

TEST REPORT

Reference No. : WTK21D01002675W001
FCC ID : 2AJQ7WIASUP10031400
Applicant..... : QUEST USA CORP
Address..... : 495 Flatbush Ave, Brooklyn, NY 11225, USA
Manufacturer : TELEPHONE EST(HK)CO.,LTD
Address..... : Room 706, 7F, FuLi Tianhe commercial building, Linhe East Road and
Tianhe District, Guangzhou, China
Factory : TELEPHONE EST(HK)CO.,LTD
Address..... : Room 706, 7F, FuLi Tianhe commercial building, Linhe East Road and
Tianhe District, Guangzhou, China
Product..... : LED Wireless Charger
Model(s). : WIASUP100031400
Standards..... : FCC CFR47 Part 15C
Date of Receipt sample : 2021-01-12
Date of Test : 2021-01-12 to 2021-01-18
Date of Issue..... : 2021-01-19
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:

Waltek Testing Group Co., Ltd.

Address: No. 77, Houjie Section, Guantai Road, Houjie Town, Dongguan City, Guangdong, China

Tel: +86-769-2267 6998

Fax: +86-769-2267 6828

Compiled by:

Levi Xiao

Levi Xiao / Test Engineer

Approved by:



Danile Liu

Danile Liu / Manager

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3 Revision History

Test report No.	Date of Receipt sample	Date of Test	Date of Issue	Purpose	Comment	Approved
WTK21D01002 675W001	2021-01-12	2021-01-12 to 2021-01-18	2021-01-19	original	-	Valid

4 General Information

4.1 General Description of E.U.T

Product:	LED Wireless Charger
Model(s):	WIASUP100031400
Type of Modulation:	ASK
Frequency Range:	110-205kHz
Antenna installation:	Inductive loop coil Antenna
Hardware Version:	V1.1
Software Version:	V1.1

4.2 Details of E.U.T.

Ratings:	Input: 5V==2A,9V==1.67A Wireless output: 10W Max
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4.3 Test Mode

Test Mode	Descriptions
Standby mode	EUT alone powered by AC/DC adapter
Charging mode	loading of 10 W

Note:

All test mode(s) and condition(s) mentioned were considered and evaluated respectively by performing full tests, the worst data were recorded and reported.

4.4 Test Facility

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

ISED CAB identifier: CN0013. Test Firm Registration No.: 7760A.

Waltek Testing Group Co., Ltd. Has been registered and fully described in a report filed with the Industry Canada. The acceptance letter from the Industry Canada is maintained in our files.

Registration number 7760A, October 15, 2016.

FCC Designation No.: CN1201. Test Firm Registration No.: 523476.

Waltek Testing Group 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 number 523476, September 10, 2019.

5 Test Summary

Test Items	Test Requirement	Result
Conducted Emission	47CFR part 15 § 15.207	PASS
Radiated Emission	47CFR part 15 § 15.209	PASS
20dB Bandwidth	47CFR part 15 § 15.215	PASS
Antenna Requirement	47CFR part 15 § 15.203	PASS
RF Exposure	FCC CFR 47 part1 § 1.1310 KDB 680106 D01 v03	PASS
Note: Pass=Compliance; NC=Not Compliance; NT=Not Tested; N/A=Not Applicable		

6 Equipment Used during Test

6.1 Equipments List

Conducted Emissions Test Site 1#						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Valid
1.	EMI Test Receiver	R&S	ESCI	100947	2020-07-30	1Year
2.	LISN	R&S	ENV216	100115	2020-07-30	1Year
3.	Cable	Top	TYPE16(3.5M)	-	2020-07-30	1Year
Conducted Emissions Test Site 2#						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Valid
1.	EMI Test Receiver	R&S	ESCI	101155	2020-07-30	1Year
2.	LISN	SCHWARZBECK	NSLK 8128	8128-259	2020-07-30	1Year
3.	Limiter	CYBERTEK	EM5010	261115-001-0024	2020-07-30	1Year
4.	Cable	Laplace	RF300	-	2020-07-30	1Year
3m Semi-anechoic Chamber for Radiation Emissions Test site 1#						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Valid
1	Test Receiver	R&S	ESCI	101296	2020-04-20	1Year
2	Trilog Broadband Antenna	SCHWARZBECK	VULB9160	9160-3325	2020-04-25	1Year
3	Active Loop Antenna	Com-Power Corp.	AL-130R	10160007	2020-05-06	1Year
4	Amplifier	ANRITSU	MH648A	M43381	2020-04-20	1Year
5	Cable	HUBER+SUHNER	CBL2	525178	2020-04-20	1Year
3m Semi-anechoic Chamber for Radiation Emissions Test site 2#						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Valid
1	Spectrum Analyzer	R&S	FSP30	100091	2020-04-20	1Year
2	Amplifier	Agilent	8447D	2944A10178	2020-08-26	1Year
4	Trilog Broadband Antenna	SCHWARZBECK	VULB9163	336	2020-08-22	1Year
5	Coaxial Cable (below 1GHz)	Top	TYPE16(13M)	-	2020-04-20	1Year
RF Conducted Testing						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Valid
1.	Signal Analyzer (9k~26.5GHz)	Agilent	N9010A	MY50520207	2020-04-20	1Year
2	Spectrum Analyzer	R&S	FSP40	100501	2020-07-30	1Year

