

# TEST REPORT

Product Name : LED LAMP  
Model Number : LED2100-QI, LED2100-QI-FLT,  
LED-QI2100-BKG-AMZ, LED2200-QI-BK  
FCC ID : 2AZLV-LED2100-QI10W

Prepared for : Goods iQ  
Address : 50 Romano Vineyard Way North Kingstown, RI 02852

Prepared by : EMTEK (DONGGUAN) CO., LTD.  
Address : -1&2F., Building 2, Zone A, Zhongda Marine Biotechnology  
Research and Development Base, No. 9, Xincheng Avenue,  
Songshanhu High-technology Industrial Development Zone,  
Dongguan, Guangdong, China

Tel : +86-0769-22807078  
Fax: +86-0769-22807079

Report Number : EDG2208310038E00701R  
Date(s) of Tests : August 31, 2022 to January 09, 2023  
Date of Issue : January 10, 2023

## TABLE OF CONTENT

Test Report Description	Page
<b>1. SUMMARY OF TEST RESULTS .....</b>	<b>5</b>
<b>2. GENERAL INFORMATION.....</b>	<b>6</b>
2.1. Description of Device (EUT).....	6
2.2. Input / Output Ports .....	6
2.3. Independent Operation Modes .....	7
2.4. Test Manner.....	7
2.5. Description of Test Facility .....	7
2.6. Description of Support Device.....	8
2.7. Measurement Uncertainty .....	8
<b>3. MEASURING DEVICE AND TEST EQUIPMENT .....</b>	<b>9</b>
3.1. Conducted Emission Test Equipment .....	9
3.2. For 3m Radiated Emission Measurement 9K-1GHz (3m chamber 1#).....	9
3.3. For other test items: .....	9
<b>4. 20DB BANDWIDTH .....</b>	<b>10</b>
4.1. Test Procedure .....	10
4.2. Test Results.....	10
<b>5. POWER LINE CONDUCTED EMISSION MEASUREMENT .....</b>	<b>11</b>
5.1. Block Diagram of Test Setup.....	11
5.2. Limits .....	11
5.3. Test Procedure .....	11
5.4. Measuring Results .....	12
<b>6. RADIATED EMISSION TEST .....</b>	<b>15</b>
6.1. Measurement Procedure.....	15
6.2. Test SET-UP (Block Diagram of Configuration) .....	15
6.3. Radiated Emission Limit.....	16
6.4. Measurement Result .....	17
<b>7. ANTENNA APPLICATION .....</b>	<b>20</b>
7.1. Antenna Requirement .....	20
7.2. Result .....	20

**TEST REPORT DESCRIPTION**

Applicant : Goods iQ  
Address : 50 Romano Vineyard Way North Kingstown, RI 02852.  
Manufacturer : Ningbo Chinyo Lighting Appliance Co., Ltd  
Address : No. 7, Ketai Road, Wangchun Industrial Zone Haishu District, Ningbo, Zhejiang Provincce, China.  
EUT : LED LAMP  
Model Name : LED2100-QI, LED2100-QI-FLT, LED-QI2100-BKG-AMZ, LED2200-QI-BK  
Trademark : BLACK+DECKER

**We hereby certify that:**

The above equipment was tested by EMTEK (DONGGUAN) CO., LTD. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with the requirements of FCC Rules Part 15C

The test results of this report relate only to the tested sample identified in this report.

Date of Test : August 31, 2022 to January 09, 2023

Prepared by : Warren Deng  
Warren deng /Engineer

Reviewer : Tim Dong  
Tim Dong /Supervisor

Approved & Authorized Signer : Sam Lv  
Sam Lv /Manager



## Modified Information

Version	Report No.	Revision Data	Summary
/	EDG2208310038E00701R	/	Original Version



## 1. SUMMARY OF TEST RESULTS

<b>EMISSION</b>		
Description of Test Item	Standard & Limits	Results
Conducted Emission	FCC Part 15, Subpart C- Section 15.207 ANSI C63.10-2013	Pass
Radiated Emission	FCC Part 15, Subpart C- Section 15.209 ANSI C63.10-2013	Pass

Note: N/A is an abbreviation for Not Applicable.



