TEST REPORT

Report No.:	8330EU121402W3
Applicant:	Dakota Lithium Batteries
Address:	225 S. LUCILE ST. SEATTLE,WA 98108, the US
Product Name:	PORTABLE POWER STATION
Model No.:	PS2400
Trademark:	N/A
FCC ID:	2BDF8PS2400V2400A
Test Standard(s):	47 CFR Part 15 Subpart C
Test Result:	Pass
Date of Receipt:	May 14, 2025
Test Date:	May 14, 2025 – May 30, 2025
Date of Issue:	Jun. 10, 2025

ISSUED BY:

SHENZHEN EU TESTING LABORATORY LIMITED

SHENZHEN EU TESTING LABORATORY LIMITED APPROVED

Prepared by:

Mikey Zhu

Mikey Zhu/ Engineer

Reviewed and Approved by:

Sally Zhang

Sally Zhang/ Manager

Revision Record

Report Version	Issued Date	Description	Status
V0	Jun. 10, 2025	Original	Valid

Address: 101, Building B1, Fuqiao Fourth Area, Qiaotou Community, Fuhai Subdistrict, Baoan District, Shenzhen, Guangdong, China
Website: www.eu-test.com
Tel: (86)-755-2357-9714 Email: Service@eu-test.com

Table of Contents

1 COVER PAGE 1
2 GENERAL INFORMATION 4
2.1 APPLICANT INFORMATION 4
2.2 MANUFACTURER INFORMATION 4
2.3 FACTORY INFORMATION 4
2.4 GENERAL DESCRIPTION OF E.U.T. 4
2.5 TECHNICAL INFORMATION OF E.U.T. 5
3 TEST SUMMARY 7
3.1 TEST STANDARD 7
3.2 TEST VERDICT 7
3.3 TEST LABORATORY 7
4 TEST CONFIGURATION 8
4.1 TEST ENVIRONMENT 8
4.2 TEST EQUIPMENT 8
4.3 DESCRIPTION OF SUPPORT UNIT 9
4.4 TEST MODE 9
4.5 DESCRIPTION OF CALCULATION 9
4.6 MEASUREMENT UNCERTAINTY 10
4.7 DEVIATION FROM STANDARDS 10
4.8 ABNORMALITIES FROM STANDARD CONDITION 10
5 TEST ITEMS 11
5.1 ANTENNA REQUIREMENT 11
5.1.1 Test Requirement 11
5.1.2 Antenna Anti-Replacement Construction 11
5.1.3 Antenna Gain 11
5.2 CONDUCTED EMISSION AT AC POWER LINE 12
5.2.1 Test Requirement 12
5.2.2 Test Setup Diagram 12
5.2.3 Test Procedure 12
5.2.4 Test Data 12
5.3 EMISSIONS BANDWIDTH 15
5.3.1 Test Requirement 15
5.3.2 Test Setup Diagram 15
5.3.3 Test Procedure 16
5.3.4 Test Data 16
5.4 FIELD STRENGTH OF FUNDAMENTAL EMISSIONS AND RADIATED EMISSION 18
5.4.1 Test Requirement 18
5.4.2 Test Setup Diagram 19
5.4.3 Test Procedure 20
5.4.4 Test Data 20
ANNEX A TEST SETUP PHOTOS 27
ANNEX B EXTERNAL PHOTOS 27
ANNEX C INTERNAL PHOTOS 27

Address: 101, Building B1, Fuqiao Fourth Area, Qiaotou Community, Fuhai Subdistrict, Baoan District, Shenzhen, Guangdong, China
Website: www.eu-test.com
Tel: (86)-755-2357-9714 Email: Service@eu-test.com

2 General Information

2.1 Applicant Information

Applicant	Dakota Lithium Batteries
Address	225 S. LUCILE ST. SEATTLE,WA 98108, the US

2.2 Manufacturer Information

Manufacturer	Huizhou Intelligent Energy Co., Ltd.
Address	8-9/F, Building E2-1, Qunyi Intelligent Manufacturing Industrial Park, No.1 Xingyuan South Road, Zhongkai High-tech Zone, HuiZhou

2.3 Factory Information

Factory	Huizhou Intelligent Energy Co., Ltd.
Address	8-9/F, Building E2-1, Qunyi Intelligent Manufacturing Industrial Park, No.1 Xingyuan South Road, Zhongkai High-tech Zone, HuiZhou

2.4 General Description of E.U.T.

Product Name	PORTABLE POWER STATION
Model No. Under Test	PS2400
List Model No.	N/A
Description of Model differentiation	N/A
Rating(s)	Refer to the following detailed table.
Product Type	☒ Mobile ☐ Portable ☐ Fix Location
Test Sample No.	-1/2(Normal Sample), -2/2(Engineering Sample)
Hardware Version	N/A
Software Version	N/A
Remark	For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

Detailed table:

PORTABLE POWER STATION

- Type: PS2400
- Batch Code: IGM2400-0425
- Battery Capacity: 51.2V, 40Ah/2048Wh
- AC Input: 100V-130V~12.5A, 60Hz, 1500W
- PV Input: DC 12V-75V⎓25A, 800W Max
- AC Output ×4: Pure Sine Wave 120V~60Hz, 2400W
- AC Parallel Interface: 2400W
- After Being Connected AC Output: 4800W
- DC Output ×2 + Cigarette Lighter Socket Output: Total 12V⎓10A
- USB-A Output ×2: 5V⎓3A, 9V⎓2A, 12V⎓1.5A, 18W Max
- USB-C Output ×2: 5V/9V/12V/15V/20V⎓3A, 20V⎓5A, 100W Max
- Wireless Charge: 10W
- Operating Temp: 14 to 104°F (-10 to 40°C)
- Charging Temp: 32 to 104°F (0 to 40°C)

DAKOTA LITHIUM BATTERIES MEET U.N. 38.3 STANDARDS FOR QUALITY & PERFORMANCE, AND CONFORM TO U.N. 38.3/DOT SHIPPING REGULATIONS FOR AIR, TRAIN, MARINE, AND GROUND TRANSPORTATION. BUILT WITH GRADE A LIFEPO4 CELLS TESTED PER IEC62133 STANDARDS FOR SAFETY AND PERFORMANCE

1 99284 11696 2

Made in China

ALL BATTERIES INCLUDE AN ACTIVE BMS (BATTERY MANAGEMENT SYSTEM PROTECTION CIRCUIT THAT HANDLES CELL BALANCING, LO VOLTAGE CUTOFF, HIGH VOLTAGE CUTOFF, SHORT CIRCUIT PROTECTION AND TEMPERATURE PROTECTION FOR INCREASED PERFORMANCE AND LONGER LIFE

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. FCC ID: 2BDF8PS2400V2400A

CE FC RoHs UN38.3 Li-ion

MADE IN CHINA

⚠ WARNING!

- Do not short-circuit the unit. To avoid short-circuiting, keep the unit away from all metal objects (e.g.coins, hair-pins, keys, etc.) .
- Do not heat the unit, or dispose of it in fire, water or other liquids. Keep away from high temperatures.
- Do not expose the unit to direct sunlight. Keep away from high humidity, dusty places.
- Do not disassemble or reassemble this unit.
- Do not drop and place heavy objects on, or allow strong impact to this unit.
- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
- Children should be supervised to ensure that they do not play with the appliance.
- The unit may become hot when charging. This is normal. Be careful when handling.
- Use the unit properly to avoid electronic shock.
- The product is only used for emergency power station, it can not replace the standard DC or AC power of household appliances or digital products.
- Do not overcharge the internal battery. See Instruction Manual.

⚠ ACHTUNG!

- Schließen Sie das Gerät nicht kurz. Um Kurzschlüsse zu vermeiden, halten Sie das Gerät von allen Metallgegenständen (z.B.Münzen, Haarnadeln, Schlüssel usw.) fern.
- Erhitzen Sie das Gerät nicht und werfen Sie es nicht in Feuer, Wasser oder andere Flüssigkeiten. Von hohen Temperaturen fernhalten.
- Setzen Sie das Gerät keiner direkten Sonneneinstrahlung aus. Von hoher Luftfeuchtigkeit und staubigen Orten fernhalten.
- Zerlegen Sie dieses Gerät nicht und bauen Sie es nicht wieder zusammen.
- Lassen Sie das Gerät nicht fallen, stellen Sie keine schweren Gegenstände darauf und setzen Sie es keinen starken Stößen aus.
- Dieses Gerät ist nicht für die Verwendung durch Personen (einschließlich Kinder) mit eingeschränkten körperlichen, sensorischen oder geistigen Fähigkeiten oder mangelnder Erfahrung und Wissen bestimmt, es sei denn, sie werden von einer für ihre Sicherheit verantwortlichen Person beaufsichtigt oder in die Verwendung des Geräts eingewiesen .
- Kinder sollten beaufsichtigt werden, um sicherzustellen, dass sie nicht mit dem Gerät spielen.
- Das Gerät kann beim Laden heiß werden. Das ist normal. Seien Sie vorsichtig bei der Handhabung.
- Verwenden Sie das Gerät ordnungsgemäß, um einen Stromschlag zu vermeiden.
- Das Produkt wird nur für Notstromanlagen verwendet und kann nicht die Standard-Gleich- oder Wechselstromversorgung von Haushaltsgeräten oder digitalen Produkten ersetzen.
- Überladen Sie den internen Akku nicht. Siehe Bedienungsanleitung.

