

# EMC TEST REPORT

## Client Information:

Applicant: Shenzhen pecron technology co.,LTD  
Applicant add.: A503,No.2 Tian An Cyber Park,Longgang District,Shenzhen

Brand Name:



## Product Information:

Product Name: portable power station  
Model No.: E2000LFP

Derivative model No.: E1000,E1500,E3000,E1500PRO,E1000PRO,E600LFP,E300,EB3000-24V,EB3000-48V,E3600,E1500LFP,S200,S400,S500,S1000,S1500,P600,P1000,P1500,Q2000,Q3000,Q2000S,Q3000S,B300,B500,B1000,T3000,T6000,T3000S,T6000S,H600

Test Standard: EN 55032:2015+A11:2020  
EN 55035:2017+A11:2020  
EN IEC 61000-3-2:2019+A1:2021  
EN 61000-3-3:2013+A1:2019

Test Date: Dec.6 to Dec.12,2022

Issue Date: Dec.12,2022

**Test Result: PASS**

**Shenzhen iTC Product Testing Co.,Ltd.**

**Issued by:** Add. : Room 204,No.10,Phase 1,Xinhe Xinxing Third Industrial Area,Fuhai Road,Fuyong Street,Bao'an District,Shenzhen,Guangdong,China

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Test result presented in this test report is applicable to the tested sample only

Report Revision History			
Report No.	Report Version	Description	Issue Date
22ITC1207037E	NONE	Original	Dec.12,2022

Customer information	
Applicant Name:	Shenzhen pecron technology co.,LTD
Applicant Address:	A503,No.2 Tian An Cyber Park,Longgang District,Shenzhen
Manufacturer Name:	HuiZhou pecron technology co.,LTD
Manufacturer Address:	Gaowu section,Dongfeng Village,Xinwei Town,Huiyang District,Huizhou City

Measurement Uncertainty		
The reported uncertainty of measurement $y \pm U$ , where expanded uncertainty $U$ is based on a standard uncertainty multiplied by a coverage factor of $k=2$ , providing a level of confidence of approximately 95 %.		
Conducted Measurement :		
Method	Measurement Frequency Range	U,(dB)
ANSI	150KHz ~ 30MHz	3.2
Radiated Measurement :		
Method	Measurement Frequency Range	U,(dB)
ANSI	30MHz ~ 1000MHz	4.7
ANSI	1GHz ~ 6GHz	5.0

Test site information	
Lab performing tests	Shenzhen iTC Product Testing Co.,Ltd.
Lab Address	Room 204,No.10,Phase 1,Xinhe Xinxing Third Industrial Area,Fuhai Road,Fuyong Street,Bao'an District,Shenzhen,Guangdong,China
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## TABLE OF CONTENTS

	Page
Test Report Declaration	
<b>1. GENERAL PRODUCT INFORMATION</b> .....	<b>4</b>
1.1. Product Function .....	4
1.2. Description of Device (EUT) .....	4
1.3. Difference between Model Numbers .....	4
1.4. Independent Operation Modes .....	4
<b>2. TEST SITES</b> .....	<b>4</b>
2.1. Test Facilities .....	4
2.2. List of Test and Measurement Instruments .....	4
<b>3. TEST SET-UP AND OPERATION MODES</b> .....	<b>6</b>
3.1. Principle of Configuration Selection .....	6
3.2. Block Diagram of Test Set-up .....	6
3.3. Test Operation Mode and Test Software .....	6
3.4. Special Accessories and Auxiliary Equipment .....	7
3.5. Countermeasures to Achieve EMC Compliance .....	7
<b>4. EMISSION TEST RESULTS</b> .....	<b>7</b>
4.1. Conducted Emission at the Mains Terminals Test .....	7
4.2. Conducted Emission at the telecom port Test .....	10
4.3. Radiated Emission Test .....	11
4.4. Harmonic Current Emissions on AC Mains Test .....	14
4.5. Voltage Fluctuations and Flicker on AC Mains Test .....	15
<b>5. IMMUNITY TEST RESULTS</b> .....	<b>16</b>
5.1. Description of Performance Criteria .....	16
5.2. Electrostatic Discharge Immunity Test .....	17
5.3. Radio Frequency Electromagnetic Field Immunity Test .....	18
5.4. Electrical Fast Transient/Burst Immunity Test .....	19
5.5. Surge Immunity Test .....	21
5.6. Injected Currents Susceptibility Test .....	23
5.7. Power Frequency Magnetic Field Immunity Test .....	24
5.8. Voltage Dips and Short Interruptions Immunity Test .....	24
<b>6. PHOTOGRAPHS OF THE EUT</b> .....	<b>26</b>

## 1. GENERAL PRODUCT INFORMATION

### 1.1.Product Function

Refer to Technical Construction Form and User Manual.

