

TEST REPORT

Reference No...... : WTF19S10071526W001 V3
FCC ID : 2AQ93-WD21A01
Applicant..... : SHENZHEN GOODWIN TECHNOLOGY CO., LTD
Address..... : 4/F Buiding A, Huayuan Industrial park, Fenghuang No.1 Industrial Area, Fuyong, Baoan Dist, Shenzhen, China
Manufacturer : GOLD CABLE VIET NAM COMPANY LIMITED
Address..... : Road D3, Part D, Pho Noi A Industrial Park, Lac Hong Commune, Van Lam District, Hung Yen Province, Viet Nam
Product..... : Wireless Charging Pad
Model(s) : WD21
Standards : FCC PART 18, SUBPART C
Date of Receipt sample : 2019-10-23
Date of Test : 2019-10-24 to 2019-10-28
Date of Issue..... : 2019-11-08
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.

Prepared By:

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2 Laboratories Introduction

Waltek Services (Shenzhen) Co., Ltd is a professional third-party testing and certification laboratory with multi-year product testing and certification experience, established strictly in accordance with ISO/IEC 17025 requirements, and accredited by ILAC (International Laboratory Accreditation Cooperation) member. A2LA (American Association for Laboratory Accreditation, the certification number is 4243.01) of USA, CNAS (China National Accreditation Service for Conformity Assessment, the registration number is L3110) of China. Meanwhile, Waltek has got recognition as registration and accreditation laboratory from EMSD (Electrical and Mechanical Services Department), and American Energy star, FCC (The Federal Communications Commission), CEC (California energy efficiency), ISED (Innovation, Science and Economic Development Canada). It's the strategic partner and data recognition laboratory of international authoritative organizations, such as Intertek (ETL-SEMKO), TÜV Rheinland, TÜV SÜD, etc.



Waltek Services (Shenzhen) Co., Ltd is one of the largest and the most comprehensive third party testing laboratory in China. Our test capability covered four large fields: safety test. Electro Magnetic Compatibility (EMC), and energy performance, wireless radio. As a professional, comprehensive, justice international test organization, we still keep the scientific and rigorous work attitude to help each client satisfy the international standards and assist their product enter into globe market smoothly.

Test Facility:**A. Accreditations for Conformity Assessment (International)**

Country/Region	Scope Covered By	Scope	Note
USA	ISO/IEC 17025	FCC ID \ DOC \ VOC	1
Canada		IC ID \ VOC	2
Japan		MIC-T \ MIC-R	-
Europe		EMCD \ RED	-
Taiwan		NCC	-
Hong Kong		OFCA	-
Australia		RCM	-
India		WPC	-
Thailand		NTC	-
Singapore		IDA	-
Note:			
1. FCC Designation No.: CN1201. Test Firm Registration No.: 523476.			
2. ISED CAB identifier: CN0013. Test Firm Registration No.: 7760A.			

B. TCBs and Notify Bodies Recognized Testing Laboratory.

Recognized Testing Laboratory of ...	Notify body number
TUV Rheinland	Optional.
Intertek	
TUV SUD	
SGS	
Phoenix Testlab GmbH	0700
Element Materials Technology Warwick Ltd	0891
Timco Engineering, Inc.	1177
Eurofins Product Service GmbH	0681

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4 Revision History

Test report No.	Date of Receipt sample	Date of Test	Date of Issue	Purpose	Comment	Approved
WTF19S10071 526W001	2019-10-23	2019-10-24 to 2019-10-28	2019-10-29	original	-	Replaced
WTF19S10071 526W001 V1	2019-10-23	2019-10-24 to 2019-10-28	2019-11-06	Version 1	Updated	Replaced
WTF19S10071 526W001 V2	2019-10-23	2019-10-24 to 2019-10-28	2019-11-07	Version 2	Updated	Replaced
WTF19S10071 526W001 V3	2019-10-23	2019-10-24 to 2019-10-28	2019-11-08	Version 3	Updated	Valid

5 General Information

5.1 General Description of E.U.T.

Product:	Wireless Charging Pad
Model(s):	WD21
Model Description:	N/A
Frequency Range:	110~205kHz
Modulation Type:	ASK
Antenna Type:	Coil Antenna
Antenna Gain:	0dBi

5.2 Details of E.U.T.

Ratings:	5V/2A(Wireless input), 5V/1A(Wireless output)
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5.3 Standards Applicable for Testing

The tests were performed according to following standards:

FCC PART 18, SUBPART C Industrial, Scientific, and medical medical equipment.

