



Draft ETSI EN 301 489-1 V2.2.0 (2017-03) Draft ETSI EN 301 489-3 V2.1.1 (2017-03) EMC TEST REPORT

Client Information:

Applicant:

Applicant add.:

Brand Name:

Product Information:

Product Name: Wireless 10W fast charging pad

Model No.: P308.701

Derivative model No.: N/A

Test Date: July 03 to July 11, 2019

Issue Date: July 11, 2019

Test Result: PASS

Shenzhen iTC Product Testing Co., Ltd.

Issued by: Add. : Room 502, Floor 5, Fuong buliding, No. 3, Dayang road,
Qiaotou community, Fuhai street, Baoan district, Shenzhen, China

This device has been tested and found to comply with the stated standard(s), which is (are) required by the council directive of 2014/53/EU and indicated in the test report and are applicable only to the tested sample identified in the report.

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Tested by

Max Zhuang



Max Zhuang

Reviewed by

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Approved by

John Liu

John Liu

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Test result presented in this test report is applicable to the tested sample only

Report Revision History			
Report No.	Report Version	Description	Issue Date
ET-19050500	NONE	Original	July 11, 2019

Customer information	
Applicant Name	
Applicant Address	
Manufacturer Name	
Manufacturer Address	

Test site information	
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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 %.		
A. Conducted Measurement :		
Method	Measurement Frequency Range	$U \cdot$ (dB)
ANSI	150 KHz ~ 30Mz	3.2
B. Radiated Measurement :		
Method	Measurement Frequency Range	$U \cdot$ (dB)
ANSI	30MHz ~ 1000MHz	4.7
	1GHz ~6000GHz	5.0



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1. TEST SUMMARY

Test Procedures According To The Technical Standards:

Draft ETSI EN 301 489-1 V2.2.0 (2017-03)

Draft ETSI EN 301 489-3 V2.1.1 (2017-03)

EMC Emission				
Standard	Test Item	Product Class	Pass / Fail	Remark
EN 55032:2015	Conducted Emission	Class B	N/A	
	Radiated Emission	Class B	PASS	
EN61000-3-2:2014	Harmonic Current Emission	Class A or D	N/A	NOTE (2)
EN 61000-3-3:2013	Voltage Fluctuations & Flicker	Meets the requirements	N/A	
EMC Immunity				
Section EN 55035:2017	Test Item	Product Class	Pass / Fail	Remark
EN 61000-4-2:2009	Electrostatic Discharge	Criteria TT&TR	PASS	
EN 61000-4-3:2006 +A1:2008+A2:2010	RF electromagnetic field	Criteria CT&CR	PASS	
EN 61000-4-4:2012	Fast transients	Criteria TT&TR	N/A	
EN 61000-4-5:2014	Surges	Criteria TT&TR	N/A	
EN 61000-4-6:2014	Injected Current	Criteria CT&CR	N/A	
EN 61000-4-11:2004	Volt. Interruptions Volt. Dips	Criteria TT&TR	N/A	

NOTE:

(1) "N/A" denotes test is not applicable in this Test Report.

(2) The power consumption of EUT is less than 75W and no Limits apply.



2. GENERAL INFORMATION

2.1 Description of Device (EUT)

Description of EUT	: Wireless 10W fast charging pad
Main Model	: P308.701
Serial Model	: N/A
Model Difference	: N/A
Trademark	: ETECH
Operation frequency	: 59-61Hz
Type of Modulation	: ASK
Antenna Type	: Loop antenna
Maximum Antenna Gain	: 0dBi
Power supply	Input: DC 5V 2A;
	Output: DC 5V 1A;
	Quick charge Input: DC 9V 1.67A; Quick charge Output: DC 9V 1.1A;
Normal Test Voltage	: DC 5V from DC Power, AC 230V/50Hz for DC Power
Charge area	: 10mm*10mm
Adapter	: N/A
Battery	: N/A
Intend use environment	: Residential, commercial and light industrial environment

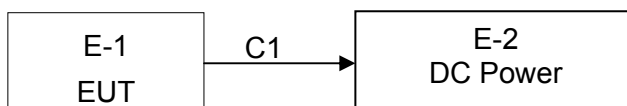
For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

2.1 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

For all Test Mode	Description
Mode 1	charging adjustment Mode

2.2 DESCRIPTION OF TEST SETUP



2.3 DESCRIPTION TEST PERIPHERAL AND EUT PERIPHERAL

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	Wireless 10W fast charging pad	ETECH	P308.701	N/A	EUT
E-2	DC Power	N/A	DC Power 1	N/A	Supply by Lab

Item	Shielded Type	Ferrite Core	Length	Note
C1	N/A	N/A	0.8M	USB Line

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.

2.4 MEASUREMENT INSTRUMENTS LIST

CONDUCTED EMISSION

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Cal.	Next Cal.
1	LISN	R&S	ENV216	101313	Jul. 07, 2017	Jul. 06, 2018
2	LISN	EMCO	3816/2	00042990	Jul. 07, 2017	Jul. 06, 2018
3	50Ω Switch	ANRITSU CORP	MP59B	6200983704	Jul. 07, 2017	Jul. 06, 2018
4	Test Cable	N/A	C01	N/A	Jul. 07, 2017	Jul. 06, 2018
5	Test Cable	N/A	C02	N/A	Jul. 07, 2017	Jul. 06, 2018
6	Test Cable	N/A	C03	N/A	Jul. 07, 2017	Jul. 06, 2018
7	EMI Test Receiver	R&S	ESCI	101160	Jul. 07, 2017	Jul. 06, 2018

RADIATED TEST SITE

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Cal.	Next Cal.
1	Bilog Antenna	TESEQ	CBL6111D	31216	Jul. 07, 2017	Jul. 06, 2018
2	Test Cable	N/A	R-01	N/A	Jul. 07, 2017	Jul. 06, 2018
3	Test Cable	N/A	R-02	N/A	Jul. 07, 2017	Jul. 06, 2018
4	EMI Test Receiver	R&S	ESCI-7	101318	Jul. 07, 2017	Jul. 06, 2018
5	Antenna Mast	EM	SC100_1	N/A	N/A	N/A
6	Turn Table	EM	SC100	060531	N/A	N/A
7	50Ω Switch	Anritsu Corp	MP59B	6200983705	Jul. 07, 2017	Jul. 06, 2018
8	Spectrum Analyzer	Aglient	E4407B	MY45108040	Jul. 07, 2017	Jul. 06, 2018
9	Horn Antenna	EM	EM-AH-10180	2011071402	Jul. 07, 2017	Jul. 06, 2018
10	Amplifier	EM	EM-30180	060538	Jul. 07, 2017	Jul. 06, 2018

