

RF Exposure Evaluation Report

Product : K628 4G LTE Module
Trade mark : KIAYO
Model/Type reference : K628-G, K628-CN, K628-WIFI
Serial Number : N/A
Report Number : EED32Q80383707
FCC ID : 2BFPB-K628
Date of Issue : May 30, 2024
Test Standards : 47 CFR Part 1.1307
47 CFR Part 1.1310
47 CFR Part 2.1091
47 CFR Part 2.1093
KDB 447498 D04 Interim General RF
Exposure Guidance v01
Test result : PASS

Prepared for:

SHENZHEN KIAYO TECHNOLOGY CO.,LTD.
4th Floor, Building 25, Chentian Industrial Zone, Xixiang Street, Bao'an
District, Shenzhen, Guangdong Province, China

Prepared by:

Centre Testing International Group Co., Ltd.
Hongwei Industrial Zone, Bao'an 70 District,
Shenzhen, Guangdong, China
TEL: +86-755-3368 3668
FAX: +86-755-3368 3385



Compiled by:

Frazer Li

Frazer Li

Approved by:

Aaron Ma

Aaron Ma

Reviewed by:

Tom Chen

Tom Chen

Date:

May 30, 2024

Check No.: 7001270324

1 Version

Version No.	Date	Description
00	May 30, 2024	Original

2 Contents

	Page
1 VERSION	2
2 CONTENTS	3
3 GENERAL INFORMATION	4
3.1 CLIENT INFORMATION	4
3.2 GENERAL DESCRIPTION OF EUT	4
3.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD	4
3.4 TEST LOCATION	6
3.5 DEVIATION FROM STANDARDS	6
3.6 ABNORMALITIES FROM STANDARD CONDITIONS	6
3.7 OTHER INFORMATION REQUESTED BY THE CUSTOMER	6
4 SAR EVALUATION	7
4.1 RF EXPOSURE COMPLIANCE REQUIREMENT	7
4.1.1 Limits	7
4.1.2 Test Procedure	7
4.1.3 EUT RF Exposure Evaluation	8

3 General Information

3.1 Client Information

Applicant:	SHENZHEN KIAYO TECHNOLOGY CO.,LTD.
Address of Applicant:	4th Floor, Building 25, Chentian Industrial Zone, Xixiang Street, Bao'an District, Shenzhen, Guangdong Province, China
Manufacturer:	SHENZHEN KIAYO TECHNOLOGY CO.,LTD.
Address of Manufacturer:	4th Floor, Building 25, Chentian Industrial Zone, Xixiang Street, Bao'an District, Shenzhen, Guangdong Province, China
Factory:	SHENZHEN KIAYO TECHNOLOGY CO.,LTD.
Address of Factory:	4th Floor, Building 25, Chentian Industrial Zone, Xixiang Street, Bao'an District, Shenzhen, Guangdong Province, China

3.2 General Description of EUT

Product Name:	K628 4G LTE Module
Model No.(EUT):	K628-G, K628-CN, K628-WIFI
Test Model No.:	K628-G
Trade Mark:	KIAYO

3.3 Product Specification subjective to this standard

Frequency Range:	BLE/BT: 2402MHz~2480MHz 2.4G Wi-Fi: IEEE 802.11b/g/n(HT20): 2412MHz to 2462MHz IEEE 802.11n(HT40): 2422MHz to 2452MHz 5G Wi-Fi: U-NII-1 & U-NII-2A: 5180-5320MHz U-NII-2C:5500-5700MHz(except 5600-5675MHz) U-NII-3:5745-5825MHz LTE: FDD band 2:UL:1850-1910MHz,DL:1930-1990MHz; FDD band 4:UL:1710-1755MHz,DL:2110-2155MHz; FDD band 5:UL:824 - 849 MHz,DL: 869 - 894MHz; FDD band 7:UL:2500 - 2570MHz,DL:2620 - 2690MHz; FDD band 12:UL:699-716MHz,DL:729-746MHz; FDD band 13:UL:777-787MHz,DL:746-756MHz; FDD band 17:UL:704 - 716MHz,DL:734 - 746MHz; FDD band 26:UL: 814-824 MHz,DL: 859-869MHz; & UL: 824 - 849 MHz,DL: 869 - 894MHz; TDD band 41:UL&DL:2496 MHz -2690 MHz; FDD band 66:UL:1710 - 1780 MHz,DL:2110 - 2200MHz; FDD band 71:UL: 663 - 698 MHz,DL: 617 - 652 MHz
Modulation Type:	BLE: GFSK, $\pi/4$DQPSK BT: GFSK, $\pi/4$DQPSK, 8DPSK 2.4G Wi-Fi: 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) 5G Wi-Fi: IEEE 802.11a: OFDM (BPSK, QPSK, 16QAM, 64QAM) IEEE 802.11n(HT20/HT40): OFDM (BPSK, QPSK, 16QAM, 64QAM) IEEE 802.11ac(VHT20/VHT40/VHT80): OFDM (BPSK, QPSK, 16QAM, 64QAM,

	256QAM) LTE: QPSK,16QAM,64QAM
Test Power Grade:	Default
Test Software of EUT:	RF test
Antenna Type:	External Antenna
Antenna Gain:	B/E/BT/2.4G Wi-Fi/LTE: 3.5dBi 5G Wi-Fi: 6.6dBi
Power Supply:	INPUT:100-240V~50/60Hz, 1.2A OUTPUT:12V/4A, 48W
Sample Received Date:	Mar. 27, 2024
Sample tested Date:	Apr. 10, 2024 to May 23, 2024
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. Model No.: K628-G, K628-CN, K628-WIFI Only the model K628-G was tested. Their electrical circuit design, layout, components used and internal wiring are identical. Only the different sales regions is different.	