5.4 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 Lab: N/A

Lab address: N/A

Test items: N/A

5.5 Abnormalities from Standard Conditions

None.

6 Test Summary

Test Items	Test Requirement	Test Result
Power Line Conducted Emission (150kHz to 30MHz)	FCC PART 18.307	Pass
Radiated Emission 9KHz to 30MHz)	FCC PART 18.305	Pass

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

7 Equipment Used during Test

7.1 Equipment List

Conducted Emissions Test Site 1#						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1.	EMI Test Receiver	R&S	ESCI	100947	2019-09-17	2020-09-16
2.	LISN	R&S	ENV216	101215	2019-09-17	2020-09-16
3.	Cable	Top	TYPE16(3.5M)	-	2019-09-17	2020-09-16
3m Semi-anechoic Chamber for Radiation Emissions Test site 2#						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1	Test Receiver	R&S	ESCI	101296	2019-04-20	2020-04-19
2	Active Loop Antenna	Com-Power Corp.	AL-130R	10160007	2019-04-28	2020-04-27
3	Amplifier	H/P	8447F	880456	2019-09-10	2020-09-09
4	Cable	HUBER+SUHNER	CBL2	525178	2019-04-20	2020-04-19

7.2 Description of Support Units

Equipment	Manufacturer	Model No.	Series No.
MacBook Air	APPLE	A1465	C17KTQDNF5N7
Power Supply	LPS DELTA ELECTRONICS UIANG CO.,LTD	ADP-45GD	-

7.3 Measurement Uncertainty

Test Item	Frequency Range	Uncertainty	Note
Conduction Emission	150kHz~30MHz	±3.64dB	(1)
Radiation Emission	9kHz~30MHz	±5.03dB	(1)
Confidence interval: 95%. Confidence factor:k=2			

8 Emission Test Results

8.1 Power Line Conducted Emission, 150kHz to 30MHz

Test Requirement : FCC PART 18.307
 Test Method : ANSI C63.4
 Test Result : Pass
 Frequency Range : 150kHz to 30MHz
 Class : Class B
 Limit :

Frequency (MHz)	Limit (dB μ V)	
	Quasi-peak	Average
0.15 to 0.5	66 to 56*	56 to 46*
0.5 to 5	56	46
5 to 30	60	50

8.1.1 E.U.T. Operation

Operating Environment:

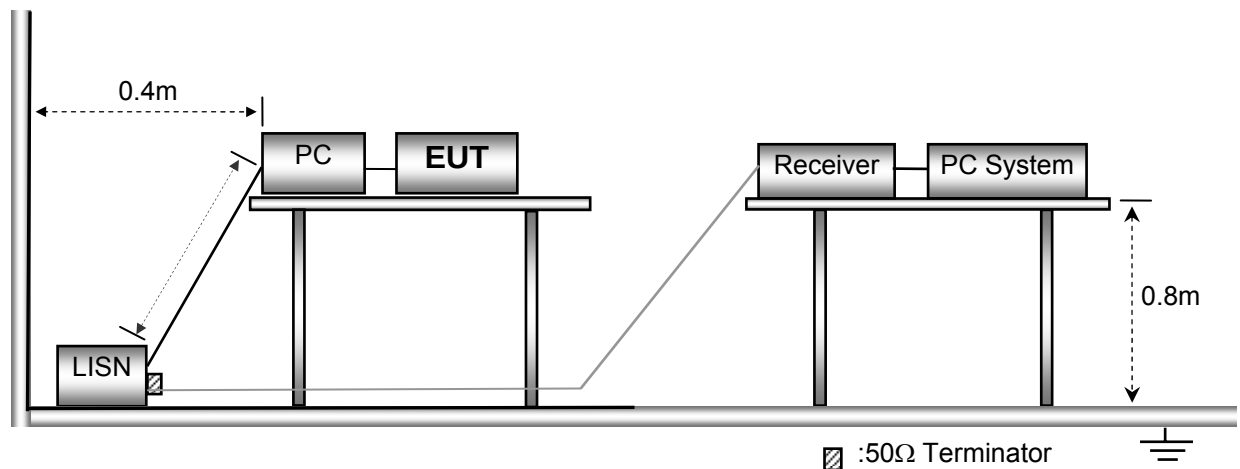
Temperature : 23°C
 Humidity : 53.6%RH
 Atmospheric Pressure : 101kPa

