Shenzhen GUOREN Certification Technology Service Co., Ltd.

101#, Building K & Building T, The Second Industrial Zone, Jiazitang Community, Fenghuang Street, Guangming District, Shenzhen, China

FCC PART 15 SUBPART C TEST REPORT

Report Reference No.....:	**GRCTR210902004-01**
FCC ID..... :	**2ARPF-EC150**
Compiled by (position+printed name+signature).. :	Testing Engineer Jimmy Wang
Supervised by (position+printed name+signature).. :	Project Engineer Kelley Zhang
Approved by (position+printed name+signature).. :	Manager Sam Wang
Date of issue.....:	Sep. 23, 2021
Representative Laboratory Name. :	**Shenzhen GUOREN Certification Technology Service Co., Ltd.**
Address..... :	101#, Building K & Building T, The Second Industrial Zone, Jiazitang Community, Fenghuang Street, Guangming District, Shenzhen, China
Applicant's name.....:	**Universal Through (HK) Limited**
Address..... :	Room 1405C, 14/F, Lucky Centre, 165-171,Wanchai Road, Wanchai, Hongkong, China
Test specification..... **:**	
Standard.....:	**FCC Rules and Regulations Part 15 Subpart C (Section 15.209), ANSI C63.10: 2013**

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Test item description.....:	**Wireless charger**
Trade Mark.....:	N/A
Manufacturer.....:	Shenzhen universal through Technology co.ltd.
Model/Type reference..... :	EC150
Listed Models ..... :	N/A
Modulation Type..... :	ASK
Operation Frequency..... :	From 110KHz~205KHz
Rating.....:	5-9V, 1.5-3A
Result.....:	**PASS**

TEST REPORT

Equipment under Test	:	Wireless charger
Model /Type	:	EC150
Listed Models	:	N/A
Applicant	:	**Universal Through (HK) Limited**
Address	:	Room 1405C, 14/F, Lucky Centre, 165-171,Wanchai Road, Wanchai, Hongkong, China
Manufacturer	:	**Shenzhen universal through Technology co.ltd.**
Address	:	6th,Floor,Dongshangang industrial area,Gusu one road,Xixiang street,Bao'an district,, shenzhen, 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.

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1 TEST STANDARDS

The tests were performed according to following standards:

FCC Rules and Regulations Part 15 Subpart C (Section 15.207): Conducted limits.
FCC Rules and Regulations Part 15 Subpart C (Section 15.209): Radiated emission limits; general requirements.
ANSI C63.10: 2013: American National Standard for Testing Unlicensed Wireless Devices

2 SUMMARY

2.1 General Remarks

Date of receipt of test sample	:	Sep. 13, 2021
Testing commenced on	:	Sep. 13, 2021
Testing concluded on	:	Sep. 23, 2021

2.2 Product Description

Product Name:	Wireless charger
Model/Type reference:	EC150
Test samples ID:	GRCTR210902004-01-1#
Power supply:	DC 5-9V, 1.5-3A, 5-15W
Operation frequency:	110KHz - 205KHz
Modulation type:	ASK
Antenna type:	Loop coil antenna

2.3 Description of the test mode

Equipment under test was operated during the measurement under the following conditions:
☒ Charging and communication mode

Test Modes:		
Mode 1	AC/DC Adapter (5V/3A) + EUT + Mobile Phone1 (Battery Status: <1%)	Pre-tested
Mode 2	AC/DC Adapter (5V/3A) + EUT + Mobile Phone1 (Battery Status: <50%)	Pre-tested
Mode 3	AC/DC Adapter (5V/3A) + EUT + Mobile Phone1 (Battery Status: 100%)	Pre-tested
Mode 4	AC/DC Adapter (9V/2A) + EUT + Mobile Phone1 (Battery Status: <1%)	Record
Mode 5	AC/DC Adapter (9V/2A) + EUT + Mobile Phone1 (Battery Status: <50%)	Pre-tested
Mode 6	AC/DC Adapter (9V/2A) + EUT + Mobile Phone1 (Battery Status: 100%)	Pre-tested
Note: All test modes were pre-tested, but we only recorded the worst case in this report.		

2.4 Special Accessories

Follow auxiliary equipment(s) test with EUT that provided by the manufacturer or laboratory is listed as follow:

Description	Manufacturer	Model	Technical Parameters	Certificate	Provided by
Adapter	FANYEJIAHE	PD20W-2	Input: 100-240V~, 50/60Hz, 0.5A Output: 5V⎓3A / 9V⎓2A / 12V⎓1.5A	FCC	laboratory

2.5 Modifications

No modifications were implemented to meet testing criteria.

3 TEST ENVIRONMENT

3.1 Address of the test laboratory

Shenzhen GUOREN Certification Technology Service Co., Ltd.
101#, Building K & Building T, The Second Industrial Zone, Jiazitang Community, Fenghuang Street, Guangming District, Shenzhen, China

3.2 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

FCC-Registration No.: 920798 Designation Number: CN1304

Shenzhen GUOREN Certification Technology Service 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.: 6202.01

Shenzhen GUOREN Certification Technology Service Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.

ISED#: 27264 CAB identifier: CN0115
Shenzhen GUOREN Certification Technology Service Co., Ltd. has been listed by Innovation, Science and Economic Development Canada 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.

