TCT 通测检测
TESTING CENTRE TECHNOLOGY

TEST REPORT

FCC ID. ..... :	2A28H302-MMC-000
Test Report No..... :	TCT220720E008
Date of issue..... :	Aug. 04, 2022
Testing laboratory ..... :	SHENZHEN TONGCE TESTING LAB
Testing location/ address:	2101 & 2201, Zhenchang Factory Renshan Industrial Zone, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, 518103, People's Republic of China
Applicant's name..... :	Lenntek Corp.
Address..... :	1610 Lockness Place Torrance, California, 90501, United States
Manufacturer's name ... :	Dongguan Huili Electronics Co., Ltd
Address..... :	Room201, building 4, no.353-2, gongchangRoad, HuangjiangTown, Dongguan City, Guangdong Province, China
Standard(s) ..... :	FCC CFR Title 47 Part 1.1310 KDB 680106 D01 RF Exposure Wireless Charging App v03r01
Product Name..... :	MAGLINK MINI CHARGE
Trade Mark ..... :	Sonix BONDIR
Model/Type reference..... :	302-MMC-000
Rating(s)..... :	Rechargeable Li-ion Battery DC 3.7V
Date of receipt of test item ..... :	Jul. 20, 2022
Date (s) of performance of test..... :	Jul. 20, 2022 - Aug. 04, 2022
Tested by (+signature) ... :	Aaron MO
Check by (+signature).... :	Beryl ZHAO
Approved by (+signature):	Tomsin

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1. General Product Information

1.1. EUT description

Product Name.....:	MAGLINK MINI CHARGE
Model/Type reference.....:	302-MMC-000
Sample Number.....:	TCT220720E007-0101
Operation Frequency .....:	114.74kHz –151.92kHz
Modulation Technology .....:	Load modulation
Max. Wireless Output Power:	5W
Antenna Type.....:	Inductive loop coil Antenna
Rating(s).....:	Rechargeable Li-ion Battery DC 3.7V

Note: The antenna gain listed in this report is provided by applicant, and the test laboratory is not responsible for this parameter.

1.2. Model(s) list

None.

2. Facilities and Accreditations

2.1. Facilities

The test facility is recognized, certified, or accredited by the following organizations:

- FCC - Registration No.: 645098
  SHENZHEN TONGCE TESTING LAB
  Designation Number: CN1205
  The testing lab has been registered and fully described in a report with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.
- IC - Registration No.: 10668A-1
  SHENZHEN TONGCE TESTING LAB
  CAB identifier: CN0031
  The testing lab has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing.

2.2. Location

SHENZHEN TONGCE TESTING LAB
Address: 2101 & 2201, Zhenchang Factory Renshan Industrial Zone, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, 518103, People's Republic of China
TEL: +86-755-27673339

3. Technical Requirements Specification

3.1. Requirements

According to the item 5 of KDB 680106 D01 RF Exposure Wireless Charging App v03r01:
According to the item 5 of KDB 680106 D01 v03r01:

Requirement of KDB 680106 D01	Yes/No	Description
Power transfer frequency is less than 1MHz	Yes	The device operate in the frequency range 114.74kHz –151.92kHz
Output power from each primary coil is less than or equal to 15 watts	Yes	The maximum output power of the primary coil is 5W.
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 transfer system includes single coil that is able to detect receiver device.
Client device is placed directly in contact with the transmitter.	Yes	Client device is placed directly in contact with the transmitter.
Portable exposure conditions are not covered by this exclusion.	No	Mobile and portable exposure conditions.
The aggregate H-field strengths at 15 cm surrounding the device and 20cm above the top surface from all simultaneous transmitting coils are demonstrated to be less than 50% of the MPE limit.	Yes	The EUT H-filed strengths at 0 cm surrounding the device and from 0 cm to 20 cm, in 2 cm maximum increment measured from the edge of the device. all simultaneous transmitting coils are demonstrated to be less than 50% of the MPE limit.

Limits

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)

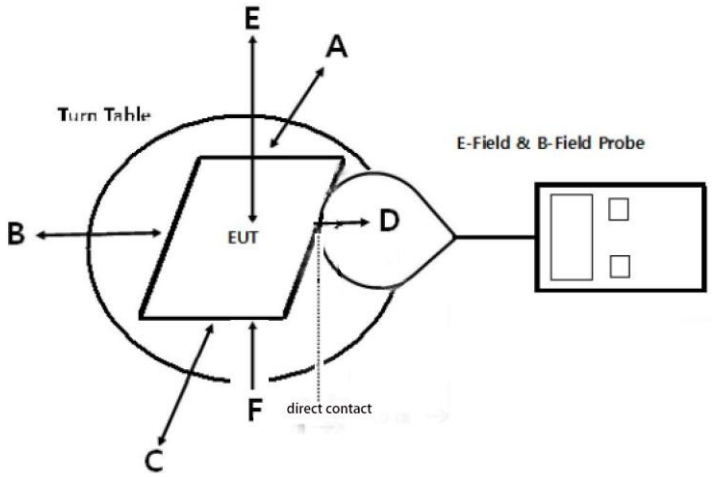
Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
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
1500-100,000	/	/	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/f^2)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	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).

