SAR Test Report

Report No.: AGC03057200502FH01

FCC ID	:	2AWCR-U850
APPLICATION PURPOSE	:	Original Equipment
PRODUCT DESIGNATION	:	4G Wireless Router
BRAND NAME	:	signalinks
MODEL NAME	:	U850
APPLICANT	:	Shenzhen Xinfengweiye Technology Co.,Ltd
DATE OF ISSUE	:	Jun.18,2020
STANDARD(S)	:	IEEE Std. 1528:2013 FCC 47 CFR Part 2§2.1093:2013 IEEE Std C95.1 ™-2005 IEC 62209-1: 2016
REPORT VERSION	:	V1.0

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

Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Jun.18,2020	Valid	Initial Release

Test Report	
Applicant Name	Shenzhen Xinfengweiye Technology Co.,Ltd
Applicant Address	301, Blk 6, Donglongxing Science Park, Huaning Rd., Longhua Dist., Shenzhen, China
Manufacturer Name	Shenzhen Xinfengweiye Technology Co.,Ltd
Manufacturer Address	301, Blk 6, Donglongxing Science Park, Huaning Rd., Longhua Dist., Shenzhen, China
Factory Name	Shenzhen Xinfengweiye Technology Co.,Ltd
Factory Address	301, Blk 6, Donglongxing Science Park, Huaning Rd., Longhua Dist., Shenzhen, China
Product Designation	4G Wireless Router
Brand Name	signalinks
Model Name	U850
Applicable Standard	IEEE Std. 1528:2013 FCC 47 CFR Part 2§2.1093:2013 IEEE Std C95.1 ™-2005 IEC 62209-1: 2016
Test Date	May 22,2020 to Jun.01,2020
Report Template	AGCRT-US-4G/SAR (2018-01-01)

Note: The results of testing in this report apply to the product/system which was tested only.

Prepared By

Jack Gui (Project Engineer) Jun.01,2020

Reviewed By

Angela Li (Reviewer) Jun.18,2020

Approved By

Forrest Lei (Authorized Officer) Jun.18,2020

TABLE OF CONTENTS

1. SUMMARY OF MAXIMUM SAR VALUE

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

Frequency Band	Highest Reported 1g-SAR(W/Kg)	SAR Test Limit (W/Kg)
	Body (with 5mm separation)	
UMTS Band II	0.599	1.6
UMTS Band IV	0.304	
LTE Band 2	0.817	
LTE Band 4	0.773	
LTE Band 7	0.849	
LTE Band 12	0.672	
LTE Band 25	0.821	
WIFI 2.4G	0.112	
SAR Test Result	PASS	

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

- KDB 447498 D01 General RF Exposure Guidance v06
- KDB 447498 D02 SAR Procedures for Dongle Xmtr v02r01
- KDB 648474 D04 Handset SAR v01r03
- KDB 865664 D01 SAR Measurement 100MHz to 6GHz v01r04
- KDB 941225 D01 3G SAR Procedures v03r01
- KDB 248227 D01 802 11 Wi-Fi SAR v02r02
- KDB 941225 D05 SAR for LTE Devices v02r05

2. GENERAL INFORMATION

2.1. EUT Description

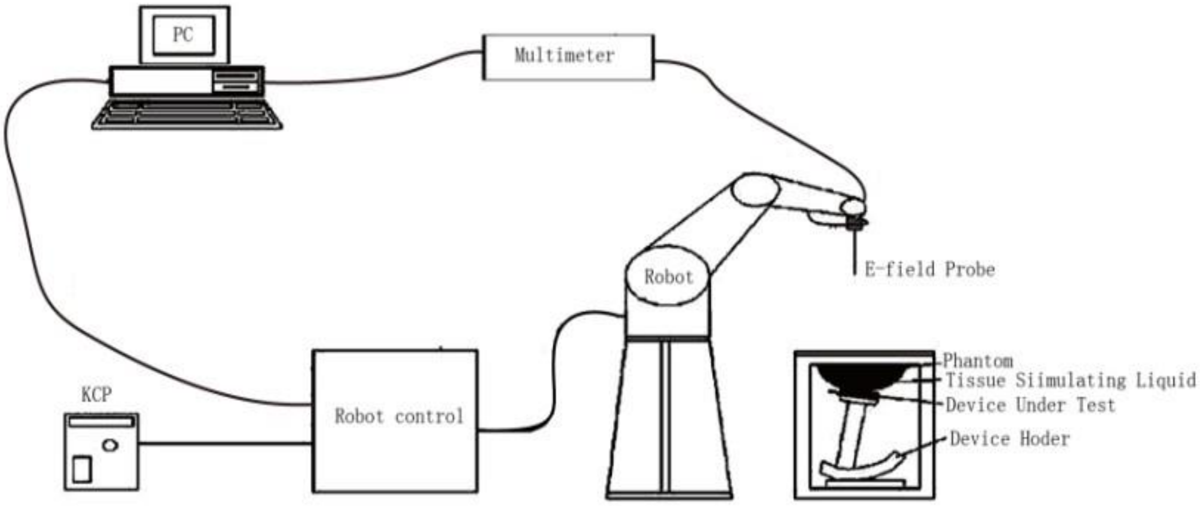
General Information	
Product Designation	4G Wireless Router
Test Model	U850
Hardware Version	F232E_V3.0_RR_FX
Software Version	XFNJ_B03P14_F232E_V3.0_RR_FX_F232_P005
Device Category	Portable
RF Exposure Environment	Uncontrolled
Antenna Type	Internal
WCDMA	
Support Band	☒UMTS FDD Band II ☐UMTS FDD Band 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	FDD Band II: 1850-1910MHz; FDD Band IV: 1712.4-1752.6MHz
RX Frequency Range	FDD Band II: 1930-1990MHz; FDD Band IV: 2112.4-5152.6MHz
Release Version	Rel-6
Type of modulation	HSDPA:QPSK/16QAM; HSUPA:BPSK; WCDMA:QPSK
Antenna Gain	Band II: 1.1dBii; Band IV: 0.9dBi;
Max. Average Power	Band II: 23.06dBm; Band IV: 23.73dBm;
LTE	
Support Band	☒FDD Band 2 ☒FDD Band 4 ☐FDD Band 5 ☒FDD Band 7 ☒FDD Band 12 ☐FDD Band 17 ☒FDD Band 25 ☐FDD Band 26 ☐TDD Band 41 (U.S. Bands) ☐FDD Band 1 ☐FDD Band 3 ☐FDD Band 8 ☐FDD Band 20 ☒TDD Band 28 ☐TDD Band 38 ☐FDD Band 40 ☐FDD Band 42 ☐FDD Band 43 (Non-U.S. Bands)
TX Frequency Range	Band 2:1850-1910MHz; Band 4:1710-1755MHz; Band 7:2500-2570MHz; Band 12:700-716MHz; Band 25: 1850-1915MHz;
RX Frequency Range	Band 2:1930-1990MHz; Band 4:2110-2155MHz; Band 7:2620-2690MHz; Band 12: 730-746 MHz; Band 25: 1930-1995MHz;
Release Version	Rel-8
Type of modulation	QPSK, 16QAM
Antenna Gain	Band 2: 1.1dBi; Band 4: 0.9dBi; Band 7: 1.5dBi; Band 12: 0.7dBi; Band 25: 1.1dBi;
Max. Average Power	Band 2: 24.66dBm; Band 4: 24.00dBm; Band 7:24.90dBm; Band 12: 24.69dBm; Band 25: 25.65dBm;
WIFI	
WIFI Specification	☐802.11a ☒802.11b ☒802.11g ☒802.11n(20) ☒802.11n(40)
Operation Frequency	2412~2462MHz
Avg. Burst Power	11b: 13.89dBm,11g:9.85dBm,11n(20):11.76dBm,11n(40):11.58dBm
Antenna Gain	0dBi

Note:1.CMU200 can measure the average power and Peak power at the same time
2.The sample used for testing is end product.
3. The test sample has no any deviation to the test method of standard mentioned in page 1.

Product	Type	
	☒ Production unit	☐ Identical Prototype

3. SAR MEASUREMENT SYSTEM

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



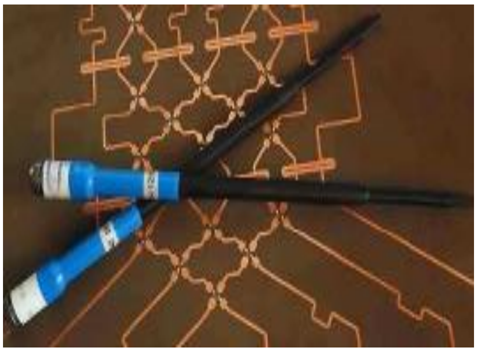
The COMOSAR system for performing compliance tests consists of the following items:

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

3.2. COMOSAR E-Field Probe

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

Isotropic E-Field Probe Specification

Model	SSE5	
Manufacture	MVG	
Identification No.	SN 22/16 EP315	
Frequency	0.7GHz-3GHz Linearity:±0.06dB(0.7GHz-3GHz)	
Dynamic Range	0.01W/Kg-100W/Kg Linearity:±0.06dB	
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 precisin of better 30%.	

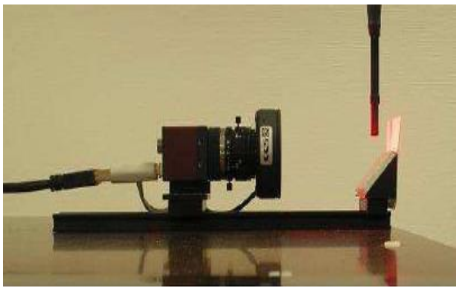
3.3. Robot

The COMOSAR system uses the KUKA robot from SATIMO SA (France).For the 6-axis controller COMOSAR system, the KUKA robot controller version from SATIMO is used.
The XL robot series have many features that are important for our application:

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

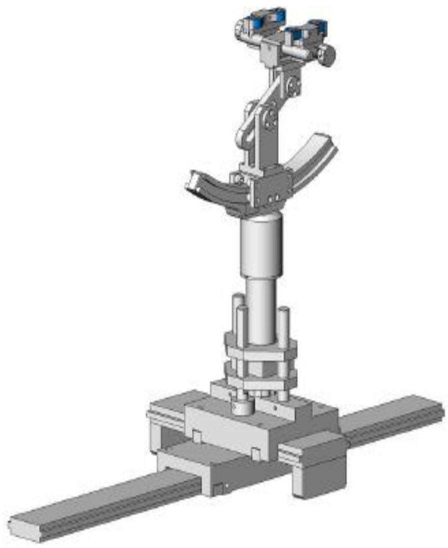
3.4. Video Positioning System

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



3.5. Device Holder

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



3.6. SAM Twin Phantom

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

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

4. SAR MEASUREMENT PROCEDURE

4.1. Specific Absorption Rate (SAR)

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

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

$$\mathrm{SAR} = \frac{\mathrm{d}}{\mathrm{d}t}\left(\frac{\mathrm{d}W}{\mathrm{d}m}\right) = \frac{\mathrm{d}}{\mathrm{d}t}\left(\frac{\mathrm{d}W}{\rho \mathrm{d}V}\right)$$

SAR is expressed in units of Watts per kilogram (W/Kg)
SAR can be obtained using either of the following equations:

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

$$\mathrm{SAR} = c_h \left.\frac{\mathrm{d}T}{\mathrm{d}t}\right|_{t=0}$$

Where

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

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

4.2. SAR Measurement Procedure

Step 1: Power Reference Measurement

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

Step 2: Area Scan

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

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

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 ± 1 mm	½·δ·ln(2) ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}	≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
	When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	

Step 3: Zoom Scan

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

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

Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm

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

* When zoom scan is required and the <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.

Step 4: Power Drift Measurement

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

4.3. RF Exposure Conditions

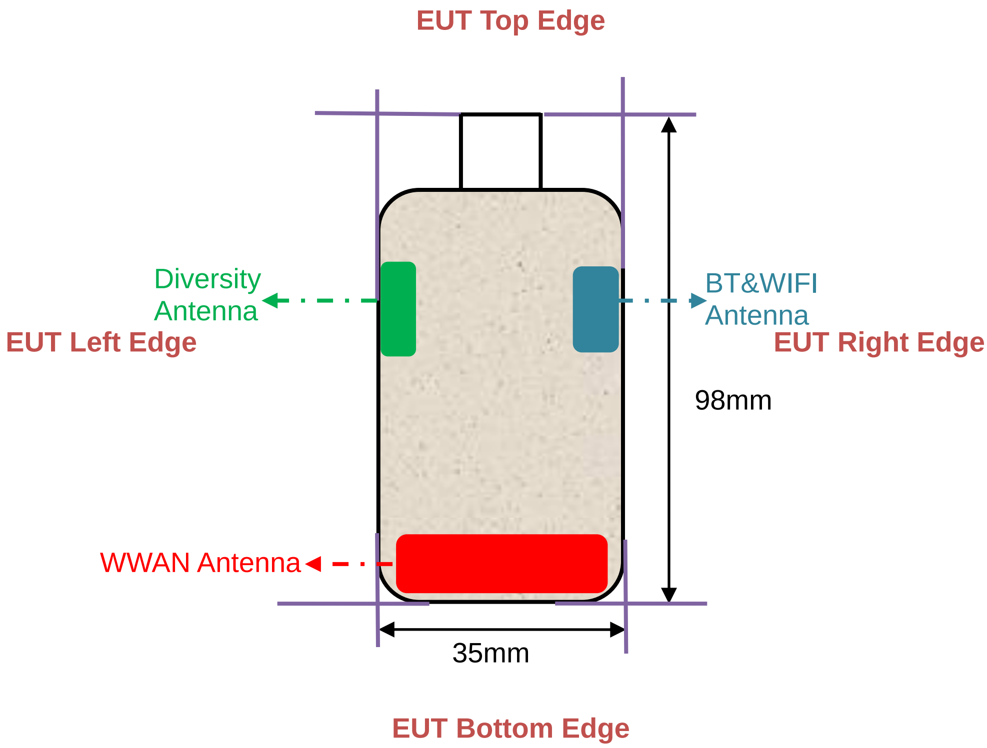
Test Configuration and setting:

The EUT is a dongle of 4G Wireless Router. It supports WCDMA/HSPA, LTE and WIFI.

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

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

Antenna Location: (the back view)



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 10% are listed in 6.2

5.1. The composition of the tissue simulating liquid

Ingredient (% Weight) / **Frequency** (MHz)	**Water**	**Nacl**	**Polysorbate 20**	**DGBE**	**1,2 Propanediol**	**Triton X-100**
750 Head	35	2	0.0	0.0	63	0.0
1750 Head	52.64	0.36	0.0	47	0.0	0.0
1900 Head	54.9	0.18	0.0	44.92	0.0	0.0
2450 Head	71.88	0.16	0.0	7.99	0.0	19.97
2600 Head	55.242	0.306	0	44.452	0	0

5.2. Tissue Dielectric Parameters for Head and Body Phantoms

The head tissue dielectric parameters recommended by the IEC 62209-1 have been incorporated in the following table. The body tissue dielectric parameters recommended by the IEC 62209-2 have been incorporated in the following table.

Target Frequency (MHz)	head		body	
	εr	σ (S/m)	εr	σ (S/m)
300	45.3	0.87	45.3	0.87
450	43.5	0.87	43.5	0.87
750	**41.9**	**0.89**	41.9	0.89
835	41.5	0.90	41.5	0.90
900	41.5	0.97	41.5	0.97
915	41.5	1.01	41.5	1.01
1450	40.5	1.20	40.5	1.20
1610	40.3	1.29	40.3	1.29
1750	**40.1**	**1.37**	40.1	1.37
1800 – 2000	**40.0**	**1.40**	40.0	1.40
2450	**39.2**	**1.80**	39.2	1.80
2600	**39.0**	**1.96**	39.0	1.96
3000	38.5	2.40	38.5	2.40

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

5.3. Tissue Calibration Result

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

Tissue Stimulant Measurement for 750MHz					
Head	Fr. (MHz)	Dielectric Parameters (±10%)		Tissue Temp [°C]	Test time
		εr 41.9 (37.71-46.09)	δ[s/m] 0.89(0.801-0.979)		
	708	42.36	0.89	20.1	Jun.01,2020
	750	41.61	0.91		

Tissue Stimulant Measurement for 1750MHz					
Head	Fr. (MHz)	Dielectric Parameters (±10%)		Tissue Temp [°C]	Test time
		εr 40.1 (36.09-44.11)	δ[s/m]1.37(1.233-1.507)		
	1732.5	39.87	1.36	20.3	May 30,2020
	1750	39.52	1.38		

Tissue Stimulant Measurement for 1900MHz					
Head	Fr. (MHz)	Dielectric Parameters (±10%)		Tissue Temp [°C]	Test time
		εr40.00(36.00-44.00)	δ[s/m]1.40(1.26-1.54)		
	1880	40.23	1.33	19.8	May 28,2020
	1900	39.51	1.36		

Tissue Stimulant Measurement for 1900MHz					
Head	Fr. (MHz)	Dielectric Parameters (±10%)		Tissue Temp [°C]	Test time
		εr40.00(36.00-44.00)	δ[s/m]1.40(1.26-1.54)		
	1880	39.26	1.36	20.5	May 31,2020
	1882.5	38.82	1.37		
	1900	38.58	1.39		

Tissue Stimulant Measurement for 2450MHz					
Head	Fr. (MHz)	Dielectric Parameters (±10%)		Tissue Temp [°C]	Test time
		εr39.2(35.28-43.12)	δ[s/m]1.80(1.62-1.98)		
	2437	39.51	1.81	20.8	May 29,2020
	2450	38.74	1.84		

Tissue Stimulant Measurement for 2600MHz					
Head	Fr. (MHz)	Dielectric Parameters (±10%)		Tissue Temp [°C]	Test time
		εr39(35.1-42.9)	δ[s/m]1.96(1.764-2.156)		
	2535	39.62	1.87	20.9	May 22,2020
	2600	38.92	1.89		

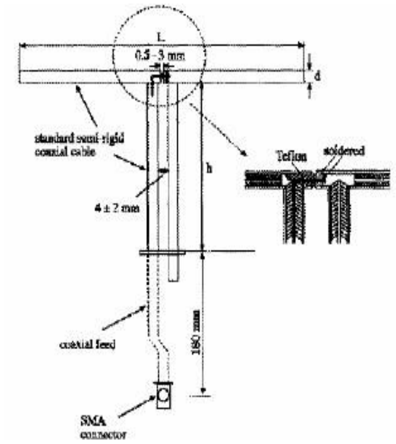
6. SAR SYSTEM CHECK PROCEDURE

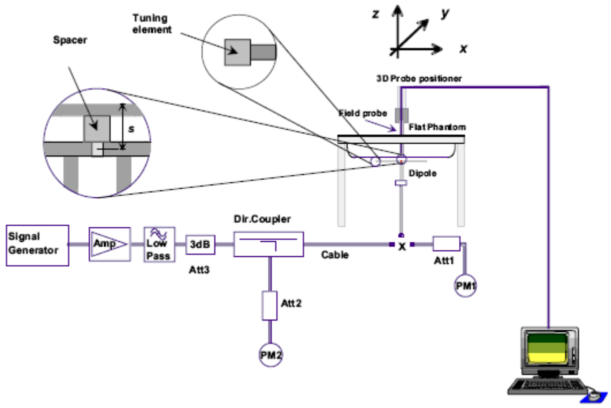
6.1. SAR System Check Procedures

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

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

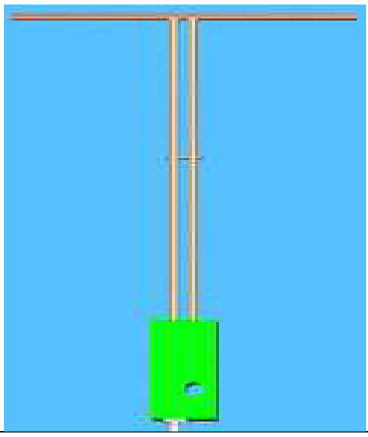
The system check verifies that the system operates within its specifications. It’s performed daily or before every SAR measurement. The system check uses normal SAR measurement in the flat section of the phantom with a matched dipole at a specified distance. The system check setup is shown as below.





