



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

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

Report No.: SZCR250300114101

Page: 1 of 13

FCC TEST REPORT PART 0

Application No.: SZCR2503001141WM
Applicant: vivo Mobile Communication Co., Ltd.
Address of Applicant: No.1, vivo Road, Chang'an, Dongguan, Guangdong, China
Manufacturer: vivo Mobile Communication Co., Ltd.
Address of Manufacturer: No.1, vivo Road, Chang'an, Dongguan, Guangdong, China
Product Name: Mobile Phone
Model No.(EUT): V2418
Trade Mark: vivo
FCC ID: 2AUCY-V2418
Date of Receipt: 2024-07-22
Date of Test: 2024-07-23 to 2024-08-17
Date of Issue: 2025-04-08
Test conclusion: **PASS**

Keny Xu

Keny Xu
EMC Laboratory Manager



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REVISION HISTORY

Revision Record			
Version	Description	Date	Remark
01		2025-04-08	

Authorized for issue by:			
		Sherlock Fang	
		Sherlock Fang/Project Engineer	
		Eric Fu	
		Eric Fu/Reviewer	



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Report No.: SZCR250300114101

Page: 3 of 13

CONTENTS

1	GENERAL INFORMATION	4
1.1	GENERAL DESCRIPTION OF EUT	4
1.2	TEST LOCATION	7
1.3	TEST FACILITY	7
1.4	TIME-AVERAGING FOR SAR	8
2	SAR CHARACTERIZATION	9
2.1	DSI AND SAR DETERMINATION	9
2.2	SAR DESIGN TARGET AND UNCERTAINTY	10
2.3	SAR CHAR	11



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1 General Information

1.1 General Description of EUT

Product Name:	Mobile Phone		
Model No.:	V2418		
Trade Mark:	vivo		
Product Phase:	production unit		
Device Type:	portable device		
Exposure Category:	uncontrolled environment / general population		
IMEI:	864141079799992; 864141079799398 864141079799471; 864141079799752 864141079799794; 864141079799497 864141079799430; 864141079799711		
Hardware Version:	MP_0.1		
Software Version:	PD2418F_EX_A_14.0.3.8.W30		
Antenna Type:	Intergated Antenna		
Device Operating Configurations:			
Modulation Mode:	GSM: GMSK,8PSK; WCDMA: QPSK,16QAM LTE: QPSK,16QAM,64QAM,256QAM 5G NR: DFT-s-OFDM(PI/2 BPSK,QPSK,16QAM,64QAM,256QAM) CP-OFDM(QPSK,16QAM,64QAM,256QAM) WIFI: DSSS,OFDM; BT: GFSK, $\pi/4$ DQPSK,8DPSK		
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





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

Report No.: SZCR250300114101

Page: 5 of 13

	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 12	699~716	729~746
	LTE Band 13	777~787	746~756
	LTE Band 17	704-716	734-746
	LTE Band 26	814~849	859~894
	LTE Band 38	2570~2620	2570~2620
	LTE Band 41	2496~2690	2496~2690
	LTE Band 66	1710~1780	2110~2200
	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 n38	2570~2620	2570~2620
	NR Band n41 (Class 2/3)	2496~2690	2496~2690
	NR Band n66	1710~1780	2110~2200
	NR Band n77	3450~3550	3450~3550
		3700~3980	3700~3980
	NR Band n78(Class 2/3)	3450~3550	3450~3550
		3700~3800	3700~3800
	WIFI 2.4G	2412~2462	2412~2462
	WIFI 5G	5150~5250	5150~5250
		5250~5350	5250~5350
		5470~5725	5470~5725
		5725~5850	5725~5850
	BT	2402~2480	2402~2480
RF Cable:	<input checked="" type="checkbox"/> Provided by applicant <input type="checkbox"/> Provided by the laboratory		
Battery Information:	Model:	BA27	
	Normal Voltage:	3.91V	



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Report No.: SZCR250300114101

Page: 6 of 13

	Rated capacity:	4900mAh
	Manufacturer:	Sunwoda Electronic CO.,LTD.
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1.2 Test Location

All tests were performed at:

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Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.

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 EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

- **VCCI (Member No. 1937)**

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen EMC laboratory have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

- **FCC –Designation Number: CN1336**

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

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

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

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

CAB identifier: CN0006.

IC#: 4620C.



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1.4 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 bands, but only 2G/3G/4G/5G NR 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. we verification the applicable cases in part2.

The compliance test under the static transmission scenario and simultaneous transmission analysis are reported in Part 1 report. The validation of the time-averaging algorithm and compliance under the dynamic (time- varying) transmission scenario for WWAN technologies are reported in Part 2 report.