3.3 Summary of measurement results

DESCRIPTION OF TEST	RESULT
CONDUCTED EMISSIONS TEST	COMPLIANT
RADIATED EMISSION TEST	COMPLIANT
OCCUPIED BANDWIDTH MEASUREMENT	COMPLIANT
ANTENNA REQUIREMENT	COMPLIANT

3.4 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01" Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 2 " and is documented in the Shenzhen GUOREN Certification Technology Service Co., Ltd.quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Shenzhen GUOREN Certification Technology Service Co., Ltd.:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	4.06 dB	(1)
Radiated Emission	1~18GHz	5.14 dB	(1)
Radiated Emission	18-40GHz	5.38 dB	(1)
Conducted Disturbance	0.15~30MHz	2.14 dB	(1)

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

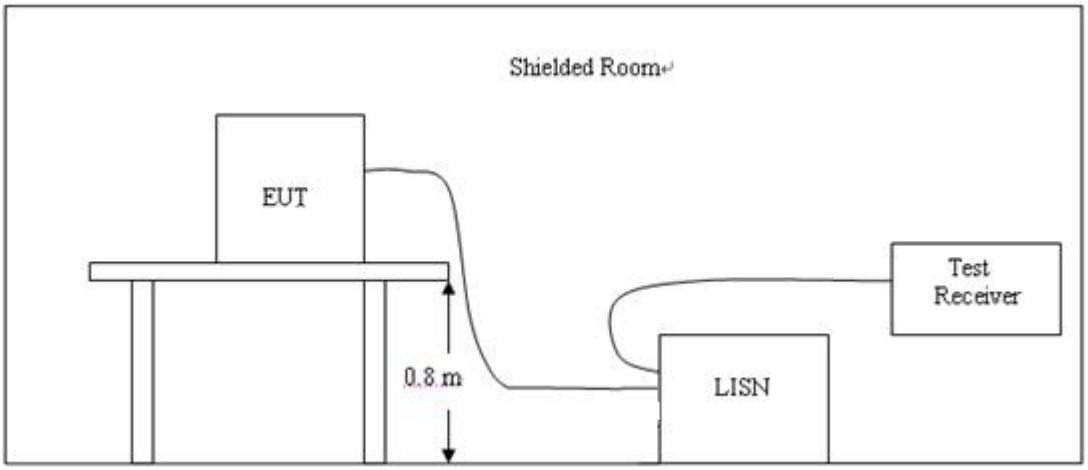
3.5 Equipments Used during the Test

Test Equipment	Manufacturer	Model No.	Equipment No.	Calibration Date	Calibration Due Date
LISN	R&S	ENV216	GRCTEE009	2020/11/3	2021/11/2
LISN	R&S	ENV216	GRCTEE010	2020/11/3	2021/11/2
EMI Test Receiver	R&S	ESPI	GRCTEE017	2020/11/3	2021/11/2
EMI Test Receiver	R&S	ESCI	GRCTEE008	2020/11/3	2021/11/2
Spectrum Analyzer	Agilent	N9020A	GRCTEE002	2020/11/3	2021/11/2
Spectrum Analyzer	R&S	FSP	GRCTEE003	2020/11/19	2021/11/18
Vector Signal generator	Agilent	N5181A	GRCTEE007	2020/11/3	2021/11/2
Analog Signal Generator	R&S	SML03	GRCTEE006	2020/11/3	2021/11/2
Universal Radio Communication	CMW500	R&S	GRCTEE001	2020/11/3	2021/11/2
Climate Chamber	QIYA	LCD-9530	GRCTES016	2020/11/1	2021/10/31
Ultra-Broadband Antenna	Schwarzbeck	VULB9163	GRCTEE018	2020/10/25	2023/10/24
Horn Antenna	Schwarzbeck	BBHA 9120D	GRCTEE019	2020/10/25	2023/10/24
Loop Antenna	Zhinan	ZN30900C	GRCTEE020	2020/10/25	2023/10/24
Horn Antenna	Beijing Hangwei Dayang	OBH100400	GRCTEE049	2021/1/18	2024/1/17
Amplifier	Schwarzbeck	BBV 9745	GRCTEE021	2021/1/18	2022/1/17
Amplifier	Taiwan chengyi	EMC051845B	GRCTEE022	2020/11/19	2021/11/18
Temperature/Humidity Meter	Huaguan	HG-308	GRCTES037	2020/11/1	2021/10/31
Directional coupler	NARDA	4226-10	GRCTEE004	2020/11/3	2021/11/2
High-Pass Filter	XingBo	XBLBQ-GTA18	GRCTEE053	2020/11/3	2021/11/2
High-Pass Filter	XingBo	XBLBQ-GTA27	GRCTEE054	2020/11/3	2021/11/2
Automated filter bank	Tonscend	JS0806-F	GRCTEE055	2020/11/3	2021/11/2
EMI Test Software	ROHDE & SCHWARZ	ESK1-V1.71	GRCTEE060	N/A	N/A
EMI Test Software	Fera	EZ-EMC	GRCTEE061	N/A	N/A

4 TEST CONDITIONS AND RESULTS

4.1 AC Power Conducted Emission

TEST CONFIGURATION



TEST PROCEDURE

1, The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10.
2, Support equipment, if needed, was placed as per ANSI C63.10.
3, All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
4, If a EUT received DC power from the USB Port of Notebook PC, the PC's adapter received power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
5, All support equipments received AC power from a second LISN, if any.
6, The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7, Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.