- Date Code:

2.5 Technical Information of E.U.T.

Network and Wireless Connectivity	Bluetooth (BLE) WiFi 2.4G: 802.11b, 802.11g, 802.11n(HT20/40) Wireless Power Transfer

The requirement for the following technical information of the EUT was tested in this report:

Technology	**WPT**
Operating Frequency	110.1-205KHz
Modulation Type	FSK
Antenna Type	Coil Antenna
Antenna Gain(Peak)	0 dBi
Remark	The above information are declared by the applicant, EU-LAB is not responsible for the information accuracy provided by the applicant.

Address: 101, Building B1, Fuqiao Fourth Area, Qiaotou Community, Fuhai Subdistrict, Baoan District, Shenzhen, Guangdong, China
Website: www.eu-test.com
Tel: (86)-755-2357-9714 Email: Service@eu-test.com

3 Test Summary

3.1 Test Standard

The tests were performed according to following standards:

No.	Identity	Document Title
1	47 CFR Part 15, Subpart C	Intentional radiators of radio frequency equipment
2	ANSI C63.10-2020	American National Standard for Testing Unlicensed Wireless Devices

Remark:
Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product maybe which result in lowering the emission/immunity should be checked to ensure compliance has been maintained.

3.2 Test Verdict

No.	Description	FCC Part No.	Verdict	Remark
1	Antenna Requirement	15.203	Pass	--
2	Conducted Emission at AC Power Line	15.207	Pass	--
3	Emissions Bandwidth	15.215	Pass	--
4	Radiated Emissions	15.209 /15.215(b)	Pass	--

3.3 Test Laboratory

Test Laboratory	Shenzhen EU Testing Laboratory Limited
Address	101, Building B1, Fuqiao Fourth Area, Qiaotou Community, Fuhai Subdistrict, Baoan District, Shenzhen, Guangdong, China
Designation Number	CN1368
Test Firm Registration Number	952583

4 Test Configuration

4.1 Test Environment

During the measurement, the normal environmental conditions were within the listed ranges:

Relative Humidity	30% to 60%	
Atmospheric Pressure	86 kPa to 106 kPa	
Temperature	NT (Normal Temperature)	+15℃ to +35℃
Working Voltage of the EUT	NV (Normal Voltage)	120 VAC, 60Hz

4.2 Test Equipment

Conducted Emission at AC power line					
Equipment	**Manufacturer**	**Model No**	**Serial No**	**Cal Date**	**Cal Due Date**
L.I.S.N. Artificial Mains Network	Rohde & Schwarz	ENV216	EE-004	2025/01/08	2026/01/07
EMI Test Receiver	Rohde & Schwarz	ESCI	EE-005	2025/01/08	2026/01/07
Test Software	Farad	EZ-EMC	EE-014	N.C.R	N.C.R

Radiated Emission and RF Test					
Equipment	**Manufacturer**	**Model No**	**Serial No**	**Cal Date**	**Cal Due Date**
EMI Test Receiver	ROHDE & SCHWARZ	ESPI	EE-006	2025/01/08	2026/01/07
Bilog Broadband Antenna	SCHWARZBECK	VULB 9163	EE-007	2023/01/14	2026/01/13
Double Ridged Horn Antenna	A-INFOMW	LB-10180-NF	EE-008	2023/01/12	2026/01/11
Pre-amplifier	Agilent	8447D	EE-009	2025/01/08	2026/01/07
Pre-amplifier	Agilent	8449B	EE-010	2025/01/08	2026/01/07
MXA Signal Analyzer	Agilent	N9020A	EE-011	2025/01/08	2026/01/07
MXG RF Vector Signal Generator	Agilent	N5182A	EE-012	2025/01/08	2026/01/07
Test Software	Farad	EZ-EMC	EE-015	N.C.R	N.C.R
MIMO Power Measurement Module	TSTPASS	TSPS 2023R	EE-016	2025/01/08	2026/01/07
RF Test Software	TSTPASS	TS32893 V2.0	EE-017	N.C.R	N.C.R
Wideband Radio Communication Tester	ROHDE & SCHWARZ	CMW500	EE-402	2025/02/14	2026/02/13
Loop Antenna	TESEQ	HLA6121	EE-403	2025/02/14	2026/02/13
MXG RF Analog Signal Generator	Agilent	N5181A	EE-406	2025/02/14	2026/02/13
Constant Temperature Humidity Chamber	Guangxin	GXP-401	ES-002	2024/07/30	2025/07/29

Address: 101, Building B1, Fuqiao Fourth Area, Qiaotou Community, Fuhai Subdistrict, Baoan District, Shenzhen, Guangdong, China
Website: www.eu-test.com
Tel: (86)-755-2357-9714 Email: Service@eu-test.com

4.3 Description of Support Unit

No.	Title	Manufacturer	Model No.	Serial No.
1	Wireless Charging Load	YBZ	ID-ZWX	EMC-PJ-050
2	Adapter	MI	A232-050200U-CN2	EMC-PJ-004

4.4 Test Mode

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned bellow was evaluated respectively.

No.	Description	Remark
TM1	Wireless Output (10W)--AC Power Supply	
TM2	Wireless Output (10W)--DC Power Supply	
TM3	Standby	
Note: 1. EUT supports empty load, half load, full load working at the same time, so the all conditions have been tested. It is found that TM1 full load is the worst mode, and the data in the report only reflects the worst mode.		

4.5 Description of Calculation

4.5.1. Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS (dBuV/m) = RA (dBuV) + AF (dB/m) + CL (dB) – AG (dB)

Where	FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
	RA = Reading Amplitude	AG = Amplifier Gain
	AF = Antenna Factor	

4.5.2. Disturbance Calculation

The AC mains conducted disturbance is calculated by adding the 10dB Pulse Limiter and Cable Factor and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

CD (dBuV) = RA (dBuV) + PL (dB) + CL (dB)

Where	CD = Conducted Disturbance	CL = Cable Attenuation Factor (Cable Loss)
	RA = Reading Amplitude	PL = 10 dB Pulse Limiter Factor

Address: 101, Building B1, Fuqiao Fourth Area, Qiaotou Community, Fuhai Subdistrict, Baoan District, Shenzhen, Guangdong, China
Website: www.eu-test.com
Tel: (86)-755-2357-9714 Email: Service@eu-test.com

4.6 Measurement Uncertainty

The following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2.
This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Test Item	Measurement Uncertainty
Conducted Emission	2.64 dB
Occupied Channel Bandwidth	70 kHz
RF output power, conducted	1.04 dB
Power Spectral Density, conducted	0.91 dB
Unwanted Emissions, conducted	2.72 dB
Radiated Emission (9kHz- 30MHz)	Ur = 2.50 dB
Radiated Emission (30MHz- 1GHz)	Ur = 2.70 dB (Horizontal)
	Ur = 2.70 dB (Vertical)
Radiated Emission (1GHz- 18GHz)	Ur = 3.50 dB (Horizontal)
	Ur = 3.50 dB (Vertical)
Radiated Emission (18GHz- 40GHz)	Ur = 5.15 dB (Horizontal)
	Ur = 5.24 dB (Vertical)
Temperature	0.8°C
Humidity	4%

4.7 Deviation from Standards

None.

4.8 Abnormalities from Standard Condition

None.

Address: 101, Building B1, Fuqiao Fourth Area, Qiaotou Community, Fuhai Subdistrict, Baoan District, Shenzhen, Guangdong, China
Website: www.eu-test.com
Tel: (86)-755-2357-9714 Email: Service@eu-test.com

5 Test Items

5.1 Antenna requirement

5.1.1 Test Requirement

Test Requirement	According to FCC §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. If directional gain of transmitting antennas is greater than 6 dBi, the power shall be reduced by the same level in dB comparing to gain minus 6 dBi. For the fixed point-to-point operation, the power shall be reduced by one dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi. 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 FCC rule.

5.1.2 Antenna Anti-Replacement Construction

The Antenna Anti-Replacement as following method:

Protected Method	Description
The antenna is embedded in the product.	The EUT has a permanently and irreplaceable inductive loop antenna.

