RF EVALUATION TEST REPORT

Applicant……..	:	Raffel Systems, LLC
Address……	:	N112 W14600 Mequon Road Germantown, WI 53022
Manufacturer……	:	Xiamen Raffel Electronic Technology Co., LTD
Address……	:	Room 1902, Tianshou Operations Center, NO.5 Yilan Road, Guanyinshan CBD Siming District, Xiamen, Fujian, China
Factory……....	:	Fortress Electronics (Xiamen) Co., LTD
Address……...	:	East Of The Fifth Floor, 181 Banqiao Road, Jimei District, Xiamen, Fujian, China
Product Name……	:	Embedded Wireless Charger
Brand Name…….....	:	Raffel Systems
Model No. ……...	:	WCP XXXX 01, WCP XXXX 01-YY, WCP XXXX 02, WCP XXXX 02-YY (For model difference refers to section 2.)
FCC ID…….....	:	YZHWCPBA01
Measurement Standard…….	:	47 CFR PART 2, Section 2.1091
Receipt Date of Samples….	:	April 13, 2024
Date of Tested……	:	April 13, 2024 to April 18, 2024
Date of Report……	:	April 29, 2024

This report shows that above equipment is technically compliant with the requirements of the standards above. All test results in this report apply only to the tested sample(s). Without prior written approval of Dongguan Nore Testing Center Co., Ltd, this report shall not be reproduced except in full.

Prepared by

Jenny Liu / Project Engineer

Approved by

Iori Fan / Authorized Signatory

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Revision History

Report Number	Description	Issued Date
NTC2404195F-1	Initial Issue	2024-04-29

1. General Description of EUT

Product Information	
Product Name:	Embedded Wireless Charger
Main Model Name:	WCP XXXX 01
Additional Model Name:	WCP XXXX 01-YY, WCP XXXX 02, WCP XXXX 02-YY (Where XXXX represents casing surface finish, X may be A-Z or blank. Where YY represents the lengthen of power input cord (less than 2m) and type of power input connector, Y may be 0-9 or blank.)
Model Difference:	These models have the same circuit schematic, construction, and critical components. The differences are model number, appearance design, casing surface finish, indicator light, the lengthen of power input cord and type of power input connector due to trading purpose.
S/N:	2404-1819~1820
Brand Name:	Raffel Systems
Hardware Version:	Not stated
Software Version:	Not stated
Rating:	DC 5V 2A, 5W DC 9V 1.65A, 10W DC 12V 1.2A, 10W
Typical Arrangement:	Table-top
I/O Port:	Refer to user manual
Accessories Information	
Cable:	DC Line: 0.30m, unshielded, undetachable
Other:	N/A
Additional Information	
Note:	According to the model difference and the requirements of the manufacturer, all tests were performed on model WCP HCP 01, WCP BL 02. Both of two models have been tested but only model WCP HCP 01 was exhibited in report.
Remark:	All the information above are provided by the manufacturer. More detailed feature of the EUT please refers to the user manual.

Technical Specification	
Frequency Range:	110.5-148KHz
Modulation Type:	FSK
Antenna Type:	Coil antenna
Output power for coil:	5W, 10W

