TEST REPORT

Product Name	:	DC EV Charging Station
Model Number	:	BDCa-D-UL
FCC ID	:	2BKHQ-BDCA-D-UL

Prepared for	:	Zhejiang Benyi New Energy Co.,Ltd.
Address	:	Shuanghuanglou Industrial Zone, Beibaixiang Yueqing,zhejiang P.R. China
Prepared by	:	EMTEK(NINGBO) CO., LTD.
Address	:	No. 8, Building 8, Lane 216, Qingyi Road, Ningbo Hi-Tech Zone, Ningbo, Zhejiang, China Tel: +86-574-27907998 Fax: +86-574-27721538

Report Number	:	ENB2408020036W00101R
Date(s) of Tests	:	August 02, 2024 to August 23, 2024
Date of issue	:	August 30, 2024

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TEST RESULT CERTIFICATION

Applicant	:	Zhejiang Benyi New Energy Co.,Ltd.
Address	:	Shuanghuanglou Industrial Zone, Beibaixiang Yueqing,zhejiang P.R. China
Manufacturer	:	Zhejiang Benyi New Energy Co.,Ltd.
Address	:	Shuanghuanglou Industrial Zone, Beibaixiang Yueqing,zhejiang P.R. China
EUT	:	DC EV Charging Station
Model Name	:	BDCa-D-UL
Trademark	:	B

Measurement Procedure Used:

APPLICABLE STANDARDS	
STANDARD	**TEST RESULT**
FCC 47 CFR Part 2, Subpart J FCC 47 CFR Part 15, Subpart C	PASS

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 2 and Part 15.225.

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

Date of Test : July 29, 2022 to August 23, 2022

Prepared by : June Gao/Engineer

Reviewer : Lucas Xu/Supervisor

Approved & Authorized Signer : Tony Wei/Manager

EMTEK(NINGBO) CO.,LTD TESTING

1 EUT TECHNICAL DESCRIPTION

Characteristics	Description
Product:	DC EV Charging Station
Model Number:	BDCa-D-UL (Note: The letter "a" stands for power, 60kW, 90kW, 120kW,150,180,210, 240. The more numbers, the more power. In addition to the power, the schematic design, PCB Layout, etc. are the same. We chose the most powerful BDC240-D-UL for testing.)
Sample Number:	ENB2408020036W001-1-1
Device Type:	RFID
Modulation:	ASK modulation
Operating Frequency Range(s):	13.553-13.567MHz
Channel Frequency:	13.56MHz
Number of Channels:	1 channel
Max Transmit Power:	56.16 dBuV/m
Antenna Type :	PCB Antenna
Antenna Gain:	2.0 dBi
Power supply:	Input : AC 480±15%V, 160 A, 50/60Hz Output: DC 150~1000 V, 0~250 A, 240KW
Temperature Range:	-10°C ~ +60°C

Note: *for more details, please refer to the User's manual of the EUT.*

2 SUMMARY OF TEST RESULT

FCC Part Clause	Test Parameter	Verdict	Remark
2.1049	Occupied Bandwidth	PASS	
15.225(e)	Frequency stability	PASS	
15.225(d) 15.209	Radiated Spurious Emissions	PASS	
15.207	Conducted Emission	PASS	
NOTE1: N/A (Not Applicable)			

RELATED SUBMITTAL(S) / GRANT(S):

This submittal(s) (test report) is intended for FCC ID: 2BKHQ-BDCA-D-UL filing to comply with Section 15.225 of the FCC Part 15, Subpart C Rules.

3 TEST METHODOLOGY

3.1 GENERAL DESCRIPTION OF APPLIED STANDARDS

According to its specifications, the EUT must comply with the requirements of the following standards:
FCC 47 CFR Part 2, Subpart J
FCC 47 CFR Part 15, Subpart C

3.2 MEASUREMENT EQUIPMENT USED

3.2.1 Conducted Emission Test Equipment

Equ. No.	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
ENE-002	EMI Test Receiver	R & S	ESCI	101107	July 02, 2024	1 Year
ENE-158	L.I.S.N	Schwarzbeck	NNLK 8129	0373	Nov 17, 2023	1 Year
ENE-004	L.I.S.N	Schwarzbeck	NSLK 8126	8126-462	July 02, 2024	1 Year
ENE-162-1	RF Cable	TIMES	2M(N-N)	605236-0001	May 30, 2024	1 Year
ENE-070	Pulse Limiter	Schwarzbeck	VTSD 9561F-N	00525	Mar 08, 2024	1 Year
ENE-150	Conduction Test Room 2#	SKET	6.5*5*4m	/	Apr 17, 2023	3 Year

3.2.2 Radiated Emission Test Equipment

Equ.No.	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
ENE-185	EMI Test Receiver	R&S	ESR7	102480	Apr 25, 2024	1 Year
ENE-188	Low Frequency Field Antenna	Schwarzbeck	FMZB 1513-60	00026	Aug 24, 2022	2 Year
ENE-279-1	RF Cable	Rosenberger	L17-C001-7000	/	May 30, 2024	1 Year
ENE-279-6	RF Cable	Rosenberger	L08-C446-1500	/	May 30, 2024	1 Year
ENE-280-1	RF Cable	Rosenberger	L17-C001-3500	/	May 30, 2024	1 Year
ENE-280-2	RF Cable	Rosenberger	L17-C001-1500	/	May 30, 2024	1 Year
ENE-204	Low Frequency Notch Filter RF Switching	JS Denki	JSDSW-F	JSDSW2211D02	Apr 25, 2024	1 Year
ENE-190	Antenna Multiple	Schwarzbeck	VULB 9163	01499	May 18, 2024	2 Year
ENE-195	Pre-Amplifier	JS Denki	PA09K03-40	JSPA21019	Apr 25, 2024	1 Year
ENE-204	Low Frequency Notch Filter RF Switching	JS Denki	JSDSW-F	JSDSW2211D02	Apr 25, 2024	1 Year
ENE-251	6dB Attenuator	Mini-Circuits	UNAT-6+	11542	July 02, 2024	1 Year
ENE-279-2	RF Cable	Rosenberger	L17-C001-3500	/	May 30, 2024	1 Year
ENE-279-3	RF Cable	Rosenberger	L17-C001-150	/	May 30, 2024	1 Year

			0			
ENE-279-4	RF Cable	Rosenberger	/	/	May 30, 2024	1 Year
ENE-279-5	RF Cable	Rosenberger	/	/	May 30, 2024	1 Year
ENE-144	3-Meter Anechoic Chamber2#	SKET	9*6*6m	/	June 19, 2022	3 Year

3.2.3 Radio Frequency Test Equipment

Equ. No.	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
ENE-256	EXA Signal Anaalyzer	Keysight	N9010B	MY62060219	July 02, 2024	1 Year

3.3 DESCRIPTION OF TEST MODES

The EUT has been tested under its typical operating condition.
The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.
The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

Pre-defined engineering program for regulatory testing used to control the EUT for staying in continuous transmitting mode is programmed.

4 FACILITIES AND ACCREDITATIONS

4.1 FACILITIES

All measurement facilities used to collect the measurement data are located at

No. 8, Building 8, Lane 216, Qingyi Road, Ningbo Hi-Tech Zone, Ningbo, Zhejiang, China
The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.10 and CISPR Publication 22.

4.2 LABORATORY ACCREDITATIONS AND LISTINGS

Site Description

EMC Lab. : **Accredited by CNAS**
The Certificate Registration Number is L6666.
The Laboratory has been assessed and proved to be in compliance with CNAS-CL01:2018 (identical to ISO/IEC 17025:2017)

Designation by FCC
Designation Number: CN1354
Test Firm Registration Number: 427606

Accredited by A2LA
The certificate is valid until May 31, 2025

Accredited by Industry Canada
The Conformity Assessment Body Identifier is CN0114
Test Firm Registration Number: 9469A

Name of Firm : EMTEK (NINGBO) CO., LTD.
Site Location : No. 8, Building 8, Lane 216, Qingyi Road, Ningbo Hi-Tech Zone, Ningbo, Zhejiang, China

5 TEST SYSTEM UNCERTAINTY

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

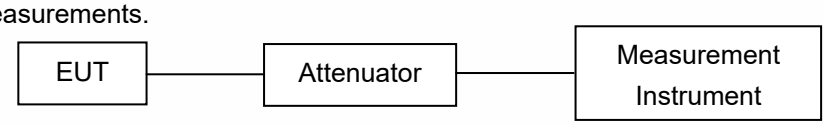
Parameter	Uncertainty
Radio Frequency	±1x10^-5
Conducted Emissions Test	±2.0dB
Radiated Emission Test	±2.0dB
Occupied Bandwidth Test	±1.0dB
All emission, radiated	±3dB
Temperature	±0.5℃
Humidity	±3%

Measurement Uncertainty for a level of Confidence of 95%

6 SETUP OF EQUIPMENT UNDER TEST

6.1 RADIO FREQUENCY TEST SETUP 1

The component's antenna ports(s) of the EUT are connected to the measurement instrument per an appropriate attenuator. The EUT is controlled by PC/software to emit the specified signals for the purpose of measurements.



