FCC SAR REPORT

Applicant:	Shenzhen Coosea Group Company Limited
Address of Applicant:	9-10th Floor, Tower 1, Foresea Life Center, Xingye Road, Bao'an District, Shenzhen City, Guangdong Province, China
Equipment Under Test (EUT)	
Product Name:	ZEEKER T100
Model No.:	ZEEKER T100
Trade mark	ZEEKER
FCC ID:	2A2GN-T100
Applicable standards:	FCC 47 CFR Part 2.1093
Date of Test:	24 Nov., 2021 ~ 02 Dec., 2021
Test Result:	Maximum Reported 1-g SAR (W/kg) Head: 0.696 Body: 0.789 Hotspot: 0.789

Authorized Signature:

Bruce Zhang
Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the JYT product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

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2 Version

Version No.	Date	Description
00	*10 Jan., 2021*	*Original*

Tested by:	Vieta Zhang	***Date:***	*10 Jan., 2021*
	Test Engineer		
Reviewed by:	Wiby Zhang	***Date:***	*10 Jan., 2021*
	Project Engineer		

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4 SAR Results Summary

The maximum results of Specific Absorption Rate (SAR) found during test as bellows:
<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	0.150	PCE	0.696
	GSM 1900	0.022		
	WCDMA Band V	0.131		
	WCDMA Band IV	0.090		
	WCDMA Band II	0.030		
	CDMA BC 0	0.027		
	CDMA BC 1	0.062		
	CDMA BC 10	0.140		
	LTE Band 5	0.174		
	LTE Band 7	0.348		
	LTE Band 12	0.101		
	LTE Band 13	0.130		
	LTE Band 25	0.032		
	LTE Band 26	0.114		
	LTE Band 41	0.078		
	LTE Band 66	0.103		
	WLAN 2.4 GHz	0.696	DTS	
Body (10 mm Gap)	GSM 850	0.674	PCE	0.789
	GSM 1900	0.170		
	WCDMA Band V	0.360		
	WCDMA Band IV	0.278		
	WCDMA Band II	0.151		
	CDMA BC 0	0.267		
	CDMA BC 1	0.509		
	CDMA BC 10	0.379		
	LTE Band 5	0.358		
	LTE Band 7	0.789		
	LTE Band 12	0.274		
	LTE Band 13	0.334		
	LTE Band 25	0.174		
	LTE Band 26	0.287		
	LTE Band 41	0.262		
	LTE Band 66	0.186		
	WLAN 2.4GHz	0.195	DTS	
Hotspot (10 mm Gap)	GSM 850	0.674	PCE	0.789
	GSM 1900	0.170		
	WCDMA Band V	0.360		
	WCDMA Band IV	0.278		
	WCDMA Band II	0.151		
	CDMA BC 0	0.267		
	CDMA BC 1	0.509		
	CDMA BC 10	0.379		
	LTE Band 5	0.358		
	LTE Band 7	0.789		
	LTE Band 12	0.274		
	LTE Band 13	0.334		
	LTE Band 25	0.174		
	LTE Band 26	0.287		
	LTE Band 41	0.262		
	LTE Band 66	0.186		
	WLAN 2.4 GHz	0.195	DTS	

<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)
Left Cheek	WWAN	0.348	PCE	1.044
	WLAN 2.4 GHz	0.696	DTS	

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 IEEE 1528-2013.
3. For FDD-LTE Band 2 is full covered by FDD-LTE Band 25, FDD-LTE Band 4 is full covered by FDD-LTE Band 66,FDD-LTE Band 17 is full covered by FDD-LTE Band 12, FDD-LTE Band 38 is full covered by FDD-LTE Band 41,so only FDD-LTE Band 2, FDD-LTE Band 4, FDD-LTE Band 12,FDD-LTE Band 38 was tested.

5 General Information

5.1 Client Information

Applicant:	Shenzhen Coosea Group Company Limited
Address of Applicant:	9-10th Floor, Tower 1, Foresea Life Center, Xingye Road, Bao'an District, Shenzhen City, Guangdong Province, China
Manufacturer:	Sichuan Koobee Communication Equipment Co., Ltd.
Address of Manufacturer:	3 Floor, Building 2, 69 Gangyuan Road West Section, Lingang Development Zone, Yibin City, Sichuan Province, China

5.2 General Description of EUT

Product Name:	ZEEKER T100			
Model No.:	ZEEKER T100			
Category of device	Portable device			
Operation Frequency:	2G :	GSM850: 824.2~848.8 MHz	PCS 1900: 1850.2~1909.8 MHz	
	3G :	Band II: 1852.4~1907.6 MHz	Band V: 826.4~846.6 MHz	
		Band IV: 1712.4~1752.6 MHz		
	CDMA :	BC 0: 824.7~848.31 MHz	BC 1: 1851.25~1908.75 MHz	
		BC 10: 817.9 ~ 823.1 MHz		
	4G :	Band 2 :1850MHz~1910MHz	Band 4 :1710MHz~1755MHz	
		Band 5 :824MHz~849MHz	Band 7: 2500MHz~2570MHz	
		Band 12: 698MHz~716MHz	Band 13: 777MHz~787MHz	
		Band 17: 704MHz~716MHz	Band 25 : 1850MHz-1915MHz	
		Band 26 :814MHz~849MHz	Band 38: 2570MHz~2620MHz	
		Band 41: 2555MHz~2655MHz	Band 66 :1710MHz~1780MHz	
	Wi-Fi:	2412MHz~2462MHz		
	Bluetooth: 2402 MHz ~ 2480 MHz			
Modulation technology:	2G:	☒Voice(GMSK)	☒GPRS(GMSK)	☒EGPRS(GMSK, 8PSK)
	3G:	☒RCM(QPSK)	☒HSUPA(QPSK)	☒HSDPA(QPSK,16QAM)
	4G:	☒QPSK	☒16QAM	☒64QAM
	Wi-Fi:	☒802.11b(DSSS)	☒802.11a/g/n/ac (OFDM)	
	Bluetooth:	☒BDR(GFSK)	☒EDR(π/4-DQPSK, 8DPSK)	☒LE(GFSK)
Antenna Type:	Internal Antenna			
Antenna Gain:	GSM 850: -3.9 dBi; PCS 1900: 0.5 dBi WCDMA Band V: -3.9 dBi ;WCDMA Band II: 0.3 dBi; WCDMA Band IV: 0.6 dBi CDMA BC0 : -3.5 dBi ; CDMA BC1 : 0.4 dBi; CDMA BC10 : -3.6 dBi LTE Band 2: 0.3 dBi; LTE Band 4: 0.6 dBi LTE Band 5: -3.7 dBi; LTE Band 7: 0.6 dBi LTE Band 12: -4.3 dBi; LTE Band 13: -3.9 dBi LTE Band 17: -4.3 dBi; LTE Band 25: -3.7 dBi LTE Band 26: -3.9 dBi; LTE Band 38: 0.6 dBi LTE Band 41: 0.6 dBi; LTE Band 66: 0.5 dBi Bluetooth: 0.8 dBi; 2.4G Wi-Fi: 0.8 dBi; 5G Wi-Fi: 0.8 dBi			

(E)GPRS Class:	(E)GPRS Class: 12	
Dimensions (L*W*H):	167 mm (L)× 81 mm (W)× 18 mm (H)	
Accessories information:	Adapter: Model: UF22P03 Input:100-240V AC,50/60Hz 0.5A Output: DC 5.0V, 3.0A or DC 9.0V, 2.0A or DC 12.0V, 1.5A	Battery: Rechargeable Li-ion Battery 3.85V/5900mAh Headset: Support headset

5.3 Maximum RF Output Power

Mode	Average Power (dBm)	
	GSM 850	GSM 1900
GSM (Voice)	33.68	30.41
GPRS (1 TX Slot)	33.60	30.41
GPRS (2 TX Slots)	32.62	29.43
GPRS (3 TX Slots)	30.59	27.38
GPRS (4 TX Slots)	29.43	26.27
EGPRS (1 TX Slot)	27.27	26.36
EGPRS (2 TX Slots)	26.12	25.45
EGPRS (3 TX Slots)	23.95	23.41
EGPRS (4 TX Slots)	22.66	22.41

Mode	Average Power (dBm)		
	WCDMA Band V	WCDMA Band IV	WCDMA Band II
AMR 12.2 kbps	23.51	23.50	23.35
RMC 12.2 kbps	23.51	23.50	23.39
HSDPA Sub-test 1	22.61	22.50	22.42
HSDPA Sub-test 2	22.06	22.00	21.85
HSDPA Sub-test 3	22.09	22.00	21.87
HSDPA Sub-test 4	22.06	22.00	21.84
HSUPA Sub-test 1	20.59	20.50	20.37
HSUPA Sub-test 2	21.11	21.00	20.87
HSUPA Sub-test 3	21.59	21.50	21.37
HSUPA Sub-test 4	20.62	20.50	20.39
HSUPA Sub-test 5	22.59	22.50	22.39

Mode		Average Power (dBm)		
		BC 0	BC 1	BC 10
1XRTT/RC1	2(Loopback)	23.51	23.39	24.48
	55(Loopback)	23.54	23.40	24.46
1XRTT/RC2	9(Loopback)	23.51	22.85	24.45
	55(Loopback)	23.33	23.43	24.43
1XRTT/RC3	2(Loopback)	23.60	23.42	24.43
	55(Loopback)	23.64	23.41	24.45
	32(+F-SCH)	23.67	23.47	24.54
	32(+SCH)	23.66	23.45	24.52
1XRTT/RC4	2(Loopback)	23.62	23.37	24.44
	55(Loopback)	23.62	23.46	24.45
	32(+F-SCH)	23.63	23.43	24.53
	32(+SCH)	23.61	23.42	24.51
1XRTT/RC5	9(Loopback)	23.57	23.41	24.48
	55(Loopback)	23.35	23.38	24.48

Mode	Average Power (dBm)					
	LTE Band 2	LTE Band 4	LTE Band 5	LTE Band 7	LTE Band 12	LTE Band 13
BW/1.4 MHz	24.39	24.28	24.95	/	24.96	/
BW/3.0 MHz	24.25	24.29	24.83	/	24.79	/
BW/5.0 MHz	24.38	24.32	24.92	24.06	24.86	24.92
BW/10 MHz	24.33	24.27	25.03	24.07	24.86	24.89
BW/15 MHz	24.38	24.21	/	24.03	/	/
BW/20 MHz	24.39	24.36	/	24.15	/	/

Mode	Average Power (dBm)					
	LTE Band 17	LTE Band 25	LTE Band 26	LTE Band 38	LTE Band 41	LTE Band 66
BW/1.4 MHz	/	24.39	25	/	/	24.37
BW/3.0 MHz	/	24.3	24.08	/	/	24.27
BW/5.0 MHz	24.45	24.32	24.86	24.18	24.01	24.33
BW/10 MHz	24.39	24.54	24.02	24.30	24.09	24.31
BW/15 MHz	/	24.31	24.90	24.14	23.99	24.23
BW/20 MHz	/	24.38	/	24.32	24.13	24.38

WLAN 2.4 GHz Band Average Power (dBm)				
Mode/Band	b	g	n (HT-20)	n (HT-40)
WLAN 2.4GHz	16.13	13.78	13.48	12.87

WLAN 5.2 GHz Band Average Power (dBm)						
Mode/Band	a	ac 20	ac 40	ac 80	n 20	n 40
WLAN 5.2GHz	5.75	5.55	5.60	5.47	5.49	5.59

WLAN 5.8 GHz Band Average Power (dBm)						
Mode/Band	a	ac 20	ac 40	ac 80	n 20	n 40
WLAN 5.8GHz	5.81	5.64	4.90	4.85	4.95	5.04

Bluetooth Average Power (dBm)				
Mode/Band	1 Mbps(GFSK)	2 Mbps(π/4DQPSK)	3 Mbps (8DPSK)	LE (BT 4.0)
Bluetooth	5.79	4.95	4.80	-2.18

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
4#	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 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://www.ccis-cb.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

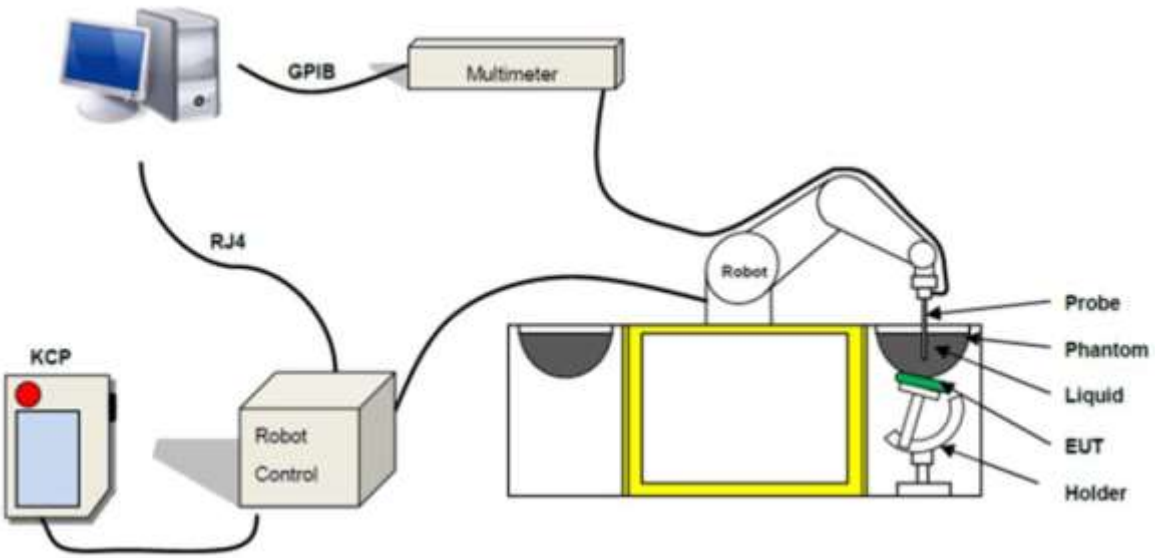


Fig. 8.1 MVG COMOSAR System Configurations

These measurements were performed with the automated near-field scanning system COMOSAR from MVG. The system is based on a high precision robot (working range: 850 mm), which positions the probes with a positional repeatability of better than ± 0.02 mm. Special E- and H-field probes have been developed for measurements close to material discontinuity, the sensors of which are directly loaded with a Schottky diode and connected via highly resistive lines to the data acquisition unit.

The SAR measurements were conducted with dosimetric probe (manufactured by MVG), designed in the classical triangular configuration and optimized for dosimetric evaluation. The probe has been calibrated according to the procedure described in SAR standard with accuracy of better than ±10%.The spherical isotropy was evaluated with the procedure described in SAR standard and found to be better than ±0.25 dB. The phantom used was the SAM Phantom as described in FCC supplement C, IEEE P1528.

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

- Main computer to control all the system
- 6 axis robot
- Data acquisition system
- Miniature E-field probe
- Phone holder
- Head simulating tissue

8.1 E-Field Probe

The SAR measurement is conducted with the dosimetric probe (manufactured by MVG). 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.

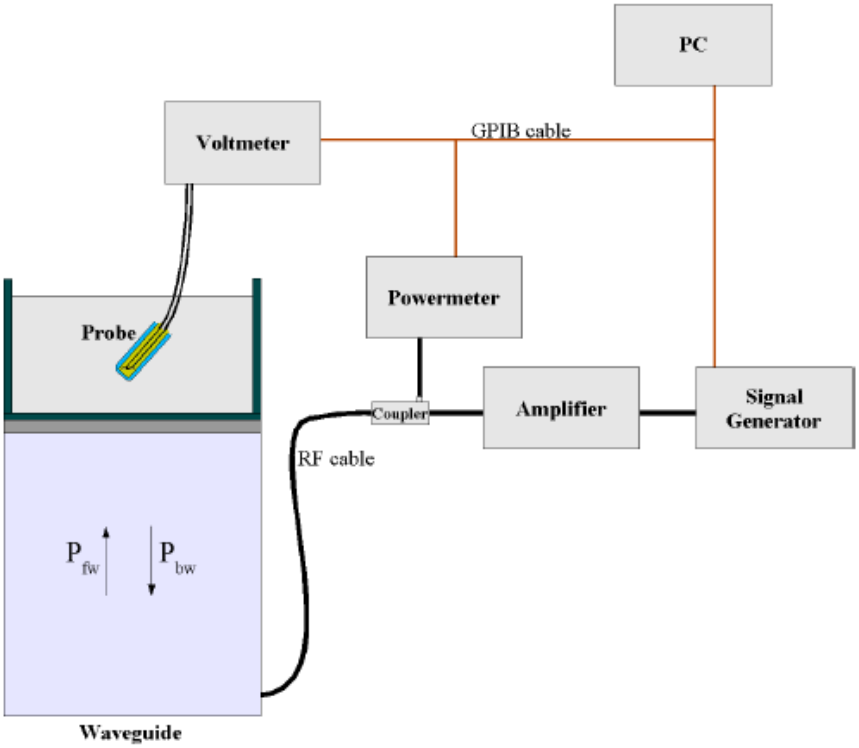
➢ **E-Field Probe Specification**

Device Type	COMOSAR DOSIMETRIC E FIELD PROBE
Model	SSE2
Frequency Range	150 MHz to 6 GHz
Dynamic Range	0.01W/kg to 100W/kg
Probe linearity	<0.25dB
Dimensions	Overall length: 330 mm Tip diameter: 2.5 mm Distance between dipoles / probe extremity: 1 mm

Fig. 8.2 Photo of E-Field Probe

➢ **E-Field Probe Calibration**

Probe calibration is realized, in compliance with EN/IEC 62209-1/-2 and IEEE 1528 std, with CALISAR, MVG proprietary calibration system. The calibration is performed with the technique using reference waveguide.



$$SAR = \frac{4(P_{fw} - P_{bw})}{ab\sigma} \cos^2\left(\pi \frac{y}{a}\right) c^{(2\pi/\sigma)}$$

Where :

Pfw	=	Forward Power
Pbw	=	Backward Power
a and b	=	Waveguide Dimensions
ı	=	Skin Depth

Keithley configuration

Rate=Medium; Filter=ON; RDGS=10; FILTER TYPE=MOVING AVERAGE; RANGE AUTO

After each calibration, a SAR measurement performed on a validation dipole and compared with a NPL calibrated probe, to verify it.

The Calibration factors, CF(N), for the 3 sensors corresponding to dipole 1, dipole 2 and dipole 3 are:

CF(N)=SAR(N)/Vlin(N) (N=1,2,3)

The linearized output voltage Vlin(N) is obtained from the displayed output voltage V(N) using

Vlin(N)=V(N)*(1+V(N)/DCP(N)) N=1,2,3

Where the DCP is the dipole compression point in mV

8.2 Robot

The COMOSAR system uses the high precision robots from KUKA. For the 6-axis controller system, the robot controller version (KUKA-KRC2sr) from KUKA is used. The KUKA 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; no belt drives)
- Jerk-free straight movements
- Low ELF interference (motor control fields shielded via the closed metallic construction shields)

Fig. 8.4 Photo of Robot

8.3 Phantom

<SAM Phantom>

Shell Thickness	2 ± 0.2 mm; Center ear point: 6 ± 0.2 mm	 **Fig. 8.7 Photo of SAM Phantom**
Filling Volume Dimensions	Approx. 27 liters Length: 1000mm; Width: 500mm; Height: 200mm	
Material	Fiberglass based	
Relative permittivity	3-4	
Loss tangent	0.02	
Measurement Areas	Left Head, Right Head, Flat phantom	

The phantom developed by MVG is produced in accordance with the specified in the standards. It has been designed to fit the COMOSAR phantom tables and is delivered with a plastic cover to prevent liquid evaporation.

8.4 Device Holder

The positioning system is made of an extremely stable material, which ensures easy handling and reproducible positioning. It also allows correct positioning of the dipoles referenced by the IEEE, ANSI and IEC.

<Device Holder for SAM Phantom>

Model	Handset Positioning System	 **Fig. 8.9 Photo of Device Holder**
Material properties	The positioning system is made of PETP. This material offers a low permittivity of 3.2 and low loss, with a loss tangent of 0.005 to minimize the influence of the DUT on measurement results.	
Mechanical properties	The positioning system developed by MVG allows a positioning resolution better than 1 mm. The system is fixed on a bottom rail “x axis” so that the positioning system can be quickly moved from the right to the left part of the phantom. In addition, it can be moved on a perpendicular “y axis” and the height can be adapted. The system is also composed of three rotation points for accurate positioning of the device’s acoustical output.	
Accuracy and precision	A curved rail on the top part allows the fast switch from the cheek to the tilt position. The required 15° angle for the tilt position can be easily checked thanks to a printed scale on the curved rail with a tolerance of ± 1°	

8.5 Test Equipment List

Manufacturer	Equipment Description	Model	Management Number	Cal. Information	
				Last Cal.	Due Date
MVG	COMOSAR DOSIMETRIC E FIELD PROBE	SSE2	WXJ076	05.20.2021	05.19.2022
MVG	COMOSAR 750 MHz REFERENCE DIPOLE	SID750	WXJ076-4	01.14.2021	01.13.2024
MVG	COMOSAR 835 MHz REFERENCE DIPOLE	SID835	WXJ076-5	01.14.2021	01.13.2024
MVG	COMOSAR 1750 MHz REFERENCE DIPOLE	SID1750	WXJ076-8	01.14.2021	01.13.2024
MVG	COMOSAR 1900 MHz REFERENCE DIPOLE	SID1900	WXJ076-9	01.14.2021	01.13.2024
MVG	COMOSAR 2450 MHz REFERENCE DIPOLE	SID2450	WXJ076-12	01.14.2021	01.13.2024
MVG	COMOSAR 2600 MHz REFERENCE DIPOLE	SID2600	WXJ076-13	01.14.2021	01.13.2024
KEITHLEY	DIGIT MULTIMETER	DMM6500	WXJ076-1	12.17.2019	12.16.2022
MVG	MVG Measurement Software	OpenSAR	Version: V5_01_09	N.C.R	N.C.R
MVG	COMOSAR IEEE SAM PHANTOM	N/A	WXG009-2	N.C.R	N.C.R
MVG	COMOSAR IEEE SAM PHANTOM	N/A	WXG009-3	N.C.R	N.C.R
MVG	MOBILE PHONE POSITIONNING SYSTEM	N/A	WXG009-4	N.C.R	N.C.R
KUKA	Robot	KR 6 R900 sixx	WXG009-1	N.C.R	N.C.R
Anritsu	Universal Radio Communication Analyzer	MT8820C	WXJ008-5	03.03.2021	03.02.2022
R&S	Universal Radio Communication Tester	CMU200	WXJ008-2	06.18.2020	06.17.2021
HP	Network Analyzer	8753D	WXJ024	06.18.2020	06.17.2022
KEYSIGHT	EPM Series Power Meter	N1914A	WXJ075	08.29.2021	08.28.2022
KEYSIGHT	E-Series Power Sensor	E9300H	WXJ075-1	08.29.2021	08.28.2022
KEYSIGHT	E-Series Power Sensor	E9300H	WXJ075-2	08.29.2021	08.28.2022
KEYSIGHT	Signal Generator	N5173B	WXJ006-7	03.25.2021	03.24.2022
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	
MVG	LIMESAR DIELECTRIC PROBE	SCLMP	WXG009-5	See Note 4	
TXC	Broadband Amplifier	BBA018000	WXG008-11	See Note 5	

Note:

1. The calibration certificate of MVG 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 MVG.
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, 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.

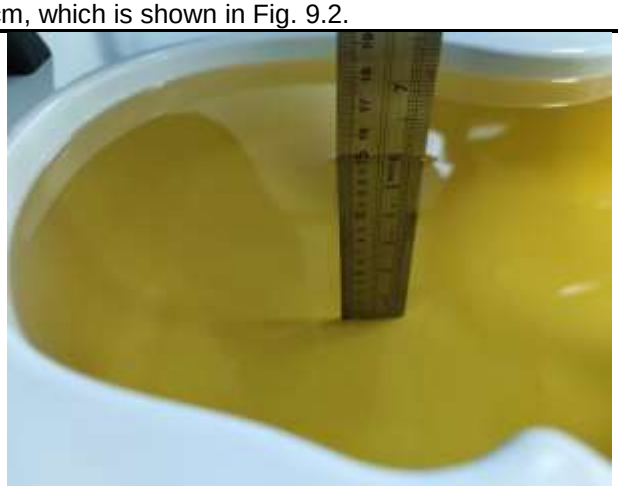


Fig. 9.1 Photo of Liquid Height for Head SAR (depth>15cm)

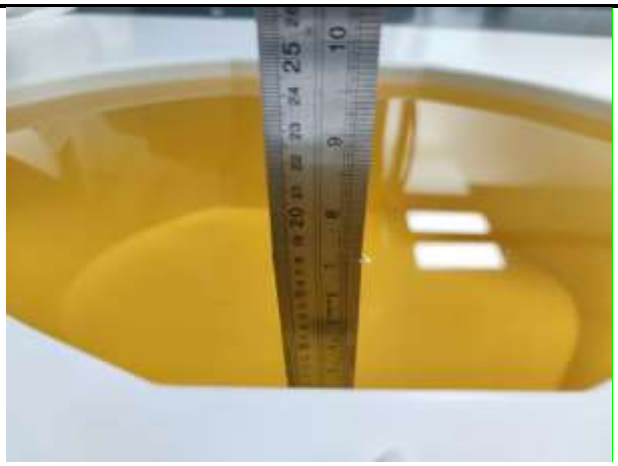


Fig. 9.2 Photo of Liquid Height for Body SAR (depth>15cm)

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	Head		Body	
(MHz)	εr	σ(S/m)	εr	σ(S/m)
150	52.3	0.76	61.9	0.80
300	45.3	0.87	58.2	0.92
450	43.5	0.87	56.7	0.94
835	41.5	0.90	55.2	0.97
900	41.5	0.97	55.0	1.05
915	41.5	0.98	55.0	1.06
1450	40.5	1.20	54.0	1.30
1610	40.3	1.29	53.8	1.40
1800-2000	40.0	1.40	53.3	1.52
2450	39.2	1.80	52.7	1.95
3000	38.5	2.40	52.0	2.73
5800	35.3	5.27	48.2	6.00

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

The dielectric parameters of liquids were verified prior to the SAR evaluation using a MVG Liquid measurement 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	22.5	0.92	41.11	0.89	41.9	3.37	-1.89	±5	11.24.2021
835	22.5	0.93	42.15	0.90	41.5	3.33	1.57	±5	11.24.2021
1750	22.3	1.35	40.38	1.37	40.1	-1.46	0.70	±5	11.29.2021
1900	22.3	1.44	39.14	1.40	40.0	2.86	-2.15	±5	11.29.2021
2450	22.7	1.82	40.10	1.80	39.2	1.11	2.30	±5	12.02.2021
2600	22.7	1.98	39.18	1.96	39.0	1.02	0.46	±5	12.02.2021

10 SAR System Verification

Each ComoSAR system is equipped with one or more system validation kits. These units, together with the predefined measurement procedures within the OpenSAR 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:

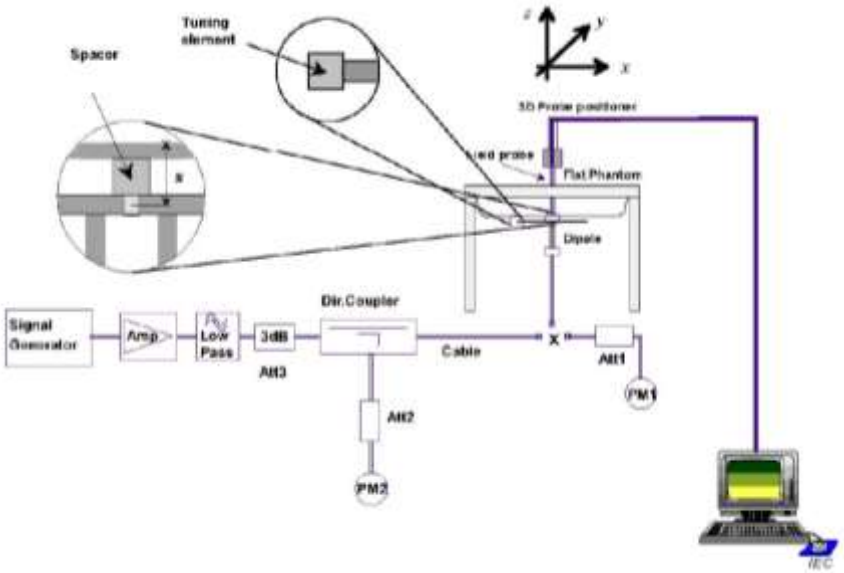


Fig.10.1 System Verification Setup Diagram

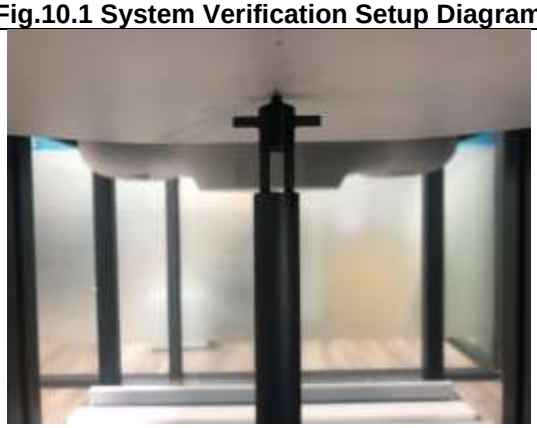


Fig.10.2 Photo of Dipole setup

-

- **System Verification Results**
  Comparing to the original SAR value provided by MVG, 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 to 1W 1g SAR (W/kg)	1W Target 1g SAR (W/kg)	Deviation (%)
11.24.2021	750	100	0.85	8.50	8.57	-0.82
11.24.2021	835	100	0.96	9.60	9.57	0.31
11.29.2021	1750	100	3.71	37.10	36.50	1.64
11.29.2021	1900	100	3.77	37.70	39.60	-4.80
12.02.2021	2450	100	4.96	49.60	52.92	-6.27
12.02.2021	2600	100	5.59	55.90	55.47	0.78

11 EUT Testing Position

This EUT was tested in ten different positions. They are right cheek/right tilted/left cheek/left tilted for head, Front/Back/ Left /Right /Top /Bottom 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.

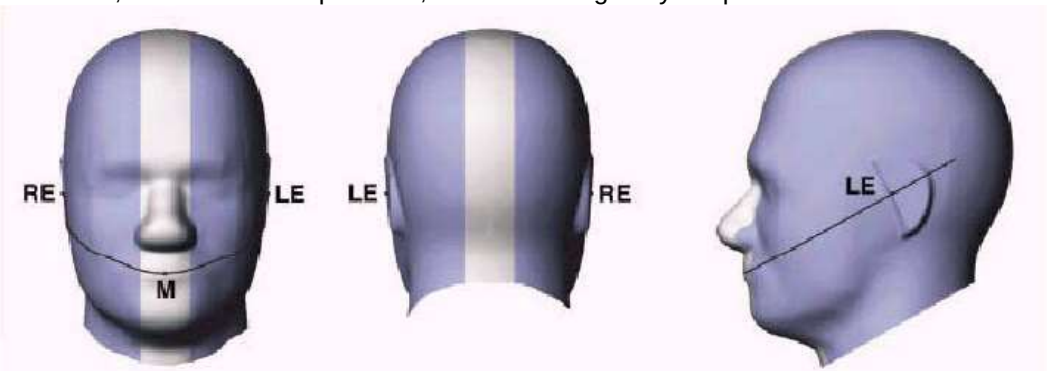


Fig.11.1 Illustration for Front, Back and Side of SAM Phantom

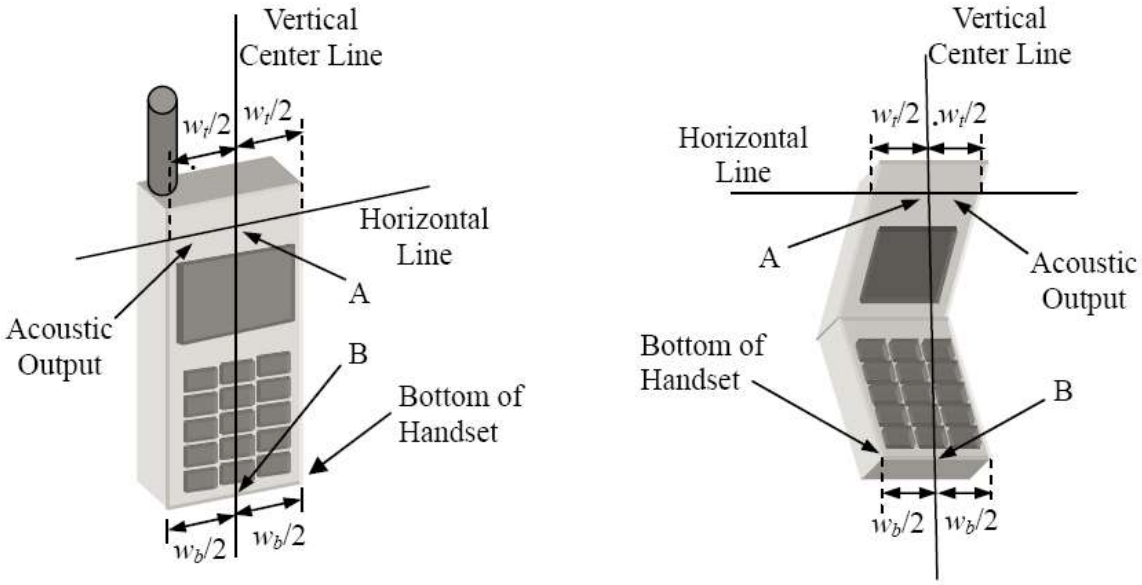


Fig. 11.2 Illustration for Handset Vertical and Horizontal Reference Lines

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.

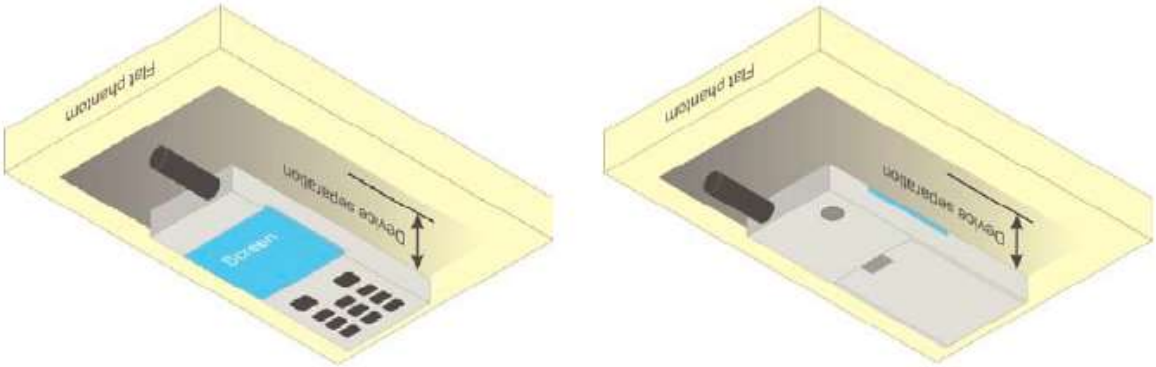


Fig.11.5 Illustration for Body Worn Position

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.

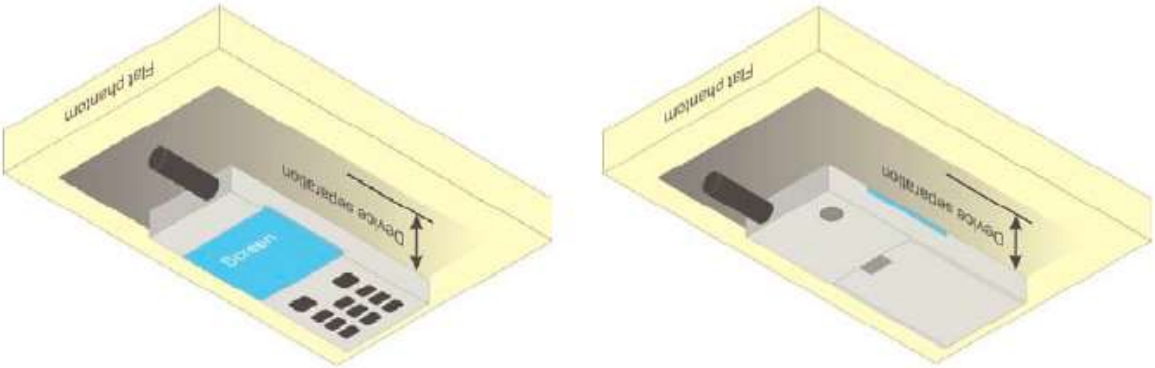


Fig.11.6 Illustration for Hotspot Position

12 Measurement Procedures

The measurement procedures are as bellows:

<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 OpenSAR 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 OpenSAR 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. 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	$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$	
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 can combine and subsequently superpose these measurement data to calculating the multiband SAR.

12.5 SAR Averaged Methods

In COMOSAR system, 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 OpenSAR 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. If the power drifts more than 5%, the SAR will be retested.