Nomenclature for Part 0 Report:

Technology	Term	Description
WWAN	P_{limit}	Power level that corresponds to the exposure design target (SAR_{design_target}) after accounting for all device design related uncertainties
	P_{max}	Maximum tune up output power
	SAR_{design_target}	Target SAR level < FCC SAR limit after accounting for all device design related uncertainties
	SAR_{Char}	Table containing P_{limit} 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 = 2)	<ul style="list-style-type: none"> •Device positioned next to head •Receiver Active 	Head SAR per KDB Publication 648474 D04
Hotspot mode (DSI = 10)	<ul style="list-style-type: none"> •Device transmits in hotspot mode near body •Hotspot Mode Active 	Hotspot SAR per KDB Publication 941225 D06
Phablet (DSI = 5)	<ul style="list-style-type: none"> •Device is held with hand •Sensor Mode Active 	Phablet SAR per KDB Publication 648474 D04 & KDB 616217 D04
Phablet (DSI = 4)	<ul style="list-style-type: none"> •Device is held with hand •Sensor Mode does not Active 	Phablet SAR per KDB Publication 648474 D04
Body-worn (DSI = 4)	<ul style="list-style-type: none"> •Device being used with a body-worn accessory 	Body-worn SAR per KDB Publication 648474 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.

$$\text{SAR_design_target} < \text{SAR}_{\text{regulatory_limit}} \times 10^{\frac{-\text{total uncertainty}}{10}}$$

Uncertainty dB (k=2)	All Band
Total uncertainty	1.49

Exposure position	Frequency band	SAR_Regulatory_Limit W/kg(1g)	SAR_design_target W/kg(1g)
Head	WWAN	1.6	0.7
Body worn	WWAN	1.6	0.7
Hotspot	WWAN	1.6	0.7
Exposure position	Frequency band	SAR_Regulatory_Limit W/kg(10g)	SAR_design_target W/kg(10g)
Limbs	WWAN	4.0	2.0



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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).

P_{limit} for supported technologies and bands (actual EFS settings)

Band	Mode	Antenna	P_{max}	P_{limit} (average)			
				Head	Body Worn/Limbs Receiver Off&Sensor Off	Body Worn/Limbs Receiver Off&Sensor On	Hotspot
				DSI 2	DSI 4	DSI 5	DSI 10
GSM 850	GPRS 3TS	13#	25.5	21.5	/	/	25.0
GSM 850	GPRS 2TS	13#	25.0	/	25.0	/	/
GSM 850	GPRS 3TS	31#	25.0	/	/	/	24.5
GSM 850	GPRS 2TS	31#	24.5	24.5	24.5	/	/
GSM 1900	GPRS 4TS	13#	21.5	15.0	/	/	/
GSM 1900	GPRS 2TS	13#	22.0	/	22.0	/	/
GSM 1900	GPRS 3TS	13#	22.5	/	/	/	20.5
GSM 1900	GPRS 2TS	31#	22.0	22.0	20.5	/	/
GSM 1900	GPRS 4TS	31#	21.5	/	/	/	19.5
WCDMA_B2	RMC	13#	23.0	15.5	23.0	21.5	19.0
	RMC	31#	23.0	23.0	20.5	/	20.0
WCDMA_B4	RMC	13#	23.5	15.5	23.5	20.5	19.5
	RMC	31#	23.5	23.5	21.0	/	19.5
WCDMA_B5	RMC	13#	24.0	19.5	24.0	/	24.0
	RMC	31#	24.0	24.0	23.5	/	22.5
LTE_B2	QPSK	13#	23.0	15.5	23.0	19.5	18.0
	QPSK	31#	22.5	22.5	20.0	/	19.0
	QPSK	11#	23.0	15.5	23.0	19.5	18.0
LTE_B4	QPSK	13#	23.5	15.5	23.5	21.5	20.0
	QPSK	31#	23.0	23.0	21.0	/	19.5
	QPSK	11#	23.0	17.5	23.0	/	18.5
LTE_B5	QPSK	13#	24.0	19.5	24.0	/	24.0
	QPSK	31#	24.0	24.0	24.0	/	23.0
LTE_B7	QPSK	13#	23.0	13.5	19.5	17.5	15.0
	QPSK	31#	22.5	22.5	22.5	/	21.0
	QPSK	11#	22.5	18.5	22.5	/	17.0



