TEST REPORT

Product Name	:	Long Distance Wireless Charger
Model Number	:	QI30
FCC ID	:	2ARK8-QI30

Prepared for	:	Loctek Ergonomic Technology Corp
Address	:	588 Qihang South Road Binhai Industrial Zone Yinzhou District Ningbo, Zhejiang 315145 P.R. China
Prepared by	:	EMTEK (SHENZHEN) CO., LTD.
Address	:	Building69, Majialong Industry Zone, Nanshan District, Shenzhen, Guangdong, China Tel: (0755) 26954280 Fax: (0755) 26954282

Report Number	:	ES200610009W01
Date(s) of Tests	:	July 02, 2020 to August 03, 2020
Date of issue	:	August 04, 2020

TABLE OF CONTENT

TEST REPORT DESCRIPTION

Applicant	:	Loctek Ergonomic Technology Corp
Address	:	588 Qihang South Road Binhai Industrial Zone Yinzhou District Ningbo, Zhejiang 315145 P.R. China.
Manufacturer	:	Loctek Ergonomic Technology Corp
Address	:	588 Qihang South Road Binhai Industrial Zone Yinzhou District Ningbo, Zhejiang 315145 P.R. China.
EUT	:	Long Distance Wireless Charger
Model Name	:	QI30
Trademark	:	N/A

We hereby certify that:

The above equipment was tested by EMTEK (NINGBO) 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	:	July 02, 2020 to August 03, 2020
Prepared by	:	Sewen Guo /Editor
Reviewer	:	Joe Xia/Supervisor
Approved & Authorized Signer	:	Lisa Wang/Manager

EMTEK (SHENZHEN) CO., LTD. TESTING

Modified Information

Version	Report No.	Revision Data	Summary
Ver.1.0	ES200610009W01	/	Original Version

1. SUMMARY OF TEST RESULTS

EMISSION		
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)

EUT	:	Long Distance Wireless Charger
Model Number	:	QI30
Power Rating	:	Input : DC 24~36V Output: Wireless charge 5W/10W
Modulation:		ASK
Operation Frequency for WPT	:	110KHz-175KHz
Maximum Power Rate	:	77.59 dBuV/m
Antenna Type:	:	Induction Coil antenna
Antenna Gain:		0 dBi
Date of Test	:	July 02, 2020 to August 03, 2020

2.2. Input / Output Ports

Port #	Name	Type*	Cable Max. >3m	Cable Shielded	Comments
1	AC port	AC	No	N/A	None
2	Type-C	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.	ON

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, 2018.11.30
The certificate is valid until 2022.10.28
The Laboratory has been assessed and proved to be in compliance with CNAS-CL01:2018 (identical to ISO/IEC 17025:2017)
The Certificate Registration Number is L2291

Accredited by FCC, August 09, 2018
Designation Number: CN1204
Test Firm Registration Number: 882943
Accredited by A2LA, August 08, 2018
The Certificate Registration Number is 4321.01

Accredited by Industry Canada, November 09, 2018
The Conformity Assessment Body Identifier is CN0008

Name of Firm : EMTEK(SHENZHEN) CO., LTD.
Site Location : Building 69, Majialong Industry Zone,Nanshan District, Shenzhen, Guangdong, China

2.6. Description of Support Device

No.	Equipment	Trade name	Model	S/N	Power Cord
1	AC/DC Switching Power Supply	/	W52RA198-290018	/	/

2.7. Measurement Uncertainty

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

Parameter	Uncertainty
Radio Frequency	±1x10^-5
Conducted Emissions Test	±2.0dB
Radiated Emission Test	±2.0dB
Occupied Bandwidth Test	±1.0dB
Temperature	±0.5℃
Humidity	±3%

Measurement Uncertainty for a level of Confidence of 95%

3. MEASURING DEVICE AND TEST EQUIPMENT

3.1. Conducted Emission Test Equipment

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	DUE CAL.
Test Receiver	Rohde & Schwarz	ESCS30	828985/018	05/18/2020	05/17/2021
L.I.S.N.	Schwarzbeck	NNLK8129	8129203	05/18/2020	05/17/2021
50Ω Coaxial Switch	Anritsu	MP59B	M20531	05/18/2020	05/17/2021
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100006	05/18/2020	05/17/2021
Voltage Probe	Rohde & Schwarz	TK9416	N/A	05/18/2020	05/17/2021
I.S.N	Rohde & Schwarz	ENY22	1109.9508.02	05/18/2020	05/17/2021