## 2. GENERAL INFORMATION

### 2.1. Description of Device (EUT)

Product:	LED LAMP
Model Number:	LED2100-QI, LED2100-QI-FLT, LED-QI2100-BKG-AMZ, LED2200-QI-BK Note: The only difference between all models is the color. The PCB schematic, PCB Layout, etc. are all the same. We choose model " LED2100-QI " for RF testing.
Sample Number:	1#
Power Supply:	DC 12V from adapter
Adapter:	Model: RSS1006-240120-W2-J-P Input: 100-240V 50/60Hz 1.4A Output: 12V 2A
Wireless specification	10W(MAX)
Modulation:	Ask
Maximum Power Rate:	70.67 dBuV/m
Frequency Range:	110 kHz~205 KHz
Antenna Type:	Integral Antenna(Induction coil)
Antenna Gain:	0 dBi
Operating Temperature	0°C ~ +50°C
Date of Received:	August 31, 2022

### 2.2. Input / Output Ports

Port #	Name	Type*	Cable Max. >3m	Cable Shielded	Comments
1	DC Power Port	DC	No	N/A	None

\* Note: For the purposes of the present document, the following symbols apply:

AC	AC Power Port
DC	DC Power Port
N/E	Non-Electrical
I/O	Signal Input or Output Port (Not Involved in Process Control)
TP	Telecommunication Ports

### 2.3. Independent Operation Modes

A 1. Wireless Charging(Full load)

### 2.4. Test Manner

Test Items	Test Voltage	Operation Modes
Conducted Emission	AC 120V/60Hz	Mode A.1
Radiated Emission	AC 120V/60Hz	Mode A.1

### 2.5. Description of Test Facility

#### Site Description

EMC Lab. : Accredited by CNAS, 2020.08.27  
The certificate is valid until 2024.07.05  
The Laboratory has been assessed and proved to be in compliance with  
CNAS/CL01:2018  
The Certificate Registration Number is L3150

Accredited by FCC  
Designation Number: CN1300  
Test Firm Registration Number: 945551

Accredited by A2LA, April 05, 2021  
The Certificate Registration Number is 4321.02

Accredited by Industry Canada  
The Certificate Registration Number is CN0113

Name of Firm : EMTEK (Dongguan) Co., Ltd.  
Site Location : -1&2/F., Buiding 2, Zone A, Zhongda Marine Biotechnology Research and  
Development Base, N.9, Xincheng Avenue, Songshanhu High-technology  
Industrial Development Zone, Dongguan, Guangdong, China

## 2.6. Description of Support Device

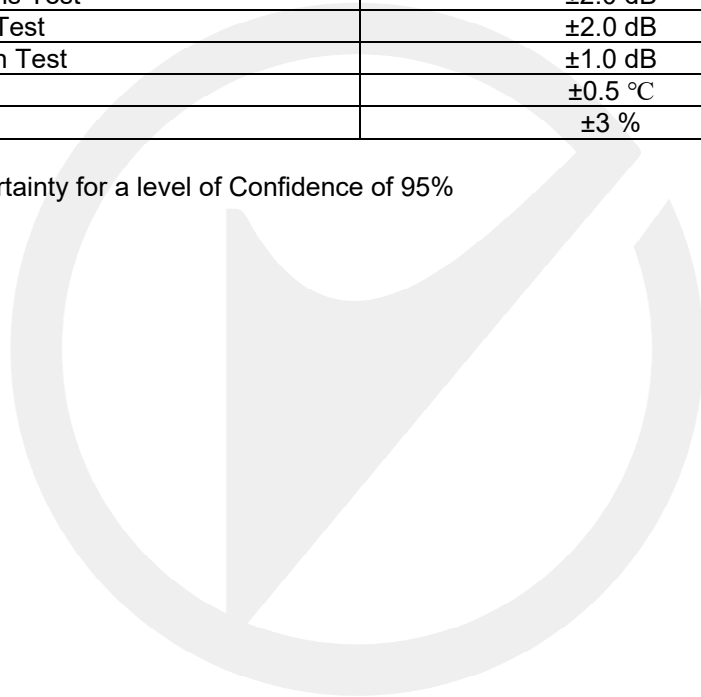
No.	Equipment	Trade name	Model	S/N	Power Cord
1	Wireless Load	/	10w	/	/

## 2.7. Measurement Uncertainty

The following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Parameter	Uncertainty
Radio Frequency	$\pm 1 \times 10^{-5}$
Conducted Emissions Test	$\pm 2.0$ dB
Radiated Emission Test	$\pm 2.0$ dB
Occupied Bandwidth Test	$\pm 1.0$ dB
Temperature	$\pm 0.5$ °C
Humidity	$\pm 3$ %

Measurement Uncertainty for a level of Confidence of 95%





### 3. MEASURING DEVICE AND TEST EQUIPMENT

#### 3.1. Conducted Emission Test Equipment

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
Test Receiver	Rohde& Schwarz	ESCI	100137	2022/05/19	1Year
L.I.S.N.	Rohde& Schwarz	ENV216	101209	2022/05/19	1Year
RF Switching Unit	CDS	RSU-M2	38401	2022/05/19	1Year