EUT Operation:

Input Voltage : AC 120V/60Hz by PC adapter
 Operating Mode : Wireless charging

8.1.2 Block Diagram of Test Setup

The Mains Terminals Disturbance Voltage tests were performed in accordance with ANSI C63.4.



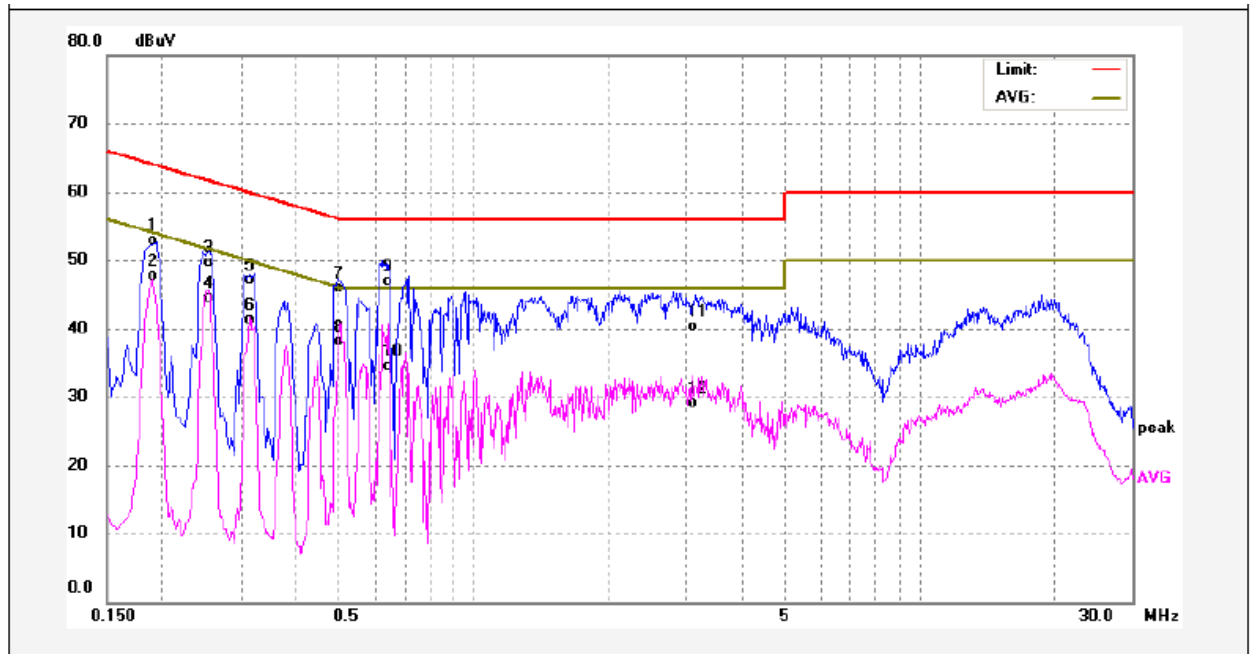
8.1.3 Measurement Data

The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line. According to the data in below section, the EUT complied with the FCC PART 18, SUBPART C standards.