### 1.2.Description of Device (EUT)

Description : portable power station

Model No. : E2000LFP,E1000,E1500,E3000,E1500PRO,E1000PRO,E600LFP,E300,EB3000-24V,EB3000-48V,E3600,E1500LFP,S200,S400,S500,S1000,S1500,P600,P1000,P1500,Q2000,Q3000,Q2000S,Q3000S,B300,B500,B1000,T3000,T6000,T3000S,T6000S,H600

Power supply : USB output:5V2A/9V2A/12V1.5A/20V5A MAX  
Battery Capacity:1920Wh(25.6V75Ah)  
AC output:Pure Sine Wave 110V60Hz  
DC output:12V10A/12V3A  
AC out Power:2000W  
AC 230V/50HZ For adapter

Testing voltage : AC 230V/50Hz

### 1.3.Difference between Model Numbers

The models differ only in type,but all others are the same

### 1.4.Independent Operation Modes

The basic operation modes are:

#### 1.4.1.working

## 2. TEST SITES

### 2.1.Test Facilities

Lab Qualifications : Certificated by CNAS China  
Registration No.: CNAS /  
Date of registration: March 12,2018

### 2.2.List of Test and Measurement Instruments

#### 2.2.1.For conducted emission at the mains terminals test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESCI	101156	Apr. 27,22	Apr. 27,23
Artificial Mains Network	Rohde&Schwarz	ENV216	101315	Apr. 27,22	Apr. 27,23

Artificial Mains Network (AUX)	Rohde&Schwarz	ENV216	101314	Apr. 27,22	Apr. 27,23
RF Cable	FUJIKURA	3D-2W	944 Cable	Apr. 27,22	Apr. 27,23

2.2.2.For radiated emission test (30MHz-1GHz)

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESCI	101156	Apr. 27,22	Apr. 27,23
Bilog Antenna	ETS-LINDGREN	3142D	00135452	Apr. 27,22	Apr. 27,23
Spectrum Analyzer	Agilent	8593E	3911A04271	Apr. 27,22	Apr. 27,23
3m Semi-anechoic Chamber	ETS-LINDGREN	966	KW01	Apr. 27,22	Apr. 27,23
Signal Amplifier	SONOMA	310	187303	Apr. 27,22	Apr. 27,23
RF Cable	IMRO	IMRO-400	966 Cable 1#	Apr. 27,22	Apr. 27,23

2.2.3.For radiated emission test (Above 1GHz)

EMI Test Receiver	Rohde&Schwarz	ESCI	101156	Apr. 27,22	Apr. 27,23
Horn Antenna	DAZE	ZN30701	11003	Apr. 27,22	Apr. 27,23
Spectrum Analyzer	Agilent	8593E	3911A04271	Apr. 27,22	Apr. 27,23
3m Semi-anechoic Chamber	ETS-LINDGREN	966	KW01	Apr. 27,22	Apr. 27,23
Signal Amplifier	DAZE	ZN3380C	11001	Apr. 27,22	Apr. 27,23
RF Cable	IMRO	IMRO-400	966 Cable 1#	Apr. 27,22	Apr. 27,23
MULTI-DEVICE Controller	ETS-LINDGREN	2090	126913	N/A	N/A
Antenna Holder	ETS-LINDGREN	2070B	00109601	N/A	N/A

2.2.4.For harmonic current emissions and voltage fluctuations/flicker test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
5kVA AC Power Source	California Instruments	5001iX-CTS-400	60138	Apr. 27,22	Apr. 27,23
Harmonic/Flicker Test System	California Instruments	PACS-1	72847	Apr. 27,22	Apr. 27,23

2.2.5.For electrostatic discharge immunity test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
ESD Generator	TESEQ	NSG437	433	Apr. 28,22	Apr. 28,23

2.2.6.For radio frequency electromagnetic field immunity (R/S) test (STC)

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
BiConiLog Antenna	ETS	3142C	00060445	Apr. 28,22	Apr. 28,23
Amplifier	BONN ELEKTRONIK	BLWA0840-50/30D	066454B	Apr. 28,22	Apr. 28,23
Amplifier	BONN ELEKTRONIK	BLWA0840-50/100D	066454A	Apr. 28,22	Apr. 28,23
Signal Generator	Rohde&Schwarz	SML03	102947	Apr. 28,22	Apr. 28,23
Signal Generator	Rohde&Schwarz	SMB100A	1406600K02-104532-DF	Apr. 28,22	Apr. 28,23

Power Meter	Rohde&Schwarz	NRVD	102051	Apr. 28,22	Apr. 28,23
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#### 2.2.7.For electrical fast transient/burst immunity test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EFT Tester	EMtest	EFT500N5	V1105108698	Apr. 27,22	Apr. 27,23
EFT Coupling Clamp	EMtest	HFK	0211-168	Apr. 27,22	Apr. 27,23

#### 2.2.8.For surge immunity test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Surge Tester	EMtest	UCS500N7	V1105108699	Apr. 27,22	Apr. 27,23

#### 2.2.9.For injected currents susceptibility test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
C/S Test System	EMtest	CIT-10	126B1164	Apr. 27,22	Apr. 27,23
CDN	Luthi	L-801 M2/M3	2789	Apr. 27,22	Apr. 27,23
Electromagnetic Injection Clamp	Luthi	EM101	36041	Apr. 28,22	Apr. 28,23

#### 2.2.10.For power frequency magnetic field immunity test:

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Magnetic Field Generator	EVERFINE	EMS61000-8K	YG100376N11080002	Apr. 27,22	Apr. 27,23

#### 2.2.11.For voltage dips and short interruptions immunity test:

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Dips Tester	EVERFINE	EMS61000-11K	YG100319N11040005	Apr. 27,22	Apr. 27,23

### 3. TEST SET-UP AND OPERATION MODES

#### 3.1.Principle of Configuration Selection

**Emission:** The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the Operating Instructions.

**Immunity:** The equipment under test (EUT) was configured to the representative operating mode and conditions.

#### 3.2.Block Diagram of Test Set-up

System Diagram of Connections between EUT and Simulators



#### 3.3.Test Operation Mode and Test Software

Refer to Test Setup in clause 4 & 5.

### 3.4.Special Accessories and Auxiliary Equipment

None.

### 3.5.Countermeasures to Achieve EMC Compliance

None.