AC Power Conducted Emission Limit

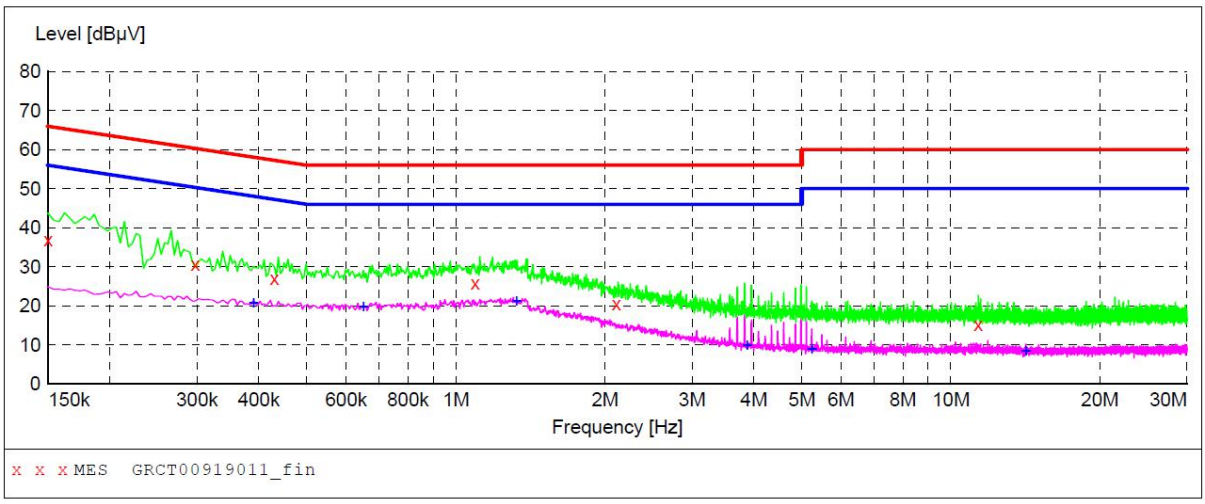
For intentional device, according to § 15.207(a) AC Power Conducted Emission Limits is as following:

Frequency range (MHz)	Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50
* Decreases with the logarithm of the frequency.		

TEST RESULTS

1. Both 120 VAC, 50/60 Hz and 240 VAC, 50/60 Hz power supply have been tested, only the worst result of 120 VAC, 60 Hz was reported as below:
2. All test modes described in section 2.3 has been tested, only the worst result of Mode 1 is recorded.

Power supply:	DC 5V from Adapter AC 120V/60Hz	Polarization	L



MEASUREMENT RESULT: "GRCT00919011_fin"

9/19/2021 9:51AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.150000	37.00	10.3	66	29.0	QP	L1	GND
0.298000	30.70	10.3	60	29.6	QP	L1	GND
0.430000	27.10	10.3	57	30.2	QP	L1	GND
1.094000	25.90	10.4	56	30.1	QP	L1	GND
2.110000	20.60	10.5	56	35.4	QP	L1	GND
11.350000	15.30	10.7	60	44.7	QP	L1	GND

MEASUREMENT RESULT: "GRCT00919011_fin2"

9/19/2021 9:51AM

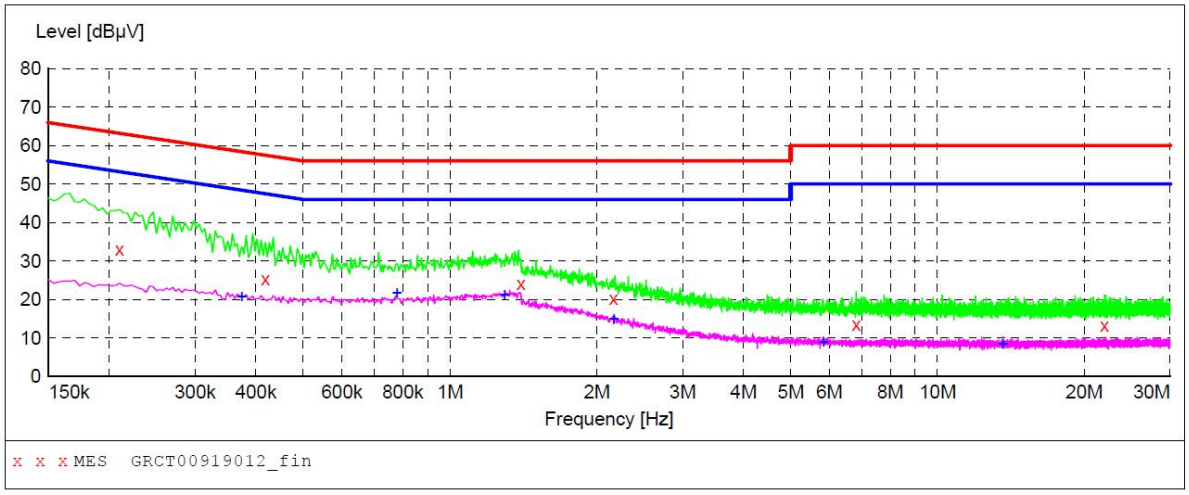
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.390000	20.70	10.3	48	27.4	AV	L1	GND
0.650000	19.90	10.3	46	26.1	AV	L1	GND
1.326000	21.30	10.4	46	24.7	AV	L1	GND
3.874000	9.90	10.5	46	36.1	AV	L1	GND
5.238000	9.00	10.5	50	41.0	AV	L1	GND
14.174000	8.40	10.7	50	41.6	AV	L1	GND

