# **SAR Test Report**

Report No.: AGC00653150905FH01

FCC ID : 2AFD9UNIVERSAL

**APPLICATION PURPOSE**: Original Equipment

**PRODUCT DESIGNATION**: Tablet PC

**BRAND NAME** : KRONO

**MODEL NAME**: UNIVERSAL

**CLIENT**: MOVEON TECHNOLOGY LIMITED

**DATE OF ISSUE** : Nov. 04,2015

IEEE Std. 1528:2013

**STANDARD(S)** : FCC 47CFR § 2.1093

IEEE/ANSI C95.1:1992

**REPORT VERSION**: V1.0

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

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Page 2 of 139

## **Report Revise Record**

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Nov. 04,2015	Valid	Original Report

Page 3 of 139

Test Report Certification				
Applicant Name MOVEON TECHNOLOGY LIMITED				
Applicant Address World Trade Plaza-A block#3201-3202 Fuhong Road, Futian				
Manufacturer Name	MOVEON TECHNOLOGY LIMITED.			
Manufacturer Address	World Trade Plaza-A block#3201-3202 Fuhong Road, Futian			
Product Designation	Tablet PC			
Brand Name	KRONO			
Model Name	UNIVERSAL			
Different Description	N/A			
EUT Voltage	DC3.7V by battery			
Applicable Standard	IEEE Std. 1528:2013 FCC 47CFR § 2.1093 IEEE/ANSI C95.1:1992			
Test Date	Oct. 22,2015 to Nov. 02,2015			
	Attestation of Global Compliance(Shenzhen) Co., Ltd.			
Performed Location	2 F, Building 2, No.1-No.4, Chaxi Sanwei Technical Industrial Park, Gushu, Xixiang Street, Bao'an District, Shenzhen, China			
Report Template AGCRT-US-4G/SAR (2015-05-01)				

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Page 4 of 139

#### **TABLE OF CONTENTS**

1. SUMMARY OF MAXIMUM SAR VALUE	5
2. GENERAL INFORMATION	6
2.1. EUT Description	6
3. SAR MEASUREMENT SYSTEM	8
3.1. The SATIMO system used for performing compliance tests consists of following items	9
3.3. Robot	
3.5. Device Holder	
3.6. SAM Twin Phantom	11
4. SAR MEASUREMENT PROCEDURE	12
4.1. Specific Absorption Rate (SAR)	12
4.2. SAR Measurement Procedure	
4.3. RF Exposure Conditions	
5. TISSUE SIMULATING LIQUID	
5.1. The composition of the tissue simulating liquid	17 17
5.3. Tissue Calibration Result	
6. SAR SYSTEM CHECK PROCEDURE	22
6.1. SAR System Check Procedures	
6.2. SAR System Check	
7. EUT TEST POSITION	25
7.1. Define Two Imaginary Lines on the Handset	25
7.2. Cheek Position	
7.3. Title Position	
8. SAR EXPOSURE LIMITS	
9. TEST EQUIPMENT LIST	
10. MEASUREMENT UNCERTAINTY	
11. CONDUCTED POWER MEASUREMENT	
12. TEST RESULTS	
12.1. SAR Test Results Summary	
APPENDIX A. SAR SYSTEM CHECK DATA	
APPENDIX B. SAR MEASUREMENT DATA	
APPENDIX C. TEST SETUP PHOTOGRAPHS &EUT PHOTOGRAPHS	
APPENDIX D. CALIBRATION DATA	139

Page 5 of 139

#### 1. SUMMARY OF MAXIMUM SAR VALUE

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

Eraguanay Pand	Highest Reported 1g-SAR(W/Kg)			
Frequency Band	Head	Body-worn(with 10mm separation)		
GSM 850	0.053	0.879		
PCS 1900	0.086	0.493		
UMTS Band II	0.154	1.152		
UMTS Band V	0.061	0.625		
LTE Band IV	0.399	0.955		
LTE Band VII	0.110	1.099		
WIFI 2.4G	0.214	0.415		
Simultaneous Reported SAR		1.567		

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 C95.1:1992 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 100 MHz to 6 GHz v01r04
- KDB 941225 D01 3G SAR Procedures v03r01
- KDB 248227 D01 802.11 Wi-Fi SAR v02r02
- KDB 941225 D05 SAR for LTE Devices v02r04
- KDB 616217 D04 SAR for laptop and tablets v01r02

Page 6 of 139

# 2. GENERAL INFORMATION

2.1. EUT Description

2.1. EUT Description				
General Information				
Product Designation	Tablet PC			
Test Model	UNIVERSAL			
Hardware Version	W706BF_V2			
Software Version	Android 5.1			
Device Category	Portable			
RF Exposure Environment	Uncontrolled			
Antenna Type	Internal			
GSM and GPRS&EGPRS				
Support Band	⊠GSM 850 ⊠PCS 1900 ⊠GSM 900 ⊠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	-1.0dBi			
Max. Average Power (Max. Peak Power)  GSM850: 31.12dBm(32.52dBm); PCS1900: 28.21dBm(29.54dBm)				
WCDMA				
Support Band	☑UMTS FDD Band II ☑UMTS FDD Band V ☐UMTS FDD Band IV ☑UMTS FDD Band I ☐UMTS FDD Band III ☐UMTS FDD Band VIII			
HS Type	HSPA(HSUPA/HSDPA)			
TX Frequency Range	WCDMA FDD Band II: 1850 -1910MHz; WCDMA FDD Band V: 820-850MHz			
RX Frequency Range	WCDMA FDD Band II: 1930-1990MHz WCDMA FDD Band V: 869-894MHz			
Release Version Rel-6				
Type of modulation	HSDPA:QPSK/16QAM; HSUPA:BPSK; WCDMA:QPSK			
Antenna Gain	-1.0dBi			
Max. Average Power (Max. Peak Power)	Band II: 21.41dBm (23.48dBm); Band V: 21.31dBm (23.51dBm)			

Page 7 of 139

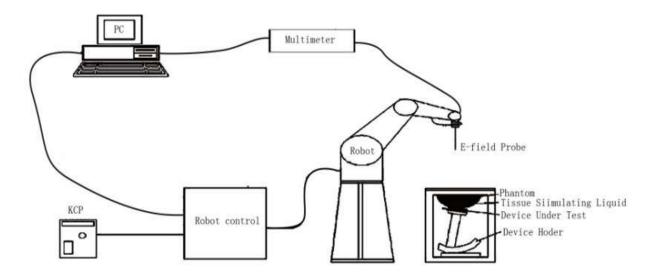
**EUT Description( Continue)** 

	-1		
LTE			
Support Band	⊠Band IV 1700MHz ⊠Band VII2600MHz		
TX Frequency Range	Band IV: 1710-1755 MHz; Band VII:2500-2570 MHz;		
RX Frequency Range	Band IV: 2110-2155 MHz; Band VII:2620-2690 MHz;		
Release Version	Rel-8		
Type of modulation	QPSK, 16QAM		
Antenna Gain	-0.7dBi(LTE Band IV), -1.0dBi(LTE Band VII)		
Max. Average Power (Max. Peak Power)	Band IV: 23.53dBm;Band VII: 21.75dBm		
Bluetooth			
Bluetooth Version	□V2.0         □V2.1         □V2.1+EDR         □V3.0         □V3.0+HS         □V4.0		
Operation Frequency	2402~2480MHz		
Type of modulation	⊠GFSK ⊠∏/4-DQPSK ⊠8-DPSK		
Avg. Burst Power	2.65dBm		
Antenna Gain	0.8dBi		
WIFI			
WIFI Specification	□802.11a ⊠802.11b ⊠802.11g ⊠802.11n(20) ⊠802.11n(40)		
Operation Frequency	2412~2462MHz		
Avg. Burst Power	11b:10.84dBm,11g:9.73dBm,11n(20):9.32dBm,11n(40):7.43dBm		
Antenna Gain	0.8dBi		
Accessories			
Battery	Brand name: SJY Model No.: 356593 Voltage and Capacitance: 3.7 V & 3000mAh		
Adapter	Brand name: N/O Model No. : DM050200-5V Input: AC 100-240V, 50/60Hz, 0.5A Output: DC 5V, 2000mA		
Earphone	Brand name: N/A Model No. : N/A		
Note: CMU200 can measu	re the average power and Peak power at the same time		
Product	Туре		
i ioduct	Production unit		

Page 8 of 139

#### 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.

Page 9 of 139

#### 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 19/15 EP254			
Frequency	0.3GHz-3GHz Linearity:±0.12dB(300MHz-3GHz)			
Dynamic Range	0.01W/Kg-100W/Kg Linearity:±0.12dB			
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

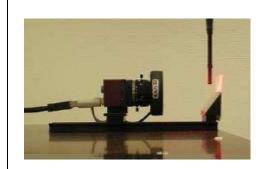
Page 10 of 139

#### 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.

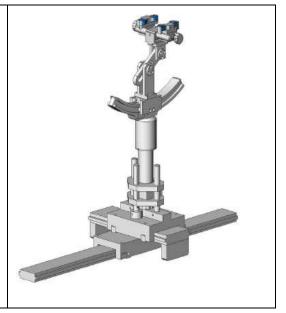
The repeatability of this process is better than 0.1 mm. If a position has been taught with an aligned probe, the same position will be reached with another aligned probe within 0.1 mm, even if the other probe has different dimensions. During probe rotations, the probe tip will keep its actual position.



#### 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.



Page 11 of 139

#### 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.

Page 12 of 139

#### 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 ( $\rho$ ). 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:

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

$$SAR = c_h \frac{dT}{dt}\Big|_{t=0}$$

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;  $\sigma$  is the conductivity of the tissue in siemens per metre;  $\rho$  is the density of the tissue in kilograms per cubic metre;

ch is the heat capacity of the tissue in joules per kilogram and Kelvin;

 $\frac{dT}{dt} \mid t=0 \quad \text{is the initial time derivative of temperature in the tissue in kelvins per second}$ 

Page 13 of 139

#### 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

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 ± 1 mm	½·δ·ln(2) ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	30° ± 1°	20° ± 1°
	≤2 GHz: ≤15 mm 2 – 3 GHz: ≤12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
Maximum area scan spatial resolution: $\Delta x_{Area}$ , $\Delta y_{Area}$	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.

Page 14 of 139

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

Maximum zoom scan spatial resolution: Δx <sub>Zoom</sub> , Δy <sub>Zoom</sub>			≤ 2 GHz: ≤ 8 mm 2 - 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
	uniform grid: Δz <sub>Zoom</sub> (n)		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
Maximum zoom scan spatial resolution, normal to phantom surface	$\begin{array}{c} \Delta z_{Z00m}(1)\text{: between} \\ 1^{\text{st}} \text{ two points closest} \\ \text{to phantom surface} \\ \\ \Delta z_{Z00m}(n > 1)\text{:} \\ \text{between subsequent} \\ \text{points} \end{array}$	1 <sup>st</sup> two points closest	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		≤ 1.5·Δz	Zoom(n-1)	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm

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

#### 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.

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

Page 15 of 139

#### 4.3. RF Exposure Conditions

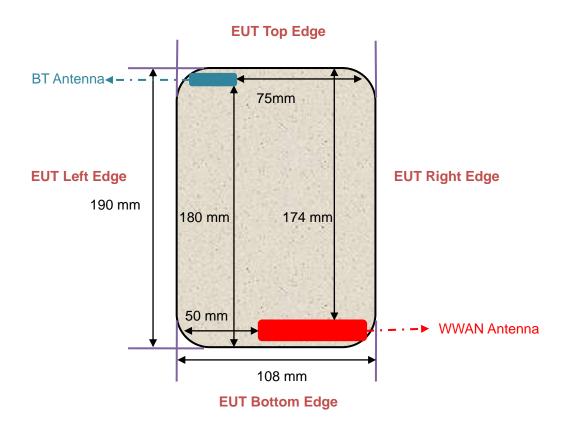
Test Configuration and setting:

The EUT is a model of GSM Portable Mobile Station (MS). It supports GSM/GPRS/EGPRS, WCDMA/HSPA, LTE, BT, WIFI, and support hotspot 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: (front view)**



Page 16 of 139

#### 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		
Edge 1 (Top)	174	No		
Edge 2 (Right)	3	Yes		
Edge 3 (Bottom)	2	Yes		
Edge 4 (Left)	50	No		

#### 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	
Edge 1 (Top)	2	Yes	
Edge 2 (Right)	75	No	
Edge 3 (Bottom)	180	No	
Edge 4 (Left)	3	Yes	

Page 17 of 139

#### 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 4.2

5.1. The composition of the tissue simulating liquid

Ingredient	Water	Salt	Sugar	HEC	Preventol	DGBE	TWEEN	Triton X-100
835MHz Head	√	√	√	√	√			
835MHz Body	<b>√</b>	√	√	√	√			
1750MHz Head	√	√				√		
1750MHz Body	√	√				√		
1900MHz Head	√	√				√		
1900MHz Body	√	√	√	√	√			
2600MHz Head	√	√				√		
2600MHz Body	√	√				√		
2450MHz Head	√	√						
2450MHz Body	√	√				√		

#### 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	he	ad	body		
(MHz)	εr	σ (S/m)	εr	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	
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	

( $\epsilon r$  = relative permittivity,  $\sigma$  = conductivity and  $\rho$  = 1000 kg/m3)

Report No.: AGC00653150905FH01 Page 18 of 139

Target Frequency	he	ad	body		
(MHz)	εr	σ (S/m)	εr	σ (S/m)	
2600	39.00	1.96	52.5	2.16	
1750	40.1	0.90	53.4	1.49	

 $(\epsilon r = relative permittivity, \sigma = conductivity and \rho = 1000 kg/m3)$ 

Page 19 of 139

#### 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 835MHz								
	Fr.	Dielectric Par	Tissue						
	(MHz)	εr 41.5 (39.425-43.575)	δ[s/m] 0.90(0.855-0.945)	Temp [°C]	Test time				
	824.2	42.87	0.86						
Head	826.4	42.16	0.88		Oct. 22,2015				
	835	42.00	0.89	22.2					
	836.6	41.59	0.90	22.3					
	846.6	41.17	0.92						
	848.8	40.97	0.92						
	Fr.	Dielectric Par	Tissue	Test time					
	(MHz)	er 55.20(52.44-57-96)	δ[s/m]0.97(0.9215-1.0185)	Temp [°C]	1651 11116				
	824.2	56.43	0.94						
Pody	826.4	56.07	0.94						
Body	835	55.71	0.96	22.3	Oct 22 2015				
	836.6	55.19	0.97	22.3	Oct. 22,2015				
	846.6	54.57	0.98						
	848.8	53.83	0.99						

Tissue Stimulant Measurement for 1750MHz								
	Fr.	Dielectric Par	ameters (±5%)	Tissue				
	(MHz)	εr 40.1 (38.095-42.105) δ[s/m] 0.90(0.855-0.945)		Temp [°C]	Test time			
Head	1720	41.60	0.87					
	1732.5	40.76	0.88	21.4	Oct. 31,2015			
	1745	40.03	0.90	21. <del>4</del>	Oct. 31,2013			
	1750	39.78	0.91					
	Fr.	Dielectric Par	Tissue	Test time				
	(MHz)	εr 53.4(50.73-56.07)	δ[s/m] 1.49(1.4155-1.5645)	Temp [°C]	rest time			
Darde	1720	54.61	1.45					
Body	1732.5	54.03	1.46	21.7	Oct. 31,2015			
	1745	53.86	1.50	۷۱./	Oct. 31,2015			
	1750	53.12	1.54					

Page 20 of 139

Tissue Stimulant Measurement for 1900MHz								
Fr.		Dielectric Par	Tissue					
	(MHz)	εr40.00(38.00-42.00)	δ[s/m]1.40(1.33-1.47)	Temp [°C]	Test time			
	1850.2	40.86	1.36					
Head	1852.4	40.07	1.37		Ort. 26 2045			
	1880	39.90	1.40	04.0				
	1900 39.64		1.42	21.8	Oct. 26,2015			
	1907.6	39.52	1.43					
	1909.8	39.41	1.43					
	Fr.	Dielectric Par	Tissue	Test time				
	(MHz)	εr53.30(50.635-55.965)	δ[s/m]1.52(1.444-1.596)	Temp [°C]	rest time			
	1850.2	54.18	1.46					
Dodu	1852.4	54.00	1.49					
Body	1880	53.69	1.52	21.5	Oct 26 2015			
	1900	53.26	1.54	21.5	Oct. 26,2015			
	1907.6	52.47	1.55					
	1909.8	52.06	1.57					

	Tissue Stimulant Measurement for 2600MHz								
	Fr.	Dielectric Par	ameters (±5%)	Tissue					
	(MHz)	εr 39.0 37.05-40.95			Test time				
Head	2510	40.12	1.89						
	2535	39.74	1.92	21.9	Oct. 29,2015				
	2560	38.78	1.97						
	2600	38.23	2.00						
	Fr.	Dielectric Par	Tissue	Test time					
	(MHz)	εr 52.5(49.875-55.125)	δ[s/m] 2.16(2.052-2.268)	Temp [°C]	rest ume				
Dooby	2510	53.09	2.10						
Body	2535	52.86	2.14	24.0	Oct. 29,2015				
	2560	52.13	2.15	21.8	001. 29,2015				
	2600	51.95	2.18						

Page 21 of 139

	Tissue Stimulant Measurement for 2450MHz								
	Fr.	Dielectric Par	ameters (±5%)	Tissue					
	(MHz)	εr39.2(37.24-41.16) δ[s/m]1.80(1.71-1.89)		Temp [°C]	Test time				
Head	2412	40.98	1.74						
	2437	40.88	1.75	21.9	Nov. 02,2015				
	2450	40.84	1.77						
	2462	39.66	1.82						
	Fr.	Dielectric Par	Tissue	Test time					
	(MHz)	er52.7(50.065-55.335)	δ[s/m]1.95(1.8525-2.0475)	Temp [°C]	rest time				
Dody	2412	54.26	1.87						
Body	2437	53.98	1.90	21.7	Nov. 02 2015				
	2450	53.47	1.91	21.7	Nov. 02,2015				
	2462	52.61	1.94						

Page 22 of 139

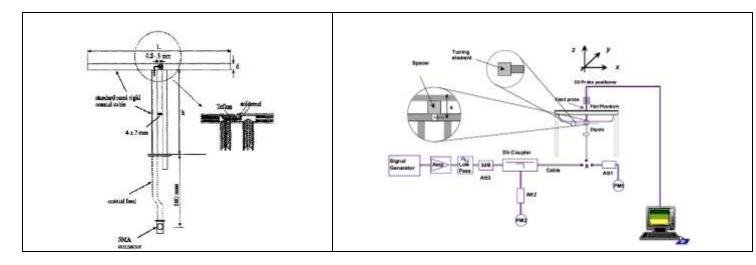
#### 6. SAR SYSTEM CHECK PROCEDURE

#### 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.

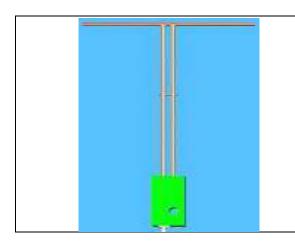
Each SATIMO system is equipped with one or more system check kits. These units, together with the predefined measurement procedures within the SATIMO software, enable the user to conduct the system check and system validation. System kit includes a dipole, and dipole device holder.

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.



Page 23 of 139

# **6.2. SAR System Check 6.2.1. Dipoles**



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.

Frequency	L (mm)	h (mm)	d (mm)
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
2600MHz	48.5	28.8	3.6

Page 24 of 139

# 6.2.2. System Check Result

System Per	System Performance Check at 835MHz &1750MHz &1900MHz &2450MHz &2600Mhz for Head								
Validation Kit: SN 46/11DIP 0G835-190 & SN 46/11DIP 1G800-186 & SN 46/11DIP 1G900-187 & SN 46/11DIP 2G450-189 &SN47/14 DIP 2G600-342									
Frequency [MHz]	Target Value(W/Kg)		Reference Result (± 10%)		Tested Value(W/Kg)		Tissue Temp.	Test time	
[1411 12]	1g	10g	1g	10g	1g	10g	[°C]		
835	9.60	6.20	8.64-10.56	5.58-6.82	10.060	6.402	22.3	Oct. 22,2015	
1800	38.17	19.98	34.353-41.987	17.982-21.978	35.321	19.193	21.4	Oct. 31,2015	
1900	39.65	20.24	35.685-43.615	18.216-22.264	42.823	21.396	21.8	Oct. 26,2015	
2450	54.40	23.75	48.96-59.84	21.34-26.13	53.918	24.679	21.9	Nov. 02,2015	
2600	55.48	24.49	49.932-61.028	22.041-26.939	51.025	25.280	21.9	Oct. 29,2015	
System Per	formance	Check at	835MHz &175	0MHz &1900MHz	2 &2450MH	z &2600MI	Hz for Body	/	
Frequency		get W/Kg)	Reference Result (± 10%)			sted W/Kg)	Tissue Temp.	Test time	
[MHz]	1g	10g	1g	10g	1g	10g	[°C]		
835	9.90	6.39	8.91-10.89	5.75-7.03	10.361	6.564	22.3	Oct. 22,2015	
1800	38.28	20.89	34.452-42.108	18.801-22.979	38.569	21.044	21.7	Oct. 31,2015	
1900	40.74	21.43	36.666-44.814	19.287-23.573	43.472	21.624	21.5	Oct. 26,2015	
2450	54.19	24.96	48.77-59.61	22.46-27.46	57.771	26.439	21.7	Nov. 02,2015	
2600	52.19	23.58	46.971-57.409	21.222-25.938	49.466	24.482	21.8	Oct. 29,2015	

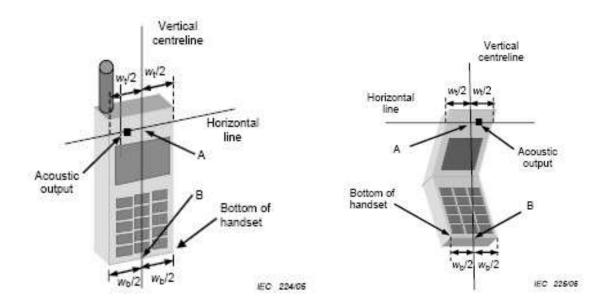
Page 25 of 139

#### 7. EUT TEST POSITION

This EUT was tested in Right Cheek, Right Titled, Left Cheek, Left Titled, Body back and 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 wt of the handset at the level of the acoustic output, and the midpoint of the width wb 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.

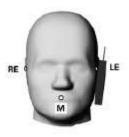


Page 26 of 139

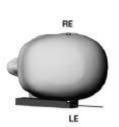
#### 7.2. Cheek Position

(1) To position the device with the vertical center line of the body of the device and the horizontal line crossing the center picec 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





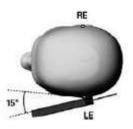


#### 7.3. Title Position

- (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.



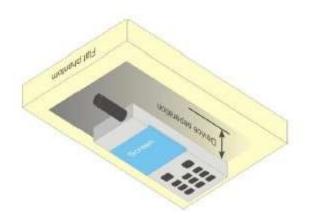


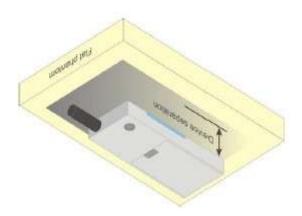


Page 27 of 139

### 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 surface and the flat phantom to 0mm.





Page 28 of 139

#### 8. SAR EXPOSURE LIMITS

SAR assessments have been made in line with the requirements of IEEE-1528, and comply with ANSI/IEEE C95.1-1992 "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

Page 29 of 139

### 9. TEST EQUIPMENT LIST

Equipment description	Manufacturer/ Model	Identification No.	Current calibration date	Next calibration date
SAR Probe	MVG	SN 19/15 EP254	07/10/2015	07/09/2016
TISSUE Probe	SATIMO	SN 45/11 OCPG45	12/03/2014	12/02/2015
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	R&S - CMU200	069Y7-158-13-712	03/06/2015	03/05/2016
Comm Tester	R&S- CMW500	S/N120909	10/19/2015	10/18/2016
Comm Tester	Agilent-8960	GB46310822	03/06/2015	03/05/2016
Multimeter	Keithley 2000	1188656	03/06/2015	03/05/2016
Dipole	SATIMO SID835	SN46/11 DIP 0G835-190	10/02/2014	10/01/2017
Dipole	SATIMO SID1800	SN46/11 DIP 1G800-186	11/14/2013	11/13/2016
Dipole	SATIMO SID1900	SN46/11 DIP 1G900-187	11/14/2013	11/13/2016
Dipole	SATIMO SID2450	SN46/11 DIP 2G450-189	11/14/2013	11/13/2016
Dipole	SATIMO SID2600	SN47/14 DIP 2G600-342	12/03/2014	12/03/2017
Signal Generator	Agilent-E4438C	MY44260051	03/06/2015	03/05/2016
Spectrum Analyzer E4440	Agilent	US41421290	07/23/2015	07/22/2016
Network Analyzer	Rhode & Schwarz ZVL6	SN100132	03/06/2015	03/05/2016
Attenuator	Warison /WATT-6SR1211	N/A	N/A	N/A
Attenuator	Mini-circuits / VAT-10+	N/A	N/A	N/A
Amplifier	EM30180	SN060552	03/06/2015	03/05/2016
Directional Couple	Werlatone/ C5571-10	SN99463	07/29/2015	07/28/2016
Directional Couple	Werlatone/ C6026-10	SN99482	07/29/2015	07/28/2016
Power Sensor	NRP-Z21	1137.6000.02	10/20/2015	10/19/2016
Power Sensor	NRP-Z23	US38261498	03/06/2015	03/05/2016
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  $5\Omega$  of calibrated measurement.

