



REPORT No. : SZ18050201S01

TEST REPORT

MANUFACTURER : Shenzhen Chainway Information Technology Co.,Ltd.

PRODUCT NAME : Mobile Data Terminal

MODEL NAME : C75

BRAND NAME : CHAINWAY

STANDARD(S) : EN 50360: 2017
EN 50566: 2017
EN 62209-1: 2016
EN 62209-2: 2010
EN 62479: 2010

TEST DATE : 2018-06-19 to 2018-06-23

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Tested by:

Gan Yueming
Gan Yueming(Test engineer)

Approved by:

Peng Huarui
Peng Huarui(Supervisor)

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MORLAB

SHENZHEN MORLAB COMMUNICATIONS TECHNOLOGY Co., Ltd.
FL1-3, Building A, FeiYang Science Park, No.8 LongChang Road,
Block67, BaoAn District, ShenZhen , Guangdong Province, P. R. China

Tel: 86-755-36698555

Http://www.morlab.cn

Fax: 86-755-36698525

E-mail: service@morlab.cn





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Change History		
Issue	Date	Reason for change
1.0	2018-07-05	First edition



1. Technical Information

Note: Provide by manufacturer.

1.1. Manufacturer and Factory Information

Manufacturer:	Shenzhen Chainway Information Technology Co.,Ltd.
Manufacturer Address:	9/F, Building 2, Daqian Industrial Park, Longchang Rd., District 67, Bao'an, Shenzhen
Factory:	Shenzhen Chainway Information Technology Co.,Ltd.
Factory Address:	9/F, Building 2, Daqian Industrial Park, Longchang Rd., District 67, Bao'an, Shenzhen

1.2. Equipment Under Test (EUT) Description

Model Name:	Mobile Data Terminal
Hardware Version:	C70_MB_V11
Software Version:	N/A
Frequency Bands:	GSM900: 880.2 MHz ~ 914.8 MHz GSM1800: 1710.2 MHz ~ 1784.8 MHz WCDMA Band I: 1922.4 MHz ~ 1977.6 MHz WCDMA Band VIII: 882.4 MHz ~ 912.6 MHz LTE Band 1: 1920 MHz ~ 1980 MHz LTE Band 3: 1710 MHz ~ 1785 MHz LTE Band 7: 2500 MHz ~ 2570 MHz LTE Band 8: 880 MHz ~ 915 MHz LTE Band 20: 832 MHz ~ 862 MHz LTE Band 40: 2300 MHz ~ 2400 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2472 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz WLAN 5.5GHz Band: 5500 MHz ~ 5720 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz Bluetooth(BR+EDR): 2402 MHz ~ 2480 MHz Bluetooth(4.0LE): 2402 MHz ~ 2480 MHz NFC: 13.56MHz
Modulation Mode:	GSM/GPRS: GMSK EDGE: 8PSK WCDMA: QPSK WLAN2.4GHz 802.11b:DSSS



	WLAN2.4GHz 802.11g/n HT20/HT40: OFDM WLAN5GHz 802.11a/n HT20/HT40: OFDM Bluetooth: GFSK, $\pi/4$ -DQPSK, 8-DPSK NFC		
Multi-slot Class:	GPRS/EDGE: Multi-slot Class 12		
Operation Mode:	Class B		
Hotspot Function:	Not Support		
Antenna Type:	FPC Antenna		
Antenna Gain:	WLAN/BT: 0.49dBi		
SIM Cards Description:	Single SIM card		
Antenna Gain:	WLAN/BT: 0.49dBi		
Max Scaled SAR-10g(W/Kg)	Head	0.242W/kg	Limit(W/kg): 2.0W/kg
	Body-worn	1.292W/kg	

Accessory List:

Battery	Brand name	N/A
	Model Name	646069
	Power Rating	8000mAh 3.8V

Note: For a more detailed description, please refer to specification or user's manual supplied by the applicant and/or manufacturer.

1.3. Summary of Maximum SAR Value

Equipment Class	Frequency Band		Highest SAR Summary	
			Head (Separation 0mm)	Body-worn (Separation 5mm)
			10g SAR (W/kg)	
N/A	GSM	GSM900	0.103	0.127
		GSM1800	0.022	0.507
	WCDMA	WCDMA I	0.033	0.246
		WCDMA VIII	0.093	0.076
	LTE	LTE Band 1	0.029	0.193
		LTE Band 3	0.032	0.744
		LTE Band 7	0.052	1.292
		LTE Band 8	0.109	0.075
		LTE Band 20	0.055	0.069
		LTE Band 40	0.012	0.217
DTS	WLAN	WLAN 2.4GHz	0.242	0.220
NII		WLAN 5GHz	0.094	0.050
DSS	BT	Bluetooth	N/A	N/A
Highest Simultaneous Transmission			0.339	1.336

According to REDCA Technical Guidance on the publication with restriction in the Official Journal of Europe of the reference of standard EN 50566:2017, ensuring the safe a separation distance of 5mm or less is applied for handheld device and body-mounted wireless communication device used by the general public, the 5mm distance is used for SAR testing and this device is compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure (Localized 10-g SAR for head and trunk , limit: 2.0W/kg) specified in Council Recommendation 1999/519/EC, and ICNERP Guidance, and had been tested accordance with the measurement methods and procedures specified in EN 50360:2017, EN 50566:2017, EN 62209-1:2016 and EN62209-2:2010.

1.4. Applied Reference Documents

Leading reference documents for testing:

No.	Identity	Document Title
1	EN 50360:2017	Product standard to demonstrate the compliance of wireless communication devices, with the basic restrictions and exposure limit values related to human exposure to electromagnetic fields in the frequency range from 300 MHz to 6 GHz: devices used next to the ear
2	EN 50566: 2017	Product standard to demonstrate the compliance of wireless communication devices with the basic restrictions and exposure limit values related to human exposure to electromagnetic fields in the frequency range from 30 MHz to 6 GHz: hand-held and body mounted devices in close proximity to the human body
3	EN 62209-1: 2016	Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Human models, instrumentation, and procedures - Part 1: Procedure to determine the specific absorption rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)
4	EN 62209-2: 2010	Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices – Human models, instrumentation, and procedures –Part 2: Procedure to determine the Specific Absorption Rate (SAR) in the head and body for 30MHz to 6GHz Handheld and Body-Mounted Devices used in close proximity to the body
5	EN 62479: 2010	Assessment of the compliance of low-power electronic and electrical equipment with the basic restrictions related to human exposure to electromagnetic fields(10MHz to 300GHz)



1.5. Test Environment/Conditions

Normal Temperature (NT):	20 ... 25 °C
Relative Humidity:	30 ... 75 %
Air Pressure:	980 ... 1020 hPa
Test frequency:	GSM 900MHz/1800MHz; WCDMA Band I/VIII; FDD-LTE Band 1/3/7/8/20; TDD-LTE Band 40; WLAN2.4GHz WLAN5GHz
Operation mode:	Call established
Power Level:	GSM 900 MHz Maximum output power(level 5) GSM 1800MHz Maximum output power(level 0) WCDMA Band I/VIII (All Up Bits) FDD-LTE Band 1/3/7/8/20 Maximum output power TDD-LTE Band 40 Maximum output power WLAN2.4GHz Maximum output power WLAN5GHz Maximum output power

During SAR test, EUT is in Traffic Mode (Channel Allocated) at Normal Voltage Condition. A communication link is set up with a System Simulator (SS) by air link, and a call is established.

The EUT shall use its internal transmitter. The antenna(s), battery and accessories shall be those specified by the Factory. The EUT battery must be fully charged and checked periodically during the test to ascertain uniform power output. If a wireless link is used, the antenna connected to the output of the base station simulator shall be placed at least 50 cm away from the handset.

The signal transmitted by the simulator to the antenna feeding point shall be lower than the output power level of the handset by at least 35 dB.

For SAR testing, EUT is in GPRS mode. In GPRS link mode, its crest factor is 2, because EUT is set in GPRS multi-slot class 12 with 4 uplink slots. In WCDMA and WI-FI mode, its crest factor is 1.

2. Basic Restrictions

This device belongs to portable device category because its radiating structure is allowed to be used within 20 centimeters of the body of the user. Limit for General Population/Uncontrolled exposure should be applied for this device, it is 2.0 W/kg as averaged over any 10 gram of tissue. The basic restrictions given below are set so as to account for uncertainties related to individual sensitivities, environmental conditions, and for the fact that the age and health status of members of the public vary.

**Basic restrictions for electric, magnetic and electromagnetic fields
(0 Hz to 300 GHz)**

Frequency range	Magnetic flux density (mT)	Current density (mA/m ²) (rms)	Whole body average SAR (W/kg)	Localised SAR (head and trunk) (W/kg)	Localised SAR (limbs) (W/kg)	Power density, S (W/m ²)
0 Hz	40	—	—	—	—	—
>0-1 Hz	—	8	—	—	—	—
1-4 Hz	—	8/f	—	—	—	—
4-1 000 Hz	—	2	—	—	—	—
1 000 Hz-100 kHz	—	f/500	—	—	—	—
100 kHz-10 MHz	—	f/500	0,08	2	4	—
10 MHz-10 GHz	—	—	0,08	2	4	—
10-300 GHz	—	—	—	—	—	10

Note:

1. f is the frequency in Hz.

3. Specific Absorption Rate (SAR)

3.1. 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 Middle than the limits for general population/uncontrolled.

3.2. 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.

(p). The equation description is as below:

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

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 head capacity, δT is the temperature rise and δt the exposure duration, or related to the electrical field in the tissue by

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

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.

4. SAR Measurement Setup

4.1. The Measurement System

Comosar is a system that is able to determine the SAR distribution inside a phantom of human being according to different standards. The Comosar 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

The following figure shows the system.



The EUT under test operating at the maximum power level is placed in the phone holder, under the phantom, which is filled with head simulating liquid. The E-Field probe measures the electric field inside the phantom. The OpenSAR software computes the results to give a SAR value in a 1g or 10g mass.

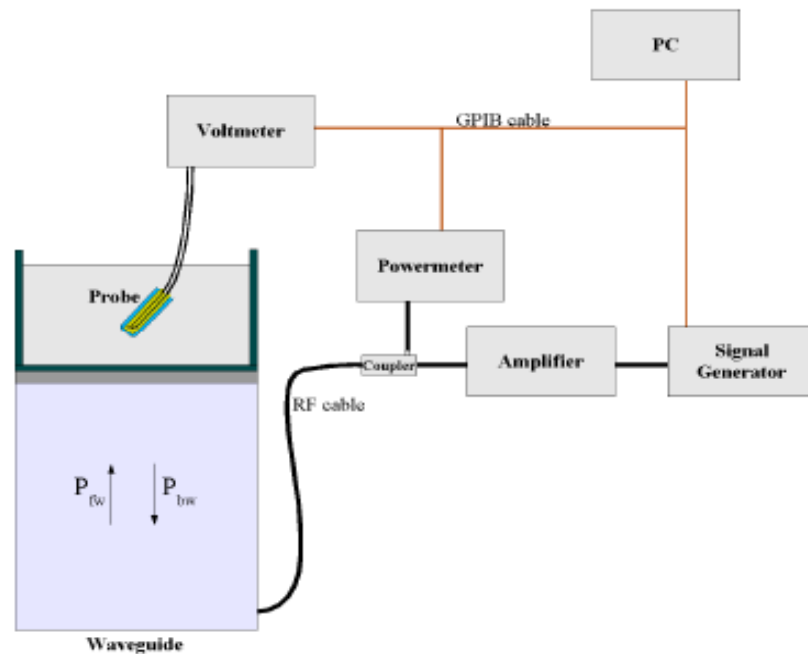
4.2. Probe

For the measurements the Specific Dosimetric E-Field Probe SN 37/08 EP80 with following specifications is used

- Dynamic range: 0.01-100 W/kg
- Tip Diameter : 6.5 mm
- Distance between probe tip and sensor center: 2.5mm
- Distance between sensor center and the inner phantom surface: 4 mm
(repeatability better than +/- 1mm)
- Probe linearity: <0.25 dB
- Axial Isotropy: <0.25 dB
- Spherical Isotropy: <0.25 dB
- Calibration range: 835 to 2500MHz for head & body simulating liquid.

Angle between probe axis (evaluation axis) and surface normal line: less than 30°

Probe calibration is realized, in compliance with CENELEC EN 62209 and IEEE 1528 std, with CALISAR, Antennessa proprietary calibration system. The calibration is performed with the EN 622091 annexe technique using reference guide at the five frequencies.



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

Where :

P_{fw} = Forward Power

P_{bw} = Backward Power



a and b = Waveguide dimensions

δ = Skin depth

Keithley configuration:

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

After each calibration, a SAR measurement is 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:

$$CF(N) = SAR(N) / V_{lin}(N) \quad (N=1,2,3)$$

The linearised output voltage $V_{lin}(N)$ is obtained from the displayed output voltage $V(N)$ using

$$V_{lin}(N) = V(N) * (1 + V(N) / DCP(N)) \quad (N=1,2,3)$$

where DCP is the diode compression point in mV.

4.3. Probe Calibration Process

4.3.1. Dosimetric Assessment Procedure

Each E-Probe/Probe Amplifier combination has unique calibration parameters. SATIMO Probe calibration procedure is conducted to determine the proper amplifier settings to enter in the probe parameters. The amplifier settings are determined for a given frequency by subjecting the probe to a known E-field density (1 mW/cm²) using an with CALISAR, Antenna proprietary calibration system.

4.3.2. Free Space Assessment Procedure

The free space E-field from amplified probe outputs is determined in a test chamber. This calibration can be performed in a TEM cell if the frequency is below 1 GHz and in a waveguide or other methodologies above 1 GHz for free space. For the free space calibration, the probe is placed in the volumetric center of the cavity and at the proper orientation with the field. The probe is rotated 360 degrees until the three channels show the maximum reading. The power density readings equates to 1 mW/cm².

4.3.3. Temperature Assessment Procedure

E-field temperature correlation calibration is performed in a flat phantom filled with the appropriate simulating head tissue. The E-field in the medium correlates with the temperature rise in the dielectric medium. For temperature correlation calibration a RF transparent thermistor-based temperature probe is used in conjunction with the E-field probe.

Where:

δt = exposure time (30 seconds),

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

C = heat capacity of tissue (brain or muscle),

δT = temperature increase due to RF exposure.

SAR is proportional to $\Delta T/\Delta t$, the initial rate of tissue heating, before thermal diffusion takes place. The electric field in the simulated tissue can be used to estimate SAR by equating the thermally derived SAR to that with the E- field component.

Where:

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

ζ = simulated tissue conductivity,

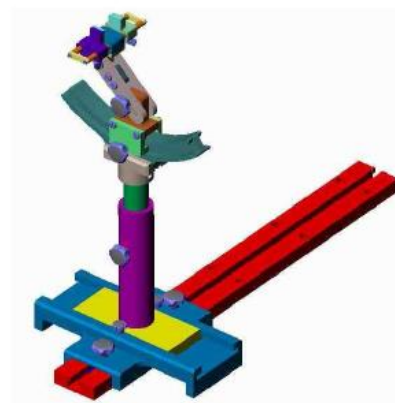
ρ = Tissue density (1.25 g/cm³ for brain tissue)

4.4. Phantom

For the measurements the Specific Anthropomorphic Mannequin (SAM) defined by the IEEE SCC-34/SC2 group is used. The phantom is a polyurethane shell integrated in a wooden table. The thickness of the phantom amounts to 2mm +/- 0.2mm. It enables the dosimetric evaluation of left and right phone usage and includes an additional flat phantom part for the simplified performance check. The phantom set-up includes a cover, which prevents the evaporation of the liquid.

4.5. Device Holder

The positioning system allows obtaining cheek and tilting position with a very good accuracy. In compliance with CENELEC, the tilt angle uncertainty is lower than 1°.



Device holder

System Material	Permittivity	Loss Tangent
Delrin	3.7	0.005

5. Tissue Simulating Liquids

For SAR measurement of the field distribution inside the phantom, the phantom must be filled with homogeneous tissue simulating liquid to a depth of at least 15 cm. 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. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15 cm. The nominal dielectric values of the tissue simulating liquids in the phantom and the tolerance of 5% are listed in below table.



Fig 5.1 Photo of Liquid Height for Head SAR



Fig 5.2 Photo of Liquid Height for Body SAR

The following table gives the recipes for tissue simulating liquids

Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity (ζ)	Permittivity (ε _r)
Head								
750	41.1	57.0	0.2	1.4	0.2	0	0.89	41.9
835	40.3	57.9	0.2	1.4	0.2	0	0.90	41.5
1800, 1900, 2000	55.2	0	0	0.3	0	44.5	1.40	40.0
2450	55.0	0	0	0	0	45.0	1.80	39.2
2600	54.8	0	0	0.1	0	45.1	1.96	39.0

Simulating Liquid for 5GHz, Manufactured by SPEAG

Ingredients	(% by weight)
Water	64~78%
Mineral oil	11~18%
Emulsifiers	9~15%
Additives and Salt	2~3%

Recipes for Tissue Simulating Liquid

The dielectric parameters of the liquids were verified prior to the SAR evaluation using an Agilent 85033E Dielectric Probe Kit and an Agilent Network Analyzer.

Table: Dielectric Performance of Human Tissue Simulating Liquid

Frequency (MHz)	Tissue Type	Liquid Temp. (°C)	Conductivity (σ)	Conductivity Target (σ)	Delta (σ) (%)	Limit (%)	Date
835	HSL	21.2	0.892	0.90	-0.89	± 5	2018.06.23
900	HSL	21.2	0.990	0.97	0.29	± 5	2018.06.23
1800	HSL	22.6	1.365	1.40	-2.50	± 5	2018.06.19
2000	HSL	22.4	1.415	1.40	1.07	± 5	2018.06.19
2450	HSL	21.8	1.837	1.80	2.06	± 5	2018.06.21
2600	HSL	21.8	1.976	1.96	0.82	± 5	2018.06.21
5200	HSL	22.1	4.672	4.66	0.26	± 5	2018.06.22
5600	HSL	22.1	5.110	5.07	0.79	± 5	2018.06.22
5800	HSL	22.1	5.320	5.27	0.95	± 5	2018.06.22

Frequency (MHz)	Tissue Type	Liquid Temp. (°C)	Permittivity (ϵ_r)	Permittivity Target (ϵ_r)	Delta (ϵ_r) (%)	Limit (%)	Date
835	HSL	21.2	41.183	41.50	-0.76	± 5	2018.06.23
900	HSL	21.2	39.98	40.00	-0.3	± 5	2018.06.23
1800	HSL	22.6	40.096	40.00	0.24	± 5	2018.06.19
2000	HSL	22.4	39.985	40.00	-0.04	± 5	2018.06.19
2450	HSL	21.8	39.295	39.20	0.24	± 5	2018.06.21
2600	HSL	21.8	39.013	39.00	0.03	± 5	2018.06.21
5200	HSL	22.1	36.127	36.00	0.35	± 5	2018.06.22
5600	HSL	22.1	35.565	35.50	0.18	± 5	2018.06.22
5800	HSL	22.1	5.320	35.30	0.07	± 5	2018.06.22

Note: For frequency bands not used in Europe, parameters of the tissue equivalent liquid refer to EN 62209-1:2016.

6. Uncertainty Assessment

The following table includes the uncertainty table of the IEEE 1528. The values are determined by Antennessa.

6.1. Uncertainty Evaluation For Handset SAR Test

a	b	c	d	e= f(d,k)	f	g	h= c*f/e	i= c*g/e	k
Uncertainty Component	Sec.	Tol (+- %)	Prob . Dist.	Div.	Ci (1g)	Ci (10g)	1g Ui (+-%)	10g Ui (+-%)	Vi
Measurement System									
Probe calibration	E.2.1	5.83	N	1	1	1	5.83	5.83	∞
Axial Isotropy	E.2.2	3.5	R	$\sqrt{3}$	1	1	2.02	2.02	∞
Hemispherical Isotropy	E.2.2	5.9	R	$\sqrt{3}$	1	1	3.41	3.41	∞
Boundary effect	E.2.3	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Linearity	E.2.4	4.7	R	$\sqrt{3}$	1	1	2.71	2.71	∞
System detection limits	E.2.5	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Modulation Response	E.2.4	4.1	R	$\sqrt{3}$	1	1	2.4	2.4	∞
Readout Electronics	E.2.6	0.5	N	1	1	1	0.5	0.5	∞
Reponse Time	E.2.7	3.0	R	$\sqrt{3}$	1	1	3.0	3.0	∞
Integration Time	E.2.8	1.4	R	$\sqrt{3}$	1	1	0.81	0.81	∞
RF ambient Conditions	E.6.1	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	∞
Probe positioner Mechanical Tolerance	E.6.2	1.4	R	$\sqrt{3}$	1	1	0.81	0.81	∞
Probe positioning with respect to Phantom Shell	E.6.3	1.4	R	$\sqrt{3}$	1	1	0.81	0.81	∞
Extrapolation, interpolation and integration Algorithms for Max. SAR Evaluation	E.5.2	2.3	R	$\sqrt{3}$	1	1	1.33	1.33	∞
Test sample Related									
Test sample positioning	E.4.2. 1	2.6	N	1	1	1	2.6	2.6	N-1
Device Holder Uncertainty	E.4.1.	3.0	N	1	1	1	3.0	3.0	N-1



	1								
Output power Power drift - SAR drift measurement	6.6.2	5.0	R	$\sqrt{3}$	1	1	2.89	2.89	∞
Phantom and Tissue Parameters									
Phantom Uncertainty (Shape and thickness tolerances)	E.3.1	4.0	R	$\sqrt{3}$	1	1	2.31	2.31	∞
Liquid conductivity - deviation from target value	E.3.2	2.0	R	$\sqrt{3}$	0.6 4	0.43	1.69	1.13	∞
Liquid conductivity - measurement uncertainty	E.3.3	2.5	N	1	0.6 4	0.43	3.20	2.15	M
Liquid permittivity - deviation from target value	E.3.2	2.5	R	$\sqrt{3}$	0.6	0.49	1.28	1.04	∞
Liquid permittivity - measurement uncertainty	E.3.3	5.0	N	1	0.6	0.49	6.00	4.90	M
Liquid conductivity -temperature uncertainty	E.3.4		R	$\sqrt{3}$	0.7 8	0.41			∞
Liquid permittivity -temperature uncertainty	E.3.4		R	$\sqrt{3}$	0.2 3	0.26			∞
Combined Standard Uncertainty			RSS				11.55	12.0 7	
Expanded Uncertainty (95% Confidence interval)			K=2				\pm 23.20	\pm 24.17	

6.2. Uncertainty For System Performance Check

a	b	c	d	e= f(d,k)	f	g	h= c*f/e	i= c*g/ e	k
Uncertainty Component	Sec.	Tol (+-%)	Prob . Dist.	Div.	Ci (1g)	Ci (10g)	1g Ui (+-%)	10g Ui (+-%)	Vi
Measurement System									
Probe calibration	E.2.1	4.76	N	1	1	1	4.76	4.7	∞
Axial Isotropy	E.2.2	2.5	R	$\sqrt{3}$	1	1	1.44	1.4	∞
Hemispherical Isotropy	E.2.2	4.0	R	$\sqrt{3}$	1	1	2.31	2.3	∞
Boundary effect	E.2.3	1.0	R	$\sqrt{3}$	1	1	0.58	0.5	∞

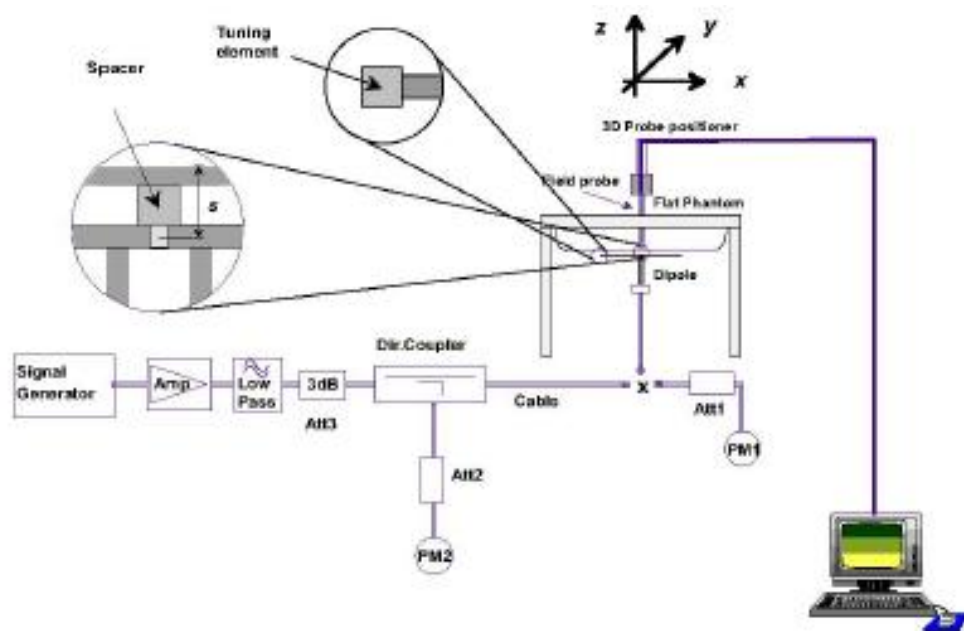


Linearity	E.2.4	5.0	R	$\sqrt{3}$	1	1	2.89	2.8	∞
System detection limits	E.2.5	1.0	R	$\sqrt{3}$	1	1	0.58	0.5	∞
Readout Electronics	E.2.6	0.02	N	1	1	1	0.02	0.0	∞
Reponse Time	E.2.7	3.0	R	$\sqrt{3}$	1	1	1.73	1.7	∞
Integration Time	E.2.8	2.0	R	$\sqrt{3}$	1	1	1.15	1.1	∞
RF ambient Conditions	E.6.1	3.0	R	$\sqrt{3}$	1	1	1.73	1.7	∞
Probe positioner Mechanical Tolerance	E.6.2	2.0	R	$\sqrt{3}$	1	1	1.15	1.1 5	∞
Probe positioning with respect to Phantom Shell	E.6.3	0.05	R	$\sqrt{3}$	1	1	0.03	0.0 3	∞
Extrapolation, interpolation and integration Algorithms for Max. SAR Evaluation	E.5.2	5.0	R	$\sqrt{3}$	1	1	2.89	2.8 9	∞
Dipole									
Dipole axis to liquid Distance	8,E.4. 2	1.00	N	$\sqrt{3}$	1	1	0.58	0.5 8	∞
Input power and SAR drift measurement	8,6.6. 2	4.04	R	$\sqrt{3}$	1	1	2.33	2.3 3	∞
Phantom and Tissue Parameters									
Phantom Uncertainty (Shape and thickness tolerances)	E.3.1	0.05	R	$\sqrt{3}$	1	1	0.03	0.0 3	∞
Liquid conductivity - deviation from target value	E.3.2	4.57	R	$\sqrt{3}$	0.64	0.43	1.69	1.1 3	∞
Liquid conductivity - measurement uncertainty	E.3.3	5.00	N	$\sqrt{3}$	0.64	0.43	1.85	1.2 4	M
Liquid permittivity - deviation from target value	E.3.2	3.69	R	$\sqrt{3}$	0.6	0.49	1.28	1.0 4	∞
Liquid permittivity - measurement uncertainty	E.3.3	10.0 0	N	$\sqrt{3}$	0.6	0.49	3.46	2.8 3	M
Combined Standard Uncertainty			RSS				8.83	8.3 7	
Expanded Uncertainty (95% Confidence interval)			K=2				17.66	16. 73	

7. SAR Measurement Evaluation

7.1. System Setup

In the simplified setup for system evaluation, the DUT is replaced by a calibrated dipole and the power source is replaced by a continuous wave which 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 system check verifies that the system operates within its specifications. It is performed daily or before every SAR measurement. The system check uses normal SAR measurements in the flat section of the phantom with a matched dipole at a specified distance. The system verification setup is shown as below.



The validation dipole is placed beneath the flat phantom with the specific spacer in place. The distance spacer is touch the phantom surface with a light pressure at the reference marking and be oriented parallel to the long side of the phantom. The power meter PM1 measures the forward power at the location of the system check dipole connector. The signal generator is adjusted for the desired forward power at the dipole connector and the power meter PM2 is read at that level. After connecting the cable to the dipole, the signal generator is readjusted for the same reading at power meter PM2.

7.2. Validation Results

Comparing to the original SAR value provided by SATIMO, the validation data should be within its specification of 10 %.

<1g SAR>

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	Measured 1g SAR (W/kg)	Targeted 1g SAR (W/kg)	Normalized 1g SAR (W/kg)	Deviation (%)
2018.06.23	835	HSL	100	D835V2-DIPC99	EP80	0.97	9.61	9.7	0.94
2018.06.23	900	HSL	100	D900V2-DIPD100	EP80	1.07	11.16	10.7	-4.12
2018.06.19	1800	HSL	100	D1800V2-DIPF101	EP80	3.70	37.05	37	-0.13
2018.06.19	2000	HSL	100	D2000V2-DIPI102	EP80	4.26	42.70	42.6	-0.23
2018.06.21	2450	HSL	100	D2450V2-263	EP80	5.33	53.34	53.3	-0.07
2018.06.21	2600	HSL	100	D2600V2-265	EP80	5.68	56.94	56.8	-0.25
2018.06.22	5200	HSL	100	D5GHzV2-DIPB98	EP80	16.40	164.05	164	-0.03
2018.06.22	5600	HSL	100	D5GHzV2-DIPB98	EP80	17.14	177.81	171.4	-3.60
2018.06.22	5800	HSL	100	D5GHzV2-DIPB98	EP80	17.71	185.02	177.1	-4.28

<10g SAR>

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	Measured 10g SAR (W/kg)	Targeted 10g SAR (W/kg)	Normalized 10g SAR (W/kg)	Deviation (%)
2018.06.23	835	HSL	100	D835V2-DIPC99	EP80	0.62	6.17	6.2	0.49
2018.06.23	900	HSL	100	D900V2-DIPD100	EP80	0.72	7.01	7.2	2.71
2018.06.19	1800	HSL	100	D1800V2-DIPF101	EP80	2.05	19.85	20.5	3.27
2018.06.19	2000	HSL	100	D2000V2-DIPI102	EP80	1.99	21.39	19.9	-6.97
2018.06.21	2450	HSL	100	D2450V2-263	EP80	2.38	24.22	23.8	-1.73
2018.06.21	2600	HSL	100	D2600V2-265	EP80	2.50	25.06	25	-0.24
2018.06.22	5200	HSL	100	D5GHzV2-DIPB98	EP80	5.65	57.03	56.5	-0.93
2018.06.22	5600	HSL	100	D5GHzV2-DIPB98	EP80	6.06	60.90	60.6	-0.49
2018.06.22	5800	HSL	100	D5GHzV2-DIPB98	EP80	5.99	62.43	59.9	-4.05

Note: System checks the specific test data please see the Annex C.

8. Operational Conditions During Test

8.1. Information on the testing

The mobile phone antenna and battery are those specified by the Factory. The battery is fully charged before each measurement. The output power and frequency are controlled using a base station simulator. The mobile phone is set to transmit at its highest output peak power level.

The mobile phone is test in the “cheek” and “tilted” positions on the left and right sides of the phantom. The mobile phone is placed with the vertical centre line of the body of the mobile phone and the horizontal line crossing the centre of the earpiece in a plane parallel to the sagittal plane of the phantom.

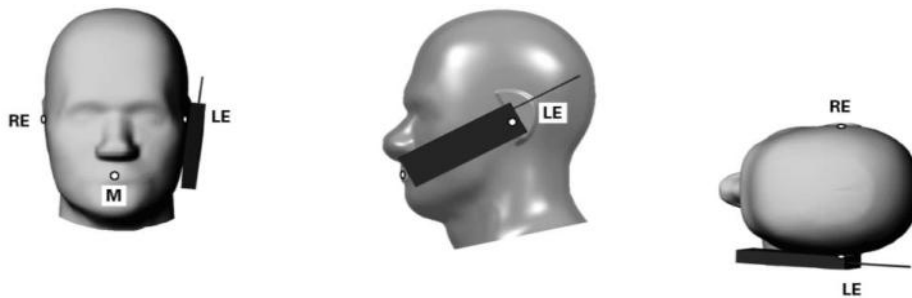


Illustration for Cheek Position

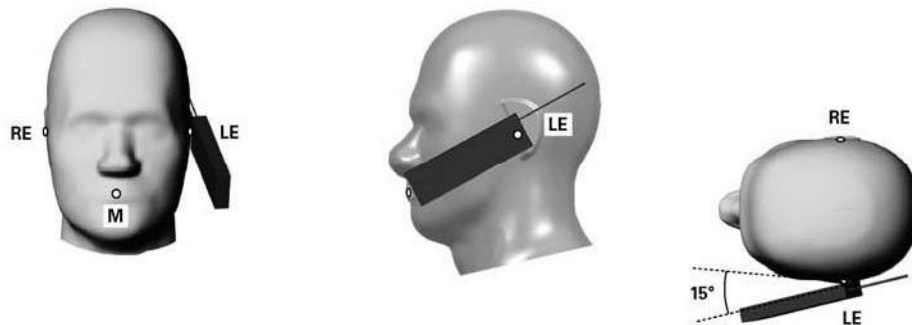


Illustration for Tilted Position

Description of the “cheek” position:

The mobile phone is well placed in the reference plane and the earpiece is in contact with the ear. Then the mobile phone is moved until any point on the front side get in contact with the cheek of the phantom or until contact with the ear is lost.

Description of the “tilted” position:

The mobile phone is well placed in the “cheek” position as described above. Then the mobile

phone is moved outward away from the mouth by an angle of 15 degrees or until contact with the ear lost.

Remark: Please refer to Appendix B for the test setup photos.

8.2. Body-worn Configurations

The body-worn configurations shall be tested with the supplied accessories (belt-clips, holsters, etc.) attached to the device in normal use configuration. The depth of the body tissue was 15.1cm.

For body-worn and other configurations a flat phantom shall be used which is comprised of material with electrical properties similar to the corresponding tissues.

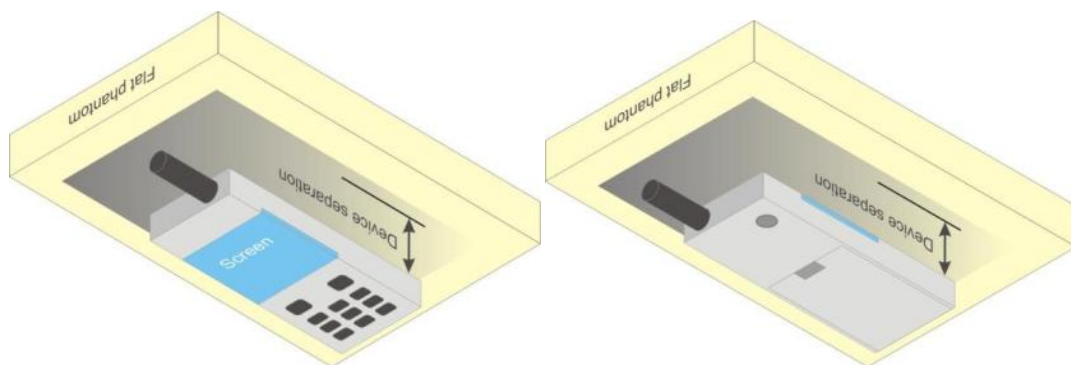


Illustration for Body Worn Position

Body-worn operating configurations should be tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in normal use configurations. Devices with a headset output should be tested with a headset connected to the device. The distance between of the device and the phantom was kept 5mm.

The separation distance 5mm is selected according to the user guide statement as below:

“It complies with the rules on exposure to radio frequencies when used in its normal position at the ear or at a minimum distance of 0.5 cm from the body.

Be sure to follow the instructions regarding the separation distance for establishing the transmission. If you use a case, belt-clip or holder for carrying the phone, it must not contain any metal and should be kept at a minimum distance of 0.5 cm from your body.”

The intended use of the DUT for body worn position is to carry the mobile phone on human body by non-metallic accessories and the typical use of this method will provide a face up and face down position to human body. The separation distance is clearly stated in the user guide as important information to the user. Therefore the separation distance 5mm and face up/face down positions are selected for this DUT.

8.3. Measurement procedure

The following steps are used for each test position

- Establish a call with the maximum output power with a base station simulator. The connection between the mobile and the base station simulator is established via air interface
- Measurement of the local E-field value at a fixed location. This value serves as a reference value for calculating a possible power drift.
- Measurement of the SAR distribution with a grid of 8 to 16mm * 8 to 16 mm and a constant distance to the inner surface of the phantom. Since the sensors can not directly measure at the inner phantom surface, the values between the sensors and the inner phantom surface are extrapolated. With these values the area of the maximum SAR is calculated by an interpolation scheme.
- Around this point, a cube of 30 * 30 * 30 mm or 32 * 32 * 32 mm is assessed by measuring 5 or 8 * 5 or 8*4 or 5 mm. With these data, the peak spatial-average SAR value can be calculated.

