

FCC Part 15, Subpart B, Class B(sDoC)  
TEST REPORT  
ZHEJIANG IWALK TECHNOLOGY CO., LTD.  
Electrical Bike  
Test Model: RS1  
Additional Model No: Please Refer to Page 7

Prepared for : ZHEJIANG IWALK TECHNOLOGY CO., LTD.  
Address : NO. 59-1 JUXING TECHNOLOGY PARK, JIAOJIANG DISTRICT, TAIZHOU CITY, ZHEJIANG, PROVINCE

Prepared by : Shanghai Global Testing Services Co., Ltd  
Address : Floor 2nd, Building D-1, No. 128, Shenfu Road, Minhang District, Shanghai, China.  
Tel : 021-33637866  
Fax : 021-33637858  
Web : <http://www.gts-lab.com>

Date of receipt of test sample : August. 28, 2021  
Number of tested samples : 1  
Serial number : Prototype  
Date of Test : August. 28, 2021 ~ September. 06, 2021  
Date of Report : September. 06, 2021

**FCC -- TEST REPORT****Test Report No. : TFZJ2108263317**September. 06, 2021

Date of issue

Test Model .....	: RS1
EUT.....	: Electrical Bike
<b>Applicant.....</b>	<b>: ZHEJIANG IWALK TECHNOLOGY CO., LTD.</b>
Address.....	: NO. 59-1 JUXING TECHNOLOGY PARK, JIAOJIANG DISTRICT, TAIZHOU CITY, ZHEJIANG, PROVINCE
Telephone.....	: /
Fax.....	: /
<b>Manufacturer.....</b>	<b>: ZHEJIANG IWALK TECHNOLOGY CO., LTD.</b>
Address.....	: NO. 59-1 JUXING TECHNOLOGY PARK, JIAOJIANG DISTRICT, TAIZHOU CITY, ZHEJIANG, PROVINCE
Telephone.....	: /
Fax.....	: /
<b>Factory.....</b>	<b>: ZHEJIANG IWALK TECHNOLOGY CO., LTD.</b>
Address.....	: NO. 59-1 JUXING TECHNOLOGY PARK, JIAOJIANG DISTRICT, TAIZHOU CITY, ZHEJIANG, PROVINCE
Telephone.....	: /
Fax.....	: /

**Test Result:****PASS**

The test report merely corresponds to the test sample.

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The duplication of this report or parts of it and its use for advertising purposes is only allowed with permission of the testing laboratory. This report contains the result of examination of the product sample submitted by the appliance. A general statement concerning the quality of the products from the series manufacturer cannot be derived therefore.

### Revision History

Revision	Issue Date	Revisions	Revised By
000	September. 06, 2021	Initial Issue	Lh Li

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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.

EMISSION			
Description of Test Item	Standard	Limits	Results
Conducted disturbance at mains terminals	FCC Part 15, Subpart B, Class B(sDoC), ANSI C63.4 -2014	Class B	PASS
Radiated disturbance	FCC Part 15, Subpart B, Class B(sDoC), ANSI C63.4 -2014	Class B	PASS

N/A is an abbreviation for Not Applicable.

## 2. GENERAL INFORMATION

### 2.1. Description of Device (EUT)

EUT : Electrical Bike

Trade Mark : N/A

Test Model : RS1

Additional Model No : N/A

Model Declaration : /

Power Supply : Adapter Input: AC 100-240V, 50/60Hz;  
EUT Input : DC 36V

### 2.2. 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.

### 2.3. Measurement Uncertainty

Test	Parameters	Expanded Uncertainty (Ulab)	Expanded Uncertainty (Ucisp)
Conducted Emission	Level accuracy (9kHz to 150kHz) (150kHz to 30MHz)	$\pm 2.63$ dB $\pm 2.35$ dB	$\pm 3.8$ dB $\pm 3.4$ dB
Radiated Emission	Level accuracy (9kHz to 30MHz)	$\pm 3.68$ dB	N/A
Radiated Emission	Level accuracy (30MHz to 1000MHz)	$\pm 3.48$ dB	$\pm 5.3$ dB
Radiated Emission	Level accuracy (above 1000MHz)	$\pm 3.90$ dB	$\pm 5.2$ 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%.