6.2 Description of Support Units

Equipment	Manufacturer	Model No.	Series No.
Simulated load	/	/	/
Adapter	HUAWEI	HW-050200C3W	N/A

6.3 Measurement Uncertainty

Parameter	Uncertainty
Conducted Emission	± 3.64 dB (AC mains 150KHz~30MHz)
Radiated Spurious Emissions	± 5.08 dB (Bilog antenna 30M~1000MHz)
	± 5.47 dB (Horn antenna 1000M~25000MHz)
Radio Frequency	$\pm 1 \times 10^{-7}$ Hz
RF Power	± 0.42 dB
RF Power Density	± 0.7 dB
Conducted Spurious Emissions	± 2.76 dB (9kHz~26500MHz)
Confidence interval: 95%. Confidence factor: k=2	

6.4 Test Equipment Calibration

All the test equipments used are valid and calibrated by CEPREI Certification Body that address is No.110 Dongguan Zhuang RD. Guangzhou, P. R. China.

7 Conducted Emission

Test Requirement: FCC CFR 47 Part 15 Section 15.207

Test Method: ANSI C63.10:2013

Test Result: PASS

Frequency Range: 150kHz to 30MHz

Class/Severity: 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

* Decreases with the logarithm of the frequency.

7.1 EUT Operation

Operating Environment:

Temperature: 24.6 °C

Humidity: 45.8 % RH

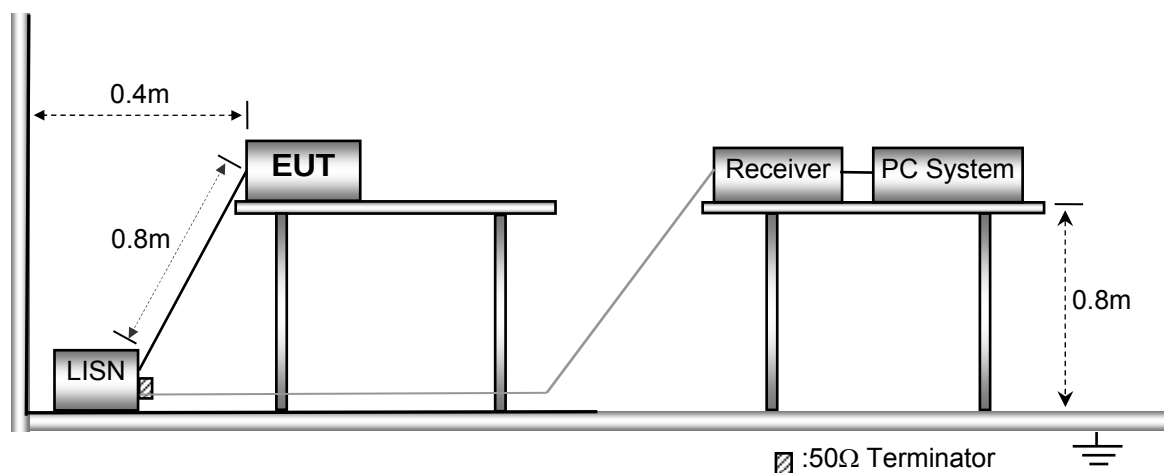
Atmospheric Pressure: 101.2kPa

EUT Operation: loading of 10 W

Only the worst case transmitting mode were record in the report.

7.2 EUT Setup

The EUT was placed on the test table in shielding room.