6.2. SAR System Check

6.2.1. Dipoles



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)
750MHz	176	100	6.35
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

6.2.2. System Check Result

System Performance Check at 750MHz &1800MHz &1900MHz &2450MHz&2600MHz for Head								
Validation Kit: SN47/14 DIP 0G750-340& SN46/11 DIP 1G800-186& SN 46/11 DIP 1G900-187& SN46/11 DIP 2G450-189& SN 47/14 DIP 2G600-342								
Frequency [MHz]	Target Value(W/Kg)		Reference Result (± 10%)		Tested Value(W/Kg)		Tissue Temp. [°C]	Test time
	1g	10g	1g	10g	1g	10g		
750	8.31	5.45	7.479-9.141	4.905-5.995	8.13	5.72	20.1	Jun.01,2020
1800	39.07	20.29	35.163-42.977	18.261-22.319	36.02	18.98	20.3	May 30,2020
1900	40.25	20.50	36.225-44.275	18.45-22.55	41.16	20.02	19.8	May 28,2020
1900	40.25	20.50	36.225-44.275	18.45-22.55	38.26	19.45	20.5	May 31,2020
2450	53.97	24.01	48.573-59.367	21.609-26.411	52.90	23.68	20.8	May 29,2020
2600	56.86	24.84	51.174-62.546	22.356-27.324	54.16	24.31	20.9	May 22,2020

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

7. EUT TEST POSITION

This EUT was tested in **Horizontal-Up, Horizontal-Down, Vertical-Front , Vertical-Back and the tip.**

7.1. Test 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 **5mm**

(A) Horizontal-Up | (B) Horizontal-Down | (C) Vertical-Front | (D) Vertical-Back

8. SAR EXPOSURE LIMITS

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

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

9. TEST FACILITY

Test Site	Attestation of Global Compliance (Shenzhen) Co., Ltd
Location	1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China
Designation Number	CN1259
FCC Test Firm Registration Number	975832
A2LA Cert. No.	5054.02
Description	Attestation of Global Compliance(Shenzhen) Co., Ltd is accredited by A2LA

10. TEST EQUIPMENT LIST

Equipment description	Manufacturer/ Model	Identification No.	Current calibration date	Next calibration date
SAR Probe	MVG	SN 22/16 EP315	Jun. 04,2019	Jun. 03,2020
Phantom	SATIMO	SN_4511_SAM90	Validated. No cal required.	Validated. No cal required.
Liquid	SATIMO	-	Validated. No cal required.	Validated. No cal required.
Comm Tester	Agilent-8960	GB46310822	Oct. 08,2019	Oct. 07,2020
Comm Tester	R&S- CMW500	S/N120909	Jul. 02,2019	Jul. 01,2020
Multimeter	Keithley 2000	1350784	Oct. 08,2019	Oct. 07,2020
Dipole	SATIMO SID750	SN47/14 DIP 0G750-340	Apr. 26,2019	Apr. 25,2022
Dipole	SATIMO SID1800	SN46/11 DIP 1G800-186	Apr. 26,2019	Apr. 25,2022
Dipole	SATIMO SID1900	SN 46/11 DIP 1G900-187	Apr. 26,2019	Apr. 25,2022
Dipole	SATIMO SID2450	SN46/11 DIP 2G450-189	Apr. 26,2019	Apr. 25,2022
Dipole	SATIMO SID2600	SN 47/14 DIP 2G600-342	Apr. 26,2019	Apr. 25,2022
Signal Generator	Agilent-E4438C	US41461365	Oct. 08,2019	Oct. 07,2020
Vector Analyzer	Agilent / E4440A	US41421290	Sep. 09,2019	Sep. 08,2020
Network Analyzer	Rhode & Schwarz ZVL6	SN101443	Oct. 08,2019	Oct. 07,2020
Attenuator	Warison /WATT-6SR1211	S/N:WRJ34AYM2F1	June 11,2019	June 10, 2020
Attenuator	Mini-circuits / VAT-10+	31405	June 11,2019	June 10, 2020
Amplifier	AS0104-55_55	1004793	June 12,2019	June 11,2020
Directional Couple	Werlatone/ C5571-10	SN99463	June 12,2019	June 11,2020
Directional Couple	Werlatone/ C6026-10	SN99482	June 12,2019	June 11,2020
Power Sensor	NRP-Z21	1137.6000.02	Sep. 09,2019	Sep. 08,2020
Power Sensor	NRP-Z23	US38261498	Feb. 18,2020	Feb. 17,2021
Power Viewer	R&S	V2.3.1.0	N/A	N/A

Note: Per KDB 865664 Dipole SAR Validation, AGC Lab has adopted 3 years calibration intervals. On annual basis, every measurement dipole has been evaluated and is in compliance with the following criteria:
1. There is no physical damage on the dipole;
2. System validation with specific dipole is within 10% of calibrated value;
3. Return-loss is within 20% of calibrated measurement;
4. Impedance is within 5Ω of calibrated measurement.

11. MEASUREMENT UNCERTAINTY

Measurement uncertainty for Dipole averaged over 1 gram / 10 gram									
a	b	c	d	e f(d,k)	f	g	h c×f/e	i c×g/e	k
Uncertainty Component	Sec.	Tol (+- %)	Prob. Dist.	Div.	Ci (1g)	Ci (10g)	1g Ui (±%)	10g Ui (±%)	vi
Measurement System									
Probe calibration	E.2.1	5.831	N	1	1	1	5.83	5.83	∞
Axial Isotropy	E.2.2	0.57	R	$\sqrt{3}$	√0.5	√0.5	0.23	0.23	∞
Hemispherical Isotropy	E.2.2	0.915	R	$\sqrt{3}$	√0.5	√0.5	0.37	0.37	∞
Boundary effect	E.2.3	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Linearity	E.2.4	0.675	R	$\sqrt{3}$	1	1	0.39	0.39	∞
System detection limits	E.2.4	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Modulation response	E2.5	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	∞
Readout Electronics	E.2.6	0.021	N	1	1	1	0.021	0.021	∞
Response Time	E.2.7	0	R	$\sqrt{3}$	1	1	0	0	∞
Integration Time	E.2.8	1.4	R	$\sqrt{3}$	1	1	0.81	0.81	∞
RF ambient conditions-Noise	E.6.1	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	∞
RF ambient conditions-reflections	E.6.1	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	∞
Probe positioner mechanical tolerance	E.6.2	1.4	R	$\sqrt{3}$	1	1	0.81	0.81	∞
Probe positioning with respect to phantom shell	E.6.3	1.4	R	$\sqrt{3}$	1	1	0.81	0.81	∞
Extrapolation, interpolation, and integrations algorithms for max. SAR evaluation	E.5	2.3	R	$\sqrt{3}$	1	1	1.33	1.33	∞
Test sample Related									
Test sample positioning	E.4.2	2.6	N	1	1	1	2.6	2.6	∞
Device holder uncertainty	E.4.1	3	N	1	1	1	3	3	∞
Output power variation—SAR drift measurement	E.2.9	5	R	$\sqrt{3}$	1	1	2.89	2.89	∞
SAR scaling	E.6.5	5	R	$\sqrt{3}$	1	1	2.89	2.89	∞
Phantom and tissue parameters									
Phantom shell uncertainty—shape, thickness, and permittivity	E.3.1	4	R	$\sqrt{3}$	1	1	2.31	2.31	∞
Uncertainty in SAR correction for deviations in permittivity and conductivity	E.3.2	1.9	N	1	1	0.84	1.90	1.60	∞
Liquid conductivity measurement	E.3.3	4	N	1	0.78	0.71	3.12	2.84	M
Liquid permittivity measurement	E.3.3	5	N	1	0.23	0.26	1.15	1.30	M
Liquid conductivity—temperature uncertainty	E.3.4	2.5	R	$\sqrt{3}$	0.78	0.71	1.13	1.02	∞
Liquid permittivity—temperature uncertainty	E.3.4	2.5	R	$\sqrt{3}$	0.23	0.26	0.33	0.38	∞
Combined Standard Uncertainty			RSS				9.787	9.587	
Expanded Uncertainty (95% Confidence interval)			K=2				19.573	19.175	

System Validation uncertainty for Dipole averaged over 1 gram / 10 gram.									
a	b	c	d	e f(d,k)	f	g	h c×f/e	i c×g/e	k
Uncertainty Component	Sec.	Tol (±%)	Prob. Dist.	Div.	Ci (1g)	Ci (10g)	1g Ui (±%)	10g Ui (±%)	vi
Measurement System									
Probe calibration	E.2.1	5.831	N	1	1	1	5.83	5.83	∞
Axial Isotropy	E.2.2	0.57	R	$\sqrt{3}$	1	1	0.33	0.33	∞
Hemispherical Isotropy	E.2.2	0.915	R	$\sqrt{3}$	0	0	0.00	0.00	∞
Boundary effect	E.2.3	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Linearity	E.2.4	0.675	R	$\sqrt{3}$	1	1	0.39	0.39	∞
System detection limits	E.2.4	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Modulation response	E2.5	3.0	R	$\sqrt{3}$	0	0	0.00	0.00	∞
Readout Electronics	E.2.6	0.021	N	1	1	1	0.021	0.021	∞
Response Time	E.2.7	0.0	R	$\sqrt{3}$	0	0	0.00	0.00	∞
Integration Time	E.2.8	1.4	R	$\sqrt{3}$	0	0	0.00	0.00	∞
RF ambient conditions-Noise	E.6.1	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	∞
RF ambient conditions-reflections	E.6.1	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	∞
Probe positioner mechanical tolerance	E.6.2	1.4	R	$\sqrt{3}$	1	1	0.81	0.81	∞
Probe positioning with respect to phantom shell	E.6.3	1.4	R	$\sqrt{3}$	1	1	0.81	0.81	∞
Extrapolation, interpolation, and integrations algorithms for max. SAR evaluation	E.5	2.3	R	$\sqrt{3}$	1	1	1.33	1.33	∞
System check source (dipole)									
Deviation of experimental dipole from numerical dipole	E.6.4	5.0	N	1	1	1	5.00	5.00	∞
Input power and SAR drift measurement	8,6.6.4	5.0	R	$\sqrt{3}$	1	1	2.89	2.89	∞
Dipole axis to liquid distance	8,E.6.6	2.0	R	$\sqrt{3}$	1	1	1.15	1.15	∞
Phantom and tissue parameters									
Phantom shell uncertainty—shape, thickness, and permittivity	E.3.1	4.0	R	$\sqrt{3}$	1	1	2.31	2.31	∞
Uncertainty in SAR correction for deviations in permittivity and conductivity	E.3.2	1.9	N	1	1	0.84	1.90	1.60	∞
Liquid conductivity measurement	E.3.3	4.0	N	1	0.78	0.71	3.12	2.84	M
Liquid permittivity measurement	E.3.3	5.0	N	1	0.23	0.26	1.15	1.30	M
Liquid conductivity—temperature uncertainty	E.3.4	2.5	R	$\sqrt{3}$	0.78	0.71	1.13	1.02	∞
Liquid permittivity—temperature uncertainty	E.3.4	2.5	R	$\sqrt{3}$	0.23	0.26	0.33	0.38	∞
Combined Standard Uncertainty			RSS				9.735	9.534	
Expanded Uncertainty (95% Confidence interval)			K=2				19.470	19.069	

System check uncertainty for Dipole averaged over 1 gram / 10 gram.									
a	b	c	d	e f(d,k)	f	g	h c×f/e	i c×g/e	k
Uncertainty Component	Sec.	Tol (+- %)	Prob. Dist.	Div.	Ci (1g)	Ci (10g)	1g Ui (+-%)	10g Ui (+-%)	vi
Measurement System									
Probe calibration drift	E.2.1.3	0.5	N	1	1	1	0.50	0.50	∞
Axial Isotropy	E.2.2	0.57	R	$\sqrt{3}$	0	0	0.00	0.00	∞
Hemispherical Isotropy	E.2.2	0.915	R	$\sqrt{3}$	0	0	0.00	0.00	∞
Boundary effect	E.2.3	1.0	R	$\sqrt{3}$	0	0	0.00	0.00	∞
Linearity	E.2.4	0.675	R	$\sqrt{3}$	0	0	0.00	0.00	∞
System detection limits	E.2.4	1.0	R	$\sqrt{3}$	0	0	0.00	0.00	∞
Modulation response	E2.5	3.0	R	$\sqrt{3}$	0	0	0.00	0.00	∞
Readout Electronics	E.2.6	0.021	N	1	0	0	0.00	0.00	∞
Response Time	E.2.7	0	R	$\sqrt{3}$	0	0	0.00	0.00	∞
Integration Time	E.2.8	1.4	R	$\sqrt{3}$	0	0	0.00	0.00	∞
RF ambient conditions-Noise	E.6.1	3.0	R	$\sqrt{3}$	0	0	0.00	0.00	∞
RF ambient conditions-reflections	E.6.1	3.0	R	$\sqrt{3}$	0	0	0.00	0.00	∞
Probe positioner mechanical tolerance	E.6.2	1.4	R	$\sqrt{3}$	1	1	0.81	0.81	∞
Probe positioning with respect to phantom shell	E.6.3	1.4	R	$\sqrt{3}$	1	1	0.81	0.81	∞
Extrapolation, interpolation, and integrations algorithms for max. SAR evaluation	E.5	2.3	R	$\sqrt{3}$	0	0	0.00	0.00	∞
System check source (dipole)									
Deviation of experimental dipoles	E.6.4	2	N	1	1	1	2	2	∞
Input power and SAR drift measurement	8,6.6.4	5	R	$\sqrt{3}$	1	1	2.89	2.89	∞
Dipole axis to liquid distance	8,E.6.6	2	R	$\sqrt{3}$	1	1	1.15	1.15	∞
Phantom and tissue parameters									
Phantom shell uncertainty—shape, thickness, and permittivity	E.3.1	4	R	$\sqrt{3}$	1	1	2.31	2.31	∞
Uncertainty in SAR correction for deviations in permittivity and conductivity	E.3.2	1.9	N	1	1	0.84	1.90	1.60	∞
Liquid conductivity measurement	E.3.3	4	N	1	0.78	0.71	3.12	2.84	M
Liquid permittivity measurement	E.3.3	5	N	1	0.23	0.26	1.15	1.30	M
Liquid conductivity—temperature uncertainty	E.3.4	2.5	R	$\sqrt{3}$	0.78	0.71	1.13	1.02	∞
Liquid permittivity—temperature uncertainty	E.3.4	2.5	R	$\sqrt{3}$	0.23	0.26	0.33	0.38	∞
Combined Standard Uncertainty			RSS				5.564	5.205	
Expanded Uncertainty (95% Confidence interval)			K=2				11.128	10.410	

12. CONDUCTED POWER MEASUREMENT

UMTS BAND

HSDPA Setup Configuration:

·The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.

·The RF path losses were compensated into the measurements.

·A call was established between EUT and Based Station with following setting:

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

(2) Set RMC 12.2Kbps+HSDPA mode.

(3) Set Cell Power=-86dBm

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

(5) Select HSDPA Uplink Parameters

(6) Set Delta ACK, Delta NACK and Delta CQI=8

(7) Set Ack - Nack Repetition Factor to 3

(8) Set CQI Feedback Cycle (k) to 4ms

(9) Set CQI Repetition Factor to 2

(10) Power Ctrl Mode=All Up bits

·The transmitted maximum output power was recorded.

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

Sub-test	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: ∆ACK, ∆NACK and ∆CQI = 30/15 with β_{hs} = 30/15 * β_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, ∆ACK and ∆NACK = 30/15 with β_{hs} = 30/15 * β_c, and ∆CQI = 24/15 with β_{hs} = 24/15 * β_c .

Note 3: CM = 1 for βc/βd =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.

HSUPA Setup Configuration:

· The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.

· The RF path losses were compensated into the measurements.

· A call was established between EUT and Base Station with following setting * :

(1) Call Configs = 5.2B, 5.9B, 5.10B, and 5.13.2B with QPSK

(2) Set the Gain Factors (βc and βd) and parameters (AG Index) were set according to each specific sub-test in the following table, C11.1.3, quoted from the TS 34.121

(3) Set Cell Power = -86 dBm

(4) Set Channel Type = 12.2k + HSPA

(5) Set UE Target Power

(6) Power Ctrl Mode= Alternating bits

(7) Set and observe the E-TFCI

(8) Confirm that E-TFCI is equal to the target E-TFCI of 75 for sub-test 1, and other subtest's E-TFCI

· The transmitted maximum output power was recorded.

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

Sub-test	βc	βd	βd (SF)	βc/βd	βHS (Note 1)	βec	βed (Note 4) (Note 5)	βed (SF)	βed (Codes)	CM (dB) (Note 2)	MPR (dB) (Note 2) (Note 6)	AG Index (Note 5)	E-TFCI
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/225	1309/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	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, ΔACK, ΔNACK and ΔCQI = 30/15 with β_{hs} = 30/15 * β_c. For sub-test 5, ΔACK, ΔNACK and ΔCQI = 5/15 with β_{hs} = 5/15 * β_c.
Note 2: CM = 1 for βc/βd =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 cannot be set directly; it is set by Absolute Grant Value.
Note 6: For subtests 2, 3 and 4, UE may perform E-DPDCH power scaling at max power which could results in slightly smaller MPR values.

UMTS BAND II

Mode	Frequency (MHz)	Avg. Burst Power (dBm)
WCDMA 1900 RMC	1852.4	**23.06**
	1880	22.29
	1907.6	21.84
WCDMA 1900 AMR	1852.4	22.95
	1880	22.15
	1907.6	22.03
HSDPA Subtest 1	1852.4	23.01
	1880	22.83
	1907.6	22.05
HSDPA Subtest 2	1852.4	22.22
	1880	22.06
	1907.6	21.39
HSDPA Subtest 3	1852.4	22.14
	1880	22.27
	1907.6	21.61
HSDPA Subtest 4	1852.4	21.87
	1880	21.77
	1907.6	21.15
HSUPA Subtest 1	1852.4	20.77
	1880	20.22
	1907.6	19.47
HSUPA Subtest 2	1852.4	18.29
	1880	17.72
	1907.6	17.18
HSUPA Subtest 3	1852.4	20.77
	1880	20.28
	1907.6	19.57
HSUPA Subtest 4	1852.4	20.01
	1880	19.73
	1907.6	19.03
HSUPA Subtest 5	1852.4	19.63
	1880	19.33
	1907.6	18.81

UMTS BAND IV

Mode	Frequency (MHz)	Avg. Burst Power (dBm)
WCDMA 1700 RMC	1712.5	**23.73**
	1732.5	23.00
	1752.5	22.12
WCDMA 1700 AMR	1712.5	23.65
	1732.5	22.56
	1752.5	22.40
HSDPA Subtest 1	1712.5	23.57
	1732.5	23.47
	1752.5	22.29
HSDPA Subtest 2	1712.5	22.74
	1732.5	22.71
	1752.5	21.69
HSDPA Subtest 3	1712.5	22.74
	1732.5	22.85
	1752.5	21.73
HSDPA Subtest 4	1712.5	22.21
	1732.5	22.33
	1752.5	21.27
HSUPA Subtest 1	1712.5	20.76
	1732.5	20.53
	1752.5	19.62
HSUPA Subtest 2	1712.5	20.13
	1732.5	18.24
	1752.5	17.31
HSUPA Subtest 3	1712.5	21.00
	1732.5	20.80
	1752.5	19.80
HSUPA Subtest 4	1712.5	20.30
	1732.5	20.23
	1752.5	19.36
HSUPA Subtest 5	1712.5	19.96
	1732.5	19.69
	1752.5	18.79

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 β_c/β_d=12/15, β_{hs}/β_c=24/15.For all other combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.		

