

Test Report

Report No.: MTi230901007-01E2
Date of issue: 2023-09-21
Applicant: Shenzhen Keshunda Technology Co., LTD
Product: Power Bank
Model(s): 973WP
FCC ID: 2BCH9-973WP

Shenzhen Microtest Co., Ltd.

<http://www.mtitest.com>

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

1	General Description	5
1.1	Description of the EUT	5
1.2	Description of test modes	5
1.3	Description of support units	6
2	Measurement uncertainty	6
3	Test facilities and accreditations	7
3.1	Test laboratory	7
4	List of test equipment	8
5	Test result	9
5.2	Test setup	10
5.3	Test Procedures	11
5.4	Equipment Approval Considerations item 5 b) of KDB 680106 D01 v03r01	12
5.5	Test results	13
5.6	Test results	13
	Photographs of the Test Setup.....	20
	Photographs of the EUT	20

Test Result Certification

Applicant:	Shenzhen Keshunda Technology Co., LTD
Address:	1101, Building 2, No. 2 Chongqing Road, Qiaotou Community, Fuhai Street, Bao'an District, Shenzhen
Manufacturer:	Shenzhen Keshunda Technology Co., LTD
Address:	1101, Building 2, No. 2 Chongqing Road, Qiaotou Community, Fuhai Street, Bao'an District, Shenzhen
Product description	
Product name:	Power Bank
Trademark:	N/A
Model name:	973WP
Series Model:	N/A
Standards:	FCC CFR 47 PART 1, § 1.1310
Test method:	KDB 680106 v03r01
Date of Test	
Date of test:	2023-09-12 to 2023-09-21
Test result:	Pass

Test Engineer :

Letter Lan.

(Letter Lan)

Reviewed By: :

Leon Chen

(Leon Chen)

Approved By: :

Tom Xue

(Tom Xue)

1 General Description

1.1 Description of the EUT

Product name:	Power Bank
Model name:	973WP
Series Model:	N/A
Model difference:	N/A
Electrical rating:	lightning input :5V2A Type-C in put:5V3A \9v2A\12V1.5A wireless Output:5W\7.5W\10W\15W battery: 3.85V 10000mAh
Accessories:	N/A
Hardware version:	V0.0
Software version:	V0.0
RF specification:	
Operation frequency:	115 kHz – 205 kHz
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	lightning input+Wireless output(5W)
Mode2	Type-C input+Wireless output(5W)
Mode3	Wireless output(7.5W)
Mode4	Wireless output(10W)
Mode5	Wireless output(15W)
Mode6	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
Mobile phone	OPPO FIND X3	/	OPPO
Support cable list			
Description	Length (m)	From	To
/	/	/	/

2 Measurement uncertainty

Parameter	Expanded Uncertainty
Magnetic field measurement (9kHz~30MHz)	$\pm 7.8\%$
Electric field measurements (9kHz~30MHz)	$\pm 7.8\%$

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-E115	Electric and Magnetic Field Probe – Analyzer	Narda	EHP-200A	101166	202308/15	202408/14