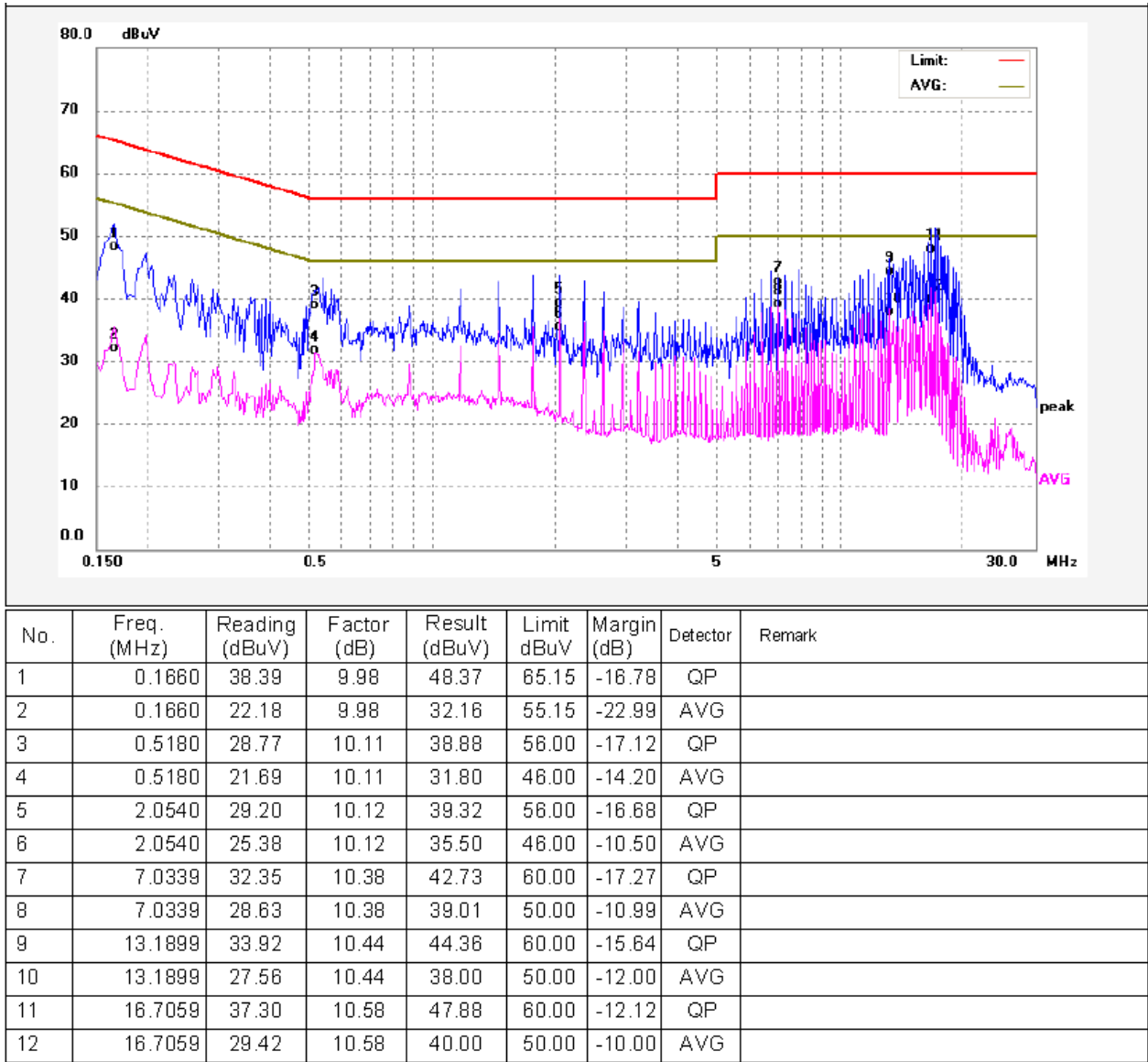


7.3 Measurement Description

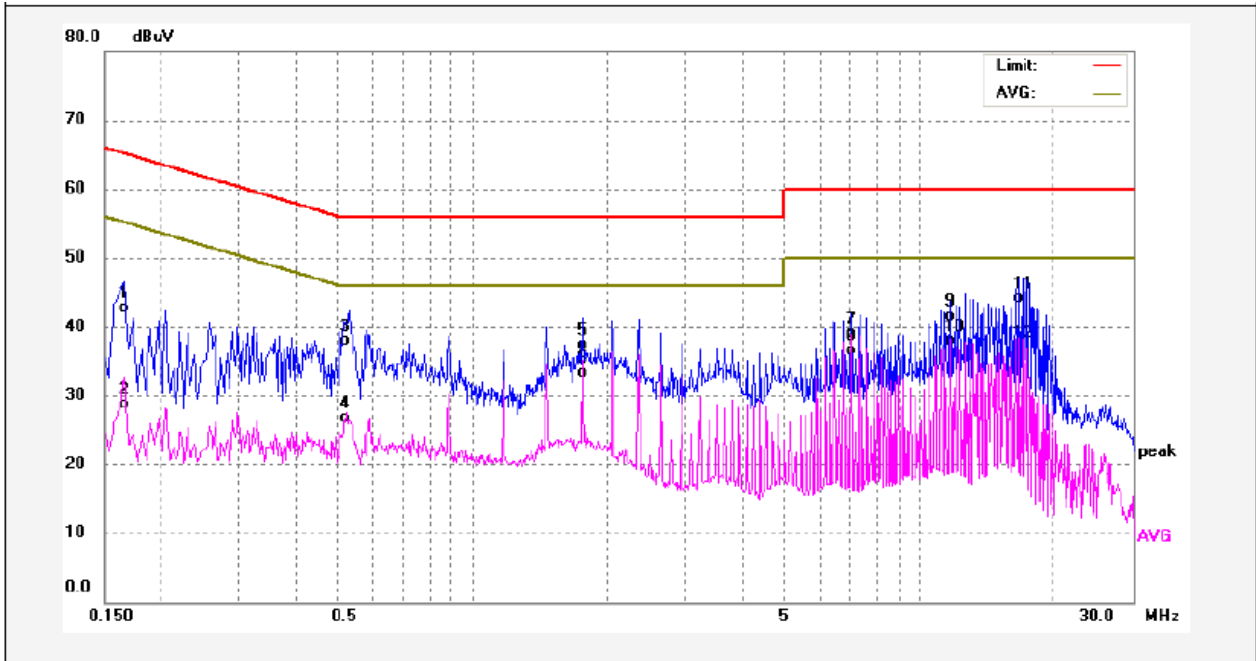
The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