3.2. For 3m Radiated Emission Measurement 9K-30M (3m chamber 1#)

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	DUE CAL.
EMI Test Receiver	Rohde & Schwarz	ESU	1302.6005.26	05/18/2020	05/17/2021
Loop Antenna	Schwarzbeck	FMZB 1519	1519-012	05/18/2020	05/17/2021
Cable		3M SF104-26.5	295838/4	05/18/2020	05/17/2021
Cable		6M SF104-26.5	295840/4	05/18/2020	05/17/2021

3.3. For 3m Radiated Emission Measurement 30M-1G (3m chamber 1#)

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
EMI Test Receiver	Rohde & Schwarz	ESU	1302.6005.26	05/18/2020	05/17/2021
Pre-Amplifier	HP	8447F	2944A07999	05/18/2020	05/17/2021
Bilog Antenna	Schwarzbeck	VULB9163	142	05/18/2020	05/17/2021
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170399	05/18/2020	05/17/2021
Horn Antenna	Schwarzbeck	BBHA 9120	D143	05/18/2020	05/17/2021
Cable	Schwarzbeck	AK9513	ACRX1	05/18/2020	05/17/2021
Cable	Rosenberger	N/A	FP2RX2	05/18/2020	05/17/2021
Cable	Schwarzbeck	AK9513	CRPX1	05/18/2020	05/17/2021
Cable	Schwarzbeck	AK9513	CRRX2	05/18/2020	05/17/2021

4. 20DB BANDWIDTH

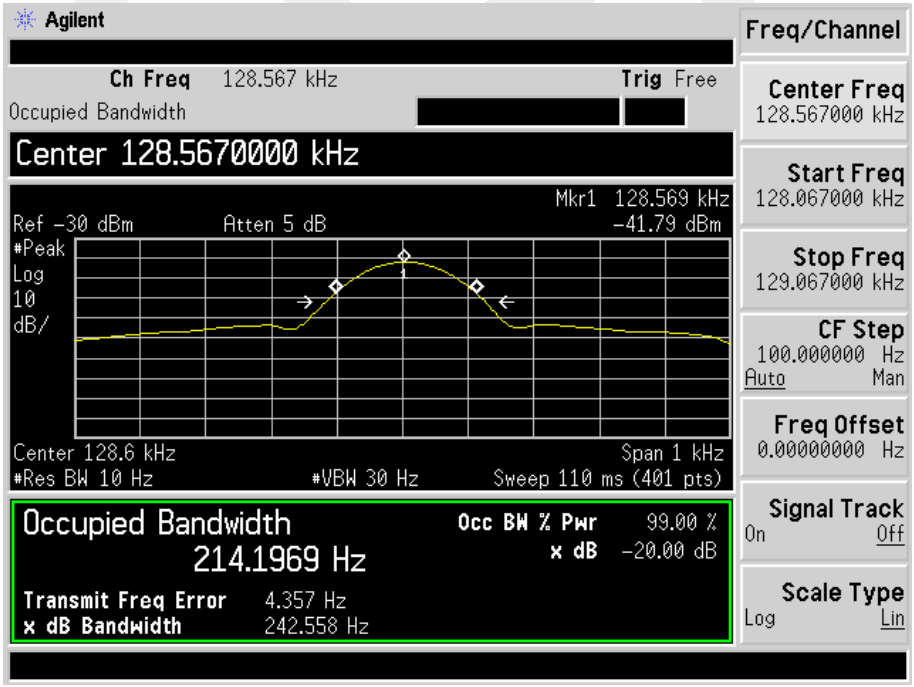
4.1. Test Procedure

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= 1KHz
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