8.1.4 Power Line Conducted Emission Test Data

Wireless charging(worst mode):

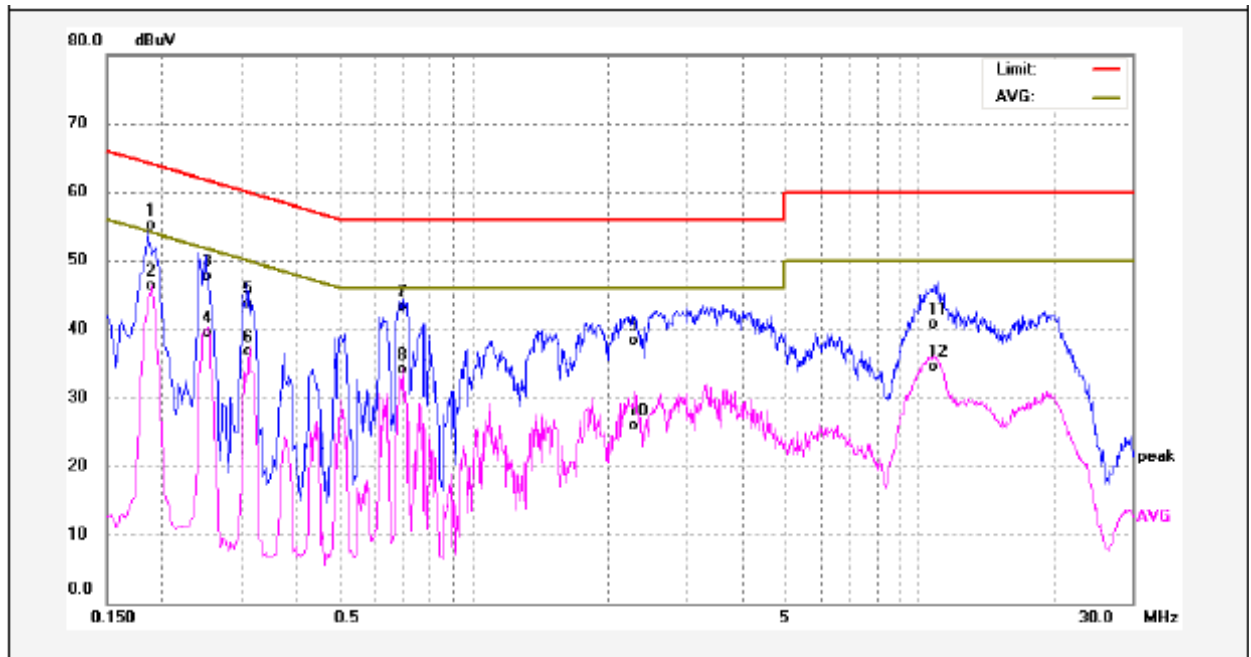
Live Line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1900	43.19	9.77	52.96	64.03	-11.07	QP	
2	0.1900	37.99	9.77	47.76	54.03	-6.27	AVG	
3	0.2540	39.87	9.76	49.63	61.62	-11.99	QP	
4	0.2540	34.84	9.76	44.60	51.62	-7.02	AVG	
5	0.3140	37.25	9.81	47.06	59.86	-12.80	QP	
6	0.3140	31.47	9.81	41.28	49.86	-8.58	AVG	
7	0.5020	36.01	9.81	45.82	56.00	-10.18	QP	
8	0.5020	28.34	9.81	38.15	46.00	-7.85	AVG	
9	0.6419	37.10	9.84	46.94	56.00	-9.06	QP	
10	0.6419	24.59	9.84	34.43	46.00	-11.57	AVG	
11	3.1060	30.45	9.93	40.38	56.00	-15.62	QP	
12	3.1060	19.13	9.93	29.06	46.00	-16.94	AVG	

Wireless charging(worst mode):

Neutral Line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1900	45.42	9.77	55.19	64.03	-8.84	QP	
2	0.1900	36.61	9.77	46.38	54.03	-7.65	AVG	
3	0.2540	37.93	9.76	47.69	61.62	-13.93	QP	
4	0.2540	29.71	9.76	39.47	51.62	-12.15	AVG	
5	0.3140	33.90	9.81	43.71	59.86	-16.15	QP	
6	0.3140	26.85	9.81	36.66	49.86	-13.20	AVG	
7	0.6940	33.52	9.83	43.35	56.00	-12.65	QP	
8	0.6940	24.21	9.83	34.04	46.00	-11.96	AVG	
9	2.2980	28.41	9.95	38.36	56.00	-17.64	QP	
10	2.2980	16.02	9.95	25.97	46.00	-20.03	AVG	
11	10.7900	30.62	10.07	40.69	60.00	-19.31	QP	
12	10.7900	24.34	10.07	34.41	50.00	-15.59	AVG	

