



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

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

Report No.: SZCR241200460901

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FCC TEST REPORT PART 0

Application No.: SZCR2412004609WM
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): V2427
Trade Mark: vivo
FCC ID: 2AUCY-V2427
Date of Receipt: 2024-12-10
Date of Test: 2024-12-12 to 2025-01-07
Date of Issue: 2025-01-08
Test conclusion: **PASS**

Keny Xu

Keny Xu
EMC Laboratory Manager



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Shenzhen Branch EMC Laboratory

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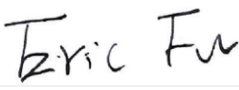
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REVISION HISTORY

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

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



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1 General Information

1.1 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:	Charley Yi

1.2 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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1.3 General Description of EUT

Product Name:	Mobile Phone		
Model No.:	V2427		
Trade Mark:	vivo		
Product Phase:	production unit		
Device Type:	portable device		
Exposure Category:	uncontrolled environment / general population		
IMEI:	861994079993350; 861994079993012; 861994079994697; 861994079993335; 861994079993277; 861994079993392; 861994079994598.		
Hardware Version:	MP_0.1		
Software Version:	PD2437JF_EX_A_15.0.8.0.W30		
Antenna Type:	Integrated 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, OFDMA; 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:	7
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



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	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 25	1850 ~1910	1930 ~1990
	LTE Band 26	814~849	859~894
	LTE Band 38	2570~2620	2570~2620
	LTE Band 41	2496~2690	2496~2690
	LTE Band 42	3450~3550	3450~3550
	LTE Band 66	1710~1780	2110~2180
	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	2110~2180
	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
	NFC	13.56	13.56
RF Cable:	☒ Provided by applicant ☐ Provided by the laboratory		
Battery Information:	Model:	BA77	



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	Normal Voltage:	3.84V
	Rated capacity:	5870mAh
	Manufacturer:	Sunwoda Electronic CO.,LTD.

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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/NFC 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)	- Device positioned next to head - Receiver Active	Head SAR per KDB Publication 648474 D04
Hotspot mode (DSI = 9/10)	- Device transmits in hotspot mode near body - Hotspot Mode Active	Hotspot SAR per KDB Publication 941225 D06
Phablet (DSI = 5)	- Device is held with hand - Sensor Mode Active	Phablet SAR per KDB Publication 648474 D04 & KDB 616217 D04
Phablet (DSI = 4)	- Device is held with hand - Sensor Mode does not Active	Phablet SAR per KDB Publication 648474 D04
Body-worn (DSI = 4)	Device being used with a body-worn accessory	Body-worn SAR per KDB Publication 648474 D04

Table 1: DSI and Corresponding Exposure Scenarios



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2.2 SAR Design Target And Uncertainty

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

Exposure position	Frequency band	SAR_Regulatory_Limit W/kg(10g)	SAR_design_target W/kg(10g)
Product specific 10gSAR	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	Hotspot	Hotspot	Limbs
				DSI 2	DSI 4	DSI 9	DSI 10	DSI 5
GSM 850	GPRS 2TS	31#	25.0	25.0	25.0	/	/	/
	GPRS 4TS		24.5	/	/	/	23.0	/
	GPRS 4TS	11#	24.5	24.0	/	/	22.6	/
	GPRS 2TS		25.0	/	25.0	/	/	/
GSM 1900	GPRS 2TS	41#	22.0	22.0	22.0	/	/	/
	GPRS 4TS		21.5	/	/	/	21.0	/
	GPRS 4TS	14#	20.8	18.3	/	18.3	/	/
	GPRS 2TS		21.3	/	21.3	/	/	/
WCDMA_B2	RMC	41#	23.3	23.3	21.3	/	19.8	/
	RMC	14#	22.6	17.1	22.6	19.1	/	/
WCDMA_B4	RMC	41#	24.0	24.0	21.0	/	20.0	/
	RMC	14#	23.3	16.8	23.3	19.8	/	/
WCDMA_B5	RMC	31#	24.0	24.0	24.0	/	23.5	/
	RMC	11#	24.0	22.5	24.0	/	21.5	/
LTE_B2/25	QPSK	41#	23.3	23.3	21.8	/	20.8	/
	QPSK	14#	22.6	17.6	22.6	20.6	/	/
	QPSK	12#	22.5	18.5	21.5	/	20.0	/
	QPSK	24#	21.0	19.5	21.0	/	21.0	/
LTE_B4	QPSK	41#	24.3	24.3	20.8	/	19.8	/
	QPSK	14#	23.6	17.1	23.6	19.6	/	/
	QPSK	12#	23.5	17.5	20.5	/	19.0	/
	QPSK	24#	22.2	18.7	22.2	/	22.2	/