5.1.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi.

Address: 101, Building B1, Fuqiao Fourth Area, Qiaotou Community, Fuhai Subdistrict, Baoan District, Shenzhen, Guangdong, China
Website: www.eu-test.com
Tel: (86)-755-2357-9714 Email: Service@eu-test.com

5.2 Conducted Emission at AC Power Line

5.2.1 Test Requirement

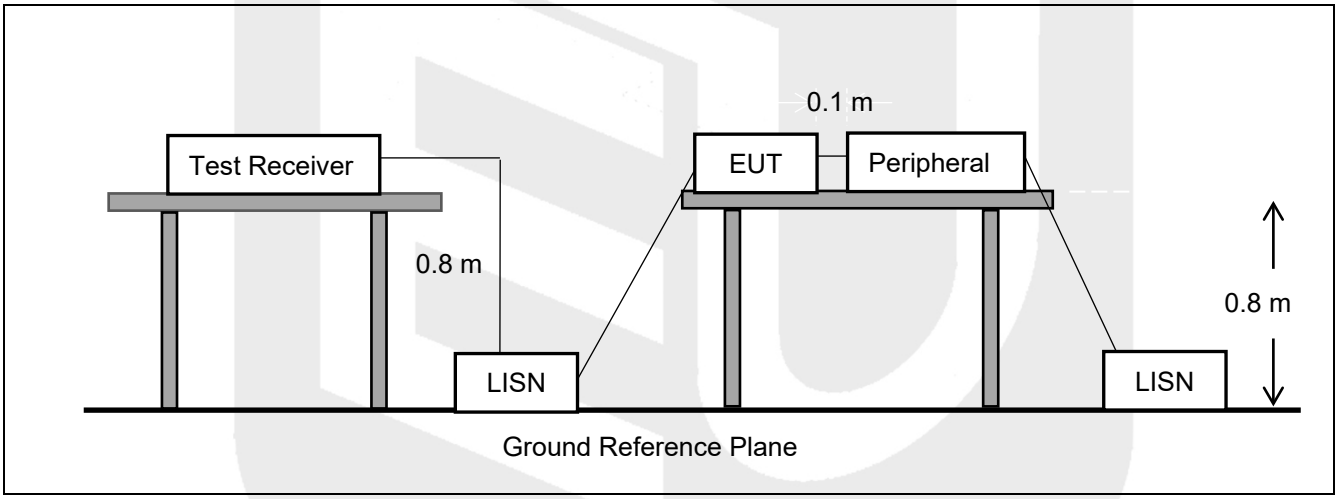
Test Requirement:	Except as shown in paragraphs (b)and (c)of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μH/50 ohms line impedance stabilization network (LISN).
Test Limit	

Frequency of emission (MHz)	Conducted limit (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

Test Method	Refer to ANSI C63.10-2020 section 6.2, standard test method for ac power-line conducted emissions from unlicensed wireless devices.

5.2.2 Test Setup Diagram



5.2.3 Test Procedure

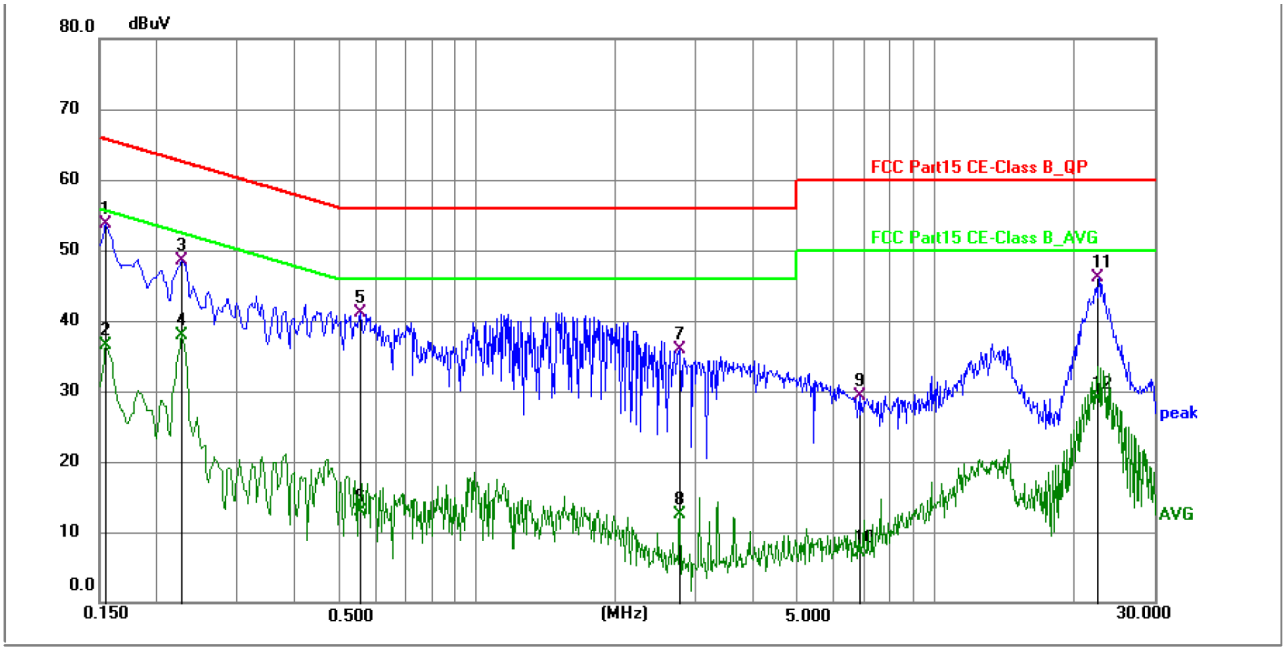
The EUT is put on the plane 0.8 m high above the ground by insulating support and connected to the AC mains through Line Impedance Stability Network (L.I.S.N). This provided a 50ohm coupling impedance for the tested equipment. Both sides of AC line are investigated to find out the maximum conducted emission according to the test standard regulations during conducted emission measurement.
The bandwidth of the field strength meter (R&S Test Receiver ESCI) is set at 9kHz in 150kHz~30MHz.
The maximum conducted interference is searched using Peak (PK), if the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. Refer to recorded points and plots below.
Devices subject to Part 15 must be tested for all available U.S. voltages and frequencies (such as a nominal 120 VAC, 50/60 Hz and 240 VAC, 50/60 Hz) for which the device is capable of operation. A device rated for 50/60 Hz operation need not be tested at both frequencies provided the radiated and line conducted emissions are the same at both frequencies.

5.2.4 Test Data

PASS.
During the test, pre-scan all test modes, and found the AC power supply is worse case, the report only record this mode.

