

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 : Mobile Computing Device

Trademark : AMobile

Model Name : K500

Family Model : N/A

Report No. : S18111202901E001

FCC ID : 2AQ5W-K500

Prepared for

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TEST RESULT CERTIFICATION

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Manufacturer's Name.....: Hong Kong AMobile Intelligent Corp. Limited Taiwan Branch
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Product description

Product name.....: Mobile Computing Device
Trademark: AMobile
Model Name: K500
Family Model.....: N/A

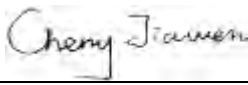
Standards.....: FCC 47 CFR Part 2(2.1093)
ANSI/IEEE C95.1-1992
IEEE Std 1528-2013
Published RF exposure KDB procedures

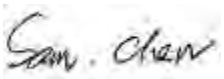
This device described above has been tested by Shenzhen NTEK. In accordance with the measurement methods and procedures specified in IEEE Std 1528-2013 and KDB 865664 D01. Testing has shown that this device is capable of compliance with localized specific absorption rate (SAR) specified in FCC 47 CFR 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.....: Nov. 12, 2018 ~ Feb. 20, 2019
Date of Issue: Feb. 28, 2019
Test Result: **Pass**

Prepared By : 
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(Cheng Jiawen)

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

※ ※ Revision History ※ ※

REV.	DESCRIPTION	ISSUED DATE	REMARK
Rev.1.0	Initial Test Report Release	Jan. 06, 2019	Cheng Jiawen
Rev.1.1	Add LTE band 12/17	Feb. 28, 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 K500 are as follows.

Band	Max Reported SAR Value(W/kg)			
	1-g Head	1-g Body-Worn (Separation distance of 10mm)	1-g Hotspot (Separation distance of 10mm)	Max Simultaneous Tx
GSM 850	0.075	0.116	0.272	1.488
GSM 1900	0.191	0.142	0.264	
WCDMA Band V	0.105	0.351	0.448	
WCDMA Band II	0.384	0.347	0.583	
CDMA2000 BC0	0.048	0.090	0.225	
LTE Band XII	0.021	0.019	0.023	
LTE Band XVII	0.025	0.017	0.023	
LTE Band V	0.109	0.372	0.435	
LTE Band IV	0.769	0.774	1.235	
LTE Band II	0.348	0.361	0.459	
LTE Band VII	0.551	0.774	1.172	
LTE Band XLI	0.148	0.145	0.398	
WLAN 2.4G	0.340	0.201	0.255	
WLAN 5.2G	0.719	0.679	N/A	
WLAN 5.8G	0.536	0.332	N/A	

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	Mobile Computing Device		
Trade Name	AMobile		
Model Name	K500		
Family Model	N/A		
FCC ID	2AQ5W-K500		
Device Phase	Identical Prototype		
Exposure Category	General population / Uncontrolled environment		
Antenna	FPCB Antenna		
Battery Information	DC 3.7V, 5200mAh		
Device Operating Configurations			
Supporting Mode(s)	GSM 850/1900, WCDMA Band V/II, CDMA2000 BC0, LTE Band XII/XVII/V/IV/III/VII/XLI, WLAN 2.4G/5G, Bluetooth, NFC		
Test Modulation	GSM(GMSK/8PSK), WCDMA(QPSK), CDMA2000(QPSK), LTE(QPSK/16QAM), WLAN(DSSS/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 II	1850-1910	1930-1990
	CDMA2000 BC0	824-849	869-894
	LTE Band XII	699-716	729-746
	LTE Band XVII	704-716	734-746
	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 XLI	2555-2655	
	WLAN 2.4G	2412-2462	
	WLAN 5.2G	5180-5240	
	WLAN 5.8G	5745-5825	
	Bluetooth	2402-2480	
	NFC	13.56	
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 II)	
	3, tested with power control "all Up"(CDMA2000 BC0)	
	3, tested with power control all Max.(LTE Band XII)	
	3, tested with power control all Max.(LTE Band XVII)	
	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 XLI)	
Test Channels (low-mid-high)	128-189-251(GSM 850)	
	512-661-810(GSM 1900)	
	4132-4182-4233(WCDMA Band V)	
	9262-9400-9538(WCDMA Band II)	
	1013-384-777(CDMA2000 BC0)	
	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)	
	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)
40240-40740-41240(LTE Band XLI BW=5MHz)
40265-40740-41215(LTE Band XLI BW=10MHz)
40290-40740-41190(LTE Band XLI BW=15MHz)
40315-40740-41165(LTE Band XLI BW=20MHz)
1-3-6-9-11(WLAN 2.4G)
36-38-40-42-46-48(WLAN 5.2G)
149-151-155-157-159-165(WLAN 5.8G)

1.4. Test specification(s)

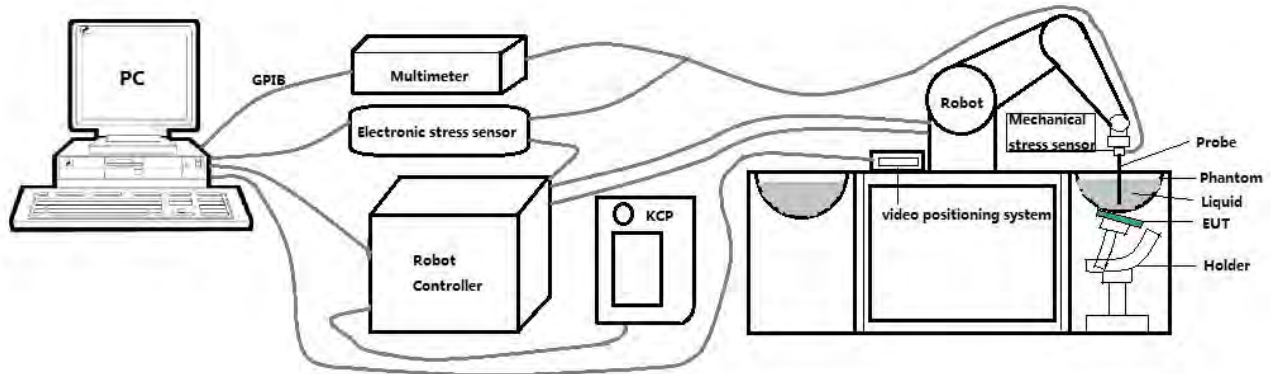
FCC 47 CFR Part 2(2.1093)
ANSI/IEEE C95.1-1992
IEEE Std 1528-2013
KDB 865664 D01 SAR measurement 100 MHz to 6 GHz
KDB 865664 D02 RF Exposure Reporting
KDB 447498 D01 General RF Exposure Guidance
KDB 248227 D01 802.11 Wi-Fi SAR
KDB 941225 D01 3G SAR Procedures
KDB 941225 D05 SAR for LTE Devices
KDB 941225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

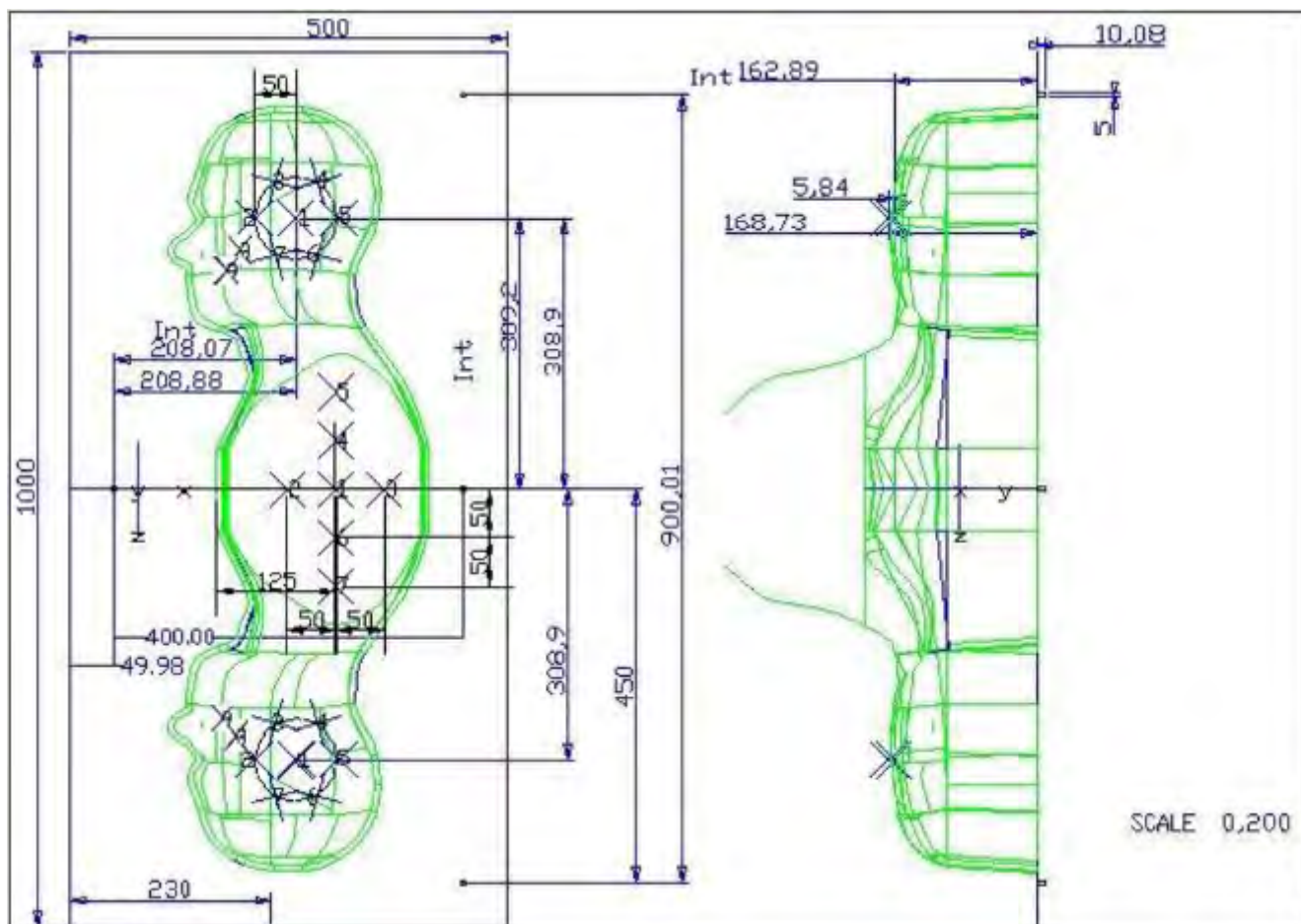
Photo of SAM phantom SN 16/15 SAM119



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

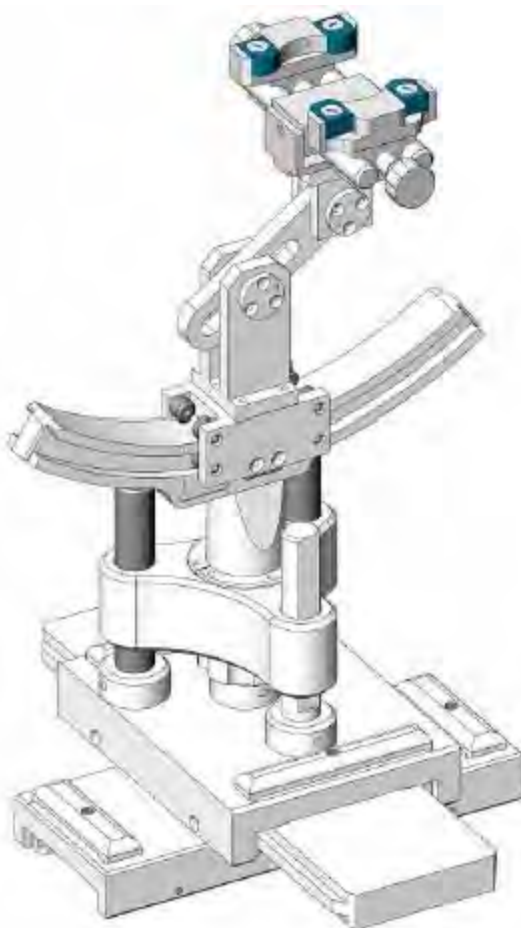


Serial Number	Left Head(mm)		Right Head(mm)		Flat Part(mm)	
SN 16/15 SAM119	2	2.02	2	2.08	1	2.09
	3	2.05	3	2.06	2	2.06
	4	2.07	4	2.07	3	2.08
	5	2.08	5	2.08	4	2.10
	6	2.05	6	2.07	5	2.10
	7	2.05	7	2.05	6	2.07
	8	2.07	8	2.06	7	2.07
	9	2.08	9	2.06	-	-

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

☒	Agilent	Power meter	E4419B	MY45102538	Aug. 05, 2018	Aug. 04, 2019
☒	Agilent	Power sensor	E9301A	MY41495644	Aug. 05, 2018	Aug. 04, 2019
☒	Agilent	Power sensor	E9301A	US39212148	Aug. 05, 2018	Aug. 04, 2019
☒	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	$\frac{1}{2} \cdot \delta \cdot \ln(2) \pm 0.5$ mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location			$30^\circ \pm 1^\circ$	$20^\circ \pm 1^\circ$
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 $\leq$ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	
Maximum zoom scan spatial resolution: Δx_{Zoom} , Δy_{Zoom}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm *	3 – 4 GHz: ≤ 5 mm * 4 – 6 GHz: ≤ 4 mm *
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 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
		$\Delta z_{Zoom}(n>1)$: between subsequent points	$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm

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

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

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									
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									
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

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 parameter are within the tolerances of the specified target values. The measured conductivity and relative permittivity should be within $\pm 5\%$ of the target values.

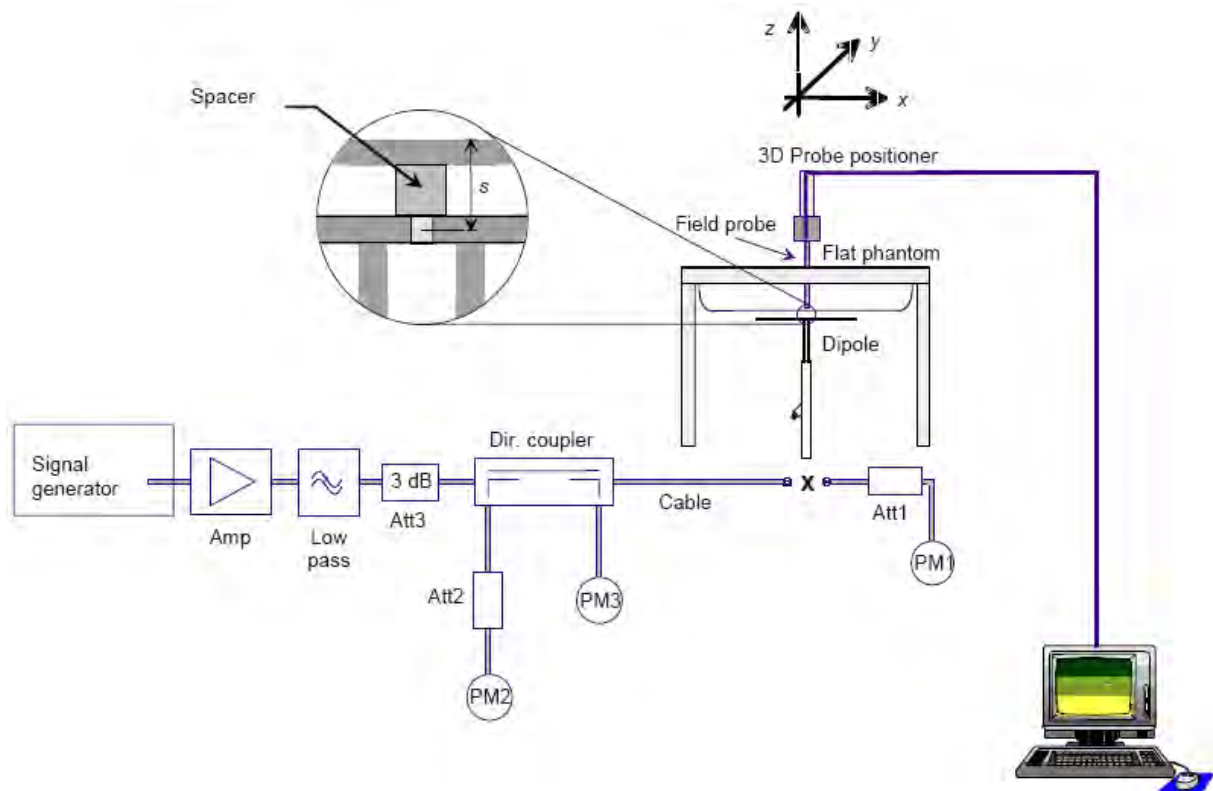
Tissue Type	Measured Frequency (MHz)	Target Tissue		Measured Tissue		Liquid Temp.	Test Date
		ϵ_r ($\pm 5\%$)	σ (S/m) ($\pm 5\%$)	ϵ_r	σ (S/m)		
Head 750	750	41.90 (39.81~43.99)	0.89 (0.85~0.93)	41.47	0.89	21.4 °C	Feb. 20, 2019
Body 750	750	55.50 (52.73~58.27)	0.96 (0.91~1.01)	55.38	0.97	21.5 °C	Feb. 20, 2019
Head 850	835	41.50 (39.43~43.57)	0.90 (0.86~0.94)	41.45	0.90	21.4 °C	Nov. 21, 2018
Body 850	835	55.20 (52.44~57.96)	0.97 (0.92~1.01)	54.83	0.99	21.4 °C	Nov. 21, 2018
Head 1800	1800	40.00 (38.00~42.00)	1.40 (1.33~1.47)	39.37	1.38	21.5 °C	Nov. 21, 2018
Body 1800	1800	53.30 (50.64~55.96)	1.52 (1.44~1.59)	53.89	1.51	21.7 °C	Nov. 22, 2018
Head 1900	1900	40.00 (38.00~42.00)	1.40 (1.33~1.47)	39.80	1.41	21.5 °C	Nov. 22, 2018
Body 1900	1900	53.30 (50.64~55.96)	1.52 (1.44~1.59)	53.16	1.54	21.3 °C	Nov. 22, 2018
Head 2450	2450	39.20 (37.24~41.16)	1.80 (1.71~1.89)	40.11	1.78	21.5 °C	Nov. 23, 2018
Body 2450	2450	52.70 (50.07~55.33)	1.95 (1.85~2.04)	52.69	1.98	21.6 °C	Nov. 28, 2018
Head 2600	2600	39.00 (37.05~40.95)	1.96 (1.86~2.05)	38.94	1.98	21.4 °C	Nov. 23, 2018
Body 2600	2600	52.50 (49.88~55.13)	2.16 (2.05~2.27)	53.20	2.17	21.5 °C	Nov. 23, 2018
Head 5000	5200	36.00 (34.20~37.80)	4.66 (4.43~4.89)	35.94	4.61	21.3 °C	Nov. 24, 2018
Body 5000	5200	49.00 (46.55~51.45)	5.30 (5.04~5.57)	49.95	5.26	21.5 °C	Nov. 12, 2018
Head 5000	5800	35.30 (33.54~37.07)	5.27 (5.01~5.53)	34.79	5.16	21.7 °C	Nov. 24, 2018
Body 5000	5800	48.20 (45.79~50.61)	6.00 (5.70~6.30)	48.64	6.04	21.8 °C	Nov. 12, 2018

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) (±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)	8.36	5.53	21.4 °C	Feb. 20, 2019
750MHz Body	8.55 (7.69~9.41)	5.75 (5.17~6.33)	8.36	5.73	21.5 °C	Feb. 20, 2019
835MHz Head	9.56 (8.60~10.51)	6.22 (5.60~6.84)	10.05	6.21	21.4 °C	Nov. 21, 2018
835MHz Body	9.48 (8.53~10.42)	6.29 (5.66~6.91)	9.46	6.27	21.4 °C	Nov. 21, 2018
1800MHz Head	38.40 (34.56~42.24)	20.10 (18.09~22.11)	39.28	20.17	21.5 °C	Nov. 21, 2018
1800MHz Body	37.04 (33.34~40.74)	20.26 (18.23~22.29)	40.01	21.25	21.7 °C	Nov. 22, 2018
1900MHz Head	39.70 (35.73~43.67)	20.50 (18.45~22.55)	40.23	20.63	21.5 °C	Nov. 22, 2018
1900MHz Body	38.43 (34.59~42.27)	20.34 (18.31~22.37)	40.23	19.85	21.3 °C	Nov. 22, 2018
2450MHz Head	52.40 (47.16~57.64)	24.00 (21.60~26.40)	51.98	23.03	21.5 °C	Nov. 23, 2018
2450MHz Body	49.32 (44.39~54.25)	22.89 (20.60~25.17)	50.72	22.81	21.6 °C	Nov. 28, 2018
2600MHz Head	55.30 (49.77~60.83)	24.60 (22.14~27.06)	60.01	24.16	21.4 °C	Nov. 23, 2018
2600MHz Body	52.95 (47.66~58.25)	23.64 (21.28~26.00)	54.70	23.62	21.5 °C	Nov. 23, 2018
5200MHz Head	159.00 (143.10~174.90)	56.90 (51.21~62.59)	154.54	54.51	21.3 °C	Nov. 24, 2018
5200MHz Body	156.85 (141.17~172.54)	55.20 (49.68~60.72)	154.98	54.28	21.5 °C	Nov. 12, 2018
5800MHz Head	181.20 (163.08~199.32)	61.50 (55.35~67.65)	179.21	57.44	21.7 °C	Nov. 24, 2018
5800MHz Body	169.30 (152.37~186.23)	58.49 (52.64~64.34)	168.00	58.38	21.8 °C	Nov. 12, 2018

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 ($\sim 10\%$ 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.

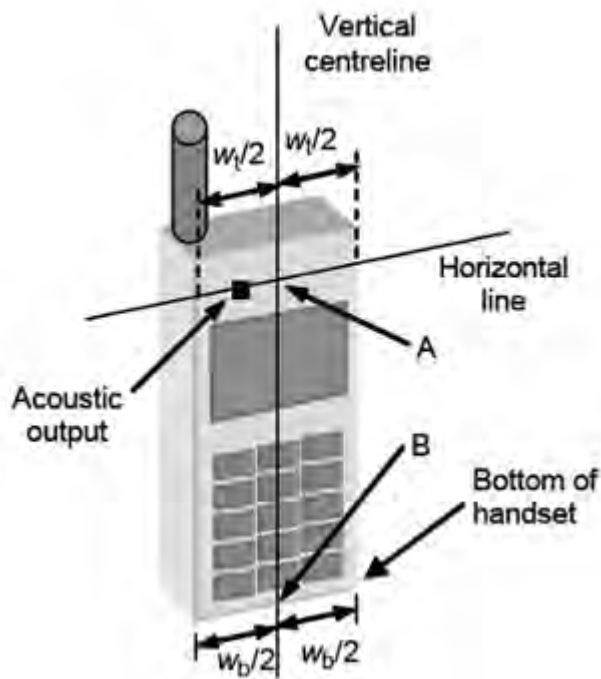


Fig 6.2.1 Handset vertical and horizontal reference lines—"fixed case"

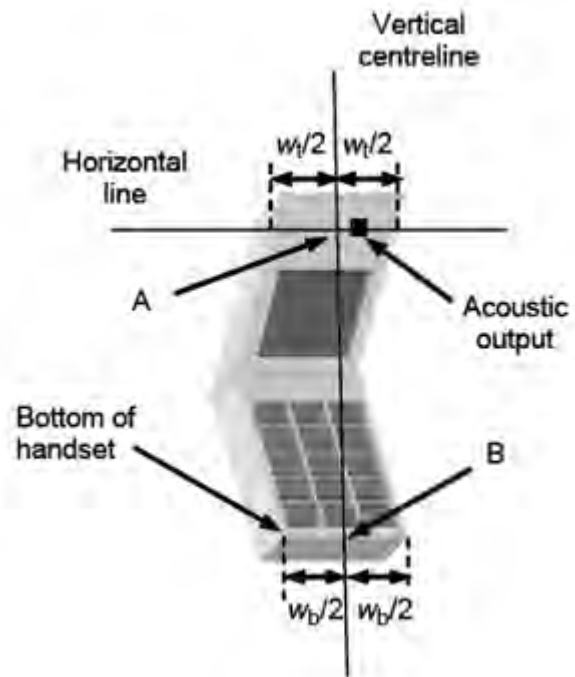


Fig 6.2.2 Handset vertical and horizontal reference lines—"clam-shell case"

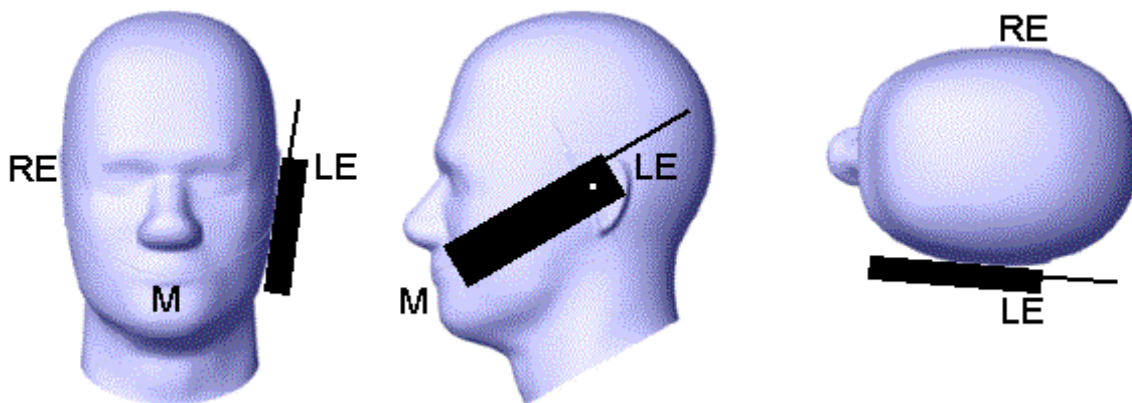


Fig 6.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

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.

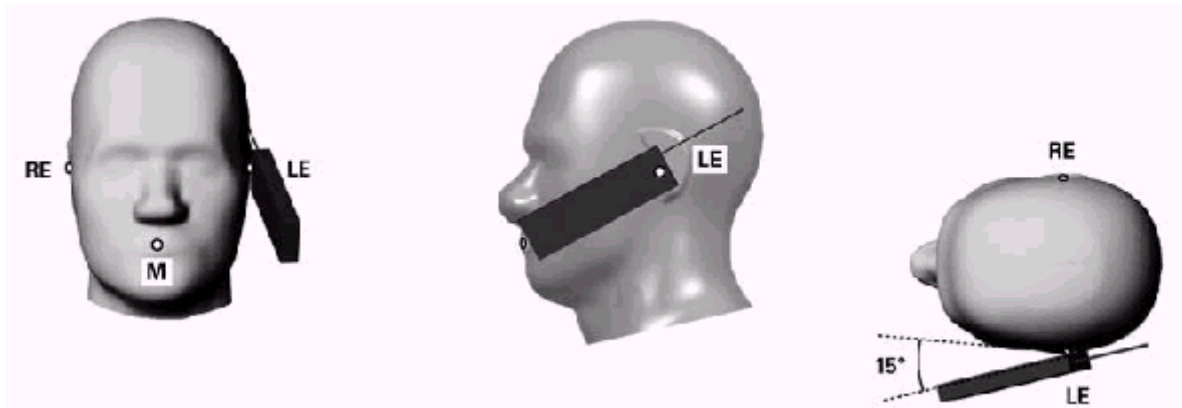


Figure 6.3.1 – Tilt position of the wireless device on the left side of SAM

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 $< 1.2 \text{ W/kg}$, 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.

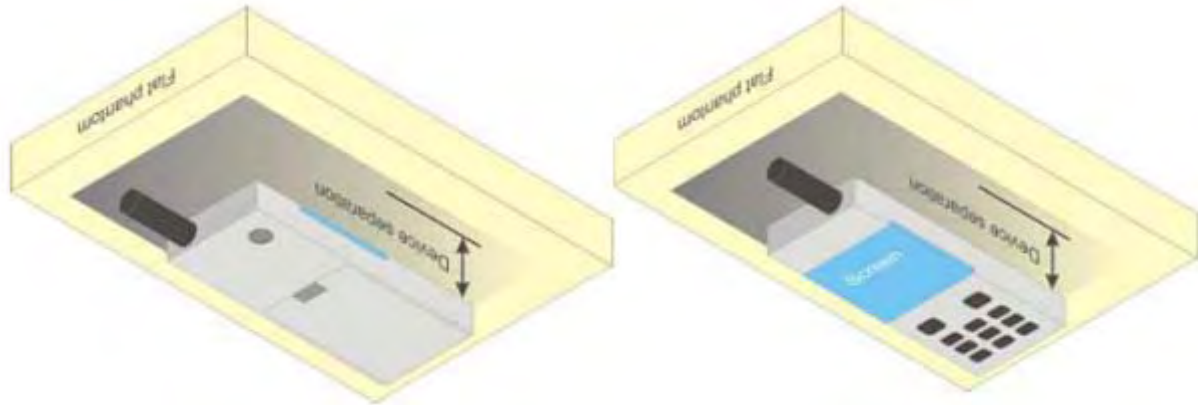


Figure 6.4.1 – Test positions for body-worn devices

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	128	189	251	Tune-up	128	189	251
Frequency (MHz)	(dBm)	824.2	836.4	848.8	(dBm)	824.2	836.4	848.8
GSM (GMSK)	32.00	31.75	31.93	31.92	22.97	22.72	22.90	22.89
GPRS(GMSK, 1 TS)	32.00	31.21	31.20	31.54	22.97	22.18	22.17	22.51
GPRS(GMSK, 2 TS)	30.00	29.61	29.54	29.87	23.98	23.59	23.52	23.85
GPRS(GMSK, 3 TS)	29.00	28.45	28.54	28.46	24.74	24.19	24.28	24.20
GPRS(GMSK, 4 TS)	28.00	27.34	27.32	27.14	24.99	24.33	24.31	24.13
EDGE(8PSK, 1 TS)	27.00	26.87	26.79	26.86	17.97	17.84	17.76	17.83
EDGE(8PSK, 2 TS)	26.00	25.45	25.34	25.30	19.98	19.43	19.32	19.28
EDGE(8PSK, 3 TS)	25.00	24.16	24.26	24.15	20.74	19.90	20.00	19.89
EDGE(8PSK, 4 TS)	24.00	23.25	23.54	23.31	20.99	20.24	20.53	20.30
Band GSM1900	Burst-Averaged output Power (dBm)				Frame-Averaged output Power (dBm)			
Tx Channel	Tune-up	512	661	810	Tune-up	512	661	810
Frequency (MHz)	(dBm)	1850.2	1880.0	1909.8	(dBm)	1850.2	1880.0	1909.8
GSM (GMSK)	30.00	29.41	29.13	29.14	20.97	20.38	20.10	20.11
GPRS(GMSK, 1 TS)	30.00	29.44	29.10	29.12	20.97	20.41	20.07	20.09
GPRS(GMSK, 2 TS)	27.00	26.27	26.24	26.22	20.98	20.25	20.22	20.20
GPRS(GMSK, 3 TS)	25.00	24.85	24.94	24.35	20.74	20.59	20.68	20.09
GPRS(GMSK, 4 TS)	24.00	23.87	23.75	23.72	20.99	20.86	20.74	20.71
EDGE(8PSK, 1 TS)	26.00	25.45	25.51	25.23	16.97	16.42	16.48	16.20
EDGE(8PSK, 2 TS)	24.00	23.12	23.01	23.05	17.98	17.10	16.99	17.03
EDGE(8PSK, 3 TS)	22.00	21.03	21.20	21.21	17.74	16.77	16.94	16.95
EDGE(8PSK, 4 TS)	21.00	20.14	20.08	20.11	17.99	17.13	17.07	17.10

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	23.00	22.45	22.53	22.57
HSDPA Subtest-1	22.00	21.86	21.96	21.87
HSDPA Subtest-2	22.00	21.45	21.48	21.38
HSDPA Subtest-3	22.00	21.42	21.44	21.35
HSDPA Subtest-4	22.00	21.35	21.51	21.37
HSUPA Subtest-1	22.00	21.33	21.45	21.38
HSUPA Subtest-2	22.00	21.33	21.44	21.42
HSUPA Subtest-3	22.00	21.34	21.38	21.35
HSUPA Subtest-4	22.00	21.36	21.46	21.41
HSUPA Subtest-5	22.00	21.86	21.94	21.78
Band	WCDMA Band II			
Tx Channel	Tune-up	9262	9400	9538
Frequency (MHz)		1852.4	1880	1907.6
RMC 12.2Kbps	23.00	22.30	22.34	22.31
HSDPA Subtest-1	22.00	21.74	21.75	21.76
HSDPA Subtest-2	22.00	21.37	21.36	21.42
HSDPA Subtest-3	22.00	21.30	21.35	21.44
HSDPA Subtest-4	22.00	21.35	21.37	21.34
HSUPA Subtest-1	22.00	21.33	21.32	21.32
HSUPA Subtest-2	22.00	21.38	21.30	21.28
HSUPA Subtest-3	22.00	21.32	21.34	21.25
HSUPA Subtest-4	22.00	21.38	21.35	21.37
HSUPA Subtest-5	22.00	21.76	21.80	21.85

7.3. CDMA Conducted Power

CDMA2000 BC0		Averaged output Power (dBm)			
Tx Channel		Tune-up	1013	384	777
Frequency (MHz)			824.7	836.5	848.3
1xRTT	RC1 SO55 (Loopback)	24.50	24.19	24.28	24.11
	RC3 SO55 (Loopback)	24.50	24.35	24.46	24.31
	RC3 SO32 (+F-SCH)	24.50	24.41	24.49	24.36
1xEVDO Rev. 0	FTAP Rate: 307.2 kbps(2 slot, QPSK) RTAP Rate: 153.6 kbps	24.50	24.23	24.43	24.36
1xEVDO Rev. A	FETAP: 307.2k, QPSK/ ACK RETAP: 4096	24.50	24.26	24.46	24.37

7.4. LTE Conducted Power

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	23.50	22.92	23.32	23.02
			1	2	23.50	22.99	23.29	23.13
			1	5	23.50	22.77	23.29	23.21
			3	0	23.50	23.08	23.23	23.00
			3	1	23.50	23.05	23.24	23.10
			3	2	23.50	23.03	23.23	23.15
		16QAM	6	0	22.50	21.98	22.08	22.07
			1	0	22.50	22.44	22.14	22.06
			1	2	22.50	22.47	22.28	22.09
			1	5	22.50	22.34	22.26	21.53
			3	0	22.50	22.16	22.03	22.10
			3	1	22.50	22.21	22.00	22.00
			3	2	22.50	22.30	21.99	21.99
			6	0	21.50	21.19	20.72	21.09
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	23.50	23.10	23.01	23.23
			1	7	23.50	23.07	23.05	23.35
			1	14	23.50	23.00	22.84	23.34
			8	0	22.50	22.12	22.12	22.19
			8	4	22.50	22.11	22.18	22.17
			8	7	22.50	22.10	22.21	22.15
			15	0	22.50	22.12	22.09	22.11
		16QAM	1	0	22.50	22.40	21.97	21.74
			1	7	22.50	22.19	22.00	21.69
			1	14	22.50	22.15	21.56	22.50
			8	0	21.50	21.04	21.16	21.46
			8	4	21.50	21.10	21.12	21.37
			8	7	21.50	21.12	20.83	21.30
			15	0	21.50	21.03	21.09	21.37
Band	Band Width	Modulation	RB Configuration		Tune-up	Channel/Frequency(MHz)		
			RB Size	RB Offset		23035/701.5	23095/707.5	23155/713.5
LTE Band XII	5MHz	QPSK	1	0	23.50	23.01	23.12	22.95
			1	12	23.50	22.98	23.43	23.14
			1	24	23.50	22.96	22.89	22.87
			12	0	22.50	22.07	22.10	22.13
			12	6	22.50	22.07	22.12	22.08
			12	11	22.50	22.08	22.14	22.01
			25	0	22.50	22.14	22.11	22.11
		16QAM	1	0	22.50	21.65	21.98	22.24
			1	12	22.50	21.62	21.60	22.35
			1	24	22.50	21.19	21.72	22.10
			12	0	21.50	21.12	20.99	20.84
			12	6	21.50	21.08	20.90	20.88
			12	11	21.50	21.04	20.86	20.95
			25	0	21.50	21.24	21.06	20.95
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	23.50	22.84	22.76	23.11
			1	24	23.50	23.08	23.41	23.17
			1	49	23.50	22.99	22.68	22.93
			25	0	22.50	22.02	22.14	22.19

			25	12	22.50	22.12	22.14	22.19
			25	24	22.50	22.14	22.15	22.20
			50	0	22.50	22.08	22.16	22.14
		16QAM	1	0	23.50	22.17	21.69	22.75
			1	24	23.50	23.05	21.77	22.70
			1	49	23.50	22.33	21.56	22.28
			25	0	22.50	21.12	21.25	21.25
			25	12	22.50	21.15	21.14	21.19
			25	24	22.50	21.17	21.09	21.15
			50	0	21.50	21.09	20.94	21.09

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	23.50	22.76	22.99	22.88
			1	12	23.50	23.19	23.12	23.16
			1	24	23.50	22.94	22.96	22.81
			12	0	22.50	21.90	21.98	22.08
			12	6	22.50	21.92	21.99	21.95
			12	11	22.50	21.95	22.00	21.89
			25	0	22.50	22.02	22.06	21.88
		16QAM	1	0	22.50	21.81	22.23	21.56
			1	12	22.50	21.94	22.34	21.33
			1	24	22.50	20.81	22.34	21.10
			12	0	21.50	20.77	20.72	20.90
			12	6	21.50	20.76	20.78	20.89
			12	11	21.50	20.75	20.80	20.90
			25	0	21.50	20.98	20.93	21.08
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	23.50	22.92	22.85	23.19
			1	24	23.50	23.03	23.32	23.02
			1	49	23.50	23.06	23.00	22.94
			25	0	22.50	22.09	22.11	22.13
			25	12	22.50	22.08	22.12	22.12
			25	24	22.50	22.09	22.13	22.12
			50	0	22.50	22.12	22.10	22.11
		16QAM	1	0	22.50	22.22	22.06	22.42
			1	24	22.50	22.50	21.86	22.43
			1	49	22.50	22.44	21.41	22.39
			25	0	21.50	21.07	21.17	21.05
			25	12	21.50	21.15	21.12	21.06
			25	24	21.50	21.21	21.07	21.07
			50	0	21.50	21.16	20.90	21.06

Band	Band Width	Modulation	RB Configuration		Tune-up	Channel/Frequency(MHz)		
			RB Size	RB Offset		20407/824.7	20525/836.5	20643/848.3
LTE Band V	1.4MHz	QPSK	1	0	23.00	22.84	22.85	22.60
			1	2	23.00	22.49	22.79	22.82
			1	5	23.00	23.00	22.81	22.65
			3	0	23.00	22.88	22.96	22.88
			3	1	23.00	22.90	22.97	22.92
			3	2	23.00	22.80	22.96	22.94
			6	0	22.00	21.91	21.96	21.80
		16QAM	1	0	22.00	21.80	21.91	21.89
			1	2	22.00	21.82	21.80	21.80
			1	5	22.00	21.69	21.29	21.88
			3	0	22.00	21.87	21.88	21.87
			3	1	22.00	21.88	21.89	21.90
			3	2	22.00	21.60	21.95	22.00
			6	0	21.00	20.92	20.55	20.96

Band	Band Width	Modulation	RB Configuration		Tune-up	Channel/Frequency(MHz)		
			RB Size	RB Offset		20415/825.5	20525/836.5	20635/847.5
LTE Band V	3MHz	QPSK	1	0	23.00	22.96	22.87	22.77
			1	7	23.00	22.65	22.91	23.00
			1	14	23.00	22.91	22.82	22.76
			8	0	22.00	21.90	21.99	21.96
			8	4	22.00	21.89	21.97	21.87
			8	7	22.00	21.96	21.90	21.87
			15	0	22.00	21.93	21.89	21.82
		16QAM	1	0	23.00	22.06	22.30	22.56
			1	7	23.00	22.01	22.18	22.86
			1	14	23.00	22.74	21.65	22.90
			8	0	22.00	21.37	21.15	21.47
			8	4	22.00	21.31	21.17	21.48
			8	7	22.00	21.45	21.30	21.19
			15	0	21.00	20.84	20.98	20.76
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	5MHz	QPSK	1	0	23.00	22.36	22.56	22.28
			1	12	23.00	22.35	22.56	22.62
			1	24	23.00	22.44	22.50	22.58
			12	0	22.00	21.38	21.54	21.34
			12	6	22.00	21.41	21.55	21.35
			12	11	22.00	21.53	21.53	21.44
			25	0	22.00	21.37	21.49	21.39
		16QAM	1	0	22.00	20.73	21.38	21.62
			1	12	22.00	21.49	21.38	21.84
			1	24	22.00	20.61	20.52	21.62
			12	0	21.00	20.38	20.30	20.30
			12	6	21.00	20.39	20.31	20.24
			12	11	21.00	20.52	20.29	20.23
			25	0	21.00	20.44	20.64	20.34

Band	Band Width	Modulation	RB Configuration		Tune-up	Channel/Frequency(MHz)		
			RB Size	RB Offset		20450/829	20525/836.5	20600/844
LTE Band V	10MHz	QPSK	1	0	23.00	22.27	22.22	22.30
			1	24	23.00	22.51	22.41	22.46
			1	49	23.00	22.33	22.33	22.36
			25	0	22.00	21.35	21.57	21.47
			25	12	22.00	21.36	21.59	21.48
			25	24	22.00	21.46	21.46	21.46
			50	0	22.00	21.51	21.56	21.47
		16QAM	1	0	22.00	21.61	21.33	21.84
			1	24	22.00	21.98	21.14	21.90
			1	49	22.00	21.78	20.99	21.73
			25	0	21.00	20.47	20.75	20.62
			25	12	21.00	20.50	20.78	20.66
			25	24	21.00	20.50	20.58	20.49
			50	0	21.00	20.50	20.40	20.42

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	23.06	23.43	23.50
			1	2	24.00	23.33	23.52	23.49
			1	5	24.00	23.37	23.52	23.46
			3	0	24.00	23.23	23.36	23.29
			3	1	24.00	23.30	23.31	23.33
			3	2	24.00	23.47	23.75	23.23
			6	0	23.00	22.33	22.29	22.28
		16QAM	1	0	23.00	22.92	22.55	22.47
			1	2	23.00	23.00	22.41	22.85
			1	5	23.00	23.00	22.41	21.94
			3	0	23.00	22.26	22.32	22.31
			3	1	23.00	22.32	22.35	22.39
			3	2	23.00	22.43	22.43	22.48
			6	0	22.00	21.45	21.32	21.35

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	23.17	23.38	23.44
			1	7	24.00	23.29	23.43	23.25
			1	14	24.00	23.39	23.19	23.27
			8	0	23.00	22.31	22.34	22.33
			8	4	23.00	22.31	22.29	22.30
			8	7	23.00	22.32	22.26	22.24
			15	0	23.00	22.32	22.34	22.33
		16QAM	1	0	23.00	22.65	22.24	22.65
			1	7	23.00	22.17	22.17	23.00
			1	14	23.00	22.16	21.83	22.77
			8	0	22.00	21.11	21.28	21.42
			8	4	22.00	21.21	21.19	21.43
			8	7	22.00	21.35	21.10	21.44
			15	0	22.00	21.23	21.10	21.42
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	23.15	23.36	23.47
			1	12	24.00	23.31	23.55	23.40
			1	24	24.00	23.08	23.09	23.44
			12	0	23.00	22.22	22.29	22.43
			12	6	23.00	22.24	22.28	22.45
			12	11	23.00	22.26	22.28	22.49
			25	0	23.00	22.31	22.29	22.47
		16QAM	1	0	23.00	21.93	22.14	22.68
			1	12	23.00	22.38	22.10	22.70
			1	24	23.00	21.61	21.77	22.70
			12	0	22.00	21.16	21.26	22.00
			12	6	22.00	21.12	21.20	21.18
			12	11	22.00	21.07	21.18	21.16
			25	0	22.00	21.23	21.25	21.23

Band	Band Width	Modulation	RB Configuration		Tune-up	Channel/Frequency(MHz)		
			RB Size	RB Offset		20000/1715	20175/1732.5	20350/1750
LTE Band IV	10MHz	QPSK	1	0	24.00	23.57	23.03	23.57
			1	24	24.00	23.51	23.51	23.53
			1	49	24.00	23.25	23.20	23.40
			25	0	23.00	22.31	22.22	22.46
			25	12	23.00	22.32	22.15	22.49
			25	24	23.00	22.35	22.27	22.51
			50	0	23.00	22.28	22.28	22.55
		16QAM	1	0	23.00	22.46	22.56	22.72
			1	24	23.00	22.36	22.78	22.89
			1	49	23.00	22.57	22.57	22.52
			25	0	22.00	21.35	21.37	21.34
			25	12	22.00	21.25	21.37	21.40
			25	24	22.00	21.41	21.38	21.43
			50	0	22.00	21.35	21.21	21.41
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	23.26	23.12	23.36
			1	37	24.00	23.22	23.30	23.26
			1	74	24.00	23.44	23.23	23.28
			36	0	23.00	22.35	22.29	22.41
			36	18	23.00	22.39	22.28	22.42
			36	37	23.00	22.43	22.23	22.40
			75	0	23.00	22.45	22.17	22.38
		16QAM	1	0	23.00	22.30	22.30	22.85
			1	37	23.00	23.00	22.25	23.00
			1	74	23.00	22.29	21.69	22.85
			36	0	22.00	21.08	21.05	21.41
			36	18	22.00	21.12	21.11	21.38
			36	37	22.00	21.31	21.14	21.36
			75	0	22.00	21.36	21.19	21.40

Band	Band Width	Modulation	RB Configuration		Tune-up	Channel/Frequency(MHz)		
			RB Size	RB Offset		20050/1720	20175/1732.5	20300/1745
LTE Band IV	20MHz	QPSK	1	0	24.00	23.03	23.16	23.49
			1	49	24.00	23.03	23.45	23.61
			1	99	24.00	23.54	23.78	23.73
			50	0	23.00	22.26	22.32	22.46
			50	24	23.00	22.31	22.28	22.46
			50	49	23.00	22.40	22.25	22.46
			100	0	23.00	22.39	22.34	22.48
		16QAM	1	0	23.00	22.52	22.94	22.52
			1	49	23.00	22.51	22.97	22.52
			1	99	23.00	23.00	23.00	22.53
			50	0	22.00	21.29	21.14	21.41
			50	24	22.00	21.30	21.11	21.42
			50	49	22.00	21.30	21.07	21.48
			100	0	22.00	21.43	21.19	21.43

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	24.00	23.80	23.75	23.79
			1	2	24.00	23.86	23.98	23.98
			1	5	24.00	23.83	23.71	23.95
			3	0	24.00	23.95	23.89	23.82
			3	1	24.00	23.69	23.91	23.82
			3	2	24.00	23.74	23.97	23.87
			6	0	23.00	22.86	22.76	22.75
		16QAM	1	0	23.00	22.40	22.75	22.45
			1	2	23.00	22.50	22.98	22.69
			1	5	23.00	22.33	22.71	22.40
			3	0	23.00	22.26	22.89	22.10
			3	1	23.00	22.38	22.91	22.25
			3	2	23.00	22.36	22.97	22.24
			6	0	22.00	21.31	21.86	21.27

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	24.00	23.69	23.53	23.67
			1	7	24.00	23.93	23.62	23.71
			1	14	24.00	23.90	23.61	23.68
			8	0	23.00	22.87	22.65	22.84
			8	4	23.00	22.90	22.68	22.87
			8	7	23.00	22.88	22.76	22.72
			15	0	23.00	22.84	22.69	22.73
		16QAM	1	0	23.00	22.95	22.73	22.91
			1	7	23.00	22.83	22.81	22.84
			1	14	23.00	22.83	22.58	22.88
			8	0	22.00	21.87	21.92	21.43
			8	4	22.00	21.89	21.91	21.45
			8	7	22.00	21.82	21.58	21.52
			15	0	22.00	21.88	21.11	21.03
Band	Band Width	Modulation	RB Configuration		Tune-up	Channel/Frequency(MHz)		
			RB Size	RB Offset		18625/1852.5	18900/1880	19175/1907.5
LTE Band II	5MHz	QPSK	1	0	24.00	23.90	23.75	23.99
			1	12	24.00	23.99	23.80	24.00
			1	24	24.00	23.96	23.85	23.93
			12	0	23.00	22.54	22.38	22.59
			12	6	23.00	22.55	22.39	22.60
			12	11	23.00	22.65	22.35	22.61
			25	0	22.00	21.86	21.87	21.85
		16QAM	1	0	22.00	21.84	21.52	21.81
			1	12	22.00	21.98	21.21	21.85
			1	24	22.00	21.96	21.20	21.69
			12	0	21.00	20.80	20.82	20.89
			12	6	21.00	20.81	20.83	20.87
			12	11	21.00	20.83	20.76	21.00
			25	0	21.00	20.96	20.82	21.00

