



## SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch

SZSAR-TRF-01 Rev. A/0 May15,2023

Report No.: SZCR240900349310

Page: 1 of 14

# FCC TEST REPORT PART 0

**Application No.:** SZCR2409003493WM  
**Applicant:** Xiaomi Communications Co., Ltd.  
**Manufacturer:** Xiaomi Communications Co., Ltd.  
**Product Name:** Mobile Phone  
**Model No.(EUT):** 24117RK2CG  
**Trade Mark:** POCO  
**FCC ID:** 2AFZZRK2CG  
**Date of Receipt:** 2024/09/29  
**Date of Test:** 2024/10/10 to 2024/10/21  
**Date of Issue:** 2024/10/31  
**Test conclusion:** **PASS**

\*

Keny Xu

Keny Xu  
EMC Laboratory Manager



SGS-CSTC Standards Technical Services Co., Ltd.  
Shenzhen Branch Testing Center EMC Laboratory

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REVISION HISTORY

Report Number	Revision	Description	Issue Date
SZCR240900349310	01	Original	2024/10/31

Authorized for issue by:				
		<div>Kevin Lan</div>		
		Kevin Lan/Project Engineer		
		<div>Eric Fu</div>		
		Eric Fu/Reviewer		



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## 1 General Information

### 1.1 Details of Client

Applicant:	Xiaomi Communications Co., Ltd.
Address:	#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085
Manufacturer:	Xiaomi Communications Co., Ltd.
Address:	#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085

### 1.2 Test Location

Company:	SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch
Address:	No. 1 Workshop, M-10, Middle section, Science & Technology Park, Nanshan District, Shenzhen, Guangdong, China
Post code:	518057
Test engineer:	Vito Wang, Charley Yi



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### 1.3 Test Facility

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

• **A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

• **Innovation, Science and Economic Development Canada**

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0006.

IC#: 4620C.

• **FCC –Designation Number: CN1336**

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch has been recognized as an accredited testing laboratory.

Designation Number: CN1336. Test Firm Registration Number: 787754.



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### 1.4 General Description of EUT

Device Type :	portable device		
Exposure Category:	uncontrolled environment / general population		
Product Name:	Mobile Phone		
Model No.(EUT):	24117RK2CG		
Trade Mark:	POCO		
Product Phase:	Identical Prototype		
IMEI:	866966070024968 ; 866966070026443 866966070034405 ; 866966070034447 866966070037846 ; 866966070039388 866966070035246 ; 866966070034322 866966070037622 ; 866966070033589		
Device Operating Configurations :			
Modulation Mode:	<b>GSM:</b> GMSK, 8PSK; <b>WCDMA:</b> QPSK,16QAM; <b>LTE:</b> QPSK,16QAM,64QAM; <b>5G NR:</b> DFT-s-OFDM (PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM), CP-OFDM (QPSK, 16QAM, 64QAM, 256QAM) <b>WIFI:</b> DSSS, OFDM, OFDMA; <b>BT:</b> GFSK, $\pi/4$ DQPSK,8DPSK <b>NFC:</b> ASK		
Hardware Version:	135100O11		
Software Version:	Xiaomi HyperOS 2.0		
Device Class:	B		
GPRS Multi-slots Class:	33	EGPRS Multi-slots Class:	33
HSDPA UE Category:	24	HSUPA UE Category	6
DC-HSDPA UE Category:	24		
Power Class	4,tested with power level 5(GSM850)		
	1,tested with power level 0(GSM1900)		
	3, tested with power control “all 1”(WCDMA Band)		
	3, tested with power control Max Power(LTE Band)		
Frequency Bands:	Band	Tx (MHz)	Rx (MHz)
	GSM850	824 - 849	869 - 894
	GSM1900	1850 - 1910	1930 - 1990
	WCDMA Band II	1850 - 1910	1930 - 1990
	WCDMA Band IV	1710 - 1755	2110 - 2155
	WCDMA Band V	824 - 849	869 - 894
	LTE Band 2	1850 - 1910	1930 - 1990
	LTE Band 4	1710 - 1755	2110 - 2155
	LTE Band 5	824 - 849	869 - 894
	LTE Band 7	2500 - 2570	2620 - 2690
	LTE Band 26	814 - 849	859 - 894
	LTE Band 66	1710 - 1780	2110 - 2200