Conducted Emission Test Data

Test Site:	Shielded Room #1
Test Mode:	TM1
Comments:	Live Line



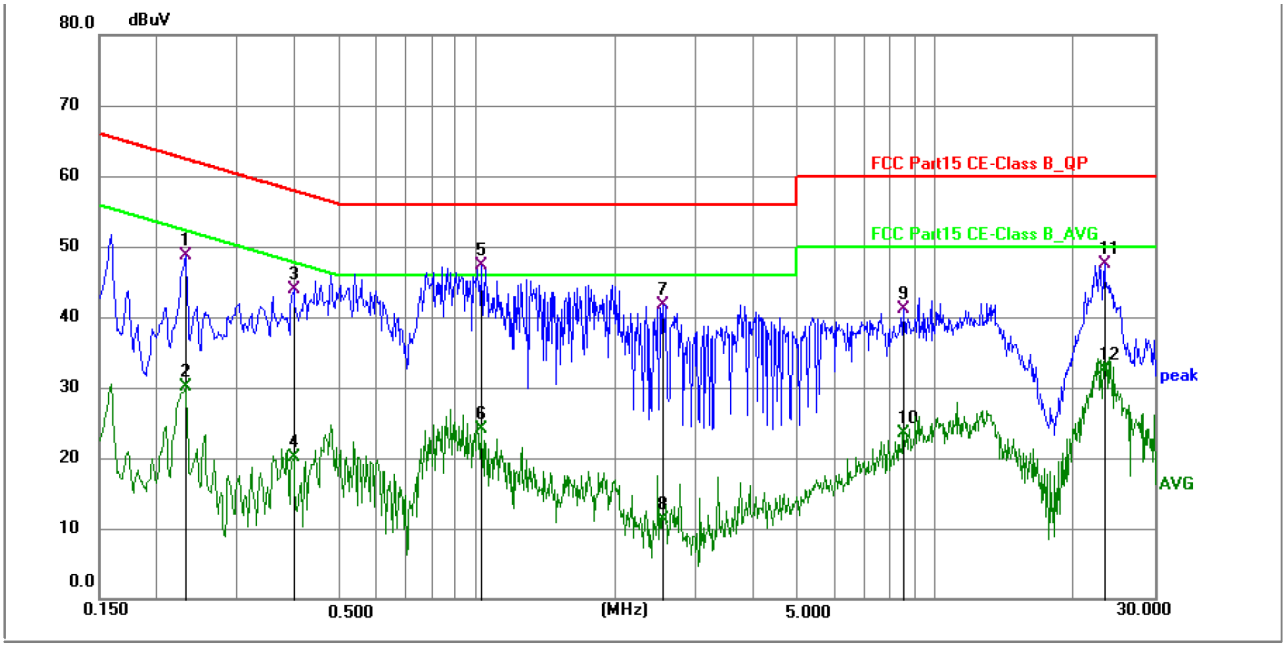
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1 *	0.1544	43.66	9.96	53.62	65.76	-12.14	QP	P	
2	0.1544	26.51	9.96	36.47	55.76	-19.29	AVG	P	
3	0.2265	38.58	9.97	48.55	62.58	-14.03	QP	P	
4	0.2265	27.92	9.97	37.89	52.58	-14.69	AVG	P	
5	0.5550	31.01	10.04	41.05	56.00	-14.95	QP	P	
6	0.5550	2.92	10.04	12.96	46.00	-33.04	AVG	P	
7	2.7734	25.93	10.05	35.98	56.00	-20.02	QP	P	
8	2.7734	2.36	10.05	12.41	46.00	-33.59	AVG	P	
9	6.8414	19.31	10.01	29.32	60.00	-30.68	QP	P	
10	6.8414	-2.93	10.01	7.08	50.00	-42.92	AVG	P	
11	22.6904	35.90	10.13	46.03	60.00	-13.97	QP	P	
12	22.6904	18.77	10.13	28.90	50.00	-21.10	AVG	P	

Note: Level = Reading + Factor Margin = Level – Limit

Address: 101, Building B1, Fuqiao Fourth Area, Qiaotou Community, Fuhai Subdistrict, Baoan District, Shenzhen, Guangdong, China
Website: www.eu-test.com
Tel: (86)-755-2357-9714 Email: Service@eu-test.com

Conducted Emission Test Data

Test Site:	Shielded Room #1
Test Mode:	TM1
Comments:	Neutral Line



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.2310	38.73	9.99	48.72	62.41	-13.69	QP	P	
2	0.2310	20.16	9.99	30.15	52.41	-22.26	AVG	P	
3	0.3975	33.78	10.04	43.82	57.91	-14.09	QP	P	
4	0.3975	10.05	10.04	20.09	47.91	-27.82	AVG	P	
5 *	1.0230	37.18	10.06	47.24	56.00	-8.76	QP	P	
6	1.0230	14.14	10.06	24.20	46.00	-21.80	AVG	P	
7	2.5440	31.62	10.06	41.68	56.00	-14.32	QP	P	
8	2.5440	1.19	10.06	11.25	46.00	-34.75	AVG	P	
9	8.5243	31.01	10.02	41.03	60.00	-18.97	QP	P	
10	8.5243	13.46	10.02	23.48	50.00	-26.52	AVG	P	
11	23.3520	37.42	10.13	47.55	60.00	-12.45	QP	P	
12	23.3520	22.45	10.13	32.58	50.00	-17.42	AVG	P	

Note: Level = Reading + Factor Margin = Level – Limit

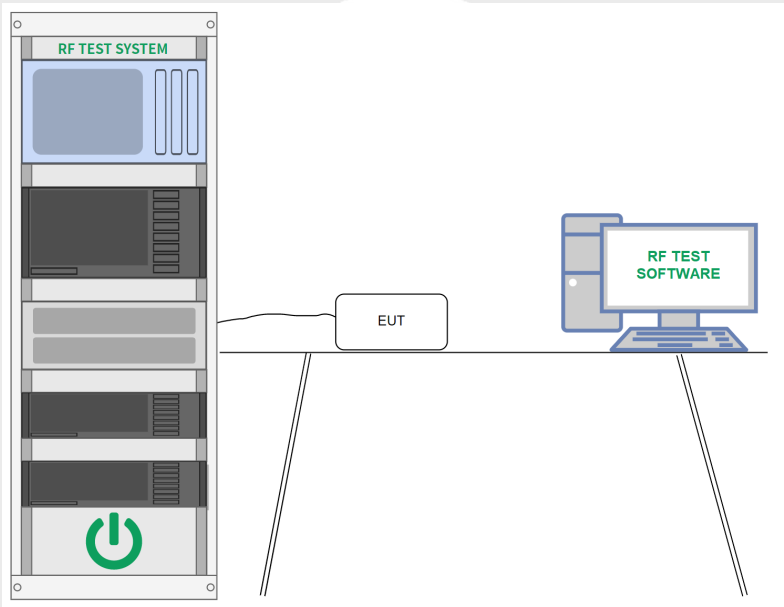
Address: 101, Building B1, Fuqiao Fourth Area, Qiaotou Community, Fuhai Subdistrict, Baoan District, Shenzhen, Guangdong, China
Website: www.eu-test.com
Tel: (86)-755-2357-9714 Email: Service@eu-test.com

5.3 Emissions Bandwidth

5.3.1 Test Requirement

Test Requirement	Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.
Test Method	ANSI C63.10-2020, section 6.9.2 Occupied bandwidth—relative measurement procedure

5.3.2 Test Setup Diagram



5.3.3 Test Procedure

a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the EMI receiver or spectrum analyzer shall be between two times and five times the OBW.
b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW and video bandwidth (VBW) shall be approximately three times RBW, unless otherwise specified by the applicable requirement.
c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than [10 log (OBW/RBW)] below the reference level. Specific guidance is given in 4.1.5.2.
d) Steps a) through c) might require iteration to adjust within the specified tolerances.
e) The dynamic range of the instrument at the selected RBW shall be more than 10 dB below the target "−xx dB down" requirement; that is, if the requirement calls for measuring the −20 dB OBW, the instrument noise floor at the selected RBW shall be at least 30 dB below the
reference value.
f) Set detection mode to peak and trace mode to max hold.
g) Determine the reference value: Set the EUT to transmit an unmodulated carrier or modulated signal, as applicable. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace (this is the reference value).
h) Determine the "−xx dB down amplitude" using [(reference value) − xx]. Alternatively, this calculation may be made by using the marker-delta function of the instrument.
i) If the reference value is determined by an unmodulated carrier, then turn the EUT modulation ON, and either clear the existing trace or start a new trace on the spectrum analyzer and allow the new trace to stabilize. Otherwise, the trace from step g) shall be used for step j).
j) Place two markers, one at the lowest frequency and the other at the highest frequency of the envelope of the spectral display, such that each marker is at or slightly below the "-xx dB down amplitude" determined in step h). If a marker is below this "−xx dB down amplitude" value, then it shall be as close as possible to this value. The occupied bandwidth is the frequency difference between the two markers. Alternatively, set a marker at the lowest frequency of the envelope of the spectral display, such that the marker is at or slightly below the "-xx dB down amplitude" determined in step h). Reset the marker-delta function and move the marker to the other side of the emission until the delta marker amplitude is at the same level as the reference marker amplitude. The marker-delta frequency reading at this point is the specified emission bandwidth.
k)The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

