



RF Exposure Evaluation Report

1. Product Information

FCC ID:	2AI7B-TF1560B
Product Name	Table Lamp
Model Number	TM1561
Additional Model No.	TF1560B
Model Declaration	PCB board, structure and internal of these model(s) are the same, The item tested was the TM1561 which has the same wireless charger components as the TF1560B, So no additional models were tested
Ratings	Input:100-240V~, 50/60Hz Wireless Charging: Input: 9V==1.12A, 10W Max
Modulation Type	Msk
Frequency Range	110.0~205.0KHz
Antenna Type	Coil Antenna
Hardware version	/
Software version	/
Accessories	/
Exposure category	General population/uncontrolled environment
EUT Type	Production Unit
Device Type	Mobile Device
Date of Test	February 12, 2025 ~ February 18, 2025
Date of Report	February 19, 2025

2. Evaluation Method

Per KDB 680106 D01 Section 3. RF Exposure Requirements;

- 1) Wireless power transfer devices must comply with RF exposure requirements for all design configurations in which they can operate. At a minimum, RF exposure must be evaluated for the worst-case scenario, typically when the transmitter, while delivering energy to a client device, is operating at maximum output power. RF exposure compliance for equipment authorization must be determined following the guidance of KDB447498, which includes consideration of the different test requirements for *Mobile Device* and *Portable Device* exposure categories, as defined in §§ 2.1091 and 2.1093 of the Rules.
- 2) The RF exposure limits, as set forth in § 1.1310, do not cover the frequency range below 100 kHz for Specific Absorption Rate (SAR) and below 300 kHz for Maximum Permitted Exposure (MPE). In addition, present limitations of RF exposure evaluation systems prevent an accurate evaluation of SAR below 4 MHz. For these reasons, a specific MPE-based RF Exposure compliance procedure for devices operating in the aforementioned low-frequency ranges has been set in place. This procedure is applicable to Equipment Authorization of all RF devices, thus including, but not limited to, Part 18 and WPT devices. Accordingly, for § 2.1091-*Mobile* devices, the MPE limits between 100 kHz to 300 kHz are to be considered the same as those at 300 kHz in Table 1 of § 1.1310, that is, 614 V/m and 1.63 A/m, for the electric field and magnetic field, respectively. For § 2.1093-*Portable* devices below 4 MHz and down to 100 kHz, the MPE

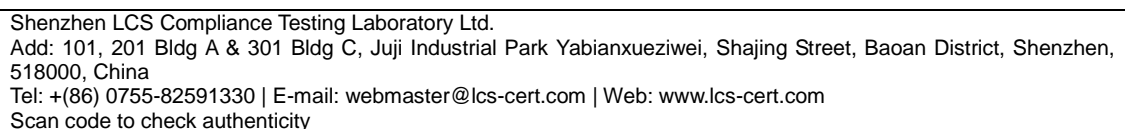


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and the receiver enclosure surfaces. For instance, two coils positioned as in Figure 2-a may be operated and considered under the provisions of this section, because both receivers are within one-meter distance from the transmitter. However, the case in Figure 2-b cannot be considered in the same way, and it is treated according to the prescription of Section 5.3.

For WPT designs with more than one radiating structure the distance to the load shall be considered as in Figure 3, thus measured between the receiver and the closest transmitting structure.