Note:1).Level (dBµV)= Reading (dBµV)+ Transducer (dB)

2). Transducer (dB)=insertion loss of LISN (dB) + Cable loss (dB)

3). Margin(dB) = Limit (dBµV) - Level (dBµV)

Power supply:	DC 5V from Adapter AC 120V/60Hz	Polarization	N



MEASUREMENT RESULT: "GRCT00919012_fin"

9/19/2021 9:55AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.210000	33.20	10.3	63	30.0	QP	N	GND
0.418000	25.30	10.3	58	32.2	QP	N	GND
1.398000	24.20	10.4	56	31.8	QP	N	GND
2.166000	20.30	10.5	56	35.7	QP	N	GND
6.814000	13.60	10.5	60	46.4	QP	N	GND
22.018000	13.30	11.0	60	46.7	QP	N	GND

MEASUREMENT RESULT: "GRCT00919012_fin2"

9/19/2021 9:55AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.374000	20.90	10.3	48	27.5	AV	N	GND
0.778000	21.70	10.3	46	24.3	AV	N	GND
1.294000	21.20	10.4	46	24.8	AV	N	GND
2.170000	14.90	10.5	46	31.1	AV	N	GND
5.834000	8.90	10.5	50	41.1	AV	N	GND
13.602000	8.40	10.7	50	41.6	AV	N	GND

Note:1).Level (dBµV)= Reading (dBµV)+ Transducer (dB)

2). Transducer (dB)=insertion loss of LISN (dB) + Cable loss (dB)

3). Margin(dB) = Limit (dBµV) - Level (dBµV)

4.2 Radiated Emission

Limit

For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emission out of authorized band shall not exceed the following table at a 3 meters measurement distance.

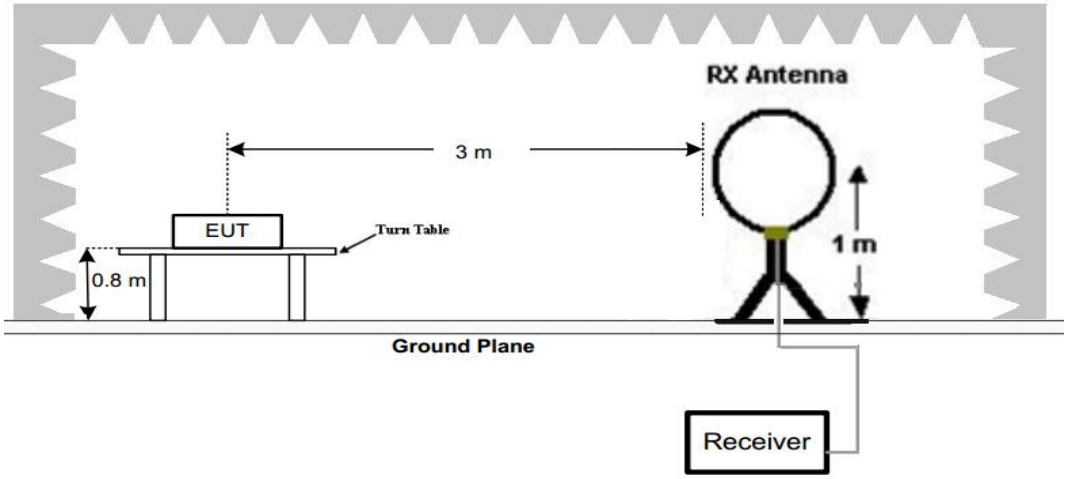
In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a)

Radiated emission limits

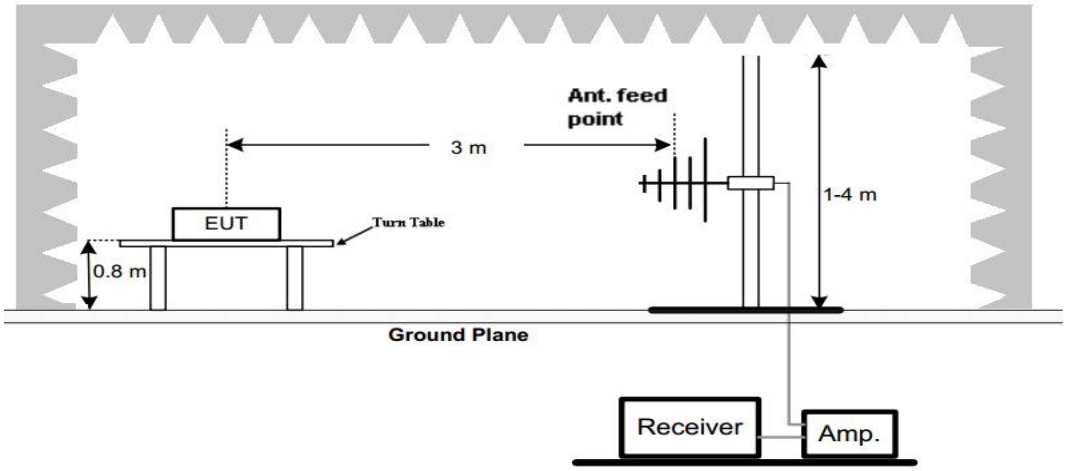
Frequency (MHz)	Distance (Meters)	Radiated (dBμV/m)	Radiated (μV/m)
0.009-0.49	3	20log(2400/F(KHz))+40log(300/3)	2400/F(KHz)
0.49-1.705	3	20log(24000/F(KHz))+ 40log(30/3)	24000/F(KHz)
1.705-30	3	20log(30)+ 40log(30/3)	30
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