#### 3.2. For 3m Radiated Emission Measurement 9K-1GHz (3m chamber 1#)

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
EMI Test Receiver	Rohde & Schwarz	ESCI	101415	2022/05/19	1Year
Power Amplifier	HP	8447F	OPH64	2022/05/19	1Year
Bilog Antenna	Schwarzbeck	VULB9163	141	2022/05/22	1Year
Power Amplifier	LUNAR EM	LNA1G18-40	J10100000081	2022/05/19	1Year
Loop Antenna	Schwarzbeck	FMZB1513	1513-60	2022/05/22	2 Year
Signal Analyzer	R&S	FSV30	103039	2022/05/19	1Year
Bilog Antenna	Schwarzbeck	VULB9163	141	2022/05/22	1Year

#### 3.3. For other test items:

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
Wireless Connectivity Tester	R&S	CMW270	102543	2022/06/21	1Year
Automatic Control Unit	Tonscend	JS0806-2	2118060480	2022/06/21	1Year
Signal Analyzer	KEYSIGHT	N9010B	MY60242456	2022/06/21	1Year
Analog Signal Generator	KEYSIGHT	N5173B	MY61252625	2022/06/21	1Year
UP/DOWN-Converter	R&S	CMW-Z800A	100274	2022/06/21	1Year
Vector Signal Generator	KEYSIGHT	N5182B	MY61252674	2022/06/21	1Year
Frequency Extender	KEYSIGHT	N5182BX07	MY59362541	2022/06/21	1Year
Temperature&Humidity test chamber	ESPEC	EL-02KA	12107166	2022/06/21	1 Year

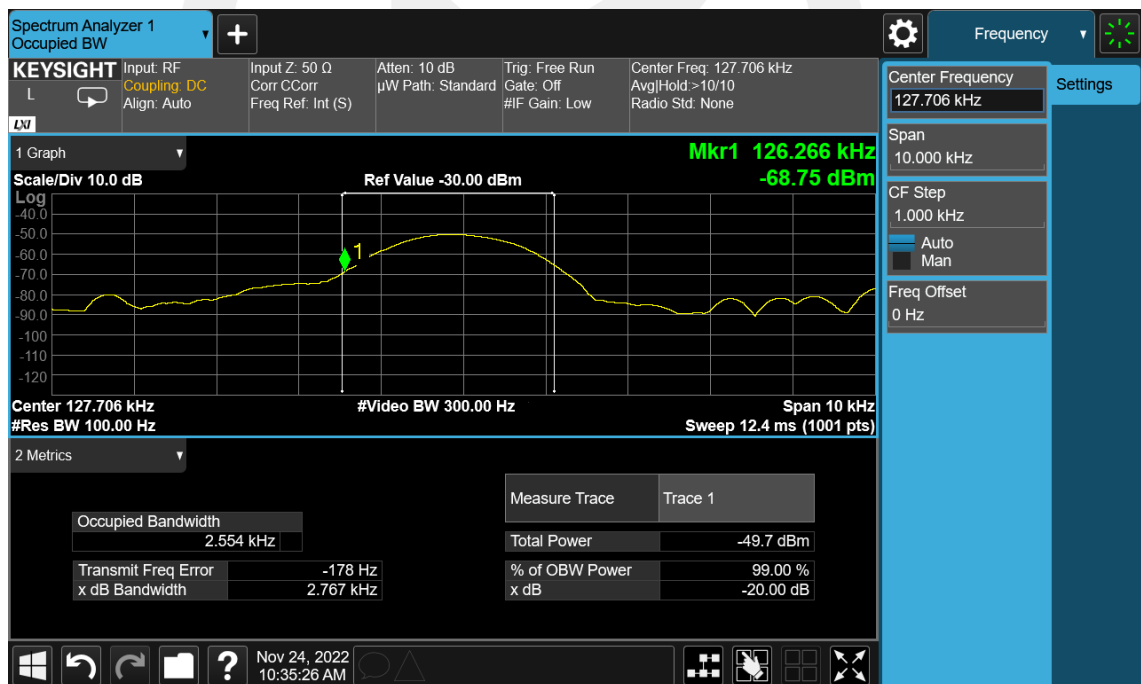
## 4. 20DB BANDWIDTH

### 4.1. Test Procedure

Set to the maximum power setting and enable the EUT transmit continuously  
 Set RBW = 1%-5%OBW  
 Set the video bandwidth (VBW) = 3\*RBW  
 Set Span= 10 kHz  
 Set Detector = Peak.  
 Set Trace mode = max hold.  
 Set Sweep = auto couple.  
 Measure and record the results in the test report.

