Shenzhen CTL Testing Technology Co., Ltd.
Tel:+86-755-89486194 E-Mail:ctl@ctl-lab.com

FCC SDoC Test Report

FCC PART 15 Subpart B

Report Reference No..... :	**CTL2009272041-F**
Compiled by (position+printed name+signature).. :	File administrators Darben Pan
Name of the organization performing the tests (position+printed name+signature).. :	Technique principal Ivan Xie
Approved by (position+printed name+signature).. :	Manager Tracy Qi
Date of issue..... :	Oct. 28, 2020
Representative Laboratory Name. :	**Shenzhen CTL Testing Technology Co., Ltd.**
Address..... :	Floor 1-A, Baisha Technology Park, No.3011, Shahexi Road, Nanshan District, Shenzhen, China 518055
Test Firm..... :	**Shenzhen CTL Testing Technology Co., Ltd.**
Address..... :	Floor 1-A, Baisha Technology Park, No.3011, Shahexi Road, Nanshan District, Shenzhen, China 518055
Web..... :	www.ctl-lab.com
Applicant's name..... :	**GAINSCHA NETWORK INC.**
Address..... :	1104 Huarong Building, 9 Xing Ao Road, Hengqin New Area, Zhuhai, Guangdong, China
Test specification:	
Standard..... :	**FCC PART 15 Subpart B**
TRF Originator..... :	Shenzhen CTL Testing Technology Co., Ltd.

Shenzhen CTL Testing Technology Co., Ltd.

This publication may be reproduced in whole or in part for non-commercial purposes as long as the Shenzhen CTL Testing Technology Co., Ltd. is acknowledged as copyright owner and source of the material. Shenzhen CTL Testing Technology 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..... :	**Barcode Printer**
Trade Mark ..... :	Gainscha
Rating..... :	DC 24V from adapter AC 100~240V
Result..... :	**Pass**

FCC Test Report

Test Report No. :	CTL2009272041-F	Oct. 28, 2020 Date of issue

Equipment under Test	:	Barcode Printer
Type / Model	:	GS-2408D
Listed Models	:	GS-x4xxDy (x=0-9, y=A-Z, Blank, x is print resolution and print speed y is the transport interface or specific code for different markets)
Applicant	:	**GAINSCHA NETWORK INC.**
Address	:	1104 Huarong Building, 9 Xing Ao Road, Hengqin New Area, Zhuhai, Guangdong, China
Manufacturer	:	**GAINSCHA NETWORK INC.**
Address	:	1104 Huarong Building, 9 Xing Ao Road, Hengqin New Area, Zhuhai, Guangdong, 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.

History of this test report

Report No.	Version	Description	Issued Date
CTL2009272041-F	V1.0	Initial Issued Report	Oct. 28, 2020

Content

1. TEST STANDARDS 5

2. SUMMARY 6

2.1. General Remarks 6
2.2. Equipment Under Test 6
2.3. Short description of the Equipment under Test (EUT) 6
2.4. EUT operation mode 6
2.5. EUT configuration 6
2.7. Related Submittal(s) / Grant (s) 7
2.8. Modifications 7
2.9. Test Result Summary 7

3. TEST ENVIRONMENT 8

3.1. Address of the test laboratory 8
3.2. Test Facility 8
3.3. Environmental conditions 8
3.4. Statement of the measurement uncertainty 9
3.5. Equipments Used during the Test 10

4 TEST CONDITIONS AND RESULTS 11

4.1. Radiated Emission Test 11
4.2. Conducted Emissions Test 15

5. TEST SETUP PHOTOS OF THE EUT 18

6. PHOTOS OF THE EUT 19

1. TEST STANDARDS

The tests were performed according to following standards:

FCC Rules Part 15 Subpart B - Unintentional Radiators

ANSI C63.4-2014

2. SUMMARY

2.1. General Remarks

Date of receipt of test sample	:	Sep. 27, 2020
Sampling and Testing commenced on	:	Sep. 27, 2020
Testing concluded on	:	Oct. 28, 2020

2.2. Equipment Under Test

Power supply system utilised

Power supply voltage : ■ 120V / 60 Hz o 115V / 60Hz
o 12 V DC o 24 V DC
o Other (specified in blank below)

/

2.3. Short description of the Equipment under Test (EUT)

Barcode Printer.

For more details, refer to the user's manual of the EUT.

2.4. EUT operation mode

The EUT has been tested under typical operating condition.

2.5. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

- ● - supplied by the manufacturer
- o - supplied by the lab

2.7. Related Submittal(s) / Grant (s)

This test report is intended for Barcode Printer filing to comply with the FCC Part 15, Subpart B Rules.

2.8. Modifications

No modifications were implemented to meet testing criteria.

2.9. Test Result Summary

Test Item	Test Requirement	Standard Paragrph	Result
Radiated Emission	FCC PART 15 Subpart B	Section 15.109	PASS
Conducted Emission	FCC PART 15 Subpart B	Section 15.107	PASS

3. TEST ENVIRONMENT

3.1. Address of the test laboratory

Shenzhen CTL Testing Technology Co., Ltd.
Floor 1-A, Baisha Technology Park, No. 3011, Shahexi Road, Nanshan, Shenzhen 518055 China

There is one 3m semi-anechoic chamber and two line conducted labs for final test. The Test Sites meet the requirements in documents ANSI C63.4 and CISPR 22/EN 55022 requirements.

3.2. Test Facility

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

IC Registration No.: 9618B

The 3m alternate test site of Shenzhen CTL Testing Technology Co., Ltd. EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration No.: 9618B on November 13, 2013.

