FCC SAR REPORT

Report No.: JYTSZ-R14-2400013

Applicant: TECNO MOBILE LIMITED

Address of Applicant: FLAT N 16/F BLOCK B UNIVERSAL INDUSTRIAL CENTRE 19-25 SHAN MEI STREET FOTAN NT HONGKONG

Equipment Under Test (EUT)

Product Name: Mobile Phone

Model No.: KJ8

Trade mark TECNO

FCC ID: 2ADYY-KJ8

Applicable standards: FCC 47 CFR Part 2.1093

Date of Test: 01 Mar., 2024 ~ 29 Mar., 2024

Test Result: Maximum Reported 1-g SAR (W/kg)

Head: 1.032 Body: 0.832 Hotspot: 0.967

Project by:	Eric Wang ***Project Engineer***	***Date:***	*12 Apr., 2024*
Reviewed by:	Peter Zhang ***Senior Engineer***	***Date:***	*12 Apr., 2024*
Approved by:	Janet Wei ***Manager***	***Date:***	*12 Apr., 2024*

2 Version

Version No.	Date	Description
00	*08 Apr., 2024*	*Original*
01	*12 Apr., 2024*	*Update on page 7,9,66*

3 Contents

4 SAR Results Summary

The maximum results of Specific Absorption Rate (SAR) found during test as below:
<Highest Reported standalone SAR Summary>

Exposure Position	Frequency Band	Reported 1-g SAR (W/kg)	Equipment Class	Highest Reported 1-g SAR (W/kg)
Head	GSM 850	0.915	PCE	1.032
	PCS 1900	0.717		
	WCDMA Band II	0.900		
	WCDMA Band IV	0.949		
	WCDMA Band V	0.972		
	LTE Band 2	1.032		
	LTE Band 5	0.711		
	LTE Band 7	0.695		
	LTE Band 12& LTE Band 17	0.343		
	LTE Band 41& LTE Band 38	0.523		
	LTE Band 42	0.872		
	LTE Band 66& LTE Band 4	0.677		
	NR n5	0.714		
	NR n7	0.744		
	NR n12	0.267		
	NR n41&n38	0.181		
	NR n66	0.620		
	NR n77 (3450MHz~3550MHz) &n78 (3450MHz~3550MHz)	0.860		
	NR n77 (3550MHz~3700MHz) &n78 (3550MHz~3700MHz)	0.542		
	NRn77 (3700MHz~3980MHz) &n78 (3700MHz~3800MHz)	0.472		
	WLAN 2.4 GHz	0.227	DTS	
	Bluetooth	0.001	DSS	
	WLAN 5.2 GHz	0.184	NII	
	WLAN 5.3 GHz	0.243		
	WLAN 5.6 GHz	0.174		
	WLAN 5.8 GHz	0.164		
Body (10 mm Gap)	GSM 850	0.483	PCE	0.832
	PCS 1900	0.832		
	WCDMA Band II	0.228		
	WCDMA Band IV	0.168		
	WCDMA Band V	0.315		
	LTE Band 2	0.217		
	LTE Band 5	0.346		
	LTE Band 7	0.215		
	LTE Band 12& LTE Band 17	0.090		
	LTE Band 41& LTE Band 38	0.266		
	LTE Band 42	0.474		

	LTE Band 66& LTE Band 4	0.139		
	NR n5	0.278		
	NR n7	0.344		
	NR n12	0.077		
	NR n41&n38	0.087		
	NR n66	0.144		
	NR n77 (3450MHz~3550MHz) &n78 (3450MHz~3550MHz)	0.335		
	NR n77 (3550MHz~3700MHz) &n78 (3550MHz~3700MHz)	0.386		
	NRn77 (3700MHz~3980MHz) &n78 (3700MHz~3800MHz)	0.210		
	WLAN 2.4GHz	0.147	DTS	
	Bluetooth	<0.001	DSS	
	WLAN 5.2 GHz	0.105	NII	
	WLAN 5.3 GHz	0.117		
	WLAN 5.6 GHz	0.042		
	WLAN 5.8 GHz	0.074		
Hotspot (10 mm Gap)	GSM 850	0.483	PCE	0.967
	PCS 1900	0.967		
	WCDMA Band II	0.345		
	WCDMA Band IV	0.283		
	WCDMA Band V	0.315		
	LTE Band 2	0.335		
	LTE Band 5	0.346		
	LTE Band 7	0.249		
	LTE Band 12& LTE Band 17	0.090		
	LTE Band 41& LTE Band 38	0.266		
	LTE Band 42	0.474		
	LTE Band 66& LTE Band 4	0.250		
	NR n5	0.278		
	NR n7	0.376		
	NR n12	0.077		
	NR n41&n38	0.113		
	NR n66	0.256		
	NR n77 (3450MHz~3550MHz) &n78 (3450MHz~3550MHz)	0.373		
	NR n77 (3550MHz~3700MHz) &n78 (3550MHz~3700MHz)	0.386		
	NRn77 (3700MHz~3980MHz) &n78 (3700MHz~3800MHz)	0.255		

	WLAN 2.4 GHz	0.147	DTS	
	Bluetooth	<0.001	DSS	
	WLAN 5.2 GHz	0.105	NII	
	WLAN 5.8 GHz	0.074		

<Highest Reported simultaneous SAR Summary>

Exposure Position	Frequency Band	Reported 1-g SAR (W/kg)	Equipment Class	Highest Reported Simultaneous Transmission 1-g SAR (W/kg)
Right Tilted	EN-DC 5A_n7A	1.391	PCE	1.562
	2.4 G WLAN	0.171	DTS	
	NFC	0.000	DXX	

Note:

1. The highest simultaneous transmission is scalar summation of Reported standalone SAR per FCC KDB 690783 D01 v01r03, and scalar SAR summation of all possible simultaneous transmission scenarios are < 1.6W/kg.
2. This device is compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg) specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-2005, and had been tested in accordance with the measurement methods and procedures specified in IEC/IEEE 62209-1528:2020.
3. For DFS operation type is slaver device without radar detection function, 5.3GHz WLAN and 5.6GHz WLAN does not support hotspot mode.
4. For FDD-LTE Band 17 is full covered by FDD-LTE Band 12, so only FDD-LTE Band 12 was tested.
5. For TDD-LTE Band 38 is full covered by TDD-LTE Band 41, so only TDD-LTE Band 41 was tested.
6. For FDD-LTE Band 4 is full covered by FDD-LTE Band 66, so only FDD-LTE Band 66 was tested.
7. For NR n38 is full covered by NR n41, so only NR n41 was tested.
8. For NR n78 is full covered by NR n77, so only NR n77 was tested.

5 General Information

5.1 Client Information

Applicant:	TECNO MOBILE LIMITED
Address of Applicant:	FLAT N 16/F BLOCK B UNIVERSAL INDUSTRIAL CENTRE 19-25 SHAN MEI STREET FOTAN NT HONGKONG
Manufacturer:	TECNO MOBILE LIMITED
Address of Manufacturer:	FLAT N 16/F BLOCK B UNIVERSAL INDUSTRIAL CENTRE 19-25 SHAN MEI STREET FOTAN NT HONGKONG
Factory:	SHENZHEN TECNO TECHNOLOGY CO., LTD.
Address of Factory:	101, Building 24, Waijing Industrial Park, Fumin Community, Fucheng Street, Longhua District, Shenzhen City, P.R.China

5.2 General Description of EUT

Product Name:	Mobile Phone		
Model No.:	KJ8		
Category of device	Portable device		
Operation Frequency:	GSM:	GSM850: 824.2~848.8 MHz	PCS 1900: 1850.2~1909.8 MHz
	WCDMA:	Band II: 1852.4~1907.6 MHz	Band V: 826.4~846.6 MHz
		Band IV: 1712.4~1752.6 MHz	
	LTE:	Band 2:1850MHz~1910MHz	Band 4:1710MHz~1755MHz
		Band 5:824MHz~849MHz	Band 7: 2500MHz~2570MHz
		Band 12: 699MHz~716MHz	Band 17: 704MHz~716MHz
		Band 38: 2570MHz~2620MHz	Band 41: 2496MHz~2690MHz
		Band 42: 3450MHz~3550MHz	Band 66:1710MHz~1780MHz
	5G NR	n5: 824MHz~849MHz	n7: 2500MHz~2570MHz
		n12: 699MHz ~716MHz	n38: 2570MHz~2620MHz
		n41: 2496MHz~2690MHz	n66:1710MHz~1780MHz
		n77: 3450MHz~3550MHz	n77: 3550MHz~3700MHz
		n77: 3700MHz~3980MHz	n78: 3450MHz~3550MHz
		n78: 3550MHz~3700MHz	n78: 3700MHz~3800MHz
	Wi-Fi:	2412MHz~2462MHz	5150MHz-5250MHz
		5250MHz-5350MHz	5470MHz-5725MHz
		5725MHz-5850MHz	
	Bluetooth: 2402 MHz ~ 2480 MHz		
	NFC:13.56MHz		
Modulation technology:	GSM:	☒Voice(GMSK)	☒GPRS(GMSK) ☒EGPRS(GMSK, 8PSK)
	WCDMA:	☒RMC(QPSK)	☒HSUPA(QPSK) ☒HSDPA(QPSK,16QAM)
	LTE:	☒QPSK	☒16QAM ☒64QAM
	5G NR：	☒CP-OFDM(QPSK,16QAM,64QAM,256QAM)	
		☒DFT-s-OFDM(π /2 -BPSK,QPSK,16QAM,64QAM,256QAM)	
	Wi-Fi:	☒802.11b(DSSS)	☒802.11a/g/n/ac (OFDM)
	Bluetooth:	☒BDR(GFSK)	☒EDR(π /4-DQPSK, 8DPSK) ☒LE(GFSK)

	NFC:	☒ASK		
	SA: NR n5, n7,n12, n38, n41,n66, n77, n78			
	NSA(EN-DC): DC_2A_n7A, DC_5A_n7A, DC_7A_n7A, DC_66A_n7A, DC_5A_n38A, DC_66A_n38A, DC_4A_n41A, DC_5A_n41A, DC_41A_n41A, DC_66A_n41A, DC_2A_n66A, DC_5A_n66A, DC_7A_n66A, DC_66A_n66A, DC_2A_n78A, DC_4A_n78A, DC_5A_n78A, DC_7A_n78A, DC_38A_n78A, DC_41A_n78A, DC_66A_n78A, DC_5A_n77A, DC_7A_n77A, DC_41A_n77A, DC_66A_n77A EN-DC with LTE 2CA: DC_7C_n78A, DC_41C_n78A, DC_7C_n77A, DC_41C_n77A, DC_41C_n41A, DC_7A_7A_n78A, DC_2A_7A_n78, DC_2A_66A_n78, DC_5A-7A_n78A (LTE Band 7C and 41C only supports downlink)			
Antenna Type:	Internal Antenna			
Antenna Gain:	GSM 850:	-4.95 dBi	PCS 1900:	-3.39 dBi
	WCDMA Band II:	-3.39 dBi	WCDMA Band V	-4.95 dBi
	WCDMA Band IV:	-3.23 dBi		
	LTE Band 2 ANT 5:	-3.39 dBi	LTE Band 2 ANT 3:	-6.45 dBi
	LTE Band 4 ANT 5:	-3.23 dBi	LTE Band 4 ANT 3:	-7.06 dBi
	LTE Band 5 ANT 5:	-4.95 dBi	LTE Band 7 ANT 5:	-1.12 dBi
	LTE Band 7 ANT 3:	-5.25 dBi	LTE band 12 ANT 5:	-7.25 dBi
	LTE band 17 ANT 5:	-7.25 dBi	LTE Band 38 ANT 5:	-1.12 dBi
	LTE Band 38 ANT 3:	-5.25 dBi	LTE Band 41 ANT 5:	-1.12 dBi
	LTE Band 41 ANT 3:	-5.25 dBi	LTE Band 42 ANT 0:	-3.60 dBi
	LTE Band 66 ANT 5:	-3.23 dBi	LTE Band 66 ANT 3:	-7.06 dBi
	n5:	-4.95 dBi	n7:	-1.12 dBi
	n12:	-7.25 dBi	n38	-1.12 dBi
	n41:	-1.12 dBi	n66	-3.23 dBi
	n77:	-3.60 dBi	n78:	-3.60 dBi
	Bluetooth ANT 12:	-1.87 dBi	Bluetooth ANT 13:	-4.52 dBi
	2.4G Wi-Fi ANT12:	-1.87 dBi	2.4G Wi-Fi ANT13:	-4.52 dBi
	5G Wi-Fi:	-3.18 dBi		
(E)GPRS Class:	(E)GPRS Class: 12			
DFS Operation Type:	☐ Master Device ☐ Slaver Device with Radar detection function ☒ Slaver Device without Radar detection function			
Dimensions (L*W*H):	169 mm (L)× 76 mm (W)× 8 mm (H)			
Accessories information:	Adapter: Model: U330TSB Input: AC100-240V, 50/60Hz, 0.15A Output: DC 5.0V, 3.0A 15W or 5.0-10.0V, 3.3A or 11.0V, 3.0A 33W MAX		Battery: Rechargeable Li-ion Polymer Battery DC3.87V, 4900mAh Headset: Support headset	

5.3 Maximum RF Output Power

ANT 5:

Mode	Average Power (dBm)	
	GSM 850	PCS 1900
GSM (Voice)	32.92	28.28
GPRS (1 TX Slot)	32.91	28.28
GPRS (2 TX Slots)	32.13	27.66
GPRS (3 TX Slots)	30.33	26.22
GPRS (4 TX Slots)	29.25	25.38
EGPRS (1 TX Slot)	27.30	24.29
EGPRS (2 TX Slots)	26.20	23.24
EGPRS (3 TX Slots)	23.99	21.11
EGPRS (4 TX Slots)	22.67	19.87

ANT 5:

Mode	Average Power (dBm)		
	WCDMA Band II	WCDMA Band IV	WCDMA Band V
AMR 12.2 kbps	22.94	23.00	23.42
RMC 12.2 kbps	22.99	23.03	23.42
HSDPA Sub-test 1	23.01	23.05	23.46
HSDPA Sub-test 2	22.41	22.58	22.95
HSDPA Sub-test 3	22.44	22.63	23.00
HSDPA Sub-test 4	22.38	22.58	22.95
HSUPA Sub-test 1	20.93	21.08	21.44
HSUPA Sub-test 2	21.44	21.59	21.96
HSUPA Sub-test 3	21.96	22.06	22.46
HSUPA Sub-test 4	20.96	21.08	21.46
HSUPA Sub-test 5	22.94	23.06	23.48

ANT 5:

Mode	Average Power (dBm)					
	LTE Band 2	LTE Band 5	LTE Band 7	LTE Band 12	LTE Band 41	LTE Band 66
BW/1.4 MHz	23.24	23.66	/	23.84	/	23.55
BW/3.0 MHz	23.27	23.67	/	23.91	/	23.45
BW/5.0 MHz	23.45	23.90	22.33	24.03	24.45	23.69
BW/10 MHz	23.37	23.77	22.14	23.86	24.50	23.46
BW/15 MHz	23.42	/	22.34	/	24.79	23.33
BW/20 MHz	23.48	/	22.39	/	24.40	23.28

ANT 3:

Mode	Average Power (dBm)			
	LTE Band 2	LTE Band 7	LTE Band 41	LTE Band 66
BW/1.4 MHz	20.09	/	/	20.84
BW/3.0 MHz	20.07	/	/	20.75
BW/5.0 MHz	20.25	19.36	21.79	20.90
BW/10 MHz	20.16	19.19	21.35	20.84
BW/15 MHz	20.10	19.09	22.22	20.81
BW/20 MHz	20.03	19.16	21.72	20.98

ANT 0:

Mode	Average Power (dBm)
	LTE Band 42
BW/1.4 MHz	/
BW/3.0 MHz	/
BW/5.0 MHz	23.68
BW/10 MHz	23.74
BW/15 MHz	23.82
BW/20 MHz	23.78

ANT 5:

Mode	Average Power (dBm)			
	NR Band n5	NR Band n7	NR Band n41	LTE Band 66
BW/10MHz	23.37	23.35	26.77	24.00
BW/15MHz	23.25	23.35	26.75	24.03
BW/20 MHz	23.26	23.42	26.73	24.15
BW/30MHz	/	/	26.64	/
BW/40MHz	/	/	26.58	23.92
BW/50MHz	/	/	26.84	/
BW/60MHz	/	/	26.73	/
BW/80MHz	/	/	26.79	/
BW/90MHz	/	/	26.79	/
BW/100MHz	/	/	26.72	/

ANT 0:

Mode	Average Power (dBm)		
	NR Band n77 3450-3550	NR Band n77 3550-3700	NR Band n77 3700-3980
BW/10MHz	27.06	26.98	26.61
BW/15MHz	27.04	27.00	26.58
BW/20 MHz	27.11	26.96	26.59
BW/30MHz	27.13	26.94	26.49
BW/40MHz	27.18	26.88	26.52
BW/50MHz	27.29	27.00	26.59
BW/60MHz	27.20	26.88	26.56
BW/80MHz	27.14	26.99	26.67
BW/90MHz	27.04	26.99	26.53
BW/100MHz	26.95	26.97	26.57

ANT 12:

WLAN 2.4 GHz Band Average Power (dBm)				
Mode/Band	b	g	n (HT-20)	n (HT-40)
WLAN 2.4GHz	16.5	14.24	14.33	13.44

ANT 13:

WLAN 2.4 GHz Band Average Power (dBm)				
Mode/Band	b	g	n (HT-20)	n (HT-40)
WLAN 2.4GHz	16.19	14.07	13.93	13.21

ANT 12:

WLAN 5.2 GHz Band Average Power (dBm)						
Mode/Band	a	ac 20	ac 40	ac 80	n 20	n 40
WLAN 5.2GHz	13.23	13.41	13.34	13.13	13.20	13.41

ANT 12:

WLAN 5.3 GHz Band Average Power (dBm)						
Mode/Band	a	ac 20	ac 40	ac 80	n 20	n 40
WLAN 5.3GHz	14.07	13.88	13.68	13.39	13.91	13.73

ANT 12:

WLAN 5.6 GHz Band Average Power (dBm)						
Mode/Band	a	ac 20	ac 40	ac 80	n 20	n 40
WLAN 5.6GHz	13.92	13.22	13.30	12.88	14.25	14.02

ANT 12:

WLAN 5.8 GHz Band Average Power (dBm)						
Mode/Band	a	ac 20	ac 40	ac 80	n 20	n 40
WLAN 5.8GHz	14.44	13.27	12.80	13.23	14.03	13.84

ANT 12:

Bluetooth Average Power (dBm)							
Mode/Band	1 Mbps (GFSK)	2 Mbps (π/4DQPSK)	3 Mbps (8DPSK)	BLE PHY 1M	BLE PHY 2M	BLE Coded PHY S=2	BLE Coded PHY S=8
Bluetooth	5.60	5.28	5.11	2.13	1.96	2.10	2.10

ANT 13:

Bluetooth Average Power (dBm)							
Mode/Band	1 Mbps (GFSK)	2 Mbps (π/4DQPSK)	3 Mbps (8DPSK)	BLE PHY 1M	BLE PHY 2M	BLE Coded PHY S=2	BLE Coded PHY S=8
Bluetooth	4.37	3.49	3.29	2.87	2.75	2.85	2.83

NFC Band Average Power (dBm)	
Mode/Band	ASK
NFC	-59.06

5.4 Environment of Test Site

Temperature:	18°C ~25 °C
Humidity:	35%~75% RH
Atmospheric Pressure:	1010 mbar

5.5 Test Sample Plan

Sample Number	Used for Test Items
SZR012400045-3	SAR
***Remark**: JianYan Testing Group Shenzhen Co., Ltd. is only responsible for the test project data of the above samples, and will keep the above samples for a month.*	

5.6 Laboratory Facility

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

- **FCC - Designation No.: CN1211**

JianYan Testing Group Shenzhen Co., Ltd. has been accredited as a testing laboratory by FCC(Federal Communications Commission). The test firm Registration No. is 727551.

- **ISED – CAB identifier.: CN0021**

The 3m Semi-anechoic chamber and 10m Semi-anechoic chamber of JianYan Testing Group Shenzhen Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

- **CNAS - Registration No.: CNAS L15527**

JianYan Testing Group Shenzhen Co., Ltd. is accredited to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L15527.

- **A2LA - Registration No.: 4346.01**

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: https://portal.a2la.org/scopepdf/4346-01.pdf

5.7 Test Location

JianYan Testing Group Shenzhen Co., Ltd.
No.101, Building 8, Innovation Wisdom Port, No.155 Hongtian Road, Huangpu Community,Xinqiao Street, Bao'an District, Shenzhen, Guangdong,People's Republic of China.
Tel: +86-755-23118282, Fax: +86-755-23116366
Email: info-JYTee@lets.com, Website: http://jyt.lets.com

6 Introduction

6.1 Introduction

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling. The standard recommends limits for two tiers of groups, occupational/controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.

