



## RF EXPOSURE EVALUATION

**FCC ID:2A9Q9-EPB-IM25**

Product Name:	Imperial 10000mAh Light-Up Power Bank
Model No.:	EPB-IM25
Operation Frequency:	Phone:115kHz-205kHz Watch:325kHz-325kHz
Modulation Type:	ASK
Antenna Type:	Loop Coil Antenna
Power Supply:	Wireless Output(Phone): 5W/ 7.5W/10W/15W Wireless Output(Watch): 2W USB-C/Lightning Input: DC 5V/3A, 9V/2A, 12V/1.5A 18W USB-C/Lightning Output: DC 5V/3A, 9V/2.22A, 12V/1.67A 20W USB Output: DC 5V/3A, 9V/2A, 12V/1.5A 18W
Battery Capacity:	10000mAh/3.85V/38.5Wh
Transmitting Mode:	Keep the EUT in continuously wireless charging mode
Date of Test:	Jun. 23, 2025 to Jul. 01, 2025
Date of issue:	Jul. 01, 2025



a. EUT mode of AC/DC Adapter + wireless charge output:

Test Modes:	Test Coil:	Description:
Mode 1a	ANT 1	AC/DC Adapter (12V/1.5A) + EUT + Phone (Battery Status: <1%)
Mode 2a		AC/DC Adapter (12V/1.5) + EUT + Phone (Battery Status: 50%)
Mode 3a		AC/DC Adapter (12V/1.5) + EUT + Phone (Battery Status: >98%)
Mode 1b		AC/DC Adapter (9V/2A) + EUT + Phone (Battery Status: <1%)
Mode 2b		AC/DC Adapter (9V/2A) + EUT + Phone (Battery Status: 50%)
Mode 3b		AC/DC Adapter (9V/2A) + EUT + Phone (Battery Status: >98%)
Mode 1c		AC/DC Adapter (5V/3A) + EUT + Phone (Battery Status: <1%)
Mode 2c		AC/DC Adapter (5V/3A) + EUT + Phone (Battery Status: 50%)
Mode 3c		AC/DC Adapter (5V/3A) + EUT + Phone (Battery Status: >98%)
Mode 4a	ANT 2	AC/DC Adapter (12V/1.5A) + EUT + Watch (Battery Status: <1%)
Mode 5a		AC/DC Adapter (12V/1.5A) + EUT + Watch (Battery Status: 50%)
Mode 6a		AC/DC Adapter (12V/1.5A) + EUT + Watch (Battery Status: >98%)
Mode 4b		AC/DC Adapter (9V/2A) + EUT + Watch (Battery Status: <1%)
Mode 5b		AC/DC Adapter (9V/2A) + EUT + Watch (Battery Status: 50%)
Mode 6b		AC/DC Adapter (9V/2A) + EUT + Watch (Battery Status: >98%)
Mode 4c		AC/DC Adapter (5V/3A) + EUT + Watch (Battery Status: <1%)
Mode 5c		AC/DC Adapter (5V/3A) + EUT + Watch (Battery Status: 50%)
Mode 6c		AC/DC Adapter (5V/3A) + EUT + Watch (Battery Status: >98%)
Mode 7a	ANT 1+2	AC/DC Adapter (12V/1.5A) + EUT + Phone Watch (Battery Status: <1%)
Mode 8a		AC/DC Adapter (12V/1.5) + EUT + Phone Watch (Battery Status: 50%)
Mode 9a		AC/DC Adapter (12V/1.5) + EUT + Phone Watch (Battery Status: >98%)
Mode 7b		AC/DC Adapter (9V/2A) + EUT + Phone Watch (Battery Status: <1%)
Mode 8b		AC/DC Adapter (9V/2A) + EUT + Phone Watch (Battery Status: 50%)
Mode 9b		AC/DC Adapter (9V/2A) + EUT + Phone Watch (Battery Status: >98%)
Mode 7c		AC/DC Adapter (5V/3A) + EUT + Phone Watch (Battery Status: <1%)
Mode 8c		AC/DC Adapter (5V/3A) + EUT + Phone Watch (Battery Status: 50%)
Mode 9c		AC/DC Adapter (5V/3A) + EUT + Phone Watch (Battery Status: >98%)



b. EUT mode of wireless charge output:

