Shenzhen CTA Testing Technology Co., Ltd.
Room 106, Building 1, Yibaolai Industrial Park, Qiaotou Community, Fuhai Street, Bao'an District, Shenzhen, China

TEST REPOR

Report Reference No.....:	**CTA24061300602**
FCC ID.....	**2A938-PNGB55NWW4**
Compiled by (position+printed name+signature)..:	File administrators Jinghua Xiao
Supervised by (position+printed name+signature)..:	Test Engineer Lushan Kong
Approved by (position+printed name+signature)..:	Manager Eric Wang
Date of issue.....:	Jul.06, 2024
Representative Laboratory Name .:	**Shenzhen CTA Testing Technology Co., Ltd.**
Address.....:	Room 106, Building 1, Yibaolai Industrial Park, Qiaotou Community, Fuhai Street, Bao'an District, Shenzhen, China
Applicant's name.....:	**Jiangsu Austin Optronics Technology Co., Ltd.**
Address .....:	Building 02, 1 KeChuang Road, Qixia District, Nanjing, China
Test specification .....**:**	
Standard .....:	FCC KDB 680106 D01

Test item description .....:	**Wireless Charging Board**
Trade Mark .....:	Pintura
Manufacturer .....:	Jiangsu Austin Optronics Technology Co., Ltd.
Model/Type reference.....:	PNGB55NWW4
List Model .....:	PNGB55NWW3, PNGB55NWW2, PNGB55NWW1
Modulation Type .....:	ASK
Operation Frequency.....:	110-205KHz
Ratings .....:	Input: DC 19.5V/3.0A by Adapter Wireless Output 1:15W(Max) Wireless Output 2: 15W(Max) Wireless Output 3: 15W(Max) Wireless Output 4: 15W(Max)
Result.....:	**PASS**

T E S T R E P O R T

Test Report No. :	**CTA24061300602**	Jul.06, 2024 Date of issue

Equipment under Test	:	Wireless Charging Board
Model /Type	:	PNGB55NWW4
Listed Models	:	PNGB55NWW3, PNGB55NWW2, PNGB55NWW1
Applicant	:	**Jiangsu Austin Optronics Technology Co., Ltd.**
Address	:	Building 02, 1 KeChuang Road, Qixia District, Nanjing, China
Manufacturer		**Jiangsu Austin Optronics Technology Co., Ltd.**
Address	:	Building 02, 1 KeChuang Road, Qixia District, Nanjing, China

Test Result:	**PASS**

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

Contents

1. SUMMARY

1.1. General Remarks

Date of receipt of test sample	:	Jun.05, 2024
Testing commenced on	:	Jun.05, 2024
Testing concluded on	:	Jul.05, 2024

1.2. Product Description

Product Name:	Wireless Charging Board
Trade Mark:	Pintura
Model/Type reference:	PNGB55NWW4
List Model:	PNGB55NWW3, PNGB55NWW2, PNGB55NWW1
Model Declaration	N/A
Power supply:	Input: DC 19.5V/3.0A by Adapter Wireless Output 1:15W(Max) Wireless Output 2: 15W(Max) Wireless Output 3: 15W(Max) Wireless Output 4: 15W(Max)
Hardware Version	N/A
Software Version	N/A
WPT	
Frequency Range	110.0~205.0KHz
Modulation Type	ASK (Continuous Wave)
Load Sensing	Contact transmission
Antenna Type	Coil Antenna
Antenna gain	0dBi

1.3. Equipment Under Test

Power supply system utilised

Power supply voltage	:	○	230V / 50 Hz	○	120V / 60Hz
		○	12 V DC	○	24 V DC
		●	Other (specified in blank below)		

DC 19.5V

Description of the test mode

Operation Frequency each of channel	
Channel	Frequency
1	127.00KHz

Mode	AC mode
Mode 1	Wireless Charging 15W(Wireless Output 1)+ Wireless Charging 15W(Wireless Output 2)+ Wireless Charging 15W(Wireless Output 3)+ Wireless Charging 15W(Wireless Output 4)
Mode 2	Wireless Charging 15W(Wireless Output 1)+ Wireless Charging 15W(Wireless Output 2)+ Wireless Charging 15W(Wireless Output 3)+
Mode 3	Wireless Charging 15W(Wireless Output 1)+ Wireless Charging 15W(Wireless Output 2)+ Wireless Charging 15W(Wireless Output 4)
Mode 4	Wireless Charging 15W(Wireless Output 1)+ Wireless Charging 15W(Wireless Output 3)+ Wireless Charging 15W(Wireless Output 4)
Mode 5	Wireless Charging 15W(Wireless Output 2)+ Wireless Charging 15W(Wireless Output 3)+ Wireless Charging 15W(Wireless Output 4)
Mode 6	Wireless Charging 15W(Wireless Output 1)+ Wireless Charging 15W(Wireless Output 2)+
Mode 7	Wireless Charging 15W(Wireless Output 1)+ Wireless Charging 15W(Wireless Output 3)+
Mode 8	Wireless Charging 15W(Wireless Output 1)+ Wireless Charging 15W(Wireless Output 4)
Mode 9	Wireless Charging 15W(Wireless Output 2)+ Wireless Charging 15W(Wireless Output 3)+
Mode 10	Wireless Charging 15W(Wireless Output 2)+ Wireless Charging 15W(Wireless Output 4)
Mode 11	Wireless Charging 15W(Wireless Output 3)+ Wireless Charging 15W(Wireless Output 4)
Mode 12	Wireless Charging 15W(Wireless Output 1)
Mode 13	Wireless Charging 15W(Wireless Output 2)
Mode 14	Wireless Charging 15W(Wireless Output 3)
Mode 14	Wireless Charging 15W(Wireless Output 4)

Note :1.EUT has one Type-C port, The Type-C supports wireless charging in AC mode.
2. All the modes have been tested and recorded worst mode in the report(Mode 1).
3. All modes were tested for load states less than 1%, less than 50%, and less than 99%.