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

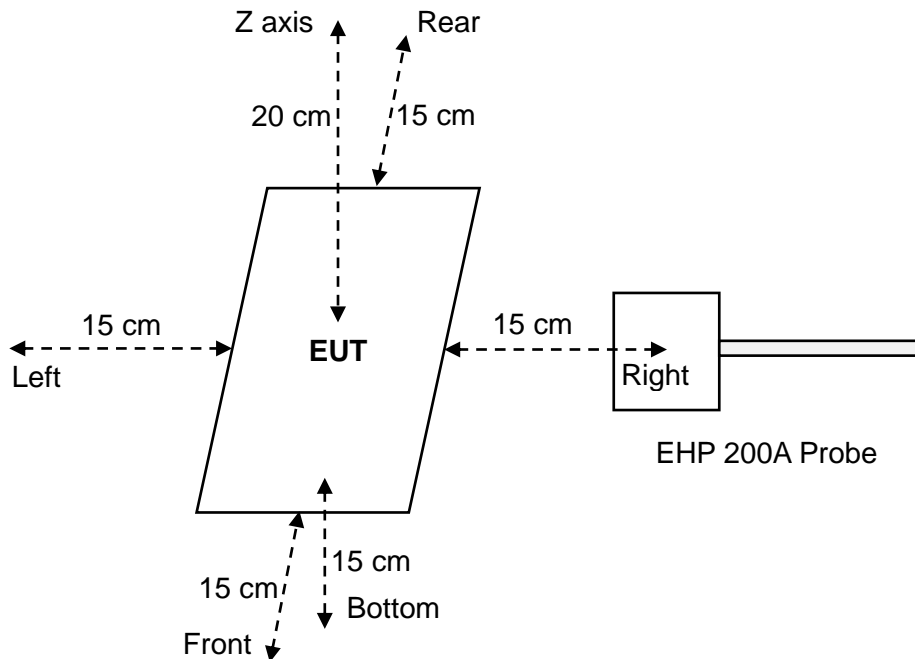
* = Plane-wave equivalent power density

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.

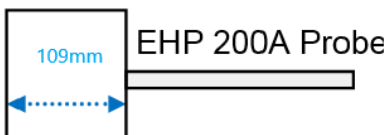
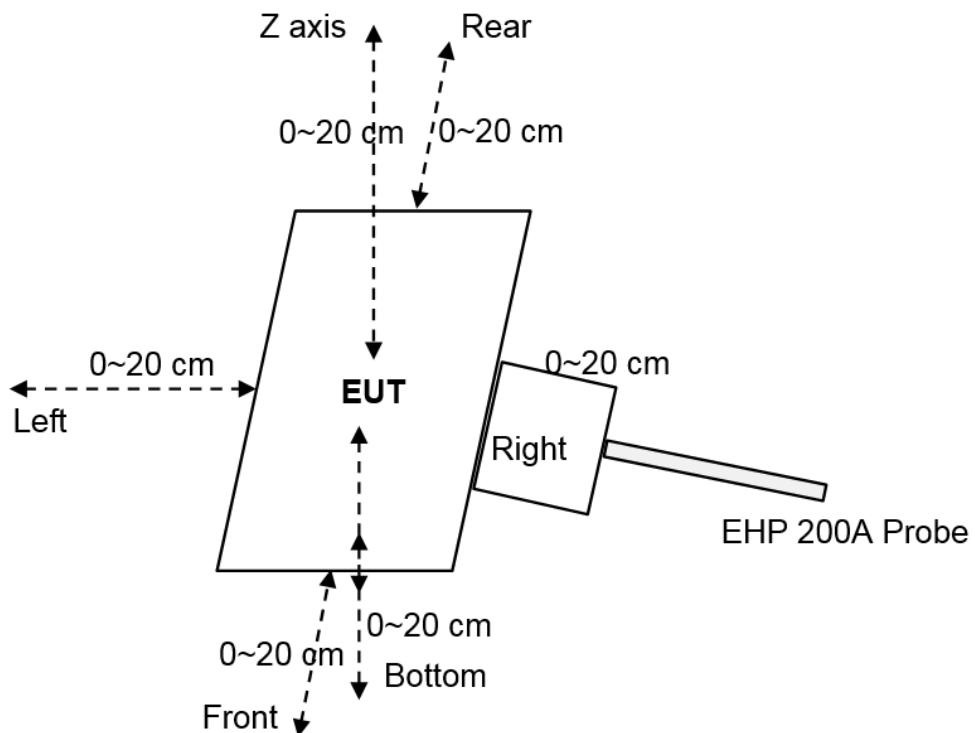
Note 2: General population/uncontrolled exposure limits apply in situations in which the general public may be exposed, or in which persons who are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

5.2 Test setup

For mobile exposure conditions:



For portable exposure conditions:



Notes: The EHP 200A Probe has a diameter of 10.9cm and a radius of 5.45cm.

5.3 Test Procedures

For mobile exposure conditions:

- a. The RF exposure test was performed in anechoic chamber.
- b. E and H-field measurements should be made with the center of the probe at a distance of 15 cm surrounding the EUT and 20 cm above the top surface of the primary/client pair.
- c. The highest emission level was recorded and compared with limit.
- d. The EUT was measured according to the dictates of KDB 680106 v03r01.