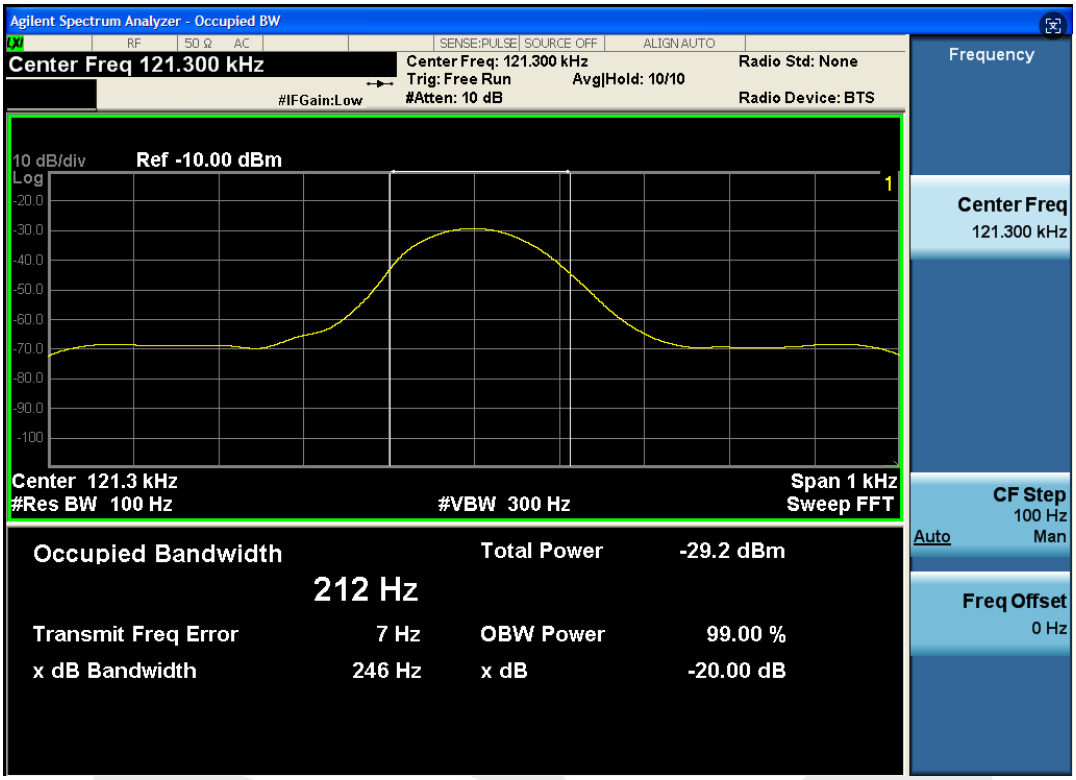
5.3.4 Test Data

PASS.

Please refer to the following pages.

Address: 101, Building B1, Fuqiao Fourth Area, Qiaotou Community, Fuhai Subdistrict, Baoan District, Shenzhen, Guangdong, China
Website: www.eu-test.com
Tel: (86)-755-2357-9714 Email: Service@eu-test.com

Frequency (KHz)	20dB bandwidth (Hz)	99% bandwidth (Hz)	Result
121.3	246	212	Pass



5.4 Field Strength of Fundamental Emissions and Radiated Emission

5.4.1 Test Requirement

<table>
<tr><td>Test Requirement</td><td>FCC §15.215; FCC §15.209;</td></tr>
<tr><td>Test Limit</td><td>FCC §15.215(b):
In most unwanted emissions outside of the frequency bands shown in these alternative provisions must be attenuated to the emission limits shown in §15.209.In no case shall the level of the unwanted emissions from an intentional radiator operating under these additional provisions exceed the field strength of the fundamental emission.

FCC §15.209:
According to FCC section 15.209 (a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:
<table>
<tr><th>Frequency (MHz)</th><th>Field strength (microvolts/meter)</th><th>Measurement distance (meters)</th></tr>
<tr><td>0.009-0.490</td><td>2400/F(kHz)</td><td>300</td></tr>
<tr><td>0.490-1.705</td><td>24000/F(kHz)</td><td>30</td></tr>
<tr><td>1.705-30.0</td><td>30</td><td>30</td></tr>
<tr><td>30-88</td><td>100 **</td><td>3</td></tr>
<tr><td>88-216</td><td>150 **</td><td>3</td></tr>
<tr><td>216-960</td><td>200 **</td><td>3</td></tr>
<tr><td>Above 960</td><td>500</td><td>3</td></tr>
</table>
** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241.
NOTE:
1. Field Strength (dBμV/m) = 20*log[Field Strength (μV/m)].
2. In the emission tables above, the tighter limit applies at the band edges.
3. At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the regulations, when performing measurements at a closer distance than specified, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). For example, at the frequency 9 kHz, limit @3m = 20*log (2400/f) + 40log (dlimit/dmeasure) where limit = 300m, dmeasure=3m. limit @3m = 20*log (2400/9) + 40log (300/3) = 128.52 (dBμV/m).
4. The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9 90kHz,110-490 kHz and above 1000 MHZ Radiated emission limits in these three bands are based on measurements em-ploying an average detector.</td></tr>
<tr><td>Test Method</td><td>ANSI C63.10-2020 section 6.4, 6.5
Radiated emissions tests</td></tr>
</table>

Address: 101, Building B1, Fuqiao Fourth Area, Qiaotou Community, Fuhai Subdistrict, Baoan District, Shenzhen, Guangdong, China
Website: www.eu-test.com
Tel: (86)-755-2357-9714 Email: Service@eu-test.com

5.4.2 Test Setup Diagram

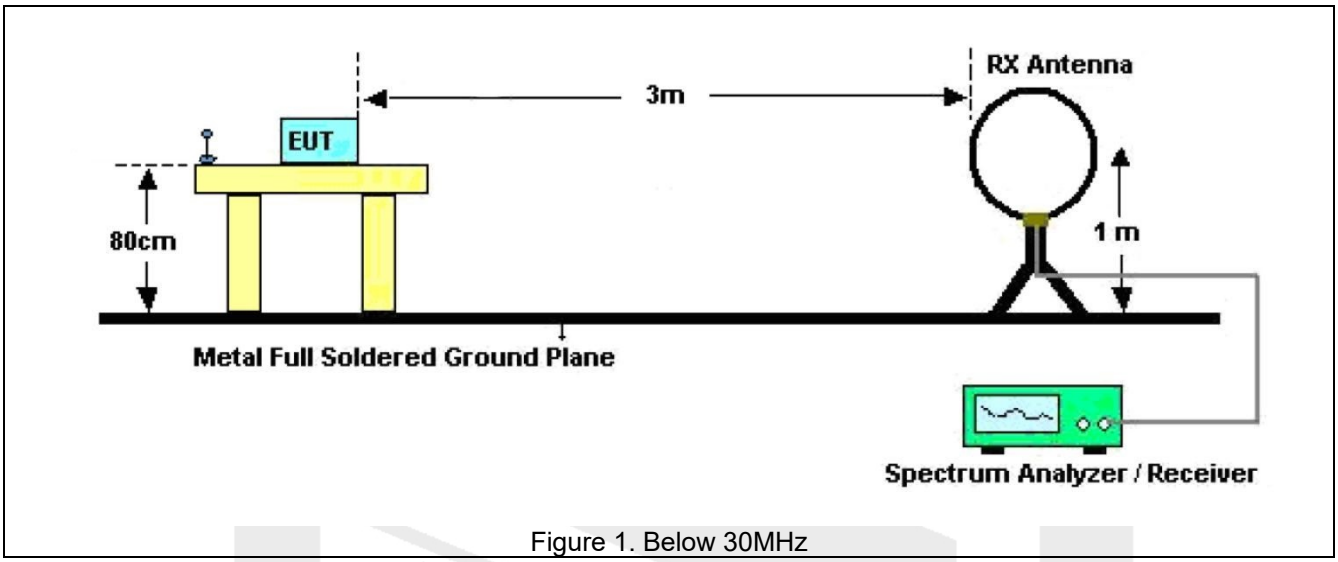


Figure 1. Below 30MHz

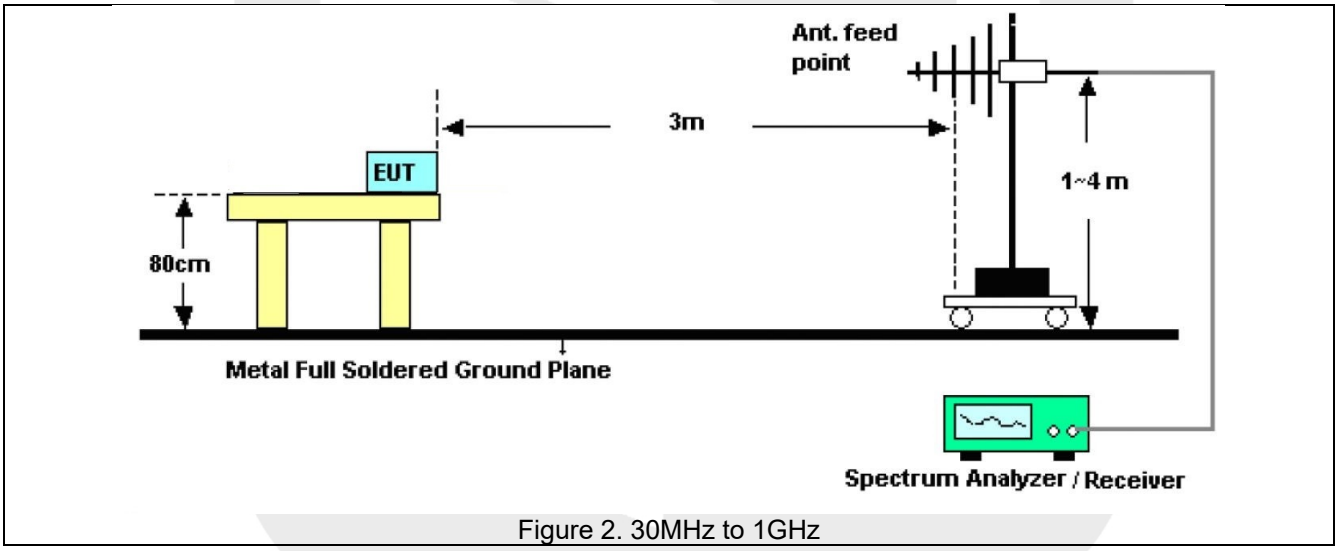


Figure 2. 30MHz to 1GHz

Address: 101, Building B1, Fuqiao Fourth Area, Qiaotou Community, Fuhai Subdistrict, Baoan District, Shenzhen, Guangdong, China
Website: www.eu-test.com
Tel: (86)-755-2357-9714 Email: Service@eu-test.com