Page 30 of 139

### 10. MEASUREMENT UNCERTAINTY

IU. MEASUREMENT UNCERTAINTY									
SATIMO Uncertainty									
Measurement uncertainty for 300 MHz to 3 GHz averaged over 1 gram / 10 gram.									
Uncertainty Component	Sec.	Tol	Prob.	Div.	Ci (1g)	Ci	1g Ui	10g Ui	Vi
		(+- %)	Dist.			(10g)	(+-%)	(+-%)	
Measurement System	<b>5</b> 04	7.0			1 4		0.00	0.00	1
Probe calibration	E.2.1	7.0	N	1	1	1	6.98	6.98	∞
Axial Isotropy	E.2.2	2.5	R	$\sqrt{3}$	1	1	1.16	1.16	∞
Hemispherical Isotropy	E.2.2	4.0	R	√3	1	1	2.33	2.33	∞
Boundary effect	E.2.3	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	$\infty$
Linearity	E.2.4	5.0	R	$\sqrt{3}$	1	1	2.87	2.87	∞
System detection limits	E.2.5	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	$\infty$
Readout Electronics	E.2.6	0.02	N	1	1	1	0.03	0.03	∞
Response Time	E.2.7	3.0	R	$\sqrt{3}$	1	1	1.70	1.70	∞
Integration Time	E.2.8	2.0	R	$\sqrt{3}$	1	1	1.16	1.16	8
RF ambient Conditions	E.6.1	3.0	R	$\sqrt{3}$	1	1	1.71	1.71	∞
Probe positioner Mechanical Tolerance	E.6.2	2.0	R	√3	1	1	1.15	1.15	<sub>∞</sub>
Probe positioning with respect to Phantom Shell	E.6.3	0.05	R	$\sqrt{3}$	1	1	0.03	0.03	∞
Extrapolation, interpolation and integration Algoritms for Max. SAR Evaluation	E.5.2	5.0	R	√3	1	1	2.91	2.91	∞
Test sample Related							l.	l .	l
Test sample positioning	E.4.2.1	0.03	N	1	1	1	0.05	0.05	N-1
Device Holder Uncertainty	E.4.1.1	5.00	N	1	1	1	4.95	4.95	$\infty$
Output power Variation - SAR drift measurement	6.6.2	0.65	R	$\sqrt{3}$	1	1	0.36	0.36	∞
Phantom and Tissue Para	meters								
Phantom Uncertainty (Shape and thickness tolerances)	E.3.1	0.05	R	$\sqrt{3}$	1	1	0.02	0.02	<sub>∞</sub>
Liquid conductivity deviation from target value	E.3.2	5.00	R	√3	0.64	0.43	1.83	1.23	8
Liquid conductivity - measurement uncertainty	E.3.3	5.00	N	1	0.64	0.43	3.18	2.14	∞
Liquid permittivity - deviation from target value	E.3.2	0.03	R	√3	0.6	0.49	0.01	0.01	8
Liquid permittivity - measurement uncertainty	E.3.3	10.00	N	1	0.6	0.49	6.06	4.95	М
Combined Standard Uncertainty			RSS				11.17	10.63	∞
Expanded Uncertainty (95% Confidence interval)			k				22.34	21.26	

Page 31 of 139

SATIMO Uncertainty									
System uncertainty for 300 MHz to 3 GHz averaged over 1 gram / 10 gram.									
Uncertainty Component	Sec.	Tol (+- %)	Prob. Dist.	Div.	Ci (1g)	Ci (10g)	1g Ui (+-%)	10g Ui (+-%)	Vi
Measurement System	Measurement System								
Probe calibration	E.2.1	7.0	N	1	1	1	6.98	6.98	∞
Axial Isotropy	E.2.2	2.5	R	$\sqrt{3}$	1	1	1.16	1.16	$\infty$
Hemispherical Isotropy	E.2.2	4.0	R	$\sqrt{3}$	1	1	2.33	2.33	∞
Boundary Effects	E.2.3	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Linearity	E.2.4	5.0	R	$\sqrt{3}$	1	1	2.87	2.87	∞
System detection limits	E.2.5	1.0	R	√3	1	1	0.58	0.58	∞
Readout Electronics	E.2.6	0.02	N	1	1	1	0.03	0.03	∞
Response Time	E.2.7	3.0	R	√3	1	1	1.70	1.70	∞
Integration Time	E.2.8	2.0	R	√3	1	1	1.16	1.16	∞
RF ambient Conditions	E.6.1	3.0	R	$\sqrt{3}$	1	1	1.71	1.71	∞
Probe positioner Mechanical Tolerance	E.6.2	2.0	R	√3	1	1	1.15	1.15	∞
Probe positioning with respect to Phantom Shell	E.6.3	0.05	R	$\sqrt{3}$	1	1	0.03	0.03	∞
Extrapolation, interpolation and integration Algoritms for Max. SAR Evaluation	E.5.2	5.0	R	√3	1	1	2.91	2.91	<sub>∞</sub>
Dipole				I					
Dipole axis to liquid Distance	8,E.4.2	1.00	N	$\sqrt{3}$	1	1	0.55	0.55	N-1
Input power and SAR drift measurement	8,6.6.2	0.65	R	$\sqrt{3}$	1	1	0.36	0.36	∞
Phantom and Tissue Parar	neters			<u>l</u>	l .		<u>I</u>	<u>I</u>	l
Phantom Uncertainty (Shape and thickness tolerances)	E.3.1	0.05	R	$\sqrt{3}$	1	1	0.02	0.02	∞
Liquid conductivity - deviation from target value	E.3.2	5.00	R	$\sqrt{3}$	0.64	0.43	1.83	1.23	∞
Liquid conductivity - measurement uncertainty	E.3.3	5.00	N	1	0.64	0.43	3.18	2.14	∞
Liquid permittivity -	E.3.2	0.03	R	$\sqrt{3}$	0.6	0.49	0.01	0.01	∞
deviation from target value Liquid permittivity -	E.3.3	10.00	N	1	0.6	0.49	6.06	4.95	М
measurement uncertainty	⊑.ა.ა	10.00	IN	ı	0.0	0.48	0.00	4.90	IVI
Combined Standard Uncertainty			RSS				10.03	9.42	
Expanded Uncertainty (95% Confidence interval)			k				20.05	18.85	

Page 32 of 139

# 11. CONDUCTED POWER MEASUREMENT GSM BAND

Mode	Frequency(MHz)	Avg. Burst Power(dBm)	Duty cycle Factor(dBm)	Frame Power(dBm)	
Maximum Power <1>					
	824.2	31.12	-9	22.12	
GSM 850	836.6	31.09	-9	22.09	
	848.8	31.06	-9	22.06	
GPRS 850	824.2	30.57	-9	21.57	
(1 Slot)	836.6	30.54	-9	21.54	
(1001)	848.8	30.51	-9	21.51	
GPRS 850	824.2	28.32	-6	22.32	
(2 Slot)	836.6	28.27	-6	22.27	
(2 0101)	848.8	28.22	-6	22.22	
000000	824.2	26.29	-4.26	22.03	
GPRS850 (3 Slot)	836.6	26.24	-4.26	21.98	
(3 300)	848.8	26.18	-4.26	21.92	
0000000	824.2	25.26	-3	22.26	
GPRS 850 (4 Slot)	836.6	25.24	-3	22.24	
(4 301)	848.8	25.21	-3	22.21	
50000.000	824.2	26.71	-9	17.71	
EGPRS 850 (1 Slot)	836.6	26.67	-9	17.67	
(1 300)	848.8	26.64	-9	17.64	
50000.000	824.2	22.15	-6	16.15	
EGPRS 850 (2 Slot)	836.6	22.12	-6	16.12	
(2 3101)	848.8	22.11	-6	16.11	
	824.2	21.49	-4.26	17.23	
EGPRS 850 (3 Slot)	836.6	21.38	-4.26	17.12	
(3 3101)	848.8	21.34	-4.26	17.08	
	824.2	20.32	-3	17.32	
EGPRS 850	836.6	20.25	-3	17.25	
(4 Slot)	848.8	20.21	-3	17.21	

Page 33 of 139

#### **GSM BAND CONTINUE**

Mode	Frequency(MHz)	Avg. Burst Power(dBm)	Duty cycle Factor(dBm)	Frame Power(dBm)
	1850.2	28.21	-9	19.21
PCS1900	1880	28.15	-9	19.15
	1909.8	28.12	-9	19.12
00001000	1850.2	27.67	-9	18.67
GPRS1900 (1 Slot)	1880	27.62	-9	18.62
(1 300)	1909.8	27.52	-9	18.52
00001000	1850.2	25.33	-6	19.33
GPRS1900 (2 Slot)	1880	25.31	-6	19.31
(2 0101)	1909.8	25.28	-6	19.28
00004000	1850.2	23.38	-4.26	19.12
GPRS1900 (3 Slot)	1880	23.27	-4.26	19.01
(3 0101)	1909.8	23.24	-4.26	18.98
ODD04000	1850.2	22.31	-3	19.31
GPRS1900 (4 Slot)	1880	22.25	-3	19.25
(4 0101)	1909.8	22.22	-3	19.22
ECDD04000	1850.2	25.26	-9	16.26
EGPRS1900 (1 Slot)	1880	25.31	-9	16.31
(1000)	1909.8	25.37	-9	16.37
ECDB04000	1850.2	22.72	-6	16.72
EGPRS1900 (2 Slot)	1880	23.64	-6	17.64
(2 0101)	1909.8	22.75	-6	16.75
EGPRS1900	1850.2	22.42	-4.26	18.16
(3 Slot)	1880	22.45	-4.26	18.19
(3 0101)	1909.8	22.51	-4.26	18.25
ECDD04000	1850.2	20.02	-3	17.02
EGPRS1900 (4 Slot)	1880	20.15	-3	17.15
	1909.8	20.16	-3	17.16
Maximum Power <2>				
GSM 850	836.6	30.89	-9	21.89
PCS1900	1880	27.95	-9	18.95

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

Page 34 of 139

#### **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:

Set Gain Factors(βc and βd) parameters set according to each

Specific sub-test in the following table.C10.1.4.quoted from the TS34.121

Set RMC 12.2Kbps + HSDPA mode

Set Cell Power=-86dBm

Set HS-DSCH Configuration Type to FRC (H-set 1, QPSK)

Select HSDPA Uplink Parameters

Set Delta ACK, Delta NACK and Delta CQI=8

Set Ack-Nack Repetition Factor to 3

Set CQI Feedback Cycle (k) to 4ms

Set CQI Repetition Factor to 2

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	βc (Note5)	βd	βd (SF)	βc/βd	βHS (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:  $\triangle$ ACK,  $\triangle$ NACK and  $\triangle$ 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,  $\triangle$ ACK

and  $\triangle NACK = 30/15$  with  $\beta_{hs} = 30/15 * \beta_c$ , and  $\triangle CQI = 24/15$  with  $\beta_{hs} = 24/15 * \beta_c$ .

Note 3: CM = 1 for  $\beta c/\beta d$  =12/15, hs/ 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 c/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 c = 11/15 and d = 15/15.

Page 35 of 139

#### **HSUPA Setup Configuration:**

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

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

Sub-t est	βс	βd	βd (SF)	βc/βd	βHS (Note1	βес	βed (Note 4) (Note 5)	βed (SF )	βed (Codes )	CM (dB) (Note 2)	MPR (dB) (Note 2) (Note 6)	AG Index (Note 5)	E-TF Cl
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/22 5	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	βed1: 47/15 βed2: 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,  $\triangle$ ACK,  $\triangle$ NACK and  $\triangle$ CQI = 30/15 with  $\beta_{hs} = 30/15 * \beta_c$ . For sub-test 5,  $\triangle$ ACK,  $\triangle$ NACK

and  $\Delta$ CQI = 5/15 with  $\beta_{hs} = 5/15 * \beta_c$ .

Note 2: CM = 1 for  $\beta c/\beta d$  =12/15, hs/ 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 c/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 c = 10/15 and 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: βed can not 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.

Page 36 of 139

#### **UMTS BAND II**

Mode	Frequency (MHz)	Avg. Burst Power (dBm)
WODAA 4000	1852.4	21.41
WCDMA 1900	1880	21.38
RMC	1907.6	21.32
WODMA 4000	1852.4	21.21
WCDMA 1900	1880	21.18
AMR	1907.6	21.15
LICDDA	1852.4	20.21
HSDPA	1880	20.18
Subtest 1	1907.6	20.15
LICDDA	1852.4	20.32
HSDPA	1880	20.31
Subtest 2	1907.6	20.25
LICDDA	1852.4	20.37
HSDPA	1880	20.33
Subtest 3	1907.6	20.31
LICDDA	1852.4	20.25
HSDPA	1880	20.21
Subtest 4	1907.6	20.27
LICLIDA	1852.4	20.26
HSUPA	1880	20.19
Subtest 1	1907.6	20.21
LICLIDA	1852.4	20.22
HSUPA	1880	20.32
Subtest 2	1907.6	20.27
LICLIDA	1852.4	20.31
HSUPA	1880	20.26
Subtest 3	1907.6	20.31
LICLIDA	1852.4	20.35
HSUPA Subtest 4	1880	20.32
Sublest 4	1907.6	20.26
LICLIDA	1852.4	20.32
HSUPA	1880	20.39
Subtest 5	1907.6	20.27

Page 37 of 139

# **UMTS BAND V**

Mode	Frequency (MHz)	Avg. Burst Power (dBm)
MODMA OFO	826.4	21.31
WCDMA 850	836.6	21.28
RMC	846.6	21.21
\\(CD\\\\ 050	826.4	21.15
WCDMA 850 AMR	836.6	21.12
AWR	846.6	21.17
HSDPA	826.4	20.28
	836.6	20.23
Subtest 1	846.6	20.21
HCDDA	826.4	20.28
HSDPA	836.6	20.21
Subtest 2	846.6	20.25
LICDDA	826.4	20.31
HSDPA	836.6	20.26
Subtest 3	846.6	20.21
LICDDA	826.4	20.32
HSDPA	836.6	20.25
Subtest 4	846.6	20.21
LICLIDA	826.4	20.27
HSUPA	836.6	20.24
Subtest 1	846.6	20.19
LICLIDA	826.4	20.25
HSUPA	836.6	20.23
Subtest 2	846.6	20.19
HSUPA	826.4	20.27
	836.6	20.23
Subtest 3	846.6	20.18
LICLIDA	826.4	20.32
HSUPA	836.6	20.28
Subtest 4	846.6	20.24
1101724	826.4	20.31
HSUPA	836.6	20.29
Subtest 5	846.6	20.25

Page 38 of 139

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≤ CM≤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,						
E-DPDCH and E-DPCCH the MPR is based on the rela	ative 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.

Page 39 of 139

# LTE BAND

Conducted Power of LTE Band IV(dBm)									
			RB	Target	Channel	Channel	Channel		
Bandwidth	Modulation	RB size	offset	MPR	19975	20175	20393		
			0	0	22.86	23.04	23.40		
		1	12	0	22.93	23.12	23.44		
			24	0	22.84	23.09	23.43		
	QPSK		0	1	22.92	23.12	23.47		
		12	6	1	22.88	23.08	23.47		
			13	1	22.91	23.12	23.44		
1.4MHz		25	0	1	21.87	22.08	22.40		
1.4WITZ			0	1	22.12	22.42	22.63		
		1	12	1	22.27	22.52	22.78		
			24	1	22.11	22.48	22.66		
	16QAM		0	2	22.08	22.08	22.49		
		12	6	2	22.03	22.09	22.46		
			13	2	22.02	22.14	22.46		
		25	0	2	20.90	21.02	21.53		
Randwidth	Modulation	RR size	RB	Target	Channel	Channel	Channel		
Bandwidth	Modulation	RB size	RB offset	Target MPR	Channel 19965	Channel 20175	Channel 20385		
Bandwidth	Modulation	RB size		Target MPR					
Bandwidth	Modulation	RB size	offset	MPR	19965	20175	20385		
Bandwidth	Modulation		offset 0	<b>MPR</b> 0	<b>19965</b> 22.82	<b>20175</b> 22.89	<b>20385</b> 23.32		
Bandwidth	<b>Modulation</b> QPSK		<b>offset</b> 0 24	0 0	19965 22.82 22.90	<b>20175</b> 22.89 23.09	20385 23.32 23.45		
Bandwidth			0 24 49	0 0 0	19965 22.82 22.90 22.75	20175 22.89 23.09 23.07	20385 23.32 23.45 23.39		
Bandwidth		1	0 24 49 0	0 0 0 1	19965 22.82 22.90 22.75 21.87	20175 22.89 23.09 23.07 22.05	20385 23.32 23.45 23.39 22.39		
		1	0 24 49 0 12	0 0 0 1 1	19965 22.82 22.90 22.75 21.87 21.86	20175 22.89 23.09 23.07 22.05 22.10	20385 23.32 23.45 23.39 22.39 22.41		
Bandwidth  3MHz		1 25	0 24 49 0 12 25	0 0 0 1 1 1	19965 22.82 22.90 22.75 21.87 21.86 21.82	20175 22.89 23.09 23.07 22.05 22.10 22.11	20385 23.32 23.45 23.39 22.39 22.41 22.45		
		1 25	0 24 49 0 12 25 0	0 0 0 1 1 1 1	19965 22.82 22.90 22.75 21.87 21.86 21.82 21.85	20175 22.89 23.09 23.07 22.05 22.10 22.11 22.04	20385 23.32 23.45 23.39 22.39 22.41 22.45 22.41		
		1 25 50	0 24 49 0 12 25 0 0	0 0 0 1 1 1 1	19965 22.82 22.90 22.75 21.87 21.86 21.82 21.85 22.11	20175 22.89 23.09 23.07 22.05 22.10 22.11 22.04 22.15	20385 23.32 23.45 23.39 22.39 22.41 22.45 22.41 22.71		
		1 25 50	0 24 49 0 12 25 0 0 24	0 0 0 1 1 1 1 1	19965 22.82 22.90 22.75 21.87 21.86 21.82 21.85 22.11 22.22	20175 22.89 23.09 23.07 22.05 22.10 22.11 22.04 22.15 22.40	20385 23.32 23.45 23.39 22.39 22.41 22.45 22.41 22.71 22.82		
	QPSK	1 25 50	0 24 49 0 12 25 0 0 24 49	MPR 0 0 1 1 1 1 1 1 1	19965 22.82 22.90 22.75 21.87 21.86 21.82 21.85 22.11 22.22 22.02	20175 22.89 23.09 23.07 22.05 22.10 22.11 22.04 22.15 22.40 22.34	20385 23.32 23.45 23.39 22.39 22.41 22.45 22.41 22.71 22.82 22.75		
	QPSK	1 25 50 1	0 24 49 0 12 25 0 0 24 49 0	MPR 0 0 1 1 1 1 1 1 1 2	19965 22.82 22.90 22.75 21.87 21.86 21.82 21.85 22.11 22.22 22.02 21.00	20175 22.89 23.09 23.07 22.05 22.10 22.11 22.04 22.15 22.40 22.34 21.08	20385 23.32 23.45 23.39 22.39 22.41 22.45 22.41 22.71 22.82 22.75 21.37		

Page 40 of 139

	Conducted Power of LTE Band IV(dBm)									
			RB	Target	Channel	Channel	Channel			
Bandwidth	Modulation	RB size	offset	MPR	19975	20175	20375			
			0	0	22.94	22.90	23.38			
		1	12	0	22.88	23.15	23.47			
			24	0	22.69	23.17	23.47			
	QPSK		0	1	21.92	22.03	22.39			
		12	6	1	21.85	22.08	22.42			
			13	1	21.80	22.16	22.44			
5MHz		25	0	1	21.80	22.05	22.38			
SIVITZ			0	1	22.34	22.33	22.40			
		1	12	1	22.26	22.56	22.51			
			24	1	22.09	22.53	22.46			
	16QAM		0	2	21.15	21.16	21.43			
		12	6	2	21.10	21.25	21.41			
			13	2	21.04	21.32	21.47			
		25	0	2	20.94	21.10	21.40			
Bandwidth	Modulation	RB size	RB	Target	Channel	Channel	Channel			
Banawiatii	Wooddiation	ND 3126	offset	MPR	20000	20175	20350			
			0	0	22.92	22.73	23.36			
		1	24	0	22.70	23.08	23.30			
			49	0	22.39	23.27	23.43			
	QPSK		0	1	21.79	21.88	22.33			
		25	12	1	21.66	22.05	22.32			
			25	1	21.49	22.18	22.40			
10MHz		50	0	1	21.65	22.04	22.33			
IUIVITIZ			0	1	22.17	22.02	22.77			
		1	24	1	21.94	22.34	22.74			
			49	1	21.68	22.54	22.82			
	16QAM		0	2	20.88	20.92	21.36			
		25	12	2	20.76	21.06	21.35			
			25	2	20.62	21.18	21.40			

Page 41 of 139

	Conducted Power of LTE Band IV(dBm)									
			RB	Target	Channel	Channel	Channel			
Bandwidth	Modulation	RB size	offset	MPR	20025	20175	20325			
			0	0	22.90	22.61	23.37			
		1	37	0	22.58	23.20	23.39			
			74	0	22.48	23.35	23.42			
	QPSK		0	1	21.77	21.87	22.43			
		37	19	1	21.54	22.09	22.39			
			38	1	21.43	22.28	22.43			
4EMU-		75	0	1	21.60	22.09	22.42			
15MHz			0	1	22.17	21.92	22.67			
		1	37	1	21.90	22.44	22.67			
			74	1	21.76	22.63	22.72			
	16QAM		0	2	20.81	20.91	21.42			
		37	19	2	20.60	21.06	21.41			
			38	2	20.48	21.27	21.42			
		75	0	2	20.65	21.09	21.41			
Bandwidth	Modulation	RB size	RB	Target	Channel	Channel	Channel			
Danawiatii	Wooddiation	ND SIZE	offset	MPR	20050	20175	20300			
			0	0	22.99	22.58	23.38			
		1	49	0	22.49	23.14	23.41			
			99	0	22.95	23.53	23.53			
	QPSK		0	1	21.62	21.76	22.37			
		50	25	1	21.45	22.05	22.36			
			50	1	21.55	22.29	22.40			
20MHz		100	0	1	21.58	22.03	22.37			
ZUIVIIIZ			0	1	22.18	21.77	22.71			
		1	49	1	21.67	22.36	22.81			
			99	1	22.13	22.71	22.88			
	16QAM		0	2	20.72	20.84	21.40			
		50	25	2	20.52	21.03	21.41			
			50	2	20.62	21.26	21.44			
		100	· · · · · · · · · · · · · · · · · · ·	2	20.64	21.03	21.39			

Page 42 of 139

	Conducted Power of LTE Band VII(dBm)									
			RB	Target	Channel	Channel	Channel			
Bandwidth	Modulation	RB size	offset	MPR	20775	21100	21425			
			0	0	21.71	21.78	21.74			
		1	12	0	21.62	21.68	21.65			
			24	0	21.59	21.61	21.56			
	QPSK		0	1	20.71	20.77	20.74			
		12	6	1	20.66	20.42	20.69			
			13	1	20.65	20.67	20.61			
CAALL-		25	0	1	20.62	20.64	20.65			
5MHz			0	1	21.85	21.63	21.73			
		1	12	1	21.66	21.68	21.67			
			24	1	21.53	21.54	21.53			
	16QAM		0	2	20.49	20.72	20.75			
		12	6	2	20.46	20.63	20.64			
			13	2	20.62	20.69	20.62			
		25	0	2	20.67	20.57	20.69			
Bandwidth	Modulation	RB size	RB	Target	Channel	Channel	Channel			
Danawiatii	Woddiation	ND SIZE	offset	MPR	20800	21100	21400			
			0	0	21.60	21.64	21.63			
		1	24	0	21.49	21.47	21.41			
			49	0	21.41	21.44	21.43			
	QPSK		0	1	20.54	20.58	20.57			
		25	12	1	20.49	20.51	20.45			
			25	1	20.47	20.43	20.45			
10MHz		50	0	1	20.50	20.56	20.53			
TOWITIE			0	1	21.63	21.63	21.62			
		1	24	1	21.42	21.47	21.42			
			49	1	21.45	21.43	21.44			
	16QAM		0	2	20.58	20.58	20.58			
		25	12	2	20.46	20.46	20.46			
			25	2	20.48	20.42	20.43			
		50	0	2	20.52	20.51	20.53			

Page 43 of 139

	Conducted Power of LTE Band VII(dBm)									
			RB	Target	Channel	Channel	Channel			
Bandwidth	Modulation	RB size	offset	MPR	20825	21100	21375			
			0	0	21.62	21.73	21.71			
		1	37	0	21.50	21.63	21.56			
			74	0	21.46	21.49	21.72			
	QPSK		0	1	20.69	20.46	20.71			
		37	19	1	20.58	20.53	20.53			
			38	1	20.55	20.66	20.59			
15MHz		75	0	1	20.64	20.67	20.66			
ISMITZ			0	1	21.69	21.58	21.68			
		1	37	1	21.62	21.54	21.54			
			74	1	21.51	21.53	21.42			
	16QAM		0	2	20.64	20.62	20.51			
		37	19	2	20.47	20.52	20.54			
			38	2	20.52	20.59	20.59			
		75	0	2	20.68	20.68	20.66			
Bandwidth	Modulation	RB size	RB	Target	Channel	Channel	Channel			
Banawiatii	Wooddiation	ND 3126	offset	MPR	20850	21100	21350			
			0	0	21.75	21.72	21.64			
		1	49	0	21.50	21.59	21.54			
			99	0	21.01	21.14	21.12			
	QPSK		0	1	20.54	20.47	20.62			
		50	25	1	20.46	20.42	20.71			
			50	1	21.68	21.64	21.49			
20MHz		100	50 0	1 1	21.68 21.53	21.64 21.59	21.49 21.42			
20MHz		100								
20MHz		100	0	1	21.53	21.59	21.42			
20MHz			0	1 1	21.53 21.64	21.59 21.62	21.42 21.79			
20MHz	16QAM		0 0 49	1 1 1	21.53 21.64 21.58	21.59 21.62 21.55	21.42 21.79 21.63			
20MHz	16QAM		0 0 49 99	1 1 1 1	21.53 21.64 21.58 21.12	21.59 21.62 21.55 21.12	21.42 21.79 21.63 21.21			
20MHz	16QAM	1	0 0 49 99 0	1 1 1 1 2	21.53 21.64 21.58 21.12 20.57	21.59 21.62 21.55 21.12 20.63	21.42 21.79 21.63 21.21 20.71			

Page 44 of 139

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]						
Modulation	1.4MHz	3MHz	5MHz	10MHz	15MHz	20MHz	MPR(dB)	
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

Page 45 of 139

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

Network	Requirements		Channel	Resources	
Signaling value	(sub-clause)	E-UTRA Band	bandwidth (MHz)	Blocks ( <i>N</i> <sub>RB</sub> )	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
_			3	>5	≤ 1
		0.4.40.00	5	>6	≤ 1
NS_03	6.6.2.2.3.1	2,4,10, 23,	10	>6	≤ 1
		25,35,36	15	>8	≤ 1
			20	>10	≤ 1
NS_04	6.6.2.2.3.2	41	5	>6	≤1
	0.0.2.2.3.2	41	10, 15, 20		.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 6.2.4.3-12, 2.4.3-13
NO 47	6.6.3.3.10	28	5, 10	Table 5.4.2-1	N/A
NS_17	6.6.3.3.11	28	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	-	-	-	-	-

Page 46 of 139

# WIFI

Mode	Data Rate (Mbps)	Channel	Frequency(MHz)	Avg. Burst Power(dBm)
		01	2412	10.84
802.11b	1	06	2437	10.62
		11	2462	10.37
		01	2412	9.73
802.11g	6	06	2437	9.56
		11	2462	9.41
		01	2412	9.32
802.11n(20)	6.5	06	2437	9.28
		11	2462	9.23
		03	2422	7.43
802.11n(40)	13.5	06	2437	7.26
		09	2452	7.21

# Bluetooth\_V2.1+EDR

Modulation	Channel	Frequency(MHz)	Average Power (dBm)
	0	2402	0.25
GFSK	39	2441	2.65
	78	2480	-0.67
	0	2402	-0.96
π /4-DQPSK	39	2441	1.36
	78	2480	-1.9
	0	2402	-0.96
8-DPSK	39	2441	1.36
	78	2480	-1.97

# Bluetooth\_V4.0

Modulation	Channel	Frequency(MHz)	Peak Burst Power (dBm)
	0	2402	-5.53
GFSK	19	2440	-3.59
	39	2480	-6.55

Page 47 of 139

### 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, and Body SAR was performed with the device 10mm from the phantom.

