FCC SAR
Measurement and Test Report

For

SZZT ELECTRONICS CO.,LTD

SZZT Industrial Park,NO.3TongguanRoad,Guangming New District,

Shenzhen, Guangdong, China

FCC ID: 2AL7RKS8223

FCC Rules:	FCC Part 2.1093 ANSI / IEEE C95.1 :2005 ANSI / IEEE C95.3 :2002
Product Description:	Smart wireless pos
Tested Model:	KS8223
Report No.:	STR17048102H
Tested Date:	2017-05-15 to 2017-05-22
Issued Date:	2017-05-23
Tested By:	Lucy Wei / Engineer
Reviewed By:	Silin Chen / EMC Manager
Approved & Authorized By:	Jandy So / PSQ Manager
Prepared By:	

Shenzhen SEM.Test Technology Co., Ltd.
1/F, Building A, Hongwei Industrial Park, Liuxian 2nd Road,
Bao'an District, Shenzhen, P.R.C.（518101）
Tel.: +86-755-33663308 Fax.: +86-755-33663309 Website: www.semtest.com.cn

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:	SZZT ELECTRONICS CO.,LTD
Address of applicant:	SZZT Industrial Park,NO.3TongguanRoad,Guangming New District, Shenzhen, Guangdong ,China
Manufacturer:	SZZT ELECTRONICS CO.,LTD
Address of manufacturer:	SZZT Industrial Park,NO.3TongguanRoad,Guangming New District, Shenzhen, Guangdong, China

General Description of EUT	
Product Name:	Smart wireless pos
Brand Name:	SZZT
Model No.:	KS8223
Adding Model(s):	/
Hardware version:	KS8223_MB_V2.1.2
Software version:	V1.0.0
Rated Voltage:	DC 3.7V by battery
Battery Capacity:	5000mAh
The EUT Main board support GSM850/PCS1900,WCDMA Band 2/5, LTE Band 2/5 Smart wireless pos . The Smart wireless pos is not support GSM voice mode. It is equipped with GPRS/EDGE class 12 for GSM850 /PCS1900, GPS,WIFI, Bluetooth and NFC functions. For more information see the following datasheet	
Note: The test data is gathered from a production sample, provided by the manufacturer.	

Technical Characteristics of EUT	
2G	
Support Networks:	GPRS, EDGE
Support Band:	GSM850/PCS1900
Uplink Frequency:	GPRS/EDGE 850: 824~849MHz GPRS/EDGE 1900: 1850~1910MHz
Downlink Frequency:	GPRS/EDGE 850: 869~894MHz GPRS/EDGE 1900: 1930~1990MHz
Max RF Output Power:	GSM850: 32.39dBm, GSM1900: 28.74dBm EDGE850: 24.81dBm, EDGE1900: 24.52dBm
Type of Modulation:	GMSK, 8PSK
Type of Antenna:	Integral Antenna
Antenna Gain:	1.0dBi
GPRS/EDGE Class:	Class 12
3G	
Support Networks:	WCDMA, HSDPA, HSUPA
Support Band:	WCDMA Band 2, WCDMA Band 5
Uplink Frequency:	WCDMA Band 2: 1850~1910MHz WCDMA Band 5: 824~849MHz
Downlink Frequency:	WCDMA Band 2: 1930~1990MHz WCDMA Band 5: 869~894MHz
RF Output Power:	WCDMA Band 2: 22.33dBm, WCDMA Band 5: 22.21dBm
Type of Modulation:	BPSK
Antenna Type:	Integral Antenna
Antenna Gain:	1.0dBi
WIFI	
Support Standards:	802.11b, 802.11g, 802.11n
Frequency Range:	2412-2462MHz for 802.11b/g/n(HT20) 2422-2452MHz for 802.11n(HT40)
AV Output Power:	15.0dBm (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:	1.0dBi
Bluetooth	
Bluetooth Version:	V4.0
Frequency Range:	2402-2480MHz
AV Output Power:	4.972dBm (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:	1.0dBi
4G	
Support Networks:	FDD-LTE
Support Band:	FDD-LTE Band 2,5
Uplink Frequency:	FDD-LTE Band 2: Tx: 1850-1910MHz, FDD-LTE Band 5: Tx: 824-849MHz,
Downlink Frequency:	FDD-LTE Band 2: Rx: 1930-1990MHz, FDD-LTE Band 5: Rx: 869-894MHz,
RF Output Power:	FDD-LTE Band 2: 24.53dBm, FDD-LTE Band 5: 25.73dBm
Type of Modulation:	QPSK, 16QAM
Antenna Type:	Integral Antenna
Antenna Gain:	2.0dBi

1.2 Test Standards

The following report is prepared on behalf of the SZZT ELECTRONICS CO.,LTD in accordance with FCC 47 CFR Part 2.1093, ANSI/IEEE C95.1-2005, IEEE 1528-2013 and KDB 865664 D01 v01r04 and KDB 865664 D02 v01r02.