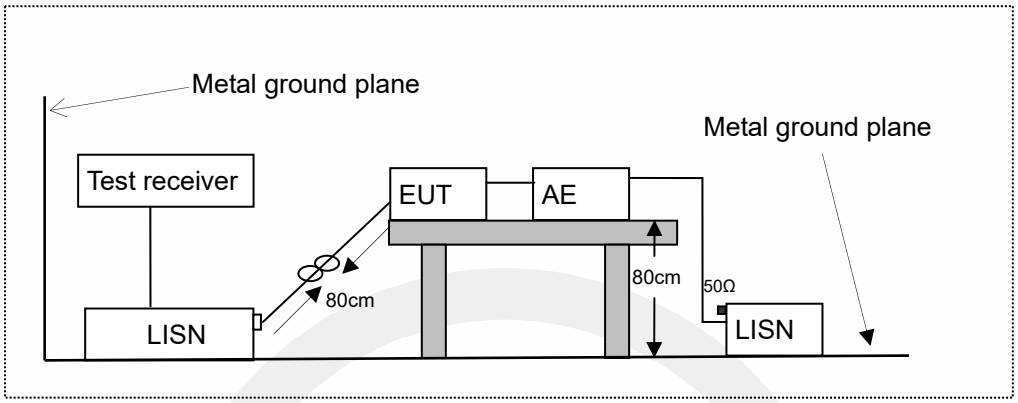
Temperature:	24℃	Test Date:	July 3, 2020
Humidity:	53 %	Test By:	XW

20dB Band=242.558Hz



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 (dBμV)	
			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 x1.0 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.

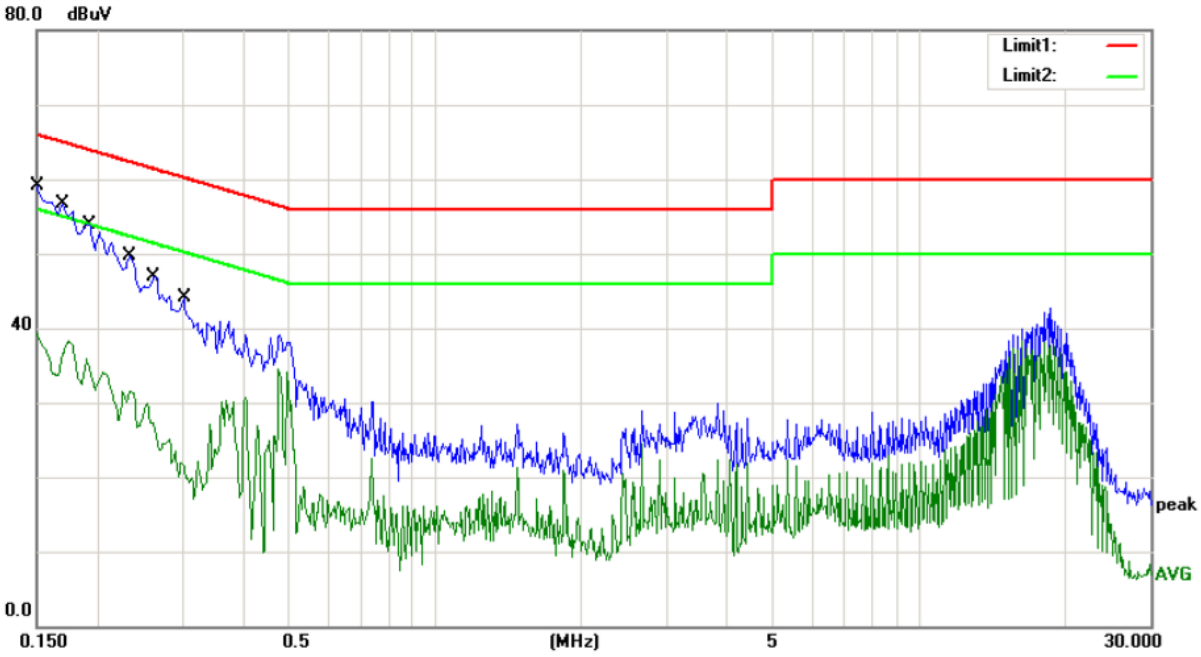
The frequency range from 150 kHz to 30 MHz was sweep.

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 (dBμV) = LISN Factor (dB) + Cable Loss (dB) + Reading (dBμV)
Margin (dB) = Emission Level (dBμV) - Limit (dBμV)

5.4. Measuring Results

Pass.