6.2 RADIO FREQUENCY TEST SETUP 2

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4 dB according to the standards: ANSI C63.10. The test distance is 3m.The setup is according to the requirements in Section 13.1.4.1 of ANSI C63.10-2013 and CAN/CSA-CEI/IEC CISPR 22.

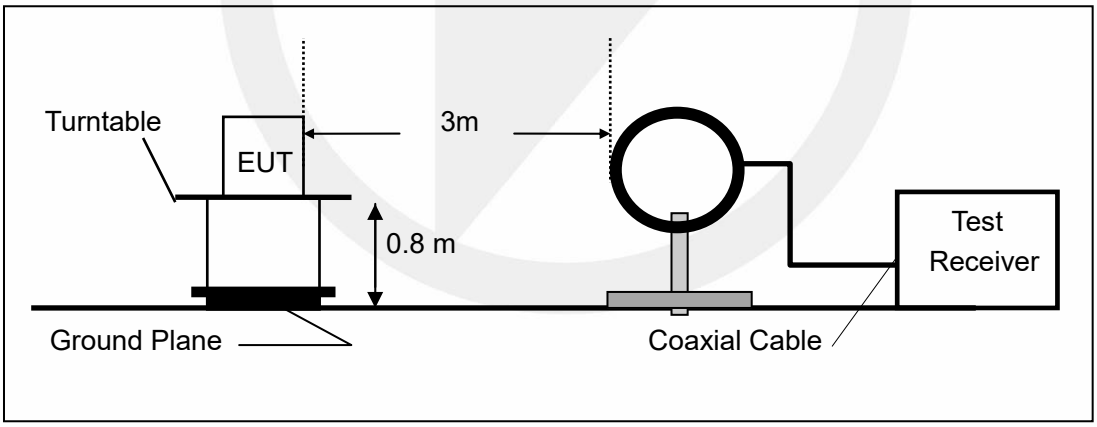
Below 30MHz：

The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna (loop antenna). The Antenna should be positioned with its plane vertical at the specified distance from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. The center of the loop shall be 1 m above the ground. For certain applications, the loop antenna plane may also need to be positioned horizontally at the specified distance from the EUT.

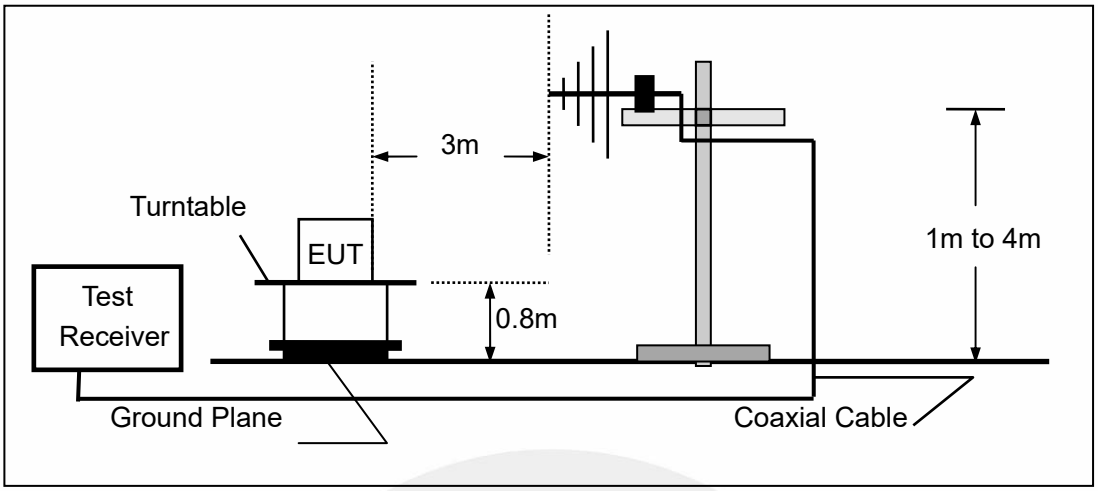
Above 30MHz：

The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H).

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

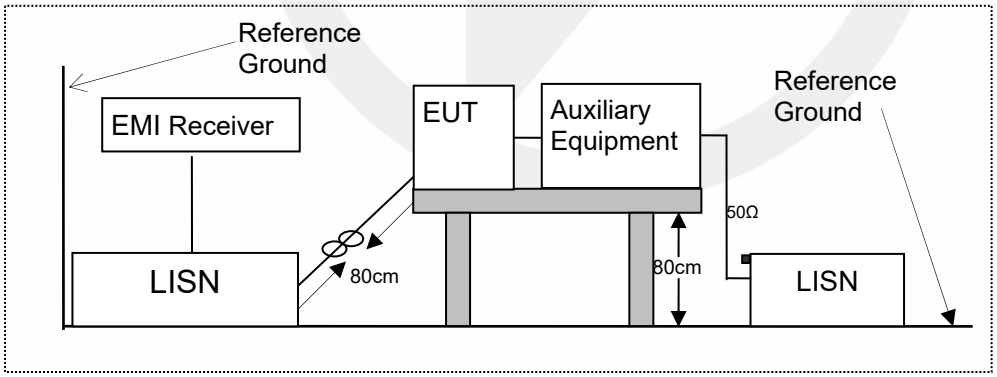


(b) Radiated Emission Test Set-Up, Frequency Below 1000MHz

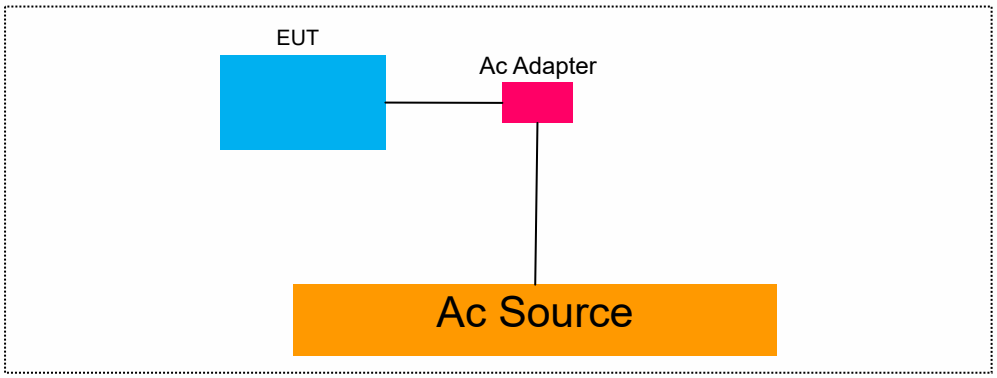


6.3 CONDUCTED EMISSION TEST SETUP

The mains cable of the EUT (maybe per AC/DC Adapter) must be connected to LISN. The LISN shall be placed 0.8 m from the boundary of EUT and bonded to a ground reference plane for LISN mounted on top of the ground reference plane. This distance is between the closest points of the LISN and the EUT. All other units of the EUT and associated equipment shall be at least 0.8m from the LISN.
Ground connections, where required for safety purposes, shall be connected to the reference ground point of the LISN and, where not otherwise provided or specified by the manufacturer, shall be of same length as the mains cable and run parallel to the mains connection at a separation distance of not more than 0.1 m.
According to the requirements in ANSI C63.10-2013 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30 MHz using CISPR Quasi-Peak and average detector mode.



6.4 BLOCK DIAGRAM CONFIGURATION OF TEST SYSTEM



6.5 SUPPORT EQUIPMENT

EUT Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
/	/	/	/

Auxiliary Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
AC cable	1.2	Unshielded	Without Ferrite
DC cable	1.5	Shielded	Without Ferrite

Auxiliary Equipment List and Details			
Description	Manufacturer	Model	Serial Number
Notebook	acer	ZR1	LXTECOCO76643158 372500
Adapter	Simsukian	SK05T-1200300W2	CE,FCC

Notes:

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.*
3. *Unless otherwise denoted as EUT in 『Remark』 column , device(s) used in tested system is a support equipment*

7 TEST REQUIREMENTS

7.1 OCCUPIED BANDWIDTH

7.1.1 Applicable Standard

According to FCC Part 2.1049

7.1.2 Conformance Limit

No limit requirement.