### 12.1.2. Operation Mode

- 1. Per KDB 447498 D01 v05r02 ,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 ≥0.8W/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  $\geq$ 0.8W/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  $\geq$ 1.5 W/Kg and ratio of largest to smallest SAR for the original, first and second measurement is  $\geq$  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 v01r02,when the reported SAR for a body-worn accessory measured without a headset connected to the handset is ≤1.2W/Kg, SAR testing with a headset connected is not required.
- 5. Per KDB616217 D04 Hotspot is not required.
- 6. Per 248227 D01 v02r01, SAR is not required for 802.11g channels when the maximum average output power is less than 1/4dB higher than measured on the corresponding 802.11b channels.
- 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.) ×[maximum turn-up power (mw)/ maximum measurement output power(mw)]
- 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.

Page 48 of 139

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 ≤1.45W/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 ≤1.45W/Kg. Per KDB 941125 D05v02r03, smaller bandwidth SAR testing is not required.

Page 49 of 139

# 12.1.3. Test Result

SAR MEASURE	MENT								
Depth of Liquid (c	:m):>15			Relat	ive Humidity	(%): 48.9			
Product: Tablet P	С								
Test Mode: GSM8	850 with GMSK mo	dulation							
Position	Mode	Ch.	Fr. (MHz)	Power Drift (<±5%)	SAR (1g) (W/kg)	Max. Turn-up Power (dBm)	Meas. output Power (dBm)	Scaled SAR (W/Kg)	Limit W/kg
SIM 1 Card									
Left Cheek	voice	190	836.6	-0.65	0.025	31.50	31.09	0.027	1.6
Left Tilt	voice	190	836.6	2.03	0.020	31.50	31.09	0.022	1.6
Right Cheek	voice	190	836.6	0.76	0.038	31.50	31.09	0.042	1.6
Right Tilt	voice	190	836.6	0.12	0.045	31.50	31.09	0.049	1.6
Body back	voice	190	836.6	0.27	0.658	31.50	31.09	0.723	1.6
Body front	voice	190	836.6	0.58	0.433	31.50	31.09	0.476	1.6
Edge 1 (Top)	voice	190	836.6	2.25	0.054	31.50	31.09	0.059	1.6
Edge 2(Right)	voice	190	836.6	0.67	0.101	31.50	31.09	0.111	1.6
Edge 3(Bottom)	voice	190	836.6	0.19	0.510	31.50	31.09	0.560	1.6
Edge 4(Left)	voice	190	836.6	1.33	0.078	31.50	31.09	0.027	1.6
Left Cheek	GPRS-2 slot	190	836.6	0.72	0.050	28.50	28.27	0.053	1.6
Left Tilt	GPRS-2 slot	190	836.6	0.69	0.033	28.50	28.27	0.035	1.6
Right Cheek	GPRS-2 slot	190	836.6	0.72	0.042	28.50	28.27	0.044	1.6
Right Tilt	GPRS-2 slot	190	836.6	0.18	0.030	28.50	28.27	0.032	1.6
Body back	GPRS-2 slot	128	824.2	0.22	0.790	28.50	28.32	0.823	1.6
Body back	GPRS-2 slot	190	836.6	0.62	0.831	28.50	28.27	0.876	1.6
Body back	GPRS-2 slot	251	8488	1.28	0.824	28.50	28.22	0.879	1.6
Body front	GPRS-2 slot	190	836.6	0.85	0.595	28.50	28.27	0.627	1.6
Edge 1 (Top)	GPRS-2 slot	190	836.6	0.89	0.097	28.50	28.27	0.102	1.6
Edge 2(Right)	GPRS-2 slot	190	836.6	0.58	0.131	28.50	28.27	0.138	1.6
Edge 3(Bottom)	GPRS-2 slot	128	824.2	0.09	0.778	28.50	28.32	0.811	1.6
Edge 3(Bottom)	GPRS-2 slot	190	836.6	1.08	0.782	28.50	28.27	0.825	1.6
Edge 3(Bottom)	GPRS-2 slot	251	8488	0.84	0.780	28.50	28.22	0.832	1.6
Edge 4(Left)	GPRS-2 slot	190	836.6	1.16	0.107	28.50	28.27	0.113	1.6
SIM 2 Card									
Right Tilt	voice	190	836.6	-0.65	0.018	31.50	30.89	0.021	1.6
Body back	voice	190	836.6	-0.19	0.592	31.50	30.89	0.681	1.6

<sup>•</sup> When the 1-g Reported SAR is  $\leq$  0.8 W/kg, testing for low and high channel is optional. Refer to KDB 447498. • The test separation for body is 0mm of all above table.

Page 50 of 139

SAR MEASUREI									
Depth of Liquid (d	cm):>15			Rela	tive Humidity	(%): 50.1			
Product: Tablet P	C								
Test Mode: PCS1	1900 with GMSK mo	odulation							
Position	Mode	Ch.	Fr. (MHz)	Power Drift (<±5%)	SAR (1g) (W/kg)	Max. Turn-up Power (dBm)	Meas. output Power (dBm)	Scaled SAR (W/Kg)	Limit W/kg
SIM 1 Card	•								
Left Cheek	voice	661	1880.0	0.10	0.021	28.50	28.15	0.023	1.6
Left Tilt	voice	661	1880.0	3.68	0.021	28.50	28.15	0.023	1.6
Right Cheek	voice	661	1880.0	-2.43	0.043	28.50	28.15	0.047	1.6
Right Tilt	voice	661	1880.0	0.63	0.010	28.50	28.15	0.011	1.6
Body back	voice	661	1880.0	2.36	0.455	28.50	28.15	0.493	1.6
Body front	voice	661	1880.0	-1.71	0.235	28.50	28.15	0.255	1.6
Edge 1 (Top)	voice	661	1880.0	0.28	0.0095	28.50	28.15	0.010	1.6
Edge 2(Right)	voice	661	1880.0	-2.94	0.104	28.50	28.15	0.113	1.6
Edge 3(Bottom)	voice	661	1880.0	-3.10	0.072	28.50	28.15	0.078	1.6
Edge 4(Left)	voice	661	1880.0	-2.22	0.011	28.50	28.15	0.012	1.6
Left Cheek	GPRS-2 slot	661	1880.0	2.99	0.034	25.50	25.31	0.036	1.6
Left Tilt	GPRS-2 slot	661	1880.0	-0.46	0.036	25.50	25.31	0.038	1.6
Right Cheek	GPRS-2 slot	661	1880.0	-1.02	0.082	25.50	25.31	0.086	1.6
Right Tilt	GPRS-2 slot	661	1880.0	3.62	0.023	25.50	25.31	0.024	1.6
Body back	GPRS-2 slot	661	1880.0	2.31	0.457	25.50	25.31	0.477	1.6
Body front	GPRS-2 slot	661	1880.0	-1.33	0.154	25.50	25.31	0.161	1.6
Edge 1 (Top)	GPRS-2 slot	661	1880.0	-0.64	0.014	25.50	25.31	0.015	1.6
Edge 2(Right)	GPRS-2 slot	661	1880.0	-0.84	0.146	25.50	25.31	0.153	1.6
Edge 3(Bottom)	GPRS-2 slot	661	1880.0	-3.16	0.122	25.50	25.31	0.127	1.6
Edge 4(Left)	GPRS-2 slot	661	1880.0	-3.36	0.018	25.50	25.31	0.019	1.6
SIM 2 Card	•				•		•		
Right Cheek	voice	661	1880.0	3.27	0.039	28.50	27.95	0.049	1.6
Body back	voice	661	1880.0	-2.53	0.432	28.50	27.95	0.490	1.6

<sup>•</sup> When the 1-g Reported SAR is  $\leq$  0.8 W/kg, testing for low and high channel is optional. Refer to KDB 447498. • The test separation for body is 0mm of all above table.

Page 51 of 139

SAR MEASUREM	MENT													
Depth of Liquid (c	m):>15			Relative	Humidity (%	%): 50.1								
Product: Tablet P	С													
Test Mode: WCD	Test Mode: WCDMA Band II with QPSK modulation													
Position	Mode	Ch.	Fr. (MHz)	Power Drift (<±5%)	SAR (1g) (W/kg)	Max. Turn-up Power (dBm)	Meas. output Power (dBm)	Scaled SAR (W/Kg)	Limit W/kg					
SIM 1 Card														
Left Cheek	RMC 12.2kbps	9400	1880	1.77	0.065	21.50	21.38	0.067	1.6					
Left Tilt	RMC 12.2kbps	9400	1880	-0.09	0.063	21.50	21.38	0.065	1.6					
Right Cheek	RMC 12.2kbps	9400	1880	1.89	0.150	21.50	21.38	0.154	1.6					
Right Tilt	RMC 12.2kbps	9400	1880	-0.19	0.035	21.50	21.38	0.036	1.6					
Body back	RMC 12.2kbps	9262	1852.4	-1.78	1.128	21.50	21.41	1.152	1.6					
Body back	RMC 12.2kbps	9400	1880	0.24	1.029	21.50	21.38	1.058	1.6					
Body back	RMC 12.2kbps	9538	1907.6	0.60	1.056	21.50	21.32	1.101	1.6					
Body front	RMC 12.2kbps	9400	1880	0.46	0.709	21.50	21.38	0.729	1.6					
Edge 1 (Top)	RMC 12.2kbps	9400	1880	-1.48	0.016	21.50	21.38	0.179	1.6					
Edge 2(Right)	RMC 12.2kbps	9400	1880	-2.52	0.174	21.50	21.38	0.535	1.6					
Edge 3(Bottom)	RMC 12.2kbps	9400	1880	1.42	0.520	21.50	21.38	0.029	1.6					
Edge 4(Left)	RMC 12.2kbps	9400	1880	4.46	0.028	21.50	21.38	0.016	1.6					

- 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 for body is 0mm of all above table.

Page 52 of 139

SAR MEASUREM	MENT								
Depth of Liquid (c	:m):>15			Relative	Humidity (%	%): 48.9			
Product: Tablet P	С								
Test Mode: WCD	MA Band V with QPSK r	nodulation							
Position	Mode	Ch.	Fr. (MHz)	Power Drift (<±5%)	SAR (1g) (W/kg)	Max. Turn-up Power (dBm)	Meas. output Power (dBm)	Scaled SAR (W/Kg)	Limit W/kg
SIM 1 Card									
Left Cheek	RMC 12.2kbps	4183	836.6	-0.77	0.043	21.50	21.28	0.045	1.6
Left Tilt	RMC 12.2kbps	4183	836.6	-2.59	0.028	21.50	21.28	0.029	1.6
Right Cheek	RMC 12.2kbps	4183	836.6	-1.52	0.035	21.50	21.28	0.037	1.6
Right Tilt	RMC 12.2kbps	4183	836.6	-1.97	0.058	21.50	21.28	0.061	1.6
Body back	RMC 12.2kbps	4183	836.6	-0.59	0.513	21.50	21.28	0.540	1.6
Body front	RMC 12.2kbps	4183	836.6	0.01	0.495	21.50	21.28	0.521	1.6
Edge 1 (Top)	RMC 12.2kbps	4183	836.6	0.52	0.016	21.50	21.28	0.017	1.6
Edge 2(Right)	RMC 12.2kbps	4183	836.6	0.44	0.014	21.50	21.28	0.015	1.6
Edge 3(Bottom)	RMC 12.2kbps	4183	836.6	0.71	0.594	21.50	21.28	0.625	1.6
Edge 4(Left)	RMC 12.2kbps	4183	836.6	0.76	0.010	21.50	21.28	0.011	1.6

<sup>•</sup> When the 1-g Reported SAR is  $\leq$  0.8 W/kg, testing for low and high channel is optional. Refer to KDB 447498. • The test separation for body is 0mm of all above table.

Page 53 of 139

### **SAR MEASUREMENT**

Depth of Liquid (cm):>15 Relative Humidity (%): 52.4

Product: Tablet PC

Test Mode: LTE Band IV with QPSK modulation

restin	loae: LTE	E Band IV wi	th QPSK m	lodulation								
ВМ				Mode		Erca	Power	SAR	Max.	Meas.	Scaled	Limit
MHz	MOD	Position	UL RB Allocat ion	UL RB START	Ch.	Freq. (MHz)	Drift (<±5%)	(1g) (W/kg)	Turnup Power (dBm)	output Power (dBm)	SAR (W/Kg)	(W/kg)
		Left Cheek	1	99	20175	1732.5	1.25	0.136	24.00	23.53	0.152	1.6
		Left Tilt	1	99	20175	1732.5	0.64	0.140	24.00	23.53	0.156	1.6
		Right Cheek	1	99	20175	1732.5	0.77	0.358	24.00	23.53	0.399	1.6
		Right Tilt	1	99	20175	1732.5	2.01	0.085	24.00	23.53	0.095	1.6
		Left Cheek	50	50	20300	1745.0	0.08	0.032	23.00	22.40	0.037	1.6
		Left Tilt	50	50	20300	1745.0	3.05	0.113	23.00	22.40	0.130	1.6
		Right Cheek	50	50	20300	1745.0	0.17	0.279	23.00	22.40	0.320	1.6
		Right Tilt	50	50	20300	1745.0	0.57	0.068	23.00	22.40	0.078	1.6
		Left Cheek	100	0	20300	1745.0	2.01	0.031	23.00	22.37	0.036	1.6
		Left Tilt	100	0	20300	1745.0	0.64	0.112	23.00	22.37	0.129	1.6
		Right Cheek	100	0	20300	1745.0	0.57	0.277	23.00	22.37	0.320	1.6
		Right Tilt	100	0	20300	1745.0	0.33	0.065	23.00	22.37	0.075	1.6
		Body back	1	0	20050	1720.0	2.12	0.725	24.00	22.99	0.915	1.6
20	QPSK	Body back	1	99	20175	1732.5	1.08	0.739	24.00	23.53	0.823	1.6
		Body back	1	99	20300	1745.0	0.06	0.770	24.00	23.53	0.858	1.6
		Body front	1	99	20175	1732.5	0.75	0.168	24.00	23.53	0.187	1.6
		Body back	50	50	20300	1745.0	0.64	0.615	23.00	22.40	0.706	1.6
		Body front	50	50	20300	1745.0	0.02	0.142	23.00	22.40	0.163	1.6
		Body back	100	50	20300	1745.0	1.68	0.611	23.00	22.37	0.706	1.6
		Body front	100	50	20300	1745.0	1.72	0.143	23.00	22.37	0.165	1.6
		Edge 1 (Top)	1	99	20300	1745.0	1.44	0.069	24.00	23.53	0.077	1.6
		Edge 2(Right)	1	0	20050	1720.0	1.08	0.757	24.00	22.99	0.955	1.6
		Edge 2(Right)	1	99	20175	1732.5	0.61	0.781	24.00	23.53	0.870	1.6
		Edge 2(Right)	1	99	20300	1745.0	0.75	0.801	24.00	23.53	0.893	1.6
		Edge 3(Bottom)	1	99	20300	1745.0	0.64	0.412	24.00	23.53	0.459	1.6
N <sub>0</sub>		Edge 4(Left)	1	99	20300	1745.0	1.08	0.085	24.00	23.53	0.095	1.6

<sup>•</sup> When the 1-g Reported SAR is ≤ 0.8 W/kg, testing for low and high channel is optional. Refer to KDB 447498.

<sup>•</sup>The test separation for body is 0mm of all above table.

Page 54 of 139

### **SAR MEASUREMENT**

Relative Humidity (%): 50.3 Depth of Liquid (cm):>15

Product: Tablet PC

Test Mode: LTE Band VII with OPSK modulation

l est N	Test Mode: LTE Band VII with QPSK modulation											
			Test N	lode			_	SAR	Max.	Meas.		
BM MHz	MOD	Position	UL RB Allocat ion	UL RB STAR T	Ch.	Freq. (MHz)	Power Drift (<±5%)	(1g) (W/kg)	Turnup Power (dBm)	output Power (dBm)	Scaled SAR (W/Kg)	Limit (W/kg)
		Left Cheek	1	0	20850	2510.0	2.08	0.049	22.00	21.75	0.052	1.6
		Left Tilt	1	0	20850	2510.0	1.39	0.040	22.00	21.75	0.042	1.6
		Right Cheek	1	0	20850	2510.0	1.77	0.104	22.00	21.75	0.110	1.6
		Right Tilt	1	0	20850	2510.0	0.58	0.027	22.00	21.75	0.029	1.6
		Left Cheek	50	50	20850	2510.0	0.30	0.047	22.00	21.68	0.051	1.6
		Left Tilt	50	50	20850	2510.0	0.03	0.040	22.00	21.68	0.043	1.6
		Right Cheek	50	50	20850	2510.0	0.78	0.093	22.00	21.68	0.100	1.6
		Right Tilt	50	50	20850	2510.0	0.11	0.027	22.00	21.68	0.029	1.6
		Left Cheek	100	0	21100	2535.0	0.82	0.047	22.00	21.59	0.052	1.6
		Left Tilt	100	0	21100	2535.0	2.07	0.040	22.00	21.59	0.044	1.6
		Right Cheek	100	0	21100	2535.0	1.91	0.069	22.00	21.59	0.076	1.6
		Right Tilt	100	0	21100	2535.0	1.47	0.027	22.00	21.59	0.030	1.6
		Body back	1	0	20850	2510.0	0.36	0.905	22.00	21.75	0.959	1.6
20	QPSK	Body back	1	0	21100	2353.0	0.47	0.988	22.00	21.72	1.054	1.6
20	QPSN	Body back	1	0	21350	2560.0	0.82	1.012	22.00	21.64	1.099	1.6
		Body front	1	0	20850	2510.0	0.06	0.423	22.00	21.75	0.448	1.6
		Body back	50	50	20850	2510.0	0.72	0.794	22.00	21.68	0.855	1.6
		Body back	50	50	21100	2353.0	0.32	0.806	22.00	21.64	0.876	1.6
		Body back	50	50	21350	2560.0	2.36	0.805	22.00	21.49	0.905	1.6
		Body front	50	50	20850	2510.0	3.01	0.363	22.00	21.68	0.391	1.6
		Body back	100	0	20850	2510.0	2.58	0.745	22.00	21.53	0.830	1.6
		Body back	100	0	21100	2353.0	0.15	0.806	22.00	21.59	0.886	1.6
		Body back	100	0	21350	2560.0	0.36	0.821	22.00	21.42	0.938	1.6
		Body front	100	0	21100	2535.0	0.29	0.366	22.00	21.59	0.402	1.6
		Edge 1 (Top)	1	0	20850	2510.0	2.23	0.045	22.00	21.75	0.048	1.6
		Edge 2(Right)	1	0	20850	2510.0	0.98	0.725	22.00	21.75	0.768	1.6
		Edge 3(Bottom)	1	0	20850	2510.0	0.71	0.496	22.00	21.75	0.525	1.6
		Edge 4(Left)	1	0	20850	2510.0	2.21	0.024	22.00	21.75	0.025	1.6

- 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 for body is 0mm of all above table.

Page 55 of 139

SAR MEASUREM	MENT												
Depth of Liquid (c	m):>15			Relative	Humidity (%	6): 52.1							
Product: Tablet Po	C												
Test Mode: 802.11b													
Position	Mode	Ch.	Fr. (MHz)	Power Drift (<±5%)	SAR (1g) (W/kg)	Max. Turn-up Power (dBm)	Meas. output Power (dBm)	Scaled SAR (W/Kg)	Limit W/kg				
Left Cheek	DTS	6	2437	0.38	0.196	11.00	10.62	0.214	1.6				
Left Tilt	DTS	6	2437	-1.03	0.174	11.00	10.62	0.190	1.6				
Right Cheek	DTS	6	2437	0.54\	0.151	11.00	10.62	0.165	1.6				
Right Tilt	DTS	6	2437	0.76	0.164	11.00	10.62	0.179	1.6				
Body back	DTS	6	2437	0.18	0.380	11.00	10.62	0.415	1.6				
Body front	DTS	6	2437	-0.44	0.212	11.00	10.62	0.231	1.6				
Edge 1 (Top)	DTS	6	2437	0.39	0.125	11.00	10.62	0.136	1.6				
Edge 2(Right)	DTS	6	2437	0.71	0.036	11.00	10.62	0.039	1.6				
Edge 3(Bottom)	DTS	6	2437	-0.35	0.377	11.00	10.62	0.411	1.6				

# Edge 4(Left) 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.

2.00

0.048

11.00

10.62

0.052

1.6

2437

- All of above "DTS" means data transmitters.

DTS

• The test separation of all above table for body part is 0mm.

Page 56 of 139

Repeated SAR										
Product: Tablet	PC									
Test Mode: GSN	√1850& WCDMA Ban	d II								
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	251	8488	-0.69	0.825				-	1.6
Body back	RMC 12.2kbps	9262	1852.4	-0.44	1.075	-				1.6

Repe	ated SA	AR .											
Produ	Product: Tablet PC												
Test M	Test Mode: LTE Band IV& LTE Band VII												
ВМ			Test Mode Freq. Power Once SAR Twice SAR Limit										
MHz	MOD	Position	UL RB Allocat ion	UL RB START	Ch.	Freq. (MHz)	Drift (<±5%)	(1g) (W/kg)	(1g) (W/kg)	(1g) (W/kg)	(W/kg)		
20	QPSK	Edge 2(Right)	1	0	20175	1732.5	0.15	0.749	1	-	1.6		
20	W/3N	Body back	1	0	21350	2560.0	-1.06	0.962			1.6		

Page 57 of 139

### **Simultaneous Multi-band Transmission Evaluation:**

**Application Simultaneous Transmission information:** 

NO	Simultaneous state		Portable Handset	
NO	Simultaneous State	Head	Body-worn	Hotspot
1	GSM(voice)+WLAN 2.4GHz (data)	Yes	Yes	ı
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

### NOTE:

- 1. WLAN 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 10mm for body-worn SAR.
- 5. If the test separation distance is <5mm, 5mm is used for excluded SAR calculation.
- 6. According to KDB447497 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 4.3.1 is applied to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to the following to determine simultaneous transmission SAR test exclusion:

(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)]·[ $\sqrt{f(GHz)/x}$ ] W/kg for test separation distances  $\leq$  50 mm;

where x = 7.5 for 1-g SAR, and x = 18.75 for 10-g SAR.

7. 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/Ri, 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.