8.4. Description of interpolation/extrapolation scheme

The local SAR inside the phantom is measured using small dipole sensing elements inside a probe body. The probe tip must not be in contact with the phantom surface in order to minimize measurements errors, but the highest local SAR will occur at the surface of the phantom.

An extrapolation is using to determinate this highest local SAR values. The extrapolation is based on a fourth-order least-square polynomial fit of measured data. The local SAR value is then extrapolated from the liquid surface with a 1mm step.

The measurements have to be performed over a limited time (due to the duration of the battery) so the step of measurement is high. It could vary between 5 and 8 mm. To obtain an accurate assessment of the maximum SAR averaged over 10 grams and 1 gram requires a very fine resolution in the three dimensional scanned data array.

9. Measurement of Conducted Output Power

GSM Conducted output power

GSM900	Burst Average Power (dBm)			Tune-up	Frame-Average Power (dBm)			Tune-up
TX Channel	975	38	124	Limit	975	38	124	Limit
Frequency (MHz)	880.2	897.6	914.8	(dBm)	880.2	897.6	914.8	(dBm)
GSM 1 Tx slot	33.52	33.69	33.67	34.00	24.52	24.69	24.67	25.00
GPRS 1 Tx slot	33.12	33.27	33.16	33.50	24.12	24.27	24.16	24.50
GPRS 2 Tx slots	32.84	32.88	32.90	33.00	26.84	26.88	26.90	27.00
GPRS 3 Tx slots	30.73	30.66	30.56	31.00	26.47	26.40	26.30	26.74
GPRS 4 Tx slots	29.71	29.78	29.46	30.00	26.71	26.78	26.46	27.00
EDGE 1 Tx slot	27.29	27.21	27.22	27.50	18.29	18.21	18.22	18.50
EDGE 2 Tx slots	26.92	26.35	26.49	27.00	20.92	20.35	20.49	21.00
EDGE 3 Tx slots	25.33	25.25	25.24	25.50	21.07	20.99	20.98	21.24
EDGE 4 Tx slots	24.50	24.27	23.17	24.50	21.50	21.27	20.17	21.50

GSM1800	Burst Average Power (dBm)			Tune-up	Frame-Average Power (dBm)			Tune-up
TX Channel	512	698	885	Limit	512	698	885	Limit
Frequency (MHz)	1710.2	1747.4	1784.8	(dBm)	1710.2	1747.4	1784.8	(dBm)
GSM 1 Tx slot	29.43	29.61	29.52	30.00	20.43	20.61	20.52	21.00
GPRS 1 Tx slot	29.36	29.48	29.28	29.50	20.36	20.48	20.28	20.50
GPRS 2 Tx slots	28.78	29.25	29.26	29.50	22.78	23.25	23.26	23.50
GPRS 3 Tx slots	27.89	27.97	27.93	28.00	23.63	23.71	23.67	23.74
GPRS 4 Tx slots	27.07	27.05	27.14	27.50	24.07	24.05	24.14	24.50
EDGE 1 Tx slot	26.30	26.80	26.52	27.00	17.30	17.80	17.52	18.00
EDGE 2 Tx slots	25.65	25.91	25.99	26.00	19.65	19.91	19.99	20.00
EDGE 3 Tx slots	24.10	24.32	24.62	25.00	19.84	20.06	20.36	20.74
EDGE 4 Tx slots	23.17	23.27	23.37	23.50	20.17	20.27	20.37	20.50

Time slot consignations:

No. of Slots	Slot 1	Slot 2	Slot 3	Slot 4
Slot Consignation	1Up4Down	2Up3Down	3Up2Down	4Up1Down
Duty Cycle	1:8.3	1:4.15	1:2.77	1:2.08
Correct Factor	-9.03dB	-6.02dB	-4.26dB	-3.01dB



WCDMA Average output power

Band		WCDMA Band I			Tune-up Limit (dBm)	WCDMA Band VIII			Tune-up Limit (dBm)
TX Channel		9612	9750	9888		2712	2788	2863	
Rx Channel		10562	10700	10838		2937	3013	3088	
Frequency (MHz)		1922.4	1950	1977.6		882.4	897.6	912.6	
3GPP Rel 99	RMC 12.2Kbps	23.38	23.05	23.28	23.50	22.90	22.85	22.89	23.00
3GPP Rel 6	HSDPA Subtest-1	22.67	22.46	22.53	23.00	21.83	21.83	21.84	22.00
3GPP Rel 6	HSDPA Subtest-2	22.68	22.47	22.48	23.00	21.80	21.89	21.82	22.00
3GPP Rel 6	HSDPA Subtest-3	22.23	22.01	22.02	22.50	21.34	21.40	21.39	21.50
3GPP Rel 6	HSDPA Subtest-4	22.17	21.99	22.00	22.50	21.36	21.37	21.36	21.50
3GPP Rel 6	HSUPA Subtest-1	20.70	20.36	20.41	21.00	19.80	19.83	19.89	22.50
3GPP Rel 6	HSUPA Subtest-2	20.65	20.36	20.41	21.00	19.78	19.86	19.87	20.50
3GPP Rel 6	HSUPA Subtest-3	21.65	21.40	21.42	22.00	20.85	20.91	20.91	21.50
3GPP Rel 6	HSUPA Subtest-4	20.07	19.85	19.90	21.00	19.24	19.31	19.34	20.50
3GPP Rel 6	HSUPA Subtest-5	22.59	22.36	22.42	23.00	21.82	21.83	21.85	22.50
3GPP Rel 7	HSPA+ (16QAM) Subtest-1	21.46	21.30	21.33	22.00	21.13	21.18	21.17	20.00



LTE Average output power

<FDD-LTE Band 1>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				18100	18300	18500	
Frequency (MHz)				1930	1950	1970	
20	QPSK	1	0	22.06	21.86	21.98	22.50
20	QPSK	1	99	21.89	21.90	21.93	
20	QPSK	18	0	21.94	21.74	21.95	22.50
20	QPSK	18	82	21.90	21.91	21.95	
Channel				18075	18300	18525	Tune-up limit (dBm)
Frequency (MHz)				1927.5	1950	1972.5	
15	QPSK	1	0	21.80	21.88	21.89	22.50
15	QPSK	1	74	21.86	21.88	21.90	
15	QPSK	16	0	21.82	21.87	21.86	22.50
15	QPSK	16	59	21.97	21.84	21.99	
Channel				18050	18300	18550	Tune-up limit (dBm)
Frequency (MHz)				1925	1950	1975	
10	QPSK	1	0	22.01	22.03	22.05	22.50
10	QPSK	1	49	21.98	21.97	21.86	
10	QPSK	12	0	21.88	21.96	21.99	22.50
10	QPSK	12	38	21.89	21.86	21.87	
Channel				18025	18300	18575	Tune-up limit (dBm)
Frequency (MHz)				1922.5	1950	1977.5	
5	QPSK	1	0	21.71	21.57	21.75	22.50
5	QPSK	1	24	21.80	21.73	21.56	
5	QPSK	8	0	21.92	21.70	21.70	22.50
5	QPSK	8	17	21.90	21.86	21.70	



<FDD-LTE Band 3>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				19300	19575	19850	22.50
Frequency (MHz)				1720	1747.5	1775	
20	QPSK	1	0	22.16	22.29	22.16	22.50
20	QPSK	1	99	21.74	22.11	22.04	
20	QPSK	18	0	21.80	22.23	21.86	22.50
20	QPSK	18	82	21.77	21.78	21.79	
Channel				19275	19575	19875	22.50
Frequency (MHz)				1717.5	1747.5	1777.5	
15	QPSK	1	0	21.86	21.88	21.90	22.50
15	QPSK	1	74	21.76	21.87	21.89	
15	QPSK	16	0	21.90	21.88	21.99	22.50
15	QPSK	16	59	21.98	21.91	21.90	
Channel				19250	19575	19900	22.50
Frequency (MHz)				1715	1747.5	1780	
10	QPSK	1	0	21.80	21.86	21.82	22.50
10	QPSK	1	49	21.88	21.86	21.79	
10	QPSK	12	0	21.88	21.80	21.79	22.50
10	QPSK	12	38	21.86	21.84	21.82	
Channel				19225	19575	19925	22.50
Frequency (MHz)				1712.5	1747.5	1782.5	
5	QPSK	1	0	21.75	21.90	21.80	22.50
5	QPSK	1	24	21.70	21.91	21.77	
5	QPSK	8	0	21.87	22.09	21.76	22.50
5	QPSK	8	17	21.79	21.78	21.70	
Channel				19215	19575	19935	22.50
Frequency (MHz)				1711.5	1747.5	1783.5	
3	QPSK	1	0	21.77	21.78	21.79	22.50
3	QPSK	1	14	21.80	21.82	21.80	
3	QPSK	4	0	21.79	21.77	21.75	22.50
3	QPSK	4	11	21.70	21.76	21.80	



Channel				19207	19575	19943	Tune-up limit (dBm)
Frequency (MHz)				1710.7	1747.5	1784.3	
1.4	QPSK	1	0	21.77	21.95	21.80	22.50
1.4	QPSK	1	5	21.79	21.90	21.82	
1.4	QPSK	5	0	22.01	22.15	22.03	22.50
1.4	QPSK	5	1	21.90	21.92	21.98	

<FDD-LTE Band 7>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				20850	21100	21350	22.50
Frequency (MHz)				2510	2535	2560	
20	QPSK	1	0	22.17	22.15	22.28	22.50
20	QPSK	1	99	21.85	21.88	21.85	
20	QPSK	18	0	22.20	22.25	22.10	22.50
20	QPSK	18	82	22.12	22.16	22.09	
Channel				20825	21100	21375	22.50
Frequency (MHz)				2507.5	2535	2562.5	
15	QPSK	1	0	22.09	22.18	22.07	22.50
15	QPSK	1	74	22.03	22.10	22.01	
15	QPSK	16	0	21.98	21.97	21.89	22.50
15	QPSK	16	59	21.88	21.87	21.89	
Channel				20800	21100	21400	22.50
Frequency (MHz)				2505	2535	2565	
10	QPSK	1	0	21.80	21.89	21.88	22.50
10	QPSK	1	49	21.82	21.86	21.84	
10	QPSK	12	0	21.79	21.80	21.82	22.50
10	QPSK	12	38	21.88	21.83	21.85	
Channel				20775	21100	21425	22.50
Frequency (MHz)				2502.5	2535	2567.5	
5	QPSK	1	0	21.95	21.81	21.73	22.50
5	QPSK	1	24	21.51	21.62	21.63	
5	QPSK	8	0	21.80	21.96	21.82	22.50
5	QPSK	8	17	21.79	21.83	21.80	



<FDD-LTE Band 8>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				21500	21625	21750	
Frequency (MHz)				885	897.5	910	
10	QPSK	1	0	22.37	22.25	22.22	22.50
10	QPSK	1	49	22.13	22.22	22.04	
10	QPSK	12	0	22.14	22.24	22.13	22.50
10	QPSK	12	38	22.10	22.15	22.14	
Channel				21475	21625	21775	Tune-up limit (dBm)
Frequency (MHz)				882.5	897.5	912.5	
5	QPSK	1	0	21.81	22.09	21.83	22.50
5	QPSK	1	24	21.76	21.93	21.72	
5	QPSK	8	0	21.90	22.22	21.98	22.50
5	QPSK	8	17	21.89	21.92	21.93	
Channel				21465	21625	21785	Tune-up limit (dBm)
Frequency (MHz)				881.5	897.5	913.5	
3	QPSK	1	0	21.94	21.95	21.96	22.50
3	QPSK	1	14	21.89	21.88	21.80	
3	QPSK	4	0	21.92	21.98	21.93	22.50
3	QPSK	4	11	21.97	21.90	21.96	
Channel				21457	21625	21793	Tune-up limit (dBm)
Frequency (MHz)				880.7	897.5	914.3	
1.4	QPSK	1	0	21.84	22.50	21.85	22.50
1.4	QPSK	1	5	21.90	22.32	21.89	
1.4	QPSK	5	0	22.03	22.26	21.90	22.50
1.4	QPSK	5	1	21.98	22.31	22.01	



<FDD-LTE Band 20>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				24250	24300	24350	
Frequency (MHz)				842	847	852	
20	QPSK	1	0	22.23	22.21	22.12	22.50
20	QPSK	1	99	21.78	21.89	21.98	
20	QPSK	18	0	21.90	22.08	21.93	22.50
20	QPSK	18	82	22.03	21.98	22.04	
Channel				24225	24300	24375	Tune-up limit (dBm)
Frequency (MHz)				839.5	847	854.5	
15	QPSK	1	0	21.90	21.98	21.93	22.50
15	QPSK	1	74	21.92	22.01	22.06	
15	QPSK	16	0	21.99	22.05	22.04	22.50
15	QPSK	16	59	22.03	22.04	22.04	
Channel				24200	24300	24400	Tune-up limit (dBm)
Frequency (MHz)				837	847	857	
10	QPSK	1	0	22.15	21.84	21.95	22.50
10	QPSK	1	49	21.95	21.87	21.98	
10	QPSK	12	0	21.90	21.87	21.96	22.50
10	QPSK	12	38	21.97	21.89	21.92	
Channel				24175	24300	24425	Tune-up limit (dBm)
Frequency (MHz)				834.5	847	859.5	
5	QPSK	1	0	22.01	21.65	21.78	22.50
5	QPSK	1	24	21.80	21.61	21.11	
5	QPSK	8	0	21.90	21.86	22.01	22.50
5	QPSK	8	17	22.02	22.03	21.98	



<TDD-LTE Band 40>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				38750	39150	39550	
Frequency (MHz)				2310	2350	2390	
20	QPSK	1	0	23.28	23.36	23.32	
20	QPSK	1	99	23.10	23.01	22.98	23.50
20	QPSK	18	0	22.90	23.30	23.29	23.50
20	QPSK	18	82	23.01	23.10	23.10	
Channel				38725	39150	39575	Tune-up limit (dBm)
Frequency (MHz)				2307.5	2350	2392.5	
15	QPSK	1	0	22.90	23.01	23.10	
15	QPSK	1	74	23.01	23.20	23.18	23.50
15	QPSK	16	0	23.11	23.13	23.05	23.50
15	QPSK	16	59	22.99	22.98	22.97	
Channel				38700	39150	39600	Tune-up limit (dBm)
Frequency (MHz)				2305	2350	2395	
10	QPSK	1	0	22.90	23.10	23.12	
10	QPSK	1	49	23.15	23.14	23.10	23.50
10	QPSK	12	0	23.11	23.10	23.08	23.50
10	QPSK	12	38	23.01	23.05	23.06	
Channel				38675	39150	39625	Tune-up limit (dBm)
Frequency (MHz)				2302.5	2350	2397.5	
5	QPSK	1	0	22.29	22.79	22.80	
5	QPSK	1	24	22.89	22.98	21.99	23.50
5	QPSK	8	0	22.56	22.92	22.80	23.50
5	QPSK	8	17	22.50	22.39	22.37	

**WLAN 2.4GHz Average output power**

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
WLAN 2.4GHz	802.11b 1Mbps	CH 1	2412	12.63	14.5	100
		CH 7	2442	14.11	14.5	100
		CH 13	2472	13.27	14.5	100
	802.11g 6Mbps	CH 1	2412	9.01	10.00	100
		CH 7	2442	12.14	13.00	100
		CH 13	2472	9.16	10.00	100
	802.11n-HT20 MCS0	CH 1	2412	9.18	10	100
		CH 7	2442	12.01	13	100
		CH 13	2472	9.14	10	100
	802.11n-HT40 MCS0	CH 3	2422	10.75	11.50	100
		CH 7	2442	11.29	11.50	100
		CH 11	2462	10.53	11.50	100

WLAN 5GHz Average output power

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
WLAN 5.2GHz&5.3 GHz	802.11a 6Mbps	CH 36	5180	12.30	13.00	100
		CH 52	5260	12.29	13.00	100
		CH 64	5320	9.97	11.50	100
	802.11n-HT20 MCS0	CH 36	5180	12.12	12.50	100
		CH 52	5260	12.10	12.50	100
		CH 64	5320	11.80	12.50	100
	802.11n-HT40 MCS0	CH 38	5190	13.98	14.50	100
		CH 54	5270	13.90	14.50	100
		CH 62	5310	12.90	13.50	100



	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
WLAN 5.5GHz	802.11a 6Mbps	CH 100	5500	9.83	10.50	100
		CH 120	5600	10.82	11.50	100
		CH 144	5720	10.87	11.50	100
	802.11n-HT20 MCS0	CH 100	5500	10.50	11.00	100
		CH 120	5600	10.41	11.00	100
		CH 140	5700	10.05	11.00	100
	802.11n-HT40 MCS0	CH 102	5510	11.32	12.00	100
		CH 118	5580	12.30	13.00	100
		CH 142	5710	12.35	13.00	100

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
WLAN 5.8GHz	802.11a 6Mbps	CH 149	5745	10.88	11.50	100
		CH 161	5805	10.25	11.00	100
		CH 165	5825	11.61	12.00	100
	802.11n-HT20 MCS0	CH 149	5745	10.48	11.00	100
		CH 157	5785	10.42	11.00	100
		CH 165	5825	10.18	11.00	100
	802.11n-HT40 MCS0	CH 151	5755	11.01	11.50	100
		CH 159	5795	11.00	11.50	100

Bluetooth Average output power

Mode	EIRP (dBm)		
	2.1 / EDR		
	GFSK	$\pi/4$ -DQPSK	8-DPSK
Bluetooth	5.34	4.92	4.83

Mode	Channel	Frequency (MHz)	EIRP (dBm)
			GFSK
LE	CH 00	2402	-1.02
	CH 19	2440	-1.12
	CH 39	2480	-1.49

10. Test Results List

Test Guidance:

1. The reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
 - a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
 - b. For SAR testing of WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)"
 - c. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
 - d. For WLAN/Bluetooth: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
 - e. For TDD LTE SAR measurement, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix $63.3\%/62.9\% = 1.006$ is applied to scale-up the measured SAR result. The Reported TDD LTE SAR = measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.
2. The SAR test shall be performed at the middle frequency channels of each operating mode as the primary test channel. If the SAR measured at the middle channel for each test configuration is at least 3.0dB lower than the SAR limit, testing at the high and low channels is optional. And the High and Low frequency channels must be tested at a worst exposure position, and if the primary test channel reported SAR is ≥ 1.0 W/kg at the test exposure position, the High and Low frequency channels are also must be required.
3. The SAR test shall be performed at the high, middle and low frequency channels of each operating mode. If the SAR measured at the middle channel for each test configuration is at least 3.0dB lower than the SAR limit, testing at the high and low channels is optional.
4. For LTE, the maximum bandwidth and modulation of QPSK will be selected for SAR measurement.
5. For WLAN 5GHz, 5.2GHz&5.3GHz will be evaluated together, and the mode with maximum power will be also chosen for SAR testing. In addition, WLAN 2.4GHz testing is available to the methods.



10.1 Head SAR Evaluation

Plot No.	Band	Mode	Test Position	Ch.	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
	GSM900	GSM Voice	Right Cheek	38	33.69	34.00	1.074	0.090	0.097
	GSM900	GSM Voice	Right Tilt	38	33.69	34.00	1.074	0.024	0.026
	GSM900	GSM Voice	Left Cheek	38	33.69	34.00	1.074	0.076	0.082
	GSM900	GSM Voice	Left Tilt	38	33.69	34.00	1.074	0.022	0.024
01#	GSM900	GSM Voice	Right Cheek	975	33.52	34.00	1.117	0.092	0.103
	GSM900	GSM Voice	Right Cheek	124	33.67	34.00	1.079	0.094	0.101
	GSM1800	GSM Voice	Right Cheek	698	29.61	30.00	1.094	0.008	0.009
	GSM1800	GSM Voice	Right Tilt	698	29.61	30.00	1.094	0.005	0.005
	GSM1800	GSM Voice	Left Cheek	698	29.61	30.00	1.094	0.009	0.010
	GSM1800	GSM Voice	Left Tilt	698	29.61	30.00	1.094	0.004	0.004
02#	GSM1800	GSM Voice	Left Cheek	512	29.43	30.00	1.140	0.019	0.022
	GSM1800	GSM Voice	Left Cheek	885	29.52	30.00	1.117	0.006	0.007
03#	WCDMA I	RMC 12.2Kbps	Right Cheek	9750	23.05	23.50	1.109	0.030	0.033
	WCDMA I	RMC 12.2Kbps	Right Tilt	9750	23.05	23.50	1.109	0.028	0.031
	WCDMA I	RMC 12.2Kbps	Left Cheek	9750	23.05	23.50	1.109	0.023	0.026
	WCDMA I	RMC 12.2Kbps	Left Tilt	9750	23.05	23.50	1.109	0.021	0.023
	WCDMA I	RMC 12.2Kbps	Right Cheek	9612	23.38	23.50	1.028	0.017	0.017
	WCDMA I	RMC 12.2Kbps	Right Cheek	9888	23.28	23.50	1.052	0.023	0.024
04#	WCDMA VIII	RMC 12.2Kbps	Right Cheek	2787	22.85	23.00	1.035	0.090	0.093
	WCDMA VIII	RMC 12.2Kbps	Right Tilt	2787	22.85	23.00	1.035	0.021	0.022
	WCDMA VIII	RMC 12.2Kbps	Left Cheek	2787	22.85	23.00	1.035	0.082	0.085
	WCDMA VIII	RMC 12.2Kbps	Left Tilt	2787	22.85	23.00	1.035	0.023	0.024
	WCDMA VIII	RMC 12.2Kbps	Right Cheek	2712	22.90	23.00	1.023	0.075	0.077
	WCDMA VIII	RMC 12.2Kbps	Right Cheek	2863	22.89	23.00	1.026	0.088	0.090



REPORT No. : SZ18050201S01

Plot No.	Band	Mode	Test Position	Ch.	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
	LTE Band 1	1RB Offset	Right Cheek	18300	21.66	22.50	1.213	0.010	0.012
	LTE Band 1	1RB Offset	Right Tilt	18300	21.66	22.50	1.213	0.004	0.005
	LTE Band 1	1RB Offset	Left Cheek	18300	21.66	22.50	1.213	0.020	0.024
	LTE Band 1	1RB Offset	Left Tilt	18300	21.66	22.50	1.213	0.020	0.024
	LTE Band 1	1RB Offset	Left Cheek	18100	22.06	22.50	1.107	0.021	0.023
05#	LTE Band 1	1RB Offset	Left Cheek	18500	21.98	22.50	1.127	0.026	0.029
	LTE Band 3	1RB Offset	Right Cheek	19575	22.29	22.50	1.050	0.020	0.021
	LTE Band 3	1RB Offset	Right Tilt	19575	22.29	22.50	1.050	0.017	0.018
	LTE Band 3	1RB Offset	Left Cheek	19575	22.29	22.50	1.050	0.016	0.017
	LTE Band 3	1RB Offset	Left Tilt	19575	22.29	22.50	1.050	0.013	0.014
06#	LTE Band 3	1RB Offset	Right Cheek	19300	22.16	22.50	1.081	0.030	0.032
	LTE Band 3	1RB Offset	Right Cheek	19850	22.16	22.50	1.081	0.019	0.021
	LTE Band 7	1RB Offset	Right Cheek	21100	22.15	22.50	1.084	0.034	0.037
	LTE Band 7	1RB Offset	Right Tilt	21100	22.15	22.50	1.084	0.018	0.020
07#	LTE Band 7	1RB Offset	Left Cheek	21100	22.15	22.50	1.084	0.048	0.052
	LTE Band 7	1RB Offset	Left Tilt	21100	22.15	22.50	1.084	0.021	0.023
	LTE Band 7	1RB Offset	Left Cheek	20850	22.17	22.50	1.079	0.035	0.038
	LTE Band 7	1RB Offset	Left Cheek	21350	22.28	22.50	1.052	0.046	0.048
08#	LTE Band 8	1RB Offset	Right Cheek	21625	22.25	22.50	1.059	0.103	0.109
	LTE Band 8	1RB Offset	Right Tilt	21625	22.25	22.50	1.059	0.023	0.024
	LTE Band 8	1RB Offset	Left Cheek	21625	22.25	22.50	1.059	0.092	0.097
	LTE Band 8	1RB Offset	Left Tilt	21625	22.25	22.50	1.059	0.024	0.025
	LTE Band 8	1RB Offset	Right Cheek	21500	22.37	22.50	1.030	0.084	0.087
	LTE Band 8	1RB Offset	Right Cheek	21750	22.22	22.50	1.067	0.091	0.097
	LTE Band 20	1RB Offset	Right Cheek	24300	22.21	22.50	1.069	0.039	0.042
	LTE Band 20	1RB Offset	Right Tilt	24300	22.21	22.50	1.069	0.012	0.013
	LTE Band 20	1RB Offset	Left Cheek	24300	22.21	22.50	1.069	0.046	0.049
	LTE Band 20	1RB Offset	Left Tilt	24300	22.21	22.50	1.069	0.012	0.013
	LTE Band 20	1RB Offset	Left Cheek	24250	22.23	22.50	1.064	0.048	0.051
09#	LTE Band 20	1RB Offset	Left Cheek	24350	22.12	22.50	1.091	0.050	0.055



REPORT No. : SZ18050201S01

Plot No.	Band	Mode	Test Position	Ch.	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
	LTE Band 40	1RB 0offset	Right Cheek	39150	23.36	23.50	1.033	62.9	1.006	0.002	0.002
	LTE Band 40	1RB 0offset	Right Tilt	39150	23.36	23.50	1.033	62.9	1.006	0.002	0.002
	LTE Band 40	1RB 0offset	Left Cheek	39150	23.36	23.50	1.033	62.9	1.006	0.009	0.009
	LTE Band 40	1RB 0offset	Left Tilt	39150	23.36	23.50	1.033	62.9	1.006	0.003	0.003
	LTE Band 40	1RB 0offset	Left Cheek	38750	23.28	23.50	1.052	62.9	1.006	0.010	0.011
10#	LTE Band 40	1RB 0offset	Left Cheek	39550	23.32	23.50	1.042	62.9	1.006	0.011	0.012
	WLAN2.4GHz	802.11b	Right Cheek	7	14.11	14.50	1.094	100	1.000	0.152	0.166
	WLAN2.4GHz	802.11b	Right Tilt	7	14.11	14.50	1.094	100	1.000	0.180	0.197
11#	WLAN2.4GHz	802.11b	Left Cheek	7	14.11	14.50	1.094	100	1.000	0.221	0.242
	WLAN2.4GHz	802.11b	Left Tilt	7	14.11	14.50	1.094	100	1.000	0.182	0.199
	WLAN2.4GHz	802.11b	Left Cheek	1	12.63	14.50	1.538	100	1.000	0.147	0.226
	WLAN2.4GHz	802.11b	Left Cheek	13	13.27	14.50	1.327	100	1.000	0.147	0.195
	WLAN5GHz	802.11n-HT40	Right Cheek	54	13.90	14.50	1.148	100	1.000	0.026	0.030
	WLAN5GHz	802.11n-HT40	Right Tilt	54	13.90	14.50	1.148	100	1.000	0.016	0.018
12#	WLAN5GHz	802.11n-HT40	Left Cheek	54	13.90	14.50	1.148	100	1.000	0.082	0.094
	WLAN5GHz	802.11n-HT40	Left Tilt	54	13.90	14.50	1.148	100	1.000	0.042	0.048
	WLAN5GHz	802.11n-HT40	Left Cheek	38	13.98	14.50	1.127	100	1.000	0.058	0.065
	WLAN5GHz	802.11n-HT40	Left Cheek	62	12.90	13.50	1.148	100	1.000	0.076	0.087
	WLAN5GHz	802.11n-HT40	Right Cheek	118	12.20	12.50	1.072	100	1.000	0.021	0.023
	WLAN5GHz	802.11n-HT40	Right Tilt	118	12.20	12.50	1.072	100	1.000	0.015	0.016
13#	WLAN5GHz	802.11n-HT40	Left Cheek	118	12.20	12.50	1.072	100	1.000	0.044	0.047
	WLAN5GHz	802.11n-HT40	Left Tilt	118	12.20	12.50	1.072	100	1.000	0.029	0.031
	WLAN5GHz	802.11n-HT40	Left Cheek	102	11.32	11.50	1.042	100	1.000	0.032	0.033
	WLAN5GHz	802.11n-HT40	Left Cheek	142	12.35	12.50	1.035	100	1.000	0.042	0.043
	WLAN5GHz	802.11a	Right Cheek	161	10.25	10.50	1.059	100	1.000	0.018	0.019
	WLAN5GHz	802.11a	Right Tilt	161	10.25	10.50	1.059	100	1.000	0.011	0.012
14#	WLAN5GHz	802.11a	Left Cheek	161	10.25	10.50	1.059	100	1.000	0.054	0.057
	WLAN5GHz	802.11a	Left Tilt	161	10.25	10.50	1.059	100	1.000	0.047	0.050
	WLAN5GHz	802.11a	Left Tilt	149	10.88	11.00	1.028	100	1.000	0.035	0.036
	WLAN5GHz	802.11a	Left Tilt	165	11.61	12.00	1.094	100	1.000	0.047	0.051



10.2 Body-worn SAR Evaluation (Test distance: 5mm)

Plot No.	Band	Mode	Test Position	Ch.	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
	GSM900	GPRS(4 TX slots)	Front Side	38	29.78	30	1.052	0.110	0.116
	GSM900	GPRS(4 TX slots)	Back Side	38	29.78	30	1.052	0.099	0.104
	GSM900	GPRS(4 TX slots)	Front Side	975	29.71	30	1.069	0.103	0.110
15#	GSM900	GPRS(4 TX slots)	Front Side	124	29.46	30	1.132	0.112	0.127
	GSM1800	GPRS(4 TX slots)	Front Side	698	27.05	27.5	1.109	0.276	0.306
	GSM1800	GPRS(4 TX slots)	Back Side	698	27.05	27.5	1.109	0.168	0.186
16#	GSM1800	GPRS(4 TX slots)	Front Side	512	27.07	27.5	1.104	0.459	0.507
	GSM1800	GPRS(4 TX slots)	Front Side	885	27.14	27.5	1.086	0.215	0.234
	WCDMA I	RMC 12.2Kbps	Front Side	9750	23.05	23.50	1.109	0.115	0.128
17#	WCDMA I	RMC 12.2Kbps	Back Side	9750	23.05	23.50	1.109	0.222	0.246
	WCDMA I	RMC 12.2Kbps	Back Side	9612	23.05	23.50	1.109	0.176	0.195
	WCDMA I	RMC 12.2Kbps	Back Side	9888	23.38	23.50	1.028	0.217	0.223
	WCDMA VIII	RMC 12.2Kbps	Front Side	2788	22.85	23.00	1.035	0.067	0.069
	WCDMA VIII	RMC 12.2Kbps	Back Side	2788	22.85	23.00	1.035	0.058	0.060
	WCDMA VIII	RMC 12.2Kbps	Front Side	2712	22.90	23.00	1.023	0.054	0.055
18#	WCDMA VIII	RMC 12.2Kbps	Front Side	2863	22.89	23.00	1.026	0.074	0.076
	LTE Band 1	1RB 0offset	Front Side	18300	21.66	22.50	1.213	0.113	0.137
	LTE Band 1	1RB 0offset	Back Side	18300	21.66	22.50	1.213	0.147	0.178
	LTE Band 1	1RB 0offset	Back Side	18100	22.06	22.50	1.107	0.151	0.167
19#	LTE Band 1	1RB 0offset	Back Side	18500	21.98	22.50	1.127	0.171	0.193
	LTE Band 3	1RB 0offset	Front Side	19575	22.29	22.50	1.050	0.475	0.499
	LTE Band 3	1RB 0offset	Back Side	19575	22.29	22.50	1.050	0.385	0.404
20#	LTE Band 3	1RB 0offset	Front Side	19300	22.16	22.50	1.081	0.688	0.744
	LTE Band 3	1RB 0offset	Front Side	19850	22.16	22.50	1.081	0.356	0.385



REPORT No. : SZ18050201S01

Plot No.	Band	Mode	Test Position	Ch.	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
	LTE Band 7	1RB Offset	Front Side	21100	22.15	22.50	1.084	0.213	0.231
	LTE Band 7	1RB Offset	Back Side	21100	22.15	22.50	1.084	1.021	1.107
	LTE Band 7	1RB Offset	Back Side	20850	22.17	22.50	1.079	0.604	0.652
21#	LTE Band 7	1RB Offset	Back Side	21350	22.28	22.50	1.052	1.228	1.292
22#	LTE Band 8	1RB Offset	Front Side	21625	22.25	22.50	1.059	0.071	0.075
	LTE Band 8	1RB Offset	Back Side	21625	22.25	22.50	1.059	0.059	0.062
	LTE Band 8	1RB Offset	Front Side	21500	22.37	22.50	1.030	0.054	0.056
	LTE Band 8	1RB Offset	Front Side	21750	22.22	22.50	1.067	0.067	0.071
	LTE Band 20	1RB Offset	Front Side	24300	22.21	22.50	1.069	0.035	0.037
	LTE Band 20	1RB Offset	Back Side	24300	22.21	22.50	1.069	0.063	0.067
23#	LTE Band 20	1RB Offset	Back Side	24250	22.23	22.50	1.064	0.065	0.069
	LTE Band 20	1RB Offset	Back Side	24350	22.12	22.50	1.091	0.058	0.063

Plot No.	Band	Mode	Test Position	Ch.	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
	LTE Band 40	1RB Offset	Front Side	39150	23.36	23.50	1.033	62.9	1.006	0.048	0.050
	LTE Band 40	1RB Offset	Back Side	39150	23.36	23.50	1.033	62.9	1.006	0.177	0.184
	LTE Band 40	1RB Offset	Back Side	38750	23.28	23.50	1.052	62.9	1.006	0.198	0.210
24#	LTE Band 40	1RB Offset	Back Side	39550	23.32	23.50	1.042	62.9	1.006	0.207	0.217
	WLAN2.4GHz	802.11b	Front Side	7	14.11	14.50	1.094	100	1.000	0.155	0.170
	WLAN2.4GHz	802.11b	Back Side	7	14.11	14.50	1.094	100	1.000	0.012	0.013
	WLAN2.4GHz	802.11b	Front Side	1	12.63	14.50	1.538	100	1.000	0.137	0.211
25#	WLAN2.4GHz	802.11b	Front Side	13	13.27	14.50	1.327	100	1.000	0.166	0.220
26#	WLAN5GHz	802.11n-HT40	Front Side	54	13.90	14.50	1.148	100	1.000	0.026	0.030
	WLAN5GHz	802.11n-HT40	Back Side	54	13.90	14.50	1.148	100	1.000	0.024	0.028
	WLAN5GHz	802.11n-HT40	Back Side	38	13.98	14.50	1.127	100	1.000	0.021	0.024
	WLAN5GHz	802.11n-HT40	Back Side	62	12.90	13.50	1.148	100	1.000	0.018	0.021



REPORT No. : SZ18050201S01

Plot No.	Band	Mode	Test Position	Ch.	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
27#	WLAN5GHz	802.11n-HT40	Front Side	118	12.20	12.50	1.072	100	1.000	0.045	0.048
	WLAN5GHz	802.11n-HT40	Back Side	118	12.20	12.50	1.072	100	1.000	0.028	0.030
	WLAN5GHz	802.11n-HT40	Back Side	102	11.32	11.50	1.042	100	1.000	0.041	0.043
	WLAN5GHz	802.11n-HT40	Back Side	142	12.35	12.50	1.035	100	1.000	0.038	0.039
28#	WLAN5GHz	802.11a	Front Side	161	10.25	10.50	1.059	100	1.000	0.047	0.050
	WLAN5GHz	802.11a	Back Side	161	10.25	10.50	1.059	100	1.000	0.032	0.034
	WLAN5GHz	802.11a	Back Side	149	10.88	11.00	1.028	100	1.000	0.043	0.044
	WLAN5GHz	802.11a	Back Side	165	11.61	12.00	1.094	100	1.000	0.034	0.037

11. Simultaneous Transmission Evaluation

Simultaneous Evaluation:

No.	Simultaneous transmission Condition	Head	Body-worn
1	GSM/GPRS/EDGE + WLAN 2.4GHz	Yes	Yes
2	WCDMA + WLAN 2.4GHz	Yes	Yes
3	LTE + WLAN 2.4GHz	Yes	Yes
4	GSM/GPRS/EDGE + LAN 5GHz	Yes	Yes
5	WCDMA + LAN 5GHz	Yes	Yes
6	LTE + LAN 5GHz	Yes	Yes
7	GSM/GPRS/EDGE + Bluetooth	Yes	Yes
8	WCDMA + Bluetooth	Yes	Yes
9	LTE + Bluetooth	Yes	Yes

Note:

- DUT will choose either WWAN according to the network signal condition, therefore, WWAN will not transmit simultaneously.
- Multi-band transmission analysis for Body SAR is performed following EN62209-2 procedure.
- The maximum SAR summation is calculated based on the same configuration and test position.
- When 10-g SAR scalar summation < 2.0 W/kg, the Simultaneous SAR is not required.
- One way of determining the threshold power level available to the secondary transmitter ($P_{\text{available}}$) is to calculate it from the measured peak spatial-average SAR of the primary transmitter (SAR_{max}) according to the equation:

$$P_{\text{available}} = P_{\text{th,m}} \times (SAR_{\text{lim}} - SAR_{\text{max}}) / SAR_{\text{lim}} = 20 \times (2.0 - 1.292) / 2.0 = 7.08\text{mW}$$
where $P_{\text{th,m}}$ is the threshold exclusion power level taken from Annex B of EN 62479 for the frequency of the secondary transmitter at the separation distance used in the testing.
The output power of the BT is 3.42mW(5.34dBm) less than $P_{\text{available}}$, SAR measurement for the BT is not necessary.