5.4.3 Test Procedure

The measurement frequency range is from 9 kHz to the 10th harmonic of the fundamental frequency. The Turn Table is actuated to turn from 0° to 360°, and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power.
The power of the EUT transmitting frequency should be ignored.
All Spurious Emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.
Use the following spectrum analyzer settings:
Span = wide enough to fully capture the emission being measured
For 9kHz to 150kHz, Set the spectrum analyzer as:
RBW = 200Hz, VBW =1kHz, Detector= Quasi-Peak, Trace mode= Max hold, Sweep- auto couple.

For 150kHz to 30MHz, Set the spectrum analyzer as:
RBW = 9KHz, VBW =30kHz, Detector= Quasi-Peak, Trace mode= Max hold, Sweep- auto couple.

For 30MHz to 1000MHz, Set the spectrum analyzer as:
RBW = 100kHz, VBW =300kHz, Detector= Quasi-Peak, Trace mode= Max hold, Sweep- auto couple.

For above 1GHz,Set the spectrum analyzer as:
RBW =1MHz, VBW =1MHz, Detector= Peak, Trace mode= Max hold, Sweep- auto couple.
RBW =1MHz, VBW =10Hz, Detector= Average, Trace mode= Max hold, Sweep- auto couple.

For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported, Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

5.4.4 Test Data

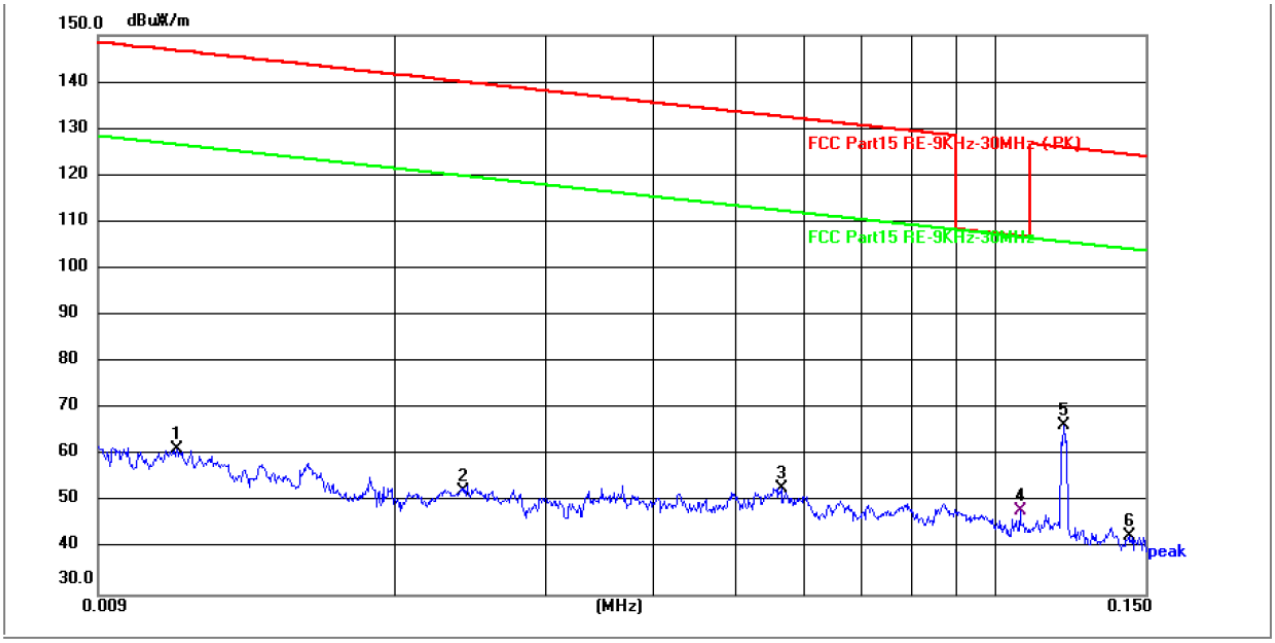
PASS.

Please refer to the following pages.
The frequency range from 9KHz to 1000MHz is checked.
Only the worst case data was showed in the report, please to see the following pages.
For test of 30MHz-1GHz, during the test, pre-scan all test mode, the report only record this mode.
Note: During the test, pre-scan all test modes, and found the AC power supply is worse case, the report only record this mode.

Address: 101, Building B1, Fuqiao Fourth Area, Qiaotou Community, Fuhai Subdistrict, Baoan District, Shenzhen, Guangdong, China
Website: www.eu-test.com
Tel: (86)-755-2357-9714 Email: Service@eu-test.com

Radiated Emission Test Data (9kHz -150kHz)

Test item:	**966 Chamber #1**	**Polarization:**	**Coaxial**
Distance:	**3m**	**Test Mode:**	**TM1**



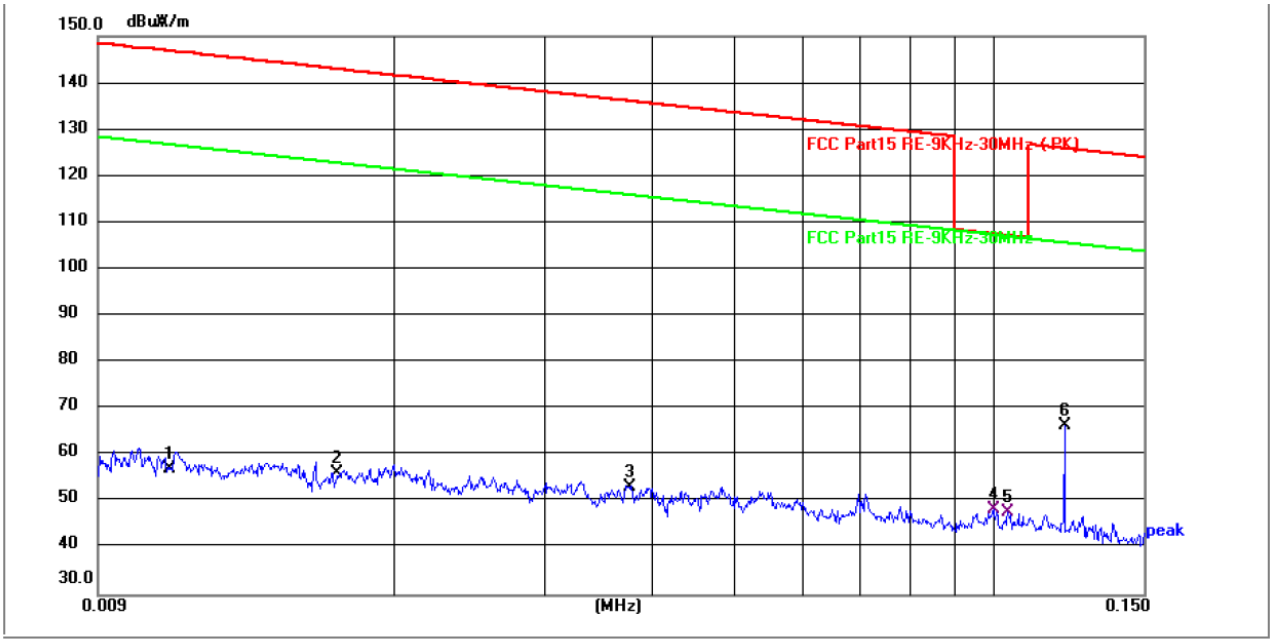
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	0.0111	41.87	19.62	61.49	146.70	-85.21	peak	P	
2	0.0240	32.54	19.76	52.30	140.00	-87.70	peak	P	
3	0.0563	33.04	19.93	52.97	132.59	-79.62	peak	P	
4 *	0.1070	28.19	20.03	48.22	107.02	-58.80	QP	P	
5	0.1203	46.44	20.00	66.44	126.00	-59.56	peak	P	
6	0.1433	22.73	20.03	42.76	124.48	-81.72	peak	P	