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LTE_B5	QPSK	31#	24.3	24.3	24.3	/	23.8	/
	QPSK	11#	24.3	22.3	24.3	/	20.8	/
LTE_B7	QPSK	41#	24.3	24.3	20.3	/	18.8	/
	QPSK	14#	23.7	15.2	23.7	17.7	/	/
	QPSK	12#	23.7	15.7	18.7	/	17.2	/
	QPSK	24#	21.4	14.9	18.9	/	17.9	/
LTE_B12	QPSK	31#	23.5	23.5	23.5	/	23.5	/
	QPSK	11#	23.5	21.5	23.5	/	21.5	/
LTE_B13	QPSK	31#	23.5	23.5	23.5	/	23.5	/
	QPSK	11#	23.5	23.0	23.5	/	19.5	/
LTE_B17	QPSK	31#	23.5	23.5	23.5	/	23.5	/
	QPSK	11#	23.5	21.5	23.5	/	21.0	/
LTE_B25	QPSK	41#	23.3	23.3	21.8	/	20.8	/
	QPSK	14#	22.6	17.6	22.6	20.6	/	/
	QPSK	12#	22.5	18.5	21.5	/	20.0	/
	QPSK	24#	21.0	19.5	21.0	/	21.0	/
LTE_B26	QPSK	31#	24.3	24.3	24.3	/	23.8	/
	QPSK	11#	24.3	22.3	24.3	/	20.8	/
LTE_B38	QPSK	41#	22.3	22.3	20.3	/	17.8	/
	QPSK	14#	21.3	14.8	21.3	18.3	/	/
	QPSK	12#	21.2	15.7	19.2	/	17.7	/
	QPSK	24#	20.3	15.3	20.3	/	18.8	/
LTE_B41	QPSK	41#	22.3	22.3	20.3	/	17.8	/
	QPSK	14#	21.3	14.8	21.3	18.3	/	/
	QPSK	12#	21.2	15.7	19.2	/	17.7	/
	QPSK	24#	20.3	15.3	20.3	/	18.8	/
LTE_B42	QPSK	14#	21.5	13.0	21.5	13.0	/	17.5
	QPSK	23#	18.5	13.5	18.5	/	18.0	/
	QPSK	13#	22.0	13.5	18.0	/	16.5	/
	QPSK	21#	18.5	18.5	18.5	/	18.5	/
LTE_B66	QPSK	41#	24.3	24.3	20.8	/	19.8	/
	QPSK	14#	23.6	17.1	23.6	19.6	/	/



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	QPSK	12#	23.5	17.5	20.5	/	19.0	/
	QPSK	24#	22.2	18.7	22.2	/	22.2	/
NR5G_N2-SA	QPSK	41#	23.3	23.3	20.8	/	19.3	/
	QPSK	14#	22.6	16.6	22.6	20.1	/	/
	QPSK	12#	22.5	17.0	21.5	/	20.0	/
	QPSK	24#	21.0	18.5	21.0	/	21.0	/
NR5G_N2-NSA	QPSK	41#	23.8	23.8	21.3	/	19.8	/
	QPSK	14#	23.3	17.3	23.3	20.8	/	/
	QPSK	12#	23.3	17.8	22.3	/	20.8	/
	QPSK	24#	21.8	19.3	21.8	/	21.8	/
NR5G_N5	QPSK	31#	24.5	24.5	24.5	/	23.5	/
	QPSK	11#	24.5	22.5	24.5	/	22.0	/
NR5G_N7-SA	QPSK	41#	24.0	24.0	20.0	/	18.5	/
	QPSK	14#	23.0	15.5	23.0	18.0	/	19.5
	QPSK	12#	22.9	15.4	19.4	/	17.9	/
	QPSK	24#	20.7	14.2	18.2	/	17.2	/
NR5G_N7-NSA	QPSK	41#	24.5	24.5	20.8	/	19.3	/
	QPSK	14#	23.7	16.5	23.7	19.0	/	20.5
	QPSK	12#	23.7	16.5	20.5	/	19.0	/
	QPSK	24#	21.4	15.2	19.2	/	18.2	/
NR5G_N26	QPSK	31#	24.5	24.5	24.5	/	23.5	/
	QPSK	11#	24.5	22.5	24.5	/	22.0	23.0
NR5G_N38-SA	QPSK	41#	24.5	24.5	19.5	/	18.0	/
	QPSK	14#	23.5	14.5	23.5	18.0	/	/
	QPSK	12#	23.5	15.5	19.5	/	18.0	/
	QPSK	24#	22.6	14.1	19.1	/	17.6	/
NR5G_N38-NSA	QPSK	41#	24.5	24.5	20.5	/	19.0	/
	QPSK	14#	23.5	15.5	23.5	19.0	/	/
	QPSK	12#	23.5	16.5	20.5	/	19.0	/
	QPSK	24#	21.2	14.1	19.1	/	17.6	/
NR5G_N41-PC2 SA	QPSK	41#	26.5	26.5	19.5	/	18.0	/
	QPSK	14#	25.5	16.0	24.0	18.5	/	20.0