FCC-Registration No.: 399832

Shenzhen CTL Testing Technology 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 399832, December 08, 2017.

Certificated by A2LA, USA
Registration No.:4343.01
Date of registration: December 27, 2017

3.3. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15-35 ° C
Humidity:	30-60 %
Atmospheric pressure:	950-1050mbar

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 CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the Shenzhen CTL Testing Technology 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 CTL laboratory is reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission(chamber 1)	30~1000MHz	±3.20dB	(1)
Radiated Emission(chamber 2)	30~1000MHz	±3.53dB	(1)
Radiated Emission	Above 1GHz	±4.32dB	(1)
Conducted Emission	0.15~30MHz	±2.66dB	(1)
Disturbance Power	30~300MHz	±2.90dB	(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

Radiated Emission(chamber 1)						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due
1	ULTRA-BROADBAND ANTENNA	Sunol Sciences Corp.	JB1 Antenna	A061713	2020/04/08	2023/04/07
2	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	1166.5950.03	2020/05/18	2021/05/17
3	Horn Antenna	Sunol Sciences Corp	DRH-118	A062013	2020/05/23	2021/05/22
Software:						
Name of Software:				Version:		
ES-K1(Below 1GHz)				V1.71		
e3(Above 1GHz)				6.111221a		

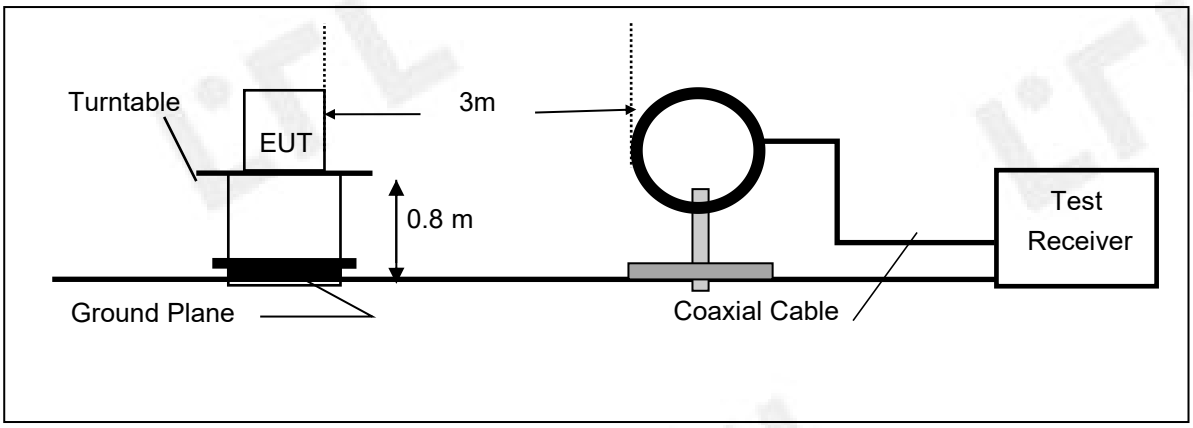
Conducted Emission						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due
1	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	1166.5950.03	2020/05/18	2021/05/17
2	LISN	ROHDE & SCHWARZ	ESH2-Z5	860014/010	2020/05/15	2021/05/14
3	Limitator	HP	11947A	N/A	2020/05/15	2021/05/14
Software:						
Name of Software:				Version:		
ES-K1				V1.71		