3.2. Test Setup

A:



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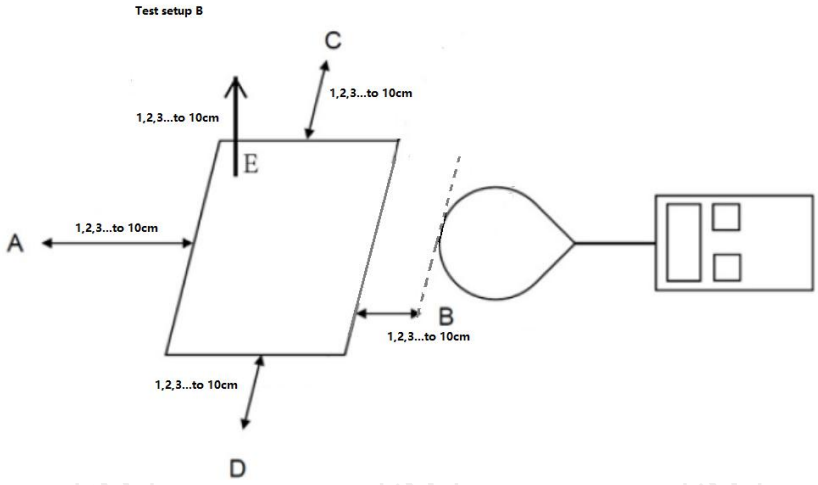

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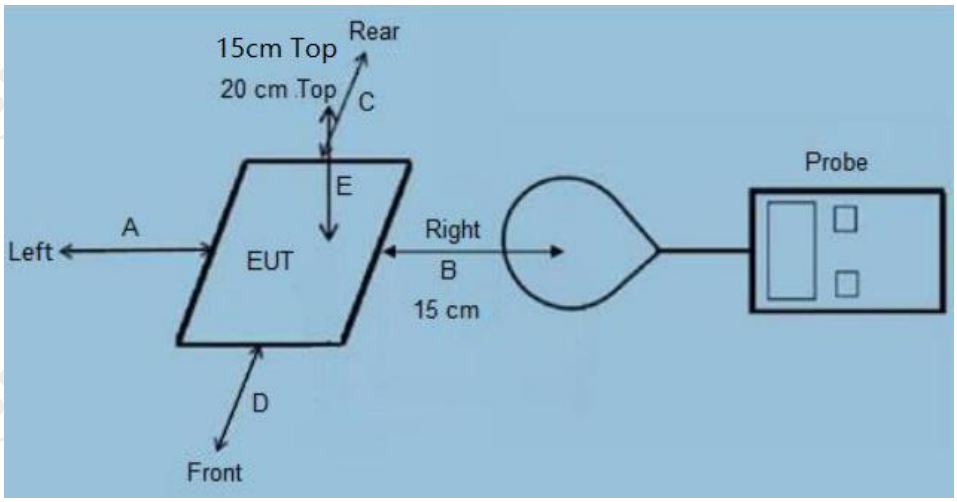

3.3. Test Procedure

1. The RF exposure test was performed in anechoic chamber.
2. The measurement probe was placed at 0 cm surrounding the device for test setup A; and the measurement Probe was placed from 1 cm to 10 cm, in 1 cm maximum increment measured from the edge of the device For the test setup B; and the measurement Probe was placed at 15 cm surrounding the device and both 15 cm and 20 cm above the top for setup C.
1. The highest emission level was recorded and compared with limit as soon as measurement of each points (A, B, C, D, E, F) were completed.
2. The EUT was measured according to the dictates of KDB680106 D01v03r01.
3. Remark;

The EUT's test position A, B, C, D , E and F is valid for the E and H field measurements.

3.4. Test Instruments List

Equipment	Manufacturer	Model No.	Calibration Due
Magnetic field meter	NARDA	ELT-400	Feb. 24, 2023
Mobile Phone	SAMSUNG	SM-G9350	/
Load	LHX	LHX901RX	/
Adapter	SAMSUNG	EP-TA20CBC	/

3.5. Test Result

Setup A:

Note: Internal battery power mode

E-Filed Strength at 0 cm from edges surrounding the EUT (V/m)

Frequency Range (KHz)	Operation condition	Test Position A (V/m)	Test Position B (V/m)	Test Position C (V/m)	Test Position D (V/m)	Test Position E (V/m)	Test Position F (V/m)	Reference Limits Test (V/m)	Limits Test (V/m)
114.74kHz –151.92kHz	Full load	1.74	1.67	1.65	1.75	1.54	1.77	307	614
	Half load	1.39	1.58	1.53	1.64	1.46	1.68	307	614
	No load	1.33	1.44	1.49	1.50	1.41	1.52	307	614

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

Frequency Range (KHz)	Operation condition	Test Position A (A/m)	Test Position B (A/m)	Test Position C (A/m)	Test Position D (A/m)	Test Position E (A/m)	Test Position F (A/m)	Limits (A/m)
114.74kHz –151.92kHz	Full load	0.218	0.177	0.199	0.194	0.181	0.194	1.63
	Half load	0.190	0.184	0.194	0.185	0.188	0.197	1.63
	No load	0.176	0.172	0.186	0.183	0.177	0.176	1.63

For setup C:

Note: AC Mode

E-Filed Strength at (15 cm surrounding the device and 20 cm above the top) surface of the EUT (V/m)

Frequency Range (KHz)	Operation condition	Test Position A (V/m)	Test Position B (V/m)	Test Position C (V/m)	Test Position D (V/m)	Test Position E 15cm	Test Position F 20cm	Reference Limits Test (V/m)	Limits Test (V/m)
114.74kHz –151.92kHz	Full load	1.76	1.77	1.65	1.76	1.54	1.77	307	614
	Half load	1.54	1.59	1.52	1.69	1.45	1.68	307	614
	No load	1.50	1.41	1.47	1.61	1.47	1.62	307	614

H-Filed Strength at (15 cm surrounding the device and 20 cm above the top) surface of the EUT (A/m)

Frequency Range (KHz)	Operation condition	Test Position A(A/m)	Test Position B(A/m)	Test Position C(A/m)	Test Position D(A/m)	Test Position E 15cm (A/m)	Test Position E 20cm (A/m)	Limits (A/m)
114.74kHz –151.92kHz	Full load	0.215	0.197	0.193	0.195	0.184	0.194	1.63
	Half load	0.189	0.184	0.196	0.186	0.177	0.189	1.63
	No load	0.182	0.171	0.184	0.188	0.173	0.186	1.63

Note:uT=1.25*(A/m),1mT=1000uT

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Setup B:

Note： Internal battery power mode

Full Load

E-Filed Strength at (distance from 1cm to 10cm at 1cm iteration) surrounding the EUT (V/m)

Test distance (cm)	Test Position A(V/m)	Test Position B(V/m)	Test Position C(V/m)	Test Position D(V/m)	Test Position E(V/m)	Reference Limits Test (V/m)	Limits Test (V/m)
1	1.28	1.28	1.29	1.28	1.26	307	614
2	1.28	1.27	1.28	1.27	1.25	307	614
3	1.26	1.26	1.27	1.26	1.24	307	614
4	1.26	1.26	1.26	1.26	1.23	307	614
5	1.25	1.25	1.25	1.24	1.22	307	614
6	1.21	1.25	1.24	1.23	1.22	307	614
7	1.21	1.24	1.23	1.23	1.21	307	614
8	1.20	1.23	1.23	1.21	1.20	307	614
9	1.20	1.23	1.21	1.19	1.18	307	614
10	1.20	1.22	1.20	1.18	1.18	307	614

Half Load

E-Filed Strength at (distance from 1cm to 10cm at 1cm iteration) surrounding the EUT (V/m)

Test distance (cm)	Test Position A(V/m)	Test Position B(V/m)	Test Position C(V/m)	Test Position D(V/m)	Test Position E(V/m)	Reference Limits Test (V/m)	Limits Test (V/m)
1	1.27	1.28	1.27	1.24	1.25	307	614
2	1.26	1.28	1.27	1.24	1.24	307	614
3	1.25	1.27	1.26	1.23	1.23	307	614
4	1.24	1.27	1.25	1.23	1.23	307	614
5	1.23	1.25	1.24	1.22	1.22	307	614
6	1.23	1.25	1.23	1.20	1.21	307	614
7	1.21	1.23	1.21	1.19	1.21	307	614
8	1.19	1.23	1.19	1.18	1.19	307	614
9	1.18	1.22	1.18	1.16	1.17	307	614
10	1.17	1.22	1.17	1.15	1.17	307	614

NO-load

E-Filed Strength at (distance from 1cm to 10cm at 1cm iteration) surrounding the EUT (V/m)

Test distance (cm)	Test Position A(V/m)	Test Position B(V/m)	Test Position C(V/m)	Test Position D(V/m)	Test Position E(V/m)	Reference Limits Test (V/m)	Limits Test (V/m)
1	1.26	1.24	1.27	1.23	1.25	307	614
2	1.25	1.23	1.26	1.23	1.24	307	614
3	1.24	1.23	1.26	1.22	1.23	307	614
4	1.23	1.23	1.25	1.21	1.23	307	614
5	1.21	1.21	1.25	1.20	1.23	307	614
6	1.21	1.20	1.24	1.18	1.22	307	614
7	1.19	1.19	1.23	1.17	1.22	307	614
8	1.18	1.18	1.21	1.15	1.20	307	614
9	1.17	1.15	1.18	1.14	1.19	307	614
10	1.17	1.14	1.18	1.14	1.17	307	614

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Full Load

H-Filed Strength at (distance from 1cm to 10cm at 1cm iteration) surrounding the EUT (A/m)

Test distance (cm)	Test Position A(A/m)	Test Position B(A/m)	Test Position C(A/m)	Test Position D(A/m)	Test Position E(A/m)	Limits (A/m)
1	0.204	0.186	0.192	0.215	0.210	1.63
2	0.203	0.186	0.188	0.213	0.209	1.63
3	0.198	0.183	0.187	0.210	0.206	1.63
4	0.198	0.182	0.184	0.209	0.206	1.63
5	0.196	0.178	0.183	0.207	0.205	1.63
6	0.173	0.177	0.182	0.205	0.204	1.63
7	0.172	0.175	0.179	0.200	0.200	1.63
8	0.169	0.172	0.176	0.196	0.198	1.63
9	0.169	0.169	0.174	0.193	0.197	1.63
10	0.166	0.169	0.172	0.193	0.196	1.63

Half Load

H-Filed Strength at (distance from 1cm to 10cm at 1cm iteration) surrounding the EUT (A/m)

Test distance (cm)	Test Position A(A/m)	Test Position B(A/m)	Test Position C(A/m)	Test Position D(A/m)	Test Position E(A/m)	Limits (A/m)
1	0.199	0.186	0.191	0.208	0.202	1.63
2	0.199	0.185	0.188	0.208	0.202	1.63
3	0.197	0.183	0.188	0.207	0.201	1.63
4	0.196	0.182	0.185	0.206	0.198	1.63
5	0.195	0.179	0.182	0.202	0.198	1.63
6	0.172	0.175	0.181	0.202	0.198	1.63
7	0.165	0.176	0.180	0.199	0.193	1.63
8	0.164	0.172	0.177	0.191	0.193	1.63
9	0.163	0.168	0.173	0.188	0.191	1.63
10	0.159	0.168	0.172	0.188	0.191	1.63

NO-load

H-Filed Strength at (distance from 1cm to 10cm at 1cm iteration) surrounding the EUT (A/m)

Test distance (cm)	Test Position A(A/m)	Test Position B(A/m)	Test Position C(A/m)	Test Position D(A/m)	Test Position E(A/m)	Limits (A/m)
1	0.202	0.182	0.187	0.208	0.206	1.63
2	0.202	0.179	0.187	0.207	0.204	1.63
3	0.196	0.178	0.186	0.207	0.203	1.63
4	0.196	0.178	0.184	0.204	0.198	1.63
5	0.190	0.177	0.181	0.203	0.197	1.63
6	0.170	0.174	0.180	0.194	0.196	1.63
7	0.168	0.173	0.179	0.191	0.183	1.63
8	0.166	0.172	0.178	0.189	0.181	1.63
9	0.166	0.171	0.173	0.188	0.181	1.63
10	0.165	0.168	0.172	0.186	0.179	1.63

Note: In the frequency range of 1k-10M, except the fundamental frequency, other transmissions of the power transmission system are less than 20dB lower than the maximum fundamental transmission, so it is not necessary to evaluate.

