
SAR Test Report

Report No.: AGC03219170301FH01

FCC ID : 2ADCR-WGHK22009

APPLICATION PURPOSE : Original Equipment

PRODUCT DESIGNATION : 8 Inch 4G tablet

BRAND NAME : LB Technology

MODEL NAME : WGHK22009

CLIENT : LB Technology

DATE OF ISSUE : June 01,2017

STANDARD(S) : IEEE Std. 1528:2013
FCC 47CFR § 2.1093
IEEE/ANSI C95.1:2005

REPORT VERSION : V1.0

Attestation of Global Compliance(Shenzhen) Co., Ltd.

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Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	June 01,2017	Valid	Original Report

Test Report Certification

Applicant Name	LB Technology
Applicant Address	5100 Poplar Ave. Memphis Tennessee United States 38137
Manufacturer Name	LB Technology
Manufacturer Address	5100 Poplar Ave. Memphis Tennessee United States 38137
Product Designation	8 Inch 4G tablet
Brand Name	LB Technology
Model Name	WGHK22009
Different Description	N/A
EUT Voltage	DC3.7V by battery
Applicable Standard	IEEE Std. 1528:2013 FCC 47CFR § 2.1093 IEEE/ANSI C95.1:2005
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1. SUMMARY OF MAXIMUM SAR VALUE

The maximum results of Specific Absorption Rate (SAR) found during testing for EUT are as follows:

Frequency Band	Highest Reported 1g-SAR(W/Kg)		SAR Test Limit (W/Kg)
	Head	Body-worn	
GSM 850	0.124	0.992	1.6
PCS 1900	0.082	1.044	
UMTS Band II	0.051	0.869	
UMTS Band V	0.048	0.645	
LTE Band 4	0.027	0.984	
LTE Band 12	0.058	1.146	
LTE Band 17	0.115	0.678	
WIFI 2.4G	0.266	0.291	
Simultaneous Reported SAR	1.418		
SAR Test Result	PASS		

This device is compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6W/Kg) specified in IEEE Std. 1528:2013; FCC 47CFR § 2.1093; IEEE/ANSI C95.1:2005 and the following specific FCC Test Procedures:

- KDB 447498 D01 General RF Exposure Guidance v06
- KDB 648474 D04 Handset SAR v01r03
- KDB 865664 D01 SAR Measurement 100MHz to 6GHz v01r04
- KDB 941225 D01 3G SAR Procedures v03r01
- KDB 941225 D06 Hotspot Mode v02r01
- KDB 248227 D01 802 11 Wi-Fi SAR v02r02
- KDB 941225 D05 SAR for LTE Devices v02r05
- KDB 616217 D04 SAR for laptop and tablets v01r02

2. GENERAL INFORMATION

2.1. EUT Description

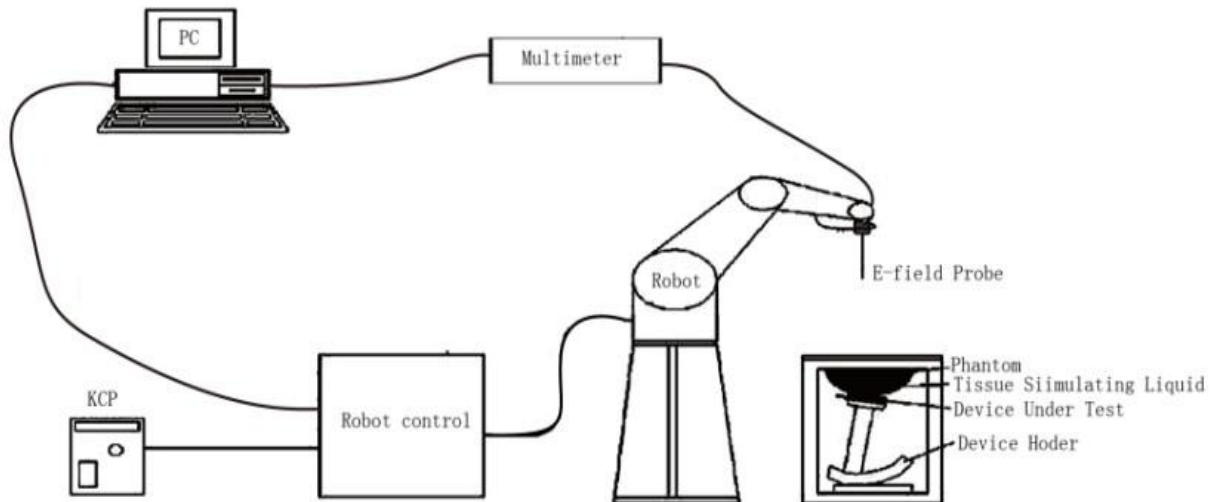
General Information	
Product Designation	8 Inch 4G tablet
Test Model	WGHK22009
Hardware Version	RC_L696_V2.2
Software Version	L696M-V20LKK8G8GEN-LF05.MIPI_WXGA.3M_SKY
Device Category	Portable
RF Exposure Environment	Uncontrolled
Antenna Type	Internal
GSM and GPRS& EGPRS	
Support Band	<input checked="" type="checkbox"/> GSM 850 <input checked="" type="checkbox"/> PCS 1900 <input type="checkbox"/> GSM 900 <input type="checkbox"/> DCS 1800
GPRS & EGPRS Type	Class B
GPRS & EGPRS Class	Class 12(1Tx+4Rx, 2Tx+3Rx, 3Tx+2Rx, 4Tx+1Rx)
TX Frequency Range	GSM 850 : 820-850MHz; PCS 1900: 1850-1910MHz;
RX Frequency Range	GSM 850 : 869~894MHz; PCS 1900: 1930~1990MHz
Release Version	R99
Type of modulation	GMSK for GSM/GPRS; GMSK & 8-PSK for EGPRS
Antenna Gain	GSM850: 0.63dBi; PCS1900: 0.97dBi;
Max. Average Power	GSM850: 30.56dBm; PCS1900: 27.41dBm
WCDMA	
Support Band	<input checked="" type="checkbox"/> UMTS FDD Band II <input checked="" type="checkbox"/> UMTS FDD Band V <input type="checkbox"/> UMTS FDD Band IV <input type="checkbox"/> UMTS FDD Band I <input type="checkbox"/> UMTS FDD Band III <input type="checkbox"/> UMTS FDD Band VIII
HS Type	HSPA(HSUPA/HSDPA)
TX Frequency Range	FDD Band II: 1850-1910MHz; FDD Band V: 820-850MHz
RX Frequency Range	FDD Band II: 1930-1990MHz; FDD Band V: 869-894MHz
Release Version	Rel-6
Type of modulation	HSDPA:QPSK/16QAM; HSUPA:BPSK; WCDMA:QPSK
Antenna Gain	WCDMA1900: 1.12dBi; WCDMA850: 0.58dBi
Max. Average Power	Band II: 21.63dBm; Band V: 21.71dBm

EUT Description(Continue)

LTE	
Support Band	<input type="checkbox"/> FDD Band 2 <input checked="" type="checkbox"/> FDD Band 4 <input type="checkbox"/> FDD Band 5 <input checked="" type="checkbox"/> FDD Band 12 <input checked="" type="checkbox"/> FDD Band 17 <input type="checkbox"/> FDD Band 25 <input type="checkbox"/> FDD Band 26 <input type="checkbox"/> TDD Band 41 (U.S. Bands) <input type="checkbox"/> FDD Band 1 <input type="checkbox"/> FDD Band 3 <input type="checkbox"/> FDD Band 7 <input type="checkbox"/> FDD Band 8 <input type="checkbox"/> FDD Band 20 <input type="checkbox"/> TDD Band 33 <input type="checkbox"/> TDD Band 34 <input type="checkbox"/> TDD Band 38 <input type="checkbox"/> FDD Band 40 <input type="checkbox"/> FDD Band 42 <input type="checkbox"/> FDD Band 43 (Non-U.S. Bands)
TX Frequency Range	Band 4:1710 -1754.9MHz;Band 12: 699 -715.9 MHz; Band 17: 704-716 MHz;
RX Frequency Range	Band 4: 2110 -2154.9MHz;Band 12: 729- 745.9 MHz; Band 17:734-746 MHz;
Release Version	Rel-8
Type of modulation	QPSK, 16QAM
Antenna gain:	0.87dBi(LTE band 4), 0.36dBi(LTE band 12), 0.23dBi(LTE band 17)
Diversity Antenna Gain	0.79dBi(LTE band 4), 0.33dBi(LTE band 12), 0.19dBi(LTE band 17)
Max. Average Power	Band 4: 22.27dBm; Band 12: 22.14dBm; Band 17: 22.74dBm
Bluetooth	
Bluetooth Version	<input type="checkbox"/> V2.0 <input type="checkbox"/> V2.1 <input type="checkbox"/> V2.1+EDR <input checked="" type="checkbox"/> V3.0 <input type="checkbox"/> V3.0+HS <input checked="" type="checkbox"/> V4.0 <input type="checkbox"/> V4.1
Operation Frequency	2402~2480MHz
Type of modulation	<input checked="" type="checkbox"/> GFSK <input checked="" type="checkbox"/> II/4-DQPSK <input checked="" type="checkbox"/> 8-DPSK
Peak Power	5.433dBm
Antenna Gain	1.87dBi
WIFI	
WIFI Specification	<input type="checkbox"/> 802.11a <input checked="" type="checkbox"/> 802.11b <input checked="" type="checkbox"/> 802.11g <input checked="" type="checkbox"/> 802.11n(20) <input checked="" type="checkbox"/> 802.11n(40)
Operation Frequency	2412~2472MHz
Avg. Burst Power	11b: 16.57dBm,11g: 14.50dBm,11n(20): 14.32dBm,11n(40): 13.66dBm
Antenna Gain	1.87dBi
Accessories	
Battery	Brand name: UEE Model No. : 3495100 Voltage and Capacitance: 3.7 V & 4000mAh
Adapter	Brand name: Aoyio Model No. : AI-29 double U Car Charger Input: AC 100-240V, 50-60Hz, 1.6A Output: DC5.25V, 2.1A
Earphone	Brand name: N/A Model No. : N/A
Note:1.CMU200 can measure the average power and Peak power at the same time 2.The sample used for testing is end product.	
Product	Type <input checked="" type="checkbox"/> Production unit <input type="checkbox"/> Identical Prototype

3. SAR MEASUREMENT SYSTEM

3.1. The SATIMO system used for performing compliance tests consists of following items



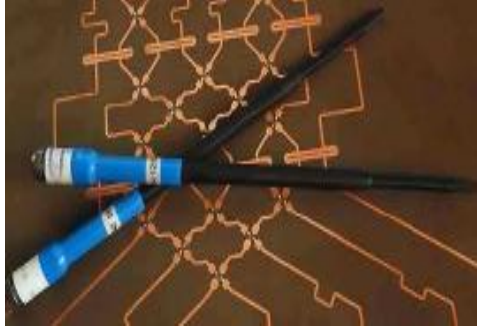
The COMOSAR system for performing compliance tests consists of the following items:

- The PC. It controls most of the bench devices and stores measurement data. A computer running WinXP and the Opensar software.
- The E-Field probe. The probe is a 3-axis system made of 3 distinct dipoles. Each dipole returns a voltage in function of the ambient electric field.
- The Keithley multimeter measures each probe dipole voltages.
- The SAM phantom simulates a human head. The measurement of the electric field is made inside the phantom.
- The liquids simulate the dielectric properties of the human head tissues.
- The network emulator controls the mobile phone under test.
- The validation dipoles are used to measure a reference SAR. They are used to periodically check the bench to make sure that there is no drift of the system characteristics over time.
- The phantom, the device holder and other accessories according to the targeted measurement.

3.2. COMOSAR E-Field Probe

The SAR measurement is conducted with the dosimetric probe manufactured by SATIMO. The probe is specially designed and calibrated for use in liquid with high permittivity. The dosimetric probe has special calibration in liquid at different frequency. SATIMO conducts the probe calibration in compliance with international and national standards (e.g. IEEE 1528 and relevant KDB files.) The calibration data are in Appendix D.

Isotropic E-Field Probe Specification

Model	SSE5	
Manufacture	MVG	
Identification No.	SN 14/16 EP307	
Frequency	0.7GHz-3GHz Linearity: $\pm 0.05\text{dB}$ (700MHz-3GHz)	
Dynamic Range	0.01W/Kg-100W/Kg Linearity: $\pm 0.05\text{dB}$	
Dimensions	Overall length: 330mm Length of individual dipoles: 4.5mm Maximum external diameter: 8mm Probe Tip external diameter: 5mm Distance between dipoles/ probe extremity: 2.7mm	
Application	High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields). Only probe which enables compliance testing for frequencies up to 3 GHz with precision of better 30%.	

3.3. Robot

The COMOSAR system uses the KUKA robot from SATIMO SA (France). For the 6-axis controller COMOSAR system, the KUKA robot controller version from SATIMO is used.

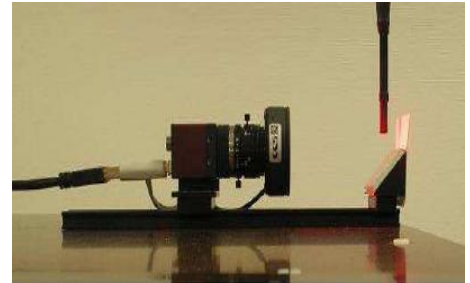
The XL robot series have many features that are important for our application:

- ☐ High precision (repeatability 0.02 mm)
- ☐ High reliability (industrial design)
- ☐ Jerk-free straight movements
- ☐ Low ELF interference (the closed metallic construction shields against motor control fields)
- ☐ 6-axis controller



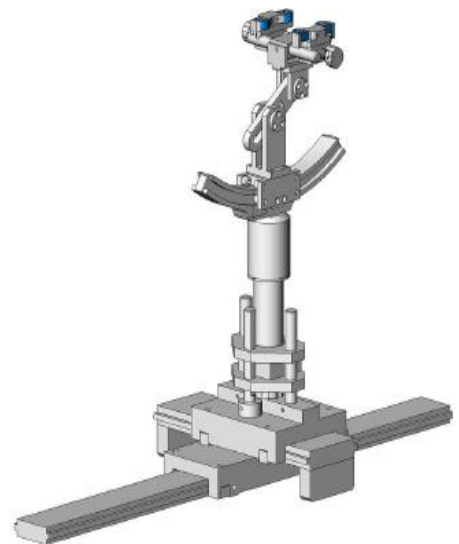
3.4. Video Positioning System

The video positioning system is used in OpenSAR to check the probe. Which is composed of a camera, LED, mirror and mechanical parts. The camera is piloted by the main computer with firewire link. During the process, the actual position of the probe tip with respect to the robot arm is measured, as well as the probe length and the horizontal probe offset. The software then corrects all movements, such that the robot coordinates are valid for the probe tip. The repeatability of this process is better than 0.1 mm. If a position has been taught with an aligned probe, the same position will be reached with another aligned probe within 0.1 mm, even if the other probe has different dimensions. During probe rotations, the probe tip will keep its actual position.



3.5. Device Holder

The COMOSAR device holder is designed to cope with different positions given in the standard. It has two scales for the device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear reference points). The rotation center for both scales is the ear reference point (EPR). Thus the device needs no repositioning when changing the angles. The COMOSAR device holder has been made out of low-loss POM material having the following dielectric parameters: relative permittivity $\epsilon_r = 3$ and loss tangent $\delta = 0.02$. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered.



3.6. SAM Twin Phantom

The SAM twin phantom is a fiberglass shell phantom with 2mm shell thickness (except the ear region where shell thickness increases to 6mm). It has three measurement areas:

- ☐ Left head
- ☐ Right head
- ☐ Flat phantom



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

4. SAR MEASUREMENT PROCEDURE

4.1. Specific Absorption Rate (SAR)

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

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

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

SAR is expressed in units of Watts per kilogram (W/Kg)

SAR can be obtained using either of the following equations:

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

$$SAR = c_h \left. \frac{dT}{dt} \right|_{t=0}$$

Where

SAR	is the specific absorption rate in watts per kilogram;
E	is the r.m.s. value of the electric field strength in the tissue in volts per meter;
σ	is the conductivity of the tissue in siemens per metre;
ρ	is the density of the tissue in kilograms per cubic metre;
c _h	is the heat capacity of the tissue in joules per kilogram and Kelvin;

$\left. \frac{dT}{dt} \right|_{t=0}$ is the initial time derivative of temperature in the tissue in kelvins per second

4.2. SAR Measurement Procedure

Step 1: Power Reference Measurement

The Power Reference Measurement and Power Drift Measurement are for monitoring the power drift of the device under test in the batch process. The minimum distance of probe sensors to surface is 2.7mm This distance cannot be smaller than the distance os sensor calibration points to probe tip as `defined in the probe properties,

Step 2: Area Scan

The Area Scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot. The sophisticated interpolation routines implemented in SATIMO software can find the maximum locations even in relatively coarse grids. When an Area Scan has measured all reachable points, it computes the field maximal found in the scanned area, within a range of the global maximum. The range (in db) is specified in the standards for compliance testing. For example, a 2db range is required in IEEE Standard 1528 and IEC62209 standards, whereby 3db is a requirement when compliance is assessed in accordance with the ARIB standard (Japan) If one Zoom Scan follows the Area Scan, then only the absolute maximum will be taken as reference. For cases where multiple maximum are detected, the number of Zoom Scan has to be increased accordingly.

Area Scan Parameters extracted from KDB 865664 D01 SAR Measurement 100MHz to 6GHz

	$\leq 3 \text{ GHz}$	$> 3 \text{ GHz}$
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	$5 \pm 1 \text{ mm}$	$\frac{1}{2} \cdot \delta \cdot \ln(2) \pm 0.5 \text{ mm}$
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: $\Delta x_{\text{Area}}, \Delta y_{\text{Area}}$	$\leq 2 \text{ GHz: } \leq 15 \text{ mm}$ $2 - 3 \text{ GHz: } \leq 12 \text{ mm}$	$3 - 4 \text{ GHz: } \leq 12 \text{ mm}$ $4 - 6 \text{ GHz: } \leq 10 \text{ mm}$
	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.	

Step 3: Zoom Scan

Zoom Scan are used to assess the peak spatial SAR value within a cubic average volume containing 1g abd 10g of simulated tissue. The Zoom Scan measures points(refer to table below) within a cube whose base faces are centered on the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the Zoom Scan evaluates the averaged SAR for 1g and 10g and displays these values next to the job's label.

Zoom Scan Parameters extracted from KDB865664 d01 SAR Measurement 100MHz to 6GHz

Maximum zoom scan spatial resolution: $\Delta x_{\text{Zoom}}, \Delta y_{\text{Zoom}}$			$\leq 2 \text{ GHz}: \leq 8 \text{ mm}$ $2 - 3 \text{ GHz}: \leq 5 \text{ mm}^*$	$3 - 4 \text{ GHz}: \leq 5 \text{ mm}^*$ $4 - 6 \text{ GHz}: \leq 4 \text{ mm}^*$
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{\text{Zoom}}(n)$		$\leq 5 \text{ mm}$	$3 - 4 \text{ GHz}: \leq 4 \text{ mm}$ $4 - 5 \text{ GHz}: \leq 3 \text{ mm}$ $5 - 6 \text{ GHz}: \leq 2 \text{ mm}$
	graded grid	$\Delta z_{\text{Zoom}}(1)$: between 1 st two points closest to phantom surface	$\leq 4 \text{ mm}$	$3 - 4 \text{ GHz}: \leq 3 \text{ mm}$ $4 - 5 \text{ GHz}: \leq 2.5 \text{ mm}$ $5 - 6 \text{ GHz}: \leq 2 \text{ mm}$
		$\Delta z_{\text{Zoom}}(n>1)$: between subsequent points	$\leq 1.5 \cdot \Delta z_{\text{Zoom}}(n-1)$	
Minimum zoom scan volume	x, y, z		$\geq 30 \text{ mm}$	$3 - 4 \text{ GHz}: \geq 28 \text{ mm}$ $4 - 5 \text{ GHz}: \geq 25 \text{ mm}$ $5 - 6 \text{ GHz}: \geq 22 \text{ mm}$
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 <u>reported</u> SAR from the <i>area scan based 1-g SAR estimation</i> procedures of KDB 447498 is $\leq 1.4 \text{ W/kg}$, $\leq 8 \text{ mm}$, $\leq 7 \text{ mm}$ and $\leq 5 \text{ mm}$ zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.				

Step 4: Power Drift Measurement

The Power Drift Measurement measures the field at the same location as the most recent power reference measurement within the same procedure, and with the same settings. The Power Drift Measurement gives the field difference in dB from the reading conducted within the same settings. This allows a user to monitor the power drift of the device under test within a batch process. The measurement procedure is the same as Step 1.

4.3. RF Exposure Conditions

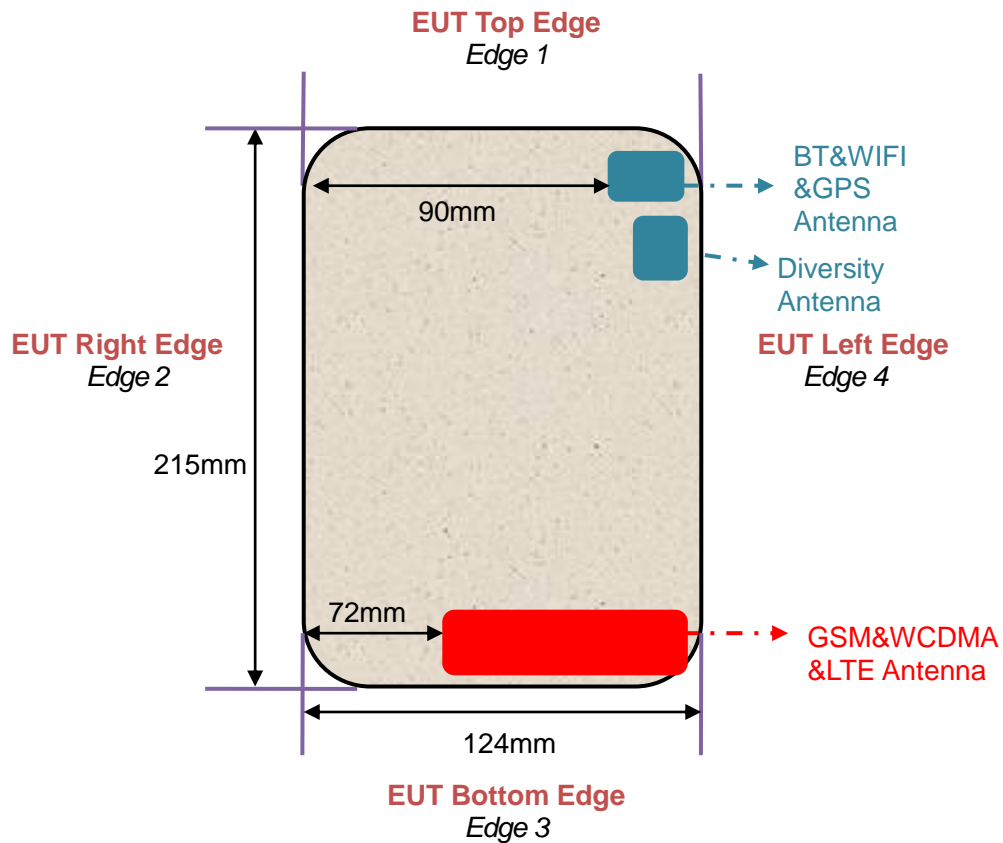
Test Configuration and setting:

The EUT is a model of GSM Portable Mobile Station (MS). It supports GSM/GPRS/EGPRS, WCDMA/HSPA, LTE, BT, WIFI, and support hot spot mode.