TEST CONFIGURATION

1. Radiated Emission Test Set-Up, Frequency Below 30MHz



2. Radiated Emission Test Set-Up, Frequency below 1000MHz



Test Procedure

1. Below 1GHz measurement the EUT is placed on a turntable which is 0.8m above ground plane.
2. Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0℃ to 360℃ to acquire the highest emissions from EUT
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measurements have been completed.
5. Radiated emission test frequency band from 9KHz to 1000MHz.
6. The distance between test antenna and EUT as following table states:

Test Frequency range	Test Antenna Type	Test Distance
9KHz-30MHz	Active Loop Antenna	3
30MHz-1GHz	Bilog Antenna	3

7. Setting test receiver/spectrum as following table states:

Test Frequency range	Test Receiver/Spectrum Setting	Detector
9KHz-150KHz	RBW=200Hz/VBW=3KHz,Sweep time=Auto	QP
150KHz-30MHz	RBW=9KHz/VBW=100KHz,Sweep time=Auto	QP
30MHz-1GHz	RBW=120KHz/VBW=1000KHz,Sweep time=Auto	QP

TEST RESULTS

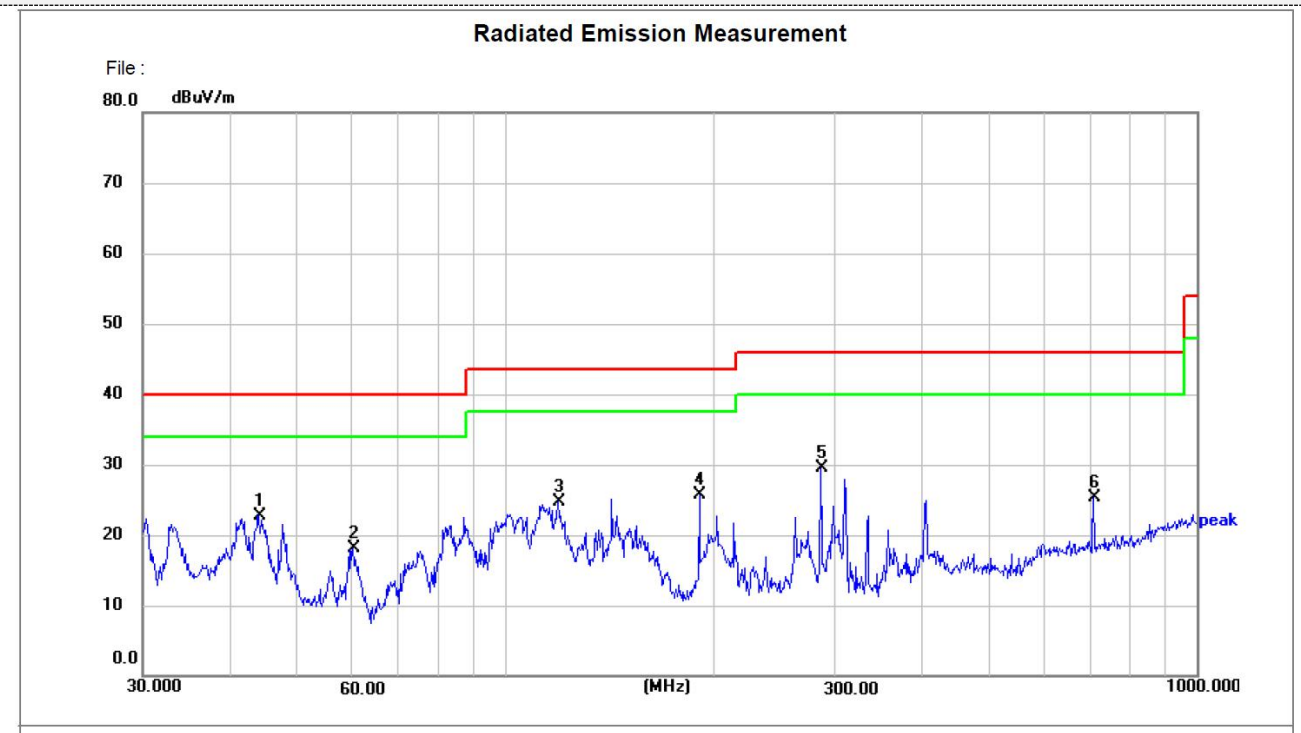
For 9 KHz-30MHz

Frequency	Reading	Polar	Antenna Factor	Cable Loss	Emission Levels	Limits at 3m	Margin	Detector Mode
(MHz)	(dBμV/m)	Loop	(dB/m)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
0.124(F)	59.87	Loop	23.65	0.01	83.53	105.88	22.35	PK
0.124(F)	52.71	Loop	23.65	0.01	76.37	85.88	9.51	AV
0.110	28.76	Loop	23.55	0.01	52.32	106.78	54.46	PK
0.110	24.91	Loop	23.55	0.01	48.47	86.78	38.31	AV
0.524	19.81	Loop	24.93	-0.18	44.56	73.22	28.66	QP
2.753	25.51	Loop	24.02	-0.24	49.29	58.81	9.52	QP
3.421	25.93	Loop	23.24	-0.28	48.89	69.54	20.65	QP
--	--	--	--	--	--	--		--