13 Conducted RF Output Power

13.1 GSM Conducted Power

Band: GSM 850	Burst Average Power (dBm)			Frame-Average Power(dBm)		
Channel	128	190	251	128	190	251
Frequency (MHz)	824.2	836.6	848.8	824.2	836.6	848.8
GSM (GMSK, Voice)	33.34	33.58	**33.68**	24.31	24.55	24.65
GPRS (GMSK, 1 TX slot)	33.37	33.50	33.60	24.34	24.47	24.57
GPRS (GMSK, 2 TX slots)	32.30	32.52	**32.62**	26.28	26.50	**26.60**
GPRS (GMSK, 3 TX slots)	30.23	30.47	30.59	25.97	26.21	26.33
GPRS (GMSK, 4 TX slots)	29.08	29.32	29.43	26.07	26.31	26.42
EGPRS (8PSK, 1 TX slot)	27.24	27.27	27.14	18.21	18.24	18.11
EGPRS (8PSK, 2 TX slots)	25.95	26.12	25.99	19.93	20.10	19.97
EGPRS (8PSK, 3 TX slots)	23.78	23.95	23.81	19.52	19.69	19.55
EGPRS (8PSK, 4 TX slots)	22.41	22.66	22.58	19.40	19.65	19.57

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 2 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 D01v06, the maximum output power channel is used for SAR testing and for further SAR test reduction.

Band: PCS 1900	Burst Average Power (dBm)			Frame-Average Power(dBm)		
Channel	512	661	810	512	661	810
Frequency (MHz)	1850.2	1880.0	1909.8	1850.2	1880.0	1909.8
GSM (GMSK, Voice)	30.41	**30.41**	30.30	21.38	21.38	21.27
GPRS (GMSK, 1 TX slot)	30.41	30.40	30.29	21.38	21.37	21.26
GPRS (GMSK, 2 TX slots)	29.40	**29.43**	29.35	23.38	**23.41**	23.33
GPRS (GMSK, 3 TX slots)	27.34	27.38	27.34	23.08	23.12	23.08
GPRS (GMSK, 4 TX slots)	26.21	26.27	26.25	23.20	23.26	23.24
EGPRS (8PSK, 1 TX slot)	26.21	26.17	26.36	17.18	17.14	17.33
EGPRS (8PSK, 2 TX slots)	25.22	25.24	25.45	19.20	19.22	19.43
EGPRS (8PSK, 3 TX slots)	23.16	23.24	23.41	18.90	18.98	19.15
EGPRS (8PSK, 4 TX slots)	22.18	22.18	22.41	19.17	19.17	19.40

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 GSM 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 D01v06, the maximum output power channel is used for SAR testing and for further SAR test reduction.

13.2 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

WCDMA Conducted Power:

WCDMA Average power (dBm)			
Band	WCDMA Band V		
Channel	4132	4183	4233
Frequency (MHz)	826.4	836.6	846.6
AMR 12.2 kbps	23.21	23.46	23.51
RMC 12.2 kbps	23.24	23.46	**23.51**
HSDPA Sub-test 1	22.36	22.55	22.61
HSDPA Sub-test 2	21.83	22.01	22.06
HSDPA Sub-test 3	21.80	22.05	22.09
HSDPA Sub-test 4	21.79	22.00	22.06
HSUPA Sub-test 1	20.30	20.53	20.59
HSUPA Sub-test 2	20.81	21.05	21.11
HSUPA Sub-test 3	21.35	21.56	21.59
HSUPA Sub-test 4	20.35	20.57	20.62
HSUPA Sub-test 5	22.34	22.55	22.59

WCDMA Average power (dBm)			
Band	WCDMA Band IV		
Channel	1312	1413	1513
Frequency (MHz)	1712.4	1732.6	1752.6
AMR 12.2 kbps	23.21	23.20	23.17
RMC 12.2 kbps	**23.31**	23.27	23.28
HSDPA Sub-test 1	22.28	22.19	22.23
HSDPA Sub-test 2	21.69	21.63	21.70
HSDPA Sub-test 3	21.74	21.65	21.70
HSDPA Sub-test 4	21.71	21.62	21.72
HSUPA Sub-test 1	20.30	20.22	20.26
HSUPA Sub-test 2	20.72	20.68	20.73
HSUPA Sub-test 3	21.25	21.17	21.23
HSUPA Sub-test 4	20.31	20.24	20.30
HSUPA Sub-test 5	22.27	22.20	22.29

WCDMA Average power (dBm)			
Band	WCDMA Band II		
Channel	9262	9400	9538
Frequency (MHz)	1852.4	1880.0	1907.6
AMR 12.2 kbps	23.24	23.22	23.35
RMC 12.2 kbps	23.19	23.31	**23.39**
HSDPA Sub-test 1	22.26	22.30	22.42
HSDPA Sub-test 2	21.70	21.71	21.85
HSDPA Sub-test 3	21.70	21.71	21.87
HSDPA Sub-test 4	21.65	21.68	21.84
HSUPA Sub-test 1	20.18	20.26	20.37
HSUPA Sub-test 2	20.69	20.74	20.87
HSUPA Sub-test 3	21.20	21.26	21.37
HSUPA Sub-test 4	20.20	20.27	20.39
HSUPA Sub-test 5	22.19	22.23	22.39

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.

13.3 CDMA 2000 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:

CDMA 2000 1XRTT Setup Configuration:

Maximum output power is verified on the High, Middle and Low channels according to procedures in section 4.4.5.2 of 3GPP2 C.S0011/TIA-98-E. Results for at least steps 3, 4 and 10 of the power measurement procedures should be tabulated in the SAR report. Steps 3 and 4 should be measured using SO55 with power control bits in “ALL UP” condition. TDSO/SO32 may be used instead of SO55 for step 2. Step 10 should be measured using TDSO/SO32 with power control bits in the “Bits Hold” condition. All power measurements defined in C.S0011/TIA-98-E that are inapplicable to the DUT or cannot be measured due to technical or equipment limitations should be clearly identified in the test report.

CDMA2000 1XRTT Conducted Power:

Conducted Output Power (dBm)							
Band		BC 0			BC 1		
Channel		1013	384	777	25	600	1175
Frequency (MHz)		824.7	836.52	848.31	1851.25	1880	1908.75
RC1	2(Loopback)	23.51	23.50	23.43	23.39	23.37	23.36
	55(Loopback)	23.54	23.49	23.46	23.40	23.37	23.38
RC2	9(Loopback)	23.51	23.46	23.44	22.81	22.85	22.70
	55(Loopback)	23.33	23.31	23.20	23.43	23.35	23.36
RC3	2(Loopback)	23.60	23.32	23.24	23.42	23.37	23.40
	55(Loopback)	**23.64**	23.47	23.42	**23.41**	23.37	23.39
	32(+F-SCH)	**23.67**	23.63	23.56	**23.47**	23.42	23.40
	32(+SCH)	23.66	23.65	23.58	23.45	23.41	23.39
RC4	2(Loopback)	23.62	23.55	23.50	23.37	23.34	23.37
	55(Loopback)	23.62	23.56	23.23	23.46	23.38	23.36
	32(+F-SCH)	23.63	23.60	23.54	23.43	23.41	23.41
	32(+SCH)	23.61	23.58	23.53	23.42	23.42	23.40
RC5	9(Loopback)	23.57	23.50	23.25	23.41	23.33	23.32
	55(Loopback)	23.35	23.32	23.24	23.38	23.35	23.37

Conducted Output Power (dBm)				
Band		BC 10		
Channel		476	580	684
Frequency (MHz)		817.9	820.5	823.1
RC1	2(Loopback)	24.48	24.43	24.44
	55(Loopback)	24.46	24.39	24.41
RC2	9(Loopback)	24.45	24.40	24.41
	55(Loopback)	24.43	24.37	24.38
RC3	2(Loopback)	24.43	24.38	24.42
	55(Loopback)	**24.45**	24.40	24.39
	32(+F-SCH)	**24.54**	24.49	24.51
	32(+SCH)	24.52	24.48	24.49
RC4	2(Loopback)	24.44	24.39	24.41
	55(Loopback)	24.45	24.40	24.43
	32(+F-SCH)	24.53	24.46	24.48
	32(+SCH)	24.51	24.45	24.48
RC5	9(Loopback)	24.48	24.42	24.45
	55(Loopback)	24.48	24.41	24.44

Note:

4. Per KDB 941225 D01, SAR for head exposure configurations is measured in RC3 with the DUT configured to transmit at full rate using Loopback Service Option SO55.

5. Per KDB 941225 D01, SAR for RC1 is not required when the maximum average output of each channel is less than ¼ dB higher than that measured in RC3.
6. Per KDB 941225 D01, SAR for body exposure configurations is measured in RC3 with the DUT configured using TDSO/SO32, to transmit at full rate on FCH with all other code channels disabled.
7. Per KDB 941225 D01, SAR for multiple code channels (FCH + SCH_n) is not required when the maximum average output of each RF channel is less than ¼ dB higher than that measured with FCH only.

CDMA 2000 1XEV-DO Release 0 Setup Configuration:

1. Configure all of the open loop parameters to their maximum settings. Set the following parameters of the *Access Parameters Message* as specified below:

Parameter	Value(Decimal)
Open Loop Adjust	81 (-81 dB) for BC 0, 2, 3, 5, 7, and 9 84 (-84 dB) for BC 1, 4, 6, and 8
Probe Initial Adjust	15 (15dB)
Probe Num Adjust	15 (15 probes/sequence)

2. Set the following fields of the Initial Configuration attribute of the Default Access Channel MAC Protocol as specified below:

Parameter	Value(Decimal)
Power Step	15 (7.5 dB/step)
Probe Sequence Max	15 (15 sequences)

3. Connect the sector to the access terminal antenna connector as shown in Figure 11.5.1-4. The AWGN generator and the CW generator are not applicable in this test.
4. Set up a Test Application session. Open a connection and configure the Test Application RTAP so that the Reverse Data Channel rate corresponds to 153.6 kbps. Configure the Test Application FTAP so that the Forward Traffic Channel data rate corresponds to the 2-slot version of 307.2 kbps, and the ACK Channel is transmitted at all the slots.
5. Set Îor to –105.5 dBm/1.23 MHz. (Check latest standards/revisions on -105 dBm)
6. Send continuously ‘0’ power control bits to the access terminal.
7. Measure the access terminal output power at the access terminal antenna connector.

CDMA2000 1XEV-DO Release 0 Conducted Power:

Conducted Output Power (dBm)							
Band		BC 0			BC 1		
Channel		1013	384	777	25	600	1175
Frequency (MHz)		824.7	836.52	848.31	1851.25	1880	1908.75
FTAP Rate	RTAP Rate	22.95	22.98	22.84	22.66	22.50	22.59
307.2kbps	153.6kbps						

Note:

1. Applying the subtest setup in KDB 941225 D01.
2. Pre KDB 941225 D01, when the maximum average output of each channel in Rev. 0 is less than ¼ dB higher than that measured in RC3 (1x RTT), body SAR for Ev-Do is not required.

CDMA 2000 1XEV-DO Release A Setup Configuration:

1. Configure all of the open loop parameters to their maximum settings. Set the following parameters of the *Access Parameters Message* as specified below:

Parameter	Value(Decimal)
Open Loop Adjust	81 (-81 dB) for BC 0, 2, 3, 5, 7, 9, 10, 11,and 12 84 (-84 dB) for BC 1, 4, 6, and 8
Probe Initial Adjust	15 (15dB)
Probe Num Adjust	15 (15 7.5 dB/step)

2. Connect the sector to the access terminal antenna connector as shown in Figure 8.5.1-4. The AWGN generator and the CW generator are not applicable in this test.

3. For each band class that the access terminal supports, configure the access terminal to operate in that band class and perform steps 4 through 7.
4. Set up a Test Application session using one of the Physical Layer subtypes. Open a connection. For Subtype 0 or 1 Physical Layer, configure the Test Application RTAP so that the Reverse Data Channel rate corresponds to 153.6 kbps. For Subtype 2 Physical Layer, configure the Test Application RETAP so that the Reverse Data Channel payload size corresponds to 4096 bits with Termination Target of 16 slots. Configure the Test Application FTAP (for Subtype 0 or 1 Physical Layer) or FETAP (for Subtype 2 Physical Layer) so that the Forward Traffic Channel data rate corresponds to the 2-slot version of 307.2 kbps, and the ACK Channel is transmitted 4 at all the slots.
5. Set Îor to –60 dBm/1.23 MHz. (Check latest standards/revisions on -60 dBm)
6. Send continuously ‘0’ power control bits to the access terminal.
7. Measure the mean access terminal output power at the access terminal antenna connector.

CDMA2000 1XEV-DO Release A Conducted Power:

Conducted Output Power (dBm)							
Band		BC 0			BC 1		
Channel		1013	384	777	25	600	1175
Frequency (MHz)		824.7	836.52	848.31	1851.25	1880	1908.75
FETAP-Traffic Format	RETAP-Data Payload Size	22.89	22.85	22.66	22.66	22.56	22.50
307.2k,QPSK/ACK Channel is transmitted at all the slots	4096						

Note:

3. Applying the subtest setup in KDB 941225 D01.
4. Pre KDB 941225 D01, SAR for Rev. A is not required when the maximum average output of each channel is less than that measured in Rev. 0 or less than ¼ dB higher than that measured in RC3.

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 > ½ 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 > ½ 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

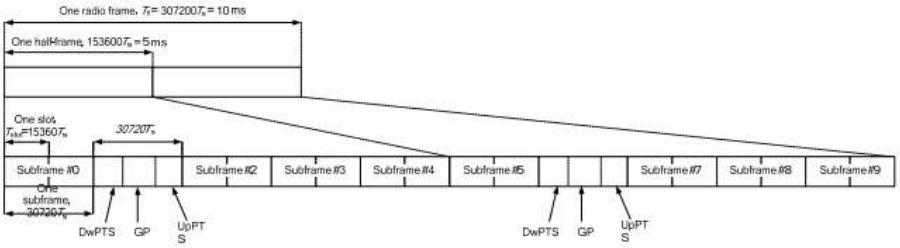


Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity)

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·Ts = 10 ms consists of two half-frames of length 153600·Ts = 5ms each. Each half-frame consists of five subframes of length 30720 ·Ts = 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.

LTE Band 2 part

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					18607	18900	19193
					1850.7MHz	1880.0MHz	1909.3MHz
Band 2	1.4	QPSK	1	0	23.98	24.08	24.25
			1	2	24.13	24.18	24.39
			1	5	24.01	24.05	24.18
			3	0	24.12	24.17	24.28
			3	1	24.07	24.18	24.31
			3	2	24.10	24.17	24.30
			6	0	23.07	23.16	23.30
		16QAM	1	0	23.06	23.22	23.37
			1	2	23.13	23.42	23.50
			1	5	23.13	23.18	23.34
			3	0	22.97	23.05	23.20
			3	1	23.01	23.04	23.20
			3	2	22.93	23.07	23.18
			6	0	22.10	22.19	22.18

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					18615	18900	19185
					1851.5MHz	1880.0MHz	1908.5MHz
Band 2	3	QPSK	1	0	23.93	24.12	24.19
			1	7	23.91	24.08	24.25
			1	14	24.01	24.12	24.24
			8	0	23.02	23.14	23.25
			8	4	23.02	23.13	23.25
			8	7	23.05	23.12	23.27
			15	0	22.97	23.08	23.22
		16QAM	1	0	23.16	23.36	23.12
			1	7	23.10	23.29	23.15
			1	14	23.17	23.25	23.14
			8	0	22.08	22.13	22.27
			8	4	22.11	22.15	22.26
			8	7	22.09	22.12	22.29
			15	0	22.01	22.05	22.12

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					18625	18900	19175
					1852.5MHz	1880.0MHz	1907.5MHz
Band 2	5	QPSK	1	0	24.01	24.12	24.26
			1	12	24.09	24.19	24.38
			1	24	24.04	24.07	24.29
			12	0	23.01	23.17	23.18
			12	6	22.99	23.14	23.16
			12	11	23.05	23.15	23.23
			25	0	23.02	23.12	23.30
		16QAM	1	0	22.94	23.29	23.26
			1	12	23.10	23.41	23.36
			1	24	23.05	23.29	23.23
			12	0	21.97	22.15	22.19
			12	6	22.02	22.15	22.20
			12	11	22.00	22.14	22.19
			25	0	22.03	22.10	22.37

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					18650	18900	19150
					1855.0MHz	1880.0MHz	1905.0MHz
Band 2	10	QPSK	1	0	23.96	24.13	24.23
			1	24	24.12	24.23	24.33
			1	49	24.04	24.08	24.25
			25	0	23.05	23.18	23.34
			25	12	23.06	23.18	23.29
			25	24	23.05	23.21	23.37
			50	0	23.10	23.10	23.35
		16QAM	1	0	23.15	23.29	23.16
			1	24	23.19	23.35	23.23
			1	49	23.23	23.22	23.17
			25	0	22.08	22.23	22.35
			25	12	22.02	22.20	22.36
			25	24	22.03	22.26	22.39
			50	0	22.02	22.16	22.34

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					18675	18900	19125
					1857.5MHz	1880.0MHz	1902.5MHz
Band 2	15	QPSK	1	0	23.90	24.04	24.16
			1	37	24.07	24.19	24.38
			1	74	23.92	23.97	24.24
			36	0	23.02	23.20	23.49
			36	16	23.09	23.23	23.46
			36	35	23.07	23.23	23.42
			75	0	23.12	23.22	23.42
		16QAM	1	0	23.11	23.36	23.07
			1	37	23.19	23.45	23.25
			1	74	23.17	23.30	23.13
			36	0	21.98	22.22	22.36
			36	16	22.06	22.23	22.33
			36	35	22.00	22.21	22.32
			75	0	22.03	22.12	22.35

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					18700	18900	19100
					1860.0MHz	1880.0MHz	1900.0MHz
Band 2	20	QPSK	1	0	24.02	24.12	23.95
			1	49	24.27	24.28	24.39
			1	99	24.13	24.11	24.13
			50	0	23.06	23.06	23.28
			50	24	23.05	23.09	23.31
			50	49	23.05	23.05	23.30
			100	0	23.02	23.09	23.34
		16QAM	1	0	23.01	23.25	23.04
			1	49	23.24	23.44	23.43
			1	99	23.13	23.18	23.25
			50	0	22.07	22.07	22.37
			50	24	22.02	22.09	22.37
			50	49	22.05	22.11	22.32
			100	0	21.96	22.09	22.33

LTE Band 4 part

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					19957	20175	20393
					1710.7MHz	1732.5MHz	1754.3MHz
Band 4	1.4	QPSK	1	0	24.25	24.17	24.05
			1	2	24.28	24.21	24.18
			1	5	24.26	24.13	24.07
			3	0	24.33	24.22	24.19
			3	1	24.34	24.21	24.24
			3	2	24.35	24.22	24.21
			6	0	23.31	23.18	23.17
		16QAM	1	0	23.37	23.29	23.01
			1	2	23.50	23.41	23.19
			1	5	23.34	23.29	22.96
			3	0	23.23	23.12	23.04
			3	1	23.23	23.09	23.03
			3	2	23.21	23.14	23.01
			6	0	22.38	22.10	22.21

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					19965	20175	20385
					1711.5MHz	1732.5MHz	1753.5MHz
Band 4	3	QPSK	1	0	24.29	24.14	24.17
			1	7	24.23	24.15	24.19
			1	14	24.19	24.11	24.15
			8	0	23.24	23.12	23.17
			8	4	23.23	23.15	23.20
			8	7	23.28	23.16	23.18
			15	0	23.23	23.08	23.11
		16QAM	1	0	23.47	23.38	23.06
			1	7	23.39	23.32	23.08
			1	14	23.43	23.29	23.01
			8	0	22.36	22.18	22.19
			8	4	22.36	22.18	22.25
			8	7	22.38	22.19	22.22
			15	0	22.26	22.07	22.11

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					19975	20175	20375
					1712.5MHz	1732.5MHz	1752.5MHz
Band 4	5	QPSK	1	0	24.23	24.10	24.19
			1	12	24.32	24.22	24.28
			1	24	24.27	24.16	24.20
			12	0	23.23	23.10	23.21
			12	6	23.25	23.09	23.17
			12	11	23.23	23.11	23.17
			25	0	23.21	23.16	23.20
		16QAM	1	0	23.24	23.31	23.13
			1	12	23.37	23.38	23.29
			1	24	23.24	23.38	23.13
			12	0	22.24	22.14	22.23
			12	6	22.21	22.18	22.22
			12	11	22.21	22.17	22.21
			25	0	22.33	22.17	22.30

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					20000	20175	20350
					1715.0MHz	1732.5MHz	1750.0MHz
Band 4	10	QPSK	1	0	24.25	24.09	24.17
			1	24	24.27	24.23	24.27
			1	49	24.16	24.11	24.08
			25	0	23.19	23.11	23.22
			25	12	23.22	23.15	23.22
			25	24	23.21	23.13	23.18
			50	0	23.24	23.10	23.17
		16QAM	1	0	23.41	23.26	23.05
			1	24	23.41	23.41	23.19
			1	49	23.34	23.31	22.99
			25	0	22.21	22.16	22.31
			25	12	22.23	22.16	22.30
			25	24	22.23	22.18	22.31
			50	0	22.20	22.18	22.21

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					20025	20175	20325
					1717.5MHz	1732.5MHz	1747.5MHz
Band 4	15	QPSK	1	0	24.20	24.03	24.05
			1	37	24.14	24.13	24.21
			1	74	24.02	24.03	24.06
			36	0	23.20	23.16	23.19
			36	16	23.23	23.16	23.16
			36	35	23.23	23.15	23.16
			75	0	23.22	23.18	23.23
		16QAM	1	0	23.35	23.35	22.94
			1	37	23.38	23.40	23.13
			1	74	23.19	23.36	22.94
			36	0	22.18	22.19	22.13
			36	16	22.18	22.15	22.12
			36	35	22.18	22.22	22.11
			75	0	22.22	22.21	22.24

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					20050	20175	20300
					1720.0MHz	1732.5MHz	1745.0MHz
Band 4	20	QPSK	1	0	24.21	24.13	23.94
			1	49	24.36	24.32	24.23
			1	99	24.12	24.12	24.01
			50	0	23.08	23.04	23.15
			50	24	23.14	23.04	23.18
			50	49	23.10	23.04	23.19
			100	0	23.19	23.14	23.10
		16QAM	1	0	23.26	23.28	23.04
			1	49	23.46	23.48	23.32
			1	99	23.13	23.26	23.07
			50	0	22.19	22.12	22.24
			50	24	22.16	22.07	22.28
			50	49	22.14	22.16	22.28
			100	0	22.22	22.14	22.23

LTE Band 5 part:

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					20407	20525	20643
					824.7MHz	836.5MHz	848.3MHz
Band 5	1.4	QPSK	1	0	24.81	24.77	24.76
			1	2	24.89	24.88	24.95
			1	5	24.79	24.77	24.80
			3	0	24.91	24.90	24.88
			3	1	24.89	24.89	24.88
			3	2	24.91	24.89	24.91
			6	0	23.89	23.86	23.96
		16QAM	1	0	23.91	23.94	23.66
			1	2	24.08	24.13	23.84
			1	5	23.87	23.92	23.66
			3	0	23.77	23.81	23.69
			3	1	23.77	23.80	23.71
			3	2	23.79	23.78	23.70
			6	0	22.91	22.76	22.87

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					20415	20525	20635
					825.5MHz	836.5MHz	847.5MHz
Band 5	3	QPSK	1	0	24.74	24.82	24.82
			1	7	24.76	24.80	24.83
			1	14	24.78	24.80	24.81
			8	0	23.85	23.84	23.86
			8	4	23.82	23.76	23.86
			8	7	23.83	23.85	23.85
			15	0	23.82	23.86	23.86
		16QAM	1	0	24.00	24.02	23.74
			1	7	23.93	23.92	23.71
			1	14	23.93	23.97	23.74
			8	0	22.82	22.84	22.88
			8	4	22.89	22.83	22.88
			8	7	22.84	22.86	22.86
			15	0	22.81	22.75	22.76

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					20425	20525	20625
					826.5MHz	836.5MHz	846.5MHz
Band 5	5	QPSK	1	0	24.75	24.75	24.84
			1	12	24.89	24.86	24.92
			1	24	24.77	24.78	24.86
			12	0	23.85	23.83	23.87
			12	6	23.83	23.79	23.83
			12	11	23.81	23.82	23.82
			25	0	23.79	23.86	23.83
		16QAM	1	0	23.79	23.97	23.85
			1	12	23.85	24.06	23.90
			1	24	23.75	23.97	23.78
			12	0	22.80	22.89	22.83
			12	6	22.77	22.92	22.82
			12	11	22.83	22.85	22.82
			25	0	22.84	22.86	22.85

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					20450	20525	20600
					829MHz	836.5MHz	844MHz
Band 5	10	QPSK	1	0	24.76	24.77	24.75
			1	24	24.78	24.95	25.03
			1	49	24.76	24.78	24.85
			25	0	23.89	23.90	23.93
			25	12	23.90	23.93	23.96
			25	24	23.91	23.91	23.97
			50	0	23.84	23.88	23.91
		16QAM	1	0	23.93	23.96	23.73
			1	24	24.05	23.98	23.86
			1	49	23.93	23.98	23.74
			25	0	22.85	22.95	23.00
			25	12	22.83	22.96	23.03
			25	24	22.86	22.95	23.03
			50	0	22.83	22.95	22.90

LTE Band 7 part:

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					20775	21100	21425
					2502.5MHz	2535.0MHz	2567.5MHz
Band 7	5	QPSK	1	0	23.59	23.79	23.90
			1	12	23.75	23.96	24.06
			1	24	23.68	23.81	23.99
			12	0	22.75	22.90	23.10
			12	6	22.74	22.96	23.06
			12	11	22.73	22.93	23.07
			25	0	22.78	22.91	23.06
		16QAM	1	0	22.69	23.06	22.97
			1	12	22.79	23.21	23.14
			1	24	22.74	23.07	23.00
			12	0	21.75	22.03	22.09
			12	6	21.76	22.02	22.07
			12	11	21.71	22.04	22.08
			25	0	21.78	21.94	22.11

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					20800	21100	21400
					2505.0MHz	2535.0MHz	2565.0MHz
Band 7	10	QPSK	1	0	23.63	23.83	23.95
			1	24	23.78	24.07	24.01
			1	49	23.71	23.85	23.97
			25	0	22.81	22.98	23.17
			25	12	22.83	22.99	23.13
			25	24	22.81	22.97	23.13
			50	0	22.85	23.02	23.09
		16QAM	1	0	22.80	23.05	22.92
			1	24	23.01	23.15	23.07
			1	49	23.02	23.12	22.99
			25	0	21.80	22.01	22.20
			25	12	21.78	22.05	22.18
			25	24	21.78	22.05	22.15
			50	0	21.83	22.05	22.11

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					20825	21100	21375
					2507.5MHz	2535.0MHz	2562.5MHz
Band 7	15	QPSK	1	0	23.51	23.79	23.94
			1	37	23.68	23.87	24.03
			1	74	23.69	23.81	23.94
			36	0	22.81	22.98	23.14
			36	16	22.79	22.99	23.17
			36	35	22.83	23.01	23.19
			75	0	22.89	23.07	23.17
		16QAM	1	0	22.78	23.09	22.88
			1	37	22.98	23.18	22.98
			1	74	22.89	23.11	22.89
			36	0	21.75	22.01	22.04
			36	16	21.76	22.08	22.07
			36	35	21.79	22.05	22.07
			75	0	21.78	22.05	22.04

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					20850	21100	21350
					2510.0MHz	2535.0MHz	2560.0MHz
Band 7	20	QPSK	1	0	23.55	23.78	23.76
			1	49	23.90	23.97	24.15
			1	99	23.76	23.87	23.81
			50	0	22.72	22.89	23.02
			50	24	22.73	22.89	23.03
			50	49	22.70	22.89	23.02
			100	0	22.82	22.93	22.97
		16QAM	1	0	22.57	23.00	22.99
			1	49	22.94	23.18	23.20
			1	99	22.82	23.10	23.00
			50	0	21.74	21.99	22.09
			50	24	21.70	21.97	22.12
			50	49	21.69	21.95	22.16
			100	0	21.76	21.94	21.99

LTE Band 12 part:

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					23017	23095	23175
					699.7MHz	707.5MHz	715.3MHz
Band 12	1.4	QPSK	1	0	24.78	24.74	24.66
			1	2	24.96	24.83	24.79
			1	5	24.79	24.73	24.68
			3	0	24.90	24.86	24.82
			3	1	24.88	24.85	24.81
			3	2	24.88	24.86	24.81
			6	0	23.82	23.80	23.75
		16QAM	1	0	23.86	23.87	23.58
			1	2	24.04	24.03	23.73
			1	5	23.88	23.88	23.58
			3	0	23.77	23.76	23.58
			3	1	23.75	23.76	23.60
			3	2	23.76	23.77	23.59
			6	0	22.89	22.72	22.79

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					23025	23095	23165
					700.5MHz	707.5MHz	714.5MHz
Band 12	3	QPSK	1	0	24.75	24.79	24.74
			1	7	24.75	24.79	24.75
			1	14	24.76	24.76	24.73
			8	0	23.81	23.79	23.80
			8	4	23.81	23.80	23.80
			8	7	23.84	23.78	23.80
			15	0	23.82	23.84	23.66
		16QAM	1	0	23.92	23.98	23.62
			1	7	23.94	23.86	23.62
			1	14	23.92	23.87	23.63
			8	0	22.91	22.89	22.80
			8	4	22.91	22.90	22.80
			8	7	22.91	22.84	22.79
			15	0	22.92	22.82	22.67

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					23035	23095	23155
					701.5MHz	707.5MHz	713.5MHz
Band 12	5	QPSK	1	0	24.67	24.76	24.68
			1	12	24.86	24.86	24.83
			1	24	24.77	24.71	24.71
			12	0	23.81	23.79	23.73
			12	6	23.84	23.86	23.74
			12	11	23.80	23.83	23.75
			25	0	23.78	23.82	23.72
		16QAM	1	0	23.73	23.92	23.62
			1	12	23.85	24.05	23.76
			1	24	23.80	23.87	23.67
			12	0	22.88	22.92	22.81
			12	6	22.86	22.90	22.85
			12	11	22.84	22.92	22.78
			25	0	22.89	22.90	22.88

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					23060	23095	23130
					704MHz	707.5MHz	711MHz
Band 12	10	QPSK	1	0	24.68	24.75	24.75
			1	24	24.86	24.86	24.79
			1	49	24.72	24.76	24.74
			25	0	23.79	23.78	23.74
			25	12	23.87	23.78	23.77
			25	24	23.86	23.80	23.78
			50	0	23.89	23.85	23.77
		16QAM	1	0	23.88	23.87	23.68
			1	24	24.01	24.02	23.71
			1	49	23.89	23.85	23.68
			25	0	22.92	22.94	22.88
			25	12	22.89	22.95	22.87
			25	24	22.89	22.94	22.86
			50	0	22.93	22.91	22.82

LTE Band 13 part:

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					23205	23230	23255
					779.50MHz	782.00MHz	784.50MHz
Band 13	5	QPSK	1	0	23.82	24.80	23.70
			1	12	24.92	24.90	23.91
			1	24	24.81	24.78	23.76
			12	0	23.80	23.81	22.88
			12	6	23.81	23.85	22.86
			12	11	23.83	23.82	22.94
			25	0	23.76	23.83	22.95
		16QAM	1	0	24.80	23.80	23.98
			1	12	24.92	23.99	24.02
			1	24	24.80	23.91	23.86
			12	0	23.91	22.83	22.92
			12	6	23.86	22.80	22.87
			12	11	23.93	22.82	22.88
			25	0	23.88	22.78	22.85

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					/	23230	/
					/	782.00MHz	/
Band 13	10	QPSK	1	0	/	24.81	/
			1	24	/	24.89	/
			1	49	/	24.80	/
			25	0	/	23.96	/
			25	12	/	23.96	/
			25	24	/	23.94	/
			50	0	/	23.93	/
		16QAM	1	0	/	23.84	/
			1	24	/	24.05	/
			1	49	/	23.90	/
			25	0	/	23.01	/
			25	12	/	22.98	/
			25	24	/	23.00	/
			50	0	/	22.95	/

LTE Band 17 part:

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					23755	23790	23825
					706.5MHz	710.0MHz	713.5MHz
Band 17	5	QPSK	1	0	24.30	24.17	24.14
			1	12	24.45	24.23	24.32
			1	24	24.25	24.14	24.13
			12	0	23.23	23.25	23.23
			12	6	23.28	23.27	23.27
			12	11	23.26	23.26	23.24
			25	0	23.34	23.18	23.26
		16QAM	1	0	23.37	23.44	23.19
			1	12	23.47	23.49	23.31
			1	24	23.29	23.28	23.22
			12	0	22.25	22.26	22.27
			12	6	22.22	22.25	22.28
			12	11	22.19	22.22	22.30
			25	0	22.34	22.15	22.28

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					23780	23790	23800
					709.0MHz	710.0MHz	711.0MHz
Band 17	10	QPSK	1	0	24.35	24.36	24.39
			1	24	24.37	24.35	24.38
			1	49	24.17	24.20	24.23
			25	0	23.16	23.22	23.35
			25	12	23.19	23.19	23.31
			25	24	23.20	23.19	23.33
			50	0	23.18	23.20	23.23
		16QAM	1	0	23.54	23.56	23.22
			1	24	23.53	23.52	23.30
			1	49	23.41	23.35	23.20
			25	0	22.18	22.21	22.32
			25	12	22.16	22.23	22.34
			25	24	22.18	22.25	22.32
			50	0	22.12	22.23	22.23

LTE Band 25 part

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					26047	26365	26683
					1850.70MHz	1882.5MHz	1914.3MHz
Band 25	1.4	QPSK	1	0	24.02	24.10	24.22
			1	2	24.15	24.18	24.39
			1	5	24.04	24.12	24.20
			3	0	24.13	24.20	24.28
			3	1	24.11	24.21	24.27
			3	2	24.11	24.27	24.29
			6	0	23.10	23.22	23.35
		16QAM	1	0	23.14	23.30	23.09
			1	2	23.27	23.47	23.22
			1	5	23.17	23.29	23.09
			3	0	22.97	23.10	23.09
			3	1	23.01	23.10	23.06
			3	2	22.97	23.10	23.05
			6	0	22.10	22.07	22.28

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					26055	26365	26675
					1851.50MHz	1882.5MHz	1913.5MHz
Band 25	3	QPSK	1	0	23.99	24.07	24.30
			1	7	24.06	24.13	24.25
			1	14	23.97	24.07	24.24
			8	0	23.02	23.12	23.36
			8	4	23.02	23.16	23.37
			8	7	23.02	23.15	23.29
			15	0	22.92	23.10	23.24
		16QAM	1	0	23.16	23.34	23.18
			1	7	23.17	23.27	23.17
			1	14	23.16	23.30	23.16
			8	0	22.04	22.16	22.33
			8	4	22.08	22.15	22.34
			8	7	22.05	22.13	22.28
			15	0	22.01	21.99	22.13

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					26065	26365	26665
					1852.5MHz	1882.5MHz	1912.5MHz
Band 25	5	QPSK	1	0	23.97	24.10	24.27
			1	12	24.10	24.25	24.32
			1	24	23.90	24.12	24.19
			12	0	22.96	23.09	23.28
			12	6	22.96	23.09	23.29
			12	11	23.00	23.11	23.07
			25	0	22.99	23.18	23.19
		16QAM	1	0	22.97	23.28	23.23
			1	12	23.04	23.42	23.31
			1	24	22.97	23.29	23.15
			12	0	21.95	22.17	22.25
			12	6	22.00	22.18	22.24
			12	11	22.01	22.14	22.09
			25	0	22.01	22.08	22.21

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					26090	26365	26640
					1855.00MHz	1882.5MHz	1910.0MHz
Band 25	10	QPSK	1	0	23.92	24.15	24.29
			1	24	24.06	24.17	24.54
			1	49	24.01	24.12	24.24
			25	0	23.00	23.16	23.27
			25	12	23.03	23.18	23.23
			25	24	23.06	23.24	23.17
			50	0	23.04	23.18	23.18
		16QAM	1	0	23.14	23.30	23.20
			1	24	23.26	23.40	23.22
			1	49	23.17	23.30	23.14
			25	0	22.01	22.25	22.29
			25	12	21.99	22.24	22.33
			25	24	22.07	22.26	22.17
			50	0	22.02	22.20	22.16

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					26115	26365	26615
					1857.50MHz	1882.5MHz	1907.5MHz
Band 25	15	QPSK	1	0	23.92	24.09	24.20
			1	37	24.04	24.17	24.31
			1	74	24.01	24.07	24.19
			36	0	23.11	23.31	23.37
			36	16	23.10	23.27	23.37
			36	35	23.12	23.21	23.32
			75	0	23.12	23.28	23.35
		16QAM	1	0	23.09	23.35	23.14
			1	37	23.21	23.42	23.27
			1	74	23.16	23.37	23.07
			36	0	23.11	23.24	23.38
			36	16	23.09	23.29	23.35
			36	35	23.09	23.25	23.34
			75	0	22.02	22.24	22.30