HARMONICS AND FILCK

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Cal.	Next Cal.
1	Harmonic & Flicker	EM TEST	DPA500	0303-04	Jul. 07, 2017	Jul. 06, 2018
2	AC Power Source	EM TEST	ACS500	0203-01	Jul. 07, 2017	Jul. 06, 2018

ESD

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Cal.	Next Cal.
1	ESD TEST GENERATOR	EVERFINE	EMS61000-2A-V200	11040001T	Jul. 07, 2017	Jul. 06, 2018

RS

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Cal.	Next Cal.
1	Signal Generator	R&S	SMT 06	832080/007	Jul. 07, 2017	Jul. 06, 2018
2	Log-Bicon Antenna	Schwarzbeck	VULB9161	4022	Jul. 07, 2017	Jul. 06, 2018
3	Power Amplifier	AR	150W1000M1	320946	Jul. 07, 2017	Jul. 06, 2018
4	Microwave Horn Antenna	AR	AT4002A	321467	Jul. 07, 2017	Jul. 06, 2018
5	Power Amplifier	AR	25S1G4A	308598	Jul. 07, 2017	Jul. 06, 2018

SURGE, EFT/BURST, VOLTAGE INTERRUPTION/DIPS

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Cal.	Next Cal.
1	Surge Generator	EMC-PARTNER	TRA2000	646	Jul. 07, 2017	Jul. 06, 2018
2	DIPS Generator	EMC-PARTNER	TRA2000	646	Jul. 07, 2017	Jul. 06, 2018
	EFT/B Generator	EMC-PARTNER	TRA2000	646	Jul. 07, 2017	Jul. 06, 2018

INJECTION CURRENT

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Cal.	Next Cal.
1	Signal Generator	IFR	2023A	202301/368	Jul. 07, 2017	Jul. 06, 2018
2	Power Amplifier	AR	75A250AM1	0320709	Jul. 07, 2017	Jul. 06, 2018
3	CDN	FCC	FCC-801-M2	06043	Jul. 07, 2017	Jul. 06, 2018
4	EM Clamp	FCC	F-203I-23MM	504	Jul. 07, 2017	Jul. 06, 2018

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *
0.50 -5.0	73.00	60.00	56.00	46.00
5.0 -30.0	73.00	60.00	60.00	50.00

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

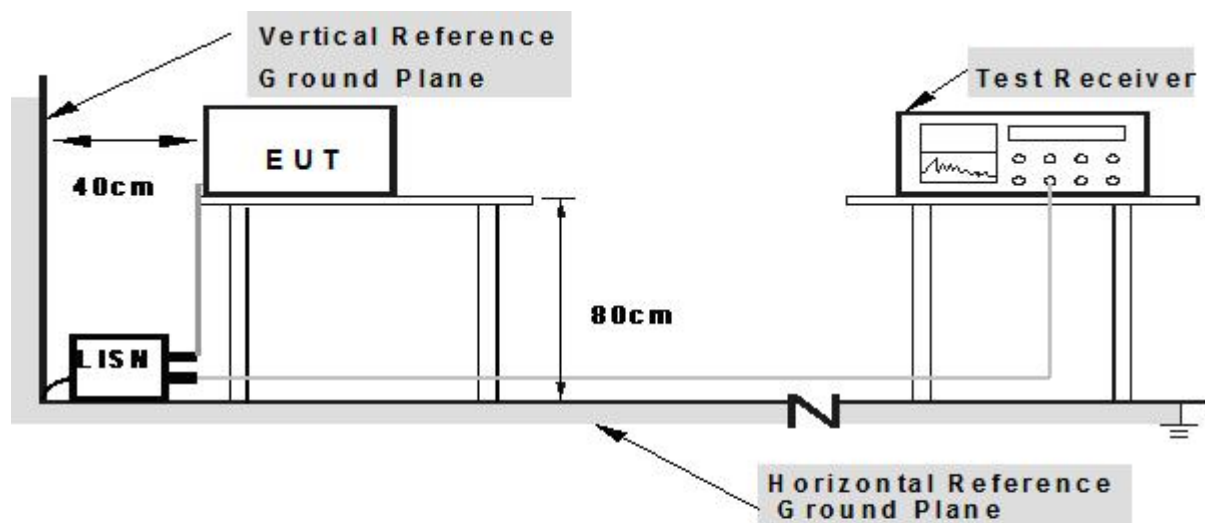
The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

3.1.2 TEST PROCEDURE

- The EUT was placed 0.4 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- LISN at least 80 cm from nearest part of EUT chassis.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.3 TEST SETUP



Note: 1.Support units were connected to second LISN.

2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

3.1.4 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.2 Unless otherwise a special operating condition is specified in the follows during the testing.

3.1.5 TEST RESULTS

N/A, Remark: Because the EUT employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines. Measurements to demonstrate compliance with the conducted limits are not required for devices.