Remark:
1. Data of measurement within this frequency range shown "-- in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits and not recorded.
2. The test limit distance is 3m limit.
3. PK means Peak Value, QP means Quasi Peak Value, AV means Average Value.
4. F means Fundamental Frequency.
5. Emission level (dBuV/m) =Reading + Antenna Factor + Cable Loss.
6. Margin value = Limit value- Emission level.

For 30MHz-1GHz

Horizontal



Site LAB
Limit: FCC Part15 RE-Class B_30-1000MHz
EUT:
M/N:
Mode:
Note:

Polarization: ***Horizontal***
Power: AC120/60Hz
Distance: 3m

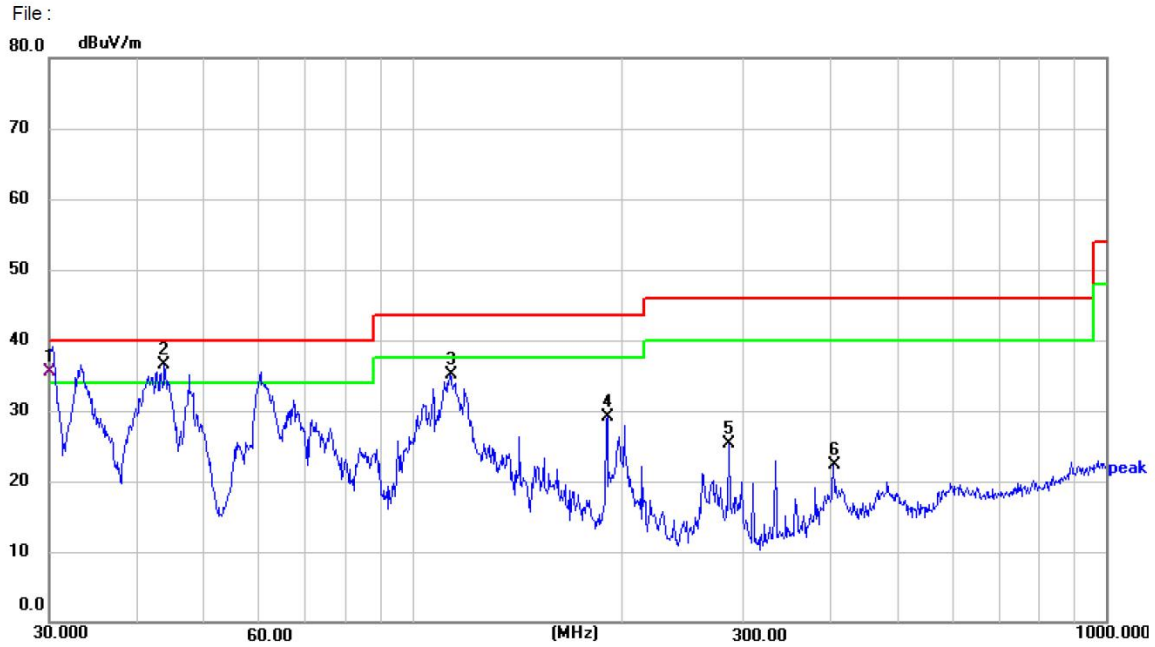
Temperature: 24.5(C)
Humidity: 52 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	44.1202	40.68	-17.95	22.73	40.00	-17.27	peak	100	139	P	
2	60.2801	37.46	-19.31	18.15	40.00	-21.85	peak	100	139	P	
3	119.4361	44.56	-19.83	24.73	43.50	-18.77	peak	199	234	P	
4	191.0738	45.38	-19.61	25.77	43.50	-17.73	peak	100	54	P	
5 *	285.9778	46.76	-17.33	29.43	46.00	-16.57	peak	100	307	P	
6	709.1823	35.56	-10.30	25.26	46.00	-20.74	peak	100	184	P	

Note:1).Level (dBμV/m)= Reading (dBμV/m)+ Factor (dB/m)
2). Factor(dB/m)=Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB)
3). Margin(dB) = Limit (dBμV/m) - Level (dBμV/m)

Vertical

Radiated Emission Measurement



Site LAB
Limit: FCC Part15 RE-Class B_30-1000MHz
EUT:
M/N:
Mode:
Note:

Polarization: ***Vertical***
Power: AC120/60Hz
Distance: 3m

Temperature: 24.5(C)
Humidity: 52 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1 !	30.0550	55.70	-20.10	35.60	40.00	-4.40	QP	100	282	P	
2 *	43.9658	54.46	-17.95	36.51	40.00	-3.49	peak	199	9	P	
3	113.3162	54.58	-19.55	35.03	43.50	-8.47	peak	100	57	P	
4	191.0738	48.69	-19.61	29.08	43.50	-14.42	peak	100	156	P	
5	285.9777	42.70	-17.33	25.37	46.00	-20.63	peak	100	57	P	
6	404.6665	37.58	-15.29	22.29	46.00	-23.71	peak	100	26	P	

