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TEST REPORT

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Report No.:
KR22-SRF0071

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1. Client

- Name : IPX Corporation
- Address : 5F ,98, Hannam-daero, Yongsan-gu, Seoul, Republic of Korea
- Date of Receipt : 2022-03-29

2. Use of Report : Certification

3. Name of Product / Model : BF_BROWN_21 UV WIRELESS CHARGER(3IN1) / 8809720399997

4. Manufacturer / Country of Origin : IPX Corporation / Korea

5. FCC ID : 2AQTSBFUVWLC31

6. Date of Test : 2022-05-06 to 2022-05-10

7. Location of Test : ■ Permanent Testing Lab ☐ On Site Testing
(Address:65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea)

8. Test method used : 47 CRF Part 1.1310

9. Test Result : Refer to the test result in the test report

Affirmation	Tested by Name : Jungwon Seo (Signature)	Technical Manager Name : Heesu Ahn (Signature)

2022-05-17

KCTL Inc.

As a test result of the sample which was submitted from the client, this report does not guarantee the whole product quality. This test report should not be used and copied without a written agreement by KCTL Inc.

REPORT REVISION HISTORY

Date	Revision	Page No
2022-05-17	Originally issued	-

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General remarks for test reports

Statement concerning the uncertainty of the measurement systems used for the tests

(may be required by the product standard or client)

☐ **Internal procedure used for type testing through which traceability of the measuring uncertainty has been established:**

Procedure number, issue date and title:

Calculations leading to the reported values are on file with the testing laboratory that conducted the testing.

☒ **Statement not required by the standard or client used for type testing**

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1. General information

Client	:	IPX Corporation
Address	:	5F ,98, Hannam-daero, Yongsan-gu, Seoul, Republic of Korea
Manufacturer	:	IPX Corporation
Address	:	5F ,98, Hannam-daero, Yongsan-gu, Seoul, Republic of Korea
Laboratory	:	KCTL Inc.
Address	:	65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea
Accreditations	:	FCC Site Designation No: KR0040, FCC Site Registration No: 687132 VCCI Registration No. : R-20080, G-20078, C-20059, T-20056 CAB Identifier: KR0040, ISED Number: 8035A KOLAS No.: KT231

2. Device information

Equipment under test	:	BF_BROWN_21 UV WIRELESS CHARGER(3IN1)
Model	:	8809720399997
Modulation technique	:	AM
Frequency range	:	110 ㎑ ~ 239 ㎑
Power source	:	DC 5 V, 9 V
Antenna specification	:	Coil Antenna
Software version	:	Ver 1.0
Hardware version	:	Ver 1.0
Test device serial No.	:	N/A
Operation temperature	:	-20 ℃ ~ 50 ℃

2.1. Accessory information

Equipment	Manufacturer	Model	Serial No.	Power Source
Adapter	SAMSUNG	EP-TA200	R37M6JHF4Q1DK3	100-240V/50-60Hz, 0.5A

2.2. Support equipment used in the test :

Equipment	Manufacturer	Model	Serial No.	FCC ID
Mobile Phone	Apple	MGJC3KH/A	-	-
Wireless Earphone	Apple	MWP22KH/A	-	-
Wireless Watch	Apple	MKNY3KH/A	-	-

2.3. Frequency/channel operations

This device contains the following capabilities:
WPT

Frequency (㎑)
110 ~ 239

Table 2.3.1. WPT

3. Measurement uncertainty

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.10-2013.

All measurement uncertainty values are shown with a coverage factor of k=2 to indicated a 95 % level of confidence. The measurement data shown herein meets of exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and thus, can be compared directly to specified limits to determine compliance.

Parameter	Expanded uncertainty (±)	
Conducted RF power	1.3 dB	
E-Field	3 kHz ~ 10 MHz	11.04 %
H-Field	3 kHz ~ 10 MHz	13.80 %

4. RF Exposure
4.1. FCC Regulation

This document is prepared to show compliance with the RF Exposure requirements as required in §1.1310 of the FCC rules and Regulations.
The limit for Maximum Permissible Exposure (MPE), specified in FCC §1.1310, is listed in Table 1-1.
According to FCC §1.1310: the criteria listed in the following table shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in §1.1307(b).

