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检测
TESTING
CNAS L6478

TEST REPORT

Reference No.	:	WTF19F06039091E
Applicant	:	
Address	:	
Manufacturer	:	The same as above
Address	:	The same as above
Product Name	:	Wireless chargeable bluetooth speaker (includes wireless charger)
Model No.	:	SL298, SW007, SW045
Standards	:	EN 55032:2015 EN 55024:2010+A1:2015 EN 55011:2016+A1:2017 EN 61000-6-1:2007
Date of Receipt sample	:	2019-05-27
Date of Test	:	2019-05-30 to 2019-05-31
Date of Issue	:	2019-06-18
Test Report Form No.	:	WEI-55032A-03A
Test Result	:	**Pass**

Remarks:
The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

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Compiled by:

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1 Test Summary

EMISSION			
Test Item	**Test Standard**	**Class / Severity**	**Result**
Mains Terminal Disturbance Voltage, 150kHz to 30MHz	EN 55032:2015 EN 55011:2016+A1:2017	Table A.10 Table 4	N/A
Radiated Emission, 150kHz to 30MHz	EN 55011:2016+A1:2017	Table 12	Pass
Radiated Emission, 30MHz to 1000MHz	EN 55032:2015 EN 55011:2016+A1:2017	Table A.4 Table 12	Pass
Radiated Emission, 1GHz to 6GHz	EN 55032:2015	Table A.5	Pass

IMMUNITY (EN 55024:2010+A1:2015, EN 61000-6-1:2007)				
Test Item	**Test Method**	**Class / Severity**	**Performance Criteria**	**Result**
Electrostatic Discharge(ESD)	IEC 61000-4-2:2008	±4 Kv Contact ±8 Kv Air	B	Pass
Radio-frequency electromagnetic fields	IEC 61000-4-3:2010	3V/m, 80%, 1kHz, Amp. Mod.	A	Pass
Electrical Fast Transients (EFT)	IEC 61000-4-4:2012	AC ±1.0Kv DC ±0.5Kv	B	N/A
Surge	IEC 61000-4-5:2005	±1Kv D.M.† ±2Kv C.M.‡	B	N/A
Injected Currents, 0.15MHz to 80MHz	IEC 61000-4-6:2013	3Vr.m.s.(emf), 80%, 1kHz Amp. Mod.	A	N/A
Power-frequency magnetic Field	IEC 61000-4-8:2009	1A/m	A	N/A
Voltage Dips	IEC 61000-4-11:2004	0 % U_T * for 0.5per	B	N/A
		70 % U_T * for 25per	C	N/A
Voltage Interruptions	IEC 61000-4-11:2004	0 % U_T * for 250per	C	N/A

Remark:

Pass	Test item meets the requirement
Fail	Test item does not meet the requirement
N/A	Test case does not apply to the test object
A.M	Amplitude Modulation
†	Differential Mode
‡	Common Mode
*	U_T is the nominal supply voltage

2 Contents

3 General Information

3.1 General Description of E.U.T.

Product Name	:	Wireless chargeable bluetooth speaker (includes wireless charger)
Model No.	:	SL298, SW007, SW045
Remark	:	All models are identical except for model name. Therefore the full tests were performed on model SL298.

3.2 Details of E.U.T.

Technical Data	:	Wireless Charging Pad: DC 5V, 1000mA Speaker: DC 5V, 180mAh

3.3 Description of Support Units

The EUT has been tested as an independent unit. SL298 is the test smaple. All tests were performed in the condition of DC 5V input, powered by USB port of Notebook.

3.4 Standards Applicable for Testing

The tests were performed according to following standards:

EN 55032:2015	Electromagnetic compatibility of multimedia equipment — Emission Requirements
EN 55024:2010+A1:2015	Information technology equipment — Immunity characteristics — Limits and methods of measurement.
EN 55011:2016+A1:2017	Industrial, scientific and medical equipment - Radio-frequency disturbance characteristics - Limits and methods of measurement
EN 61000-6-1:2007	Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity for residential, commercial and light-industrial environments

3.5 Test Facility

The test facility has a test site registered with the following organizations:

- **ISED – Registration No.: 21895**

Waltek Services (Foshan) Co., Ltd. has been registered and fully described in a report filed with the Innovation, Science an Economic Development Canada(ISED). The acceptance letter from the ISED is maintained in our files. Registration ISED number:21895, March 12, 2019

- **FCC – Registration No.: 820106**

Waltek Services (Foshan) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 820106, August 16, 2018

- **NVLAP – Lab Code: 600191-0**

Waltek Services (Foshan) Co., Ltd. EMC Laboratory is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 600191-0.
This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

3.6 Subcontracted

Whether parts of tests for the product have been subcontracted to other labs:

☐ Yes ☒ No

If Yes, list the related test items and lab information:

Test items:---

Lab information: ---

3.7 Abnormalities from Standard Conditions

None.

3.8 Other

This report is based on report No. WTF19F05032819E for adding a new applicant and updating the model name. The new models and the original model are identical except for model name. Therefore the EUT is deemed to fulfill all the requirements and no further test has been performed.

4 Equipment Used during Test

Radiated Emission					
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Status**
1.	EMI Test Receiver	R&S	ESR7	101566	Valid
2.	Active Loop Antenna	SCHWARZBECK	FMZB1519B	00004	Valid
3.	Trilog Broadband Antenna	SCHWARZBECK	VULB 9162	9162-117	Valid
4.	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9120 D	01561	Valid
5.	Preamplifier	Lunar E M	LNA1G18-40	20160501002	Valid
ESD					
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Status**
1.	ESD Simulator	TESEQ	NSG437	521	Valid
Radio-frequency electromagnetic fields					
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Status**
1.	RF Power Amplifier	OPHIR	5225R	1051/1712	Valid
2.	RF Power Amplifier	OPHIR	5293RE	1051/171.	Valid
3.	Stacked double logarithmic periodic antenna	SCHWARZBECK	STLP9128E-SPECIAL	STLP9128E	Valid
4.	Stacked double logarithmic periodic antenna	SCHWARZBECK	STLP 9149	STLP 9149 #476	Valid
5.	RF signal generator	Agilent	N5181A	MY48080720	Valid
6.	Power meter	RS	NRP6A	101133	Valid
7.	Power meter	RS	NRP6A	101134	Valid
8.	Electric field probe	Narda S.T.S/PMM	EP 601	---	Valid

4.1 Special Accessories and Auxiliary Equipment

Item	Equipment	Technical Data	Manufacturer	Model No.	Serial No.
1.	Notebook	AC 230V/50Hz	Lenovo	ThinkPad Edge E430	00426-OEM-8992662-00400

4.2 Measurement Uncertainty

Test Item	Frequency Range	Uncertainty	Note
Radiated Emission	30MHz~1GHz	±4.56dB	(1)
Radiated Emission	1GHz~6GHz	±4.96dB	(1)

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

5 Emission Test Results

5.1 Magnetic field disturbance, 150KHz to 30MHz

Test Requirement ..... : EN 55011

Test Method ..... : EN 55011

Test Result ..... : Pass

Frequency Range ..... : 150KHz to 30MHz

Class/Severity ..... : Table 12 of EN55011（39uA/m Decreasing linearly with the logarithm of frequency to 3uA/m for Quise-peak) for class B group 2 equipment

5.1.1 E.U.T. Operation

Operating Environment:

Temperature ..... : 25.2°C

Humidity ..... : 50.0%RH

Barometric Pressure ..... : 101.2kPa

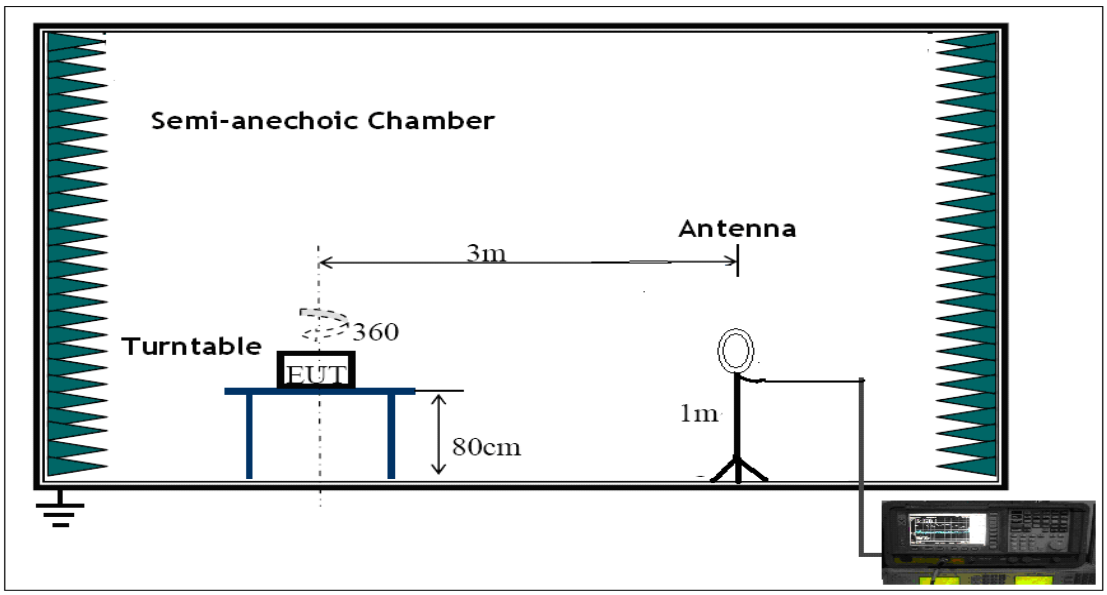
EUT Operation:

Input Voltage ..... : DC 5V

Operating Mode ..... : Wireless Charging mode

5.1.2 Block Diagram of Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the EN 55011.

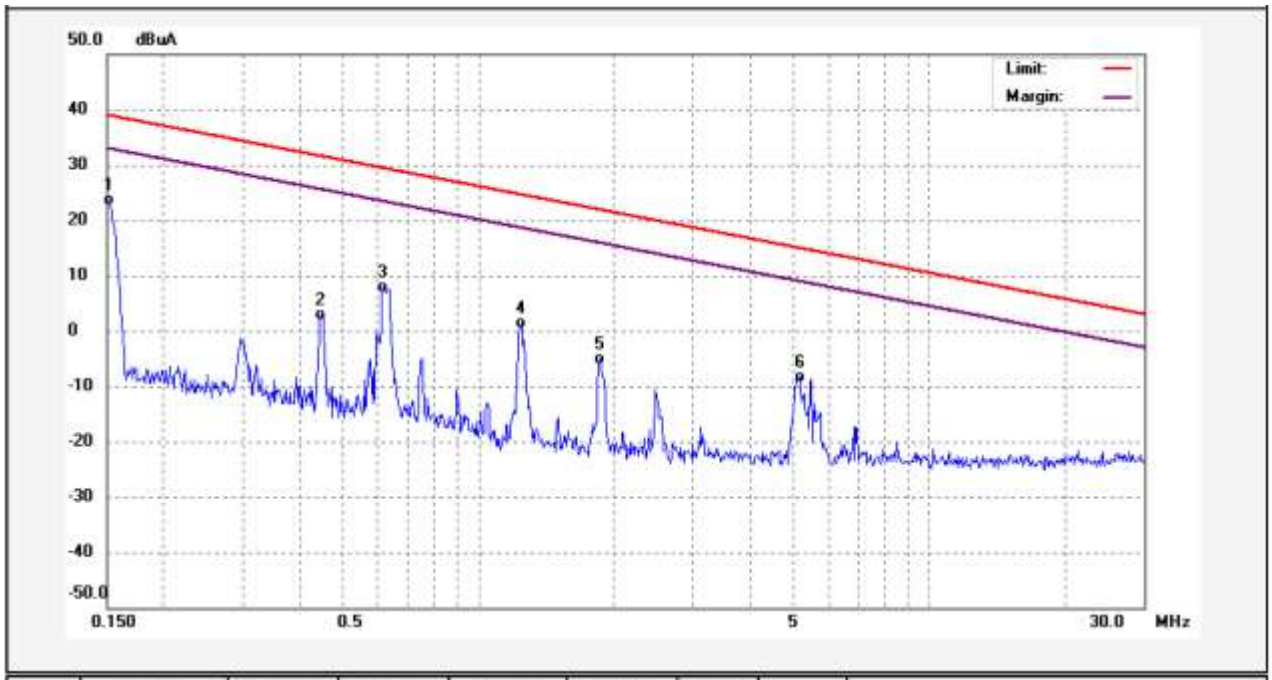


5.1.3 Measurement Data

The maximised peak emissions from the EUT was scanned and measured for EUT 0^0-360^0.Quasi-peak measurements were performed if peak emissions were within 6dB of the limit line.