Test Modes:	Test Coil:	Description:
Mode 1d	ANT 1	EUT + Phone (Battery Status: <1%)
Mode 2d		EUT + Phone (Battery Status: 50%)
Mode 3d		EUT + Phone (Battery Status: >98%)
Mode 4d	ANT 2	EUT + Watch (Battery Status: <1%)
Mode 5d		EUT + Watch (Battery Status: 50%)
Mode 6d		EUT + Watch (Battery Status: >98%)
Mode 7d	ANT 1+2	EUT + Phone + Watch (Battery Status: <1%)
Mode 8d		EUT + Phone + Watch (Battery Status: 50%)
Mode 9d		EUT + Phone + Watch (Battery Status: >98%)



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## 1. Measuring Standard

### 1.1 KDB 680106 D01 Wireless Power Transfer v04

### 1.2 Measurement Uncertainty

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

No.	Item	Uncertainty
1	H-filed	$\pm 0.93\text{dB}$
2	E-filed	$\pm 0.51\text{dB}$

## 2. Requirements

### 2.1 According to the item 5.2 of KDB 680106 D01v04:

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

a) The power transfer frequency is below 1 MHz.

Yes. The device operates in the frequency from Phone: 115kHz-205kHz  
Watch: 325kHz-325kHz.

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

Yes, The maximum output power of the primary coil is 15 watts.

c) 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).

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

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

NO. The EUT is a portable wireless charger.

e) 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

Yes. The EUT coil is evaluated at maximum output power and the test results are less than 50% of the limit.

f) 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.



NO, The EUT has one coil.

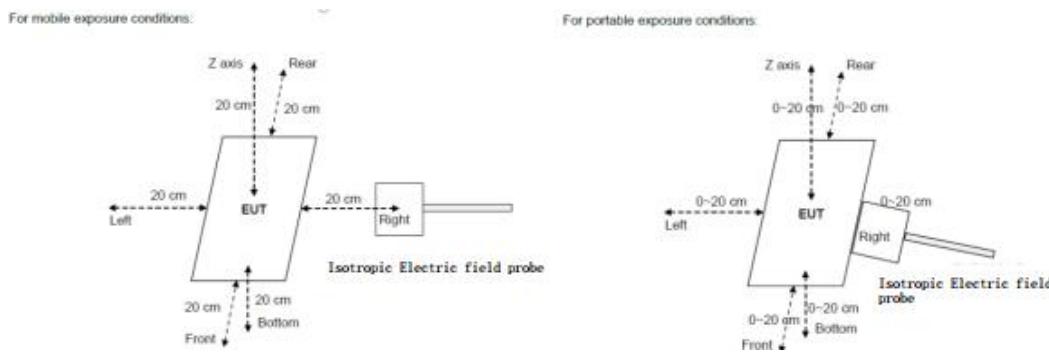


### 3. Method Of Measurement

#### 3.1 Applicable Standard

According to S1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines. According to §1.1310 and §2.1093 RF exposure is calculated. According KDB 680106 D01 Wireless Power Transfer v04.

#### 3.2 Block diagram of Test Setup



Note: Measurements should be made from all sides and the top of the primary/client pair, with the 20cm - 0cm measured from the center of the top, and 20cm - 0cm measured from the center of the rest.

#### 3.3 For mobile exposure conditions:

- The RF exposure test was performed in an echoic chamber;
- E and H-field measurements should be made with the center of the probe at a distance of 20 cm surrounding the EUT and 20 cm above the top surface of the primary/client pair;
- The highest emission level was recorded and compared with limit;
- The EUT was measured according to the dictates of KDB 680106 D01v04.

#### 3.4 For portable exposure conditions:

- The RF exposure test was performed in an echoic chamber;
- E and H-field measurements should be made with the probe at 0 - 20 cm for all side of the EUT;
- The highest emission level was recorded and compared with limit;
- 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 20cm.



### 3.5 Limits for Maximum Permissible Exposure (MPE):

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm <sup>2</sup> )	Averaging time (minutes)
<b>(A) Limits for Occupational/Controlled Exposures</b>				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f <sup>2</sup> )	6
30-300	61.4	0.163	1.0	6
300-1500	/	/	f/300	6
1500-100,000	/	/	5	6
<b>(B) Limits for General Population/Uncontrolled Exposure</b>				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f <sup>2</sup> )	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).

