



Shenzhen Global Test Service Co.,Ltd.

No.7-101 and 8A-104,Building 7 and 8,DCC Cultural and Creative Garden No.98,Pingxin North Road,Shangmugu,Pinghu Street, Longgang District,Shenzhen,Guangdong,China

TEST REPORT

FCC Rules and Regulations Part 15 Subpart C (Section 15.209), ANSI C63.10: 2013

Report Reference No......: **GTS20210906007-1-4**

FCC ID.....: **2A27Y-OGW20**

Compiled by

(position+printed name+signature)...: File administrators Peter Xiao

Peter Xiao

Supervised by

(position+printed name+signature)...: Test Engineer Oliver Ou

Oliver Ou

Approved by

(position+printed name+signature)...: Manager Simon Hu



Simon Hu

Date of issue.....: Sep.14, 2021

Representative Laboratory Name .: **Shenzhen Global Test Service Co.,Ltd.**

Address.....: No.7-101 and 8A-104,Building 7 and 8,DCC Cultural and Creative Garden No.98,Pingxin North Road,Shangmugu,Pinghu Street,Longgang District,Shenzhen,Guangdong,China

Applicant's name: **HUIAN TAIZAN TRADEING CO., LTD.**

Address: ROOM1701, WUYI MANSION,YANAN EAST ROAD, QINGJIANGPUDISTRICT, HUIAN JANGSU CHINA.

Test specification

Standard: FCC Rules and Regulations Part 15 Subpart C (Section 15.209), ANSI C63.10: 2013

Shenzhen Global Test Service Co.,Ltd. All rights reserved.

This publication may be reproduced in whole or in part for non-commercial purposes as long as the Shenzhen Global Test Service Co.,Ltd. is acknowledged as copyright owner and source of the material. Shenzhen Global Test Service Co.,Ltd. takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.

Test item description: **Oongalee Gateway**

Trade Mark: oongalee

Manufacturer: Lvhua Ruisheng (Shenzhen) Industrial Technology Co., Ltd.

Model/Type reference.....: OGW 2.0

List Model: OGW 2.0-C, OGW 2.0-U, OGW 2.0-E, OGW 2.0-S, OGW 2.0-CN, OGW 3.0-C, OGW 3.0-U, OGW 3.0-E, OGW 3.0-S, OGW 3.0-CN, OGW 3.0, OGW 4.0-C, OGW 4.0-U, OGW 4.0-E, OGW 4.0-S, OGW 4.0-CN, OGW 4.0

Modulation Type: CW (Continuous Wave)

Operation Frequency.....: 115-205KHz

Ratings: DC 12.0V by Adapter

Result.....: **PASS**

TEST REPORT

Test Report No. : GTS20210906007-1-4	Sep.14, 2021
	Date of issue

Equipment under Test : Oongalee Gateway

Model /Type : OGW 2.0

Listed Models : OGW 2.0-C, OGW 2.0-U, OGW 2.0-E, OGW 2.0-S, OGW 2.0-CN,
OGW 3.0-C, OGW 3.0-U, OGW 3.0-E, OGW 3.0-S, OGW 3.0-CN,
OGW 3.0, OGW 4.0-C, OGW 4.0-U, OGW 4.0-E, OGW 4.0-S,
OGW 4.0-CN, OGW 4.0

Applicant : **HUAIAN TAIZAN TRADEING CO., LTD.**

Address : ROOM1701, WUYI MANSION,YANAN EAST ROAD,
QINGJIANGPUDISTRICT, HUAIAN JANGSU CHINA.

Manufacturer **Lvhua Ruisheng (Shenzhen) Industrial Technology Co., Ltd.**

Address : 406A, Jiatian Industry and Trade Building, Dapu North Road, Houting
Community, Shajing Street, Baoan 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.

Contents

1. TEST STANDARDS	4
2. SUMMARY	5
2.1. General Remarks	5
2.2. Product Description	5
2.3. Equipment Under Test	6
2.4. EUT Exercise Software	6
2.5. Special Accessories	6
2.6. External I/O Cable	6
2.7. Modifications	6
3. TEST ENVIRONMENT	7
3.1. Address of the test laboratory	7
3.2. Test Facility	7
3.3. Test Description	7
3.4. Statement of the measurement uncertainty	7
3.5. Equipments Used during the Test	8
4. TEST CONDITIONS AND RESULTS	9
4.1. AC Power Conducted Emission	9
4.2. Radiated Emission	12
4.3. Occupied Bandwidth	16
4.4. Antenna Requirement	17
5. TEST SETUP PHOTOS OF THE EUT	18
6. EXTERNAL AND INTERNAL PHOTOS OF THE EUT	20

1. TEST STANDARDS

The tests were performed according to following standards:

[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.01, 2021
Testing commenced on	:	Sep.01, 2021
Testing concluded on	:	Sep.14, 2021

2.2. Product Description

Product Name	Oongalee Gateway
Trade Mark	oongalee
Model/Type reference	OGW 2.0
List Models	OGW 2.0-C, OGW 2.0-U, OGW 2.0-E, OGW 2.0-S, OGW 2.0-CN, OGW 3.0-C, OGW 3.0-U, OGW 3.0-E, OGW 3.0-S, OGW 3.0-CN, OGW 3.0, OGW 4.0-C, OGW 4.0-U, OGW 4.0-E, OGW 4.0-S, OGW 4.0-CN, OGW 4.0
Model Declaration	PCB board, structure and internal of these model(s) are the same, Only the model name different , So no additional models were tested.
Power supply:	DC 12.0V by Adapter
Sample ID	GTS20210906007-1-1#>S20210906007-1-2#
Bluetooth	
Operation frequency	2402-2480MHz
Channel Number	79 channels for Bluetooth (DSS) 40 channels for Bluetooth (DTS)
Channel Spacing	1MHz for Bluetooth (DSS) 2MHz for Bluetooth (DTS)
Modulation Type	GFSK, $\pi/4$ -DQPSK, 8DPSK for Bluetooth (DSS) GFSK for Bluetooth (DTS)
WIFI(2.4G Band)	
Frequency Range	2412MHz ~ 2462MHz
Channel Spacing	5MHz
Channel Number	11 Channel for 20MHz bandwidth(2412~2462MHz)
Modulation Type	802.11b: DSSS; 802.11g/n: OFDM
Antenna Description	Internal Antenna, 0dBi(Max.) for 2.4G Band
WPT	
Operation frequency	115-205KHz
Modulation Type	CW (Continuous Wave)
Load Sensing	Contact transmission
Antenna Type	Coil Antenna
Antenna Gain	0dBi