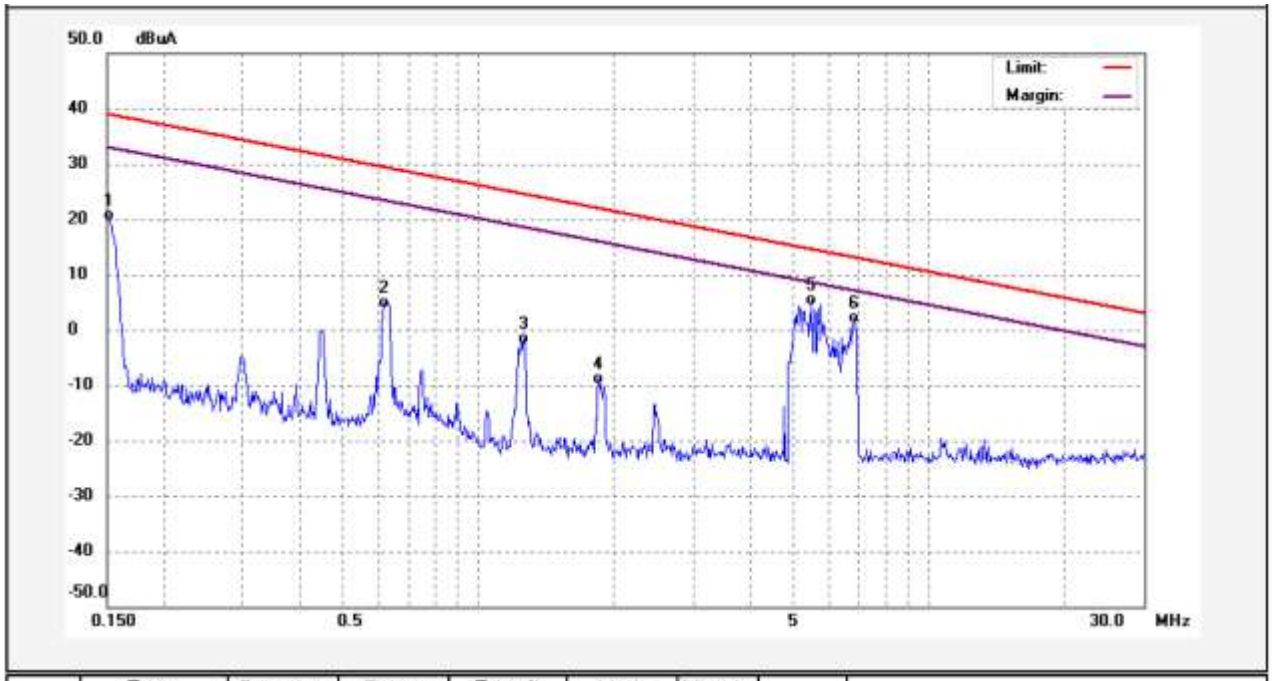
5.1.4 Magnetic field disturbance Test Results

Vertical Polarization:



No.	Freq. (MHz)	Reading (dBuA)	Factor (dB)	Result (dBuA)	Limit (dBuA)	Margin (dB)	Detector	Remark
1	0.1500	54.23	-30.57	23.66	39.00	-15.34	QP	
2	0.4468	34.37	-31.44	2.93	31.58	-28.65	QP	
3	0.6140	38.96	-31.09	7.87	29.42	-21.55	QP	
4	1.2422	31.69	-30.35	1.34	24.63	-23.29	QP	
5	1.8581	25.31	-30.45	-5.14	21.90	-27.04	QP	
6	5.1663	22.03	-30.30	-8.27	14.95	-23.22	QP	

Horizontal Polarization :



No.	Freq. (MHz)	Reading (dBuA)	Factor (dB)	Result (dBuA)	Limit (dBuA)	Margin (dB)	Detector	Remark
1	0.1500	51.24	-30.57	20.67	39.00	-18.33	QP	
2	0.6173	36.07	-31.08	4.99	29.38	-24.39	QP	
3	1.2621	28.73	-30.35	-1.62	24.53	-26.15	QP	
4	1.8483	21.47	-30.45	-8.98	21.93	-30.91	QP	
5	5.4763	35.58	-30.32	5.26	14.55	-9.29	QP	
6	6.8051	32.65	-30.42	2.23	13.08	-10.85	QP	

5.2 Radiated Emission, 30 MHz to 1GHz

Test Requirement..... : EN 55032, EN 55011

Test Method..... : EN 55032, EN 55011

Test Limit..... : Table A.4 of EN 55032, Table 12 of EN 55011

Test Result..... : Pass

Frequency Range..... : 30MHz to 1000MHz

Class...... : Class B

5.2.1 E.U.T. Operation

Operating Environment:

Temperature ..... : 25.2°C

Humidity..... : 50.0%RH

Atmospheric Pressure..... : 101.2kPa

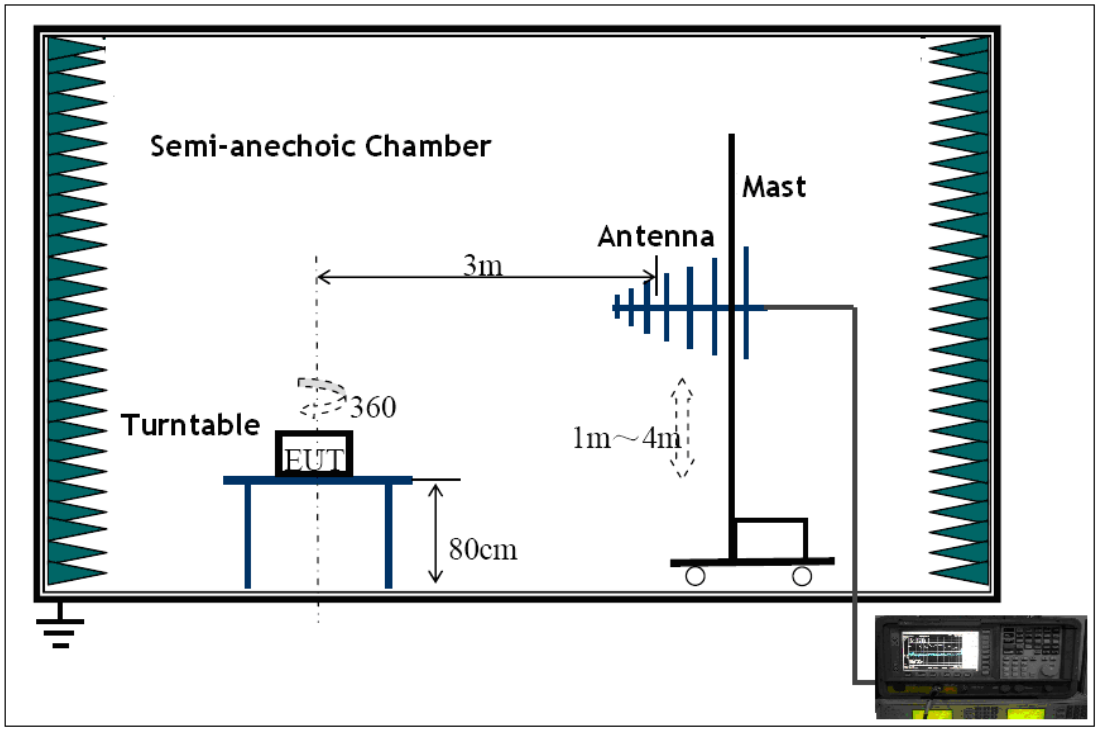
EUT Operation:

Input Voltage ..... : DC 5V (for BT+ charging mode and BT+ wireless charging mode)
Battery 3.7V (for BT mode)

Operating Mode..... : BT+ charging mode; BT+ wireless charging mode; BT mode

5.2.2 Block Diagram of Test Setup

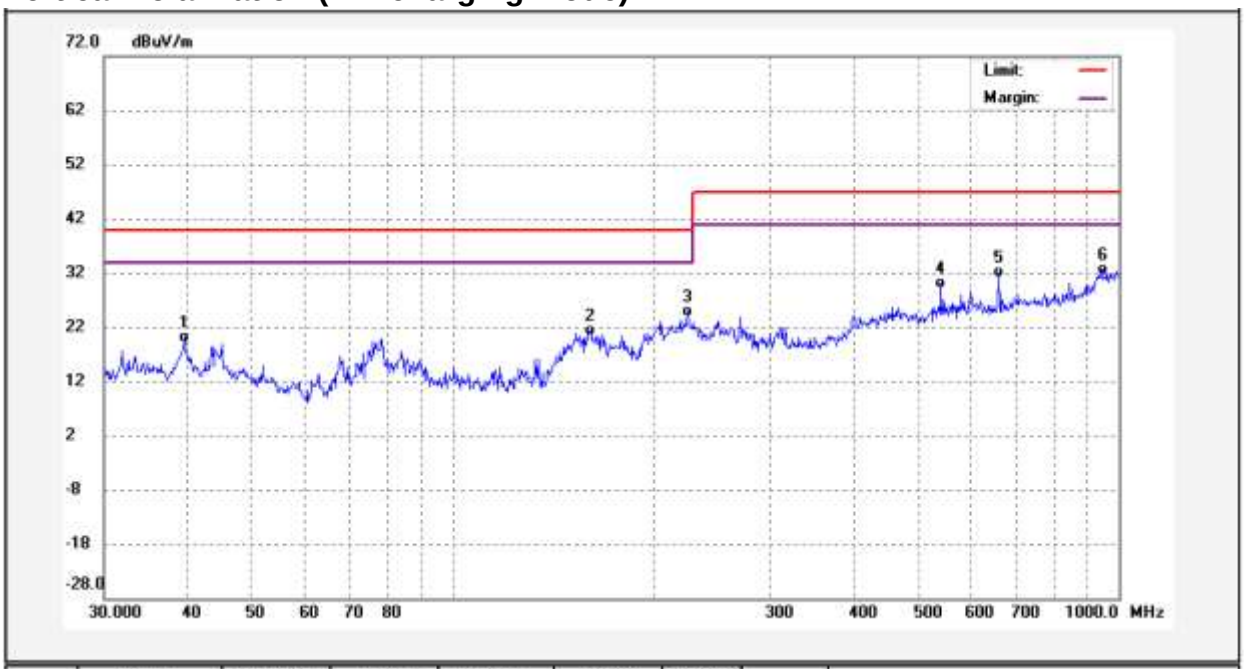
The Radiated Emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the CISPR 16-2-3.



