FCC SAR
Measurement and Test Report

For

CHUWI TECHNOLOGY (ShenZhen) CO., LIMITED

2 Floor Building 3 LiJinCheng Industrial park the east of Gongye road

LongHua Shenzhen China

FCC Rules:	FCC Part 2.1093 ANSI / IEEE C95.1 :2005+A1:2010 ANSI / IEEE C95.3 : 2002(R2008)
Product Description:	Tablet PC
Tested Model:	Hi9 Air - CWI546
Report No.:	STR18068224H
Sample Received Date:	2018-07-09
Tested Date:	2018-07-09 to 2018-07-12
Issued Date:	2018-07-12
Tested By:	Lucy Wei / Engineer
Reviewed By:	Silin Chen / EMC Manager
Approved & Authorized By:	Jandy So / PSQ Manager
Prepared By:	

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Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior permitted by Shenzhen SEM. Test Technology Co., Ltd.

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1. General Information

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant:	CHUWI TECHNOLOGY (ShenZhen) CO., LIMITED
Address of applicant:	2 Floor Building 3 LiJinCheng Industrial park the east of Gongye road LongHua Shenzhen China
Manufacturer:	Shenzhen Sunty Technology Co., Ltd
Address of manufacturer:	F7-8, Building 7, ZhongYunTai Industry Park, Songbai Road, Shiyan Street, Bao'an District, Shenzhen, China.

General Description of EUT	
Product Name:	Tablet PC
Brand Name:	CHUWI
Model No.:	Hi9 Air - CWI546
Adding Model:	/
Rated Voltage:	DC 3.8V
Note: The test data is gathered from a production sample, provided by the manufacturer.	

Technical Characteristics of EUT	
2G	
Support Networks:	GSM, GPRS,EDGE
Support Band:	GSM850/PCS1900
Uplink Frequency:	GSM/GPRS 850: 824~849MHz GSM/GPRS 1900: 1850~1910MHz
Downlink Frequency:	GSM/GPRS 850: 869~894MHz GSM/GPRS 1900: 1930~1990MHz
RF Output Power:	GSM850: 32.37dBm, GSM1900: 30.57dBm EDGE850: 27.51dBm, EDGE1900: 27.21dBm
Type of Modulation:	GMSK,8PSK
Antenna Type:	Integral Antenna
Antenna Gain:	GSM850: - 4.0dBi, GSM1900: - 2.0dBi
GPRS/EDGE Class:	Class 12
3G	
Support Networks:	WCDMA, HSDPA, HSUPA
Support Band:	WCDMA Band 2, WCDMA Band 5, WCDMA Band 4
Uplink Frequency:	WCDMA Band 2: 1850~1910MHz WCDMA Band 5: 824~849MHz

	WCDMA Band 4: 1710~1755MHz
Downlink Frequency:	WCDMA Band 2: 1930~1990MHz WCDMA Band 5: 869~894MHz WCDMA Band 4: 2110~2155MHz
RF Output Power:	WCDMA Band 2: 21.45dBm, WCDMA Band 5: 21.64dBm WCDMA Band 4: 21.75dBm
Type of Modulation:	BPSK
Antenna Type:	Integral Antenna
Antenna Gain:	WCDMA Band 2: - 2.0dBi, WCDMA Band 5: - 4.0dBi, WCDMA Band 4: - 2.0dBi
WIFI(2.4G)	
Support Standards:	802.11b, 802.11g, 802.11n
Frequency Range:	2412-2462MHz for 802.11b/g/n(HT20) 2422-2452MHz for 11n(HT40)
AV Output Power:	17.52dBm (Conducted)
Type of Modulation:	CCK, OFDM, QPSK, BPSK, 16QAM, 64QAM
Data Rate:	1-11Mbps, 6-54Mbps, up to 150Mbps
Quantity of Channels:	11/7
Channel Separation:	5MHz
Antenna Type:	Integral Antenna
Antenna Gain:	1.07dBi
Bluetooth	
Bluetooth Version:	V4.0
Frequency Range:	2402-2480MHz
AV Output Power:	2.94dBm (Conducted)
Data Rate:	1Mbps, 2Mbps, 3Mbps
Modulation:	GFSK, Pi/4 QDPSK, 8DPSK
Quantity of Channels:	79/40
Channel Separation:	1MHz/2MHz
Antenna Type:	Integral Antenna
Antenna Gain:	1.07dBi
4G	
Support Networks:	FDD-LTE
Support Band:	FDD-LTE Band 2, 4, 5,17, TDD-LTE Band 40
Uplink Frequency:	FDD-LTE Band 2: Tx: 1850-1910MHz, FDD-LTE Band 4: Tx: 1710-1755MHz, FDD-LTE Band 5: Tx: 824-849MHz, FDD-LTE Band 17: Tx: 704-716MHz TDD-LTE Band 40: Tx: 2305-2315MHz&2350-2360MHz
Downlink Frequency:	FDD-LTE Band 2: Rx: 1930-1990MHz, FDD-LTE Band 4: Rx: 2110-2155MHz,

	FDD-LTE Band 5: Rx: 869-894MHz, FDD-LTE Band 17: Tx: 734-746MHz TDD-LTE Band 40: Rx: 2305-2315MHz&2350-2360MHz
RF Output Power:	FDD-LTE Band 2: 22.55dBm, FDD-LTE Band 4: 22.60dBm FDD-LTE Band 5: 22.84dBm FDD-LTE Band 17: 22.68dBm TDD-LTE Band 40: 22.64dBm
Type of Modulation:	QPSK, 16QAM
Antenna Type:	Integral Antenna
Antenna Gain:	FDD-LTE Band 2: - 2.0dBi, FDD-LTE Band 4: - 2.0dBi, FDD-LTE Band 5: - 4.0dBi, FDD-LTE Band 17: - 2.0dBi, TDD-LTE Band 40: - 2.0dBi
WIFI (5G)	
Support Standards:	802.11a, 802.11n-HT20/40, 802.11ac-HT20/40/80
Frequency Range:	Band 1: 5150-5250MHz, Band 4: 5725-5850MHz
RF Output Power:	13.31dBm (Conducted)
Type of Modulation:	QPSK, 16QAM, 64QAM
Type of Antenna:	Integral Antenna
Antenna Gain:	Band 1: 0.4dBi, Band 4: 1.65dBi

1.2 Test Standards

The following report is prepared on behalf of the CHUWI TECHNOLOGY (ShenZhen) CO., LIMITED in accordance with FCC 47 CFR Part 2.1093, ANSI / IEEE C95.1 ::2005+A1:2010, ANSI / IEEE C95.3 : 2002(R2008) and KDB 865664 D01 v01r04 and KDB 865664 D02 v01r02, KDB 941225 D01 v03r01,KDB 616217 D04 v01r02 and KDB 248227 D01 v02r02,and KDB941225 D05 v02r05.

The objective is to determine compliance with FCC Part 2.1093 of the Federal Communication Commissions rules.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission, should be checked to ensure compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with KDB 865664 D01 v01r04 and KDB 865664 D02 v01r02. The public notice KDB 447498 D01 v06 for Mobile and Portable Devices RF Exposure Procedure also.

1.4 Test Facility

FCC – Registration No.: 125990

Shenzhen SEM Test Technology Co., Ltd. Laboratory has been recognized to perform compliance testing on equipment subject to the Commissions Declaration Of Conformity (DOC). The Designation Number is CN5010, and Test Firm Registration Number is 125990.

Industry Canada (IC) Registration No.: 11464A

The 3m Semi-anechoic chamber of Shenzhen SEM.Test Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A.

2. Summary of Test Results

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

Frequency Band	Body (0mm Gap) Maximum SAR_{1g} (W/kg)	SAR_{1g} Limit (W/kg)
GSM850	0.284	1.6
GSM1900	1.089	1.6
WCDMA Band V	0.921	1.6
WCDMA Band II	0.566	1.6
WCDMA Band IV	1.223	1.6
LTE Band 2	**1.287**	1.6
LTE Band 4	0.586	1.6
LTE Band 5	1.075	1.6
LTE Band 17	0.793	1.6
LTE Band 40	0.922	1.6
WLAN 2.4GHz	0.085	1.6
WLAN 5.2GHz	0.125	1.6
WLAN 5.8GHz	0.226	1.6
Simultaneous Transmission	**1.513**	1.6

Remark:

The highest reported SAR values for body, and simultaneous transmission conditions are ***1.287W/kg, and 1.513W/kg*** *respectively.*

The device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg) specified in FCC 47 CFR Part 2.1093 and ANSI / IEEE C95.1 ::2005+A1:2010, and had been tested in accordance with the measurement methods and procedure specified in KDB 865664 D01 v01r04 and KDB 865664 D02 v01r02

3. Specific Absorption Rate (SAR)

3.1 Introduction

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techiques or numerical modeling. The standard recommends limits for two tiers of groups, occupational/controlled and general population/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.

3.2 SAR Definition

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 a given density (ρ). The equation description is as below:

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

SAR is expressed in units of Watts per kilogram (W/kg)
SAR measurement can be either related to the temperature elevation in tissue by

$$\mathbf{SAR} = \mathbf{C}\left(\frac{\boldsymbol{\delta}\mathbf{T}}{\boldsymbol{\delta}\mathbf{t}}\right)$$

Where: C is the specific heat capacity, δ T is the temperature rise and δ t is the exposure duration, or related to the
electrical field in the tissue by

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

Where: σ is the conductivity of the tissue, ρ is the mass density of the tissue and E is the RMS electrical field strength.

However for evaluating SAR of low power transmitter, electrical field measurement is typically applied.

4. SAR Measurement System

4.1 The Measurement System

Comosar is a system that is able to determine the SAR distribution inside a phantom of human being according to different standards. The Comosar system consists of the following items:

- Main computer to control all the system
- 6 axis robot
- Data acquisition system
- Miniature E-field probe
- Phone holder
- Head simulating tissue

The following figure shows the system.

The EUT under test operating at the maximum power level is placed in the phone holder, under the phantom, which is filled with head simulating liquid. The E-Field probe measures the electric field inside the phantom. The OpenSAR software computes the results to give a SAR value in a 1g or 10g mass.

4.2 Probe

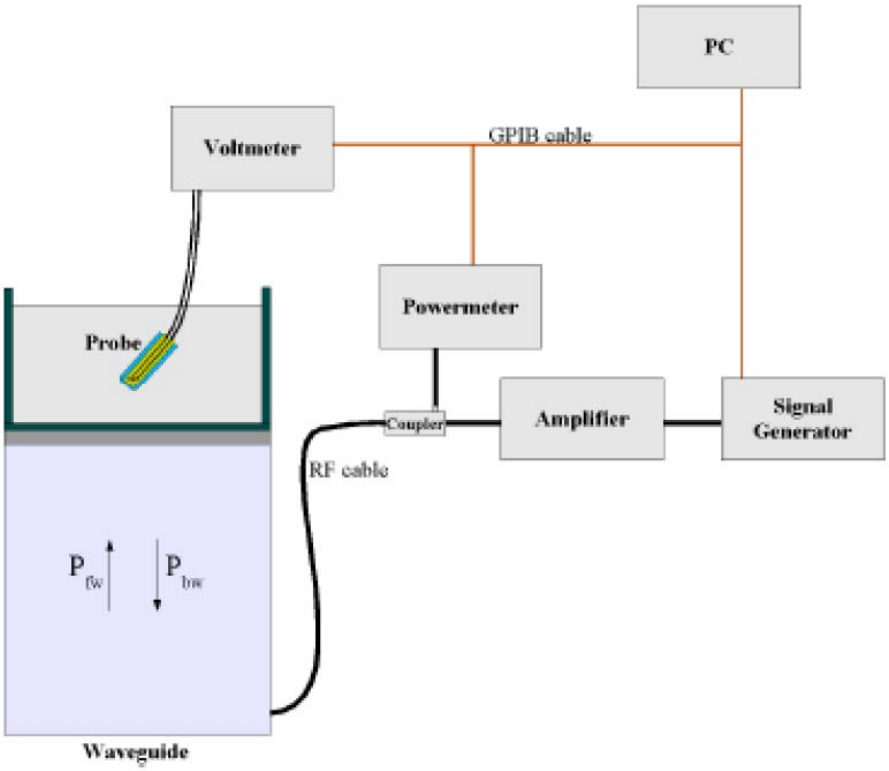
For the measurements the Specific Dosimetric E-Field Probe SSE5 SN 09/13 EP168 with following specifications is used

- Dynamic range: 0.01-100 W/kg
- Probe Length: 330 mm
- Length of Individual Dipoles: 4.5 mm
- Maximum external diameter: 8 mm
- Probe Tip External Diameter : 5 mm
- Distance between dipoles / probe extremity: 2.7mm

- Probe linearity: ＜0.25 dB
- Axial Isotropy: ＜0.25 dB
- Spherical Isotropy: ＜0.50 dB
- Calibration range: 700 to 3000MHz for head & body simulating liquid.

Angle between probe axis (evaluation axis) and suface normal line:1ess than 30°

Probe calibration is realized, in compliance with EN 62209-1 and IEEE 1528 STD, with CALISAR, Antennessa proprietary calibration system. The calibration is performed with the EN 62209-1 annexe technique using reference guide at the five frequencies.



$$SAR = \frac{4\,(P_{fw} - P_{bw})}{ab\delta} \cos^2\left(\pi \frac{y}{a}\right) e^{-(2z/\delta)}$$

Where :

Pfw = Forward Power

Pbw = Backward Power

a and b =Waveguide dimensions

I = Skin depth

Keithley configuration:

Rate = Medium; Filter = ON; RDGS = 10; Filter type = Moving Average; Range auto after each calibration, a SAR measurement is performed on a validation dipole and compared with a NPL calibrated probe, to verify it.

The calibration factors, CF(N), for the 3 sensors corresponding to dipole 1, dipole 2 and dipole 3 are:

$$CF(N)=SAR(N)/Vlin(N) \quad (N=1,2,3)$$

The linearised output voltage Vlin(N) is obtained from the displayed output voltage V(N) using

$$Vlin(N)=V(N)*(1+V(N)/DCP(N)) \quad (N=1,2,3)$$

where DCP is the diode compression point in mV.

4.3 Probe Calibration Process

Dosimetric Assessment Procedure

Each E-Probe/Probe Amplifier combination has unique calibration parameters. SATIMO Probe calibration procedure is conducted to determine the proper amplifier settings to enter in the probe parameters. The amplifier settings are determined for a given frequency by subjecting the probe to a known E-field density (1 mW/cm2) using an with CALISAR, Antenna proprietary calibration system.

Free Space Assessment Procedure

The free space E-field from amplified probe outputs is determined in a test chamber. This calibration can be performed in a TEM cell if the frequency is below 1 GHz and in a waveguide or other methodologies above 1 GHz for free space. For the free space calibration, the probe is placed in the volumetric center of the cavity and at the proper orientation with the field. The probe is rotated 360 degrees until the three channels show the maximum reading. The power density readings equates to 1mW/cm2.

Temperature Assessment Procedure

E-field temperature correlation calibration is performed in a flat phantom filled with the appropriate simulated head tissue. The E-field in the medium correlates with the temperature rise in the dielectric medium. For temperature correlation calibration a RF transparent thermistor-based temperature probe is used in conjunction with the E-field probe.

$$SAR = C\frac{\Delta T}{\Delta t}$$

Where:

Δt = exposure time (30 seconds),

C = heat capacity of tissue (brain or muscle),

ΔT = temperature increase due to RF exposure.

SAR is proportional to $\Delta T/\Delta t$, the initial rate of tissue heating, before thermal diffusion takes place. The electric field in the simulated tissue can be used to estimate SAR by equating the thermally derived SAR to that with the E- field component.

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

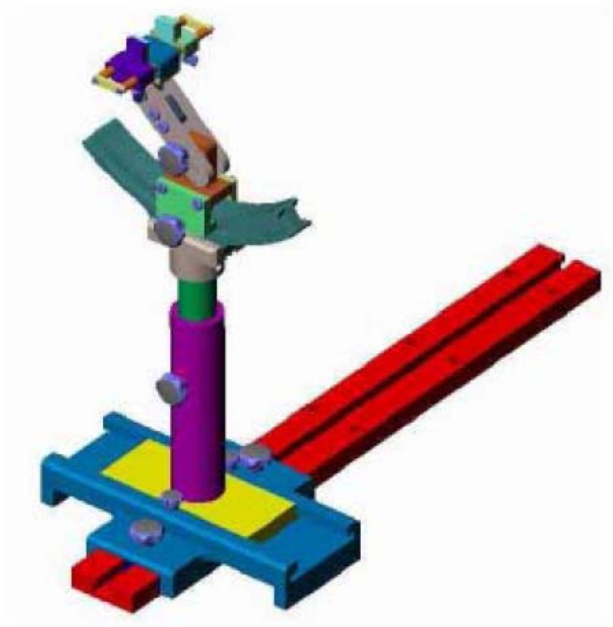
Where:
σ = simulated tissue conductivity,
ρ = Tissue density (1.25 g/cm3 for brain tissue)

4.4 Phantom

For the measurements the Specific Anthropomorphic Mannequin (SAM) defined by the IEEE SCC-34/SC2 group is used. The phantom is a polyurethane shell integrated in a wooden table. The thickness of the phantom amounts to 2mm +/- 0.2mm. It enables the dosimetric evaluation of left and right phone usage and includes an additional flat phantom part for the simplified performance check. The phantom set-up includes a cover, which prevents the evaporation of the liquid.

4.5 Device Holder

The positioning system allows obtaining cheek and tilting position with a very good accuracy. In compliance with CENELEC, the tilt angle uncertainty is lower than 1°.



System Material	Permittivity	Loss Tangent
Delrin	3.7	0.005

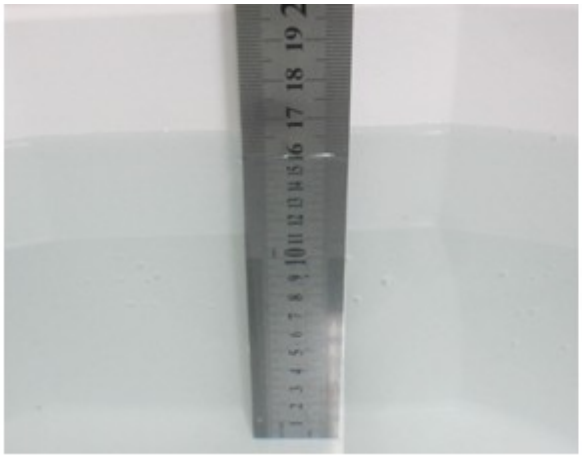
4.6 Test Equipment List

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
E-Field Probe	SATIMO	SSE5	SN 09/13 EP168	2018-06-01	2019-05-31
E-Field Probe	MVG	SSE2	SN 08/16 EPGO298	2017-09-18	2018-09-17
750MHz Dipole	SATIMO	SID750	SN 47/12 DIP 0G750-203	2018-03-20	2019-03-19
835MHz Dipole	SATIMO	SID835	SN 47/12 DIP 0G835-204	2018-03-20	2019-03-19
1800MHz Dipole	SATIMO	SID1800	SN 47/12 DIP 1G800-206	2018-03-20	2019-03-19
1900MHz Dipole	SATIMO	SID1900	SN 47/12 DIP 1G900-207	2018-03-20	2019-03-19
2450MHz Dipole	SATIMO	SID2450	SN 13/15 DIP 2G450-364	2018-03-20	2019-03-19
5 GHz Waveguide	MVG	SWG5500	SN 49/16 WGA45	2017-08-07	2018-08-06
Dielectric Probe Kit	SATIMO	SCLMP	SN 47/12 OCPG49	2018-03-20	2019-03-19
SAM Phantom	SATIMO	SAM	SN/ 47/12 SAM95	N/A	N/A
MULTIMETER	KEITHLEY	Keithley 2000	4006367	2018-05-22	2019-05-21
Signal Generator	Rohde & Schwarz	SMR20	100047	2018-05-22	2019-05-21
Universal Tester	Rohde & Schwarz	CMU200	112012	2018-05-22	2019-05-21
Communications Tester	Rohde & Schwarz	CMW500	148650	2018-05-22	2019-05-21
Network Analyzer	HP	8753C	2901A00831	2018-05-22	2019-05-21
Directional Couplers	Agilent	778D	20160	2018-05-22	2019-05-21

5. Tissue Simulating Liquids

5.1 Composition of Tissue Simulating Liquid

For the measurement of the field distribution inside the SAM phantom with SMTIMO, the phantom must be filled with around 25 liters of homogeneous body tissue simulating liquid. For head SAR testing, the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15 cm. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15 cm. Please see the following photos for the liquid height.



Liquid Height for Head SAR

Liquid Height for Body SAR

The Composition of Tissue Simulating Liquid

Frequency (MHz)	Water (%)	Salt (%)	Sugar (%)	HEC (%)	Preventol (%)	DGBE (%)
Body						
750	50.0	0.8	48.8	0.2	0.2	0
835	50.8	0.9	48.1	0.1	0.1	0
1700-1900	70.2	0.4	0	0	0	29.4
2450	68.6	0.1	0	0	0	31.3

Frequency (MHz)	Water (%)	Hexyl Carbitol (%)	Triton X-100 (%)
Body			
5000-6000	78.6	10.7	10.7

5.2 Tissue Dielectric Parameters for Head and Body Phantoms

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

Target Frequency (MHz)	Head		Body	
	Conductivity (σ)	Permittivity (ε_r)	Conductivity (σ)	Permittivity (ε_r)
150	0.76	52.3	0.80	61.9
300	0.87	45.3	0.92	58.2
450	0.87	43.5	0.94	56.7
750	0.89	41.9	**0.96**	**55.5**
835	0.90	41.5	**0.97**	**55.2**
900	0.97	41.5	1.05	55.0
915	0.98	41.5	1.06	55.0
1450	1.20	40.5	1.30	54.0
1610	1.29	40.3	1.40	53.8
1750	1.37	40.1	**1.49**	**53.4**
1800-2000	1.40	40.0	**1.52**	**53.3**
2450	1.80	39.2	**1.95**	**52.7**
3000	2.40	38.5	2.73	52.0
5200	4.66	36.0	**5.30**	**49.0**
5800	5.27	35.3	**6.00**	**48.2**

5.3 Tissue Calibration Result

The dielectric parameters of the liquids were verified prior to the SAR evaluation using COMOSAR Dielectric Probe Kit and an Agilent Network Analyzer.

Calibration Result for Dielectric Parameters of Tissue Simulating Liquid

Body Tissue Simulating Liquid									
Freq. MHz.	Temp. (℃)	Conductivity			Permittivity			Limit (%)	Date
		Reading (σ)	Target (σ)	Delta (%)	Reading (ε r)	Target (ε r)	Delta (%)		
750	21.2	0.93	0.96	-3.12	54.96	55.50	-0.97	±5	2018-07-09
835	21.2	0.95	0.97	-2.06	54.85	55.20	-0.63	±5	2018-07-09
1750	21.3	1.46	1.49	-2.01	51.22	53.40	-4.08	±5	2018-07-10
1800	21.3	1.46	1.52	-3.95	51.22	53.30	-3.90	±5	2018-07-10
1900	21.3	1.50	1.52	-1.32	52.42	53.30	-1.65	±5	2018-07-10
2450	21.3	1.91	1.95	-2.05	52.01	52.70	-1.31	±5	2018-07-11
5200	21.3	5.16	5.30	-2.64	48.50	49.0	-1.02	±5	2018-07-11
5800	21.3	5.23	5.00	4.60	48.62	48.2	0.87	±5	2018-07-11

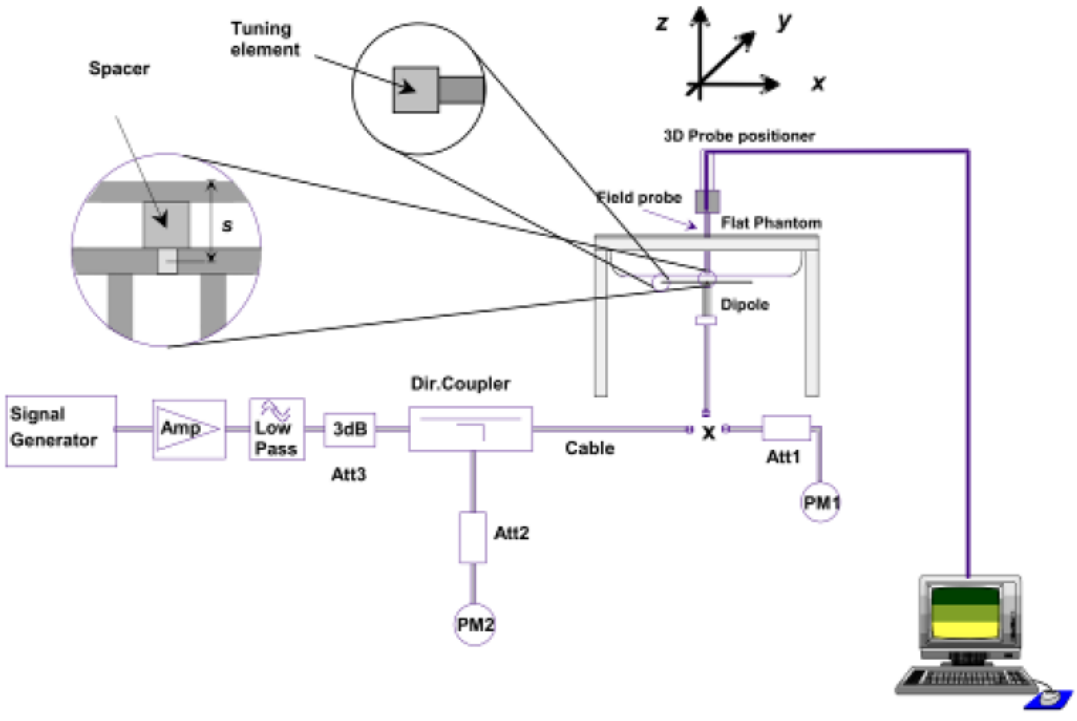
6. SAR Measurement Evaluation

6.1 Purpose of System Performance Check

The system performance check verifies that the system operates within its specifications. System and operator errors can be detected and corrected. It is recommended that the system performance check be performed prior to any usage of the system in order to guarantee reproducible results. The system performance check uses normal SAR measurements in a simplified setup with a well characterized source. This setup was selected to give a high sensitivity to all parameters that might fail or vary over time. The system check does not intend to replace the calibration of the components, but indicates situations where the system uncertainty is exceeded due to drift or failure.

6.2 System Setup

In the simplified setup for system evaluation, the EUT is replaced by a calibrated dipole and the power source is replaced by a continuous wave which comes from a signal generator at frequency 835 MHz and 1900MHz. The calibrated dipole must be placed beneath the flat phantom section of the SAM twin phantom with the correct distance holder. The distance holder should touch the phantom surface with a light pressure at the reference marking and be oriented parallel to the long side of the phantom.



System Verification Setup Block Diagram

Setup Photo of Dipole Antenna

The output power on dipole port must be calibrated to 24dBm (250mW) before dipole is connected.
The output power on 5 GHz Waveguide must be calibrated to 20 dBm (100mW) before 5 GHz Waveguide is connected.

6.3 Validation Results

Comparing to the original SAR value provided by SATIMO, the validation data should be within its specification of 10 %. Table 6.1 shows the target SAR and measured SAR after normalized to 1W input power. The table below indicates the system performance check can meet the variation criterion.