**Head Exposure Condition:**

WWAN	Exposure Position	WWAN	WLAN 2.4GHz	WLAN 5GHz	WWAN+2.4G Summed	WWAN+5G Summed
		10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)
GSM900	Right Cheek	0.103	0.166	0.030	0.269	0.133
	Right Tilt	0.026	0.197	0.018	0.223	0.044
	Left Cheek	0.082	0.242	0.094	0.324	0.176
	Left Tilt	0.024	0.199	0.051	0.223	0.075
GSM1800	Right Cheek	0.009	0.166	0.030	0.175	0.039
	Right Tilt	0.005	0.197	0.018	0.202	0.023
	Left Cheek	0.022	0.242	0.094	0.264	0.116
	Left Tilt	0.004	0.199	0.051	0.203	0.055
WCDMA I	Right Cheek	0.033	0.166	0.030	0.199	0.063
	Right Tilt	0.031	0.197	0.018	0.228	0.049
	Left Cheek	0.026	0.242	0.094	0.268	0.120
	Left Tilt	0.023	0.199	0.051	0.222	0.074
WCDMA VIII	Right Cheek	0.093	0.166	0.030	0.259	0.123
	Right Tilt	0.022	0.197	0.018	0.219	0.040
	Left Cheek	0.085	0.242	0.094	0.327	0.179
	Left Tilt	0.024	0.199	0.051	0.223	0.075
LTE Band 1	Right Cheek	0.012	0.166	0.030	0.178	0.042
	Right Tilt	0.005	0.197	0.018	0.202	0.023
	Left Cheek	0.029	0.242	0.094	0.271	0.123
	Left Tilt	0.024	0.199	0.051	0.223	0.075
LTE Band 3	Right Cheek	0.032	0.166	0.030	0.198	0.062
	Right Tilt	0.018	0.197	0.018	0.215	0.036
	Left Cheek	0.017	0.242	0.094	0.259	0.111
	Left Tilt	0.014	0.199	0.051	0.213	0.065
LTE Band 7	Right Cheek	0.037	0.166	0.030	0.203	0.067
	Right Tilt	0.020	0.197	0.018	0.217	0.038
	Left Cheek	0.052	0.242	0.094	0.294	0.146
	Left Tilt	0.023	0.199	0.051	0.222	0.074
LTE Band 8	Right Cheek	0.109	0.166	0.030	0.275	0.139
	Right Tilt	0.024	0.197	0.018	0.221	0.042
	Left Cheek	0.097	0.242	0.094	0.339	0.191
	Left Tilt	0.025	0.199	0.051	0.224	0.076



LTE Band 20	Right Cheek	0.042	0.166	0.030	0.208	0.072
	Right Tilt	0.013	0.197	0.018	0.210	0.031
	Left Cheek	0.055	0.242	0.094	0.297	0.149
	Left Tilt	0.013	0.199	0.051	0.212	0.064
LTE Band 40	Right Cheek	0.002	0.166	0.030	0.168	0.032
	Right Tilt	0.002	0.197	0.018	0.199	0.020
	Left Cheek	0.012	0.242	0.094	0.254	0.106
	Left Tilt	0.003	0.199	0.051	0.202	0.054

Body-worn Exposure Condition:

WWAN	Exposure Position	WWAN	WLAN 2.4GHz	WLAN 5GHz	WWAN+2.4G Summed	WWAN+5G Summed
		10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)
GSM900	Front	0.127	0.220	0.050	0.347	0.177
	Back	0.104	0.013	0.044	0.117	0.148
GSM1800	Front	0.507	0.220	0.050	0.727	0.557
	Back	0.186	0.013	0.044	0.199	0.230
WCDMA I	Front	0.128	0.220	0.050	0.348	0.178
	Back	0.246	0.013	0.044	0.259	0.290
WCDMA VIII	Front	0.076	0.220	0.050	0.296	0.126
	Back	0.060	0.013	0.044	0.073	0.104
LTE Band 1	Front	0.137	0.220	0.050	0.357	0.187
	Back	0.193	0.013	0.044	0.206	0.237
LTE Band 3	Front	0.744	0.220	0.050	0.964	0.794
	Back	0.404	0.013	0.044	0.417	0.448
LTE Band 7	Front	0.231	0.220	0.050	0.451	0.281
	Back	1.292	0.013	0.044	1.305	1.336
LTE Band 8	Front	0.075	0.220	0.050	0.295	0.125
	Back	0.062	0.013	0.044	0.075	0.106
LTE Band 20	Front	0.037	0.220	0.050	0.257	0.087
	Back	0.069	0.013	0.044	0.082	0.113
LTE Band 40	Front	0.050	0.220	0.050	0.270	0.100
	Back	0.210	0.013	0.044	0.223	0.254



Annex A General Information

1. Identification of the Responsible Testing Laboratory

Company Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Department:	Morlab Laboratory
Address:	FL.3, Building A, Fei Yang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China
Responsible Test Lab Manager:	Mr. Su Feng
Telephone:	+86 755 36698555
Facsimile:	+86 755 36698525

2. Identification of the Responsible Testing Location

Name:	Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory
Address:	FL.3, Building A, Fei Yang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China

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**3. List of Test Equipments**

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SATIMO	835MHz System Validation Kit	D835	20/08 DIPC99	2018.05.10	2019.05.09
SATIMO	900MHz System Validation Kit	D900	20/08 DIPC100	2018.05.10	2019.05.09
SATIMO	1800MHz System Validation Kit	D1800	36/08 DIPF101	2018.05.10	2019.05.09
SATIMO	2000MHz System Validation Kit	D2000V2	20/08 DIPI102	2018.05.10	2019.05.09
SATIMO	2450MHz System Validation Kit	D2450V2	30/13 DIP2G450-263	2018.05.10	2019.05.09
SATIMO	2600MHz System Validation Kit	D2600	30/13 DIP2G600-265	2018.05.10	2019.05.09
SATIMO	5000-6000MHz System Validation Kit	D5GHz	41/12 WGA21	2018.05.10	2019.05.09
SATIMO	Dosimetric E-Field Probe	N/A	37/08 EP80	2018.05.10	2019.05.09
SATIMO	Dosimetric E-Field Probe	N/A	37/13 EPG193	2018.05.10	2019.05.09
Keithley	Voltmeter	2000	1000572	2018.05.10	2019.05.09
SATIMO	SAM Twin Phantom 2	N/A	SN_36_08_SAM62	NCR	NCR
SPEAG	Phone Holder	N/A	N/A	NCR	NCR
R&S	Network Emulator	CMW500	124534	2018.04.17	2019.04.16
Agilent	Network Emulator	8960	10752	2018.04.17	2019.04.16
Agilent	Network Analyzer	E5071B	MY42404762	2018.04.17	2019.04.16
Agilent	Dielectric Probe Kit	85033E	N/A	2018.04.17	2019.04.16
mini-circuits	Amplifier	ZHL-42W+	608501717	NCR	NCR
mini-circuits	Amplifier	ZVE-8G+	754401735	NCR	NCR
Agilent	Signal Generator	SMP_02	150K-3GHz	2017.07.08	2018.07.07
Agilent	Signal Generator	N5182B	MY53050509	2018.04.17	2019.04.16
Agilent	Power Meter	E4416A	MY45102093	2017.11.30	2018.11.29
Agilent	Power Sensor	N8482A	MY41090849	2017.11.30	2018.11.29
R&S	Power Meter	NRVD	101066	2017.07.08	2018.07.07
Anritsu	Power Sensor	MA2411B	N/A	2017.07.08	2018.07.07
Giga-tronics	Directional coupler	N/A	1829112	NA	NA
R&S	Synthesizer	SML_03	101868	2017.08.24	2018.08.23
MCL	Attenuation1	6dBm	351-218-010	NA	NA
THERMOMETER	Thermo meter	DC-803	N/A	NA	NA
N/A	Tissue Simulating Liquid	835-6000MHz		24H	

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Annex B Test Setup Photos

Head:



Right Cheek



Right Tilt

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Left Cheek



Left Tilt

Body:



Body worn – Front (5mm)



Body worn – Back (5mm)



Annex C Plots of System Performance Check

System Performance Check Data (835MHz Head)

Type: Phone measurement (Complete)

Area scan resolution: dx=8mm,dy=8mm

Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2018.06.23

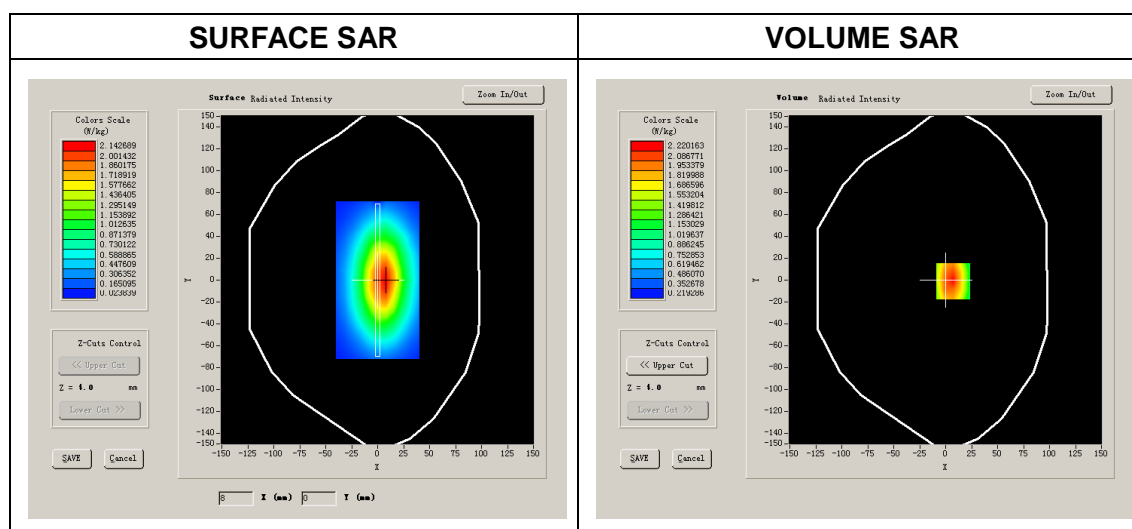
Measurement duration: 13 minutes 35 seconds

A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Flat
Device Position	
Band	835MHz
Channels	
Signal	CW

B. SAR Measurement Results

Frequency (MHz)	835.000000
Relative permittivity (real part)	41.182291
Conductivity (S/m)	0.891718
Power drift (%)	1.070000
Ambient Temperature:	22.6°C
Liquid Temperature:	21.2°C
ConvF:	6.13
Crest factor:	1:1

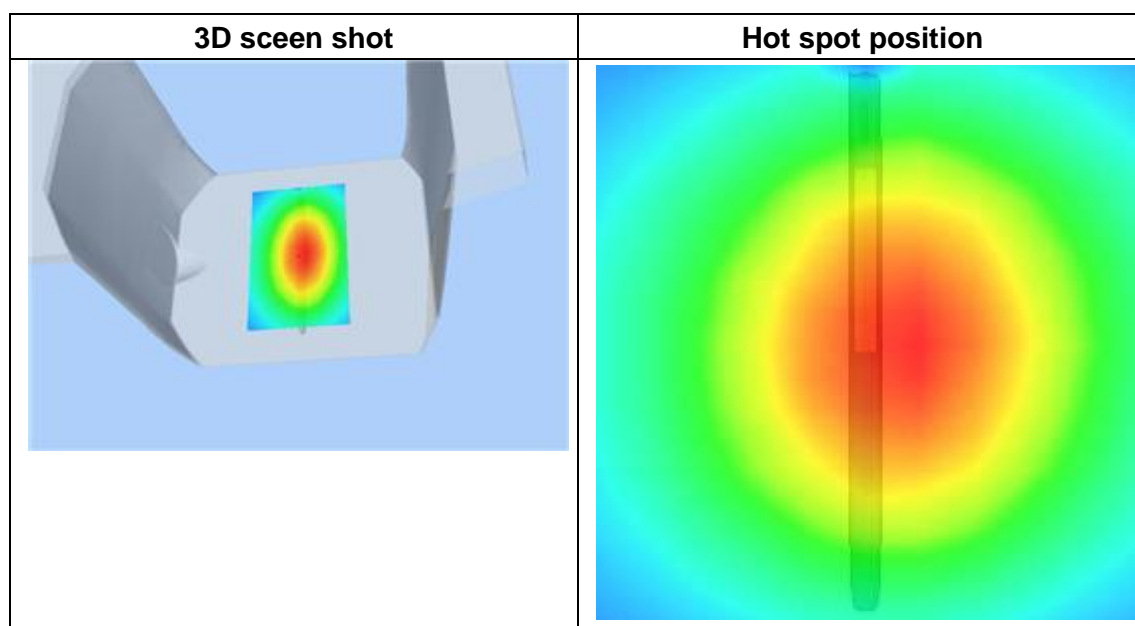
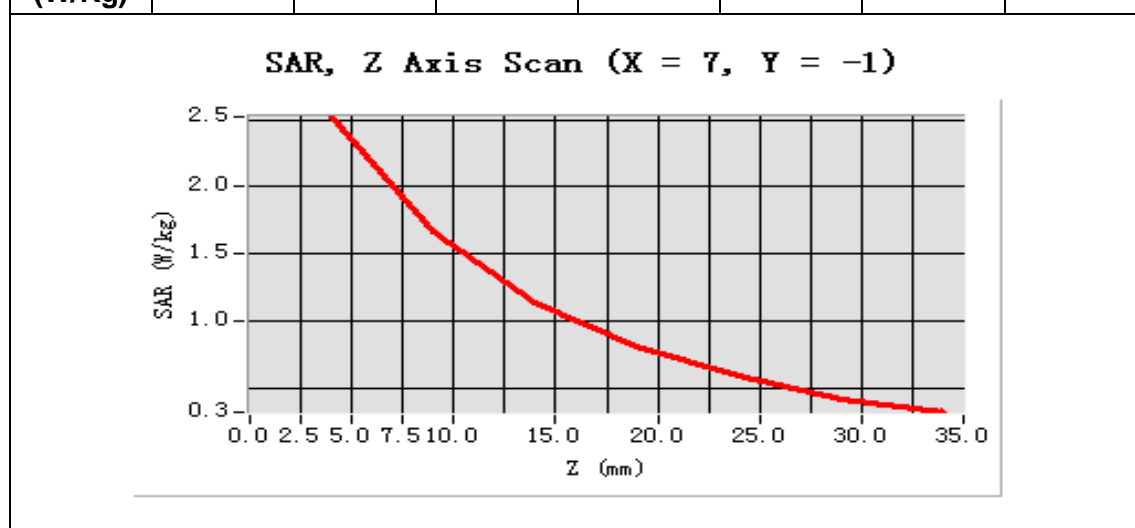


Maximum location: X=7.00, Y=-1.00

SAR 10g (W/Kg)	0.622151
SAR 1g (W/Kg)	0.968476

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	2.5209	1.6629	1.1437	0.8075	0.5889	0.4143



**System Performance Check Data (900MHz)**

Type: Phone measurement (Complete)

Area scan resolution: dx=8mm,dy=8mm

Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2018.06.23

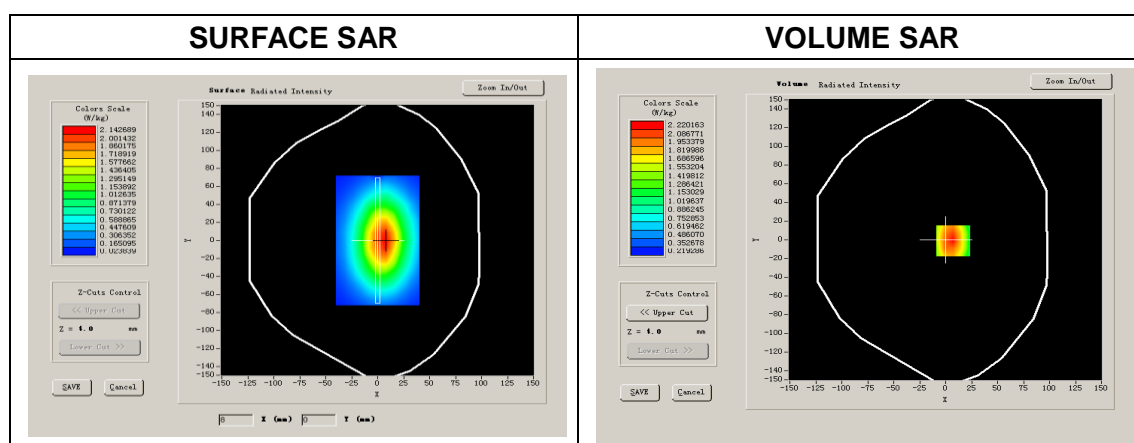
Measurement duration: 16 minutes 28 seconds

A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Flat
Device Position	
Band	900MHz
Channels	
Signal	CW

B. SAR Measurement Results

Frequency (MHz)	900.000000
Relative permittivity (real part)	39.976163
Conductivity (S/m)	0.990332
Power drift (%)	1.070000
Ambient Temperature:	22.8°C
Liquid Temperature:	22.7°C
ConvF:	6.13
Crest factor:	1:1

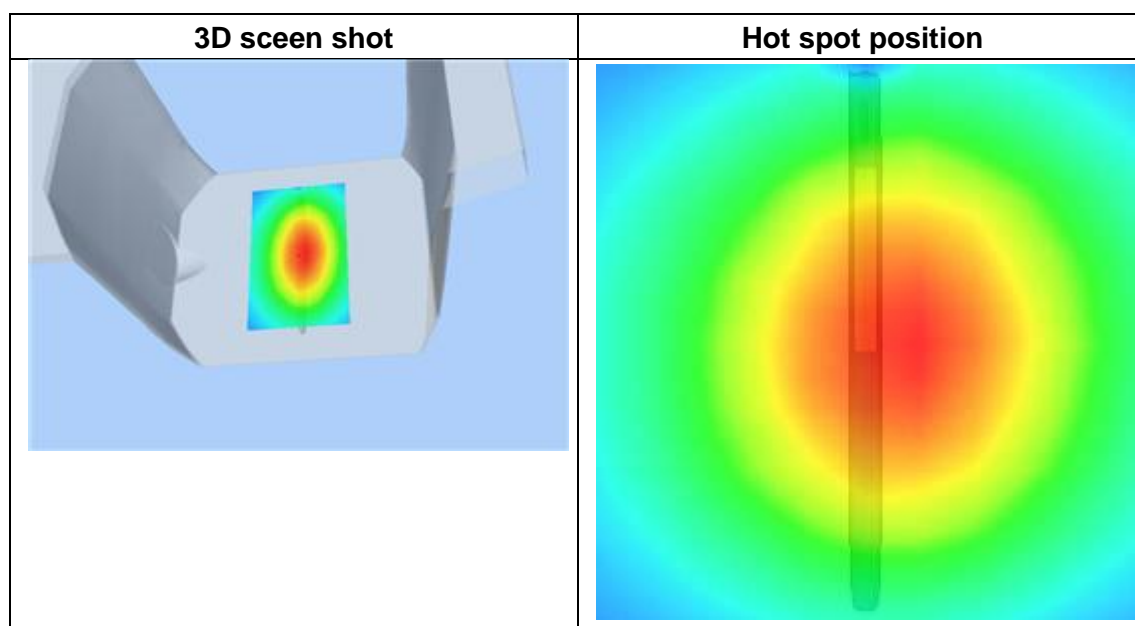
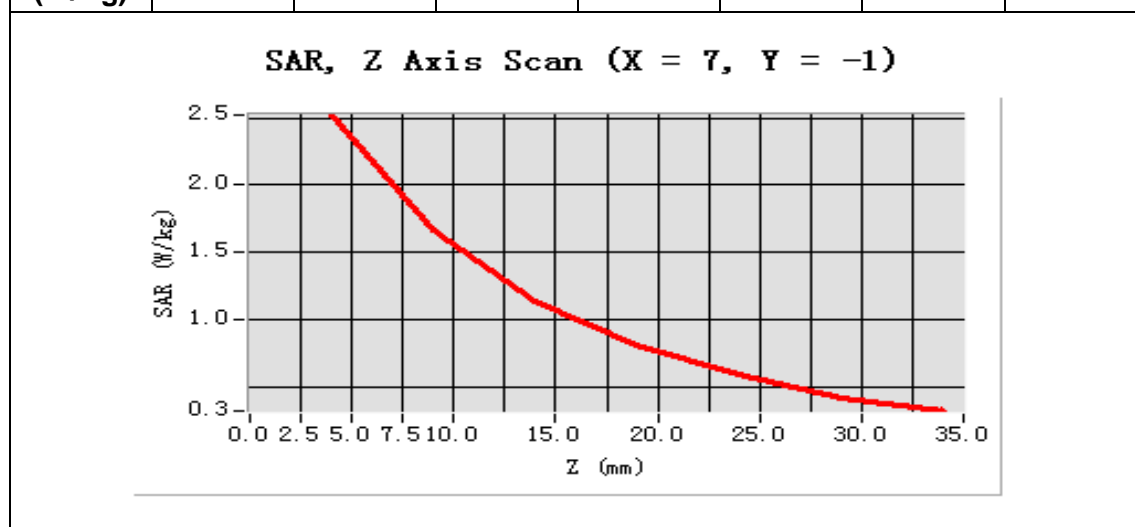


Maximum location: X=7.00, Y=-1.00

SAR 10g (W/Kg)	0.722151
SAR 1g (W/Kg)	1.068476

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	2.5209	1.6629	1.1437	0.8075	0.5889	0.4143



**System Performance Check Data(1800MHz Head)**

Type: Phone measurement (Complete)

Area scan resolution: dx=8mm,dy=8mm

Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2018.06.19

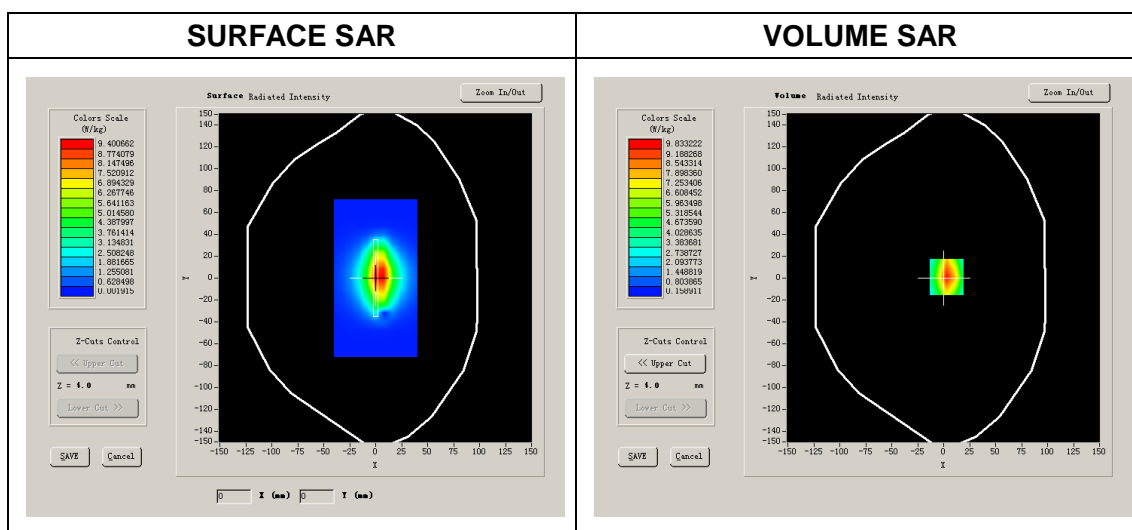
Measurement duration: 13 minutes 27 seconds

A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Flat
Device Position	
Band	1800MHz
Channels	
Signal	CW

B. SAR Measurement Results**Band SAR**

Frequency (MHz)	1800.000000
Relative permittivity (real part)	40.095167
Conductivity (S/m)	1.365073
Power drift (%)	0.310000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.6°C
ConvF:	5.21
Crest factor:	1:1

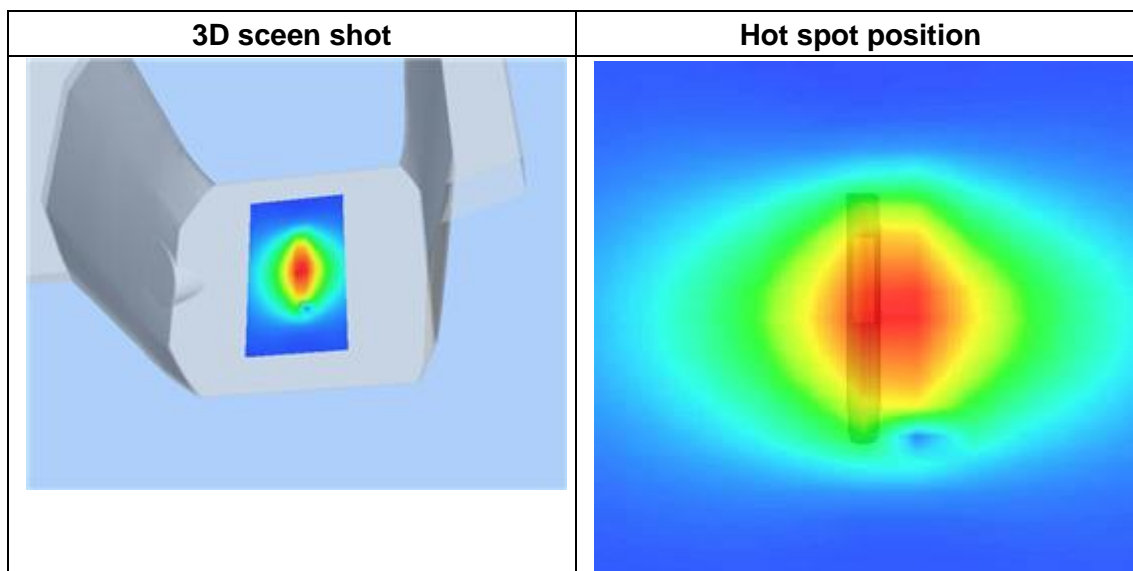
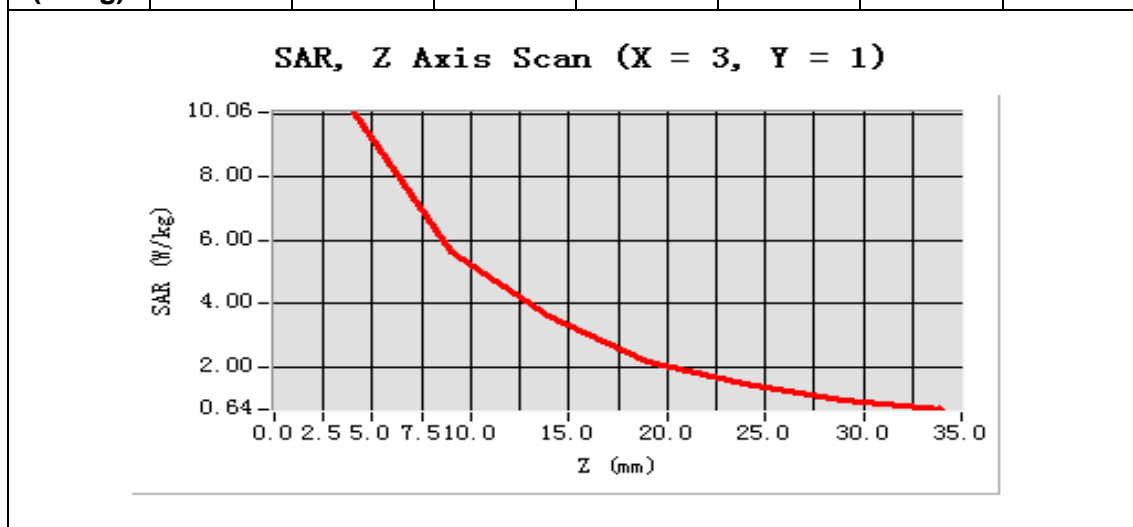


Maximum location: X=3.00, Y=1.00

SAR 10g (W/Kg)	2.048386
SAR 1g (W/Kg)	3.698154

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	10.0621	5.6445	3.6226	2.1642	1.4521	0.9078





System Performance Check Data(2000MHz Head)

Type: Phone measurement (Complete)

Area scan resolution: dx=8mm,dy=8mm

Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2018.06.19

Measurement duration: 13 minutes 27 seconds

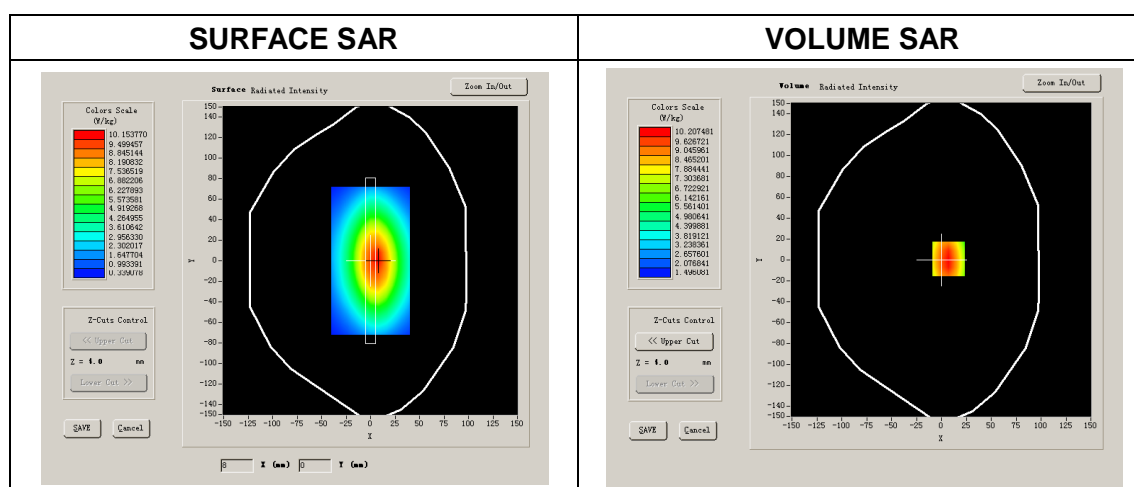
A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Flat
Device Position	
Band	2000MHz
Channels	
Signal	CW

B. SAR Measurement Results

Band SAR

Frequency (MHz)	2000.000000
Relative permittivity (real part)	39.984477
Conductivity (S/m)	1.414283
Power drift (%)	-0.830000
Ambient Temperature:	22.1°C
Liquid Temperature:	22.4°C
ConvF:	5.61
Crest factor:	1:1

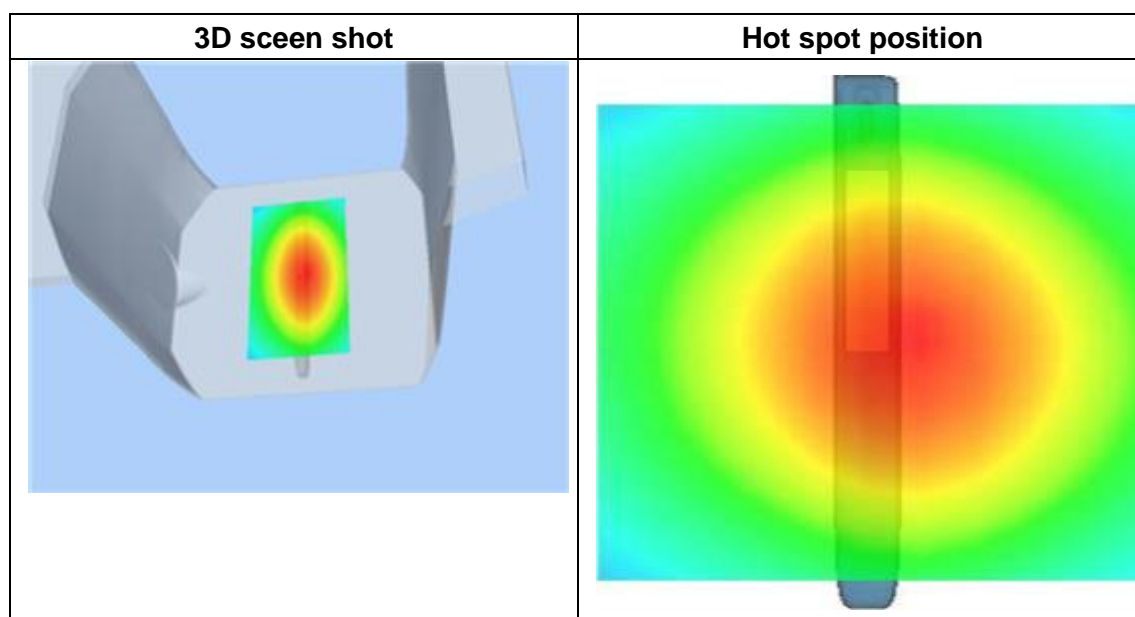
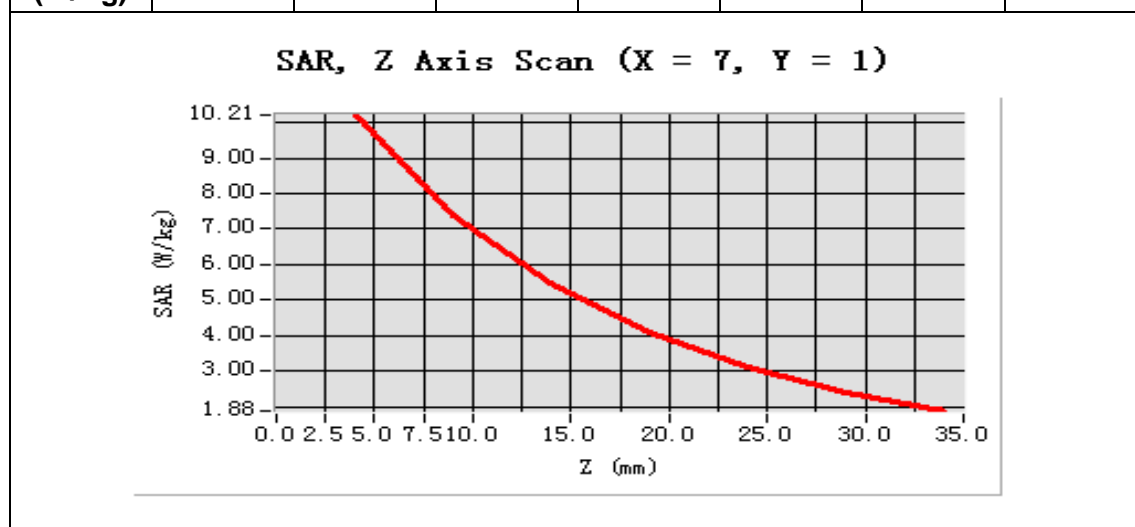


Maximum location: X=7.00, Y=1.00

SAR 10g (W/Kg)	1.992518
SAR 1g (W/Kg)	4.255954

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	10.2075	7.3996	5.4654	4.1101	3.1286	2.4128



**System Performance Check Data(2450MHz Head)**

Type: Phone measurement (Complete)