7.1.3 Test Configuration

Test according to clause 6.1 radio frequency test setup 1

7.1.4 Test Procedure

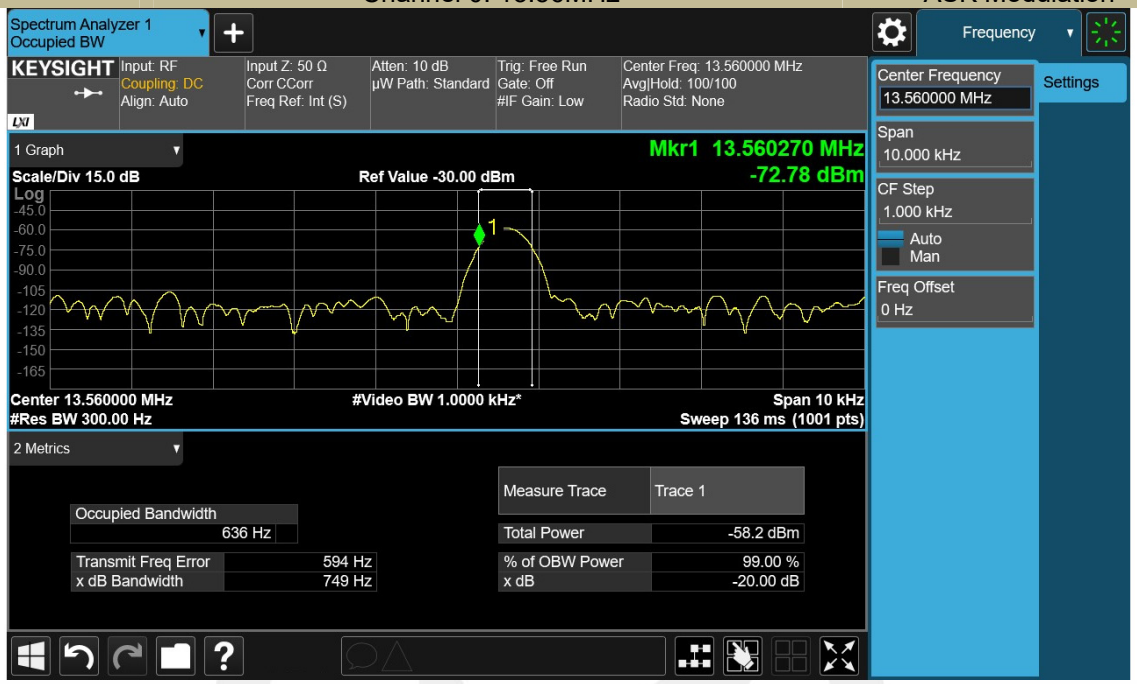
The EUT was operating in transmit mode and controlled its channel. Printed out the test result from the spectrum by hard copy function.
The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
Set to the maximum power setting and enable the EUT transmit continuously
Set RBW = 1% occupied bandwidth (30Hz).
Set the video bandwidth (VBW) =3 times RBW .
Set Span= approximately 2 to 3 times the occupied bandwidth
Set Detector = Peak.
Set Trace mode = max hold.
Set Sweep = auto couple.
The EUT should be transmitting at its maximum data rate. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. Use the marker-delta function to measure 99% down one side of the emission. Reset the markerdelta function, and move the marker to the other side of the emission, until it is (as close as possible to) even with the reference marker level. The marker-delta reading at this point is the 99% bandwidth of the emission.
If this value varies with different modes of operation (e.g., data rate, modulation format, etc.), repeat this test for each variation.
Measure and record the results in the test report.

7.1.5 Test Results

Temperature :	25℃	Test Date :	
Humidity :	65 %	Test By:	Lucas Xu

Modulation Mode	Channel Number	Channel Frequency (MHz)	-20dB Measurement Bandwidth (kHz)	Limit (kHz)	Verdict
ASK	0	13.56	0.749	N/A	PASS
Note: N/A (Not Applicable)					

Test Model	Occupied Bandwidth Channel 0: 13.56MHz	ASK Modulation



7.2 FREQUENCY STABILITY

7.2.1 Applicable Standard

According to FCC Part 2.1055

7.2.2 Conformance Limit

According to part 15.225(e),The frequency tolerance of the carrier signal shall be maintained within ±0.01% of the operating frequency over a temperature variation of −20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

7.2.3 Test Configuration

Test according to clause 6.1 radio frequency test setup

7.2.4 Test Procedures

Connect the EUT to frequency analyzer via the antenna connector.
EUT was placed at temperature chamber and connected to an external power supply.
Temperature and voltage condition shall be tested to confirm frequency stability.
(a) Frequency measurements shall be made at the extremes of the specified temperature range and at intervals of not more than 10^{o} centigrade through the range. A period of time sufficient to stabilize all of the components of the oscillator circuit at each temperature level shall be allowed prior to frequency measurement. The short-term transient effects on the frequency of the transmitter due to keying (except for broadcast transmitters) and any heating element cycling normally occurring at each ambient temperature level also shall be shown. Only the portion or portions of the transmitter containing the frequency determining and stabilizing circuitry need be subjected to the temperature variation test.
(b) The frequency stability shall be measured with variation of primary supply voltage as follows:
(1) Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.
(2) For hand carried, battery powered equipment, reduce primary supply voltage to the battery operating end point, which shall be specified by the manufacturer.

7.2.5 Test Results

Operation Mode	Channel Number	Test Condition		Channel Frequency (MHz)	Freq.Dev. (KHz)	Deviation (ppm)	Limit (ppm)
		Voltage (V)	Temp (℃)				
ASK	CH0	Vnom	-20	13.55952	-0.48	-0.34	10
			-10	13.56014	0.14	0.01	10
			0	13.55914	-0.86	-0.06	10
			10	13.56017	0.17	0.01	10
			20	13.56055	0.55	0.04	10
			30	13.56022	0.22	0.02	10
			40	13.55978	-0.22	-0.02	10
			50	13.55969	-0.31	-0.02	10
		85% Vnom	20	13.55752	-2.48	-0.20	10
		115% Vnom	20	13.56433	4.33	0.32	10
VERDICT				PASS			

7.3 RADIATED SPURIOUS EMISSION

7.3.1 Applicable Standard

According to FCC Part 15.225 and 15.209

7.3.2 Conformance Limit

Field Strength of Fundamental Emissions and Spectrum Mask					
Emissions	**(uV/m)@30m**	**(dBuV/m)@30m**	**(dBuV/m)@10m**	**(dBuV/m)@3m**	**(dBuV/m)@1m**
Fundamental	15848	84.0	103.1	**124.0**	143.1
Quasi peak measurement of the fundamental.					

Spectrum Mask					
Freq. of Emission (MHz)	**(uV/m)@30m**	**(dBuV/m)@30m**	**(dBuV/m)@10m**	**(dBuV/m)@3m**	**(dBuV/m)@1m**
1.705~13.110	30	29.5	48.6	**69.5**	88.6
13.110~13.410	106	40.5	59.6	**80.5**	99.6
13.410~13.553	334	50.5	69.6	**90.5**	109.6
13.553~13.567	15848	84.0	103.1	**124.0**	143.1
13.567~13.710	334	50.5	69.6	**90.5**	109.6
13.710~14.010	106	40.5	59.6	**80.5**	99.6
14.010~30.000	30	29.5	48.6	**69.5**	88.6

According to FCC Part15.205, Restricted bands

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			

According to FCC Part15.205, the level of any transmitter spurious emission in Restricted bands shall not exceed the level of the emission specified in the following table

Restricted Frequency(MHz)	Field Strength (μV/m)	Field Strength (dBμV/m)	Measurement Distance
0.009-0.490	2400/F(KHz)	48.5 - 13.8	300
0.490-1.705	24000/F(KHz)	33.8 – 23.0	30
1.705-30	30	29.5	30
30-88	100	40.0	3
88-216	150	43.5	3
216-960	200	46.0	3
Above 960	500	54.0	3