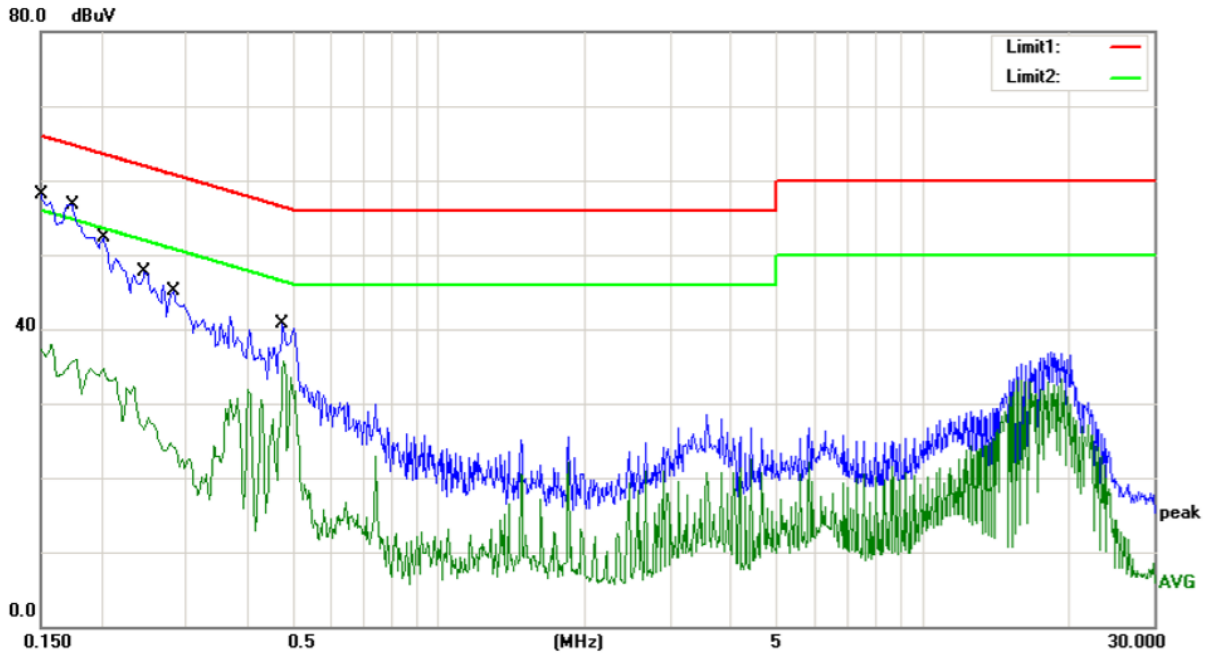
Site site #1 Phase: L1 Temperature: 24

Limit: (CE)FCC PART 15.207_QP Power: AC 120V/60Hz Humidity: 50 %

Mode: Full Load

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1500	49.00	10.10	59.10	66.00	-6.90	QP	
2		0.1500	29.20	10.10	39.30	56.00	-16.70	AVG	
3		0.1700	46.50	10.09	56.59	64.96	-8.37	QP	
4		0.1700	26.50	10.09	36.59	54.96	-18.37	AVG	
5		0.1944	42.80	10.09	52.89	63.85	-10.96	QP	
6		0.1944	23.60	10.09	33.69	53.85	-20.16	AVG	
7		0.2340	39.60	10.09	49.69	62.31	-12.62	QP	
8		0.2340	21.40	10.09	31.49	52.31	-20.82	AVG	
9		0.2644	36.60	10.09	46.69	61.29	-14.60	QP	
10		0.2644	15.50	10.09	25.59	51.29	-25.70	AVG	
11		0.3020	34.00	10.08	44.08	60.19	-16.11	QP	
12		0.3020	10.80	10.08	20.88	50.19	-29.31	AVG	



Site site #1 Phase: N Temperature: 24
Limit: (CE)FCC PART 15.207_QP Power: AC 120V/60Hz Humidity: 50 %
Mode: Full Load
Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1500	48.00	10.07	58.07	66.00	-7.93	QP	
2		0.1500	27.30	10.07	37.37	56.00	-18.63	AVG	
3		0.1740	46.60	10.08	56.68	64.77	-8.09	QP	
4		0.1740	25.60	10.08	35.68	54.77	-19.09	AVG	
5		0.2020	42.20	10.08	52.28	63.53	-11.25	QP	
6		0.2020	24.30	10.08	34.38	53.53	-19.15	AVG	
7		0.2460	37.50	10.08	47.58	61.89	-14.31	QP	
8		0.2460	16.50	10.08	26.58	51.89	-25.31	AVG	
9		0.2820	34.90	10.09	44.99	60.76	-15.77	QP	
10		0.2820	14.00	10.09	24.09	50.76	-26.67	AVG	
11		0.4740	30.60	10.11	40.71	56.44	-15.73	QP	
12		0.4740	24.00	10.11	34.11	46.44	-12.33	AVG	