1.4. Modifications

No modifications were implemented to meet testing criteria.

1.5. Address of the test laboratory

Shenzhen CTA Testing Technology Co., Ltd.
Room 106, Building 1, Yibaolai Industrial Park, Qiaotou Community, Fuhai Street, Bao'an District, Shenzhen, China

1.6. Test Facility

The test facility is recognized, certified, or accredited by the following organizations:
FCC-Registration No.: 517856 Designation Number: CN1318
Shenzhen CTA Testing Technology Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.
A2LA-Lab Cert. No.: 6534.01
Shenzhen CTA Testing Technology Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.
The 3m-Semi anechoic test site fulfils CISPR 16-1-4 according to ANSI C63.10 and CISPR 16-1-4:2010.

1.7. Statement of the measurement uncertainty

Test Item	Frequency Range	Uncertainty
H-Field Strength Uncertainty	1Hz~400KHz	3.12dB, k=2
F-Field Strength Uncertainty	1Hz~400KHz	2.68dB, k=2

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

1.8. TEST STANDARDS

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 RF Exposure Wireless Charging Apps v04: RF Exposure Considerations for Low Power Consumer Wireless Power Transfer Applications
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:Indusial, Scientific, and Medical Equipment

1.9. Equipments Used during the Test

Description	Brand	Model No.	Frequency Range	Calibrated Date	Calibrated Until
Magnetic Field Meter	NARDA	ELT-400	1 – 400kHz	Apr. 02, 2024	Apr. 01, 2025
E-Field Probe	NARDA	ELT-400	1 – 400kHz	Apr. 10, 2024	Apr. 09, 2025

NOTE: 1. The calibration interval of the above test instruments is 12 months .

2. TEST CONDITIONS AND RESULTS

2.1. 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 limits in § 1.1310 (with the 300 kHz limit applicable all the way down to 100 kHz) can be used for the purpose of equipment authorization in lieu of SAR evaluations.

Furthermore, consistent with FCC's equipment authorization RF exposure guidance, any device (both portable and mobile) operating at frequencies below 100 kHz is considered compliant for the purpose of equipment authorization when the external (unperturbed) temporal peak field strengths do not exceed the following reference levels:

83 V/m for the electric field strength (*E*)

and 90 A/m for the magnetic field strength (*H*)

These data may be provided through measurements and/or numerical simulations, and for all the positions in space relevant for any possible body exposure.

3) "Large size" probes may prevent the measurement of E- and/or H-fields near the surface of the radiating structure (e.g., a WPT source coil), as in the example shown in Figure 1.

If the center of the probe sensing element is located more than 5 mm from the probe outer surface, the field strengths need to be estimated through modeling for those positions that are not reachable. The estimates may be done either via numerical calculation, or via analytic model: e.g., approximated formulas for circular coils, dipoles, etc., may be acceptable if it is shown that the model is applicable for the design parameters considered. A typical example is the use of a quasi-static approximation formula for a low-frequency magnetic field source. These estimates shall include points spaced no more than 2 cm from each other. Thus, in the example of Figure 1, at least the estimates at 0 cm2 and 2 cm are required, while only one point would not be sufficient. In addition, the model needs to be validated through the probe measurements for the two closest points to the device surface, and with 2-cm increments, as indicated in Figure 1. In that example, the same model must also be applied to the 4 cm and 6 cm positions, and then compared with the measured data, for validation purposes. The validation is considered sufficient if a 30% agreement between the model and the (E- and/or H-field) probe measurements is demonstrated. If such a level of agreement cannot be shown, a more accurate model (and/or a smaller probe) shall be used.

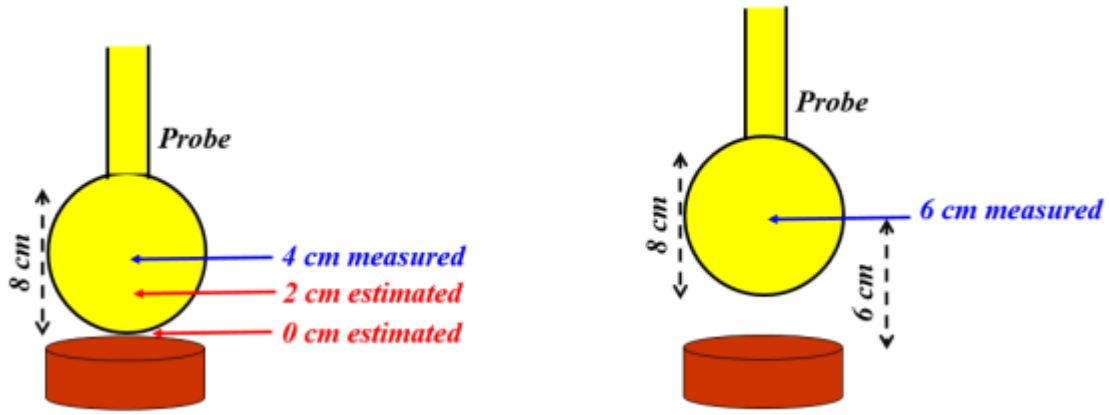


Figure 1. Example of probe (in yellow) measurements in points close to the WPT device (in red/brown). The probe radius is 4 cm, thus the closest point to the device where the field can be measured is at 4 cm from the surface (this example assumes that the probe calibration refers to the center of the sensing element structure, in this case a sphere of 4 cm radius). Data at 0 cm and 2 cm must be estimated through a model, and then the same model must be validated via comparison with the actual measurements at 4 cm and 6 cm, where the probe center can be positioned and collect valid data.