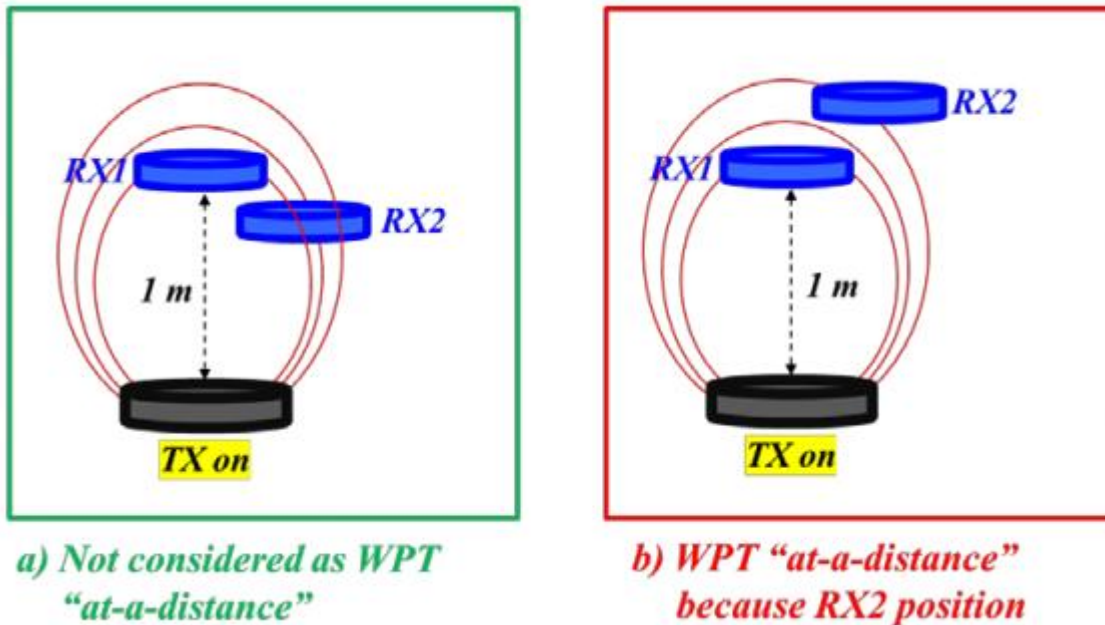


Figure 2-a) For multiple-receiver systems (here shown with two receivers, indicated with RX1 and RX2) the one-meter distance limit must apply for all the receivers that are engaged in the charging process. **b)** The WPT system is considered “at-a-distance” because it can function when the RX2 is further away than one meter from the transmitter.

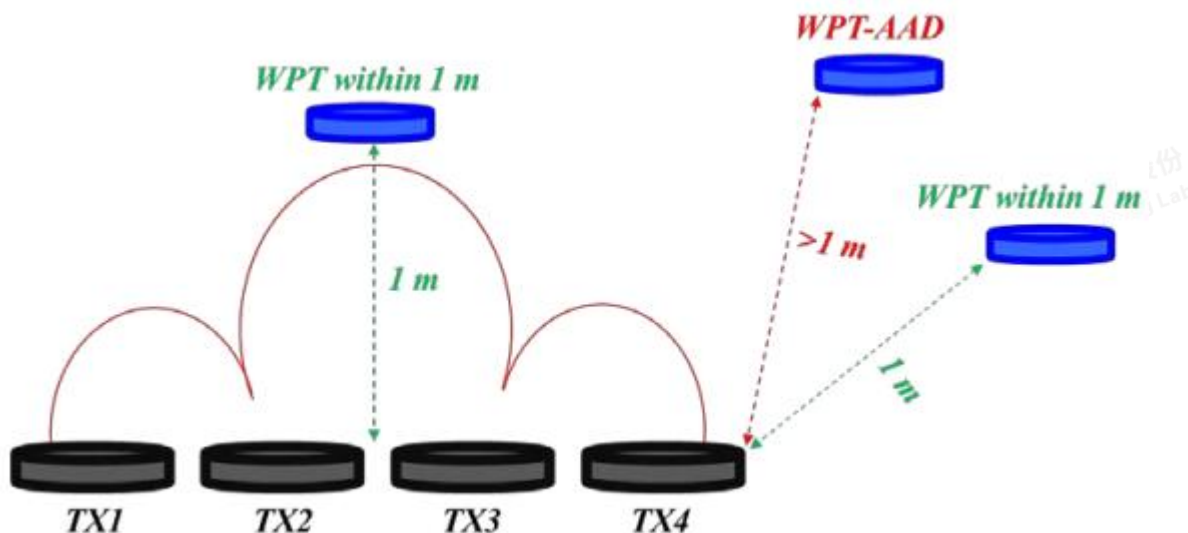


Figure 3. For multiple-coil transmitter systems, the one-meter distance limit is measured from the closest coil edge. A WPT within one meter operates with loads configured as those labeled in green font, if a load can be powered beyond one meter (in red), then it shall be considered “at-a-distance”