2.3. Equipment Under Test

Power supply system utilised

Power supply voltage	:	<input type="radio"/> 230V / 50 Hz	<input type="radio"/> 120V / 60Hz
		<input checked="" type="radio"/> 12 V DC	<input type="radio"/> 24 V DC
		<input type="radio"/> Other (specified in blank below)	

Description of the test mode

Operation Frequency each of channel	
Channel	Frequency
1	125.5KHz

Test Modes:		
TM1	AC/DC Adapter + EUT + Wireless load (Battery Status: <1%)	Record
TM2	AC/DC Adapter + EUT + Wireless load (Battery Status: <50%)	Pre-tested
TM3	AC/DC Adapter+ EUT + Wireless load (Battery Status: 100%)	Pre-tested
Note: All test modes were pre-tested, but we only recorded the worst case in this report.		

2.4. EUT Exercise Software

N/A

2.5. Special Accessories

Manufacturer	Description	Model	Serial Number	Certificate
Shenzhen Jihongda Power Co.,Ltd.	Adapter	JHD-AP024C-120200BA-A	--	SDOC

Note: The adapter is only used for auxiliary testing and is not shipped with the product.

2.6. External I/O Cable

I/O Port Description	Quantity	Cable
DC IN Port	1	1.0M, Unscreened Cable
USB Port	1	N/A
Type-C	2	N/A

2.7. Modifications

No modifications were implemented to meet testing criteria.

3. TEST ENVIRONMENT

3.1. Address of the test laboratory

Shenzhen Global Test Service Co.,Ltd.

No.7-101 and 8A-104,Building 7 and 8,DCC Cultural and Creative Garden No.98,Pingxin North Road,Shangmugu,Pinghu Street,Longgang District,Shenzhen,Guangdong,China

3.2. Test Facility

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

CNAS (No. CNAS L8169)

Shenzhen Global Test Service Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2019 General Requirements) for the Competence of Testing and Calibration Laboratories.

A2LA (Certificate No. 4758.01)

Shenzhen Global Test Service Co., Ltd. has been assessed by the American Association for Laboratory Accreditation (A2LA). Certificate No. 4758.01.

Industry Canada Registration Number. is 24189.

FCC Designation Number is CN1234.

FCC Registered Test Site Number is165725.

IC Registration Number is 24189.

CAB identifier is CN0082.

3.3. Test Description

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

Measurement Uncertainty		
Conducted Emission Expanded Uncertainty	=	2.23dB, k=2
Radiated emission expanded uncertainty(9kHz-30MHz)	=	3.08dB, k=2
Radiated emission expanded uncertainty(30MHz-1000MHz)	=	4.42dB, k=2
Radiated emission expanded uncertainty(Above 1GHz)	=	4.06dB, k=2

3.5. Equipments Used during the Test

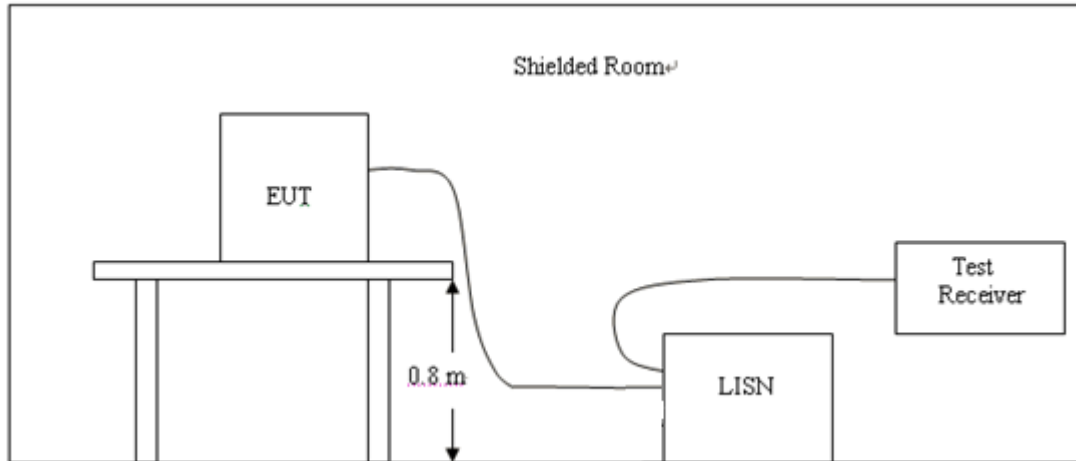
Test Equipment	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Due Date
LISN	CYBERTEK	EM5040A	E1850400105	2021/07/17	2022/07/16
LISN	R&S	ESH2-Z5	893606/008	2021/07/17	2022/07/16
EMI Test Receiver	R&S	ESPI3	101841-cd	2021/07/17	2022/07/16
EMI Test Receiver	R&S	ESCI7	101102	2020/09/20	2021/09/19
Spectrum Analyzer	Agilent	N9020A	MY48010425	2020/09/20	2021/09/19
Spectrum Analyzer	R&S	FSV40	100019	2021/07/17	2022/07/16
Vector Signal generator	Agilent	N5181A	MY49060502	2021/07/17	2022/07/16
Signal generator	Agilent	N5182A	3610AO1069	2020/09/20	2021/09/19
Climate Chamber	ESPEC	EL-10KA	A20120523	2020/09/20	2021/09/19
Controller	EM Electronics	Controller EM 1000	N/A	N/A	N/A
Horn Antenna	Schwarzbeck	BBHA 9120D	01622	2020/11/08	2021/11/07
Active Loop Antenna	Beijing Da Ze Technology Co.,Ltd.	ZN30900C	15006	2020/10/11	2021/10/10
Bilog Antenna	Schwarzbeck	VULB9163	000976	2021/07/23	2022/07/22
Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	791	2020/11/08	2021/11/07
Amplifier	Schwarzbeck	BBV 9743	#202	2021/08/08	2022/08/07
Amplifier	Schwarzbeck	BBV9179	9719-025	2021/07/17	2022/07/16
Amplifier	EMCI	EMC051845B	980355	2021/07/17	2022/07/16
Temperature/Humidity Meter	Gangxing	CTH-608	02	2021/07/17	2022/07/16
High-Pass Filter	K&L	9SH10-2700/X12750-O/O	KL142031	2021/07/17	2022/07/16
High-Pass Filter	K&L	41H10-1375/U12750-O/O	KL142032	2021/07/17	2022/07/16
RF Cable(below 1GHz)	HUBER+SUHNER	RG214	RE01	2021/07/17	2022/07/16
RF Cable(above 1GHz)	HUBER+SUHNER	RG214	RE02	2021/07/17	2022/07/16
Data acquisition card	Agilent	U2531A	TW53323507	2021/07/17	2022/07/16
Power Sensor	Agilent	U2021XA	MY5365004	2021/07/17	2022/07/16
Test Control Unit	Tonscend	JS0806-1	178060067	2021/07/17	2022/07/16
Automated filter bank	Tonscend	JS0806-F	19F8060177	2021/07/17	2022/07/16
EMI Test Software	Tonscend	JS1120-1	Ver 2.6.8.0518	/	/
EMI Test Software	Tonscend	JS1120-3	Ver 2.5.77.0418	/	/
EMI Test Software	Tonscend	JS32-CE	Ver 2.5	/	/
EMI Test Software	Tonscend	JS32-RE	Ver 2.5.1.8	/	/