4) Part 18 Wireless Power Transfer up to One-Meter Distance. This section applies only to WPT transmitters that, by design, can provide power to a load located at a distance no greater than one meter. This distance shall be measured between the closest points between the transmitter 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.

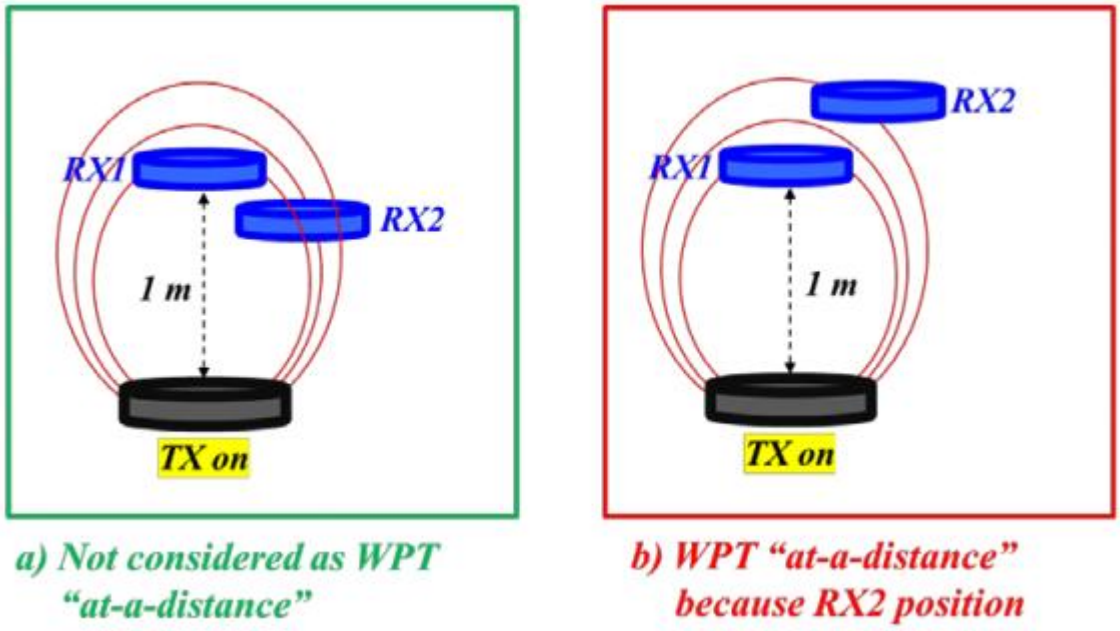


Figure 2-a) For multiple-receiver systems (here shown with two receivers, indicated with RX1 and RX2) the one-meter distance limit must apply for all the receivers that are engaged in the charging process. b) The WPT system is considered "at-a-distance" because it can function when the RX2 is further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

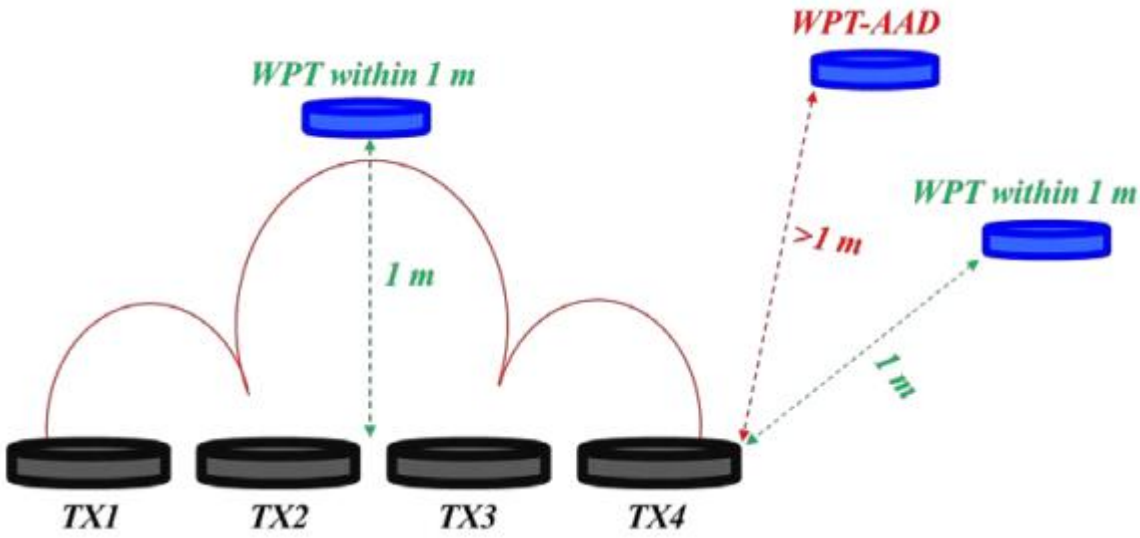


Figure 3. For multiple-coil transmitter systems, the one-meter distance limit is measured from the closest coil edge. A WPT within one meter operates with loads configured as those labeled in green font, if a load can be powered beyond one meter (in red), then it shall be considered "at-a-distance"

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.

