

FCC SAR EVALUATION REPORT

In accordance with the requirements of
FCC 47 CFR Part 2(2.1093), ANSI/IEEE C95.1-1992 and
IEEE Std 1528-2013

Product Name : Smart Phone

Trademark : OUKITEL

Model Name : C17 Pro

Family Model : N/A

Report No. : S19070302208001

FCC ID : 2ANMU-C17PRO

Prepared for

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TEST RESULT CERTIFICATION

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Product description

Product name.....: Smart Phone
Trademark: OUKITEL
Model Name: C17 Pro
Family Model.....: N/A
FCC 47 CFR Part 2(2.1093)
ANSI/IEEE C95.1-1992

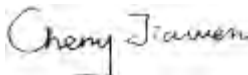
Standards.....: IEEE Std 1528-2013
Published RF exposure KDB procedures

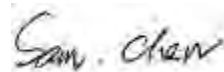
This device described above has been tested by Shenzhen NTEK. In accordance with the measurement methods and procedures specified in IEEE Std 1528-2013 and KDB 865664 D01. Testing has shown that this device is capable of compliance with localized specific absorption rate (SAR) specified in FCC 47 CFR Part 2(2.1093) and ANSI/IEEE C95.1-1992. The test results in this report apply only to the tested sample of the stated device/equipment. Other similar device/equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

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Date of Test

Date (s) of performance of tests..... : Jul. 17, 2019 ~ Aug. 02, 2019
Date of Issue : Aug. 08, 2019
Test Result : **Pass**

Prepared By : 
(Test Engineer) : _____
(Cheng Jiawen)

Approved By : 
(Lab Manager) : _____
(Sam Chen)

※ ※ **Revision History** ※ ※

REV.	DESCRIPTION	ISSUED DATE	REMARK
Rev.1.0	Initial Test Report Release	Aug. 08, 2019	Cheng Jiawen

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1. General Information

1.1. RF exposure limits

(A).Limits for Occupational/Controlled Exposure (W/kg)

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.4	8.0	20.0

(B).Limits for General Population/Uncontrolled Exposure (W/kg)

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.08	1.6	4.0

NOTE: **Whole-Body SAR** is averaged over the entire body, **partial-body SAR** is averaged over any 1 gram of tissue defined as a tissue volume in the shape of a cube. **SAR for hands, wrists, feet and ankles** is averaged over any 10 grams of tissue defined as a tissue volume in the shape of a cube.

Occupational/Controlled Environments:

Are defined as locations where there is exposure that may be incurred by people who are aware of the potential for exposure, (i.e. as a result of employment or occupation).

General Population/Uncontrolled Environments:

Are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure.

NOTE
 HEAD AND TRUNK LIMIT
 1.6 W/kg
 APPLIED TO THIS EUT

1.2. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for C17 Pro are as follows.

Band	Max Reported SAR Value(W/kg)			Max Simultaneous Tx
	1-g Head	1-g Body-Worn (Separation distance of 10mm)	1-g Hotspot (Separation distance of 10mm)	
GSM 850	0.273	0.599	0.599	0.975
GSM 1900	0.711	0.686	0.686	
WCDMA Band II	0.743	0.749	0.749	
WCDMA Band IV	0.224	0.580	0.580	
WCDMA Band V	0.249	0.717	0.717	
LTE Band II	0.613	0.639	0.639	
LTE Band IV	0.572	0.557	0.557	
LTE Band V	0.251	0.481	0.481	
LTE Band VII	0.319	0.565	0.565	
LTE Band XII	0.202	0.417	0.417	
LTE Band XVII	0.243	0.398	0.398	
WLAN 2.4G	0.232	0.074	0.074	

Note: The Max Simultaneous Tx is calculated based on the same configuration and test position. This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg) specified in FCC 47 CFR Part 2(2.1093) and ANSI/IEEE C95.1-1992, and had been tested in accordance with the measurement methods and procedures specified in IEEE Std 1528-2013 & KDB 865664 D01.

1.3. EUT Description

Device Information	
Product Name	Smart Phone
Trade Name	OUKITEL
Model Name	C17 Pro
Family Model	N/A
FCC ID	2ANMU-C17PRO
Device Phase	Identical Prototype
Exposure Category	General population / Uncontrolled environment
Antenna	FPC Antenna
Battery Information	DC 3.8V, 3900mAh
Device Operating Configurations	
Supporting Mode(s)	GSM 850/1900, WCDMA Band V/IV/II, LTE Band

	V/IV/II/VII/XII/XVII, WLAN 2.4G, Bluetooth		
Test Modulation	GSM(GMSK/8PSK), WCDMA(QPSK), LTE(QPSK/16QAM), WLAN(DSSSS/OFDM), Bluetooth(GFSK, $\pi/4$ -DQPSK, 8DPSK)		
Device Class	B		
Operating Frequency Range(s)	Band	Tx (MHz)	Rx (MHz)
	GSM 850	824-849	869-894
	GSM 1900	1850-1910	1930-1990
	WCDMA Band V	824-849	869-894
	WCDMA Band IV	1710-1755	2110-2155
	WCDMA Band II	1850-1910	1930-1990
	LTE Band V	824-849	869-894
	LTE Band IV	1710-1755	2110-2155
	LTE Band II	1850-1910	1930-1990
	LTE Band VII	2500-2570	2620-2690
	LTE Band XII	699-716	729-746
	LTE Band XVII	777-787	746-756
	WLAN 2.4G	2412-2462	
	Bluetooth	2402-2480	
GPRS Multislot Class(12)	Max Number of Timeslots in Uplink		4
	Max Number of Timeslots in Downlink		4
	Max Total Timeslot		5
EDGE Multislot Class(12)	Max Number of Timeslots in Uplink		4
	Max Number of Timeslots in Downlink		4
	Max Total Timeslot		5
Power Class	4, tested with power level 5(GSM 850)		
	1, tested with power level 0(GSM 1900)		
	3, tested with power control "all 1"(WCDMA Band V)		
	3, tested with power control "all 1"(WCDMA Band IV)		
	3, tested with power control "all 1"(WCDMA Band II)		
	3, tested with power control all Max.(LTE Band V)		
	3, tested with power control all Max.(LTE Band IV)		
	3, tested with power control all Max.(LTE Band II)		
	3, tested with power control all Max.(LTE Band VII)		
	3, tested with power control all Max.(LTE Band XII)		
	3, tested with power control all Max.(LTE Band XVII)		
Test Channels (low-mid-high)	128-189-251(GSM 850)		
	512-661-810(GSM 1900)		
	4132-4182-4233(WCDMA Band V)		
	1312-1413-1513(WCDMA Band IV)		
	9262-9400-9538(WCDMA Band II)		

20407-20525-20643(LTE Band V BW=1.4MHz)
20415-20525-20635(LTE Band V BW=3MHz)
20425-20525-20625(LTE Band V BW=5MHz)
20450-20525-20600(LTE Band V BW=10MHz)
19957-20175-20393(LTE Band IV BW=1.4MHz)
19965-20175-20385(LTE Band IV BW=3MHz)
19975-20175-20375(LTE Band IV BW=5MHz)
20000-20175-20350(LTE Band IV BW=10MHz)
20025-20175-20325(LTE Band IV BW=15MHz)
20050-20175-20300(LTE Band IV BW=20MHz)
18607-18900-19193(LTE Band II BW=1.4MHz)
18615-18900-19185(LTE Band II BW=3MHz)
18625-18900-19175(LTE Band II BW=5MHz)
18650-18900-19150(LTE Band II BW=10MHz)
18675-18900-19125(LTE Band II BW=15MHz)
18700-18900-19100(LTE Band II BW=20MHz)
20775-21100-21425(LTE Band VII BW=5MHz)
20800-21100-21400(LTE Band VII BW=10MHz)
20825-21100-21375(LTE Band VII BW=15MHz)
20850-21100-21350(LTE Band VII BW=20MHz)
23017-23095-23173 (LTE Band XII BW=1.4MHz)
23025-23095-23165 (LTE Band XII BW=3MHz)
23035-23095-23155 (LTE Band XII BW=5MHz)
23060-23095-23130 (LTE Band XII BW=10MHz)
23755-23790-23825(LTE Band XVII BW=5MHz)
23780-23790-23800(LTE Band XVII BW=10MHz)
1-3-6-9-11(WLAN 2.4G)

1.4. Test specification(s)

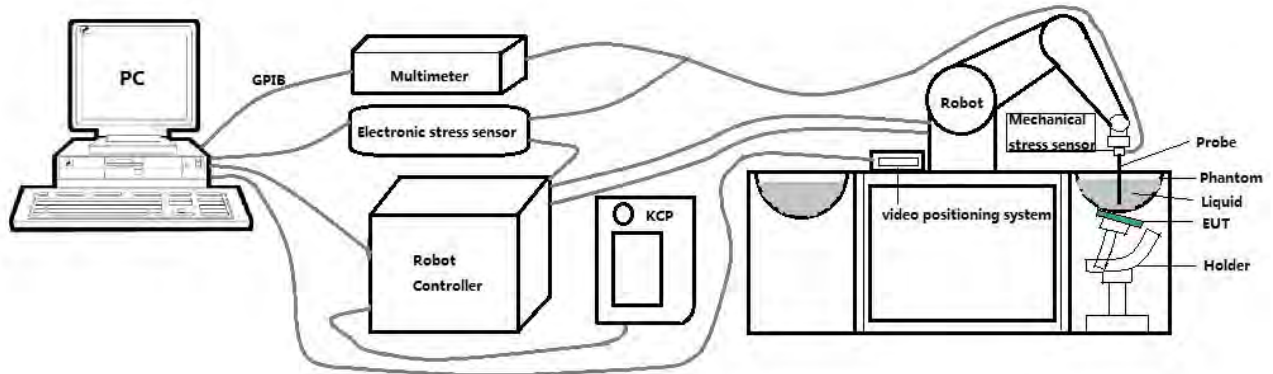
FCC 47 CFR Part 2(2.1093)
ANSI/IEEE C95.1-1992
IEEE Std 1528-2013
KDB 865664 D01 SAR measurement 100 MHz to 6 GHz
KDB 865664 D02 RF Exposure Reporting
KDB 447498 D01 General RF Exposure Guidance
KDB 248227 D01 802.11 Wi-Fi SAR
KDB 941225 D01 3G SAR Procedures
KDB 941225 D05 SAR for LTE Devices
KDB 941225 D06 Hotspot SAR
KDB 648474 D04 Handset SAR

1.5. Ambient Condition

Ambient temperature	20°C – 24°C
Relative Humidity	30% – 70%

2. SAR Measurement System

2.1. SATIMO SAR Measurement Set-up Diagram



These measurements were performed with the automated near-field scanning system OPENSAR from SATIMO. The system is based on a high precision robot (working range: 901 mm), which positions the probes with a positional repeatability of better than ± 0.03 mm. The SAR measurements were conducted with dosimetric probe (manufactured by SATIMO), designed in the classical triangular configuration and optimized for dosimetric evaluation.

The first step of the field measurement is the evaluation of the voltages induced on the probe by the device under test. Probe diode detectors are nonlinear. Below the diode compression point, the output voltage is proportional to the square of the applied E-field; above the diode compression point, it is linear to the applied E-field. The compression point depends on the diode, and a calibration procedure is necessary for each sensor of the probe.

The Keithley multimeter reads the voltage of each sensor and send these three values to the PC. The corresponding E field value is calculated using the probe calibration factors, which are stored in the working directory. This evaluation includes linearization of the diode characteristics. The field calculation is done separately for each sensor. Each component of the E field is displayed on the "Dipole Area Scan Interface" and the total E field is displayed on the "3D Interface"

2.2. Robot

The SATIMO SAR system uses the high precision robots from KUKA. For the 6-axis controller system, the robot controller version (KUKA) from KUKA is used. The KUKA robot series have many features that are important for our application:



- High precision (repeatability ± 0.03 mm)
- High reliability (industrial design)
- Jerk-free straight movements
- Low ELF interference (the closed metallic construction shields against motor control fields)

2.3. E-Field Probe

This E-field detection probe is composed of three orthogonal dipoles linked to special Schottky diodes with low detection thresholds. The probe allows the measurement of electric fields in liquids such as the one defined in the IEEE and CENELEC standards.

For the measurements the Specific Dosimetric E-Field Probe SN 08/16 EPGO287 with following specifications is used



- Dynamic range: 0.01-100 W/kg
 - Tip Diameter: 2.5 mm
 - Distance between probe tip and sensor center: 1 mm
 - Distance between sensor center and the inner phantom surface: 2 mm (repeatability better than ± 1 mm).
 - Probe linearity: ± 0.08 dB
 - Axial isotropy: 0.06 dB
 - Hemispherical Isotropy: 0.08 dB
 - Calibration range: 650MHz to 5900MHz for head & body simulating liquid.
 - Lower detection limit: 7mW/kg
- Angle between probe axis (evaluation axis) and surface normal line: less than 30° .

2.3.1. E-Field Probe Calibration

Each probe needs to be calibrated according to a dosimetric assessment procedure with accuracy better than $\pm 10\%$. The spherical isotropy shall be evaluated and within ± 0.25 dB. The sensitivity parameters (Norm X, Norm Y, and Norm Z), the diode compression parameter (DCP) and the conversion factor (Conv F) of the probe are tested. The calibration data can be referred to appendix D of this report.

2.4. SAM phantoms

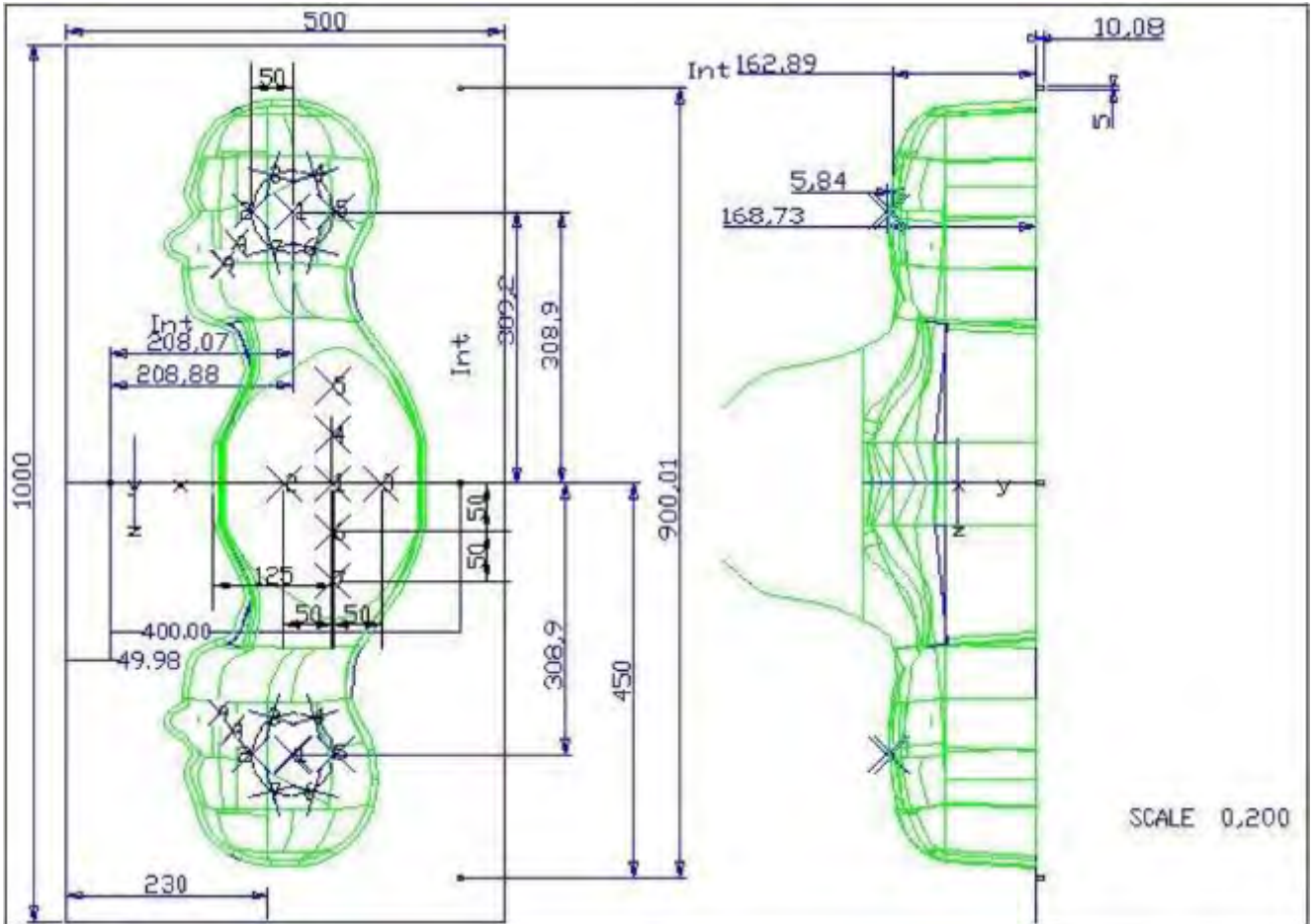
Photo of SAM phantom SN 16/15 SAM119



The SAM phantom is used to measure the SAR relative to people exposed to electro-magnetic field radiated by mobile phones.

2.4.1. Technical Data

Serial Number	Shell thickness	Filling volume	Dimensions	Positionner Material	Permittivity	Loss Tangent
SN 16/15 SAM119	2 mm ±0.2 mm	27 liters	Length:1000 mm Width:500 mm Height:200 mm	Gelcoat with fiberglass	3.4	0.02

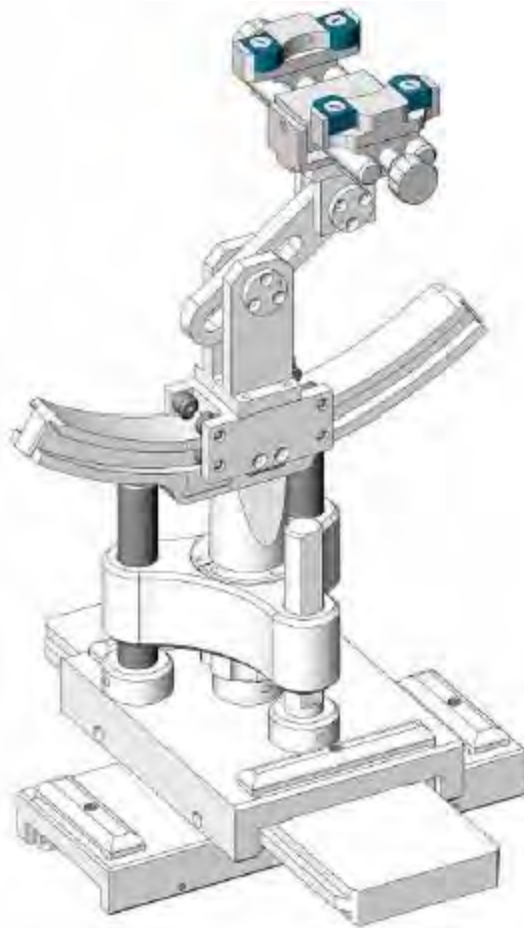


Serial Number	Left Head(mm)		Right Head(mm)		Flat Part(mm)	
	1	2	1	2	1	2
SN 16/15 SAM119	2	2.02	2	2.08	1	2.09
	3	2.05	3	2.06	2	2.06
	4	2.07	4	2.07	3	2.08
	5	2.08	5	2.08	4	2.10
	6	2.05	6	2.07	5	2.10
	7	2.05	7	2.05	6	2.07
	8	2.07	8	2.06	7	2.07
	9	2.08	9	2.06	-	-

The test, based on ultrasonic system, allows measuring the thickness with an accuracy of 10 µm.

2.5. 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 degree.



Serial Number	Holder Material	Permittivity	Loss Tangent
SN 16/15 MSH100	Delrin	3.7	0.005

2.6. Test Equipment List

This table gives a complete overview of the SAR measurement equipment.

Devices used during the test described are marked

	Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
					Last Cal.	Due Date
<input checked="" type="checkbox"/>	MVG	E FIELD PROBE	SSE2	SN 08/16 EPGO287	Sep. 17, 2018	Sep. 16, 2019
<input checked="" type="checkbox"/>	MVG	750 MHz Dipole	SID750	SN 03/15 DIP 0G750-355	Apr. 19, 2018	Apr. 18, 2021
<input checked="" type="checkbox"/>	MVG	835 MHz Dipole	SID835	SN 03/15 DIP 0G835-347	Apr. 19, 2018	Apr. 18, 2021
<input type="checkbox"/>	MVG	900 MHz Dipole	SID900	SN 03/15 DIP 0G900-348	Apr. 19, 2018	Apr. 18, 2021
<input checked="" type="checkbox"/>	MVG	1800 MHz Dipole	SID1800	SN 03/15 DIP 1G800-349	Apr. 19, 2018	Apr. 18, 2021
<input checked="" type="checkbox"/>	MVG	1900 MHz Dipole	SID1900	SN 03/15 DIP 1G900-350	Apr. 19, 2018	Apr. 18, 2021
<input type="checkbox"/>	MVG	2000 MHz Dipole	SID2000	SN 03/15 DIP 2G000-351	Apr. 19, 2018	Apr. 18, 2021
<input checked="" type="checkbox"/>	MVG	2450 MHz Dipole	SID2450	SN 03/15 DIP 2G450-352	Apr. 19, 2018	Apr. 18, 2021
<input checked="" type="checkbox"/>	MVG	2600 MHz Dipole	SID2600	SN 03/15 DIP 2G600-356	Apr. 19, 2018	Apr. 18, 2021
<input type="checkbox"/>	MVG	5000 MHz Dipole	SWG5500	SN 13/14 WGA 33	Apr. 19, 2018	Apr. 18, 2021
<input checked="" type="checkbox"/>	MVG	Liquid measurement Kit	SCLMP	SN 21/15 OCPG 72	NCR	NCR
<input checked="" type="checkbox"/>	MVG	Power Amplifier	N.A	AMPLISAR_28/14_003	NCR	NCR
<input checked="" type="checkbox"/>	KEITHLEY	Millivoltmeter	2000	4072790	NCR	NCR
<input checked="" type="checkbox"/>	R&S	Universal radio communication tester	CMU200	117858	Aug. 05, 2018	Aug. 04, 2019
<input checked="" type="checkbox"/>	R&S	Wideband radio communication tester	CMW500	103917	Oct. 08, 2018	Oct. 07, 2019
<input checked="" type="checkbox"/>	HP	Network Analyzer	8753D	3410J01136	Aug. 05, 2018	Aug. 04, 2019
<input checked="" type="checkbox"/>	Agilent	PSG Analog Signal Generator	E8257D	MY51110112	Aug. 05, 2018	Aug. 04, 2019

<input checked="" type="checkbox"/>	Agilent	Power meter	E4419B	MY45102538	Aug. 05, 2018	Aug. 04, 2019
<input checked="" type="checkbox"/>	Agilent	Power sensor	E9301A	MY41495644	Aug. 05, 2018	Aug. 04, 2019
<input checked="" type="checkbox"/>	Agilent	Power sensor	E9301A	US39212148	Aug. 05, 2018	Aug. 04, 2019
<input checked="" type="checkbox"/>	MCLI/USA	Directional Coupler	CB11-20	0D2L51502	Aug. 05, 2018	Aug. 04, 2019

3. SAR Measurement Procedures

The measurement procedures are as follows:

<Conducted power measurement>

- (a) For WWAN power measurement, use base station simulator to configure EUT WWAN transmission in conducted connection with RF cable, at maximum power in each supported wireless interface and frequency band.
- (b) Read the WWAN RF power level from the base station simulator.
- (c) For WLAN/Bluetooth power measurement, use engineering software to configure EUT WLAN/Bluetooth continuously transmission, at maximum RF power in each supported wireless interface and frequency band.
- (d) Connect EUT RF port through RF cable to the power meter, and measure WLAN/Bluetooth output power.

<SAR measurement>

- (a) Use base station simulator to configure EUT WWAN transmission in radiated connection, and engineering software to configure EUT WLAN/Bluetooth continuously transmission, at maximum RF power, in the highest power channel.
- (b) Place the EUT in the positions as Appendix A demonstrates.
- (c) Set scan area, grid size and other setting on the OPENSAR software.
- (d) Measure SAR results for the highest power channel on each testing position.
- (e) Find out the largest SAR result on these testing positions of each band.
- (f) Measure SAR results for other channels in worst SAR testing position if the reported SAR of highest power channel is larger than 0.8 W/kg.

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

- (a) Power reference measurement
- (b) Area scan
- (c) Zoom scan
- (d) Power drift measurement

3.1. Power Reference

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

3.2. Area scan & Zoom scan

The area scan is a 2D scan to find the hot spot location on the DUT. The zoom scan is a 3D scan above the hot spot to calculate the 1g and 10g SAR value.

Measurement of the SAR distribution with a grid of 8 to 16 mm * 8 to 16 mm and a constant distance to the inner surface of the phantom. Since the sensors cannot 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.

From the scanned SAR distribution, identify the position of the maximum SAR value, in addition identify the positions of any local maxima with SAR values within 2 dB of the maximum value that will not be within the zoom scan of other peaks; additional peaks shall be measured only when the primary peak is within 2 dB of the SAR compliance limit (e.g., 1 W/kg for 1,6 W/kg 1 g limit, or 1,26 W/kg for 2 W/kg, 10 g limit).

Area scan & Zoom scan scan parameters extracted from FCC KDB 865664 D01 SAR measurement 100 MHz to 6 GHz.

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

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

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

3.3. 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 minimise 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 1 mm 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.

3.4. Volumetric Scan

The volumetric scan consists to a full 3D scan over a specific area. This 3D scan is useful form multi Tx SAR measurement. Indeed, it is possible with OpenSAR to add, point by point, several volumetric scan to calculate the SAR value of the combined measurement as it is define in the standard IEEE1528 and IEC62209.

3.5. Power Drift

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

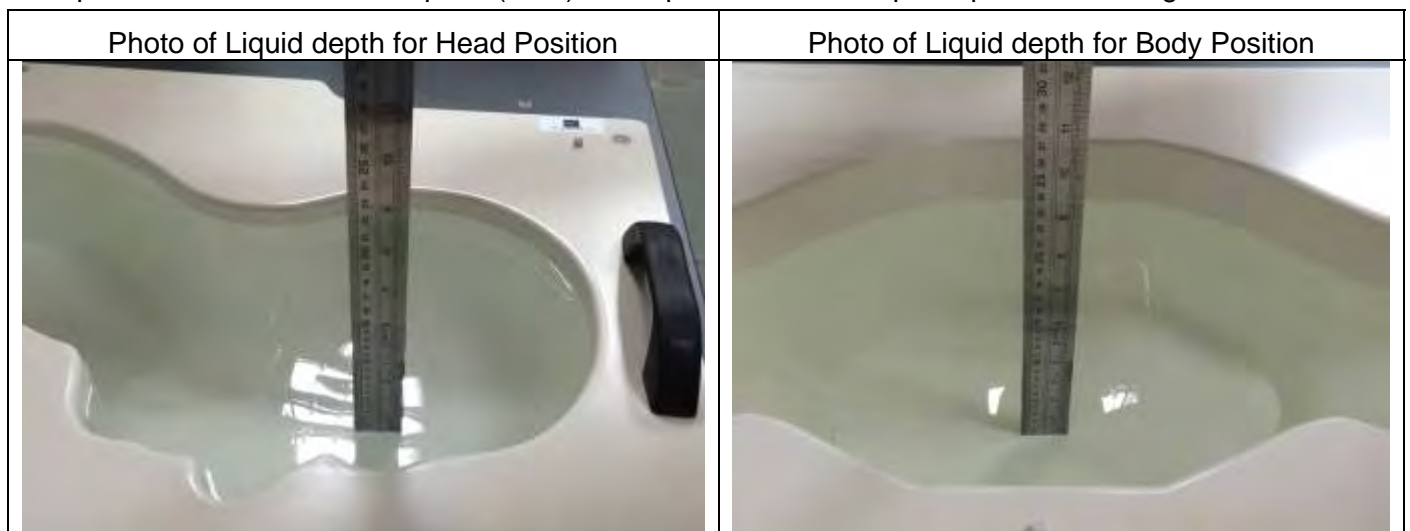
4. System Verification Procedure

4.1. Tissue Verification

The following tissue formulations are provided for reference only as some of the parameters have not been thoroughly verified. The composition of ingredients may be modified accordingly to achieve the desired target tissue parameters required for routine SAR evaluation.

Ingredients (% of weight)	Head Tissue									
	750	835	900	1800	1900	2000	2450	2600	5200	5800
Frequency Band (MHz)	750	835	900	1800	1900	2000	2450	2600	5200	5800
Water	34.40	34.40	34.40	55.36	55.36	57.87	57.87	57.87	65.53	65.53
NaCl	0.79	0.79	0.79	0.35	0.35	0.16	0.16	0.16	0.00	0.00
1,2-Propanediol	64.81	64.81	64.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triton X-100	0.00	0.00	0.00	30.45	30.45	19.97	19.97	19.97	24.24	24.24
DGBE	0.00	0.00	0.00	13.84	13.84	22.00	22.00	22.00	10.23	10.23
Ingredients (% of weight)	Body Tissue									
	750	835	900	1800	1900	2000	2450	2600	5200	5800
Frequency Band (MHz)	750	835	900	1800	1900	2000	2450	2600	5200	5800
Water	50.30	50.30	50.30	69.91	69.91	71.88	71.88	71.88	79.54	79.54
NaCl	0.60	0.60	0.60	0.13	0.13	0.16	0.16	0.16	0.00	0.00
1,2-Propanediol	49.10	49.10	49.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triton X-100	0.00	0.00	0.00	9.99	9.99	19.97	19.97	19.97	11.24	11.24
DGBE	0.00	0.00	0.00	19.97	19.97	7.99	7.99	7.99	9.22	9.22

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 depth from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15 cm.



4.1.1. Tissue Dielectric Parameter Check Results

The simulating liquids should be checked at the beginning of a series of SAR measurements to determine if the dielectric parameters are within the tolerances of the specified target values. The measured conductivity and relative permittivity should be within $\pm 5\%$ of the target values.

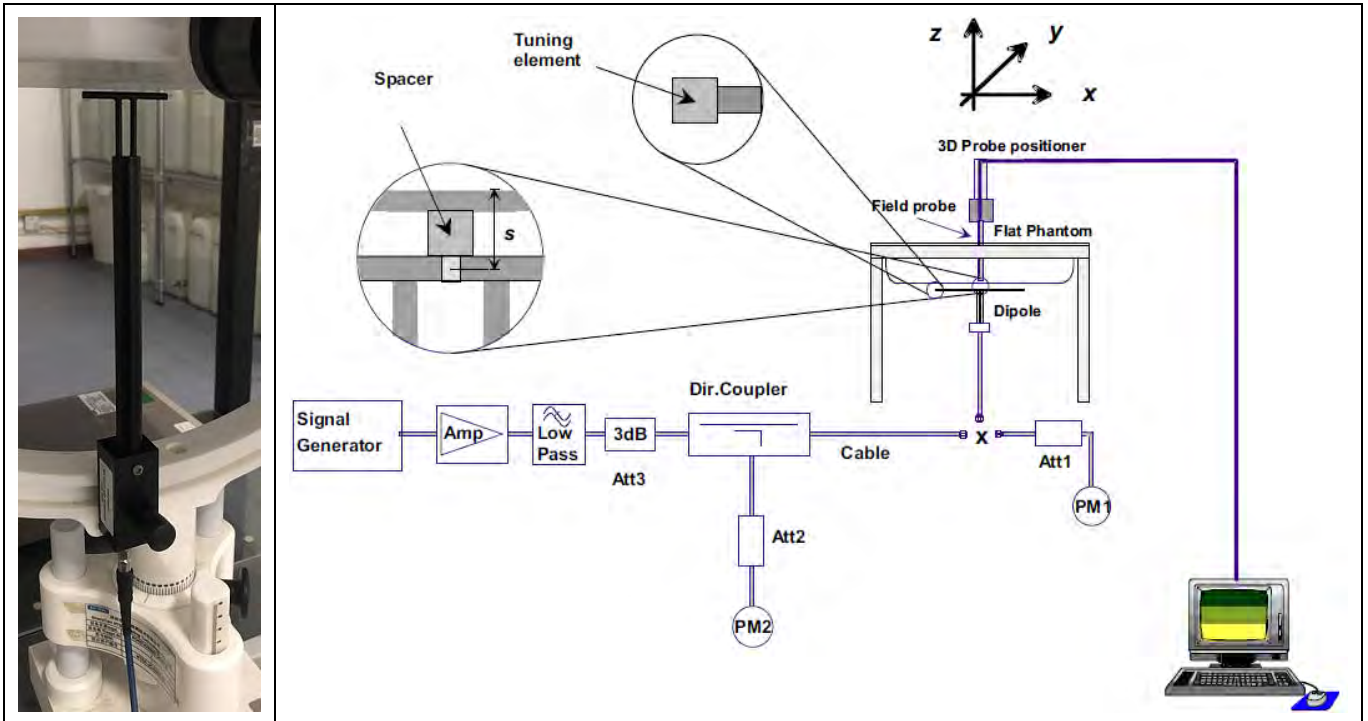
Tissue Type	Measured Frequency (MHz)	Target Tissue		Measured Tissue		Liquid Temp.	Test Date
		ϵ_r ($\pm 5\%$)	σ (S/m) ($\pm 5\%$)	ϵ_r	σ (S/m)		
Head 750	750	41.90 (39.81~43.99)	0.89 (0.85~0.93)	41.28	0.89	21.4 °C	Aug. 02, 2019
Body 750	750	55.50 (52.73~58.27)	0.96 (0.91~1.01)	55.26	0.97	21.5 °C	Jul. 19, 2019
Head 850	835	41.50 (39.43~43.57)	0.90 (0.86~0.94)	41.04	0.92	21.7 °C	Jul. 28, 2019
Body 850	835	55.20 (52.44~57.96)	0.97 (0.92~1.01)	54.62	0.99	21.4 °C	Jul. 19, 2019
Head 1800	1800	40.00 (38.00~42.00)	1.40 (1.33~1.47)	39.27	1.41	21.3 °C	Jul. 28, 2019
Body 1800	1800	53.30 (50.64~55.96)	1.52 (1.44~1.59)	53.57	1.55	21.2 °C	Aug. 01, 2019
Head 1900	1900	40.00 (38.00~42.00)	1.40 (1.33~1.47)	41.31	1.45	21.6 °C	Jul. 17, 2019
Body 1900	1900	53.30 (50.64~55.96)	1.52 (1.44~1.59)	52.97	1.57	21.5 °C	Jul. 21, 2019
Head 2450	2450	39.20 (37.24~41.16)	1.80 (1.71~1.89)	39.44	1.87	21.6 °C	Jul. 25, 2019
Body 2450	2450	52.70 (50.07~55.33)	1.95 (1.85~2.04)	52.44	2.01	21.5 °C	Jul. 25, 2019
Head 2600	2600	39.00 (37.05~40.95)	1.96 (1.86~2.05)	38.56	2.02	21.7 °C	Jul. 24, 2019
Body 2600	2600	52.50 (49.88~55.13)	2.16 (2.05~2.27)	52.79	2.21	21.6 °C	Jul. 25, 2019

NOTE: The dielectric parameters of the tissue-equivalent liquid should be measured under similar ambient conditions and within 2 °C of the conditions expected during the SAR evaluation to satisfy protocol requirements.

4.2. System Verification Procedure

The system verification is performed for verifying the accuracy of the complete measurement system and performance of the software. The dipole is connected to the signal source consisting of signal generator and amplifier via a directional coupler, N-connector cable and adaption to SMA. It is fed with a power of 100mW (below 5GHz) or 100mW (above 5GHz). To adjust this power a power meter is used. The power sensor is connected to the cable before the system verification to measure the power at this point and do adjustments at the signal generator. At the outputs of the directional coupler both return loss as well as forward power are controlled during the system verification to make sure that emitted power at the dipole is kept constant. This can also be checked by the power drift measurement after the test (result on plot).

The system verification is shown as below picture:



4.2.1. System Verification Results

Comparing to the original SAR value provided by SATIMO, the verification data should be within its specification of $\pm 10\%$. Below table shows the target SAR and measured SAR after normalized to 1W input power. The table below indicates the system performance verification can meet the variation criterion and the plots can be referred to Appendix B of this report.

System Verification	Target SAR (1W) ($\pm 10\%$)		Measured SAR (Normalized to 1W)		Liquid Temp.	Test Date
	1-g (W/Kg)	10-g (W/Kg)	1-g (W/Kg)	10-g (W/Kg)		
750MHz Head	8.49 (7.64~9.34)	5.55 (4.99~6.11)	8.37	5.16	21.4 °C	Aug. 02, 2019
750MHz Body	8.55 (7.69~9.41)	5.75 (5.17~6.33)	9.00	6.01	21.5 °C	Jul. 19, 2019
835MHz Head	9.56 (8.60~10.51)	6.22 (5.60~6.84)	9.27	6.28	21.7 °C	Jul. 28, 2019
835MHz Body	9.48 (8.53~10.42)	6.29 (5.66~6.91)	8.96	5.97	21.4 °C	Jul. 19, 2019
1800MHz Head	38.40 (34.56~42.24)	20.10 (18.09~22.11)	38.44	19.43	21.3 °C	Jul. 28, 2019
1800MHz Body	37.04 (33.34~40.74)	20.26 (18.23~22.29)	34.04	21.43	21.2 °C	Aug. 01, 2019
1900MHz Head	39.70 (35.73~43.67)	20.50 (18.45~22.55)	40.21	20.15	21.6 °C	Jul. 17, 2019
1900MHz Body	38.43 (34.59~42.27)	20.34 (18.31~22.37)	38.26	19.91	21.5 °C	Jul. 21, 2019
2450MHz Head	52.40 (47.16~57.64)	24.00 (21.60~26.40)	55.46	24.23	21.6 °C	Jul. 25, 2019
2450MHz Body	49.32 (44.39~54.25)	22.89 (20.60~25.17)	48.22	23.94	21.5 °C	Jul. 25, 2019
2600MHz Head	55.30 (49.77~60.83)	24.60 (22.14~27.06)	55.83	26.72	21.7 °C	Jul. 24, 2019
2600MHz Body	52.95 (47.66~58.25)	23.64 (21.28~26.00)	53.22	24.73	21.6 °C	Jul. 25, 2019

5. SAR Measurement variability and uncertainty

5.1. SAR measurement variability

Per KDB865664 D01 SAR measurement 100 MHz to 6 GHz, SAR measurement variability must be assessed for each frequency band, which is determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. The additional measurements are repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device should be returned to ambient conditions (normal room temperature) with the battery fully charged before it is re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

- 1) Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg; steps 2) through 4) do not apply.
- 2) When the original highest measured SAR is ≥ 0.80 W/kg, repeat that measurement once.
- 3) Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 W/kg (~ 10% from the 1-g SAR limit).
- 4) Perform a third repeated measurement only if the original, first or second repeated measurement is ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20 .

5.2. SAR measurement uncertainty

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

6. RF Exposure Positions

6.1. Ear and handset reference point

Figure 6.1.1 shows the front, back, and side views of the SAM phantom. The center-of-mouth reference point is labeled “M”, the left ear reference point (ERP) is marked “LE”, and the right ERP is marked “RE”.



Fig 6.1.1 Front, back, and side views of SAM phantom

6.2. Definition of the cheek position

1. Define two imaginary lines on the handset, the vertical centerline and the horizontal line. The vertical centerline passes through two points on the front side of the handset: the midpoint of the width w_t of the handset at the level of the acoustic output (point A in Figure 6.2.1 and Figure 6.2.2), and the midpoint of the width w_b of the bottom of the handset (point B). The horizontal line is perpendicular to the vertical centerline and passes through the center of the acoustic output (see Figure 6.2.1). The two lines intersect at point A. Note that for many handsets, point A coincides with the center of the acoustic output; however, the acoustic output may be located elsewhere on the horizontal line. Also note that the vertical centerline is not necessarily parallel to the front face of the handset (see Figure 6.2.2), especially for clamshell handsets, handsets with flip covers, and other irregularly-shaped handsets.
2. Position the handset close to the surface of the phantom such that point A is on the (virtual) extension of the line passing through points RE and LE on the phantom (see Figure 6.2.3), such that the plane defined by the vertical centerline and the horizontal line of the handset is approximately parallel to the sagittal plane of the phantom.
3. Translate the handset towards the phantom along the line passing through RE and LE until handset point A touches the pinna at the ERP
4. While maintaining the handset in this plane, rotate it around the LE-RE line until the vertical centerline is in the plane normal to the plane containing B-M and N-F lines, i.e., the Reference Plane.
5. Rotate the handset around the vertical centerline until the handset (horizontal line) is parallel to the N-F line.

6. While maintaining the vertical centerline in the Reference Plane, keeping point A on the line passing through RE and LE, and maintaining the handset contact with the pinna, rotate the handset about the N-F line until any point on the handset is in contact with a phantom point below the pinna on the cheek. See Figure 6.2.3. The actual rotation angles should be documented in the test report.

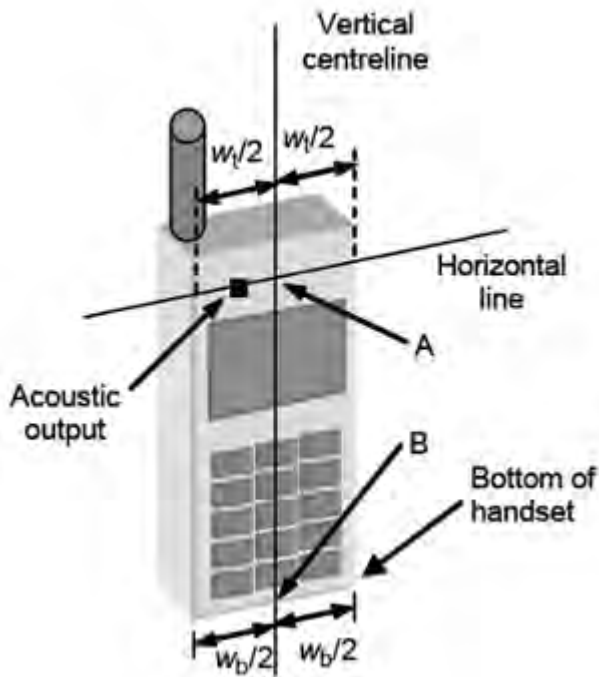


Fig 6.2.1 Handset vertical and horizontal reference lines—“fixed case”

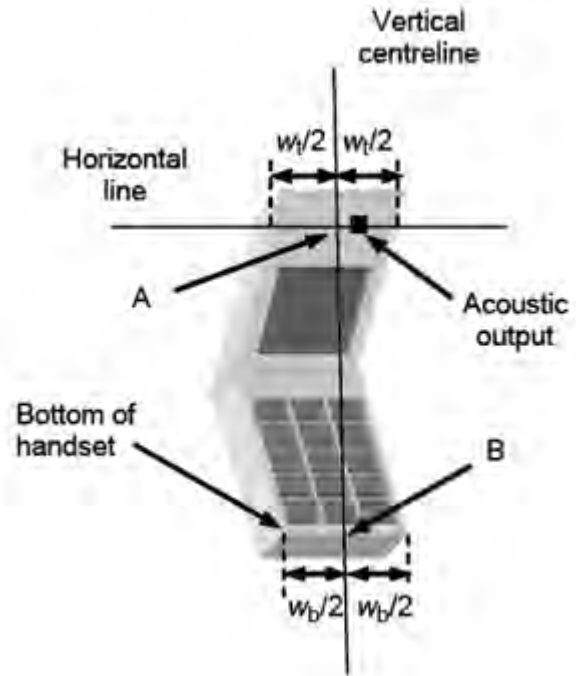


Fig 6.2.2 Handset vertical and horizontal reference lines— “clam-shell case”

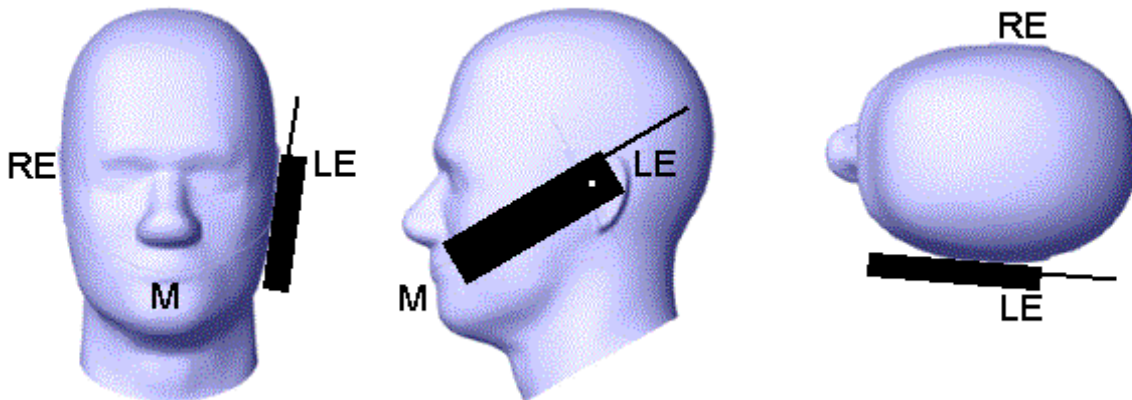


Fig 6.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

6.3. Definition of the tilt position

1. While maintaining the orientation of the handset, retract the handset parallel to the reference plane far enough away from the phantom to enable a rotation of the device by 15 degree.
2. Rotate the Handset around the horizontal line by 15 degree (see Figure 6.3.1).
3. While maintaining the orientation of the handset, move the handset towards the phantom on a line passing through RE and LE until any part of the handset touches the ear. The tilt position is obtained when the contact is on the pinna. If the contact is at any location other than the pinna, e.g., the antenna with the back of the phantom head, the angle of the handset shall be reduced. In this case, the tilt position is obtained if any part of the handset is in contact with the pinna as well as a second part of the handset is in contact with the phantom, e.g., the antenna with the back of the head.

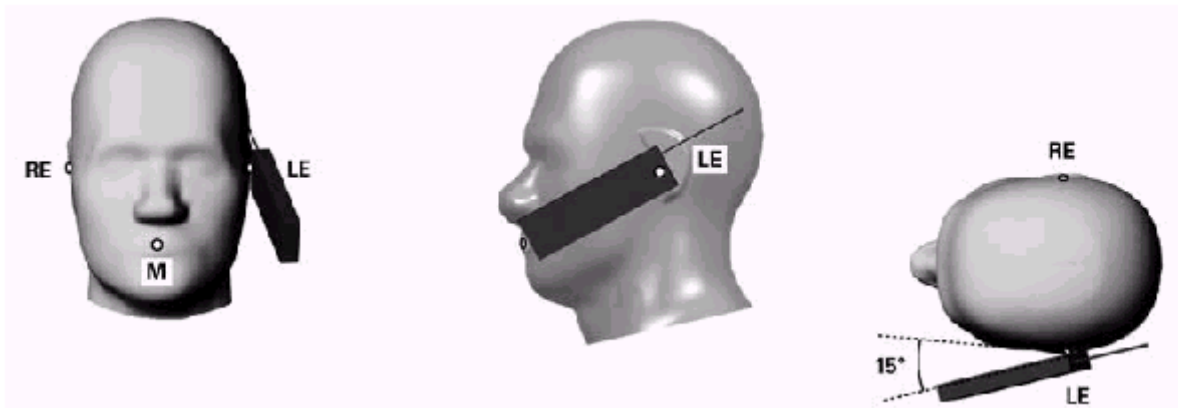


Figure 6.3.1 – Tilt position of the wireless device on the left side of SAM

6.4. Body Worn Accessory

1. Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration (see Figure 6.4.1). Per KDB 648474 D04, body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in FCC KDB 447498 D01 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode, when applicable. When the reported SAR for body-worn accessory, measured without a headset connected to the handset is < 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a handset attached to the handset.
2. Accessories for body-worn operation configurations are divided into two categories: those that do not contain metallic components and those that do contain metallic components and those that do contain metallic components. When multiple accessories that do not contain metallic components are supplied with the device, the device is tested with only the accessory that dictates the closest

spacing to the body. Then multiple accessories that contain metallic components are test with the device with each accessory. If multiple accessories share an identical metallic component (i.e. the same metallic belt-clip used with different holsters with no other metallic components) only the accessory that dictates the closest spacing to the body is tested.

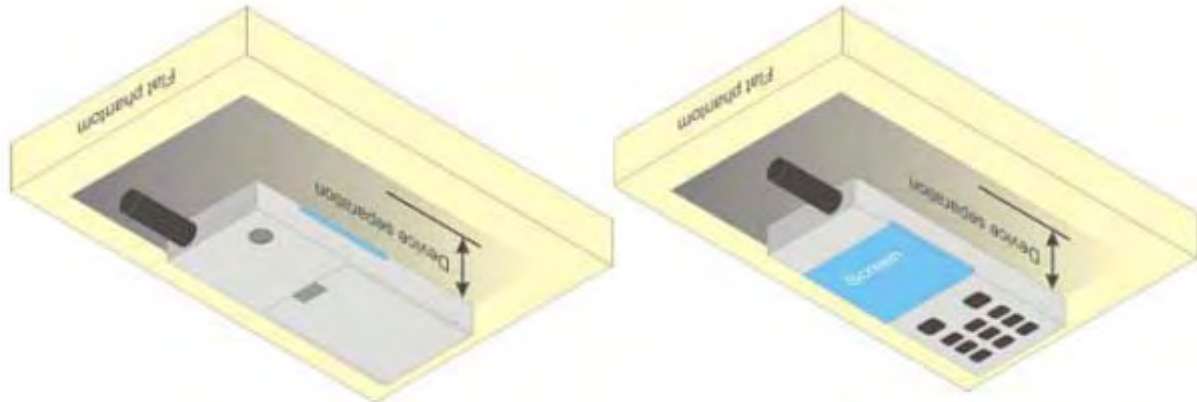


Figure 6.4.1 – Test positions for body-worn devices

6.5. Wireless Router Devices

Some battery-operated handsets have the capability to transmit and receive user through simultaneous transmission of WLAN simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC KDB Publication 941225 D06 where SAR test considerations for handsets ($L \times W \geq 9 \text{ cm} \times 5 \text{ cm}$) are based on a composite test separation distance of 10mm from the front, back and edges of the device containing transmitting antennas within 2.5cm of their edges, determined from general mixed use conditions for this type of devices. Since the hotspot SAR results may overlap with the body-worn accessory SAR requirements, the more conservative configurations can be considered, thus excluding some body-worn accessory SAR tests.

When the user enables the personal wireless router functions for the handset, actual operations include simultaneous transmission of both the WLAN transmitter and another licensed transmitter. Both transmitters often do not transmit at the same transmitting frequency and thus cannot be evaluated for SAR under actual use conditions due to the limitations of the SAR assessment probes. Therefore, SAR must be evaluated for each frequency transmission and mode separately and spatially summed with the WLAN transmitter according to FCC KDB Publication 447498 D01 publication procedures. The “Portable Hotspot” feature on the handset was NOT activated during SAR assessments, to ensure the SAR measurements were evaluated for a single transmission frequency RF signal at a time.