Frequency	Targeted SAR_{1g}	Measured SAR_{1g}	Normalized SAR_{1g}	Tolerance
MHz	**(W/kg)**	**(W/kg)**	**(W/kg)**	**(%)**
Body				
750	8.40	2.12	8.48	0.95
835	9.38	2.35	9.4	0.21
1800	38.31	9.58	38.32	0.03
1900	39.10	9.78	39.12	0.05
2450	50.41	12.59	50.36	-0.10

Frequency	Liquid	Power (mw)	Targeted SAR1g	Measured SAR1g	Normalized SAR1g	Tolerance
5200	Body	100	154.45	16.681	166.81	8.00
5800	Body	100	170.71	17.632	176.32	3.29

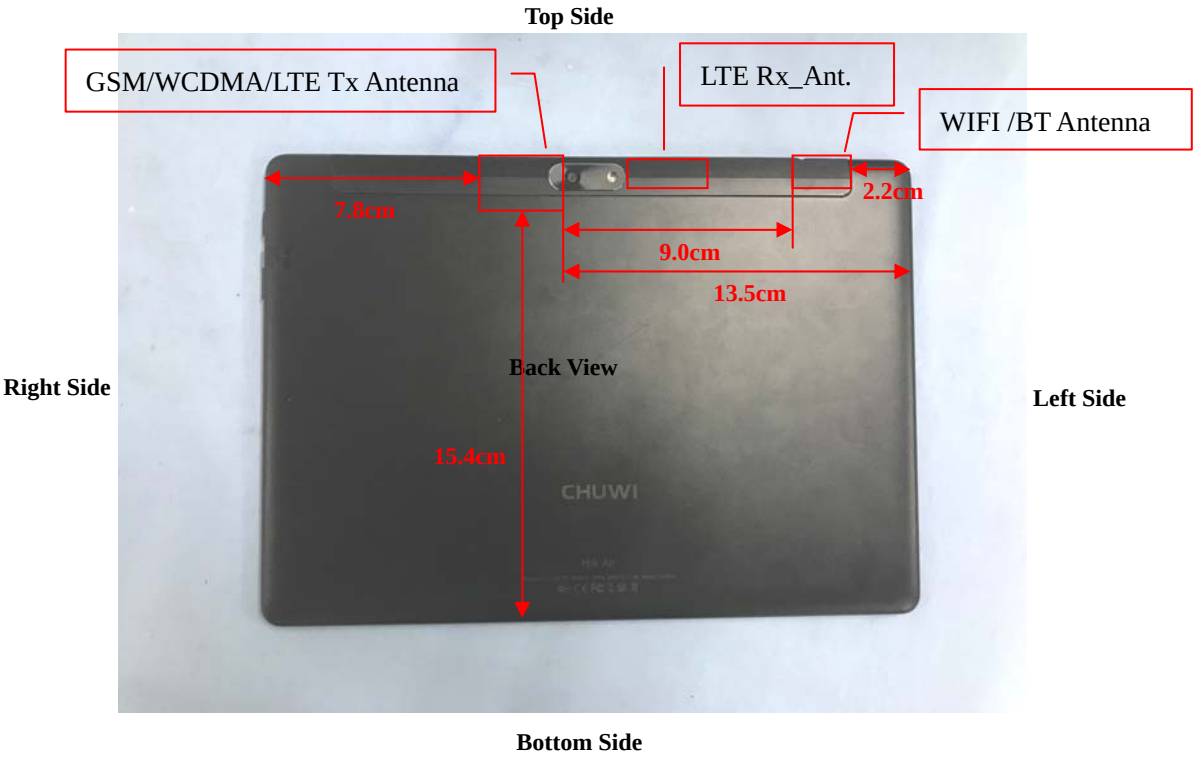
Remark: The system check shall be performed at a test frequency that is within ±10% or ±100 MHz of the compliance test mid-band frequency, so the 1750 MHz system verification is made of 1800MHz Dipole.

Targeted and Measurement SAR

Please refer to Annex A for the plots of system performance check.

7. EUT Testing Position

7.1 EUT Antenna Position



7.2 EUT Testing Position

Exclusion Distance Calculation				
Frequency Bands	Service	Maximum Tune-up Power	Average Power	Exclusion Distance
GPRS850	GPRS(4slots)	29.0dBm	26.0dBm	100mm
GPRS1900	GPRS(4slots)	27.0dBm	24.0dBm	70mm
WCDMA Band II	RMC 12.2k	21.5dBm	21.5dBm	60mm
WCDMA Band V	RMC 12.2k	22.0dBm	22.0dBm	50mm
WCDMA Band IV	RMC 12.2k	22.0dBm	22.0dBm	60mm
LTE_ Band 2	QPSK(20 MHz)	23.0dBm	23.0dBm	60mm
LTE_ Band 4	QPSK(20 MHz)	23.0dBm	23.0dBm	60mm
LTE_ Band 5	QPSK(10 MHz)	23.0dBm	23.0dBm	60mm
LTE_ Band 17	QPSK(10 MHz)	23.0dBm	23.0dBm	60mm
LTE_ Band 40	QPSK(10 MHz)	23.0dBm	23.0dBm	70mm
WLAN(2.4G)	802.11b	18.0dBm	18.0dBm	35mm
WLAN(5.2G)	802.11a	11.0dBm	11.0dBm	10mm
WLAN(5.8G)	802.11a	13.5dBm	13.5dBm	20mm
Note: Refer to Chapter 9.1 Conducted RF Output Power				

Remark:

1. Referring to KDB 447498 D01v06, the distance of the antennas to all adjacent edges SAR test exclusion for adjacent edges.

Body mode SAR assessments are required for this device. This EUT was tested in different positions for different SAR test modes, more information as below:

Body SAR tests, Test distance: 0mm						
Antennas	**Front**	**Back**	**Right Side**	**Left Side**	**Top Side**	**Bottom**
WWAN_GPRS850	No	Yes	Yes	No	Yes	No
WWAN_GPRS1900	No	Yes	No	No	Yes	No
WWAN_WCDMA Band II	No	Yes	No	No	Yes	No
WWAN_WCDMA Band V	No	Yes	No	No	Yes	No
WWAN_WCDMA Band IV	No	Yes	No	No	Yes	No
WWAN_LTE_ Band 2	No	Yes	No	No	Yes	No
WWAN_LTE_ Band 4	No	Yes	No	No	Yes	No
WWAN_LTE_ Band 5	No	Yes	No	No	Yes	No
WWAN_LTE_ Band 17	No	Yes	No	No	Yes	No
WWAN_LTE_ Band 40	No	Yes	No	No	Yes	No
WLAN(2.4G)	No	Yes	No	Yes	Yes	No
WLAN(5.2G)	No	Yes	No	No	Yes	No
WLAN(5.8G)	No	Yes	No	No	Yes	No

Remark:

1. Referring to KDB 616217 D04 v01r02, KDB 248227 D01 v02r02 and KDB 447498 D01 v06, this device is overall diagonal dimension(>20cm) tablet, tested in direct contact (no gap) with flat phantom.
2. Referring to KDB 616217 D04 v01r02, Exposures from antennas through the front (top) surface of the display section of a full-size tablet, away from the edges, are generally limited to the user's hands. Exposures to hands for typical consumer transmitters used in tablets are not expected to exceed the extremity SAR limit; therefore, SAR evaluation for the front surface of tablet display screens are generally not necessary.

Please refer to Annex D for the EUT test setup photos.

8. SAR Measurement Procedures

8.1 Measurement Procedures

The measurement procedures are as follows:
(a) Use base station simulator (if applicable) or engineering software to transmit RF power continuously (continuous Tx) in the highest power channel.
(b) Keep EUT to radiate maximum output power or 100% factor (if applicable)
(c) Measure output power through RF cable and power meter.
(d) Place the EUT in the positions as Annex D demonstrates.
(e) Set scan area, grid size and other setting on the SATIMO software.
(f) Measure SAR results for the highest power channel on each testing position.
(g) Find out the largest SAR result on these testing positions of each band
(h) Measure SAR results for other channels in worst SAR testing position if the SAR of highest power channel is larger than 0.8 W/kg

According to the test standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:
(a) Power reference measurement
(b) Area scan
(c) Zoom scan
(d) Power drift measurement

8.2 Spatial Peak SAR Evaluation

The procedure for spatial peak SAR evaluation has been implemented according to the test standard. It can be conducted for 1g and 10g, as well as for user-specific masses. The SATIMO software includes all numerical procedures necessary to evaluate the spatial peak SAR value.
The base for the evaluation is a "cube" measurement. The measured volume must include the 1g and 10g cubes with the highest averaged SAR values. For that purpose, the center of the measured volume is aligned to the interpolated peak SAR value of a previously performed area scan.
The entire evaluation of the spatial peak values is performed within the post-processing engine. The system always gives the maximum values for the 1g and 10g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:
(a) Extraction of the measured data (grid and values) from the Zoom Scan
(b) Calculation of the SAR value at every measurement point based on all stored data
(c) Generation of a high-resolution mesh within the measured volume
(d) Interpolation of all measured values form the measurement grid to the high-resolution grid
(e) Extrapolation of the entire 3D field distribution to the phantom surface over the distance from sensor to surface
(f) Calculation of the averaged SAR within masses of 1g and 10g

8.3 Area & Zoom Scan Procedures

First Area Scan is used to locate the approximate location(s) of the local peak SAR value(s). The measurement grid within an Area Scan is defined by the grid extent, grid step size and grid offset. Next, in order to determine the EM field distribution in a three-dimensional spatial extension, Zoom Scan is required. The Zoom Scan measures 5x5x7 points with step size 8, 8 and 5 mm for 300 MHz to 3 GHz, and 8x8x8 points with step size 4, 4 and 2.5 mm for 3 GHz to 6 GHz. The Zoom Scan is performed around the highest E-field value to determine the averaged SAR-distribution over 10 g.

8.4 Volume Scan Procedures

The volume scan is used for assess overlapping SAR distributions for antennas transmitting in different frequency bands. It is equivalent to an oversized zoom scan used in standalone measurements. The measurement volume will be used to enclose all the simultaneous transmitting antennas. For antennas transmitting simultaneously in different frequency bands, the volume scan is measured separately in each frequency band. In order to sum correctly to compute the 1g aggregate SAR, the EUT remain in the same test position for all measurements and all volume scan use the same spatial resolution and grid spacing (step-size is 4, 4 and 2.5 mm). When all volume scan were completed, the software can combine and subsequently superpose these measurement data to calculating the multiband SAR.

8.5 SAR Averaged Methods

The local SAR inside the phantom is measured using small dipole sensing elements inside a probe body. The probe tip must not be in contact with the phantom surface in order to minimize measurements errors, but the highest local SAR will occur at the surface of the phantom.

An extrapolation is using to determinate this highest local SAR values. The extrapolation is based on a fourth-order least-square polynomial fit of measured data. The local SAR value is then extrapolated from the liquid surface with a 1mm step.

The measurements have to be performed over a limited time (due to the duration of the battery) so the step of measurement is high. It could vary between 5 and 8 mm. To obtain an accurate assessment of the maximum SAR averaged over 10g and 1 g requires a very fine resolution in the three dimensional scanned data array.

8.6 Power Drift Monitoring

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

9. SAR Test Result

9.1 Conducted RF Output Power

GSM - Burst Average Power (dBm)						
Band	**GSM850**			**PCS1900**		
Channel	**128**	**189**	**251**	**512**	**661**	**810**
Frequency (MHz)	**824.2**	**836.4**	**848.8**	**1850.2**	**1880**	**1909.8**
GSM	32.37	32.24	32.22	30.57	30.49	30.47
GPRS (1 slot)	31.61	31.69	31.68	30.46	30.45	30.15
GPRS (2 slots)	31.57	31.52	31.51	29.52	29.44	29.17
GPRS (3 slots)	29.82	29.75	29.76	27.77	27.74	27.35
GPRS (4 slots)	28.61	28.62	28.64	26.83	26.81	26.78
EDGE(1 slot)	27.51	27.34	27.32	26.98	27.08	27.21
EDGE (2 slots)	26.27	26.14	25.98	26.14	26.25	26.31
EDGE (3 slots)	23.97	23.95	23.86	24.69	24.58	24.55
EDGE (4 slots)	22.94	22.92	22.87	23.52	23.49	23.47

GSM - Source-Based Time-Average Power (dBm)						
Band	**GSM850**			**PCS1900**		
Channel	**128**	**189**	**251**	**512**	**661**	**810**
Frequency (MHz)	**824.2**	**836.4**	**848.8**	**1850.2**	**1880**	**1909.8**
GSM	23.37	23.24	23.22	21.57	21.49	21.47
GPRS (1 slot)	22.61	22.69	22.68	21.46	21.45	21.15
GPRS (2 slots)	25.57	25.52	25.51	23.52	23.44	23.17
GPRS (3 slots)	25.57	25.50	25.51	23.52	23.49	23.10
GPRS (4 slots)	25.61	25.62	25.64	23.83	23.81	23.78
EDGE(1 slot)	18.51	18.34	18.32	17.98	18.08	18.21
EDGE (2 slots)	20.27	20.14	19.98	20.14	20.25	20.31
EDGE (3 slots)	19.72	19.70	19.61	20.44	20.33	20.30
EDGE (4 slots)	19.94	19.92	19.87	20.52	20.49	20.47
Note: The source-based time-averaged power is linearly scaled the maximum burst averaged power based on time slots. The calculated method are shown as below: Source based time-average power = Burst averaged power - Duty cycle factor in dB						

Remark:

1. For Body SAR testing, GPRS should be evaluated, therefore the EUT was set in GPRS (4Tx slots) for GSM850 and GSM1900 due to its highest source-based time-average power.
2. Per KDB 447498 D01 v06 , the maximum output power channel is used for SAR testing and for further SAR test reduction.
3. The DUT do not support DTM function.

WCDMA - Average Power (dBm)						
Band	**WCDMA Band II**			**WCDMA Band V**		
Channel	**9262**	**9400**	**9538**	**4132**	**4182**	**4233**
Frequency (MHz)	**1852.4**	**1880.0**	**1907.6**	**826.4**	**836.4**	**846.6**
RMC 12.2k	21.42	21.35	21.45	21.64	21.57	21.52
HSDPA Subtest-1	20.91	20.85	20.83	20.84	20.27	20.65
HSDPA Subtest-2	20.62	20.73	20.61	20.52	20.84	20.35
HSDPA Subtest-3	20.32	20.74	20.23	20.55	20.92	20.36
HSDPA Subtest-4	20.31	20.71	20.18	20.54	20.92	20.27
HSUPA Subtest-1	20.32	20.69	20.15	20.72	20.27	20.74
HSUPA Subtest-2	20.33	20.57	20.12	20.62	20.07	20.64
HSUPA Subtest-3	20.41	20.62	20.29	20.73	20.24	20.63
HSUPA Subtest-4	20.35	20.48	20.15	20.62	20.17	20.57
HSUPA Subtest-5	20.48	20.32	20.22	20.74	20.15	20.52

WCDMA - Average Power (dBm)						
Band	**WCDMA Band IV**					
Channel	**1312**	**1450**	**1513**			
Frequency (MHz)	**1712.4**	**1740.0**	**1752.6**			
RMC 12.2k	21.74	21.75	21.72			
HSDPA Subtest-1	20.35	20.75	20.36			
HSDPA Subtest-2	20.32	20.71	20.34			
HSDPA Subtest-3	20.32	20.64	20.33			
HSDPA Subtest-4	20.31	20.61	20.38			
HSUPA Subtest-1	20.32	20.69	20.15			
HSUPA Subtest-2	20.33	20.57	20.12			
HSUPA Subtest-3	20.41	20.62	20.19			
HSUPA Subtest-4	20.35	20.48	20.15			
HSUPA Subtest-5	20.36	20.32	20.12			

Remark:

1. For Body SAR, per KDB 941225 D01 v03r01, RMC 12.2kbps setting is used to evaluate SAR. If HSDPA subset-1 output power is < 1/4 dB higher than RMC, and SAR with RMC 12.2kbps setting is ≦1.2W/kg, HSDPA SAR evaluation can be excluded.

LTE Band 2:

OUTPUT POWER FOR LTE BAND 2 (1.4MHZ)

Band	Band Width	Channel	Frequency (MHz)	Modulation	RB Configuration		Average Power(dBm)
					RB Size	RB Offset	
Band 2	1.4MHz	18607	1850.7	QPSK	1	Low	22.18
					1	Mid	22.15
					1	High	22.07
					3	Low	21.82
					3	High	21.86
					6	Low	21.73
				16QAM	1	Low	21.65
					1	Mid	21.21
					1	High	21.15
					3	Low	20.85
					3	High	20.78
					6	Low	20.67
	1.4MHz	18900	1880.0	QPSK	1	Low	22.12
					1	Mid	22.11
					1	High	22.07
					3	Low	22.05
					3	High	21.92
					6	Low	21.84
				16QAM	1	Low	21.66
					1	Mid	21.47
					1	High	21.24
					3	Low	21.12
					3	High	20.84
					6	Low	20.67
	1.4MHz	19193	1909.3	QPSK	1	Low	22.09
					1	Mid	22.11
					1	High	22.13
					3	Low	21.92
					3	High	21.71
					6	Low	21.47
				16QAM	1	Low	21.51
					1	Mid	21.37
					1	High	21.28
					3	Low	21.15
					3	High	20.93
					6	Low	20.82

OUTPUT POWER FOR LTE BAND 2 (3.0MHZ)

Band	Band Width	Channel	Frequency (MHz)	Modulation	RB Configuration		Average Power(dBm)
					RB Size	RB Offset	
Band 2	3.0 MHz	18615	1851.5	QPSK	1	Low	22.14
					1	Mid	22.12
					1	High	22.09
					8	Low	21.81
					8	High	21.75
					15	Low	21.20
				16QAM	1	Low	21.17
					1	Mid	21.06
					1	High	20.95
					8	Low	20.77
					8	High	20.58
					15	Low	20.14
	3.0 MHz	18900	1880.0	QPSK	1	Low	22.28
					1	Mid	22.21
					1	High	22.13
					8	Low	22.02
					8	High	21.86
					15	Low	21.50
				16QAM	1	Low	21.38
					1	Mid	21.27
					1	High	21.14
					8	Low	20.93
					8	High	20.72
					15	Low	20.48
	3.0 MHz	19185	1908.5	QPSK	1	Low	22.22
					1	Mid	22.13
					1	High	22.04
					8	Low	21.81
					8	High	21.68
					15	Low	21.32
				16QAM	1	Low	21.04
					1	Mid	21.00
					1	High	20.85
					8	Low	20.66
					8	High	20.49
					15	Low	20.18

OUTPUT POWER FOR LTE BAND 2 (5.0MHZ)

Band	Band Width	Channel	Frequency (MHz)	Modulation	RB Configuration		Average Power(dBm)
					RB Size	RB Offset	
Band 2	5.0 MHz	18625	1852.5	QPSK	1	Low	22.17
					1	Mid	22.15
					1	High	22.08
					12	Low	21.84
					12	High	21.66
					25	Low	21.21
				16QAM	1	Low	21.13
					1	Mid	21.07
					1	High	21.01
					12	Low	20.85
					12	High	20.64
					25	Low	20.15
	5.0 MHz	18900	1880.0	QPSK	1	Low	22.39
					1	Mid	22.36
					1	High	22.15
					12	Low	22.03
					12	High	21.87
					25	Low	21.45
				16QAM	1	Low	21.40
					1	Mid	21.28
					1	High	21.13
					12	Low	21.05
					12	High	20.82
					25	Low	20.44
	5.0 MHz	19175	1907.5	QPSK	1	Low	22.10
					1	Mid	22.04
					1	High	21.87
					12	Low	21.77
					12	High	21.59
					25	Low	21.21
				16QAM	1	Low	21.14
					1	Mid	21.06
					1	High	20.88
					12	Low	20.79
					12	High	20.52
					25	Low	20.09

OUTPUT POWER FOR LTE BAND 2 (10.0MHZ)

Band	Band Width	Channel	Frequency (MHz)	Modulation	RB Configuration		Average Power(dBm)
					RB Size	RB Offset	
Band 2	10.0 MHz	18650	1855.0	QPSK	1	Low	22.20
					1	Mid	22.11
					1	High	21.99
					25	Low	21.85
					25	High	21.57
					50	Low	21.23
				16QAM	1	Low	21.32
					1	Mid	21.26
					1	High	21.10
					25	Low	20.96
					25	High	20.63
					50	Low	20.21
	10.0 MHz	18900	1880.0	QPSK	1	Low	22.38
					1	Mid	22.33
					1	High	22.21
					25	Low	22.06
					25	High	21.86
					50	Low	21.43
				16QAM	1	Low	21.26
					1	Mid	21.15
					1	High	21.03
					25	Low	20.88
					25	High	20.64
					50	Low	20.39
	10.0 MHz	19150	1905.0	QPSK	1	Low	22.26
					1	Mid	22.12
					1	High	21.97
					25	Low	21.84
					25	High	21.58
					50	Low	21.12
				16QAM	1	Low	21.25
					1	Mid	21.22
					1	High	21.06
					25	Low	20.86
					25	High	20.61
					50	Low	20.28

OUTPUT POWER FOR LTE BAND 2 (15.0MHZ)

Band	Band Width	Channel	Frequency (MHz)	Modulation	RB Configuration		Average Power(dBm)
					RB Size	RB Offset	
Band 2	15.0 MHz	18675	1857.5	QPSK	1	Low	22.25
					1	Mid	22.18
					1	High	22.06
					36	Low	21.87
					36	High	21.65
					75	Low	21.43
				16QAM	1	Low	21.33
					1	Mid	21.21
					1	High	21.05
					36	Low	20.88
					36	High	20.62
					75	Low	20.32
	15.0 MHz	18900	1880.0	QPSK	1	Low	22.38
					1	Mid	22.26
					1	High	22.13
					36	Low	22.05
					36	High	21.82
					75	Low	21.59
				16QAM	1	Low	21.24
					1	Mid	21.11
					1	High	21.02
					36	Low	20.89
					36	High	20.72
					75	Low	20.51
	15.0 MHz	19125	1902.5	QPSK	1	Low	22.36
					1	Mid	22.21
					1	High	22.03
					36	Low	21.87
					36	High	21.63
					75	Low	21.36
				16QAM	1	Low	21.45
					1	Mid	21.37
					1	High	21.28
					36	Low	21.02
					36	High	20.76
					75	Low	20.24

OUTPUT POWER FOR LTE BAND 2 (20.0MHZ)

Band	Band Width	Channel	Frequency (MHz)	Modulation	RB Configuration		Average Power(dBm)
					RB Size	RB Offset	
Band 2	20.0 MHz	18700	1860.0	QPSK	1	Low	22.23
					1	Mid	22.14
					1	High	22.01
					50	Low	21.89
					50	High	21.63
					100	Low	21.31
				16QAM	1	Low	21.27
					1	Mid	21.14
					1	High	21.01
					50	Low	20.84
					50	High	20.61
					100	Low	20.29
	20.0 MHz	18900	1880.0	QPSK	1	Low	22.55
					1	Mid	22.37
					1	High	22.12
					50	Low	21.98
					50	High	21.71
					100	Low	21.43
				16QAM	1	Low	21.41
					1	Mid	21.36
					1	High	21.14
					50	Low	20.96
					50	High	20.64
					100	Low	20.39
	20.0 MHz	19100	1900.0	QPSK	1	Low	22.47
					1	Mid	22.45
					1	High	22.36
					50	Low	21.79
					50	High	21.56
					100	Low	21.21
				16QAM	1	Low	21.47
					1	Mid	21.34
					1	High	21.19
					50	Low	20.89
					50	High	20.63
					100	Low	20.15

LTE Band 4:

OUTPUT POWER FOR LTE BAND 4 (1.4MHZ)

Band	Band Width	Channel	Frequency (MHz)	Modulation	RB Configuration		Average Power(dBm)
					RB Size	RB Offset	
Band 4	1.4MHz	19957	1710.7	QPSK	1	Low	22.12
					1	Mid	22.08
					1	High	22.01
					3	Low	21.84
					3	High	21.77
					6	Low	21.65
				16QAM	1	Low	21.73
					1	Mid	21.71
					1	High	21.58
					3	Low	21.32
					3	High	21.14
					6	Low	21.02
	1.4MHz	20175	1732.5	QPSK	1	Low	22.21
					1	Mid	22.13
					1	High	22.03
					3	Low	21.89
					3	High	21.71
					6	Low	21.44
				16QAM	1	Low	21.37
					1	Mid	21.34
					1	High	21.29
					3	Low	21.11
					3	High	21.03
					6	Low	20.86
	1.4MHz	20393	1754.3	QPSK	1	Low	22.19
					1	Mid	22.08
					1	High	22.01
					3	Low	21.89
					3	High	21.77
					6	Low	21.63
				16QAM	1	Low	21.57
					1	Mid	21.49
					1	High	21.31
					3	Low	21.14
					3	High	21.06
					6	Low	20.88

OUTPUT POWER FOR LTE BAND 4 (3.0MHZ)

Band	Band Width	Channel	Frequency (MHz)	Modulation	RB Configuration		Average Power(dBm)
					RB Size	RB Offset	
Band 4	3.0 MHz	19965	1711.5	QPSK	1	Low	22.30
					1	Mid	22.29
					1	High	22.27
					8	Low	22.03
					8	High	21.86
					15	Low	21.43
				16QAM	1	Low	21.97
					1	Mid	21.80
					1	High	21.74
					8	Low	21.62
					8	High	21.52
					15	Low	20.86
	3.0 MHz	20175	1732.5	QPSK	1	Low	22.37
					1	Mid	22.32
					1	High	22.19
					8	Low	22.09
					8	High	21.91
					15	Low	21.50
				16QAM	1	Low	22.04
					1	Mid	22.00
					1	High	21.86
					8	Low	21.60
					8	High	21.51
					15	Low	20.60
	3.0 MHz	20385	1753.5	QPSK	1	Low	22.44
					1	Mid	22.32
					1	High	22.21
					8	Low	22.04
					8	High	21.95
					15	Low	21.50
				16QAM	1	Low	21.51
					1	Mid	21.45
					1	High	21.33
					8	Low	21.16
					8	High	21.97
					15	Low	20.58

OUTPUT POWER FOR LTE BAND 4 (5.0MHZ)

Band	Band Width	Channel	Frequency (MHz)	Modulation	RB Configuration		Average Power(dBm)
					RB Size	RB Offset	
Band 4	5.0 MHz	19975	1712.5	QPSK	1	Low	22.32
					1	Mid	22.24
					1	High	22.18
					12	Low	21.83
					12	High	21.62
					25	Low	21.35
				16QAM	1	Low	21.39
					1	Mid	21.28
					1	High	21.15
					12	Low	21.02
					12	High	20.82
					25	Low	20.47
	5.0 MHz	20175	1732.5	QPSK	1	Low	22.46
					1	Mid	22.29
					1	High	22.07
					12	Low	21.85
					12	High	21.66
					25	Low	21.49
				16QAM	1	Low	21.51
					1	Mid	21.35
					1	High	21.21
					12	Low	21.07
					12	High	20.97
					25	Low	20.62
	5.0 MHz	20375	1752.5	QPSK	1	Low	22.60
					1	Mid	22.46
					1	High	22.41
					12	Low	21.21
					12	High	21.17
					25	Low	21.02
				16QAM	1	Low	21.86
					1	Mid	21.81
					1	High	21.76
					12	Low	21.41
					12	High	21.20
					25	Low	20.89

OUTPUT POWER FOR LTE BAND 4 (10.0MHZ)