Band	Band Width	Modulation	RB Configuration		Tune-up	Channel/Frequency(MHz)		
			RB Size	RB Offset		18650/1855	18900/1880	19150/1905
LTE Band II	10MHz	QPSK	1	0	24.00	23.19	22.70	22.96
			1	24	24.00	23.23	23.15	23.39
			1	49	24.00	23.85	23.57	23.46
			25	0	23.00	22.07	21.92	22.05
			25	12	23.00	22.08	21.93	22.04
			25	24	23.00	22.07	21.93	22.01
			50	0	22.00	21.89	21.94	21.82
		16QAM	1	0	22.00	21.83	21.92	21.76
			1	24	22.00	21.86	21.99	21.79
			1	49	22.00	21.77	21.47	21.75
			25	0	22.00	21.00	21.14	21.24
			25	12	22.00	21.10	21.15	21.18
			25	24	22.00	21.11	21.14	21.03
			50	0	21.00	20.95	21.00	20.97
Band	Band Width	Modulation	RB Configuration		Tune-up	Channel/Frequency(MHz)		
			RB Size	RB Offset		18675/1857.5	18900/1880	19125/1902.5
LTE Band II	15MHz	QPSK	1	0	24.00	23.67	23.42	23.69
			1	37	24.00	23.70	23.54	23.53
			1	74	24.00	23.49	23.51	23.53
			36	0	23.00	22.14	21.99	22.06
			36	18	23.00	22.10	21.87	22.01
			36	37	23.00	22.00	21.89	22.01
			75	0	22.00	21.83	21.90	21.89
		16QAM	1	0	22.00	21.64	21.20	21.67
			1	37	22.00	21.80	21.12	21.60
			1	74	22.00	20.96	20.64	21.66
			36	0	21.00	20.84	20.55	20.79
			36	18	21.00	20.81	20.62	20.79
			36	37	21.00	20.63	20.60	20.55
			75	0	21.00	20.89	20.92	20.87

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	24.00	23.88	23.81	23.94
			1	49	24.00	24.00	23.98	23.97
			1	99	24.00	23.71	23.88	23.96
			50	0	23.00	22.61	22.76	22.48
			50	24	23.00	22.60	22.48	22.49
			50	49	23.00	22.51	22.47	22.53
			100	0	22.00	21.86	21.95	21.99
		16QAM	1	0	22.00	21.86	21.90	21.24
			1	49	22.00	21.87	21.74	21.23
			1	99	22.00	21.40	21.82	20.61
			50	0	21.00	20.81	20.81	20.97
			50	24	21.00	20.89	20.89	20.99
			50	49	21.00	20.92	20.77	20.95
			100	0	21.00	20.88	20.84	20.88

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	24.00	23.62	23.66	23.55
			1	12	24.00	23.69	24.00	23.58
			1	24	24.00	23.42	23.66	23.54
			12	0	23.00	22.66	22.78	22.62
			12	6	23.00	22.64	22.75	22.60
			12	11	23.00	22.62	22.72	22.64
			25	0	23.00	22.68	22.73	22.59
		16QAM	1	0	23.00	22.44	22.91	22.19
			1	12	23.00	22.54	22.99	22.38
			1	24	23.00	22.24	22.72	21.86
			12	0	22.00	21.49	21.52	21.44
			12	6	22.00	21.52	21.50	21.42
			12	11	22.00	21.56	21.50	21.41
			25	0	22.00	21.54	21.78	21.66

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	24.00	23.48	23.59	23.66
			1	24	24.00	23.83	24.00	23.99
			1	49	24.00	23.69	23.81	23.51
			25	0	23.00	22.77	22.84	22.71
			25	12	23.00	22.75	22.81	22.73
			25	24	23.00	22.69	22.82	22.75
			50	0	23.00	22.75	22.80	22.79
		16QAM	1	0	23.00	22.95	22.74	22.41
			1	24	23.00	22.89	22.60	22.79
			1	49	23.00	22.62	22.42	22.51
			25	0	22.00	21.77	21.97	21.74
			25	12	22.00	21.78	21.92	21.73
			25	24	22.00	21.79	21.84	21.77
			50	0	22.00	21.73	21.69	21.66
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	24.00	23.61	23.54	23.75
			1	37	24.00	23.72	23.68	23.74
			1	74	24.00	23.63	23.75	23.65
			36	0	23.00	22.73	22.89	22.86
			36	18	23.00	22.74	22.88	22.85
			36	37	23.00	22.73	22.87	22.77
			75	0	23.00	22.73	22.79	22.73
		16QAM	1	0	23.00	22.97	22.77	22.49
			1	37	23.00	22.91	22.69	22.80
			1	74	23.00	22.55	22.28	22.89
			36	0	22.00	21.72	21.66	21.73
			36	18	22.00	21.71	21.68	21.74
			36	37	22.00	21.62	21.75	21.75
			75	0	22.00	21.68	21.76	21.78

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	24.00	23.49	23.53	23.70
			1	49	24.00	23.94	24.00	23.98
			1	99	24.00	23.56	23.43	23.67
			50	0	23.00	22.79	22.84	22.80
			50	24	23.00	22.80	22.86	22.79
			50	49	23.00	22.73	22.87	22.77
			100	0	23.00	22.72	22.86	22.79
		16QAM	1	0	23.00	22.89	22.41	22.86
			1	49	23.00	22.87	22.77	22.84
			1	99	23.00	22.76	22.51	22.84
			50	0	22.00	21.77	21.71	21.71
			50	24	22.00	21.79	21.78	21.72
			50	49	22.00	21.74	21.81	21.69
			100	0	22.00	21.76	21.79	21.78

Band	Band Width	Modulation	RB Configuration		Tune-up	Channel/Frequency(MHz)		
			RB Size	RB Offset		40240/2555	40740/2605	41240/2655
LTE Band XLI	5MHz	QPSK	1	0	25.00	24.22	24.27	23.90
			1	12	25.00	24.38	24.15	23.93
			1	24	25.00	24.21	24.05	23.93
			12	0	24.00	23.50	23.48	23.06
			12	6	24.00	23.51	23.52	23.02
			12	11	24.00	23.42	23.30	23.03
			25	0	24.00	23.38	23.29	23.13
		16QAM	1	0	24.00	23.11	22.91	23.26
			1	12	24.00	22.85	23.03	22.94
			1	24	24.00	23.06	22.69	23.12
			12	0	23.00	22.37	22.29	21.99
			12	6	23.00	22.38	22.30	21.94
			12	11	23.00	22.30	22.34	21.91
			25	0	23.00	22.72	22.22	21.97

Band	Band Width	Modulation	RB Configuration		Tune-up	Channel/Frequency(MHz)		
			RB Size	RB Offset		40265/2557.5	40740/2605	41215/2652.5
LTE Band XLI	10MHz	QPSK	1	0	25.00	24.58	24.14	24.32
			1	24	25.00	24.50	24.27	24.35
			1	49	25.00	24.53	24.11	24.19
			25	0	24.00	23.50	23.45	23.21
			25	12	24.00	23.52	23.41	23.24
			25	24	24.00	23.47	23.38	23.15
			50	0	24.00	23.44	23.35	23.26
		16QAM	1	0	24.00	23.53	23.35	23.79
			1	24	24.00	23.65	23.89	23.92
			1	49	24.00	23.05	23.75	23.66
			25	0	23.00	22.48	22.71	22.39
			25	12	23.00	22.50	22.72	22.40
			25	24	23.00	22.45	22.60	22.27
			50	0	23.00	22.40	22.23	22.19
Band	Band Width	Modulation	RB Configuration		Tune-up	Channel/Frequency(MHz)		
			RB Size	RB Offset		40290/2560	40740/2605	41190/2650
LTE Band XLI	15MHz	QPSK	1	0	25.00	24.48	24.18	24.21
			1	37	25.00	24.31	24.31	24.05
			1	74	25.00	24.45	24.21	24.00
			36	0	24.00	23.47	23.44	23.12
			36	18	24.00	23.44	23.45	23.22
			36	37	24.00	23.40	23.46	23.21
			75	0	24.00	23.39	23.36	23.28
		16QAM	1	0	24.00	23.41	23.08	23.65
			1	37	24.00	23.16	23.08	23.57
			1	74	24.00	23.21	23.38	23.46
			36	0	23.00	22.42	22.44	22.39
			36	18	23.00	22.40	22.43	22.40
			36	37	23.00	22.31	22.43	22.18
			75	0	23.00	22.41	22.42	22.27

Band	Band Width	Modulation	RB Configuration		Tune-up	Channel/Frequency(MHz)		
			RB Size	RB Offset		40315/2562.5	40740/2605	41165/2647.5
LTE Band XLI	20MHz	QPSK	1	0	25.00	24.37	24.28	23.98
			1	49	25.00	24.57	24.47	24.41
			1	99	25.00	24.27	24.38	24.18
			50	0	24.00	23.41	23.45	23.16
			50	24	24.00	23.39	23.43	23.30
			50	49	24.00	23.40	23.42	23.29
			100	0	24.00	23.42	23.34	23.23
		16QAM	1	0	24.00	23.85	23.74	22.92
			1	49	24.00	23.95	23.36	23.04
			1	99	24.00	23.74	23.90	22.84
			50	0	23.00	22.46	22.40	22.37
			50	24	23.00	22.48	22.41	22.39
			50	49	23.00	22.43	22.48	22.31
			100	0	23.00	22.48	22.36	22.29

7.5. WLAN & Bluetooth Output Power

7.5.1. Output Power Results Of WLAN 2.4G

Mode	Channel	Frequency (MHz)	Tune-up	Output Power (dBm)
802.11b	1	2412	14.5	14.1
	6	2437	14.5	14.5
	11	2462	14.5	14.4
802.11g	1	2412	11.5	11.2
	6	2437	11.5	11.4
	11	2462	11.5	11.5
802.11n (HT20)	1	2412	11.5	11.2
	6	2437	11.5	11.4
	11	2462	11.5	11.5
802.11n (HT40)	3	2422	11.5	11.2
	6	2437	11.5	11.1
	9	2452	11.5	11.2

7.5.2. Output Power Results Of WLAN 5.2G

Mode	Channel	Frequency (MHz)	Tune-up	Output Power (dBm)
802.11a	36	5180	11.5	11.5
	40	5200	11.5	11.4
	48	5240	11.5	11.1
802.11n (HT20)	36	5180	11.5	11.5
	40	5200	11.5	11.3
	48	5240	11.5	11.2
802.11n (HT40)	38	5190	11.5	11.0
	46	5230	11.5	10.8
802.11ac (VHT20)	36	5180	11.5	11.2
	40	5200	11.5	11.4
	48	5240	11.5	11.0
802.11ac (VHT40)	38	5190	11.5	10.6
	46	5230	11.5	10.4
802.11ac (VHT80)	42	5210	11.5	9.8

7.5.3. Output Power Results Of WLAN 5.8G

Mode	Channel	Frequency (MHz)	Tune-up	Output Power (dBm)
802.11a	149	5745	11.0	10.6
	157	5785	11.0	10.0
	165	5825	11.0	9.8
802.11n (HT20)	149	5745	11.0	10.5
	157	5785	11.0	10.0
	165	5825	11.0	9.8
802.11n (HT40)	151	5755	11.0	10.1
	159	5795	11.0	9.5
802.11ac (VHT20)	149	5745	11.0	10.4
	157	5785	11.0	10.0
	165	5825	11.0	9.6
802.11ac (VHT40)	151	5755	11.0	10.0
	159	5795	11.0	9.3
802.11ac (VHT80)	155	5775	9.0	8.2

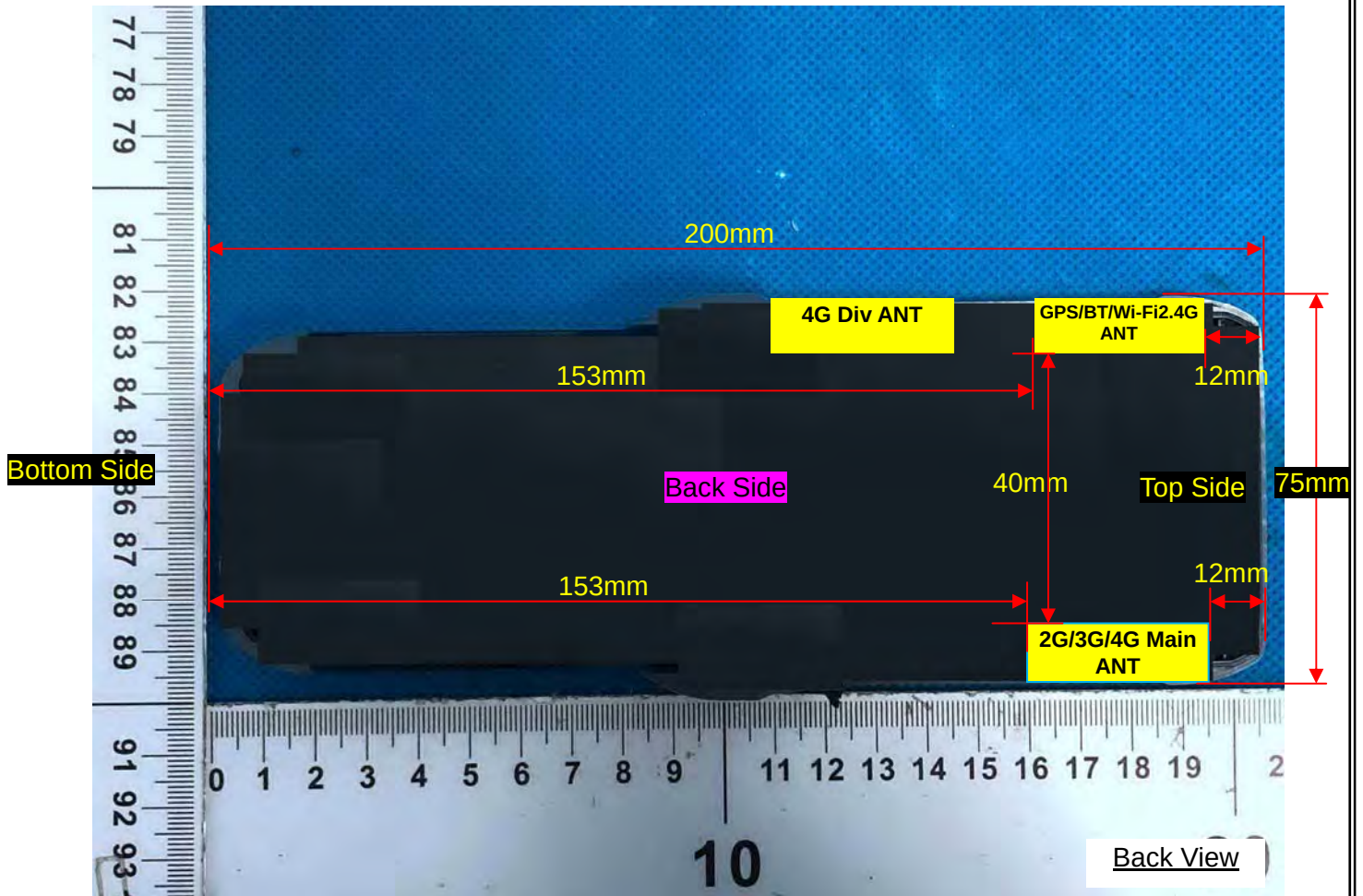
7.5.4. Output Power Results Of Bluetooth

BR+EDR	Output Power (dBm)				
	Channel	Tune-up	Data Rates		
			0CH	39CH	78CH
	1M	-0.90	-1.54	-0.93	-2.52
	2M	-1.00	-1.65	-1.00	-2.65
	3M	-0.50	-1.31	-0.69	-2.32

BLE	Channel	Tune-up	Output Power (dBm)
	0CH	-1.00	-1.61
	19CH	-1.00	-1.01
	39CH	-1.00	-2.33

8. Antenna Location

Right Side



Left Side

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	NO	Yes	NO
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	-0.50	0.89	5	2.480	0.28	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 $\leq 50\text{mm}$, 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	-0.50	0.89	5	2.480	7.5	0.037
Bluetooth	Body	-0.50	0.89	10	2.480	7.5	0.019
Bluetooth	Hotspot	-0.50	0.89	10	2.480	7.5	0.019

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)	0.064	0.048	2.05	27.32	28.00	0.075
Left Tilt 15 Degree	189/836.4	GPRS(GMSK 4TS)	0.038	0.019	2.54	27.32	28.00	0.044
Right Cheek	189/836.4	GPRS(GMSK 4TS)	0.058	0.041	0.24	27.32	28.00	0.068
Right Tilt 15 Degree	189/836.4	GPRS(GMSK 4TS)	0.031	0.013	-0.58	27.32	28.00	0.036

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)	0.099	0.066	1.73	27.32	28.00	0.116
Back Side	189/836.4	GPRS(GMSK 4TS)	0.057	0.044	0.93	27.32	28.00	0.067

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)	0.099	0.066	1.73	27.32	28.00	0.116
Back Side	189/836.4	GPRS(GMSK 4TS)	0.057	0.044	0.93	27.32	28.00	0.067
Left Side	189/836.4	GPRS(GMSK 4TS)	0.233	0.139	1.66	27.32	28.00	0.272
Top Side	189/836.4	GPRS(GMSK 4TS)	0.054	0.042	0.28	27.32	28.00	0.063

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 (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)
			1g	10g				
Left Cheek	661/1880	GPRS(GMSK 4TS)	0.180	0.105	1.50	23.75	24.00	0.191
Left Tilt 15 Degree	661/1880	GPRS(GMSK 4TS)	0.105	0.074	0.12	23.75	24.00	0.111

Right Cheek	661/1880	GPRS(GMSK 4TS)	0.167	0.086	-0.54	23.75	24.00	0.177
Right Tilt 15 Degree	661/1880	GPRS(GMSK 4TS)	0.081	0.060	2.91	23.75	24.00	0.086

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 (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)
			1g	10g				
Front Side	661/1880	GPRS(GMSK 4TS)	0.104	0.064	-3.64	23.75	24.00	0.110
Back Side	661/1880	GPRS(GMSK 4TS)	0.134	0.080	-3.90	23.75	24.00	0.142

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 (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)
			1g	10g				
Front Side	661/1880	GPRS(GMSK 4TS)	0.104	0.064	-3.64	23.75	24.00	0.110
Back Side	661/1880	GPRS(GMSK 4TS)	0.134	0.080	-3.90	23.75	24.00	0.142
Left Side	661/1880	GPRS(GMSK 4TS)	0.249	0.142	1.27	23.75	24.00	0.264
Top Side	661/1880	GPRS(GMSK 4TS)	0.187	0.105	0.12	23.75	24.00	0.198

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	0.094	0.070	1.38	22.53	23.00	0.105
Left Tilt 15 Degree	4182/836.4	RMC12.2K	0.057	0.032	1.02	22.53	23.00	0.064
Right Cheek	4182/836.4	RMC12.2K	0.081	0.060	1.57	22.53	23.00	0.090
Right Tilt 15 Degree	4182/836.4	RMC12.2K	0.048	0.024	2.51	22.53	23.00	0.053

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	0.204	0.105	0.21	22.53	23.00	0.227
Back Side	4182/836.4	RMC12.2K	0.315	0.159	1.54	22.53	23.00	0.351

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	0.204	0.105	0.21	22.53	23.00	0.227
Back Side	4182/836.4	RMC12.2K	0.315	0.159	1.54	22.53	23.00	0.351
Left Side	4182/836.4	RMC12.2K	0.402	0.235	0.18	22.53	23.00	0.448
Top Side	4182/836.4	RMC12.2K	0.124	0.082	0.80	22.53	23.00	0.138

NOTE: Hotspot SAR test results of WCDMA Band V

10.1.4. 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	0.330	0.191	1.93	22.34	23.00	0.384
Left Tilt 15 Degree	9400/1880	RMC12.2K	0.129	0.086	0.21	22.34	23.00	0.150
Right Cheek	9400/1880	RMC12.2K	0.302	0.158	0.57	22.34	23.00	0.352
Right Tilt 15 Degree	9400/1880	RMC12.2K	0.114	0.073	-1.87	22.34	23.00	0.133

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	0.235	0.140	-1.93	22.34	23.00	0.274
Back Side	9400/1880	RMC12.2K	0.298	0.175	-0.02	22.34	23.00	0.347

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	0.235	0.140	-1.93	22.34	23.00	0.274
Back Side	9400/1880	RMC12.2K	0.298	0.175	-0.02	22.34	23.00	0.347
Left Side	9400/1880	RMC12.2K	0.501	0.274	-3.76	22.34	23.00	0.583
Top Side	9400/1880	RMC12.2K	0.224	0.132	0.21	22.34	23.00	0.261

NOTE: Hotspot SAR test results of WCDMA Band II

10.1.5. SAR measurement Result of CDMA2000 BC0

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				
1xRTT								
Left Cheek	384/836.5	RC3 SO55 (Loopback)	0.048	0.036	2.16	24.46	24.50	0.048
Left Tilt 15 Degree	384/836.5	RC3 SO55 (Loopback)	0.024	0.016	0.21	24.46	24.50	0.024
Right Cheek	384/836.5	RC3 SO55 (Loopback)	0.041	0.032	3.21	24.46	24.50	0.041
Right Tilt 15 Degree	384/836.5	RC3 SO55 (Loopback)	0.020	0.012	-0.45	24.46	24.50	0.020
1xEVDO (Rev. 0)								
Left Cheek	384/836.5	RTAP: 153.6 kbps	0.045	0.034	2.30	24.43	24.50	0.046
Left Tilt 15 Degree	384/836.5	RTAP: 153.6 kbps	0.022	0.014	0.41	24.43	24.50	0.022
Right Cheek	384/836.5	RTAP: 153.6 kbps	0.039	0.030	1.25	24.43	24.50	0.040
Right Tilt 15 Degree	384/836.5	RTAP: 153.6 kbps	0.018	0.011	3.21	24.43	24.50	0.018

NOTE: Head SAR test results of CDMA2000 BC0

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	384/836.5	1xRTT RC3 SO32 (+F-SCH)	0.090	0.061	0.88	24.49	24.50	0.090
Back Side	384/836.5	1xRTT RC3 SO32 (+F-SCH)	0.048	0.037	-4.31	24.49	24.50	0.048

NOTE: Body-Worn SAR test results of CDMA2000 BC0

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	384/836.5	1xRTT RC3 SO32	0.090	0.061	0.88	24.49	24.50	0.090

		(+F-SCH)						
Back Side	384/836.5	1xRTT RC3 SO32 (+F-SCH)	0.048	0.037	-4.31	24.49	24.50	0.048
Left Side	384/836.5	1xRTT RC3 SO32 (+F-SCH)	0.224	0.129	2.34	24.49	24.50	0.225
Top Side	384/836.5	1xRTT RC3 SO32 (+F-SCH)	0.110	0.072	0.21	24.49	24.50	0.110

NOTE: Hotspot SAR test results of CDMA2000 BC0

10.1.6. SAR measurement Result of LTE Band XII

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	23095/707.5	10M QPSK(1,24)	0.021	0.019	1.96	23.41	23.50	0.021
Left Tilt 15 Degree	23095/707.5	10M QPSK(1,24)	0.015	0.012	0.21	23.41	23.50	0.015
Right Cheek	23095/707.5	10M QPSK(1,24)	0.020	0.017	1.40	23.41	23.50	0.020
Right Tilt 15 Degree	23095/707.5	10M QPSK(1,24)	0.013	0.010	-0.71	23.41	23.50	0.013
50%RB								
Left Cheek	23095/707.5	1.4M QPSK(3,1)	0.019	0.017	0.24	23.24	23.50	0.020
Left Tilt 15 Degree	23095/707.5	1.4M QPSK(3,1)	0.014	0.012	1.52	23.24	23.50	0.015
Right Cheek	23095/707.5	1.4M QPSK(3,1)	0.017	0.013	3.14	23.24	23.50	0.018
Right Tilt 15 Degree	23095/707.5	1.4M QPSK(3,1)	0.011	0.008	0.25	23.24	23.50	0.012

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 (±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)	0.014	0.010	2.05	23.41	23.50	0.014
Back Side	23095/707.5	10M QPSK(1,24)	0.018	0.014	1.81	23.41	23.50	0.018
50%RB								
Front Side	23095/707.5	1.4M QPSK(3,1)	0.013	0.010	1.77	23.24	23.50	0.014
Back Side	23095/707.5	1.4M QPSK(3,1)	0.018	0.014	3.64	23.24	23.50	0.019

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 (±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)	0.014	0.010	2.05	23.41	23.50	0.014
Back Side	23095/707.5	10M QPSK(1,24)	0.018	0.014	1.81	23.41	23.50	0.018
Left Side	23095/707.5	10M QPSK(1,24)	0.023	0.019	-0.38	23.41	23.50	0.023
Top Side	23095/707.5	10M QPSK(1,24)	0.015	0.011	2.57	23.41	23.50	0.015
50%RB								
Front Side	23095/707.5	1.4M QPSK(3,1)	0.013	0.010	1.77	23.24	23.50	0.014
Back Side	23095/707.5	1.4M QPSK(3,1)	0.018	0.014	3.64	23.24	23.50	0.019
Left Side	23095/707.5	1.4M QPSK(3,1)	0.021	0.018	2.59	23.24	23.50	0.022
Top Side	23095/707.5	1.4M QPSK(3,1)	0.014	0.011	-0.37	23.24	23.50	0.015

NOTE: Hotspot SAR test results of LTE Band XII

10.1.7. SAR measurement Result of LTE Band XVII

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	23790/710	10M QPSK(1,24)	0.024	0.021	1.97	23.32	23.50	0.025
Left Tilt 15 Degree	23790/710	10M QPSK(1,24)	0.017	0.015	3.10	23.32	23.50	0.018
Right Cheek	23790/710	10M QPSK(1,24)	0.022	0.020	0.24	23.32	23.50	0.023
Right Tilt 15 Degree	23790/710	10M QPSK(1,24)	0.015	0.013	-1.47	23.32	23.50	0.016
50%RB								
Left Cheek	23790/710	10M QPSK(25,24)	0.023	0.021	0.31	22.13	22.50	0.025
Left Tilt 15 Degree	23790/710	10M QPSK(25,24)	0.016	0.013	1.02	22.13	22.50	0.017
Right Cheek	23790/710	10M QPSK(25,24)	0.020	0.017	4.05	22.13	22.50	0.022
Right Tilt 15 Degree	23790/710	10M QPSK(25,24)	0.014	0.012	3.17	22.13	22.50	0.015

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 (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)
			1g	10g				
1RB								
Front Side	23790/710	10M QPSK(1,24)	0.014	0.012	3.14	23.32	23.50	0.015
Back Side	23790/710	10M QPSK(1,24)	0.016	0.013	2.07	23.32	23.50	0.017
50%RB								
Front Side	23790/710	10M QPSK(25,24)	0.012	0.010	3.28	22.13	22.50	0.013
Back Side	23790/710	10M QPSK(25,24)	0.015	0.013	0.74	22.13	22.50	0.016

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 (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)
			1g	10g				
1RB								
Front Side	23790/710	10M QPSK(1,24)	0.014	0.012	3.14	23.32	23.50	0.015
Back Side	23790/710	10M QPSK(1,24)	0.016	0.013	2.07	23.32	23.50	0.017
Left Side	23790/710	10M QPSK(1,24)	0.022	0.019	-2.78	23.32	23.50	0.023
Top Side	23790/710	10M QPSK(1,24)	0.018	0.015	1.47	23.32	23.50	0.019
50%RB								
Front Side	23790/710	10M QPSK(25,24)	0.012	0.010	3.28	22.13	22.50	0.013
Back Side	23790/710	10M QPSK(25,24)	0.015	0.013	0.74	22.13	22.50	0.016
Left Side	23790/710	10M QPSK(25,24)	0.020	0.017	3.61	22.13	22.50	0.022
Top Side	23790/710	10M QPSK(25,24)	0.015	0.012	-1.47	22.13	22.50	0.016

NOTE: Hotspot SAR test results of LTE Band XVII

10.1.8. SAR measurement Result of LTE 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				
1RB								
Left Cheek	20525/836.5	10M QPSK(1,24)	0.095	0.072	0.28	22.41	23.00	0.109
Left Tilt 15 Degree	20525/836.5	10M QPSK(1,24)	0.054	0.034	0.12	22.41	23.00	0.062
Right Cheek	20525/836.5	10M QPSK(1,24)	0.079	0.058	0.57	22.41	23.00	0.090
Right Tilt 15 Degree	20525/836.5	10M QPSK(1,24)	0.046	0.027	-1.87	22.41	23.00	0.053

50%RB								
Left Cheek	20525/836.5	1.4M QPSK(3,1)	0.095	0.060	2.88	22.97	23.00	0.096
Left Tilt 15 Degree	20525/836.5	1.4M QPSK(3,1)	0.051	0.032	0.25	22.97	23.00	0.051
Right Cheek	20525/836.5	1.4M QPSK(3,1)	0.078	0.051	-1.83	22.97	23.00	0.079
Right Tilt 15 Degree	20525/836.5	1.4M QPSK(3,1)	0.044	0.024	3.08	22.97	23.00	0.044

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 (±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)	0.278	0.175	2.59	22.41	23.00	0.318
Back Side	20525/836.5	10M QPSK(1,24)	0.325	0.208	0.14	22.41	23.00	0.372
50%RB								
Front Side	20525/836.5	1.4M QPSK(3,1)	0.201	0.084	0.21	22.97	23.00	0.202
Back Side	20525/836.5	1.4M QPSK(3,1)	0.229	0.109	-1.58	22.97	23.00	0.231

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 (±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)	0.278	0.175	2.59	22.41	23.00	0.318
Back Side	20525/836.5	10M QPSK(1,24)	0.325	0.208	0.14	22.41	23.00	0.372
Left Side	20525/836.5	10M QPSK(1,24)	0.380	0.220	0.49	22.41	23.00	0.435
Top Side	20525/836.5	10M QPSK(1,24)	0.264	0.167	2.54	22.41	23.00	0.302
50%RB								

Front Side	20525/836.5	1.4M QPSK(3,1)	0.201	0.084	0.21	22.97	23.00	0.202
Back Side	20525/836.5	1.4M QPSK(3,1)	0.229	0.109	-1.58	22.97	23.00	0.231
Left Side	20525/836.5	1.4M QPSK(3,1)	0.287	0.168	1.51	22.97	23.00	0.289
Top Side	20525/836.5	1.4M QPSK(3,1)	0.215	0.093	0.64	22.97	23.00	0.216

NOTE: Hotspot SAR test results of LTE Band V

10.1.9. 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(1,99)	0.731	0.477	-1.89	23.78	24.00	0.769
Left Tilt 15 Degree	20175/1732.5	20M QPSK(1,99)	0.345	0.201	0.21	23.78	24.00	0.363
Right Cheek	20175/1732.5	20M QPSK(1,99)	0.701	0.438	1.10	23.78	24.00	0.737
Right Tilt 15 Degree	20175/1732.5	20M QPSK(1,99)	0.312	0.187	0.54	23.78	24.00	0.328
50%RB								
Left Cheek	20175/1732.5	1.4M QPSK(3,2)	0.573	0.375	-1.13	23.75	24.00	0.607
Left Tilt 15 Degree	20175/1732.5	1.4M QPSK(3,2)	0.214	0.184	0.14	23.75	24.00	0.227
Right Cheek	20175/1732.5	1.4M QPSK(3,2)	0.551	0.300	0.57	23.75	24.00	0.584
Right Tilt 15 Degree	20175/1732.5	1.4M QPSK(3,2)	0.201	0.178	1.08	23.75	24.00	0.213

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(1,99)	0.701	0.258	0.21	23.78	24.00	0.737
Back Side	20175/1732.5	20M QPSK(1,99)	0.736	0.276	2.15	23.78	24.00	0.774
50%RB								
Front Side	20175/1732.5	1.4M QPSK(3,2)	0.512	0.187	0.21	23.75	24.00	0.542
Back Side	20175/1732.5	1.4M QPSK(3,2)	0.554	0.218	1.04	23.75	24.00	0.587

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(1,99)	0.701	0.258	0.21	23.78	24.00	0.737
Back Side	20175/1732.5	20M QPSK(1,99)	0.736	0.276	2.15	23.78	24.00	0.774
Left Side	20175/1732.5	20M QPSK(1,99)	1.019	0.580	0.09	23.78	24.00	1.072
Top Side	20175/1732.5	20M QPSK(1,99)	0.758	0.291	0.25	23.78	24.00	0.797
Left Side	20050/1720	20M QPSK(1,99)	1.111	0.635	-3.60	23.54	24.00	1.235
Left Side - Repeated	20050/1720	20M QPSK(1,99)	1.104	0.629	1.05	23.54	24.00	1.227
Left Side	20300/1745	20M QPSK(1,99)	1.009	0.579	4.07	23.73	24.00	1.074
50%RB								
Front Side	20175/1732.5	1.4M QPSK(3,2)	0.512	0.187	0.21	23.75	24.00	0.542
Back Side	20175/1732.5	1.4M QPSK(3,2)	0.554	0.218	1.04	23.75	24.00	0.587

Left Side	20175/1732. 5	1.4M QPSK(3,2)	0.816	0.467	-1.41	23.75	24.00	0.864
Left Side - Repeated	20175/1732. 5	1.4M QPSK(3,2)	0.811	0.460	1.41	23.75	24.00	0.859
Top Side	20175/1732. 5	1.4M QPSK(3,2)	0.597	0.268	0.27	23.75	24.00	0.632
Left Side	19957/1710. 7	1.4M QPSK(3,2)	0.801	0.439	1.54	23.47	24.00	0.905
Left Side	20393/1754. 3	1.4M QPSK(3,2)	0.791	0.431	2.09	23.23	24.00	0.944
100%RB								
Left Side	20175/1732. 5	20M QPSK(100,0)	0.712	0.387	-0.64	22.34	23.00	0.829

NOTE: Hotspot SAR test results of LTE Band IV

10.1.10. 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 Cheek	18900/1880	20M QPSK(1,49)	0.346	0.215	-1.44	23.98	24.00	0.348
Left Tilt 15 Degree	18900/1880	20M QPSK(1,49)	0.121	0.091	0.21	23.98	24.00	0.122
Right Cheek	18900/1880	20M QPSK(1,49)	0.310	0.197	1.20	23.98	24.00	0.311
Right Tilt 15 Degree	18900/1880	20M QPSK(1,49)	0.105	0.082	1.54	23.98	24.00	0.105
50%RB								
Left Cheek	18900/1880	1.4M QPSK(3,2)	0.263	0.163	-0.60	23.97	24.00	0.265
Left Tilt 15 Degree	18900/1880	1.4M QPSK(3,2)	0.118	0.087	0.21	23.97	24.00	0.119
Right Cheek	18900/1880	1.4M QPSK(3,2)	0.229	0.142	1.58	23.97	24.00	0.231
Right	18900/1880	1.4M QPSK(3,2)	0.102	0.080	0.91	23.97	24.00	0.103

Tilt 15 Degree								
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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%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)
			1g	10g				
1RB								
Front Side	18900/1880	20M QPSK(1,49)	0.312	0.111	0.21	23.98	24.00	0.313
Back Side	18900/1880	20M QPSK(1,49)	0.359	0.164	0.31	23.98	24.00	0.361
50%RB								
Front Side	18900/1880	1.4M QPSK(3,2)	0.302	0.105	0.58	23.97	24.00	0.304
Back Side	18900/1880	1.4M QPSK(3,2)	0.331	0.152	3.27	23.97	24.00	0.333

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)	0.312	0.111	0.21	23.98	24.00	0.313
Back Side	18900/1880	20M QPSK(1,49)	0.359	0.164	0.31	23.98	24.00	0.361
Left Side	18900/1880	20M QPSK(1,49)	0.457	0.252	-2.61	23.98	24.00	0.459
Top Side	18900/1880	20M QPSK(1,49)	0.321	0.128	0.57	23.98	24.00	0.322
50%RB								
Front Side	18900/1880	1.4M QPSK(3,2)	0.302	0.105	0.58	23.97	24.00	0.304
Back Side	18900/1880	1.4M QPSK(3,2)	0.331	0.152	3.27	23.97	24.00	0.333
Left Side	18900/1880	1.4M QPSK(3,2)	0.363	0.201	0.09	23.97	24.00	0.366
Top Side	18900/1880	1.4M QPSK(3,2)	0.318	0.115	1.08	23.97	24.00	0.320

NOTE: Hotspot SAR test results of LTE Band II

10.1.11. 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(1,49)	0.551	0.287	3.78	24.00	24.00	0.551
Left Tilt 15 Degree	21100/2535	20M QPSK(1,49)	0.264	0.147	0.21	24.00	24.00	0.264
Right Cheek	21100/2535	20M QPSK(1,49)	0.504	0.235	1.08	24.00	24.00	0.504
Right Tilt 15 Degree	21100/2535	20M QPSK(1,49)	0.247	0.127	-4.06	24.00	24.00	0.247
50%RB								
Left Cheek	21100/2535	20M QPSK(50,49)	0.438	0.229	-2.99	22.87	23.00	0.451
Left Tilt 15 Degree	21100/2535	20M QPSK(50,49)	0.241	0.128	0.54	22.87	23.00	0.248
Right Cheek	21100/2535	20M QPSK(50,49)	0.421	0.210	2.54	22.87	23.00	0.434
Right Tilt 15 Degree	21100/2535	20M QPSK(50,49)	0.231	0.118	1.87	22.87	23.00	0.238

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(1,49)	0.745	0.258	0.11	24.00	24.00	0.745
Back Side	21100/2535	20M QPSK(1,49)	0.764	0.269	1.40	24.00	24.00	0.764
50%RB								
Front Side	21100/2535	20M QPSK(50,49)	0.725	0.227	0.25	22.87	23.00	0.747
Back Side	21100/2535	20M QPSK(50,49)	0.751	0.251	0.17	22.87	23.00	0.774

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%)	Conduc ted power (dBm)	Tune-u p power (dBm)	Scaled SAR 1g (W/Kg)
			1g	10g				
1RB								
Front Side	21100/2535	20M QPSK(1,49)	0.745	0.258	0.11	24.00	24.00	0.745
Back Side	21100/2535	20M QPSK(1,49)	0.764	0.269	1.40	24.00	24.00	0.764
Left Side	21100/2535	20M QPSK(1,49)	1.172	0.588	-0.33	24.00	24.00	1.172
Left Side - Repeated	21100/2535	20M QPSK(1,49)	1.140	0.571	0.21	24.00	24.00	1.140
Top Side	21100/2535	20M QPSK(1,49)	0.705	0.221	0.21	24.00	24.00	0.705
Left Side	20850/2510	20M QPSK(1,49)	1.068	0.537	0.39	23.94	24.00	1.083
Left Side	21350/2560	20M QPSK(1,49)	1.121	0.565	-1.05	23.98	24.00	1.126
50%RB								
Front Side	21100/2535	20M QPSK(50,49)	0.725	0.227	0.25	22.87	23.00	0.747
Back Side	21100/2535	20M QPSK(50,49)	0.751	0.251	0.17	22.87	23.00	0.774
Left Side	21100/2535	20M QPSK(50,49)	1.001	0.503	-2.16	22.87	23.00	1.031
Left Side - Repeated	21100/2535	20M QPSK(50,49)	0.978	0.491	0.54	22.87	23.00	1.008
Top Side	21100/2535	20M QPSK(50,49)	0.678	0.204	1.08	22.87	23.00	0.699
Left Side	20850/2510	20M QPSK(50,49)	0.865	0.430	-0.41	22.73	23.00	0.920
Left Side	21350/2560	20M QPSK(50,49)	0.967	0.486	-0.90	22.77	23.00	1.020
100%RB								
Left Side	21100/2535	20M QPSK(100,0)	0.701	0.211	0.51	22.86	23.00	0.724

NOTE: Hotspot SAR test results of LTE Band VII

10.1.12. SAR measurement Result of LTE Band XLI

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	40740/2605	20M QPSK(1,49)	0.131	0.075	-0.13	24.47	25.00	0.148
Left Tilt 15 Degree	40740/2605	20M QPSK(1,49)	0.084	0.041	0.21	24.47	25.00	0.095
Right Cheek	40740/2605	20M QPSK(1,49)	0.124	0.061	1.02	24.47	25.00	0.140
Right Tilt 15 Degree	40740/2605	20M QPSK(1,49)	0.072	0.034	2.54	24.47	25.00	0.081
50%RB								
Left Cheek	40740/2605	20M QPSK(50,0)	0.110	0.063	-4.68	23.45	24.00	0.125
Left Tilt 15 Degree	40740/2605	20M QPSK(50,0)	0.075	0.037	0.12	23.45	24.00	0.085
Right Cheek	40740/2605	20M QPSK(50,0)	0.119	0.051	2.58	23.45	24.00	0.135
Right Tilt 15 Degree	40740/2605	20M QPSK(50,0)	0.065	0.031	3.21	23.45	24.00	0.074

NOTE: Head SAR test results of LTE Band XLI

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	40740/2605	20M QPSK(1,49)	0.080	0.053	-1.27	24.47	25.00	0.090
Back Side	40740/2605	20M QPSK(1,49)	0.128	0.084	0.21	24.47	25.00	0.145
50%RB								
Front Side	40740/2605	20M QPSK(50,0)	0.071	0.045	0.21	23.45	24.00	0.081
Back Side	40740/2605	20M QPSK(50,0)	0.115	0.076	3.51	23.45	24.00	0.131

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

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	40740/2605	20M QPSK(1,49)	0.080	0.053	-1.27	24.47	25.00	0.090
Back Side	40740/2605	20M QPSK(1,49)	0.128	0.084	0.21	24.47	25.00	0.145
Left Side	40740/2605	20M QPSK(1,49)	0.352	0.188	-1.91	24.47	25.00	0.398
Top Side	40740/2605	20M QPSK(1,49)	0.099	0.063	-1.54	24.47	25.00	0.112
50%RB								
Front Side	40740/2605	20M QPSK(50,0)	0.071	0.045	0.21	23.45	24.00	0.081
Back Side	40740/2605	20M QPSK(50,0)	0.115	0.076	3.51	23.45	24.00	0.131
Left Side	40740/2605	20M QPSK(50,0)	0.282	0.152	0.04	23.45	24.00	0.320
Top Side	40740/2605	20M QPSK(50,0)	0.087	0.053	2.07	23.45	24.00	0.099

NOTE: Hotspot SAR test results of LTE Band XLI

10.1.13. 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	0.340	0.175	-1.64	14.50	14.50	0.340
Left Tilt 15 Degree	6/2437	802.11 b	0.154	0.091	2.01	14.50	14.50	0.154
Right Cheek	6/2437	802.11 b	0.312	0.164	1.25	14.50	14.50	0.312
Right Tilt 15 Degree	6/2437	802.11 b	0.147	0.082	3.01	14.50	14.50	0.147

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	0.174	0.102	2.01	14.50	14.50	0.174
Back Side	6/2437	802.11 b	0.201	0.121	1.05	14.50	14.50	0.201

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

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	6/2437	802.11 b	0.174	0.102	2.01	14.50	14.50	0.174
Back Side	6/2437	802.11 b	0.201	0.121	1.05	14.50	14.50	0.201
Right Side	6/2437	802.11 b	0.255	0.142	-1.04	14.50	14.50	0.255
Top Side	6/2437	802.11 b	0.197	0.115	3.21	14.50	14.50	0.197

NOTE: Hotspot SAR test results of WLAN 2.4G

10.1.14. SAR measurement Result of WLAN 5.2G

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	40/5200	802.11 a	0.703	0.239	-2.04	11.40	11.50	0.719
Left Tilt 15 Degree	40/5200	802.11 a	0.321	0.087	1.41	11.40	11.50	0.328
Right Cheek	40/5200	802.11 a	0.687	0.201	0.35	11.40	11.50	0.703
Right Tilt 15 Degree	40/5200	802.11 a	0.304	0.062	4.21	11.40	11.50	0.311

NOTE: Head SAR test results of WLAN 5.2G

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	40/5200	802.11 a	0.657	0.314	-3.47	11.40	11.50	0.672
Back Side	40/5200	802.11 a	0.664	0.331	0.21	11.40	11.50	0.679

NOTE: Body-Worn SAR test results of WLAN 5.2G

10.1.15. SAR measurement Result of WLAN 5.8G

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	157/5785	802.11 a	0.426	0.160	-2.59	10.00	11.00	0.536
Left Tilt 15 Degree	157/5785	802.11 a	0.254	0.075	0.21	10.00	11.00	0.320

Right Cheek	157/5785	802.11 a	0.401	0.142	1.04	10.00	11.00	0.505
Right Tilt 15 Degree	157/5785	802.11 a	0.231	0.062	-1.45	10.00	11.00	0.291

NOTE: Head SAR test results of WLAN 5.8G

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	157/5785	802.11 a	0.214	0.087	-2.51	10.00	11.00	0.269
Back Side	157/5785	802.11 a	0.264	0.102	1.41	10.00	11.00	0.332

NOTE: Body-Worn SAR test results of WLAN 5.8G

10.2. SAR Summation Scenario

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

- Scalar SAR summation $< 1.6\text{W/kg}$.
- $\text{SPLSR} = (\text{SAR}_1 + \text{SAR}_2)^{1.5} / (\text{min. separation distance, mm})$, 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 $\text{SPLSR} \leq 0.04$, 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	0.075	0.340	0.415	N/A	N/A
	Left Tilt 15 Degree	0.044	0.154	0.198	N/A	N/A
	Right Cheek	0.068	0.312	0.380	N/A	N/A
	Right Tilt 15 Degree	0.036	0.147	0.183	N/A	N/A
Body-Worn	Front Side	0.116	0.174	0.290	N/A	N/A
	Back Side	0.067	0.201	0.268	N/A	N/A
Hotspot	Front Side	0.116	0.174	0.290	N/A	N/A
	Back Side	0.067	0.201	0.268	N/A	N/A
	Left Side	0.272	N/A	0.272	N/A	N/A
	Right Side	N/A	0.255	0.255	N/A	N/A
	Top Side	0.063	0.197	0.260	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	0.191	0.340	0.531	N/A	N/A

	Left Tilt 15 Degree	0.111	0.154	0.265	N/A	N/A
	Right Cheek	0.177	0.312	0.489	N/A	N/A
	Right Tilt 15 Degree	0.086	0.147	0.233	N/A	N/A
Body-Worn	Front Side	0.110	0.174	0.284	N/A	N/A
	Back Side	0.142	0.201	0.343	N/A	N/A
Hotspot	Front Side	0.110	0.174	0.284	N/A	N/A
	Back Side	0.142	0.201	0.343	N/A	N/A
	Left Side	0.264	N/A	0.264	N/A	N/A
	Right Side	N/A	0.255	0.255	N/A	N/A
	Top Side	0.198	0.197	0.395	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	0.105	0.340	0.445	N/A	N/A
	Left Tilt 15 Degree	0.064	0.154	0.218	N/A	N/A
	Right Cheek	0.090	0.312	0.402	N/A	N/A
	Right Tilt 15 Degree	0.053	0.147	0.200	N/A	N/A
Body-Worn	Front Side	0.227	0.174	0.401	N/A	N/A
	Back Side	0.351	0.201	0.552	N/A	N/A
Hotspot	Front Side	0.227	0.174	0.401	N/A	N/A
	Back Side	0.351	0.201	0.552	N/A	N/A
	Left Side	0.448	N/A	0.448	N/A	N/A
	Right Side	N/A	0.255	0.255	N/A	N/A
	Top Side	0.138	0.197	0.335	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 II	WLAN 2.4G			
Head	Left Cheek	0.384	0.340	0.724	N/A	N/A
	Left Tilt 15 Degree	0.150	0.154	0.304	N/A	N/A
	Right Cheek	0.352	0.312	0.664	N/A	N/A
	Right Tilt 15 Degree	0.133	0.147	0.280	N/A	N/A
Body-Worn	Front Side	0.274	0.174	0.448	N/A	N/A
	Back Side	0.347	0.201	0.548	N/A	N/A
Hotspot	Front Side	0.274	0.174	0.448	N/A	N/A

	Back Side	0.347	0.201	0.548	N/A	N/A
	Left Side	0.583	N/A	0.583	N/A	N/A
	Right Side	N/A	0.255	0.255	N/A	N/A
	Top Side	0.261	0.197	0.458	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
		CDMA2000 BC0	WLAN 2.4G			
Head	Left Cheek	0.048	0.340	0.388	N/A	N/A
	Left Tilt 15 Degree	0.024	0.154	0.178	N/A	N/A
	Right Cheek	0.041	0.312	0.353	N/A	N/A
	Right Tilt 15 Degree	0.020	0.147	0.167	N/A	N/A
Body-Worn	Front Side	0.090	0.174	0.264	N/A	N/A
	Back Side	0.048	0.201	0.249	N/A	N/A
Hotspot	Front Side	0.090	0.174	0.264	N/A	N/A
	Back Side	0.048	0.201	0.249	N/A	N/A
	Left Side	0.225	N/A	0.225	N/A	N/A
	Right Side	N/A	0.255	0.255	N/A	N/A
	Top Side	0.110	0.197	0.307	N/A	N/A

NOTE: 1-g SAR Simultaneous Tx Combination of CDMA2000 BC0 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	0.021	0.340	0.361	N/A	N/A
	Left Tilt 15 Degree	0.015	0.154	0.169	N/A	N/A
	Right Cheek	0.020	0.312	0.332	N/A	N/A
	Right Tilt 15 Degree	0.013	0.147	0.160	N/A	N/A
Body-Worn	Front Side	0.014	0.174	0.188	N/A	N/A
	Back Side	0.019	0.201	0.220	N/A	N/A
Hotspot	Front Side	0.014	0.174	0.188	N/A	N/A
	Back Side	0.019	0.201	0.220	N/A	N/A
	Left Side	0.023	N/A	0.023	N/A	N/A
	Right Side	N/A	0.255	0.255	N/A	N/A
	Top Side	0.015	0.197	0.212	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	0.025	0.340	0.365	N/A	N/A
	Left Tilt 15 Degree	0.018	0.154	0.172	N/A	N/A
	Right Cheek	0.023	0.312	0.335	N/A	N/A
	Right Tilt 15 Degree	0.016	0.147	0.163	N/A	N/A
Body-Worn	Front Side	0.015	0.174	0.189	N/A	N/A
	Back Side	0.017	0.201	0.218	N/A	N/A
Hotspot	Front Side	0.015	0.174	0.189	N/A	N/A
	Back Side	0.017	0.201	0.218	N/A	N/A
	Left Side	0.023	N/A	0.023	N/A	N/A
	Right Side	N/A	0.255	0.255	N/A	N/A
	Top Side	0.019	0.197	0.216	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
		LTE Band V	WLAN 2.4G			
Head	Left Cheek	0.109	0.340	0.449	N/A	N/A
	Left Tilt 15 Degree	0.062	0.154	0.216	N/A	N/A
	Right Cheek	0.090	0.312	0.402	N/A	N/A
	Right Tilt 15 Degree	0.053	0.147	0.200	N/A	N/A
Body-Worn	Front Side	0.318	0.174	0.492	N/A	N/A
	Back Side	0.372	0.201	0.573	N/A	N/A
Hotspot	Front Side	0.318	0.174	0.492	N/A	N/A
	Back Side	0.372	0.201	0.573	N/A	N/A
	Left Side	0.435	N/A	0.435	N/A	N/A
	Right Side	N/A	0.255	0.255	N/A	N/A
	Top Side	0.302	0.197	0.499	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	0.769	0.340	1.109	N/A	N/A
	Left Tilt 15 Degree	0.363	0.154	0.517	N/A	N/A
	Right Cheek	0.737	0.312	1.049	N/A	N/A
	Right Tilt 15 Degree	0.328	0.147	0.475	N/A	N/A