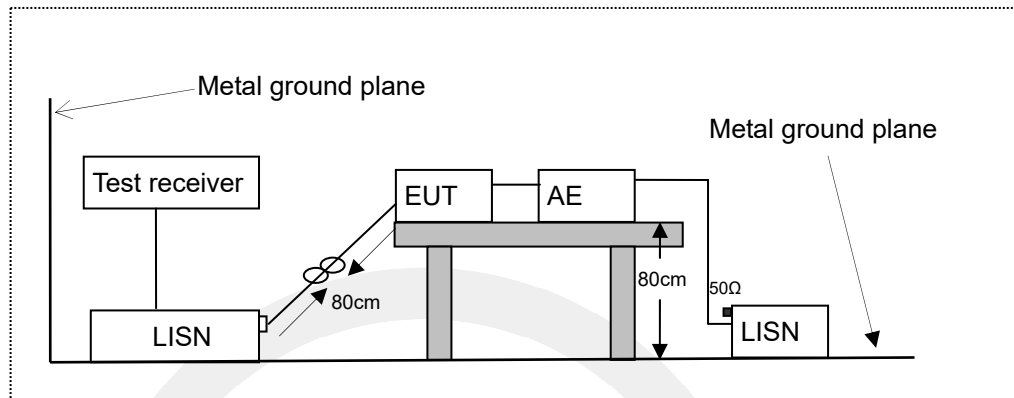
### 4.2. Test Results

Temperature: 24°C                      Test Date: November 24, 2022  
 Humidity: 53 %                        Test By: XSJ  
 20dB Band=2.767 kHz



## 5. POWER LINE CONDUCTED EMISSION MEASUREMENT

### 5.1. Block Diagram of Test Setup



LISN: Line Impedance Stabilization Network  
 AE: Associated equipment  
 EUT: Equipment under test

### 5.2. Limits

FCC Part 15.207

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.

### 5.3. Test Procedure

The EUT was placed on a desk 0.8 m height from the metal ground plane and 0.4 m from the conducting wall of the shielding room and it was kept at least 0.8 m from any other grounded conducting surface. The size of the table will nominally be 1.5 m x 1.0 m.

The rear of the arrangement shall be flush with the back of the supporting tabletop unless that would not be possible or typical of normal use.

All units of equipment forming the system under test (includes the EUT as well as connected peripherals and associated equipment or devices) shall be arranged such that a nominal 0.1 m separation is achieved between the neighboring units.

Connect EUT to the power mains through a line impedance stabilization network (LISN). Where the mains cable supplied by the manufacturer is longer than 1 m, the excess should be folded at the centre into a bundle no longer than 0.4 m, so that its length is shortened to 1 m.

All the support units are connecting to the other LISN.

The LISN provides 50 ohm coupling impedance for the measuring instrument.

Both sides of AC line were checked for maximum conducted interference.

The frequency range from 150 kHz to 30 MHz was sweep.

Set the test-receiver system to quasi peak detect function and average detect function, and to measure the conducted emissions values.

Test results were obtained from the following equation:

Emission Level (dB $\mu$ V) = LISN Factor (dB) + Cable Loss (dB) + Reading (dB $\mu$ V)

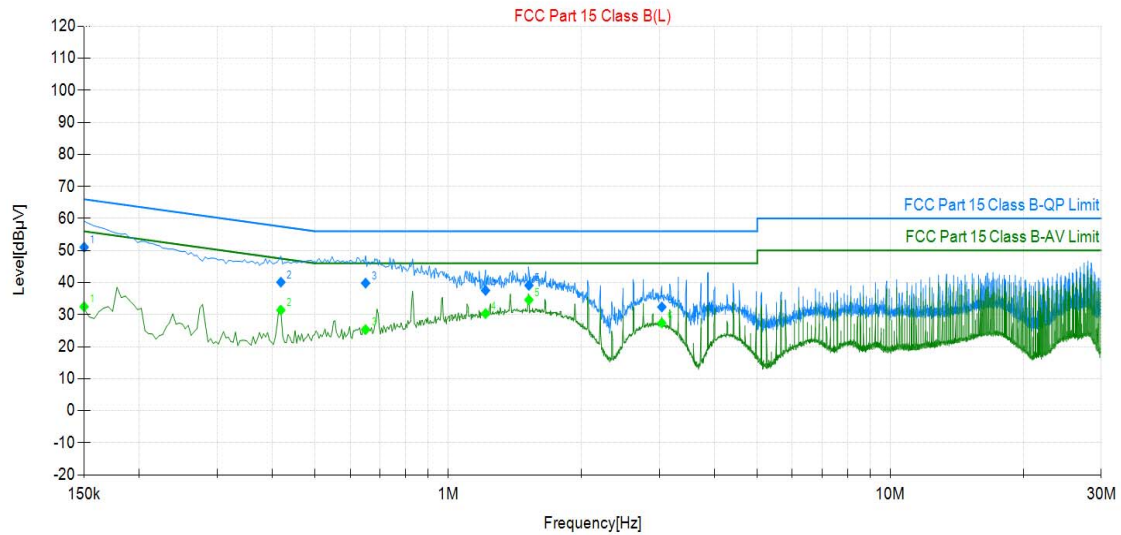
Margin (dB) = Emission Level (dB $\mu$ V) - Limit (dB $\mu$ V)