8.2 Radiation Emission, 9KHz to 30MHz

Test Requirement : FCC PART 18.305
 Test Method : ANSI C63.4
 Test Result : Pass
 Frequency Range : 9KHz to 30MHz
 Class. : Class B
 Limit..... :

Frequency (MHz)	Distance (Meter)	Limit (dB μ V/m)
		Quasi-peak
0.009 to 30	3	103.5

8.2.1 E.U.T. Operation

Operating Environment:

Temperature : 22.5°C
 Humidity : 52.6%RH
 Atmospheric Pressure : 101.2kPa

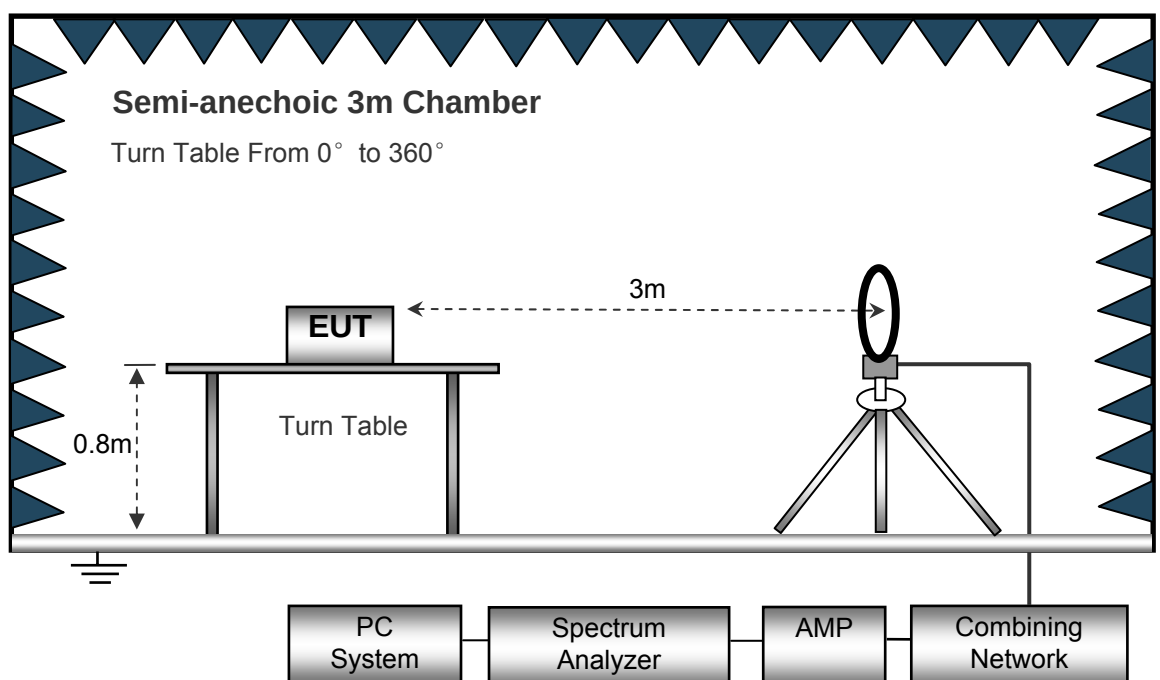
EUT Operation:

Input Voltage..... : AC 120V/60Hz by PC adapter
 Operating Mode : Wireless charging

8.2.2 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 ANSI C63.4.

The test setup for emission measurement below 30MHz.