For WWAN SAR testing, the device was controlled by using a base station emulator. Communication between the device and the emulator were established by air link. The distance between the EUT and the antenna is larger than 50cm, and the output power radiated from the emulator antenna is at least 30db smaller than the output power of EUT.

For WLAN testing, the EUT is configured with the WLAN continuous TX tool through engineering command.

Antenna Location: (the back view)



For WWAN mode:

Test Configurations	Antenna to edges/surface	SAR required	Note
Head			
Left Touch		Yes	--
Left Tilt		Yes	--
Right Touch		Yes	--
Right Tilt		Yes	--
Body			
Back	<25mm	Yes	--
Front	<25mm	Yes	--
Hotspot			
Back	<25mm	Yes	--
Front	<25mm	Yes	--
Edge 1 (Top)	190mm	No	SAR is not required for the distance between the antenna and the edge is >25mm as per KDB 941225 D06 Hotspot SAR
Edge 2 (Right)	8mm	Yes	--
Edge 3 (Bottom)	2mm	Yes	--
Edge 4 (Left)	72mm	No	SAR is not required for the distance between the antenna and the edge is >25mm as per KDB 941225 D06 Hotspot SAR

For WLAN mode:

Test Configurations	Antenna to edges/surface	SAR required	Note
Head			
Left Touch		Yes	--
Left Tilt		Yes	--
Right Touch		Yes	--
Right Tilt		Yes	--
Body			
Back	<25mm	Yes	--
Front	<25mm	Yes	--
Hotspot			
Back	<25mm	Yes	--
Front	<25mm	Yes	--
Edge 1 (Top)	3mm	Yes	--
Edge 2 (Right)	4mm	Yes	--
Edge 3 (Bottom)	197mm	No	SAR is not required for the distance between the antenna and the edge is >25mm as per KDB 941225 D06 Hotspot SAR
Edge 4 (Left)	91mm	No	SAR is not required for the distance between the antenna and the edge is >25mm as per KDB 941225 D06 Hotspot SAR

5. TISSUE SIMULATING LIQUID

For SAR measurement of the field distribution inside the phantom, the phantom must be filled with homogeneous tissue simulating liquid to a depth of at least 15cm. For head SAR testing the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15cm For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15cm. The nominal dielectric values of the tissue simulating liquids in the phantom and the tolerance of 5% are listed in 5.2

5.1. The composition of the tissue simulating liquid

Ingredient (% Weight) Frequency (MHz)	Water	NaCl	Polysorbate 20	DGBE	1,2 Propanediol	Triton X-100
750 Head	35	2	0.0	0.0	63	0.0
750 Body	55	1	0.0	0.0	44	0.0
835 Head	50.36	1.25	48.39	0.0	0.0	0.0
835 Body	54.00	1	0.0	15	0.0	30
1750 Head	52.64	0.36	0.0	47	0.0	0.0
1750 Body	70	1	0.0	9	0.0	20
1900 Head	54.9	0.18	0.0	44.92	0.0	0.0
1900 Body	70	1	0.0	9	0.0	20
2450 Head	71.88	0.16	0.0	7.99	0.0	19.97
2450 Body	70	1	0.0	9	0.0	20

5.2. Tissue Dielectric Parameters for Head and Body Phantoms

The head tissue dielectric parameters recommended by the IEEE 1528 have been incorporated in the following table. These head parameters are derived from planar layer models simulating the highest expected SAR for the dielectric properties and tissue thickness variations in a human head. Other head and body tissue parameters that have not been specified in IEEE 1528 are derived from the tissue dielectric parameters computed from the 4-Cole-Cole equations described in Reference [12] and extrapolated according to the head parameters specified in IEEE 1528.

Target Frequency (MHz)	head		body	
	ϵ_r	σ (S/m)	ϵ_r	σ (S/m)
300	45.3	0.87	58.2	0.92
450	43.5	0.87	56.7	0.94
750	41.9	0.89	55.5	0.96
835	41.5	0.90	55.2	0.97
900	41.5	0.97	55.0	1.05
915	41.5	1.01	55.0	1.06
1450	40.5	1.20	54.0	1.30
1610	40.3	1.29	53.8	1.40
1750	40.1	1.37	53.4	1.49
1800 – 2000	40.0	1.40	53.3	1.52
2450	39.2	1.80	52.7	1.95
3000	38.5	2.40	52.0	2.73

(ϵ_r = relative permittivity, σ = conductivity and ρ = 1000 kg/m³)

5.3. Tissue Calibration Result

The dielectric parameters of the liquids were verified prior to the SAR evaluation using SATIMO Dielectric Probe Kit and R&S Network Analyzer ZVL6.

Tissue Stimulant Measurement for 750MHz					
Head	Fr. (MHz)	Dielectric Parameters ($\pm 5\%$)		Tissue Temp [°C]	Test time
		ϵ_r 41.9 (39.805-43.995)	δ [s/m] 0.89(0.8455-0.9345)		
	704	43.23	0.87	21.5	May 31,2017
	707.5	43.06	0.88		
	709	42.92	0.89		
	710	42.58	0.90		
	711	41.97	0.91		
	750	40.62	0.93		
Body	Fr. (MHz)	Dielectric Parameters ($\pm 5\%$)		Tissue Temp [°C]	Test time
		ϵ_r 55.5(52.725-58.275)	δ [s/m]0.96(0.912-1.008)		
	704	57.32	0.92	21.4	May 31,2017
	707.5	56.86	0.93		
	709	56.03	0.94		
	710	55.59	0.94		
	711	55.05	0.95		
	750	53.68	0.98		

Tissue Stimulant Measurement for 835MHz					
Head	Fr. (MHz)	Dielectric Parameters ($\pm 5\%$)		Tissue Temp [°C]	Test time
		ϵ_r 41.5 (39.425-43.575)	δ [s/m] 0.90(0.855-0.945)		
	824.2	42.96	0.88	21.5	May 25,2017
	826.4	42.25	0.89		
	835	41.86	0.90		
	836.6	41.48	0.91		
	846.6	40.97	0.92		
	848.8	40.52	0.93		
Body	Fr. (MHz)	Dielectric Parameters ($\pm 5\%$)		Tissue Temp [°C]	Test time
		ϵ_r 55.20(52.44-57.96)	δ [s/m]0.97(0.9215-1.0185)		
	824.2	56.86	0.93	21.3	May 25,2017
	826.4	56.03	0.93		
	835	55.54	0.94		
	836.6	54.89	0.94		
	846.6	54.21	0.95		
	848.8	53.69	0.96		

Tissue Stimulant Measurement for 1750MHz					
	Fr. (MHz)	Dielectric Parameters ($\pm 5\%$)		Tissue Temp [°C]	Test time
		ϵ_r 40.1 (38.095-42.105)	δ [s/m] 1.37(1.3015-1.439)		
Head	1720	41.22	1.33	21.4	May 26,2017
	1732.5	41.01	1.34		
	1745	40.66	1.35		
	1750	40.25	1.36		
	Fr. (MHz)	Dielectric Parameters ($\pm 5\%$)		Tissue Temp [°C]	Test time
		ϵ_r 53.4(50.73-56.07)	δ [s/m] 1.49(1.4155-1.5645)		
Body	1720	54.63	1.46	21.3	May 26,2017
	1732.5	53.72	1.47		
	1745	53.16	1.48		
	1750	52.53	1.49		

Tissue Stimulant Measurement for 1900MHz					
	Fr. (MHz)	Dielectric Parameters ($\pm 5\%$)		Tissue Temp [°C]	Test time
		ϵ_r 40.00(38.00-42.00)	δ [s/m] 1.40(1.33-1.47)		
Head	1850.2	41.38	1.35	21.2	May 24,2017
	1852.4	41.11	1.36		
	1880	40.25	1.38		
	1900	39.45	1.40		
	1907.6	38.97	1.41		
	1909.8	38.73	1.43		
	Fr. (MHz)	Dielectric Parameters ($\pm 5\%$)		Tissue Temp [°C]	Test time
		ϵ_r 53.30(50.635-55.965)	δ [s/m] 1.52(1.444-1.596)		
Body	1850.2	54.36	1.46	21.0	May 24,2017
	1852.4	54.02	1.47		
	1880	53.13	1.50		
	1900	52.81	1.52		
	1907.6	52.05	1.53		
	1909.8	51.64	1.54		

Tissue Stimulant Measurement for 2450MHz					
Head	Fr. (MHz)	Dielectric Parameters ($\pm 5\%$)		Tissue Temp [°C]	Test time
		$\epsilon_r 39.2(37.24-41.16)$	$\delta [s/m] 1.80(1.71-1.89)$		
	2412	40.69	1.78	21.1	May 27,2017
	2437	39.57	1.80		
	2450	38.93	1.81		
	2462	37.99	1.83		
Body	Fr. (MHz)	Dielectric Parameters ($\pm 5\%$)		Tissue Temp [°C]	Test time
		$\epsilon_r 52.7(50.065-55.335)$	$\delta [s/m] 1.95(1.8525-2.0475)$		
	2412	54.88	1.87	21.0	May 27,2017
	2437	54.05	1.89		
	2450	53.27	1.90		
	2462	52.66	1.92		

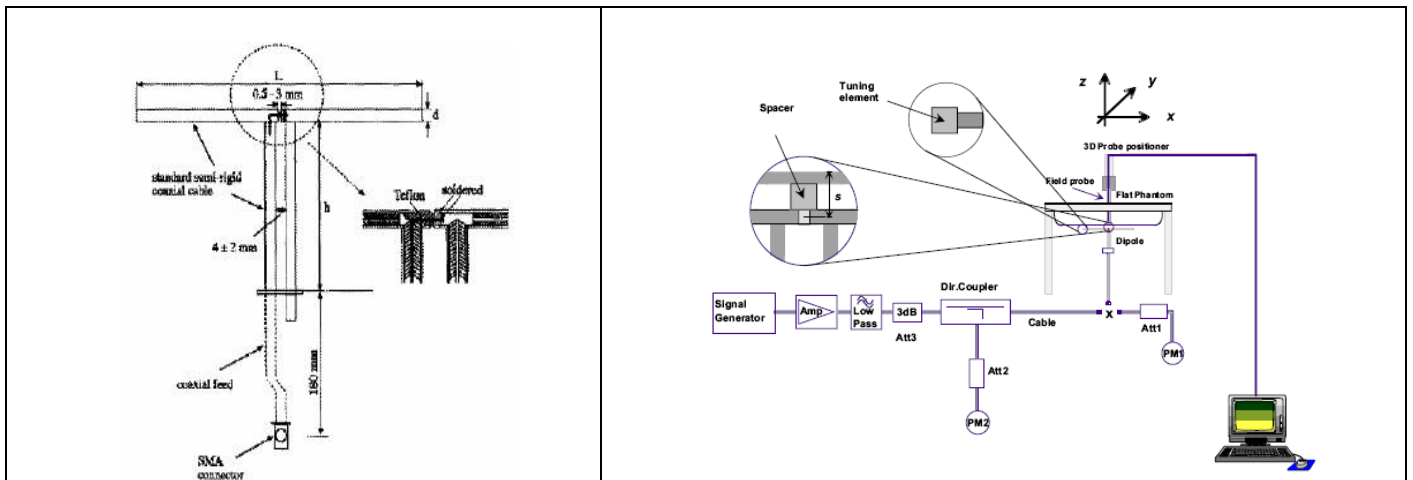
6. SAR SYSTEM CHECK PROCEDURE

6.1. SAR System Check Procedures

SAR system check is required to confirm measurement accuracy, according to the tissue dielectric media, probe calibration points and other system operating parameters required for measuring the SAR of a test device. The system verification must be performed for each frequency band and within the valid range of each probe calibration point required for testing the device. The same SAR probe(s) and tissue-equivalent media combinations used with each specific SAR system for system verification must be used for device testing. When multiple probe calibration points are required to cover substantially large transmission bands, independent system verifications are required for each probe calibration point. A system verification must be performed before each series of SAR measurements using the same probe calibration point and tissue-equivalent medium. Additional system verification should be considered according to the conditions of the tissue-equivalent medium and measured tissue dielectric parameters, typically every three to four days when the liquid parameters are remeasured or sooner when marginal liquid parameters are used at the beginning of a series of measurements.

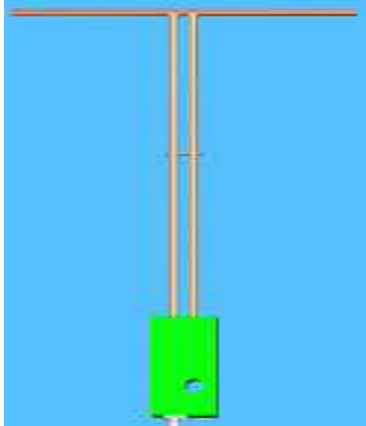
Each SATIMO system is equipped with one or more system check kits. These units, together with the predefined measurement procedures within the SATIMO software, enable the user to conduct the system check and system validation. System kit includes a dipole, and dipole device holder.

The system check verifies that the system operates within its specifications. It's performed daily or before every SAR measurement. The system check uses normal SAR measurement in the flat section of the phantom with a matched dipole at a specified distance. The system check setup is shown as below.



6.2. SAR System Check

6.2.1. Dipoles

	<p>The dipoles used is based on the IEEE-1528 standard, and is complied with mechanical and electrical specifications in line with the requirements of IEEE. the table below provides details for the mechanical and electrical Specifications for the dipoles.</p>
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Frequency	L (mm)	h (mm)	d (mm)
750MHz	176	100	6.35
835MHz	161.0	89.8	3.6
1800MHz	71.6	41.7	3.6
1900MHz	68	39.5	3.6
2450MHz	51.5	30.4	3.6

6.2.2. System Check Result

System Performance Check at 750MHz&835MHz &1800MHz &1900MHz &2450MHz for Head								
Validation Kit: SN47/14 DIP 0G750-340& SN29/15 DIP 0G835-383& SN29/15 DIP 1G800-387&SN 29/15 DIP 1G900-389& SN 29/15DIP 2G450-393								
Frequency [MHz]	Target Value(W/Kg)		Reference Result ($\pm 10\%$)		Tested Value(W/Kg)		Tissue Temp. [°C]	Test time
	1g	10g	1g	10g	1g	10g		
750	8.55	5.62	7.695-9.405	5.058-6.182	9.30	5.89	21.5	May 31,2017
835	10.04	6.43	9.036-11.044	5.787 -7.073	10.39	6.67	21.5	May 25,2017
1800	37.43	19.88	33.687-41.173	17.892-21.868	38.27	20.11	21.4	May 26,2017
1900	41.44	21.33	37.296-45.584	19.197-23.463	38.21	20.08	21.2	May 24,2017
2450	54.53	24.30	49.077-59.983	21.87-26.730	52.16	23.36	21.1	May 27,2017
System Performance Check at 750MHz & 835MHz &1800MHz &1900MHz &2450MHz for Body								
Frequency [MHz]	Target Value(W/Kg)		Reference Result ($\pm 10\%$)		Tested Value(W/Kg)		Tissue Temp. [°C]	Test time
	1g	10g	1g	10g	1g	10g		
750	8.78	5.86	7.902-9.658	5.274-6.446	9.53	6.24	21.4	May 31,2017
835	9.85	6.45	8.865-10.835	5.805-7.095	9.77	6.40	21.3	May 25,2017
1800	36.53	19.80	32.877-40.183	17.82-21.780	37.49	20.84	21.3	May 26,2017
1900	39.38	20.86	35.442-43.318	18.774-22.946	40.10	19.91	21.0	May 24,2017
2450	49.92	23.16	44.928-54.912	20.844-25.476	54.06	21.57	21.0	May 27,2017

Note:

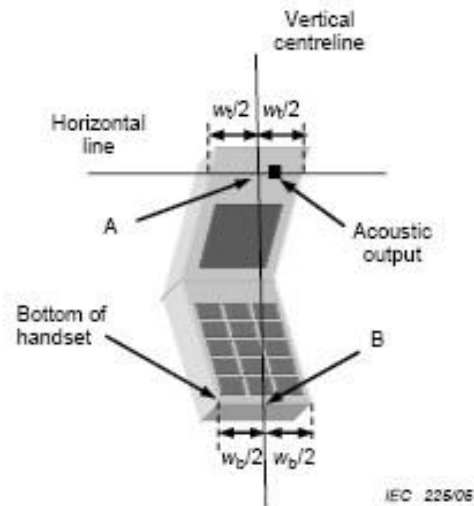
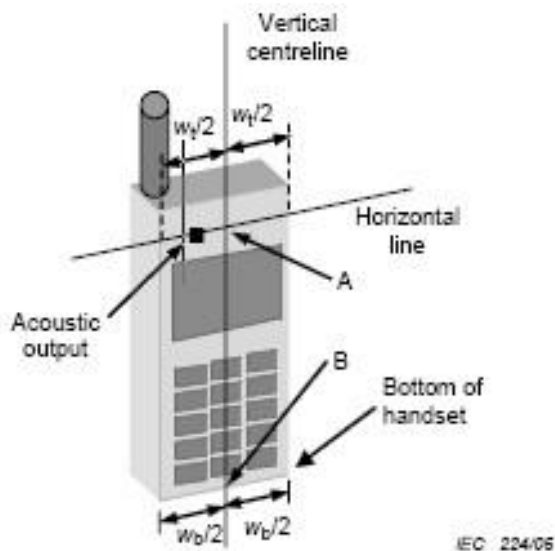
(1) We use a CW signal of 18dBm for system check, and then all SAR value are normalized to 1W forward power. The result must be within $\pm 10\%$ of target value.

7. EUT TEST POSITION

This EUT was tested in **Right Cheek, Right Tilted, Left Cheek, Left Tilted, Body back, Body front and 4 edges.**

7.1. Define Two Imaginary Lines on the Handset

- (1) 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, and the midpoint of the width w_b of the handset.
- (2) The horizontal line is perpendicular to the vertical centerline and passes through the center of the acoustic output. The horizontal line is also tangential to the face of the handset at point A.
- (3) 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 to the front face of the handset, especially for clamshell handsets, handsets with flip covers, and other irregularly shaped handsets.



7.2. Cheek Position

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



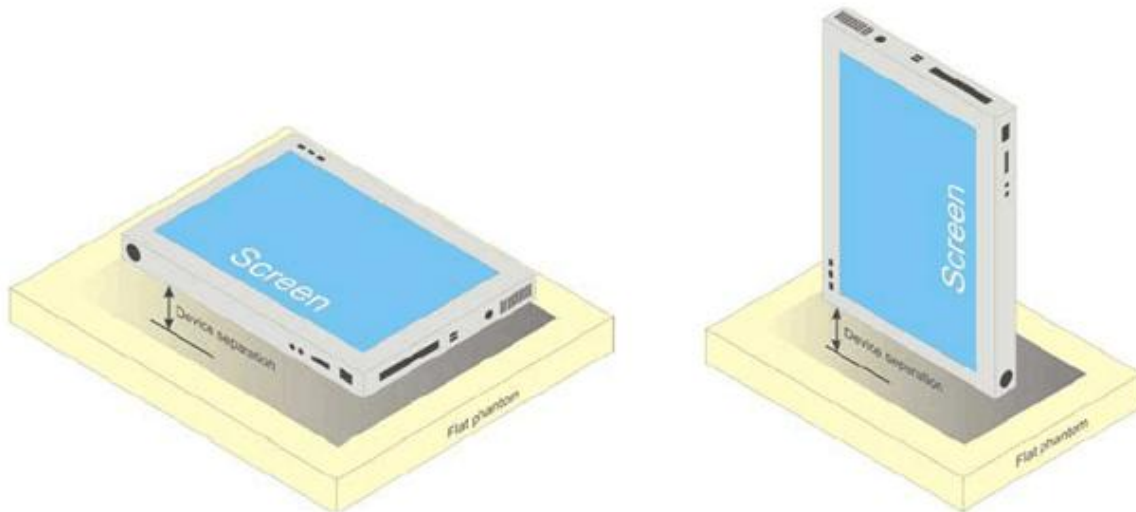
7.3. Tilt Position

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



7.4. Body Worn Position

- (1) To position the EUT parallel to the phantom surface.
- (2) To adjust the EUT parallel to the flat phantom.
- (3) To adjust the distance between the EUT (back, front and 4edges) surface at the flat phantom to **0mm**.



8. SAR EXPOSURE LIMITS

SAR assessments have been made in line with the requirements of IEEE-1528, and comply with ANSI/IEEE C95.1-2005 “Uncontrolled Environments” limits. These limits apply to a location which is deemed as “Uncontrolled Environment” which can be described as a situation where the general public may be exposed to an RF source with no prior knowledge or control over their exposure.

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

Type Exposure	Uncontrolled Environment Limit (W/kg)
Spatial Peak SAR (1g cube tissue for brain or body)	1.60
Spatial Average SAR (Whole body)	0.08
Spatial Peak SAR (Limbs)	4.0

9. TEST EQUIPMENT LIST

Equipment description	Manufacturer/ Model	Identification No.	Current calibration date	Next calibration date
SAR Probe	MVG	SN 14/16 EP307	07/05/2016	07/04/2017
TISSUE Probe	SATIMO	SN 23/16 OCPG 75	07/05/2016	07/04/2017
Phantom	SATIMO	SN_4511_SAM90	Validated. No cal required.	Validated. No cal required.
Liquid	SATIMO	-	Validated. No cal required.	Validated. No cal required.
Comm Tester	Agilent-8960	GB46310822	03/02/2017	03/01/2018
Comm Tester	R&S- CMW500	S/N121209	07/18/2016	07/17/2017
Multimeter	Keithley 2000	1188656	03/02/2017	03/01/2018
Dipole	SATIMO SID750	SN47/14 DIP 0G750-340	12/03/2014	12/02/2017
Dipole	SATIMO SID835	SN29/15 DIP 0G835-383	07/05/2016	07/04/2019
Dipole	SATIMO SID1800	SN29/15 DIP 1G800-387	07/05/2016	07/04/2019
Dipole	SATIMO SID1900	SN 29/15 DIP 1G900-389	07/05/2016	07/04/2019
Dipole	SATIMO SID2450	SN29/15 DIP 2G450-393	07/05/2016	07/04/2019
Signal Generator	Agilent-E4438C	US41461365	03/02/2017	03/01/2018
Vector Analyzer	Agilent / E4440A	US40420298	07/02/2016	07/01/2017
Network Analyzer	Rhode & Schwarz ZVL6	SN100132	03/02/2017	03/01/2018
Attenuator	Warison /WATT-6SR1211	N/A	N/A	N/A
Attenuator	Mini-circuits / VAT-10+	N/A	N/A	N/A
Amplifier	EM30180	SN060552	03/02/2017	03/01/2018
Directional Couple	Werlatone/ C5571-10	SN99463	07/02/2016	07/01/2017
Directional Couple	Werlatone/ C6026-10	SN99482	07/02/2016	07/01/2017
Power Sensor	NRP-Z21	1137.6000.02	10/10/2016	10/09/2017
Power Sensor	NRP-Z23	US38261498	03/02/2017	03/01/2018
Power Viewer	R&S	V2.3.1.0	N/A	N/A

Note: Per KDB 865664 Dipole SAR Validation, AGC Lab has adopted 3 years calibration intervals. On annual basis, every measurement dipole has been evaluated and is in compliance with the following criteria:

1. There is no physical damage on the dipole;
2. System validation with specific dipole is within 10% of calibrated value;
3. Return-loss is within 20% of calibrated measurement;
4. Impedance is within 5Ω of calibrated measurement.