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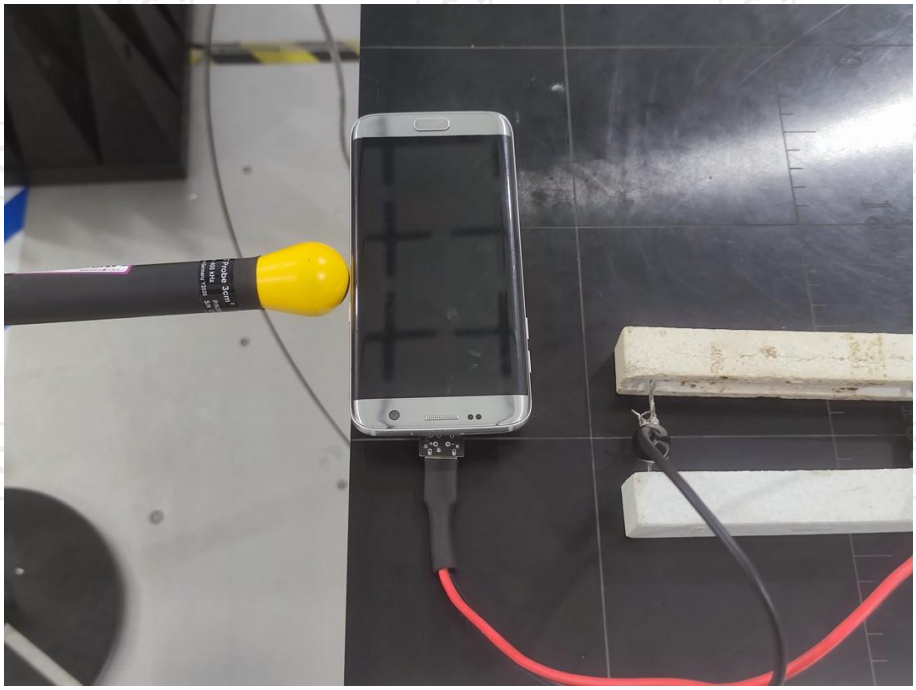
4. Test Set-up Photo

Setup A:
Internal battery mode

front



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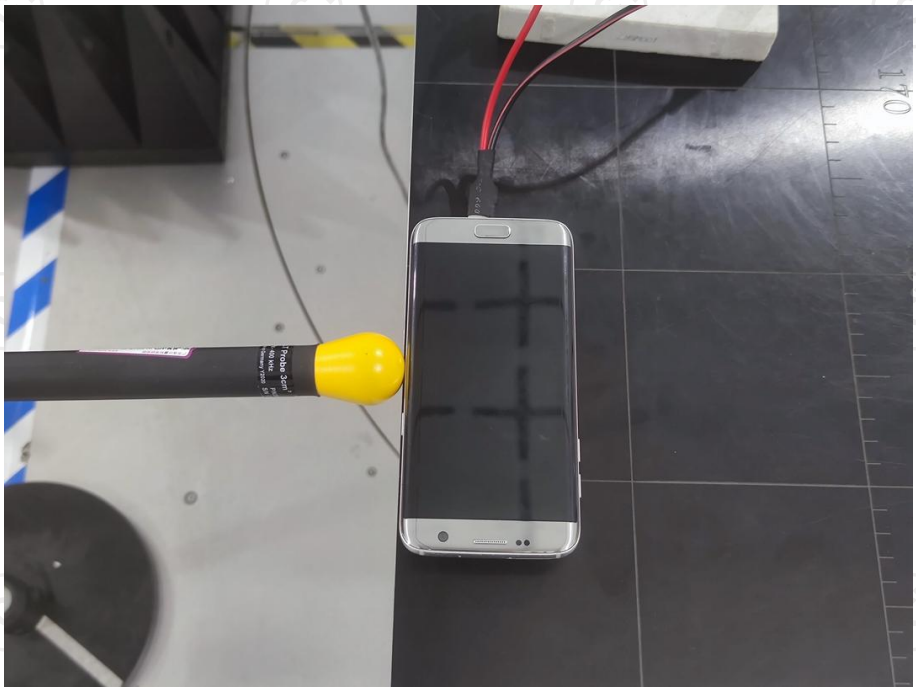

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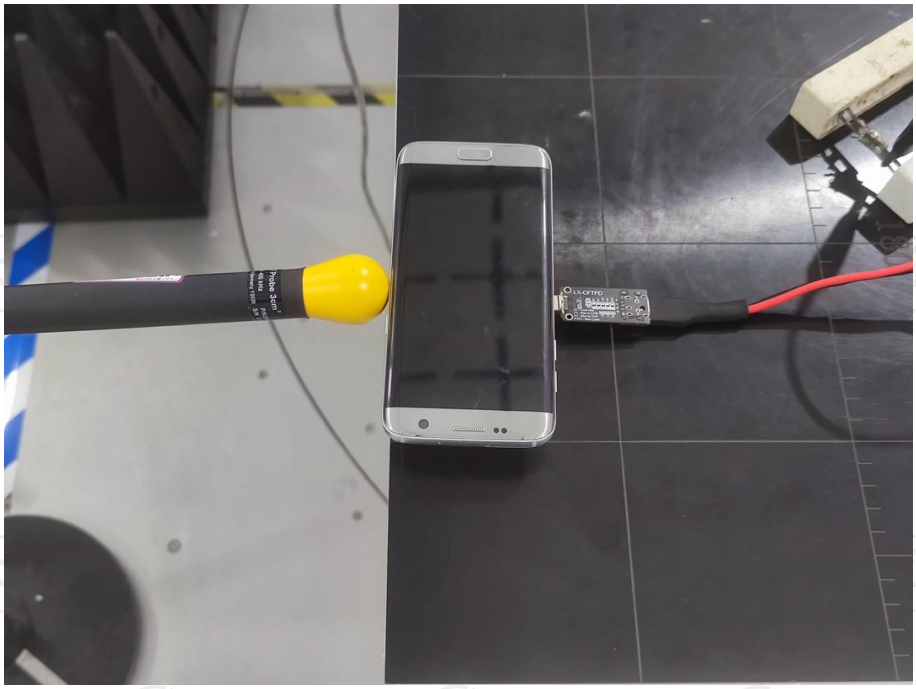