4 TEST CONDITIONS AND RESULTS

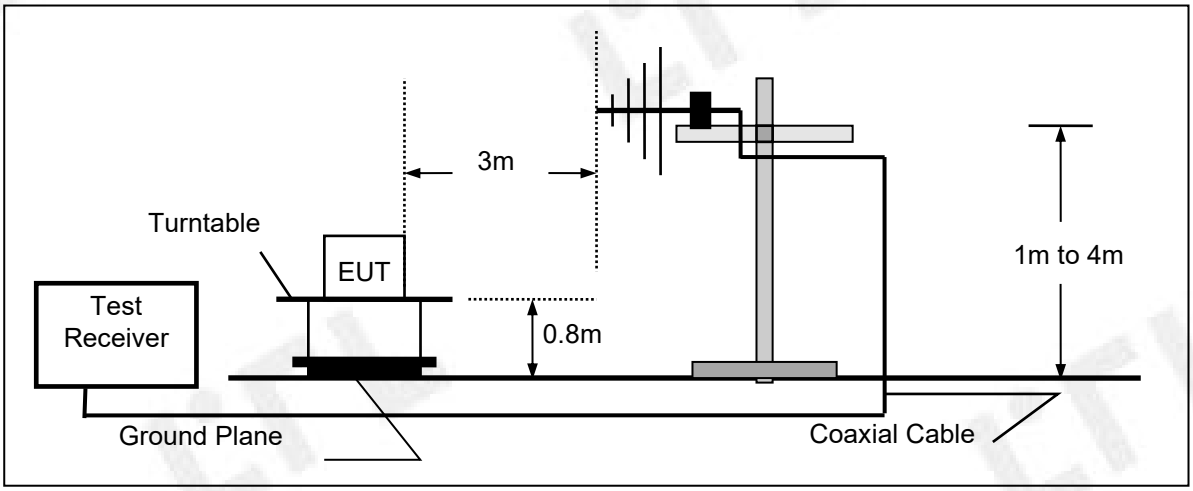
4.1. Radiated Emission Test

TEST CONFIGURATION

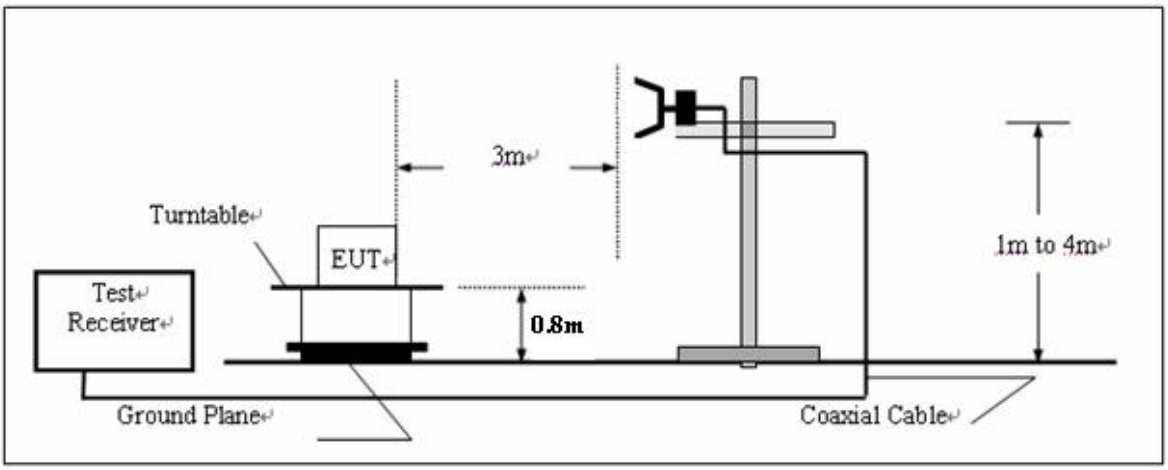
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



(B) Radiated Emission Test Set-Up, Frequency below 1000MHz



(C) Radiated Emission Test Set-Up, Frequency above 1000MHz



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	

RADIATION LIMIT

For unintentional device, according to § 15.109(a), except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values：

Frequency (MHz)	Distance (Meters)	Radiated (dBμV/m)	Radiated (μV/m)
30-88	3	49.0	100
88-216	3	53.5	150
216-960	3	56.0	200
Above 960	3	60.0	500

For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emissions from intentional radiators at a distance of 3 meters shall not exceed the above table.

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 varied from 1m to 4m to find out the highest emissions.
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.

Radiation Test Results

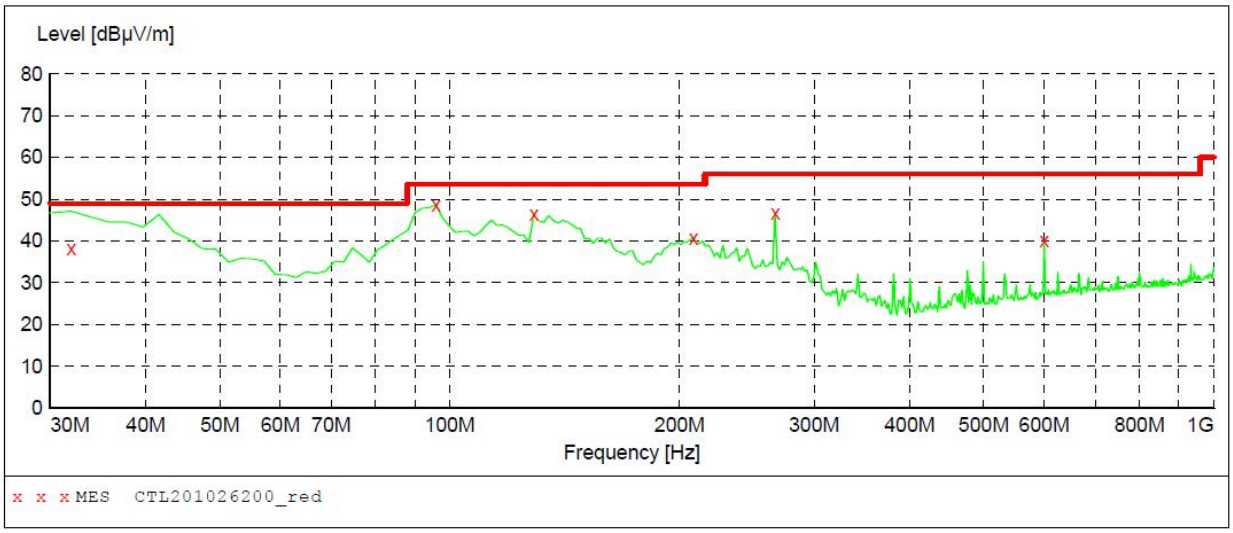
Shenzhen CTL Testing Technology Co.,Ltd

Radiation Emission Test FCC PART 15

EUT: GS-2408D
Manufacturer: GAINSCHA NETWORK INC.
Operating Condition: WORKING
Test Site: 3m Chamber 1
Operator: ZJ
Test Specification: AC 120V/60Hz
Comment: /
Start of Test: 26/10/2020 / 09:07:49

SWEEP TABLE: "test (30M-1G)"

Short Description:			Field Strength		
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	300.0 ms	100 kHz	JB1



MEASUREMENT RESULT: "CTL201026200_red"

26/10/2020 09:08

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
31.940000	38.00	20.9	49.0	11.0	QP	0.0	0.00	VERTICAL
95.960000	48.60	10.3	53.5	4.9	---	0.0	0.00	VERTICAL
128.940000	46.30	15.4	53.5	7.2	---	0.0	0.00	VERTICAL
208.480000	40.70	14.5	53.5	12.8	---	0.0	0.00	VERTICAL
266.680000	46.60	15.0	56.0	9.4	---	0.0	0.00	VERTICAL
600.360000	40.00	23.1	56.0	16.0	---	0.0	0.00	VERTICAL