3.2 RADIATED EMISSION MEASUREMENT

3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT (Below 1000MHz)

FREQUENCY (MHz)	Class A (at 10m)	Class B (at 10m)
	dBuV/m	dBuV/m
30 – 230	40	30
230 – 1000	47	37

3.2.2 LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Class A (at 10m) dBuV/m		Class B (at 10m) dBuV/m	
	Peak	Avg	Peak	Avg
1000-3000	76	56	70	50
3000-6000	80	60	74	54

Notes:

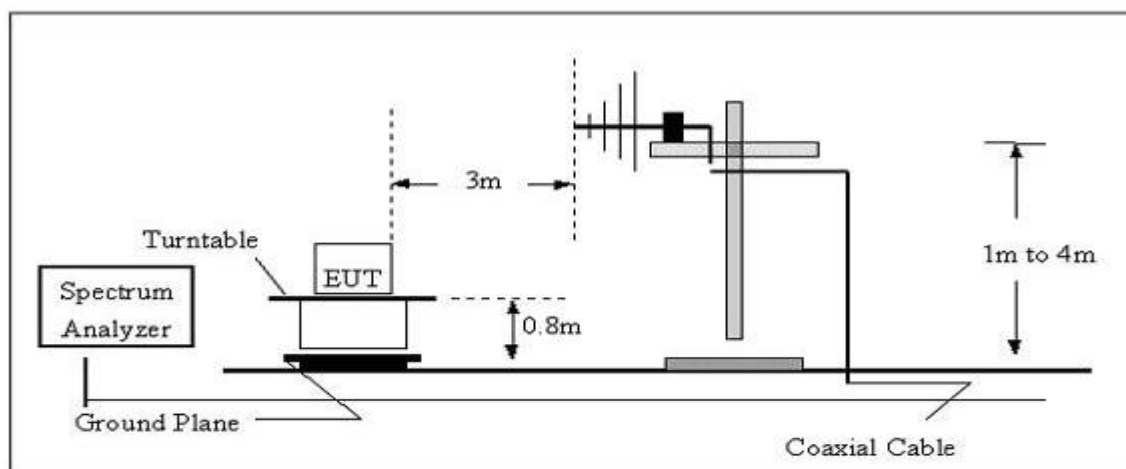
- (1) The limit for radiated test was performed according to as following:
CISPR 22/ FCC PART 15B /ICES-003.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

3.2.3 TEST PROCEDURE

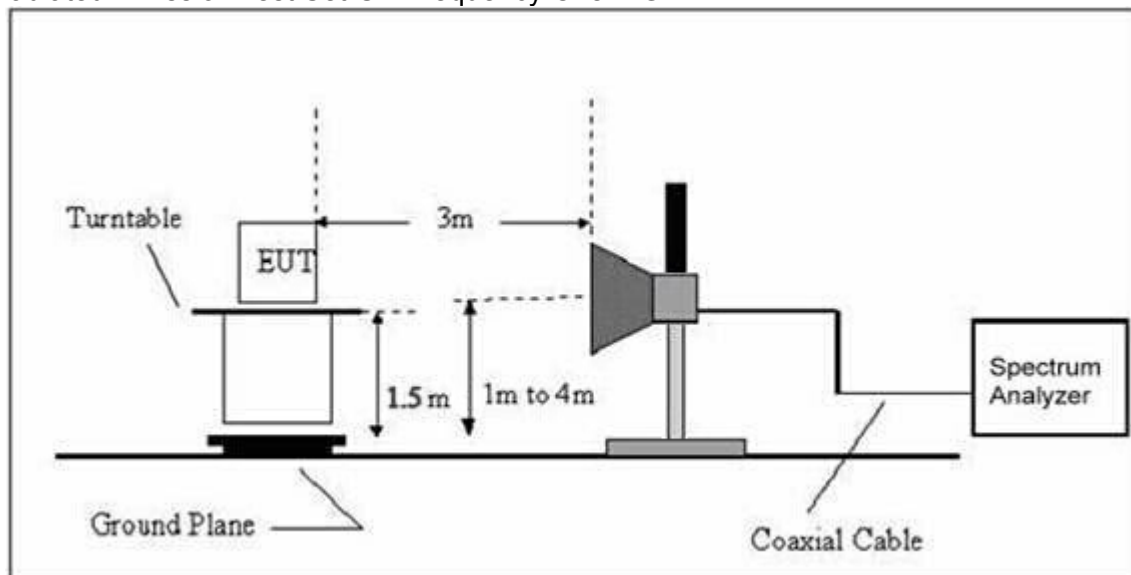
- a. The measuring distance of at 10 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.2.4 TEST SETUP

(A) Radiated Emission Test Set-UP Frequency Below 1GHz



(B) Radiated Emission Test Set-UP Frequency Over 1GHz



3.2.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.2 Unless otherwise a special operating condition is specified in the follows during the testing.

3.2.6 TEST RESULTS (30-1000MHz)

EUT :	Wireless 10W fast charging pad	Model Name :	P308.701
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Polarization :	Horizontal
Test Voltage :	DC 5V from DC Power, AC 230V/50Hz for DC Power	Test Mode :	Mode 1



Remark:

1. All readings are Quasi-Peak and Average values.
2. Margin = Result (Result =Reading + Factor)-Limit

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		30.5306	26.23	-8.08	18.15	40.00	-21.85	QP
2		35.8746	25.86	-8.58	17.28	40.00	-22.72	QP
3		158.1123	32.66	-12.87	19.79	40.00	-20.21	QP
4		171.3926	36.64	-13.57	23.07	40.00	-16.93	QP
5		275.1570	35.37	-13.29	22.08	47.00	-24.92	QP
6	*	948.7610	31.65	-0.48	31.17	47.00	-15.83	QP

EUT :	Wireless 10W fast charging pad	Model Name :	P308.701
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Polarization :	Vertical
Test Voltage :	DC 5V from DC Power, AC 230V/50Hz for DC Power	Test Mode :	Mode 1



Remark:

1. All readings are Quasi-Peak and Average values.
2. Margin = Result (Result = Reading + Factor) - Limit

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		30.5306	27.95	-8.08	19.87	40.00	-20.13	QP
2		50.7637	29.67	-10.42	19.25	40.00	-20.75	QP
3		145.8611	25.43	-13.07	12.36	40.00	-27.64	QP
4		279.0436	27.74	-13.13	14.61	47.00	-32.39	QP
5		656.5300	32.27	-4.99	27.28	47.00	-19.72	QP
6	*	955.4381	30.92	-0.45	30.47	47.00	-16.53	QP