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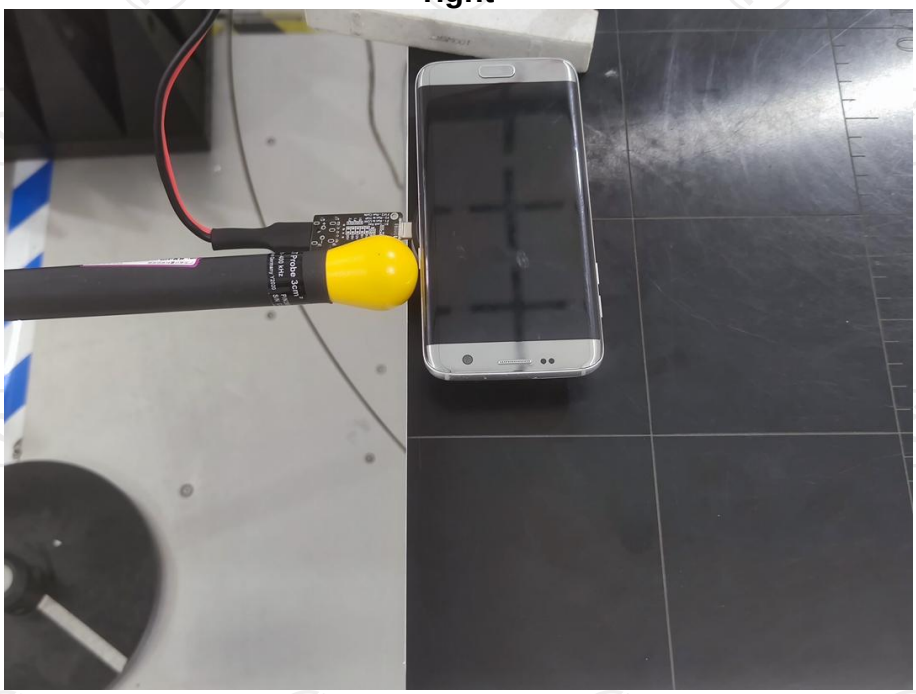

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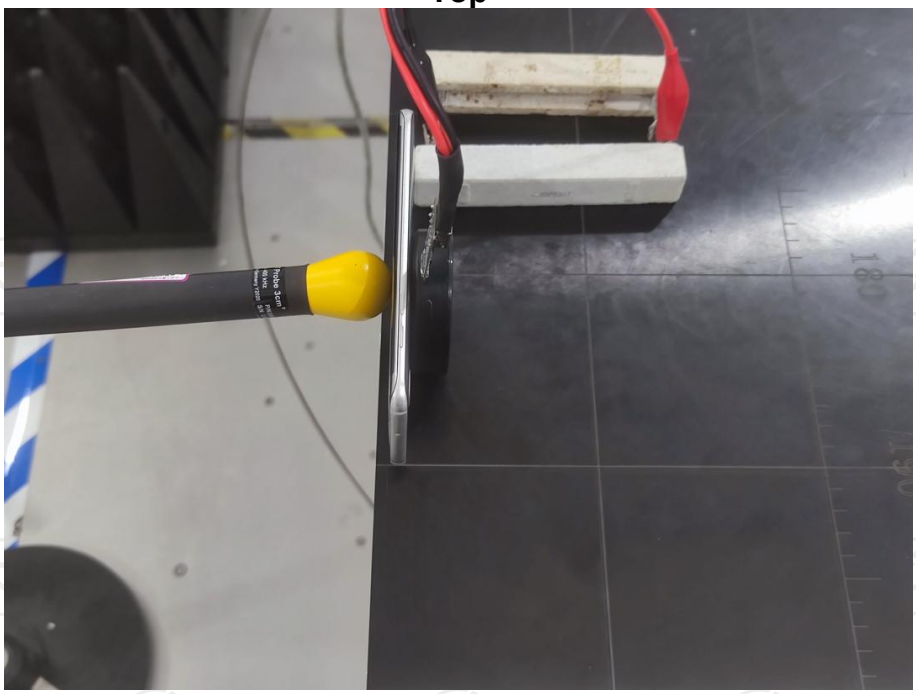
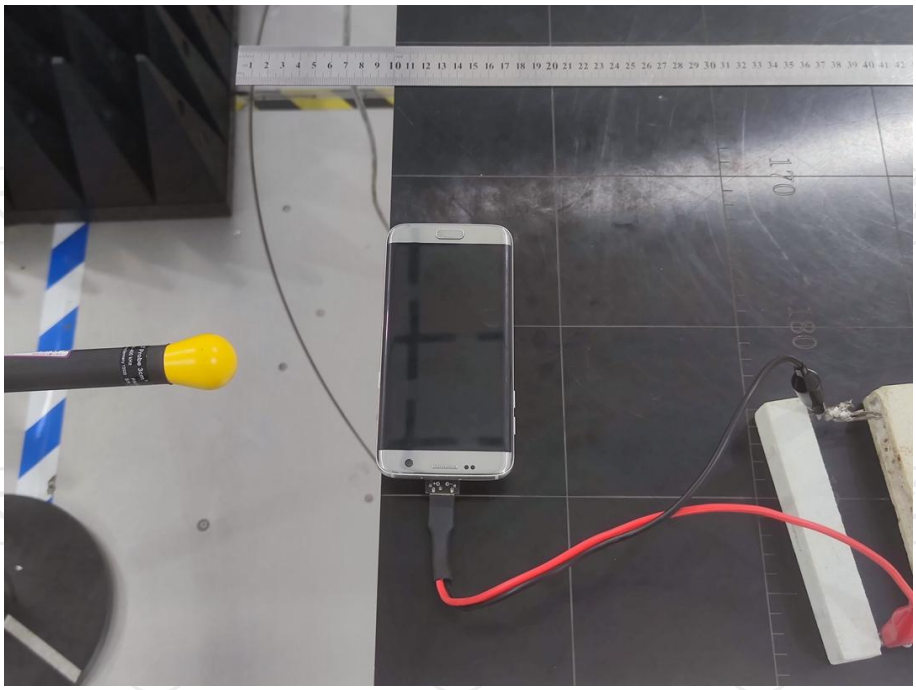