7. RF Output Power

7.1. GSM Conducted Power

Band GSM850		Burst-Averaged output Power (dBm)			Frame-Averaged output Power (dBm)			
Tx Channel	Tune-up (dBm)	128	189	251	Tune-up	128	189	251
Frequency (MHz)		824.2	836.4	848.8	(dBm)	824.2	836.4	848.8
GSM (GMSK)	33.50	33.15	33.09	33.02	24.47	24.12	24.06	23.99
GPRS(GMSK, 1 TS)	33.50	33.15	33.08	33.02	24.47	24.12	24.05	23.99
GPRS(GMSK, 2 TS)	32.50	32.30	32.19	32.13	26.48	26.28	26.17	26.11
GPRS(GMSK, 3 TS)	30.50	30.32	30.21	30.19	26.24	26.06	25.95	25.93
GPRS(GMSK, 4 TS)	29.50	29.14	29.06	29.07	26.49	26.13	26.05	26.06
EDGE(GMSK, 1 TS)	28.00	27.63	27.45	27.68	18.97	18.60	18.42	18.65
EDGE(GMSK, 2 TS)	27.00	26.24	26.47	26.18	20.98	20.22	20.45	20.16
EDGE(GMSK, 3 TS)	25.00	24.49	24.19	24.46	20.74	20.23	19.93	20.20
EDGE(GMSK, 4 TS)	24.00	23.27	23.09	23.27	20.99	20.26	20.08	20.26
Band GSM1900		Burst-Averaged output Power (dBm)			Frame-Averaged output Power (dBm)			
Tx Channel	Tune-up (dBm)	512	661	810	Tune-up	512	661	810
Frequency (MHz)		1850.2	1880.0	1909.8	(dBm)	1850.2	1880.0	1909.8
GSM (GMSK)	31.00	29.77	29.90	30.41	21.97	20.74	20.87	21.38
GPRS(GMSK, 1 TS)	31.00	29.77	29.89	30.41	21.97	20.74	20.86	21.38
GPRS(GMSK, 2 TS)	30.00	28.93	29.07	29.69	23.98	22.91	23.05	23.67
GPRS(GMSK, 3 TS)	28.00	27.08	27.19	27.89	23.74	22.82	22.93	23.63
GPRS(GMSK, 4 TS)	27.00	26.03	26.17	26.89	23.99	23.02	23.16	23.88
EDGE(GMSK, 1 TS)	27.00	25.92	26.06	25.53	17.97	16.89	17.03	16.50
EDGE(GMSK, 2 TS)	25.00	24.85	24.93	24.34	18.98	18.83	18.91	18.32
EDGE(GMSK, 3 TS)	23.00	22.81	22.82	22.34	18.74	18.55	18.56	18.08
EDGE(GMSK, 4 TS)	22.00	21.59	21.62	21.06	18.99	18.58	18.61	18.05

Note: The frame-averaged power is linearly scaled the maximum burst averaged power over 8 time slots.

The calculated method are shown as below:

Frame-averaged power = Maximum burst averaged power (1 TS) - 9.03 dB

Frame-averaged power = Maximum burst averaged power (2 TS) - 6.02 dB

Frame-averaged power = Maximum burst averaged power (3 TS) - 4.26 dB

Frame-averaged power = Maximum burst averaged power (4 TS) - 3.01 dB

7.2. WCDMA Conducted Power

Band	WCDMA Band V			
Tx Channel	Tune-up	4132	4182	4233
Frequency (MHz)		826.4	836.4	846.6

RMC 12.2Kbps	23.50	23.28	23.17	23.17
HSDPA Subtest-1	23.00	22.35	22.25	22.26
HSDPA Subtest-2	22.00	21.92	21.55	21.21
HSDPA Subtest-3	21.00	20.49	20.85	20.54
HSDPA Subtest-4	21.00	20.84	20.77	20.70
HSUPA Subtest-1	22.00	21.90	21.75	21.81
HSUPA Subtest-2	23.00	22.15	22.10	22.20
HSUPA Subtest-3	22.00	21.23	21.16	21.02
HSUPA Subtest-4	23.00	22.38	22.24	22.26
HSUPA Subtest-5	22.00	21.61	21.54	21.42
Band	WCDMA Band IV			
Tx Channel	Tune-up	1312	1413	1513
Frequency (MHz)		1712.4	1732.6	1752.6
RMC 12.2Kbps	23.50	23.19	23.10	23.07
HSDPA Subtest-1	23.00	22.40	22.25	22.23
HSDPA Subtest-2	22.00	21.74	21.62	21.65
HSDPA Subtest-3	21.00	20.72	20.49	20.73
HSDPA Subtest-4	21.00	20.65	20.79	20.53
HSUPA Subtest-1	23.00	22.05	21.86	21.62
HSUPA Subtest-2	23.00	22.29	22.17	22.19
HSUPA Subtest-3	22.00	21.18	20.78	20.72
HSUPA Subtest-4	23.00	22.39	22.25	22.23
HSUPA Subtest-5	22.00	21.61	21.30	21.27
Band	WCDMA Band II			
Tx Channel	Tune-up	9262	9400	9538
Frequency (MHz)		1852.4	1880	1907.6
RMC 12.2Kbps	24.00	23.44	23.56	23.42
HSDPA Subtest-1	23.00	22.63	22.67	22.54
HSDPA Subtest-2	23.00	21.89	22.08	21.71
HSDPA Subtest-3	22.00	21.19	20.96	20.90
HSDPA Subtest-4	22.00	21.20	20.85	21.02
HSUPA Subtest-1	23.00	22.06	22.25	22.05
HSUPA Subtest-2	23.00	22.48	22.58	22.48
HSUPA Subtest-3	22.00	21.29	21.34	21.33
HSUPA Subtest-4	23.00	22.63	22.70	22.51
HSUPA Subtest-5	22.00	21.55	21.90	21.68

7.3. LTE Conducted Power

Band	Band Width	Modulation	RB Configuration		Tune-up	Channel/Frequency(MHz)		
			RB Size	RB Offset		18607/1850.7	18900/1880	19193/1909.3
LTE Band II	1.4MHz	QPSK	1	0	25.00	24.40	24.42	24.09
			1	2	25.00	24.53	24.60	24.28
			1	5	25.00	24.38	24.41	24.10
			3	0	25.00	24.45	24.47	24.00
			3	1	25.00	24.45	24.81	23.95
			3	2	25.00	24.43	24.49	23.88
		16QAM	6	0	24.00	23.51	23.48	22.69
			1	0	24.00	23.25	23.50	22.94
			1	2	24.00	23.38	23.63	23.05
			1	5	24.00	23.23	23.51	22.93
			3	0	24.00	23.61	23.66	23.10
			3	1	24.00	23.59	23.64	23.16
			3	2	24.00	23.62	23.62	23.15
6	0	23.00	22.63	22.60	21.91			
Band	Band Width	Modulation	RB Configuration		Tune-up	Channel/Frequency(MHz)		
			RB Size	RB Offset		18615/1851.5	18900/1880	19185/1908.5
LTE Band II	3MHz	QPSK	1	0	25.00	23.97	23.92	23.80
			1	7	25.00	24.15	24.16	24.14
			1	14	25.00	23.87	23.94	23.72
			8	0	23.00	22.94	22.92	22.77
			8	4	23.00	22.95	22.97	22.76
			8	7	23.00	22.94	22.93	22.71
			15	0	23.00	22.89	22.92	22.75
		16QAM	1	0	24.00	23.30	23.16	22.71
			1	7	24.00	23.56	23.52	23.04
			1	14	24.00	23.25	23.04	22.63
			8	0	22.00	21.95	21.93	21.77
			8	4	22.00	21.97	21.95	21.78
			8	7	22.00	21.91	21.90	21.73
15	0	22.00	21.92	21.87	21.85			
Band	Band Width	Modulation	RB Configuration		Tune-up	Channel/Frequency(MHz)		

II			1	74	25.00	23.87	23.79	23.58			
			36	0	24.00	23.04	23.08	22.87			
			36	18	24.00	23.00	23.03	22.84			
			36	37	24.00	23.00	23.00	22.77			
			75	0	24.00	23.07	23.09	22.86			
		16QAM	1	0	24.00	23.31	23.10	22.90			
			1	37	24.00	23.57	23.44	23.12			
			1	74	24.00	23.27	22.95	22.83			
			36	0	23.00	22.07	22.11	21.84			
			36	18	23.00	22.02	22.04	21.84			
			36	37	23.00	22.00	22.03	21.74			
			75	0	23.00	22.01	21.99	21.83			
			Band	Band Width	Modulation	RB Configuration		Tune-up	Channel/Frequency(MHz)		
						RB Size	RB Offset		18700/1860	18900/1880	19100/1900
LTE Band II	20MHz	QPSK	1	0	25.00	23.91	23.89	23.70			
			1	49	25.00	24.06	24.91	23.93			
			1	99	25.00	23.83	23.71	23.63			
			50	0	24.00	22.97	23.09	22.77			
			50	24	24.00	22.98	22.98	22.90			
			50	49	24.00	22.98	22.94	22.70			
			100	0	24.00	22.98	23.01	22.74			
		16QAM	1	0	24.00	23.18	23.11	22.95			
			1	49	24.00	23.33	23.30	23.15			
			1	99	24.00	23.09	23.01	22.92			
			50	0	23.00	22.00	22.10	21.85			
			50	24	23.00	22.05	21.99	21.91			
			50	49	23.00	22.00	21.90	21.76			
			100	0	23.00	21.97	22.00	21.77			

Band	Band Width	Modulation	RB Configuration		Tune-up	Channel/Frequency(MHz)		
			RB Size	RB Offset		19957/1710.7	20175/1732.5	20393/1754.3
LTE Band IV	1.4MHz	QPSK	1	0	24.00	23.64	23.57	23.45
			1	2	24.00	23.84	23.74	23.65
			1	5	24.00	23.69	23.60	23.46
			3	0	24.00	23.77	23.65	23.59
			3	1	24.00	23.85	23.66	23.58

			3	2	24.00	23.86	23.92	23.58
			6	0	23.00	22.74	22.63	22.46
		16QAM	1	0	24.00	22.92	22.44	22.69
			1	2	24.00	23.02	22.59	22.81
			1	5	24.00	22.92	22.43	22.72
			3	0	24.00	23.05	22.77	22.75
			3	1	24.00	23.04	22.79	22.76
			3	2	24.00	23.09	22.79	22.77
			6	0	22.00	21.92	21.76	21.67
Band	Band Width	Modulation	RB Configuration		Tune-up	Channel/Frequency(MHz)		
			RB Size	RB Offset		19965/1711.5	20175/1732.5	20385/1753.5
LTE Band IV	3MHz	QPSK	1	0	24.00	23.80	23.56	23.53
			1	7	24.00	24.00	23.89	23.83
			1	14	24.00	23.79	23.63	23.46
			8	0	23.00	22.74	22.60	22.51
			8	4	23.00	22.77	22.65	22.51
			8	7	23.00	22.74	22.59	22.43
			15	0	23.00	22.75	22.56	22.45
		16QAM	1	0	24.00	23.21	22.75	22.49
			1	7	24.00	23.44	23.08	22.87
			1	14	24.00	23.18	22.73	22.41
			8	0	22.00	21.76	21.58	21.48
			8	4	22.00	21.81	21.57	21.51
			8	7	22.00	21.75	21.55	21.45
			15	0	22.00	21.75	21.50	21.52
Band	Band Width	Modulation	RB Configuration		Tune-up	Channel/Frequency(MHz)		
			RB Size	RB Offset		19975/1712.5	20175/1732.5	20375/1752.5
LTE Band IV	5MHz	QPSK	1	0	24.00	23.70	23.55	23.49
			1	12	24.00	24.00	23.90	23.80
			1	24	24.00	23.75	23.54	23.42
			12	0	23.00	22.75	22.60	22.54
			12	6	23.00	22.82	22.63	22.57
			12	11	23.00	22.75	22.55	22.49
			25	0	23.00	22.83	22.61	22.54
		16QAM	1	0	24.00	23.23	22.81	22.82
			1	12	24.00	23.76	23.00	23.18

Band	Band Width	Modulation	RB Configuration		Tune-up	Channel/Frequency(MHz)		
			RB Size	RB Offset		20000/1715	20175/1732.5	20350/1750
			1	24	24.00	23.27	22.80	22.80
			12	0	22.00	21.84	21.53	21.60
			12	6	22.00	21.82	21.57	21.60
			12	11	22.00	21.77	21.51	21.46
			25	0	22.00	21.75	21.58	21.53
LTE Band IV	10MHz	QPSK	1	0	24.00	23.79	23.64	23.60
			1	24	24.00	23.90	23.73	23.67
			1	49	24.00	23.73	23.63	23.49
			25	0	23.00	22.88	22.63	22.64
			25	12	23.00	22.83	22.63	22.57
			25	24	23.00	22.81	22.62	22.53
			50	0	23.00	22.85	22.61	22.57
		16QAM	1	0	24.00	23.19	22.79	22.48
			1	24	24.00	23.36	22.88	22.58
			1	49	24.00	23.11	22.80	22.43
			25	0	22.00	21.84	21.59	21.61
			25	12	22.00	21.86	21.60	21.53
			25	24	22.00	21.79	21.61	21.48
			50	0	22.00	21.83	21.64	21.55
Band	Band Width	Modulation	RB Configuration		Tune-up	Channel/Frequency(MHz)		
			RB Size	RB Offset		20025/1717.5	20175/1732.5	20325/1747.5
LTE Band IV	15MHz	QPSK	1	0	24.00	23.79	23.68	23.49
			1	37	24.00	23.97	23.89	23.84
			1	74	24.00	23.64	23.53	23.37
			36	0	23.00	22.77	22.65	22.69
			36	18	23.00	22.80	22.66	22.61
			36	37	23.00	22.73	22.58	22.50
			75	0	23.00	22.81	22.67	22.62
		16QAM	1	0	24.00	23.15	22.82	22.68
			1	37	24.00	23.57	22.89	22.82
			1	74	24.00	23.00	22.69	22.56
			36	0	22.00	21.82	21.70	21.61
			36	18	22.00	21.79	21.70	21.57
			36	37	22.00	21.77	21.64	21.47

Band	Band Width	Modulation	RB Configuration		Tune-up	Channel/Frequency(MHz)		
			RB Size	RB Offset		20050/1720	20175/1732.5	20300/1745
			75	0		22.00	21.77	21.57
LTE Band IV	20MHz	QPSK	1	0	24.00	23.73	23.60	23.51
			1	49	24.00	23.86	23.99	23.76
			1	99	24.00	23.56	23.52	23.40
			50	0	23.00	22.80	22.60	22.74
			50	24	23.00	22.80	22.64	22.64
			50	49	23.00	22.74	22.55	22.50
		16QAM	100	0	23.00	22.77	22.56	22.63
			1	0	24.00	23.03	22.84	22.72
			1	49	24.00	23.16	22.97	23.03
			1	99	24.00	22.87	22.78	22.65
			50	0	22.00	21.81	21.51	21.75
			50	24	22.00	21.83	21.64	21.69
			50	49	22.00	21.79	21.46	21.51
			100	0	22.00	21.78	21.51	21.65

Band	Band Width	Modulation	RB Configuration		Tune-up	Channel/Frequency(MHz)		
			RB Size	RB Offset		20407/824.7	20525/836.5	20643/848.3
			RB Size	RB Offset		20407/824.7	20525/836.5	20643/848.3
LTE Band V	1.4MHz	QPSK	1	0	24.00	23.88	23.52	23.38
			1	2	24.00	23.90	23.67	23.53
			1	5	24.00	23.70	23.47	23.37
			3	0	24.00	23.70	23.83	23.40
			3	1	24.00	23.62	23.49	23.36
			3	2	24.00	23.54	23.47	23.33
			6	0	23.00	22.53	22.58	22.45
		16QAM	1	0	23.00	22.63	22.48	22.08
			1	2	23.00	22.69	22.58	22.27
			1	5	23.00	22.64	22.50	22.08
			3	0	23.00	22.71	22.57	22.44
			3	1	23.00	22.71	22.59	22.48
			3	2	23.00	22.69	22.59	22.45
			6	0	22.00	21.70	21.59	21.56

Band	Band Width	Modulation	RB Configuration	Tune-up	Channel/Frequency(MHz)
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Band	Band Width	Modulation	RB Configuration		Tune-up	Channel/Frequency(MHz)		
			RB Size	RB Offset		20425/826.5	20525/836.5	20625/846.5
LTE Band V	3MHz	QPSK	1	0	24.00	20415/825.5	20525/836.5	20635/847.5
			1	7	24.00	23.52	23.53	23.43
			1	14	24.00	23.85	23.91	23.72
			8	0	23.00	23.42	23.45	23.44
			8	4	23.00	22.46	22.47	22.37
			8	7	23.00	22.47	22.52	22.38
			15	0	23.00	22.43	22.43	22.34
		16QAM	15	0	23.00	22.42	22.36	22.30
			1	0	23.00	22.87	22.52	22.18
			1	7	23.00	23.00	22.90	22.37
			1	14	23.00	22.79	22.47	22.09
			8	0	22.00	21.55	21.44	21.33
			8	4	22.00	21.53	21.44	21.38
			8	7	22.00	21.47	21.40	21.31
15	0	22.00	21.50	21.30	21.41			
LTE Band V	5MHz	QPSK	1	0	24.00	20425/826.5	20525/836.5	20625/846.5
			1	12	24.00	23.40	23.50	23.31
			1	24	24.00	23.81	23.92	23.59
			12	0	23.00	23.41	23.38	23.28
			12	6	23.00	22.47	22.38	22.34
			12	11	23.00	22.43	22.45	22.39
			25	0	23.00	22.32	22.40	22.24
		16QAM	25	0	23.00	22.47	22.39	22.36
			1	0	23.00	22.93	22.55	22.56
			1	12	23.00	23.00	22.99	22.85
			1	24	23.00	22.74	22.54	22.42
			12	0	22.00	21.54	21.34	21.50
			12	6	22.00	21.55	21.39	21.45
			12	11	22.00	21.39	21.38	21.33
25	0	22.00	21.44	21.36	21.33			
LTE Band	10MHz	QPSK	RB Configuration		Tune-up	Channel/Frequency(MHz)		
			RB Size	RB Offset		20450/829	20525/836.5	20600/844
LTE Band	10MHz	QPSK	1	0	24.00	23.49	23.52	23.42
			1	24	24.00	23.60	23.69	23.58

V			1	49	24.00	23.49	23.40	23.38	
			25	0	23.00	22.57	22.36	22.47	
			25	12	23.00	22.45	22.43	22.46	
			25	24	23.00	22.53	22.44	22.35	
			50	0	23.00	22.55	22.41	22.38	
	16QAM			1	0	23.00	22.84	22.44	22.18
				1	24	23.00	22.83	22.62	22.39
				1	49	23.00	22.63	22.47	22.08
				25	0	22.00	21.65	21.32	21.50
				25	12	22.00	21.47	21.42	21.48
				25	24	22.00	21.54	21.44	21.36
				50	0	22.00	21.56	21.44	21.41

Band	Band Width	Modulation	RB Configuration		Tune-up	Channel/Frequency(MHz)		
			RB Size	RB Offset		20775/2502.5	21100/2535	21425/2567.5
LTE Band VII	5MHz	QPSK	1	0	25.00	24.59	24.09	24.39
			1	12	25.00	24.90	24.56	24.78
			1	24	25.00	24.37	24.06	24.56
			12	0	24.00	23.64	23.08	23.44
			12	6	24.00	23.62	23.16	23.52
			12	11	24.00	23.56	23.13	23.49
		16QAM	25	0	24.00	23.55	23.15	23.48
			1	0	24.00	23.73	23.50	23.60
			1	12	24.00	24.00	23.86	24.00
			1	24	24.00	23.64	23.47	23.62
			12	0	23.00	22.65	22.12	22.39
			12	6	23.00	22.66	22.19	22.47
			12	11	23.00	22.57	22.17	22.38
25	0	23.00	22.54	22.13	22.48			

Band	Band Width	Modulation	RB Configuration		Tune-up	Channel/Frequency(MHz)		
			RB Size	RB Offset		20800/2505	21100/2535	21400/2565
LTE Band VII	10MHz	QPSK	1	0	25.00	24.73	24.13	24.37
			1	24	25.00	24.55	24.24	24.59
			1	49	25.00	24.39	24.12	24.61
			25	0	24.00	23.60	23.21	23.44
			25	12	24.00	23.52	23.13	23.44

		16QAM	25	24	24.00	23.52	23.17	23.48
			50	0	24.00	23.57	23.18	23.47
			1	0	24.00	23.92	23.25	23.15
			1	24	24.00	23.87	23.36	23.34
			1	49	24.00	23.77	23.25	23.25
			25	0	23.00	22.60	22.18	22.43
			25	12	23.00	22.54	22.16	22.42
			25	24	23.00	22.53	22.13	22.49
			50	0	23.00	22.57	22.22	22.45
Band	Band Width	Modulation	RB Configuration		Tune-up	Channel/Frequency(MHz)		
			RB Size	RB Offset		20825/2507.5	21100/2535	21375/2562.5
LTE Band VII	15MHz	QPSK	1	0	25.00	24.64	24.15	24.23
			1	37	25.00	24.72	24.38	24.59
			1	74	25.00	24.26	24.00	24.46
			36	0	24.00	23.64	23.20	23.46
			36	18	24.00	23.52	23.20	23.53
			36	37	24.00	23.49	23.11	23.59
		16QAM	75	0	24.00	23.61	23.19	23.59
			1	0	24.00	23.89	23.32	23.34
			1	37	24.00	23.96	23.48	23.75
			1	74	24.00	23.60	23.16	23.48
			36	0	23.00	22.61	22.22	22.39
			36	18	23.00	22.52	22.22	22.43
			36	37	23.00	22.42	22.14	22.46
			75	0	23.00	22.53	22.15	22.49
Band	Band Width	Modulation	RB Configuration		Tune-up	Channel/Frequency(MHz)		
			RB Size	RB Offset		20850/2510	21100/2535	21350/2560
LTE Band VII	20MHz	QPSK	1	0	25.00	24.67	24.93	24.35
			1	49	25.00	24.61	24.29	24.52
			1	99	25.00	24.17	23.99	24.54
			50	0	24.00	23.52	23.88	23.43
			50	24	24.00	23.50	23.19	23.45
			50	49	24.00	23.43	23.07	23.41
			100	0	24.00	23.46	23.11	23.39
		16QAM	1	0	24.00	23.79	23.44	23.51
			1	49	24.00	23.85	23.44	23.70

			1	99	24.00	23.43	23.20	23.51
			50	0	23.00	22.56	22.16	22.46
			50	24	23.00	22.53	22.18	22.52
			50	49	23.00	22.44	22.07	22.46
			100	0	23.00	22.43	22.17	22.38

Band	Band Width	Modulation	RB Configuration		Tune-up	Channel/Frequency(MHz)		
			RB Size	RB Offset		23017/699.7	23095/707.5	23173/715.3
LTE Band XII	1.4MHz	QPSK	1	0	24.00	23.44	23.43	23.28
			1	2	24.00	23.60	23.59	23.48
			1	5	24.00	23.50	23.42	23.23
			3	0	24.00	23.51	23.55	23.35
			3	1	24.00	23.49	23.48	23.36
			3	2	24.00	23.49	23.46	23.32
		16QAM	6	0	23.00	22.55	22.47	22.41
			1	0	23.00	22.34	22.64	22.51
			1	2	23.00	22.55	22.75	22.62
			1	5	23.00	22.38	22.60	22.46
			3	0	23.00	22.70	22.70	22.60
			3	1	23.00	22.74	22.69	22.61
			3	2	23.00	22.75	22.63	22.56
			6	0	22.00	21.71	21.62	21.52

Band	Band Width	Modulation	RB Configuration		Tune-up	Channel/Frequency(MHz)		
			RB Size	RB Offset		23025/700.5	23095/707.5	23165/714.5

LTE Band XII	3MHz	QPSK	1	0	24.00	23.46	23.38	23.51
			1	7	24.00	23.79	23.67	24.00
			1	14	24.00	23.46	23.39	23.52
			8	0	23.00	22.48	22.40	22.82
			8	4	23.00	22.50	22.46	22.70
			8	7	23.00	22.46	22.44	22.66
		16QAM	15	0	23.00	22.45	22.37	22.80
			1	0	23.00	22.93	22.60	22.70
			1	7	23.00	23.00	22.92	22.94
			1	14	23.00	22.89	22.62	22.61
			8	0	22.00	21.46	21.40	21.85
			8	4	22.00	21.49	21.45	21.86

Band	Band Width	Modulation	RB Configuration		Tune-up	Channel/Frequency(MHz)		
			RB Size	RB Offset		23035/701.5	23095/707.5	23155/713.5
			8	7	22.00	21.44	21.40	21.81
			15	0	22.00	21.46	21.35	21.87
LTE Band XII	5MHz	QPSK	1	0	24.00	23.89	23.87	23.70
			1	12	24.00	23.98	24.00	23.97
			1	24	24.00	23.89	23.84	23.66
			12	0	23.00	22.91	22.89	22.92
			12	6	23.00	22.98	22.97	22.87
			12	11	23.00	22.91	23.00	22.78
			25	0	23.00	22.95	22.93	22.86
		16QAM	1	0	24.00	23.40	23.16	23.08
			1	12	24.00	23.81	23.54	23.46
			1	24	24.00	23.41	23.14	22.96
			12	0	22.00	21.94	21.81	21.86
			12	6	22.00	22.00	21.89	21.90
			12	11	22.00	21.94	21.88	21.82
			25	0	22.00	21.87	21.89	21.77
Band	Band Width	Modulation	RB Configuration		Tune-up	Channel/Frequency(MHz)		
			RB Size	RB Offset		23060/704	23095/707.5	23130/711
LTE Band XII	10MHz	QPSK	1	0	24.00	23.91	23.83	23.89
			1	24	24.00	23.95	24.00	23.92
			1	49	24.00	23.89	23.79	23.78
			25	0	23.00	22.92	22.95	22.89
			25	12	23.00	22.91	22.98	22.93
			25	24	23.00	22.95	23.00	22.91
			50	0	23.00	22.95	22.94	22.90
		16QAM	1	0	24.00	23.35	23.09	22.79
			1	24	24.00	23.45	23.22	22.87
			1	49	24.00	23.29	23.02	22.62
			25	0	22.00	21.98	21.90	21.88
			25	12	22.00	21.96	21.96	21.87
			25	24	22.00	21.93	22.00	21.85
			50	0	22.00	21.93	21.99	21.82

Band	Band Width	Modulation	RB Configuration		Tune-up	Channel/Frequency(MHz)		
			RB Size	RB Offset		23755/706.5	23790/710	23825/713.5
LTE Band XVII	5MHz	QPSK	1	0	24.00	23.86	23.87	23.85
			1	12	24.00	23.96	24.00	23.92
			1	24	24.00	23.85	23.80	23.77
			12	0	23.00	22.95	22.88	22.90
			12	6	23.00	23.00	22.95	22.90
			12	11	23.00	22.95	22.84	22.84
			25	0	23.00	22.94	22.95	22.86
		16QAM	1	0	24.00	23.22	23.42	23.16
			1	12	24.00	23.71	23.84	23.43
			1	24	24.00	23.16	23.34	23.05
			12	0	22.00	22.00	21.91	21.85
			12	6	22.00	22.00	22.00	21.89
			12	11	22.00	22.00	21.92	21.82
			25	0	22.00	21.92	21.87	21.89
Band	Band Width	Modulation	RB Configuration		Tune-up	Channel/Frequency(MHz)		
			RB Size	RB Offset		23780/709	23790/710	23800/711
LTE Band XVII	10MHz	QPSK	1	0	24.00	23.93	23.94	23.95
			1	24	24.00	23.98	24.00	23.99
			1	49	24.00	23.91	23.85	23.83
			25	0	23.00	22.92	23.00	22.97
			25	12	23.00	23.00	22.98	22.94
			25	24	23.00	22.95	22.88	22.87
			50	0	23.00	22.95	22.91	22.89
		16QAM	1	0	24.00	23.36	23.12	22.82
			1	24	24.00	23.48	23.25	22.93
			1	49	24.00	23.22	22.95	22.63
			25	0	22.00	21.92	21.88	21.91
			25	12	22.00	21.99	21.97	21.95
			25	24	22.00	21.97	21.90	21.89
			50	0	22.00	21.96	21.92	21.90

7.4. WLAN & Bluetooth Output Power

7.4.1. Output Power Results Of WLAN

Mode	Channel	Frequency (MHz)	Tune-up	Output Power (dBm)
802.11b	1	2412	15.50	14.99
	6	2437	15.50	15.04
	11	2462	15.50	15.46
802.11g	1	2412	15.00	14.01
	6	2437	15.00	14.40
	11	2462	15.00	14.35
802.11n HT20	1	2412	15.00	13.82
	6	2437	15.00	14.41
	11	2462	15.00	14.55
802.11n HT40	3	2422	15.00	13.48
	6	2437	15.00	13.70
	9	2452	15.00	14.11

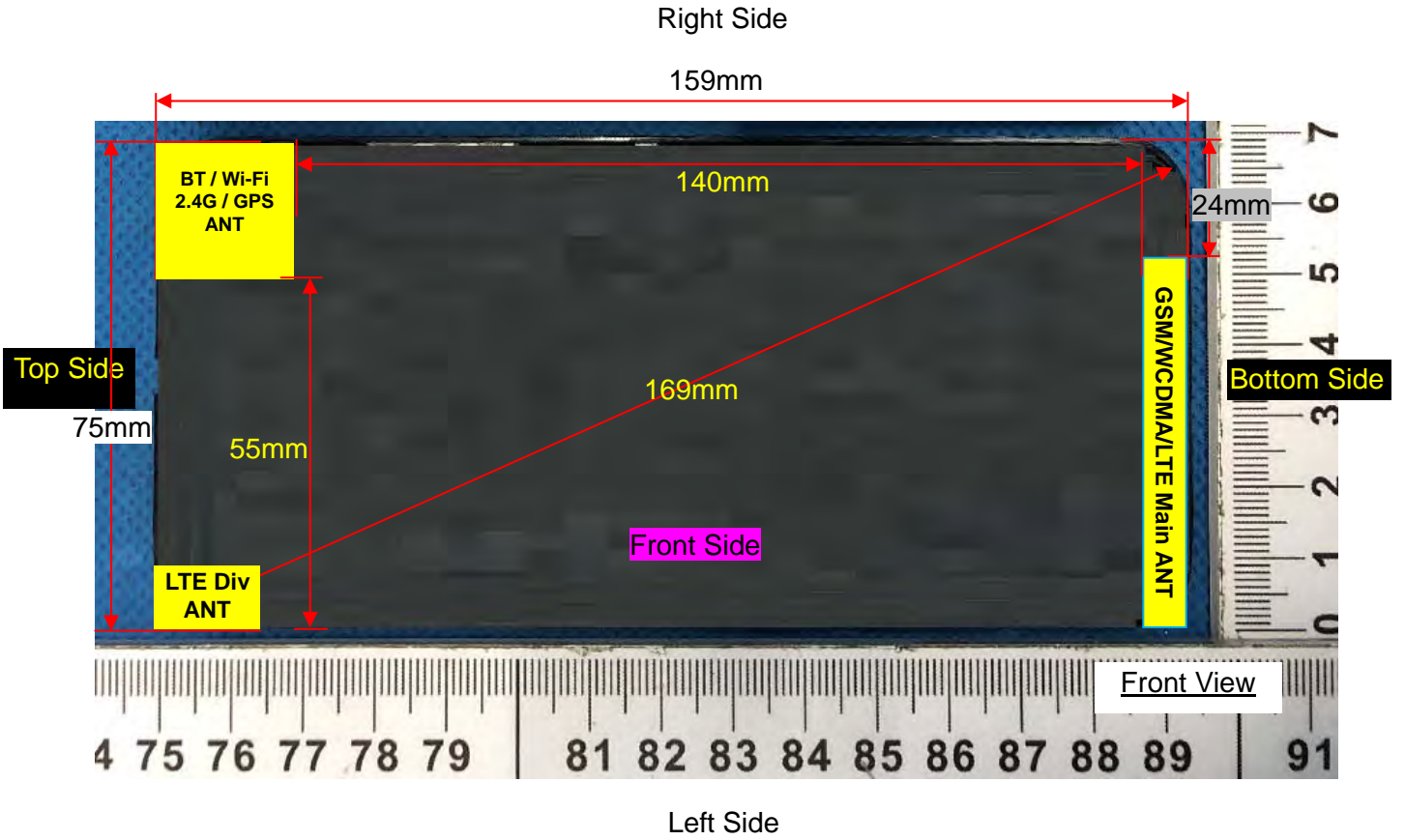
NOTE: Power measurement results of WLAN 2.4G.

7.4.2. Output Power Results Of Bluetooth

BR+EDR	Output Power (dBm)				
	Channel	Tune-up	Data Rates		
			1M	2M	3M
	0CH	5.00	4.623	3.482	3.183
	39CH	5.00	4.786	3.536	3.717
	78CH	3.00	2.378	1.372	1.298

BLE	Channel	Tune-up	Output Power (dBm)
	0CH	5.00	4.203
	19CH	5.00	4.435
	39CH	3.00	2.159

8. Antenna Location



Distance of the Antenna to the EUT surface/edge						
Antennas	Front Side	Back Side	Left Side	Right Side	Top Side	Bottom Side
WWAN Main	≤ 25mm	≤ 25mm	≤ 25mm	≤ 25mm	>25mm	≤ 25mm
WLAN & Bluetooth	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	≤ 25mm	>25mm
Positions for SAR tests						
Antennas	Front Side	Back Side	Left Side	Right Side	Top Side	Bottom Side
WWAN Main	Yes	Yes	Yes	Yes	NO	Yes
WLAN & Bluetooth	Yes	Yes	NO	Yes	Yes	NO

9. Stand-alone SAR test exclusion

Refer to FCC KDB 447498D01, the 1-g SAR and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f_{(\text{GHz})}}] \leq 3.0$ for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where:

- $f_{(\text{GHz})}$ is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison

When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

Mode	P_{max} (dBm)	P_{max} (mW)	Distance (mm)	f (GHz)	Calculation Result	SAR Exclusion threshold	SAR test exclusion
Bluetooth	5.00	3.16	5	2.480	1.00	3.0	Yes

NOTE: Standalone SAR test exclusion for Bluetooth

When standalone SAR test exclusion applies to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to following to determine simultaneous transmission SAR test exclusion:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f_{(\text{GHz})} / x}] \text{ W/kg}$ for test separation distances ≤ 50 mm, where $x = 7.5$ for 1-g SAR and $x = 18.75$ for 10-g SAR.

When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

Mode	Position	P_{max} (dBm)	P_{max} (mW)	Distance (mm)	f (GHz)	x	Estimated SAR (W/Kg)
Bluetooth	Head	5.00	3.16	5	2.480	7.5	0.133
Bluetooth	Body	5.00	3.16	10	2.480	7.5	0.066
Bluetooth	Hotspot	5.00	3.16	10	2.480	7.5	0.066

NOTE: Estimated SAR calculation for Bluetooth

10. SAR Results

10.1. SAR measurement results

10.1.1. SAR measurement Result of GSM850

Test Position of Head	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)
			1g	10g				
Left Cheek	189/836.4	GPRS(GMSK 4TS)	0.247	0.198	3.93	29.06	29.50	0.273
Left Tilt 15 Degree	189/836.4	GPRS(GMSK 4TS)	0.153	0.127	-1.24	29.06	29.50	0.169
Right Cheek	189/836.4	GPRS(GMSK 4TS)	0.239	0.196	3.37	29.06	29.50	0.264
Right Tilt 15 Degree	189/836.4	GPRS(GMSK 4TS)	0.149	0.121	-0.64	29.06	29.50	0.165

NOTE: Head SAR test results of GSM850.

Test Position of Body-Worn with 10mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)
			1g	10g				
Front Side	189/836.4	GPRS(GMSK 4TS)	0.409	0.317	2.38	29.06	29.50	0.453
Back Side	189/836.4	GPRS(GMSK 4TS)	0.541	0.391	2.48	29.06	29.50	0.599

NOTE: Body-Worn SAR test results of GSM850

Test Position of Hotspot with 10mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)
			1g	10g				
Front Side	189/836.4	GPRS(GMSK 4TS)	0.409	0.317	2.38	29.06	29.50	0.453
Back Side	189/836.4	GPRS(GMSK 4TS)	0.541	0.391	2.48	29.06	29.50	0.599
Left Side	189/836.4	GPRS(GMSK 4TS)	0.357	0.284	1.29	29.06	29.50	0.395
Right Side	189/836.4	GPRS(GMSK 4TS)	0.349	0.271	-2.31	29.06	29.50	0.386
Bottom Side	189/836.4	GPRS(GMSK 4TS)	0.527	0.380	0.28	29.06	29.50	0.583

NOTE: Hotspot SAR test results of GSM850

10.1.2. SAR measurement Result of GSM1900

Test Position of Head	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift ($\pm 5\%$)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)
			1g	10g				
Left Cheek	661/1880	GPRS(GMSK 4TS)	0.587	0.362	-1.01	26.17	27.00	0.711
Left Tilt 15 Degree	661/1880	GPRS(GMSK 4TS)	0.357	0.162	1.29	26.17	27.00	0.432
Right Cheek	661/1880	GPRS(GMSK 4TS)	0.582	0.346	-0.07	26.17	27.00	0.705
Right Tilt 15 Degree	661/1880	GPRS(GMSK 4TS)	0.339	0.158	-3.24	26.17	27.00	0.410

NOTE: Head SAR test results of GSM1900

Test Position of Body-Worn with 10mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift ($\pm 5\%$)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)
			1g	10g				
Front Side	661/1880	GPRS(GMSK 4TS)	0.492	0.254	2.38	26.17	27.00	0.596
Back Side	661/1880	GPRS(GMSK 4TS)	0.567	0.292	0.17	26.17	27.00	0.686

NOTE: Body-Worn SAR test results of GSM1900

Test Position of Hotspot with 10mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift ($\pm 5\%$)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)
			1g	10g				
Front Side	661/1880	GPRS(GMSK 4TS)	0.492	0.254	2.38	26.17	27.00	0.596
Back Side	661/1880	GPRS(GMSK 4TS)	0.567	0.292	0.17	26.17	27.00	0.686
Left Side	661/1880	GPRS(GMSK 4TS)	0.347	0.186	2.62	26.17	27.00	0.420
Right Side	661/1880	GPRS(GMSK 4TS)	0.329	0.173	1.29	26.17	27.00	0.398
Bottom Side	661/1880	GPRS(GMSK 4TS)	0.234	0.144	-0.76	26.17	27.00	0.283

NOTE: Hotspot SAR test results of GSM1900

10.1.3. SAR measurement Result of WCDMA Band V

Test Position of Head	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)
			1g	10g				
Left Cheek	4182/836.4	RMC12.2K	0.231	0.187	0.51	23.17	23.50	0.249
Left Tilt 15 Degree	4182/836.4	RMC12.2K	0.182	0.134	3.25	23.17	23.50	0.196
Right Cheek	4182/836.4	RMC12.2K	0.227	0.182	1.27	23.17	23.50	0.245
Right Tilt 15 Degree	4182/836.4	RMC12.2K	0.177	0.129	2.39	23.17	23.50	0.191

NOTE: Head SAR test results of WCDMA Band V

Test Position of Body-Worn with 10mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)
			1g	10g				
Front Side	4182/836.4	RMC12.2K	0.556	0.434	-2.65	23.17	23.50	0.600
Back Side	4182/836.4	RMC12.2K	0.665	0.474	-1.19	23.17	23.50	0.717

NOTE: Body-Worn SAR test results of WCDMA Band V

Test Position of Hotspot with 10mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)
			1g	10g				
Front Side	4182/836.4	RMC12.2K	0.556	0.434	-2.65	23.17	23.50	0.600
Back Side	4182/836.4	RMC12.2K	0.665	0.474	-1.19	23.17	23.50	0.717
Left Side	4182/836.4	RMC12.2K	0.482	0.316	2.64	23.17	23.50	0.520
Right Side	4182/836.4	RMC12.2K	0.497	0.304	3.33	23.17	23.50	0.536
Bottom Side	4182/836.4	RMC12.2K	0.627	0.489	0.97	23.17	23.50	0.676

NOTE: Hotspot SAR test results of WCDMA Band V

10.1.4. SAR measurement Result of WCDMA Band IV

Test Position of Head	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)
			1g	10g				
Left Cheek	1413/1732.6	RMC12.2K	0.204	0.132	2.00	23.10	23.50	0.224
Left Tilt 15 Degree	1413/1732.6	RMC12.2K	0.123	0.075	3.21	23.10	23.50	0.135
Right Cheek	1413/1732.6	RMC12.2K	0.192	0.117	1.02	23.10	23.50	0.211
Right Tilt 15 Degree	1413/1732.6	RMC12.2K	0.109	0.068	0.57	23.10	23.50	0.120

NOTE: Head SAR test results of WCDMA Band IV

Test Position of Body-Worn with 10mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)
			1g	10g				
Front Side	1413/1732.6	RMC12.2K	0.462	0.276	-0.89	23.10	23.50	0.507
Back Side	1413/1732.6	RMC12.2K	0.529	0.321	-0.91	23.10	23.50	0.580

NOTE: Body-Worn SAR test results of WCDMA Band IV

Test Position of Hotspot with 10mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)
			1g	10g				
Front Side	1413/1732.6	RMC12.2K	0.462	0.276	-0.89	23.10	23.50	0.507
Back Side	1413/1732.6	RMC12.2K	0.529	0.321	-0.91	23.10	23.50	0.580
Left Side	1413/1732.6	RMC12.2K	0.252	0.168	1.25	23.10	23.50	0.276
Right Side	1413/1732.6	RMC12.2K	0.148	0.083	0.21	23.10	23.50	0.162
Bottom Side	1413/1732.6	RMC12.2K	0.511	0.306	-0.04	23.10	23.50	0.560

NOTE: Hotspot SAR test results of WCDMA Band IV

10.1.5. SAR measurement Result of WCDMA Band II

Test Position of Head	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)
			1g	10g				
Left Cheek	9400/1880	RMC12.2K	0.671	0.410	2.10	23.56	24.00	0.743
Left Tilt 15 Degree	9400/1880	RMC12.2K	0.327	0.209	0.18	23.56	24.00	0.362
Right Cheek	9400/1880	RMC12.2K	0.590	0.391	-2.33	23.56	24.00	0.653
Right Tilt 15 Degree	9400/1880	RMC12.2K	0.285	0.197	0.29	23.56	24.00	0.315

NOTE: Head SAR test results of WCDMA Band II

Test Position of Body-Worn with 10mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)
			1g	10g				
Front Side	9400/1880	RMC12.2K	0.341	0.152	2.69	23.56	24.00	0.377
Back Side	9400/1880	RMC12.2K	0.677	0.354	-0.37	23.56	24.00	0.749

NOTE: Body-Worn SAR test results of WCDMA Band II

Test Position of Hotspot with 10mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)
			1g	10g				

Front Side	9400/1880	RMC12.2K	0.341	0.152	2.69	23.56	24.00	0.377
Back Side	9400/1880	RMC12.2K	0.677	0.354	-0.37	23.56	24.00	0.749
Left Side	9400/1880	RMC12.2K	0.298	0.143	1.16	23.56	24.00	0.392
Right Side	9400/1880	RMC12.2K	0.264	0.14	2.08	23.56	24.00	0.158
Bottom Side	9400/1880	RMC12.2K	0.278	0.173	-0.73	23.56	24.00	0.308

NOTE: Hotspot SAR test results of WCDMA Band II

10.1.6. SAR measurement Result of LTE Band V

Test Position of Head	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift ($\pm 5\%$)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)
			1g	10g				
1RB								
Left Cheek	20525/836.5	10M QPSK(1,24)	0.234	0.189	1.81	23.69	24.00	0.251
Left Tilt 15 Degree	20525/836.5	10M QPSK(1,24)	0.163	0.137	2.18	23.69	24.00	0.175
Right Cheek	20525/836.5	10M QPSK(1,24)	0.213	0.176	-2.63	23.69	24.00	0.229
Right Tilt 15 Degree	20525/836.5	10M QPSK(1,24)	0.139	0.894	-1.24	23.69	24.00	0.149
50%RB								
Left Cheek	20525/836.5	1.4M QPSK(3,0)	0.192	0.164	2.24	23.83	24.00	0.200
Left Tilt 15 Degree	20525/836.5	1.4M QPSK(3,0)	0.142	0.118	1.81	23.83	24.00	0.148
Right Cheek	20525/836.5	1.4M QPSK(3,0)	0.167	0.130	-3.27	23.83	24.00	0.174
Right Tilt 15 Degree	20525/836.5	1.4M QPSK(3,0)	0.112	0.093	0.94	23.83	24.00	0.116

NOTE: Head SAR test results of LTE Band V

Test Position of Body-Worn with 10mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift ($\pm 5\%$)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)
			1g	10g				

1RB								
Front Side	20525/836.5	10M QPSK(1,24)	0.417	0.297	0.82	23.69	24.00	0.448
Back Side	20525/836.5	10M QPSK(1,24)	0.448	0.337	-0.11	23.69	24.00	0.481
50%RB								
Front Side	20525/836.5	1.4M QPSK(3,0)	0.358	0.270	1.20	23.83	24.00	0.372
Back Side	20525/836.5	1.4M QPSK(3,0)	0.403	0.301	3.14	23.83	24.00	0.419

NOTE: Body-Worn SAR test results of LTE Band V

Test Position of Hotspot with 10mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift ($\pm 5\%$)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)
			1g	10g				
1RB								
Front Side	20525/836.5	10M QPSK(1,24)	0.417	0.297	0.82	23.69	24.00	0.448
Back Side	20525/836.5	10M QPSK(1,24)	0.448	0.337	-0.11	23.69	24.00	0.481
Left Side	20525/836.5	10M QPSK(1,24)	0.351	0.234	1.27	23.69	24.00	0.377
Right Side	20525/836.5	10M QPSK(1,24)	0.339	0.217	-2.24	23.69	24.00	0.364
Bottom Side	20525/836.5	10M QPSK(1,24)	0.439	0.312	1.36	23.69	24.00	0.471
50%RB								
Front Side	20525/836.5	1.4M QPSK(3,0)	0.358	0.270	1.20	23.83	24.00	0.372
Back Side	20525/836.5	1.4M QPSK(3,0)	0.403	0.301	3.14	23.83	24.00	0.419
Left Side	20525/836.5	1.4M QPSK(3,0)	0.312	0.187	2.67	23.83	24.00	0.324
Right Side	20525/836.5	1.4M QPSK(3,0)	0.289	0.173	2.63	23.83	24.00	0.301
Bottom Side	20525/836.5	1.4M QPSK(3,0)	0.381	0.287	-2.15	23.83	24.00	0.396

NOTE: Hotspot SAR test results of LTE Band V

10.1.7. SAR measurement Result of LTE Band IV

Test Position of Head	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)
			1g	10g				
1RB								
Left Cheek	20175/1732.5	20M QPSK(1,49)	0.571	0.367	-2.24	23.99	24.00	0.572
Left Tilt 15 Degree	20175/1732.5	20M QPSK(1,49)	0.324	0.167	1.49	23.99	24.00	0.325
Right Cheek	20175/1732.5	20M QPSK(1,49)	0.554	0.342	-0.27	23.99	24.00	0.555
Right Tilt 15 Degree	20175/1732.5	20M QPSK(1,49)	0.307	0.151	4.24	23.99	24.00	0.308
50%RB								
Left Cheek	20175/1732.5	1.4M QPSK(3,2)	0.523	0.324	3.44	23.92	24.00	0.533
Left Tilt 15 Degree	20175/1732.5	1.4M QPSK(3,2)	0.251	0.161	-2.57	23.92	24.00	0.256
Right Cheek	20175/1732.5	1.4M QPSK(3,2)	0.501	0.246	2.68	23.92	24.00	0.510
Right Tilt 15 Degree	20175/1732.5	1.4M QPSK(3,2)	0.223	0.137	-0.19	23.92	24.00	0.227

NOTE: Head SAR test results of LTE Band IV

Test Position of Body-Worn with 10mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)
			1g	10g				
1RB								
Front Side	20175/1732.5	20M QPSK(1,49)	0.419	0.241	1.88	23.99	24.00	0.420
Back Side	20175/1732.5	20M QPSK(1,49)	0.556	0.324	-3.59	23.99	24.00	0.557
50%RB								
Front Side	20175/1732.5	1.4M QPSK(3,2)	0.401	0.214	2.58	23.92	24.00	0.408

	5							
Back Side	20175/1732. 5	1.4M QPSK(3,2)	0.531	0.304	3.14	23.92	24.00	0.541

NOTE: Body-Worn SAR test results of LTE Band IV

Test Position of Hotspot with 10mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)
			1g	10g				
1RB								
Front Side	20175/1732. 5	20M QPSK(1,49)	0.419	0.241	1.88	23.99	24.00	0.420
Back Side	20175/1732. 5	20M QPSK(1,49)	0.556	0.324	-3.59	23.99	24.00	0.557
Left Side	20175/1732. 5	20M QPSK(1,49)	0.337	0.169	2.61	23.99	24.00	0.338
Right Side	20175/1732. 5	20M QPSK(1,49)	0.304	0.152	-1.24	23.99	24.00	0.305
Bottom Side	20175/1732. 5	20M QPSK(1,49)	0.187	0.117	-1.77	23.99	24.00	0.187
50%RB								
Front Side	20175/1732. 5	1.4M QPSK(3,2)	0.401	0.214	2.58	23.92	24.00	0.408
Back Side	20175/1732. 5	1.4M QPSK(3,2)	0.531	0.304	3.14	23.92	24.00	0.541
Left Side	20175/1732. 5	1.4M QPSK(3,2)	0.301	0.153	-1.27	23.92	24.00	0.307
Right Side	20175/1732. 5	1.4M QPSK(3,2)	0.291	0.146	-4.28	23.92	24.00	0.296
Bottom Side	20175/1732. 5	1.4M QPSK(3,2)	0.167	0.109	3.69	23.92	24.00	0.170

NOTE: Hotspot SAR test results of LTE Band IV

10.1.8. SAR measurement Result of LTE Band II

Test Position of Head	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)
			1g	10g				
1RB								
Left	18900/1880	20M QPSK(1,49)	0.600	0.375	-0.79	24.91	25.00	0.613

Cheek									
Left Tilt 15 Degree	18900/1880	20M QPSK(1,49)	0.275	0.168	0.17	24.91	25.00	0.281	
Right Cheek	18900/1880	20M QPSK(1,49)	0.582	0.351	-2.13	24.91	25.00	0.594	
Right Tilt 15 Degree	18900/1880	20M QPSK(1,49)	0.257	0.153	2.59	24.91	25.00	0.262	
50%RB									
Left Cheek	18900/1880	1.4M QPSK(3,1)	0.509	0.278	1.26	24.81	25.00	0.532	
Left Tilt 15 Degree	18900/1880	1.4M QPSK(3,1)	0.224	0.153	-0.94	24.81	25.00	0.234	
Right Cheek	18900/1880	1.4M QPSK(3,1)	0.467	0.238	1.27	24.81	25.00	0.488	
Right Tilt 15 Degree	18900/1880	1.4M QPSK(3,1)	0.201	0.132	3.55	24.81	25.00	0.210	

NOTE: Head SAR test results of LTE Band II

Test Position of Body-Worn with 10mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conduc ted power (dBm)	Tune-u p power (dBm)	Scaled SAR 1g (W/Kg)
			1g	10g				
1RB								
Front Side	18900/1880	20M QPSK(1,49)	0.302	0.158	4.58	24.91	25.00	0.308
Back Side	18900/1880	20M QPSK(1,49)	0.626	0.322	-0.50	24.91	25.00	0.639
50%RB								
Front Side	18900/1880	1.4M QPSK(3,1)	0.254	0.119	-0.18	24.81	25.00	0.265
Back Side	18900/1880	1.4M QPSK(3,1)	0.512	0.261	2.69	24.81	25.00	0.535

NOTE: Body-Worn SAR test results of LTE Band II

Test Position of Hotspot with 10mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conduc ted power (dBm)	Tune-u p power (dBm)	Scaled SAR 1g (W/Kg)
			1g	10g				
1RB								
Front Side	18900/1880	20M QPSK(1,49)	0.302	0.158	4.58	24.91	25.00	0.308

Back Side	18900/1880	20M QPSK(1,49)	0.626	0.322	-0.50	24.91	25.00	0.639
Left Side	18900/1880	20M QPSK(1,49)	0.243	0.121	1.59	24.91	25.00	0.248
Right Side	18900/1880	20M QPSK(1,49)	0.239	0.112	2.14	24.91	25.00	0.244
Bottom Side	18900/1880	20M QPSK(1,49)	0.259	0.134	0.07	24.91	25.00	0.264
50%RB								
Front Side	18900/1880	1.4M QPSK(3,1)	0.254	0.119	-0.18	24.81	25.00	0.265
Back Side	18900/1880	1.4M QPSK(3,1)	0.512	0.261	2.69	24.81	25.00	0.535
Left Side	18900/1880	1.4M QPSK(3,1)	0.197	0.101	1.14	24.81	25.00	0.206
Right Side	18900/1880	1.4M QPSK(3,1)	0.205	0.902	-1.59	24.81	25.00	0.214
Bottom Side	18900/1880	1.4M QPSK(3,1)	0.217	0.124	2.65	24.81	25.00	0.227

