Test Report

Report No.:	MTi240619004-01E2
Date of issue:	2024-07-13
Applicant:	Hong Kong Etech Groups Ltd.
Product:	5000mAh POWER BANK
Model(s):	EPB1967, ENG-BB09WH, ENG-BB09BK
FCC ID:	2A3ZO-EPB1967

Shenzhen Microtest Co., Ltd.

http://www.mtitest.cn

Instructions

1. This test report shall not be partially reproduced without the written consent of the laboratory.

2. The test results in this test report are only responsible for the samples submitted

3. This test report is invalid without the seal and signature of the laboratory.

4. This test report is invalid if transferred, altered, or tampered with in any form without authorization.

5. Any objection to this test report shall be submitted to the laboratory within 15 days from the date of receipt of the report.

Contents

Test Result Certification	
Applicant:	Hong Kong Etech Groups Ltd.
Address:	16/F, Block C, 2nd Phase of Central Avenue, Haihong Industrial Area, Xixiang Road, Baoan District, Shenzhen,518102 China
Manufacturer:	Hong Kong Etech Groups Ltd.
Address:	16/F, Block C, 2nd Phase of Central Avenue, Haihong Industrial Area, Xixiang Road, Baoan District, Shenzhen,518102 China
Product description	
Product name:	5000mAh POWER BANK
Trademark:	N/A
Model name:	EPB1967
Series Model:	ENG-BB09WH,ENG-BB09BK
Standards:	FCC CFR 47 PART 1, § 1.1310
Test method:	KDB 680106 D01 Wireless Power Transfer v04
Date of Test	
Date of test:	2024-06-23 to 2024-07-12
Test result:	Pass

Test Engineer	:	Maleah Deng
		(Maleah Deng)
Reviewed By	:	David. Lee
		(David Lee)
Approved By	:	Leon chen
		(Leon Chen)

1 General Description

1.1 Description of the EUT

Product name:	5000mAh POWER BANK
Model name:	EPB1967
Series Model:	ENG-BB09WH, ENG-BB09BK
Model difference:	All the models are the same circuit and module, except the model name and color.
Electrical rating:	Input: USB-C: DC 5V3A,9V2A,12V1.5A Micro: DC 5V2A, 9V2A Output: USB-C: DC 5V3A, 9V2.2A, 12V1.67A USB-A: DC 5V3A, 9V2A, 12V1.5A Wireless Output: 5W,7.5W,10W,15W Battery: DC 3.7V 5000mAh
Accessories:	N/A
Hardware version:	V1.0
Software version:	V1.0
Test sample(s) number:	MTi240619004-01S1001
RF specification:	
Operation frequency:	115-205KHz
Modulation type:	ASK
Antenna type:	Coil Antenna

1.2 Description of test modes

All the test modes were carried out with the EUT in normal operation, the final test mode of the EUT was the worst test mode for emission test, which was shown in this report and defined as:

No.	Emission test modes
Mode1	Charging(Micro)+Wireless Output(5W)
Mode2	Charging(Type-C)+Wireless Output(5W)
Mode3	Wireless Output(5W)
Mode4	Wireless Output(7.5W)
Mode5	Wireless Output(10W)
Mode6	Wireless Output(15W)
Mode7	Stand by

1.3 Description of support units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Support equipment list			
Description	Model	Serial No.	Manufacturer
Smartphone	FIND X3	/	OPPO
HUAWEI QUICK CHARGE	HW-200200ZP1	JN67LSN7N03451	HUAWEI
Support cable list			
Description	Length (m)	From	To
/	/	/	/

2 Measurement uncertainty

Parameter	Expanded Uncertainty
Magnetic field measurements(3kHz~10MHz)	±14.8%
Electric field measurements(3kHz~10MHz)	±17.5%

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

3 Test facilities and accreditations

3.1 Test laboratory

Test laboratory:	Shenzhen Microtest Co., Ltd.
Test site location:	101, No. 7, Zone 2, Xinxing Industrial Park, Fuhai Avenue, Xinhe Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China
Telephone:	(86-755)88850135
Fax:	(86-755)88850136
CNAS Registration No.:	CNAS L5868
FCC Registration No.:	448573