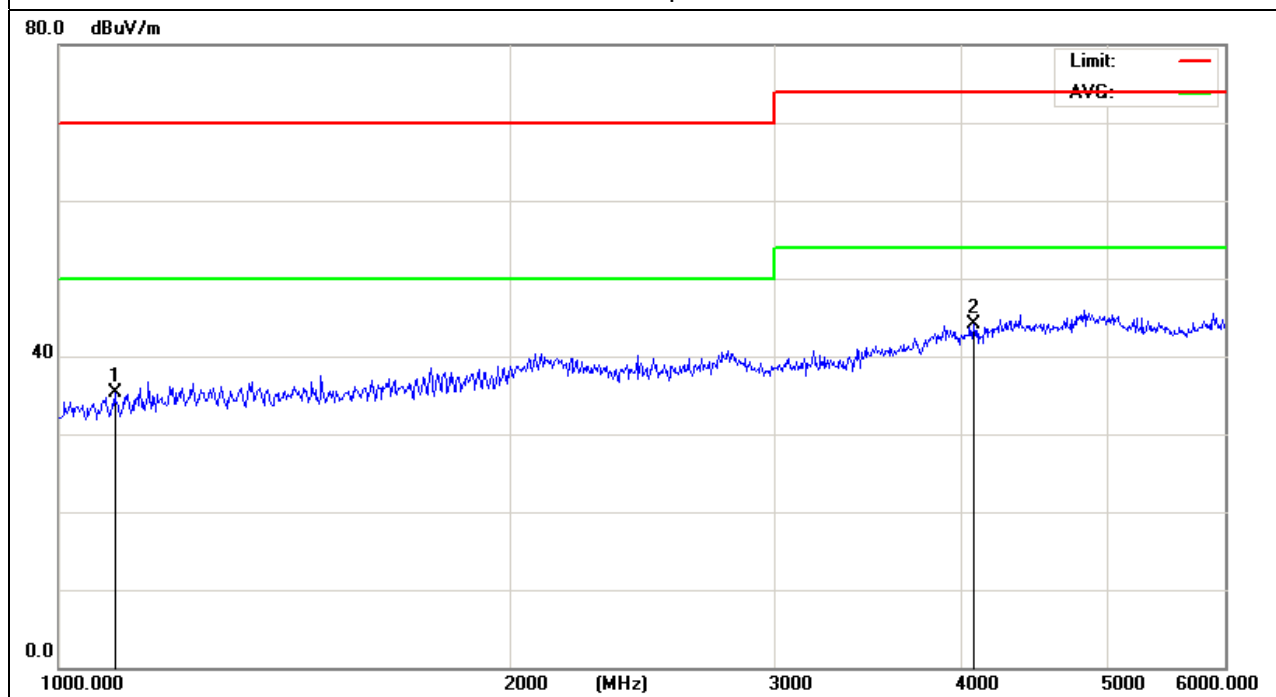
3.2.7 TEST RESULTS(1000-6000)

Temperature:	24 °C	Relative Humidity:	54 %
Pressure:	1010hPa	Test Mode:	Mode 1
Test Power:	DC 5V from DC Power, AC 230V/50Hz for DC Power		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
1162.350	52.87	-19.58	33.29	70.00	-36.71	peak
4132.652	49.52	-6.07	43.45	74.00	-30.55	peak

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



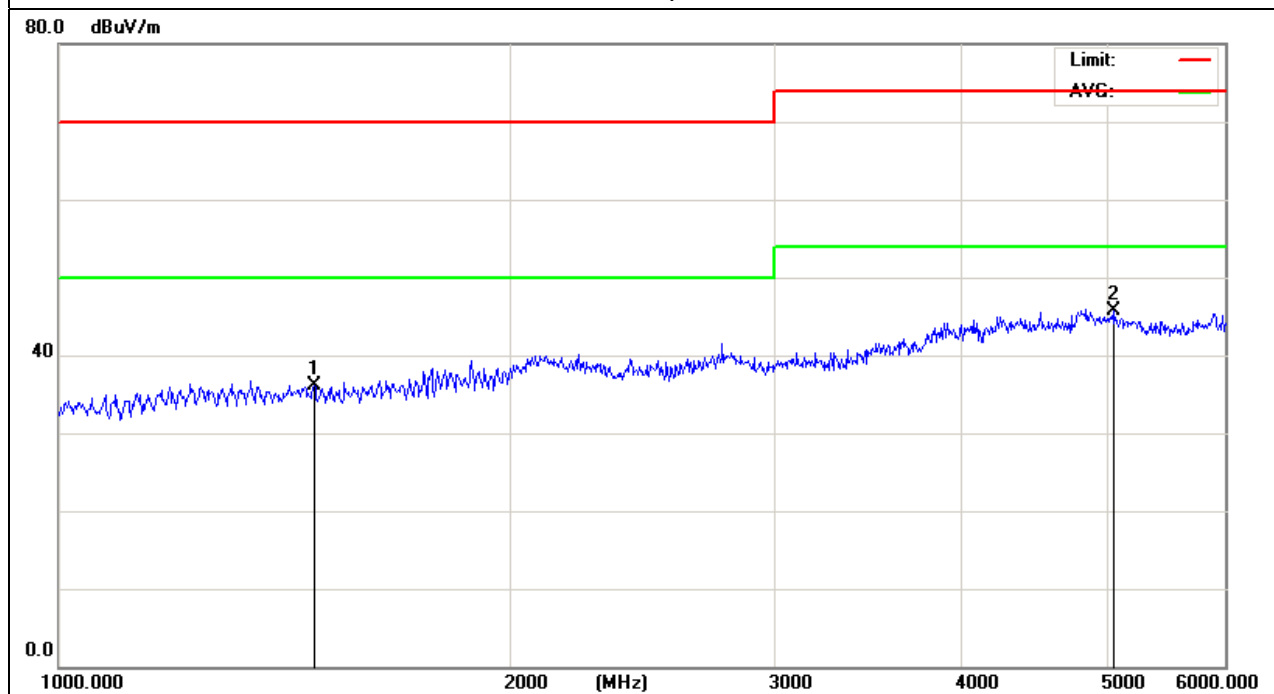


Temperature:	24 °C	Relative Humidity:	54 %
Pressure:	1010hPa	Test Mode:	Mode 1
Test Power:	DC 5V from DC Power, AC 230V/50Hz for DC Power		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
16130.475	54.35	-17.07	36.28	70.00	-33.72	
5052.471	50.12	-3.96	46.14	74.00	-27.86	peak