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

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

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

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

LTE Band

Conducted Power of LTE Band 2(dBm)							
Bandwidth	Modulation	RB size	RB offset	Target MPR	Channel 18607	Channel 18900	Channel 19193
1.4MHz	QPSK	1	0	0	22.98	22.72	21.11
			3	0	22.86	22.81	21.76
			5	0	22.89	22.77	21.79
		3	0	0	22.99	22.77	21.96
			2	0	22.98	22.75	21.99
			3	0	22.98	22.13	21.78
		6	0	1	22.39	22.95	21.28
	16QAM	1	0	1	22.67	22.31	21.57
			3	1	22.56	22.26	21.41
			5	1	22.60	22.28	21.39
		3	0	1	22.94	22.73	21.92
			2	1	22.93	22.73	21.94
			3	1	22.99	22.71	21.76
		6	0	2	22.85	21.57	20.93
Bandwidth	Modulation	RB size	RB offset	Target MPR	Channel 18615	Channel 18900	Channel 19185
3MHz	QPSK	1	0	0	22.68	22.92	21.55
			7	0	22.09	21.93	21.32
			14	0	22.76	22.80	21.68
		8	0	1	21.93	21.73	20.26
			4	1	21.93	21.73	20.26
			7	1	21.93	21.73	20.26
		15	0	1	21.93	21.72	20.25
	16QAM	1	0	1	22.03	22.09	21.02
			7	1	21.42	21.10	20.94
			14	1	22.12	22.01	20.18
		8	0	2	21.94	21.72	20.25
			4	2	21.93	21.73	20.25
			7	2	21.93	21.73	20.25
		15	0	2	21.35	21.13	20.87

Conducted Power of LTE Band 2(dBm)							
Bandwidth	Modulation	RB size	RB offset	Target MPR	Channel 18625	Channel 18900	Channel 19175
5MHz	QPSK	1	0	0	22.56	22.35	22.19
			12	0	22.25	22.16	21.91
			24	0	22.75	22.95	21.66
		12	0	1	22.10	21.84	21.77
			6	1	22.10	21.83	21.77
			13	1	22.10	21.83	21.77
		25	0	1	22.10	21.83	21.78
	16QAM	1	0	1	22.18	21.93	21.77
			12	1	21.91	21.59	20.57
			24	1	22.41	22.11	20.19
		12	0	2	22.10	21.83	20.77
			6	2	22.10	21.82	20.78
			13	2	22.10	21.82	20.78
		25	0	2	21.54	21.27	20.39
Bandwidth	Modulation	RB size	RB offset	Target MPR	Channel 18650	Channel 18900	Channel 19150
10MHz	QPSK	1	0	0	23.43	22.63	23.18
			25	0	22.27	21.90	21.65
			49	0	22.97	**24.66**	23.36
		25	0	1	22.14	21.77	22.06
			13	1	22.14	21.77	22.06
			25	1	21.98	22.04	21.01
		50	0	1	22.39	21.97	21.75
	16QAM	1	0	1	22.49	21.98	22.70
			25	1	21.54	21.14	21.38
			49	1	22.26	22.76	21.02
		25	0	2	22.14	21.77	22.07
			13	2	22.14	21.77	22.08
			25	2	21.98	22.04	21.02
		50	0	2	21.83	21.41	21.33

Conducted Power of LTE Band 2(dBm)							
Bandwidth	Modulation	RB size	RB offset	Target MPR	Channel 18675	Channel 18900	Channel 19125
15MHz	QPSK	1	0	0	23.21	22.78	23.54
			37	0	22.05	22.00	22.01
			74	0	22.72	24.00	22.42
		36	0	1	22.12	22.11	21.87
			18	1	22.12	22.11	21.87
			38	1	22.12	22.11	21.87
		75	0	1	22.12	22.09	21.92
	16QAM	1	0	1	22.57	22.24	22.96
			37	1	21.53	21.48	21.42
			74	1	22.16	22.70	20.91
		36	0	2	22.11	22.10	21.89
			18	2	22.11	22.10	21.89
			38	2	22.12	22.09	21.89
		75	0	2	21.66	21.53	21.47
Bandwidth	Modulation	RB size	RB offset	Target MPR	Channel 18700	Channel 18900	Channel 19100
20MHz	QPSK	1	0	0	23.09	23.56	23.65
			49	0	22.31	22.50	22.80
			99	0	22.98	24.16	23.05
		50	0	1	22.56	21.61	22.74
			25	1	22.56	21.61	22.73
			50	1	21.84	22.25	22.26
		100	0	1	22.01	22.45	22.17
	16QAM	1	0	1	22.65	22.26	23.19
			49	1	21.89	22.16	22.36
			99	1	22.47	23.15	21.51
		50	0	2	22.56	21.60	22.94
			25	2	22.56	21.60	22.93
			50	2	21.84	22.24	22.18
		100	0	2	21.60	21.93	21.70

Conducted Power of LTE Band 4(dBm)							
Bandwidth	Modulation	RB size	RB offset	Target MPR	Channel 19957	Channel 20175	Channel 20393
1.4MHz	QPSK	1	0	0	23.71	22.69	21.24
			3	0	23.61	22.59	21.94
			5	0	23.86	22.60	21.88
		3	0	0	23.87	22.55	22.09
			2	0	23.86	22.52	22.07
			3	0	23.80	22.52	21.89
		6	0	1	23.20	21.90	21.52
	16QAM	1	0	1	23.26	22.06	21.72
			3	1	23.17	21.98	21.61
			5	1	23.49	22.07	22.44
		3	0	1	23.84	22.51	22.08
			2	1	23.84	22.51	22.06
			3	1	23.78	22.50	22.88
		6	0	2	22.82	21.56	21.20
Bandwidth	Modulation	RB size	RB offset	Target MPR	Channel 19965	Channel 20175	Channel 20385
3MHz	QPSK	1	0	0	23.53	22.57	21.58
			7	0	23.00	21.90	21.55
			14	0	23.57	22.53	21.82
		8	0	1	22.74	21.48	21.45
			4	1	22.75	21.48	21.46
			7	1	22.75	21.48	21.46
		15	0	1	22.75	21.45	21.47
	16QAM	1	0	1	23.28	22.16	22.23
			7	1	22.78	21.46	21.25
			14	1	23.38	22.15	22.69
		8	0	2	22.74	21.47	21.46
			4	2	22.74	21.47	21.46
			7	2	22.75	21.46	21.46
		15	0	2	22.33	21.11	21.12

Conducted Power of LTE Band 4(dBm)							
Bandwidth	**Modulation**	**RB size**	**RB offset**	**Target MPR**	**Channel 19975**	**Channel 20175**	**Channel 20375**
5MHz	QPSK	1	0	0	23.63	22.62	22.14
			12	0	23.27	22.15	22.11
			24	0	23.54	22.58	21.94
		12	0	1	23.05	21.68	21.24
			6	1	23.05	21.67	21.24
			13	1	23.09	21.70	21.58
		25	0	1	23.05	21.66	21.94
	16QAM	1	0	1	23.47	21.96	21.89
			12	1	22.95	21.50	21.90
			24	1	23.30	21.97	21.64
		12	0	2	23.03	21.65	21.24
			6	2	23.03	21.65	21.24
			13	2	23.07	21.68	21.59
		25	0	2	22.60	21.36	21.55
Bandwidth	**Modulation**	**RB size**	**RB offset**	**Target MPR**	**Channel 20000**	**Channel 20175**	**Channel 20350**
10MHz	QPSK	1	0	0	**24.00**	23.00	22.11
			25	0	22.72	21.77	21.33
			49	0	23.55	22.98	22.02
		25	0	1	22.88	21.63	21.61
			13	1	22.88	21.62	21.61
			25	1	22.34	21.68	21.87
		50	0	1	22.78	21.67	21.41
	16QAM	1	0	1	23.62	22.41	21.81
			25	1	22.47	21.22	21.06
			49	1	23.32	22.54	22.02
		25	0	2	22.88	21.60	21.62
			13	2	22.88	21.60	21.63
			25	2	22.35	21.66	20.88
		50	0	2	22.37	21.38	21.05

Conducted Power of LTE Band 4(dBm)							
Bandwidth	Modulation	RB size	RB offset	Target MPR	Channel 20025	Channel 20175	Channel 20325
15MHz	QPSK	1	0	0	23.86	22.42	22.94
			37	0	22.22	21.78	20.51
			74	0	23.19	22.79	21.25
		36	0	1	22.27	21.83	20.46
			18	1	22.27	21.82	20.47
			38	1	22.27	21.82	20.47
		75	0	1	22.28	21.79	20.51
	16QAM	1	0	1	23.51	22.08	22.38
			37	1	21.86	21.18	20.16
			74	1	22.86	22.29	19.90
		36	0	2	22.27	21.81	20.49
			18	2	22.27	21.81	20.49
			38	2	22.28	21.80	20.50
		75	0	2	21.88	21.50	20.08
Bandwidth	Modulation	RB size	RB offset	Target MPR	Channel 20050	Channel 20175	Channel 20300
20MHz	QPSK	1	0	0	23.80	22.26	22.52
			50	0	22.52	22.10	21.36
			99	0	23.34	22.53	21.44
		50	0	1	22.75	21.74	22.04
			25	1	22.75	21.74	22.03
			50	1	22.39	21.84	20.48
		100	0	1	22.31	22.01	20.81
	16QAM	1	0	1	23.64	21.89	22.01
			50	1	22.37	21.71	21.05
			99	1	23.03	22.36	21.11
		50	0	2	22.76	21.72	22.04
			25	2	22.77	21.72	22.04
			50	2	22.40	21.83	20.49
		100	0	2	21.91	21.74	20.40

Conducted Power of LTE Band 7 (dBm)							
Bandwidth	Modulation	RB size	RB offset	Target MPR	Channel 20775	Channel 21100	Channel 21425
5MHz	QPSK	1	0	0	24.22	22.92	22.37
			12	0	24.16	22.75	22.29
			24	0	24.03	23.20	22.82
		12	0	1	**24.90**	23.62	23.08
			6	1	24.89	23.61	23.08
			13	1	24.66	23.54	23.33
		25	0	1	24.72	23.42	23.58
	16QAM	1	0	1	24.82	23.42	23.88
			12	1	24.11	23.20	22.92
			24	1	24.01	23.41	23.36
		12	0	2	24.86	23.60	23.03
			6	2	24.85	23.60	23.02
			13	2	24.62	23.51	23.43
		25	0	2	23.84	22.60	22.42
Bandwidth	Modulation	RB size	RB offset	Target MPR	Channel 20800	Channel 21100	Channel 21400
10MHz	QPSK	1	0	0	24.63	23.25	22.10
			24	0	22.67	22.14	21.45
			49	0	23.97	23.27	23.47
		25	0	1	24.38	23.40	22.21
			12	1	24.39	23.39	22.22
			25	1	23.96	23.53	23.62
		50	0	1	24.23	23.37	23.40
	16QAM	1	0	1	24.25	23.67	23.70
			24	1	23.52	22.57	22.00
			49	1	23.88	23.59	23.10
		25	0	2	24.40	23.40	23.18
			12	2	24.40	23.39	23.18
			25	2	23.97	23.53	23.59
		50	0	2	23.40	22.59	22.25

Conducted Power of LTE Band 7 (dBm)							
Bandwidth	Modulation	RB size	RB offset	Target MPR	Channel 20825	Channel 21100	Channel 21375
15MHz	QPSK	1	0	0	24.71	22.83	23.44
			37	0	22.72	22.20	21.68
			74	0	23.43	23.19	23.15
		37	0	1	24.31	23.36	22.47
			16	1	24.31	23.37	22.46
			35	1	24.31	23.37	22.45
		75	0	1	24.32	23.37	22.40
	16QAM	1	0	1	24.32	23.25	22.56
			37	1	23.64	22.61	22.33
			74	1	24.39	23.55	22.53
		37	0	2	24.31	23.36	22.43
			16	2	24.31	23.36	22.42
			35	2	24.32	23.36	22.42
		75	0	2	23.46	22.54	21.57
Bandwidth	Modulation	RB size	RB offset	Target MPR	Channel 20850	Channel 21100	Channel 21350
20MHz	QPSK	1	0	0	24.30	23.84	23.39
			49	0	22.79	23.60	21.30
			99	0	23.38	23.24	23.32
		50	0	1	24.30	23.33	23.26
			25	1	24.30	23.31	23.27
			49	1	23.29	23.47	23.26
		100	0	1	23.84	23.72	22.34
	16QAM	1	0	1	23.98	23.45	23.84
			49	1	23.79	23.10	23.99
			99	1	24.33	23.73	23.65
		50	0	2	24.28	23.31	23.24
			25	2	24.28	23.61	23.26
			49	2	23.28	23.45	23.26
		100	0	2	22.97	22.93	21.51

Conducted Power of LTE Band 12(dBm)							
Bandwidth	Modulation	RB size	RB offset	Target MPR	Channel	Channel	Channel
					23027	23100	23173
1.4MHz	QPSK	1	0	0	**24.69**	23.32	23.19
			3	0	24.43	23.22	23.32
			5	0	24.31	23.39	23.61
		3	0	0	24.42	23.59	23.25
			2	0	24.37	23.57	23.24
			3	0	24.13	23.49	23.49
		6	0	1	23.80	22.79	23.75
	16QAM	1	0	1	24.19	23.23	23.91
			3	1	23.90	23.04	22.01
			5	1	23.94	23.10	22.22
		3	0	1	23.83	23.10	22.66
			2	1	23.85	23.08	22.73
			3	1	23.50	23.00	22.98
		6	0	2	23.21	22.38	22.36
Bandwidth	Modulation	RB size	RB offset	Target MPR	Channel	Channel	Channel
					23035	23100	23165
3MHz	QPSK	1	0	0	24.20	23.27	22.33
			7	0	23.00	22.63	21.99
			14	0	23.40	23.53	21.91
		8	0	1	23.24	22.33	22.08
			4	1	23.26	22.29	22.07
			7	1	22.72	22.43	21.79
		15	0	1	22.95	22.07	21.84
	16QAM	1	0	1	23.81	22.85	22.78
			7	1	22.49	22.21	22.64
			14	1	22.88	23.01	22.43
		8	0	2	22.81	21.91	21.95
			4	2	22.80	21.90	21.79
			7	2	22.30	22.08	21.46
		15	0	2	22.68	22.04	21.52

Conducted Power of LTE Band 12(dBm)							
Bandwidth	Modulation	RB size	RB offset	Target MPR	Channel 23045	Channel 23100	Channel 23155
5MHz	QPSK	1	0	0	24.02	23.22	22.86
			13	0	22.80	22.90	21.74
			24	0	23.28	23.51	22.13
		12	0	1	23.07	22.50	21.55
			6	1	23.08	22.49	21.56
			13	1	22.52	22.72	20.94
		25	0	1	22.81	22.37	21.72
	16QAM	1	0	1	23.60	22.99	22.40
			13	1	22.48	22.66	21.38
			24	1	22.79	23.17	21.83
		12	0	2	22.65	22.06	21.95
			6	2	22.61	22.05	21.97
			13	2	22.07	22.39	21.63
		25	0	2	22.38	22.00	21.39
Bandwidth	Modulation	RB size	RB offset	Target MPR	Channel 23070	Channel 23100	Channel 23130
10MHz	QPSK	1	0	0	23.04	23.71	23.02
			25	0	22.10	22.40	23.16
			49	0	22.41	23.46	23.85
		25	0	1	22.35	21.58	21.42
			13	1	22.15	22.71	22.31
			25	1	21.20	21.66	21.45
		50	0	1	21.84	21.35	21.85
	16QAM	1	0	1	22.31	21.05	21.02
			25	1	22.52	23.14	21.60
			49	1	22.54	22.36	21.24
		25	0	2	21.22	23.85	21.39
			13	2	22.38	23.54	21.58
			25	2	22.40	23.63	21.61
		50	0	2	21.55	22.41	20.74

Conducted Power of LTE Band 25(dBm)							
Bandwidth	Modulation	RB size	RB offset	Target MPR	Channel 26047	Channel 26365	Channel 26683
1.4MHz	QPSK	1	0	0	25.16	23.79	23.25
			3	0	24.29	23.62	23.06
			5	0	**25.65**	23.66	23.97
		3	0	0	24.88	23.71	23.77
			2	0	24.86	23.71	23.77
			3	0	25.17	23.62	23.08
		6	0	1	24.98	23.11	23.13
	16QAM	1	0	1	24.86	23.25	22.97
			3	1	23.85	23.05	22.95
			5	1	24.87	23.11	22.87
		3	0	1	24.84	23.67	23.76
			2	1	24.82	23.68	23.74
			3	1	25.14	23.60	23.14
		6	0	2	24.96	23.65	23.75
Bandwidth	Modulation	RB size	RB offset	Target MPR	Channel 26055	Channel 26365	Channel 26675
3MHz	QPSK	1	0	0	22.15	23.74	21.24
			8	0	22.06	22.94	21.35
			14	0	21.77	22.64	21.06
		8	0	1	21.26	22.77	21.17
			4	1	21.26	22.77	21.17
			7	1	21.24	22.77	21.17
		15	0	1	21.19	22.77	21.14
	16QAM	1	0	1	22.05	23.35	21.69
			8	1	21.83	22.48	20.71
			14	1	21.82	22.24	20.70
		8	0	2	21.22	22.77	21.16
			4	2	21.23	22.77	21.15
			7	2	21.21	22.77	21.15
		15	0	2	21.20	22.23	20.64

Conducted Power of LTE Band 25(dBm)							
Bandwidth	**Modulation**	**RB size**	**RB offset**	**Target MPR**	**Channel**	**Channel**	**Channel**
					26065	**26365**	**26665**
5MHz	QPSK	1	0	0	22.93	23.80	21.89
			12	0	22.15	23.54	22.10
			24	0	22.38	23.80	22.73
		12	0	1	21.96	23.43	21.94
			6	1	21.94	23.41	21.93
			13	1	21.83	23.27	21.54
		25	0	1	21.73	23.26	21.68
	16QAM	1	0	1	22.48	23.31	21.31
			12	1	21.76	22.84	21.55
			24	1	22.02	23.44	22.44
		12	0	2	21.85	23.37	22.89
			6	2	21.84	23.36	22.89
			13	2	21.73	23.22	22.49
		25	0	2	21.68	22.73	22.15
Bandwidth	**Modulation**	**RB size**	**RB offset**	**Target MPR**	**Channel**	**Channel**	**Channel**
					26090	**26365**	**26640**
10MHz	QPSK	1	0	0	22.69	23.85	23.16
			24	0	21.93	22.91	21.18
			49	0	21.49	22.82	21.22
		25	0	1	21.66	22.78	21.98
			12	1	21.65	22.78	21.97
			25	1	21.65	22.87	21.64
		50	0	1	21.62	22.95	21.29
	16QAM	1	0	1	22.28	23.45	22.67
			24	1	21.59	22.51	20.65
			49	1	21.19	23.63	21.79
		25	0	2	21.13	22.77	21.93
			12	2	21.13	22.77	21.92
			25	2	21.13	22.85	20.60
		50	0	2	21.61	22.45	20.80

Conducted Power of LTE Band 25(dBm)							
Bandwidth	Modulation	RB size	RB offset	Target MPR	Channel 26115	Channel 26365	Channel 26615
15MHz	QPSK	1	0	0	24.00	23.88	23.95
			37	0	22.04	22.89	21.81
			74	0	22.21	24.14	22.89
		38	0	1	22.27	23.02	22.19
			18	1	22.27	23.02	22.19
			38	1	22.27	23.02	22.18
		75	0	1	22.24	23.00	22.18
	16QAM	1	0	1	23.47	23.50	23.56
			37	1	21.43	22.53	21.47
			74	1	21.59	23.57	21.66
		38	0	2	22.25	23.01	22.18
			18	2	22.24	23.00	22.18
			38	2	22.24	23.00	22.18
		75	0	2	22.23	22.47	21.69
Bandwidth	Modulation	RB size	RB offset	Target MPR	Channel 26140	Channel 26365	Channel 26590
20MHz	QPSK	1	0	0	24.94	23.66	23.98
			49	0	22.82	23.18	22.27
			99	0	22.89	23.97	22.23
		50	0	1	23.02	22.65	23.13
			25	1	23.04	22.65	23.14
			50	1	22.24	23.05	21.41
		100	0	1	23.25	23.17	22.11
	16QAM	1	0	1	24.44	23.23	23.65
			49	1	22.26	22.84	22.94
			99	1	22.65	23.62	22.90
		50	0	2	23.03	22.66	23.14
			25	2	23.04	22.66	23.15
			50	2	22.25	23.06	22.42
		100	0	2	23.24	22.66	22.65

The following tests were conducted according to the test requirements outlined in section 6.2 of the 3GPP TS36.101 specification.
UE Power Class: 3 (23 +/- 2dBm). The allowed Maximum Power Reduction (MPR) for the maximum output power due to higher order modulation and transmit bandwidth configuration (resource blocks) is specified in Table 6.2.3.3-1 of the 3GPP TS36.101.