4 List of test equipment

No.	Equipment	Manufacturer	Model	Serial No.	Cal. date	Cal. Due
MTI-E143	Near-field Electric and Magnetic Field Sensor System	Speag	MAGPy-8H3D +ED3 V2	3101	2024/3/12	2027/3/11

No.	Equipment	Manufacturer	Model	Software version:	Cal. date	Cal. Due
MTI-E016S	MPE test software	SPEAG	MAGPY 2.4	2.4.1	/	/

5 Test result

5.1.1 Requirement

§1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in §1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of FCC part 2.1093 of this chapter.

Table 1 to §1.1310(e)(1) - Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(i) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*(100)	≤6
3.0-30	1842/f	4.89/f	*($900/f^2$)	<6
30-300	61.4	0.163	1.0	<6
300-1500			f/300	<6
1500-100000			5	<6
(ii) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	<30
1.34-30	824/f	2.19/f	*($180/f^2$)	<30
30-300	27.5	0.073	0.2	<30
300-1500			f/1500	<30
1500-100000			1.0	<30

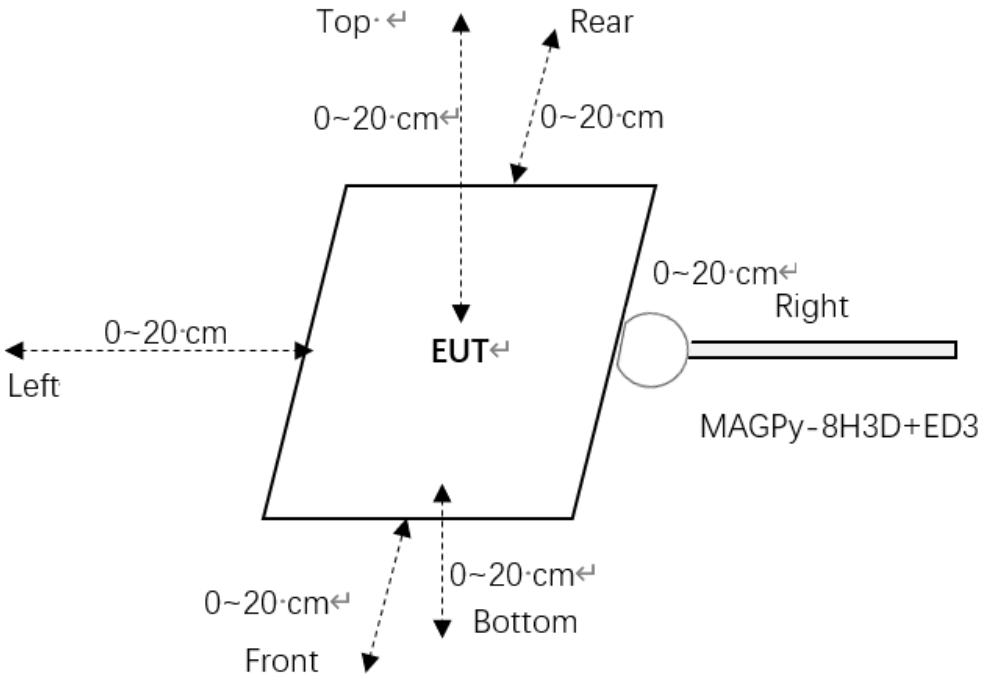
f = frequency in MHz
* = Plane-wave equivalent power density

Note 1: Occupational/controlled exposure limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure.

Note 2: General population/uncontrolled exposure limits apply in situations in which the general public may be exposed, or in which persons who are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

5.2 Test setup

0~20cm distance:



Note: tips mode of the test probe is used for 0cm measurement.