7.4 Conducted Emission Test Result

Live line:



Neutral line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1660	32.74	9.98	42.72	65.15	-22.43	QP	
2	0.1660	18.75	9.98	28.73	55.15	-26.42	AVG	
3	0.5220	27.87	10.11	37.98	56.00	-18.02	QP	
4	0.5220	16.60	10.11	26.71	46.00	-19.29	AVG	
5	1.7620	27.26	10.13	37.39	56.00	-18.61	QP	
6	1.7620	23.14	10.13	33.27	46.00	-12.73	AVG	
7	7.0380	28.52	10.38	38.90	60.00	-21.10	QP	
8	7.0380	26.04	10.38	36.42	50.00	-13.58	AVG	
9	11.7260	31.12	10.41	41.53	60.00	-18.47	QP	
10	11.7260	27.59	10.41	38.00	50.00	-12.00	AVG	
11	16.7139	33.52	10.58	44.10	60.00	-15.90	QP	
12	16.7139	26.27	10.58	36.85	50.00	-13.15	AVG	

8 Radiated Spurious Emissions

Test Requirement: FCC CFR47 Part 15 Section 15.209

Test Method: ANSI C63.10:2013

Test Result: PASS

Measurement Distance: 3m

Limit:

FCC Part15 Paragraph 15.209

Frequency (MHz)	Field Strength		Field Strength Limit at 3m Measurement Dist	
	uV/m	Distance (m)	uV/m	dBuV/m
0.009 ~ 0.490	$2400/F(\text{kHz})$	300	$10000 * 2400/F(\text{kHz})$	$20\log^{(2400/F(\text{kHz}))} + 80$
0.490 ~ 1.705	$24000/F(\text{kHz})$	30	$100 * 24000/F(\text{kHz})$	$20\log^{(24000/F(\text{kHz}))} + 40$
1.705 ~ 30	30	30	$100 * 30$	$20\log^{(30)} + 40$
30 ~ 88	100	3	100	$20\log^{(100)}$
88 ~ 216	150	3	150	$20\log^{(150)}$
216 ~ 960	200	3	200	$20\log^{(200)}$
Above 960	500	3	500	$20\log^{(500)}$

8.1 EUT Operation

Operating Environment :