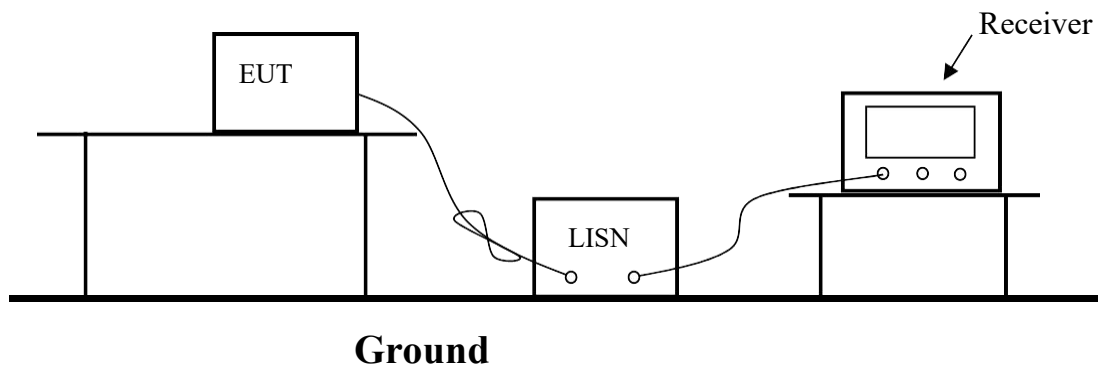
### 3. POWER LINE CONDUCTED EMISSION MEASUREMENT

#### 3.1. Test Equipment

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

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Date.
1	EMI Test Software	AUDIX	E3	/	N/A
2	EMI Test Receiver	R&S	ESR 3	102519	2021-05-31
3	Artificial Mains	R&S	ENV216	102318	2021-05-31

#### 3.2. Block Diagram of Test Setup



#### 3.3. 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.

#### 3.4. 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.



### 3.5. Operating Condition of EUT

3.5.1. Setup the EUT as shown on Section 3.2

3.5.2. Turn on the power of all equipments.

3.5.3. Let the EUT work in measuring mode (Charging) and measure it.

### 3.6. 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.

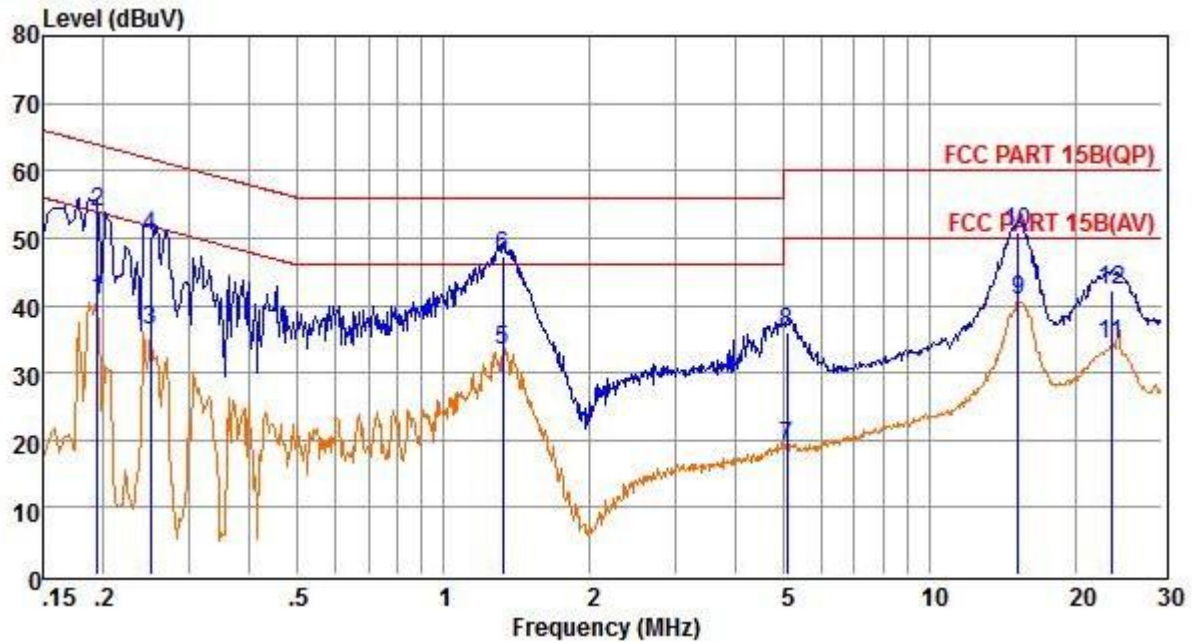
The frequency range from 150kHz to 30MHz is investigated

### 3.7. Test Results

**PASS.**

The test result please refer to the next page.