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

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

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

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

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

WIFI

Mode	Data Rate (Mbps)	Channel	Frequency(MHz)	Avg. Burst Power(dBm)
802.11b	1	01	2412	**13.89**
		06	2437	13.87
		11	2462	12.67
802.11g	6	01	2412	9.83
		06	2437	9.85
		11	2462	9.84
802.11n(20)	6.5	01	2412	10.65
		06	2437	11.76
		11	2462	9.39
802.11n(40)	13.5	03	2422	10.05
		06	2437	11.22
		09	2452	11.58

13. TEST RESULTS

13.1. SAR Test Results Summary

13.1.1. Test position and configuration

BodySAR was performed with the device 5mm from the phantom according to KDB 616217.

13.1.2. Operation Mode

1. Per KDB 447498 D01 v06 ,for each exposure position, if the highest 1-g SAR is ≤ 0.8 W/kg, testing for low and high channel is optional.
2. Per KDB 865664 D01 v01r04,for each frequency band, if the measured SAR is ≥0.8W/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 ≥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 ≥1.5 W/Kg and ratio of largest to smallest SAR for the original, first and second measurement is ≥ 1.20.
3. Per KDB 248227 D01v02r02,for 2.4GHz 802.11g/n SAR testing is not required when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤1.2W/kg.
4. 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)]
5. Proximity sensor, just for avoiding the wrong operation in the phone screen when call, and has no influence on output power or SAR result
6. 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.
7. Per KDB 941125 D05v02r03, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
8. 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.
9. 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.
10. 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.

13.1.3. Test Result

SAR MEASUREMENT									
Depth of Liquid (cm):>15				Relative Humidity (%): 48.5					
Product: 4G Wireless Router									
Test Mode: WCDMA Band II with QPSK modulation									
Position	**Mode**	**Ch.**	**Fr. (MHz)**	**Power Drift (<±5%)**	**SAR (1g) (W/kg)**	**Max. Tune-up Power (dBm)**	**Meas. output Power (dBm)**	**Scaled SAR (W/Kg)**	**Limit (W/kg)**
Horizontal-Up	RMC 12.2kbps	9400	1880	-0.08	0.482	23.10	22.29	0.581	1.6
Horizontal-Down	RMC 12.2kbps	9400	1880	-0.32	**0.497**	23.10	22.29	**0.599**	1.6
Vertical-Back	RMC 12.2kbps	9400	1880	0.06	0.230	23.10	22.29	0.277	1.6
Tip	RMC 12.2kbps	9400	1880	0.39	0.253	23.10	22.29	0.305	1.6
Vertical-Front	RMC 12.2kbps	9400	1880	-0.35	0.152	23.10	22.29	0.183	1.6

Note:
· When the 1-g Reported SAR is ≤ 0.8 W/kg, testing for low and high channel is optional. Refer to KDB 447498.
·The test separation is 5mm of all above table.

SAR MEASUREMENT									
Depth of Liquid (cm):>15				Relative Humidity (%): 49.3					
Product: 4G Wireless Router									
Test Mode: WCDMA Band IV with QPSK modulation									
Position	**Mode**	**Ch.**	**Fr. (MHz)**	**Power Drift (<±5%)**	**SAR (1g) (W/kg)**	**Max. Tune-up Power (dBm)**	**Meas. output Power (dBm)**	**Scaled SAR (W/Kg)**	**Limit (W/kg)**
Horizontal-Up	RMC 12.2kbps	8662	1732.5	-0.11	**0.253**	23.80	23.00	**0.304**	1.6
Horizontal-Down	RMC 12.2kbps	8662	1732.5	-0.06	0.154	23.80	23.00	0.185	1.6
Vertical-Back	RMC 12.2kbps	8662	1732.5	0.32	0.085	23.80	23.00	0.102	1.6
Tip	RMC 12.2kbps	8662	1732.5	-0.07	0.038	23.80	23.00	0.046	1.6
Vertical-Front	RMC 12.2kbps	8662	1732.5	0.42	0.036	23.80	23.00	0.043	1.6

Note:
· When the 1-g Reported SAR is ≤ 0.8 W/kg, testing for low and high channel is optional. Refer to KDB 447498.
·The test separation is 5mm of all above table.

SAR MEASUREMENT													
Depth of Liquid (cm):>15					Relative Humidity (%): 48.4								
Product: 4G Wireless Router													
Test Mode: LTE Band 2													
BM MHz	**MOD**	**Position**	**Test Mode**		**Ch.**	**Freq. (MHz)**	**Power Drift (<±5%)**	**SAR (1g) (W/kg)**	**Max. Tune up Power (dBm)**	**Meas. output Power (dBm)**	**Scaled SAR (W/Kg)**	**Limit (W/kg)**	
			UL RB Allocation	**UL RB START**									
20	**QPSK**	Horizontal-Up	1	0	18900	1880	-0.18	0.458	24.70	23.56	0.595	1.6	
		Horizontal-Down	1	0	18900	1880	0.37	**0.628**	24.70	23.56	**0.817**	1.6	
		Vertical-Back	1	0	18900	1880	-0.62	0.283	24.70	23.56	0.368	1.6	
		Tip	1	0	18900	1880	-0.34	0.302	24.70	23.56	0.393	1.6	
		Vertical-Front	1	0	18900	1880	0.50	0.200	24.70	23.56	0.260	1.6	

Note:
· When the 1-g Reported SAR is ≤ 0.8 W/kg, testing for low and high channel is optional. Refer to KDB 447498.
·The test separation is 5mm of all above table.

SAR MEASUREMENT												
Depth of Liquid (cm):>15					Relative Humidity (%): 49.3							
Product: 4G Wireless Router												
Test Mode: LTE Band 4												
BM MHz	**MOD**	**Position**	**Test Mode**		**Ch.**	**Freq. (MHz)**	**Power Drift (<±5%)**	**SAR (1g) (W/kg)**	**Max. Tuneup Power (dBm)**	**Meas. output Power (dBm)**	**Scaled SAR (W/Kg)**	**Limit (W/kg)**
			UL RB Allocation	**UL RB START**								
20	**QPSK**	Horizontal-Up	1	0	20175	1732.5	-0.17	**0.518**	24.00	22.26	**0.773**	1.6
		Horizontal-Down	1	0	20175	1732.5	-0.08	0.437	24.00	22.26	0.652	1.6
		Vertical-Back	1	0	20175	1732.5	-0.53	0.245	24.00	22.26	0.366	1.6
		Tip	1	0	20175	1732.5	0.26	0.101	24.00	22.26	0.151	1.6
		Vertical-Front	1	0	20175	1732.5	0.24	0.088	24.00	22.26	0.131	1.6

Note:
· When the 1-g Reported SAR is ≤ 0.8 W/kg, testing for low and high channel is optional. Refer to KDB 447498.
·The test separation is 5mm of all above table.

SAR MEASUREMENT												
Depth of Liquid (cm):>15					Relative Humidity (%): 57.7							
Product: 4G Wireless Router												
Test Mode: LTE Band 7												
BM MHz	**MOD**	**Position**	**Test Mode**		**Ch.**	**Freq. (MHz)**	**Power Drift (<±5%)**	**SAR (1g) (W/kg)**	**Max. Tuneup Power (dBm)**	**Meas. output Power (dBm)**	**Scaled SAR (W/Kg)**	**Limit (W/kg)**
			UL RB Allocation	**UL RB START**								
20	**QPSK**	Horizontal-Up	1	0	21100	2535	-0.36	0.234	24.90	23.84	0.299	1.6
		Horizontal-Down	1	0	21100	2535	-0.27	**0.665**	24.90	23.84	**0.849**	1.6
		Vertical-Back	1	0	21100	2535	0.18	0.175	24.90	23.84	0.223	1.6
		Tip	1	0	21100	2535	-0.53	0.153	24.90	23.84	0.195	1.6
		Vertical-Front	1	0	21100	2535	0.06	0.116	24.90	23.84	0.148	1.6

Note:
· When the 1-g Reported SAR is ≤ 0.8 W/kg, testing for low and high channel is optional. Refer to KDB 447498.
·The test separation is 5mm of all above table.

SAR MEASUREMENT												
Depth of Liquid (cm):>15					Relative Humidity (%): 58.3							
Product: 4G Wireless Router												
Test Mode: LTE Band 12												
BM MHz	**MOD**	**Position**	**Test Mode**		**Ch.**	**Freq. (MHz)**	**Power Drift (<±5%)**	**SAR (1g) (W/kg)**	**Max. Tuneup Power (dBm)**	**Meas. output Power (dBm)**	**Scaled SAR (W/Kg)**	**Limit (W/kg)**
			UL RB Allocation	**UL RB START**								
10	**QPSK**	Horizontal-Up	1	0	23095	708	-0.22	0.504	24.70	23.71	0.633	1.6
		Horizontal-Down	1	0	23095	708	0.17	**0.535**	24.70	23.71	**0.672**	1.6
		Vertical-Back	1	0	23095	708	-0.36	0.122	24.70	23.71	0.153	1.6
		Tip	1	0	23095	708	-0.05	0.068	24.70	23.71	0.085	1.6
		Vertical-Front	1	0	23095	708	0.31	0.151	24.70	23.71	0.190	1.6

Note:
· When the 1-g Reported SAR is ≤ 0.8 W/kg, testing for low and high channel is optional. Refer to KDB 447498.
·The test separation is 5mm of all above table.

SAR MEASUREMENT													
Depth of Liquid (cm):>15					Relative Humidity (%): 48.4								
Product: LTE smartphone													
Test Mode: LTE Band 25													
BM MHz	**MOD**	**Position**	**Test Mode**		**Ch.**	**Freq. (MHz)**	**Power Drift (<±5%)**	**SAR (1g) (W/kg)**	**Max. Tuneup Power (dBm)**	**Meas. output Power (dBm)**	**Scaled SAR (W/Kg)**	**Limit (W/kg)**
			UL RB Allocation	**UL RB START**								
20	**QPSK**	Horizontal-Up	1	0	26365	1882.5	-0.17	**0.519**	25.65	23.66	**0.821**	1.6
		Horizontal-Down	1	0	26365	1882.5	0.25	0.316	25.65	23.66	0.500	1.6
		Vertical-Back	1	0	26365	1882.5	-0.32	0.214	25.65	23.66	0.338	1.6
		Tip	1	0	26365	1882.5	-0.04	0.212	25.65	23.66	0.335	1.6
		Vertical-Front	1	0	26365	1882.5	-0.18	0.152	25.65	23.66	0.240	1.6

Note:
· When the 1-g Reported SAR is ≤ 0.8 W/kg, testing for low and high channel is optional. Refer to KDB 447498.
·The test separation is 5mm of all above table.

SAR MEASUREMENT									
Depth of Liquid (cm):>15				Relative Humidity (%): 46.2					
Product: 4G Wireless Router									
Test Mode:802.11b									
Position	**Mode**	**Ch.**	**Fr. (MHz)**	**Power Drift (<±5%)**	**SAR (1g) (W/kg)**	**Max. Tune-up Power (dBm)**	**Meas. output Power (dBm)**	**Scaled SAR (W/Kg)**	**Limit (W/kg)**
Horizontal-Up	DTS	6	2437	-0.15	0.044	13.90	13.87	0.044	1.6
Horizontal-Down	DTS	6	2437	-0.24	**0.111**	13.90	13.87	**0.112**	1.6
Vertical-Back	DTS	6	2437	0.16	0.016	13.90	13.87	0.016	1.6
Tip	DTS	6	2437	-0.31	0.017	13.90	13.87	0.017	1.6
Vertical-Front	DTS	6	2437	-0.07	0.040	13.90	13.87	0.040	1.6

Note:
· According to KDB248227, SAR is not required for 802.11n HT20/HT40 channels when the maximum average output power is less than 1/4 dB higher than that measured on the corresponding 802.11a/b channels.
· All of above “DTS” means data transmitters.
·The test separation is 5mm of all above table.

APPENDIX A. SAR SYSTEM CHECK DATA

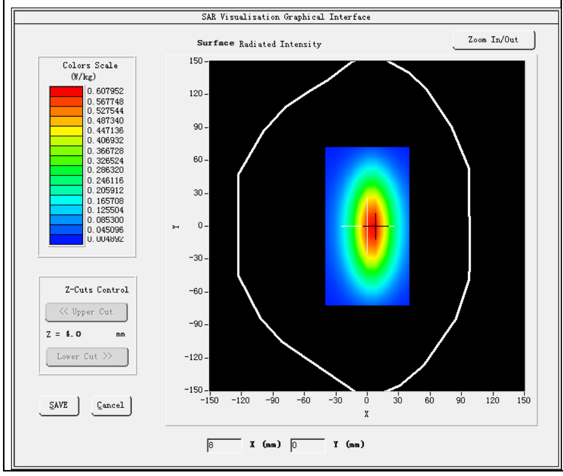
Test Laboratory: AGC Lab **Date: Jun.01,2020**
System Check Head 750 MHz
DUT: Dipole 750 MHz Type: SID 750
Communication System CW; Communication System Band: D750 (750.0 MHz); Duty Cycle: 1:1; Conv.F=4.97
Frequency: 750 MHz; Medium parameters used: f = 750 MHz; σ =0.91 mho/m; ε r =41.61; ρ = 1000 kg/m³ ;
Phantom section: Flat Section; Input Power=18dBm
Ambient temperature (℃):20.4, Liquid temperature (℃): 20.1

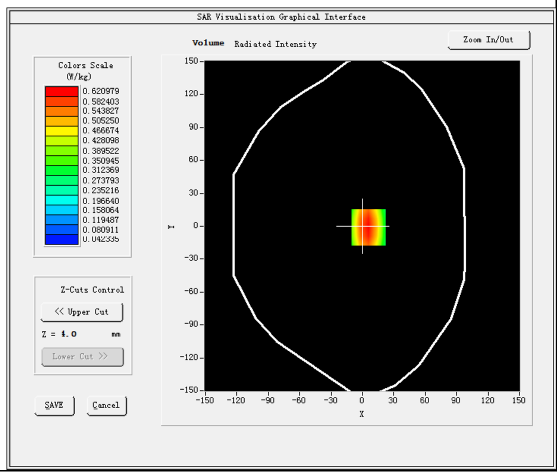
SATIMO Configuration:

- Probe: SSE5; Calibrated: Jun. 04,2019; Serial No.: SN 22/16 EP315
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: SAM twin phantom
- Measurement SW: OpenSAR V4_02_35

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

SURFACE SAR	VOLUME SAR

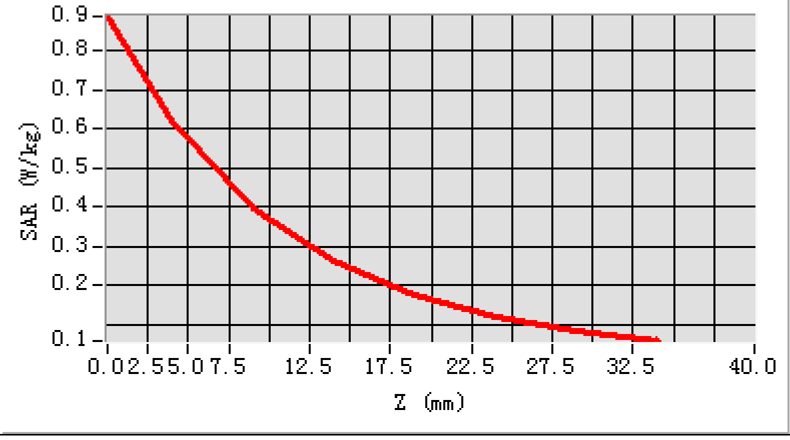


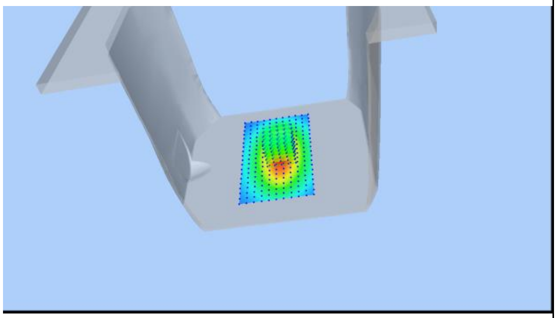
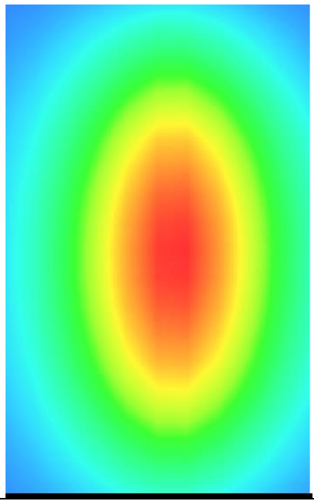


Maximum location: X=6.00, Y=-1.00
SAR Peak: 0.89 W/kg

SAR 10g (W/Kg)	0.360951
SAR 1g (W/Kg)	0.512874

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.8835	0.6287	0.3945	0.2668	0.1748	0.1221	0.0882



3D screen shot	Hot spot position
	

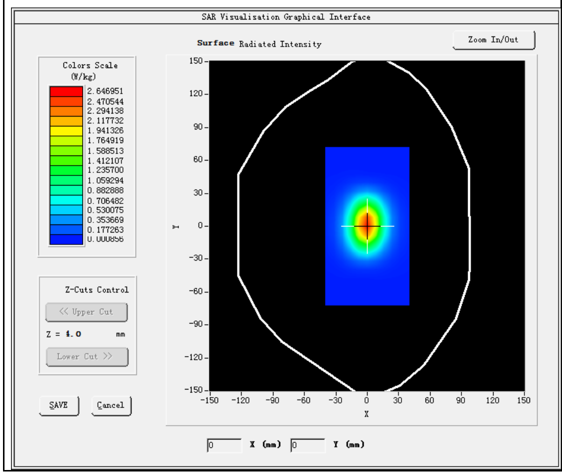
Test Laboratory: AGC Lab **Date: May 30,2020**
System Check Head 1750MHz
DUT: Dipole 1800 MHz; Type: SID 1800
Communication System: CW; Communication System Band: D1700 (1750.0 MHz); Duty Cycle:1:1; Conv.F=4.05
Frequency: 1750 MHz; Medium parameters used: f = 1800MHz; σ =1.38 mho/m; ε r =39.52; ρ = 1000 kg/m³ ;
Phantom section: Flat Section; Input Power=18dBm
Ambient temperature (℃): 20.6, Liquid temperature (℃): 20.3

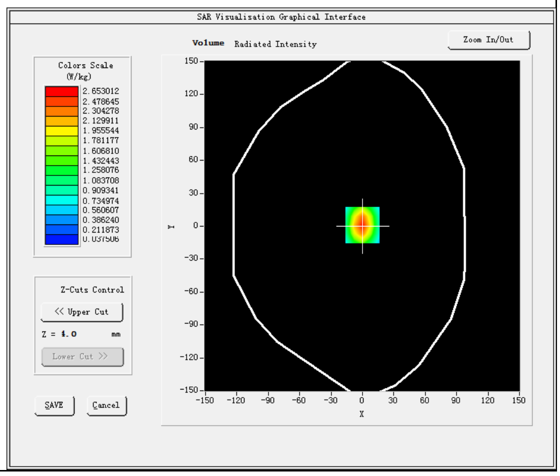
SATIMO Configuration:
Probe: SSE5; Calibrated: Jun. 04,2019; Serial No.: SN 22/16 EP315