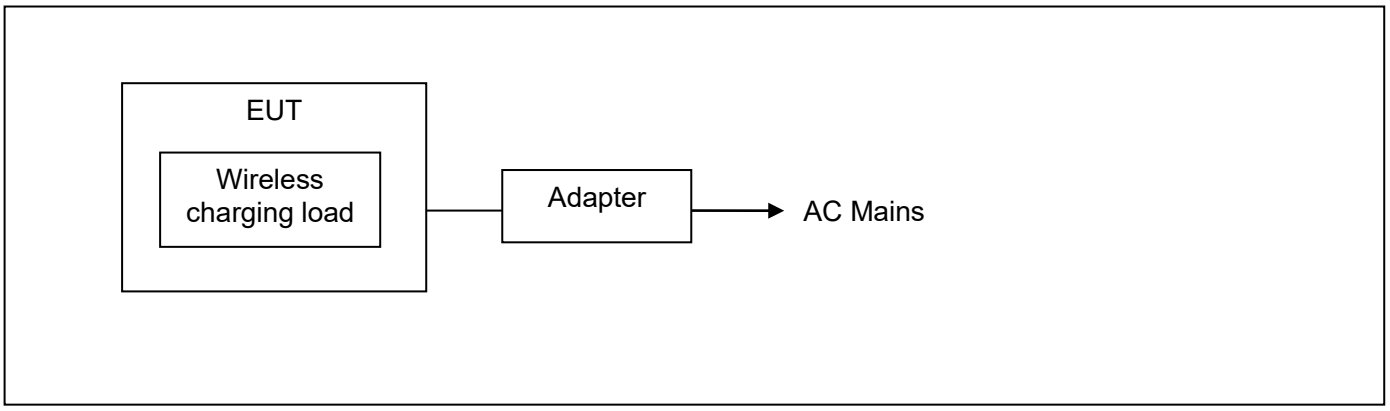
2. Test Facility and Location

Test Site	:	Dongguan Nore Testing Center Co., Ltd. (Dongguan NTC Co., Ltd.)
Accreditations and Authorizations	:	The Laboratory has been assessed and proved to be in compliance with CNAS/CL01 Listed by CNAS, August 13, 2018 The Certificate Registration Number is L5795. The Certificate is valid until August 13, 2024 The Laboratory has been assessed and proved to be in compliance with ISO17025 Listed by A2LA, November 01, 2017 The Certificate Registration Number is 4429.01 Listed by FCC, November 06, 2017 Test Firm Registration Number: 907417 Listed by Industry Canada, June 08, 2017 The Certificate Registration Number. Is 46405-9743A
Test Site Location	:	Building D, Gaosheng Science and Technology Park, Hongtu Road, Nancheng District, Dongguan City, Guangdong Province, China

3. Test Modes Detail

Test Mode	Test Setup Configuration	Remark
1.	Wireless Charging 5W (DC 5V 2A)	Full Load, Half Load, Empty Load
2.	Wireless Charging 10W (DC 9V 1.65A)	Full Load, Half Load, Empty Load
3.	Wireless Charging 10W (DC 12V 1.2A)	Full Load, Half Load, Empty Load

4. Configuration of EUT



5. Modification of EUT

No modifications are made to the EUT during all test items.

6. Description of Support Device

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

No.	Equipment	Brand	M/N	S/N	Cable Specification	Remarks
1.	Wireless Charging Load	YBZ	001	---	---	Provided by the Lab.
2.	Adapter	HUAWEI	HW-059200CHQ	---	---	Provided by the Lab.
3.	Adapter	---	UPP-AE090200U	---	---	Provided by the Lab.
4.	Adapter	Keerda	DZ018CHL120150V	---	---	Provided by the Lab.

7. Deviations and Abnormalities from Standard Conditions

No additions, deviations and exclusions from the standard.

8. Applicable Standards and References

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

Test Standards:

47 CFR Part 1, 1.1307(b) and 1.1310

KDB 680106 D01v04

9. Measurement Uncertainty

No.	Test Item	Uncertainty	Remarks
1.	Magnetic Field Emissions	±0.15 dB	---
2.	Electric Field Emissions	±0.36 dB	---

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

10. Maximum Permissible Exposure

LIMIT

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm2)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
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
300-1500	/	/	f/300	6
1500-100,000	/	/	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
300-1500	/	/	f/1500	30
1500-100,00	/	/	1.0	30