Area scan resolution: dx=12mm,dy=12mm

Zoom scan resolution: dx=5mm, dy=5mm, dz=4mm

Date of measurement: 2018.06.21

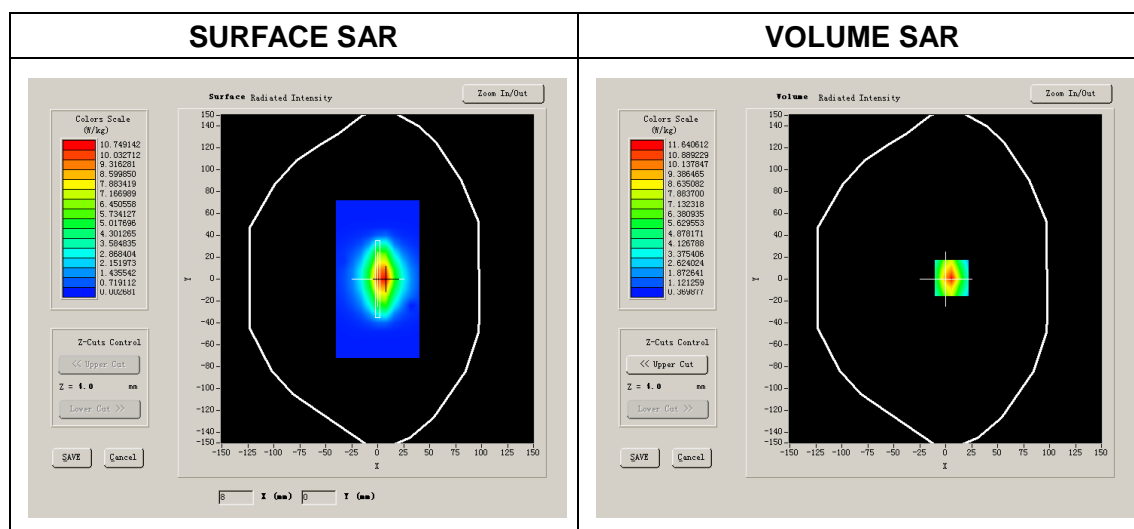
Measurement duration: 13 minutes 31 seconds

A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Flat
Device Position	
Band	2450MHz
Channels	
Signal	CW

B. SAR Measurement Results**Band SAR**

Frequency (MHz)	2450.000000
Relative permittivity (real part)	39.284446
Conductivity (S/m)	1.836061
Power Drift (%)	1.080000
Ambient Temperature:	22.0°C
Liquid Temperature:	21.8°C
ConvF:	4.82
Crest factor:	1:1

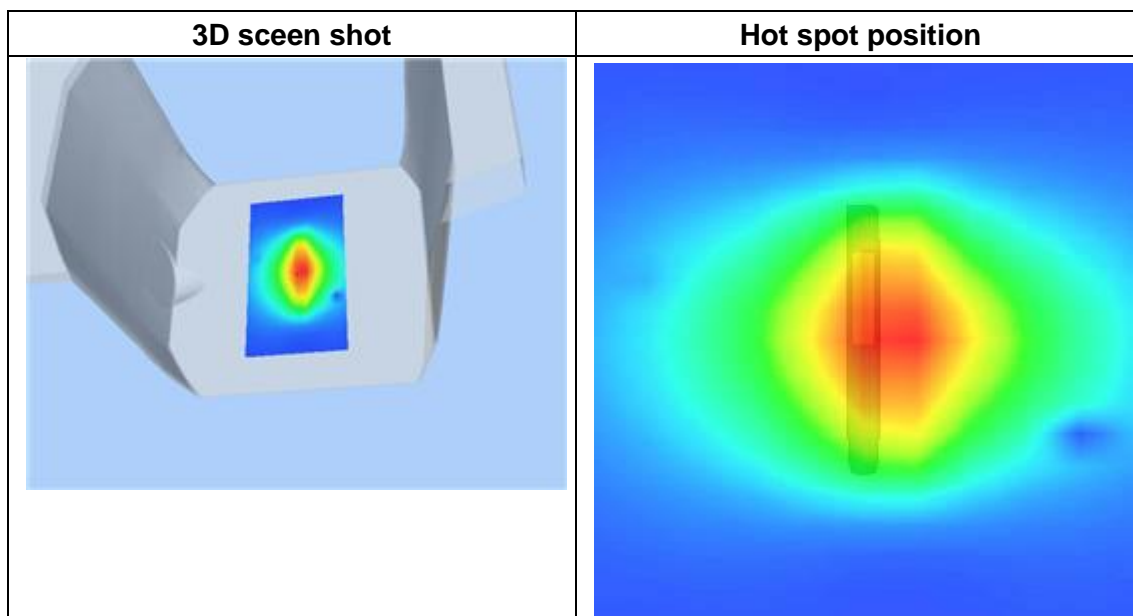
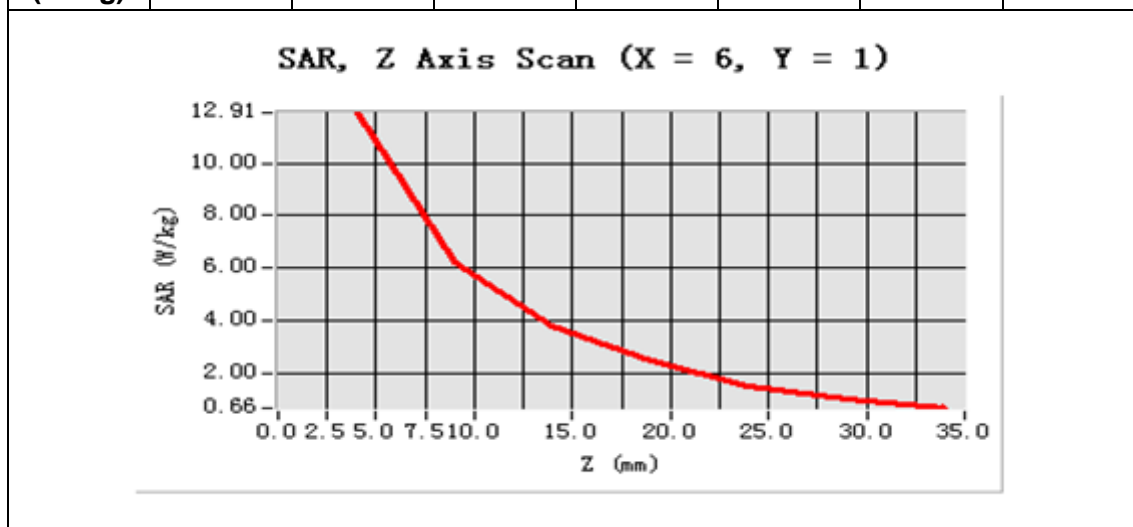


Maximum location: X=6.00, Y=1.00

SAR 10g (W/Kg)	2.377250
SAR 1g (W/Kg)	5.326074

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	12.9615	6.2096	3.8187	2.4504	1.5036	1.0219



**System Performance Check Data(2600MHz Head)**

Type: Phone measurement (Complete)

Area scan resolution: dx=12mm,dy=12mm

Zoom scan resolution: dx=5mm, dy=5mm, dz=5mm

Date of measurement: 2018.06.21

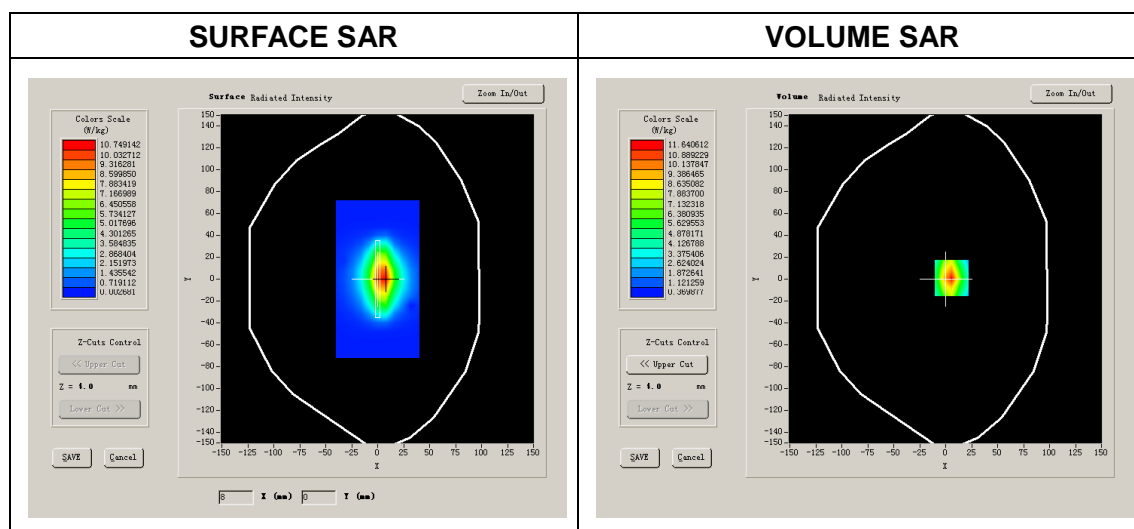
Measurement duration: 13 minutes 31 seconds

A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Flat
Device Position	
Band	2600MHz
Channels	
Signal	CW

B. SAR Measurement Results**Band SAR**

Frequency (MHz)	2600.000000
Relative permittivity (real part)	39.024564
Conductivity (S/m)	1.975236
Power Drift (%)	1.080000
Ambient Temperature:	22.0°C
Liquid Temperature:	21.8°C
ConvF:	4.74
Crest factor:	1:1

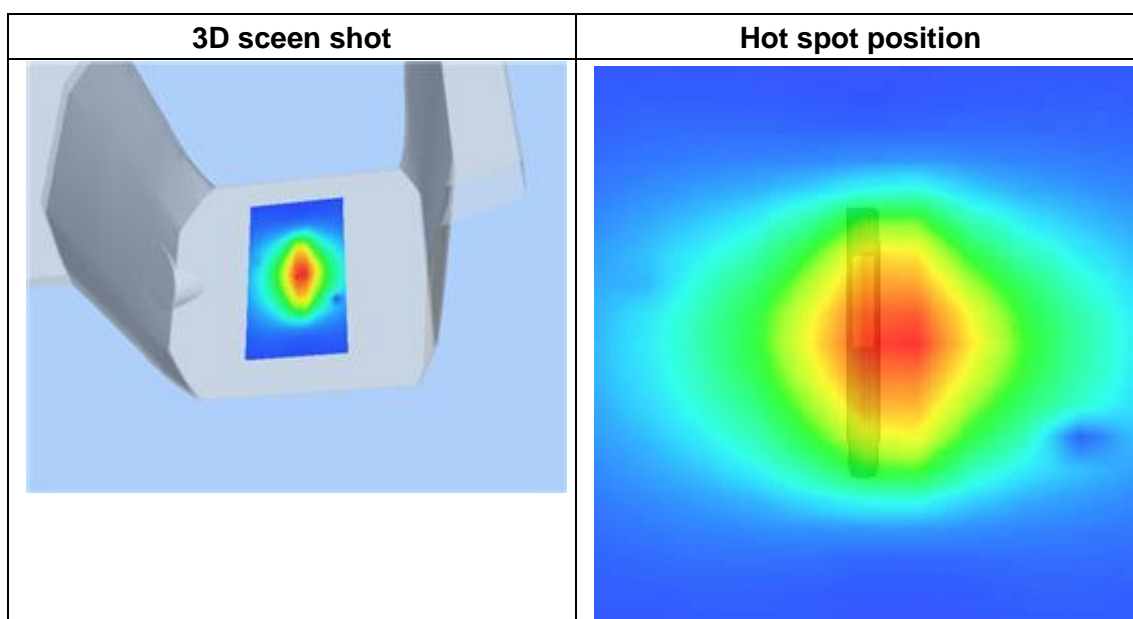
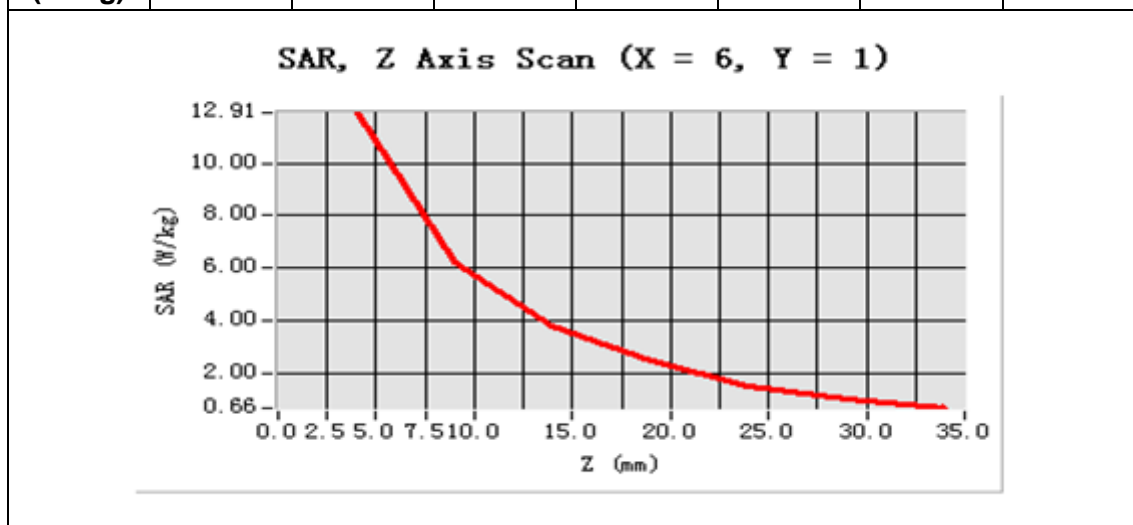


Maximum location: X=6.00, Y=1.00

SAR 10g (W/Kg)	2.498154
SAR 1g (W/Kg)	5.681472

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	12.9745	6.2193	3.8245	2.4624	1.5033	1.0220



**System Performance Check Data(5200MHz Head)**

Type: Phone measurement (Complete)

Area scan resolution: dx=10mm,dy=10mm

Zoom scan resolution: dx=4mm, dy=4mm, dz=2mm

Date of measurement: 2018.06.22

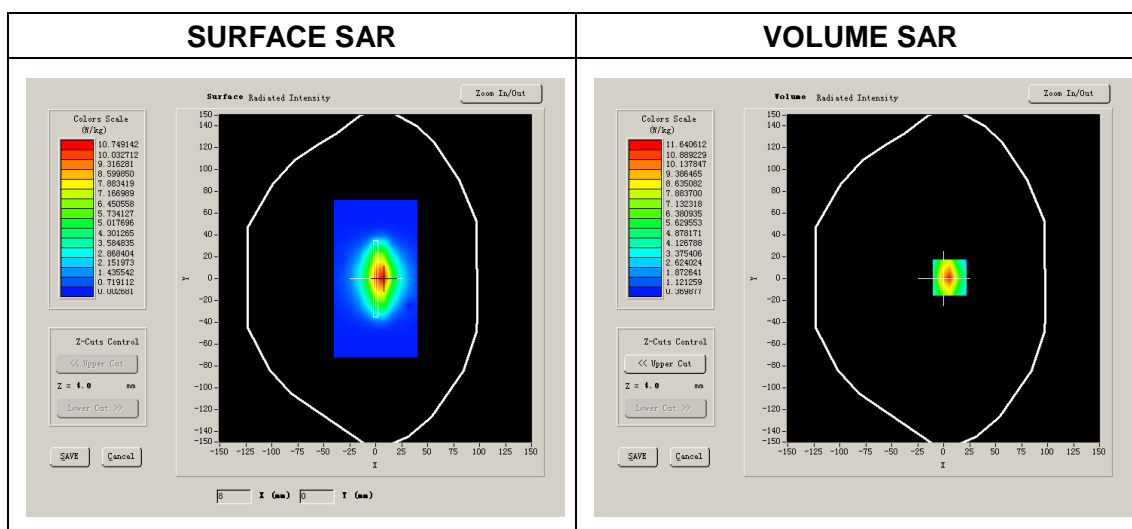
Measurement duration: 23 minutes 27 seconds

A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	
Band	5200MHz
Channels	
Signal	CW

B. SAR Measurement Results**Band SAR**

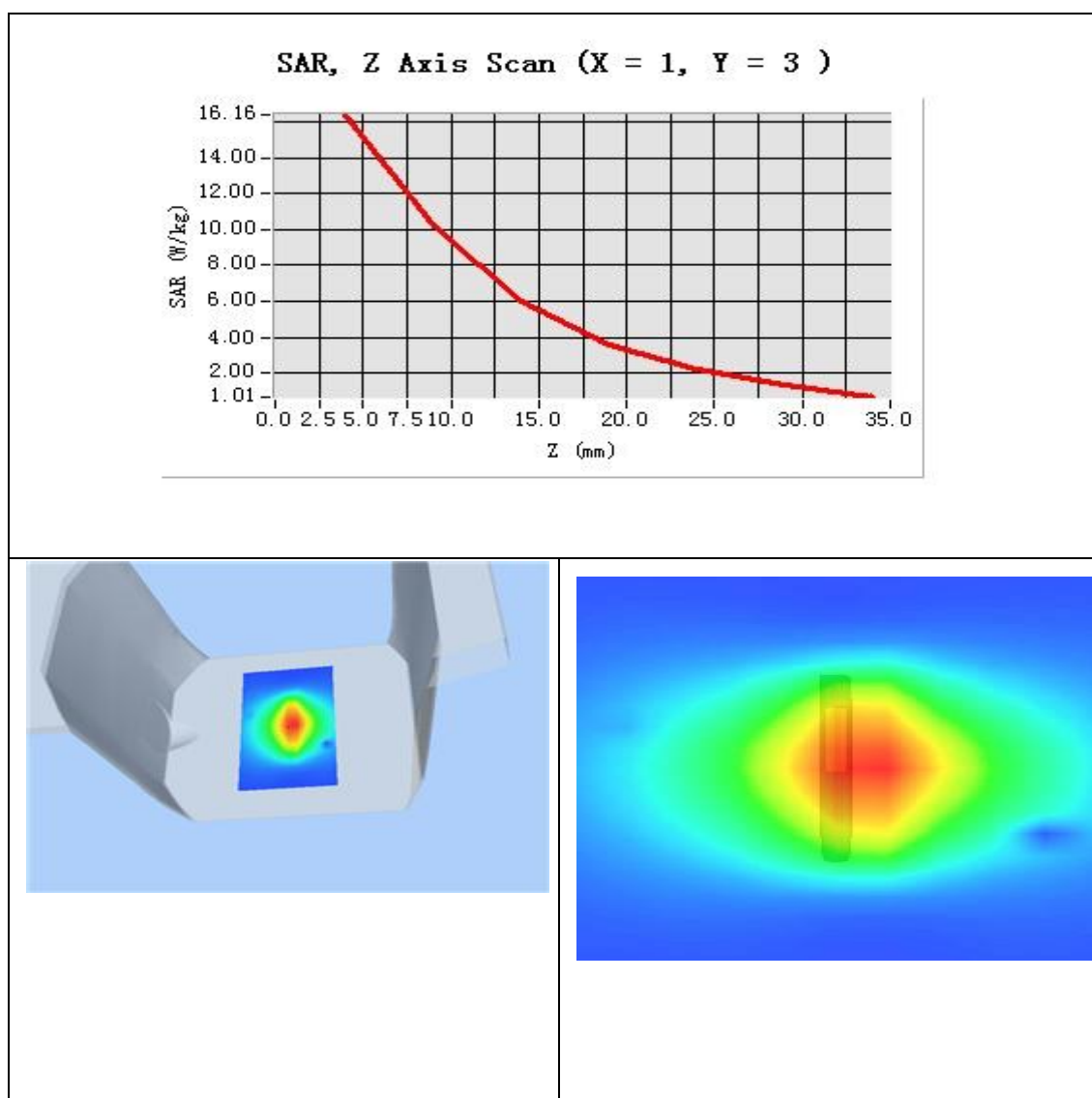
Frequency (MHz)	5200.000000
Relative permittivity (real part)	36.123014
Conductivity (S/m)	4.665260
Power Drift (%)	2.310000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	21.61
Crest factor:	1:1



Maximum location: X=1.00, Y=3.00

SAR 10g (W/Kg)	5.651263
SAR 1g (W/Kg)	16.398864

Z Axis Scan





System Performance Check Data(5600MHz Head)

Type: Phone measurement (Complete)

Area scan resolution: dx=10mm,dy=10mm

Zoom scan resolution: dx=4mm, dy=4mm, dz=2mm

Date of measurement: 2018.06.22

Measurement duration: 13 minutes 27 seconds

A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	
Band	5600MHz
Channels	
Signal	CW

B. SAR Measurement Results

Band SAR

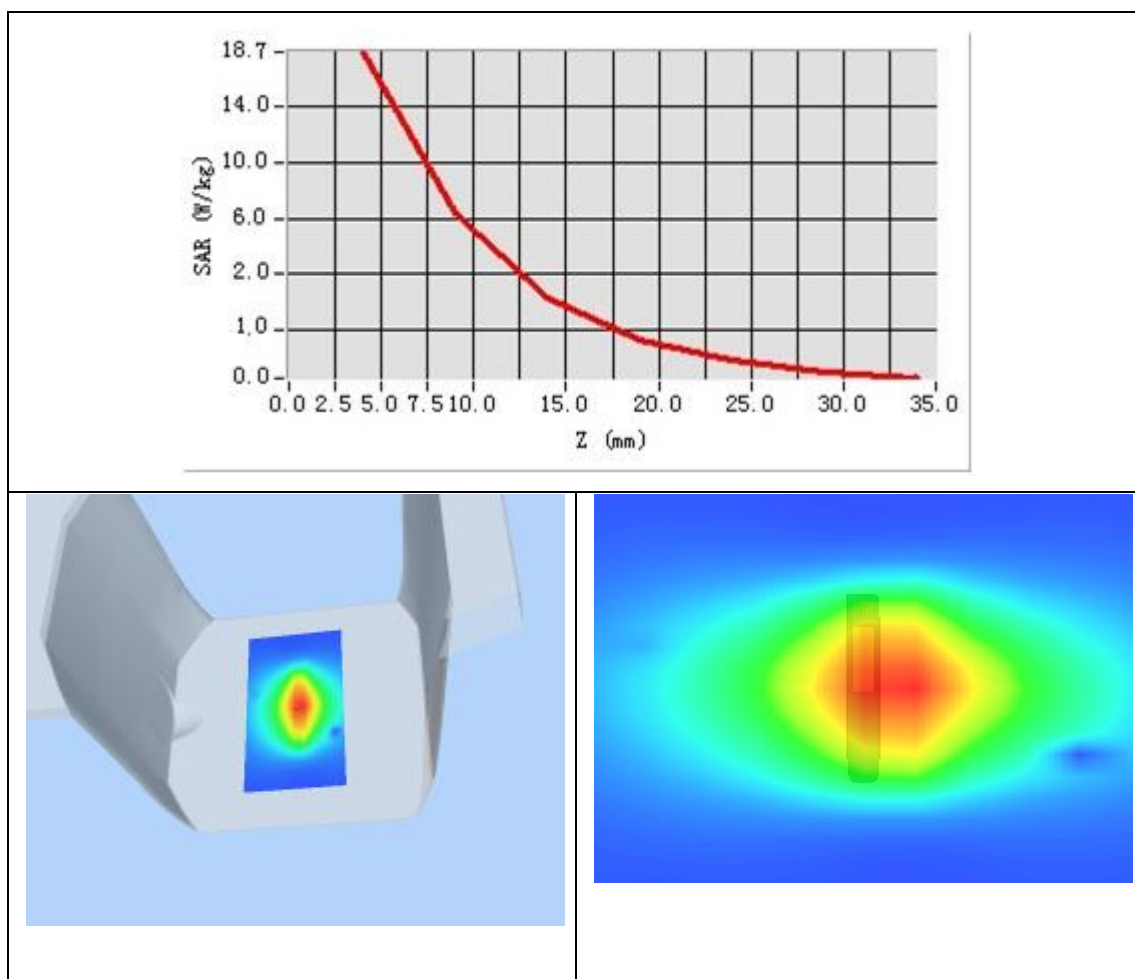
Frequency (MHz)	5600.000000
Relative permittivity (real part)	35.562139
Conductivity (S/m)	5.100255
Power Drift (%)	1.080000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	22.92
Crest factor:	1:1



Maximum location: X=-1.00, Y=-5.00

SAR 10g (W/Kg)	6.0553669
SAR 1g (W/Kg)	17.144263

Z Axis Scan



**System Performance Check Data(5800MHz Head)**

Type: Phone measurement (Complete)

Area scan resolution: dx=10mm,dy=10mm

Zoom scan resolution: dx=4mm, dy=4mm, dz=2mm

Date of measurement: 2018.06.22

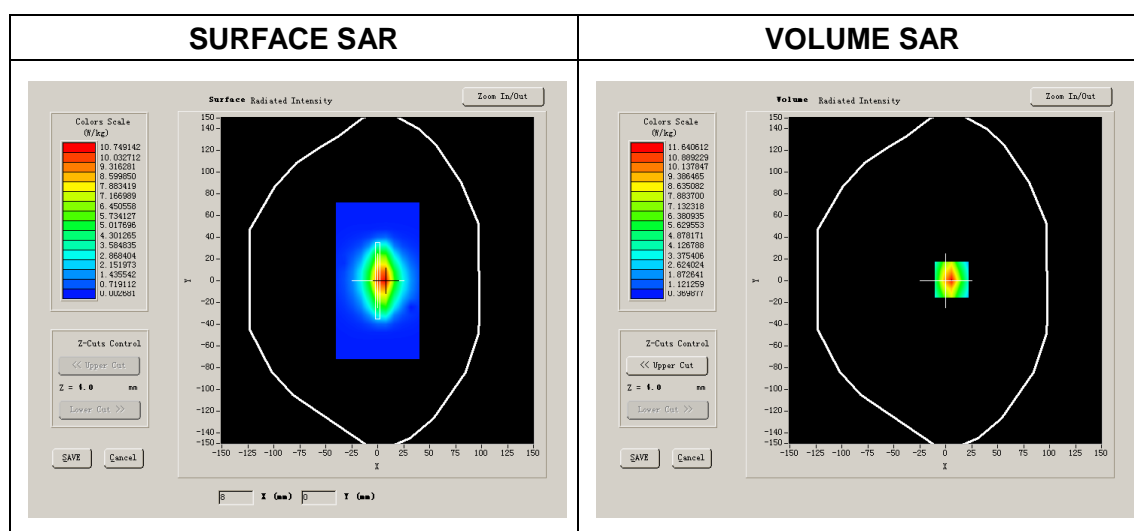
Measurement duration: 13 minutes 27 seconds

A. Experimental conditions.

Phantom File	surf_sam_plan.txt
Phantom	Validation plane
Device Position	
Band	5800MHz
Channels	
Signal	CW

B. SAR Measurement Results**Band SAR**

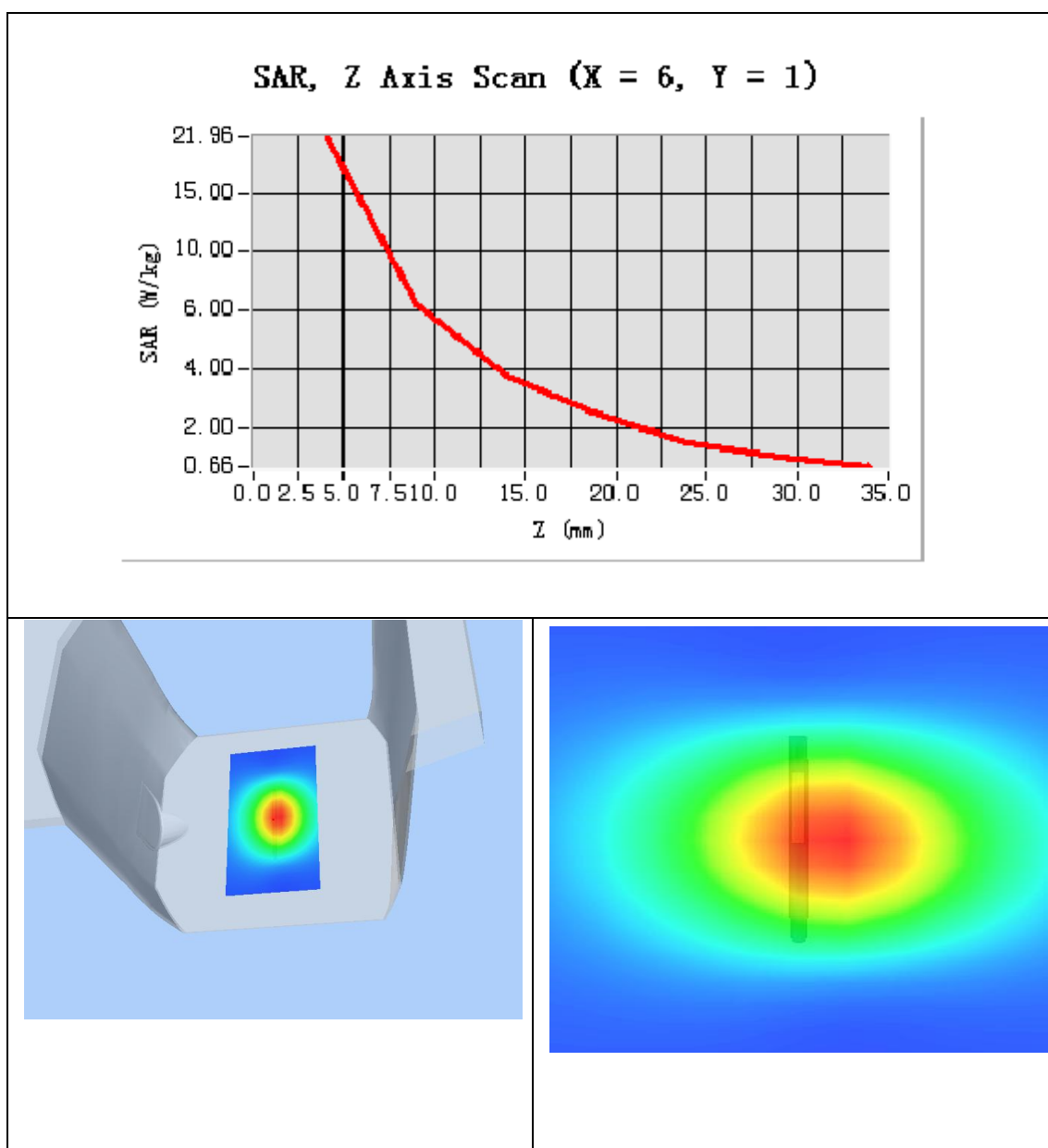
Frequency (MHz)	5800.000000
Relative permittivity (real part)	35.334675
Conductivity (S/m)	5.310226
Power Drift (%)	1.260000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	22.42
Crest factor:	1:1



Maximum location: X=-6.00, Y=-1.00

SAR 10g (W/Kg)	5.994412
SAR 1g (W/Kg)	17.711256

Z Axis Scan



Annex D Plots of Maximum SAR Test Result

MEASUREMENT 1

Type: Phone measurement (Complete)

Area scan resolution: dx=15mm,dy=15mm

Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2018.06.23

Measurement duration: 17 minutes 3 seconds

A. Experimental conditions.

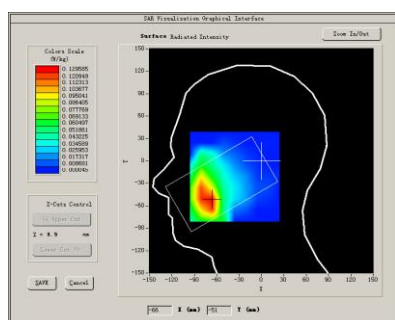
<u>Phantom File</u>	<u>surf_sam_plan.txt</u>
<u>Phantom</u>	<u>Right head</u>
<u>Device Position</u>	<u>Cheek</u>
<u>Band</u>	<u>GSM900</u>
<u>Channels</u>	<u>Low</u>
<u>Signal</u>	<u>GSM</u>

B. SAR Measurement Results

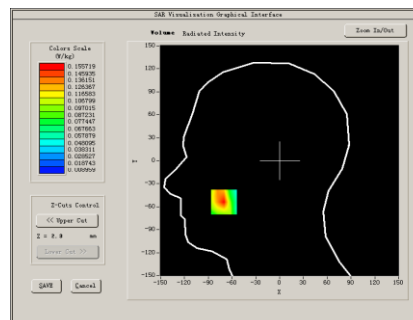
Lower Band SAR (Channel 975):

Frequency (MHz)	880.200000
Relative permittivity (real part)	41.178294
Conductivity (S/m)	0.895726
Power drift (%)	1.070000
Ambient Temperature:	22.6°C
Liquid Temperature:	21.2°C
ConvF:	6.13
Duty Cycle:	1:1

SURFACE SAR



VOLUME SAR



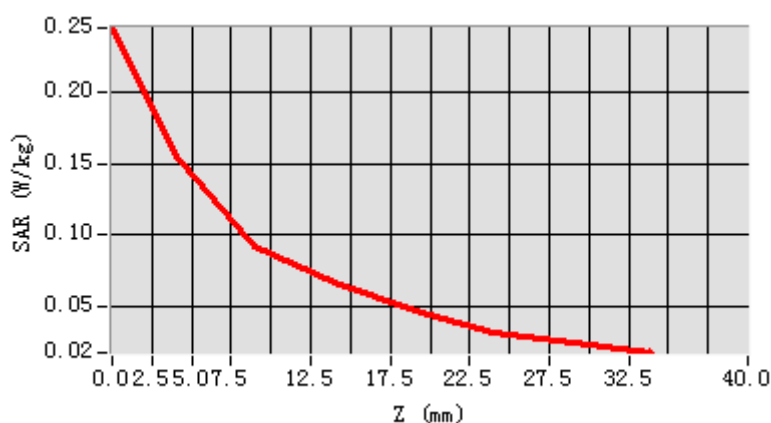
NOTE: This document is issued by MORLAB, the test report shall not be reproduced except in full without prior written permission of the company. The test results apply only to the particular sample(s) tested and to the specific tests carried out which is available on request for validation and information confirmed at our website.

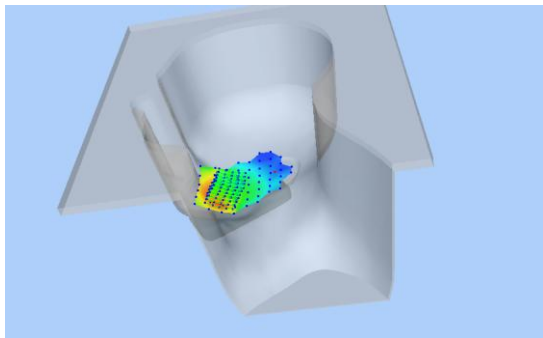
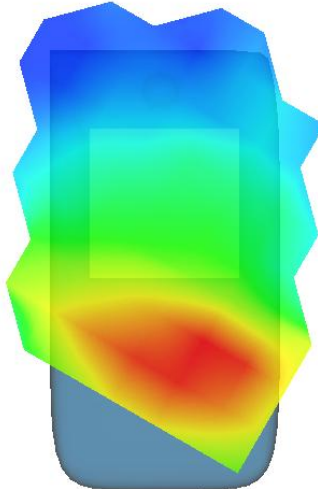
Maximum location: X=-70.00, Y=-54.00

SAR Peak: 0.24 W/kg

SAR 10g (W/Kg)	0.091944
SAR 1g (W/Kg)	0.148721

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.2450	0.1557	0.0918	0.0670	0.0479	0.0325	0.0247



3D screen shot	Hot spot position
	

NOTE: This document is issued by MORLAB, the test report shall not be reproduced except in full without prior written permission of the company. The test results apply only to the particular sample(s) tested and to the specific tests carried out which is available on request for validation and information confirmed at our website.

**MEASUREMENT 2**

Type: Phone measurement (Complete)

Area scan resolution: dx=15mm,dy=15mm

Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2018.06.19

Measurement duration: 17 minutes 52 seconds

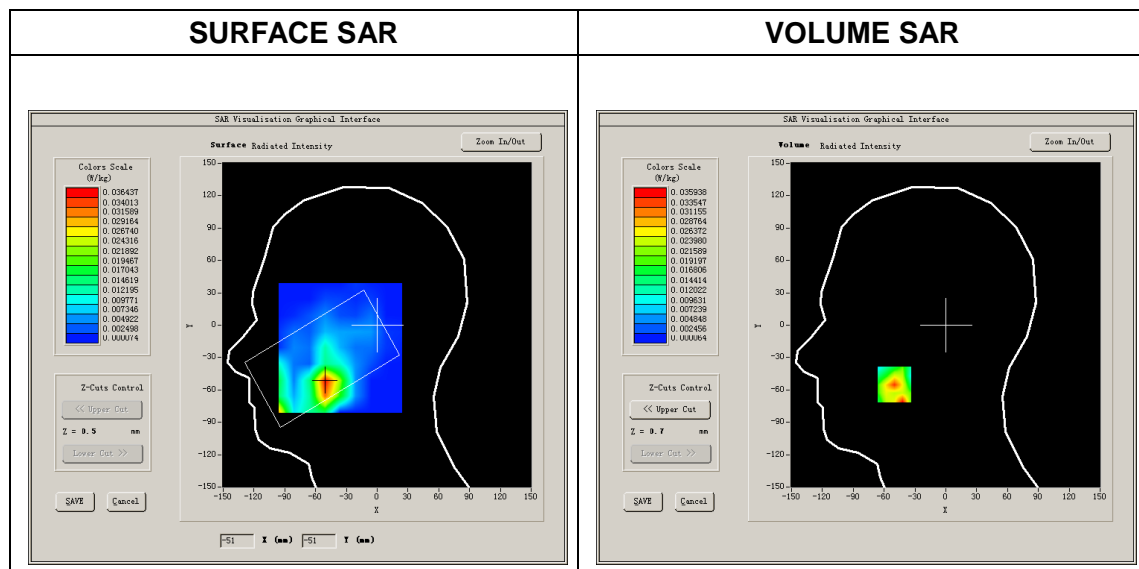
A. Experimental conditions.