5.2.3 Radiated Emission Test Data

According to the data in section 5.2.3, the EUT complied with the EN 55032 standards.

Vertical Polarization (BT+charging mode):

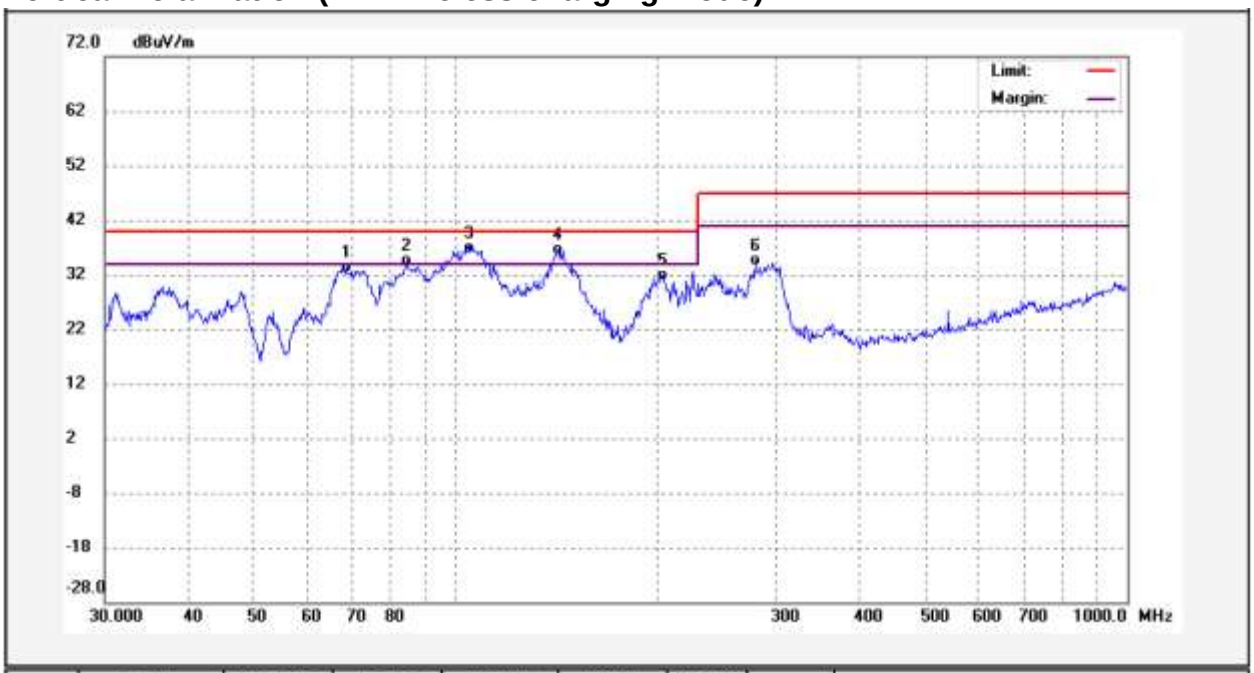


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	39.5757	6.31	13.81	20.12	40.00	-19.88	QP	
2	160.9089	10.34	11.03	21.37	40.00	-18.63	QP	
3	225.3080	9.77	15.11	24.88	40.00	-15.12	QP	
4	541.3725	9.08	20.97	30.05	47.00	-16.95	QP	
5	661.1505	8.49	23.63	32.12	47.00	-14.88	QP	
6	945.4399	4.92	27.76	32.68	47.00	-14.32	QP	

Horizontal Polarization (BT+charging mode):

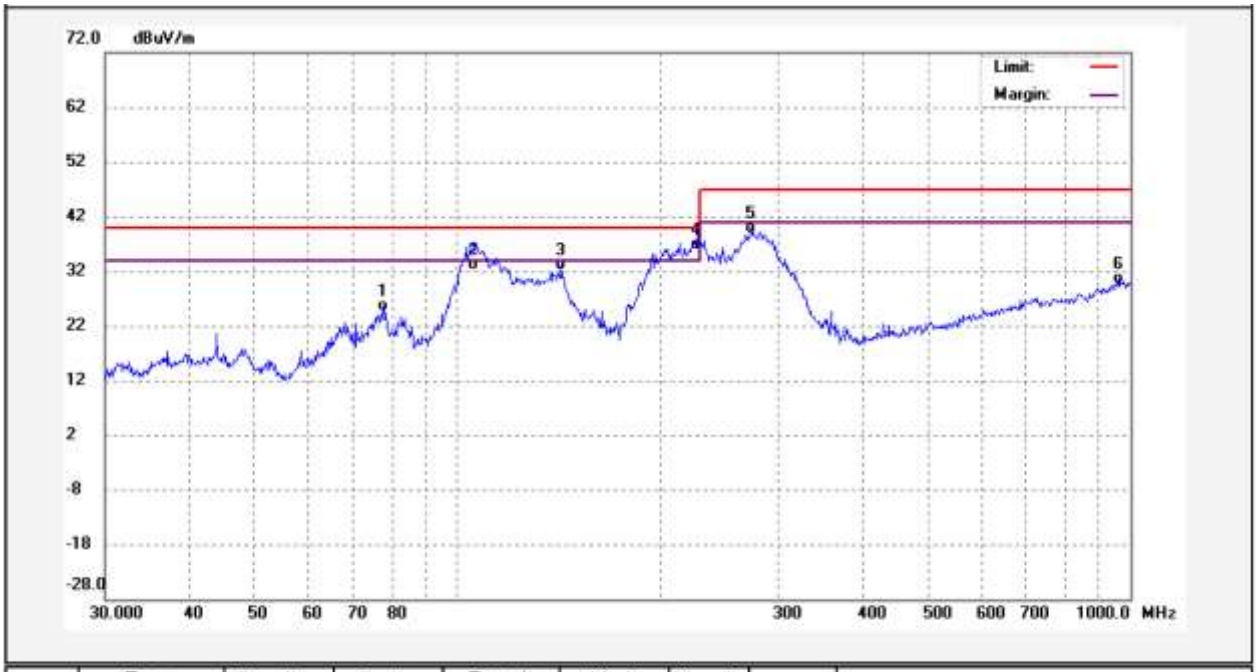
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	75.9773	13.68	9.59	23.27	40.00	-16.73	QP	
2	200.6881	13.40	13.00	26.40	40.00	-13.60	QP	
3	244.2321	14.83	15.26	30.09	47.00	-16.91	QP	
4	300.3672	14.80	16.12	30.92	47.00	-16.08	QP	
5	750.1083	5.33	25.08	30.41	47.00	-16.59	QP	
6	975.7529	4.50	27.56	32.06	47.00	-14.94	QP	

Vertical Polarization (BT+wireless charging mode):



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	68.6310	23.72	9.56	33.28	40.00	-6.72	QP	
2	84.4054	24.32	10.20	34.52	40.00	-5.48	QP	
3	104.8833	24.96	11.87	36.83	40.00	-3.17	QP	
4	141.8262	26.33	10.18	36.51	40.00	-3.49	QP	
5	203.5228	18.74	13.17	31.91	40.00	-8.09	QP	
6	279.0436	18.42	16.31	34.73	47.00	-12.27	QP	

Horizontal Polarization (BT+wireless charging mode):



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	77.5928	16.20	9.44	25.64	40.00	-14.36	QP	
2	105.6415	21.41	11.64	33.05	40.00	-6.95	QP	
3	142.8243	23.01	10.04	33.05	40.00	-6.95	QP	
4	225.5721	22.17	14.81	36.98	40.00	-3.02	QP	
5	273.2341	24.39	15.50	39.89	47.00	-7.11	QP	
6	962.1623	2.95	27.56	30.51	47.00	-16.49	QP	

Vertical Polarization (BT mode):

No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	78.1389	9.64	9.70	19.34	40.00	-20.66	QP	
2	159.7844	10.71	10.96	21.67	40.00	-18.33	QP	
3	212.2695	11.62	13.39	25.01	40.00	-14.99	QP	
4	400.4319	9.32	18.53	27.85	47.00	-19.15	QP	
5	597.2234	7.56	22.42	29.98	47.00	-17.02	QP	
6	962.1623	4.69	28.06	32.75	47.00	-14.25	QP	

Horizontal Polarization (BT mode):

No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	43.6584	3.78	15.21	18.99	40.00	-21.01	QP	
2	75.9773	12.31	9.59	21.90	40.00	-18.10	QP	
3	108.2667	7.62	11.49	19.11	40.00	-20.89	QP	
4	262.8955	13.48	15.44	28.92	47.00	-18.08	QP	
5	750.1083	4.08	25.08	29.16	47.00	-17.84	QP	
6	1000.0000	4.67	27.65	32.32	47.00	-14.68	QP	

5.3 Radiated Emission ,1GHz to 6GHz

Test Requirement..... : EN 55032

Test Method..... : EN 55032

Test Limit..... : Table A.5 of EN 55032

Test Result..... : Pass

Frequency Range..... : 1GHz to 6GHz

Class..... : Class B

5.3.1 E.U.T. Operation

Operating Environment:

Temperature ..... : 25.2°C

Humidity..... : 50.0%RH

Atmospheric Pressure..... : 101.2 kPa

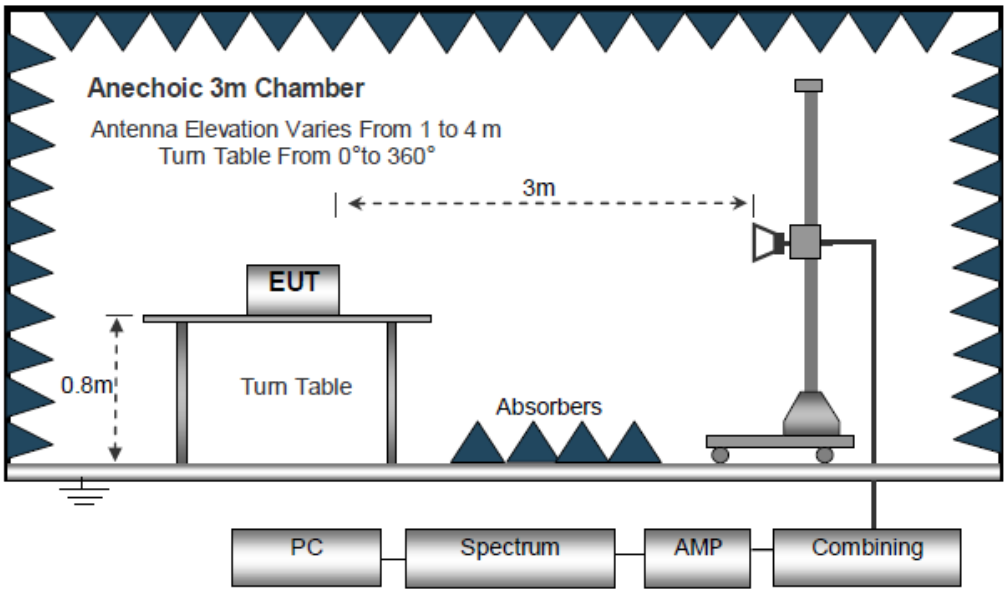
EUT Operation:

Input Voltage ..... : DC 5V (for BT+ charging mode and BT+ wireless charging mode)
Battery 3.7V (for BT mode)

Operating Mode..... : BT+ charging mode; BT+ wireless charging mode; BT mode

5.3.2 Block Diagram of Test Setup

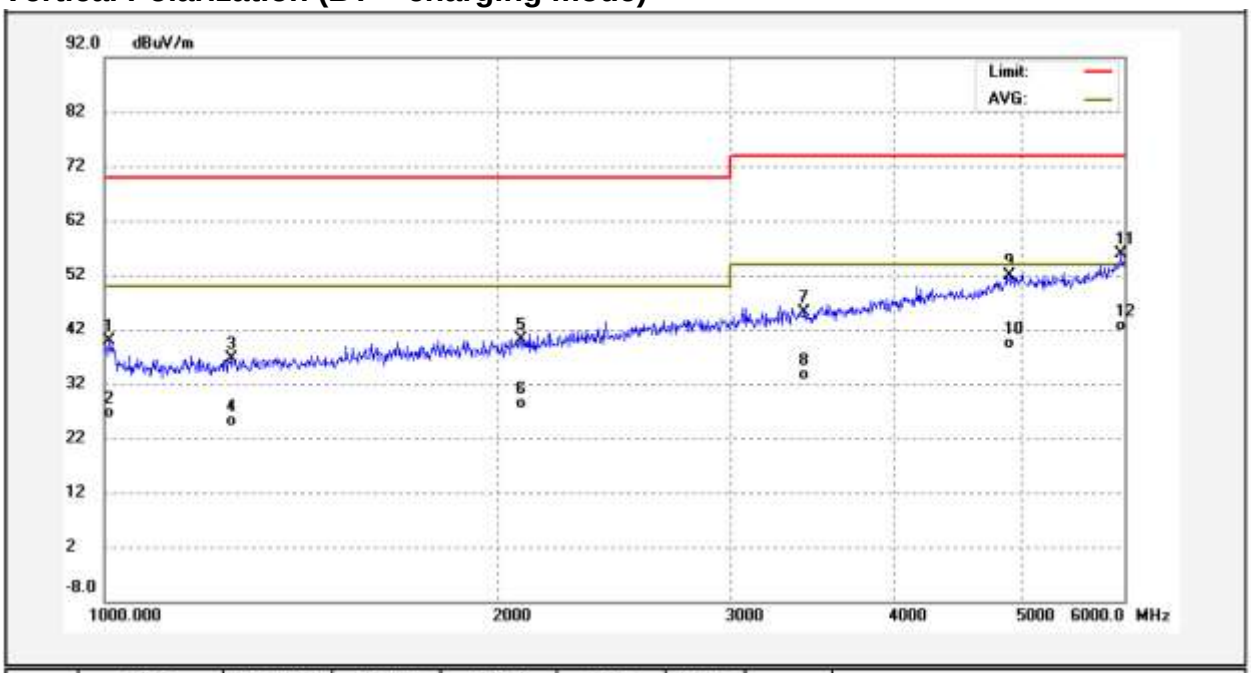
The Radiated Emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the CISPR 16-2-3.



5.3.3 Radiated Emission Test Data

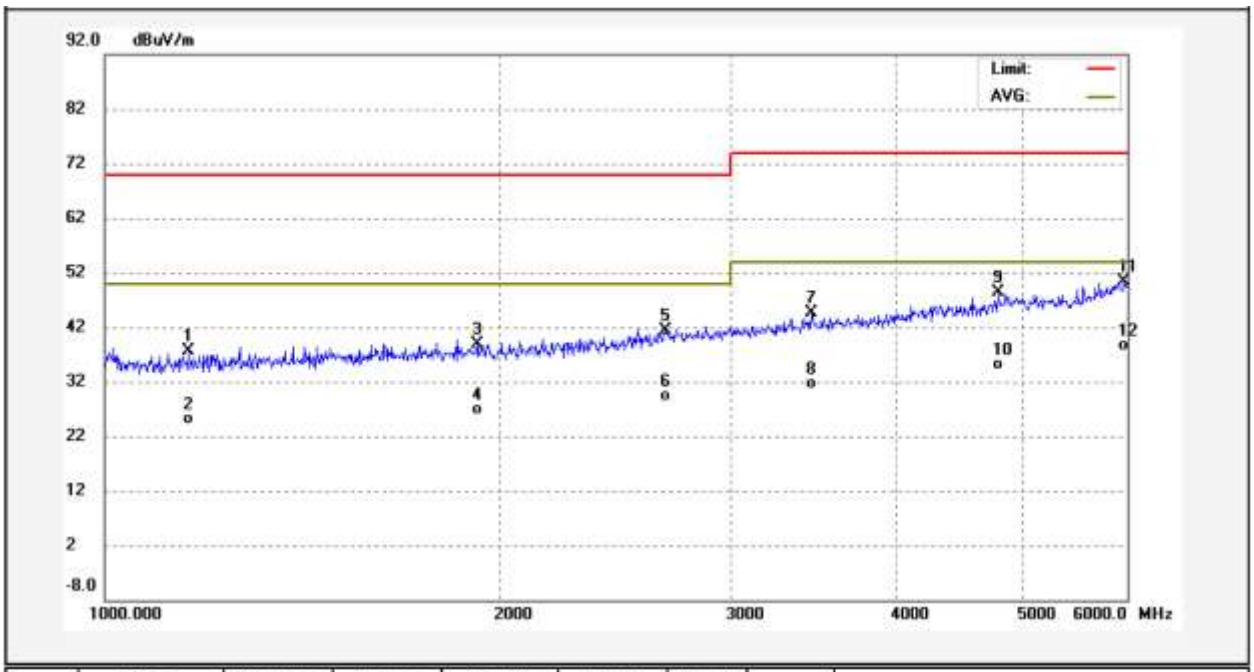
According to the data in section 5.3.3, the EUT complied with the EN 55032 standards.

Vertical Polarization (BT + charging mode)



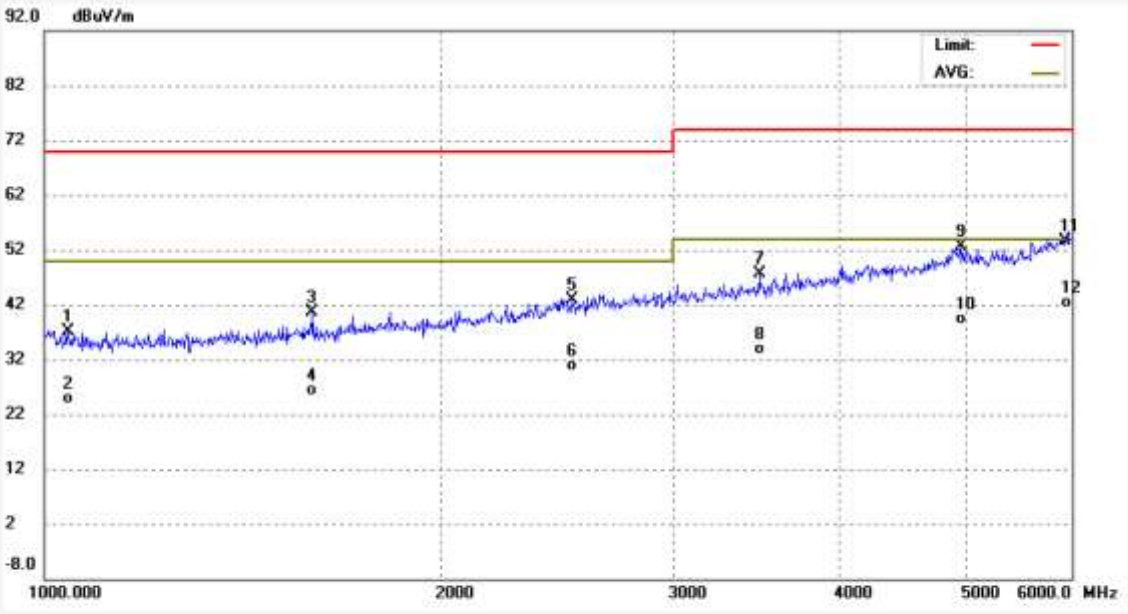
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	1008.999	12.26	27.53	39.79	70.00	-30.21	peak	
2	1008.999	-0.94	27.53	26.59	50.00	-23.41	AVG	
3	1248.794	8.18	28.34	36.52	70.00	-33.48	peak	
4	1248.794	-3.26	28.34	25.08	50.00	-24.92	AVG	
5	2080.961	9.32	30.92	40.24	70.00	-29.76	peak	
6	2080.961	-2.45	30.92	28.47	50.00	-21.53	AVG	
7	3418.312	10.20	35.01	45.21	74.00	-28.79	peak	
8	3418.312	-1.32	35.01	33.69	54.00	-20.31	AVG	
9	4900.272	12.06	39.79	51.85	74.00	-22.15	peak	
10	4900.272	-0.35	39.79	39.44	54.00	-14.56	AVG	
11	5957.152	13.75	42.24	55.99	74.00	-18.01	peak	
12	5957.152	0.40	42.24	42.64	54.00	-11.36	AVG	

Horizontal Polarization (BT + charging mode)