There might be situations where the WPT RF emissions are limited enough that even operations in a “crowded” environment, where many similar WPT devices are present, do not pose significant EMC and RF exposure concerns. In this scenario, and for devices operating within a one-meter distance from the receiver, as defined above, a manufacturer will not have to submit an “Equipment Compliance Review” KDB, and receive FCC concurrence before proceeding with equipment authorization. This exception to the requirement of submitting the ECR to obtain FCC concurrence only applies when all the following criteria (1) through (6) are met:

- (1) The power transfer frequency is below 1 MHz.
 - (2) The output power from each transmitting element (e.g., coil) is less than or equal to 15 watts.
 - (3) 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)
 - (4) Only § 2.1091- Mobile exposure conditions apply (i.e., this provision does not cover § 2.1093 – Portable exposure conditions).
 - (5) 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 (e.g., coils or antennas) that by design can simultaneously transmit are energized at their nominal maximum power.
- 5) 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. For instance, a device may use three RF coils powered at 5 W, or one coil powered at 15 W: in this case, both scenarios shall be tested

3. Evaluation Limit

3.1 Refer evaluation method

[ANSI C95.1–1999](#): IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.

[FCC KDB publication 680106 D01 Wireless Power Transfer v04](#): EQUIPMENT AUTHORIZATION OF WIRELESS POWER TRANSFER DEVICES

[FCC CFR 47 part1 1.1310](#): Radiofrequency radiation exposure limits.

[FCC CFR 47 part2 2.1091](#): Radiofrequency radiation exposure evaluation: mobile devices

[FCC CFR 47 part 18.107](#): Industrial, Scientific, and Medical Equipment





3.2 Limit

Limits for Maximum Permissible Exposure (MPE)/Controlled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm ²)	Averaging Time (minute)
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
300-1,500	/	/	f/300	6
1,500-100,000	/	/	5	6

Limits for Maximum Permissible Exposure (MPE)/Uncontrolled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm ²)	Averaging Time (minute)
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
300-1,500	/	/	f/1500	30
1,500-100,000	/	/	1.0	30

F=frequency in MHz

*=Plane-wave equivalent power density

According to FCC KDB 680106 D01 Section 3. RF Exposure Requirements clause 3 the Emission-Limits in the frequency range from 100 KHz to 300 KHz should be assessed versus the limits at 300 KHz in Table 1 of CFR 47 – Section1.310 as following (measured distance shall be 15cm from the center of the probe to the edge of the device):