<u>Phantom File</u>	<u>surf_sam_plan.txt</u>
<u>Phantom</u>	<u>Left head</u>
<u>Device Position</u>	<u>Cheek</u>
<u>Band</u>	<u>GSM1800</u>
<u>Channels</u>	<u>Low</u>
<u>Signal</u>	<u>GSM</u>

B. SAR Measurement Results

Lower Band SAR (Channel 512):

Frequency (MHz)	1710.200000
Relative permittivity (real part)	40.183169
Conductivity (S/m)	1.354074
Power drift (%)	0.310000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.6°C
ConvF:	5.21
Duty Cycle:	1:1

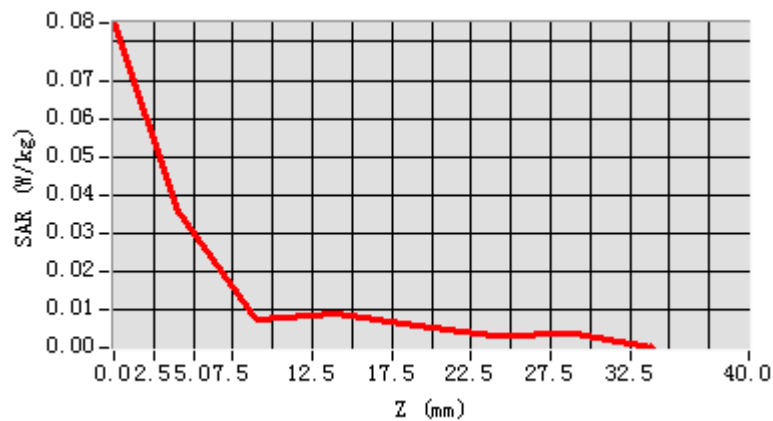
SURFACE SAR

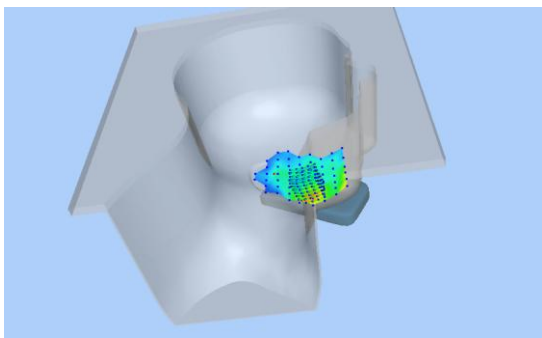
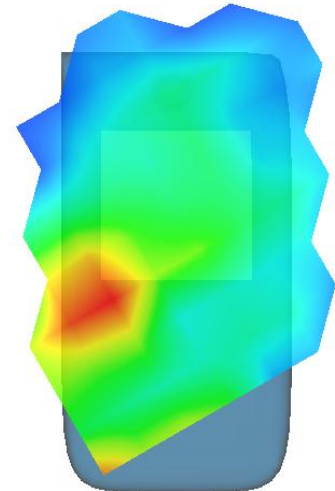
Maximum location: X=-50.00, Y=-55.00

SAR Peak: 0.07 W/kg

SAR 10g (W/Kg)	0.018847
SAR 1g (W/Kg)	0.028593

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0849	0.0359	0.0077	0.0092	0.0061	0.0034	0.0036



3D screen shot	Hot spot position
	

**MEASUREMENT 3**

Type: Phone measurement (Complete)

Area scan resolution: dx=15mm,dy=15mm

Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2018.06.19

Measurement duration: 15 minutes 30 seconds

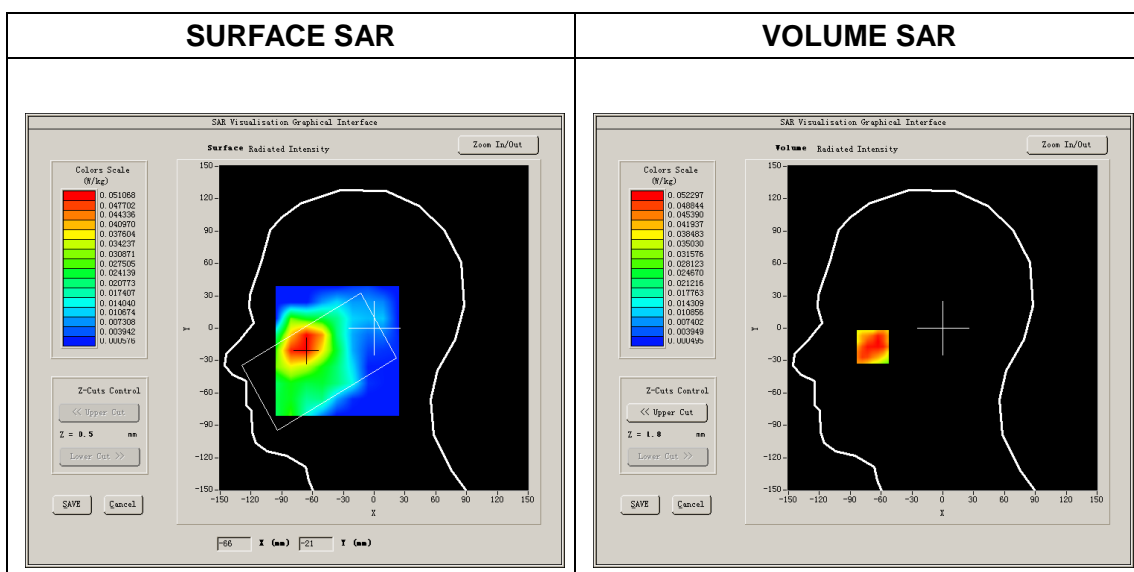
A. Experimental conditions.

<u>Phantom File</u>	<u>surf_sam_plan.txt</u>
<u>Phantom</u>	<u>Right head</u>
<u>Device Position</u>	<u>Cheek</u>
<u>Band</u>	<u>Band1 UMTS</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>RMC</u>

B. SAR Measurement Results

Middle Band SAR (Channel 9750):

Frequency (MHz)	1950.000000
Relative permittivity (real part)	40.100000
Conductivity (S/m)	1.390750
Power drift (%)	-0.830000
Ambient Temperature:	22.1°C
Liquid Temperature:	22.4°C
ConvF:	5.61
Duty Cycle:	1:1

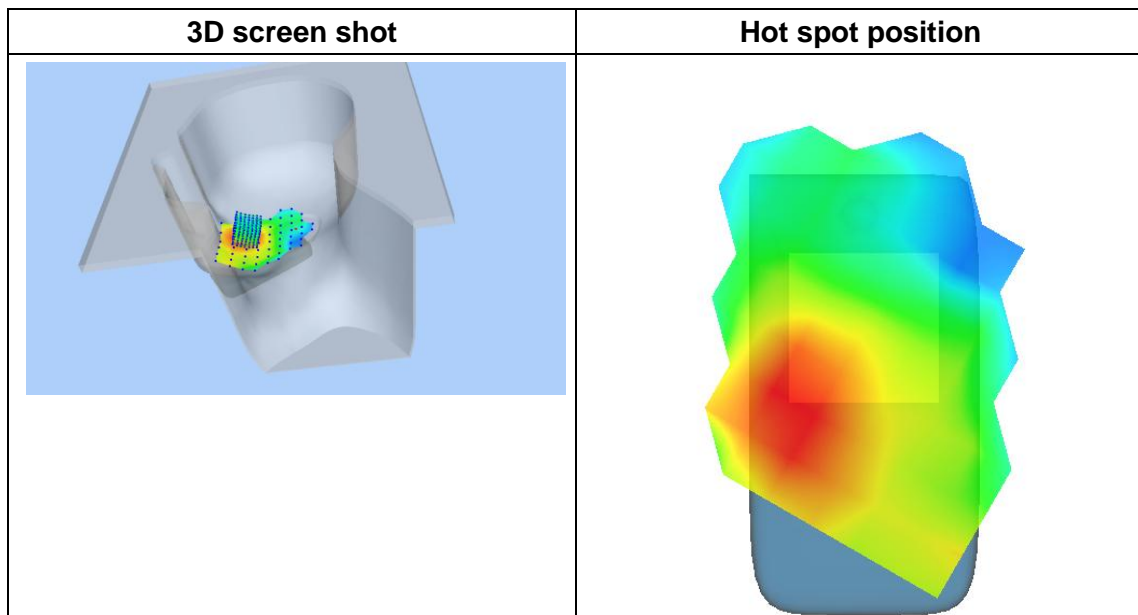
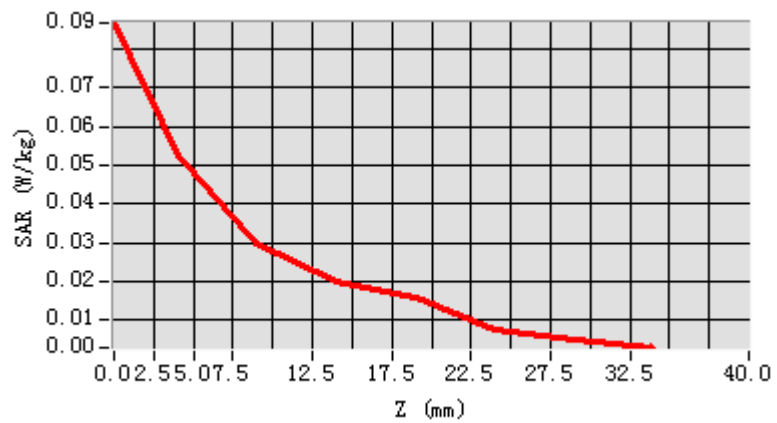


Maximum location: X=-68.00, Y=-16.00

SAR Peak: 0.08 W/kg

SAR 10g (W/Kg)	0.030051
SAR 1g (W/Kg)	0.049554

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0867	0.0523	0.0298	0.0201	0.0158	0.0076	0.0051



**MEASUREMENT 4**

Type: Phone measurement (Complete)

Area scan resolution: dx=15mm,dy=15mm

Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2018.06.23

Measurement duration: 15 minutes 4 seconds

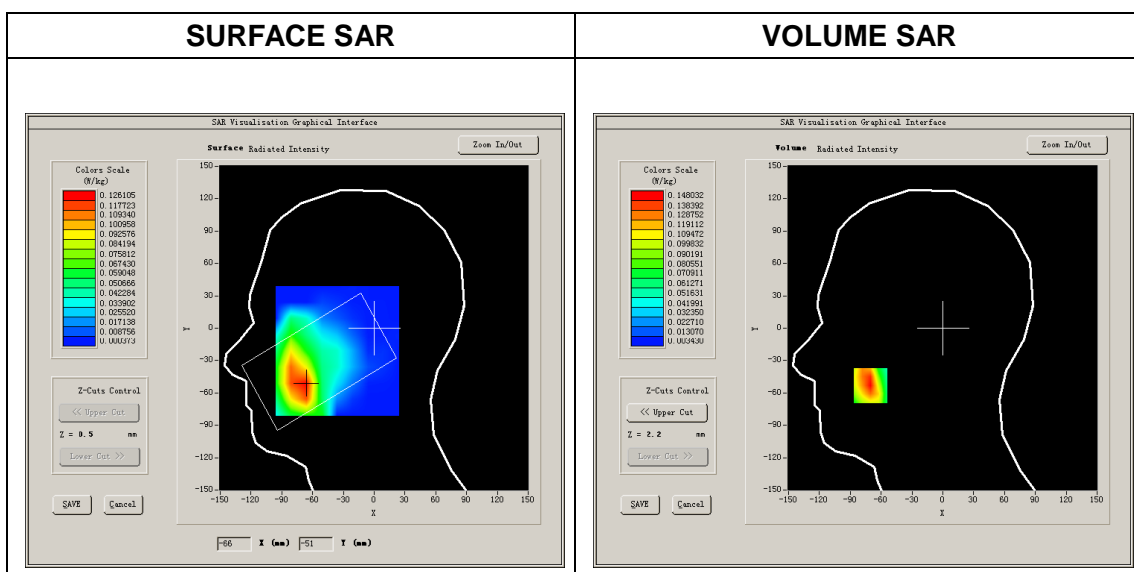
A. Experimental conditions.

Phantom File	<u>surf sam plan.txt</u>
Phantom	<u>Right head</u>
Device Position	<u>Cheek</u>
Band	<u>Band8_RMC900</u>
Channels	<u>Middle</u>
Signal	<u>RMC</u>

B. SAR Measurement Results

Middle Band SAR (Channel 2787):

Frequency (MHz)	897.400000
Relative permittivity (real part)	41.082367
Conductivity (S/m)	0.991625
Power drift (%)	1.070000
Ambient Temperature:	22.8°C
Liquid Temperature:	22.7°C
ConvF:	6.13
Duty Cycle:	1:1

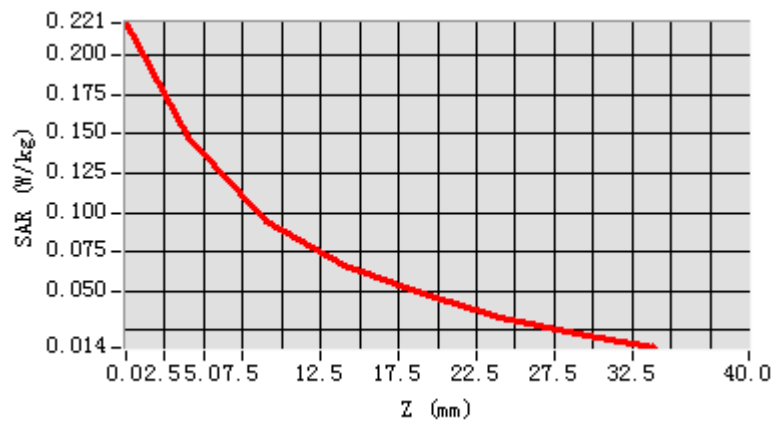


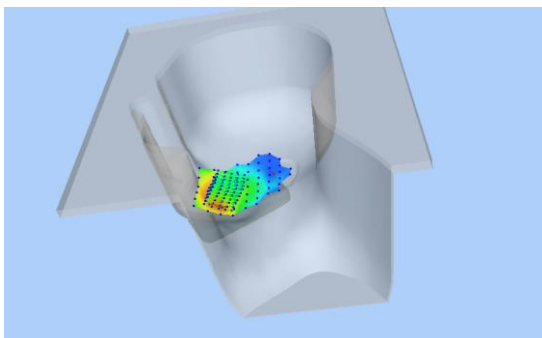
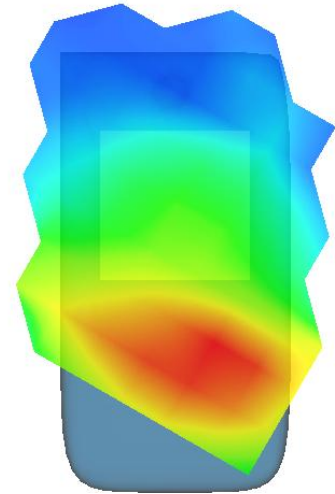
Maximum location: X=-70.00, Y=-53.00

SAR Peak: 0.22 W/kg

SAR 10g (W/Kg)	0.090103
SAR 1g (W/Kg)	0.141975

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.2207	0.1480	0.0941	0.0662	0.0487	0.0336	0.0227



3D screen shot	Hot spot position
	

**MEASUREMENT 5**

Type: Phone measurement (Complete)

Area scan resolution: dx=15mm,dy=15mm

Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2018.06.19

Measurement duration: 17 minutes 47 seconds

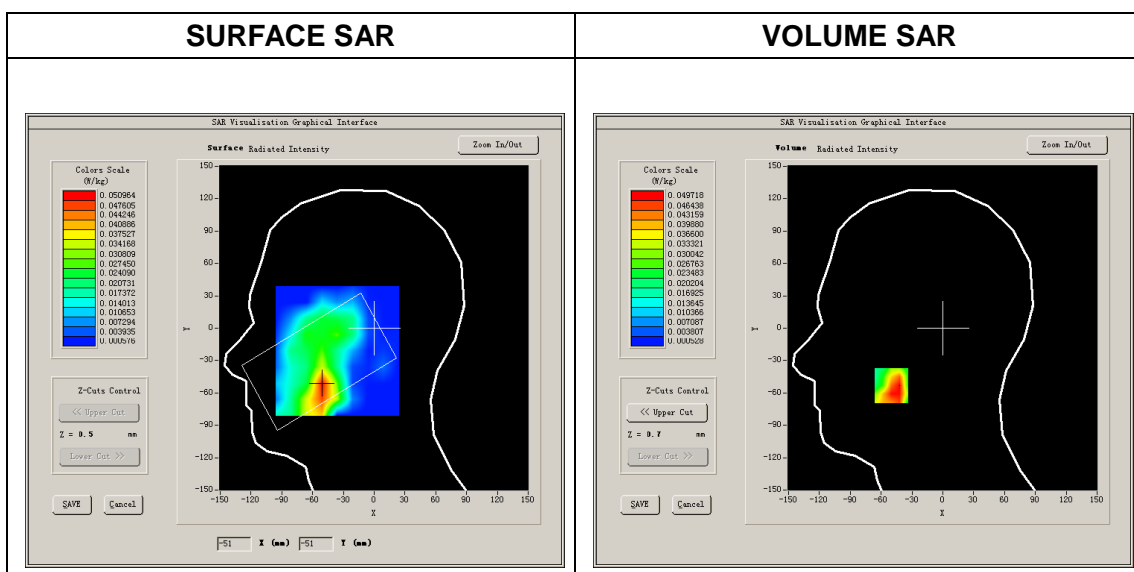
A. Experimental conditions.

Phantom File	<u>surf_sam_plan.txt</u>
Phantom	<u>Left head</u>
Device Position	<u>Cheek</u>
Band	<u>LTE band 1</u>
Channels	<u>High</u>
Signal	<u>LTE</u>

B. SAR Measurement Results

Higher Band SAR (Channel 18500):

Frequency (MHz)	1970.000000
Relative permittivity (real part)	39.992421
Conductivity (S/m)	1.407281
Power drift (%)	-0.830000
Ambient Temperature:	22.1°C
Liquid Temperature:	22.4°C
ConvF:	5.61
Duty Cycle:	1:1

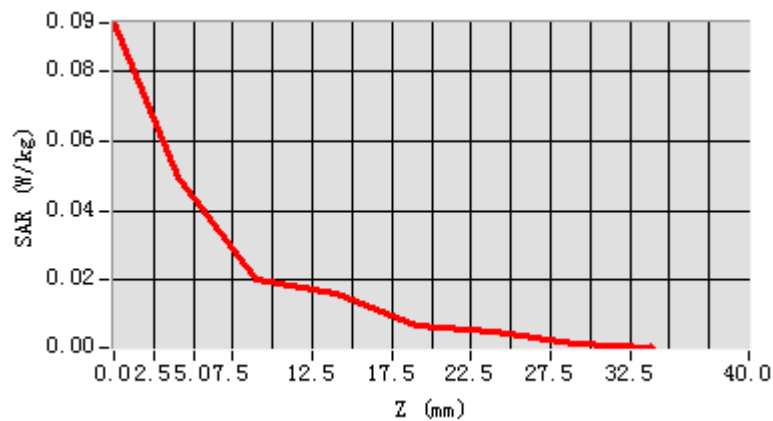


Maximum location: X=-50.00, Y=-53.00

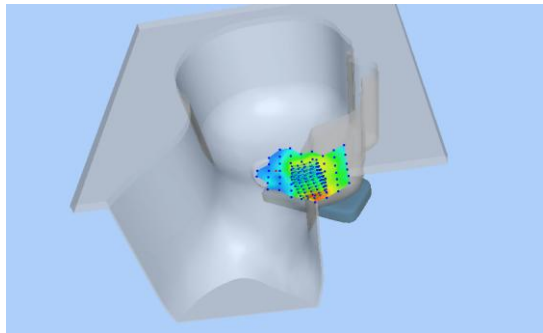
SAR Peak: 0.09 W/kg

SAR 10g (W/Kg)	0.026214
SAR 1g (W/Kg)	0.050581

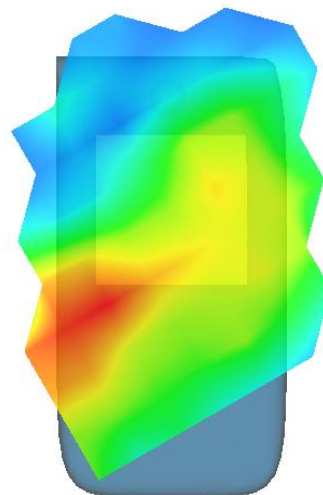
Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0938	0.0497	0.0202	0.0161	0.0067	0.0050	0.0020



3D screen shot



Hot spot position



**MEASUREMENT 6**

Type: Phone measurement (Complete)

Area scan resolution: dx=15mm,dy=15mm

Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2018.06.19

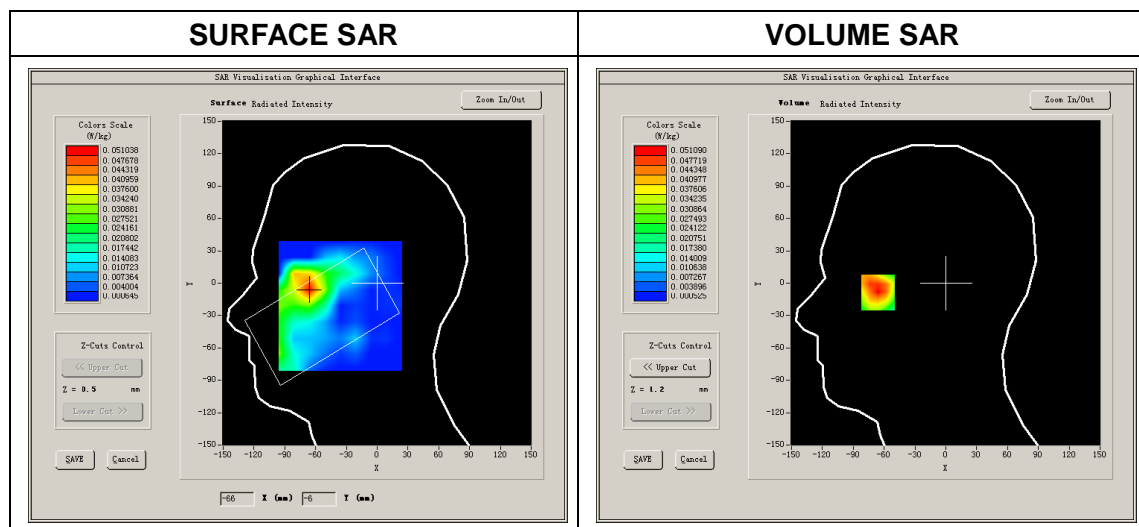
Measurement duration: 16 minutes 3 seconds

A. Experimental conditions.

Phantom File	<u>surf_sam_plan.txt</u>
Phantom	<u>Right head</u>
Device Position	<u>Cheek</u>
Band	<u>LTE band 3</u>
Channels	<u>Low</u>
Signal	<u>LTE</u>

B. SAR Measurement ResultsLower Band SAR (Channel 19300):

Frequency (MHz)	1720.000000
Relative permittivity (real part)	40.127274
Conductivity (S/m)	1.353935
Power drift (%)	0.310000
Ambient Temperature:	22.3°C
Liquid Temperature:	22.6°C
ConvF:	5.21
Duty Cycle:	1:1

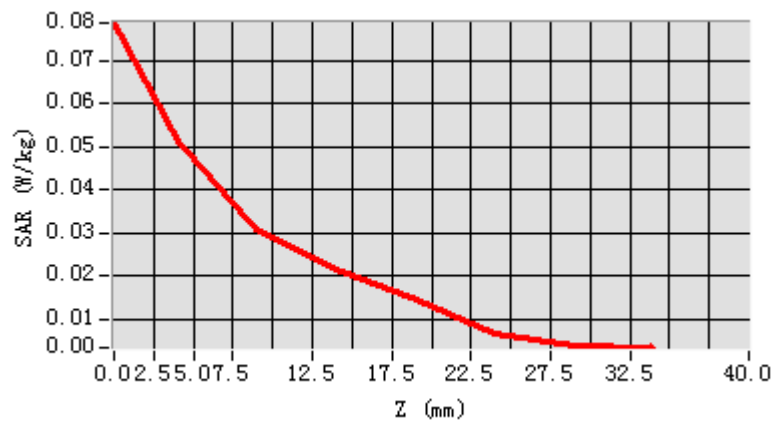


Maximum location: X=-66.00, Y=-5.00

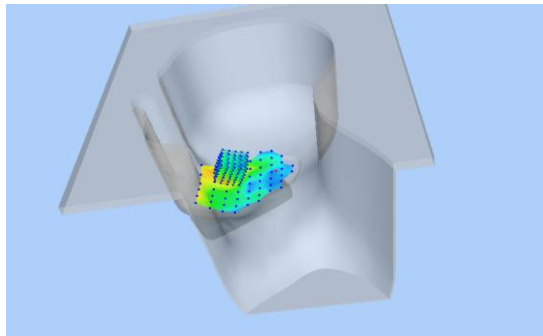
SAR Peak: 0.08 W/kg

SAR 10g (W/Kg)	0.030499
SAR 1g (W/Kg)	0.050979

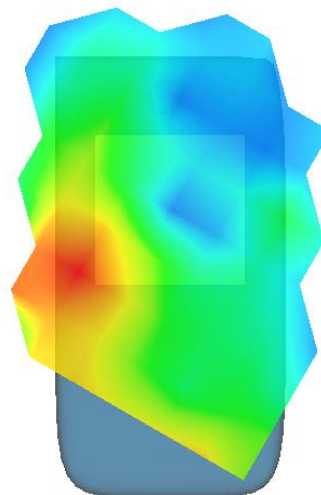
Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0787	0.0511	0.0310	0.0214	0.0143	0.0064	0.0037



3D screen shot



Hot spot position



**MEASUREMENT 7**

Type: Phone measurement (Complete)

Area scan resolution: dx=15mm,dy=15mm

Zoom scan resolution: dx=5mm, dy=5mm, dz=5mm

Date of measurement: 2018.06.21

Measurement duration: 17 minutes 50 seconds

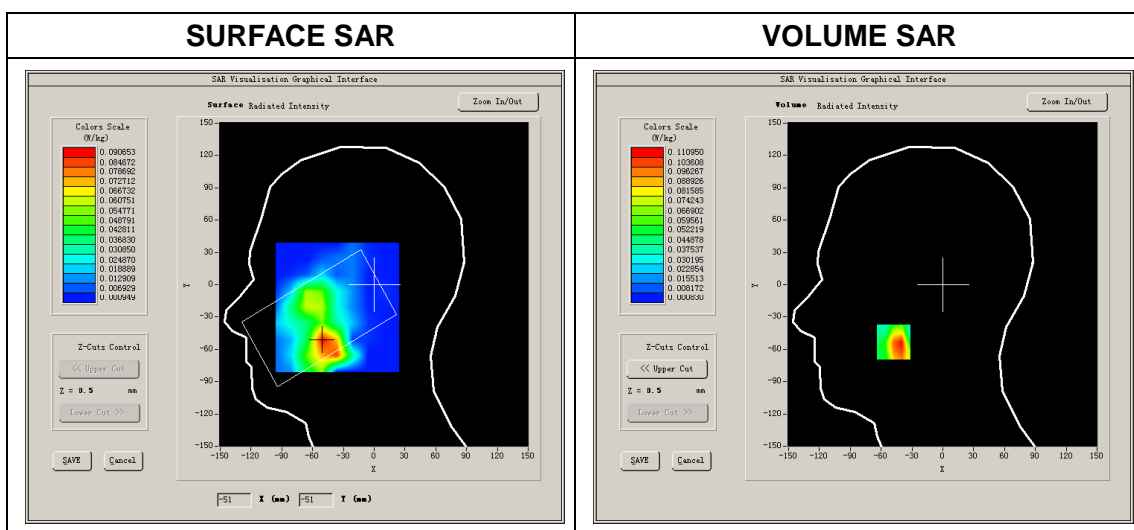
A. Experimental conditions.

Phantom File	<u>surf_sam_plan.txt</u>
Phantom	<u>Left head</u>
Device Position	<u>Cheek</u>
Band	<u>LTE band 7</u>
Channels	<u>Middle</u>
Signal	<u>LTE</u>

B. SAR Measurement Results

Middle Band SAR (Channel 21100):

Frequency (MHz)	2535.000000
Relative permittivity (real part)	39.861428
Conductivity (S/m)	1.856062
Power Drift (%)	1.080000
Ambient Temperature:	22.0°C
Liquid Temperature:	21.8°C
ConvF:	4.82
Duty Cycle:	1:1

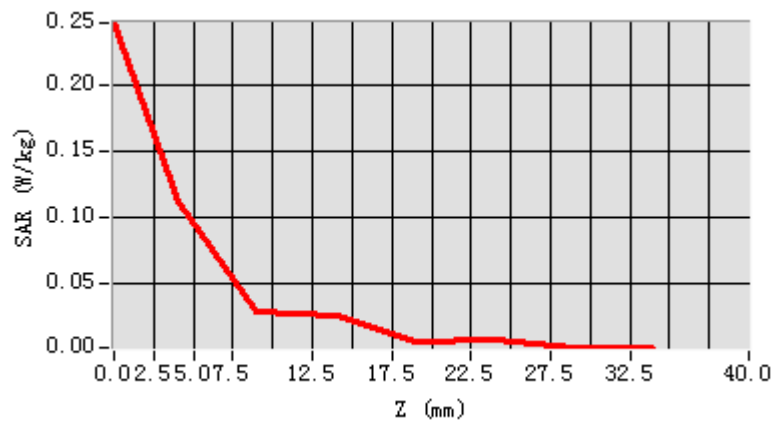


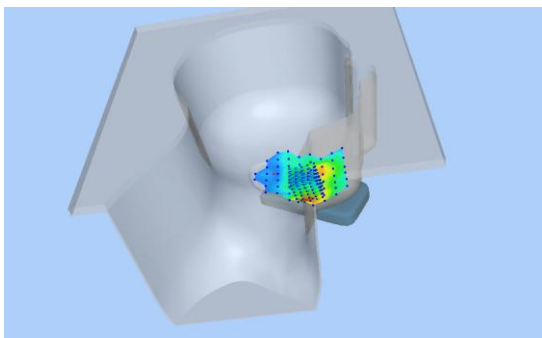
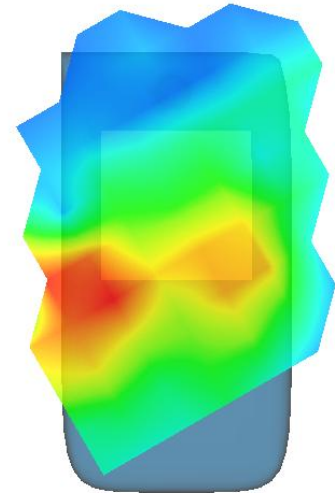
Maximum location: X=-48.00, Y=-53.00

SAR Peak: 0.19 W/kg

SAR 10g (W/Kg)	0.048420
SAR 1g (W/Kg)	0.103818

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.2463	0.1109	0.0284	0.0246	0.0059	0.0075	0.0011



3D screen shot	Hot spot position
	

**MEASUREMENT 8**

Type: Phone measurement (Complete)

Area scan resolution: dx=15mm,dy=15mm

Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2018.06.23

Measurement duration: 15 minutes 4 seconds

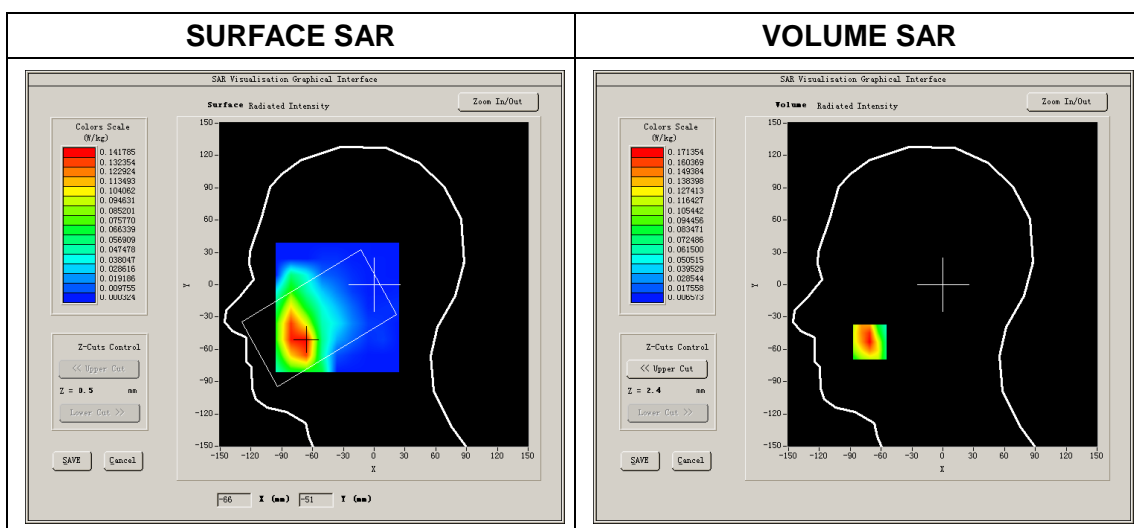
A. Experimental conditions.

Phantom File	<u>surf sam plan.txt</u>
Phantom	<u>Right head</u>
Device Position	<u>Cheek</u>
Band	<u>LTE band 8</u>
Channels	<u>Middle</u>
Signal	<u>LTE</u>

B. SAR Measurement Results

Middle Band SAR (Channel 21625):

Frequency (MHz)	897.000000
Relative permittivity (real part)	41.089166
Conductivity (S/m)	0.990614
Power drift (%)	1.070000
Ambient Temperature:	22.8°C
Liquid Temperature:	22.7°C
ConvF:	6.13
Duty Cycle:	1:1

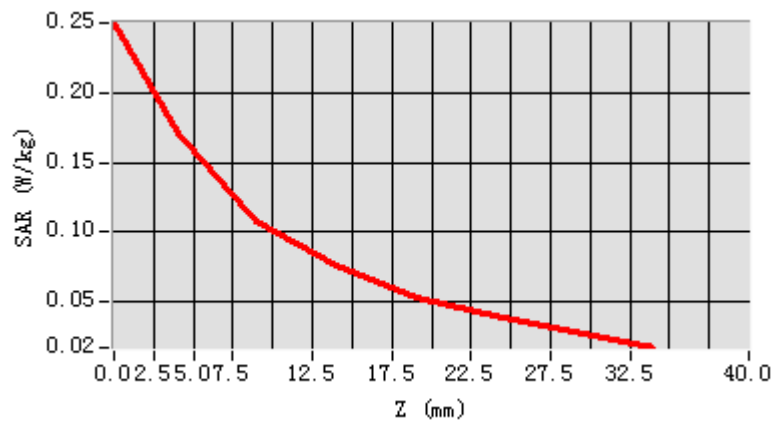


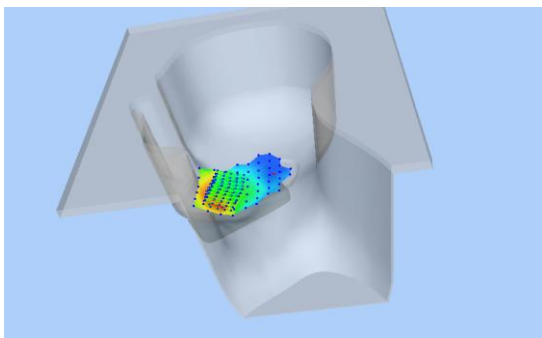
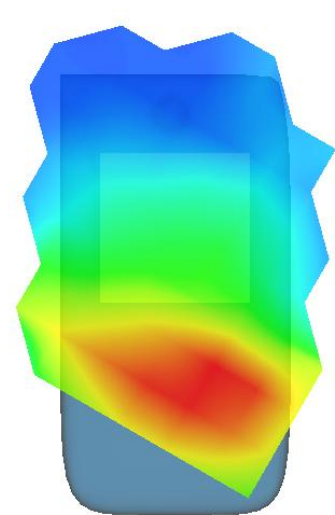
Maximum location: X=-71.00, Y=-53.00

SAR Peak: 0.25 W/kg

SAR 10g (W/Kg)	0.102642
SAR 1g (W/Kg)	0.162448

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.2506	0.1714	0.1079	0.0761	0.0527	0.0389	0.0280



3D screen shot	Hot spot position
	

**MEASUREMENT 9**

Type: Phone measurement (Complete)

Area scan resolution: dx=15mm,dy=15mm

Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2018.06.23

Measurement duration: 16 minutes 4 seconds

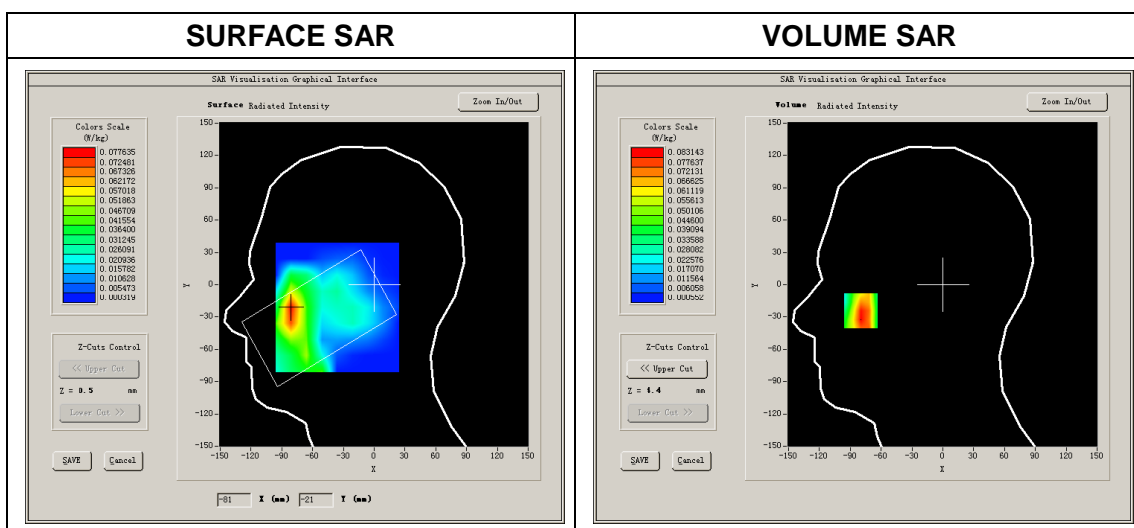
A. Experimental conditions.