F=frequency in MHz

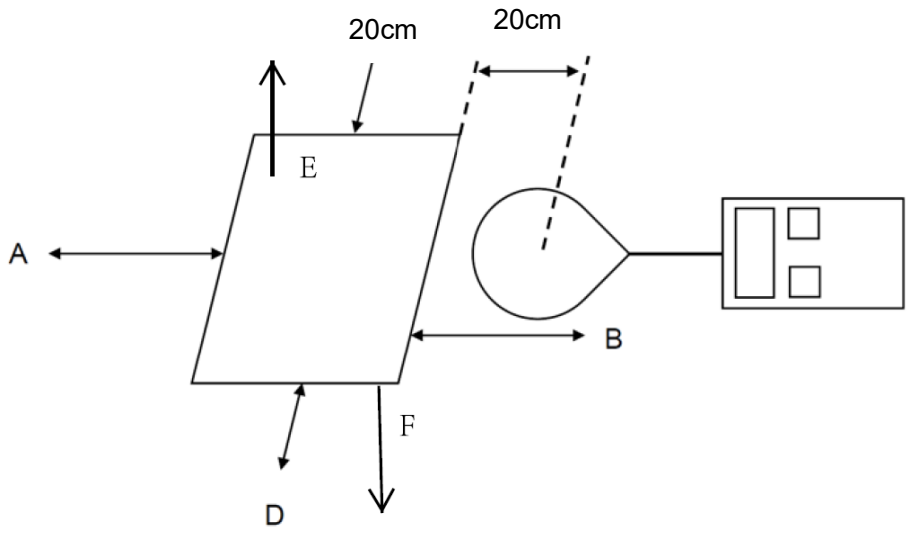
*=Plane-wave equivalent power density

RF exposure compliance will need to be determined with respect to 1.1307(c) and (d) of the FCC rules. The emissions should be within the limits at 300kHz in Table 1 of 1.1310(use the 300kHz limits for 150kHz: 614V/m,1.63A/m).

Per KDB 680106 D01v04, RF exposure evaluation at 15cm surrounding the device and 20cm above the top surface. Emission between 50 kHz to 300 kHz should be assessed versus the limits at 300 kHz in Table 1 of Section 1.1310: 1.63/Am and aggregate H-field strengths from all simultaneous transmitting coils are demonstrated to be less than 50% of the MPE limit.

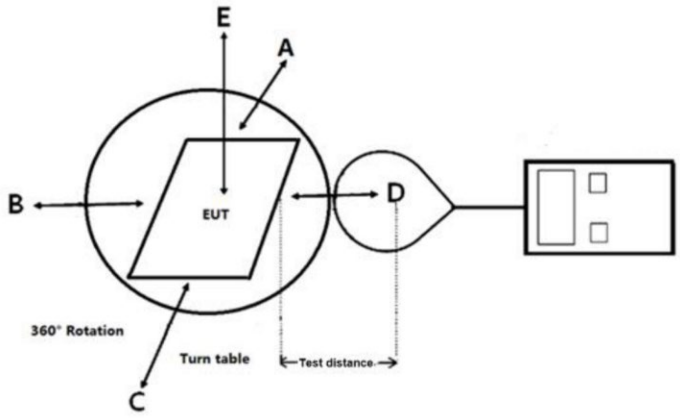
BLOCK DIAGRAM OF TEST SETUP

For Mobile:



Note: The distance of the points A/B/C/D/E and F(if necessary) is 20cm.

For Portable:



Note: The distance of the points A/B/C/D/E is 2 4 6 8 10 15 20cm.

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 20cm surrounding the EUT 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 D01v04.

For portable exposure conditions:

a. The RF exposure test was performed in anechoic chamber;

b. E and H-field measurements should be made with the probe at 0cm for all sides of the EUT.

c. The highest emission level was recorded and compared with limit.

For portable exposure conditions:

Perform H-field measurements for each edge/top surface of the host/client pair at every 2cm, starting from as close as possible out to 20cm.

TEST RESULTS

PASS

Please refer to the following pages of the worst case.

For model WCP XXXX 01

10W, Test Mode 3, Full load					
Test Distance (cm)	**Test Position**	**Mobile Measure Result (V/m)**	**Mobile Measure Result (A/m)**	**Limit (V/m)**	**Limit (A/m)**
20	Side A	0.250	0.20	614	1.63
	Side B	0.257	0.20	614	1.63
	Side C	0.249	0.20	614	1.63
	Side D	0.253	0.20	614	1.63
	Side E	0.349	0.28	614	1.63