6.2 SAR Definition

The SAR definition is the time derivative (rate) of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density (ρ). The equation description is as below:

$$SAR = \frac{d}{dt}\left(\frac{dU}{dm}\right) = \frac{d}{dt}\left(\frac{dU}{\rho dv}\right)$$

SAR is expressed in units of Watts per kilogram (W/kg)
SAR measurement can be either related to the temperature elevation in tissue by

$$SAR = C\left(\frac{\delta T}{\delta t}\right)$$

Where: C is the specific heat capacity, δT is the temperature rise and δt is the exposure duration, or related to the electrical field in the tissue by

$$SAR = \frac{\sigma \cdot E^2}{\rho}$$

Where: σ is the conductivity of the tissue, ρ is the mass density of the tissue and E is the RMS electrical field strength. However for evaluating SAR of low power transmitter, electrical field measurement is typically applied.

7 RF Exposure Limits

7.1 Uncontrolled Environment

Uncontrolled Environments are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure. The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity.

7.2 Controlled Environment

Controlled Environments are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation). In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. This exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

7.3 RF Exposure Limits

SAR Human Exposure Specified in ANSI/IEEE C95.1-1992 and Health Canada Safety Code 6

HUMAN EXPOSURE LIMITS		
	UNCONTROLLED ENVIRONMENT *General Population* (W/kg) or (mW/g)	CONTROLLED ENVIRONMENT *Occupational* (W/kg) or (mW/g)
SPATIAL PEAK SAR Brain	1.6	8.0
SPATIAL AVERAGE SAR Whole Body	0.08	0.4
SPATIAL PEAK SAR Hands, Feet, Ankles, Wrists	4.0	20

Note:

1. The Spatial Peak value of the SAR averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.
2. The Spatial Average value of the SAR averaged over the whole body.
3. The Spatial Peak value of the SAR averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

8 SAR Measurement System

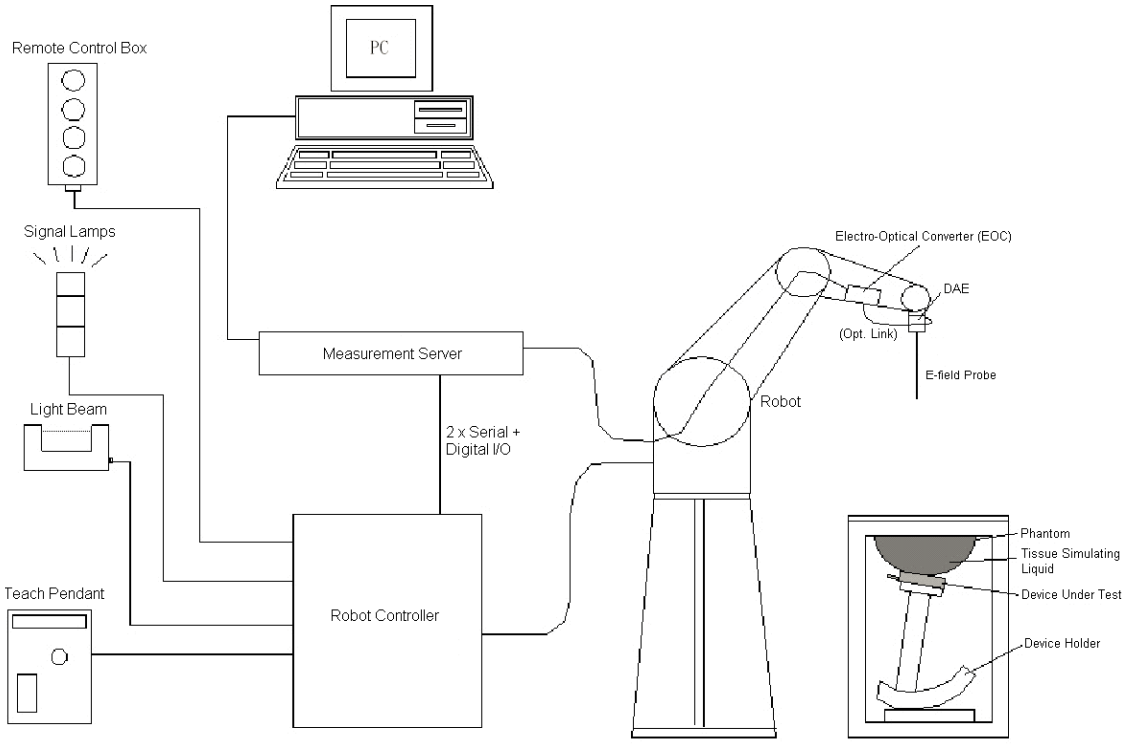

Fig. 8.1 SPEAG DASY System Configurations

The DASY system for performance compliance tests is illustrated above graphically. This system consists of the following items:

- A standard high precision 6-axis robot with controller, a teach pendant and software
- A data acquisition electronic (DAE) attached to the robot arm extension
- A dosimetric probe equipped with an optical surface detector system
- The electro-optical converter (EOC) performs the conversion between optical and electrical signals
- A measurement server performs the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- A probe alignment unit which improves the accuracy of the probe positioning
- A computer operating Windows XP
- DASY software
- Remove control with teach pendant and additional circuitry for robot safety such as warming lamps, etc.
- The SAM twin phantom
- A device holder
- Tissue simulating liquid
- Dipole for evaluating the proper functioning of the system

Component details are described in the following sub-sections.

8.1 E-Field Probe

The SAR measurement is conducted with the dosimetric probe (manufactured by SPEAG). The probe is specially designed and calibrated for use in liquid with high permittivity. The dosimetric probe has special calibration in liquid at different frequency. This probe has a built in optical surface detection system to prevent from collision with phantom.

➢ **E-Field Probe Specification**
<EX3DV4 Probe>

Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Frequency Directivity	10 MHz to 6 GHz; Linearity: ± 0.2 dB ± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis)
Dynamic Range	10 µW/g to 100 mW/g; Linearity: ± 0.2 dB (noise: typically < 1 µW/g)
Dimensions	Overall length: 330 mm (Tip: 20mm) Tip diameter: 2.5 mm (Body: 12mm) Typical distance from probe tip to dipole centers: 1 mm

Fig. 8.2 Photo of E-Field Probe

➢ **E-Field Probe Calibration**
Each probe needs to be calibrated according to a dosimetric assessment procedure with accuracy better than ± 10%. The spherical isotropy shall be evaluated and within ± 0.25 dB. The sensitivity parameters (Norm X, Norm Y and Norm Z), the diode compression parameter (DCP) and the conversion factor (ConvF) of the probe are tested. The calibration data can be referred to appendix E of this report.

8.2 Data Acquisition Electronics (DAE)

The Data acquisition electronics (DAE) consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information as well as an optical uplink for commands and the clock. The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

Fig. 8.3 Photo of DAE

8.3 Robot

The SPEAG DASY system uses the high precision robots (DASY5: TX60L) type from Stäubli SA (France). For the 6-axis controller system, the robot controller version (DASY5: CS8c) from Stäubli is used. The Stäubli robot series have many features that are important for our application:

- High precision (repeatability 0.02 mm)
- High reliability (industrial design)
- Low maintenance costs (virtually maintenance free due to direct drive gears; nobelt drives)
- Jerk-free straight movements
- Low ELF interference (motor control fields shielded via the closed metallic construction shields)

Fig. 8.4 Photo of Robot

8.4 Measurement Server

The measurement server is based on a PC/104 CPU board with CPU (DASY 5: 400MHz, Intel Celeron), chip-disk (DASY5: 128 MB), RAM (DASY5: 128 MB). The necessary circuits for communication with the DAE electronic box, as well as the 16 bit AD converter system for optical detection and digital I/O interface are contained on the DASY I/O board, which is directly connected to the PC/104 bus of the CPU board.
The measurement server performs all the real-time data evaluation for field measurements and surface detection, controls robot movements and handles safety operations.

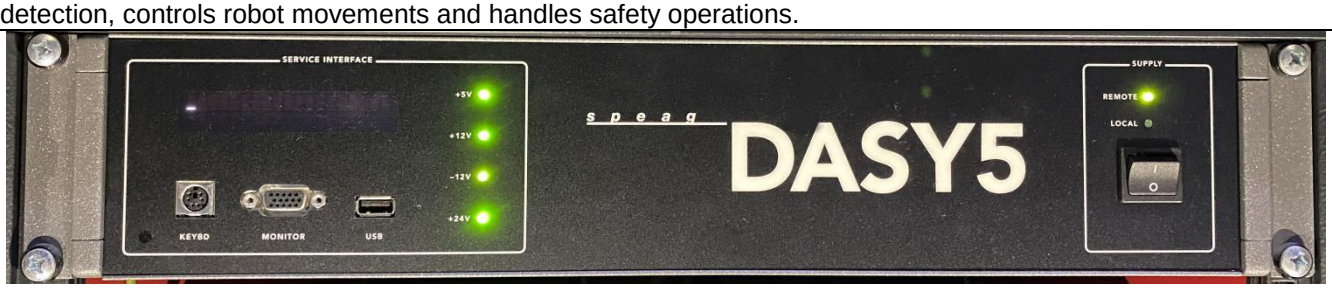

Fig. 8.5 Photo of Server for DASY5

8.5 Light Beam Unit

The light beam switch allows automatic "tooling" of the probe. During the process, the actual position of the probe tip with respect to the robot arm is measured, as well as the probe length and the horizontal probe offset. The software then corrects all movements, such that the robot coordinates are valid for the probe tip.
The repeatability of this process is better than0.1 mm. If a position has been taught with an aligned probe, the same position will be reached with another aligned probe within 0.1 mm, even if the other probe has different dimensions. During probe rotations, the probe tip will keep its actual position.

Fig. 8.6 Photo of Light Beam

8.6 Phantom

<SAM Twin Phantom>

Shell Thickness	2 ± 0.2 mm; Center ear point: 6 ± 0.2 mm
Filling Volume **Dimensions**	Approx. 25 liters Length: 1000mm; Width: 500mm; Height: adjustable feet
Measurement Areas	Left Head, Right Head, Flat phantom

Fig. 8.7 Photo of SAM Twin Phantom

The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. A white cover is provided to tap the phantom during off-periods to prevent water evaporation and changes in the liquid parameters. On the phantom top, three reference markers are provided to identify the phantom position with respect to the robot.

<ELI4 Phantom >

The ELI4 phantom is intended for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30MHz to 6 GHz. ELI4 is fully compatible with the latest draft of the standard IEC 62209-2 and all known tissue simulating liquids.
ELI4 has been optimized regarding its performance and can be integrated into a SPEAG standard phantom table. A cover prevents evaporation of the liquid. Reference markings on the phantom allow installation of the complete setup, including all predefined phantom positions and measurement grids, by teaching three points
The phantom can be used with the following tissue simulating liquids:

- Water-sugar based liquids can be left permanently in the phantom. Always cover the liquid if the system is not in use; otherwise the parameters will change due to water evaporation.
- DGBE based liquids should be used with care. As DGBE is a softener for most plastics, the liquid should be taken out of the phantom and the phantom should be dried when the system is not in use (desirable at least once a week).
- Do not use other organic solvents without previously testing the phantom resistiveness

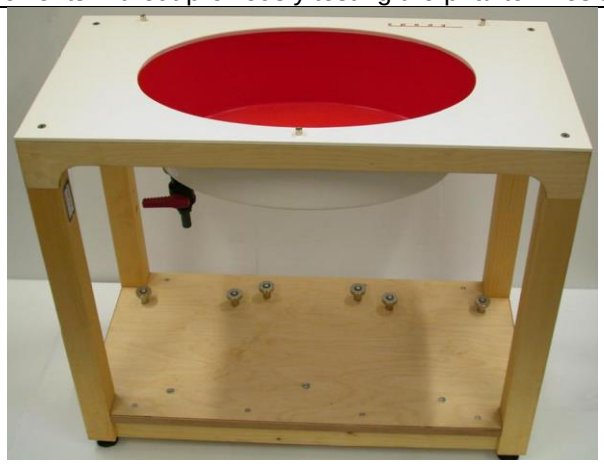

Fig.8.8 Photo of ELI4 Phantom

8.7 Device Holder

<Device Holder for SAM Twin Phantom>

The SAR in the phantom is approximately inversely proportional to the square of the distance between the source and the liquid surface. For a source at 5 mm distance, a positioning uncertainty of ± 0.5 mm would produce a SAR uncertainty of ± 20 %. Accurate device positioning is therefore crucial for accurate and repeatable measurements. The positions in which the devices must be measured are defined by the standards.
The DASY device holder is designed to cope with different positions given in the standard. It has two scales for the device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear reference points). The rotation center for both scales is the ear reference point (ERP).
Thus the device needs no repositioning when changing the angles.
The DASY device holder is constructed of low-low POM material having the following dielectric parameters: relative permittivity ε = 3 and loss tangent δ = 0.02. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered.

Fig. 8.9 Photo of Device Holder

8.8 Data storage and Evaluation

- **Data Storage**

The DASY software stores the assessed data from the data acquisition electronics as raw data (in microvolt readings from the probe sensors), together with all the necessary software parameters for the data evaluation (probe calibration data, liquid parameters and device frequency and modulation data) in measurement files. The post-processing software evaluates the desired unit and format for output each time the data is visualized or exported. This allows verifications of the complete software setup even after the measurement and allows correction of erroneous parameter settings. For example, if a measurement has been performed with an incorrect crest factor parameter in the device setup, the parameter can be corrected afterwards and the data can be reevaluated.

The measured data can be visualized or exported in different units or formats, depending on the selected probe type (e.g., [V/m], [mW/g]). Some of these units are not available in certain situations or give meaningless results, e.g., a SAR-output in a non-lose media, will always be zero. Raw data can also be exported to perform the evaluation with other software packages.

- **Data Evaluation**

The DASY post-processing software (SEMCAD) automatically executes the following procedures to calculate the field units from the microvolt readings at the probe connector. The parameters used in the evaluation are stored in the configuration modules of the software:

Probe Parameters:	- Sensitivity	$Norm_i$, a_{i0}, a_{i1}, a_{i2}
	- Conversion	$ConvF_i$
	- Diode compression point	dcp_i
Device Parameters:	- Frequency	f
	- Crest	cf
Media Parameters:	- Conductivity	σ
	- Density	ρ

These parameters must be set correctly in the software. They can be found in the component documents or they can be imported into the software from the configuration files issued for the DASY components. In the direct measuring mode of the multi-meter option, the parameters of the actual system setup are used. In the scan visualization and export modes, the parameters stored in the corresponding document files are used.

The first step of the evaluation is a linearization of the filtered input signal to account for the compression characteristics of the detector diode. The compensation depends on the input signal, the diode type and the DC-transmission factor from the diode to the evaluation electronics. If the exciting field is pulsed, the crest factor of the signal must be known to correctly compensate for peak power.

The formula for each channel can be given as:

$$V_i = U_i + U_i^2 \cdot \frac{cf}{dcp_i}$$

With V_i = compensated signal of channel i, (i = x, y, z)
U_i = input signal of channel i, (i = x, y, z)
cf = crest factor of exciting field (DASY parameter)
dcp^i = diode compression point (DASY parameter)

From the compensated input signals, the primary field data for each channel can be evaluated:

E- Field Probes: $E_i = \sqrt{\frac{V_i}{Norm_i \cdot ConvF}}$

H-Field Probes: $H_i = \sqrt{V_i} \cdot \frac{a_{i0} + a_{i1} f + a_{i2} f^2}{f}$

With V_i = compensated signal of channel i, (i = x, y, z)
$Norm_i$ = senor sensitivity of channel i, (i = x, y, z), μV/ $(V/m)^2$
ConvF = sensitivity enhancement in solution
a_{ij} = sensor sensitivity factors for H-field probes
f = carrier frequency (GHz)
E_i = electric field strength of channel i in V/m
Hi = magnetic field strength of channel i in A/m

The RSS value of the field components gives the total field strength (Hermitian magnitude):

$$E_{tot} = \sqrt{E_x^2 + E_y^2 + E_z^2}$$

The primary field data are used to calculate the derived field units.

$$SAR = E_{tot}^2 \cdot \frac{\sigma}{\rho \cdot 1000}$$

With SAR = local specific absorption rate in mW/g
E_{tot} = total field strength in V/m
σ = conductivity in (mho/m) or (Siemens/m)
ρ = equipment tissue density in g/cm^3

Note that the density is set to 1, to account for actual head tissue density rather than the density of the tissue simulating liquid.

8.9 Test Equipment List

Manufacturer	Equipment Description	Model	Management Number	Cal. Information	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit	D750V3	WXJ023	05.18.2023	05.17.2026
SPEAG	835MHz System Validation Kit	D835V2	WXJ023-1	06.08.2022	06.07.2025
SPEAG	1750MHz System Validation Kit	D1750V2	WXJ023-6	01.17.2024	01.16.2027
SPEAG	1900MHz System Validation Kit	D1900V2	WXJ023-2	06.07.2022	06.06.2025
SPEAG	2450MHz System Validation Kit	D2450V2	WXJ023-3	06.06.2022	06.05.2025
SPEAG	2600MHz System Validation Kit	D2600V2	WXJ023-4	10.28.2021	10.27.2024
SPEAG	3300MHz System Validation Kit	D3300V2	WXJ023-7	01.17.2024	01.16.2027
SPEAG	3500MHz System Validation Kit	D3500V2	WXJ023-8	01.22.2024	01.21.2027
SPEAG	3700MHz System Validation Kit	D3700V2	WXJ023-9	01.17.2024	01.16.2027
SPEAG	3900MHz System Validation Kit	D3900V2	WXJ023-10	01.22.2024	01.21.2027
SPEAG	5GHz System Validation Kit	D5GHzV2	WXJ023-14	01.16.2024	01.15.2027
SPEAG	Data Acquisition Electronics	DAE4	WXJ021-1	03.26.2024	03.25.2025
SPEAG	Dosimetric E-Field Probe	EX3DV4	WXJ022	03.20.2024	03.19.2025
SPEAG	Data Acquisition Electronics	DAE4	WXJ021	11.27.2023	11.26.2024
SPEAG	Dosimetric E-Field Probe	EX3DV4	WXJ022-1	01.29.2024	01.28.2025
SPEAG	DASY 52 Measurement Software	DASY 52	Version 52.10.4.1527	N.C.R	N.C.R
SPEAG	DASY 52 File Conversion Software	SEMCAD X	Version 14.6.14 (7501)	N.C.R	N.C.R
SPEAG	Robot Controller	CS8Cspeag-TX60	WXG021-1	N.C.R	N.C.R
SPEAG	Phantom	Twin SAM Phantom	WXG021-4	N.C.R	N.C.R
SPEAG	Phantom	ELI V5.0	WXG021-5	N.C.R	N.C.R
SPEAG	Phone Positioner	N/A	WXG021-6	N.C.R	N.C.R
St?ubli	Robot	TX60Lspeag	WXG021-3	N.C.R	N.C.R
KEYSIGHT	UXM 5G Wireless Test Platform	E7515B	WXJ008-6	09.25.2023	09.24.2024
Anritsu	Universal Radio Communication Analyzer	MT8820C	WXJ008-5	01.10.2023	01.09.2025
R&S	Universal Radio Communication Tester	CMU200	WXJ008-2	12.27.2023	12.26.2025
KEYSIGHT	Network Analyzer	E5071C	WXJ091	12.27.2023	12.26.2024
KEYSIGHT	EPM Series Power Meter	N1914A	WXJ075	06.13.2023	06.12.2024
KEYSIGHT	E-Series Power Sensor	E9300H	WXJ075-1	06.13.2023	06.12.2024
KEYSIGHT	E-Series Power Sensor	E9300H	WXJ075-2	06.13.2023	06.12.2024
KEYSIGHT	Signal Generator	N5173B	WXJ006-3	09.25.2023	09.24.2024
Huber Suhner	RF Cable	SUCOFLEX	WXG008-13	See Note 3	
Huber Suhner	RF Cable	SUCOFLEX	WXG008-14	See Note 3	
Huber Suhner	RF Cable	SUCOFLEX	WXG008-15	See Note 3	
Weinschel	Attenuator	23-3-34	WXG008-16	See Note 3	
Anritsu	Directional Coupler	MP654A	WXG008-17	See Note 3	
SPEAG	Dielectric Assessment Kit	3.5 Probe	WXG008-7	See Note 4	
SPEAG	DAK Measurement Software	DAK	Version: DAK 3.5	N.C.R	
TXC	Broadband Amplifier	BBA018000	WXG008-11	See Note 5	

Note:

1. The calibration certificate of DASY can be referred to appendix C of this report.
2. Referring to KDB 865664 D01v01r04, the dipole calibration interval can be extended to 3 years with justification. The dipoles are also not physically damaged, or repaired during the interval.

3. The Insertion Loss calibration of Dual Directional Coupler and Attenuator were characterized via the network analyzer and compensated during system check.
4. The dielectric probe kit was calibrated via the network analyzer, with the specified procedure (calibrated in pure water) and calibration kit (standard) short circuit, before the dielectric measurement. The specific procedure and calibration kit are provided by Speag.
5. In system check we need to monitor the level on the spectrum analyzer, and adjust the power amplifier level to have precise power level to the dipole; the measured SAR will be normalized to 1 W input power according to the ratio of 1 W to the input power to the dipole. For system check, the calibration of the power amplifier is deemed not critically required for correct measurement; the spectrum analyzer is critical and we do have calibration for it
6. Attenuator insertion loss is calibrated by the network Analyzer, which the calibration is valid, before system check.
7. N.C.R means No Calibration Requirement.

9 Tissue Simulating Liquids

For the measurement of the field distribution inside the SAM phantom with DASY, the phantom must be filled with around 25 liters of homogeneous body tissue simulating liquid. For head SAR testing, the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15 cm, which is shown in Fig. 9.1, for body SAR testing, the liquid height from the center of the flat phantom to liquid top surface is larger than 15 cm, which is shown in Fig. 9.2.