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

Report No.: SZCR250300114101

Page: 12 of 13

LTE_B12	QPSK	13#	23.5	21.5	23.5	/	23.5
	QPSK	31#	23.5	23.5	23.5	/	23.5
LTE_B13	QPSK	13#	23.0	22.0	23.0	/	23.0
	QPSK	31#	23.0	23.0	23.0	/	23.0
LTE_B17	QPSK	13#	23.5	21.5	23.5	/	23.5
	QPSK	31#	23.5	23.5	23.5	/	23.5
LTE_B26	QPSK	13#	24.0	20.0	24.0	/	24.0
	QPSK	31#	24.0	24.0	24.0	/	23.0
LTE_B66	QPSK	13#	23.5	15.5	23.5	21.5	20.0
	QPSK	31#	23.0	23.0	21.0	/	19.5
	QPSK	11#	23.0	17.5	23.0	20.0	18.5
LTE_B38	QPSK	13#	22.0	12.5	18.5	/	14.5
	QPSK	31#	21.5	21.5	21.5	/	21.5
	QPSK	11#	22.0	18.5	22.0	18.5	17.5
LTE_B41	QPSK	13#	22.0	12.5	18.5	/	14.0
	QPSK	31#	22.0	22.0	21.0	/	20.0
	QPSK	11#	22.0	18.5	22.0	/	16.0
NR5G_N2	QPSK	31#	23.0	14.5	23.0	19.0	17.5
	QPSK	11#	22.5	22.5	20.0	/	19.0
NR5G_N5	QPSK	31#	24.0	20.0	24.0	/	24.0
	QPSK	11#	24.0	24.0	24.0	/	23.0
NR5G_N7	QPSK	11#	23.0	18.5	23.0	/	17.0
	QPSK	13#	23.0	12.5	18.5	/	14.5
	QPSK	31#	23.0	23.0	22.5	22.5	21.0
NR5G_N26	QPSK	13#	24.0	20.0	24.0	/	24.0
	QPSK	31#	24.0	24.0	24.0	/	23.0
NR5G_N66	QPSK	11#	23.5	18.5	23.5	/	20.0
	QPSK	13#	23.5	14.0	23.5	/	17.5
	QPSK	31#	23.5	23.5	21.0	21.0	20.0
NR5G_N38	QPSK	11#	24.0	18.5	24.0	/	17.0
	QPSK	13#	24.0	12.5	18.0	/	14.5
	QPSK	31#	24.0	24.0	21.0	21.0	20.0
NR5G_N41 (PC2)	QPSK	11#	25.5	18.5	23.5	/	16.5
	QPSK	13#	25.5	12.5	18.5	/	14.0
	QPSK	31#	25.5	25.5	21.0	21.0	20.0
NR5G_N41 (PC3)	QPSK	11#	22.5	18.5	22.5	/	16.5
	QPSK	13#	22.5	12.5	18.5	/	14.0
	QPSK	31#	22.5	22.5	21.0	21.0	20.0
NR5G_N77	QPSK	11#	23.5	16.0	23.5	20.0	18.0
	QPSK	12#	22.5	17.0	22.5	/	17.5



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

Report No.: SZCR250300114101

Page: 13 of 13

	QPSK	23#	21.5	15.0	18.0	/	16.5
	QPSK	21#	21.5	12.5	17.0	/	15.5
NR5G_N78 (PC2)	QPSK	11#	25.5	16.0	22.5	19.0	16.5
	QPSK	12#	25.0	16.0	22.5	/	17.0
	QPSK	23#	24.0	16.5	19.5	/	18.0
	QPSK	21#	23.5	13.0	17.5	/	16.0
NR5G_N78 (PC3)	QPSK	11#	22.5	16.0	22.5	19.0	16.5
	QPSK	12#	22.0	16.0	22.0	/	17.0
	QPSK	23#	21.0	12.5	19.5	/	18.0
	QPSK	21#	20.5	13.0	17.5	/	16.0

Note:

- 1) * P_{max} is used for RF tune up procedure. The maximum allowed output power is equal to P_{max} + Total uncertainty.
- 2) The max allowed output power is the P_{limit} + Total uncertainty, and if P_{limit} is higher than P_{max} , the device output power will be P_{max} instead.
- 3) Note that WLAN operations are not enabled with Smart Transmit.
- 4) The following table is duty cycle and factor used for calculating time average power.

Mode	Duty Cycle	Time Average calculation Factor
GSM 1TX	12.5%	-9.0
GSM 2TX	25.0%	-6.0
GSM 3TX	37.5%	-4.3
GSM 4TX	50.0%	-3.0
LTE FDD	100.0%	0.0
LTE TDD	63.3%	-2.0
LTE TDD HPUE	43.3%	-3.5
NR FDD	100.0%	0.0
NR TDD	100.0%	0.0
NR TDD HPUE	100.0%	0.0

- End of Report -



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