Temperature: 23.5 °C

Humidity: 51.1 % RH

Atmospheric Pressure: 101.2kPa

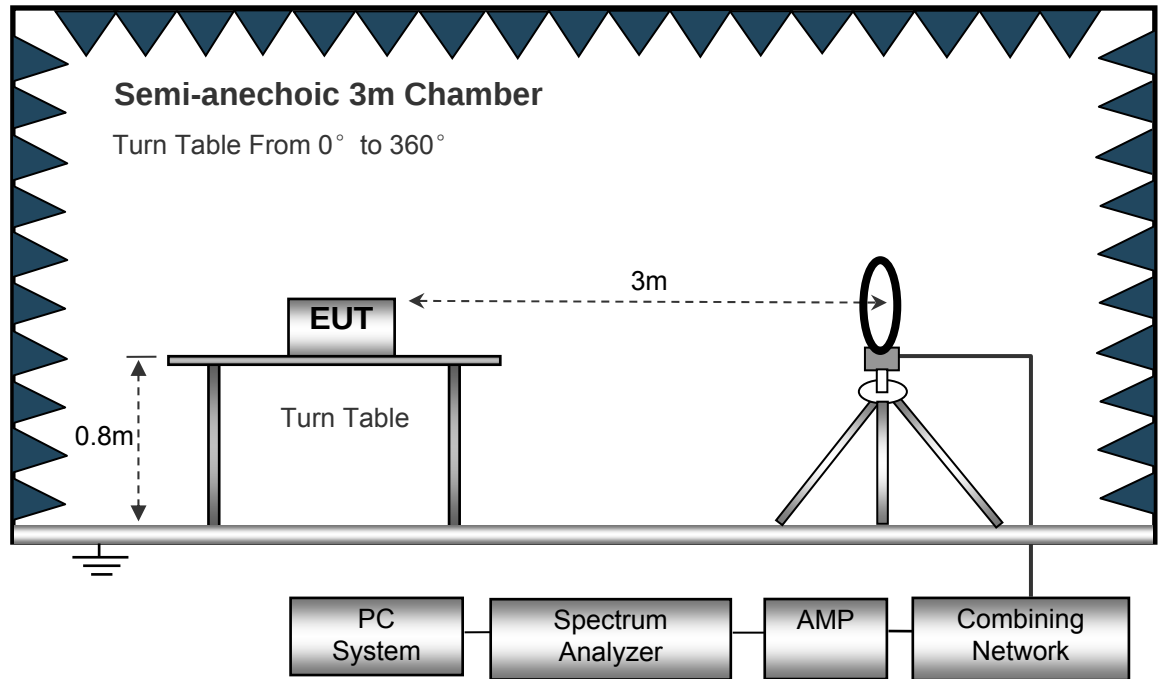
EUT Operation : loading of 10 W

Only the worst case Wireless charging were record in the report.

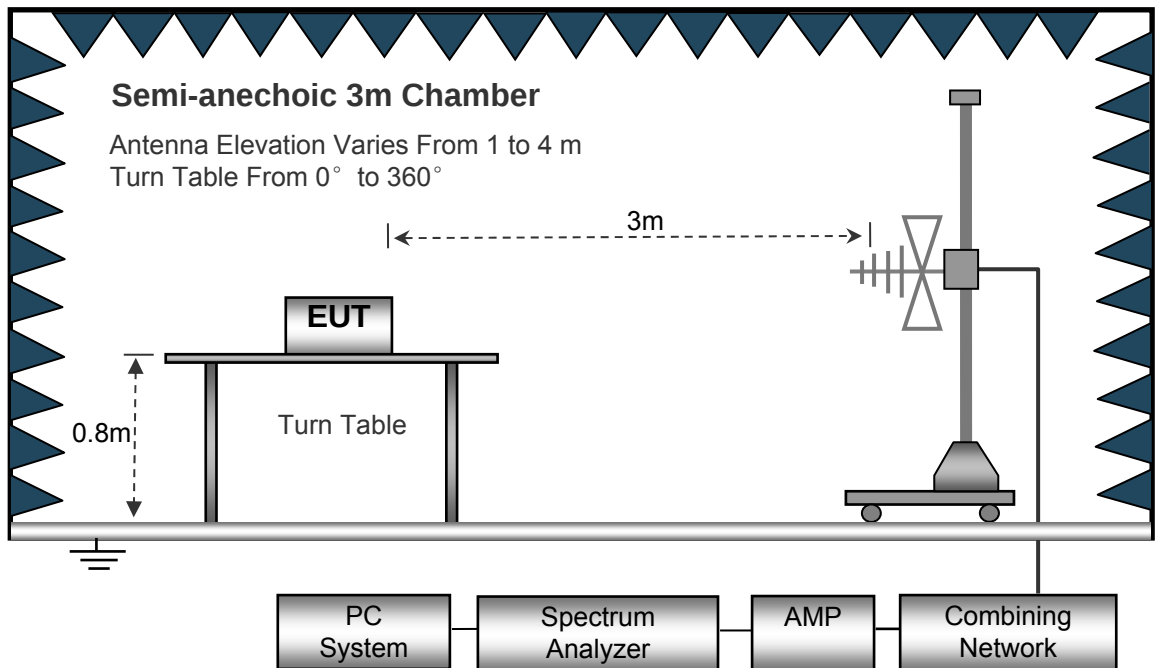
8.2 Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI C63.10: 2013.

The test setup for emission measurement below 30MHz.



The test setup for emission measurement from 30 MHz to 1 GHz.



8.3 Spectrum Analyzer Setup

Below 30MHz

Sweep Speed Auto
IF Bandwidth..... 10kHz
Video Bandwidth..... 10kHz
Resolution Bandwidth..... 10kHz

30MHz ~ 1GHz

Sweep Speed Auto
Detector PK
Resolution Bandwidth..... 100kHz
Video Bandwidth..... 300kHz

8.4 Test Procedure

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions. The spectrum was investigated from the lowest radio frequency signal generated in the device, without going below 9 kHz, up to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.
7. The radiation measurements are tested under 3-axes(X, Y, Z) position(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand). After pre-test, It was found that the worse radiation emission was get at the X position. So the data shown was the X position only.

8.5 Summary of Test Results

Wireless charging(worst mode):