### 3.6 Test Procedure:

- 1) The RF exposure test was performed on 360 degree turn table in an echoic chamber.
- 2) 20 cm-0cm measured from the center of the top, and 20cm-0cm measured from the center of the rest sides.
- 3) The turn table was rotated 360 degree to search of highest strength.
- 4) The highest emission level was recorded and compared with limit as soon as measurement of each points were completed.
- 5) The EUT were measured according to the dictates of KDB 680106 D01v04.



#### 4. Test instrument and equipment list

##### 4.1 Test Instruments list

Test Equipment	Manufacturer	Model No.	SN.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
Exposure Level Tester	Narda	ELT-400	180ZX10220	Sep. 29, 2024	Sep. 28, 2025
Magnetic field probe 100cm <sup>2</sup>	Narda	ELT probe 100cm <sup>2</sup>	M0675	Sep. 29, 2024	Sep. 28, 2025

##### 4.2 Test auxiliary equipment list

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	Imperial 10000mAh Light-Up Power Bank	N/A	EPB-IM25	N/A	EUT
E-2	AC/DC Adapter	Aohai	A895-200150C-CN1	N/A	Auxiliary
E-3	Phone	APPLE	iPhone.13 Pro Max	N/A	Auxiliary
E-4	Watch	BASEUS	E3	N/A	Auxiliary



## 5. Test Result

5.1 For portable exposure result (Test mode 7a to 9a recorded)

**H-Filed Strength at (distance from 6cm to 20cm at 2cm iteration) surrounding the EUT (A/m):**

distance (cm)	Battery Level:	Position Left (uT)	Position Right (uT)	Position Rear (uT)	Position Front (uT)	Position Top (uT)	Position BOTTOM (uT)
20	<1%	0.0175	0.0174	0.0173	0.0174	0.0167	0.0168
18	<1%	0.0230	0.0236	0.0233	0.0233	0.0222	0.0224
16	<1%	0.0314	0.0319	0.0320	0.0315	0.0308	0.0307
14	<1%	0.0449	0.0453	0.0452	0.0451	0.0437	0.0439
12	<1%	0.0663	0.0669	0.0668	0.0700	0.0640	0.0649
10	<1%	0.1023	0.1036	0.1030	0.1627	0.0993	0.0998
8	<1%	0.1661	0.1682	0.1674	0.1269	0.1610	0.1625
6	<1%	0.2819	0.2857	0.2835	0.2542	0.2731	0.2753

distance (cm)	Battery Level:	Position Left (A/m)	Position Right (A/m)	Position Rear (A/m)	Position Front (A/m)	Position Top (A/m)	Position BOTTOM (A/m)	50% Limits (A/m)	Limits (A/m)
20	<1%	0.0140	0.0139	0.0138	0.0139	0.0134	0.0135	0.815	1.63
18	<1%	0.0184	0.0189	0.0186	0.0187	0.0177	0.0179	0.815	1.63
16	<1%	0.0251	0.0255	0.0256	0.0252	0.0246	0.0245	0.815	1.63
14	<1%	0.0359	0.0362	0.0362	0.0361	0.0349	0.0351	0.815	1.63
12	<1%	0.0530	0.0536	0.0534	0.0560	0.0512	0.0519	0.815	1.63
10	<1%	0.0818	0.0829	0.0824	0.1302	0.0794	0.0798	0.815	1.63
8	<1%	0.1326	0.1346	0.1340	0.1015	0.1288	0.1300	0.815	1.63
6	<1%	0.2252	0.2286	0.2268	0.2034	0.2185	0.2203	0.815	1.63



**H-Filed Strength at (distance from 6cm to 20cm at 2cm iteration) surrounding the EUT (A/m):**

distance (cm)	Battery Level:	Position Left (uT)	Position Right (uT)	Position Rear (uT)	Position Front (uT)	Position Top (uT)	Position Bottom (uT)
20	50%	0.0174	0.0175	0.0175	0.0176	0.0169	0.0170
18	50%	0.0232	0.0233	0.0231	0.0232	0.0224	0.0225
16	50%	0.0314	0.0322	0.0319	0.0316	0.0307	0.0311
14	50%	0.0448	0.0456	0.0454	0.0454	0.0433	0.0441
12	50%	0.0664	0.0671	0.0667	0.0698	0.0641	0.0645
10	50%	0.1021	0.1036	0.1033	0.1630	0.0991	0.0998
8	50%	0.1658	0.1685	0.1673	0.1272	0.1611	0.1623
6	50%	0.2814	0.2857	0.2835	0.2543	0.2736	0.2753

