



## FCC SDoC TEST REPORT

Shenzhen Filmbase Technology Co., Ltd.

PDLC Smart Film Smart Galss

Test Model: FB-500W-60V

Additional Model No.: Please Refer To Page 7

Prepared for : Shenzhen Filmbase Technology Co., Ltd.  
Address : 3103/31F, 3A Building, Smart Park, Baolong,  
Longgang, Shenzhen, China

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Date of receipt of test sample : August 24, 2021  
Number of tested samples : 1  
Serial number : Prototype  
Date of Test : August 24, 2021 ~ September 03, 2021  
Date of Report : September 06, 2021





**FCC SDoC TEST REPORT**  
**FCC 47 CFR Part 15 Subpart B, Class B(SDoC), ANSI C63.4 -2014**

**Report Reference No.** ..... : **LCS210706139AE**

**Date Of Issue** ..... : September 06, 2021

**Testing Laboratory Name** .... : **Shenzhen LCS Compliance Testing Laboratory Ltd.**

**Address** ..... : Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China

**Testing Location/ Procedure...** : Full application of Harmonised standards   
Partial application of Harmonised standards   
Other standard testing method

**Applicant's Name**..... : **Shenzhen Filmbase Technology Co., Ltd.**

**Address** ..... : 3103/31F, 3A Building, Smart Park, Baolong, Longgang, Shenzhen, China

**Test Specification**

**Standard**..... : FCC 47 CFR Part 15 Subpart B, Class B(SDoC), ANSI C63.4 -2014

**Test Report Form No.**..... : LCSEMC-1.0

**TRF Originator**..... : Shenzhen LCS Compliance Testing Laboratory Ltd.

**Master TRF**..... : Dated 2011-03

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**Test Item Description**..... : **PDLC Smart Film Smart Galss**

**Trade Mark** ..... : **Filmbase** 新视界  
Make Glass On Micro

**Test Model**..... : FB-500W-60V

**Ratings** ..... : Input: AC 100-240V, 50Hz, 500W  
Output: AC 60V, 1667mA, Max, 500W

**Result** ..... : **Positive**

**Compiled by:**

**Supervised by:**

**Approved by:**



Emma Wang/ File administrators

Baron Wen/Technique principal

Gavin Liang/ Manager



### FCC -- TEST REPORT

<b>Test Report No. : LCS210706139AE</b>	<u>September 06, 2021</u> Date of issue
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Test Model .....	: FB-500W-60V
EUT.....	: PDLC Smart Film Smart Galss
<b>Applicant.....</b>	<b>: Shenzhen Filmbase Technology Co., Ltd.</b>
Address.....	: 3103/31F, 3A Building, Smart Park, Baolong, Longgang, Shenzhen, China
Telephone.....	: /
Fax.....	: /
<b>Manufacturer.....</b>	<b>: Shenzhen Yuguang New Material Co., Ltd.</b>
Address.....	: 202/ 2/F, Building 3, Huaqiang Industrial Logistics Park, No. 43 Qingfeng Avenue, Longgang District, Shenzhen City, Guangdong Province,China
Telephone.....	: /
Fax.....	: /
<b>Factory.....</b>	<b>: Shenzhen Yuguang New Material Co., Ltd.</b>
Address.....	: 202/ 2/F, Building 3, Huaqiang Industrial Logistics Park, No. 43 Qingfeng Avenue, Longgang District, Shenzhen City, Guangdong Province,China
Telephone.....	: /
Fax.....	: /

**Test Result** according to the standards on page 6: **Positive**

The test report merely corresponds to the test sample.  
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.



## Revision History

Revision	Issue Date	Revisions	Revised By
000	September 06, 2021	Initial Issue	Gavin Liang



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## 1. SUMMARY OF STANDARDS AND RESULTS

### 1.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

<b>EMISSION</b>			
Description of Test Item	Standard	Limits	Results
Conducted disturbance at mains terminals	FCC 47 CFR Part 15 Subpart B, Class B(SDoC), ANSI C63.4 -2014	Class B	PASS
Radiated disturbance	FCC 47 CFR Part 15 Subpart B, Class B(SDoC), ANSI C63.4 -2014	Class B	PASS

N/A is an abbreviation for Not Applicable.

