

RF EXPOSURE Test Report

Product: EcoFlow RAPID Magnetic Power
Bank(5000mAh)
Trade Mark: ECOFLOW,EF ECOFLOW
Model Number: EFPB503-5K-P
FCC ID: 2A2P9-EFPB5035KP

Prepared for

EcoFlow Inc.

RM 401, Plant #1, Runheng Industrial Zone, Fuyuan Road, Zhancheng
Community, Fuhai Street, Bao'an District, Shenzhen City, Guangdong
Province, P.R.China

Prepared by

Shenzhen HongBiao Certification& Testing Co., Ltd
Room 102, 201, Building 2, Yuanwanggu RFID Industrial Park, Tongguan
Road, Tianliao Community, Yutang Street, Guangming District, Shenzhen,
China
Tel.: +86-755-2998 9321 Fax.: +86-755-2998 5110
Website: <http://www.sz-hongbiao.com>

Table of Contents

1	GENERAL DESCRIPTION	5
1.1	DESCRIPTION OF EUT	5
1.2	TEST MODE.....	5
1.3	TEST SETUP.....	5
1.4	ANCILLARY EQUIPMENT	5
2	TEST FACILITIES AND ACCREDITATIONS	6
2.1	TEST LABORATORY	6
2.2	ENVIRONMENTAL CONDITIONS.....	6
2.3	MEASUREMENT UNCERTAINTY	6
2.4	TEST SOFTWARE.....	6
3	LIST OF TEST EQUIPMENT	7
4	RF EXPOSURE.....	8
4.1	MAXIMUM PERMISSIBLE EXPOSURE	8
4.1.1.	<i>Limit</i>	8
4.1.2.	<i>Test Procedures</i>	8
4.1.3.	<i>Test Setup</i>	8
4.1.4.	<i>Test Result</i>	9
5	PHOTOGRAPHS OF THE TEST SETUP.....	17

TEST RESULT CERTIFICATION

Applicant's Name..... : EcoFlow Inc.
RM 401, Plant #1, Runheng Industrial Zone, Fuyuan Road,
Address : Zhancheng Community, Fuhai Street, Bao'an District, Shenzhen
City, Guangdong Province, P.R.China
Manufacturer's Name : EcoFlow Inc.
RM 401, Plant #1, Runheng Industrial Zone, Fuyuan Road,
Address : Zhancheng Community, Fuhai Street, Bao'an District, Shenzhen
City, Guangdong Province, P.R.China

Product description

Product name : EcoFlow RAPID Magnetic Power Bank(5000mAh)
Model Number : EFPB503-5K-P
Standards : FCC CFR 47 PART 1 , 1.1310
Test procedure..... : KDB 680106 D01 Wireless Power Transfer v04

This device described above has been tested by Shenzhen HongBiao Certification& Testing Co., Ltd and the test results show that the equipment under test (EUT) is in compliance with the EMC requirements. And it is applicable only to the tested sample identified in the report.

Date of Test :
Date (s) of performance of tests : Oct. 18, 2024~ Oct. 23, 2024
Test Result..... : **Pass**

Testing Engineer : Zoe su
(Z o e S u)

Technical Manager : Ming Liu
(Ming Liu)

Authorized Signatory : Leo
(L e o S)



1 General Description

1.1 Description of EUT

Product name:	EcoFlow RAPID Magnetic Power Bank(5000mAh)
Model name:	EFPB503-5K-P
Series Model:	EFPB503-5K
Different of series model:	Except for the external base charging port, all models have the same circuit and module.
Operation frequency:	127.7kHz, 360kHz
Operational mode:	Wireless charging
Modulation type:	ASK
Antenna type:	Coil Antenna
Battery:	DC 3.87V, 5000mAh,19.35Wh
Power supply:	DC Input: 5V==3A, 9V==3A,12V==2.5A, 20V==1.5A Base Input: 12V==2A DC Output: 5V==3A, 9V==3A,12V==2.5A, 20V==1.5A Wireless Output: 15W(Max)
Adapter information:	N/A

1.2 Test Mode

Pretest Test Mode	Description of Mode
1	Wireless Output: 5W
2	Wireless Output: 7.5W
3	Wireless Output: 10W
4	Wireless Output: 15W

1.3 Test Setup

See photographs of the test setup in the report for the actual setup and connections between EUT and support equipment.