The calibration interval is 1 year.

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 adapter, the 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:.

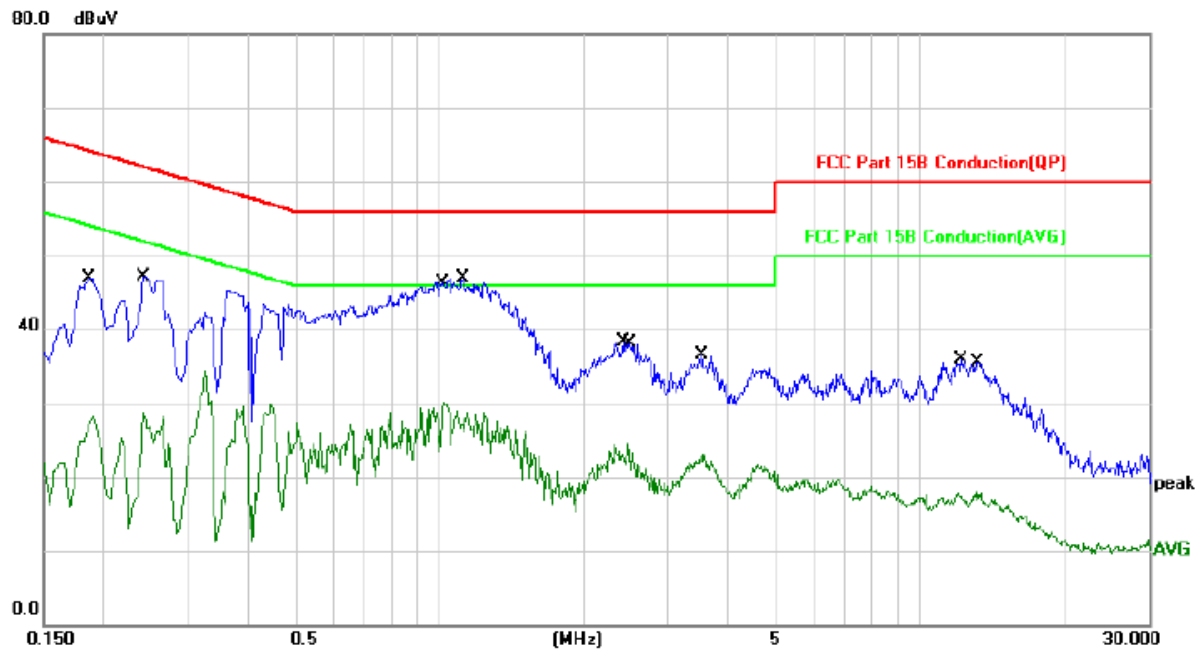
Temperature	23.6°C	Humidity	55.3%
Test Engineer	Moon Tan	Configurations	WPT

Power supply:

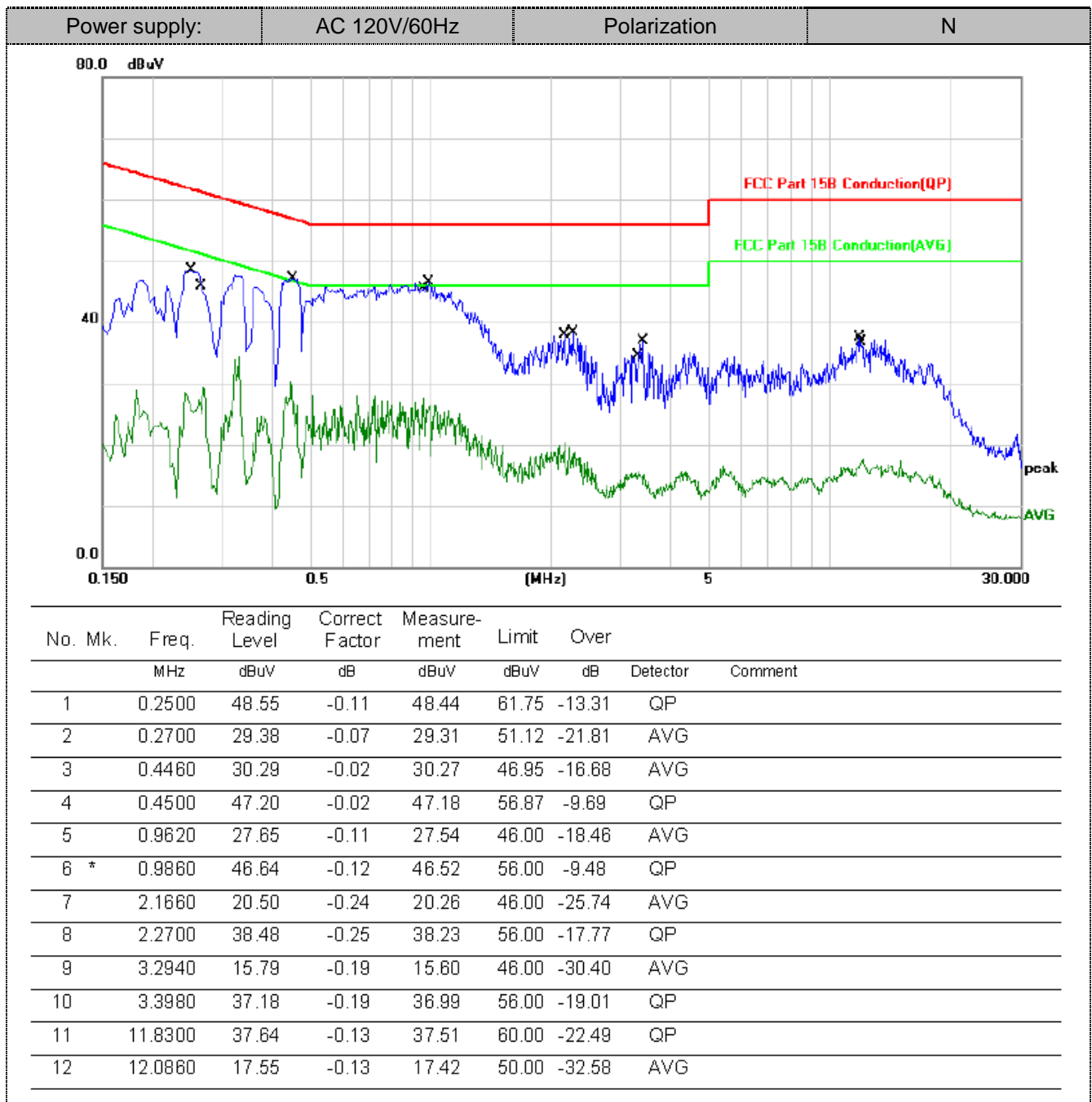
AC 120V/60Hz

Polarization

L



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1860	47.02	-0.13	46.89	64.21	-17.32	QP	
2		0.1900	28.35	-0.13	28.22	54.03	-25.81	AVG	
3		0.2420	47.16	-0.11	47.05	62.02	-14.97	QP	
4		0.2420	28.89	-0.11	28.78	52.02	-23.24	AVG	
5		1.0260	30.19	-0.12	30.07	46.00	-15.93	AVG	
6	*	1.1180	47.10	-0.14	46.96	56.00	-9.04	QP	
7		2.4180	38.53	-0.22	38.31	56.00	-17.69	QP	
8		2.4820	24.63	-0.18	24.45	46.00	-21.55	AVG	
9		3.5180	36.61	-0.19	36.42	56.00	-19.58	QP	
10		3.5620	23.26	-0.19	23.07	46.00	-22.93	AVG	
11		12.2500	36.00	-0.13	35.87	60.00	-24.13	QP	
12		13.1980	18.19	-0.15	18.04	50.00	-31.96	AVG	

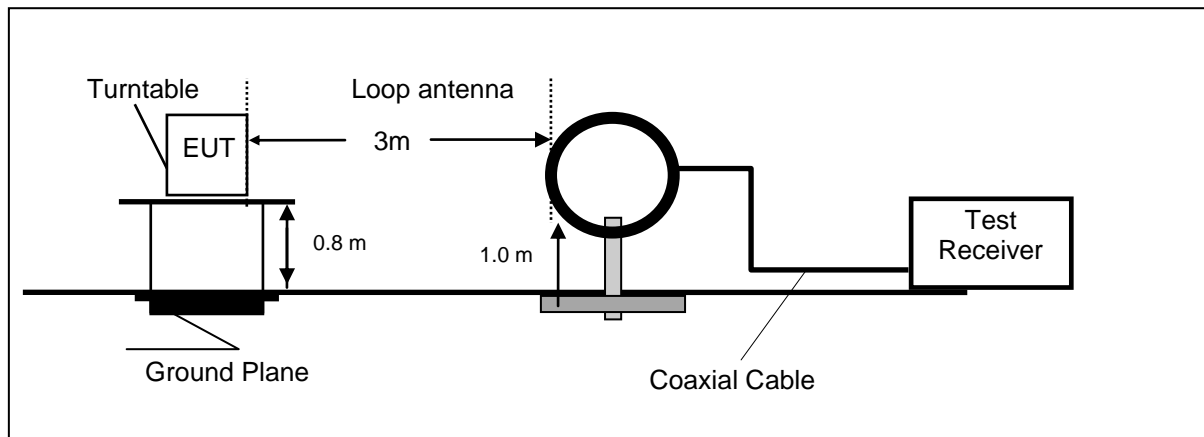


Note: All the modes have been tested and recorded worst mode in the report.