Page 58 of 139

Estimat	Estimated SAR		luding Tune-up ance	Separation Distance (mm)	Estimated SAR (W/kg)
		dBm mW		Distance (IIIII)	(VV/Kg)
ВТ	Head	3	1.995	0	0.083
ы	Body	3	1.995	10	0.042

Maximum test results (WWAN) with BT SAR: BT: Head (0 cm gap): 0.083 W/kg and Body (1.0cm gap): 0.042 W/kg

Page 59 of 139

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

RF Exposure	Test	Simultan	eous Transmissior	Scenario	Σ1-g SAR	SPLSR	
Conditions	Position	GSM 850 Band	WI-Fi DTS Band	Bluetooth	(W/Kg)	(Yes/No)	
	Left Touch	0.027	0.214		0.241	No	
Head	Left Tilt	0.022	0.190		0.212	No	
(voice)	Right Touch	0.042	0.165		0.207	No	
	Right Tilt	0.049	0.179		0.228	No	
	Rear	0.723	0.415		1.138	No	
	Front	0.476	0.231		0.707	No	
	Edge 1	0.059	0.136		0.195	No	
	Edge 2	0.111	0.039		0.150	No	
	Edge 3	0.560	0.411		0.971	No	
Body-worn	Edge 4	0.027	0.052		0.079	No	
(voice)	Rear	0.723		0.042	0.765	No	
	Front	0.476		0.042	0.518	No	
	Edge 1	0.059		0.042	0.101	No	
	Edge 2	0.111		0.042	0.153	No	
	Edge 3	0.560		0.042	0.602	No	
	Edge 4	0.027		0.042	0.069	No	
	Left Touch	0.053	0.214		0.267	No	
Head	Left Tilt	0.035	0.190		0.225	No	
(GPRS)	Right Touch	0.044	0.165		0.209	No	
	Right Tilt	0.032	0.179		0.211	No	
	Rear	0.879	0.415		1.294	No	
	Front	0.627	0.231		0.858	No	
	Edge 1	0.102	0.136		0.238	No	
	Edge 2	0.138	0.039		0.177	No	
	Edge 3	0.832	0.411		1.243	No	
Body-worn	Edge 4	0.113	0.052		0.165	No	
(GPRS)	Rear	0.879		0.042	0.921	No	
	Front	0.627		0.042	0.669	No	
	Edge 1	0.102		0.042	0.144	No	
	Edge 2	0.138		0.042	0.180	No	
	Edge 3	0.832		0.042	0.874	No	
	Edge 4	0.113		0.042	0.155	No	

- 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 "

Page 60 of 139

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

RF Exposure		Simultane	eous Transmission	74 ~ CAD	CDI CD		
RF Exposure Test Conditions Position		GSM 1900 Band	WI-Fi DTS Band	Bluetooth	Σ1-g SAR (W/Kg)	SPLSR (Yes/No)	
	Left Touch	0.023	0.214		0.237	No	
Head	Left Tilt	0.023	0.190		0.213	No	
(voice)	Right Touch	0.047	0.165		0.212	No	
	Right Tilt	0.011	0.179		0.190	No	
	Rear	0.493	0.415		0.908	No	
	Front	0.255	0.231		0.486	No	
	Edge 1	0.010	0.136		0.146	No	
	Edge 2	0.113	0.039		0.152	No	
	Edge 3	0.078	0.411		0.489	No	
Body-worn	Edge 4	0.012	0.052		0.064	No	
(voice)	Rear	0.493		0.042	0.535	No	
	Front	0.255		0.042	0.297	No	
	Edge 1	0.010		0.042	0.052	No	
	Edge 2	0.113		0.042	0.155	No	
	Edge 3	0.078		0.042	0.120	No	
	Edge 4	0.012		0.042	0.054	No	
	Left Touch	0.036	0.214		0.250	No	
Head	Left Tilt	0.038	0.190		0.228	No	
(GPRS)	Right Touch	0.086	0.165		0.251	No	
	Right Tilt	0.024	0.179		0.203	No	
	Rear	0.477	0.415		0.892	No	
	Front	0.161	0.231		0.392	No	
	Edge 1	0.015	0.136		0.151	No	
	Edge 2	0.153	0.039		0.192	No	
	Edge 3	0.127	0.411		0.538	No	
Body-worn	Edge 4	0.019	0.052		0.071	No	
(GPRS)	Rear	0.477		0.042	0.519	No	
	Front	0.161		0.042	0.203	No	
	Edge 1	0.015		0.042	0.057	No	
	Edge 2	0.153		0.042	0.195	No	
	Edge 3	0.127		0.042	0.169	No	
	Edge 4	0.019		0.042	0.061	No	

- 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 "

Page 61 of 139

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

RF Exposure Test		Simultane	ous Transmission	Σ1-g SAR	SPLSR	
Conditions	Position	WCDMA Band II	Wi-Fi DTS Band	Bluetooth	(W/Kg)	(Yes/No)
	Left Touch	0.067	0.214		0.281	No
Head	Left Tilt	0.065	0.190		0.255	No
пеац	Right Touch	0.154	0.165		0.319	No
	Right Tilt	0.036	0.179		0.215	No
	Rear	1.152	0.415		1.567	No
	Front	0.729	0.231		0.960	No
	Edge 1	0.179	0.136		0.315	No
	Edge 2	0.535	0.039		0.574	No
	Edge 3	0.029	0.411		0.440	No
Pody worn	Edge 4	0.016	0.052		0.068	No
Body-worn	Rear	1.152		0.042	1.194	No
	Front	0.729		0.042	0.771	No
	Edge 1	0.179		0.042	0.221	No
	Edge 2	0.535		0.042	0.577	No
	Edge 3	0.029		0.042	0.071	No
	Edge 4	0.016		0.042	0.058	No

- 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 "

Page 62 of 139

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

RF Exposure	Test	Simultane	ous Transmission	Σ1-g SAR	SPLSR	
Conditions	Position	WCDMA Band V	Wi-Fi DTS Band	Bluetooth	(W/Kg)	(Yes/No)
	Left Touch	0.045	0.214		0.259	No
Used	Left Tilt	0.029	0.190		0.219	No
Head	Right Touch	0.037	0.165		0.202	No
	Right Tilt	0.061	0.179		0.240	No
	Rear	0.540	0.415		0.955	No
	Front	0.521	0.231		0.752	No
	Edge 1	0.017	0.136		0.153	No
	Edge 2	0.015	0.039		0.054	No
	Edge 3	0.625	0.411		1.036	No
Dody worn	Edge 4	0.011	0.052		0.063	No
Body-worn	Rear	0.540		0.042	0.582	No
	Front	0.521		0.042	0.563	No
	Edge 1	0.017		0.042	0.059	No
	Edge 2	0.015		0.042	0.057	No
	Edge 3	0.625		0.042	0.667	No
	Edge 4	0.011		0.042	0.053	No

- 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 "

Page 63 of 139

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

RF Exposure	RF Exposure Test		eous Transmission	Σ1-g SAR	SPLSR	
Conditions	Position	\A/: F:		Bluetooth	(W/Kg)	(Yes/No)
	Left Touch	0.152	0.214		0.366	No
Head	Left Tilt	0.156	0.190		0.346	No
пеац	Right Touch	0.399	0.165		0.564	No
	Right Tilt	0.095	0.179		0.274	No
	Rear	0.858	0.415		1.273	No
	Front	0.187	0.231		0.418	No
	Edge 1	0.077	0.136		0.213	No
	Edge 2	0.955	0.039		0.994	No
	Edge 3	0.459	0.411		0.870	No
Pody worn	Edge 4	0.095	0.052		0.147	No
Body-worn	Rear	0.858		0.042	0.900	No
	Front	0.187		0.042	0.229	No
	Edge 1	0.077		0.042	0.119	No
	Edge 2	0.955		0.042	0.997	No
	Edge 3	0.459		0.042	0.501	No
	Edge 4	0.095		0.042	0.137	No

- 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 "

Page 64 of 139

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

RF Exposure Test		Simultane	ous Transmission	Σ1-g SAR	SPLSR	
Conditions	Position	V.		Bluetooth	(W/Kg)	(Yes/No)
	Left Touch	0.052	0.214		0.266	No
Head	Left Tilt	0.042	0.190		0.232	No
пеац	Right Touch	0.110	0.165		0.275	No
	Right Tilt	0.029	0.179		0.208	No
	Rear	1.099	0.415		1.514	No
	Front	0.448	0.231		0.679	No
	Edge 1	0.048	0.136		0.184	No
	Edge 2	0.768	0.039		0.807	No
	Edge 3	0.525	0.411		0.936	No
Hotonot	Edge 4	0.025	0.052		0.077	No
Hotspot	Rear	1.099		0.042	1.141	No
	Front	0.448		0.042	0.490	No
	Edge 1	0.048		0.042	0.090	No
	Edge 2	0.768		0.042	0.810	No
	Edge 3	0.525		0.042	0.567	No
	Edge 4	0.025		0.042	0.067	No

- 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 "

Page 65 of 139

# APPENDIX A. SAR SYSTEM CHECK DATA

Test Laboratory: AGC Lab Date: Oct. 22,2015

System Check Head 835 MHz

DUT: Dipole 835 MHz Type: SID 835

Communication System CW; Communication System Band: D835 (835.0 MHz); Duty Cycle: 1:1; Conv.F=6.36 Frequency: 835 MHz; Medium parameters used: f = 835 MHz;  $\sigma = 0.89$  mho/m;  $\epsilon r = 42.00$ ;  $\rho = 1000$  kg/m³;

Phantom section: Flat Section; Input Power=18dBm

Ambient temperature (°C):22.5, Liquid temperature (°C): 22.3

### **SATIMO Configuration**

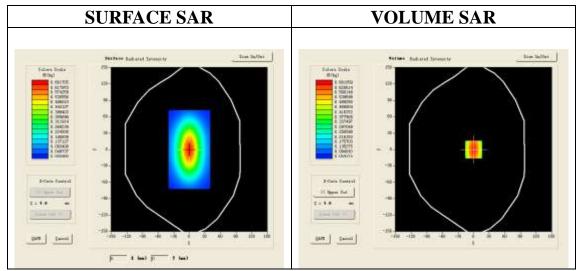
• Probe: SSE5; Calibrated: 07/10/2015; Serial No.: SN 19/15 EP254

· Sensor-Surface: 4mm (Mechanical Surface Detection)

· Phantom: Flat Phantom; Type: Elliptical Phantom

· Measurement SW: OpenSAR V4\_02\_01

Configuration/System Check 835MHz Head/Area Scan: Measurement grid: dx=8mm, dy=8mm Configuration/System Check 835MHz Head/Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm

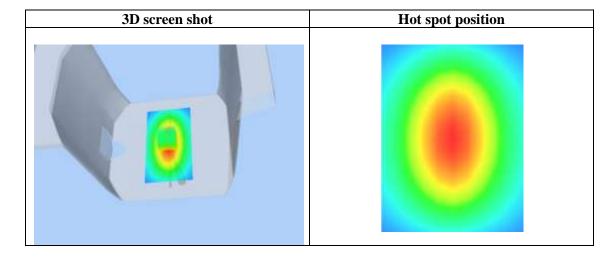


Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	0.400110
SAR 1g (W/Kg)	0.628762

Report No.: AGC00653150905FH01 Page 66 of 139

Z (mm) SAR	0.00 0.0000	4.00 0.6602	9.00 0.4417	14.00 0.3019	19.00 0.2100	24.00 0.1458	29.00 0.1034
(W/Kg)							_
	S	AR, ZA	xis Sca	n (X = )	0, Y = 0	0)	
		_					
	0.7-						
	0.6-						
	0.5-	$\perp$					
	0.4-		$\longrightarrow$				
	뚌 0.3-						
	0.2-						
	0.1-		+++				
		.5 5.0 7.51	0.0 15.0	20.0	25.0 30	.0 35.0	
				(mm)			
				, Anni 2			



Date: Oct. 22,2015

Page 67 of 139

Test Laboratory: AGC Lab System Check Body 835 MHz

DUT: Dipole 835 MHz Type: SID 835

Communication System CW; Communication System Band: D835 (835.0 MHz); Duty Cycle: 1:1; Conv.F=6.56 Frequency: 835 MHz; Medium parameters used: f = 835 MHz;  $\sigma = 0.96$  mho/m;  $\epsilon r = 55.71$ ;  $\rho = 1000$  kg/m<sup>3</sup>;

Phantom section: Flat Section; Input Power=18dBm

Ambient temperature (°C):22.3, Liquid temperature (°C): 22.5

### **SATIMO Configuration**

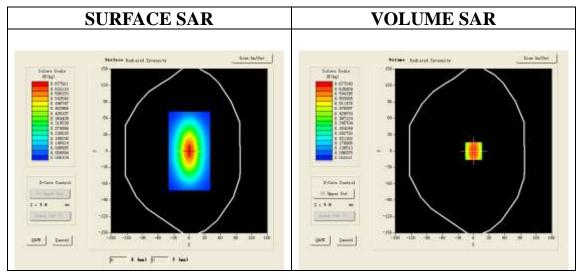
• Probe: SSE5; Calibrated: 07/10/2015; Serial No.: SN 19/15 EP254

Sensor-Surface: 4mm (Mechanical Surface Detection)

· Phantom: Flat Phantom; Type: Elliptical Phantom

· Measurement SW: OpenSAR V4\_02\_01

Configuration/System Check 835MHz Body/Area Scan: Measurement grid: dx=8mm, dy=8mm Configuration/System Check 835MHz Body/Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm

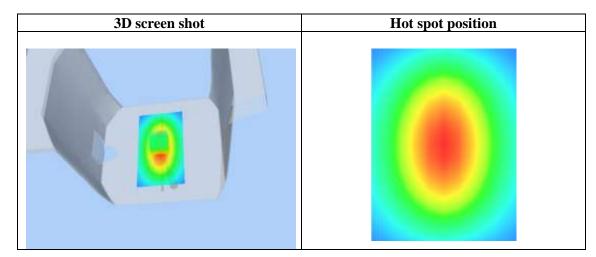


**Maximum location: X=0.00, Y=0.00** 

SAR 10g (W/Kg)	0.410231
SAR 1g (W/Kg)	0.647564

Report No.: AGC00653150905FH01 Page 68 of 139

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR	0.0000	0.6769	0.4522	0.3107	0.2143	0.1507	0.1062
(W/Kg)							
	S	AR. 7. A	xis Sca	n (X = 0	O. Y = 0	o)	
		, 2	110 000	(	•, •		
	0.7-						
	0.6-	+	+				
	್ಲಾ 0.5-						
	(%/kg) 0.4-—		$\longrightarrow$	+	-		
	器 0.3-						
	0.2-		+++				
					+		
	0.1-		1 1				
	0.02	.5 5.0 7.51			25.0 30	.0 35.0	
			7	(mm)			



Date: Otc. 31,2015

Page 69 of 139

Test Laboratory: AGC Lab System Check Head 1750MHz

DUT: Dipole 1800 MHz; Type: SID 1800

Communication System: CW; Communication System Band: D1700 (1750.0 MHz); Duty Cycle:1:1; Conv.F=4.77 Frequency: 1750 MHz; Medium parameters used: f = 1750 MHz;  $\sigma = 0.91 mho/m$ ;  $\epsilon r = 39.78$ ;  $\rho = 1000 kg/m^3$ ;

Phantom section: Flat Section; Input Power=18dBm

Ambient temperature (°C): 21.9, Liquid temperature (°C): 21.4

### SATIMO Configuration:

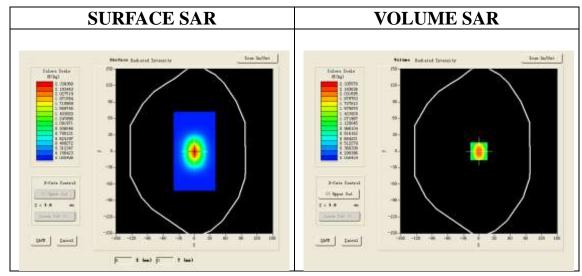
• Probe: SSE5; Calibrated: 07/10/2015; Serial No.: SN 19/15 EP254

Sensor-Surface: 4mm (Mechanical Surface Detection)

· Phantom: Flat Phantom; Type: Elliptical Phantom

· Measurement SW: OpenSAR V4\_02\_01

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

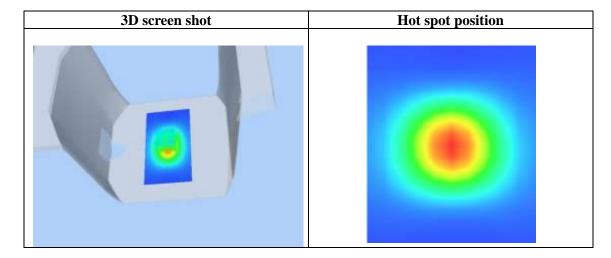


Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	1.199576
SAR 1g (W/Kg)	2.207561

Report No.: AGC00653150905FH01 Page 70 of 139

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR	0.0000	2.3363	1.3650	0.8298	0.5091	0.3173	0.1984
(W/Kg)							_
				(***	A TF /		
	S	AK, Z A	xis Sca	$\mathbf{n} (\mathbf{X} = \mathbf{I})$	0,  Y = 0	))	
	2.3-						
		$  \setminus  $					
	2.0-	+	+++	+			
	ু 1.5- —	+	+++	+	-		
	(2) 1.5- (3) (3)						
			$\perp$	$\perp$			
	₩ 1.0-						
	0.5-						
	0.5-						
	0.1-						
	0.02	.5 5.0 7.51	0.0 15.0	20.0	25.0 30	.0 35.0	
			Z	(mm)			
_							



Date: Oct. 31,2015

Page 71 of 139

Test Laboratory: AGC Lab System Check Body 1750MHz

DUT: Dipole 1800 MHz; Type: SID 1800

Communication System: CW; Communication System Band: D1700 (1750.0 MHz); Duty Cycle:1:1; Conv.F=4.91 Frequency: 1750MHz; Medium parameters used: f = 1750MHz;  $\sigma = 1.54 \text{ mho/m}$ ;  $\epsilon r = 53.12$ ;  $\rho = 1000 \text{ kg/m}^3$ ;

Phantom section: Flat Section; Input Power=18dBm

Ambient temperature (°C): 21.9, Liquid temperature (°C): 21.4

### SATIMO Configuration:

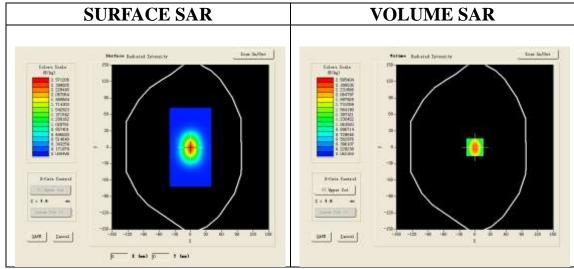
• Probe: SSE5; Calibrated: 07/10/2015; Serial No.: SN 19/15 EP254

Sensor-Surface: 4mm (Mechanical Surface Detection)

· Phantom: Flat Phantom; Type: Elliptical Phantom

· Measurement SW: OpenSAR V4\_02\_01

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

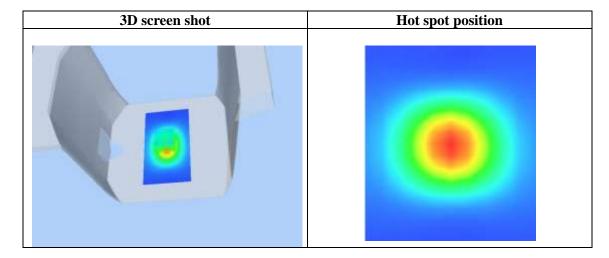


Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	1.315241
SAR 1g (W/Kg)	2.410565

Page 72 of 139

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	2.5661	1.5024	0.9108	0.5572	0.3453	0.2160
SAR, Z Axis Scan $(X = 0, Y = 0)$							
2.6-							
	2.0-						
	2.0-	++					
	(2) 1.5- €	+	$\downarrow \downarrow \downarrow$				
	% 1.0-		$N \perp$				
				$\downarrow$			
	0.5-				44		
	0.1- 0.02	 .5 5.0 7.51	0.0 15.0	20.0	25.0 30	.0 35.0	
			7	(mm)			
							_



Date: Oct. 26,2015

Page 73 of 139

Test Laboratory: AGC Lab System Check Head 1900MHz

DUT: Dipole 1900 MHz; Type: SID 1900

Communication System: CW; Communication System Band: D1900 (1900.0 MHz); Duty Cycle:1:1; Conv.F=5.40 Frequency: 1900 MHz; Medium parameters used: f = 1900 MHz;  $\sigma = 1.42$  mho/m;  $\epsilon r = 39.64$ ;  $\rho = 1000$  kg/m<sup>3</sup>;

Phantom section: Flat Section; Input Power=18dBm

Ambient temperature ( $^{\circ}$ C):21.8, Liquid temperature ( $^{\circ}$ C): 21.8

# SATIMO Configuration:

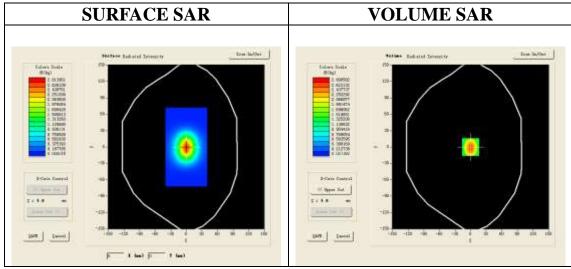
• Probe: SSE5; Calibrated: 07/10/2015; Serial No.: SN 19/15 EP254

Sensor-Surface: 4mm (Mechanical Surface Detection)

· Phantom: Flat Phantom; Type: Elliptical Phantom

· Measurement SW: OpenSAR V4\_02\_01

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

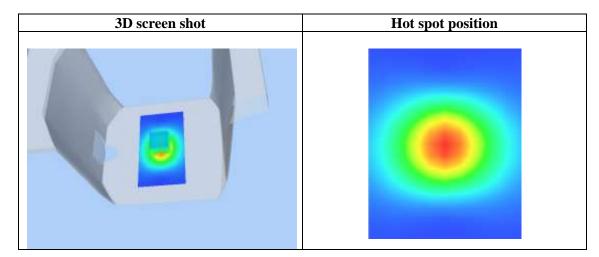


Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	1.337215		
SAR 1g (W/Kg)	2.676387		

Report No.: AGC00653150905FH01 Page 74 of 139

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00			
SAR	0.0000	2.8093	1.4029	0.7248	0.3786	0.2007	0.1054			
(W/Kg)							_			
	SAR, Z Axis Scan $(X = 0, Y = 0)$									
	2.8-									
	2.5-	+	+++	+						
		$  \cdot   \setminus   \cdot  $								
	2.0-	+								
	(%//g) 1.5-	++		+						
	器 1.0-		$\setminus \mid \mid$							
	Ø 1.0−									
	0.5-		++	$\downarrow \downarrow \downarrow$	$\perp$					
	0.1-				<del>-</del>					
		i i i .5 5.0 7.51	0.0 15.0	20.0	25.0 30	.0 35.0				
				(mm)						
_										
L										



Date: Oct. 26,2015

Page 75 of 139

Test Laboratory: AGC Lab System Check Body 1900MHz

DUT: Dipole 1900 MHz; Type: SID 1900

Communication System: CW; Communication System Band: D1900 (1900.0 MHz); Duty Cycle:1:1; Conv.F=5.61 Frequency: 1900 MHz; Medium parameters used: f = 1900 MHz;  $\sigma = 1.54$  mho/m;  $\epsilon r = 53.26$ ;  $\rho = 1000$  kg/m³;

Phantom section: Flat Section; Input Power=18dBm

Ambient temperature ( $^{\circ}$ C):21.8, Liquid temperature ( $^{\circ}$ C): 21.5

# SATIMO Configuration:

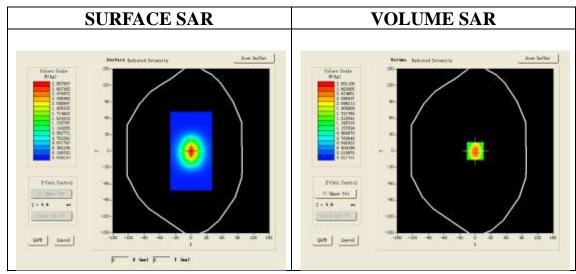
• Probe: SSE5; Calibrated: 07/10/2015; Serial No.: SN 19/15 EP254

Sensor-Surface: 4mm (Mechanical Surface Detection)

· Phantom: Flat Phantom; Type: Elliptical Phantom

· Measurement SW: OpenSAR V4\_02\_01

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

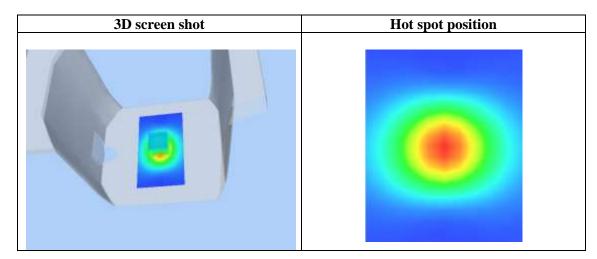


Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	1.351523		
SAR 1g (W/Kg)	2.717011		

Page 76 of 139

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	2.8507	1.4241	0.7387	0.3835	0.2079	0.1086
	9	AR 7 A	vie Sca	n (X =	0, 7 = 0	n)	_
		int, <i>D</i> ii	AIS DCG	11 (21 –	<b>V</b> , 1 – <b>V</b>	,	
	2.9-	I V					
	2.5-	+	+++		+		
	_ 2.0-						
	(2) 1.5-						
	€ 1.5-	<del>                                     </del>	+++				
	器 1.0-						
	01 1.0		$\perp N$				
	0.5-						
	0.1-				<del></del>		
		.'5 5.'0 7.'51	0.0 15.0	20.0	25.0 30	.0 35.0	
			7	(mm)			
							I