**Test mode:**

Mode	Working	Record
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## 2. GENERAL INFORMATION

### 2.1. Description of Device (EUT)

EUT	: PDLC Smart Film Smart Galss
Trade Mark	: Filmbase, <b>Filmbase</b> <small>禮廉與廉 Make Glass Do More</small>
Test Model	: FB-500W-60V
Additional Model	: FB-100W-60V, FB-020W-60V, FB-030W-60V, FB-050W-60V, FB-200W-60V, FB-300W-60V
Model Declaration	: PCB board, structure and internal of these model(s) are the same, So no additional models were tested
Power Supply	: Input: AC 100-240V, 50Hz, 500W Output: AC 60V, 1667mA, Max, 500W
Highest internal freq.	: $F_x \leq 108\text{MHz}$

Highest internal frequency (Fx)	Highest measured frequency
$F_x \leq 108\text{ MHz}$	1 GHz
$108\text{ MHz} < F_x \leq 500\text{ MHz}$	2 GHz
$500\text{ MHz} < F_x \leq 1\text{ GHz}$	5 GHz
$F_x > 1\text{ GHz}$	$5 \times F_x$ up to a maximum of 6 GHz
NOTE 1 For FM and TV broadcast receivers, Fx is determined from the highest frequency generated or used excluding the local oscillator and tuned frequencies.	
NOTE 2 Fx is defined in EN 55032 Section 3.1.19.	
Where Fx is unknown, the radiated emission measurements shall be performed up to 6 GHz	

### 2.2. Support equipment List

Name	Manufacturers	M/N	S/N
--	--	--	--

### 2.3. Description of Test Facility

Site Description	
EMC Lab.	: NVLAP Accreditation Code is 600167-0. FCC Designation Number is CN5024. CAB identifier is CN0071. CNAS Registration Number is L4595.

## 2.4. Statement of the Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. To CISPR 16 – 4 “Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements” and is documented in the LCS quality system acc. To DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

## 2.5. Measurement Uncertainty

Test	Parameters	Expanded Uncertainty (U <sub>lab</sub> )	Expanded Uncertainty (U <sub>cispr</sub> )
Conducted Emission	Level accuracy (9kHz to 150kHz) (150kHz to 30MHz)	± 2.63 dB ± 2.35 dB	± 3.8 dB ± 3.4 dB
Radiated Emission	Level accuracy (9kHz to 30MHz)	± 3.68 dB	N/A
Radiated Emission	Level accuracy (30MHz to 1000MHz)	± 3.48 dB	± 5.3 dB
Radiated Emission	Level accuracy (above 1000MHz)	± 3.90 dB	± 5.2 dB

(1) Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus.

(2) The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor of  $k=2$ , which for a normal distribution corresponds to a coverage probability of approximately 95%.

### 3. TEST RESULTS

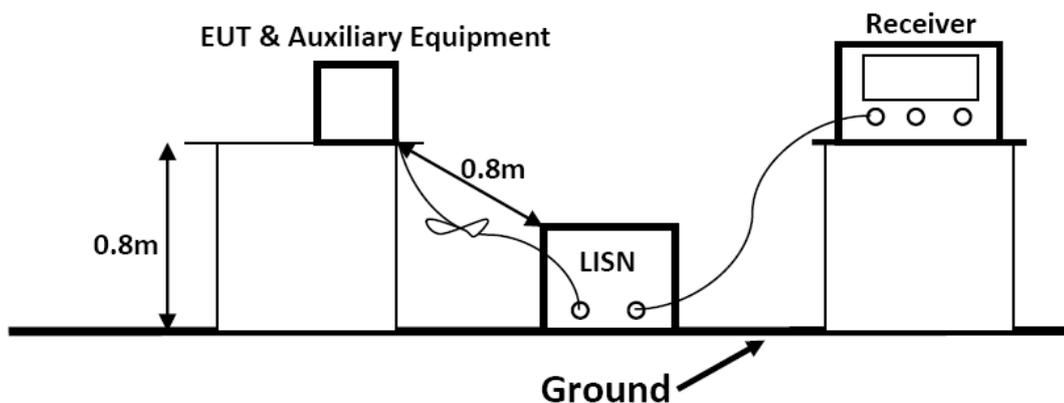
#### 3.1. POWER LINE CONDUCTED EMISSION MEASUREMENT

##### 3.1.1. Test Equipment

The following test equipments are used during the power line conducted measurement:

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	EMI Test Software	EZ	EZ-EMC	/	N/A	N/A
2	EMI Test Receiver	R&S	ESR3	102312	2021-03-16	2022-03-15
3	Artificial Mains	R&S	ENV216	101119	2021-06-21	2022-06-20
4	10dB Attenuator	SCHWARZBEC K	MTS-IMP-136	261115-001-0032	2021-06-21	2022-06-20

##### 3.1.2. Block Diagram of Test Setup



##### 3.1.3. Test Standard

###### Power Line Conducted Emission Limits (Class B)

Frequency (MHz)			Limit (dB $\mu$ V)	
			Quasi-peak Level	Average Level
0.15	~	0.50	66.0 ~ 56.0 *	56.0 ~ 46.0 *
0.50	~	5.00	56.0	46.0
5.00	~	30.00	60.0	50.0

NOTE1-The lower limit shall apply at the transition frequencies.