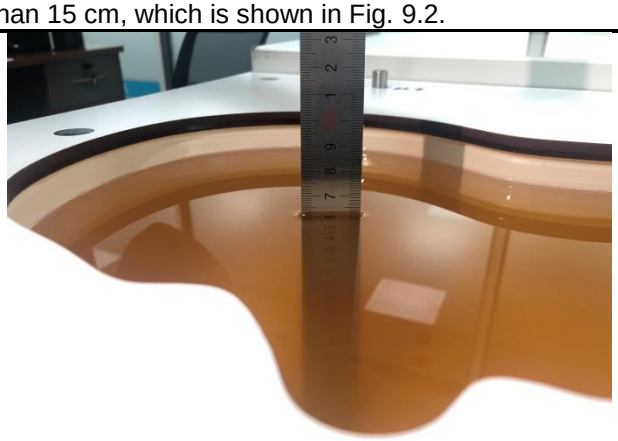

Fig. 9.1 Photo of Liquid Height for Head SAR

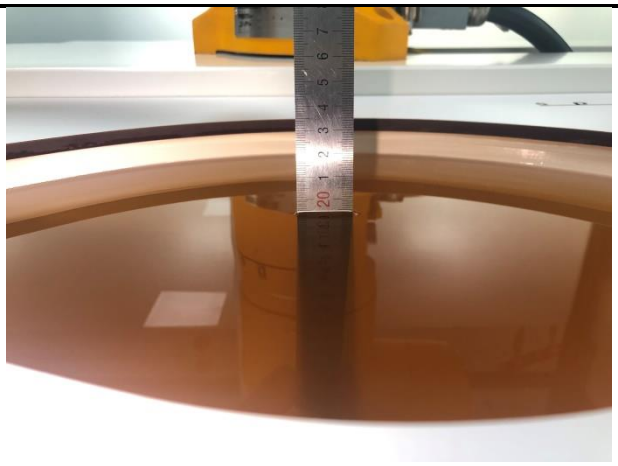

Fig. 9.2 Photo of Liquid Height for Body SAR

The relative permittivity and conductivity of the tissue material should be within ±5% of the values given in the table below recommended by the FCC OET 65 supplement C and RSS 102 Issue 5.

Target Frequency (MHz)	εr	σ(S/m)
150	52.3	0.76
300	45.3	0.87
450	43.5	0.87
835	41.5	0.90
900	41.5	0.97
915	41.5	0.98
1450	40.5	1.20
1610	40.3	1.29
1800-2000	40.0	1.40
2450	39.2	1.80
3000	38.5	2.40
5800	35.3	5.27

(εr = relative permittivity, σ = conductivity and ρ = 1000 kg/m^3)

The dielectric parameters of liquids were verified prior to the SAR evaluation using a Speag Dielectric Probe Kit and an Agilent Network Analyzer.
The following table shows the measuring results for simulating liquid.

Frequency (MHz)	Liquid Temp. (℃)	Conductivity (σ)	Permittivity (εr)	Conductivity Target(σ)	Permittivity Target(εr)	Delta (σ)%	Delta (εr)%	Limit (%)	Date (mm/dd/yy)
750	22.1	0.89	41.94	0.89	41.90	0.00	0.10	±5	03.01.2024
835	22.6	0.92	41.69	0.90	41.50	2.22	0.46	±5	03.04.2024
1750	22.4	1.36	39.87	1.37	40.10	-0.73	-0.57	±5	03.06.2024
1900	22.1	1.45	39.64	1.40	40.00	3.57	-0.90	±5	03.13.2024
2450	22.3	1.83	38.81	1.80	39.20	1.67	-0.99	±5	03.16.2024
2600	22.1	1.95	38.57	1.96	39.00	-0.51	-1.10	±5	03.20.2024
3500	22.4	2.93	36.90	2.91	37.90	0.69	-2.64	±5	03.28.2024
3700	22.4	3.11	36.58	3.12	37.70	-0.32	-2.97	±5	03.28.2024
3900	22.4	3.31	36.27	3.32	37.50	-0.30	-3.28	±5	03.28.2024
5200	22	4.74	34.56	4.67	35.74	1.50	-3.30	±5	03.24.2024
5300	22	4.69	34.38	4.76	35.90	-1.47	-4.23	±5	03.24.2024
5600	22.3	5.01	34.12	5.06	35.50	-0.99	-3.89	±5	03.26.2024
5800	22.3	5.24	34.04	5.27	35.30	-0.57	-3.57	±5	03.26.2024

10 SAR System Verification

Each DASY system is equipped with one or more system validation kits. These units, together with the predefined measurement procedures within the DASY software, enable the user to conduct the system performance check and system validation. System validation kit includes a dipole, tripod holder to fix it underneath the flat phantom and a corresponding distance holder.

- **Purpose of System Performance check**

  The system performance check verifies that the system operates within its specifications. System and operator errors can be detected and corrected. It is recommended that the system performance check be performed prior to any usage of the system in order to guarantee reproducible results. The system performance check uses normal SAR measurements in a simplified setup with a well characterized source. This setup was selected to give a high sensitivity to all parameters that might fail or vary over time. The system check does not intend to replace the calibration of the components, but indicates situations where the system uncertainty is exceeded due to drift or failure.

- **System Setup**

In the simplified setup for system evaluation, the EUT is replaced by a calibrated dipole and the power source is replaced by a continuous wave that comes from a signal generator. The calibrated dipole must be placed beneath the flat phantom section of the SAM twin phantom with the correct distance holder. The distance holder should touch the phantom surface with a light pressure at the reference marking and be oriented parallel to the long side of the phantom. The equipment setup is shown below:

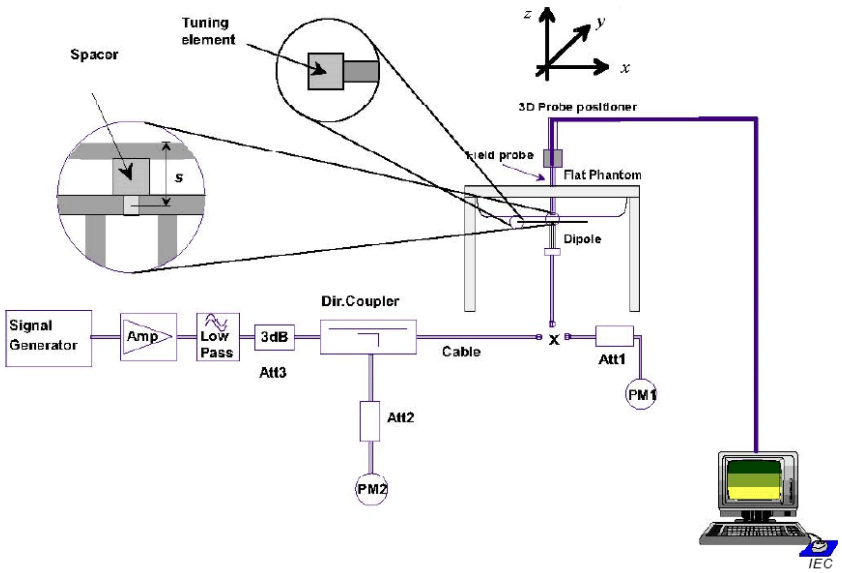

Fig.10.1 System Verification Setup Diagram

Fig.10.2 Photo of Dipole setup

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➢ **System Verification Results**

Comparing to the original SAR value provided by SPEAG, the verification data should be within its specification of 10%. The table as below indicates the system performance check can meet the variation criterion and the plots can be referred to Appendix C of this report.

Date (mm/dd/yy)	Frequency (MHz)	Power fed onto dipole (mW)	Measured 1g SAR (W/kg)	Normalized to1W 1g SAR (W/kg)	1W Target 1g SAR (W/kg)	Deviation (%)
03.01.2024	750	80	0.702	8.78	8.55	2.69
03.04.2024	835	80	0.831	10.39	9.6	8.23
03.06.2024	1750	40	1.490	37.25	36.5	2.05
03.13.2024	1900	40	1.670	41.75	39.9	4.64
03.16.2024	2450	40	2.170	54.25	53.4	1.59
03.20.2024	2600	40	2.240	56.00	55.3	1.27
03.28.2024	3500	40	2.680	67.00	66.2	1.21
03.28.2024	3700	40	2.770	69.25	66.5	4.14
03.28.2024	3900	40	2.720	68.00	68.0	0.00
03.24.2024	5200	40	3.190	79.75	77.00	3.57
03.24.2024	5300	40	3.280	82.00	79.20	3.54
03.26.2024	5600	40	3.370	84.25	81.90	2.87
03.26.2024	5800	40	3.170	79.25	78.90	0.44

11 EUT Testing Position

This EUT was tested in nine different positions. They are right cheek/right tilted/left cheek/left tilted for head, Front/Back/Left Side/Right Side/Top Side of the EUT with phantom 10 mm gap, as illustrated below, please refer to Appendix B for the test setup photos.

11.1 Handset Reference Points

- The vertical centreline passes through two points on the front side of the handset – the midpoint of the width w_t of the handset at the level of the acoustic output, and the midpoint of the width w_b of the bottom of the handset.
- The horizontal line is perpendicular to the vertical centreline and passes the center of the acoustic output. The horizontal line is also tangential to the handset at point A.
- The two lines intersect at point A. Note that for many handsets, point A coincides with the center of the acoustic output; however, the acoustic output may be located elsewhere on the horizontal line. Also note that the vertical centreline is not necessarily parallel to the front face of the handset, especially for clamshell handsets, handsets with flip covers, and other irregularly shaped handsets.

Fig.11.1 Illustration for Front, Back and Side of SAM Phantom

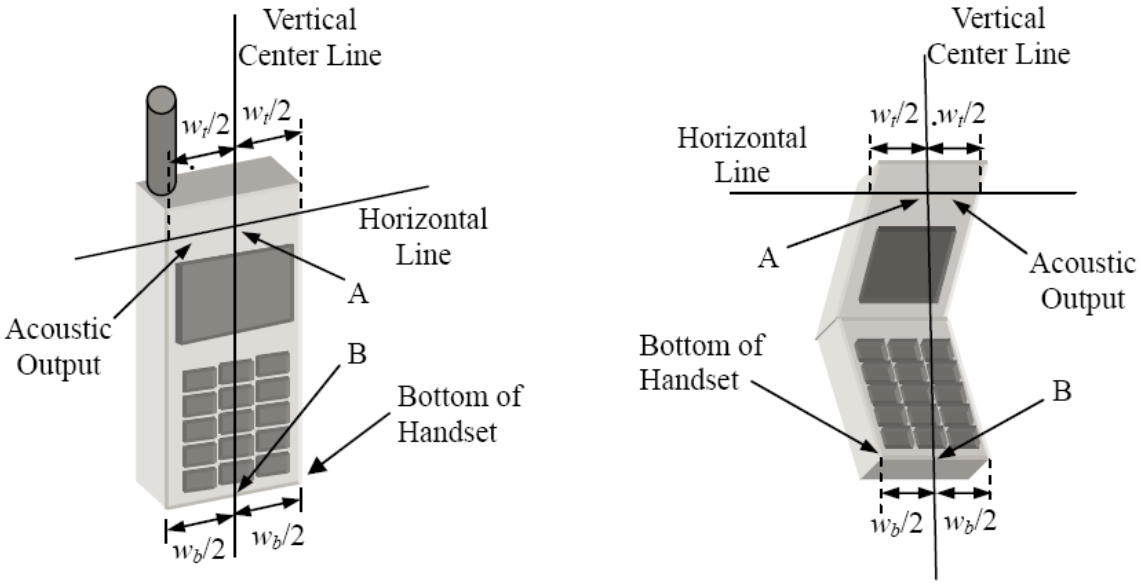

Fig. 11.2 Illustration for Handset Vertical and Horizontal Reference Lines

11.2 Positioning for Cheek / Touch

- To position the device with the vertical center line of the body of the device and the horizontal line crossing the center piece in a plane parallel to the sagittal plane of the phantom. While maintaining the device in this plane, align the vertical center line with the reference plane containing the three ear and mouth reference point (M: Mouth, RE: Right Ear and LE: Left Ear) and align the center of the ear piece with the line RE-LE.
- To move the device towards the phantom with the ear piece aligned with the line LE-RE until the phone touched the ear. While maintaining the device in the reference plane and maintaining the phone contact with the ear, move the bottom of the phone until any point on the front side is in contact with the cheek of the phantom or until contact with the ear is lost (see below figure)

Fig. 11.3 Illustration for Cheek Position

11.3 Positioning for Ear / 15o Tilt

- To position the device in the “cheek” position described above.
- While maintaining the device the reference plane described above and pivoting against the ear, moves it outward away from the mouth by an angle of 15 degrees or until contact with the ear is lost (see figure below).

Fig.11.4 Illustration for Tilted Position

11.4 SAR Evaluations near the Mouth/Jaw Regions of the SAM Phantom

Antennas located near the bottom of a phone may require SAR measurements around the mouth and jaw regions of the SAM head phantom. This typically applies to clam-shell style phones that are generally longer in the unfolded normal use positions or to certain older style long rectangular phones.

Under these circumstances, the following procedures apply, adopted from the FCC guidance on SAR handsets document FCC KDB Publication 648474 D04v01r03. The SAR required in these regions of SAM should be measured using a flat phantom. The phone should be positioned with a separation distance of 4 mm between the ear reference point (ERP) and the outer surface of the flat phantom shell. While maintaining this distance at the ERP location, the low (bottom) edge of the phone should be lowered from the phantom to establish the same separation distance between the peak SAR locations identified by the truncated partial SAR distribution measured with the SAM phantom. The distance from the peak SAR location to the phone is determined by the straight line passing perpendicularly through the phantom surface. When it is not feasible to maintain 4 mm separation at the ERP while also establishing the required separation at the peak SAR location, the top edge of the phone will be allowed to touch the phantom with a separation < 4 mm at the ERP. The phone should not be tilted to the left or right while placed in this inclined position to the flat phantom.

11.5 Body Worn Accessory Configurations

- To position the device parallel to the phantom surface with either keypad up or down.
- To adjust the device parallel to the flat phantom.
- To adjust the distance between the device surface and the flat phantom to 10 mm or holster surface and the flat phantom to 0 mm.

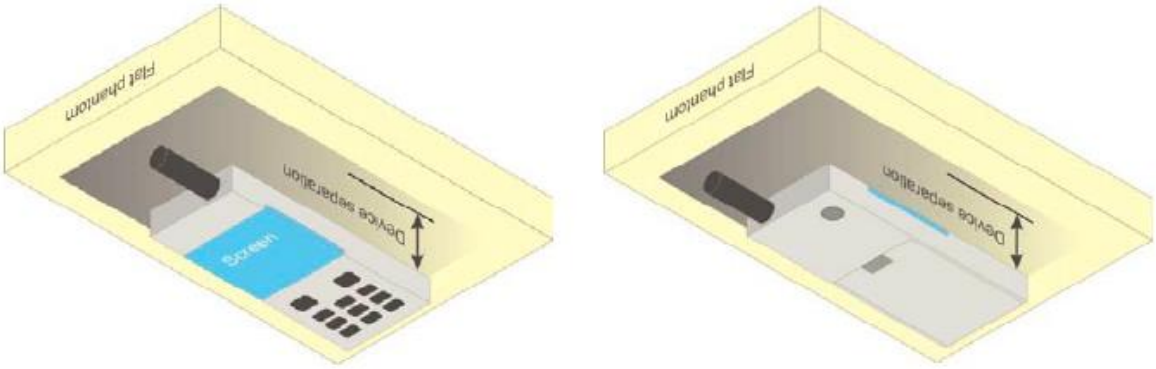

Fig.11.5 Illustration for Body Worn Position

11.6 Wireless Router (Hotspot) Configurations

Some battery-operated handsets have the capability to transmit and receive internet connectivity through simultaneous transmission of WIFI in conjunction with a separate licensed transmitter. The FCC has provided guidance in KDB Publication 941225 D06 where SAR test considerations for handsets (L x W ≥
9 cm x 5 cm) are based on a composite test separation distance of 10 mm from the front, back and edges of the device with antennas 2.5 cm or closer to the edge of the device, determined from general mixed use conditions for this type of devices. Since the hotspot SAR results may overlap with the body-worn accessory SAR requirements, the more conservative configurations can be considered, thus excluding some body-worn accessory SAR tests.

When the user enables the personal wireless router functions for the handset, actual operations include simultaneous transmission of both the WIFI transmitter and another licensed transmitter. Both transmitters often do not transmit at the same transmitting frequency and thus cannot be evaluated for SAR under actual use conditions. Therefore, SAR must be evaluated for each frequency transmission and mode separately and summed with the WIFI transmitter according to KDB 648474 publication procedures. The “Portable Hotspot” feature on the handset was NOT activated, to ensure the SAR measurements were evaluated for a single transmission frequency RF signal.

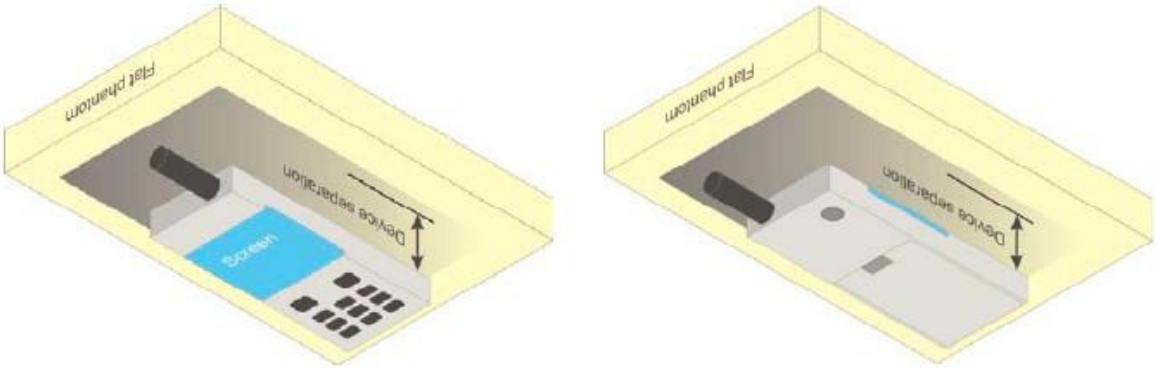

Fig.11.6 Illustration for Hotspot Position

12 Measurement Procedures

The measurement procedures are as below:

<Conducted power measurement>
- For WWAN power measurement, use base station simulator to configure EUT WWAN transition in conducted connection with RF cable, at maximum power in each supported wireless interface and frequency band.
- Read the WWAN RF power level from the base station simulator.
- For WLAN/BT power measurement, use engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power in each supported wireless interface and frequency band.
- Connect EUT RF port through RF cable to the power meter or spectrum analyzer, and measure WLAN/BT output power.

<Conducted power measurement>
- Use base station simulator to configure EUT WWAN transmission in radiated connection, and engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power, in the highest power channel.
- Place the EUT in positions as Appendix B demonstrates.
- Set scan area, grid size and other setting on the DASY software.
- Measure SAR results for the highest power channel on each testing position.
- Find out the largest SAR result on these testing positions of each band.
- Measure SAR results for other channels in worst SAR testing position if the Reported SAR or highest power channel is larger than 0.8 W/kg.

According to the test standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:

- Power reference measurement
- Area scan
- Zoom scan
- Power drift measurement

12.1 Spatial Peak SAR Evaluation

The procedure for spatial peak SAR evaluation has been implemented according to the test standard. It can be conducted for 1g and 10g, as well as for user-specific masses. The DASY software includes all numerical procedures necessary to evaluate the spatial peak SAR value.

The base for the evaluation is a “cube” measurement. The measured volume must include the 1g and 10 g cubes with the highest averaged SAR values. For that purpose, the center of the measured volume is aligned to the interpolated peak SAR value of a previously performed area scan.

The entire evaluation of the spatial peak values is performed within the post-processing engine (SEMCAD). The system always gives the maximum values for 1g and 10g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:
- Extraction of the measured data (grid and values) from the Zoom Scan.
- Calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters).
- Generation of a high-resolution mesh within the measured volume.
- Interpolation of all measured values form the measurement grid to the high-resolution grid
- Extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
- Calculation of the averaged SAR within masses of 1g and 10g.

12.2 Power Reference Measurement

The Power Reference Measurement and Power Drift Measurement are for monitoring the power drift of the device under test in the batch process. The minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

12.3 Area & Zoom Scan Procedures

First Area Scan is used to locate the approximate location(s) of the local peak SAR value(s). The measurement grid within an Area Scan is defined by the grid extent, grid step size and grid offset. Next, in order to determine the EM field distribution in a three-dimensional spatial extension, Zoom Scan is required. The Zoom Scan is performed around the highest E-field value to determine the averaged SAR-distribution over 10g. Area scan and zoom scan resolution setting follows KDB 865664 D01v01r04 quoted below.

			≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface			5 ± 1 mm	½·δ·ln(2) ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location			30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}			≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
			When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	
Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	≤ 1.5·$\Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm

Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.

* When zoom scan is required and the ***reported*** SAR from the *area scan based 1-g SAR estimation* procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.