## 4. EMISSION TEST RESULTS

### 4.1. Conducted Emission at the Mains Terminals Test

<b>Result</b>	: <b>Pass</b>
Test Procedure	: EN 55032
Frequency Range	: 0.15 to 30 MHz
Test Site	: 944 Shielded Room
Limits	: EN 55032 Class B

#### Test Setup

M/N	: portable power station
Test Voltage	: AC 230V/50Hz
Operation Mode	: working

The EUT was put on a wooden table which was 0.8 m high above the ground and connected to the AC mains through the Artificial Mains Network(AMN). Where the mains cable supplied by the manufacture was longer than 1 m,the excess was folded back and forth parallel to the cable at the centre so as to form a bundle no longer than 0.4 m.

The EUT was kept 0.4 m from any other earthed conducting surface. Both sides of AC line were checked to find out the maximum conducted emission levels according to the test procedure during the conducted emission test.

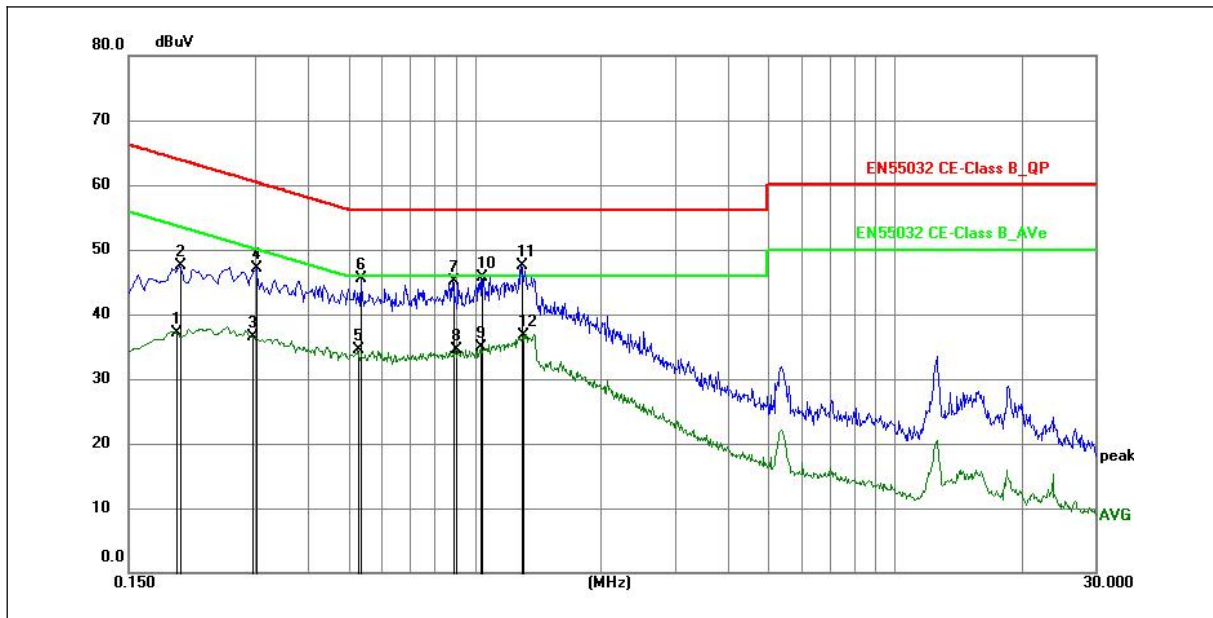
The frequency range from 150 kHz to 30 MHz was investigated.

The bandwidth of the test receiver was set at 9 kHz.

All the test data were reported on the following page.

Notes: Measurement Uncertainty:  $\pm 2.6$  dB at a level of confidence of 95%.

EUT :	portable power station	Model Name. :	E2000LFP
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Phase :	L
Test Voltage :	AC 230V/50Hz	Test Mode :	working



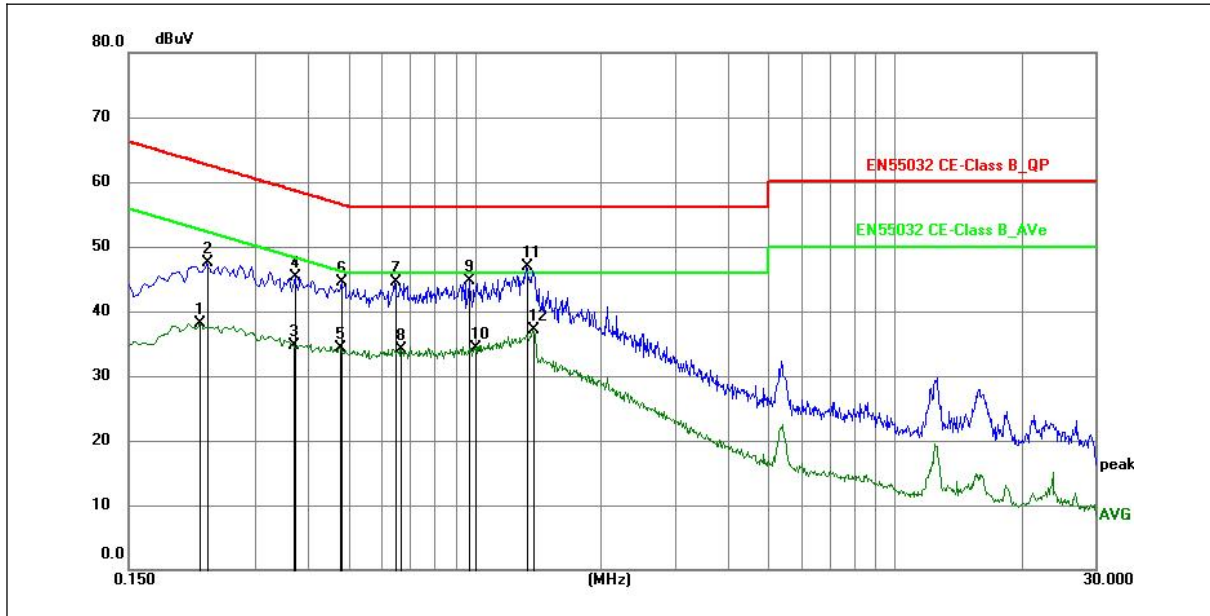
Remark:

1. All readings are Quasi-Peak and Average values.
2. Margin = Result (Result =Reading + Factor) –Limit

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1949	25.15	12.03	37.18	53.83	-16.65	AVG	P
2	0.1995	35.62	11.93	47.55	63.63	-16.08	QP	P
3	0.2955	25.03	11.48	36.51	50.37	-13.86	AVG	P
4	0.3030	35.63	11.45	47.08	60.16	-13.08	QP	P
5	0.5280	23.93	10.53	34.46	46.00	-11.54	AVG	P
6	0.5370	34.99	10.53	45.52	56.00	-10.48	QP	P
7	0.8880	34.64	10.46	45.10	56.00	-10.90	QP	P
8	0.9015	24.01	10.46	34.47	46.00	-11.53	AVG	P
9	1.0365	24.43	10.43	34.86	46.00	-11.14	AVG	P
10	1.0410	35.25	10.43	45.68	56.00	-10.32	QP	P
11	1.2930	37.11	10.37	47.48	56.00	-8.52	QP	P
12	1.3065	26.27	10.36	36.63	46.00	-9.37	AVG	P



EUT :	portable power station	Model Name. :	E2000LFP
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Phase :	N
Test Voltage :	AC 230V/50Hz	Test Mode :	working



Remark:

1. All readings are Quasi-Peak and Average values.
2. Margin = Result (Result = Reading + Factor) – Limit

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.2220	26.30	11.82	38.12	52.74	-14.62	AVG	P
2	0.2310	35.66	11.78	47.44	62.41	-14.97	QP	P
3	0.3704	23.66	11.13	34.79	48.49	-13.70	AVG	P
4	0.3750	34.16	11.11	45.27	58.39	-13.12	QP	P
5	0.4785	23.65	10.64	34.29	46.37	-12.08	AVG	P
6	0.4830	33.89	10.62	44.51	56.29	-11.78	QP	P
7	0.6449	33.90	10.51	44.41	56.00	-11.59	QP	P
8	0.6674	23.67	10.51	34.18	46.00	-11.82	AVG	P
9	0.9734	34.28	10.45	44.73	56.00	-11.27	QP	P
10	1.0004	23.90	10.44	34.34	46.00	-11.66	AVG	P
11	1.3289	36.58	10.36	46.94	56.00	-9.06	QP	P
12	1.3784	26.74	10.35	37.09	46.00	-8.91	AVG	P

## 4.2. Conducted Emission at the telecom port Test

**Result** : N/A  
Test Procedure : EN 55032  
Frequency Range : 0.15 to 30 MHz  
Test Site : 944 Shielded Room  
Limits : EN 55032 Class B

### Test Setup

M/N : portable power station  
Input Voltage : AC 230V/50Hz  
Operation Mode : working

The EUT was put on a wooden table which was 0.8 m high above the ground and connected to the PC through the Artificial Mains Network(ISN). Where the signal cable supplied by the manufacture was longer than 1 m, the excess was folded back and forth parallel to the cable at the center so as to form a bundle no longer than 0.4 m.

The EUT was kept 0.4 m from any other earthed conducting surface. Both sides of AC line were checked to find out the maximum conducted emission levels according to the test procedure during the conducted emission test.

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

The bandwidth of the test receiver was set at 9 kHz.

All the test data were reported on the following page.

### 4.3.Radiated Emission Test

**Result** : **Pass**  
Test Procedure : EN 55032  
Frequency Range : 30 to 2000 MHz  
Test Site : 966 Chamber  
Limits : EN 55032 Class B

#### Test Setup

M/N : portable power station  
Test Voltage : AC 230V/50Hz  
Operation Mode : working

The EUT was placed on a turn table which was 0.8 m above the ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was set 3 m away from the receiving antenna which was mounted on an antenna tower. The measuring antenna moved up and down to find out the maximum emission level. It moved from 1 m to 4 m for both horizontal and vertical polarizations.

The highest frequency of the internal sources of the EUT was 125 MHz,so the measurement was only made up to 2 GHz.

The EUT was tested in the Chamber Site. It was pre-scanned with a Peak detector from the spectrum,and all the final readings from the test receiver were measured with the Quasi-Peak detector.