Test Frequency: 9KHz ~ 30MHz, Note: Correct factor = Cable loss + Antenna factor

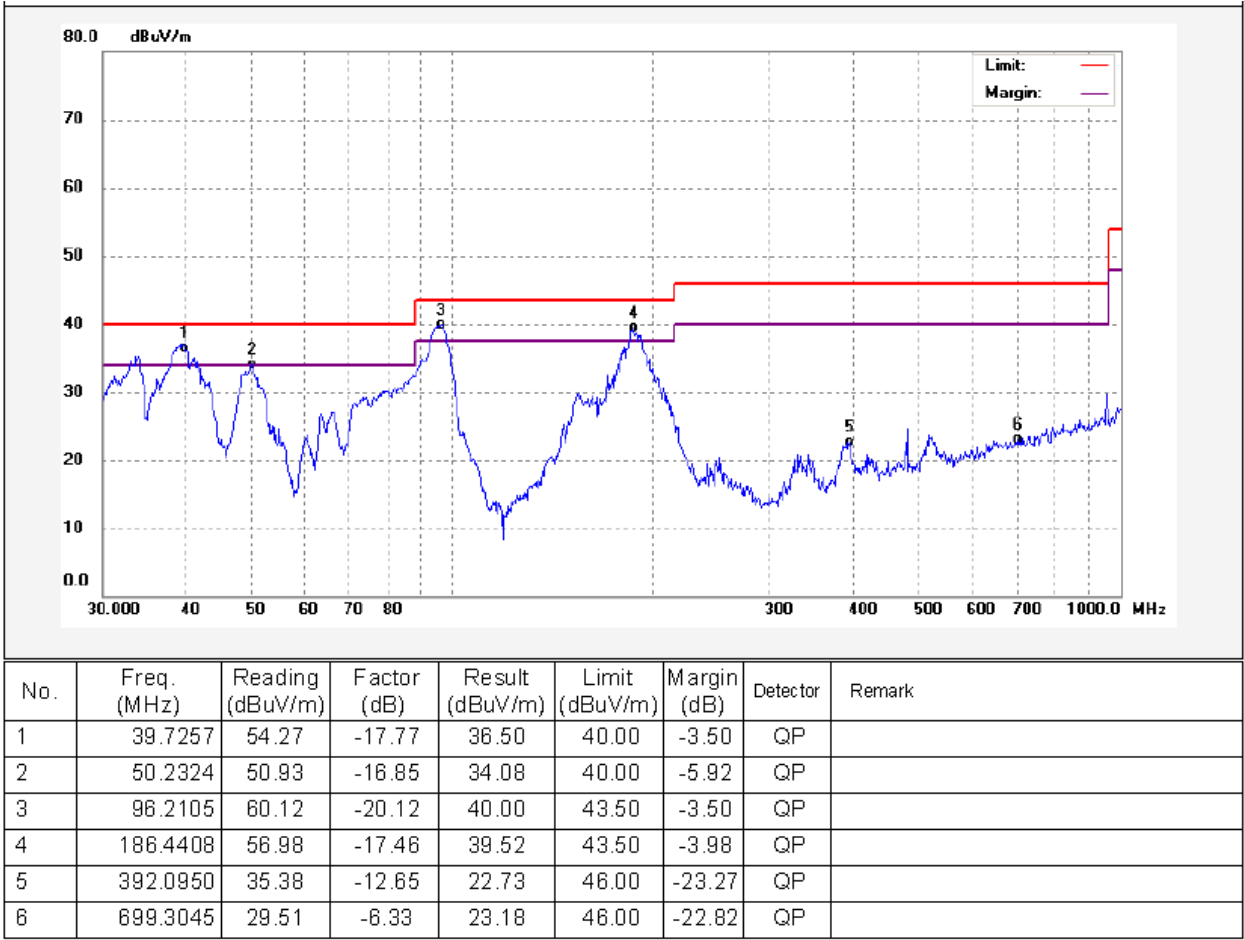
Frequency (MHz)	Measurement results	Detector	Correct factor	Polarization	Measurement results (calculated)	Limits	Margin
	dB μ V @3m	PK/QP	dB/m	H/V	dB μ V/m @3m	dB μ V/m @3m	dB
0.127	88.52	QP	-28.98	H	58.54	104.4	-45.86
0.127	84.23	QP	-28.98	V	55.25	104.4	-49.15
0.061	70.12	QP	-28.53	H	41.59	111.9	-70.31
0.061	65.06	QP	-28.53	V	36.53	111.9	-75.37

Note: 0.127 MHz is the Center frequency of the EUT for Radiated Spurious Emissions.

Wireless charging (worst mode):