10. MEASUREMENT UNCERTAINTY

Per KDB 865664 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 1528-2013 is not required in SAR reports submitted for equipment approval.

11. CONDUCTED POWER MEASUREMENT

GSM BAND

Mode	Frequency(MHz)	Avg. Burst Power(dBm)	Duty cycle Factor(dBm)	Frame Power(dBm)
Maximum Power <1>				
GSM 850	824.2	30.37	-9	21.37
	836.6	30.34	-9	21.34
	848.8	30.56	-9	21.56
GPRS 850 (1 Slot)	824.2	30.21	-9	21.21
	836.6	30.27	-9	21.27
	848.8	30.32	-9	21.32
GPRS 850 (2 Slot)	824.2	27.70	-6	21.70
	836.6	27.30	-6	21.30
	848.8	27.57	-6	21.57
GPRS 850 (3 Slot)	824.2	25.39	-4.26	21.13
	836.6	25.48	-4.26	21.22
	848.8	25.86	-4.26	21.60
GPRS 850 (4 Slot)	824.2	24.20	-3	21.20
	836.6	24.01	-3	21.01
	848.8	24.29	-3	21.29
EGPRS 850 (1 Slot)	824.2	23.52	-9	14.52
	836.6	23.33	-9	14.33
	848.8	23.41	-9	14.41
EGPRS 850 (2 Slot)	824.2	20.55	-6	14.55
	836.6	20.34	-6	14.34
	848.8	20.40	-6	14.40
EGPRS 850 (3 Slot)	824.2	19.27	-4.26	15.01
	836.6	19.28	-4.26	15.02
	848.8	19.41	-4.26	15.15
EGPRS 850 (4 Slot)	824.2	18.23	-3	15.23
	836.6	18.12	-3	15.12
	848.8	18.35	-3	15.35

Mode	Frequency(MHz)	Avg. Burst Power(dBm)	Duty cycle Factor(dBm)	Frame Power(dBm)
Maximum Power <2>				
GSM 850	824.2	30.21	-9	21.21
	836.6	30.31	-9	21.31
	848.8	30.49	-9	21.49
GPRS 850 (1 Slot)	824.2	30.12	-9	21.12
	836.6	30.15	-9	21.15
	848.8	30.25	-9	21.25
GPRS 850 (2 Slot)	824.2	27.65	-6	21.65
	836.6	27.29	-6	21.29
	848.8	27.41	-6	21.41
GPRS 850 (3 Slot)	824.2	25.25	-4.26	20.99
	836.6	25.33	-4.26	21.07
	848.8	25.52	-4.26	21.26
GPRS 850 (4 Slot)	824.2	24.12	-3	21.12
	836.6	24.00	-3	21.00
	848.8	24.12	-3	21.12

GSM BAND CONTINUE

Mode	Frequency(MHz)	Avg. Burst Power(dBm)	Duty cycle Factor(dBm)	Frame Power(dBm)
Maximum Power <1>				
PCS1900	1850.2	27.24	-9	18.24
	1880	27.14	-9	18.14
	1909.8	27.41	-9	18.41
GPRS1900 (1 Slot)	1850.2	27.23	-9	18.23
	1880	27.10	-9	18.10
	1909.8	27.37	-9	18.37
GPRS1900 (2 Slot)	1850.2	24.03	-6	18.03
	1880	24.40	-6	18.40
	1909.8	24.88	-6	18.88
GPRS1900 (3 Slot)	1850.2	22.21	-4.26	17.95
	1880	22.12	-4.26	17.86
	1909.8	22.30	-4.26	18.04
GPRS1900 (4 Slot)	1850.2	21.27	-3	18.27
	1880	21.22	-3	18.22
	1909.8	21.16	-3	18.16
EGPRS1900 (1 Slot)	1850.2	23.63	-9	14.63
	1880	23.17	-9	14.17
	1909.8	23.85	-9	14.85
EGPRS1900 (2 Slot)	1850.2	20.47	-6	14.47
	1880	20.54	-6	14.54
	1909.8	20.81	-6	14.81
EGPRS1900 (3 Slot)	1850.2	20.68	-4.26	16.42
	1880	20.44	-4.26	16.18
	1909.8	20.82	-4.26	16.56
EGPRS1900 (4 Slot)	1850.2	19.21	-3	16.21
	1880	19.64	-3	16.64
	1909.8	19.35	-3	16.35

Mode	Frequency(MHz)	Avg. Burst Power(dBm)	Duty cycle Factor(dBm)	Frame Power(dBm)
Maximum Power <2>				
PCS1900	1850.2	27.19	-9	18.19
	1880	27.10	-9	18.10
	1909.8	27.33	-9	18.33
GPRS1900 (1 Slot)	1850.2	27.15	-9	18.15
	1880	27.02	-9	18.02
	1909.8	27.21	-9	18.21
GPRS1900 (2 Slot)	1850.2	24.01	-6	18.01
	1880	24.38	-6	18.38
	1909.8	24.31	-6	18.31
GPRS1900 (3 Slot)	1850.2	22.13	-4.26	17.87
	1880	22.05	-4.26	17.79
	1909.8	22.22	-4.26	17.96
GPRS1900 (4 Slot)	1850.2	21.15	-3	18.15
	1880	21.12	-3	18.12
	1909.8	21.01	-3	18.01

Note 1:

The Frame Power (Source-based time-averaged Power) is scaled the maximum burst average power based on time slots. The calculated methods are show as following:

Frame Power = Max burst power (1 Up Slot) – 9 dB

Frame Power = Max burst power (2 Up Slot) – 6 dB

Frame Power = Max burst power (3 Up Slot) – 4.26 dB

Frame Power = Max burst power (4 Up Slot) – 3 dB

Note 2:

SAR is not required for GPRS (1 Slot) Mode because its output power is less than of Voice Mode

UMTS BAND

HSDPA Setup Configuration:

- The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.
- The RF path losses were compensated into the measurements.
- A call was established between EUT and Based Station with following setting:
 - (1) Set Gain Factors(β_c and β_d) parameters set according to each
 - (2) Set RMC 12.2Kbps+HSDPA mode.
 - (3) Set Cell Power=-86dBm
 - (4) Set HS-DSCH Configuration Type to FRC (H-set 1, QPSK)
 - (5) Select HSDPA Uplink Parameters
 - (6) Set Delta ACK, Delta NACK and Delta CQI=8
 - (7) Set Ack - Nack Repetition Factor to 3
 - (8) Set CQI Feedback Cycle (k) to 4ms
 - (9) Set CQI Repetition Factor to 2
 - (10) Power Ctrl Mode=All Up bits
- The transmitted maximum output power was recorded.

Table C.10.2.4: β values for transmitter characteristics tests with HS-DPCCH

Sub-test	β_c (Note5)	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note1, Note 2)	CM (dB) (Note 3)	MPR (dB) (Note 3)
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15(Note 4)	15/15(Note 4)	64	12/15(Note 4)	24/15	1.0	0.0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

Note 1: ΔACK , $\Delta NACK$ and $\Delta CQI = 30/15$ with $\beta_{hs} = 30/15 * \beta_c$.

Note 2: For the HS-DPCCH power mask requirement test in clause 5.2C, 5.7A, and the Error Vector Magnitude (EVM) with HS-DPCCH test in clause 5.13.1A, and HSDPA EVM with phase discontinuity in clause 5.13.1AA, ΔACK and $\Delta NACK = 30/15$ with $\beta_{hs} = 30/15 * \beta_c$, and $\Delta CQI = 24/15$ with $\beta_{hs} = 24/15 * \beta_c$.

Note 3: CM = 1 for $\beta_c/\beta_d = 12/15$, $\square_{hs}/\square_c = 24/15$. For all other combinations of DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

Note 4: For subtest 2 the \square_c/\square_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\square_c = 11/15$ and $\square_d = 15/15$.

HSUPA Setup Configuration:

- The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.
- The RF path losses were compensated into the measurements.
- A call was established between EUT and Base Station with following setting * :
 - (1) Call Configs = 5.2B, 5.9B, 5.10B, and 5.13.2B with QPSK
 - (2) Set the Gain Factors (β_c and β_d) and parameters (AG Index) were set according to each specific sub-test in the following table, C11.1.3, quoted from the TS 34.121
 - (3) Set Cell Power = -86 dBm
 - (4) Set Channel Type = 12.2k + HSPA
 - (5) Set UE Target Power
 - (6) Power Ctrl Mode= Alternating bits
 - (7) Set and observe the E-TFCI
 - (8) Confirm that E-TFCI is equal to the target E-TFCI of 75 for sub-test 1, and other subtest's E-TFCI
- The transmitted maximum output power was recorded.

Table C.11.1.3: β values for transmitter characteristics tests with HS-DPCCH and E-DCH

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note 1)	β_{ec}	β_{ed} (Note 4) (Note 5)	β_{ed} (SF)	β_{ed} (Code s)	CM (dB) (Note 2)	MPR (dB) (Note 2) (Note 6)	AG Index (Note 5)	E-TF CI
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/225	1309/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	β_{ed1} : 47/15 β_{ed2} : 47/15	4 4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15	0	-	-	5/15	5/15	47/15	4	1	1.0	0.0	12	67

Note 1: For sub-test 1 to 4, ΔACK , $\Delta NACK$ and $\Delta CQI = 30/15$ with $\beta_{hs} = 30/15 * \beta_c$. For sub-test 5, ΔACK , $\Delta NACK$ and $\Delta CQI = 5/15$ with $\beta_{hs} = 5/15 * \beta_c$.

Note 2: CM = 1 for $\beta_c/\beta_d = 12/15$, $\square_{hs}/\square_c = 24/15$. For all other combinations of DPDCH, DPCCH, HS DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.

Note 3: For subtest 1 the \square_c/\square_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\square_c = 10/15$ and $\square_d = 15/15$.

Note 4: In case of testing by UE using E-DPDCH Physical Layer category 1, Sub-test 3 is omitted according to TS25.306 Table 5.1g.

Note 5: β_{ed} cannot be set directly; it is set by Absolute Grant Value.

Note 6: For subtests 2, 3 and 4, UE may perform E-DPDCH power scaling at max power which could results in slightly smaller MPR values.

UMTS BAND II

Mode	Frequency (MHz)	Avg. Burst Power (dBm)
WCDMA 1900 RMC	1852.4	21.27
	1880	21.34
	1907.6	21.63
WCDMA 1900 AMR	1852.4	21.35
	1880	21.01
	1907.6	21.45
HSDPA Subtest 1	1852.4	20.58
	1880	20.36
	1907.6	20.43
HSDPA Subtest 2	1852.4	20.77
	1880	20.53
	1907.6	20.65
HSDPA Subtest 3	1852.4	20.36
	1880	20.35
	1907.6	20.66
HSDPA Subtest 4	1852.4	20.31
	1880	20.27
	1907.6	20.61
HSUPA Subtest 1	1852.4	20.49
	1880	20.53
	1907.6	20.45
HSUPA Subtest 2	1852.4	20.57
	1880	20.42
	1907.6	20.46
HSUPA Subtest 3	1852.4	20.51
	1880	20.60
	1907.6	20.61
HSUPA Subtest 4	1852.4	20.26
	1880	20.41
	1907.6	20.32
HSUPA Subtest 5	1852.4	20.16
	1880	20.45
	1907.6	20.60

UMTS BAND V

Mode	Frequency (MHz)	Avg. Burst Power (dBm)
WCDMA 850 RMC	826.4	21.51
	836.6	21.59
	846.6	21.68
WCDMA 850 AMR	826.4	21.67
	836.6	21.71
	846.6	21.62
HSDPA Subtest 1	826.4	20.72
	836.6	20.65
	846.6	20.79
HSDPA Subtest 2	826.4	20.19
	836.6	20.44
	846.6	20.65
HSDPA Subtest 3	826.4	20.12
	836.6	20.29
	846.6	20.43
HSDPA Subtest 4	826.4	20.11
	836.6	20.28
	846.6	20.50
HSUPA Subtest 1	826.4	20.24
	836.6	20.48
	846.6	20.35
HSUPA Subtest 2	826.4	20.51
	836.6	20.45
	846.6	20.25
HSUPA Subtest 3	826.4	20.42
	836.6	20.33
	846.6	20.35
HSUPA Subtest 4	826.4	20.59
	836.6	20.14
	846.6	20.57
HSUPA Subtest 5	826.4	20.55
	836.6	20.51
	846.6	20.46

According to 3GPP 25.101 sub-clause 6.2.2 , the maximum output power is allowed to be reduced by following the table.

Table 6.1aA: UE maximum output power with HS-DPCCH and E-DCH

UE Transmit Channel Configuration	CM(db)	MPR(db)
For all combinations of ,DPDCH,DPCCH HS-DPDCH,E-DPDCH and E-DPCCH	$0 \leq CM \leq 3.5$	$MAX(CM-1,0)$
Note: CM=1 for $\beta_o/\beta_d=12/15$, $\beta_{hs}/\beta_c=24/15$.For all other combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.		

The device supports MPR to solve linearity issues (ACLR or SEM) due to the higher peak-to average ratios (PAR) of the HSUPA signal. This prevents saturating the full range of the TX DAC inside of device and provides a reduced power output to the RF transceiver chip according to the Cubic Metric (a function of the combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH).

When E-DPDCH channels are present the beta gains on those channels are reduced firsts to try to get the power under the allowed limit. If the beta gains are lowered as far as possible, then a hard limiting is applied at the maximum allowed level.

The SW currently recalculates the cubic metric every time the beta gains on the E-DPDCH are reduced. The cubic metric will likely get lower each time this is done .However, there is no reported reduction of maximum output power in the HSUPA mode since the device also provides a compensation for the power back-off by increasing the gain of TX_AGC in the transceiver (PA) device.

The end effect is that the DUT output power is identical to the case where there is no MPR in the device.

LTE Band

Conducted Power of LTE Band IV(dBm)							
Bandwidth	Modulation	RB size	RB offset	Target MPR	Channel	Channel	Channel
					19957	20175	20393
1.4MHz	QPSK	1	0	0	21.48	21.79	21.59
			3	0	21.43	22.12	21.56
			5	0	21.55	21.59	21.68
		3	0	0	21.51	21.96	21.74
			2	0	21.66	21.41	21.61
			3	0	21.93	21.73	21.53
		6	0	1	21.58	21.45	21.86
	16QAM	1	0	1	21.45	21.84	21.62
			3	1	21.66	21.50	21.67
			5	1	21.71	21.78	21.63
		3	0	1	22.00	22.07	21.88
			2	1	21.80	21.47	21.75
			3	1	21.64	21.60	21.52
		6	0	2	22.02	22.16	21.54
Bandwidth	Modulation	RB size	RB offset	Target MPR	Channel	Channel	Channel
					19965	20175	20385
3MHz	QPSK	1	0	0	21.62	21.79	22.19
			7	0	21.98	21.99	21.55
			14	0	21.86	21.77	21.80
		8	0	1	21.59	21.49	21.88
			4	1	21.63	21.59	22.16
			7	1	21.64	21.72	21.61
		15	0	1	22.03	21.86	21.85
	16QAM	1	0	1	21.68	21.85	22.01
			7	1	21.73	21.61	21.56
			14	1	21.42	22.05	21.59
		8	0	2	21.62	21.54	21.62
			4	2	21.70	21.79	21.64
			7	2	21.59	21.86	21.76
		15	0	2	21.58	21.95	21.58

Conducted Power of LTE Band IV(dBm)							
Bandwidth	Modulation	RB size	RB offset	Target MPR	Channel	Channel	Channel
					19975	20175	20375
5MHz	QPSK	1	0	0	21.68	21.27	22.08
			13	0	21.62	21.55	21.89
			24	0	21.54	21.99	21.56
		12	0	1	21.64	22.19	21.83
			6	1	21.87	22.20	22.07
			13	1	21.97	22.11	21.52
		25	0	1	21.52	21.85	21.71
	16QAM	1	0	1	21.89	21.76	21.66
			13	1	22.07	22.19	21.77
			24	1	21.61	21.62	21.74
		12	0	2	21.57	21.50	22.04
			6	2	21.68	21.65	21.29
			13	2	21.50	21.55	21.74
		25	0	2	21.56	21.78	21.61
Bandwidth	Modulation	RB size	RB offset	Target MPR	Channel	Channel	Channel
					20000	20175	20350
10MHz	QPSK	1	0	0	22.06	21.89	21.85
			25	0	21.13	22.21	21.89
			49	0	22.13	21.66	21.76
		25	0	1	21.85	21.91	21.72
			13	1	21.36	21.62	21.72
			25	1	21.67	21.79	21.69
		50	0	1	22.09	21.69	21.85
	16QAM	1	0	1	22.27	21.69	21.75
			25	1	21.36	21.52	21.49
			49	1	22.03	21.80	21.45
		25	0	2	21.99	21.59	21.89
			13	2	21.30	21.81	21.73
			25	2	21.20	21.66	21.74
		50	0	2	21.90	21.92	21.73

Conducted Power of LTE Band IV(dBm)							
Bandwidth	Modulation	RB size	RB offset	Target MPR	Channel	Channel	Channel
					20025	20175	20325
15MHz	QPSK	1	0	0	21.51	22.04	22.02
			38	0	21.58	21.67	21.68
			74	0	22.05	21.60	21.63
		36	0	1	21.42	21.91	21.81
			18	1	21.47	21.86	21.76
			39	1	21.55	21.66	21.58
		75	0	1	21.87	21.84	21.77
	16QAM	1	0	1	21.88	21.64	21.68
			38	1	21.79	21.91	21.65
			74	1	21.95	21.90	21.65
		36	0	2	21.79	22.02	21.78
			18	2	21.79	21.23	21.62
			39	2	21.95	21.92	21.69
		75	0	2	21.95	21.78	21.59
Bandwidth	Modulation	RB size	RB offset	Target MPR	Channel	Channel	Channel
					20050	20175	20300
20MHz	QPSK	1	0	0	21.59	21.78	22.16
			50	0	21.64	21.82	21.93
			99	0	21.81	21.56	21.86
		50	0	1	21.51	21.62	21.68
			25	1	21.85	21.51	21.80
			50	1	21.63	21.32	21.50
		100	0	1	21.57	21.38	21.54
	16QAM	1	0	1	21.71	21.38	21.37
			50	1	21.59	21.30	21.37
			99	1	21.79	21.71	22.03
		50	0	2	21.57	21.37	21.60
			25	2	21.46	21.46	21.75
			50	2	21.59	21.59	21.74
		100	0	2	21.53	22.19	21.66

Conducted Power of LTE Band XII(dBm)							
Bandwidth	Modulation	RB size	RB offset	Target MPR	Channel	Channel	Channel
					23017	23095	23173
1.4MHz	QPSK	1	0	0	21.66	21.55	21.70
			3	0	21.65	21.96	21.34
			5	0	21.62	21.77	21.96
		3	0	0	21.60	22.03	21.55
			2	0	21.63	21.59	22.01
			3	0	21.40	21.44	21.65
		6	0	1	21.92	21.54	21.52
	16QAM	1	0	1	21.91	21.92	21.48
			3	1	21.89	21.51	21.62
			5	1	21.94	21.85	21.49
		3	0	1	22.05	21.66	21.42
			2	1	21.28	21.70	21.66
			3	1	21.41	21.98	21.48
		6	0	2	21.67	21.74	21.66
Bandwidth	Modulation	RB size	RB offset	Target MPR	Channel	Channel	Channel
					23025	23095	23165
3MHz	QPSK	1	0	0	21.70	21.62	21.68
			7	0	22.11	21.80	22.06
			14	0	21.59	21.54	22.01
		8	0	1	21.98	21.71	21.60
			4	1	22.11	21.54	22.05
			7	1	21.92	21.68	21.50
		15	0	1	21.57	21.53	22.01
	16QAM	1	0	1	21.45	21.75	21.59
			7	1	21.53	21.82	21.98
			14	1	21.76	21.66	22.11
		8	0	2	21.52	21.47	21.92
			4	2	21.67	21.95	21.57
			7	2	21.79	22.00	21.45
		15	0	2	21.80	21.45	21.53

Conducted Power of LTE Band XII(dBm)							
Bandwidth	Modulation	RB size	RB offset	Target MPR	Channel	Channel	Channel
					23035	23095	23155
5MHz	QPSK	1	0	0	21.69	21.71	21.52
			13	0	21.51	21.41	21.74
			24	0	21.63	21.77	21.61
		12	0	1	21.74	21.63	22.07
			6	1	21.59	22.09	21.73
			13	1	21.81	21.84	21.69
		25	0	1	21.43	22.11	21.51
	16QAM	1	0	1	21.43	22.09	21.53
			13	1	21.53	22.01	21.64
			24	1	21.44	21.57	21.59
		12	0	2	22.04	21.41	21.71
			6	2	21.31	22.13	21.53
			13	2	21.67	21.58	21.84
		25	0	2	22.11	21.77	21.64
Bandwidth	Modulation	RB size	RB offset	Target MPR	Channel	Channel	Channel
					23060	23095	23130
10MHz	QPSK	1	0	0	21.91	21.29	21.52
			25	0	21.99	21.98	21.67
			49	0	22.11	22.05	21.50
		25	0	1	21.87	21.72	21.49
			13	1	21.56	21.63	21.56
			25	1	21.58	22.08	21.54
		50	0	1	21.63	21.85	22.02
	16QAM	1	0	1	21.74	21.41	21.68
			25	1	21.60	21.82	21.92
			49	1	21.95	21.84	21.88
		25	0	2	21.48	21.56	21.64
			13	2	22.14	21.92	21.59
			25	2	21.93	21.52	22.01
		50	0	2	21.92	21.60	21.77

Conducted Power of LTE Band XVII(dBm)							
Bandwidth	Modulation	RB size	RB offset	Target MPR	Channel	Channel	Channel
					23755	23790	23825
5MHz	QPSK	1	0	0	21.75	21.42	21.52
			13	0	21.79	21.62	21.65
			24	0	21.58	22.01	21.72
		12	0	1	21.63	21.63	21.62
			6	1	21.58	21.67	21.57
			13	1	21.94	21.56	21.75
		25	0	1	21.55	21.69	21.79
	16QAM	1	0	1	21.85	21.77	21.68
			13	1	21.55	21.63	21.91
			24	1	21.68	21.94	21.74
		12	0	2	21.45	21.67	21.58
			6	2	21.47	21.54	21.55
			13	2	21.87	21.63	21.74
		25	0	2	21.73	21.50	22.01
Bandwidth	Modulation	RB size	RB offset	Target MPR	Channel	Channel	Channel
					23780	23790	23800
10MHz	QPSK	1	0	0	21.45	21.55	21.54
			25	0	21.60	21.78	21.90
			49	0	21.61	21.68	22.26
		25	0	1	22.00	22.04	21.70
			13	1	21.79	21.79	21.18
			25	1	22.74	22.01	21.76
		50	0	1	21.54	21.71	20.92
	16QAM	1	0	1	22.11	21.58	21.52
			25	1	21.36	21.61	21.50
			49	1	21.52	21.94	22.03
		25	0	2	21.69	21.51	21.73
			13	2	21.54	21.79	21.64
			25	2	21.63	21.89	21.90
		50	0	2	21.40	22.23	22.02

The following tests were conducted according to the test requirements outlined in section 6.2 of the 3GPP TS36.101 specification.