NOTE: Hotspot SAR test results of LTE Band II

10.1.9. SAR measurement Result of LTE Band VII

Test Position of Head	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)
			1g	10g				
1RB								
Left Cheek	21100/2535	20M QPSK(1,0)	0.314	0.178	-1.94	24.93	25.00	0.319
Left Tilt 15 Degree	21100/2535	20M QPSK(1,0)	0.186	0.112	2.24	24.93	25.00	0.189
Right Cheek	21100/2535	20M QPSK(1,0)	0.309	0.173	-1.61	24.93	25.00	0.314
Right Tilt 15 Degree	21100/2535	20M QPSK(1,0)	0.162	0.096	0.84	24.93	25.00	0.165
50%RB								
Left Cheek	21100/2535	20M QPSK(50,0)	0.293	0.167	1.27	23.88	24.00	0.301
Left Tilt 15 Degree	21100/2535	20M QPSK(50,0)	0.143	0.062	2.51	23.88	24.00	0.147
Right	21100/2535	20M QPSK(50,0)	0.281	0.132	1.34	23.88	24.00	0.289

Cheek								
Right Tilt 15 Degree	21100/2535	20M QPSK(50,0)	0.132	0.000	3.39	23.88	24.00	0.136

NOTE: Head SAR test results of LTE Band VII

Test Position of Body-Worn with 10mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)
			1g	10g				
1RB								
Front Side	21100/2535	20M QPSK(1,0)	0.453	0.236	-3.69	24.93	25.00	0.460
Back Side	21100/2535	20M QPSK(1,0)	0.556	0.276	-1.25	24.93	25.00	0.565
50%RB								
Front Side	21100/2535	20M QPSK(50,0)	0.439	0.218	1.28	23.88	24.00	0.451
Back Side	21100/2535	20M QPSK(50,0)	0.534	0.251	-0.64	23.88	24.00	0.549

NOTE: Body-Worn SAR test results of LTE Band VII

Test Position of Hotspot with 10mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)
			1g	10g				
1RB								
Front Side	21100/2535	20M QPSK(1,0)	0.453	0.236	-3.69	24.93	25.00	0.460
Back Side	21100/2535	20M QPSK(1,0)	0.556	0.276	-1.25	24.93	25.00	0.565
Left Side	21100/2535	20M QPSK(1,0)	0.327	0.153	-2.88	24.93	25.00	0.332
Right Side	21100/2535	20M QPSK(1,0)	0.308	0.147	2.74	24.93	25.00	0.313
Bottom Side	21100/2535	20M QPSK(1,0)	0.527	0.249	1.63	24.93	25.00	0.536
50%RB								
Front Side	21100/2535	20M QPSK(50,0)	0.439	0.218	1.28	23.88	24.00	0.451
Back Side	21100/2535	20M QPSK(50,0)	0.534	0.251	-0.64	23.88	24.00	0.549
Left Side	21100/2535	20M QPSK(50,0)	0.306	0.131	0.93	23.88	24.00	0.315
Right Side	21100/2535	20M QPSK(50,0)	0.278	0.129	2.63	23.88	24.00	0.286
Bottom Side	21100/2535	20M QPSK(50,0)	0.492	0.213	1.22	23.88	24.00	0.506

NOTE: Hotspot SAR test results of LTE Band VII

10.1.10. SAR measurement Result of LTE Band XII

Test Position of Head	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift ($\pm 5\%$)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)
			1g	10g				
1RB								
Left Cheek	23095/707.5	10M QPSK(1,24)	0.195	0.164	1.87	24.00	24.00	0.195
Left Tilt 15 Degree	23095/707.5	10M QPSK(1,24)	0.153	0.127	-0.07	24.00	24.00	0.153
Right Cheek	23095/707.5	10M QPSK(1,24)	0.186	0.161	1.21	24.00	24.00	0.186
Right Tilt 15 Degree	23095/707.5	10M QPSK(1,24)	0.149	0.121	-1.27	24.00	24.00	0.149
50%RB								
Left Cheek	23095/707.5	1.4M QPSK(3,0)	0.182	0.157	0.94	23.55	24.00	0.202
Left Tilt 15 Degree	23095/707.5	1.4M QPSK(3,0)	0.146	0.115	-2.14	23.55	24.00	0.162
Right Cheek	23095/707.5	1.4M QPSK(3,0)	0.171	0.143	1.34	23.55	24.00	0.190
Right Tilt 15 Degree	23095/707.5	1.4M QPSK(3,0)	0.132	0.102	1.26	23.55	24.00	0.146

NOTE: Head SAR test results of LTE Band XII

Test Position of Body-Worn with 10mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift ($\pm 5\%$)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)
			1g	10g				
1RB								
Front Side	23095/707.5	10M QPSK(1,24)	0.355	0.241	-0.34	24.00	24.00	0.355
Back Side	23095/707.5	10M QPSK(1,24)	0.397	0.300	-2.48	24.00	24.00	0.397
50%RB								
Front Side	23095/707.5	1.4M QPSK(3,0)	0.345	0.234	3.24	23.55	24.00	0.383
Back Side	23095/707.5	1.4M QPSK(3,0)	0.376	0.273	1.18	23.55	24.00	0.417

NOTE: Body-Worn SAR test results of LTE Band XII

Test Position of Hotspot with 10mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift ($\pm 5\%$)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)
			1g	10g				
1RB								
Front Side	23095/707.5	10M QPSK(1,24)	0.355	0.241	-0.34	24.00	24.00	0.355
Back Side	23095/707.5	10M QPSK(1,24)	0.397	0.300	-2.48	24.00	24.00	0.397
Left Side	23095/707.5	10M QPSK(1,24)	0.324	0.281	2.81	24.00	24.00	0.324
Right Side	23095/707.5	10M QPSK(1,24)	0.318	0.276	1.29	24.00	24.00	0.318
Bottom Side	23095/707.5	10M QPSK(1,24)	0.388	0.294	-0.46	24.00	24.00	0.388
50%RB								
Front Side	23095/707.5	1.4M QPSK(3,0)	0.345	0.234	3.24	23.55	24.00	0.383
Back Side	23095/707.5	1.4M QPSK(3,0)	0.376	0.273	1.18	23.55	24.00	0.417
Left Side	23095/707.5	1.4M QPSK(3,0)	0.301	0.214	-2.93	23.55	24.00	0.334
Right Side	23095/707.5	1.4M QPSK(3,0)	0.284	0.194	1.34	23.55	24.00	0.315
Bottom Side	23095/707.5	1.4M QPSK(3,0)	0.362	0.267	2.16	23.55	24.00	0.402

NOTE: Hotspot SAR test results of LTE Band XII

10.1.11. SAR measurement Result of LTE Band XVII

Test Position of Head	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift ($\pm 5\%$)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)
			1g	10g				
1RB								
Left Cheek	23790/710	10M QPSK(1,24)	0.243	0.187	-1.17	24.00	24.00	0.243
Left Tilt 15 Degree	23790/710	10M QPSK(1,24)	0.201	0.147	3.21	24.00	24.00	0.201

Right Cheek	23790/710	10M QPSK(1,24)	0.239	0.181	-1.28	24.00	24.00	0.239
Right Tilt 15 Degree	23790/710	10M QPSK(1,24)	0.194	0.137	0.04	24.00	24.00	0.194
50%RB								
Left Cheek	23790/710	10M QPSK(25,0)	0.224	0.174	2.53	23.00	23.00	0.224
Left Tilt 15 Degree	23790/710	10M QPSK(25,0)	0.183	0.134	-3.42	23.00	23.00	0.183
Right Cheek	23790/710	10M QPSK(25,0)	0.218	0.173	3.31	23.00	23.00	0.218
Right Tilt 15 Degree	23790/710	10M QPSK(25,0)	0.171	0.126	2.49	23.00	23.00	0.171

NOTE: Head SAR test results of LTE Band XVII

Test Position of Body-Worn with 10mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift ($\pm 5\%$)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)
			1g	10g				
1RB								
Front Side	23790/710	10M QPSK(1,24)	0.354	0.251	1.59	24.00	24.00	0.354
Back Side	23790/710	10M QPSK(1,24)	0.398	0.300	-1.72	24.00	24.00	0.398
50%RB								
Front Side	23790/710	10M QPSK(25,0)	0.322	0.241	2.21	23.00	23.00	0.322
Back Side	23790/710	10M QPSK(25,0)	0.374	0.286	1.13	23.00	23.00	0.374

NOTE: Body-Worn SAR test results of LTE Band XVII

Test Position of Hotspot with 10mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift ($\pm 5\%$)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)
			1g	10g				
1RB								
Front Side	23790/710	10M QPSK(1,24)	0.354	0.251	1.59	24.00	24.00	0.354
Back Side	23790/710	10M QPSK(1,24)	0.398	0.300	-1.72	24.00	24.00	0.398

Left Side	23790/710	10M QPSK(1,24)	0.327	0.231	-1.54	24.00	24.00	0.327
Right Side	23790/710	10M QPSK(1,24)	0.319	0.224	0.46	24.00	24.00	0.319
Bottom Side	23790/710	10M QPSK(1,24)	0.382	0.297	0.81	24.00	24.00	0.382
50%RB								
Front Side	23790/710	10M QPSK(25,0)	0.322	0.241	2.21	23.00	23.00	0.322
Back Side	23790/710	10M QPSK(25,0)	0.374	0.286	1.13	23.00	23.00	0.374
Left Side	23790/710	10M QPSK(25,0)	0.306	0.219	1.24	23.00	23.00	0.306
Right Side	23790/710	10M QPSK(25,0)	0.287	0.169	-1.82	23.00	23.00	0.287
Bottom Side	23790/710	10M QPSK(25,0)	0.364	0.271	0.94	23.00	23.00	0.364

NOTE: Hotspot SAR test results of LTE Band XVII

10.1.12. SAR measurement Result of WLAN 2.4G

Test Position of Head	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)
			1g	10g				
Left Cheek	6/2437	802.11 b	0.209	0.103	-1.09	15.04	15.50	0.232
Left Tilt 15 Degree	6/2437	802.11 b	0.156	0.064	1.49	15.04	15.50	0.173
Right Cheek	6/2437	802.11 b	0.197	0.097	-3.24	15.04	15.50	0.219
Right Tilt 15 Degree	6/2437	802.11 b	0.149	0.053	1.63	15.04	15.50	0.166

NOTE: Head SAR test results of WLAN 2.4G

Test Position of Body-Worn with 10mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)
			1g	10g				
Front Side	6/2437	802.11 b	0.051	0.032	0.94	15.04	15.50	0.057
Back Side	6/2437	802.11 b	0.067	0.046	-0.50	15.04	15.50	0.074

NOTE: Body-Worn SAR test results of WLAN 2.4G

Test Position of	Test channel	Test Mode	SAR Value (W/kg)	Power Drift	Conducted power	Tune-up power	Scaled SAR 1g
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Hotspot with 10mm	/Freq.		1g	10g	(±5%)	(dBm)	(dBm)	(W/Kg)
Front Side	6/2437	802.11 b	0.051	0.032	0.94	15.04	15.50	0.057
Back Side	6/2437	802.11 b	0.067	0.046	-0.50	15.04	15.50	0.074
Right Side	6/2437	802.11 b	0.043	0.027	2.31	15.04	15.50	0.048
Top Side	6/2437	802.11 b	0.056	0.035	1.47	15.04	15.50	0.062

NOTE: Hotspot SAR test results of WLAN 2.4G

10.2. SAR Summation Scenario

Per KDB 447498 D01, simultaneous transmission SAR is compliant if,

- Scalar SAR summation < 1.6W/kg.
- $SPLSR = (SAR_1 + SAR_2)^{1.5} / (\text{min. separation distance, mm})$, and the peak separation distance is determined from the square root of $[(x_1-x_2)^2 + (y_1-y_2)^2 + (z_1-z_2)^2]$, where (x_1, y_1, z_1) and (x_2, y_2, z_2) are the coordinates of the extrapolated peak SAR locations in the zoom scan. If $SPLSR \leq 0.04$, simultaneously transmission SAR measurement is not necessary.

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		GSM 850	WLAN 2.4G			
Head	Left Cheek	0.273	0.232	0.506	N/A	N/A
	Left Tilt 15 Degree	0.169	0.173	0.343	N/A	N/A
	Right Cheek	0.264	0.219	0.483	N/A	N/A
	Right Tilt 15 Degree	0.165	0.166	0.331	N/A	N/A
Body-Worn	Front Side	0.453	0.057	0.509	N/A	N/A
	Back Side	0.599	0.074	0.673	N/A	N/A
Hotspot	Front Side	0.453	0.057	0.509	N/A	N/A
	Back Side	0.599	0.074	0.673	N/A	N/A
	Left Side	0.395	N/A	0.395	N/A	N/A
	Right Side	0.386	0.048	0.434	N/A	N/A
	Top Side	N/A	0.062	0.062	N/A	N/A
	Bottom Side	0.583	N/A	0.583	N/A	N/A

NOTE: 1-g SAR Simultaneous Tx Combination of GSM850 and WLAN 2.4G.

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		GSM 1900	WLAN 2.4G			
Head	Left Cheek	0.711	0.232	0.943	N/A	N/A
	Left Tilt 15 Degree	0.432	0.173	0.606	N/A	N/A
	Right Cheek	0.705	0.219	0.924	N/A	N/A
	Right Tilt 15 Degree	0.410	0.166	0.576	N/A	N/A
Body-Worn	Front Side	0.596	0.057	0.652	N/A	N/A

	Back Side	0.686	0.074	0.761	N/A	N/A
Hotspot	Front Side	0.596	0.057	0.652	N/A	N/A
	Back Side	0.686	0.074	0.761	N/A	N/A
	Left Side	0.420	N/A	0.420	N/A	N/A
	Right Side	0.398	0.048	0.446	N/A	N/A
	Top Side	N/A	0.062	0.062	N/A	N/A
	Bottom Side	0.283	N/A	0.283	N/A	N/A

NOTE: 1-g SAR Simultaneous Tx Combination of GSM1900 and WLAN 2.4G.

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		WCDMA Band V	WLAN 2.4G			
Head	Left Cheek	0.249	0.232	0.482	N/A	N/A
	Left Tilt 15 Degree	0.196	0.173	0.370	N/A	N/A
	Right Cheek	0.245	0.219	0.464	N/A	N/A
	Right Tilt 15 Degree	0.191	0.166	0.357	N/A	N/A
Body-Worn	Front Side	0.600	0.057	0.657	N/A	N/A
	Back Side	0.717	0.074	0.792	N/A	N/A
Hotspot	Front Side	0.600	0.057	0.657	N/A	N/A
	Back Side	0.717	0.074	0.792	N/A	N/A
	Left Side	0.520	N/A	0.520	N/A	N/A
	Right Side	0.536	0.048	0.584	N/A	N/A
	Top Side	N/A	0.062	0.062	N/A	N/A
	Bottom Side	0.676	N/A	0.676	N/A	N/A

NOTE: 1-g SAR Simultaneous Tx Combination of WCDMA Band V and WLAN 2.4G.

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		WCDMA Band IV	WLAN 2.4G			
Head	Left Cheek	0.224	0.232	0.456	N/A	N/A
	Left Tilt 15 Degree	0.135	0.173	0.308	N/A	N/A
	Right Cheek	0.211	0.219	0.430	N/A	N/A
	Right Tilt 15 Degree	0.120	0.166	0.285	N/A	N/A
Body-Worn	Front Side	0.507	0.057	0.563	N/A	N/A
	Back Side	0.580	0.074	0.655	N/A	N/A
Hotspot	Front Side	0.507	0.057	0.563	N/A	N/A
	Back Side	0.580	0.074	0.655	N/A	N/A
	Left Side	0.276	N/A	0.276	N/A	N/A
	Right Side	0.162	0.048	0.210	N/A	N/A
	Top Side	N/A	0.062	0.062	N/A	N/A

	Bottom Side	0.560	N/A	0.560	N/A	N/A
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NOTE: 1-g SAR Simultaneous Tx Combination of WCDMA Band IV and WLAN 2.4G.

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		WCDMA Band II	WLAN 2.4G			
Head	Left Cheek	0.743	0.232	0.975	N/A	N/A
	Left Tilt 15 Degree	0.362	0.173	0.535	N/A	N/A
	Right Cheek	0.653	0.219	0.872	N/A	N/A
	Right Tilt 15 Degree	0.315	0.166	0.481	N/A	N/A
Body-Worn	Front Side	0.377	0.057	0.434	N/A	N/A
	Back Side	0.749	0.074	0.824	N/A	N/A
Hotspot	Front Side	0.377	0.057	0.434	N/A	N/A
	Back Side	0.749	0.074	0.824	N/A	N/A
	Left Side	0.392	N/A	0.392	N/A	N/A
	Right Side	0.158	0.048	0.206	N/A	N/A
	Top Side	N/A	0.062	0.062	N/A	N/A
	Bottom Side	0.308	N/A	0.308	N/A	N/A

NOTE: 1-g SAR Simultaneous Tx Combination of WCDMA Band II and WLAN 2.4G.

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		LTE Band V	WLAN 2.4G			
Head	Left Cheek	0.251	0.232	0.484	N/A	N/A
	Left Tilt 15 Degree	0.175	0.173	0.348	N/A	N/A
	Right Cheek	0.229	0.219	0.448	N/A	N/A
	Right Tilt 15 Degree	0.149	0.166	0.315	N/A	N/A
Body-Worn	Front Side	0.448	0.057	0.505	N/A	N/A
	Back Side	0.481	0.074	0.556	N/A	N/A
Hotspot	Front Side	0.448	0.057	0.505	N/A	N/A
	Back Side	0.481	0.074	0.556	N/A	N/A
	Left Side	0.377	N/A	0.377	N/A	N/A
	Right Side	0.364	0.048	0.412	N/A	N/A
	Top Side	N/A	0.062	0.062	N/A	N/A
	Bottom Side	0.471	N/A	0.471	N/A	N/A

NOTE: 1-g SAR Simultaneous Tx Combination of LTE Band V and WLAN 2.4G.

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		LTE Band IV	WLAN 2.4G			
Head	Left Cheek	0.572	0.232	0.805	N/A	N/A
	Left Tilt 15	0.325	0.173	0.498	N/A	N/A

	Degree					
	Right Cheek	0.555	0.219	0.774	N/A	N/A
	Right Tilt 15 Degree	0.308	0.166	0.473	N/A	N/A
Body-Worn	Front Side	0.420	0.057	0.477	N/A	N/A
	Back Side	0.557	0.074	0.632	N/A	N/A
Hotspot	Front Side	0.420	0.057	0.477	N/A	N/A
	Back Side	0.557	0.074	0.632	N/A	N/A
	Left Side	0.338	N/A	0.338	N/A	N/A
	Right Side	0.305	0.048	0.353	N/A	N/A
	Top Side	N/A	0.062	0.062	N/A	N/A
	Bottom Side	0.187	N/A	0.187	N/A	N/A

NOTE: 1-g SAR Simultaneous Tx Combination of LTE Band IV and WLAN 2.4G.

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		LTE Band II	WLAN 2.4G			
Head	Left Cheek	0.613	0.232	0.845	N/A	N/A
	Left Tilt 15 Degree	0.281	0.173	0.454	N/A	N/A
	Right Cheek	0.594	0.219	0.813	N/A	N/A
	Right Tilt 15 Degree	0.262	0.166	0.428	N/A	N/A
Body-Worn	Front Side	0.308	0.057	0.365	N/A	N/A
	Back Side	0.639	0.074	0.714	N/A	N/A
Hotspot	Front Side	0.308	0.057	0.365	N/A	N/A
	Back Side	0.639	0.074	0.714	N/A	N/A
	Left Side	0.248	N/A	0.248	N/A	N/A
	Right Side	0.244	0.048	0.292	N/A	N/A
	Top Side	N/A	0.062	0.062	N/A	N/A
	Bottom Side	0.264	N/A	0.264	N/A	N/A

NOTE: 1-g SAR Simultaneous Tx Combination of LTE Band II and WLAN 2.4G.

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		LTE Band VII	WLAN 2.4G			
Head	Left Cheek	0.319	0.232	0.551	N/A	N/A
	Left Tilt 15 Degree	0.189	0.173	0.362	N/A	N/A
	Right Cheek	0.314	0.219	0.533	N/A	N/A
	Right Tilt 15 Degree	0.165	0.166	0.330	N/A	N/A
Body-Worn	Front Side	0.460	0.057	0.517	N/A	N/A
	Back Side	0.565	0.074	0.640	N/A	N/A
Hotspot	Front Side	0.460	0.057	0.517	N/A	N/A

	Back Side	0.565	0.074	0.640	N/A	N/A
	Left Side	0.332	N/A	0.332	N/A	N/A
	Right Side	0.313	0.048	0.361	N/A	N/A
	Top Side	N/A	0.062	0.062	N/A	N/A
	Bottom Side	0.536	N/A	0.536	N/A	N/A

NOTE: 1-g SAR Simultaneous Tx Combination of LTE Band VII and WLAN 2.4G.

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		LTE Band XII	WLAN 2.4G			
Head	Left Cheek	0.202	0.232	0.434	N/A	N/A
	Left Tilt 15 Degree	0.162	0.173	0.335	N/A	N/A
	Right Cheek	0.190	0.219	0.409	N/A	N/A
	Right Tilt 15 Degree	0.149	0.166	0.315	N/A	N/A
Body-Worn	Front Side	0.383	0.057	0.439	N/A	N/A
	Back Side	0.417	0.074	0.492	N/A	N/A
Hotspot	Front Side	0.383	0.057	0.439	N/A	N/A
	Back Side	0.417	0.074	0.492	N/A	N/A
	Left Side	0.334	N/A	0.334	N/A	N/A
	Right Side	0.318	0.048	0.366	N/A	N/A
	Top Side	N/A	0.062	0.062	N/A	N/A
	Bottom Side	0.402	N/A	0.402	N/A	N/A

NOTE: 1-g SAR Simultaneous Tx Combination of LTE Band XII and WLAN 2.4G.

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		LTE Band XVII	WLAN 2.4G			
Head	Left Cheek	0.243	0.232	0.475	N/A	N/A
	Left Tilt 15 Degree	0.201	0.173	0.374	N/A	N/A
	Right Cheek	0.239	0.219	0.458	N/A	N/A
	Right Tilt 15 Degree	0.194	0.166	0.360	N/A	N/A
Body-Worn	Front Side	0.354	0.057	0.411	N/A	N/A
	Back Side	0.398	0.074	0.472	N/A	N/A
Hotspot	Front Side	0.354	0.057	0.411	N/A	N/A
	Back Side	0.398	0.074	0.472	N/A	N/A
	Left Side	0.327	N/A	0.327	N/A	N/A
	Right Side	0.319	0.048	0.367	N/A	N/A
	Top Side	N/A	0.062	0.062	N/A	N/A
	Bottom Side	0.382	N/A	0.382	N/A	N/A

NOTE: 1-g SAR Simultaneous Tx Combination of LTE Band XVII and WLAN 2.4G.

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		GSM 850	Bluetooth			
Head	Left Cheek	0.273	0.133	0.406	N/A	N/A
	Left Tilt 15 Degree	0.169	0.133	0.302	N/A	N/A
	Right Cheek	0.264	0.133	0.397	N/A	N/A
	Right Tilt 15 Degree	0.165	0.133	0.298	N/A	N/A
Body-Worn	Front Side	0.453	0.066	0.519	N/A	N/A
	Back Side	0.599	0.066	0.665	N/A	N/A
Hotspot	Front Side	0.453	0.066	0.519	N/A	N/A
	Back Side	0.599	0.066	0.665	N/A	N/A
	Left Side	0.395	N/A	0.395	N/A	N/A
	Right Side	0.386	0.066	0.453	N/A	N/A
	Top Side	N/A	0.066	0.066	N/A	N/A
	Bottom Side	0.583	N/A	0.583	N/A	N/A

NOTE: 1-g SAR Simultaneous Tx Combination of GSM850 and Bluetooth.

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		GSM 1900	Bluetooth			
Head	Left Cheek	0.711	0.133	0.843	N/A	N/A
	Left Tilt 15 Degree	0.432	0.133	0.565	N/A	N/A
	Right Cheek	0.705	0.133	0.837	N/A	N/A
	Right Tilt 15 Degree	0.410	0.133	0.543	N/A	N/A
Body-Worn	Front Side	0.596	0.066	0.662	N/A	N/A
	Back Side	0.686	0.066	0.753	N/A	N/A
Hotspot	Front Side	0.596	0.066	0.662	N/A	N/A
	Back Side	0.686	0.066	0.753	N/A	N/A
	Left Side	0.420	N/A	0.420	N/A	N/A
	Right Side	0.398	0.066	0.465	N/A	N/A
	Top Side	N/A	0.066	0.066	N/A	N/A
	Bottom Side	0.283	N/A	0.283	N/A	N/A

NOTE: 1-g SAR Simultaneous Tx Combination of GSM1900 and Bluetooth.

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		WCDMA Band V	Bluetooth			
Head	Left Cheek	0.249	0.133	0.382	N/A	N/A
	Left Tilt 15 Degree	0.196	0.133	0.329	N/A	N/A
	Right Cheek	0.245	0.133	0.378	N/A	N/A

	Right Tilt 15 Degree	0.191	0.133	0.324	N/A	N/A
Body-Worn	Front Side	0.600	0.066	0.666	N/A	N/A
	Back Side	0.717	0.066	0.784	N/A	N/A
Hotspot	Front Side	0.600	0.066	0.666	N/A	N/A
	Back Side	0.717	0.066	0.784	N/A	N/A
	Left Side	0.520	N/A	0.520	N/A	N/A
	Right Side	0.536	0.066	0.603	N/A	N/A
	Top Side	N/A	0.066	0.066	N/A	N/A
	Bottom Side	0.676	N/A	0.676	N/A	N/A

NOTE: 1-g SAR Simultaneous Tx Combination of WCDMA Band V and Bluetooth.

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		WCDMA Band IV	Bluetooth			
Head	Left Cheek	0.224	0.133	0.356	N/A	N/A
	Left Tilt 15 Degree	0.135	0.133	0.268	N/A	N/A
	Right Cheek	0.211	0.133	0.343	N/A	N/A
	Right Tilt 15 Degree	0.120	0.133	0.252	N/A	N/A
Body-Worn	Front Side	0.507	0.066	0.573	N/A	N/A
	Back Side	0.580	0.066	0.646	N/A	N/A
Hotspot	Front Side	0.507	0.066	0.573	N/A	N/A
	Back Side	0.580	0.066	0.646	N/A	N/A
	Left Side	0.276	N/A	0.276	N/A	N/A
	Right Side	0.162	0.066	0.229	N/A	N/A
	Top Side	N/A	0.066	0.066	N/A	N/A
	Bottom Side	0.560	N/A	0.560	N/A	N/A

NOTE: 1-g SAR Simultaneous Tx Combination of WCDMA Band IV and Bluetooth.

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		WCDMA Band II	Bluetooth			
Head	Left Cheek	0.743	0.133	0.875	N/A	N/A
	Left Tilt 15 Degree	0.362	0.133	0.495	N/A	N/A
	Right Cheek	0.653	0.133	0.786	N/A	N/A
	Right Tilt 15 Degree	0.315	0.133	0.448	N/A	N/A
Body-Worn	Front Side	0.377	0.066	0.444	N/A	N/A
	Back Side	0.749	0.066	0.816	N/A	N/A
Hotspot	Front Side	0.377	0.066	0.444	N/A	N/A
	Back Side	0.749	0.066	0.816	N/A	N/A

	Left Side	0.392	N/A	0.392	N/A	N/A
	Right Side	0.158	0.066	0.225	N/A	N/A
	Top Side	N/A	0.066	0.066	N/A	N/A
	Bottom Side	0.308	N/A	0.308	N/A	N/A

NOTE: 1-g SAR Simultaneous Tx Combination of WCDMA Band II and Bluetooth.

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		LTE Band V	Bluetooth			
Head	Left Cheek	0.251	0.133	0.384	N/A	N/A
	Left Tilt 15 Degree	0.175	0.133	0.308	N/A	N/A
	Right Cheek	0.229	0.133	0.362	N/A	N/A
	Right Tilt 15 Degree	0.149	0.133	0.282	N/A	N/A
Body-Worn	Front Side	0.448	0.066	0.514	N/A	N/A
	Back Side	0.481	0.066	0.548	N/A	N/A
Hotspot	Front Side	0.448	0.066	0.514	N/A	N/A
	Back Side	0.481	0.066	0.548	N/A	N/A
	Left Side	0.377	N/A	0.377	N/A	N/A
	Right Side	0.364	0.066	0.430	N/A	N/A
	Top Side	N/A	0.066	0.066	N/A	N/A
	Bottom Side	0.471	N/A	0.471	N/A	N/A

NOTE: 1-g SAR Simultaneous Tx Combination of LTE Band V and Bluetooth.

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		LTE Band IV	Bluetooth			
Head	Left Cheek	0.572	0.133	0.705	N/A	N/A
	Left Tilt 15 Degree	0.325	0.133	0.458	N/A	N/A
	Right Cheek	0.555	0.133	0.688	N/A	N/A
	Right Tilt 15 Degree	0.308	0.133	0.441	N/A	N/A
Body-Worn	Front Side	0.420	0.066	0.486	N/A	N/A
	Back Side	0.557	0.066	0.624	N/A	N/A
Hotspot	Front Side	0.420	0.066	0.486	N/A	N/A
	Back Side	0.557	0.066	0.624	N/A	N/A
	Left Side	0.338	N/A	0.338	N/A	N/A
	Right Side	0.305	0.066	0.371	N/A	N/A
	Top Side	N/A	0.066	0.066	N/A	N/A
	Bottom Side	0.187	N/A	0.187	N/A	N/A

NOTE: 1-g SAR Simultaneous Tx Combination of LTE Band IV and Bluetooth.

Test Position	Scaled SAR _{MAX}		Σ 1-g SAR	SPLSR	Remark
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		LTE Band II	Bluetooth	(W/Kg)		
Head	Left Cheek	0.613	0.133	0.745	N/A	N/A
	Left Tilt 15 Degree	0.281	0.133	0.414	N/A	N/A
	Right Cheek	0.594	0.133	0.727	N/A	N/A
	Right Tilt 15 Degree	0.262	0.133	0.395	N/A	N/A
Body-Worn	Front Side	0.308	0.066	0.375	N/A	N/A
	Back Side	0.639	0.066	0.706	N/A	N/A
Hotspot	Front Side	0.308	0.066	0.375	N/A	N/A
	Back Side	0.639	0.066	0.706	N/A	N/A
	Left Side	0.248	N/A	0.248	N/A	N/A
	Right Side	0.244	0.066	0.310	N/A	N/A
	Top Side	N/A	0.066	0.066	N/A	N/A
	Bottom Side	0.264	N/A	0.264	N/A	N/A

NOTE: 1-g SAR Simultaneous Tx Combination of LTE Band II and Bluetooth.

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		LTE Band VII	Bluetooth			
Head	Left Cheek	0.319	0.133	0.452	N/A	N/A
	Left Tilt 15 Degree	0.189	0.133	0.322	N/A	N/A
	Right Cheek	0.314	0.133	0.447	N/A	N/A
	Right Tilt 15 Degree	0.165	0.133	0.297	N/A	N/A
Body-Worn	Front Side	0.460	0.066	0.527	N/A	N/A
	Back Side	0.565	0.066	0.631	N/A	N/A
Hotspot	Front Side	0.460	0.066	0.527	N/A	N/A
	Back Side	0.565	0.066	0.631	N/A	N/A
	Left Side	0.332	N/A	0.332	N/A	N/A
	Right Side	0.313	0.066	0.379	N/A	N/A
	Top Side	N/A	0.066	0.066	N/A	N/A
	Bottom Side	0.536	N/A	0.536	N/A	N/A

NOTE: 1-g SAR Simultaneous Tx Combination of LTE Band VII and Bluetooth.

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		LTE Band XII	Bluetooth			
Head	Left Cheek	0.202	0.133	0.335	N/A	N/A
	Left Tilt 15 Degree	0.162	0.133	0.295	N/A	N/A
	Right Cheek	0.190	0.133	0.322	N/A	N/A
	Right Tilt 15	0.149	0.133	0.282	N/A	N/A

	Degree					
Body-Worn	Front Side	0.383	0.066	0.449	N/A	N/A
	Back Side	0.417	0.066	0.483	N/A	N/A
Hotspot	Front Side	0.383	0.066	0.449	N/A	N/A
	Back Side	0.417	0.066	0.483	N/A	N/A
	Left Side	0.334	N/A	0.334	N/A	N/A
	Right Side	0.318	0.066	0.384	N/A	N/A
	Top Side	N/A	0.066	0.066	N/A	N/A
	Bottom Side	0.402	N/A	0.402	N/A	N/A

NOTE: 1-g SAR Simultaneous Tx Combination of LTE Band XII and Bluetooth.

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		LTE Band XVII	Bluetooth			
Head	Left Cheek	0.243	0.133	0.376	N/A	N/A
	Left Tilt 15 Degree	0.201	0.133	0.334	N/A	N/A
	Right Cheek	0.239	0.133	0.372	N/A	N/A
	Right Tilt 15 Degree	0.194	0.133	0.327	N/A	N/A
Body-Worn	Front Side	0.354	0.066	0.420	N/A	N/A
	Back Side	0.398	0.066	0.464	N/A	N/A
Hotspot	Front Side	0.354	0.066	0.420	N/A	N/A
	Back Side	0.398	0.066	0.464	N/A	N/A
	Left Side	0.327	N/A	0.327	N/A	N/A
	Right Side	0.319	0.066	0.385	N/A	N/A
	Top Side	N/A	0.066	0.066	N/A	N/A
	Bottom Side	0.382	N/A	0.382	N/A	N/A

NOTE: 1-g SAR Simultaneous Tx Combination of LTE Band XVII and Bluetooth.

11. Appendix A. Photo documentation

Refer to appendix Test Setup photo---SAR

12. Appendix B. System Check Plots

Table of contents
MEASUREMENT 1 System Performance Check - SID750 - Head
MEASUREMENT 2 System Performance Check - SID750 - Body
MEASUREMENT 3 System Performance Check - SID835 - Head
MEASUREMENT 4 System Performance Check - SID835 - Body
MEASUREMENT 5 System Performance Check - SID1800 - Head
MEASUREMENT 6 System Performance Check - SID1800 - Body
MEASUREMENT 7 System Performance Check - SID1900 - Head
MEASUREMENT 8 System Performance Check - SID1900 - Body
MEASUREMENT 9 System Performance Check - SID2450 - Head
MEASUREMENT 10 System Performance Check - SID2450 - Body
MEASUREMENT 11 System Performance Check - SID2600 - Head
MEASUREMENT 12 System Performance Check - SID2600 - Body

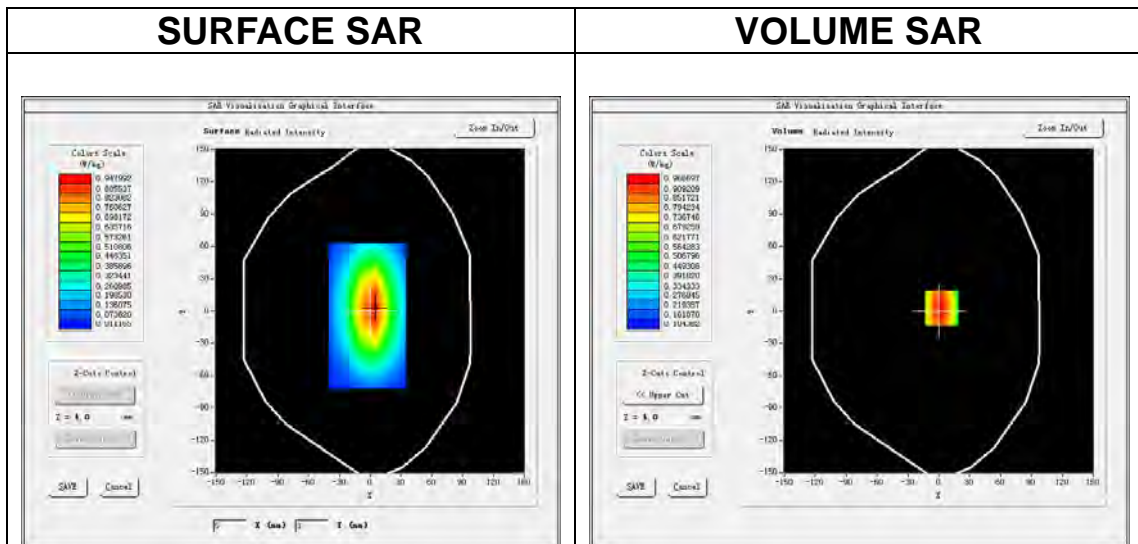
MEASUREMENT 1

A. Experimental conditions.

Area Scan	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
ZoomScan	<u>5x5x7, dx=8mm dy=8mm dz=5mm</u>
Phantom	<u>Validation plane</u>
Device Position	<u>Dipole</u>
Band	<u>CW750</u>
Channels	<u>Middle</u>
Signal	<u>CW (Crest factor: 1.0)</u>

B. SAR Measurement Results

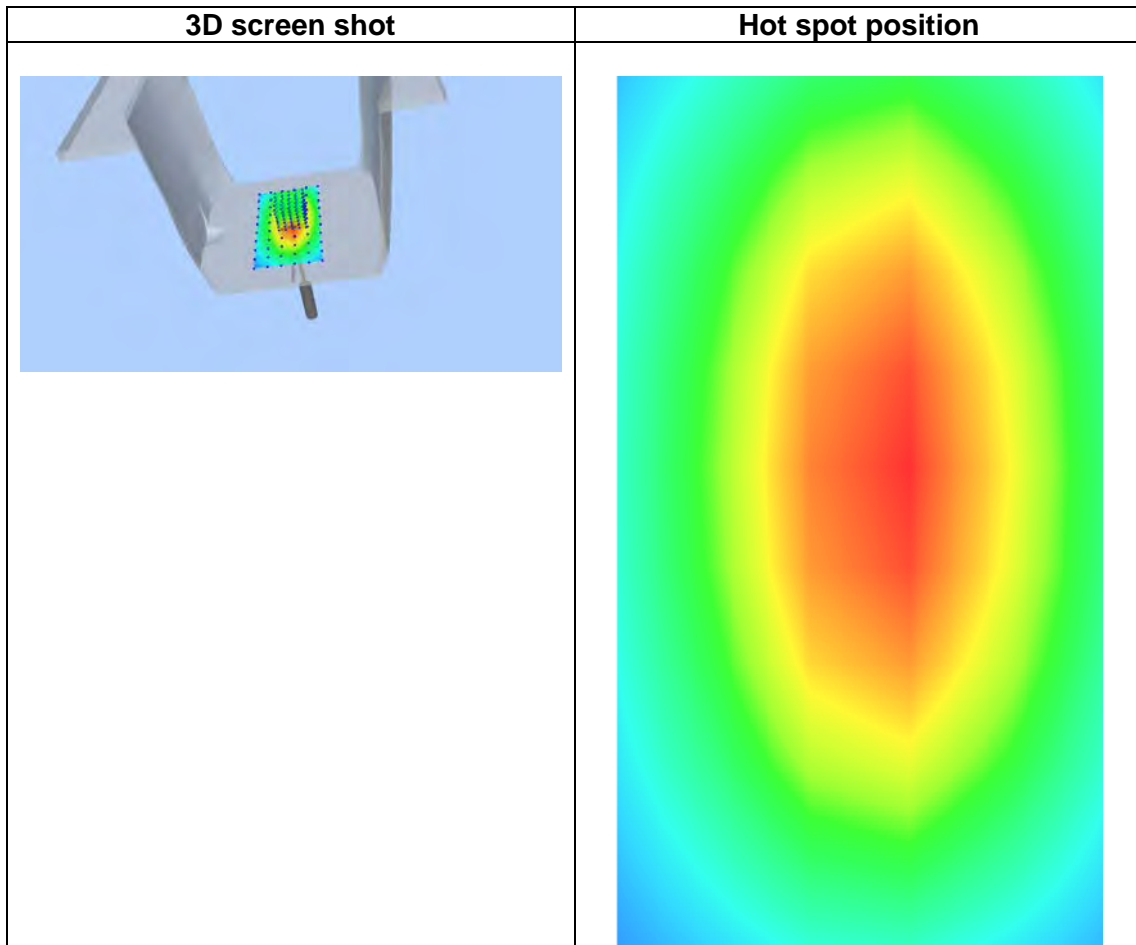
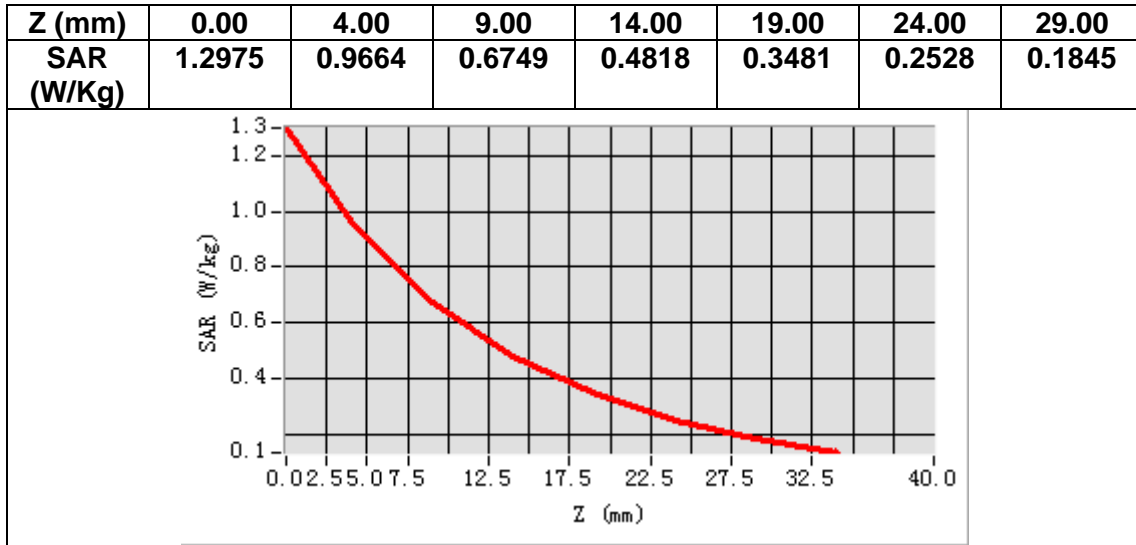
Frequency (MHz)	750.000000
Relative permittivity (real part)	41.285662
Relative permittivity (imaginary part)	21.42761
Conductivity (S/m)	0.893117
Variation (%)	0.960000



Maximum location: X=3.00, Y=3.00

SAR Peak: 1.30 W/kg

SAR 10g (W/Kg)	0.516437
SAR 1g (W/Kg)	0.836700



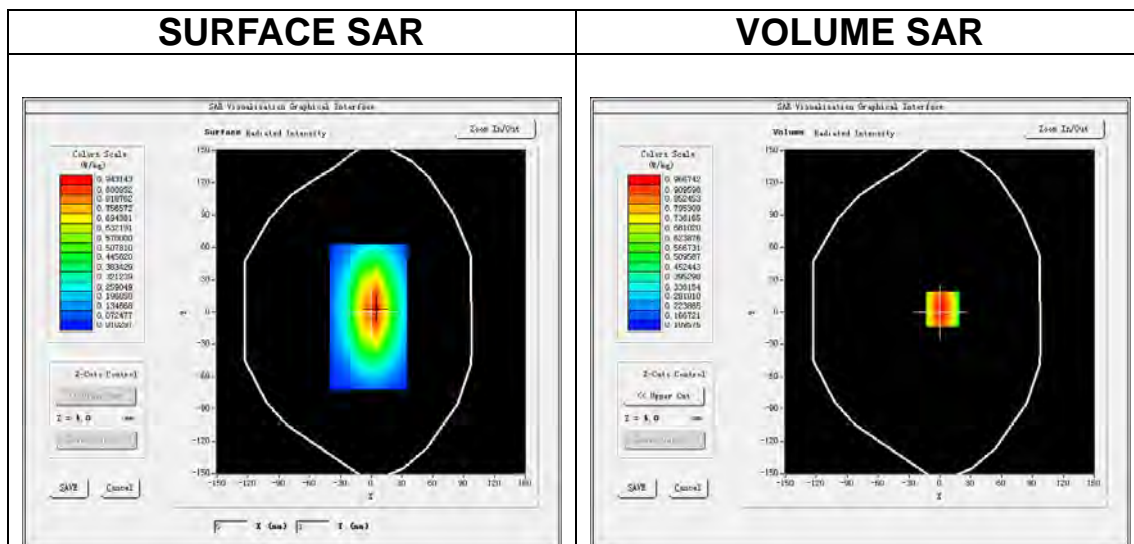
MEASUREMENT 2

A. Experimental conditions.

Area Scan	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
ZoomScan	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
Phantom	<u>Validation plane</u>
Device Position	<u>Dipole</u>
Band	<u>CW750</u>
Channels	<u>Middle</u>
Signal	<u>CW (Crest factor: 1.0)</u>

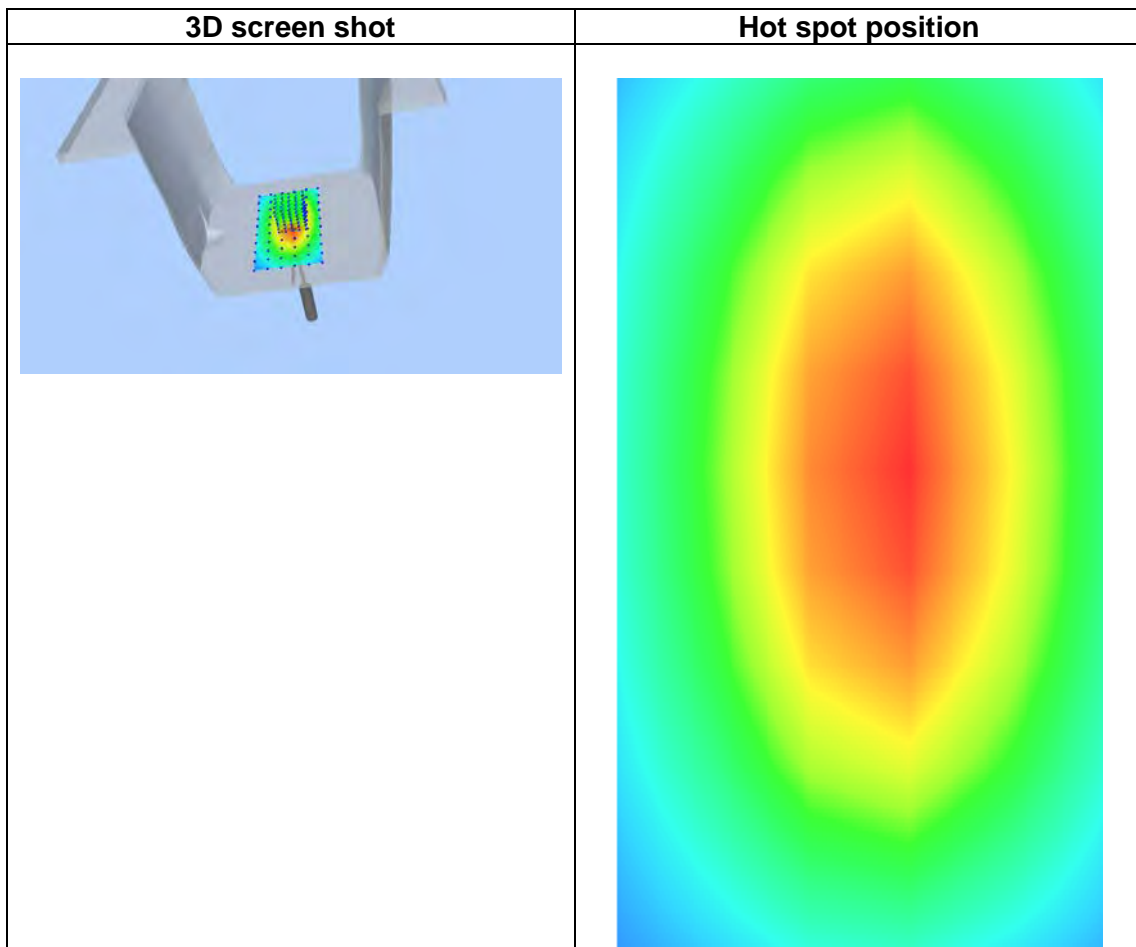
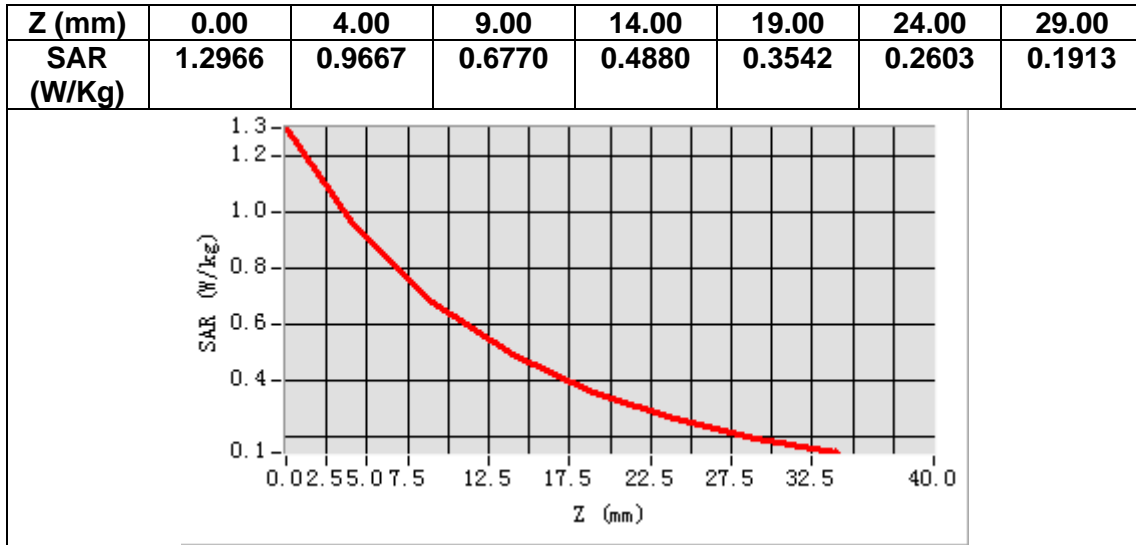
B. SAR Measurement Results

Frequency (MHz)	750.000000
Relative permittivity (real part)	55.260000
Relative permittivity (imaginary part)	23.320000
Conductivity (S/m)	0.971921
Variation (%)	0.910000