Body-Worn	Front Side	0.737	0.174	0.911	N/A	N/A
	Back Side	0.774	0.201	0.975	N/A	N/A
Hotspot	Front Side	0.737	0.174	0.911	N/A	N/A
	Back Side	0.774	0.201	0.975	N/A	N/A
	Left Side	1.235	N/A	1.235	N/A	N/A
	Right Side	N/A	0.255	0.255	N/A	N/A
	Top Side	0.797	0.197	0.994	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	0.348	0.340	0.688	N/A	N/A
	Left Tilt 15 Degree	0.122	0.154	0.276	N/A	N/A
	Right Cheek	0.311	0.312	0.623	N/A	N/A
	Right Tilt 15 Degree	0.105	0.147	0.252	N/A	N/A
Body-Worn	Front Side	0.313	0.174	0.487	N/A	N/A
	Back Side	0.361	0.201	0.562	N/A	N/A
Hotspot	Front Side	0.313	0.174	0.487	N/A	N/A
	Back Side	0.361	0.201	0.562	N/A	N/A
	Left Side	0.459	N/A	0.459	N/A	N/A
	Right Side	N/A	0.255	0.255	N/A	N/A
	Top Side	0.322	0.197	0.519	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	0.551	0.340	0.891	N/A	N/A
	Left Tilt 15 Degree	0.264	0.154	0.418	N/A	N/A
	Right Cheek	0.504	0.312	0.816	N/A	N/A
	Right Tilt 15 Degree	0.247	0.147	0.394	N/A	N/A
Body-Worn	Front Side	0.747	0.174	0.921	N/A	N/A
	Back Side	0.774	0.201	0.975	N/A	N/A
Hotspot	Front Side	0.747	0.174	0.921	N/A	N/A
	Back Side	0.774	0.201	0.975	N/A	N/A
	Left Side	1.172	N/A	1.172	N/A	N/A
	Right Side	N/A	0.255	0.255	N/A	N/A
	Top Side	0.705	0.197	0.902	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 XLI	WLAN 2.4G			
Head	Left Cheek	0.148	0.340	0.488	N/A	N/A
	Left Tilt 15 Degree	0.095	0.154	0.249	N/A	N/A
	Right Cheek	0.140	0.312	0.452	N/A	N/A
	Right Tilt 15 Degree	0.081	0.147	0.228	N/A	N/A
Body-Worn	Front Side	0.090	0.174	0.264	N/A	N/A
	Back Side	0.145	0.201	0.346	N/A	N/A
Hotspot	Front Side	0.090	0.174	0.264	N/A	N/A
	Back Side	0.145	0.201	0.346	N/A	N/A
	Left Side	0.398	N/A	0.398	N/A	N/A
	Right Side	N/A	0.255	0.255	N/A	N/A
	Top Side	0.112	0.197	0.309	N/A	N/A

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

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		GSM 850	Bluetooth			
Head	Left Cheek	0.075	0.037	0.112	N/A	N/A
	Left Tilt 15 Degree	0.044	0.037	0.082	N/A	N/A
	Right Cheek	0.068	0.037	0.105	N/A	N/A
	Right Tilt 15 Degree	0.036	0.037	0.074	N/A	N/A
Body-Worn	Front Side	0.116	0.019	0.134	N/A	N/A
	Back Side	0.067	0.019	0.085	N/A	N/A
Hotspot	Front Side	0.116	0.019	0.134	N/A	N/A
	Back Side	0.067	0.019	0.085	N/A	N/A
	Left Side	0.272	N/A	0.272	N/A	N/A
	Right Side	N/A	0.019	0.019	N/A	N/A
	Top Side	0.063	0.019	0.082	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	0.191	0.037	0.228	N/A	N/A
	Left Tilt 15 Degree	0.111	0.037	0.149	N/A	N/A
	Right Cheek	0.177	0.037	0.214	N/A	N/A
	Right Tilt 15 Degree	0.086	0.037	0.123	N/A	N/A
Body-Worn	Front Side	0.110	0.019	0.129	N/A	N/A

	Back Side	0.142	0.019	0.161	N/A	N/A
Hotspot	Front Side	0.110	0.019	0.129	N/A	N/A
	Back Side	0.142	0.019	0.161	N/A	N/A
	Left Side	0.264	N/A	0.264	N/A	N/A
	Right Side	N/A	0.019	0.019	N/A	N/A
	Top Side	0.198	0.019	0.217	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	0.105	0.037	0.142	N/A	N/A
	Left Tilt 15 Degree	0.064	0.037	0.101	N/A	N/A
	Right Cheek	0.090	0.037	0.128	N/A	N/A
	Right Tilt 15 Degree	0.053	0.037	0.091	N/A	N/A
Body-Worn	Front Side	0.227	0.019	0.246	N/A	N/A
	Back Side	0.351	0.019	0.370	N/A	N/A
Hotspot	Front Side	0.227	0.019	0.246	N/A	N/A
	Back Side	0.351	0.019	0.370	N/A	N/A
	Left Side	0.448	N/A	0.448	N/A	N/A
	Right Side	N/A	0.019	0.019	N/A	N/A
	Top Side	0.138	0.019	0.157	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 II	Bluetooth			
Head	Left Cheek	0.384	0.037	0.422	N/A	N/A
	Left Tilt 15 Degree	0.150	0.037	0.188	N/A	N/A
	Right Cheek	0.352	0.037	0.389	N/A	N/A
	Right Tilt 15 Degree	0.133	0.037	0.170	N/A	N/A
Body-Worn	Front Side	0.274	0.019	0.292	N/A	N/A
	Back Side	0.347	0.019	0.366	N/A	N/A
Hotspot	Front Side	0.274	0.019	0.292	N/A	N/A
	Back Side	0.347	0.019	0.366	N/A	N/A
	Left Side	0.583	N/A	0.583	N/A	N/A
	Right Side	N/A	0.019	0.019	N/A	N/A
	Top Side	0.261	0.019	0.279	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
		CDMA2000 BC0	Bluetooth			
Head	Left Cheek	0.048	0.037	0.086	N/A	N/A
	Left Tilt 15 Degree	0.024	0.037	0.062	N/A	N/A
	Right Cheek	0.041	0.037	0.079	N/A	N/A
	Right Tilt 15 Degree	0.020	0.037	0.058	N/A	N/A
Body-Worn	Front Side	0.090	0.019	0.109	N/A	N/A
	Back Side	0.048	0.019	0.067	N/A	N/A
Hotspot	Front Side	0.090	0.019	0.109	N/A	N/A
	Back Side	0.048	0.019	0.067	N/A	N/A
	Left Side	0.225	N/A	0.225	N/A	N/A
	Right Side	N/A	0.019	0.019	N/A	N/A
	Top Side	0.110	0.019	0.129	N/A	N/A

NOTE: 1-g SAR Simultaneous Tx Combination of CDMA2000 BC0 and Bluetooth

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		LTE Band XII	Bluetooth			
Head	Left Cheek	0.021	0.037	0.059	N/A	N/A
	Left Tilt 15 Degree	0.015	0.037	0.053	N/A	N/A
	Right Cheek	0.020	0.037	0.058	N/A	N/A
	Right Tilt 15 Degree	0.013	0.037	0.051	N/A	N/A
Body-Worn	Front Side	0.014	0.019	0.033	N/A	N/A
	Back Side	0.019	0.019	0.038	N/A	N/A
Hotspot	Front Side	0.014	0.019	0.033	N/A	N/A
	Back Side	0.019	0.019	0.038	N/A	N/A
	Left Side	0.023	N/A	0.023	N/A	N/A
	Right Side	N/A	0.019	0.019	N/A	N/A
	Top Side	0.015	0.019	0.034	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	0.025	0.037	0.062	N/A	N/A
	Left Tilt 15 Degree	0.018	0.037	0.055	N/A	N/A
	Right Cheek	0.023	0.037	0.060	N/A	N/A
	Right Tilt 15	0.016	0.037	0.053	N/A	N/A

	Degree					
Body-Worn	Front Side	0.015	0.019	0.033	N/A	N/A
	Back Side	0.017	0.019	0.035	N/A	N/A
Hotspot	Front Side	0.015	0.019	0.033	N/A	N/A
	Back Side	0.017	0.019	0.035	N/A	N/A
	Left Side	0.023	N/A	0.023	N/A	N/A
	Right Side	N/A	0.019	0.019	N/A	N/A
	Top Side	0.019	0.019	0.037	N/A	N/A

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

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		LTE Band V	Bluetooth			
Head	Left Cheek	0.109	0.037	0.146	N/A	N/A
	Left Tilt 15 Degree	0.062	0.037	0.099	N/A	N/A
	Right Cheek	0.090	0.037	0.127	N/A	N/A
	Right Tilt 15 Degree	0.053	0.037	0.090	N/A	N/A
Body-Worn	Front Side	0.318	0.019	0.337	N/A	N/A
	Back Side	0.372	0.019	0.391	N/A	N/A
Hotspot	Front Side	0.318	0.019	0.337	N/A	N/A
	Back Side	0.372	0.019	0.391	N/A	N/A
	Left Side	0.435	N/A	0.435	N/A	N/A
	Right Side	N/A	0.019	0.019	N/A	N/A
	Top Side	0.302	0.019	0.321	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	0.769	0.037	0.806	N/A	N/A
	Left Tilt 15 Degree	0.363	0.037	0.400	N/A	N/A
	Right Cheek	0.737	0.037	0.774	N/A	N/A
	Right Tilt 15 Degree	0.328	0.037	0.365	N/A	N/A
Body-Worn	Front Side	0.737	0.019	0.756	N/A	N/A
	Back Side	0.774	0.019	0.793	N/A	N/A
Hotspot	Front Side	0.737	0.019	0.756	N/A	N/A
	Back Side	0.774	0.019	0.793	N/A	N/A
	Left Side	1.235	N/A	1.235	N/A	N/A
	Right Side	N/A	0.019	0.019	N/A	N/A
	Top Side	0.797	0.019	0.816	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 (W/Kg)	SPLSR	Remark
		LTE Band II	Bluetooth			
Head	Left Cheek	0.348	0.037	0.385	N/A	N/A
	Left Tilt 15 Degree	0.122	0.037	0.159	N/A	N/A
	Right Cheek	0.311	0.037	0.348	N/A	N/A
	Right Tilt 15 Degree	0.105	0.037	0.142	N/A	N/A
Body-Worn	Front Side	0.313	0.019	0.332	N/A	N/A
	Back Side	0.361	0.019	0.380	N/A	N/A
Hotspot	Front Side	0.313	0.019	0.332	N/A	N/A
	Back Side	0.361	0.019	0.380	N/A	N/A
	Left Side	0.459	N/A	0.459	N/A	N/A
	Right Side	N/A	0.019	0.019	N/A	N/A
	Top Side	0.322	0.019	0.341	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	0.551	0.037	0.588	N/A	N/A
	Left Tilt 15 Degree	0.264	0.037	0.301	N/A	N/A
	Right Cheek	0.504	0.037	0.541	N/A	N/A
	Right Tilt 15 Degree	0.247	0.037	0.284	N/A	N/A
Body-Worn	Front Side	0.747	0.019	0.766	N/A	N/A
	Back Side	0.774	0.019	0.793	N/A	N/A
Hotspot	Front Side	0.747	0.019	0.766	N/A	N/A
	Back Side	0.774	0.019	0.793	N/A	N/A
	Left Side	1.172	N/A	1.172	N/A	N/A
	Right Side	N/A	0.019	0.019	N/A	N/A
	Top Side	0.705	0.019	0.724	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 XLI	Bluetooth			
Head	Left Cheek	0.148	0.037	0.185	N/A	N/A
	Left Tilt 15 Degree	0.095	0.037	0.132	N/A	N/A
	Right Cheek	0.140	0.037	0.177	N/A	N/A
	Right Tilt 15 Degree	0.081	0.037	0.118	N/A	N/A

Body-Worn	Front Side	0.090	0.019	0.109	N/A	N/A
	Back Side	0.145	0.019	0.164	N/A	N/A
Hotspot	Front Side	0.090	0.019	0.109	N/A	N/A
	Back Side	0.145	0.019	0.164	N/A	N/A
	Left Side	0.398	N/A	0.398	N/A	N/A
	Right Side	N/A	0.019	0.019	N/A	N/A
	Top Side	0.112	0.019	0.131	N/A	N/A

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

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		GSM 850	WLAN 5.2G			
Head	Left Cheek	0.075	0.719	0.794	N/A	N/A
	Left Tilt 15 Degree	0.044	0.328	0.373	N/A	N/A
	Right Cheek	0.068	0.703	0.771	N/A	N/A
	Right Tilt 15 Degree	0.036	0.311	0.347	N/A	N/A
Body-Worn	Front Side	0.116	0.672	0.788	N/A	N/A
	Back Side	0.067	0.679	0.746	N/A	N/A

NOTE: 1-g SAR Simultaneous Tx Combination of GSM850 and WLAN 5.2G.

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		GSM 1900	WLAN 5.2G			
Head	Left Cheek	0.191	0.719	0.910	N/A	N/A
	Left Tilt 15 Degree	0.111	0.328	0.440	N/A	N/A
	Right Cheek	0.177	0.703	0.880	N/A	N/A
	Right Tilt 15 Degree	0.086	0.311	0.397	N/A	N/A
Body-Worn	Front Side	0.110	0.672	0.782	N/A	N/A
	Back Side	0.142	0.679	0.821	N/A	N/A

NOTE: 1-g SAR Simultaneous Tx Combination of GSM1900 and WLAN 5.2G.

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		WCDMA Band V	WLAN 5.2G			
Head	Left Cheek	0.105	0.719	0.824	N/A	N/A
	Left Tilt 15 Degree	0.064	0.328	0.392	N/A	N/A
	Right Cheek	0.090	0.703	0.793	N/A	N/A
	Right Tilt 15 Degree	0.053	0.311	0.365	N/A	N/A
Body-Worn	Front Side	0.227	0.672	0.900	N/A	N/A
	Back Side	0.351	0.679	1.030	N/A	N/A

NOTE: 1-g SAR Simultaneous Tx Combination of WCDMA Band V and WLAN 5.2G.

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		WCDMA Band II	WLAN 5.2G			
Head	Left Cheek	0.384	0.719	1.104	N/A	N/A
	Left Tilt 15 Degree	0.150	0.328	0.479	N/A	N/A
	Right Cheek	0.352	0.703	1.055	N/A	N/A
	Right Tilt 15 Degree	0.133	0.311	0.444	N/A	N/A
Body-Worn	Front Side	0.274	0.672	0.946	N/A	N/A
	Back Side	0.347	0.679	1.026	N/A	N/A

NOTE: 1-g SAR Simultaneous Tx Combination of WCDMA Band II and WLAN 5.2G.

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		CDMA2000 BC0	WLAN 5.2G			
Head	Left Cheek	0.048	0.719	0.768	N/A	N/A
	Left Tilt 15 Degree	0.024	0.328	0.353	N/A	N/A
	Right Cheek	0.041	0.703	0.744	N/A	N/A
	Right Tilt 15 Degree	0.020	0.311	0.331	N/A	N/A
Body-Worn	Front Side	0.090	0.672	0.763	N/A	N/A
	Back Side	0.048	0.679	0.728	N/A	N/A

NOTE: 1-g SAR Simultaneous Tx Combination of CDMA2000 BC0 and WLAN 5.2G.

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		LTE Band XII	WLAN 5.2G			
Head	Left Cheek	0.021	0.719	0.741	N/A	N/A
	Left Tilt 15 Degree	0.015	0.328	0.344	N/A	N/A
	Right Cheek	0.020	0.703	0.723	N/A	N/A
	Right Tilt 15 Degree	0.013	0.311	0.324	N/A	N/A
Body-Worn	Front Side	0.014	0.672	0.686	N/A	N/A
	Back Side	0.019	0.679	0.699	N/A	N/A

NOTE: 1-g SAR Simultaneous Tx Combination of LTE Band XII and WLAN 5.2G.

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		LTE Band XVII	WLAN 5.2G			
Head	Left Cheek	0.025	0.719	0.744	N/A	N/A
	Left Tilt 15 Degree	0.018	0.328	0.346	N/A	N/A

Body-Worn	Right Cheek	0.023	0.703	0.726	N/A	N/A
	Right Tilt 15 Degree	0.016	0.311	0.327	N/A	N/A
	Front Side	0.015	0.672	0.687	N/A	N/A
	Back Side	0.017	0.679	0.696	N/A	N/A

NOTE: 1-g SAR Simultaneous Tx Combination of LTE Band XVII and WLAN 5.2G.

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		LTE Band V	WLAN 5.2G			
Head	Left Cheek	0.109	0.719	0.828	N/A	N/A
	Left Tilt 15 Degree	0.062	0.328	0.390	N/A	N/A
	Right Cheek	0.090	0.703	0.793	N/A	N/A
	Right Tilt 15 Degree	0.053	0.311	0.364	N/A	N/A
Body-Worn	Front Side	0.318	0.672	0.990	N/A	N/A
	Back Side	0.372	0.679	1.051	N/A	N/A

NOTE: 1-g SAR Simultaneous Tx Combination of LTE Band V and WLAN 5.2G.

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		LTE Band IV	WLAN 5.2G			
Head	Left Cheek	0.769	0.719	1.488	N/A	N/A
	Left Tilt 15 Degree	0.363	0.328	0.691	N/A	N/A
	Right Cheek	0.737	0.703	1.440	N/A	N/A
	Right Tilt 15 Degree	0.328	0.311	0.639	N/A	N/A
Body-Worn	Front Side	0.737	0.672	1.409	N/A	N/A
	Back Side	0.774	0.679	1.453	N/A	N/A

NOTE: 1-g SAR Simultaneous Tx Combination of LTE Band IV and WLAN 5.2G.

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		LTE Band II	WLAN 5.2G			
Head	Left Cheek	0.348	0.719	1.067	N/A	N/A
	Left Tilt 15 Degree	0.122	0.328	0.450	N/A	N/A
	Right Cheek	0.311	0.703	1.014	N/A	N/A
	Right Tilt 15 Degree	0.105	0.311	0.416	N/A	N/A
Body-Worn	Front Side	0.313	0.672	0.985	N/A	N/A
	Back Side	0.361	0.679	1.040	N/A	N/A

NOTE: 1-g SAR Simultaneous Tx Combination of LTE Band II and WLAN 5.2G.

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		LTE Band VII	WLAN 5.2G			

Head	Left Cheek	0.551	0.719	1.270	N/A	N/A
	Left Tilt 15 Degree	0.264	0.328	0.592	N/A	N/A
	Right Cheek	0.504	0.703	1.207	N/A	N/A
	Right Tilt 15 Degree	0.247	0.311	0.558	N/A	N/A
Body-Worn	Front Side	0.747	0.672	1.419	N/A	N/A
	Back Side	0.774	0.679	1.453	N/A	N/A

NOTE: 1-g SAR Simultaneous Tx Combination of LTE Band VII and WLAN 5.2G.

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		LTE Band XLI	WLAN 5.2G			
Head	Left Cheek	0.148	0.719	0.867	N/A	N/A
	Left Tilt 15 Degree	0.095	0.328	0.423	N/A	N/A
	Right Cheek	0.140	0.703	0.843	N/A	N/A
	Right Tilt 15 Degree	0.081	0.311	0.392	N/A	N/A
Body-Worn	Front Side	0.090	0.672	0.762	N/A	N/A
	Back Side	0.145	0.679	0.824	N/A	N/A

NOTE: 1-g SAR Simultaneous Tx Combination of LTE Band XLI and WLAN 5.2G.

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		GSM 850	WLAN 5.8G			
Head	Left Cheek	0.075	0.536	0.611	N/A	N/A
	Left Tilt 15 Degree	0.044	0.320	0.364	N/A	N/A
	Right Cheek	0.068	0.505	0.573	N/A	N/A
	Right Tilt 15 Degree	0.036	0.291	0.327	N/A	N/A
Body-Worn	Front Side	0.116	0.269	0.385	N/A	N/A
	Back Side	0.067	0.332	0.399	N/A	N/A

NOTE: 1-g SAR Simultaneous Tx Combination of GSM850 and WLAN 5.8G.

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		GSM 1900	WLAN 5.8G			
Head	Left Cheek	0.191	0.536	0.727	N/A	N/A
	Left Tilt 15 Degree	0.111	0.320	0.431	N/A	N/A
	Right Cheek	0.177	0.505	0.682	N/A	N/A
	Right Tilt 15 Degree	0.086	0.291	0.377	N/A	N/A
Body-Worn	Front Side	0.110	0.269	0.380	N/A	N/A
	Back Side	0.142	0.332	0.474	N/A	N/A

NOTE: 1-g SAR Simultaneous Tx Combination of GSM1900 and WLAN 5.8G.

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		WCDMA Band V	WLAN 5.8G			
Head	Left Cheek	0.105	0.536	0.641	N/A	N/A
	Left Tilt 15 Degree	0.064	0.320	0.383	N/A	N/A
	Right Cheek	0.090	0.505	0.595	N/A	N/A
	Right Tilt 15 Degree	0.053	0.291	0.344	N/A	N/A
Body-Worn	Front Side	0.227	0.269	0.497	N/A	N/A
	Back Side	0.351	0.332	0.683	N/A	N/A

NOTE: 1-g SAR Simultaneous Tx Combination of WCDMA Band V and WLAN 5.8G.

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		WCDMA Band II	WLAN 5.8G			
Head	Left Cheek	0.384	0.536	0.920	N/A	N/A
	Left Tilt 15 Degree	0.150	0.320	0.470	N/A	N/A
	Right Cheek	0.352	0.505	0.856	N/A	N/A
	Right Tilt 15 Degree	0.133	0.291	0.424	N/A	N/A
Body-Worn	Front Side	0.274	0.269	0.543	N/A	N/A
	Back Side	0.347	0.332	0.679	N/A	N/A

NOTE: 1-g SAR Simultaneous Tx Combination of WCDMA Band II and WLAN 5.8G.

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		CDMA2000 BC0	WLAN 5.8G			
Head	Left Cheek	0.048	0.536	0.585	N/A	N/A
	Left Tilt 15 Degree	0.024	0.320	0.344	N/A	N/A
	Right Cheek	0.041	0.505	0.546	N/A	N/A
	Right Tilt 15 Degree	0.020	0.291	0.311	N/A	N/A
Body-Worn	Front Side	0.090	0.269	0.360	N/A	N/A
	Back Side	0.048	0.332	0.380	N/A	N/A

NOTE: 1-g SAR Simultaneous Tx Combination of CDMA2000 BC0 and WLAN 5.8G.

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		LTE Band XII	WLAN 5.8G			
Head	Left Cheek	0.021	0.536	0.558	N/A	N/A
	Left Tilt 15 Degree	0.015	0.320	0.335	N/A	N/A

Body-Worn	Right Cheek	0.020	0.505	0.525	N/A	N/A
	Right Tilt 15 Degree	0.013	0.291	0.304	N/A	N/A
	Front Side	0.014	0.269	0.283	N/A	N/A
	Back Side	0.019	0.332	0.351	N/A	N/A

NOTE: 1-g SAR Simultaneous Tx Combination of LTE Band XII and WLAN 5.8G.

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		LTE Band XVII	WLAN 5.8G			
Head	Left Cheek	0.025	0.536	0.561	N/A	N/A
	Left Tilt 15 Degree	0.018	0.320	0.337	N/A	N/A
	Right Cheek	0.023	0.505	0.528	N/A	N/A
	Right Tilt 15 Degree	0.016	0.291	0.306	N/A	N/A
Body-Worn	Front Side	0.015	0.269	0.284	N/A	N/A
	Back Side	0.017	0.332	0.349	N/A	N/A

NOTE: 1-g SAR Simultaneous Tx Combination of LTE Band XVII and WLAN 5.8G.

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		LTE Band V	WLAN 5.8G			
Head	Left Cheek	0.109	0.536	0.645	N/A	N/A
	Left Tilt 15 Degree	0.062	0.320	0.382	N/A	N/A
	Right Cheek	0.090	0.505	0.595	N/A	N/A
	Right Tilt 15 Degree	0.053	0.291	0.344	N/A	N/A
Body-Worn	Front Side	0.318	0.269	0.587	N/A	N/A
	Back Side	0.372	0.332	0.704	N/A	N/A

NOTE: 1-g SAR Simultaneous Tx Combination of LTE Band V and WLAN 5.8G.

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		LTE Band IV	WLAN 5.8G			
Head	Left Cheek	0.769	0.536	1.305	N/A	N/A
	Left Tilt 15 Degree	0.363	0.320	0.683	N/A	N/A
	Right Cheek	0.737	0.505	1.242	N/A	N/A
	Right Tilt 15 Degree	0.328	0.291	0.619	N/A	N/A
Body-Worn	Front Side	0.737	0.269	1.006	N/A	N/A
	Back Side	0.774	0.332	1.106	N/A	N/A

NOTE: 1-g SAR Simultaneous Tx Combination of LTE Band IV and WLAN 5.8G.

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		LTE Band II	WLAN 5.8G			

Head	Left Cheek	0.348	0.536	0.884	N/A	N/A
	Left Tilt 15 Degree	0.122	0.320	0.442	N/A	N/A
	Right Cheek	0.311	0.505	0.816	N/A	N/A
	Right Tilt 15 Degree	0.105	0.291	0.396	N/A	N/A
Body-Worn	Front Side	0.313	0.269	0.582	N/A	N/A
	Back Side	0.361	0.332	0.693	N/A	N/A

NOTE: 1-g SAR Simultaneous Tx Combination of LTE Band II and WLAN 5.8G.

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		LTE Band VII	WLAN 5.8G			
Head	Left Cheek	0.551	0.536	1.087	N/A	N/A
	Left Tilt 15 Degree	0.264	0.320	0.584	N/A	N/A
	Right Cheek	0.504	0.505	1.009	N/A	N/A
	Right Tilt 15 Degree	0.247	0.291	0.538	N/A	N/A
Body-Worn	Front Side	0.747	0.269	1.016	N/A	N/A
	Back Side	0.774	0.332	1.106	N/A	N/A

NOTE: 1-g SAR Simultaneous Tx Combination of LTE Band VII and WLAN 5.8G.

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		LTE Band XLI	WLAN 5.8G			
Head	Left Cheek	0.148	0.536	0.684	N/A	N/A
	Left Tilt 15 Degree	0.095	0.320	0.415	N/A	N/A
	Right Cheek	0.140	0.505	0.645	N/A	N/A
	Right Tilt 15 Degree	0.081	0.291	0.372	N/A	N/A
Body-Worn	Front Side	0.090	0.269	0.359	N/A	N/A
	Back Side	0.145	0.332	0.477	N/A	N/A

NOTE: 1-g SAR Simultaneous Tx Combination of LTE Band XLI and WLAN 5.8G.

11. Appendix A. Photo documentation

Refer to appendix Test Setup photo---SAR

12. Appendix B. System Check Plots

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MEASUREMENT 1

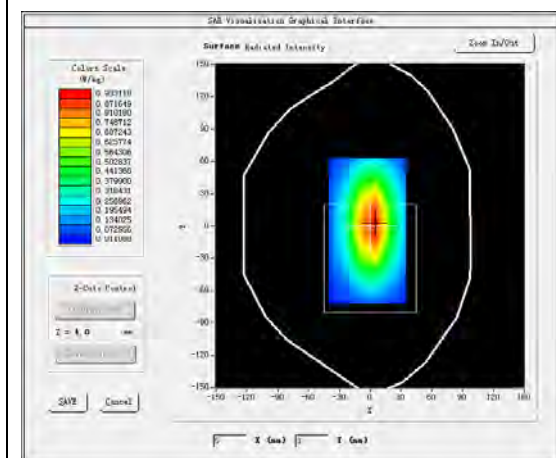
A. Experimental conditions.

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

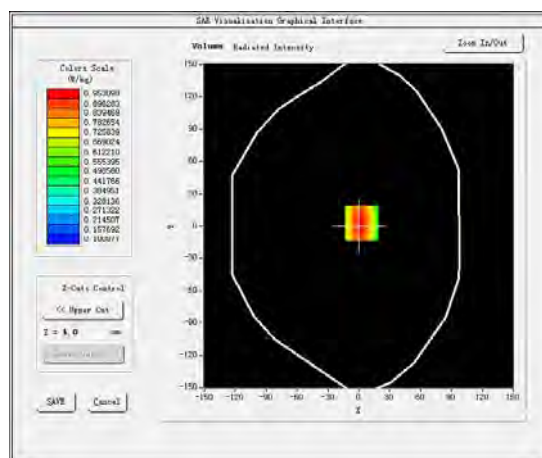
B. SAR Measurement Results

Frequency (MHz)	750.000000
Relative permittivity (real part)	41.471426
Relative permittivity (imaginary part)	21.333465
Conductivity (S/m)	0.892594
Variation (%)	0.090000

SURFACE SAR



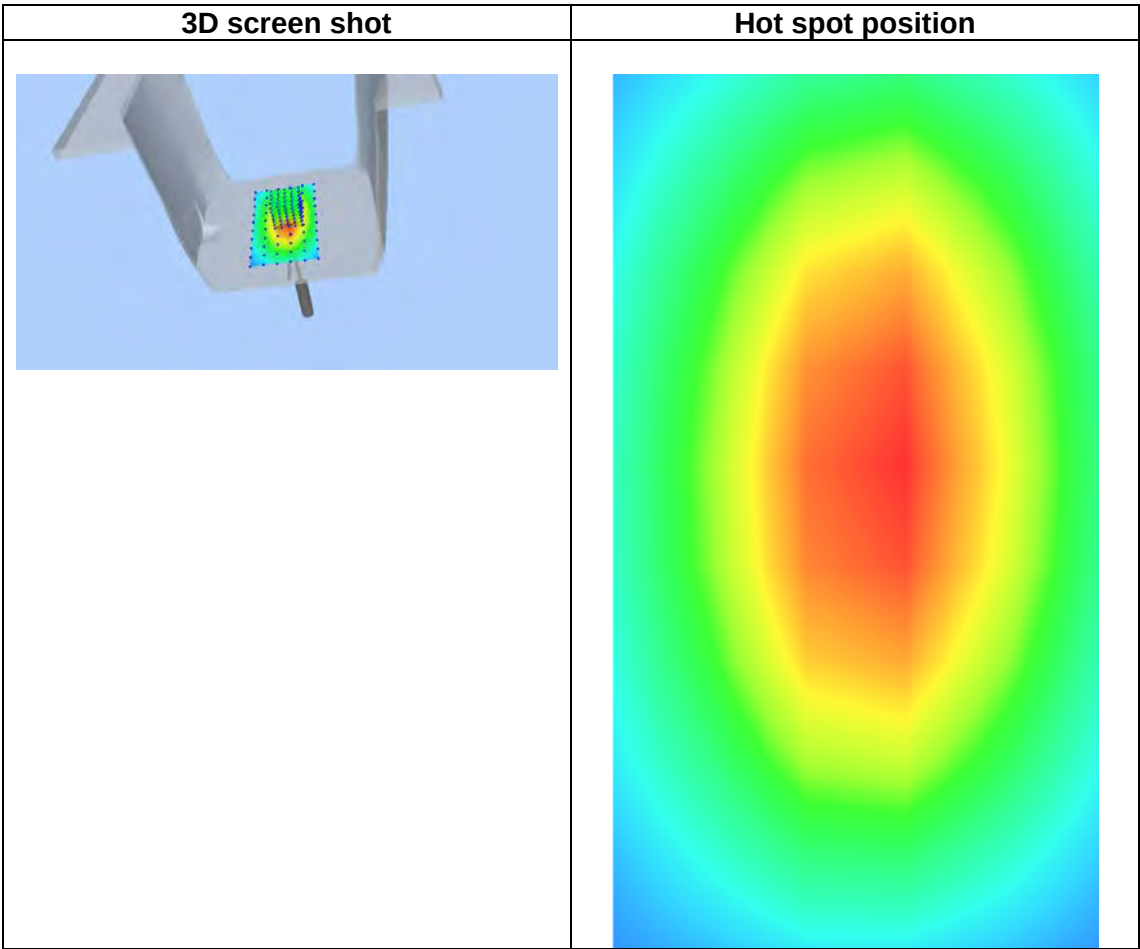
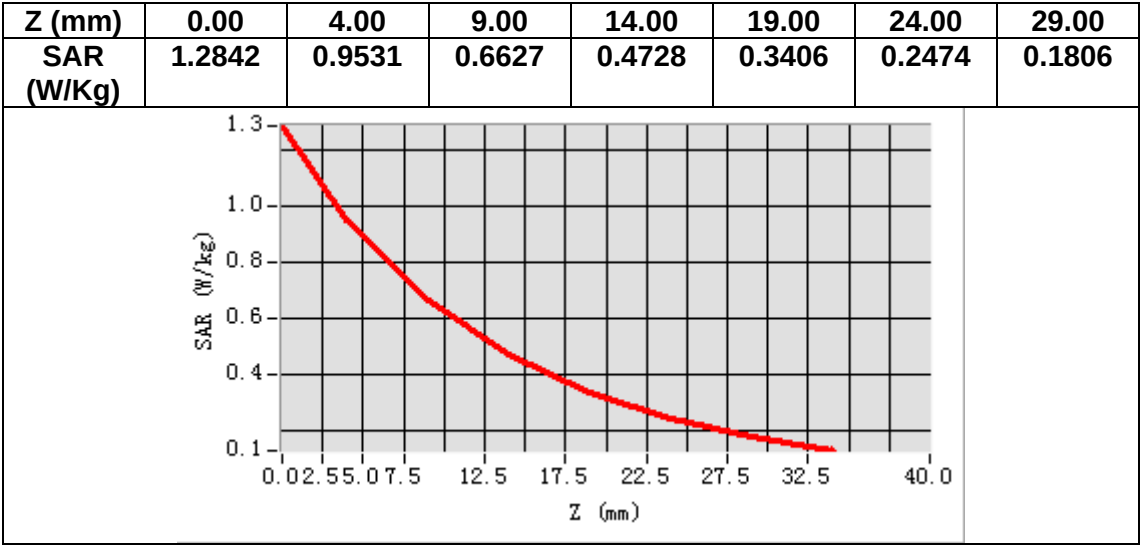
VOLUME SAR



Maximum location: X=3.00, Y=3.00

SAR Peak: 1.29 W/kg

SAR 10g (W/Kg)	0.553210
SAR 1g (W/Kg)	0.836365



MEASUREMENT 2

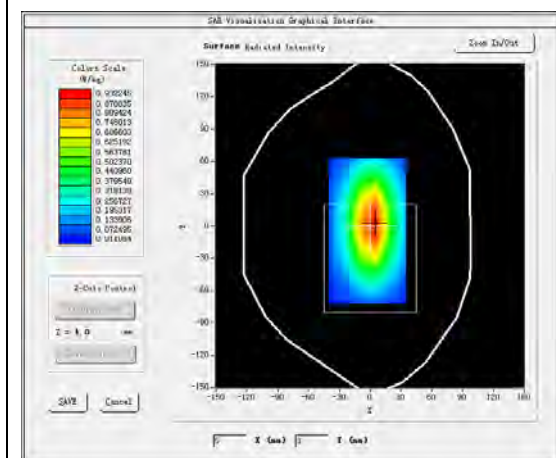
A. Experimental conditions.

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>

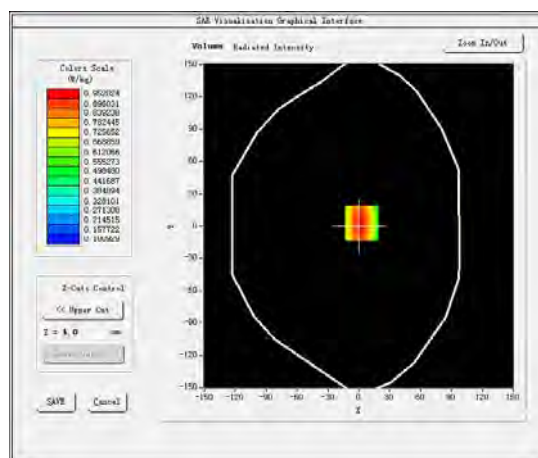
B. SAR Measurement Results

Frequency (MHz)	750.000000
Relative permittivity (real part)	55.382426
Relative permittivity (imaginary part)	23.253465
Conductivity (S/m)	0.973594
Variation (%)	-0.010000

SURFACE SAR



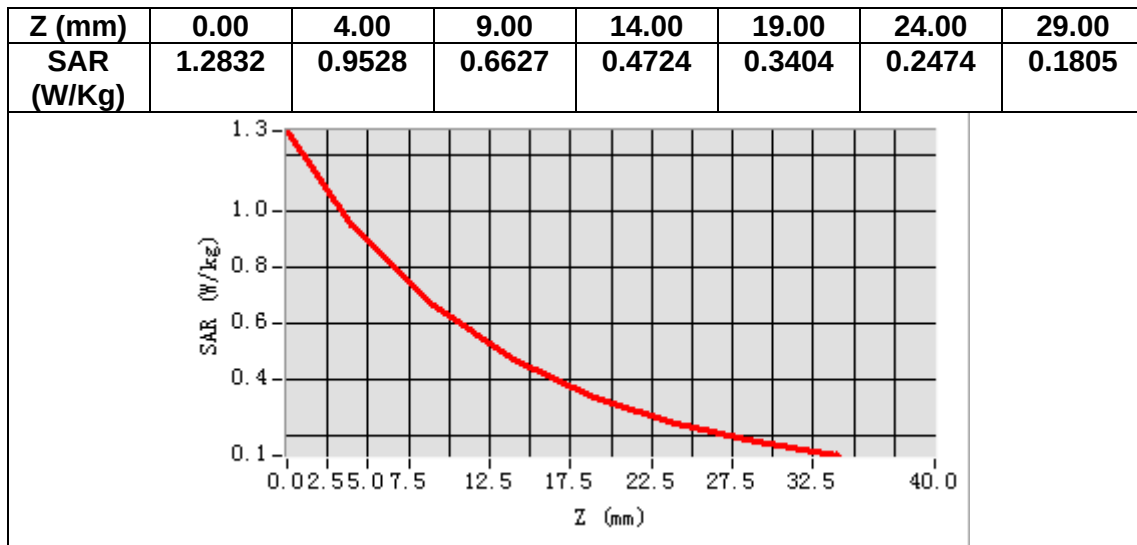
VOLUME SAR



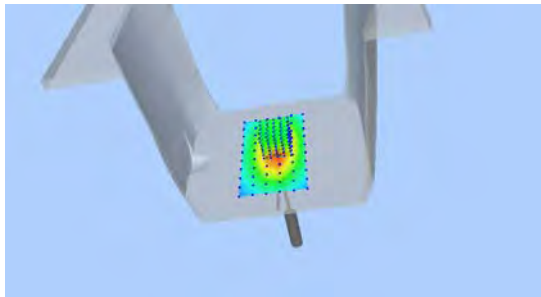
Maximum location: X=3.00, Y=3.00

SAR Peak: 1.29 W/kg

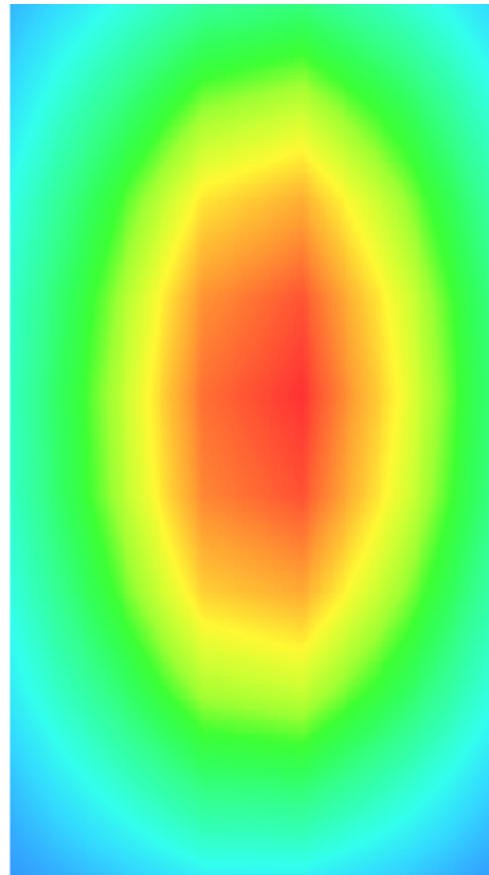
SAR 10g (W/Kg)	0.573049
SAR 1g (W/Kg)	0.836342



3D screen shot



Hot spot position



MEASUREMENT 3

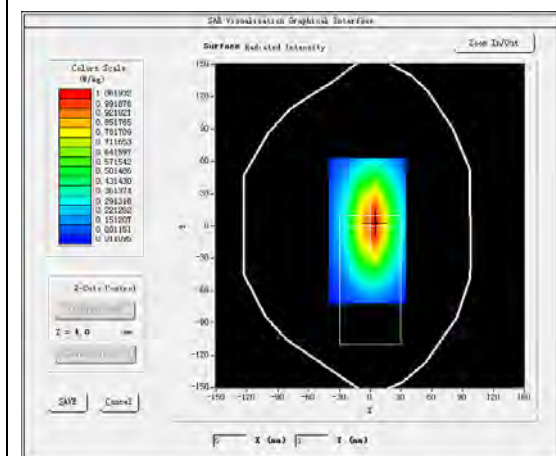
A. Experimental conditions.

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>

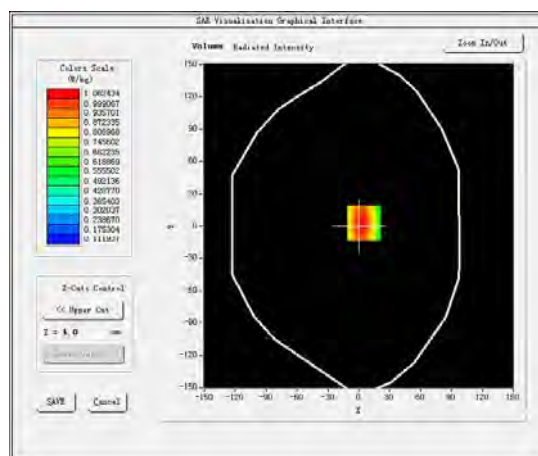
B. SAR Measurement Results

Frequency (MHz)	835.000000
Relative permittivity (real part)	41.450000
Relative permittivity (imaginary part)	19.420000
Conductivity (S/m)	0.899944
Variation (%)	0.180000

SURFACE SAR



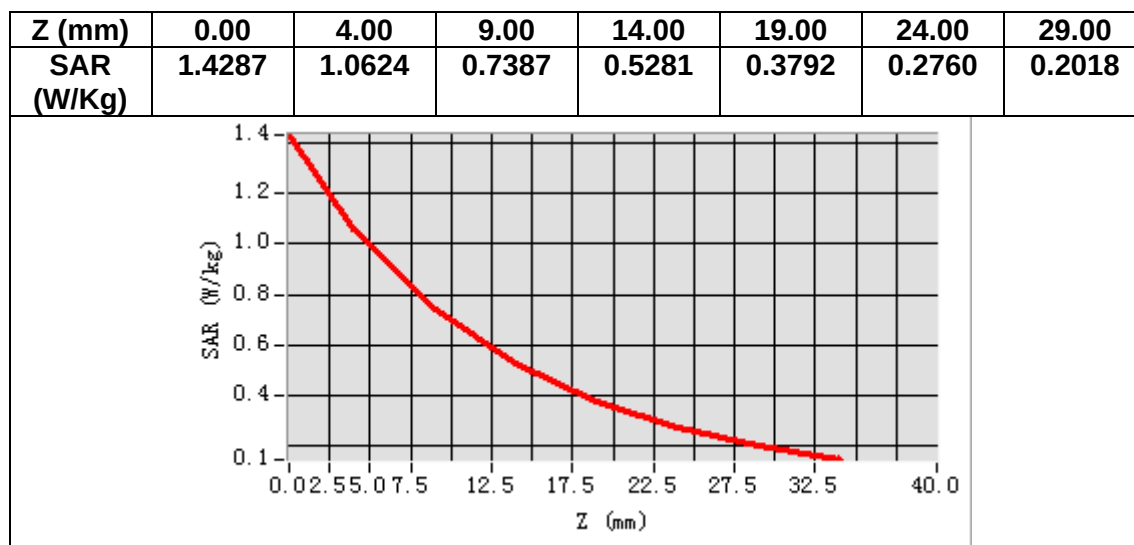
VOLUME SAR



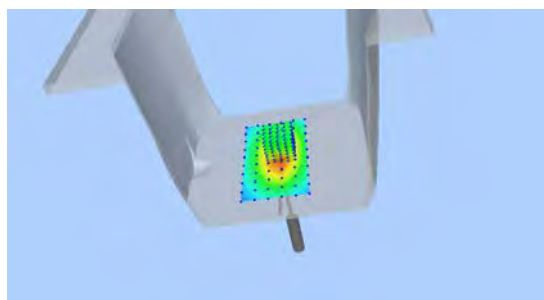
Maximum location: X=5.00, Y=3.00

SAR Peak: 1.45 W/kg

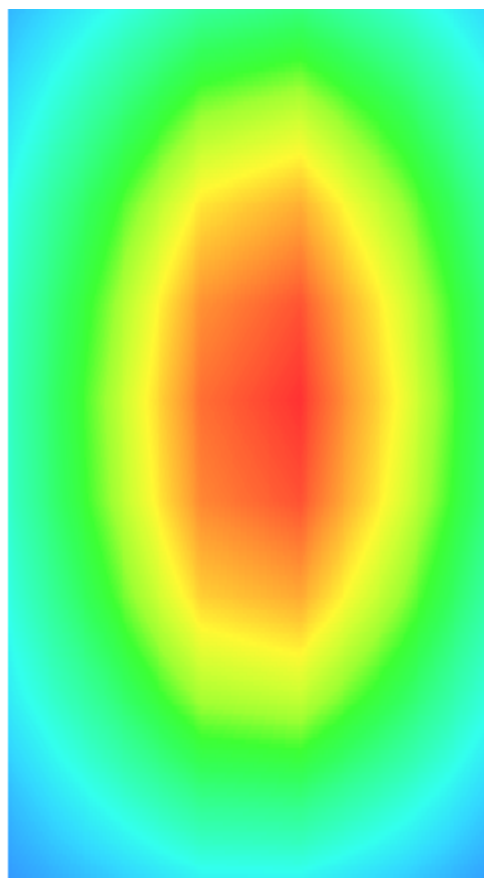
SAR 10g (W/Kg)	0.621344
SAR 1g (W/Kg)	1.005427



3D screen shot



Hot spot position



MEASUREMENT 4

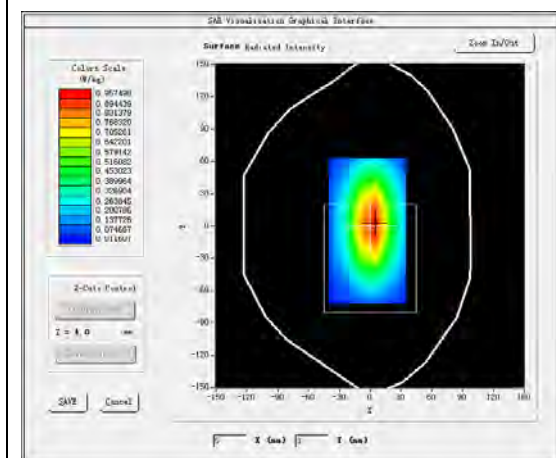
A. Experimental conditions.