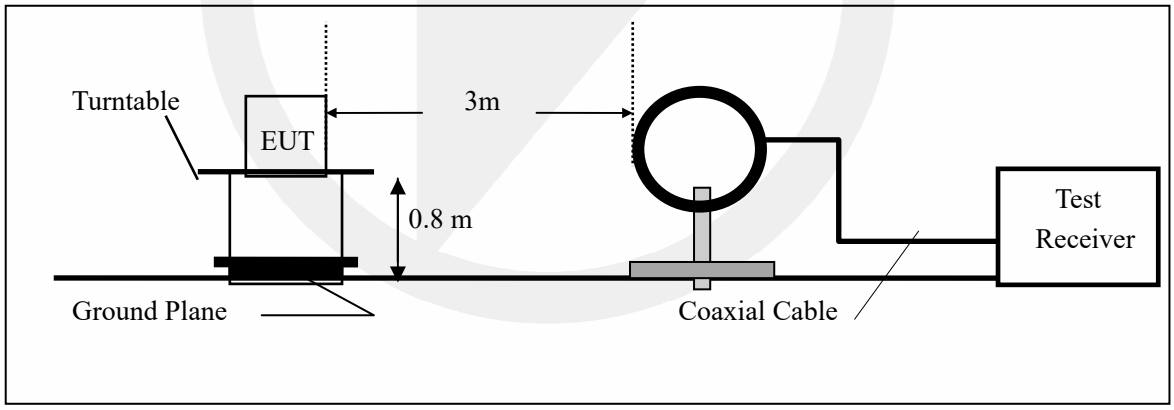
6. RADIATED EMISSION TEST

6.1. Measurement Procedure

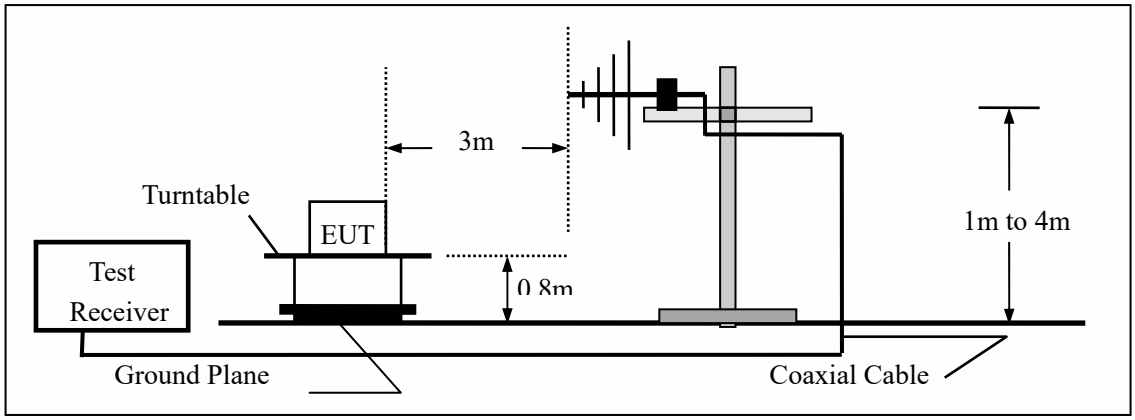
1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above 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 ≥ 3*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