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.: 934118**
  Shenzhen SEM.Test Technology Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files and the Registration is 934118.

- **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.

- **CNAS Registration No.: L4062**
  Shenzhen SEM.Test Technology Co., Ltd. is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L4062. All measurement facilities used to collect the measurement data are located at 1/F, Building A, Hongwei Industrial Park, Liuxian 2nd Road, Bao'an District, Shenzhen, P.R.C (518101)

2. Summary of Test Results

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

Body SAR(5mm Gap)

Frequency Band	Maximum SAR_{1g} (W/kg)	SAR_{1g} Limit (W/kg)
GSM	**1.107**	1.6
WCDMA	0.448	1.6
LTE	0.795	1.6
WLAN 2.4GHz	0.251	1.6
Simultaneous Transmission	1.315	1.6

Hand SAR(0mm Gap)

Frequency Band	Maximum SAR_{10g} (W/kg)	SAR_{10g} Limit (W/kg)
GSM	**2.455**	4.0
WCDMA	0.594	4.0
LTE	1.021	4.0
WLAN 2.4GHz	0.304	4.0
Simultaneous Transmission	**2.611**	4.0

Remark:

The highest reported SAR values for body, and Hand and simultaneous transmission conditions are ***1.107W/kg, 2.455W/kg, and 2.611W/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, 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

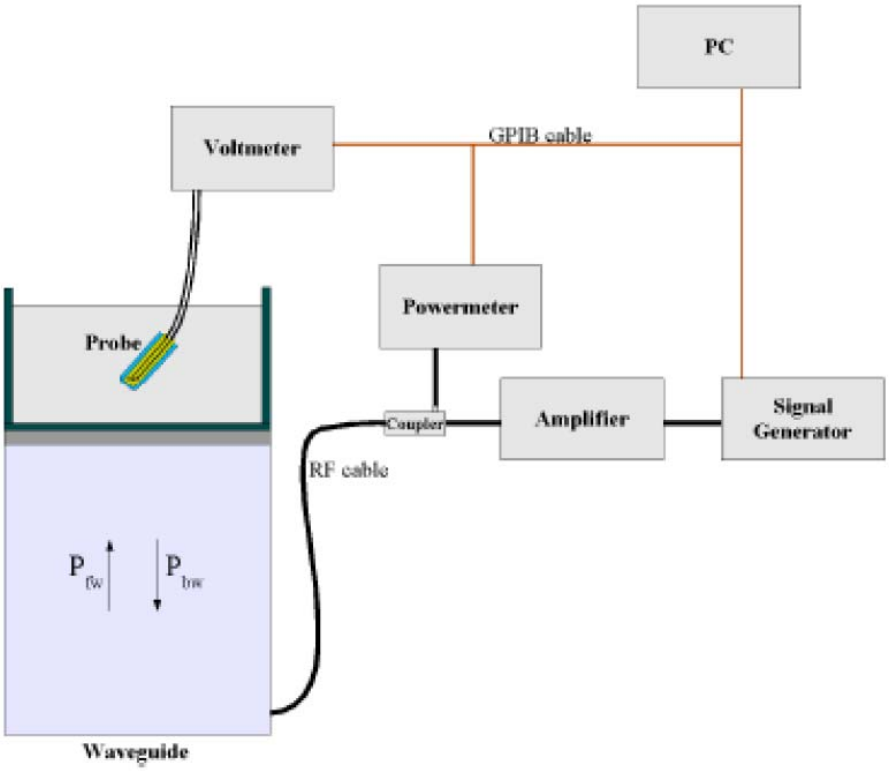
For the measurements the Specific Dosimetric E-Field Probe SSE5 SN 09/13 EP168 with following specifications is used

- 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.