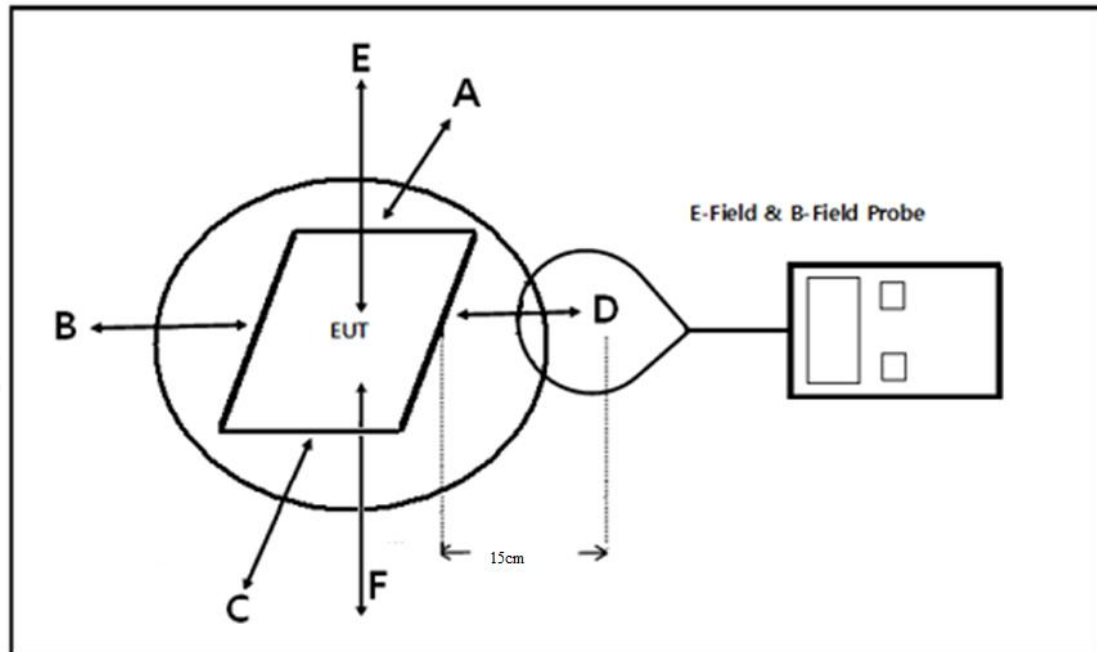
	E-Field	*/*	B-Field
Frequency	V/m	A/m	uT
0.3 MHz – 3.0 MHz	614	1.613	2.0
3.0 MHz – 30 MHz	824/f (=27.5 _{30MHz})	2.19/f (=0.073 _{30MHz})	--

A KDB inquire was required to determine/confirm the applicable limits below 100 KHz.





4. Test Setup Diagram



5. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	Exposure Level Tester	Narda	ELT-400	N-0713	2024-11-11	2025-11-10
2	B-Field Probe	Narda	ELT-400	M-1154	2024-10-08	2025-10-07
3	Electric field probe	Narda	EP601	611WX70332	N/A	N/A

6. Measurement Procedure

- The RF exposure test was performed on 360 degree turn table in anechoic chamber.
- The measurement probe was placed at test distance (15cm and 20cm) which is between the edges of the charger and the geometric center of probe.
- The turn table was rotated 360d degree to search of highest strength.
- The highest emission level was recorded and compared with limit as soon as measurement of each points (A, B, C, D, E) were completed.
- The EUT were measured according to the dictates of KDB 680106D01v03.





7. Equipment Approval Considerations

The EUT does comply with item 5.2 of KDB 680106 D01v04 as follows table;

Requirements of KDB 680106 D01	Yes / No	Description
Power transfer frequency is less than 1 MHz	Yes	The device operates in the frequency range 110.0 KHz - 205 KHz
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 10W.
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.
Only § 2.1091- Mobile exposure conditions apply (i.e., this provision does not cover § 2.1093-Portable exposure conditions).	Yes	Mobile exposure conditions only
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 (e.g., coils or antennas) that by design can simultaneously transmit are energized at their nominal maximum power.	Yes	The EUT H-field strengths at 15 cm surrounding the device and 20 cm above the top surface from all simultaneous transmitting coils are demonstrated to be less than 50% of the MPE limit.
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	Yes	Only one radiating structure and tested at maximum Output Power





powered, then those cases must be tested as well. For instance, a device may use three RF coils powered at 5 W, or one coil powered at 15 W: in this case, both scenarios shall be tested		
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There might be situations where the WPT RF emissions are limited enough that even operations in a “crowded” environment, where many similar WPT devices are present, do not pose significant EMC and RF exposure concerns. In this scenario, and for devices operating within a one-meter distance from the receiver, as defined above, a manufacturer will not have to submit an “Equipment Compliance Review” KDB, and receive FCC concurrence before proceeding with equipment authorization. This exception to the requirement of submitting the ECR to obtain FCC concurrence only applies when all the following criteria (1) through (6) are met.

8. E and H field Strength

Test Modes		
Mode 1	AC/DC Adapter(20V)+EUT+mobile phone (Battery Status: <1%)	Record
Mode 2	AC/DC Adapter(20V)+EUT+mobile phone (Battery Status: <50%)	Record
Mode 3	AC/DC Adapter(20V)+EUT+mobile phone (Battery Status: 100%)	Record
Note: All test modes were pre-tested, but we only recorded the worst case in this report.		