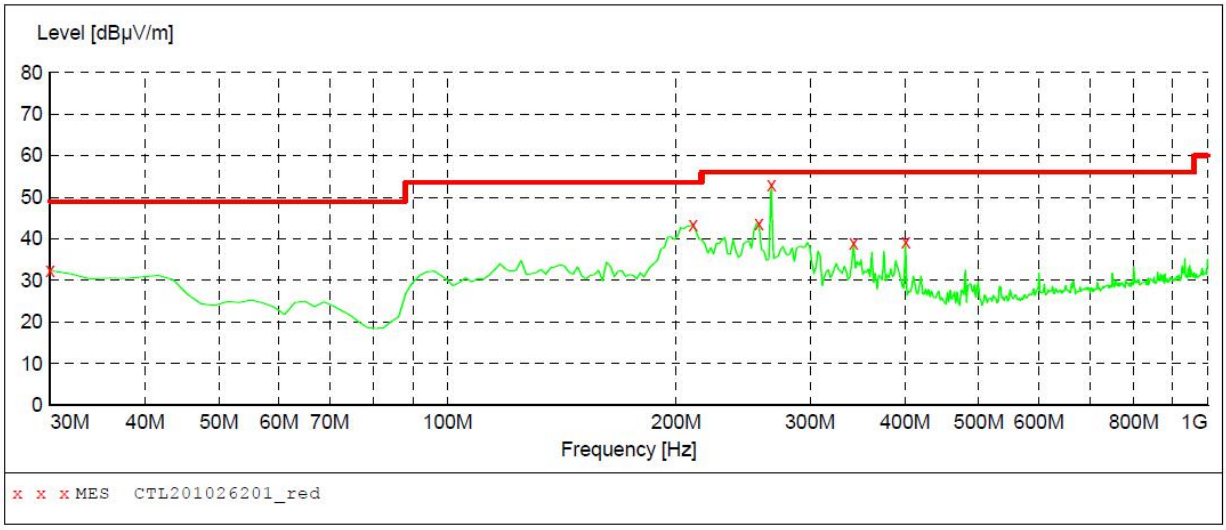
Shenzhen CTL Testing Technology Co.,Ltd

Radiation Emission Test FCC PART 15

EUT: GS-2408D
Manufacturer: GAINSCHA NETWORK INC.
Operating Condition: WORKING
Test Site: 3m Chamber 1
Operator: ZJ
Test Specification: AC 120V/60Hz
Comment: /
Start of Test: 26/10/2020 / 09:11:42

SWEEP TABLE: "test (30M-1G)"

Short Description:			Field Strength		
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	300.0 ms	100 kHz	JB1



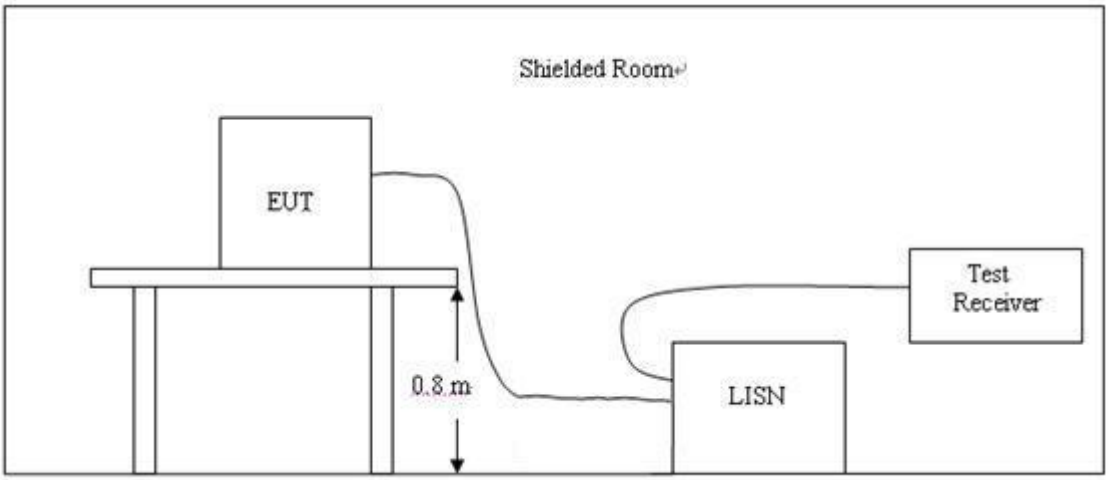
MEASUREMENT RESULT: "CTL201026201_red"

26/10/2020 09:12

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
30.000000	32.40	22.2	49.0	16.6	---	0.0	0.00	HORIZONTAL
210.420000	43.50	14.5	53.5	10.0	---	0.0	0.00	HORIZONTAL
256.980000	43.70	14.7	56.0	12.3	---	0.0	0.00	HORIZONTAL
266.680000	52.90	15.0	56.0	3.1	---	0.0	0.00	HORIZONTAL
342.340000	39.10	17.1	56.0	16.9	---	0.0	0.00	HORIZONTAL
400.540000	39.30	18.2	56.0	16.7	---	0.0	0.00	HORIZONTAL

4.2. Conducted Emissions Test

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 C63.4.
2 Support equipment, if needed, was placed as per ANSI C63.4.
3 All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.
4 The EUT 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.
8 During the above scans, the emissions were maximized by cable manipulation.