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					26140	26365	26590
					1860.00MHz	1882.50MHz	1905.00MHz
Band 25	20	QPSK	1	0	23.97	24.07	23.96
			1	49	24.23	24.38	24.35
			1	99	24.06	24.10	24.04
			50	0	22.99	23.09	23.31
			50	24	22.98	23.12	23.32
			50	49	23.05	23.16	23.26
			100	0	22.99	23.14	23.27
		16QAM	1	0	22.99	23.27	23.10
			1	49	23.19	23.45	23.50
			1	99	23.07	23.24	23.15
			50	0	22.00	22.17	22.36
			50	24	21.95	22.14	22.38
			50	49	22.00	22.16	22.32
			100	0	21.97	22.18	22.33

LTE Band 26 part:

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					26697	26865	27033
					814.7MHz	831.5MHz	848.3MHz
Band 26	1.4	QPSK	1	0	24.88	24.83	24.72
			1	2	25.00	24.88	24.83
			1	5	24.89	24.78	24.69
			3	0	24.82	24.91	24.84
			3	1	24.80	24.88	24.84
			3	2	24.83	24.92	24.78
			6	0	23.94	23.88	23.81
		16QAM	1	0	24.71	24.73	24.79
			1	2	24.81	24.87	24.82
			1	5	24.70	24.72	24.77
			3	0	24.79	24.82	24.88
			3	1	24.76	24.80	24.86
			3	2	24.76	24.88	24.88
			6	0	23.72	23.85	23.87

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					26705	26865	27025
					815.5MHz	831.5MHz	847.5MHz
Band 26	3	QPSK	1	0	23.78	23.95	23.62
			1	7	23.94	24.08	23.77
			1	14	23.76	23.91	23.62
			8	0	23.65	23.79	23.63
			8	4	23.64	23.79	23.63
			8	7	23.65	23.80	23.63
			15	0	22.84	22.77	22.79
		16QAM	1	0	23.79	23.87	23.66
			1	7	24.00	24.06	23.84
			1	14	23.77	23.90	23.64
			8	0	23.66	23.71	23.67
			8	4	23.68	23.72	23.66
			8	7	23.68	23.74	23.63
			15	0	22.82	22.68	22.87

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					26715	26865	27015
					816.5MHz	831.5MHz	846.5MHz
Band 26	5	QPSK	1	0	24.86	24.84	24.83
			1	12	24.80	24.84	24.77
			1	24	24.83	24.84	24.77
			12	0	23.86	23.86	23.75
			12	6	23.88	23.87	23.78
			12	11	23.88	23.81	23.78
			25	0	23.78	23.82	23.77
		16QAM	1	0	24.69	24.81	24.86
			1	12	24.69	24.76	24.84
			1	24	24.67	24.81	24.85
			12	0	23.64	23.79	23.92
			12	6	23.75	23.80	23.93
			12	11	23.76	23.76	23.85
			25	0	23.72	23.77	23.82

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					26750	26865	26990
					820MHz	831.5MHz	844MHz
Band 26	10	QPSK	1	0	23.90	24.02	23.71
			1	24	23.87	23.95	23.69
			1	49	23.91	23.94	23.70
			25	0	22.75	22.87	22.81
			25	12	22.82	22.86	22.81
			25	24	22.84	22.88	22.85
			50	0	22.79	22.79	22.71
		16QAM	1	0	23.90	23.98	23.79
			1	24	23.82	23.82	23.75
			1	49	23.85	23.90	23.75
			25	0	22.79	22.82	22.86
			25	12	22.77	22.83	22.87
			25	24	22.81	22.83	22.82
			50	0	22.75	22.74	22.72

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					26775	26865	26965
					822.5MHz	831.5MHz	841.5MHz
Band 26	15	QPSK	1	0	24.80	24.80	24.85
			1	37	24.89	24.90	24.88
			1	74	24.81	24.79	24.78
			36	0	23.81	23.83	23.82
			36	16	23.82	23.85	23.83
			36	35	23.80	23.85	23.79
			75	0	23.82	23.89	23.80
		16QAM	1	0	24.71	24.79	24.80
			1	37	24.78	24.82	24.92
			1	74	24.77	24.75	24.88
			36	0	23.76	23.80	23.85
			36	16	23.76	23.87	23.80
			36	35	23.80	23.78	23.74
			75	0	23.78	23.85	23.86

LTE Band 38 part:

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					37775	38000	38225
					2572.50MHz	2595.00MHz	2617.50MHz
Band 38	5	QPSK	1	0	23.85	24.03	23.86
			1	12	24.00	24.18	24.01
			1	24	23.87	24.02	23.85
			12	0	23.03	23.13	23.03
			12	6	23.05	23.15	23.04
			12	11	23.01	23.13	23.03
			25	0	23.03	23.17	23.06
		16QAM	1	0	23.22	23.42	23.23
			1	12	23.36	23.58	23.34
			1	24	23.22	23.43	23.21
			12	0	22.17	22.20	22.12
			12	6	22.12	22.18	22.11
			12	11	22.15	22.16	22.15
			25	0	22.14	22.22	22.14

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					378000	38000	38200
					2575.00MHz	2595.00MHz	2615.00MHz
Band 38	10	QPSK	1	0	24.07	24.13	24.04
			1	24	24.28	24.30	24.28
			1	49	23.99	24.07	24.02
			25	0	23.11	23.18	23.13
			25	12	23.16	23.19	23.11
			25	24	23.15	23.20	23.10
			50	0	23.15	23.21	23.08
		16QAM	1	0	23.50	23.52	22.98
			1	24	23.69	23.68	23.15
			1	49	23.43	23.46	22.92
			25	0	22.33	22.34	22.17
			25	12	22.29	22.31	22.19
			25	24	22.29	22.31	22.18
			50	0	22.22	22.29	22.13

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					37825	38000	38175
					2577.50MHz	2595.00MHz	2612.50MHz
Band 38	15	QPSK	1	0	23.99	23.98	24.10
			1	37	24.09	24.10	24.14
			1	74	24.02	23.99	24.01
			36	0	23.12	23.12	23.12
			36	16	23.08	23.14	23.09
			36	35	23.11	23.13	23.11
			75	0	23.10	23.12	23.10
		16QAM	1	0	23.42	23.41	23.14
			1	37	23.51	23.51	23.21
			1	74	23.40	23.38	23.05
			36	0	22.16	22.17	22.13
			36	16	22.13	22.20	22.12
			36	35	22.17	22.23	22.12
			75	0	22.17	22.20	22.15

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					37850	38000	38150
					2580.00MHz	2595.00MHz	2610.00MHz
Band 38	20	QPSK	1	0	23.96	24.00	23.99
			1	49	24.27	24.32	24.26
			1	99	23.98	23.99	23.90
			50	0	23.18	23.14	23.10
			50	24	23.12	23.13	23.15
			50	49	23.13	23.07	23.11
			100	0	23.11	23.12	23.06
		16QAM	1	0	23.22	22.64	22.94
			1	49	23.53	22.95	23.20
			1	99	23.21	22.66	22.88
			50	0	22.28	22.21	22.10
			50	24	22.19	22.24	22.17
			50	49	22.28	22.20	22.18
			100	0	22.15	22.23	22.20

LTE Band 41 part:

LTE Band	Band width (MHz)	Modu-lation	RB Size	RB Offset	Average Power (dBm)				
					39675	40148	40620	41093	41565
					2498.5MHz	2545.5MHz	2593.0MHz	2640.3MHz	2687.5MHz
Band 41	5	QPSK	1	0	23.68	23.62	23.87	23.70	23.55
			1	12	23.81	23.76	24.01	23.84	23.71
			1	24	23.70	23.62	23.86	23.70	23.54
			12	0	22.94	22.81	22.97	22.86	22.67
			12	6	22.91	22.78	22.96	22.84	22.65
			12	11	22.87	22.77	22.93	22.82	22.67
			25	0	22.89	22.80	23.00	22.87	22.71
		16QAM	1	0	23.05	22.97	23.28	23.07	22.88
			1	12	23.22	23.10	23.39	23.20	22.98
			1	24	23.10	22.97	23.26	23.06	22.83
			12	0	21.99	21.88	21.96	21.90	21.76
			12	6	21.95	21.85	22.00	21.90	21.75
			12	11	21.97	21.88	21.93	21.89	21.78
			25	0	21.95	21.85	22.03	21.91	21.75

LTE Band	Band width (MHz)	Modu-lation	RB Size	RB Offset	Average Power (dBm)				
					39700	40160	40620	41080	41540
					2501.0MHz	2547.0MHz	2593.0MHz	2639.0MHz	2685.0MHz
Band 41	10	QPSK	1	0	23.88	23.82	23.95	23.86	23.76
			1	24	24.08	24.01	24.09	24.03	23.93
			1	49	23.88	23.77	23.90	23.81	23.66
			25	0	23.02	22.87	22.99	22.91	22.72
			25	12	23.00	22.86	22.98	22.90	22.72
			25	24	23.06	22.91	22.99	22.94	22.76
			50	0	23.02	22.89	22.96	22.91	22.76
		16QAM	1	0	23.35	22.97	23.32	23.09	22.59
			1	24	23.49	23.12	23.47	23.23	22.74
			1	49	23.32	22.94	23.27	23.05	22.55
			25	0	22.09	21.93	22.15	22.00	21.77
			25	12	22.12	21.97	22.14	22.03	21.82
			25	24	22.13	22.01	22.14	22.05	21.89
			50	0	22.00	21.90	22.07	21.95	21.79

LTE Band	Band width (MHz)	Modu-lation	RB Size	RB Offset	Average Power (dBm)				
					39725	40173	40620	41068	41515
					2503.5MHz	2548.5MHz	2593.0MHz	2637.8MHz	2682.5MHz
Band 41	15	QPSK	1	0	23.83	23.83	23.92	23.86	23.83
			1	37	23.92	23.92	23.99	23.94	23.91
			1	74	23.80	23.78	23.81	23.79	23.75
			36	0	22.98	22.94	22.99	22.95	22.89
			36	16	23.00	22.94	22.97	22.95	22.88
			36	35	22.98	22.94	22.99	22.95	22.89
			75	0	22.96	22.92	22.98	22.94	22.87
		16QAM	1	0	23.26	23.02	23.30	23.11	22.77
			1	37	23.37	23.12	23.34	23.19	22.87
			1	74	23.29	22.98	23.22	23.06	22.67
			36	0	22.01	21.93	22.07	21.97	21.84
			36	16	21.99	21.92	22.03	21.96	21.85
			36	35	22.00	21.91	22.05	21.96	21.82
			75	0	21.99	21.93	22.03	21.96	21.87

LTE Band	Band width (MHz)	Modu-lation	RB Size	RB Offset	Average Power (dBm)				
					39750	40185	40620	41055	41490
					2506.0MHz	2549.5MHz	2593.0MHz	2636.5MHz	2680.0MHz
Band 41	20	QPSK	1	0	23.83	23.80	23.85	23.81	23.76
			1	49	24.08	24.03	24.13	24.06	23.98
			1	99	23.79	23.73	23.79	23.75	23.66
			50	0	23.02	22.89	23.03	22.94	22.76
			50	24	23.01	22.87	22.98	22.90	22.72
			50	49	22.97	22.85	23.01	22.90	22.72
			100	0	22.96	22.89	22.97	22.92	22.82
		16QAM	1	0	23.13	22.76	23.14	22.88	22.38
			1	49	23.38	22.96	23.35	23.09	22.53
			1	99	23.10	22.68	23.06	22.81	22.26
			50	0	22.00	21.90	22.05	21.95	21.80
			50	24	22.01	21.93	22.11	21.99	21.85
			50	49	22.03	21.92	22.06	21.97	21.81
			100	0	21.98	21.93	22.01	21.96	21.88

Note:

1. Per KDB 447498 D01v05r02 section 4.1, 6), the required test channels number is 5 for LTE Band 41.

LTE Band 66 part

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					131979	132322	132665
					1710.70MHz	1745.00MHz	1779.30MHz
Band 66	1.4	QPSK	1	0	24.23	24.07	23.95
			1	2	24.37	24.21	24.05
			1	5	24.23	24.09	23.99
			3	0	24.36	24.18	24.10
			3	1	24.32	24.21	24.07
			3	2	24.29	24.20	24.10
			6	0	23.24	23.12	23.04
		16QAM	1	0	23.13	23.20	23.14
			1	2	23.29	23.46	23.24
			1	5	23.15	23.28	23.14
			3	0	23.18	23.10	22.93
			3	1	23.19	23.07	22.91
			3	2	23.15	23.09	22.98
			6	0	22.29	22.19	21.96

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					131987	132322	132657
					1711.50MHz	1745.00MHz	1778.50MHz
Band 66	3	QPSK	1	0	24.26	24.19	24.09
			1	7	24.27	24.20	24.06
			1	14	24.24	24.21	24.10
			8	0	23.28	23.26	23.17
			8	4	23.28	23.20	23.16
			8	7	23.34	23.22	23.18
			15	0	23.29	23.20	23.09
		16QAM	1	0	23.52	23.41	22.98
			1	7	23.41	23.38	23.03
			1	14	23.45	23.37	22.99
			8	0	22.45	22.29	22.22
			8	4	22.38	22.28	22.21
			8	7	22.38	22.27	22.19
			15	0	22.28	22.17	22.07

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					131997	132322	132647
					1712.50MHz	1745.00MHz	1777.50MHz
Band 66	5	QPSK	1	0	24.27	24.13	23.96
			1	12	24.33	24.24	24.15
			1	24	24.19	24.12	24.05
			12	0	23.28	23.15	23.05
			12	6	23.21	23.16	23.06
			12	11	23.21	23.15	23.05
			25	0	23.24	23.21	23.06
		16QAM	1	0	23.21	23.34	22.94
			1	12	23.32	23.45	23.12
			1	24	23.17	23.32	23.05
			12	0	22.23	22.27	22.14
			12	6	22.23	22.28	22.10
			12	11	22.21	22.27	22.10
			25	0	22.32	22.23	22.14

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					132022	132322	132622
					1715.00MHz	1745.00MHz	1775.00MHz
Band 66	10	QPSK	1	0	24.24	24.17	23.92
			1	24	24.31	24.23	24.06
			1	49	24.08	24.15	24.00
			25	0	23.24	23.16	23.09
			25	12	23.22	23.16	23.13
			25	24	23.26	23.19	23.07
			50	0	23.20	23.21	23.04
		16QAM	1	0	23.37	23.31	22.88
			1	24	23.56	23.44	22.95
			1	49	23.32	23.35	22.96
			25	0	22.29	22.28	22.14
			25	12	22.30	22.27	22.14
			25	24	22.27	22.26	22.19
			50	0	22.25	22.32	22.14

LT E Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					132047	132322	132597
					1717.50MHz	1745.00MHz	1772.50MHz
Band 66	15	QPSK	1	0	24.22	24.09	23.91
			1	37	24.23	24.22	24.02
			1	74	24.10	24.10	23.97
			36	0	23.29	23.22	23.13
			36	16	23.27	23.26	23.16
			36	35	23.30	23.20	23.16
			75	0	23.26	23.30	23.13
		16QAM	1	0	23.40	23.36	22.88
			1	37	23.47	23.45	22.91
			1	74	23.24	23.38	22.85
			36	0	22.28	22.29	22.11
			36	16	22.27	22.29	22.12
			36	35	22.24	22.22	22.10
			75	0	22.22	22.26	22.10

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					132072	132322	132572
					1720.00MHz	1745.00MHz	1770.00MHz
Band 66	20	QPSK	1	0	24.25	24.10	23.76
			1	49	24.31	24.38	24.02
			1	99	24.17	24.06	23.85
			50	0	23.10	23.14	23.08
			50	24	23.11	23.15	23.06
			50	49	23.19	23.13	23.06
			100	0	23.17	23.16	22.95
		16QAM	1	0	23.29	23.25	22.91
			1	49	23.40	23.49	23.10
			1	99	23.15	23.21	23.00
			50	0	22.18	22.18	22.13
			50	24	22.16	22.21	22.15
			50	49	22.17	22.23	22.14
			100	0	22.21	22.24	22.01

13.5 WLAN 2.4 GHz Band Conducted Power

Average Power (dBm)				
Channel	Frequency (MHz)	802.11 b	802.11 g	802.11n (HT20)
CH 01	2412	15.78	13.69	13.48
CH 06	2437	15.86	13.61	13.45
CH 11	2462	**16.13**	**13.78**	13.48

Average Power (dBm)		
Channel	Frequency (MHz)	802.11n (HT40)
CH 03	2422	12.85
CH 06	2437	12.87
CH 09	2452	12.85

Note:

1. Per KDB 447498 D01v06, the 1-g SAR test exclusion thresholds for 100 MHz to 6 GHz at *test separation distances* ≤ 50 mm are determined by:
   [(*max. power of channel, including tune-up tolerance, mW*) / (*min. test separation distance, mm*)] · [√f(GHz)] ≤ 3.0 for 1-g SAR, where
   - f(GHz) is the RF channel transmit frequency in GHz
   - Power and distance are rounded to the nearest mW and mm before calculation
   - The result is rounded to one decimal place for comparison

Channel	Frequency (GHz)	Max. Tune-up Power (dBm)	Max. Power (mW)	Test distance (mm)	Result	exclusion thresholds for 1-g SAR
b/CH 11	2.462	16.5	44.67	5	14.02	3.0
g/CH 11	2.462	14.0	25.12	5	9.34	3.0

2. Base on the result of note1, RF exposure evaluation of 802.11 b mode is required.
3. Per KDB 248227 D01v02r02, choose the highest output power channel to test SAR and determine further SAR exclusion.
4. 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.
5. 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.
6. 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

Average Power (dBm)				
Channel	Frequency (MHz)	802.11 a	802.11 ac20	802.11 n20
CH 36	5180	5.51	5.55	5.35
CH 40	5200	5.42	5.15	5.16
CH 48	5240	**5.75**	5.48	5.49

Average Power (dBm)			
Channel	Frequency (MHz)	802.11 ac40	802.11 n40
CH 38	5190	5.47	5.37
CH 46	5230	5.47	5.59

Average Power (dBm)		
Channel	Frequency (MHz)	802.11 ac80
CH 42	5210	5.47

Note:

7. Per KDB 447498 D01v06, the 1-g SAR test exclusion thresholds for 100 MHz to 6 GHz at *test separation distances* ≤ 50 mm are determined by:
   [(*max. power of channel, including tune-up tolerance, mW*) / (*min. test separation distance, mm*)] · [√f(GHz)] ≤ 3.0 for 1-g SAR, where
   - f(GHz) is the RF channel transmit frequency in GHz
   - Power and distance are rounded to the nearest mW and mm before calculation
   - The result is rounded to one decimal place for comparison

Channel	Frequency (GHz)	Max. Tune-up Power (dBm)	Max. Power (mW)	Test distance (mm)	Result	exclusion thresholds for 1-g SAR
a/CH 48	5.240	6.0	3.98	5	1.82	3.0

8. Base on the result of note1, RF exposure evaluation of 802.11 a mode is not required.
9. Per KDB 248227 D01v02r02, choose the highest output power channel to test SAR and determine further SAR exclusion.
10. 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.

13.7 WLAN 5.8GHz Band Conducted Power

Average Power (dBm)				
Channel	Frequency (MHz)	802.11 a	802.11 ac20	802.11 n20
CH 149	5745	5.08	4.91	4.95
CH 157	5785	4.67	4.51	4.54
CH 165	5825	**5.81**	5.64	5.67

Average Power (dBm)			
Channel	Frequency (MHz)	802.11 ac40	802.11 n40
CH 151	5755	4.90	5.04
CH 159	5795	4.71	4.91

Average Power (dBm)		
Channel	Frequency (MHz)	802.11 ac80
CH 155	5775	4.85

Note:

11. Per KDB 447498 D01v06, the 1-g SAR test exclusion thresholds for 100 MHz to 6 GHz at *test separation distances* ≤ 50 mm are determined by:
    [(*max. power of channel, including tune-up tolerance, mW*) / (*min. test separation distance, mm*)] · [√f(GHz)] ≤ 3.0 for 1-g SAR, where
    - f(GHz) is the RF channel transmit frequency in GHz
    - Power and distance are rounded to the nearest mW and mm before calculation
    - The result is rounded to one decimal place for comparison

Channel	Frequency (GHz)	Max. Tune-up Power (dBm)	Max. Power (mW)	Test distance (mm)	Result	exclusion thresholds for 1-g SAR
a/CH 165	5.825	6.0	3.98	5.0	1.92	3.0

12. Base on the result of note1, RF exposure evaluation of 802.11 a mode is not required.
13. Per KDB 248227 D01v02r02, choose the highest output power channel to test SAR and determine further SAR exclusion.
14. 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.

13.8 Bluetooth Conducted Power

Average Power (dBm)				
Channel	Frequency (MHz)	GFSK	π/4-DQPSK	8DPSK
CH 00	2402	4.49	3.77	3.68
CH 39	2441	**5.79**	4.95	4.80
CH 78	2480	5.49	4.60	4.47

Average Power (dBm)					
Channel	Frequency (MHz)	BLT PHY 1M	BLT PHY 2M	BLT-Coded PHY S=2	BLT-Coded PHY S=8
CH 00	2402	-3.79	-3.91	-3.42	-3.48
CH 20	2442	-2.18	-2.40	-2.14	-2.23
CH 39	2480	-3.04	-3.36	-3.03	-3.03

Note:

1. Per KDB 447498 D01v06, the 1-g SAR test exclusion thresholds for 100 MHz to 6 GHz at *test separation distances* ≤ 50 mm are determined by:
   [(*max. power of channel, including tune-up tolerance, mW*) / (*min. test separation distance, mm*)] · [√f(GHz)] ≤ 3.0 for 1-g SAR, where
   - f(GHz) is the RF channel transmit frequency in GHz
   - Power and distance are rounded to the nearest mW and mm before calculation
   - The result is rounded to one decimal place for comparison

Channel	Frequency (GHz)	Max. tune-up Power (dBm)	Max. Power (mW)	Test distance (mm)	Result	exclusion thresholds for 1-g SAR
CH 39	2.441	6	3.98	5	1.25	3.0

2. The max. tune-up power was provided by manufacturer, base on the result of note 1, RF exposure evaluation 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. When the minimum *test separation distance* is < 5 mm, a distance of 5 mm according is applied to determine SAR test exclusion.

14 Exposure Positions Consideration

14.1 EUT Antenna Locations

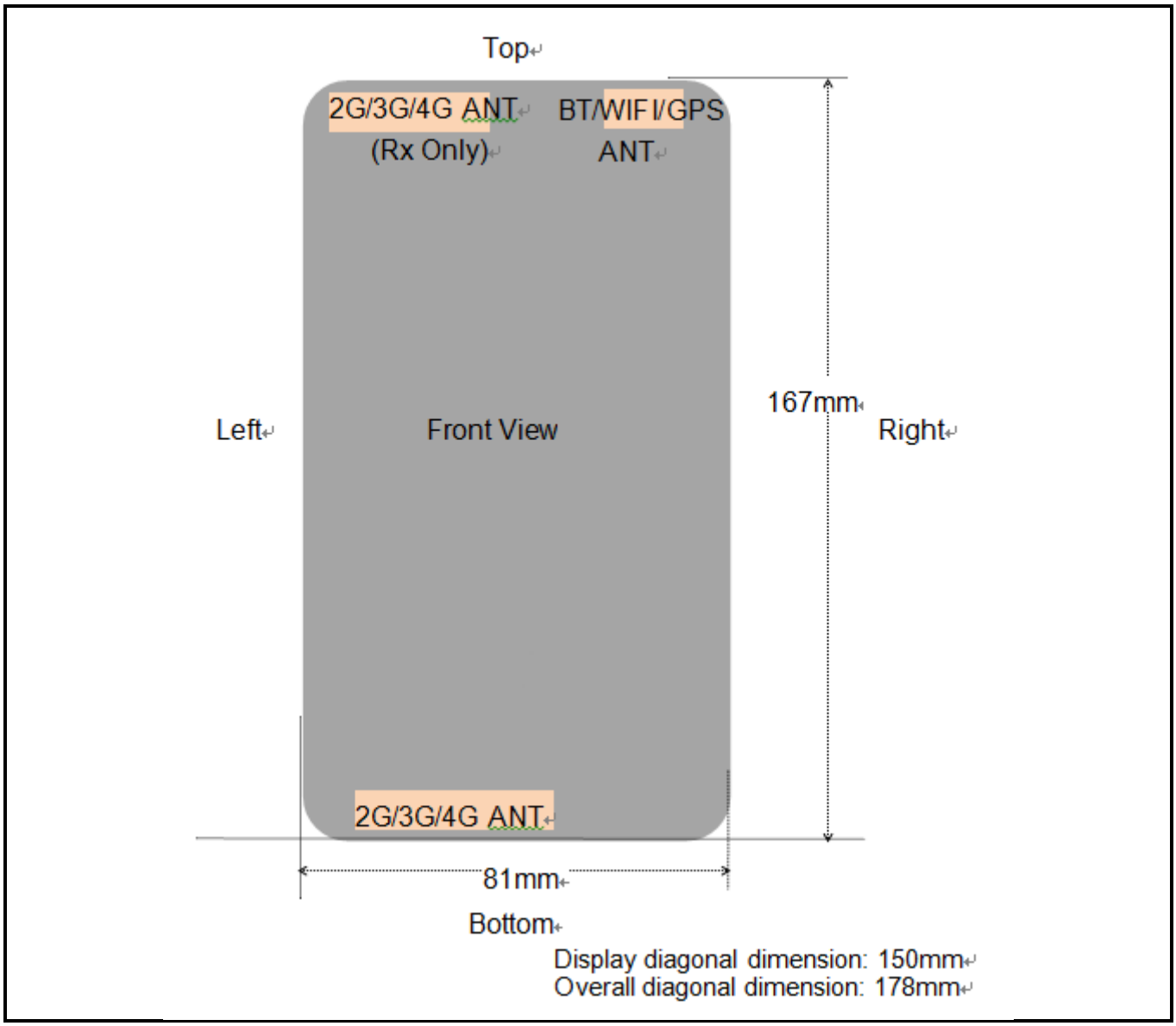


Fig.14.1 EUT Antenna Locations

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.

14.2 Test Positions Consideration

Distance of Antennas to EUT edge/surface Test distance: 10mm						
Antennas	**Back**	**Front**	**Top Side**	**Bottom Side**	**Right Side**	**Left Side**
2G/3G/4G	<25mm	<25mm	145mm	<25mm	35mm	<25mm
WLAN & Bluetooth	<25mm	<25mm	<25mm	155mm	<25mm	62mm

Test Positions Test distance: 10mm						
Antennas	**Back**	**Front**	**Top Side**	**Bottom Side**	**Right Side**	**Left Side**
2G/3G/4G	Yes	Yes	No	Yes	No	Yes
WLAN & Bluetooth	Yes	Yes	Yes	No	Yes	No

Note:

1. Head/Body-worn/Hotspot mode SAR assessments are required.
2. 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.
3. Per KDB 447498 D01v06, 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.

15 SAR Test Results Summary

15.1 Standalone Head SAR Data

➢ GSM Head SAR

Plot No.	Band/Mode	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Variation (%)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
1	GSM850/Voice	Right Cheek	251	848.8	33.68	-4.33	34.0	**0.139**	1.076	0.150
	GSM850/Voice	Right Tilted	251	848.8	33.68	1.56	34.0	0.029	1.076	0.031
	GSM850/Voice	Left Cheek	251	848.8	33.68	-1.29	34.0	0.126	1.076	0.136
	GSM850/Voice	Left Tilted	251	848.8	33.68	-1.22	34.0	0.023	1.076	0.025
	GSM1900/Voice	Right Cheek	661	1880	30.41	-1.09	30.5	0.017	1.021	0.017
	GSM1900/Voice	Right Tilted	661	1880	30.41	1.63	30.5	0.005	1.021	0.005
2	GSM1900/Voice	Left Cheek	661	1880	30.41	2.82	30.5	**0.022**	1.021	0.022
	GSM1900/Voice	Left Tilted	661	1880	30.41	-0.49	30.5	0.008	1.021	0.008
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	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Variation (%)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
3	Band V/RMC	Right Cheek	4233	846.6	23.51	-3.88	24.0	**0.117**	1.119	0.131
	Band V/RMC	Right Tilted	4233	846.6	23.51	1.85	24.0	0.022	1.119	0.025
	Band V/RMC	Left Cheek	4233	846.6	23.51	-1.02	24.0	0.091	1.119	0.102
	Band V/RMC	Left Tilted	4233	846.6	23.51	-1.66	24.0	0.017	1.119	0.019
	Band IV/RMC	Right Cheek	1312	1712.4	23.31	0.93	23.5	0.035	1.045	0.037
	Band IV/RMC	Right Tilted	1312	1712.4	23.31	1.22	23.5	0.011	1.045	0.011
4	Band IV/RMC	Left Cheek	1312	1712.4	23.31	-2.42	23.5	**0.086**	1.045	0.090
	Band IV/RMC	Left Tilted	1312	1712.4	23.31	2.13	23.5	0.026	1.045	0.027
	Band II/RMC	Right Cheek	9538	1907.6	23.39	-1.85	23.5	0.016	1.026	0.016
	Band II/RMC	Right Tilted	9538	1907.6	23.39	0.28	23.5	0.003	1.026	0.003
5	Band II/RMC	Left Cheek	9538	1907.6	23.39	-2.82	23.5	**0.029**	1.026	0.030
	Band II/RMC	Left Tilted	9538	1907.6	23.39	3.16	23.5	0.005	1.026	0.005
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population					**1.6 W/kg (mW/g) Averaged over 1g**					

➢ CDMA Head SAR

Plot No.	Band/Mode	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Variation (%)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
6	BC 0/RC3(SO55)	Right Check	1013	824.7	23.64	-1.35	24.0	**0.025**	1.086	0.027
	BC 0/RC3(SO55)	Right Tilted	1013	824.7	23.64	-1.10	24.0	0.011	1.086	0.012
	BC 0/RC3(SO55)	Left Check	1013	824.7	23.64	-0.67	24.0	0.021	1.086	0.023
	BC 0/RC3(SO55)	Left Tilted	1013	824.7	23.64	-0.30	24.0	0.005	1.086	0.005
	BC 1/RC3(SO55)	Right Check	25	1851.25	23.41	0.42	23.5	0.047	1.021	0.048
	BC 1/RC3(SO55)	Right Tilted	25	1851.25	23.41	-0.22	23.5	0.017	1.021	0.017
7	BC 1/RC3(SO55)	Left Check	25	1851.25	23.41	-2.15	23.5	**0.061**	1.021	0.062
	BC 1/RC3(SO55)	Left Tilted	25	1851.25	23.41	0.05	23.5	0.038	1.021	0.039
	BC 10/RC3(SO55)	Right Check	476	817.9	24.45	-3.54	24.5	0.105	1.135	0.119
	BC 10/RC3(SO55)	Right Tilted	476	817.9	24.45	2.16	24.5	0.048	1.135	0.054
8	BC 10/RC3(SO55)	Left Check	476	817.9	24.45	-1.99	24.5	**0.123**	1.135	0.140
	BC 10/RC3(SO55)	Left Tilted	476	817.9	24.45	1.22	24.5	0.061	1.135	0.069
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	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Variation (%)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
9	Band5/1RB#24	Right Check	20600	844	25.03	-4.51	25.5	**0.156**	1.114	0.174
	Band5/1RB#24	Right Tilted	20600	844	25.03	2.34	25.5	0.034	1.114	0.038
	Band5/1RB#24	Left Check	20600	844	25.03	1.20	25.5	0.140	1.114	0.156
	Band5/1RB#24	Left Tilted	20600	844	25.03	-1.30	25.5	0.029	1.114	0.032
	Band5/50%RB#24	Right Check	20600	844	23.97	-0.27	24.0	0.134	1.007	0.135
	Band5/50%RB#24	Right Tilted	20600	844	23.97	-1.48	24.0	0.025	1.007	0.025
	Band5/50%RB#24	Left Check	20600	844	23.97	1.98	24.0	0.122	1.007	0.123
	Band5/50%RB#24	Left Tilted	20600	844	23.97	0.39	24.0	0.018	1.007	0.018
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	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Variation (%)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	Band7/1RB#49	Right Check	21350	2560	24.15	-2.17	24.5	0.134	1.084	0.145
	Band7/1RB#49	Right Tilted	21350	2560	24.15	1.75	24.5	0.032	1.084	0.035
10	Band7/1RB#49	Left Check	21350	2560	24.15	-2.51	24.5	**0.321**	1.084	0.348
	Band7/1RB#49	Left Tilted	21350	2560	24.15	1.50	24.5	0.052	1.084	0.056
	Band7/50%RB#24	Right Check	21350	2560	23.03	0.50	23.5	0.121	1.114	0.135
	Band7/50%RB#24	Right Tilted	21350	2560	23.03	-0.64	23.5	0.026	1.114	0.029
	Band7/50%RB#24	Left Check	21350	2560	23.03	-1.68	23.5	0.294	1.114	0.328
	Band7/50%RB#24	Left Tilted	21350	2560	23.03	0.88	23.5	0.047	1.114	0.052
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	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Variation (%)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
11	Band12/1RB#24	Right Check	23095	707.5	24.86	-2.92	25.0	**0.098**	1.033	0.101
	Band12/1RB#24	Right Tilted	23095	707.5	24.86	2.65	25.0	0.016	1.033	0.017
	Band12/1RB#24	Left Check	23095	707.5	24.86	3.52	25.0	0.077	1.033	0.080
	Band12/1RB#24	Left Tilted	23095	707.5	24.86	-0.80	25.0	0.011	1.033	0.011
	Band12/50%RB#0	Right Check	23060	704	23.87	-0.73	24.0	0.089	1.03	0.092
	Band12/50%RB#0	Right Tilted	23060	704	23.87	-1.15	24.0	0.012	1.03	0.012
	Band12/50%RB#0	Left Check	23060	704	23.87	-1.20	24.0	0.068	1.03	0.070
	Band12/50%RB#0	Left Tilted	23060	704	23.87	-1.82	24.0	0.007	1.03	0.007
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population					**1.6 W/kg (mW/g) Averaged over 1g**					

➢ FDD-LTE Band 13(10MHz) QPSK Body SAR

Plot No.	Band/Mode	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Variation (%)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
12	Band13/1RB#24	Right Check	23230	782	24.89	-0.78	25.0	**0.127**	1.026	0.130
	Band13/1RB#24	Right Tilted	23230	782	24.89	1.02	25.0	0.031	1.026	0.032
	Band13/1RB#24	Left Check	23230	782	24.89	-2.93	25.0	0.096	1.026	0.098
	Band13/1RB#24	Left Tilted	23230	782	24.89	0.90	25.0	0.024	1.026	0.025
	Band13/50%RB#0	Right Check	23230	782	23.96	0.85	24.0	0.119	1.009	0.120
	Band13/50%RB#0	Right Tilted	23230	782	23.96	-1.51	24.0	0.026	1.009	0.026
	Band13/50%RB#0	Left Check	23230	782	23.96	0.79	24.0	0.084	1.009	0.085
	Band13/50%RB#0	Left Tilted	23230	782	23.96	-1.80	24.0	0.019	1.009	0.019
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak					**1.6 W/kg (mW/g) Averaged over 1g**					

Uncontrolled Exposure/General Population	

➢ FDD-LTE Band 25(10MHz) QPSK Head SAR

Plot No.	Band/Mode	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Variation (%)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	Band25/1RB#49	Right Check	26365	1882.5	24.38	4.68	25.0	0.011	1.153	0.013
	Band25/1RB#49	Right Tilted	26365	1882.5	24.38	1.23	25.0	0.005	1.153	0.006
13	Band25/1RB#49	Left Check	26365	1882.5	24.38	-0.12	25.0	**0.028**	1.153	0.032
	Band25/1RB#49	Left Tilted	26365	1882.5	24.38	0.74	25.0	0.012	1.153	0.014
	Band25/50%RB#24	Right Check	26590	1905	23.32	-1.95	23.5	0.007	1.042	0.007
	Band25/50%RB#24	Right Tilted	26590	1905	23.32	-1.79	23.5	0.004	1.042	0.004
	Band25/50%RB#24	Left Check	26590	1905	23.32	-1.68	23.5	0.015	1.042	0.016
	Band25/50%RB#24	Left Tilted	26590	1905	23.32	-0.39	23.5	0.006	1.042	0.006
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population					**1.6 W/kg (mW/g) Averaged over 1g**					

➢ FDD-LTE Band 26(15MHz) QPSK Head SAR

Plot No.	Band/Mode	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Variation (%)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
14	Band26/1RB#37	Right Cheek	26865	831.5	24.90	-0.08	25.0	**0.111**	1.023	0.114
	Band26/1RB#37	Right Tilted	26865	831.5	24.90	2.46	25.0	0.023	1.023	0.024
	Band26/1RB#37	Left Cheek	26865	831.5	24.90	-1.13	25.0	0.105	1.023	0.107
	Band26/1RB#37	Left Tilted	26865	831.5	24.90	0.94	25.0	0.018	1.023	0.018
	Band26/50%RB#16	Right Cheek	26865	831.5	23.85	0.02	24.0	0.102	1.035	0.106
	Band26/50%RB#16	Right Tilted	26865	831.5	23.85	-0.56	24.0	0.014	1.035	0.014
	Band26/50%RB#16	Left Cheek	26865	831.5	23.85	-0.58	24.0	0.087	1.035	0.090
	Band26/50%RB#16	Left Tilted	26865	831.5	23.85	-1.05	24.0	0.011	1.035	0.011
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 Head SAR

Plot No.	Band/Mode	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Variation (%)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	D.C Factor	Reported SAR_{1g} (W/kg)
	Band41/1RB#49	Right Check	40640	2595	24.13	-1.00	24.5	0.030	1.089	1.008	0.033
	Band41/1RB#49	Right Tilted	40640	2595	24.13	1.45	24.5	0.013	1.089	1.008	0.014
15	Band41/1RB#49	Left Check	40640	2595	24.13	1.43	24.5	**0.071**	1.089	1.008	0.078
	Band41/1RB#49	Left Tilted	40640	2595	24.13	0.77	24.5	0.034	1.089	1.008	0.037
	Band41/50%RB#0	Right Check	40640	2595	23.03	-1.88	23.5	0.021	1.114	1.008	0.024
	Band41/50%RB#0	Right Tilted	40640	2595	23.03	-0.01	23.5	0.007	1.114	1.008	0.008
	Band41/50%RB#0	Left Check	40640	2595	23.03	1.23	23.5	0.052	1.114	1.008	0.058
	Band41/50%RB#0	Left Tilted	40640	2595	23.03	1.09	23.5	0.023	1.114	1.008	0.026
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	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Variation (%)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	Band66/1RB#24	Right Check	132322	1745	24.38	-1.42	24.5	0.045	1.028	0.046
	Band66/1RB#24	Right Tilted	132322	1745	24.38	0.31	24.5	0.022	1.028	0.023
16	Band66/1RB#24	Left Check	132322	1745	24.38	1.40	24.5	**0.100**	1.028	0.103
	Band66/1RB#24	Left Tilted	132322	1745	24.38	-1.64	24.5	0.049	1.028	0.050
	Band66/50%RB#49	Right Check	132072	1720	23.19	-0.97	23.5	0.031	1.074	0.033
	Band66/50%RB#49	Right Tilted	132072	1720	23.19	-0.10	23.5	0.013	1.074	0.014
	Band66/50%RB#49	Left Check	132072	1720	23.19	1.85	23.5	0.081	1.074	0.087
	Band66/50%RB#49	Left Tilted	132072	1720	23.19	1.56	23.5	0.033	1.074	0.035

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	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Variation (%)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	D.C Factor	Reported SAR_{1g} (W/kg)
	2.4GHz/802.11b	Right Cheek	11	2462	16.13	-1.83	16.5	0.250	1.089	1.000	0.272
	2.4GHz/802.11b	Right Tilted	11	2462	16.13	1.33	16.5	0.176	1.089	1.000	0.192
17	2.4GHz/802.11b	Left Cheek	11	2462	16.13	-2.09	16.5	**0.639**	1.089	1.000	0.696
	2.4GHz/802.11b	Left Tilted	11	2462	16.13	0.65	16.5	0.541	1.089	1.000	0.589
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 D01v06, 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 25.12mW(14.0dBm) and 44.67mW(16.5dBm), the scaled SAR would be 0.696×(25.12/44.67)=0.391W/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.