12.4 Volume Scan Procedures

The volume scan is used for assess overlapping SAR distributions for antennas transmitting in different frequency bands. It is equivalent to an oversized zoom scan used in standalone measurements. The measurement volume will be used to enclose all the simultaneous transmitting antennas. For antennas transmitting simultaneously in different frequency bands, the volume scan is measured separately in each frequency band. In order to sum correctly to compute the 1g aggregate SAR, the EUT remain in the same test position for all measurements and all volume scan use the same spatial resolution and grid spacing. When all volume scan were completed, the software, SEMCAD post-processor scan combine and subsequently superpose these measurement data to calculating the multiband SAR.

12.5 SAR Averaged Methods

In DASY, the interpolation and extrapolation are both based on the modified Quadratic Shepard's method. The interpolation scheme combines a least-square fitted function method and a weighted average method which are the two basic types of computational interpolation and approximation.

Extrapolation routines are used to obtain SAR values between the lowest measurement points and the inner phantom surface. The extrapolation distance is determined by the surface detection distance and the probe sensor offset. The uncertainty increases with the extrapolation distance. To keep the uncertainty within 1% for the 1g and 10g cubes, the extrapolation distance should not be larger than 5 mm.

12.6 Power Drift Monitoring

All SAR testing is under the EUT install full charged battery and transmit maximum output power. In DASY measurement software, the power reference measurement and power drift measurement procedures are used for monitoring the power drift of EUT during SAR test. Both these procedures measure the field at a specified reference position before and after the SAR testing. The software will calculate the field difference in dB. If the power drifts more than 5%, the SAR will be retested.

13 Conducted RF Output Power

The detailed conducted power table can refer to Appendix D Conducted RF Output Power.

13.1 GSM 850 Conducted Power

Remark:

1. The frame-averaged power is linearly reported the maximum burst averaged power over 8 time slots. The calculated method are shown as below:
   The duty cycle "x" of different time slots as below:
   1 TX slot is 1/8, 2 TX slots is 2/8, 3 TX slots is 3/8 and 4 TX slots is 4/8
   Based on the calculation formula:
   Frame-averaged power = Burst averaged power + 10 1og (x)
   So,
   Frame-averaged power (1 TX slot) = Burst averaged power (1 TX slot)– 9.03
   Frame-averaged power (2 TX slots) = Burst averaged power (2 TX slots)– 6.02
   Frame-averaged power (3 TX slots) = Burst averaged power (3 TX slots)– 4.26
   Frame-averaged power (4 TX slots) = Burst averaged power (4 TX slots) – 3.01
2. CS1 coding scheme was used in GPRS conducted power measurements and SAR testing, MCS5 coding scheme was used in EGPRS conducted power measurements and SAR testing (if necessary).

Note:

1. For Head SAR testing, GSM Voice mode should be evaluated, therefore the EUT was set in GSM 850 Voice mode.
2. For Body worn SAR testing and Hotspot mode SAR testing, GPRS and EGPRS mode should be evaluated, therefore the EUT was set in GPRS 4 TX slots mode due to the highest frame-averaged power.
3. For GPRS multi time slots SAR measurement, when the measured maximum output power levels are within 0.25 dB of each other, test the configuration with the most number of time slots.
4. Per KDB447498 D04v01, the maximum output power channel is used for SAR testing and for further SAR test reduction.
5. The EUT do not support DTM and VoIP function.

13.2 GSM 1900 Conducted Power

Remark:

3. The frame-averaged power is linearly reported the maximum burst averaged power over 8 time slots. The calculated method are shown as below:
   The duty cycle "x" of different time slots as below:
   1 TX slot is 1/8, 2 TX slots is 2/8, 3 TX slots is 3/8 and 4 TX slots is 4/8
   Based on the calculation formula:
   Frame-averaged power = Burst averaged power + 10 1og (x)
   So,
   Frame-averaged power (1 TX slot) = Burst averaged power (1 TX slot)– 9.03
   Frame-averaged power (2 TX slots) = Burst averaged power (2 TX slots)– 6.02
   Frame-averaged power (3 TX slots) = Burst averaged power (3 TX slots)– 4.26
   Frame-averaged power (4 TX slots) = Burst averaged power (4 TX slots) – 3.01
4. CS1 coding scheme was used in GPRS conducted power measurements and SAR testing, MCS5 coding scheme was used in EGPRS conducted power measurements and SAR testing (if necessary).

Note:

1. For Head SAR testing, GSM Voice mode should be evaluated, therefore the EUT was set in PCS 1900 Voice mode.
2. For Body worn SAR testing and Hotspot mode SAR testing, GPRS and EGPRS mode should be evaluated, therefore the EUT was set in GPRS 4 TX slots mode due to the highest frame-averaged power.
3. Per KDB447498 D04v01, the maximum output power channel is used for SAR testing and for further SAR test reduction.

13.3 WCDMA Conducted Power

The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification. A summary of these settings are illustrated below:

HSDPA Setup Configuration:

a. The EUT was connected to Base Station Rohde & Schwarz CMU200 referred to the Setup Configuration.
b. The RF path losses were compensated into the measurements.
c. A call was established between EUT and Base Station with following setting:
   i. Set Gain Factors (β_c and β_d) and parameters were set according to each
   ii. Specific sub-test in the following table, C10.1.4, quoted from the TS 34.121
   iii. Set RMC 12.2kbps + HSDPA mode.
   iv. Set Cell Power = -86 dBm
   v. Set HS-DSCH Configuration Type to FRC (H-set 1, QPSK)
   vi. Select HSDPA Uplink Parameters
   vii. Set Delta ACK, Delta NACK and Delta CQI = 8
   viii. Set Ack-Nack Repetition Factor to 3
   ix. Set CQI Feedback Cycle (k) to 4 ms
   x. Set CQI Repetition Factor to 2
   xi. Power Ctrl Mode = All Up bits
d. The transmitted maximum output power was recorded.

Table 1

Sub-test	β_c	β_d	β_d *(SF)*	β_c/β_d	β_{hs} (1)	CM (dB)(2)
1	2/15	15/15	64	2/15	4/15	0.0
2	12/15(3)	15/15(3)	64	12/15(3)	24/15	1.0
3	15/15	8/15	64	15/8	30/15	1.5
4	15/15	4/15	64	15/4	30/15	1.5

Note 1: Δ_{ACK}, Δ_{NACK} and $\Delta_{CQI} = 8 \Leftrightarrow A_{hs} = \beta_{hs}/\beta_c = 30/15 \Leftrightarrow \beta_{hs} = 30/15 * \beta_c$
Note 2: CM = 1 for β_c/β_d =12/15, β_{hs}/β_c=24/15.
Note 3: For subtest 2 the β_c/β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signaled gain factors for the reference TFC (TF1, TF1) to β_c = 11/15 and β_d = 15/15.

HSDPA Sub-test setup configuration

HSUPA Setup Configuration:

a. The EUT was connected to Base Station Rohde & Schwarz CMU200 referred to the Setup Configuration.
b. The RF path losses were compensated into the measurements.
c. A call was established between EUT and Base Station with following setting * :
   i. Call Configs = 5.2B, 5.9B, 5.10B, and 5.13.2B with QPSK
   ii. Set the Gain Factors (β_c and β_d) and parameters (AG Index) were set according to each specific sub-test in the following table, C11.1.3, quoted from the TS 34.121
   iii. Set Cell Power = -86 dBm
   iv. Set Channel Type = 12.2k + HSPA
   v. Set UE Target Power
   vi. Power Ctrl Mode= Alternating bits
   vii. Set and observe the E-TFCI
   viii. Confirm that E-TFCI is equal to the target E-TFCI of 75 for sub-test 1, and other subtest's E-TFCI
d. The transmitted maximum output power was recorded.

Table 2

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{hs} (1)	β_{ec}	β_{ed}	β_{ed} (SF)	β_{ed} (codes)	CM (2) (dB)	MPR (dB)	AG (4) Index	E-TFCI
1	11/15 (3)	15/15 (3)	64	11/15 (3)	22/15	209/225	1039/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	β_{ed1}: 47/15 β_{ed2}: 47/15	4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15 (4)	15/15 (4)	64	15/15 (4)	30/15	24/15	134/15	4	1	1.0	0.0	21	81

Note 1: Δ_{ACK}, Δ_{NACK} and $\Delta_{CQI} = 8 \Leftrightarrow A_{hs} = \beta_{hs}/\beta_c = 30/15 \Leftrightarrow \beta_{hs} = 30/15 * \beta_c$.
Note 2: CM = 1 for β_c/β_d =12/15, β_{hs}/β_c=24/15. For all other combinations of DPDCH, DPCCH, HS- DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.
Note 3: For subtest 1 the β_c/β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signaled gain factors for the reference TFC (TF1, TF1) to β_c = 10/15 and β_d = 15/15.
Note 4: For subtest 5 the β_c/β_d ratio of 15/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signaled gain factors for the reference TFC (TF1, TF1) to β_c = 14/15 and β_d = 15/15.
Note 5: Testing UE using E-DPDCH Physical Layer category 1 Sub-test 3 is not required according to TS 25.306 Table 5.1g.
Note 6: β_{ed} cannot be set directly; it is set by Absolute Grant Value.

HSUPA Sub-test setup configuration

Note:

1. Applying the subtest setup in Table C.11.1.3 of 3GPP TS 34.121-1
2. Per KDB 941225 D01, RMC 12.2kbps mode is used to evaluate SAR due the highest output power. If AMR 12.2 kbps power is < 0.25dB higher than RMC 12.2kbps, SAR tests with AMR 12.2 kbps can be excluded.
3. AMR, HSDPA RF power will not be larger than RMC 12.2kbps, detailed information is included in Tune-up Procure exhibit.

13.4 LTE Conducted Power

13.4.1 Largest channel bandwidth standalone SAR test requirements

QPSK with 1 RB allocation

Start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power among RB offsets at the upper edge, middle and lower edge of each required test channel. When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required for 1 RB allocation; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel.8 When the reported SAR of a required test channel is > 1.45 W/kg, SAR is required for all three RB offset configurations for that required test channel.

QPSK with 50% RB allocation

The procedures required for 1 RB allocation in section 4.2.1 are applied to measure the SAR for QPSK with 50% RB allocation.9

QPSK with 100% RB allocation

For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation in sections 4.2.1 and 4.2.2 are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.

Higher order modulations

For each modulation besides QPSK; e.g., 16-QAM, 64-QAM, apply the QPSK procedures in sections 4.2.1, 5.2.2 and 4.2.3 to determine the QAM configurations that may need SAR measurement. For each configuration identified as required for testing, SAR is required only when the highest maximum output power for the configuration in the higher order modulation is > ? dB higher than the same configuration in QPSK or when the reported SAR for the QPSK configuration is > 1.45 W/kg.

13.4.2 Other channel bandwidth standalone SAR test requirements

For the other channel bandwidths used by the device in a frequency band, apply all the procedures required for the largest channel bandwidth in section 4.2 to determine the channels and RB configurations that need SAR testing and only measure SAR when the highest maximum output power of a configuration requiring testing in the smaller channel bandwidth is > ? dB higher than the equivalent channel configurations in the largest channel bandwidth configuration or the reported SAR of a configuration for the largest channel bandwidth is > 1.45 W/kg. The equivalent channel configuration for the RB allocation, RB offset and modulation etc. is determined for the smaller channel bandwidth according to the same number of RB allocated in the largest channel bandwidth. For example, 50 RB in 10 MHz channel bandwidth does not apply to 5 MHz channel bandwidth; therefore, this cannot be tested in the smaller channel bandwidth. However, 50% RB allocation in 10 MHz channel bandwidth is equivalent to 100% RB allocation in 5 MHz channel bandwidth; therefore, these are the equivalent configurations to be compared to determine the specific channel and configuration in the smaller channel bandwidth that need SAR testing.

13.3.3 TDD LTE configuration setup for SAR measurement

According to KDB 941225 D05v02r03 and April 2013 TCB workshop slides, SAR must be tested with a fixed periodic duty factor according to the highest transmission duty factor implemented for the device and supported by 3GPP.

- see 3GPP TS 36.211 section 4.2 for Type 2 Frame Structure and Table 4.2-2 for uplink-downlink configurations
- “special subframe S” contains both uplink and downlink transmissions and must be taken into consideration to determine the transmission duty factor
  - according to the worst case uplink and downlink cyclic prefix requirements for UpPTS to determine the highest SAR test duty factor

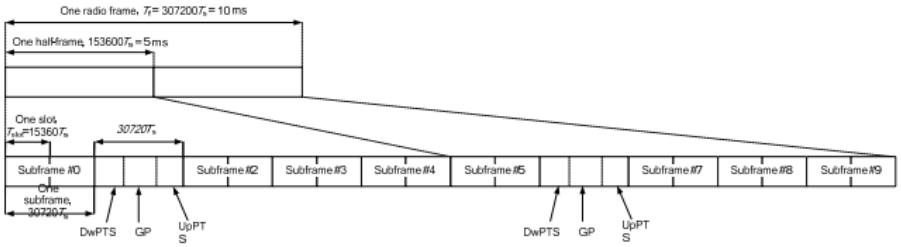

Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity)

Table 4.2-1: Configuration of special subframe (lengths of DwPTS/GP/UpPTS)

Special subframe configuration	Normal cyclic prefix in downlink			Extended cyclic prefix in downlink		
	DwPTS	UpPTS		DwPTS	UpPTS	
		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink
0	$6592 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$	$7680 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$
1	$19760 \cdot T_s$			$20480 \cdot T_s$		
2	$21952 \cdot T_s$			$23040 \cdot T_s$		
3	$24144 \cdot T_s$			$25600 \cdot T_s$		
4	$26336 \cdot T_s$			$7680 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$
5	$6592 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$	$20480 \cdot T_s$		
6	$19760 \cdot T_s$			$23040 \cdot T_s$		
7	$21952 \cdot T_s$			$12800 \cdot T_s$		
8	$24144 \cdot T_s$			-	-	-
9	$13168 \cdot T_s$			-	-	-

Per 3GPP 36.211 section 4.2, each radio frame of length T_f=37200?*T*s = 10 ms consists of two half-frames of length 153600?Ts = 5ms each. Each half-frame consists of five subframes of length 30720 ?*T*s = 1ms. So, the uplink duty factor in special subframe as below:

Special Subframe configuration	Normal cyclic prefix in downlink		Extended cyclic prefix in downlink	
	Duty factor of Uplink		Duty factor of Uplink	
	Normal cyclic prefix in uplink	Extended cyclic prefix in uplink	Normal cyclic prefix in uplink	Extended cyclic prefix in uplink
0	7.14%	8.33%	7.14%	8.33%
1	7.14%	8.33%	7.14%	8.33%
2	7.14%	8.33%	7.14%	8.33%
3	7.14%	8.33%	7.14%	8.33%
4	7.14%	8.33%	14.27%	16.67%
5	14.27%	16.67%	14.27%	16.67%
6	14.27%	16.67%	14.27%	16.67%
7	14.27%	16.67%	14.27%	16.67%
8	14.27%	16.67%	/	/
9	14.27%	16.67%	/	/

Table 4.2-2: Uplink-downlink configurations

Uplink-downlink configuration	Downlink-to-Uplink Switch-point periodicity	Subframe number									
		0	1	2	3	4	5	6	7	8	9
0	5 ms	D	S	U	U	U	D	S	U	U	U
1	5 ms	D	S	U	U	D	D	S	U	U	D
2	5 ms	D	S	U	D	D	D	S	U	D	D
3	10 ms	D	S	U	U	U	D	D	D	D	D
4	10 ms	D	S	U	U	D	D	D	D	D	D
5	10 ms	D	S	U	D	D	D	D	D	D	D
6	5 ms	D	S	U	U	U	D	S	U	U	D

According to above table:

1. The highest duty factor is configuration 0;
2. The duty factor of uplink in one half-frame with normal cyclic prefix is: (3ms + 0.143ms)/5ms=62.86%;
3. The duty factor of uplink in one half-frame with extended cyclic prefix is: (3ms + 0.167ms)/5ms=63.34%;
4. For purpose to get the worst case SAR test duty factor, the duty factor of normal cyclic prefix in uplink scaled-up to the extended cyclic prefix in uplink, the scaling factor is 63.34%/62.86%=1.008, and the scaling factor will be taken into the final measured SAR.

Note:

1. Per KDB 447498 D04v01 section 3.1.6, the required test channels number is 5 for LTE Band 41.

13.5 WLAN 2.4 GHz Band Conducted Power

Note:

1. SAR test of WLAN 2.4GHz is performed.
2. Per KDB 248227 D01v02r02, choose the highest output power channel to test SAR and determine further SAR exclusion.
3. Per KDB 248227 D01v02r02, In the 2.4 GHz band, separate SAR procedures are applied to DSSS and OFDM configurations to simplify DSSS test requirements. SAR is not required for the following 2.4 GHz OFDM conditions:
   1) When KDB Publication 447498 SAR test exclusion applies to the OFDM configuration.
   2) When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.
4. The output power of all data rate were pre-scan, just the worst case (the lowest data rate) of all mode were shown in report.
5. Per KDB 248227 D01V02r02 section 2.2, when the EUT in continuously transmitting mode, the actual duty cycle is 100%, so the duty cycle factor is 1.

13.6 WLAN 5.2GHz Band Conducted Power

Note:

1. SAR test of WLAN 5.2GHz is performed.
2. Per KDB 248227 D01v02r02, choose the highest output power channel to test SAR and determine further SAR exclusion.
3. The output power of all data rate were pre-scan, just the worst case (the lowest data rate) of all mode were shown in report.
4. Per KDB 248227 D01V02r02 section 2.2, when the EUT in continuously transmitting mode, the actual duty cycle is 100%, so the duty cycle factor is 1.

13.7 WLAN 5.3GHz Band Conducted Power

Note:

5. SAR test of WLAN 5.3GHz is performed.
6. Per KDB 248227 D01v02r02, choose the highest output power channel to test SAR and determine further SAR exclusion.
7. The output power of all data rate were pre-scan, just the worst case (the lowest data rate) of all mode were shown in report.
8. Per KDB 248227 D01V02r02 section 2.2, when the EUT in continuously transmitting mode, the actual duty cycle is 100%, so the duty cycle factor is 1.

13.8 WLAN 5.6GHz Band Conducted Power

Note:

9. SAR test of WLAN 5.6GHz is performed.
10. Per KDB 248227 D01v02r02, choose the highest output power channel to test SAR and determine further SAR exclusion.
11. The output power of all data rate were pre-scan, just the worst case (the lowest data rate) of all mode were shown in report.
12. Per KDB 248227 D01V02r02 section 2.2, when the EUT in continuously transmitting mode, the actual duty cycle is 100%, so the duty cycle factor is 1.

13.9 WLAN 5.8GHz Band Conducted Power

Note:

1. SAR test of WLAN 5.8GHz is performed.
2. Per KDB 248227 D01v02r02, choose the highest output power channel to test SAR and determine further SAR exclusion.
3. The output power of all data rate were pre-scan, just the worst case (the lowest data rate) of all mode were shown in report.
4. Per KDB 248227 D01V02r02 section 2.2, when the EUT in continuously transmitting mode, the actual duty cycle is 100%, so the duty cycle factor is 1.

13.10 Bluetooth Conducted Power

Note:

1. SAR test of Bluetooth is performed and the mode with highest average power is selected for SAR testing.
2. Per KDB 447498 D04v01 section 2.1.2: 1-mW Test Exemption, SAR test for BLE is not required.
3. The output power of all data rate were pre-scan, just the worst case of all mode were shown in report.
4. Per KDB 248227 D01V02r02 section 2.2, when the EUT in continuously transmitting mode, the actual duty cycle is 100%, so the duty cycle factor is 1.