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	LTE Band 38	2570 - 2620	2570 - 2620
	LTE Band 41	2496 - 2690	2496 - 2690
	LTE Band 42	3450 - 3600	3450 - 3600
	LTE Band 48	3550 - 3700	3550 - 3700
	NR Band n2	1850 - 1910	1930 - 1990
	NR Band n5	824 - 849	869 - 894
	NR Band n7	2500 - 2570	2620 - 2690
	NR Band n26	814 - 849	859 - 894
	NR Band n66	1710 - 1780	2110 - 2200
	NR Band n38	2570 - 2620	2570 - 2620
	NR Band n41	2496 - 2690	2496 - 2690
	NR Band n48	3550 - 3700	3550 - 3700
	NR Band n77	3450 - 3550	3450 - 3550
		3700 - 3980	3700 - 3980
	NR Band n78	3450 - 3550	3450 - 3550
		3700 - 3800	3700 - 3800
	Bluetooth	2400 - 2483.5	2400 - 2483.5
	Wi-Fi 2.4G	2402 - 2462	2402 - 2462
	Wi-Fi 5G	5150 - 5250	5150 - 5250
		5250 - 5350	5250 - 5350
5470 - 5725		5470 - 5725	
5725 - 5850		5725 - 5850	
RF Cable:	<input checked="" type="checkbox"/> Provided by the applicant <input type="checkbox"/> Provided by the laboratory		
Battery Information:	Model:	BP59	
	Normal Voltage:	+3.91V	
	Rated capacity:	5830mAh	
	Manufacturer:	NVT	
Note: *Since the above data and/or information is provided by the client relevant results or conclusions of this report are only made for these data and/or information, SGS is not responsible for the authenticity, integrity and results of the data and information and/or the validity of the conclusion. As above information is provided and confirmed by the applicant. SGS is not liable to the accuracy, suitability, reliability or/and integrity of the information.			



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## 1.5 Time-Averaging for SAR

The equipment under test (EUT) is a portable handset, it contains the Qualcomm modem supporting 2G/3G/4G/5G NR/BT/WLAN/NFC bands, but only 4G/5G NR/ BT/WLAN are enabled with Qualcomm Smart Transmit feature to control and manage transmitting power in real time and to ensure at all times the time-averaged RF exposure is in compliance with the FCC requirement. All WWAN Band are configured for peak exposure mode, we verification the applicable cases in part2.

Nomenclature for Part 0 Report:

Technology	Term	Description
WWAN	$P_{limit}$	Power level that corresponds to the exposure design target ( <i>SAR_design_target</i> ) after accounting for all device design related uncertainties
	$P_{max}$	Maximum tune up output power
	<i>SAR_design_target</i>	Target SAR level < FCC SAR limit after accounting for all device design related uncertainties
	<i>SAR Char</i>	Table containing <i>P<sub>limit</sub></i> for all technologies and bands





## 2 SAR CHARACTERIZATION

### 2.1 DSI and SAR Determination

This device uses different Device State Index (DSI) to configure different time averaged power levels based on certain exposure scenarios. Depending on the detection scheme implemented in the smartphone, the worst-case SAR was determined by measurements for the relevant exposure conditions for that DSI. Detailed descriptions of the detection mechanisms are included in the operational description.

When 1g SAR and 10g SAR exposure comparison is needed, the worst-case was determined from SAR normalized to 1g or 10g SAR limit.

The device state index (DSI) conditions used in Table 1 represent different exposure scenarios.

Scenario	Description	SAR Test Cases
Head (DSI = 1)	<ul style="list-style-type: none"> <li>Device positioned next to head</li> <li>Receiver Active</li> </ul>	Head SAR per KDB Publication 648474 D04
Hotspot mode (DSI = 5)	<ul style="list-style-type: none"> <li>Device transmits in hotspot mode near body</li> <li>Hotspot Mode Active</li> </ul>	Hotspot SAR per KDB Publication 941225 D06
Phablet Grip (DSI= 3)	<ul style="list-style-type: none"> <li>Device is held with hand and grip sensor is triggered</li> </ul>	Phablet SAR per KDB Publication 648474 D04 & KDB Publication 616217 D04
Phablet (DSI = 4)	<ul style="list-style-type: none"> <li>Device is held with hand and grip sensor is not triggered</li> <li>Distance grip sensor not triggered</li> </ul>	Phablet SAR per KDB Publication 648474 D04 & KDB Publication 616217 D04

Table 1: DSI and Corresponding Exposure Scenarios



### 2.2 SAR Design Target And Uncertainty

SAR\_design\_target is determined by ensuring that it is less than FCC SAR limit after accounting for total device designed related uncertainties specified by the manufacturer.