## 5.4. Measuring Results

**Pass.**

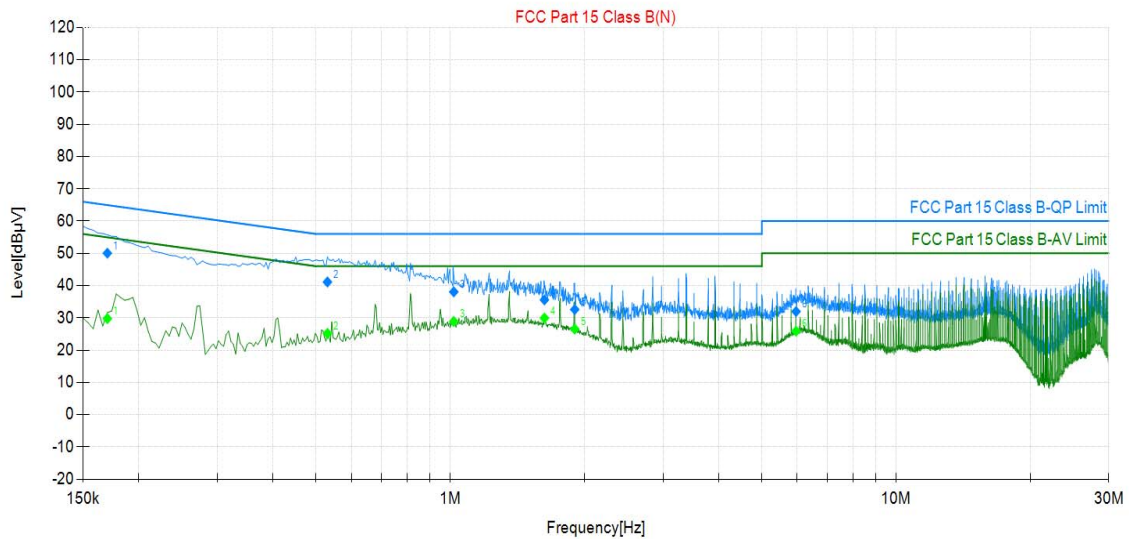


Project Information			
Mode:	Full Load	Voltage:	AC 120V/60Hz
Environment:	Temp:25°C; Humi: 55%	Engineer:	JACK ZHANG



Final Data List											
NO.	Freq. [MHz]	Factor [dB]	QP Reading [dBµV]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Reading [dBµV]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]	Verdict
1	0.150	9.86	41.17	51.03	66.00	14.97	22.61	32.47	56.00	23.53	Pass
2	0.418	9.70	30.41	40.11	57.49	17.38	21.69	31.39	47.49	16.10	Pass
3	0.650	9.73	30.10	39.83	56.00	16.17	15.58	25.31	46.00	20.69	Pass
4	1.214	10.11	27.44	37.55	56.00	18.45	20.21	30.32	46.00	15.68	Pass
5	1.522	10.19	28.93	39.12	56.00	16.88	24.40	34.59	46.00	11.41	Pass
6	3.042	10.12	22.25	32.37	56.00	23.63	17.25	27.37	46.00	18.63	Pass

Project Information			
Mode:	Full Load	Voltage:	AC 120V/60Hz
Environment:	Temp:25°C ; Humi: 55%	Engineer:	JACK ZHANG



Final Data List											
NO.	Freq. [MHz]	Factor [dB]	QP Reading [dBµV]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Reading [dBµV]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]	Verdict
1	0.170	9.86	40.19	50.05	64.96	14.91	19.90	29.76	54.96	25.20	Pass
2	0.530	9.73	31.39	41.12	56.00	14.88	15.43	25.16	46.00	20.84	Pass
3	1.018	9.80	28.26	38.06	56.00	17.94	19.09	28.89	46.00	17.11	Pass
4	1.626	10.14	25.43	35.57	56.00	20.43	19.79	29.93	46.00	16.07	Pass
5	1.902	10.17	22.43	32.60	56.00	23.40	16.37	26.54	46.00	19.46	Pass
6	5.966	9.77	22.20	31.97	60.00	28.03	16.10	25.87	50.00	24.13	Pass