<b>Test Model</b>	RS1	<b>Test Mode</b>	Charging
<b>Environmental Conditions</b>	24.1°C, 54% RH	<b>Test Engineer</b>	Feng liang
<b>Pol</b>	Line	<b>Test Voltage</b>	AC 120V/60Hz

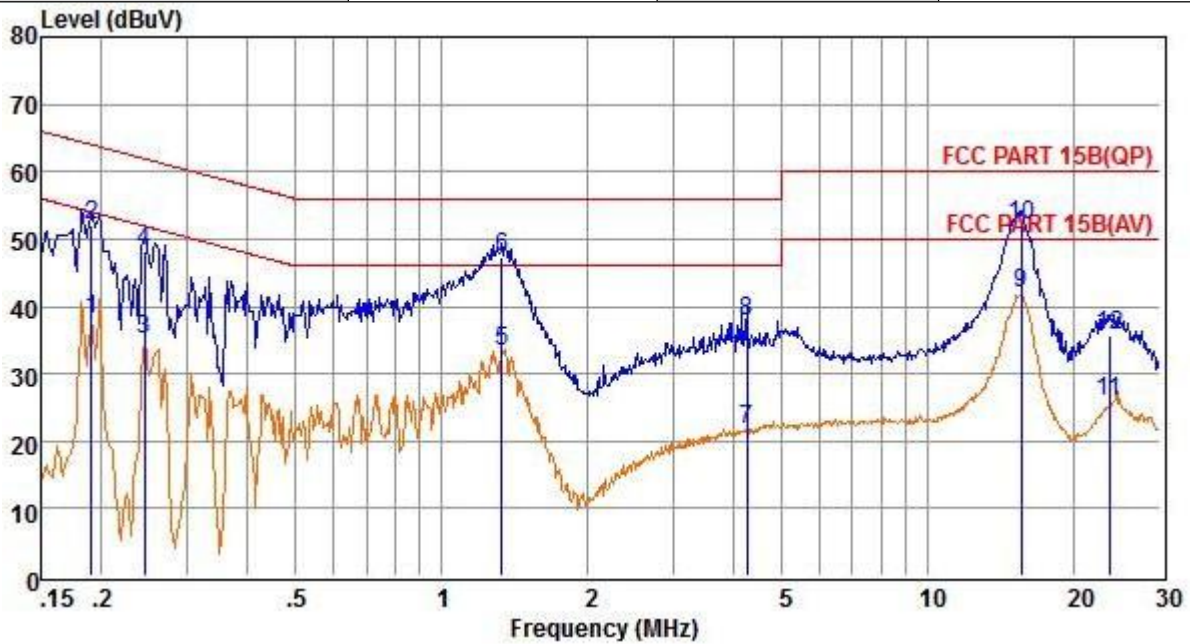


Pol: LINE

	Freq	Reading	LisnFac	CabLos	Measured	Limit	Over	Remark
	MHz	dBpW	dB	dB	dBpW	dBpW	dB	
1	0.19	31.10	9.58	0.13	40.81	53.84	-13.03	Average
2	0.19	44.10	9.58	0.13	53.81	63.84	-10.03	QP
3	0.25	26.65	9.58	0.12	36.35	51.78	-15.43	Average
4	0.25	40.65	9.58	0.12	50.35	61.78	-11.43	QP
5	1.32	23.53	9.59	0.12	33.24	46.00	-12.76	Average
6	1.32	37.53	9.59	0.12	47.24	56.00	-8.76	QP
7	5.08	9.33	9.64	0.11	19.08	50.00	-30.92	Average
8	5.08	26.33	9.64	0.11	36.08	60.00	-23.92	QP
9	15.23	30.45	10.17	0.16	40.78	50.00	-9.22	Average
10	15.23	40.45	10.17	0.16	50.78	60.00	-9.22	QP
11	23.64	23.87	10.19	0.25	34.31	50.00	-15.69	Average
12	23.64	31.87	10.19	0.25	42.31	60.00	-17.69	QP

Remarks: 1. Measured = Reading + Lisn Factor +Cable Loss.  
 2. The emission levels that are 20dB below the official limit are not reported.