Note: Level = Reading + Factor Margin =Level - Limit

Address: 101, Building B1, Fuqiao Fourth Area, Qiaotou Community, Fuhai Subdistrict, Baoan District, Shenzhen, Guangdong, China
Website: www.eu-test.com
Tel: (86)-755-2357-9714 Email: Service@eu-test.com

Radiated Emission Test Data (9kHz -150kHz)

Test item:	**966 Chamber #1**	**Polarization:**	**Coplanar**
Distance:	**3m**	**Test Mode:**	**TM1**



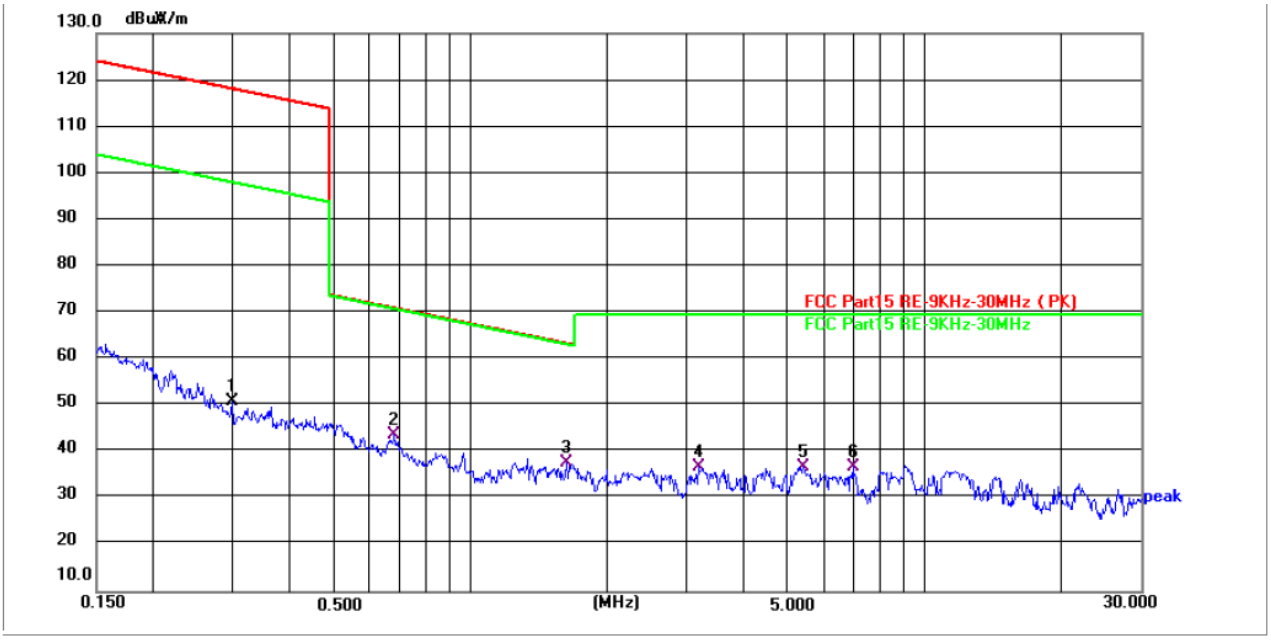
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	0.0110	37.64	19.61	57.25	146.78	-89.53	peak	P	
2	0.0171	36.44	19.69	56.13	142.94	-86.81	peak	P	
3	0.0376	33.28	19.87	53.15	136.10	-82.95	peak	P	
4 *	0.1000	28.43	19.99	48.42	107.61	-59.19	QP	P	
5	0.1040	27.78	20.01	47.79	107.27	-59.48	QP	P	
6	0.1210	46.32	20.00	66.32	125.95	-59.63	peak	P	

Note: Level = Reading + Factor Margin =Level - Limit

Address: 101, Building B1, Fuqiao Fourth Area, Qiaotou Community, Fuhai Subdistrict, Baoan District, Shenzhen, Guangdong, China
Website: www.eu-test.com
Tel: (86)-755-2357-9714 Email: Service@eu-test.com

Radiated Emission Test Data (150kHz - 30MHz)

Test item:	**966 Chamber #1**	**Polarization:**	**Coaxial**
Distance:	**3m**	**Test Mode:**	**TM1**



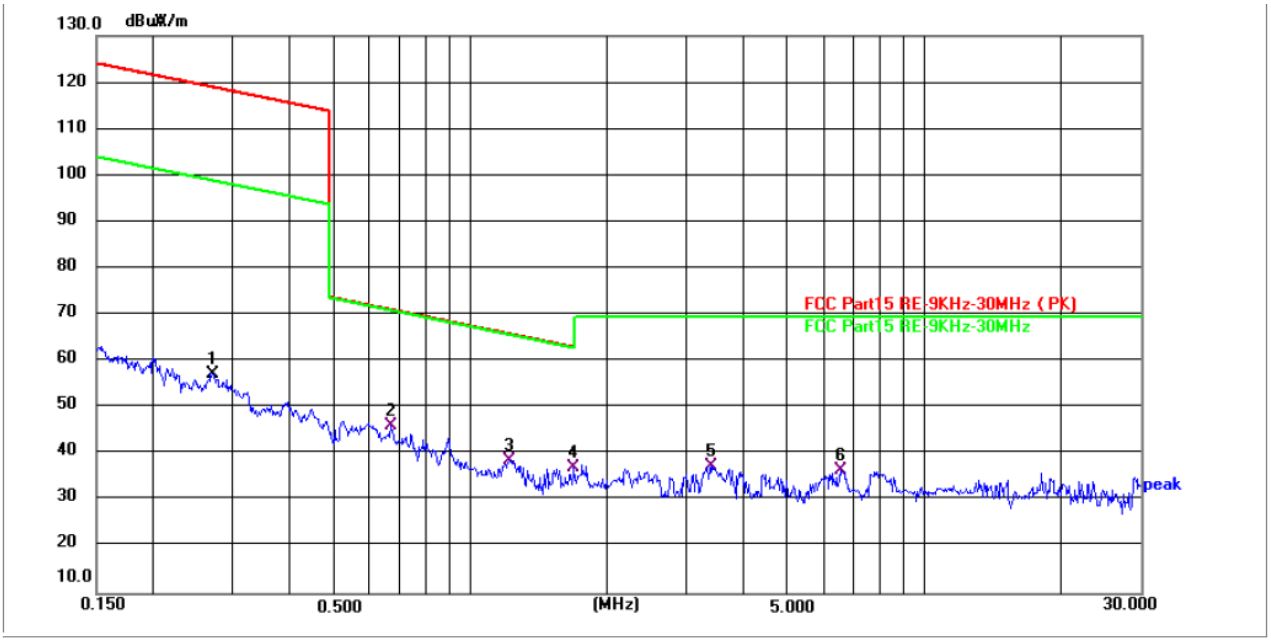
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	0.2983	30.84	20.10	50.94	118.11	-67.17	peak	P	
2	0.6790	23.54	20.10	43.64	70.97	-27.33	QP	P	
3 *	1.6270	17.54	20.10	37.64	63.38	-25.74	QP	P	
4	3.1730	16.91	20.08	36.99	69.54	-32.55	QP	P	
5	5.3900	16.91	20.03	36.94	69.54	-32.60	QP	P	
6	6.9508	16.81	19.91	36.72	69.54	-32.82	QP	P	

Note: Level = Reading + Factor Margin =Level - Limit

Address: 101, Building B1, Fuqiao Fourth Area, Qiaotou Community, Fuhai Subdistrict, Baoan District, Shenzhen, Guangdong, China
Website: www.eu-test.com
Tel: (86)-755-2357-9714 Email: Service@eu-test.com

Radiated Emission Test Data (150kHz - 30MHz)

Test item:	**966 Chamber #1**	**Polarization:**	**Coplanar**
Distance:	**3m**	**Test Mode:**	**TM1**