1.4 Ancillary Equipment

Equipment	Model	S/N	Manufacturer
Phone	iPhone 12pro Max	FF2LDX4T60D5H	Apple Inc
Phone	iPhone 15pro	JC2MVRWC76	Apple Inc.

2 Test Facilities and Accreditations

2.1 Test Laboratory

Test Site	Shenzhen HongBiao Certification& Testing Co., Ltd
Test Site Location	Room 102, 201, Building 2, Yuanwanggu RFID Industrial Park, Tongguan Road, Tianliao Community, Yutang Street, Guangming District, Shenzhen, China
Telephone:	(86-755) 2998 9321
Fax:	(86-755) 2998 5110
FCC Registration No.:	CN1341
A2LA Certificate No.:	6765.01

2.2 Environmental Conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15°C~35°C
Relative Humidity:	20%~75%
Air Pressure:	98kPa~101kPa

2.3 Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

Measurement Frequency Range	U, (dB)	Note
RF frequency	2×10^{-5}	
E-field	± 1.06 dB	
H-field	± 0.7 dB	
Temperature	± 1 degree	
Humidity	± 5 %	

2.4 Test Software

Software name	Manufacturer	Model	Version
MAGPy V2.6	Schmid & Partner Engineering AG	MAGPy V2.6	V2.6

3 List of Test Equipment

Item	Equipment No.	Equipment name	Manufacturer	Model	Serial No.	Calibration date	Due date
1	HB-E077	Magnetic Amplitude and Gradient Probe System	Schmid & Partner Engineering AG	MAGPy-8H3D+E3D	3107	2024-03-15	2025-03-14
2	HB-E078	Magnetic Amplitude and Gradient Probe System	Schmid & Partner Engineering AG	MAGPy-DAS	3097	2024-03-15	2025-03-14

Note: the calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

4 RF Exposure

4.1 Maximum Permissible Exposure

4.1.1. Limit

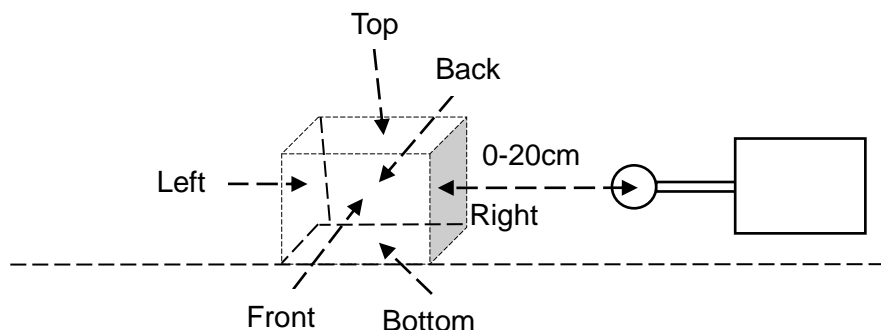
Frequency range(MHz)	Electric field strength(V/m)	Magnetic field strength(A/m)	Power density(mW/cm2)	Averaging time(minutes)
(A) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	*900/f ²	6
30-300	61.4	0.163	1.0 6	6
300-1500			f/300	6
1500-100000			5	6
(B) Limits 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
1500-100000			1	30

f = frequency in MHz * = Plane-wave equivalent power density

4.1.2. Test Procedures

- a. The RF exposure test was performed in anechoic chamber.
- b. Perform H-field measurements for each edge/top surface of the host/client pair at every 2 cm, starting from as close as possible out to 20 cm.
- c. The highest emission level was recorded and compared with limit.
- d. The EUT was measured according to the dictates of TCB Workshop "41-Part-18-&-Wireless-Power-Transfer - April 27, 2022"

4.1.3. Test Setup



4.1.4. Test Result

For portable exposure condition:

Operating modes with client device (1 %, 50%, 99% battery status of client device) have been test, only show the data of worst case of 1% battery status of client device.

H-field measurements taken every 2 cm (starting as close to 20 cm as possible) on each edge/top surface of the host/client pair were also evaluated for portable use conditions. The report reflects data for the worst 0 cm test distance mode only.