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

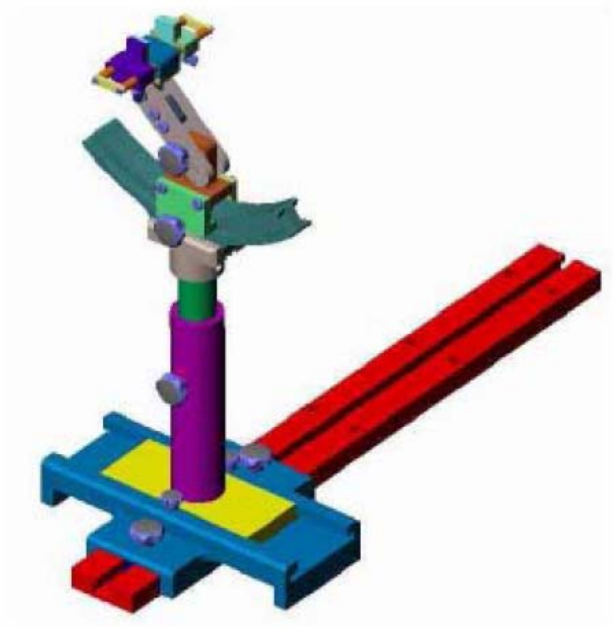
Where:
σ = simulated tissue conductivity,
ρ = Tissue density (1.25 g/cm3 for brain tissue)

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

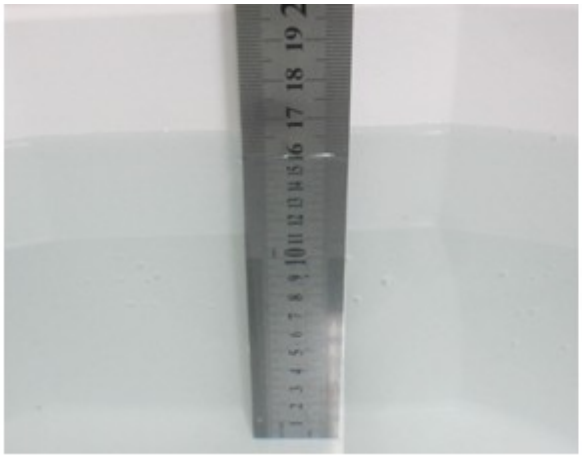
4.6 Test Equipment List

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
E-Field Probe	SATIMO	SSE5	SN 09/13 EP168	2016-06-01	2017-05-31
835MHz Dipole	SATIMO	SID835	SN 47/12 DIP 0G835-204	2017-03-16	2018-03-15
1900MHz Dipole	SATIMO	SID1900	SN 47/12 DIP 1G900-207	2017-03-16	2018-03-15
2450MHz Dipole	SATIMO	SID2450	SN 13/15 DIP 2G450-364	2017-03-16	2018-03-15
Dielectric Probe Kit	SATIMO	SCLMP	SN 47/12 OCPG49	2017-03-16	2018-03-15
SAM Phantom	SATIMO	SAM	SN/ 47/12 SAM95	N/A	N/A
MULTIMETER	KEITHLEY	Keithley 2000	4006367	2016-06-04	2017-06-03
Signal Generator	Rohde & Schwarz	SMR20	100047	2016-06-04	2017-06-03
Universal Tester	Rohde & Schwarz	CMU200	112012	2016-06-04	2017-06-03
Universal Tester	Rohde & Schwarz	CMW500	148650	2016-06-04	2017-06-03
Network Analyzer	HP	8753C	2901A00831	2016-06-04	2017-06-03
Directional Couplers	Agilent	778D	20160	2016-06-04	2017-06-03

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						
835	50.8	0.9	48.1	0.1	0.1	0
1900	70.2	0.4	0	0	0	29.4
2450	68.6	0.1	0	0	0	31.3
2600	64.5	0.1	0	0	0	35.4

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
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
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 (%)		
835	21.2	0.95	0.97	-2.06	54.85	55.20	-0.63	±5	2017-05-15
1900	21.3	1.50	1.52	-1.32	52.42	53.30	-1.65	±5	2017-05-15
2450	21.3	1.91	1.95	-2.05	52.01	52.70	-1.31	±5	2017-05-15