For portable exposure conditions:

- a. The RF exposure test was performed in anechoic chamber.
- b. Perform H-field measurements for each edge/top surface of the host/client pair at every 2 cm, starting from as close as possible out to 20 cm
- c. The highest emission level was recorded and compared with limit.
- d. The EUT was measured according to the dictates of TCB Workshop "41-Part-18-&-Wireless-Power-Transfer - April 27, 2022"

Notes: The EUT was setted to transmit continuously with the duty cycle of 100%.

5.4 Equipment Approval Considerations item 5 b) of KDB 680106 D01 v03r01

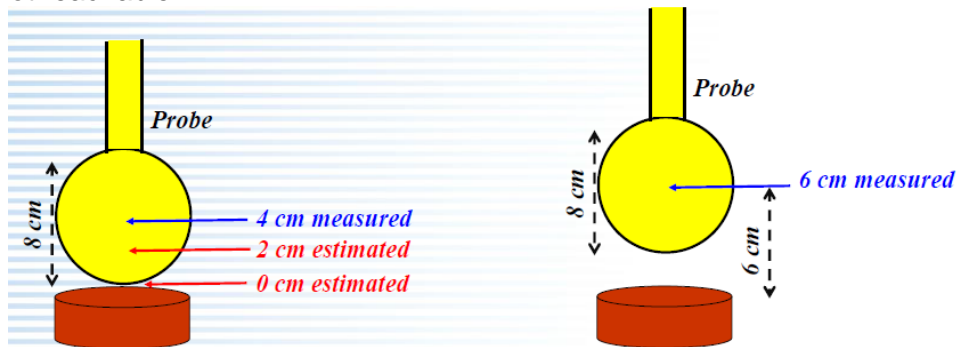
Requirement	Device
1. Power transfer frequency is less than 1 MHz.	Yes. The operating frequencies: 115 kHz – 205 kHz
2. Output power from each primary coil is less than or equal to 15 watts	Yes. The maximum output power: 15W
3. The system may consist of more than one source primary coils, charging one or more clients. If more than one primary coil is present, the coil pairs may be powered on at the same time.	Yes. The EUT have one source primary coil.
4. Client device is placed directly in contact with the transmitter.	Yes. The client device is placed directly in contact with the transmitter.
5. Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion).	No. The EUT has portable exposure condition.
6. The aggregate H-field strengths anywhere at or beyond 15 cm surrounding the device, and 20 cm away from the surface from all coils that by design can simultaneously transmit, and while those coils are simultaneously energized, are demonstrated to be less than 50% of the applicable MPE limit.	Yes, the H-field measurements for each edge/top surface of the host/client pair at every 2 cm, starting from as close as possible out to 20 cm were also evaluated for portable use condition.

5.5 Test results

5.6 Test results

For portable exposure condition: Note:

- (1). The portable test modes have covered the considerations of the mobile test, only record the test data of the portable conditions in this report.
- (2) Operating modes with client device (1 %, 50%, 99% battery status of client device) have been test, only show the data of worst case of 1% battery status of client device.
- (3) 20-2cm is the actual test value, and 0 cm is the estimated value.
- (4) Perform H-field/E-field measurements are taken along all three axes the device from 0cm~20cm in 2cm minimum increment for each edge surface of the host/client pair. If the center of the probe sensing element is more than 5mm from the probe outer edge, the field strengths need to be estimated for the positions that are not reachable.