Maximum location: X=3.00, Y=3.00
SAR Peak: 1.30 W/kg

SAR 10g (W/Kg)	0.601152
SAR 1g (W/Kg)	0.900452



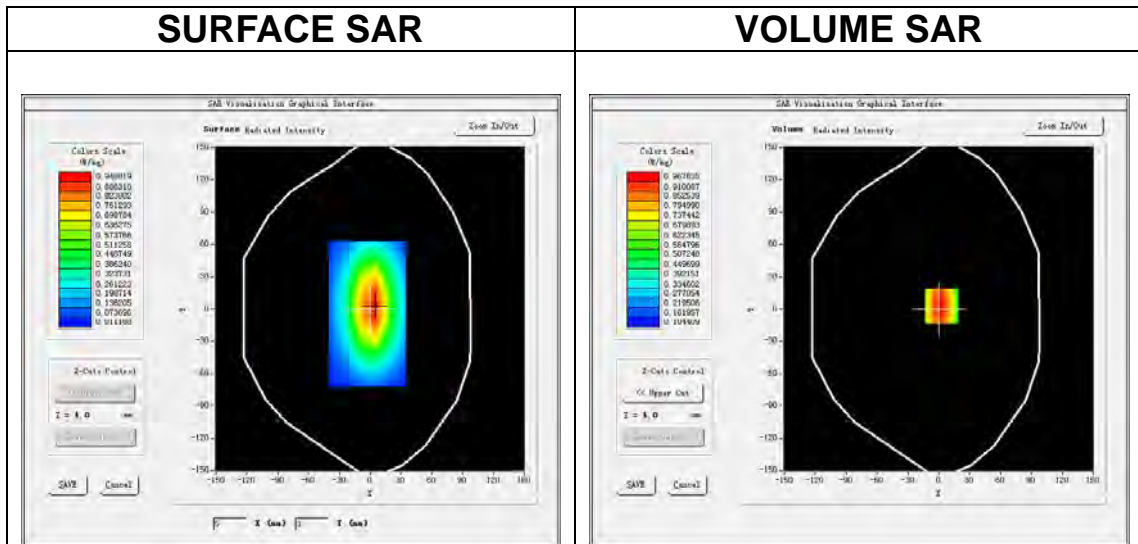
MEASUREMENT 3

A. Experimental conditions.

Area Scan	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
ZoomScan	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
Phantom	<u>Validation plane</u>
Device Position	<u>Dipole</u>
Band	<u>CW835</u>
Channels	<u>Middle</u>
Signal	<u>CW (Crest factor: 1.0)</u>

B. SAR Measurement Results

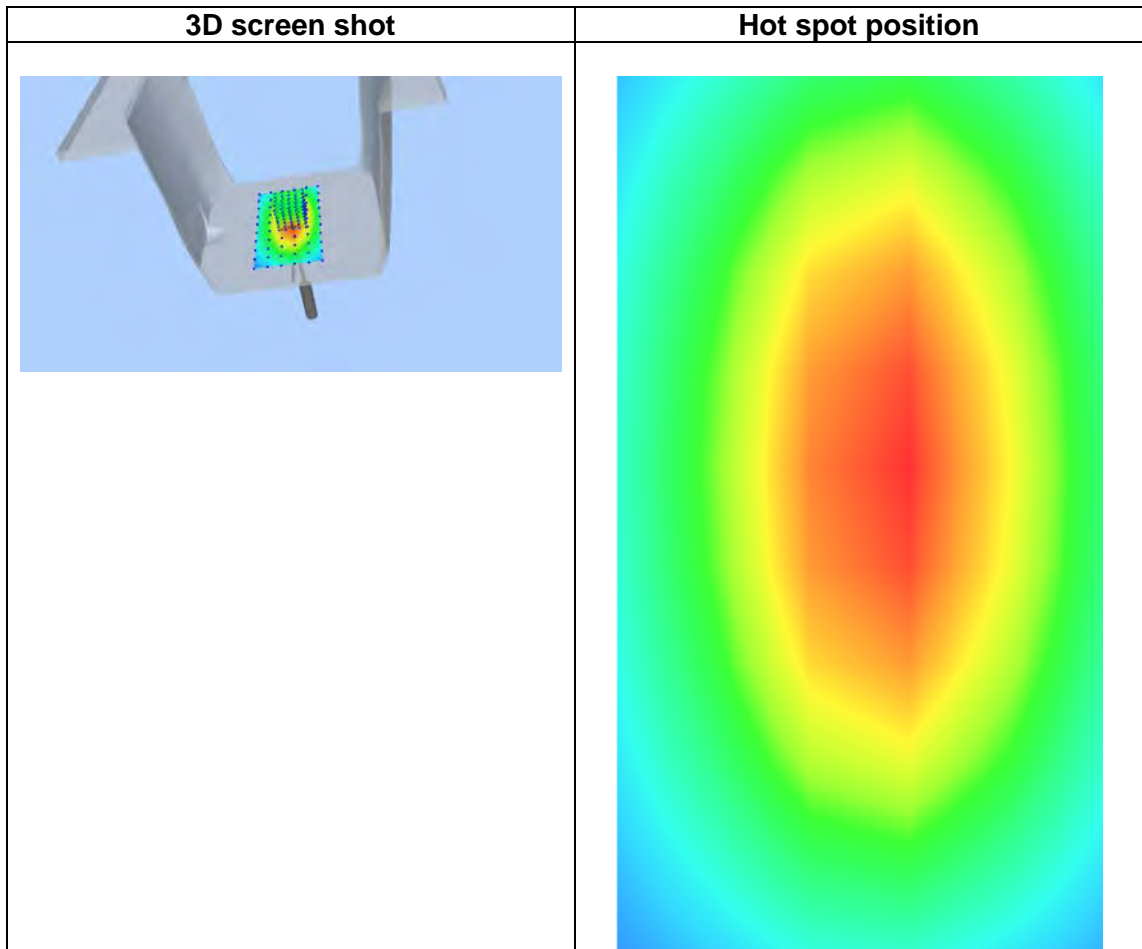
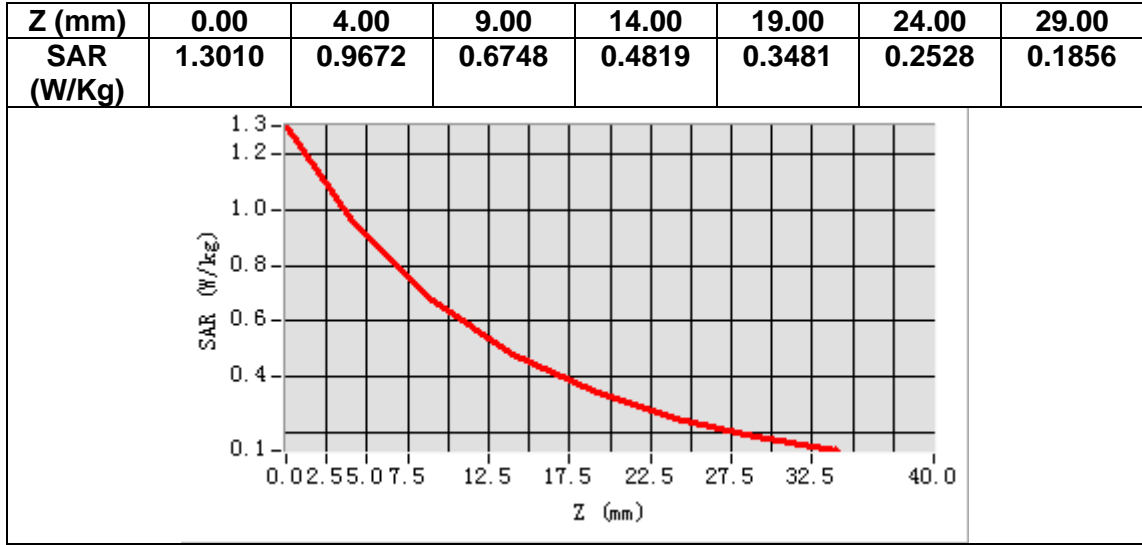
Frequency (MHz)	835.000000
Relative permittivity (real part)	41.042223
Relative permittivity (imaginary part)	19.913430
Conductivity (S/m)	0.923623
Variation (%)	-0.890000



Maximum location: X=3.00, Y=3.00

SAR Peak: 1.30 W/kg

SAR 10g (W/Kg)	0.628290
SAR 1g (W/Kg)	0.927318



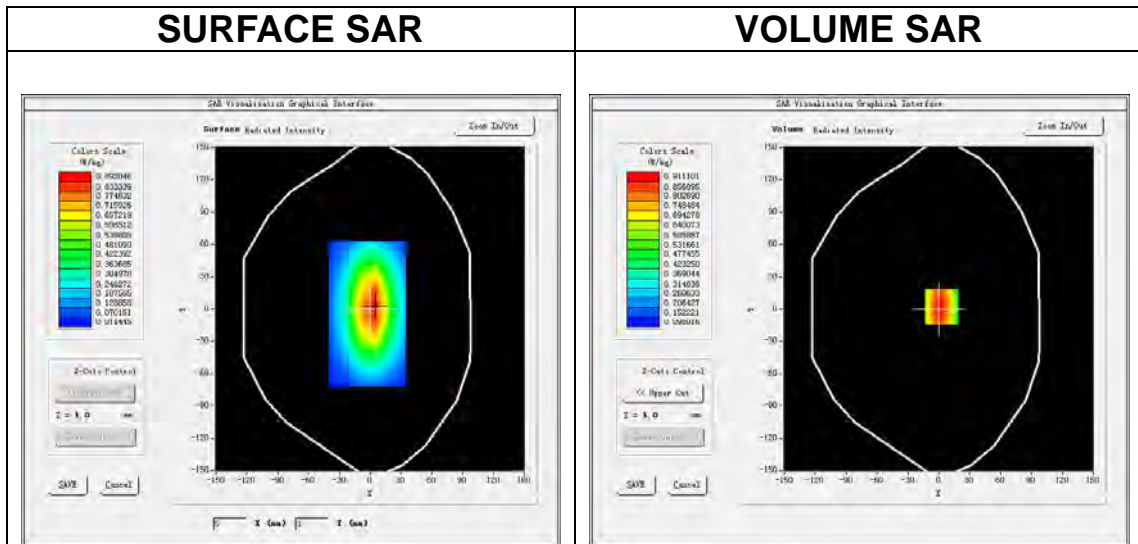
MEASUREMENT 4

A. Experimental conditions.

Area Scan	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
ZoomScan	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
Phantom	<u>Validation plane</u>
Device Position	<u>Dipole</u>
Band	<u>CW835</u>
Channels	<u>Middle</u>
Signal	<u>CW (Crest factor: 1.0)</u>

B. SAR Measurement Results

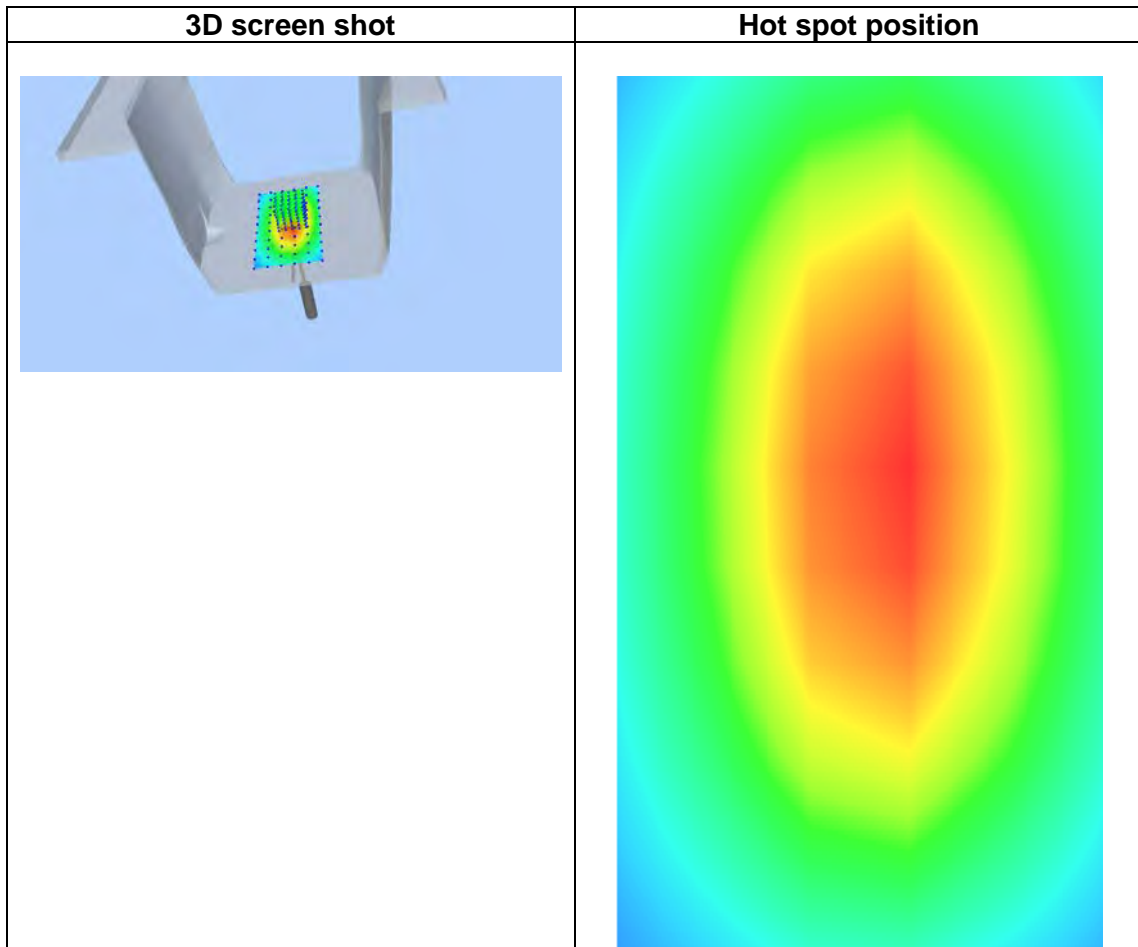
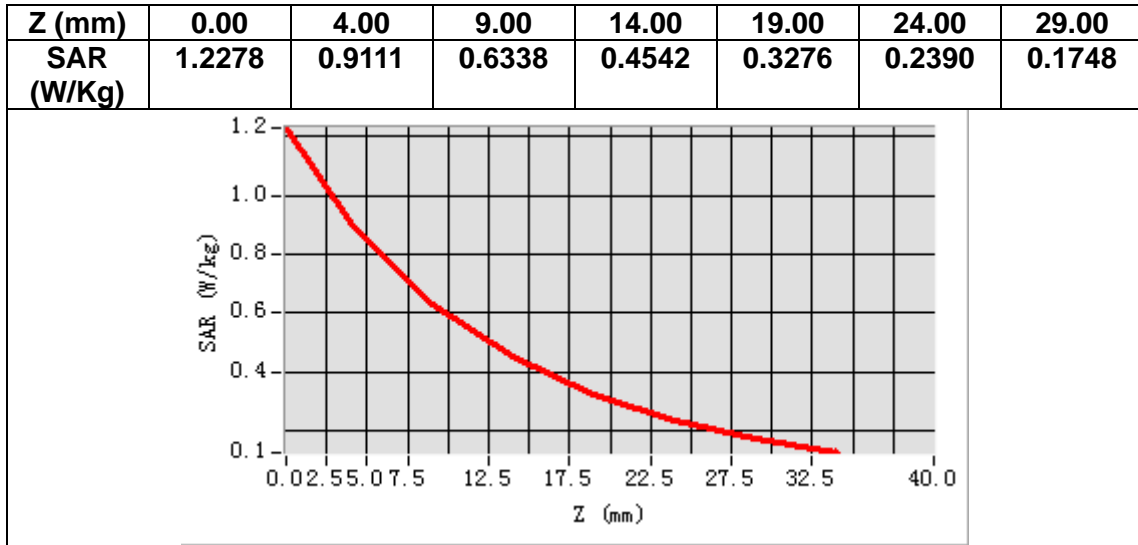
Frequency (MHz)	835.000000
Relative permittivity (real part)	54.622426
Relative permittivity (imaginary part)	21.783465
Conductivity (S/m)	0.992594
Variation (%)	-0.130000



Maximum location: X=3.00, Y=2.00

SAR Peak: 1.23 W/kg

SAR 10g (W/Kg)	0.596930
SAR 1g (W/Kg)	0.895744



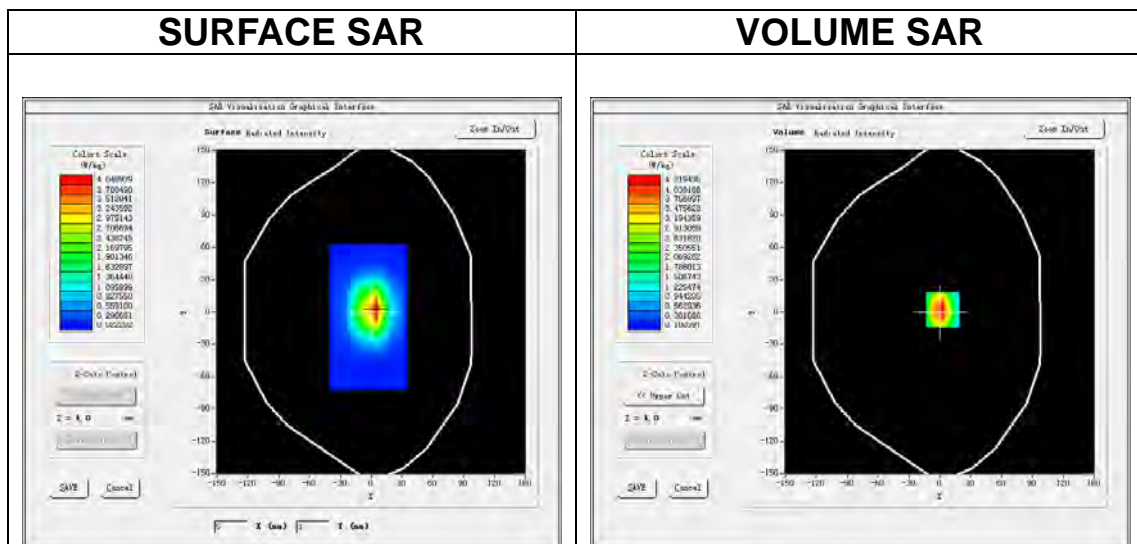
MEASUREMENT 5

A. Experimental conditions.

Area Scan	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
ZoomScan	<u>5x5x7, dx=8mm dy=8mm dz=5mm</u>
Phantom	<u>Validation plane</u>
Device Position	<u>Dipole</u>
Band	<u>CW1800</u>
Channels	<u>Middle</u>
Signal	<u>CW (Crest factor: 1.0)</u>

B. SAR Measurement Results

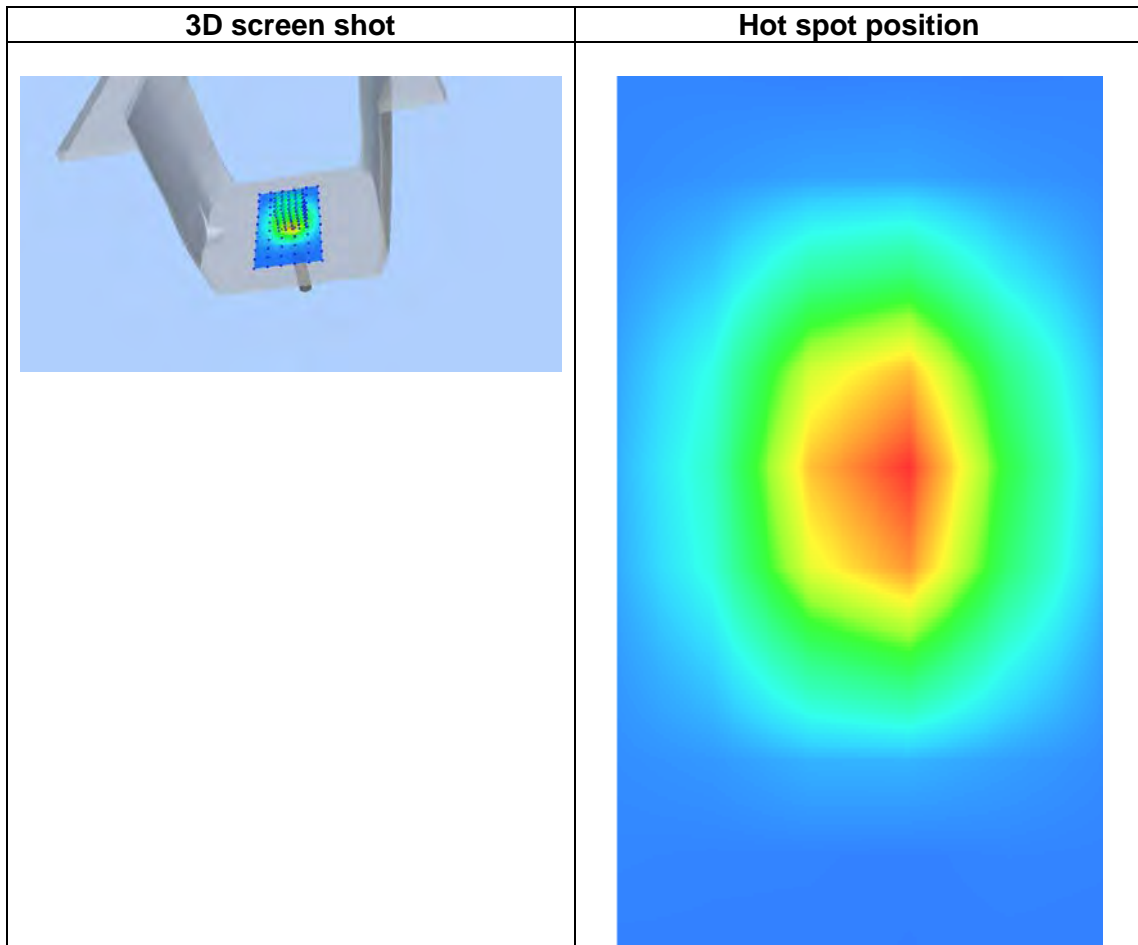
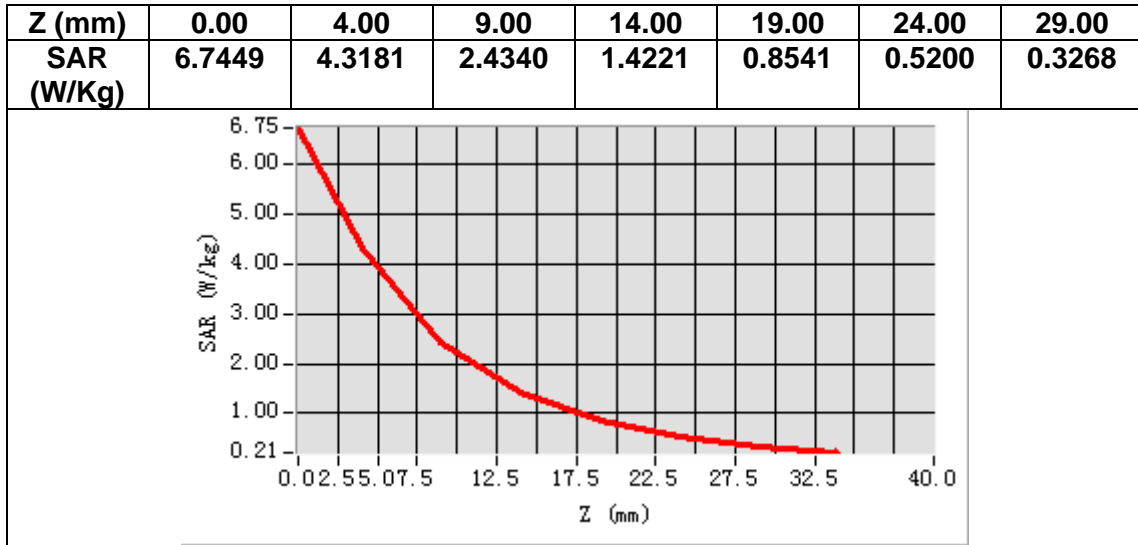
Frequency (MHz)	1800.000000
Relative permittivity (real part)	39.272731
Relative permittivity (imaginary part)	14.127401
Conductivity (S/m)	1.411429
Variation (%)	-0.490000



Maximum location: X=3.00, Y=2.00

SAR Peak: 6.82 W/kg

SAR 10g (W/Kg)	1.942757
SAR 1g (W/Kg)	3.844312



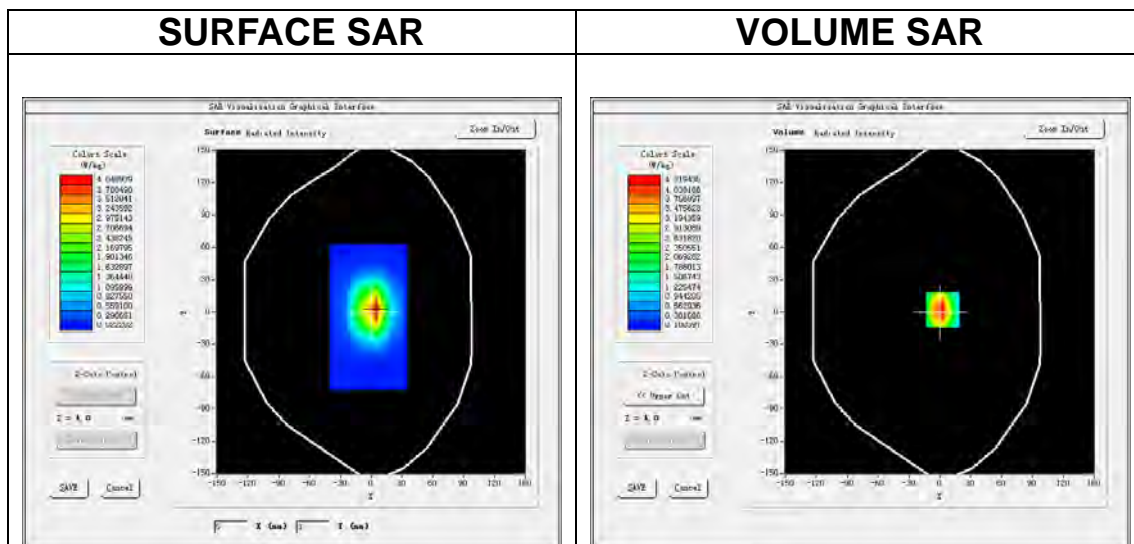
MEASUREMENT 6

A. Experimental conditions.

Area Scan	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
ZoomScan	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
Phantom	<u>Validation plane</u>
Device Position	<u>Dipole</u>
Band	<u>CW1800</u>
Channels	<u>Middle</u>
Signal	<u>CW (Crest factor: 1.0)</u>

B. SAR Measurement Results

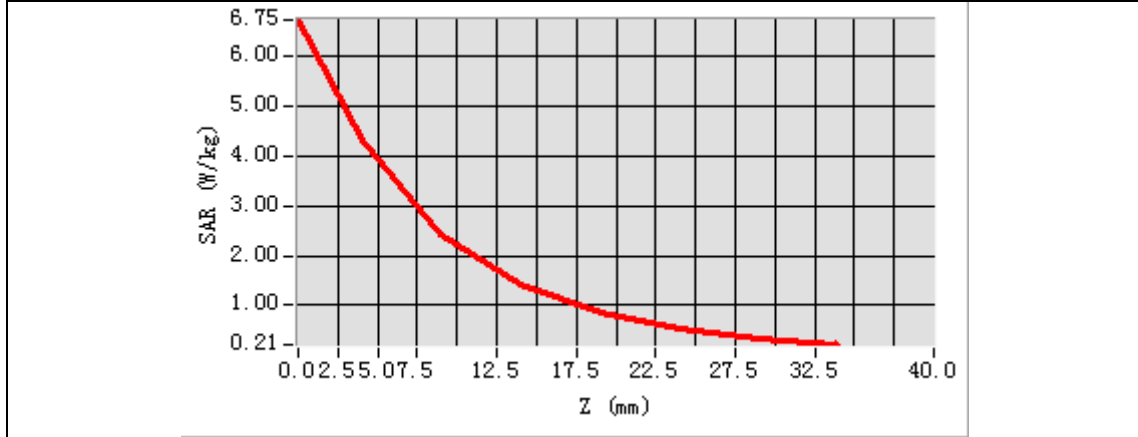
Frequency (MHz)	1800.000000
Relative permittivity (real part)	53.573491
Relative permittivity (imaginary part)	15.461874
Conductivity (S/m)	1.552700
Variation (%)	-0.270000

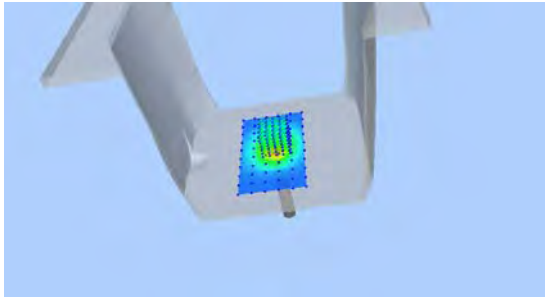
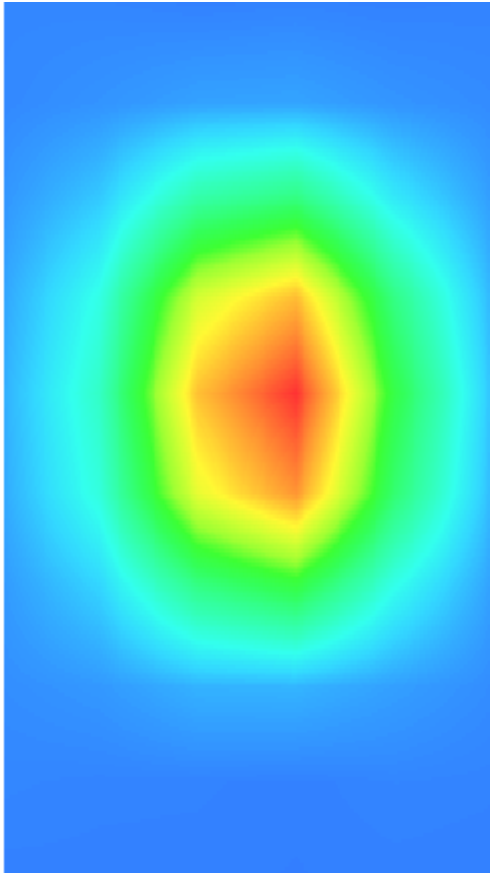


Maximum location: X=3.00, Y=2.00
SAR Peak: 6.82 W/kg

SAR 10g (W/Kg)	2.142937
SAR 1g (W/Kg)	3.403751

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	6.7449	4.3178	2.4336	1.4218	0.8540	0.5201	0.3259



3D screen shot	Hot spot position
	

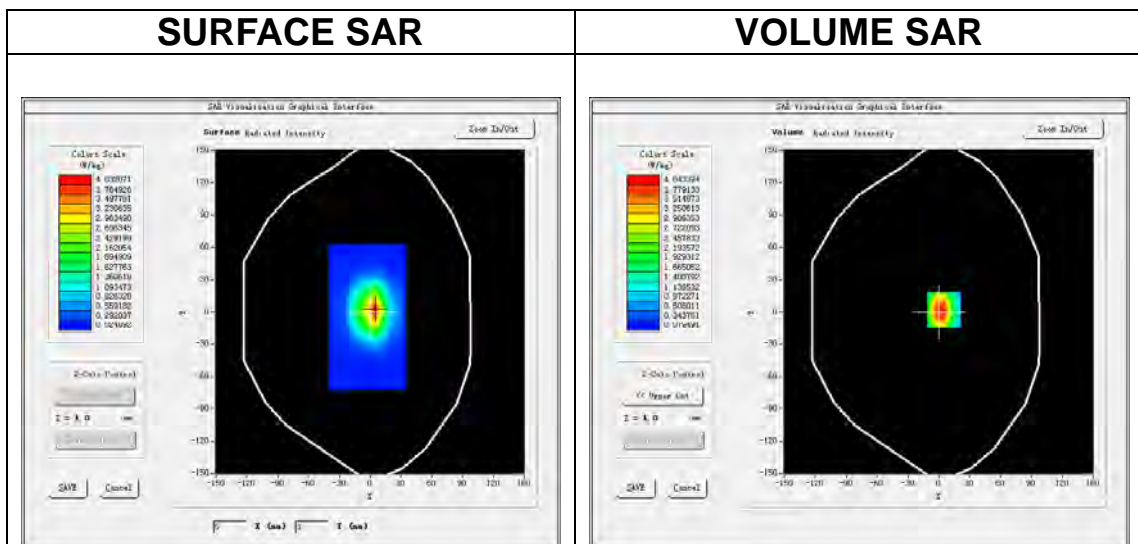
MEASUREMENT 7

A. Experimental conditions.

Area Scan	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
ZoomScan	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
Phantom	<u>Validation plane</u>
Device Position	<u>Dipole</u>
Band	<u>CW1900</u>
Channels	<u>Middle</u>
Signal	<u>CW (Crest factor: 1.0)</u>

B. SAR Measurement Results

Frequency (MHz)	1900.000000
Relative permittivity (real part)	41.312741
Relative permittivity (imaginary part)	13.720312
Conductivity (S/m)	1.450563
Variation (%)	-0.110000

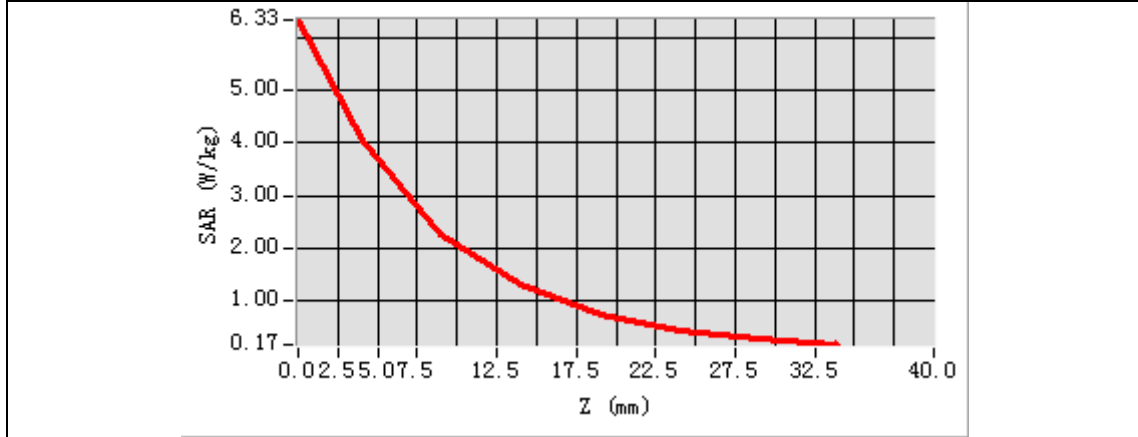


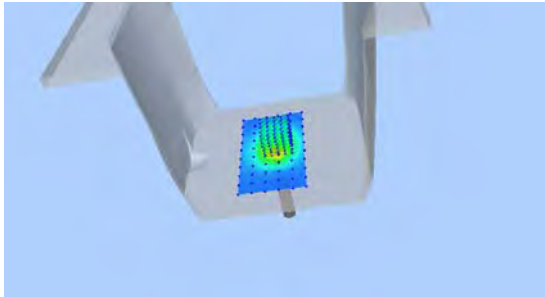
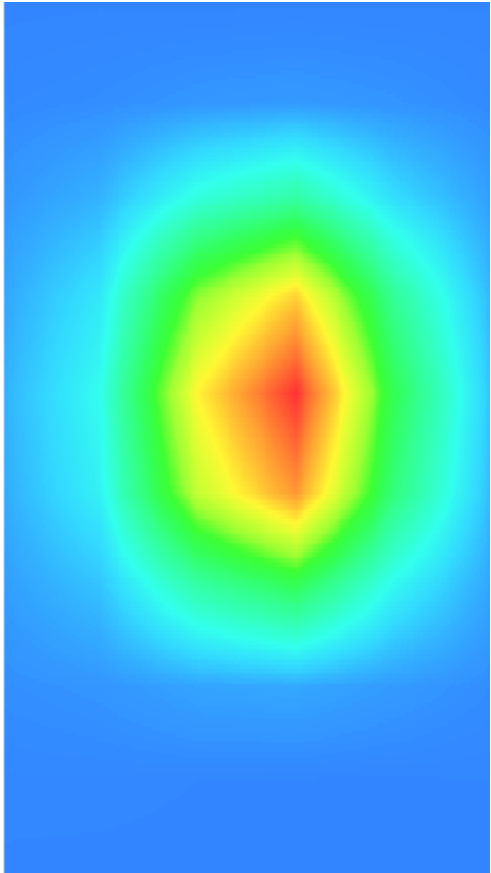
Maximum location: X=5.00, Y=2.00

SAR Peak: 6.70 W/kg

SAR 10g (W/Kg)	2.015325
SAR 1g (W/Kg)	4.021200

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	6.3253	4.0434	2.2600	1.3080	0.7608	0.4551	0.2759



3D screen shot	Hot spot position
	

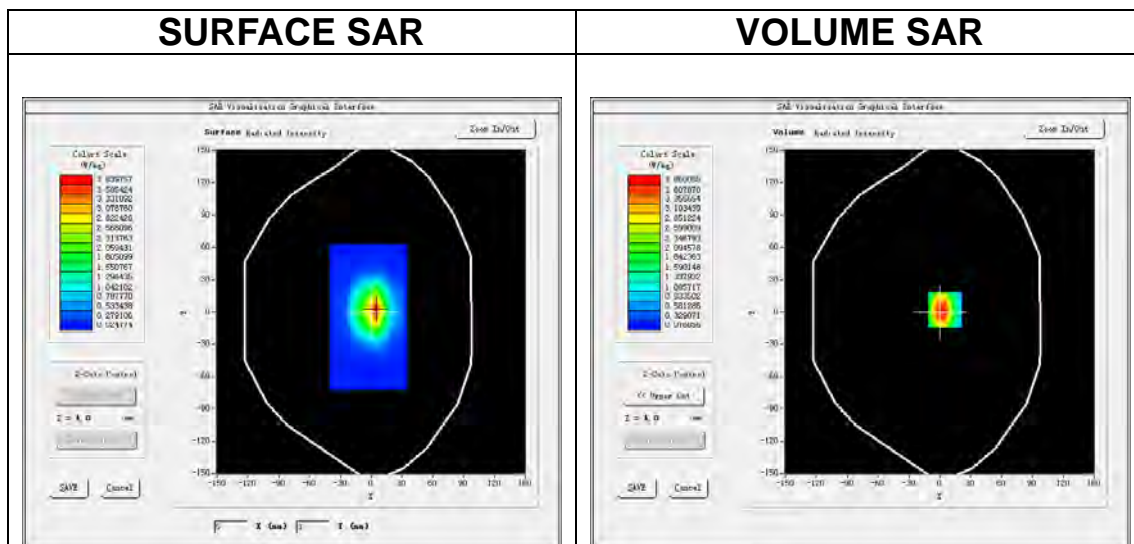
MEASUREMENT 8

A. Experimental conditions.

Area Scan	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
ZoomScan	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
Phantom	<u>Validation plane</u>
Device Position	<u>Dipole</u>
Band	<u>CW1900</u>
Channels	<u>Middle</u>
Signal	<u>CW (Crest factor: 1.0)</u>

B. SAR Measurement Results

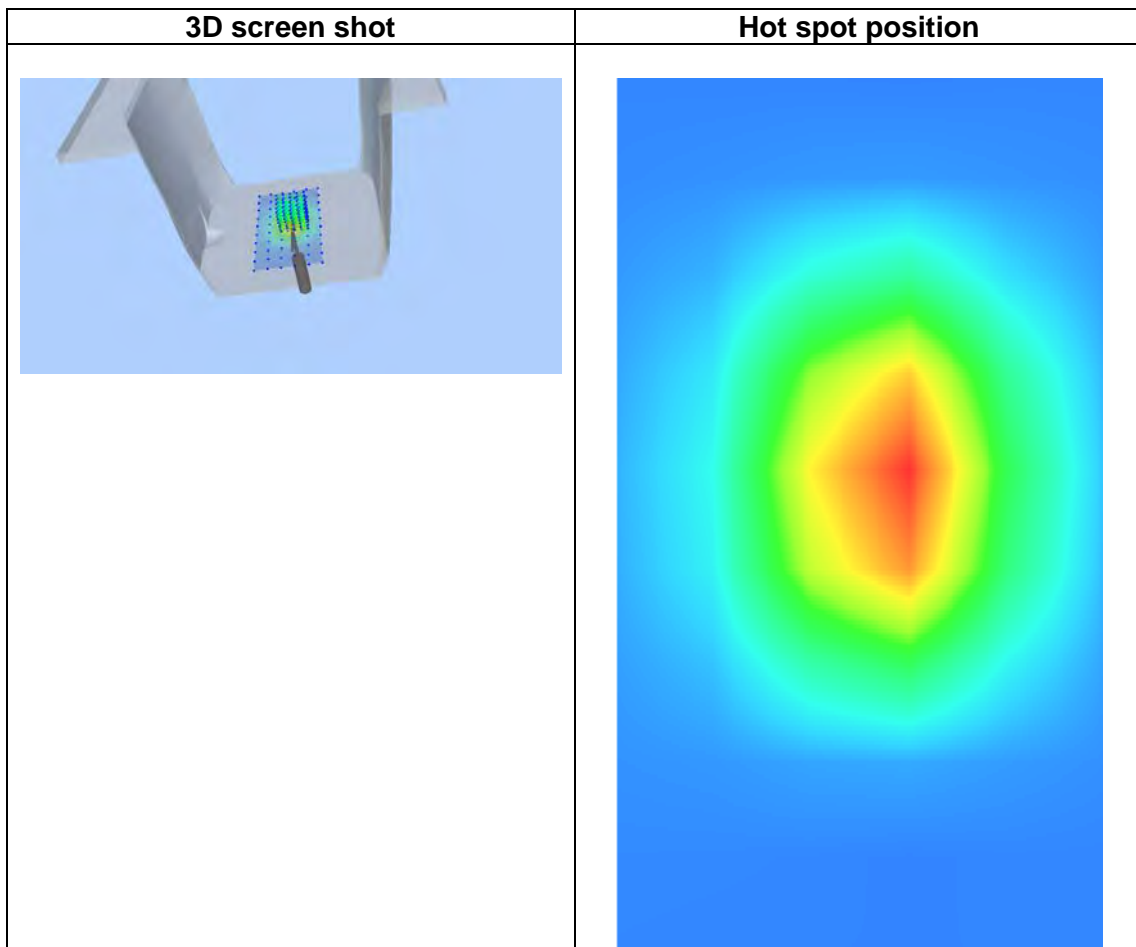
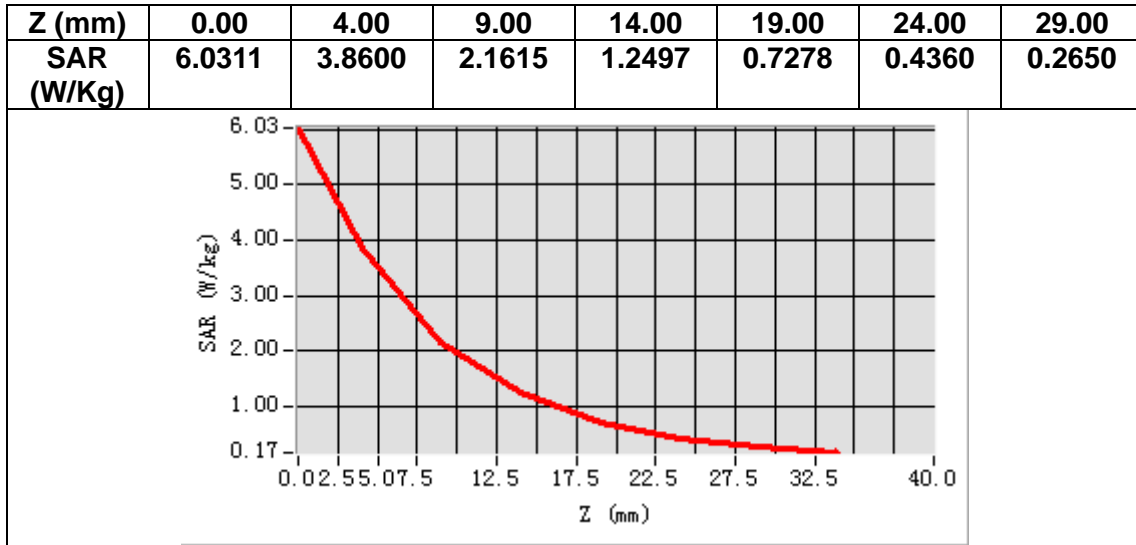
Frequency (MHz)	1900.000000
Relative permittivity (real part)	52.971899
Relative permittivity (imaginary part)	14.850311
Conductivity (S/m)	1.570587
Variation (%)	-0.120000



Maximum location: X=5.00, Y=2.00

SAR Peak: 6.39 W/kg

SAR 10g (W/Kg)	1.990784
SAR 1g (W/Kg)	3.826155



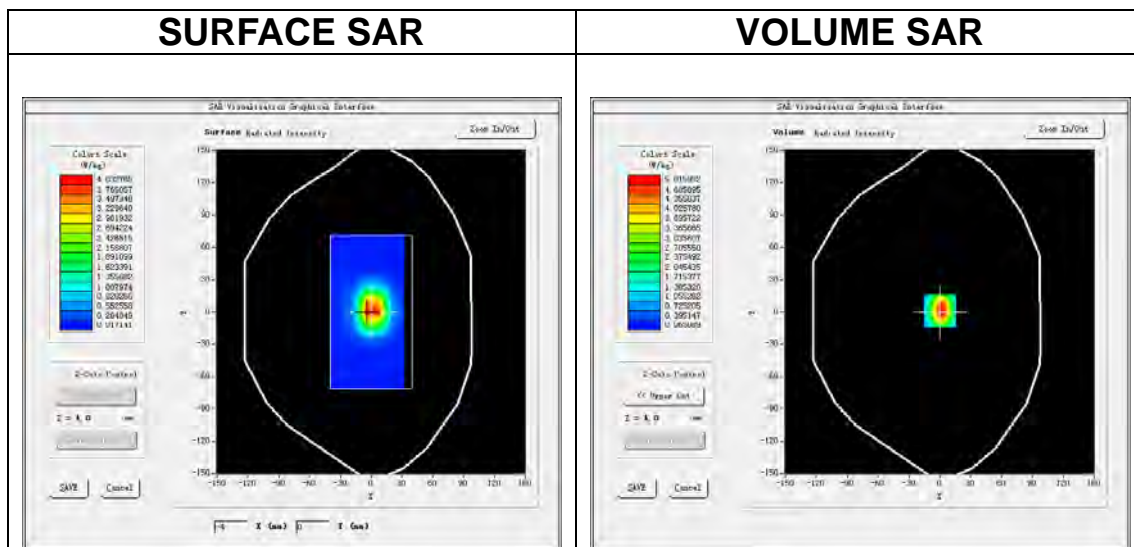
MEASUREMENT 9

A. Experimental conditions.

Area Scan	<u>dx=12mm dy=12mm, h= 5.00 mm</u>
ZoomScan	<u>7x7x7,dx=5mm dy=5mm dz=5mm</u>
Phantom	<u>Validation plane</u>
Device Position	<u>Dipole</u>
Band	<u>CW2450</u>
Channels	<u>Middle</u>
Signal	<u>CW (Crest factor: 1.0)</u>

B. SAR Measurement Results

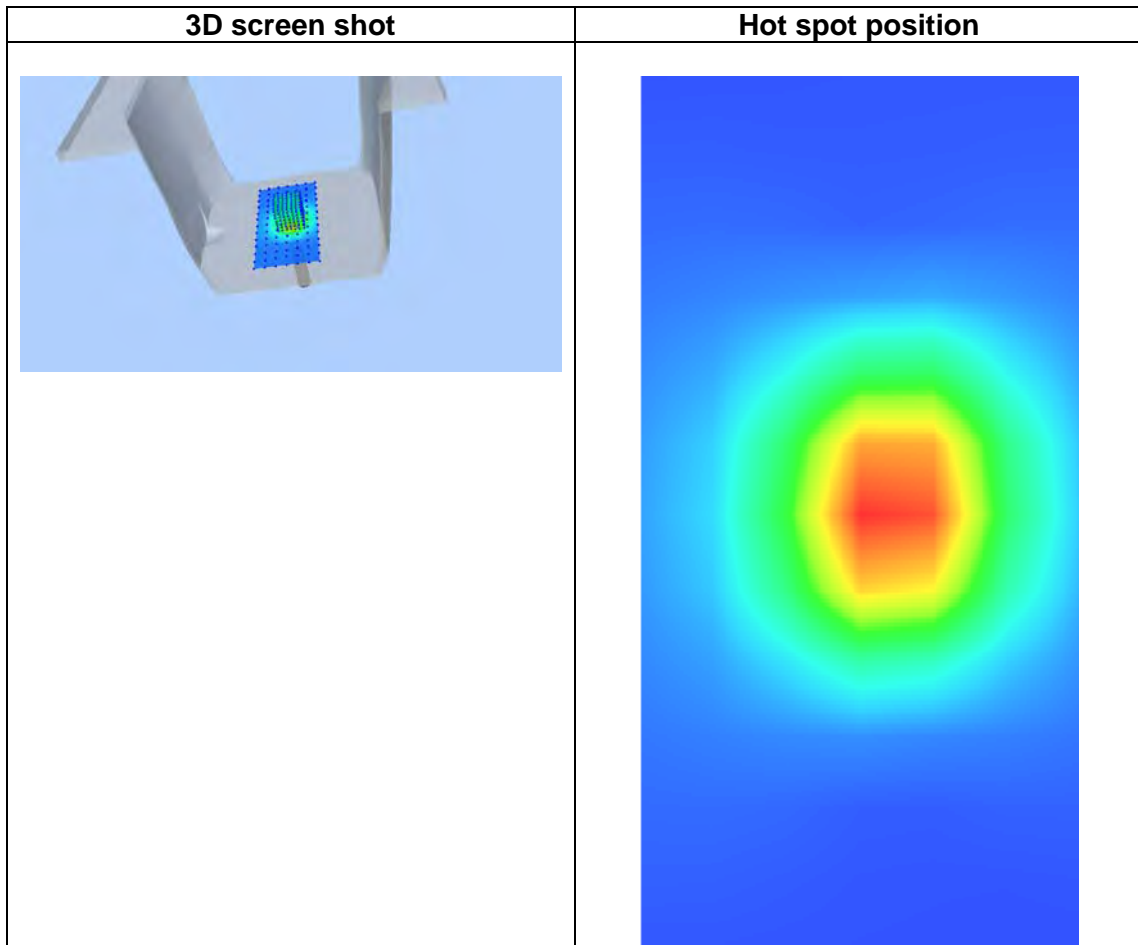
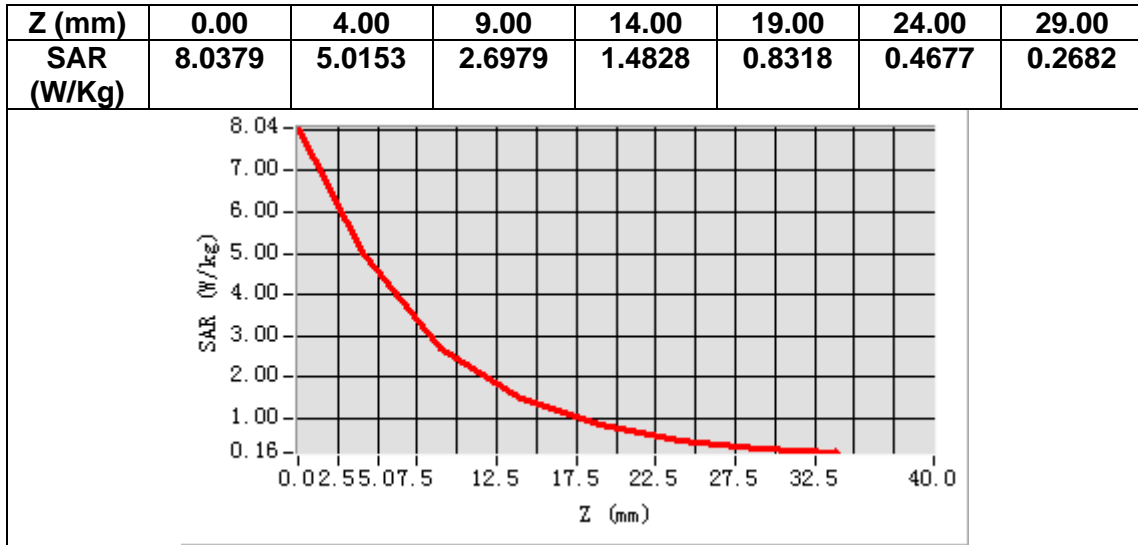
Frequency (MHz)	2450.000000
Relative permittivity (real part)	39.444391
Relative permittivity (imaginary part)	13.732722
Conductivity (S/m)	1.870029
Variation (%)	0.980000