Phantom File	<u>surf sam plan.txt</u>
Phantom	<u>Left head</u>
Device Position	<u>Cheek</u>
Band	<u>LTE band 20</u>
Channels	<u>High</u>
Signal	<u>LTE</u>

B. SAR Measurement Results

Higher Band SAR (Channel 24350):

Frequency (MHz)	852.000000
Relative permittivity (real part)	41.19296
Conductivity (S/m)	0.901714
Power drift (%)	1.070000
Ambient Temperature:	22.6°C
Liquid Temperature:	21.2°C
ConvF:	6.13
Duty Cycle:	1:1

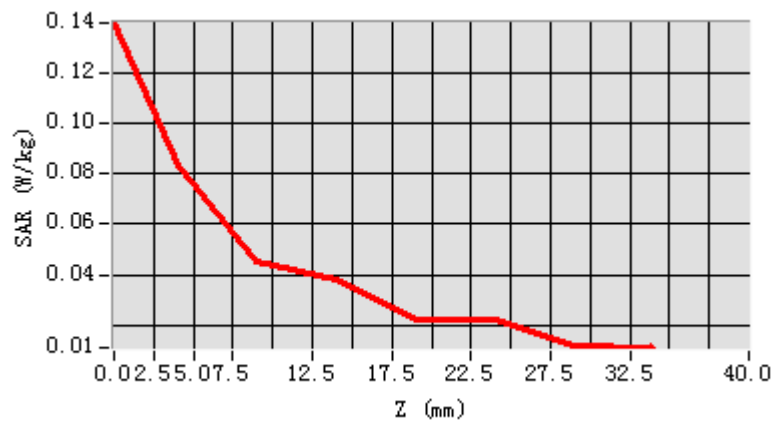


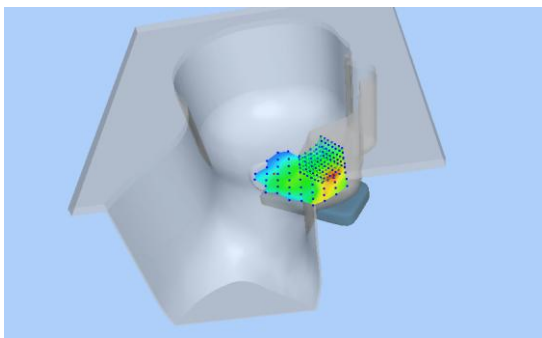
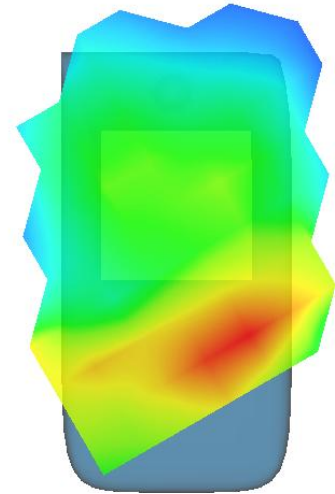
Maximum location: X=-80.00, Y=-22.00

SAR Peak: 0.12 W/kg

SAR 10g (W/Kg)	0.050031
SAR 1g (W/Kg)	0.079919

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.1394	0.0831	0.0455	0.0379	0.0220	0.0223	0.0119



3D screen shot	Hot spot position
	

**MEASUREMENT 10**

Type: Phone measurement (Complete)

Area scan resolution: dx=15mm,dy=15mm

Zoom scan resolution: dx=5mm, dy=5mm, dz=5mm

Date of measurement: 2018.06.21

Measurement duration: 15 minutes 42 seconds

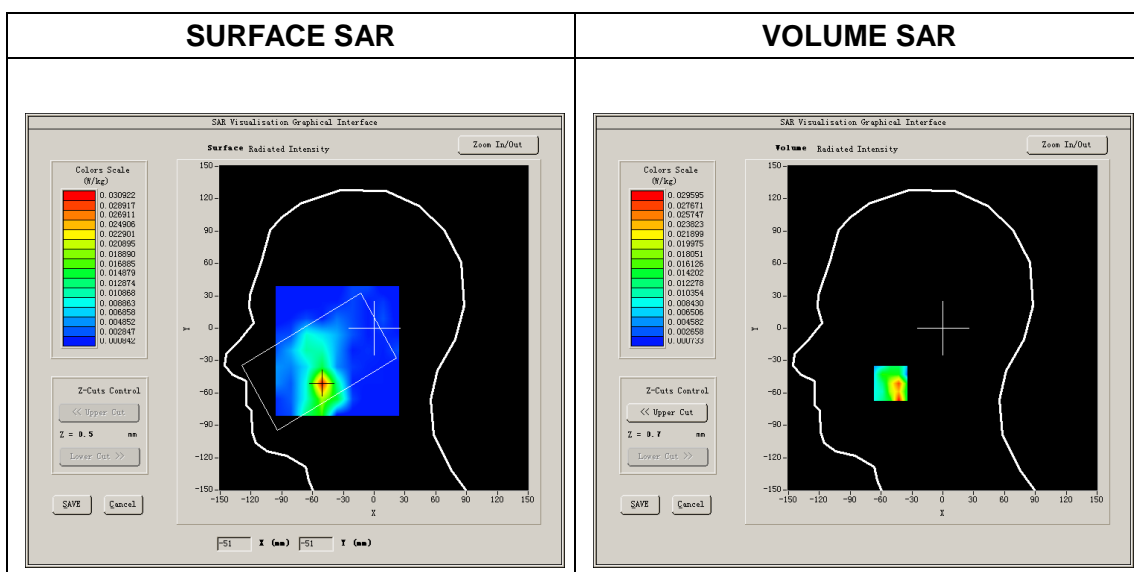
A. Experimental conditions.

Phantom File	<u>surf_sam_plan.txt</u>
Phantom	<u>Left head</u>
Device Position	<u>Cheek</u>
Band	<u>LTE band 40</u>
Channels	<u>High</u>
Signal	<u>LTE</u>

B. SAR Measurement Results

Higher Band SAR (Channel 39550):

Frequency (MHz)	2390.000000
Relative permittivity (real part)	39.304267
Conductivity (S/m)	1.815264
Power Drift (%)	1.080000
Ambient Temperature:	22.0°C
Liquid Temperature:	21.8°C
ConvF:	4.82
Duty Cycle:	1:1

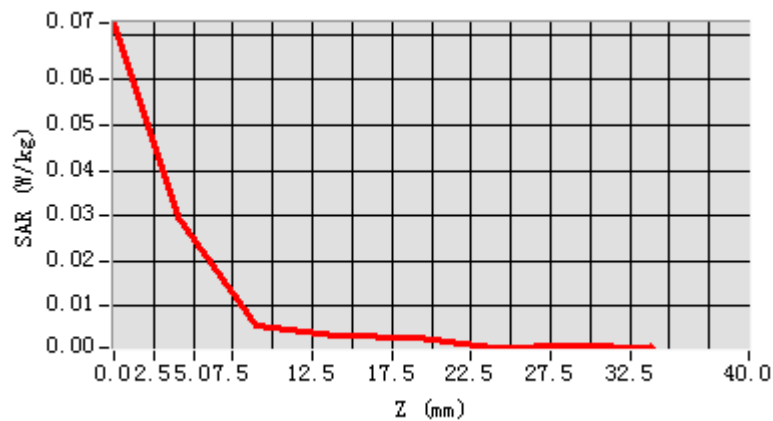


Maximum location: X=-51.00, Y=-51.00

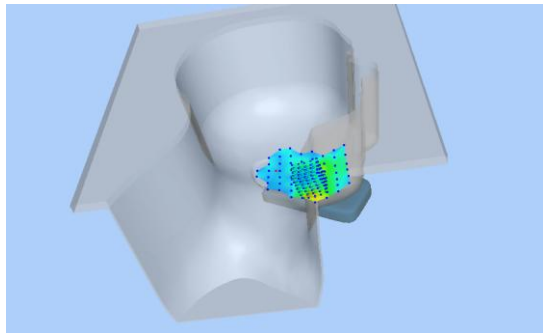
SAR Peak: 0.06 W/kg

SAR 10g (W/Kg)	0.010708
SAR 1g (W/Kg)	0.024503

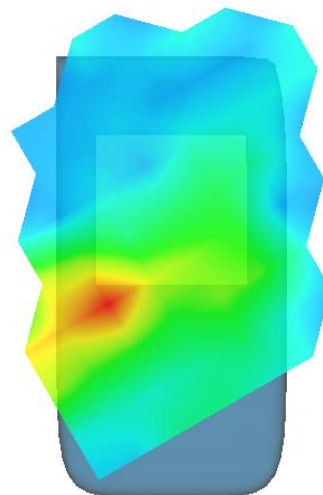
Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0726	0.0296	0.0057	0.0034	0.0032	0.0009	0.0013



3D screen shot



Hot spot position



**MEASUREMENT 11**

Type: Phone measurement (Complete)

Area scan resolution: dx=15mm,dy=15mm

Zoom scan resolution: dx=5mm, dy=5mm, dz=5mm

Date of measurement: 2018.06.21

Measurement duration: 20 minutes 42 seconds

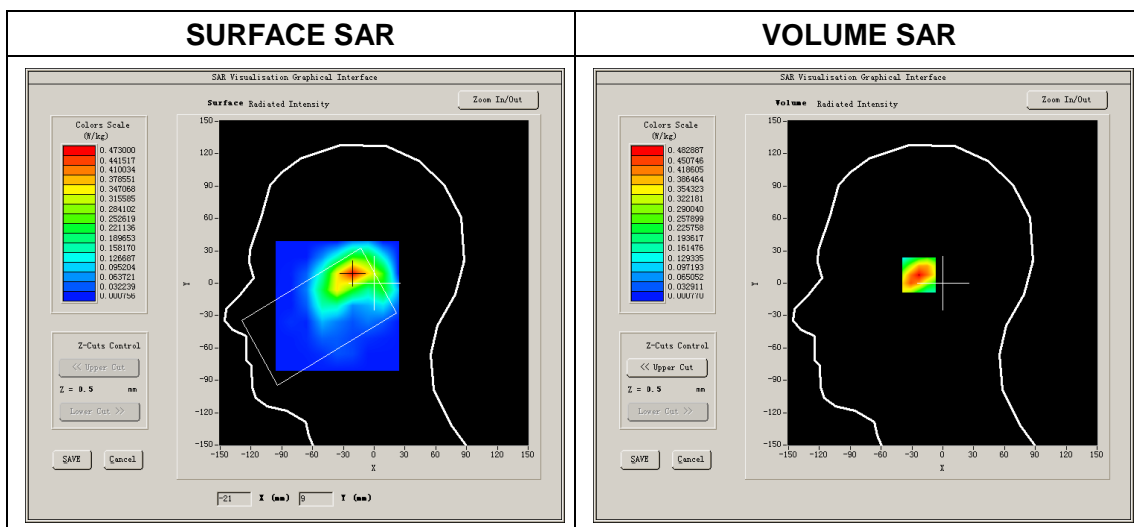
A. Experimental conditions.

Phantom File	<u>surf_sam_plan.txt</u>
Phantom	<u>Left head</u>
Device Position	<u>Cheek</u>
Band	<u>IEEE 802.11b ISM</u>
Channels	<u>Middle</u>
Signal	<u>DSSS</u>

B. SAR Measurement Results

Middle Band SAR (Channel 7):

Frequency (MHz)	2442.000000
Relative permittivity (real part)	39.291429
Conductivity (S/m)	1.831025
Power Drift (%)	1.080000
Ambient Temperature:	22.0°C
Liquid Temperature:	21.8°C
ConvF:	4.82
Duty Cycle:	1:1

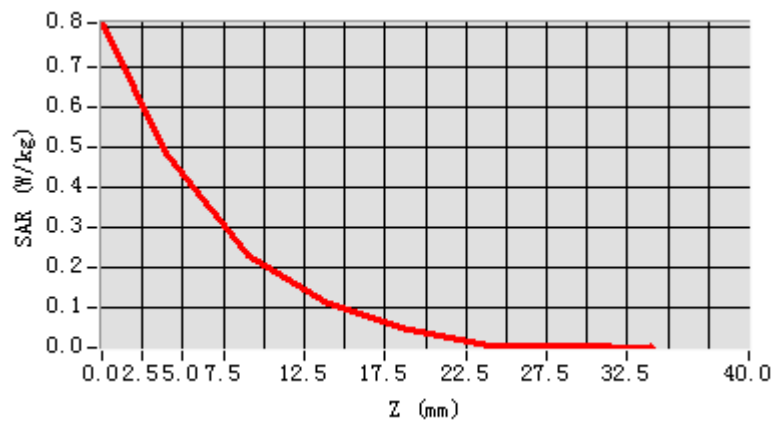


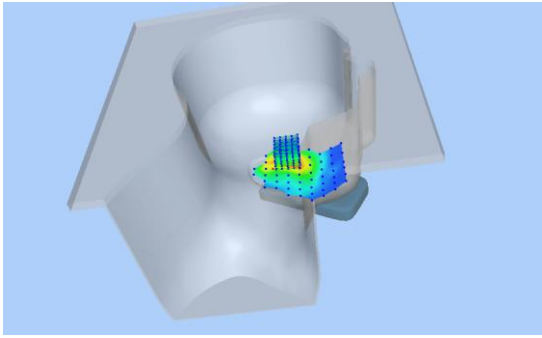
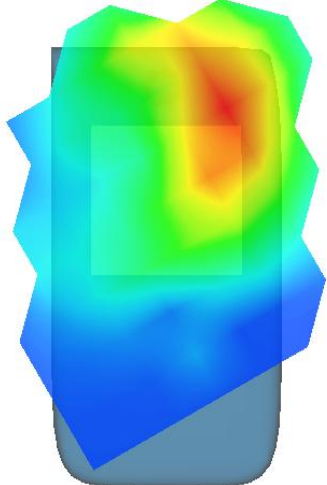
Maximum location: X=-21.00, Y=9.00

SAR Peak: 0.82 W/kg

SAR 10g (W/Kg)	0.220863
SAR 1g (W/Kg)	0.457398

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.8088	0.4829	0.2312	0.1111	0.0435	0.0083	0.0037



3D screen shot	Hot spot position
	

**MEASUREMENT 12**

Type: Phone measurement (Complete)

Area scan resolution: dx=10mm,dy=10mm

Zoom scan resolution: dx=4mm, dy=4mm, dz=2mm

Date of measurement: 2018.06.21

Measurement duration: 25 minutes 51 seconds

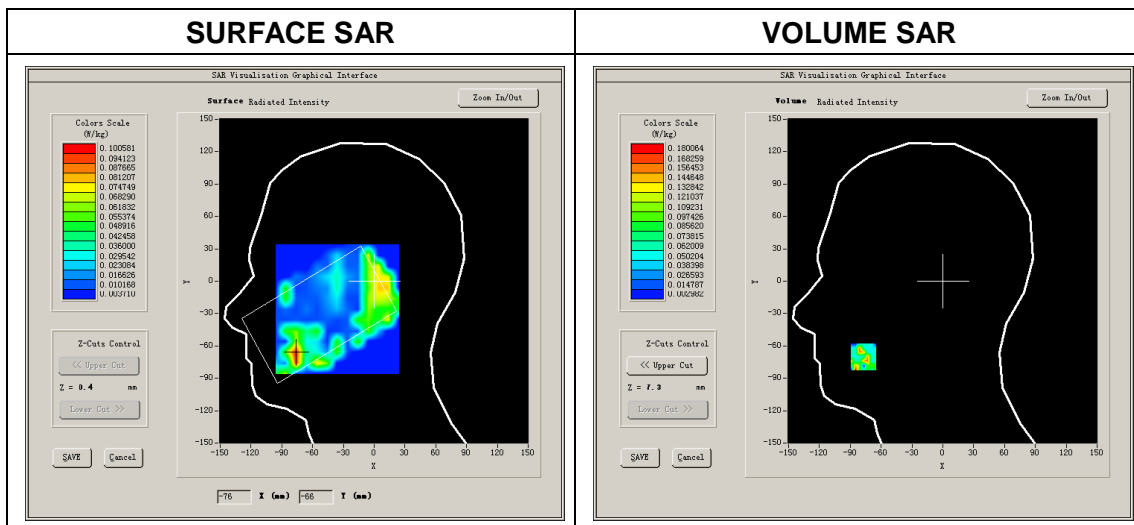
A. Experimental conditions.

Phantom File	<u>surf_sam_plan.txt</u>
Phantom	<u>Left head</u>
Device Position	<u>Cheek</u>
Band	<u>IEEE 802.11a U-NII</u>
Channels	<u>Middle</u>
Signal	<u>OFMD</u>

B. SAR Measurement Results

Middle Band SAR (Channel 54):

Frequency (MHz)	5270.000000
Relative permittivity (real part)	35.930000
Conductivity (S/m)	4.729679
Power Drift (%)	2.310000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	21.61
Duty Cycle:	1:1

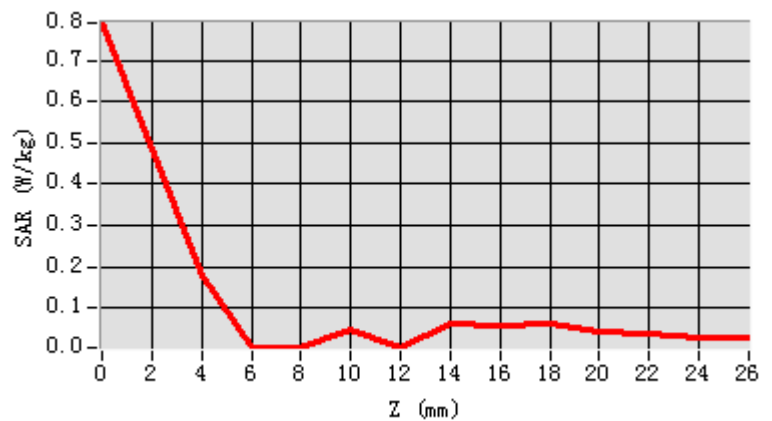


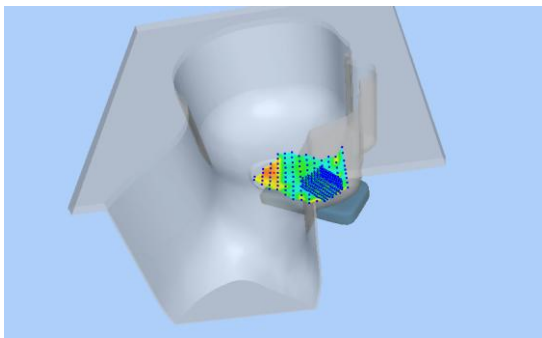
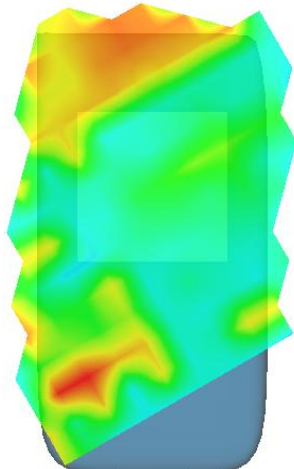
Maximum location: X=-77.00, Y=-70.00

SAR Peak: 0.82 W/kg

SAR 10g (W/Kg)	0.081995
SAR 1g (W/Kg)	0.149622

Z (mm)	0.00	4.00	6.00	8.00	10.0	12.0	14.0	16.0	18.0	20.0	22.0	24.0
					0	0	0	0	0	0	0	0
SAR (W/Kg)	0.7901	0.1801	0.0038	0.0062	0.0474	0.0046	0.0637	0.0554	0.0636	0.0423	0.0389	0.0264



3D screen shot	Hot spot position
	

**MEASUREMENT 13**

Type: Phone measurement (Complete)

Area scan resolution: dx=10mm,dy=10mm

Zoom scan resolution: dx=4mm, dy=4mm, dz=2mm

Date of measurement: 2018.06.21

Measurement duration: 25 minutes 18 seconds

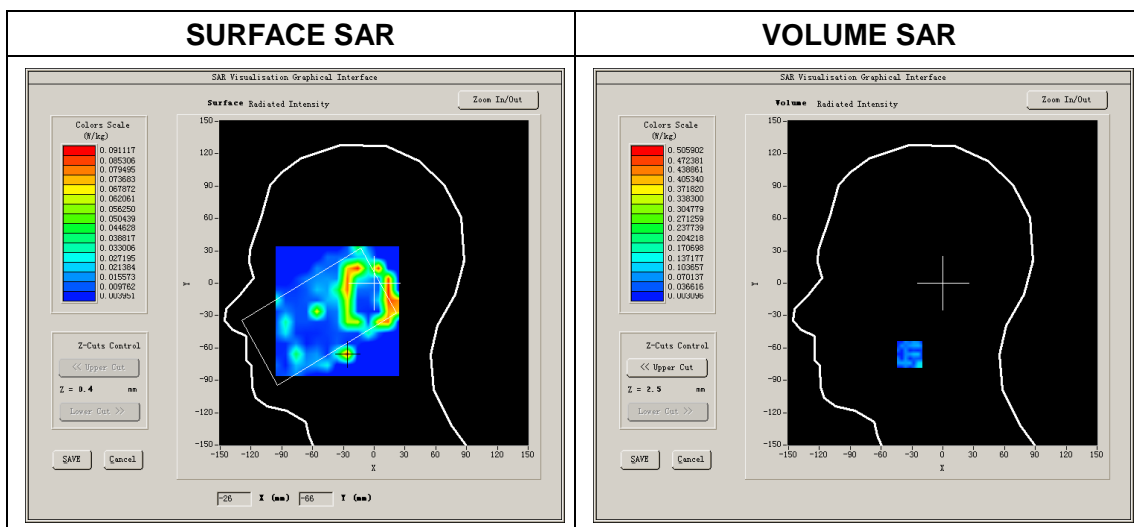
A. Experimental conditions.

Phantom File	<u>surf_sam_plan.txt</u>
Phantom	<u>Left head</u>
Device Position	<u>Cheek</u>
Band	<u>IEEE 802.11a U-NII</u>
Channels	<u>Middle</u>
Signal	<u>OFMD</u>

B. SAR Measurement Results

Middle Band SAR (Channel 118):

Frequency (MHz)	5590.000000
Relative permittivity (real part)	35.570133
Conductivity (S/m)	5.030254
Power Drift (%)	1.080000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	22.92
Duty Cycle:	1:1

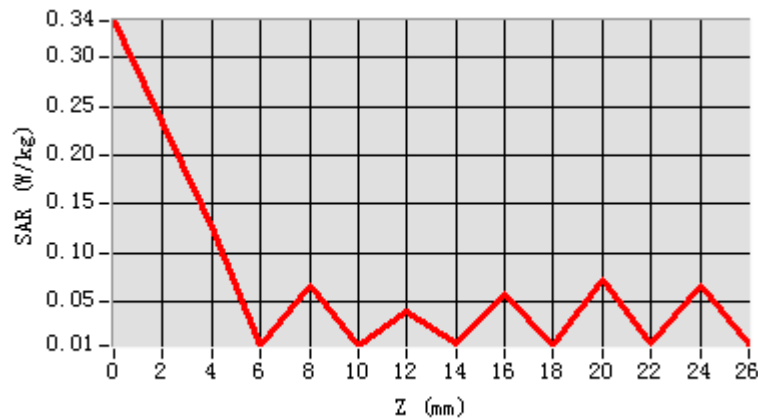


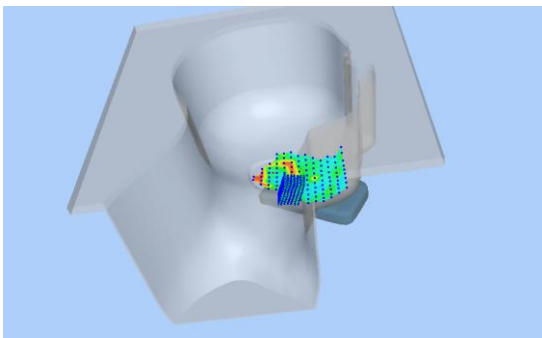
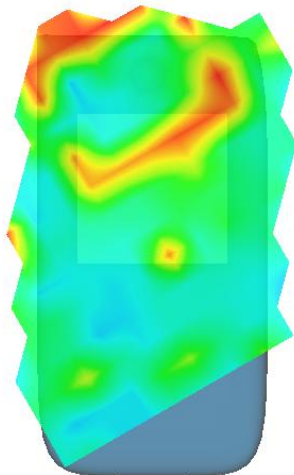
Maximum location: X=-21.00, Y=-66.00

SAR Peak: 0.46 W/kg

SAR 10g (W/Kg)	0.044077
SAR 1g (W/Kg)	0.102152

Z (mm)	0.00	4.00	6.00	8.00	10.0	12.0	14.0	16.0	18.0	20.0	22.0	24.0
					0	0	0	0	0	0	0	0
SAR (W/Kg)	0.3378	0.1272	0.0051	0.0666	0.0053	0.0390	0.0068	0.0592	0.0055	0.0735	0.0081	0.0668



3D screen shot	Hot spot position
	

**MEASUREMENT 14**

Type: Phone measurement (Complete)

Area scan resolution: dx=10mm,dy=10mm

Zoom scan resolution: dx=4mm, dy=4mm, dz=0mm

Date of measurement: 2018.06.21

Measurement duration: 25 minutes 57 seconds

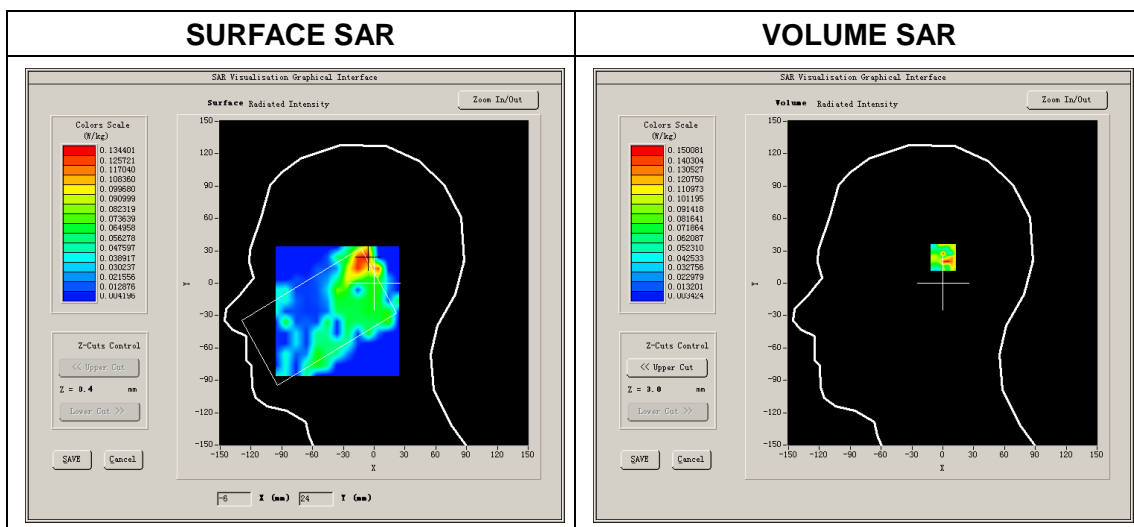
A. Experimental conditions.

Phantom File	<u>surf_sam_plan.txt</u>
Phantom	<u>Left head</u>
Device Position	<u>Cheek</u>
Band	<u>IEEE 802.11a U-NII</u>
Channels	<u>Middle</u>
Signal	<u>OFMD</u>

B. SAR Measurement Results

Middle Band SAR (Channel 161):

Frequency (MHz)	5805.000000
Relative permittivity (real part)	35.414999
Conductivity (S/m)	5.260503
Power Drift (%)	1.260000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	22.42
Duty Cycle:	1:1

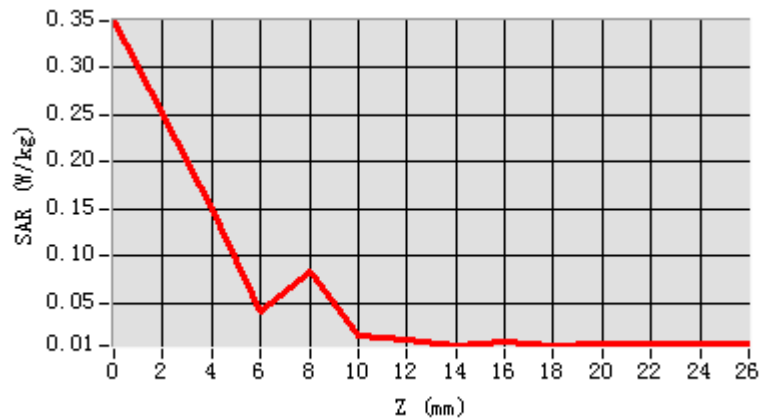


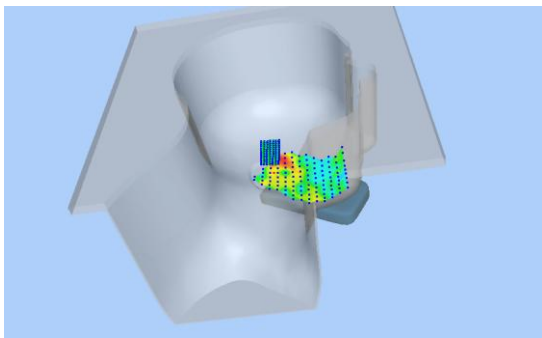
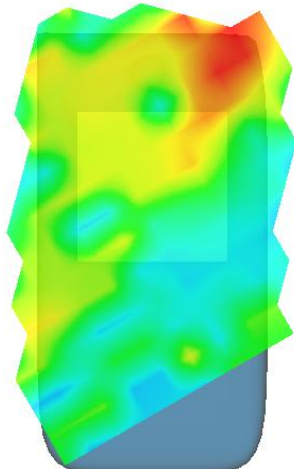
Maximum location: X=5.00, Y=25.00

SAR Peak: 0.46 W/kg

SAR 10g (W/Kg)	0.054251
SAR 1g (W/Kg)	0.092380

Z (mm)	0.00	4.00	6.00	8.00	10.0	12.0	14.0	16.0	18.0	20.0	22.0	24.0
					0	0	0	0	0	0	0	0
SAR (W/Kg)	0.3497	0.1501	0.0421	0.0840	0.0159	0.0106	0.0052	0.0097	0.0056	0.0070	0.0070	0.0068



3D screen shot	Hot spot position
	

**MEASUREMENT 15**

Type: Phone measurement (Complete)

Area scan resolution: dx=15mm,dy=15mm

Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2018.06.23

Measurement duration: 16 minutes 7 seconds

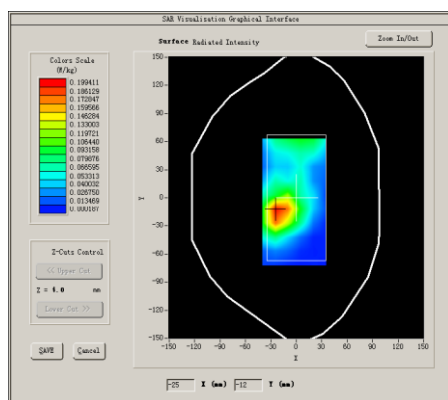
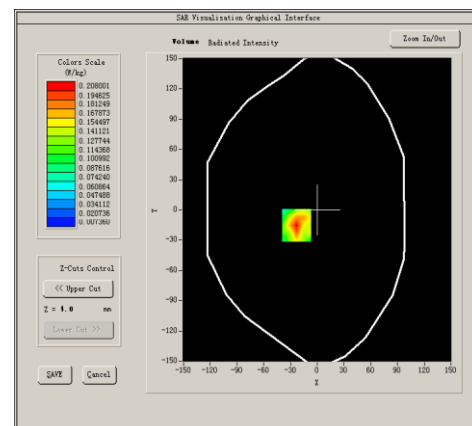
A. Experimental conditions.

<u>Phantom File</u>	<u>surf_sam_plan.txt</u>
<u>Phantom</u>	<u>Flat</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>CUSTOM (GPRS900 4Tx)</u>
<u>Channels</u>	<u>High</u>
<u>Signal</u>	<u>GPRS</u>

B. SAR Measurement Results

High Band SAR (Channel 124):

Frequency (MHz)	914.799988
Relative permittivity (real part)	41.473091
Conductivity (S/m)	0.979797
Power Drift (%)	1.260000
Ambient Temperature:	22.8℃
Liquid Temperature:	22.7℃
ConvF:	6.13
Duty Cycle:	1:2.08

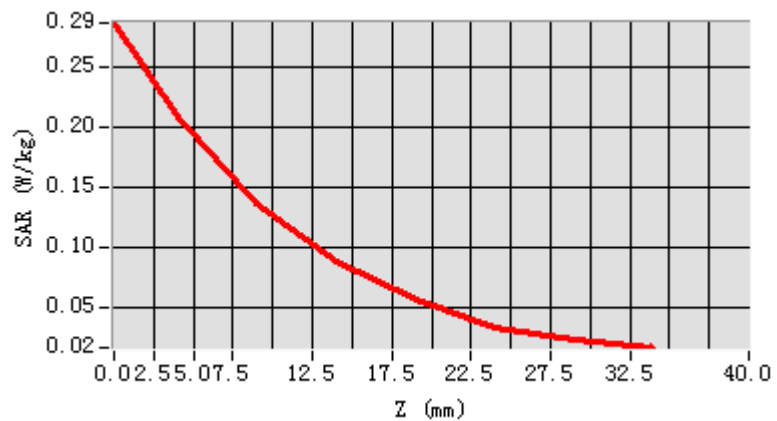
SURFACE SAR**VOLUME SAR**

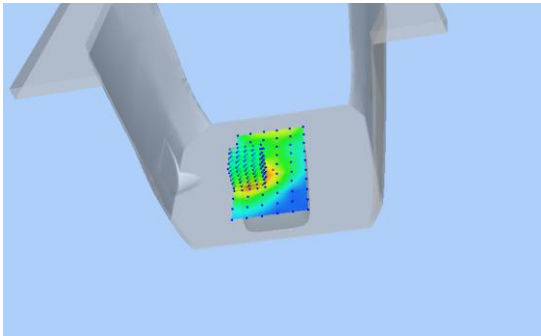
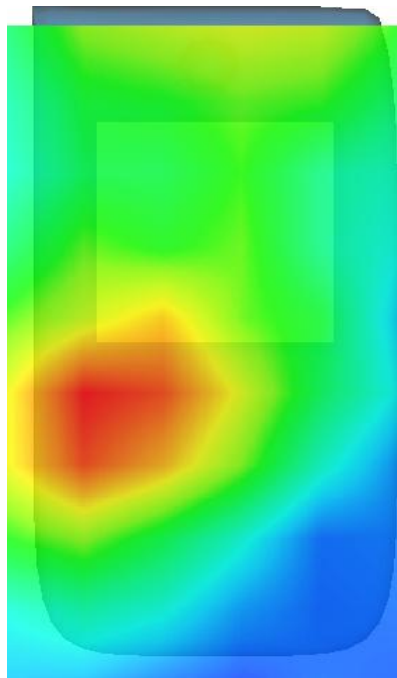
Maximum location: X=-23.00, Y=-15.00

SAR Peak: 0.29 W/kg

SAR 10g (W/Kg)	0.112143
SAR 1g (W/Kg)	0.189280

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.2866	0.2080	0.1364	0.0883	0.0564	0.0320	0.0219



3D screen shot	Hot spot position
	

**MEASUREMENT 16**

Type: Phone measurement (Complete)

Area scan resolution: dx=15mm,dy=15mm

Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2018.06.19

Measurement duration: 16 minutes 5 seconds

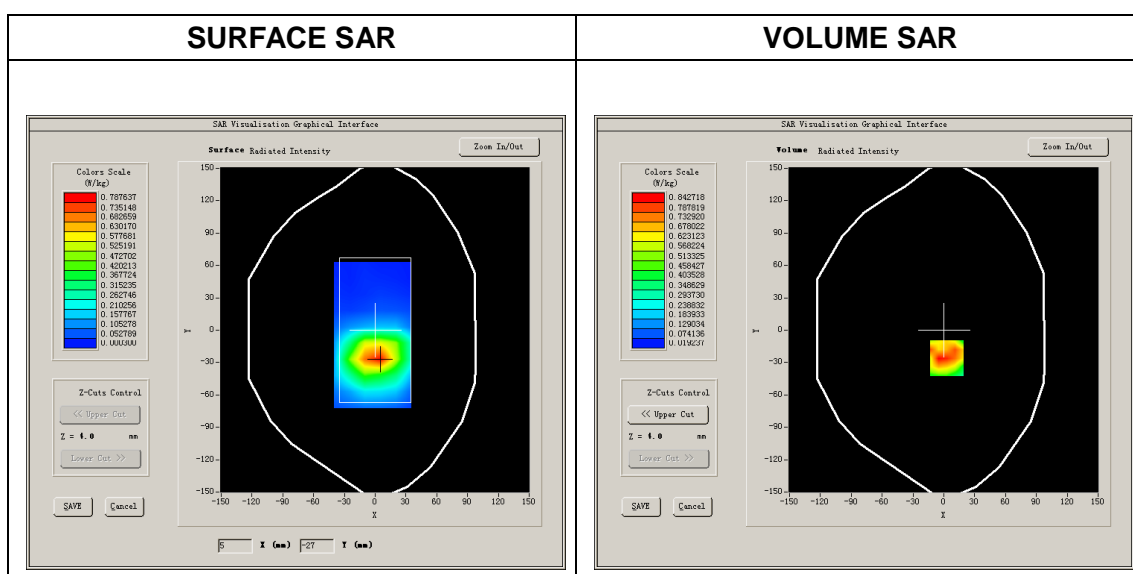
A. Experimental conditions.