Bottom

Setup B:
Internal battery mode

front



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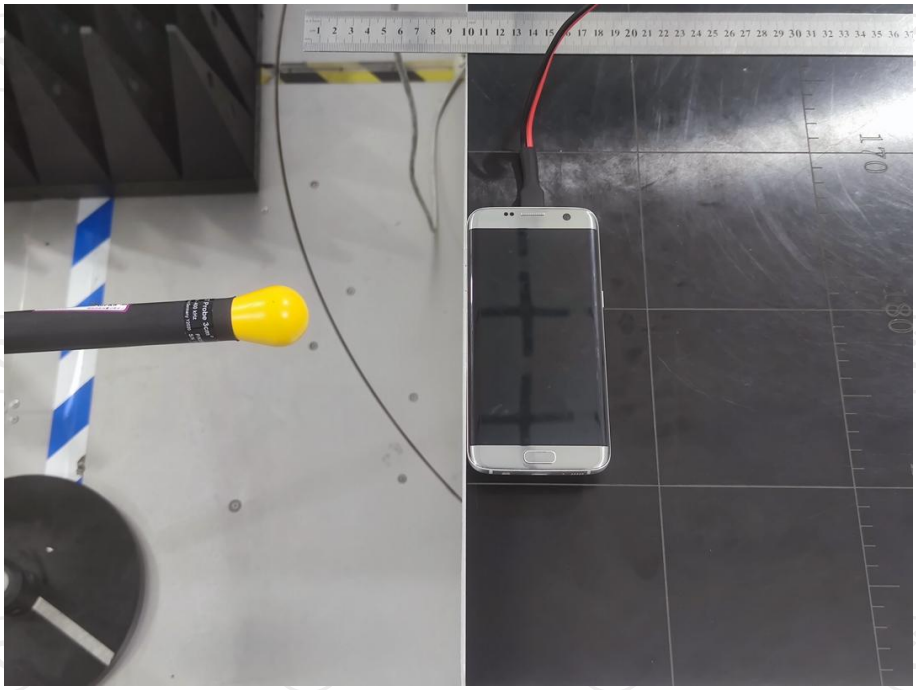

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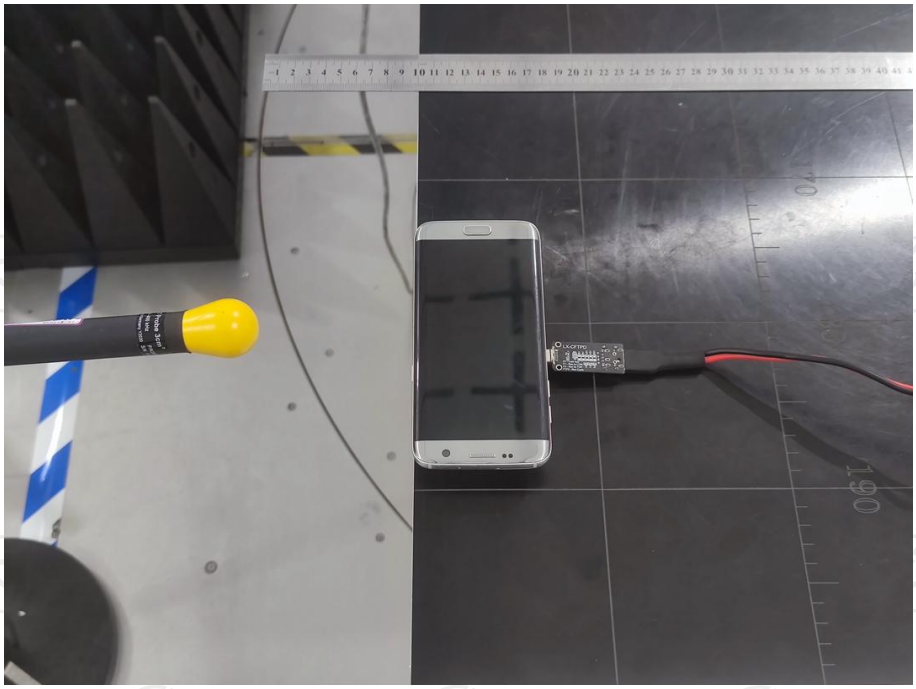