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

2.2. 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/f2	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

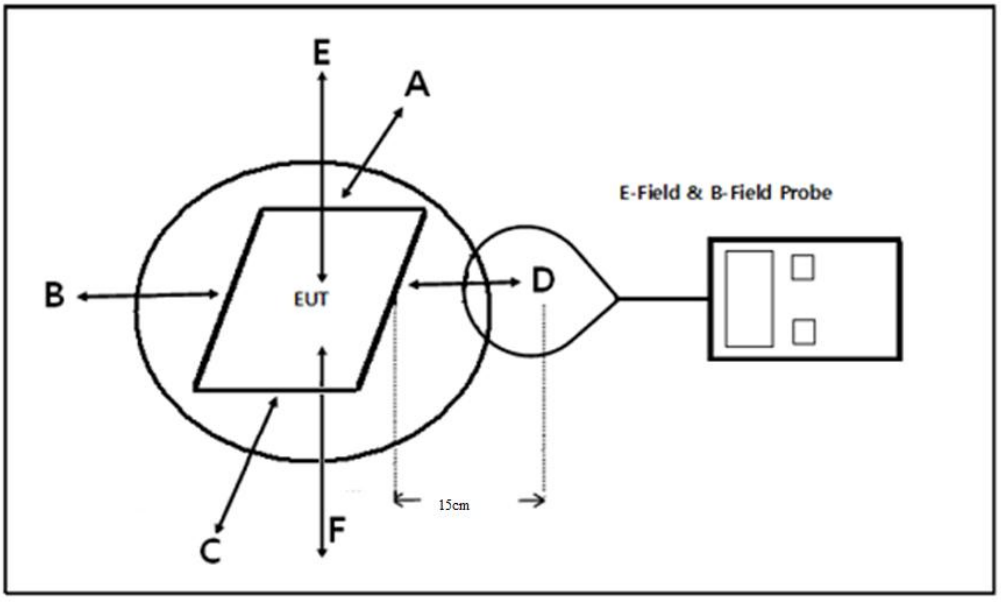
Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm^2)	Averaging Time (minute)
Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	*180/f2	30
30-300	27.5	0.073	0.2	30
300-1,500	/	/	f/1500	30
1,500-100,000	/	/	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 (=27.530MHz)	2.19/f (=0.07330MHz)	--

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

2.3. Test Setup Diagram



For mobile RF exposure condition, due to installation limitations no tests from the underside of the charging device are required.

2.4. Measurement Procedure

a) The RF exposure test was performed on 360 degree turn table in anechoic chamber.
b) 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.
c) The turn table was rotated 360d degree to search of highest strength.
d) The highest emission level was recorded and compared with limit as soon as measurement of each points (A, B, C, D, E) were completed.
e) The EUT were measured according to the dictates of KDB 680106D01v04.

2.5. 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 operate 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 each primary coil is 15W.
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 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	Yes	Only one radiating structure and tested at maximum Output Power

In all other cases, unless excluded above, an RF exposure evaluation report must be reviewed and accepted through a KDB or PBA inquiry to enable authorization of the equipment. When evaluation is required to show compliance; for example, using field strength, power density, SAR measurements or computational modeling etc., the specific authorization requirements will be determined based on the results of the RF exposure evaluation.

2.6. Symbols

For the purpose of the present document, the following symbols apply;
B: Magnetic flux
E: Filed strength
H: Magnetic field strength
EAVG = Spatial average of Filed strength
HAVG = Spatial average of Magnetic field strength
B1: Magnetic flux of wireless charge port 1 (Wireless Output 1)
E1: Filed Strength of wireless charge port 1 (Wireless Output 1)
H1: Magnetic field strength of wireless charge port 1 (Wireless Output 1)
B2: Magnetic flux of wireless charge port 1 (Wireless Output 2)
E2: Filed Strength of wireless charge port 1 (Wireless Output 2)
H2: Magnetic field strength of wireless charge port 1 (Wireless Output 2)
B3: Magnetic flux of wireless charge port 1 (Wireless Output 3)
E3: Filed Strength of wireless charge port 1 (Wireless Output 3)
H3: Magnetic field strength of wireless charge port 1 (Wireless Output 3)
B4: Magnetic flux of wireless charge port 1 (Wireless Output 4)
E4: Filed Strength of wireless charge port 1 (Wireless Output 4)
H4: Magnetic field strength of wireless charge port 1 (Wireless Output 4)

2.7. Test Results

The three charge ports are same for rated power, tested at charge together and measure each five points;
Test mode: Normal Operation (Charging mode)

B-filed Strength at 15 cm from the edges surrounding the EUT and 15 cm above the top surface

Charge Port	Charging Battery Level	Frequency Range (MHz)	Measured B-filed Strength Values (uT)					FCC E-Field Strength 50% Limits (uT)	FCC E-Field Strength Limits (uT)
			Test Position A	Test Position B	Test Position C	Test Position D	Test Position E		
B1	1%	0.12700	0.489	0.489	0.502	0.483	0.495	-	-
	50%	0.12700	0.501	0.496	0.487	0.488	0.489	-	-
	99%	0.12700	0.502	0.489	0.485	0.495	0.497	-	-
B2	1%	0.12700	0.487	0.487	0.494	0.486	0.482	-	-
	50%	0.12700	0.500	0.485	0.498	0.483	0.490	-	-
	99%	0.12700	0.485	0.499	0.501	0.499	0.500	-	-
B3	1%	0.12700	0.487	0.482	0.500	0.499	0.489	-	-
	50%	0.12700	0.496	0.484	0.483	0.502	0.483	-	-
	99%	0.12700	0.492	0.482	0.488	0.493	0.495	-	-
B4	1%	0.12700	0.490	0.486	0.491	0.486	0.491	-	-
	50%	0.12700	0.497	0.487	0.487	0.485	0.493	-	-
	99%	0.12700	0.501	0.493	0.486	0.501	0.484	-	-

E-Filed Strength at 15 cm from the edges surrounding the EUT and 15 cm above the top surface