Test condition 1: Mode 2 operating mode with client device (1 % battery status of client device). When setting MAGPy to select compliance location as probe tip, the measured value is extrapolated to 0mm as the result.

Maximum permissible Exposure(127.7kHz)			
Battery levels	Test sides	Test distance(cm)	H-field(A/m)
<1%	Top	0	1.42
<1%	Left	0	0.57
<1%	Right	0	0.94
<1%	Front	0	1.15
<1%	Back	0	0.15
<1%	Bottom	0	0.27
Limit			1.63
Margin Limit (%)			87.12%

Maximum permissible Exposure(127.7kHz)			
Battery levels	Test sides	Test distance(cm)	H-field(A/m)
<1%	Top	2	1.24
<1%	Left	2	0.48
<1%	Right	2	0.82
<1%	Front	2	1.08
<1%	Back	2	0.12
<1%	Bottom	2	0.22
Limit			1.63
Margin Limit (%)			76.07%

Maximum permissible Exposure(127.7kHz)			
Battery levels	Test sides	Test distance(cm)	H-field(A/m)
<1%	Top	4	1.12
<1%	Left	4	0.35
<1%	Right	4	0.64
<1%	Front	4	1.06
<1%	Back	4	0.11
<1%	Bottom	4	0.18
Limit			1.63
Margin Limit (%)			68.71%

Maximum permissible Exposure(127.7kHz)			
Battery levels	Test sides	Test distance(cm)	H-field(A/m)
<1%	Top	6	0.86
<1%	Left	6	0.25
<1%	Right	6	0.54
<1%	Front	6	0.82
<1%	Back	6	0.11
<1%	Bottom	6	0.14
Limit			1.63
Margin Limit (%)			52.76%

Maximum permissible Exposure(127.7kHz)			
Battery levels	Test sides	Test distance(cm)	H-field(A/m)
<1%	Top	8	0.81
<1%	Left	8	0.24
<1%	Right	8	0.52
<1%	Front	8	0.78
<1%	Back	8	0.11
<1%	Bottom	8	0.13
Limit			1.63
Margin Limit (%)			49.69%

Maximum permissible Exposure(127.7kHz)			
Battery levels	Test sides	Test distance(cm)	H-field(A/m)
<1%	Top	10	0.76
<1%	Left	10	0.23
<1%	Right	10	0.47
<1%	Front	10	0.65
<1%	Back	10	0.10
<1%	Bottom	10	0.12
Limit			1.63
Margin Limit (%)			46.63%

Maximum permissible Exposure(127.7kHz)			
Battery levels	Test sides	Test distance(cm)	H-field(A/m)
<1%	Top	12	0.71
<1%	Left	12	0.21
<1%	Right	12	0.44
<1%	Front	12	0.56
<1%	Back	12	0.09
<1%	Bottom	12	0.11
Limit			1.63
Margin Limit (%)			43.56%

Maximum permissible Exposure(127.7kHz)			
Battery levels	Test sides	Test distance(cm)	H-field(A/m)
<1%	Top	14	0.65
<1%	Left	14	0.17
<1%	Right	14	0.41
<1%	Front	14	0.48
<1%	Back	14	0.08
<1%	Bottom	14	0.09
Limit			1.63
Margin Limit (%)			39.88%

Maximum permissible Exposure(127.7kHz)			
Battery levels	Test sides	Test distance(cm)	H-field(A/m)
<1%	Top	16	0.54
<1%	Left	16	0.15
<1%	Right	16	0.28
<1%	Front	16	0.35
<1%	Back	16	0.07
<1%	Bottom	16	0.08
Limit			1.63
Margin Limit (%)			33.13%

Maximum permissible Exposure(127.7kHz)			
Battery levels	Test sides	Test distance(cm)	H-field(A/m)
<1%	Top	18	0.47
<1%	Left	18	0.12
<1%	Right	18	0.21
<1%	Front	18	0.32
<1%	Back	18	0.06
<1%	Bottom	18	0.06
Limit			1.63
Margin Limit (%)			28.83%

Maximum permissible Exposure(127.7kHz)			
Battery levels	Test sides	Test distance(cm)	H-field(A/m)
<1%	Top	20	0.42
<1%	Left	20	0.11
<1%	Right	20	0.18
<1%	Front	20	0.29
<1%	Back	20	0.05
<1%	Bottom	20	0.05
Limit			1.63
Margin Limit (%)			25.77%

Test condition 2: Mode 4 operating mode with client device (1 % battery status of client device).
When setting MAGPy to select compliance location as probe tip, the measured value is extrapolated to 0mm as the result.