Field Strength at 15 cm from the edges surrounding the EUT and 15cm from the top surface of the EUT

Load mode	Frequency Range (kHz)	Field Strength	Measured Field Strength Values					50% Limits	Limits
			Test Position A	Test Position B	Test Position C	Test Position D	Test Position E		
Mode 1	110.0~205.0	uT	0.128	0.140	0.144	0.134	0.143	--	--
Mode 1	110.0~205.0	A/m	0.103	0.112	0.116	0.108	0.115	0.815	1.63
Mode 1	110.0~205.0	V/m	38.549	42.048	43.430	40.411	43.115	307.0	614.0
Mode 2	110.0~205.0	uT	0.125	0.136	0.138	0.132	0.141	--	--
Mode 2	110.0~205.0	A/m	0.100	0.108	0.110	0.105	0.113	0.815	1.63
Mode 2	110.0~205.0	V/m	37.462	40.765	41.359	39.568	42.502	307.0	614.0
Mode 3	110.0~205.0	uT	0.119	0.133	0.134	0.128	0.141	--	--
Mode 3	110.0~205.0	A/m	0.095	0.107	0.107	0.102	0.113	0.815	1.63
Mode 3	110.0~205.0	V/m	35.783	40.087	40.320	38.403	42.423	307.0	614.0

Field Strength at 20 cm from the edges surrounding the EUT and 20cm from the top surface of the EUT

Load mode	Frequency Range (kHz)	Field Strength	Measured Field Strength Values	50% Limits	Limits
			Test Position E		
Mode 1	110.0~205.0	uT	0.147	--	--
Mode 1	110.0~205.0	A/m	0.118	0.815	1.63
Mode 1	110.0~205.0	V/m	44.217	307	614
Mode 2	110.0~205.0	uT	0.147	--	--
Mode 2	110.0~205.0	A/m	0.117	0.815	1.63
Mode 2	110.0~205.0	V/m	44.101	307	614
Mode 3	110.0~205.0	uT	0.146	--	--
Mode 3	110.0~205.0	A/m	0.117	0.815	1.63
Mode 3	110.0~205.0	V/m	44.027	307	614