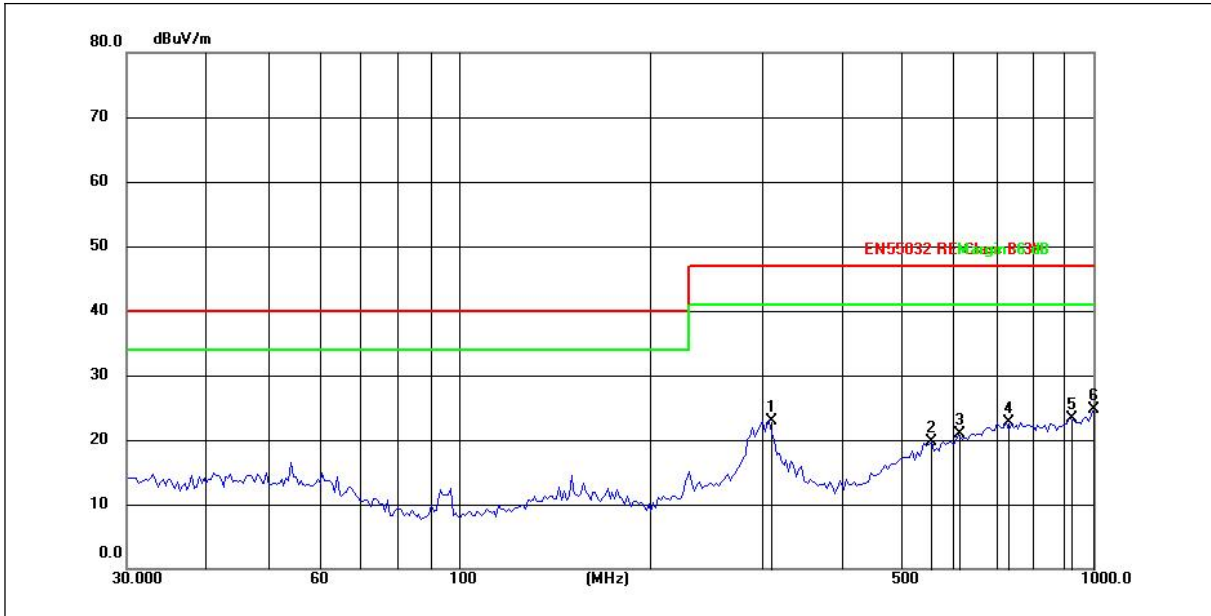
The bandwidth setting on the test receiver was 120 kHz below 1GHz.The bandwidth of the test receiver was set at 1MHz above 1GHz.

All the test data were reported on the following pages.

Notes:

1. Emission Level = Antenna Factor + Cable Loss + Meter Reading - Preamp Factor.
2. Measurement Uncertainty:  $\pm 3.6$  dB at a level of confidence of 95%.

EUT :	portable power station	Model Name. :	E2000LFP
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Polarization :	Horizontal
Test Voltage :	AC 230V/50Hz	Test Mode :	working

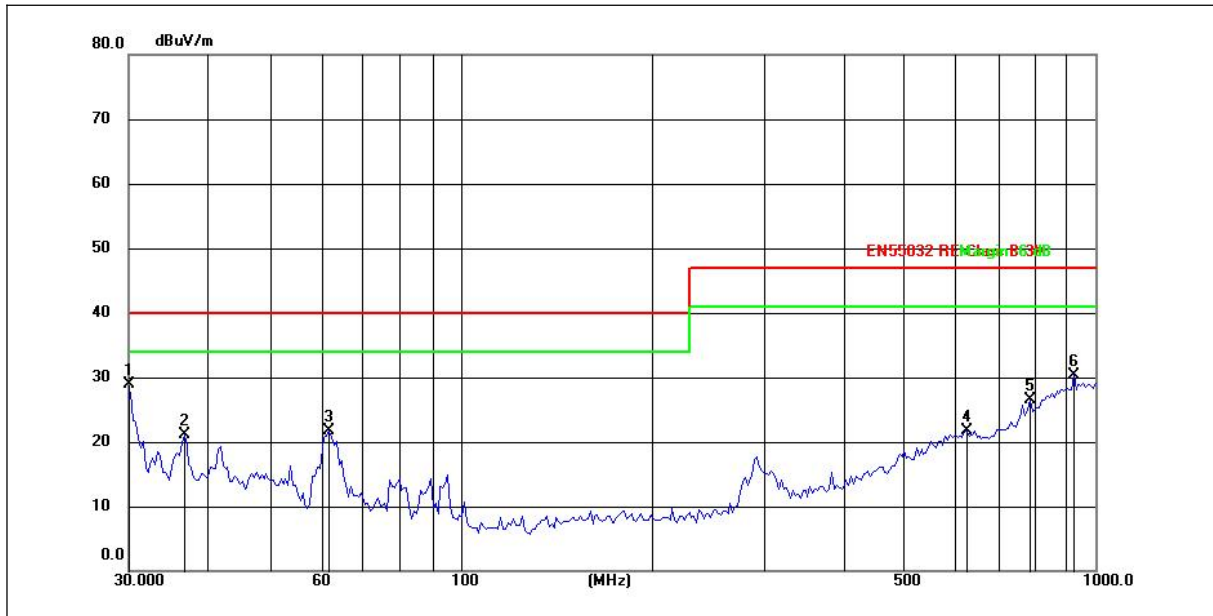


Remark:

1. All readings are Quasi-Peak and Average values.
2. Margin = Result (Result =Reading + Factor )–Limit

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	308.9126	39.88	-16.95	22.93	47.00	-24.07	QP
2	555.7990	29.84	-10.07	19.77	47.00	-27.23	QP
3	612.0642	29.48	-8.57	20.91	47.00	-26.09	QP
4	729.3583	29.51	-6.78	22.73	47.00	-24.27	QP
5	916.0687	29.91	-6.66	23.25	47.00	-23.75	QP
6	1000.0000	29.53	-4.87	24.66	47.00	-22.34	QP

EUT :	portable power station	Model Name. :	E2000LFP
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Polarization :	Vertical
Test Voltage :	AC 230V/50Hz	Test Mode :	working



Remark:

1. All readings are Quasi-Peak and Average values.
2. Margin = Result (Result =Reading + Factor )–Limit

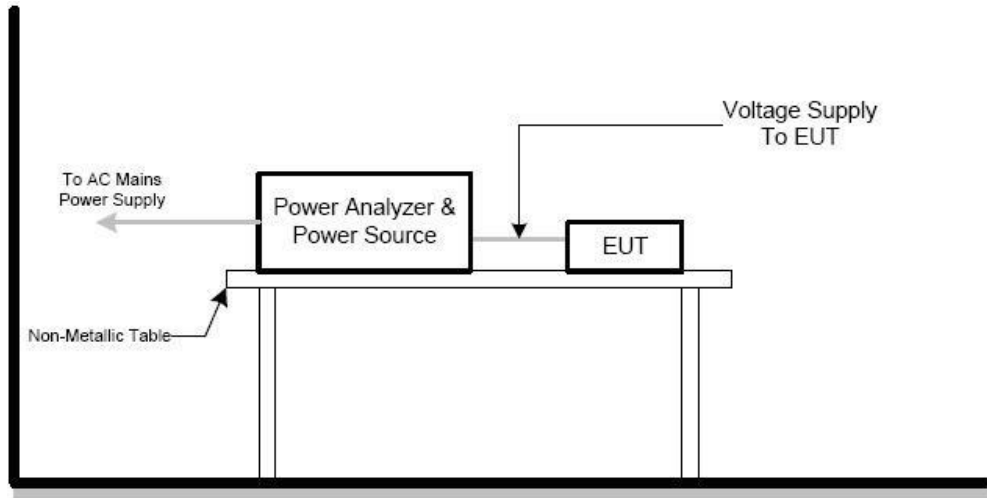
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	30.0000	47.25	-18.44	28.81	40.00	-11.19	QP
2	36.7017	38.42	-17.35	21.07	40.00	-18.93	QP
3	62.1038	40.31	-18.53	21.78	40.00	-18.22	QP
4	628.3745	29.46	-7.74	21.72	47.00	-25.28	QP
5	789.2338	30.48	-4.02	26.46	47.00	-20.54	QP
6	924.1345	30.92	-0.61	30.31	47.00	-16.69	QP

#### 4.4.Harmonic Current Emissions on AC Mains Test

**Result** : **PASS**

Limits : EN 61000-3-2 Class A

Block Diagram of Test Set-up



Remark: According to EN 61000-3-2: 2014,for products  $\leq 75$  watts,no limits are defined for the harmonics test. The EUT is deemed to comply with the standard without test.

#### 4.5.Voltage Fluctuations and Flicker on AC Mains Test

**RESULT** : **Pass**  
 Test Procedure : EN 61000-3-3  
 Limits : EN 61000-3-3

The test data of the worst case condition(s) was reported on the page below.

#### Test Data

Voltage Fluctuation	Limit	Value
Relative Voltage Change Characteristic d(t) (dc>3%)	500 ms	0 ms
Maximum Relative Voltage Change dmax	4%	0.00
	6%	/
	7%	/
Relative Steady-state Voltage Change dc	3.3%	0.00

Flicker	Limit	Value
Short-term Flicker Indicator Pst	1.0	0.064
Long-term Flicker Indicator Plt	0.65	/

## 5. IMMUNITY TEST RESULTS

### 5.1. Description of Performance Criteria

#### Performance criteria A

The equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

#### Performance criteria B

After the test, the equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed, after the application of the phenomena below a performance level specified by the manufacturer, when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance.

During the test, degradation of performance is allowed. However, no change of operating state or stored data is allowed to persist after the test.

If the minimum performance level (or the permissible performance loss) is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

#### Performance criteria C

Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions. Functions, and/or information stored in non-volatile memory, or protected by a battery backup, shall not be lost.



## 5.2. Electrostatic Discharge Immunity Test

**Result** : **Pass**

Test Procedure : EN 55035

Basic Standard : EN 61000-4-2

Test Specification :  $\pm 4$  kV (Contact discharge)  
 $\pm 8$  kV (Air discharge)

Number of Discharges : 10 (Air discharge for single polarity discharge)  
 25 (Contact discharge for single polarity discharge)

Repetition Rate : One discharge per second

Performance Criterion : B

### Test Setup

M/N : portable power station

Test Voltage : AC 230V/50Hz

Operation Mode : working

Temperature : 24.8°C

Humidity : 56%

Atmospheric Pressure : 101.52kPa

Table 1: Electrostatic Discharge Immunity Test Result

Discharge Location		Type of Discharge	Result
HCP	4 points	Contact	Pass
VCP	4 points	Contact	Pass
shell	4 points	Air	Pass
Gap	4 points	Air	Pass

*Remark: 1. No obvious change of function was found after the test.  
 2. Discharge should be considered on Contact, Air, Horizontal Coupling Plane (HCP) and Vertical Coupling Plane (VCP).*

### 5.3.Radio Frequency Electromagnetic Field Immunity Test

**Result** : **Pass**  
 Test Procedure : EN 55035  
 Basic Standard : EN 61000-4-3  
 Test Field Strength : 3 V/m (unmodulated)  
 Test Signal : 1 kHz sine wave,AM 80% modulated  
 Frequency Range : 80 to 1000 MHz,1800MHz,2600MHz,3500MHz,5000MHz  
 Performance Criterion : A  
 Test Site : ETR

**Test Setup**

M/N : portable power station  
 Test Voltage : AC 230V/50Hz  
 Operation Mode : working  
 Temperature : 24.5°C  
 Humidity : 53%  
 Atmospheric Pressure : 101.52kPa

The EUT and its simulators were placed on a turn table which was 0.8 meter above the ground. The EUT was set 3 m away from the transmitting antenna which was mounted on an antenna tower. Both horizontal and vertical polarizations of the antenna were set on the test. Each of the four sides of the EUT was faced the transmitting antenna and measured individually.