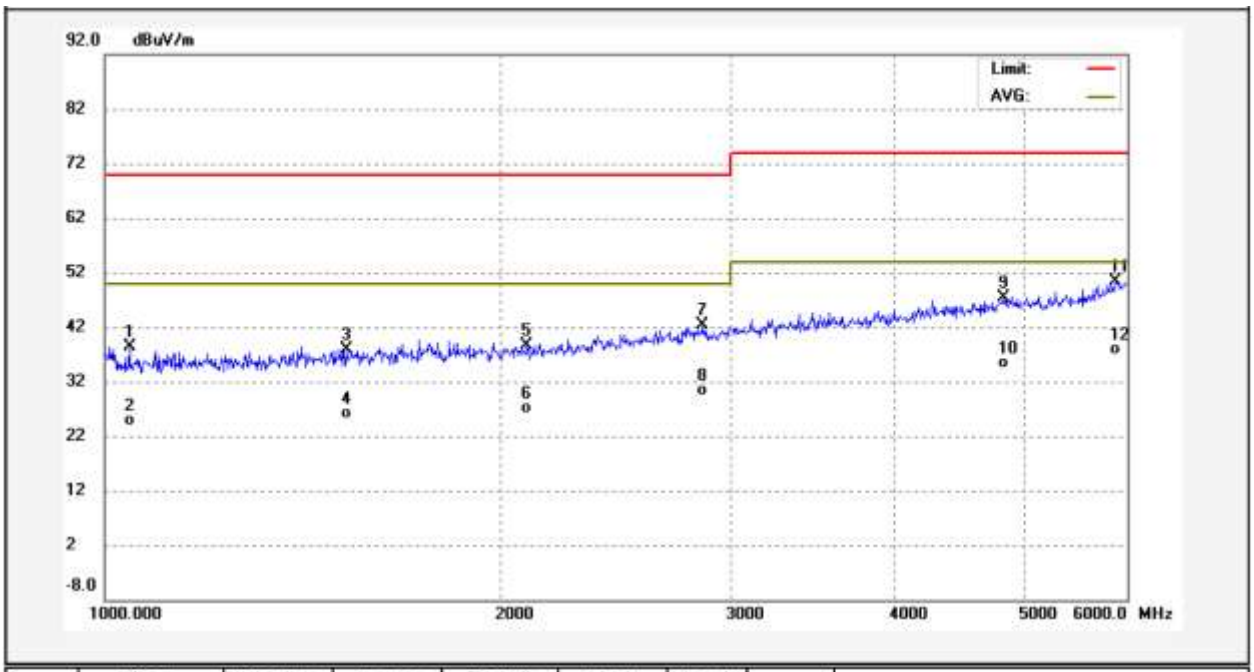
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	1158.266	9.65	27.90	37.55	70.00	-32.45	peak	
2	1158.266	-2.86	27.90	25.04	50.00	-24.96	AVG	
3	1919.761	9.43	29.50	38.93	70.00	-31.07	peak	
4	1919.761	-2.61	29.50	26.89	50.00	-23.11	AVG	
5	2669.481	10.28	31.09	41.37	70.00	-28.63	peak	
6	2669.481	-1.67	31.09	29.42	50.00	-20.58	AVG	
7	3449.074	11.58	32.99	44.57	74.00	-29.43	peak	
8	3449.074	-1.33	32.99	31.66	54.00	-22.34	AVG	
9	4787.449	12.74	35.57	48.31	74.00	-25.69	peak	
10	4787.449	-0.45	35.57	35.12	54.00	-18.88	AVG	
11	5967.835	12.15	38.19	50.34	74.00	-23.66	peak	
12	5967.835	0.34	38.19	38.53	54.00	-15.47	AVG	

Vertical Polarization (BT + wireless charging mode)



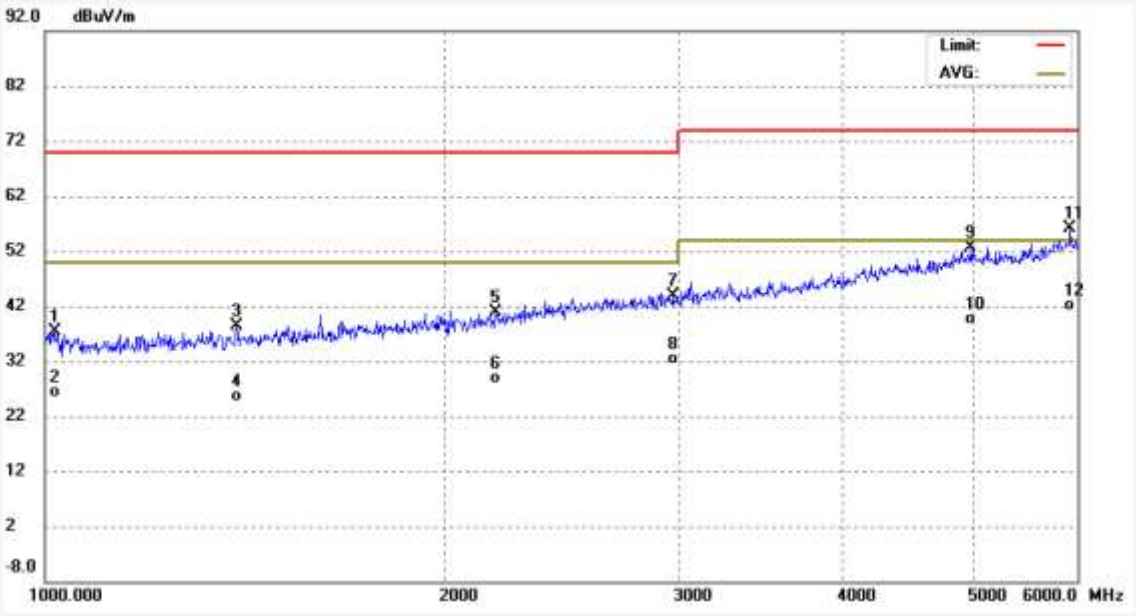
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	1042.071	9.37	27.64	37.01	70.00	-32.99	peak	
2	1042.071	-2.78	27.64	24.86	50.00	-25.14	AVG	
3	1596.237	11.16	29.45	40.61	70.00	-29.39	peak	
4	1596.237	-3.05	29.45	26.40	50.00	-23.60	AVG	
5	2511.711	9.98	32.78	42.76	70.00	-27.24	peak	
6	2511.711	-1.80	32.78	30.98	50.00	-19.02	AVG	
7	3480.112	12.56	35.14	47.70	74.00	-26.30	peak	
8	3480.112	-1.29	35.14	33.85	54.00	-20.15	AVG	
9	4944.369	12.54	39.98	52.52	74.00	-21.48	peak	
10	4944.369	-0.49	39.98	39.49	54.00	-14.51	AVG	
11	5935.842	11.60	42.15	53.75	74.00	-20.25	peak	
12	5935.842	0.22	42.15	42.37	54.00	-11.63	AVG	

Horizontal Polarization (BT + wireless charging mode)



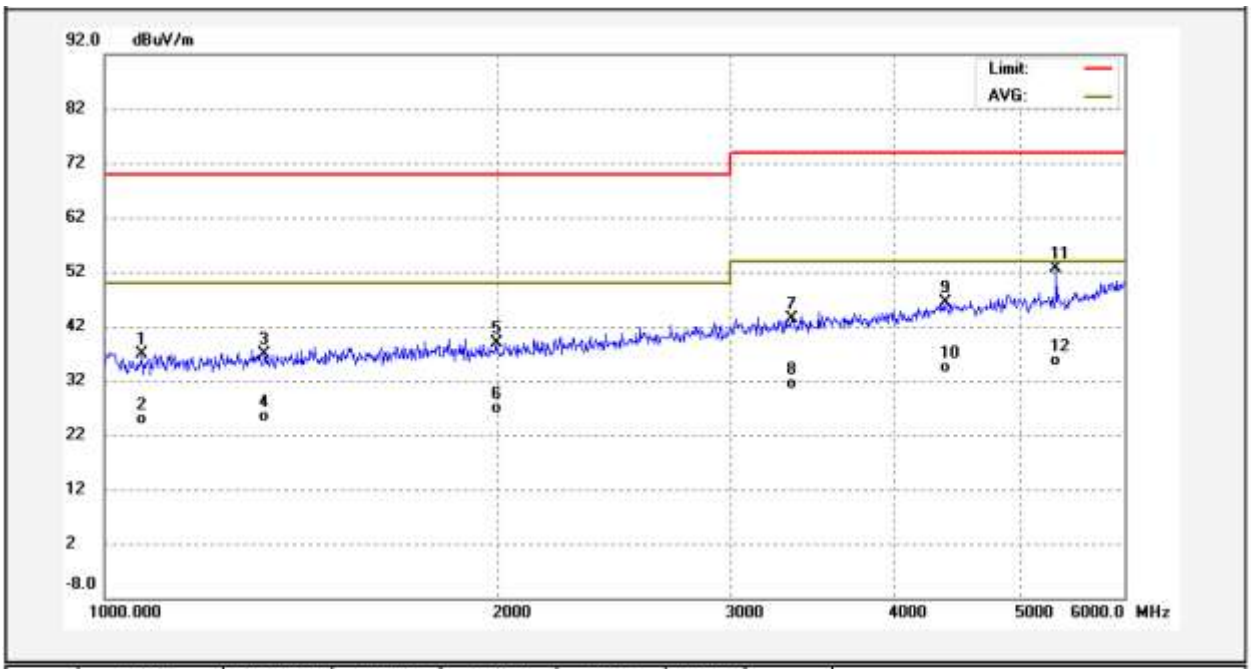
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	1043.940	10.97	27.47	38.44	70.00	-31.56	peak	
2	1043.940	-2.49	27.47	24.98	50.00	-25.02	AVG	
3	1526.313	8.70	29.21	37.91	70.00	-32.09	peak	
4	1526.313	-3.06	29.21	26.15	50.00	-23.85	AVG	
5	2092.176	8.79	29.74	38.53	70.00	-31.47	peak	
6	2092.176	-2.51	29.74	27.23	50.00	-22.77	AVG	
7	2852.453	10.66	31.68	42.34	70.00	-27.66	peak	
8	2852.453	-1.42	31.68	30.26	50.00	-19.74	AVG	
9	4830.532	11.77	35.69	47.46	74.00	-26.54	peak	
10	4830.532	-0.33	35.69	35.36	54.00	-18.64	AVG	
11	5872.370	12.57	37.83	50.40	74.00	-23.60	peak	
12	5872.370	0.04	37.83	37.87	54.00	-16.13	AVG	

Vertical Polarization (BT mode)



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	1018.079	9.81	27.56	37.37	70.00	-32.63	peak	
2	1018.079	-1.06	27.56	26.50	50.00	-23.50	AVG	
3	1395.520	9.51	28.84	38.35	70.00	-31.65	peak	
4	1395.520	-3.25	28.84	25.59	50.00	-24.41	AVG	
5	2188.024	9.52	31.38	40.90	70.00	-29.10	peak	
6	2188.024	-2.39	31.38	28.99	50.00	-21.01	AVG	
7	2972.460	9.79	34.07	43.86	70.00	-26.14	peak	
8	2972.460	-1.71	34.07	32.36	50.00	-17.64	AVG	
9	4988.864	12.41	40.18	52.59	74.00	-21.41	peak	
10	4988.864	-0.62	40.18	39.56	54.00	-14.44	AVG	
11	5925.216	13.94	42.12	56.06	74.00	-17.94	peak	
12	5925.216	0.11	42.12	42.23	54.00	-11.77	AVG	

Horizontal Polarization (BT mode)



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	1068.542	9.37	27.55	36.92	70.00	-33.08	peak	
2	1068.542	-2.59	27.55	24.96	50.00	-25.04	AVG	
3	1324.859	8.31	28.53	36.84	70.00	-33.16	peak	
4	1324.859	-3.07	28.53	25.46	50.00	-24.54	AVG	
5	1989.803	9.26	29.55	38.81	70.00	-31.19	peak	
6	1989.803	-2.55	29.55	27.00	50.00	-23.00	AVG	
7	3345.599	10.48	32.80	43.28	74.00	-30.72	peak	
8	3345.599	-1.38	32.80	31.42	54.00	-22.58	AVG	
9	4377.202	11.85	34.59	46.44	74.00	-27.56	peak	
10	4377.202	-0.32	34.59	34.27	54.00	-19.73	AVG	
11	5321.268	16.42	36.32	52.74	74.00	-21.26	peak	
12	5321.268	-0.66	36.32	35.66	54.00	-18.34	AVG	

6 Immunity Test Results

6.1 Performance Criteria

Performance criterion A: The equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer when the equipment is used as intended.