UE Power Class: 3 (23 +/- 2dBm). The allowed Maximum Power Reduction (MPR) for the maximum output power due to higher order modulation and transmit bandwidth configuration (resource blocks) is specified in Table 6.2.3.3-1 of the 3GPP TS36.101.

Table 6.2.3.3-1 Maximum Power Reduction (MPR) for Power class3

Modulation	Maximum Power Reduction (MPR) for Power[RB]						MPR(dB)
	1.4MHz	3MHz	5MHz	10MHz	15MHz	20MHz	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1
16QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1
16QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2

The allowed A-MPR values specified below in Table 6.2.4.3-1 of 3GPP TS36.101 are in addition to the allowed MPR requirements. All the measurements below were performed with A-MPR disabled, by using Network Signaling Value of "NS_01".3

Table 6.2.4.3-1: Additional Maximum Power Reduction (A-MPR) / Spectrum Emission requirements

Network Signaling value	Requirements (sub-clause)	E-UTRA Band	Channel bandwidth (MHz)	Resources Blocks (N_{RB})	A-MPR (dB)
NS_01	6.6.2.1.1	Table 5.2-1	1.4,3,5,10,15,20	Table 5.4.2-1	N/A
NS_03	6.6.2.2.3.1	2,4,10, 23, 25,35,36	3	>5	≤ 1
			5	>6	≤ 1
			10	>6	≤ 1
			15	>8	≤ 1
			20	>10	≤ 1
NS_04	6.6.2.2.3.2	41	5	>6	≤ 1
			10, 15, 20	Table 6.2.4.3-4	
NS_05	6.6.3.3.3.1	1	10,15,20	≥ 50	≤ 1
NS_06	6.6.2.2.3.3	12, 13, 14, 17	1.4, 3, 5, 10	Table 5.4.2-1	N/A
NS_07	6.6.2.2.3.3 6.6.3.3.3.2	13	10	Table 6.2.4.3-2	Table 6.2.4.3-2
NS_08	6.6.3.3.3.3	19	10, 15	> 44	≤ 3
NS_09	6.6.3.3.3.4	21	10, 15	> 40	≤ 1
				> 55	≤ 2
NS_10		20	15, 20	Table 6.2.4.3-3	Table 6.2.4.3-3
NS_11	6.6.2.2.1 6.6.3.3.13	231	1.4, 3, 5, 10,15,20	Table 6.2.4.3-5	Table 6.2.4.3-5
NS_12	6.6.3.3.5	26	1.4, 3, 5	Table 6.2.4.3-6	Table 6.2.4.3-6
NS_13	6.6.3.3.6	26	5	Table 6.2.4.3-7	Table 6.2.4.3-7
NS_14	6.6.3.3.7	26	10, 15	Table 6.2.4.3-8	Table 6.2.4.3-8
NS_15	6.6.3.3.8	26	1.4, 3, 5, 10, 15	Table 6.2.4.3-9 Table 6.2.4.3-10	Table 6.2.4.3-9, Table 6.2.4.3-10
NS_16	6.6.3.3.9	27	3, 5, 10	Table 6.2.4.3-11, Table 6.2.4.3-12, Table 6.2.4.3-13	
NS_17	6.6.3.3.10 6.6.3.3.11	28 28	5, 10	Table 5.4.2-1	N/A
			5	≥ 2	≤ 1
NS_18			10, 15, 20	≥ 1	≤ 4
NS_19			10, 15, 20	Table 6.2.4.3-15	Table 6.2.4.3-15
NS_20			5, 10, 15, 20	Table 6.2.4.3-14	Table 6.2.4.3-14
...					
NS_20	-	-	-	-	-

WIFI

Mode	Data Rate (Mbps)	Channel	Frequency(MHz)	Avg. Burst Power(dBm)
802.11b	1	01	2412	15.76
		06	2437	16.53
		11	2462	16.57
802.11g	6	01	2412	11.45
		06	2437	14.14
		11	2462	14.50
802.11n(20)	6.5	01	2412	11.34
		06	2437	14.24
		11	2462	14.32
802.11n(40)	13.5	03	2422	13.34
		06	2437	13.58
		09	2452	13.66

Bluetooth_V3.0

Modulation	Channel	Frequency(MHz)	Peak Power (dBm)
GFSK	0	2402	4.812
	39	2441	4.847
	78	2480	5.433
π /4-DQPSK	0	2402	3.702
	39	2441	3.860
	78	2480	4.250
8-DPSK	0	2402	3.521
	39	2441	3.588
	78	2480	4.043

Bluetooth_V4.0

Modulation	Channel	Frequency(MHz)	Peak Power (dBm)
GFSK	0	2402	-1.951
	19	2440	-1.755
	39	2480	-2.034

12. TEST RESULTS

12.1. SAR Test Results Summary

12.1.1. Test position and configuration

Head SAR was performed with the device configured in the positions according to IEEE 1528-2013, Body-worn SAR was performed with the device 0mm from the phantom

12.1.2. Operation Mode

1. Per KDB 447498 D01 v06 ,for each exposure position, if the highest 1-g SAR is ≤ 0.8 W/kg, testing for low and high channel is optional.
2. Per KDB 865664 D01 v01r04,for each frequency band, if the measured SAR is ≥ 0.8 W/Kg, testing for repeated SAR measurement is required , that the highest measured SAR is only to be tested. When the SAR results are near the limit, the following procedures are required for each device to verify these types of SAR measurement related variation concerns by repeating the highest measured SAR configuration in each frequency band.
 - (1) When the original highest measured SAR is ≥ 0.8 W/Kg, repeat that measurement once.
 - (2) 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.
 - (3) Perform a third repeated measurement only if the original, first and second repeated measurement is ≥ 1.5 W/Kg and ratio of largest to smallest SAR for the original, first and second measurement is ≥ 1.20 .
3. Body-worn exposure conditions are intended to voice call operations, therefore GSM voice call mode is selected to be test.
4. Per KDB 648474 D04 v01r03,when the reported SAR for a body-worn accessory measured without a headset connected to the handset is ≤ 1.2 W/Kg, SAR testing with a headset connected is not required.
5. Per KDB 248227 D01v02r02,for 2.4GHz 802.11g/n SAR testing is not required when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.
6. Per KDB 941225 D06 V02r01, When the same wireless mode transmission configurations for voice and data are required for SAR measurements, the more conservative configuration with a smaller separation distance should be tested for the overlapping SAR configurations.
7. Maximum Scaling SAR in order to calculate the Maximum SAR values to test under the standard Peak Power, Calculation method is as follows:
Maximum Scaling SAR =tested SAR (Max.) \times [maximum turn-up power (mw)/ maximum measurement output power(mw)]
8. Proximity sensor, just for avoiding the wrong operation in the phone screen when call, and has no influence on output power or SAR result
8. Per KDB 941225 D05v02r03, start with the largest channel bandwidth and measure SAR for QPSK with 1RB allocation using the RB offset and required test channel combination with highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
9. Per KDB 941125 D05v02r03, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
10. Per KDB 941125 D05v02r03. For QPSK with 100% RB allocation. SAR is not required when the highest maximum output power for 100% RB allocation is less than the highest maximum output power in 50% and

1RB allocation and the highest reported SAR is >1.45 W/Kg, the remaining required test channels must also be tested.

11. Per KDB 941125 D05v02r03. 16QAM output power for each RB allocation configuration is not 1/2 dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/Kg, Per KDB 941225 D05v02r02, 16QAM SAR testing is not required.
12. Per KDB 941125 D05v02r03. Smaller bandwidth output power for each RB allocation configuration is $>$ not 1/2 dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/Kg. Per KDB 941125 D05v02r03, smaller bandwidth SAR testing is not required.

12.1.3. Test Result

SAR MEASUREMENT									
Depth of Liquid (cm):>15				Relative Humidity (%): 55.7					
Product: 8 Inch 4G tablet									
Test Mode: GSM850 with GMSK modulation									
Position	Mode	Ch.	Fr. (MHz)	Power Drift (<±5%)	SAR (1g) (W/kg)	Max. Tune-up Power (dBm)	Meas. output Power (dBm)	Scaled SAR (W/Kg)	Limit (W/kg)
SIM 1 Card									
Left Cheek	voice	190	836.6	-0.32	0.064	30.60	30.34	0.068	1.6
Left Tilt	voice	190	836.6	1.22	0.062	30.60	30.34	0.066	1.6
Right Cheek	voice	190	836.6	0.23	0.066	30.60	30.34	0.070	1.6
Right Tilt	voice	190	836.6	-0.32	0.064	30.60	30.34	0.068	1.6
Body back	voice	190	836.6	1.22	0.597	30.60	30.34	0.634	1.6
Body front	voice	190	836.6	-0.02	0.546	30.60	30.34	0.580	1.6
Left Cheek	GPRS-2 slot	190	836.6	0.23	0.103	27.70	27.30	0.113	1.6
Left Tilt	GPRS-2 slot	190	836.6	-1.55	0.113	27.70	27.30	0.124	1.6
Right Cheek	GPRS-2 slot	190	836.6	0.02	0.099	27.70	27.30	0.109	1.6
Right Tilt	GPRS-2 slot	190	836.6	-0.23	0.097	27.70	27.30	0.106	1.6
Body back	GPRS-2 slot	128	824.2	1.55	0.883	27.70	27.70	0.883	1.6
Body back	GPRS-2 slot	190	836.6	-0.52	0.905	27.70	27.30	0.992	1.6
Body back	GPRS-2 slot	251	848.8	0.02	0.903	27.70	27.57	0.930	1.6
Body front	GPRS-2 slot	190	836.6	0.23	0.568	27.70	27.30	0.623	1.6
Edge 2(Right)	GPRS-2 slot	190	836.6	-1.55	0.104	27.70	27.30	0.114	1.6
Edge 3(Bottom)	GPRS-2 slot	190	836.6	-0.02	0.320	27.70	27.30	0.351	1.6
Edge 4(Left)	GPRS-2 slot	190	836.6	-0.23	0.131	27.70	27.30	0.144	1.6
SIM 2 Card									
Left Tilt	GPRS-2 slot	190	836.6	0.55	0.110	27.70	27.29	0.121	1.6
Body back	GPRS-2 slot	190	836.6	0.26	0.895	27.70	27.29	0.984	1.6

Note:

- When the 1-g Reported SAR is ≤ 0.8 W/kg, testing for low and high channel is optional. Refer to KDB 447498.
- The test separation of all above table(body part) is 0mm.

SAR MEASUREMENT									
Depth of Liquid (cm):>15				Relative Humidity (%): 56.2					
Product: 8 Inch 4G tablet									
Test Mode: PCS1900 with GMSK modulation									
Position	Mode	Ch.	Fr. (MHz)	Power Drift (<±5%)	SAR (1g) (W/kg)	Max. Tune-up Power (dBm)	Meas. output Power (dBm)	Scaled SAR (W/Kg)	Limit (W/kg)
SIM 1 Card									
Left Cheek	voice	661	1880.0	-0.00	0.019	27.50	27.14	0.021	1.6
Left Tilt	voice	661	1880.0	0.21	0.018	27.50	27.14	0.020	1.6
Right Cheek	voice	661	1880.0	0.23	0.025	27.50	27.14	0.027	1.6
Right Tilt	voice	661	1880.0	-1.33	0.019	27.50	27.14	0.021	1.6
Body back	voice	661	1880.0	0.02	0.687	27.50	27.14	0.746	1.6
Body front	voice	661	1880.0	-0.23	0.382	27.50	27.14	0.415	1.6
Left Cheek	GPRS-2 slot	661	1880.0	0.02	0.059	24.88	24.40	0.066	1.6
Left Tilt	GPRS-2 slot	661	1880.0	-1.33	0.048	24.88	24.40	0.054	1.6
Right Cheek	GPRS-2 slot	661	1880.0	0.02	0.073	24.88	24.40	0.082	1.6
Right Tilt	GPRS-2 slot	661	1880.0	-0.23	0.049	24.88	24.40	0.055	1.6
Body back	GPRS-2 slot	512	1850.2	-0.20	0.845	24.88	24.03	1.028	1.6
Body back	GPRS-2 slot	661	1880.0	0.23	0.935	24.88	24.40	1.044	1.6
Body back	GPRS-2 slot	810	1909.8	-1.22	0.856	24.88	24.88	0.856	1.6
Body front	GPRS-2 slot	512	1850.2	-0.02	0.781	24.88	24.03	0.950	1.6
Body front	GPRS-2 slot	661	1880	0.53	0.775	24.88	24.40	0.866	1.6
Body front	GPRS-2 slot	810	1909.8	-0.23	0.760	24.88	24.88	0.760	1.6
Edge 2(Right)	GPRS-2 slot	661	1880.0	1.22	0.026	24.88	24.40	0.029	1.6
Edge 3(Bottom)	GPRS-2 slot	661	1880.0	0.02	0.410	24.88	24.40	0.458	1.6
Edge 4(Left)	GPRS-2 slot	661	1880.0	-0.23	0.031	24.88	24.40	0.035	1.6
SIM 2 Card									
Right Cheek	GPRS-2 slot	661	1880.0	0.23	0.058	24.88	24.38	0.065	1.6
Body back	GPRS-2 slot	661	1880.0	-1.20	0.855	24.88	24.38	0.959	1.6

Note:

- When the 1-g Reported SAR is ≤ 0.8 W/kg, testing for low and high channel is optional. Refer to KDB 447498.
- The test separation of all above table(body part) is 0mm.

SAR MEASUREMENT									
Depth of Liquid (cm):>15				Relative Humidity (%): 56.2					
Product: 8 Inch 4G tablet									
Test Mode: WCDMA Band II with QPSK modulation									
Position	Mode	Ch.	Fr. (MHz)	Power Drift (<±5%)	SAR (1g) (W/kg)	Max. Tune-up Power (dBm)	Meas. output Power (dBm)	Scaled SAR (W/Kg)	Limit (W/kg)
Left Cheek	RMC 12.2kbps	9400	1880	-0.23	0.048	21.63	21.34	0.051	1.6
Left Tilt	RMC 12.2kbps	9400	1880	0.02	0.037	21.63	21.34	0.040	1.6
Right Cheek	RMC 12.2kbps	9400	1880	1.55	0.039	21.63	21.34	0.042	1.6
Right Tilt	RMC 12.2kbps	9400	1880	-0.02	0.037	21.63	21.34	0.040	1.6
Body back	RMC 12.2kbps	9262	1852.4	1.03	0.800	21.63	21.27	0.869	1.6
Body back	RMC 12.2kbps	9400	1880	0.23	0.810	21.63	21.34	0.866	1.6
Body back	RMC 12.2kbps	9538	1907.6	-1.55	0.792	21.63	21.63	0.792	1.6
Body front	RMC 12.2kbps	9400	1880	0.02	0.685	21.63	21.34	0.732	1.6
Edge 2(Right)	RMC 12.2kbps	9400	1880	-0.23	0.015	21.63	21.34	0.016	1.6
Edge 3(Bottom)	RMC 12.2kbps	9400	1880	-1.26	0.313	21.63	21.34	0.335	1.6
Edge 4(Left)	RMC 12.2kbps	9400	1880	0.23	0.025	21.63	21.34	0.027	1.6

Note:

- When the 1-g Reported SAR is ≤ 0.8 W/kg, testing for low and high channel is optional. Refer to KDB 447498.
- The test separation of all above table(body part) is 0mm.

SAR MEASUREMENT									
Depth of Liquid (cm):>15				Relative Humidity (%): 55.7					
Product: 8 Inch 4G tablet									
Test Mode: WCDMA Band V with QPSK modulation									
Position	Mode	Ch.	Fr. (MHz)	Power Drift (<±5%)	SAR (1g) (W/kg)	Max. Tune-up Power (dBm)	Meas. output Power (dBm)	Scaled SAR (W/Kg)	Limit (W/kg)
Left Cheek	RMC 12.2kbps	4183	836.6	-0.22	0.047	21.71	21.59	0.048	1.6
Left Tilt	RMC 12.2kbps	4183	836.6	0.20	0.005	21.71	21.59	0.005	1.6
Right Cheek	RMC 12.2kbps	4183	836.6	1.55	0.013	21.71	21.59	0.013	1.6
Right Tilt	RMC 12.2kbps	4183	836.6	-0.32	0.004	21.71	21.59	0.004	1.6
Body back	RMC 12.2kbps	4183	836.6	1.66	0.627	21.71	21.59	0.645	1.6
Body front	RMC 12.2kbps	4183	836.6	-0.23	0.375	21.71	21.59	0.386	1.6
Edge 2(Right)	RMC 12.2kbps	4183	836.6	-1.22	0.034	21.71	21.59	0.035	1.6
Edge 3(Bottom)	RMC 12.2kbps	4183	836.6	0.02	0.022	21.71	21.59	0.023	1.6
Edge 4(Left)	RMC 12.2kbps	4183	836.6	0.32	0.060	21.71	21.59	0.062	1.6

Note:

- When the 1-g Reported SAR is ≤ 0.8 W/kg, testing for low and high channel is optional. Refer to KDB 447498.
- The test separation of all above table(body part) is 0mm.

SAR MEASUREMENT												
Depth of Liquid (cm):>15					Relative Humidity (%): 54.1							
Product: 8 Inch 4G tablet												
Test Mode: LTE Band IV												
BM MHz	MOD	Position	Test Mode		Ch.	Freq. (MHz)	Power Drift (<±5%)	SAR (1g) (W/kg)	Max. Tuneu p Power (dBm)	Meas. output Power (dBm)	Scaled SAR (W/Kg)	Limit (W/kg)
			UL RB Allocation	UL RB START								
20	QPSK	Left Cheek	1	0	20300	1745	0.02	0.026	22.27	22.16	0.027	1.6
		Left Tilt	1	0	20300	1745	-0.23	0.009	22.27	22.16	0.009	1.6
		Right Cheek	1	0	20300	1745	1.55	0.022	22.27	22.16	0.023	1.6
		Right Tilt	1	0	20300	1745	0.23	0.019	22.27	22.16	0.019	1.6
		Body back	1	0	20050	1720	-0.12	0.841	22.27	21.59	0.984	1.6
		Body back	1	0	20175	1732.5	0.05	0.855	22.27	21.78	0.957	1.6
		Body back	1	0	20300	1745	0.23	0.874	22.27	22.16	0.896	1.6
		Body front	1	0	20300	1745	-1.55	0.587	22.27	22.16	0.602	1.6
		Edge 2(Right)	1	0	20300	1745	0.02	0.065	22.27	22.16	0.067	1.6
		Edge 3(Bottom)	1	0	20300	1745	0.12	0.472	22.27	22.16	0.484	1.6
		Edge 4(Left)	1	0	20300	1745	-0.52	0.121	22.27	22.16	0.124	1.6

Note:

- When the 1-g Reported SAR is ≤ 0.8 W/kg, testing for low and high channel is optional. Refer to KDB 447498.
- The test separation of all above table(body part) is 0mm.

SAR MEASUREMENT												
Depth of Liquid (cm):>15						Relative Humidity (%): 57.9						
Product: 8 Inch 4G tablet												
Test Mode: LTE Band XII												
BM MHz	MOD	Position	Test Mode		Ch.	Freq. (MHz)	Power Drift (<±5%)	SAR (1g) (W/kg)	Max. Tuneup Power (dBm)	Meas. output Power (dBm)	Scaled SAR (W/Kg)	Limit (W/kg)
			UL RB Allocation	UL RB START								
10	QPSK	Left Cheek	1	49	23095	707.5	-0.02	0.047	22.14	22.05	0.048	1.6
		Left Tilt	1	49	23095	707.5	0.23	0.053	22.14	22.05	0.054	1.6
		Right Cheek	1	49	23095	707.5	-1.22	0.046	22.14	22.05	0.047	1.6
		Right Tilt	1	49	23095	707.5	0.02	0.057	22.14	22.05	0.058	1.6
		Body back	1	49	23060	704	0.23	0.995	22.14	22.11	1.002	1.6
		Body back	1	49	23095	707.5	-1.22	1.004	22.14	22.05	1.025	1.6
		Body back	1	49	23130	711	-0.02	0.989	22.14	21.50	1.146	1.6
		Body front	1	49	23095	707.5	0.02	0.648	22.14	22.05	0.662	1.6
		Edge 2(Right)	1	49	23095	707.5	0.23	0.100	22.14	22.05	0.102	1.6
		Edge 3(Bottom)	1	49	23095	707.5	1.55	0.234	22.14	22.05	0.239	1.6
		Edge 4(Left)	1	49	23095	707.5	-0.02	0.185	22.14	22.05	0.189	1.6

Note:

- When the 1-g Reported SAR is ≤ 0.8 W/kg, testing for low and high channel is optional. Refer to KDB 447498.
- The test separation of all above table(body part) is 0mm.

SAR MEASUREMENT												
Depth of Liquid (cm):>15						Relative Humidity (%): 57.9						
Product: 8 Inch 4G tablet												
Test Mode: LTE Band XVII												
BM MHz	MOD	Position	Test Mode		Ch.	Freq. (MHz)	Power Drift (<±5%)	SAR (1g) (W/kg)	Max. Tuneup Power (dBm)	Meas. output Power (dBm)	Scaled SAR (W/Kg)	Limit (W/kg)
			UL RB Allocation	UL RB START								
10	QPSK	Left Cheek	1	49	23800	709	-0.55	0.103	22.74	22.26	0.115	1.6
		Left Tilt	1	49	23800	709	0.23	0.092	22.74	22.26	0.103	1.6
		Right Cheek	1	49	23800	709	1.33	0.077	22.74	22.26	0.086	1.6
		Right Tilt	1	49	23800	709	-0.22	0.102	22.74	22.26	0.114	1.6
		Body back	1	49	23800	709	0.23	0.607	22.74	22.26	0.678	1.6
		Body front	1	49	23800	709	1.55	0.353	22.74	22.26	0.394	1.6
		Edge 2(Right)	1	49	23800	709	-0.23	0.058	22.74	22.26	0.065	1.6
		Edge 3(Bottom)	1	49	23800	709	-0.52	0.140	22.74	22.26	0.156	1.6
		Edge 4(Left)	1	49	23800	709	0.23	0.104	22.74	22.26	0.116	1.6

Note:

- When the 1-g Reported SAR is ≤ 0.8 W/kg, testing for low and high channel is optional. Refer to KDB 447498.
- The test separation of all above table(body part) is 0mm.