NOTE2-The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.

##### 3.1.4. EUT Configuration on Test

The following equipments are installed on Power Line Conducted Emission Measurement to meet the commission requirement and operating regulations in a manner, which tends to maximize its emission characteristics in a normal application.



### 3.1.5. Operating Condition of EUT

3.1.5.1. Setup the EUT as shown on Section 3.1.2

3.1.5.2. Turn on the power of all equipments.

3.1.5.3. Let the EUT work in measuring test Mode (Working) and measure it.

### 3.1.6. Test Procedure

The EUT system is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of 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 FCC/ANSI C63.4-2014 on Conducted Emission Measurement.

The bandwidth of the test receiver is set at 9kHz.

The frequency range from 150kHz to 30MHz is investigated

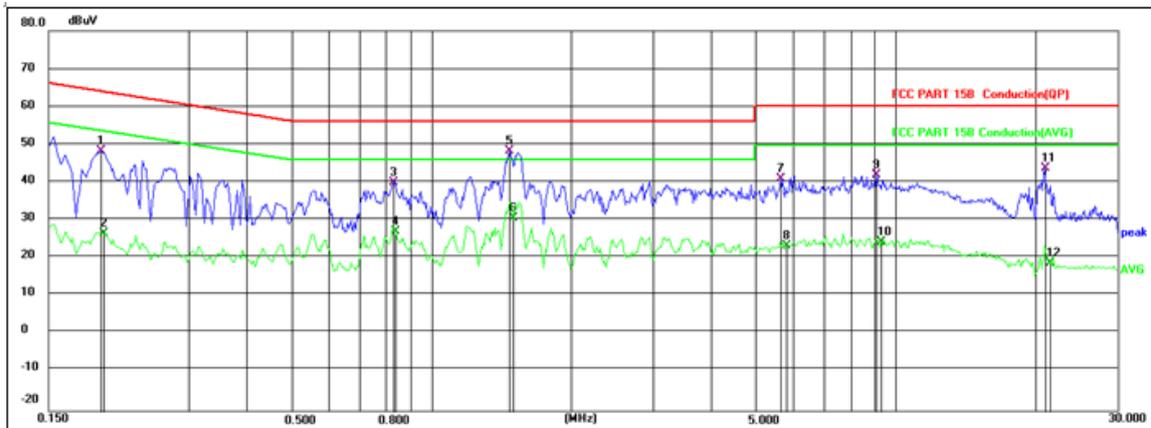
### 3.1.7. Test Results

**PASS.**

The test result please refer to the next page.



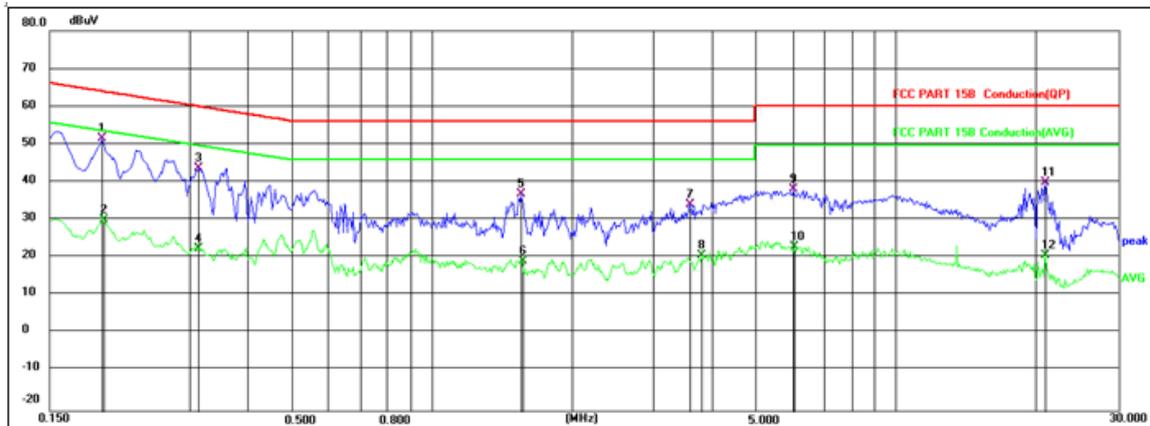
<b>Test Model</b>	FB-500W-60V	<b>Test Mode</b>	Working
<b>Environmental Conditions</b>	22.7°C, 53.7% RH	<b>Test Engineer</b>	Zhang ZePei
<b>Pol</b>	Line	<b>Test Voltage</b>	AC 120V/60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1943	38.53	9.89	48.42	63.85	-15.43	QP
2	0.1975	16.76	9.89	26.65	53.72	-27.07	AVG
3	0.8304	30.28	9.92	40.20	56.00	-15.80	QP
4	0.8393	17.38	9.92	27.30	46.00	-18.70	AVG
5	1.4717	38.35	9.95	48.30	56.00	-7.70	QP
6	1.5032	20.82	9.96	30.78	46.00	-15.22	AVG
7	5.6531	30.97	10.03	41.00	60.00	-19.00	QP
8	5.8357	13.38	10.04	23.42	50.00	-26.58	AVG
9	9.1072	31.88	10.13	42.01	60.00	-17.99	QP
10	9.3023	14.23	10.14	24.37	50.00	-25.63	AVG
11	20.9242	32.85	10.91	43.76	60.00	-16.24	QP
12	21.3724	7.95	10.86	18.81	50.00	-31.19	AVG