Performance criterion B: After the test, the equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed, after the application of the phenomena below a performance level specified by the manufacturer, when the equipment is used as intended. During the test, degradation of performance is allowed. However, no change of operating state or stored data is allowed to persist after the test.

Performance criterion C: Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions. Functions, and/or information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

6.2 Electrostatic Discharge (ESD)

Test Requirement.....	:	EN 55024
Test Method.....	:	IEC 61000-4-2
Test Result.....	:	Pass
Discharge Impedance.....	:	330Ω / 150pF
Discharge Voltage.....	:	Air Discharge: ±8kV Contact Discharge: ±4kV HCP & VCP: ±4kV
Polarity.....	:	Positive & Negative
Number of Discharge.....	:	Minimum 10 times at each test point
Discharge Mode	:	Single Discharge
Discharge Period	:	1 second minimum

6.2.1 E.U.T. Operation

Operating Environment:

Temperature ..... : 21.3°C

Humidity ..... : 53.4%RH

Barometric Pressure ..... : 101.3kPa

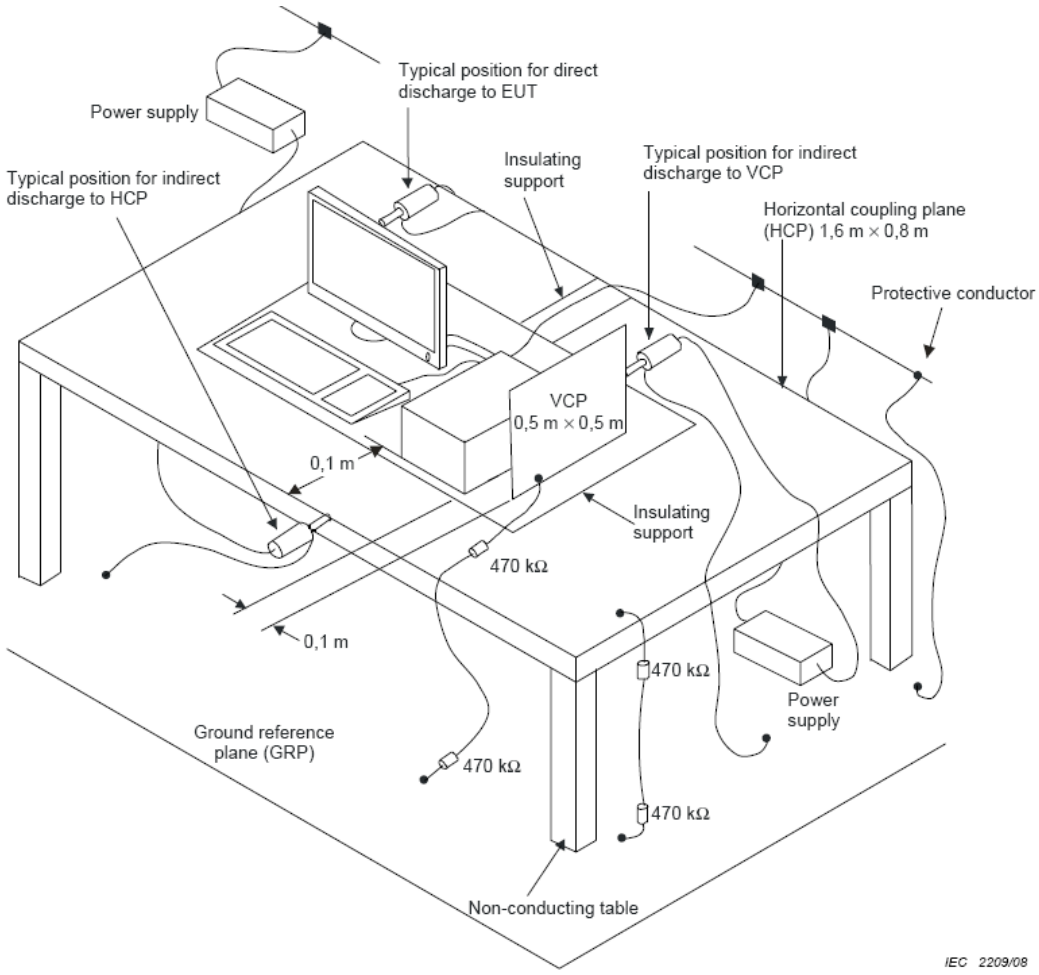
EUT Operation:

Input Voltage ..... : DC 5V

Operating Mode..... : On mode

6.2.2 Block Diagram of Setup

The ESD test was performed in accordance with the IEC 61000-4-2.



6.2.3Direct Discharge Test Results

Observations : **Test points :** **1. All Exposed Surface & Seams;**
2. All metallic part

Direct Discharge			Test Results	
Applied Voltage (kV)	**Performance Criterion**	**Test Point**	**Contact Discharge**	**Air Discharge**
±8	B	1	N/A	Pass*
±4	B	2	Pass*	N/A

Remark:

* During the test no deviation was detected to the selected operation mode(s)

6.2.4 Indirect Discharge Test Results

Observations : **Test points :** **1. All sides.**

Indirect Discharge			Test Results	
Applied Voltage (kV)	**Performance Criterion**	**Test Point**	**Horizontal Coupling**	**Vertical Coupling**
±4	B	1	Pass*	Pass*

Remark:

* During the test no deviation was detected to the selected operation mode(s)

6.3 Radio-frequency electromagnetic fields, 80MHz to 1GHz

Test Requirement ..... : EN 55024

Test Method ..... : IEC 61000-4-3

Test Result ..... : Pass

Frequency Range ..... : 80MHz to 1GHz

Test level ..... : 3V/m

Modulation ..... : 80%, 1kHz Amplitude Modulation.

Face of EUT ..... : Front, Back, Left, Right

Antenna polarisation .. : Horizontal& Vertical

6.3.1E.U.T. Operation

Operating Environment:

Temperature..... : 25.4°C

Humidity..... : 51.6%RH

Barometric Pressure..... : 100.9kPa

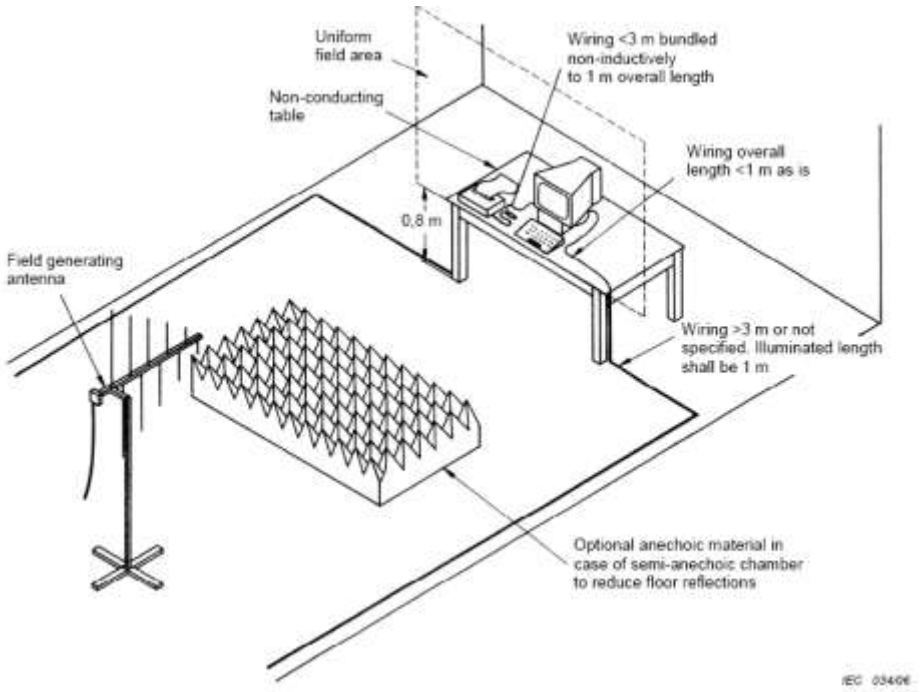
EUT Operation:

Input Voltage..... : DC 5V

Operating Mode..... : On mode

6.3.2 Block Diagram of Setup

The Radio-frequency electromagnetic fields Immunity test was performed in accordance with the IEC 61000-4-3.



6.3.3 Test Results

Frequency	Face of EUT	Antenna polarisation	Test Level	Step Size	Dwell Time	Performance Criterion	Result
80 to 1000MHz	Front, Back, Left, Right	Horizontal	3V/m	1%	1s	A	Pass*
80 to 1000MHz	Front, Back, Left, Right	Vertical	3V/m	1%	1s	A	Pass*

Frequency	Face of EUT	Antenna polarisation	Test Level	Step Size	Dwell Time	Performance Criterion	Result
1.4 to 2.0GHz	Front, Back, Left, Right	Horizontal	3V/m	1%	1s	A	Pass*
1.4 to 2.0GHz	Front, Back, Left, Right	Vertical	3V/m	1%	1s	A	Pass*

Frequency	Face of EUT	Antenna polarisation	Test Level	Step Size	Dwell Time	Performance Criterion	Result
2.0 to 2.7GHz	Front, Back, Left, Right	Horizontal	1V/m	1%	1s	A	Pass*
2.0 to 2.7GHz	Front, Back, Left, Right	Vertical	1V/m	1%	1s	A	Pass*

Remark:

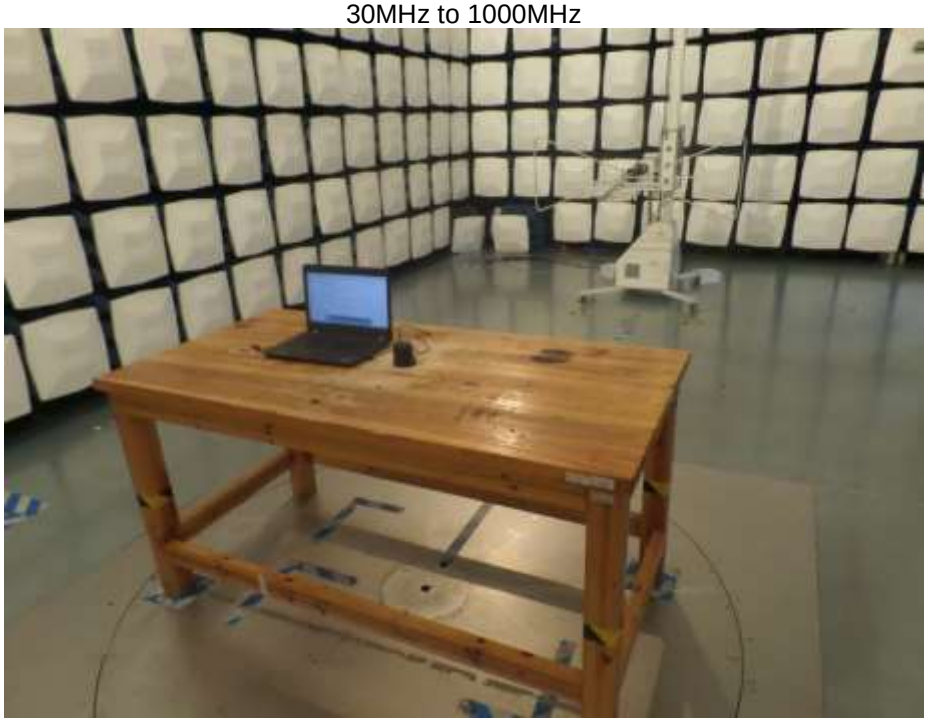
* During the test no deviation was detected to the selected operation mode(s)