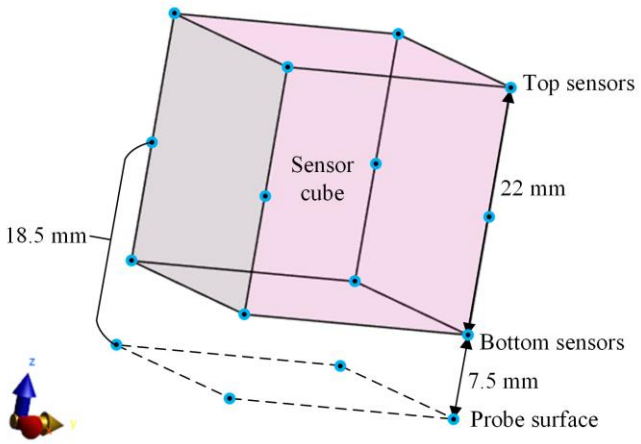
5.3 Test Procedures

a. H-field measurements should be taken 0 cm ~ 20 cm with 2 cm increments from the center of the probe.

The center of the probe to the tip surface of the probe is 18.5 mm, so the directly testing can be performed at the probe center from 2 cm to 20 cm.

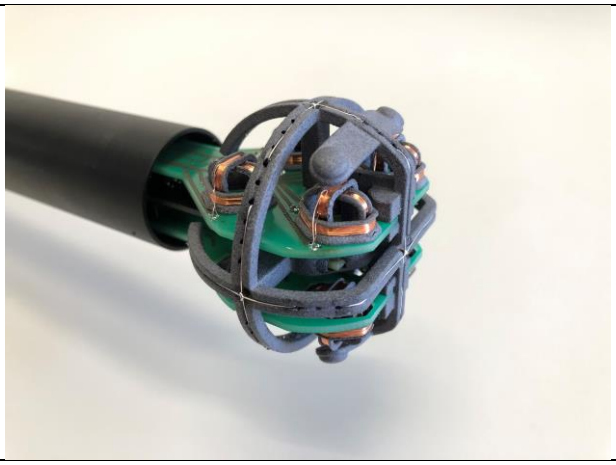
To measure the 0 cm H-filed, the probe tip mode is used. The total H-field at the tip-surface $H_{tip-surface}$ can be extrapolated using the total H-field measured at the top and bottom sensors, H_{top} and H_{bottom}, as well as the normalized H-field gradient G_n. The field extrapolation formula is a polynomial function of G_n (Δd = 18.5 mm)

$$H_{tip-surface} = \frac{H_{bottom} + H_{top}}{2} \sum_{i=0}^{7} ci(G_n \Delta \mathrm{d})^i$$



5.4 Information of test equipment

Test equipment: MAGPy-8H3D+ED3	
Diameter	60mm
8 isotropic H-field sensors	Concentric loops of 1cm^2 arranged at the corner of a cube of 22mm side length
1 isotropic E-field sensor	Orthogonal dipole/monopple(arm length:50mm)
Measurement center	18.5mm from the probe tip
Dimensions	110*635*35mm (MAGPy-8H3D+E3D V2 & MAGPy-DAS V2)



Test probe, without the casing

Item	Specification
Test frequency range:	3kHz ~ 10MHz
Probe sensitivity	E-filed: 0.08-2000 V/m H-filed: 0.1-3200 A/m
Probe level response	E-filed: ±1dB H-field: ±1dB
linearity error	E-filed: ±0.3dB H-field: ±0.3dB
Isotropy	E-filed: ±0.8dB H-field: ±0.6dB

5.5 Test results

All client power has been assessed (1%,50%, 99%), and the 1% battery status of client device was the worst.