13.11 NFC Conducted Power

Note:

5. Per KDB 447498 D04v01 section 2.1.2: 1-mW Test Exemption, SAR test for NFC is not required.

dBm	mW
-59.06	0.000001

6. The output power of all data rate were pre-scan, just the worst case of all mode were shown in report.

14 Exposure Positions Consideration

14.1 EUT Antenna Locations

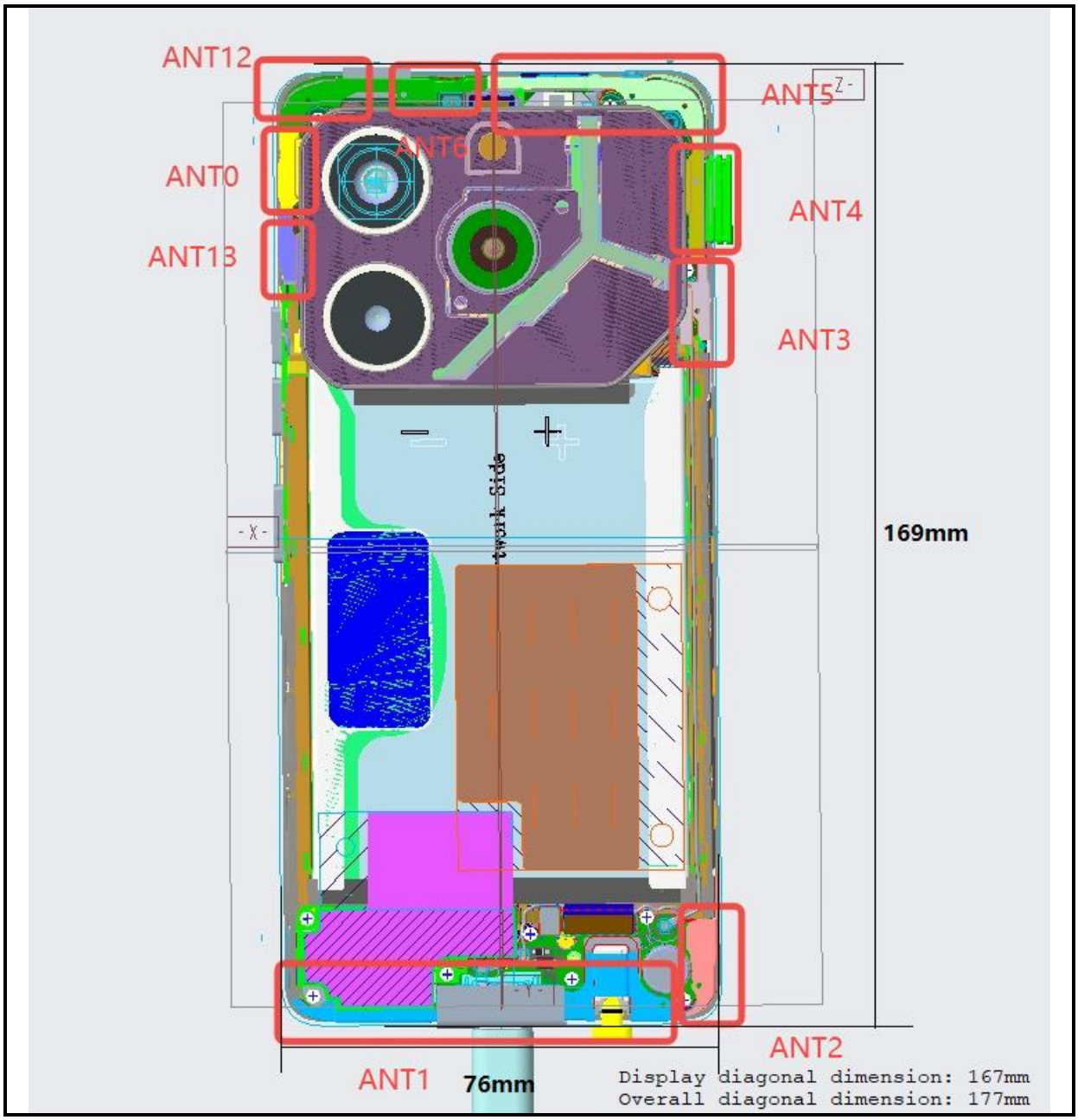

Fig.14.1 EUT Antenna Locations

Note: This antenna diagram is only used as a reference for the distance from the antenna to each edge. For the specific shape of the antenna, please refer to the physical photo.

Note:

1. ANT 0: LTE B42&5G NR N77/78 TX ANT
2. ANT 1: L/M/H Band DRX (RX only)
3. ANT 2: LTE B7/41&5G NR N77/78 DRX2 (RX only)
4. ANT 3: EN-DC LTE B2/7/41/66 TX ANT
5. ANT 4: N77/78 DRX (RX only)
6. ANT 5: L/M/H Band TX ANT
7. ANT 6:N77/N78 PRX2 (RX only)
8. ANT 12: GPS&BT&2.4G/5GWiFi TX ANT
9. ANT 13: 2.4GWiFi&BT TX ANT

14.2 Test Positions Consideration

Distance of Antennas to EUT edge/surface Test distance: 10mm						
Antennas	**Front**	**Back**	**Left Side**	**Right Side**	**Top Side**	**Bottom Side**
ANT 0	<25mm	<25mm	69mm	<25mm	<25mm	143mm
ANT 3	<25mm	<25mm	<25mm	69mm	36mm	130mm
ANT 5	<25mm	<25mm	<25mm	37mm	<25mm	155mm
ANT 12	<25mm	<25mm	39mm	<25mm	<25mm	159mm
ANT 13	<25mm	<25mm	69mm	<25mm	<25mm	135mm

Test Positions Test distance: 10mm						
Antennas	**Front**	**Back**	**Left Side**	**Right Side**	**Top Side**	**Bottom Side**
ANT 0	Yes	Yes	No	Yes	Yes	No
ANT 3	Yes	Yes	Yes	No	No	No
ANT 5	Yes	Yes	Yes	No	Yes	No
ANT 12	Yes	Yes	No	Yes	Yes	No
ANT 13	Yes	Yes	No	Yes	Yes	No

Note:

10. Head/Body-worn/Hotspot mode SAR assessments are required.
11. Referring to KDB 941225 D06 v02r01, when the overall device length and width are ≥ 9cm * 5cm, the test distance is 10mm. SAR must be measured for all sides and surfaces with a transmitting antenna located within 25mm from that surface or edge.
12. Per KDB 447498 D04v01, for handsets the test separation distance is determined by the smallest distance between the outer surface of the device and the user, which is 0 mm for head SAR, 10 mm for hotspot SAR, and 10 mm for body-worn SAR.
13. Per KDB 648474 D04 v01r03, when hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg

15 SAR Test Results Summary

15.1 Standalone Head SAR Data

➢ GSM Head SAR

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	GSM850/Voice	5	Right Cheek	190	836.6	32.92	-0.03	33.0	0.833	1.019	0.849
	GSM850/Voice	5	Right Tilted	190	836.6	32.92	0.05	33.0	0.702	1.019	0.715
	GSM850/Voice	5	Left Cheek	190	836.6	32.92	0.06	33.0	0.515	1.019	0.525
	GSM850/Voice	5	Left Tilted	190	836.6	32.92	0.12	33.0	0.436	1.019	0.444
1	GSM850/Voice	5	Right Cheek	128	824.2	32.83	0.05	33.0	**0.880**	1.04	0.915
	GSM850/Voice	5	Right Cheek	251	848.8	32.50	0.14	33.0	0.794	1.122	0.891
	GSM850/Voice	**5**	**Right Cheek**	**128**	**824.2**	**32.83**	**0.02**	**33.0**	**0.862**	**1.04**	**0.896**
	PCS1900/Voice	5	Right Cheek	512	1850.2	28.28	0.06	28.5	0.575	1.052	0.605
2	PCS1900/Voice	5	Right Tilted	512	1850.2	28.28	0.09	28.5	**0.682**	1.052	0.717
	PCS1900/Voice	5	Left Cheek	512	1850.2	28.28	0.14	28.5	0.305	1.052	0.321
	PCS1900/Voice	5	Left Tilted	512	1850.2	28.28	0.15	28.5	0.394	1.052	0.414
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**					

➢ WCDMA Head SAR

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	Band II/RMC	5	Right Cheek	9400	1880	22.99	0.05	23.0	0.745	1.002	0.746
3	Band II/RMC	5	Right Tilted	9400	1880	22.99	-0.01	23.0	**0.898**	1.002	0.900
	Band II/RMC	5	Left Cheek	9400	1880	22.99	0.11	23.0	0.485	1.002	0.486
	Band II/RMC	5	Left Tilted	9400	1880	22.99	0.14	23.0	0.608	1.002	0.609
	Band II/RMC	5	Right Tilted	9262	1852.4	22.85	0.01	23.0	0.791	1.035	0.819
	Band II/RMC	5	Right Tilted	9538	1907.6	22.90	0.05	23.0	0.735	1.023	0.752
	Band II/RMC	**5**	**Right Tilted**	**9400**	**1880**	**22.99**	**0.08**	**23.0**	**0.888**	**1.002**	**0.890**
	Band IV/RMC	5	Right Cheek	1513	1752.6	23.03	0.11	23.5	0.663	1.114	0.739
	Band IV/RMC	5	Right Tilted	1513	1752.6	23.03	-0.05	23.5	0.797	1.114	0.888
	Band IV/RMC	5	Left Cheek	1513	1752.6	23.03	0.03	23.5	0.421	1.114	0.469
	Band IV/RMC	5	Left Tilted	1513	1752.6	23.03	0.15	23.5	0.478	1.114	0.532
4	Band IV/RMC	5	Right Tilted	1312	1712.4	22.79	0.04	23.5	**0.806**	1.178	0.949
	Band IV/RMC	5	Right Tilted	1413	1732.6	22.97	0.01	23.5	0.774	1.13	0.875
	Band IV/RMC	**5**	**Right Tilted**	**1312**	**1712.4**	**22.79**	**-0.07**	**23.5**	**0.792**	**1.178**	**0.933**
	Band V/RMC	5	Right Cheek	4183	836.6	23.42	0.07	23.5	0.850	1.019	0.866
	Band V/RMC	5	Right Tilted	4183	836.6	23.42	0.05	23.5	0.747	1.019	0.761
	Band V/RMC	5	Left Cheek	4183	836.6	23.42	0.14	23.5	0.495	1.019	0.504
	Band V/RMC	5	Left Tilted	4183	836.6	23.42	-0.08	23.5	0.422	1.019	0.430
5	Band V/RMC	5	Right Cheek	4132	826.4	23.19	-0.03	23.5	**0.905**	1.074	0.972
	Band V/RMC	5	Right Cheek	4233	846.6	22.96	0.10	23.5	0.697	1.132	0.789
	Band V/RMC	**5**	**Right Cheek**	**4132**	**826.4**	**23.19**	**-0.11**	**23.5**	**0.861**	**1.074**	**0.925**
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**					

➢ FDD-LTE Band 2(20MHz) QPSK Head SAR

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	Band2/1RB#49	5	Right Cheek	19100	1900	23.48	0.02	23.5	0.669	1.005	0.672
	Band2/1RB#49	5	Right Tilted	19100	1900	23.48	0.19	23.5	0.823	1.005	0.827
	Band2/1RB#49	5	Left Cheek	19100	1900	23.48	0.15	23.5	0.425	1.005	0.427
	Band2/1RB#49	5	Left Tilted	19100	1900	23.48	0.05	23.5	0.638	1.005	0.641
6	Band2/1RB#49	5	Right Tilted	18700	1860	23.28	-0.07	23.5	**0.981**	1.052	1.032
	Band2/1RB#99	5	Right Tilted	18900	1880	23.22	0.06	23.5	0.918	1.067	0.980
	Band2/50%RB#24	5	Right Cheek	19100	1900	22.48	0.18	22.5	0.514	1.005	0.517
	Band2/50%RB#24	5	Right Tilted	19100	1900	22.48	0.11	22.5	0.768	1.005	0.772
	Band2/50%RB#24	5	Left Cheek	19100	1900	22.48	-0.19	22.5	0.414	1.005	0.416
	Band2/50%RB#24	5	Left Tilted	19100	1900	22.48	-0.14	22.5	0.609	1.005	0.612
	Band2/100%RB#0	5	Right Tilted	19100	1900	22.29	0.19	22.5	0.594	1.05	0.624
	Band2/1RB#49	**5**	**Right Tilted**	**18700**	**1860**	**23.28**	**-0.13**	**23.5**	**0.868**	**1.052**	**0.913**
	Band2/1RB#0	3	Right Cheek	18700	1860	20.03	-0.02	20.5	0.113	1.114	0.126
	Band2/1RB#0	3	Right Tilted	18700	1860	20.03	-0.16	20.5	0.026	1.114	0.029
	Band2/1RB#0	3	Left Cheek	18700	1860	20.03	0.14	20.5	0.085	1.114	0.095
	Band2/1RB#0	3	Left Tilted	18700	1860	20.03	-0.02	20.5	0.010	1.114	0.011
	Band2/50RB#0	3	Right Cheek	18900	1880	19.07	0.13	19.5	0.096	1.104	0.106
	Band2/50RB#0	3	Right Tilted	18900	1880	19.07	0.09	19.5	0.022	1.104	0.024
	Band2/50RB#0	3	Left Cheek	18900	1880	19.07	0.03	19.5	0.072	1.104	0.079
	Band2/50RB#0	3	Left Tilted	18900	1880	19.07	-0.04	19.5	0.008	1.104	0.009
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**					

➢ FDD-LTE Band 5(10MHz) QPSK Head SAR

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
7	Band5/1RB#24	5	Right Cheek	20525	836.5	23.77	0.03	24.0	**0.675**	1.054	0.711
	Band5/1RB#24	5	Right Tilted	20525	836.5	23.77	0.15	24.0	0.613	1.054	0.646
	Band5/1RB#24	5	Left Cheek	20525	836.5	23.77	-0.02	24.0	0.334	1.054	0.352
	Band5/1RB#24	5	Left Tilted	20525	836.5	23.77	0.15	24.0	0.317	1.054	0.334
	Band5/50%RB#0	5	Right Cheek	20525	836.5	22.80	-0.16	23.0	0.657	1.047	0.688
	Band5/50%RB#0	5	Right Tilted	20525	836.5	22.80	0.14	23.0	0.608	1.047	0.637
	Band5/50%RB#0	5	Left Cheek	20525	836.5	22.80	0.15	23.0	0.314	1.047	0.329
	Band5/50%RB#0	5	Left Tilted	20525	836.5	22.80	-0.11	23.0	0.296	1.047	0.310
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**					

➢ FDD-LTE Band 7(20MHz) QPSK Head SAR

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	Band7/1RB#49	5	Right Cheek	21350	2560	22.39	0.12	22.5	0.583	1.026	0.598
8	Band7/1RB#49	5	Right Tilted	21350	2560	22.39	-0.19	22.5	**0.677**	1.026	0.695
	Band7/1RB#49	5	Left Cheek	21350	2560	22.39	-0.15	22.5	0.215	1.026	0.221
	Band7/1RB#49	5	Left Tilted	21350	2560	22.39	0.16	22.5	0.240	1.026	0.246
	Band7/50%RB#0	5	Right Cheek	21350	2560	21.22	0.01	21.5	0.548	1.067	0.585
	Band7/50%RB#0	5	Right Tilted	21350	2560	21.22	-0.04	21.5	0.619	1.067	0.660
	Band7/50%RB#0	5	Left Cheek	21350	2560	21.22	-0.10	21.5	0.203	1.067	0.217
	Band7/50%RB#0	5	Left Tilted	21350	2560	21.22	0.04	21.5	0.226	1.067	0.241
	Band7/1RB#0	3	Right Cheek	21350	2560	19.16	0.01	19.5	0.126	1.081	0.136
	Band7/1RB#0	3	Right Tilted	21350	2560	19.16	-0.13	19.5	0.035	1.081	0.038
	Band7/1RB#0	3	Left Cheek	21350	2560	19.16	0.00	19.5	0.046	1.081	0.049
	Band7/1RB#0	3	Left Tilted	21350	2560	19.16	-0.20	19.5	0.011	1.081	0.012
	Band7/50%RB#0	3	Right Cheek	20850	2510	18.24	0.08	18.5	0.103	1.062	0.109
	Band7/50%RB#0	3	Right Tilted	20850	2510	18.24	0.16	18.5	0.027	1.062	0.029
	Band7/50%RB#0	3	Left Cheek	20850	2510	18.24	-0.19	18.5	0.036	1.062	0.038
	Band7/50%RB#0	3	Left Tilted	20850	2510	18.24	0.11	18.5	0.009	1.062	0.010
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**					

➢ FDD-LTE Band 12(10MHz) QPSK Head SAR

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	Band12/1RB#0	5	Right Cheek	23060	704	23.86	0.08	24.5	0.277	1.159	0.321
9	Band12/1RB#0	5	Right Tilted	23060	704	23.86	0.19	24.5	**0.296**	1.159	0.343
	Band12/1RB#0	5	Left Cheek	23060	704	23.86	-0.12	24.5	0.174	1.159	0.202
	Band12/1RB#0	5	Left Tilted	23060	704	23.86	-0.08	24.5	0.178	1.159	0.206
	Band12/50%RB#0	5	Right Cheek	23060	704	22.78	0.17	23.0	0.265	1.052	0.279
	Band12/50%RB#0	5	Right Tilted	23060	704	22.78	-0.04	23.0	0.285	1.052	0.300
	Band12/50%RB#0	5	Left Cheek	23060	704	22.78	-0.08	23.0	0.168	1.052	0.177
	Band12/50%RB#0	5	Left Tilted	23060	704	22.78	0.13	23.0	0.170	1.052	0.179
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**					

➢ TDD-LTE Band41(20MHz) QPSK Head SAR

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	D.C Factor	Reported SAR_{1g} (W/kg)
	Band41/1RB#99	5	Right Cheek	41490	2680	24.40	0.02	25.0	0.376	1.148	1.008	0.435
10	Band41/1RB#99	5	Right Tilted	41490	2680	24.40	0.09	25.0	**0.452**	1.148	1.008	0.523
	Band41/1RB#99	5	Left Cheek	41490	2680	24.40	0.14	25.0	0.214	1.148	1.008	0.248
	Band41/1RB#99	5	Left Tilted	41490	2680	24.40	0.20	25.0	0.265	1.148	1.008	0.307
	Band41/50%RB#0	5	Right Cheek	39750	2506	23.38	-0.01	23.5	0.345	1.028	1.008	0.357
	Band41/50%RB#0	5	Right Tilted	39750	2506	23.38	-0.09	23.5	0.436	1.028	1.008	0.452
	Band41/50%RB#0	5	Left Cheek	39750	2506	23.38	-0.19	23.5	0.202	1.028	1.008	0.209
	Band41/50%RB#0	5	Left Tilted	39750	2506	23.38	-0.05	23.5	0.251	1.028	1.008	0.260
	Band41/1RB#0	3	Right Cheek	41490	2680	21.72	0.00	22.5	0.050	1.197	1.008	0.061
	Band41/1RB#0	3	Right Tilted	41490	2680	21.72	-0.02	22.5	0.019	1.197	1.008	0.023
	Band41/1RB#0	3	Left Cheek	41490	2680	21.72	-0.02	22.5	0.020	1.197	1.008	0.024
	Band41/1RB#0	3	Left Tilted	41490	2680	21.72	0.17	22.5	0.005	1.197	1.008	0.007
	Band41/50%RB#24	3	Right Cheek	41490	2680	20.93	-0.03	21.0	0.042	1.016	1.008	0.043
	Band41/50%RB#24	3	Right Tilted	41490	2680	20.93	0.00	21.0	0.015	1.016	1.008	0.015
	Band41/50%RB#24	3	Left Cheek	41490	2680	20.93	0.01	21.0	0.017	1.016	1.008	0.017
	Band41/50%RB#24	3	Left Tilted	41490	2680	20.93	0.06	21.0	0.004	1.016	1.008	0.004
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**						

➢ TDD-LTE Band42(20MHz) QPSK Head SAR

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	D.C Factor	Reported SAR_{1g} (W/kg)
	Band42/1RB#49	0	Right Cheek	42990	3540	23.78	0.01	24.0	0.654	1.052	1.008	0.694
	Band42/1RB#49	0	Right Tilted	42990	3540	23.78	0.03	24.0	0.175	1.052	1.008	0.186
11	Band42/1RB#49	0	Left Cheek	42990	3540	23.78	-0.10	24.0	**0.822**	1.052	1.008	0.872
	Band42/1RB#49	0	Left Tilted	42990	3540	23.78	0.01	24.0	0.270	1.052	1.008	0.286
	Band42/1RB#49	0	Left Cheek	42190	3460	23.54	-0.13	24.0	0.774	1.112	1.008	0.868
	Band42/1RB#49	0	Left Cheek	42590	3500	23.76	0.19	24.0	0.798	1.057	1.008	0.850
	Band42/50%RB#0	0	Right Cheek	42990	3540	22.66	0.01	23.0	0.627	1.081	1.008	0.683
	Band42/50%RB#0	0	Right Tilted	42990	3540	22.66	0.20	23.0	0.162	1.081	1.008	0.177
	Band42/50%RB#0	0	Left Cheek	42990	3540	22.66	-0.20	23.0	0.698	1.081	1.008	0.761
	Band42/50%RB#0	0	Left Tilted	42990	3540	22.66	0.00	23.0	0.235	1.081	1.008	0.256
	Band42/100%RB#0	0	Left Cheek	42990	3540	22.67	0.08	23.0	0.512	1.079	1.008	0.557
	Band42/1RB#49	**0**	**Left Cheek**	**42990**	**3540**	**23.78**	**-0.17**	**24.0**	**0.796**	**1.052**	**1.008**	**0.844**
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**						

➢ FDD-LTE Band 66(20MHz) QPSK Head SAR

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	Band66/1RB#99	5	Right Cheek	132072	1720	23.28	0.02	24.0	0.428	1.18	0.505
12	Band66/1RB#99	5	Right Tilted	132072	1720	23.28	-0.07	24.0	**0.574**	1.18	0.677
	Band66/1RB#99	5	Left Cheek	132072	1720	23.28	0.02	24.0	0.296	1.18	0.349
	Band66/1RB#99	5	Left Tilted	132072	1720	23.28	0.20	24.0	0.438	1.18	0.517
	Band66/50%RB#0	5	Right Cheek	132322	1745	22.27	0.08	22.5	0.417	1.054	0.440
	Band66/50%RB#0	5	Right Tilted	132322	1745	22.27	-0.19	22.5	0.536	1.054	0.565
	Band66/50%RB#0	5	Left Cheek	132322	1745	22.27	0.04	22.5	0.276	1.054	0.291
	Band66/50%RB#0	5	Left Tilted	132322	1745	22.27	0.02	22.5	0.404	1.054	0.426
	Band66/1RB#0	3	Right Cheek	132572	1770	20.98	-0.08	21.0	0.181	1.005	0.182
	Band66/1RB#0	3	Right Tilted	132572	1770	20.98	-0.02	21.0	0.030	1.005	0.031
	Band66/1RB#0	3	Left Cheek	132572	1770	20.98	-0.12	21.0	0.167	1.005	0.168
	Band66/1RB#0	3	Left Tilted	132572	1770	20.98	-0.02	21.0	0.028	1.005	0.028
	Band66/50%RB#24	3	Right Cheek	132572	1770	19.78	0.13	20.0	0.171	1.052	0.180
	Band66/50%RB#24	3	Right Tilted	132572	1770	19.78	0.05	20.0	0.026	1.052	0.027
	Band66/50%RB#24	3	Left Cheek	132572	1770	19.78	-0.09	20.0	0.135	1.052	0.142
	Band66/50%RB#24	3	Left Tilted	132572	1770	19.78	-0.15	20.0	0.021	1.052	0.022
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**					