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

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

SURFACE SAR	VOLUME SAR

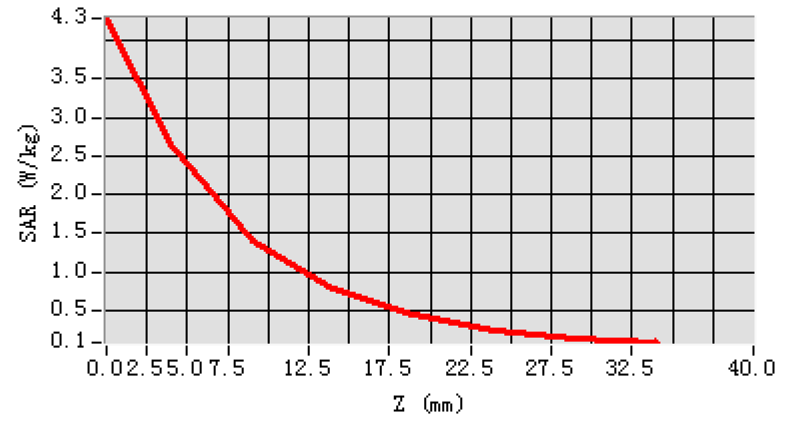


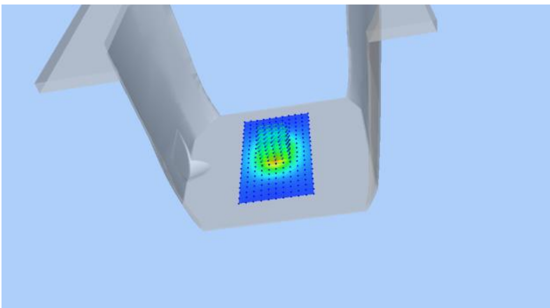
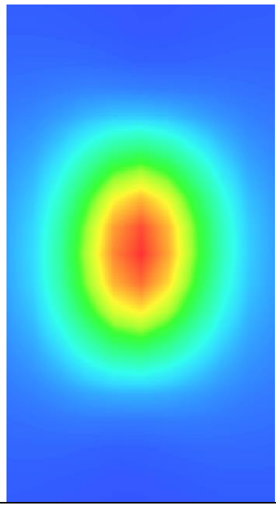


Maximum location: X=0.00, Y=1.00
SAR Peak: 4.25 W/kg

SAR 10g (W/Kg)	1.197353
SAR 1g (W/Kg)	2.272548

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	4.2870	2.6530	1.4115	0.7802	0.4363	0.2479	0.1421



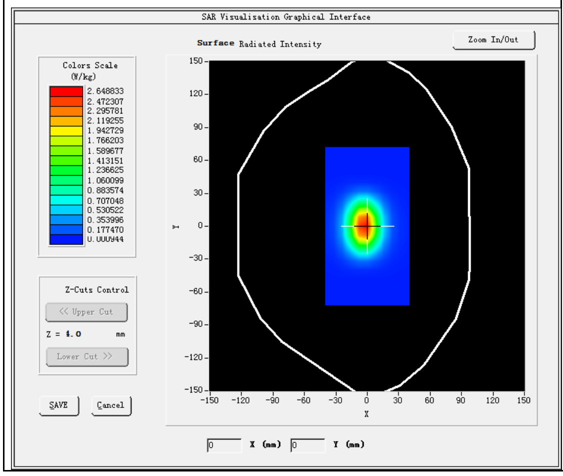
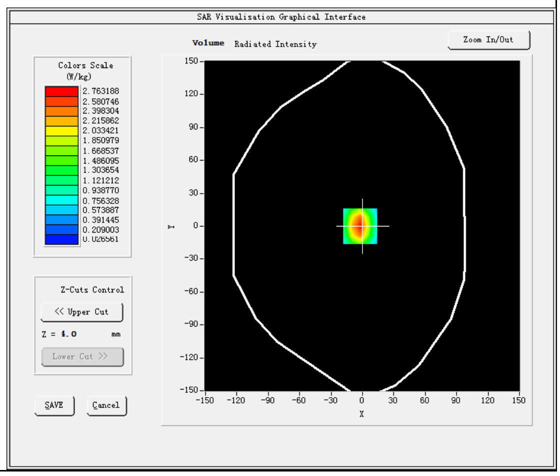
3D screen shot	Hot spot position
	

Test Laboratory: AGC Lab **Date: May 28,2020**
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=4.48
Frequency: 1900 MHz; Medium parameters used: f = 1850 MHz; σ =1.36 mho/m; ε r =39.51; ρ = 1000 kg/m³ ;
Phantom section: Flat Section; Input Power=18dBm
Ambient temperature (℃):20.1, Liquid temperature (℃): 19.8

SATIMO Configuration:
Probe: SSE5; Calibrated: Jun. 04,2019; Serial No.: SN 22/16 EP315

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

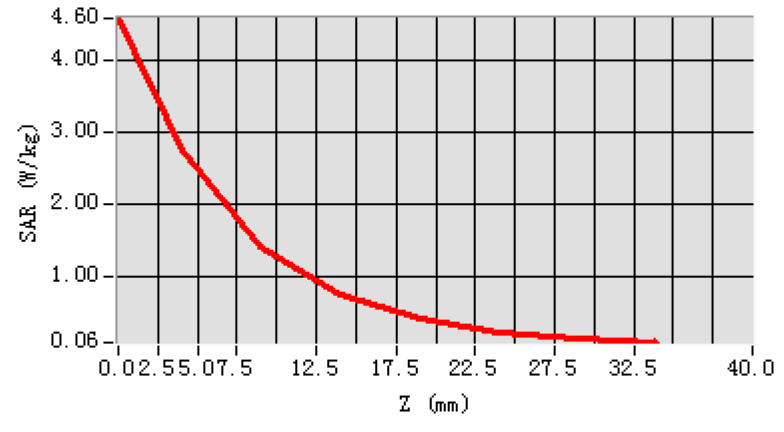
Configuration/System Check 1900MHz Head/Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/System Check 1900MHz Head/Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm

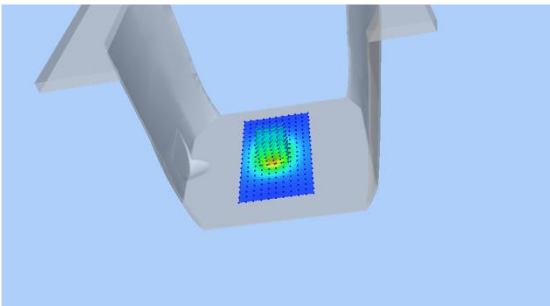
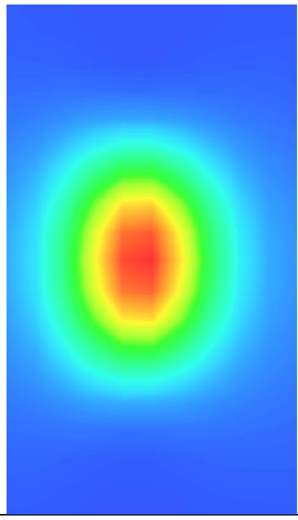
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-2.00, Y=0.00
SAR Peak: 4.58 W/kg

SAR 10g (W/Kg)	1.263171
SAR 1g (W/Kg)	2.597192

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	4.5977	2.7632	1.3999	0.7411	0.3943	0.2133	0.1159



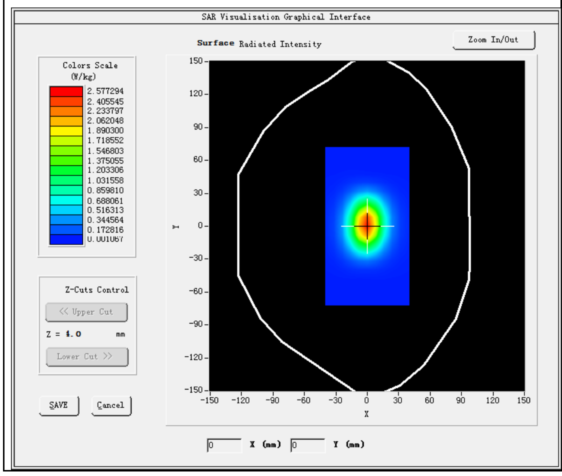
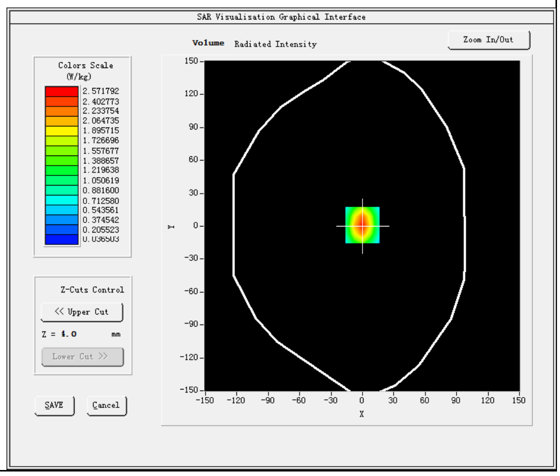
3D screen shot	Hot spot position
	

Test Laboratory: AGC Lab **Date: May 31,2020**
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=4.48
Frequency: 1900 MHz; Medium parameters used: f = 1850 MHz; σ =1.39 mho/m; ε r =38.58; ρ = 1000 kg/m³ ;
Phantom section: Flat Section; Input Power=18dBm
Ambient temperature (℃):20.8, Liquid temperature (℃): 20.5

SATIMO Configuration:
Probe: SSE5; Calibrated: Jun. 04,2019; Serial No.: SN 22/16 EP315

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

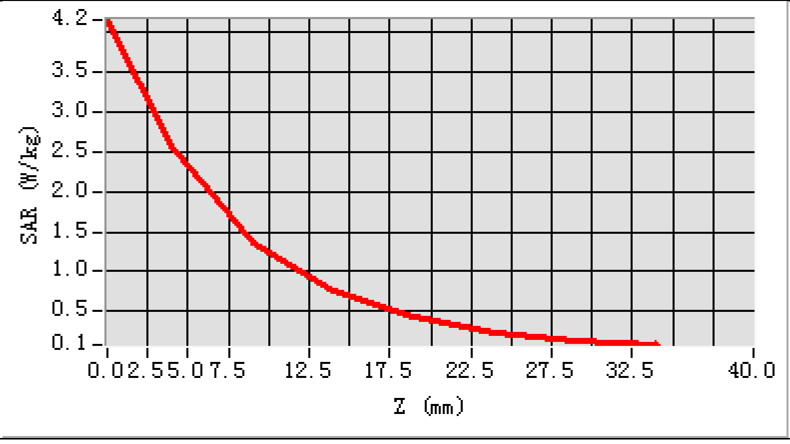
Configuration/System Check 1900MHz Head/Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/System Check 1900MHz Head/Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm

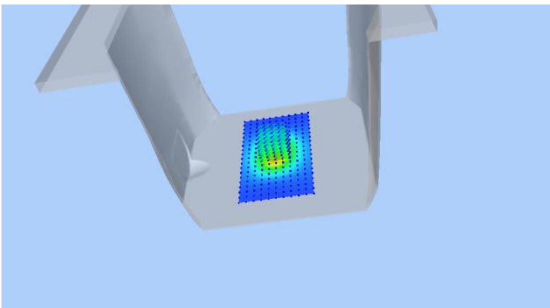
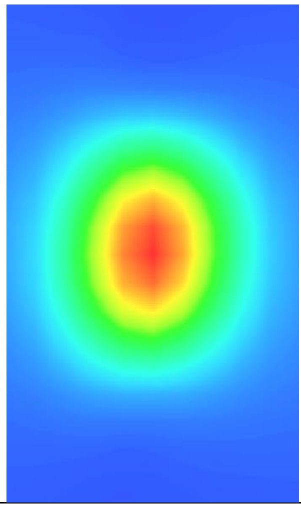
SURFACE SAR	VOLUME SAR
	

Maximum location: X=0.00, Y=1.00
SAR Peak: 4.12 W/kg

SAR 10g (W/Kg)	1.227156
SAR 1g (W/Kg)	2.413781

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	4.1524	2.5787	1.3624	0.7574	0.4212	0.2406	0.1468



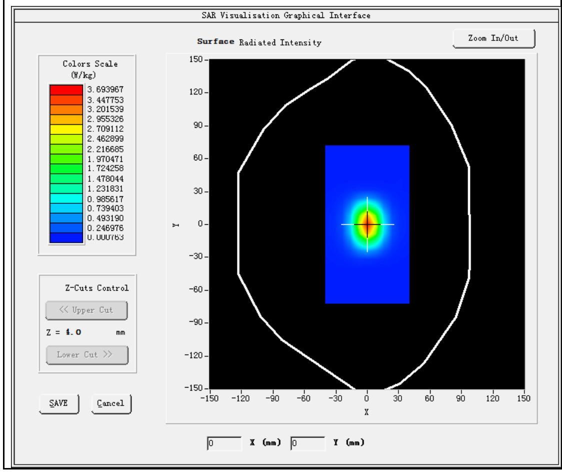
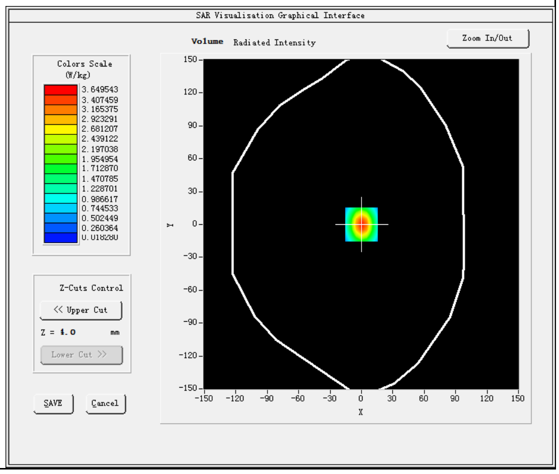
3D screen shot	Hot spot position
	

Test Laboratory: AGC Lab **Date: May 29,2020**
System Check Head 2450 MHz
DUT: Dipole 2450 MHz Type: SID 2450
Communication System CW; Communication System Band: D2450 (2450.0 MHz); Duty Cycle: 1:1; Conv.F=4.12
Frequency: 2450 MHz; Medium parameters used: f = 2450 MHz; σ =1.84 mho/m; ε r =38.74; ρ = 1000 kg/m³ ;
Phantom section: Flat Section; Input Power=18dBm
Ambient temperature (℃):21.1, Liquid temperature (℃): 20.8

SATIMO Configuration

- Probe: SSE5; Calibrated: Jun. 04,2019; Serial No.: SN 22/16 EP315
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: SAM twin phantom
- Measurement SW: OpenSAR V4_02_35

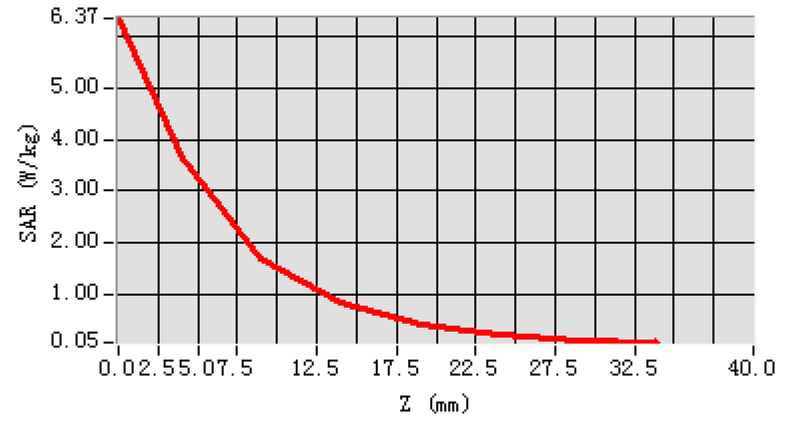
Configuration/System Check 2450MHz Head/Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/System Check 2450MHz Head/Zoom Scan: Measurement grid: dx=5mm,dy=5mm, dz=5mm

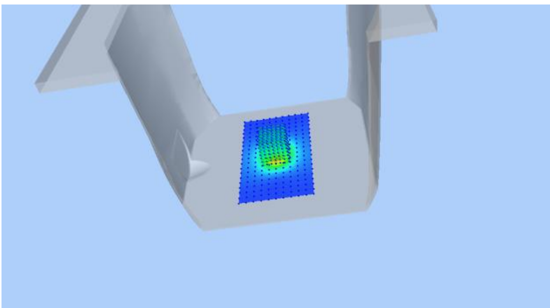
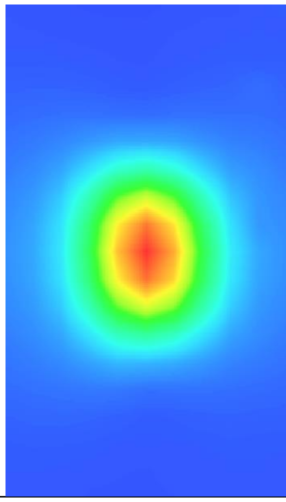
SURFACE SAR	VOLUME SAR
	

Maximum location: X=0.00, Y=0.00
SAR Peak: 6.28 W/kg

SAR 10g (W/Kg)	1.493819
SAR 1g (W/Kg)	3.337937

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	6.3689	3.6495	1.6946	0.8141	0.3932	0.1941	0.0961



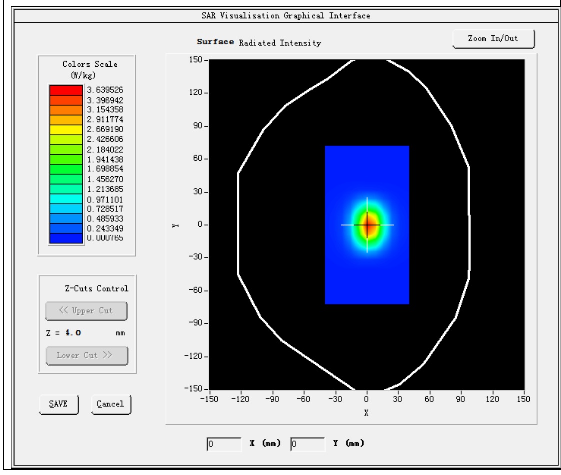
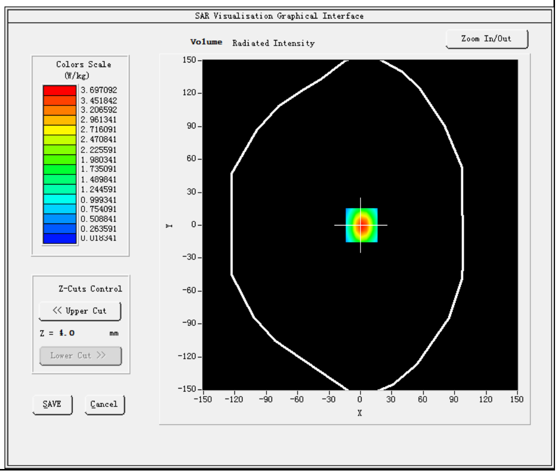
3D screen shot	Hot spot position
	

Test Laboratory: AGC Lab **Date: May 22,2020**
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=3.77
Frequency:2600 MHz; Medium parameters used: f = 2600 MHz; σ =1.89 mho/m; ε r =38.92; ρ = 1000 kg/m^3 ;
Phantom section: Flat Section; Input Power=18dBm
Ambient temperature (℃): 21.1, Liquid temperature (℃): 20.9

SATIMO Configuration:

- Probe: SSE5; Calibrated: Jun. 04,2019; Serial No.: SN 22/16 EP315
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: SAM twin phantom
- Measurement SW: OpenSAR V4_02_35

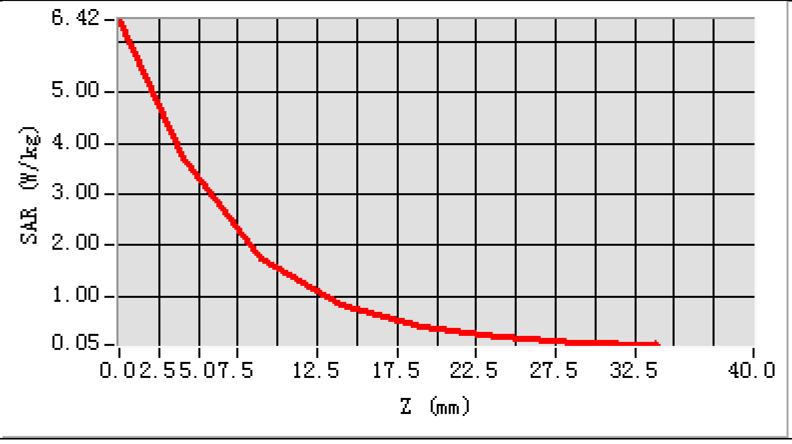
Configuration/System Check 2600 Head/Area Scan: Measurement grid: dx=8mm,dy=8mm
Configuration/System Check 2600 Head/Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm

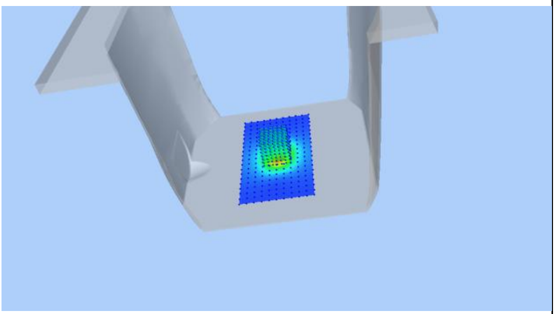
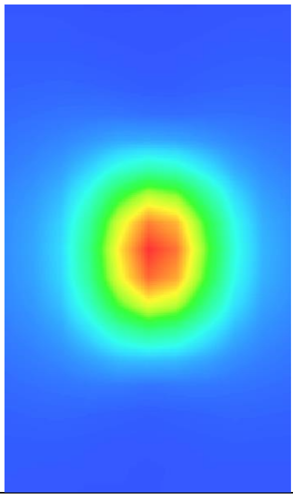
SURFACE SAR	VOLUME SAR
	

Maximum location: X=1.00, Y=0.00
SAR Peak: 6.39 W/kg

SAR 10g (W/Kg)	1.533692
SAR 1g (W/Kg)	3.417057

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	6.4203	3.6971	1.7316	0.8354	0.4061	0.2005	0.0991



3D screen shot	Hot spot position
	

APPENDIX B. SAR MEASUREMENT DATA

Test Laboratory: AGC Lab **Date: May 28,2020**
WCDMA Band II Mid-Horizontal-Down(RMC 12.2kbps)
DUT: 4G Wireless Router; Type: U850

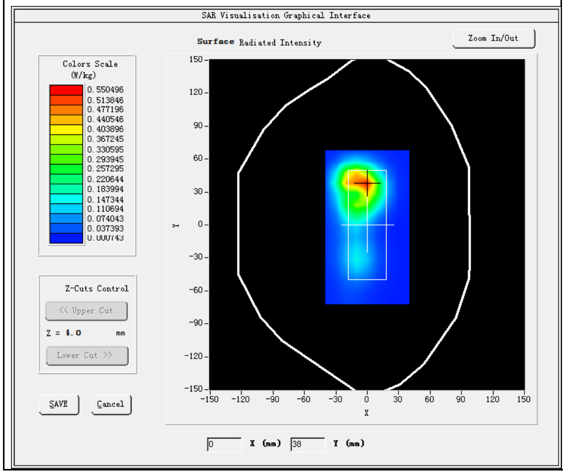
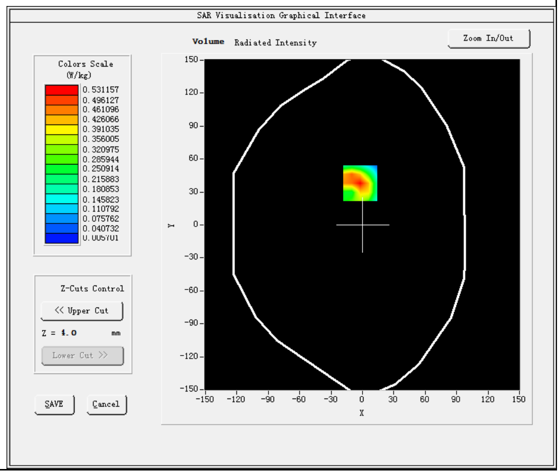
Communication System: UMTS; Communication System Band: Band II UTRA/FDD ;Duty Cycle:1:1; Conv.F=4.60; Frequency: 1880 MHz; Medium parameters used: f = 1850 MHz; σ =1.33 mho/m; ε r =40.23; ρ = 1000 kg/m³ ;
Phantom section: Flat Section
Ambient temperature (℃): 20.1, Liquid temperature (℃): 19.8

SATIMO Configuration:

- Probe: SSE5; Calibrated: Jun. 04,2019; Serial No.: SN 22/16 EP315
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: SAM twin phantom
- Measurement SW: OpenSAR V4_02_35

Configuration/ WCDMA band II Mid-Horizontal-Down/Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/ WCDMA band II Mid-Horizontal-Down/Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm;

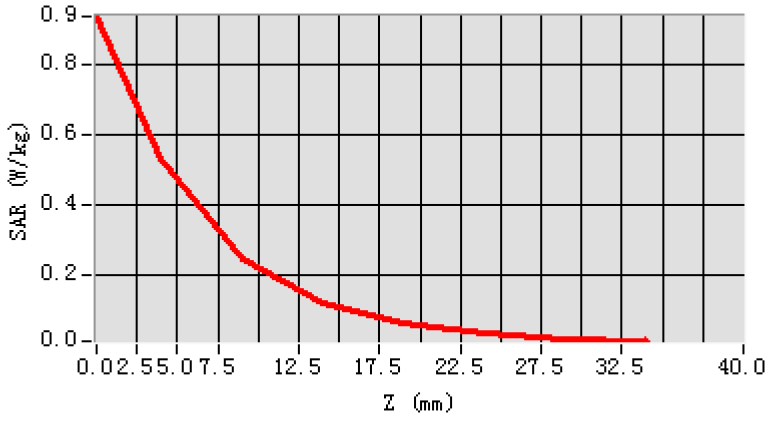
Area Scan	surf_sam_plan.txt, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Horizontal-Down
Band	WCDMA band II
Channels	Middle
Signal	CDMA (Crest factor: 1.0)

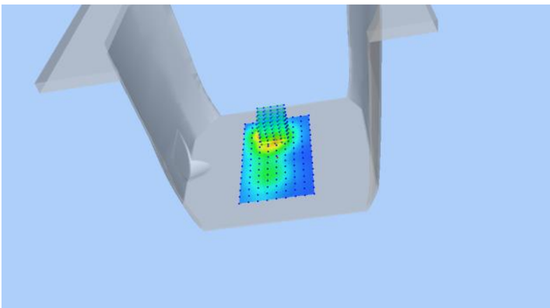
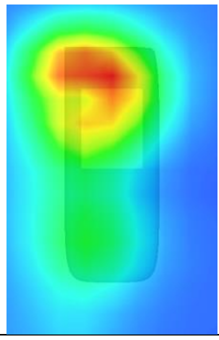
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-2.00, Y=38.00
SAR Peak: 0.92 W/kg

SAR 10g (W/Kg)	0.237351
SAR 1g (W/Kg)	0.497154

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.9348	0.5312	0.2438	0.1193	0.0586	0.0302	0.0159



3D screen shot	Hot spot position
	

Test Laboratory: AGC Lab **Date: May 30,2020**
WCDMA Band IV Mid-Horizontal-Up (RMC)
DUT: 4G Wireless Router; Type: U850

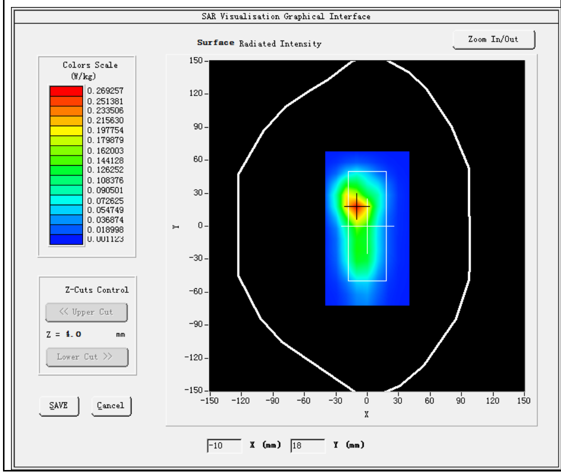
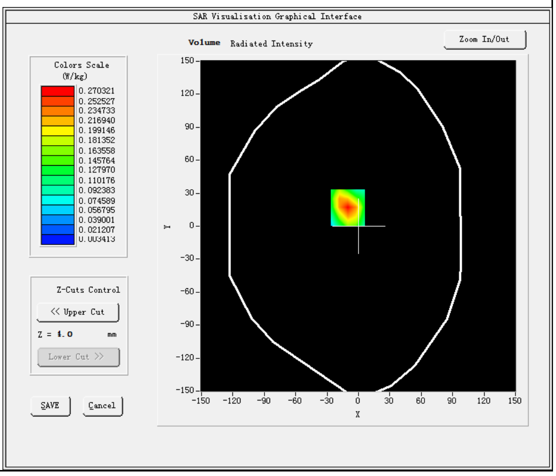
Communication System: UMTS; Communication System Band: BAND IV UTRA/FDD; Duty Cycle:1: 1; Conv.F=4.19; Frequency:1732.5 MHz; Medium parameters used: f = 1800 MHz; σ =1.36 mho/m; ε r =39.87; ρ = 1000 kg/m^3 ;
Phantom section: Flat Section
Ambient temperature (℃): 20.6, Liquid temperature (℃): 20.3

SATIMO Configuration:

- Probe: SSE5; Calibrated: Jun. 04,2019; Serial No.: SN 22/16 EP315
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: SAM twin phantom
- Measurement SW: OpenSAR V4_02_35

Configuration/ WCDMA Band IV Mid-Horizontal-Up/Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/ WCDMA Band IV Mid-Horizontal-Up/Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm;

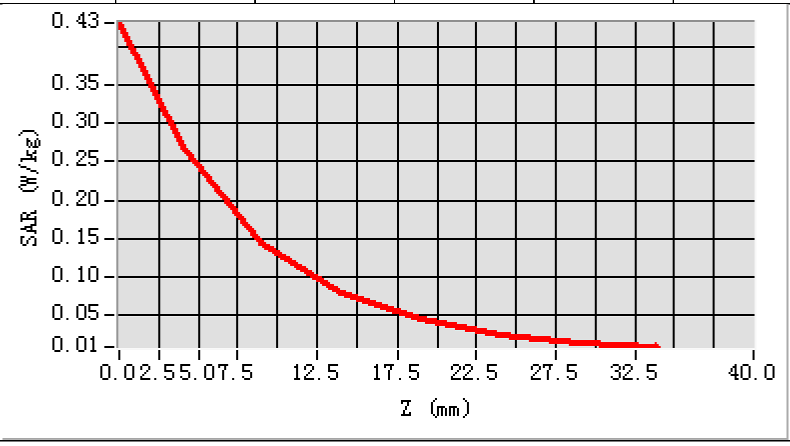
Area Scan	surf_sam_plan.txt, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Horizontal-Up
Band	WCDMA Band IV
Channels	Middle
Signal	CDMA (Crest factor: 1.0)

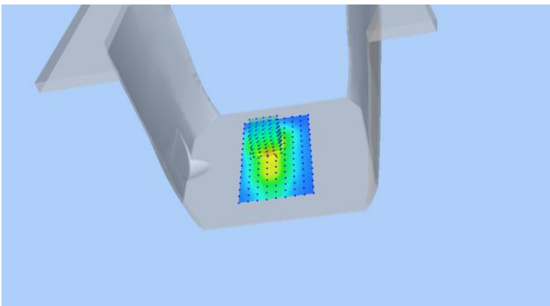
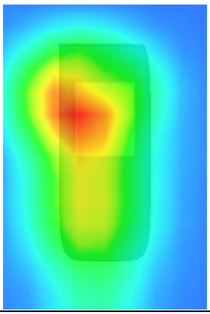
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-10.00, Y=17.00
SAR Peak: 0.43 W/kg

SAR 10g (W/Kg)	0.131852
SAR 1g (W/Kg)	0.253371

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.4319	0.2703	0.1450	0.0790	0.0431	0.0237	0.0137



3D screen shot	Hot spot position
	

Test Laboratory: AGC Lab **Date: May 31,2020**
LTE Band 2 Mid-Horizontal-Down (1 RB#0)
DUT: 4G Wireless Router; Type: U850

Communication System: LTE; Communication System Band: LTE Band 2; Duty Cycle:1:1; Conv.F=4.60;
Frequency:1880MHz; Medium parameters used: f = 1850 MHz; σ = 1.36 mho/m; εr =39.26; ρ = 1000 kg/m³ ;
Phantom section: Flat Section
Ambient temperature (℃): 20.8, Liquid temperature (℃): 20.5

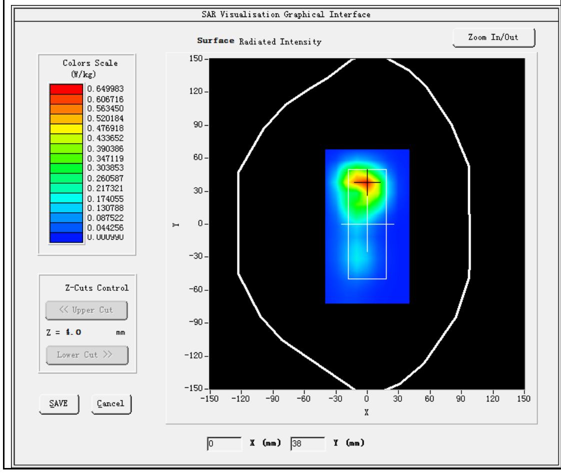
SATIMO Configuration:

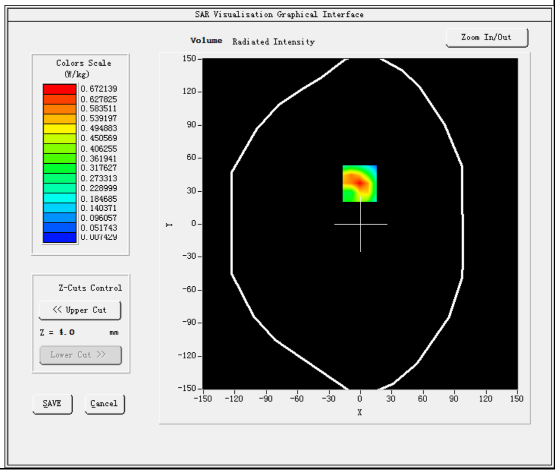
- Probe: SSE5; Calibrated: Jun. 04,2019; Serial No.: SN 22/16 EP315
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: SAM twin phantom
- Measurement SW: OpenSAR V4_02_35

Configuration/ LTE Band 2 Mid-Horizontal-Down/Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/ LTE Band 2 Mid-Horizontal-Down/Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5m;

Area Scan	surf_sam_plan.txt, h= 5.00 mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Horizontal-Down
Band	LTE Band 2
Channels	Middle
Signal	OFDM (Crest factor: 1.0)

SURFACE SAR	VOLUME SAR

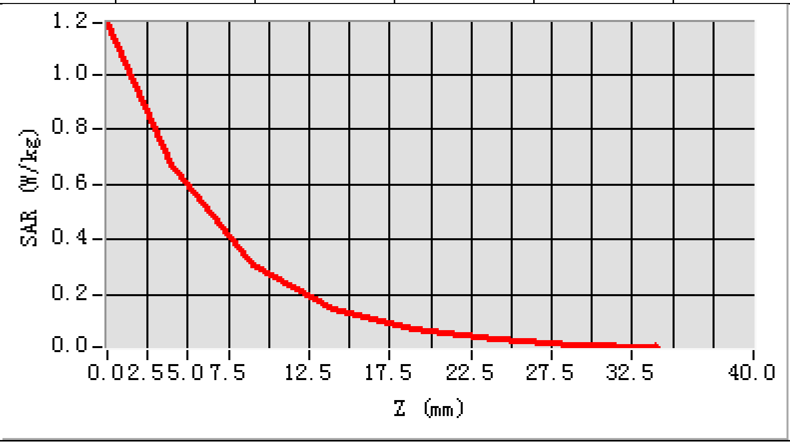


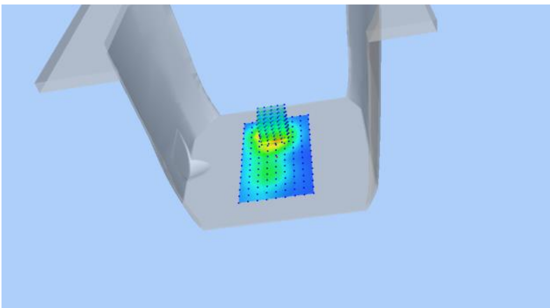
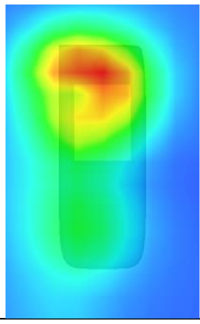


Maximum location: X=-1.00, Y=37.00
SAR Peak: 1.17 W/kg

SAR 10g (W/Kg)	0.296472
SAR 1g (W/Kg)	0.628294

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	1.1850	0.6721	0.3076	0.1473	0.0729	0.0369	0.0199



3D screen shot	Hot spot position
	

Test Laboratory: AGC Lab **Date: May 30,2020**
LTE Band 4 Mid-Horizontal-Up (1 RB#0)
DUT: 4G Wireless Router; Type: U850

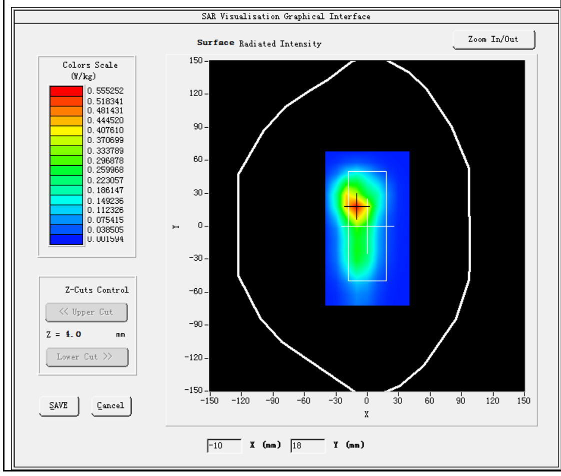
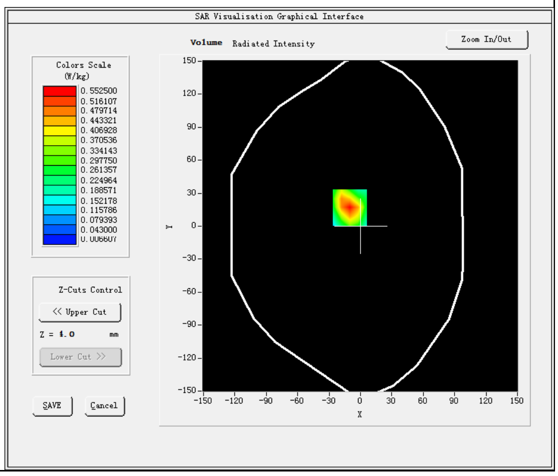
Communication System: LTE; Communication System Band: LTE Band 4; Duty Cycle:1:1; Conv.F=4.19;
Frequency:1732.5 MHz; Medium parameters used: f = 1750 MHz; σ = 1.36 mho/m; ε r =39.87; ρ = 1000 kg/m³ ;
Phantom section: Flat Section
Ambient temperature (℃): 20.6, Liquid temperature (℃): 20.3

SATIMO Configuration:

- Probe: SSE5; Calibrated: Jun. 04,2019; Serial No.: SN 22/16 EP315
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: SAM twin phantom
- Measurement SW: OpenSAR V4_02_35

Configuration/ LTE Band 4 Mid-Horizontal-Up/Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/ LTE Band 4 Mid-Horizontal-Up/Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5m;