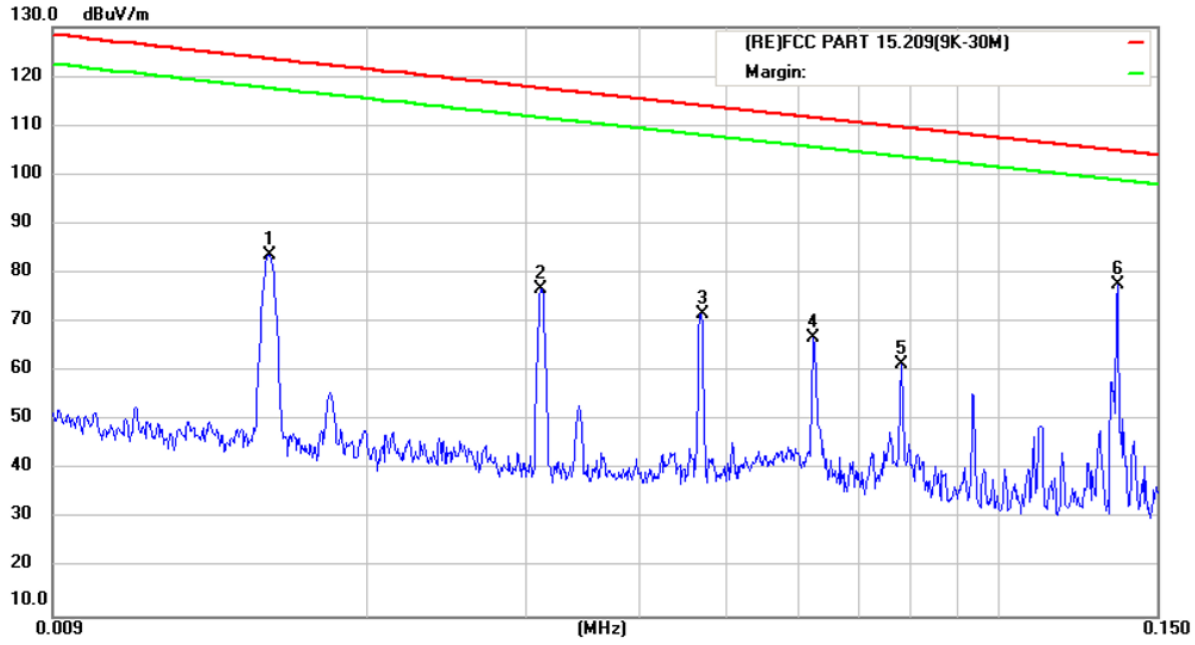
15.205 Restricted bands of operation

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 ξ 15.205, and the emissions located in restricted bands also comply with 15.209 limit.

6.4. Measurement Result

9KHz-150KHz:



Site Radiated Emission 3m #1 Polarization: Temperature: 29.5

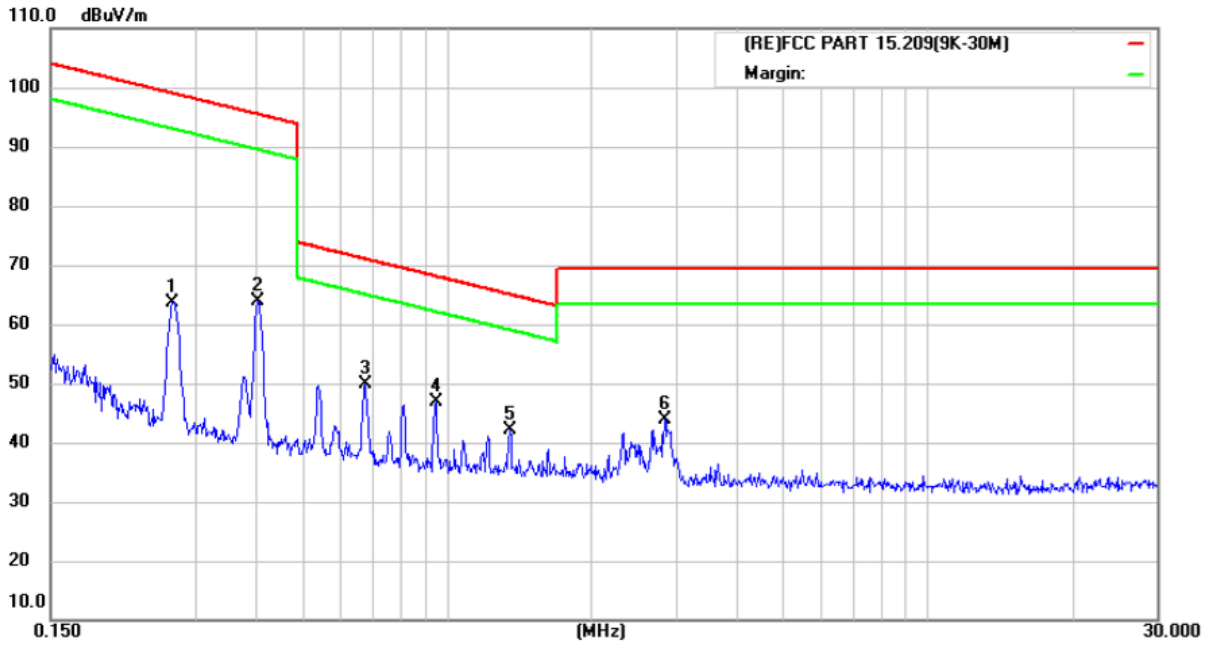
Limit: (RE)FCC PART 15.209(9K-30M) Power: AC 120V/60Hz Humidity: 48 %