3.4 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

3.5 Deviation from Standards

None.

3.6 Abnormalities from Standard Conditions

None.

3.7 Other Information Requested by the Customer

None.

4 SAR Evaluation

4.1 RF Exposure Compliance Requirement

4.1.1 Limits

The SAR-based exemption formula of § 1.1307(b)(3)(i)(B), repeated here as Formula (B.2), applies for single fixed, mobile, and portable RF sources with available maximum time-averaged power or effective radiated power (ERP), whichever is greater, of less than or equal to the threshold Pth (mW).

This method shall only be used at separation distances from 0.5 cm to 40 cm and at frequencies from 0.3 GHz to 6 GHz (inclusive). Pth is given by Formula

$$P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases}$$

where

$$x = -\log_{10} \left(\frac{60}{ERP_{20 \text{ cm}} \sqrt{f}} \right)$$

and f is in GHz, d is the separation distance (cm), and ERP20cm is per Formula (B.1).

$$P_{th} \text{ (mW)} = ERP_{20 \text{ cm}} \text{ (mW)} = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases} \quad (\text{B.1})$$

The 1 mW Blanket Exemption of § 1.1307(b)(3)(i)(A) applies for single fixed, mobile, and portable RF sources with available maximum time-averaged power of no more than 1 mW, regardless of separation distance.

4.1.2 Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

4.1.3 EUT RF Exposure Evaluation

(1)For Stand alone:

For Bluetooth LE:

Frequency (MHz)	Max. Conducted Output power (dBm)	Antenna Gain (dBi)	ERP (dBm)	ERP (mW)	Limit (mW)	MPE ratio	Result
2480	3.81	3.5	5.16	3.281	3060	0.001	PASS

For Bluetooth Classic:

Frequency (MHz)	Max. Conducted Output power (dBm)	Antenna Gain (dBi)	ERP (dBm)	ERP (mW)	Limit (mW)	MPE ratio	Result
2402	7.65	3.5	9	7.943	3060	0.003	PASS

For 2.4G Wi-Fi:

Frequency (MHz)	Max. Conducted Output power (dBm)	Antenna Gain (dBi)	ERP (dBm)	ERP (mW)	Limit (mW)	MPE ratio	Result
2412	14.54	3.5	15.89	38.815	3060	0.013	PASS

For 5G Wi-Fi:

Frequency (MHz)	Max. Conducted Output power (dBm)	Antenna Gain (dBi)	ERP (dBm)	ERP (mW)	Limit (mW)	MPE ratio	Result
5320	11.91	6.6	16.36	43.251	3060	0.014	PASS

For LTE:

Band	Channel	Frequency (MHz)	Max. Conducted Output power (dBm)	Antenna Gain (dBi)	ERP (dBm)	ERP (mW)	Limit (mW)	MPE ratio	Result
2	18700	1860	21.59	3.5	22.94	196.79	3060	0.06	PASS
4	20000	1715	21.77	3.5	23.12	205.12	3060	0.07	PASS
5	20525	836.5	22.16	3.5	23.51	224.39	1706.46	0.13	PASS
7	20800	2505	21.43	3.5	22.78	189.67	3060	0.06	PASS
12	23165	714.5	21.70	3.5	23.05	201.84	1457.58	0.14	PASS
13	23205	779.5	21.81	3.5	23.16	207.01	1590.18	0.13	PASS
17	23825	713.5	21.62	3.5	22.97	198.15	1455.54	0.14	PASS
26	26865	831.5	22.14	3.5	23.49	223.36	1696.26	0.13	PASS
41	40140	2545	21.43	3.5	22.78	189.67	3060	0.06	PASS
66	132572	1770	22.02	3.5	23.37	217.27	3060	0.07	PASS
71	133372	688	21.43	3.5	22.78	189.67	1403.52	0.14	PASS

Note:

① EIRP=conducted power+antenna gain;

② ERP=EIRP-2.15;

③ EIRP(dBm) = Field strength of the fundamental signal(dBuV/m@3m) – 95.23;

④ ERP(mW) = $10^{(ERP (dBm)/10)}$;

⑤ The estimation distance is 20cm;

⑥ The test data please refer to the report of EED32Q80383701, EED32Q80383702, EED32Q80383703, EED32Q80383704, and only the worst case data was recorded in the report.

(2) For Simultaneous Transmission:

SUM=5G Wi-Fi+LTE=0.014+0.14=0.154<1,

Result: Pass.

The test report is effective only with both signature and specialized stamp, The result(s) shown in this report refer only to the sample(s) tested. Without written approval of CTI, this report can't be reproduced except in full.

*** End of Report ***