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



3.3 HARMONICS CURRENT

3.3.1 LIMITS OF HARMONICS CURRENT

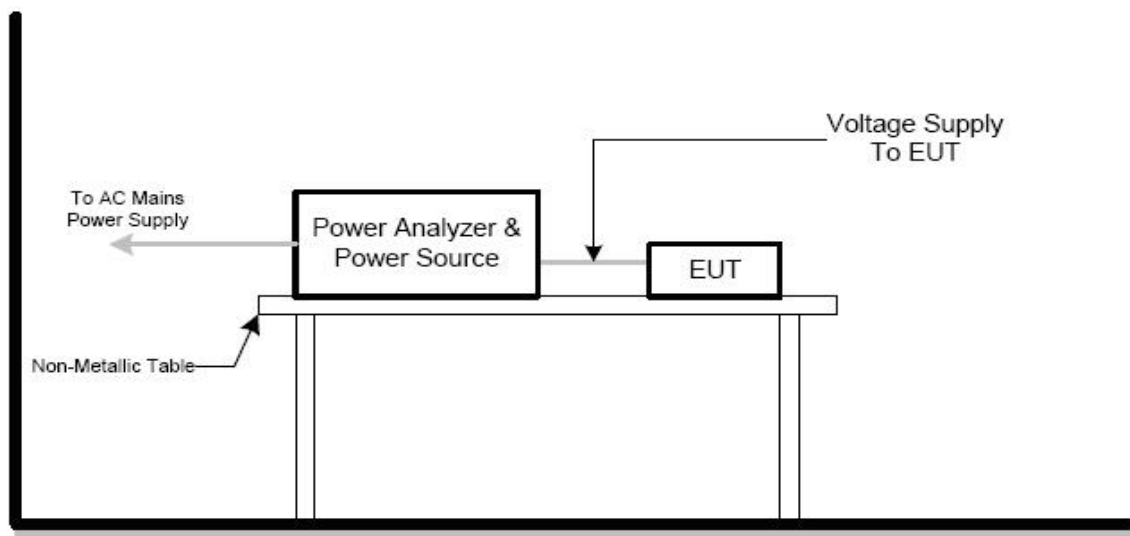
IEC 555-2					
Table - I			Table - II		
Equipment Category	Harmonic Order n	Max. Permissible Harmonic Current (in Amperes)	Equipment Category	Harmonic Order n	Max. Permissible Harmonic Current (in Amperes)
Non Portable Tools or TV Receivers	Odd Harmonics		TV Receivers	Odd Harmonics	
	3	2.30		3	0.80
	5	1.14		5	0.60
	7	0.77		7	0.45
	9	0.40		9	0.30
	11	0.33		11	0.17
	13	0.21		13	0.12
	15≤n≤39	0.15 · 15/n		15≤n≤39	0.10 · 15/n
	Even Harmonics			Even Harmonics	
	2	1.08		2	0.30
	4	0.43		4	0.15
	8	0.30			
8≤n≤40	0.23 · 8/n	DC	0.05		

EN 61000-3-2/IEC 61000-3-2					
Equipment Category	Max. Permissible Harmonic Current (in Amperes)	Equipment Category	Harmonic Order n	Max. Permissible Harmonic Current (in A) (mA/w)	
Class A	Same as Limits Specified in 4-2.1, Table - I, but only odd harmonics required	Class D	3	2.30	3.4
			5	1.14	1.9
			7	0.77	1.0
			9	0.40	0.5
			11	0.33	0.35
			13≤n≤39	see Table I	3.85/n
			only odd harmonics required		

3.3.2 TEST PROCEDURE

- The EUT was placed on the top of a wooden table 0.8 meters above the ground and operated to produce the maximum harmonic components under normal operating conditions.
- The classification of EUT is according to section 5 of EN 61000-3-2: 2000. The EUT is classified as follows:
 Class A: Balanced three-phase equipment, Household appliances excluding equipment as Class D, Tools excluding portable tools, Dimmers for incandescent lamps, audio equipment, equipment not specified in one of the three other classes.
 Class B: Portable tools. Portable tools.; Arc welding equipment which is not professional equipment.
 Class C: Lighting equipment.
 Class D: Equipment having a specified power less than or equal to 600 W of the following types: Personal computers and personal computer monitors and television receivers.
- The correspondent test program of test instrument to measure the current harmonics emanated from EUT is chosen. The measure time shall be not less than the time necessary for the EUT to be exercised.
- For the actual test configuration, please refer to the related item –EUT Test Photos.

3.3.3 TEST SETUP



3.3.4 TEST RESULTS

EUT :	Wireless 10W fast charging pad	Model Name :	P308.701
Temperature :	25 °C	Relative Humidity :	45%
Pressure :	1010 hPa	Test Power :	N/A
Test Mode	Mode 1		

Note: The active input power of the EUT is less than **75W**. No limits apply for equipment with an active input power up to and including 75W

3.4 VOLTAGE FLUCTUATION AND FLICKERS

3.4.1 LIMITS OF VOLTAGE FLUCTUATION AND FLICKERS

Tests	Limits		Descriptions
	IEC555-3	IEC/EN 61000-3-3	
Pst	≤ 1.0 , Tp= 10 min.	≤ 1.0 , Tp= 10 min.	Short Term Flicker Indicator
Plt	N/A	≤ 0.65 , Tp=2 hr.	Long Term Flicker Indicator
dc	$\leq 3\%$	$\leq 3.3\%$	Relative Steady-State V-Chang
dmax	$\leq 4\%$	$\leq 4\%$	Maximum Relative V-change
d (t)	N/A	$\leq 3.3\%$ for > 500 ms	Relative V-change characteristic

3.4.2 TEST PROCEDURE

a. Harmonic Current Test:

Test was performed according to the procedures specified in Clause 5.0 of IEC555-2 and/or Sub-clause 6.2 of IEC/EN 61000-3-2 depend on which standard adopted for compliance measurement.

b. Fluctuation and Flickers Test:

Tests was performed according to the Test Conditions/Assessment of Voltage Fluctuations specified in Clause 5.0/6.0 of IEC555-3 and/or Clause 6.0/4.0 of IEC/EN 61000-3-3 depend on which standard adopted for compliance measurement.