Charge Port	Charging Battery Level	Frequency Range (MHz)	Measured E-Field Strength Values (V/m)					FCC E-Field Strength 50% Limits (V/m)	FCC E-Field Strength Limits (V/m)
			Test Position A	Test Position B	Test Position C	Test Position D	Test Position E		
E1	1%	0.12700	146.944	147.158	150.887	145.363	148.837	307.0	614.0
	50%	0.12700	150.601	149.119	146.409	146.700	147.175	307.0	614.0
	99%	0.12700	150.869	147.140	145.711	148.712	149.386	307.0	614.0
E2	1%	0.12700	146.334	146.292	148.430	146.116	144.936	307.0	614.0
	50%	0.12700	150.463	145.859	149.601	145.131	147.265	307.0	614.0
	99%	0.12700	145.779	150.126	150.711	149.902	150.234	307.0	614.0
E3	1%	0.12700	146.413	145.031	150.276	150.073	146.908	307.0	614.0
	50%	0.12700	149.025	145.413	145.167	150.830	145.371	307.0	614.0
	99%	0.12700	147.985	145.057	146.830	148.099	148.729	307.0	614.0
E4	1%	0.12700	147.392	146.081	147.723	146.181	147.532	307.0	614.0
	50%	0.12700	149.435	146.330	146.508	145.785	148.189	307.0	614.0
	99%	0.12700	150.713	148.247	145.983	150.521	145.407	307.0	614.0

H-Filed Strength at 15 cm from the edges surrounding the EUT and 15 cm above the top surface

Charge Port	Charging Battery Level	Frequency Range (MHz)	Measured H-Field Strength Values (A/m)					FCC H-Field Strength 50% Limits (A/m)	FCC H-Field Strength Limits (A/m)
			Test Position A	Test Position B	Test Position C	Test Position D	Test Position E		
H1	1%	0.12700	0.391	0.392	0.401	0.387	0.396	0.815	1.63
	50%	0.12700	0.401	0.397	0.390	0.390	0.392	0.815	1.63
	99%	0.12700	0.401	0.391	0.388	0.396	0.397	0.815	1.63
H2	1%	0.12700	0.389	0.389	0.395	0.389	0.386	0.815	1.63
	50%	0.12700	0.400	0.388	0.398	0.386	0.392	0.815	1.63
	99%	0.12700	0.388	0.399	0.401	0.399	0.400	0.815	1.63
H3	1%	0.12700	0.390	0.386	0.400	0.399	0.391	0.815	1.63
	50%	0.12700	0.397	0.387	0.386	0.401	0.387	0.815	1.63
	99%	0.12700	0.394	0.386	0.391	0.394	0.396	0.815	1.63
H4	1%	0.12700	0.392	0.389	0.393	0.389	0.393	0.815	1.63
	50%	0.12700	0.398	0.389	0.390	0.388	0.394	0.815	1.63
	99%	0.12700	0.401	0.394	0.388	0.400	0.387	0.815	1.63

B-filed Strength at 20cm from the top surface of the EUT

Charge Port	Charging Battery Level	Frequency Range (MHz)	Measured B-filed Strength Values (uT)	FCC E-Field Strength 50% Limits (uT)	FCC E-Field Strength Limits (uT)
			Test Position E		
B1	1%	0.12700	0.385	-	-
	50%	0.12700	0.396	-	-
	99%	0.12700	0.382	-	-
B2	1%	0.12700	0.388	-	-
	50%	0.12700	0.398	-	-
	99%	0.12700	0.400	-	-
B3	1%	0.12700	0.390	-	-
	50%	0.12700	0.398	-	-
	99%	0.12700	0.389	-	-
B4	1%	0.12700	0.398	-	-
	50%	0.12700	0.401	-	-
	99%	0.12700	0.388	-	-

E-Filed Strength at 20cm from the top surface of the EUT

Charge Port	Charging Battery Level	Frequency Range (MHz)	Measured E-Field Strength Values (V/m)	FCC E-Field Strength 50% Limits (V/m)	FCC E-Field Strength Limits (V/m)
			Test Position E		
E1	1%	0.12700	115.815	307.0	614.0
	50%	0.12700	119.002	307.0	614.0
	99%	0.12700	114.963	307.0	614.0
E2	1%	0.12700	116.743	307.0	614.0
	50%	0.12700	119.768	307.0	614.0
	99%	0.12700	120.219	307.0	614.0
E3	1%	0.12700	117.371	307.0	614.0
	50%	0.12700	119.740	307.0	614.0
	99%	0.12700	117.027	307.0	614.0
E4	1%	0.12700	119.548	307.0	614.0
	50%	0.12700	120.612	307.0	614.0
	99%	0.12700	116.534	307.0	614.0

H-Field Strength at 20cm from the top surface of the EUT

Charge Port	Charging Battery Level	Frequency Range (MHz)	Measured H-Field Strength Values (A/m)	FCC H-Field Strength 50% Limits (A/m)	FCC H-Field Strength Limits (A/m)
			Test Position E		
H1	1%	0.12700	0.308	0.815	1.63
	50%	0.12700	0.317	0.815	1.63
	99%	0.12700	0.306	0.815	1.63
H2	1%	0.12700	0.311	0.815	1.63
	50%	0.12700	0.319	0.815	1.63
	99%	0.12700	0.320	0.815	1.63
H3	1%	0.12700	0.312	0.815	1.63
	50%	0.12700	0.319	0.815	1.63
	99%	0.12700	0.311	0.815	1.63
H4	1%	0.12700	0.318	0.815	1.63
	50%	0.12700	0.321	0.815	1.63
	99%	0.12700	0.310	0.815	1.63

