FCC TEST REPORT

For

Shearwater Research Inc.

Teric

Model No.: 25004-01

Prepared For	:	Shearwater Research Inc.
Address	:	Unit 250 13155 Delf Place Richmond, BC , Canada

Prepared By	:	Shenzhen Anbotek Compliance Laboratory Limited
Address	:	1/F, Building D, Sogood Science and Technology Park, Sanwei community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China.518102 Tel: (86) 755-26066365 Fax: (86) 755-26014772

Report Number	:	SZAWW180122020-02
Date of Test	:	Jan. 22~31, 2018
Date of Report	:	Jan. 31, 2018

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TEST REPORT

Applicant	:	Shearwater Research Inc.
Manufacturer	:	Shenzhen Welldy Technology Co., Limited
Product Name	:	Teric
Model No.	:	25004-01
Trade Mark	:	N/A
Rating(s)	:	Input: DC 5V 1.5A Output: DC 5V 1A

Test Standard(s)	**:**	**FCC Part 1.1310, 1.1307(b)**
Test Method(s)	**:**	**KDB680106 D01 RF Exposure Wireless Charging Apps v02**

The device described above is tested by Shenzhen Anbotek Compliance Laboratory Limited to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Shenzhen Anbotek Compliance Laboratory Limited is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the FCC Part 1.1307 & KDB680106 D01 requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Shenzhen Anbotek Compliance Laboratory Limited.

Date of Test : : Jan. 22~31, 2018

Prepared by : : Winkey Wang

(Tested Engineer / Winkey Wang)

Reviewer : : Tangcy. T.

(Project Manager / Tangcy. T)

Approved & Authorized Signer : : Tom Chen

(Manager / Tom Chen)

1. General Information

1.1. Client Information

Applicant	:	Shearwater Research Inc.
Address	:	Unit 250 13155 Delf Place Richmond, BC , Canada
Manufacturer	:	Shenzhen Welldy Technology Co., Limited
Address	:	2F, Building 6, Sinpool Pioneer Park, Shangtang Intersection, Gongye Road, Longhua new District, Shenzhen

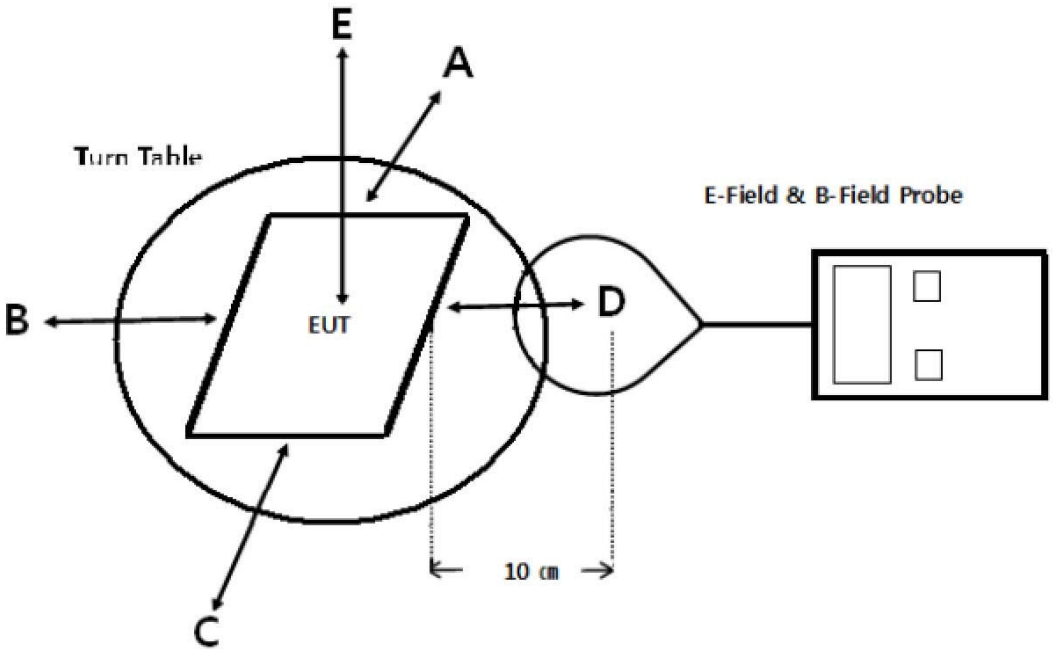
1.2. Description of Device (EUT)