7.3.3 Test Configuration

Test according to clause 6.2 radio frequency test setup 2

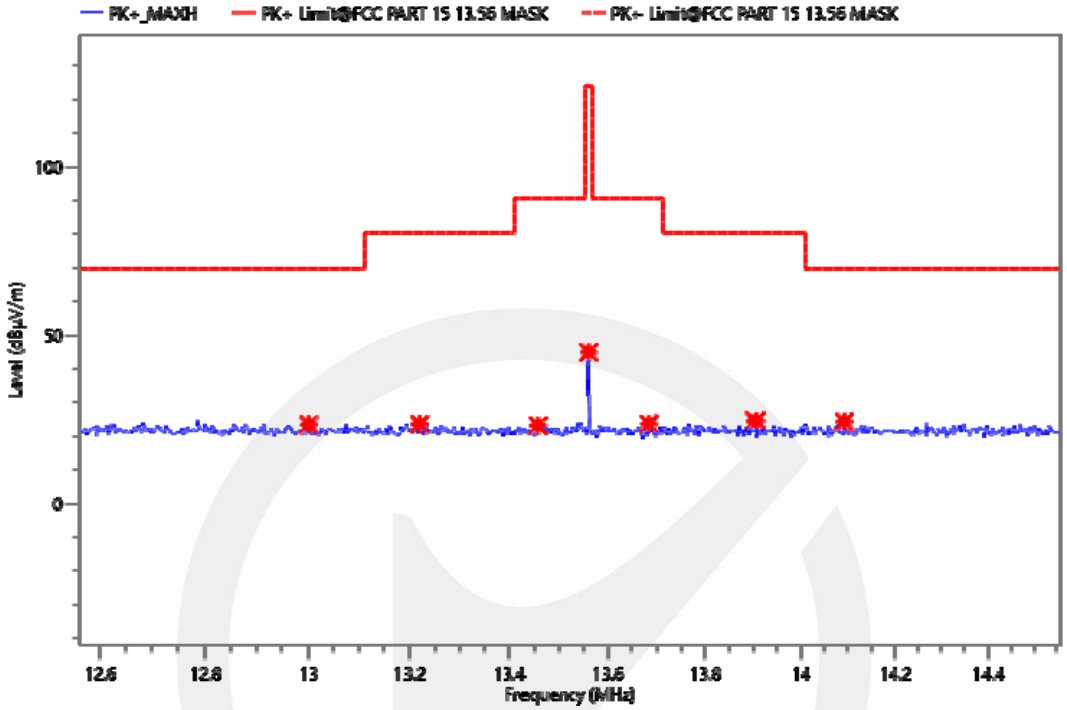
7.3.4 Test Procedure

This test is required for any spurious emission that falls in a Restricted Band, as defined in Section 15.205. It must be performed with the highest gain of each type of antenna proposed for use with the EUT. Use the following spectrum analyzer settings:
The EUT was placed on a turn table which is 0.8m above ground plane.
Maximum procedure was performed on the highest emissions to ensure EUT compliance.
Span = wide enough to fully capture the emission being measured
RBW = 100 kHz for f < 1 GHz(30MHz to 1GHz), 200Hz for f<150KHz(9KHz to 150KHz), 9KHz for f<30MHz(150KHz to 30KHz)
VBW ≥ RBW
Sweep = auto
Detector function = peak
Trace = max hold
Follow the guidelines in ANSI C63.10-2013 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization, etc. A pre-amp and a high pass filter are required for this test, in order to provide the measuring system with sufficient sensitivity. Allow the trace to stabilize. The peak reading of the emission, after being corrected by the antenna factor, cable loss, pre-amp gain, etc., is the peak field strength, which must comply with the limit specified in Section 15.35(b). Submit this data.
Now set the VBW to 10 Hz, while maintaining all of the other instrument settings. This peak level, once corrected, must comply with the limit specified in Section 15.209. If the dwell time per channel of the hopping signal is less than 100 ms, then the reading obtained with the 10 Hz VBW may be further adjusted by a “duty cycle correction factor”, derived from 20log(dwell time/100 ms), in an effort to demonstrate compliance with the 15.209 limit. Submit this data.
Repeat above procedures until all frequency measured was complete.

7.3.5 Test Results

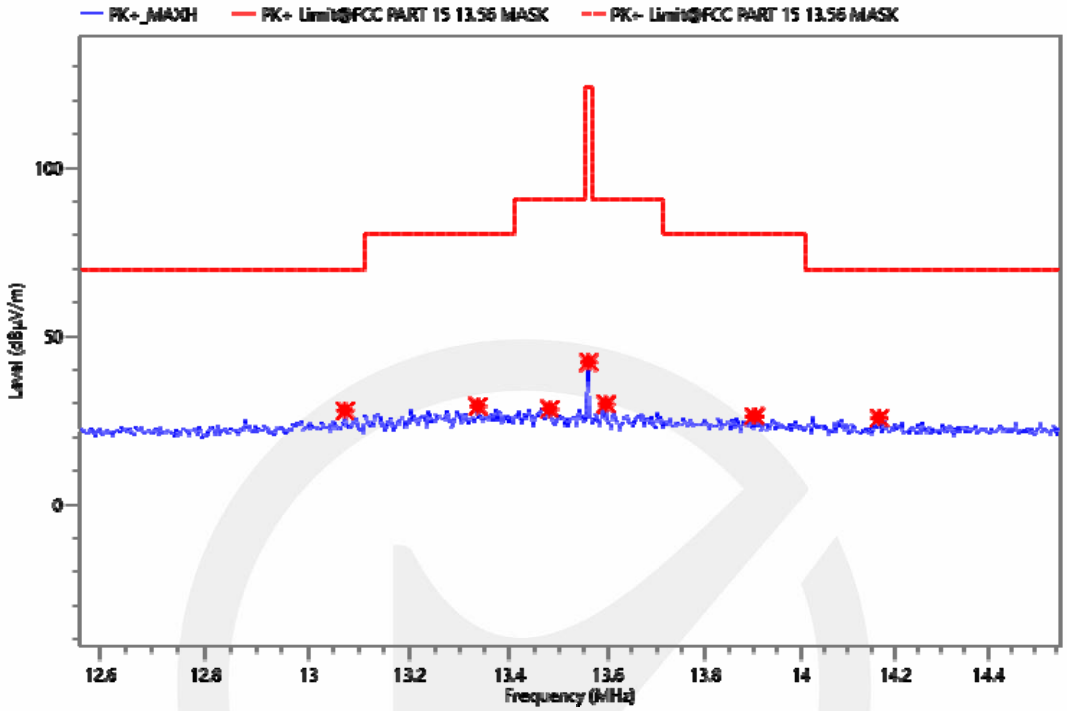
■ Field Strength of Fundamental Emissions and Spectrum Mask

Project Information			
Mode:	TX	Voltage:	AC 480V/60Hz
Environment:	Temp: 18 ℃; Humi:67%	Engineer:	Lucas Xu



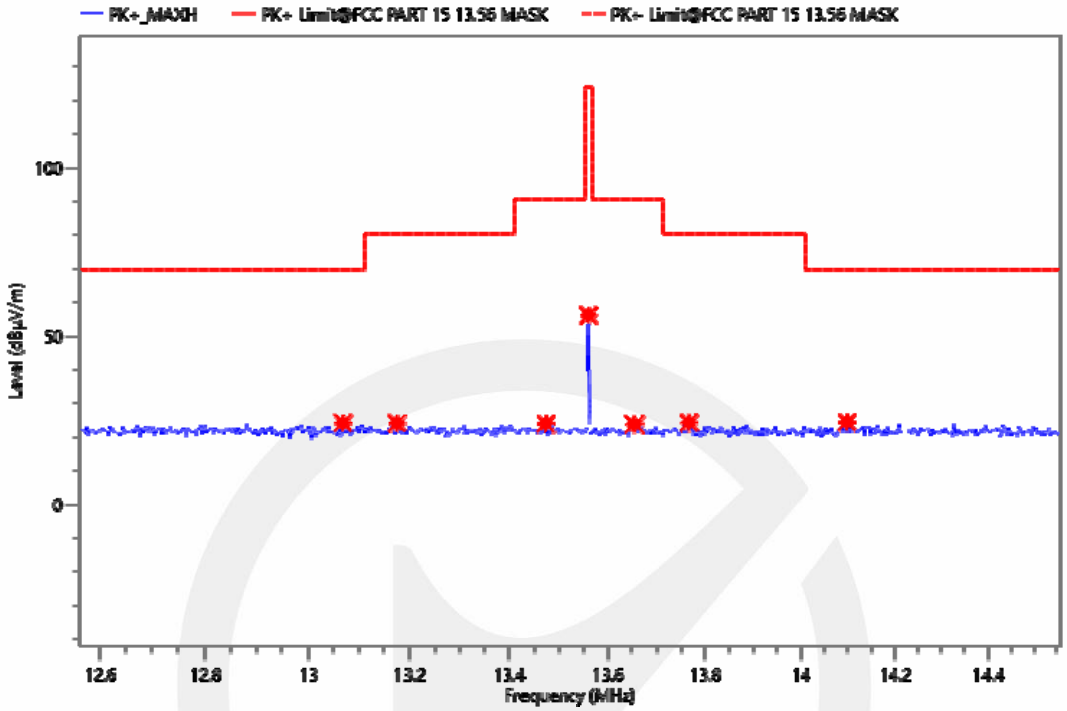
No.	Freq. (MHz)	Reading (dBµV)	Corr. (dB)	Meas. (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Det.	Height (cm)	Pol.	Azimuth (deg)	Verdict
1	13.000	-3.01	26.41	23.40	69.50	46.10	QPK	100.0	X	360.0	PASS
2	13.218	-2.86	26.38	23.52	80.50	56.98	QPK	100.0	X	360.0	PASS
3	13.456	-3.22	26.34	23.12	90.50	67.38	QPK	100.0	X	360.0	PASS
4	13.560	18.62	26.33	44.95	124.00	79.05	QPK	100.0	X	360.0	PASS
5	13.682	-2.73	26.31	23.58	90.50	66.92	QPK	100.0	X	360.0	PASS
6	13.904	-1.77	26.29	24.52	80.50	55.98	QPK	100.0	X	360.0	PASS