distance (cm)	Battery Level:	Position Left (A/m)	Position Right (A/m)	Position Rear (A/m)	Position Front (A/m)	Position Top (A/m)	Position Bottom (A/m)	50% Limits (A/m)	Limits (A/m)
20	50%	0.0140	0.0140	0.0140	0.0140	0.0136	0.0136	0.815	1.63
18	50%	0.0186	0.0186	0.0185	0.0186	0.0180	0.0180	0.815	1.63
16	50%	0.0252	0.0258	0.0255	0.0253	0.0246	0.0249	0.815	1.63
14	50%	0.0359	0.0365	0.0363	0.0363	0.0347	0.0353	0.815	1.63
12	50%	0.0531	0.0537	0.0533	0.0558	0.0513	0.0516	0.815	1.63
10	50%	0.0817	0.0829	0.0826	0.1304	0.0793	0.0799	0.815	1.63
8	50%	0.1326	0.1348	0.1338	0.1017	0.1289	0.1298	0.815	1.63
6	50%	0.2251	0.2286	0.2268	0.2035	0.2189	0.2203	0.815	1.63



**H-Filed Strength at (distance from 6cm to 20cm at 2cm iteration) surrounding the EUT (A/m):**

distance (cm)	Battery Level:	Position Left (uT)	Position Right (uT)	Position Rear (uT)	Position Front (uT)	Position Top (uT)	Position Bottom (uT)
20	>98%	0.0172	0.0173	0.0171	0.0175	0.0165	0.0167
18	>98%	0.0233	0.0234	0.0229	0.0232	0.0224	0.0224
16	>98%	0.0314	0.0320	0.0318	0.0317	0.0307	0.0308
14	>98%	0.0450	0.0456	0.0451	0.0452	0.0435	0.0438
12	>98%	0.0662	0.0672	0.0666	0.0700	0.0645	0.0647
10	>98%	0.1025	0.1038	0.1033	0.1632	0.0992	0.1002
8	>98%	0.1658	0.1687	0.1672	0.1270	0.1609	0.1627
6	>98%	0.2818	0.2856	0.2836	0.2542	0.2736	0.2752

distance (cm)	Battery Level:	Position Left (A/m)	Position Right (A/m)	Position Rear (A/m)	Position Front (A/m)	Position Top (A/m)	Position Bottom (A/m)	50% Limits (A/m)	Limits (A/m)
20	>98%	0.0138	0.0138	0.0137	0.0140	0.0132	0.0134	0.815	1.63
18	>98%	0.0186	0.0188	0.0183	0.0185	0.0179	0.0179	0.815	1.63
16	>98%	0.0251	0.0256	0.0254	0.0254	0.0245	0.0247	0.815	1.63
14	>98%	0.0360	0.0365	0.0361	0.0361	0.0348	0.0351	0.815	1.63
12	>98%	0.0530	0.0538	0.0533	0.0560	0.0516	0.0517	0.815	1.63
10	>98%	0.0820	0.0831	0.0826	0.1305	0.0794	0.0802	0.815	1.63
8	>98%	0.1326	0.1349	0.1338	0.1016	0.1287	0.1302	0.815	1.63
6	>98%	0.2255	0.2285	0.2268	0.2033	0.2189	0.2202	0.815	1.63

Note: A/m = uT/1.25



### H-Filed Strength at (distance from 4cm to 0cm) surrounding the EUT (A/m):

distance (cm)	Battery Level:	Position Left (A/m)	Position Right (A/m)	Position Rear (A/m)	Position Front (A/m)	Position Top (A/m)	Position Bottom (A/m)	50% Limits (A/m)	Limits (A/m)
4	<1%	0.3866	0.4034	0.3939	0.3930	0.3917	0.3910	0.815	1.63
4	50%	0.3901	0.3963	0.3910	0.3869	0.3775	0.3797	0.815	1.63
4	>98%	0.3838	0.3874	0.3882	0.3878	0.3724	0.3736	0.815	1.63
2	<1%	0.6066	0.6306	0.6151	0.6144	0.6136	0.6055	0.815	1.63
2	50%	0.6074	0.6179	0.6127	0.5615	0.5926	0.5968	0.815	1.63
2	>98%	0.5981	0.6052	0.6089	0.6037	0.5831	0.5885	0.815	1.63
0	<1%	0.7309	0.7573	0.7436	0.7463	0.7390	0.7314	0.815	1.63
0	50%	0.7317	0.7419	0.7379	0.7356	0.7128	0.7187	0.815	1.63
0	>98%	0.7226	0.7295	0.7319	0.7711	0.6989	0.7037	0.815	1.63

Note: Biot-Savar law:

1. Magnetic field on the axis of a current-carrying circle coil:

$$B = \frac{\mu_0 I R^2}{2(R^2 + X^2)^{\frac{3}{2}}}$$

R is the coil outside diameter radius.