➢ NR n5(20MHz) DFT-BPSK Head SAR

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
13	NR n5 /1@49	5	Right Cheek	167300	836.5	23.18	0.05	23.5	**0.664**	1.076	0.714
	NR n5 /1@49	5	Right Tilted	167300	836.5	23.18	0.08	23.5	0.591	1.076	0.636
	NR n5 /1@49	5	Left Cheek	167300	836.5	23.18	0.05	23.5	0.347	1.076	0.373
	NR n5 /1@49	5	Left Tilted	167300	836.5	23.18	-0.16	23.5	0.336	1.076	0.362
	NR n5 /25@12	5	Right Cheek	166800	834	23.24	-0.15	23.5	0.623	1.062	0.662
	NR n5 /25@12	5	Right Tilted	166800	834	23.24	0.07	23.5	0.579	1.062	0.615
	NR n5 /25@12	5	Left Cheek	166800	834	23.24	-0.15	23.5	0.316	1.062	0.336
	NR n5 /25@12	5	Left Tilted	166800	834	23.24	0.07	23.5	0.307	1.062	0.326
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**					

➢ NR n7(20MHz) DFT-BPSK Head SAR

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	NR n7 /1@49	5	Right Cheek	512000	2560	23.30	0.01	23.5	0.608	1.047	0.637
14	NR n7 /1@49	5	Right Tilted	512000	2560	23.30	-0.18	23.5	**0.711**	1.047	0.744
	NR n7 /1@49	5	Left Cheek	512000	2560	23.30	-0.14	23.5	0.236	1.047	0.247
	NR n7 /1@49	5	Left Tilted	512000	2560	23.30	-0.10	23.5	0.255	1.047	0.267
	NR n7 /25@12	5	Right Cheek	512000	2560	23.40	-0.13	23.5	0.593	1.023	0.607
	NR n7 /25@12	5	Right Tilted	512000	2560	23.40	-0.10	23.5	0.689	1.023	0.705
	NR n7 /25@12	5	Left Cheek	512000	2560	23.40	0.11	23.5	0.223	1.023	0.228
	NR n7 /25@12	5	Left Tilted	512000	2560	23.40	0.03	23.5	0.247	1.023	0.253
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**					

➢ NR n12(15MHz) DFT-BPSK Head SAR

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	NR n12 /1@49	5	Right Cheek	141500	707.5	24.05	-0.03	24.5	0.232	1.109	0.257
15	NR n12 /1@49	5	Right Tilted	141500	707.5	24.05	0.00	24.5	**0.241**	1.109	0.267
	NR n12 /1@49	5	Left Cheek	141500	707.5	24.05	-0.16	24.5	0.155	1.109	0.172
	NR n12 /1@49	5	Left Tilted	141500	707.5	24.05	-0.01	24.5	0.158	1.109	0.175
	NR n12 /25@12	5	Right Cheek	141300	706.5	24.15	-0.06	24.5	0.211	1.084	0.229
	NR n12 /25@12	5	Right Tilted	141300	706.5	24.15	-0.08	24.5	0.226	1.084	0.245
	NR n12 /25@12	5	Left Cheek	141300	706.5	24.15	-0.02	24.5	0.148	1.084	0.160
	NR n12 /25@12	5	Left Tilted	141300	706.5	24.15	-0.04	24.5	0.149	1.084	0.162
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**					

➢ NR n41(100MHz) DFT-BPSK Head SAR

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	NR n41 /1@271	5	Right Cheek	509202	2546.01	26.05	0.14	26.5	0.128	1.109	0.142
16	NR n41 /1@271	5	Right Tilted	509202	2546.01	26.05	0.04	26.5	**0.163**	1.109	0.181
	NR n41 /1@271	5	Left Cheek	509202	2546.01	26.05	-0.06	26.5	0.041	1.109	0.046
	NR n41 /1@271	5	Left Tilted	509202	2546.01	26.05	-0.05	26.5	0.042	1.109	0.047
	NR n41 /135@67	5	Right Cheek	518598	2592.99	26.72	0.10	27.0	0.122	1.067	0.130
	NR n41 /135@67	5	Right Tilted	518598	2592.99	26.72	0.08	27.0	0.158	1.067	0.169
	NR n41 /135@67	5	Left Cheek	518598	2592.99	26.72	0.12	27.0	0.039	1.067	0.041
	NR n41 /135@67	5	Left Tilted	518598	2592.99	26.72	0.09	27.0	0.040	1.067	0.043
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**					

➢ NR n66(40MHz) DFT-BPSK Head SAR

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	NR n66 /1@104	5	Right Cheek	346000	1730	23.40	0.08	23.5	0.457	1.023	0.468
17	NR n66 /1@104	5	Right Tilted	346000	1730	23.40	-0.01	23.5	**0.606**	1.023	0.620
	NR n66 /1@104	5	Left Cheek	346000	1730	23.40	0.14	23.5	0.385	1.023	0.394
	NR n66 /1@104	5	Left Tilted	346000	1730	23.40	0.11	23.5	0.582	1.023	0.595
	NR n66 /50@25	5	Right Cheek	346000	1730	23.90	-0.09	24.5	0.422	1.148	0.484
	NR n66 /50@25	5	Right Tilted	346000	1730	23.90	0.06	24.5	0.536	1.148	0.615
	NR n66 /50@25	5	Left Cheek	346000	1730	23.90	0.04	24.5	0.325	1.148	0.373
	NR n66 /50@25	5	Left Tilted	346000	1730	23.90	0.15	24.5	0.512	1.148	0.588
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**					

➢ NR n77(3450MHz~3550MHz) (100MHz)DFT-BPSK Head SAR

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	NR n77 /1@1	0	Right Cheek	633334	3500.01	26.28	-0.02	26.5	0.317	1.052	0.333
	NR n77 /1@1	0	Right Tilted	633334	3500.01	26.28	-0.02	26.5	0.086	1.052	0.091
	NR n77 /1@1	0	Left Cheek	633334	3500.01	26.28	-0.04	26.5	0.457	1.052	0.481
	NR n77 /1@1	0	Left Tilted	633334	3500.01	26.28	0.06	26.5	0.354	1.052	0.372
	NR n77 /135@67	0	Right Cheek	633334	3500.01	26.89	-0.07	27.5	0.541	1.151	0.623
	NR n77 /135@67	0	Right Tilted	633334	3500.01	26.89	0.05	27.5	0.136	1.151	0.157
18	NR n77 /135@67	0	Left Cheek	633334	3500.01	26.89	0.03	27.5	**0.747**	1.151	0.860
	NR n77 /135@67	0	Left Tilted	633334	3500.01	26.89	-0.07	27.5	0.454	1.151	0.523
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**					

➢ NR n77(3550MHz~3700MHz) (100MHz)DFT-BPSK Head SAR

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	NR n77 /1@1	0	Right Cheek	643332	3649.98	26.27	0.11	26.5	0.401	1.054	0.423
	NR n77 /1@1	0	Right Tilted	643332	3649.98	26.27	0.10	26.5	0.116	1.054	0.122
19	NR n77 /1@1	0	Left Cheek	643332	3649.98	26.27	0.04	26.5	**0.514**	1.054	0.542
	NR n77 /1@1	0	Left Tilted	643332	3649.98	26.27	-0.03	26.5	0.364	1.054	0.384
	NR n77 /135@67	0	Right Cheek	641666	3624.99	26.92	0.09	27.0	0.392	1.019	0.399
	NR n77 /135@67	0	Right Tilted	641666	3624.99	26.92	0.08	27.0	0.108	1.019	0.110
	NR n77 /135@67	0	Left Cheek	641666	3624.99	26.92	0.02	27.0	0.461	1.019	0.470
	NR n77 /135@67	0	Left Tilted	641666	3624.99	26.92	0.01	27.0	0.327	1.019	0.333
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**					

➢ NR n77(3700MHz~3980MHz) DFT-BPSK Head SAR

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	NR n77 /1@271	0	Right Cheek	662000	3930	25.72	-0.14	26.0	0.302	1.067	0.322
	NR n77 /1@271	0	Right Tilted	662000	3930	25.72	-0.05	26.0	0.062	1.067	0.066
	NR n77 /1@271	0	Left Cheek	662000	3930	25.72	-0.01	26.0	0.351	1.067	0.375
	NR n77 /1@271	0	Left Tilted	662000	3930	25.72	0.18	26.0	0.201	1.067	0.214
	NR n77 /135@67	0	Right Cheek	650000	3750	26.56	-0.02	27.0	0.317	1.107	0.351
	NR n77 /135@67	0	Right Tilted	650000	3750	26.56	-0.01	27.0	0.075	1.107	0.083
20	NR n77 /135@67	0	Left Cheek	650000	3750	26.56	0.01	27.0	**0.426**	1.107	0.472
	NR n77 /135@67	0	Left Tilted	650000	3750	26.56	-0.03	27.0	0.311	1.107	0.344
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**					

➢ WLAN 2.4 GHz Head SAR

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	D.C Factor	Reported SAR_{1g} (W/kg)
	2.4GHz/802.11b	13	Right Cheek	11	2462	16.19	0.00	16.5	<0.001*	1.074	1.000	<0.001*
	2.4GHz/802.11b	13	Right Tilted	11	2462	16.19	0.00	16.5	<0.001*	1.074	1.000	<0.001*
	2.4GHz/802.11b	13	Left Cheek	11	2462	16.19	-0.17	16.5	0.031	1.074	1.000	0.033
	2.4GHz/802.11b	13	Left Tilted	11	2462	16.19	0.08	16.5	0.023	1.074	1.000	0.025
	2.4GHz/802.11b	12	Right Cheek	11	2462	16.45	0.03	16.5	0.112	1.012	1.000	0.113
	2.4GHz/802.11b	12	Right Tilted	11	2462	16.45	0.13	16.5	0.169	1.012	1.000	0.171
	2.4GHz/802.11b	12	Left Cheek	11	2462	16.45	0.00	16.5	0.187	1.012	1.000	0.189
21	2.4GHz/802.11b	12	Left Tilted	11	2462	16.45	0.07	16.5	**0.224**	1.012	1.000	0.227
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**						

➢ WLAN 5.2 GHz Head SAR

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	D.C Factor	Reported SAR_{1g} (W/kg)
	5.2GHz/802.11a	12	Right Cheek	48	5240	13.41	-0.10	13.5	0.107	1.021	1.000	0.109
	5.2GHz/802.11a	12	Right Tilted	48	5240	13.41	0.10	13.5	0.120	1.021	1.000	0.123
	5.2GHz/802.11a	12	Left Cheek	48	5240	13.41	0.05	13.5	0.173	1.021	1.000	0.177
22	5.2GHz/802.11a	12	Left Tilted	48	5240	13.41	-0.16	13.5	**0.180**	1.021	1.000	0.184
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**						

➢ WLAN 5.3 GHz Head SAR

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	D.C Factor	Reported SAR_{1g} (W/kg)
	5.3GHz/802.11a	12	Right Cheek	64	5320	14.07	0.17	14.5	0.112	1.104	1.000	0.124
	5.3GHz/802.11a	12	Right Tilted	64	5320	14.07	0.12	14.5	0.128	1.104	1.000	0.141
	5.3GHz/802.11a	12	Left Cheek	64	5320	14.07	0.11	14.5	0.196	1.104	1.000	0.216
23	5.3GHz/802.11a	12	Left Tilted	64	5320	14.07	-0.08	14.5	**0.220**	1.104	1.000	0.243
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**						

➢ WLAN 5.6 GHz Head SAR

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	D.C Factor	Reported SAR_{1g} (W/kg)
	5.6GHz/802.11n20	12	Right Cheek	140	5700	14.25	0.14	14.5	0.099	1.059	1.000	0.104
	5.6GHz/802.11n20	12	Right Tilted	140	5700	14.25	-0.10	14.5	0.119	1.059	1.000	0.126
	5.6GHz/802.11n20	12	Left Cheek	140	5700	14.25	0.10	14.5	0.157	1.059	1.000	0.166
24	5.6GHz/802.11n20	12	Left Tilted	140	5700	14.25	0.06	14.5	**0.164**	1.059	1.000	0.174
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**						

➢ WLAN 5.8 GHz Head SAR

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	D.C Factor	Reported SAR_{1g} (W/kg)
	5.8GHz/802.11a	12	Right Cheek	165	5825	14.44	0.13	14.5	0.100	1.014	1.000	0.101
	5.8GHz/802.11a	12	Right Tilted	165	5825	14.44	-0.12	14.5	0.121	1.014	1.000	0.123
	5.8GHz/802.11a	12	Left Cheek	165	5825	14.44	-0.11	14.5	0.154	1.014	1.000	0.156
25	5.8GHz/802.11a	12	Left Tilted	165	5825	14.44	0.03	14.5	**0.162**	1.014	1.000	0.164
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**						

➢ Bluetooth Head SAR

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	D.C Factor	Reported SAR_{1g} (W/kg)
	BT/GFSK	13	Right Cheek	39	2441	4.37	0.00	4.5	<0.001*	1.03	1.000	<0.001*
	BT/GFSK	13	Right Tilted	39	2441	4.37	0.00	4.5	<0.001*	1.03	1.000	<0.001*
	BT/GFSK	13	Left Cheek	39	2441	4.37	0.00	4.5	<0.001*	1.03	1.000	<0.001*
	BT/GFSK	13	Left Tilted	39	2441	4.37	0.00	4.5	<0.001*	1.03	1.000	<0.001*
	BT/GFSK	12	Right Cheek	78	2480	5.60	0.00	6.0	<0.001*	1.096	1.000	<0.001*
	BT/GFSK	12	Right Tilted	78	2480	5.60	0.00	6.0	<0.001*	1.096	1.000	<0.001*
	BT/GFSK	12	Left Cheek	78	2480	5.60	0.00	6.0	<0.001*	1.096	1.000	<0.001*
26	BT/GFSK	12	Left Tilted	78	2480	5.60	0.02	6.0	**0.001**	1.096	1.000	0.001
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**						

Note:

1. Per KDB 447498 D04v01, for each exposure position, if the highest output power channel Reported SAR ≤ 0.8W/kg, other channels SAR testing is not necessary.
2. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required when the measured SAR is ≥ 0.8W/kg.
3. Per KDB 941225 D05v02r05, 100% RB allocation SAR measurement is not required when the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg.
4. Per KDB 248227 D01v02r02, for 802.11b DSSS , when the reported SAR of the highest measured maximum output power channel for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required in that exposure configuration.
5. Per KDB 248227 D01v02r02, OFDM SAR is not required when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg. Cuz the maximum output power specified for OFDM and DSSS are 28.18mW(14.5dBm) and 44.67mW(16.5dBm), the scaled SAR would be 0.227×(28.18/44.67)=0.143W/Kg<1.2 W/kg, therefore, SAR is not required for OFDM.
6. According to KDB 865664 D02v01r02, SAR plot is required for the highest measured SAR in each exposure configuration, wireless mode and frequency band combination
7. Highlight part of test data means repeated test.
8. *: Due the antenna location and antenna performance results the SAR value lower than the lowest system limit, then we show “<0.001 W/Kg” in the report.

15.2 Standalone Body SAR

➢ GSM Body SAR

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	GPRS850/4 slots	5	Front	190	836.6	29.25	-0.08	29.5	0.386	1.059	0.409
27	GPRS850/4 slots	5	Back	190	836.6	29.25	-0.01	29.5	**0.456**	1.059	0.483
	GPRS1900/4 slots	5	Front	661	1880	25.38	0.05	25.5	0.364	1.028	0.374
28	GPRS1900/4 slots	5	Back	661	1880	25.38	-0.06	25.5	**0.809**	1.028	0.832
	GPRS1900/4 slots	5	Back	512	1850.2	25.22	0.01	25.5	0.681	1.067	0.727
	GPRS1900/4 slots	5	Back	810	1909.8	24.94	0.05	25.5	0.611	1.138	0.695
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**					

➢ WCDMA Body SAR

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	Band II/RMC	5	Front	9400	1880	22.99	-0.05	23.0	0.145	1.002	0.145
29	Band II/RMC	5	Back	9400	1880	22.99	0.05	23.0	**0.228**	1.002	0.228
	Band IV/RMC	5	Front	1513	1752.6	23.03	0.07	23.5	0.075	1.114	0.084
30	Band IV/RMC	5	Back	1513	1752.6	23.03	-0.17	23.5	**0.151**	1.114	0.168
	Band V/RMC	5	Front	4183	836.6	23.42	0.05	23.5	0.214	1.019	0.218
31	Band V/RMC	5	Back	4183	836.6	23.42	0.05	23.5	**0.309**	1.019	0.315
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**					

➢ FDD-LTE Band 2(20MHz) QPSK Body SAR

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	Band2/1RB#49	5	Front	19100	1900	23.48	0.13	23.5	0.126	1.005	0.127
32	Band2/1RB#49	5	Back	19100	1900	23.48	-0.04	23.5	**0.216**	1.005	0.217
	Band2/50%RB#24	5	Front	19100	1900	22.48	0.10	22.5	0.114	1.005	0.115
	Band2/50%RB#24	5	Back	19100	1900	22.48	0.11	22.5	0.208	1.005	0.209
	Band2/1RB#49	3	Front	18700	1860	20.03	0.08	20.5	0.035	1.114	0.039
	Band2/1RB#49	3	Back	18700	1860	20.03	-0.04	20.5	0.104	1.114	0.116
	Band2/50%RB#0	3	Front	18900	1880	19.07	0.11	19.5	0.029	1.104	0.032
	Band2/50%RB#0	3	Back	18900	1880	19.07	-0.15	19.5	0.086	1.104	0.095
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**					

➢ FDD-LTE Band 5(10MHz) QPSK Body SAR

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	Band5/1RB#24	5	Front	20525	836.5	23.77	0.05	24.0	0.218	1.054	0.230
33	Band5/1RB#24	5	Back	20525	836.5	23.77	-0.02	24.0	**0.328**	1.054	0.346
	Band5/50%RB#0	5	Front	20525	836.5	22.80	0.03	23.0	0.211	1.047	0.221
	Band5/50%RB#0	5	Back	20525	836.5	22.80	0.10	23.0	0.318	1.047	0.333
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**					

➢ FDD-LTE Band 7(20MHz) QPSK Body SAR

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	Band7/1RB#49	5	Front	21350	2560	22.39	-0.17	22.5	0.097	1.026	0.100
34	Band7/1RB#49	5	Back	21350	2560	22.39	0.08	22.5	**0.210**	1.026	0.215
	Band7/50%RB#24	5	Front	21350	2560	21.22	0.20	21.5	0.086	1.067	0.092
	Band7/50%RB#24	5	Back	21350	2560	21.22	0.04	21.5	0.201	1.067	0.214
	Band7/1RB#49	3	Front	21350	2560	19.16	-0.18	19.5	0.041	1.081	0.044
	Band7/1RB#49	3	Back	21350	2560	19.16	-0.03	19.5	0.143	1.081	0.155
	Band7/50%RB#0	3	Front	20850	2510	18.24	-0.12	18.5	0.035	1.062	0.037
	Band7/50%RB#0	3	Back	20850	2510	18.24	0.07	18.5	0.124	1.062	0.132
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**					

➢ FDD-LTE Band 12(10MHz) QPSK Body SAR

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	Band12/1RB#0	5	Front	23060	704	23.86	0.07	24.5	0.057	1.159	0.066
35	Band12/1RB#0	5	Back	23060	704	23.86	0.04	24.5	**0.078**	1.159	0.090
	Band12/50%RB#12	5	Front	23060	704	22.78	-0.13	23.0	0.047	1.052	0.049
	Band12/50%RB#12	5	Back	23060	704	22.78	-0.01	23.0	0.072	1.052	0.076
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**					

➢ TDD-LTE Band 41(20MHz) QPSK Body SAR

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	D.C Factor	Reported SAR_{1g} (W/kg)
	Band41/1RB#99	5	Front	41490	2680	24.40	0.04	25.0	0.099	1.148	1.008	0.114
36	Band41/1RB#99	5	Back	41490	2680	24.40	-0.13	25.0	**0.230**	1.148	1.008	0.266
	Band41/50%RB#0	5	Front	39750	2506	23.38	0.12	23.5	0.098	1.028	1.008	0.101
	Band41/50%RB#0	5	Back	39750	2506	23.38	-0.10	23.5	0.022	1.028	1.008	0.023
	Band41/1RB#99	3	Front	41490	2680	21.72	-0.16	22.5	0.011	1.197	1.008	0.014
	Band41/1RB#99	3	Back	41490	2680	21.72	0.00	22.5	0.045	1.197	1.008	0.054
	Band41/50%RB#24	3	Front	41490	2680	20.93	0.12	21.0	0.009	1.016	1.008	0.009
	Band41/50%RB#24	3	Back	41490	2680	20.93	-0.11	21.0	0.038	1.016	1.008	0.039
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**						