For model WCP XXXX 02

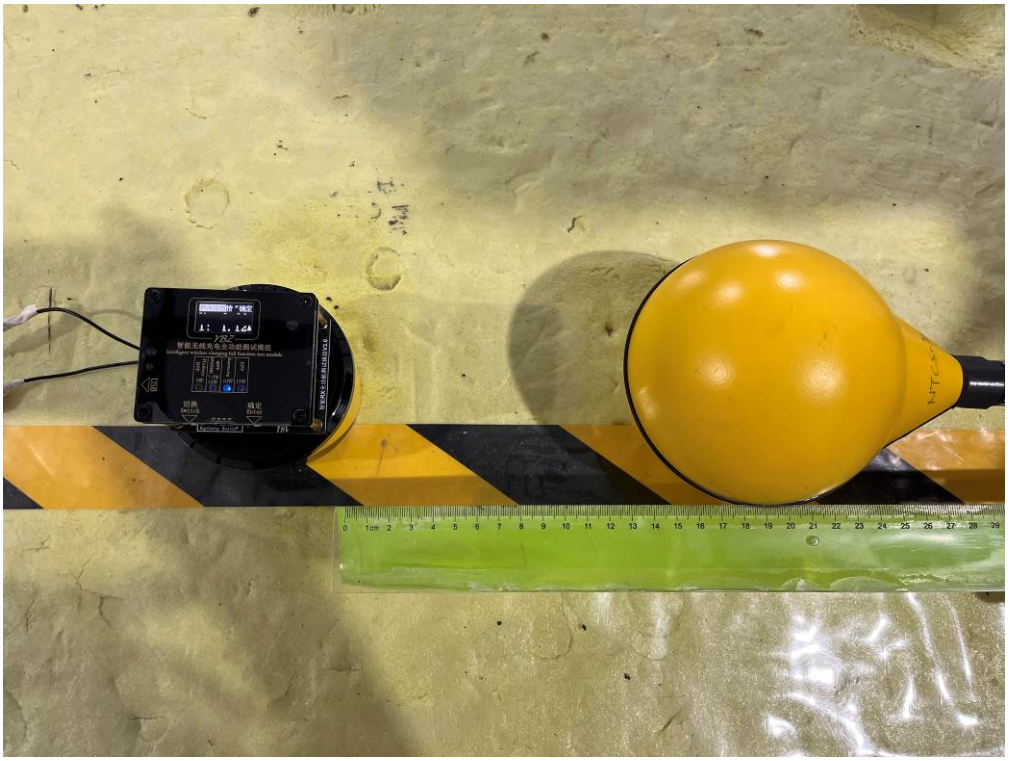
10W, Test Mode 3, Full load					
Test Distance (cm)	**Test Position**	**Mobile Measure Result (V/m)**	**Mobile Measure Result (A/m)**	**Limit (V/m)**	**Limit (A/m)**
20	Side A	0.271	0.22	614	1.63
	Side B	0.245	0.19	614	1.63
	Side C	0.243	0.19	614	1.63
	Side D	0.248	0.20	614	1.63
	Side E	0.316	0.25	614	1.63

11. Test Equipment List

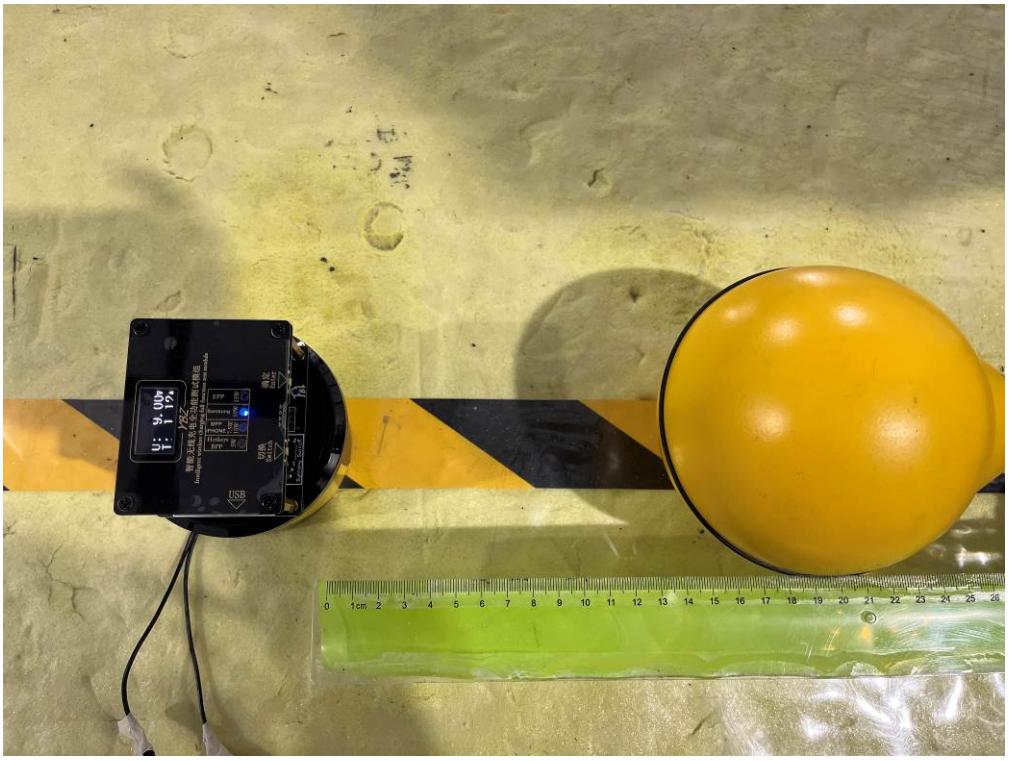
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Magnetic field probe 100cm2	Narda	ETL-400 Probe 1Hz-400KHz (r=6.2cm)	O-0167	June 28, 2023	1 Year
2.	E-Field Probe	Narda	EP-601	611WX70729	Mar. 23, 2024	1 Year