Band	Band Width	Channel	Frequency (MHz)	Modulation	RB Configuration		Average Power(dBm)
					RB Size	RB Offset	
Band 4	10.0 MHz	20000	1715.0	QPSK	1	Low	22.33
					1	Mid	22.30
					1	High	22.15
					25	Low	21.87
					25	High	21.77
					50	Low	21.39
				16QAM	1	Low	22.00
					1	Mid	21.96
					1	High	21.80
					25	Low	21.37
					25	High	21.27
					50	Low	20.61
	10.0 MHz	20175	1732.5	QPSK	1	Low	22.40
					1	Mid	22.23
					1	High	22.04
					25	Low	21.83
					25	High	21.71
					50	Low	21.40
				16QAM	1	Low	22.06
					1	Mid	22.02
					1	High	21.87
					25	Low	21.50
					25	High	21.32
					50	Low	20.53
	10.0 MHz	20350	1750.0	QPSK	1	Low	22.52
					1	Mid	22.46
					1	High	22.39
					25	Low	21.52
					25	High	21.50
					50	Low	21.14
				16QAM	1	Low	22.16
					1	Mid	22.06
					1	High	21.85
					25	Low	21.48
					25	High	21.29
					50	Low	20.56

OUTPUT POWER FOR LTE BAND 4 (15.0MHZ)

Band	Band Width	Channel	Frequency (MHz)	Modulation	RB Configuration		Average Power(dBm)
					RB Size	RB Offset	
Band 4	15.0 MHz	20025	1717.5	QPSK	1	Low	22.30
					1	Mid	22.19
					1	High	22.06
					36	Low	21.72
					36	High	21.67
					75	Low	21.38
				16QAM	1	Low	21.96
					1	Mid	21.88
					1	High	21.72
					36	Low	21.38
					36	High	21.37
					75	Low	20.39
	15.0 MHz	20175	1732.5	QPSK	1	Low	22.39
					1	Mid	22.24
					1	High	22.11
					36	Low	21.83
					36	High	21.74
					75	Low	21.52
				16QAM	1	Low	22.13
					1	Mid	22.09
					1	High	21.86
					36	Low	21.53
					36	High	21.23
					75	Low	20.82
	15.0 MHz	20325	1747.5	QPSK	1	Low	22.53
					1	Mid	22.52
					1	High	22.43
					36	Low	21.84
					36	High	21.73
					75	Low	21.55
				16QAM	1	Low	22.08
					1	Mid	22.00
					1	High	21.89
					36	Low	21.53
					36	High	21.33
					75	Low	20.83

OUTPUT POWER FOR LTE BAND 4 (20.0MHZ)

Band	Band Width	Channel	Frequency (MHz)	Modulation	RB Configuration		Average Power(dBm)
					RB Size	RB Offset	
Band 4	20.0 MHz	20050	1720.0	QPSK	1	Low	22.34
					1	Mid	22.28
					1	High	22.12
					50	Low	21.95
					50	High	21.82
					100	Low	21.38
				16QAM	1	Low	21.67
					1	Mid	21.62
					1	High	21.60
					50	Low	21.40
					50	High	21.29
					100	Low	20.40
	20.0 MHz	20175	1732.5	QPSK	1	Low	22.52
					1	Mid	22.42
					1	High	22.33
					50	Low	22.15
					50	High	22.07
					100	Low	21.48
				16QAM	1	Low	21.74
					1	Mid	21.66
					1	High	21.62
					50	Low	21.56
					50	High	21.47
					100	Low	20.82
	20.0 MHz	20300	1745.0	QPSK	1	Low	22.49
					1	Mid	22.43
					1	High	22.35
					50	Low	22.26
					50	High	22.12
					100	Low	21.52
				16QAM	1	Low	22.11
					1	Mid	22.08
					1	High	21.98
					50	Low	21.52
					50	High	21.42
					100	Low	20.54

FDD-LTE Band 5:

OUTPUT POWER FOR LTE BAND 5 (1.4MHZ)

Band	Band Width	Channel	Frequency (MHz)	Modulation	RB Configuration		Average Power(dBm)
					RB Size	RB Offset	
Band 5	1.4MHz	20407	824.7	QPSK	1	Low	22.51
					1	Mid	22.36
					1	High	22.31
					3	Low	22.11
					3	High	22.08
					6	Low	21.69
				16QAM	1	Low	21.44
					1	Mid	21.41
					1	High	21.37
					3	Low	21.12
					3	High	21.04
					6	Low	20.73
	1.4MHz	20525	836.5	QPSK	1	Low	22.56
					1	Mid	22.48
					1	High	22.39
					3	Low	22.11
					3	High	22.09
					6	Low	21.76
				16QAM	1	Low	21.71
					1	Mid	21.65
					1	High	21.57
					3	Low	21.23
					3	High	21.19
					6	Low	20.75
	1.4MHz	20643	848.3	QPSK	1	Low	22.40
					1	Mid	22.34
					1	High	22.30
					3	Low	22.03
					3	High	21.96
					6	Low	21.63
				16QAM	1	Low	21.35
					1	Mid	21.23
					1	High	21.18
					3	Low	21.04
					3	High	21.01
					6	Low	20.70

OUTPUT POWER FOR LTE BAND 5 (3.0MHZ)

Band	Band Width	Channel	Frequency (MHz)	Modulation	RB Configuration		Average Power(dBm)
					RB Size	RB Offset	
Band 5	3.0 MHz	20415	825.5	QPSK	1	Low	22.61
					1	Mid	22.57
					1	High	22.49
					8	Low	22.25
					8	High	22.17
					15	Low	21.82
				16QAM	1	Low	21.76
					1	Mid	21.72
					1	High	21.69
					8	Low	21.32
					8	High	21.28
					15	Low	20.88
	3.0 MHz	20525	836.5	QPSK	1	Low	22.74
					1	Mid	22.70
					1	High	22.63
					8	Low	22.44
					8	High	22.32
					15	Low	21.79
				16QAM	1	Low	21.56
					1	Mid	21.52
					1	High	21.43
					8	Low	21.29
					8	High	21.17
					15	Low	20.76
	3.0 MHz	20635	847.5	QPSK	1	Low	22.58
					1	Mid	22.42
					1	High	22.40
					8	Low	22.11
					8	High	20.97
					15	Low	21.63
				16QAM	1	Low	21.61
					1	Mid	21.55
					1	High	21.48
					8	Low	21.15
					8	High	21.03
					15	Low	20.58

OUTPUT POWER FOR LTE BAND 5 (5.0MHZ)

Band	Band Width	Channel	Frequency (MHz)	Modulation	RB Configuration		Average Power(dBm)
					RB Size	RB Offset	
Band 5	5.0 MHz	20425	826.5	QPSK	1	Low	22.70
					1	Mid	22.62
					1	High	22.57
					12	Low	22.21
					12	High	22.07
					25	Low	21.75
				16QAM	1	Low	21.69
					1	Mid	21.63
					1	High	21.60
					12	Low	21.42
					12	High	21.37
					25	Low	20.79
	5.0 MHz	20525	836.5	QPSK	1	Low	22.75
					1	Mid	22.72
					1	High	22.64
					12	Low	22.46
					12	High	22.31
					25	Low	21.74
				16QAM	1	Low	21.80
					1	Mid	21.67
					1	High	21.62
					12	Low	21.49
					12	High	21.32
					25	Low	20.82
	5.0 MHz	20625	846.5	QPSK	1	Low	22.62
					1	Mid	22.48
					1	High	22.41
					12	Low	22.12
					12	High	22.03
					25	Low	21.58
				16QAM	1	Low	21.71
					1	Mid	21.58
					1	High	21.51
					12	Low	21.23
					12	High	21.14
					25	Low	20.60

OUTPUT POWER FOR LTE BAND 5 (10.0MHZ)

Band	Band Width	Channel	Frequency (MHz)	Modulation	RB Configuration		Average Power(dBm)
					RB Size	RB Offset	
Band 5	10.0 MHz	20450	829	QPSK	1	Low	22.72
					1	Mid	22.67
					1	High	22.61
					25	Low	22.45
					25	High	22.41
					50	Low	21.75
				16QAM	1	Low	21.90
					1	Mid	21.84
					1	High	21.76
					25	Low	21.43
					25	High	21.39
					50	Low	20.79
	10.0 MHz	20525	836.5	QPSK	1	Low	22.84
					1	Mid	22.81
					1	High	22.75
					25	Low	22.51
					25	High	22.46
					50	Low	21.71
				16QAM	1	Low	21.71
					1	Mid	21.64
					1	High	21.59
					25	Low	21.41
					25	High	21.36
					50	Low	20.75
	10.0 MHz	20600	844	QPSK	1	Low	22.79
					1	Mid	22.72
					1	High	22.66
					25	Low	22.58
					25	High	22.51
					50	Low	21.65
				16QAM	1	Low	21.89
					1	Mid	21.82
					1	High	21.75
					25	Low	21.60
					25	High	21.48
					50	Low	20.69

LTE Band 17:

OUTPUT POWER FOR LTE BAND 17 (5.0MHZ)

Band	Band Width	Channel	Frequency (MHz)	Modulation	RB Configuration		Average Power(dBm)
					RB Size	RB Offset	
Band 17	5.0 MHz	23755	706.5	QPSK	1	Low	22.62
					1	Mid	22.58
					1	High	22.43
					12	Low	22.22
					12	High	22.16
					25	Low	21.83
				16QAM	1	Low	21.72
					1	Mid	21.70
					1	High	21.64
					12	Low	21.47
					12	High	21.36
					25	Low	20.86
	5.0 MHz	23790	710	QPSK	1	Low	22.68
					1	Mid	22.63
					1	High	22.58
					12	Low	22.22
					12	High	22.14
					25	Low	21.75
				16QAM	1	Low	21.85
					1	Mid	21.81
					1	High	21.77
					12	Low	21.46
					12	High	21.38
					25	Low	20.83
	5.0 MHz	23825	713.5	QPSK	1	Low	22.61
					1	Mid	22.59
					1	High	22.51
					12	Low	22.13
					12	High	22.04
					25	Low	21.67
				16QAM	1	Low	21.83
					1	Mid	21.78
					1	High	21.71
					12	Low	21.46
					12	High	21.37
					25	Low	20.70

OUTPUT POWER FOR LTE BAND 17 (10.0MHZ)

Band	Band Width	Channel	Frequency (MHz)	Modulation	RB Configuration		Average Power(dBm)
					RB Size	RB Offset	
Band 17	10.0 MHz	23780	709	QPSK	1	Low	22.63
					1	Mid	22.57
					1	High	22.52
					25	Low	22.14
					25	High	22.01
					50	Low	21.69
				16QAM	1	Low	21.85
					1	Mid	21.77
					1	High	21.73
					25	Low	21.48
					25	High	21.35
					50	Low	20.72
	10.0 MHz	23790	710	QPSK	1	Low	22.60
					1	Mid	22.56
					1	High	22.45
					25	Low	22.24
					25	High	22.18
					50	Low	21.85
				16QAM	1	Low	21.74
					1	Mid	21.72
					1	High	21.66
					25	Low	21.49
					25	High	21.32
					50	Low	20.84
	10.0 MHz	23800	711	QPSK	1	Low	22.66
					1	Mid	22.61
					1	High	22.55
					25	Low	22.20
					25	High	22.12
					50	Low	21.77
				16QAM	1	Low	21.87
					1	Mid	21.83
					1	High	21.75
					25	Low	21.44
					25	High	21.36
					50	Low	20.81

FDD-LTE Band 40: 2305-2315MHz

OUTPUT POWER FOR LTE BAND 40 (5.0MHZ)

Band	Band Width	Channel	Frequency (MHz)	Modulation	RB Configuration		Average Power(dBm)
					RB Size	RB Offset	
Band 40	5.0 MHz	38725	2307.5	QPSK	1	Low	22.51
					1	Mid	22.46
					1	High	22.41
					12	Low	22.32
					12	High	22.29
					25	Low	22.60
				16QAM	1	Low	21.49
					1	Mid	21.43
					1	High	21.38
					12	Low	21.27
					12	High	21.21
					25	Low	21.57
	5.0 MHz	38775	2312.5	QPSK	1	Low	22.19
					1	Mid	22.11
					1	High	22.03
					12	Low	21.96
					12	High	21.94
					25	Low	22.20
				16QAM	1	Low	21.19
					1	Mid	21.16
					1	High	21.09
					12	Low	20.97
					12	High	20.91
					25	Low	21.11

OUTPUT POWER FOR LTE BAND 40 (10.0MHZ)

Band	Band Width	Channel	Frequency (MHz)	Modulation	RB Configuration		Average Power(dBm)
					RB Size	RB Offset	
Band 40	10.0 MHz	38750	2310	QPSK	1	Low	22.64
					1	Mid	22.61
					1	High	22.59
					25	Low	22.43
					25	High	22.41
					50	Low	22.62
				16QAM	1	Low	21.54
					1	Mid	21.51
					1	High	21.43
					25	Low	21.29
					25	High	21.24
					50	Low	21.66

FDD-LTE Band 40: 2350-2360MHz

OUTPUT POWER FOR LTE BAND 40 (5.0MHZ)

Band	Band Width	Channel	Frequency (MHz)	Modulation	RB Configuration		Average Power(dBm)
					RB Size	RB Offset	
Band 40	5.0 MHz	39175	2352.5	QPSK	1	Low	22.58
					1	Mid	22.57
					1	High	22.52
					12	Low	22.14
					12	High	22.01
					25	Low	21.69
				16QAM	1	Low	21.85
					1	Mid	21.77
					1	High	21.73
					12	Low	21.48
					12	High	21.35
					25	Low	20.72
	5.0 MHz	39225	2357.5	QPSK	1	Low	22.60
					1	Mid	22.56
					1	High	22.45
					12	Low	22.24
					12	High	22.18
					25	Low	21.85
				16QAM	1	Low	21.74
					1	Mid	21.72

					1	High	21.66
					12	Low	21.49
					12	High	21.32
					25	Low	20.84

OUTPUT POWER FOR LTE BAND 40 (10.0MHZ)

Band	Band Width	Channel	Frequency (MHz)	Modulation	RB Configuration		Average Power(dBm)
					RB Size	RB Offset	
Band 40	10.0 MHz	39200	2355	QPSK	1	Low	22.31
					1	Mid	22.30
					1	High	22.24
					25	Low	22.10
					25	High	22.05
					50	Low	22.22
				16QAM	1	Low	21.36
					1	Mid	21.31
					1	High	21.24
					25	Low	21.11
					25	High	21.04
					50	Low	21.20

Remark:

1. Per KDB941225 D05 v02r05, Start with the largest channel bandwidth then measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power among RB offsets at the upper edge, middle, and lower edge of each required test channel. When the reported SAR is≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required for 1 RB allocation; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel. 6 When the reported SAR of a required test channel is > 1.45 W/kg, SAR is required for all three RB offset configurations for that required test channel.
2. Per KDB941225 D05 v02r05, The procedures required for 1 RB allocation in 5.2.1 are applied to measure the SAR for QPSK with 50% RB allocation.
3. Per KDB941225 D05 v02r05, 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 1 RB allocations, and the highest reported SAR for 1 RB and 50% RB allocation in 5.2.1 and 5.2.2 are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
4. Per KDB941225 D05 v02r05, For each modulation besides QPSK; e.g., 16-QAM, 64-QAM, apply the QPSK procedures in 5.2.1, 5.2.2, and 5.2.3 to determine the QAM configurations that may need SAR measurement. For each configuration identified as required for testing, SAR is required only when the highest maximum output power for the configuration in the higher order modulation is > ½ dB higher than the same configuration in QPSK or when the reported SAR for the QPSK configuration is > 1.45 W/kg.

WLAN(2.4G) - Maximum Average Power				
Test Mode	**Data Rate**	**Channel**	**Frequency (MHz)**	**Average Power (dBm)**
802.11b	1Mbps	CH 01	2412	17.52
		CH 06	2437	17.36
		CH 11	2462	17.27
802.11g	54Mbps	CH 01	2412	15.45
		CH 06	2437	15.14
		CH 11	2462	15.12
802.11n (20MHz)	MCS7	CH 01	2412	15.35
		CH 06	2437	15.09
		CH 11	2462	15.05
802.11n (40MHz)	MCS7	CH 03	2422	15.23
		CH 06	2437	15.69
		CH 09	2452	15.47

WLAN(5.2G) - Maximum Average Power			
Test Mode	**Channel**	**Frequency (MHz)**	**Average Power (dBm)**
802.11a	36	5180	10.75
	40	5200	10.68
	48	5240	10.89
802.11n (HT20)	36	5180	10.31
	40	5200	10.48
	48	5240	10.42
802.11n (HT40)	38	5190	9.25
	46	5230	9.17
802.11ac (VHT20)	36	5180	10.23
	40	5200	10.37
	48	5240	10.43
802.11ac (VHT40)	38	5190	9.28
	46	5230	9.81
802.11ac (VHT80)	42	5210	6.93

WLAN(5.8G) - Maximum Average Power			
Test Mode	**Channel**	**Frequency (MHz)**	**Average Power (dBm)**
802.11a	149	5745	12.54
	157	5785	12.82
	165	5825	13.31
802.11n (20M)	149	5745	12.05
	157	5785	12.16
	165	5825	12.24
802.11n (40M)	151	5755	10.82
	159	5795	11.06
802.11ac (20M)	149	5745	11.89
	157	5785	11.95
	165	5825	12.02
802.11ac (40M)	151	5755	11.21
	159	5795	11.34
802.11ac (80M)	155	5775	8.68

Remark:

1. Per KDB 248227 D01 v02r02, For 802.11b DSSS SAR measurements, DSSS SAR procedure applies to fixed exposure test position and initial test position procedure applies to multiple exposure test positions.

2. Per KDB 248227 D01 v02r02, For 802.11b DSSS SAR measurements ,when the reported SAR of the highest measured maximum output power channel (see 3.1) for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required for 802.11b DSSS in that exposure configuration. When the reported SAR is > 0.8 W/kg, SAR is required for that exposure configuration using the next highest measured output power channel. When any reported SAR is > 1.2 W/kg, SAR is required for the third channel; i.e., all channels require testing.

3 .For OFDM modes (802.11g/n), SAR is not required when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and it is <= 1.2W/kg.

4. Per KDB 248227 D01 v02r02, SAR is not required for the following U-NII-1 and U-NII-2A bands conditions.

a. When the same maximum output power is specified for both bands, begin SAR measurement in U-NII-2A band by applying the OFDM SAR requirements. If the highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band for that configuration (802.11 mode and exposure condition); otherwise, each band is tested independently for SAR.

b. When different maximum output power is specified for the bands, begin SAR measurement in the band with higher specified maximum output power. The highest reported SAR for the tested configuration is adjusted by the ratio of lower to higher specified maximum output power for the two bands. When the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for the band with lower maximum output power in that test configuration; otherwise, each band is tested independently for SAR.

Bluetooth - Maximum Average Power		
Test Mode	**Data Rate**	**Average Power(dBm)**
GFSK	1Mbps	1.54
Pi/4 QDPSK	2Mbps	1.49
8DPSK	3Mbps	1.46

Bluetooth - Maximum Average Power				
Test Mode	**Data Rate**	**Channel**	**Frequency (MHz)**	**Average Power (dBm)**
BLE	1Mbps	CH 00	2402	1.59
		CH 19	2440	2.12
		CH 39	2480	2.94

Remark:

Bluetooth maximum output power is 2.94dBm, and Tune-Up output power is 3.5dBm. Per KDB 447498 D01 V06, the 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] · [√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR,16 where

- f(GHz) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation17
- The result is rounded to one decimal place for comparison

Tune-Up Power (dBm)	Max. Power (mW)	Distance (mm)	Frequency (GHz)	Result	Limit
3.5	2.24	5	2.480	0.71	3

The exclusion thresholds is 0.71< 3, therefore, the RF exposure evaluation is not required.

9.2 Test Results for Standalone SAR Test

Body SAR

GSM850 – Body SAR Test (Gap: 0mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
1.	GPRS_4TX	Back Side	251	848.8	28.64	29.0	1.086	0.200	0.217
2.	GPRS_4TX	Top Side	251	848.8	28.64	29.0	1.086	0.261	0.284
3.	GPRS_4TX	Right side	251	848.8	28.64	29.0	1.086	0.063	0.068

GSM1900 – Body SAR Test (Gap: 0mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
4.	GPRS_4TX	Back Side	512	1850.2	26.83	27.0	1.040	0.791	0.823
5.	GPRS_4TX	Back Side	661	1880	26.81	27.0	1.045	1.042	1.089
6.	GPRS_4TX	Back Side	810	1909.8	26.78	27.0	1.052	0.695	0.731
7.	GPRS_4TX	Top Side	512	1850.2	26.83	27.0	1.040	0.933	0.970
8.	GPRS_4TX	Top Side	661	1880	26.81	27.0	1.045	0.891	0.931
9.	GPRS_4TX	Top Side	810	1909.8	26.78	27.0	1.052	0.822	0.865

WCDMA Band V – Body SAR Test (Gap: 0mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
10.	RMC 12.2k	Back Side	4132	826.4	21.64	22.0	1.086	0.848	0.921
11.	RMC 12.2k	Back Side	4182	836.4	21.57	22.0	1.104	0.806	0.890
12.	RMC 12.2k	Back Side	4233	846.6	21.52	22.0	1.117	0.782	0.873
13.	RMC 12.2k	Top Side	4132	826.4	21.64	22.0	1.086	0.658	0.715

WCDMA Band II – Body SAR Test (Gap: 0mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
14.	RMC 12.2k	Back Side	9538	1907.6	21.45	22.0	1.135	0.499	0.566
15.	RMC 12.2k	Top Side	9538	1907.6	21.45	22.0	1.135	0.284	0.322

WCDMA Band IV–Body SAR Test									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
16.	RMC 12.2k	Back Side	1450	1740.0	21.75	22.0	1.059	0.85	0.900
17.	RMC 12.2k	Back Side	1312	1712.4	21.74	22.0	1.062	0.69	0.733
18.	RMC 12.2k	Back Side	1513	1752.6	21.72	22.0	1.067	0.786	0.838
19.	RMC 12.2k	Top Side	1450	1740.0	21.75	22.0	1.059	1.155	1.223
20.	RMC 12.2k	Top Side	1312	1712.4	21.74	22.0	1.062	0.89	0.945
21.	RMC 12.2k	Top Side	1513	1752.6	21.72	22.0	1.067	0.671	0.716

LTE Band 2–Body SAR Test (Gap: 0mm)								
Plot No.	Mode	Test Position Body	Frequency	Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth, RB		MHz					
22.	RMC QPSK 20MHz 1RB	Back Side	1880.0	22.55	23.0	1.109	1.134	1.258
23.	RMC QPSK 20MHz 1RB	Back Side	1860.0	22.23	23.0	1.194	1.078	1.287
24.	RMC QPSK 20MHz 1RB	Back Side	1900.0	22.47	23.0	1.130	0.901	1.018
25.	RMC QPSK 20MHz 1RB	Top Side	1880.0	22.55	23.0	1.109	0.657	0.729
26.	RMC QPSK 20MHz 50%RB	Back Side	1880.0	21.98	22.5	1.127	0.6	0.676
27.	RMC QPSK 20MHz 50%RB	Top Side	1880.0	21.98	22.5	1.127	0.441	0.497
28.	RMC QPSK 20MHz 100%RB	Back Side	1880.0	21.43	22.5	1.279	0.554	0.709

LTE Band 4–Body SAR Test (Gap: 0mm)								
Plot No.	Mode	Test Position Body	Frequency	Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth, RB		MHz					
29.	RMC QPSK 20MHz 1RB	Back Side	1732.5	22.52	23.0	1.117	0.525	0.586
30.	RMC QPSK 20MHz 1RB	Top Side	1732.5	22.52	23.0	1.117	0.264	0.295
31.	RMC QPSK 20MHz 50%RB	Back Side	1745.0	22.26	22.5	1.057	0.12	0.127
32.	RMC QPSK 20MHz 50%RB	Top Side	1745.0	22.26	22.5	1.057	0.097	0.103

LTE Band 5–Body SAR Test (Gap: 0mm)								
Plot No.	Mode	Test Position Body	Frequency	Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth, RB		MHz					
33.	RMC QPSK 10MHz 1RB	Back Side	836.5	22.84	23.0	1.038	0.870	0.903
34.	RMC QPSK 10MHz 1RB	Back Side	829.0	22.72	23.0	1.067	0.972	1.037
35.	RMC QPSK 10MHz 1RB	Back Side	844.0	22.79	23.0	1.050	1.024	1.075
36.	RMC QPSK 10MHz 1RB	Top Side	836.5	22.84	23.0	1.038	0.828	0.859
37.	RMC QPSK 10MHz 1RB	Top Side	829.0	22.72	23.0	1.067	0.761	0.812
38.	RMC QPSK 10MHz 1RB	Top Side	844.0	22.79	23.0	1.050	0.735	0.771
39.	RMC QPSK 10MHz 50%RB	Back Side	844.0	22.58	23.0	1.102	0.881	0.970
40.	RMC QPSK 10MHz 50%RB	Back Side	836.5	22.45	23.0	1.135	0.676	0.767
41.	RMC QPSK 10MHz 50%RB	Back Side	829.0	22.51	23.0	1.119	0.743	0.832
42.	RMC QPSK 10MHz 50%RB	Top Side	844.0	22.58	23.0	1.102	0.608	0.670
43.	RMC QPSK 10MHz 100%RB	Back Side	829.0	21.75	23.0	1.334	0.637	0.849

LTE Band 17–Body SAR Test (Gap: 0mm)								
Plot No.	Mode	Test Position Body	Frequency	Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth		MHz					
44.	RMC,QPSK 10MHz 1RB	Back Side	711.0	22.66	23.0	1.081	0.733	0.793
45.	RMC,QPSK 10MHz 1RB	Top Side	711.0	22.66	23.0	1.081	0.695	0.752
46.	RMC,QPSK 10MHz 50%RB	Back Side	710.0	22.24	22.5	1.062	0.41	0.435
47.	RMC,QPSK 10MHz 50%RB	Top Side	710.0	22.24	22.5	1.062	0.325	0.345

LTE Band 40:2305-2315MHz–Body SAR Test (Gap: 0mm)								
Plot No.	Mode	Test Position Body	Frequency	Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth, RB		MHz					
48.	RMC QPSK 10MHz 1RB	Back Side	2310.0	22.64	23.0	1.086	0.744	0.808
49.	RMC QPSK 10MHz 1RB	Top Side	2310.0	22.64	23.0	1.086	0.849	0.922
50.	RMC QPSK 10MHz 50%RB	Back Side	2310.0	22.43	22.5	1.016	0.63	0.640
51.	RMC QPSK 10MHz 50%RB	Top Side	2310.0	22.43	22.5	1.016	0.700	0.711

LTE Band 40: 2350-2360MHz–Body SAR Test (Gap: 0mm)								
Plot No.	Mode	Test Position	Frequency	Output Power	Rated Limit	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth, RB	Body	MHz	(dBm)	(dBm)			
52.	RMC QPSK 10MHz 1RB	Back Side	2355.0	22.31	22.5	1.045	0.567	0.592
53.	RMC QPSK 10MHz 1RB	Top Side	2355.0	22.31	22.5	1.045	0.667	0.697
54.	RMC QPSK 10MHz 50%RB	Back Side	2355.0	22.10	22.5	1.096	0.515	0.565
55.	RMC QPSK 10MHz 50%RB	Top Side	2355.0	22.10	22.5	1.096	0.521	0.571

WLAN 2.4GHz –Body SAR Test(Gap: 0mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
56.	802.11b	Back Side	01	2412	17.52	18.0	1.117	0.073	0.082
57.	802.11b	Top Side	01	2412	17.52	18.0	1.117	0.076	0.085
58.	802.11b	Left Side	01	2412	17.52	18.0	1.117	0.032	0.036

WLAN 5.2GHz –Body SAR Test(Gap: 0mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
59.	802.11a	Back Side	48	5240	10.89	11.0	1.026	0.113	0.116
60.	802.11a	Top Side	48	5240	10.89	11.0	1.026	0.122	0.125

WLAN 5.8GHz –Body SAR Test(Gap: 0mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
61.	802.11a	Back Side	165	5825	13.31	13.5	1.045	0.216	0.226
62.	802.11a	Top Side	165	5825	13.31	13.5	1.045	0.205	0.214

Remark: Per KDB 447498 D01 v06 , if the highest output channel SAR for each exposure position ≤ 0.8 W/kg other channels SAR tests are not necessary.