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	QPSK	12#	25.4	16.4	19.4	/	17.9	/
	QPSK	24#	23.8	15.3	20.3	/	18.8	/
NR5G_N41-PC2 NSA	QPSK	41#	26.5	26.5	20.5	/	19.0	/
	QPSK	14#	25.7	17.0	25.0	19.5	/	21.0
	QPSK	12#	25.7	17.5	20.5	/	19.0	/
	QPSK	24#	24.2	16.5	21.5	/	20.0	/
NR5G_N41-PC3 SA	QPSK	41#	25.0	25.0	19.5	/	18.0	/
	QPSK	14#	24.0	16.0	24.0	18.5	/	20.0
	QPSK	12#	23.9	16.4	19.4	/	17.9	/
	QPSK	24#	22.3	15.3	20.3	/	18.8	/
NR5G_N41-PC3 NSA	QPSK	41#	25.0	25.0	20.5	/	19.0	/
	QPSK	14#	24.2	17.0	24.2	19.5	/	21.0
	QPSK	12#	24.2	17.5	20.5	/	19.0	/
	QPSK	24#	22.7	16.5	21.5	/	20.0	/
NR5G_N66 SA	QPSK	41#	23.5	23.5	21.0	/	18.5	/
	QPSK	14#	22.8	16.8	22.8	17.8	/	19.8
	QPSK	12#	22.7	17.2	20.7	/	19.2	/
	QPSK	24#	21.4	16.9	21.4	/	21.4	/
NR5G_N66 NSA	QPSK	41#	24.1	24.1	21.6	/	19.1	/
	QPSK	14#	23.5	17.5	23.5	18.5	/	20.5
	QPSK	12#	23.5	18.0	21.5	/	20.0	/
	QPSK	24#	22.4	17.9	22.4	/	22.4	/
NR5G_N77	QPSK	14#	23.5	14.0	21.0	15.5	/	17.5
	QPSK	23#	20.5	13.5	18.5	/	17.0	/
	QPSK	13#	24.0	12.5	18.5	/	17.0	/
	QPSK	21#	20.5	16.0	17.0	/	15.5	/
NR5G_N78 PC2	QPSK	14#	26.5	14.0	21.0	15.5	/	17.5
	QPSK	23#	23.5	13.5	18.5	/	17.0	/
	QPSK	13#	27.0	12.5	18.5	/	17.0	/
	QPSK	21#	23.5	16.0	17.0	/	15.5	/
NR5G_N78 PC3	QPSK	14#	25.0	14.0	21.0	15.5	/	17.5
	QPSK	23#	22.0	13.5	18.5	/	17.0	/



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	QPSK	13#	25.5	12.5	18.5	/	17.0	/
	QPSK	21#	22.0	16.0	17.0	/	15.5	/

Note:

- 1) * P_{max} is used for RF tune up procedure. The maximum allowed output power is equal to $P_{max} + \text{Total uncertainty}$.
- 2) The max allowed output power is the $P_{limit} + \text{Total uncertainty}$, 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/CS	12.5%	-9.0
GSM 2TX	25.0%	-6.0
GSM 3TX	37.5%	-4.3
GSM 4TX	50.0%	-3.0
WCDMA / LTE FDD	100.0%	0.0
LTE TDD	63.3%	-2.0
LTE TDD HPUE	43.3%	-3.6
NR FDD/TDD	100.0%	0.0

- End of Report -



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