7 Photographs – Test Setup

7.1 Photograph – Radiated Emission Test Setup

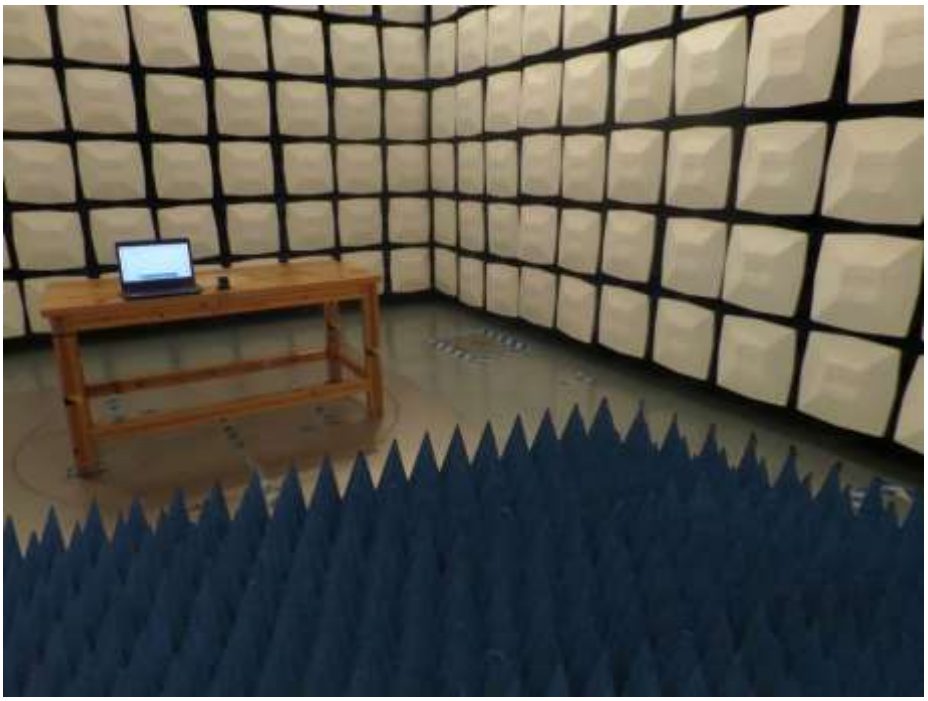
150kHz to 30MHz

30MHz to 1000MHz

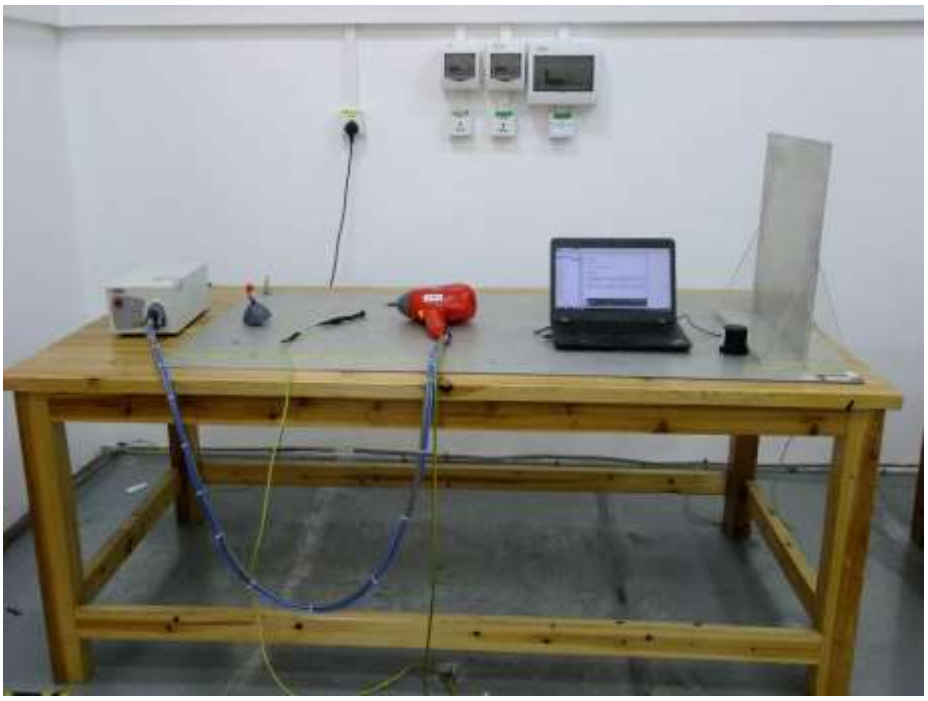


1GHz to 6GHz

7.2 Photograph – Radio-Frequency Electromagnetic Field Test Setup

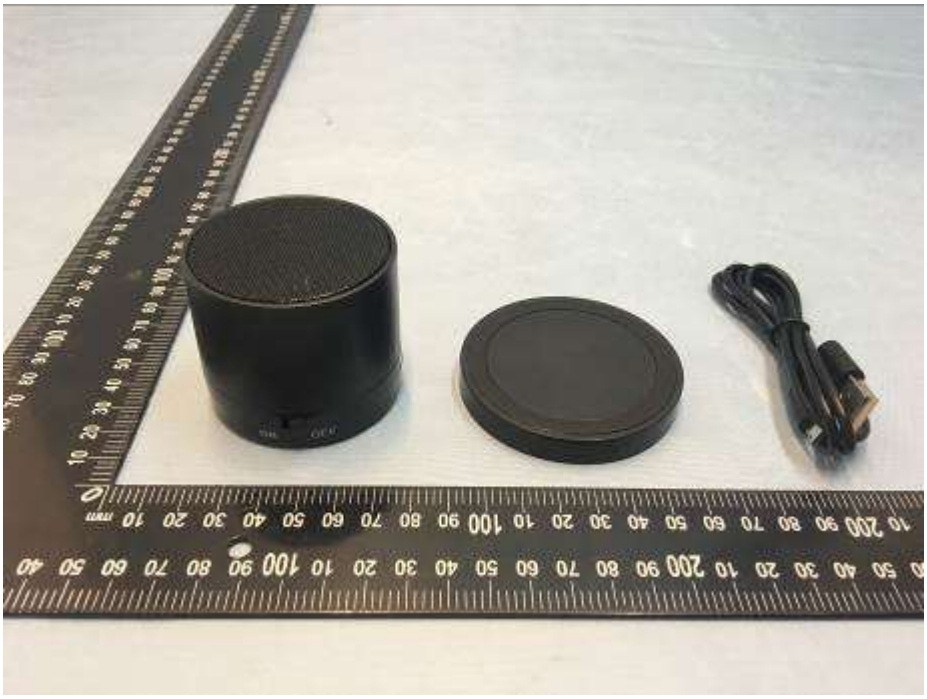


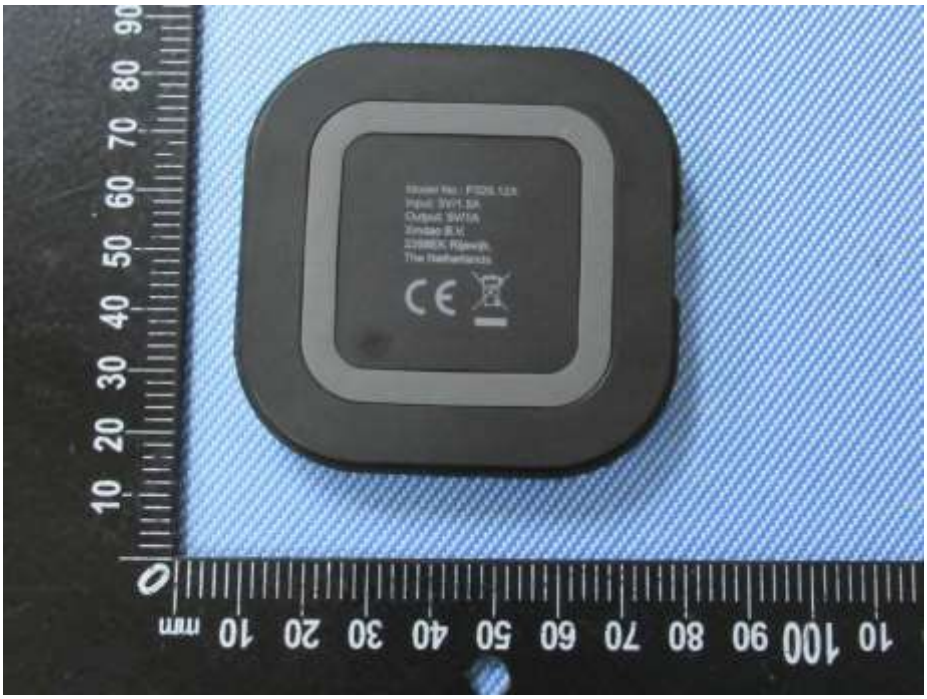
7.3 Photograph – ESD Immunity Test Setup