Repeated SAR

GSM1900 – Body SAR Test (Gap: 0mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
63.	GPRS_4TX	Back Side	661	1880	26.81	27.0	1.045	0.997	1.042

WCDMA Band V – Body SAR Test (Gap: 0mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
64.	RMC 12.2k	Back Side	4132	826.4	21.64	22.0	1.086	0.821	0.892

WCDMA Band IV–Body SAR Test									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
65.	RMC 12.2k	Top Side	1450	1740.0	21.75	22.0	1.059	1.013	1.073

LTE Band 2–Body SAR Test (Gap: 0mm)								
Plot No.	Mode	Test Position Body	Frequency	Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth, RB		MHz					
66.	RMC QPSK 20MHz 1RB	Back Side	1880.0	22.55	23.0	1.109	1.014	1.125

LTE Band 5–Body SAR Test (Gap: 0mm)								
Plot No.	Mode	Test Position Body	Frequency	Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth, RB		MHz					
67.	RMC QPSK 10MHz 1RB	Back Side	844.0	22.79	23.0	1.050	0.992	1.041

LTE Band 40:2305-2315MHz–Body SAR Test (Gap: 0mm)								
Plot No.	Mode	Test Position Body	Frequency	Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth, RB		MHz					
68.	RMC QPSK 10MHz 1RB	Top Side	2310.0	22.64	23.0	1.086	0.832	0.904

Remark:

1) Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg; steps 2) through 4) do not apply.

2) When the original highest measured SAR is ≥ 0.80 W/kg, repeat that measurement once.

3) Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original

and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 W/kg (~ 10% from the 1-g SAR limit).

4) Perform a third repeated measurement only if the original, first or second repeated measurement is ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.

9.3 Simultaneous Multi-band Transmission SAR Analysis

List of Mode for Simultaneous Multi-band Transmission

No.	Configurations	Head SAR	Body SAR
1	GSM(Voice/ Data) + WLAN(Data)	-	Yes
2	WCDMA(Voice/ Data) + WLAN(Data)	-	Yes
3	LTE(Data) + WLAN(Data)	-	Yes
4	GSM(Voice/ Data) + Bluetooth(Data)	-	Yes
5	WCDMA(Voice/ Data) + Bluetooth(Data)	-	Yes
6	LTE(Data) + Bluetooth(Data)	-	Yes

Remark:

1. GSM ,WCDMA and LTE share the same antenna, and cannot transmit simultaneously.
2. WLAN and Bluetooth share the same antenna, and cannot transmit simultaneously.
3. According to the KDB 447498 D01v06, when standalone SAR test exclusion applies to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to following to determine simultaneous transmission SAR test exclusion:

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

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

For simultaneous transmission analysis, Bluetooth SAR is estimated per KDB 447498 D01v06 as below:

Bluetooth:

Tune-Up Power (dBm)	Max. Power (mW)	Distance (mm)	Frequency (GHz)	X	SAR(1g) 5mm
3.5	2.24	5/10	2.480	7.5	0.094

4. The maximum SAR summation is calculated based on the same configuration and test position.

Body SAR

WWAN and WLAN

	WWAN		WLAN(2.4G)	Summed SAR (W/kg)
Position	**Band**	**Scaled SAR (W/kg)**	**Scaled SAR (W/kg)**	
Back	GSM850	0.217	0.082	0.299
Front	GSM850	--	--	--
Top side	GSM850	0.284	0.085	0.369
Bottom side	GSM850	--	--	--
Right side	GSM850	0.068	--	0.068
Left side	GSM850	--	0.036	0.036
Back	GSM1900	1.089	0.082	1.171
Front	GSM1900	--	--	--
Top side	GSM1900	0.970	0.085	1.055
Bottom side	GSM1900	--	--	--
Right side	GSM1900	--	--	--
Left side	GSM1900	--	0.036	0.036
Back	WCDMA Band V	0.921	0.082	1.003
Front	WCDMA Band V	--	--	--
Top side	WCDMA Band V	0.715	0.085	0.8
Bottom side	WCDMA Band V	--	--	--
Right side	WCDMA Band V	--	--	--
Left side	WCDMA Band V	--	0.036	0.036
Back	WCDMA Band II	0.566	0.082	0.648
Front	WCDMA Band II	--	--	--
Top side	WCDMA Band II	0.322	0.085	0.407
Bottom side	WCDMA Band II	--	--	--
Right side	WCDMA Band II	--	--	--
Left side	WCDMA Band II	--	0.036	0.036
Back	WCDMA Band IV	0.900	0.082	0.982
Front	WCDMA Band IV	--	--	--
Top side	WCDMA Band IV	1.223	0.085	1.308
Bottom side	WCDMA Band IV	--	--	--
Right side	WCDMA Band IV	--	--	--
Left side	WCDMA Band IV	--	0.036	0.036
Back	LTE Band 2	1.287	0.082	**1.369**
Front	LTE Band 2	--	--	--
Top side	LTE Band 2	0.729	0.085	0.814
Bottom side	LTE Band 2	--	--	--
Right side	LTE Band 2	--	--	--
Left side	LTE Band 2	--	0.036	0.036

Back	LTE Band 4	0.586	0.082	0.668
Front	LTE Band 4	--	--	--
Top side	LTE Band 4	0.295	0.085	0.38
Bottom side	LTE Band 4	--	--	--
Right side	LTE Band 4	--	--	--
Left side	LTE Band 4	--	0.036	0.036
Back	LTE Band 5	1.075	0.082	1.157
Front	LTE Band 5	--	--	--
Top side	LTE Band 5	0.859	0.085	0.944
Bottom side	LTE Band 5	--	--	--
Right side	LTE Band 5	--	--	--
Left side	LTE Band 5	--	0.036	0.036
Back	LTE Band 17	0.793	0.082	0.875
Front	LTE Band 17	--	--	--
Top side	LTE Band 17	0.752	0.085	0.837
Bottom side	LTE Band 17	--	--	--
Right side	LTE Band 17	--	--	--
Left side	LTE Band 17	--	0.036	0.036
Back	LTE Band 40	0.808	0.082	0.89
Front	LTE Band 40	--	--	--
Top side	LTE Band 40	0.922	0.085	1.007
Bottom side	LTE Band 40	--	--	--
Right side	LTE Band 40	--	--	--
Left side	LTE Band 40	--	0.036	0.036

Position	WWAN		WLAN(5.2G)	Summed SAR (W/kg)
	Band	Scaled SAR (W/kg)	Scaled SAR (W/kg)	
Back	GSM850	0.217	0.116	0.333
Front	GSM850	--	--	--
Top side	GSM850	0.284	0.125	0.409
Bottom side	GSM850	--	--	--
Right side	GSM850	0.068	--	0.068
Left side	GSM850	--	--	--
Back	GSM1900	1.089	0.116	1.205
Front	GSM1900	--	--	--
Top side	GSM1900	0.970	0.125	1.095
Bottom side	GSM1900	--	--	--
Right side	GSM1900	--	--	--
Left side	GSM1900	--	--	--
Back	WCDMA Band V	0.921	0.116	1.037
Front	WCDMA Band V	--	--	--
Top side	WCDMA Band V	0.715	0.125	0.84
Bottom side	WCDMA Band V	--	--	--
Right side	WCDMA Band V	--	--	--
Left side	WCDMA Band V	--	--	--
Back	WCDMA Band II	0.566	0.116	0.682
Front	WCDMA Band II	--	--	--
Top side	WCDMA Band II	0.322	0.125	0.447
Bottom side	WCDMA Band II	--	--	--
Right side	WCDMA Band II	--	--	--
Left side	WCDMA Band II	--	--	--
Back	WCDMA Band IV	0.900	0.116	1.016
Front	WCDMA Band IV	--	--	--
Top side	WCDMA Band IV	1.223	0.125	1.348
Bottom side	WCDMA Band IV	--	--	--
Right side	WCDMA Band IV	--	--	--
Left side	WCDMA Band IV	--	--	--
Back	LTE Band 2	1.287	0.116	**1.403**
Front	LTE Band 2	--	--	--
Top side	LTE Band 2	0.729	0.125	0.854
Bottom side	LTE Band 2	--	--	--
Right side	LTE Band 2	--	--	--
Left side	LTE Band 2	--	--	--
Back	LTE Band 4	0.586	0.116	0.702
Front	LTE Band 4	--	--	--
Top side	LTE Band 4	0.295	0.125	0.42

Bottom side	LTE Band 4	--	--	--
Right side	LTE Band 4	--	--	--
Left side	LTE Band 4	--	--	--
Back	LTE Band 5	1.075	0.116	1.191
Front	LTE Band 5	--	--	--
Top side	LTE Band 5	0.859	0.125	0.984
Bottom side	LTE Band 5	--	--	--
Right side	LTE Band 5	--	--	--
Left side	LTE Band 5	--	--	--
Back	LTE Band 17	0.793	0.116	0.909
Front	LTE Band 17	--	--	--
Top side	LTE Band 17	0.752	0.125	0.877
Bottom side	LTE Band 17	--	--	--
Right side	LTE Band 17	--	--	--
Left side	LTE Band 17	--	--	--
Back	LTE Band 40	0.808	0.116	0.924
Front	LTE Band 40	--	--	--
Top side	LTE Band 40	0.922	0.125	1.047
Bottom side	LTE Band 40	--	--	--
Right side	LTE Band 40	--	--	--
Left side	LTE Band 40	--	--	--

Position	WWAN		WLAN(5.8G)	Summed SAR (W/kg)
	Band	Scaled SAR (W/kg)	Scaled SAR (W/kg)	
Back	GSM850	0.217	0.226	0.443
Front	GSM850	--	--	--
Top side	GSM850	0.284	0.214	0.498
Bottom side	GSM850	--	--	--
Right side	GSM850	0.068	--	0.068
Left side	GSM850	--	--	--
Back	GSM1900	1.089	0.226	1.315
Front	GSM1900	--	--	--
Top side	GSM1900	0.970	0.214	1.184
Bottom side	GSM1900	--	--	--
Right side	GSM1900	--	--	--
Left side	GSM1900	--	--	--
Back	WCDMA Band V	0.921	0.226	1.147
Front	WCDMA Band V	--	--	--
Top side	WCDMA Band V	0.715	0.214	0.929
Bottom side	WCDMA Band V	--	--	--
Right side	WCDMA Band V	--	--	--
Left side	WCDMA Band V	--	--	--
Back	WCDMA Band II	0.566	0.226	0.792
Front	WCDMA Band II	--	--	--
Top side	WCDMA Band II	0.322	0.214	0.536
Bottom side	WCDMA Band II	--	--	--
Right side	WCDMA Band II	--	--	--
Left side	WCDMA Band II	--	--	--
Back	WCDMA Band IV	0.900	0.226	1.126
Front	WCDMA Band IV	--	--	--
Top side	WCDMA Band IV	1.223	0.214	1.437
Bottom side	WCDMA Band IV	--	--	--
Right side	WCDMA Band IV	--	--	--
Left side	WCDMA Band IV	--	--	--
Back	LTE Band 2	1.287	0.226	**1.513**
Front	LTE Band 2	--	--	--
Top side	LTE Band 2	0.729	0.214	0.943
Bottom side	LTE Band 2	--	--	--
Right side	LTE Band 2	--	--	--
Left side	LTE Band 2	--	--	--
Back	LTE Band 4	0.586	0.226	0.812
Front	LTE Band 4	--	--	--
Top side	LTE Band 4	0.295	0.214	0.509

Bottom side	LTE Band 4	--	--	--
Right side	LTE Band 4	--	--	--
Left side	LTE Band 4	--	--	--
Back	LTE Band 5	1.075	0.226	1.301
Front	LTE Band 5	--	--	--
Top side	LTE Band 5	0.859	0.214	1.073
Bottom side	LTE Band 5	--	--	--
Right side	LTE Band 5	--	--	--
Left side	LTE Band 5	--	--	--
Back	LTE Band 17	0.793	0.226	1.019
Front	LTE Band 17	--	--	--
Top side	LTE Band 17	0.752	0.214	0.966
Bottom side	LTE Band 17	--	--	--
Right side	LTE Band 17	--	--	--
Left side	LTE Band 17	--	--	--
Back	LTE Band 40	0.808	0.226	1.034
Front	LTE Band 40	--	--	--
Top side	LTE Band 40	0.922	0.214	1.136
Bottom side	LTE Band 40	--	--	--
Right side	LTE Band 40	--	--	--
Left side	LTE Band 40	--	--	--

WLAN and Bluetooth

	WWAN		Bluetooth	Summed SAR (W/kg)
Position	**Band**	**Scaled SAR (W/kg)**	**Scaled SAR (W/kg)**	
Back	GSM850	0.217	0.094	0.311
Front	GSM850	--	--	--
Top side	GSM850	0.284	0.094	0.378
Bottom side	GSM850	--	--	--
Right side	GSM850	0.068	--	0.068
Left side	GSM850	--	0.094	--
Back	GSM1900	1.089	0.094	1.183
Front	GSM1900	--	--	--
Top side	GSM1900	0.970	0.094	1.064
Bottom side	GSM1900	--	--	--
Right side	GSM1900	--	--	--
Left side	GSM1900	--	0.094	0.094
Back	WCDMA Band V	0.921	0.094	1.015
Front	WCDMA Band V	--	--	--
Top side	WCDMA Band V	0.715	0.094	0.809
Bottom side	WCDMA Band V	--	--	--
Right side	WCDMA Band V	--	--	--
Left side	WCDMA Band V	--	0.094	0.094
Back	WCDMA Band II	0.566	0.094	0.66
Front	WCDMA Band II	--	--	--
Top side	WCDMA Band II	0.322	0.094	0.416
Bottom side	WCDMA Band II	--	--	--
Right side	WCDMA Band II	--	--	--
Left side	WCDMA Band II	--	0.094	0.094
Back	WCDMA Band IV	0.900	0.094	0.994
Front	WCDMA Band IV	--	--	--
Top side	WCDMA Band IV	1.223	0.094	1.317
Bottom side	WCDMA Band IV	--	--	--
Right side	WCDMA Band IV	--	--	--
Left side	WCDMA Band IV	--	0.094	0.094
Back	LTE Band 2	1.287	0.094	**1.381**
Front	LTE Band 2	--	--	--
Top side	LTE Band 2	0.729	0.094	0.823
Bottom side	LTE Band 2	--	--	--
Right side	LTE Band 2	--	--	--
Left side	LTE Band 2	--	0.094	0.094
Back	LTE Band 4	0.586	0.094	0.68

Front	LTE Band 4	--	--	--
Top side	LTE Band 4	0.295	0.094	0.389
Bottom side	LTE Band 4	--	--	--
Right side	LTE Band 4	--	--	--
Left side	LTE Band 4	--	0.094	0.094
Back	LTE Band 5	1.075	0.094	1.169
Front	LTE Band 5	--	--	--
Top side	LTE Band 5	0.859	0.094	0.953
Bottom side	LTE Band 5	--	--	--
Right side	LTE Band 5	--	--	--
Left side	LTE Band 5	--	0.094	0.094
Back	LTE Band 17	0.793	0.094	0.887
Front	LTE Band 17	--	--	--
Top side	LTE Band 17	0.752	0.094	0.846
Bottom side	LTE Band 17	--	--	--
Right side	LTE Band 17	--	--	--
Left side	LTE Band 17	--	0.094	0.094
Back	LTE Band 40	0.808	0.094	0.902
Front	LTE Band 40	--	--	--
Top side	LTE Band 40	0.922	0.094	1.016
Bottom side	LTE Band 40	--	--	--
Right side	LTE Band 40	--	--	--
Left side	LTE Band 40	--	0.094	0.094

10. Measurement Uncertainty

10.1 Uncertainty for EUT SAR Test

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	7.0	N	1	1	1	7.00	7.00	∝
Axial Isotropy	E.2.2	2.5	R	√3	(1_Cp)^1/2	(1_Cp)^1/2	1.02	1.02	∝
Hemispherical Isotropy	E.2.2	4.0	R	√3	(Cp)^1/2	(Cp)^1/2	1.63	1.63	∝
Boundary effect	E.2.3	1.0	R	√3	1	1	0.58	0.58	∝
Linearity	E.2.4	5.0	R	√3	1	1	2.89	2.89	∝
System detection limits	E.2.5	1.0	R	√3	1	1	0.58	0.58	∝
Readout Electronics	E.2.6	0.02	N	1	1	1	0.02	0.02	∝
Reponse Time	E.2.7	3.0	R	√3	1	1	1.73	1.73	∝
Integration Time	E.2.8	2.0	R	√3	1	1	1.15	1.15	∝
RF ambient Conditions – Noise	E.6.1	3.0	R	√3	1	1	1.73	1.73	∝
RF ambient Conditions - Reflections	E.6.1	3.0	R	√3	1	1	1.73	1.73	∝
Probe positioner Mechanical Tolerance	E.6.2	2.0	R	√3	1	1	1.15	1.15	∝
Probe positioning with respect to Phantom Shell	E.6.3	0.05	R	√3	1	1	0.03	0.03	∝
Extrapolation, interpolation and integration Algoritms for Max. SAR Evaluation	E.5	5.0	R	√3	1	1	2.89	2.89	∝
Test Sample Related									
Test sample positioning	E.4.2	0.03	N	1	1	1	0.03	0.03	N–1
Device Holder Uncertainty	E.4.1	5.00	N	1	1	1	5.00	5.00	
Output power Variation - SAR drift measurement	E.2.9	12.02	R	√3	1	1	6.94	6.94	∝
SAR scaling	E6.5	0.0	R	√3	1	1	0.0	0.0	∝
Phantom and Tissue Parameters									
Phantom Uncertainty (Shape and thickness tolerances)	E.3.1	0.05	R	√3	1	1	0.03	0.03	∝
Uncertainty in SAR correction for deviations in permittivity and conductivity	E3.2	1.9	R	√3	1	0.84	1.10	0.90	∝
Liquid conductivity - deviation	E.3.2	5.00	R	√3	0.64	0.43	1.85	1.24	∝

from target value									
Liquid conductivity - measurement uncertainty	E.3.3	5.00	N	1	0.64	0.43	3.20	2.15	∝
Liquid permittivity - deviation from target value	E.3.2	0.37	R	√3	0.6	0.49	0.13	0.10	∝
Liquid permittivity - measurement uncertainty	E.3.3	10.00	N	1	0.6	0.49	6.00	4.90	∝
Combined Standard Uncertainty			RSS				12.98	12.53	
Expanded Uncertainty (95% Confidence interval)			K=2				25.32	24.43	

10.2 Uncertainty for System Performance Check

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	7.0	N	1	1	1	7.00	7.00	∝
Axial Isotropy	E.2.2	2.5	R	√3	(1_Cp)^1/2	(1_Cp)^1/2	1.02	1.02	∝
Hemispherical Isotropy	E.2.2	4.0	R	√3	(Cp)^1/2	(Cp)^1/2	1.63	1.63	∝
Boundary effect	E.2.3	1.0	R	√3	1	1	0.58	0.58	∝
Linearity	E.2.4	5.0	R	√3	1	1	2.89	2.89	∝
System detection limits	E.2.5	1.0	R	√3	1	1	0.58	0.58	∝
Modulation response	E.2.5	0	R	√3	0	0	0.0	0.0	∝
Readout Electronics	E.2.6	0.02	N	1	1	1	0.02	0.02	∝
Reponse Time	E.2.7	3.0	R	√3	1	1	1.73	1.73	∝
Integration Time	E.2.8	2.0	R	√3	1	1	1.15	1.15	∝
RF ambient Conditions – Noise	E.6.1	3.0	R	√3	1	1	1.73	1.73	∝
RF ambient Conditions - Reflections	E.6.1	3.0	R	√3	1	1	1.73	1.73	∝
Probe positioner Mechanical Tolerance	E.6.2	2.0	R	√3	1	1	1.15	1.15	∝
Probe positioning with respect to Phantom Shell	E.6.3	0.05	R	√3	1	1	0.03	0.03	∝
Extrapolation, interpolation and integration Algoritms for Max.	E.5.2	5.0	R	√3	1	1	2.89	2.89	∝

SAR Evaluation									
Dipole									
Dipole axis to liquid Distance	8,E.4.2	1.00	N	√3	1	1	0.58	0.58	N–1
Input power and SAR drift measurement	8,6.6.2	12.02	R	√3	1	1	6.94	6.94	∝
Deviation of experimental dipole from numerical dipole	E.6.4	5.5	R	√3	1	1	3.20	3.20	∝
Phantom and Tissue Parameters									
Phantom Uncertainty (Shape and thickness tolerances)	E.3.1	0.05	R	√3	1	1	0.03	0.03	∝
Uncertainty in SAR correction for deviations in permittivity and conductivity	E3.2	2.0	R	√3	1	0.84	1.10	1.10	∝
Liquid conductivity - deviation from target value	E.3.2	5.00	R	√3	0.64	0.43	1.85	1.24	
Liquid conductivity - measurement uncertainty	E.3.3	5.00	N	1	0.64	0.43	3.20	2.15	
Liquid permittivity - deviation from target value	E.3.2	0.37	R	√3	0.6	0.49	0.13	0.10	
Liquid permittivity - measurement uncertainty	E.3.3	10.00	N	1	0.6	0.49	6.00	4.90	M
Combined Standard Uncertainty			RSS				12.00	11.50	
Expanded Uncertainty (95% Confidence interval)			K=2				23.39	22.43	

Annex A. Plots of System Performance Check

MEASUREMENT 1

For Body Liquid

Type: Validation measurement (Fast, 75.00 %)

Date of measurement: 07/09/2018

Measurement duration: 12 minutes 21 seconds

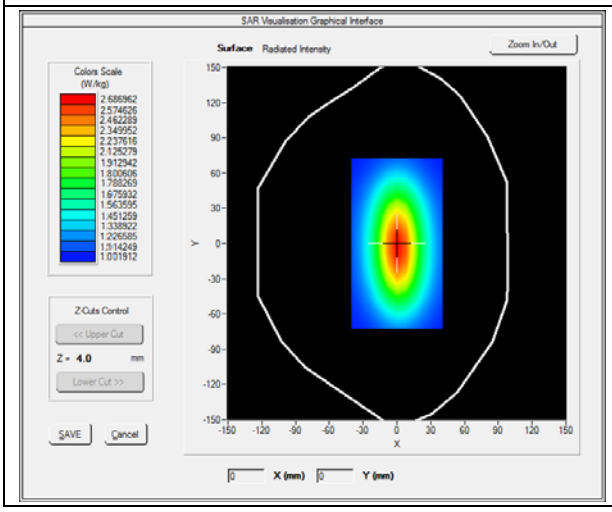
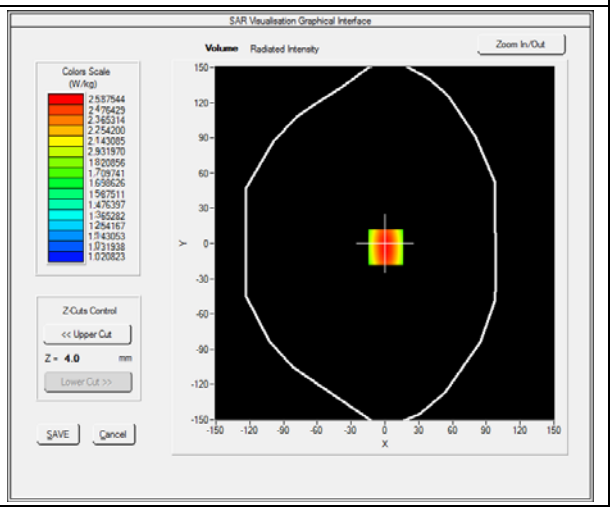
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 7.28; Calibrated: 06/01/2018

A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Dipole
Band	CW750
Signal	Duty Cycle 1:1

B. SAR Measurement Results

Frequency (MHz)	750.000000
Relative Permittivity (real part)	54.964739
Conductivity (S/m)	0.931048
Power Variation (%)	0.034745
Ambient Temperature	21.1
Liquid Temperature	21.3

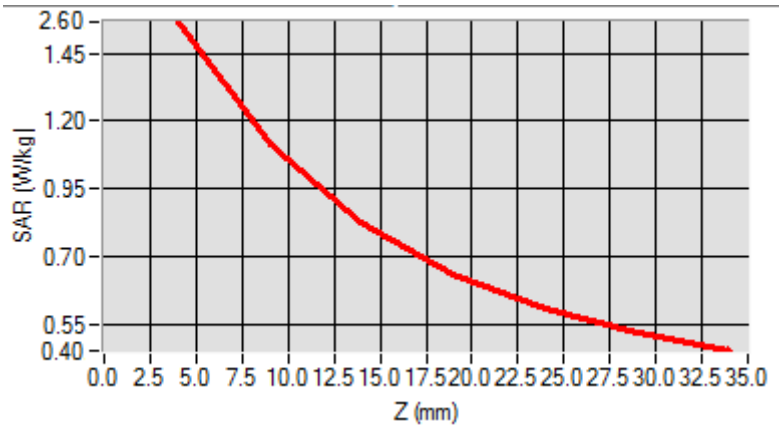
SURFACE SAR	VOLUME SAR
	

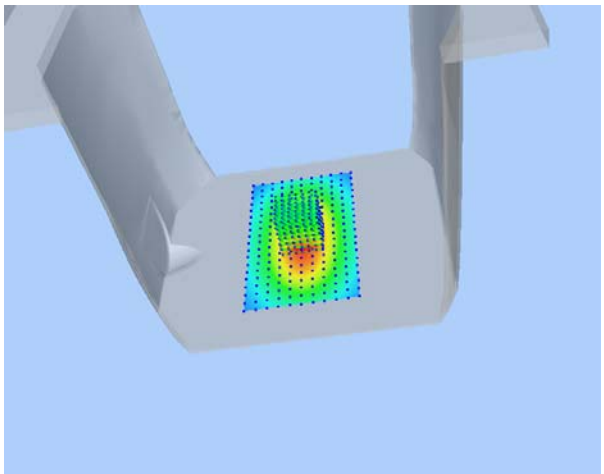
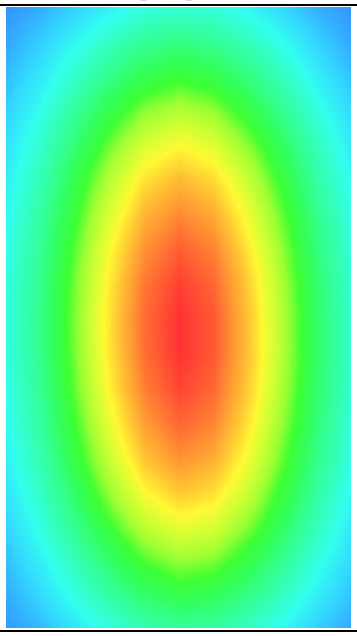
Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	1.000865
SAR 1g (W/Kg)	2.124211