Phantom File	<u>surf_sam_plan.txt</u>
Phantom	<u>Flat</u>
Device Position	<u>Body</u>
Band	<u>CUSTOM (GPRS1800_4Tx)</u>
Channels	<u>Low</u>
Signal	<u>GPRS</u>

B. SAR Measurement Results

Low Band SAR (Channel 512):

Frequency (MHz)	1710.000000
Relative permittivity (real part)	40.183169
Conductivity (S/m)	1.354074
Power Drift (%)	1.260000
Ambient Temperature:	22.3C
Liquid Temperature:	22.6C
ConvF:	5.21
Duty Cycle:	1:2.08

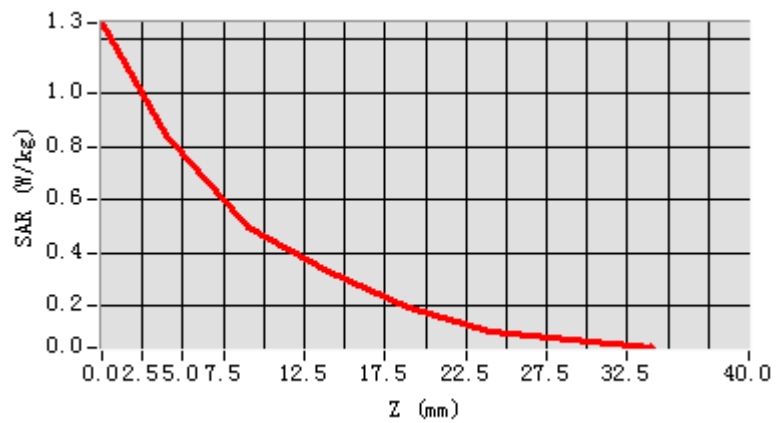


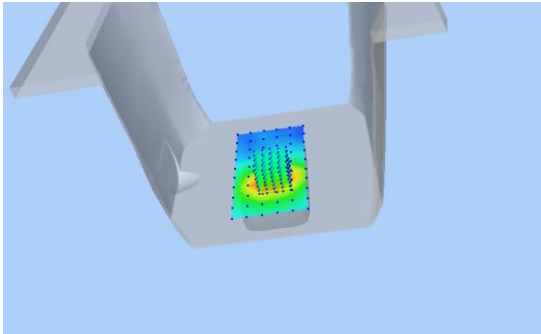
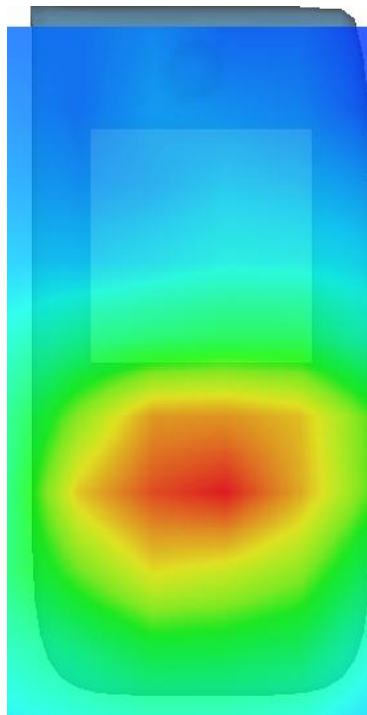
Maximum location: X=3.00, Y=-26.00

SAR Peak: 1.43 W/kg

SAR 10g (W/Kg)	0.459470
SAR 1g (W/Kg)	0.817303

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	1.2635	0.8427	0.4969	0.3297	0.1959	0.1068	0.0749



3D screen shot	Hot spot position
	



MEASUREMENT 17

Type: Phone measurement (Complete)

Area scan resolution: dx=15mm,dy=15mm

Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2018.06.19

Measurement duration: 16 minutes 49 seconds

A. Experimental conditions.

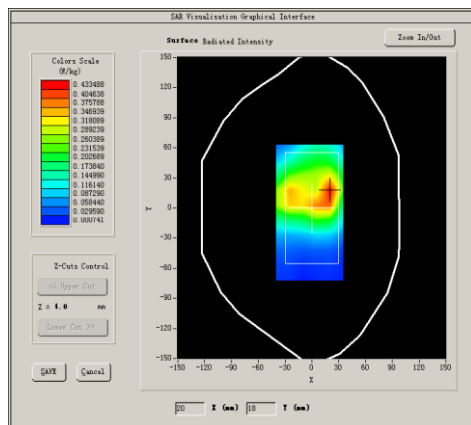
Phantom File	<u>surf_sam_plan.txt</u>
Phantom	<u>Flat</u>
Device Position	<u>Body</u>
Band	<u>Band1 UMTS</u>
Channels	<u>Middle</u>
Signal	<u>RMC</u>

B. SAR Measurement Results

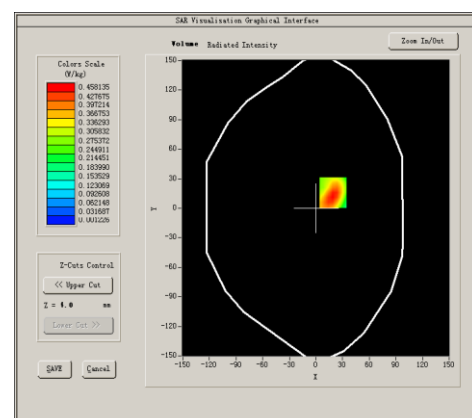
Middle Band SAR (Channel 9750):

Frequency (MHz)	1950.000000
Relative permittivity (real part)	40.100000
Conductivity (S/m)	1.390750
Ambient Temperature:	22.1°C
Liquid Temperature:	22.4°C
Power drift	2.930000
ConvF:	5.61
Duty Cycle:	1:1

SURFACE SAR



VOLUME SAR

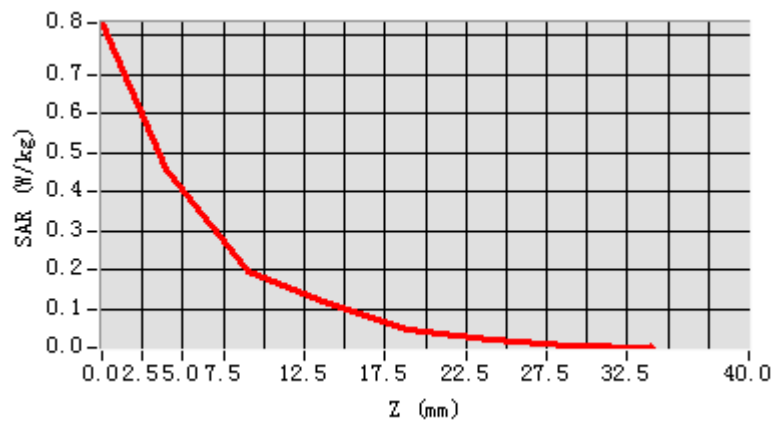


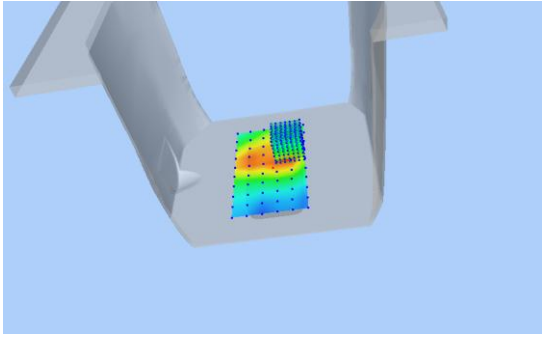
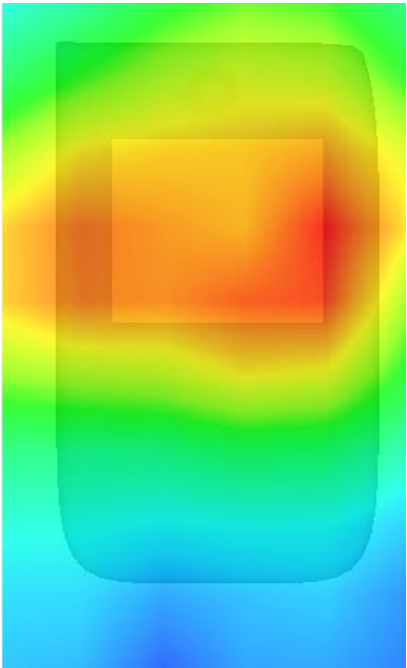
Maximum location: X=19.00, Y=16.00

SAR Peak: 0.78 W/kg

SAR 10g (W/Kg)	0.221798
SAR 1g (W/Kg)	0.435822

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.8306	0.4581	0.1974	0.1137	0.0456	0.0229	0.0068



3D screen shot	Hot spot position
	



MEASUREMENT 18

Type: Phone measurement (Complete)

Area scan resolution: dx=15mm,dy=15mm

Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2018.06.23

Measurement duration: 16 minutes 6 seconds

A. Experimental conditions.

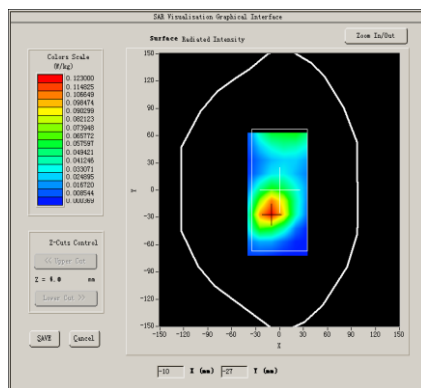
Phantom File	<u>surf_sam_plan.txt</u>
Phantom	<u>Flat</u>
Device Position	<u>Body</u>
Band	<u>Band8 WCDMA900</u>
Channels	<u>High</u>
Signal	<u>RMC</u>

B. SAR Measurement Results

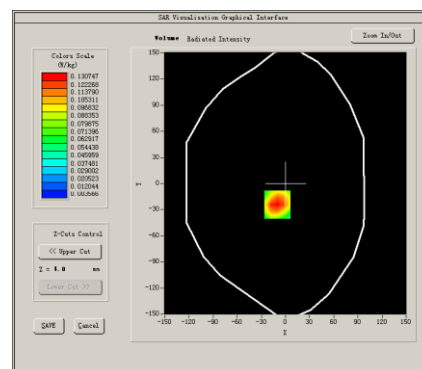
Higher Band SAR (Channel 2863):

Frequency (MHz)	912.000000
Relative permittivity (real part)	41.478184
Conductivity (S/m)	0.977959
Power drift (%)	1.876823
Ambient Temperature:	22.8℃
Liquid Temperature:	22.7℃
ConvF:	6.13
Duty Cycle:	1:1

SURFACE SAR



VOLUME SAR

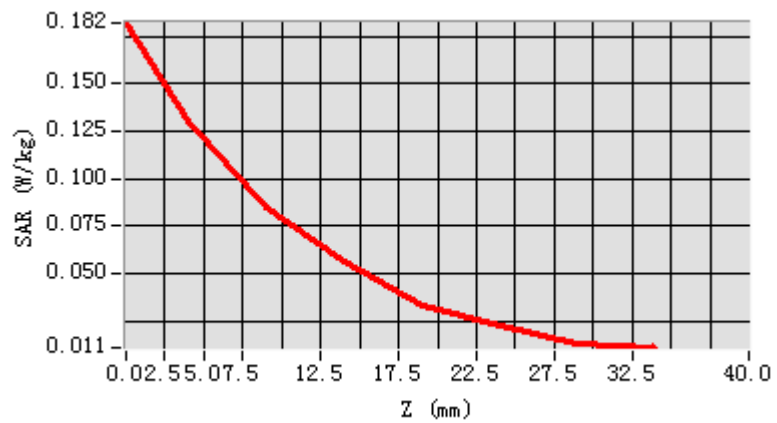


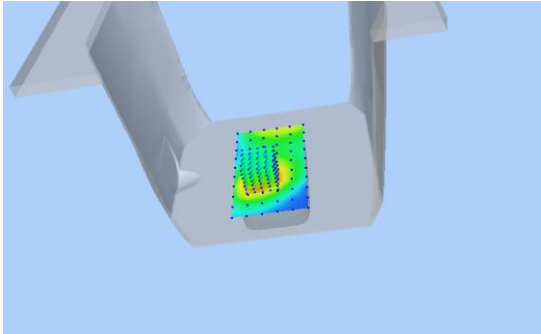
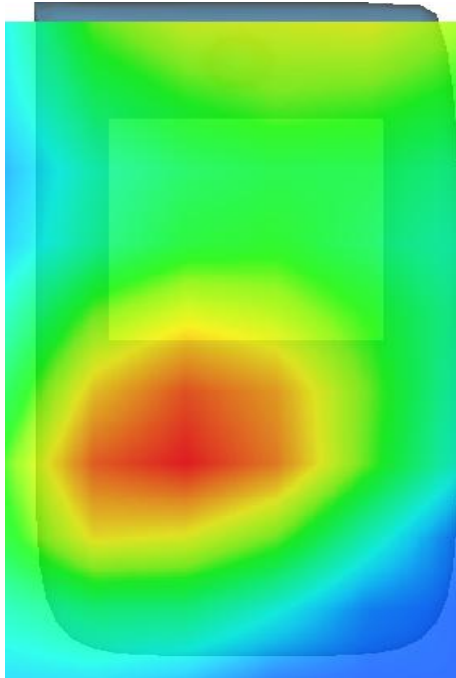
Maximum location: X=-10.00, Y=-24.00

SAR Peak: 0.19 W/kg

SAR 10g (W/Kg)	0.074431
SAR 1g (W/Kg)	0.125898

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.1820	0.1307	0.0852	0.0559	0.0334	0.0229	0.0128



3D screen shot	Hot spot position
	

**MEASUREMENT 19**

Type: Phone measurement (Complete)

Area scan resolution: dx=15mm,dy=15mm

Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2018.06.19

Measurement duration: 16 minutes 5 seconds

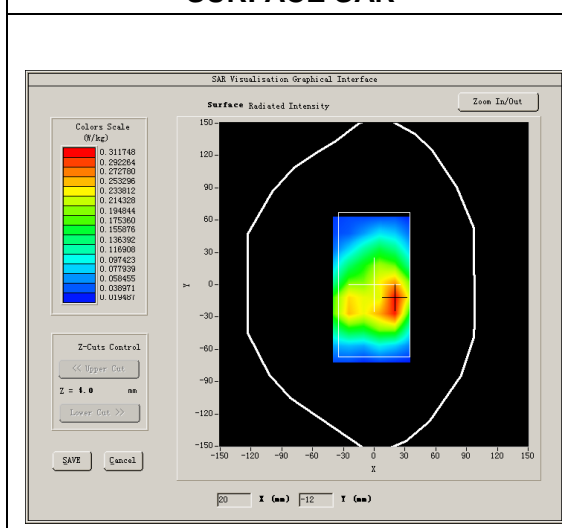
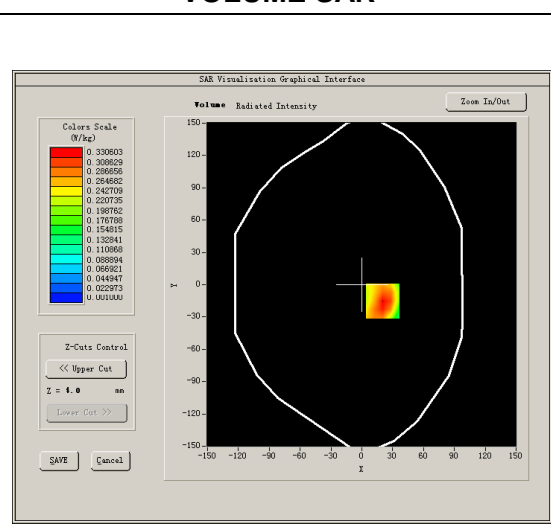
A. Experimental conditions.

Phantom File	<u>surf sam plan.txt</u>
Phantom	<u>Flat</u>
Device Position	<u>Body</u>
Band	<u>LTE band 1</u>
Channels	<u>High</u>
Signal	<u>QPSK</u>

B. SAR Measurement Results

Higher Band SAR (Channel 18500):

Frequency (MHz)	1970.000000
Relative permittivity (real part)	39.992421
Conductivity (S/m)	1.407281
Power drift (%)	0.977959
Ambient Temperature:	22.1°C
Liquid Temperature:	22.4°C
ConvF:	5.61
Duty Cycle:	1:1

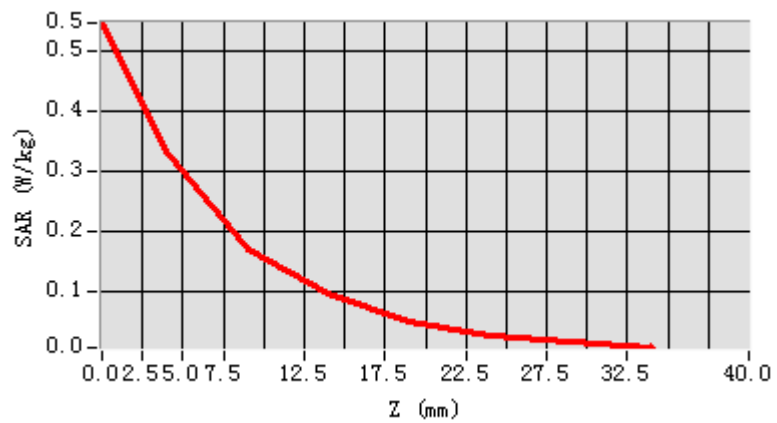
SURFACE SAR**VOLUME SAR**

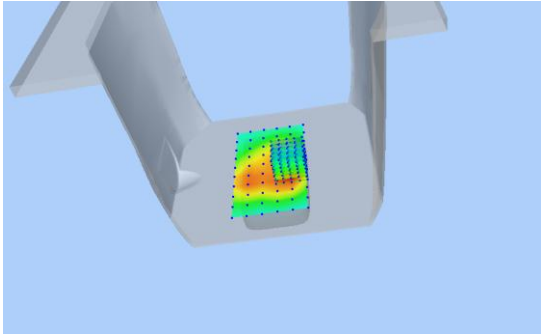
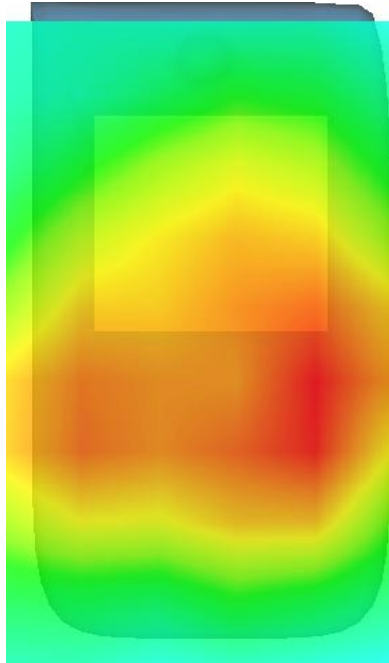
Maximum location: X=20.00, Y=-15.00

SAR Peak: 0.55 W/kg

SAR 10g (W/Kg)	0.171066
SAR 1g (W/Kg)	0.320956

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.5451	0.3306	0.1673	0.0949	0.0484	0.0259	0.0158



3D screen shot	Hot spot position
	

**MEASUREMENT 20**

Type: Phone measurement (Complete)

Area scan resolution: dx=15mm,dy=15mm

Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2018.06.19

Measurement duration: 16 minutes 53 seconds

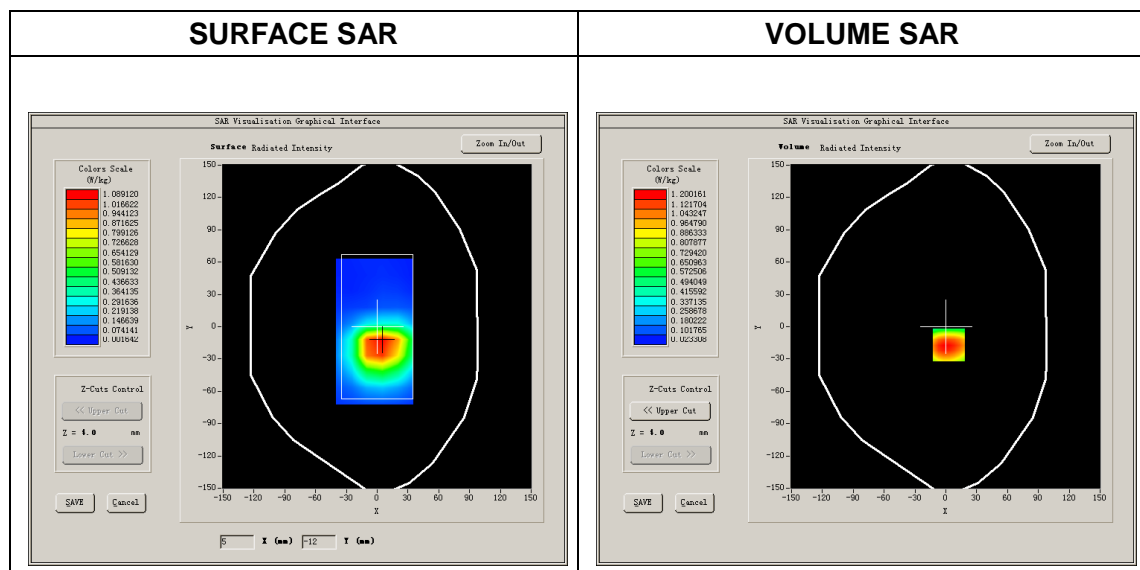
A. Experimental conditions.

Phantom File	<u>surf sam plan.txt</u>
Phantom	<u>Flat</u>
Device Position	<u>Body</u>
Band	<u>LTE band 3</u>
Channels	<u>Low</u>
Signal	<u>QPSK</u>

B. SAR Measurement Results

Low Band SAR (Channel 19300):

Frequency (MHz)	1720.000000
Relative permittivity (real part)	40.127274
Conductivity (S/m)	1.353935
Power drift (%)	1.169091
Ambient Temperature:	22.3°C
Liquid Temperature:	22.6°C
ConvF:	5.21
Duty Cycle:	1:1

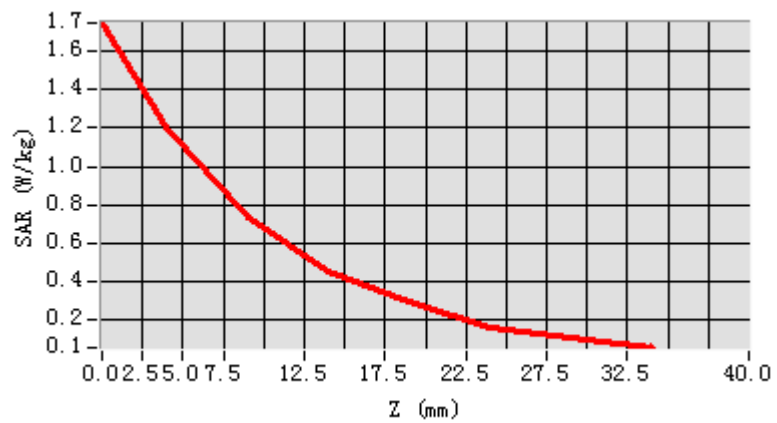


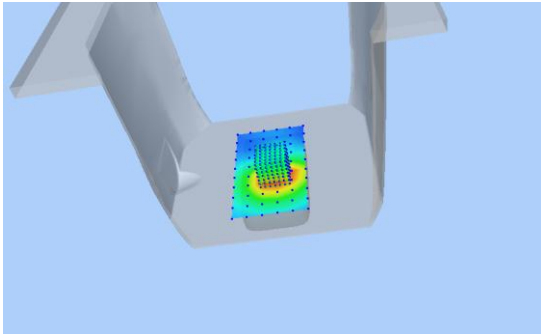
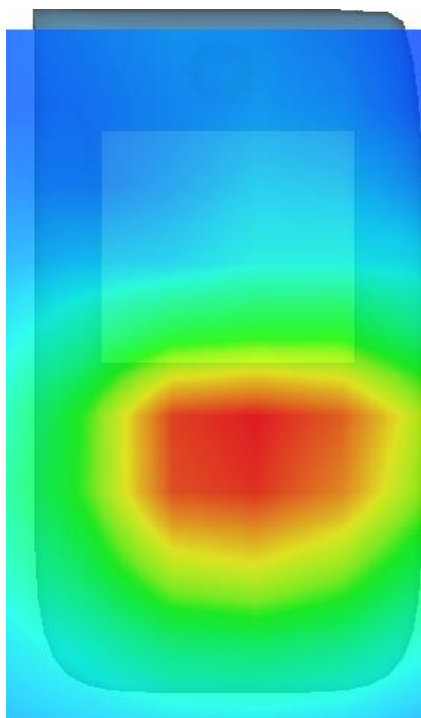
Maximum location: X=3.00, Y=-17.00

SAR Peak: 1.74 W/kg

SAR 10g (W/Kg)	0.687621
SAR 1g (W/Kg)	1.137984

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	1.7473	1.2002	0.7397	0.4537	0.2949	0.1668	0.1144



3D screen shot	Hot spot position
	

**MEASUREMENT 20**

Type: Phone measurement (Complete)

Area scan resolution: dx=15mm,dy=15mm

Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2018.06.21

Measurement duration: 16 minutes 50 seconds

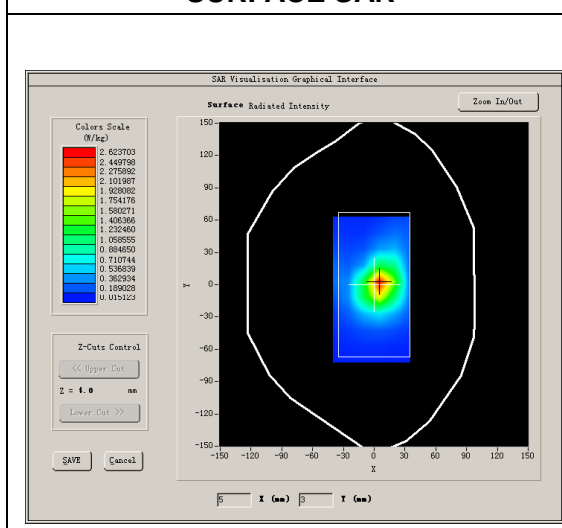
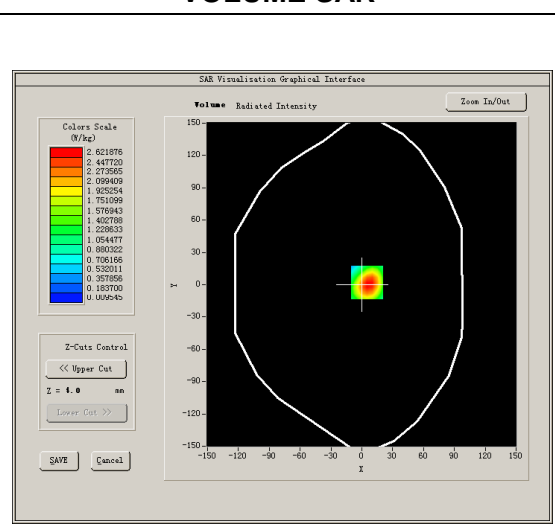
A. Experimental conditions.

Phantom File	<u>surf sam plan.txt</u>
Phantom	<u>Flat</u>
Device Position	<u>Body</u>
Band	<u>LTE band 7</u>
Channels	<u>High</u>
Signal	<u>QPSK</u>

B. SAR Measurement Results

High Band SAR (Channel 21350):

Frequency (MHz)	2560.000000
Relative permittivity (real part)	39.453333
Conductivity (S/m)	1.916681
Power drift (%)	3.476667
Ambient Temperature:	22.0°C
Liquid Temperature:	21.8°C
ConvF:	4.74
Duty Cycle:	1:1

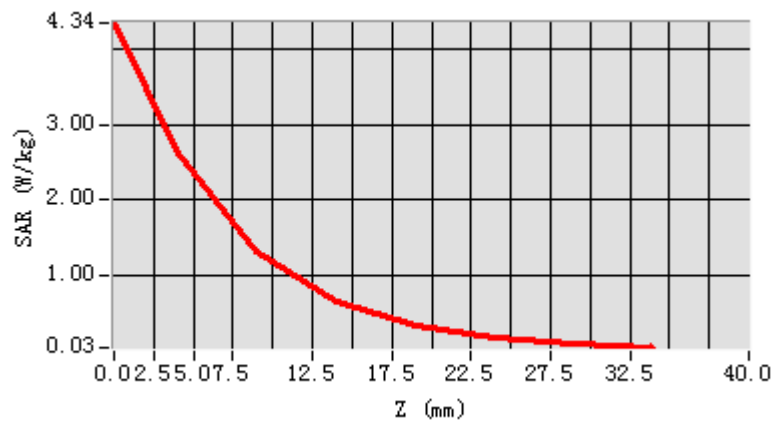
SURFACE SAR**VOLUME SAR**

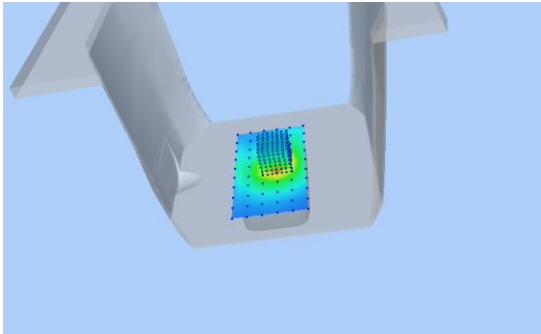
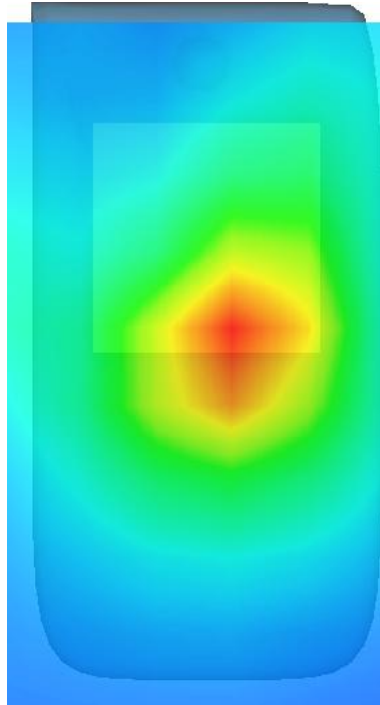
Maximum location: X=5.00, Y=2.00

SAR Peak: 4.43 W/kg

SAR 10g (W/Kg)	1.228360
SAR 1g (W/Kg)	2.502063

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	4.3445	2.6219	1.3172	0.6470	0.3209	0.1598	0.0795



3D screen shot	Hot spot position
	

**MEASUREMENT 21**

Type: Phone measurement (Complete)

Area scan resolution: dx=15mm,dy=15mm

Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2018.06.23

Measurement duration: 16 minutes 6 seconds

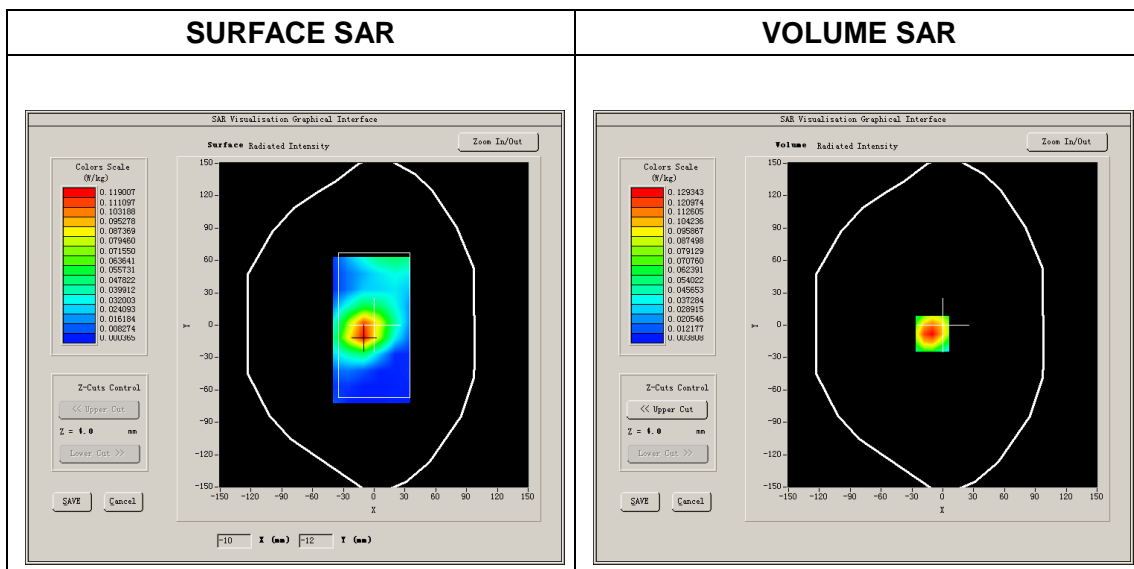
A. Experimental conditions.