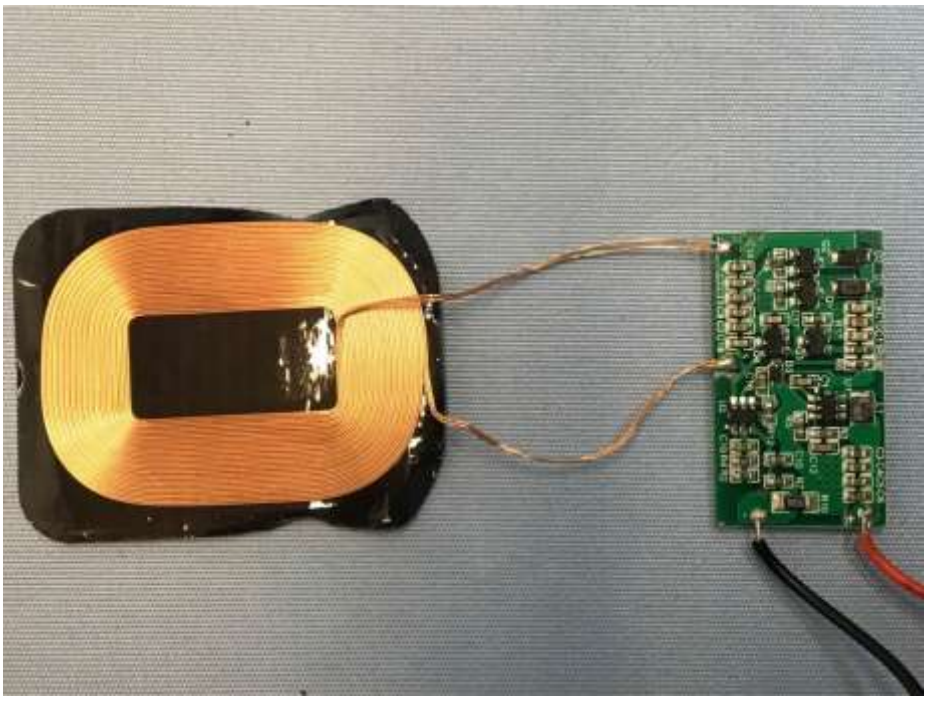
8 Photographs – Constructional Details

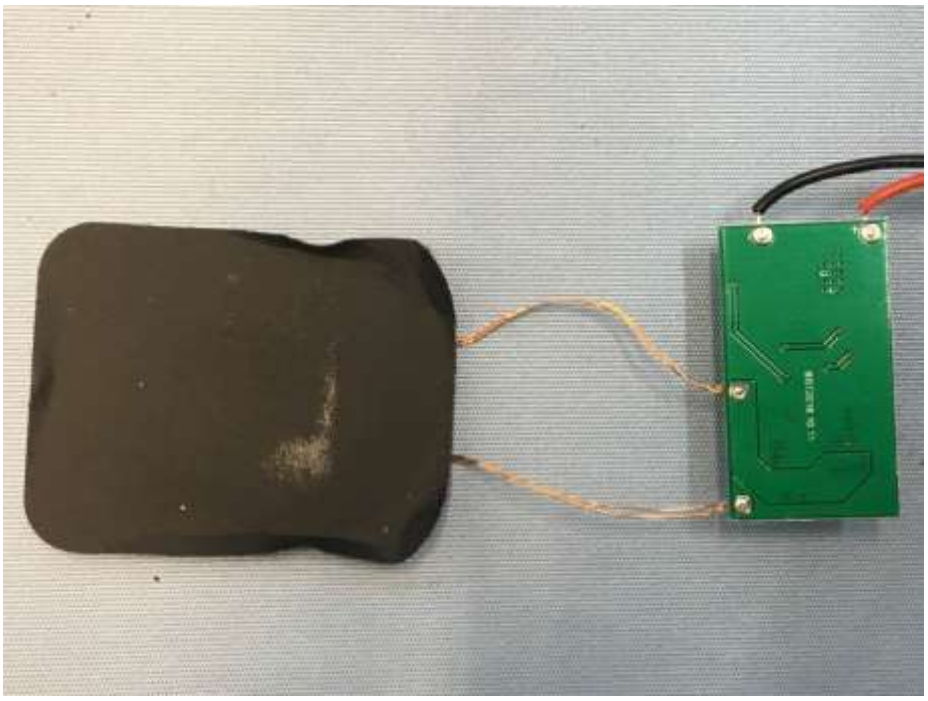
8.1 EUT – External View

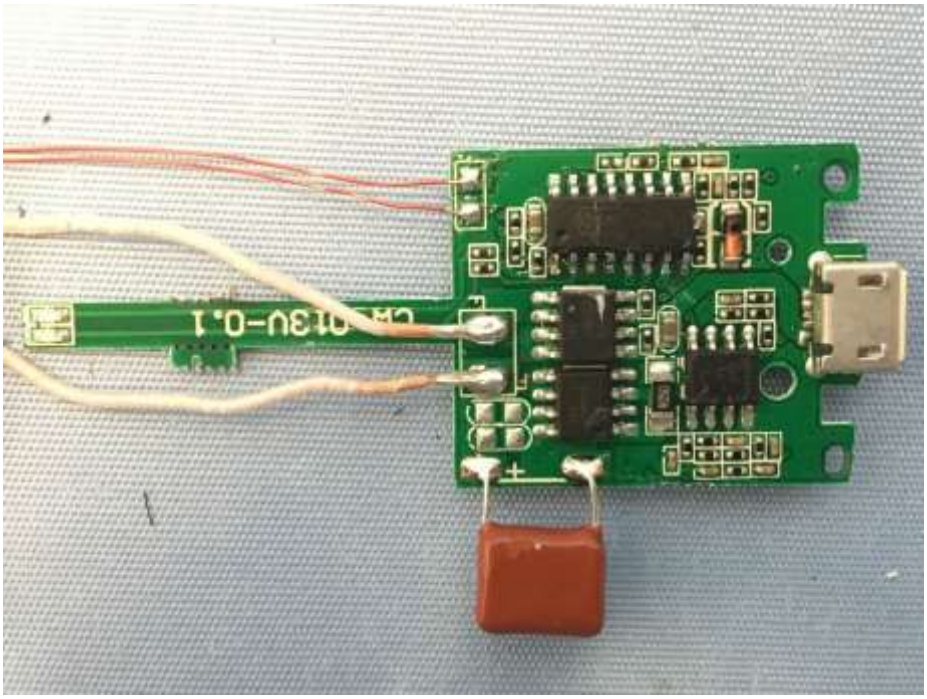


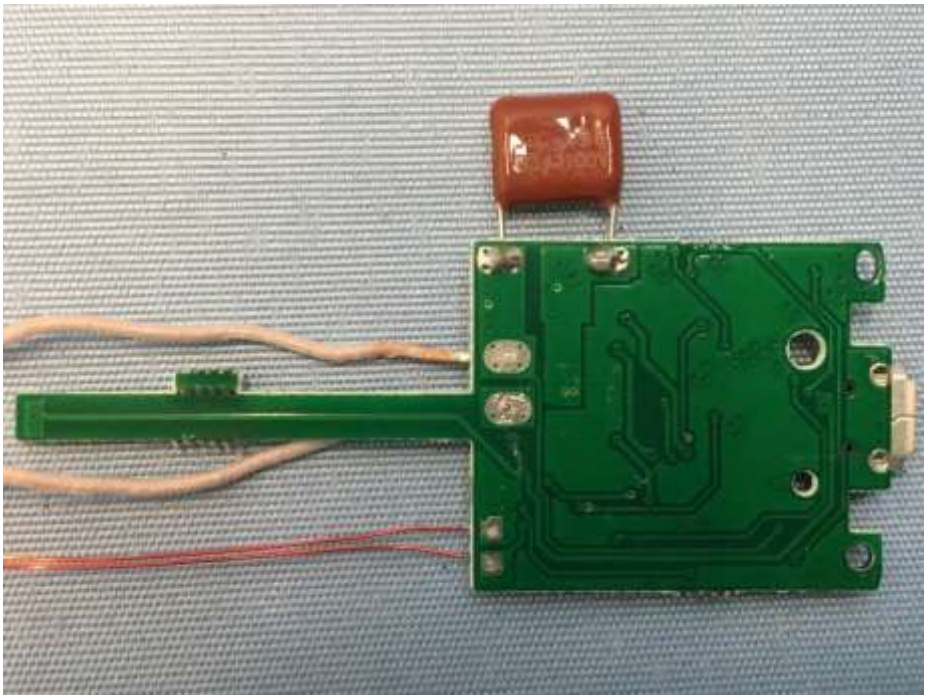


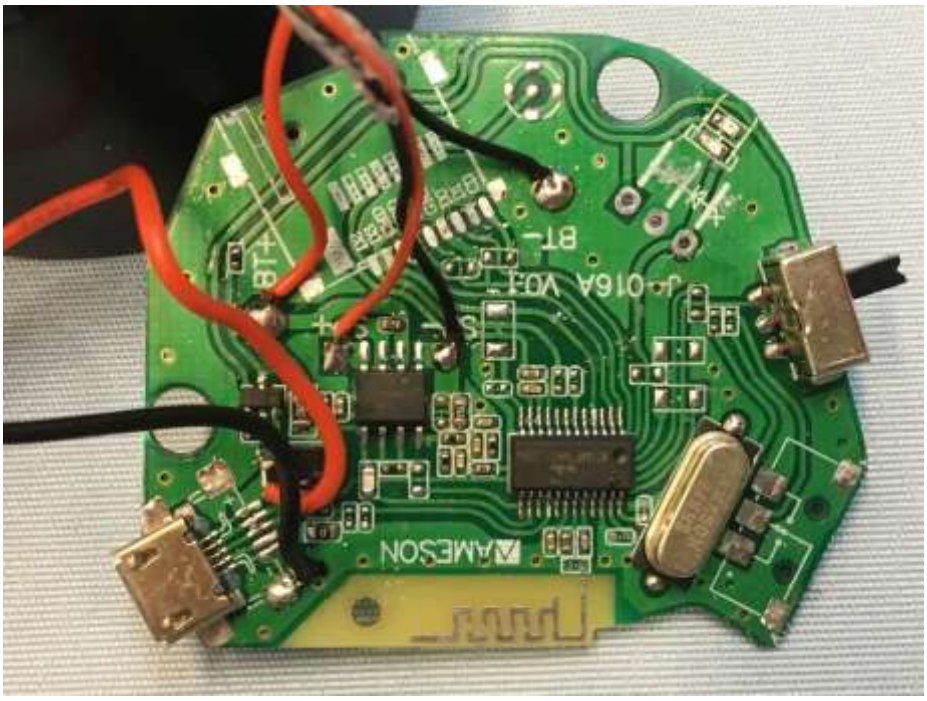
8.2 EUT – Internal View

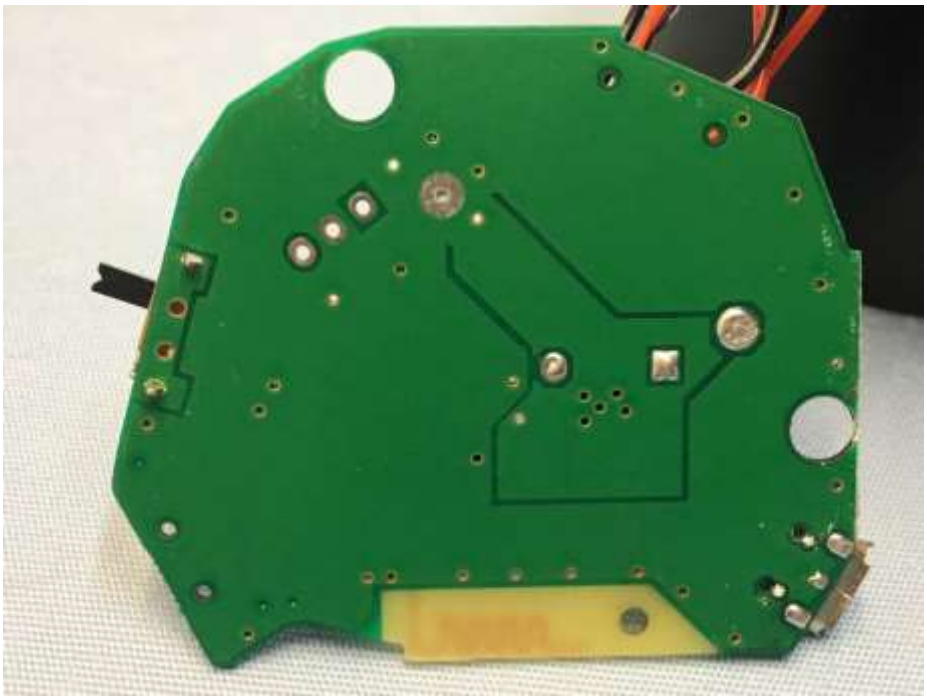












====== End of Report ======