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

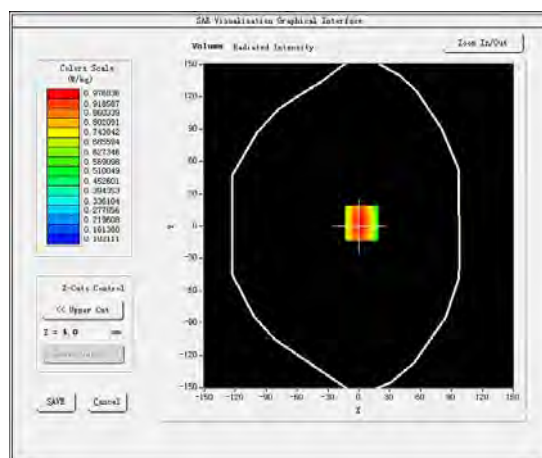
B. SAR Measurement Results

Frequency (MHz)	835.000000
Relative permittivity (real part)	54.829426
Relative permittivity (imaginary part)	21.593465
Conductivity (S/m)	0.993594
Variation (%)	-0.200000

SURFACE SAR



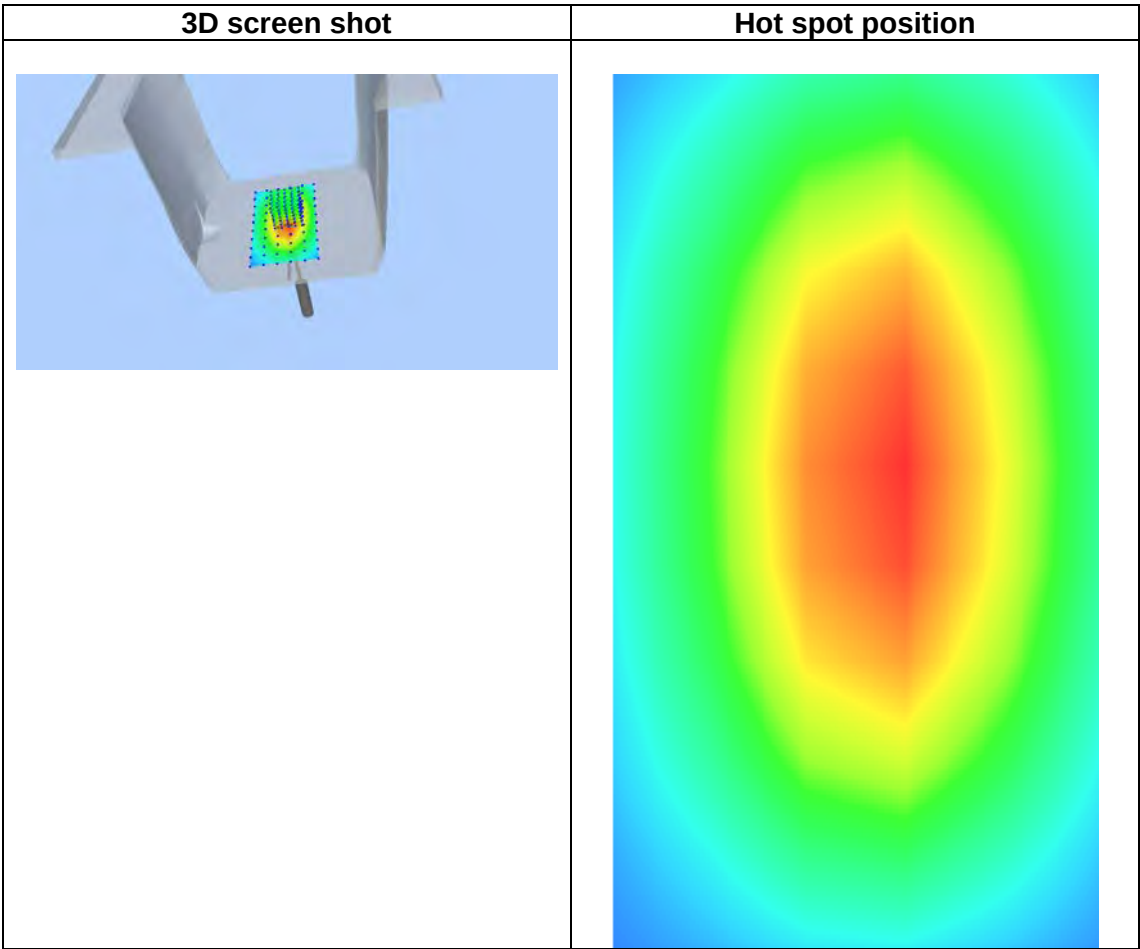
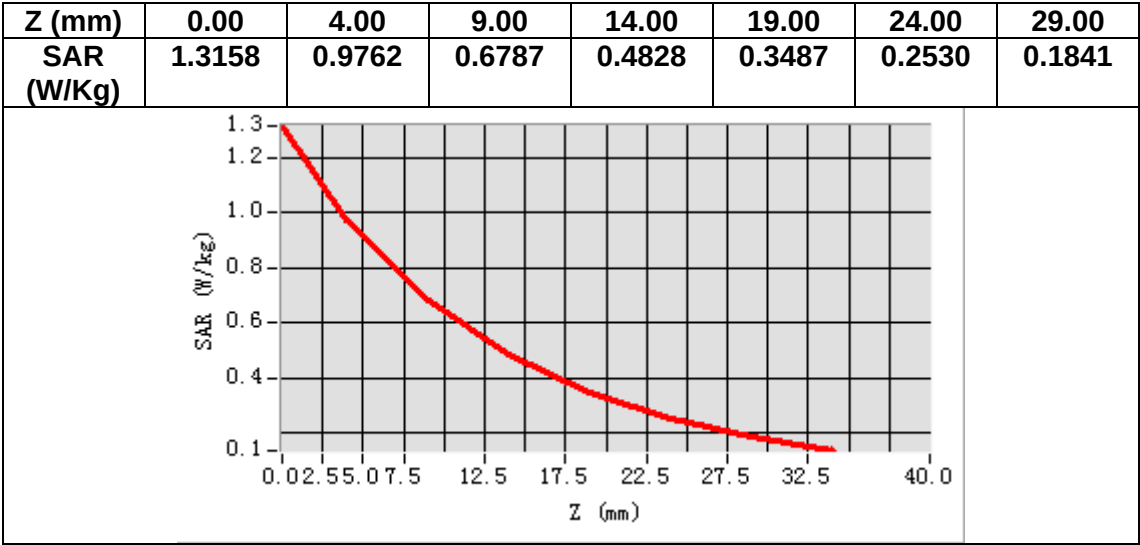
VOLUME SAR



Maximum location: X=3.00, Y=3.00

SAR Peak: 1.32 W/kg

SAR 10g (W/Kg)	0.627457
SAR 1g (W/Kg)	0.945698



MEASUREMENT 5

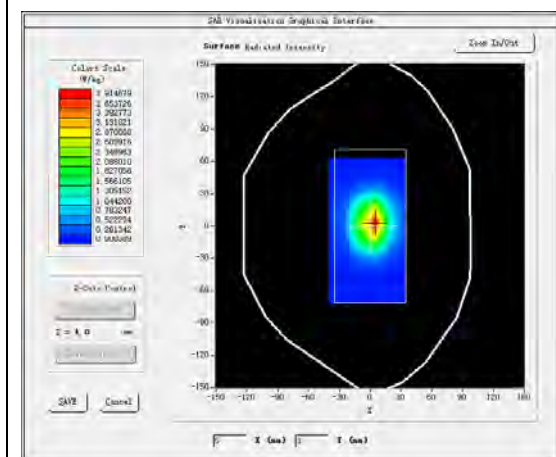
A. Experimental conditions.

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

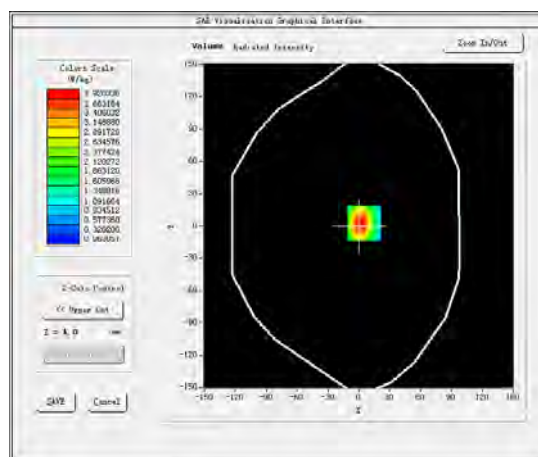
B. SAR Measurement Results

Frequency (MHz)	1800.000000
Relative permittivity (real part)	39.365899
Relative permittivity (imaginary part)	13.811442
Conductivity (S/m)	1.375587
Variation (%)	0.050000

SURFACE SAR



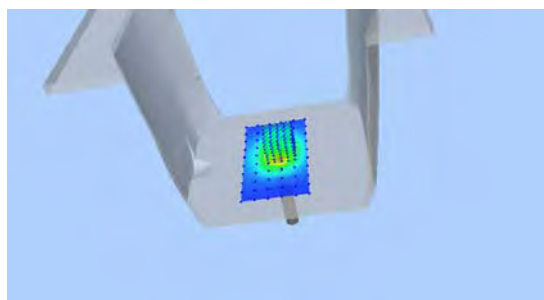
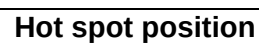
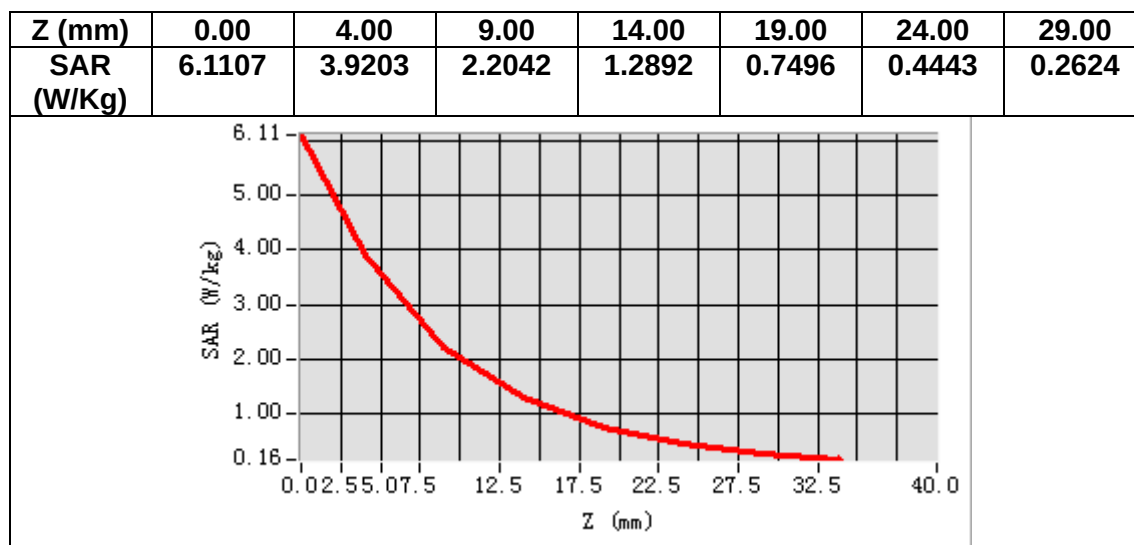
VOLUME SAR



Maximum location: X=5.00, Y=3.00

SAR Peak: 6.41 W/kg

SAR 10g (W/Kg)	2.017231
SAR 1g (W/Kg)	3.928123



MEASUREMENT 6

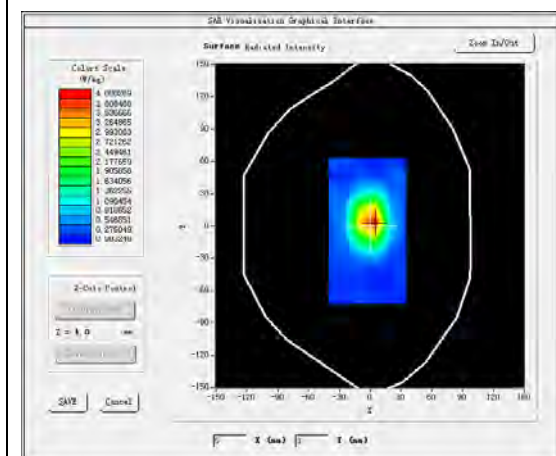
A. Experimental conditions.

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>CW1800</u>
Channels	<u>Middle</u>
Signal	<u>CW (Crest factor: 1.0)</u>

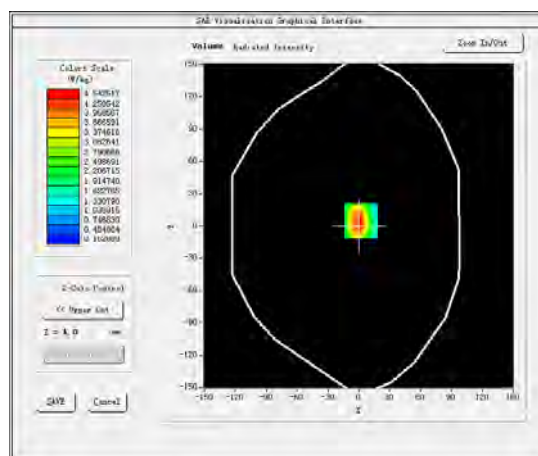
B. SAR Measurement Results

Frequency (MHz)	1800.000000
Relative permittivity (real part)	53.890000
Relative permittivity (imaginary part)	15.130000
Conductivity (S/m)	1.510000
Variation (%)	-2.310000

SURFACE SAR



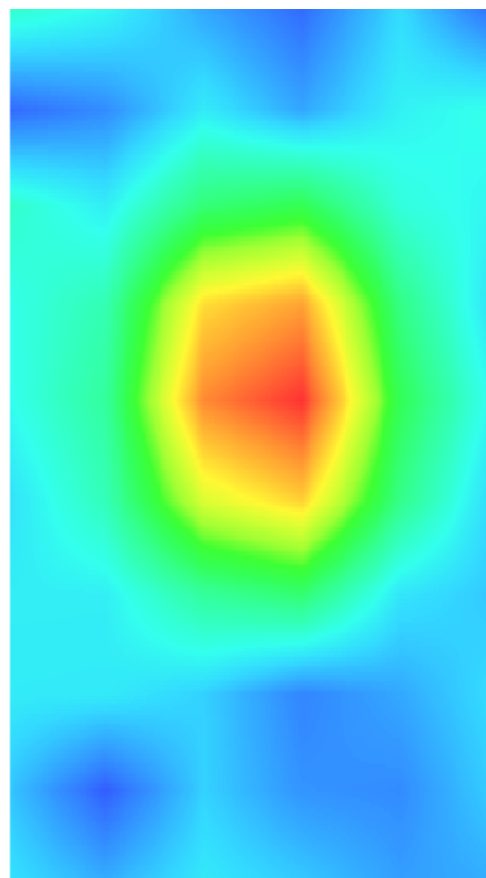
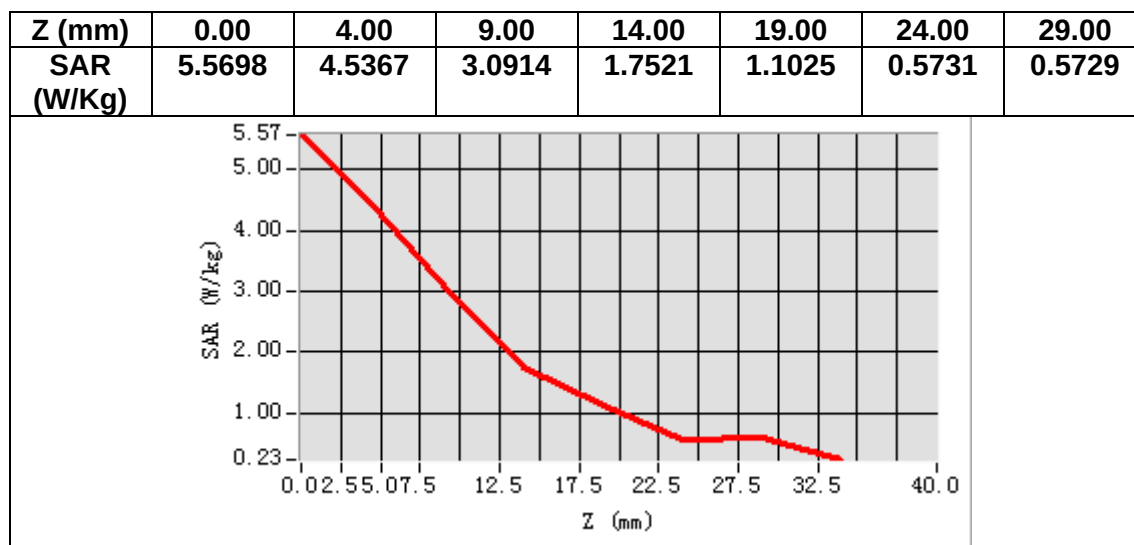
VOLUME SAR



Maximum location: X=2.00, Y=5.00

SAR Peak: 7.13 W/kg

SAR 10g (W/Kg)	2.125208
SAR 1g (W/Kg)	4.001204



MEASUREMENT 7

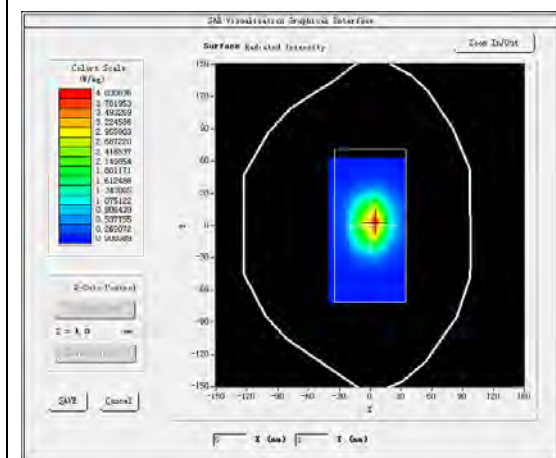
A. Experimental conditions.

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

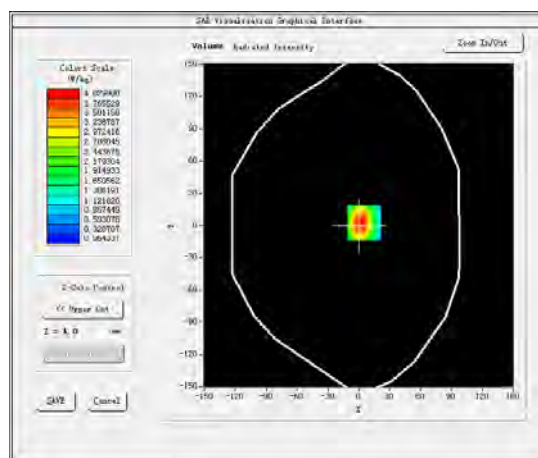
B. SAR Measurement Results

Frequency (MHz)	1900.000000
Relative permittivity (real part)	39.802899
Relative permittivity (imaginary part)	13.390300
Conductivity (S/m)	1.412587
Variation (%)	-0.110000

SURFACE SAR



VOLUME SAR



Maximum location: X=5.00, Y=3.00

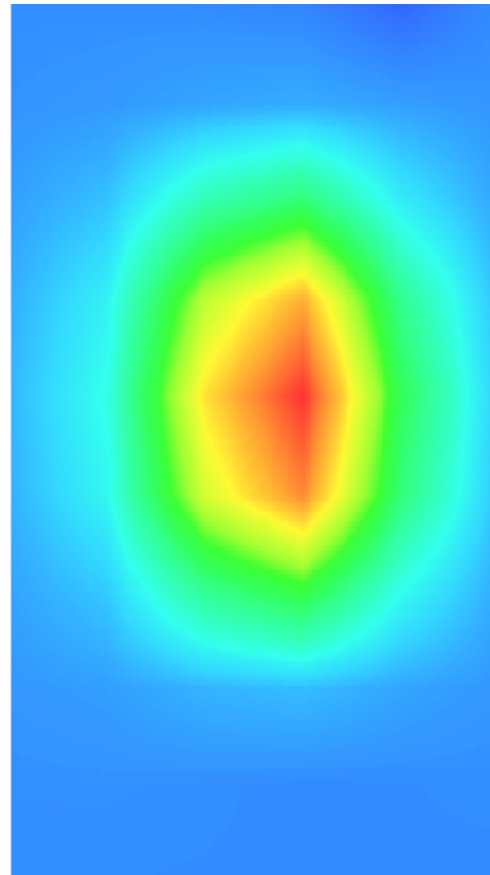
SAR Peak: 6.57 W/kg

SAR 10g (W/Kg)	2.063252
SAR 1g (W/Kg)	4.023450

The graph shows the SAR distribution for a 1000 MHz plane wave. The y-axis is SAR (W/kg) ranging from 0.16 to 6.29. The x-axis is Z (mm) ranging from 0.0 to 40.0. The SAR starts at approximately 6.29 W/kg at Z=0 and decreases to 0.16 W/kg at Z=32.5 mm.

Z (mm)	SAR (W/kg)
0.0	6.29
2.5	5.00
5.0	4.00
7.5	3.00
10.0	2.00
12.5	1.50
15.0	1.20
17.5	1.00
20.0	0.80
22.5	0.70
25.0	0.60
27.5	0.50
30.0	0.40
32.5	0.16

Hot spot position



MEASUREMENT 8

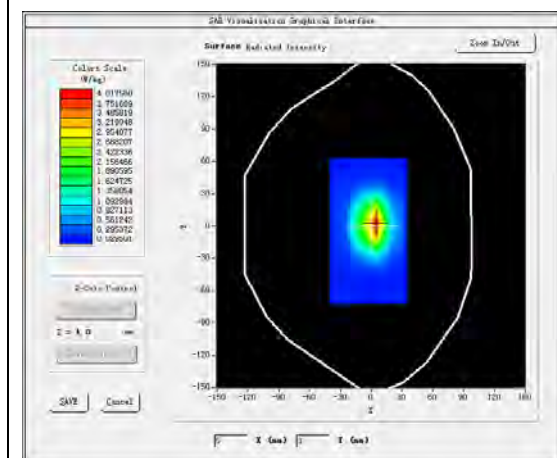
A. Experimental conditions.

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

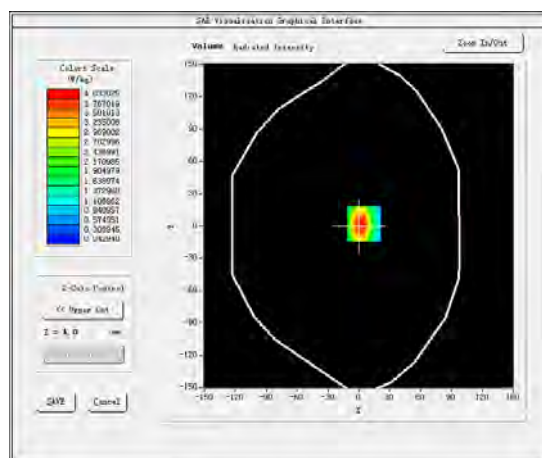
B. SAR Measurement Results

Frequency (MHz)	1900.000000
Relative permittivity (real part)	53.164601
Relative permittivity (imaginary part)	14.622000
Conductivity (S/m)	1.544600
Variation (%)	-0.300000

SURFACE SAR



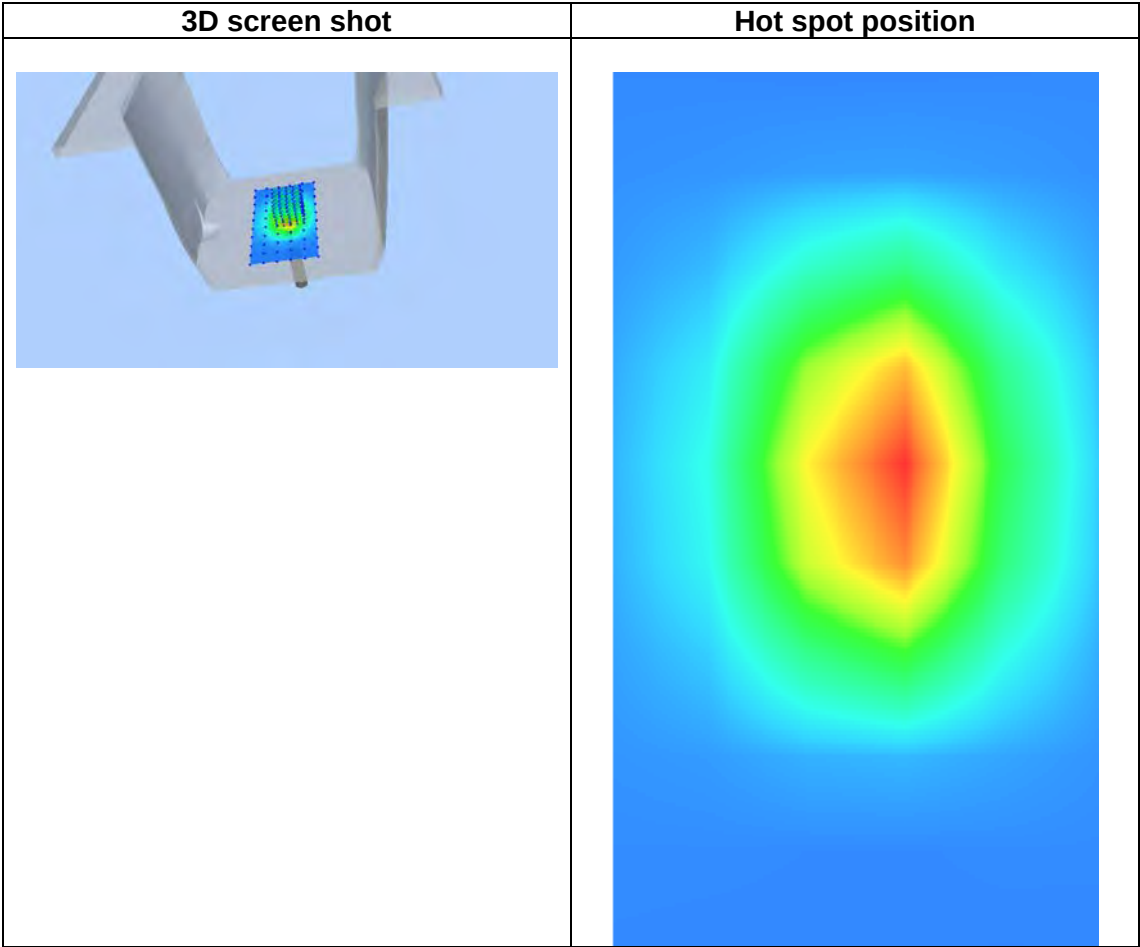
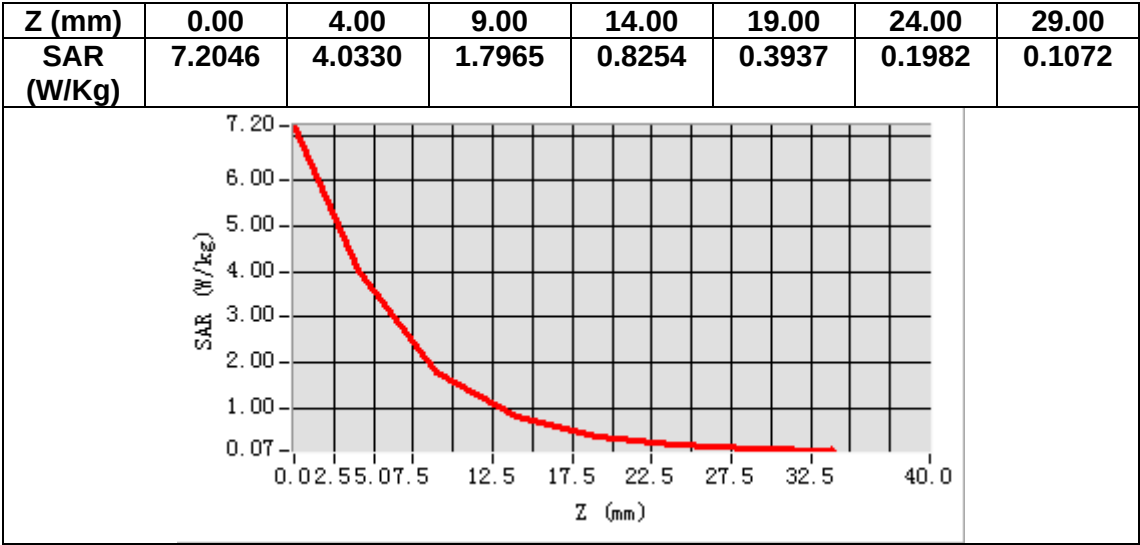
VOLUME SAR



Maximum location: X=5.00, Y=2.00

SAR Peak: 7.57 W/kg

SAR 10g (W/Kg)	1.984782
SAR 1g (W/Kg)	4.023296



MEASUREMENT 9

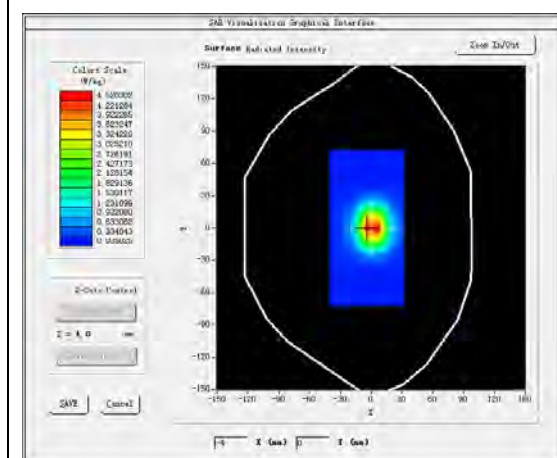
A. Experimental conditions.

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

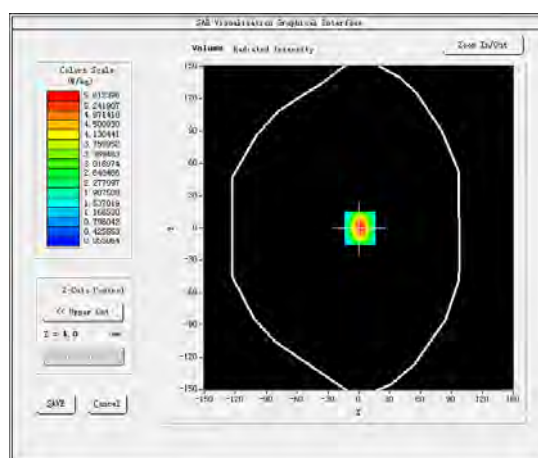
B. SAR Measurement Results

Frequency (MHz)	2450.000000
Relative permittivity (real part)	40.114097
Relative permittivity (imaginary part)	13.062800
Conductivity (S/m)	1.782738
Variation (%)	0.020000

SURFACE SAR



VOLUME SAR



Maximum location: X=1.00, Y=0.00

SAR Peak: 9.79 W/kg

SAR 10g (W/Kg)	2.302893
SAR 1g (W/Kg)	5.197675

MEASUREMENT 10

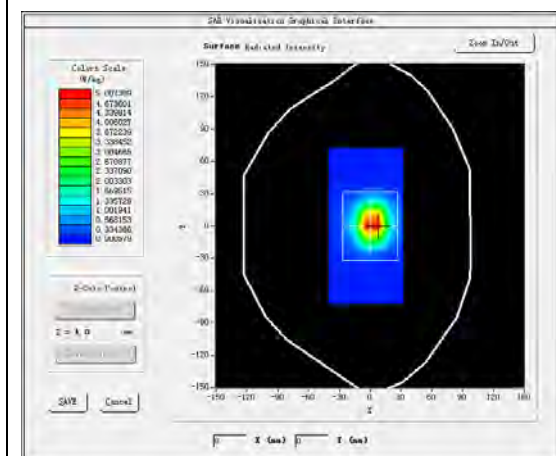
A. Experimental conditions.

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

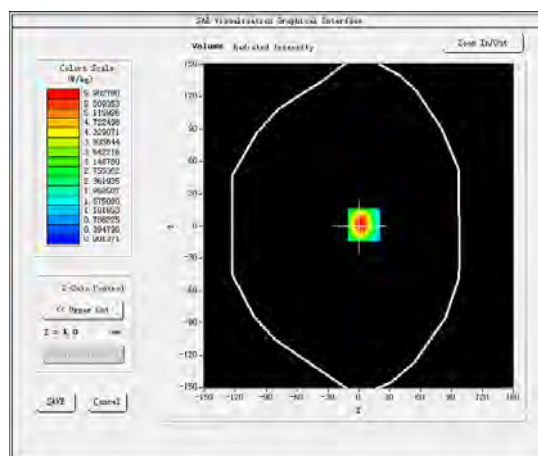
B. SAR Measurement Results

Frequency (MHz)	2450.000000
Relative permittivity (real part)	52.691099
Relative permittivity (imaginary part)	14.579900
Conductivity (S/m)	1.977598
Variation (%)	-0.100000

SURFACE SAR



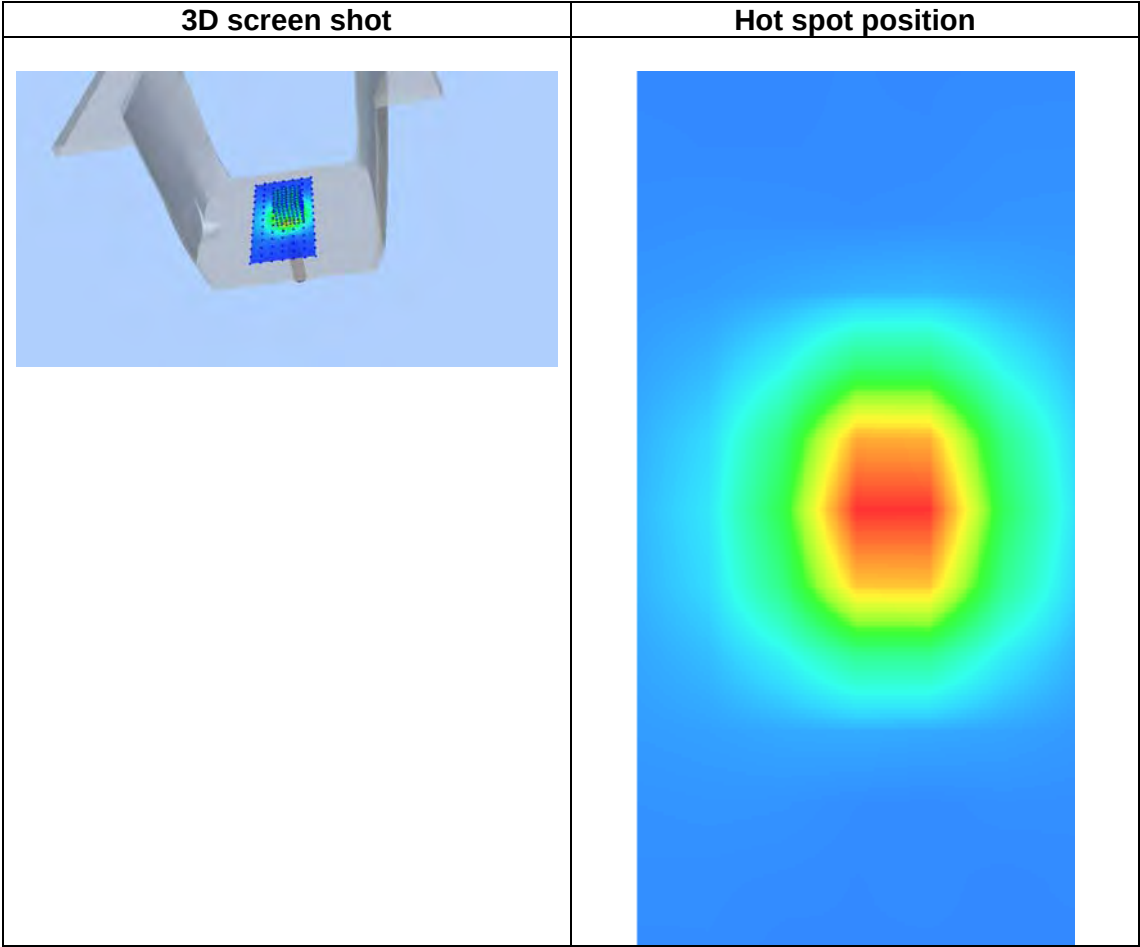
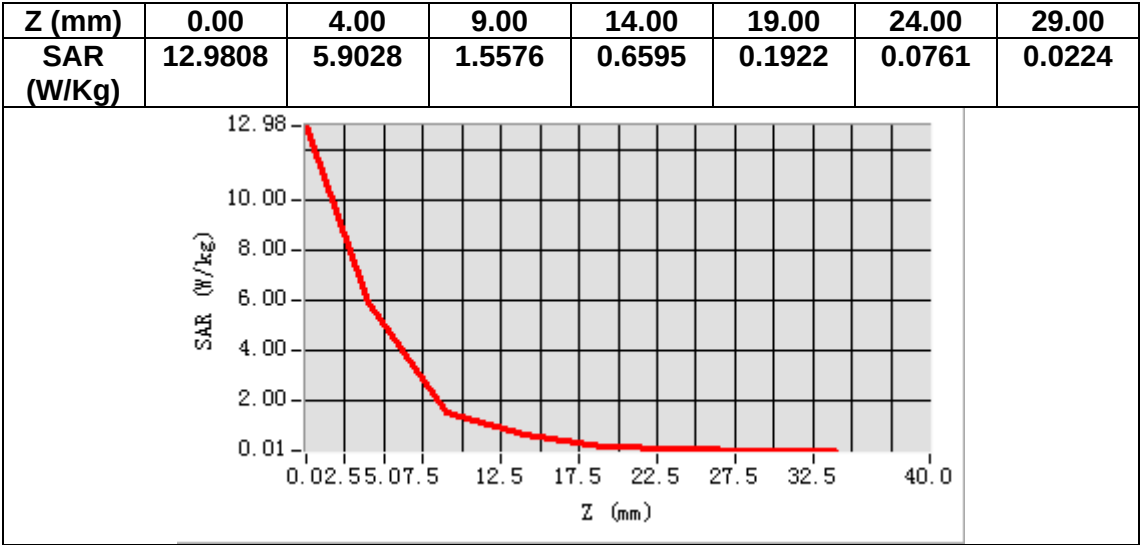
VOLUME SAR



Maximum location: X=5.00, Y=1.00

SAR Peak: 12.07 W/kg

SAR 10g (W/Kg)	2.281002
SAR 1g (W/Kg)	5.072445



MEASUREMENT 11

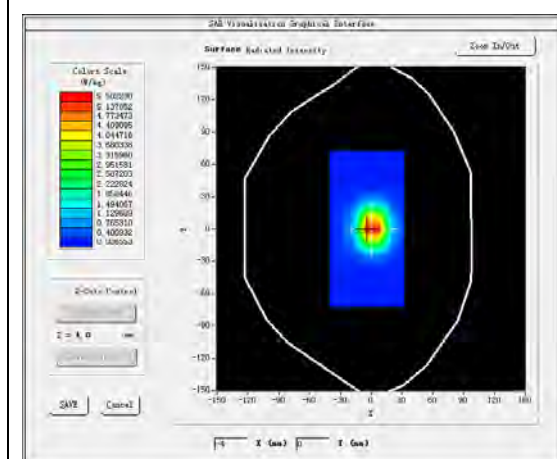
A. Experimental conditions.

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

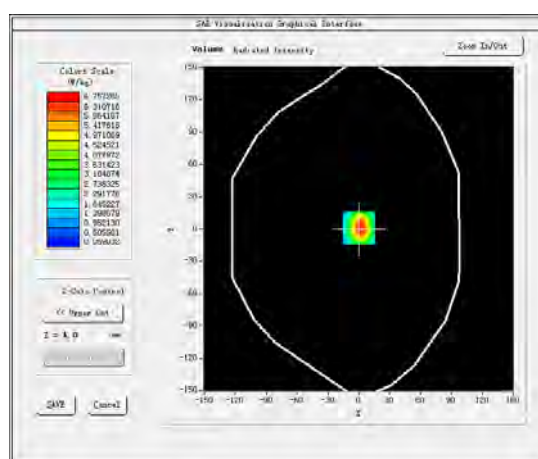
B. SAR Measurement Results

Frequency (MHz)	2600.000000
Relative permittivity (real part)	38.941710
Relative permittivity (imaginary part)	13.682579
Conductivity (S/m)	1.981428
Variation (%)	0.030000

SURFACE SAR



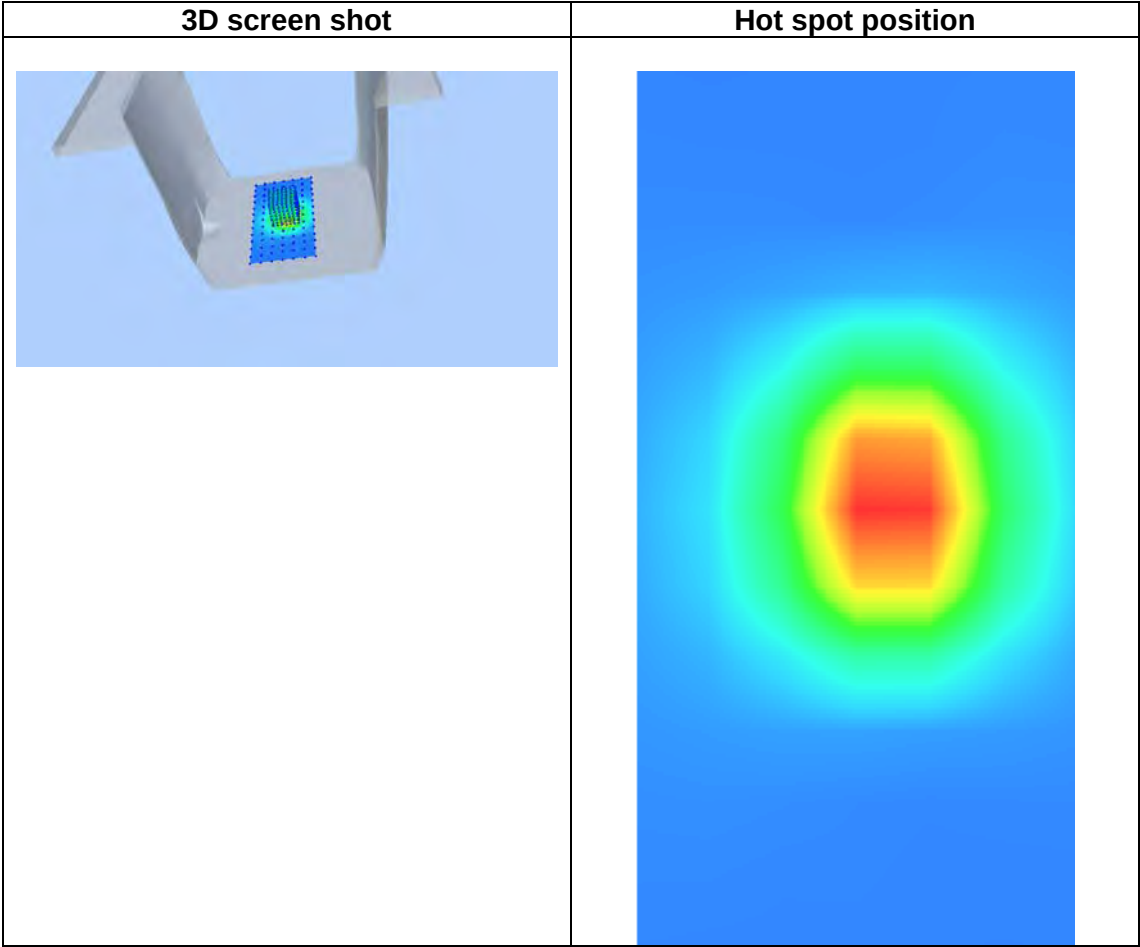
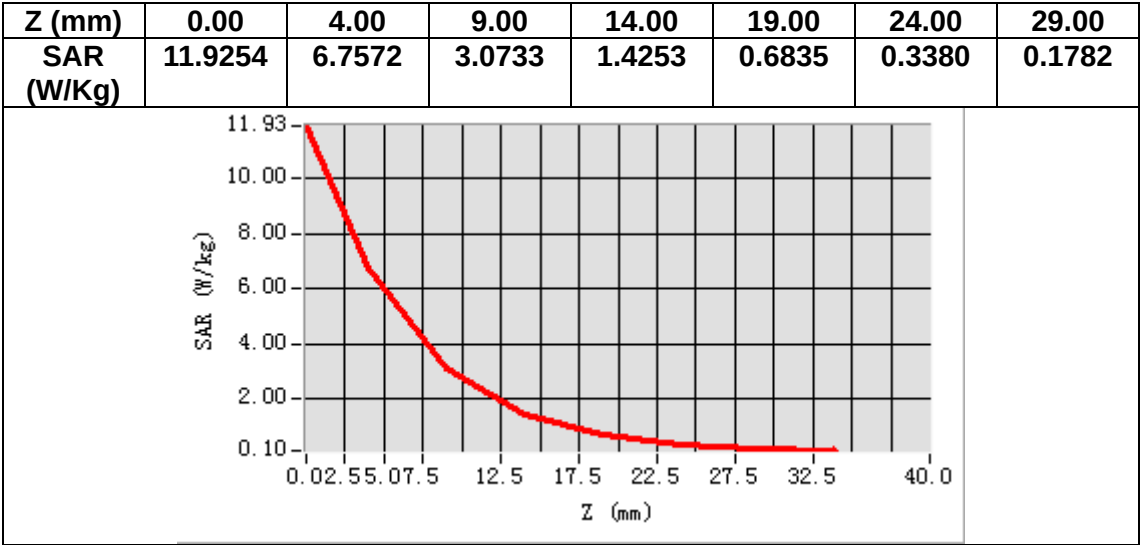
VOLUME SAR



Maximum location: X=0.00, Y=1.00

SAR Peak: 12.00 W/kg

SAR 10g (W/Kg)	2.416349
SAR 1g (W/Kg)	6.001316



MEASUREMENT 12

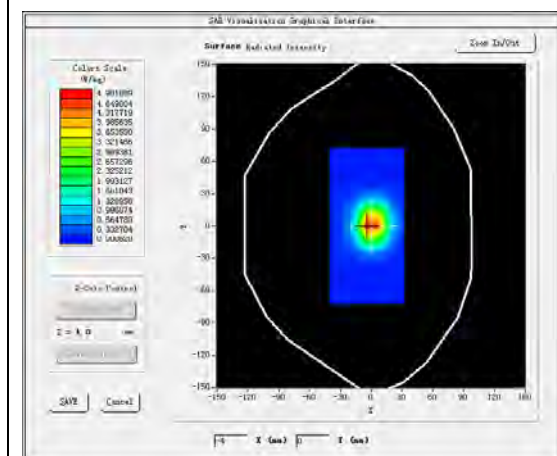
A. Experimental conditions.

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

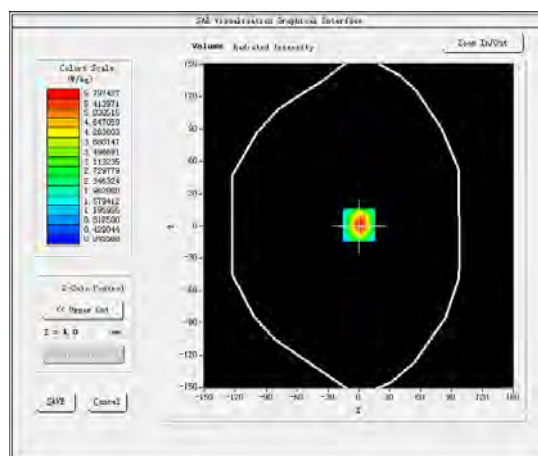
B. SAR Measurement Results

Frequency (MHz)	2600.000000
Relative permittivity (real part)	53.200143
Relative permittivity (imaginary part)	15.024940
Conductivity (S/m)	2.170111
Variation (%)	-0.100000

SURFACE SAR



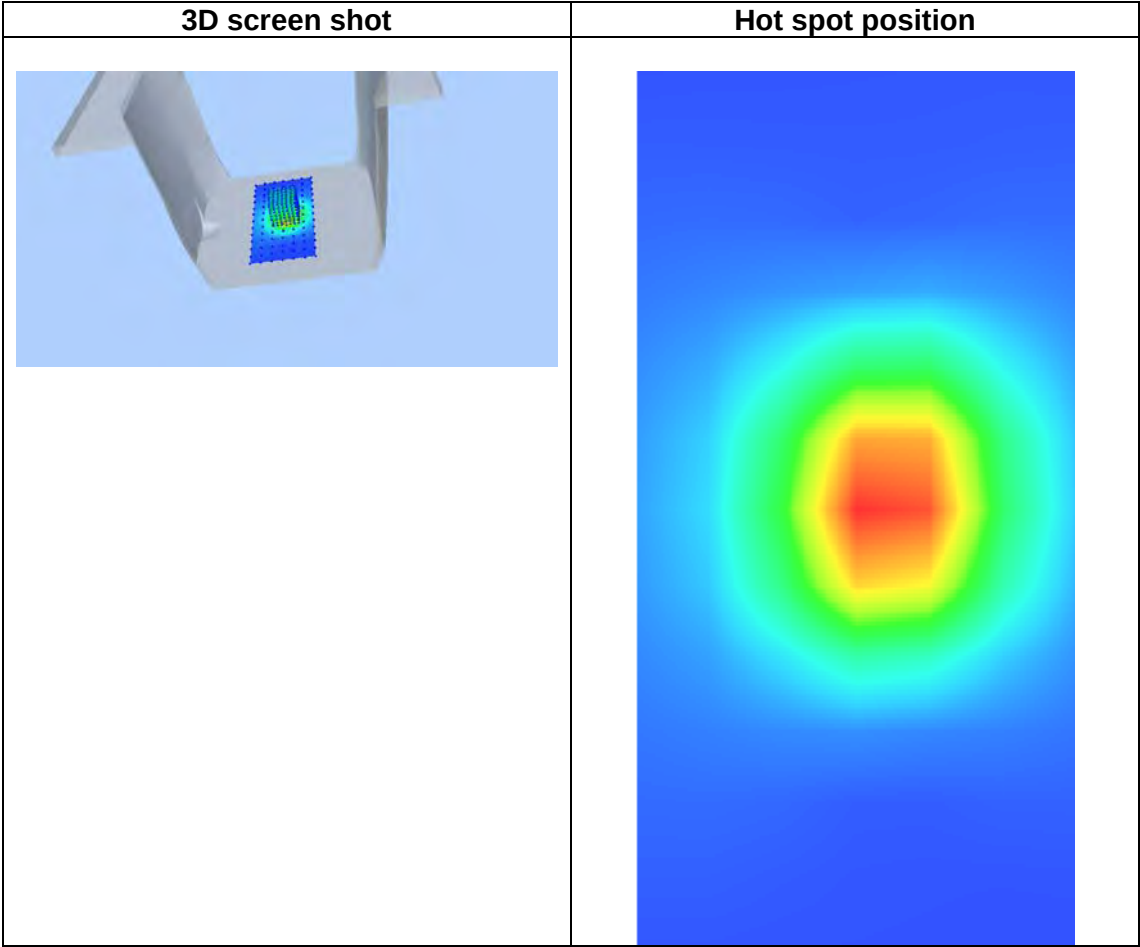
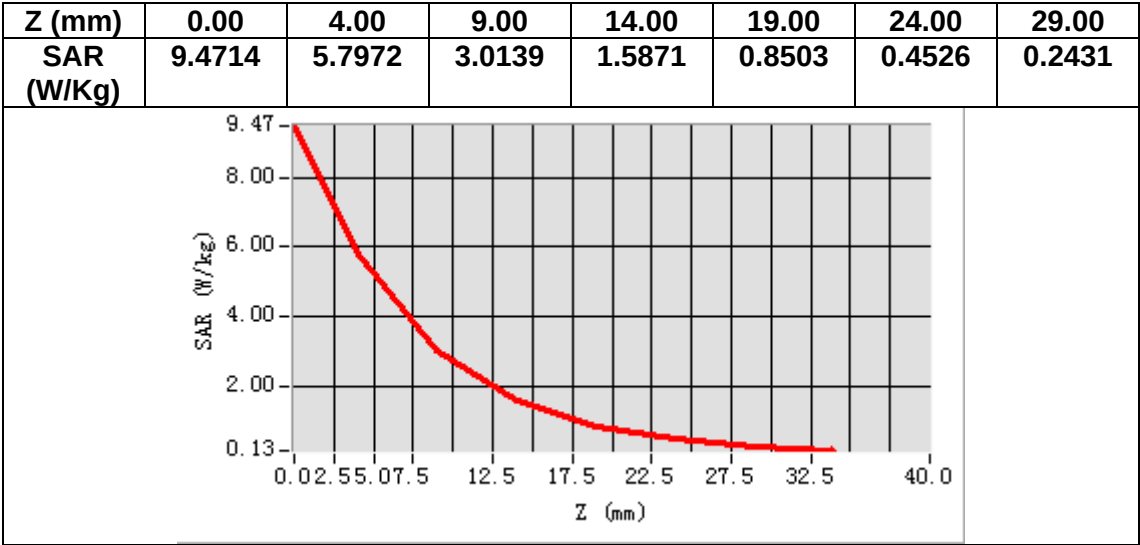
VOLUME SAR



Maximum location: X=0.00, Y=1.00

SAR Peak: 9.48 W/kg

SAR 10g (W/Kg)	2.362497
SAR 1g (W/Kg)	5.470207



MEASUREMENT 13

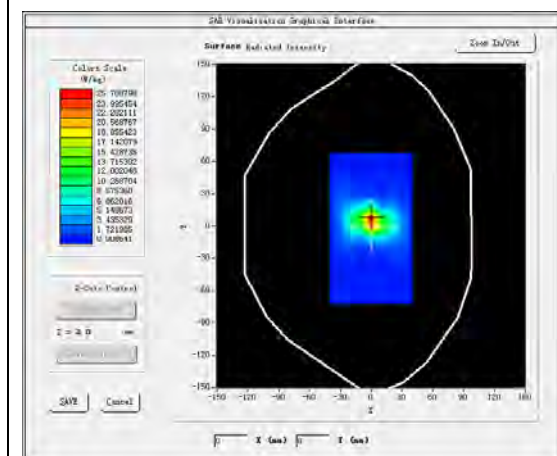
A. Experimental conditions.