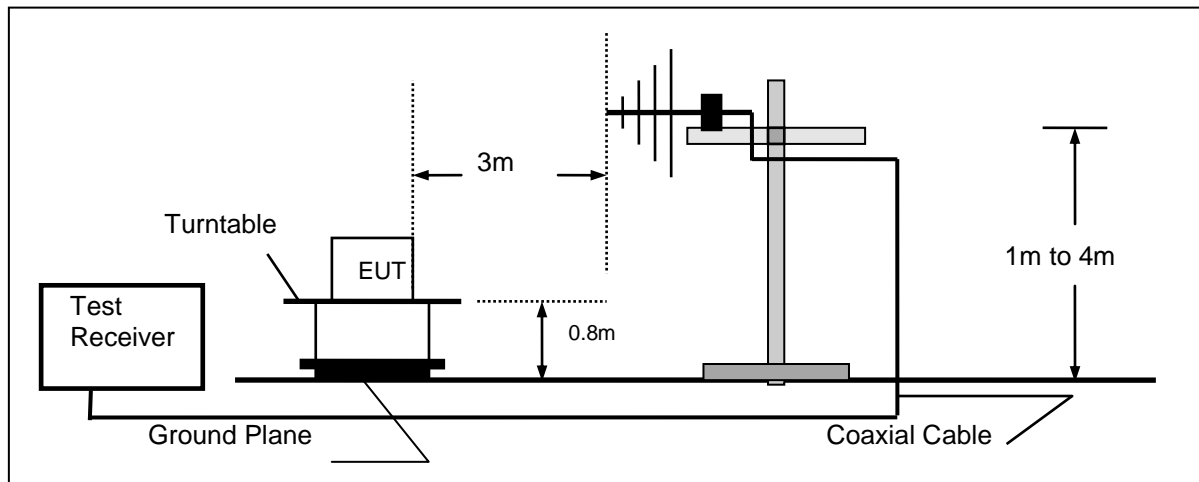
4.2. Radiated Emission

TEST CONFIGURATION

Frequency range 9 KHz – 30MHz



Frequency range 30MHz – 1000MHz



Frequency range above 1GHz-25GHz



TEST PROCEDURE

- 1.The EUT was placed on a turn table which is 12mm above ground plane when testing frequency range 9 KHz –25GHz.
- 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.The EUT minimum operation frequency was 32.768KHz and maximum operation frequency was 205KHz.so radiated emission test frequency band from 9KHz to 1GHz.
- 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	Ultra-Broadband Antenna	3
1GHz-18GHz	Double Ridged Horn Antenna	3
18GHz-25GHz	Horn Antenna	1

- 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
1GHz-40GHz	Peak Value: RBW=1MHz/VBW=3MHz, Sweep time=Auto Average Value: RBW=1MHz/VBW=10Hz, Sweep time=Auto	Peak

Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor(if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CL - AG$$

Where FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
RA = Reading Amplitude	AG = Amplifier Gain
AF = Antenna Factor	

$$\text{Transd}=AF +CL-AG$$

RADIATION LIMIT

For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emission from intentional radiators at a distance of 3 meters shall not exceed the following table. According to § 15.247(d), in any 100kHz bandwidth outside the frequency band in which the EUT is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of desired power.

The pre-test have done for the EUT in three axes and found the worst emission at position shown in test setup photos.

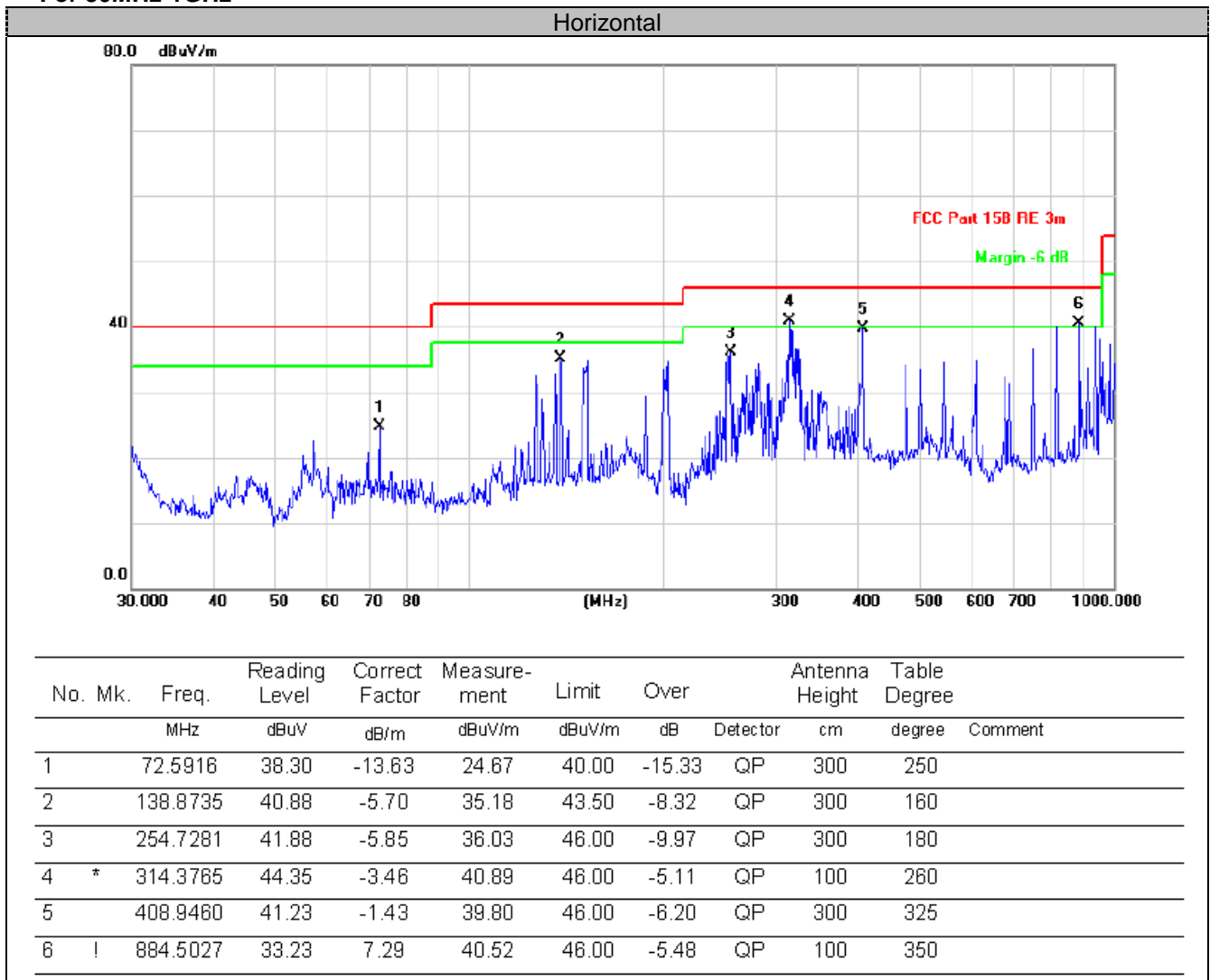
Frequency (MHz)	Distance (Meters)	Radiated (dBμV/m)	Radiated (μV/m)
0.009-0.49	3	$20\log(2400/F(\text{KHz}))+40\log(300/3)$	$2400/F(\text{KHz})$
0.49-1.705	3	$20\log(24000/F(\text{KHz}))+40\log(30/3)$	$24000/F(\text{KHz})$
1.705-30	3	$20\log(30)+40\log(30/3)$	30
30-88	3	40.0	100
88-216	3	43.5	150
216-960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