Table 1 – Limits for Maximum Permissible Exposure (MPE)

Frequency Range (㎒)	Electric Field Strength [V/m]	Magnetic Field Strength [A/m]	Power Density [㎽/㎠]	Averaging Time [minute]
(A) Limits for Occupational / Controlled Exposure				
0.3 ~ 3.0	614	1.63	*100	6
3.0 ~ 30	1842/f	4.89/f	*900/f²	6
30 ~ 300	61.4	0.163	1.0	6
300 ~ 1 500	/	/	f/300	6
1 500 ~ 15 000	/	/	5	6
(B) Limits for General Population / Uncontrolled Exposure				
0.3 ~ 1.34	614	1.63	*100	30
1.34 ~ 30	824/f	2.19/f	*180/f²	30
30 ~ 300	27.5	0.073	0.2	30
300 ~ 1 500	/	/	f/1 500	30
1 500 ~ 15 000	/	/	1.0	30

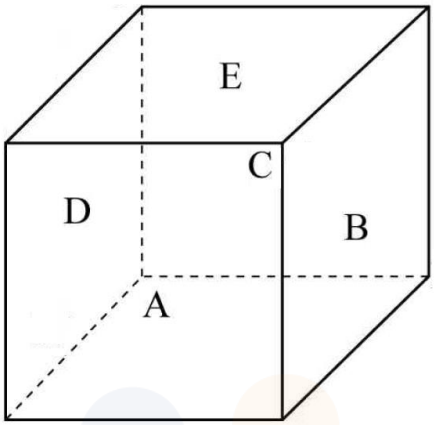
*f=frequency in ㎒, *= plane-wave equivalent power density*

Per the guidance of KDB 680106, the E-field and H-field limits shown in the table above are extended down to 100 ㎑

4.2. Test Set-up

4.2.1. Isotropic Probe test setup

The measurement probe (EHP-200A) is a regular hexahedron and supports 3-axis (X, Y and Z) isotropic probe.



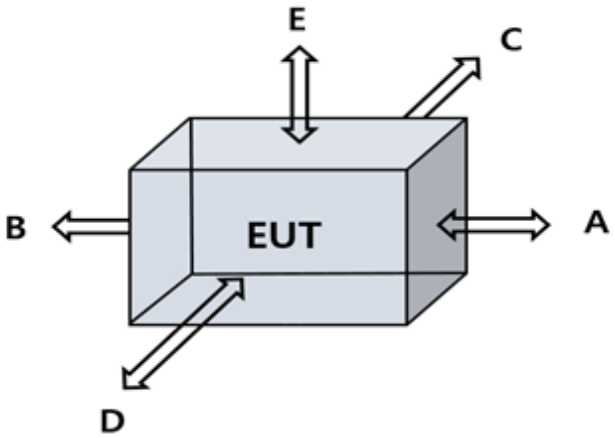
A: Front of measurement probe
B: Right of measurement probe
C: Rear of measurement probe
D: Left of measurement probe
E: Top of measurement probe
*Bottom of measurement probe is not used to measure RF exposure condition owing to connection with a stick.

At 0 cm distance, measurement isotropic probe was investigated by rotating the probe through various angles for one of the EUT's sides as below.

Measurement Point	**A**	**B**	**C**	**D**	**E**
Direction	Front	Right	Rear	Left	Top
Measurement Point	**A to B**	**B to C**	**C to D**	**D to A**	**N/A**
Direction	Front to Right	Right to Rear	Rear to Left	Left to Front	-
Measurement Point	**A to E**	**B to E**	**C to E**	**D to E**	**N/A**
Direction	Front to Top	Right to Top	Rear to Top	Left to Top	-

When the worst angle among all angles was found, RF exposure measurement should be adjusted from worst angle.

4.2.2. EUT test setup



1) Testing was performed with a calibrated field probe.
2) Measurement was performed on each side of the EUT as described per below table.

A	B	C	D	E
Front	Rear	Right	Left	Top

Measurement Probe	EHP-200A (Manufacturer: Narda)
Measurement Method	Direct measurement
Measurement Distance	Surface of the EUT to the center of the probe.

- **Support equipment**

Equipment	Manufacturer	Model	Serial No.	FCC ID
Mobile Phone	Apple	MGJC3KH/A	-	-
Wireless Earphone	Apple	MWP22KH/A	-	-
Wireless Watch	Apple	MKNY3KH/A	-	-

Equipment Approval Considerations item 5.b) of KDB 680106 D01 v03

a) Power transfer frequency is less than 1 ㎒.