$$\text{SAR\_design\_target} < \text{SAR}_{\text{regulatory\_limit}} \times 10^{\frac{-\text{total uncertainty}}{10}}$$

Band	Mode	Antenna	Uncertainty	SAR_design_target Head&5mm	SAR_design_target 0mm
GSM 850	GPRS 4TS	0#	1.0	0.79	2.07
	GPRS 4TS	1#	1.5	0.71	1.84
GSM 1900	GPRS 4TS	3#	1.5	0.71	1.84
	GPRS 4TS	5#	1.0	0.79	2.07
WCDMA_B2	RMC	3#	1.5	0.71	1.84
	RMC	5#	1.0	0.79	2.07
WCDMA_B4	RMC	2#	1.0	0.79	2.07
	RMC	3#	1.5	0.71	1.84
	RMC	5#	1.5	0.71	1.84
WCDMA_B5	RMC	0#	1.0	0.79	2.07
	RMC	1#	1.5	0.71	1.84
LTE_B2	QPSK	3#	1.2	0.76	1.97
	QPSK	5#	1.0	0.79	2.07
LTE_B4	QPSK	2#	0.7	0.85	2.21
	QPSK	3#	1.2	0.76	1.97
	QPSK	5#	1.2	0.76	1.97
LTE_B5	QPSK	0#	0.7	0.85	2.21
	QPSK	1#	1.5	0.71	1.84
LTE_B7	QPSK	2#	0.7	0.85	2.21
	QPSK	3#	1.5	0.71	1.84
	QPSK	5#	1.2	0.76	1.97
LTE_B26	QPSK	0#	0.7	0.85	2.21
	QPSK	1#	1.5	0.71	1.84
LTE_B66	QPSK	2#	0.7	0.85	2.21
	QPSK	3#	1.2	0.76	1.97
	QPSK	5#	1.2	0.76	1.97
LTE_B38	QPSK	2#	0.7	0.85	2.21
	QPSK	3#	1.2	0.76	1.97
	QPSK	4#	1.5	0.71	1.84
	QPSK	5#	1.2	0.76	1.97
LTE_B41 PC3	QPSK	2#	0.7	0.85	2.21
	QPSK	3#	1.2	0.76	1.97
	QPSK	4#	1.5	0.71	1.84
	QPSK	5#	1.2	0.76	1.97
LTE_B42	QPSK	1#	1.5	0.71	1.84
	QPSK	6#	1.0	0.79	2.07
	QPSK	7#	1.5	0.71	1.84
	QPSK	8#	1.5	0.71	1.84



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LTE_B48	QPSK	1#	1.5	0.71	1.84
	QPSK	6#	1.0	0.79	2.07
	QPSK	7#	1.5	0.71	1.84
	QPSK	8#	1.5	0.71	1.84
NR5G_N2	QPSK	3#	1.2	0.76	1.97
	QPSK	5#	1.0	0.79	2.07
NR5G_N5	QPSK	0#	0.7	0.85	2.21
	QPSK	1#	1.2	0.76	1.97
NR5G_N7	QPSK	2#	0.7	0.85	2.21
	QPSK	3#	1.5	0.71	1.84
	QPSK	5#	1.5	0.71	1.84
NR5G_N26	QPSK	0#	0.7	0.85	2.21
	QPSK	1#	1.2	0.76	1.97
NR5G_N38	QPSK	2#	0.7	0.85	2.21
	QPSK	3#	1.2	0.76	1.97
	QPSK	4#	1.5	0.71	1.84
	QPSK	5#	1.2	0.76	1.97
NR5G_N41 PC3	QPSK	2#	0.7	0.85	2.21
	QPSK	3#	1.2	0.76	1.97
	QPSK	4#	1.5	0.71	1.84
	QPSK	5#	1.2	0.76	1.97
NR5G_N48	QPSK	1#	1.5	0.71	1.84
	QPSK	6#	1.0	0.79	2.07
	QPSK	7#	1.5	0.71	1.84
	QPSK	8#	1.5	0.71	1.84
NR5G_N66	QPSK	2#	0.7	0.85	2.21
	QPSK	3#	1.2	0.76	1.97
	QPSK	5#	1.2	0.76	1.97
NR5G_N77 PC3	QPSK	1#	1.5	0.71	1.84
	QPSK	6#	1.0	0.79	2.07
	QPSK	7#	1.5	0.71	1.84
	QPSK	8#	1.5	0.71	1.84
NR5G_N78 PC2	QPSK	1#	1.5	0.71	1.84
	QPSK	6#	1.5	0.71	1.84
	QPSK	7#	1.5	0.71	1.84
	QPSK	8#	1.5	0.71	1.84
NR5G_N78 PC3	QPSK	1#	1.5	0.71	1.84
	QPSK	6#	1.0	0.79	2.07
	QPSK	7#	1.5	0.71	1.84
	QPSK	8#	1.5	0.71	1.84
WIFI 2.4G	802.11b	16#	2.0	0.63	1.64
	802.11b	7#	2.0	0.63	1.64
	802.11b	MIMO	2.0	0.63	1.64
WIFI 5G	802.11	6#	2.0	0.63	1.64
	802.11	17#	2.0	0.63	1.64
	802.11	MIMO	2.0	0.63	1.64
Bluetooth	DH5	16#	2.0	0.63	1.64
	DH5	7#	2.0	0.63	1.64