Mode:Full Load

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		0.0156	62.91	20.74	83.65	123.56	-39.91	peak			
2		0.0312	55.81	20.84	76.65	117.57	-40.92	peak			
3		0.0470	50.60	21.10	71.70	114.04	-42.34	peak			
4		0.0625	46.23	20.75	66.98	111.58	-44.60	peak			
5		0.0781	40.95	20.42	61.37	109.65	-48.28	peak			
6	*	0.1356	56.74	20.85	77.59	104.89	-27.30	peak			

150KHz-30MHz:



Site Radiated Emission 3m #1 | Polarization: | Temperature: 29.5

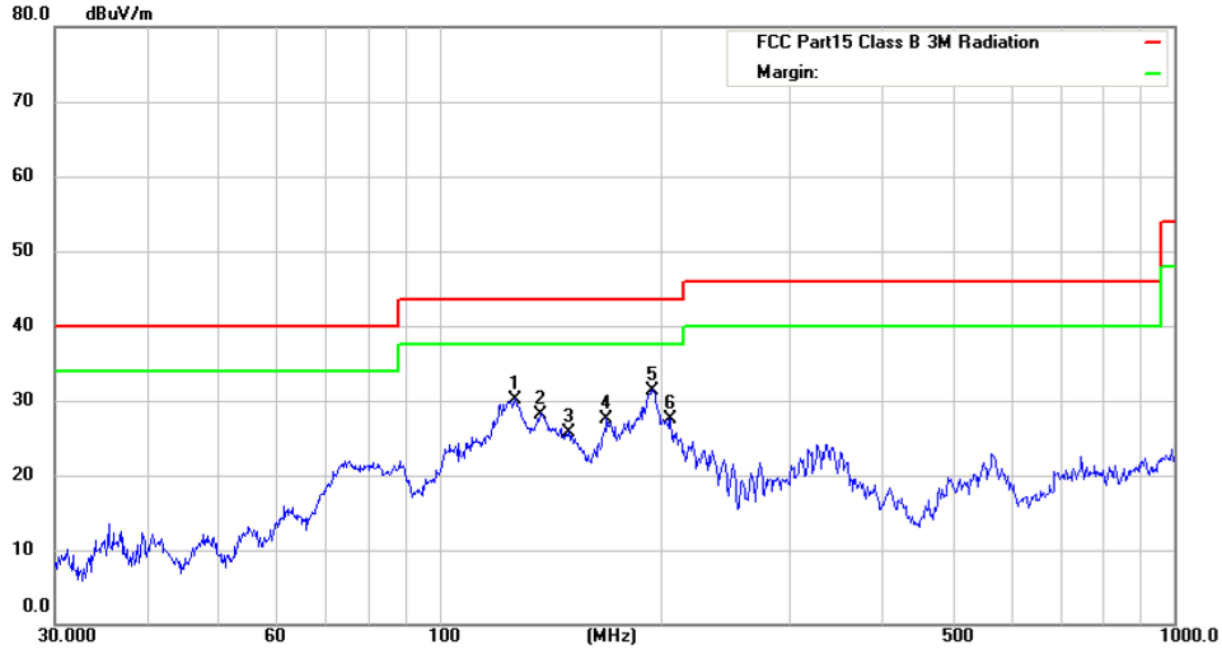
Limit: (RE)FCC PART 15.209(9K-30M) | Power: AC 120V/60Hz | Humidity: 48 %

Mode:Full Load

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		0.2686	42.65	21.05	63.70	98.99	-35.29	peak			
2		0.4040	42.79	21.05	63.84	95.47	-31.63	peak			
3	*	0.6753	28.96	20.99	49.95	71.02	-21.07	QP			
4		0.9481	25.81	20.96	46.77	68.08	-21.31	QP			
5		1.3521	21.39	20.85	42.24	65.01	-22.77	QP			
6		2.8389	23.37	20.43	43.80	69.50	-25.70	QP			