<b>Test Model</b>	FB-500W-60V	<b>Test Mode</b>	Working
<b>Environmental Conditions</b>	22.7°C, 53.7% RH	<b>Test Engineer</b>	Zhang ZePei
<b>Pol</b>	Neutral	<b>Test Voltage</b>	AC 120V/60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1949	41.65	9.89	51.54	63.83	-12.29	QP
2	0.1965	20.39	9.89	30.28	53.76	-23.48	AVG
3	0.3165	33.87	9.90	43.77	59.80	-16.03	QP
4	0.3165	12.69	9.90	22.59	49.80	-27.21	AVG
5	1.5540	27.08	9.96	37.04	56.00	-18.96	QP
6	1.5628	9.37	9.96	19.33	46.00	-26.67	AVG
7	3.6015	24.16	10.01	34.17	56.00	-21.83	QP
8	3.8176	10.97	10.01	20.98	46.00	-25.02	AVG
9	6.0136	28.30	10.04	38.34	60.00	-21.66	QP
10	6.0270	13.12	10.04	23.16	50.00	-26.84	AVG
11	20.9983	29.21	10.91	40.12	60.00	-19.88	QP
12	20.9983	10.02	10.91	20.93	50.00	-29.07	AVG

Note: Pre-Scan all mode, Thus record worse case mode result in this report.