<b>Test Model</b>	RS1	<b>Test Mode</b>	Charging
<b>Environmental Conditions</b>	24.1°C, 54% RH	<b>Test Engineer</b>	Feng liang
<b>Pol</b>	Neutral	<b>Test Voltage</b>	AC 120V/60Hz



Pol: NEUTRAL

	Freq	Reading	LisnFac	CabLos	Measured	Limit	Over	Remark
	MHz	dBpW	dB	dB	dBpW	dBpW	dB	
1	0.19	28.38	9.58	0.13	38.09	54.02	-15.93	Average
2	0.19	42.38	9.58	0.13	52.09	64.02	-11.93	QP
3	0.25	25.54	9.58	0.12	35.24	51.91	-16.67	Average
4	0.25	38.54	9.58	0.12	48.24	61.91	-13.67	QP
5	1.33	23.67	9.58	0.12	33.37	46.00	-12.63	Average
6	1.33	37.67	9.58	0.12	47.37	56.00	-8.63	QP
7	4.25	11.98	9.63	0.13	21.74	46.00	-24.26	Average
8	4.25	27.98	9.63	0.13	37.74	56.00	-18.26	QP
9	15.55	31.73	10.17	0.17	42.07	50.00	-7.93	Average
10	15.55	41.73	10.17	0.17	52.07	60.00	-7.93	QP
11	23.64	15.43	10.05	0.25	25.73	50.00	-24.27	Average
12	23.64	25.43	10.05	0.25	35.73	60.00	-24.27	QP

- Remarks: 1. Measured = Reading + Lisn Factor + Cable Loss.  
 2. The emission levels that are 20dB below the official limit are not reported.