15.2 Standalone Body SAR

➢ GSM Body SAR

Plot No.	Band/Mode	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Variation (%)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	GSM850/Voice	Front	251	848.8	32.62	-3.69	33.0	0.384	1.091	0.419
18	GSM850/Voice	Back	251	848.8	32.62	-1.19	33.0	**0.618**	1.091	0.674
	GSM1900/Voice	Front	661	1880	29.43	-1.05	29.5	0.075	1.016	0.076
19	GSM1900/Voice	Back	661	1880	29.43	-4.24	29.5	**0.167**	1.016	0.170
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	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Variation (%)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	Band V/RMC	Front	4233	846.6	23.51	-4.63	24.0	0.192	1.119	0.215
20	Band V/RMC	Back	4233	846.6	23.51	-0.82	24.0	**0.322**	1.119	0.360
21	Band IV/RMC	Front	1312	1712.4	23.31	-0.85	23.5	**0.266**	1.045	0.278
	Band IV/RMC	Back	1312	1712.4	23.31	0.54	23.5	0.169	1.045	0.177
	Band II/RMC	Front	9538	1907.6	23.39	-1.07	23.5	0.065	1.026	0.067
22	Band II/RMC	Back	9538	1907.6	23.39	-1.55	23.5	**0.147**	1.026	0.151
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	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Variation (%)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	BC 0/RC3(SO32)	Front	1013	824.7	23.67	0.77	24.0	0.152	1.079	0.164
23	BC 0/RC3(SO32)	Back	1013	824.7	23.67	-2.75	24.0	**0.247**	1.079	0.267
	BC 1/RC3(SO32)	Front	25	1851.25	23.47	1.05	23.5	0.218	1.007	0.220
24	BC 1/RC3(SO32)	Back	25	1851.25	23.47	0.68	23.5	**0.505**	1.007	0.509
	BC 10/RC3(SO32)	Front	476	817.9	24.54	1.00	25.0	0.156	1.112	0.173
25	BC 10/RC3(SO32)	Back	476	817.9	24.54	-1.70	25.0	**0.341**	1.112	0.379
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	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Variation (%)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	Band5/1RB#24	Front	20600	844	25.03	-4.87	25.5	0.263	1.114	0.293
26	Band5/1RB#24	Back	20600	844	25.03	-1.44	25.5	**0.321**	1.114	0.358
	Band5/50%RB#24	Front	20600	844	23.97	0.17	24.0	0.221	1.007	0.223
	Band5/50%RB#24	Back	20600	844	23.97	1.45	24.0	0.279	1.007	0.281
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	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Variation (%)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	Band7/1RB#49	Front	21350	2560	24.15	-1.25	24.5	0.284	1.084	0.308
27	Band7/1RB#49	Back	21350	2560	24.15	0.61	24.5	**0.749**	1.084	0.812
	and7/50%RB#24	Front	21350	2560	23.03	0.02	23.5	0.252	1.114	0.281
	and7/50%RB#24	Back	21350	2560	23.03	-0.89	23.5	0.716	1.114	0.798

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	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Variation (%)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	Band12/1RB#24	Front	23095	707.5	24.86	-0.65	25.0	0.193	1.033	0.199
28	Band12/1RB#24	Back	23095	707.5	24.86	-1.51	25.0	**0.265**	1.033	0.274
	Band12/50%RB#0	Front	23060	704	23.87	-0.60	24.0	0.166	1.030	0.171
	Band12/50%RB#0	Back	23060	704	23.87	0.69	24.0	0.213	1.030	0.219
ANSI / IEEE C912.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population					**1.6 W/kg (mW/g) Averaged over 1g**					

➢ FDD-LTE Band 13(10MHz) QPSK Body SAR

Plot No.	Band/Mode	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Variation (%)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	Band13/1RB#24	Front	23230	782	24.89	-0.71	25.0	0.268	1.026	0.275
29	Band13/1RB#24	Back	23230	782	24.89	-1.45	25.0	**0.326**	1.026	0.334
	Band13/50%RB#0	Front	23230	782	23.96	-0.45	24.0	0.223	1.009	0.225
	Band13/50%RB#0	Back	23230	782	23.96	-1.86	24.0	0.283	1.009	0.286
ANSI / IEEE C913.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population					**1.6 W/kg (mW/g) Averaged over 1g**					

➢ FDD-LTE Band 25(10MHz) QPSK Body SAR

Plot No.	Band/Mode	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Variation (%)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	Band25/1RB#49	Front	26365	1882.5	24.38	3.15	25.0	0.061	1.153	0.070
30	Band25/1RB#49	Back	26365	1882.5	24.38	-0.21	25.0	**0.151**	1.153	0.174
	Band25/50%RB#24	Front	26590	1905	23.32	-1.35	23.5	0.050	1.042	0.052
	Band25/50%RB#24	Back	26590	1905	23.32	1.27	23.5	0.132	1.042	0.138
ANSI / IEEE C913.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population					**1.6 W/kg (mW/g) Averaged over 1g**					

➢ FDD-LTE Band 26(15MHz) QPSK Body SAR

Plot No.	Band/Mode	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Variation (%)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	Band26/1RB#37	Front	26865	831.5	24.90	-1.38	25.0	0.156	1.023	0.160
31	Band26/1RB#37	Back	26865	831.5	24.90	-2.25	25.0	0.281	1.023	0.287
	Band26/50%RB#16	Front	26865	831.5	23.85	1.04	24.0	0.125	1.035	0.129
	Band26/50%RB#16	Back	26865	831.5	23.85	-1.16	24.0	0.241	1.035	0.249
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	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Variation (%)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	D.C Factor	Reported SAR_{1g} (W/kg)
	Band41/1RB#49	Front	40640	2595	24.13	-3.68	24.5	0.108	1.089	1.008	0.119
32	Band41/1RB#49	Back	40640	2595	24.13	-1.73	24.5	**0.239**	1.089	1.008	0.262

	Band41/50%RB#0	Front	40640	2595	23.03	-1.22	23.5	0.084	1.114	1.008	0.094
	Band41/50%RB#0	Back	40640	2595	23.03	-0.34	23.5	0.202	1.114	1.008	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 66(20MHz) QPSK Body SAR

Plot No.	Band/Mode	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Variation (%)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	Band66/1RB#24	Front	132322	1745	24.38	-1.20	24.5	0.139	1.028	0.143
33	Band66/1RB#24	Back	132322	1745	24.38	-4.41	24.5	**0.181**	1.028	0.186
	Band66/50%RB#49	Front	132072	1720	23.19	0.80	23.5	0.114	1.074	0.122
	Band66/50%RB#49	Back	132072	1720	23.19	-0.45	23.5	0.162	1.074	0.174
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 Body SAR

Plot No.	Band/Mode	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Variation (%)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	D.C Factor	Reported SAR_{1g} (W/kg)
34	2.4GHz/802.11b	Front	11	2462	16.13	-1.30	16.5	**0.179**	1.089	1	0.195
	2.4GHz/802.11b	Back	11	2462	16.13	-1.72	16.5	0.082	1.089	1	0.089
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 D01v06, 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.

15.3 Body SAR in Hotspot Mode

➢ GSM Body SAR in Hotspot mode

Plot No.	Band/Mode	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Variation (%)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	GPRS850/2 slots	Front	251	848.8	32.62	-3.69	33.0	0.384	1.091	0.419
18	GPRS850/2 slots	Back	251	848.8	32.62	-1.19	33.0	**0.618**	1.091	0.674
	GPRS850/2 slots	Left	251	848.8	32.62	1.84	33.0	0.136	1.091	0.148
	GPRS850/2 slots	Bottom	251	848.8	32.62	1.22	33.0	0.213	1.091	0.232
	GPRS1900/2 slots	Front	661	1880	29.43	-1.05	29.5	0.075	1.016	0.076
19	GPRS1900/2 slots	Back	661	1880	29.43	-4.24	29.5	**0.167**	1.016	0.170
	GPRS1900/2 slots	Left	661	1880	29.43	-1.28	29.5	0.082	1.016	0.083
	GPRS1900/2 slots	Bottom	661	1880	29.43	0.92	29.5	0.093	1.016	0.094
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	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Variation (%)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	Band V/RMC	Front	4233	846.6	23.51	-4.63	24.0	0.192	1.119	0.215
20	Band V/RMC	Back	4233	846.6	23.51	-0.82	24.0	**0.322**	1.119	0.360
	Band V/RMC	Left	4233	846.6	23.51	-1.16	24.0	0.097	1.119	0.109
	Band V/RMC	Bottom	4233	846.6	23.51	-1.44	24.0	0.227	1.119	0.254
21	Band IV/RMC	Front	1312	1712.4	23.31	-0.85	23.5	**0.266**	1.045	0.278
	Band IV/RMC	Back	1312	1712.4	23.31	0.54	23.5	0.169	1.045	0.177
	Band IV/RMC	Left	1312	1712.4	23.31	-0.18	23.5	0.088	1.045	0.092
	Band IV/RMC	Bottom	1312	1712.4	23.31	1.73	23.5	0.132	1.045	0.138
	Band II/RMC	Front	9538	1907.6	23.39	-1.07	23.5	0.065	1.026	0.067
22	Band II/RMC	Back	9538	1907.6	23.39	-1.55	23.5	**0.147**	1.026	0.151
	Band II/RMC	Left	9538	1907.6	23.39	0.33	23.5	0.068	1.026	0.070
	Band II/RMC	Bottom	9538	1907.6	23.39	-3.15	23.5	0.085	1.026	0.087
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population					**1.6 W/kg (mW/g) Averaged over 1g**					

➢ CDMA Body SAR in Hotspot mode

Plot No.	Band/Mode	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Variation (%)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	BC 0/RC3(SO32)	Front	1013	824.7	23.67	0.77	24.0	0.152	1.079	0.164
23	BC 0/RC3(SO32)	Back	1013	824.7	23.67	-2.75	24.0	**0.247**	1.079	0.267
	BC 0/RC3(SO32)	Left	1013	824.7	23.67	1.23	24.0	0.077	1.079	0.083
	BC 0/RC3(SO32)	Bottom	1013	824.7	23.67	0.55	24.0	0.094	1.079	0.101
24	BC 1/RC3(SO32)	Front	25	1851.25	23.47	1.05	23.5	0.218	1.007	0.220
	BC 1/RC3(SO32)	Back	25	1851.25	23.47	0.68	23.5	**0.505**	1.007	0.509
	BC 1/RC3(SO32)	Left	25	1851.25	23.47	-0.84	23.5	0.104	1.007	0.105
	BC 1/RC3(SO32)	Bottom	25	1851.25	23.47	-0.07	23.5	0.315	1.007	0.317
	BC 10/RC3(SO32)	Front	476	817.9	24.54	1.00	25.0	0.156	1.112	0.173
25	BC 10/RC3(SO32)	Back	476	817.9	24.54	-1.70	25.0	**0.341**	1.112	0.379
	BC 10/RC3(SO32)	Left	476	817.9	24.54	-0.84	25.0	0.073	1.112	0.081
	BC 10/RC3(SO32)	Bottom	476	817.9	24.54	0.36	25.0	0.197	1.112	0.219
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	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Variation (%)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	Band5/1RB#24	Front	20600	844	25.03	-4.87	25.5	0.263	1.114	0.293
26	Band5/1RB#24	Back	20600	844	25.03	-1.44	25.5	**0.321**	1.114	0.358
	Band5/1RB#24	Left	20600	844	25.03	-1.42	25.5	0.123	1.114	0.137
	Band5/1RB#24	Bottom	20600	844	25.03	0.42	25.5	0.135	1.114	0.150
	Band5/50%RB#24	Front	20600	844	23.97	0.17	24.0	0.221	1.007	0.223
	Band5/50%RB#24	Back	20600	844	23.97	1.45	24.0	0.279	1.007	0.281
	Band5/50%RB#24	Left	20600	844	23.97	-1.49	24.0	0.102	1.007	0.103
	Band5/50%RB#24	Bottom	20600	844	23.97	0.93	24.0	0.112	1.007	0.113
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	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Variation (%)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	Band7/1RB#49	Front	21350	2560	24.15	-1.25	24.5	0.284	1.084	0.308
27	Band7/1RB#49	Back	21350	2560	24.15	0.61	24.5	**0.728**	1.084	0.789
	Band7/1RB#49	Left	21350	2560	24.15	0.75	24.5	0.124	1.084	0.134
	Band7/1RB#49	Right	21350	2560	24.15	0.85	24.5	0.063	1.084	0.068
	Band7/1RB#49	Bottom	21350	2560	24.15	-1.40	24.5	0.423	1.084	0.459
	Band7/50%RB#24	Front	21350	2560	23.03	0.02	23.5	0.252	1.114	0.281
	Band7/50%RB#24	Back	21350	2560	23.03	-0.89	23.5	0.646	1.114	0.720
	Band7/50%RB#24	Left	21350	2560	23.03	1.63	23.5	0.094	1.114	0.105
	Band7/50%RB#24	Bottom	21350	2560	23.03	0.58	23.5	0.385	1.114	0.429
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	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Variation (%)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	Band12/1RB#24	Front	23095	707.5	24.86	-0.65	25.0	0.193	1.033	0.199
28	Band12/1RB#24	Back	23095	707.5	24.86	-1.51	25.0	**0.265**	1.033	0.274
	Band12/1RB#24	Left	23095	707.5	24.86	-1.11	25.0	0.077	1.033	0.080
	Band12/1RB#24	Bottom	23095	707.5	24.86	1.66	25.0	0.169	1.033	0.175
	Band12/50%RB#0	Front	23060	704	23.87	-0.60	24.0	0.166	1.030	0.171
	Band12/50%RB#0	Back	23060	704	23.87	0.69	24.0	0.213	1.030	0.219
	Band12/50%RB#0	Left	23060	704	23.87	-0.80	24.0	0.042	1.030	0.043
	Band12/50%RB#0	Bottom	23060	704	23.87	-1.35	24.0	0.127	1.030	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 13(10MHz) QPSK Body SAR in Hotspot mode

Plot No.	Band/Mode	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Variation (%)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	Band13/1RB#24	Front	23230	782	24.89	-0.71	25.0	0.268	1.026	0.275
29	Band13/1RB#24	Back	23230	782	24.89	-1.45	25.0	**0.326**	1.026	0.334
	Band13/1RB#24	Left	23230	782	24.89	0.54	25.0	0.125	1.026	0.128
	Band13/1RB#24	Bottom	23230	782	24.89	-0.12	25.0	0.153	1.026	0.157
	Band13/50%RB#0	Front	23230	782	23.96	-0.45	24.0	0.223	1.009	0.225
	Band13/50%RB#0	Back	23230	782	23.96	-1.86	24.0	0.283	1.009	0.286
	Band13/50%RB#0	Left	23230	782	23.96	-0.38	24.0	0.095	1.009	0.096

	Band13/50%RB#0	Bottom	23230	782	23.96	1.82	24.0	0.127	1.009	0.128
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population					**1.6 W/kg (mW/g) Averaged over 1g**					

➢ FDD-LTE Band 25(10MHz) QPSK Body SAR in Hotspot mode

Plot No.	Band/Mode	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Variation (%)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	Band25/1RB#49	Front	26365	1882.5	24.38	3.15	25.0	0.061	1.153	0.070
30	Band25/1RB#49	Back	26365	1882.5	24.38	-0.21	25.0	**0.151**	1.153	0.174
	Band25/1RB#49	Left	26365	1882.5	24.38	1.99	25.0	0.076	1.153	0.088
	Band25/1RB#49	Bottom	26365	1882.5	24.38	-0.65	25.0	0.098	1.153	0.113
	Band25/50%RB#24	Front	26590	1905	23.32	-1.35	23.5	0.050	1.042	0.052
	Band25/50%RB#24	Back	26590	1905	23.32	1.27	23.5	0.132	1.042	0.138
	Band25/50%RB#24	Left	26590	1905	23.32	0.45	23.5	0.054	1.042	0.056
	Band25/50%RB#24	Bottom	26590	1905	23.32	1.37	23.5	0.071	1.042	0.074
ANSI / IEEE C95.1 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population					**1.6 W/kg (mW/g) Averaged over 1g**					

➢ FDD-LTE Band 26(15MHz) QPSK Body SAR in Hotspot mode

Plot No.	Band/Mode	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Variation (%)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	Band26/1RB#37	Front	26865	831.5	24.90	-1.38	25.0	0.156	1.023	0.160
31	Band26/1RB#37	Back	26865	831.5	24.90	-2.25	25.0	**0.281**	1.023	0.287
	Band26/1RB#37	Left	26865	831.5	24.90	1.44	25.0	0.103	1.023	0.105
	Band26/1RB#37	Bottom	26865	831.5	24.90	0.79	25.0	0.137	1.023	0.140
	Band26/50%RB#16	Front	26865	831.5	23.85	1.04	24.0	0.125	1.035	0.129
	Band26/50%RB#16	Back	26865	831.5	23.85	-1.16	24.0	0.241	1.035	0.249
	Band26/50%RB#16	Left	26865	831.5	23.85	1.72	24.0	0.072	1.035	0.075
	Band26/50%RB#16	Bottom	26865	831.5	23.85	0.57	24.0	0.112	1.035	0.116
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	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Variation (%)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	D.C Factor	Reported SAR_{1g} (W/kg)
	Band41/1RB#49	Front	40640	2595	24.13	-3.68	24.5	0.108	1.089	1.008	0.119
32	Band41/1RB#49	Back	40640	2595	24.13	-1.73	24.5	**0.239**	1.089	1.008	0.262
	Band41/1RB#49	Left	40640	2595	24.13	-1.07	24.5	0.078	1.089	1.008	0.086
	Band41/1RB#49	Bottom	40640	2595	24.13	-1.83	24.5	0.130	1.089	1.008	0.143
	Band41/50%RB#0	Front	40640	2595	23.03	-1.22	23.5	0.084	1.114	1.008	0.094
	Band41/50%RB#0	Back	40640	2595	23.03	-0.34	23.5	0.202	1.114	1.008	0.227
	Band41/50%RB#0	Left	40640	2595	23.03	2.00	23.5	0.051	1.114	1.008	0.057
	Band41/50%RB#0	Bottom	40640	2595	23.03	1.62	23.5	0.112	1.114	1.008	0.126
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	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Variation (%)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	Reported SAR_{1g} (W/kg)
	Band66/1RB#24	Front	132322	1745	24.38	-1.20	24.5	0.139	1.028	0.143
33	Band66/1RB#24	Back	132322	1745	24.38	-4.41	24.5	**0.181**	1.028	0.186
	Band66/1RB#24	Left	132322	1745	24.38	0.52	24.5	0.086	1.028	0.088
	Band66/1RB#24	Bottom	132322	1745	24.38	3.41	24.5	0.105	1.028	0.108
	Band66/50%RB#49	Front	132072	1720	23.19	0.80	23.5	0.114	1.074	0.122
	Band66/50%RB#49	Back	132072	1720	23.19	-0.45	23.5	0.162	1.074	0.174
	Band66/50%RB#49	Left	132072	1720	23.19	-1.60	23.5	0.062	1.074	0.067
	Band66/50%RB#49	Bottom	132072	1720	23.19	0.59	23.5	0.071	1.074	0.076
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	Test Position	CH.	Freq. (MHz)	Ave. Power (dBm)	Variation (%)	Tune-Up Limit (dBm)	Meas. SAR_{1g} (W/kg)	Scaling Factor	D.C Factor	Reported SAR_{1g} (W/kg)
34	2.4GHz/802.11b	Front	11	2462	16.13	-1.30	16.5	**0.179**	1.089	1	0.195
	2.4GHz/802.11b	Back	11	2462	16.13	-1.72	16.5	0.082	1.089	1	0.089
	2.4GHz/802.11b	Right	11	2462	16.13	-1.71	16.5	0.046	1.089	1	0.050
	2.4GHz/802.11b	Top	11	2462	16.13	2.88	16.5	0.034	1.089	1	0.037
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 D01v06, 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.

15.4 Multi-Band Simultaneous Transmission Considerations

➢ **Simultaneous Transmission Capabilities**

According to FCC KDB Publication 447498 D01v06, 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 D01v06, 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 D01v06 4.3.2), the following equation must be used to estimate the standalone 1g SAR for simultaneous transmission assessment involving that transmitter.

$$\text{Estimated SAR} = \frac{\sqrt{f(GHz)}}{7.5} \cdot \frac{\text{Max. power of channel, mW}}{\text{Min. Separation Distance, mm}}$$

Mode	Max. tune-up Power (dBm)	Exposure Position	Head	Body	Hotspot
		Test Distance (mm)	0	10	10
Bluetooth	6	Estimated SAR (W/kg)	0.167	0.083	0.083
WIFI 5.2 GHz	6	Estimated SAR (W/kg)	0.243	0.122	0.122
WIFI 5.8 GHz	6	Estimated SAR (W/kg)	0.256	0.128	0.128

Note:

1. When the minimum *test separation distance* is < 5 mm, a distance of 5 mm according is applied to determine estimated SAR.

➢ **Multi-Band simultaneous Transmission Consideration**

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

Note:

1. WLAN 2.4GHz Band, WLAN 5.2GHz Band, WLAN 5.8GHz Band and Bluetooth share the same antenna, and cannot transmit simultaneously.
2. GSM/WCDMA/LTE shares the same antenna, and cannot transmit simultaneously.
3. The Report SAR summation is calculated based on the same configuration and test position.
4. Per KDB 447498 D01v06, 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

15.5 SAR Simultaneous Transmission Analysis

➢ **Simultaneous Transmission**

Position		Standalone SAR(W/kg)				Σ SAR_{1g} (W/kg)		
		1	2	3	4	1+2	1+3	1+4
		WWAN	2.4G WLAN	5G WLAN	BT			
Head	Right Cheek	0.174	0.272	0.256	0.167	0.446	0.430	0.341
	Right Tilted	0.054	0.192	0.256	0.167	0.246	0.310	0.221
	Left Cheek	0.348	0.696	0.256	0.167	**1.044**	0.604	0.515
	Left Tilted	0.069	0.589	0.256	0.167	0.658	0.325	0.236
Body-worn	Front	0.419	0.195	0.128	0.083	0.614	0.547	0.502
	Back	0.789	0.089	0.128	0.083	0.878	0.917	0.872
Hotspot	Front	0.419	0.195	0.128	0.083	0.614	0.547	0.502
	Back	0.789	0.089	0.128	0.083	0.878	0.917	0.872
	Left	0.148	0.000	0.128	0.083	0.148	0.276	0.231
	Right	0.000	0.050	0.128	0.083	0.050	0.128	0.184
	Top	0.000	0.037	0.128	0.083	0.037	0.128	0.083
	Bottom	0.459	0.000	0.128	0.083	0.459	0.587	0.542

➢ **Simultaneous Transmission Conclusion**

The above numerical summed SAR results for all the case simultaneous transmission conditions were below the SAR limit. Therefore, the above analysis is sufficient to determine that simultaneous transmission cases will not exceed the SAR limit and therefore no measured volumetric simultaneous SAR summation is required per FCC KDB Publication 447498 D01v06.

15.6 Measurement Uncertainty

Per KDB865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg, the extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval. The equivalent ratio (1.5/1.6) is applied to extremity and occupational exposure conditions.

16 Reference

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[3]. IEEE Std. 1528-2013, “Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques”, September2013

[4]. OpenSAR V5 Software User Manual

[5]. FCC KDB 248227 D01 v02r02, “SAR GUIDANCE FOR IEEE 802.11 (Wi-Fi) TRANSMITTERS”, October 2015

[6]. FCC KDB 447498 D01 v06, “RF EXPOSURE PROCEDURES AND EQUIPMENT AUTHORIZATION POLICIES FOR MOBILE AND PORTABLE DEVICES”, October 2015

[7]. FCC KDB 648474 D04 v01r03, “SAR EVALUATION CONSIDERATIONS FOR WIRELESS HANDSETS”, October 2015

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[9]. FCC KDB 941225 D05 v02r05, “SAR EVALUATION CONSIDERATIONS FOR LTE DEVICES”, Dec 2015

[10]. FCC KDB 941225 D03 v01, “Recommended SAR Test Reduction Procedures for GSM / GPRS / EDGE”, December 2008

[11]. FCC KDB 941225 D06 v02r01, " SAR EVALUATION PROCEDURES FOR PORTABLE DEVICES WITH WIRELESS ROUTER CAPABILITIES", October 2015

[12]. FCC KDB 865664 D01 v01r04, “SAR MEASUREMENT REQUIREMENTS FOR 100 MHz TO 6 GHz”, August 2015

Appendix A: Plots of SAR System Check

System check at 750 MHz

Date of measurement: 24/11//2021

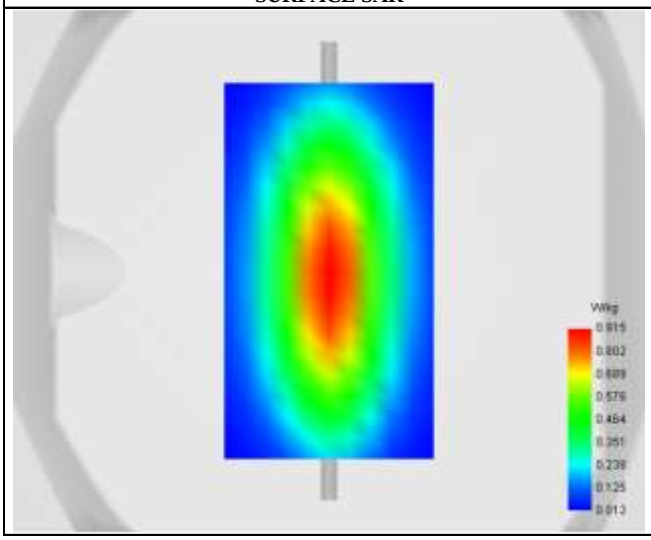
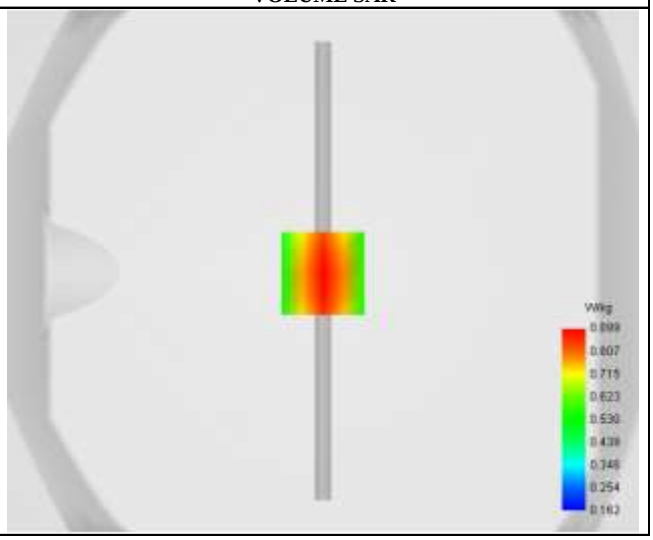
A. Experimental conditions.

Probe	SN 18/21 EPGO354
ConvF	1.73
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm, Complete
Phantom	Validation plane
Device Position	Dipole
Band	CW750
Channels	Middle
Signal	CW (Crest factor: 1.0)

B. Permitivity

Frequency (MHz)	750.000000
Relative permitivity (real part)	41.109648
Conductivity (S/m)	0.915215

C. SAR Surface and Volume

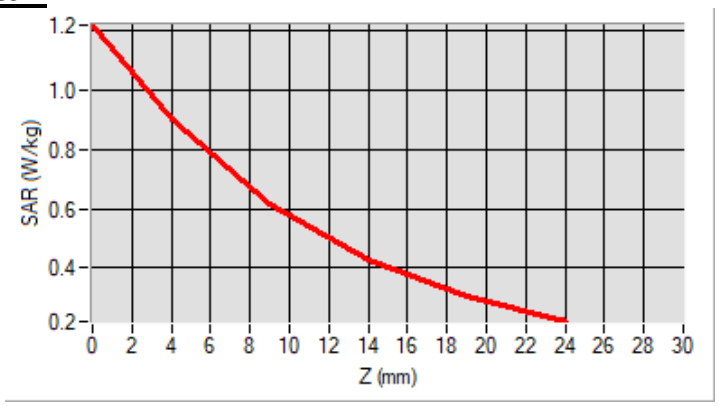
SURFACE SAR	VOLUME SAR
	

Maximum location: X=0.00, Y=0.00; SAR Peak: 1.25 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.557745
SAR 1g (W/Kg)	0.852742
Variation (%)	-1.210000

E. Z Axis Scan



System check at 835 MHz

Date of measurement: 24/11//2021

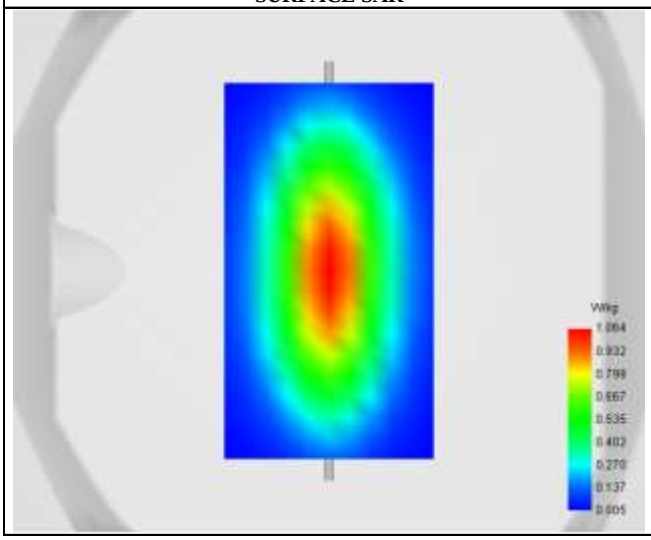
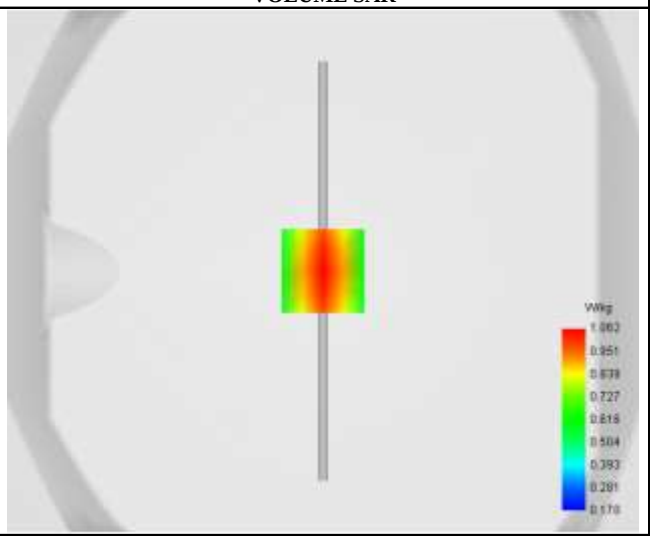
A. Experimental conditions.

Probe	SN 18/21 EPGO354
ConvF	1.68
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm, Complete
Phantom	Validation plane
Device Position	Dipole
Band	CW835
Channels	Middle
Signal	CW (Crest factor: 1.0)

B. Permitivity

Frequency (MHz)	835.000000
Relative permitivity (real part)	42.151223
Conductivity (S/m)	0.928354

C. SAR Surface and Volume

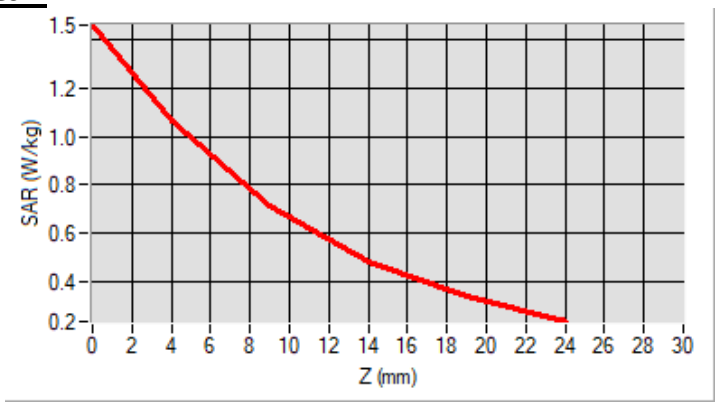
SURFACE SAR	VOLUME SAR
	

Maximum location: X=0.00, Y=0.00; SAR Peak: 1.52 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.627425
SAR 1g (W/Kg)	0.957834
Variation (%)	0.180000

E. Z Axis Scan



System check at 1750 MHz

Date of measurement: 29/11/2021

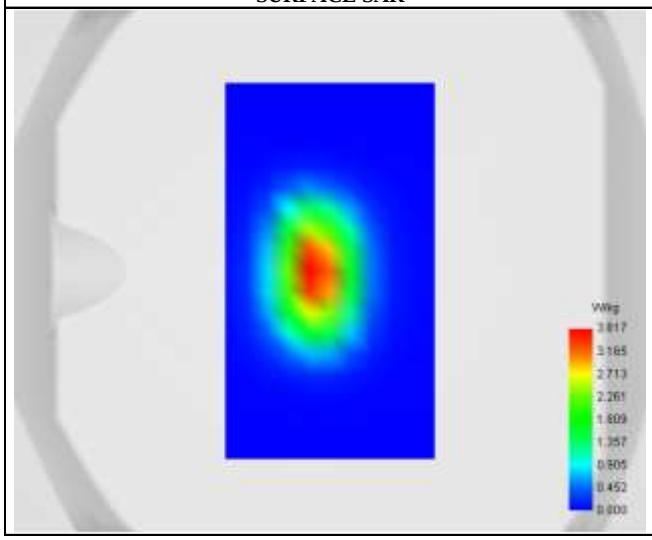
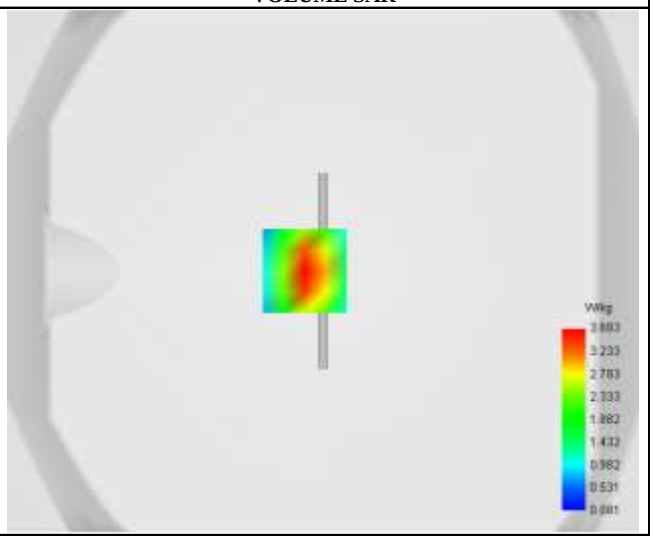
A. Experimental conditions.