SAR MEASUREMENT									
Depth of Liquid (cm):>15				Relative Humidity (%): 52.4					
Product: 8 Inch 4G tablet									
Test Mode:802.11b									
Position	Mode	Ch.	Fr. (MHz)	Power Drift (<±5%)	SAR (1g) (W/kg)	Max. Tune-up Power (dBm)	Meas. output Power (dBm)	Scaled SAR (W/Kg)	Limit (W/kg)
Left Cheek	DTS	6	2437	-0.10	0.093	16.57	16.53	0.094	1.6
Left Tilt	DTS	6	2437	0.22	0.091	16.57	16.53	0.092	1.6
Right Cheek	DTS	6	2437	-1.33	0.244	16.57	16.53	0.246	1.6
Right Tilt	DTS	6	2437	0.20	0.264	16.57	16.53	0.266	1.6
Body back	DTS	6	2437	0.02	0.270	16.57	16.53	0.272	1.6
Body front	DTS	6	2437	-0.02	0.177	16.57	16.53	0.179	1.6
Edge 1 (Top)	DTS	6	2437	-0.23	0.288	16.57	16.53	0.291	1.6
Edge 2(Right)	DTS	6	2437	1.66	0.010	16.57	16.53	0.010	1.6
Edge 4(Left)	DTS	6	2437	-0.23	0.078	16.57	16.53	0.079	1.6

Note:

- According to KDB248227, SAR is not required for 802.11n HT20/HT40 channels when the maximum average output power is less than 1/4 dB higher than that measured on the corresponding 802.11a/b channels.
- All of above "DTS" means data transmitters.
- When the 1-g Reported SAR is ≤ 0.8 W/kg, testing for low and high channel is optional. Refer to KDB 447498.
- The test separation of all above table(body part) is 0mm.

Repeated SAR										
Product: 8 Inch 4G tablet										
Test Mode: GSM850& PCS1900& WCDMA Band II& TE Band IV										
Position	Mode	Ch.	Fr. (MHz)	Power Drift (<±5%)	Once SAR (1g) (W/kg)	Power Drift (<±5%)	Twice SAR (1g) (W/kg)	Power Drift (<±5%)	Third SAR (1g) (W/kg)	Limit W/kg
Body back	GPRS-2 slot	190	836.6	-0.23	0.872	--	--	--	--	1.6
Body back	GPRS-2 slot	661	1880.0	1.33	0.822	--	--	--	--	1.6
Body back	RMC 12.2kbps	9400	1880	-0.02	0.795	--	--	--	--	1.6
Body back	QPSK	20300	1745	0.02	0.790	--	--	--	--	1.6
Body back	QPSK	23095	707.5	-1.33	0.952	--	--	--	--	1.6

Simultaneous Multi-band Transmission Evaluation: Application Simultaneous Transmission information:

NO	Simultaneous state	Portable Handset		
		Head	Body-worn	Hotspot
1	GSM(voice)+WLAN 2.4GHz (data)	Yes	Yes	-
2	WCDMA(voice)+WLAN 2.4GHz (data)	Yes	Yes	-
3	GSM(voice)+Bluetooth(data)	-	Yes	-
4	WCDMA(voice)+Bluetooth(data)	-	Yes	-
5	GSM (Data) + Bluetooth(data)	-	Yes	
6	GSM (Data) + WLAN 2.4GHz (data)	Yes	Yes	Yes
7	WCDMA (Data) + Bluetooth(data)	--	Yes	
8	WCDMA (Data) + WLAN 2.4GHz (data)	Yes	Yes	Yes
9	LTE + Bluetooth(data)	--	Yes	
10	LTE + WLAN 2.4GHz (data)	Yes	Yes	Yes

NOTE:

1. WIFI and BT share the same antenna, and cannot transmit simultaneously.
2. Simultaneous with every transmitter must be the same test position.
3. KDB 447498 D01, BT SAR is excluded as below table.
4. KDB 447498 D01, for handsets the test separation distance is determined by the smallest distance between the outer surface of the device and the user; which is 0mm for head SAR and 0mm for body-worn SAR.
5. According to KDB 447498 D01 4.3.1, Standalone SAR test exclusion is as follow:
For 100 MHz to 6 GHz and test separation distances ≤ 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following:

$$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$$
for 1-g SAR, and ≤ 7.5 for 10-g extremity SAR³⁰, where
 - f(GHz) is the RF channel transmit frequency in GHz
 - Power and distance are rounded to the nearest mW and mm before calculation³¹
 - The result is rounded to one decimal place for comparison
 - The values 3.0 and 7.5 are referred to as numeric thresholds in step b) below
The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm, and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm according to 4.1 f) is applied to determine SAR test exclusion.
6. If the test separation distance is < 5 mm, 5mm is used for excluded SAR calculation.
7. According to KDB 447498 D01 4.3.2, simultaneous transmission SAR test exclusion is as follow:
 - (1) Simultaneous transmission SAR test exclusion is determined for each operating configuration and exposure condition according to the reported standalone SAR of each applicable simultaneous transmitting antenna.
 - (2) Any transmitters and antennas should be considered when calculating simultaneous mode.
 - (3) For mobile phone and PC, it's the sum of all transmitters and antennas at the same mode with same position in each applicable exposure condition
 - (4) When the standalone SAR test exclusion of section 4.3.2 is applied to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to the following to det
$$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})/x}] \text{ W/kg}$$
for test separation distances ≤ 50 mm;
where $x = 7.5$ for 1-g SAR, and $x = 18.75$ for 10-g SAR.

8. When the sum of SAR is larger than the limit, SAR test exclusion is determined by the SAR to peak location separation ratio. The simultaneous transmitting antennas in each operating mode and exposure condition combination must be considered one pair at a time to determine the SAR to peak location separation ratio to qualify for test exclusion. The ratio is determined by $(SAR1 + SAR2)1.5/R_i$, rounded to two decimal digits, and must be ≤ 0.04 for all antenna pairs in the configuration to qualify for 1-g SAR test exclusion.

Estimated SAR		Max Power including Tune-up Tolerance		Separation Distance (mm)	Estimated SAR (W/kg)
		dBm	mW		
BT	Head	6	3.981	0	0.167
	Body	6	3.981	0	0.167

Sum of the SAR for GSM 850 & Wi-Fi & BT:

RF Exposure Conditions	Test Position	Simultaneous Transmission Scenario			Σ 1-g SAR (W/Kg)	SPLSR (Yes/No)
		GSM 850	Wi-Fi DTS Band	Bluetooth		
Head (voice)	Left Touch	0.068	0.094		0.162	No
	Left Tilt	0.066	0.092		0.158	No
	Right Touch	0.070	0.246		0.316	No
	Right Tilt	0.068	0.266		0.334	No
Body-worn (voice)	Rear	0.634	0.272		0.906	No
		0.634		0.167	0.801	No
	Front	0.580	0.179		0.759	No
		0.580		0.167	0.747	No
Head (Data)	Left Touch	0.113	0.094		0.207	No
	Left Tilt	0.124	0.092		0.216	No
	Right Touch	0.109	0.246		0.355	No
	Right Tilt	0.106	0.266		0.372	No
Body-worn (Data)	Rear	0.992		0.167	1.159	No
		0.992	0.272		1.264	No
	Front	0.623		0.167	0.790	No
		0.623	0.179		0.802	No
	Edge 2	0.114	0.010		0.124	No
	Edge 4	0.144	0.079		0.223	No
	Edge 2	0.114		0.167	0.281	No
	Edge 4	0.144		0.167	0.311	No

Note:

- According to KDB 447498 D01 General RF Exposure Guidance, when the simultaneous transmission SAR is less than 1.6 W/Kg, SPLSR assessment is not required.
- SPLSR mean is “The SAR to Peak Location Separation Ratio “

Sum of the SAR for GSM 1900 & Wi-Fi & BT:

RF Exposure Conditions	Test Position	Simultaneous Transmission Scenario			Σ 1-g SAR (W/Kg)	SPLSR (Yes/No)
		PCS 1900	Wi-Fi DTS Band	Bluetooth		
Head (voice)	Left Touch	0.021	0.094		0.115	No
	Left Tilt	0.020	0.092		0.112	No
	Right Touch	0.027	0.246		0.273	No
	Right Tilt	0.021	0.266		0.287	No
Body-worn (voice)	Rear	0.746	0.272		1.018	No
		0.746		0.167	0.913	No
	Front	0.415	0.179		0.594	No
		0.415		0.167	0.582	No
Head (Data)	Left Touch	0.066	0.094		0.16	No
	Left Tilt	0.054	0.092		0.146	No
	Right Touch	0.082	0.246		0.328	No
	Right Tilt	0.055	0.266		0.321	No
Body-worn (Data)	Rear	1.044		0.167	1.211	No
		1.044	0.272		1.316	No
	Front	0.950		0.167	1.117	No
		0.950	0.179		1.129	No
Body-worn	Edge 2	0.029	0.010		0.039	No
	Edge 4	0.035	0.079		0.114	No
	Edge 2	0.029		0.167	0.196	No
	Edge 4	0.035		0.167	0.202	No

Note:

- According to KDB 447498 D01 General RF Exposure Guidance, when the simultaneous transmission SAR is less than 1.6 W/Kg, SPLSR assessment is not required.
- SPLSR mean is "The SAR to Peak Location Separation Ratio "

Sum of the SAR for WCDMA Band II & Wi-Fi & BT:

RF Exposure Conditions	Test Position	Simultaneous Transmission Scenario			Σ 1-g SAR (W/Kg)	SPLSR (Yes/No)
		WCDMA Band II	Wi-Fi DTS Band	Bluetooth		
Head	Left Touch	0.051	0.094		0.145	No
	Left Tilt	0.040	0.092		0.132	No
	Right Touch	0.042	0.246		0.288	No
	Right Tilt	0.040	0.266		0.306	No
Body-worn	Rear	0.869	0.272		1.141	No
	Front	0.732	0.179		0.911	No
	Edge 2	0.016	0.010		0.026	No
	Edge 4	0.027	0.079		0.106	No
	Rear	0.869		0.167	1.036	No
	Front	0.732		0.167	0.899	No
	Edge 2	0.016		0.167	0.183	No
	Edge 4	0.027		0.167	0.194	No

Note:

- According to KDB 447498 D01 General RF Exposure Guidance, when the simultaneous transmission SAR is less than 1.6 W/Kg, SPLSR assessment is not required.
- SPLSR mean is "The SAR to Peak Location Separation Ratio "

Sum of the SAR for WCDMA Band V & Wi-Fi & BT:

RF Exposure Conditions	Test Position	Simultaneous Transmission Scenario			Σ 1-g SAR (W/Kg)	SPLSR (Yes/No)
		WCDMA Band V	Wi-Fi DTS Band	Bluetooth		
Head	Left Touch	0.048	0.094		0.142	No
	Left Tilt	0.005	0.092		0.097	No
	Right Touch	0.013	0.246		0.259	No
	Right Tilt	0.004	0.266		0.270	No
Body-worn	Rear	0.645	0.272		0.917	No
	Front	0.386	0.179		0.565	No
	Edge 2	0.035	0.010		0.045	No
	Edge 4	0.062	0.079		0.141	No
	Rear	0.645		0.167	0.812	No
	Front	0.386		0.167	0.553	No
	Edge 2	0.035		0.167	0.202	No
	Edge 4	0.062		0.167	0.229	No

Note:

- According to KDB 447498 D01 General RF Exposure Guidance, when the simultaneous transmission SAR is less than 1.6 W/Kg, SPLSR assessment is not required.
- SPLSR mean is "The SAR to Peak Location Separation Ratio "

Sum of the SAR for LTE Band IV & Wi-Fi & BT:

RF Exposure Conditions	Test Position	Simultaneous Transmission Scenario			Σ 1-g SAR (W/Kg)	SPLSR (Yes/No)
		LTE Band IV	Wi-Fi DTS Band	Bluetooth		
Head	Left Touch	0.027	0.094		0.121	No
	Left Tilt	0.009	0.092		0.101	No
	Right Touch	0.023	0.246		0.269	No
	Right Tilt	0.019	0.266		0.285	No
Body-worn	Rear	0.984	0.272		1.256	No
	Front	0.602	0.179		0.781	No
	Edge 2	0.067	0.010		0.077	No
	Edge 4	0.124	0.079		0.203	No
	Rear	0.984		0.167	1.151	No
	Front	0.602		0.167	0.769	No
	Edge 2	0.067		0.167	0.234	No
	Edge 4	0.124		0.167	0.291	No

Note:

- According to KDB 447498 D01 General RF Exposure Guidance, when the simultaneous transmission SAR is less than 1.6 W/Kg, SPLSR assessment is not required.
- SPLSR mean is "The SAR to Peak Location Separation Ratio "

Sum of the SAR for LTE Band XII & Wi-Fi & BT:

RF Exposure Conditions	Test Position	Simultaneous Transmission Scenario			Σ 1-g SAR (W/Kg)	SPLSR (Yes/No)
		LTE Band XII	Wi-Fi DTS Band	Bluetooth		
Head	Left Touch	0.048	0.094		0.142	No
	Left Tilt	0.054	0.092		0.146	No
	Right Touch	0.047	0.246		0.293	No
	Right Tilt	0.058	0.266		0.324	No
Body-worn	Rear	1.146	0.272		1.418	No
	Front	0.662	0.179		0.841	No
	Edge 2	0.102	0.010		0.112	No
	Edge 4	0.189	0.079		0.268	No
	Rear	1.146		0.167	1.313	No
	Front	0.662		0.167	0.829	No
	Edge 2	0.102		0.167	0.269	No
	Edge 4	0.189		0.167	0.356	No

Note:

- According to KDB 447498 D01 General RF Exposure Guidance, when the simultaneous transmission SAR is less than 1.6 W/Kg, SPLSR assessment is not required.
- SPLSR mean is “The SAR to Peak Location Separation Ratio “

Sum of the SAR for LTE Band XVII & Wi-Fi & BT:

RF Exposure Conditions	Test Position	Simultaneous Transmission Scenario			Σ 1-g SAR (W/Kg)	SPLSR (Yes/No)
		LTE Band XVII	Wi-Fi DTS Band	Bluetooth		
Head	Left Touch	0.115	0.094		0.209	No
	Left Tilt	0.103	0.092		0.195	No
	Right Touch	0.086	0.246		0.332	No
	Right Tilt	0.114	0.266		0.380	No
Body-worn	Rear	0.678	0.272		0.950	No
	Front	0.394	0.179		0.573	No
	Edge 2	0.065	0.010		0.075	No
	Edge 4	0.116	0.079		0.195	No
	Rear	0.678		0.167	0.845	No
	Front	0.394		0.167	0.561	No
	Edge 2	0.065		0.167	0.232	No
	Edge 4	0.116		0.167	0.283	No

Note:

- According to KDB 447498 D01 General RF Exposure Guidance, when the simultaneous transmission SAR is less than 1.6 W/Kg, SPLSR assessment is not required.
- SPLSR mean is “The SAR to Peak Location Separation Ratio “

APPENDIX A. SAR SYSTEM CHECK DATA

Test Laboratory: AGC Lab

Date: May 31, 2017

System Check Head 750 MHz

DUT: Dipole 750 MHz Type: SID 750

Communication System CW; Communication System Band: D750 (750.0 MHz); Duty Cycle: 1:1; Conv.F=5.08

Frequency: 750 MHz; Medium parameters used: $f = 750$ MHz; $\sigma = 0.93$ mho/m; $\epsilon_r = 40.62$; $\rho = 1000$ kg/m³ ;

Phantom section: Flat Section; Input Power=18dBm

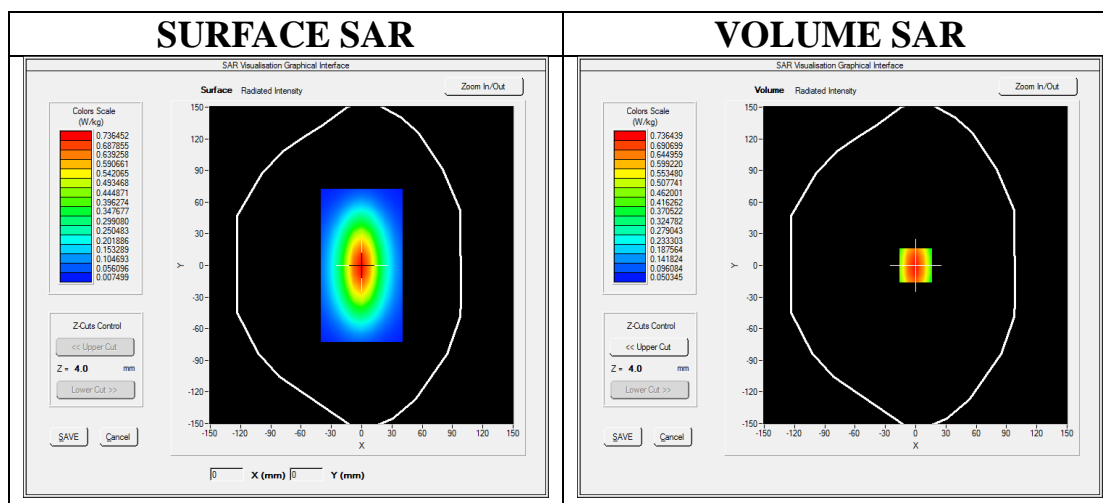
Ambient temperature (°C):22.3, Liquid temperature (°C): 21.5

SATIMO Configuration:

- Probe: SSE5; Calibrated: 07/05/2016 Serial No.: SN 14/16 EP307
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: SAM twin phantom
- Measurement SW: OpenSAR V4_02_35

Configuration/System Check 750MHz Head/Area Scan: Measurement grid: dx=8mm, dy=8mm

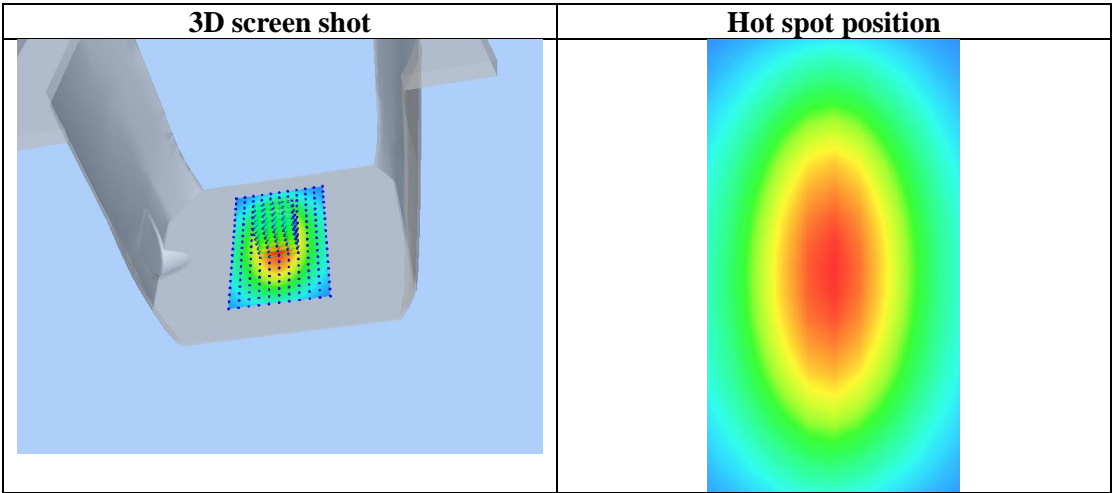
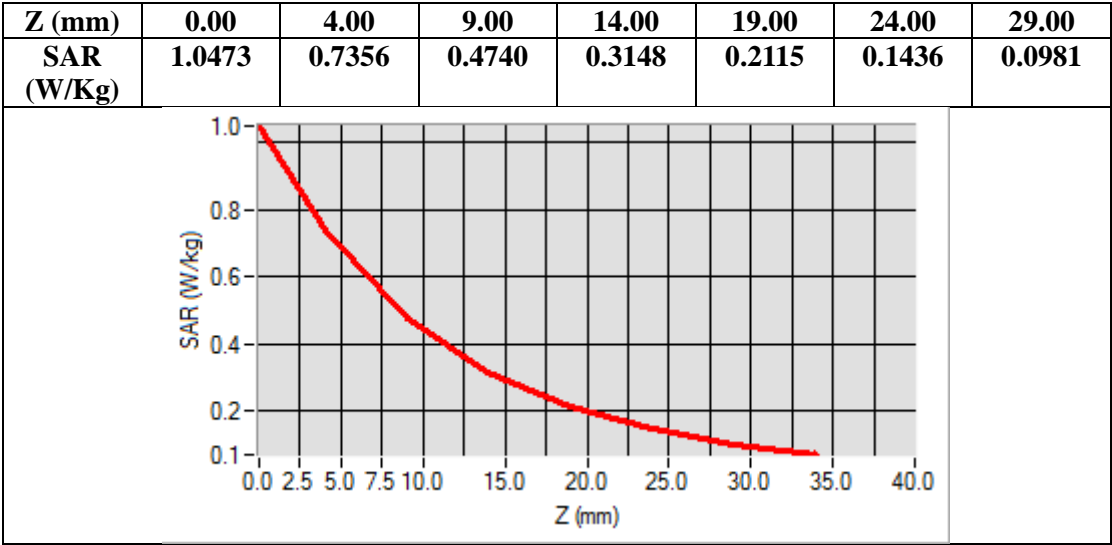
Configuration/System Check 750MHz Head/Zoom Scan: Measurement grid: dx=8mm, dy=8mm, dz=5mm



Maximum location: X=0.00, Y=0.00

SAR Peak: 1.02 W/kg

SAR 10g (W/Kg)	0.371546
SAR 1g (W/Kg)	0.587052



Test Laboratory: AGC Lab
System Check Body 750 MHz
DUT: Dipole 750 MHz Type: SID 750