Note: $V/m = 10(((20 \lg(A/m \cdot 10^6) + 51.5) - 120)/20)$

Note: $A/m = uT/1.25$



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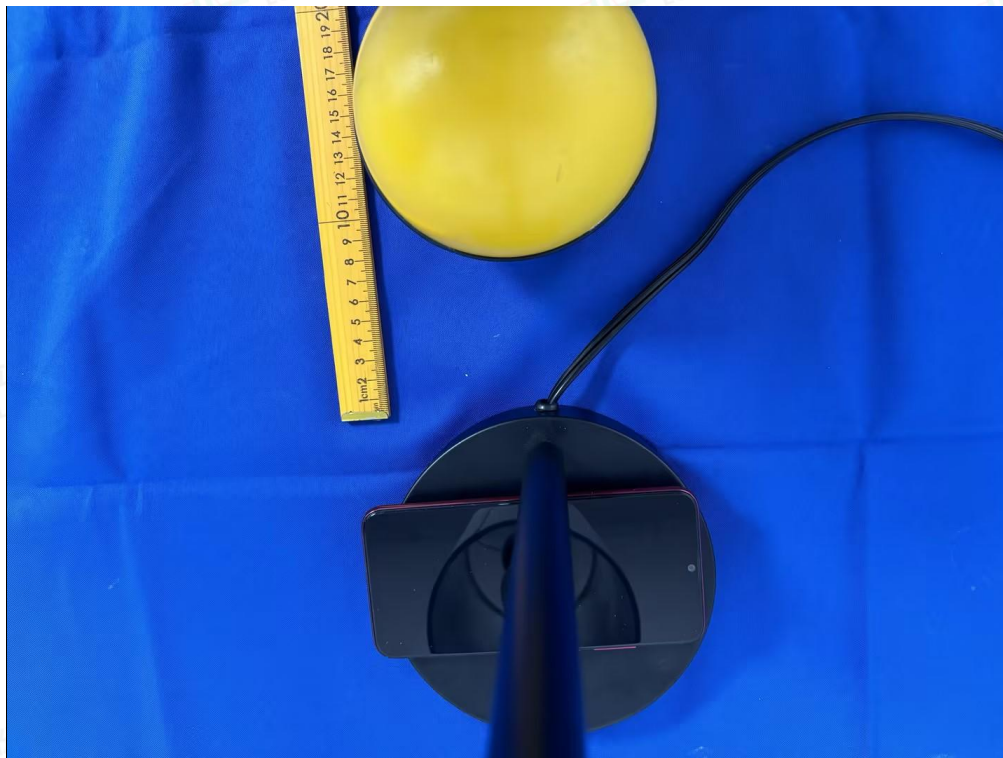
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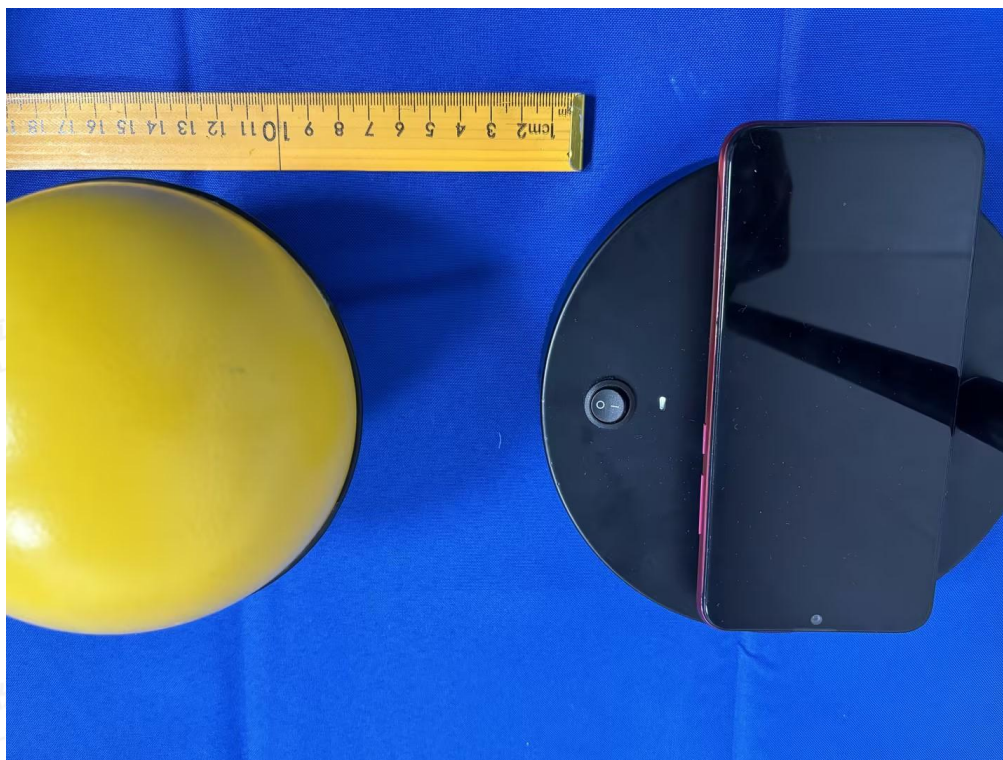
Test Setup Photos

9.1. Test Position A - Exposure photo from side edge surface-Rear



(TM1)