Probe	SN 18/21 EPGO354
ConvF	2.07
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Dipole
Band	CW1750
Channels	Middle
Signal	CW (Crest factor: 1.0)

B. Permitivity

Frequency (MHz)	1750.000000
Relative permitivity (real part)	40.375424
Conductivity (S/m)	1.347847

C. SAR Surface and Volume

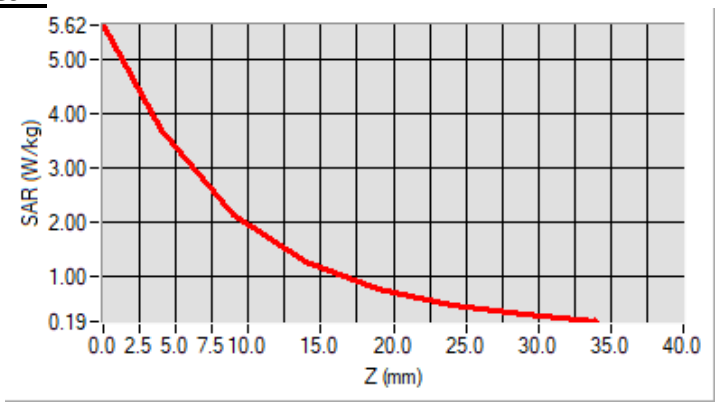
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-7.00, Y=0.00; SAR Peak: 5.68 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	1.822138
SAR 1g (W/Kg)	3.711425
Variation (%)	-1.720000

E. Z Axis Scan



System check at 1900 MHz

Date of measurement: 29/11/2021

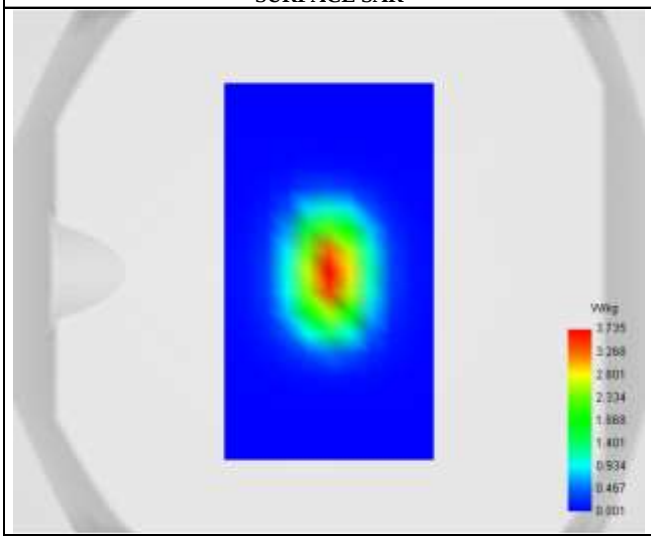
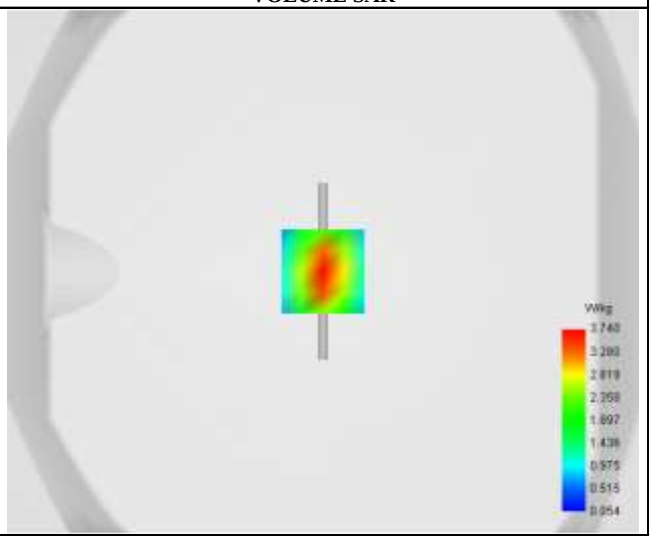
A. Experimental conditions.

Probe	SN 36/20 EPGO354
ConvF	2.14
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Dipole
Band	CW1900
Channels	Middle
Signal	CW (Crest factor: 1.0)

B. Permitivity

Frequency (MHz)	1900.000000
Relative permitivity (real part)	39.138517
Conductivity (S/m)	1.437213

C. SAR Surface and Volume

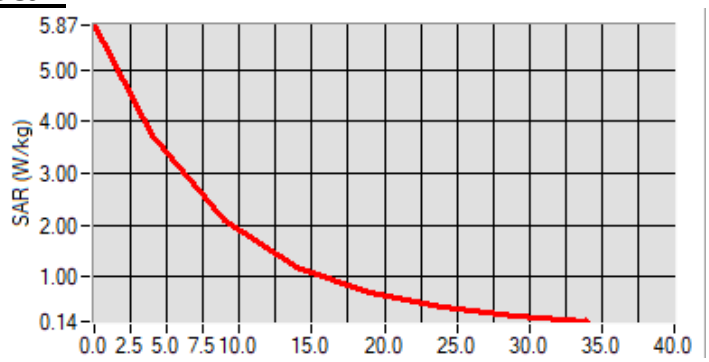
SURFACE SAR	VOLUME SAR
	

Maximum location: X=0.00, Y=0.00; SAR Peak: 5.79 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	1.925421
SAR 1g (W/Kg)	3.773682
Variation (%)	-0.480000

E. Z Axis Scan



System check at 2450 MHz

Date of measurement: 2/12/2021

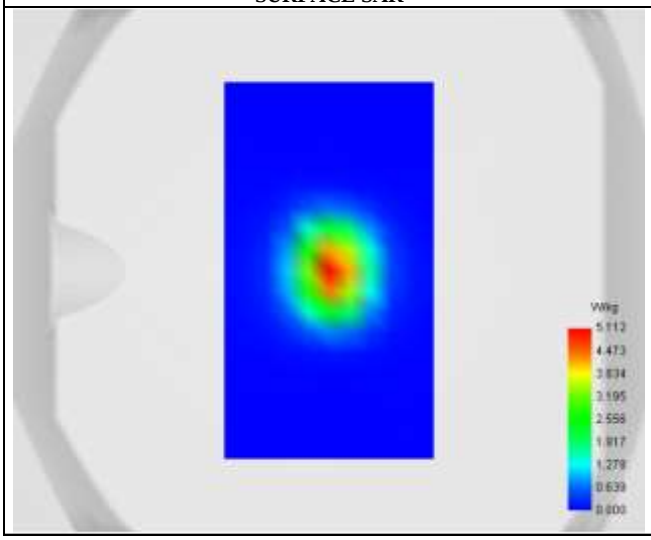
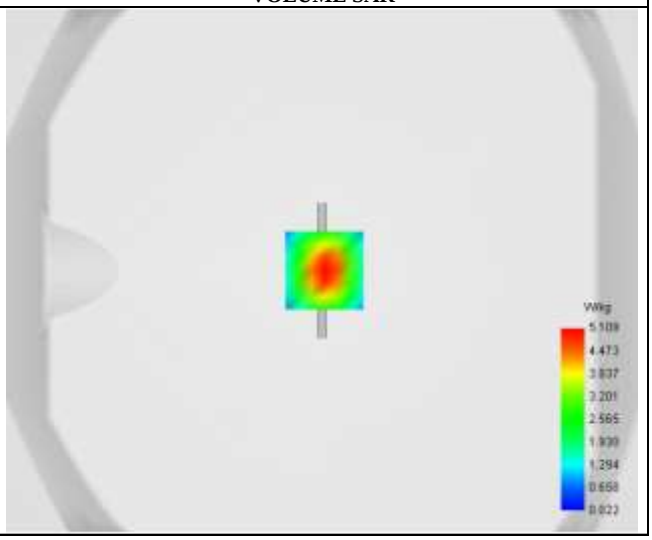
A. Experimental conditions.

Probe	SN 18/21 EPGO354
ConvF	2.23
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Dipole
Band	CW2450
Channels	Middle
Signal	CW (Crest factor: 1.0)

B. Permitivity

Frequency (MHz)	2450.000000
Relative permitivity (real part)	40.101432
Conductivity (S/m)	1.822142

C. SAR Surface and Volume

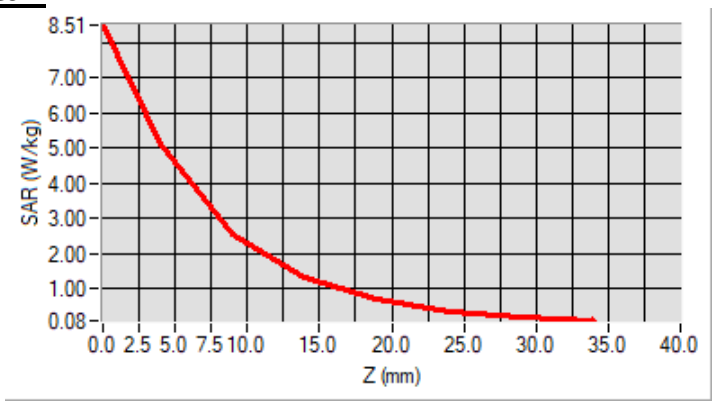
SURFACE SAR	VOLUME SAR
	

Maximum location: X=1.00, Y=0.00; SAR Peak: 8.52 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	2.348143
SAR 1g (W/Kg)	4.963054
Variation (%)	-1.050000

E. Z Axis Scan



System check at 2600 MHz

Date of measurement: 2/12/2021

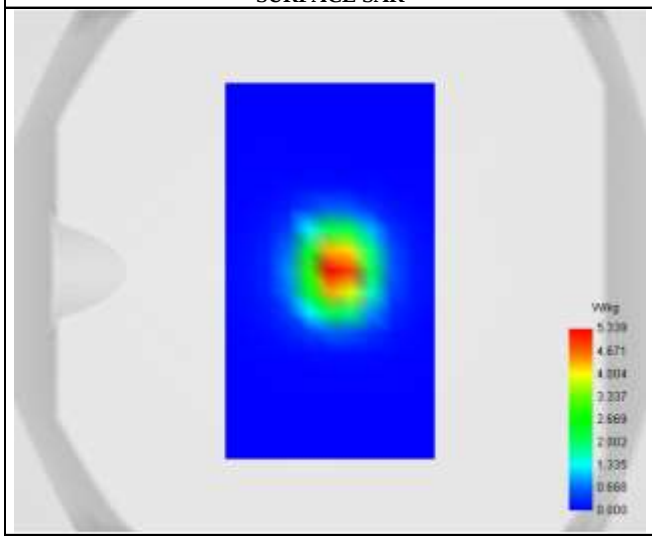
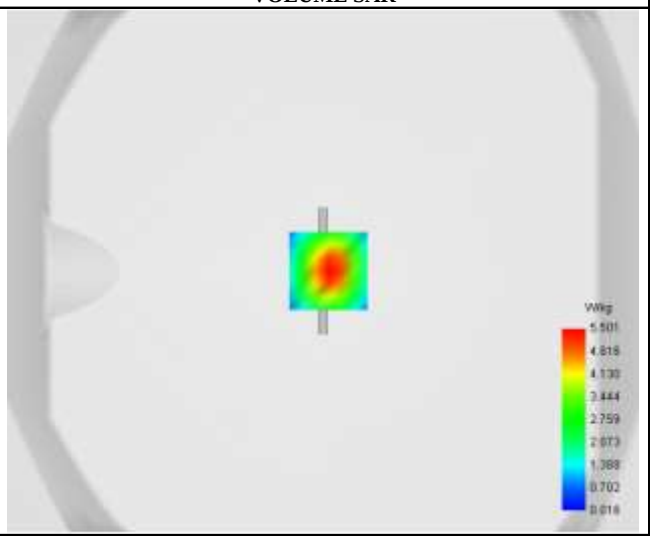
A. Experimental conditions.

Probe	SN 18/21 EPGO354
ConvF	2.15
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Dipole
Band	CW2600
Channels	Middle
Signal	CW (Crest factor: 1.0)

B. Permitivity

Frequency (MHz)	2600.000000
Relative permitivity (real part)	39.185724
Conductivity (S/m)	1.978641

C. SAR Surface and Volume

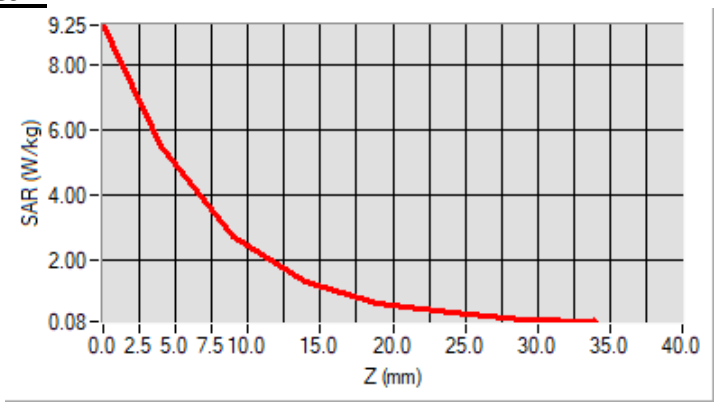
SURFACE SAR	VOLUME SAR
	

Maximum location: X=2.00, Y=0.00; SAR Peak: 9.23 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	2.396225
SAR 1g (W/Kg)	5.593451
Variation (%)	-0.280000

E. Z Axis Scan



Appendix B: Plots of SAR Test Data

SAR Measurement at GSM850 (Cheek, Right)

Date of measurement: 24/11/2021

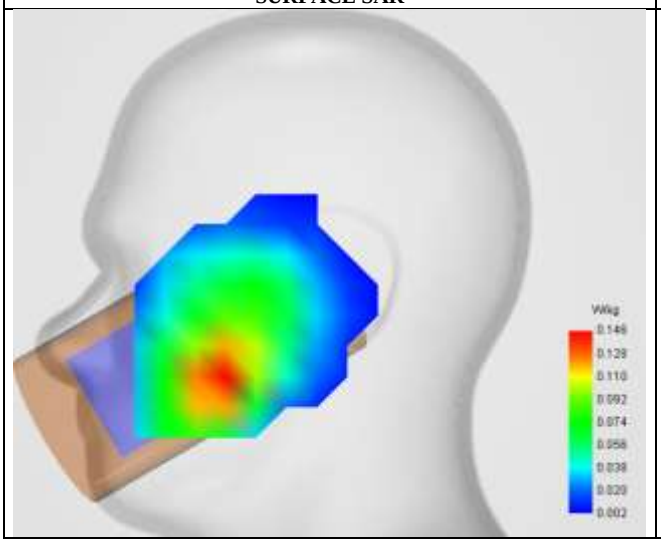
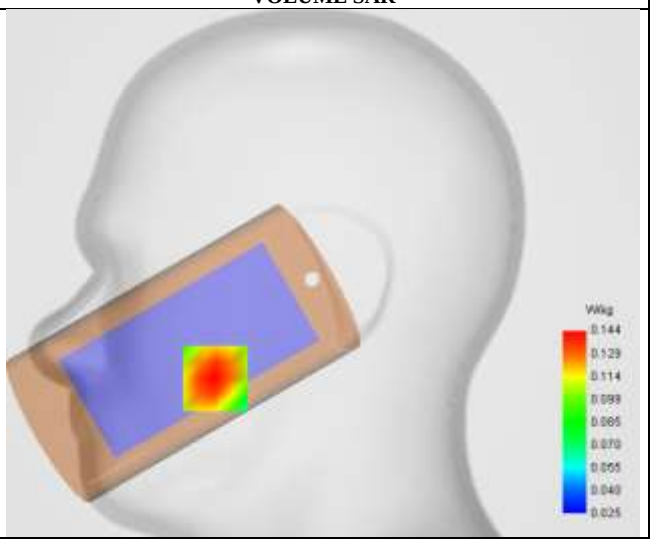
A. Experimental conditions.

Probe	SN 18/21 EPGO354
ConvF	1.68
Area Scan	dx=15mm dy=15mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Right head
Device Position	Cheek
Band	GSM850
Channels	Middle
Signal	TDMA (Crest factor: 8.0)

B. Permitivity

Frequency (MHz)	836.599976
Relative permitivity (real part)	41.500000
Conductivity (S/m)	0.901669

C. SAR Surface and Volume

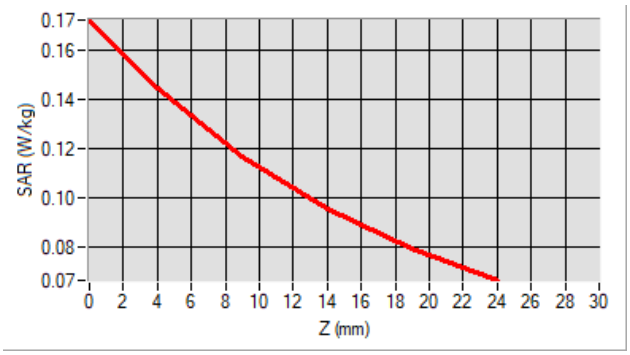
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-53.00, Y=-52.00 ; SAR Peak: 0.17 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.106296
SAR 1g (W/Kg)	0.138930
Variation (%)	-4.330000

E. Z Axis Scan



SAR Measurement at GSM1900 (Cheek, Left)

Date of measurement: 29/11/2021

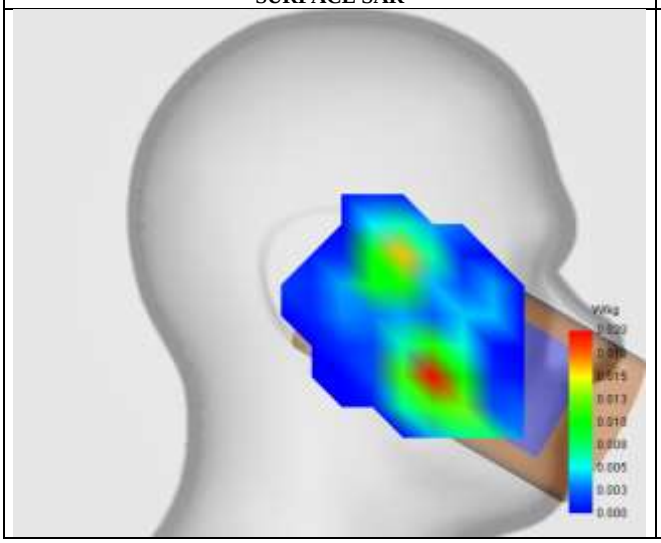
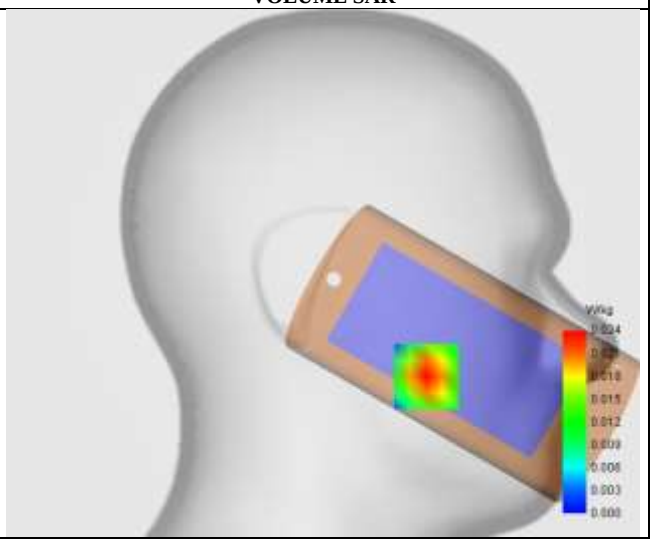
A. Experimental conditions.

Probe	SN 18/21 EPGO354
ConvF	2.14
Area Scan	dx=15mm dy=15mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Left head
Device Position	Cheek
Band	GSM1900
Channels	Middle
Signal	TDMA (Crest factor: 8.0)

B. Permitivity

Frequency (MHz)	1880.000000
Relative permitivity (real part)	40.000000
Conductivity (S/m)	1.400391

C. SAR Surface and Volume

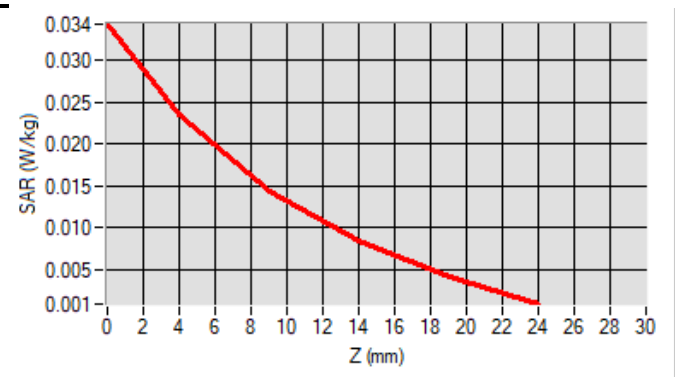
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-51.00, Y=-51.00 ; SAR Peak: 0.03 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.011860
SAR 1g (W/Kg)	0.021898
Variation (%)	2.820000

E. Z Axis Scan



SAR Measurement at Band5_WCDMA850 (Cheek, Right)

Date of measurement: 24/11/2021

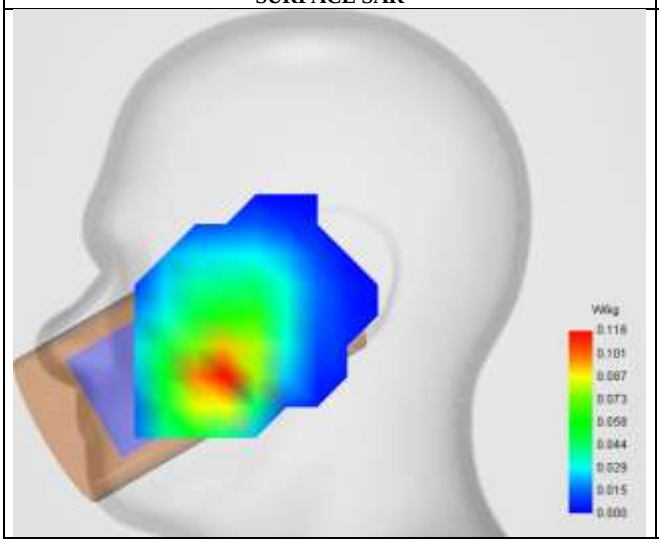
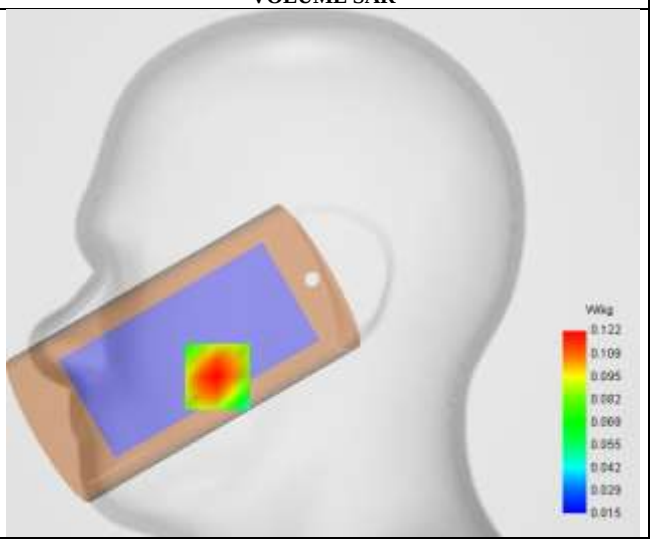
A. Experimental conditions.

Probe	SN 18/21 EPGO354
ConvF	1.68
Area Scan	dx=15mm dy=15mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Right head
Device Position	Cheek
Band	Band5_WCDMA850
Channels	Middle
Signal	WCDMA (Crest factor: 1.0)

B. Permitivity

Frequency (MHz)	836.599976
Relative permitivity (real part)	41.500000
Conductivity (S/m)	0.901669

C. SAR Surface and Volume

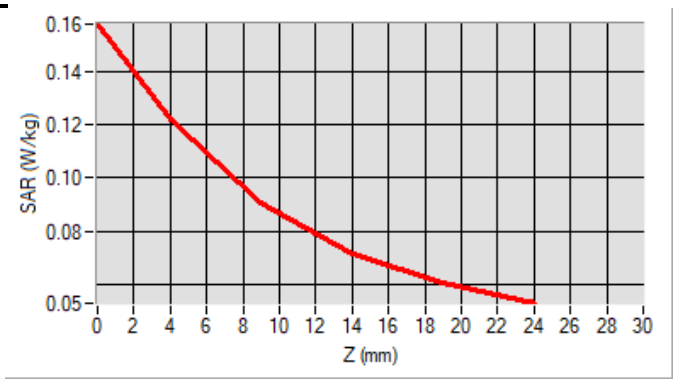
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-52.00, Y=-51.00 ; SAR Peak: 0.16 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.084609
SAR 1g (W/Kg)	0.116590
Variation (%)	-3.880000

E. Z Axis Scan



SAR Measurement at Band4_WCDMA1700 (Cheek, Left)

Date of measurement: 29/11/2021

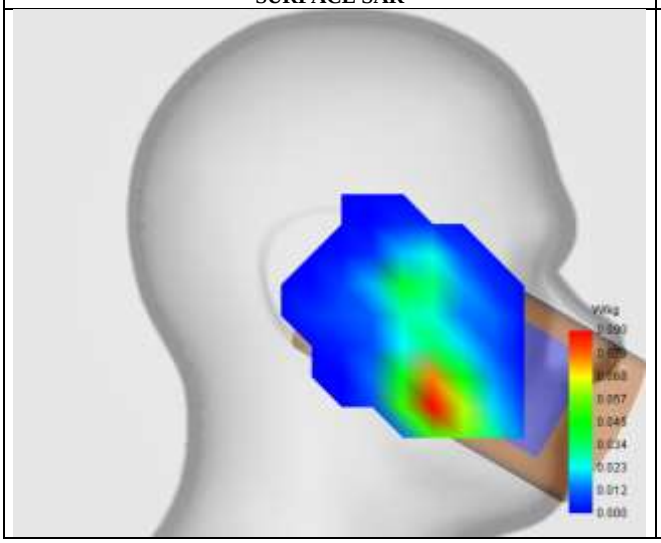
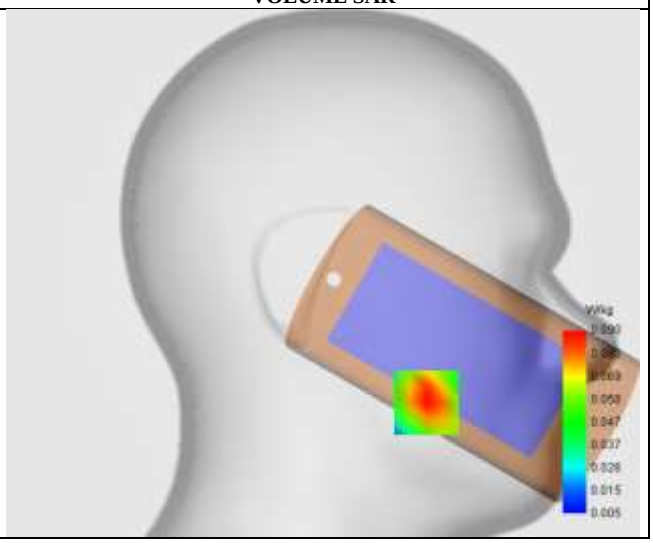
A. Experimental conditions.

Probe	SN 18/21 EPGO354
ConvF	2.07
Area Scan	dx=15mm dy=15mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Left head
Device Position	Cheek
Band	Band4_WCDMA1700
Channels	Middle
Signal	WCDMA (Crest factor: 1.0)

B. Permitivity

Frequency (MHz)	1732.599976
Relative permitivity (real part)	40.115818
Conductivity (S/m)	1.360656

C. SAR Surface and Volume

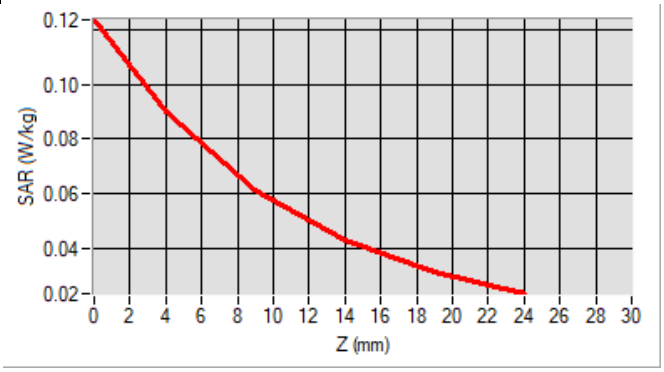
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-51.00, Y=-64.00 ; SAR Peak: 0.13 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.053593
SAR 1g (W/Kg)	0.085533
Variation (%)	-2.420000

E. Z Axis Scan



SAR Measurement at Band2_WCDMA1900 (Cheek, Left)

Date of measurement: 29/11/2021

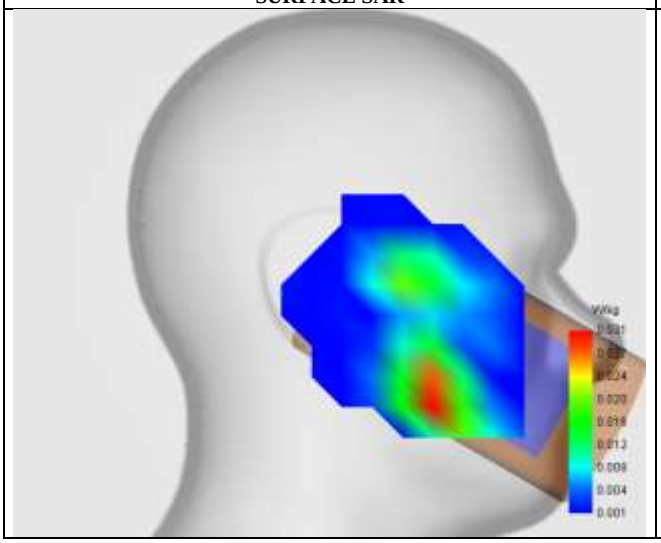
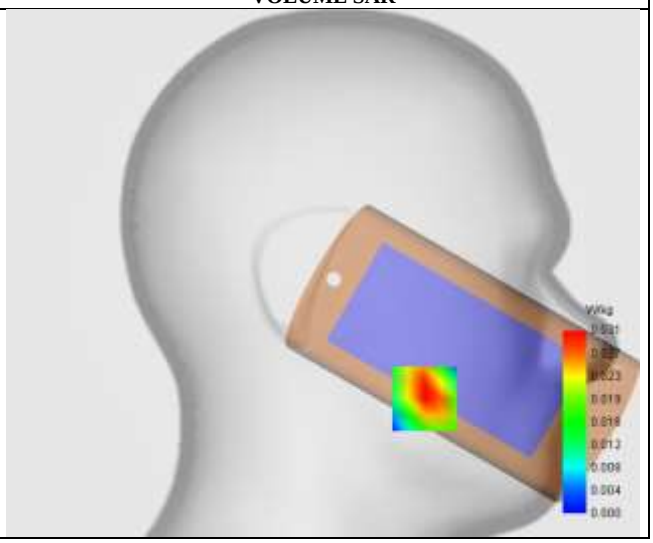
A. Experimental conditions.

Probe	SN 18/21 EPGO354
ConvF	2.14
Area Scan	dx=15mm dy=15mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Left head
Device Position	Cheek
Band	Band2_WCDMA1900
Channels	Middle
Signal	WCDMA (Crest factor: 1.0)

B. Permitivity

Frequency (MHz)	1880.000000
Relative permitivity (real part)	40.000000
Conductivity (S/m)	1.400391

C. SAR Surface and Volume

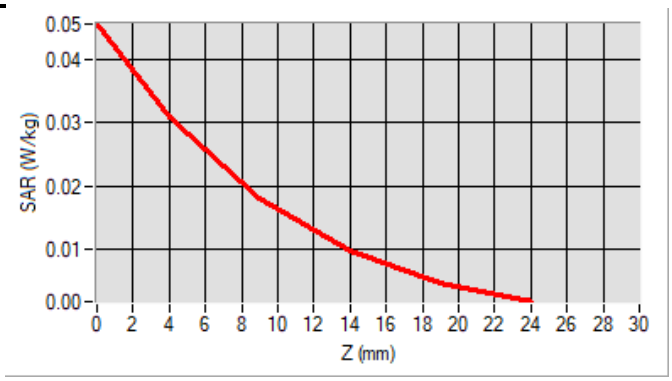
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-50.00, Y=-62.00 ; SAR Peak: 0.05 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.016104
SAR 1g (W/Kg)	0.029498
Variation (%)	-2.820000

E. Z Axis Scan



SAR Measurement at BC0_US_Cellular (Cheek, Right)

Date of measurement: 24/11/2021

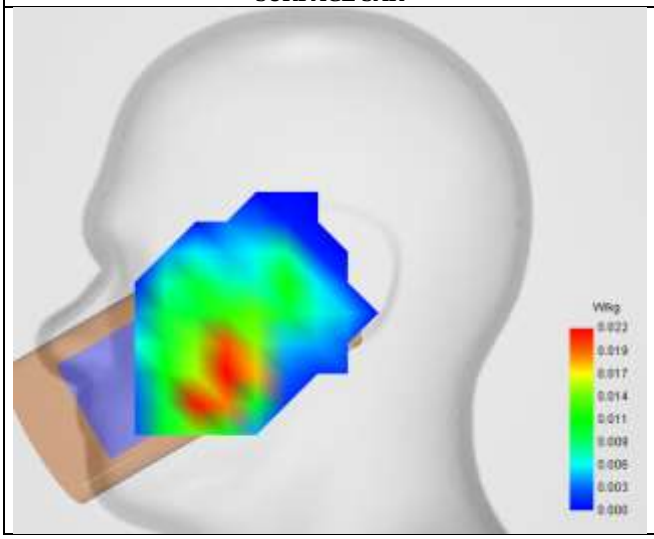
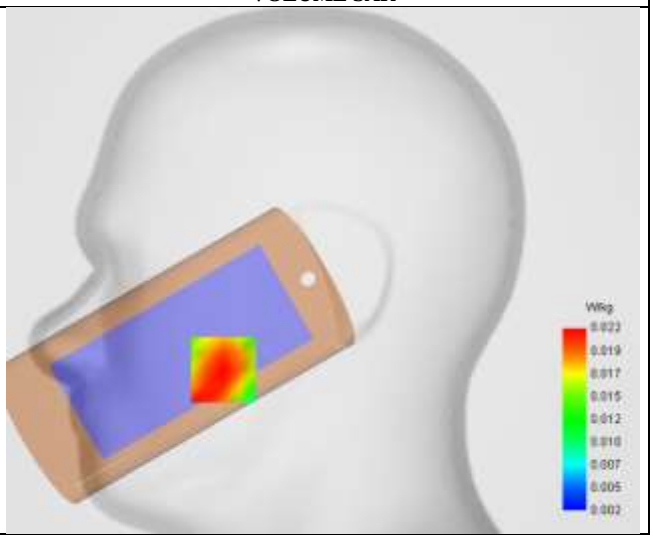
A. Experimental conditions.