Date: Nov. 02,2015

Page 77 of 139

Test Laboratory: AGC Lab
System Check Head 2450MHz

DUT: Dipole 2450 MHz; Type: SID 2450

Communication System: CW; Communication System Band: D2450 (2450.0 MHz); Duty Cycle:1:1; Conv.F=4.84 Frequency: 2450 MHz; Medium parameters used: f = 2450 MHz;  $\sigma = 1.77$  mho/m;  $\epsilon r = 40.84$ ;  $\rho = 1000$  kg/m³;

Phantom section: Flat Section; Input Power=18dBm

Ambient temperature ( $^{\circ}$ C):22.1, Liquid temperature ( $^{\circ}$ C): 21.9

# SATIMO Configuration:

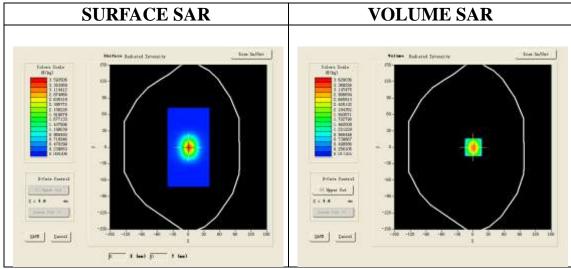
• Probe: SSE5; Calibrated: 07/10/2015; Serial No.: SN 19/15 EP254

Sensor-Surface: 4mm (Mechanical Surface Detection)

· Phantom: Flat Phantom; Type: Elliptical Phantom

· Measurement SW: OpenSAR V4\_02\_01

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

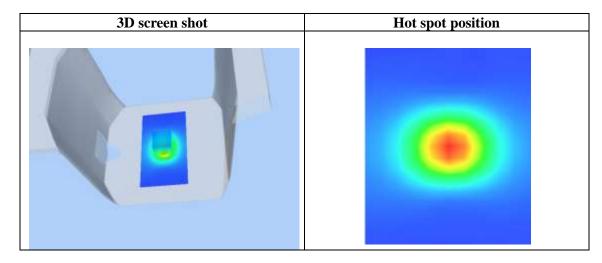


Maximum location: X=1.00, Y=0.00

SAR 10g (W/Kg)	1.542453
SAR 1g (W/Kg)	3.369854

Page 78 of 139

Z (mm) SAR (W/Kg)	0.00	4.00 3.6290	9.00 1.7734	14.00 0.8786	19.00 0.4368	24.00 0.2204	29.00 0.1108
	S	AR, Z A	xis Sca	<b>n</b> (X =	1, Y = 0	0)	
	3.6-	<del>  \                                   </del>	+				
	3.0-	$+\lambda+$					
	2.5-	++	+++				
	2.5-	$\vdash \vdash \land$					
	설 1.5-		$\longrightarrow$				
	1.0-		+		-		
	0.5-		++	+			
	0.1-						
	U. O 2	.5 5.0 7.51		) 20.0 (mm)	25.0 30	.0 35.0	



Page 79 of 139

Test Laboratory: AGC Lab
System Check Body 2450MHz
Date: Nov. 02,2015

DUT: Dipole 2450 MHz; Type: SID 2450

Communication System: CW; Communication System Band: D2450 (2450.0 MHz); Duty Cycle:1:1; Conv.F=4.97 Frequency: 2450 MHz; Medium parameters used: f = 2450 MHz;  $\sigma = 1.91$  mho/m;  $\epsilon r = 53.47$ ;  $\rho = 1000$  kg/m³;

Phantom section: Flat Section; Input Power=18dBm

Ambient temperature (°C):22.1, Liquid temperature (°C): 21.7

## SATIMO Configuration:

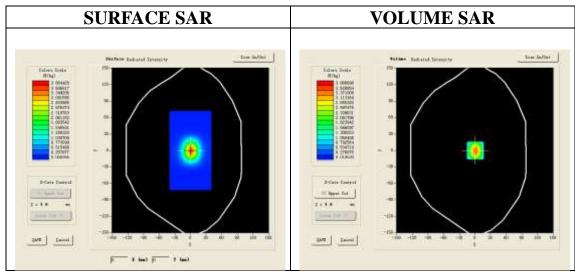
• Probe: SSE5; Calibrated: 07/10/2015; Serial No.: SN 19/15 EP254

Sensor-Surface: 4mm (Mechanical Surface Detection)

· Phantom: Flat Phantom; Type: Elliptical Phantom

· Measurement SW: OpenSAR V4\_02\_01

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

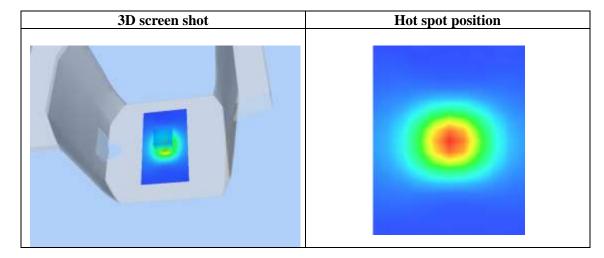


Maximum location: X=1.00, Y=0.00

SAR 10g (W/Kg)	1.652443
SAR 1g (W/Kg)	3.610706

Page 80 of 139

0.00	4.00	9.00	14.00	19.00	24.00	29.00
0.0000	3.8867	1.8948	0.9369	0.4656	0.2325	0.1174
						_
2	AR 7 A	vie Sca	n (X = '	1 <b>V</b> = (	1)	
	ш, вп	AIS DCG	II (A – .	., \	,,	
3.9-						
3.5-	+	+++	+			
3.0-	++	+++	$\perp$			
യ 2.5-	$\perp \perp \lambda$					
₹ 2.0	1 I N					
	<u> </u>					
중 1.5-						
1.0-		+				
0.5-			+	-		
0.1-				<del></del>		
0.0 2	.5 5.0 7.51	0.0 15.0	20.0	25.0 30	.0 35.0	
		7	(mm)			
	3.9- 3.5- 3.5- 2.5- 2.0- 1.5- 0.5- 0.1-	0.0000 3.8867  SAR, Z A  3.9- 3.5- 3.0- 2.5- 2.0- 2.1.5- 1.0- 0.5- 0.1-	3.9- 3.5- 3.0- 2.5- 2.0- 3.1.5- 1.0- 0.5- 0.1- 0.0 2.5 5.0 7.510.0 15.0	0.0000 3.8867 1.8948 0.9369  SAR, Z Axis Scan (X = 3.9-3.5-3.0-2.5-2.0-2.5-1.5-1.0-0.5-0.1-	0.0000 3.8867 1.8948 0.9369 0.4656  SAR, Z Axis Scan (X = 1, Y = 0)  3.9 3.5 3.0 2.5 2.0 3.1.5 1.0 0.5 0.1 0.0 2.5 5.0 7.510.0 15.0 20.0 25.0 30	0.0000 3.8867 1.8948 0.9369 0.4656 0.2325  SAR, Z Axis Scan (X = 1, Y = 0)  3.9 3.5 3.0 2.5 2.0 3.1.5 1.0 0.5 0.1 0.0 2.5 5.0 7.510.0 15.0 20.0 25.0 30.0 35.0



Date: Oct. 29,2015

Page 81 of 139

Test Laboratory: AGC Lab System Check Head 2600MHz

DUT: Dipole 2600 MHz; Type: SID 2600

Communication System: CW; Communication System Band: D2600 (2600.0 MHz); Duty Cycle:1:1; Conv.F=4.62 Frequency: 2600 MHz; Medium parameters used: f = 2600 MHz;  $\sigma = 1.92$  mho/m;  $\epsilon r = 39.74$ ;  $\rho = 1000$  kg/m³;

Phantom section: Flat Section; Input Power=18dBm

Ambient temperature (°C):21.8, Liquid temperature (°C): 21.9

# SATIMO Configuration:

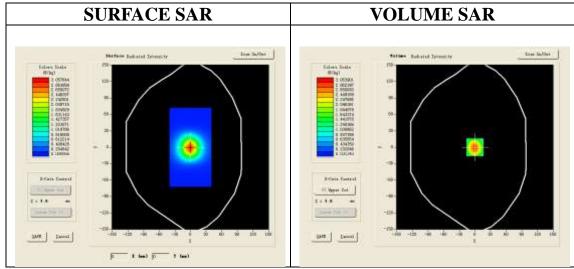
• Probe: SSE5; Calibrated: 07/10/2015; Serial No.: SN 19/15 EP254

Sensor-Surface: 4mm (Mechanical Surface Detection)

· Phantom: Flat Phantom; Type: Elliptical Phantom

· Measurement SW: OpenSAR V4\_02\_01

Configuration/System Check 2600MHz Head/Area Scan: Measurement grid: dx=8mm, dy=8mm Configuration/System Check 2600MHz Head/Zoom Scan: Measurement grid: dx=5mm,dy=5mm, dz=5mm

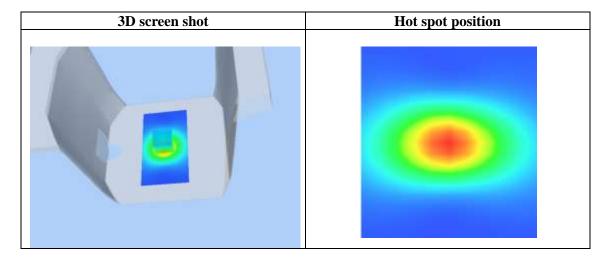


Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	1.580027
SAR 1g (W/Kg)	3.189034

Report No.: AGC00653150905FH01 Page 82 of 139

Z (mm) SAR (W/Kg)	0.00	4.00 3.0554	9.00 1.5453	14.00 0.8035	19.00 0.4207	24.00 0.2251	29.00 0.1208
	S	AR, Z A	xis Sca	n (X =	0, Y = 0	))	
	3.1-						
	2.5-	+	+++		++-		
	(2.0- ≥ 1.5-	++	+++		++		
	€ 1.5-	<del>                                     </del>	++		++		
	W 1.0-				++		
	0.5-						
	0.1- 0.02			20.0	25.0 30	.0 35.0	
			7	(mm)			
_							



Page 83 of 139

Test Laboratory: AGC Lab Date: Oct. 29,2015

System Check Body 2600MHz

DUT: Dipole 2600 MHz; Type: SID 2600

Communication System: CW; Communication System Band: D2600 (2600.0 MHz); Duty Cycle:1:1; Conv.F=4.73 Frequency: 2600 MHz; Medium parameters used: f = 2600 MHz;  $\sigma = 52.86$  mho/m;  $\epsilon r = 2.14$ ;  $\rho = 1000$  kg/m³;

Phantom section: Flat Section; Input Power=18dBm

Ambient temperature ( $^{\circ}$ C):21.8, Liquid temperature ( $^{\circ}$ C): 21.9

# SATIMO Configuration:

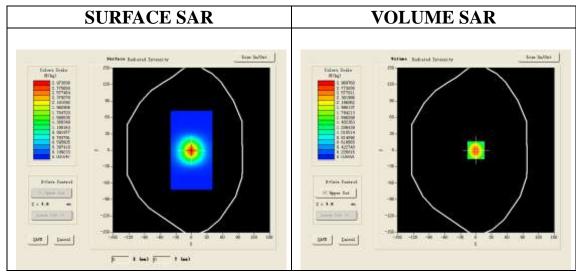
Probe: SSE5; Calibrated: 07/10/2015; Serial No.: SN 19/15 EP254

· Sensor-Surface: 4mm (Mechanical Surface Detection)

· Phantom: Flat Phantom; Type: Elliptical Phantom

· Measurement SW: OpenSAR V4\_02\_01

Configuration/System Check 2600MHz Body/Area Scan: Measurement grid: dx=8mm, dy=8mm Configuration/System Check 2600MHz Body/Zoom Scan: Measurement grid: dx=5mm,dy=5mm, dz=5mm

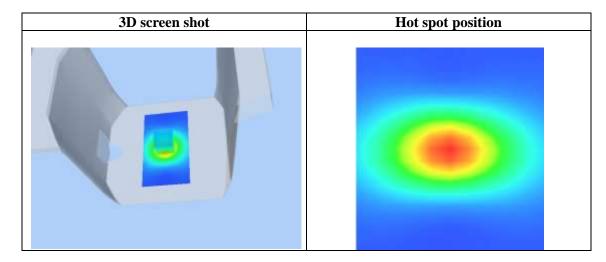


Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	1.530123		
SAR 1g (W/Kg)	3.091621		

Page 84 of 139

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	2.9700	1.5017	0.7820	0.4101	0.2163	0.1175
(W/Kg)							
	S	AR, Z A	xis Sca	$\mathbf{n}$ (X =	0, Y = 0	))	
	2.0					ı	
	3.0-						
	2.5-	+					
	a 2.0-						
	2.0- ≥ 1.5-						
		<del>                                     </del>	$\leftarrow$	+			
	\$ 1.0-		$\perp$	$\perp$			
	0.5-				_		
	0.1-						
	0.02	.5 5.0 7.51			25.0 30	.0 35.0	
			2	(mm)			
							_



Page 85 of 139

# APPENDIX B. SAR MEASUREMENT DATA

Test Laboratory: AGC Lab Date: Oct. 22,2015

GSM 850 Mid-Tilt-Right <SIM 1> DUT: Tablet PC; Type: UNIVERSAL

Communication System: Generic GSM; Communication System Band: GSM 850; Duty Cycle: 1:8.3; Conv.F=6.36; Frequency: 836.6 MHz; Medium parameters used: f = 835 MHz;  $\sigma = 0.90$  mho/m;  $\epsilon r = 41.59$ ;  $\rho = 1000$  kg/m<sup>3</sup>;

Phantom section: Right Section

Ambient temperature ( $^{\circ}$ C): 22.5, Liquid temperature ( $^{\circ}$ C): 22.3

# SATIMO Configuration:

• Probe: SSE5; Calibrated: 07/10/2015; Serial No.: SN 19/15 EP254

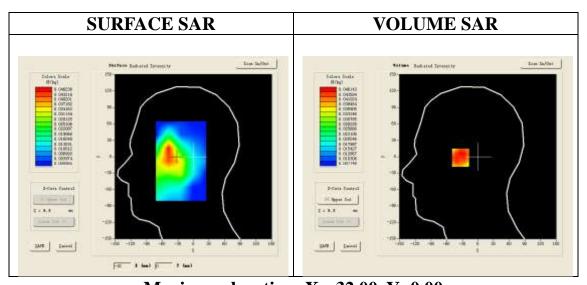
· Sensor-Surface: 4mm (Mechanical Surface Detection)

· Phantom: Flat Phantom; Type: Elliptical Phantom

· Measurement SW: OpenSAR V4\_02\_01

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

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

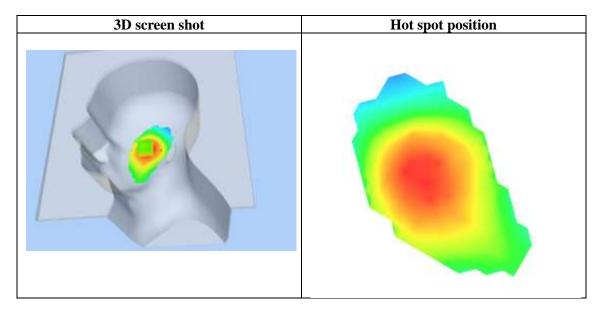


Maximum location: X=-32.00, Y=0.00

	,		
<b>SAR 10g (W/Kg)</b>	0.033979		
SAR 1g (W/Kg)	0.045462		

Report No.: AGC00653150905FH01 Page 86 of 139

Z (mm) SAR	0.00	4.00 0.0441	9.00 0.0371	14.00 0.0306	19.00 0.0234	24.00 0.0199	29.00 0.0167	
(W/Kg)							_	
	SA	R, Z Ax	is Scan	(X = -	32, Y =	0)		
	0.044-							
	0.040-	+						
	0.035-		$\rightarrow$					
	0.030-		+N					
	왕 0.025-			$\downarrow\downarrow$				
	0.020-							
	0.013- 0.0	2.55.07.9		0 20.0	1   1 25.0 30	). 0 35. 0		
	Z (mm)							
							1	



Page 87 of 139

Test Laboratory: AGC Lab Date: Oct. 22,2015

GSM 850 Mid-Tilt-Right <SIM 2> DUT: Tablet PC; Type: UNIVERSAL

Communication System: Generic GSM; Communication System Band: GSM 850; Duty Cycle: 1:8.3; Conv.F=6.36; Frequency: 836.6 MHz; Medium parameters used: f = 835 MHz;  $\sigma = 0.90$  mho/m;  $\epsilon r = 41.59$ ;  $\rho = 1000$  kg/m<sup>3</sup>;

Phantom section: Right Section

Ambient temperature ( $^{\circ}$ C): 22.5, Liquid temperature ( $^{\circ}$ C): 22.3

#### **SATIMO Configuration:**

• Probe: SSE5; Calibrated: 07/10/2015; Serial No.: SN 19/15 EP254

· Sensor-Surface: 4mm (Mechanical Surface Detection)

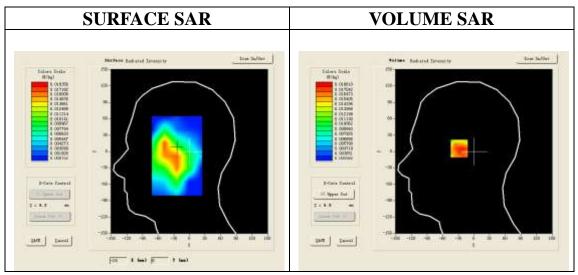
· Phantom: Flat Phantom; Type: Elliptical Phantom

· Measurement SW: OpenSAR V4\_02\_01

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

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

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

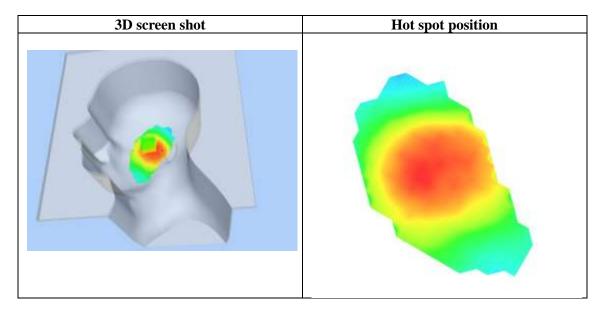


Maximum location: X=-27.00, Y=8.00

SAR 10g (W/Kg)	0.013076		
SAR 1g (W/Kg)	0.018072		

Report No.: AGC00653150905FH01 Page 88 of 139

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00	
SAR (W/Kg)	0.0000	0.0179	0.0133	0.0110	0.0085	0.0071	0.0058	
	SA	R. Z Ax	is Scan	$(\mathbf{x} = -1)$	27, Y =	8)		
	0.018-	- <b>-</b>						
	0.016-							
	0.014-							
	뛼 0.010-							
	0.008-	+						
	0.006-							
	0.005 - 0.0	2.5 5.0 7.5	510.0 15.	0 20.0	'   ' 25.0 30	).0 35.0		
	Z (mm)							



Page 89 of 139

Test Laboratory: AGC Lab Date: Oct. 22,2015

GSM 850 Mid- Body- Back (MS)<SIM 1> DUT: Tablet PC; Type: UNIVERSAL

Communication System: Generic GSM; Communication System Band: GSM 850; Duty Cycle: 1:8.3; Conv.F=6.56; Frequency: 836.6 MHz; Medium parameters used: f = 835 MHz;  $\sigma = 0.97$  mho/m;  $\epsilon r = 55.19$ ;  $\rho = 1000$  kg/m<sup>3</sup>;

Phantom section: Flat Section

Ambient temperature ( $^{\circ}$ C): 22.5, Liquid temperature ( $^{\circ}$ C): 22.3

#### **SATIMO Configuration:**

• Probe: SSE5; Calibrated: 07/10/2015; Serial No.: SN 19/15 EP254

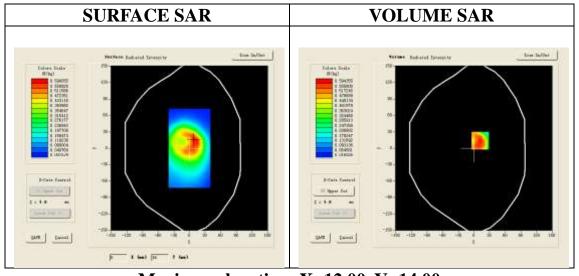
· Sensor-Surface: 4mm (Mechanical Surface Detection)

· Phantom: Flat Phantom; Type: Elliptical Phantom

· Measurement SW: OpenSAR V4\_02\_01

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	surf_sam_plan.txt			
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete			
Phantom	Validation plane			
Device Position	Body Back			
Band	GSM 850			
Channels	Middle			
Signal	TDMA (Crest factor: 8.0)			

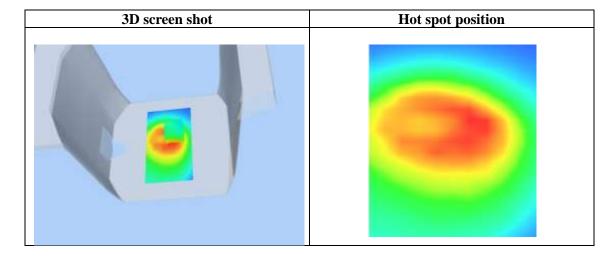


Maximum location: X=12.00, Y=14.00

<b>SAR 10g (W/Kg)</b>	0.394952		
SAR 1g (W/Kg)	0.658180		

Report No.: AGC00653150905FH01 Page 90 of 139

Z (mm) SAR	0.00 0.0000	4.00 0.5944	9.00 0.3475	14.00 0.2029	19.00 0.1330	24.00 0.0877	29.00 0.0575
(W/Kg)		D 7 1		/v _ 1	0 # - 1		
	SA	K, Z Ax	ıs Scan	(X = 1)	2, Y = 1	14)	
	0.6-	N					
	0.5-	+					
	⊙ 0.4-	++			$\perp$		
	(3) 0.4- ≥ 0.3-						
	₩ 0.2-						
	0.2-						
	0.1-				++-		
		.5 5.0 7.51	0.0 15.0	20.0	25.0 30	.0 35.0	
_			Z	(mm)			



Page 91 of 139

Test Laboratory: AGC Lab Date: Oct. 22,2015

GSM 850 Mid- Body- Back (MS)<SIM 2> DUT: Tablet PC; Type: UNIVERSAL

Communication System: Generic GSM; Communication System Band: GSM 850; Duty Cycle: 1:8.3; Conv.F=6.56; Frequency: 836.6 MHz; Medium parameters used: f = 835 MHz;  $\sigma = 0.97$  mho/m;  $\epsilon r = 55.19$ ;  $\rho = 1000$  kg/m<sup>3</sup>;

Phantom section: Flat Section

Ambient temperature ( $^{\circ}$ C): 22.5, Liquid temperature ( $^{\circ}$ C): 22.3

#### **SATIMO Configuration:**

• Probe: SSE5; Calibrated: 07/10/2015; Serial No.: SN 19/15 EP254

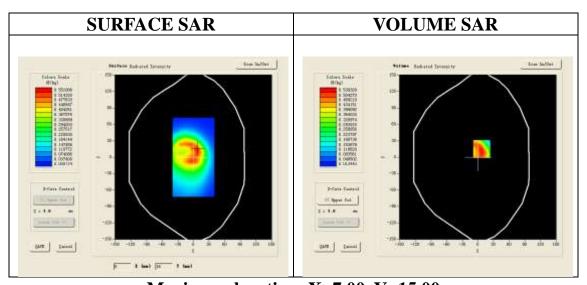
· Sensor-Surface: 4mm (Mechanical Surface Detection)

· Phantom: Flat Phantom; Type: Elliptical Phantom

· Measurement SW: OpenSAR V4\_02\_01

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	surf_sam_plan.txt			
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete			
Phantom	Validation plane			
Device Position	Body Back			
Band	GSM 850			
Channels	Middle			
Signal	TDMA (Crest factor: 8.0)			

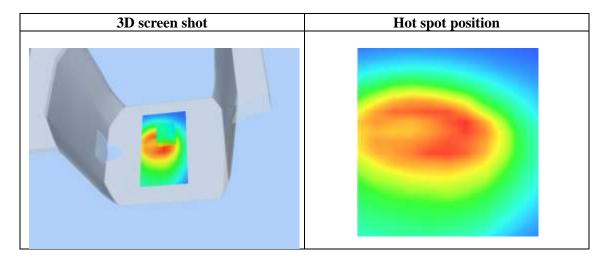


Maximum location: X=7.00, Y=15.00

SAR 10g (W/Kg)	0.353088		
SAR 1g (W/Kg)	0.591866		

Page 92 of 139

Z (mm) SAR	0.00	4.00 0.5384	9.00 0.2946	14.00 0.1847	19.00 0.1100	24.00 0.0748	29.00 0.0490
(W/Kg)	C.	ND 7 A.	ia Caar	(V - 7	', Y = 1	E)	
	0.5-	u, 2 A)	is scan	(A - 1	, 1 – 1	ວ <i>ງ</i> ∣	
	0.0	+					
	0.4-	++					
	(%) (%) (%) (%) (%) (%) (%) (%) (%) (%)	++	++				
	<b>%</b> 0.2-		$\mathbb{N}$				
	0.1-				$\bot$		
	0.0-	.5 5.0 7.51	0.0 15.0	20.0	25.0 30	.0 35.0	
	2.02			(mm)	_3.0		



Page 93 of 139

Test Laboratory: AGC Lab Date: Oct. 22,2015

GPRS 850 Mid-Touch-Left (2up) DUT: Tablet PC; Type: UNIVERSAL

Communication System: GPRS-2 Slot; Communication System Band: GSM 850; Duty Cycle: 1:4.2; Conv.F=6.36 Frequency: 836.6 MHz; Medium parameters used: f = 835 MHz;  $\sigma = 0.90$  mho/m;  $\epsilon r = 41.59$ ;  $\rho = 1000$  kg/m³;