Maximum location: X=0.00, Y=1.00

SAR Peak: 8.14 W/kg

SAR 10g (W/Kg)	2.423293
SAR 1g (W/Kg)	5.545652



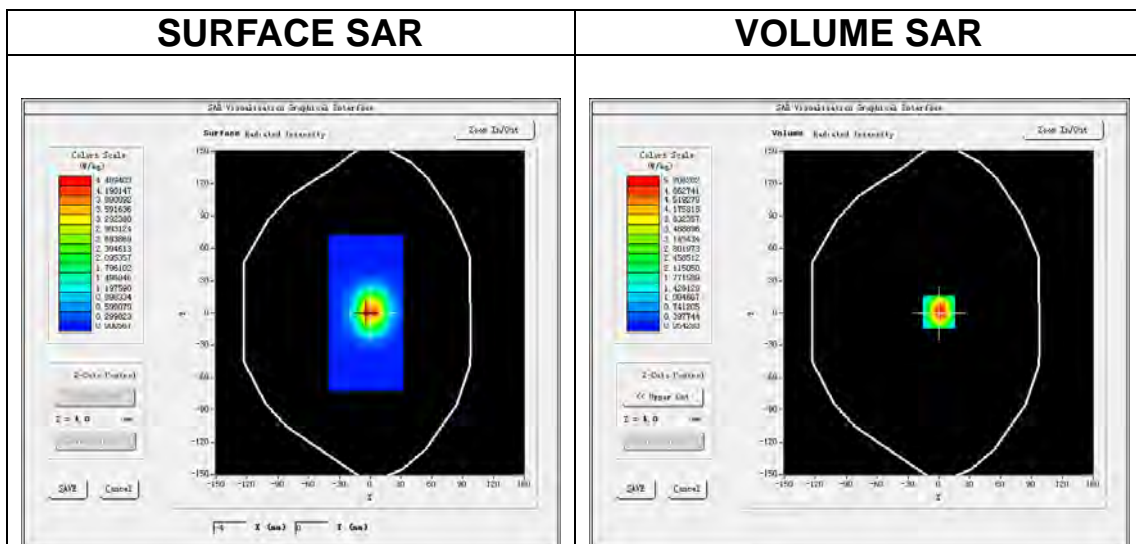
MEASUREMENT 10

A. Experimental conditions.

Area Scan	<u>dx=12mm dy=12mm, h= 5.00 mm</u>
ZoomScan	<u>7x7x7, dx=5mm dy=5mm dz=5mm</u>
Phantom	<u>Validation plane</u>
Device Position	<u>Dipole</u>
Band	<u>CW2450</u>
Channels	<u>Middle</u>
Signal	<u>CW (Crest factor: 1.0)</u>

B. SAR Measurement Results

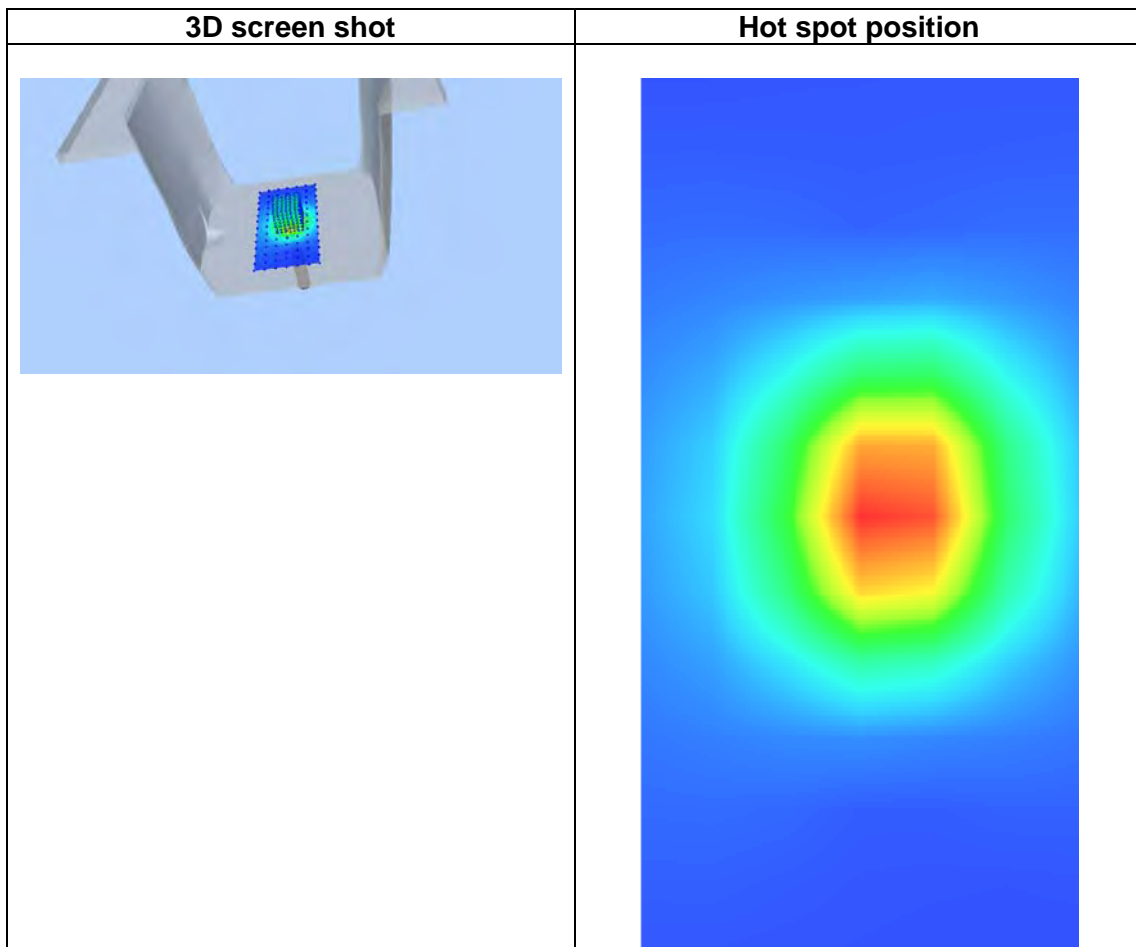
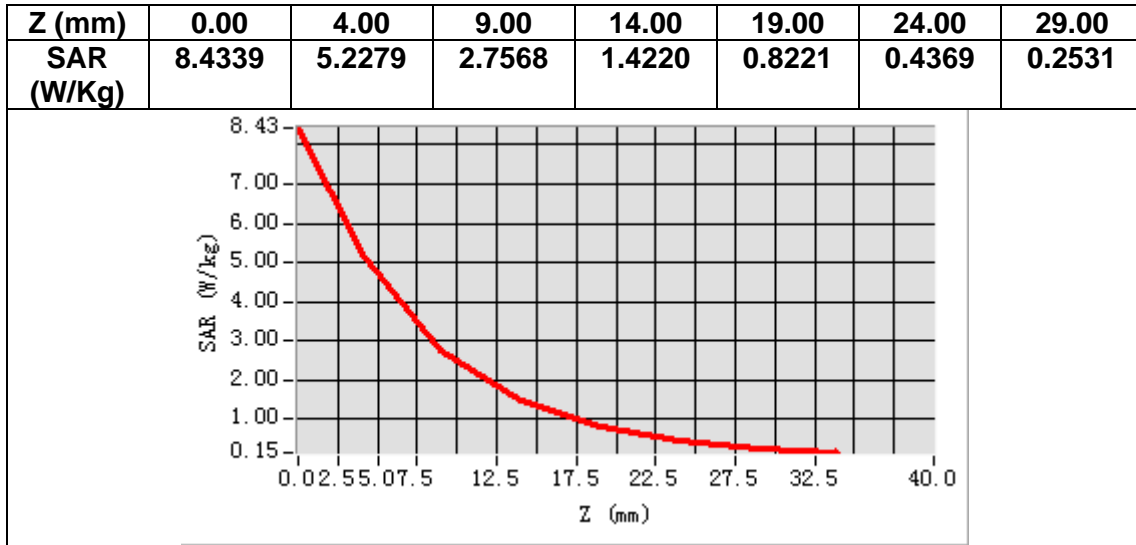
Frequency (MHz)	2450.000000
Relative permittivity (real part)	52.446843
Relative permittivity (imaginary part)	14.753694
Conductivity (S/m)	2.011329
Variation (%)	1.820000



Maximum location: X=0.00, Y=1.00

SAR Peak: 8.46 W/kg

SAR 10g (W/Kg)	2.394206
SAR 1g (W/Kg)	4.822195



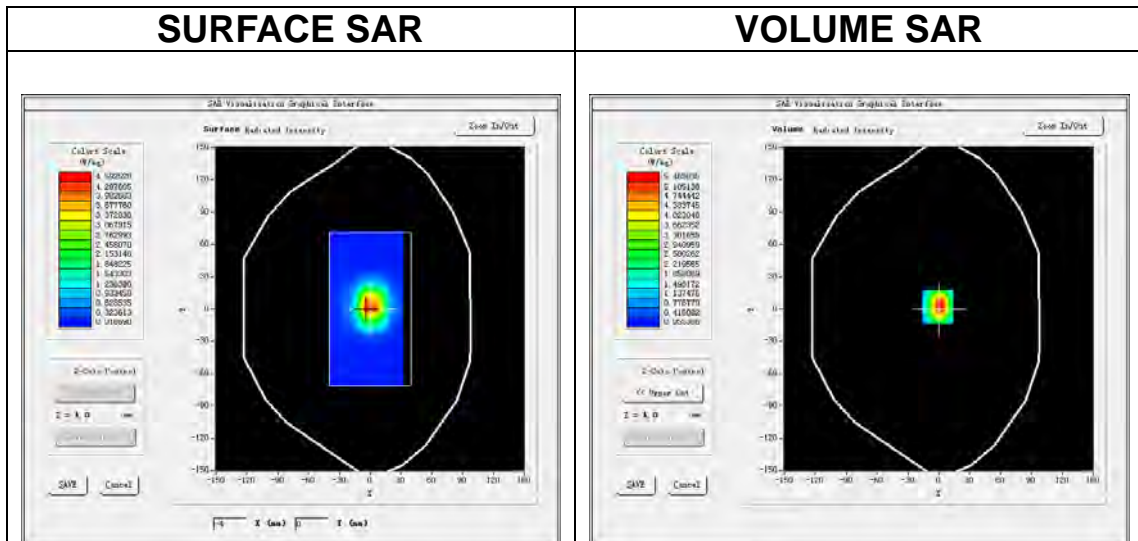
MEASUREMENT 11

A. Experimental conditions.

Area Scan	<u>dx=12mm dy=12mm, h= 5.00 mm</u>
ZoomScan	<u>7x7x7,dx=5mm dy=5mm dz=5mm</u>
Phantom	<u>Validation plane</u>
Device Position	<u>Dipole</u>
Band	<u>CW2600</u>
Channels	<u>Middle</u>
Signal	<u>CW (Crest factor: 1.0)</u>

B. SAR Measurement Results

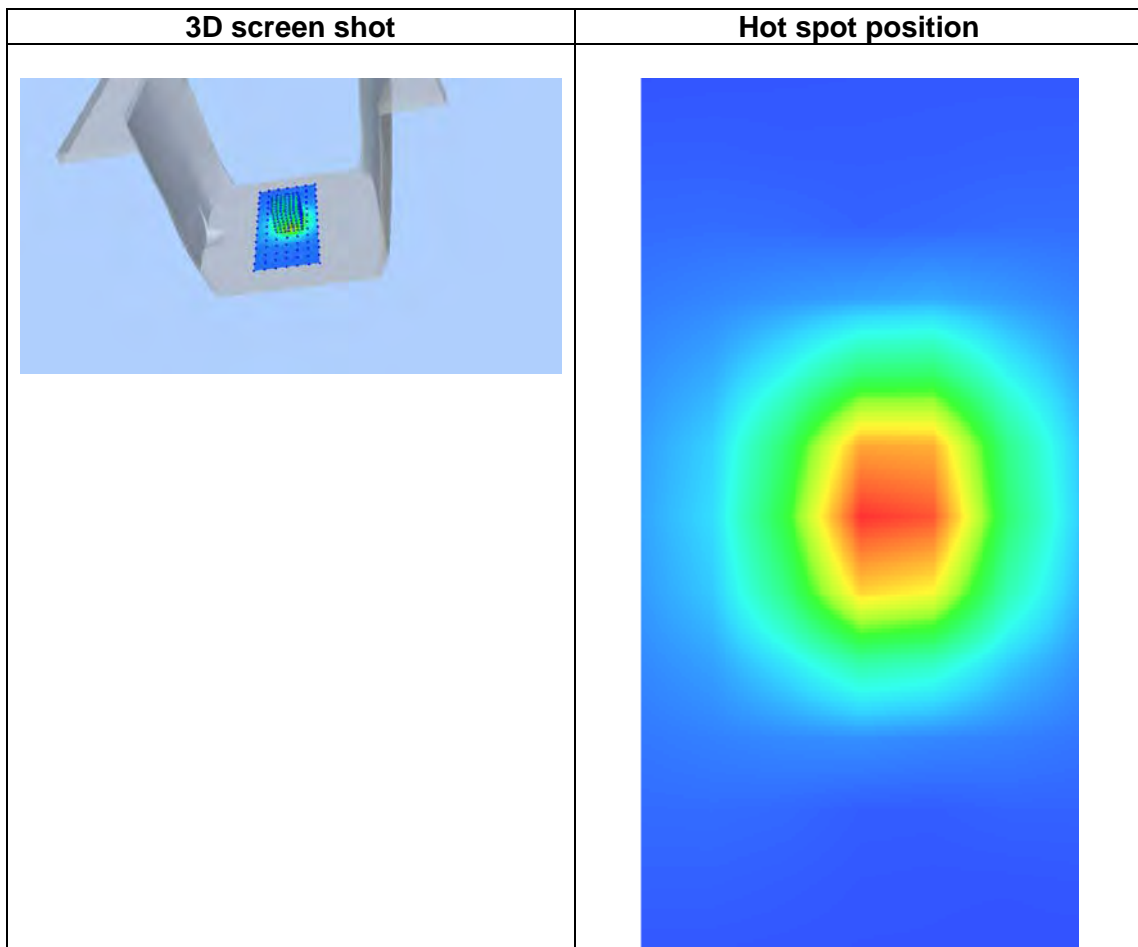
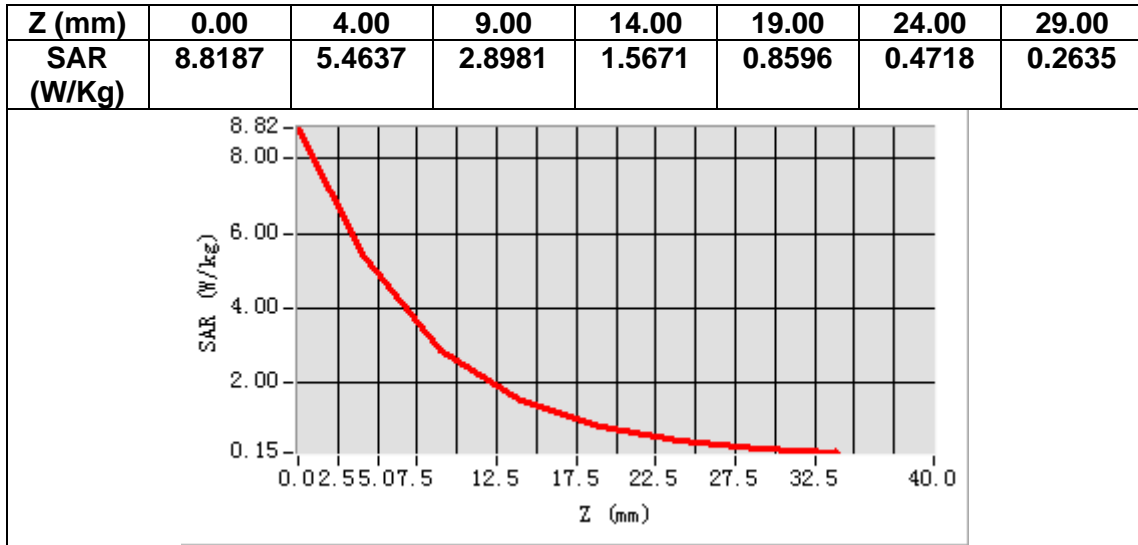
Frequency (MHz)	2600.000000
Relative permittivity (real part)	38.561413
Relative permittivity (imaginary part)	13.962628
Conductivity (S/m)	2.024198
Variation (%)	-0.980000



Maximum location: X=-1.00, Y=2.00

SAR Peak: 9.07 W/kg

SAR 10g (W/Kg)	2.672381
SAR 1g (W/Kg)	5.583335



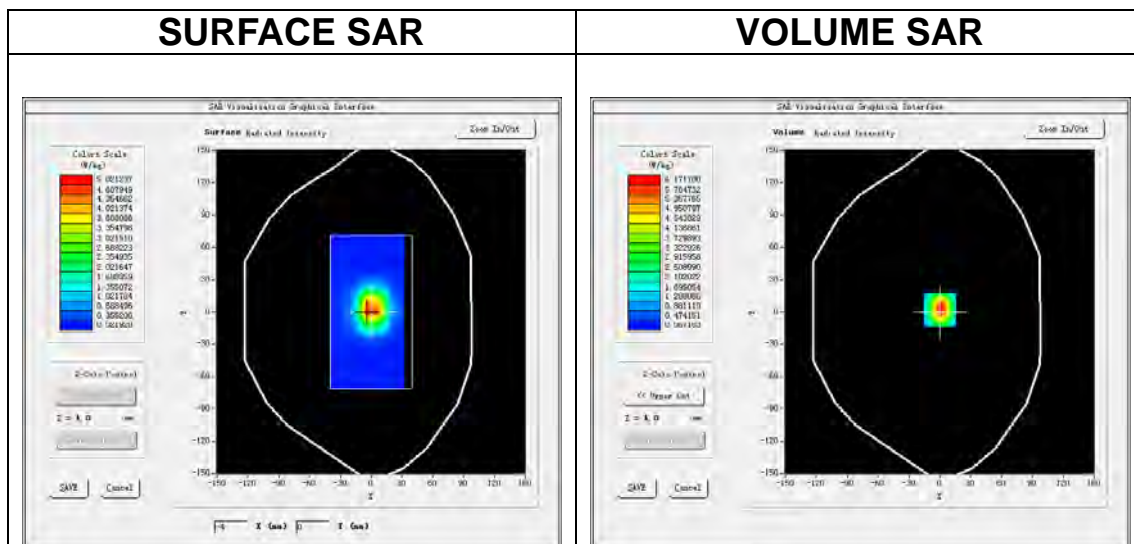
MEASUREMENT 12

A. Experimental conditions.

Area Scan	<u>dx=12mm dy=12mm, h= 5.00 mm</u>
ZoomScan	<u>7x7x7,dx=5mm dy=5mm dz=5mm</u>
Phantom	<u>Validation plane</u>
Device Position	<u>Dipole</u>
Band	<u>CW2600</u>
Channels	<u>Middle</u>
Signal	<u>CW (Crest factor: 1.0)</u>

B. SAR Measurement Results

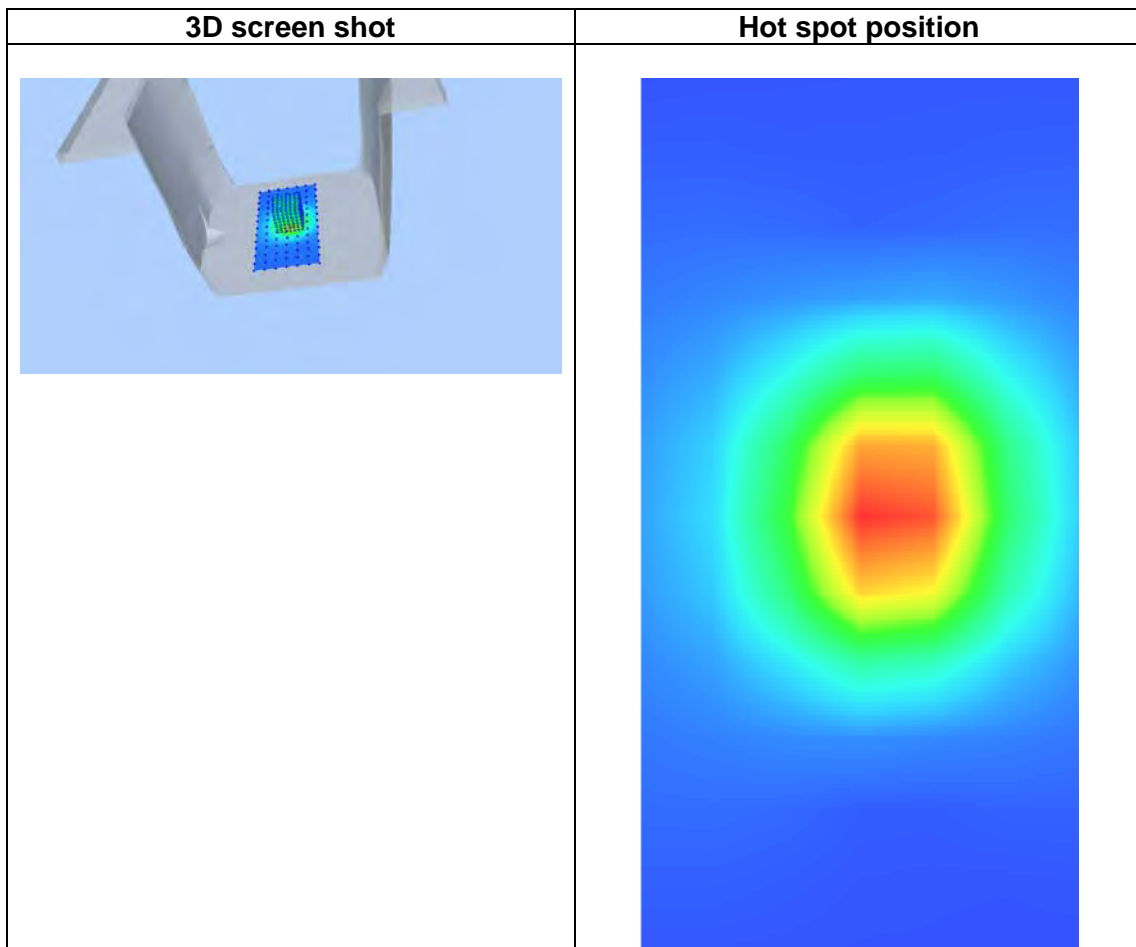
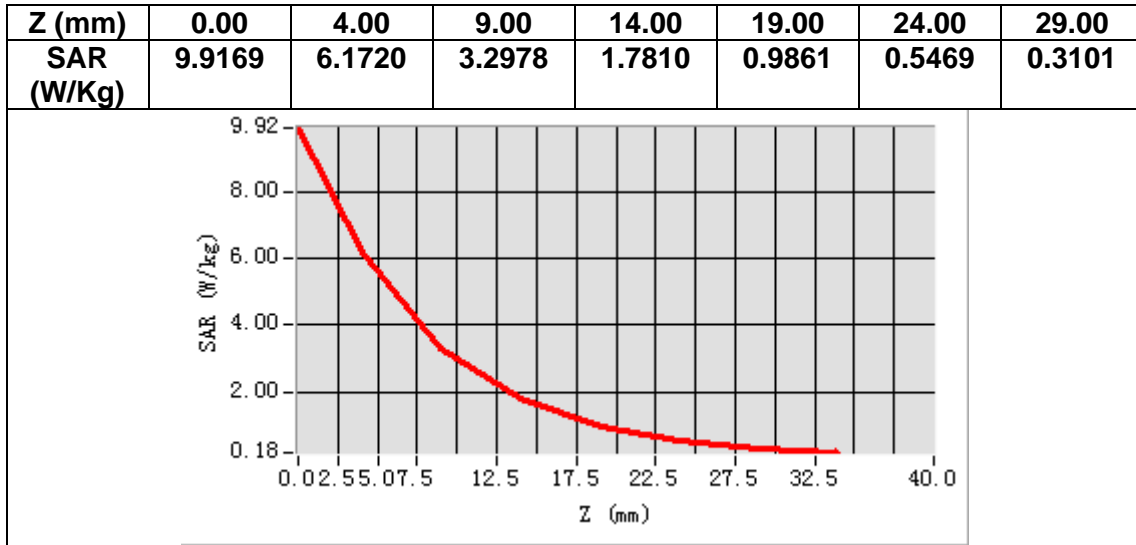
Frequency (MHz)	2600.000000
Relative permittivity (real part)	52.792221
Relative permittivity (imaginary part)	15.302188
Conductivity (S/m)	2.210243
Variation (%)	-0.980000



Maximum location: X=0.00, Y=2.00

SAR Peak: 9.99 W/kg

SAR 10g (W/Kg)	2.473140
SAR 1g (W/Kg)	5.322335



13. Appendix C. Plots of High SAR Measurement

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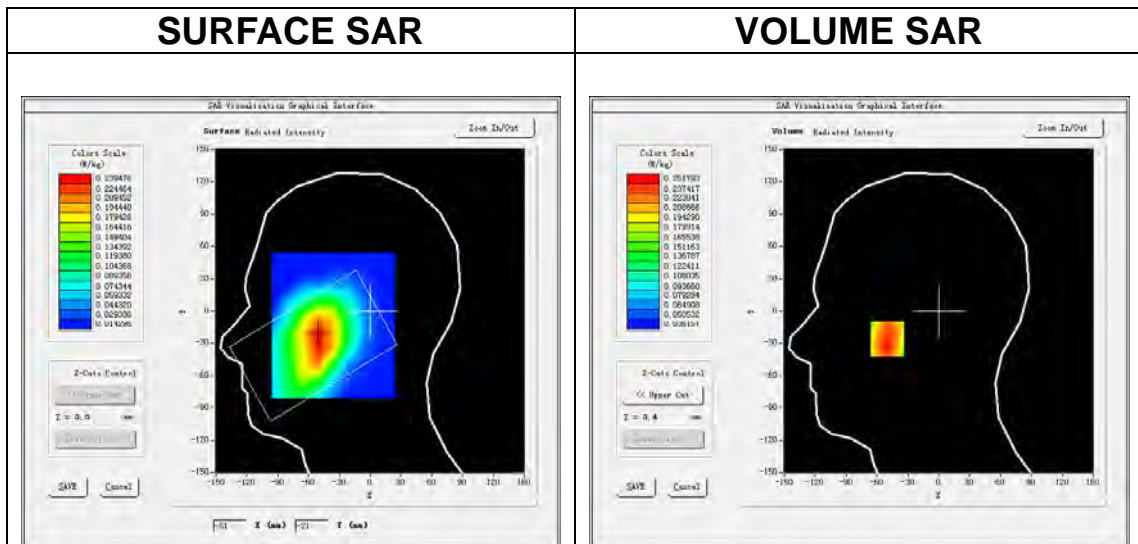
MEASUREMENT 1

A. Experimental conditions.

Area Scan	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
ZoomScan	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
Phantom	<u>Left head</u>
Device Position	<u>Cheek</u>
Band	<u>GSM850</u>
Channels	<u>Middle</u>
Signal	<u>TDMA (Crest factor: 2.0)</u>

B. SAR Measurement Results

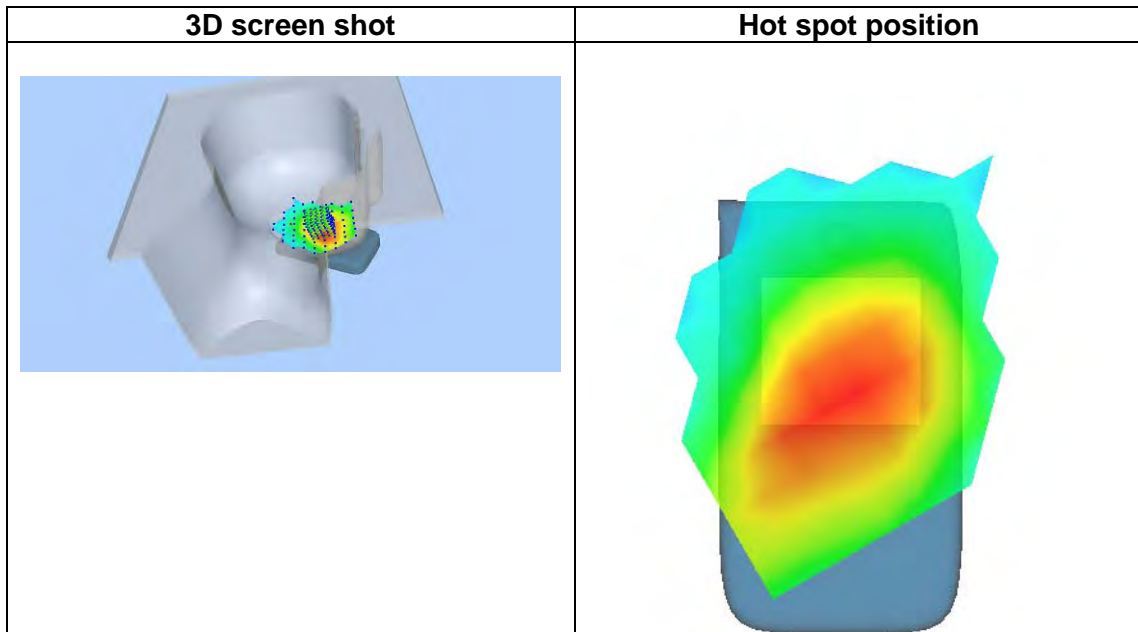
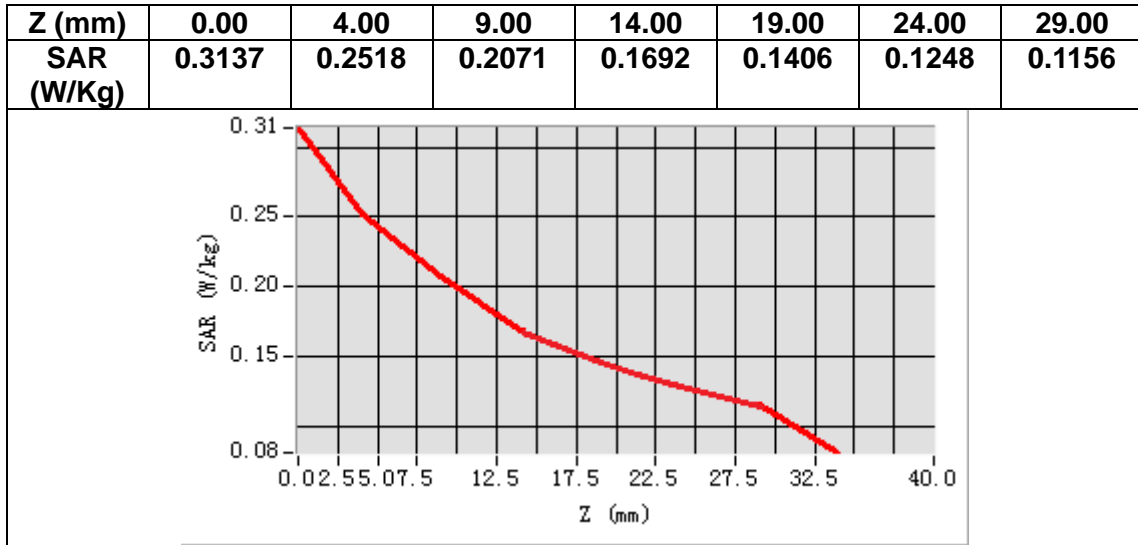
Frequency (MHz)	836.400000
Relative permittivity (real part)	40.950958
Relative permittivity (imaginary part)	19.931540
Conductivity (S/m)	0.926152
Variation (%)	3.930000



Maximum location: X=-50.00, Y=-26.00

SAR Peak: 0.30 W/kg

SAR 10g (W/Kg)	0.198466
SAR 1g (W/Kg)	0.246907



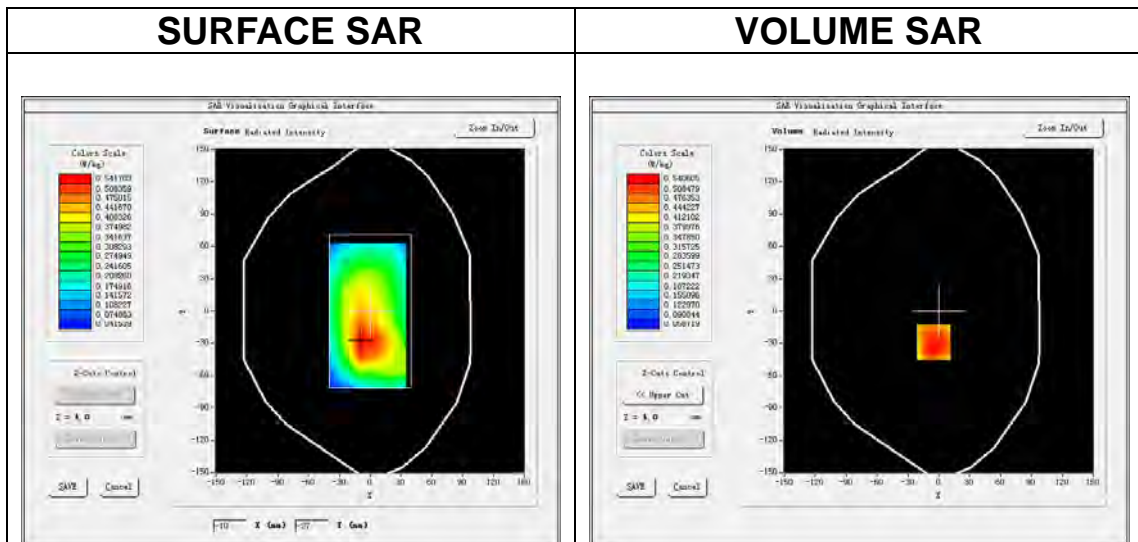
MEASUREMENT 2

A. Experimental conditions.

Area Scan	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
ZoomScan	<u>5x5x7, dx=8mm dy=8mm dz=5mm</u>
Phantom	<u>Validation plane</u>
Device Position	<u>Body</u>
Band	<u>GSM850</u>
Channels	<u>Middle</u>
Signal	<u>TDMA (Crest factor: 2.0)</u>

B. SAR Measurement Results

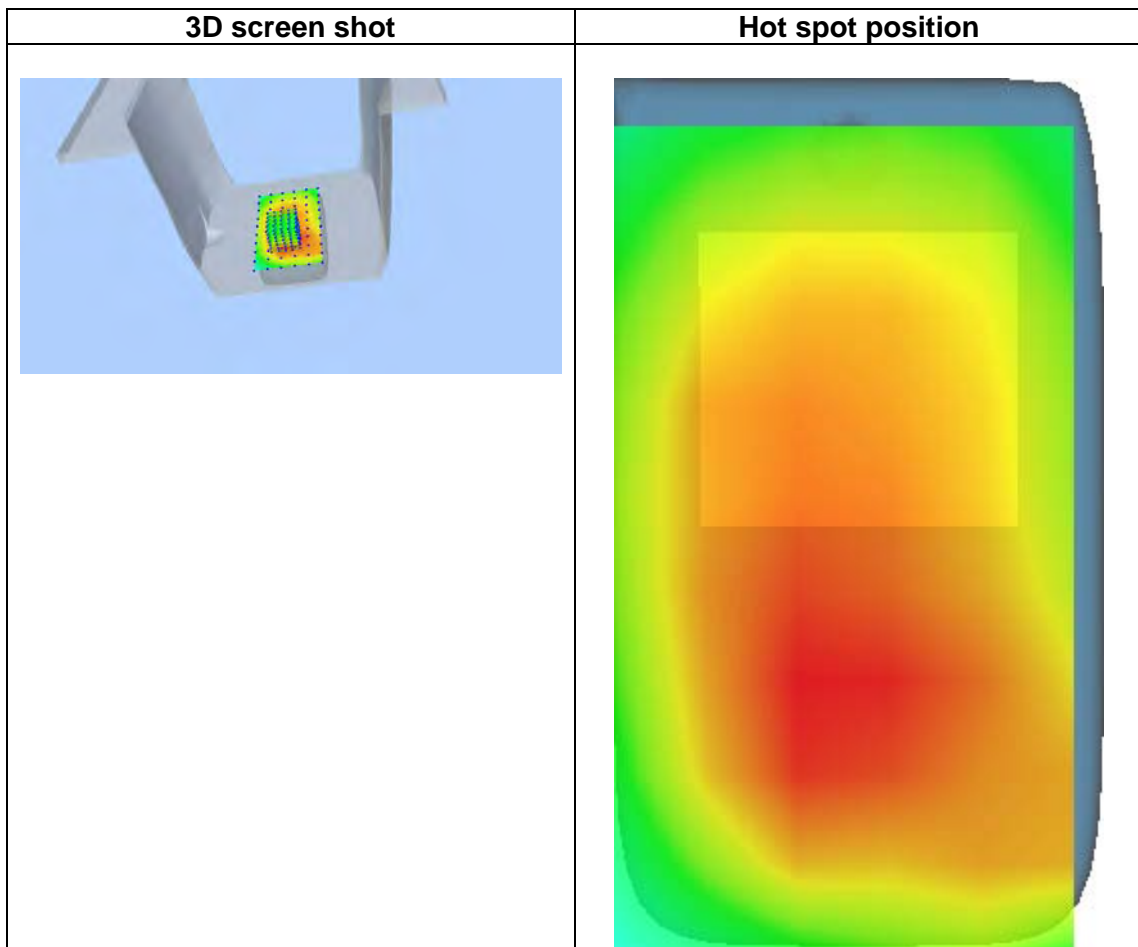
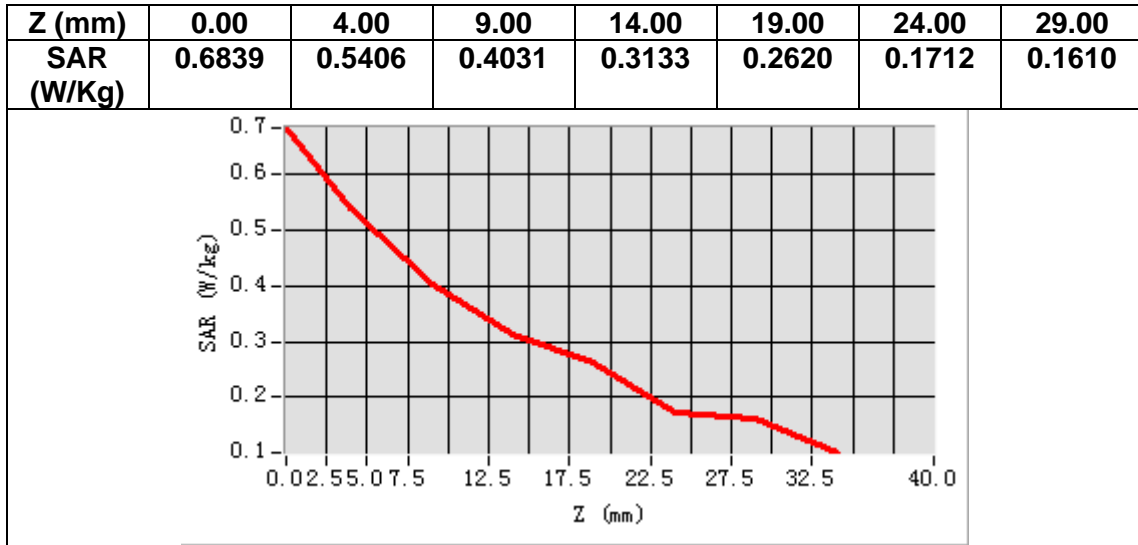
Frequency (MHz)	836.400000
Relative permittivity (real part)	54.629581
Relative permittivity (imaginary part)	21.762739
Conductivity (S/m)	1.011242
Variation (%)	2.480000



Maximum location: X=-5.00, Y=-29.00

SAR Peak: 0.70 W/kg

SAR 10g (W/Kg)	0.391268
SAR 1g (W/Kg)	0.540945



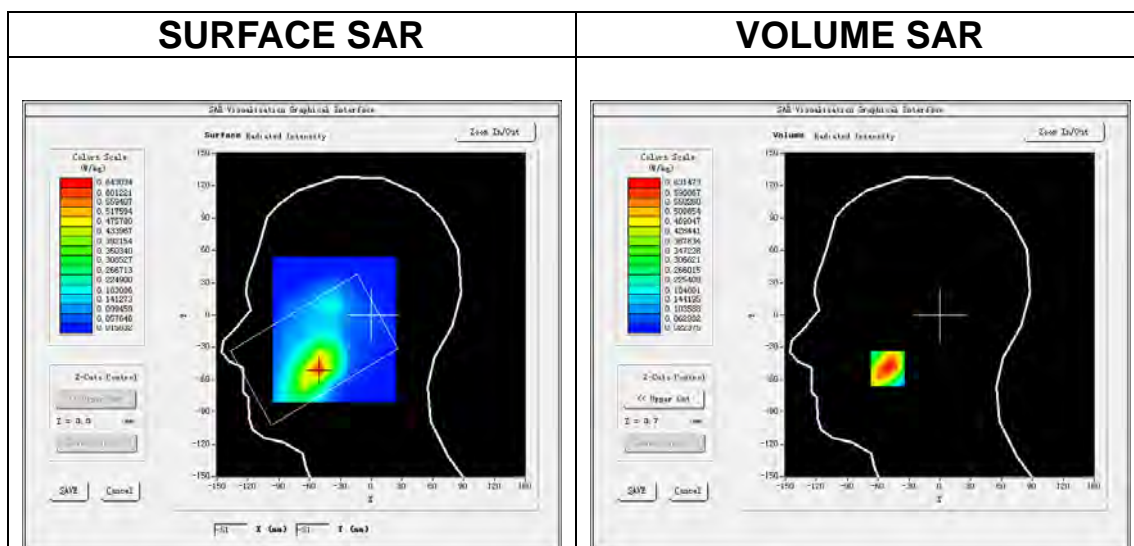
MEASUREMENT 3

A. Experimental conditions.

Area Scan	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
ZoomScan	<u>5x5x7, dx=8mm dy=8mm dz=5mm</u>
Phantom	<u>Left head</u>
Device Position	<u>Cheek</u>
Band	<u>GSM1900</u>
Channels	<u>Middle</u>
Signal	<u>TDMA (Crest factor: 2.0)</u>

B. SAR Measurement Results

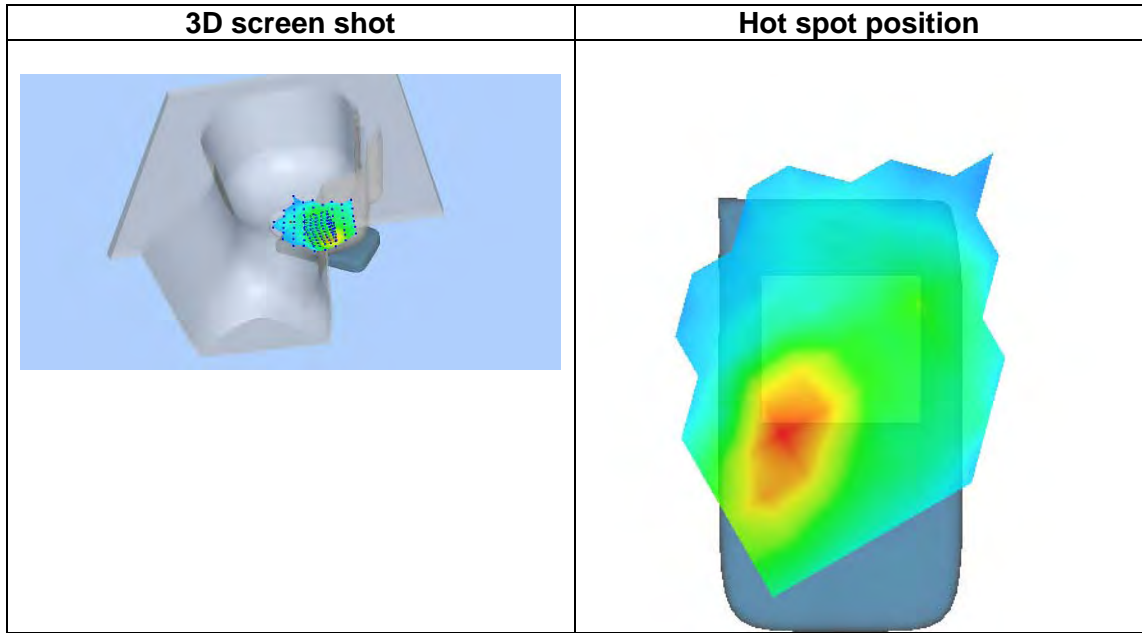
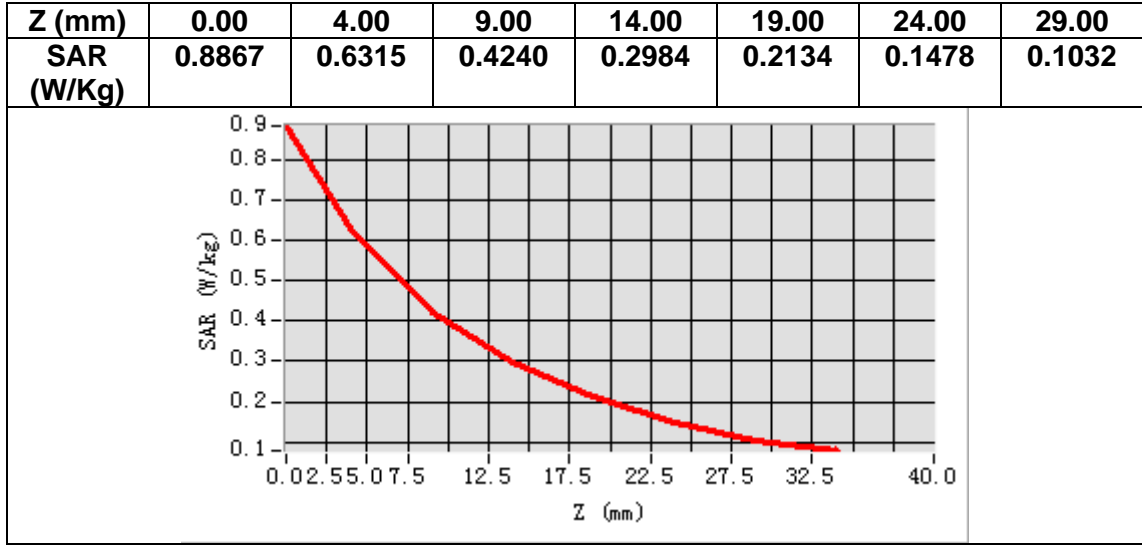
Frequency (MHz)	1880.000000
Relative permittivity (real part)	41.348202
Relative permittivity (imaginary part)	13.664300
Conductivity (S/m)	1.427160
Variation (%)	-1.010000



Maximum location: X=-51.00, Y=-50.00

SAR Peak: 0.91 W/kg

SAR 10g (W/Kg)	0.362214
SAR 1g (W/Kg)	0.587405



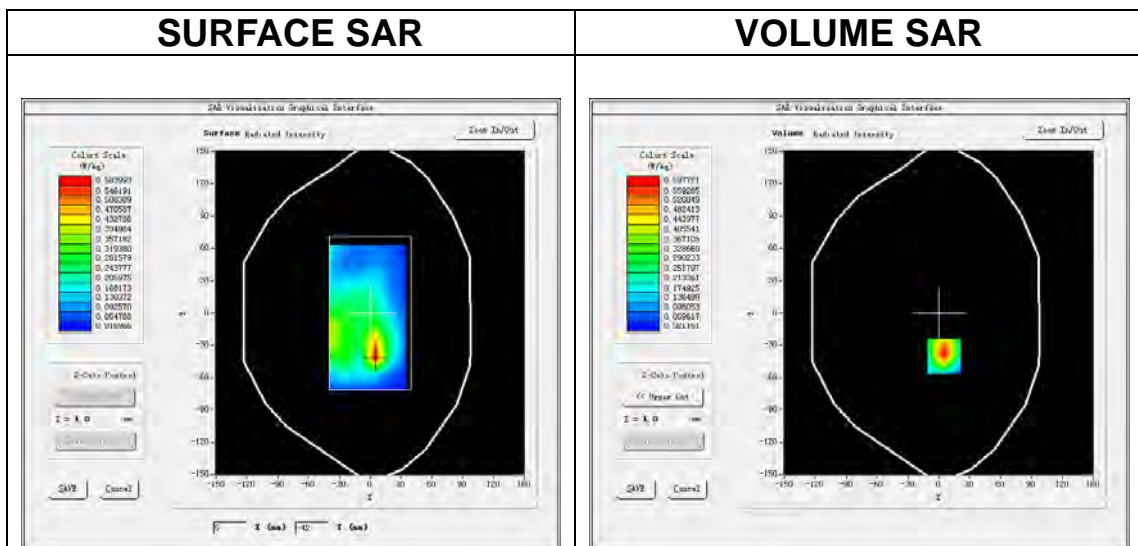
MEASUREMENT 4

A. Experimental conditions.

Area Scan	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
ZoomScan	<u>5x5x7, dx=8mm dy=8mm dz=5mm</u>
Phantom	<u>Validation plane</u>
Device Position	<u>Body</u>
Band	<u>GSM1900</u>
Channels	<u>Middle</u>
Signal	<u>TDMA (Crest factor: 2.0)</u>

B. SAR Measurement Results

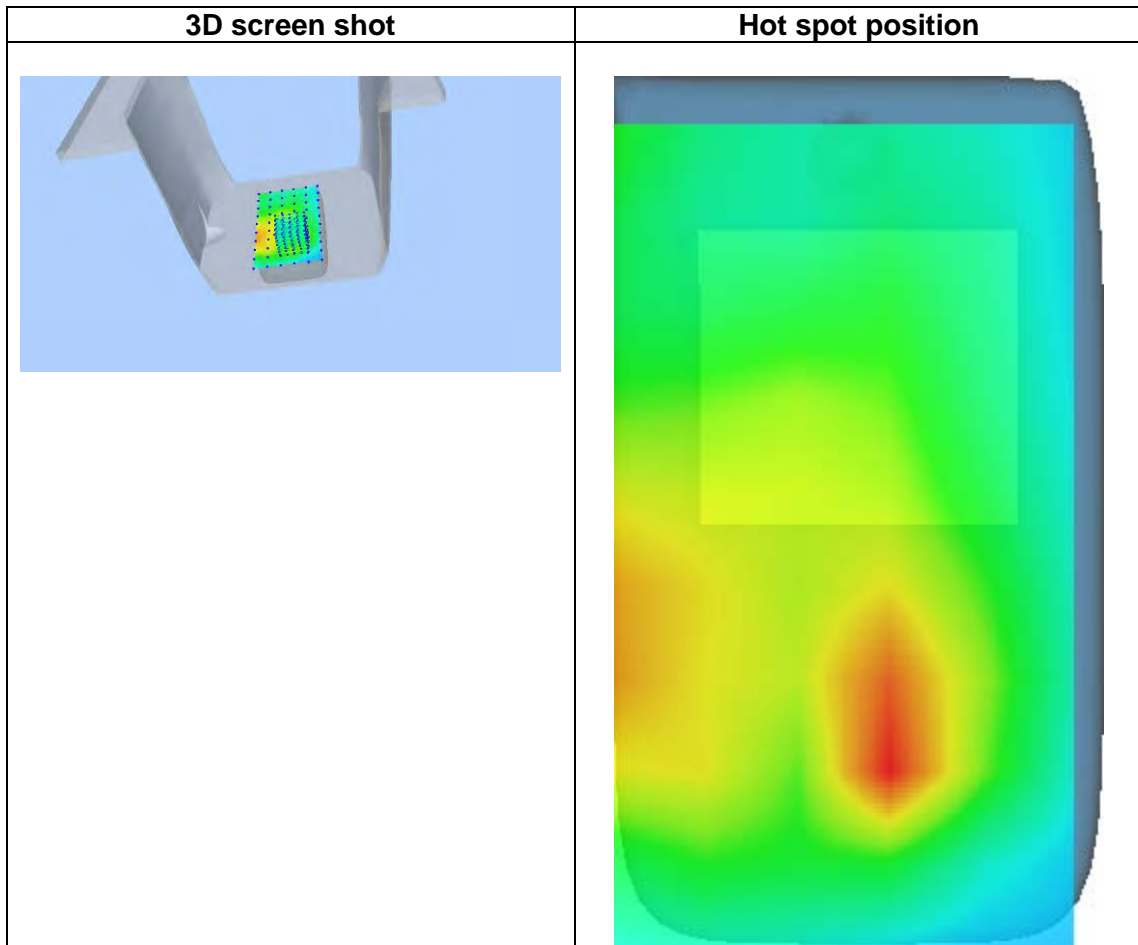
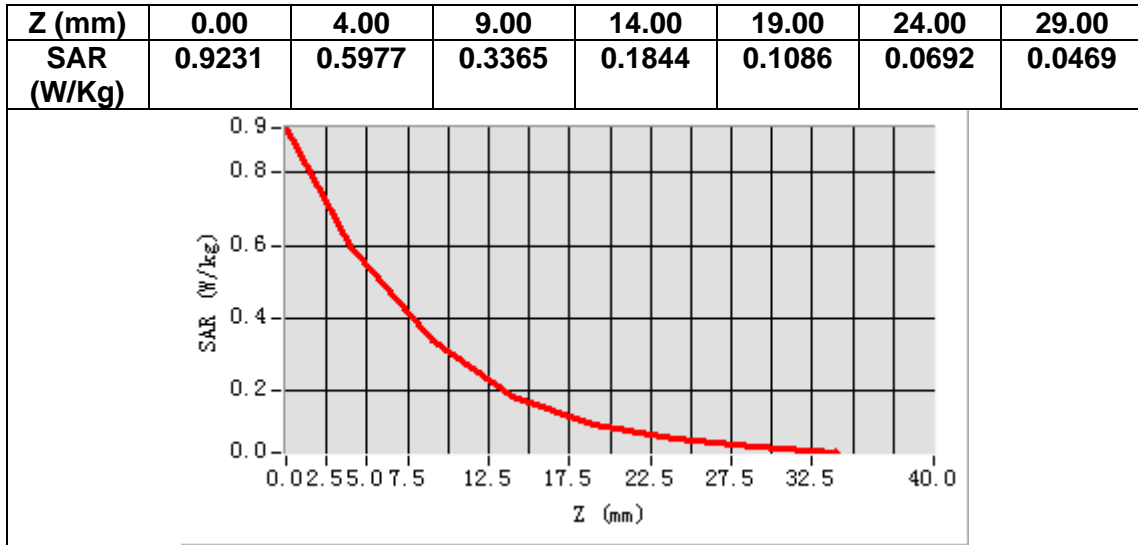
Frequency (MHz)	1880.000000
Relative permittivity (real part)	53.048901
Relative permittivity (imaginary part)	14.937700
Conductivity (S/m)	1.560160
Variation (%)	0.170000