Probe	SN 18/21 EPGO354
ConvF	1.88
Area Scan	dx=15mm dy=15mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Right head
Device Position	Cheek
Band	BC0_US_Cellular
Channels	Low
Signal	CDMA (Crest factor: 1.0)

B. Permitivity

Frequency (MHz)	824.7000000
Relative permitivity (real part)	41.500000
Conductivity (S/m)	0.967413

C. SAR Surface and Volume

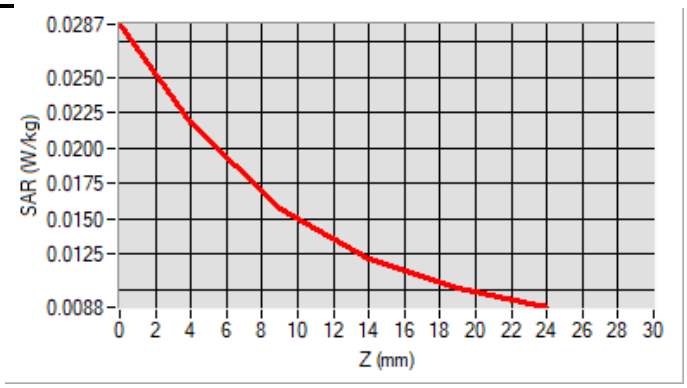
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-49.00, Y=-49.00 ; SAR Peak: 0.03 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.017587
SAR 1g (W/Kg)	0.024783
Variation (%)	-1.350000

E. Z Axis Scan



SAR Measurement at BC1_North_American_PCS (Cheek, Left)

Date of measurement: 29/11/2021

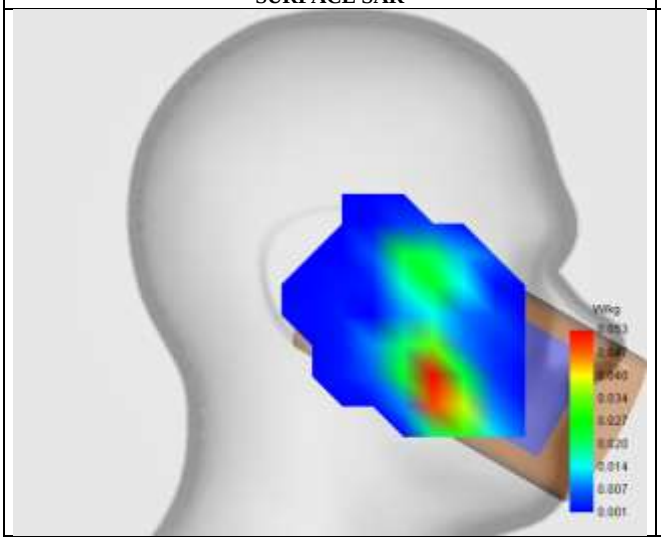
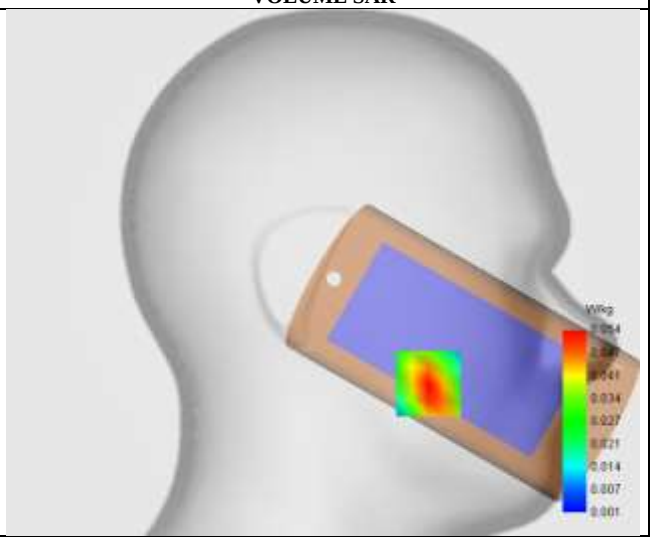
A. Experimental conditions.

Probe	SN 18/21 EPGO354
ConvF	2.09
Area Scan	dx=15mm dy=15mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Left head
Device Position	Cheek
Band	BC1_North_American_PCS
Channels	Low
Signal	CDMA (Crest factor: 1.0)

B. Permitivity

Frequency (MHz)	1851.250000
Relative permitivity (real part)	40.000000
Conductivity (S/m)	1.400750

C. SAR Surface and Volume

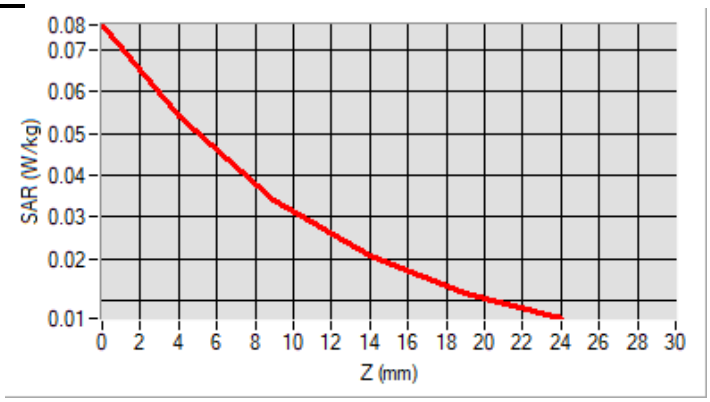
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-52.00, Y=-55.00 ; SAR Peak: 0.08 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.038389
SAR 1g (W/Kg)	0.060708
Variation (%)	-2.150000

E. Z Axis Scan



SAR Measurement at BC10_Secondary_800MHz (Cheek, Left)

Date of measurement: 24/11/2021

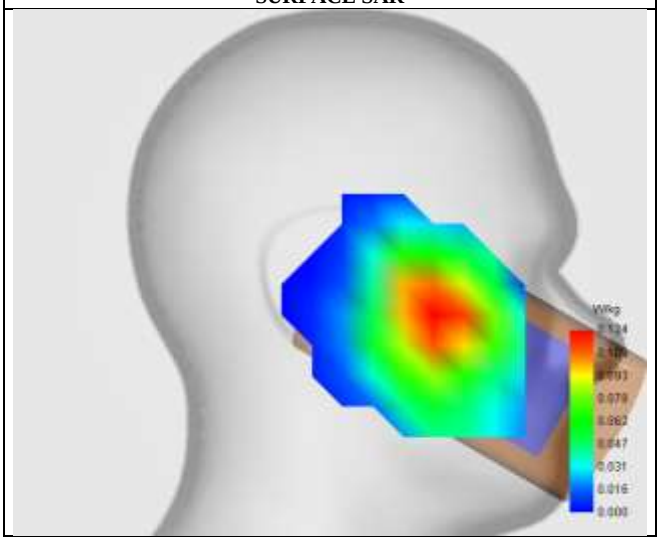
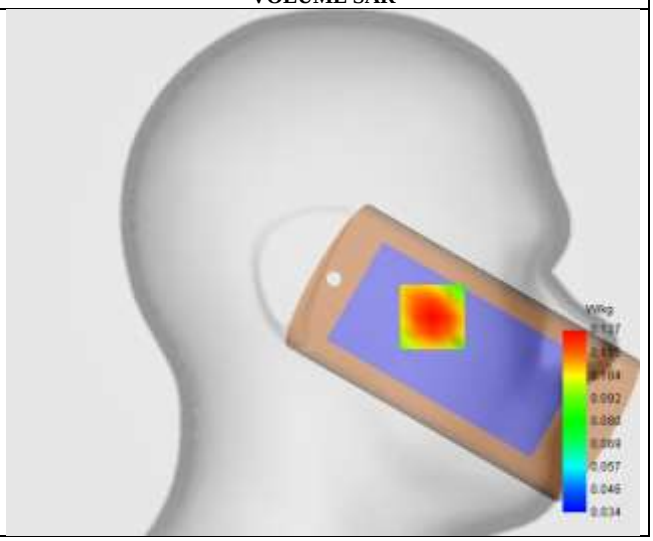
A. Experimental conditions.

Probe	SN 18/21 EPGO354
ConvF	1.68
Area Scan	dx=15mm dy=15mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Left head
Device Position	Cheek
Band	BC10_Secondary_800MHz
Channels	Low
Signal	CDMA (Crest factor: 1.0)

B. Permitivity

Frequency (MHz)	817.914976
Relative permitivity (real part)	41.582470
Conductivity (S/m)	0.899409

C. SAR Surface and Volume

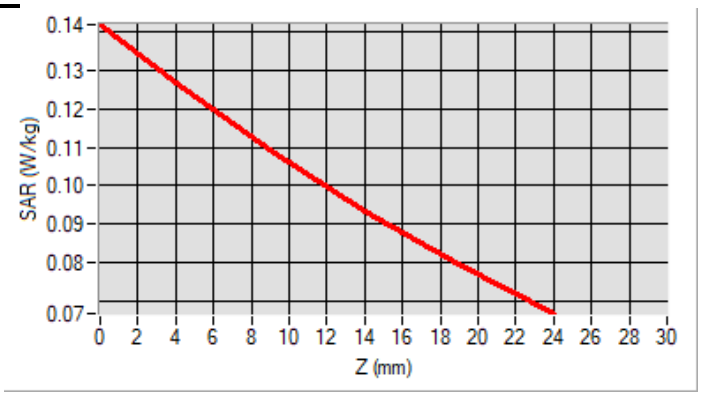
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-54.00, Y=-22.00 ; SAR Peak: 0.14 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.098725
SAR 1g (W/Kg)	0.122918
Variation (%)	-1.990000

E. Z Axis Scan



SAR Measurement at LTE band 5 (Cheek, Right)

Date of measurement: 24/11/2021

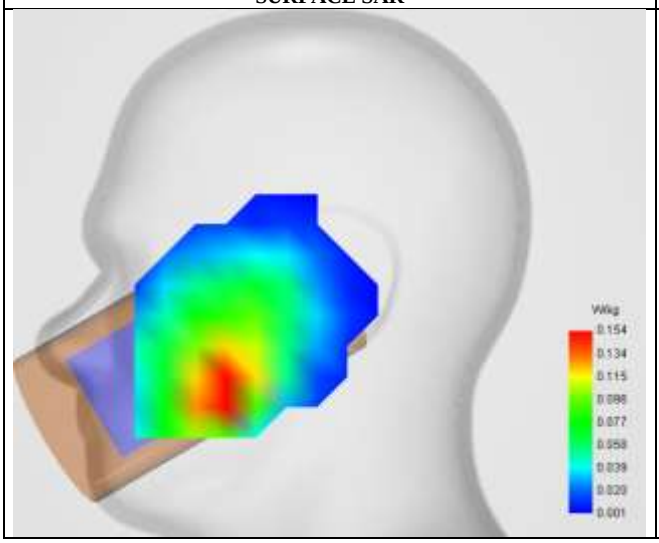
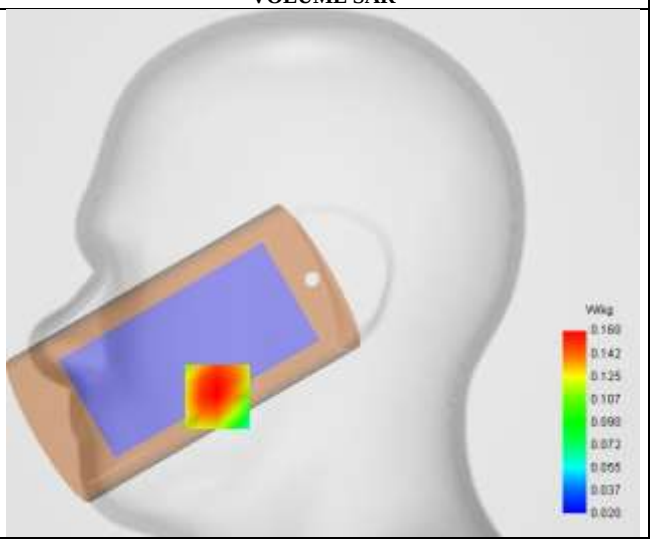
A. Experimental conditions.

Probe	SN 18/21 EPGO354
ConvF	1.68
Area Scan	dx=15mm dy=15mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Right head
Device Position	Cheek
Band	LTE band 5
Channels	Middle
Signal	LTE (Crest factor: 1.0)

B. Permitivity

Frequency (MHz)	836.500000
Relative permitivity (real part)	41.500000
Conductivity (S/m)	0.901561

C. SAR Surface and Volume

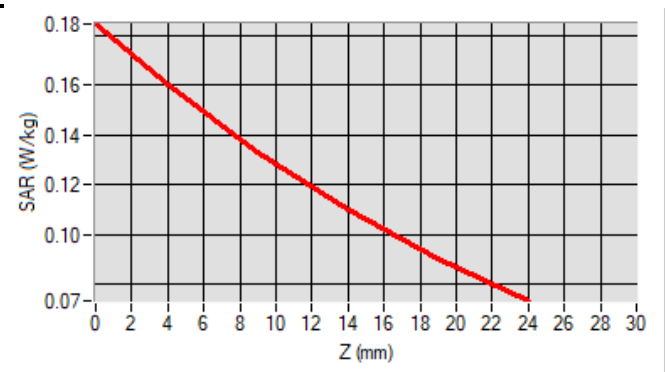
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-52.00, Y=-61.00 ; SAR Peak: 0.19 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.121053
SAR 1g (W/Kg)	0.155886
Variation (%)	-4.510000

E. Z Axis Scan



SAR Measurement at LTE band 7 (Cheek, Left)

Date of measurement: 2/12/2021

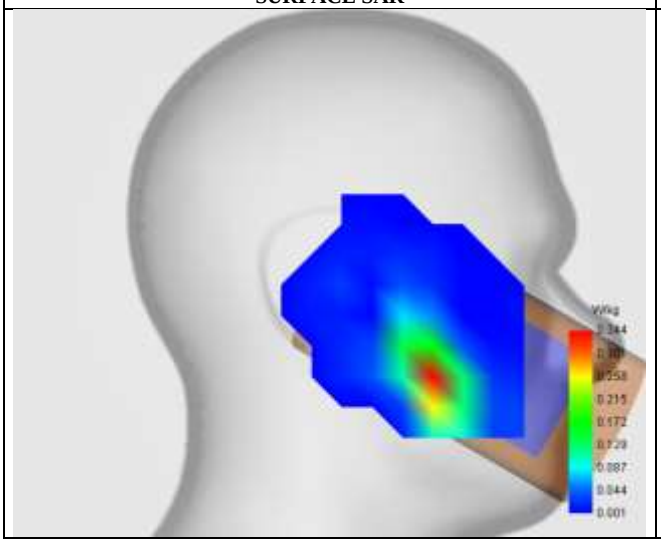
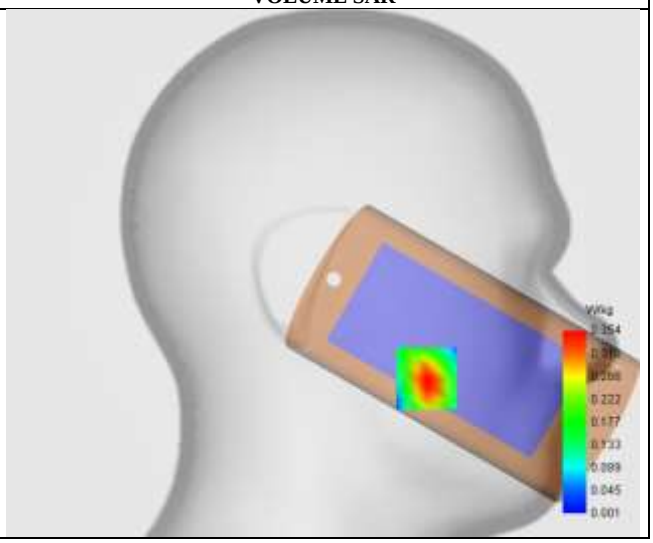
A. Experimental conditions.

Probe	SN 18/21 EPGO354
ConvF	2.15
Area Scan	dx=15mm dy=15mm
Zoom Scan	7x7x7,dx=5mm dy=5mm dz=5mm,Complete
Phantom	Left head
Device Position	Cheek
Band	LTE band 7
Channels	Middle
Signal	LTE (Crest factor: 1.0)

B. Permitivity

Frequency (MHz)	2535.000000
Relative permitivity (real part)	39.086666
Conductivity (S/m)	1.889749

C. SAR Surface and Volume

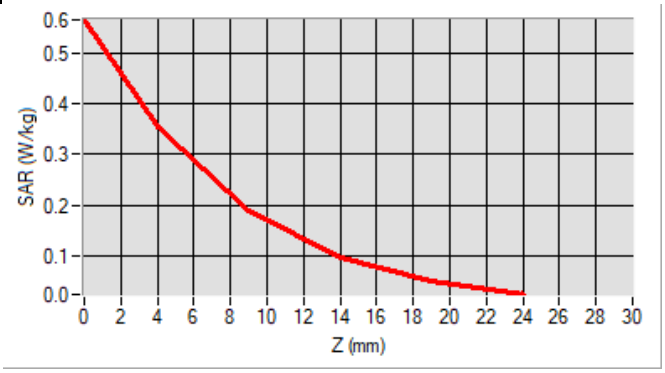
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-51.00, Y=-52.00 ; SAR Peak: 0.57 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.157246
SAR 1g (W/Kg)	0.320874
Variation (%)	-2.510000

E. Z Axis Scan



SAR Measurement at LTE band 12 (Cheek, Right)

Date of measurement: 24/11/2021

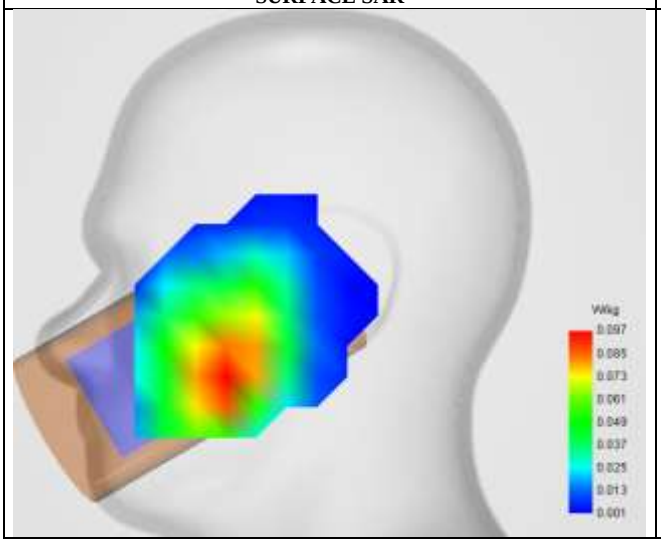
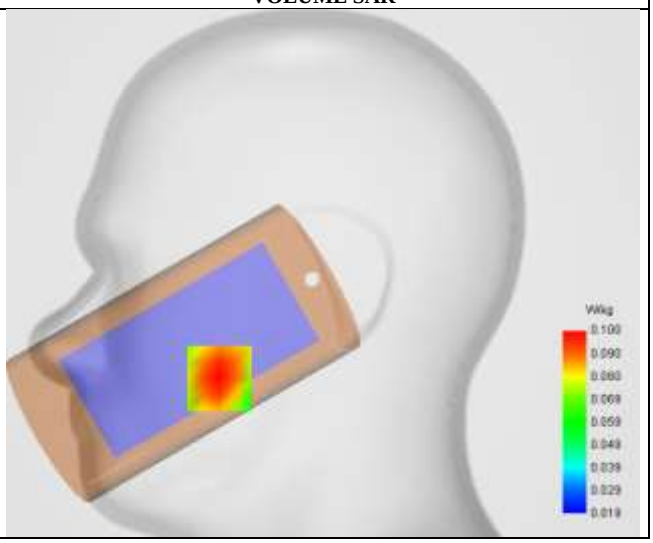
A. Experimental conditions.

Probe	SN 18/21 EPGO354
ConvF	1.73
Area Scan	dx=15mm dy=15mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Right head
Device Position	Cheek
Band	LTE band 12
Channels	Middle
Signal	LTE (Crest factor: 1.0)

B. Permitivity

Frequency (MHz)	707.500000
Relative permitivity (real part)	42.126667
Conductivity (S/m)	0.914404

C. SAR Surface and Volume

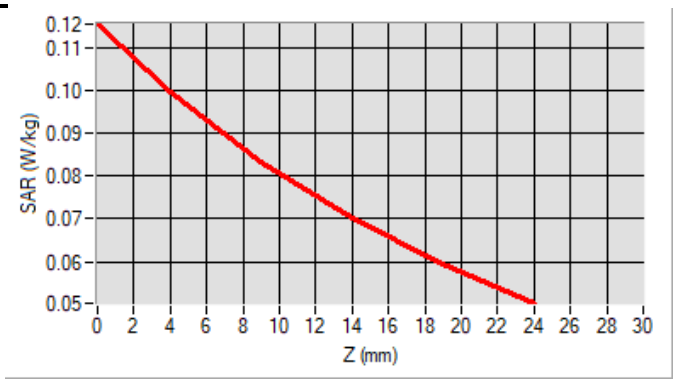
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-51.00, Y=-52.00 ; SAR Peak: 0.12 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.078118
SAR 1g (W/Kg)	0.098444
Variation (%)	-2.920000

E. Z Axis Scan



SAR Measurement at LTE band 13 (Cheek, Right)

Date of measurement: 24/11/2021

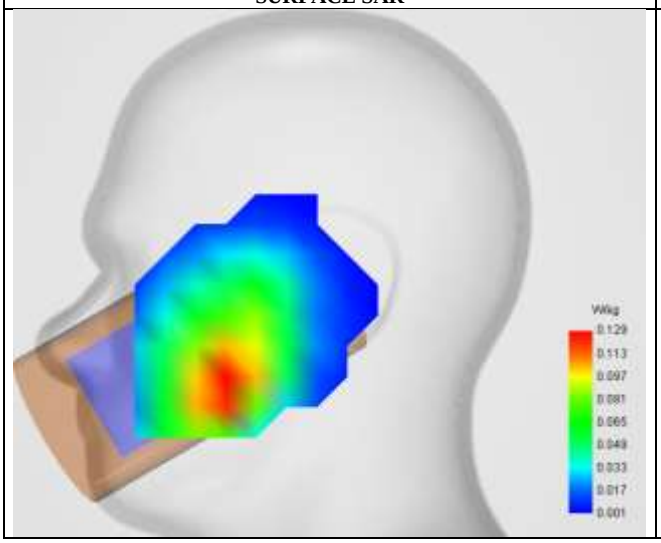
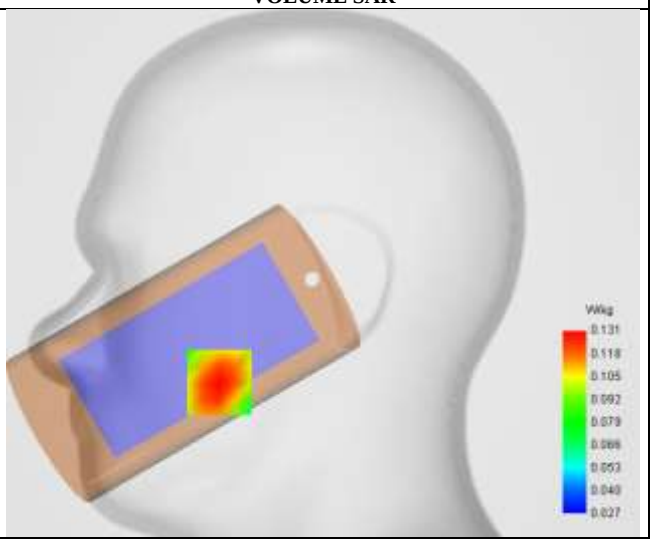
A. Experimental conditions.

Probe	SN 18/21 EPGO354
ConvF	1.73
Area Scan	dx=15mm dy=15mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Right head
Device Position	Cheek
Band	LTE band 13
Channels	Middle
Signal	LTE (Crest factor: 1.0)

B. Permitivity

Frequency (MHz)	782.000000
Relative permitivity (real part)	41.749413
Conductivity (S/m)	0.895916

C. SAR Surface and Volume

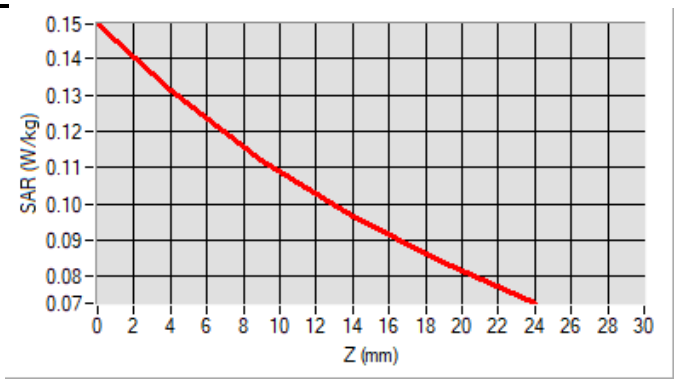
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-51.00, Y=-54.00 ; SAR Peak: 0.15 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.101064
SAR 1g (W/Kg)	0.127163
Variation (%)	-0.780000

E. Z Axis Scan



SAR Measurement at LTE band 25 (Cheek, Left)

Date of measurement: 29/11/2021

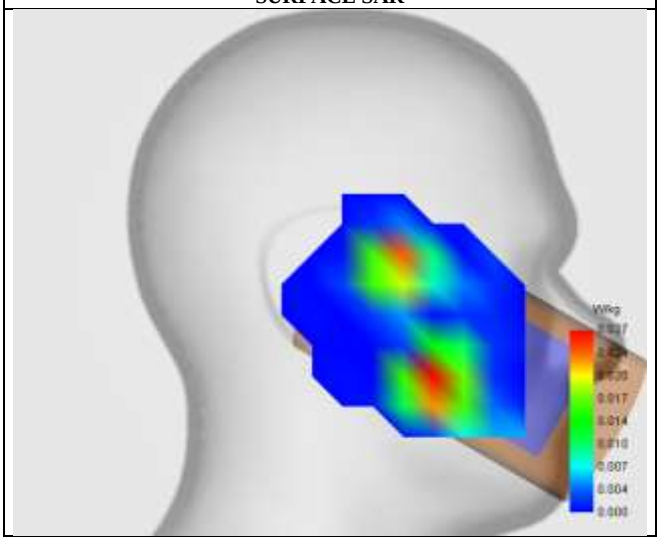
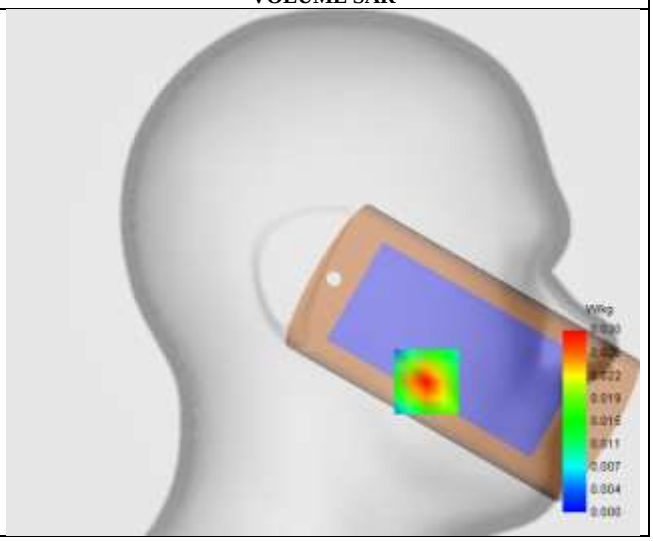
A. Experimental conditions.

Probe	SN 18/21 EPGO354
ConvF	2.14
Area Scan	dx=15mm dy=15mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Left head
Device Position	Cheek
Band	LTE band 25
Channels	Middle
Signal	LTE (Crest factor: 1.0)

B. Permitivity

Frequency (MHz)	1882.500000
Relative permitivity (real part)	40.000000
Conductivity (S/m)	1.400319

C. SAR Surface and Volume

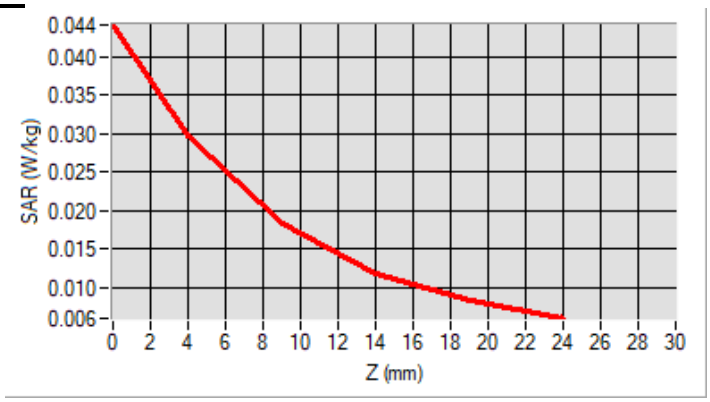
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-51.00, Y=-54.00 ; SAR Peak: 0.04 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.015241
SAR 1g (W/Kg)	0.027517
Variation (%)	-0.120000

E. Z Axis Scan



SAR Measurement at CUSTOM (LTE_Band_26) (Cheek, Right)

Date of measurement: 24/11/2021

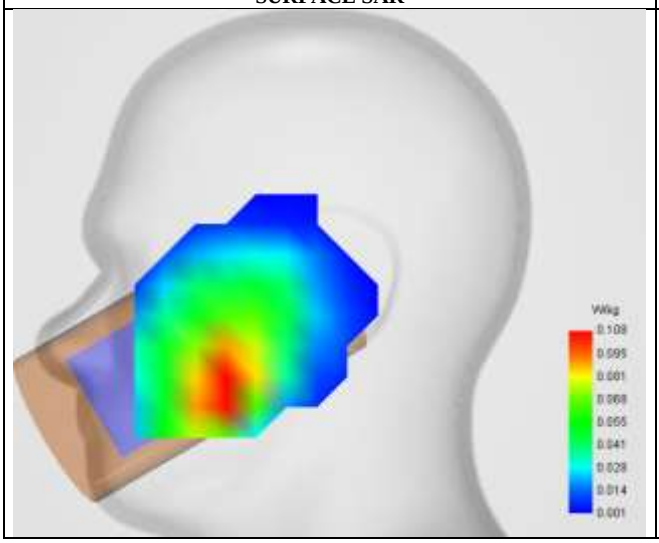
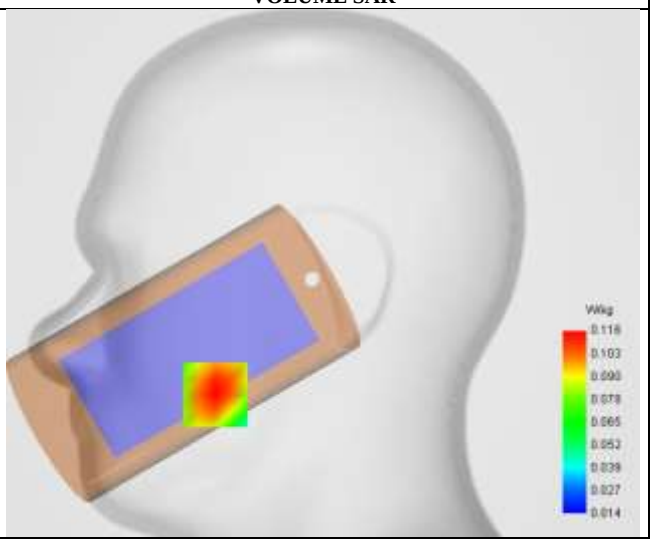
A. Experimental conditions.

Probe	SN 18/21 EPGO354
ConvF	1.73
Area Scan	dx=15mm dy=15mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Right head
Device Position	Cheek
Band	Duty Cycle: 1.00 (Crest factor: 1.0)
Channels	
Signal	

B. Permitivity

Frequency (MHz)	836.500000
Relative permitivity (real part)	41.500000
Conductivity (S/m)	0.901561

C. SAR Surface and Volume

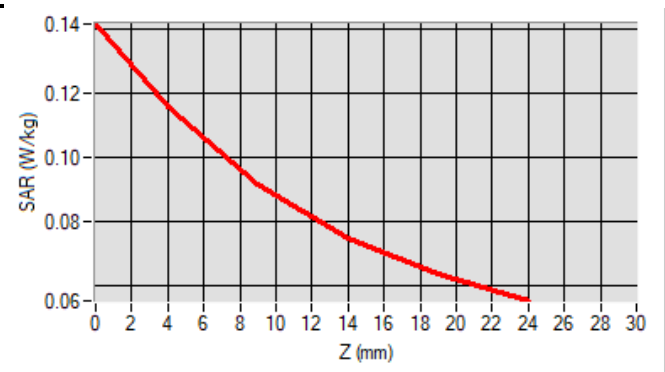
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-53.00, Y=-60.00 ; SAR Peak: 0.14 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.085142
SAR 1g (W/Kg)	0.111498
Variation (%)	-0.080000

E. Z Axis Scan



SAR Measurement at LTE band 41 (Cheek, Left)

Date of measurement: 02/12/2021

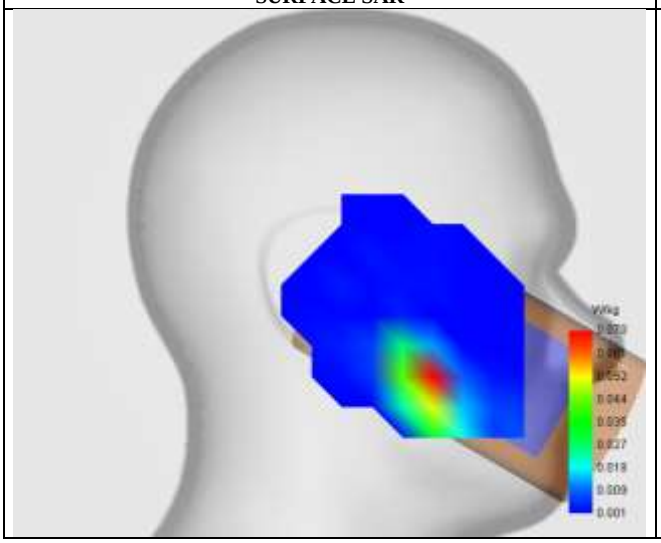
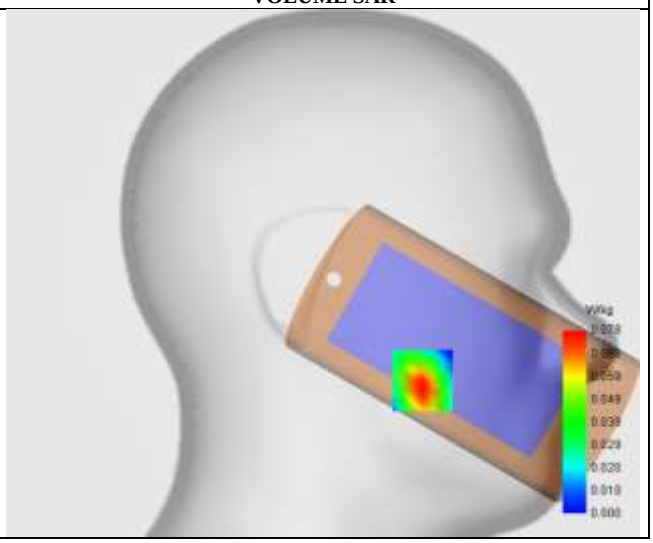
A. Experimental conditions.

Probe	SN 18/21 EPGO354
ConvF	2.15
Area Scan	dx=15mm dy=15mm
Zoom Scan	7x7x7,dx=5mm dy=5mm dz=5mm,Complete
Phantom	Left head
Device Position	Cheek
Band	LTE band 41
Channels	Middle
Signal	LTE (Crest factor: 1.0)

B. Permitivity

Frequency (MHz)	2595.000000
Relative permitivity (real part)	39.006668
Conductivity (S/m)	1.954660

C. SAR Surface and Volume

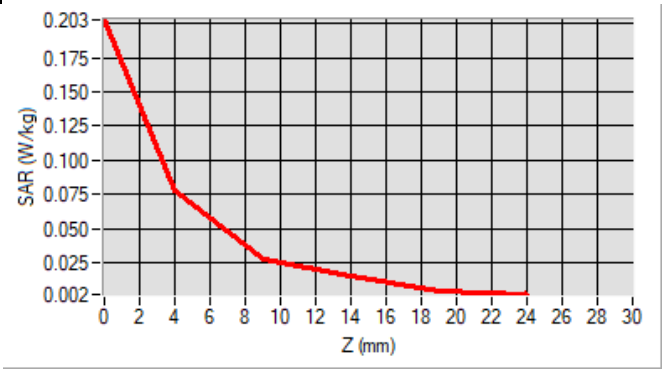
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-49.00, Y=-53.00 ; SAR Peak: 0.14 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.031361
SAR 1g (W/Kg)	0.071150
Variation (%)	1.430000

E. Z Axis Scan



SAR Measurement at CUSTOM (LTEBand66) (Cheek, Left)

Date of measurement: 29/11/2021

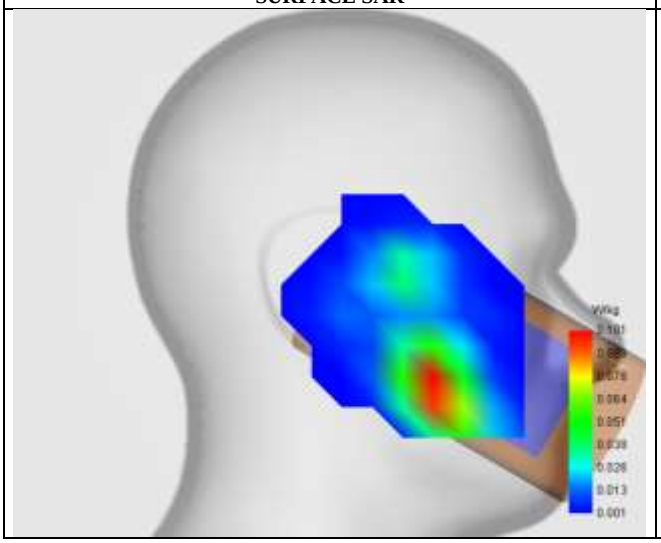
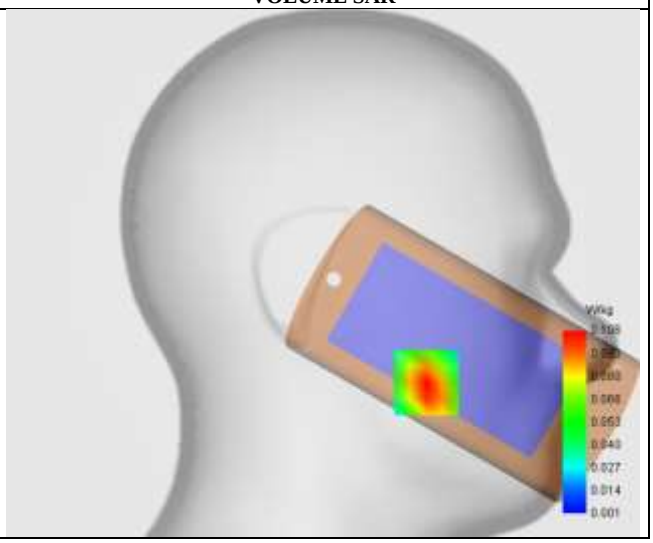
A. Experimental conditions.