Phantom section: Left Section

Ambient temperature ( $^{\circ}$ C): 22.5, Liquid temperature ( $^{\circ}$ C): 22.3

#### **SATIMO Configuration:**

• Probe: SSE5; Calibrated: 07/10/2015; Serial No.: SN 19/15 EP254

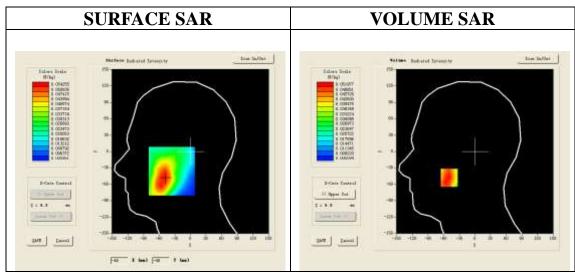
· Sensor-Surface: 4mm (Mechanical Surface Detection)

· Phantom: SAM twin phantom

Measurement SW: OpenSAR V4\_02\_01

Configuration/GPRS 850 Mid-Touch-Left/Area Scan: Measurement grid: dx=8mm, dy=8mm Configuration/GPRS 850 Mid-Touch-Left/Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm

Area Scan	sam_direct_droit2_surf8mm.txt				
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete				
Phantom	Left head				
Device Position	Cheek				
Band	GSM 850				
Channels	Middle				
Signal	TDMA (Crest factor: 4.0)				

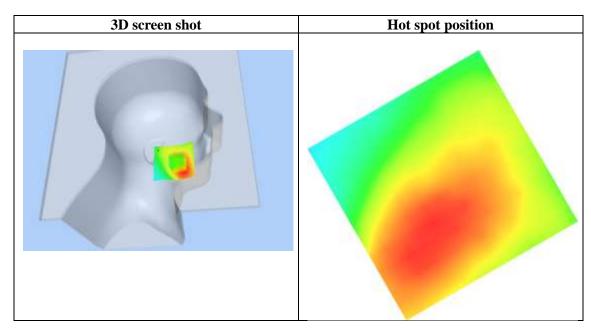


**Maximum location: X=-49.00, Y=-48.00** 

<b>SAR 10g (W/Kg)</b>	0.037226		
SAR 1g (W/Kg)	0.050200		

Report No.: AGC00653150905FH01 Page 94 of 139

Z (mm) SAR (W/Kg)	0.00	4.00 0.0520	9.00 0.0400	14.00 0.0332	19.00 0.0265	24.00 0.0204	29.00 0.0176
		, Z Axi	s Scan	(X = -4)	9, Y = ·	-48)	ı
	0.052 -						
	0.040 % 0.035						
	0.030 0.025						
	0.020-				+		
	0.013- 0.0	2.55.07.	510.0 15		25.0 30	0.0 35.0	
_				Z (mm)			



Page 95 of 139

Test Laboratory: AGC Lab Date: Oct. 22,2015

GPRS 850 Mid- Body- Back (MS)<SIM 1> DUT: Tablet PC; Type: UNIVERSAL

Communication System: GPRS-2 Slot; Communication System Band: GSM 850;; Duty Cycle: 1:4.2; Conv.F=6.56; Frequency: 836.6 MHz; Medium parameters used: f = 835 MHz;  $\sigma = 0.97$  mho/m;  $\epsilon r = 55.19$ ;  $\rho = 1000$  kg/m<sup>3</sup>;

Phantom section: Flat Section

Ambient temperature ( $^{\circ}$ C): 22.5, Liquid temperature ( $^{\circ}$ C): 22.3

#### **SATIMO Configuration:**

• Probe: SSE5; Calibrated: 07/10/2015; Serial No.: SN 19/15 EP254

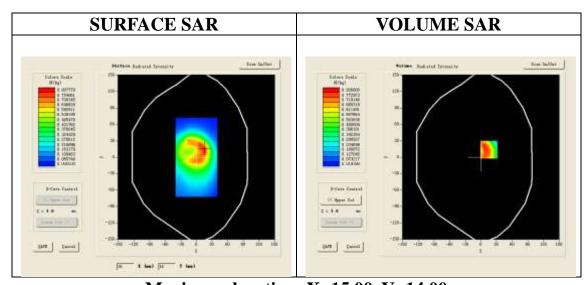
· Sensor-Surface: 4mm (Mechanical Surface Detection)

· Phantom: Flat Phantom; Type: Elliptical Phantom

· Measurement SW: OpenSAR V4\_02\_01

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

Area Scan	surf_sam_plan.txt				
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete				
Phantom	Validation plane				
Device Position	Body Back				
Band	GSM 850				
Channels	Middle				
Signal	TDMA (Crest factor: 4.0)				

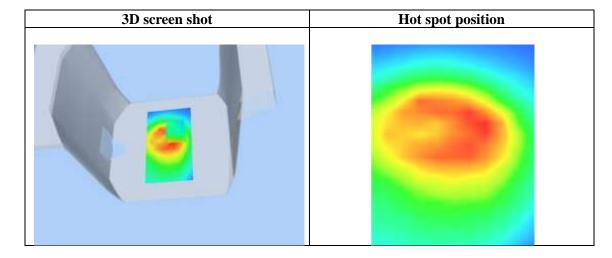


Maximum location: X=15.00, Y=14.00

<b>SAR 10g (W/Kg)</b>	0.489498		
SAR 1g (W/Kg)	0.831159		

Report No.: AGC00653150905FH01 Page 96 of 139

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.7525	0.4508	0.2648	0.1639	0.1076	0.0686
	SA	R. 7. Av	is Scan	(X = 1	5, Y = 1	(4)	
		,	ib boui	(21 1		,	
	0.8-	$\perp$					
	0.6-	$+\lambda$					
	ල 0.5-	$++\lambda$					
	© 0.5- ≥ 0.4-	<del>                                     </del>	$\longrightarrow$				
	聚 o. 3-		+		$\perp$		
	0.2-		++				
				+			
	0.0-  0.02			20.0	25.0 30	.0 35.0	
			Z	(mm)			



Page 97 of 139

Test Laboratory: AGC Lab Date: Oct. 26,2015

PCS 1900 Mid-Touch-Right <SIM 1> DUT: Tablet PC; Type: UNIVERSAL

Communication System: Generic GSM; Communication System Band: PCS 1900; Duty Cycle: 1:8.3; Conv.F=5.40; Frequency: 1880 MHz; Medium parameters used: f = 1900 MHz;  $\sigma = 1.40$  mho/m;  $\epsilon = 39.90$ ;  $\rho = 1000$  kg/m³;

Phantom section: Right Section

Ambient temperature (°C): 21.8, Liquid temperature (°C): 21.8

## **SATIMO Configuration:**

• Probe: SSE5; Calibrated: 07/10/2015; Serial No.: SN 19/15 EP254

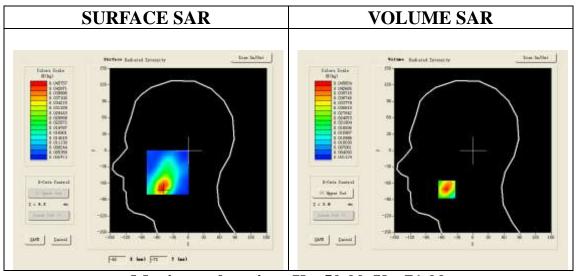
· Sensor-Surface: 4mm (Mechanical Surface Detection)

· Phantom: Flat Phantom; Type: Elliptical Phantom

· Measurement SW: OpenSAR V4\_02\_01

Configuration/PCS1900 Mid-Touch-Right/Area Scan: Measurement grid: dx=8mm, dy=8mm Configuration/PCS1900 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	PCS 1900					
Channels	Middle					
Signal	TDMA (Crest factor: 8.0)					

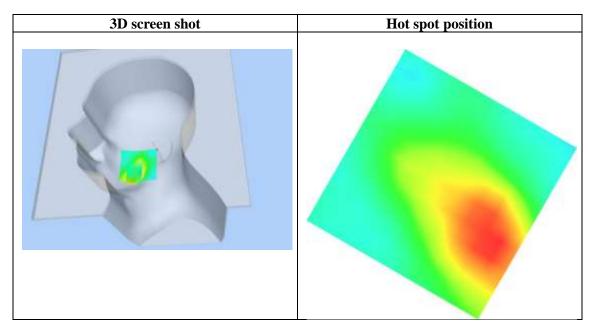


**Maximum location: X=-50.00, Y=-71.00** 

SAR 10g (W/Kg)	0.025635		
SAR 1g (W/Kg)	0.043454		

Report No.: AGC00653150905FH01 Page 98 of 139

Z (mm)	0.00	4.00		9.00	14.00	19.00	24.00	29.00
SAR	0.0000	0.0457	0	0.0282	0.0203	0.0148	0.0090	0.0060
(W/Kg)								_
	SAR	, Z Ax	is	Scan	(X = -i	50, Y =	-71)	
	0.046-		-		-	1 1 1	+ + -	
	0.040-	$+\lambda$	+					
	0.035-	<del></del>	lacksquare					
	(¥ 0.030 ≥ 0.025	+	N					
	€ 0.025-	+	+					
	뚫 0.020-	+	+	$\overline{}$				
	0.015-	++	+					
	0.010-	++	+					
	0.004-	++	+				<del> </del>	
	0.0	2.55.0	7.510.	.0 15		25.0 30	0.0 35.0	
_					Z (mm)			



Page 99 of 139

Test Laboratory: AGC Lab Date: Oct. 26,2015

PCS 1900 Mid-Touch-Right <SIM 2> DUT: Tablet PC; Type: UNIVERSAL

Communication System: Generic GSM; Communication System Band: PCS 1900; Duty Cycle: 1:8.3; Conv.F=5.40; Frequency: 1880 MHz; Medium parameters used: f = 1900 MHz;  $\sigma = 1.40$  mho/m;  $\epsilon = 39.90$ ;  $\rho = 1000$  kg/m³;

Phantom section: Right Section

Ambient temperature (°C): 21.8, Liquid temperature (°C): 21.8

## **SATIMO Configuration:**

• Probe: SSE5; Calibrated: 07/10/2015; Serial No.: SN 19/15 EP254

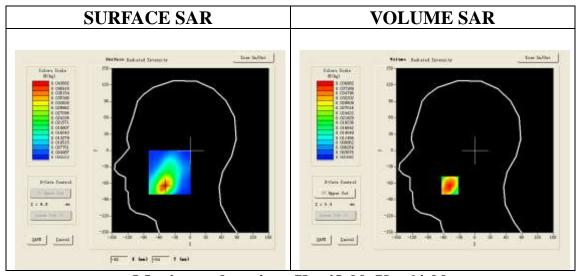
· Sensor-Surface: 4mm (Mechanical Surface Detection)

· Phantom: Flat Phantom; Type: Elliptical Phantom

· Measurement SW: OpenSAR V4\_02\_01

Configuration/PCS1900 Mid-Touch-Right/Area Scan: Measurement grid: dx=8mm, dy=8mm Configuration/PCS1900 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	PCS 1900			
Channels	Middle			
Signal	TDMA (Crest factor: 8.0)			

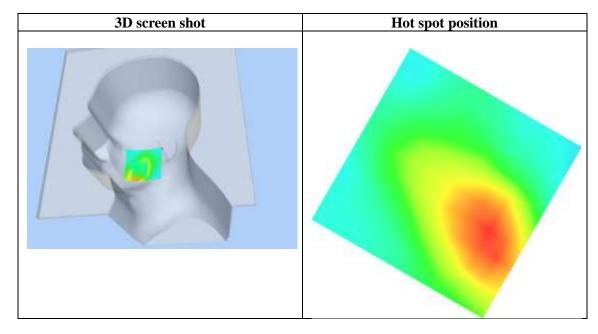


**Maximum location: X=-48.00, Y=-64.00** 

SAR 10g (W/Kg)	0.023686		
SAR 1g (W/Kg)	0.038684		

Report No.: AGC00653150905FH01 Page 100 of 139

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00			
SAR	0.0000	0.0400	0.0274	0.0186	0.0138	0.0095	0.0059			
(W/Kg)							_			
	SAR, Z Axis Scan ( $X = -48$ , $Y = -64$ )									
	0.040-									
	0.035-	+N								
	0.030-	++	+							
	∯ 0.025-		$\overline{}$							
	(%) 0.025 0.020		+N							
	ශි 0.015-									
	0.010-									
	0.004-									
	0.0	2.5 5.0 7.5	510.0 15.	0 20.0 Z (mm)	25.0 30	). 0 35. 0				
_				2 (1111)						



Page 101 of 139

Test Laboratory: AGC Lab Date: Oct. 26,2015

PCS 1900 Mid-Body-Back (MS)<SIM 1> DUT: Tablet PC; Type: UNIVERSAL

Communication System: Generic GSM; Communication System Band: PCS 1900; Duty Cycle: 1:8.3; Conv.F=5.61; Frequency: 1880 MHz; Medium parameters used: f = 1900 MHz;  $\sigma = 1.52$  mho/m;  $\epsilon r = 53.69$ ;  $\rho = 1000$  kg/m³;

Phantom section: Flat Section

Ambient temperature ( $^{\circ}$ C): 21.8, Liquid temperature ( $^{\circ}$ C): 21.5

## SATIMO Configuration:

• Probe: SSE5; Calibrated: 07/10/2015; Serial No.: SN 19/15 EP254

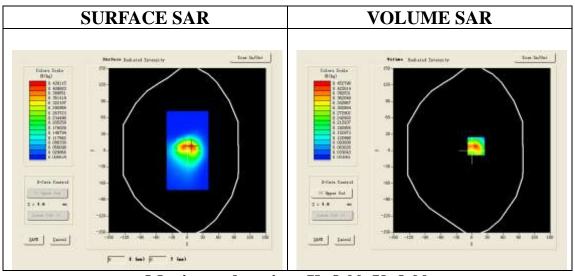
· Sensor-Surface: 4mm (Mechanical Surface Detection)

· Phantom: Flat Phantom; Type: Elliptical Phantom

· Measurement SW: OpenSAR V4\_02\_01

Configuration/PCS1900 Mid-Body-Back/Area Scan: Measurement grid: dx=8mm, dy=8mm Configuration/PCS1900 Mid-Body-Back/Zoom Scan: Measurement grid: dx=8mm, dy=8mm, dz=5mm;

Area Scan	surf_sam_plan.txt				
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete				
Phantom	Validation plane				
Device Position	Body Back				
Band	PCS 1900				
Channels	Middle				
Signal	TDMA (Crest factor: 8.0)				

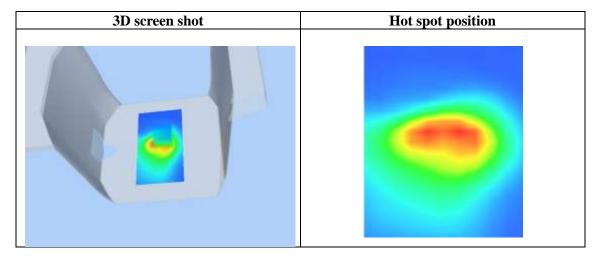


Maximum location: X=8.00, Y=8.00

SAR 10g (W/Kg)	0.223846		
SAR 1g (W/Kg)	0.455025		

Report No.: AGC00653150905FH01 Page 102 of 139

Z (mm) SAR	0.00	4.00 0.4528	9.00 0.1930	14.00 0.0830	19.00 0.0435	24.00 0.0236	29.00 0.0125
(W/Kg)	0.000	011020	0,2,50	0.000	010 100	0,0200	010120
	S	AR, Z A	xis Sca	n (X = :	8, Y = 8	3)	
	0.5-						
	0.4-	+					
	დ 0.3-						
	SAR (%/kg)	$  \   \ \rangle$					
	0.1-						
	0.0-						
	0.02	.5 5.0 7.51		) 20.0 :(mm)	25.0 30	.0 35.0	



Page 103 of 139

Test Laboratory: AGC Lab Date: Oct. 26,2015

PCS 1900 Mid-Body-Back (MS)<SIM 2> DUT: Tablet PC; Type: UNIVERSAL

Communication System: Generic GSM; Communication System Band: PCS 1900; Duty Cycle: 1:8.3; Conv.F=5.61; Frequency: 1880 MHz; Medium parameters used: f = 1900 MHz;  $\sigma = 1.52$  mho/m;  $\epsilon = 53.69$ ;  $\rho = 1000$  kg/m³;

Phantom section: Flat Section

Ambient temperature ( $^{\circ}$ C): 21.8, Liquid temperature ( $^{\circ}$ C): 21.5

#### **SATIMO Configuration:**

• Probe: SSE5; Calibrated: 07/10/2015; Serial No.: SN 19/15 EP254

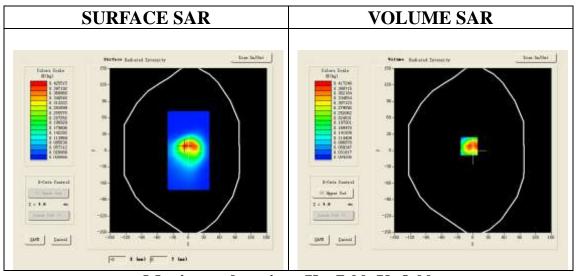
· Sensor-Surface: 4mm (Mechanical Surface Detection)

· Phantom: Flat Phantom; Type: Elliptical Phantom

· Measurement SW: OpenSAR V4\_02\_01

Configuration/PCS1900 Mid-Body-Back/Area Scan: Measurement grid: dx=8mm, dy=8mm Configuration/PCS1900 Mid-Body-Back/Zoom Scan: Measurement grid: dx=8mm, dy=8mm, dz=5mm;

Area Scan	surf_sam_plan.txt				
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete				
Phantom	Validation plane				
Device Position	Body Back				
Band	PCS 1900				
Channels	Middle				
Signal	TDMA (Crest factor: 8.0)				

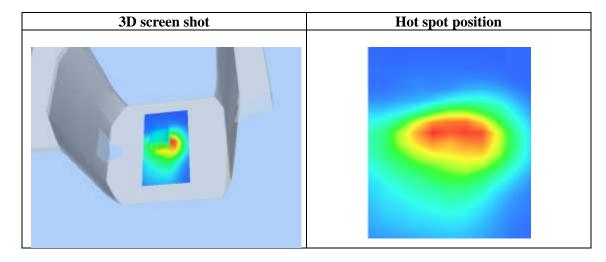


Maximum location: X=-7.00, Y=8.00

SAR 10g (W/Kg)	0.229650		
SAR 1g (W/Kg)	0.431606		

Report No.: AGC00653150905FH01 Page 104 of 139

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00		
SAR (W/Kg)	0.0000	0.4045	0.2489	0.1329	0.0795	0.0421	0.0252		
	SAR, Z Axis Scan $(X = -7, Y = 8)$								
	0.40-								
	0.35-	$+\lambda+$	+++						
	0.30-	++							
	(2) 0.25 - — (2) 0.20 - —	111							
	중 0.15-								
	0.10-	+++	++	+					
	0.05 - 0.01 -		+++		<b>-</b>				
	0.0	2.5 5.0 7.5		0 20.0 Z(mm)	25.0 30	i.o 35i.o			
_				- VIIII /					



Page 105 of 139

Test Laboratory: AGC Lab Date: Oct. 26,2015

GPRS1900 Mid-Touch-Right (2up) DUT: Tablet PC; Type: UNIVERSAL

Communication System: GPRS-2Slot; Communication System Band: PCS 1900; Duty Cycle: 1:4.2; Conv.F=5.40; Frequency: 1880 MHz; Medium parameters used: f = 1900 MHz;  $\sigma = 1.40$  mho/m;  $\epsilon r = 39.90$ ;  $\rho = 1000$  kg/m³;

Phantom section: Right Section

Ambient temperature ( $^{\circ}$ C): 21.8, Liquid temperature ( $^{\circ}$ C): 22.3

# **SATIMO Configuration:**

• Probe: SSE5; Calibrated: 07/10/2015; Serial No.: SN 19/15 EP254

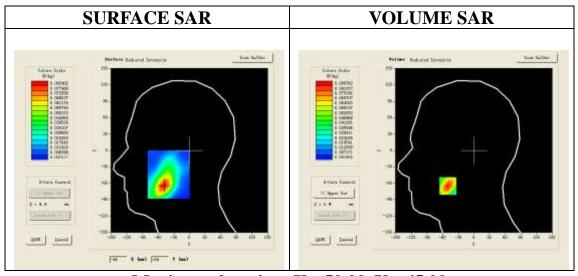
· Sensor-Surface: 4mm (Mechanical Surface Detection)

· Phantom: SAM twin phantom

· Measurement SW: OpenSAR V4\_02\_01

Configuration/GPRS1900 Mid-Touch-Right/Area Scan: Measurement grid: dx=8mm, dy=8mm Configuration/GPRS1900 Mid-Touch-Right/Zoom Scan: Measurement grid: dx=8mm, dy=8mm, dz=5mm;

Area Scan	sam_direct_droit2_surf8mm.txt				
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete				
Phantom	Right head				
Device Position	Cheek				
Band	PCS 1900				
Channels	Middle				
Signal	TDMA (Crest factor: 4.0)				

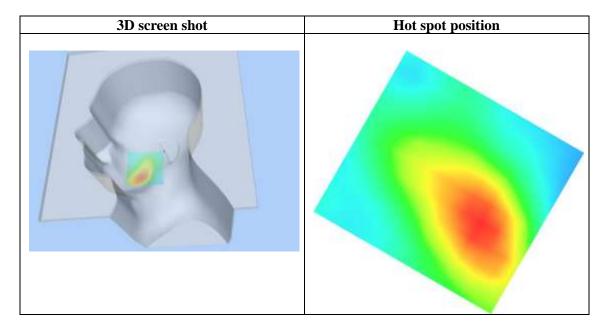


**Maximum location: X=-50.00, Y=-65.00** 

SAR 10g (W/Kg)	0.047928			
SAR 1g (W/Kg)	0.081834			

Report No.: AGC00653150905FH01 Page 106 of 139

Z (mm) SAR	0.00	4.00 0.0868	9.00 0.0570	14.00 0.0370	19.00 0.0244	24.00 0.0166	29.00 0.0103
(W/Kg)	0.0000	0.0000	0.0570	0.0370	0.0244	0.0100	0.0103
	SAR	, Z Axi	s Scan	(X = -5	0, Y = ·	-65)	
	0.09 - 0.08 -						
	0.07-	$\bot \bot \bot$					
	G 0.06-	++	+++	$\perp$			
	0.06-		$\longrightarrow$				
	ू सू 0.04-		$+\lambda$	$\perp$			
	ි් 0.03- <u></u>		++	$\downarrow \downarrow \downarrow \downarrow$			
	0.02-				$\longrightarrow$		
	0.01-						
		2.55.07.5	10.0 15.	0 20.0	25.0 30	.0 35.0	
			:	Z (mm)			



Page 107 of 139

Test Laboratory: AGC Lab Date: Oct. 26,2015

GPRS 1900 Mid-Body-Back (2up) DUT: Tablet PC; Type: UNIVERSAL

Communication System: GPRS-2Slot; Communication System Band: PCS 1900; Duty Cycle: 1:4.2; Conv.F=5.61; Frequency: 1880 MHz; Medium parameters used: f = 1900 MHz;  $\sigma = 1.52$  mho/m;  $\epsilon r = 53.69$ ;  $\rho = 1000$  kg/m³;

Phantom section: Flat Section

Ambient temperature ( $^{\circ}$ C): 21.8, Liquid temperature ( $^{\circ}$ C): 22.3

#### **SATIMO Configuration:**

• Probe: SSE5; Calibrated: 07/10/2015; Serial No.: SN 19/15 EP254

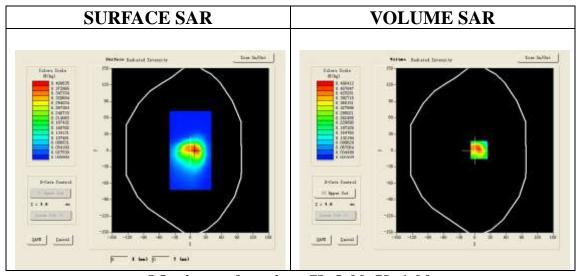
· Sensor-Surface: 4mm (Mechanical Surface Detection)

· Phantom: SAM twin phantom

· Measurement SW: OpenSAR V4\_02\_01

Configuration/GPRS1900 Mid-Body-Back/Area Scan: Measurement grid: dx=8mm, dy=8mm Configuration/GPRS1900 Mid-Body-Back/Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm;

Area Scan	surf_sam_plan.txt				
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete				
Phantom	Validation plane				
Device Position	Body Back				
Band	PCS 1900				
Channels	Middle				
Signal	TDMA (Crest factor: 4.0)				

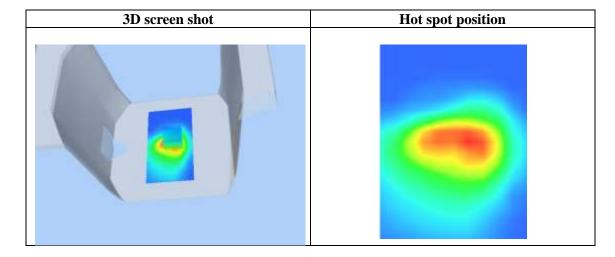


Maximum location: X=8.00, Y=1.00

SAR 10g (W/Kg)	0.218248		
SAR 1g (W/Kg)	0.457192		

Report No.: AGC00653150905FH01 Page 108 of 139

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00		
SAR	0.0000	0.4904	0.2425	0.0866	0.0454	0.0223	0.0106		
(W/Kg)							_		
	SAR, Z Axis Scan $(X = 8, Y = 1)$								
	J	ш, сп	MIS DCG	11 (K –	0, 1 – 1	.,			
	0.5-								
	0.4-								
		$  \cdot   \setminus  $							
	(%) 0.3- (%)	++	+++	+					
	왕 0.2-		N	+					
	0.1-								
	0.1		\	1					
	0.0-				<del></del>				
	0.02	.5 5.0 7.51			25.0 30	.0 35.0			
			7	(mm)					