- Output1: 5W Charge condition is operates at a frequency of 119 ㎑.
- Output1: 7.5W Charge condition is operates at a frequency of 128 ㎑.
- Output1: 10W Charge condition is operates at a frequency of 121 ㎑.
- Output1: 15W Charge condition is operates at a frequency of 149 ㎑.
- Output2: 3W Charge condition is operates at a frequency of 180 ㎑.
- Output3: 2.5W Charge condition is operates at a frequency of 148 ㎑.

b) Output power from each primary coil is less than or equal to 15 watts.

- Output1: 5W Charge condition / Output power from each primary coil : 5 watts.
- Output1: 7.5W Charge condition / Output power from each primary coil : 7.5 watts.
- Output1: 10W Charge condition / Output power from each primary coil : 10 watts.
- Output1: 15W Charge condition / Output power from each primary coil : 15 watts.
- Output2: 3W Charge condition / Output power from each primary coil : 3 watts.
- Output3: 2.5W Charge condition / Output power from each primary coil : 2.5 watts.

c) The transfer system includes 3 primary coils. This includes charging systems that may have multiple primary coils and clients that are able to detect and allow coupling only between individual pairs of coils.

- The transfer system includes 3 primary coils.

d) Client device is placed directly in contact with the transmitter.

- The client device is placed directly in contact with the transmitter.

e) Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion)

- This device is mobile exposure condition.

f) The aggregate H-field strengths at 15㎝ surrounding the device and 20㎝ above the top surface from all simultaneous transmitting coils are demonstrated to be less than 50% of the MPE limit.

- The EUT field strength levels < 50 % of the MPE limit 1.63 A/m
  0.096 A/m (Max) < 0.815 A/m

4.3. Test configuration (Description of test mode)

Test case configuration is reported as below.

Test Mode	Description
TM1	EUT + Mobile device (Battery status: < 10%)
TM2	EUT + Mobile device (Battery status: < 50%)
TM3	EUT + Mobile device (Battery status: > 90%)

Test modes:

Pre-scan / Final test	Mode code	Description
Pre-scan	00	Charge mode (Output1: 5W)
Pre-scan	01	Charge mode (Output1: 7.5W)
Pre-scan	02	Charge mode (Output1: 10W)
Final test	03	**Charge mode (Output1: 15W)**
Pre-scan	04	Charge mode (Output2: 3W)
Pre-scan	05	Charge mode (Output3: 2.5W)
Pre-scan	06	Charge mode (Output1: 5W + Output2: 3W)
Pre-scan	07	Charge mode (Output1: 7.5W + Output2: 3W)
Pre-scan	08	Charge mode (Output1: 10W + Output2: 3W)
Pre-scan	09	Charge mode (Output1: 15W + Output2: 3W)
Pre-scan	10	Charge mode (Output1: 5W + Output3: 2.5W)
Pre-scan	11	Charge mode (Output1: 7.5W + Output3: 2.5W)
Pre-scan	12	Charge mode (Output1: 10W + Output3: 2.5W)
Pre-scan	13	Charge mode (Output1: 15W + Output3: 2.5W)
Pre-scan	14	Charge mode (Output1: 5W + Output2: 3W + Output3: 2.5W)
Pre-scan	15	Charge mode (Output1: 7.5W + Output2: 3W + Output3: 2.5W)
Pre-scan	16	Charge mode (Output1: 10W + Output2: 3W + Output3: 2.5W)
Final test	17	**Charge mode (Output1: 15W + Output2: 3W + Output3: 2.5W)**

4.4. Test result

[Test mode: 03]

4.4.1. Test mode: test result of rotating the probe through various angles
Distance : 15㎝ surrounding the device and 20㎝ above the top surface.

- E-field measurement results (Sides of probe)

Frequency [MHz]	E-field Measurement [V/m]					Limits [V/m]
	Probe rotation					
	A	B	C	D	E	
0.151 5	2.438 5	1.515 4	1.359 4	1.235 3	0.638 2	614.00

- H-field measurement results (Sides of probe)

Frequency [MHz]	H-field Measurement [A/m]					Limits [A/m]
	Probe rotation					
	A	B	C	D	E	
0.151 5	0.059 2	0.064 6	0.069 1	0.070 1	0.064 0	1.630

- E-field measurement results (Rotation of probe)

Frequency [MHz]	E-field Measurement [V/m]								Limits [V/m]
	Probe rotation								
	A to E	B to E	C to E	D to E	A to B	B to C	C to D	D to A	
0.151 5	0.945 4	0.983 6	1.012 2	0.996 0	1.356 1	0.962 8	0.854 9	1.309 0	614.00

- H-field measurement results (Rotation of probe)

Frequency [MHz]	H-field Measurement [A/m]								Limits [A/m]
	Probe rotation								
	A to E	B to E	C to E	D to E	A to B	B to C	C to D	D to A	
0.151 5	0.043 4	0.059 8	0.056 4	0.047 3	0.045 0	0.048 1	0.043 0	0.039 9	1.630

Note:
- Worst Case: E-field = A-side, H-field = D-side.