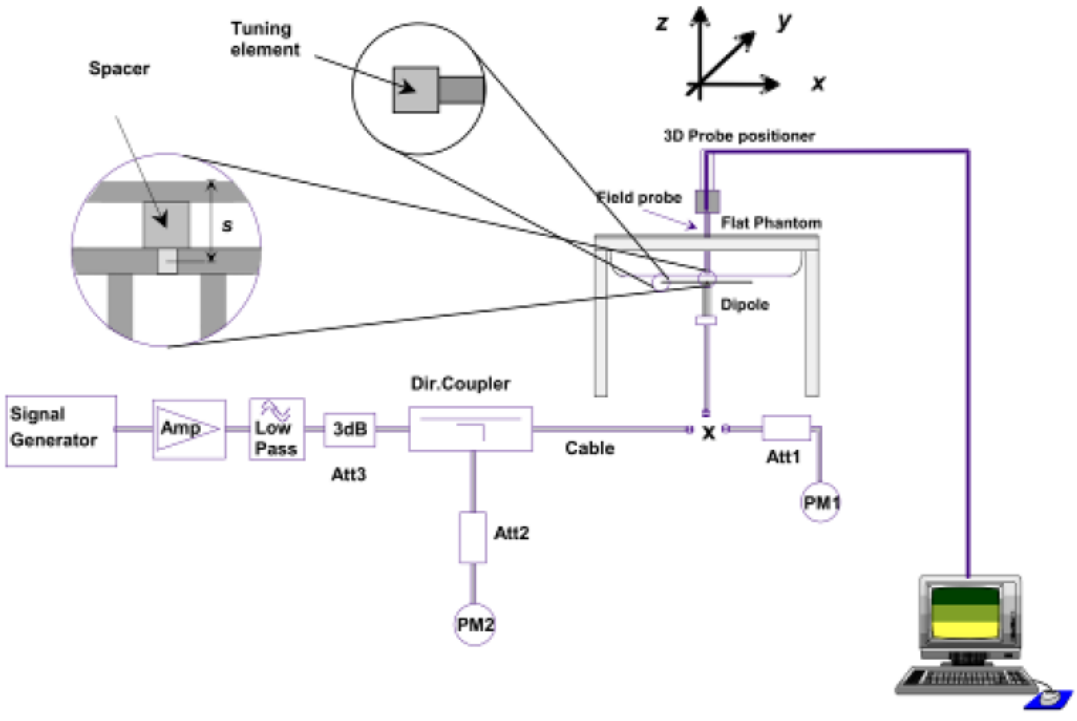
6. SAR Measurement Evaluation

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 1900 MHz. 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.

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				
835	9.36	2.35	9.4	0.43
1900	39.01	9.78	39.12	0.28
2450	50.33	12.59	50.36	0.06

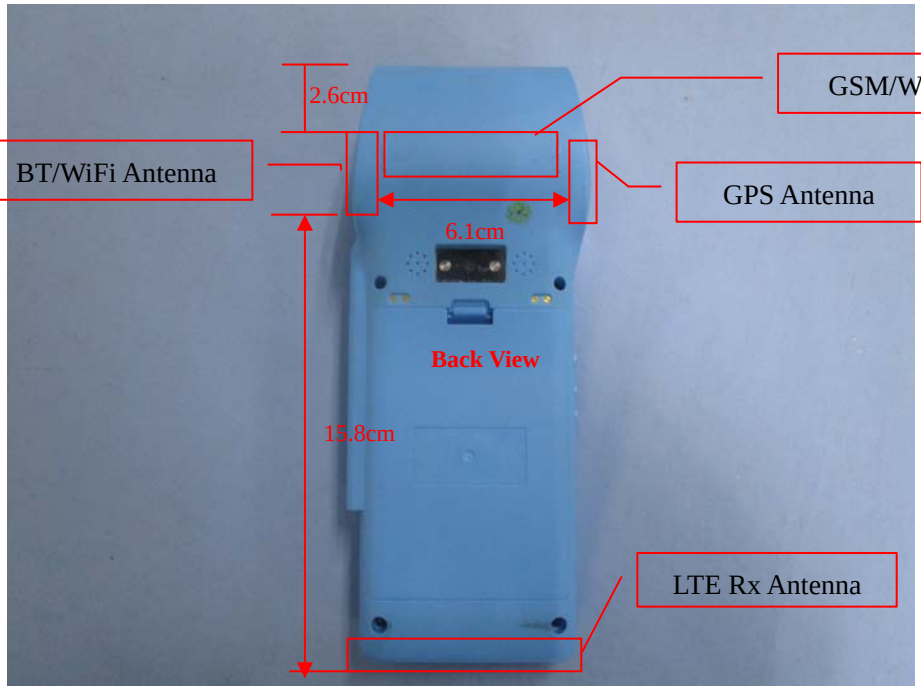
Please refer to Annex A for the plots of system performance check.

