

RF Exposure Evaluation Report

Product : Pudu GW1
Trade mark : 
Model/Type reference : PGCG01
Serial Number : N/A
Report Number : EED32O80417303
FCC ID : 2AXDW-PGCG01
Date of Issue : Jul. 29, 2022
Test Standards : 47 CFR Part 1.1307
47 CFR Part 2.1093
KDB447498D01 General RF Exposure Guidance v06
Test result : PASS

Prepared for:

SHENZHEN PUDU TECHNOLOGY CO., LTD.

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Date:

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2 Version

Version No.	Date	Description
00	Jul. 29, 2022	Original

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4 General Information

4.1 Client Information

Applicant:	SHENZHEN PUDU TECHNOLOGY CO., LTD.
Address of Applicant:	Room 501, Building A, Block 1, Phase 1, Shenzhen International Inno Valley, Dashi 1st Road, Nanshan District, Shenzhen, 518057, China
Manufacturer:	SHENZHEN PUDU TECHNOLOGY CO., LTD.
Address of Manufacturer:	Room 501, Building A, Block 1, Phase 1, Shenzhen International Inno Valley, Dashi 1st Road, Nanshan District, Shenzhen, 518057, China
Factory:	SHENZHEN WABONY ELECTRONIC CO., LTD.
Address of Factory:	Floor 1-5, Building 12#. An Tuo Shan High Tech Park, Xin Sha Road, Sha Er community, Sha Jing Street, Bao An District, Shenzhen, P.R.C

4.2 General Description of EUT

Product Name:	Pudu GW1
Model No.:	PGCG01
Trade mark:	
EUT Supports Radios application:	2.4GHz WiFi and 2.4GHz wireless

4.3 Product Specification subjective to this standard

Frequency Range:	2.4G WiFi:IEEE 802.11b/g/n(HT20): 2412MHz to 2462MHz IEEE 802.11n(HT40): 2422MHz to 2452MHz 2.4G FHSS: 2466MHz to 2480MHz
Modulation Type:	2.4G WiFi: IEEE for 802.11b: DSSS(CCK,DQPSK,DBPSK) IEEE for 802.11g :OFDM(64QAM, 16QAM, QPSK, BPSK) IEEE for 802.11n(HT20 and HT40) : OFDM (64QAM, 16QAM,QPSK,BPSK) 2.4G FHSS: CCK
Test Power Grade:	Default
Test Software of EUT:	2.4G WiFi: EspRFTTestTool_v2.8_Manual.exe 2.4G FHSS: LoRaGatewaySettings.exe
Antenna Type	External antenna
Antenna Gain	2.4G WiFi: 5.4dBi 2.4G FHSS: ANT1: 5.4dBi; ANT2: 5.4dBi; ANT3: 5.4dBi; ANT4: 5.4dBi

Function :	☒ SISO ☐ 2x2 MIMO ☐ 3x3 MIMO ☐ 4x4MIMO	
Power Supply:	Adapter:	AC 100-120V~50/60Hz,0.4A Max
Test Voltage:	AC 230V/50Hz	
Max Conducted Peak Output Power:	2.4G WIFI:23.94dBm; 2.4G FHSS:5.24dBm	
	The Max Conducted Peak Output Power data refer to the report EED32O80417301, EED32O80417302	
Sample Received Date:	Jun. 24, 2022	
Sample tested Date:	Jun. 24, 2022 to Jul. 20, 2022	
Remark: Company Name and Address shown on Report, the sample(s) and sample Information was/ were provided by the applicant who should be responsible for the authenticity which CTI hasn't verified. The product has 4 same modules of 2.4G FHSS,they are module A,module B,module C and module D.And module A used antenna 1,module B used antenna 2,module C used antenna 3 and module D used antenna 4.All modules were tested.		

4.4 Test Location

All tests were performed at:

Centre Testing International Group Co., Ltd

Building C, Hongwei Industrial Park Block 70, Bao'an District, Shenzhen, China

Telephone: +86 (0) 755 33683668 Fax: +86 (0) 755 33683385

No tests were sub-contracted.