Note:1).Level (dBμV/m)= Reading (dBμV/m)+ Factor (dB/m)
2). Factor(dB/m)=Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB)
3). Margin(dB) = Limit (dBμV/m) - Level (dBμV/m)

4.3 Occupied Bandwidth

TEST CONFIGURATION

TEST PROCEDURE

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§15.217 through 15.257 and in subpart E of this part, must be designed to ensure that 20dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equip compliance with the 20dB attenuation specification may base on measurement at the intentional radiator's antenna output terminal unless the intentional radiator uses a permanently attached antenna, in which case compliance shall be.deomonstrated by measuring the radiated emissions.

LIMIT

The 20dB bandwidth shall be less than 80% of the permitted frequency band.

TEST RESULTS

Mode	Freq (KHz)	20dB Bandwidth (KHz)	Conclusion
Tx Mode	124.00	2.844	PASS

4.4 Antenna Requirement

Standard Applicable

Standard Applicable

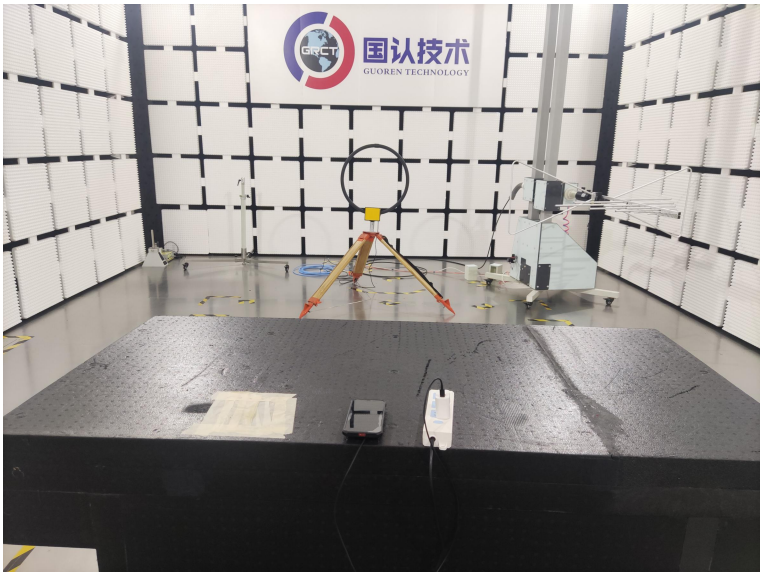
For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

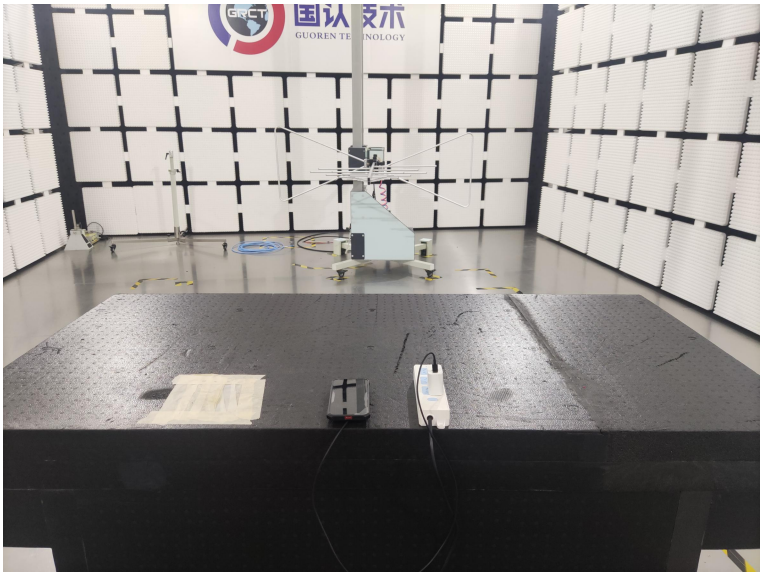
And according to FCC 47 CFR Section 15.247 (c), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

Antenna Information

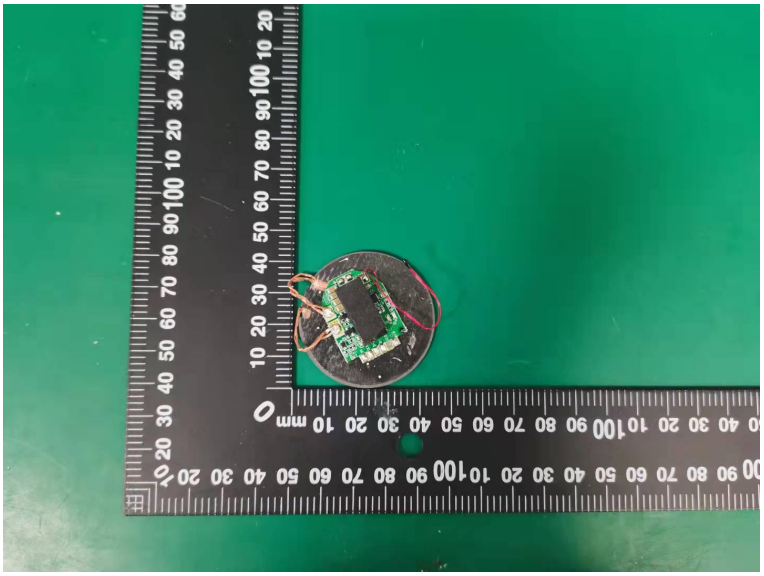
The antenna used in this product is a Coil Antenna, The directional gains of antenna used for transmitting is 0dBi.
Remark:The antenna gain is provided by the customer , if the data provided by the customer is not accurate, Shenzhen GUOREN Certification Technology Service Co., Ltd. does not assume any responsibility.