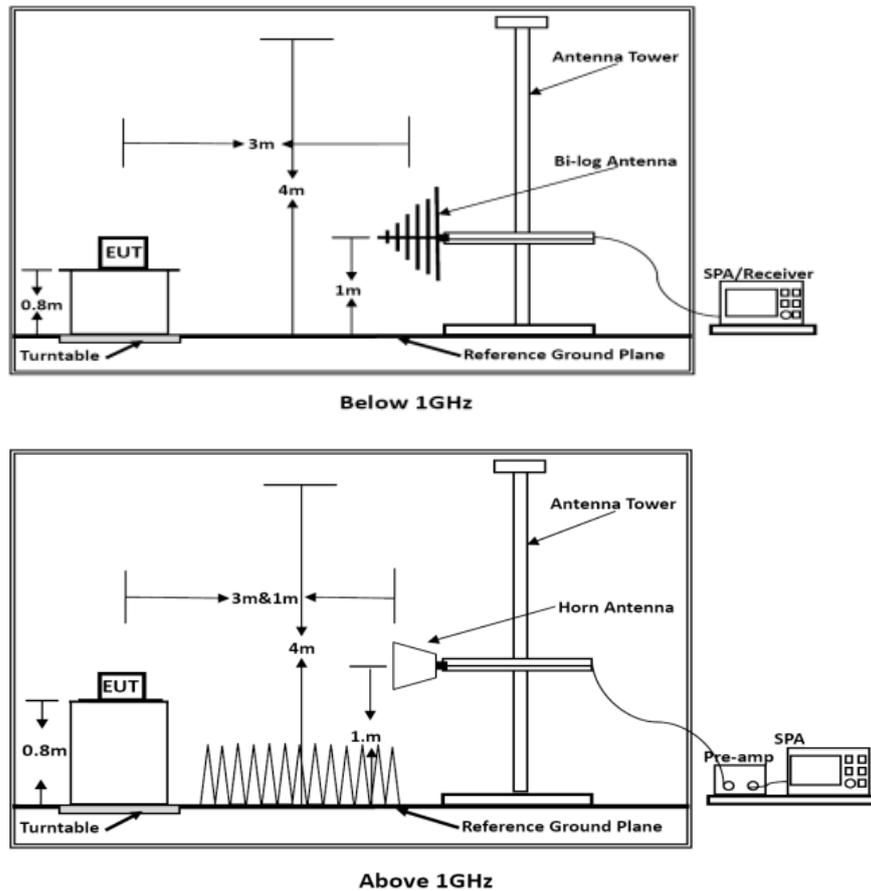
### 3.2. Radiated emission Measurement

#### 3.2.1. Test Equipment

The following test equipments are used during the radiated emission measurement:

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	EMI Test Software	E3	E3-EMC	/	N/A	N/A
2	By-log Antenna	SCHWARZBECK	VULB9163	9163-470	2021-07-25	2024-07-24
3	Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-1925	2021-07-01	2024-06-30
4	EMI Test Receiver	R&S	ESR3	102311	2021-06-21	2022-06-20
5	Broadband Pre-amplifier	/	BP-01M18G	P190501	2020-06-22	2021-06-21

#### 3.2.2. Block Diagram of Test Setup





## 3.2.3. Radiated Emission Limit (Class B)

Limits for Radiated Disturbance Below 1GHz

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		$\mu\text{V}/\text{m}$	$\text{dB}(\mu\text{V})/\text{m}$
30 ~ 88	3	100	40
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46
960 ~ 1000	3	500	54
Remark: (1) Emission level $(\text{dB})\mu\text{V} = 20 \log$ Emission level $\mu\text{V}/\text{m}$ (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.			
Limits for Radiated Emission Above 1GHz			
Frequency (MHz)	Distance (Meters)	Peak Limit ( $\text{dB}\mu\text{V}/\text{m}$ )	Average Limit ( $\text{dB}\mu\text{V}/\text{m}$ )
Above 1000	3	74	54
***Note: The lower limit applies at the transition frequency.			

## 3.2.4. EUT Configuration on Measurement

The following equipment are installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

## 3.2.5. Operating Condition of EUT

3.2.5.1. Setup the EUT as shown in Section 3.2.2.

3.2.5.2. Let the EUT work in test Mode (Working) and measure it.

## 3.2.6. Test Procedure

EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated by-log antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna is set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4-2014 on radiated emission measurement.



### 3.2.7. Measuring Instruments and Setting

Please refer to equipment list in this report. The following table is the setting of spectrum analyzer and receiver

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB/VB 200Hz/1KHz for QP/AVG
Start ~ Stop Frequency	150kHz~30MHz / RB/VB 9kHz/30KHz for QP/AVG
Start ~ Stop Frequency	30MHz~1000MHz / RB/VB 120kHz/1MHz for QP

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10 <sup>th</sup> carrier harmonic
RB / VB (Emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 1/B kHz for Average
RB / VB (Emission in non-restricted band)	1MHz / 1MHz for Peak, 1 MHz / 1/B kHz for Average

The frequency range from 30MHz to 1000MHz and above 1000MHz is checked.

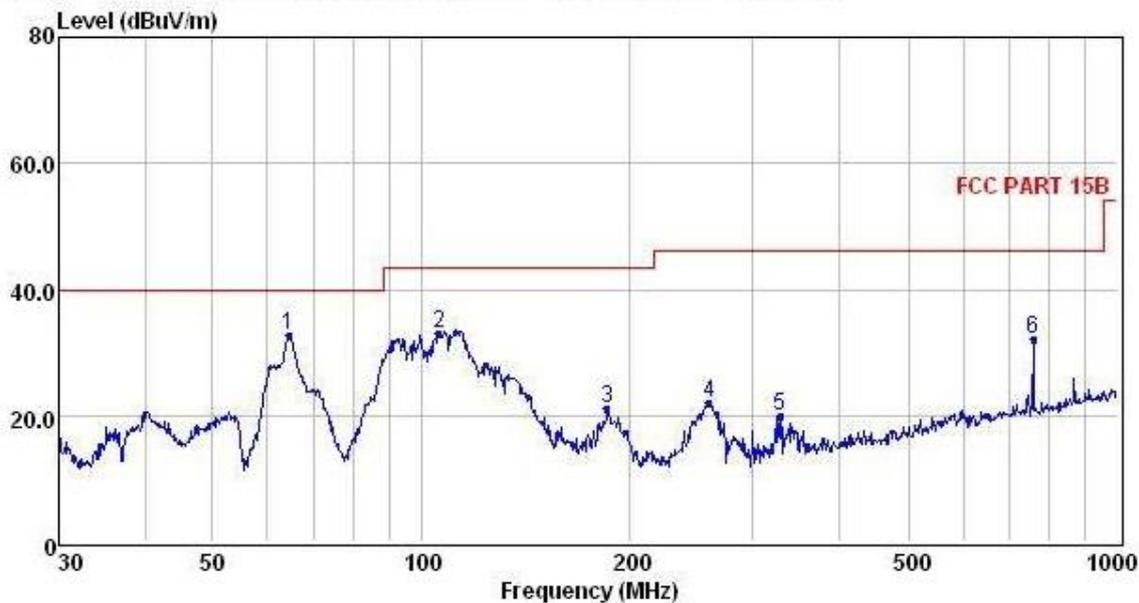
### 3.2.8. Radiated Emission Noise Measurement Result