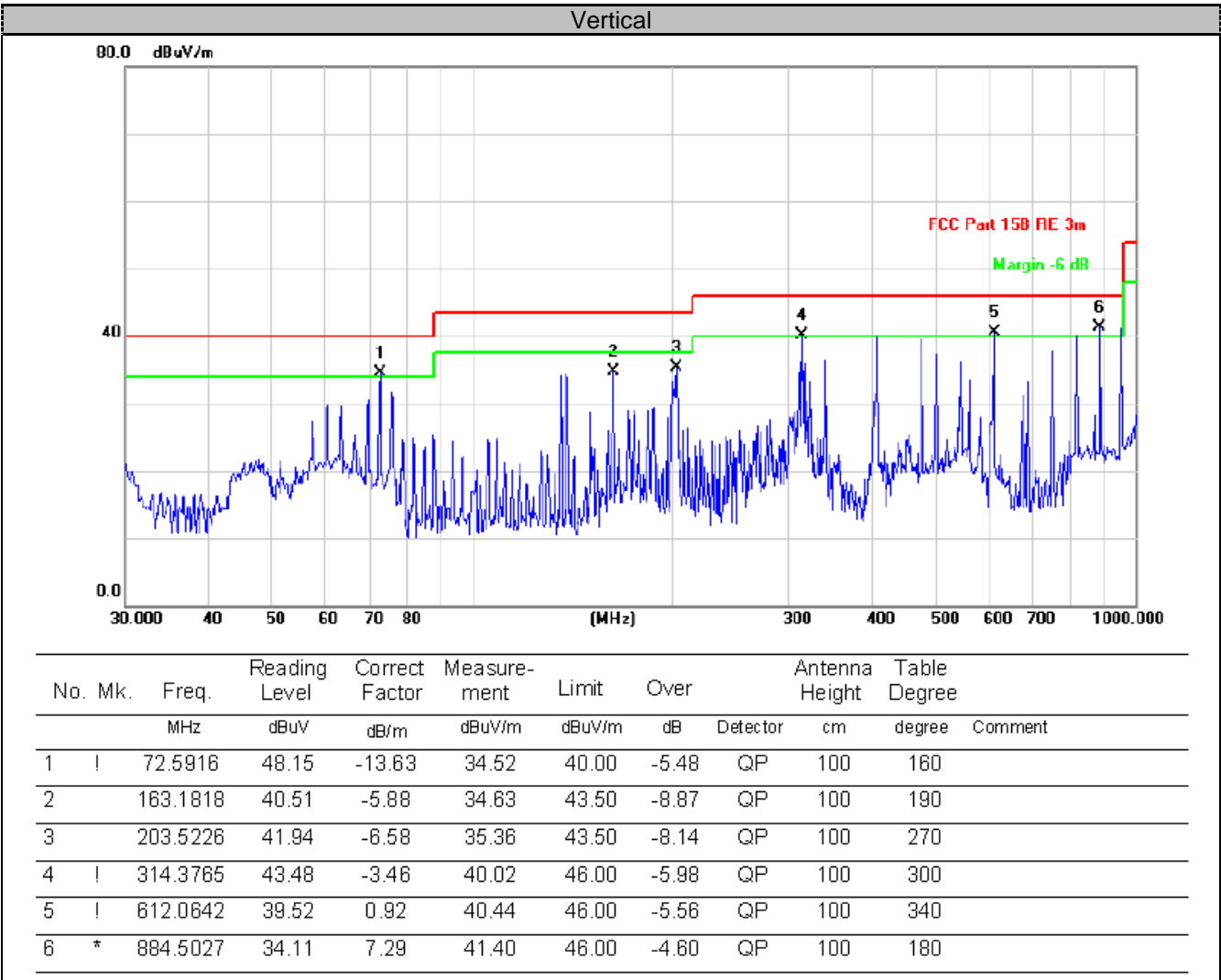
TEST RESULTS

Temperature	23.6°C	Humidity	55.3%
Test Engineer	Moon Tan	Configurations	WPT

For 9 KHz-30MHz

Frequency (MHz)	Corrected Reading (dBuV/m)@3m	FCC Limit (dBuV/m) @3m	Margin (dB)	Detector	Result
0.125	79.99	105.64	25.65	QP	PASS
0.649	40.94	71.34	30.39	QP	PASS
1.489	48.63	64.12	15.49	QP	PASS
6.027	49.53	91.58	42.05	QP	PASS
9.977	45.42	91.58	46.16	QP	PASS

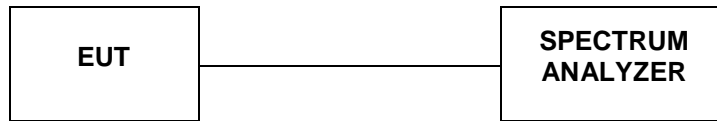
For 30MHz-1GHz



Note: All the modes have been tested and recorded worst mode in the report.