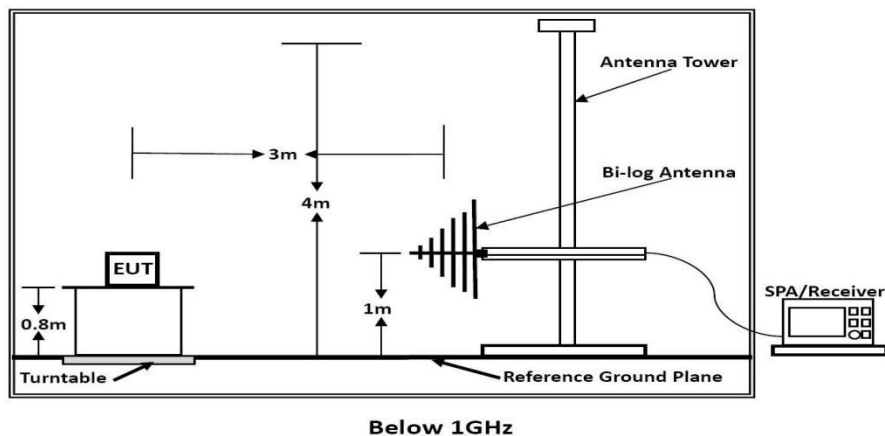
## 4. RADIATED EMISSION MEASUREMENT

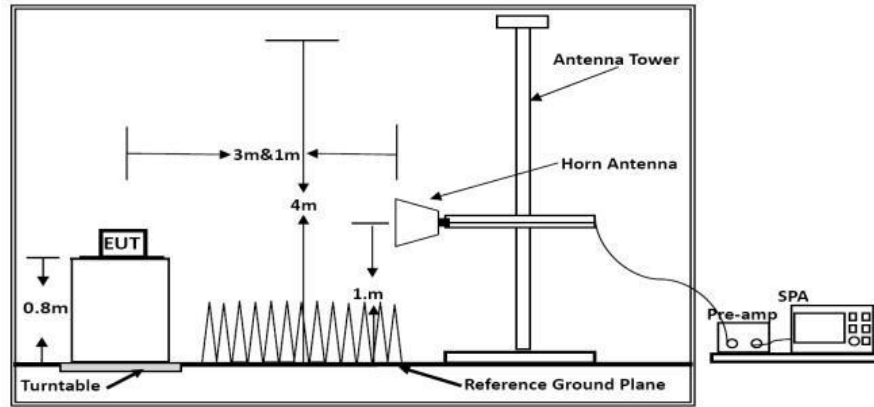
### 4.1. Test Equipment

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

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI Test Software	AUDIX	E3	/	N/A
2	3m Semi Anechoic Chamber	MAORUI	9m*6m*6	160218849	2021-05-31
3	By-log Antenna	SCHWARZBECK	VULB9168	9168-988	2019-05-31
4	Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-2049	2021-05-31
5	EMI Test Receiver	R&S	ESRP	101372	2021-05-31
6	AMPLIFIER	SCHWARZBECK	BBV9745	136	2021-05-31
7	RF Cable	Hubber Suhner	CBL-RE	/	2021-05-31
8	AMPLIFIER	SCHWARZBECK	BBV9718C	21	2021-05-31

### 4.2. Block Diagram of Test Setup





Above 1GHz

### 4.3. 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  $(\text{dB})\mu\text{V} = 20 \log \text{Emission level } \mu\text{V}/\text{m}$   
 (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 ( $\text{dB}\mu\text{V}/\text{m}$ )
1000 ~ 3000	3	70	50
3000 ~ 6000	3	74	54

\*\*\*Note: The lower limit applies at the transition frequency.

### 4.4. 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.

### 4.5. Operating Condition of EUT

- 4.5.1. Setup the EUT as shown in Section 4.2.
- 4.5.2. Let the EUT work in test mode (Charging) and measure it.

#### 4.6. 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 a 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.

The bandwidth of the EMI test receiver is set at 120kHz, 1000kHz.

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

The bandwidth of the Spectrum analyzer is set at RBW/VBW=1MHz/3MHz.

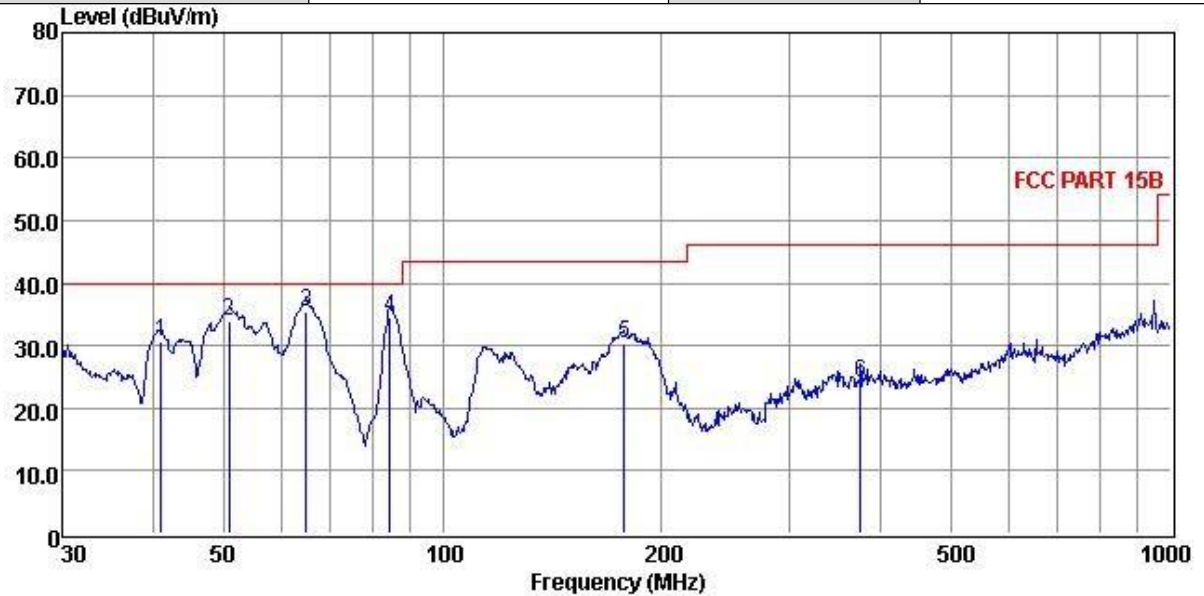
The frequency range from 1GHz to the frequency which about 5th carrier harmonic or 6GHz is checked.