Maximum location: X=5.00, Y=-40.00

SAR Peak: 0.93 W/kg

SAR 10g (W/Kg)	0.292202
SAR 1g (W/Kg)	0.566930



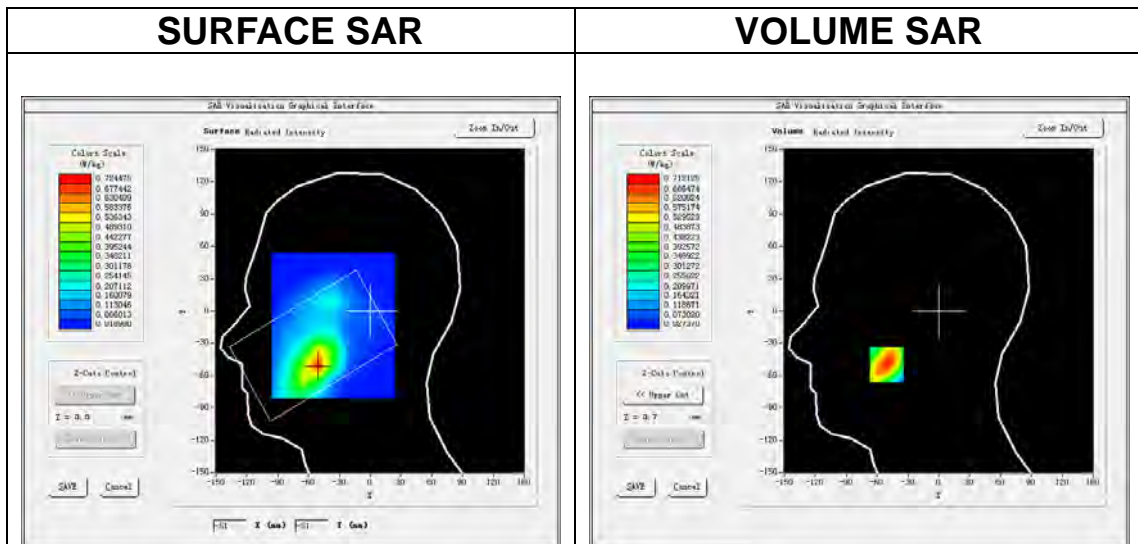
MEASUREMENT 5

A. Experimental conditions.

Area Scan	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
ZoomScan	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
Phantom	<u>Left head</u>
Device Position	<u>Cheek</u>
Band	<u>Band2_WCDMA1900</u>
Channels	<u>Middle</u>
Signal	<u>WCDMA (Crest factor: 1.0)</u>

B. SAR Measurement Results

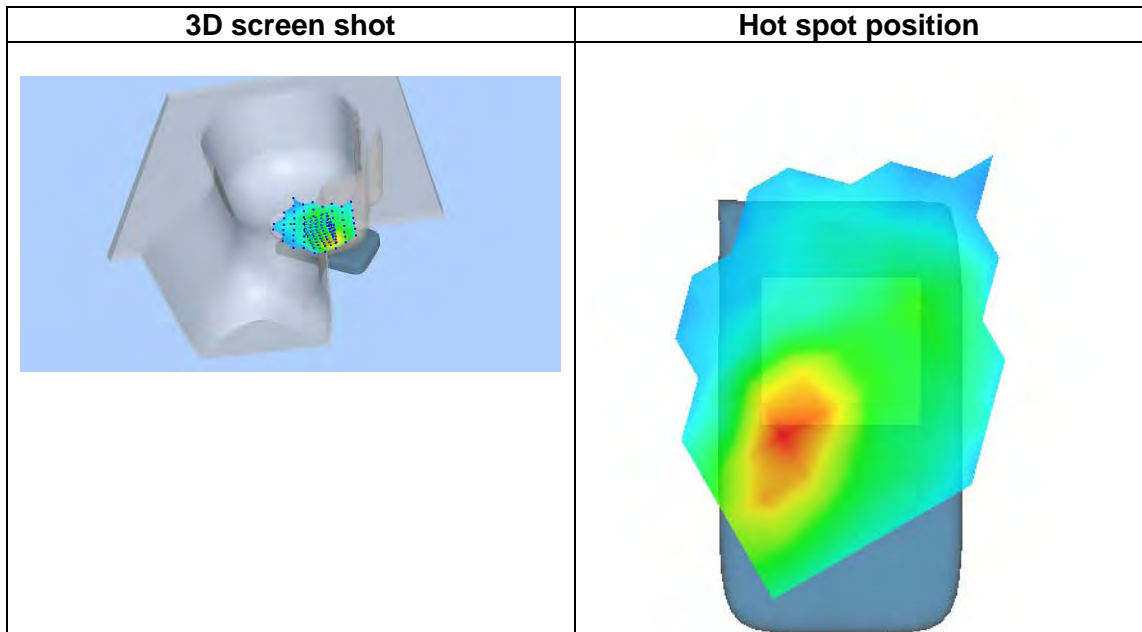
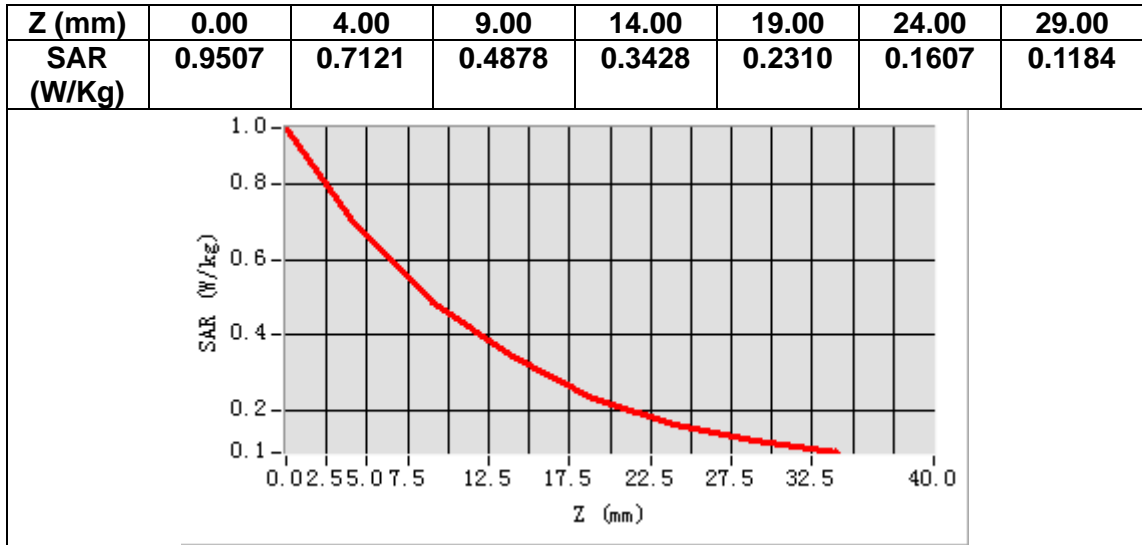
Frequency (MHz)	1880.000000
Relative permittivity (real part)	41.348202
Relative permittivity (imaginary part)	13.664300
Conductivity (S/m)	1.427160
Variation (%)	2.100000



Maximum location: X=-51.00, Y=-50.00

SAR Peak: 0.96 W/kg

SAR 10g (W/Kg)	0.409629
SAR 1g (W/Kg)	0.671152



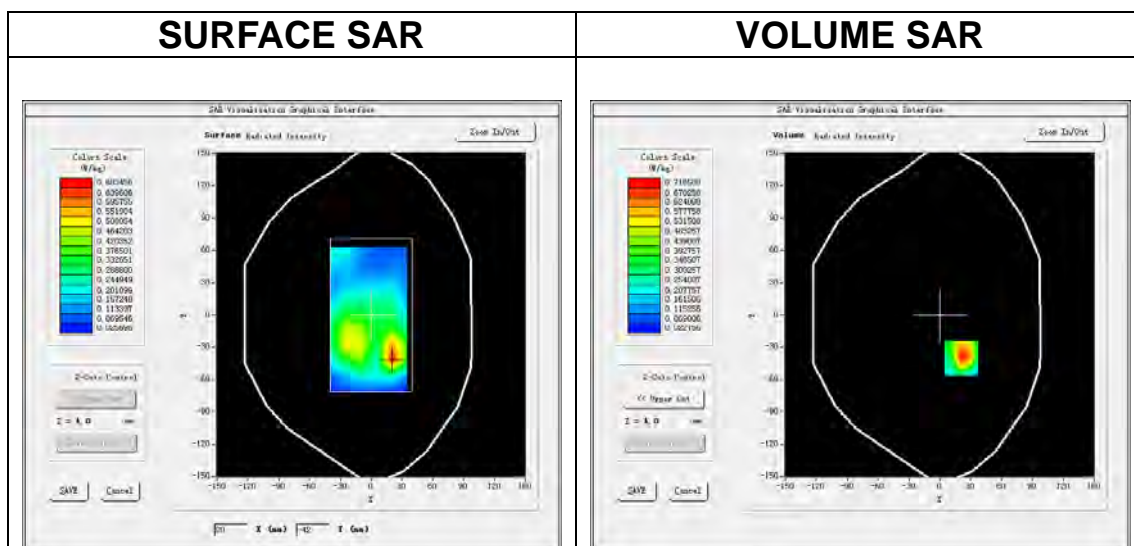
MEASUREMENT 6

A. Experimental conditions.

Area Scan	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
ZoomScan	<u>5x5x7, dx=8mm dy=8mm dz=5mm</u>
Phantom	<u>Validation plane</u>
Device Position	<u>Body</u>
Band	<u>Band2_WCDMA1900</u>
Channels	<u>Middle</u>
Signal	<u>WCDMA (Crest factor: 1.0)</u>

B. SAR Measurement Results

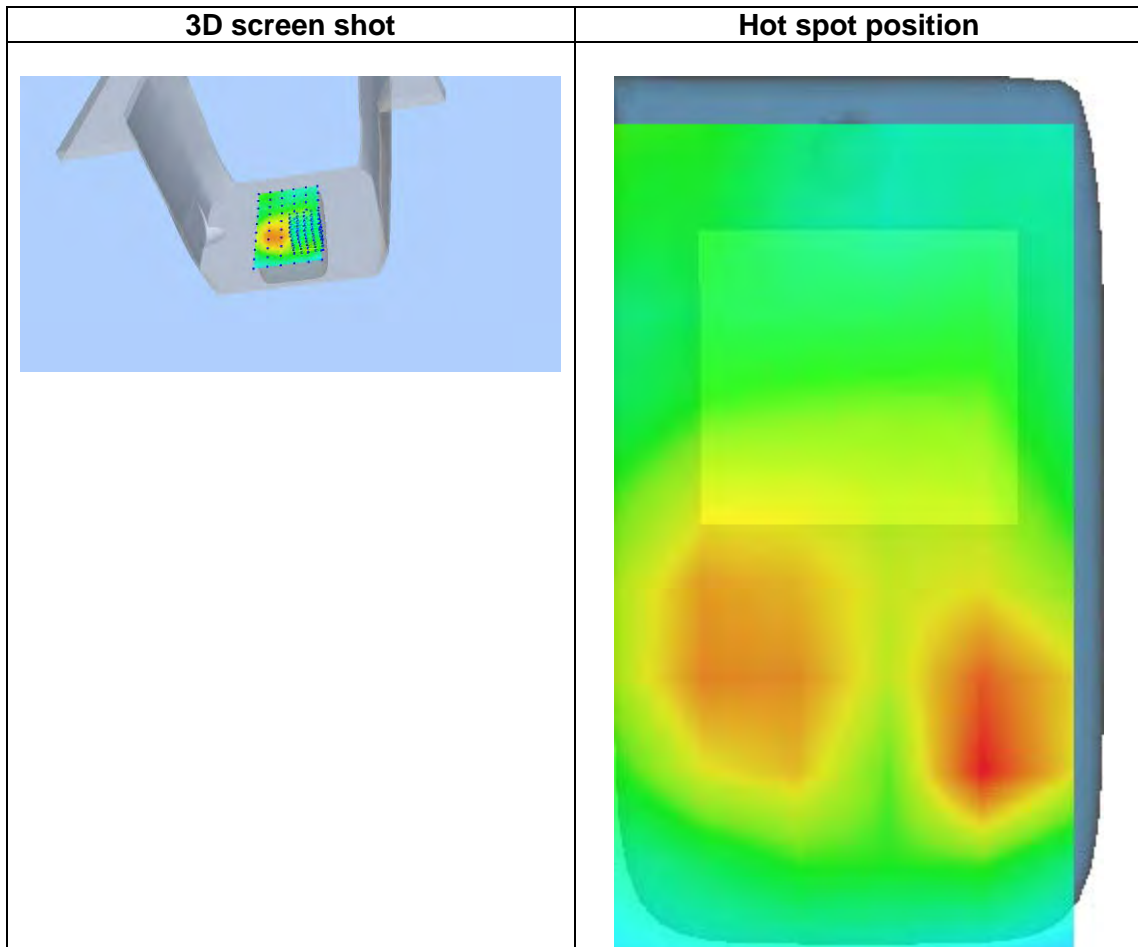
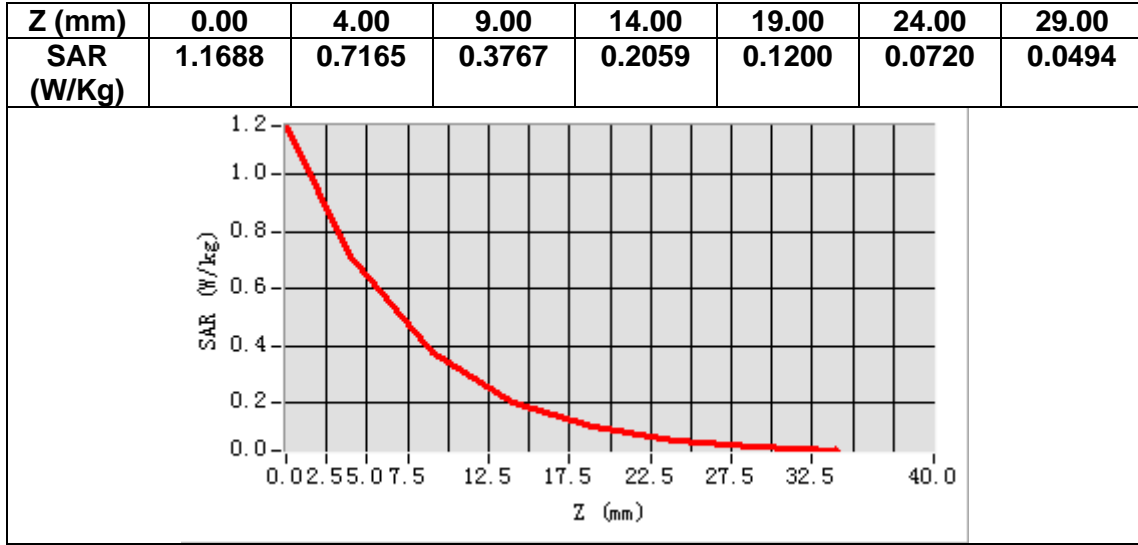
Frequency (MHz)	1880.000000
Relative permittivity (real part)	53.048901
Relative permittivity (imaginary part)	14.937700
Conductivity (S/m)	1.560160
Variation (%)	-0.370000



Maximum location: X=21.00, Y=-40.00

SAR Peak: 1.17 W/kg

SAR 10g (W/Kg)	0.354274
SAR 1g (W/Kg)	0.676729



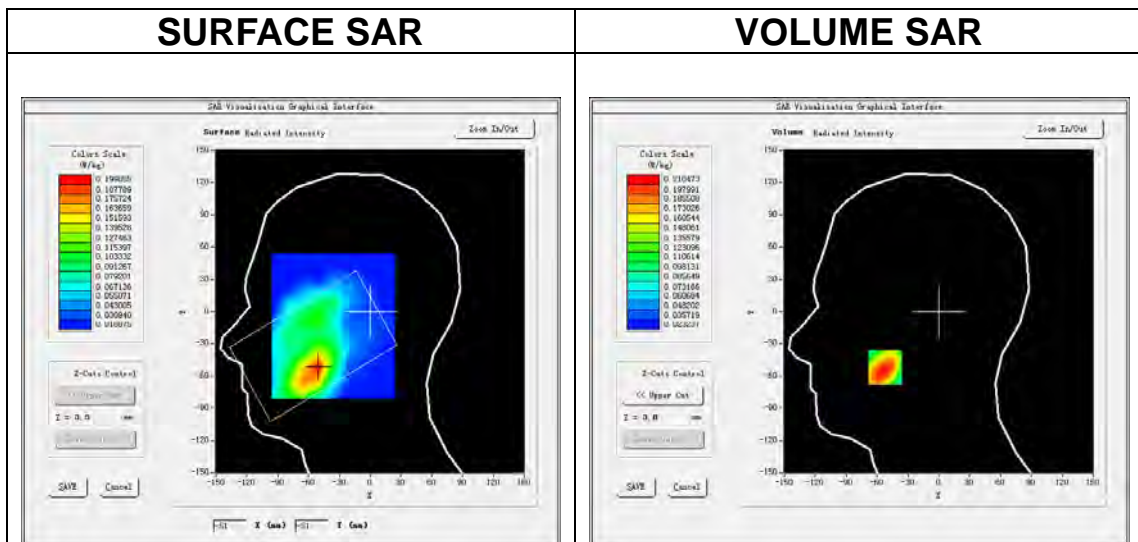
MEASUREMENT 7

A. Experimental conditions.

Area Scan	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
ZoomScan	<u>5x5x7, dx=8mm dy=8mm dz=5mm</u>
Phantom	<u>Left head</u>
Device Position	<u>Cheek</u>
Band	<u>Band4 WCDMA1700</u>
Channels	<u>Middle</u>
Signal	<u>WCDMA (Crest factor: 1.0)</u>

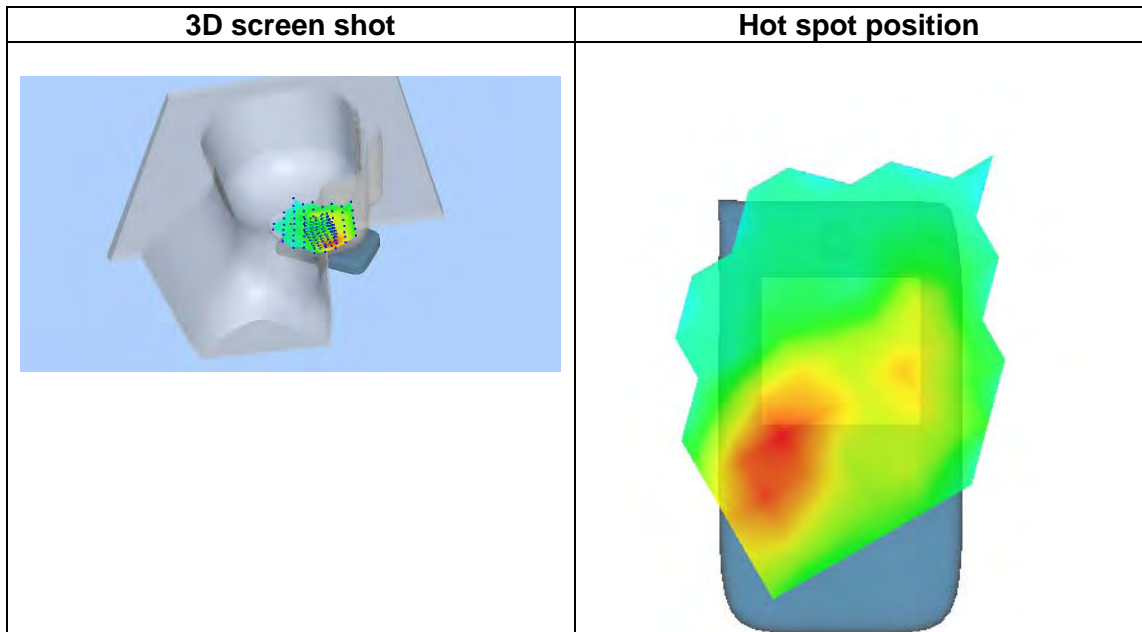
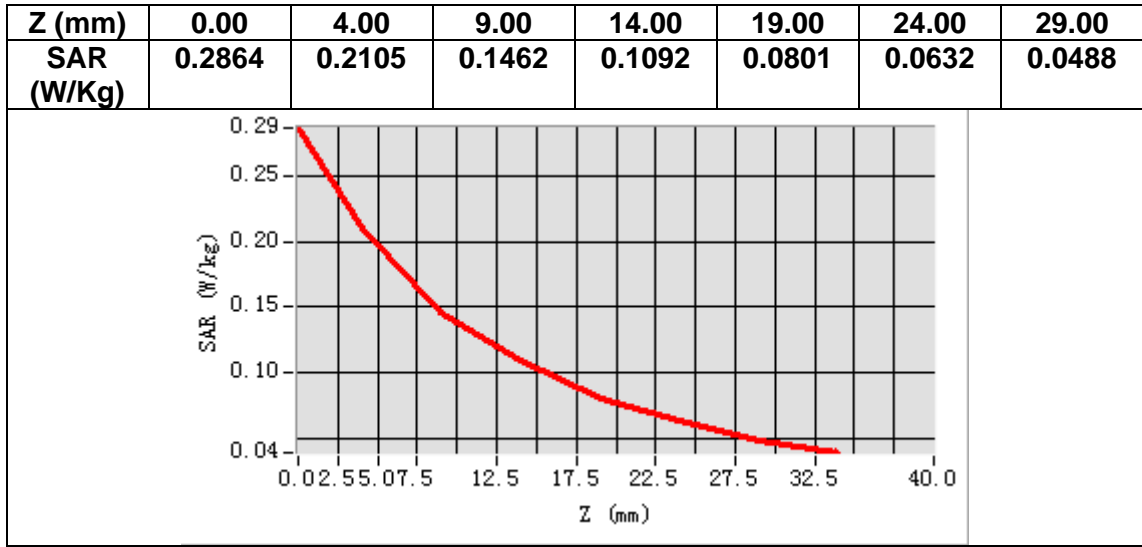
B. SAR Measurement Results

Frequency (MHz)	1732.600000
Relative permittivity (real part)	39.735291
Relative permittivity (imaginary part)	14.070592
Conductivity (S/m)	1.354294
Variation (%)	2.000000



Maximum location: X=-52.00, Y=-52.00
SAR Peak: 0.29 W/kg

SAR 10g (W/Kg)	0.132413
SAR 1g (W/Kg)	0.204045



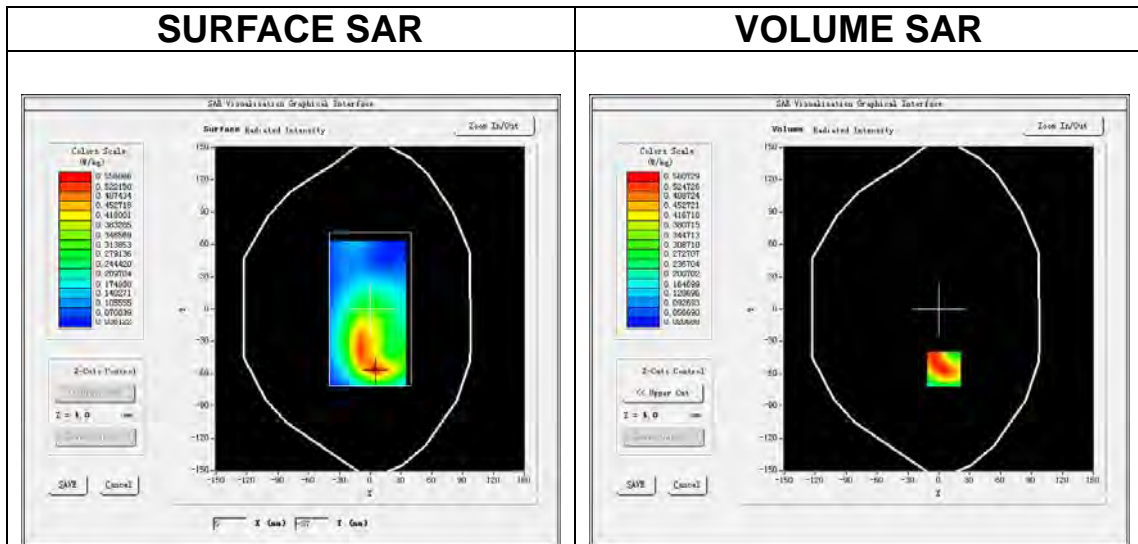
MEASUREMENT 8

A. Experimental conditions.

Area Scan	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
ZoomScan	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
Phantom	<u>Validation plane</u>
Device Position	<u>Body</u>
Band	<u>Band4 WCDMA1700</u>
Channels	<u>Middle</u>
Signal	<u>WCDMA (Crest factor: 1.0)</u>

B. SAR Measurement Results

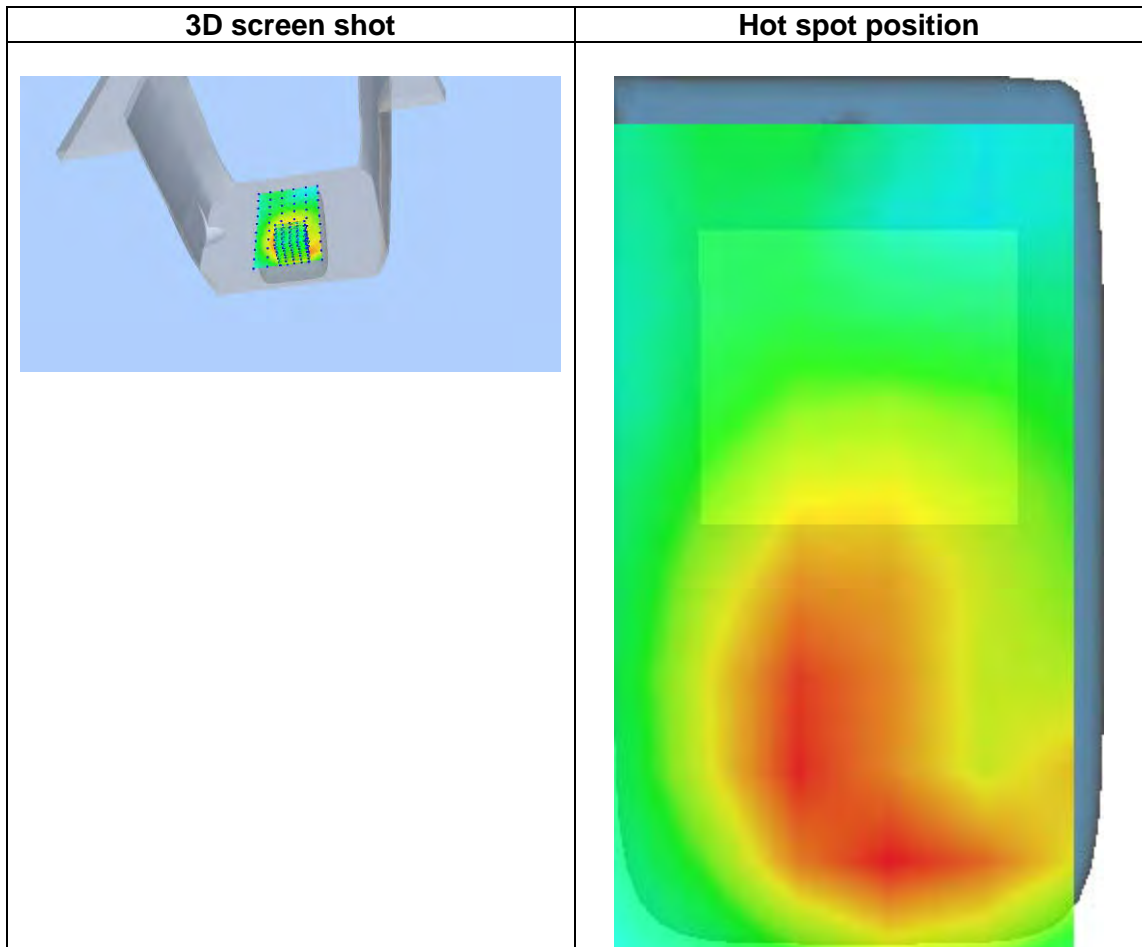
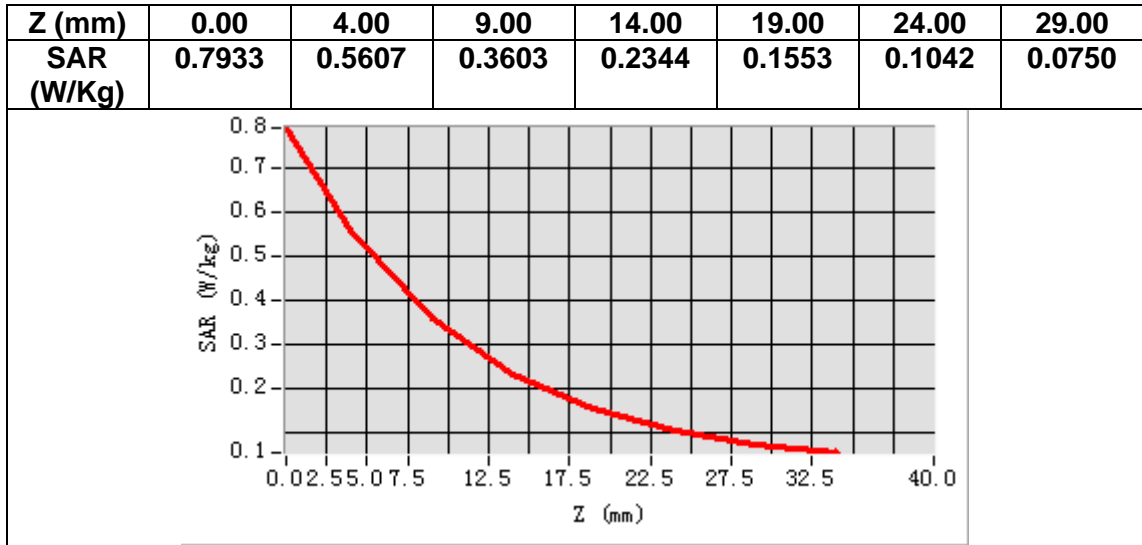
Frequency (MHz)	1732.600000
Relative permittivity (real part)	53.953365
Relative permittivity (imaginary part)	15.483220
Conductivity (S/m)	1.490260
Variation (%)	-0.910000



Maximum location: X=5.00, Y=-56.00

SAR Peak: 0.79 W/kg

SAR 10g (W/Kg)	0.321306
SAR 1g (W/Kg)	0.528993



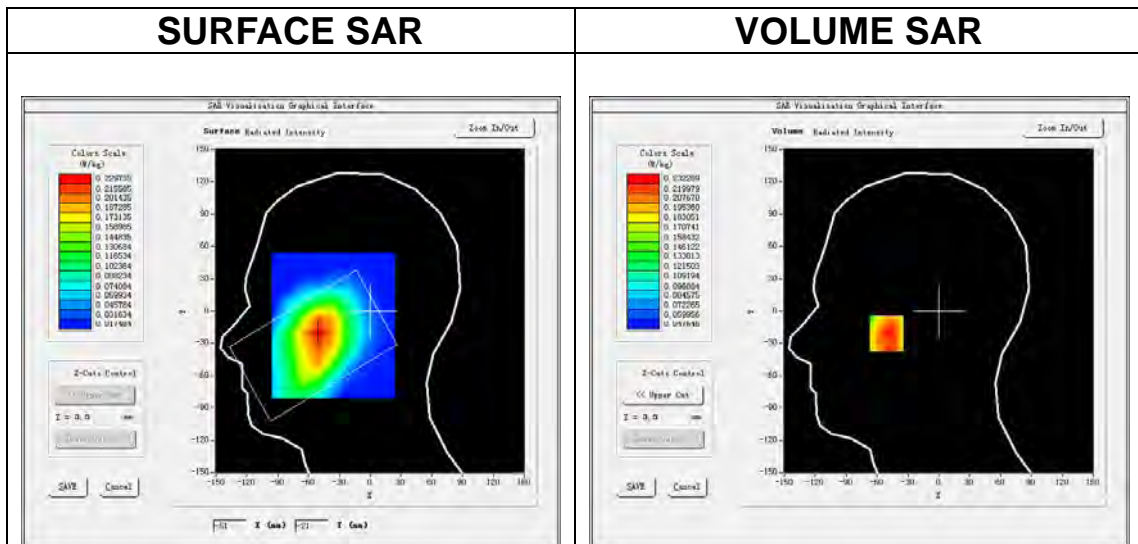
MEASUREMENT 9

A. Experimental conditions.

Area Scan	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
ZoomScan	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
Phantom	<u>Left head</u>
Device Position	<u>Cheek</u>
Band	<u>Band5_WCDMA850</u>
Channels	<u>Middle</u>
Signal	<u>WCDMA (Crest factor: 1.0)</u>

B. SAR Measurement Results

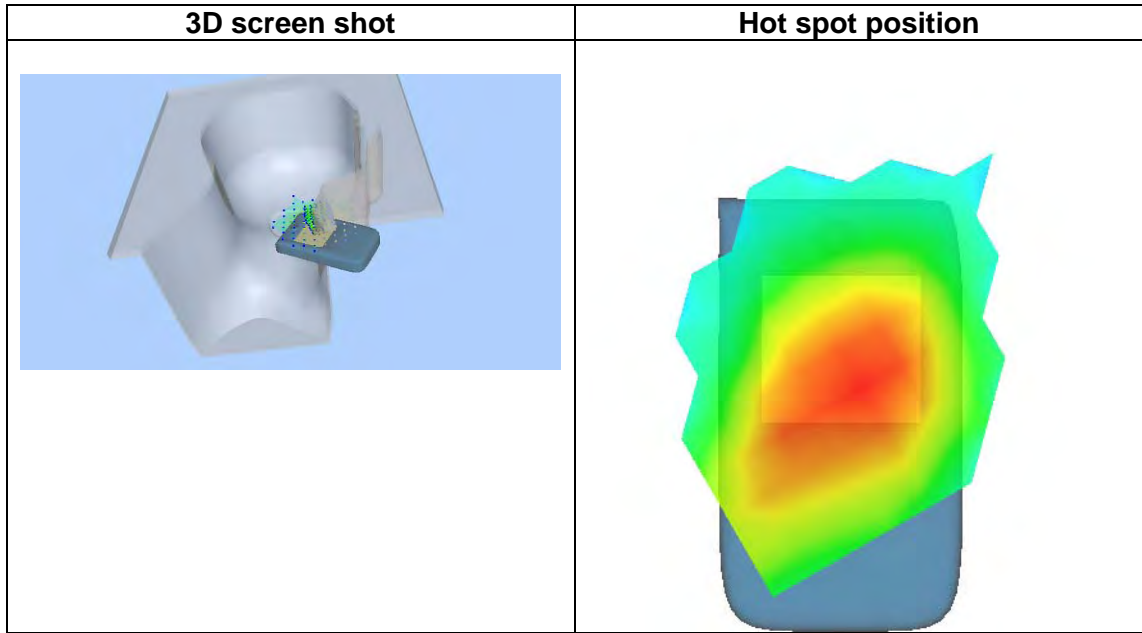
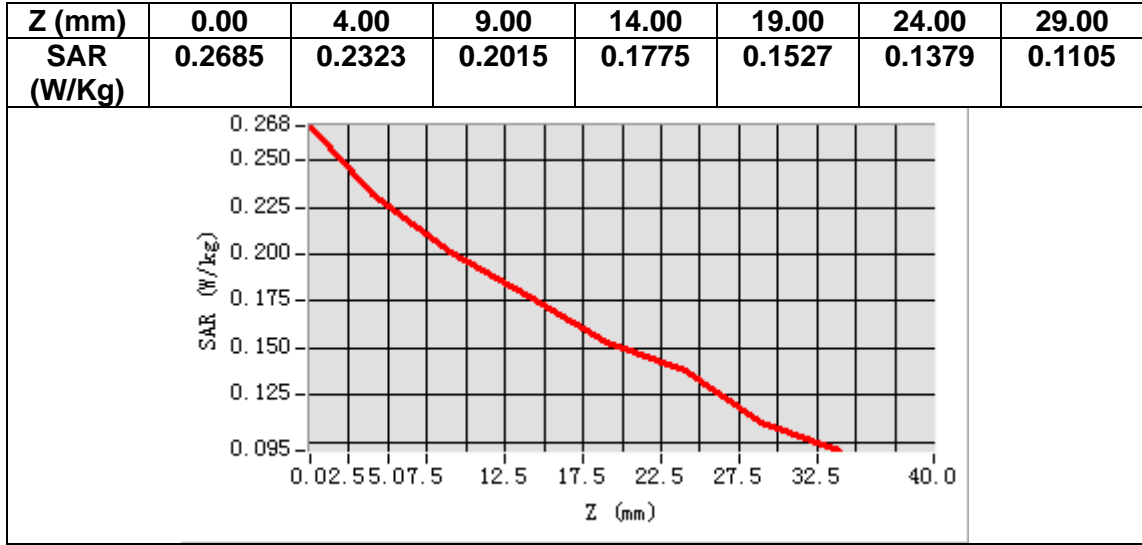
Frequency (MHz)	836.400000
Relative permittivity (real part)	40.950958
Relative permittivity (imaginary part)	19.931540
Conductivity (S/m)	0.926152
Variation (%)	0.510000



Maximum location: X=-51.00, Y=-21.00

SAR Peak: 0.28 W/kg

SAR 10g (W/Kg)	0.186515
SAR 1g (W/Kg)	0.230527



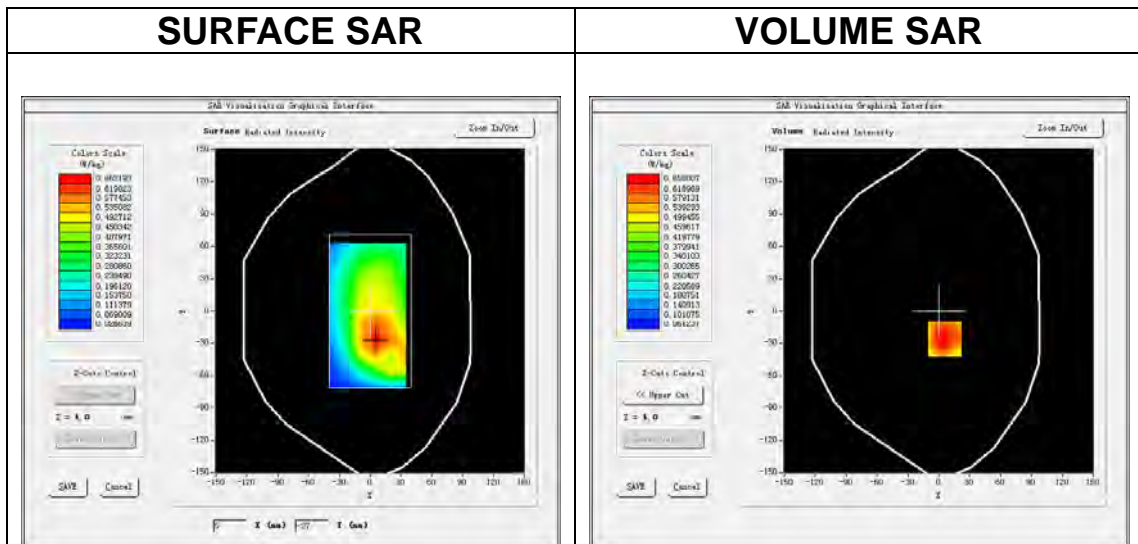
MEASUREMENT 10

A. Experimental conditions.

Area Scan	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
ZoomScan	<u>5x5x7, dx=8mm dy=8mm dz=5mm</u>
Phantom	<u>Validation plane</u>
Device Position	<u>Body</u>
Band	<u>Band5_WCDMA850</u>
Channels	<u>Middle</u>
Signal	<u>WCDMA (Crest factor: 1.0)</u>

B. SAR Measurement Results

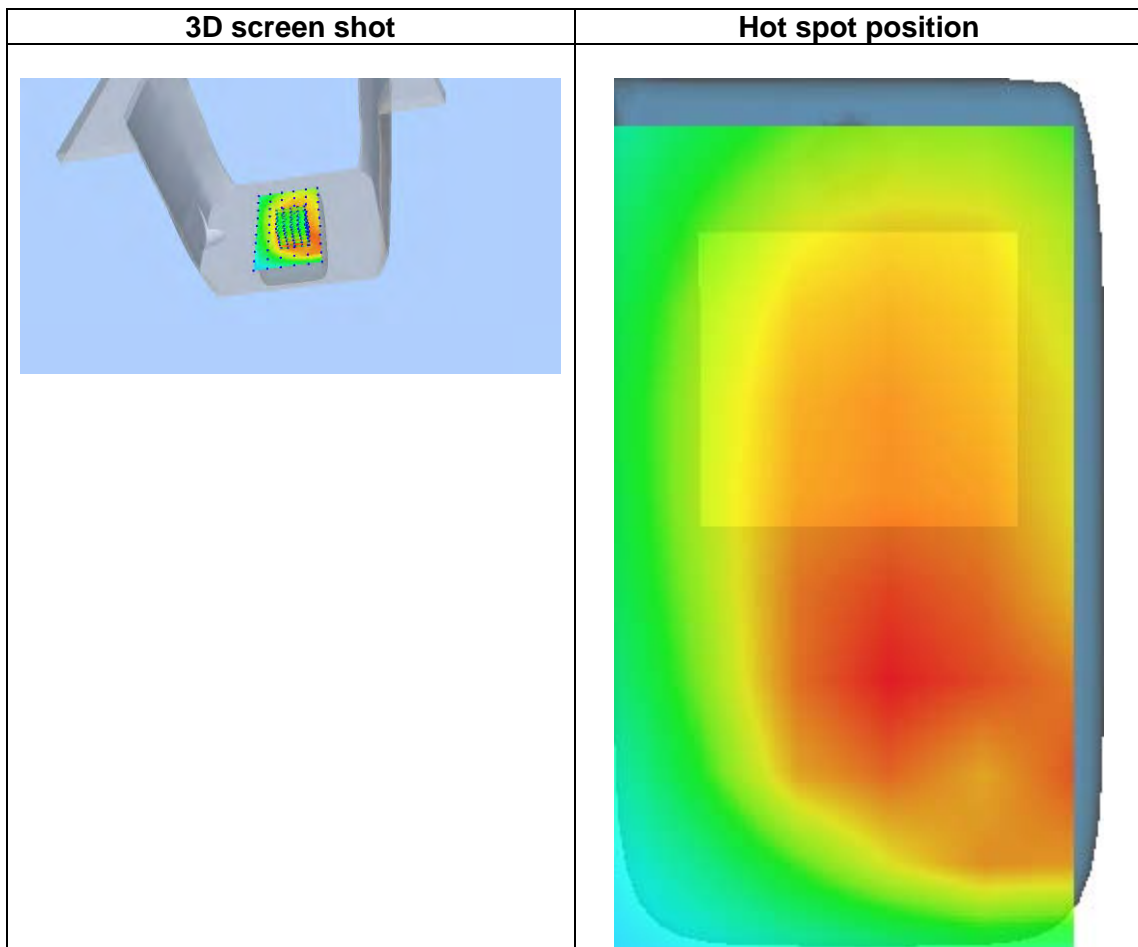
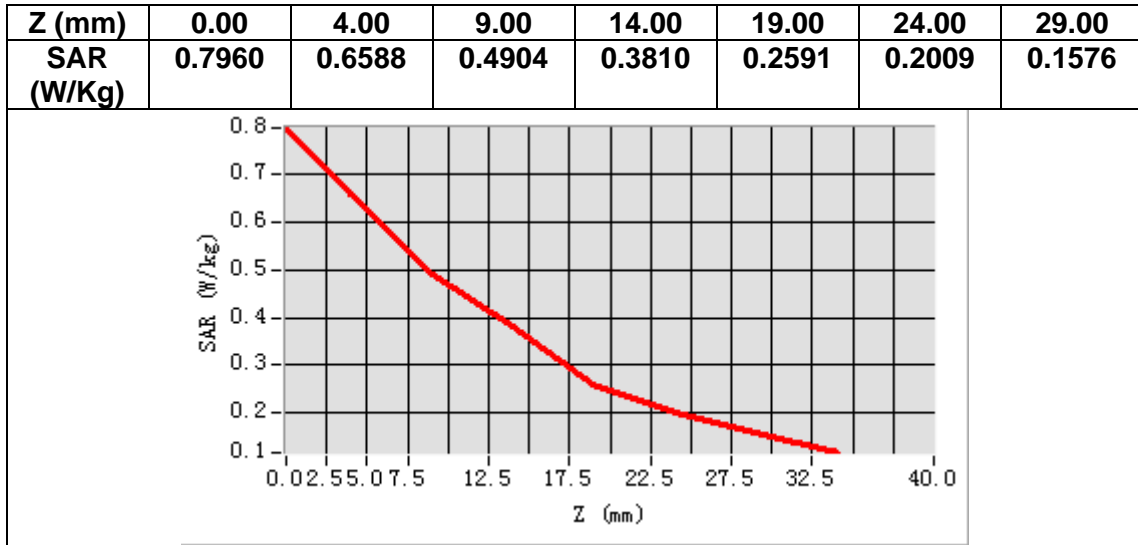
Frequency (MHz)	836.400000
Relative permittivity (real part)	54.629581
Relative permittivity (imaginary part)	21.762739
Conductivity (S/m)	1.011242
Variation (%)	-1.190000



Maximum location: X=6.00, Y=-26.00

SAR Peak: 0.85 W/kg

SAR 10g (W/Kg)	0.474037
SAR 1g (W/Kg)	0.665477



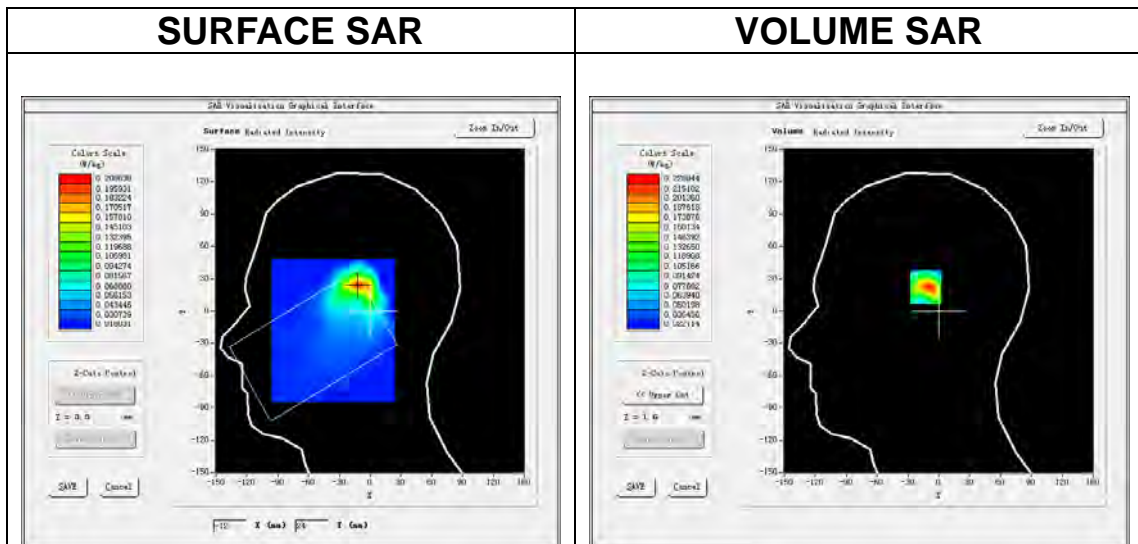
MEASUREMENT 11

A. Experimental conditions.

Area Scan	<u>dx=12mm dy=12mm, h= 5.00 mm</u>
ZoomScan	<u>7x7x7,dx=5mm dy=5mm dz=5mm</u>
Phantom	<u>Left head</u>
Device Position	<u>Cheek</u>
Band	<u>IEEE 802.11b ISM</u>
Channels	<u>Middle</u>
Signal	<u>IEEE802.11b (Crest factor: 1.0)</u>