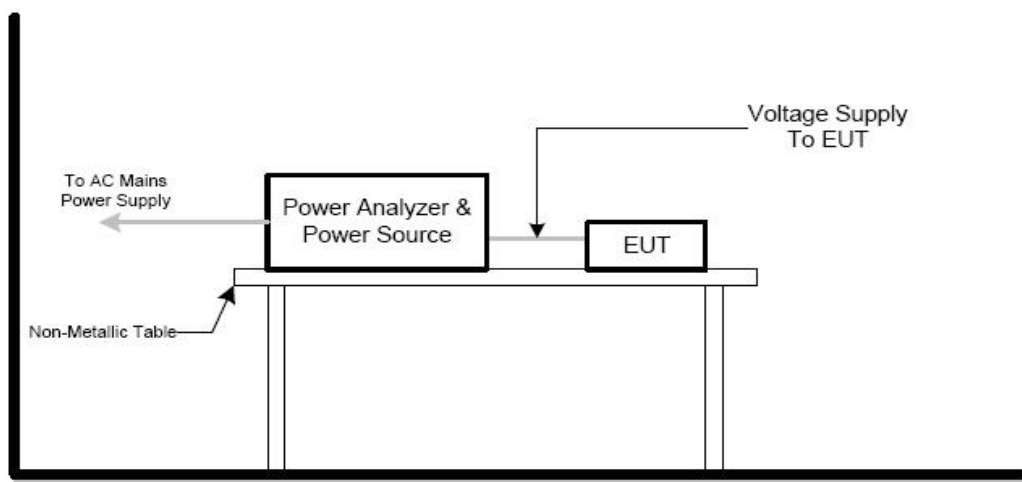
c. All types of harmonic current and/or voltage fluctuation in this report are assessed by direct measurement using flicker-meter.

d. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.4.3 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of **2.2** Unless otherwise a special operating condition is specified in the follows during the testing.

3.4.4 TEST SETUP





3.4.5 TEST RESULTS

EUT :	Wireless 10W fast charging pad	Model Name :	P308.701
Temperature :	25 °C	Relative Humidity :	45%
Pressure :	1010 hPa	Test Power :	N/A
Test Mode	N/A		

4. EMC IMMUNITY TEST

4.1 GENERAL PERFORMANCE CRITERIA

4.1.1 PERFORMANCE CRITERIA

According To **EN 301489 -3** standard, The General Performance Criteria As Following:

Criteria	During test	After test
A	Shall operate as intended. May show degradation of performance (see note 1). Shall be no loss of function. Shall be no unintentional transmissions.	Shall operate as intended. Shall be no degradation of performance (see note 2). Shall be no loss of function. Shall be no loss of stored data or user programmable functions.
B	May show loss of function (one or more). May show degradation of performance (see note 1). No unintentional transmissions.	Functions shall be self-recoverable. Shall operate as intended after recovering. Shall be no degradation of performance (see note 2). Shall be no loss of stored data or user programmable functions.
C	May be loss of function (one or more).	Functions shall be recoverable by the operator. Shall operate as intended after recovering. Shall be no degradation of performance (see note 2).

NOTE 1: Degradation of performance during the test is understood as a degradation to a level not below a minimum performance level specified by the manufacturer for the use of the apparatus as intended. In some cases the specified minimum performance level may be replaced by a permissible degradation of performance.

If the minimum performance level or the permissible performance degradation is not specified by the manufacturer then either of these may be derived from the product description and documentation (including leaflets and advertising) and what the user may reasonably expect from the apparatus if used as intended.

NOTE 2: No degradation of performance after the test is understood as no degradation below a minimum Performance level specified by the manufacturer for the use of the apparatus as intended. In some cases the specified minimum performance level may be replaced by a permissible degradation of performance. After the test no change of actual operating data or user retrievable data is allowed. If the minimum performance level or the permissible performance degradation is not specified by the manufacturer then either of these may be derived from the product description and documentation (including leaflets and what the user may reasonably expect from the apparatus if used as intended.)

Performance criteria for CT and CR:

The performance criteria A shall apply.

Tests shall be repeated with the EUT in standby mode (if applicable) to ensure that unintentional transmission does not occur. Where the EUT is a transceiver, under no circumstances, shall the transmitter operate unintentionally during the test. In systems using acknowledgement signals, it is recognized that an ACK or NACK transmission may occur, and steps should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted.

Performance criteria for TT and TR:

The performance criteria B shall apply, except for voltage dips of 100 ms and voltage interruptions of 5 000 ms duration, for which performance criteria C shall apply. Tests shall be repeated with the EUT in standby mode (if applicable) to ensure that unintentional transmission does not occur. Where the EUT is a transceiver, under no circumstances, shall the transmitter operate unintentionally during the test. In systems using acknowledgement signals, it is recognized that an ACK or NACK transmission may occur, and steps should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted.