Conducted Power Line Emission Limit

For unintentional device, according to § 15.107(a) Line Conducted Emission Limits is as following:

Frequency (MHz)	Maximum RF Line Voltage (dBμV)			
	CLASS A		CLASS B	
	Q.P.	Ave.	Q.P.	Ave.
0.15 - 0.50	79	66	66-56*	56-46*
0.50 - 5.00	73	60	56	46
5.00 - 30.0	73	60	60	50

* Decreasing linearly with the logarithm of the frequency

For intentional device, according to §15.207(a) Line Conducted Emission Limit is same as above table.

TEST RESULTS

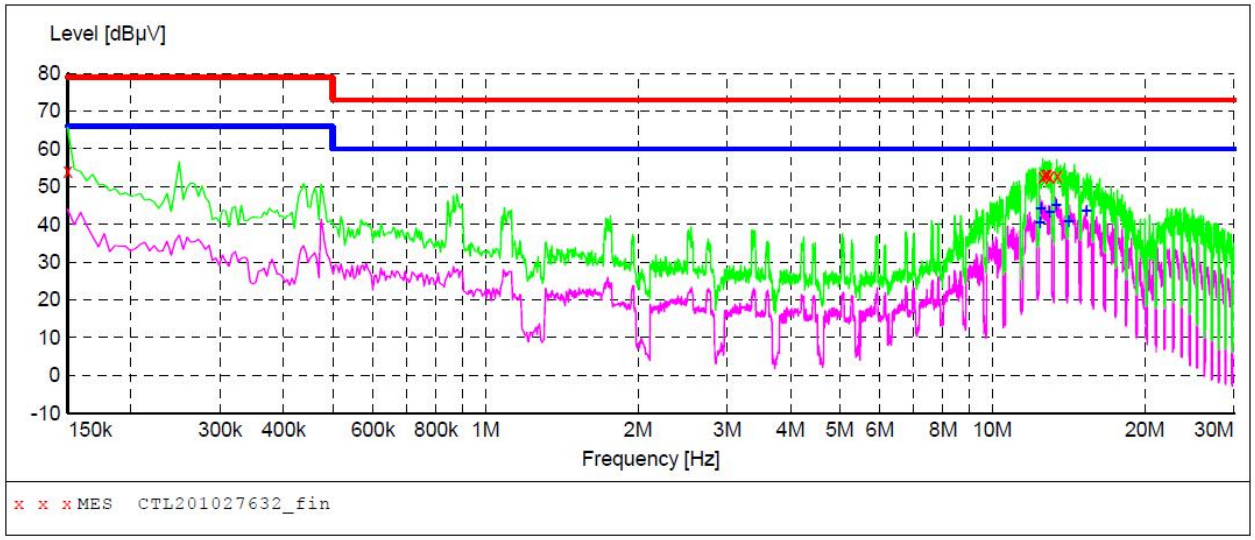
Shenzhen CTL Testing Technology Co., Ltd.

Voltage Mains Test FCC PART 15

```
EUT:                    GS-2408D
Manufacturer:           GAINSCHA NETWORK INC.
Operating Condition:    WORKING
Test Site:              /
Operator:               ZGH
Test Specification:     AC 120V/60Hz
Comment:                /
Start of Test:          10/27/2020 / 9:09:45AM
```

SCAN TABLE: "Voltage (9K-30M)FIN"

```
  Short Description:            150K-30M Voltage
```



MEASUREMENT RESULT: "CTL201027632_fin"

10/27/2020 9:12AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.150000	54.10	11.2	79	24.9	QP	L1	GND
12.592500	52.50	10.9	73	20.5	QP	L1	GND
12.723000	53.00	10.9	73	20.0	QP	L1	GND
12.853500	53.00	10.9	73	20.0	QP	L1	GND
12.984000	52.50	10.9	73	20.5	QP	L1	GND
13.456500	52.70	10.9	73	20.3	QP	L1	GND

MEASUREMENT RESULT: "CTL201027632_fin2"

10/27/2020 9:12AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
12.412500	40.50	10.9	60	19.5	AV	L1	GND
12.457500	44.10	10.9	60	15.9	AV	L1	GND
12.975000	43.20	10.9	60	16.8	AV	L1	GND
13.366500	45.20	10.9	60	14.8	AV	L1	GND
14.149500	40.80	10.9	60	19.2	AV	L1	GND
15.333000	43.60	11.0	60	16.4	AV	L1	GND

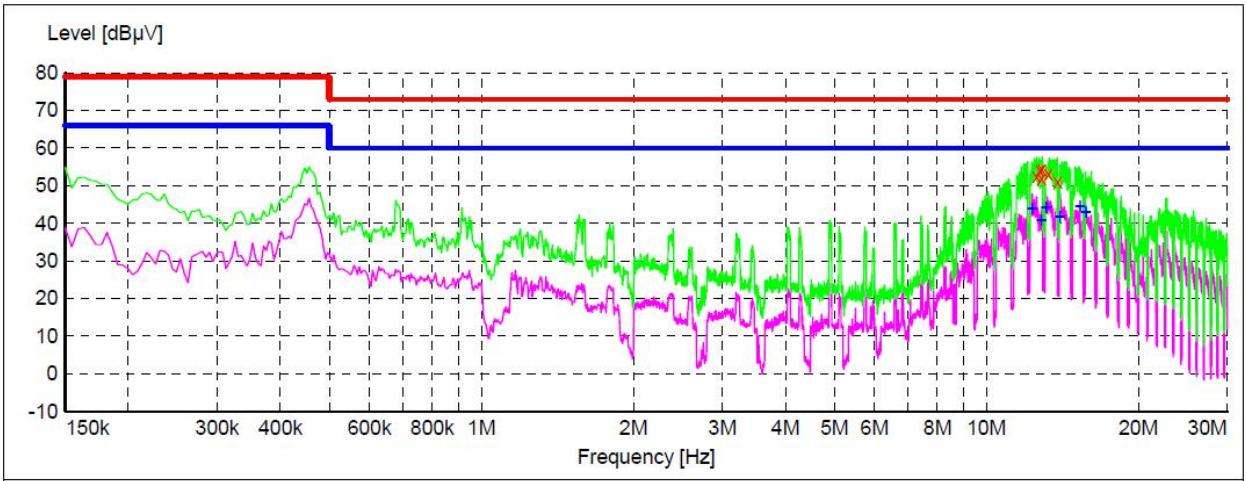
Shenzhen CTL Testing Technology Co., Ltd.