➢ TDD-LTE Band 42(20MHz) QPSK Body SAR

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	D.C Factor	Reported SAR_{1g} (W/kg)
	Band42/1RB#49	0	Front	42990	3540	23.78	0.07	24.0	0.236	1.052	1.008	0.250
37	Band42/1RB#49	0	Back	42990	3540	23.78	-0.04	24.0	**0.447**	1.052	1.008	0.474
	Band42/50RB#24	0	Front	42990	3540	22.66	0.11	23.0	0.215	1.081	1.008	0.234
	Band42/50RB#24	0	Back	42990	3540	22.66	0.16	23.0	0.399	1.081	1.008	0.435
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**						

➢ FDD-LTE Band 66(20MHz) QPSK Body SAR

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	Band66/1RB#99	5	Front	132072	1720	23.28	-0.18	24.0	0.065	1.180	0.077
38	Band66/1RB#99	5	Back	132072	1720	23.28	0.04	24.0	**0.118**	1.180	0.139
	Band66/50%RB#0	5	Front	132322	1745	22.27	-0.17	22.5	0.061	1.054	0.064
	Band66/50%RB#0	5	Back	132322	1745	22.27	-0.14	22.5	0.107	1.054	0.113
	Band66/1RB#49	3	Front	132572	1770	20.98	-0.02	21.0	0.026	1.005	0.026
	Band66/1RB#49	3	Back	132572	1770	20.98	0.06	21.0	0.114	1.005	0.115
	Band66/50%RB#24	3	Front	132572	1770	19.78	0.08	20.0	0.021	1.052	0.022
	Band66/50%RB#24	3	Back	132572	1770	19.78	0.15	20.0	0.102	1.052	0.107
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**					

➢ NR n5(20MHz) DFT-BPSK Body SAR

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	NR n5 /1@1	5	Front	167300	836.5	23.18	0.17	23.5	0.188	1.076	0.202
39	NR n5 /1@1	5	Back	167300	836.5	23.18	-0.09	23.5	**0.258**	1.076	0.278
	NR n5 /25@12	5	Front	166800	834	23.24	0.13	23.5	0.178	1.062	0.189
	NR n5 /25@12	5	Back	166800	834	23.24	-0.20	23.5	0.253	1.062	0.269
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**					

➢ NR n7(20MHz) DFT-BPSK Body SAR

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	NR n7 /1@1	5	Front	512000	2560	23.30	0.20	23.5	0.129	1.047	0.135
40	NR n7 /1@1	5	Back	512000	2560	23.30	0.06	23.5	**0.329**	1.047	0.344
	NR n7 /25@12	5	Front	512000	2560	23.40	-0.08	23.5	0.105	1.023	0.107
	NR n7 /25@12	5	Back	512000	2560	23.40	0.03	23.5	0.248	1.023	0.254
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**					

➢ NR n12(15MHz) DFT-BPSK Body SAR

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	NR n12 /1@1	5	Front	141500	707.5	24.05	-0.06	24.5	0.056	1.109	0.062
41	NR n12 /1@1	5	Back	141500	707.5	24.05	0.03	24.5	**0.070**	1.109	0.077
	NR n12 /18@9	5	Front	141300	706.5	24.15	-0.09	24.5	0.056	1.084	0.061
	NR n12 /18@9	5	Back	141300	706.5	24.15	-0.04	24.5	0.068	1.084	0.074
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**					

➢ NR n41(100MHz) DFT-BPSK Body SAR

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	NR n41 /1@1	5	Front	509202	2546.01	26.05	-0.01	26.5	0.041	1.109	0.046
	NR n41 /1@1	5	Back	509202	2546.01	26.05	0.03	26.5	0.081	1.109	0.089
	NR n41 /135@67	5	Front	518598	2592.99	26.72	0.10	27.0	0.041	1.067	0.044
42	NR n41 /135@67	5	Back	518598	2592.99	26.72	-0.07	27.0	**0.082**	1.067	0.087
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**					

➢ NR n66(40MHz) DFT-BPSK Body SAR

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	NR n66/1@104	5	Front	346000	1730	23.40	-0.02	23.5	0.068	1.023	0.070
	NR n66/1@104	5	Back	346000	1730	23.40	0.20	23.5	0.106	1.023	0.108
	NR n66 /50@25	5	Front	346000	1730	23.90	-0.07	24.5	0.070	1.148	0.080
43	NR n66 /50@25	5	Back	346000	1730	23.90	0.00	24.5	**0.125**	1.148	0.144
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**					

➢ NR n77(3450MHz~3550MHz) (100MHz) DFT-BPSK Body SAR

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	NR n77 /1@1	0	Front	633334	3500.01	26.28	-0.12	26.5	0.061	1.052	0.064
	NR n77 /1@1	0	Back	633334	3500.01	26.28	-0.11	26.5	0.270	1.052	0.284
	NR n77 /135@67	0	Front	633334	3500.01	26.89	-0.02	27.5	0.066	1.151	0.076
44	NR n77 /135@67	0	Back	633334	3500.01	26.89	-0.04	27.5	**0.291**	1.151	0.335
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**					

➢ NR n77(3550MHz~3700MHz) (100MHz) DFT-BPSK Body SAR

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	NR n77 /1@1	0	Front	643332	3649.98	26.27	0.00	26.5	0.068	1.054	0.072
45	NR n77 /1@1	0	Back	643332	3649.98	26.27	-0.04	26.5	**0.366**	1.054	0.386
	NR n77 /135@67	0	Front	641666	3624.99	26.92	-0.11	27.0	0.059	1.019	0.060
	NR n77 /135@67	0	Back	641666	3624.99	26.92	-0.20	27.0	0.345	1.019	0.352
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**					

➢ NR n77(3700MHz~3980MHz)(100MHz) DFT-BPSK Body SAR

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	NR n77 /1@1	0	Front	662000	3930	25.72	0.17	26.0	0.046	1.067	0.049
	NR n77 /1@1	0	Back	662000	3930	25.72	-0.06	26.0	0.184	1.067	0.196
	NR n77/135@67	0	Front	650000	3750	26.56	-0.10	27.0	0.047	1.107	0.052
46	NR n77 /135@67	0	Back	650000	3750	26.56	-0.05	27.0	**0.190**	1.107	0.210
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**					

➢ WLAN 2.4GHz Body SAR

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	D.C Factor	Reported SAR_{1g} (W/kg)
	2.4GHz/802.11b	13	Front	11	2462	16.19	0.00	16.5	<0.001*	1.074	1.000	<0.001*
	2.4GHz/802.11b	13	Back	11	2462	16.19	0.02	16.5	0.026	1.074	1.000	0.028
	2.4GHz/802.11b	12	Front	11	2462	16.45	0.03	16.5	0.036	1.012	1.000	0.036
47	2.4GHz/802.11b	12	Back	11	2462	16.45	0.09	16.5	**0.145**	1.012	1.000	0.147
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**						

➢ WLAN 5.2GHz Body SAR

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	D.C Factor	Reported SAR_{1g} (W/kg)
	5.2GHz/802.11a	12	Front	48	5240	13.41	0.01	13.5	0.037	1.021	1.000	0.038
48	5.2GHz/802.11a	12	Back	48	5240	13.41	-0.05	13.5	**0.103**	1.021	1.000	0.105
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**						

➢ WLAN 5.3GHz Body SAR

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	D.C Factor	Reported SAR_{1g} (W/kg)
	5.3GHz/802.11a	12	Front	64	5320	14.07	-0.13	14.5	0.040	1.104	1.000	0.044
49	5.3GHz/802.11a	12	Back	64	5320	14.07	0.02	14.5	**0.106**	1.104	1.000	0.117
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**						

➢ WLAN 5.6GHz Body SAR

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	D.C Factor	Reported SAR_{1g} (W/kg)
	5.6GHz/802.11n20	12	Front	140	5700	14.25	-0.04	14.5	0.018	1.059	1.000	0.019
50	5.6GHz/802.11n20	12	Back	140	5700	14.25	0.00	14.5	**0.040**	1.059	1.000	0.042
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**						

➢ WLAN 5.8GHz Body SAR

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	D.C Factor	Reported SAR_{1g} (W/kg)
	5.8GHz/802.11a	12	Front	165	5825	14.44	0.08	14.5	0.022	1.014	1.000	0.022
51	5.8GHz/802.11a	12	Back	165	5825	14.44	0.00	14.5	**0.073**	1.014	1.000	0.074
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**						

➢ Bluetooth Body SAR

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	D.C Factor	Reported SAR_{1g} (W/kg)
	BT/GFSK	13	Front	39	2441	4.37	0.00	4.5	<0.001*	1.030	1.000	<0.001*
	BT/GFSK	13	Back	39	2441	4.37	0.00	4.5	<0.001*	1.030	1.000	<0.001*
	BT/GFSK	12	Front	78	2480	5.60	0.00	6.0	<0.001*	1.096	1.000	<0.001*
	BT/GFSK	12	Back	78	2480	5.60	0.00	6.0	<0.001*	1.096	1.000	<0.001*
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**						

Note:

1. Body-worn SAR testing was performed at 10mm separation, and this distance is determined by the handset manufacturer that there will be body-worn accessories that users may acquire at the time of equipment certification, to enable users to purchase aftermarket body-worn accessories with the required minimum separation.
2. Per KDB 941225 D06v02r01, when the same wireless modes and device transmission configurations are required for testing body-worn accessories and hotspot mode, it is not necessary to test body-worn accessory SAR for the same device orientation if the test separation distance for hotspot mode is more conservative than that used for body-worn accessories.
3. Body-worn exposure conditions are intended to voice call operations, therefore GSM voice call is selected to be tested.
4. Per KDB 648474 D04v01r03, when the *Reported* SAR for a body-worn accessory measured without a headset connected to the handset is ≤ 1.2 W/kg, SAR testing with a headset connected to the handset is not required.
5. The WLAN SAR perform the front and back position, due considered the simultaneous SAR for body-worn.
6. Per KDB 447498 D04v01, for each exposure position, if the highest output channel Reported SAR ≤0.8W/kg, other

channels SAR testing is not necessary.

7. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required when the measured SAR is ≥0.8W/kg.
8. Per KDB 941225 D05v02r05, 100% RB allocation SAR measurement is not required when the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg.
9. According to KDB 865664 D02v01r02, SAR plot is required for the highest measured SAR in each exposure configuration, wireless mode and frequency band combination.
10. Highlight part of test data means repeated test.
11. *: Due the antenna location and antenna performance results the SAR value lower than the lowest system limit, then we show “<0.001 W/Kg” in the report.

15.3 Body SAR in Hotspot Mode

➢ GSM Body SAR in Hotspot mode

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	GPRS850/4 slots	5	Front	190	836.6	29.25	-0.08	29.5	0.386	1.059	0.409
27	GPRS850/4 slots	5	Back	190	836.6	29.25	-0.01	29.5	**0.456**	1.059	0.483
	GPRS850/4 slots	5	Left	190	836.6	29.25	0.18	29.5	0.167	1.059	0.177
	GPRS850/4 slots	5	Top	190	836.6	29.25	-0.11	29.5	0.342	1.059	0.362
	GPRS1900/4 slots	5	Front	661	1880	25.38	0.05	25.5	0.364	1.028	0.374
	GPRS1900/4 slots	5	Back	661	1880	25.38	-0.06	25.5	0.809	1.028	0.832
	GPRS1900/4 slots	5	Left	661	1880	25.38	-0.10	25.5	0.124	1.028	0.127
52	GPRS1900/4 slots	5	Top	661	1880	25.38	0.13	25.5	**0.941**	1.028	0.967
	GPRS1900/4 slots	5	Back	512	1850.2	25.22	0.01	25.5	0.681	1.067	0.727
	GPRS1900/4 slots	5	Back	810	1909.8	24.94	0.05	25.5	0.611	1.138	0.695
	GPRS1900/4 slots	5	Top	512	1850.2	25.22	0.01	25.5	0.835	1.067	0.891
	GPRS1900/4 slots	5	Top	810	1909.8	24.94	0.05	25.5	0.650	1.138	0.740
	GPRS1900/4 slots	**5**	**Top**	**661**	**1880**	**25.38**	**-0.07**	**25.5**	**0.912**	**1.028**	**0.938**
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**					

➢ WCDMA Body SAR in Hotspot mode

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	Band II/RMC	5	Front	9400	1880	22.99	-0.05	23.0	0.145	1.002	0.145
	Band II/RMC	5	Back	9400	1880	22.99	0.05	23.0	0.228	1.002	0.228
	Band II/RMC	5	Left	9400	1880	22.99	0.15	23.0	0.056	1.002	0.056
53	Band II/RMC	5	Top	9400	1880	22.99	0.04	23.0	**0.344**	1.002	0.345
	Band IV/RMC	5	Front	1513	1752.6	23.03	0.07	23.5	0.075	1.114	0.084
	Band IV/RMC	5	Back	1513	1752.6	23.03	-0.17	23.5	0.151	1.114	0.168
	Band IV/RMC	5	Left	1513	1752.6	23.03	-0.01	23.5	0.045	1.114	0.050
54	Band IV/RMC	5	Top	1513	1752.6	23.03	-0.06	23.5	**0.254**	1.114	0.283
	Band V/RMC	5	Front	4183	836.6	23.42	0.05	23.5	0.214	1.019	0.218
31	Band V/RMC	5	Back	4183	836.6	23.42	0.05	23.5	**0.309**	1.019	0.315
	Band V/RMC	5	Left	4183	836.6	23.42	0.13	23.5	0.152	1.019	0.155
	Band V/RMC	5	Top	4183	836.6	23.42	0.12	23.5	0.223	1.019	0.227
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**					

➢ FDD-LTE Band 2(20MHz) QPSK Body SAR in Hotspot mode

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	Band2/1RB#49	5	Front	19100	1900	23.48	0.13	23.5	0.126	1.005	0.127
	Band2/1RB#49	5	Back	19100	1900	23.48	-0.04	23.5	0.216	1.005	0.217
	Band2/1RB#49	5	Left	19100	1900	23.48	0.13	23.5	0.067	1.005	0.067
55	Band2/1RB#49	5	Top	19100	1900	23.48	0.20	23.5	**0.333**	1.005	0.335
	Band2/50%RB#24	5	Front	19100	1900	22.48	0.10	22.5	0.114	1.005	0.115
	Band2/50%RB#24	5	Back	19100	1900	22.48	0.11	22.5	0.208	1.005	0.209
	Band2/50%RB#24	5	Left	19100	1900	22.48	-0.05	22.5	0.064	1.005	0.065
	Band2/50%RB#24	5	Top	19100	1900	22.48	0.01	22.5	0.314	1.005	0.316
	Band2/1RB#49	3	Front	18700	1860	20.03	0.08	20.5	0.035	1.114	0.039
	Band2/1RB#49	3	Back	18700	1860	20.03	-0.04	20.5	0.104	1.114	0.116
	Band2/1RB#49	3	Left	18700	1860	20.03	-0.05	20.5	0.141	1.114	0.157
	Band2/50%RB#0	3	Front	18900	1880	19.07	0.11	19.5	0.029	1.104	0.032
	Band2/50%RB#0	3	Back	18900	1880	19.07	-0.15	19.5	0.086	1.104	0.095
	Band2/50%RB#0	3	Left	18900	1880	19.07	-0.06	19.5	0.119	1.104	0.131
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**					

➢ FDD-LTE Band 5(10MHz) QPSK Body SAR in Hotspot mode

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	Band5/1RB#24	5	Front	20525	836.5	23.77	0.05	24.0	0.218	1.054	0.230
33	Band5/1RB#24	5	Back	20525	836.5	23.77	-0.02	24.0	**0.328**	1.054	0.346
	Band5/1RB#24	5	Left	20525	836.5	23.77	-0.10	24.0	0.141	1.054	0.149
	Band5/1RB#24	5	Top	20525	836.5	23.77	0.04	24.0	0.234	1.054	0.247
	Band5/50%RB#0	5	Front	20525	836.5	22.80	0.03	23.0	0.211	1.047	0.221
	Band5/50%RB#0	5	Back	20525	836.5	22.80	0.10	23.0	0.318	1.047	0.333
	Band5/50%RB#0	5	Left	20525	836.5	22.80	0.14	23.0	0.136	1.047	0.142
	Band5/50%RB#0	5	Top	20525	836.5	22.80	0.11	23.0	0.227	1.047	0.238
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**					

➢ FDD-LTE Band 7(20MHz) QPSK Body SAR in Hotspot mode

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	Band7/1RB#49	5	Front	21350	2560	22.39	-0.17	22.5	0.097	1.026	0.100
	Band7/1RB#49	5	Back	21350	2560	22.39	0.08	22.5	0.210	1.026	0.215
	Band7/1RB#49	5	Left	21350	2560	22.39	-0.14	22.5	0.074	1.026	0.076
56	Band7/1RB#49	5	Top	21350	2560	22.39	0.06	22.5	**0.243**	1.026	0.249
	Band7/50%RB#24	5	Front	21350	2560	21.22	0.20	21.5	0.086	1.067	0.092
	Band7/50%RB#24	5	Back	21350	2560	21.22	0.04	21.5	0.201	1.067	0.214
	Band7/50%RB#24	5	Left	21350	2560	21.22	0.13	21.5	0.067	1.067	0.071
	Band7/50%RB#24	5	Top	21350	2560	21.22	-0.03	21.5	0.222	1.067	0.237
	Band7/1RB#49	3	Front	21350	2560	19.16	-0.18	19.5	0.041	1.081	0.044
	Band7/1RB#49	3	Back	21350	2560	19.16	-0.03	19.5	0.143	1.081	0.155
	Band7/1RB#49	3	Left	21350	2560	19.16	-0.13	19.5	0.182	1.081	0.197
	Band7/50%RB#0	3	Front	20850	2510	18.24	-0.12	18.5	0.035	1.062	0.037
	Band7/50%RB#0	3	Back	20850	2510	18.24	0.07	18.5	0.124	1.062	0.132
	Band7/50%RB#0	3	Left	20850	2510	18.24	0.05	18.5	0.156	1.062	0.166
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**					

➢ FDD-LTE Band 12(10MHz) QPSK Body SAR in Hotspot mode

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	Band12/1RB#0	5	Front	23060	704	23.86	0.07	24.5	0.057	1.159	0.066
35	Band12/1RB#0	5	Back	23060	704	23.86	0.04	24.5	**0.078**	1.159	0.090
	Band12/1RB#0	5	Left	23060	704	23.86	0.01	24.5	0.033	1.159	0.039
	Band12/1RB#0	5	Top	23060	704	23.86	0.02	24.5	0.059	1.159	0.068
	Band12/50%RB#12	5	Front	23060	704	22.78	-0.13	23.0	0.047	1.052	0.049
	Band12/50%RB#12	5	Back	23060	704	22.78	-0.01	23.0	0.072	1.052	0.076
	Band12/50%RB#12	5	Left	23060	704	22.78	-0.11	23.0	0.031	1.052	0.032
	Band12/50%RB#12	5	Top	23060	704	22.78	-0.05	23.0	0.053	1.052	0.056
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**					

➢ TDD-LTE Band 41(20MHz) QPSK Body SAR in Hotspot mode

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	D.C Factor	Reported SAR_{1g} (W/kg)
	Band41/1RB#99	5	Front	41490	2680	24.40	0.04	25.0	0.099	1.148	1.008	0.114
36	Band41/1RB#99	5	Back	41490	2680	24.40	-0.13	25.0	**0.230**	1.148	1.008	0.266
	Band41/1RB#99	5	Left	41490	2680	24.40	0.07	25.0	0.075	1.148	1.008	0.087
	Band41/1RB#99	5	Top	41490	2680	24.40	0.18	25.0	0.203	1.148	1.008	0.235
	Band41/50%RB#0	5	Front	39750	2506	23.38	0.12	23.5	0.098	1.028	1.008	0.101
	Band41/50%RB#0	5	Back	39750	2506	23.38	-0.10	23.5	0.022	1.028	1.008	0.023
	Band41/50%RB#0	5	Left	39750	2506	23.38	0.05	23.5	0.072	1.028	1.008	0.075
	Band41/50%RB#0	5	Top	39750	2506	23.38	0.04	23.5	0.020	1.028	1.008	0.020
	Band41/1RB#99	3	Front	41490	2680	21.72	-0.16	22.5	0.011	1.197	1.008	0.014
	Band41/1RB#99	3	Back	41490	2680	21.72	0.03	22.5	0.045	1.197	1.008	0.054
	Band41/1RB#99	3	Left	41490	2680	21.72	0.00	22.5	0.072	1.197	1.008	0.087
	Band41/50%RB#24	3	Front	41490	2680	20.93	0.12	21.0	0.009	1.016	1.008	0.009
	Band41/50%RB#24	3	Back	41490	2680	20.93	-0.11	21.0	0.038	1.016	1.008	0.039
	Band41/50%RB#24	3	Left	41490	2680	20.93	0.04	21.0	0.062	1.016	1.008	0.063
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**						