#### 4.7. Radiated Emission Noise Measurement Result

**PASS.**

The scanning waveforms please refer to the next page.

<b>Test Model</b>	RS1	<b>Test Mode</b>	Charging
<b>Environmental Conditions</b>	24.3°C, 56% RH	<b>Detector Function</b>	Quasi-peak
<b>Pol</b>	Vertical	<b>Distance</b>	3m
<b>Test Engineer</b>	Feng liang	<b>Test Voltage</b>	AC 120V/60Hz

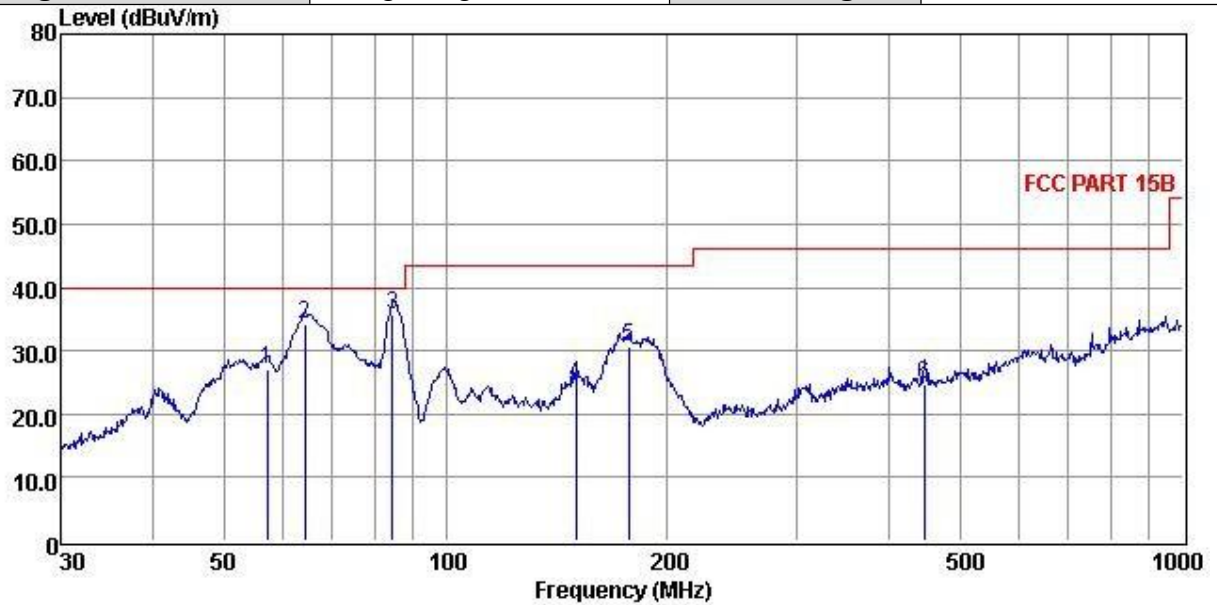


Site : 3m chamber  
 Condition : FCC PART 15B 3m VULB9168 NB VERTICAL

	Read Freq	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Limit Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB/m	dB	dBuV/m	dBuV/m	dB	
1	40.99	46.65	2.28	12.07	30.32	30.68	40.00	-9.32	QP
2	50.94	48.39	2.43	13.45	30.32	33.95	40.00	-6.05	QP
3	64.89	51.20	2.64	11.99	30.38	35.45	40.00	-4.55	QP
4	84.70	52.81	2.91	9.14	30.45	34.41	40.00	-5.59	QP
5	177.51	46.22	3.82	10.95	30.65	30.34	43.50	-13.16	QP
6	374.62	34.93	5.26	14.88	31.10	23.97	46.00	-22.03	QP

Note: 1.All read level are Quasi-peak values.  
 2.Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor.