12. Test Photos

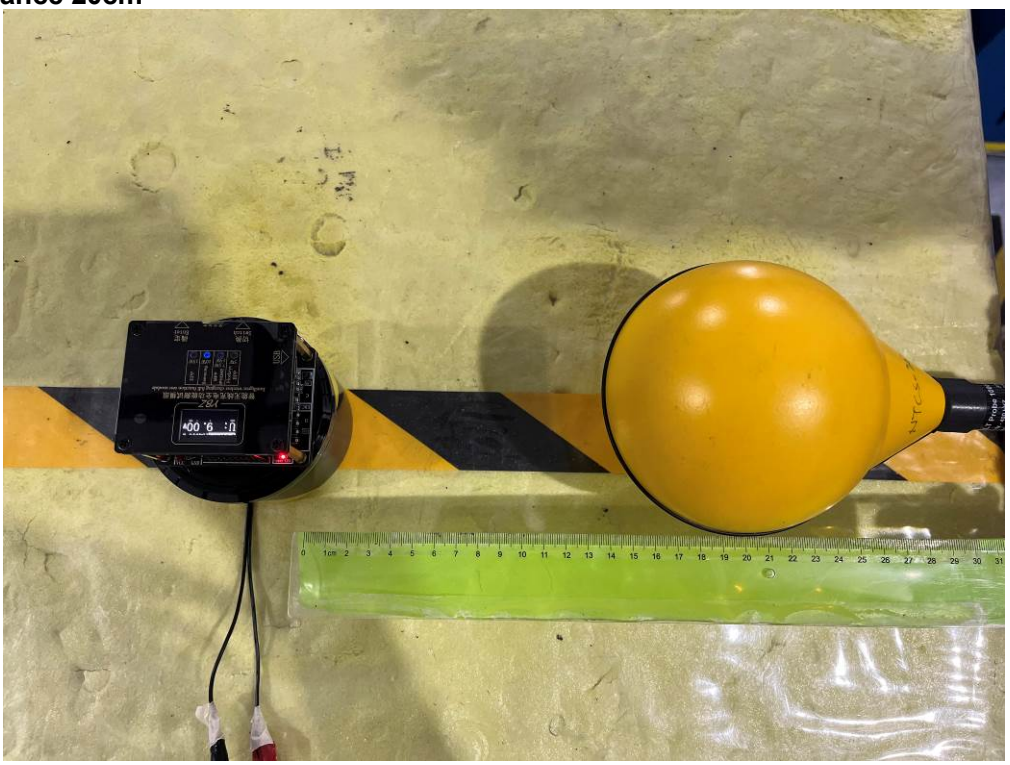
Side A: Test distance 20cm



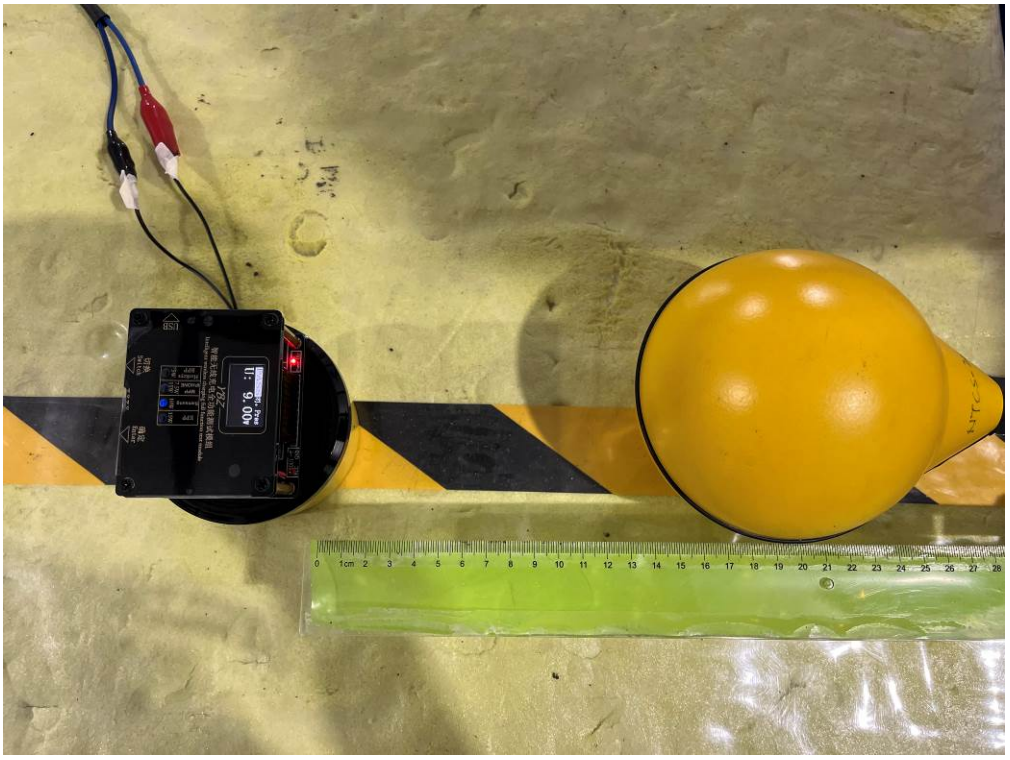
Side B: Test distance 20cm