4.4.2. Test mode: Test result of EUT's sides about the distance
Distance : 15㎝ surrounding the device and 20㎝ above the top surface.

- E-field measurement results

Test Mode	Frequency [MHz]	E-field Measurement [V/m]					Limits [V/m]
		EUT sides					
		A	B	C	D	E	
TM1	0.151 5	3.247 4	0.519 4	1.496 4	2.605 1	0.790 6	614.00
TM2	0.151 5	3.229 3	0.511 3	1.443 2	2.603 8	0.882 5	
TM3	0.151 5	3.244 7	0.512 8	1.431 5	2.569 3	0.883 9	

- H-field measurement results

Test Mode	Frequency [MHz]	H-field Measurement [A/m]					Limits [A/m]
		EUT sides					
		A	B	C	D	E	
TM1	0.151 5	0.052 4	0.037 6	0.038 9	0.046 2	0.035 3	0.814
TM2	0.151 5	0.052 8	0.037 8	0.039 8	0.046 9	0.034 9	
TM3	0.151 5	0.052 2	0.038 0	0.039 1	0.046 0	0.035 3	

Note:

- Above RF exposure measurement was performed considering worst position of isotropic probe.

[Test mode:17]

4.4.3. Test mode: test result of rotating the probe through various angles
Distance : 15㎝ surrounding the device and 20㎝ above the top surface.

- E-field measurement results (Sides of probe)

Frequency [MHz]	E-field Measurement [V/m]					Limits [V/m]
	Probe rotation					
	A	B	C	D	E	
0.151 5	2.761 1	1.378 3	1.624 7	2.811 7	1.317 5	614.00

- H-field measurement results (Sides of probe)

Frequency [MHz]	H-field Measurement [A/m]					Limits [A/m]
	Probe rotation					
	A	B	C	D	E	
0.151 5	0.045 0	0.096 0	0.091 3	0.049 9	0.060 1	1.630

- E-field measurement results (Rotation of probe)

Frequency [MHz]	E-field Measurement [V/m]								Limits [V/m]
	Probe rotation								
	A to E	B to E	C to E	D to E	A to B	B to C	C to D	D to A	
0.151 5	1.017 7	1.018 0	1.028 1	1.031 8	1.377 5	1.012 5	1.253 9	1.332 0	614.00

- H-field measurement results (Rotation of probe)

Frequency [MHz]	H-field Measurement [A/m]								Limits [A/m]
	Probe rotation								
	A to E	B to E	C to E	D to E	A to B	B to C	C to D	D to A	
0.151 5	0.060 8	0.053 5	0.068 7	0.063 4	0.074 8	0.056 8	0.046 4	0.039 5	1.630

Note:
- Worst Case: E-field = D-side, H-field = B-side.

4.4.4. Test mode: Test result of EUT's sides about the distance
Distance : 15㎝ surrounding the device and 20㎝ above the top surface.

- E-field measurement results

Test Mode	Frequency [MHz]	E-field Measurement [V/m]					Limits [V/m]
		EUT sides					
		A	B	C	D	E	
TM1	0.151 5	2.705 5	0.439 7	1.254 3	2.021 1	1.571 8	614.00
TM2	0.151 5	2.693 9	0.388 4	1.764 9	2.026 0	1.569 6	
TM3	0.151 5	2.560 3	0.468 2	1.716 4	2.021 7	1.570 0	

- H-field measurement results

Test Mode	Frequency [MHz]	H-field Measurement [A/m]					Limits [A/m]
		EUT sides					
		A	B	C	D	E	
TM1	0.151 5	0.039 2	0.036 1	0.059 3	0.040 1	0.034 1	1.630
TM2	0.151 5	0.038 3	0.034 8	0.059 6	0.040 1	0.034 2	
TM3	0.151 5	0.038 2	0.033 5	0.059 5	0.040 6	0.034 5	

Note:
- Above RF exposure measurement was performed considering worst position of isotropic probe.

5. Measurement Equipment

Equipment Name	Manufacturer	Model No.	Serial No.	Next Cal. Date
E&H Field Probe	narda	EHP-200A	170WX81015	23.02.11

End of test report