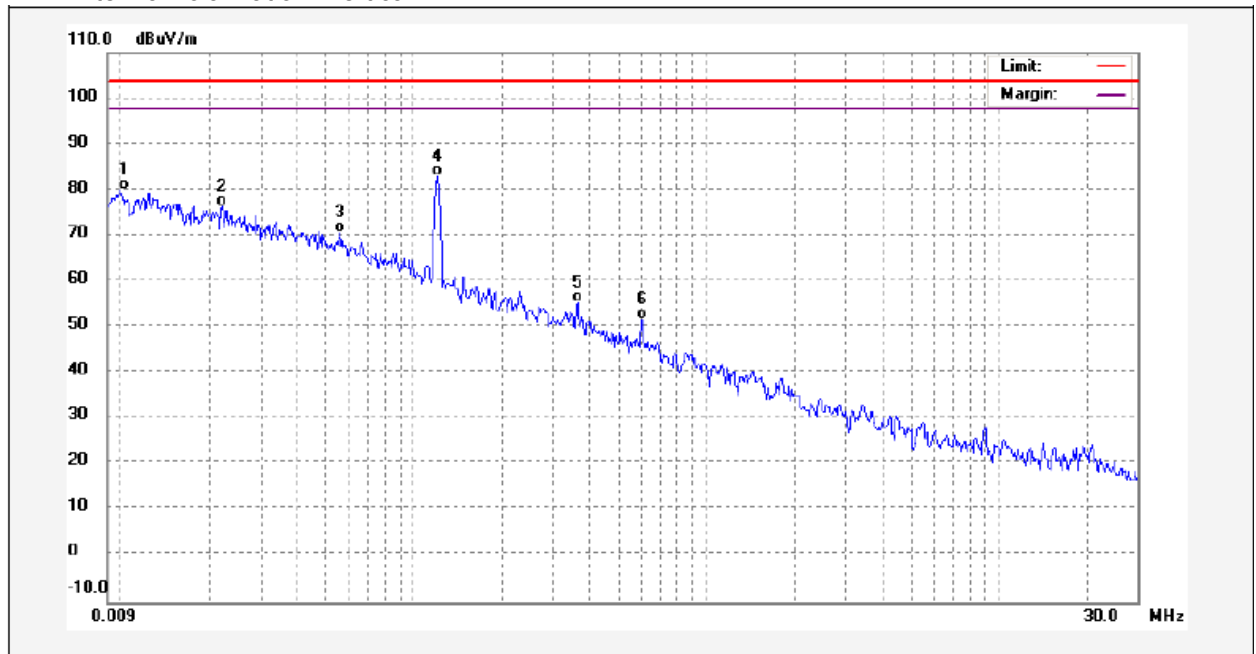
8.2.3 Measurement Data

The maximised peak emissions from the EUT was scanned and measured for both the Antenna Vertical Polarization and Antenna Horizontal Polarization. Quasi-peak measurements were performed if peak emissions were within 6dB of the Quasi-peak limit line.

8.2.4 Radiated Emission Test Data, 9KHz to 30MHz

Wireless charging(worst mode):