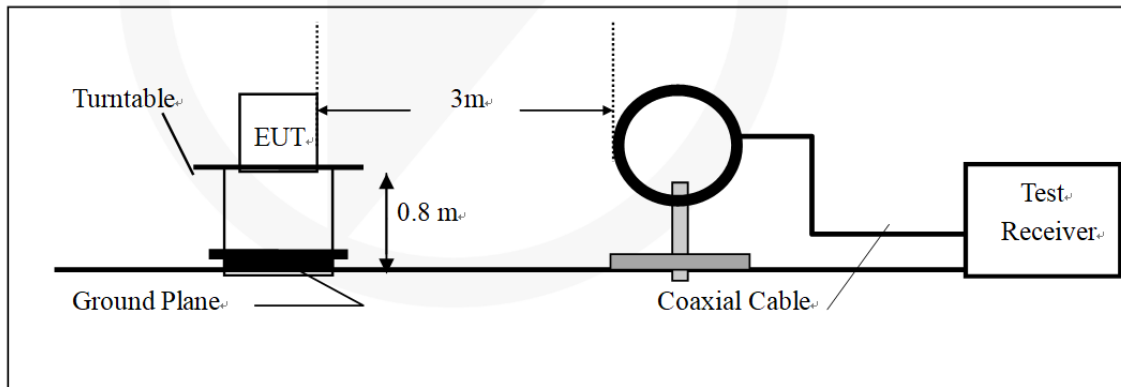
## 6. RADIATED EMISSION TEST

### 6.1. Measurement Procedure

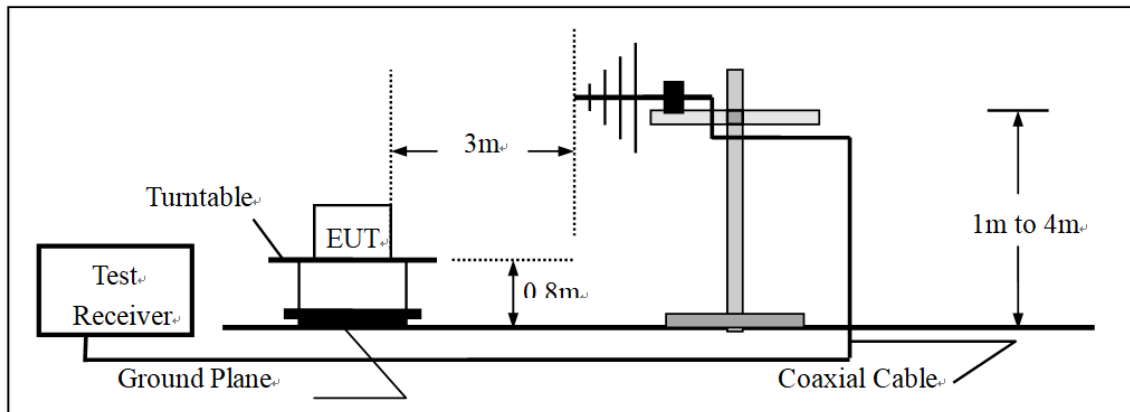
1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measured were complete.
5. Use the following receiver/spectrum analyzer settings:  
 Span = wide enough to fully capture the emission being measured  
 RBW=200Hz for 9KHz to 150KHz,  
 RBW=9kHz for 150KHz to 30MHz,  
 RBW=120KHz for 30MHz to 1GHz  
 VBW  $\geq 3 \times$  RBW  
 Sweep = auto  
 Detector function = QP  
 Trace = max hold

### 6.2. Test SET-UP (Block Diagram of Configuration)

(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



(B) Radiated Emission Test Set-Up, Frequency Below 1000MHz



### 6.3. Radiated Emission Limit

The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table 15.209(a):

FCC Part 15.209				
Frequency (MHz)	Field Strength Limitation		Field Strength Limitation Frequency tion at 3m Measurement Dist	
	(uV/m)	Dist	(uV/m)	(dBuV/m)
0.009 – 0.490	2400 / F(KHz)	300m	10000 * 2400/F(KHz)	20log 2400/F(KHz) + 80
0.490 – 1.705	24000 / F(KHz)	30m	100 * 24000/F(KHz)	20log 24000/F(KHz) + 40
1.705 – 30.00	30	30m	100* 30	20log 30 + 40
30.0 – 88.0	100	3m	100	20log 100
88.0 – 216.0	150	3m	150	20log 150
216.0 – 960.0	200	3m	200	20log 200
Above 960.0	500	3m	500	20log 500

### 15.205 Restricted bands of operation

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
10.495-0.505	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	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)
13.36-13.41			