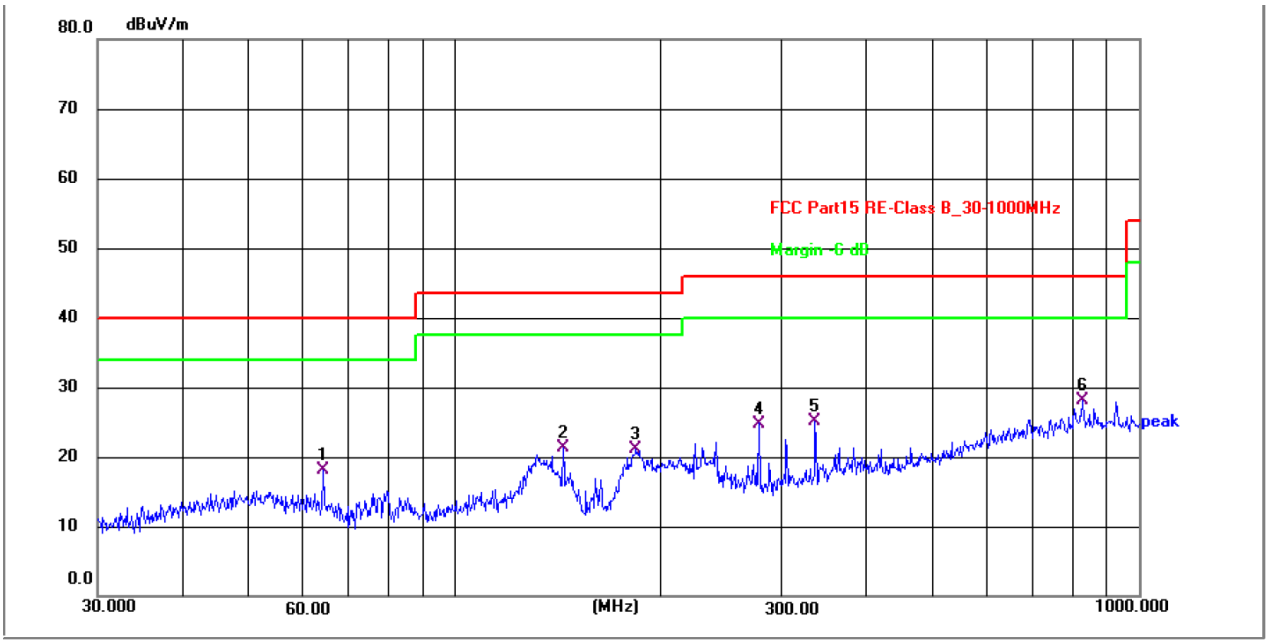


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	0.2714	37.24	20.10	57.34	118.93	-61.59	peak	P	
2 *	0.6683	25.97	20.09	46.06	71.10	-25.04	QP	P	
3	1.2160	18.68	20.11	38.79	65.91	-27.12	QP	P	
4	1.6891	17.07	20.10	37.17	63.05	-25.88	QP	P	
5	3.3814	17.43	20.08	37.51	69.54	-32.03	QP	P	
6	6.5224	16.51	19.94	36.45	69.54	-33.09	QP	P	

Note: Level = Reading + Factor Margin =Level - Limit

Radiated Emission Test Data (30-1000MHz)

Test item:	**966 Chamber #1**	**Polarization:**	**Horizontal**
Distance:	**3m**	**Test Mode:**	**TM1**



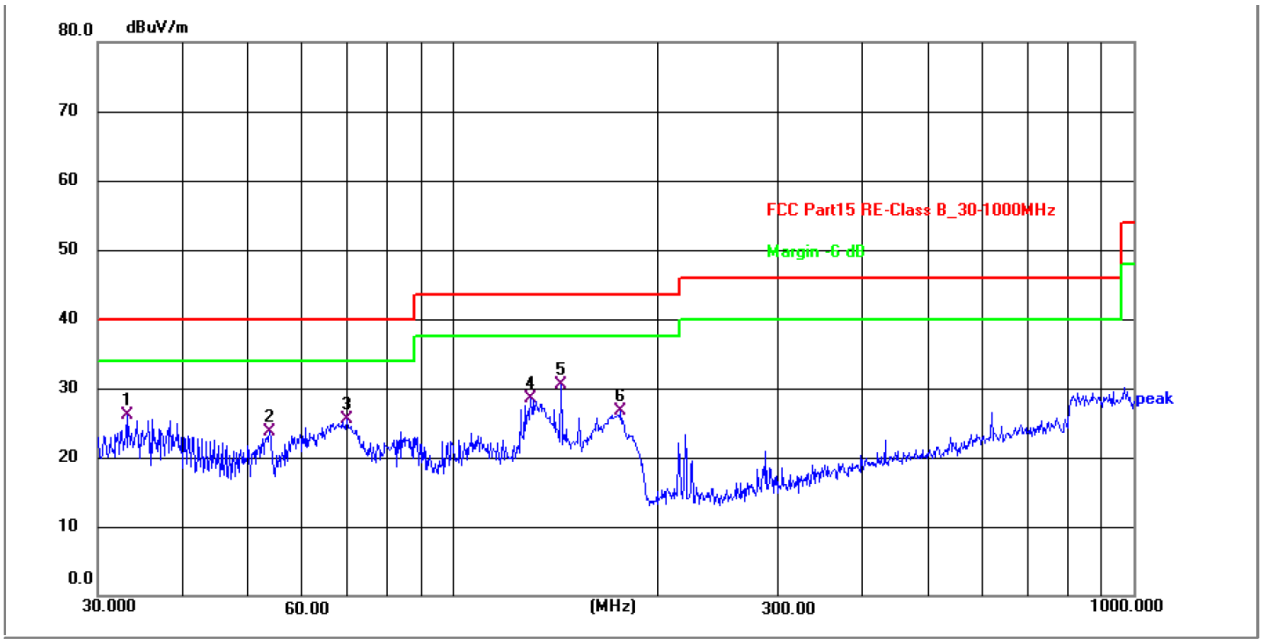
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	64.2074	34.09	-16.06	18.03	40.00	-21.97	QP	P	
2	143.8295	39.64	-18.33	21.31	43.50	-22.19	QP	P	
3	183.8440	37.39	-16.23	21.16	43.50	-22.34	QP	P	
4	278.0668	37.37	-12.57	24.80	46.00	-21.20	QP	P	
5	336.0352	36.38	-11.21	25.17	46.00	-20.83	QP	P	
6 *	827.4934	31.49	-3.44	28.05	46.00	-17.95	QP	P	

Note: Level = Reading + Factor **Margin =Level - Limit**

Address: 101, Building B1, Fuqiao Fourth Area, Qiaotou Community, Fuhai Subdistrict, Baoan District, Shenzhen, Guangdong, China
Website: www.eu-test.com
Tel: (86)-755-2357-9714 Email: Service@eu-test.com

Radiated Emission Test Data (30-1000MHz)

Test item:	**966 Chamber #1**	**Polarization:**	**Vertical**
Distance:	**3m**	**Test Mode:**	**TM1**



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	33.0950	42.91	-16.87	26.04	40.00	-13.96	QP	P	
2	53.6932	38.11	-14.43	23.68	40.00	-16.32	QP	P	
3	69.8450	43.51	-17.95	25.56	40.00	-14.44	QP	P	
4	129.9226	45.95	-17.50	28.45	43.50	-15.05	QP	P	
5 *	143.8295	48.88	-18.33	30.55	43.50	-12.95	QP	P	
6	176.2686	43.42	-16.78	26.64	43.50	-16.86	QP	P	

Note: Level = Reading + Factor **Margin =Level - Limit**

Address: 101, Building B1, Fuqiao Fourth Area, Qiaotou Community, Fuhai Subdistrict, Baoan District, Shenzhen, Guangdong, China
Website: www.eu-test.com
Tel: (86)-755-2357-9714 Email: Service@eu-test.com

ANNEX A TEST SETUP PHOTOS

Please refer to the document “8330EU121402W-AA.PDF”

ANNEX B EXTERNAL PHOTOS

Please refer to the document “8330EU121402W-AB.PDF”

ANNEX C INTERNAL PHOTOS

Please refer to the document “8330EU121402W-AC.PDF”

Address: 101, Building B1, Fuqiao Fourth Area, Qiaotou Community, Fuhai Subdistrict, Baoan District, Shenzhen, Guangdong, China
Website: www.eu-test.com
Tel: (86)-755-2357-9714 Email: Service@eu-test.com

STATEMENT

1. The laboratory guarantees the scientificity, accuracy and impartiality of the test, and is responsible for all the information in the report, except the information provided by the customer. The customer is responsible for the impact of the information provided on the validity of the results.
2. The report without China inspection body and laboratory Mandatory Approval (CMA) mark has no effect of proving to the society.
3. For the report with CNAS mark or A2LA mark, the items marked with "☆" are not within the accredited scope.
4. This report is invalid if it is altered, without the signature of the testing and approval personnel, or without the “inspection and testing dedicated stamp” or test report stamp.
5. The test data and results are only valid for the tested samples provided by the customer.
6. This report shall not be partially reproduced without the written permission of the laboratory.
7. Any objection shall be raised to the laboratory within 30 days after receiving the report.

--- End of Report ---

Address: 101, Building B1, Fuqiao Fourth Area, Qiaotou Community, Fuhai Subdistrict, Baoan District, Shenzhen, Guangdong, China
Website: www.eu-test.com
Tel: (86)-755-2357-9714 Email: Service@eu-test.com