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	2.5132	1.1087	0.8214	0.5160	0.4875	0.4864



3D screen shot	Hot spot position
	

MEASUREMENT 2

For Body Liquid

Type: Validation measurement (Fast, 75.00 %)

Date of measurement: 07/09/2018

Measurement duration: 12 minutes 21 seconds

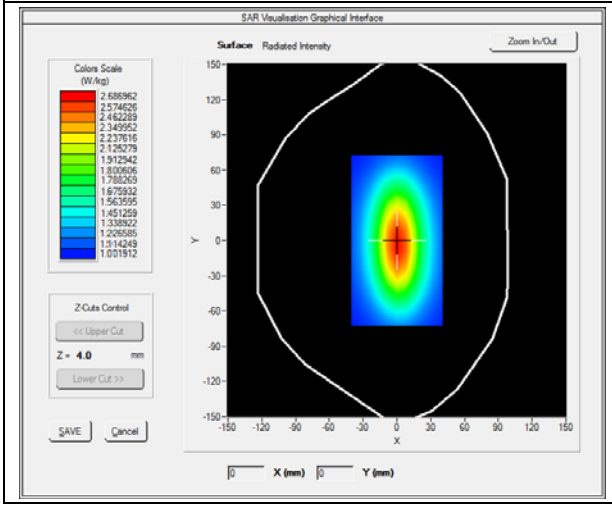
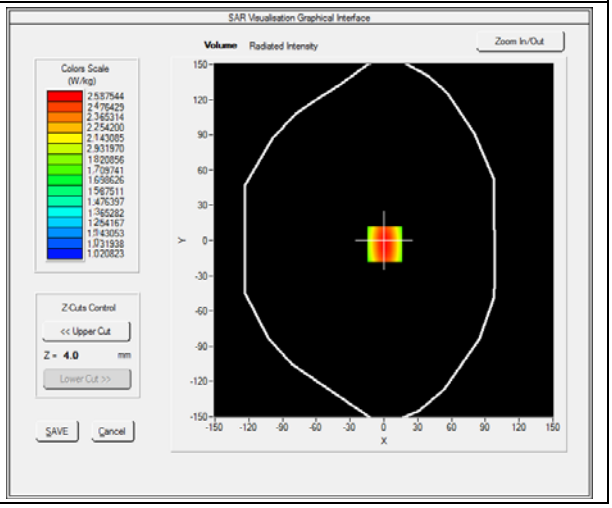
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 7.13; Calibrated: 06/01/2018

A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Dipole
Band	CW835
Signal	Duty Cycle 1:1

B. SAR Measurement Results

Frequency (MHz)	835.000000
Relative Permittivity (real part)	54.851214
Conductivity (S/m)	0.951454
Power Variation (%)	0.901472
Ambient Temperature	21.1
Liquid Temperature	21.3

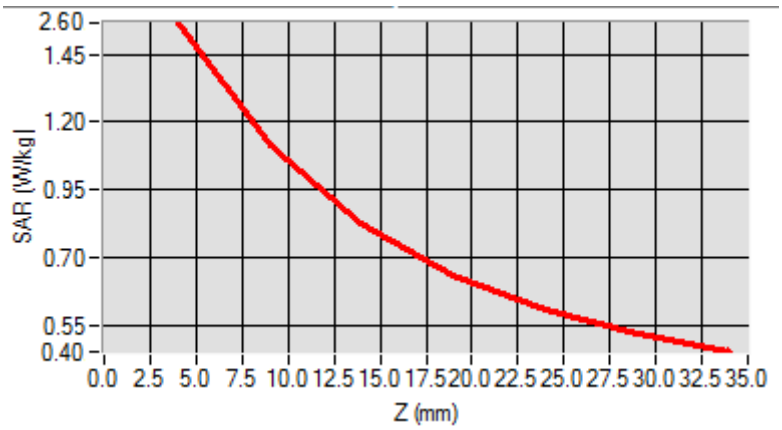
SURFACE SAR	VOLUME SAR
	

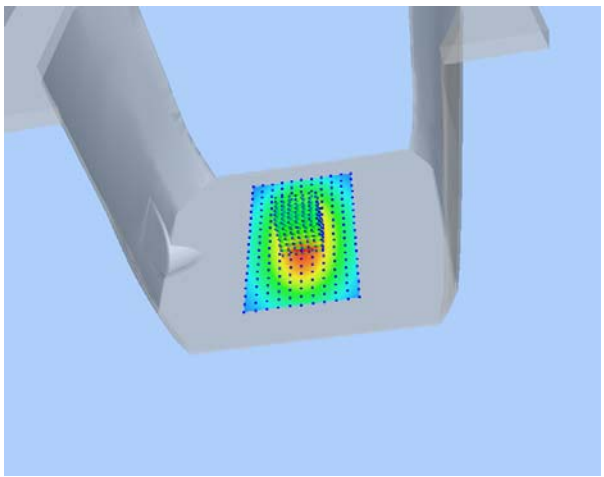
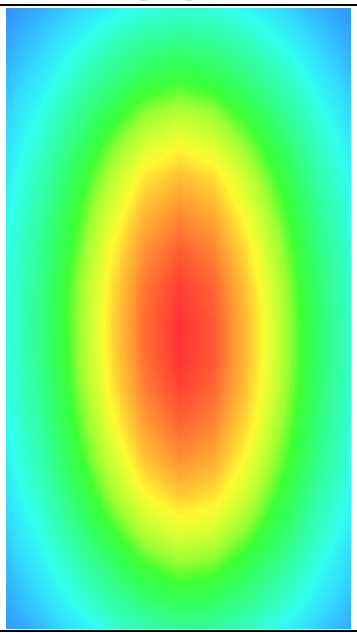
Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	1.028956
SAR 1g (W/Kg)	2.354211

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	2.5789	1.1300	0.8795	0.5940	0.5011	0.5100



3D screen shot	Hot spot position
	

MEASUREMENT 3

For Body Liquid

Type: Validation measurement (Fast, 75.00 %)

Date of measurement: 07/10/2018

Measurement duration: 12 minutes 21 seconds

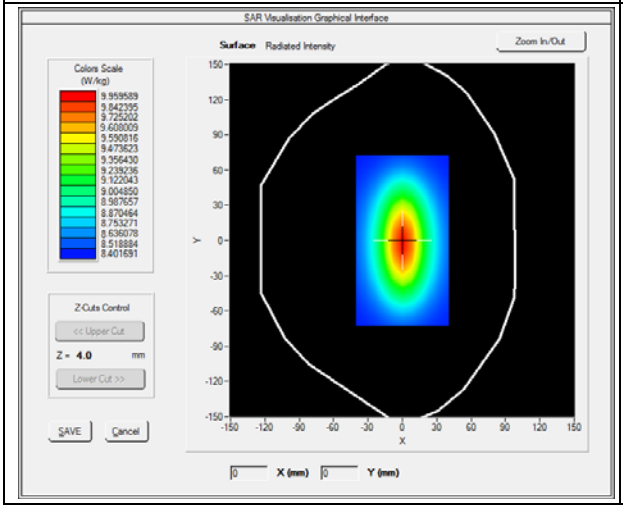
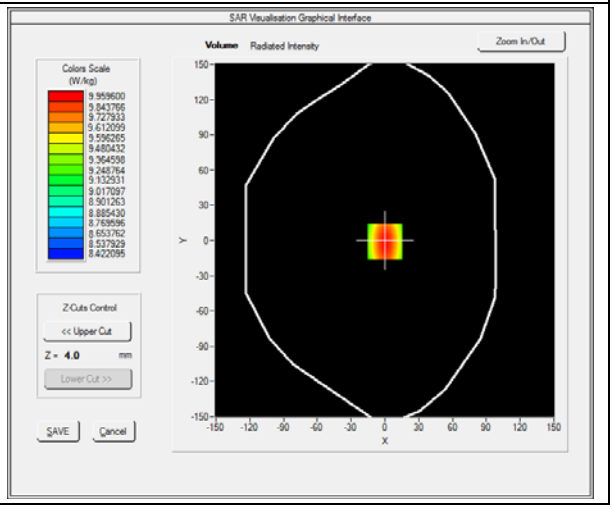
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.06; Calibrated: 06/01/2018

A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Dipole
Band	CW1800
Signal	CW (Crest factor: 1.0)

B. SAR Measurement Results

Frequency (MHz)	1800.000000
Relative Permittivity (real part)	51.224510
Conductivity (S/m)	1.461261
Power Variation (%)	0.845690
Ambient Temperature	21.1
Liquid Temperature	21.2

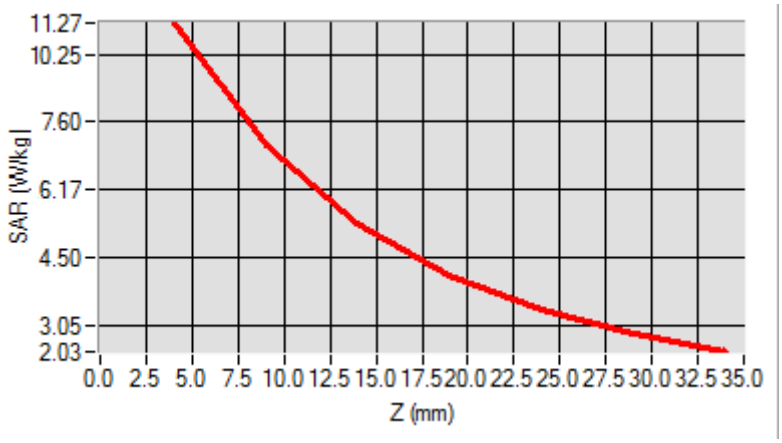
SURFACE SAR	VOLUME SAR
	

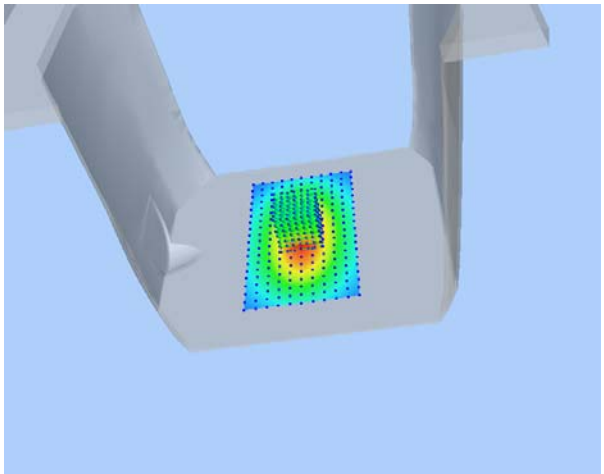
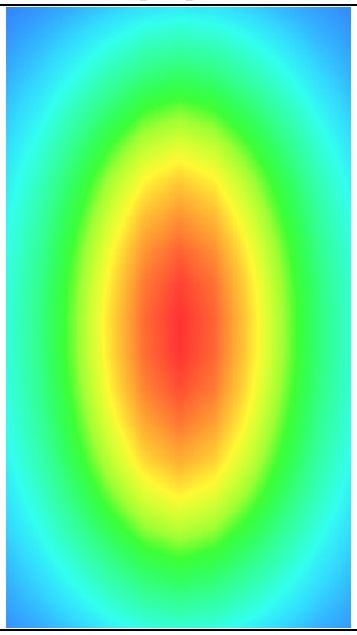
Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	**5.221202**
SAR 1g (W/Kg)	**9.582560**

Z Axis Scan

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**	**24.00**	**29.00**
SAR (W/Kg)	**0.0000**	**11.2425**	**9.4123**	**8.0345**	**6.9125**	**6.3092**	**3.9460**



3D screen shot	**Hot spot position**
	

MEASUREMENT 4

For Body Liquid

Type: Validation measurement (Fast, 75.00 %)

Date of measurement: 07/10/2018

Measurement duration: 12 minutes 21 seconds

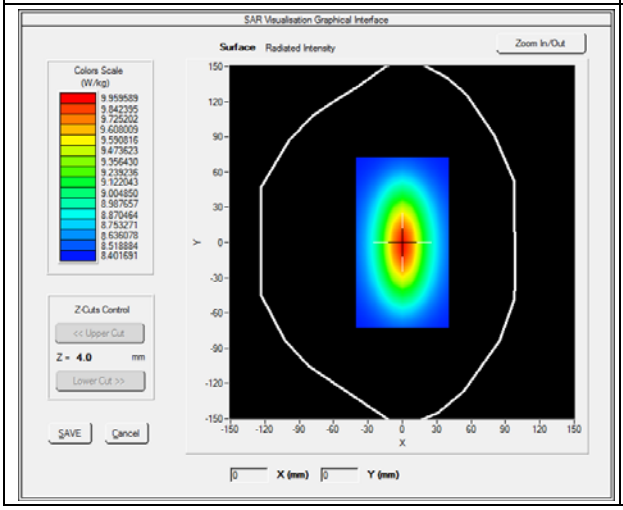
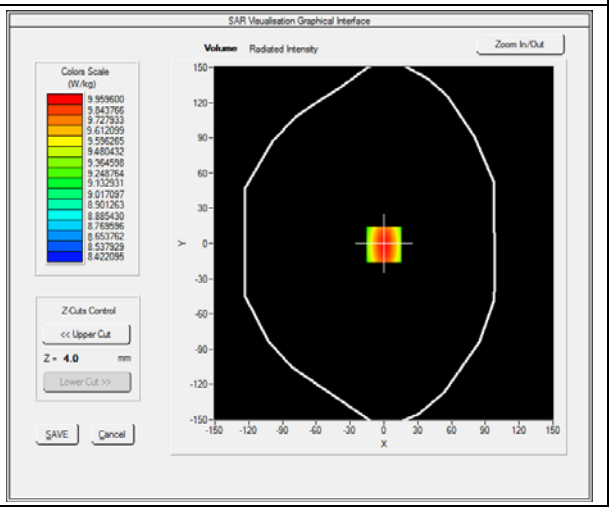
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.55; Calibrated: 06/01/2018

A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Dipole
Band	CW1900
Signal	Duty Cycle 1:1

B. SAR Measurement Results

Frequency (MHz)	1900.000000
Relative Permittivity (real part)	52.420415
Conductivity (S/m)	1.501966
Power Variation (%)	0.541872
Ambient Temperature	21.1
Liquid Temperature	21.3

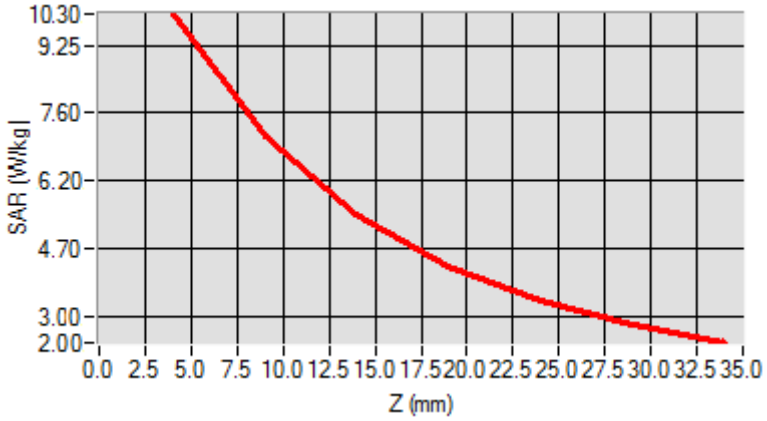
SURFACE SAR	VOLUME SAR
	

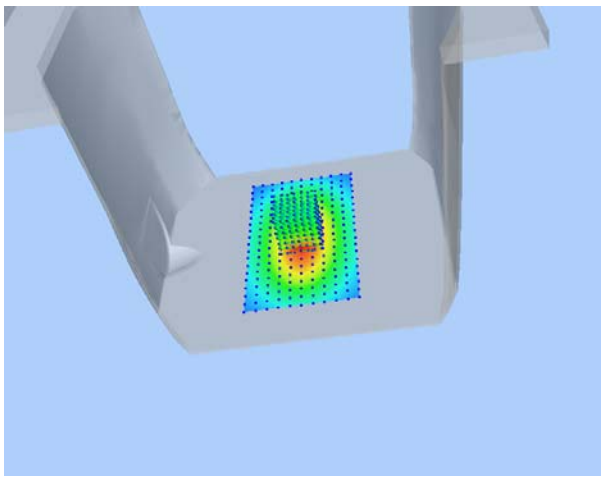
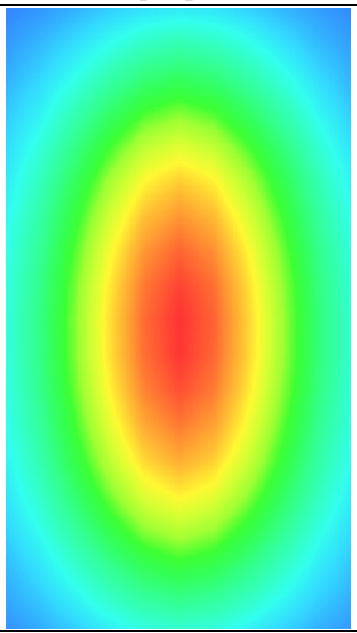
Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	5.134651
SAR 1g (W/Kg)	9.781550

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	10.2031	6.43001	4.9011	4.5325	3.1201	2.5024



3D screen shot	Hot spot position
	

MEASUREMENT 5

For Body Liquid

Type: Validation measurement (Fast, 75.00 %)

Date of measurement: 07/11/2018

Measurement duration: 12 minutes 21 seconds

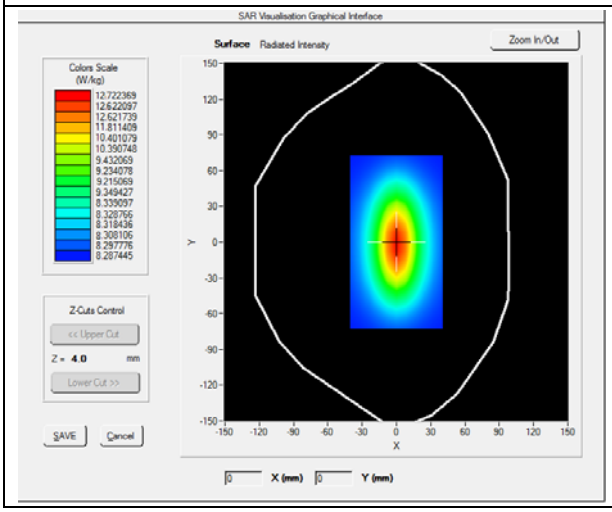
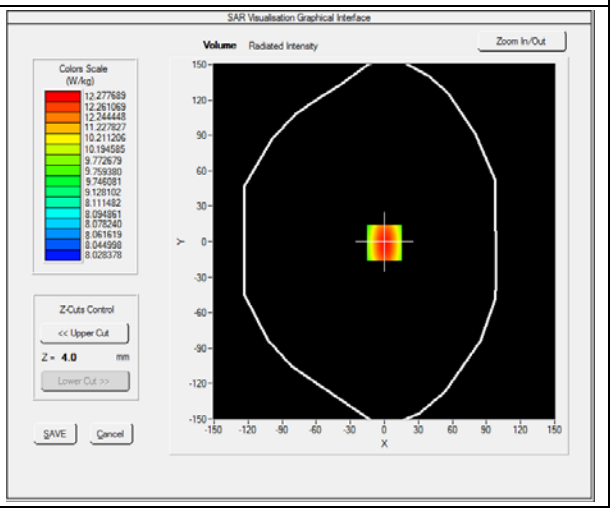
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 5.80; Calibrated: 06/01/2018

A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Dipole
Band	CW2450
Signal	Duty Cycle 1:1

B. SAR Measurement Results

Frequency (MHz)	2450.000000
Relative Permittivity (real part)	52.010212
Conductivity (S/m)	1.910255
Power Variation (%)	1.369745
Ambient Temperature	21.1
Liquid Temperature	21.2

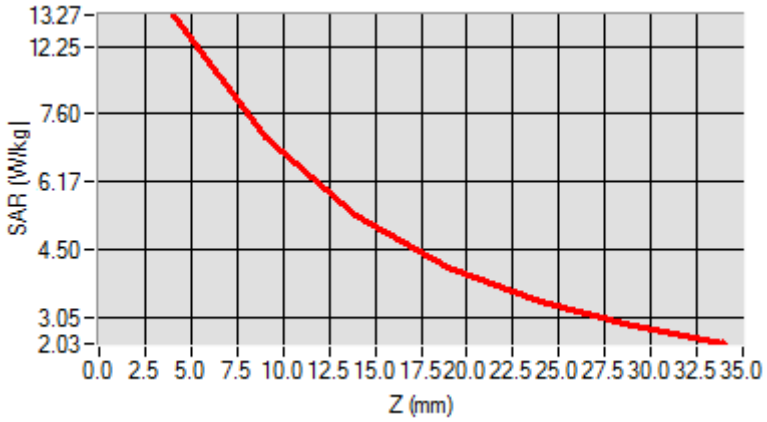
SURFACE SAR	VOLUME SAR
	

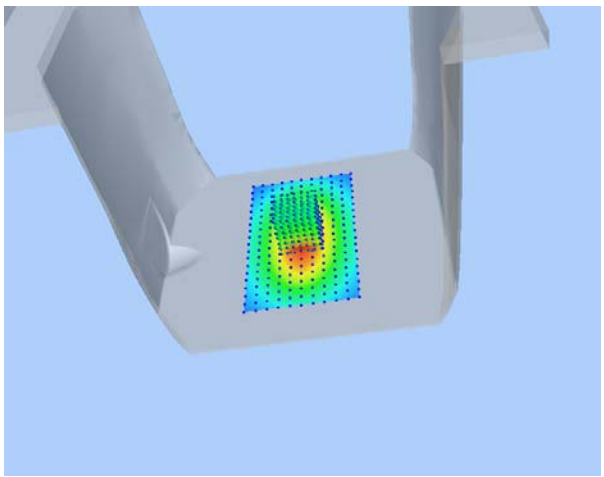
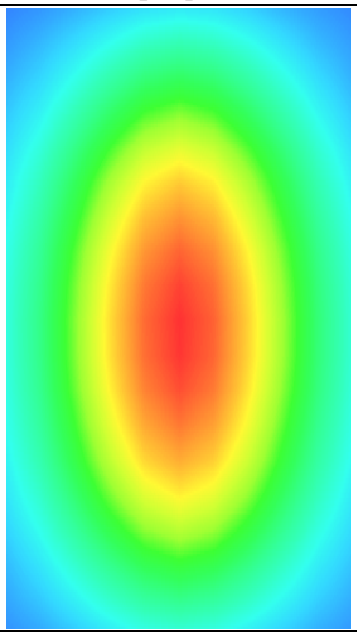
Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	7.119522
SAR 1g (W/Kg)	12.592360

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	13.3911	11.7951	9.2945	8.5400	6.3712	4.6225



3D screen shot	Hot spot position
	

MEASUREMENT 6

For Body Liquid

Type: Validation measurement (Fast, 75.00 %)

Date of measurement: 07/11/2018

Measurement duration: 12 minutes 21 seconds

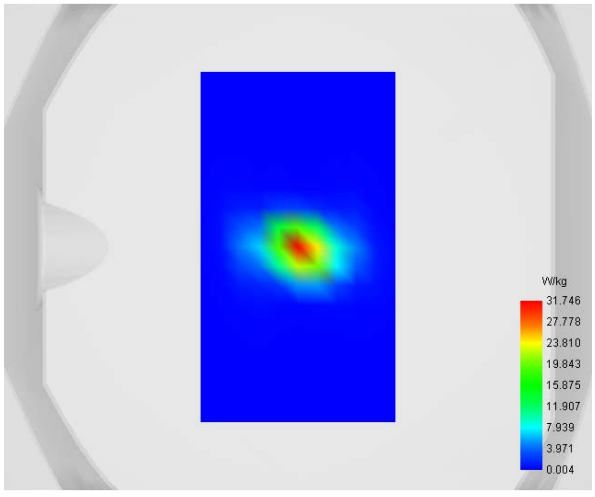
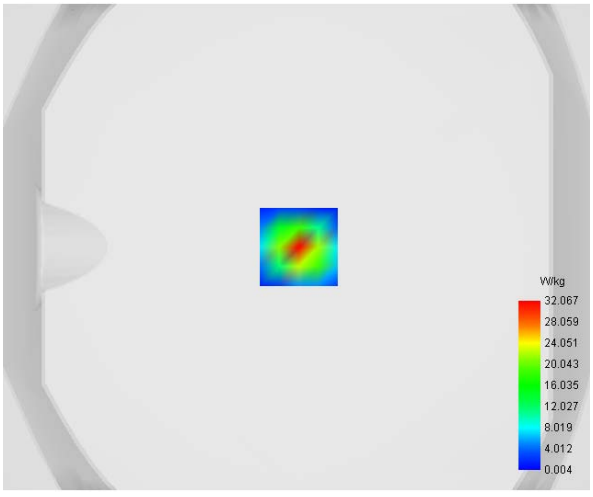
E-field Probe: SSE2 - SN 08/16 EPGO298; ConvF:2.39; Calibrated: 2017/09/18

A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=4mm dy=4mm dz=2mm
Phantom	Validation plane
Device Position	Dipole
Band	CW5200
Signal	Duty Cycle 1:1

B. SAR Measurement Results

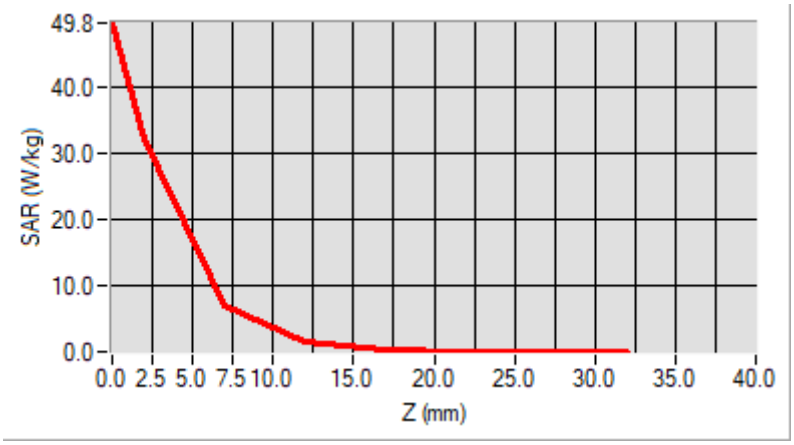
Frequency (MHz)	5200.000000
Relative Permittivity (real part)	48.501939
Conductivity (S/m)	5.161487
Power Variation (%)	0.749201
Ambient Temperature	21.1
Liquid Temperature	21.2