Area Scan	<u>dx=10mm dy=10mm, h= 2.00 mm</u>
ZoomScan	<u>7x7x12,dx=4mm dy=4mm dz=2mm</u>
Phantom	<u>Validation plane</u>
Device Position	<u>Dipole</u>
Band	<u>CW5200</u>
Channels	<u>Middle</u>
Signal	<u>CW (Crest factor: 1.0)</u>

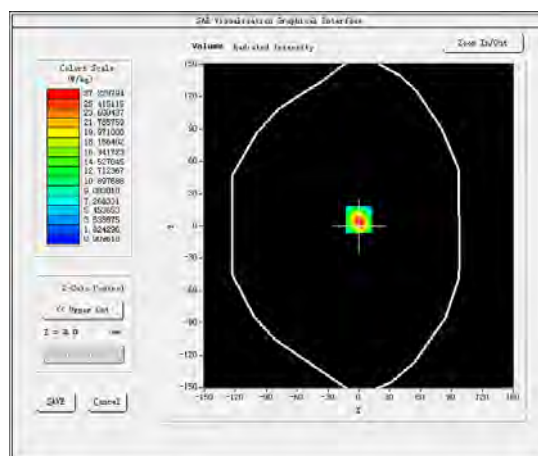
B. SAR Measurement Results

Frequency (MHz)	5200.000000
Relative permittivity (real part)	35.935237
Relative permittivity (imaginary part)	15.941710
Conductivity (S/m)	4.614271
Variation (%)	-0.590000

SURFACE SAR



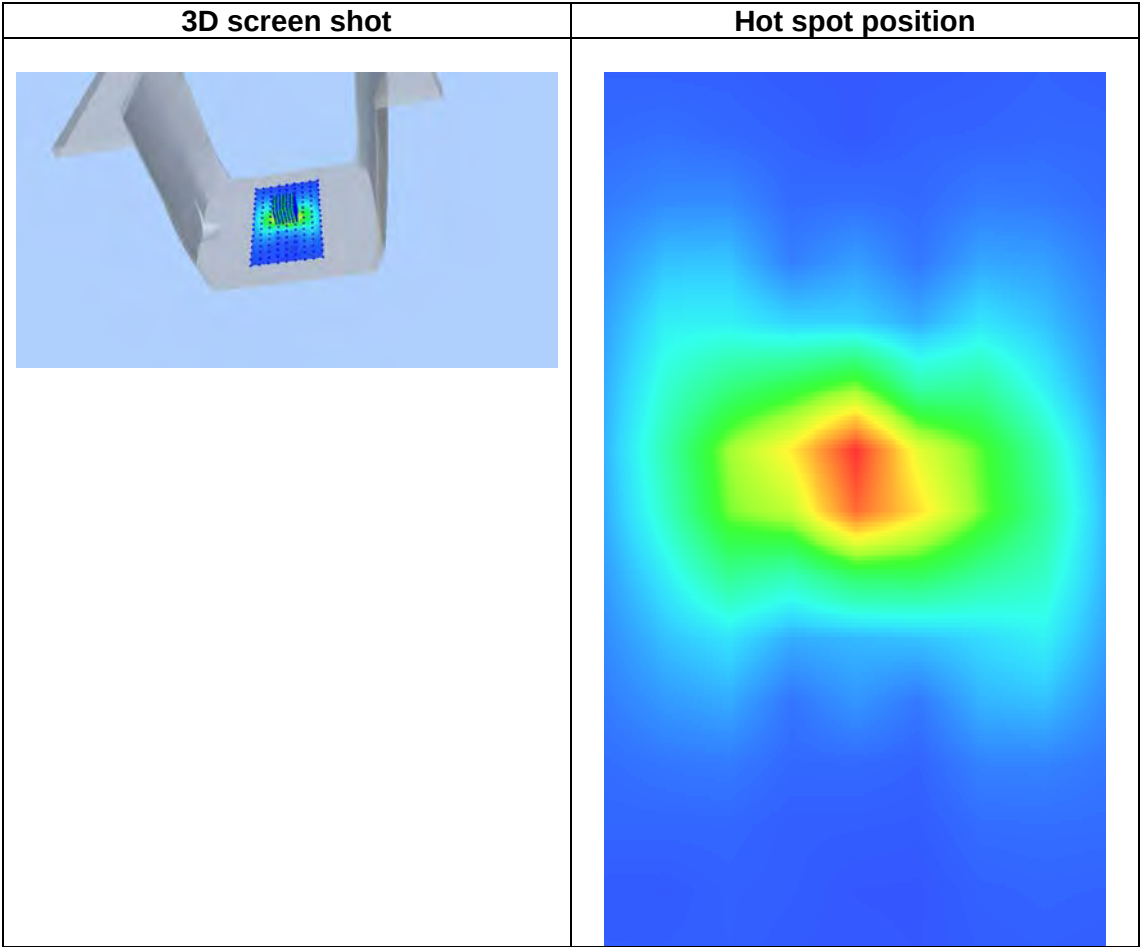
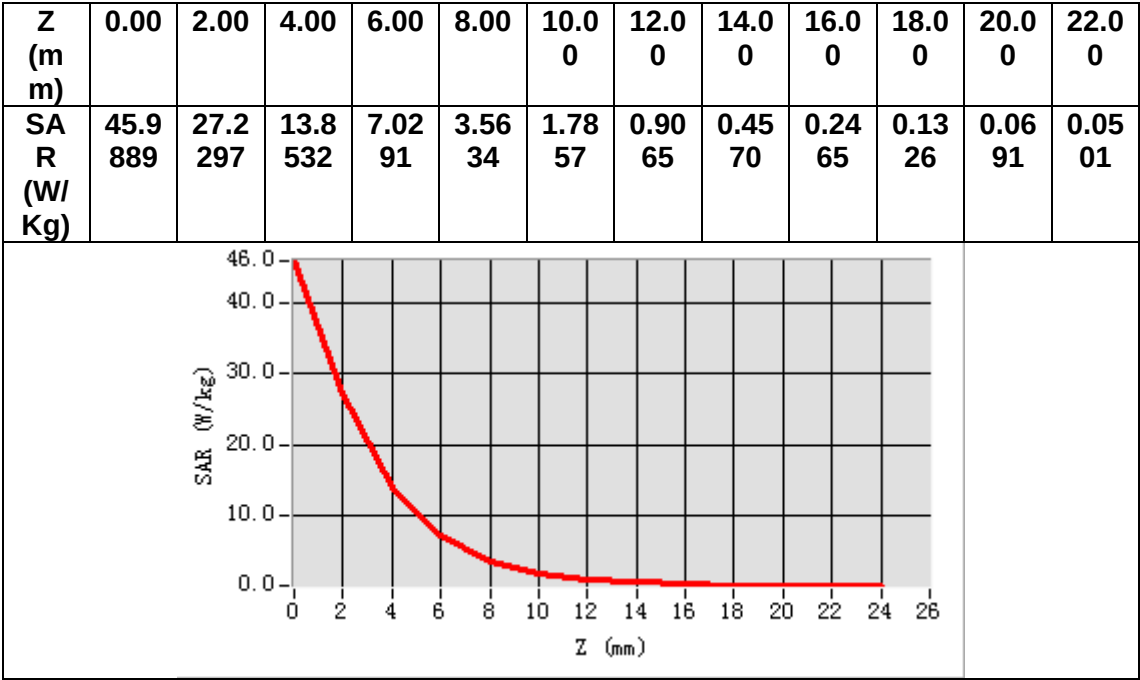
VOLUME SAR



Maximum location: X=0.00, Y=6.00

SAR Peak: 48.83 W/kg

SAR 10g (W/Kg)	5.451265
SAR 1g (W/Kg)	15.453777



MEASUREMENT 14

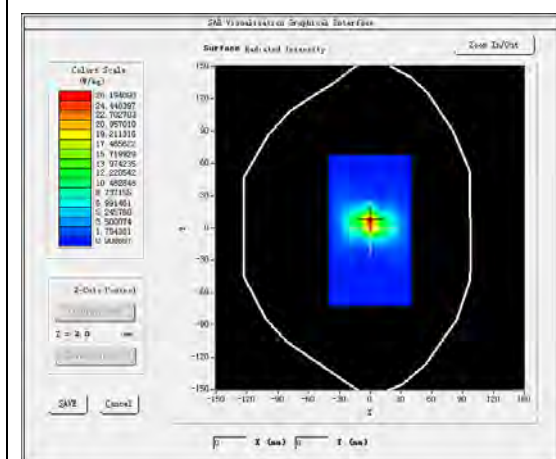
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=10mm dy=10mm, h= 2.00 mm</u>
<u>ZoomScan</u>	<u>7x7x12,dx=4mm dy=4mm dz=2mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Dipole</u>
<u>Band</u>	<u>CW5200</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>CW (Crest factor: 1.0)</u>

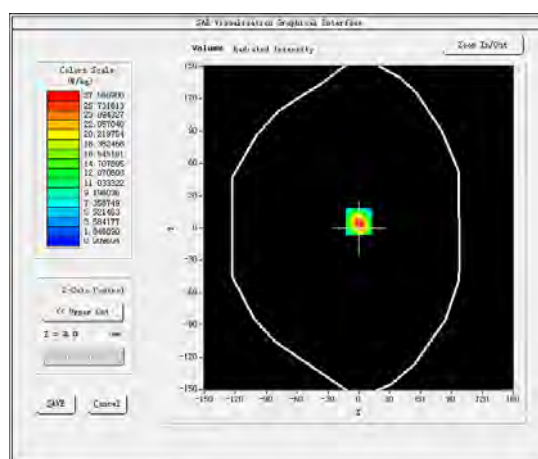
B. SAR Measurement Results

Frequency (MHz)	5200.000000
Relative permittivity (real part)	49.954251
Relative permittivity (imaginary part)	18.204510
Conductivity (S/m)	5.263375
Variation (%)	-0.590000

SURFACE SAR



VOLUME SAR

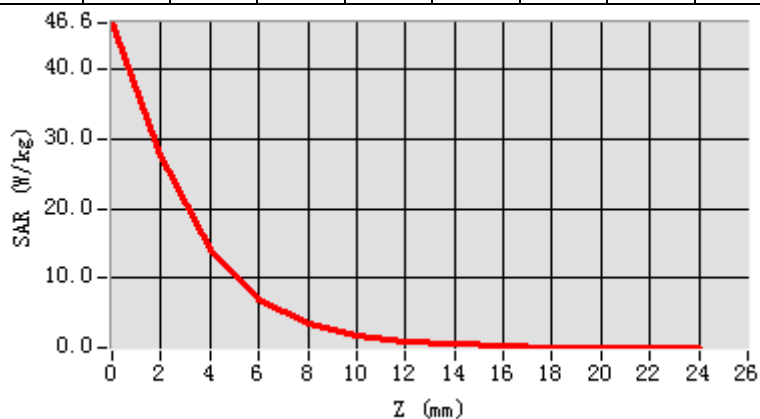


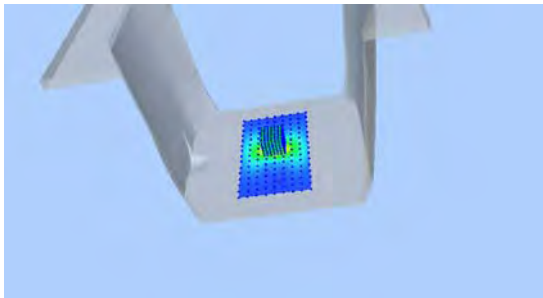
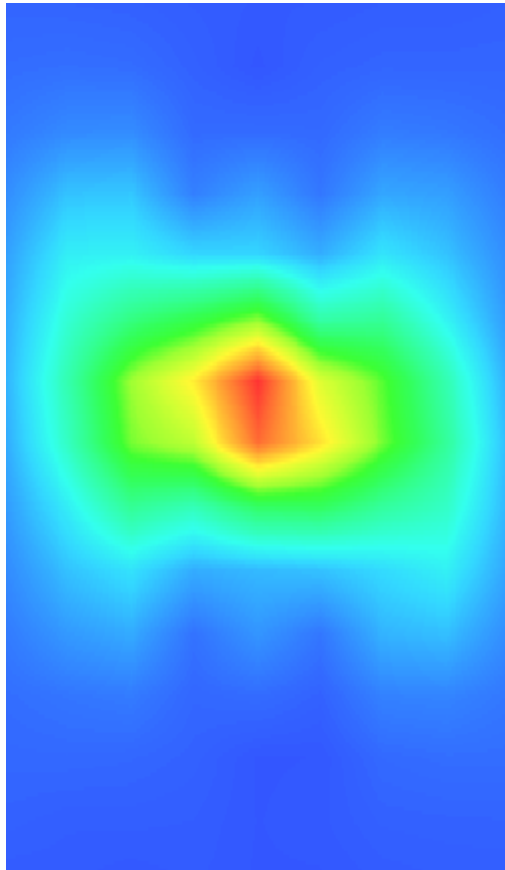
Maximum location: X=0.00, Y=6.00

SAR Peak: 49.61 W/kg

SAR 10g (W/Kg)	5.428463
SAR 1g (W/Kg)	15.498104

Z (mm)	SAR (W/kg)
0	46.6
2	28.0
4	14.0
6	7.0
8	3.5
10	1.5
12	0.5
14	0.1
16	0.0
18	0.0
20	0.0
22	0.0
24	0.0
26	0.0



3D screen shot	Hot spot position
	

MEASUREMENT 15

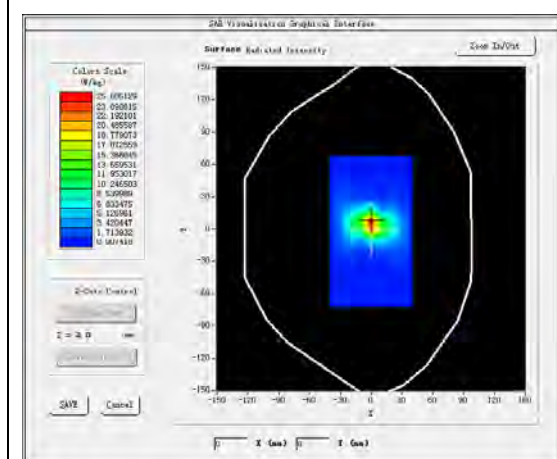
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=10mm dy=10mm, h= 2.00 mm</u>
<u>ZoomScan</u>	<u>7x7x12,dx=4mm dy=4mm dz=2mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Dipole</u>
<u>Band</u>	<u>CW5800</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>CW (Crest factor: 1.0)</u>

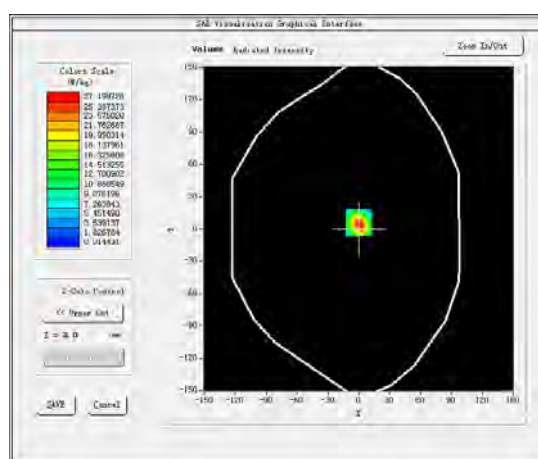
B. SAR Measurement Results

Frequency (MHz)	5800.000000
Relative permittivity (real part)	34.791237
Relative permittivity (imaginary part)	16.001710
Conductivity (S/m)	5.164271
Variation (%)	-0.390000

SURFACE SAR



VOLUME SAR

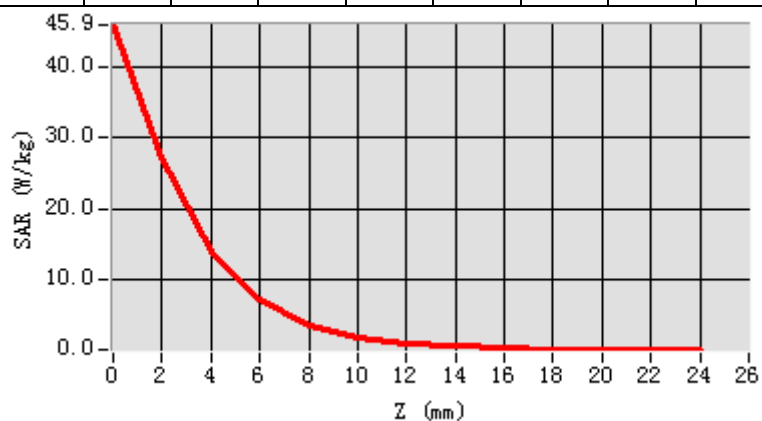


Maximum location: X=0.00, Y=6.00

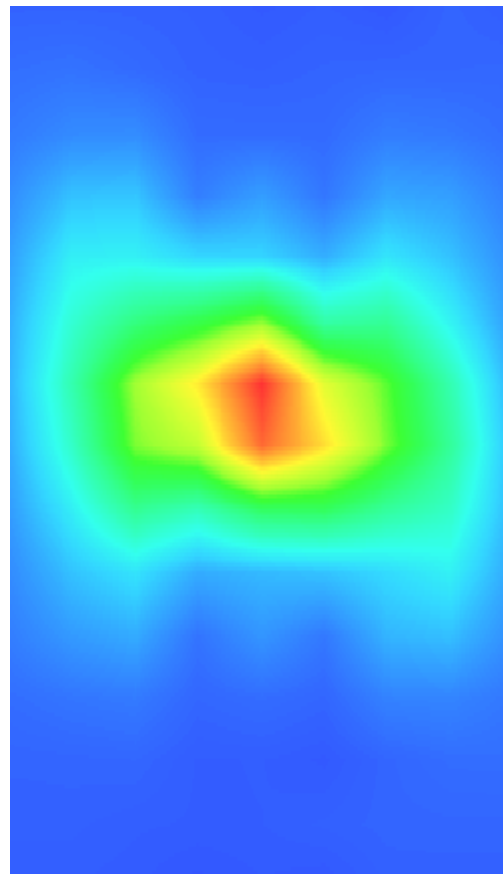
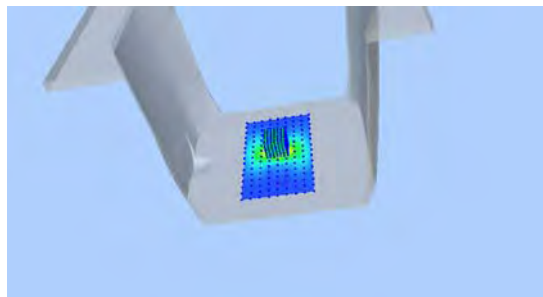
SAR Peak: 48.80 W/kg

SAR 10g (W/Kg)	5.744387
SAR 1g (W/Kg)	17.921446

Figure 10 is a line graph showing the SAR (W/kg) versus Z (mm) for the 1000 MHz antenna. The y-axis represents SAR (W/kg) and ranges from 0.0 to 45.9. The x-axis represents Z (mm) and ranges from 0 to 26. The SAR value starts at approximately 45.9 W/kg at Z=0 and decreases rapidly, reaching near zero by Z=12 mm.



Hot spot position



MEASUREMENT 16

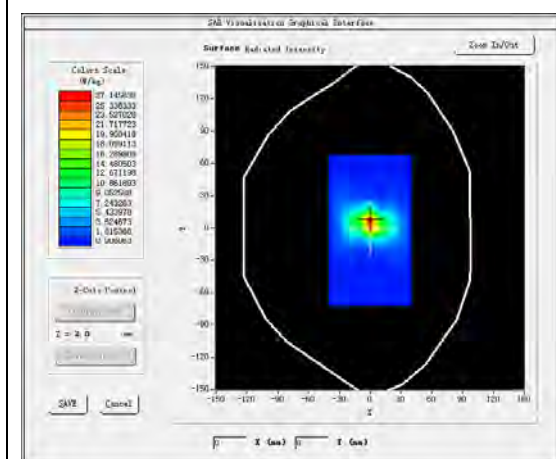
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=10mm dy=10mm, h= 2.00 mm</u>
<u>ZoomScan</u>	<u>7x7x12,dx=4mm dy=4mm dz=2mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Dipole</u>
<u>Band</u>	<u>CW5800</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>CW (Crest factor: 1.0)</u>

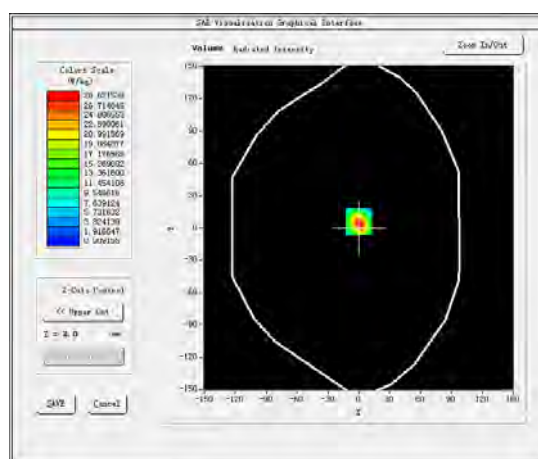
B. SAR Measurement Results

Frequency (MHz)	5800.000000
Relative permittivity (real part)	48.635861
Relative permittivity (imaginary part)	18.738841
Conductivity (S/m)	6.044222
Variation (%)	-0.450000

SURFACE SAR



VOLUME SAR

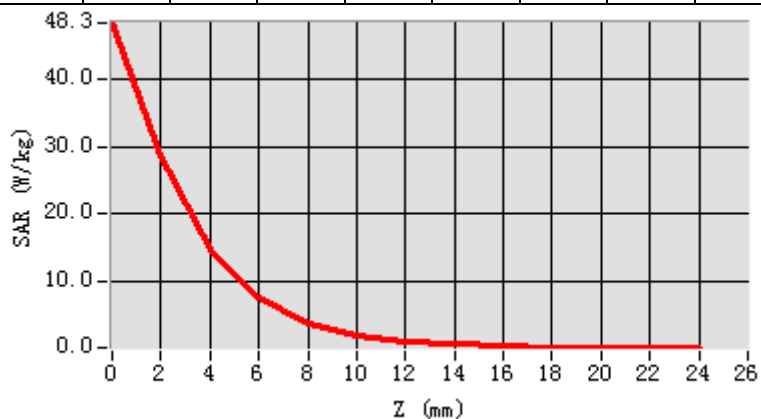


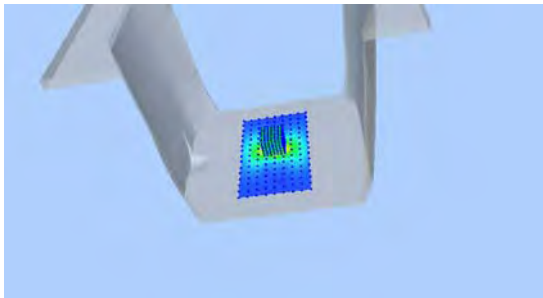
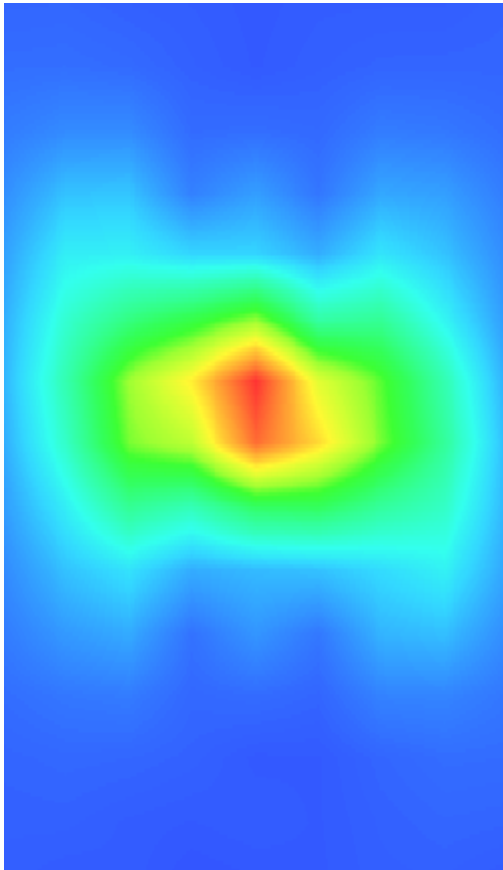
Maximum location: X=0.00, Y=6.00

SAR Peak: 51.30 W/kg

SAR 10g (W/Kg)	5.837744
SAR 1g (W/Kg)	16.799757

Graph of SAR (W/kg) vs Z (mm) for the 100 MHz case. The SAR starts at 48.3 W/kg at Z=0 and decays rapidly, reaching near zero by Z=16 mm.



3D screen shot	Hot spot position
 A 3D rendering of a robotic arm's gripper. The gripper is white and has a blue, grid-like structure on its palm. A hot spot visualization is overlaid on the grid, showing a central red area that transitions through yellow and green to blue at the edges, indicating the intensity of the hot spot.	 A 2D heatmap visualization of the hot spot position. The image shows a central red area, which is the hottest, surrounded by concentric rings of yellow, green, and blue, indicating decreasing temperature or intensity as the distance from the center increases. The background is a solid blue color.

13. Appendix C. Plots of High SAR Measurement

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MEASUREMENT 24 LTE Band VII Body
MEASUREMENT 25 LTE Band XII Head
MEASUREMENT 26 LTE Band XII Body
MEASUREMENT 27 LTE Band XVII Head
MEASUREMENT 28 LTE Band XVII Body
MEASUREMENT 29 LTE Band XLI Head
MEASUREMENT 30 LTE Band XLI Body

MEASUREMENT 1

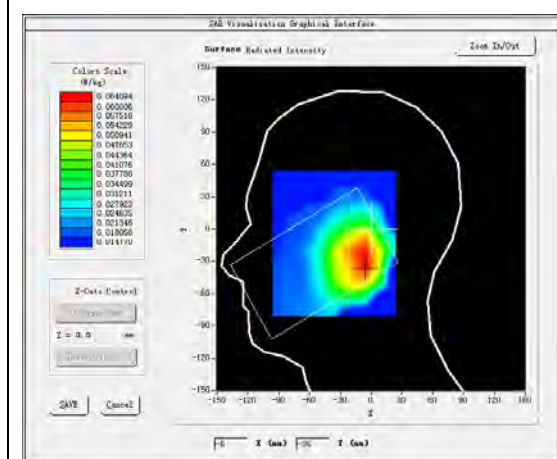
A. Experimental conditions.

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

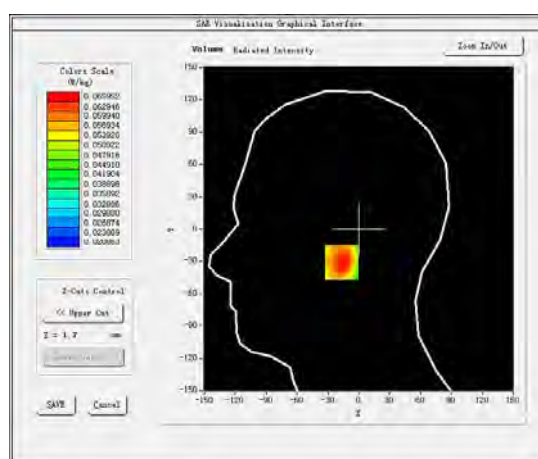
B. SAR Measurement Results

Frequency (MHz)	836.400000
Relative permittivity (real part)	41.360958
Relative permittivity (imaginary part)	19.441540
Conductivity (S/m)	0.903384
Variation (%)	2.050000

SURFACE SAR



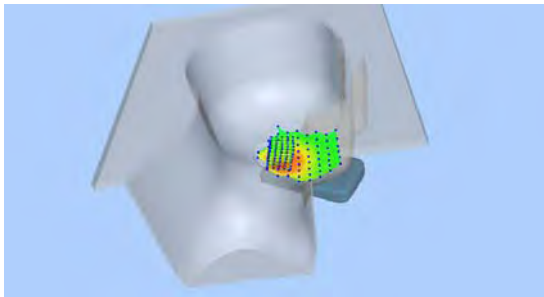
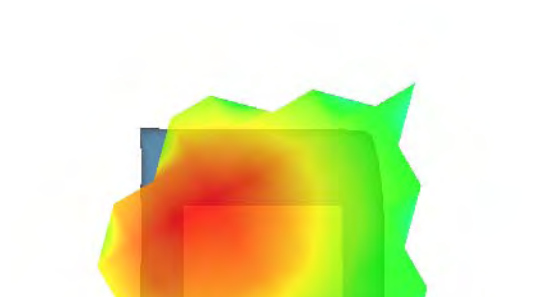
VOLUME SAR



Maximum location: X=-7.00, Y=-31.00

SAR Peak: 0.08 W/kg

SAR 10g (W/Kg)	0.048172
SAR 1g (W/Kg)	0.064247

3D screen shot	Hot spot position
 A 3D visualization of a knee joint model. The femur is shown in a light blue color, and the tibia is in a darker blue. A grid of points is overlaid on the femur, with colors ranging from green to red, indicating a heat map of the joint. The points are concentrated in the central region of the femur.	 A visualization of the hot spot position. It shows a 3D model of the knee joint with a red square indicating the hot spot. The square is centered on the femur, corresponding to the area of highest intensity in the 3D screen shot. The background is a greenish-yellow color.

MEASUREMENT 2

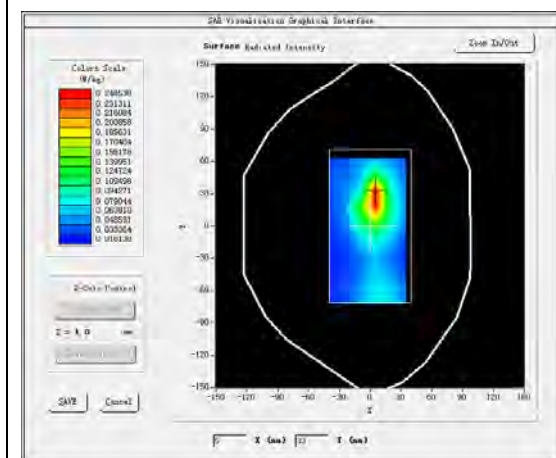
A. Experimental conditions.

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

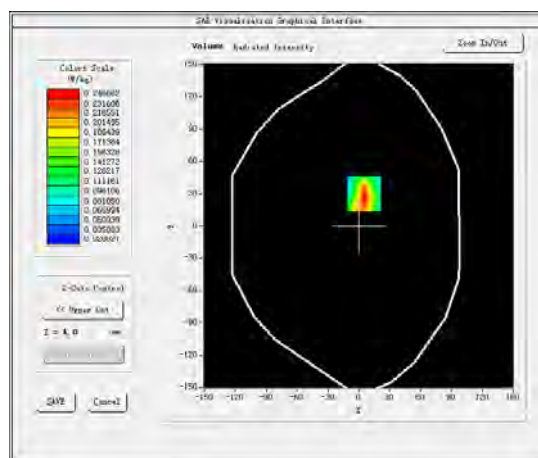
B. SAR Measurement Results

Frequency (MHz)	836.400000
Relative permittivity (real part)	54.839581
Relative permittivity (imaginary part)	21.572741
Conductivity (S/m)	1.002413
Variation (%)	1.660000

SURFACE SAR



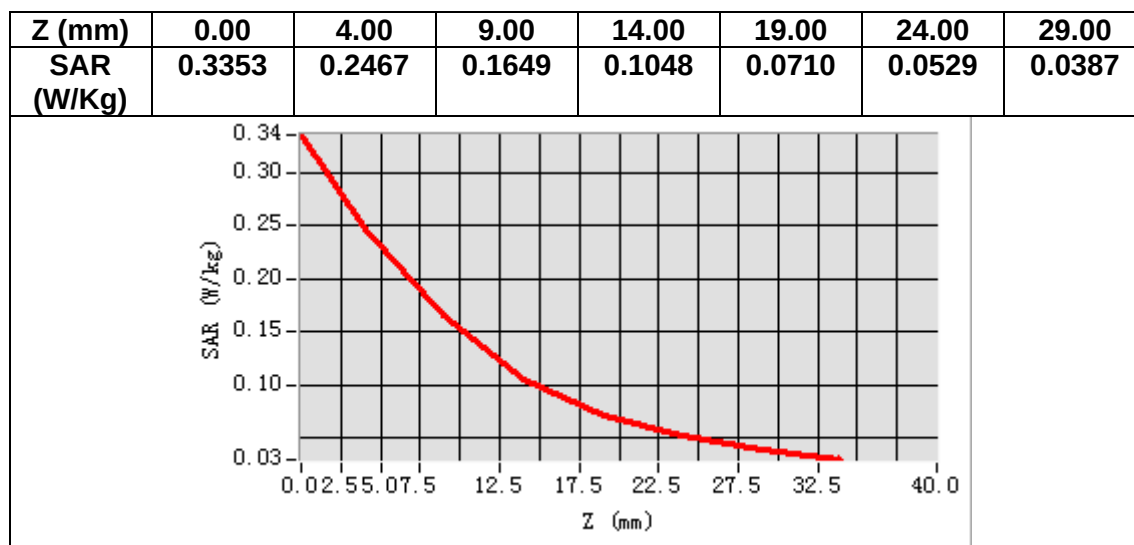
VOLUME SAR



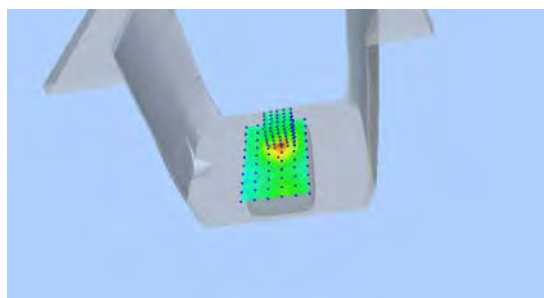
Maximum location: X=5.00, Y=30.00

SAR Peak: 0.34 W/kg

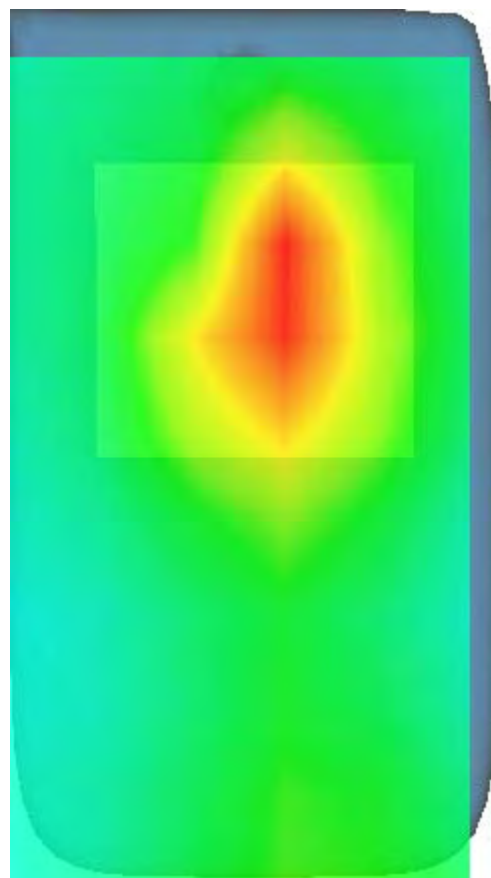
SAR 10g (W/Kg)	0.138635
SAR 1g (W/Kg)	0.233125



3D screen shot



Hot spot position



MEASUREMENT 3

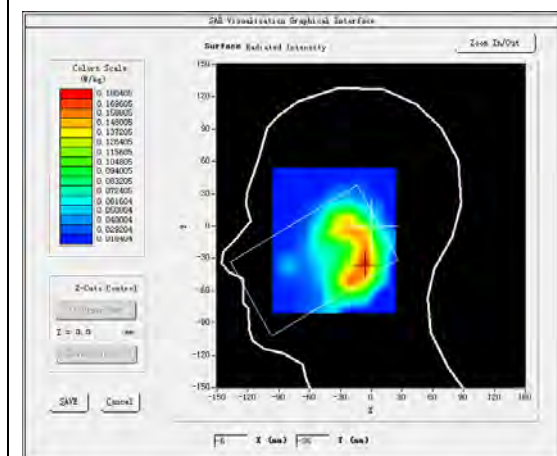
A. Experimental conditions.

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>

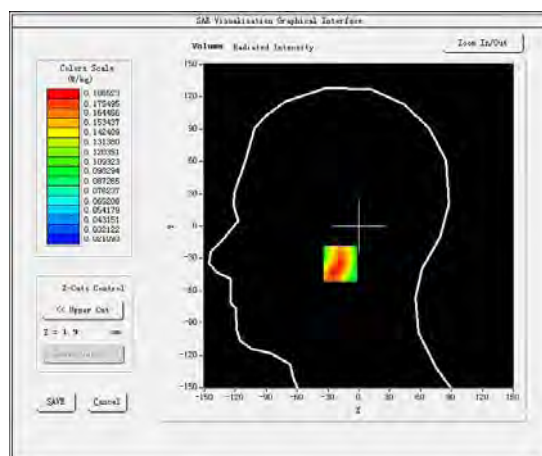
B. SAR Measurement Results

Frequency (MHz)	1880.000000
Relative permittivity (real part)	39.870399
Relative permittivity (imaginary part)	13.437800
Conductivity (S/m)	1.403504
Variation (%)	1.500000

SURFACE SAR



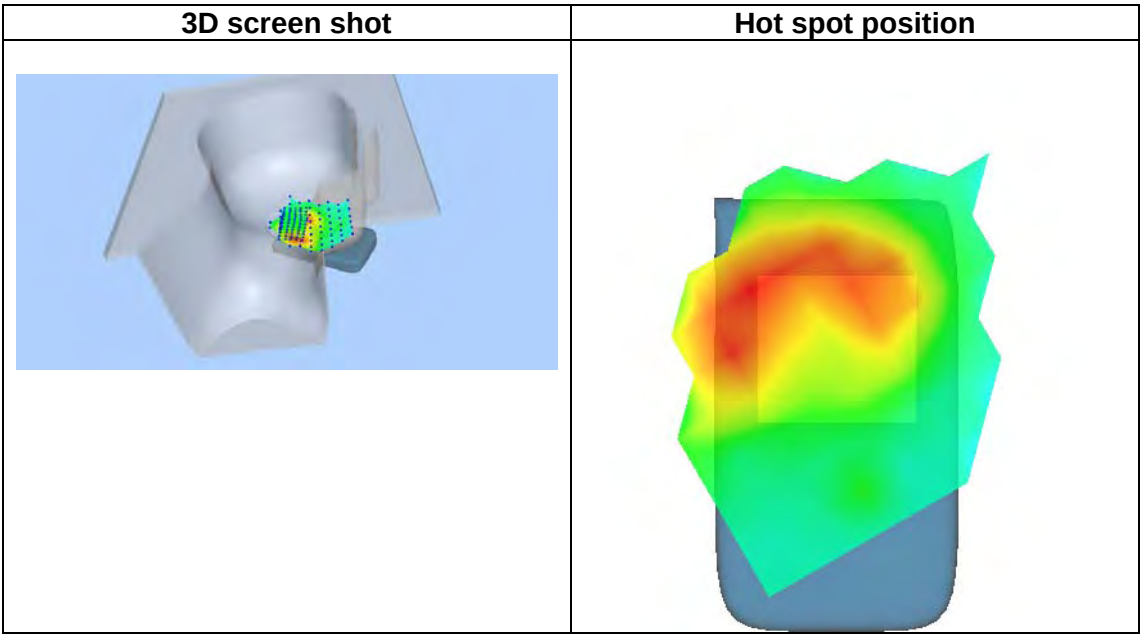
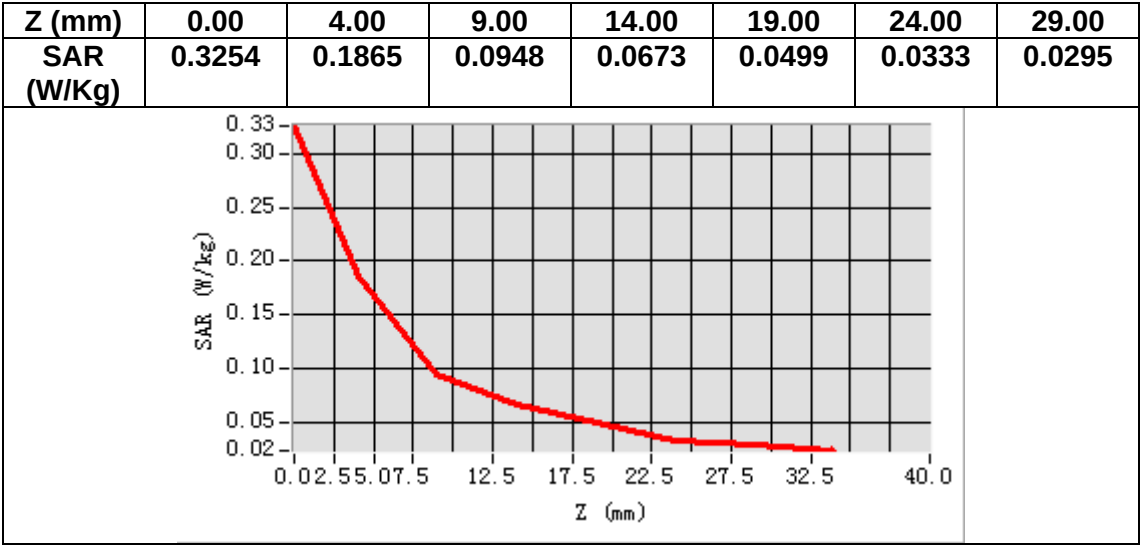
VOLUME SAR



Maximum location: X=-7.00, Y=-35.00

SAR Peak: 0.29 W/kg

SAR 10g (W/Kg)	0.105418
SAR 1g (W/Kg)	0.180137



MEASUREMENT 4

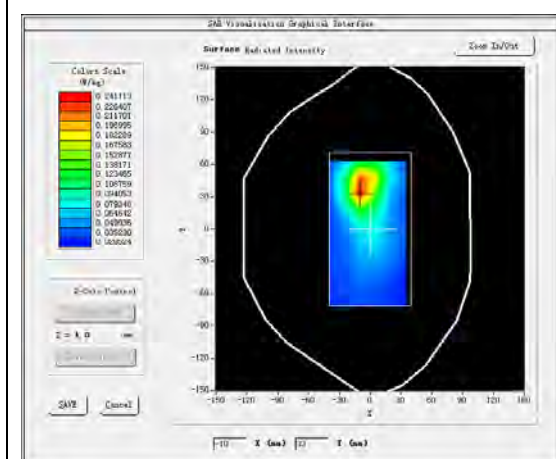
A. Experimental conditions.

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

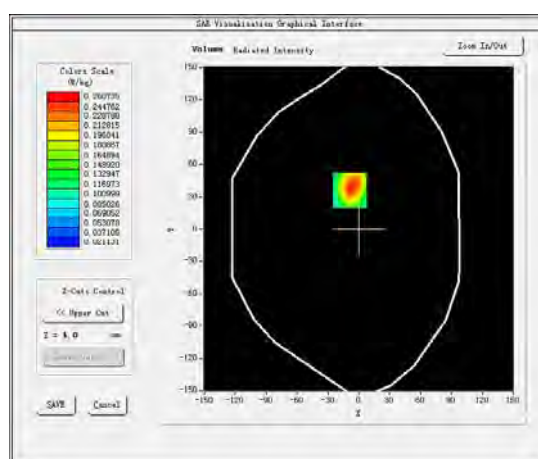
B. SAR Measurement Results

Frequency (MHz)	1880.000000
Relative permittivity (real part)	39.870399
Relative permittivity (imaginary part)	13.437800
Conductivity (S/m)	1.403504
Variation (%)	1.270000

SURFACE SAR



VOLUME SAR



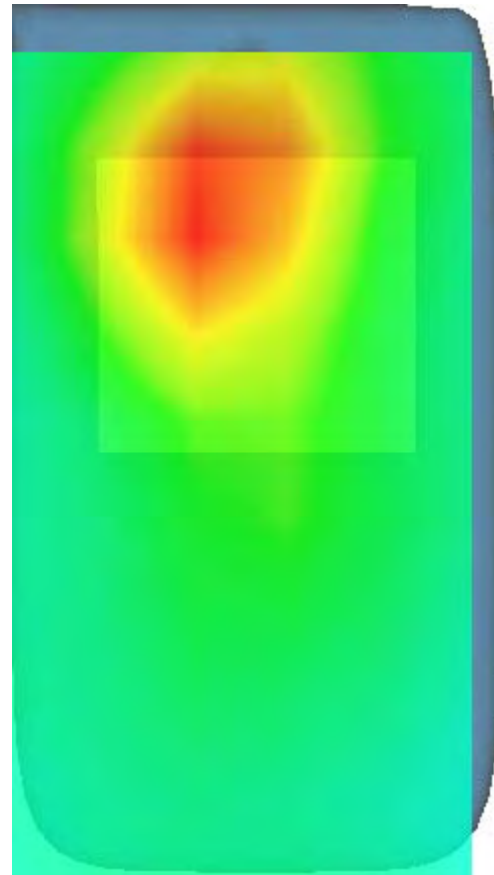
Maximum location: X=-9.00, Y=36.00

SAR Peak: 0.40 W/kg

SAR 10g (W/Kg)	0.141580
SAR 1g (W/Kg)	0.249179

Graph of SAR (W/kg) vs Z (mm) for the 100 MHz case. The SAR decreases from approximately 0.38 W/kg at Z=0 to about 0.03 W/kg at Z=35 mm.

Hot spot position



MEASUREMENT 5

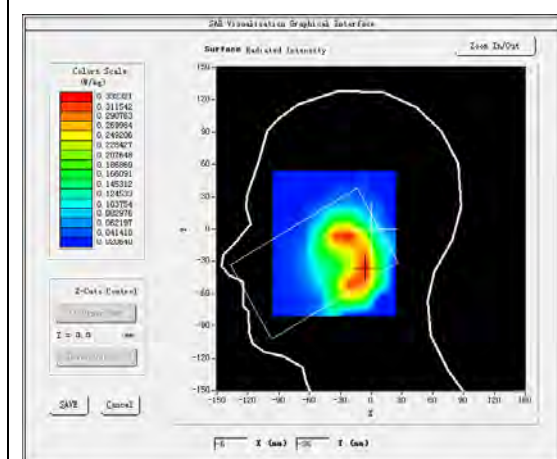
A. Experimental conditions.