**PASS.**

The scanning waveforms please refer to the next page.



<b>Test Model</b>	FB-500W-60V	<b>Test Mode</b>	Working
<b>Environmental Conditions</b>	22.2°C, 53.3% RH	<b>Detector Function</b>	Quasi-peak
<b>PoI</b>	Vertical	<b>Distance</b>	3m
<b>Test Engineer</b>	HY Luo	<b>Test Voltage</b>	AC 120V/60Hz

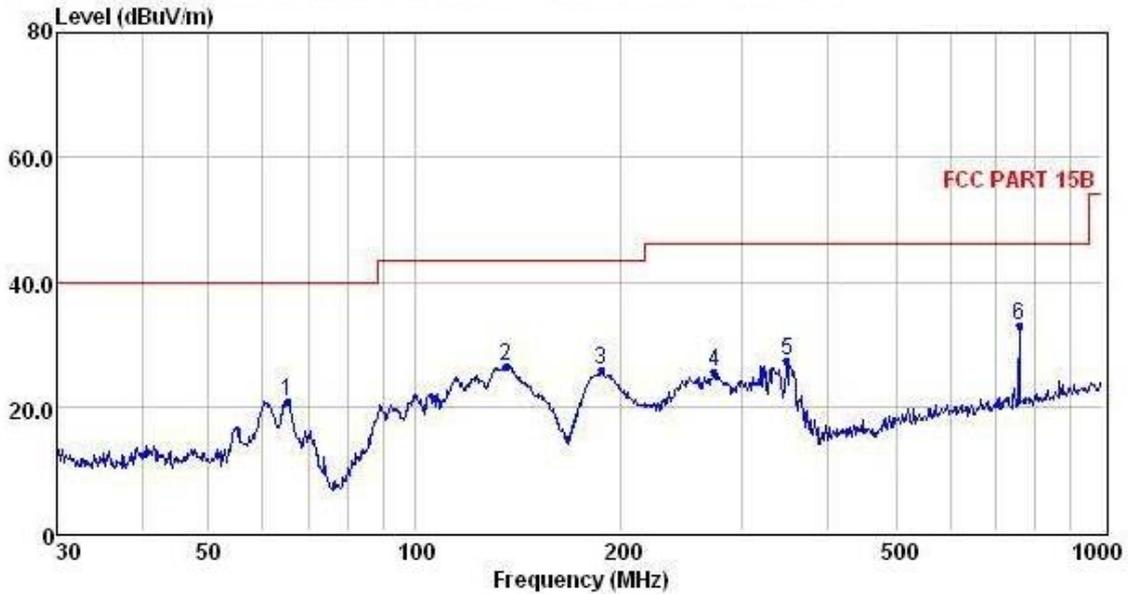


	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	64.43	21.28	0.52	10.93	32.73	40.00	-7.27	QP
2	106.01	19.77	0.68	12.61	33.06	43.50	-10.44	QP
3	185.14	10.26	0.70	10.13	21.09	43.50	-22.41	QP
4	260.14	9.01	1.01	12.05	22.07	46.00	-23.93	QP
5	329.04	5.21	1.17	13.69	20.07	46.00	-25.93	QP
6	758.04	10.96	1.69	19.54	32.19	46.00	-13.81	QP

- Note: 1. All readings are Quasi-peak values.  
2. Measured= Reading + Antenna Factor + Cable Loss  
3. The emission that are 20db below the official limit are not reported



<b>Test Model</b>	FB-500W-60V	<b>Test Mode</b>	Working
<b>Environmental Conditions</b>	22.2°C, 53.3% RH	<b>Detector Function</b>	Quasi-peak
<b>Pol</b>	Horizontal	<b>Distance</b>	3m
<b>Test Engineer</b>	HY Luo	<b>Test Voltage</b>	AC 120V/60Hz