Note:
$V/m=10^{(((dBuV/m)-120)/20}=10^{(((dBuA/m+51.5)-120)/20}=10^{(((20lg(A/m*10^6)+51.5)-120)/20}$
A/m= uT/1.25

2.8. Simultaneous E-Filed Strength and H-Filed Strength

KDB 447498 points for simultaneous transmission on far-filed measurement, while for below 30 MHz usually measured at near-filed. KDB680106 require aggregate leakage fields at 15 cm surrounding the device from all simultaneous transmitting coils are demonstrated to be less than 50% of the MPE limit;
KDB680106 can accept using field strength, power density, SAR measurements or computational modeling etc., the specific authorization requirements will be determined based on the results of the RF exposure evaluation.
Test labs suggest use Computational modelling to calculate Nerve Stimulation BRs;
Computational modelling, such as finite-difference time-domain (FDTD) may be used to demonstrate compliance with FCC § 1.1310 limits requirement,
Basic Calculations - The following calculations may be used to evaluate systems without consideration for the effects of phase resulting from multiple frequency and/or multiple antennas co-located in the measurement space, which may overestimate the actual result. If the result exceeds the limits, the advanced calculations described in follows may be used.

$$E_{AVG} = \frac{1}{n}\sum_{i=1}^{n}(E_{MaxRMS})_i$$

Where:
E-field measurements
E_{AVG} = Spatial average
E_{MaxRMS} = E-field at a measurement point
N = Number of spatially averaged points

And

$$H_{AVG} = \frac{1}{n}\sum_{i=1}^{n}(H_{MaxRMS})_i$$

Where:
H-field levels of magnetic field strength
H_{AVG} = Spatial average
H_{MaxRMS} = H-field at a measurement point
N = Number of spatially averaged points

E-Filed Strength at 15 cm from the edges surrounding the EUT and 15 cm above the top surface

Spatial Average	Charging Battery Level	Frequency Range (MHz)	Measured E-Field Strength Values (V/m)					FCC E-Field Strength 50% Limits (V/m)	FCC E-Field Strength Limits (V/m)
			Test Position A	Test Position B	Test Position C	Test Position D	Test Position E		
E_{AVG}	1%	0.12700	146.771	146.141	149.329	146.933	147.053	307.0	614.0
	50%	0.12700	149.881	146.680	146.921	147.112	147.000	307.0	614.0
	99%	0.12700	148.837	147.643	147.309	149.309	148.439	307.0	614.0

H-Filed Strength at 15 cm from the edges surrounding the EUT and 15 cm above the top surface

Spatial Average	Charging Battery Level	Frequency Range (MHz)	Measured H-Field Strength Values (A/m)					FCC H-Field Strength 50% Limits (A/m)	FCC H-Field Strength Limits (A/m)
			Test Position A	Test Position B	Test Position C	Test Position D	Test Position E		
H_{AVG}	1%	0.12700	0.391	0.389	0.397	0.391	0.392	0.815	1.63
	50%	0.12700	0.399	0.390	0.391	0.391	0.391	0.815	1.63
	99%	0.12700	0.396	0.393	0.392	0.397	0.395	0.815	1.63

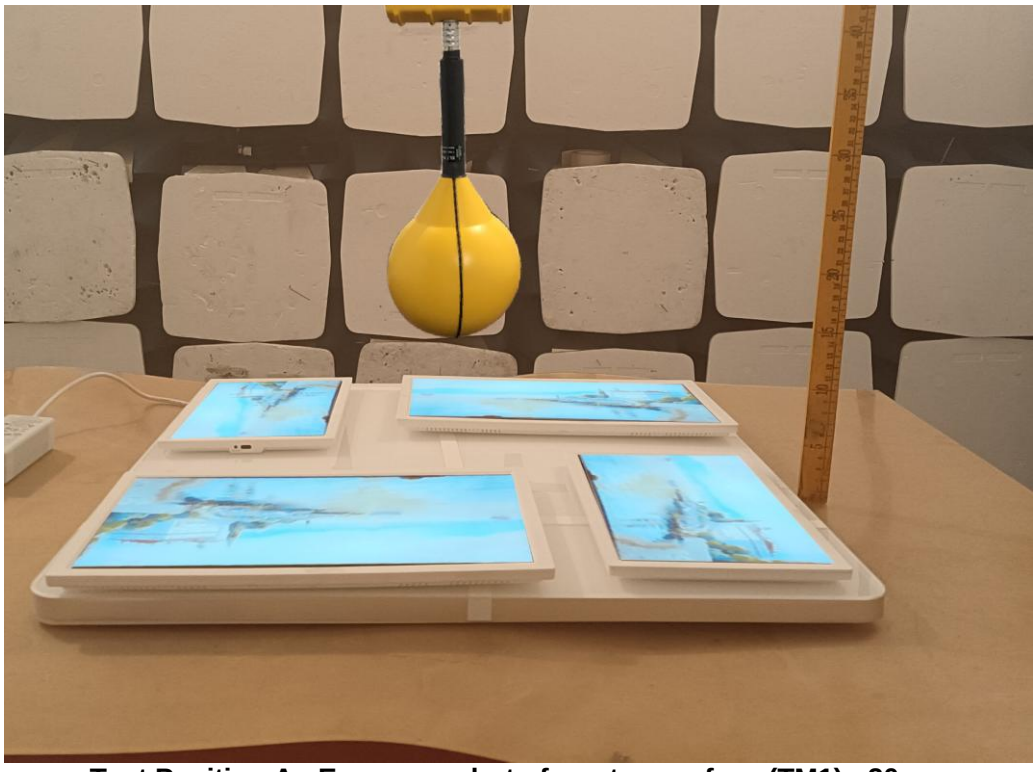
E-Filed Strength at 20cm from the top surface of the EUT