Phantom File	<u>surf_sam_plan.txt</u>
Phantom	<u>Flat</u>
Device Position	<u>Body</u>
Band	<u>LTE band 8</u>
Channels	<u>Middle</u>
Signal	<u>QPSK</u>

B. SAR Measurement Results

Middle Band SAR (Channel 21625):

Frequency (MHz)	897.000000
Relative permittivity (real part)	41.500000
Conductivity (S/m)	0.966767
Power drift (%)	1.920000
Ambient Temperature:	22.8°C
Liquid Temperature:	22.7°C
ConvF:	6.13
Duty Cycle:	1:1

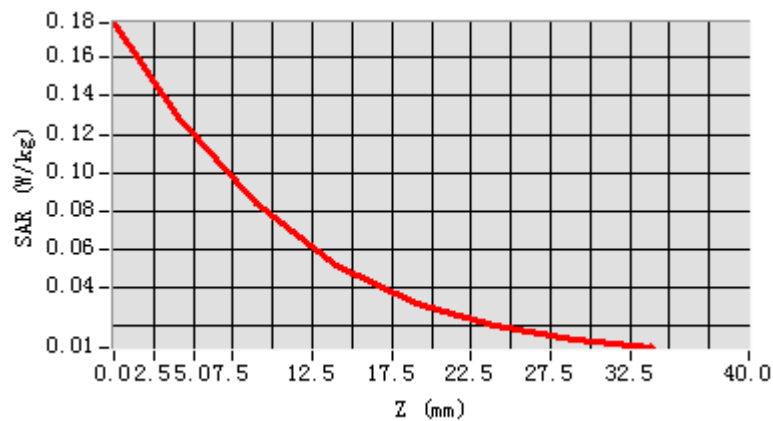
SURFACE SAR

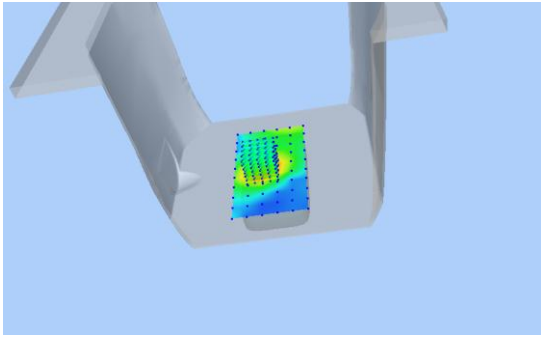
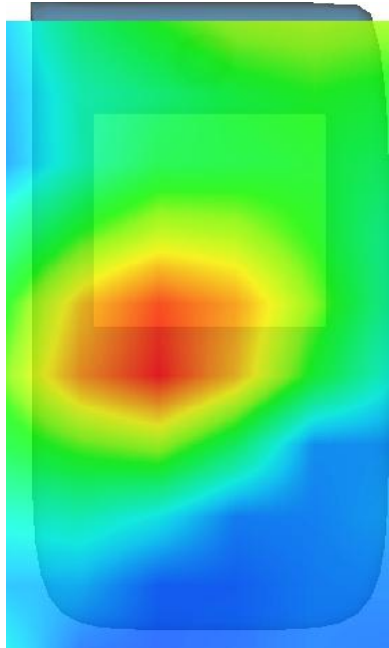
Maximum location: X=-10.00, Y=-8.00

SAR Peak: 0.18 W/kg

SAR 10g (W/Kg)	0.071244
SAR 1g (W/Kg)	0.121564

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.1780	0.1293	0.0838	0.0521	0.0317	0.0205	0.0131



3D screen shot	Hot spot position
	

**MEASUREMENT 22**

Type: Phone measurement (Complete)

Area scan resolution: dx=15mm,dy=15mm

Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2018.06.23

Measurement duration: 16 minutes 36 seconds

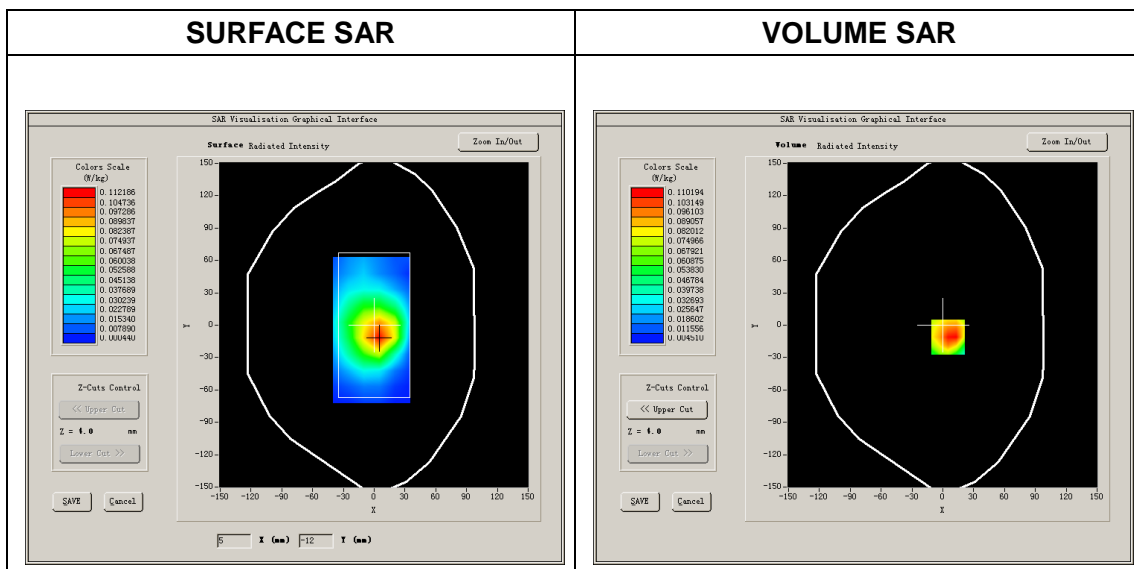
A. Experimental conditions.

Phantom File	<u>surf_sam_plan.txt</u>
Phantom	<u>Flat</u>
Device Position	<u>Body</u>
Band	<u>LTE band 20</u>
Channels	<u>Low</u>
Signal	<u>QPSK</u>

B. SAR Measurement Results

Low Band SAR (Channel 24200):

Frequency (MHz)	837.000000
Relative permittivity (real part)	41.500000
Conductivity (S/m)	0.902100
Power drift (%)	-1.550000
Ambient Temperature:	22.8°C
Liquid Temperature:	22.7°C
ConvF:	6.13
Duty Cycle:	1:1

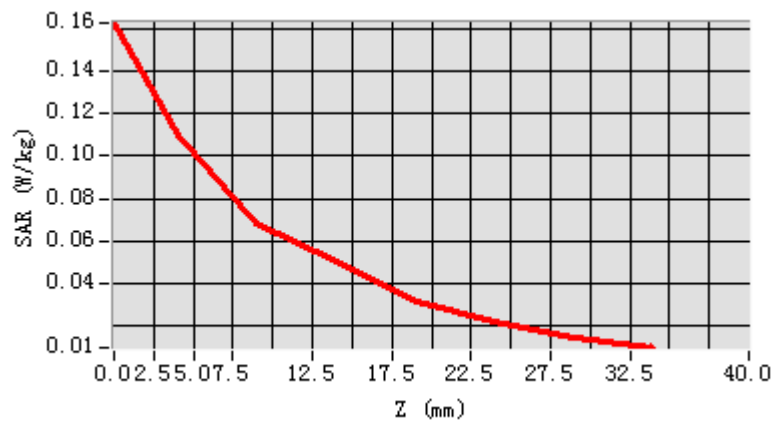
SURFACE SAR

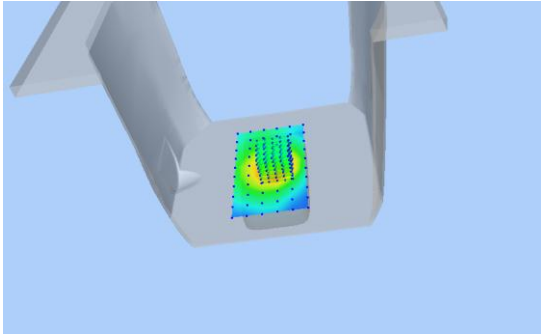
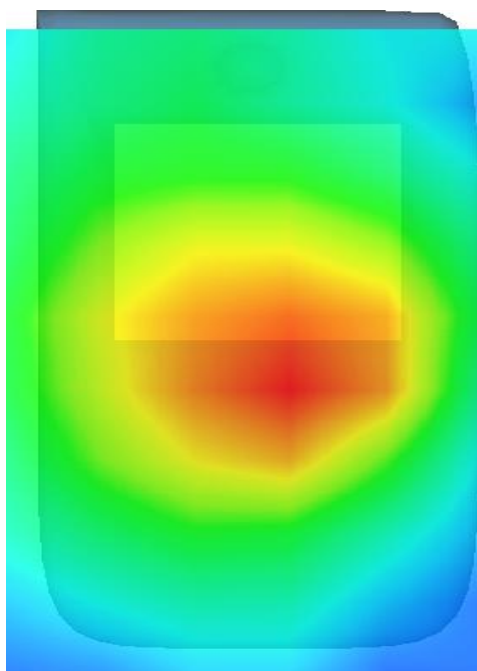
Maximum location: X=5.00, Y=-11.00

SAR Peak: 0.16 W/kg

SAR 10g (W/Kg)	0.065032
SAR 1g (W/Kg)	0.105517

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.1627	0.1102	0.0680	0.0503	0.0316	0.0220	0.0147



3D screen shot	Hot spot position
	

**MEASUREMENT 23**

Type: Phone measurement (Complete)

Area scan resolution: dx=15mm,dy=15mm

Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2018.06.21

Measurement duration: 16 minutes 43 seconds

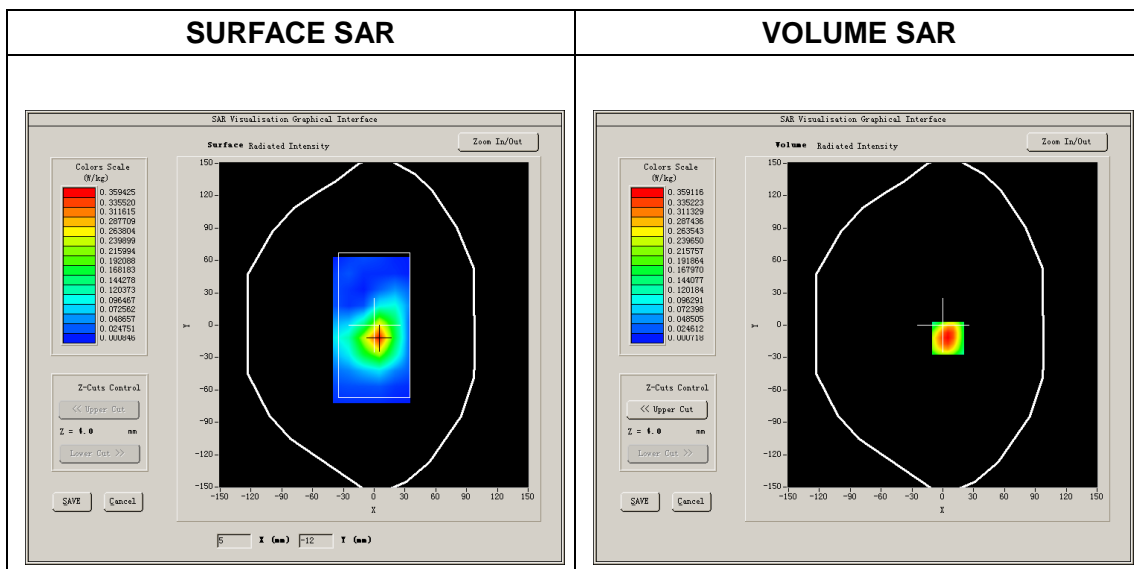
A. Experimental conditions.

Phantom File	<u>surf_sam_plan.txt</u>
Phantom	<u>Flat</u>
Device Position	<u>Body</u>
Band	<u>LTE band 40</u>
Channels	<u>High</u>
Signal	<u>QPSK</u>

B. SAR Measurement Results

High Band SAR (Channel 39550):

Frequency (MHz)	2390.000000
Relative permittivity (real part)	39.320000
Conductivity (S/m)	1.747356
Power drift (%)	2.180000
Ambient Temperature:	22.0°C
Liquid Temperature:	21.8°C
ConvF:	4.82
Duty Cycle:	1:1.59

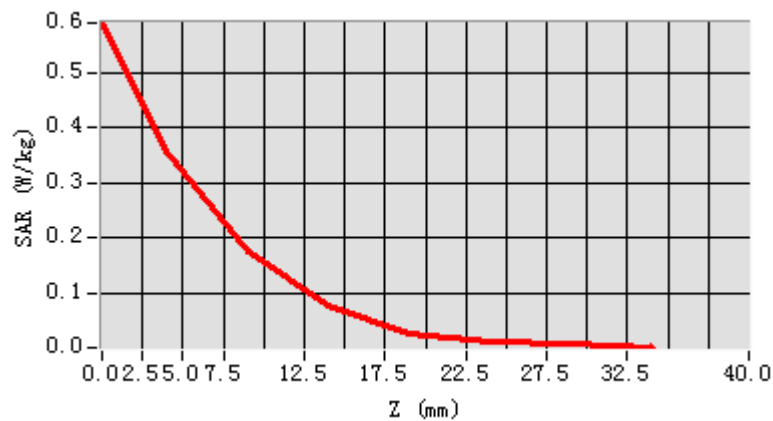
SURFACE SAR

Maximum location: X=5.00, Y=-12.00

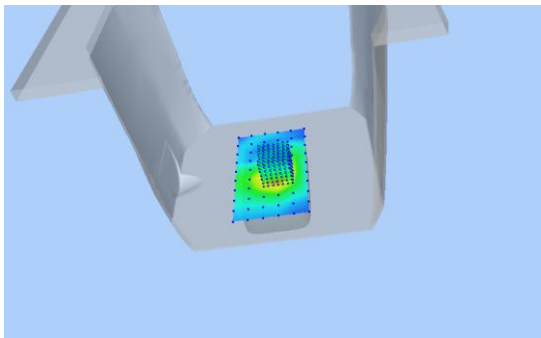
SAR Peak: 0.59 W/kg

SAR 10g (W/Kg)	0.207392
SAR 1g (W/Kg)	0.335625

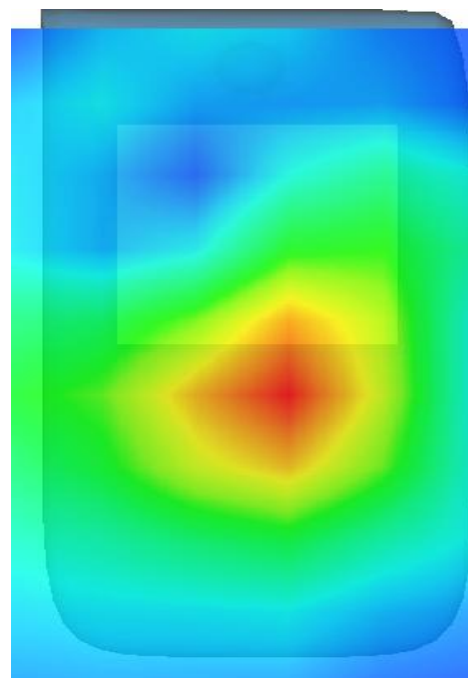
Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.5900	0.3591	0.1746	0.0770	0.0283	0.0128	0.0078



3D screen shot



Hot spot position



**MEASUREMENT 25**

Type: Phone measurement (Complete)

Area scan resolution: dx=15mm,dy=15mm

Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2018.06.21

Measurement duration: 16 minutes 46 seconds

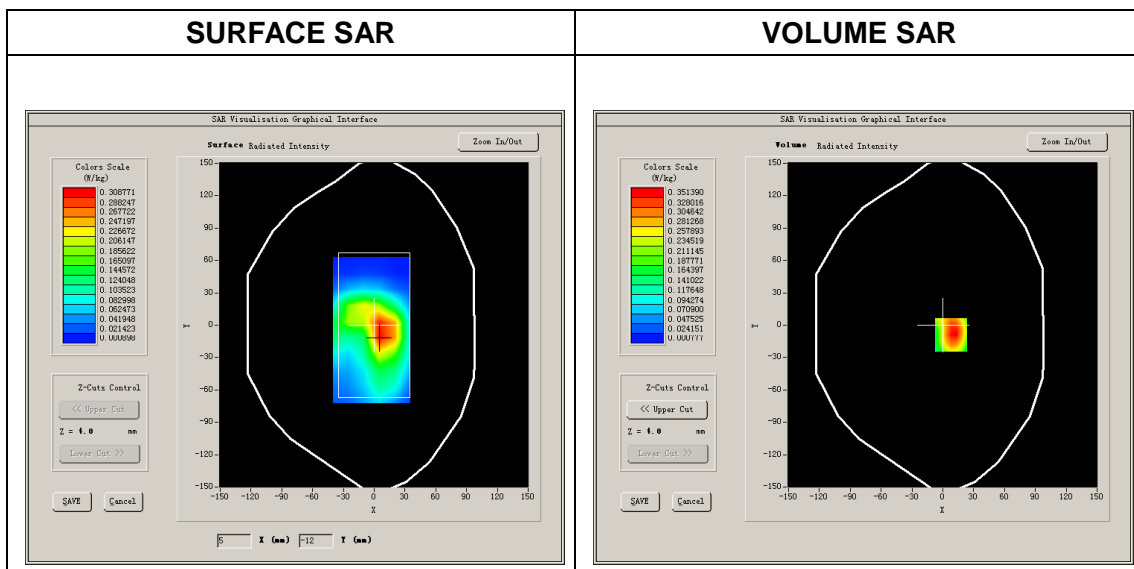
A. Experimental conditions.

Phantom File	<u>surf_sam_plan.txt</u>
Phantom	<u>Flat</u>
Device Position	<u>Body</u>
Band	<u>IEEE 802.11b ISM</u>
Channels	<u>High</u>
Signal	<u>DSSS</u>

B. SAR Measurement Results

High Band SAR (Channel 13):

Frequency (MHz)	2472.000000
Relative permittivity (real part)	39.170666
Conductivity (S/m)	1.822596
Power drift (%)	-0.300000
Ambient Temperature:	22.0°C
Liquid Temperature:	21.8°C
ConvF:	4.82
Duty Cycle:	1:1

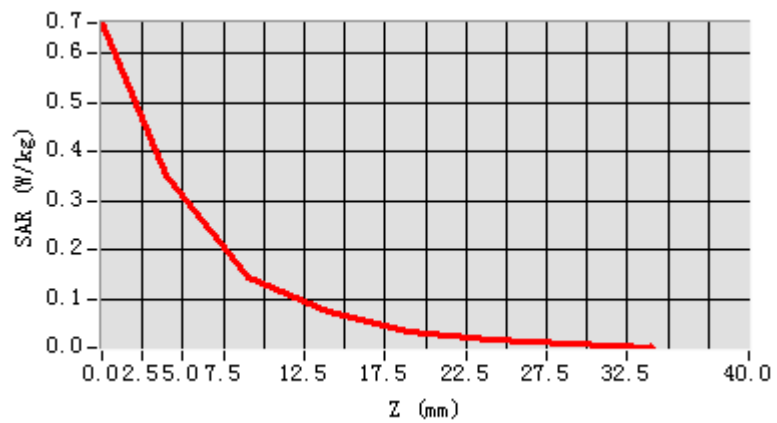
SURFACE SAR

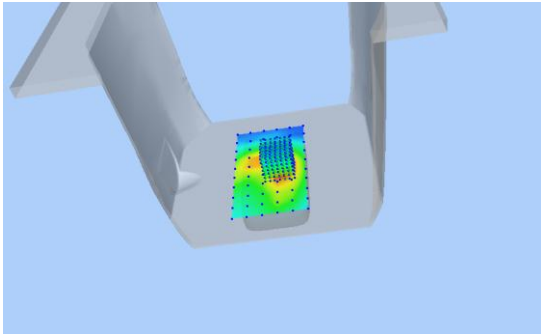
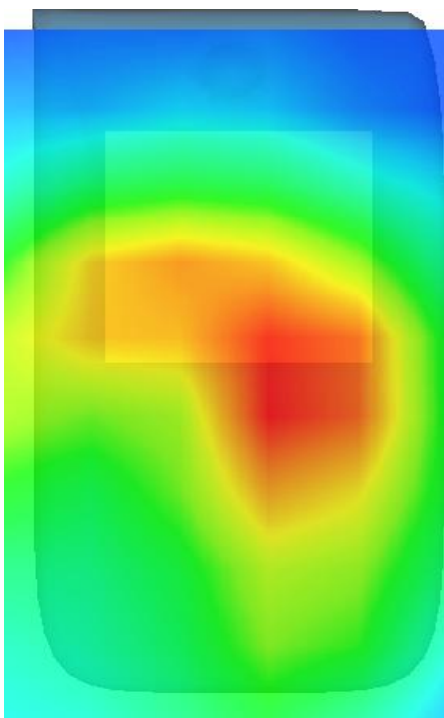
Maximum location: X=8.00, Y=-9.00

SAR Peak: 0.62 W/kg

SAR 10g (W/Kg)	0.166404
SAR 1g (W/Kg)	0.337872

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.6618	0.3514	0.1421	0.0760	0.0338	0.0181	0.0075



3D screen shot	Hot spot position
	

**MEASUREMENT 26**

Type: Phone measurement (Complete)

Area scan resolution: dx=10mm,dy=10mm

Zoom scan resolution: dx=4mm, dy=4mm, dz=2mm

Date of measurement: 2018.06.22

Measurement duration: 26 minutes 54 seconds

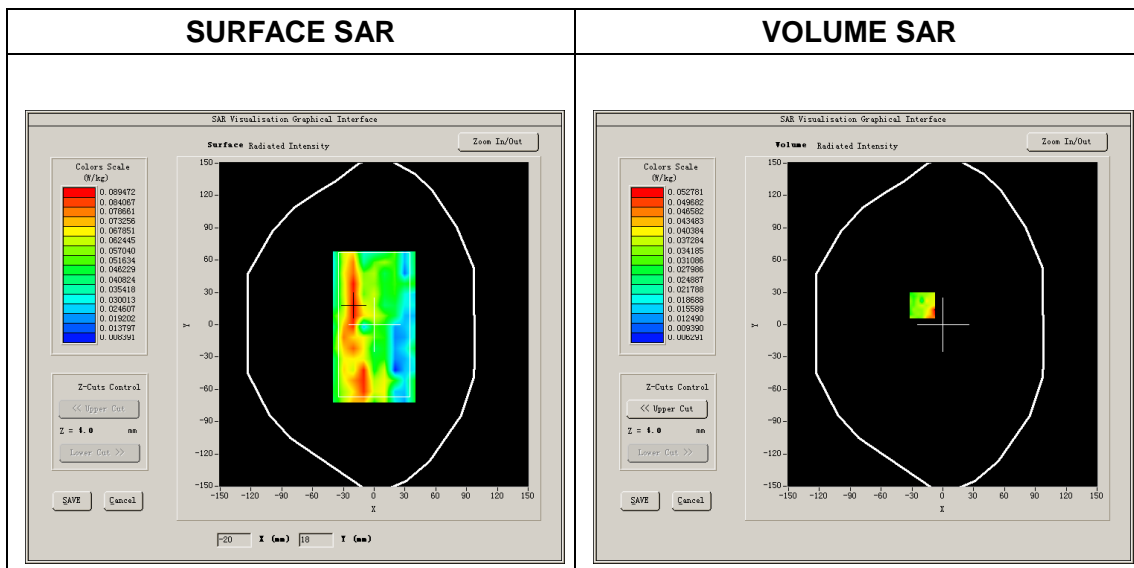
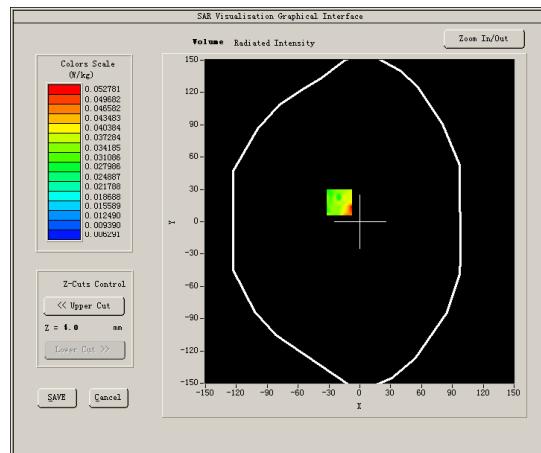
A. Experimental conditions.

Phantom File	<u>surf sam plan.txt</u>
Phantom	<u>Flat</u>
Device Position	<u>Body</u>
Band	<u>IEEE 802.11n-HT40 U-NII</u>
Channels	<u>Middle</u>
Signal	<u>OFDM</u>

B. SAR Measurement Results

Middle Band SAR (Channel 54):

Frequency (MHz)	5270.000000
Relative permittivity (real part)	35.930000
Conductivity (S/m)	4.729679
Power drift (%)	2.410000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	21.61
Duty Cycle:	1:1

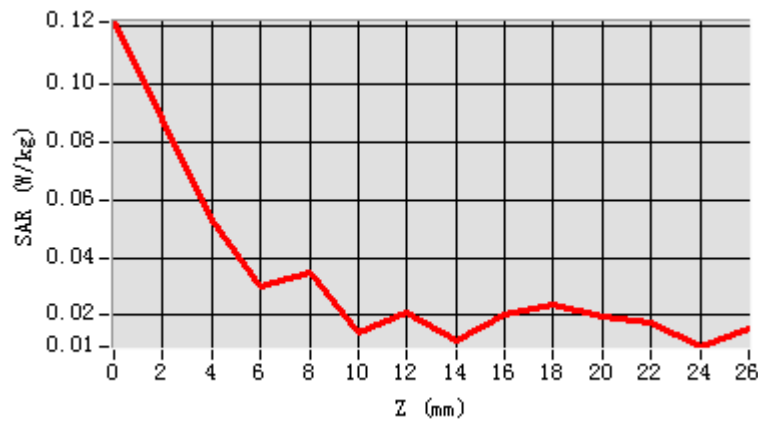
SURFACE SAR**VOLUME SAR**

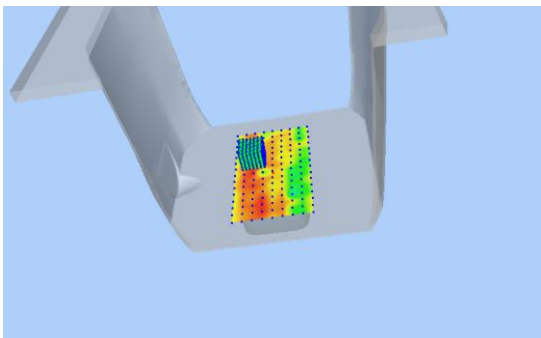
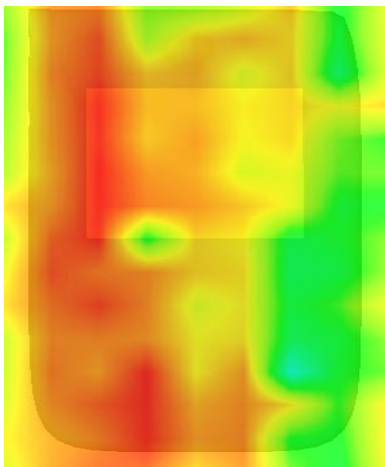
Maximum location: X=-20.00, Y=18.00

SAR Peak: 0.11 W/kg

SAR 10g (W/Kg)	0.026120
SAR 1g (W/Kg)	0.042053

Z (m m)	0.00	4.00	6.00	8.00	10.0	12.0	14.0	16.0	18.0	20.0	22.0	24.0
					0	0	0	0	0	0	0	0
SA R (W/ Kg)	0.12 17	0.05 28	0.02 98	0.03 48	0.01 41	0.02 07	0.01 12	0.02 06	0.02 35	0.01 93	0.01 78	0.00 91



3D screen shot	Hot spot position
	

**MEASUREMENT 27**

Type: Phone measurement (Complete)

Area scan resolution: dx=10mm,dy=10mm

Zoom scan resolution: dx=4mm, dy=4mm, dz=2mm

Date of measurement: 2018.06.22

Measurement duration: 26 minutes 48 seconds

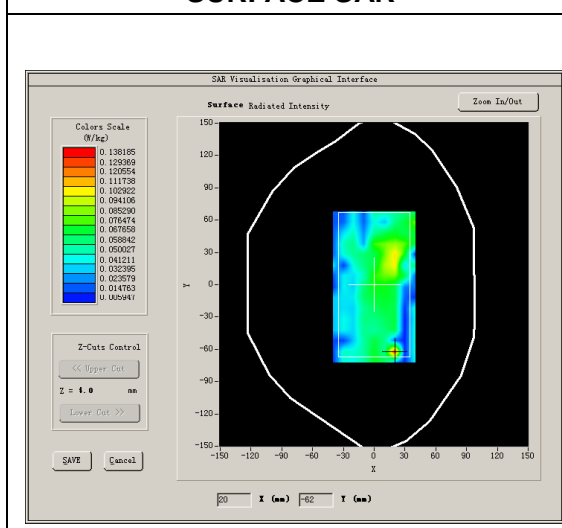
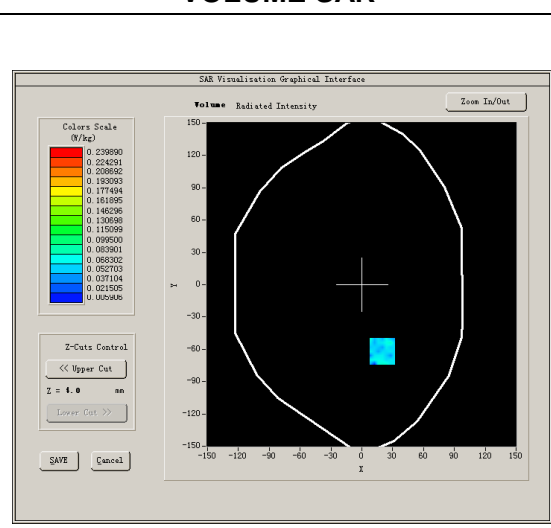
A. Experimental conditions.

Phantom File	<u>surf sam plan.txt</u>
Phantom	<u>Flat</u>
Device Position	<u>Body</u>
Band	<u>IEEE 802.11n-HT40 U-NII</u>
Channels	<u>Middle</u>
Signal	<u>OFDM</u>

B. SAR Measurement Results

Middle Band SAR (Channel 118):

Frequency (MHz)	5590.000000
Relative permittivity (real part)	35.570133
Conductivity (S/m)	5.030254
Power drift (%)	0.950001
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	22.92
Duty Cycle:	1:1

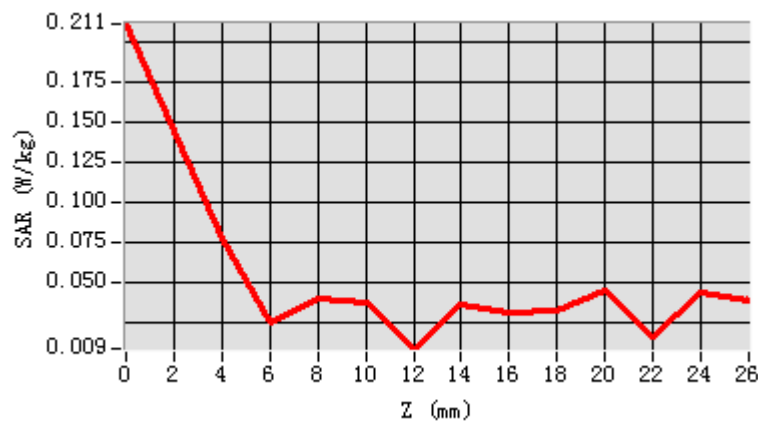
SURFACE SAR**VOLUME SAR**

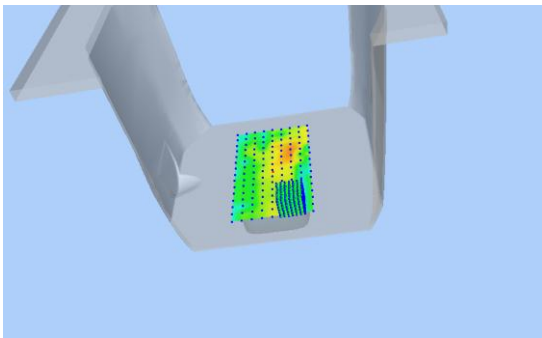
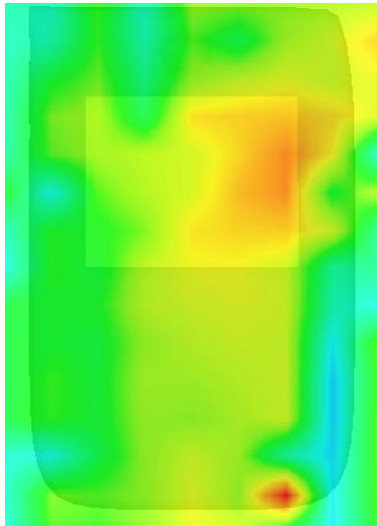
Maximum location: X=20.00, Y=-62.00

SAR Peak: 0.30 W/kg

SAR 10g (W/Kg)	0.046548
SAR 1g (W/Kg)	0.066855

Z (m m)	0.00	4.00	6.00	8.00	10.0	12.0	14.0	16.0	18.0	20.0	22.0	24.0
					0	0	0	0	0	0	0	0
SA R (W/ Kg)	0.21 13	0.07 70	0.02 48	0.04 06	0.03 70	0.00 88	0.03 68	0.03 13	0.03 23	0.04 48	0.01 61	0.04 33



3D screen shot	Hot spot position
	

**MEASUREMENT 28**

Type: Phone measurement (Complete)

Area scan resolution: dx=10mm,dy=10mm

Zoom scan resolution: dx=4mm, dy=4mm, dz=2mm

Date of measurement: 2018.06.22

Measurement duration: 26 minutes 50 seconds

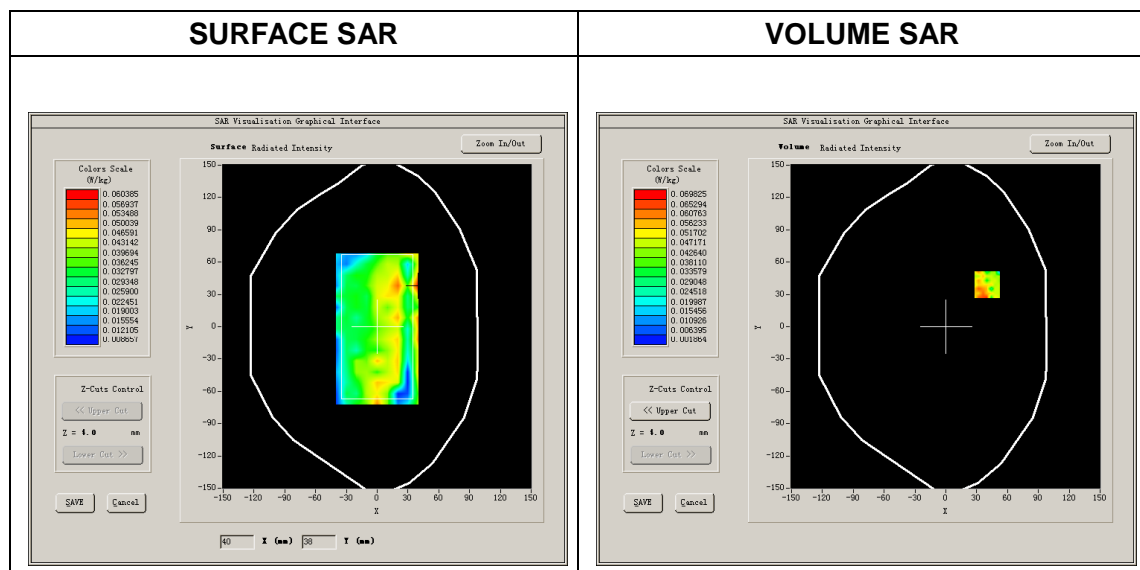
A. Experimental conditions.

Phantom File	<u>surf sam plan.txt</u>
Phantom	<u>Flat</u>
Device Position	<u>Body</u>
Band	<u>IEEE 802.11a U-NII</u>
Channels	<u>Middle</u>
Signal	<u>OFDM</u>

B. SAR Measurement Results

Middle Band SAR (Channel 161):

Frequency (MHz)	5805.000000
Relative permittivity (real part)	35.414999
Conductivity (S/m)	5.260503
Power drift (%)	3.50000
Ambient Temperature:	22.9°C
Liquid Temperature:	22.1°C
ConvF:	22.42
Duty Cycle:	1:1

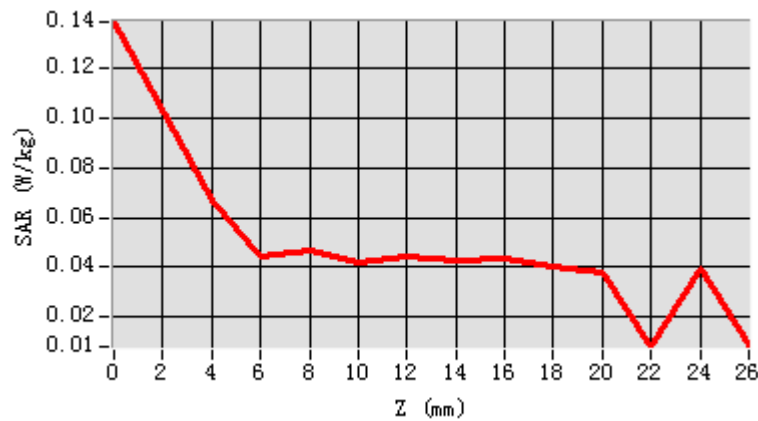


Maximum location: X=40.00, Y=39.00

SAR Peak: 0.26 W/kg

SAR 10g (W/Kg)	0.044542
SAR 1g (W/Kg)	0.070322

Z (m m)	0.00	4.00	6.00	8.00	10.0	12.0	14.0	16.0	18.0	20.0	22.0	24.0
					0	0	0	0	0	0	0	0
SA R (W/ Kg)	0.13 86	0.06 73	0.04 47	0.04 66	0.04 22	0.04 44	0.04 31	0.04 36	0.04 03	0.03 82	0.00 81	0.03 96



3D screen shot	Hot spot position