Product Name	:	Teric	
Model No.	:	25004-01	
Trade Mark	:	N/A	
Test Power Supply	:	AC 120V, 60Hz for adapter/AC 240V, 60Hz for adapter	
Product Description	:	Operation Frequency:	110-205KHz
		Number of Channel:	20 Channels
		Modulation Type:	MSK
		Antenna Type:	Loop Antenna
		Antenna Gain(Peak):	0 dBi
Remark: 1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.			

1.3. Auxiliary Equipment Used During Test

Adapter	:	Manufacturer: ZTE M/N: STC-A2050I1000USBA-C S/N: 201202102100876 Input: 100-240V~50/60Hz 0.3A Output: DC 5V, 1000mA
With		Load

1.6. Description Of Test Setup



Note: Measurements should be made from all sides and the top of the primary/client pair, with the 10cm measured from the center of the probe(s) to the edge of the device.

1.7. Test Equipment List

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Magnetic field meter	NARDA	ELT-400	423623	May 27, 2017	1 Year

1.8. Description of Test Facility

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

FCC-Registration No.: 184111

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registed and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No. 184111, July 31, 2017.

ISED-Registration No.: 8058A-1

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (ISED) Innovation, Science and Economic Development Canada. The acceptance letter from the ISED is maintained in our files. Registration 8058A-1, June 13, 2016.

Test Location

All Emissions tests were performed at

Shenzhen Anbotek Compliance Laboratory Limited. at 1/F, Building D, Sogood Science and Technology Park, Sanwei community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China.518102

2. Measurement and Result

2.1. Requirements

According to the item 5.2 of KDB 680106 D01v02:

Inductive wireless power transfer applications that meet all of the following requirements are excluded from submitting an RF exposure evaluation.

a) Power transfer frequency is less that 1 MHz

b) Output power from each primary coil is less than 5 watts

c) The transfer system includes only single primary and secondary 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

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

e) The maximum coupling surface area of the transmit (charging) device is between 60 cm^2 and 400 cm^2.

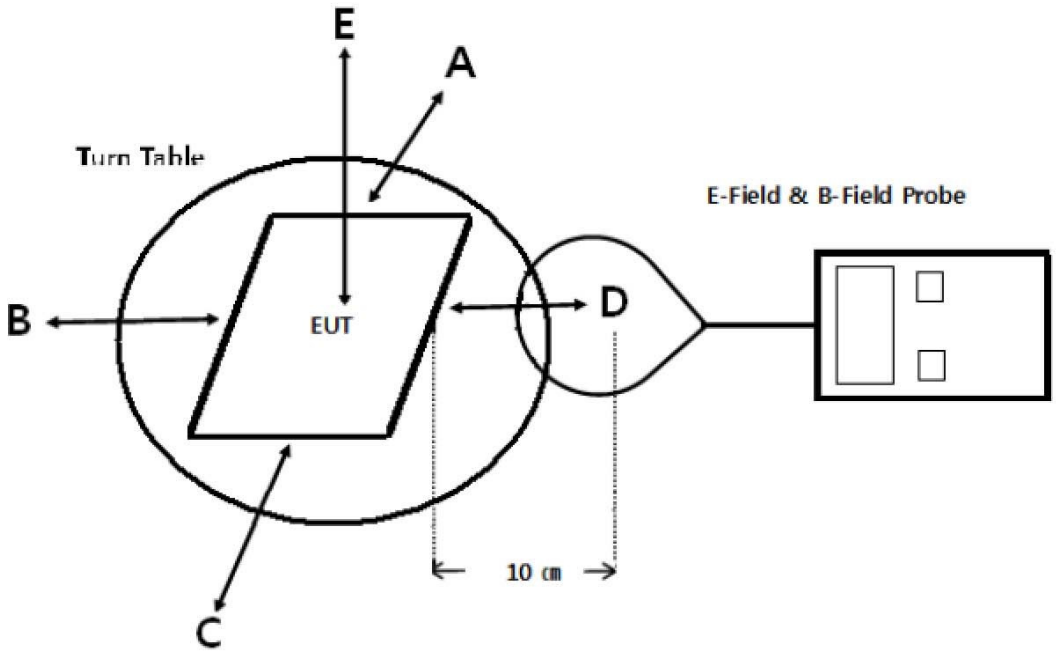
f) Aggregate leakage fields at 10 cm surrounding the device from all simultaneous transmitting coils are demonstrated to be less than 30% of the MPE limit.