Test Frequency: 30MHz ~ 1GHz

Antenna Polarization: Vertical

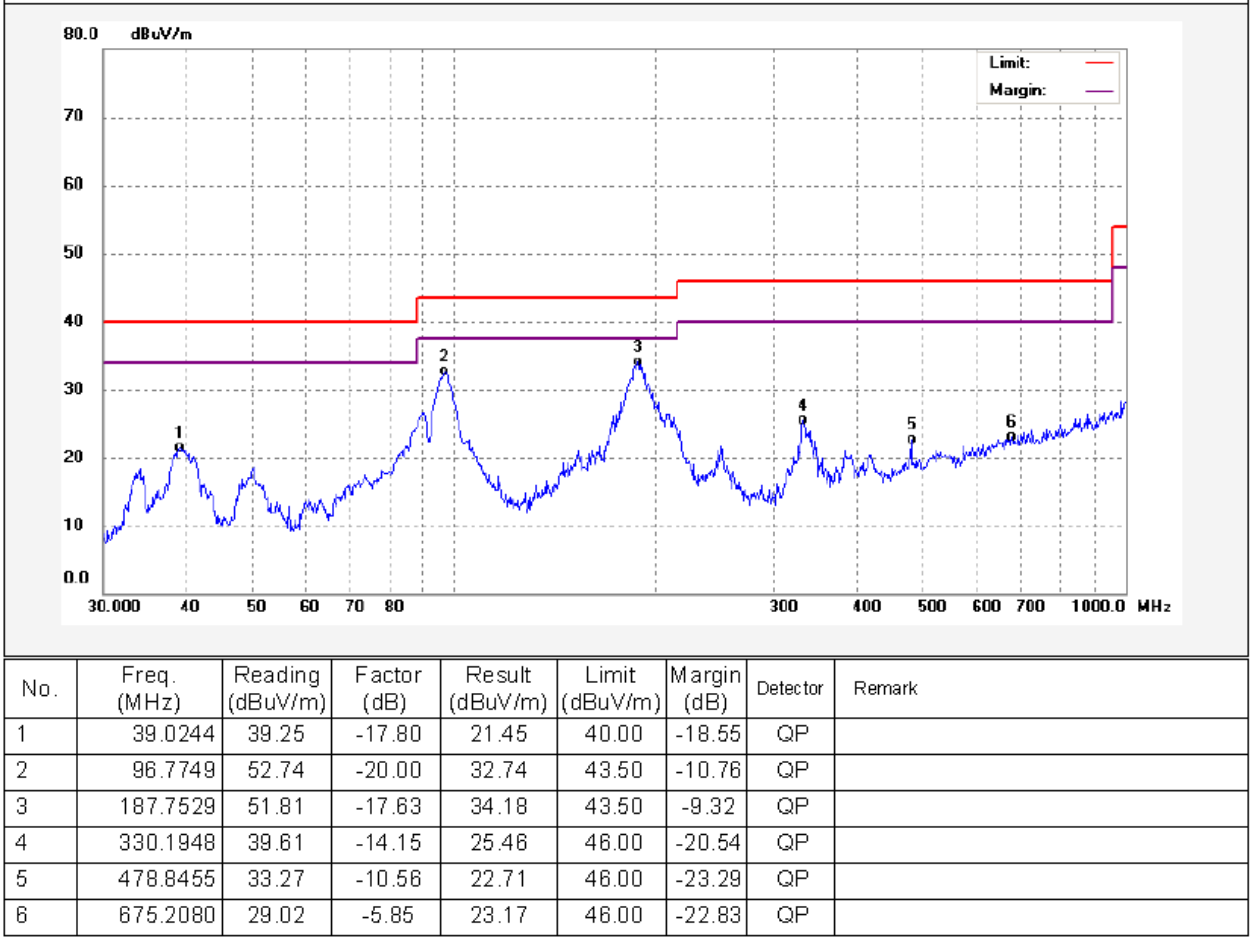


Factor= antenna factor + cable loss - preamplifier factor

Result = Reading + Factor

Wireless charging (worst mode):