Maximum permissible Exposure(360kHz)			
Battery levels	Test sides	Test distance(cm)	H-field(A/m)
<1%	Top	0	0.11
<1%	Left	0	0.13
<1%	Right	0	0.45
<1%	Front	0	0.58
<1%	Back	0	0.11
<1%	Bottom	0	0.18
Limit			1.63
Margin Limit (%)			35.58%

Maximum permissible Exposure(360kHz)			
Battery levels	Test sides	Test distance(cm)	H-field(A/m)
<1%	Top	2	0.10
<1%	Left	2	0.12
<1%	Right	2	0.38
<1%	Front	2	0.52
<1%	Back	2	0.10
<1%	Bottom	2	0.14
Limit			1.63
Margin Limit (%)			31.90%

Maximum permissible Exposure(360kHz)			
Battery levels	Test sides	Test distance(cm)	H-field(A/m)
<1%	Top	4	0.08
<1%	Left	4	0.11
<1%	Right	4	0.34
<1%	Front	4	0.47
<1%	Back	4	0.06
<1%	Bottom	4	0.12
Limit			1.63
Margin Limit (%)			28.83%

Maximum permissible Exposure(360kHz)			
Battery levels	Test sides	Test distance(cm)	H-field(A/m)
<1%	Top	6	0.06
<1%	Left	6	0.09
<1%	Right	6	0.32
<1%	Front	6	0.45
<1%	Back	6	0.04
<1%	Bottom	6	0.11
Limit			1.63
Margin Limit (%)			27.61%

Maximum permissible Exposure(360kHz)			
Battery levels	Test sides	Test distance(cm)	H-field(A/m)
<1%	Top	8	0.05
<1%	Left	8	0.07
<1%	Right	8	0.28
<1%	Front	8	0.43
<1%	Back	8	0.04
<1%	Bottom	8	0.10
Limit			1.63
Margin Limit (%)			26.38%

Maximum permissible Exposure(360kHz)			
Battery levels	Test sides	Test distance(cm)	H-field(A/m)
<1%	Top	10	0.04
<1%	Left	10	0.06
<1%	Right	10	0.25
<1%	Front	10	0.41
<1%	Back	10	0.03
<1%	Bottom	10	0.09
Limit			1.63
Margin Limit (%)			25.15%

Maximum permissible Exposure(360kHz)			
Battery levels	Test sides	Test distance(cm)	H-field(A/m)
<1%	Top	12	0.03
<1%	Left	12	0.06
<1%	Right	12	0.22
<1%	Front	12	0.36
<1%	Back	12	0.03
<1%	Bottom	12	0.08
Limit			1.63
Margin Limit (%)			22.09%

Maximum permissible Exposure(360kHz)			
Battery levels	Test sides	Test distance(cm)	H-field(A/m)
<1%	Top	14	0.03
<1%	Left	14	0.06
<1%	Right	14	0.20
<1%	Front	14	0.34
<1%	Back	14	0.02
<1%	Bottom	14	0.08
Limit			1.63
Margin Limit (%)			20.86%