Spatial Average	Charging Battery Level	Frequency Range (MHz)	Measured E-Field Strength Values (V/m)	FCC E-Field Strength 50% Limits (V/m)	FCC E-Field Strength Limits (V/m)
			Test Position E		
E_{AVG}	1%	0.12700	117.37	307.0	614.0
	50%	0.12700	119.78	307.0	614.0
	99%	0.12700	117.19	307.0	614.0

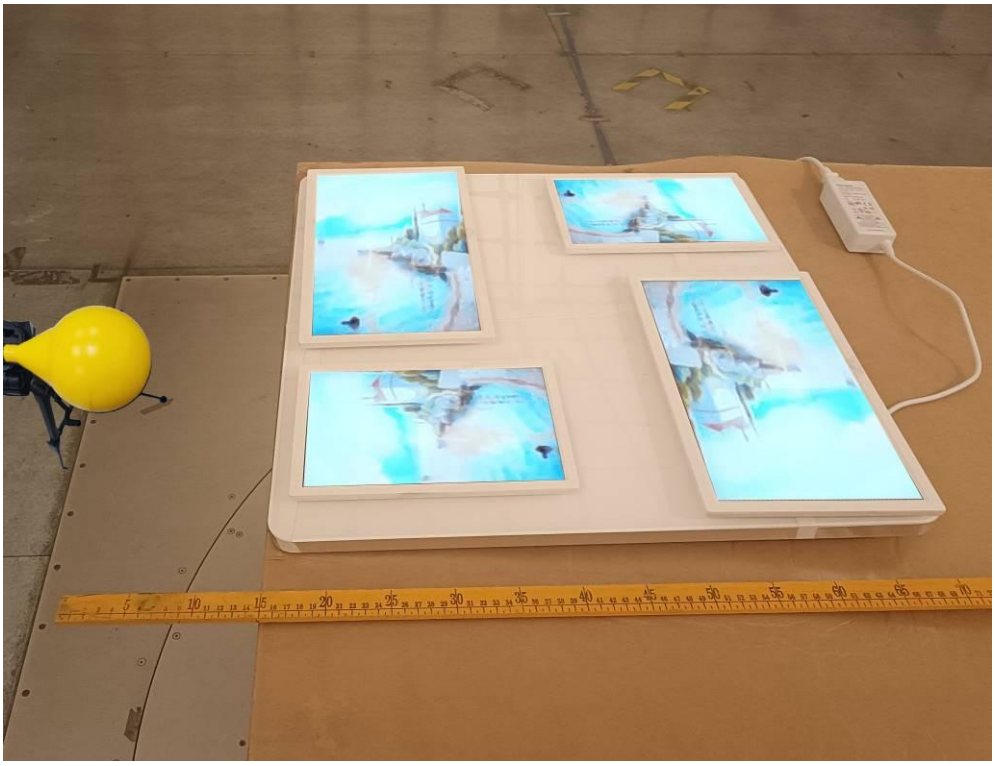
H-Field Strength at 20cm from the top surface of the EUT

Charge Port	Charging Battery Level	Frequency Range (MHz)	Measured H-Field Strength Values (A/m)	FCC H-Field Strength 50% Limits (A/m)	FCC H-Field Strength Limits (A/m)
			Test Position E		
H_{AVG}	1%	0.12700	0.31	0.815	1.63
	50%	0.12700	0.32	0.815	1.63
	99%	0.12700	0.31	0.815	1.63