Project Information			
Mode:	TX	Voltage:	AC 480V/60Hz
Environment:	Temp: 18 ℃; Humi:67%	Engineer:	Lucas Xu



No.	Freq. (MHz)	Reading (dBµV)	Corr. (dB)	Meas. (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Det.	Height (cm)	Pol.	Azimuth (deg)	Verdict
1	13.072	1.45	26.4	27.85	69.50	41.65	QPK	100.0	Y	0.0	PASS
2	13.336	2.82	26.36	29.18	80.50	51.32	QPK	100.0	Y	0.0	PASS
3	13.480	1.97	26.34	28.31	90.50	62.19	QPK	100.0	Y	0.0	PASS
4	13.560	15.90	26.33	42.23	124.00	81.77	QPK	100.0	Y	0.0	PASS
5	13.596	3.42	26.32	29.74	90.50	60.76	QPK	100.0	Y	0.0	PASS
6	13.902	-0.17	26.29	26.12	80.50	54.38	QPK	100.0	Y	0.0	PASS

Project Information			
Mode:	TX	Voltage:	AC 480V/60Hz
Environment:	Temp: 18 ℃; Humi:67%	Engineer:	Lucas Xu



No.	Freq. (MHz)	Reading (dBµV)	Corr. (dB)	Meas. (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Det.	Height (cm)	Pol.	Azimuth (deg)	Verdict
1	13.068	-2.34	26.4	24.06	69.50	45.44	QPK	100.0	Z	360.0	PASS
2	13.176	-2.37	26.38	24.01	80.50	56.49	QPK	100.0	Z	360.0	PASS
3	13.472	-2.44	26.34	23.90	90.50	66.60	QPK	100.0	Z	360.0	PASS
4	13.560	29.83	26.33	56.16	124.00	67.84	QPK	100.0	Z	360.0	PASS
5	13.654	-2.60	26.32	23.72	90.50	66.78	QPK	100.0	Z	360.0	PASS
6	13.766	-2.12	26.31	24.19	80.50	56.31	QPK	100.0	Z	360.0	PASS

■ Spurious Emission below 150kHz (9KHz to 150kHz)

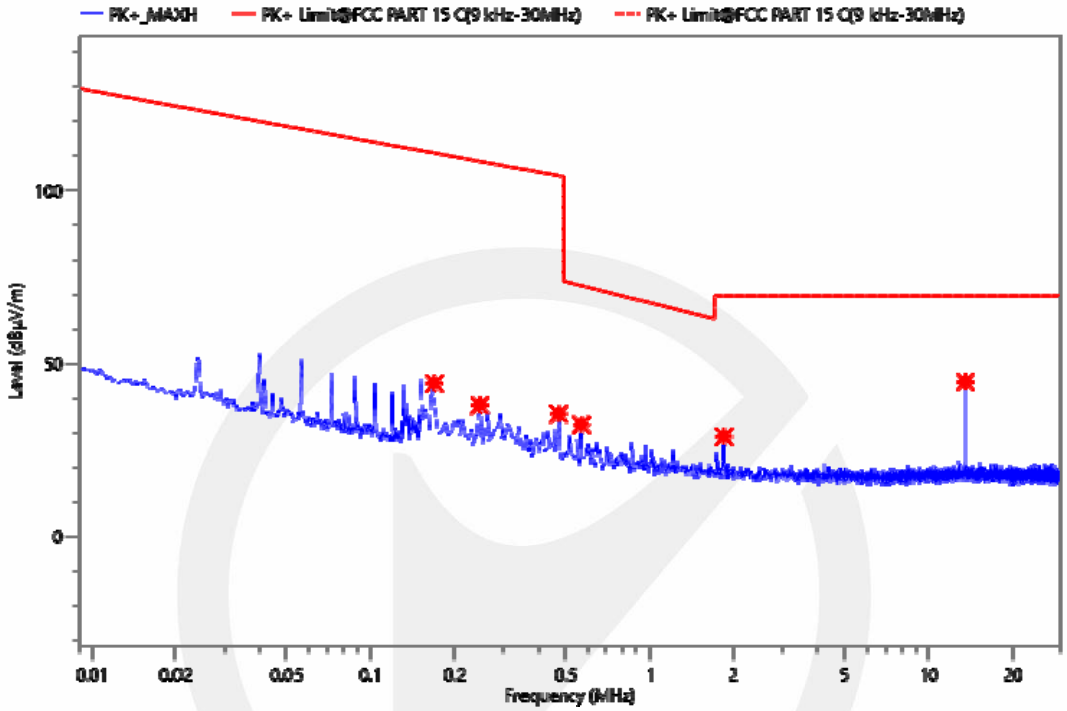
Temperature:	18℃	Test Date:	
Humidity:	67 %	Test By:	Lucas Xu
Test mode:	TX Mode		

Freq. (MHz)	Ant.Pol. H/V	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
		PK	AV	PK	AV	PK	AV
--	--	--	--	--	--	--	--

Note: the amplitude of spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.
Distance extrapolation factor =40log(Specific distance/ test distance)(dB);
Limit line=Specific limits(dBuV) + distance extrapolation factor

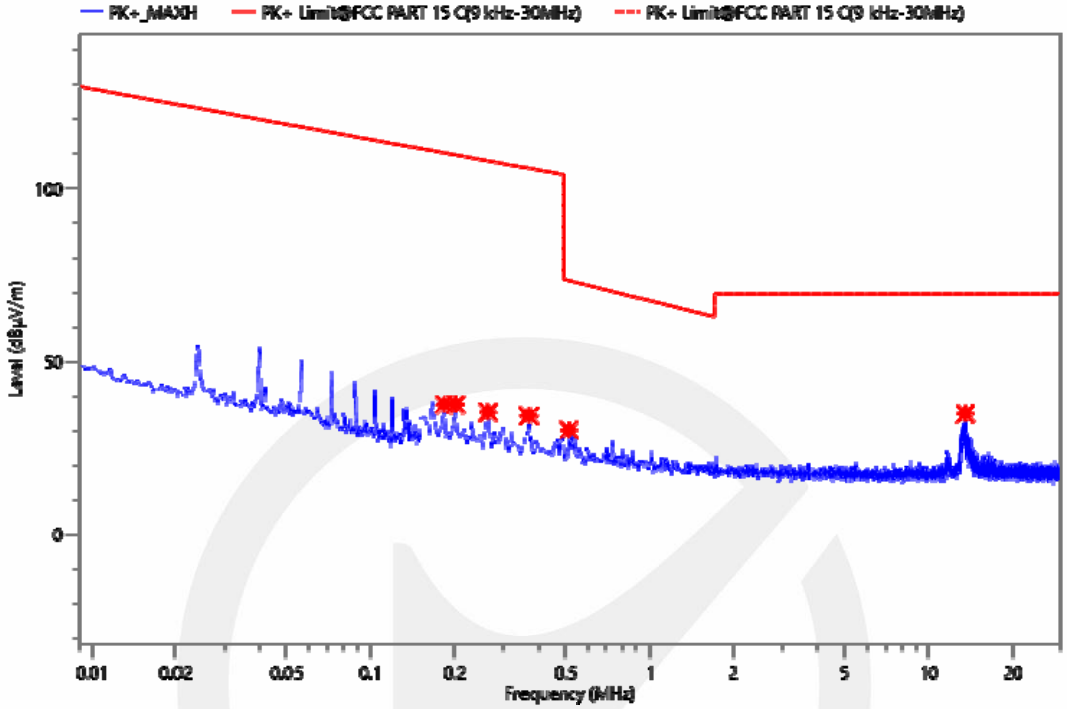
■ Spurious Emission below 30MHz (150KHz to 30MHz)
All mode have been tested, and the worst result was report as below:

Project Information			
Mode:	TX	Voltage:	AC 480V/60Hz
Environment:	Temp: 23 ℃; Humi:54%	Engineer:	Lucas Xu



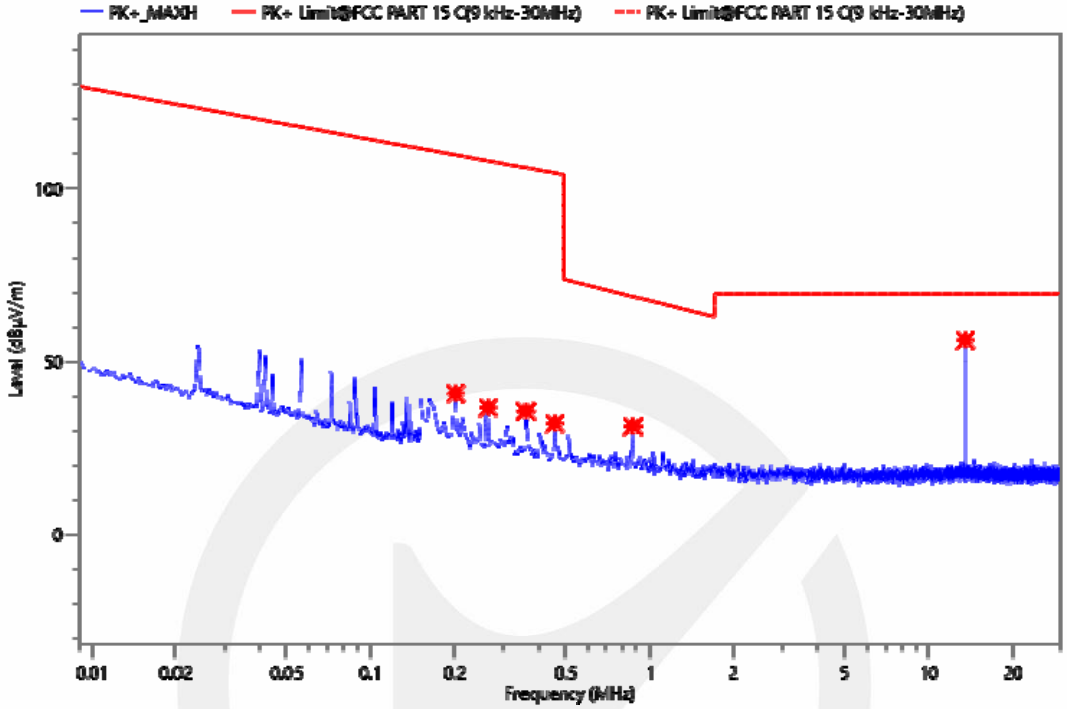
No.	Freq. (MHz)	Reading (dBµV)	Corr. (dB)	Meas. (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Det.	Height (cm)	Pol.	Azimuth (deg)	Verdict
1	0.168	18.07	26.17	44.24	110.90	66.66	QPK	100.0	X	360.0	PASS
2	0.246	11.75	26.17	37.92	108.48	70.56	QPK	100.0	X	360.0	PASS
3	0.469	9.26	26.15	35.41	104.35	68.94	QPK	100.0	X	360.0	PASS
4	0.568	6.08	26.19	32.27	72.52	40.25	QPK	100.0	X	360.0	PASS
5	1.845	2.59	26.26	28.85	69.54	40.69	QPK	100.0	X	360.0	PASS
6	13.562	18.33	26.33	44.66	69.54	24.88	QPK	100.0	X	360.0	PASS

Project Information			
Mode:	TX	Voltage:	AC 480V/60Hz
Environment:	Temp: 23 ℃; Humi:54%	Engineer:	Lucas Xu



No.	Freq. (MHz)	Reading (dBµV)	Corr. (dB)	Meas. (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Det.	Height (cm)	Pol.	Azimuth (deg)	Verdict
1	0.183	11.36	26.17	37.53	110.35	72.82	QPK	100.0	Y	0.0	PASS
2	0.201	11.39	26.17	37.56	109.76	72.20	QPK	100.0	Y	0.0	PASS
3	0.263	9.17	26.16	35.33	108.03	72.70	QPK	100.0	Y	0.0	PASS
4	0.368	8.14	26.16	34.30	105.90	71.60	QPK	100.0	Y	0.0	PASS
5	0.511	3.99	26.16	30.15	73.43	43.28	QPK	100.0	Y	0.0	PASS
6	13.568	8.60	26.33	34.93	69.54	34.61	QPK	100.0	Y	0.0	PASS

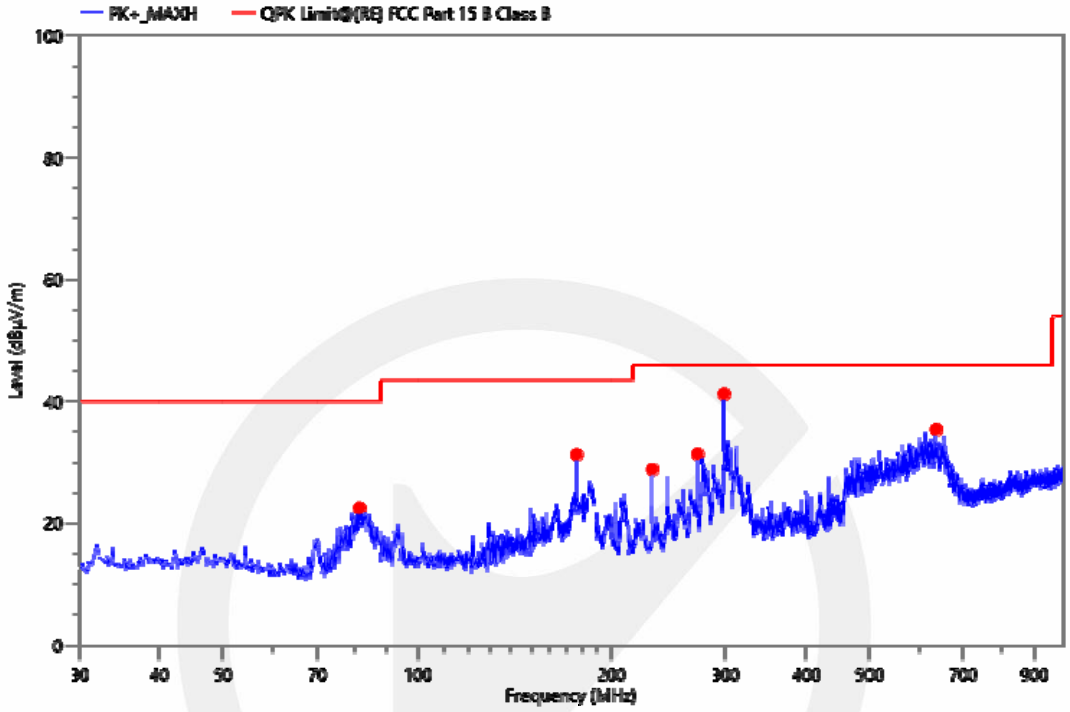
Project Information			
Mode:	TX	Voltage:	AC 480V/60Hz
Environment:	Temp: 23 ℃; Humi:54%	Engineer:	Lucas Xu



No.	Freq. (MHz)	Reading (dBµV)	Corr. (dB)	Meas. (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Det.	Height (cm)	Pol.	Azimuth (deg)	Verdict
1	0.201	14.55	26.17	40.72	109.76	69.04	QPK	100.0	Z	360.0	PASS
2	0.263	10.51	26.16	36.67	108.03	71.36	QPK	100.0	Z	360.0	PASS
3	0.359	9.41	26.16	35.57	106.06	70.49	QPK	100.0	Z	360.0	PASS
4	0.454	5.93	26.15	32.08	104.56	72.48	QPK	100.0	Z	360.0	PASS
5	0.869	4.90	26.32	31.22	68.82	37.60	QPK	100.0	Z	360.0	PASS
6	13.562	29.80	26.33	56.13	69.54	13.41	QPK	100.0	Z	360.0	PASS