Date: May 31,2017

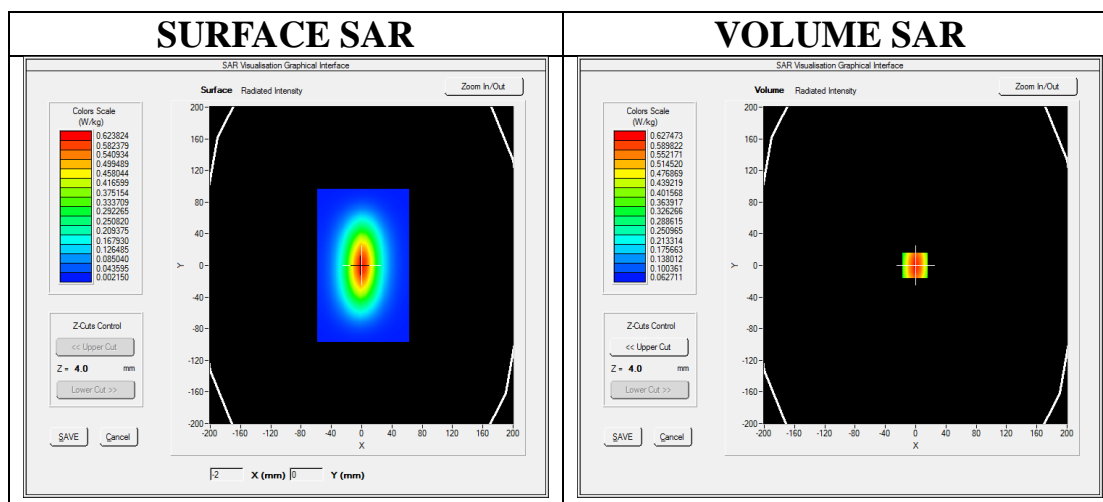
Communication System CW; Communication System Band: D750 (750.0 MHz); Duty Cycle: 1:1; Conv.F=5.27
Frequency: 750 MHz; Medium parameters used: $f = 750$ MHz; $\sigma=0.98$ mho/m; $\epsilon_r=53.68$; $\rho= 1000$ kg/m³ ;
Phantom section: Flat Section; Input Power=18dBm
Ambient temperature (°C):22.3, Liquid temperature (°C): 21.4

SATIMO Configuration:

- Probe: SSE5; Calibrated: 07/05/2016 Serial No.: SN 14/16 EP307
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: ELLI39 Phantom
- Measurement SW: OpenSAR V4_02_35

Configuration/System Check 750MHz Body/Area Scan: Measurement grid: dx=8mm, dy=8mm

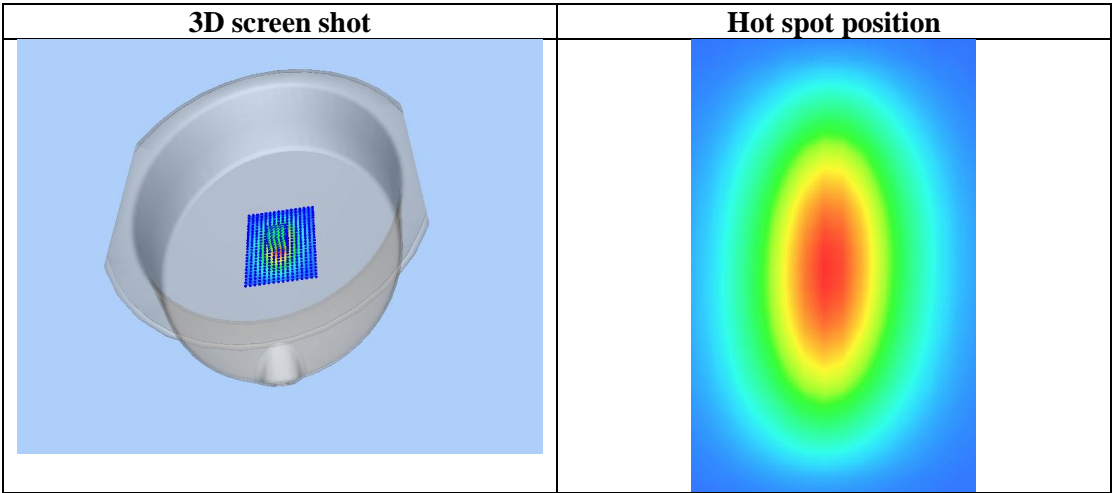
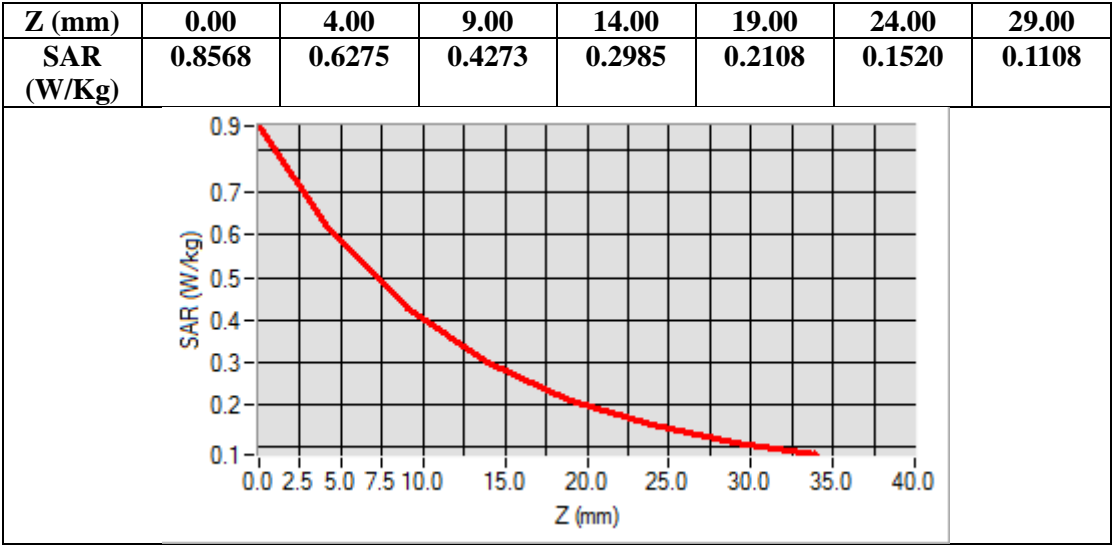
Configuration/System Check 750MHz Body/Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm



Maximum location: X=-1.00, Y=0.00

SAR Peak: 0.86 W/kg

SAR 10g (W/Kg)	0.394024
SAR 1g (W/Kg)	0.601570



Test Laboratory: AGC Lab
System Check Head 835 MHz
DUT: Dipole 835 MHz Type: SID 835

Date: May 25,2017

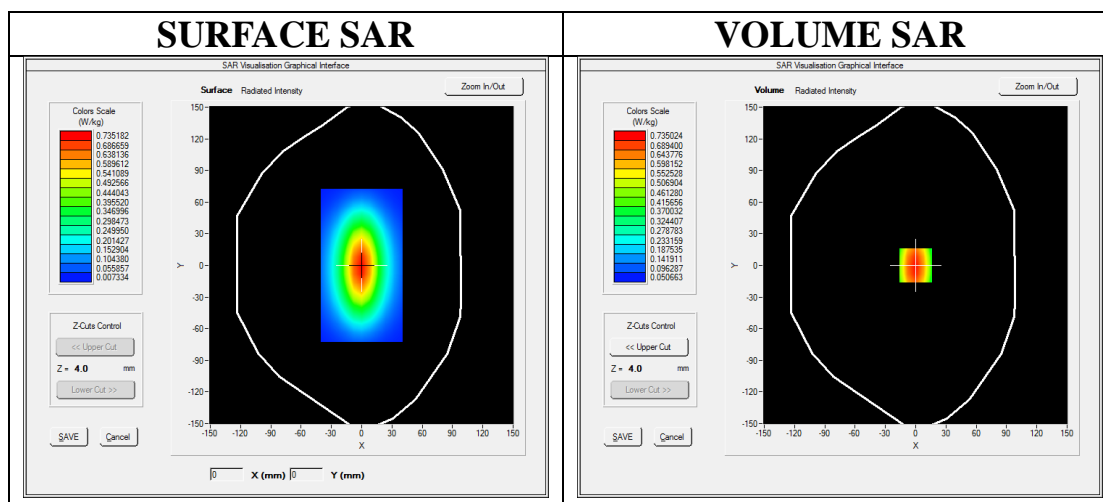
Communication System CW; Communication System Band: D835 (835.0 MHz); Duty Cycle: 1:1; Conv.F=5.67
Frequency: 835 MHz; Medium parameters used: $f = 835$ MHz; $\sigma=0.90\text{mho/m}$; $\epsilon_r=41.86$; $\rho= 1000 \text{ kg/m}^3$;
Phantom section: Flat Section; Input Power=18dBm
Ambient temperature ($^{\circ}\text{C}$):22.3, Liquid temperature ($^{\circ}\text{C}$): 21.5

SATIMO Configuration:

- Probe: SSE5; Calibrated: 07/05/2016 Serial No.: SN 14/16 EP307
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: SAM twin phantom
- Measurement SW: OpenSAR V4_02_35

Configuration/System Check 835MHz Head/Area Scan: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$

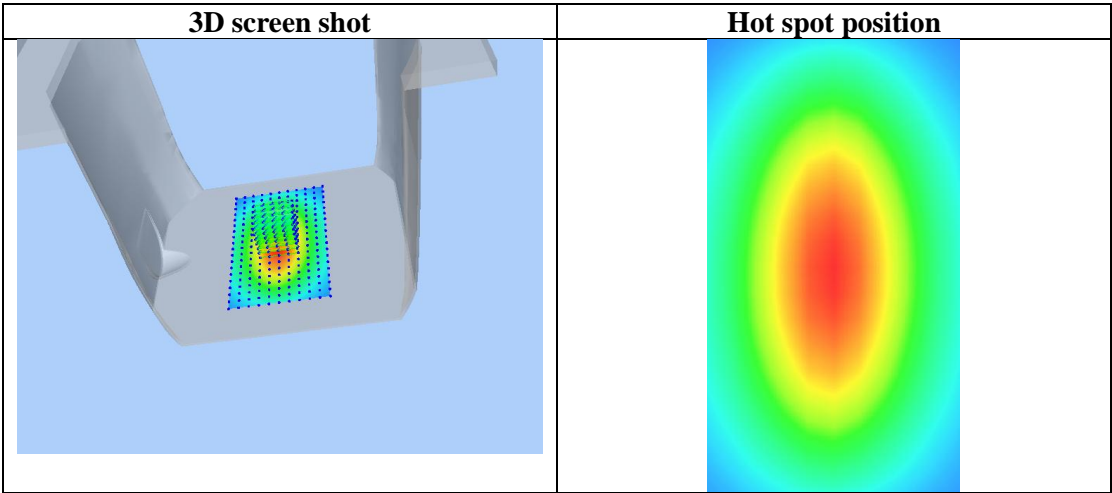
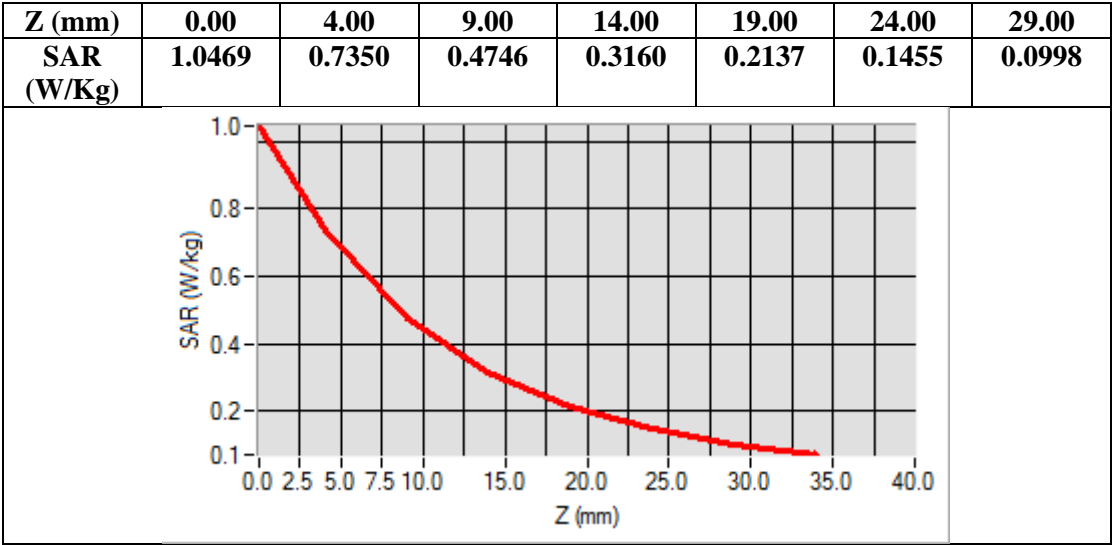
Configuration/System Check 835MHz Head/Zoom Scan: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$



Maximum location: X=0.00, Y=0.00

SAR Peak: 1.04 W/kg

SAR 10g (W/Kg)	0.421163
SAR 1g (W/Kg)	0.655854



Test Laboratory: AGC Lab
System Check Body 835 MHz
DUT: Dipole 835 MHz Type: SID 835

Date: May 25,2017

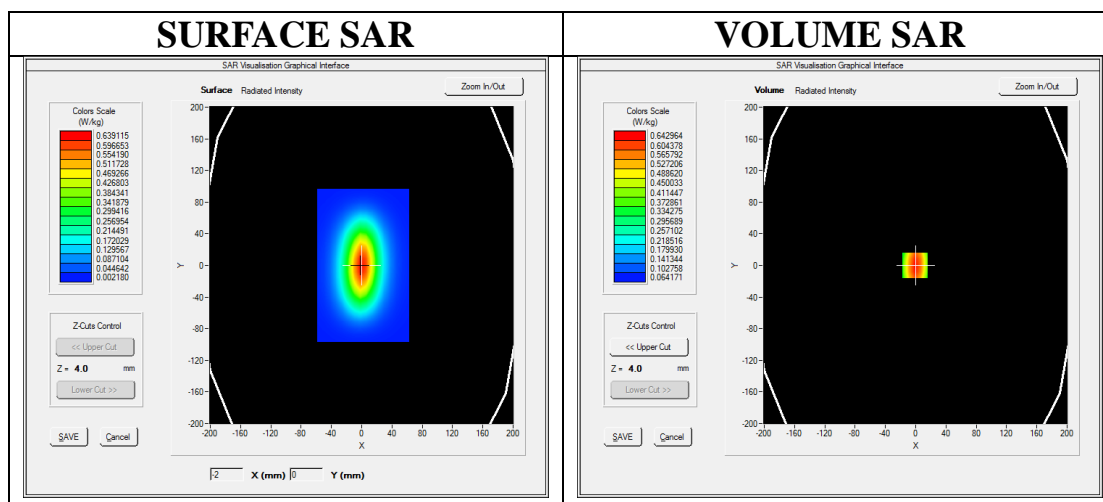
Communication System CW; Communication System Band: D835 (835.0 MHz); Duty Cycle: 1:1; Conv.F=5.89
Frequency: 835 MHz; Medium parameters used: $f = 835 \text{ MHz}$; $\sigma=0.94 \text{ mho/m}$; $\epsilon_r=55.54$; $\rho= 1000 \text{ kg/m}^3$;
Phantom section: Flat Section; Input Power=18dBm
Ambient temperature ($^{\circ}\text{C}$):22.3, Liquid temperature ($^{\circ}\text{C}$): 21.3

SATIMO Configuration:

- Probe: SSE5; Calibrated: 07/05/2016 Serial No.: SN 14/16 EP307
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: ELLI39 Phantom
- Measurement SW: OpenSAR V4_02_35

Configuration/System Check 835MHz Body/Area Scan: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$

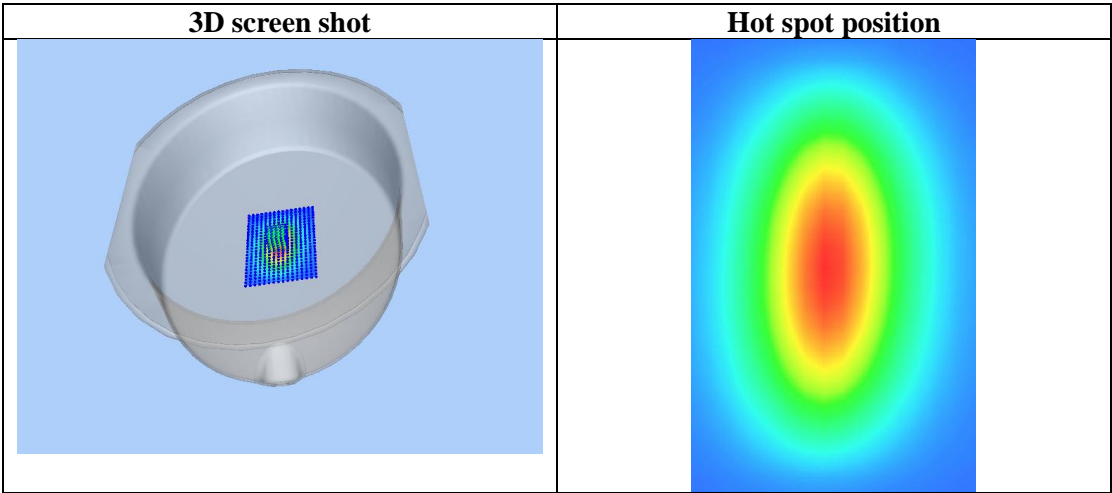
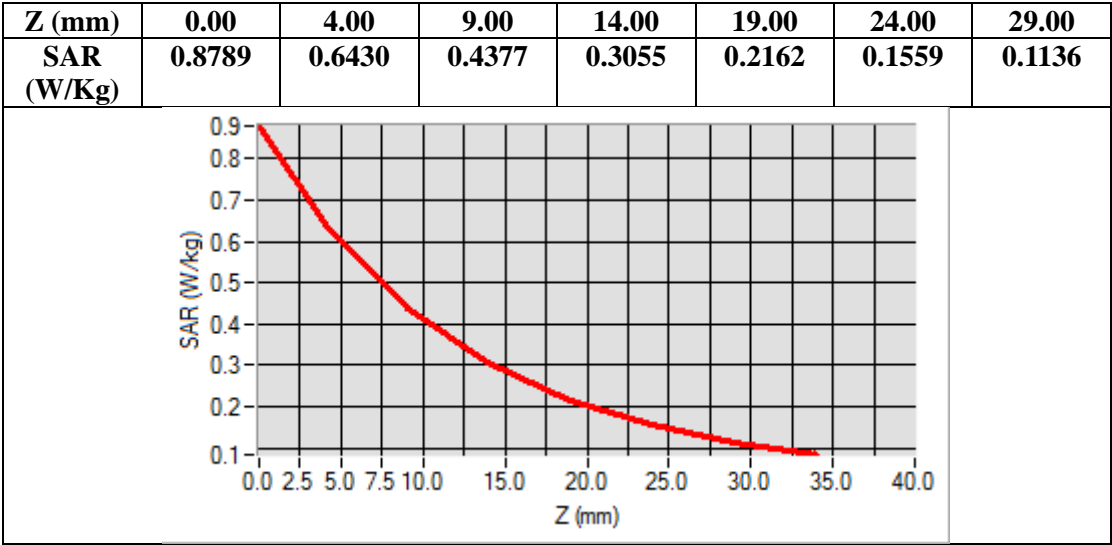
Configuration/System Check 835MHz Body/Zoom Scan: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$



Maximum location: X=-1.00, Y=0.00

SAR Peak: 0.88 W/kg

SAR 10g (W/Kg)	0.403718
SAR 1g (W/Kg)	0.616466



Test Laboratory: AGC Lab
System Check Head 1750MHz
DUT: Dipole 1800 MHz; Type: SID 1800

Date: May 26,2017

Communication System: CW; Communication System Band: D1700 (1750.0 MHz); Duty Cycle:1:1; Conv.F=4.92
Frequency: 1750 MHz; Medium parameters used: $f = 1750\text{MHz}$; $\sigma=1.36\text{mho/m}$; $\epsilon_r = 40.25$; $\rho= 1000 \text{ kg/m}^3$;
Phantom section: Flat Section; Input Power=18dBm
Ambient temperature ($^{\circ}\text{C}$): 22.2, Liquid temperature ($^{\circ}\text{C}$): 21.4

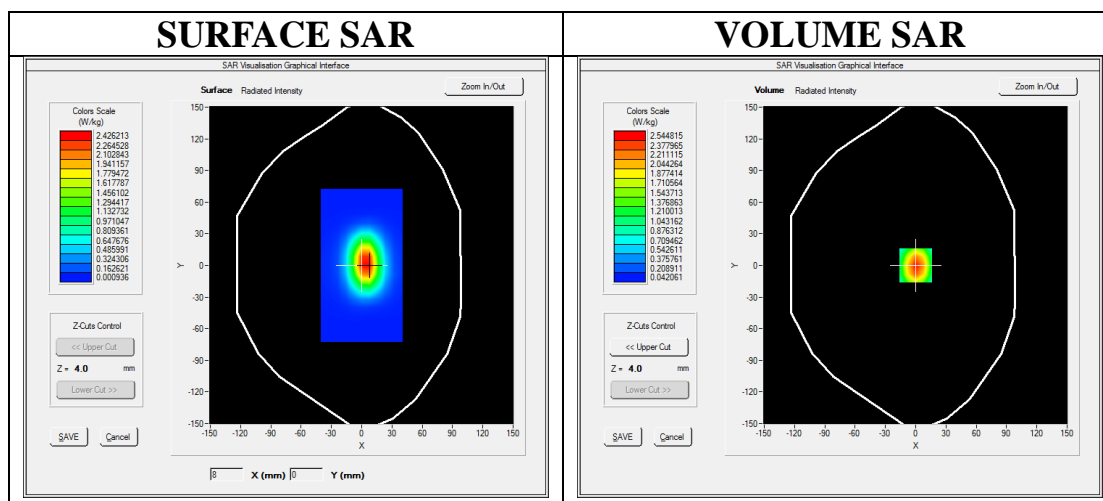
SATIMO Configuration:

Probe: SSE5; Calibrated: 07/05/2016; Serial No.: SN 14/16 EP307

- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: SAM twin phantom
- Measurement SW: OpenSAR V4_02_35

Configuration/System Check 1750MHz Head/Area Scan: Measurement grid: dx=8mm,dy=8mm