9.2. Test Position B - Exposure photo from side edge surface-Left

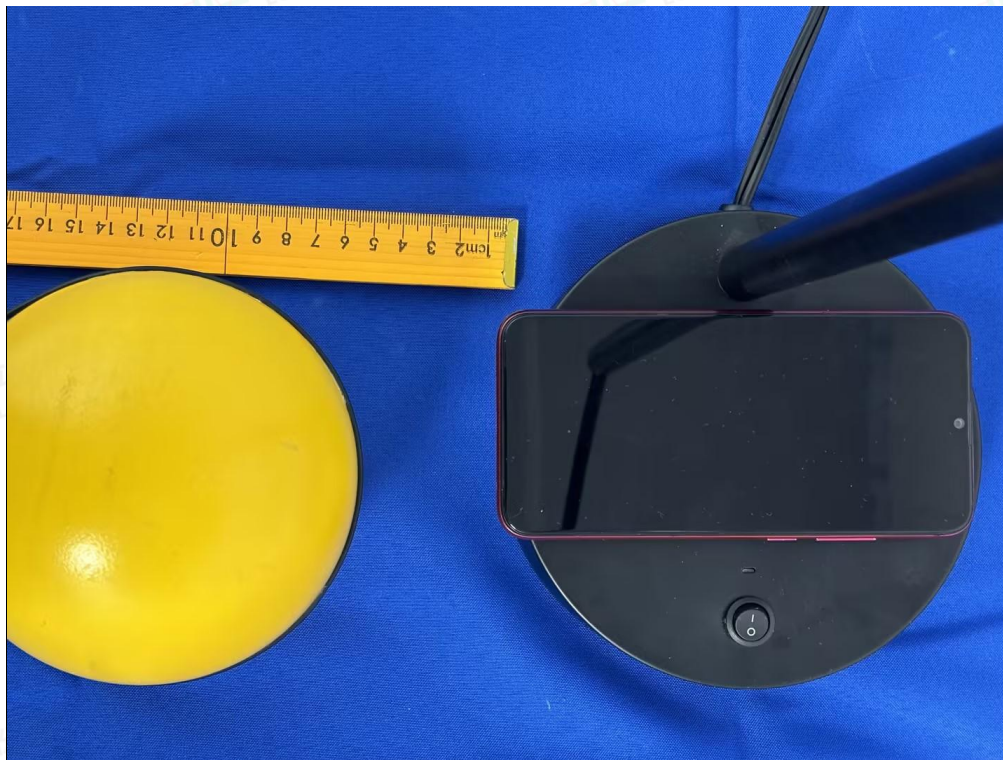


(TM1)





9.3. Test Position C - Exposure photo from side edge surface-Front



(TM1)

9.4. Test Position D - Exposure photo from side edge surface-Right



(TM1)