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>

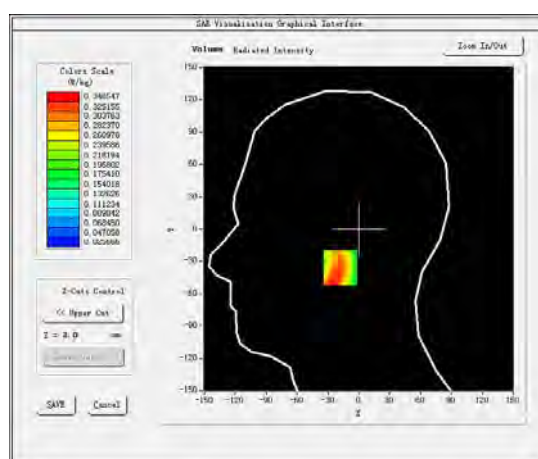
B. SAR Measurement Results

Frequency (MHz)	1880.000000
Relative permittivity (real part)	39.870399
Relative permittivity (imaginary part)	13.437800
Conductivity (S/m)	1.403504
Variation (%)	1.930000

SURFACE SAR



VOLUME SAR

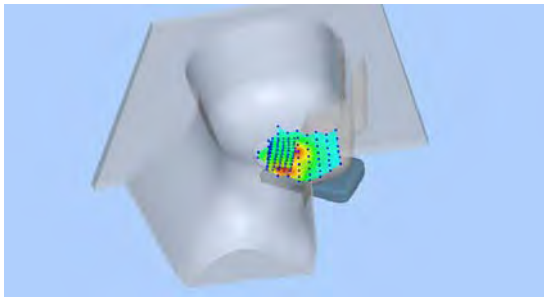
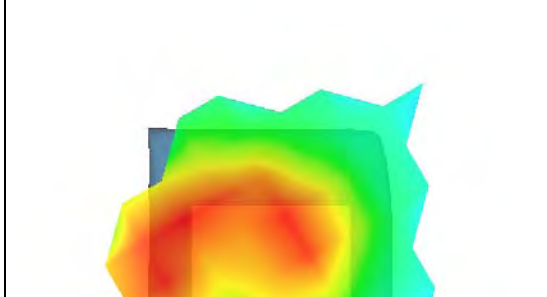


Maximum location: X=-7.00, Y=-36.00

SAR Peak: 0.55 W/kg

SAR 10g (W/Kg)	0.190540
SAR 1g (W/Kg)	0.330394

Graph of SAR (W/kg) vs Z (mm) for the 100 MHz plane wave. The SAR starts at approximately 0.68 W/kg at Z=0 and decreases rapidly, reaching near zero by Z=32.5 mm.

3D screen shot	Hot spot position
 A 3D visualization of a knee joint model. The femur (thigh bone) is at the top, and the tibia (shin bone) is at the bottom. A small, localized area on the tibia is highlighted with a color-coded grid, indicating a hot spot. The grid shows a concentration of red and yellow colors, suggesting high values, surrounded by green and blue areas.	 A 3D visualization of the same knee joint model, showing the hot spot position. The hot spot is represented by a large, irregular, multi-colored region on the tibia. The colors range from red (high intensity) in the center to yellow, green, and blue (lower intensity) towards the edges. The hot spot is positioned on the anterior (front) surface of the tibia, near the joint space.

MEASUREMENT 6

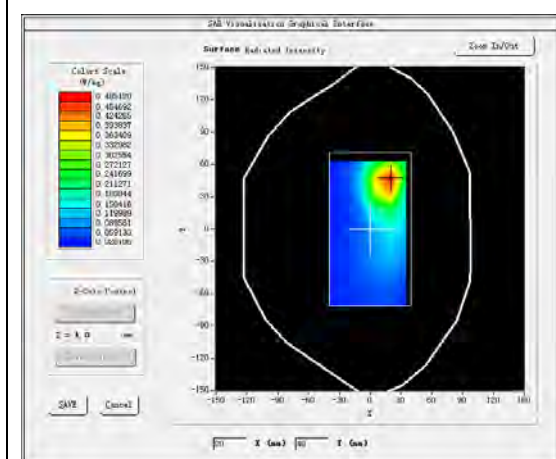
A. Experimental conditions.

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>

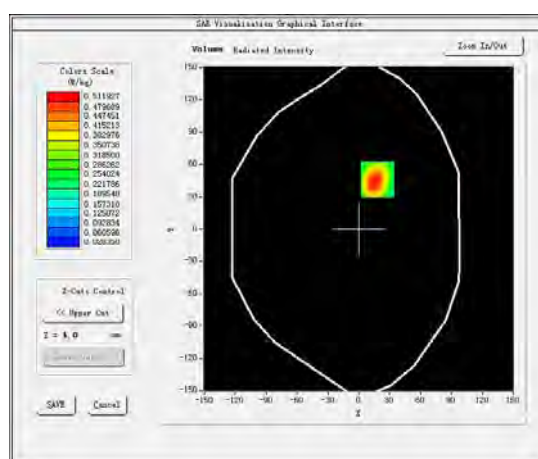
B. SAR Measurement Results

Frequency (MHz)	1880.000000
Relative permittivity (real part)	53.238899
Relative permittivity (imaginary part)	14.707700
Conductivity (S/m)	1.536138
Variation (%)	-3.760000

SURFACE SAR



VOLUME SAR



Maximum location: X=18.00, Y=46.00

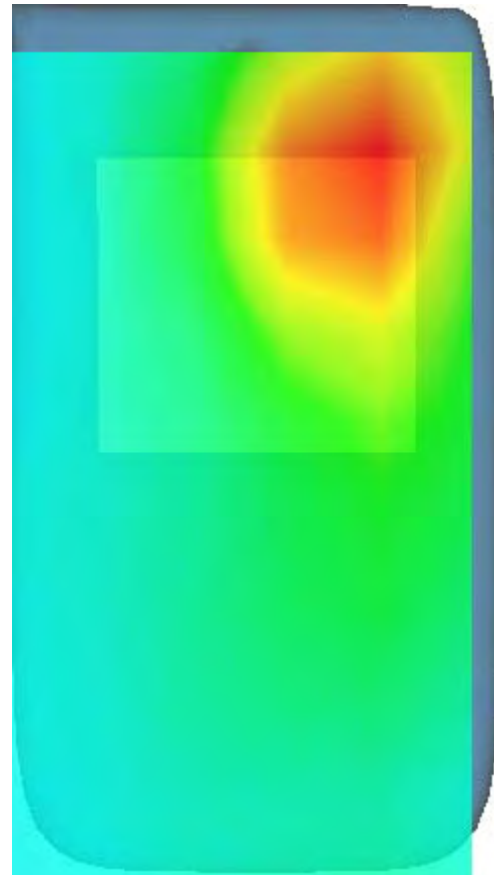
SAR Peak: 0.81 W/kg

SAR 10g (W/Kg)	0.273859
SAR 1g (W/Kg)	0.501227

The graph shows the SAR distribution along the Z-axis for a 100 W CW horn antenna. The SAR starts at approximately 0.8 W/kg at Z=0 and decreases rapidly, reaching near zero at Z=40 mm. The curve is smooth and monotonically decreasing.

Z (mm)	SAR (W/kg)
0.0	0.80
2.5	0.60
5.0	0.45
7.5	0.35
10.0	0.28
12.5	0.22
15.0	0.18
17.5	0.15
20.0	0.12
22.5	0.10
25.0	0.08
27.5	0.06
30.0	0.05
32.5	0.04
35.0	0.03
37.5	0.02
40.0	0.01

Hot spot position



MEASUREMENT 7

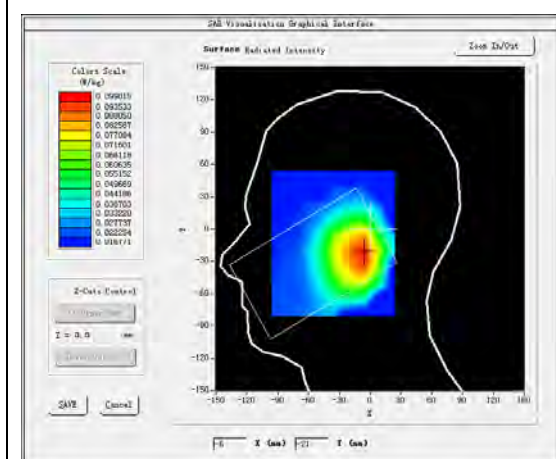
A. Experimental conditions.

Area Scan	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
ZoomScan	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
Phantom	<u>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>

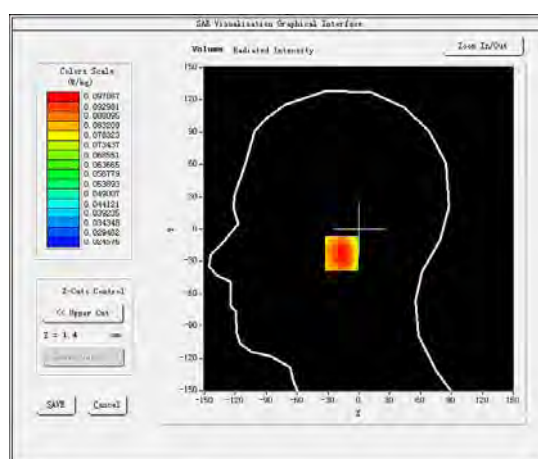
B. SAR Measurement Results

Frequency (MHz)	836.400000
Relative permittivity (real part)	41.360958
Relative permittivity (imaginary part)	19.441540
Conductivity (S/m)	0.903384
Variation (%)	1.380000

SURFACE SAR



VOLUME SAR

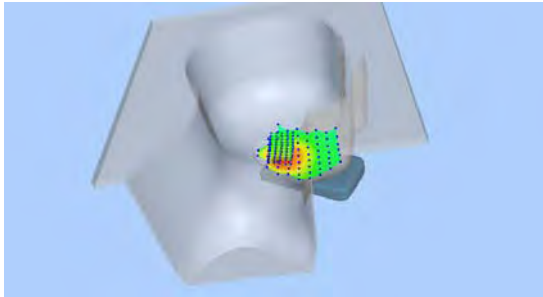
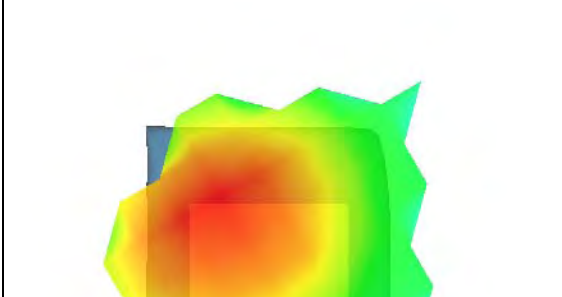


Maximum location: X=-8.00, Y=-23.00

SAR Peak: 0.12 W/kg

SAR 10g (W/Kg)	0.069987
SAR 1g (W/Kg)	0.094096

Z (mm)	SAR (W/kg)
0.0	0.120
2.5	0.105
5.0	0.095
7.5	0.085
10.0	0.075
12.5	0.068
15.0	0.060
17.5	0.052
20.0	0.045
22.5	0.040
25.0	0.035
27.5	0.032
30.0	0.030
32.5	0.028
35.0	0.025

3D screen shot	Hot spot position
 A 3D visualization of a knee joint model. The femur (thigh bone) is at the top, and the tibia (shin bone) is at the bottom. A small, localized area on the tibia is highlighted with a color-coded hot spot, showing a gradient from green to red, indicating a specific region of interest or damage.	 A 3D visualization of the same knee joint model, showing the hot spot position. The hot spot is represented by a large, irregular, multi-colored region (green, yellow, orange, red) that covers a significant portion of the tibia, indicating a widespread area of concern or damage.

MEASUREMENT 8

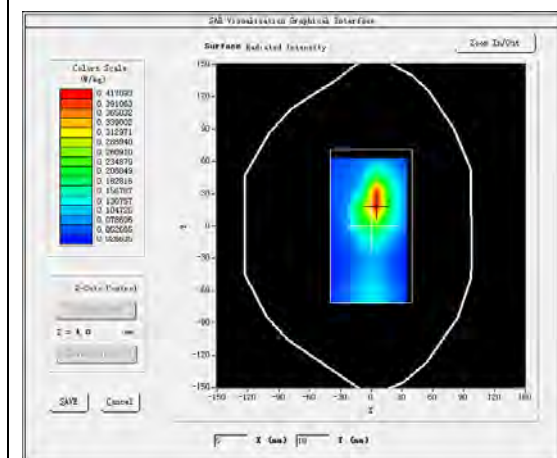
A. Experimental conditions.

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>Band5 WCDMA850</u>
Channels	<u>Middle</u>
Signal	<u>WCDMA (Crest factor: 1.0)</u>

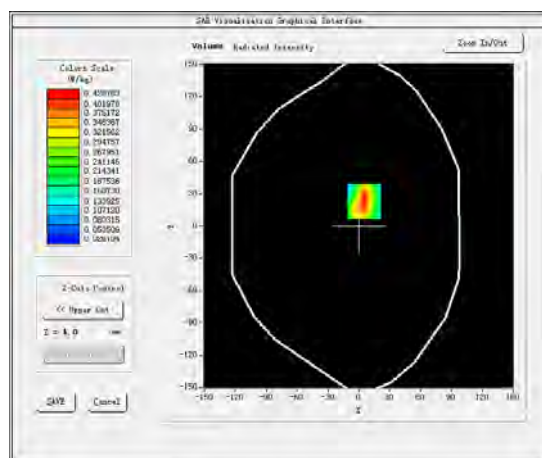
B. SAR Measurement Results

Frequency (MHz)	836.400000
Relative permittivity (real part)	54.839581
Relative permittivity (imaginary part)	21.572741
Conductivity (S/m)	1.002413
Variation (%)	0.180000

SURFACE SAR



VOLUME SAR



Maximum location: X=5.00, Y=23.00

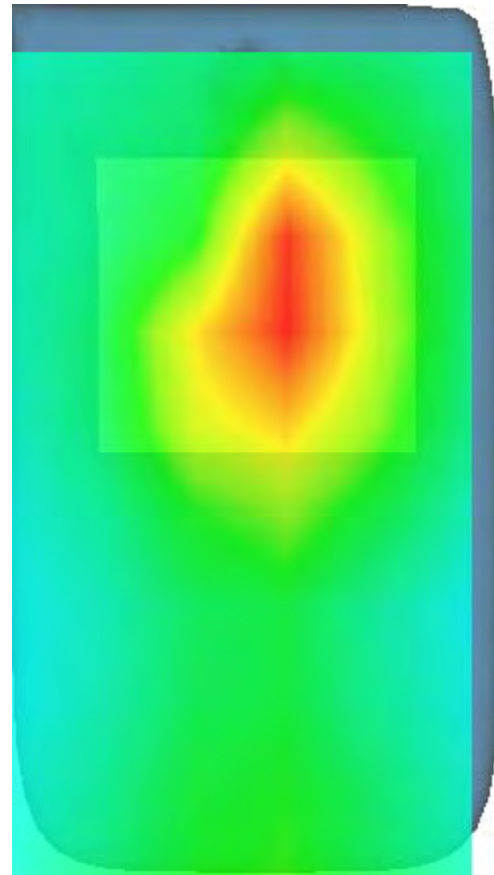
SAR Peak: 0.61 W/kg

SAR 10g (W/Kg)	0.234813
SAR 1g (W/Kg)	0.402297

A line graph showing the relationship between SAR (W/kg) and Z (mm) for a 100 W CW horn antenna. The y-axis represents SAR (W/kg) and ranges from 0.0 to 0.6 with major grid lines every 0.1 units. The x-axis represents Z (mm) and ranges from 0.0 to 40.0 with major grid lines every 5.0 units. A red curve starts at approximately (0.0, 0.6) and decreases monotonically, reaching 0.0 at Z = 32.5 mm.

Z (mm)	SAR (W/kg)
0.0	0.60
2.5	0.48
5.0	0.40
7.5	0.32
10.0	0.25
12.5	0.20
15.0	0.16
17.5	0.13
20.0	0.10
22.5	0.08
25.0	0.06
27.5	0.04
30.0	0.02
32.5	0.00

Hot spot position



MEASUREMENT 9

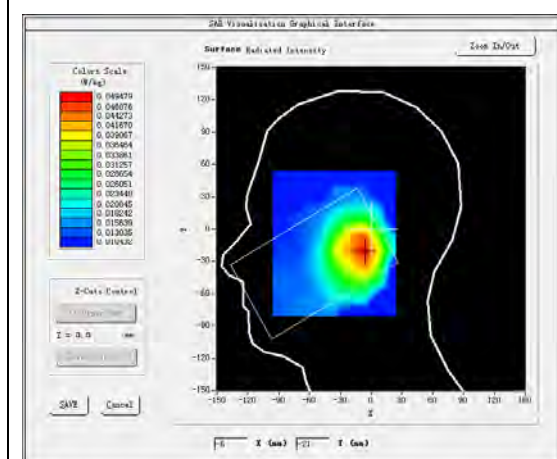
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Left head</u>
<u>Device Position</u>	<u>Cheek</u>
<u>Band</u>	<u>BC0 US Cellular</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>CDMA (Crest factor: 1.0)</u>

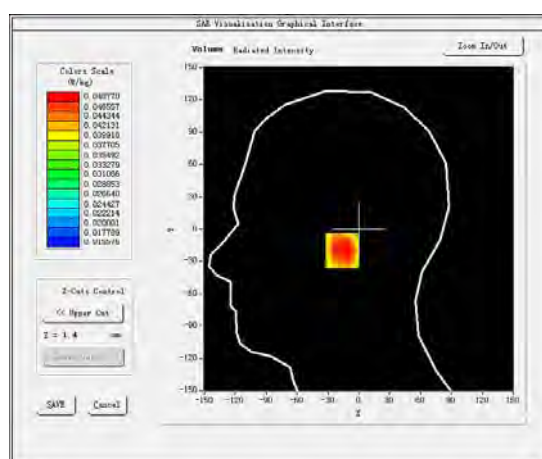
B. SAR Measurement Results

Frequency (MHz)	836.520020
Relative permittivity (real part)	41.364067
Relative permittivity (imaginary part)	19.439932
Conductivity (S/m)	0.903438
Variation (%)	2.160000

SURFACE SAR



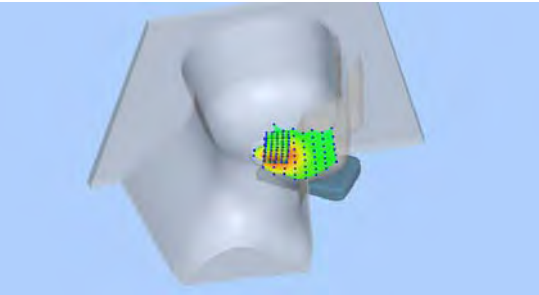
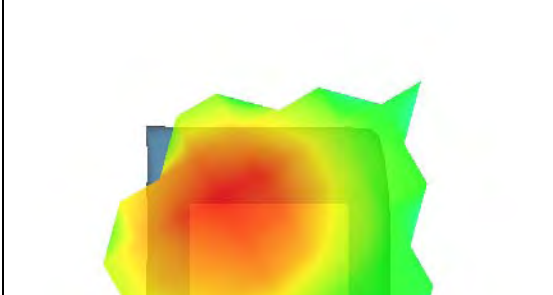
VOLUME SAR



Maximum location: X=-8.00, Y=-20.00

SAR Peak: 0.06 W/kg

SAR 10g (W/Kg)	0.036256
SAR 1g (W/Kg)	0.047747

3D screen shot	Hot spot position
 A 3D rendering of a knee joint model. A grid of colored dots (red, yellow, green, blue) is overlaid on the joint, indicating the location of the hot spot. The dots are concentrated in the center of the joint, with a color gradient from red (highest intensity) to blue (lowest intensity).	 A 3D rendering of a knee joint model showing the hot spot position. The hot spot is represented by a large, irregularly shaped region of high intensity (red and yellow) centered on the joint, surrounded by a green and blue region. The hot spot is overlaid on a semi-transparent blue rectangular plane.

MEASUREMENT 10

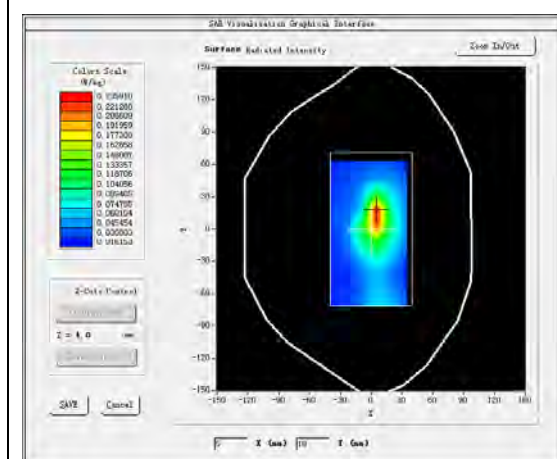
A. Experimental conditions.

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>BC0 US Cellular</u>
Channels	<u>Middle</u>
Signal	<u>CDMA (Crest factor: 1.0)</u>

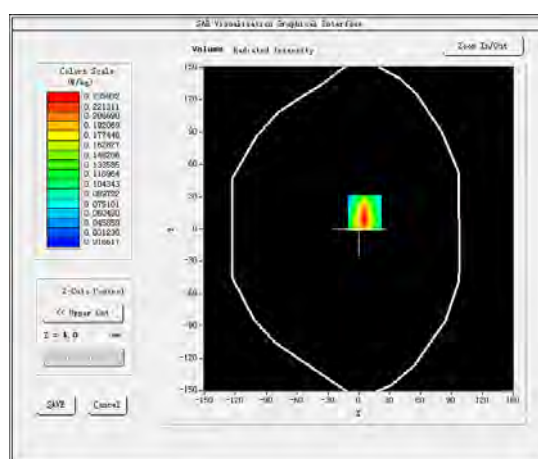
B. SAR Measurement Results

Frequency (MHz)	836.520020
Relative permittivity (real part)	54.844284
Relative permittivity (imaginary part)	21.565851
Conductivity (S/m)	1.002237
Variation (%)	2.340000

SURFACE SAR



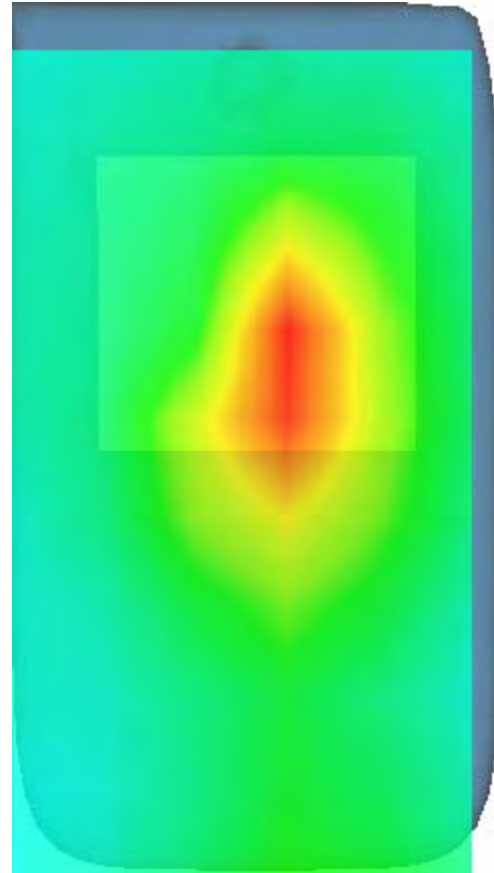
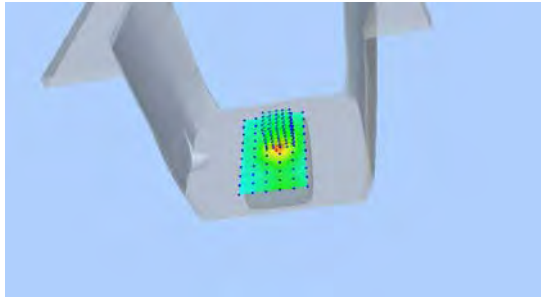
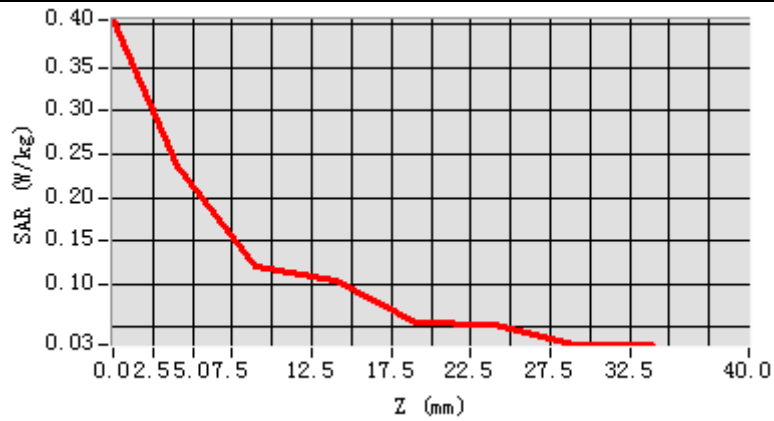
VOLUME SAR



Maximum location: X=6.00, Y=15.00

SAR Peak: 0.35 W/kg

SAR 10g (W/Kg)	0.128981
SAR 1g (W/Kg)	0.223551



MEASUREMENT 11

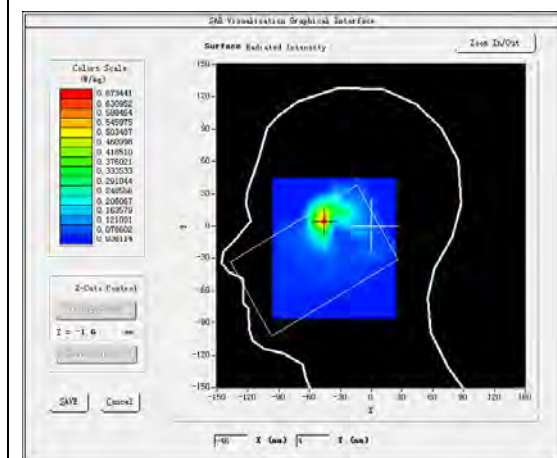
A. Experimental conditions.

Area Scan	<u>dx=10mm dy=10mm, h= 2.00 mm</u>
ZoomScan	<u>7x7x12,dx=4mm dy=4mm dz=2mm</u>
Phantom	<u>Left head</u>
Device Position	<u>Cheek</u>
Band	<u>IEEE 802.11a U-NII</u>
Channels	<u>Middle</u>
Signal	<u>IEEE802.11a (Crest factor: 1.0)</u>

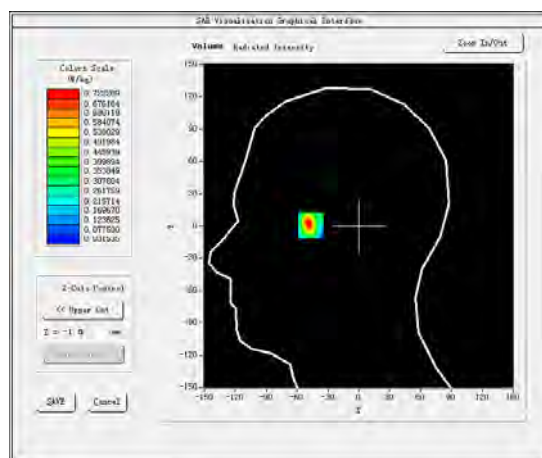
B. SAR Measurement Results

Frequency (MHz)	5200.000000
Relative permittivity (real part)	35.942982
Relative permittivity (imaginary part)	15.941619
Conductivity (S/m)	4.605357
Variation (%)	-2.040000

SURFACE SAR



VOLUME SAR

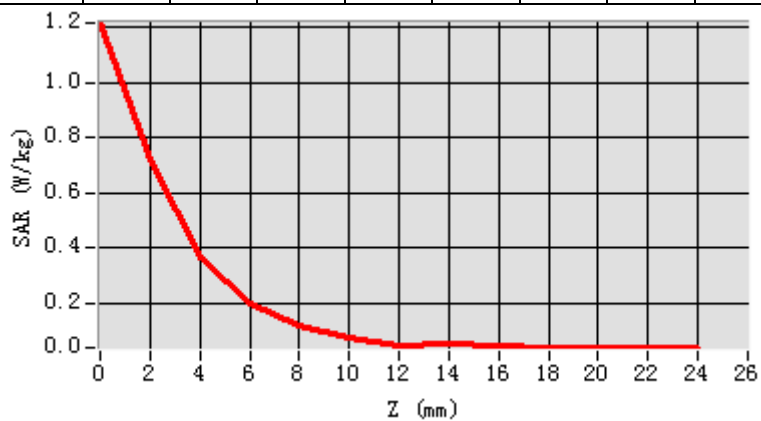


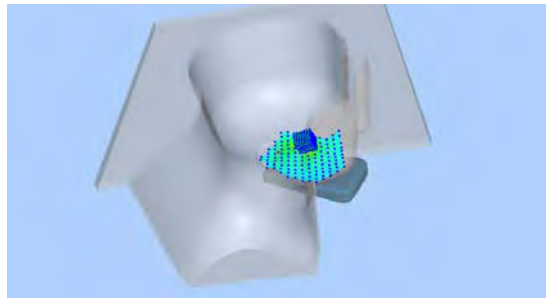
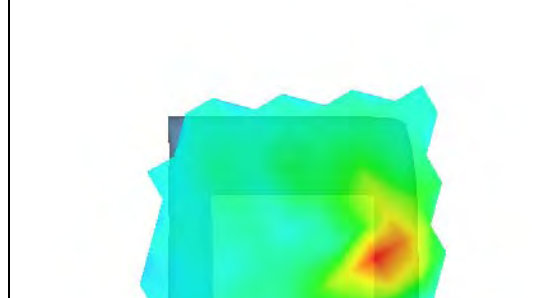
Maximum location: X=-47.00, Y=5.00

SAR Peak: 2.00 W/kg

SAR 10g (W/Kg)	0.239300
SAR 1g (W/Kg)	0.703003

Z (m m)	0.00	2.00	4.00	6.00	8.00	10.0 0	12.0 0	14.0 0	16.0 0	18.0 0	20.0 0	22.0 0
SA R (W/ Kg)	1.21 53	0.72 22	0.36 47	0.19 76	0.12 22	0.07 56	0.05 09	0.05 12	0.04 58	0.04 01	0.04 05	0.04 05



3D screen shot	Hot spot position
 A 3D rendering of a knee joint model. A sensor array, represented by a grid of small blue and green squares, is positioned on the patella (kneecap). The array is connected to a small black rectangular device, likely a data logger or power source, which is also attached to the knee.	 A heatmap visualization of the knee joint, showing the distribution of a measured quantity (likely temperature or strain). The color scale ranges from blue (low) to red (high). A prominent red and yellow 'hot spot' is visible on the patella, corresponding to the location of the sensor array shown in the 3D model. The rest of the joint is predominantly blue and green, indicating lower values.

MEASUREMENT 12

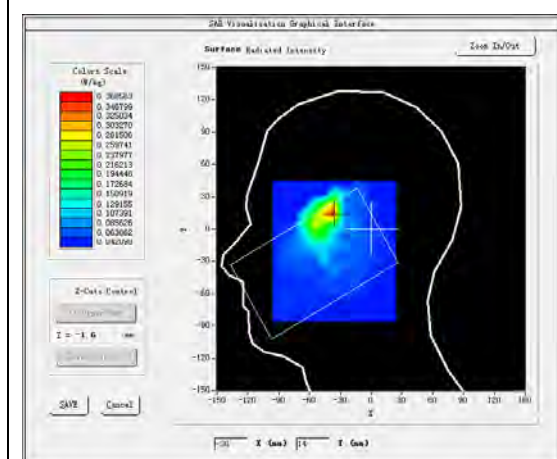
A. Experimental conditions.

Area Scan	<u>dx=10mm dy=10mm, h= 2.00 mm</u>
ZoomScan	<u>7x7x12,dx=4mm dy=4mm dz=2mm</u>
Phantom	<u>Left head</u>
Device Position	<u>Cheek</u>
Band	<u>IEEE 802.11a U-NII</u>
Channels	<u>Middle</u>
Signal	<u>IEEE802.11a (Crest factor: 1.0)</u>

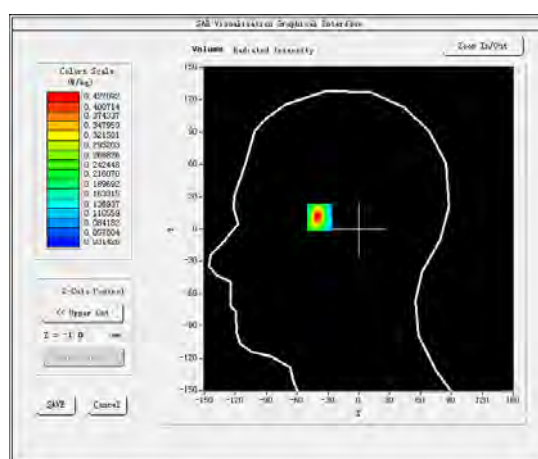
B. SAR Measurement Results

Frequency (MHz)	5785.000000
Relative permittivity (real part)	34.864788
Relative permittivity (imaginary part)	15.875266
Conductivity (S/m)	5.102134
Variation (%)	-2.590000

SURFACE SAR



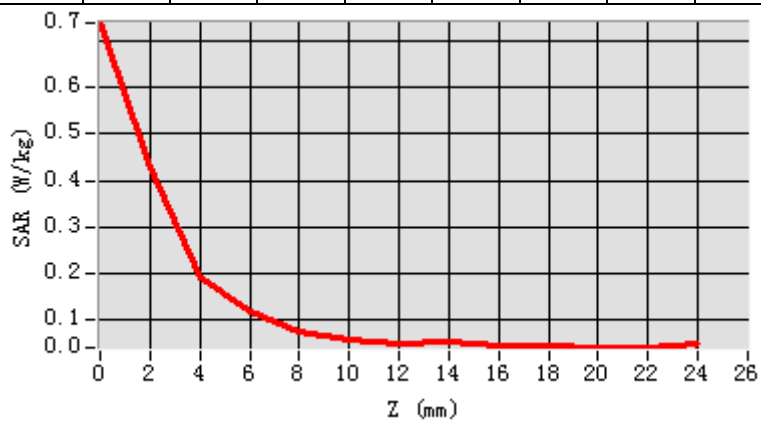
VOLUME SAR

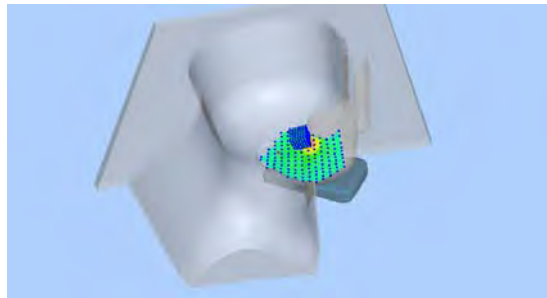
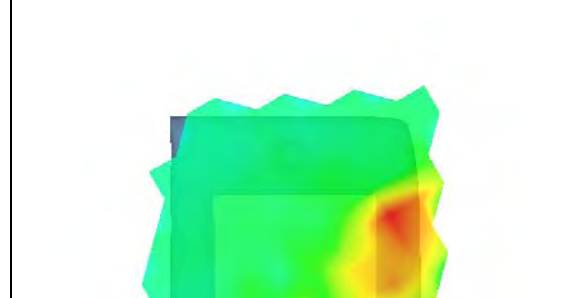


Maximum location: X=-38.00, Y=15.00

SAR Peak: 1.22 W/kg

SAR 10g (W/Kg)	0.159656
SAR 1g (W/Kg)	0.426046



3D screen shot	Hot spot position
 A 3D visualization of a knee joint model. A sensor array, represented by a grid of small colored dots (blue, green, yellow, red), is positioned on the patella (kneecap). The joint is shown in a flexed position, with the femur (thigh bone) and tibia (shin bone) visible. The background is a light blue gradient.	 A visualization of the hot spot position on the patella. The patella is shown as a green, irregularly shaped area. A rectangular region on the right side of the patella is highlighted with a color gradient from green to yellow to red, indicating the location of the hot spot. The background is a light blue gradient.

MEASUREMENT 13

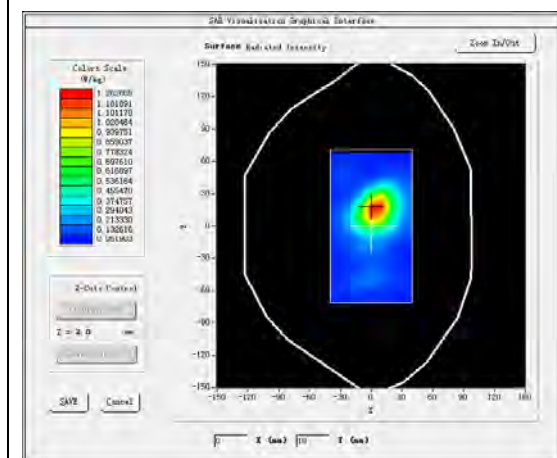
A. Experimental conditions.

Area Scan	<u>dx=10mm dy=10mm, h= 2.00 mm</u>
ZoomScan	<u>7x7x12,dx=4mm dy=4mm dz=2mm</u>
Phantom	<u>Validation plane</u>
Device Position	<u>Body</u>
Band	<u>IEEE 802.11a U-NII</u>
Channels	<u>Middle</u>
Signal	<u>IEEE802.11a (Crest factor: 1.0)</u>

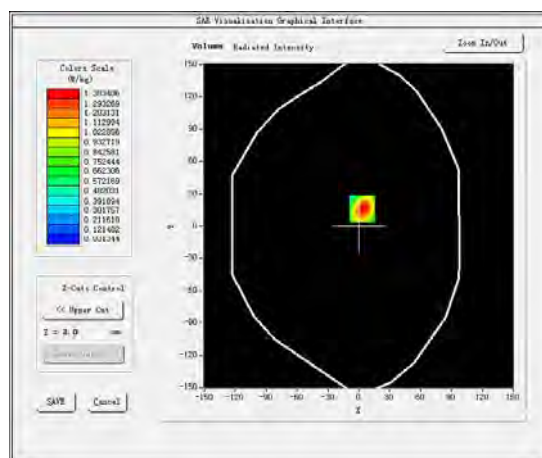
B. SAR Measurement Results

Frequency (MHz)	5200.000000
Relative permittivity (real part)	49.949535
Relative permittivity (imaginary part)	18.195509
Conductivity (S/m)	5.256480
Variation (%)	0.210000

SURFACE SAR



VOLUME SAR

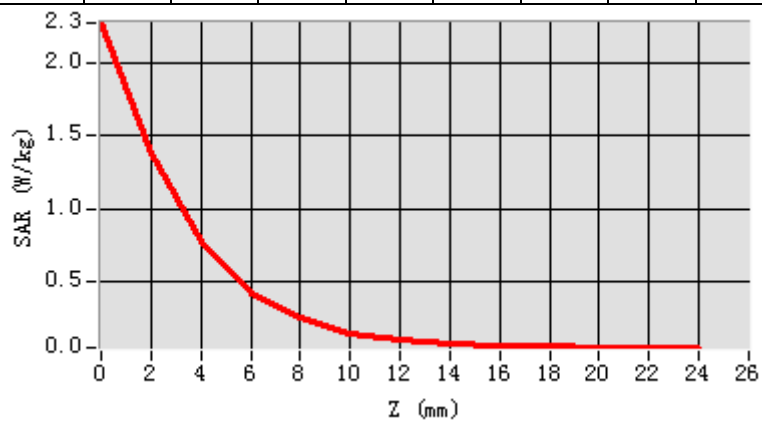


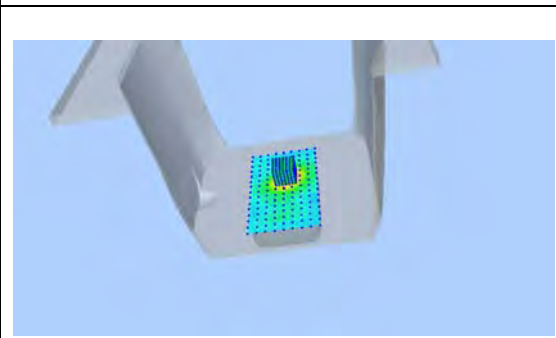
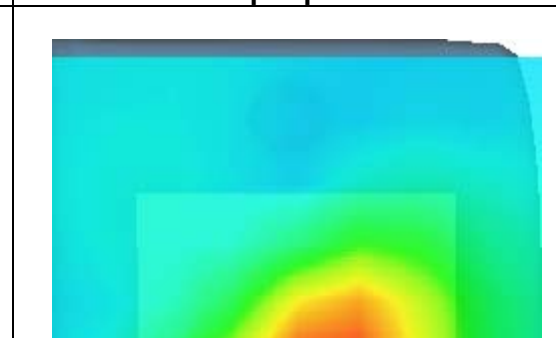
Maximum location: X=3.00, Y=16.00

SAR Peak: 2.38 W/kg

SAR 10g (W/Kg)	0.331023
SAR 1g (W/Kg)	0.664303

Z (m m)	0.00	2.00	4.00	6.00	8.00	10.0 0	12.0 0	14.0 0	16.0 0	18.0 0	20.0 0	22.0 0
SA R (W/ Kg)	2.26 94	1.38 34	0.76 69	0.41 33	0.24 94	0.14 81	0.09 62	0.08 01	0.06 53	0.05 70	0.05 15	0.04 63



3D screen shot	Hot spot position
	

MEASUREMENT 14

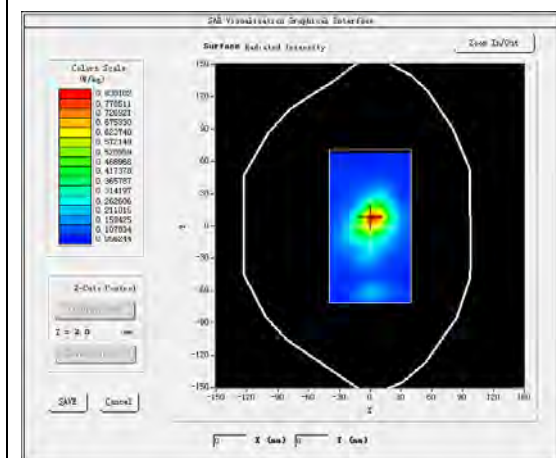
A. Experimental conditions.

Area Scan	<u>dx=10mm dy=10mm, h= 2.00 mm</u>
ZoomScan	<u>7x7x12,dx=4mm dy=4mm dz=2mm</u>
Phantom	<u>Validation plane</u>
Device Position	<u>Body</u>
Band	<u>IEEE 802.11a U-NII</u>
Channels	<u>Middle</u>
Signal	<u>IEEE802.11a (Crest factor: 1.0)</u>

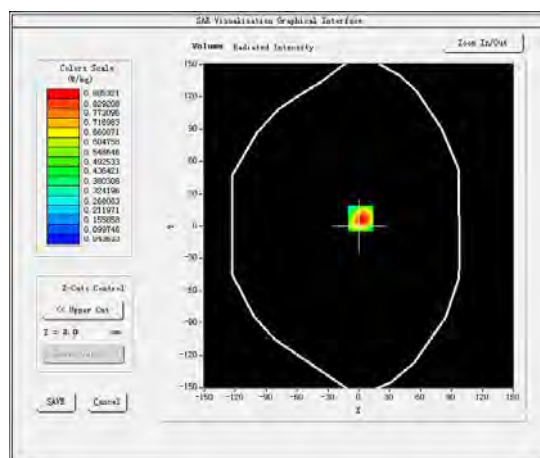
B. SAR Measurement Results

Frequency (MHz)	5785.000000
Relative permittivity (real part)	48.718700
Relative permittivity (imaginary part)	18.616766
Conductivity (S/m)	5.983222
Variation (%)	1.410000

SURFACE SAR



VOLUME SAR

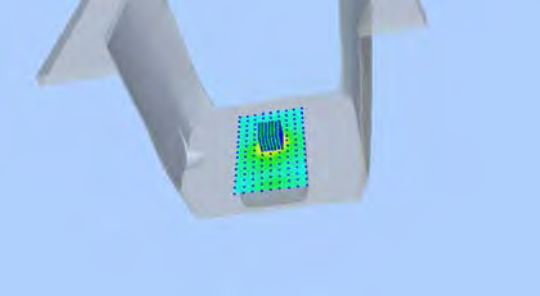
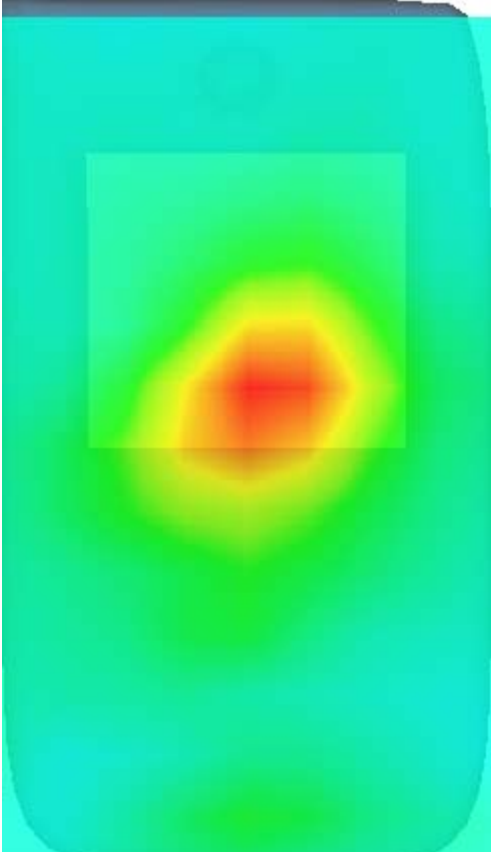


Maximum location: X=2.00, Y=7.00

SAR Peak: 1.60 W/kg

SAR 10g (W/Kg)	0.102337
SAR 1g (W/Kg)	0.264342

Graph of SAR (W/kg) vs Z (mm) for the 100 MHz case. The SAR starts at approximately 1.5 W/kg at Z=0 and decreases rapidly, reaching about 0.1 W/kg at Z=24 mm.

3D screen shot	Hot spot position
 A 3D rendering of a robotic gripper holding a small, rectangular object. The object is covered with a grid of small, colored dots. A bright yellow and red circular area, representing a hot spot, is visible on the top surface of the object. The background is a solid light blue.	 A heatmap visualization showing the spatial distribution of the hot spot. The background is a uniform cyan color. A large, irregularly shaped region of yellow and red, indicating high intensity, is centered on the object's position. This region is surrounded by a larger area of green, which fades into the cyan background. The shape of the hot spot corresponds to the object shown in the 3D view.

MEASUREMENT 15

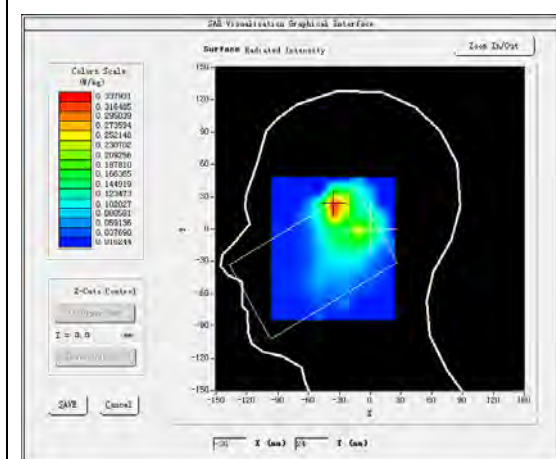
A. Experimental conditions.