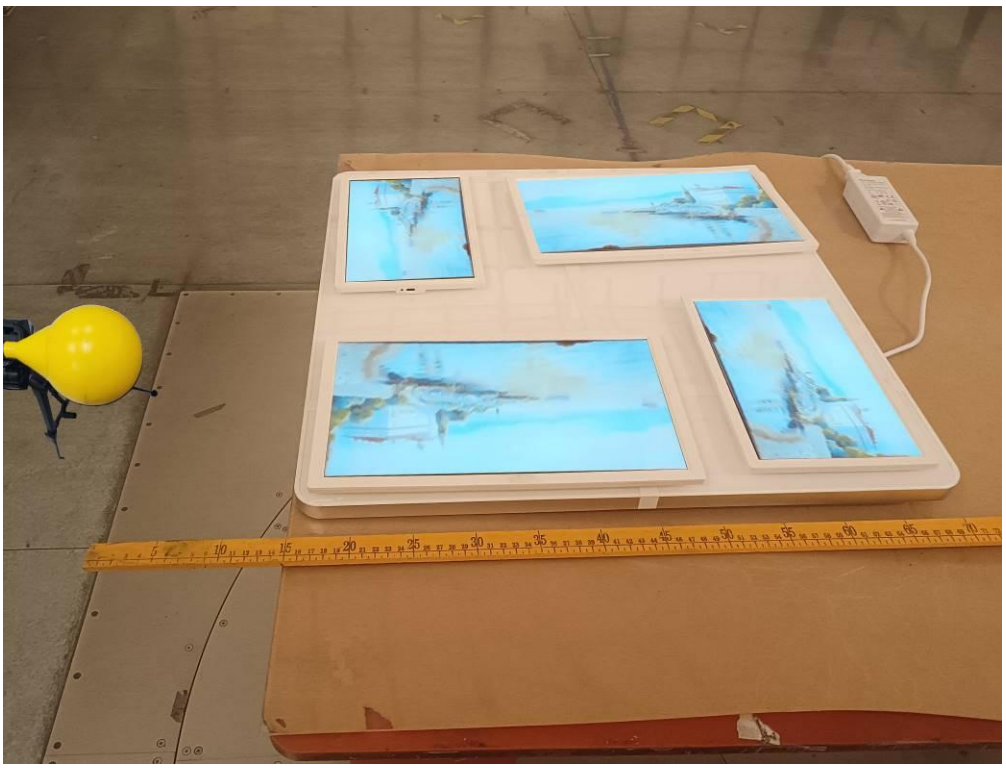
3. Test Setup Photos of the EUT



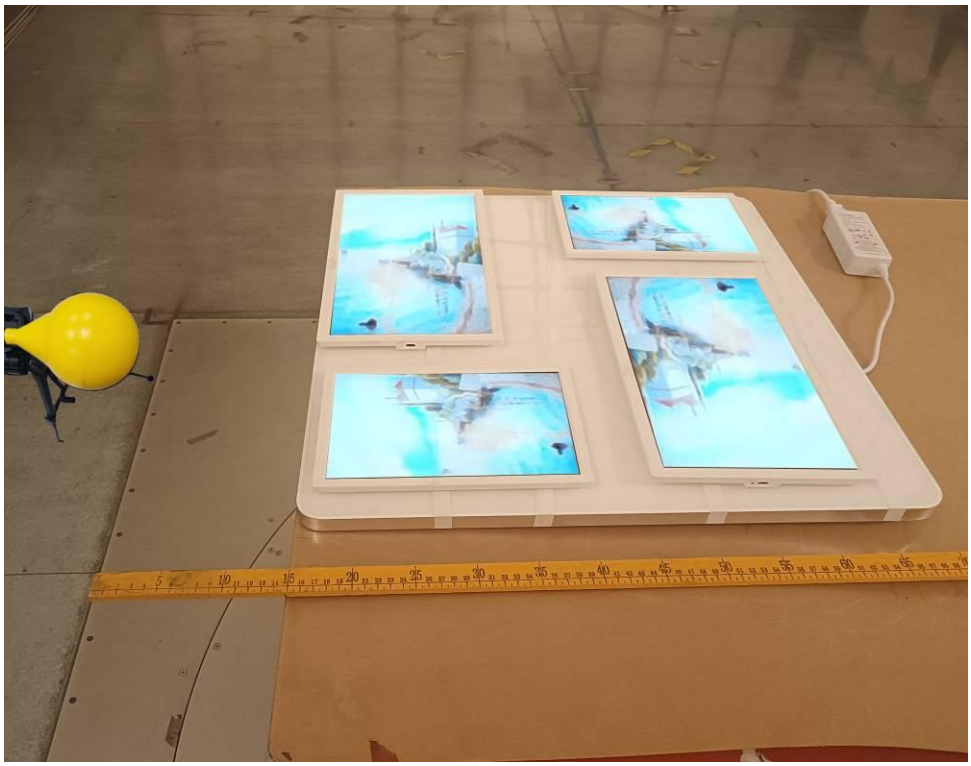
Test Position A - Exposure photo from top surface (TM1) - 20 cm



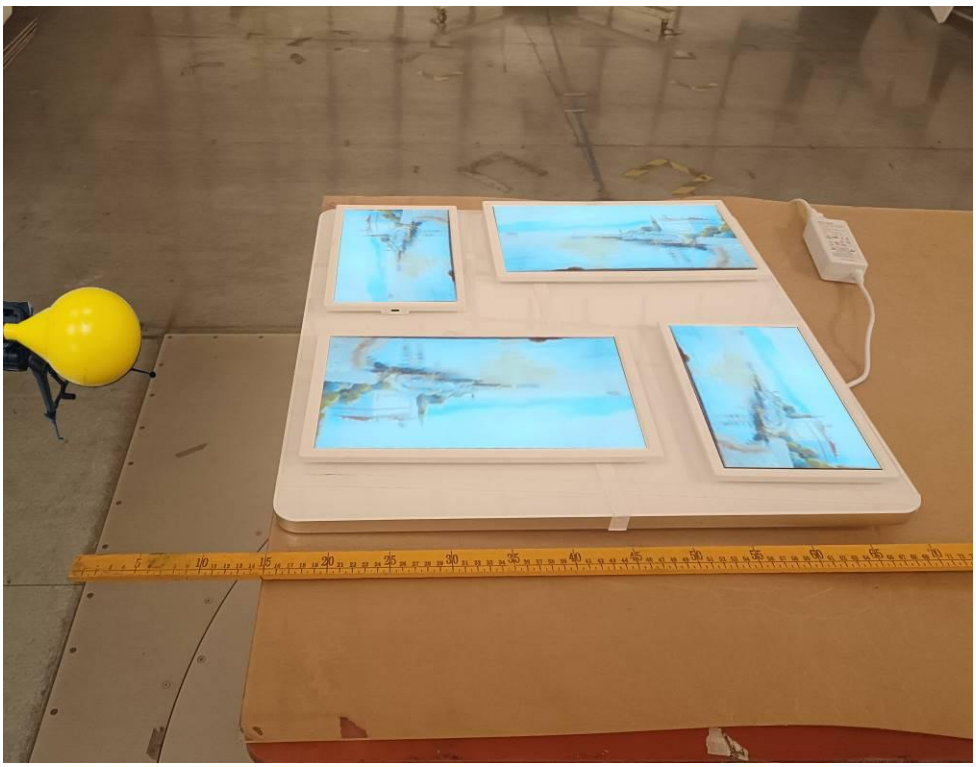
Test Position B - Exposure photo from side edge surface-Rear(TM1) - 15 cm



Test Position C - Exposure photo from side edge surface-Left(TM1) - 15 cm



Test Position D - Exposure photo from side edge surface-Front(TM1) - 15 cm



Test Position E - Exposure photo from side edge surface-Right(TM1) - 15 cm

4. 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.

.....End of Report.....