Page 109 of 139

Test Laboratory: AGC Lab Date: Oct. 26,2015

 $\begin{array}{ll} \text{WCDMA Band} & \text{II} & \text{Mid-Touch-Right (RMC)} \\ \text{DUT: Tablet PC;} & \text{Type: UNIVERSAL} \end{array}$ 

Communication System: UMTS; Communication System Band: Band II UTRA/FDD; Duty Cycle:1:1; Conv.F=5.40; Frequency: 1880 MHz; Medium parameters used: f = 1900 MHz;  $\sigma = 1.40$  mho/m;  $\epsilon r = 39.90$ ;  $\rho = 1000$  kg/m³;

Phantom section: Right Section

Ambient temperature (°C): 21.8, Liquid temperature (°C): 21.8

#### **SATIMO Configuration:**

• Probe: SSE5; Calibrated: 07/10/2015; Serial No.: SN 19/15 EP254

· Sensor-Surface: 4mm (Mechanical Surface Detection)

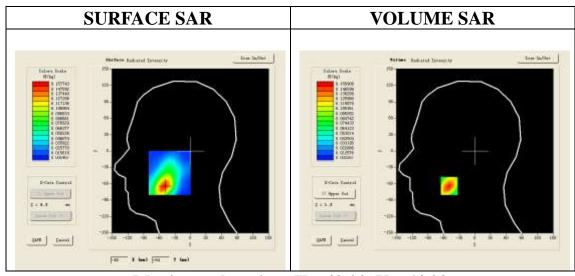
· Phantom: Flat Phantom; Type: Elliptical Phantom

· Measurement SW: OpenSAR V4\_02\_01

Configuration/WCDMA band II Mid-Touch-Right/Area Scan: Measurement grid: dx=8mm, dy=8mm

Configuration/WCDMA band II 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	WCDMA band II				
Channels	Middle				
Signal	CDMA (Crest factor: 1.0)				

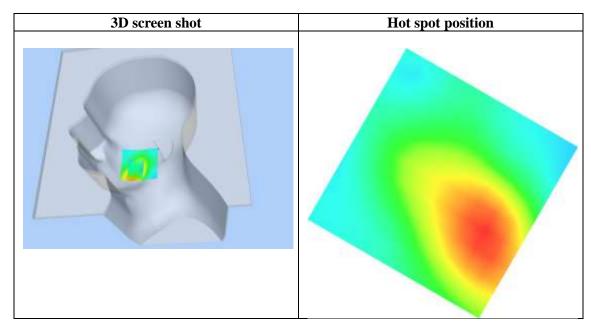


**Maximum location: X=-49.00, Y=-64.00** 

SAR 10g (W/Kg)	0.089318			
SAR 1g (W/Kg)	0.149762			

Report No.: AGC00653150905FH01 Page 110 of 139

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR	0.0000	0.1569	0.1018	0.0699	0.0467	0.0312	0.0205
(W/Kg)							
	0. 16 - 0. 14 - 0. 12 - (%) 0. 10 -	, Z Axi	s Scan	(X = -4)	9, Y = -	-64)	
	0.08- 5 0.06-						
	0.04-				+		
	0.01-	2.55.07.5			25.0 30	.0 35.0	
_				Z (mm)			



Page 111 of 139

Test Laboratory: AGC Lab Date: Oct. 26,2015

WCDMA Band II Low-Body-Towards Grounds (RMC 12.2kbps)

DUT: Tablet PC; Type: UNIVERSAL

Communication System: UMTS; Communication System Band: Band II UTRA/FDD; Duty Cycle:1:1; Conv.F=5.61; Frequency: 1852.4 MHz; Medium parameters used: f = 1900 MHz;  $\sigma = 1.49 \text{ mho/m}$ ;  $\epsilon = 54.00$ ;  $\rho = 1000 \text{ kg/m}^3$ ;

Phantom section: Flat Section

Ambient temperature ( $^{\circ}$ C): 21.8, Liquid temperature ( $^{\circ}$ C): 21.5

# **SATIMO Configuration:**

Probe: SSE5; Calibrated: 07/10/2015; Serial No.: SN 19/15 EP254

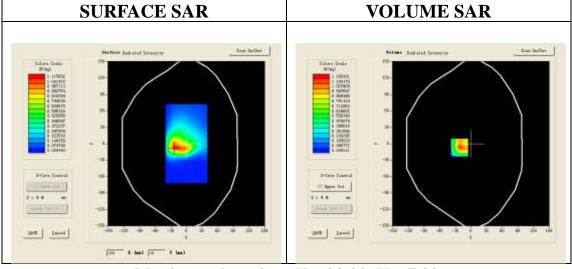
· Sensor-Surface: 4mm (Mechanical Surface Detection)

· Phantom: Flat Phantom; Type: Elliptical Phantom

· Measurement SW: OpenSAR V4\_02\_01

**Configuration/ WCDMA band** II **Low-Body-back/Area Scan:** Measurement grid: dx=8mm, dy=8mm **Configuration/ WCDMA band** II **Low-Body-back/Zoom Scan:** Measurement grid: dx=8mm,dy=8mm, dz=5m;

Area Scan	surf_sam_plan.txt				
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete				
Phantom	Validation plane				
Device Position	Body Back				
Band	WCDMA band II				
Channels	Low				
Signal	CDMA (Crest factor: 1.0)				

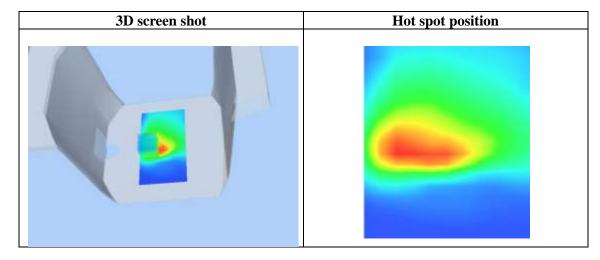


Maximum location: X=-22.00, Y=-7.00

<b>SAR 10g (W/Kg)</b>	0.623397		
SAR 1g (W/Kg)	1.128178		

Page 112 of 139

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR	0.0000	1.1824	0.7130	0.3420	0.1710	0.0867	0.0451
(W/Kg)							_
	SAI	R, Z Axi	s Scan	(X = -2)	2, Y =	-7)	
	1.2-						
	1.0-						
	⊋ 0.8-	++	+++		+		
	-8.0 (%/kg)		$\downarrow \downarrow \downarrow$		$\perp$		
	왕 0.4-		$+\lambda +$		$\perp$		
	0.2-		++		$\perp$		
	0.0-				++-		
	0.0 2	.5 5.0 7.51			25. 0 30	.0 35.0	
_				(mm)			



Page 113 of 139

Test Laboratory: AGC Lab Date: Oct. 22,2015

WCDMA Band V Mid-Tilt-Right (RMC)
DUT: Tablet PC; Type: UNIVERSAL

Communication System: UMTS; Communication System Band: BAND V UTRA/FDD; Duty Cycle:1: 1; Conv.F=6.36;

Frequency: 836.6 MHz; Medium parameters used: f = 835MHz;  $\sigma=0.90$  mho/m;  $\epsilon r = 41.59$ ;  $\rho=1000$  kg/m³;

Phantom section: Right Section

Ambient temperature ( $^{\circ}$ C): 22.5, Liquid temperature ( $^{\circ}$ C): 22.3

# **SATIMO Configuration:**

Probe: SSE5; Calibrated: 07/10/2015; Serial No.: SN 19/15 EP254

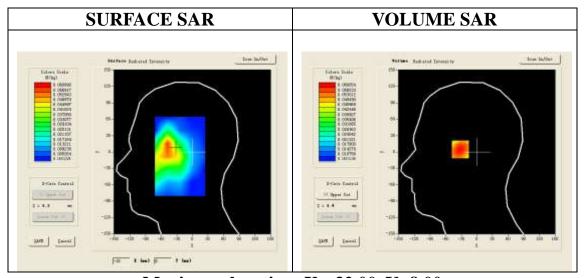
· Sensor-Surface: 4mm (Mechanical Surface Detection)

Phantom: Flat Phantom; Type: Elliptical Phantom

· Measurement SW: OpenSAR V4\_02\_01

Configuration/ WCDMA Band V Mid-Tilt-Right/Area Scan: Measurement grid: dx=8mm, dy=8mm Configuration/ WCDMA Band V Mid-Tilt-Right/Zoom Scan: Measurement grid: dx=8mm, dy=8mm, dz=5mm;

Area Scan	sam direct droit2 surf8mm.txt				
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete				
Phantom	Right head				
Device Position	Tilt				
Band	WCDMA Band V				
Channels	Middle				
Signal	CDMA (Crest factor: 1.0)				

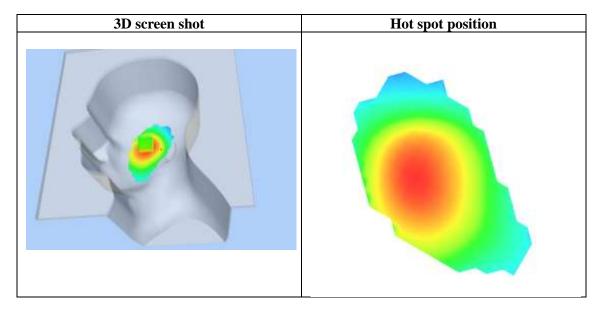


Maximum location: X=-32.00, Y=8.00

SAR 10g (W/Kg)	0.043122			
SAR 1g (W/Kg)	0.058070			

Report No.: AGC00653150905FH01 Page 114 of 139

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00		
SAR	0.0000	0.0601	0.0469	0.0366	0.0287	0.0226	0.0180		
_(W/Kg)									
	SAR, Z Axis Scan $(X = -32, Y = 8)$								
	0.06-								
	0.05-	++	+++						
	0.04-		$\downarrow\downarrow$						
	₹ 0.03-								
	0.02-				+				
	0. 01 – 0. 0 :		10.0 15.1	0 20.0	25.0 30	.0 35.0			
_			7	Z (mm)					



Page 115 of 139

Test Laboratory: AGC Lab Date: Oct. 22,2015

WCDMA Band V Mid- Edge 3 (RMC)
DUT: Tablet PC; Type: UNIVERSAL

Communication System: UMTS; Communication System Band: BAND V UTRA/FDD; Duty Cycle:1: 1; Conv.F=6.56

Frequency: 836.6 MHz; Medium parameters used: f = 835MHz;  $\sigma = 0.97$  mho/m;  $\epsilon r = 55.19$ ;  $\rho = 1000$ kg/m³;

Phantom section: Flat Section

Ambient temperature (°C): 22.5, Liquid temperature (°C): TTPPB

# SATIMO Configuration:

• Probe: SSE5; Calibrated: 07/10/2015; Serial No.: SN 19/15 EP254

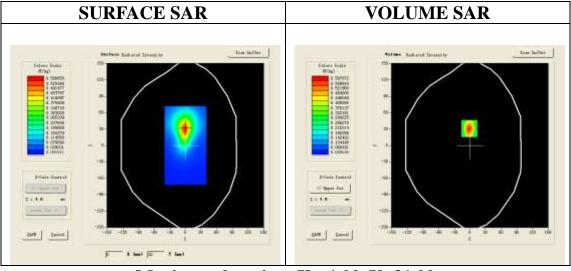
Sensor-Surface: 4mm (Mechanical Surface Detection)

· Phantom: SAM twin phantom

· Measurement SW: OpenSAR V4\_02\_01

Configuration/ WCDMA Band V Mid- Edge 3 /Area Scan: Measurement grid: dx=8mm, dy=8mm Configuration/ WCDMA Band V Mid- Edge 3 /Zoom Scan: Measurement grid: dx=8mm, dy=8mm, dz=5mm;

Area Scan	surf_sam_plan.txt				
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete				
Phantom	Validation plane				
Device Position	Edge 3				
Band	WCDMA Band V				
Channels	Middle				
Signal	CDMA (Crest factor: 1.0)				

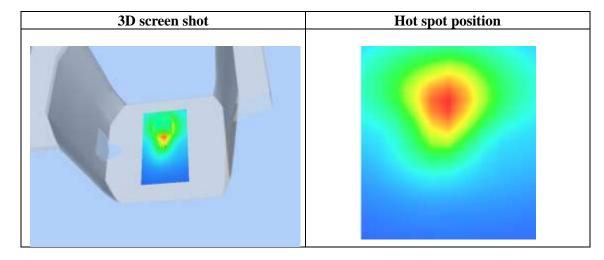


Maximum location: X=-1.00, Y=31.00

SAR 10g (W/Kg)	0.325183		
SAR 1g (W/Kg)	0.593923		

Report No.: AGC00653150905FH01 Page 116 of 139

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.5979	0.3394	0.2114	0.1375	0.0924	0.0620
	SA	R, Z Ax	is Scan	(X = -	1, Y = 3	31)	
	0.6-						
	0.5-	$ \mathcal{A} $					
	⊋ 0. 4-	++					
	23 0.4-		$\downarrow \downarrow \downarrow$				
	₩ 0.2-		$\perp$				
	0.1-			<b>&gt;</b>			
	0.0- 0.02	.5 5.0 7.51	.0.0 15.0		25.0 30	.0 35.0	
_			7	(mm)			



Page 117 of 139

Test Laboratory: AGC Lab Date: Oct. 31,2015

LTE Band IV Mid-Touch-Right (1 RB#99) DUT: Tablet PC; Type: UNIVERSAL

Communication System: LTE; Communication System Band: LTE Band  ${\rm IV}$ ; Duty Cycle: 1:1; Conv.F=4.77; Frequency:1732.5MHz; Medium parameters used: f =1750 MHz;  $\sigma$ = 0.88 mho/m;  $\epsilon$ r = 40.76;  $\rho$ = 1000 kg/m³;

Phantom section: Right Section

Ambient temperature ( $^{\circ}$ ): 21.9, Liquid temperature ( $^{\circ}$ ): 21.4

# **SATIMO Configuration:**

Probe: SSE5; Calibrated: 07/10/2015; Serial No.: SN 19/15 EP254

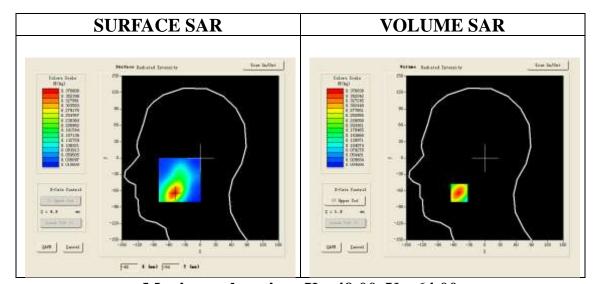
Sensor-Surface: 4mm (Mechanical Surface Detection)

Phantom: Flat Phantom; Type: Elliptical Phantom

· Measurement SW: OpenSAR V4\_02\_01

Configuration/ LTE Band IV Mid-Touch- Right /Area Scan: Measurement grid: dx=8mm, dy=8mm Configuration/ LTE Band IV Mid-Touch- Right /Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm;

Area Scan	sam_direct_droit2_surf8mm.txt				
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm				
Phantom	Right head				
Device Position	Cheek				
Band	LTE Band IV				
Channels	Middle				
Signal	OFDM (Crest factor: 1.0)				

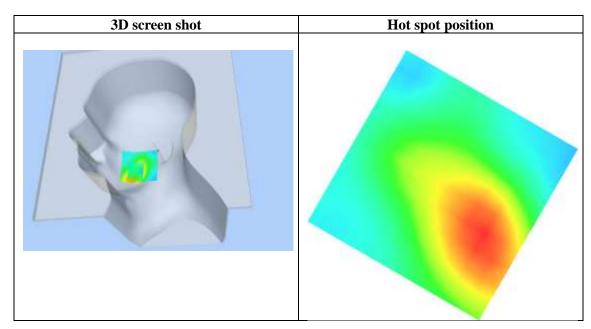


**Maximum location: X=-49.00, Y=-64.00** 

SAR 10g (W/Kg)	0.213558		
SAR 1g (W/Kg)	0.358409		

Report No.: AGC00653150905FH01 Page 118 of 139

Z (mm) SAR (W/Kg)	0.00	4.00 0.3768	9.00 0.2424	14.00 0.1637	19.00 0.1098	24.00 0.0729	29.00 0.0486
	SAR	, Z Axi	s Scan	(X = -4	9, Y = -	-64)	
	0.38-						
	0.30-	+ + +	+				
	© 0.25- ≥ 0.20-						
	& 0.20-						
	0.10-	+ + +					
	0.03-						
	0.02	2.5 5.0 7.5		0 20.0 Z (mm)	25.0 30	.0 35.0	
_							



Page 119 of 139

Test Laboratory: AGC Lab Date: Oct. 31,2015

LTE Band IV Low- Edge2 (1RB#0)
DUT: Tablet PC; Type: UNIVERSAL

Communication System: LTE; Communication System Band: LTE Band  $\, \mathrm{IV}$ ; Duty Cycle: 1:1; Conv.F=4.91; Frequency:1720.0 MHz; Medium parameters used:  $f = 1750 \, \mathrm{MHz}$ ;  $\sigma = 1.45 \, \mathrm{mho/m}$ ;  $\epsilon = 54.61$ ;  $\rho = 1000 \, \mathrm{kg/m^3}$ ;

Phantom section: Flat Section

Ambient temperature ( $^{\circ}$ C): 21.9, Liquid temperature ( $^{\circ}$ C): 21.7

# SATIMO Configuration:

• Probe: SSE5; Calibrated: 07/10/2015; Serial No.: SN 19/15 EP254

Sensor-Surface: 4mm (Mechanical Surface Detection)

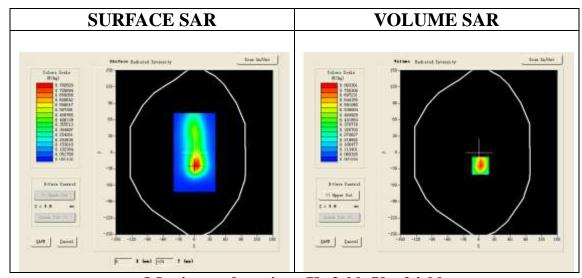
Phantom: Flat Phantom; Type: Elliptical Phantom

· Measurement SW: OpenSAR V4\_02\_01

Configuration/ LTE Band IV Low-Edge2 /Area Scan: Measurement grid: dx=8mm, dy=8mm

Configuration/ LTE Band IV Low- Edge2 /Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5m;

Area Scan	surf_sam_plan.txt				
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm				
Phantom	Validation plane				
Device Position	Horizontal				
Band	LTE Band IV				
Channels	Low				
Signal	OFDM (Crest factor: 1.0)				

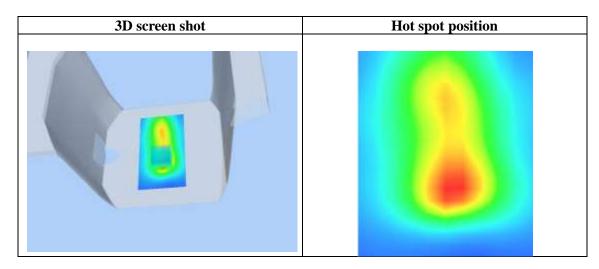


Maximum location: X=3.00, Y=-24.00

<b>SAR 10g (W/Kg)</b>	0.383659		
SAR 1g (W/Kg)	0.756547		

Report No.: AGC00653150905FH01 Page 120 of 139

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.8034	0.4271	0.2318	0.1261	0.0691	0.0388
	SA	R, Z Ax	is Scan	(x = 3	<b>Y</b> = -2	24)	
	0.8-						
	0.7-						
	0.6-	$\perp \downarrow \downarrow$					
	(2) 0.5- & 0.4-	$++\lambda$			$\perp$		
		<del>                                     </del>	+++				
	₩ 0.3-	++	+	+			
	0.2-						
	0.1-						
		.5 5.0 7.51	0.0 15.0	20.0	25.0 30	.0 35.0	
			Z	(mm)			



Page 121 of 139

Test Laboratory: AGC Lab Date: Oct. 31,2015

LTE Band IV High-Body-Edge2 (1 RB#99)
DUT: Tablet PC; Type: UNIVERSAL

Communication System: LTE; Communication System Band: LTE Band  ${\rm IV}$ ; Duty Cycle: 1:1; Conv.F=4.91; Frequency:1745.0MHz; Medium parameters used: f = 1750 MHz;  $\sigma$ = 1.50 mho/m;  $\epsilon$ r =53.86;  $\rho$ = 1000 kg/m³;

Phantom section: Flat Section

Ambient temperature ( $^{\circ}$ ): 21.9, Liquid temperature ( $^{\circ}$ ): 21.7

# **SATIMO Configuration:**

Probe: SSE5; Calibrated: 07/10/2015; Serial No.: SN 19/15 EP254

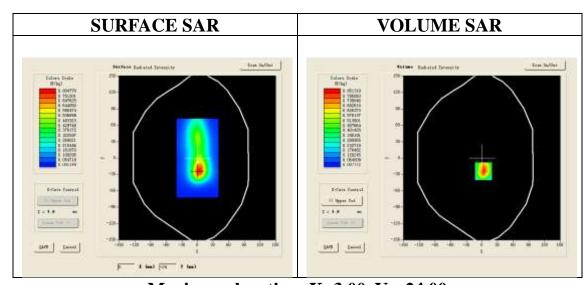
Sensor-Surface: 4mm (Mechanical Surface Detection)

Phantom: Flat Phantom; Type: Elliptical Phantom

· Measurement SW: OpenSAR V4\_02\_01

Configuration/ LTE Band IV High-Edge 2/Area Scan: Measurement grid: dx=8mm, dy=8mm Configuration/ LTE Band IV High- Edge 2 /Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5m;

Area Scan	surf_sam_plan.txt				
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm				
Phantom	Validation plane				
Device Position	Horizontal				
Band	LTE Band IV				
Channels	High				
Signal	OFDM (Crest factor: 1.0)				

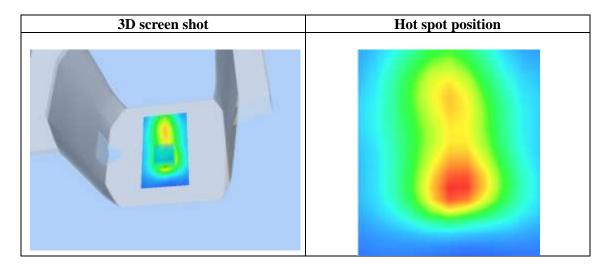


Maximum location: X=3.00, Y=-24.00

SAR 10g (W/Kg)	0.405086		
SAR 1g (W/Kg)	0.800775		

Report No.: AGC00653150905FH01 Page 122 of 139

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.8513	0.4496	0.2437	0.1322	0.0728	0.0403
	SA	R, Z Ax	is Scan	(x = 3	Y = -2	24)	
	0.9-						
		+					
	0.7-						
	0.5- 8 0.4	++					
	ଞ 0.4- ଞ 0.3-						
	0.2-						
	0.1-			1			
	0.0-  0.02			20.0	25.0 30	.0 35.0	
			Z	(mm)			



Page 123 of 139

Test Laboratory: AGC Lab Date: Oct. 22,2015

LTE Band VII Low-Touch-Right (1 RB#0) DUT: Tablet PC; Type: UNIVERSAL

Communication System: LTE; Communication System Band: LTE Band V; Duty Cycle:1:1; Conv.F=4.62 Frequency: 2510MHz; Medium parameters used: f = 2600 MHz;  $\sigma = 1.87 \text{ mho/m}$ ;  $\epsilon = 40.52$ ;  $\rho = 1000 \text{ kg/m}^3$ ;

Phantom section: Right Section

Ambient temperature ( $^{\circ}$ ): 22.5, Liquid temperature ( $^{\circ}$ ): 22.3

# **SATIMO Configuration:**

Probe: SSE5; Calibrated: 07/10/2015; Serial No.: SN 19/15 EP254

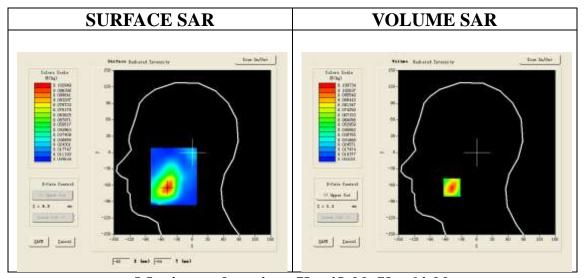
· Sensor-Surface: 4mm (Mechanical Surface Detection)

· Phantom: Flat Phantom; Type: Elliptical Phantom

· Measurement SW: OpenSAR V4 02 01

Configuration/ LTE Band VII Low - Touch- Right /Area Scan: Measurement grid: dx=8mm, dy=8mm Configuration/ LTE Band VII Low - Touch- Right /Zoom Scan: Measurement grid: dx=5mm, dy=5mm, dz=5mm;

Area Scan	sam_direct_droit2_surf8mm.txt				
Zoom Scan	7x7x7,dx=5mm dy=5mm dz=5mm				
Phantom	Right head				
Device Position	Cheek				
Band	LTE Band VII				
Channels	Low				
Signal	OFDM (Crest factor: 1.0)				