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

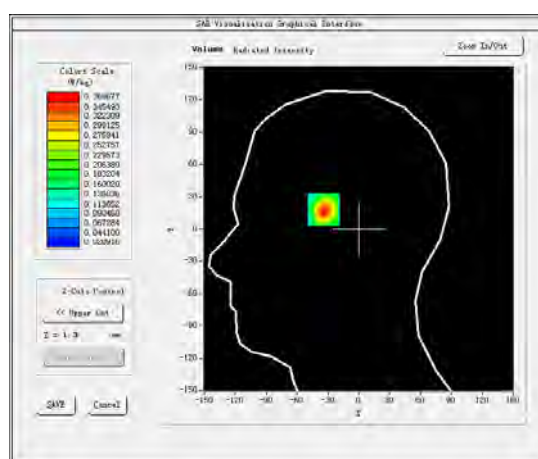
B. SAR Measurement Results

Frequency (MHz)	2437.000000
Relative permittivity (real part)	40.160999
Relative permittivity (imaginary part)	12.980300
Conductivity (S/m)	1.757388
Variation (%)	-1.640000

SURFACE SAR



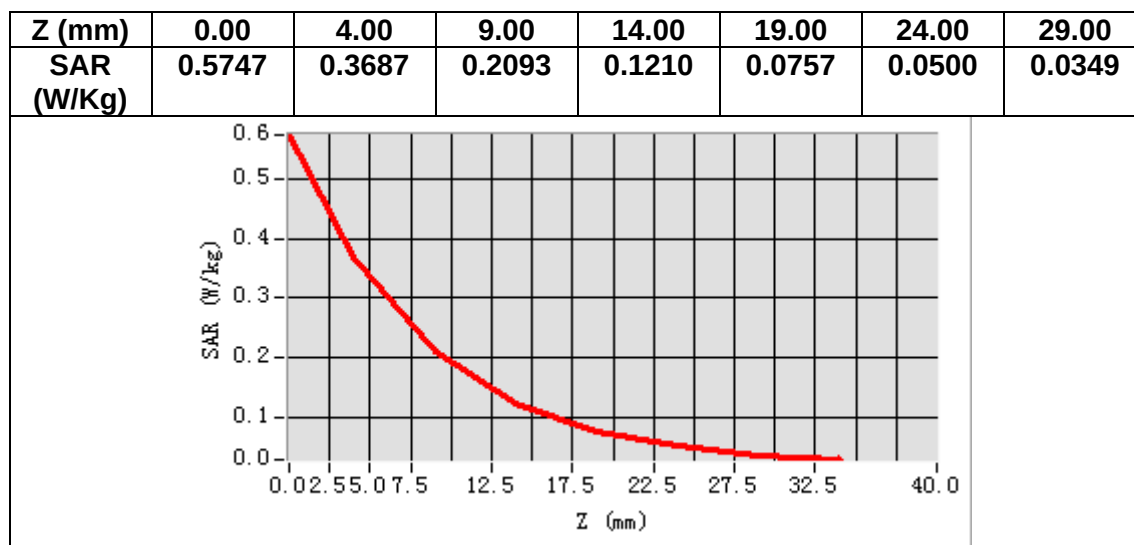
VOLUME SAR

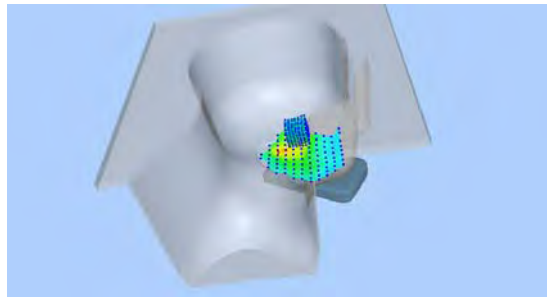
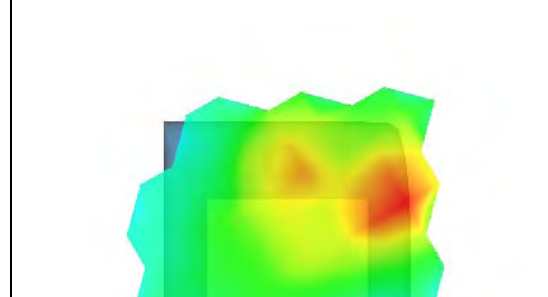


Maximum location: X=-34.00, Y=22.00

SAR Peak: 0.59 W/kg

SAR 10g (W/Kg)	0.175187
SAR 1g (W/Kg)	0.339934



3D screen shot	Hot spot position
 A 3D visualization of a knee joint model. The femur (thigh bone) is at the top, and the tibia (shin bone) is at the bottom. A small, rectangular, multi-colored mesh is positioned on the tibia, representing the hot spot area. The colors range from blue (low intensity) to red (high intensity), with yellow and green in between.	 A 2D visualization of the hot spot position on a knee joint model. The model is shown in a sagittal view. A rectangular area is highlighted with a color gradient from blue to red, indicating the intensity of the hot spot. The red area is concentrated in the center of the highlighted region, with yellow and green areas surrounding it.

MEASUREMENT 16

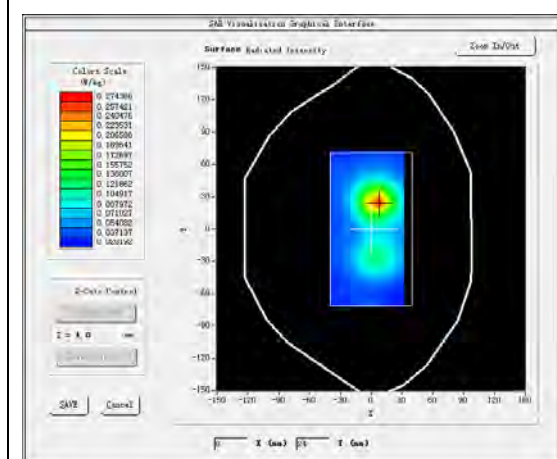
A. Experimental conditions.

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>

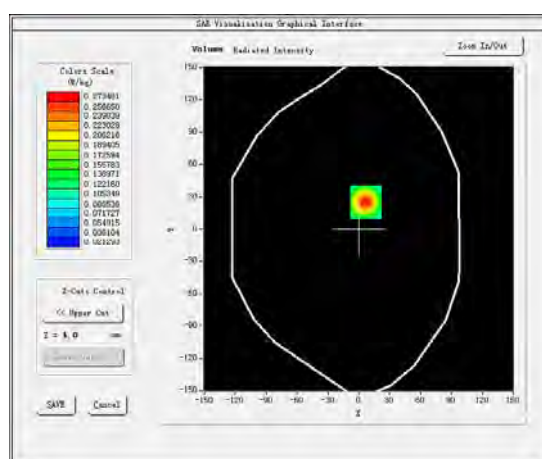
B. SAR Measurement Results

Frequency (MHz)	2437.000000
Relative permittivity (real part)	52.751598
Relative permittivity (imaginary part)	14.535620
Conductivity (S/m)	1.967961
Variation (%)	-1.040000

SURFACE SAR



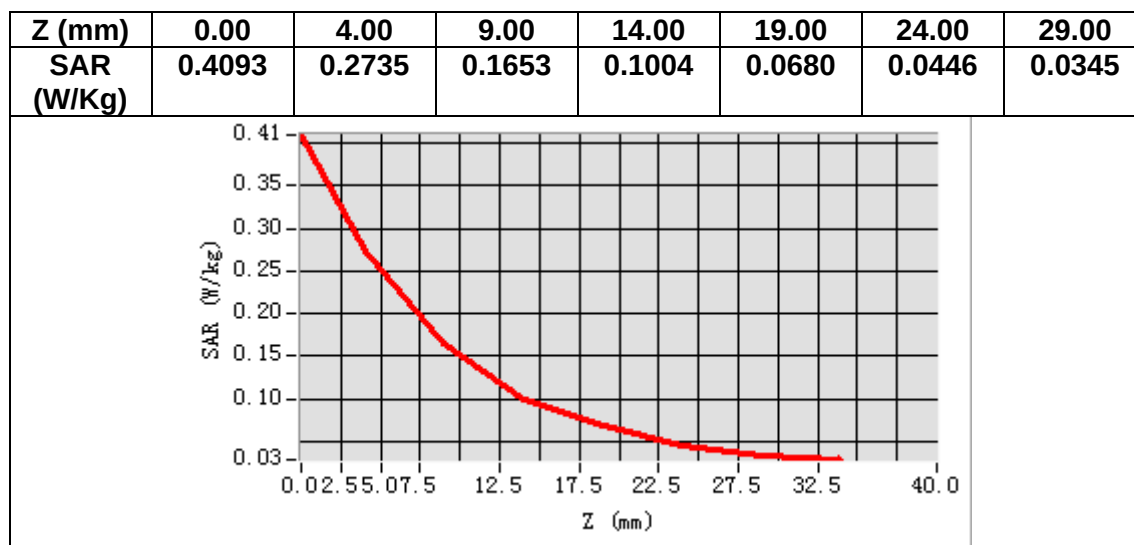
VOLUME SAR

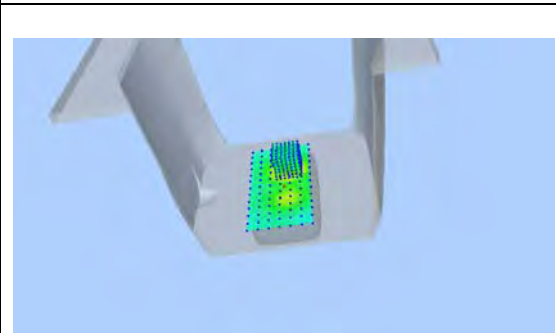
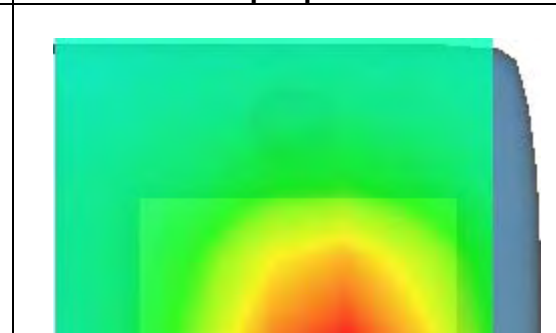


Maximum location: X=7.00, Y=25.00

SAR Peak: 0.41 W/kg

SAR 10g (W/Kg)	0.141677
SAR 1g (W/Kg)	0.255073



3D screen shot	Hot spot position
	

MEASUREMENT 17

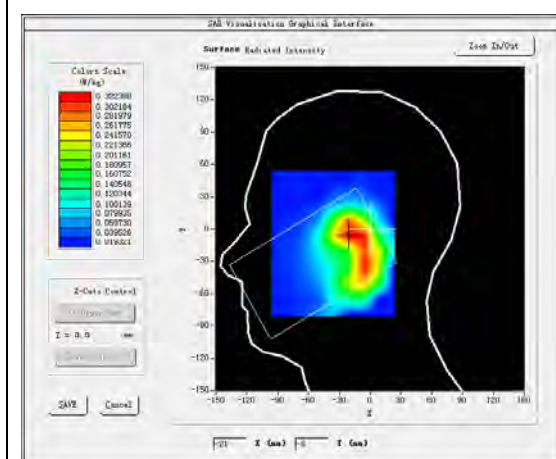
A. Experimental conditions.

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

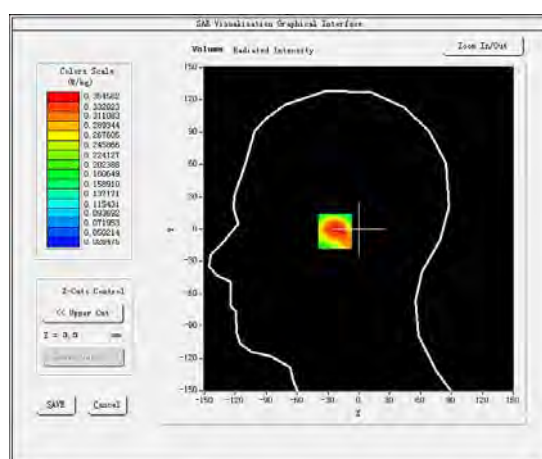
B. SAR Measurement Results

Frequency (MHz)	1880.000000
Relative permittivity (real part)	39.876949
Relative permittivity (imaginary part)	13.422750
Conductivity (S/m)	1.401559
Variation (%)	-1.440000

SURFACE SAR



VOLUME SAR



Maximum location: X=-19.00, Y=-2.00

SAR Peak: 0.51 W/kg

SAR 10g (W/Kg)	0.215114
SAR 1g (W/Kg)	0.345888

MEASUREMENT 18

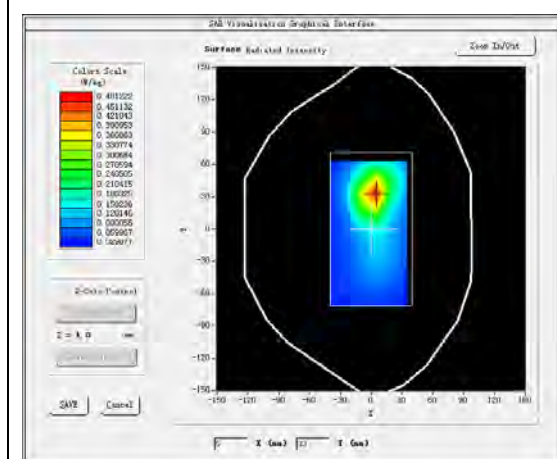
A. Experimental conditions.

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

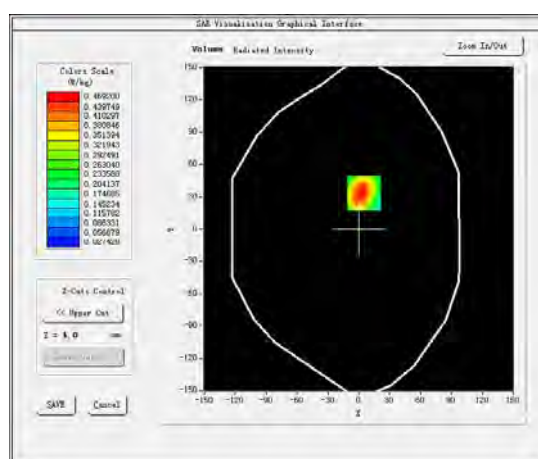
B. SAR Measurement Results

Frequency (MHz)	1880.000000
Relative permittivity (real part)	53.245949
Relative permittivity (imaginary part)	14.716150
Conductivity (S/m)	1.536611
Variation (%)	-2.610000

SURFACE SAR



VOLUME SAR



Maximum location: X=5.00, Y=33.00

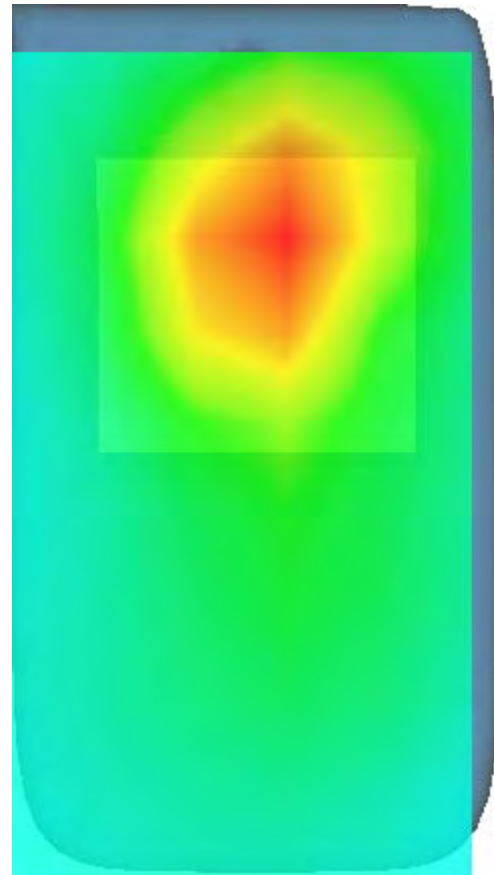
SAR Peak: 0.75 W/kg

SAR 10g (W/Kg)	0.251831
SAR 1g (W/Kg)	0.456756

The graph shows the SAR distribution for a 1000 MHz plane wave. The y-axis represents SAR in W/kg, ranging from 0.0 to 0.7. The x-axis represents the distance Z in mm, ranging from 0.0 to 40.0. The SAR starts at approximately 0.7 W/kg at Z=0 and decreases rapidly, reaching near zero by Z=40 mm.

Z (mm)	SAR (W/kg)
0.0	0.70
2.5	0.55
5.0	0.45
7.5	0.35
10.0	0.28
12.5	0.22
15.0	0.18
17.5	0.15
20.0	0.12
22.5	0.10
25.0	0.08
27.5	0.06
30.0	0.05
32.5	0.04
35.0	0.03
37.5	0.02
40.0	0.01

Hot spot position



MEASUREMENT 19

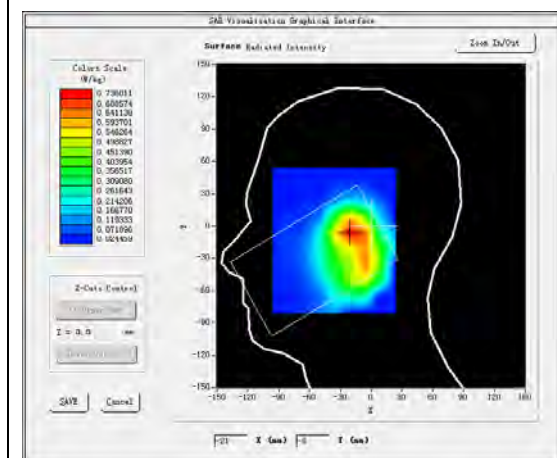
A. Experimental conditions.

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>

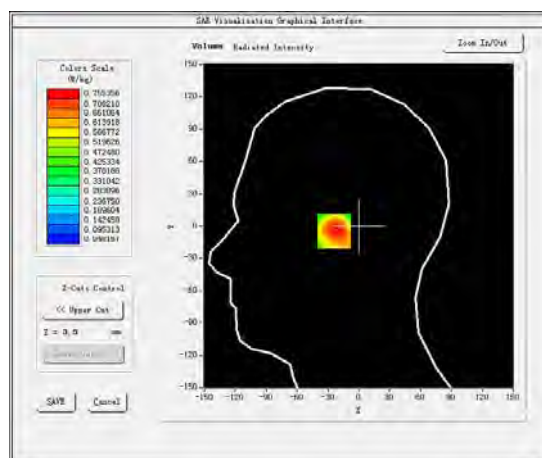
B. SAR Measurement Results

Frequency (MHz)	1732.500000
Relative permittivity (real part)	39.835289
Relative permittivity (imaginary part)	13.740592
Conductivity (S/m)	1.322532
Variation (%)	-1.890000

SURFACE SAR



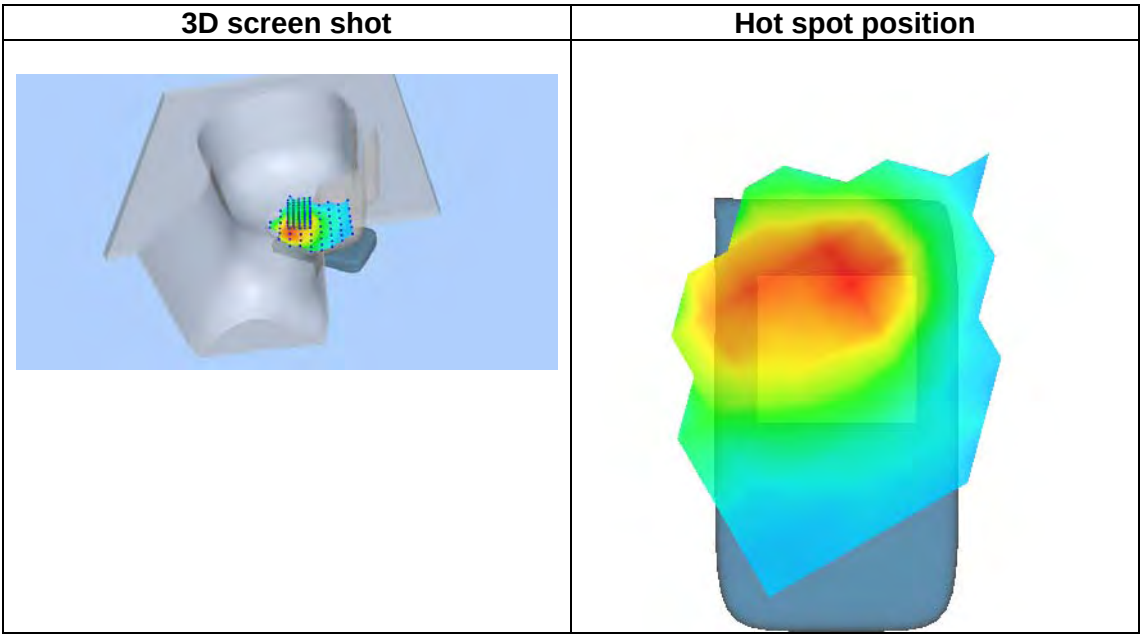
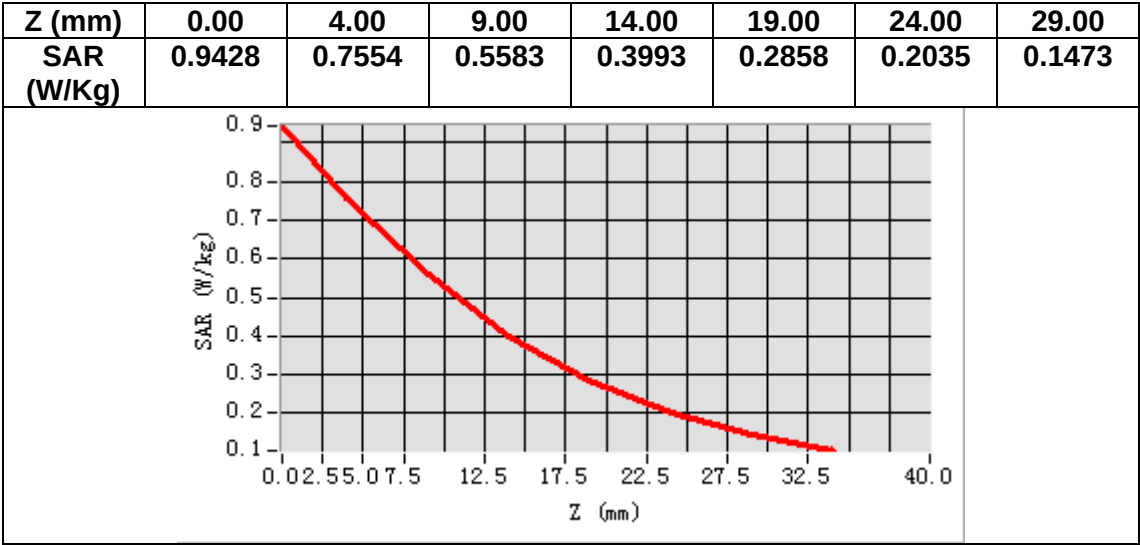
VOLUME SAR



Maximum location: X=-19.00, Y=-5.00

SAR Peak: 1.02 W/kg

SAR 10g (W/Kg)	0.477192
SAR 1g (W/Kg)	0.731330



MEASUREMENT 20

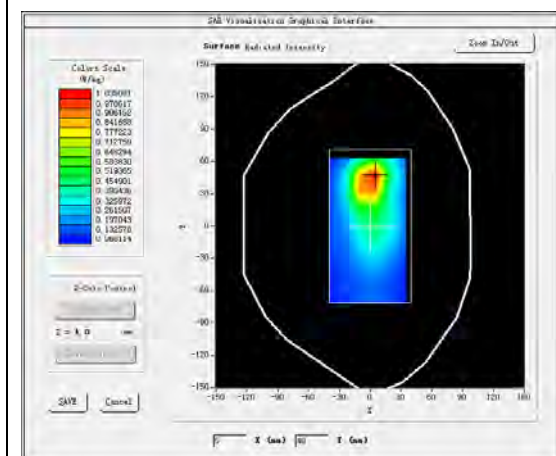
A. Experimental conditions.

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>Low</u>
Signal	<u>LTE (Crest factor: 1.0)</u>

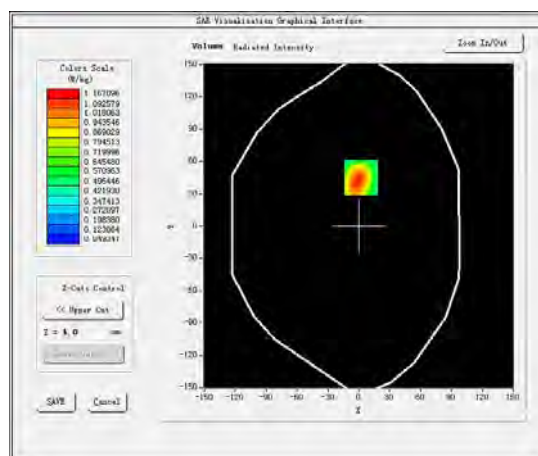
B. SAR Measurement Results

Frequency (MHz)	1720.000000
Relative permittivity (real part)	54.386665
Relative permittivity (imaginary part)	15.147870
Conductivity (S/m)	1.447042
Variation (%)	-3.600000

SURFACE SAR



VOLUME SAR

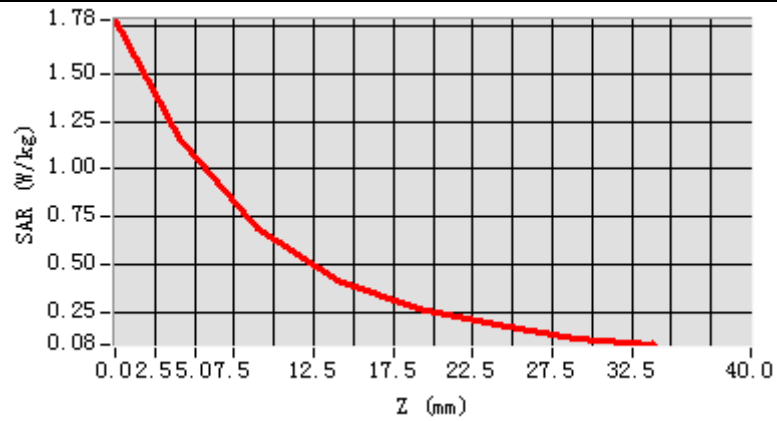


Maximum location: X=2.00, Y=45.00

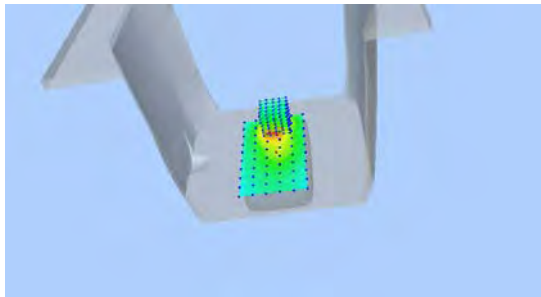
SAR Peak: 1.78 W/kg

SAR 10g (W/Kg)	0.634717
SAR 1g (W/Kg)	1.111368

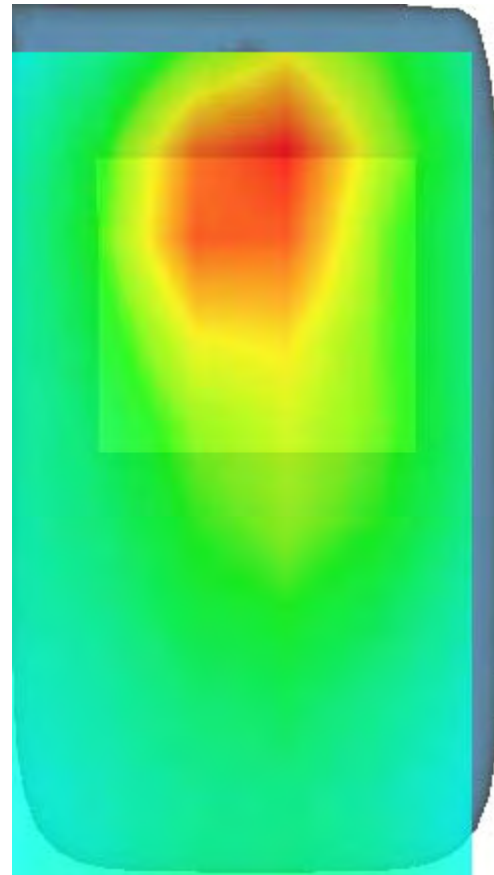
Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	1.7826	1.1671	0.6862	0.4171	0.2650	0.1802	0.1148



3D screen shot



Hot spot position



MEASUREMENT 21

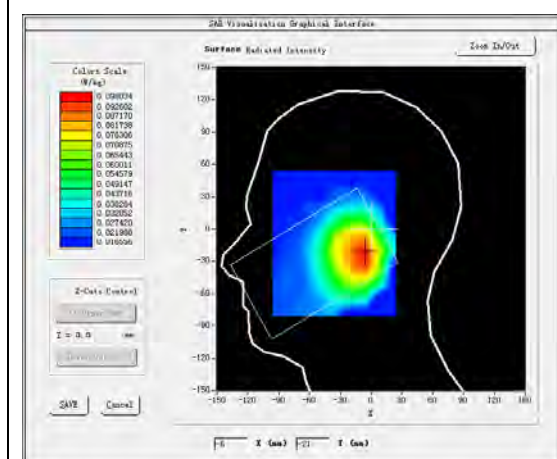
A. Experimental conditions.

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 5</u>
Channels	<u>Middle</u>
Signal	<u>LTE (Crest factor: 1.0)</u>

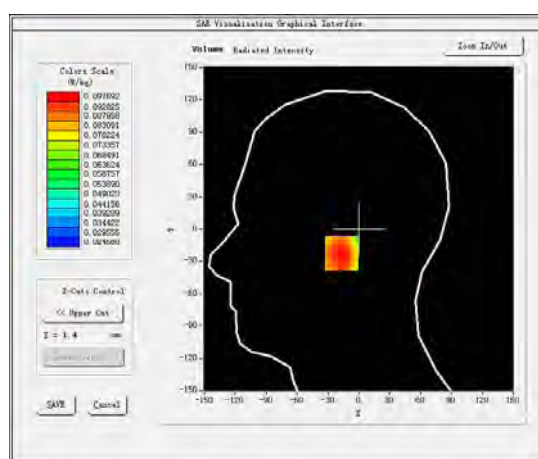
B. SAR Measurement Results

Frequency (MHz)	836.500000
Relative permittivity (real part)	41.363548
Relative permittivity (imaginary part)	19.440201
Conductivity (S/m)	0.903429
Variation (%)	0.280000

SURFACE SAR



VOLUME SAR



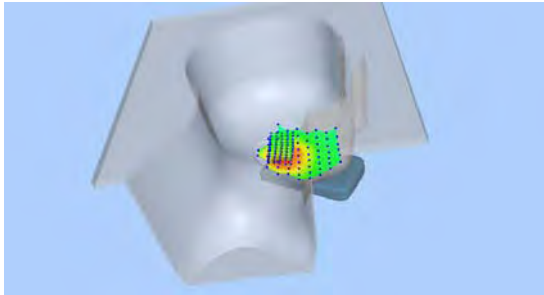
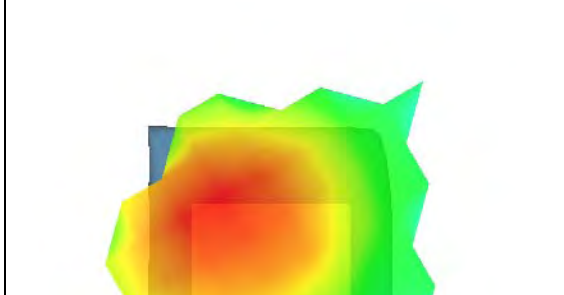
Maximum location: X=-8.00, Y=-23.00

SAR Peak: 0.13 W/kg

SAR 10g (W/Kg)	0.071638
SAR 1g (W/Kg)	0.095087

A line graph showing the SAR (W/kg) as a function of Z (mm) for a 1000 MHz plane wave. The y-axis is labeled 'SAR (W/kg)' and ranges from 0.03 to 0.12 with major grid lines every 0.02 and minor grid lines every 0.005. The x-axis is labeled 'Z (mm)' and ranges from 0.0 to 40.0 with major grid lines every 5.0 and minor grid lines every 1.0. A red line represents the SAR profile, starting at approximately 0.115 W/kg at Z=0 and decreasing to approximately 0.03 W/kg at Z=32.5 mm.

Z (mm)	SAR (W/kg)
0.0	0.115
2.5	0.105
5.0	0.095
7.5	0.085
10.0	0.075
12.5	0.068
15.0	0.060
17.5	0.052
20.0	0.048
22.5	0.042
25.0	0.038
27.5	0.035
30.0	0.032
32.5	0.030

3D screen shot	Hot spot position
 A 3D visualization of a knee joint model. The femur (thigh bone) is at the top, and the tibia (shin bone) is at the bottom. A small, localized area on the tibia is highlighted with a color gradient from green to red, indicating a hot spot. The model is set against a light blue background.	 A 3D visualization of the same knee joint model, showing the hot spot position. The hot spot is represented by a large, irregularly shaped region with a color gradient from green to red, indicating the intensity of the hot spot. The model is set against a light blue background.

MEASUREMENT 22

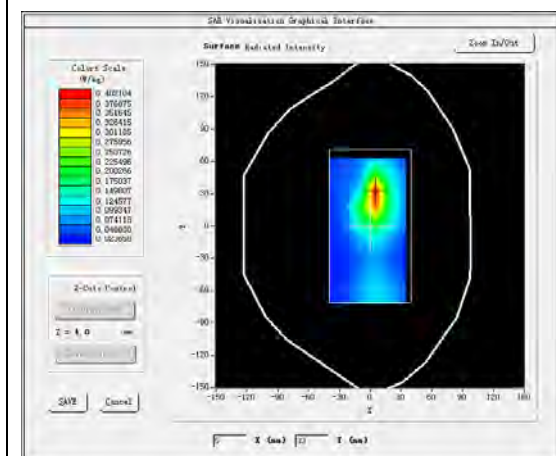
A. Experimental conditions.

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

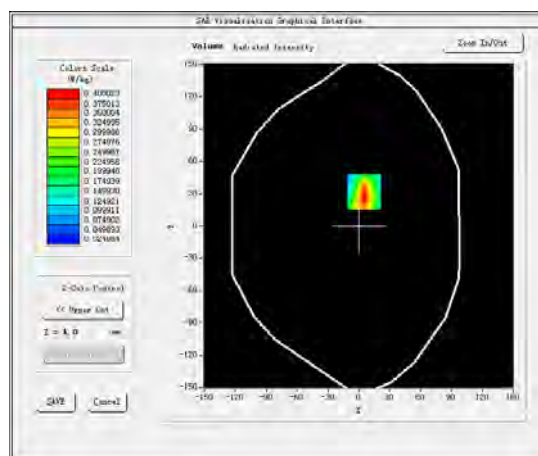
B. SAR Measurement Results

Frequency (MHz)	836.500000
Relative permittivity (real part)	54.843498
Relative permittivity (imaginary part)	21.566999
Conductivity (S/m)	1.002266
Variation (%)	0.490000

SURFACE SAR



VOLUME SAR



Maximum location: X=5.00, Y=32.00

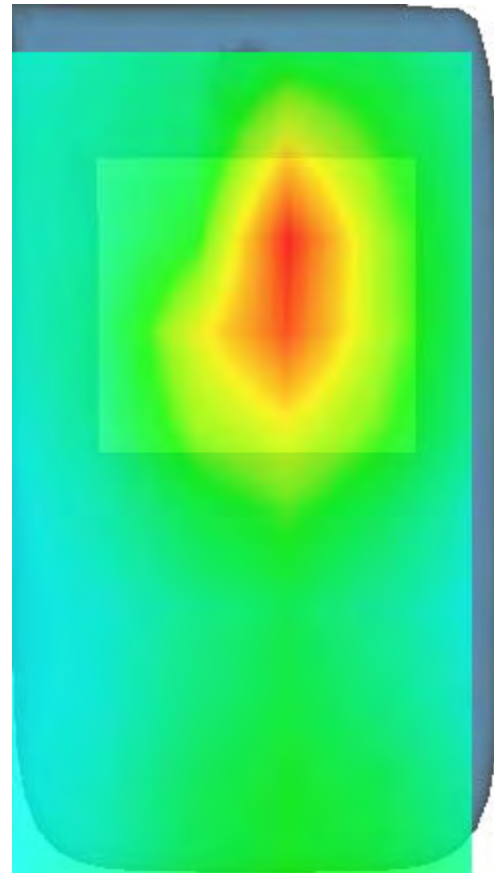
SAR Peak: 0.58 W/kg

SAR 10g (W/Kg)	0.219666
SAR 1g (W/Kg)	0.379608

Figure 10 is a line graph showing the SAR (W/kg) versus Z (mm) for the 100 MHz case. The x-axis represents Z (mm) from 0.0 to 40.0, and the y-axis represents SAR (W/kg) from 0.0 to 0.7. The SAR value starts at approximately 0.7 W/kg at Z=0 and decreases rapidly, reaching about 0.2 W/kg at Z=10 mm, and then continues to decrease more slowly, reaching near 0 W/kg at Z=35 mm.

Z (mm)	SAR (W/kg)
0.0	0.70
2.5	0.55
5.0	0.40
7.5	0.28
10.0	0.20
12.5	0.18
15.0	0.15
17.5	0.10
20.0	0.08
22.5	0.08
25.0	0.05
27.5	0.02
30.0	0.01
32.5	0.01
35.0	0.01

Hot spot position



MEASUREMENT 23

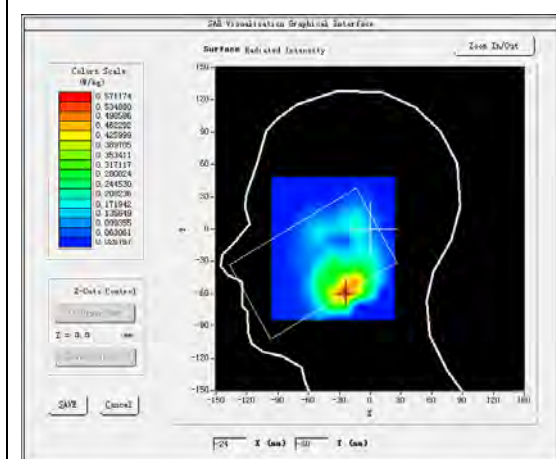
A. Experimental conditions.

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>

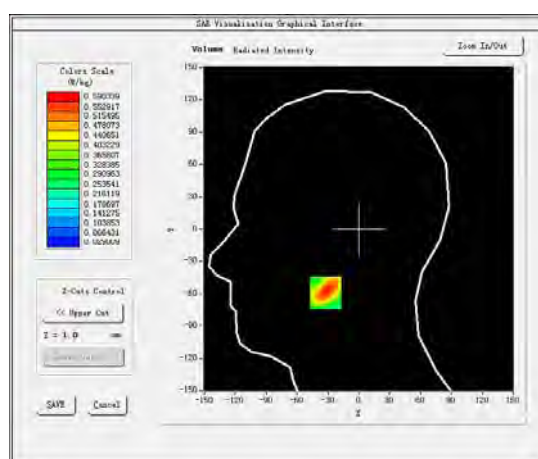
B. SAR Measurement Results

Frequency (MHz)	2535.000000
Relative permittivity (real part)	39.275486
Relative permittivity (imaginary part)	13.551160
Conductivity (S/m)	1.908455
Variation (%)	3.780000

SURFACE SAR



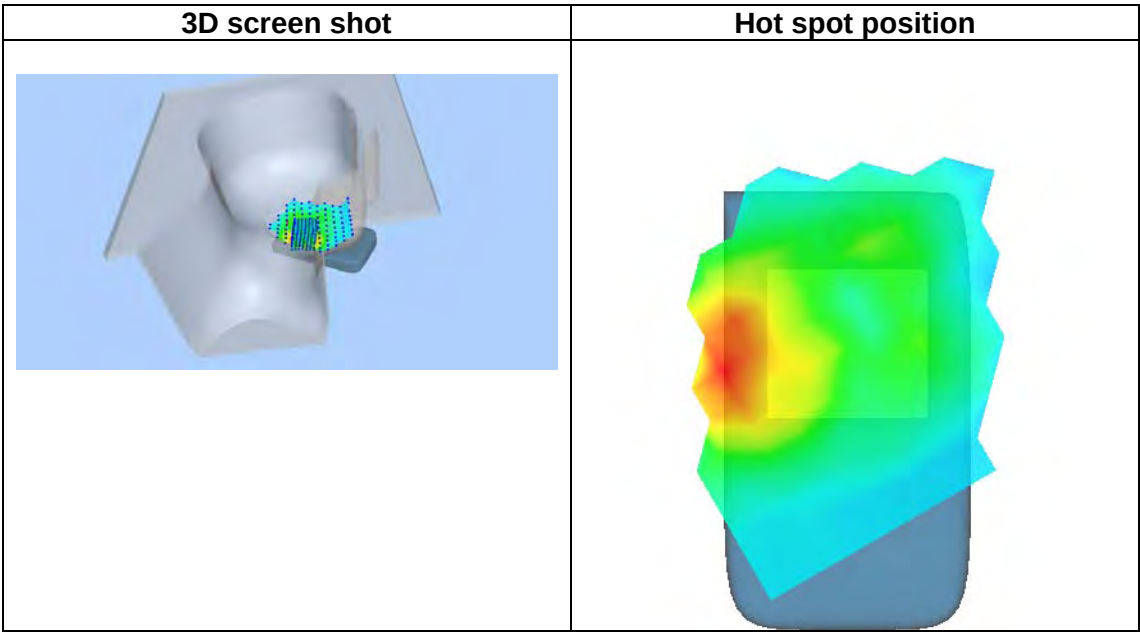
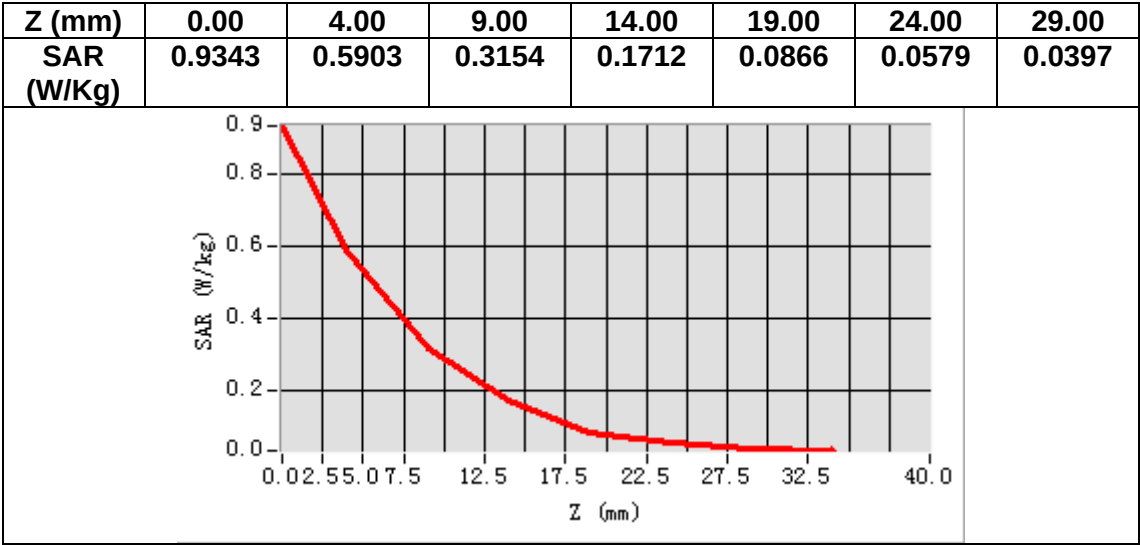
VOLUME SAR



Maximum location: X=-24.00, Y=-59.00

SAR Peak: 0.96 W/kg

SAR 10g (W/Kg)	0.287004
SAR 1g (W/Kg)	0.550869



MEASUREMENT 24

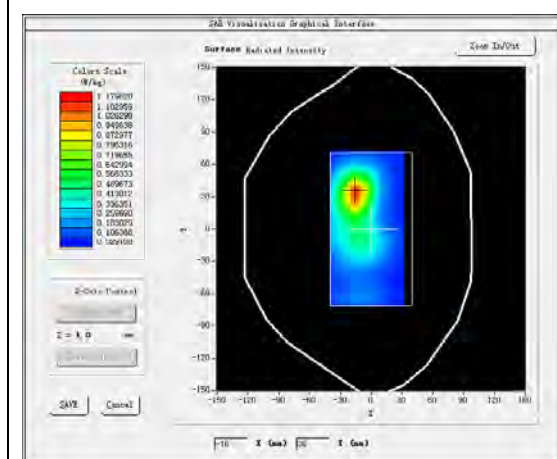
A. Experimental conditions.

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>

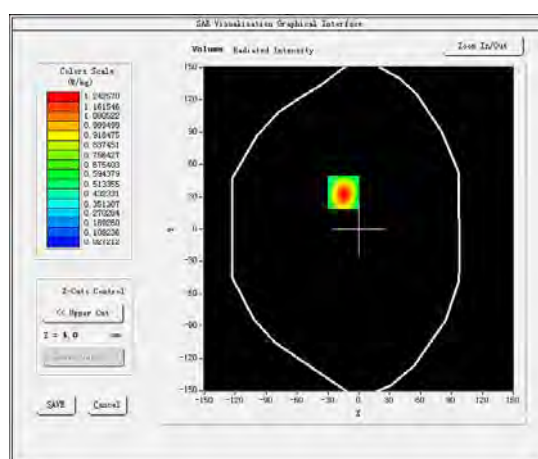
B. SAR Measurement Results

Frequency (MHz)	2535.000000
Relative permittivity (real part)	53.536945
Relative permittivity (imaginary part)	14.887840
Conductivity (S/m)	2.096704
Variation (%)	-0.330000

SURFACE SAR



VOLUME SAR

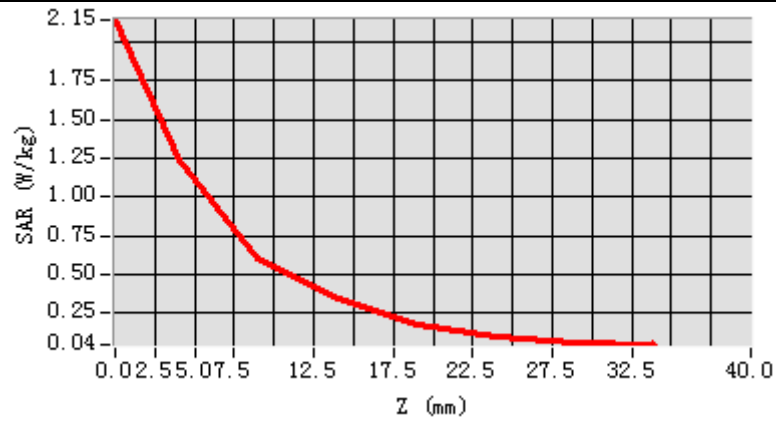


Maximum location: X=-15.00, Y=34.00

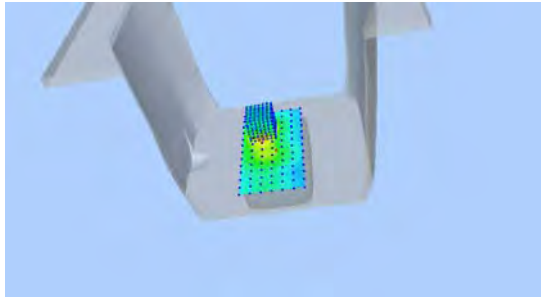
SAR Peak: 2.04 W/kg

SAR 10g (W/Kg)	0.588105
SAR 1g (W/Kg)	1.171577

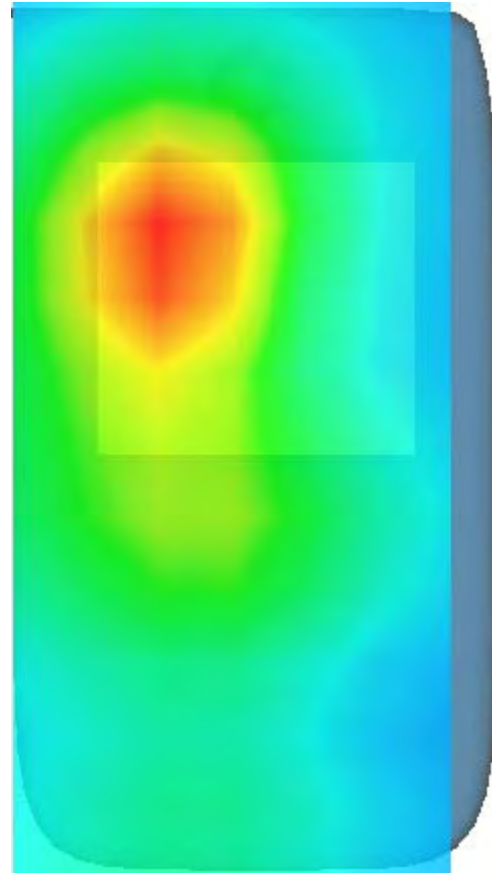
Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	2.1457	1.2426	0.5965	0.3353	0.1733	0.1014	0.0579



3D screen shot



Hot spot position



MEASUREMENT 25

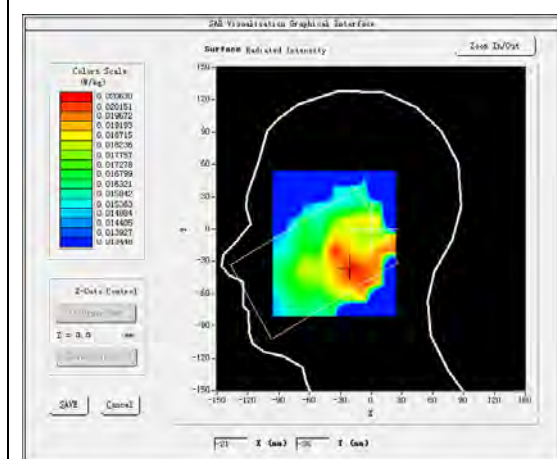
A. Experimental conditions.

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

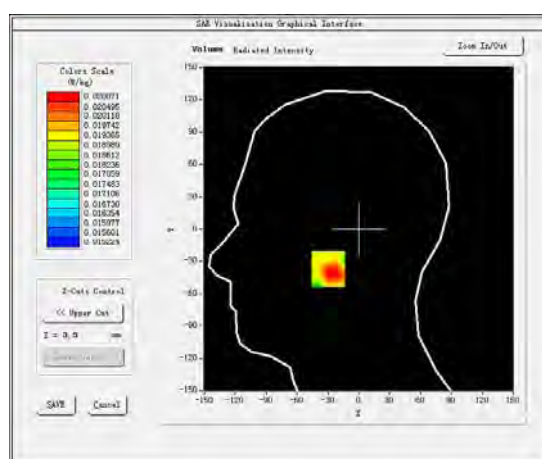
B. SAR Measurement Results

Frequency (MHz)	707.500000
Relative permittivity (real part)	41.977959
Relative permittivity (imaginary part)	21.691299
Conductivity (S/m)	0.852589
Variation (%)	1.960000

SURFACE SAR



VOLUME SAR

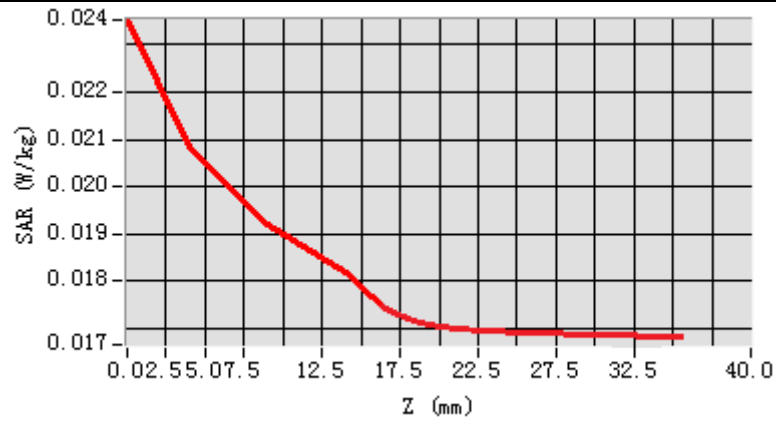


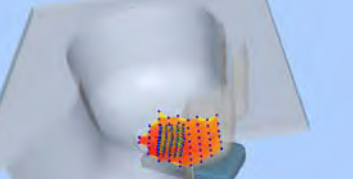
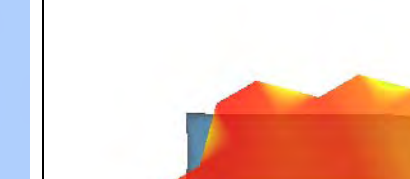
Maximum location: X=-20.00, Y=-37.00

SAR Peak: 0.02 W/kg

SAR 10g (W/Kg)	0.018977
SAR 1g (W/Kg)	0.021028

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0235	0.0209	0.0192	0.0177	0.0175	0.0173	0.0171



3D screen shot	Hot spot position
 A 3D visualization of a knee joint model. The femur (thigh bone) is at the top, and the tibia (shin bone) is at the bottom. A blue rectangular area is highlighted on the tibia, representing the hot spot position. The background is a light blue gradient.	 A 3D visualization of the hot spot position. The hot spot is represented by a red and yellow area on the tibia, indicating a high concentration of force or pressure. The background is a light blue gradient.