Voltage Mains Test FCC PART 15

```
EUT:                  GS-2408D
Manufacturer:         GAINSCHA NETWORK INC.
Operating Condition:  WORKING
Test Site:            /
Operator:             ZGH
Test Specification:   AC 120V/60Hz
Comment:              /
Start of Test:        10/27/2020 / 9:13:19AM
```

SCAN TABLE: "Voltage (9K-30M)FIN"

Short Description: 150K-30M Voltage



MEASUREMENT RESULT: "CTL201027633_fin"

10/27/2020 9:15AM

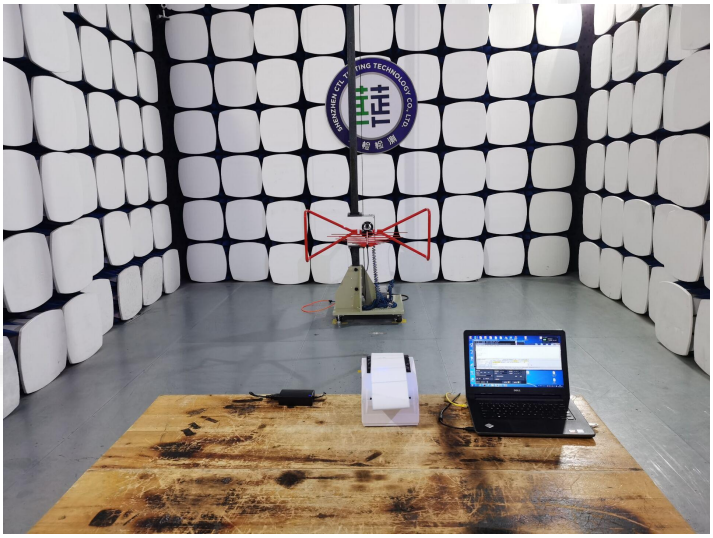
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
12.574500	52.60	10.9	73	20.4	QP	N	GND
12.754500	53.90	10.9	73	19.1	QP	N	GND
12.858000	51.80	10.9	73	21.2	QP	N	GND
12.889500	54.40	10.9	73	18.6	QP	N	GND
13.281000	53.20	10.9	73	19.8	QP	N	GND
13.830000	51.00	10.9	73	22.0	QP	N	GND

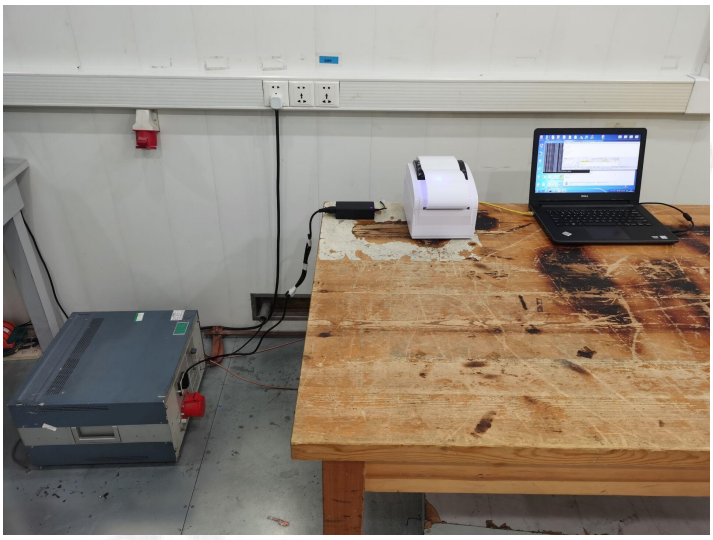
MEASUREMENT RESULT: "CTL201027633_fin2"

10/27/2020 9:15AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
12.300000	43.90	10.9	60	16.1	AV	N	GND
12.844500	40.90	10.9	60	19.1	AV	N	GND
13.105500	44.30	10.9	60	15.7	AV	N	GND
13.969500	41.60	10.9	60	18.4	AV	N	GND
15.328500	44.40	11.0	60	15.6	AV	N	GND
15.720000	42.90	11.0	60	17.1	AV	N	GND