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 demonstrated by measuring the radiated emissions.

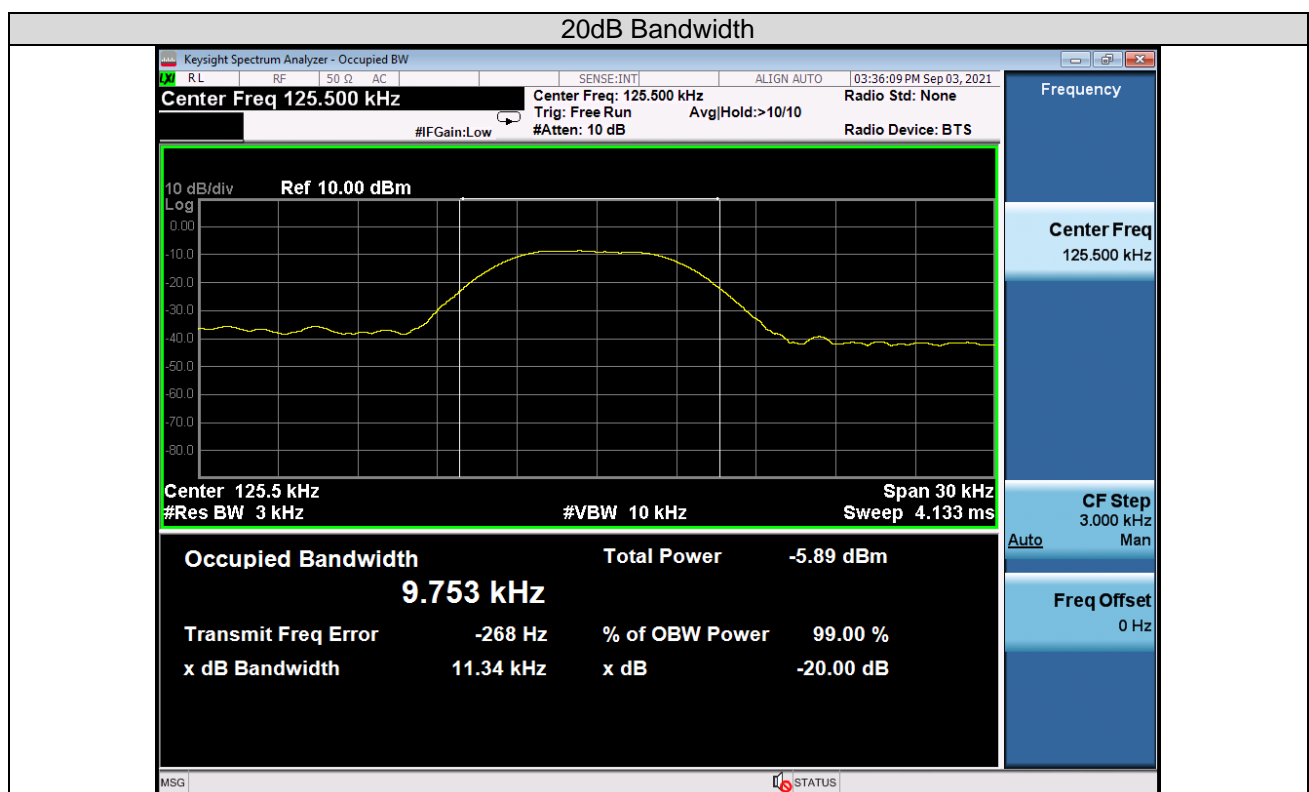
LIMIT

/.

TEST RESULTS

Temperature	24.5°C	Humidity	53.9%
Test Engineer	Moon Tan	Configurations	WPT

Mode	Freq (KHz)	20dB Bandwidth (KHz)	Limit (kHz)	Conclusion
Tx Mode	125.5	11.34	/	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.

Antenna Information

The antenna used in this product is a Coil Antenna, The directional gains of antenna used for transmitting is 0dBi.

Reference to the **Internal photos**.