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).

2.2. Test Setup



Note: Measurements should be made from all sides and the top of the primary/client pair, with the 10cm measured from the center of the probe(s) to the edge of the device.

2.3. Test Procedure

1) The RF exposure test was performed in anechoic chamber.
2) The measurement probe was placed at test distance (10 cm) which is between the edge of the charger and the geometric center of probe.
3) The highest emission level was recorded and compared with limit as soon as measurement of each points (A, B, C, D, E) were completed.(A is the right, B is the back, C is the left, D is the front, and E is the top.)
4) The EUT was measured according to the dictates of KDB 680106 D01 v02.
Remark;
The EUT's test position A, B, C, D and E is valid for the E and H field measurements.

2.4. Test Result

2.4.1. Equipment Approval Considerations item 5.2 of KDB 680106 D01 v02.

a) Power transfer frequency is less that 1 MHz

- The device operate in the frequency range from 110 KHz to 205 KHz

b) Output power from each primary coil is less than 5 watts

- The maximum output power of the primary coil is 5W.

c) The transfer system includes only single primary and secondary 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 including a charging system with only single primary coils is to detect and allow only between individual pairs of coils.

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

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

e) The maximum coupling surface area of the transmit (charging) device is between 60 cm^2 and 400 cm^2.

- The EUT coupling surface area : (Type : Circle)

π * Radius of width^2 (cm^2) = 3.14 * 1.2 (cm^2) = 4.52cm^2 ＜ 60 cm^2

f) Aggregate leakage fields at 10cm surrounding the device from all simultaneous transmitting coils are demonstrated to be less than 30% the MPE limit.

- The EUT E-Field Strength levels at 10 cm & The EUT H-Field Strength levels at 10 cm are less than 30% the MPE limit.

The test results please refer to the section 2.4.2

2.4.2. Environmental evaluation and exposure limit according to FCC CFR 47 part 1, 1.1307(b), 1.1310

E-Filed Strength at 10 cm from the edges surrounding the EUT (V/m)