Probe	SN 18/21 EPGO354
ConvF	2.07
Area Scan	dx=15mm dy=15mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Left head
Device Position	Cheek
Band	Middle
Channels	LTEBand66
Signal	LTE (Crest factor: 1.0)

B. Permitivity

Frequency (MHz)	1745.000000
Relative permitivity (real part)	40.104546
Conductivity (S/m)	1.367225

C. SAR Surface and Volume

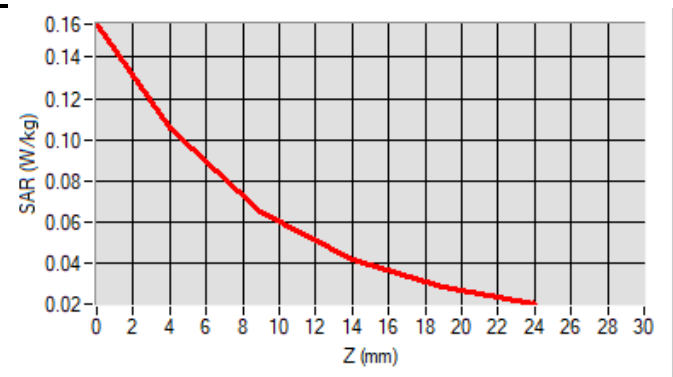
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-51.00, Y=-54.00 ; SAR Peak: 0.16 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.057431
SAR 1g (W/Kg)	0.099647
Variation (%)	1.400000

E. Z Axis Scan



SAR Measurement at IEEE 802.11b ISM (Cheek, Left)

Date of measurement: 2/12/2021

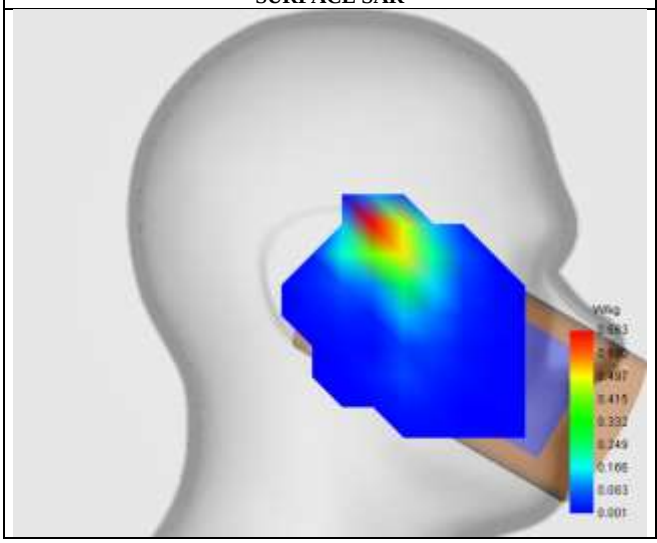
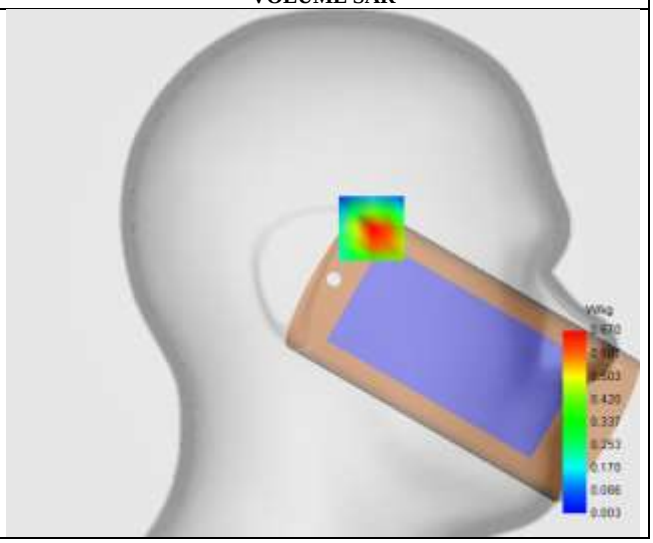
A. Experimental conditions.

Probe	SN 18/21 EPGO354
ConvF	2.23
Area Scan	dx=12mm dy=12mm
Zoom Scan	5x5x7,dx=5mm dy=5mm dz=5mm,Complete
Phantom	Left head
Device Position	Cheek
Band	IEEE 802.11b ISM
Channels	High
Signal	IEEE802.b (Crest factor: 1.0)

B. Permitivity

Frequency (MHz)	2462.000000
Relative permitivity (real part)	39.226002
Conductivity (S/m)	1.788081

C. SAR Surface and Volume

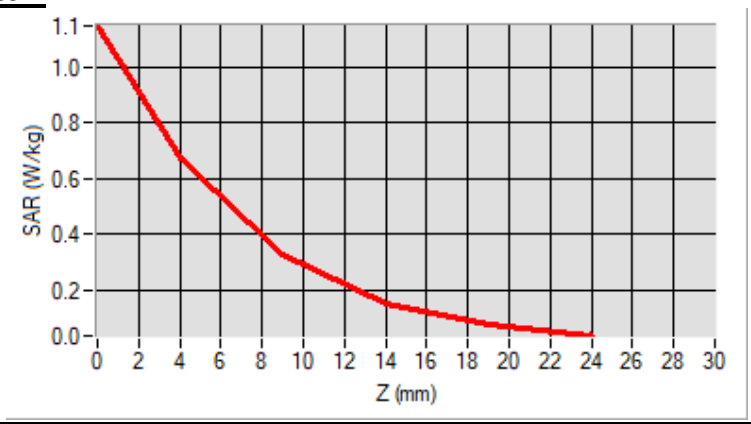
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-24.00, Y=22.00 ; SAR Peak: 1.19 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.302278
SAR 1g (W/Kg)	0.639005
Variation (%)	-2.090000

E. Z Axis Scan



SAR Measurement at CUSTOM (GPRS8503Txslot) (Body, Validation Plane)

Date of measurement: 24/11/2021

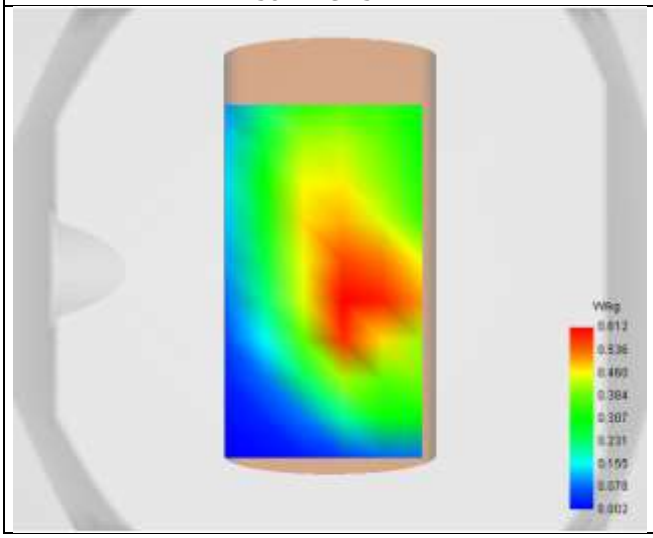
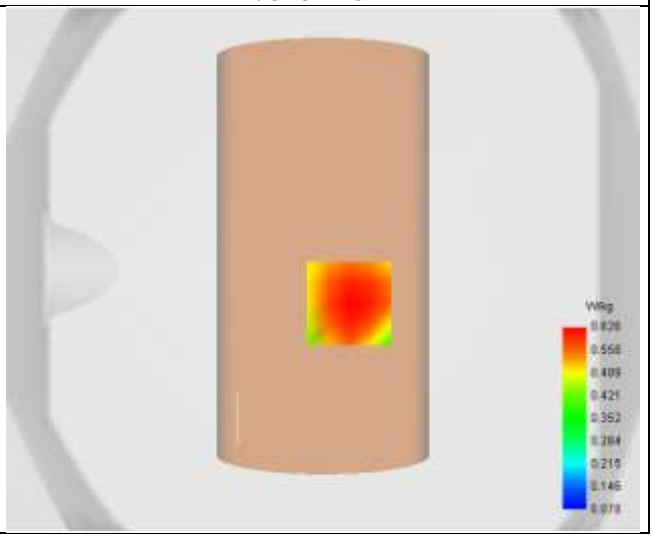
A. Experimental conditions.

Probe	SN 18/21 EPGO354
ConvF	1.73
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	GPRS850
Channels	Middle
Signal	TDMA(Crest factor: 4.0)

B. Permitivity

Frequency (MHz)	836.599976
Relative permitivity (real part)	41.456322
Conductivity (S/m)	0.927115

C. SAR Surface and Volume

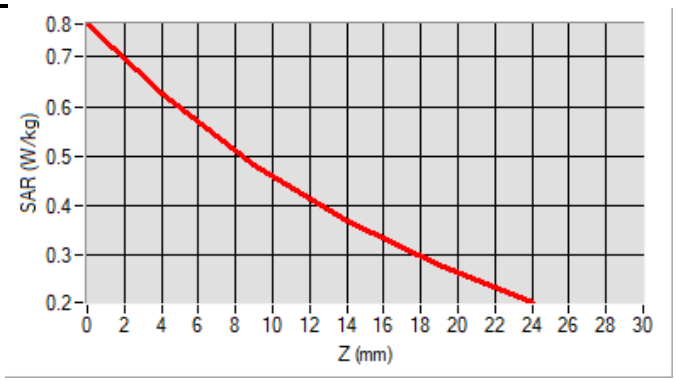
SURFACE SAR	VOLUME SAR
	

Maximum location: X=10.00, Y=-13.00 ; SAR Peak: 0.78 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.453595
SAR 1g (W/Kg)	0.618447
Variation (%)	-1.190000

E. Z Axis Scan



SAR Measurement at CUSTOM (GPRS19003Txslot) (Body, Validation Plane)

Date of measurement: 29/11/2021

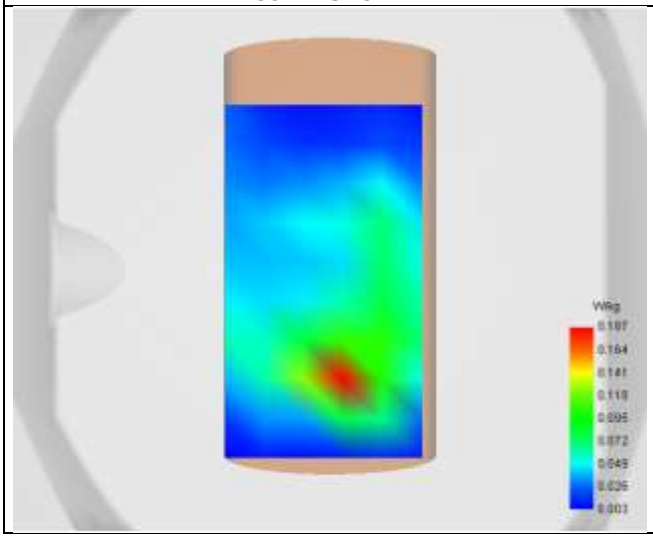
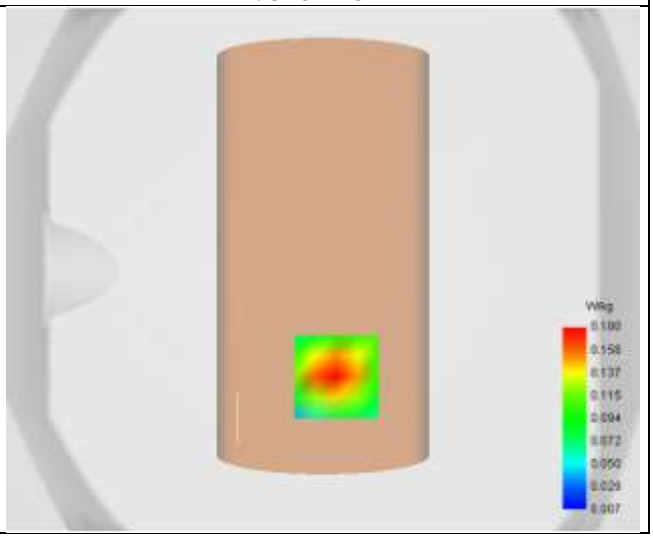
A. Experimental conditions.

Probe	SN 18/21 EPGO354
ConvF	2.14
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	GPRS1900
Channels	Middle
Signal	TDMA (Crest factor: 4.0)

B. Permitivity

Frequency (MHz)	1880.000000
Relative permitivity (real part)	40.000000
Conductivity (S/m)	1.400391

C. SAR Surface and Volume

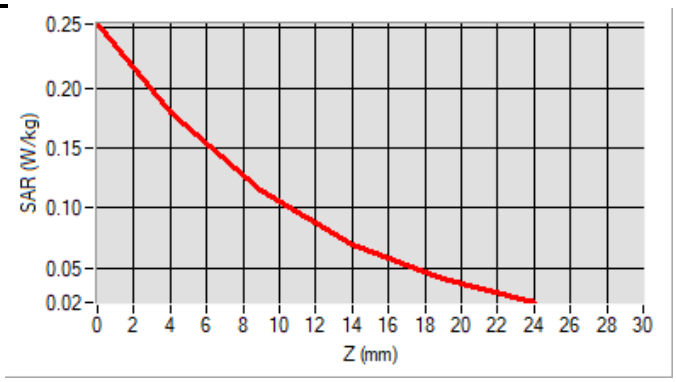
SURFACE SAR	VOLUME SAR
	

Maximum location: X=5.00, Y=-41.00 ; SAR Peak: 0.25 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.094051
SAR 1g (W/Kg)	0.166933
Variation (%)	-4.240000

E. Z Axis Scan



SAR Measurement at Band5_WCDMA850 (Body, Validation Plane)

Date of measurement: 24/11/2021

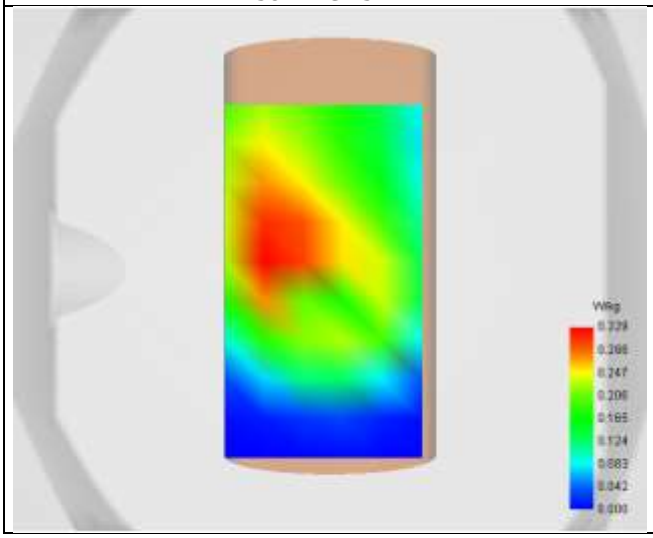
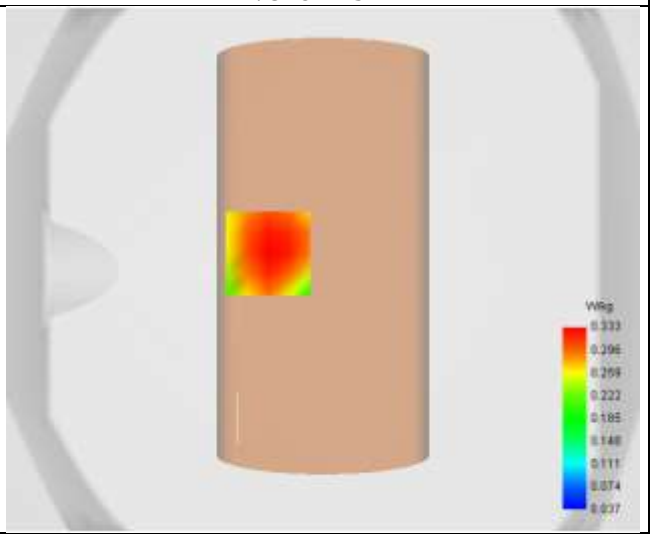
A. Experimental conditions.

Probe	SN 18/21 EPGO354
ConvF	1.68
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	Band5_WCDMA850
Channels	Middle
Signal	WCDMA (Crest factor: 1.0)

B. Permitivity

Frequency (MHz)	836.599976
Relative permitivity (real part)	41.500000
Conductivity (S/m)	0.901669

C. SAR Surface and Volume

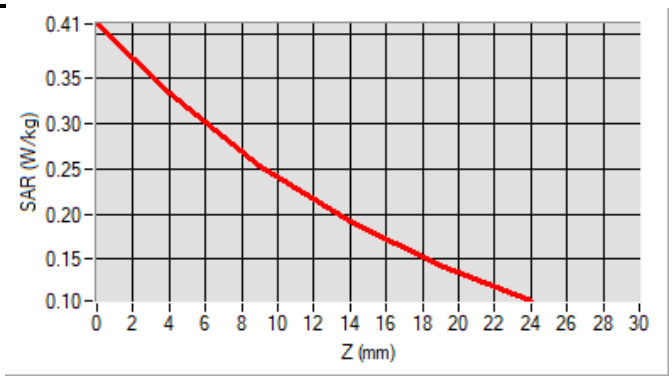
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-21.00, Y=6.00 ; SAR Peak: 0.42 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.236278
SAR 1g (W/Kg)	0.322495
Variation (%)	-0.820000

E. Z Axis Scan



SAR Measurement at Band4_WCDMA1700 (Body, Validation Plane)

Date of measurement: 29/11/2021

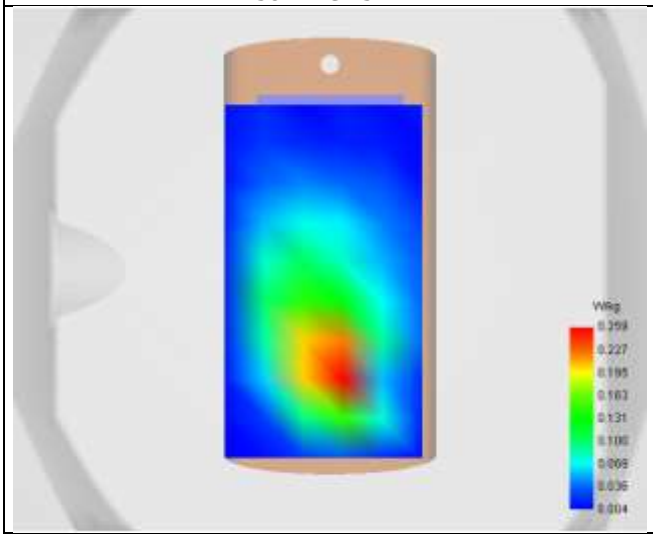
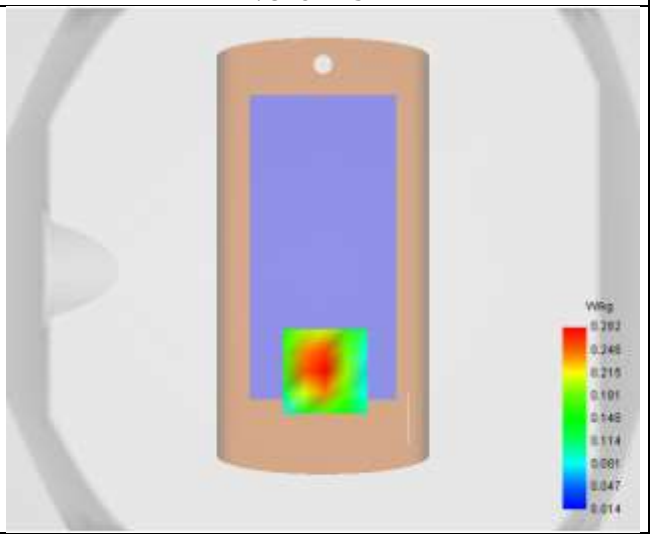
A. Experimental conditions.

Probe	SN 18/21 EPGO354
ConvF	2.07
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	Band4_WCDMA1700
Channels	Middle
Signal	WCDMA (Crest factor: 1.0)

B. Permitivity

Frequency (MHz)	1732.599976
Relative permitivity (real part)	40.115818
Conductivity (S/m)	1.360656

C. SAR Surface and Volume

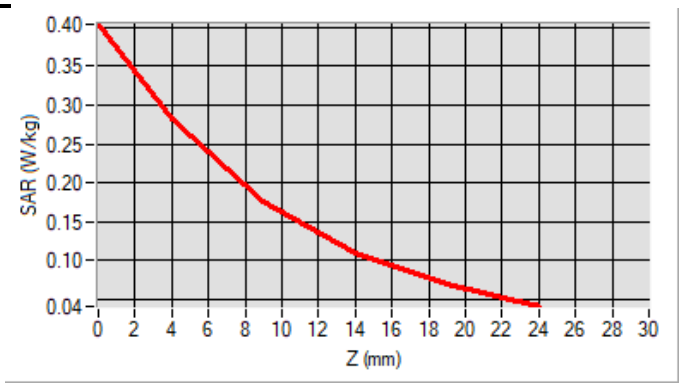
SURFACE SAR	VOLUME SAR
	

Maximum location: X=1.00, Y=-39.00 ; SAR Peak: 0.42 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.150027
SAR 1g (W/Kg)	0.265978
Variation (%)	-0.850000

E. Z Axis Scan



SAR Measurement at Band2_WCDMA1900 (Body, Validation Plane)

Date of measurement: 29/11/2021

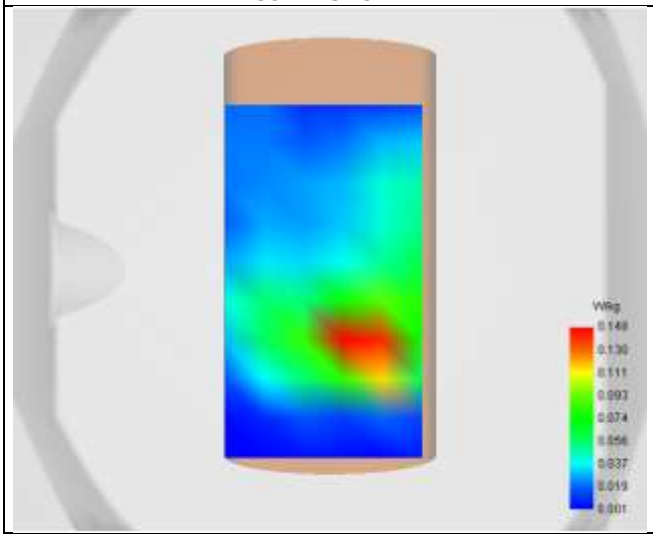
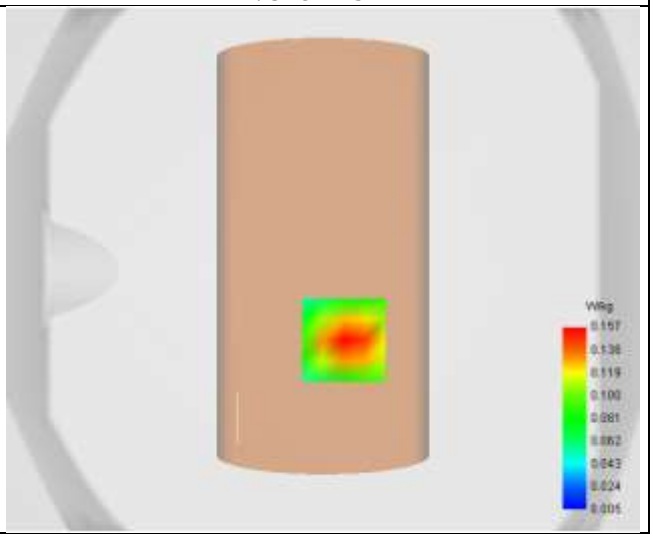
A. Experimental conditions.

Probe	SN 18/21 EPGO354
ConvF	2.14
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	Band2_WCDMA1900
Channels	Middle
Signal	WCDMA (Crest factor: 1.0)

B. Permitivity

Frequency (MHz)	1880.000000
Relative permitivity (real part)	40.000000
Conductivity (S/m)	1.400391

C. SAR Surface and Volume

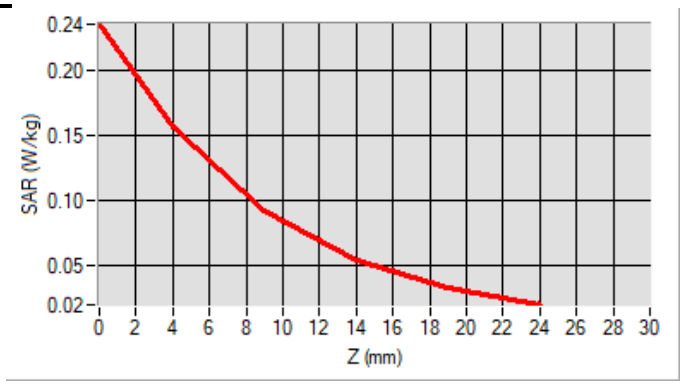
SURFACE SAR	VOLUME SAR
	

Maximum location: X=8.00, Y=-27.00 ; SAR Peak: 0.24 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.082236
SAR 1g (W/Kg)	0.146641
Variation (%)	-1.550000

E. Z Axis Scan



SAR Measurement at BC0_US_Cellular (Body, Validation Plane)

Date of measurement: 24/11/2021

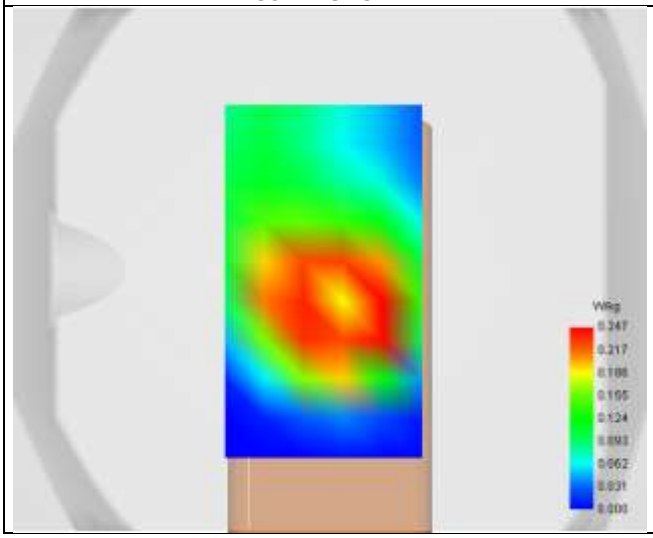
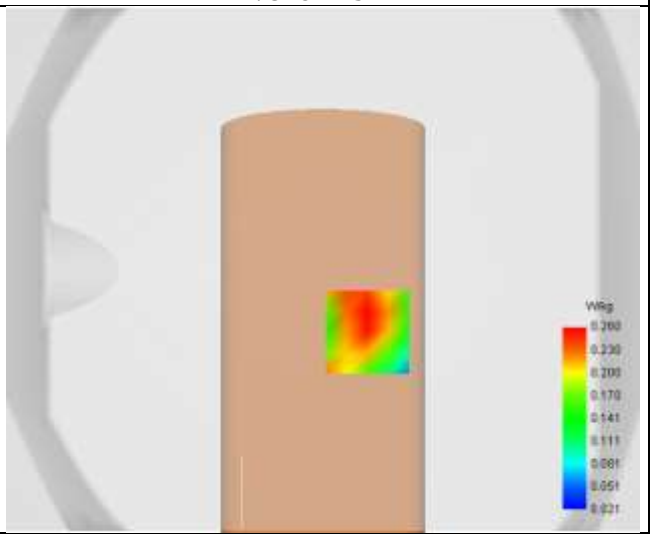
A. Experimental conditions.

Probe	SN 18/21 EPGO354
ConvF	1.88
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	BC0_US_Cellular
Channels	Low
Signal	CDMA (Crest factor: 1.0)

B. Permitivity

Frequency (MHz)	824.7000000
Relative permitivity (real part)	41.500000
Conductivity (S/m)	0.967413

C. SAR Surface and Volume

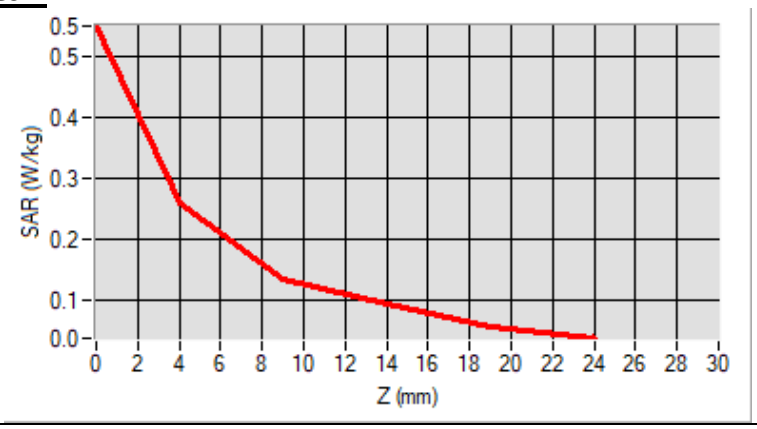
SURFACE SAR	VOLUME SAR
	

Maximum location: X=17.00, Y=-24.00 ; SAR Peak: 0.40 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.111952
SAR 1g (W/Kg)	0.2472109
Variation (%)	-2.750000

E. Z Axis Scan



SAR Measurement at BC1_North_American_PCS (Body, Validation Plane)

Date of measurement: 29/11/2021

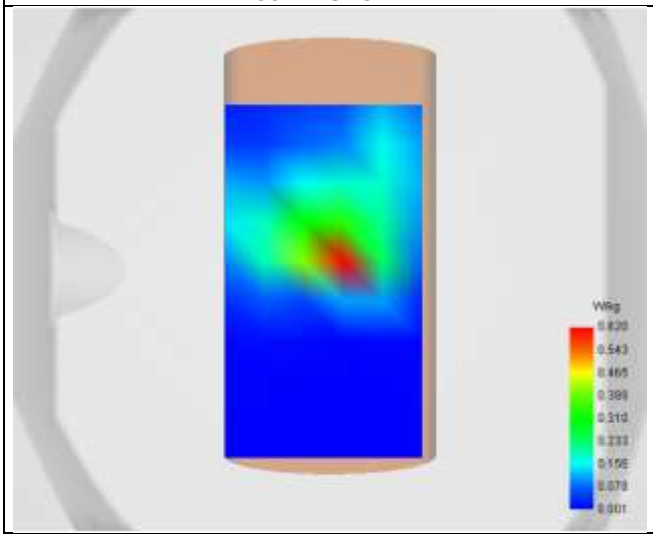
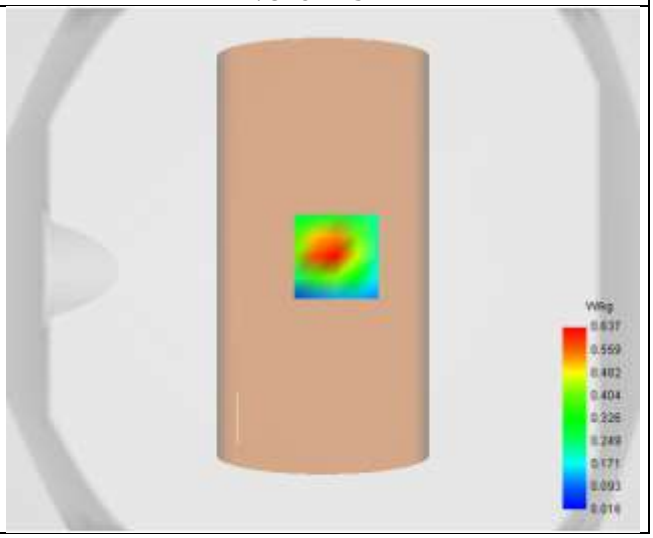
A. Experimental conditions.

Probe	SN 18/21 EPGO354
ConvF	2.09
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	BC1_North_American_PCS
Channels	Low
Signal	CDMA (Crest factor: 1.0)

B. Permitivity

Frequency (MHz)	1851.250000
Relative permitivity (real part)	40.000000
Conductivity (S/m)	1.400750

C. SAR Surface and Volume

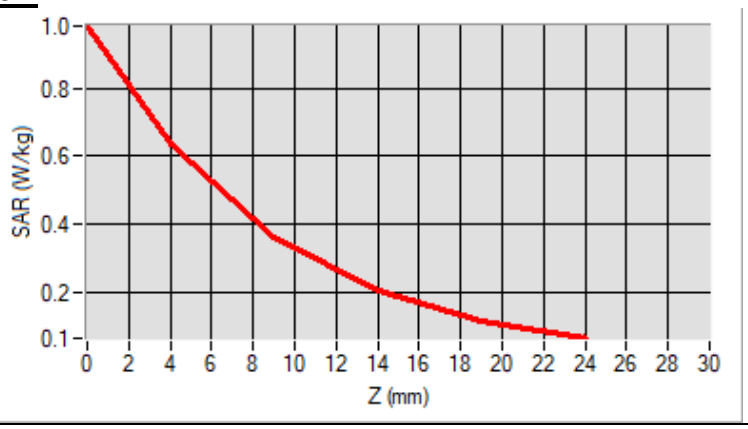
SURFACE SAR	VOLUME SAR
	

Maximum location: X=5.00, Y=5.00 ; SAR Peak: 1.01 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.273192
SAR 1g (W/Kg)	0.504754
Variation (%)	0.680000

E. Z Axis Scan



SAR Measurement at BC10_Secondary_800MHz (Body, Validation Plane)

Date of measurement: 24/11/2021

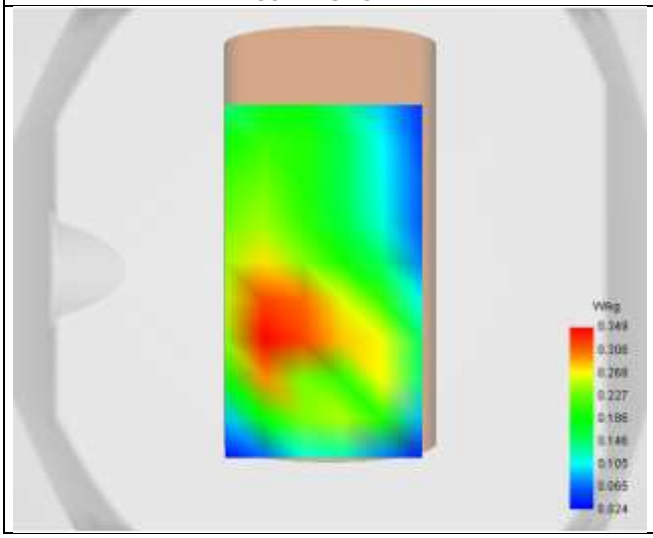
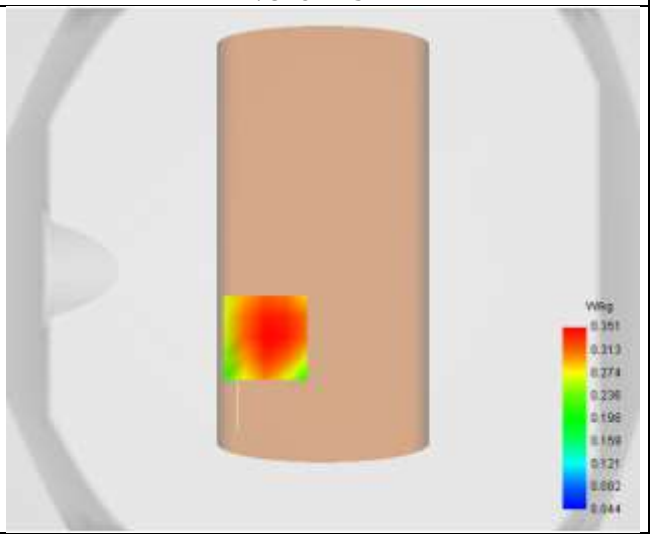
A. Experimental conditions.