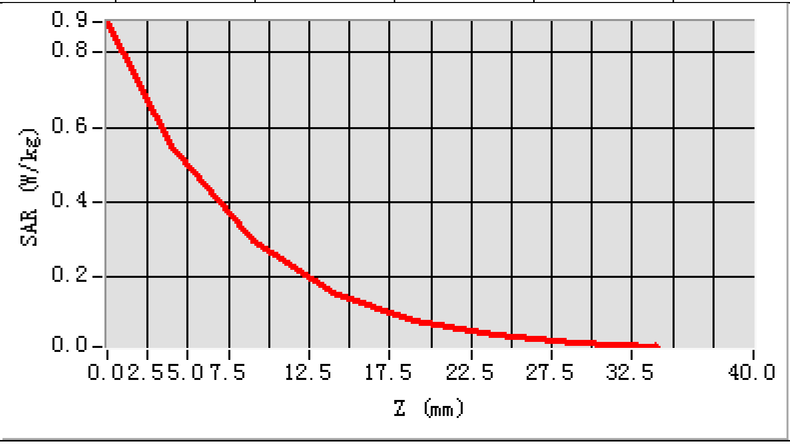
Area Scan	surf_sam_plan.txt, h= 5.00 mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Horizontal-Up
Band	LTE Band 4
Channels	Middle
Signal	OFDM (Crest factor: 1.0)

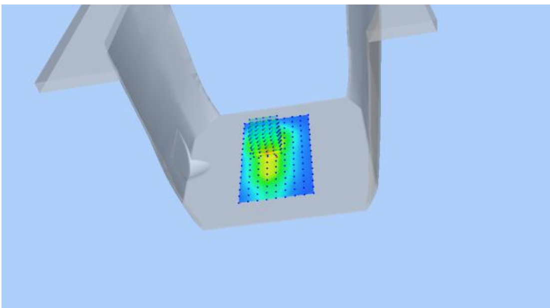
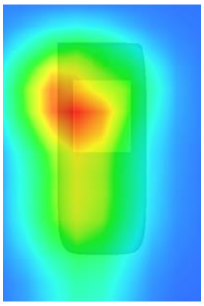
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-10.00, Y=17.00
SAR Peak: 0.89 W/kg

SAR 10g (W/Kg)	0.267233
SAR 1g (W/Kg)	0.517987

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.8816	0.5525	0.2966	0.1605	0.0869	0.0469	0.0264



3D screen shot	Hot spot position
	

Test Laboratory: AGC Lab **Date: May 22,2020**
LTE Band 7 Mid-Horizontal-Down (1RB#0)
DUT: 4G Wireless Router; Type: U850

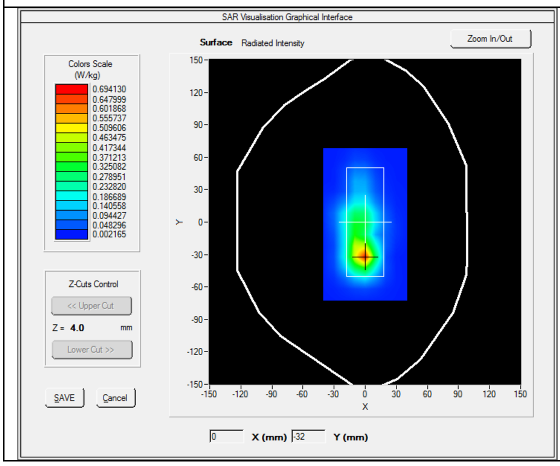
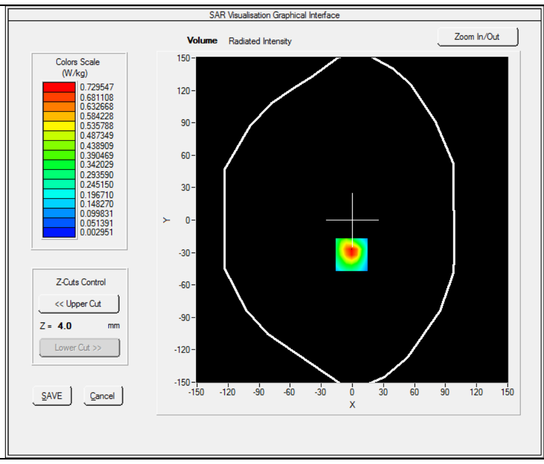
Communication System: LTE; Communication System Band: LTE Band 7; Duty Cycle:1:1; Conv.F=3.92
Frequency: 2535MHz; Medium parameters used: f =2600 MHz; σ =1.87 mho/m; ε r =39.62; ρ = 1000 kg/m³ ;
Phantom section: Flat Section
Ambient temperature (℃): 21.1, Liquid temperature (℃): 20.9

SATIMO Configuration:

- Probe: SSE5; Calibrated: Jun. 04,2019; Serial No.: SN 22/16 EP315
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: SAM twin phantom
- Measurement SW: OpenSAR V4_02_35

Configuration/ LTE BAND 7 Mid-Horizontal-Down /Area Scan: Measurement grid: dx=10mm, y=10mm
Configuration/ LTE BAND 7 Mid-Horizontal-Down /Zoom Scan: Measurement grid: dx=5mm, dy=5mm, dz=5mm

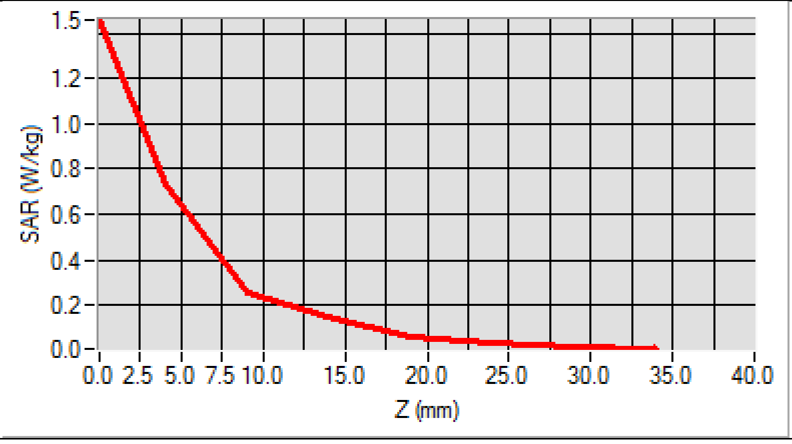
Area Scan	surf_sam_plan.txt, h= 5.00 mm
ZoomScan	7x7x7,dx=5mm dy=5mm dz=5mm
Phantom	Validation plane
Device Position	Horizontal-Down
Band	LTE BAND 7
Channels	Middle
Signal	OFDM (Crest factor: 1.0)

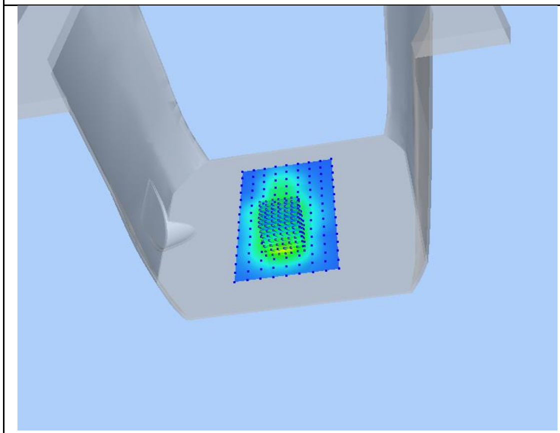
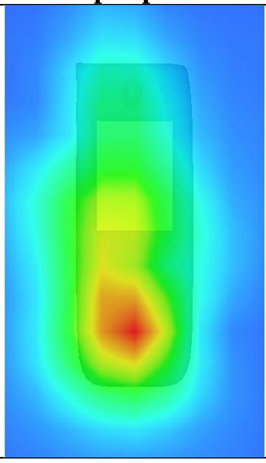
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-1.00, Y=-32.00
SAR Peak: 1.30 W/kg

SAR 10g (W/Kg)	0.282224
SAR 1g (W/Kg)	0.665274

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	1.4596	0.7295	0.2552	0.1518	0.0569	0.0312	0.0131



3D screen shot	Hot spot position
	

Test Laboratory: AGC Lab **Date: Jun.01,2020**
LTE Band 12 Mid-Horizontal-Down (1 RB#0)
DUT: 4G Wireless Router; Type: U850

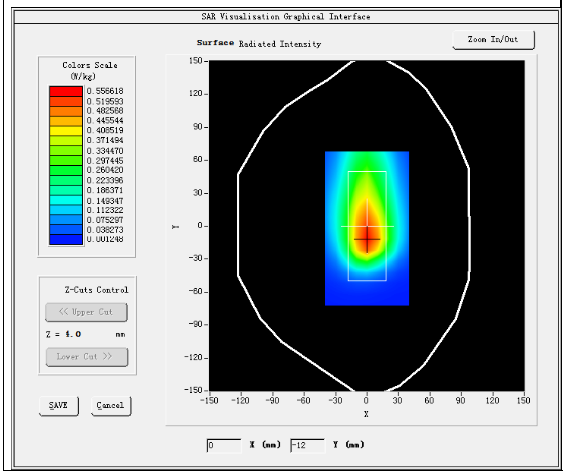
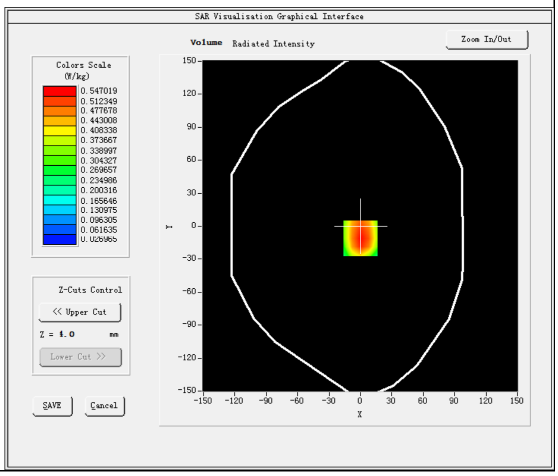
Communication System: LTE; Communication System Band: LTE Band 12; Duty Cycle:1:1; Conv.F=5.14;
Frequency: 708 MHz; Medium parameters used: f = 750 MHz; σ =0.89 mho/m; ε r =42.36; ρ = 1000 kg/m³ ;
Phantom section: Flat Section
Ambient temperature (℃): 20.4, Liquid temperature (℃): 20.1

SATIMO Configuration:

- Probe: SSE5; Calibrated: Jun. 04,2019; Serial No.: SN 22/16 EP315
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: SAM twin phantom
- Measurement SW: OpenSAR V4_02_35

Configuration/ LTE Band 12 Mid-Horizontal-Down/Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/ LTE Band 12 Mid-Horizontal-Down/Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5m;

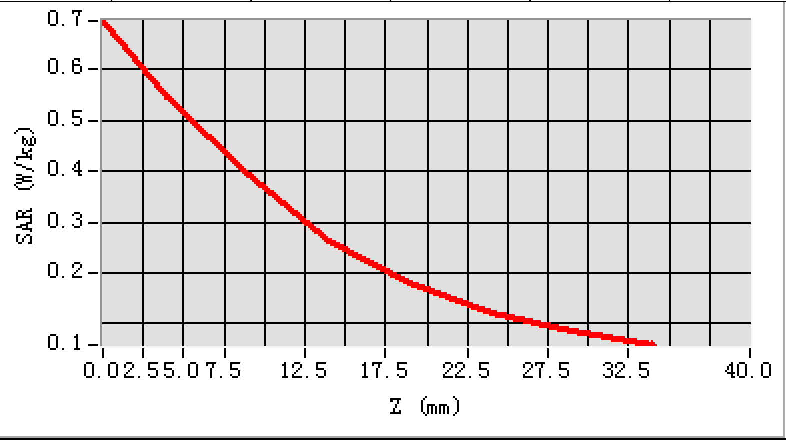
Area Scan	surf_sam_plan.txt, h= 5.00 mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Horizontal-Down
Band	LTE Band 12
Channels	Middle
Signal	OFDM (Crest factor: 1.0)

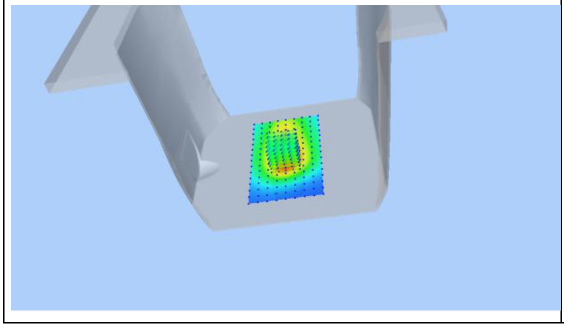
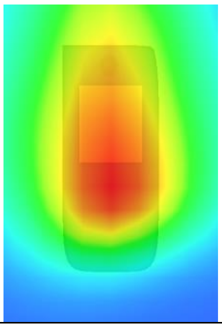
SURFACE SAR	VOLUME SAR
	

Maximum location: X=0.00, Y=-11.00
SAR Peak: 0.74 W/kg

SAR 10g (W/Kg)	0.348246
SAR 1g (W/Kg)	0.534880

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.6966	0.5470	0.3914	0.2642	0.1799	0.1222	0.0838



3D screen shot	Hot spot position
	

Test Laboratory: AGC Lab **Date: May 31,2020**
LTE Band 25 Mid-Horizontal-Up (1 RB#0)
DUT: 4G Wireless Router; Type: U850

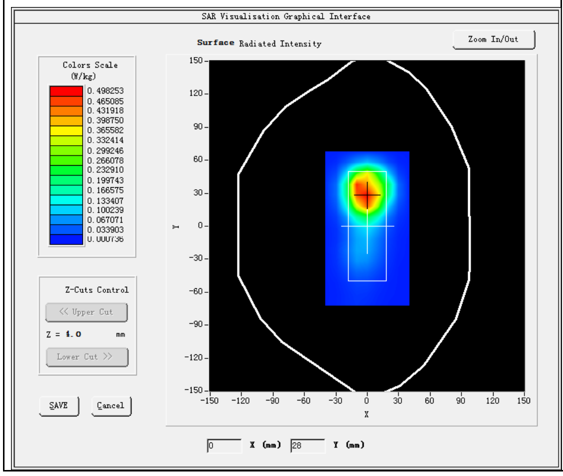
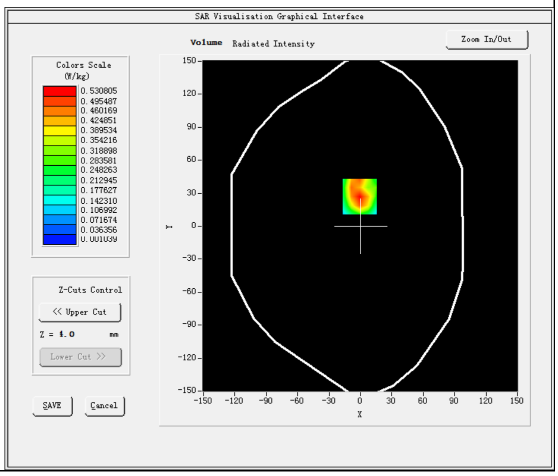
Communication System: LTE; Communication System Band: LTE Band 25; Duty Cycle:1:1; Conv.F=4.60; Frequency:1882.5MHz; Medium parameters used: f = 1850 MHz; σ = 1.37 mho/m; ε r =38.82; ρ = 1000 kg/m³ ;
Phantom section: Flat Section
Ambient temperature (℃): 20.8, Liquid temperature (℃): 20.5

SATIMO Configuration:

- Probe: SSE5; Calibrated: Jun. 04,2019; Serial No.: SN 22/16 EP315
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: SAM twin phantom
- Measurement SW: OpenSAR V4_02_35

Configuration/ LTE Band 25 Mid-Horizontal-Up/Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/ LTE Band 25 Mid-Horizontal-Up/Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5m;

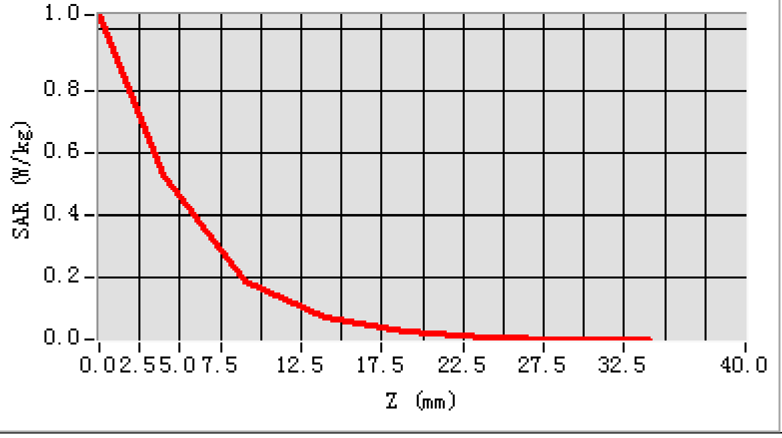
Area Scan	surf_sam_plan.txt, h= 5.00 mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Horizontal-Up
Band	LTE Band 25
Channels	Middle
Signal	OFDM (Crest factor: 1.0)

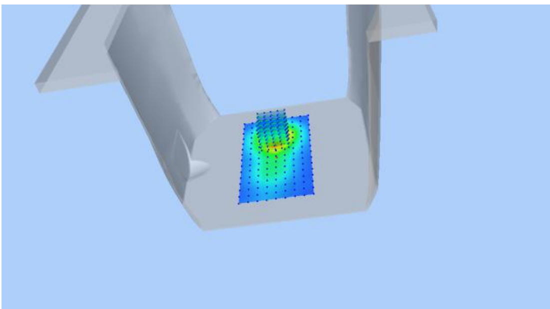
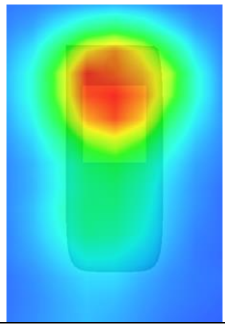
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-1.00, Y=27.00
SAR Peak: 1.04 W/kg

SAR 10g (W/Kg)	0.222415
SAR 1g (W/Kg)	0.518562

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	1.0453	0.5308	0.1920	0.0699	0.0266	0.0105	0.0039



3D screen shot	Hot spot position
	

WIFI MODE

Test Laboratory: AGC Lab **Date: May 29,2020**
802.11b Mid-Horizontal-Down
DUT: 4G Wireless Router; Type: U850

Communication System: Wi-Fi; Communication System Band: 802.11b; Duty Cycle: 1:1; Conv.F=4.24;
Frequency: 2437 MHz; Medium parameters used: f = 2450 MHz; σ =1.81mho/m; εr =39.51; ρ = 1000 kg/m³ ;
Phantom section: Flat Section
Ambient temperature (℃):21.1, Liquid temperature (℃): 20.8

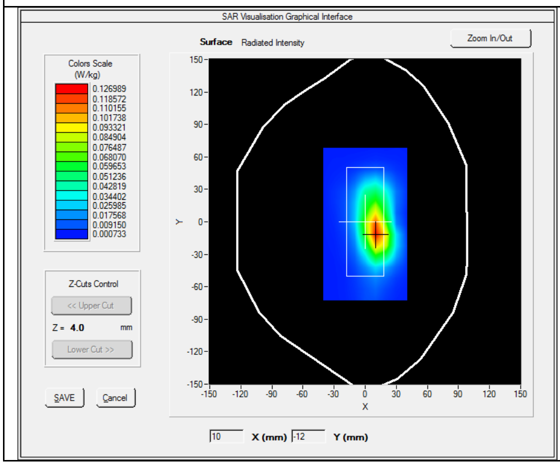
SATIMO Configuration:

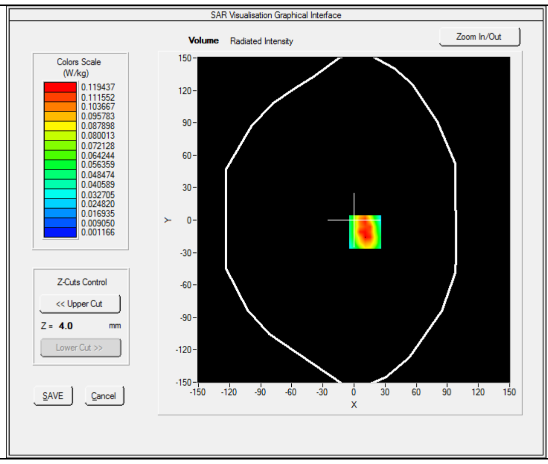
- Probe: SSE5; Calibrated: Jun. 04,2019; Serial No.: SN 22/16 EP315
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: SAM twin phantom
- Measurement SW: OpenSAR V4_02_35