The test was carried out in the Anechoic Chamber which was that of a size adequate to maintain a uniform field of sufficient dimensions with respect to the EUT. Additional absorbers were used to damp reflections in chambers which were not fully lined.

Table 2: Radio Frequency Electromagnetic Field Immunity Test Result

Position	Test Level	Modulated Signal	Freq. Step	Dwell Time	Result
Front	3 V/m	AM 80%,1kHz sine wave	1%	3 s	Pass
Right					Pass
Rear					Pass
Left					Pass

*Remark: The EUT was operated as intended during and after the test.*

#### 5.4.Electrical Fast Transient/Burst Immunity Test

<b>RESULT</b>	: <b>Pass</b>
Test Procedure	: EN 55035
Basic Standard	: EN 61000-4-4
Waveshape of the pulse	: Tr/Td=5/50 ns
Repetition Frequency	: 5 kHz
Burst Duration	: 15 ms
Burst Period	: 300 ms
Test Duration	: 60 s
Performance Criterion	: B

#### Test Setup

M/N	: portable power station
Test Voltage	: AC 230V/50Hz
Operation Mode	: working
Temperature	: 24.8°C
Humidity	: 56%
Atmospheric Pressure	: 101.52kPa

The test generator and the coupling/decoupling networking were placed directly on, and bonded to, the ground reference plane. The ground reference plane projected beyond the EUT or/and the coupling clamp by at least 0.1 m on all sides. And the minimum area was 1 m x 1 m. The minimum distance between the EUT and all other conductive structures, except the ground plane was more than 0.5 m.

EUT and its simulators were placed on the insulation support 0.1 m above the ground reference plane. The length of the cables between the coupling device and the EUT was 0.5 m. If it was more than 0.5 m, the excess length of this cable was folded to avoid a flat coil and situated at a distance of 0.1 m above the ground reference plane.

Table 3: Electrical Fast Transient/Burst Immunity Test Result

Coupling Ports		Coupling Voltage	Inject Method	Result
AC Power Ports	L	±1 kV	Direct	Pass
	N	±1 kV		Pass
	L-N	±1 kV		Pass
	PE	±1 kV		Pass
	L-PE	±1 kV		Pass
	N-PE	±1 kV		Pass
	L-N-PE	±1 kV		Pass
Signal Line		±500V	Indirect	Pass

*Remark: No obvious change of function was found after the test.*

## 5.5.Surge Immunity Test

<b>RESULT</b>	: <b>Pass</b>
Test Procedure	: EN 55035
Basic Standard	: EN 61000-4-5
Waveform Parameters	: Open-circuit voltage: 1.2/50 $\mu$ s Short-circuit current: 8/20 $\mu$ s
Repetition Rate	: 60 s
Performance Criterion	: B

### Test Setup

M/N	: portable power station
Test Voltage	: AC 230V/50Hz
Operation Mode	: working
Temperature	: 24.8 $^{\circ}$ C
Humidity	: 56%
Atmospheric Pressure	: 101.52kPa

The effective output impedance of the generator was 2  $\Omega$  for L-N test, and 12  $\Omega$  for L-PE and N-PE test.

For d.c. power ports and interconnection lines, the surge pulses were 5 positive and 5 negative. For a.c. power ports, the surge pulses were 5 positive and 5 negative each at 0 $^{\circ}$ , 90 $^{\circ}$ , 180 $^{\circ}$  and at 270 $^{\circ}$ . The time between successive pulses was 1 minute.

For double-insulated products without PE or external earth connections, the test was done in a similar way as for grounded products but without additional external grounded connections. If there were no other possible connections to earth, line-to-ground tests were omitted. The power cord or/and interconnection line between the EUT and the coupling/decoupling networking was less than 2 m in length.

Table 4: Surge Immunity Test Result

Coupling Ports		Coupling Voltage	Coupling Phase / Result			
			0°	90°	180°	270°
AC power ports	L-N	±1 kV	Pass	Pass	Pass	Pass
	L-PE	±2 kV	Pass	Pass	Pass	Pass
	N-PE	±2 kV	Pass	Pass	Pass	Pass
Signal Line		±1 kV	Pass	Pass	Pass	Pass

*Remark: No obvious change of function was found after the test.*

### 5.6.Injected Currents Susceptibility Test

**RESULT** : **Pass**  
 Test Procedure : EN 55035  
 Basic Standard : EN 61000-4-6  
 Test Voltage : 3 V (r.m.s) unmodulated  
 Test Signal : 1kHz sine wave,AM 80% modulated  
 Frequency Range : 150 kHz to 80 MHz  
 Performance Criterion : A

**Test Setup**

M/N : portable power station  
 Test Voltage : AC 230V/50Hz  
 Operation Mode : working  
 Temperature : 24.8°C  
 Humidity : 56%  
 Atmospheric Pressure : 101.52kPa

The EUT was placed on an insulating support of 0.1m height above the ground reference plane. All cables exiting the EUT were supported at a height of 30 mm above the ground reference plane. CDN (coupling and decoupling device) was placed on the ground reference plane about 0.3 m from the EUT. The cables between the CDN and EUT were as short as possible (0.1 m to 0.3 m) and were not to be bundled or wrapped. Their height above the ground reference plane was 30 mm.

The frequency range was swept from 150 kHz to 10 MHz,10 MHz to 30 MHz,30 MHz to 80 MHz,using the signal levels established during the setting process,and with the disturbance signal 80% amplitude modulated with a 1kHz sine wave.

The frequency was swept incrementally,the step size was 1% of the preceding frequency value. The dwell time of the amplitude modulated carrier at each frequency was 1.5 s.