B. SAR Measurement Results

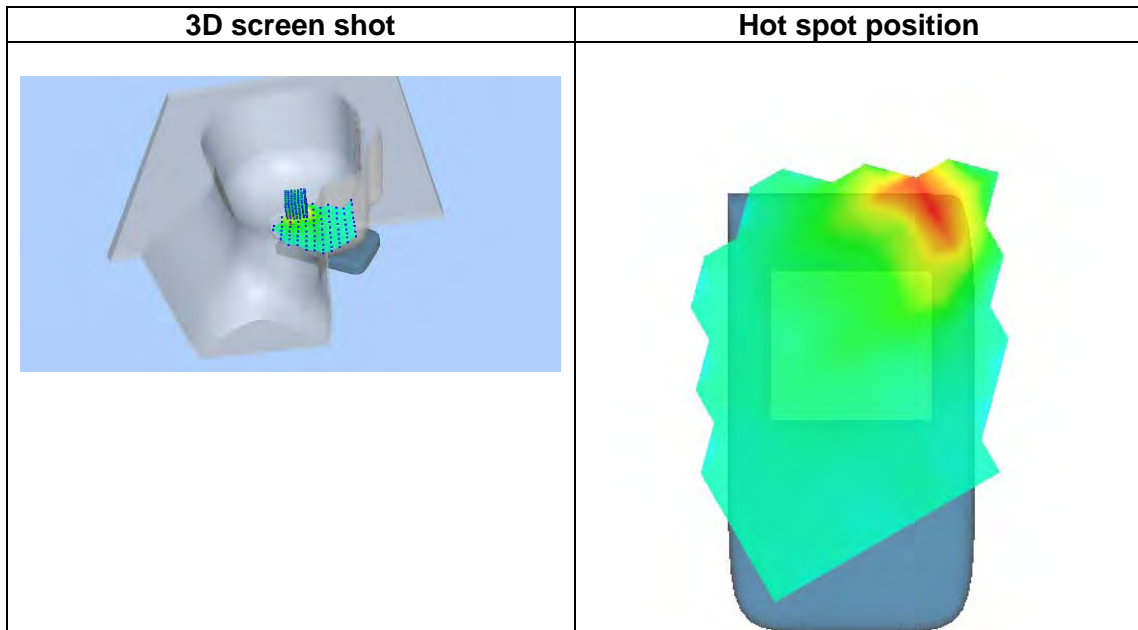
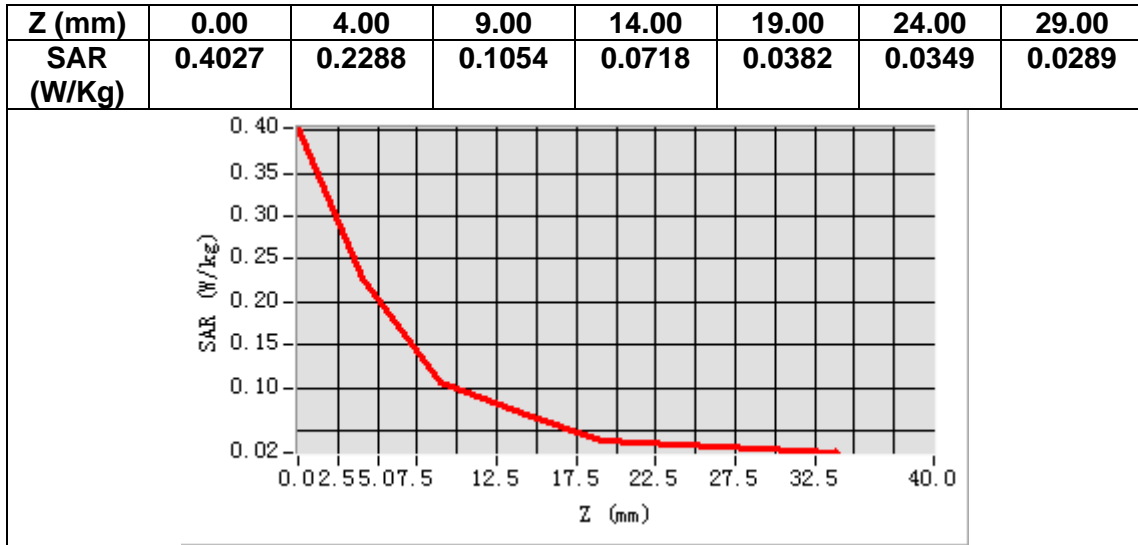
Frequency (MHz)	2437.000000
Relative permittivity (real part)	39.491001
Relative permittivity (imaginary part)	13.650300
Conductivity (S/m)	1.848099
Variation (%)	-1.090000



Maximum location: X=-11.00, Y=24.00

SAR Peak: 0.38 W/kg

SAR 10g (W/Kg)	0.102940
SAR 1g (W/Kg)	0.208763



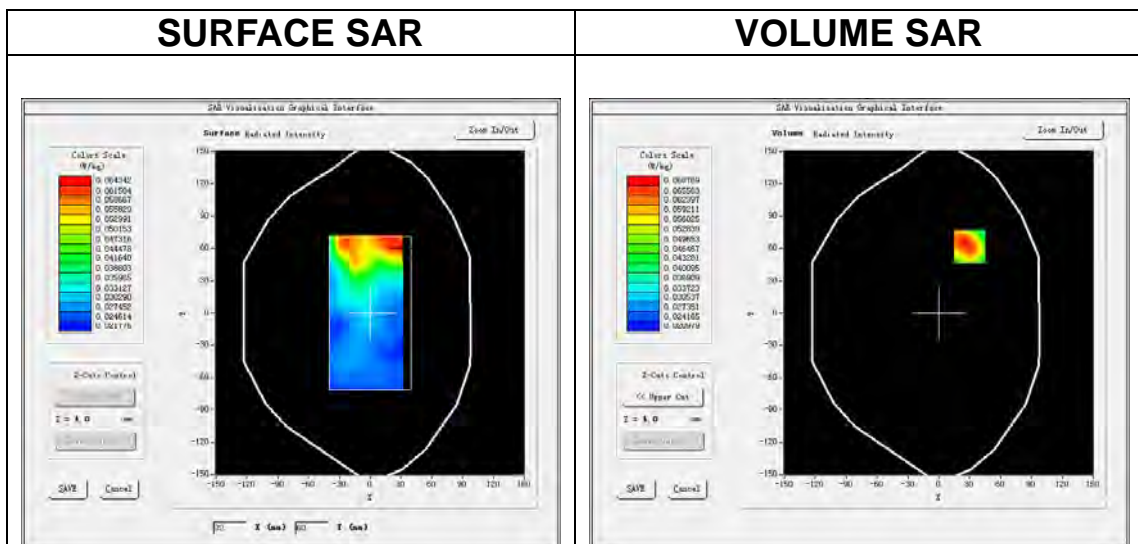
MEASUREMENT 12

A. Experimental conditions.

Area Scan	<u>dx=12mm dy=12mm, h= 5.00 mm</u>
ZoomScan	<u>7x7x7, dx=5mm dy=5mm dz=5mm</u>
Phantom	<u>Validation plane</u>
Device Position	<u>Body</u>
Band	<u>IEEE 802.11b ISM</u>
Channels	<u>Middle</u>
Signal	<u>IEEE802.11b (Crest factor: 1.0)</u>

B. SAR Measurement Results

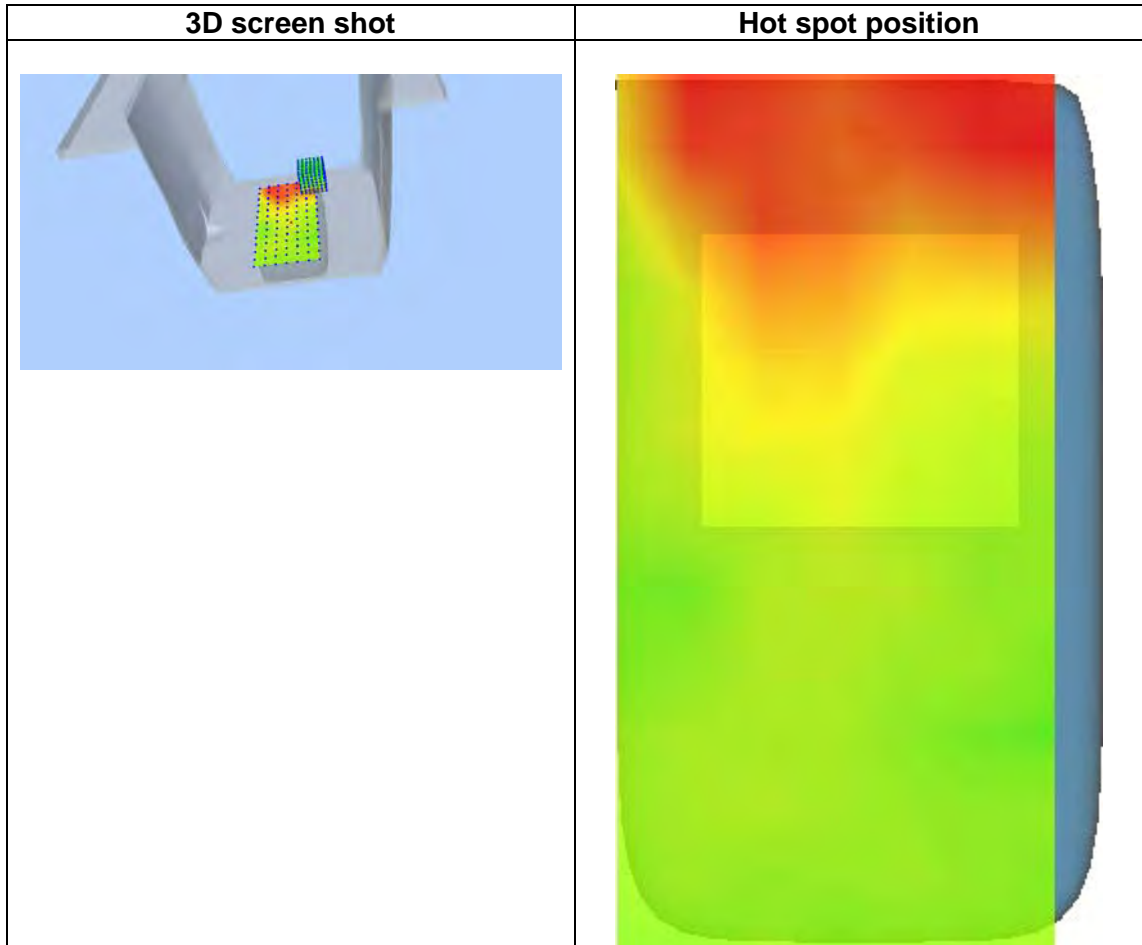
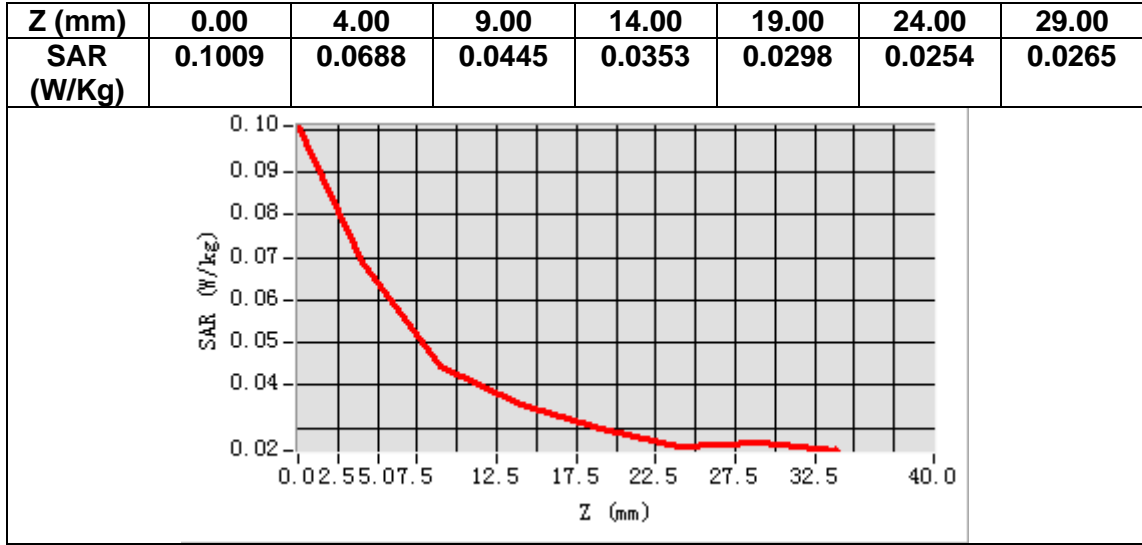
Frequency (MHz)	2437.000000
Relative permittivity (real part)	52.501598
Relative permittivity (imaginary part)	14.705620
Conductivity (S/m)	1.990978
Variation (%)	-0.500000



Maximum location: X=30.00, Y=62.00

SAR Peak: 0.10 W/kg

SAR 10g (W/Kg)	0.046398
SAR 1g (W/Kg)	0.067214



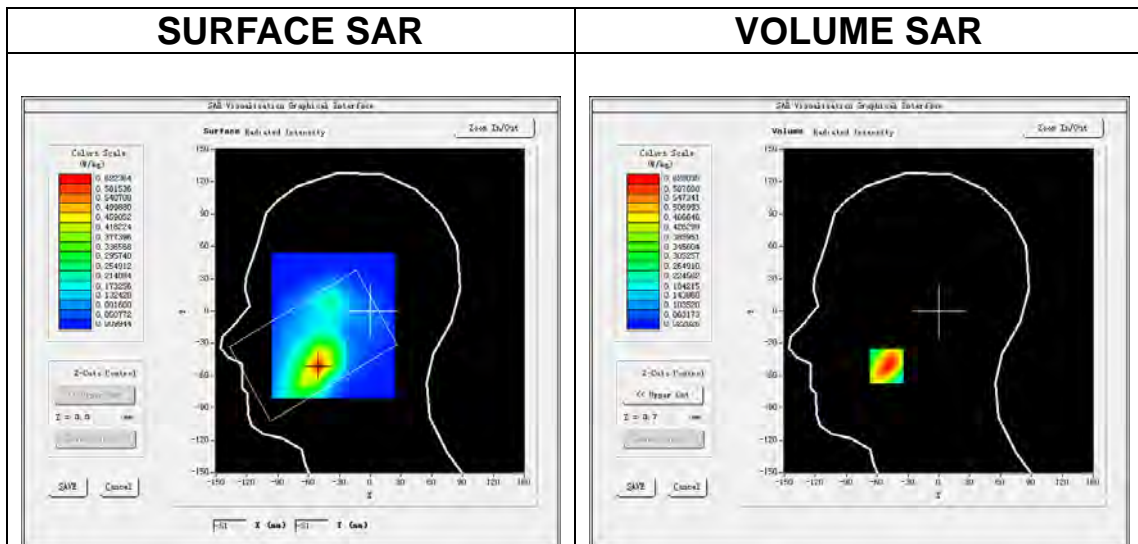
MEASUREMENT 13

A. Experimental conditions.

Area Scan	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
ZoomScan	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
Phantom	<u>Left head</u>
Device Position	<u>Cheek</u>
Band	<u>LTE band 2</u>
Channels	<u>Middle</u>
Signal	<u>LTE (Crest factor: 1.0)</u>

B. SAR Measurement Results

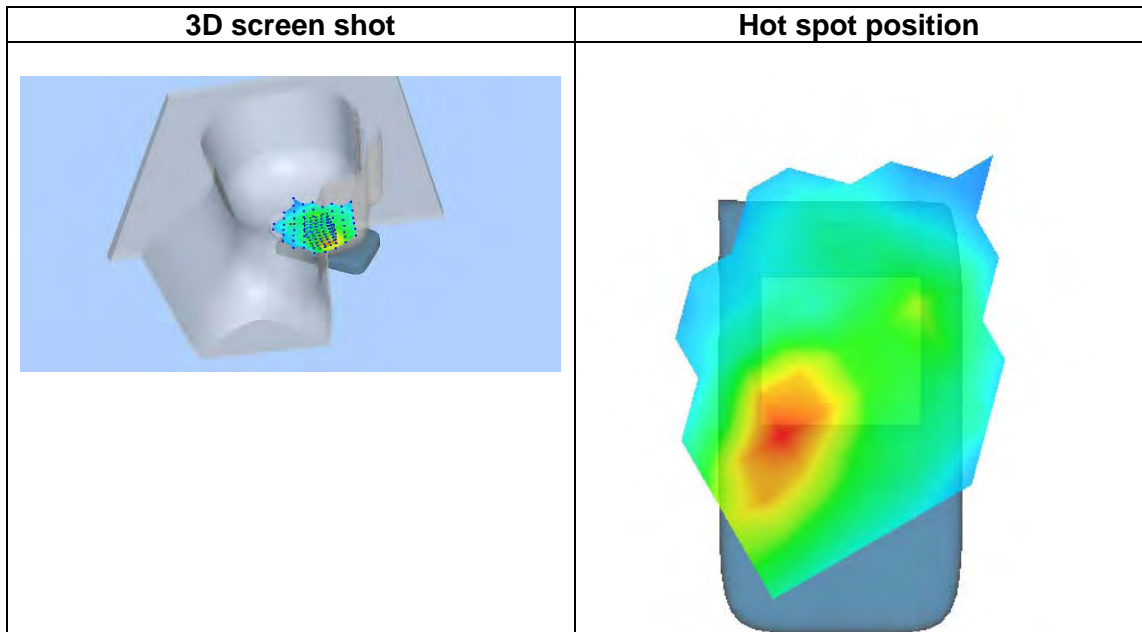
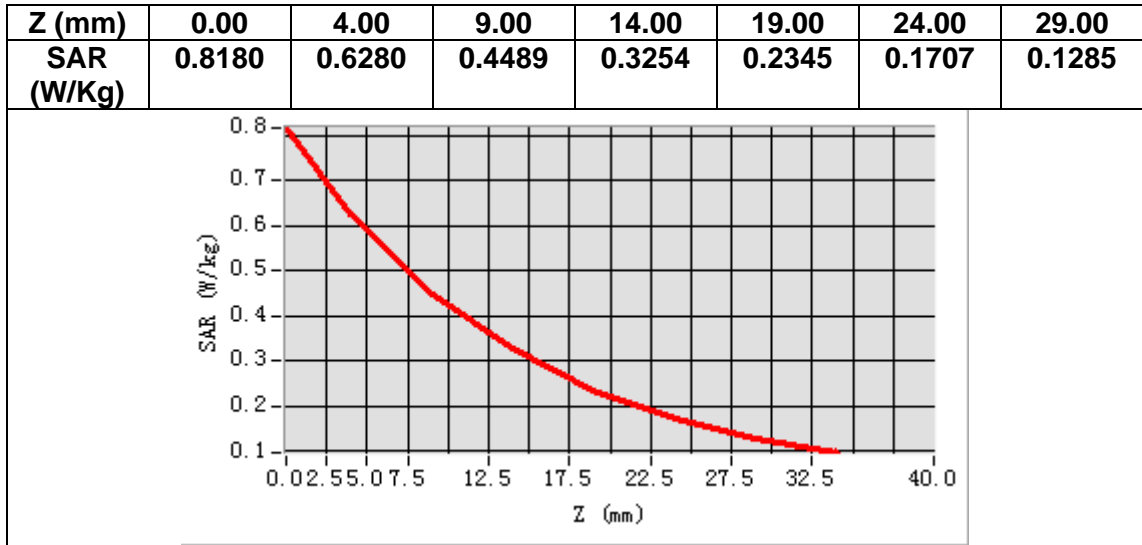
Frequency (MHz)	1880.000000
Relative permittivity (real part)	41.393799
Relative permittivity (imaginary part)	13.658100
Conductivity (S/m)	1.426133
Variation (%)	-0.790000



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

SAR Peak: 0.84 W/kg

SAR 10g (W/Kg)	0.374580
SAR 1g (W/Kg)	0.599714



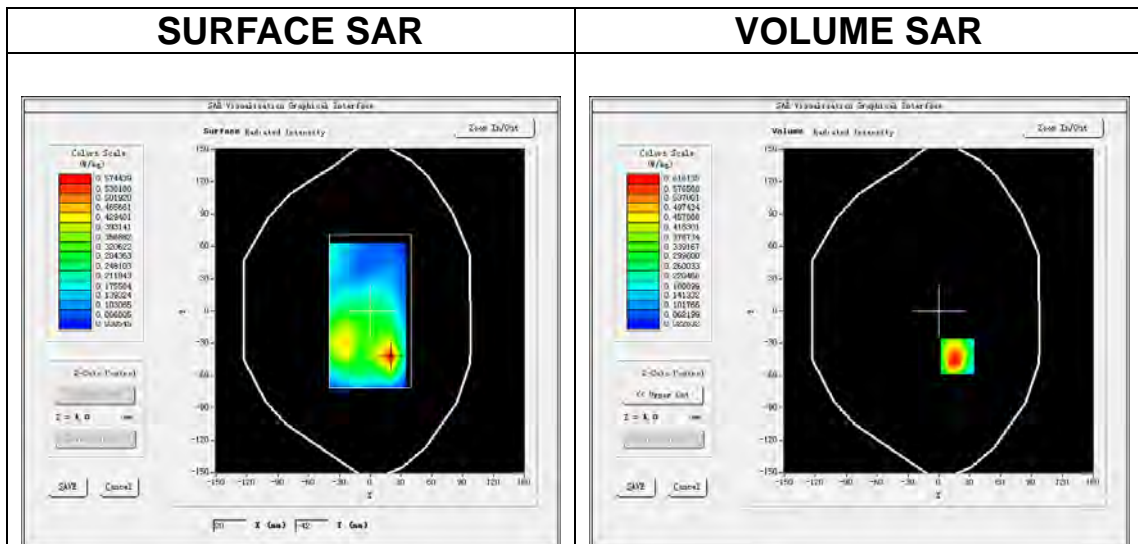
MEASUREMENT 14

A. Experimental conditions.

Area Scan	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
ZoomScan	<u>5x5x7, dx=8mm dy=8mm dz=5mm</u>
Phantom	<u>Validation plane</u>
Device Position	<u>Body</u>
Band	<u>LTE band 2</u>
Channels	<u>Middle</u>
Signal	<u>LTE (Crest factor: 1.0)</u>

B. SAR Measurement Results

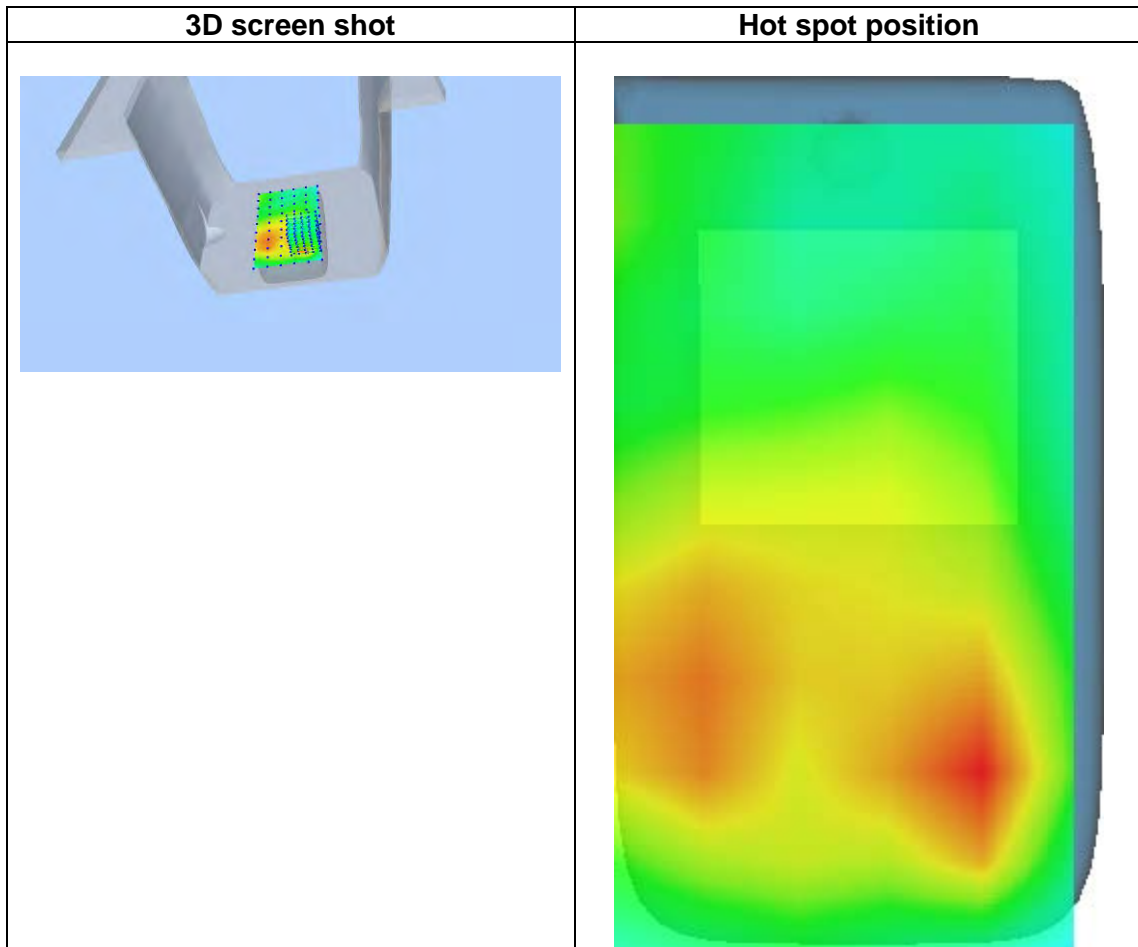
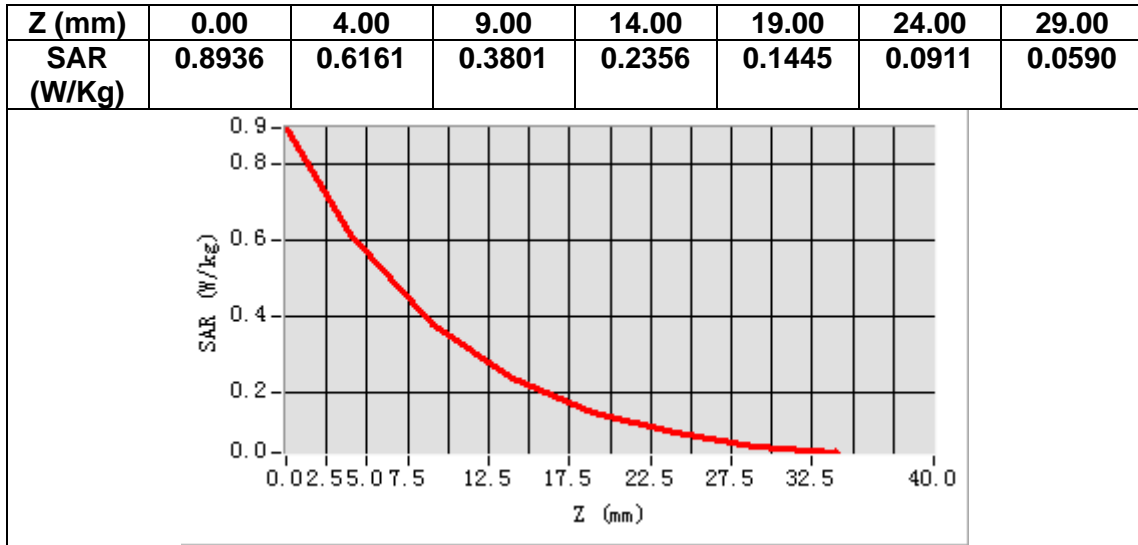
Frequency (MHz)	1880.000000
Relative permittivity (real part)	53.055950
Relative permittivity (imaginary part)	14.946150
Conductivity (S/m)	1.560627
Variation (%)	-0.500000



Maximum location: X=18.00, Y=-42.00

SAR Peak: 1.05 W/kg

SAR 10g (W/Kg)	0.322190
SAR 1g (W/Kg)	0.625602



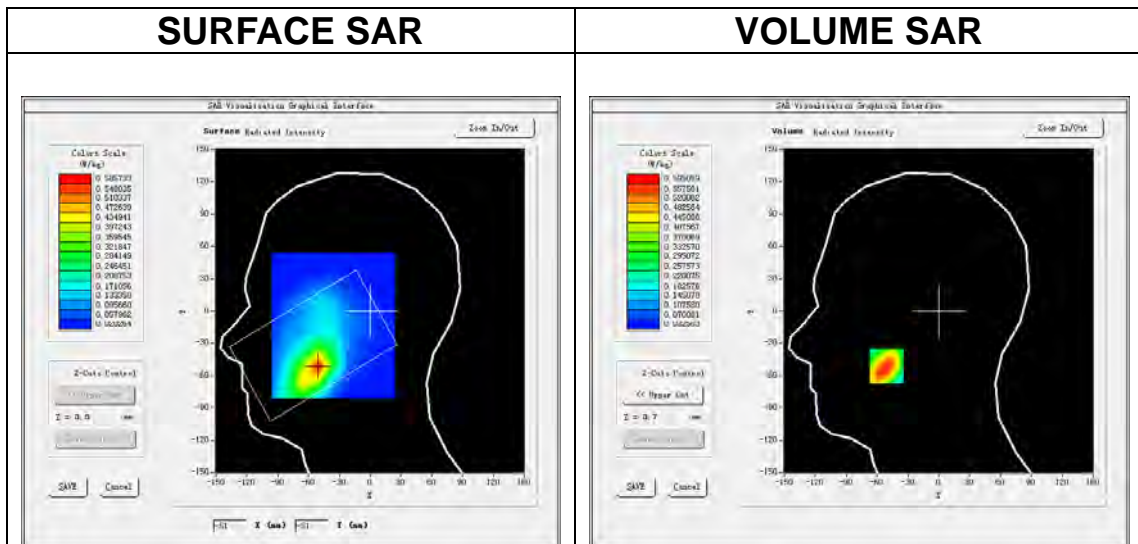
MEASUREMENT 15

A. Experimental conditions.

Area Scan	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
ZoomScan	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
Phantom	<u>Left head</u>
Device Position	<u>Cheek</u>
Band	<u>LTE band 4</u>
Channels	<u>Middle</u>
Signal	<u>LTE (Crest factor: 1.0)</u>

B. SAR Measurement Results

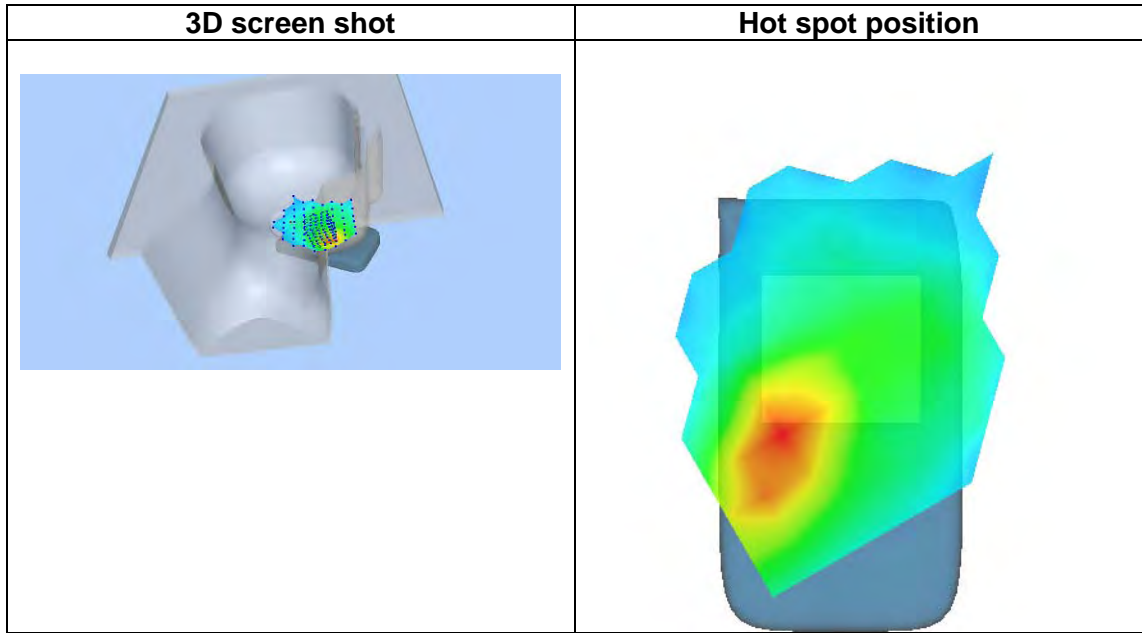
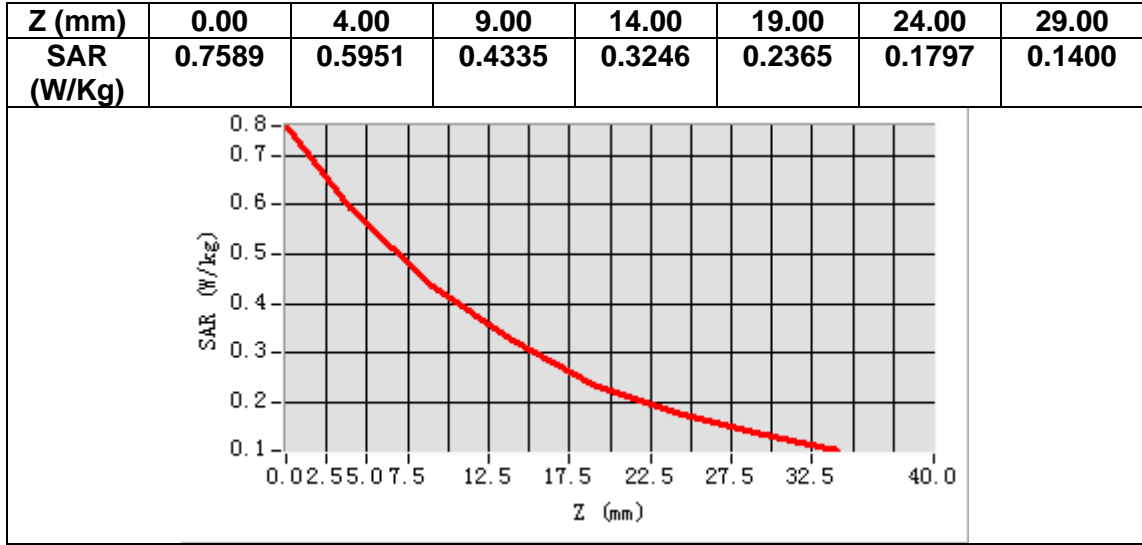
Frequency (MHz)	1732.500000
Relative permittivity (real part)	39.735291
Relative permittivity (imaginary part)	14.070592
Conductivity (S/m)	1.354294
Variation (%)	-2.240000



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

SAR Peak: 0.80 W/kg

SAR 10g (W/Kg)	0.367207
SAR 1g (W/Kg)	0.571283



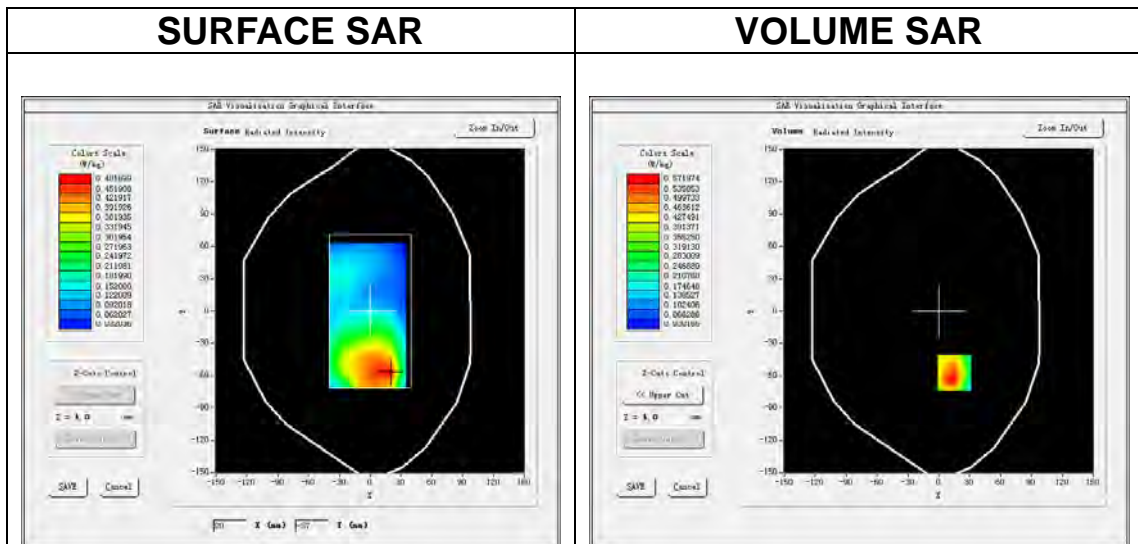
MEASUREMENT 16

A. Experimental conditions.

Area Scan	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
ZoomScan	<u>5x5x7, dx=8mm dy=8mm dz=5mm</u>
Phantom	<u>Validation plane</u>
Device Position	<u>Body</u>
Band	<u>LTE band 4</u>
Channels	<u>Middle</u>
Signal	<u>LTE (Crest factor: 1.0)</u>

B. SAR Measurement Results

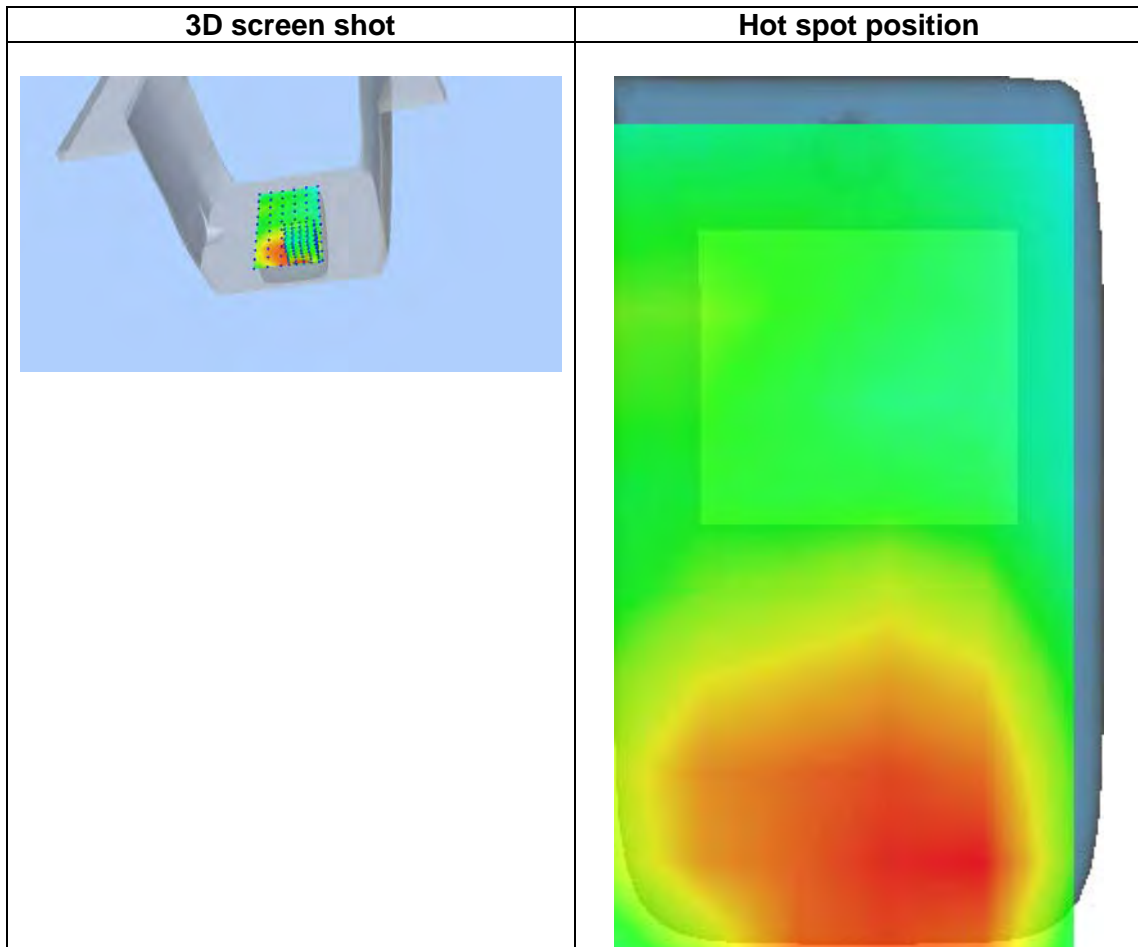
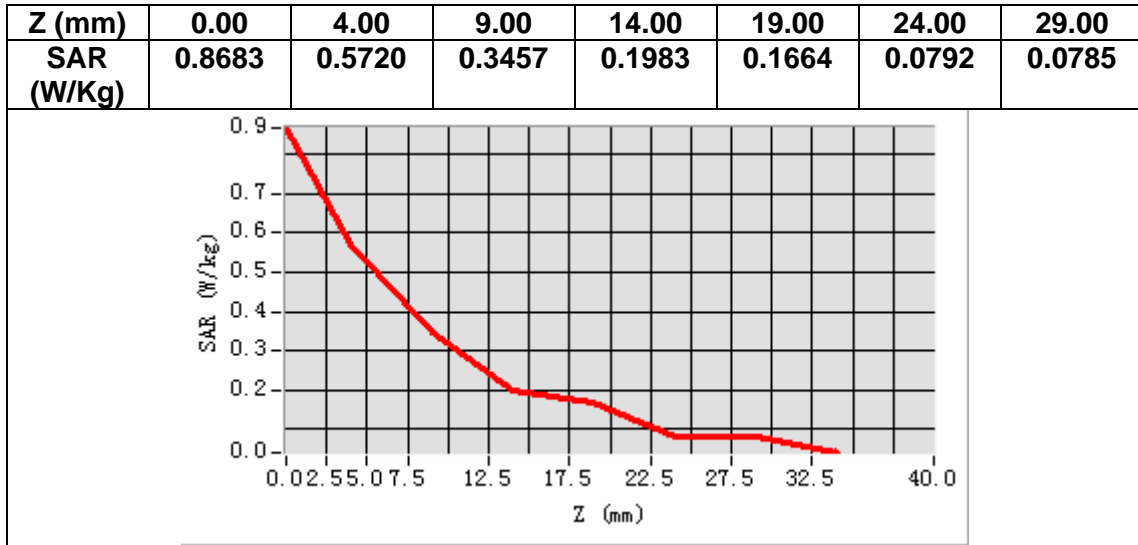
Frequency (MHz)	1732.500000
Relative permittivity (real part)	53.953365
Relative permittivity (imaginary part)	15.483220
Conductivity (S/m)	1.490260
Variation (%)	-3.590000



Maximum location: X=15.00, Y=-57.00

SAR Peak: 0.93 W/kg

SAR 10g (W/Kg)	0.324364
SAR 1g (W/Kg)	0.555706



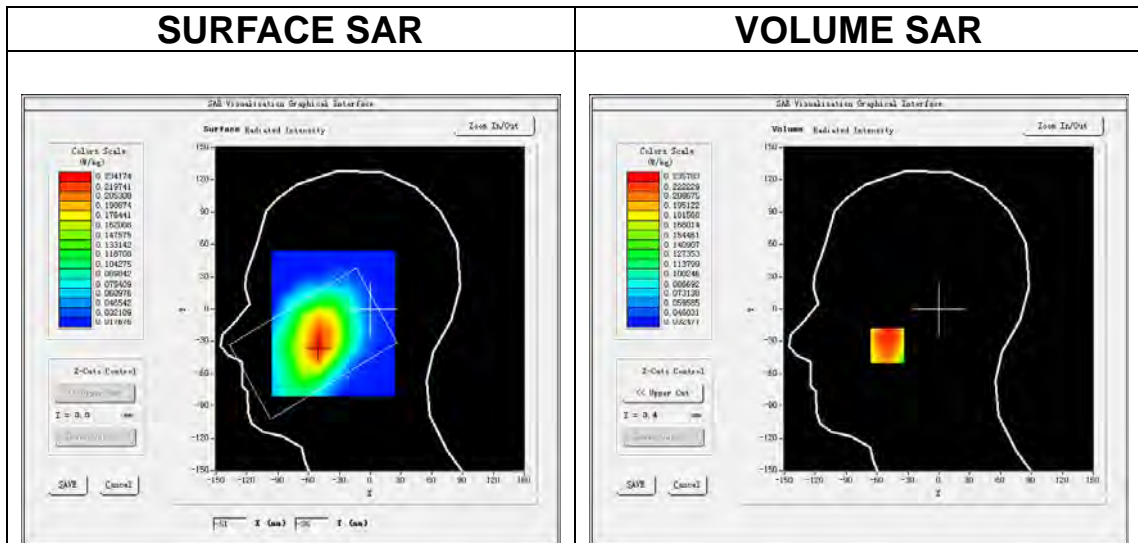
MEASUREMENT 17

A. Experimental conditions.

Area Scan	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
ZoomScan	<u>5x5x7, dx=8mm dy=8mm dz=5mm</u>
Phantom	<u>Left head</u>
Device Position	<u>Cheek</u>
Band	<u>LTE band 5</u>
Channels	<u>Middle</u>
Signal	<u>LTE (Crest factor: 1.0)</u>

B. SAR Measurement Results

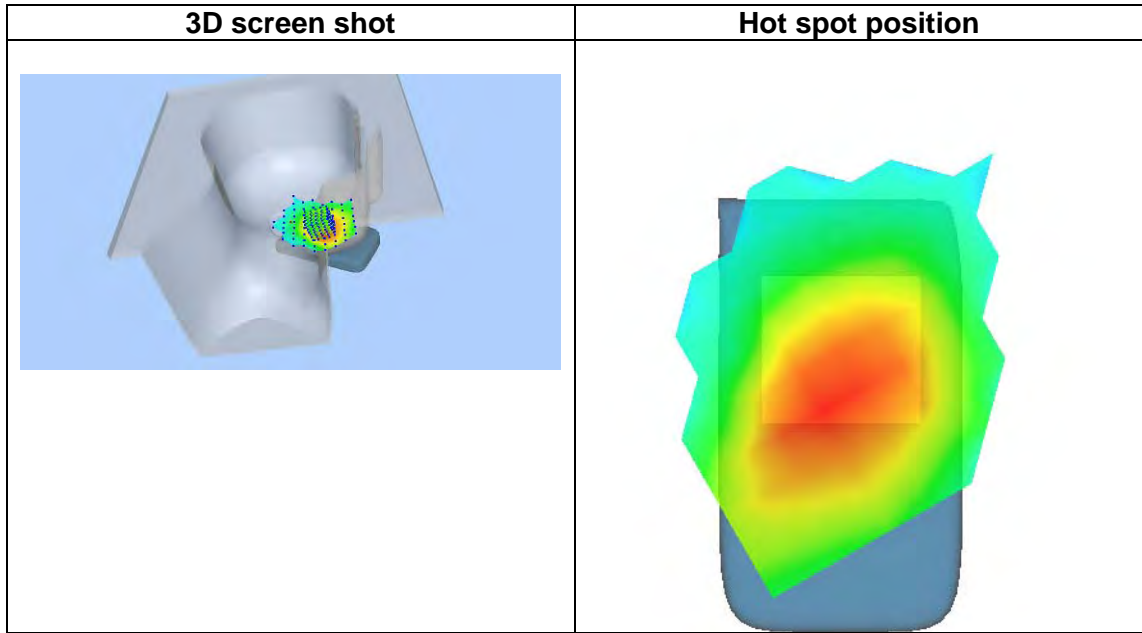
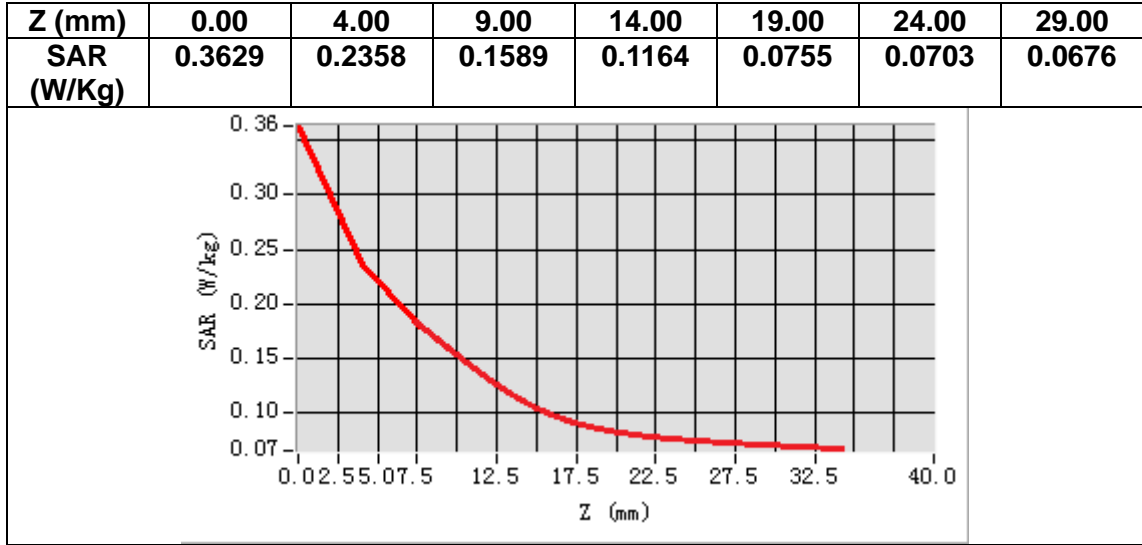
Frequency (MHz)	836.500000
Relative permittivity (real part)	40.953548
Relative permittivity (imaginary part)	19.930201
Conductivity (S/m)	0.926201
Variation (%)	1.810000



Maximum location: X=-50.00, Y=-34.00

SAR Peak: 0.28 W/kg

SAR 10g (W/Kg)	0.189137
SAR 1g (W/Kg)	0.233972



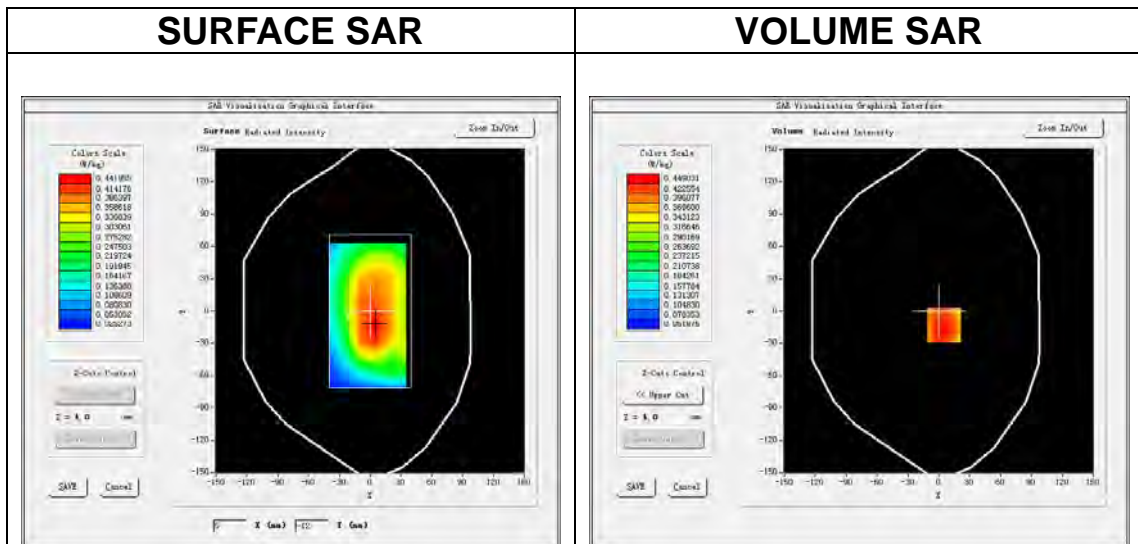
MEASUREMENT 18

A. Experimental conditions.

Area Scan	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
ZoomScan	<u>5x5x7, dx=8mm dy=8mm dz=5mm</u>
Phantom	<u>Validation plane</u>
Device Position	<u>Body</u>
Band	<u>LTE band 5</u>
Channels	<u>Middle</u>
Signal	<u>LTE (Crest factor: 1.0)</u>