FCC Designation No.: CN1164

4.5 Deviation from Standards

None.

4.6 Abnormalities from Standard Conditions

None.

4.7 Other Information Requested by the Customer

None.

5 RF Exposure Evaluation

5.1 RF Exposure Compliance Requirement

Given $E = \frac{\sqrt{30 \times P \times G}}{d}$ & $S = \frac{E^2}{377}$

Where E = Field strength in Volts / meter

P = Power in Watts

G = Numeric antenna gain

d = Distance in meters

S = Power density in milliwatts / square centimeter

Combining equations and re-arranging the terms to express the distance as a function of the remaining variables yields:

$$S = \frac{30 \times P \times G}{377 d^2}$$

Changing to units of mW and cm, using:

$$P \text{ (mW)} = P \text{ (W)} / 1000 \text{ and}$$

$$d \text{ (cm)} = d \text{ (m)} / 100$$

Yields

$$S = \frac{30 \times (P/1000) \times G}{377 \times (d/100)^2} = 0.0796 \times \frac{P \times G}{d^2} \quad \text{Equation 1}$$

Where d = Distance in cm

P = Power in mW

G = Numeric antenna gain

S = Power density in mW / cm²

5.2 Maximum Permissible Exposure

Substituting the MPE safe distance using $d = 20 \text{ cm}$ into Equation 1:

$$S = 0.000199 \times P \times G$$

Where P = Power in mW

G = Numeric antenna gain

S = Power density in mW / cm^2

1)Maximum tune-up Power

2.4G WiFi:

Test Mode	Antenna	Frequency [MHz]	Maximum Peak Conducted Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power(dBm)
11B	Ant1	2412	21.48	21.00 ± 1	22.00
		2437	21.45	21.00 ± 1	22.00
		2462	20.98	21.00 ± 1	22.00
11G	Ant1	2412	23.67	23.00 ± 1	24.00
		2437	23.84	23.00 ± 1	24.00
		2462	23.38	23.00 ± 1	24.00
11N20SI SO	Ant1	2412	23.77	23.00 ± 1	24.00
		2437	23.94	23.00 ± 1	24.00
		2462	23.44	23.00 ± 1	24.00
11N40SI SO	Ant1	2422	23.66	23.00 ± 1	24.00
		2437	23.10	23.00 ± 1	24.00
		2452	23.87	23.00 ± 1	24.00

2.4G FHSS:

Test Mode	Antenna	Frequency[MHz]	Maximum Peak Conducted Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power(dBm)
TX	Ant1	2466	4.33	4.50±1	5.50
	Ant2	2466	4.26	4.50±1	5.50
	Ant3	2466	5.14	4.50±1	5.50
	Ant4	2466	5.10	4.50±1	5.50
	Ant1	2473	4.24	4.50±1	5.50
	Ant2	2473	4.23	4.50±1	5.50
	Ant3	2473	5.00	4.50±1	5.50
	Ant4	2473	5.24	4.50±1	5.50
	Ant1	2480	4.26	4.50±1	5.50
	Ant2	2480	4.18	4.50±1	5.50
	Ant3	2480	5.02	4.50±1	5.50
	Ant4	2480	5.24	4.50±1	5.50

2)Calculation

①For SISO:

2.4G WIFI:

Maximum tune-up Power(dBm)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm ²)
24.00	251.19	3.467	20	0.1733	1

2.4G FHSS ANT1:

Maximum tune-up Power(dBm)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm ²)
5.50	3.548	3.467	20	0.0024	1

2.4G FHSS ANT2:

Maximum tune-up Power(dBm)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm ²)
5.50	3.548	3.467	20	0.0024	1

2.4G FHSS ANT3:

Maximum tune-up Power(dBm)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm ²)
5.50	3.548	3.467	20	0.0024	1

2.4G FHSS ANT4:

Maximum tune-up Power(dBm)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm ²)
5.50	3.548	3.467	20	0.0024	1

Result: compliant

②For SUM:

$$\text{SUM}=0.1733+0.0024+0.0024+0.0024+0.0024=0.1829<1$$

Result: compliant

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*** End of Report ***