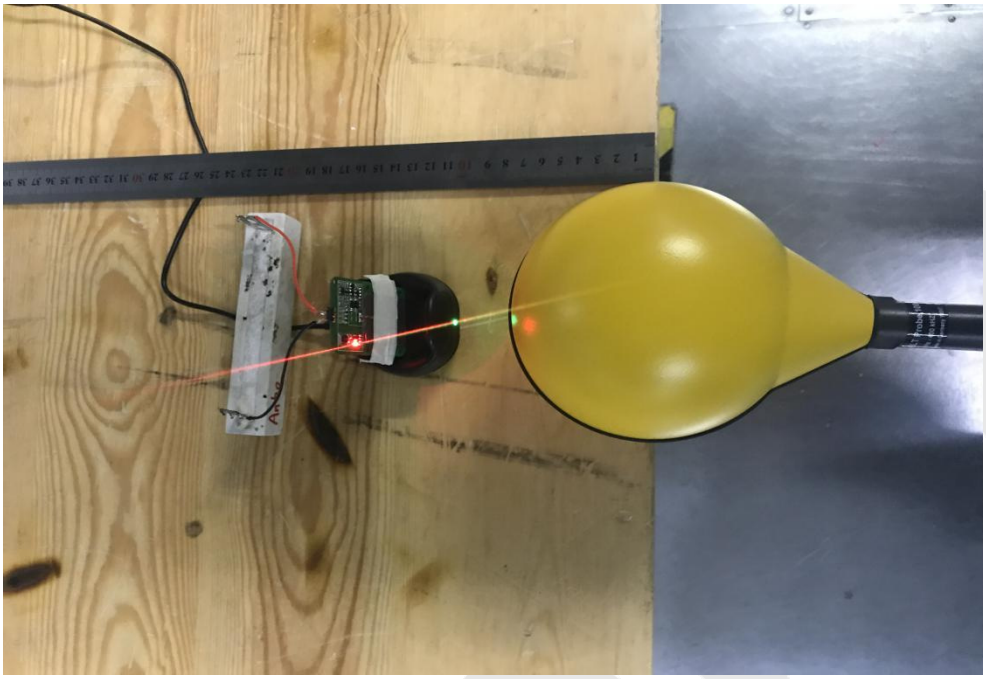
Battery power	Frequency Range (KHz)	Test Position A	Test Position B	Test Position C	Test Position D	Test Position E	Reference Limit (V/m)	Limits Test (V/m)
1%	110~ 205	0.26	0.27	0.29	0.18	0.20	184.2	614
50%	110~ 205	1.15	1.14	1.20	1.18	1.19	184.2	614
99%	110~ 205	2.24	2.27	2.26	2.21	2.27	184.2	614

H-Filed Strength at 10 cm from the edges surrounding the EUT (A/m)

Battery power	Frequency Range (KHz)	Test Position A	Test Position B	Test Position C	Test Position D	Test Position E	Reference Limit (A/m)	Limits Test (A/m)
1%	110~ 205	0.072	0.089	0.078	0.079	0.087	0.489	1.63
50%	110~ 205	0.11	0.12	0.15	0.14	0.10	0.489	1.63
99%	110~ 205	0.28	0.26	0.33	0.37	0.24	0.489	1.63