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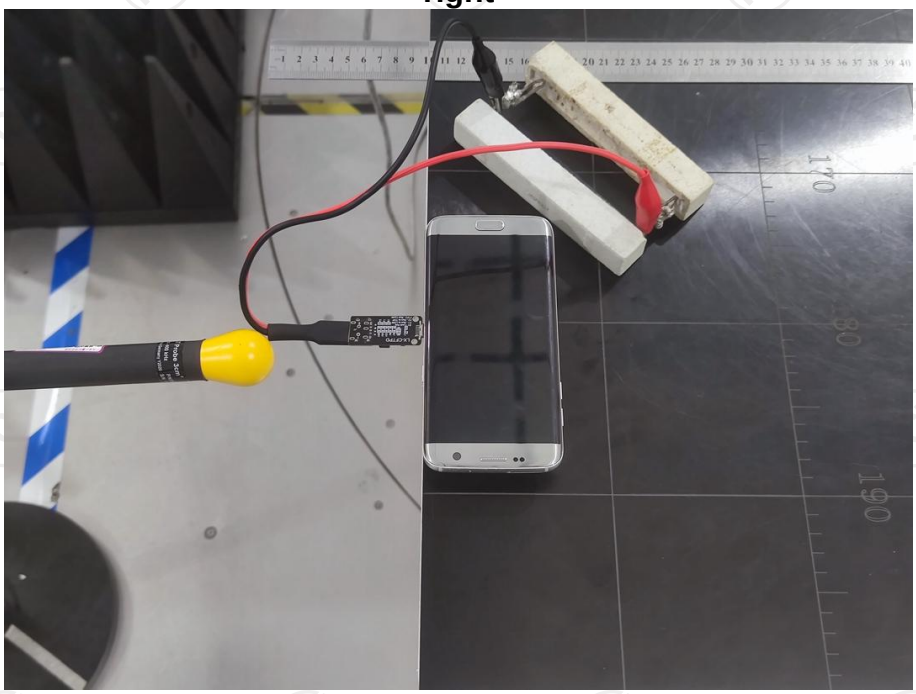

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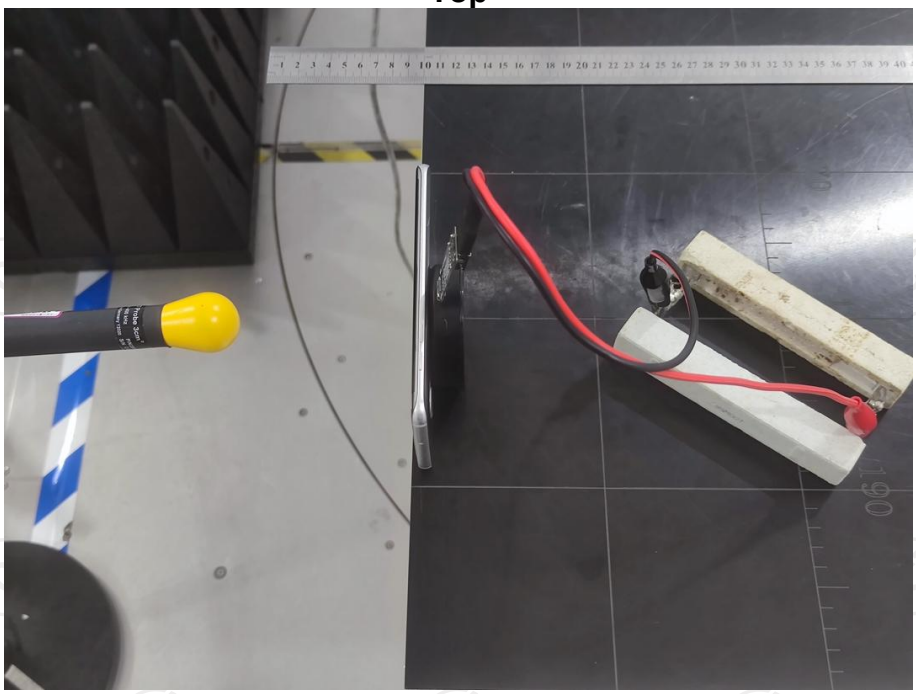
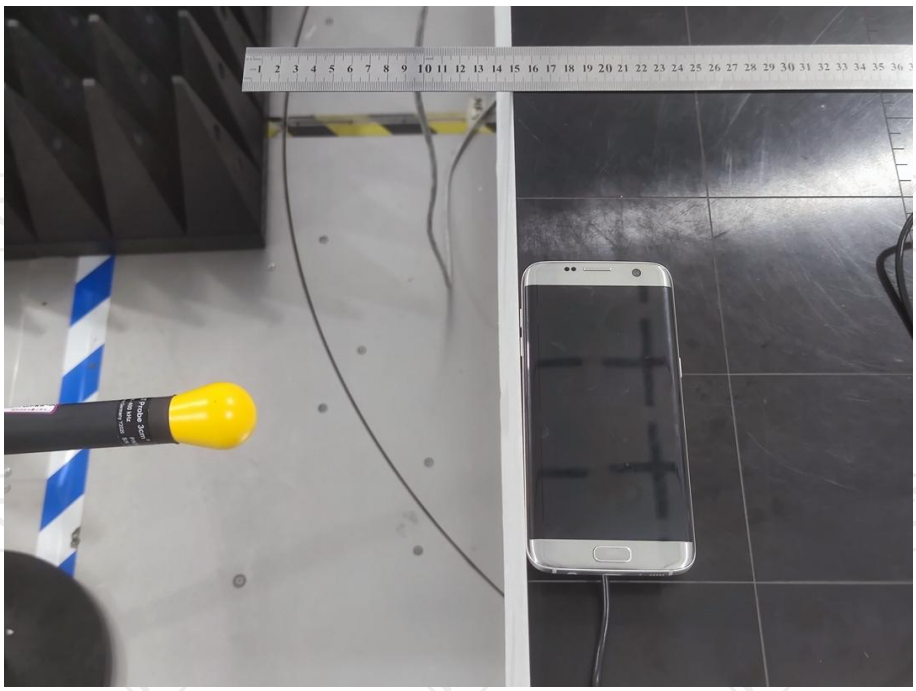


