

TEST REPORT

of

FCC CFR 47 part 1, 1.1307(b), 1.1310

FCC ID: O8HGCUBE-100BB

1. Equipment Under Test : POS PRINTER
2. Model Name : GCUBE-100BB
3. Variant Model Name(s) : Refer to the page 4
4. Applicant : Shin Heung Precision Co., Ltd.
5. Manufacturer : Shin Heung Precision Co., Ltd.
6. Date of Receipt : 2020.01.09
7. Date of Test(s) : 2020.01.26 ~ 2020.04.08
8. Date of Issue : 2020.04.21

In the configuration tested, the EUT complied with the standards specified above. This test report does not assure KOLAS accreditation.

- 1) The results of this test report are effective only to the items tested.
- 2) The SGS Korea is not responsible for the sampling, the results of this test report apply to the sample as received.

Tested by:



Jinhyoung Cho

Technical
Manager:



Hyunchae You

SGS Korea Co., Ltd. Gunpo Laboratory



SGS Korea Co., Ltd.

4, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807
Tel. +82 31 428 5700 / Fax. +82 31 427 2370
<http://www.sgsgroup.kr>

Report Number: F690501-RF-RTL000567

Page: 2 of 6

INDEX

Table of Contents

Page

1. General Information -----	3
2. RF Exposure Evaluation -----	5

1. General Information

1.1. Testing Laboratory

SGS Korea Co., Ltd. (Gunpo Laboratory)

- 10-2, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807
- 4, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807
- Designation number: KR0150

All SGS services are rendered in accordance with the applicable SGS conditions of service available on request and accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>.

Telephone : +82 31 688 0901

FAX : +82 31 688 0921

1.2. Details of Applicant

Applicant : Shin Heung Precision Co., Ltd.

Address : 53, Je3gongdan 3-gil, Seoun-myeon, Anseong-si, Gyeonggi-do, South Korea, 17605

Contact Person : Ha, Byoung-jo

Phone No. : +82 2 2101 9672

1.3. Details of Manufacturer

Company : Same as applicant

Address : Same as applicant

1.4. Description of EUT

Kind of Product	POS PRINTER
Model Name	GCUBE-100BB
Variant Model Names	Gcube-****, GCUBE-****, CALLISTO-**** (*: 0 to 9 or A to Z)
Power Supply	DC 24 V
Frequency Range	2 402 MHz ~ 2 480 MHz (Bluetooth)
Modulation Technique	GFSK, $\pi/4$ DQPSK, 8DPSK
Number of Channels	79 channels (Bluetooth)
Antenna Type	Pattern antenna
Antenna Gain	-0.63 dB i

1.5. Test Report Revision

Revision	Report Number	Date of Issue	Description
0	F690501-RF-RTL000567	2020.04.21	Initial

1.6. Description of Variant Models

Model Name	Description
Gcube-100BB	- Basic model
Gcube-****, GCUBE-****, CALLISTO-****	- These model names are made for marketing purpose

The suffix “” denote buyer code can be 0 to 9 or A to Z.

2. RF Exposure Evaluation

2.1. Environmental evaluation and exposure limit according to FCC CFR 47 part 1, 1.1307(b), 1.1310

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Average Time
(A) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	*900/f ²	6
30-300	61.4	0.163	1.0	6
300-1 500	-	-	f/300	6
1 500-100 000	-	-	5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	*180/f ²	30
30-300	27.5	0.073	0.2	30
300-1 500	-	-	f/1500	30
<u>1 500-100 000</u>	-	-	<u>1.0</u>	<u>30</u>

2.1.1. Friis transmission formula: $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2)$

Where P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

R = distance between observation point and center of the radiator in cm

P_d the limit of MPE, 1 mW/cm². If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

2.1.2. Test Result of RF Exposure Evaluation

Test Item : RF Exposure Evaluation Data

Test Mode : Normal Operation

2.1.3. Output Power into Antenna & RF Exposure Evaluation Distance

Bluetooth

- Maximum tune up tolerance

Frequency Range (MHz)	Output Average Power to Antenna (dB m)	Antenna Gain (dB i)	Power Density at 20 cm (mW/cm ²)	Limits (mW/cm ²)
2 402 ~ 2 480	7	-0.63	0.000 862	1

Note;

- The power density Pd (5th column) at a distance of 20 cm calculated from the friis transmission formula is far below the limit of 1 mW/cm².
- This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.
- This equipment should be installed and operated with minimum 20 cm between the radiator and your body.
- The antenna gain of this transmitter is less than 6 dB i and must not be collocated or operating in conjunction with any other antenna or transmitter unless authorized to do so by the FCC.
- According to KDB 447498 D01 RF Exposure Guidance 4.1.d, Output Average Power to Antenna applied Maximum Tune up power considering tolerance.

- End of the Test Report