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### 2.3 SAR Char

The Smart Transmit algorithm maintains the time-averaged transmit power, in turn, time-averaged RF exposure of SAR\_design\_target, below the predefined time-averaged power limit, for each characterized technology and band. Smart Transmit allows the device to transmit at higher power instantaneously, as high as  $P_{max}$ , when needed, but enforces power limiting to maintain time-averaged transmit power to  $P_{limit}$ . Below table shows  $P_{limit}$  EFS settings and maximum tune up output power  $P_{max}$  configured for this EUT for various transmit conditions (DSI: Device State Index).

Band	Mode	Antenna	$P_{max}^*$	$P_{limit}$ (average)			
				Head DSI1	DSI 3	DSI 4	Hotspot DSI5
GSM 850	GPRS 4TS	0#	24.0	24.0	24.0	24.0	24.0
	GPRS 4TS	1#	23.0	18.0	23.0	23.0	18.0
GSM 1900	GPRS 4TS	3#	21.0	17.0	21.0	21.0	17.0
	GPRS 4TS	5#	21.0	21.0	21.0	21.0	21.0
WCDMA_B2	RMC	3#	24.0	17.0	20.0	24.0	17.0
	RMC	5#	24.0	24.0	23.5	23.5	22.0
WCDMA_B4	RMC	2#	24.0	17.0	22.5	22.5	17.0
	RMC	3#	23.5	17.5	20.0	23.5	17.5
	RMC	5#	23.5	23.5	22.5	22.5	21.0
WCDMA_B5	RMC	0#	24.0	24.0	24.0	24.0	24.0
	RMC	1#	23.5	18.0	21.0	23.5	18.0
LTE_B2	QPSK	3#	24.5	17.5	19.5	24.5	17.5
	QPSK	5#	24.5	24.5	21.5	21.5	21.5
LTE_B4	QPSK	2#	25.0	18.5	23.5	23.5	18.5
	QPSK	3#	24.5	18.5	21.0	24.5	18.5
	QPSK	5#	24.5	24.5	20.5	20.5	20.5
LTE_B5	QPSK	0#	25.0	25.0	25.0	25.0	25.0
	QPSK	1#	24.0	18.5	21.0	24.0	18.5
LTE_B7	QPSK	2#	25.0	17.5	20.0	20.0	17.5
	QPSK	3#	24.0	15.5	18.0	24.0	15.5
	QPSK	5#	24.5	24.5	20.5	20.5	20.5
LTE_B26	QPSK	0#	25.0	25.0	25.0	25.0	25.0
	QPSK	1#	24.0	18.0	20.5	24.0	18.0
LTE_B66	QPSK	2#	25.0	17.5	23.0	23.0	17.5
	QPSK	3#	24.5	17.5	21.0	24.5	17.5
	QPSK	5#	24.5	24.5	21.0	21.0	21.0
LTE_B38	QPSK	2#	23.0	17.0	19.5	19.5	17.0
	QPSK	3#	22.5	16.5	18.5	22.0	16.5
	QPSK	4#	21.5	18.5	19.5	21.5	18.5
	QPSK	5#	22.5	22.5	20.5	20.5	20.5
LTE_B41 PC3	QPSK	2#	23.0	17.5	19.5	19.5	17.5
	QPSK	3#	22.5	16.5	18.0	22.5	16.5
	QPSK	4#	21.5	19.5	20.0	21.5	19.5
	QPSK	5#	22.5	22.5	20.0	20.0	20.0
LTE_B42	QPSK	1#	20.5	16.0	19.5	20.5	16.0
	QPSK	6#	23.0	14.0	18.0	23.0	14.0
	QPSK	7#	22.5	13.5	17.0	17.0	13.5
	QPSK	8#	22.5	22.5	17.5	21.0	17.5
LTE_B48	QPSK	1#	20.5	15.5	19.5	20.5	15.5
	QPSK	6#	23.0	13.5	18.5	23.0	13.5
	QPSK	7#	22.5	13.5	17.5	17.5	13.5
	QPSK	8#	22.5	22.5	17.5	21.0	17.0