B. SAR Measurement Results

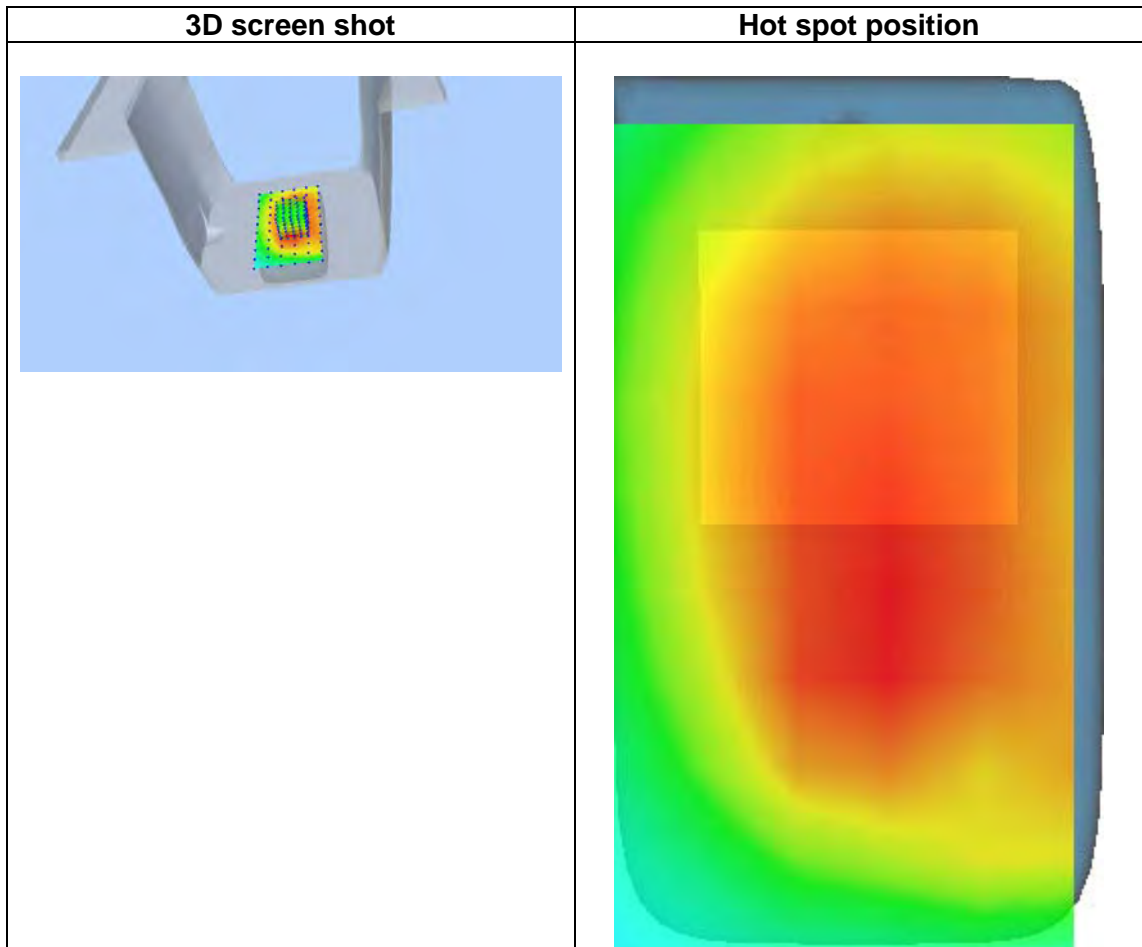
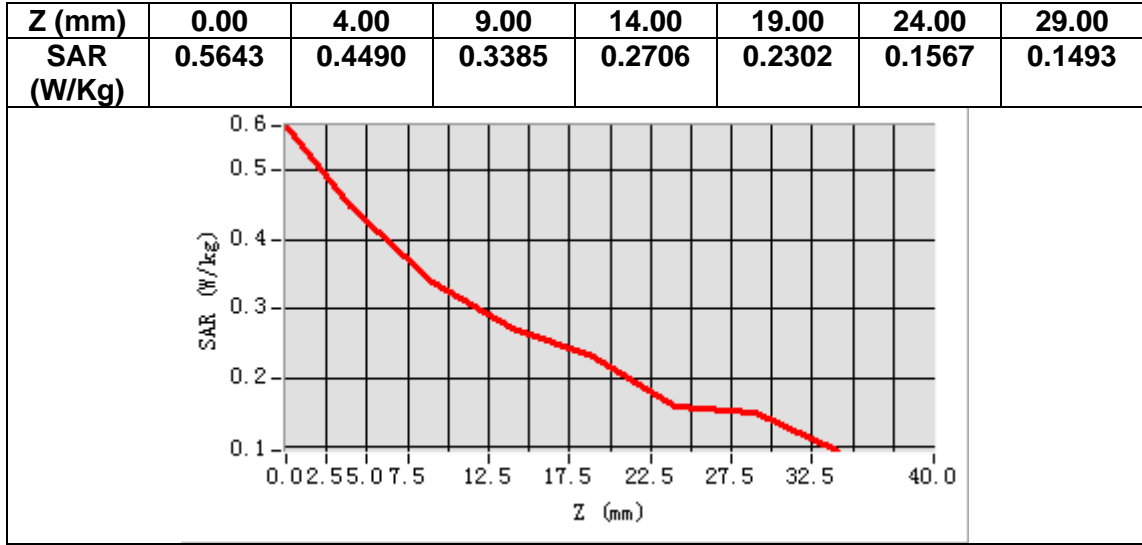
Frequency (MHz)	836.500000
Relative permittivity (real part)	54.633499
Relative permittivity (imaginary part)	21.757000
Conductivity (S/m)	1.011096
Variation (%)	-0.110000



Maximum location: X=5.00, Y=-13.00

SAR Peak: 0.56 W/kg

SAR 10g (W/Kg)	0.336503
SAR 1g (W/Kg)	0.448495



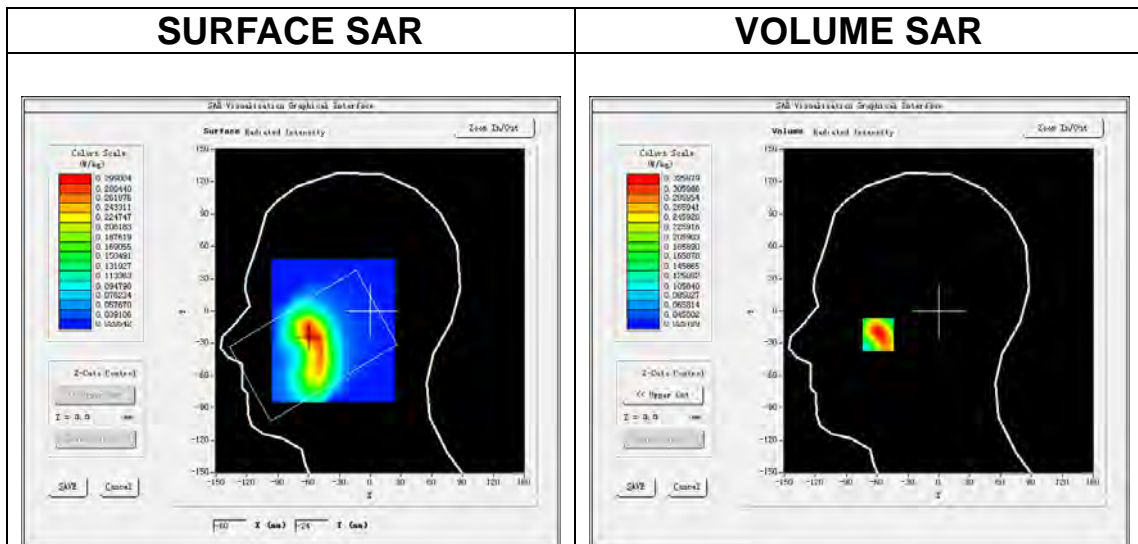
MEASUREMENT 19

A. Experimental conditions.

Area Scan	<u>dx=12mm dy=12mm, h= 5.00 mm</u>
ZoomScan	<u>7x7x7,dx=5mm dy=5mm dz=5mm</u>
Phantom	<u>Left head</u>
Device Position	<u>Cheek</u>
Band	<u>LTE band 7</u>
Channels	<u>Middle</u>
Signal	<u>LTE (Crest factor: 1.0)</u>

B. SAR Measurement Results

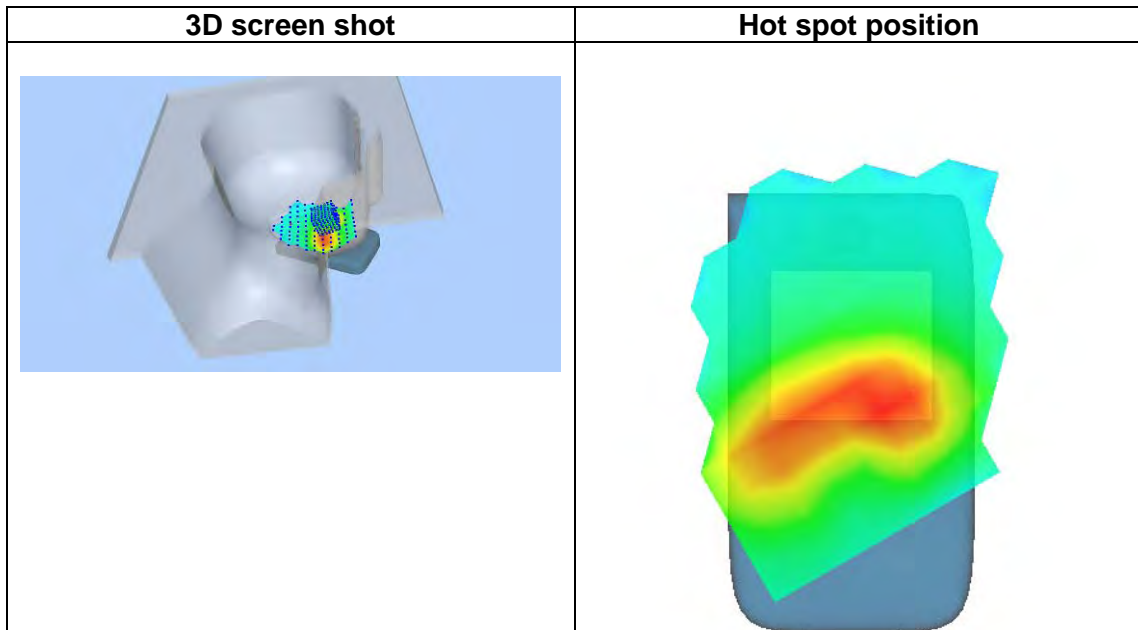
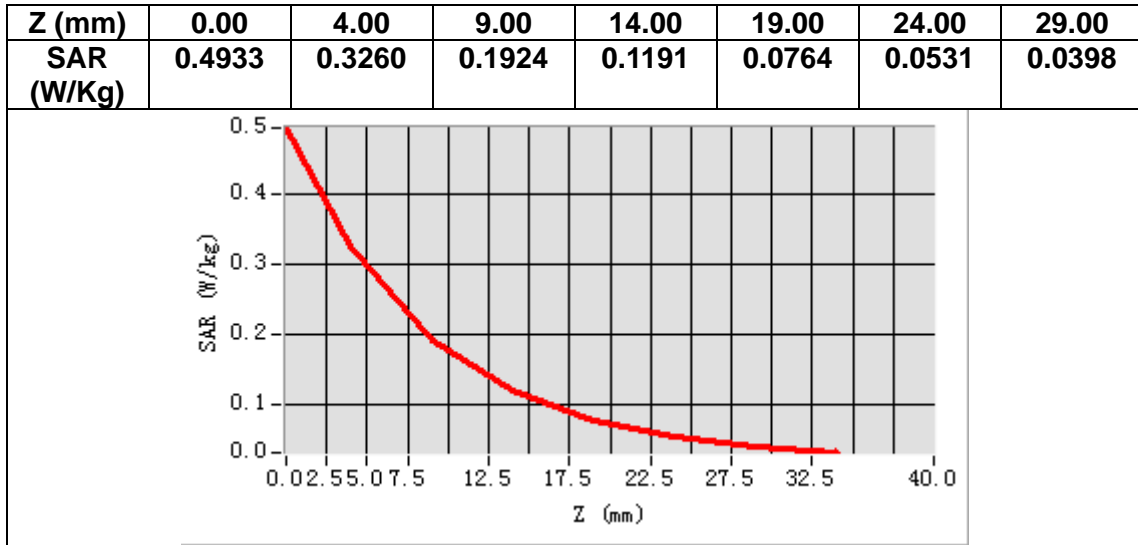
Frequency (MHz)	2535.000000
Relative permittivity (real part)	38.895485
Relative permittivity (imaginary part)	13.831160
Conductivity (S/m)	1.947888
Variation (%)	-1.940000



Maximum location: X=-59.00, Y=-21.00

SAR Peak: 0.50 W/kg

SAR 10g (W/Kg)	0.178141
SAR 1g (W/Kg)	0.313955



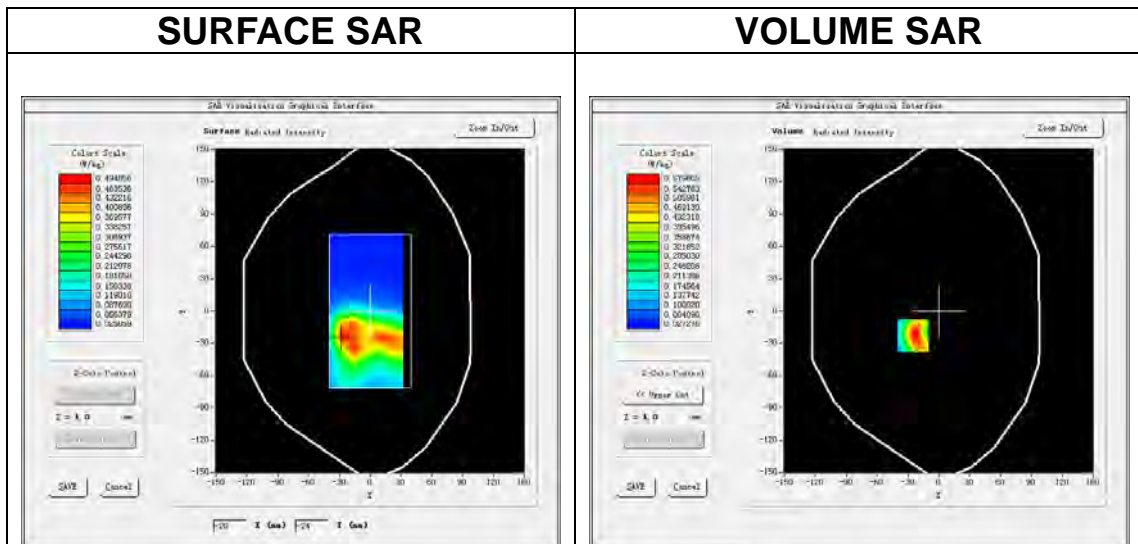
MEASUREMENT 20

A. Experimental conditions.

Area Scan	<u>dx=12mm dy=12mm, h= 5.00 mm</u>
ZoomScan	<u>7x7x7, dx=5mm dy=5mm dz=5mm</u>
Phantom	<u>Validation plane</u>
Device Position	<u>Body</u>
Band	<u>LTE band 7</u>
Channels	<u>Middle</u>
Signal	<u>LTE (Crest factor: 1.0)</u>

B. SAR Measurement Results

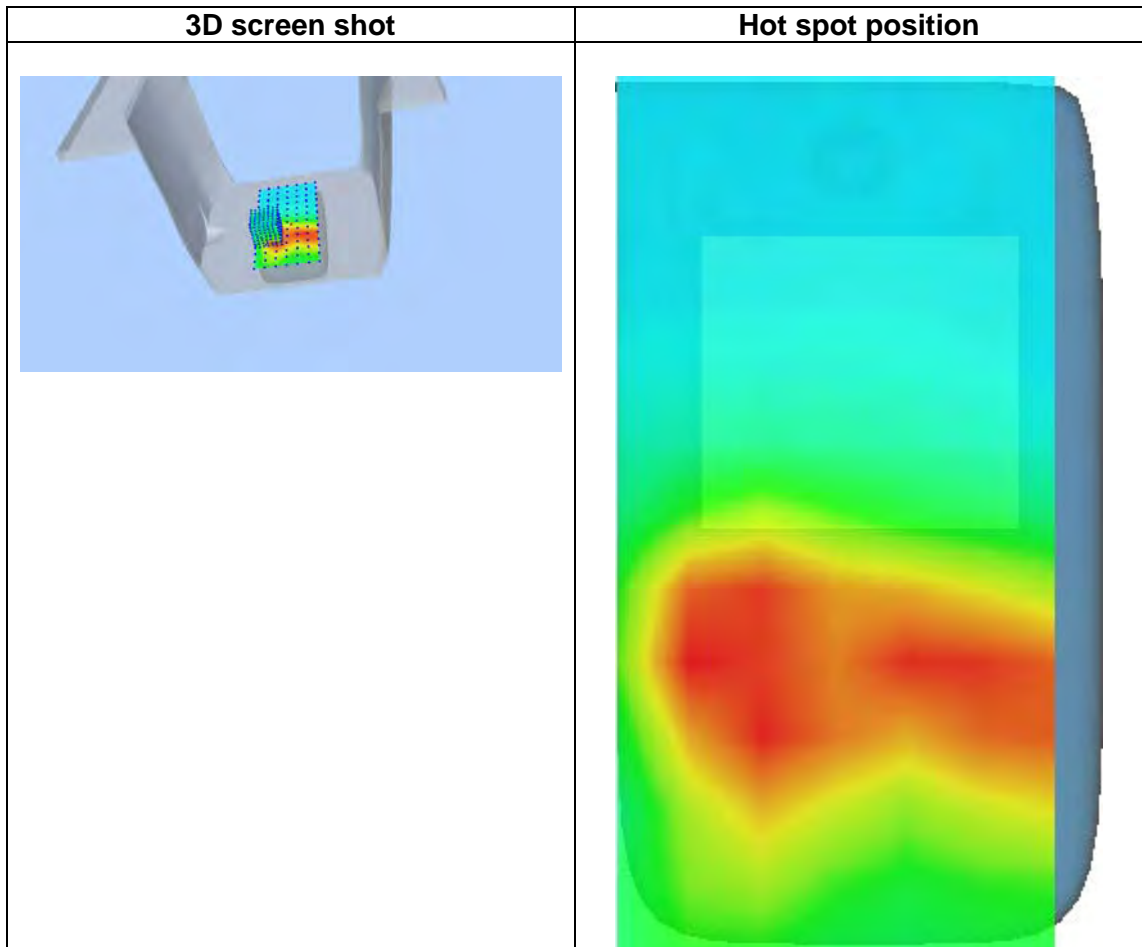
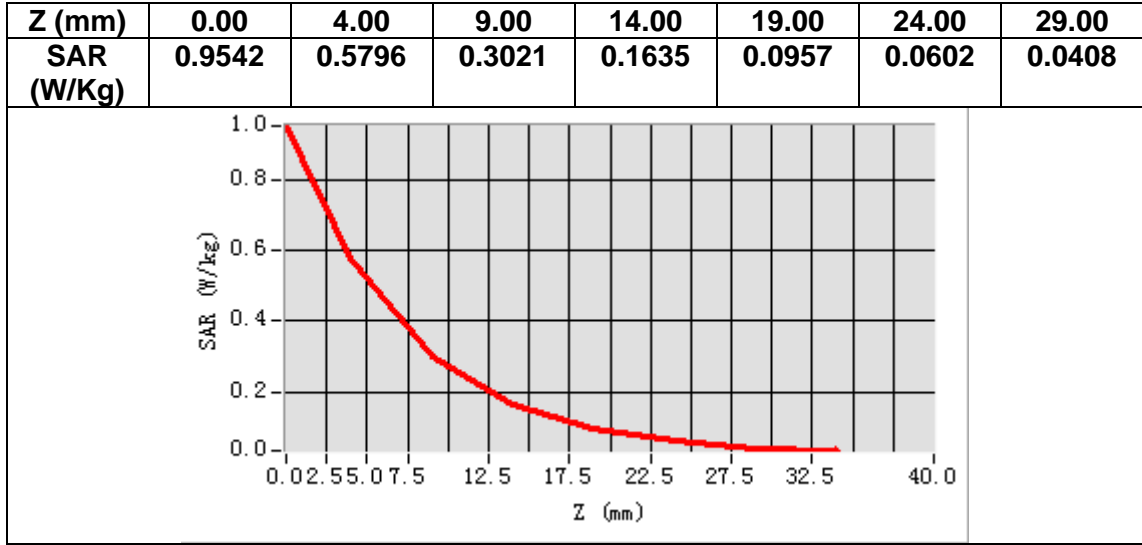
Frequency (MHz)	2535.000000
Relative permittivity (real part)	53.126945
Relative permittivity (imaginary part)	15.167840
Conductivity (S/m)	2.136137
Variation (%)	-1.250000



Maximum location: X=-25.00, Y=-23.00

SAR Peak: 1.00 W/kg

SAR 10g (W/Kg)	0.276135
SAR 1g (W/Kg)	0.556148



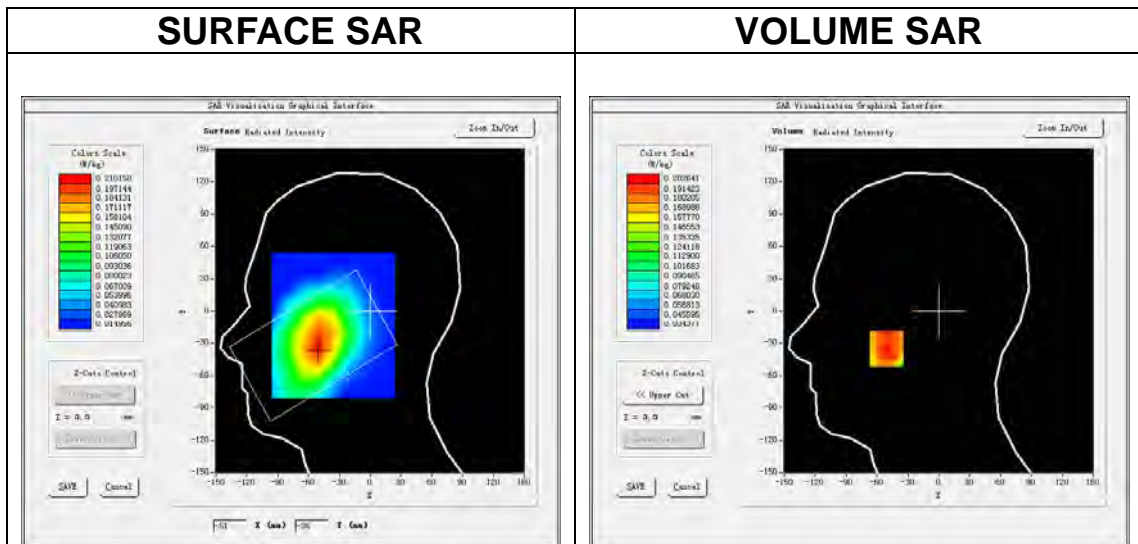
MEASUREMENT 21

A. Experimental conditions.

Area Scan	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
ZoomScan	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
Phantom	<u>Left head</u>
Device Position	<u>Cheek</u>
Band	<u>LTE band 12</u>
Channels	<u>Middle</u>
Signal	<u>LTE (Crest factor: 1.0)</u>

B. SAR Measurement Results

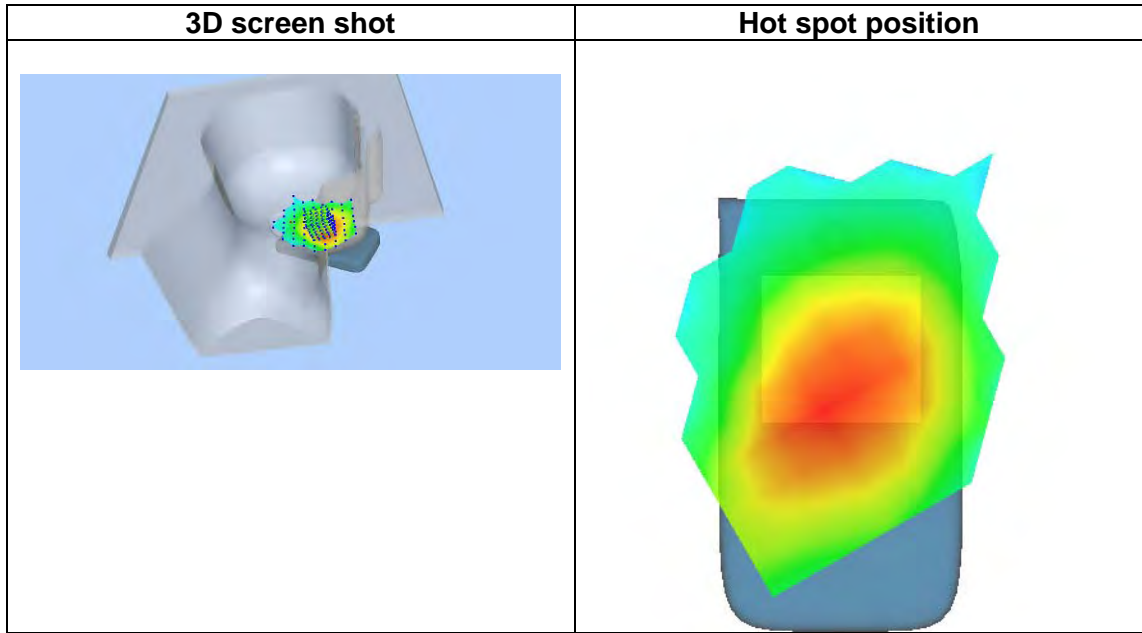
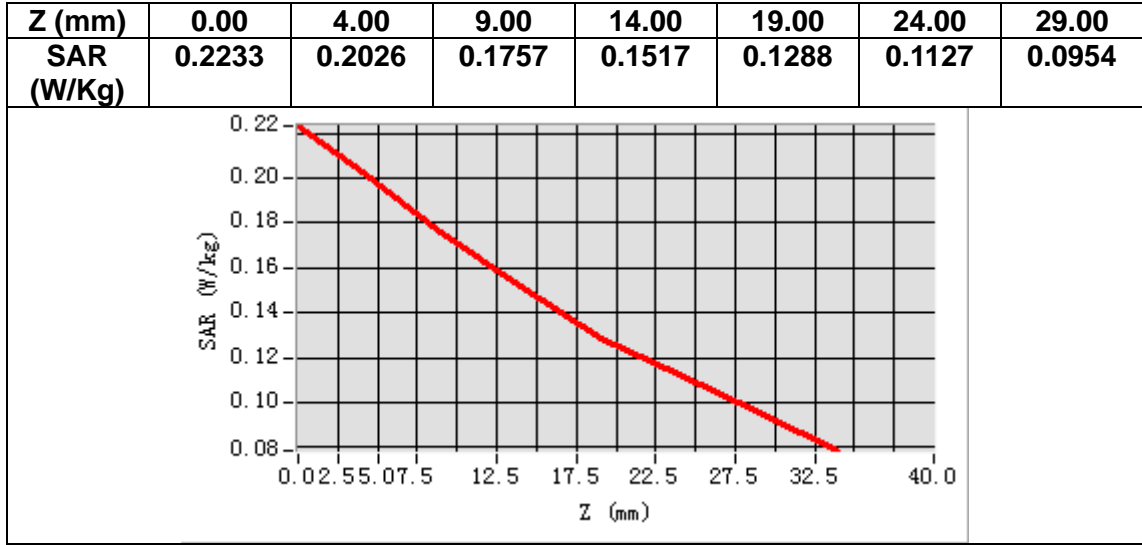
Frequency (MHz)	707.500000
Relative permittivity (real part)	41.787960
Relative permittivity (imaginary part)	21.791300
Conductivity (S/m)	0.856519
Variation (%)	1.870000



Maximum location: X=-51.00, Y=-35.00

SAR Peak: 0.24 W/kg

SAR 10g (W/Kg)	0.164159
SAR 1g (W/Kg)	0.195270



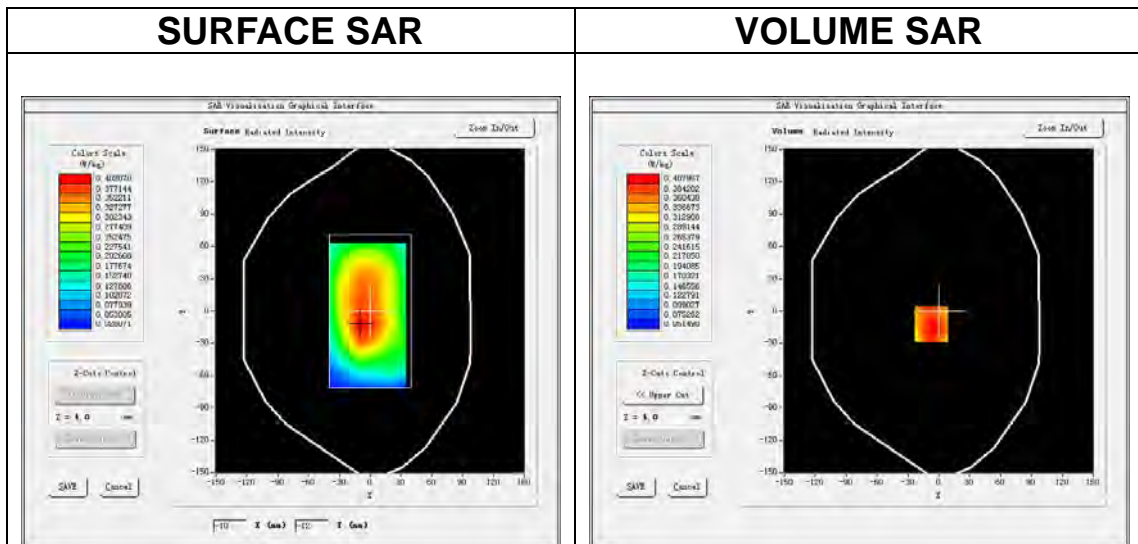
MEASUREMENT 22

A. Experimental conditions.

Area Scan	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
ZoomScan	<u>5x5x7, dx=8mm dy=8mm dz=5mm</u>
Phantom	<u>Validation plane</u>
Device Position	<u>Body</u>
Band	<u>LTE band 12</u>
Channels	<u>Middle</u>
Signal	<u>LTE (Crest factor: 1.0)</u>

B. SAR Measurement Results

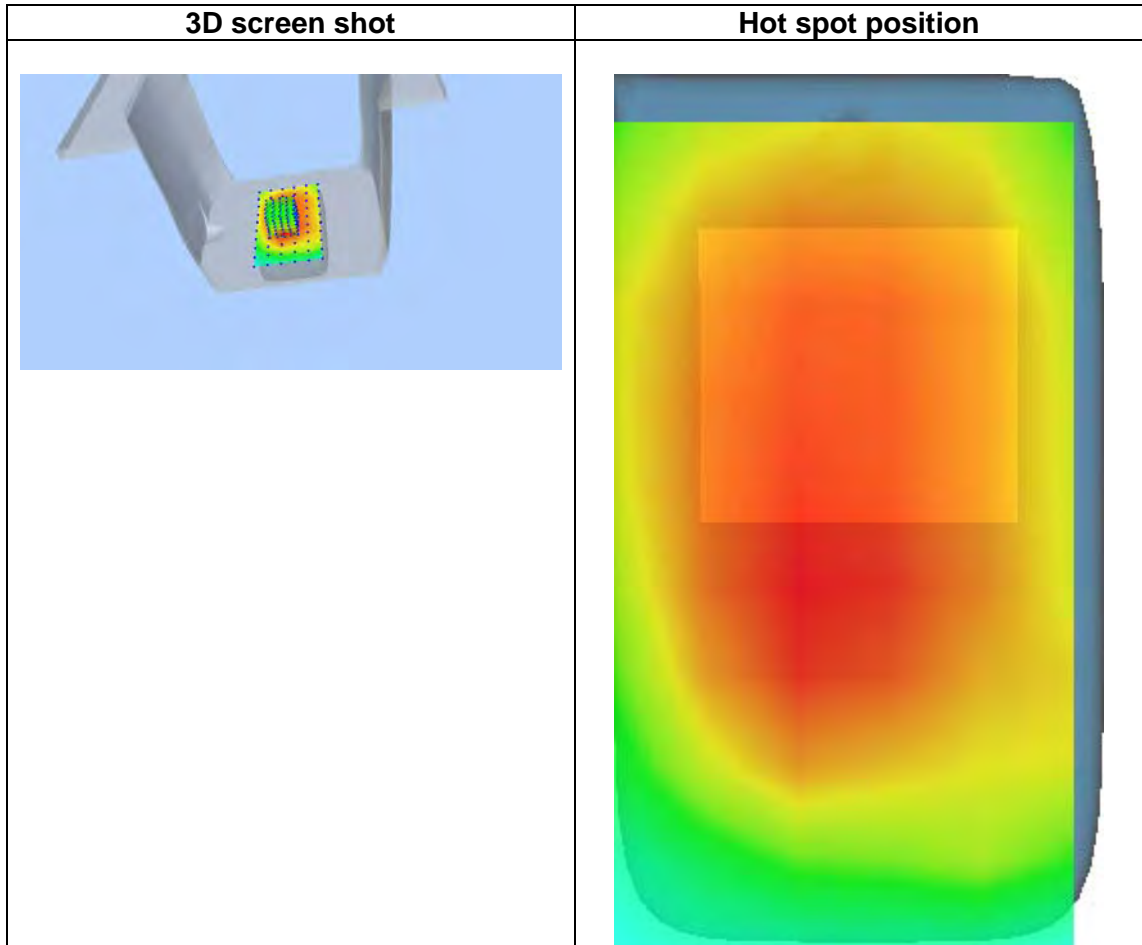
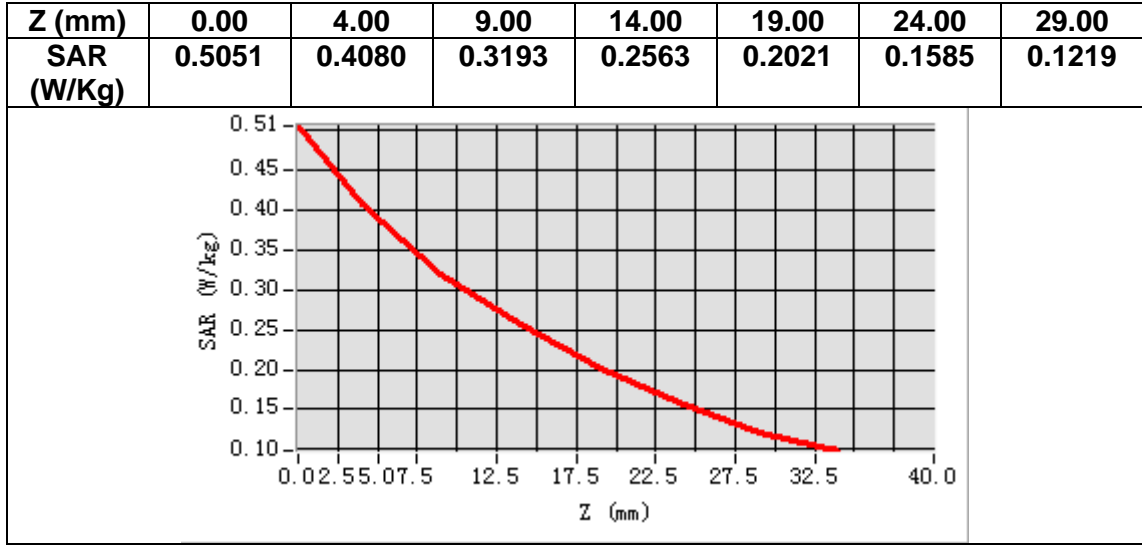
Frequency (MHz)	707.500000
Relative permittivity (real part)	55.767960
Relative permittivity (imaginary part)	23.681299
Conductivity (S/m)	0.930807
Variation (%)	-2.480000



Maximum location: X=-7.00, Y=-12.00

SAR Peak: 0.52 W/kg

SAR 10g (W/Kg)	0.299863
SAR 1g (W/Kg)	0.397064



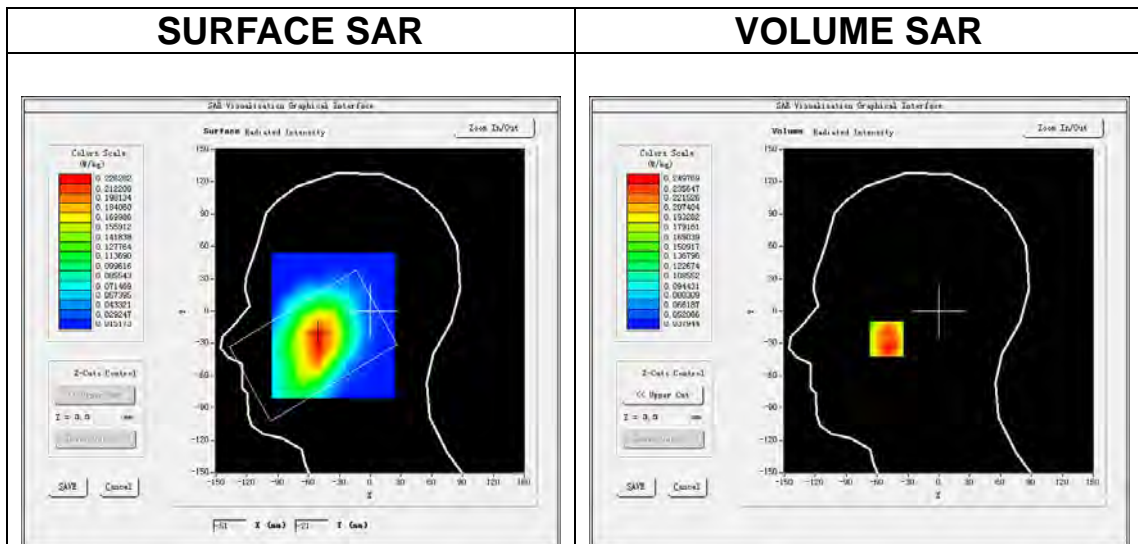
MEASUREMENT 23

A. Experimental conditions.

Area Scan	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
ZoomScan	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
Phantom	<u>Left head</u>
Device Position	<u>Tilt</u>
Band	<u>LTE band 17</u>
Channels	<u>Middle</u>
Signal	<u>LTE (Crest factor: 1.0)</u>

B. SAR Measurement Results

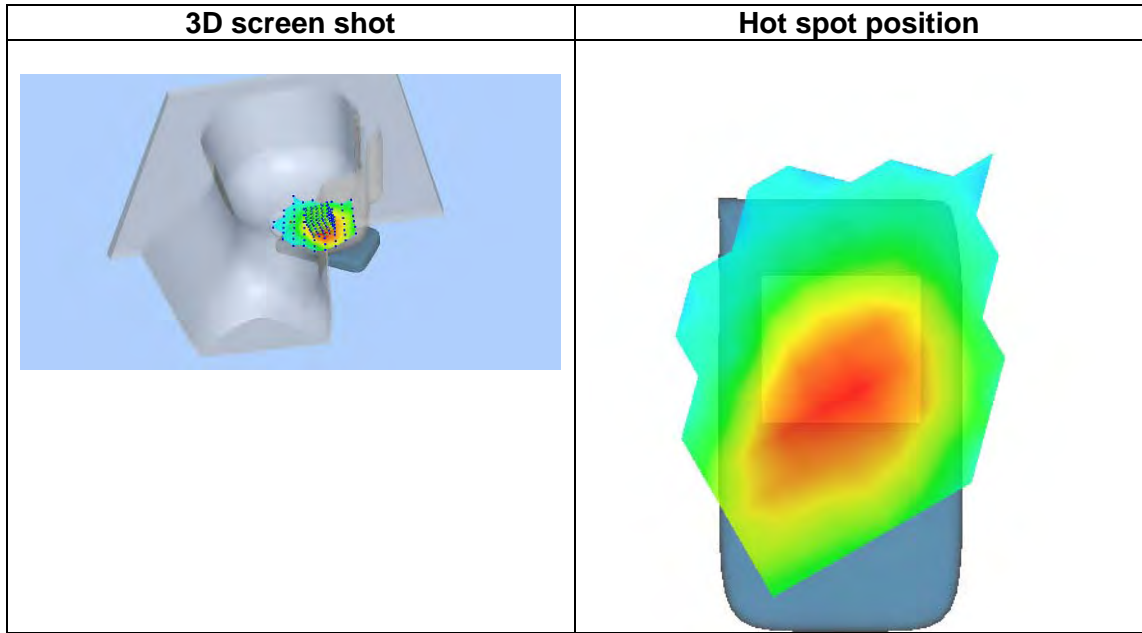
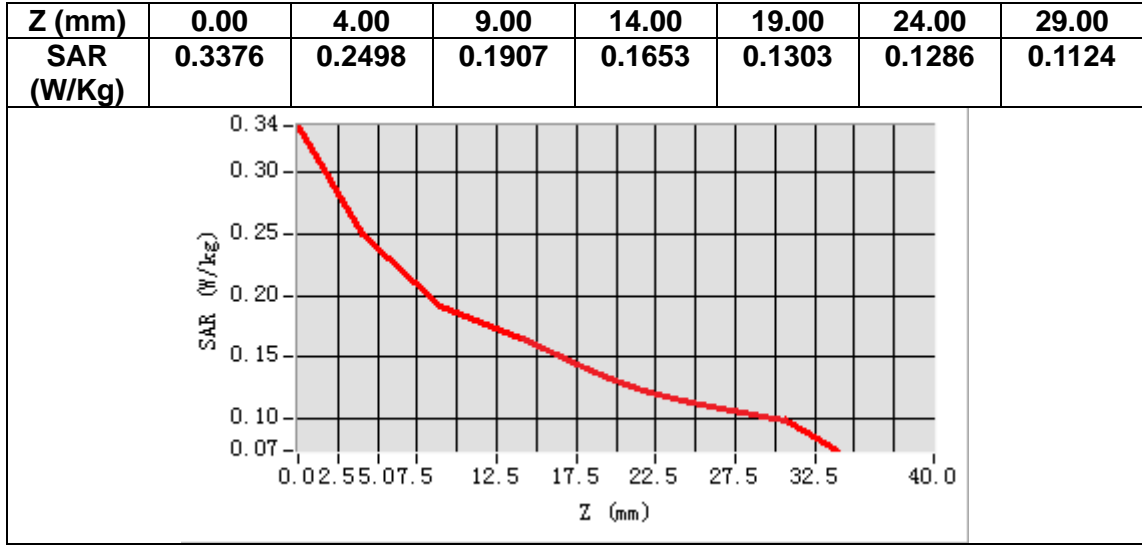
Frequency (MHz)	710.000000
Relative permittivity (real part)	41.766708
Relative permittivity (imaginary part)	21.810499
Conductivity (S/m)	0.860303
Variation (%)	-1.170000



Maximum location: X=-51.00, Y=-26.00

SAR Peak: 0.33 W/kg

SAR 10g (W/Kg)	0.186869
SAR 1g (W/Kg)	0.242857



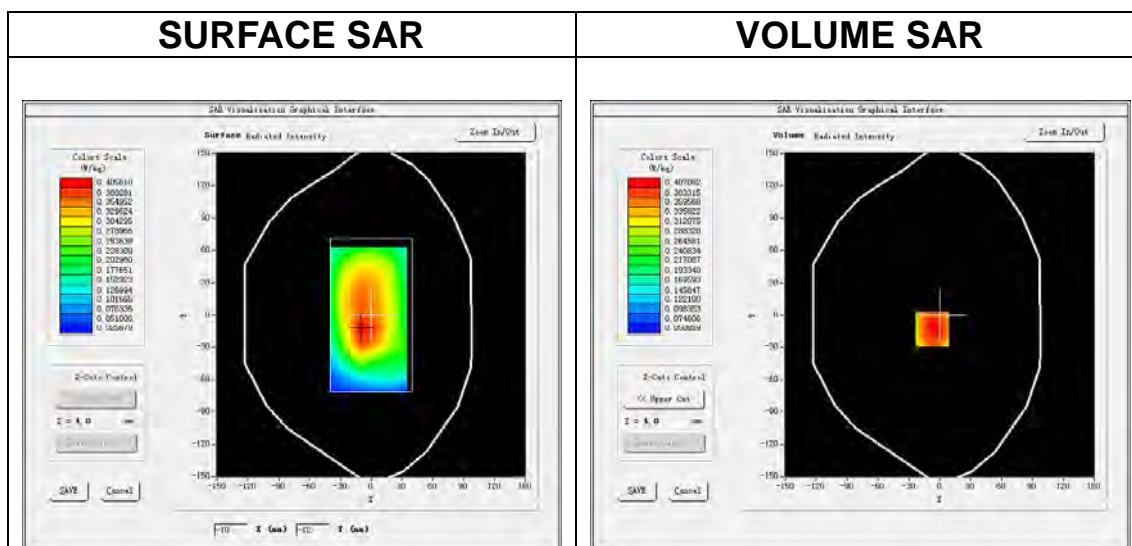
MEASUREMENT 24

A. Experimental conditions.

Area Scan	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
ZoomScan	<u>5x5x7, dx=8mm dy=8mm dz=5mm</u>
Phantom	<u>Validation plane</u>
Device Position	<u>Body</u>
Band	<u>LTE band 17</u>
Channels	<u>Middle</u>
Signal	<u>LTE (Crest factor: 1.0)</u>

B. SAR Measurement Results

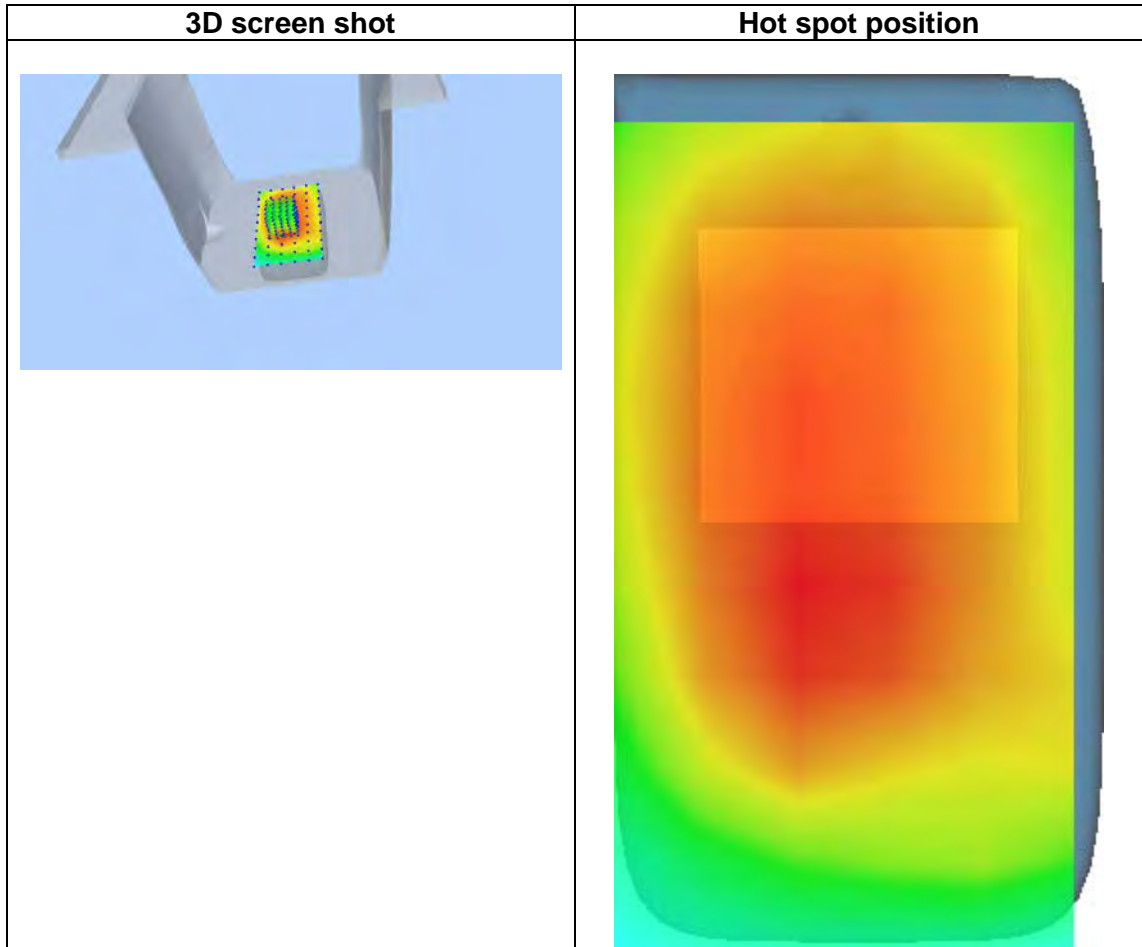
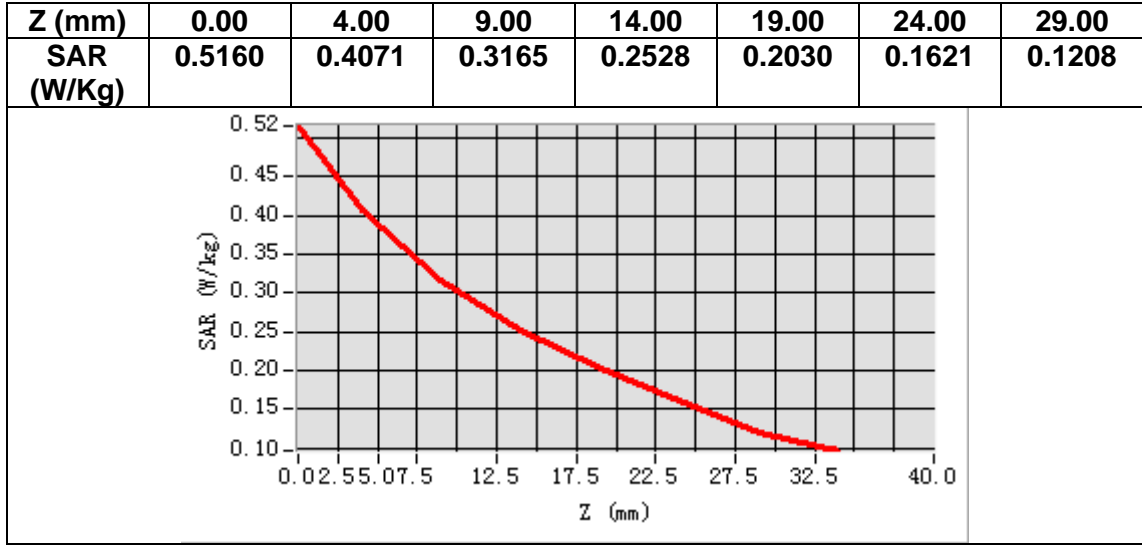
Frequency (MHz)	710.000000
Relative permittivity (real part)	55.746712
Relative permittivity (imaginary part)	23.700500
Conductivity (S/m)	0.934853
Variation (%)	-1.720000



Maximum location: X=-7.00, Y=-13.00

SAR Peak: 0.51 W/kg

SAR 10g (W/Kg)	0.300016
SAR 1g (W/Kg)	0.398320



14. Appendix D. Calibration Certificate

Table of contents
E Field Probe - SN 08/16 EPGO287
750 MHz Dipole - SN 03/15 DIP 0G750-355
835 MHz Dipole - SN 03/15 DIP 0G835-347
1800 MHz Dipole - SN 03/15 DIP 1G800-349
1900 MHz Dipole - SN 03/15 DIP 1G900-350
2450 MHz Dipole - SN 03/15 DIP 2G450-352
2600 MHz Dipole - SN 03/15 DIP 2G600-356
Extended Calibration Certificate



COMOSAR E-Field Probe Calibration Report

Ref : ACR.260.1.18.SATU.A

SHENZHEN NTEK TESTING TECHNOLOGY CO., LTD.

**BUILDING E, FENDA SCIENCE PARK, SANWEI
COMMUNITY, XIXIANG STREET,
BAO'AN DISTRICT, SHENZHEN GUANGDONG, CHINA
MVG COMOSAR DOSIMETRIC E-FIELD PROBE
SERIAL NO.: SN 08/16 EPGO287**

**Calibrated at MVG US
2105 Barrett Park Dr. - Kennesaw, GA 30144**



Calibration Date: 09/17/2018

Summary:

This document presents the method and results from an accredited COMOSAR Dosimetric E-Field Probe calibration performed in MVG USA using the CALISAR / CALIBAIR test bench, for use with a COMOSAR system only. All calibration results are traceable to national metrology institutions.



COMOSAR E-FIELD PROBE CALIBRATION REPORT

Ref: ACR.260.1.18.SATU.A

	<i>Name</i>	<i>Function</i>	<i>Date</i>	<i>Signature</i>
<i>Prepared by :</i>	Jérôme LUC	Product Manager	9/17/2018	<i>JS</i>
<i>Checked by :</i>	Jérôme LUC	Product Manager	9/17/2018	<i>JS</i>
<i>Approved by :</i>	Kim RUTKOWSKI	Quality Manager	9/17/2018	<i>Kim Rutkowski</i>

	<i>Customer Name</i>
<i>Distribution :</i>	SHENZHEN NTEK TESTING TECHNOLOGY CO., LTD.

<i>Issue</i>	<i>Date</i>	<i>Modifications</i>
A	9/17/2018	Initial release



COMOSAR E-FIELD PROBE CALIBRATION REPORT

Ref: ACR.260.1.18.SATU.A

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