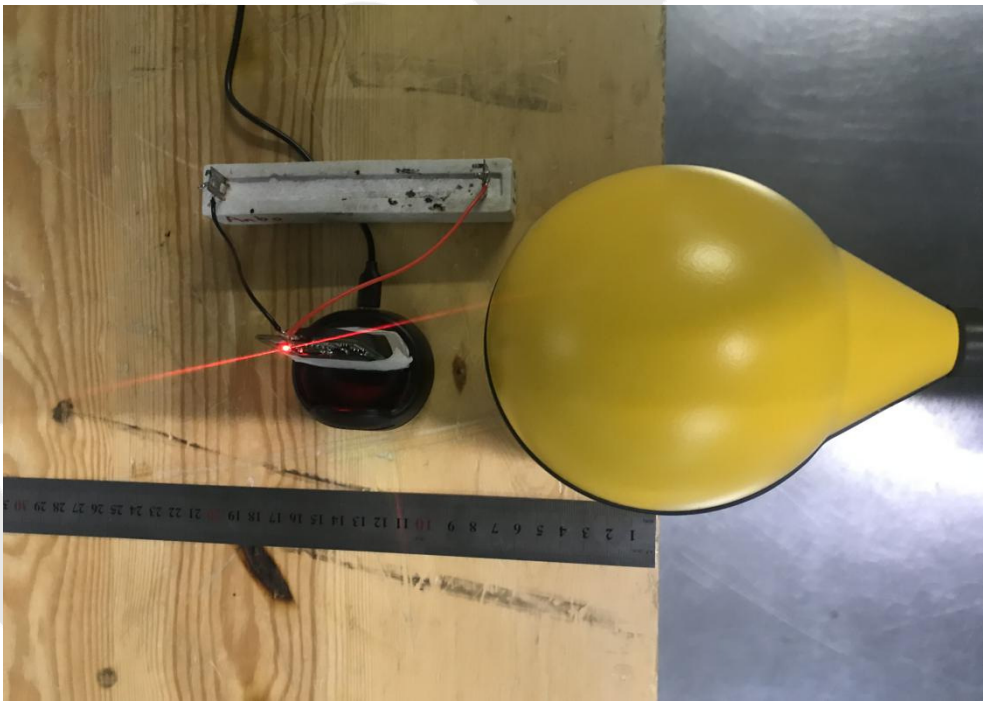
APPENDIX I -- TEST SETUP PHOTOGRAPH

Photo of MPE Measurement



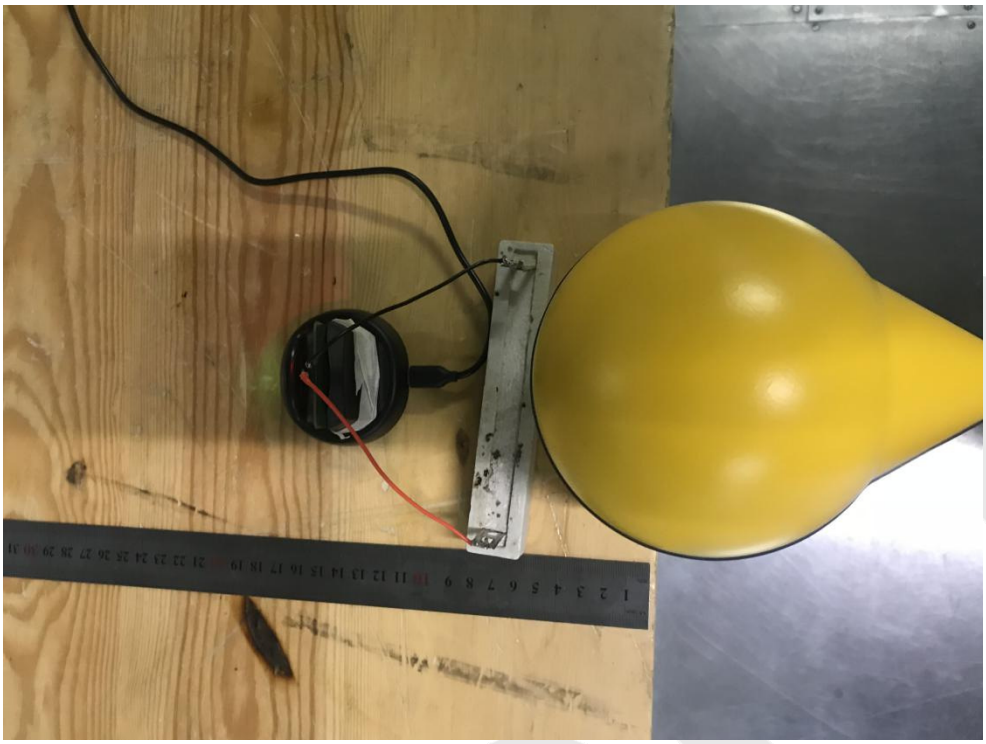
D is the front

Photo of MPE Measurement



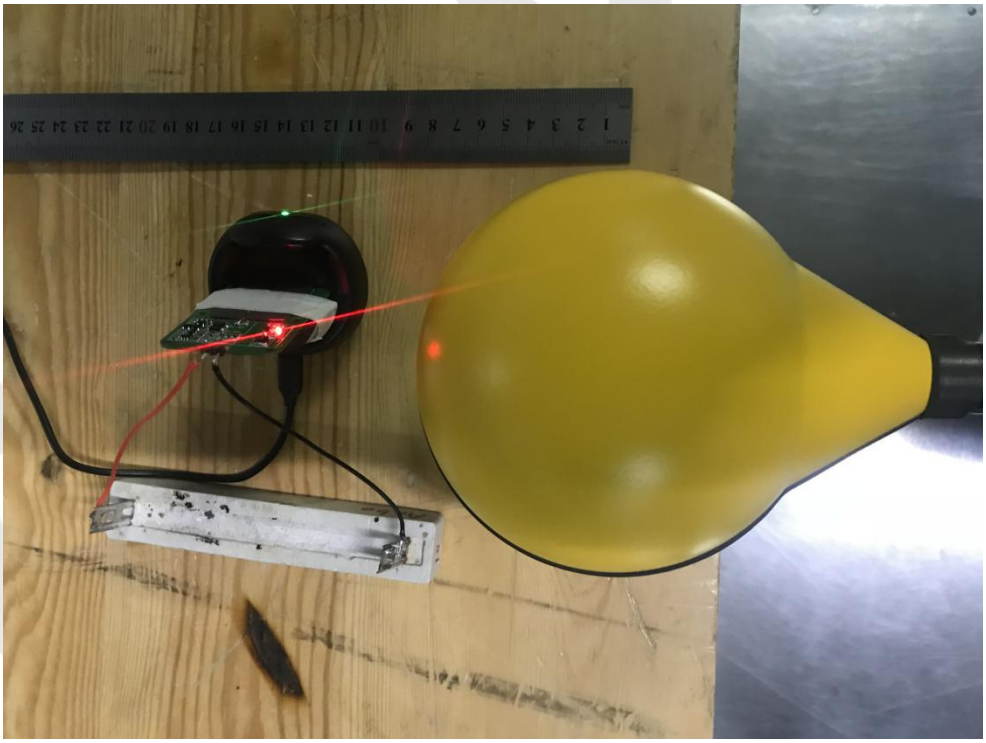
