

TEST REPORT



Dt&C Co., Ltd.

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1. Report No : DRTFCC2311-0155(1)

2. Customer

• Name (FCC) : PLUTO Solution Inc.

• Address (FCC) : B-1122, Kumkang Penterium IT Tower 282, Hagui-ro, Dongan-gu
Anyang-si, Gyeonggi-do South Korea

3. Use of Report : FCC Original Grant

4. Product Name / Model Name : SQF Charging station / NFC-100
FCC ID : 2AZ8A-NFC-100

5. FCC Regulation(s) : Part 1.1310
Test Method Used : KDB 680106 D01 v04

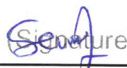
6. Date of Test : 2023.11.15 ~ 2023.11.27

7. Location of Test : ☒ Permanent Testing Lab ☐ On Site Testing

8. Testing Environment : See appended test report.

9. Test Result : Refer to the attached test result.

The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
This test report is not related to KOLAS accreditation.

Affirmation	Tested by	Technical Manager
	Name : SeungMin Gil  (Signature)	Name : JaeJin Lee  (Signature)

2023 . 12 . 14 .

Dt&C Co., Ltd.

If this report is required to confirmation of authenticity, please contact to report@dtnc.net

Test Report Version

Test Report No.	Date	Description	Tested by	Reviewed by
DRTFCC2311-0155	Nov. 30, 2023	Initial issue	SeungMin Gil	JaeJin Lee
DRTFCC2311-0155 (1)	Dec. 14, 2023	Revised the output power	SeungMin Gil	JaeJin Lee

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1. Equipment information

1.1 Equipment description

FCC Equipment Class	Part 15 Low Power Transmitter Below 1705kHz (DCD)
Product Name	SQF Charging station
Model Name	NFC-100
Add Model Name	-
Firmware Version Identification Number	V1.11
EUT Serial Number	No Specified
Wireless charging output	Max : 50 W
Power Supply	DC 12.6 V
Antenna type	Coil Antenna

1.2 Support equipment

Support Equipment	Model Name	Manufacturer	Note
SQF Flow rate FOUP	NFD-100	PLUTO Solution Inc.	-
AC ADAPTER	CAD150241	Channel Well Technology	-

Note: The above equipment was supported by manufacturer.

2. Information about test items

2.1 Test Configuration and Mode

•Test configuration

The field strength of both E-field and H-field were measured at 20 cm using RF exposure survey meter with E-field and H-field probes for determining compliance with the MPE requirements of FCC Part 1.1310

These testing were performed at test configuration as test setup diagram on clause 3 of this test report.

During measurements, the EUT has been tested with client device.

Ant the EUT was loaded with the client device as described below summary table for test conditions.

Client device	Model Name	Wireless Charging Output	Note
SQF Flow rate FOUP	NFD-100	50 W	-

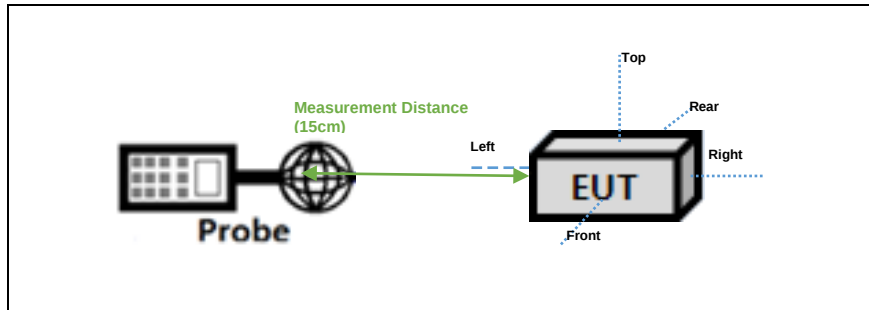
2.2 Testing environment

Temperature	:	21 °C ~ 22 °C
Relative humidity content	:	40 % ~ 42 %
Details of power supply	:	DC 12.6 V

3. E and H field strength

For RF exposure purposes, the E and H field strengths are measured separately with E and H probes and meters at different locations surrounding the test setup.