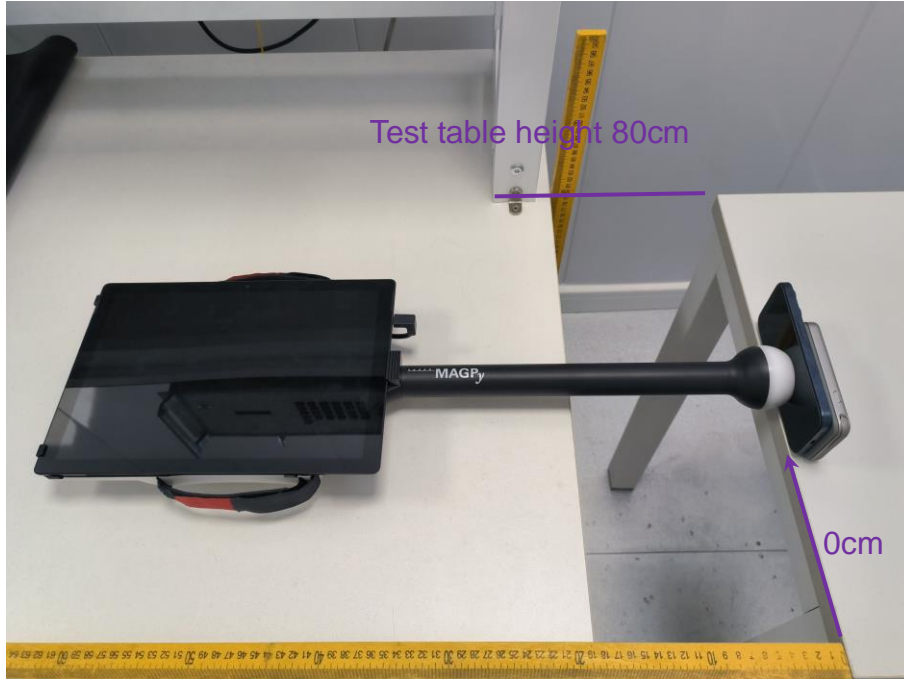
Maximum permissible Exposure(360kHz)			
Battery levels	Test sides	Test distance(cm)	H-field(A/m)
<1%	Top	16	0.03
<1%	Left	16	0.05
<1%	Right	16	0.18
<1%	Front	16	0.33
<1%	Back	16	0.02
<1%	Bottom	16	0.07
Limit			1.63
Margin Limit (%)			20.25%

Maximum permissible Exposure(360kHz)			
Battery levels	Test sides	Test distance(cm)	H-field(A/m)
<1%	Top	18	0.03
<1%	Left	18	0.04
<1%	Right	18	0.15
<1%	Front	18	0.27
<1%	Back	18	0.02
<1%	Bottom	18	0.04
Limit			1.63
Margin Limit (%)			16.56%

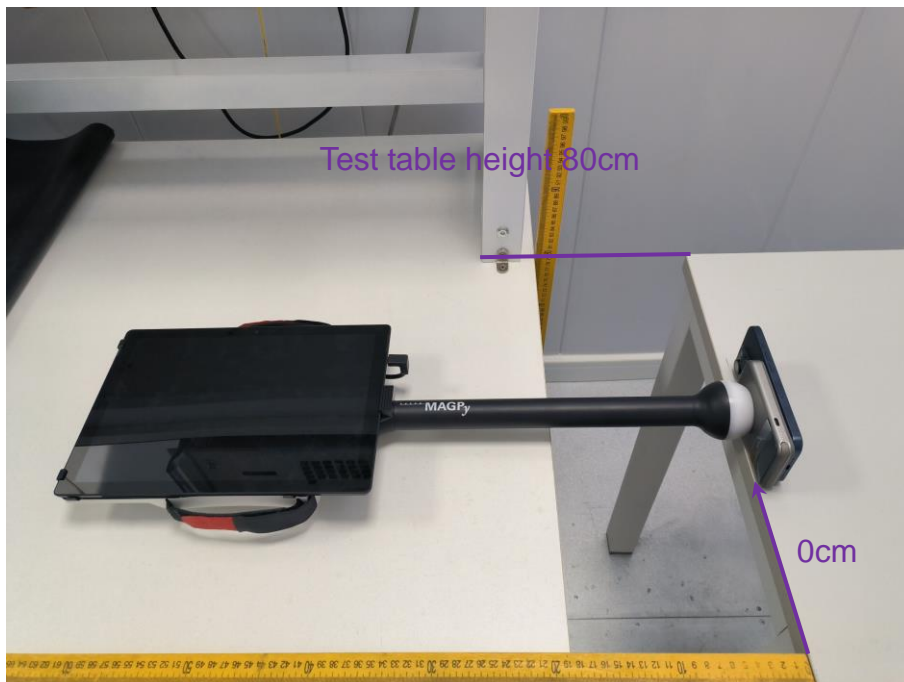
Maximum permissible Exposure(360kHz)			
Battery levels	Test sides	Test distance(cm)	H-field(A/m)
<1%	Top	20	0.02
<1%	Left	20	0.03
<1%	Right	20	0.12
<1%	Front	20	0.19
<1%	Back	20	0.01
<1%	Bottom	20	0.03
Limit			1.63
Margin Limit (%)			11.66%