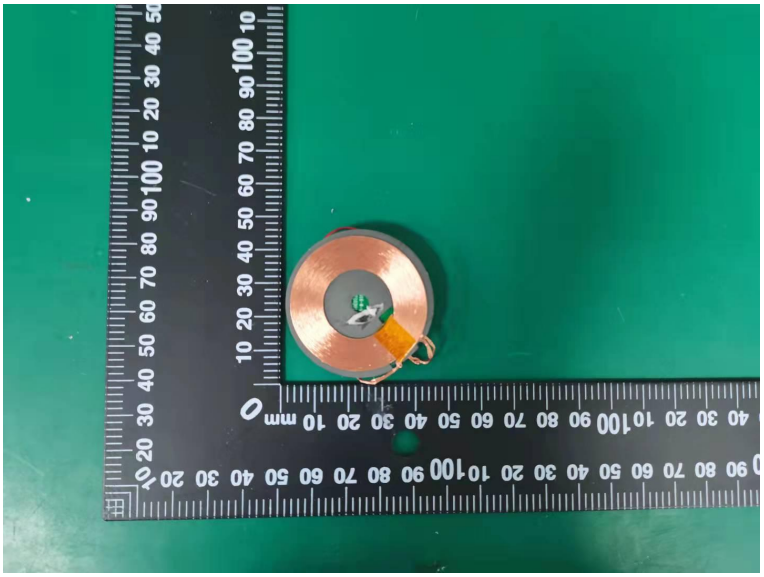
5 Test Setup Photos of the EUT

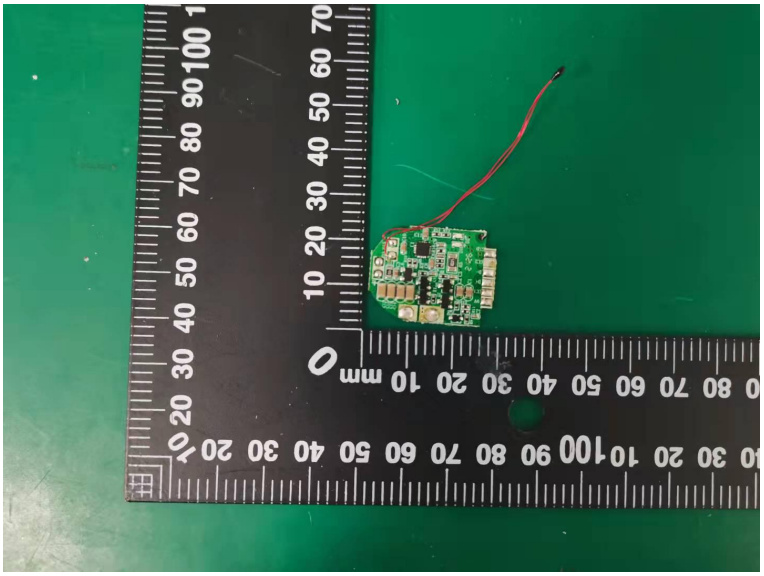


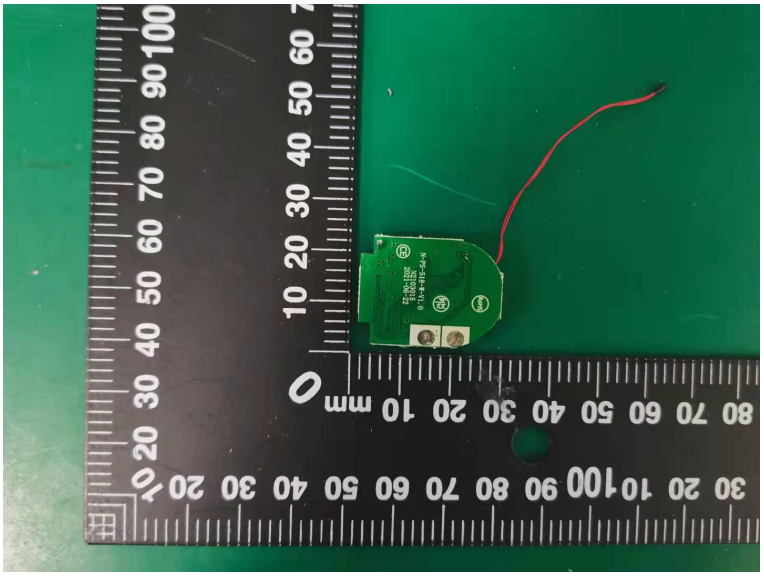


6 PHOTOS OF THE EUT









********** End of Report **********