Test condition 1: Mode 6 operating mode with client device (1 % battery status of client device) -estimated value: 0cm

Estimated value for H-Filed Strength at 0 cm from the edges surrounding the EUT (A/m)

Antenna	Probe Position	H–field (A/m)		
		Measurement	Limit	Max. Percentage (%)
1	Z axis	1.22	1.63	96.32%
	Left	1.51		
	Right	1.57		
	Front	1.31		
	Rear	1.06		
	Bottom	1.02		

Test condition 2: Mode 6 operating mode with client device (1 % battery status of client device) - Test distance: 2cm

Antenna	Probe Position	H–field (A/m)		
		Measurement	Limit	Max. Percentage (%)
1	Z axis	0.97	1.63	70.55%
	Left	1.02		
	Right	1.15		
	Front	1.09		
	Rear	0.80		
	Bottom	0.76		

Test condition 3: Mode 6 operating mode with client device (1 % battery status of client device) - Test distance 4cm

Antenna	Probe Position	H–field (A/m)		
		Measurement	Limit	Max. Percentage (%)
1	Z axis	0.58	1.63	59.51%
	Left	0.35		
	Right	0.97		
	Front	0.73		
	Rear	0.68		
	Bottom	0.52		

Test condition 4: Mode 6 operating mode with client device (1 % battery status of client device) - Test distance 6cm

Antenna	Probe Position	H–field (A/m)		
		Measurement	Limit	Max. Percentage (%)
1	Z axis	0.31	1.63	19.02%
	Left	0.21		
	Right	0.15		
	Front	0.13		
	Rear	0.12		
	Bottom	0.02		

Test condition 5: Mode 6 operating mode with client device (1 % battery status of client device) - Test distance 8cm

Antenna	Probe Position	H–field (A/m)		
		Measurement	Limit	Max. Percentage (%)
1	Z axis	0.25	1.63	15.34%
	Left	0.13		
	Right	0.12		
	Front	0.08		
	Rear	0.11		
	Bottom	0.01		

Test condition 6: Mode 6 operating mode with client device (1 % battery status of client device) - Test distance 10cm

Antenna	Probe Position	H–field (A/m)		
		Measurement	Limit	Max. Percentage (%)
1	Z axis	0.03	1.63	1.84%
	Left	0.02		
	Right	0.01		
	Front	0.02		
	Rear	0.01		
	Bottom	0.01		

Test condition 7: Mode 6 operating mode with client device (1 % battery status of client device) - Test distance 12cm

Antenna	Probe Position	H–field (A/m)		
		Measurement	Limit	Max. Percentage (%)
1	Z axis	0.01038	1.63	0.64%
	Left	0.00972		
	Right	0.00946		
	Front	0.00813		
	Rear	0.00805		
	Bottom	0.00798		

Test condition 8: Mode 6 operating mode with client device (1 % battery status of client device) - Test distance 14cm

Antenna	Probe Position	H–field (A/m)		
		Measurement	Limit	Max. Percentage (%)
1	Z axis	0.00964	1.63	0.59%
	Left	0.00932		
	Right	0.00897		
	Front	0.00794		
	Rear	0.00785		
	Bottom	0.00774		

Test condition 9: Mode 6 operating mode with client device (1 % battery status of client device) - Test distance 16cm

Antenna	Probe Position	H–field (A/m)		
		Measurement	Limit	Max. Percentage (%)
1	Z axis	0.00567	1.63	0.35%
	Left	0.00523		
	Right	0.00499		
	Front	0.00389		
	Rear	0.00357		
	Bottom	0.00352		

Test condition 10: Mode 6 operating mode with client device (1 % battery status of client device) - Test distance 18cm

Antenna	Probe Position	H–field (A/m)		
		Measurement	Limit	Max. Percentage (%)
1	Z axis	0.00384	1.63	0.24%
	Left	0.00353		
	Right	0.00349		
	Front	0.00305		
	Rear	0.00296		
	Bottom	0.00267		

Test condition 11: Mode 6 operating mode with client device (1 % battery status of client device) - Test distance 20cm

Antenna	Probe Position	H–field (A/m)		
		Measurement	Limit	Max. Percentage (%)
1	Z axis	0.00394	1.63	0.24%
	Left	0.00305		
	Right	0.00297		
	Front	0.00283		
	Rear	0.00262		
	Bottom	0.00234		

Photographs of the Test Setup

See the Appendix - Test Setup Photos.

Photographs of the EUT

See the Appendix - EUT Photos.

----End of Report----