4.2 ESD TESTING

4.2.1 TEST SPECIFICATION

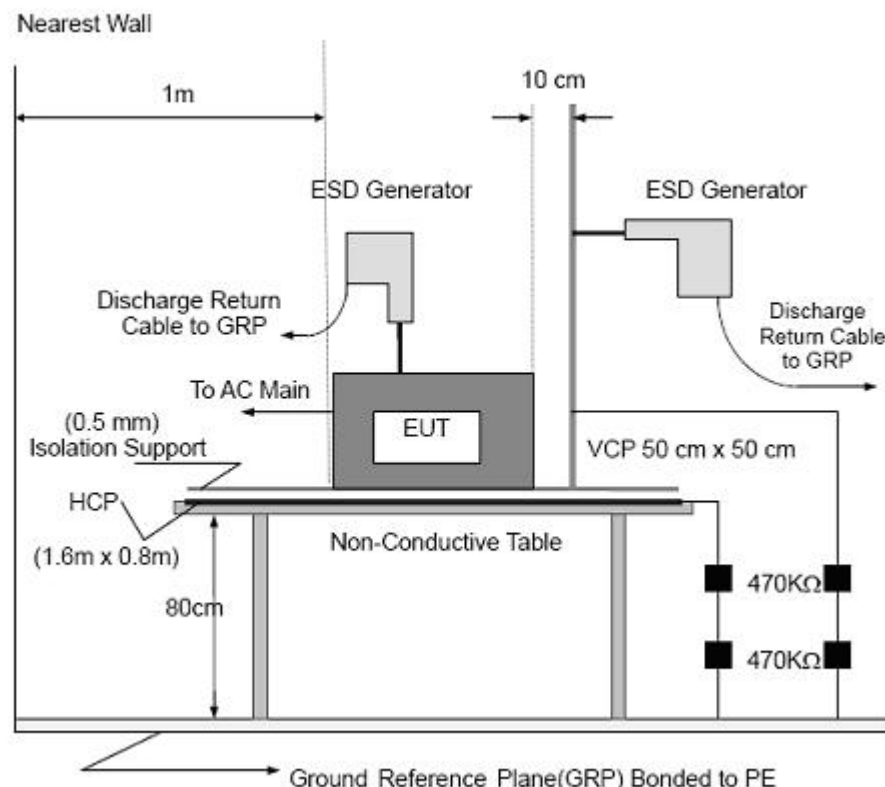
Basic Standard:	IEC/EN 61000-4-2
Discharge Impedance:	330 ohm / 150 pF
Required Performance	B
Discharge Voltage:	Air Discharge : 2kV/4kV/8kV (Direct) Contact Discharge : 2kV/4kV (Direct/Indirect)
Polarity:	Positive & Negative
Number of Discharge:	Air Discharge: min. 20 times at each test point Contact Discharge: min. 200 times in total
Discharge Mode:	AC Discharge
Discharge Period:	1 second minimum

4.2.2 TEST PROCEDURE

The test generator necessary to perform direct and indirect application of discharges to the EUT in the following manner:

- Contact discharge was applied to conductive surfaces and coupling planes of the EUT.
During the test, it was performed with single discharges. For the single discharge time between successive single discharges was at least 1 second. The EUT shall be exposed to at least 200 discharges, 100 each at negative and positive polarity, at a minimum of four test points. One of the test points shall be subjected to at least 50 indirect discharges to the center of the front edge of the horizontal coupling plane. The remaining three test points shall each receive at least 50 direct contact discharges.
If no direct contact test points are available, then at least 200 indirect discharges shall be applied in the indirect mode. Test shall be performed at a maximum repetition rate of one discharge per second.
Vertical Coupling Plane (VCP):
The coupling plane, of dimensions 0.5m x 0.5m, is placed parallel to, and positioned at a distance 0.1m from, the EUT, with the Discharge Electrode touching the coupling plane.
The four faces of the EUT will be performed with electrostatic discharge.
Horizontal Coupling Plane (HCP):
The coupling plane is placed under to the EUT. The generator shall be positioned vertically at a distance of 0.1m from the EUT, with the Discharge Electrode touching the coupling plane.
The four faces of the EUT will be performed with electrostatic discharge.
- Air discharges at insulation surfaces of the EUT.
It was at least ten single discharges with positive and negative at the same selected point.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.2.3 TEST SETUP



Note:

TABLE-TOP EQUIPMENT

The configuration consisted of a wooden table 0.8 meters high standing on the Ground Reference Plane. The GRP consisted of a sheet of aluminum at least 0.25mm thick, and 2.5 meters square connected to the protective grounding system. A Horizontal Coupling Plane (1.6m x 0.8m) was placed on the table and attached to the GRP by means of a cable with 940k total impedance. The equipment under test, was installed in a representative system as described in section 7 of IEC /EN 61000-4-2, and its cables were placed on the HCP and isolated by an insulating support of 0.5mm thickness. A distance of 1-meter minimum was provided between the EUT and the walls of the laboratory and any other metallic structure.

FLOOR-STANDING EQUIPMENT

The equipment under test was installed in a representative system as described in section 7 of IEC/EN 61000-4-2, and its cables were isolated from the Ground Reference Plane by an insulating support of 0.1-meter thickness. The GRP consisted of a sheet of aluminum that is at least 0.25mm thick, and 2.5meters square connected to the protective grounding system and extended at least 0.5 meters from the EUT on all sides.

4.2.4 TEST RESULTS

EUT :	Wireless 10W fast charging pad	Model Name :	P308.701
Temperature :	25 °C	Relative Humidity :	45%
Pressure :	1010 hPa	Test Power :	DC 5V from DC Power, AC 230V/50Hz for DC Power
Test Mode	Mode 1		

Mode	Air Discharge								Contact Discharge								Obser vation	Criterion	Result
Test level (kV)	2		4		8		10		2		4		6		8				
Test Location	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-			
HCP									A	A	A	A					TT,TR	B	PASS
VCP									A	A	A	A							PASS
port									A	A	A	A							PASS
shell	A	A	A	A	A	A													PASS

Note:

- 1) P/N denotes the Positive/Negative polarity of the output voltage.
- 2) Test condition:
Direct / Indirect (HCP/VCP) discharges: Minimum 50 times (Positive/Negative) at each point. Air discharges: Minimum 10 times (Positive/Negative) at each point.
- 3) N/A - denotes test is not applicable in this test report
- 4) There was not any unintentional transmission in standby mode

4.3 RS TESTING

4.3.1 TEST SPECIFICATION

Basic Standard:	IEC/EN 61000-4-3
Required Performance	A
Frequency Range:	80 MHz - 6000 MHz
Field Strength:	3 V/m
Modulation:	1kHz Sine Wave, 80%, AM Modulation
Frequency Step:	1 % of fundamental
Polarity of Antenna:	Horizontal and Vertical
Test Distance:	3 m
Antenna Height:	1.5 m
Dwell Time:	at least 3 seconds