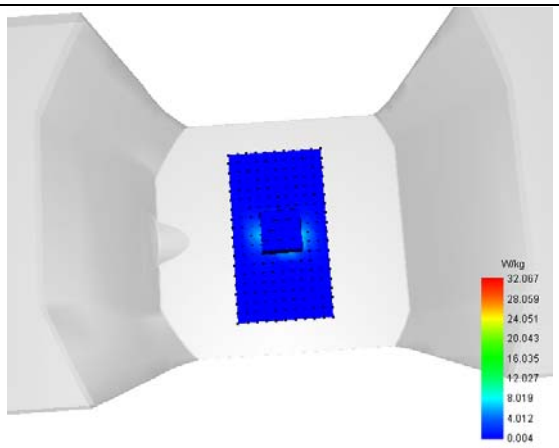
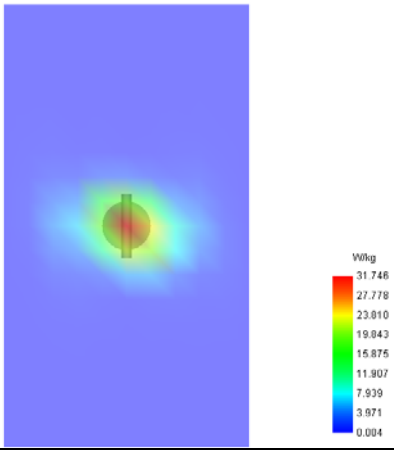
SURFACE SAR	VOLUME SAR
	

Maximum location: X=1.00, Y=0.00

SAR 10g (W/Kg)	6.047588
SAR 1g (W/Kg)	16.681175

Z (mm)	0.00	2.00	7.00	12.00	17.00	22.00	27.00
SAR (W/Kg)	49.8193	32.0669	7.0244	1.5969	0.3410	0.0635	0.0070



3D screen shot	Hot spot position
	

MEASUREMENT 7

For Body Liquid

Type: Validation measurement (Fast, 75.00 %)

Date of measurement: 07/11/2018

Measurement duration: 12 minutes 21 seconds

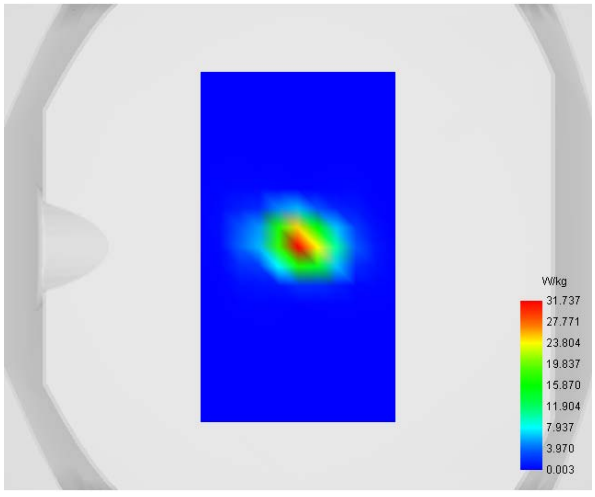
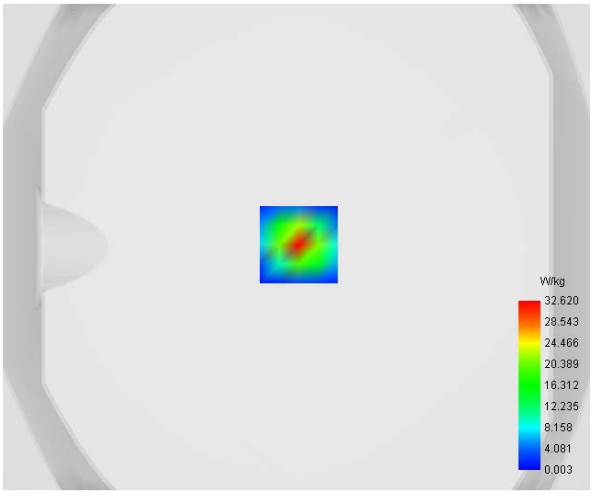
E-field Probe: SSE2 - SN 08/16 EPGO298; ConvF:2.50; Calibrated: 2017/09/18

A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=4mm dy=4mm dz=2mm
Phantom	Validation plane
Device Position	Dipole
Band	CW5800
Signal	Duty Cycle 1:1

B. SAR Measurement Results

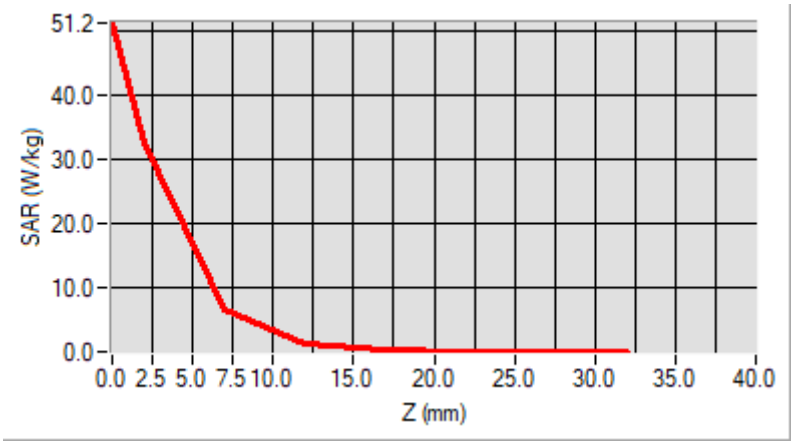
Frequency (MHz)	5800.000000
Relative Permittivity (real part)	48.620132
Conductivity (S/m)	5.230213
Power Variation (%)	0.703787
Ambient Temperature	21.1
Liquid Temperature	21.2

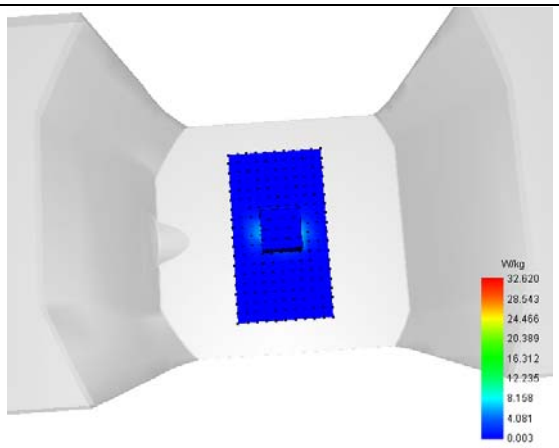
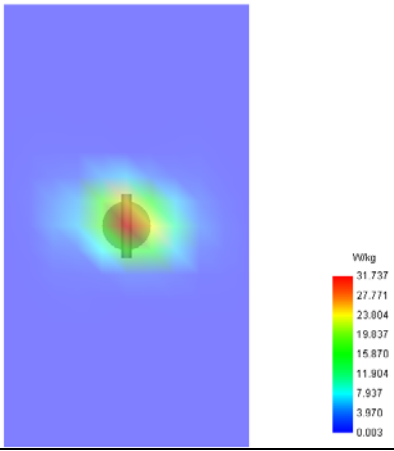
SURFACE SAR	VOLUME SAR
	

Maximum location: X=1.00, Y=1.00

SAR 10g (W/Kg)	5.901454
SAR 1g (W/Kg)	17.632248

Z (mm)	0.00	2.00	7.00	12.00	17.00	22.00	27.00
SAR (W/Kg)	51.2061	32.6198	6.6166	1.3486	0.2638	0.0509	0.0050



3D screen shot	Hot spot position
	

Annex B. Plots of SAR Measurement

TYPE	BAND	PARAMETERS
Tablet	**GPRS850_4TX**	Measurement 2: Flat Plane with Top device position on High Channel in GPRS mode
Tablet	**GPRS1900_4TX**	Measurement 5: Flat Plane with Back device position on Middle Channel in GPRS mode
Tablet	**WCDMA850_RMC**	Measurement 10: Flat Plane with Back device position on Low Channel in WCDMA mode
Tablet	**WCDMA1900_RMC**	Measurement 14: Flat Plane with Back device position on High Channel in WCDMA mode
Tablet	**WCDMA1700_RMC**	Measurement 19: Flat Plane with Top device position on Middle Channel in WCDMA mode
Tablet	**LTE Band 2_RMC**	Measurement 22: Flat Plane with Back device position on Middle Channel in LTE QPSK 20MHz 1RB mode
Tablet	**LTE Band 4_RMC**	Measurement 29: Flat Plane with Back device position on Middle Channel in LTE QPSK 20MHz 1RB mode
Tablet	**LTE Band 5_RMC**	Measurement 35: Flat Plane with Back device position on High Channel in LTE QPSK 10MHz 1RB mode
Tablet	**LTE Band 17_RMC**	Measurement 44: Flat Plane with Back device position on High Channel in LTE QPSK 10MHz 1RB mode
Tablet	**LTE Band 40_RMC 2305-2315MHz**	Measurement 49: Flat Plane with Top device position on Middle Channel in LTE mode
Tablet	**LTE Band 40_RMC 2350-2360MHz**	Measurement 53: Flat Plane with Top device position on Middle Channel in LTE mode
Tablet	**WiFi(2.4G)_802.11b**	Measurement 57: Flat Plane with Top side device position on Low Channel in 802.11b mode
Tablet	**WiFi(5.2G):WiFi_802.11a**	Measurement 60: Flat Plane with Top side device position on High Channel in 802.11a mode
Tablet	**WiFi(5.8G):WiFi_802.11a**	Measurement 61: Flat Plane with Back side device position on High Channel in 802.11a mode
Remark: SAR plot is showed the highest measured SAR in each exposure configuration, wireless mode and frequency band combination.		

MEASUREMENT 2

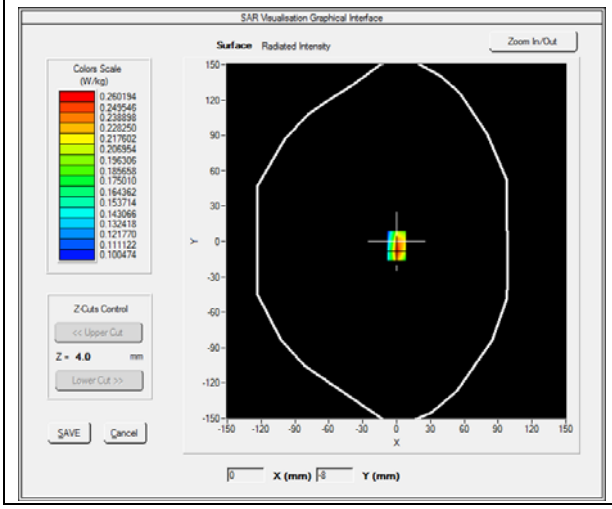
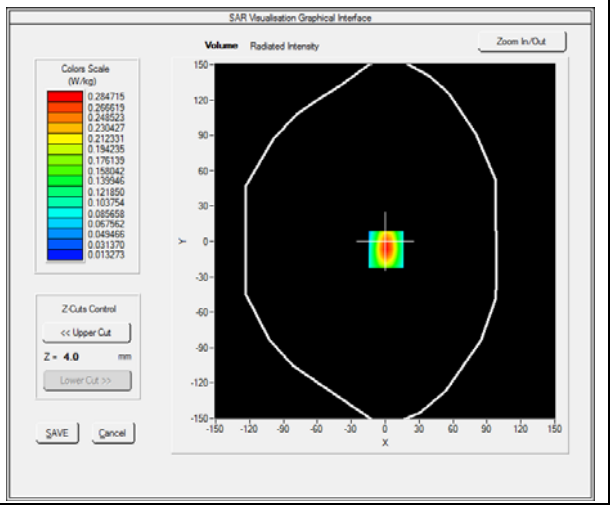
Type: Phone measurement (Complete)
Date of measurement: 07/09/2018
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 7.13; Calibrated: 06/01/2018

A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=8mm dy=8mm dz=5mm
Phantom	Flat plane
Device Position	Top
Band	GPRS850_4TX
Channels	High
Signal	Duty Cycle 1:2

B. SAR Measurement Results

Frequency (MHz)	848.800000
Relative Permittivity (real part)	54.851214
Conductivity (S/m)	0.951454
Power Variation (%)	0.903892
Ambient Temperature	21.1
Liquid Temperature	21.3

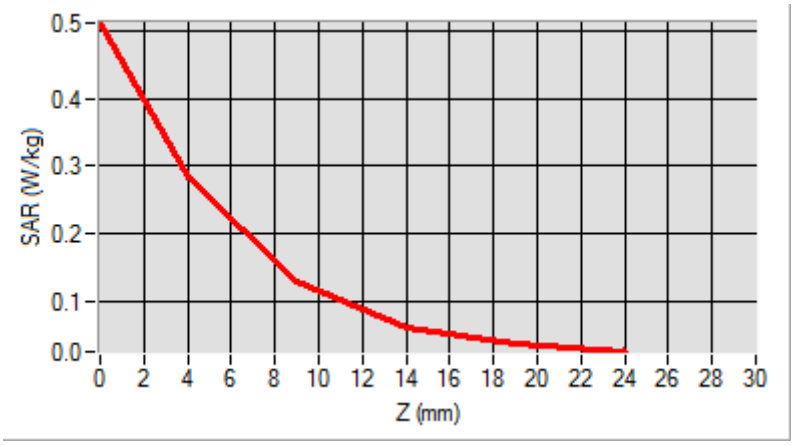
SURFACE SAR	VOLUME SAR
	

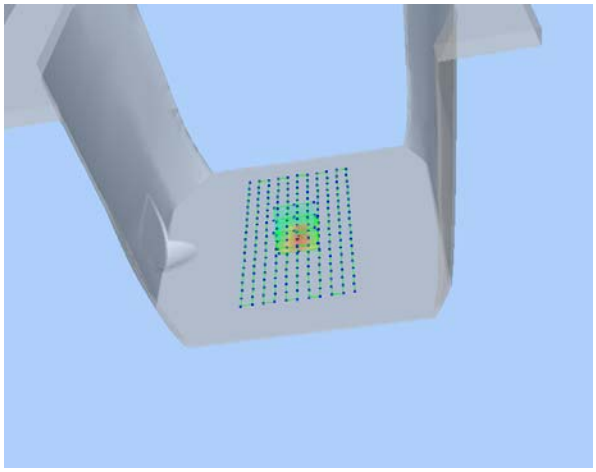
Maximum location: X=1.00, Y=-7.00

SAR Peak: 0.51 W/kg

SAR 10g (W/Kg)	**0.128037**
SAR 1g (W/Kg)	**0.261385**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.5105**	**0.2847**	**0.1310**	**0.0637**	**0.0384**



3D screen shot	**Hot spot position**
	

MEASUREMENT 5

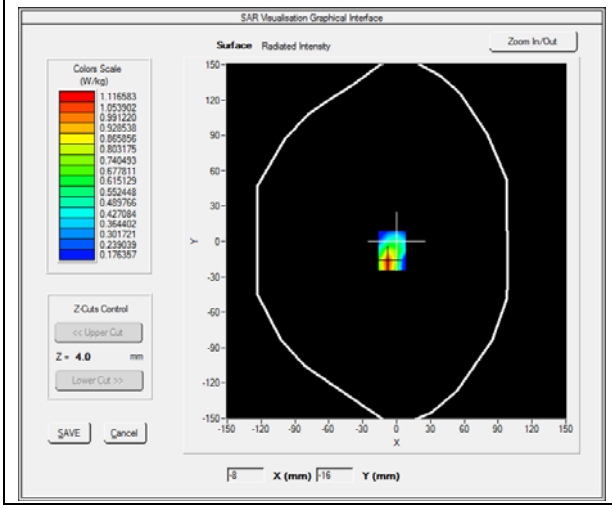
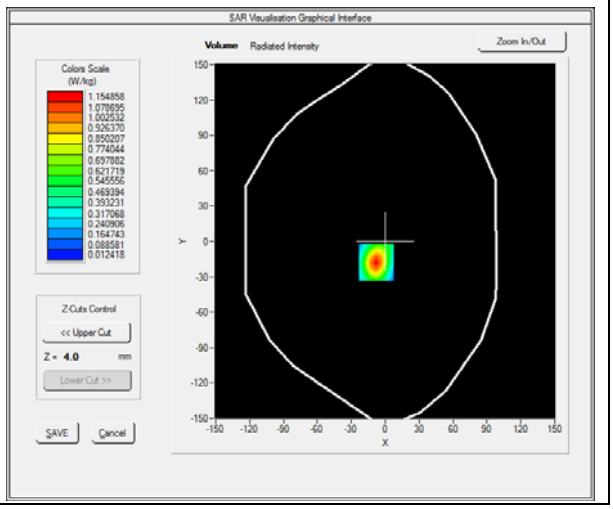
Type: Phone measurement (Complete)
Date of measurement: 07/10/2018
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.55; Calibrated: 06/01/2018

A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=8mm dy=8mm dz=5mm
Phantom	Flat plane
Device Position	Back
Band	GPRS1900_4TX
Channels	Middle
Signal	Duty Cycle 1:2

B. SAR Measurement Results

Frequency (MHz)	1880.000000
Relative Permittivity (real part)	52.420415
Conductivity (S/m)	1.501966
Power Variation (%)	0.642662
Ambient Temperature	21.1
Liquid Temperature	21.3

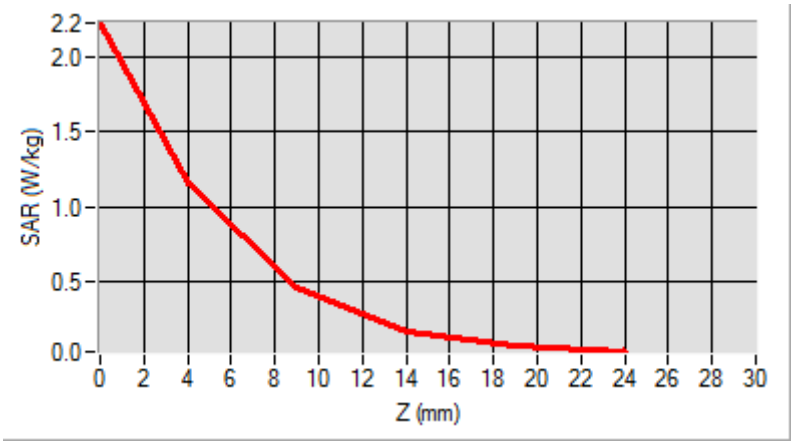
SURFACE SAR	VOLUME SAR
	

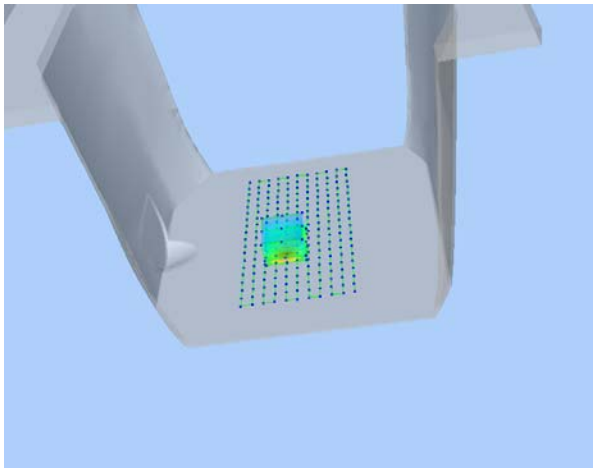
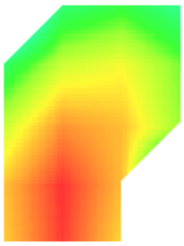
Maximum location: X=-8.00, Y=-18.00

SAR Peak: 2.21 W/kg

SAR 10g (W/Kg)	0.451568
SAR 1g (W/Kg)	1.041902

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	2.2198	1.1549	0.4612	0.1781	0.0804



3D screen shot	Hot spot position
	

MEASUREMENT 10

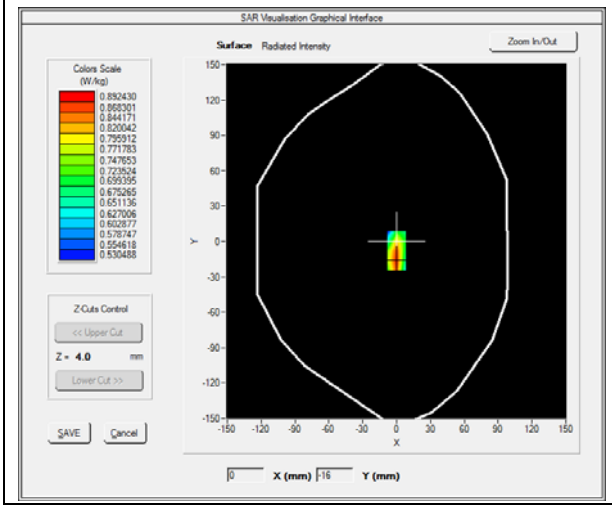
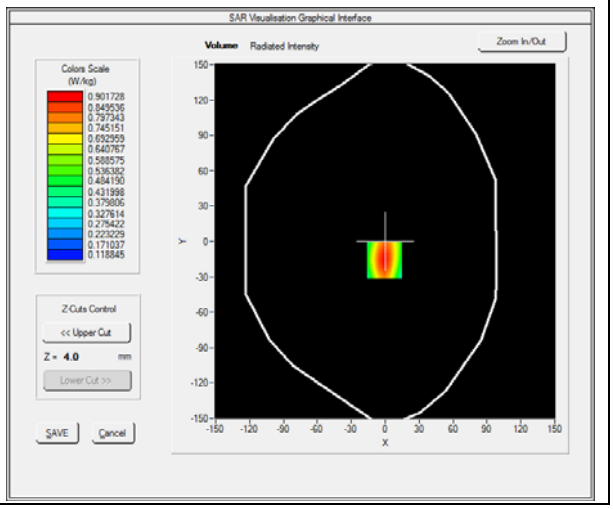
Type: Phone measurement (Complete)
Date of measurement: 07/09/2018
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 7.13; Calibrated: 06/01/2018

A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=8mm dy=8mm dz=5mm
Phantom	Flat Plane
Device Position	Back
Band	WCDMA850_RMC
Channels	Low
Signal	Duty Cycle 1:1

B. SAR Measurement Results

Frequency (MHz)	826.400000
Relative Permittivity (real part)	54.851214
Conductivity (S/m)	0.951454
Power Variation (%)	0.707382
Ambient Temperature	21.1
Liquid Temperature	21.3

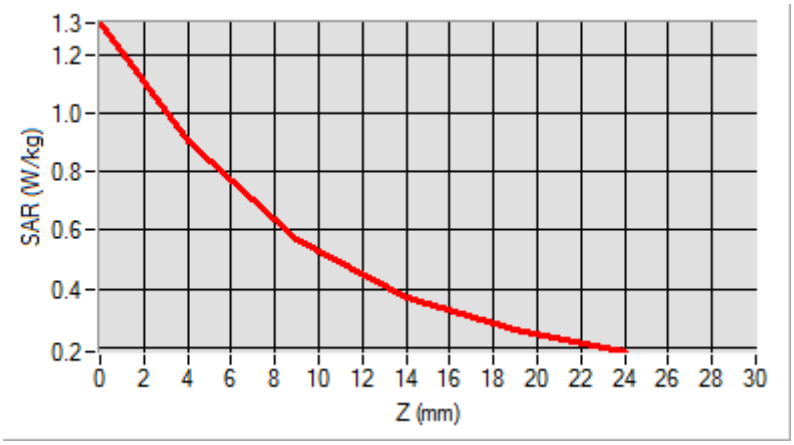
SURFACE SAR	VOLUME SAR
	

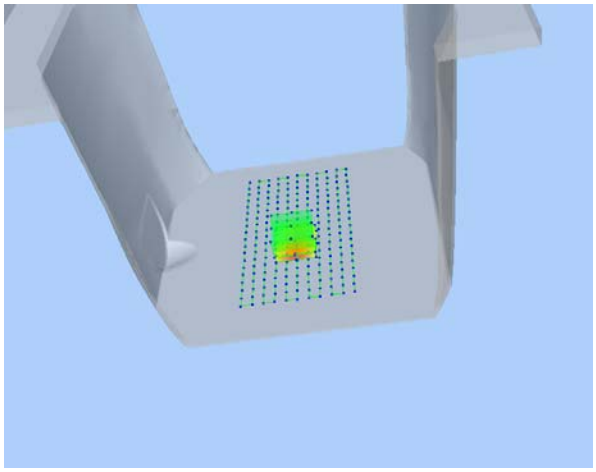
Maximum location: X=-1.00, Y=-16.00

SAR Peak: 1.31 W/kg

SAR 10g (W/Kg)	0.524611
SAR 1g (W/Kg)	0.847742

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.3059	0.9017	0.5681	0.3712	0.2590



3D screen shot	Hot spot position
	

MEASUREMENT 14

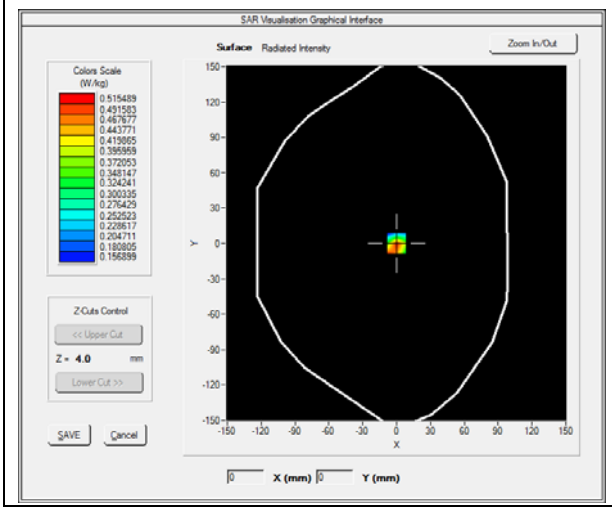
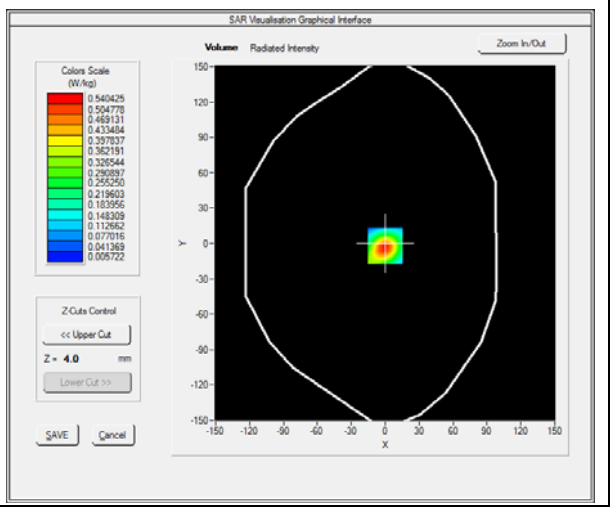
Type: Phone measurement (Complete)
Date of measurement: 07/10/2018
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.55; Calibrated: 06/01/2018

A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=8mm dy=8mm dz=5mm
Phantom	Flat Plane
Device Position	Back
Band	WCDMA1900_RMC
Channels	High
Signal	Duty Cycle 1:1

B. SAR Measurement Results

Frequency (MHz)	1907.600000
Relative Permittivity (real part)	52.420415
Conductivity (S/m)	1.501966
Power Variation (%)	0.706372
Ambient Temperature	21.1
Liquid Temperature	21.3