Table 5: Injected Currents Susceptibility Test Result

Coupling ports	Frequency (MHz)	Voltage (r.m.s)	Required Level	Performance criterion	Result
AC Power Ports	0.15 to 10	3	A	A	Pass
	10 to 30	3 to 1	A	A	Pass
	30 to 80	1	A	A	Pass

*Remark: The EUT was operated as intended during and after the test.*

### 5.7.Power Frequency Magnetic Field Immunity Test

**Result** : **Pass**  
 Test Procedure : EN 55035  
 Basic Standard : EN 61000-4-8  
 Test Specification : 1 A/m  
 Performance Criterion : A

**Test Setup**

M/N : portable power station  
 Test Voltage : AC 230V/50Hz  
 Operation Mode : working  
 Temperature : 24.8°C  
 Humidity : 56%  
 Atmospheric Pressure : 101.52kPa

The EUT was subjected to the test magnetic field by using the standard inductive coil 1 m x 1 m. The plane of the inductive coil then was rotated by 90° in order to expose the EUT to the test field with different orientations.

The magnetic field strength was expressed in A/m; 1 A/m corresponded to a free space magnetic flux density of 1.26 μT.

The electromagnetic conditions of the laboratory were such as to guarantee the correct operation of the EUT in order to influence the test results. And the power frequency magnetic field value of the laboratory was at least 20 dB lower than the selected test level.

Table 6: Power Frequency Magnetic Field Immunity Test Result

Test Level	Testing Duration	Coil Orientation	Criterion	Result
1 A/m	5 min	X	A	Pass
1 A/m	5 min	Y	A	Pass
1 A/m	5 min	Z	A	Pass

*Remark: The EUT was operated as intended during and after the test.*

### 5.8.Voltage Dips and Short Interruptions Immunity Test

**RESULT** : **Pass**  
 Test Procedure : EN 55035



Basic Standard : EN 61000-4-11  
 Test Specification : 0%  $U_T$  / 0.5 P, Criterion: B  
                               70%  $U_T$  / 25 P, Criterion: C  
                               0%  $U_T$  / 250 P, Criterion: C

### Test Setup

M/N : portable power station  
 Test Voltage : AC 230V/50Hz  
 Operation Mode : working  
 Temperature : 24.8°C  
 Humidity : 56%  
 Atmospheric Pressure : 101.52kPa

The test was performed with the EUT connected to the test generator with the shortest possible length suitable to the application of the EUT.

The EUT was tested for each selected combination of test level and duration with a sequence of three dips/interruptions with intervals of 10 s (between each test event). Each representative mode of operation was to be tested.

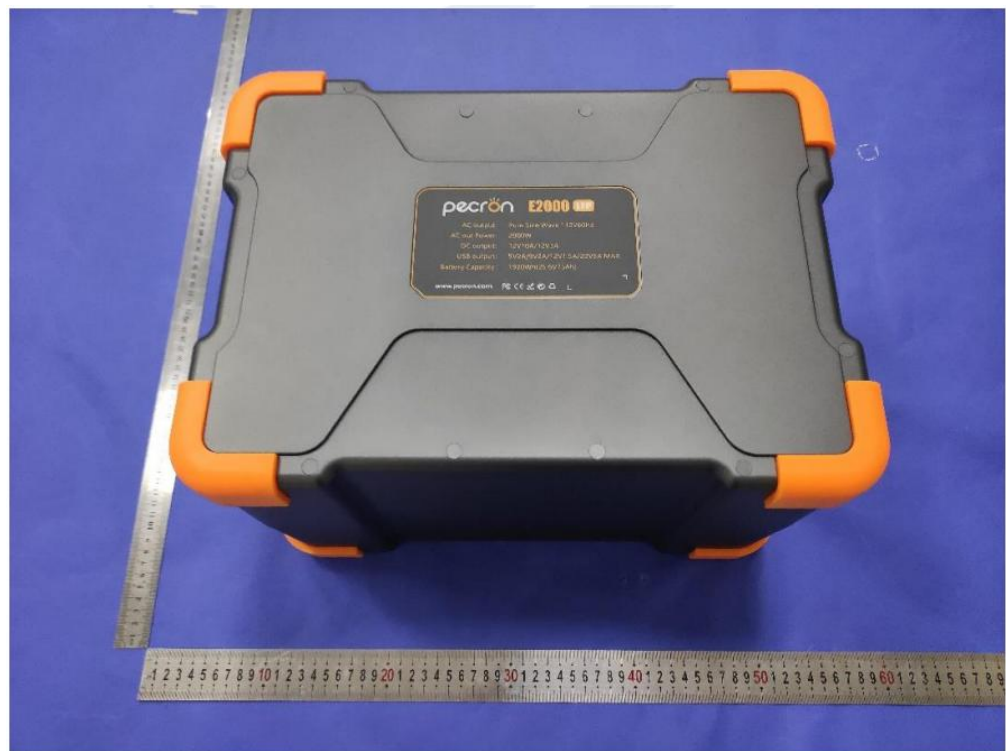
For voltage dips and short interruptions, changes in supply voltage were to occur at zero crossings of the voltage.

Table 7: Voltage Dips and Short Interruptions Immunity Test Result

Test Level in % $U_T$	Voltage Dips & Short Interruptions in % $U_T$	Durations (in Period)	Criterion	Result
0	100	0.5 P	B	Pass
70	30	25 P	C	Pass
0	100	250 P	C	Pass

*Remark: No obvious change of function was found after the test.*

## 6. PHOTOGRAPHS OF THE EUT



END