4.3.2 TEST PROCEDURE

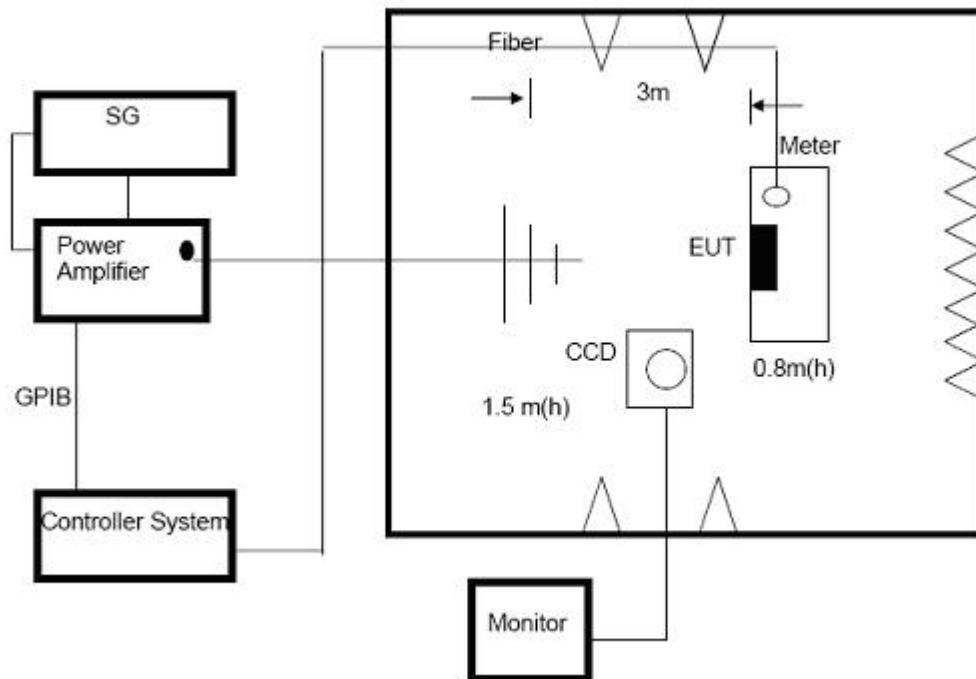
The EUT and support equipment, which are placed on a table that is 0.8 meter above ground and the testing was performed in a fully-anechoic chamber.

The testing distance from antenna to the EUT was 3 meters.

The other condition as following manner:

- The field strength level was 3V/m.
- The frequency range is swept from 80 MHz to 6000 MHz, & 1400MHz - 2700MHz with the signal 80%amplitude modulated with a 1kHz sine wave. The rate of sweep did not exceed 1.5x 10⁻³ decade/s. Where the frequency range is swept incrementally, the step size was 1% of fundamental.
- Sweep Frequency 900 MHz, with the Duty Cycle:1/8 and Modulation: Pulse 217 Hz(if applicable)
- The dwell time at each frequency shall be not less than the time necessary for the EUT to be able to respond.
- The test was performed with the EUT exposed to both vertically and horizontally polarized fields on each of the four sides.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.3.3 TEST SETUP



Note:

TABLE-TOP EQUIPMENT

The EUT installed in a representative system as described in section 7 of IEC/EN 61000-4-3 was placed on a non-conductive table 0.8 meters in height. The system under test was connected to the power and signal wire according to relevant installation instructions.

FLOOR-STANDING EQUIPMENT

The EUT installed in a representative system as described in section 7 of IEC/EN 61000-4-3 was placed on a non-conductive wood support 0.1 meters in height. The system under test was connected to the power and signal wire according to relevant installation instructions.

4.3.4 TEST RESULTS

EUT :	Wireless 10W fast charging pad	Model Name :	P308.701
Temperature :	25 °C	Relative Humidity :	45%
Pressure :	1010 hPa	Test Power :	DC 5V from DC Power, AC 230V/50Hz for DC Power
Test Mode	Mode 1		

Frequency Range (MHz)	RF Field Position	R.F. Field Strength	Azimuth	Observation	Perform. Criteria	Results	Judgment
80~6000	H / V	3 V/m (rms) AM Modulated 1000Hz, 80%	Front	CT,CR	A	A	PASS
			Rear				
			Left				
			Right				

Note:

- 1) P/N denotes the Positive/Negative polarity of the output voltage.
- 2) N/A - denotes test is not applicable in this test report.
- 3) There was no change operated with initial operating during the test.
- 4) There was not any unintentional transmission in standby mode

5. PHOTOS OF TEST SETUP

Radiated Emission



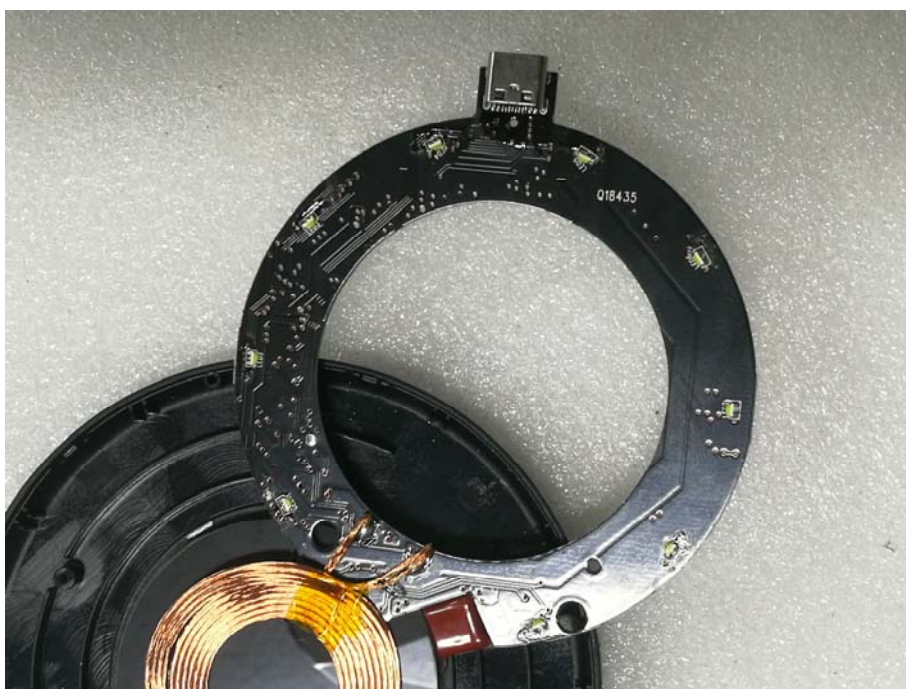
ESD



6. PHOTOS OF EUT







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