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

Area Scan	surf_sam_plan.txt, h= 5.00 mm
ZoomScan	7x7x7,dx=5mm dy=5mm dz=5mm
Phantom	Validation plane
Device Position	Horizontal-Down
Band	2450MHz
Channels	Middle
Signal	Crest factor: 1.0

SURFACE SAR	VOLUME SAR

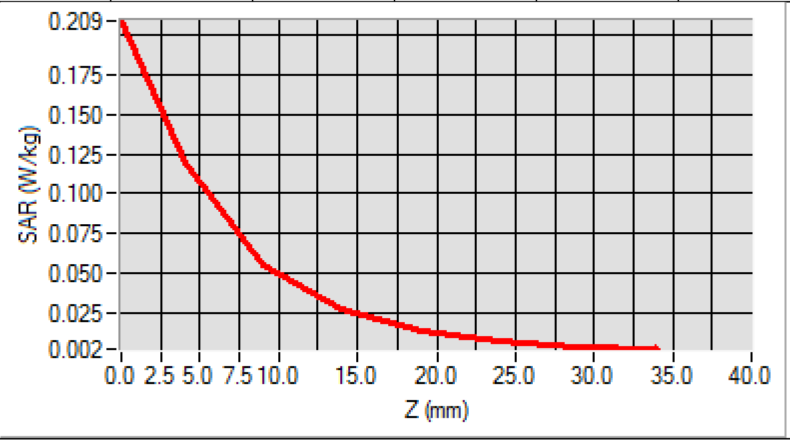


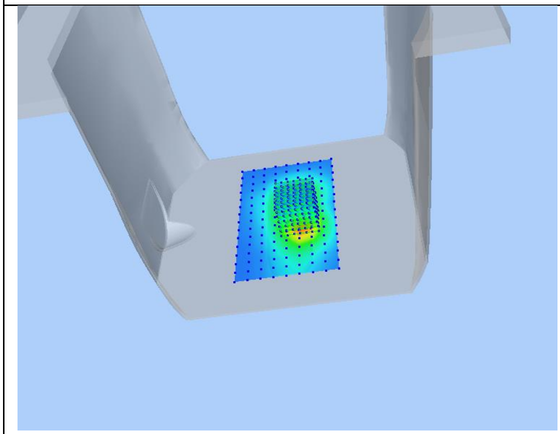
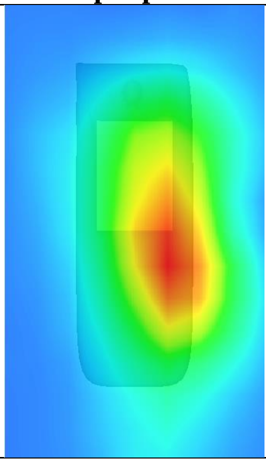


Maximum location: X=11.00, Y=-11.00
SAR Peak: 0.21 W/kg

SAR 10g (W/Kg)	0.053623
SAR 1g (W/Kg)	0.111392

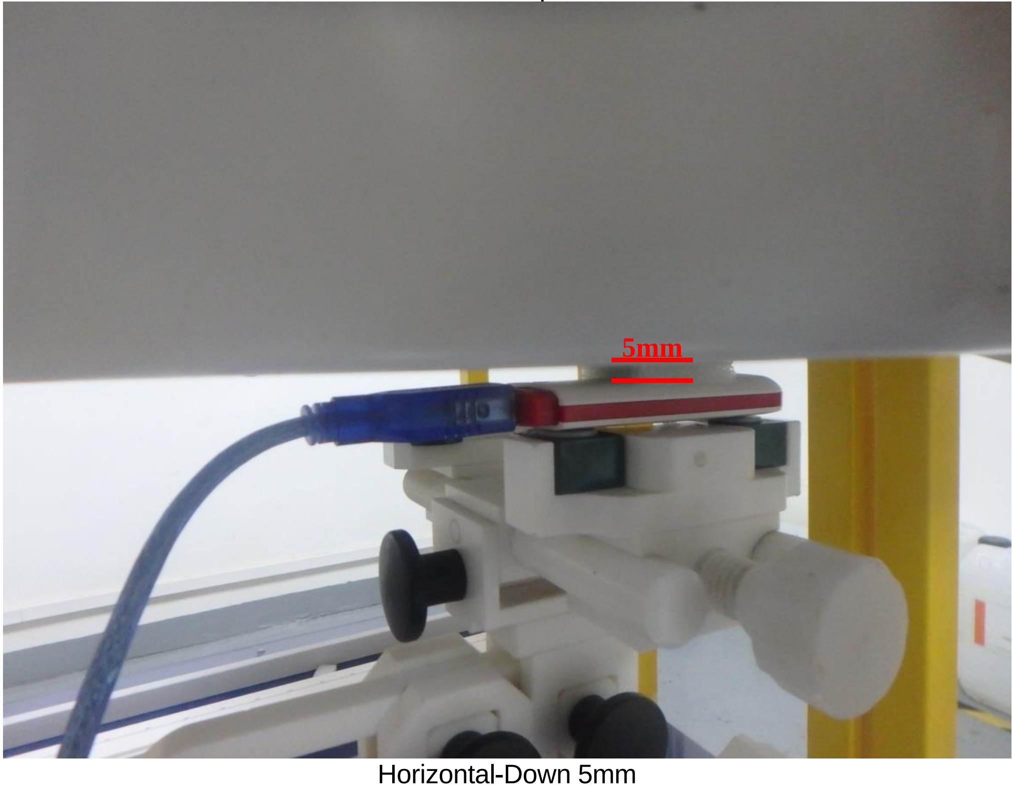
Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.2091	0.1194	0.0557	0.0269	0.0138	0.0069	0.0035



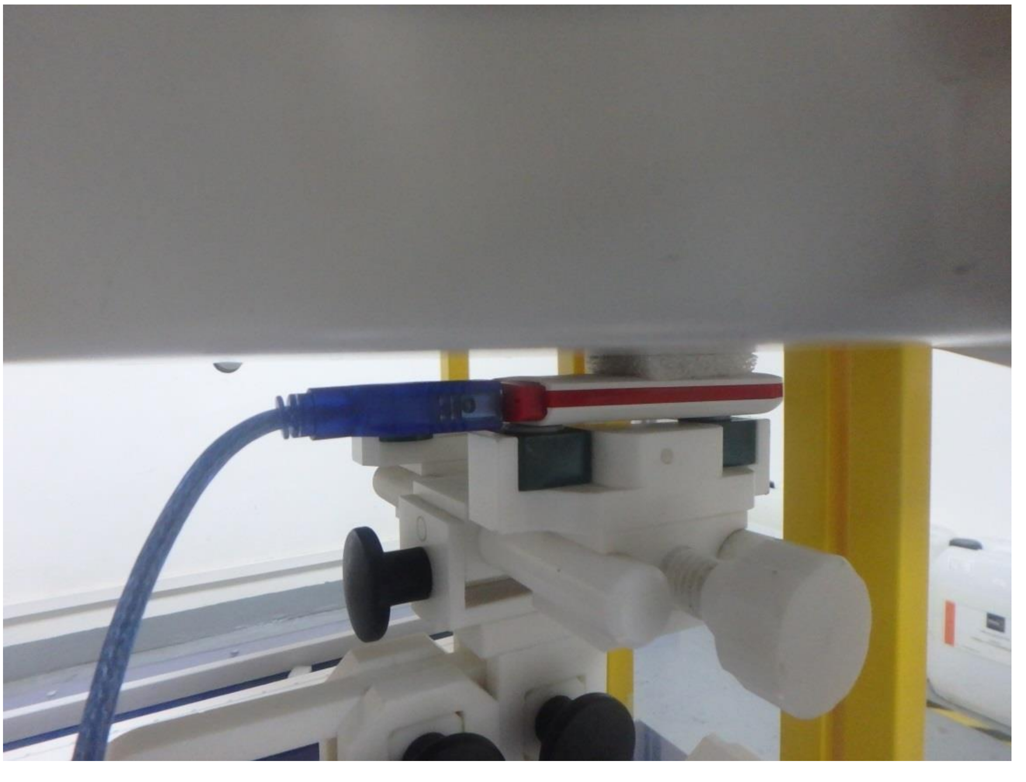
3D screen shot	Hot spot position
	

APPENDIX C. TEST SETUP PHOTOGRAPHS

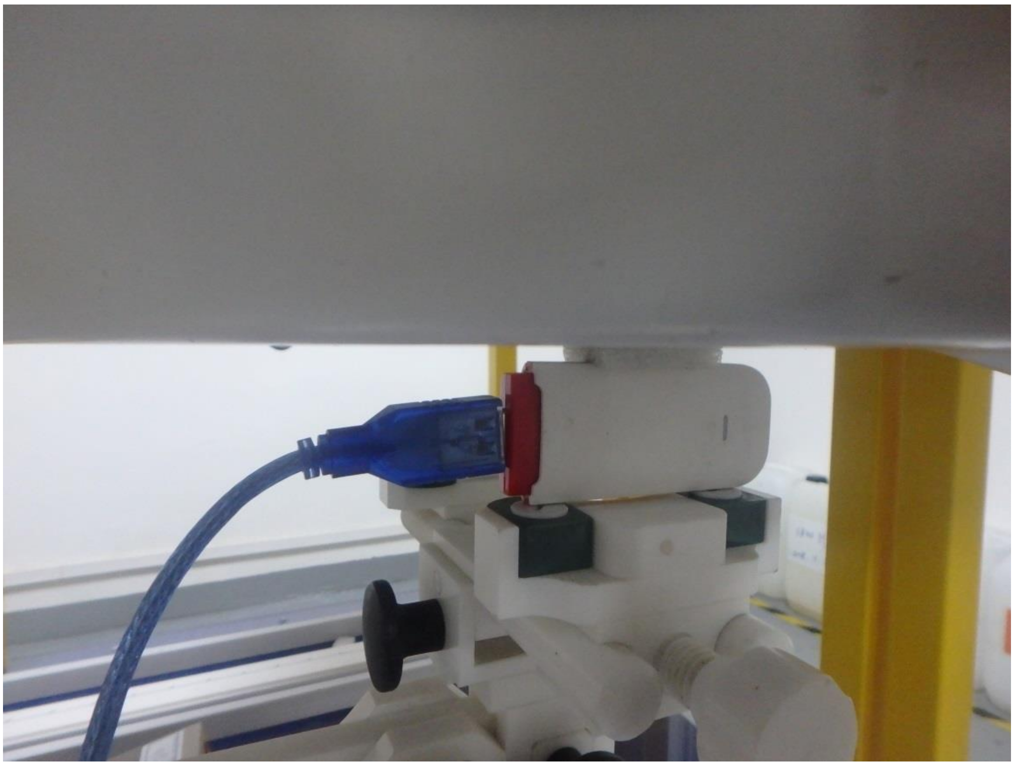
Horizontal-Up 5mm



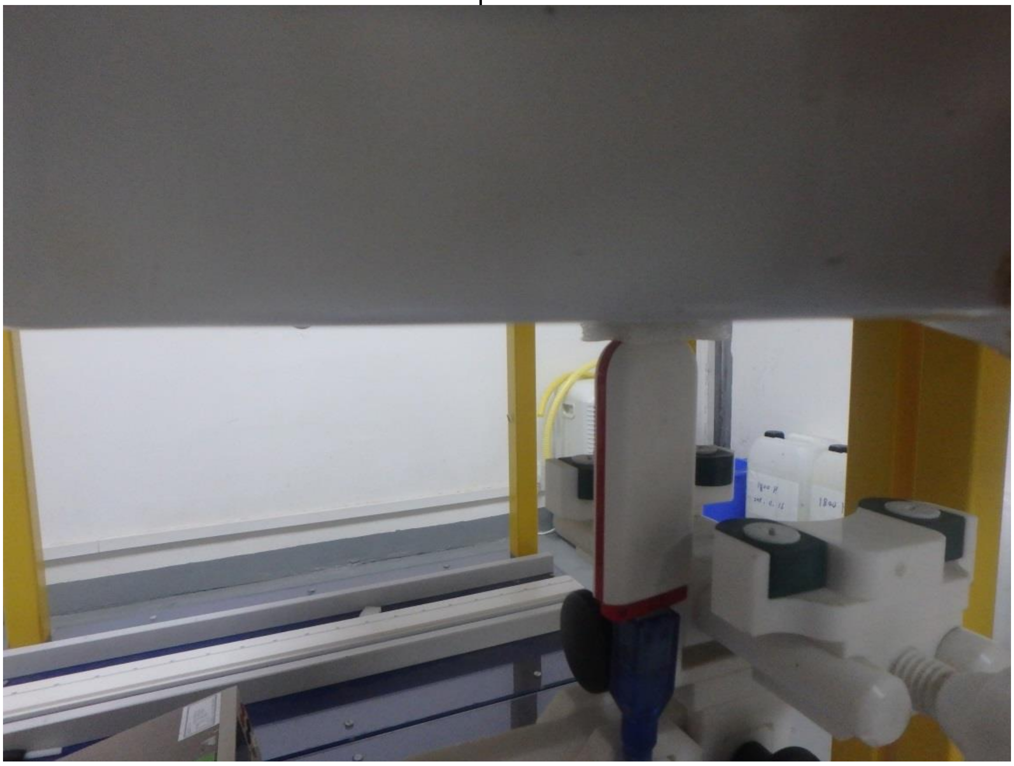
Horizontal-Down 5mm



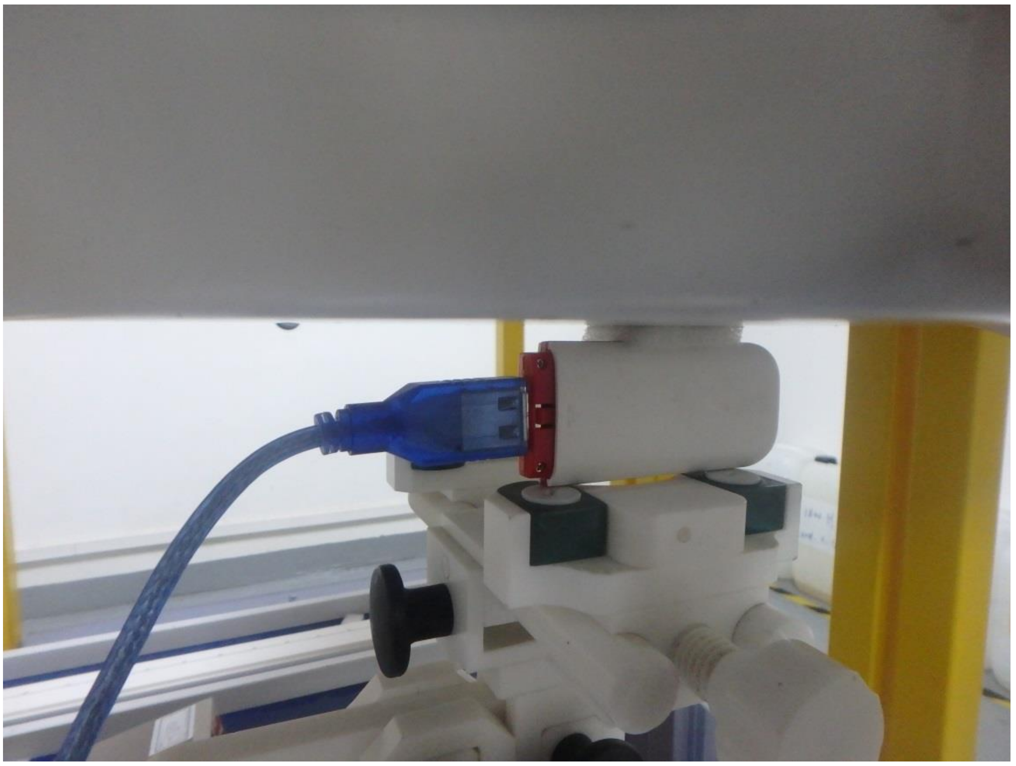
Vertical-Back 5mm



Tip 5mm

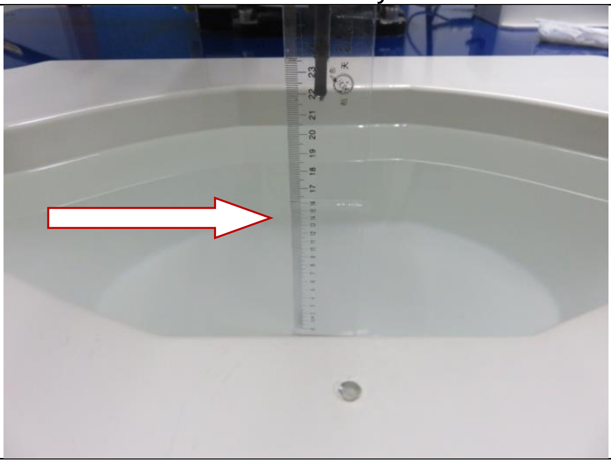
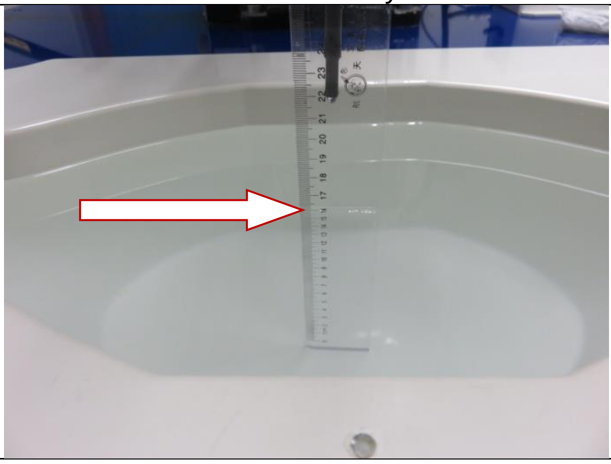
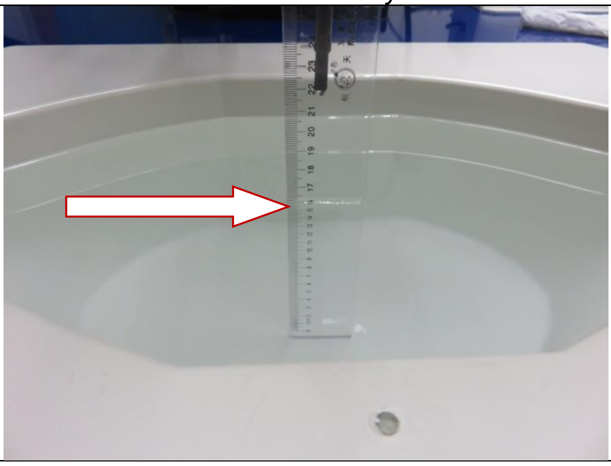
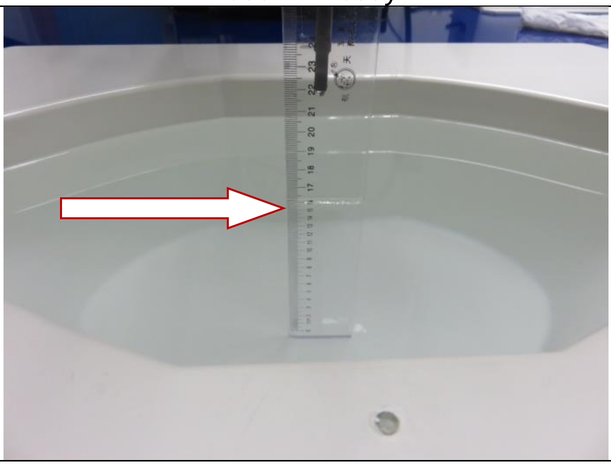


Vertical-Front 5mm



DEPTH OF THE LIQUID IN THE PHANTOM—ZOOM IN

Note：The position used in the measurement were according to IEEE 1528-2013

750MHz body	1750MHz body
	
1900MHz body	2450MHz body
	
2600MHz body	
	

APPENDIX D. CALIBRATION DATA

Refer to Attached files.