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NR5G_N2	QPSK	3#	24.5	17.0	19.0	24.5	17.0
	QPSK	5#	24.5	24.5	20.5	20.5	20.5
NR5G_N5	QPSK	0#	25.0	25.0	24.0	24.0	24.0
	QPSK	1#	24.5	19.5	21.0	24.5	19.5
NR5G_N7	QPSK	2#	25.0	16.0	19.0	19.0	16.0
	QPSK	3#	23.5	16.0	18.0	23.5	16.0
	QPSK	5#	24.0	24.0	19.0	19.0	19.0
NR5G_N26	QPSK	0#	25.0	25.0	25.0	25.0	25.0
	QPSK	1#	24.5	19.0	21.0	24.5	19.0
NR5G_N38	QPSK	2#	25.0	16.0	19.0	19.0	16.0
	QPSK	3#	24.5	16.0	18.0	24.0	16.0
	QPSK	4#	23.0	16.5	18.5	23.0	16.5
	QPSK	5#	24.5	24.5	19.5	19.5	19.5
NR5G_N41 PC3	QPSK	2#	25.0	16.0	18.5	18.5	16.0
	QPSK	3#	24.5	16.5	17.5	24.0	16.5
	QPSK	4#	23.0	17.0	19.0	23.0	17.0
	QPSK	5#	24.5	24.5	19.5	19.5	19.5
NR5G_N48	QPSK	1#	23.0	15.5	19.0	23.0	15.5
	QPSK	6#	25.0	13.5	17.0	25.0	13.5
	QPSK	7#	24.5	13.5	16.5	16.5	13.5
	QPSK	8#	24.5	24.5	17.0	21.0	17.0
NR5G_N66	QPSK	2#	25.0	16.5	22.5	22.5	16.5
	QPSK	3#	24.5	17.0	19.5	24.5	17.0
	QPSK	5#	24.5	24.5	21.0	21.0	20.5
NR5G_N77 PC3	QPSK	1#	23.0	16.0	19.5	23.0	16.0
	QPSK	6#	25.0	15.0	16.5	25.0	15.0
	QPSK	7#	24.5	14.0	17.0	17.0	14.0
	QPSK	8#	24.5	23.0	17.0	21.0	17.0
NR5G_N78 PC2	QPSK	1#	22.0	15.0	18.5	22.0	15.0
	QPSK	6#	24.0	14.0	16.0	24.0	14.0
	QPSK	7#	23.5	13.0	15.5	15.5	13.0
	QPSK	8#	23.5	22.0	15.5	20.0	15.5
NR5G_N78 PC3	QPSK	1#	23.0	16.0	19.5	23.0	16.0
	QPSK	6#	25.0	15.0	17.0	25.0	15.0
	QPSK	7#	24.5	14.0	16.5	16.5	14.0
	QPSK	8#	24.5	23.0	16.5	21.0	16.5
WIFI 2.4G	802.11b	16#	18.0	14.0	18.0	18.0	18.0
	802.11b	7#	18.0	12.0	16.0	16.0	16.0
	802.11b	MIMO	18.0	12.0	16.0	16.0	16.0
WIFI 5G	802.11	6#	16.5	10.0	13.5	13.5	14.5
	802.11	17#	17.0	12.0	14.0	14.0	15.0
	802.11	MIMO	16.5	10.0	13.5	13.5	14.5
Bluetooth	DH5	16#	13.5	13.5	13.5	13.5	13.5
	DH5	7#	13.5	13.5	13.5	13.5	13.5

### P<sub>limit</sub> for supported technologies and bands (actual EFS settings)

Note:

- 1) \*P<sub>max</sub> is used for RF tune up procedure. The maximum allowed output power is equal to P<sub>max</sub> + Total uncertainty.



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- 2) The max allowed output power is the  $P_{\text{limit}} + \text{Total uncertainty}$ , and if  $P_{\text{limit}}$  is higher than  $P_{\text{max}}$ , the device output power will be  $P_{\text{max}}$  instead.

---END---



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