30MHz-1GHz:



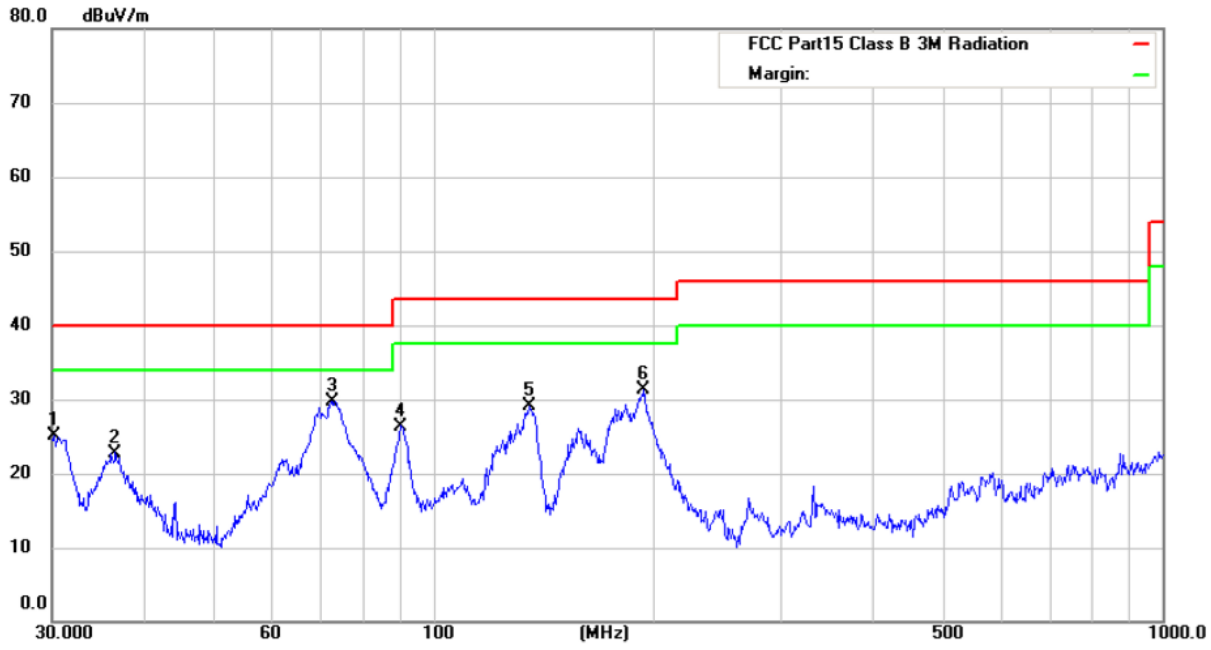
Site Radiated Emission 3m #1 Polarization: **Horizontal** Temperature: 24

Limit: FCC Part15.209 Power: AC 120V/60Hz Humidity: 55 %

Mode:Full Load

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		126.7723	56.08	-25.88	30.20	43.50	-13.30	QP			
2		137.4202	55.63	-27.43	28.20	43.50	-15.30	QP			
3		150.0108	52.03	-26.23	25.80	43.50	-17.70	QP			
4		169.0053	54.31	-26.71	27.60	43.50	-15.90	QP			
5	*	195.1363	54.46	-23.06	31.40	43.50	-12.10	QP			
6		206.3975	51.14	-23.64	27.50	43.50	-16.00	QP			



Site Radiated Emission 3m #1 Polarization: *Vertical* Temperature: 24

Limit: FCC Part15.209 Power: AC 120V/60Hz Humidity: 55 %

Mode:Full Load

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		30.2111	50.71	-25.61	25.10	40.00	-14.90	QP			
2		36.6374	46.39	-23.59	22.80	40.00	-17.20	QP			
3	*	72.8466	56.19	-26.49	29.70	40.00	-10.30	QP			
4		90.2204	51.14	-24.74	26.40	43.50	-17.10	QP			
5		135.5061	56.35	-27.25	29.10	43.50	-14.40	QP			
6		194.4534	54.39	-23.09	31.30	43.50	-12.20	QP			

7. ANNTENNA 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 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；
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   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.

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   Objections shall be raised within 20 days from the date receiving the report.