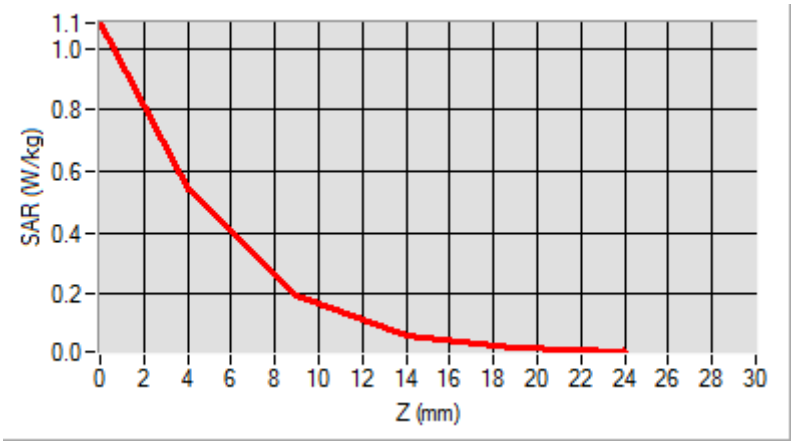
SURFACE SAR	VOLUME SAR
	

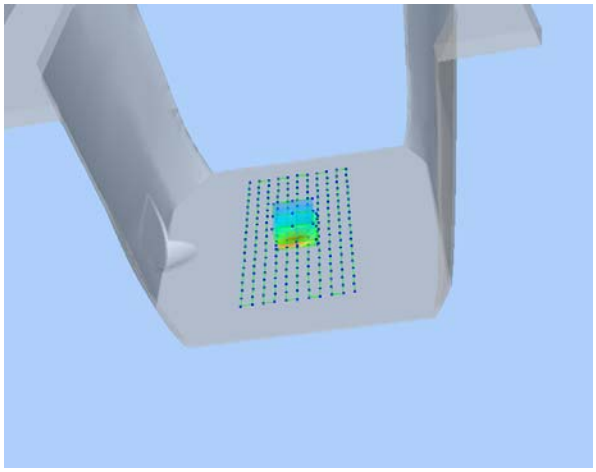
Maximum location: X=0.00, Y=-2.00

SAR Peak: 1.09 W/kg

SAR 10g (W/Kg)	**0.212795**
SAR 1g (W/Kg)	**0.498855**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**1.0825**	**0.5404**	**0.1994**	**0.0688**	**0.0281**



3D screen shot	**Hot spot position**
	

MEASUREMENT 19

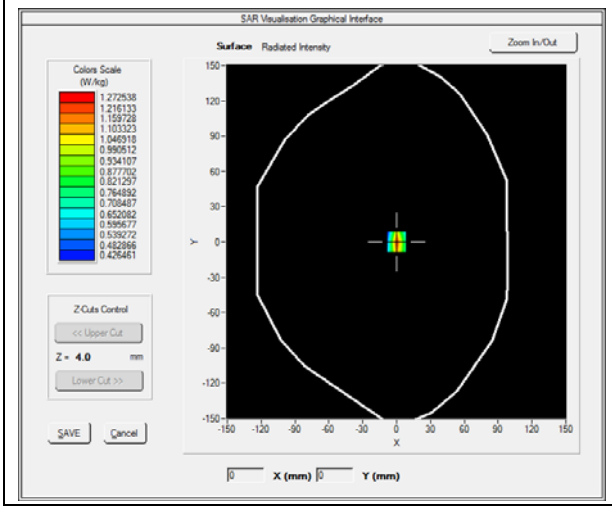
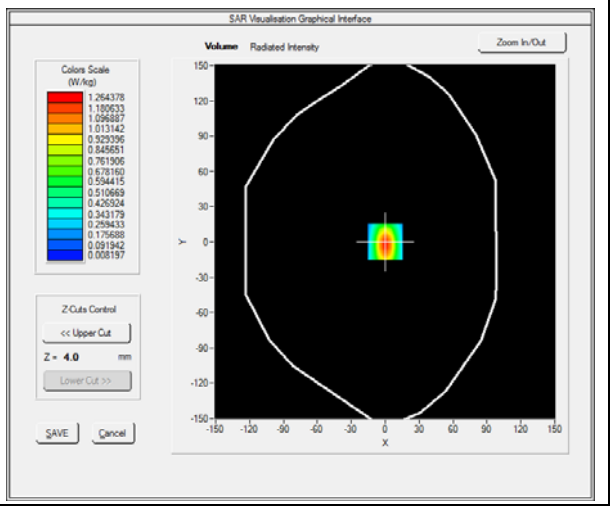
Type: Phone measurement (Complete)
Date of measurement: 07/10/2018
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.06; Calibrated: 06/01/2018

A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=8mm dy=8mm dz=5mm
Phantom	Flat Plane
Device Position	Top
Band	WCDMA1700_RMC
Channels	Middle
Signal	Duty Cycle 1:1

B. SAR Measurement Results

Frequency (MHz)	1740.000000
Relative Permittivity (real part)	51.221241
Conductivity (S/m)	1.460643
Power Variation (%)	0.541872
Ambient Temperature	21.1
Liquid Temperature	21.3

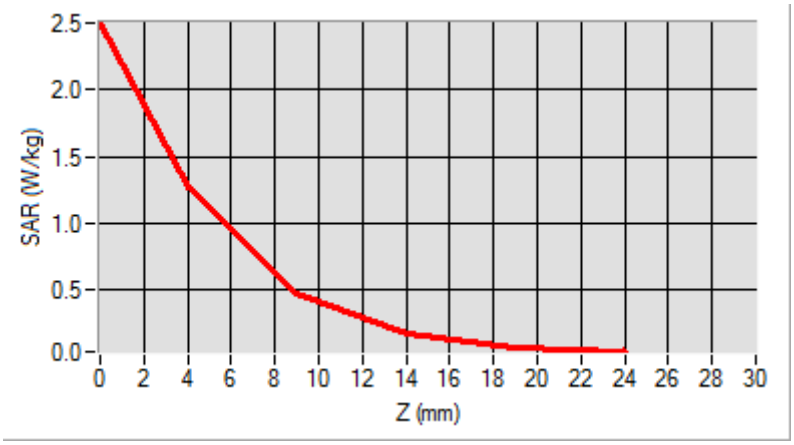
SURFACE SAR	VOLUME SAR
	

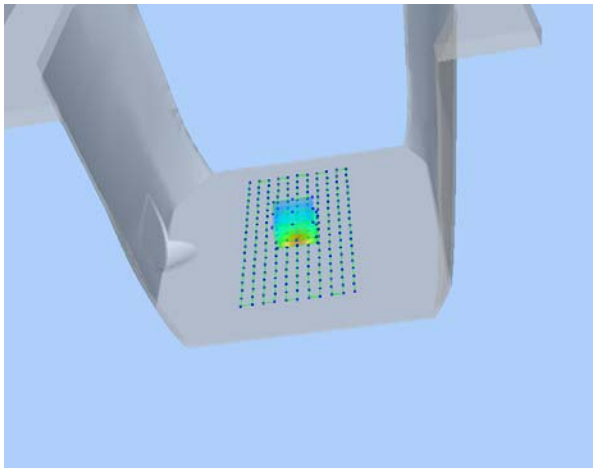
Maximum location: X=0.00, Y=0.00

SAR Peak: 2.50 W/kg

SAR 10g (W/Kg)	**0.494755**
SAR 1g (W/Kg)	**1.155431**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**2.5016**	**1.2644**	**0.4789**	**0.1732**	**0.0753**



3D screen shot	**Hot spot position**
	

MEASUREMENT 22

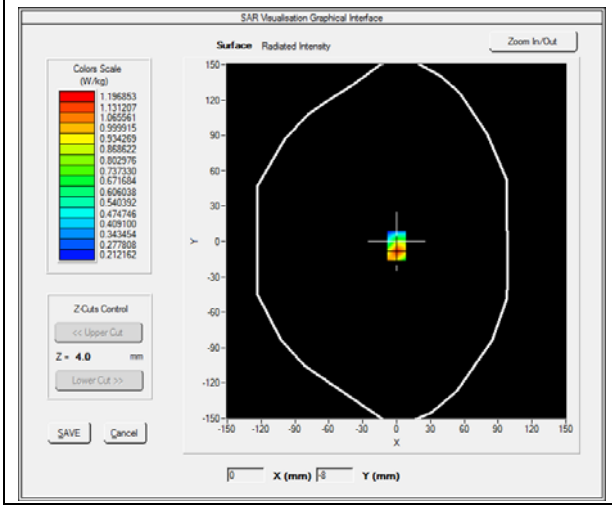
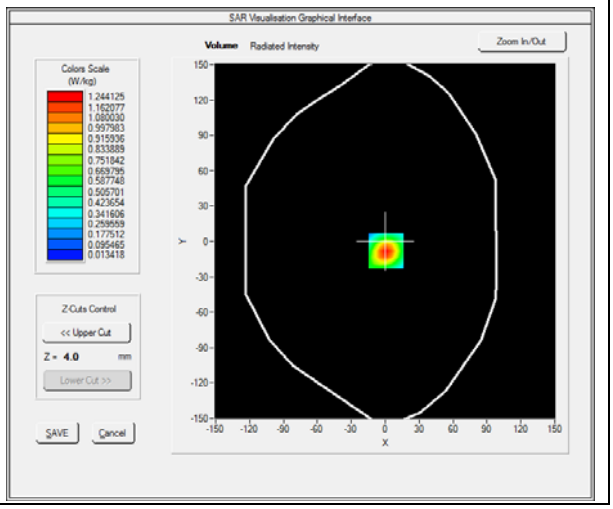
Type: Phone measurement (Complete)
Date of measurement: 07/10/2018
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.55; Calibrated: 06/01/2018

A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=8mm dy=8mm dz=5mm
Phantom	Flat Plane
Device Position	Back
Band	LTE Band 2_RMC
Channels	QPSK, 20MHz, 1RB,Middle
Signal	Duty Cycle 1:1

B. SAR Measurement Results

Frequency (MHz)	1880.000000
Relative Permittivity (real part)	52.420415
Conductivity (S/m)	1.501966
Power Variation (%)	1.523573
Ambient Temperature	21.1
Liquid Temperature	21.3

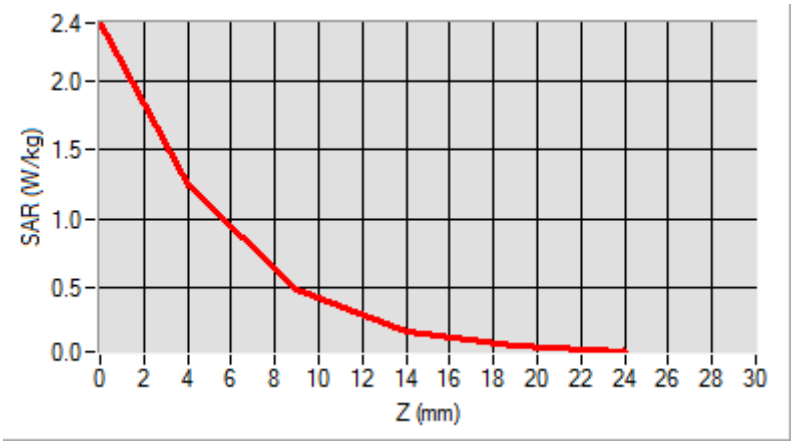
SURFACE SAR	VOLUME SAR
	

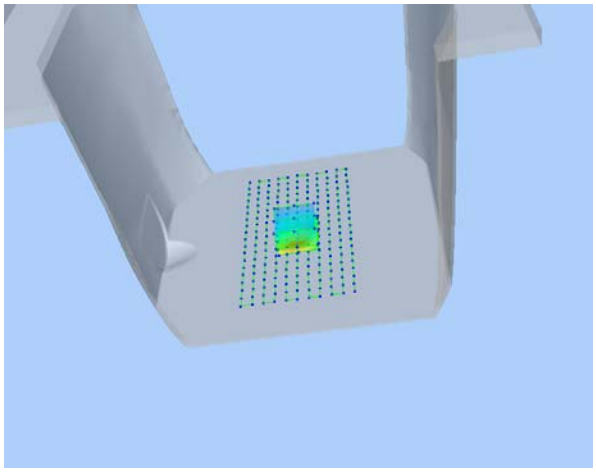
Maximum location: X=1.00, Y=-8.00

SAR Peak: 2.42 W/kg

SAR 10g (W/Kg)	**0.495651**
SAR 1g (W/Kg)	**1.134351**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**2.4237**	**1.2441**	**0.4829**	**0.1773**	**0.0745**



3D screen shot	**Hot spot position**
	

MEASUREMENT 29

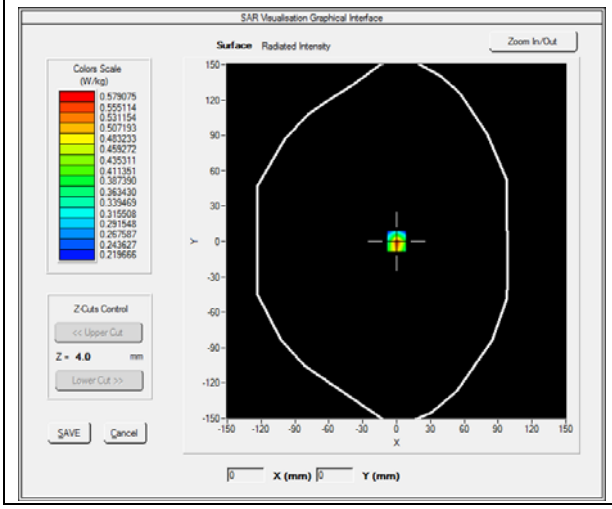
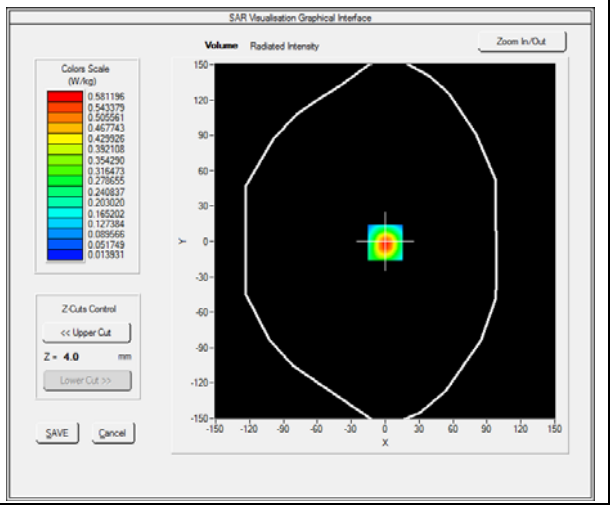
Type: Phone measurement (Complete)
Date of measurement: 07/10/2018
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.06; Calibrated: 06/01/2018

A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=8mm dy=8mm dz=5mm
Phantom	Flat Plane
Device Position	Back
Band	LTE Band 4_RMC
Channels	QPSK, 20MHz, 1RB, Middle
Signal	Duty Cycle 1:1

B. SAR Measurement Results

Frequency (MHz)	1732.500000
Relative Permittivity (real part)	51.221241
Conductivity (S/m)	1.460643
Power Variation (%)	0.858383
Ambient Temperature	21.1
Liquid Temperature	21.2

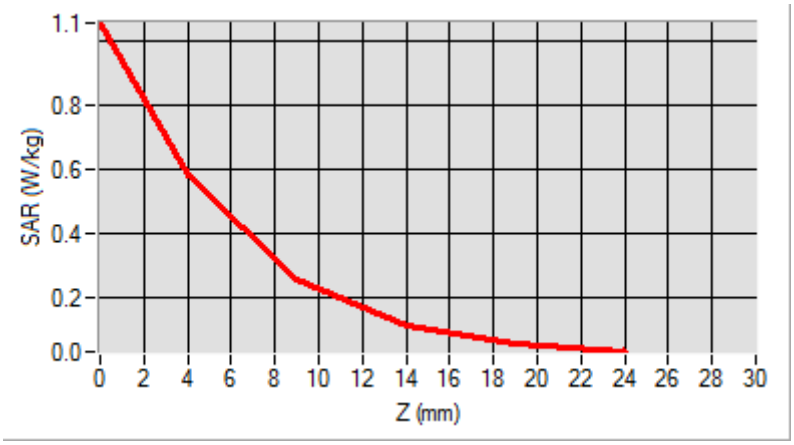
SURFACE SAR	**VOLUME SAR**
	

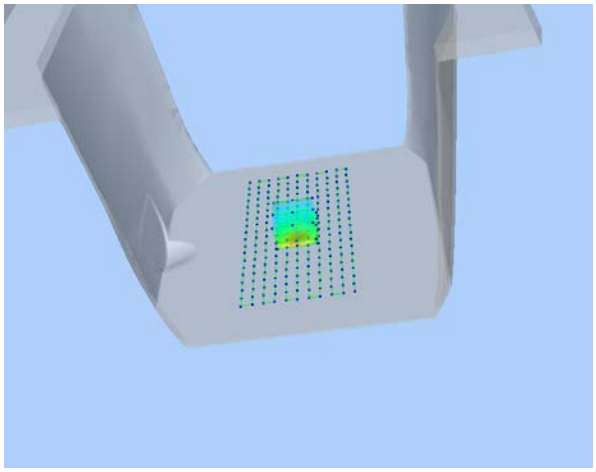
Maximum location: X=0.00, Y=-1.00

SAR Peak: 1.06 W/kg

SAR 10g (W/Kg)	**0.237122**
SAR 1g (W/Kg)	**0.524716**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**1.0554**	**0.5812**	**0.2572**	**0.1135**	**0.0573**



3D screen shot	**Hot spot position**
	

MEASUREMENT 35

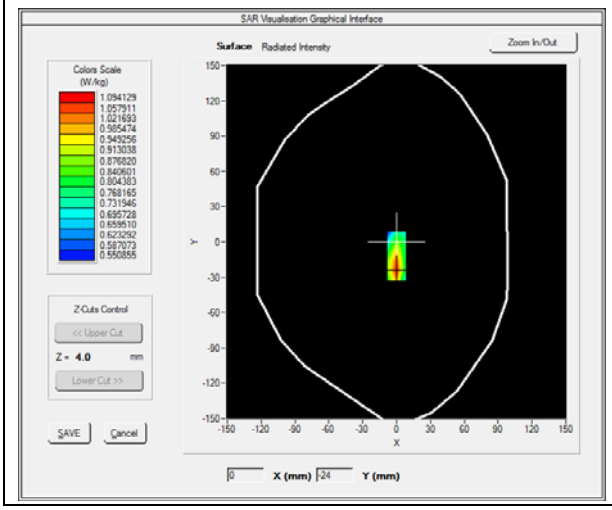
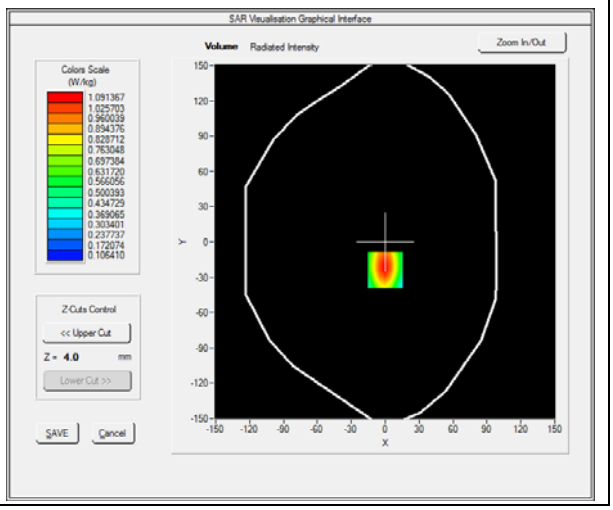
Type: Phone measurement (Complete)
Date of measurement: 07/09/2018
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 7.13; Calibrated: 06/01/2018

A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=8mm dy=8mm dz=5mm
Phantom	Flat Plane
Device Position	Back
Band	LTE Band 5_RMC
Channels	QPSK, 10MHz, 1RB, High
Signal	Duty Cycle 1:1

B. SAR Measurement Results

Frequency (MHz)	844.000000
Relative Permittivity (real part)	54.851214
Conductivity (S/m)	0.951454
Power Variation (%)	3.672346
Ambient Temperature	21.1
Liquid Temperature	21.2

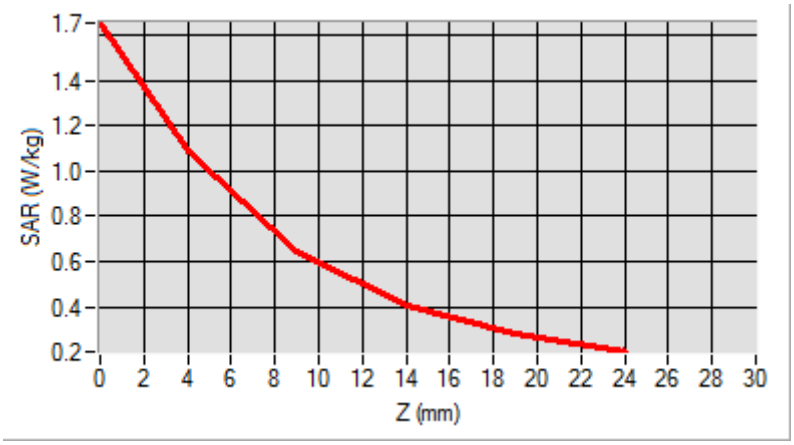
SURFACE SAR	VOLUME SAR
	

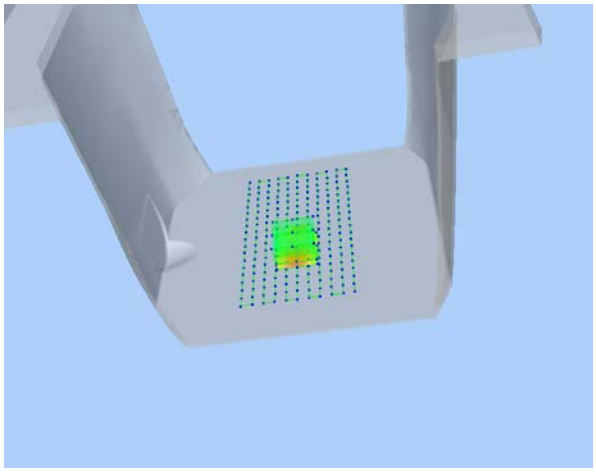
Maximum location: X=0.00, Y=-24.00

SAR Peak: 1.66 W/kg

SAR 10g (W/Kg)	**0.608961**
SAR 1g (W/Kg)	**1.024320**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**1.6560**	**1.0914**	**0.6473**	**0.4036**	**0.2774**



3D screen shot	**Hot spot position**
	

MEASUREMENT 44

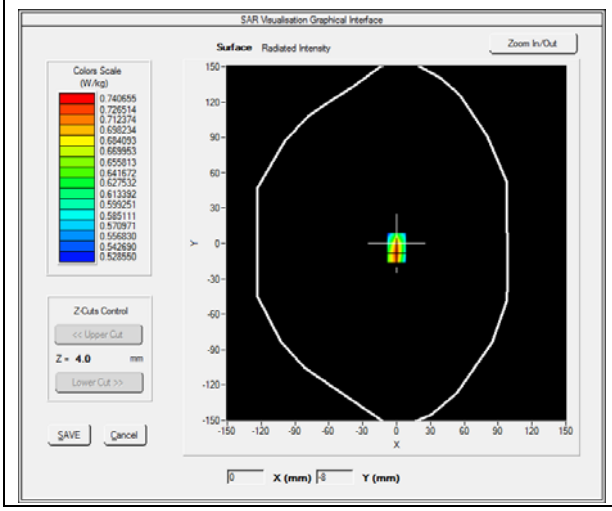
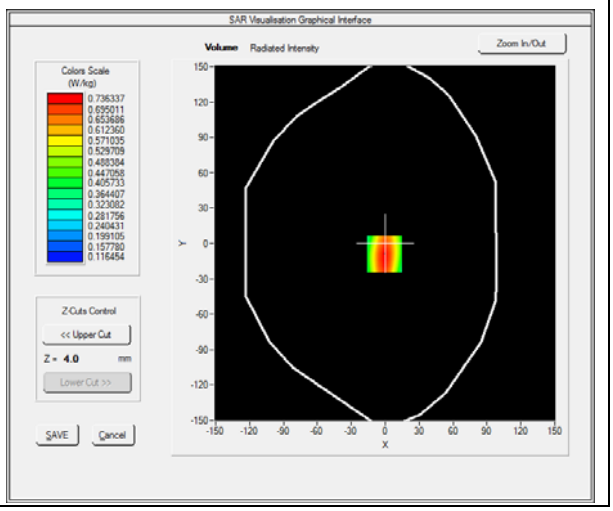
Type: Phone measurement (Complete)
Date of measurement: 07/09/2018
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 7.28; Calibrated: 06/01/2018

A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=8mm dy=8mm dz=5mm
Phantom	Flat Plane
Device Position	Back
Band	LTE Band 17_RMC
Channels	QPSK, 10MHz, 1RB, High
Signal	Duty Cycle 1:1

B. SAR Measurement Results

Frequency (MHz)	711.000000
Relative Permittivity (real part)	54.964739
Conductivity (S/m)	0.931048
Power Variation (%)	0.954431
Ambient Temperature	21.1
Liquid Temperature	21.3

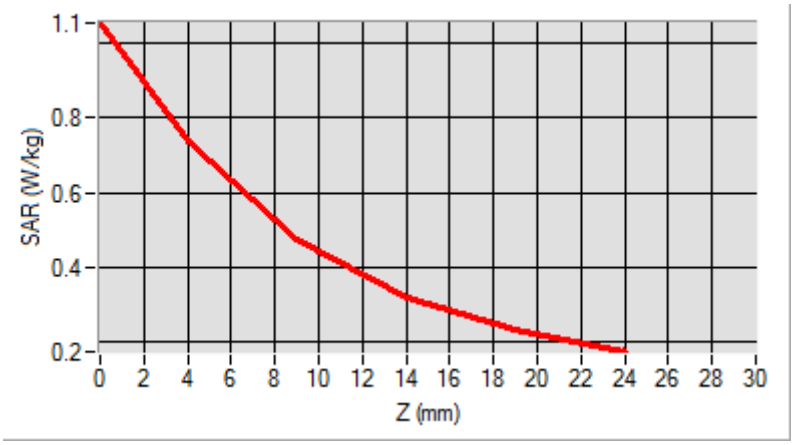
SURFACE SAR	VOLUME SAR
	

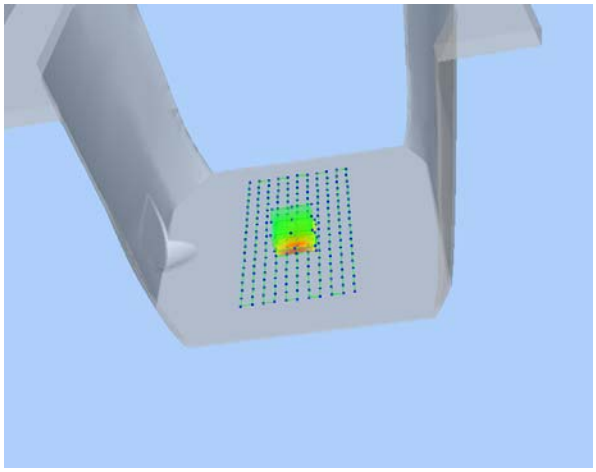
Maximum location: X=-1.00, Y=-9.00

SAR Peak: 1.06 W/kg

SAR 10g (W/Kg)	**0.464208**
SAR 1g (W/Kg)	**0.733270**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**1.0520**	**0.7363**	**0.4748**	**0.3203**	**0.2326**