X is the distance from the test point to the center of the coil circle.

B is the magnetic magnetic field.

2. According to the KDB 680106, the model needs to be validated by probe measurements at the two points closest to the surface of the device, in 2cm increments, and if there is a 30% agreement between the model and the (E-field and/or h-field) probe measurements, the validation is considered sufficient.
3. We derived the field strengths at 10cm to 8cm and 8cm to 6cm, respectively, which are close to the actual test values, based on the field strength at 6 cm, the field strength at 4cm and 2cm and 0 cm can be deduced.

4. A table of error data between the assessed and measured values:

distance (cm)	Measurements (A/m)	distance (cm)	Assessed	Error	Limit
			(A/m)	(%)	(%)
10	0.0818	\	\	\	\
8	0.1326	10 to 8	0.1283	3.35	<30
6	0.2252	8 to 6	0.2185	3.06	<30



5. Calculation process:

distance (cm)	Battery Level:	Position Left (A/m)
8	<1%	0.1329
6	<1%	0.2255
4	<1%	0.3866
2	<1%	0.6066
0	<1%	0.7309

$$8\text{cm: } u_0IR^2 = B * 2(R^2 + X^2)^{\frac{3}{2}} = 0.1329 * 2(0.055^2 + 0.08^2)^{\frac{3}{2}} = 0.000243192$$

$$\text{To 6cm: } B = \frac{u_0IR^2}{2(R^2+X^2)^{\frac{3}{2}}} = \frac{0.000243192}{2(0.055^2+0.06^2)^{\frac{3}{2}}} = 0.2263$$

$$6\text{cm: } u_0IR^2 = B * 2(R^2 + X^2)^{\frac{3}{2}} = 0.2255 * 2(0.055^2 + 0.06^2)^{\frac{3}{2}} = 0.000243192$$

$$\text{To 4cm: } B = \frac{u_0IR^2}{2(R^2+X^2)^{\frac{3}{2}}} = \frac{0.000243192}{2(0.055^2+0.04^2)^{\frac{3}{2}}} = 0.3880$$

$$4\text{cm: } u_0IR^2 = B * 2(R^2 + X^2)^{\frac{3}{2}} = 0.3866 * 2(0.055^2 + 0.04^2)^{\frac{3}{2}} = 0.000243192$$

$$\text{To 2cm: } B = \frac{u_0IR^2}{2(R^2+X^2)^{\frac{3}{2}}} = \frac{0.000243192}{2(0.055^2+0.02^2)^{\frac{3}{2}}} = 0.6089$$

$$2\text{cm: } u_0IR^2 = B * 2(R^2 + X^2)^{\frac{3}{2}} = 0.6066 * 2(0.055^2 + 0.02^2)^{\frac{3}{2}} = 0.000243192$$

$$\text{To 0cm: } B = \frac{u_0IR^2}{2(R^2+X^2)^{\frac{3}{2}}} = \frac{0.000243192}{2(0.055^2+0^2)^{\frac{3}{2}}} = 0.7309$$



## 5.2 For mobile exposure result (Test mode 7d to 9d recorded)

### H-Field Strength at (distance from 20cm) surrounding the EUT (A/m):

distance (cm)	Battery Level:	Position Left (uT)	Position Right (uT)	Position Rear (uT)	Position Front (uT)	Position Top (uT)	Position Bottom (uT)
20	<1%	0.0175	0.0175	0.0172	0.0176	0.0166	0.0171
20	50%	0.0174	0.0171	0.0171	0.0173	0.0166	0.0170
20	>98%	0.0173	0.0173	0.0173	0.0178	0.0167	0.0169

distance (cm)	Battery Level:	Position Left (A/m)	Position Right (A/m)	Position Rear (A/m)	Position Front (A/m)	Position Top (A/m)	Position Bottom (A/m)	50% Limits (A/m)	Limits (A/m)
20	<1%	0.0140	0.0140	0.0137	0.0141	0.0133	0.0137	0.815	1.63
20	50%	0.0139	0.0137	0.0137	0.0139	0.0133	0.0135	0.815	1.63
20	>98%	0.0139	0.0139	0.0139	0.0142	0.0134	0.0136	0.815	1.63