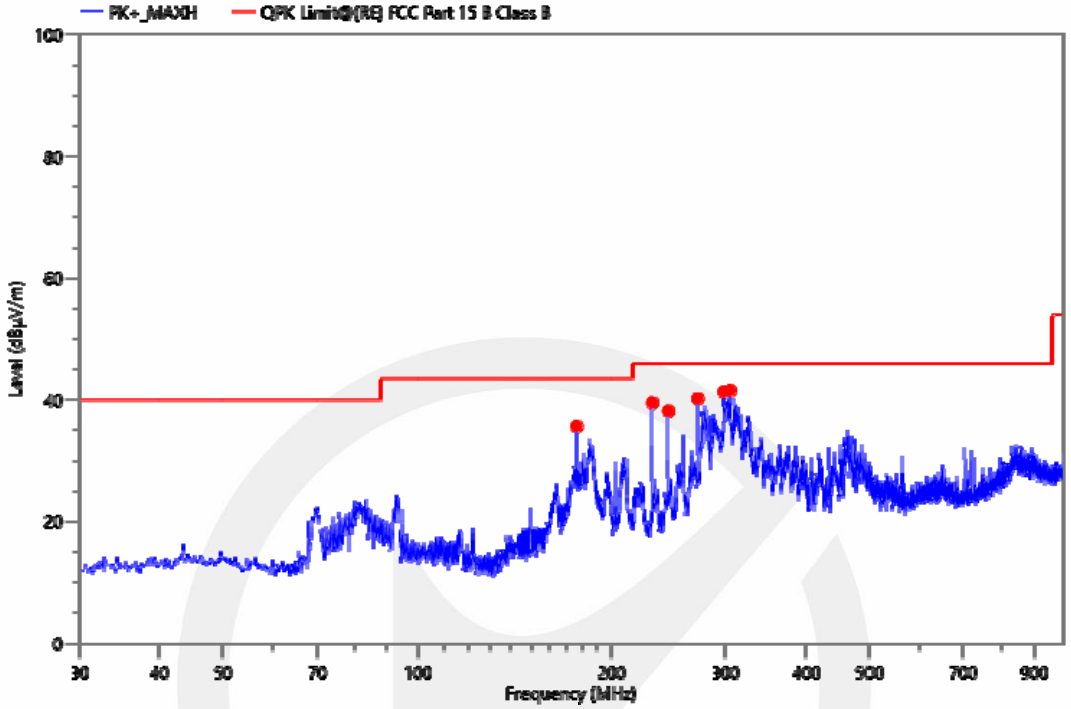
■ Spurious Emission Above 30MHz (30MHz to 1GHz)

Project Information			
Mode:	TX	Voltage:	AC 480V/60Hz
Environment:	Temp: 23 ℃; Humi:54%	Engineer:	Victor Chen



No.	Freq. (MHz)	Reading (dBµV)	Corr. (dB)	Meas. (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Det.	Height (cm)	Pol.	Azimuth (deg)	Verdict
1	81.410	49.30	-26.8	22.50	40.00	17.50	QPK	100	V	109.1	PASS
2	176.276	57.43	-26.15	31.28	43.50	12.22	QPK	100	V	289.6	PASS
3	230.499	52.58	-23.72	28.86	46.00	17.14	QPK	100	V	67.6	PASS
4	271.239	54.14	-22.79	31.35	46.00	14.65	QPK	100	V	48.6	PASS
5	298.333	63.56	-22.33	41.23	46.00	4.77	QPK	100	V	84.6	PASS
6	634.601	50.48	-15.09	35.39	46.00	10.61	QPK	100	V	339.1	PASS

Project Information			
Mode:	TX	Voltage:	AC 480V/60Hz
Environment:	Temp: 23 ℃; Humi:54%	Engineer:	Victor Chen



No.	Freq. (MHz)	Reading (dBµV)	Corr. (dB)	Meas. (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Det.	Height (cm)	Pol.	Azimuth (deg)	Verdict
1	176.276	61.80	-26.15	35.65	43.50	7.85	QPK	100	H	360	PASS
2	230.499	63.25	-23.72	39.53	46.00	6.47	QPK	100	H	348.3	PASS
3	244.079	61.20	-23.04	38.16	46.00	7.84	QPK	100	H	157.8	PASS
4	271.239	63.01	-22.79	40.22	46.00	5.78	QPK	100	H	160.8	PASS
5	298.205	63.63	-22.33	41.30	46.00	4.70	QPK	100	H	136.3	PASS
6	304.898	63.59	-22.07	41.52	46.00	4.48	QPK	100	H	23.3	PASS

7.4 CONDUCTED EMISSION TEST

7.4.1 Applicable Standard

According to FCC Part 15.207(a)

7.4.2 Conformance Limit

Conducted Emission Limit		
Frequency(MHz)	Quasi-peak	Average
0.15-0.5	66-56	56-46
0.5-5.0	56	46
5.0-30.0	60	50
Note: 1. The lower limit shall apply at the transition frequencies 2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.		

7.4.3 Test Configuration

Test according to clause 7.3 conducted emission test setup

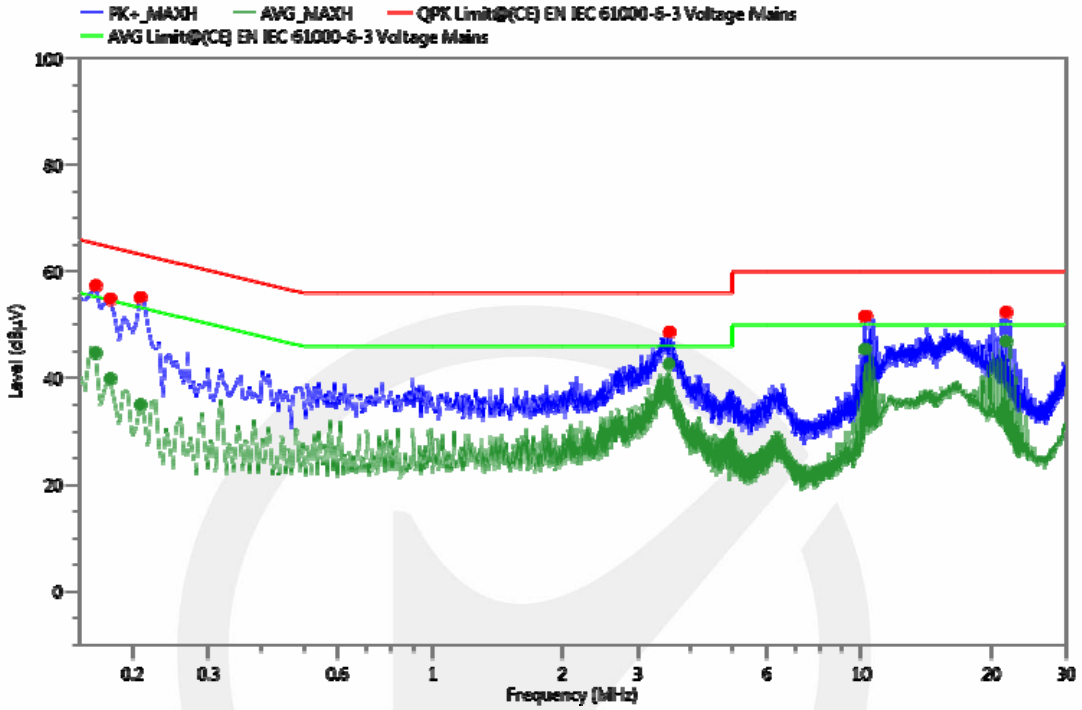
7.4.4 Test Procedure

The EUT was placed on a table which is 0.8m above ground plane.
Maximum procedure was performed on the highest emissions to ensure EUT compliance.
Repeat above procedures until all frequency measured were complete.