MEASUREMENT 26

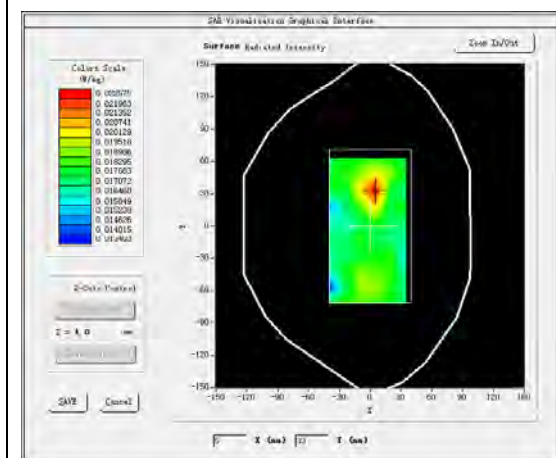
A. Experimental conditions.

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>

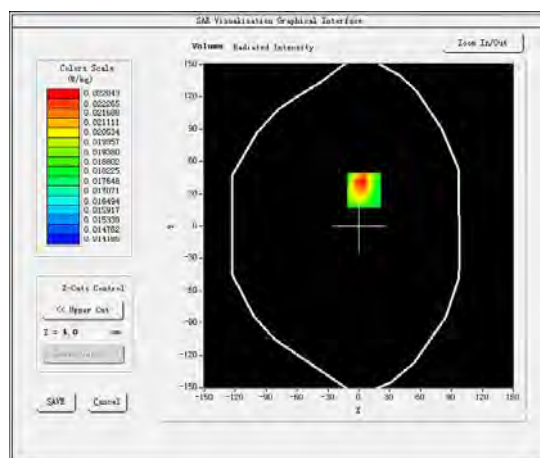
B. SAR Measurement Results

Frequency (MHz)	707.500000
Relative permittivity (real part)	55.887959
Relative permittivity (imaginary part)	23.611300
Conductivity (S/m)	0.928055
Variation (%)	-0.380000

SURFACE SAR



VOLUME SAR

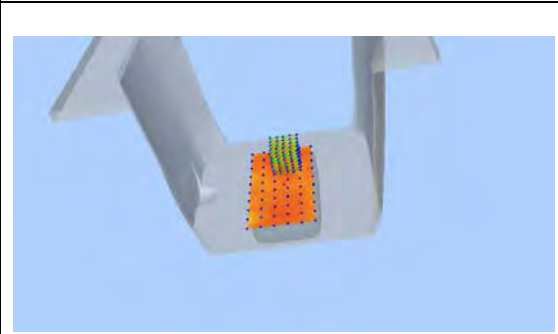
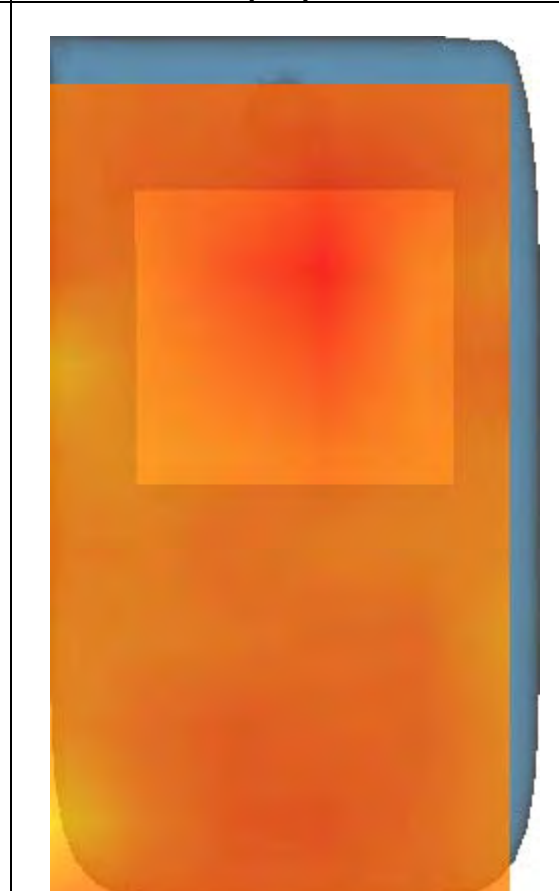


Maximum location: X=5.00, Y=33.00

SAR Peak: 0.03 W/kg

SAR 10g (W/Kg)	0.019000
SAR 1g (W/Kg)	0.022818

Z (mm)	SAR (W/kg)
0	0.029
2.5	0.026
5	0.023
7.5	0.020
10	0.0185
12.5	0.0185
15	0.0185
17.5	0.0175
20	0.0168
22.5	0.0172
25	0.0170
27.5	0.0165
30	0.0162
32.5	0.0160
35	0.0158

3D screen shot	Hot spot position
	

MEASUREMENT 27

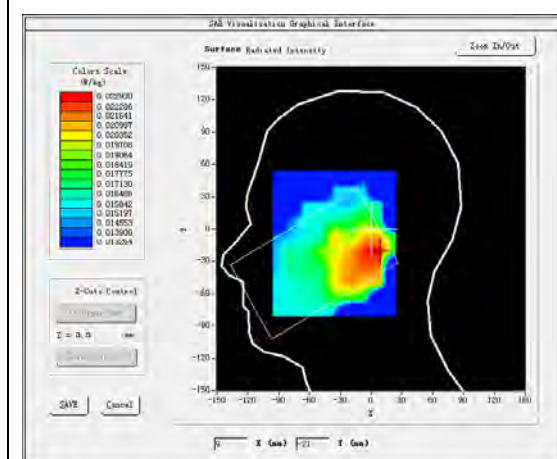
A. Experimental conditions.

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 17</u>
Channels	<u>Middle</u>
Signal	<u>LTE (Crest factor: 1.0)</u>

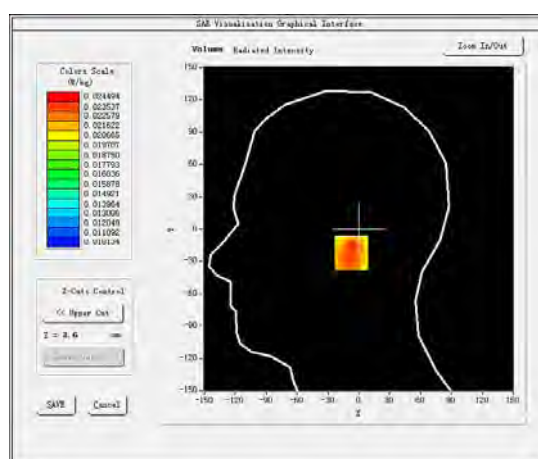
B. SAR Measurement Results

Frequency (MHz)	710.000000
Relative permittivity (real part)	41.956711
Relative permittivity (imaginary part)	21.710501
Conductivity (S/m)	0.856359
Variation (%)	1.970000

SURFACE SAR



VOLUME SAR

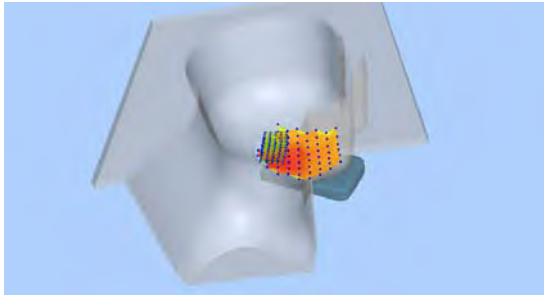
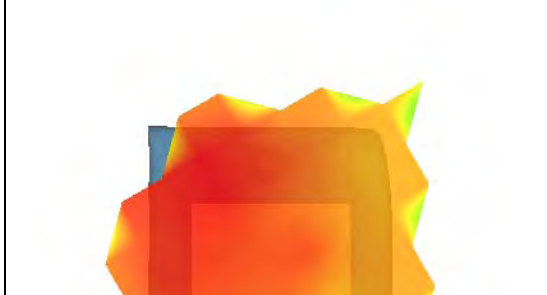


Maximum location: X=3.00, Y=-22.00

SAR Peak: 0.03 W/kg

SAR 10g (W/Kg)	0.020659
SAR 1g (W/Kg)	0.024230

Graph of SAR (W/kg) vs Z (mm) for the 100 MHz case. The SAR decreases from approximately 0.028 W/kg at Z=0 to about 0.017 W/kg at Z=35 mm.

3D screen shot	Hot spot position
 A 3D rendering of a knee joint model. A grid of colored dots (red, orange, yellow, green, blue) is overlaid on the joint, indicating the location of hot spots. The dots are concentrated in the central region of the joint.	 A visualization of the hot spot position. It shows a heatmap overlay on the knee joint model, with colors ranging from red (high intensity) to blue (low intensity). The hot spot is located in the central region of the joint, corresponding to the area where the colored dots were in the 3D screen shot.

MEASUREMENT 28

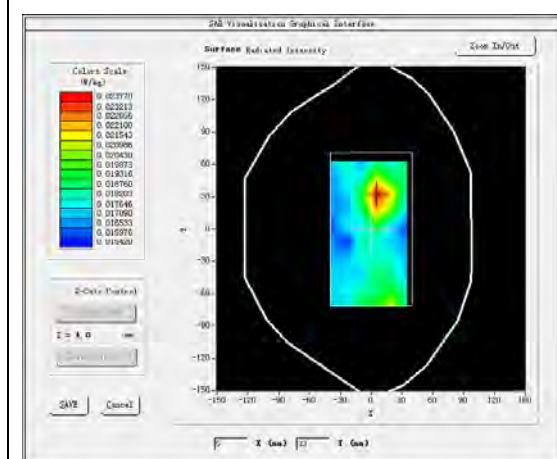
A. Experimental conditions.

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>

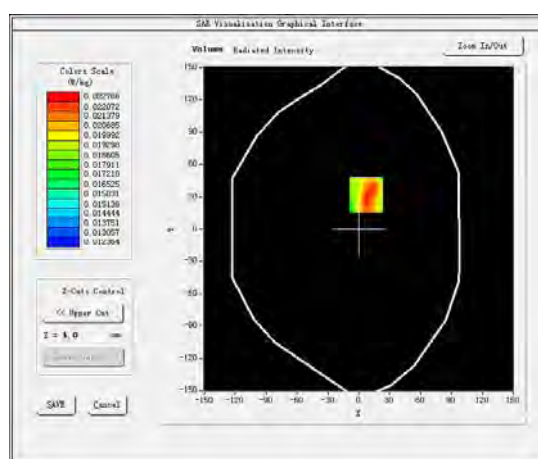
B. SAR Measurement Results

Frequency (MHz)	710.000000
Relative permittivity (real part)	55.866711
Relative permittivity (imaginary part)	23.630501
Conductivity (S/m)	0.932092
Variation (%)	-2.780000

SURFACE SAR



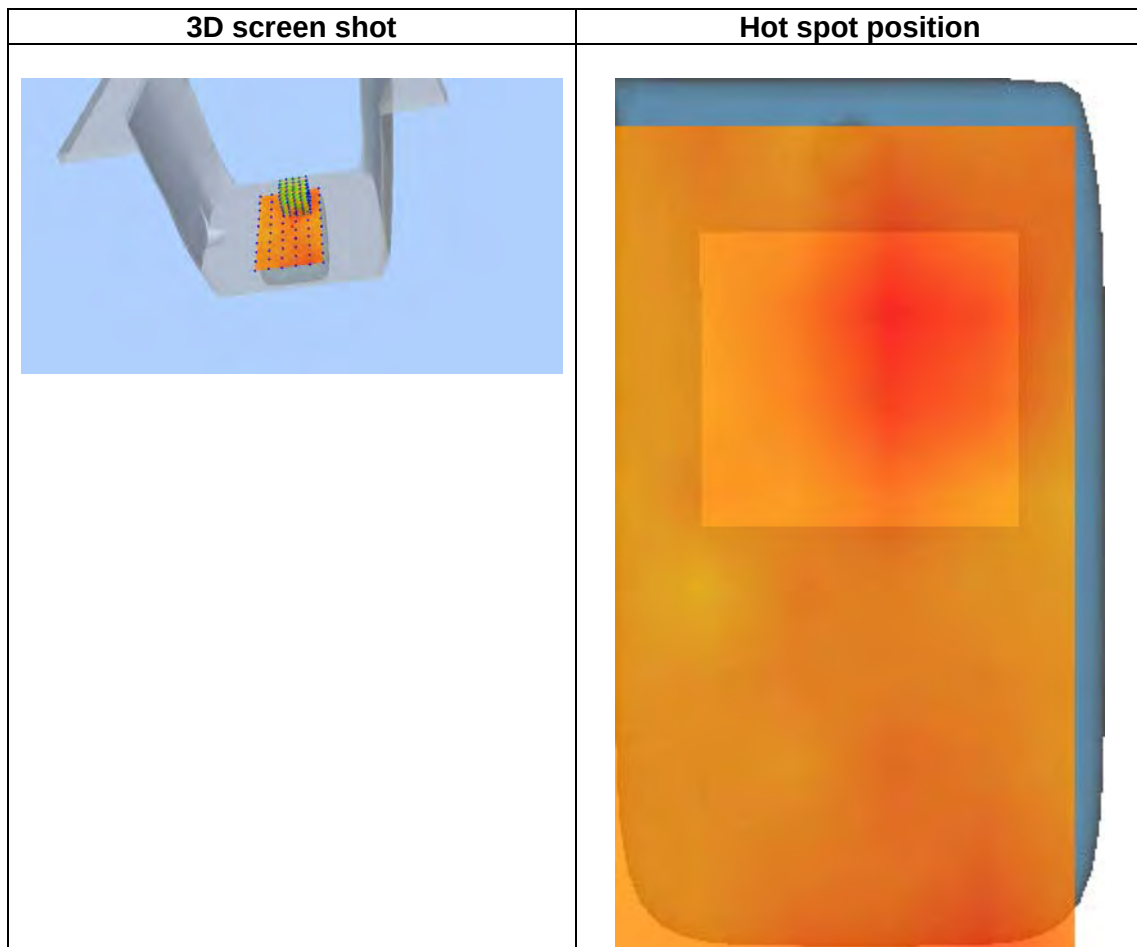
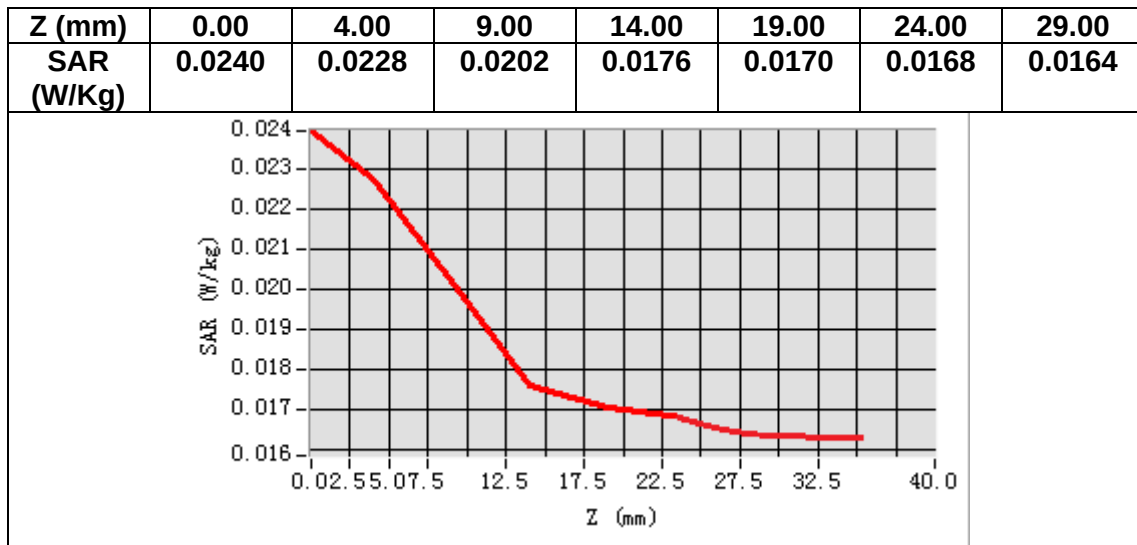
VOLUME SAR



Maximum location: X=7.00, Y=32.00

SAR Peak: 0.03 W/kg

SAR 10g (W/Kg)	0.019125
SAR 1g (W/Kg)	0.022166



MEASUREMENT 29

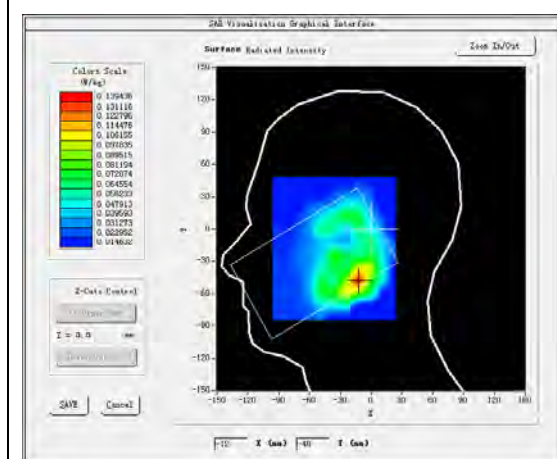
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=12mm dy=12mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>7x7x7,dx=5mm dy=5mm dz=5mm</u>
<u>Phantom</u>	<u>Left head</u>
<u>Device Position</u>	<u>Cheek</u>
<u>Band</u>	<u>LTE band 41</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>LTE (Crest factor: 1.0)</u>

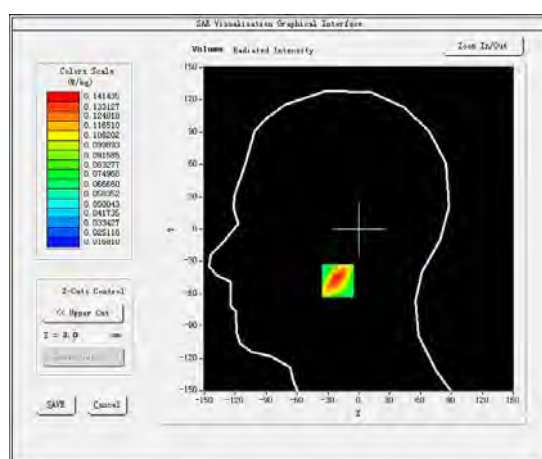
B. SAR Measurement Results

Frequency (MHz)	2605.000000
Relative permittivity (real part)	38.895086
Relative permittivity (imaginary part)	13.733560
Conductivity (S/m)	1.987551
Variation (%)	-0.130000

SURFACE SAR



VOLUME SAR

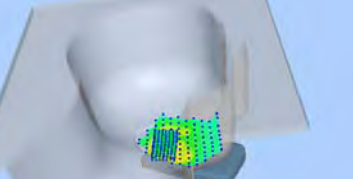
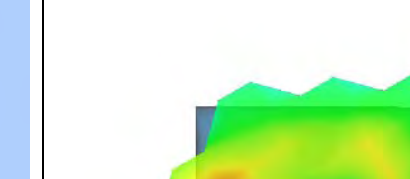


Maximum location: X=-12.00, Y=-48.00

SAR Peak: 0.22 W/kg

SAR 10g (W/Kg)	0.074847
SAR 1g (W/Kg)	0.131410

Z (mm)	SAR (W/kg)
0.0	0.22
2.5	0.18
5.0	0.14
7.5	0.11
10.0	0.08
12.5	0.06
15.0	0.045
17.5	0.035
20.0	0.03
22.5	0.025
25.0	0.022
27.5	0.02
30.0	0.018
32.5	0.015
35.0	0.012

3D screen shot	Hot spot position
 A 3D rendering of a knee joint model. A grid of small, multi-colored dots (red, yellow, green, blue) is overlaid on the joint, indicating the positions of hot spots. The dots are concentrated in the central area of the joint.	 A 3D visualization of the hot spot position. A heatmap is overlaid on a 3D model of the knee joint, showing a color gradient from red (high intensity) to green (low intensity). The red area is concentrated in the central region of the joint, corresponding to the hot spot location.

MEASUREMENT 30

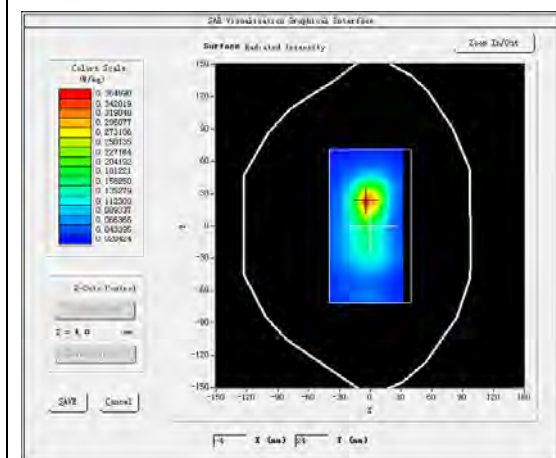
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=12mm dy=12mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>7x7x7,dx=5mm dy=5mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>LTE band 41</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>LTE (Crest factor: 1.0)</u>

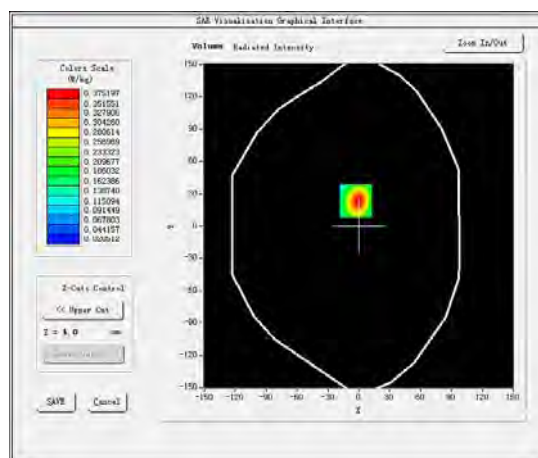
B. SAR Measurement Results

Frequency (MHz)	2605.000000
Relative permittivity (real part)	53.156546
Relative permittivity (imaginary part)	15.070240
Conductivity (S/m)	2.180998
Variation (%)	-1.910000

SURFACE SAR



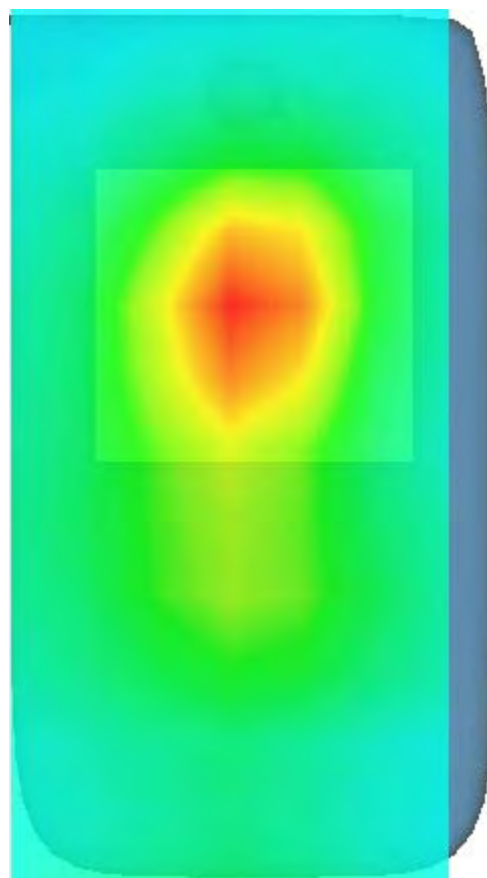
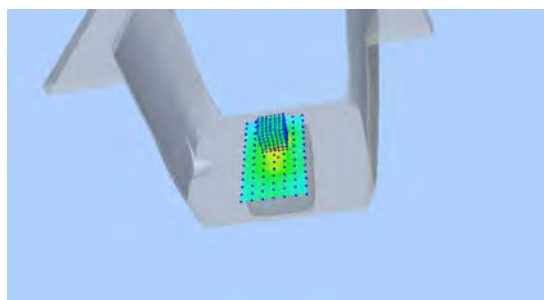
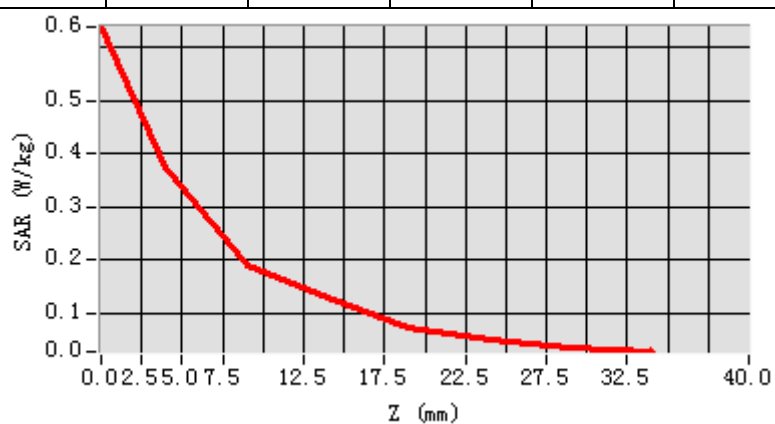
VOLUME SAR



Maximum location: X=-3.00, Y=23.00

SAR Peak: 0.58 W/kg

SAR 10g (W/Kg)	0.188018
SAR 1g (W/Kg)	0.352443



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
5000-6000 MHz Dipole - SN 13/14 WGA 33



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>Checked by :</i>	Jérôme LUC	Product Manager	9/17/2018	
<i>Approved by :</i>	Kim RUTKOWSKI	Quality Manager	9/17/2018	

	<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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COMOSAR E-FIELD PROBE CALIBRATION REPORT

Ref: ACR.260.1.18.SATU.A

1 DEVICE UNDER TEST

Device Under Test	
Device Type	COMOSAR DOSIMETRIC E FIELD PROBE
Manufacturer	MVG
Model	SSE2
Serial Number	SN 08/16 EPGO287
Product Condition (new / used)	Used
Frequency Range of Probe	0.15 GHz-6GHz
Resistance of Three Dipoles at Connector	Dipole 1: R1=0.209 MΩ Dipole 2: R2=0.196 MΩ Dipole 3: R3=0.197 MΩ

A yearly calibration interval is recommended.

2 PRODUCT DESCRIPTION

2.1 GENERAL INFORMATION

MVG's COMOSAR E field Probes are built in accordance to the IEEE 1528, OET 65 Bulletin C and CEI/IEC 62209 standards.



Figure 1 – MVG COMOSAR Dosimetric E field Dipole

Probe Length	330 mm
Length of Individual Dipoles	2 mm
Maximum external diameter	8 mm
Probe Tip External Diameter	2.5 mm
Distance between dipoles / probe extremity	1 mm

3 MEASUREMENT METHOD

The IEEE 1528, OET 65 Bulletin C, CENELEC EN50361 and CEI/IEC 62209 standards provide recommended practices for the probe calibrations, including the performance characteristics of interest and methods by which to assess their affect. All calibrations / measurements performed meet the fore mentioned standards.

3.1 LINEARITY

The evaluation of the linearity was done in free space using the waveguide, performing a power sweep to cover the SAR range 0.01W/kg to 100W/kg.



COMOSAR E-FIELD PROBE CALIBRATION REPORT

Ref: ACR.260.1.18.SATU.A

3.2 SENSITIVITY

The sensitivity factors of the three dipoles were determined using a two step calibration method (air and tissue simulating liquid) using waveguides as outlined in the standards.

3.3 LOWER DETECTION LIMIT

The lower detection limit was assessed using the same measurement set up as used for the linearity measurement. The required lower detection limit is 10 mW/kg.

3.4 ISOTROPY

The axial isotropy was evaluated by exposing the probe to a reference wave from a standard dipole with the dipole mounted under the flat phantom in the test configuration suggested for system validations and checks. The probe was rotated along its main axis from 0 - 360 degrees in 15 degree steps. The hemispherical isotropy is determined by inserting the probe in a thin plastic box filled with tissue-equivalent liquid, with the plastic box illuminated with the fields from a half wave dipole. The dipole is rotated about its axis (0°–180°) in 15° increments. At each step the probe is rotated about its axis (0°–360°).

3.5 BOUNDARY EFFECT

The boundary effect is defined as the deviation between the SAR measured data and the expected exponential decay in the liquid when the probe is oriented normal to the interface. To evaluate this effect, the liquid filled flat phantom is exposed to fields from either a reference dipole or waveguide. With the probe normal to the phantom surface, the peak spatial average SAR is measured and compared to the analytical value at the surface.

4 MEASUREMENT UNCERTAINTY

The guidelines outlined in the IEEE 1528, OET 65 Bulletin C, CENELEC EN50361 and CEI/IEC 62209 standards were followed to generate the measurement uncertainty associated with an E-field probe calibration using the waveguide technique. All uncertainties listed below represent an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$, traceable to the Internationally Accepted Guides to Measurement Uncertainty.

Uncertainty analysis of the probe calibration in waveguide					
ERROR SOURCES	Uncertainty value (%)	Probability Distribution	Divisor	ci	Standard Uncertainty (%)
Incident or forward power	3.00%	Rectangular	$\sqrt{3}$	1	1.732%
Reflected power	3.00%	Rectangular	$\sqrt{3}$	1	1.732%
Liquid conductivity	5.00%	Rectangular	$\sqrt{3}$	1	2.887%
Liquid permittivity	4.00%	Rectangular	$\sqrt{3}$	1	2.309%
Field homogeneity	3.00%	Rectangular	$\sqrt{3}$	1	1.732%
Field probe positioning	5.00%	Rectangular	$\sqrt{3}$	1	2.887%
Field probe linearity	3.00%	Rectangular	$\sqrt{3}$	1	1.732%
Combined standard uncertainty					5.831%
Expanded uncertainty 95 % confidence level $k = 2$					12.0%

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COMOSAR E-FIELD PROBE CALIBRATION REPORT

Ref: ACR.260.1.18.SATU.A

5 CALIBRATION MEASUREMENT RESULTS

Calibration Parameters	
Liquid Temperature	21 °C
Lab Temperature	21 °C
Lab Humidity	45 %

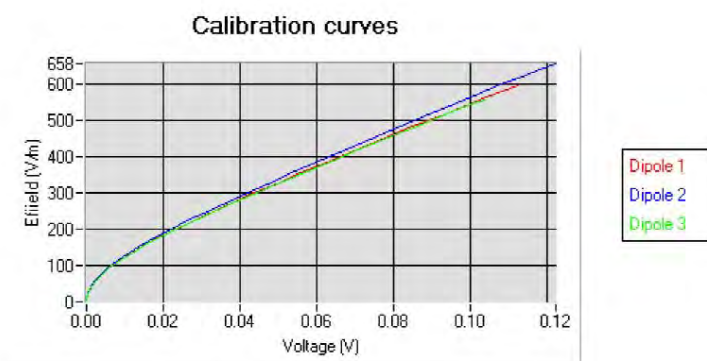
5.1 SENSITIVITY IN AIR

Normx dipole 1 ($\mu\text{V}/(\text{V}/\text{m})^2$)	Normy dipole 2 ($\mu\text{V}/(\text{V}/\text{m})^2$)	Normz dipole 3 ($\mu\text{V}/(\text{V}/\text{m})^2$)
0.66	0.75	0.58

DCP dipole 1 (mV)	DCP dipole 2 (mV)	DCP dipole 3 (mV)
93	93	98

Calibration curves $e_i=f(V)$ ($i=1,2,3$) allow to obtain H-field value using the formula:

$$E = \sqrt{E_1^2 + E_2^2 + E_3^2}$$

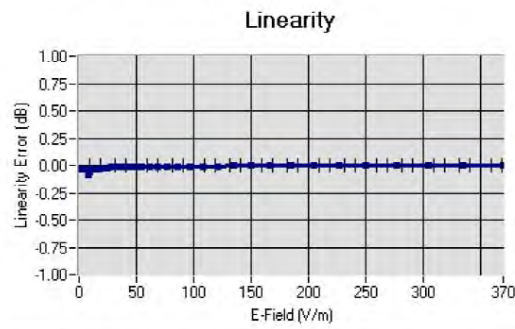




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5.2 LINEARITY

Linearity: $\pm 1.89\%$ ($\pm 0.08\text{dB}$)

5.3 SENSITIVITY IN LIQUID

Liquid	Frequency (MHz $\pm$ 100MHz)	Permittivity	Epsilon (S/m)	ConvF
HL750	750	40.03	0.93	1.45
BL750	750	56.83	1.00	1.49
HL850	835	42.19	0.90	1.50
BL850	835	54.67	1.01	1.56
HL900	900	42.08	1.01	1.51
HL1800	1800	41.68	1.46	1.71
BL1800	1800	53.86	1.46	1.77
HL1900	1900	38.45	1.45	2.03
BL1900	1900	53.32	1.56	2.07
HL2000	2000	38.26	1.38	1.76
HL2450	2450	37.50	1.80	2.00
BL2450	2450	53.22	1.89	2.08
HL2600	2600	39.80	1.99	2.12
BL2600	2600	52.52	2.23	2.19
HL5200	5200	35.64	4.67	2.55
BL5200	5200	48.64	5.51	2.62
HL5400	5400	36.44	4.87	2.53
BL5400	5400	46.52	5.77	2.59
HL5600	5600	36.66	5.17	2.64
BL5600	5600	46.79	5.77	2.73
HL5800	5800	35.31	5.31	2.72
BL5800	5800	47.04	6.10	2.81

LOWER DETECTION LIMIT: 7mW/kg

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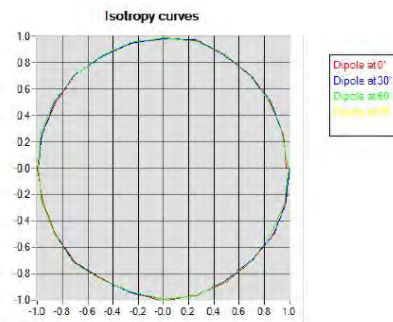
COMOSAR E-FIELD PROBE CALIBRATION REPORT

Ref: ACR.260.1.18.SATU.A

5.4 ISOTROPY

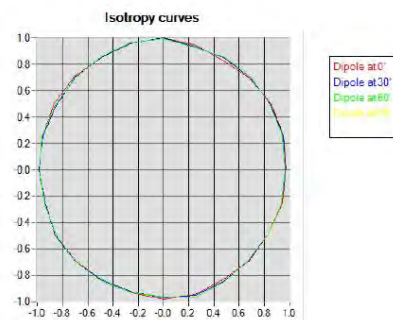
HL900 MHz

- Axial isotropy: 0.04 dB
- Hemispherical isotropy: 0.07 dB



HL1800 MHz

- Axial isotropy: 0.06 dB
- Hemispherical isotropy: 0.08 dB



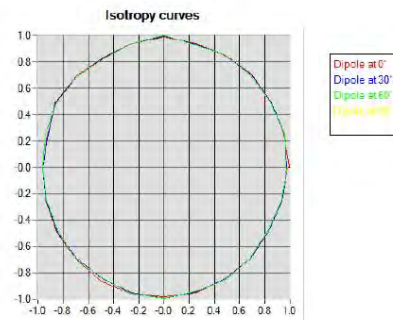


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HL5600 MHz

- Axial isotropy: 0.06 dB
- Hemispherical isotropy: 0.08 dB





COMOSAR E-FIELD PROBE CALIBRATION REPORT

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6 LIST OF EQUIPMENT

Equipment Summary Sheet				
Equipment Description	Manufacturer / Model	Identification No.	Current Calibration Date	Next Calibration Date
Flat Phantom	MVG	SN-20/09-SAM71	Validated. No cal required.	Validated. No cal required.
COMOSAR Test Bench	Version 3	NA	Validated. No cal required.	Validated. No cal required.
Network Analyzer	Rhode & Schwarz ZVA	SN100132	02/2016	02/2019
Reference Probe	MVG	EP 94 SN 37/08	10/2017	10/2018
Multimeter	Keithley 2000	1188656	01/2017	01/2020
Signal Generator	Agilent E4438C	MY49070581	01/2017	01/2020
Amplifier	Aethercomm	SN 046	Characterized prior to test. No cal required.	Characterized prior to test. No cal required.
Power Meter	HP E4418A	US38261498	01/2017	01/2020
Power Sensor	HP ECP-E26A	US37181460	01/2017	01/2020
Directional Coupler	Narda 4216-20	01386	Characterized prior to test. No cal required.	Characterized prior to test. No cal required.
Waveguide	Mega Industries	069Y7-158-13-712	Validated. No cal required.	Validated. No cal required.
Waveguide Transition	Mega Industries	069Y7-158-13-701	Validated. No cal required.	Validated. No cal required.
Waveguide Termination	Mega Industries	069Y7-158-13-701	Validated. No cal required.	Validated. No cal required.
Temperature / Humidity Sensor	Control Company	150798832	11/2017	11/2020



SAR Reference Dipole Calibration Report

Ref : ACR.109.1.18.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 REFERENCE DIPOLE

FREQUENCY: 750 MHZ

SERIAL NO.: SN 03/15 DIP 0G750-355

Calibrated at MVG US

2105 Barrett Park Dr. - Kennesaw, GA 30144



Calibration Date: 04/19/2018

Summary:

This document presents the method and results from an accredited SAR reference dipole calibration performed in MVG USA using the COMOSAR test bench. All calibration results are traceable to national metrology institutions.



SAR REFERENCE DIPOLE CALIBRATION REPORT

Ref: ACR.109.1.18.SATU.A

	Name	Function	Date	Signature
Prepared by :	Jérôme LUC	Product Manager	4/19/2018	<i>JS</i>
Checked by :	Jérôme LUC	Product Manager	4/19/2018	<i>JS</i>
Approved by :	Kim RUTKOWSKI	Quality Manager	4/19/2018	<i>Kim Rutkowski</i>

	Customer Name
Distribution :	SHENZHEN NTEK TESTING TECHNOLOGY CO., LTD.

Issue	Date	Modifications
A	4/19/2018	Initial release



SAR REFERENCE DIPOLE CALIBRATION REPORT

Ref: ACR.109.1.18.SATU.A

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SAR REFERENCE DIPOLE CALIBRATION REPORT

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1 INTRODUCTION

This document contains a summary of the requirements set forth by the IEEE 1528, FCC KDBs and CEI/IEC 62209 standards for reference dipoles used for SAR measurement system validations and the measurements that were performed to verify that the product complies with the fore mentioned standards.

2 DEVICE UNDER TEST

Device Under Test	
Device Type	COMOSAR 750 MHz REFERENCE DIPOLE
Manufacturer	MVG
Model	SID750
Serial Number	SN 03/15 DIP 0G750-355
Product Condition (new / used)	Used

A yearly calibration interval is recommended.

3 PRODUCT DESCRIPTION

3.1 GENERAL INFORMATION

MVG's COMOSAR Validation Dipoles are built in accordance to the IEEE 1528, FCC KDBs and CEI/IEC 62209 standards. The product is designed for use with the COMOSAR test bench only.



Figure 1 – MVG COMOSAR Validation Dipole



SAR REFERENCE DIPOLE CALIBRATION REPORT

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4 MEASUREMENT METHOD

The IEEE 1528, FCC KDBs and CEI/IEC 62209 standards provide requirements for reference dipoles used for system validation measurements. The following measurements were performed to verify that the product complies with the fore mentioned standards.

4.1 RETURN LOSS REQUIREMENTS

The dipole used for SAR system validation measurements and checks must have a return loss of -20 dB or better. The return loss measurement shall be performed against a liquid filled flat phantom, with the phantom constructed as outlined in the fore mentioned standards.

4.2 MECHANICAL REQUIREMENTS

The IEEE Std. 1528 and CEI/IEC 62209 standards specify the mechanical components and dimensions of the validation dipoles, with the dimensions frequency and phantom shell thickness dependent. The COMOSAR test bench employs a 2 mm phantom shell thickness therefore the dipoles sold for use with the COMOSAR test bench comply with the requirements set forth for a 2 mm phantom shell thickness.

5 MEASUREMENT UNCERTAINTY

All uncertainties listed below represent an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$, traceable to the Internationally Accepted Guides to Measurement Uncertainty.

5.1 RETURN LOSS

The following uncertainties apply to the return loss measurement:

Frequency band	Expanded Uncertainty on Return Loss
400-6000MHz	0.1 dB

5.2 DIMENSION MEASUREMENT

The following uncertainties apply to the dimension measurements:

Length (mm)	Expanded Uncertainty on Length
3 - 300	0.05 mm

5.3 VALIDATION MEASUREMENT

The guidelines outlined in the IEEE 1528, FCC KDBs, CENELEC EN50361 and CEI/IEC 62209 standards were followed to generate the measurement uncertainty for validation measurements.

Scan Volume	Expanded Uncertainty
1 g	20.3 %



SAR REFERENCE DIPOLE CALIBRATION REPORT

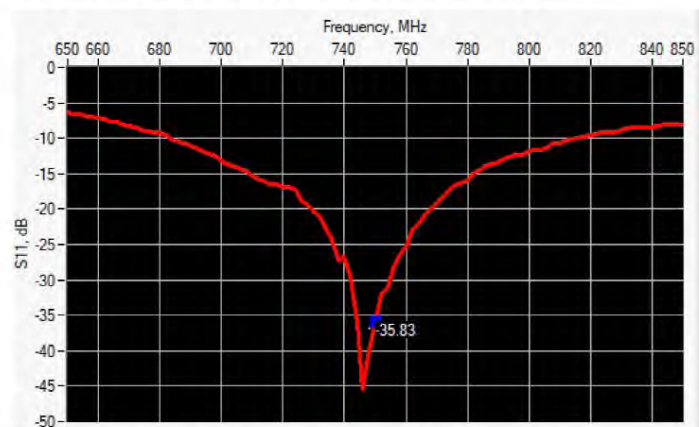
Ref: ACR.109.1.18.SATU.A

10 g

20.1 %

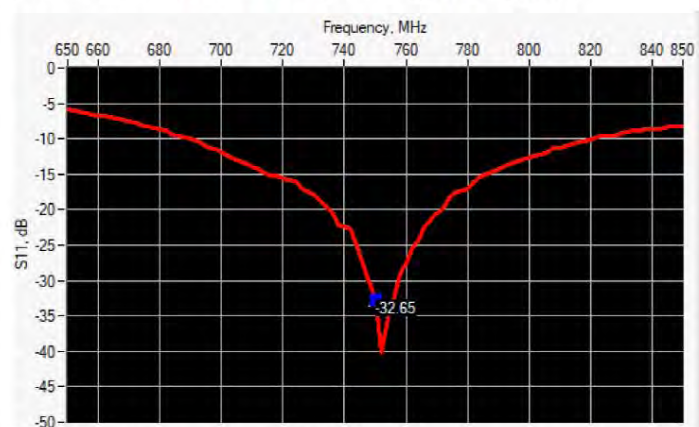
6 CALIBRATION MEASUREMENT RESULTS

6.1 RETURN LOSS AND IMPEDANCE IN HEAD LIQUID



Frequency (MHz)	Return Loss (dB)	Requirement (dB)	Impedance
750	-35.83	-20	51.3 Ω - 1.2 j Ω

6.2 RETURN LOSS AND IMPEDANCE IN BODY LIQUID



Frequency (MHz)	Return Loss (dB)	Requirement (dB)	Impedance
750	-32.65	-20	50.8 Ω + 2.3 j Ω

6.3 MECHANICAL DIMENSIONS

Frequency MHz	L mm		h mm		d mm	
	required	measured	required	measured	required	measured
300	420.0 $\pm$ 1 %		250.0 $\pm$ 1 %		6.35 $\pm$ 1 %	

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450	290.0 ±1 %.		166.7 ±1 %.		6.35 ±1 %.	
750	176.0 ±1 %.	PASS	100.0 ±1 %.	PASS	6.35 ±1 %.	PASS
835	161.0 ±1 %.		89.8 ±1 %.		3.6 ±1 %.	
900	149.0 ±1 %.		83.3 ±1 %.		3.6 ±1 %.	
1450	89.1 ±1 %.		51.7 ±1 %.		3.6 ±1 %.	
1500	80.5 ±1 %.		50.0 ±1 %.		3.6 ±1 %.	
1640	79.0 ±1 %.		45.7 ±1 %.		3.6 ±1 %.	
1750	75.2 ±1 %.		42.9 ±1 %.		3.6 ±1 %.	
1800	72.0 ±1 %.		41.7 ±1 %.		3.6 ±1 %.	
1900	68.0 ±1 %.		39.5 ±1 %.		3.6 ±1 %.	
1950	66.3 ±1 %.		38.5 ±1 %.		3.6 ±1 %.	
2000	64.5 ±1 %.		37.5 ±1 %.		3.6 ±1 %.	
2100	61.0 ±1 %.		35.7 ±1 %.		3.6 ±1 %.	
2300	55.5 ±1 %.		32.6 ±1 %.		3.6 ±1 %.	
2450	51.5 ±1 %.		30.4 ±1 %.		3.6 ±1 %.	
2600	48.5 ±1 %.		28.8 ±1 %.		3.6 ±1 %.	
3000	41.5 ±1 %.		25.0 ±1 %.		3.6 ±1 %.	
3500	37.0 ±1 %.		26.4 ±1 %.		3.6 ±1 %.	
3700	34.7 ±1 %.		26.4 ±1 %.		3.6 ±1 %.	

7 VALIDATION MEASUREMENT

The IEEE Std. 1528, FCC KDBs and CEI/IEC 62209 standards state that the system validation measurements must be performed using a reference dipole meeting the fore mentioned return loss and mechanical dimension requirements. The validation measurement must be performed against a liquid filled flat phantom, with the phantom constructed as outlined in the fore mentioned standards. Per the standards, the dipole shall be positioned below the bottom of the phantom, with the dipole length centered and parallel to the longest dimension of the flat phantom, with the top surface of the dipole at the described distance from the bottom surface of the phantom.

7.1 HEAD LIQUID MEASUREMENT

Frequency MHz	Relative permittivity (ϵ_r')		Conductivity (σ) S/m	
	required	measured	required	measured
300	45.3 ±5 %		0.87 ±5 %	
450	43.5 ±5 %		0.87 ±5 %	
750	41.9 ±5 %	PASS	0.89 ±5 %	PASS
835	41.5 ±5 %		0.90 ±5 %	
900	41.5 ±5 %		0.97 ±5 %	
1450	40.5 ±5 %		1.20 ±5 %	
1500	40.4 ±5 %		1.23 ±5 %	
1640	40.2 ±5 %		1.31 ±5 %	
1750	40.1 ±5 %		1.37 ±5 %	

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1800	40.0 ±5 %		1.40 ±5 %	
1900	40.0 ±5 %		1.40 ±5 %	
1950	40.0 ±5 %		1.40 ±5 %	
2000	40.0 ±5 %		1.40 ±5 %	
2100	39.8 ±5 %		1.49 ±5 %	
2300	39.5 ±5 %		1.67 ±5 %	
2450	39.2 ±5 %		1.80 ±5 %	
2600	39.0 ±5 %		1.96 ±5 %	
3000	38.5 ±5 %		2.40 ±5 %	
3500	37.9 ±5 %		2.91 ±5 %	

7.2 SAR MEASUREMENT RESULT WITH HEAD LIQUID

The IEEE Std. 1528 and CEI/IEC 62209 standards state that the system validation measurements should produce the SAR values shown below (for phantom thickness of 2 mm), within the uncertainty for the system validation. All SAR values are normalized to 1 W forward power. In bracket, the measured SAR is given with the used input power.

Software	OPENSAR V4
Phantom	SN 20/09 SAM71
Probe	SN 18/11 EPG122
Liquid	Head Liquid Values: eps' : 40.0 sigma : 0.93
Distance between dipole center and liquid	15.0 mm
Area scan resolution	dx=8mm/dy=8mm
Zoon Scan Resolution	dx=8mm/dy=8mm/dz=5mm
Frequency	750 MHz
Input power	20 dBm
Liquid Temperature	21 °C
Lab Temperature	21 °C
Lab Humidity	45 %

Frequency MHz	1 g SAR (W/kg/W)		10 g SAR (W/kg/W)	
	required	measured	required	measured
300	2.85		1.94	
450	4.58		3.06	
750	8.49	8.56 (0.86)	5.55	5.61 (0.56)
835	9.56		6.22	
900	10.9		6.99	
1450	29		16	
1500	30.5		16.8	
1640	34.2		18.4	
1750	36.4		19.3	
1800	38.4		20.1	

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