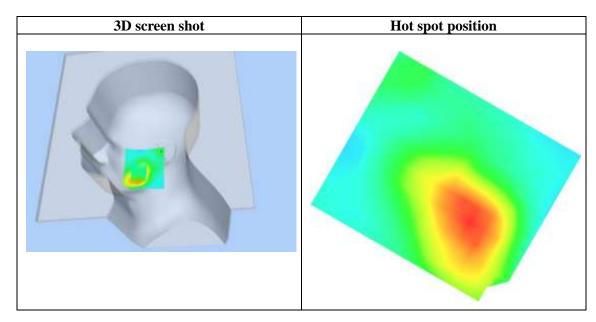


Maximum location: X=-48.00, Y=-64.00

SAR 10g (W/Kg)	0.059618		
SAR 1g (W/Kg)	0.104226		

Report No.: AGC00653150905FH01 Page 124 of 139

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00		
SAR	0.0000	0.1097	0.0650	0.0475	0.0313	0.0189	0.0142		
(W/Kg)							_		
	SAR, Z Axis Scan (X = -48, Y = -64)								
	0.11-								
	0.10-	+	+++						
	ე 0.08-	++	+						
	(% J. V. S.								
	₩ 0.04-	+++	++	$\Box$					
	0.02-	+	+++						
	0.01-								
	0.0	2.55.07.5			25.0 30	.0 35.0			
			:	Z (mm)					



Page 125 of 139

Test Laboratory: AGC Lab Date: Oct. 22,2015

LTE Band VII High-Body-Back (1 RB#0) DUT: Tablet PC; Type: UNIVERSAL

Communication System: LTE; Communication System Band: LTE Band V; Duty Cycle:1:1; Conv.F=4.73; Frequency: 2560 MHz; Medium parameters used: f = 2600 MHz;  $\sigma = 2.15$  mho/m;  $\epsilon = 52.13$ ;  $\rho = 1000$  kg/m³;

Phantom section: Flat Section

Ambient temperature ( $^{\circ}$ C): 22.5, Liquid temperature ( $^{\circ}$ C): 22.3

# **SATIMO Configuration:**

• Probe: SSE5; Calibrated: 07/10/2015; Serial No.: SN 19/15 EP254

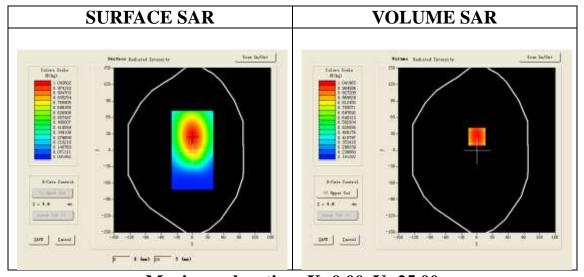
· Sensor-Surface: 4mm (Mechanical Surface Detection)

· Phantom: Flat Phantom; Type: Elliptical Phantom

· Measurement SW: OpenSAR V4\_02\_01

Configuration/ LTE Band VII High-Body-back/Area Scan: Measurement grid: dx=8mm, dy=8mm Configuration/ LTE Band VII High-Body-back/Zoom Scan: Measurement grid: dx=5mm, dy=5mm, dz=5m;

Area Scan	surf_sam_plan.txt				
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm				
Phantom	Validation plane				
Device Position	Body Back				
Band	LTE Band VII				
Channels	High				
Signal	OFDM (Crest factor: 1.0)				

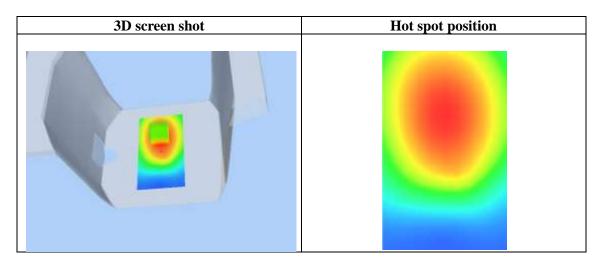


Maximum location: X=0.00, Y=25.00

SAR 10g (W/Kg)	0.775471		
SAR 1g (W/Kg)	1.012163		

Report No.: AGC00653150905FH01 Page 126 of 139

0.00	4.00	9.00	14.00	19.00	24.00	29.00		
0.0000	1.0421	0.8363	0.6735	0.5387	0.4295	0.3414		
SAR - Z - Axis - Scan - (X = 0 - Y = 25)								
Š 0.7-		+						
g 0.6-								
0.3-								
	.'5 5.'0 7.'51			25.0 30	.0 35.0			
			(MM)					
	0.0000 SAR (M/kg) 1.0- 0.9- 0.8- 0.8- 0.6- 0.6- 0.4- 0.3-	0.0000 1.0421  SAR, Z Ax  1.0- 0.9- 0.8- 0.8- 0.6- 0.5- 0.4- 0.3-	0.0000 1.0421 0.8363  SAR, Z Axis Scan  1.0- 0.9- 0.8- 0.8- 0.5- 0.4- 0.3- 0.0 2.5 5.0 7.510.0 15.0	0.0000 1.0421 0.8363 0.6735  SAR, Z Axis Scan (X = 0	0.0000 1.0421 0.8363 0.6735 0.5387  SAR, Z Axis Scan (X = 0, Y = 2)  0.9  0.8  0.7  0.6  0.5  0.4  0.3  0.0 2.5 5.0 7.510.0 15.0 20.0 25.0 30	0.0000 1.0421 0.8363 0.6735 0.5387 0.4295  SAR, Z Axis Scan (X = 0, Y = 25)  1.0- 0.9- 0.8- 0.6- 0.5- 0.4- 0.3- 0.02.5 5.0 7.510.0 15.0 20.0 25.0 30.0 35.0		



Page 127 of 139

Test Laboratory: AGC Lab Date: Oct. 22,2015

802.11b Mid-Touch-Left (DTS)
DUT: Tablet PC; Type: UNIVERSAL

Communication System: Wi-Fi; Communication System Band: 802.11b; Duty Cycle: 1:1; Conv.F=4.84; Frequency: 2437MHz; Medium parameters used: f = 2450 MHz;  $\sigma = 1.75 \text{mho/m}$ ;  $\epsilon r = 40.88$ ;  $\rho = 1000 \text{ kg/m}^3$ ;

Phantom section: Left Section

Ambient temperature ( $^{\circ}$ ): 22.5, Liquid temperature ( $^{\circ}$ ): 22.3

# **SATIMO Configuration:**

Probe: SSE5; Calibrated: 07/10/2015; Serial No.: SN 19/15 EP254

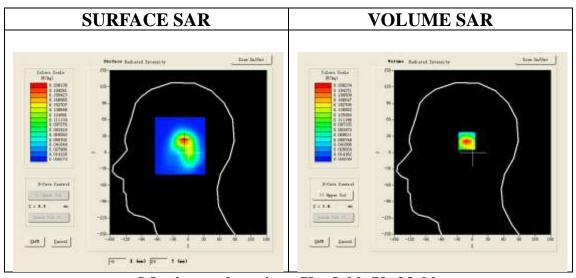
· Sensor-Surface: 4mm (Mechanical Surface Detection)

· Phantom: Flat Phantom; Type: Elliptical Phantom

· Measurement SW: OpenSAR V4 02 01

Configuration/ 802.11b Mid-Touch- Left /Area Scan: Measurement grid: dx=8mm, dy=8mm Configuration/ 802.11b Mid-Touch- Left /Zoom Scan: Measurement grid: dx=5mm, dy=5mm, dz=5mm;

Area Scan	sam_direct_droit2_surf8mm.txt				
Zoom Scan	7x7x7,dx=5mm dy=5mm dz=5mm				
Phantom	Left head				
Device Position	Cheek				
Band	2450				
Channels	Middle				
Signal	OFDM (Crest factor: 1.0)				

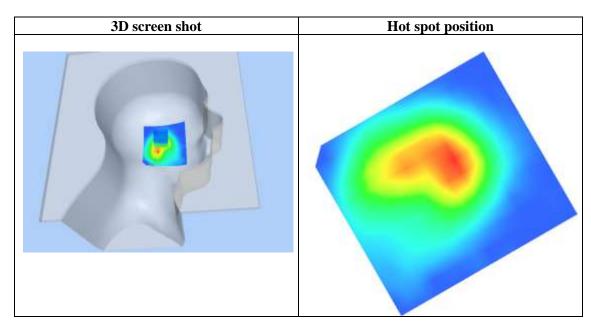


Maximum location: X=-8.00, Y=23.00

SAR 10g (W/Kg)	0.084176		
SAR 1g (W/Kg)	0.196279		

Report No.: AGC00653150905FH01 Page 128 of 139

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR	0.0000	0.2081	0.0893	0.0355	0.0153	0.0055	0.0023
(W/Kg)							
	SA	R, Z Ax	is Scan	(x = -x)	8, Y = 2	23)	
	0. 208 -						
	0.175	$\perp \setminus$					
	0.150-	++++					
	왕 0. 125 - 0. 100 -	$++\lambda$					
		<del>                                     </del>	$\bigcirc$				
	뚨 0.075-	+	$\rightarrow$				
	0.050-	+	+				
	0.025-	+++	<del>                                     </del>	+			
	0.001-						
	0.0	2.5 5.0 7.5		0 20.0 Z (mm)	25.0 30	0.0 35.0	
_				*******			



Page 129 of 139

Test Laboratory: AGC Lab Date: Oct. 31,2015

802.11b Mid-Body-Worn- Back (DTS) DUT: Tablet PC; Type: UNIVERSAL

Communication System: Wi-Fi; Communication System Band: 802.11b; Duty Cycle: 1:1; Conv.F=4.97; Frequency: 2437 MHz; Medium parameters used: f = 2450 MHz;  $\sigma = 1.90$ mho/m;  $\epsilon r = 53.98$ ;  $\rho = 1000$  kg/m³;

Phantom section: Flat Section

Ambient temperature (°C):21.9, Liquid temperature (°C): 22.3

# **SATIMO Configuration:**

• Probe: SSE5; Calibrated: 12/03/2014; Serial No.: SN 22/12 EP159

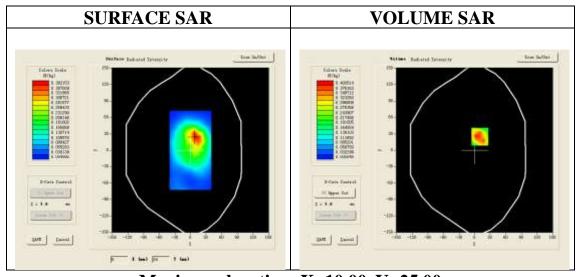
· Sensor-Surface: 4mm (Mechanical Surface Detection)

· Phantom: SAM twin phantom

· Measurement SW: OpenSAR V4\_02\_01

Configuration/802.11b Mid- Body- Back /Area Scan: Measurement grid: dx=8mm, dy=8mm Configuration/802.11b Mid- Body- Back /Zoom Scan: Measurement grid: dx=5mm, dy=5mm, dz=5mm;

Area Scan	surf_sam_plan.txt			
ZoomScan	7x7x7,dx=5mm dy=5mm dz=5mm			
Phantom	Validation plane			
Device Position	Body Back			
Band	2450MHz			
Channels	Middle			
Signal	Crest factor: 1.0			

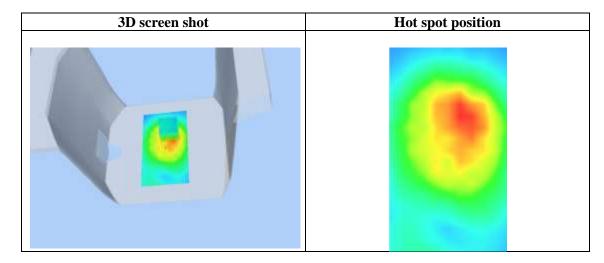


Maximum location: X=10.00, Y=25.00

SAR 10g (W/Kg)	0.201462		
SAR 1g (W/Kg)	0.380318		

Report No.: AGC00653150905FH01 Page 130 of 139

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00		
SAR (W/Kg)	0.0000	0.3685	0.2033	0.1041	0.0732	0.0393	0.0195		
	SAR, Z Axis Scan (X = 10, Y = 25)								
	0.37-								
	0.30-	$+\lambda +$	+++						
	0.25- ≥ 0.20-	$++\lambda$							
		<del>                                     </del>	$\overline{}$						
	왕 0.15- 0.10-								
	0.05-			1					
	0.01-		10.0 15.0		25.0 30	.0 35.0			
	3.0	2.50.01.0		Z (mm)	23.0 00	55.6			



Page 131 of 139

**Reapted SAR** 

Test Laboratory: AGC Lab Date: Oct. 22,2015

GPRS 850 Mid-Touch-Left (2up) DUT: Tablet PC; Type: UNIVERSAL

Communication System: GPRS-2 Slot; Communication System Band: GSM 850; Duty Cycle: 1:4.2; Conv.F=6.36 Frequency: 836.6 MHz; Medium parameters used: f = 835 MHz;  $\sigma = 0.90$  mho/m;  $\epsilon r = 41.59$ ;  $\rho = 1000$  kg/m³;

Phantom section: Left Section

Ambient temperature ( $^{\circ}$ C): 22.5, Liquid temperature ( $^{\circ}$ C): 22.3

# SATIMO Configuration:

Probe: SSE5; Calibrated: 07/10/2015; Serial No.: SN 19/15 EP254

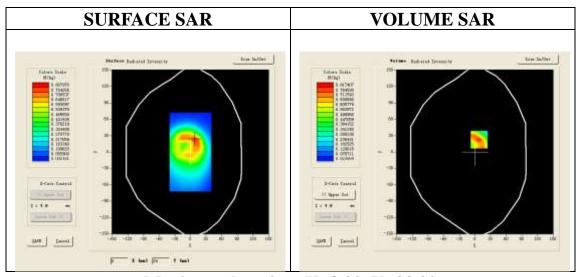
Sensor-Surface: 4mm (Mechanical Surface Detection)

· Phantom: SAM twin phantom

· Measurement SW: OpenSAR V4 02 01

Configuration/GPRS 850 Mid-Touch-Left/Area Scan: Measurement grid: dx=8mm, dy=8mm Configuration/GPRS 850 Mid-Touch-Left/Zoom Scan: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Area Scan	sam_direct_droit2_surf8mm.txt			
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete			
Phantom	Left head			
Device Position	Cheek			
Band	GSM 850			
Channels	Middle			
Signal	TDMA (Crest factor: 4.0)			

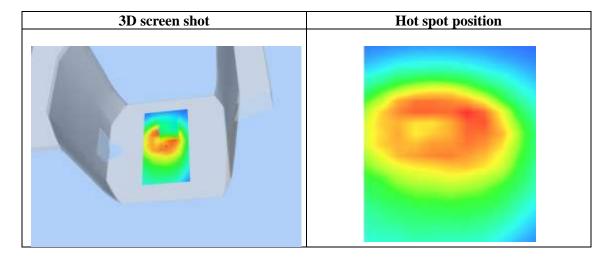


Maximum location: X=8.00, Y=23.00

SAR 10g (W/Kg)	0.477366		
SAR 1g (W/Kg)	0.825006		

Report No.: AGC00653150905FH01 Page 132 of 139

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.8174	0.4726	0.2758	0.1669	0.1117	0.0743
	Si	AR. Z Ax	is Scan	(X = 8	3, ¥ = 2	3)	
	0.8-						
	0.7-						
	_ 0.6-	++			+		
	(%) 0.5- (%) 0.4-				++-		
	0.4- 8 0.3-						
	0.2-		++				
	0.0-				++-		
	0.02	.'5 5.'0 7.'51	0.0 15.0 Z		25.0 30	.0 35.0	
_				, Aum >			



Page 133 of 139

T Test Laboratory: AGC Lab Date: Oct. 26,2015

WCDMA Band II Low-Body-Towards Grounds (RMC 12.2kbps)

DUT: Tablet PC; Type: UNIVERSAL

Communication System: UMTS; Communication System Band: Band II UTRA/FDD; Duty Cycle:1:1; Conv.F=5.61; Frequency: 1852.4 MHz; Medium parameters used: f = 1900 MHz;  $\sigma = 1.49 \text{ mho/m}$ ;  $\epsilon = 54.00$ ;  $\rho = 1000 \text{ kg/m}^3$ ;

Phantom section: Flat Section

Ambient temperature ( $^{\circ}$ C): 21.8, Liquid temperature ( $^{\circ}$ C): 21.5

# SATIMO Configuration:

Probe: SSE5; Calibrated: 07/10/2015; Serial No.: SN 19/15 EP254

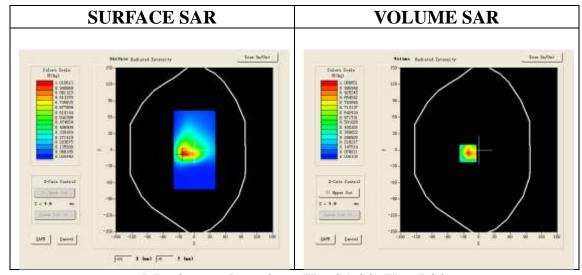
· Sensor-Surface: 4mm (Mechanical Surface Detection)

· Phantom: Flat Phantom; Type: Elliptical Phantom

· Measurement SW: OpenSAR V4\_02\_01

Configuration/ WCDMA band II Low-Body-back/Area Scan: Measurement grid: dx=8mm, dy=8mm Configuration/ WCDMA band II Low-Body-back/Zoom Scan: Measurement grid: dx=8mm, dy=8mm, dz=5m;

Area Scan	surf_sam_plan.txt			
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete			
Phantom	Validation plane			
Device Position	Body Back			
Band	WCDMA band II			
Channels	Low			
Signal	CDMA (Crest factor: 1.0)			

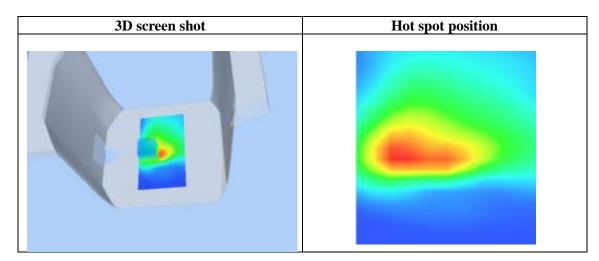


**Maximum location: X=-21.00, Y=-6.00** 

SAR 10g (W/Kg)	0.513269		
SAR 1g (W/Kg)	1.075251		

Report No.: AGC00653150905FH01 Page 134 of 139

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00		
SAR (W/Kg)	0.0000	1.0667	0.4852	0.2318	0.1130	0.0573	0.0299		
	SAR, Z Axis Scan $(X = -21, Y = -6)$								
	1.1-								
	0.8-								
	- 6.0 (%/kg)	$  \   \  $							
	¥ 0.4-	$  \   \  $							
	0.2-								
		.5 5.0 7.51			25.0 30	.0 35.0			
_				(mm)					



Page 135 of 139

Test Laboratory: AGC Lab Date: Oct. 31,2015

LTE Band IV Low- Edge2 (1 RB#0)
DUT: Tablet PC; Type: UNIVERSAL

Communication System: LTE; Communication System Band: LTE Band  $\, {\rm IV}$ ; Duty Cycle:1:1; Conv.F=4.91; Frequency:1720.0 MHz; Medium parameters used: f = 1750 MHz;  $\sigma$ = 1.45 mho/m;  $\epsilon$ r =54.61;  $\rho$ = 1000 kg/m³;

Phantom section: Flat Section

Ambient temperature ( $^{\circ}$ ): 21.9, Liquid temperature ( $^{\circ}$ ): 21.7

# SATIMO Configuration:

Probe: SSE5; Calibrated: 07/10/2015; Serial No.: SN 19/15 EP254

Sensor-Surface: 4mm (Mechanical Surface Detection)

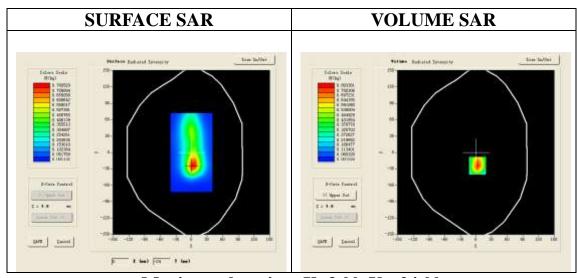
Phantom: Flat Phantom; Type: Elliptical Phantom

· Measurement SW: OpenSAR V4\_02\_01

Configuration/ LTE Band IV Low-Edge2 /Area Scan: Measurement grid: dx=8mm, dy=8mm

Configuration/ LTE Band IV Low- Edge2 /Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5m;

Area Scan	surf_sam_plan.txt			
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm			
Phantom	Validation plane			
Device Position	Horizontal			
Band	LTE Band IV			
Channels	Low			
Signal	OFDM (Crest factor: 1.0)			

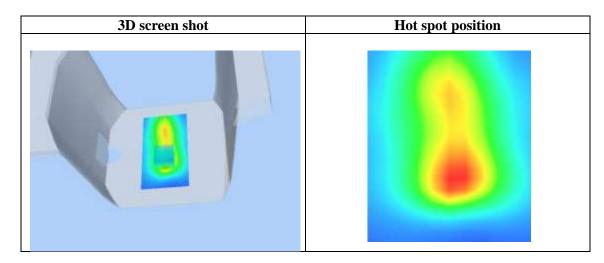


Maximum location: X=3.00, Y=-24.00

SAR 10g (W/Kg)	0.412508		
SAR 1g (W/Kg)	0.748597		

Report No.: AGC00653150905FH01 Page 136 of 139

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	0.7876	0.4706	0.2814	0.1703	0.0948	0.0595
	S	AR. Z. A	xis Scar	n (X = :	3. ¥ = -	24)	
	0.8-	100					
	0.7-						
	0.6-						
	A200 P. St. (200)		0 0 0			- 4 - 2	
	(20 0.5- ≥ 0.4-			$\perp$			
	₩ 0.3-						
	0.2-					- 4 1	
	0.1-			+			
	0.0- 0.02	5 5.0 7.51	0.0 15.0	20.0	25.0 30.	0 35.0	
			Z	(mm)		35	



Page 137 of 139

Test Laboratory: AGC Lab Date: Oct. 22,2015

LTE Band VII High-Body-Back (1 RB#0) DUT: Tablet PC; Type: UNIVERSAL

Communication System: LTE; Communication System Band: LTE Band V; Duty Cycle:1:1; Conv.F=4.73; Frequency: 2560 MHz; Medium parameters used: f = 2600 MHz;  $\sigma = 2.15$  mho/m;  $\epsilon = 52.13$ ;  $\rho = 1000$  kg/m³;

Phantom section: Flat Section

Ambient temperature ( $^{\circ}$ C): 22.5, Liquid temperature ( $^{\circ}$ C): 22.3

# **SATIMO Configuration:**

• Probe: SSE5; Calibrated: 07/10/2015; Serial No.: SN 19/15 EP254

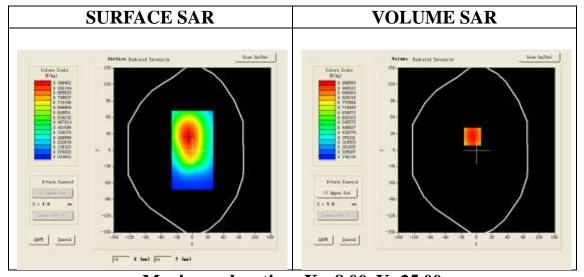
· Sensor-Surface: 4mm (Mechanical Surface Detection)

· Phantom: Flat Phantom; Type: Elliptical Phantom

· Measurement SW: OpenSAR V4\_02\_01

Configuration/ LTE Band VII High-Body-back/Area Scan: Measurement grid: dx=8mm, dy=8mm Configuration/ LTE Band VII High-Body-back/Zoom Scan: Measurement grid: dx=5mm, dy=5mm, dz=5m;

Area Scan	surf_sam_plan.txt			
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm			
Phantom	Validation plane			
Device Position	Body Back			
Band	LTE Band VII			
Channels	High			
Signal	OFDM (Crest factor: 1.0)			

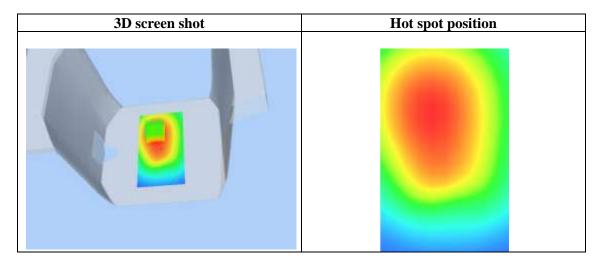


Maximum location: X=-8.00, Y=25.00

SAR 10g (W/Kg)	0.722344		
SAR 1g (W/Kg)	0.961539		

Report No.: AGC00653150905FH01 Page 138 of 139

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR	0.0000	0.9998	0.7801	0.6041	0.4659	0.3578	0.2731
(W/Kg)							_
	C.	n 7 1		/w _	0 8 - (	n=\	
	24	K, Z AX	ıs əcan	$(\mathbf{X} = -$	$8, \ \ Y = 2$	25)	
	1.0-						
	0.9-						
	0.8-						
	(%) 0.7- ≥ 0.6-						
	똜 0.5-						
	0.4-		+	+			
	0.3-		+++	+			
	0.2-						
		.5 5.0 7.51	0.0 15.0	20.0	25.0 30	.0 35.0	
			Z	(mm)			



Page 139 of 139

# **APPENDIX C. TEST SETUP PHOTOGRAPHS & EUT PHOTOGRAPHS**

Refer to Attached files.

# **APPENDIX D. CALIBRATION DATA**

Refer to Attached files.