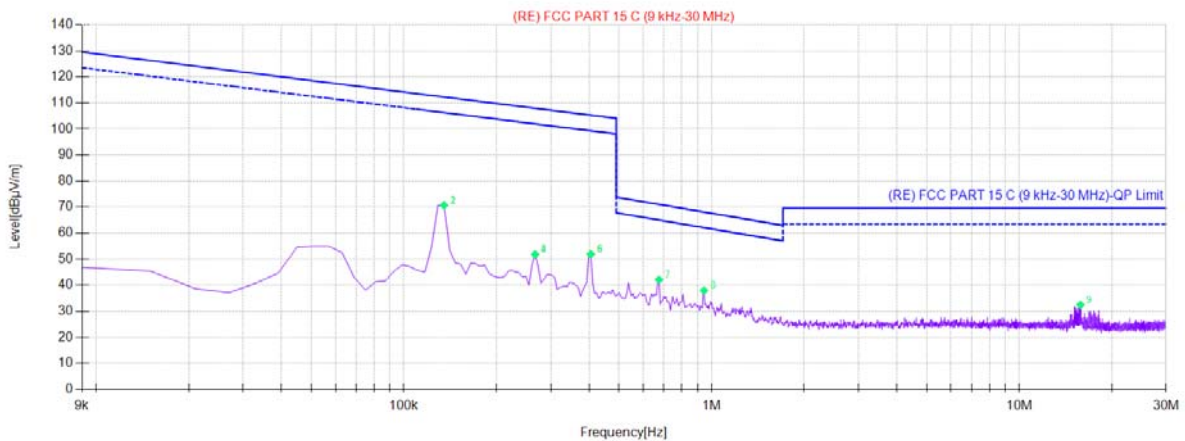
- Remark:
1. Emission level in dBuV/m=20 log (uV/m)
  2. Measurement was performed at an antenna to the closed point of EUT distance of meters.
  3. Only spurious frequency is permitted to locate within the Restricted Bands specified in provision of § 15.205, and the emissions located in restricted bands also comply with 15.209 limit.



## 6.4.Measurement Result

9KHz-30 MHz:

Project Information			
Mode:	Full Load	Voltage:	AC 120/60Hz
Environment:	Temp: 18°C; Humi:54%	Engineer:	Lucas Xu

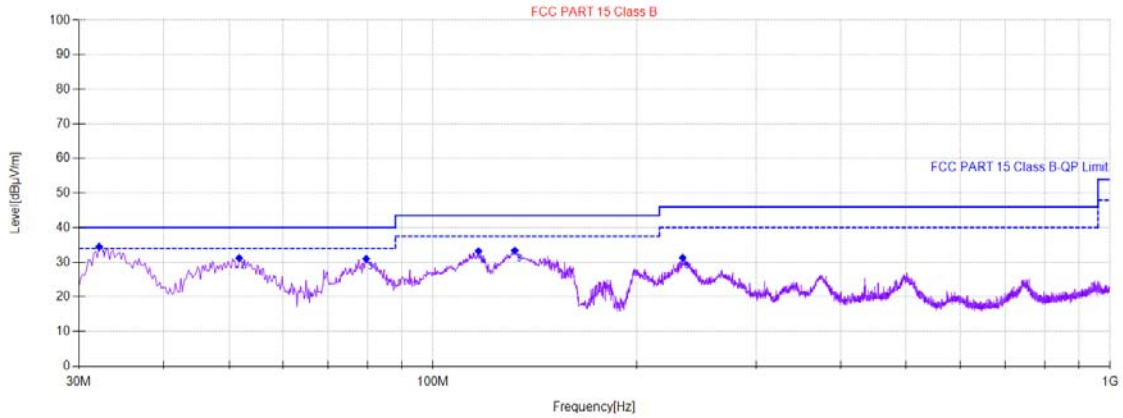


PK Final Data List									
NO.	Freq. [MHz]	PK Reading [dBµV/m]	Factor [dB]	PK Value [dBµV/m]	PK Limit [dBµV/m]	PK Margin [dB]	Height [cm]	Angle [°]	Verdict
1	0.135	50.70	19.97	70.67	112.28	41.61	100	104	PASS
2	0.267	31.64	20.13	51.77	107.94	56.17	100	111	PASS
3	0.405	31.86	20.05	51.91	105.29	53.38	100	139	PASS
4	0.6749	22.00	20.07	42.07	71.02	28.95	100	129	PASS
5	0.9449	17.71	20.18	37.89	68.10	30.21	100	118	PASS
6	15.8114	12.69	19.72	32.41	69.54	37.13	100	221	PASS

AV Final Data List									
NO.	Freq. [MHz]	AV Reading [dBµV/m]	Factor [dB]	AV Value [dBµV/m]	AV Limit [dBµV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Verdict
1	0.135	41.33	19.97	61.30	112.28	50.98	100	104	PASS
2	0.267	23.64	20.13	43.77	107.94	64.17	100	111	PASS
3	0.405	24.86	20.05	44.81	105.29	60.38	100	139	PASS

30MHz-1GHz:

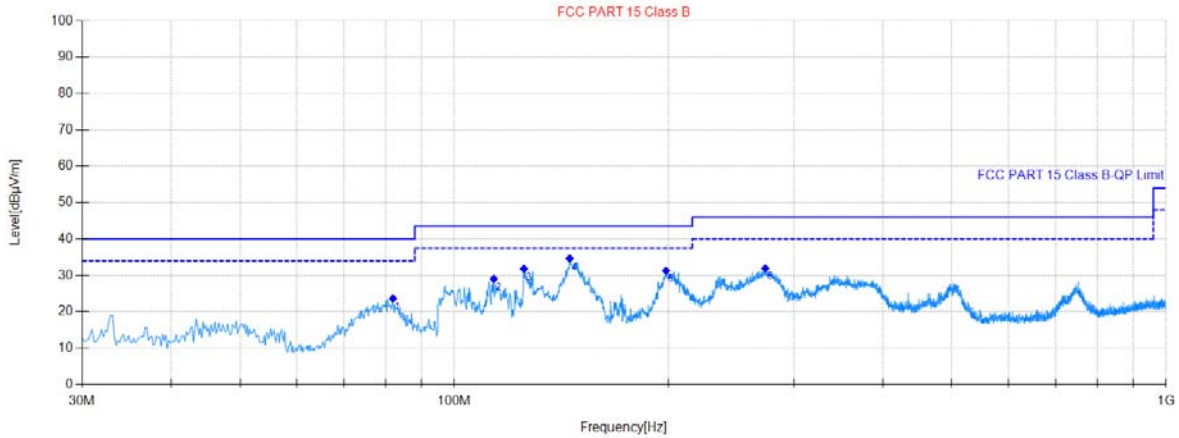
Project Information			
Mode:	Full Load	Voltage:	AC 120/60Hz
Environment:	Temp: 25°C; Humi:60%	Engineer:	JACK ZHANG



### Final Data List

NO.	Freq. [MHz]	QP Reading [dBµV/m]	Factor [dB]	QP Value [dBµV/m]	QP Limit [dBµV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity	Verdict
1	32.134	65.87	-31.39	34.48	40.00	5.52	100	139	Vertical	Pass
2	51.732	61.76	-30.52	31.24	40.00	8.76	100	97	Vertical	Pass
3	79.674	63.97	-32.95	31.02	40.00	8.98	100	97	Vertical	Pass
4	116.735	65.90	-32.67	33.23	43.50	10.27	100	139	Vertical	Pass
5	132.064	67.08	-33.67	33.41	43.50	10.09	100	139	Vertical	Pass
6	233.741	60.92	-29.63	31.29	46.00	14.71	100	209	Vertical	Pass

Project Information			
Mode:	Full Load	Voltage:	AC 120/60Hz
Environment:	Temp: 25°C; Humi:60%	Engineer:	JACK ZHANG



Final Data List										
NO.	Freq. [MHz]	QP Reading [dBµV/m]	Factor [dB]	QP Value [dBµV/m]	QP Limit [dBµV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity	Verdict
1	82.002	56.36	-32.69	23.67	40.00	16.33	200	83	Horizontal	Pass
2	113.631	61.25	-32.21	29.04	43.50	14.46	200	42	Horizontal	Pass
3	125.273	65.24	-33.39	31.85	43.50	11.65	200	111	Horizontal	Pass
4	145.259	68.25	-33.63	34.62	43.50	8.88	200	111	Horizontal	Pass
5	198.426	62.15	-30.87	31.28	43.50	12.22	100	106	Horizontal	Pass
6	273.519	60.47	-28.51	31.96	46.00	14.04	100	130	Horizontal	Pass

## 7. ANTENNA APPLICATION

### 7.1. Antenna Requirement

Standard	Requirement
FCC CRF Part 15.203	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 shall be considered sufficient to comply with the provisions of this section. 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. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

For intentional device, according to FCC 47 CFR Section 15.203, 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.

### 7.2. Result

Pass

Note: The EUT has 1 antenna: The internal antenna gain is 0.0 dBi;

- Antenna use a permanently attached antenna which is not replaceable.
- Not using a standard antenna jack or electrical connector for antenna replacement
- The antenna has to be professionally installed (please provide method of installation)

which in accordance to section 15.203, please refer to the internal photos.

\*\*\* End of Report \*\*\*

# 声明 Statement

1. 本报告无授权批准人签字及“检验报告专用章”无效;  
This report will be void without authorized signature or special seal for testing report.
2. 未经许可本报告不得部分复制;  
This report shall not be copied partly without authorization.
3. 本报告的检测结果仅对送测样品有效, 委托方对样品的代表性和资料的真实性负责;  
The test results or observations are applicable only to tested sample. Client shall be responsible for representativeness of the sample and authenticity of the material.
4. 本检测报告中检测项目标注有特殊符号则该项目不在资质认定范围内, 仅作为客户委托、科研、教学或内部质量控制等目的使用;  
The observations or tests with special mark fall outside the scope of accreditation, and are only used for purpose of commission, research, training, internal quality control etc.
5. 本检测报告以实测值进行符合性判定, 未考虑不确定度所带来的风险, 本实验室不承担相关责任, 特别约定、标准或规范中有明确规定的除外;  
The test results or observations are provided in accordance with measured value, without taking risks caused by uncertainty into account. Without explicit stipulation in special agreements, standards or regulations, EMTEK shall not assume any responsibility.
6. 对本检测报告若有异议, 请于收到报告之日起 20 日内提出;  
Objections shall be raised within 20 days from the date receiving the report.