5 Photographs of the Test Setup

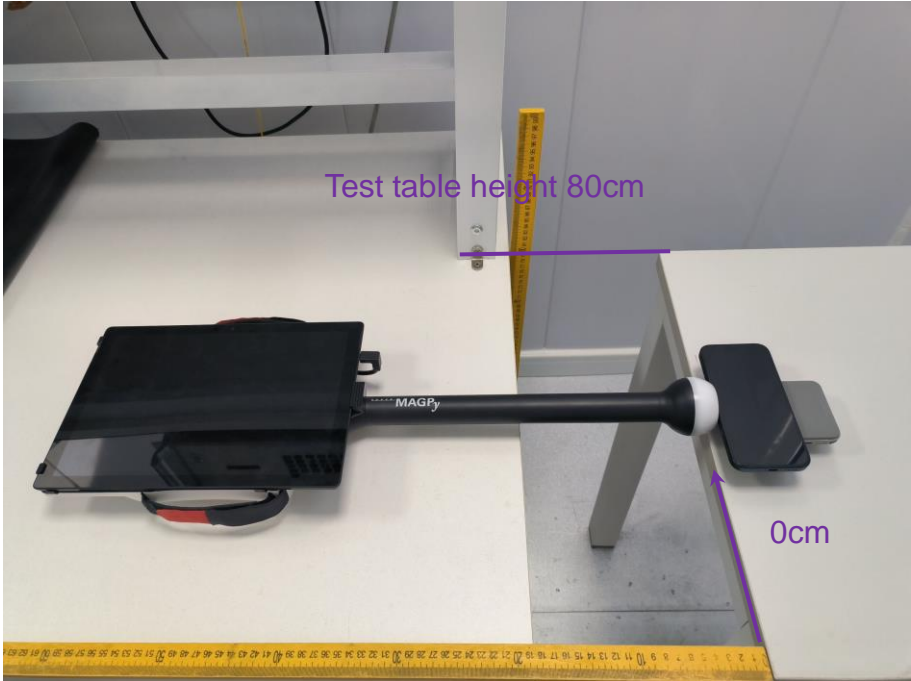
Phone 1



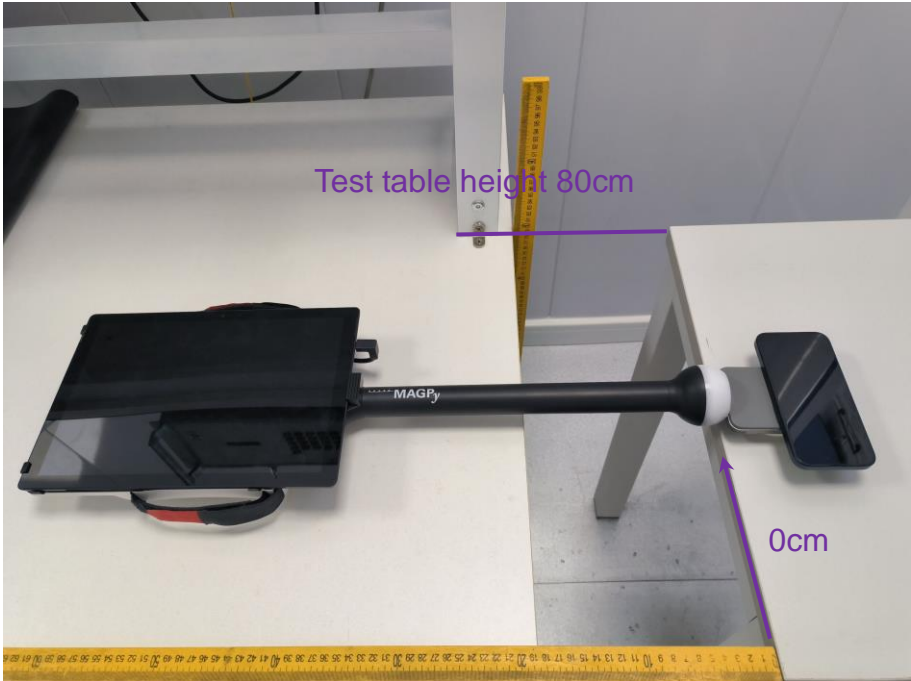
Phone 2



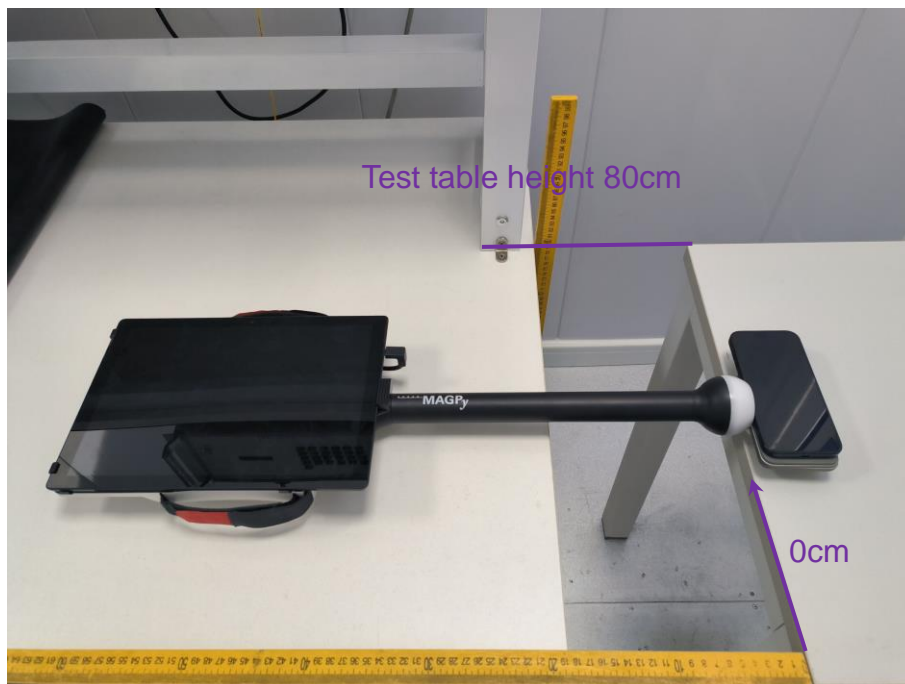