Antenna Polarization: Horizontal



Factor= antenna factor + cable loss - preamplifier factor

Result = Reading + Factor

9 Bandwidth Measurement

Test Requirement: FCC CFR47 Part 15 Section 15.215

Test Method: ANSI C63.10:2013

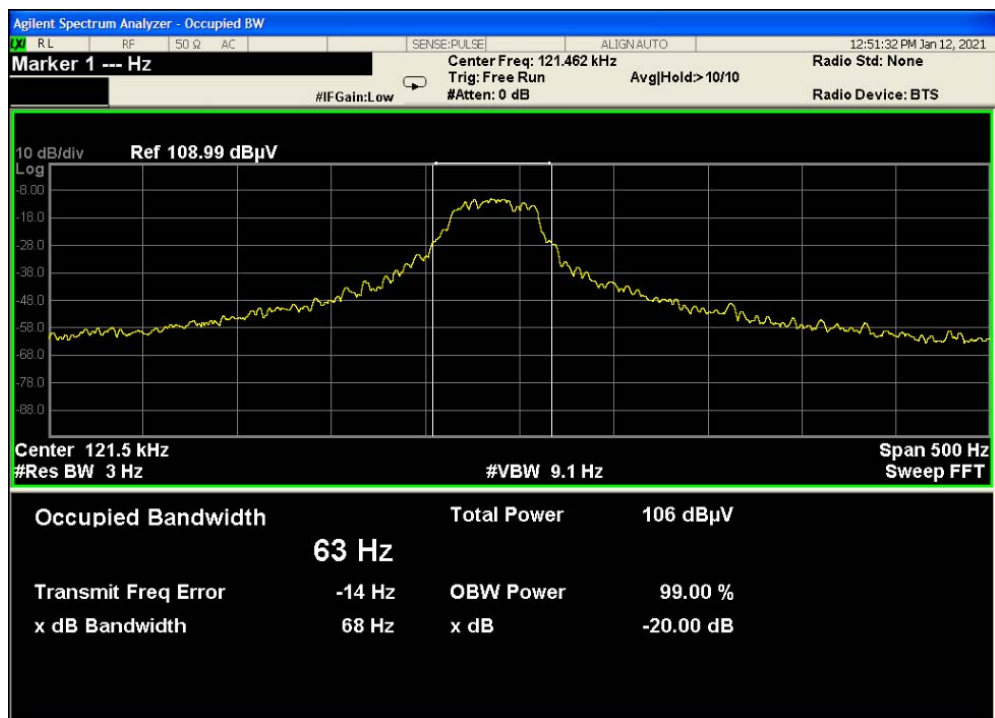
9.1 Test Procedure

- 1 The transmitter shall be operated at its maximum carrier power measured under normal test conditions;
2. The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.
3. The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the occupied bandwidth (OBW), video bandwidth (VBW) is set to approximately 3 times of the RBW.
4. Measured the spectrum width with power higher than 20dB below carrier and 99% Bandwidth.

9.2 Test Result Plot:

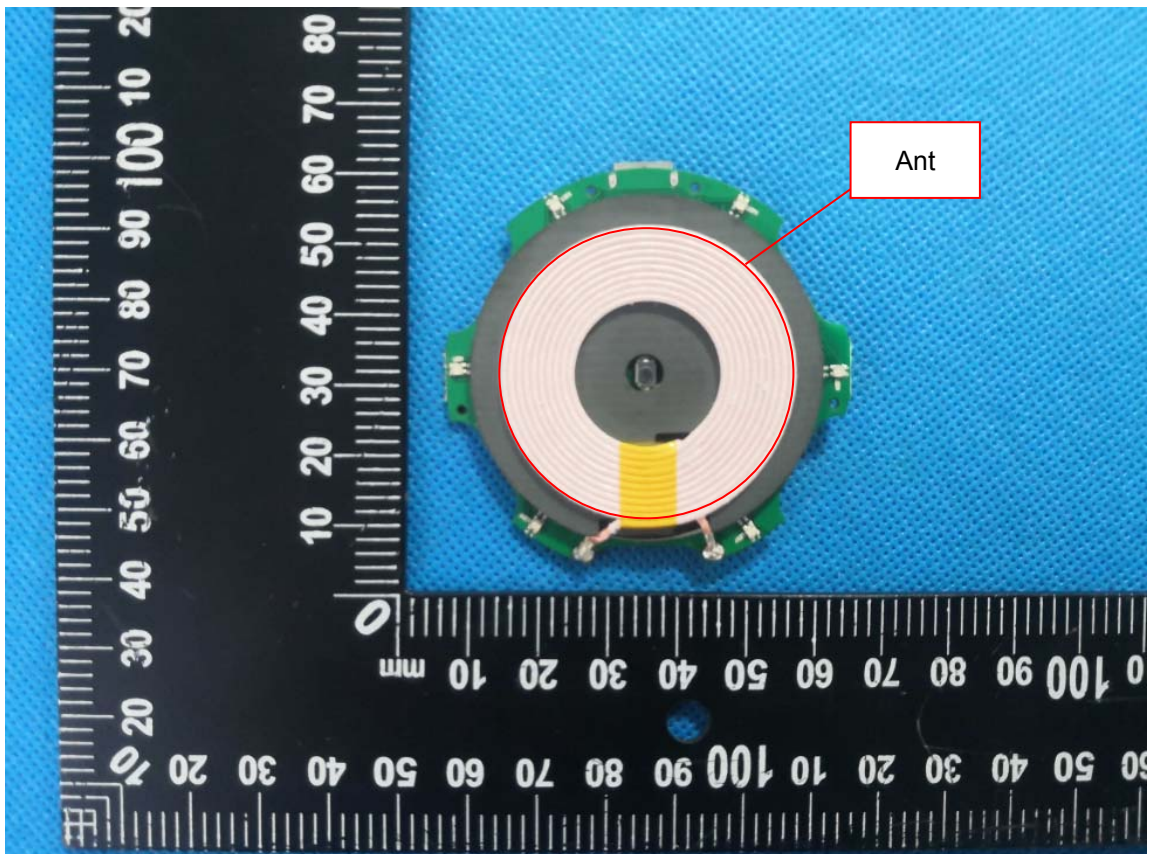
Test Channel(kHz)	99% Bandwidth(kHz)	20dB Bandwidth Emission(KHz)
121.5	0.063	0.068

Test result plot as follows:



10 Antenna Requirement

According to the FCC Part 15 Paragraph 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna to the intentional radiator shall be considered sufficient to comply with the provisions of this section. This product has one Inductive loop coil Antenna, fulfill the requirement of this section.



11 Photographs of test setup and EUT.

Note: Please refer to appendix: Appendix- WIASUP100031400-Photos.

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