<b>Test Model</b>	RS1	<b>Test Mode</b>	Charging
<b>Environmental Conditions</b>	24.3°C, 56% RH	<b>Detector Function</b>	Quasi-peak
<b>Pol</b>	Horizontal	<b>Distance</b>	3m
<b>Test Engineer</b>	Feng liang	<b>Test Voltage</b>	AC 120V/60Hz



Site : 3m chamber

Condition : FCC PART 15B 3m VULB9168 NB HORIZONTAL

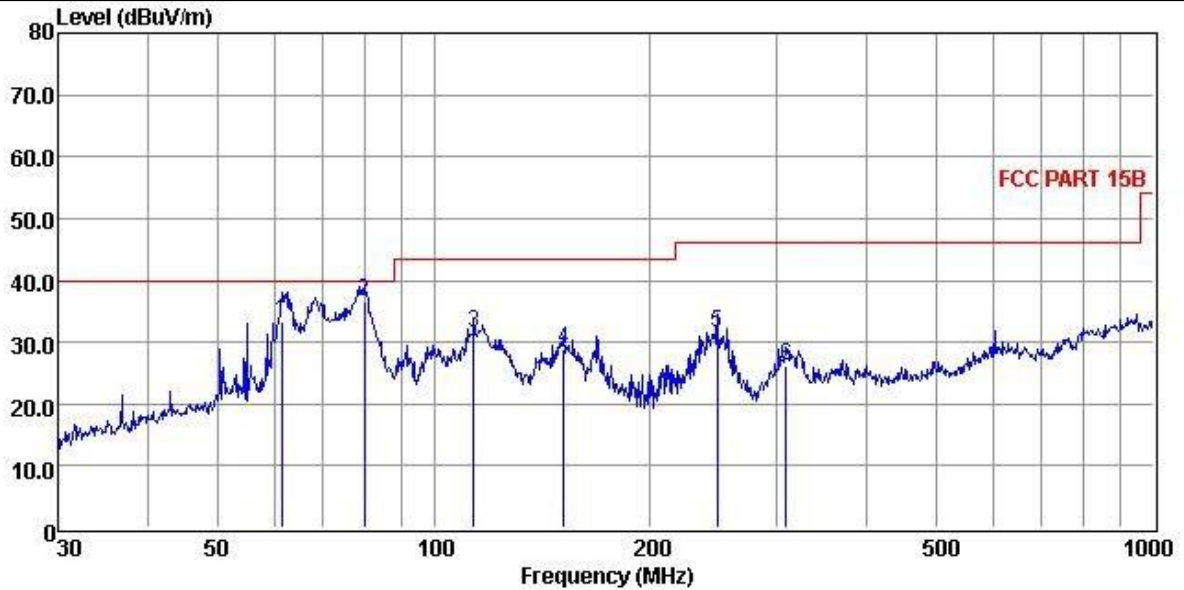
	Read Freq	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB/m	dB	dBuV/m	dBuV/m	dB	
1	57.19	43.56	2.53	11.46	30.35	27.20	40.00	-12.80	QP
2	64.43	49.89	2.64	11.95	30.37	34.11	40.00	-5.89	QP
3	84.70	54.19	2.91	9.14	30.45	35.79	40.00	-4.21	QP
4	150.01	37.57	3.54	14.30	30.60	24.81	43.50	-18.69	QP
5	176.89	46.51	3.82	11.04	30.64	30.73	43.50	-12.77	QP
6	446.41	34.84	5.41	15.73	31.32	24.66	46.00	-21.34	QP

Note: 1.All read level are Quasi-peak values.

2.Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor.



<b>Test Model</b>	RS1	<b>Test Mode</b>	Working
<b>Environmental Conditions</b>	24.3°C, 56% RH	<b>Detector Function</b>	Quasi-peak
<b>Pol</b>	Vertical	<b>Distance</b>	3m
<b>Test Engineer</b>	Feng liang	<b>Test Voltage</b>	DC 36V