➢ TDD-LTE Band 42(20MHz) QPSK Body SAR in Hotspot mode

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	D.C Factor	Reported SAR_{1g} (W/kg)
	Band42/1RB#49	0	Front	42990	3540	23.78	0.07	24.0	0.236	1.052	1.008	0.250
37	Band42/1RB#49	0	Back	42990	3540	23.78	-0.04	24.0	**0.447**	1.052	1.008	0.474
	Band42/1RB#49	0	Right	42990	3540	23.78	0.16	24.0	0.020	1.052	1.008	0.021
	Band42/1RB#49	0	Top	42990	3540	23.78	0.07	24.0	0.090	1.052	1.008	0.096
	Band42/50RB#24	0	Front	42990	3540	22.66	0.11	23.0	0.215	1.081	1.008	0.234
	Band42/50RB#24	0	Back	42990	3540	22.66	0.16	23.0	0.399	1.081	1.008	0.435
	Band42/50RB#24	0	Right	42990	3540	22.66	0.12	23.0	0.018	1.081	1.008	0.020
	Band42/50RB#24	0	Top	42990	3540	22.66	-0.17	23.0	0.078	1.081	1.008	0.085
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**						

➢ FDD-LTE Band 66(20MHz) QPSK Body SAR in Hotspot mode

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	Band66/1RB#99	5	Front	132072	1720	23.28	-0.18	24.0	0.065	1.180	0.077
	Band66/1RB#99	5	Back	132072	1720	23.28	0.04	24.0	0.118	1.180	0.139
	Band66/1RB#99	5	Left	132072	1720	23.28	0.06	24.0	0.034	1.180	0.040
57	Band66/1RB#99	5	Top	132072	1720	23.28	0.18	24.0	**0.212**	1.180	0.250
	Band66/50%RB#0	5	Front	132322	1745	22.27	-0.17	22.5	0.061	1.054	0.064
	Band66/50%RB#0	5	Back	132322	1745	22.27	-0.14	22.5	0.107	1.054	0.113
	Band66/50%RB#0	5	Left	132322	1745	22.27	-0.11	22.5	0.035	1.054	0.037
	Band66/50%RB#0	5	Top	132322	1745	22.27	-0.10	22.5	0.204	1.054	0.215
	Band66/1RB#49	3	Front	132572	1770	20.98	-0.02	21.0	0.026	1.005	0.026
	Band66/1RB#49	3	Back	132572	1770	20.98	0.06	21.0	0.114	1.005	0.115
	Band66/1RB#49	3	Left	132572	1770	20.98	-0.04	21.0	0.187	1.005	0.188
	Band66/50%RB#24	3	Front	132572	1770	19.78	0.08	20.0	0.021	1.052	0.022
	Band66/50%RB#24	3	Back	132572	1770	19.78	0.15	20.0	0.102	1.052	0.107
	Band66/50%RB#24	3	Left	132572	1770	19.78	-0.01	20.0	0.187	1.052	0.197
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**					

➢ NR n5(20MHz) DFT-BPSK Body SAR in Hotspot mode

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	NR n5 /1@1	5	Front	167300	836.5	23.18	0.17	23.5	0.188	1.076	0.202
39	NR n5 /1@1	5	Back	167300	836.5	23.18	-0.09	23.5	**0.258**	1.076	0.278
	NR n5 /1@1	5	Left	167300	836.5	23.18	-0.06	23.5	0.142	1.076	0.153
	NR n5 /1@1	5	Top	167300	836.5	23.18	-0.03	23.5	0.193	1.076	0.208
	NR n5 /25@12	5	Front	166800	834	23.24	0.13	23.5	0.178	1.062	0.189
	NR n5 /25@12	5	Back	166800	834	23.24	-0.20	23.5	0.253	1.062	0.269
	NR n5 /25@12	5	Left	166800	834	23.24	-0.08	23.5	0.138	1.062	0.147
	NR n5 /25@12	5	Top	166800	834	23.24	-0.01	23.5	0.187	1.062	0.199
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**					

➢ NR n7(20MHz) DFT-BPSK Body SAR in Hotspot mode

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	NR n7 /1@1	5	Front	512000	2560	23.30	0.20	23.5	0.129	1.047	0.135
	NR n7 /1@1	5	Back	512000	2560	23.30	0.06	23.5	0.329	1.047	0.344
	NR n7 /1@1	5	Left	512000	2560	23.30	0.18	23.5	0.101	1.047	0.106
58	NR n7 /1@1	5	Top	512000	2560	23.30	-0.07	23.5	**0.359**	1.047	0.376
	NR n7 /25@12	5	Front	512000	2560	23.40	-0.08	23.5	0.105	1.023	0.107
	NR n7 /25@12	5	Back	512000	2560	23.40	0.03	23.5	0.248	1.023	0.254
	NR n7 /25@12	5	Right	512000	2560	23.40	0.01	23.5	0.098	1.023	0.100
	NR n7 /25@12	5	Top	512000	2560	23.40	0.02	23.5	0.268	1.023	0.274
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**					

➢ NR n12(15MHz) DFT-BPSK Body SAR in Hotspot mode

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	NR n12 /1@1	5	Front	141500	707.5	24.05	-0.06	24.5	0.056	1.109	0.062
41	NR n12 /1@1	5	Back	141500	707.5	24.05	0.03	24.5	**0.070**	1.109	0.077
	NR n12 /1@1	5	Left	141500	707.5	24.05	-0.16	24.5	0.021	1.109	0.023
	NR n12 /1@1	5	Top	141500	707.5	24.05	-0.11	24.5	0.057	1.109	0.063
	NR n12 /18@9	5	Front	141300	706.5	24.15	-0.09	24.5	0.056	1.084	0.061
	NR n12 /18@9	5	Back	141300	706.5	24.15	-0.04	24.5	0.068	1.084	0.074
	NR n12 /18@9	5	Right	141300	706.5	24.15	-0.03	24.5	0.020	1.084	0.022
	NR n12 /18@9	5	Top	141300	706.5	24.15	-0.05	24.5	0.055	1.084	0.060
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**					

➢ NR n41(100MHz) DFT-BPSK Body SAR in Hotspot mode

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	NR n41 /1@1	5	Front	509202	2546.01	26.05	-0.01	26.5	0.041	1.109	0.046
	NR n41 /1@1	5	Back	509202	2546.01	26.05	0.03	26.5	0.081	1.109	0.089
	NR n41 /1@1	5	Left	509202	2546.01	26.05	0.09	26.5	0.057	1.109	0.063
59	NR n41 /1@1	5	Top	509202	2546.01	26.05	-0.02	26.5	**0.102**	1.109	0.113
	NR n41/135@67	5	Front	518598	2592.99	26.72	0.10	27.0	0.041	1.067	0.044
	NR n41/135@67	5	Back	518598	2592.99	26.72	-0.07	27.0	0.082	1.067	0.087
	NR n41/135@67	5	Left	518598	2592.99	26.72	0.14	27.0	0.062	1.067	0.066
	NR n41/135@67	5	Top	518598	2592.99	26.72	-0.04	27.0	0.093	1.067	0.099
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**					

➢ NR n66(40MHz) DFT-BPSK Body SAR in Hotspot mode

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	NR n66/1@104	5	Front	346000	1730	23.40	-0.02	23.5	0.068	1.023	0.070
	NR n66/1@104	5	Back	346000	1730	23.40	0.20	23.5	0.106	1.023	0.108
	NR n66/1@104	5	Left	346000	1730	23.40	-0.20	23.5	0.024	1.023	0.025
	NR n66/1@104	5	Top	346000	1730	23.40	-0.17	23.5	0.214	1.023	0.219
	NR n66/50@25	5	Front	346000	1730	23.90	-0.07	24.5	0.070	1.148	0.080
	NR n66/50@25	5	Back	346000	1730	23.90	0.00	24.5	0.125	1.148	0.144
	NR n66/50@25	5	Left	346000	1730	23.90	-0.16	24.5	0.026	1.148	0.030
60	NR n66/50@25	5	Top	346000	1730	23.90	0.07	24.5	**0.223**	1.148	0.256
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**					

➢ NR n77(3450MHz~3550MHz) (100MHz) DFT-BPSK Body SAR in Hotspot mode

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	NR n77 /1@1	0	Front	633334	3500.01	26.28	-0.12	26.5	0.061	1.052	0.064
	NR n77 /1@1	0	Back	633334	3500.01	26.28	-0.11	26.5	0.270	1.052	0.284
	NR n77 /1@1	0	Right	633334	3500.01	26.28	-0.07	26.5	0.315	1.052	0.331
	NR n77 /1@1	0	Top	633334	3500.01	26.28	-0.09	26.5	0.078	1.052	0.082
	NR n77 /135@67	0	Front	633334	3500.01	26.89	-0.02	27.5	0.066	1.151	0.076
	NR n77 /135@67	0	Back	633334	3500.01	26.89	-0.04	27.5	0.291	1.151	0.335
61	NR n77 /135@67	0	Right	633334	3500.01	26.89	0.01	27.5	**0.324**	1.151	0.373
	NR n77 /135@67	0	Top	633334	3500.01	26.89	0.02	27.5	0.084	1.151	0.097
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**					

➢ NR n77(3550MHz~3700MHz) (100MHz) DFT-BPSK Body SAR in Hotspot mode

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	NR n77 /1@1	0	Front	643332	3649.98	26.27	0.00	26.5	0.068	1.054	0.072
45	NR n77 /1@1	0	Back	643332	3649.98	26.27	-0.04	26.5	**0.366**	1.054	0.386
	NR n77 /1@1	0	Right	643332	3649.98	26.27	0.10	26.5	0.360	1.054	0.379
	NR n77 /1@1	0	Top	643332	3649.98	26.27	0.06	26.5	0.088	1.054	0.093
	NR n77 /135@67	0	Front	641666	3624.99	26.92	-0.11	27.0	0.059	1.019	0.060
	NR n77 /135@67	0	Back	641666	3624.99	26.92	-0.20	27.0	0.345	1.019	0.352
	NR n77 /135@67	0	Right	641666	3624.99	26.92	-0.14	27.0	0.342	1.019	0.348
	NR n77 /135@67	0	Top	641666	3624.99	26.92	-0.08	27.0	0.086	1.019	0.088
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**					

➢ NR n77(3700MHz~3980MHz)(100MHz) DFT-BPSK Body SAR in Hotspot mode

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	NR n77 /1@1	0	Front	662000	3930	25.72	0.17	26.0	0.046	1.067	0.049
	NR n77 /1@1	0	Back	662000	3930	25.72	-0.06	26.0	0.184	1.067	0.196
	NR n77 /1@1	0	Right	662000	3930	25.72	-0.05	26.0	0.216	1.067	0.230
	NR n77 /1@1	0	Top	662000	3930	25.72	-0.01	26.0	0.055	1.067	0.059
	NR n77 /135@67	0	Front	650000	3750	26.56	-0.10	27.0	0.047	1.107	0.052
	NR n77 /135@67	0	Back	650000	3750	26.56	-0.05	27.0	0.190	1.107	0.210
62	NR n77 /135@67	0	Right	650000	3750	26.56	0.12	27.0	**0.230**	1.107	0.255
	NR n77 /135@67	0	Top	650000	3750	26.56	-0.18	27.0	0.062	1.107	0.069
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**					

➢ WLAN 2.4GHz Body SAR in Hotspot mode

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	D.C Factor	Reported SAR_{1g} (W/kg)
	2.4GHz/802.11b	13	Front	11	2462	16.19	0.00	16.5	<0.001*	1.074	1.000	<0.001*
	2.4GHz/802.11b	13	Back	11	2462	16.19	0.02	16.5	0.026	1.074	1.000	0.028
	2.4GHz/802.11b	13	Right	11	2462	16.19	0.10	16.5	0.012	1.074	1.000	0.013
	2.4GHz/802.11b	13	Top	11	2462	16.19	0.00	16.5	<0.001*	1.074	1.000	<0.001*
	2.4GHz/802.11b	12	Front	11	2462	16.45	0.03	16.5	0.036	1.012	1.000	0.036
47	2.4GHz/802.11b	12	Back	11	2462	16.45	0.09	16.5	**0.145**	1.012	1.000	0.147
	2.4GHz/802.11b	12	Right	11	2462	16.45	0.19	16.5	0.056	1.012	1.000	0.057
	2.4GHz/802.11b	12	Top	11	2462	16.45	-0.17	16.5	0.121	1.012	1.000	0.122
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**						

➢ WLAN 5.2GHz Body SAR in Hotspot mode

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	D.C Factor	Reported SAR_{1g} (W/kg)
	5.2GHz/802.11a	12	Front	48	5240	13.41	0.01	13.5	0.037	1.021	1.000	0.038
48	5.2GHz/802.11a	12	Back	48	5240	13.41	-0.05	13.5	**0.103**	1.021	1.000	0.105
	5.2GHz/802.11a	12	Right	48	5240	13.41	0.03	13.5	0.075	1.021	1.000	0.077
	5.2GHz/802.11a	12	Top	48	5240	13.41	0.02	13.5	0.077	1.021	1.000	0.079
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**						

➢ WLAN 5.8GHz Body SAR in Hotspot mode

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	D.C Factor	Reported SAR_{1g} (W/kg)
	5.8GHz/802.11a	12	Front	165	5826	14.44	0.08	14.5	0.022	1.014	1.000	0.022
51	5.8GHz/802.11a	12	Back	165	5826	14.44	0.09	14.5	**0.073**	1.014	1.000	0.074
	5.8GHz/802.11a	12	Right	165	5826	14.44	-0.10	14.5	0.051	1.014	1.000	0.052
	5.8GHz/802.11a	12	Top	165	5826	14.44	-0.03	14.5	0.053	1.014	1.000	0.054
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**						

➢ Bluetooth Body SAR in Hotspot mode

Plot No.	Band/Mode	ANT	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Power Drift (dB)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	D.C Factor	Reported SAR_{1g} (W/kg)
	BT/GFSK	13	Front	39	2441	4.37	0.00	4.5	<0.001*	1.030	1.000	<0.001*
	BT/GFSK	13	Back	39	2441	4.37	0.00	4.5	<0.001*	1.030	1.000	<0.001*
	BT/GFSK	13	Right	39	2441	4.37	0.00	4.5	<0.001*	1.030	1.000	<0.001*
	BT/GFSK	13	Top	39	2441	4.37	0.00	4.5	<0.001*	1.030	1.000	<0.001*
	BT/GFSK	12	Front	78	2480	5.60	0.00	6.0	<0.001*	1.096	1.000	<0.001*
	BT/GFSK	12	Back	78	2480	5.60	0.00	6.0	<0.001*	1.096	1.000	<0.001*
	BT/GFSK	12	Right	78	2480	5.60	0.00	6.0	<0.001*	1.096	1.000	<0.001*
	BT/GFSK	12	Top	78	2480	5.60	0.00	6.0	<0.001*	1.096	1.000	<0.001*
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**1.6 W/kg (mW/g) Averaged over 1g**						

Note:

1. Per KDB 447498 D04v01, for each exposure position, if the highest output channel Reported SAR ≤0.8W/kg, other channels SAR testing is not necessary.
2. Additional WLAN SAR testing was performed for simultaneous transmission analysis.
3. For Hotspot SAR testing, per KDB 941225 D06v02r01, for EUT dimension ≥ 9cm*5cm, the test distance is 10mm. SAR must be measured for all surfaces and sides with a transmitting antenna located within 2.5cm from that surface or edge.
4. Per KDB 941225 D01v03r01, RMC 12.2kbps setting is used to evaluate SAR. If HSDPA output power is < 0.25dB higher than RMC 12.2kbps, or Reported SAR with RMC 12.2kbps setting is ≤ 1.2W/kg, HSDPA SAR evaluation can be excluded.

5. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required when the measured SAR is ≥0.8W/kg.
6. Per KDB 648474 D04v01r03, when the Reported SAR for a body-worn accessory measured without a headset connected to the handset is > 1.2 W/kg, SAR testing with a headset connected to the handset is required.
7. Per KDB 941225 D05v02r05, 100% RB allocation SAR measurement is not required when the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel.
8. According to KDB 865664 D02v01r02, SAR plot is required for the highest measured SAR in each exposure configuration, wireless mode and frequency band combination.
9. Highlight part of test data means repeated test.
10. *: Due the antenna location and antenna performance results the SAR value lower than the lowest system limit, then we show “<0.001 W/Kg” in the report.

15.4 Product specific 10g SAR

Extremity SAR measurement is not required.

15.5 Repeated SAR measurement

Band/ Mode	Test Position	CH.	Freq. (MHz)	Measured SAR (W/kg)				
				Original	1st Repeated		2nd Repeated	
					Value	Ratio	Value	Ratio
GSM850/Voice	Right Cheek	128	824.2	0.880	0.862	1.02	/	/
Band II/RMC	Right Tilted	9400	1880	0.898	0.888	1.01	/	/
Band IV/RMC	Right Tilted	1312	1712.4	0.806	0.792	1.02	/	/
Band V/RMC	Right Cheek	4132	826.4	0.905	0.861	1.05	/	/
Band2/1RB#49	Right Tilted	18700	1860	0.981	0.868	1.13	/	/
Band42/1RB#49	Left Cheek	42990	3540	0.822	0.796	1.03	/	/
GPRS1900/4 slots	Top	661	1880	0.941	0.912	1.03	/	/
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population				**1.6 W/kg (mW/g) Averaged over 1g**				

Note:

1. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8 W/kg
2. Per KDB 865664 D01v01r04, if the ratio of *original* and *repeated* is ≤ 1.2 and the measured SAR <1.45 W/kg, only one repeated measurement is required.

15.6 Multi-Band Simultaneous Transmission Considerations

➢ **Simultaneous Transmission Capabilities**

According to FCC KDB Publication 447498 D04v01, transmitters are considered to be transmitting simultaneously when there is overlapping transmission, with the exception of transmissions during network hand-offs with maximum hand-off duration less than 30 seconds. Possible transmission paths for the EUT are shown in below Figure and are color-coded to indicate communication modes which share the same path. Modes which share the same transmission path cannot transmit simultaneously with one another.

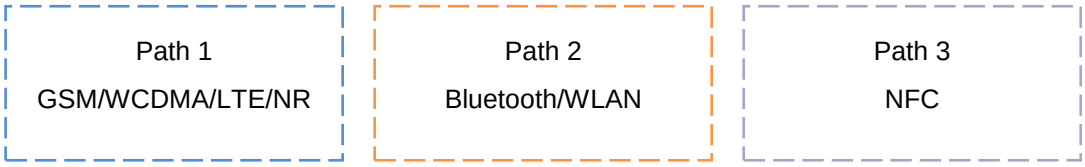

Fig.15.1 Simultaneous Transmission Paths

➢ **Simultaneous Transmission Procedures**

This device contains transmitters that may operate simultaneously. Therefore simultaneous transmission analysis is required. Per FCC KDB 447498 D04v01, simultaneous transmission SAR test exclusion may be applied when the sum of the 1-g SAR for all the simultaneous transmitting antennas in a specific a physical test configuration is ≤ 1.6 W/kg. When standalone SAR is not required to be measured, per FCC KDB 447498 D04v01 Appendix E, E.1), the following equation must be used to estimate the standalone 1g SAR for simultaneous transmission assessment involving that transmitter.

$$SAR_{est} = 1.6 \cdot P_{ant} / P_{th} \ [\mathrm{W/kg}].$$

Mode	Max. Power (dBm)	Max. Power (mW)	Exposure Position	Head	Body	Hotspot
NFC	-59.06	0.000001	Estimated SAR (W/kg)	0.000	0.000	0.000

Note:

1. Per KDB 447498 D04v01 section 2.1.2: 1-mW Test Exemption, P_{th} =1mW.

➢ **Multi-Band simultaneous Transmission Consideration**

	Position	Applicable Combination
Simultaneous Transmission Consideration	Head	WWAN (Voice) + WLAN 2.4 GHz+ NFC
		WWAN (Voice) +5.2GHz/5.3GHz/5.6 GHz/5.8GHz +Bluetooth+ NFC
	Body	WWAN (Data) + WLAN 2.4 GHz+ NFC
		WWAN (Data) +5.2GHz/5.3GHz/5.6 GHz/5.8GHz +Bluetooth+ NFC
	Hotspot	WWAN (Data) + WLAN 2.4 GHz+ NFC
		WWAN (Data) +5.2GHz/5.8GHz +Bluetooth+ NFC

Note:

1. WLAN 2.4GHz Band ANT12 and Bluetooth ANT12 share the same antenna, and cannot transmit simultaneously.
2. WLAN 2.4GHz Band ANT12 and WLAN 5GHz ANT12 share the same antenna, and cannot transmit simultaneously, Band
3. WLAN 2.4GHz ANT12, WLAN 2.4GHz ANT13, Bluetooth ANT12 and Bluetooth ANT13 cannot transmit simultaneously.
4. GSM/WCDMA/LTE shares the same antenna, and cannot transmit simultaneously.
5. For 5GNR EN-DC mode, the simultaneous transmission analysis is used standalone SAR at total power level to show compliance.
6. The Report SAR summation is calculated based on the same configuration and test position.
7. Per KDB 447498 D04v01, simultaneous transmission SAR is compliant if,
   i. Scalar SAR summation < 1.6 W/kg.
   ii. $SPLSR = (SAR_1 + SAR_2)^{1.5} / (min.\ separation\ distance,\ mm)$, and the peak separation distance is determined from the square root of $[(x_1-x_2)^2 + (y_1-y_2)^2 + (z_1-z_2)^2]$, where (x_1, y_1, z_1) and (x_2, y_2, z_2) are the coordinates of the extrapolated peak SAR locations in the zoom scan If SPLSR ≤ 0.04, simultaneously transmission SAR measurement is not necessary
   iii. Simultaneously transmission SAR measurement, and the Reported multi-band SAR < 1.6 W/kg