5. Test Setup Photos of the EUT



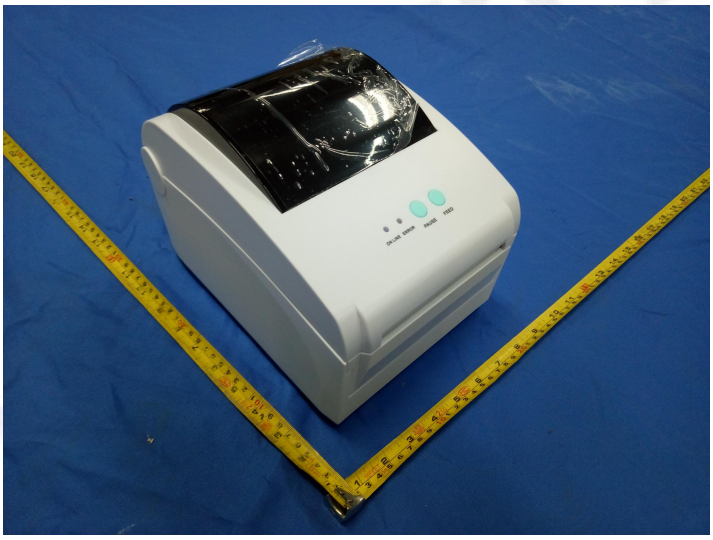


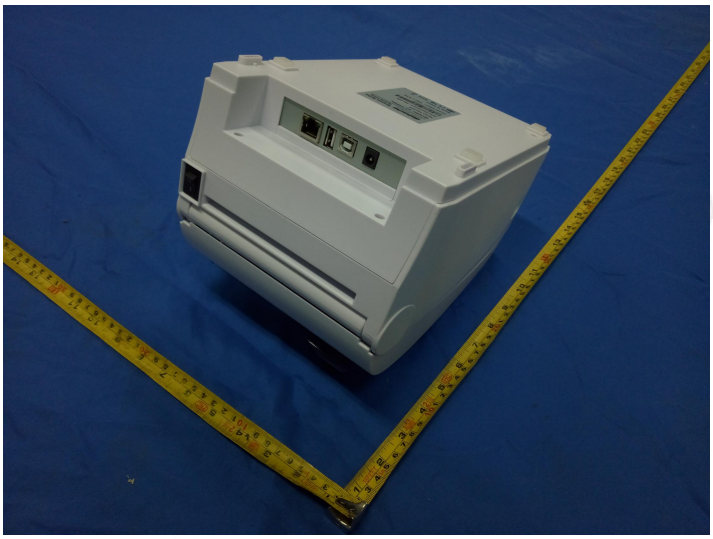
6. Photos of the EUT



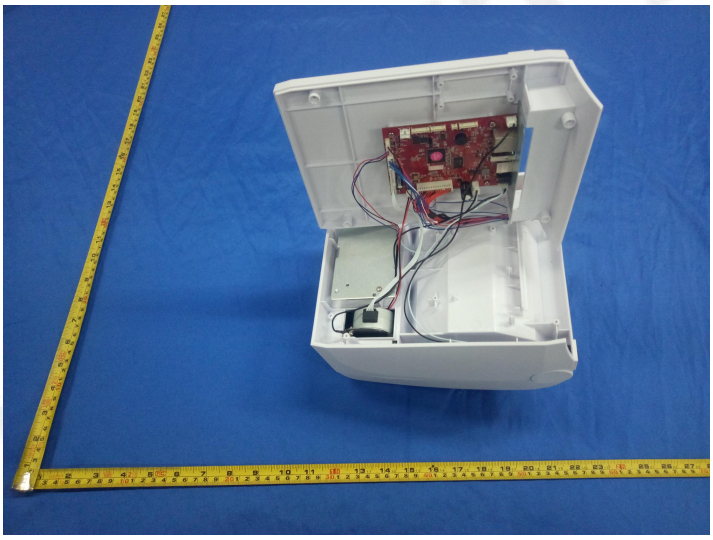


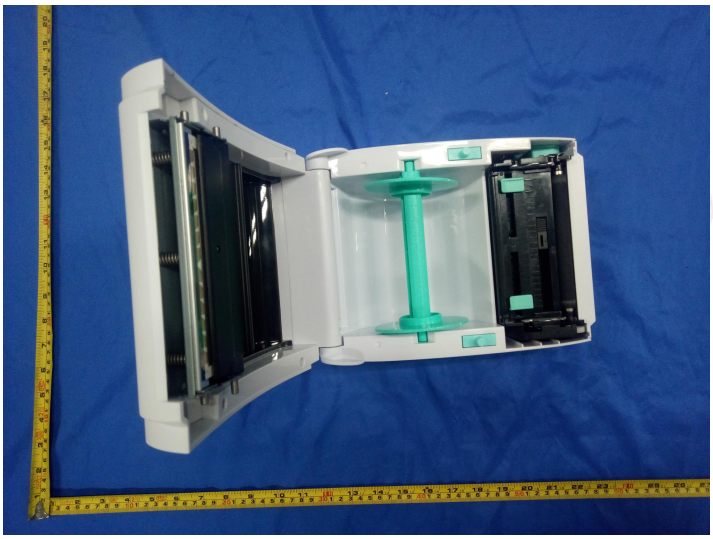




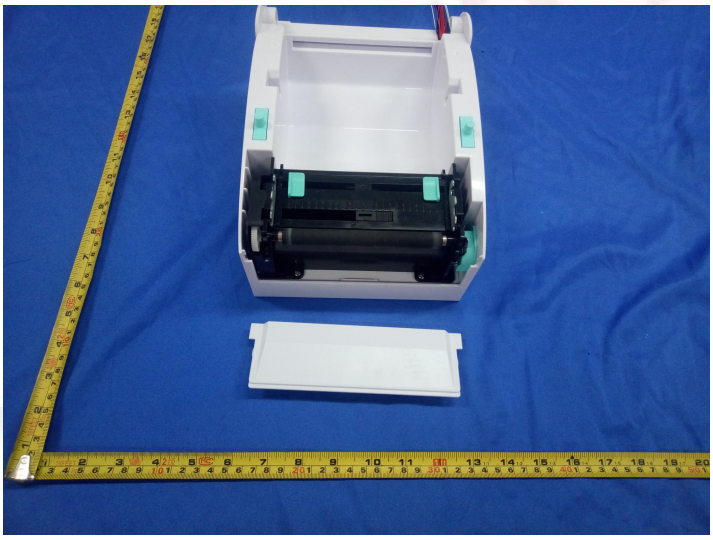


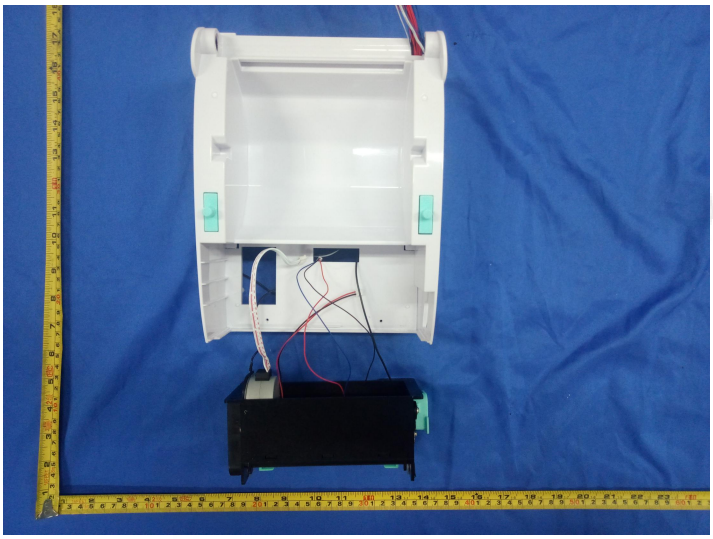