Probe	SN 18/21 EPGO354
ConvF	1.68
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	BC10_Secondary_800MHz
Channels	Low
Signal	CDMA (Crest factor: 1.0)

B. Permitivity

Frequency (MHz)	817.914976
Relative permitivity (real part)	41.582470
Conductivity (S/m)	0.899409

C. SAR Surface and Volume

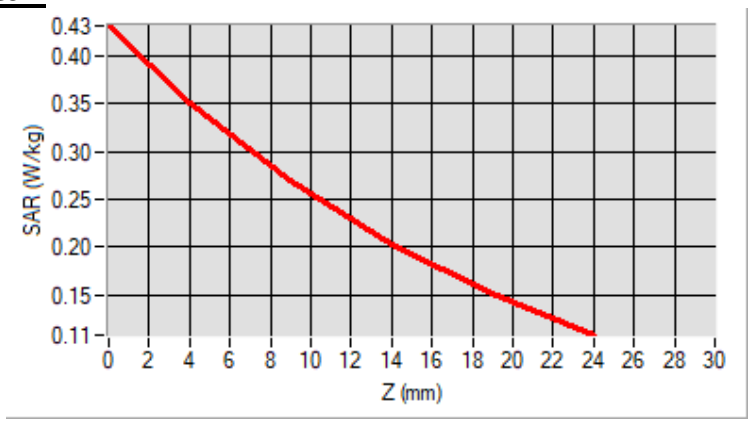
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-22.00, Y=-26.00 ; SAR Peak: 0.44 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.248012
SAR 1g (W/Kg)	0.341140
Variation (%)	-1.700000

E. Z Axis Scan



SAR Measurement at LTE band 5 (Body, Validation Plane)

Date of measurement: 24/11/2021

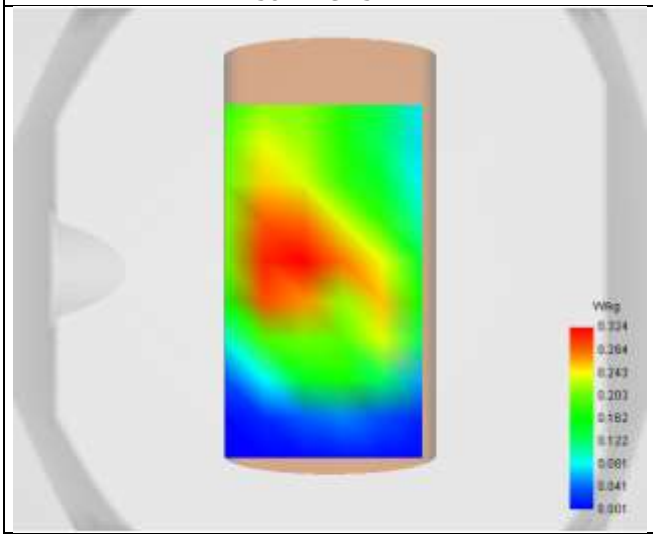
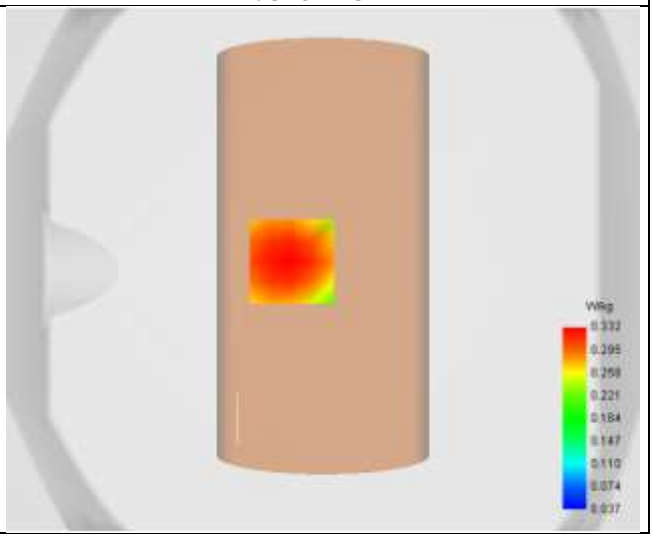
A. Experimental conditions.

Probe	SN 18/21 EPGO354
ConvF	1.68
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	LTE band 5
Channels	Middle
Signal	LTE (Crest factor: 1.0)

B. Permitivity

Frequency (MHz)	836.500000
Relative permitivity (real part)	41.500000
Conductivity (S/m)	0.901561

C. SAR Surface and Volume

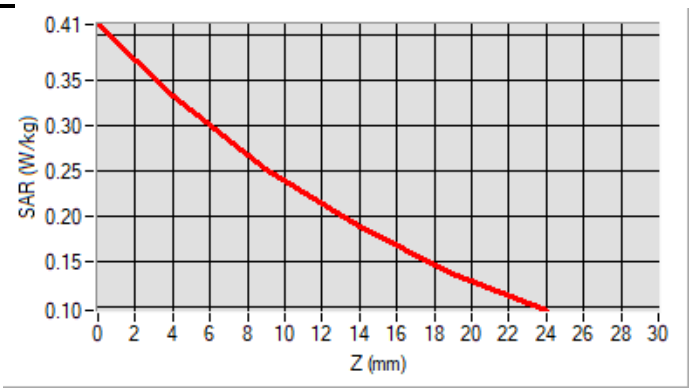
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-12.00, Y=3.00 ; SAR Peak: 0.41 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.236468
SAR 1g (W/Kg)	0.320706
Variation (%)	-1.440000

E. Z Axis Scan



SAR Measurement at LTE band 7 (Body, Validation Plane)

Date of measurement: 2/12/2021

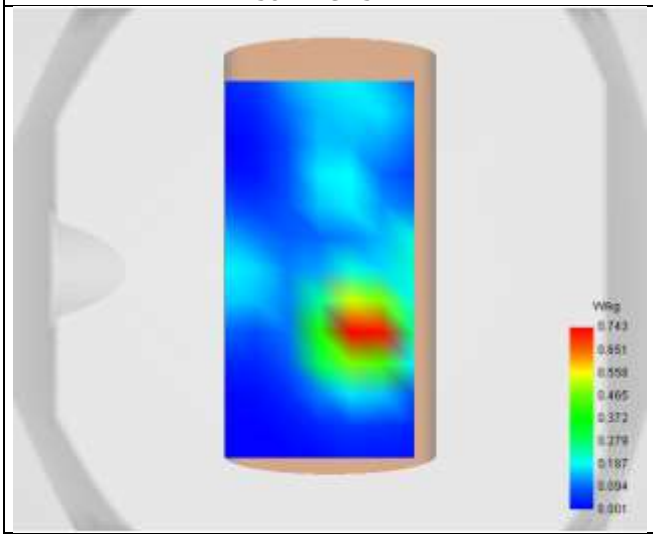
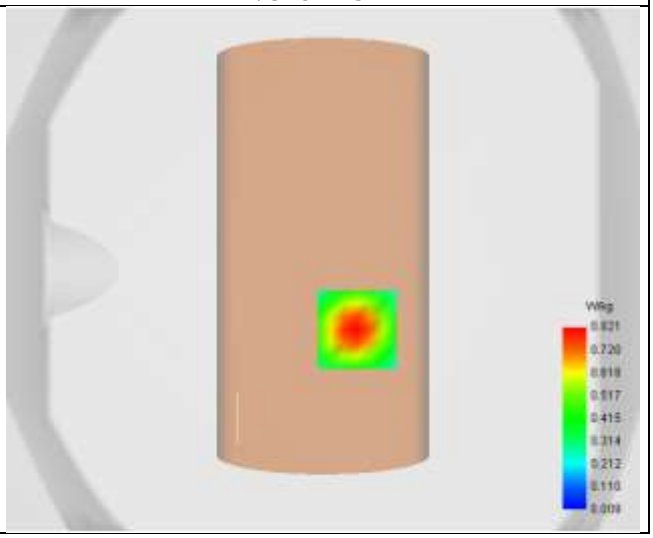
A. Experimental conditions.

Probe	SN 18/21 EPGO354
ConvF	2.15
Area Scan	surf_sam_plan.txt
Zoom Scan	7x7x7,dx=5mm dy=5mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	LTE band 7
Channels	Middle
Signal	LTE (Crest factor: 1.0)

B. Permitivity

Frequency (MHz)	2535.000000
Relative permitivity (real part)	39.086666
Conductivity (S/m)	1.889749

C. SAR Surface and Volume

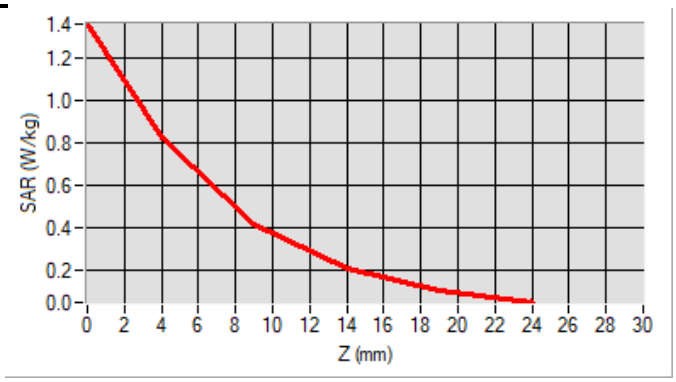
SURFACE SAR	VOLUME SAR
	

Maximum location: X=13.00, Y=-23.00 ; SAR Peak: 1.36 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.369322
SAR 1g (W/Kg)	0.748591
Variation (%)	0.610000

E. Z Axis Scan



SAR Measurement at LTE band 12 (Body, Validation Plane)

Date of measurement: 24/11/2021

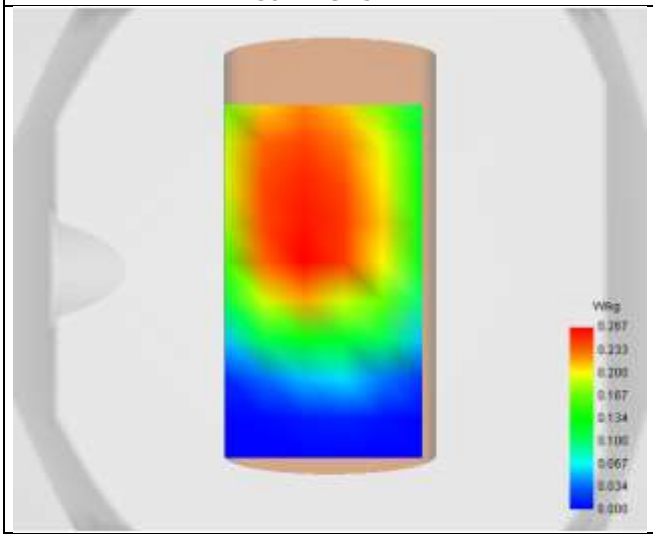
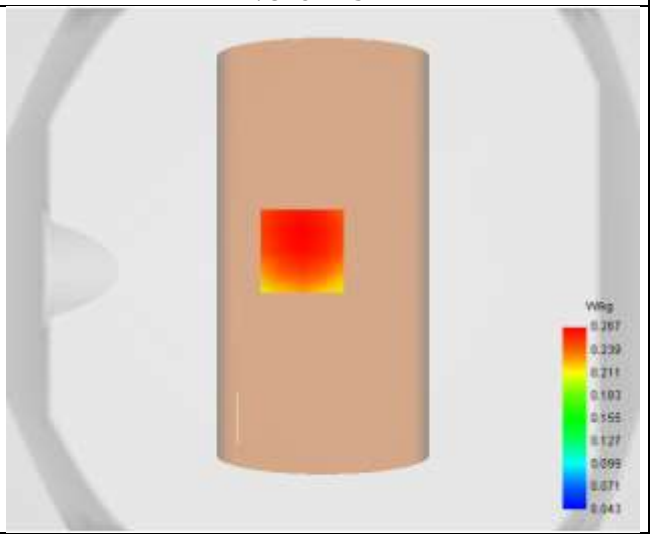
A. Experimental conditions.

Probe	SN 18/21 EPGO354
ConvF	1.73
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	LTE band 12
Channels	Middle
Signal	LTE (Crest factor: 1.0)

B. Permitivity

Frequency (MHz)	707.500000
Relative permitivity (real part)	42.126667
Conductivity (S/m)	0.914404

C. SAR Surface and Volume

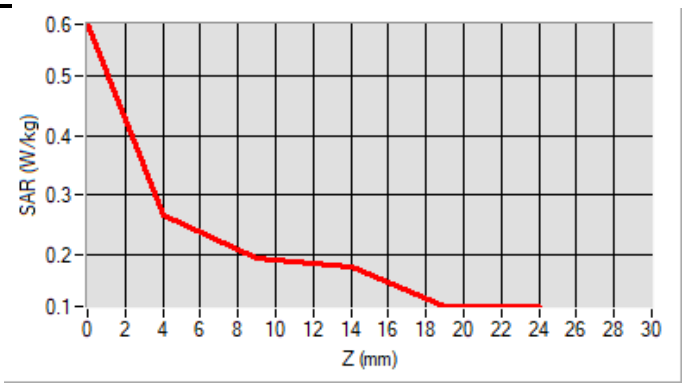
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-8.00, Y=7.00 ; SAR Peak: 0.31 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.207884
SAR 1g (W/Kg)	0.264936
Variation (%)	-1.510000

E. Z Axis Scan



SAR Measurement at LTE band 13 (Body, Validation Plane)

Date of measurement: 24/11/2021

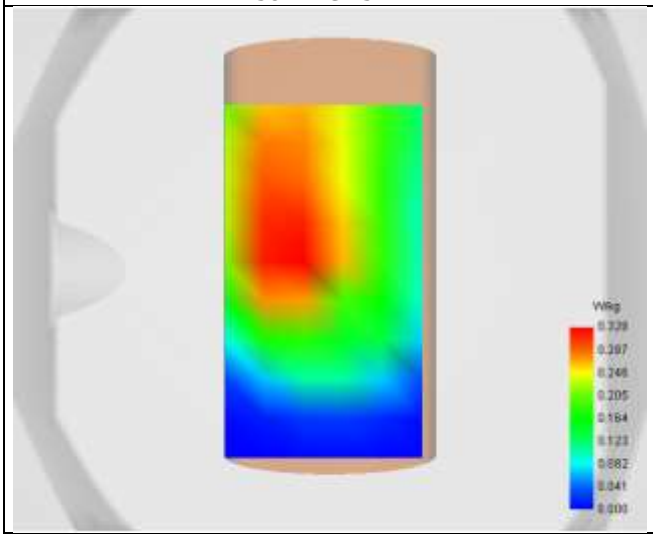
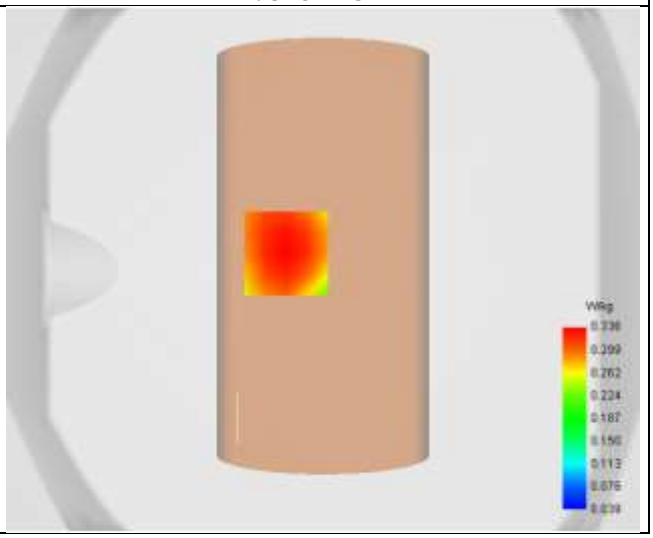
A. Experimental conditions.

Probe	SN 18/21 EPGO354
ConvF	1.73
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	LTE band 13
Channels	Middle
Signal	LTE (Crest factor: 1.0)

B. Permitivity

Frequency (MHz)	782.000000
Relative permitivity (real part)	41.749413
Conductivity (S/m)	0.895916

C. SAR Surface and Volume

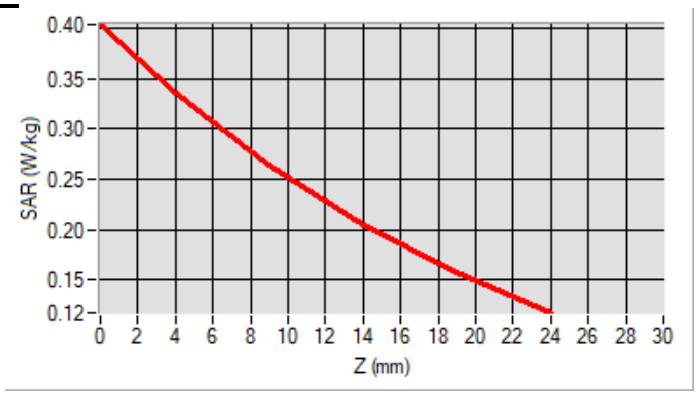
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-14.00, Y=6.00 ; SAR Peak: 0.41 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.247549
SAR 1g (W/Kg)	0.325641
Variation (%)	-1.450000

E. Z Axis Scan



SAR Measurement at LTE band 25 (Body, Validation Plane)

Date of measurement: 29/11/2021

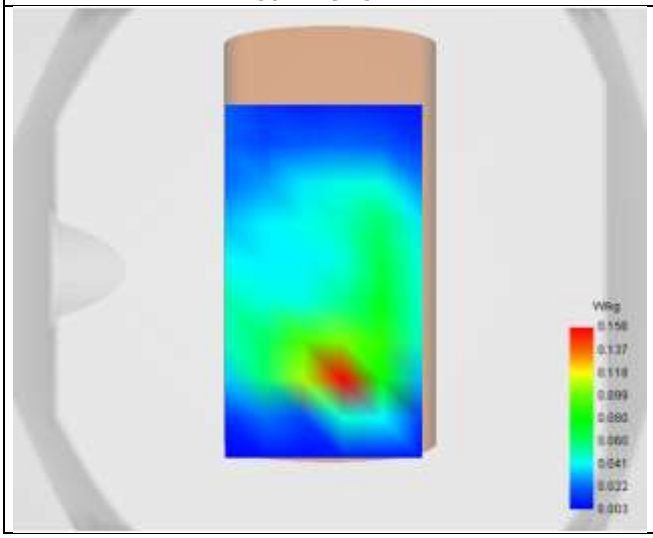
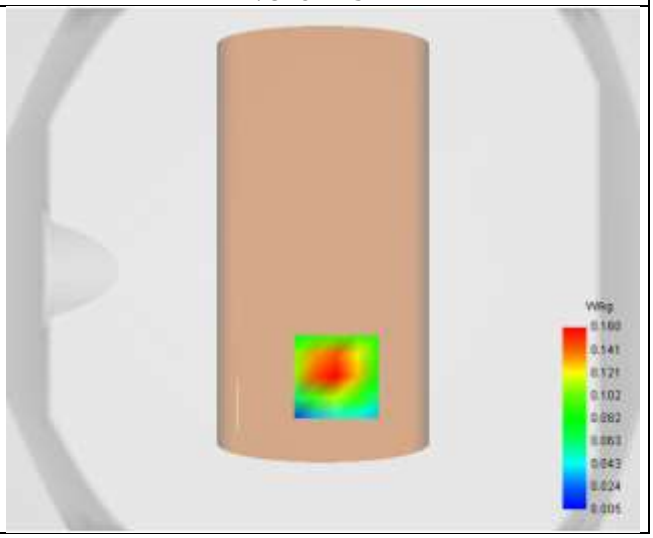
A. Experimental conditions.

Probe	SN 18/21 EPGO354
ConvF	2.14
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	LTE band 25
Channels	Middle
Signal	LTE (Crest factor: 1.0)

B. Permitivity

Frequency (MHz)	1882.500000
Relative permitivity (real part)	40.000000
Conductivity (S/m)	1.400319

C. SAR Surface and Volume

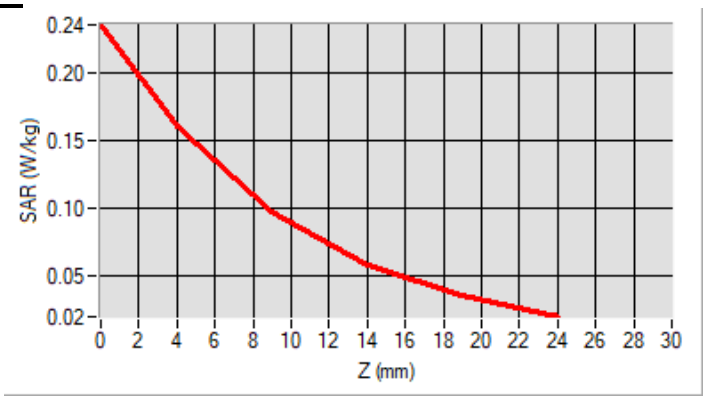
SURFACE SAR	VOLUME SAR
	

Maximum location: X=5.00, Y=-41.00 ; SAR Peak: 0.24 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.082634
SAR 1g (W/Kg)	0.150991
Variation (%)	-0.210000

E. Z Axis Scan



SAR Measurement at CUSTOM (LTE_Band_26) (Body, Validation Plane)

Date of measurement: 24/11/2021

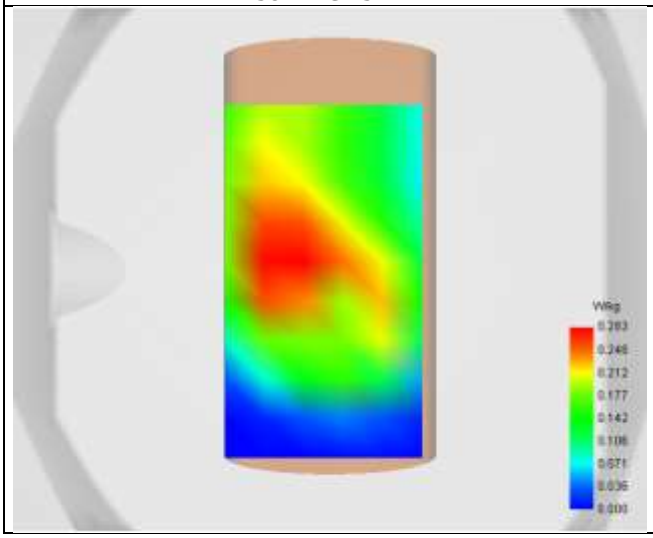
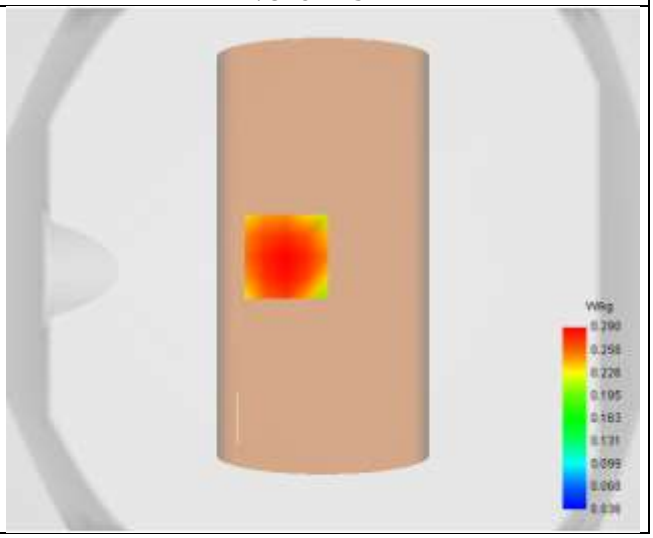
A. Experimental conditions.

Probe	SN 18/21 EPGO354
ConvF	1.73
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	LTE_Band_26
Channels	Middle
Signal	LTE (Crest factor: 1.0)

B. Permitivity

Frequency (MHz)	836.500000
Relative permitivity (real part)	41.500000
Conductivity (S/m)	0.901561

C. SAR Surface and Volume

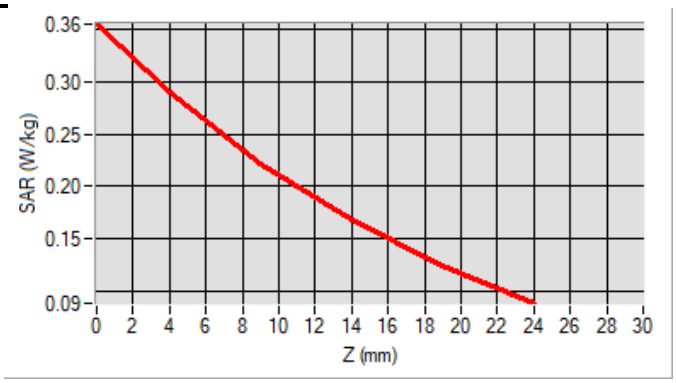
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-14.00, Y=5.00 ; SAR Peak: 0.37 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.206873
SAR 1g (W/Kg)	0.281017
Variation (%)	-2.250000

E. Z Axis Scan



SAR Measurement at LTE band 41 (Body, Validation Plane)

Date of measurement: 2/12/2021

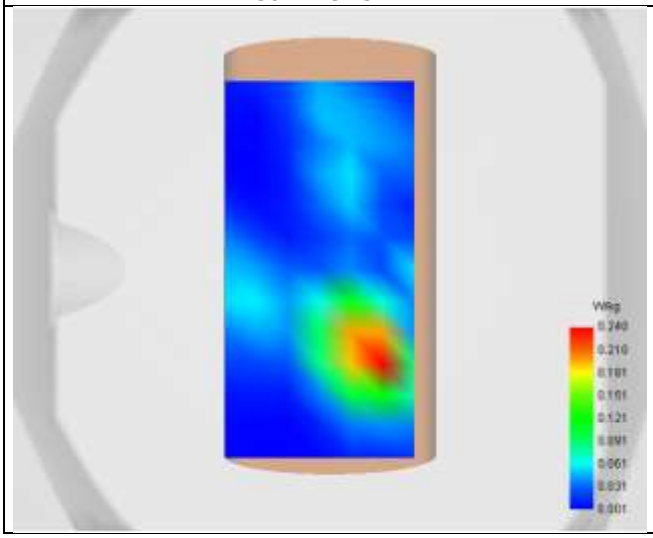
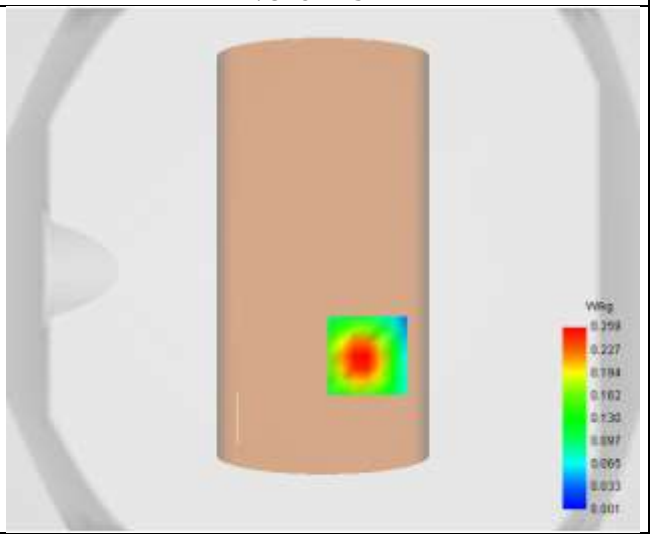
A. Experimental conditions.

Probe	SN 18/21 EPGO354
ConvF	2.15
Area Scan	surf_sam_plan.txt
Zoom Scan	7x7x7,dx=5mm dy=5mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	LTE band 41
Channels	Middle
Signal	LTE (Crest factor: 1.0)

B. Permitivity

Frequency (MHz)	2595.000000
Relative permitivity (real part)	39.006668
Conductivity (S/m)	1.954660

C. SAR Surface and Volume

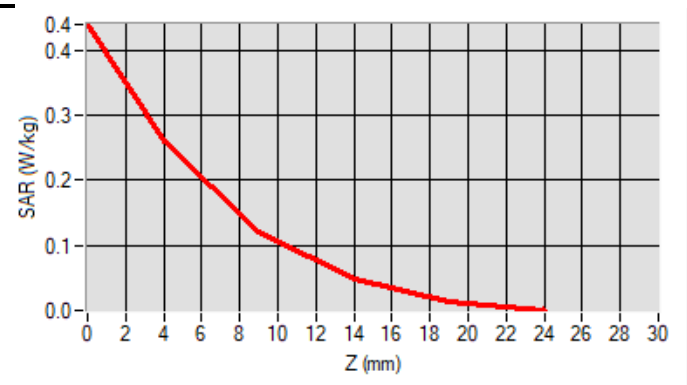
SURFACE SAR	VOLUME SAR
	

Maximum location: X=17.00, Y=-33.00 ; SAR Peak: 0.45 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.110244
SAR 1g (W/Kg)	0.238735
Variation (%)	-1.730000

E. Z Axis Scan



SAR Measurement at CUSTOM (LTEBand66) (Body, Validation Plane)

Date of measurement: 29/11/2021

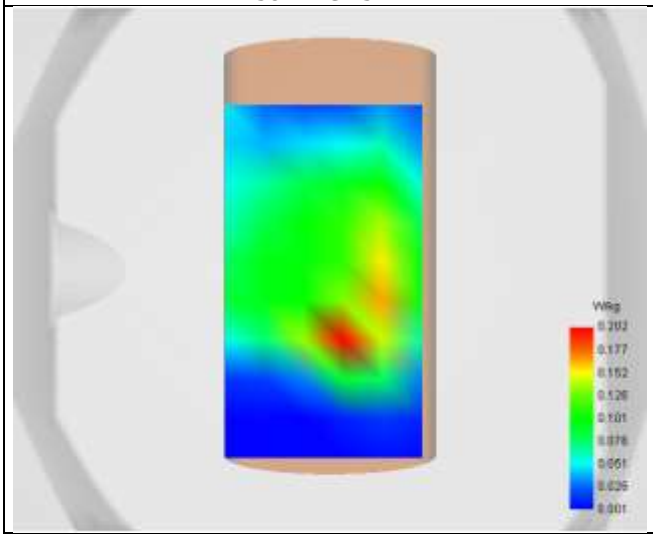
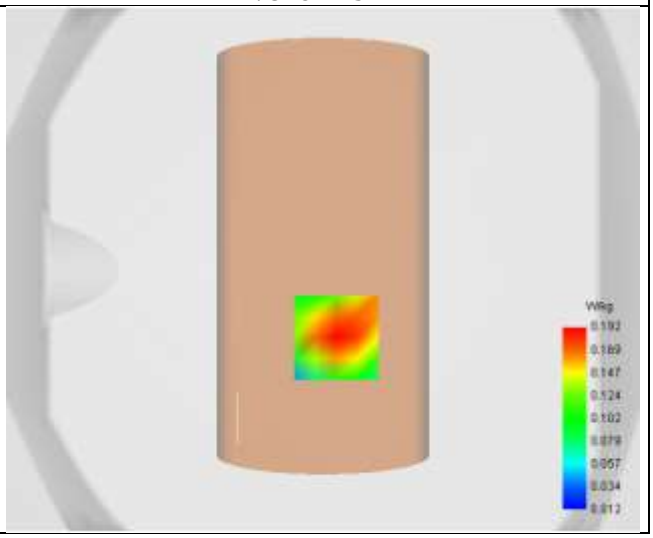
A. Experimental conditions.

Probe	SN 18/21 EPGO354
ConvF	2.07
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	LTEBand66
Channels	Middle
Signal	LTE(Crest factor: 1.0)

B. Permitivity

Frequency (MHz)	1745.000000
Relative permitivity (real part)	40.104546
Conductivity (S/m)	1.367225

C. SAR Surface and Volume

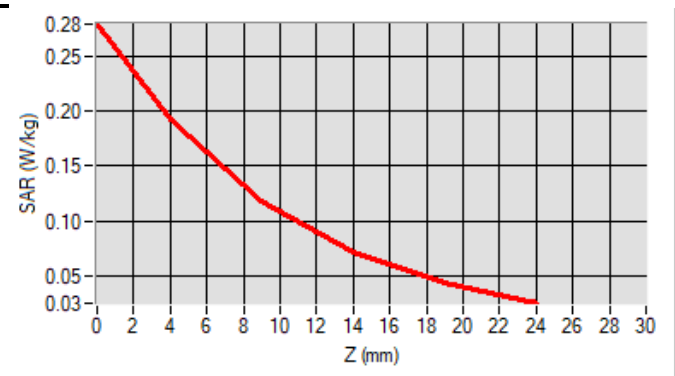
SURFACE SAR	VOLUME SAR
	

Maximum location: X=5.00, Y=-26.00 ; SAR Peak: 0.28 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.105348
SAR 1g (W/Kg)	0.180502
Variation (%)	-4.410000

E. Z Axis Scan



SAR Measurement at IEEE 802.11b ISM (Body, Validation Plane)

Date of measurement: 2/12/2021

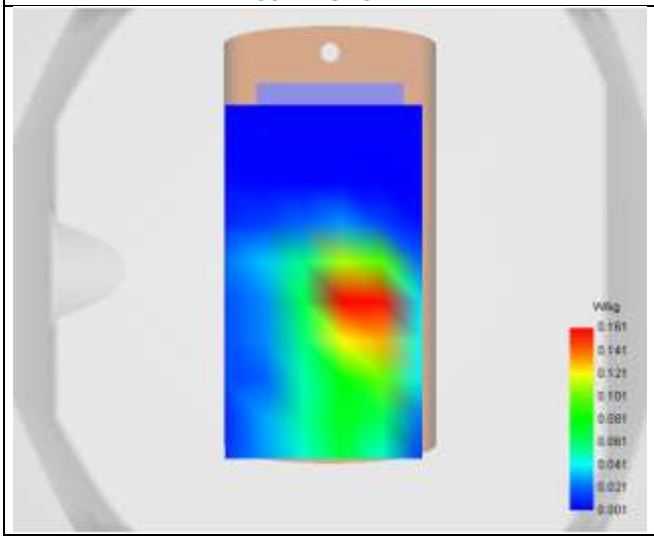
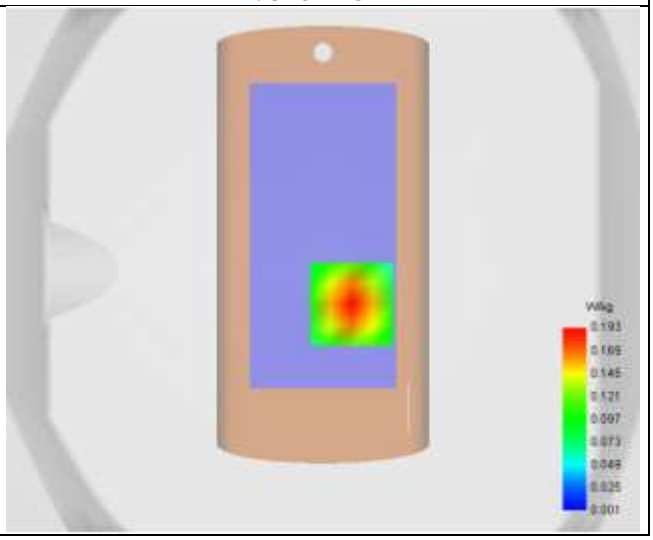
A. Experimental conditions.

Probe	SN 18/21 EPGO354
ConvF	2.23
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=5mm dy=5mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	IEEE 802.11b ISM
Channels	High
Signal	IEEE802.b (Crest factor: 1.0)

B. Permitivity

Frequency (MHz)	2462.000000
Relative permitivity (real part)	39.226002
Conductivity (S/m)	1.788081

C. SAR Surface and Volume

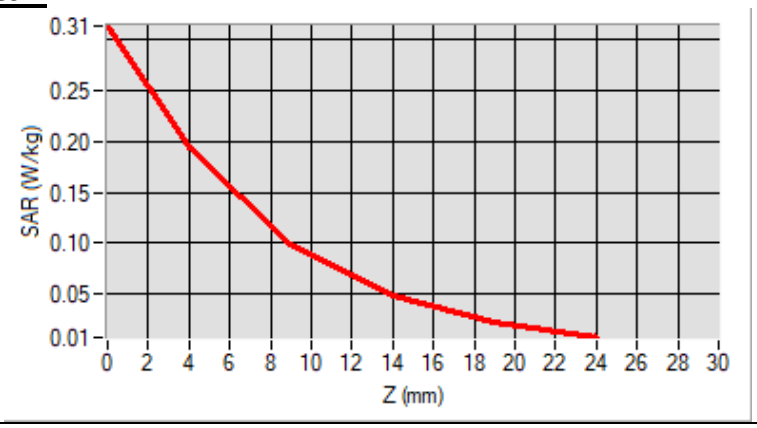
SURFACE SAR	VOLUME SAR
	

Maximum location: X=11.00, Y=-13.00 ; SAR Peak: 0.31 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.089727
SAR 1g (W/Kg)	0.179181
Variation (%)	-1.300000

E. Z Axis Scan



Appendix C: System Calibration Certificate