Phone 3



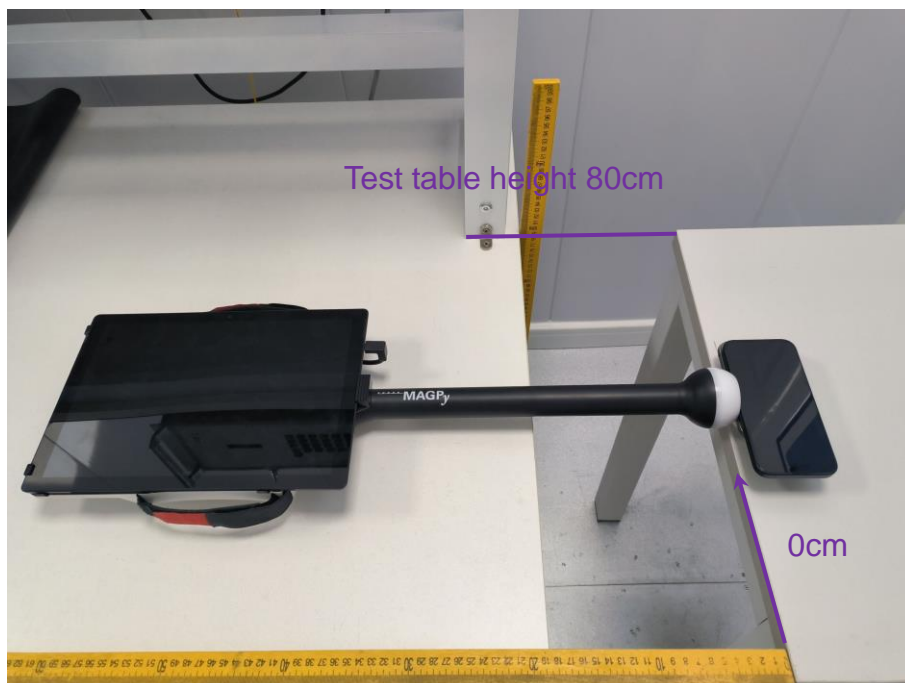
Phone 4



Phone 5



Phone 6



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