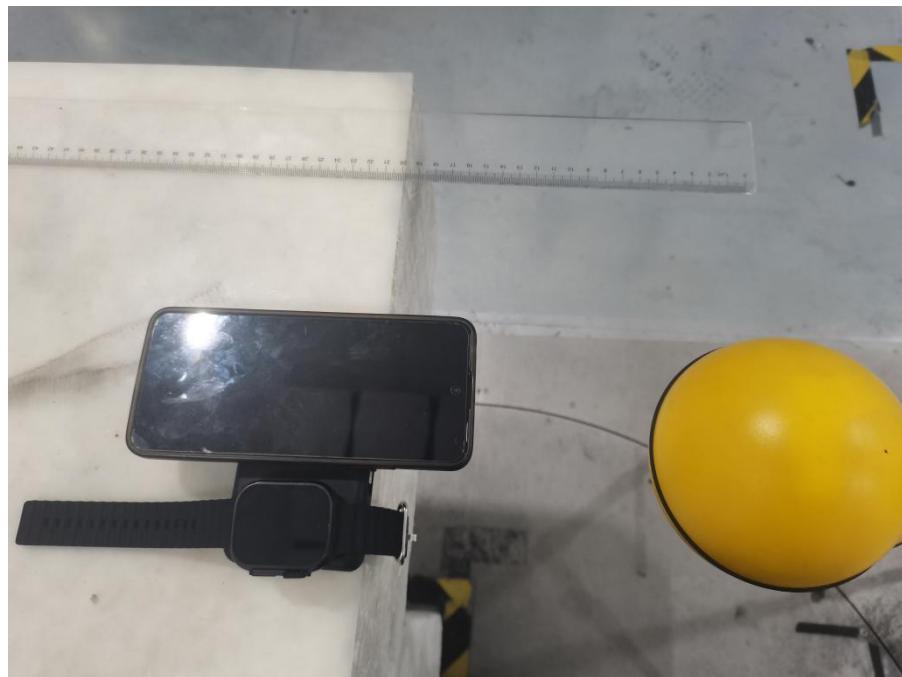
Note: A/m = uT/1.25

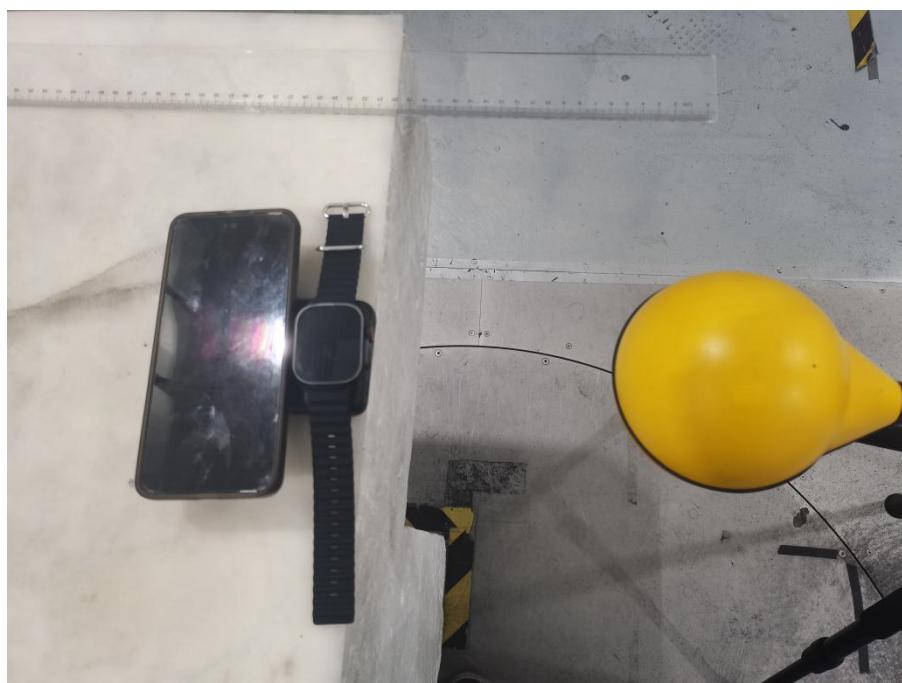
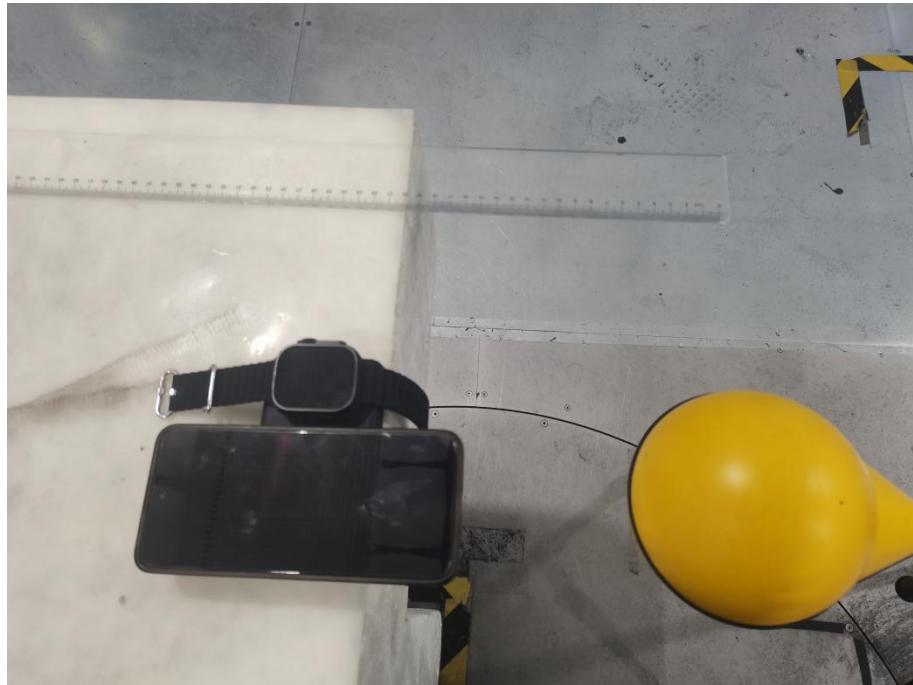


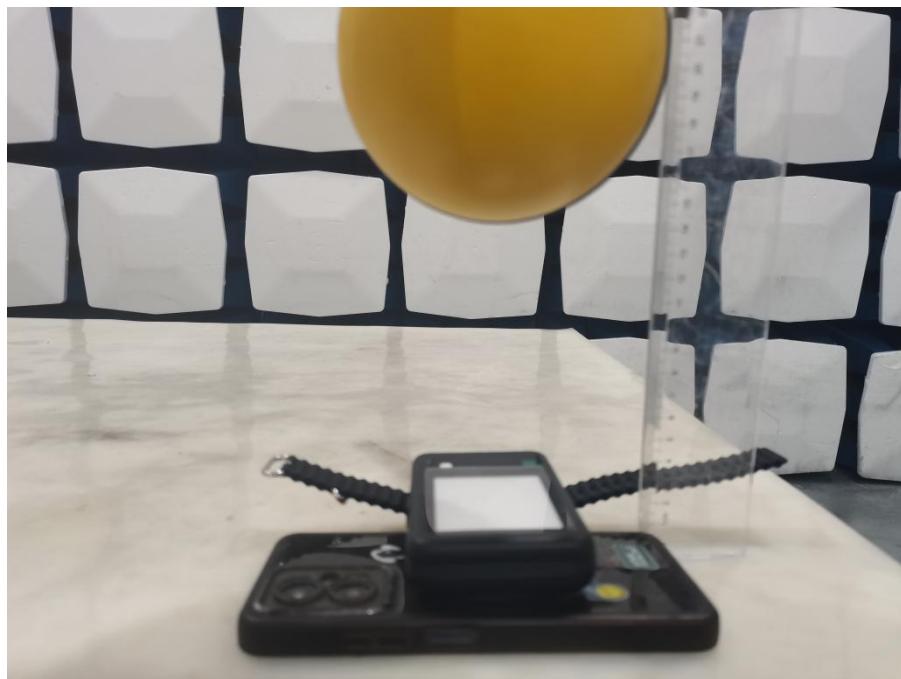
## 6. Test Set-up Photo

Probe	Length	Width	Radius
	11cm	11cm	5.5cm

### 6.1 Test distance: 20cm









## 6.2 Test distance: 6cm







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