	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	65.11	9.53	0.52	10.66	20.71	40.00	-19.29	QP
2	135.98	17.31	0.70	8.49	26.50	43.50	-17.00	QP
3	187.10	14.59	0.98	10.30	25.87	43.50	-17.63	QP
4	273.23	11.96	1.04	12.46	25.46	46.00	-20.54	QP
5	349.25	11.97	1.13	14.26	27.36	46.00	-18.64	QP
6	758.04	11.77	1.69	19.54	33.00	46.00	-13.00	QP

Note: 1. All readings are Quasi-peak values.

2. Measured= Reading + Antenna Factor + Cable Loss

3. The emission that are 20db below the official limit are not reported

*Note: Pre-Scan all mode, Thus record worse case mode result in this report.*

*Remark: For above 1000MHz, Because the emission it too low to be reported.*

#### 4. PHOTOGRAPH

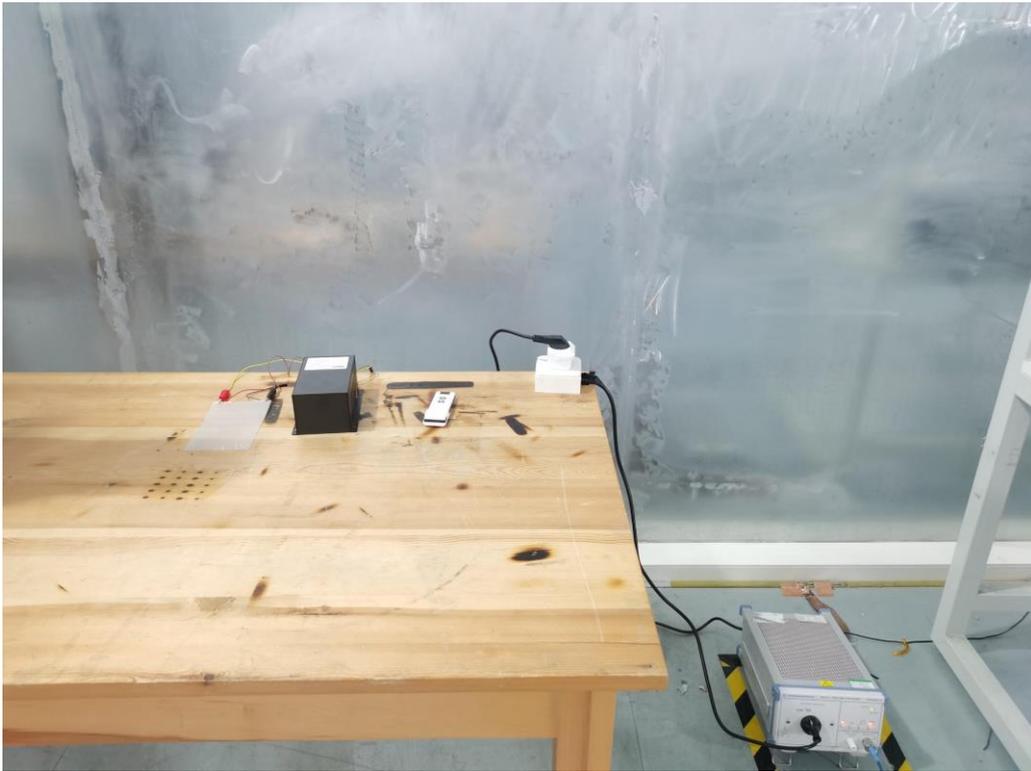


Photo of Power Line Conducted Measurement

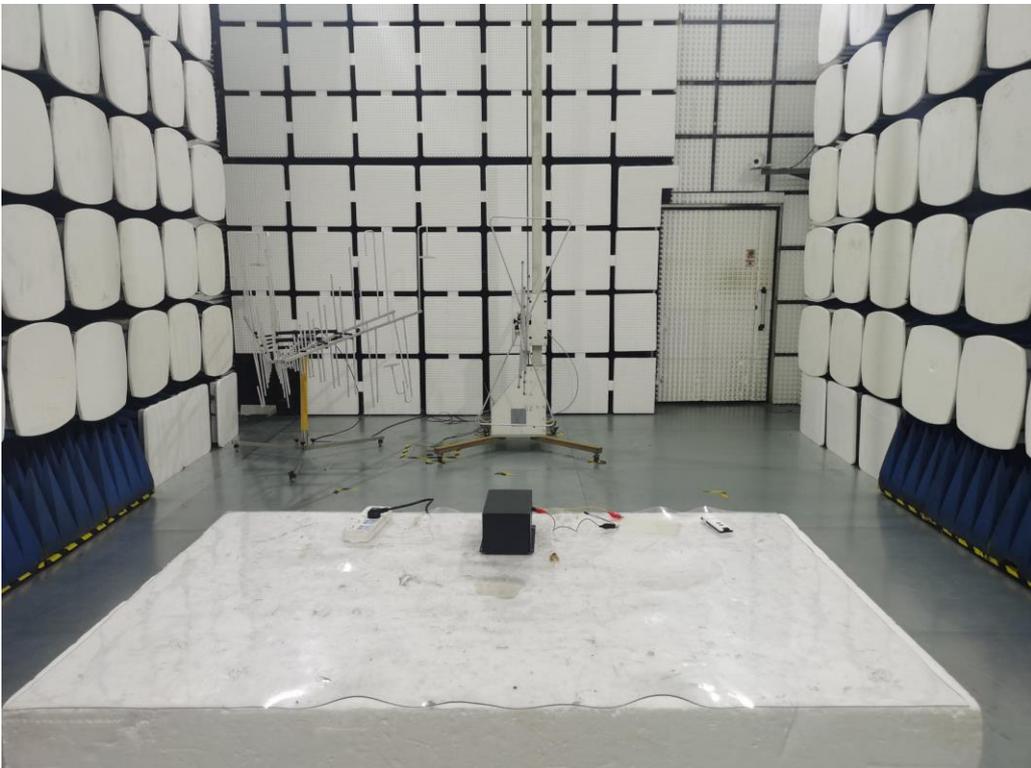


Photo of Radiated emission Measurement

## 5. EXTERNAL AND INTERNAL PHOTOS OF THE EUT



Fig. 1



Fig. 2

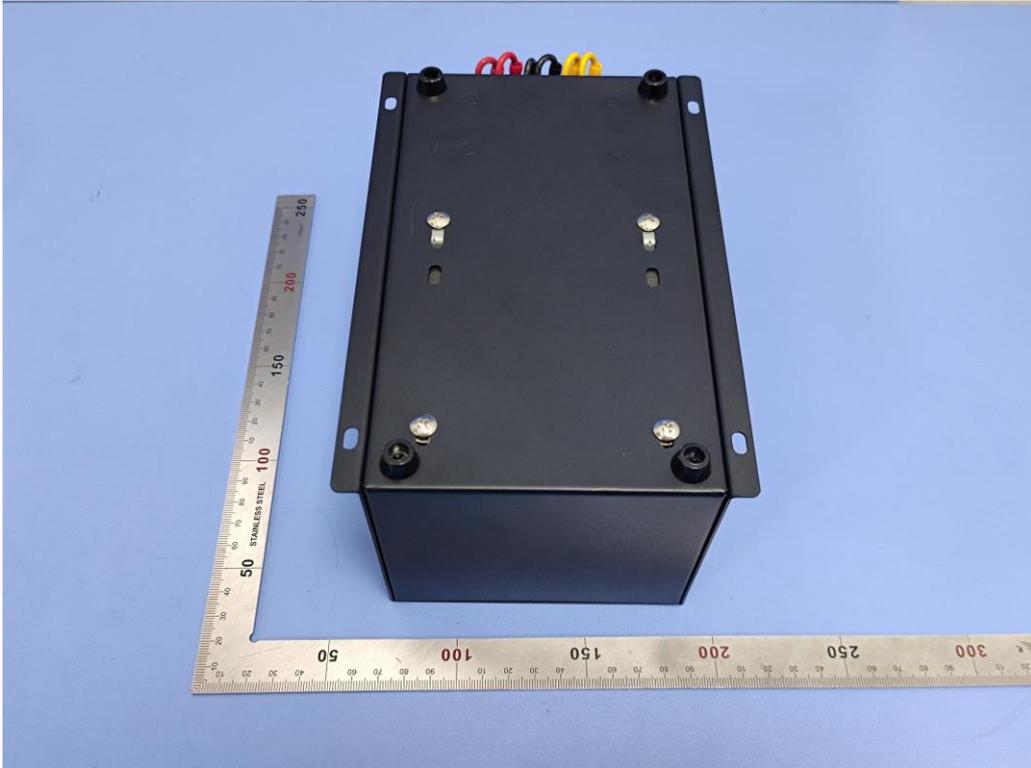


Fig. 3

-----THE END OF TEST REPORT-----