▪ Test setup diagram



▪ Measurement procedure: KDB 680106

These testing were performed at test configuration as above diagram.

EUT was placed on a turntable, and the measurement distance of 20 cm from the center of the probe to the edge of the device. And test was performed all sides of the EUT(except bottom side).

▪ Limit

This device uses a wireless charging circuit for power transfer operating at the frequency of 110 kHz ~ 205 kHz. Thus, the 300 kHz RF exposure limits were used as below table.

	Frequency	E-Field limit	H-Field limit
FCC Part 1.1310	300 kHz ~ 3 MHz	614 V/m	1.63 A/m

▪Measurement data:

Measurements were performed on the lowest, middle and highest frequency within the frequency range of operation, and worst case data was reported

Test Frequency	Test separation distance	E-field(V/m)					Limit(V/m)
		Front	Rear	Right	Left	Top	FCC
111.1 kHz	15 cm	10.13	11.23	7.93	9.72	10.21	614
111.1 kHz	20 cm	9.01	9.24	6.05	7.85	9.07	
-	-	-	-	-	-	-	

Test Frequency	Test separation distance	H-field(A/m)					Limit(A/m)
		Front	Rear	Right	Left	Top	FCC
111.1 kHz	15 cm	0.13	0.07	0.04	0.05	0.04	1.63
111.1 kHz	20 cm	0.08	0.06	0.03	0.04	0.02	
-	-	-	-	-	-	-	

•Test equipment list

Type	Manufacturer	Model	Cal.Date (yy/mm/dd)	Next. Cal.Date (yy/mm/dd)	S/N
Exposure Level Tester	NARDA	ELT-400	23/06/23	24/06/23	N-0342
B-Field Probe	NARDA	B-Field Probe 100Cm2	23/06/23	24/06/23	M-0779
Magnetic Field Meter	WaveControl	SMP2	23/06/23	24/06/23	20SN1409
E&H Field Probe	WaveControl	WP400	23/06/23	24/06/23	20WP100706
Thermohygrometer	BODYCOM	BJ5478	22/12/16	23/12/16	120612-2

Appendix I

EQUIPMENT APPROVAL CONSIDERATIONS

(1) The power transfer frequency is below 1 MHz.

- Yes

(2) The output power from each transmitting element (e.g., coil) is less than or equal to 15 watts.

- No. 50W.

(3) A client device providing the maximum permitted load is placed in physical contact with the transmitter (i.e., the surfaces of the transmitter and client device enclosures need to be in physical contact)

- Client device is placed directly in contact with the transmitter.

(4) Only § 2.1091-Mobile exposure conditions apply (i.e., this provision does not cover § 2.1093-Portable exposure conditions).

- Yes, Mobile exposure conditions only.

(5) The E-field and H-field strengths, at and beyond 20 cm surrounding the device surface, are demonstrated to be less than 50% of the applicable MPE limit, per KDB 447498, Table 1. These measurements shall be taken along the principal axes of the device, with one axis oriented along the direction of the estimated maximum field strength, and for three points per axis or until a 1/d (inverse distance from the emitter structure) field strength decay is observed. Symmetry considerations may be used for test reduction purposes. The device shall be operated in documented worst-case compliance scenarios

(i.e., the ones that lead to the maximum field components), and while all the radiating structures (e.g., coils or antennas) that by design can simultaneously transmit are energized at their nominal maximum power.

- Yes

(6) For systems with more than one radiating structure, the conditions specified in (5) must be met when the system is fully loaded (i.e., clients absorbing maximum power available), and with all the radiating structures operating at maximum power at the same time, as per design conditions. If the design allows one or more radiating structures to be powered at a higher level while other radiating structures are not powered, then those cases must be tested as well. For instance, a device may use three RF coils powered at 5 W, or one coil powered at 15 W: in this case, both scenarios shall be tested.

- Yes