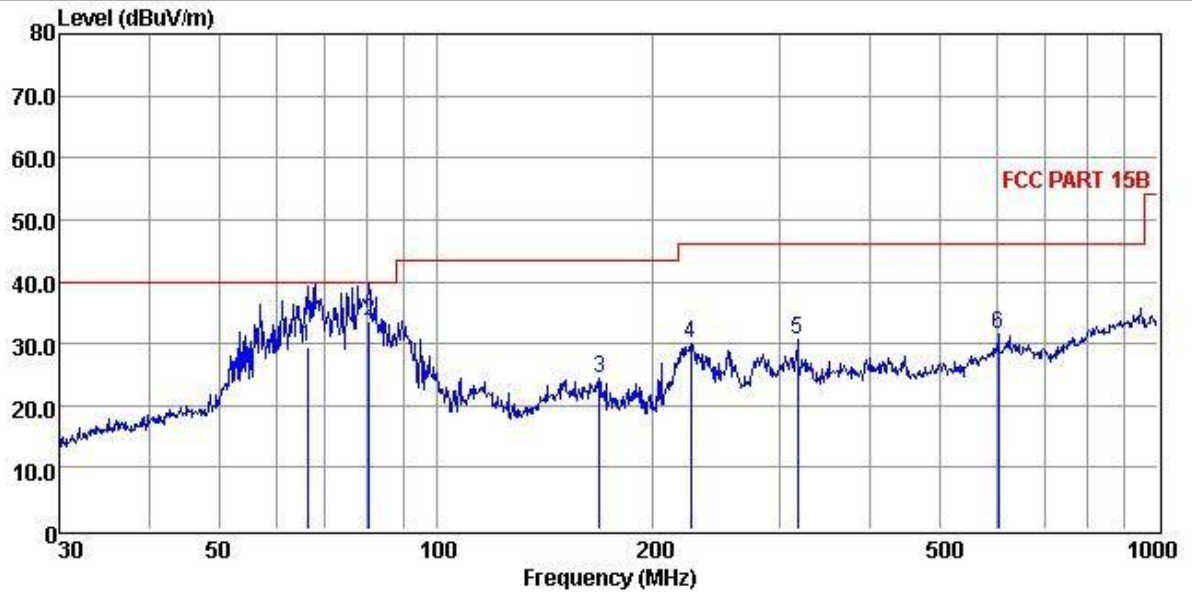


Site : 3m chamber  
 Condition : FCC PART 15B 3m VULB9168 NB VERTICAL

	Read Freq	Level	Cable Loss	Antenna Factor	Preamp Factor	Limit Level	Over Limit	Remark
	MHz	dBuV	dB	dB/m	dB	dBuV/m	dBuV/m	dB
1	61.35	49.50	2.59	11.71	30.36	33.44	40.00	-6.56 QP
2	80.08	54.40	2.85	9.69	30.43	36.51	40.00	-3.49 QP
3	113.71	48.79	3.19	10.01	30.53	31.46	43.50	-12.04 QP
4	151.60	41.81	3.56	14.03	30.60	28.80	43.50	-14.70 QP
5	247.68	46.81	4.40	10.94	30.77	31.38	46.00	-14.62 QP
6	308.91	39.09	4.88	13.18	30.89	26.26	46.00	-19.74 QP

Note: 1.All read level are Quasi-peak values.  
 2.Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor.

<b>Test Model</b>	RS1	<b>Test Mode</b>	Working
<b>Environmental Conditions</b>	24.3°C, 56% RH	<b>Detector Function</b>	Quasi-peak
<b>Pol</b>	Horizontal	<b>Distance</b>	3m
<b>Test Engineer</b>	Feng liang	<b>Test Voltage</b>	DC 36V



Site : 3m chamber  
 Condition : FCC PART 15B 3m VULB9168 NB HORIZONTAL

	Read Freq	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB/m	dB	dBuV/m	dBuV/m	dB	
1	66.27	45.09	2.66	12.03	30.38	29.40	40.00	-10.60	QP
2	80.64	51.60	2.86	9.62	30.44	33.64	40.00	-6.36	QP
3	168.41	39.30	3.73	12.10	30.63	24.50	43.50	-19.00	QP
4	225.31	46.52	4.18	9.95	30.73	29.92	46.00	-16.08	QP
5	316.59	43.23	4.95	13.33	30.91	30.60	46.00	-15.40	QP
6	601.43	37.25	5.87	19.94	31.64	31.42	46.00	-14.58	QP

Note: 1.All read level are Quasi-peak values.  
 2.Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor.

## 5. PHOTOGRAPH

### 5.1. Photo of Power Line Conducted Measurement



### 5.2. Photo of Radiated Measurement



## 6. EXTERNAL AND INTERNAL PHOTOS OF THE EUT



Fig. 1



Fig. 2



Fig. 3



Fig. 4



Fig. 5



Fig. 6



Fig. 7



Fig. 8



Fig. 9



Fig. 10





Fig. 11

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