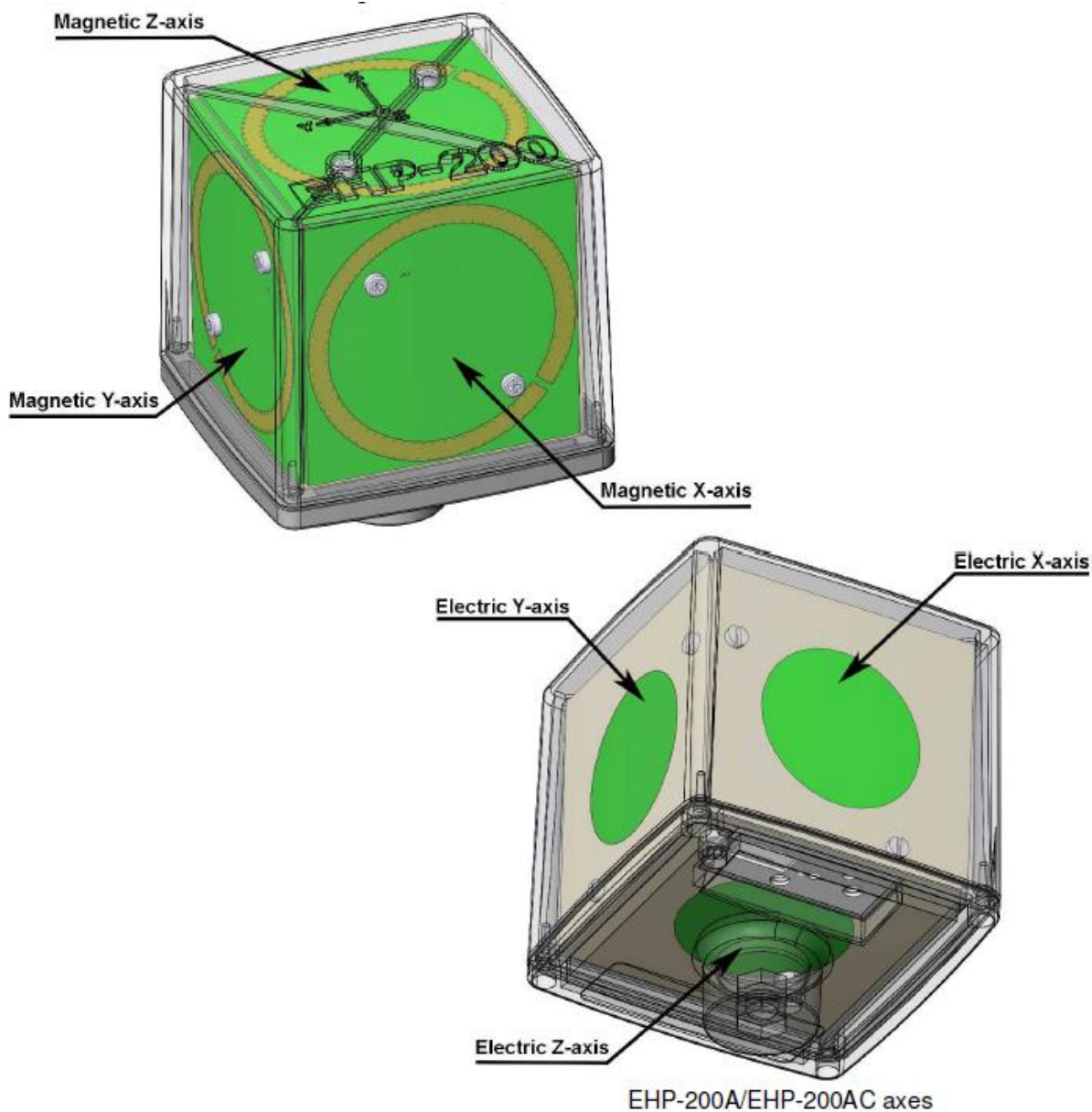
Example of probe measurements in points close to the device surface: estimates compared with measurements at 4 and 6 cm provide validation

According to Calibration information and specification about EHP-200A, The Probe EHP-200A's sensitive elements center are 8mm below the external surface, and the dimensions is 92x92x109mm. so the actual 0cm field strengths need to be estimated for the positions that are not reachable. The Extrapolated Value Calculation Method please below). And the result of test distance 2cm~20cm was measured value.

Probe	Length	Width	Height
	109mm	92mm	92mm



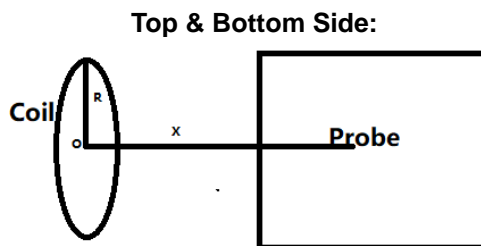
Note: EUT is a loop/coil emitting structure, so E-field not required. Just recorded the H-field value.