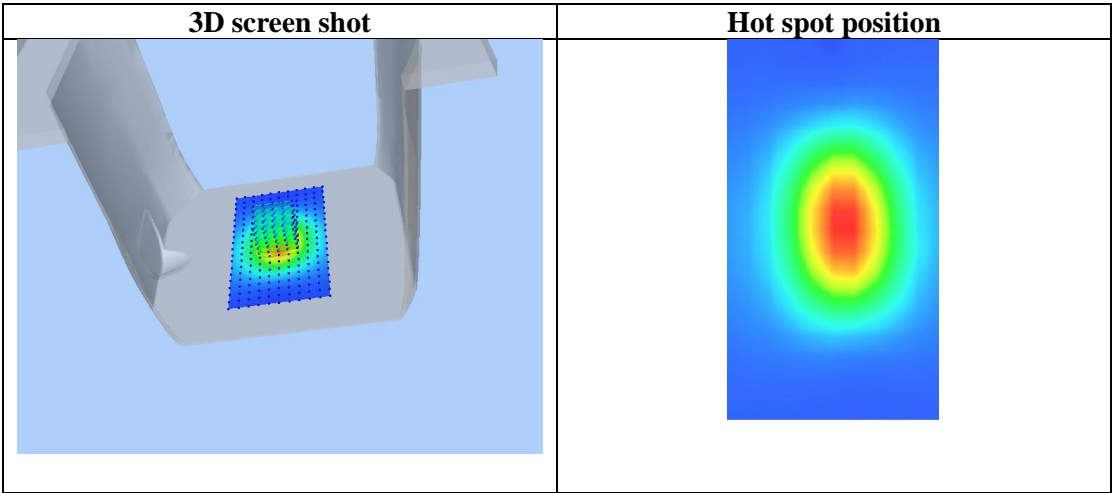
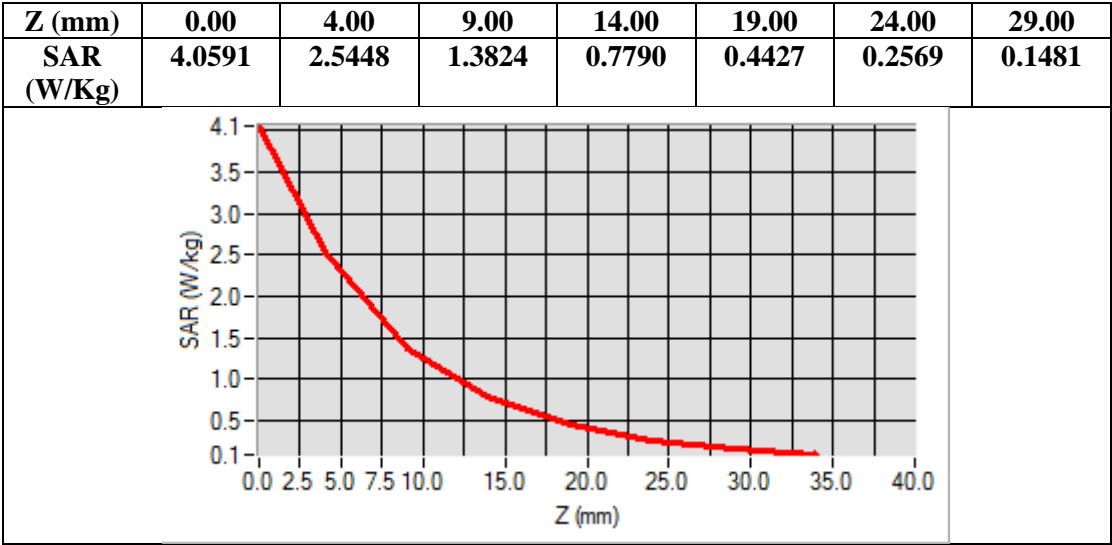
Configuration/System Check 1750MHz Head/Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm



Maximum location: X=0.00, Y=0.00

SAR Peak: 4.03 W/kg

SAR 10g (W/Kg)	1.268605
SAR 1g (W/Kg)	2.414374



Test Laboratory: AGC Lab
System Check Body 1750MHz
DUT: Dipole 1800 MHz; Type: SID 1800

Date: May 26,2017

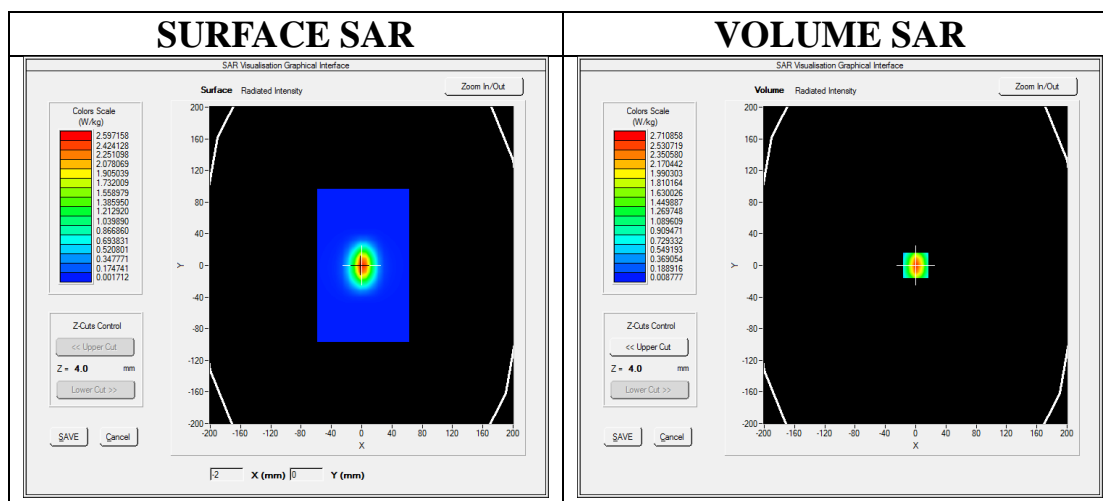
Communication System: CW; Communication System Band: D1700 (1750.0 MHz); Duty Cycle:1:1; Conv.F=5.06
Frequency: 1750MHz; Medium parameters used: $f = 1750\text{MHz}$; $\sigma=1.49\text{mho/m}$; $\epsilon_r=52.53$; $\rho= 1000 \text{ kg/m}^3$;
Phantom section: Flat Section; Input Power=18dBm
Ambient temperature ($^{\circ}\text{C}$): 22.2, Liquid temperature ($^{\circ}\text{C}$): 21.3

SATIMO Configuration:

- Probe: SSE5; Calibrated: 07/05/2016; Serial No.: SN 14/16 EP307
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: ELLI39 Phantom
- Measurement SW: OpenSAR V4_02_35

Configuration/System Check 1750MHz Body/Area Scan: Measurement grid: $dx=8\text{mm}, dy=8\text{mm}$

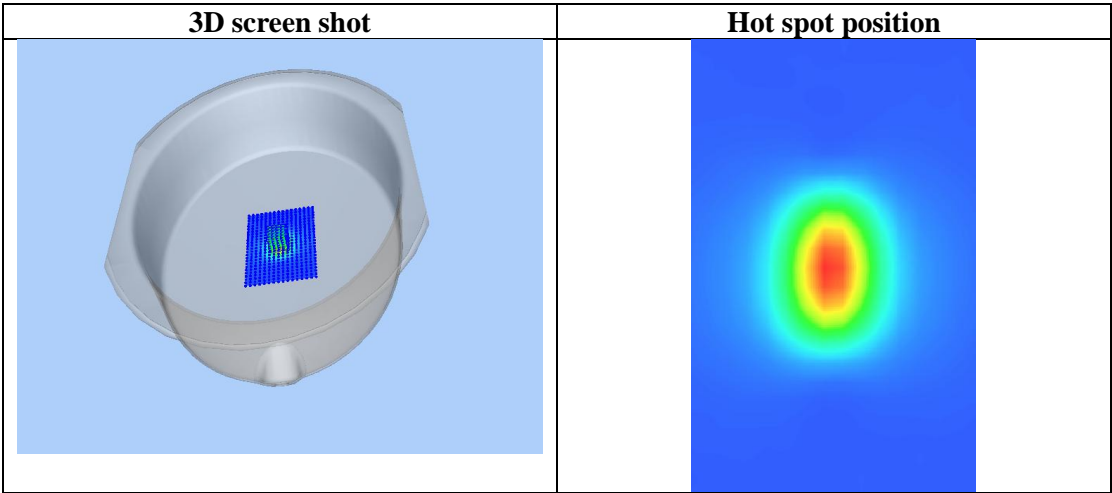
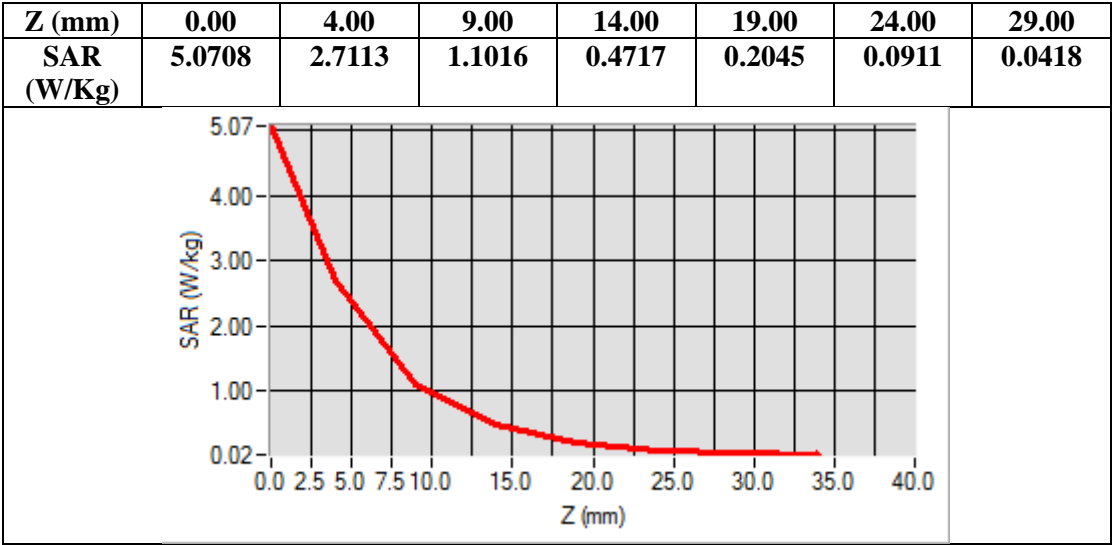
Configuration/System Check 1750MHz Body/Zoom Scan: Measurement grid: $dx=8\text{mm}, dy=8\text{mm}, dz=5\text{mm}$



Maximum location: X=0.00, Y=0.00

SAR Peak: 5.01 W/kg

SAR 10g (W/Kg)	1.314655
SAR 1g (W/Kg)	2.365582



Test Laboratory: AGC Lab
System Check Head 1900MHz
DUT: Dipole 1900 MHz; Type: SID 1900

Date: May 24,2017

Communication System: CW; Communication System Band: D1900 (1900.0 MHz); Duty Cycle:1:1; Conv.F=5.14
Frequency: 1900 MHz; Medium parameters used: $f = 1900$ MHz; $\sigma=1.40$ mho/m; $\epsilon_r=39.45$; $\rho=1000$ kg/m³ ;
Phantom section: Flat Section; Input Power=18dBm
Ambient temperature (°C):22.0 , Liquid temperature (°C): 21.2

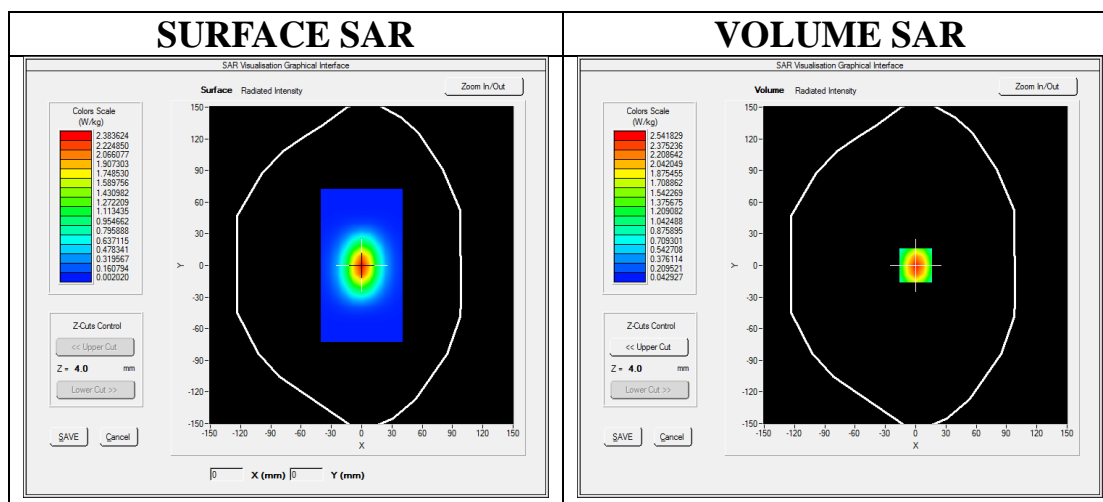
SATIMO Configuration:

Probe: SSE5; Calibrated: 07/05/2016; Serial No.: SN 14/16 EP307

- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: SAM twin phantom
- Measurement SW: OpenSAR V4_02_35

Configuration/System Check 1900MHz Head/Area Scan: Measurement grid: dx=8mm, dy=8mm

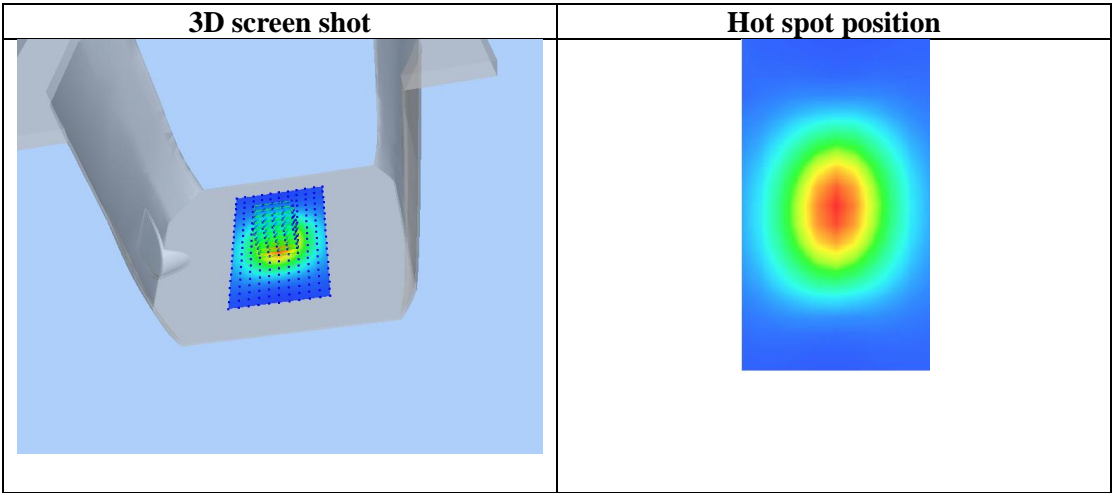
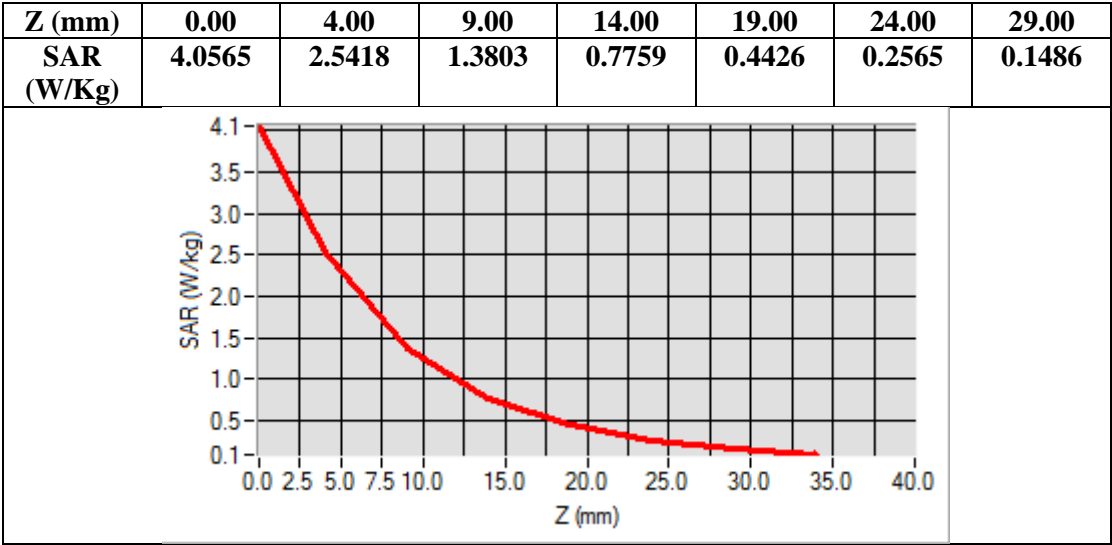
Configuration/System Check 1900MHz Head/Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm



Maximum location: X=0.00, Y=0.00

SAR Peak: 4.03 W/kg

SAR 10g (W/Kg)	1.266699
SAR 1g (W/Kg)	2.411194



Test Laboratory: AGC Lab
System Check Body 1900MHz
DUT: Dipole 1900 MHz; Type: SID 1900

Date: May 24,2017

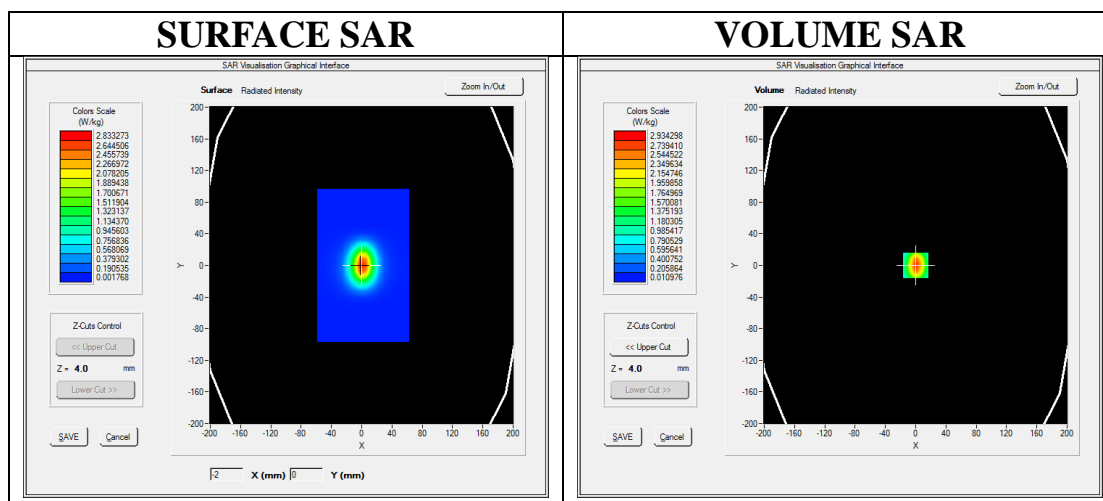
Communication System: CW; Communication System Band: D1900 (1900.0 MHz); Duty Cycle:1:1; Conv.F=5.34
Frequency: 1900 MHz; Medium parameters used: $f = 1900$ MHz; $\sigma = 1.52$ mho/m; $\epsilon_r = 52.81$; $\rho = 1000$ kg/m³ ;
Phantom section: Flat Section; Input Power=18dBm
Ambient temperature (°C):22.0 , Liquid temperature (°C): 21.0

SATIMO Configuration:

- Probe: SSE5; Calibrated: 07/05/2016; Serial No.: SN 14/16 EP307
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: ELLI39 Phantom
- Measurement SW: OpenSAR V4_02_35

Configuration/System Check 1900MHz Body/Area Scan: Measurement grid: dx=8mm, dy=8mm

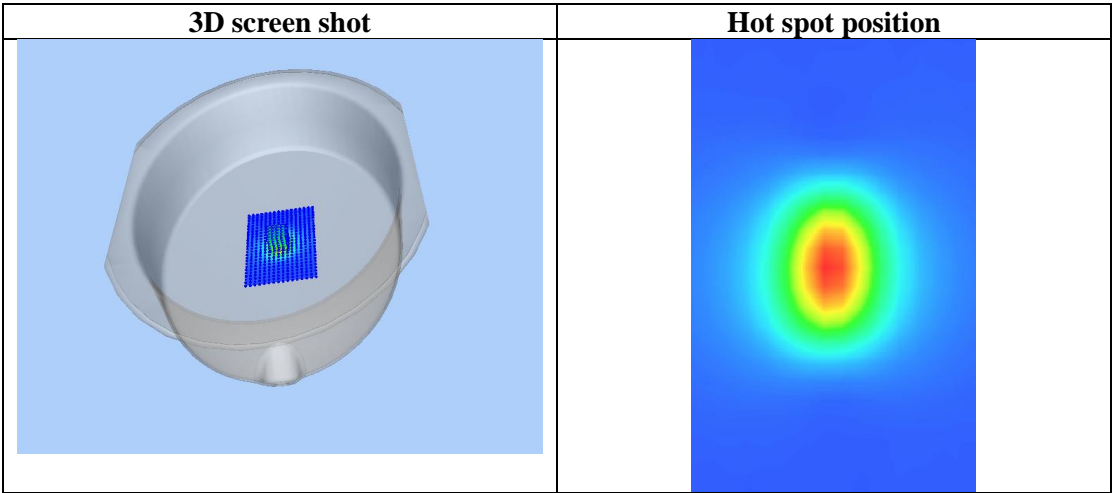
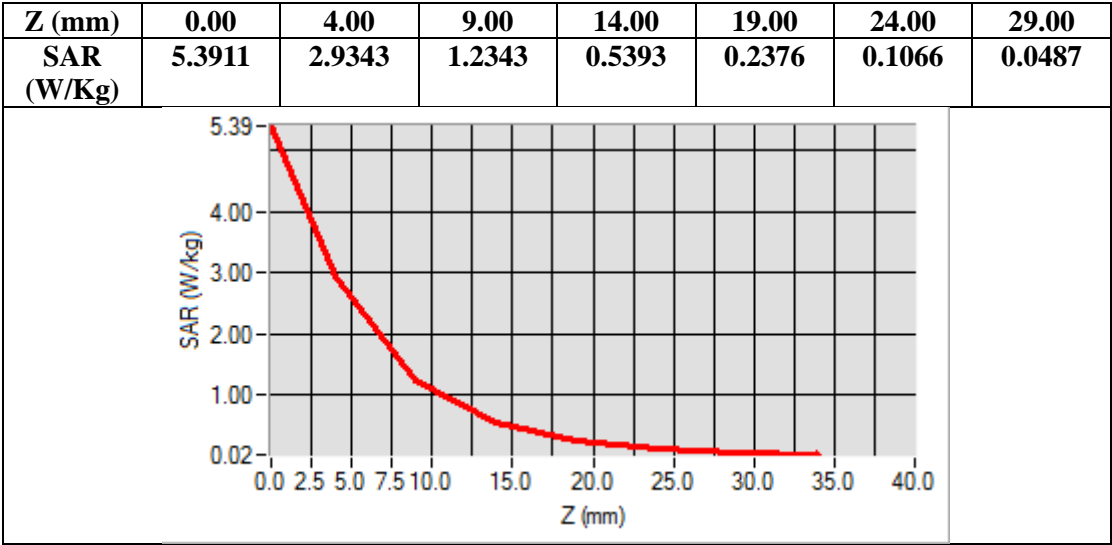
Configuration/System Check 1900MHz Body/Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm



Maximum location: X=0.00, Y=0.00

SAR Peak: 5.33 W/kg

SAR 10g (W/Kg)	1.256418
SAR 1g (W/Kg)	2.529895



Test Laboratory: AGC Lab
System Check Head 2450 MHz

Date: May 27,2017

DUT: Dipole 2450 MHz Type: SID 2450

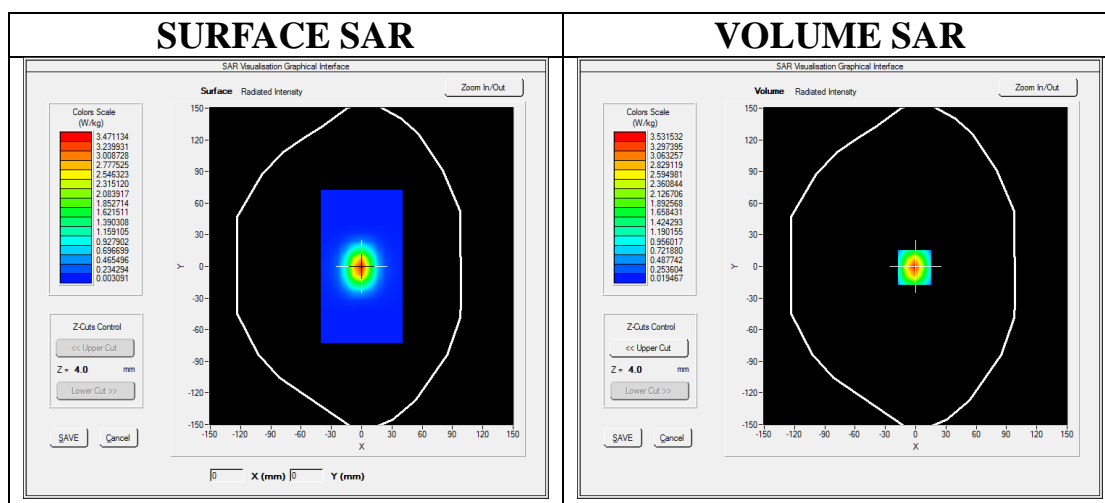
Communication System CW; Communication System Band: D2450 (2450.0 MHz); Duty Cycle: 1:1; Conv.F=5.07
Frequency: 2450 MHz; Medium parameters used: $f = 2450$ MHz; $\sigma = 1.81$ mho/m; $\epsilon_r = 38.93$; $\rho = 1000$ kg/m³ ;
Phantom section: Flat Section; Input Power=18dBm
Ambient temperature (°C):21.8, Liquid temperature (°C): 21.1

SATIMO Configuration

- Probe: SSE5; Calibrated: 07/05/2016 Serial No.: SN 14/16 EP307
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: SAM twin phantom
- Measurement SW: OpenSAR V4_02_35

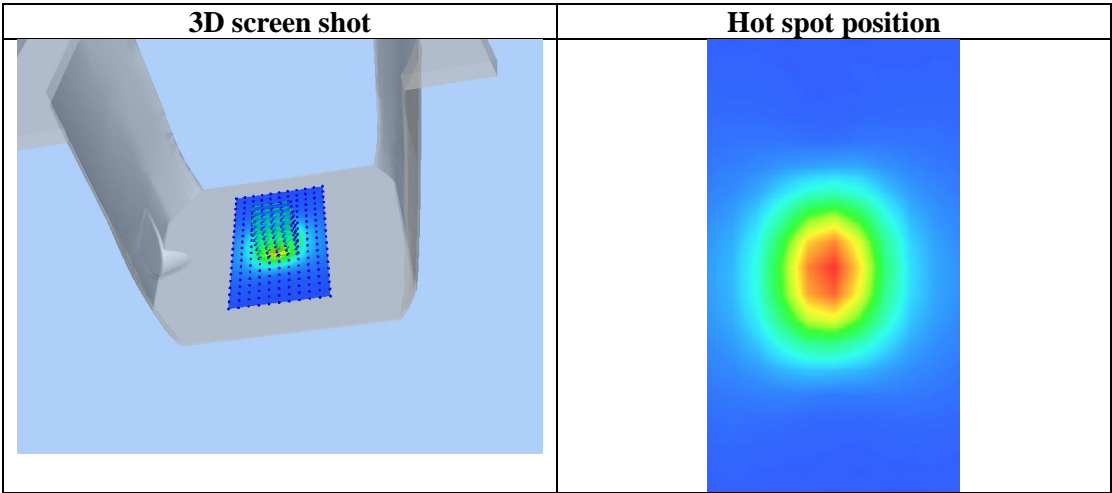
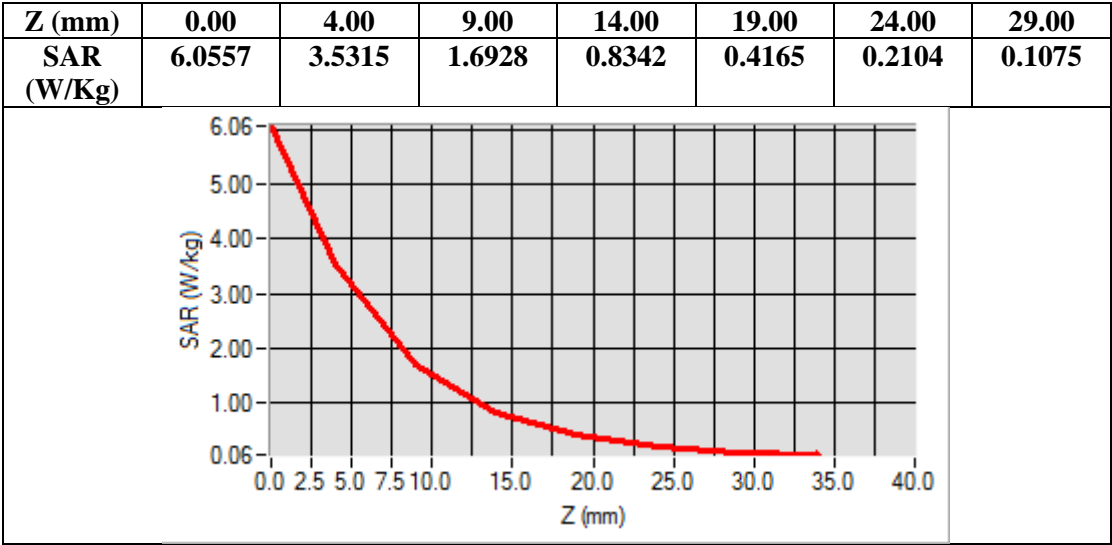
Configuration/System Check 2450MHz Head/Area Scan: Measurement grid: dx=8mm, dy=8mm

Configuration/System Check 2450MHz Head/Zoom Scan: Measurement grid: dx=5mm,dy=5mm, dz=5mm



Maximum location: X=-1.00, Y=-1.00
SAR Peak: 5.99 W/kg

SAR 10g (W/Kg)	1.473656
SAR 1g (W/Kg)	3.290789



Test Laboratory: AGC Lab
System Check Body 2450 MHz

Date: May 27,2017

DUT: Dipole 2450 MHz Type: SID 2450

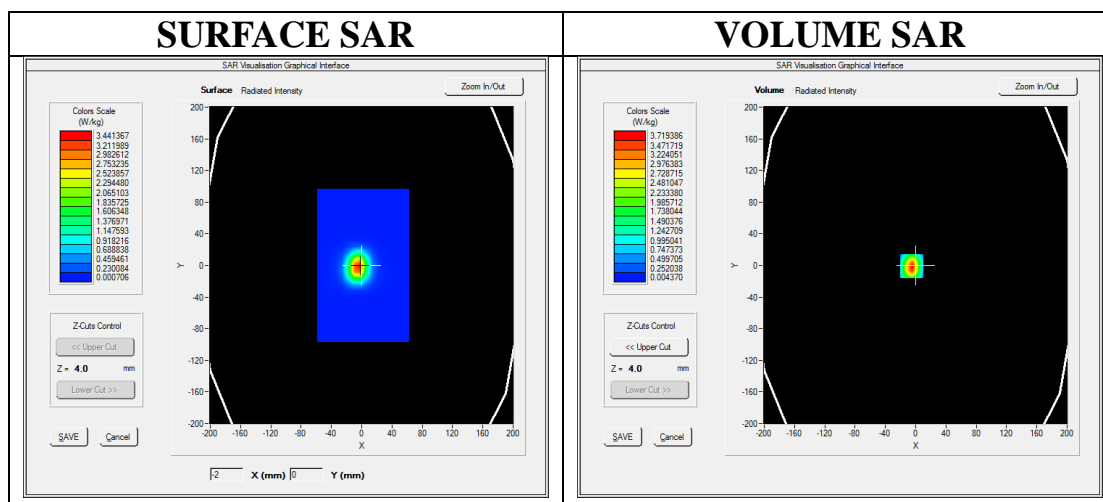
Communication System CW; Communication System Band: D2450 (2450.0 MHz); Duty Cycle: 1:1; Conv.F=5.19
Frequency: 2450 MHz; Medium parameters used: $f = 2450$ MHz; $\sigma = 1.90$ mho/m; $\epsilon_r = 53.27$; $\rho = 1000$ kg/m³ ;
Phantom section: Flat Section; Input Power=18dBm
Ambient temperature (°C):21.8, Liquid temperature (°C): 21.0

SATIMO Configuration

- Probe: SSE5; Calibrated: 07/05/2016 Serial No.: SN 14/16 EP307
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: ELLI39 Phantom
- Measurement SW: OpenSAR V4_02_35

Configuration/System Check 2450MHz Body/Area Scan: Measurement grid: dx=8mm, dy=8mm

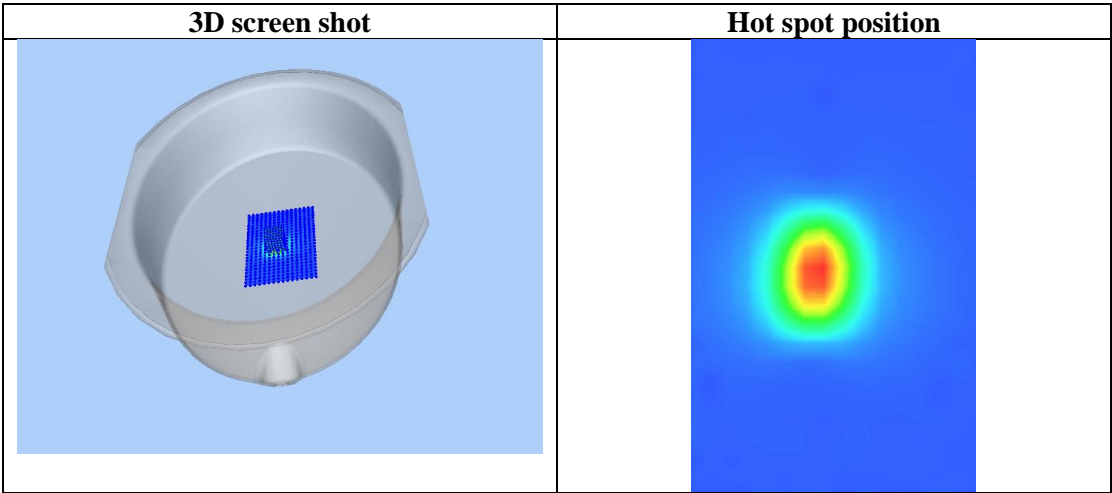
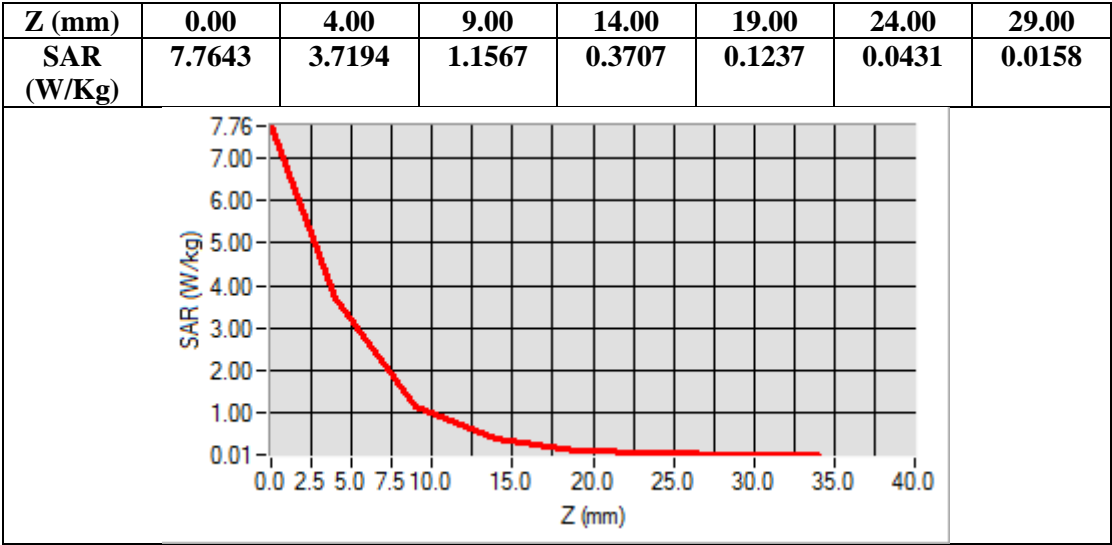
Configuration/System Check 2450MHz Body/Zoom Scan: Measurement grid: dx=5mm,dy=5mm, dz=5mm



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

SAR Peak: 7.59 W/kg

SAR 10g (W/Kg)	1.361254
SAR 1g (W/Kg)	3.410804



APPENDIX B. SAR MEASUREMENT DATA

Test Laboratory: AGC Lab

Date: May 25,2017

GSM 850 Mid- Touch-Right <SIM 1>

DUT: 8 Inch 4G tablet; Type: WG HK22009

Communication System: Generic GSM; Communication System Band: GSM 850; Duty Cycle: 1:8.3; Conv.F=5.67;
Frequency: 836.6 MHz; Medium parameters used: $f = 835$ MHz; $\sigma = 0.91$ mho/m; $\epsilon_r = 41.48$; $\rho = 1000$ kg/m³ ;
Phantom section: Right Section
Ambient temperature (°C): 22.3, Liquid temperature (°C): 21.5

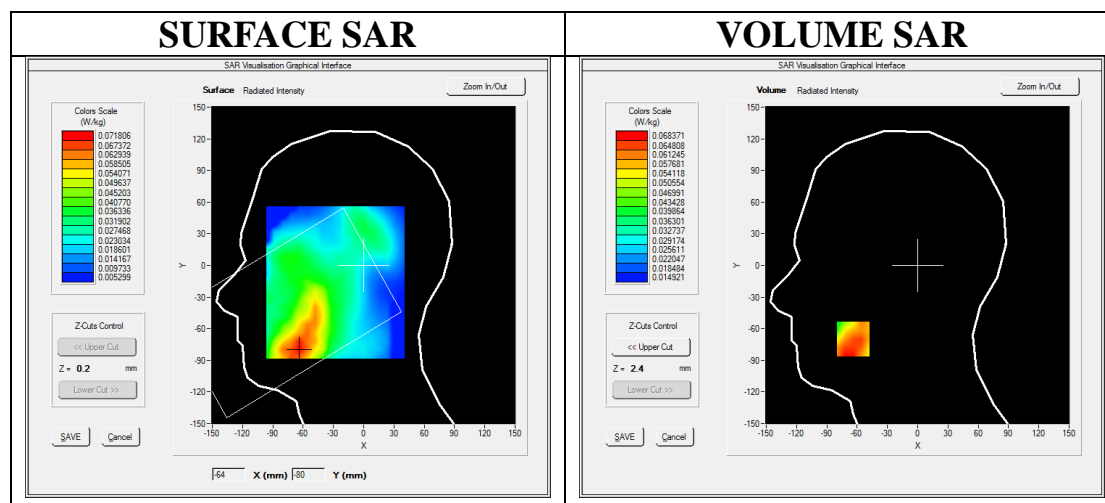
SATIMO Configuration:

- Probe: SSE5; Calibrated: 07/05/2016 Serial No.: SN 14/16 EP307
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: SAM twin phantom
- Measurement SW: OpenSAR V4_02_35

Configuration/GSM 850 Mid-Touch-Right/Area Scan: Measurement grid: dx=8mm, dy=8mm

Configuration/GSM 850 Mid-Touch-Right/Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm;

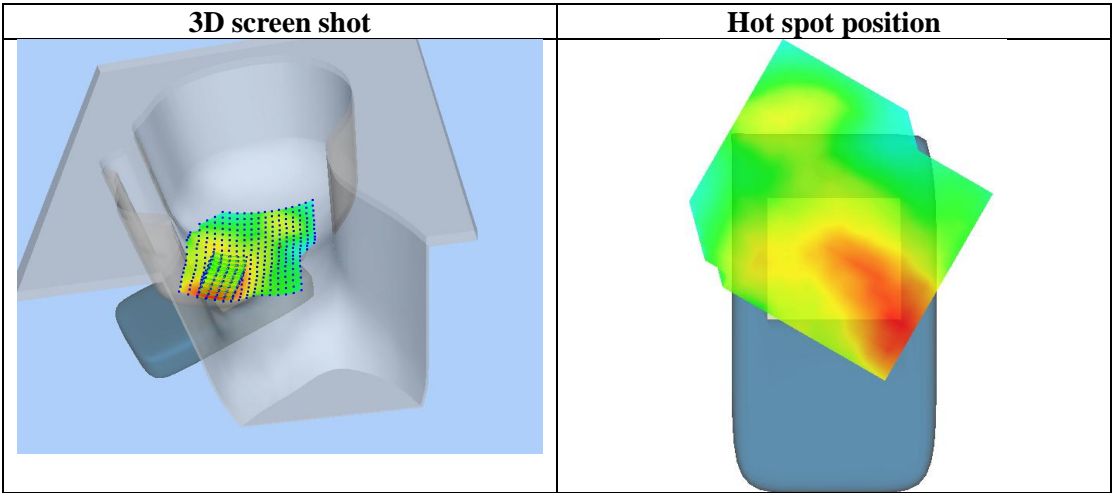
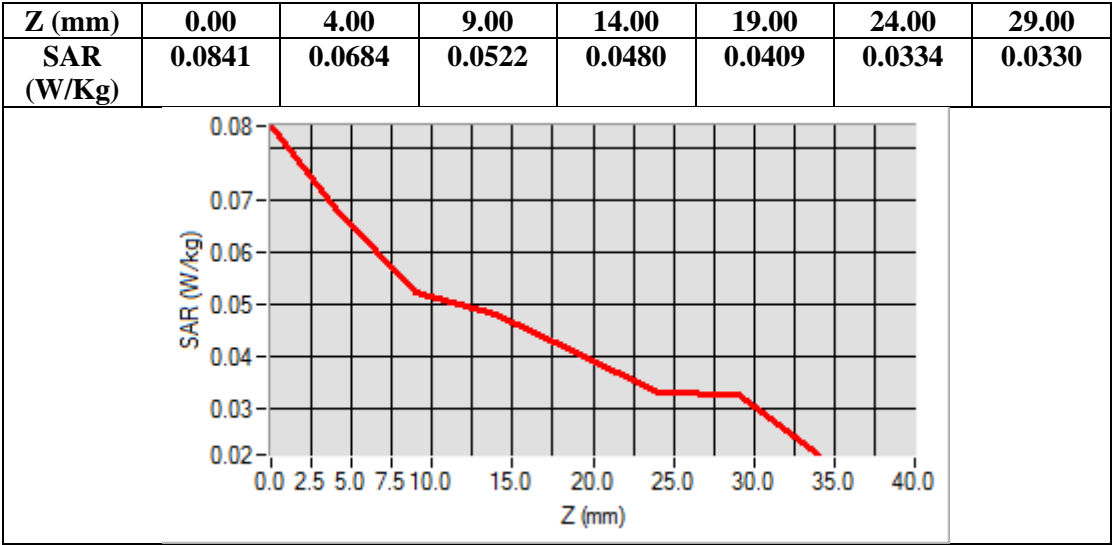
Area Scan	sam_direct_droit2_surf8mm.txt
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Right head
Device Position	Cheek
Band	GSM 850
Channels	Middle
Signal	TDMA (Crest factor: 8.0)



Maximum location: X=-64.00, Y=-70.00

SAR Peak: 0.08 W/kg

SAR 10g (W/Kg)	0.055218
SAR 1g (W/Kg)	0.065959



Test Laboratory: AGC Lab
GSM 850 Mid- Body- Back (MS)<SIM 1>
DUT: 8 Inch 4G tablet; **Type:** WGHK22009

Date: May 25,2017

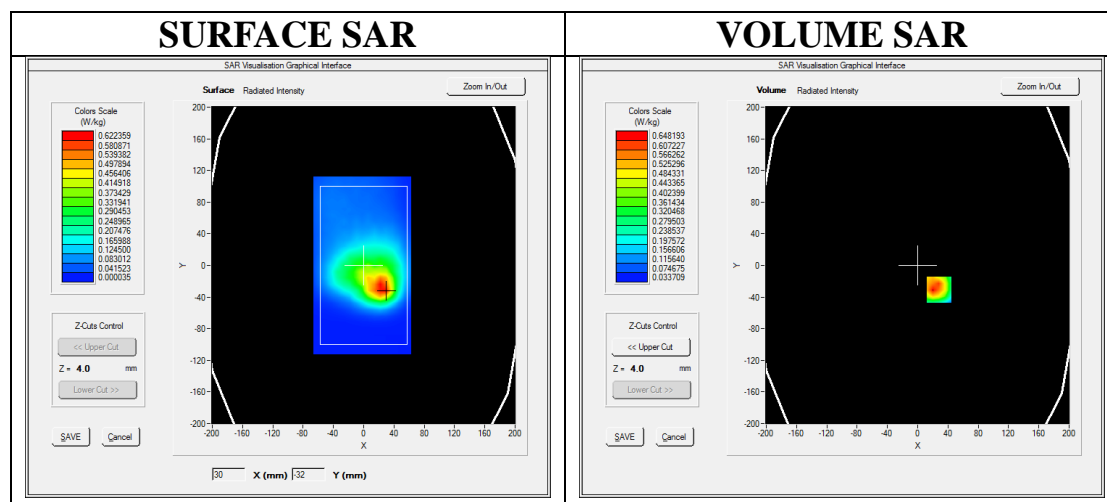
Communication System: Generic GSM; Communication System Band: GSM 850; Duty Cycle: 1:8.3; Conv.F=5.89;
Frequency: 836.6 MHz; Medium parameters used: $f = 835$ MHz; $\sigma = 0.94$ mho/m; $\epsilon_r = 54.89$; $\rho = 1000$ kg/m³ ;
Phantom section: Flat Section
Ambient temperature (°C): 22.3, Liquid temperature (°C): 21.3

SATIMO Configuration:

- Probe: SSE5; Calibrated: 07/05/2016 Serial No.: SN 14/16 EP307
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: ELLI39 Phantom
- Measurement SW: OpenSAR V4_02_35

Configuration/GSM 850 Mid-Body-Back/Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/GSM 850 Mid-Body-Back/Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm;

Area Scan	dx=8mm dy=8mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	ELLI
Device Position	Body Back
Band	GSM 850
Channels	Middle
Signal	TDMA (Crest factor: 8.0)



Maximum location: X=28.00, Y=-31.00

SAR Peak: 0.86 W/kg

SAR 10g (W/Kg)	0.406995
SAR 1g (W/Kg)	0.597005