3D screen shot	**Hot spot position**
	

MEASUREMENT 49

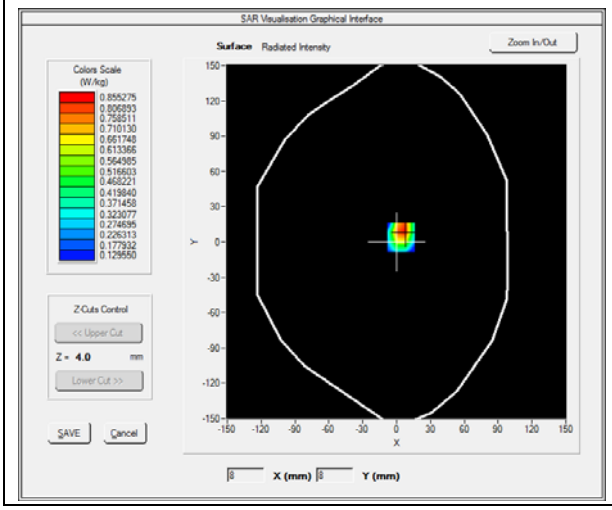
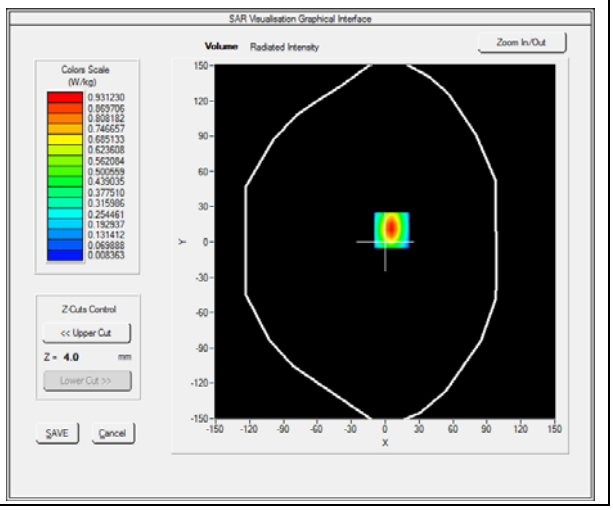
Type: Phone measurement (Complete)
Date of measurement: 07/11/2018
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 5.80; Calibrated: 06/01/2018

A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=8mm dy=8mm dz=5mm
Phantom	Flat Plane
Device Position	Top
Band	LTE Band 40_RMC
Channels	QPSK, 10MHz, 1RB, Middle
Signal	Duty Cycle 1:1

B. SAR Measurement Results

Frequency (MHz)	2310.000000
Relative Permittivity (real part)	52.010212
Conductivity (S/m)	1.910255
Power Variation (%)	2.492743
Ambient Temperature	21.1
Liquid Temperature	21.2

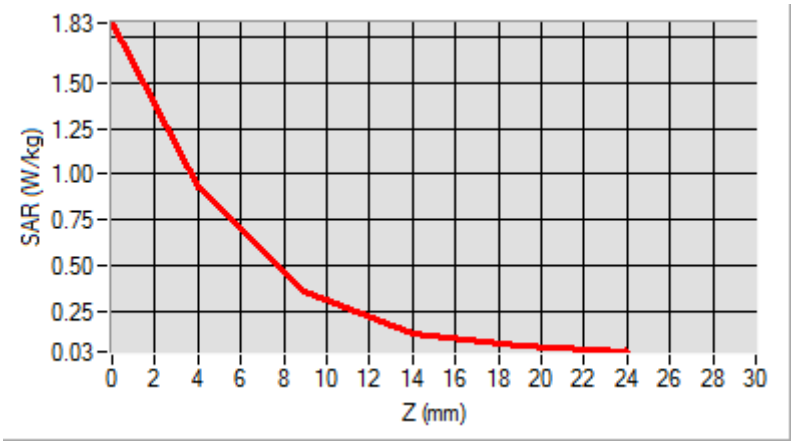
SURFACE SAR	VOLUME SAR
	

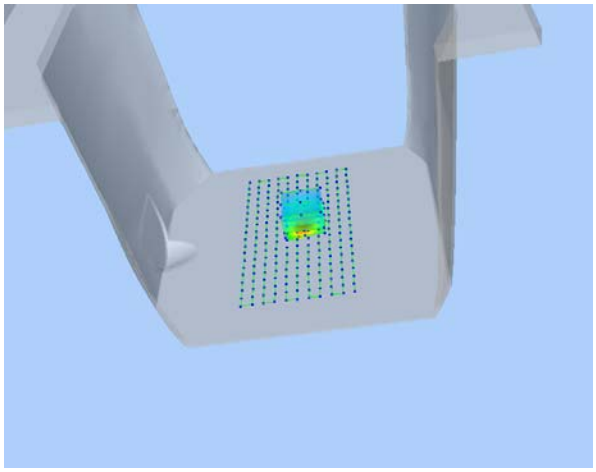
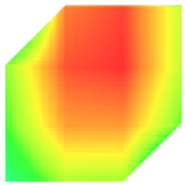
Maximum location: X=6.00, Y=10.00

SAR Peak: 1.83 W/kg

SAR 10g (W/Kg)	0.358814
SAR 1g (W/Kg)	0.848635

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.8269	0.9312	0.3570	0.1293	0.0541



3D screen shot	Hot spot position
	

MEASUREMENT 53

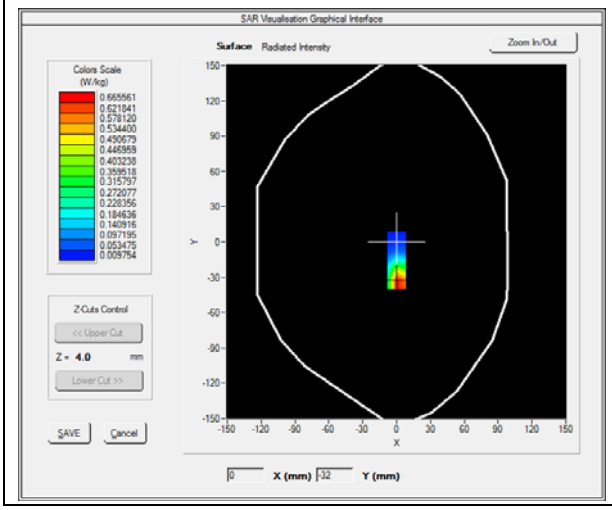
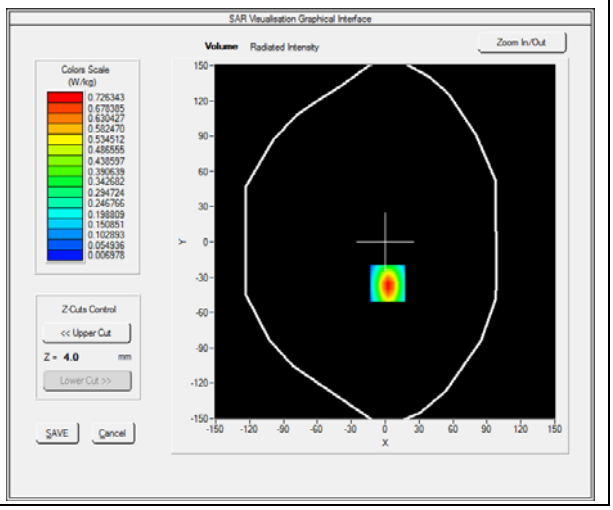
Type: Phone measurement (Complete)
Date of measurement: 07/11/2018
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 5.80; Calibrated: 06/01/2018

A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=8mm dy=8mm dz=5mm
Phantom	Flat Plane
Device Position	Top
Band	LTE Band 40_RMC
Channels	QPSK, 10MHz, 1RB, Middle
Signal	Duty Cycle 1:1

B. SAR Measurement Results

Frequency (MHz)	2355.000000
Relative Permittivity (real part)	52.010212
Conductivity (S/m)	1.910255
Power Variation (%)	2.017811
Ambient Temperature	21.1
Liquid Temperature	21.2

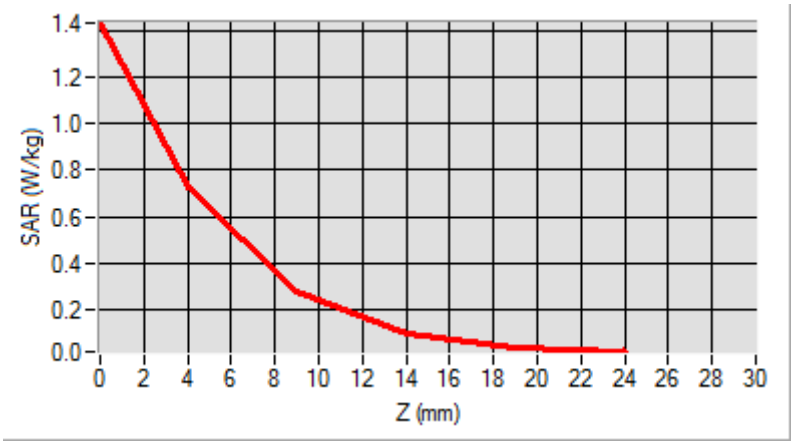
SURFACE SAR	VOLUME SAR
	

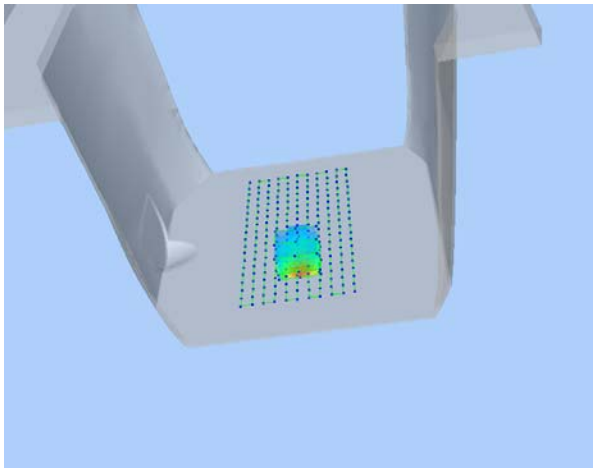
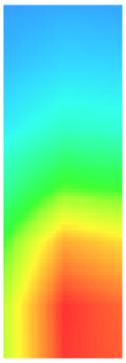
Maximum location: X=2.00, Y=-35.00

SAR Peak: 1.44 W/kg

SAR 10g (W/Kg)	**0.280588**
SAR 1g (W/Kg)	**0.666874**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**1.4318**	**0.7263**	**0.2761**	**0.0990**	**0.0414**



3D screen shot	**Hot spot position**
	

MEASUREMENT 57

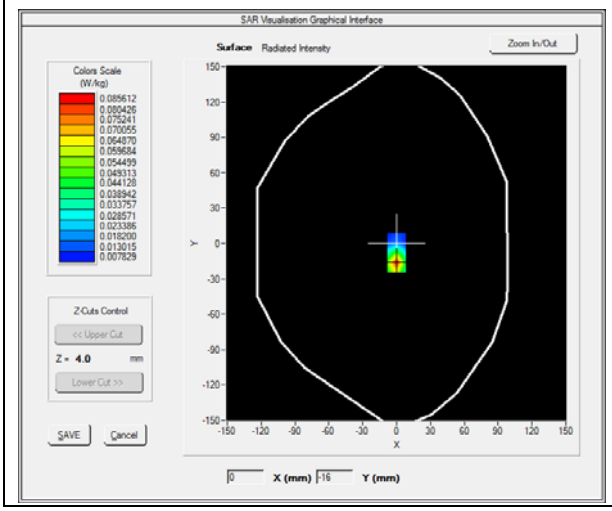
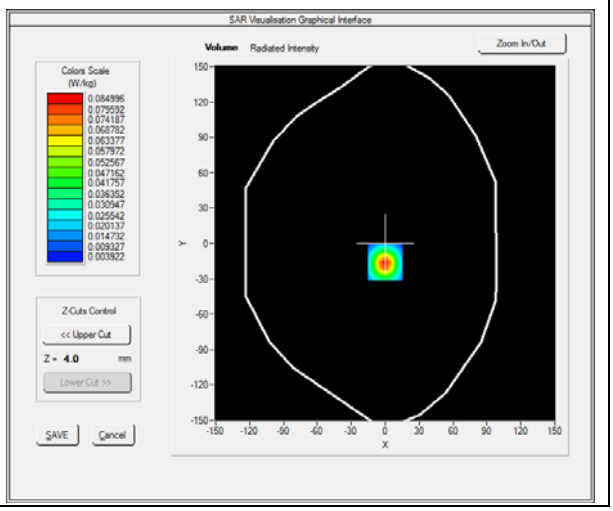
Type: Phone measurement (Complete)
Date of measurement: 07/11/2018
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 5.80; Calibrated: 06/01/2018

A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=8mm dy=8mm dz=5mm
Phantom	Flat Plane
Device Position	Top
Band	WiFi_802.11b
Channels	Low
Signal	Duty Cycle 1:1

B. SAR Measurement Results

Frequency (MHz)	2412.000000
Relative Permittivity (real part)	52.010212
Conductivity (S/m)	1.910255
Power Variation (%)	0.462345
Ambient Temperature	21.1
Liquid Temperature	21.2

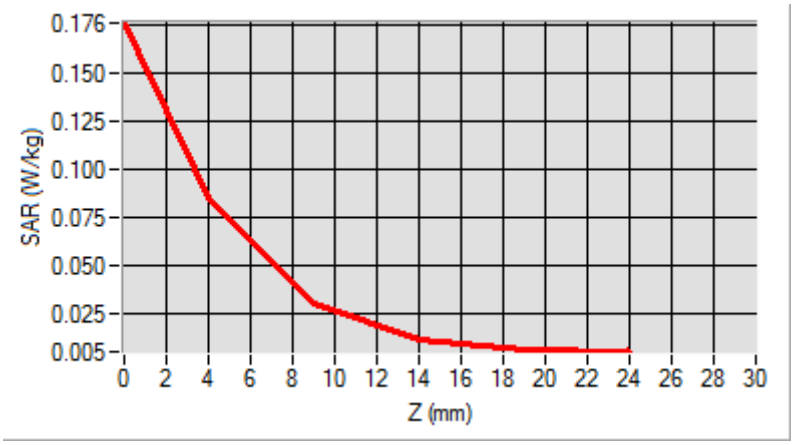
SURFACE SAR	VOLUME SAR
	

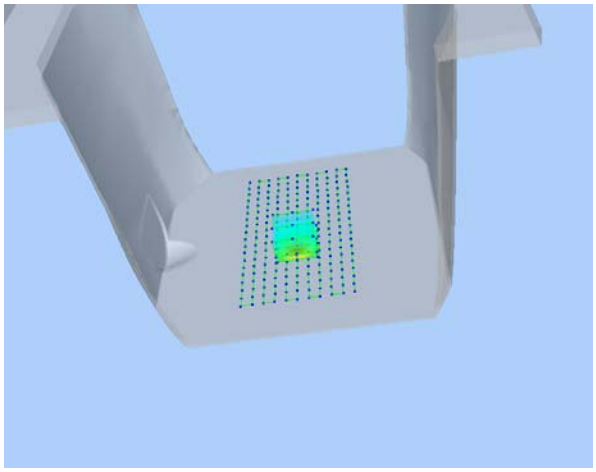
Maximum location: X=0.00, Y=-16.00

SAR Peak: 0.18 W/kg

SAR 10g (W/Kg)	**0.031035**
SAR 1g (W/Kg)	**0.076199**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.1758**	**0.0850**	**0.0302**	**0.0111**	**0.0061**



3D screen shot	**Hot spot position**
	

MEASUREMENT 60

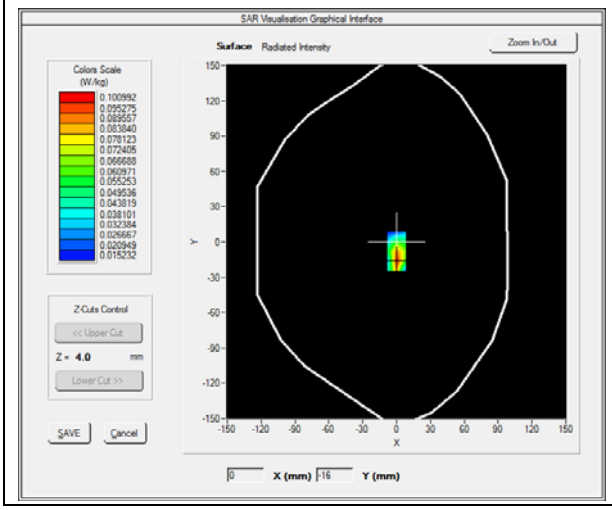
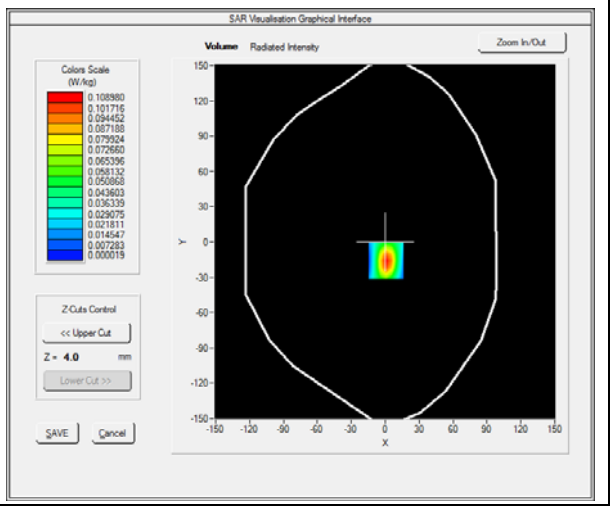
Type: Phone measurement (Complete)
Date of measurement: 07/11/2018
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE2 - SN 08/16 EPGO298; ConvF: 2.39; Calibrated: 2017/09/18

A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=4mm dy=4mm dz=2mm
Phantom	Flat Plane
Device Position	Top
Band	WiFi(5.2G)_802.11a
Channels	High
Signal	Duty Cycle: 1:1

B. SAR Measurement Results

Frequency (MHz)	5240.000000
Relative Permittivity (real part)	48.501939
Conductivity (S/m)	5.161487
Power Variation (%)	0.542660
Ambient Temperature	21.1
Liquid Temperature	21.2

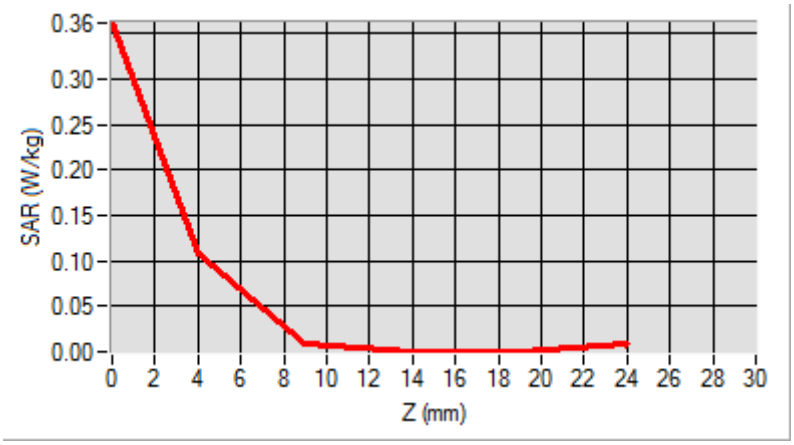
SURFACE SAR	VOLUME SAR
	

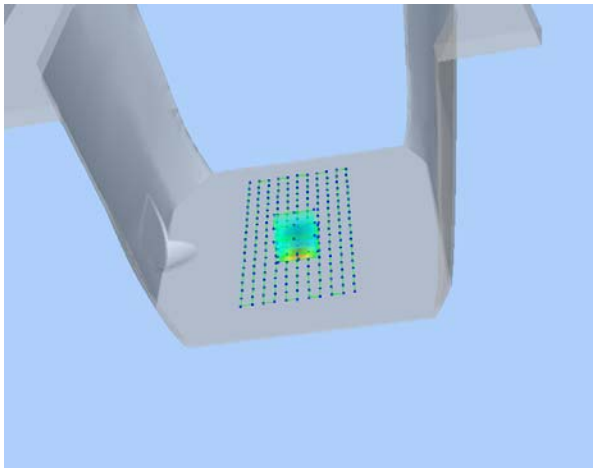
Maximum location: X=1.00, Y=-16.00

SAR Peak: 0.35 W/kg

SAR 10g (W/Kg)	**0.044374**
SAR 1g (W/Kg)	**0.122351**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.3619**	**0.1090**	**0.0091**	**0.0004**	**0.0006**



3D screen shot	**Hot spot position**
	

MEASUREMENT 61

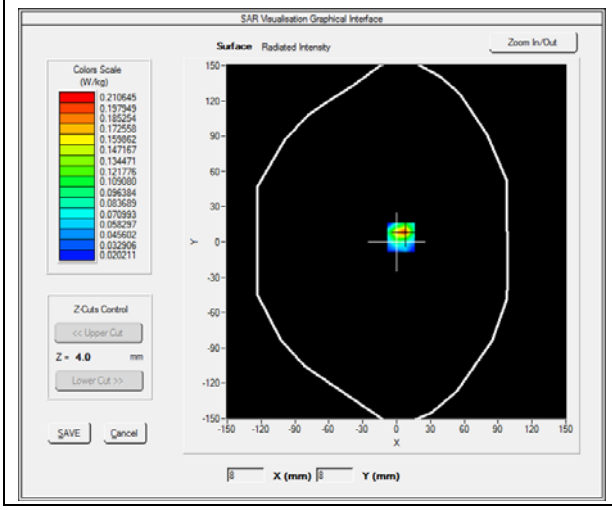
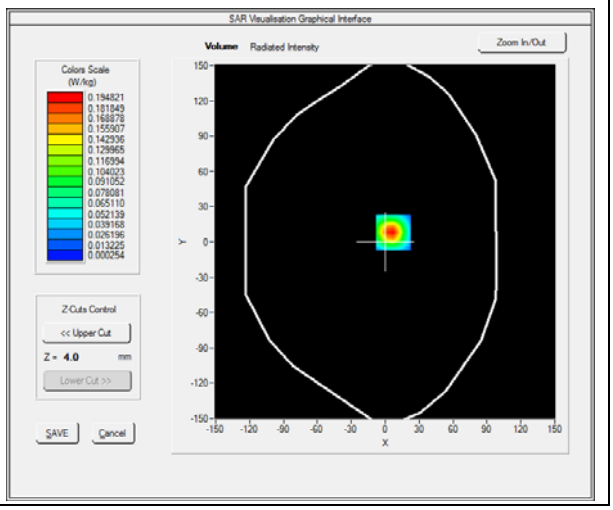
Type: Phone measurement (Complete)
Date of measurement: 07/11/2018
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE2 - SN 08/16 EPGO298; ConvF: 2.50; Calibrated: 2017/09/18

A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=4mm dy=4mm dz=2mm
Phantom	Flat Plane
Device Position	Back
Band	WiFi(5.8G)_802.11a
Channels	High
Signal	Duty Cycle: 1:1

B. SAR Measurement Results

Frequency (MHz)	5825.000000
Relative Permittivity (real part)	48.620132
Conductivity (S/m)	5.230213
Power Variation (%)	0.554211
Ambient Temperature	21.1
Liquid Temperature	21.2

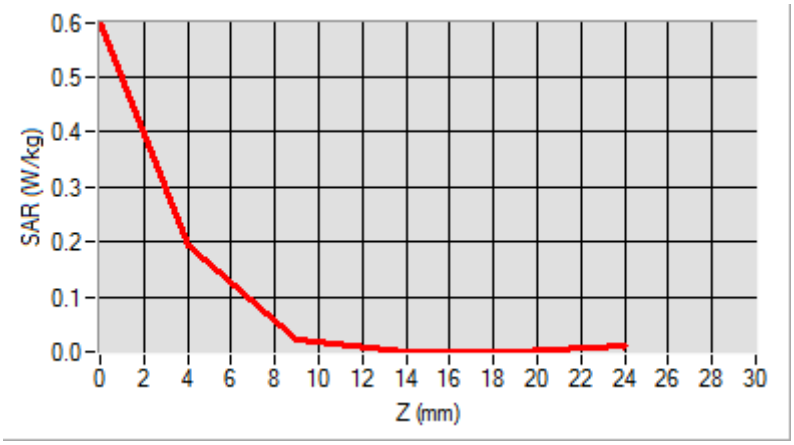
SURFACE SAR	VOLUME SAR
	

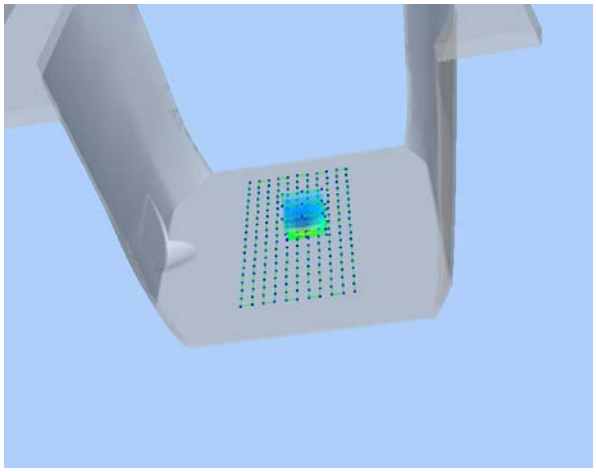
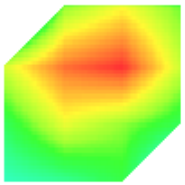
Maximum location: X=7.00, Y=8.00

SAR Peak: 0.60 W/kg

SAR 10g (W/Kg)	**0.078008**
SAR 1g (W/Kg)	**0.215580**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.5978**	**0.1948**	**0.0228**	**0.0004**	**0.0006**



3D screen shot	**Hot spot position**
	

Annex C. EUT Photos

EUT View Front

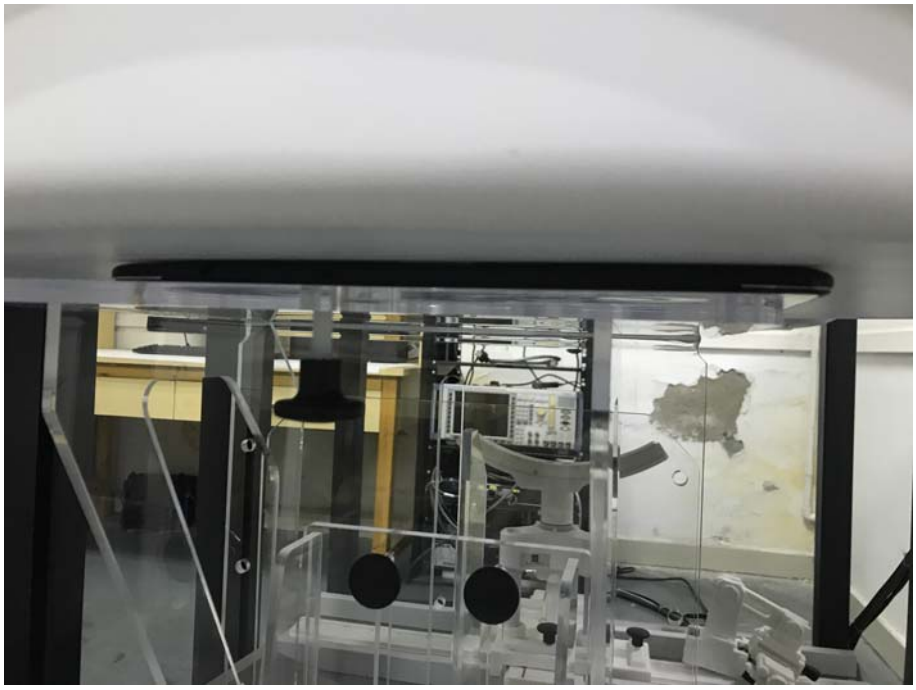
EUT View Back

Antenna View

Annex D. Test Setup Photos

Body Exposure Conditions

Body Back



Body Left

Body Right

Body Top

Annex E. Calibration Certificate

Please refer to the Exhibit for the Calibration Certificate

******* END OF REPORT *******