The sensitive elements are located approximately 8 mm below the external surface

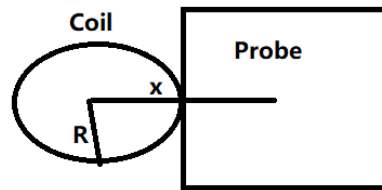
(5) Estimated method for portable RF Exposure condition:

We use Biot-Savart formula theory to estimate the strength of the magnetic field that the measuring instrument cannot measure. According to Biot-Savart formula:



$$B = \frac{\mu_0 * I * N * R^2}{2 * (R^2 + x^2)^{3/2}}$$

Front, left, right & rear Side:



$$B = \frac{\mu_0 * I * N}{2 * x}$$

B: means H-field value;

μ_0 is space permeability; $\mu_0=4\pi*10^{-7}$;

I: A current element passing through a coil;

R: means the Radius of coil(According to provided Antenna specification: We can get the minimum $R=42/2=21\text{mm}=0.21\text{m}$);

Test Distance: The distance from the sensing element of the probe to the edge of the device surface.

x: means the center of the coil to the sensing elements of the probe. (For top & bottom side: $x=\text{test distance}$; For other side: $x=\text{test distance}+R$)

N: Number of turns, according to providing "Antenna specification" files: $N=10$.

(6) For validation purposes: If the value to show a **30% agreement** between the mode and the (E- and/or H-field) probe measurements for the two closest points to the device surface, and with 2cm increments. Then this extrapolation method is reasonable.

Note: The percent ratio of agreement is the difference between the estimated and measured values divided by the average of the estimated and measured values.

Validation:

Magnetic Field Emissions							Conclusion
Test Distance(cm)	Top	Left	Right	Rear	Front	Bottom	
Agreement -2cm	27.65	21.09	25.20	26.17	-7.67	27.43	Compliance (Within 30%)
2cm(estimated)	0.1939	0.1153	0.1251	0.10539	0.07641	0.1845	
2cm(measured)	0.1468	0.0933	0.0971	0.081	0.0825	0.14	

**Test condition 1: Mode 5 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	0.3866	1.63	44.33%
	Left	0.6943		
	Right	0.7226		
	Front	0.6140		
	Rear	0.6028		
	Bottom	0.3687		

**Test condition 2: Mode 5 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	0.1468	1.63	9.01%
	Left	0.0933		
	Right	0.0971		
	Front	0.0825		
	Rear	0.081		
	Bottom	0.140		

Test condition 3: Mode 5 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	0.0513	1.63	3.15%
	Left	0.035		
	Right	0.038		
	Front	0.0232		
	Rear	0.032		
	Bottom	0.0488		

Test condition 4: Mode 5 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	0.05	1.63	3.07%
	Left	0.032		
	Right	0.036		
	Front	0.0231		
	Rear	0.0315		
	Bottom	0.0481		

Test condition 5: Mode 5 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	0.05	1.63	3.07%
	Left	0.0313		
	Right	0.033		
	Front	0.0232		
	Rear	0.0314		
	Bottom	0.048		

Test condition 6: Mode 5 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	0.05	1.63	3.07%
	Left	0.0313		
	Right	0.033		
	Front	0.0232		
	Rear	0.0314		
	Bottom	0.048		

Test condition 7: Mode 5 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	0.0481	1.63	2.95%
	Left	0.0310		
	Right	0.033		
	Front	0.0230		
	Rear	0.0314		
	Bottom	0.0474		

Test condition 8: Mode 5 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	0.0475	1.63	2.91%
	Left	0.0302		
	Right	0.0322		
	Front	0.0230		
	Rear	0.0311		
	Bottom	0.0470		

Test condition 9: Mode 5 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	0.0473	1.63	2.90%
	Left	0.0302		
	Right	0.0320		
	Front	0.0225		
	Rear	0.0310		
	Bottom	0.0467		

Test condition 10: Mode 5 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	0.0470	1.63	2.88%
	Left	0.030		
	Right	0.0311		
	Front	0.0223		
	Rear	0.0310		
	Bottom	0.0460		

Test condition 11: Mode 5 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	0.0470	1.63	2.88%
	Left	0.030		
	Right	0.031		
	Front	0.022		
	Rear	0.03		
	Bottom	0.045		

Photographs of the Test Setup

See the Appendix - Test Setup Photos.

Photographs of the EUT

See the Appendix - EUT Photos.

----End of Report----