Setup C:
AC mode

front



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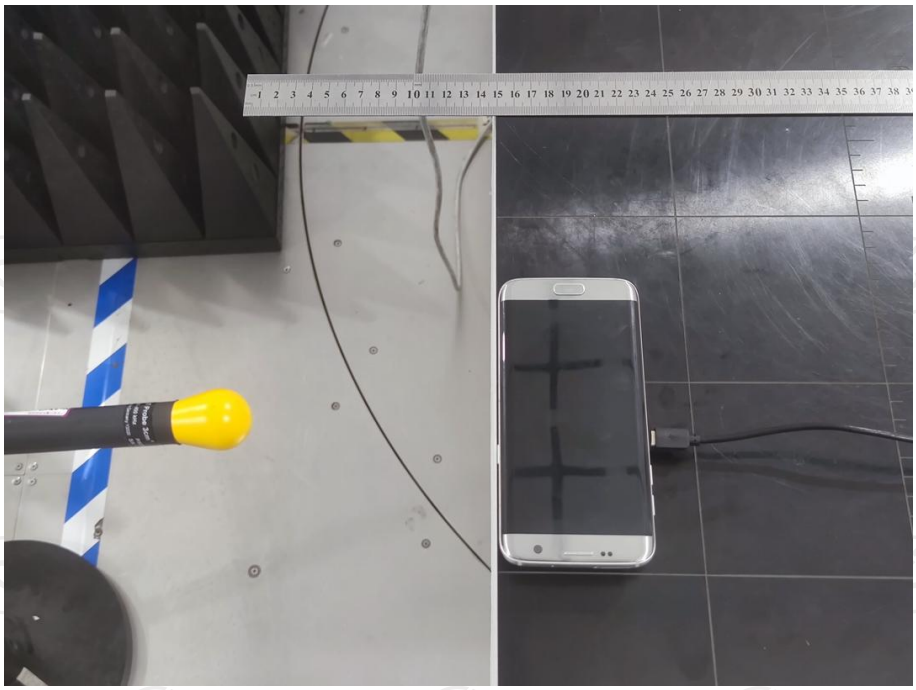

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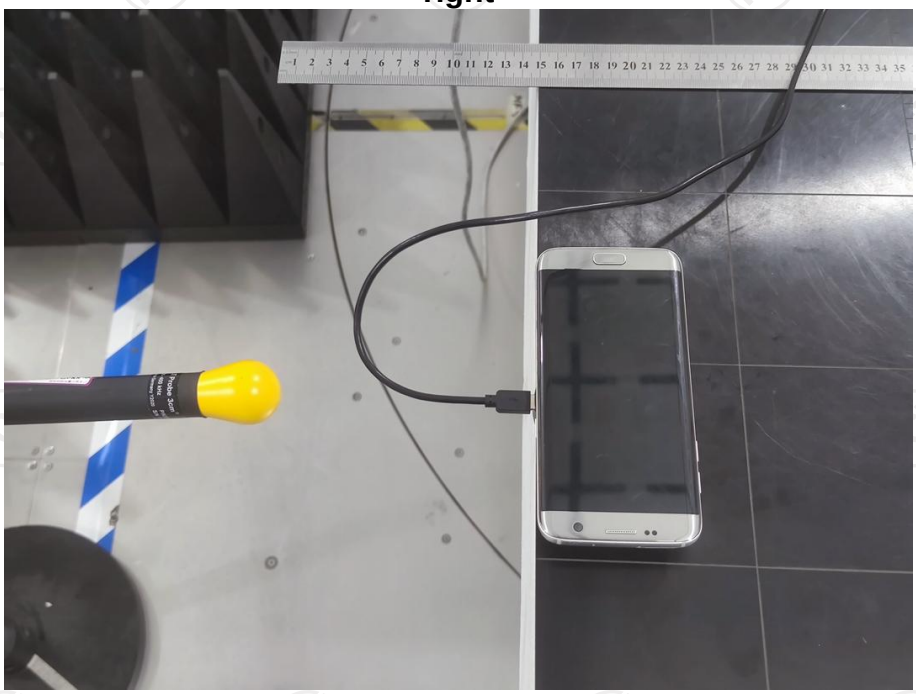

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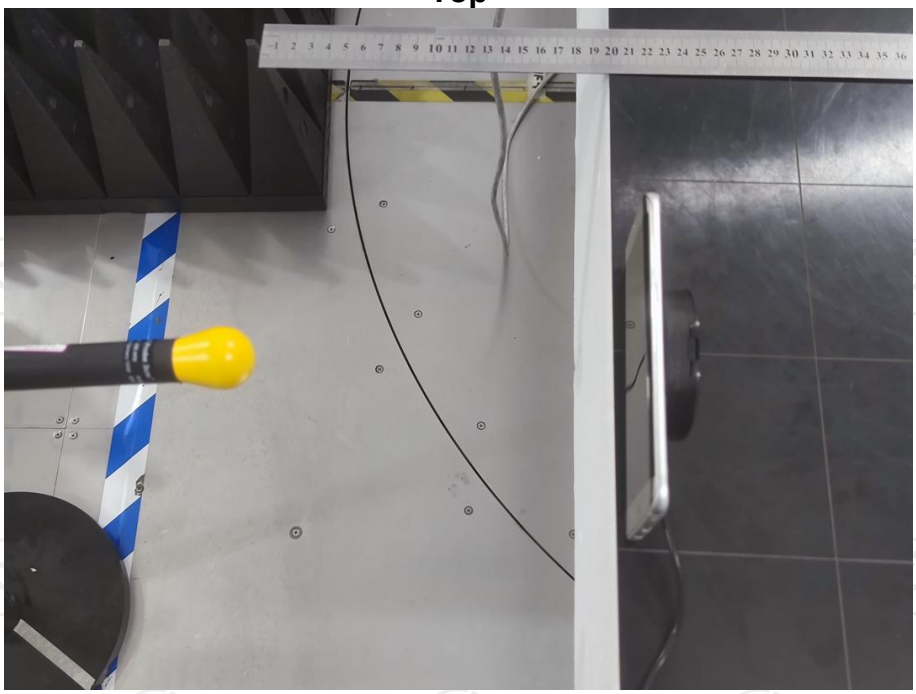
Top



********END OF REPORT********

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