A is the right

Photo of MPE Measurement



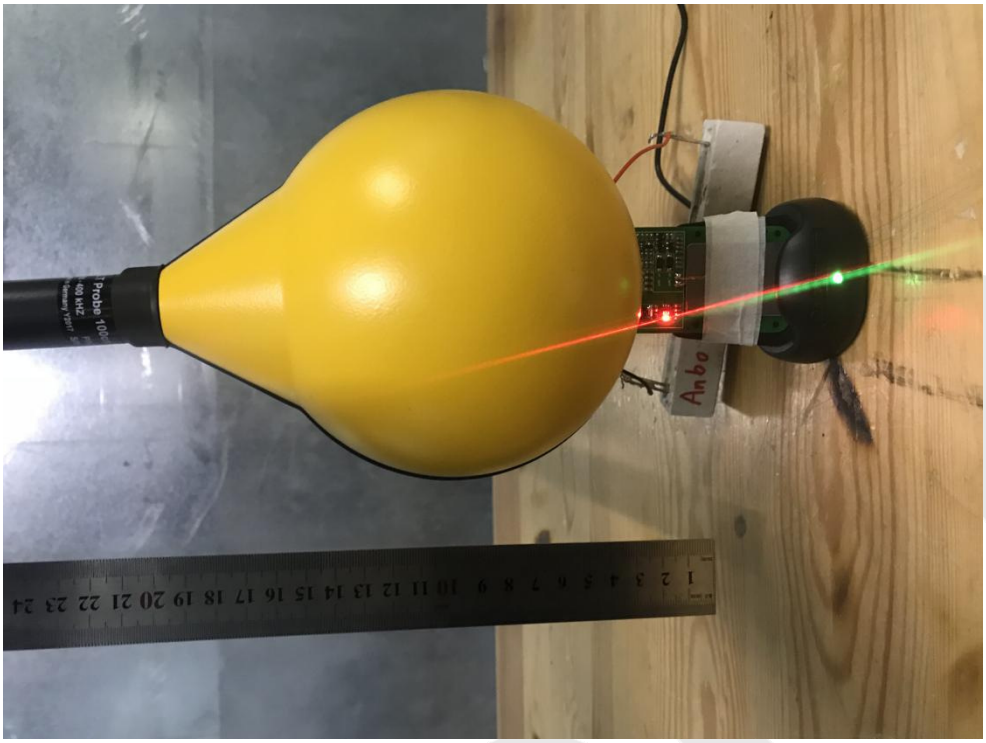
B is the back

Photo of MPE Measurement



C is the left

Photo of MPE Measurement



E is the Top

End of Report