7.4.5 Test Results

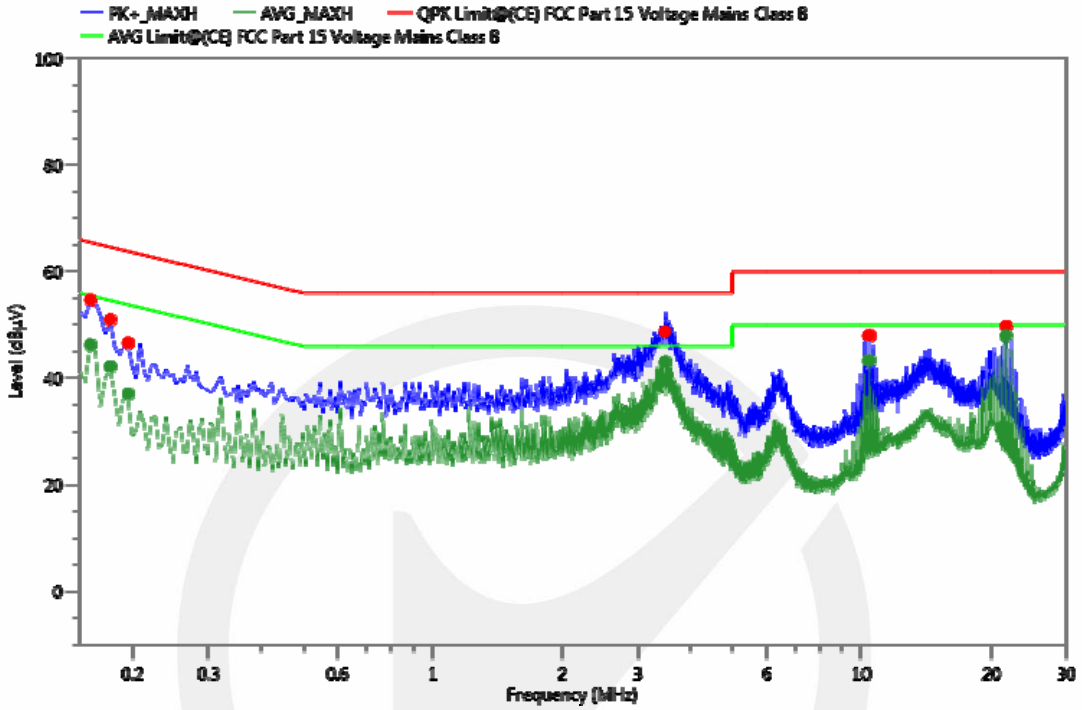
Pass

Project Information			
Mode:	TX	Voltage:	AC 480V/60Hz
Environment:	Temp: 23 ℃; Humi:54%	Engineer:	Lucas Xu i



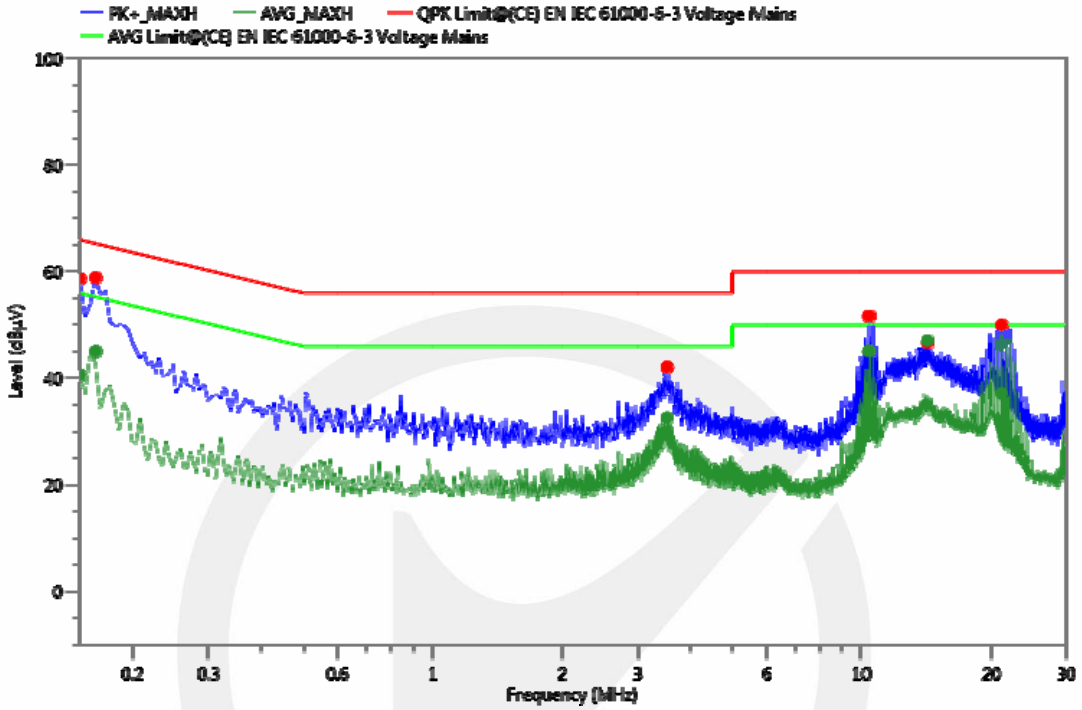
No.	Freq. (MHz)	Reading (dBµV)	Corr. (dB)	Meas. (dBµV)	Limit (dBµV)	Margin (dB)	Det.	Line	PE	Verdict
1	0.164	37.39	19.98	57.37	65.28	7.91	QPK	L1	GND	PASS
2	0.164	24.74	19.98	44.72	55.28	10.56	AVG	L1	GND	PASS
3	0.177	34.84	19.98	54.82	64.63	9.81	QPK	L1	GND	PASS
4	0.177	19.90	19.98	39.88	54.63	14.75	AVG	L1	GND	PASS
5	0.209	35.18	19.97	55.15	63.26	8.11	QPK	L1	GND	PASS
6	0.209	15.04	19.97	35.01	53.26	18.25	AVG	L1	GND	PASS
7	3.552	28.83	19.8	48.63	56.00	7.37	QPK	L1	GND	PASS
8	3.552	22.83	19.8	42.63	46.00	3.37	AVG	L1	GND	PASS
9	10.190	31.68	19.91	51.59	60.00	8.41	QPK	L1	GND	PASS
10	10.190	25.46	19.91	45.37	50.00	4.63	AVG	L1	GND	PASS
11	21.629	31.98	20.37	52.35	60.00	7.65	QPK	L1	GND	PASS
12	21.629	26.47	20.37	46.84	50.00	3.16	AVG	L1	GND	PASS

Project Information			
Mode:	TX	Voltage:	AC 480V/60Hz
Environment:	Temp: 23 ℃; Humi:54%	Engineer:	Lucas Xu i



No.	Freq. (MHz)	Reading (dBµV)	Corr. (dB)	Meas. (dBµV)	Limit (dBµV)	Margin (dB)	Det.	Line	PE	Verdict
1	0.159	34.72	19.94	54.66	65.52	10.86	QPK	L2	GND	PASS
2	0.159	26.32	19.94	46.26	55.52	9.26	AVG	L2	GND	PASS
3	0.177	31.00	19.95	50.95	64.63	13.68	QPK	L2	GND	PASS
4	0.177	22.19	19.95	42.14	54.63	12.49	AVG	L2	GND	PASS
5	0.195	26.62	19.96	46.58	63.82	17.24	QPK	L2	GND	PASS
6	0.195	17.07	19.96	37.03	53.82	16.79	AVG	L2	GND	PASS
7	3.472	28.94	19.72	48.66	56.00	7.34	QPK	L2	GND	PASS
8	3.472	21.33	19.72	42.05	46.00	3.95	AVG	L2	GND	PASS
9	10.392	28.06	19.91	47.97	60.00	12.03	QPK	L2	GND	PASS
10	10.392	23.35	19.91	43.26	50.00	6.74	AVG	L2	GND	PASS
11	21.629	29.31	20.44	49.75	60.00	10.25	QPK	L2	GND	PASS
12	21.629	26.48	20.44	46.92	50.00	3.98	AVG	L2	GND	PASS

Project Information			
Mode:	TX	Voltage:	AC 480V/60Hz
Environment:	Temp: 23 ℃; Humi:54%	Engineer:	Lucas Xu i



No.	Freq. (MHz)	Reading (dBµV)	Corr. (dB)	Meas. (dBµV)	Limit (dBµV)	Margin (dB)	Det.	Line	PE	Verdict
1	0.150	38.72	19.94	58.66	66.00	7.34	QPK	L3	GND	PASS
2	0.150	20.62	19.94	40.56	56.00	15.44	AVG	L3	GND	PASS
3	0.164	38.88	19.95	58.83	65.28	6.45	QPK	L3	GND	PASS
4	0.164	25.06	19.95	45.01	55.28	10.27	AVG	L3	GND	PASS
5	3.507	22.31	19.74	42.05	56.00	13.95	QPK	L3	GND	PASS
6	3.507	12.76	19.74	32.50	46.00	13.50	AVG	L3	GND	PASS
7	10.392	31.75	19.9	51.65	60.00	8.35	QPK	L3	GND	PASS
8	10.392	25.13	19.9	45.03	50.00	4.97	AVG	L3	GND	PASS
9	14.222	26.48	20.05	46.53	60.00	13.47	QPK	L3	GND	PASS
10	14.222	25.96	20.05	46.01	50.00	2.99	AVG	L3	GND	PASS
11	21.125	29.52	20.41	49.93	60.00	10.07	QPK	L3	GND	PASS
12	21.125	16.63	20.41	37.04	50.00	12.96	AVG	L3	GND	PASS

8 ANTENNA APPLICATION

8.1.1 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. if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

8.2 RESULT

The EUT'S antenna is PCB antenna, The antenna's gain is 0.0 dBi and meets the requirement. and the antenna can't be replaced by the user, which in accordance to section 15.203.