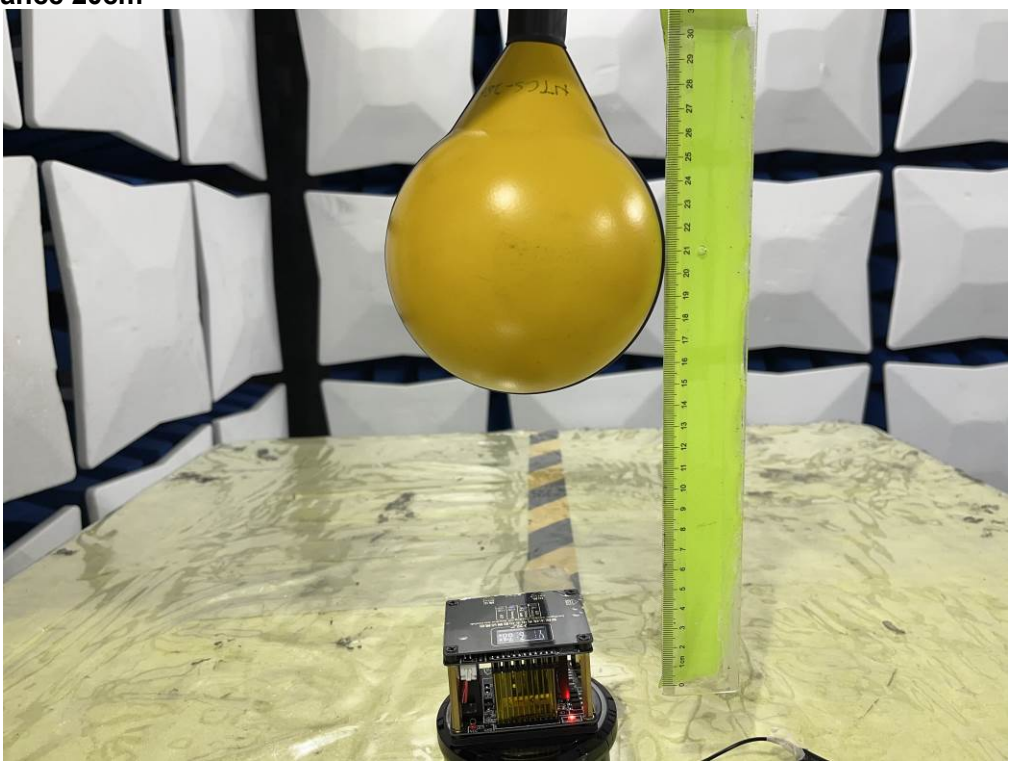
Side C: Test distance 20cm



Side D: Test distance 20cm



Side E: Test distance 20cm



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