AC ADAPTER 电源适配器
MODEL 型号：PRL0602U-24
INPUT 输入：AC100-240V
OUTPUT 输出：+24V/=2.5A
MADE IN CHINA

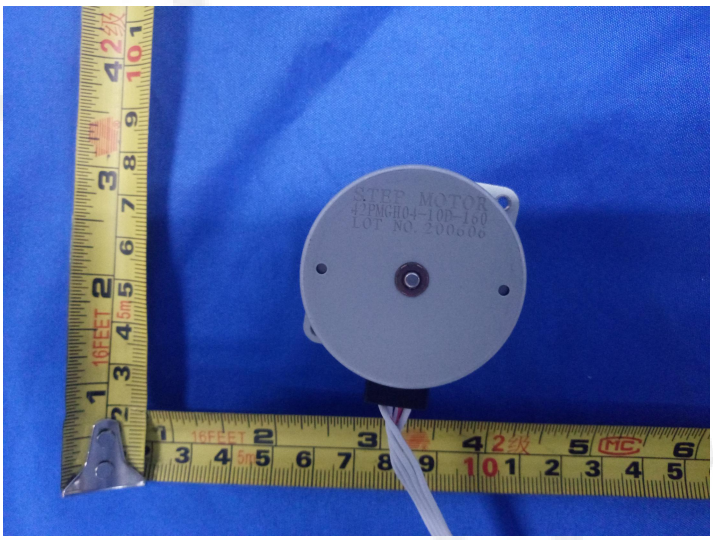




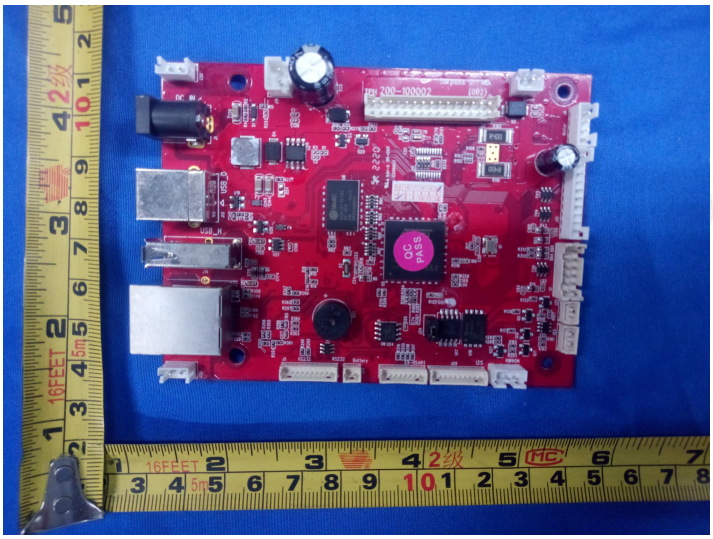


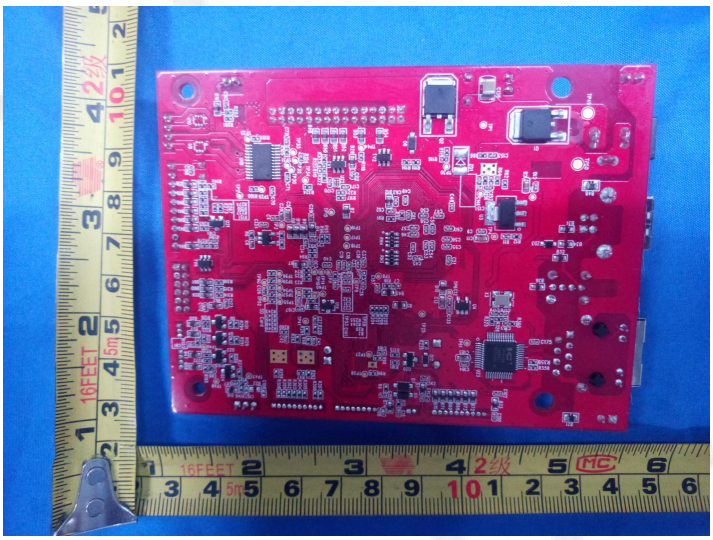





STEP MOTOR
42PMG804-100-160
LOT NO. 200606







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