Antenna Polarization: Vertical

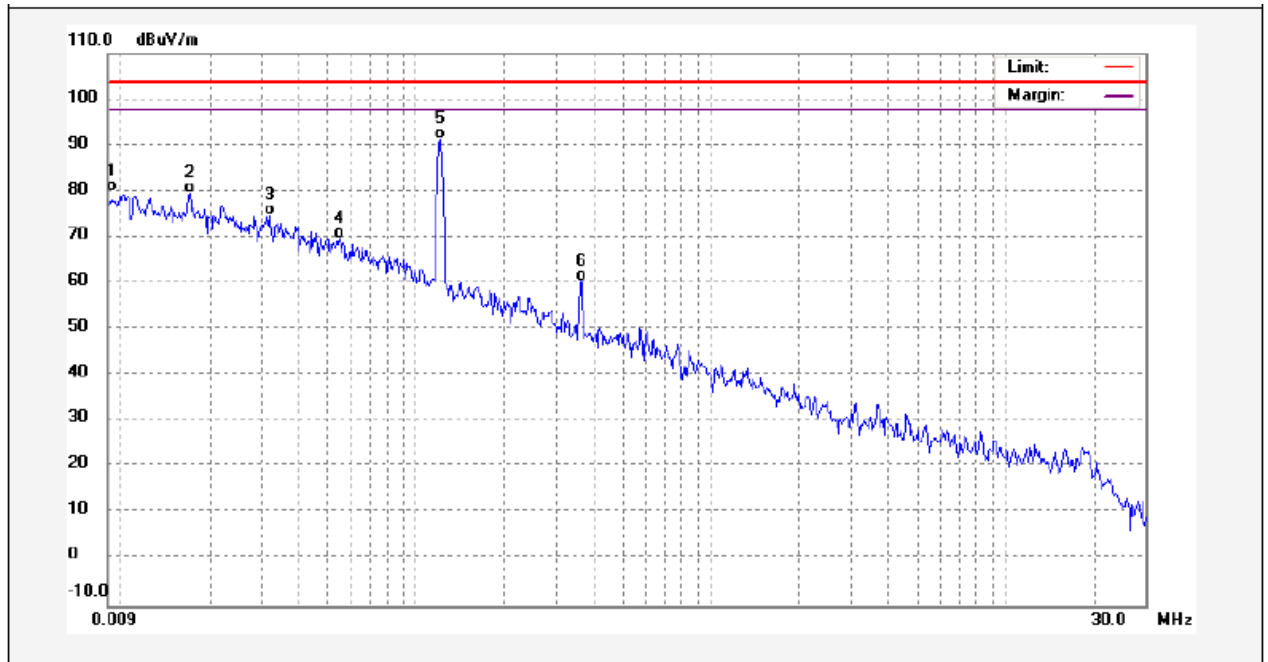


Factor= antenna factor + cable loss - preamplifier factor

Result = Reading + Factor

Wireless charging(worst mode):

Antenna Polarization: Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	0.0090	79.69	0.02	79.71	103.50	-23.79	QP	
2	0.0171	79.31	0.11	79.42	103.50	-24.08	QP	
3	0.0319	74.63	0.14	74.77	103.50	-28.73	QP	
4	0.0549	69.58	0.13	69.71	103.50	-33.79	QP	
5	0.1207	91.17	0.08	91.25	103.50	-12.25	QP	
6	0.3636	60.46	0.03	60.49	103.50	-43.01	QP	

Factor= antenna factor + cable loss - preamplifier factor

Result = Reading + Factor

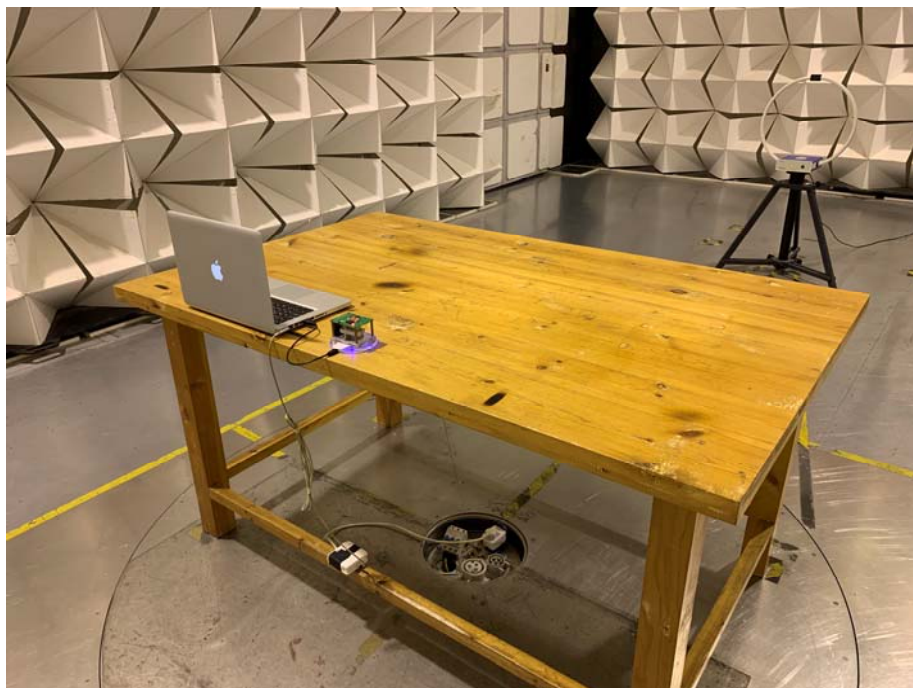
Note : Test with carry on X, Y, Z. The worst is Z.

9 Photographs – Test Setup FCC ID 2AQ93-WD21A01

9.1 Photograph –Power Line Conducted Emission Test Setup at Test Site 1#



9.2 Photograph – Radiated Emission Test Setup for 9KHz~30MHz at Test Site 2#



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