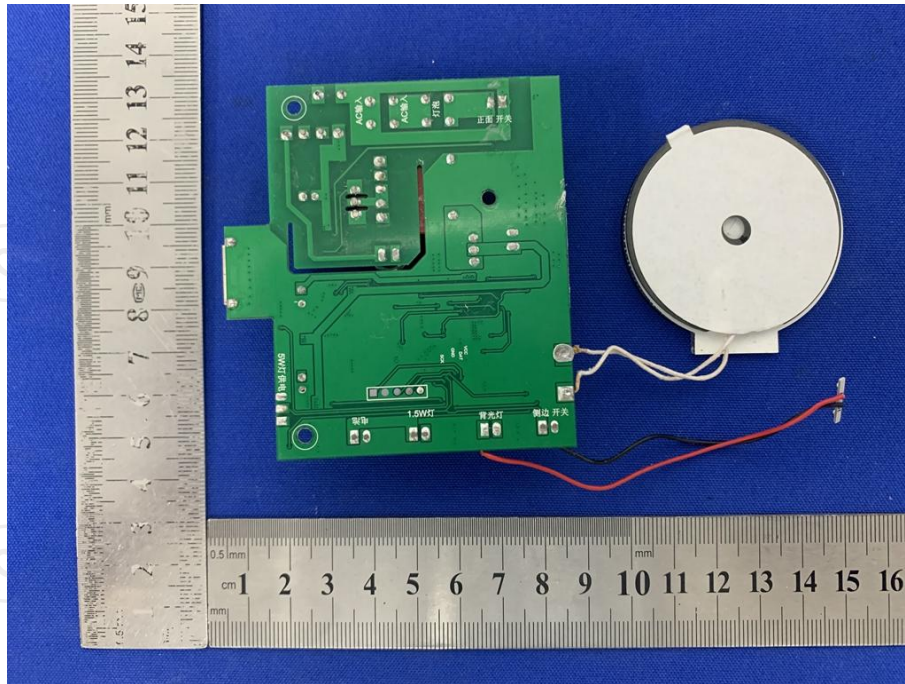


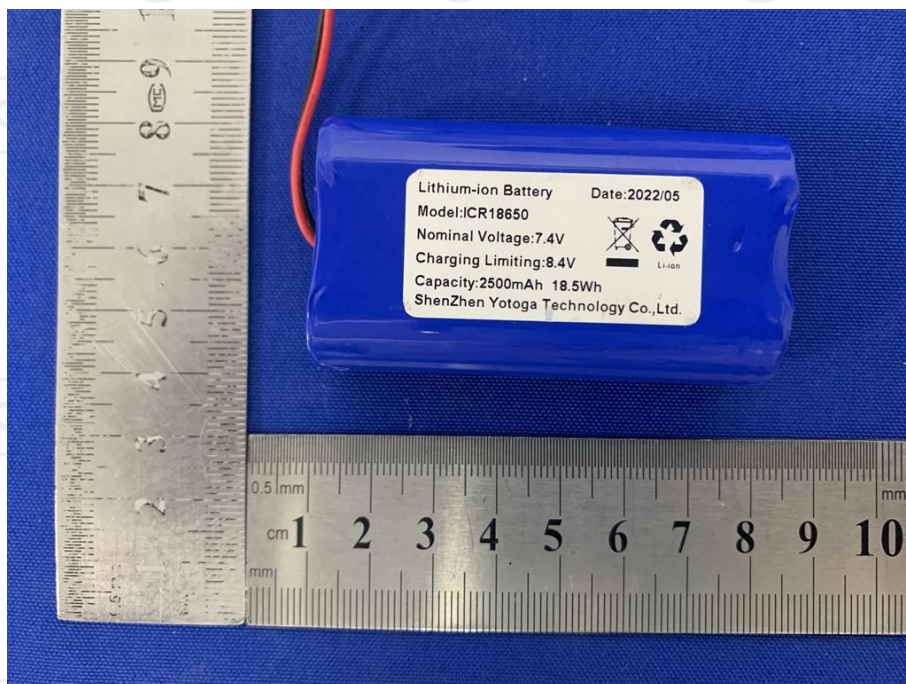
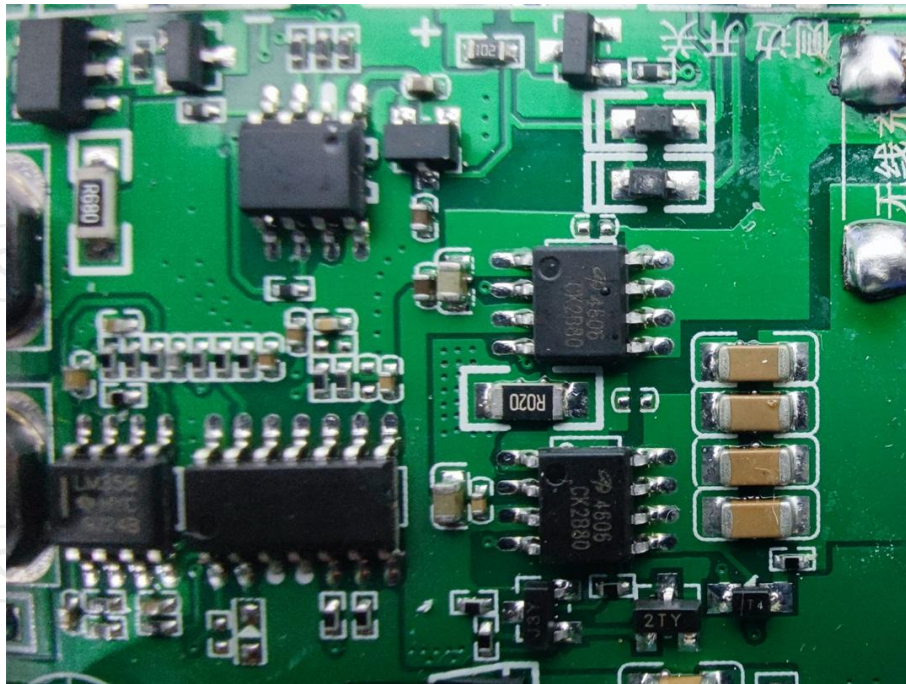




Product: Vertical Lamp
Model: V5
Internal Photos







*******END OF REPORT*******