5. Test Setup Photos of the EUT

Photo of Radiated Emissions Measurement

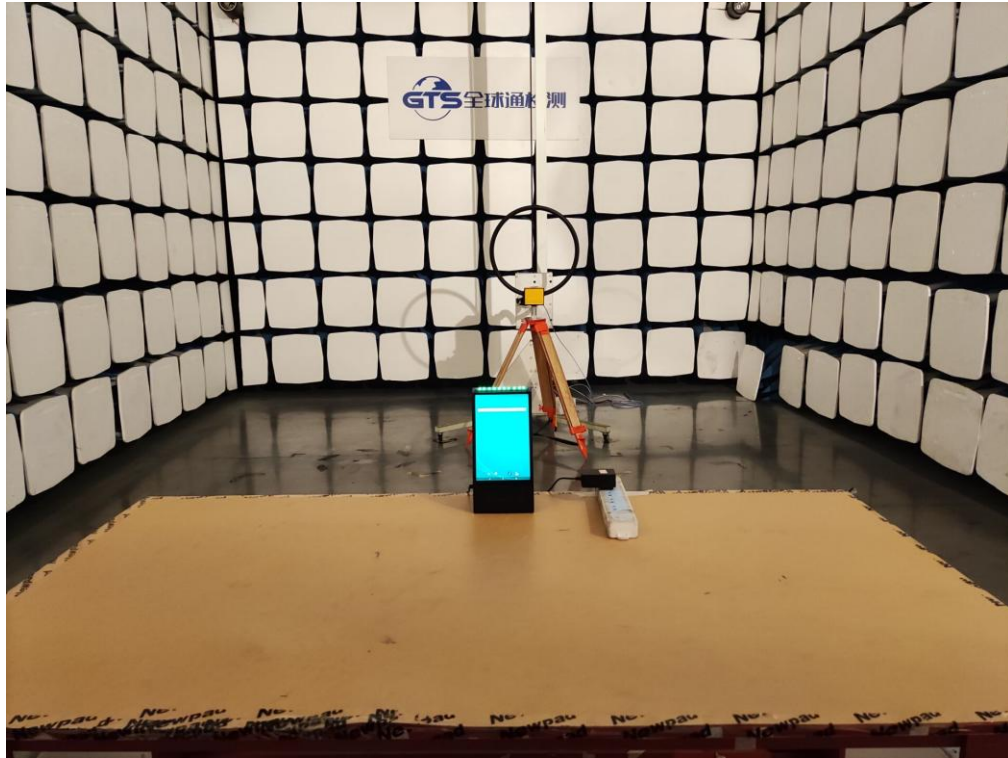


Fig. 1

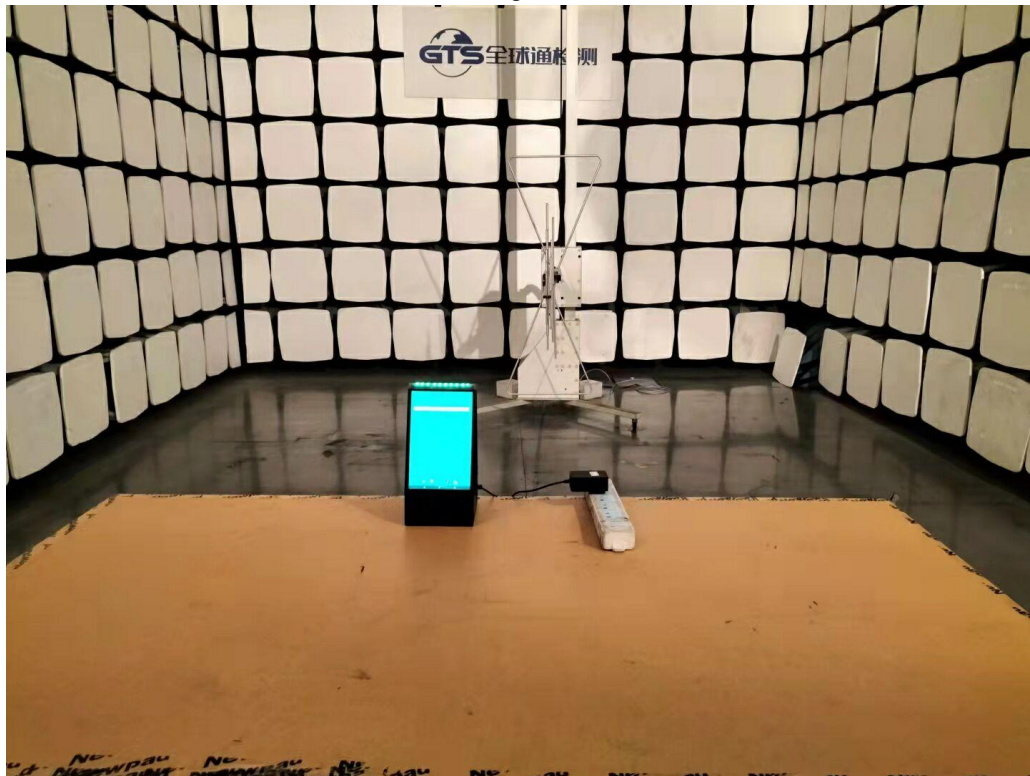


Fig. 2

Photo of Conducted Emissions Measurement

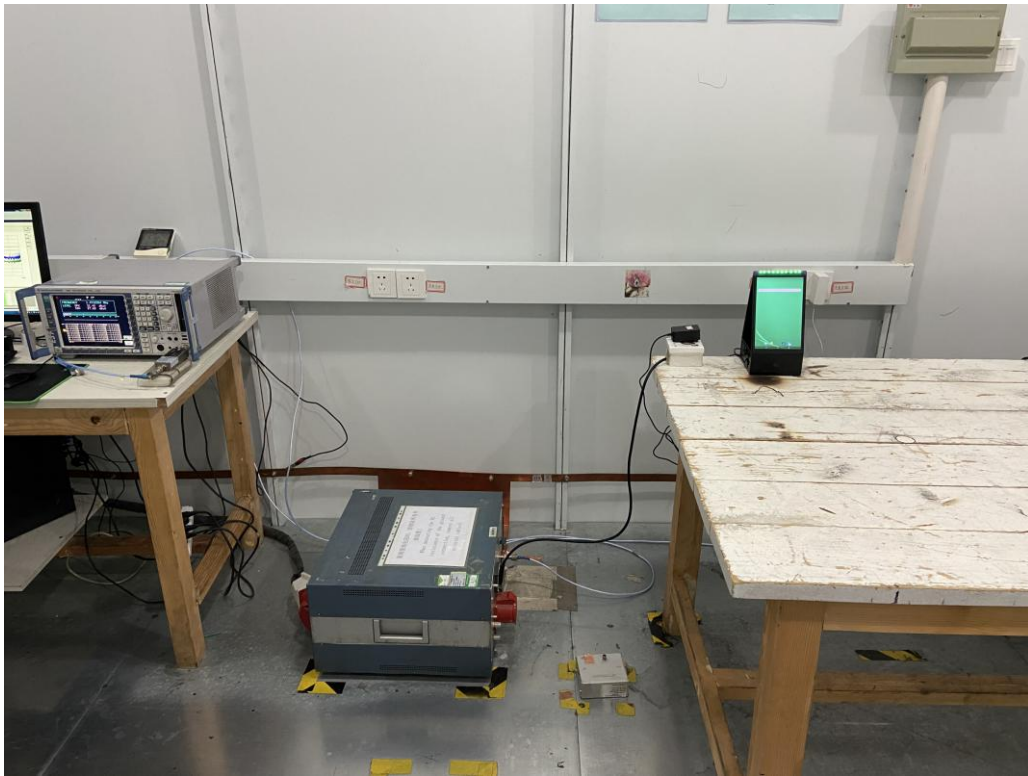


Fig. 3

6. External and Internal Photos of the EUT

Reference to the **Internal photos**.

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