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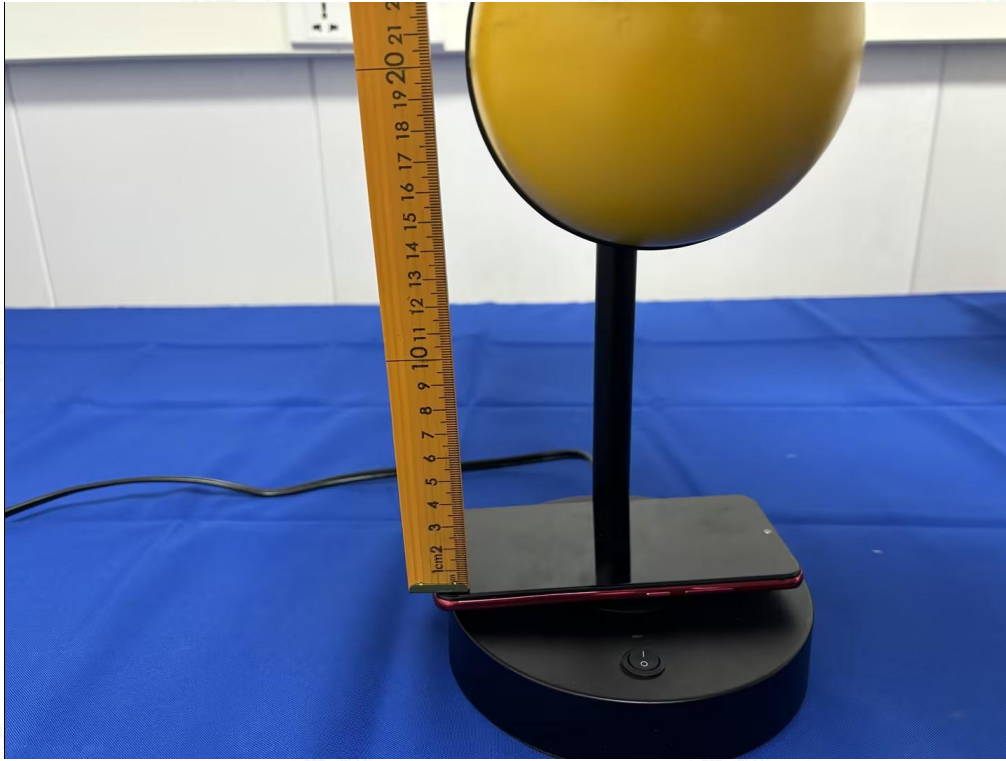
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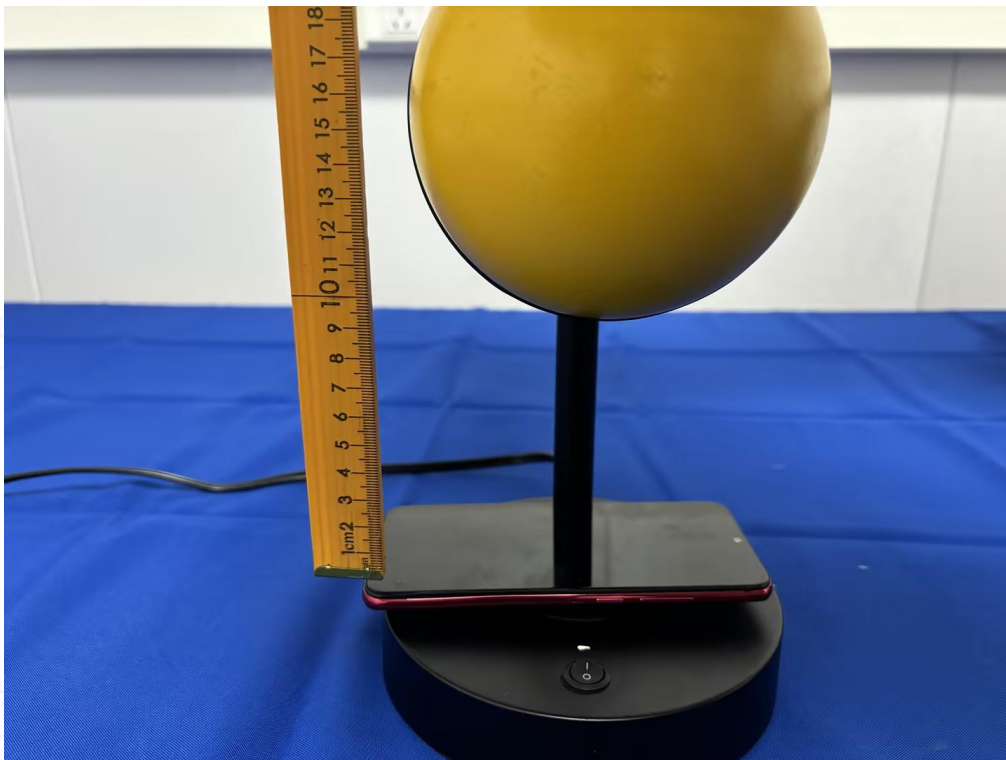


9.5. Test Position E - Exposure photo from top surface (20cm)



(TM1)

9.6. Test Position E- Exposure photo from top surface (15cm)



(TM1)



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9 Conclusion

A minimum safety distance of at 15 cm surrounding the device and 20 cm above the top surface of the device is required when the device is charging a smart phone. The detected emissions with a distance of 15 cm surrounding the device and 20 cm above the top surface of the device are below the limitations according to FCC KDB 680106 D01 Section 3. RF Exposure Requirement Clause 3.

Revision History

Report Version	Issue Date	Revision Content	Revised By
000	February 19, 2025	Initial Issue	--

.....END OF REPORT.....