7. EUT Testing Position

7.1 EUT Antenna Position

Top Side

Right Side



Left Side

Bottom Side

7.2 EUT Testing Position

Body /Hand 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: 5mm						
Antennas	**Front**	**Back**	**Right Side**	**Left Side**	**Top Side**	**Bottom Side**
WWAN	Yes	Yes	Yes	Yes	No	No
WLAN	Yes	Yes	Yes	No	No	No

Hand SAR tests, Test distance: 0mm						
Antennas	**Front**	**Back**	**Right Side**	**Left Side**	**Top Side**	**Bottom Side**
WWAN	Yes	Yes	Yes	Yes	No	No
WLAN	Yes	Yes	Yes	No	No	No

Remark:

1. Referring to 447498 D01 v06 , when the overall device length and width are >= 9cm*5cm, the test separation distances of body and hand is 5 mm and 0mm *respectively.* SAR must be measured for all sides and surfaces with a transmitting antenna located within 25mm from that surface or edge.

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**			**Tune-up power (dBm)**	**PCS1900**			**Tune-up power (dBm)**
Channel	**128**	**190**	**251**		**512**	**661**	**810**	
Frequency (MHz)	**824.2**	**836.6**	**848.8**		**1850.2**	**1880**	**1909.8**	
GSM	/	/	/	/	/	/	/	/
GPRS (1 slot)	32.22	32.34	32.39	32.5	27.82	28.15	28.74	29.0
GPRS (2 slots)	31.96	32.08	32.19	32.5	27.52	27.8	28.39	29.0
GPRS (3 slots)	31.77	31.9	32	32.0	27.67	28.01	28.56	29.0
GPRS (4 slots)	31.67	31.79	31.74	32.0	27.41	27.68	28.22	28.5
EDGE (1 slot)	24.81	24.79	24.71	25.0	24.52	24.38	24.46	25.0
EDGE (2 slots)	24.64	24.66	24.59	25.0	24.21	24.14	24.27	24.5
EDGE (3 slots)	24.5	24.47	24.45	24.5	24.07	23.95	23.99	24.5
EDGE (4 slots)	24.36	24.33	24.27	24.5	23.89	23.72	23.81	24.0

GSM - Source-Based Time-Average Power (dBm)								
Band	**GSM850**			**Tune-up power (dBm)**	**PCS1900**			**Tune-up power (dBm)**
Channel	**128**	**190**	**251**		**512**	**661**	**810**	
Frequency (MHz)	**824.2**	**836.6**	**848.8**		**1850.2**	**1880**	**1909.8**	
GSM	/	/	/	/	/	/	/	/
GPRS (1 slot)	23.22	23.34	23.39	23.5	18.82	19.15	19.74	20.0
GPRS (2 slots)	25.96	26.08	26.19	26.5	21.52	21.80	22.39	22.5
GPRS (3 slots)	27.52	27.65	27.75	28.0	23.42	23.76	24.31	24.5
GPRS (4 slots)	28.67	28.79	28.74	29.0	24.41	24.68	25.22	25.5
EDGE (1 slot)	15.81	15.79	15.71	16.0	15.52	15.38	15.46	16.0
EDGE (2 slots)	18.64	18.66	18.59	19.0	18.21	18.14	18.27	18.5
EDGE (3 slots)	20.25	20.22	20.20	20.5	19.82	19.70	19.74	20.0
EDGE (4 slots)	21.36	21.33	21.27	21.5	20.89	20.72	20.81	21.0
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 Duty cycle factor = 9 dB for 1 Tx slot, 6 dB for 2 Tx slots, 4.25 dB for 3 Tx slots, 3 dB for 4 Tx slots								

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**	**Tune-up power (dBm)**	**4132**	**4182**	**4233**	**Tune-up power (dBm)**
Frequency (MHz)	**1852.4**	**1880.0**	**1907.6**		**826.4**	**836.6**	**846.6**	
RMC 12.2k	22.33	21.88	22.08	22.5	22.11	22.21	22.02	22.5
HSDPA Subtest-1	21.38	20.96	21.49	21.5	20.91	21.14	20.97	21.5
HSDPA Subtest-2	21.31	20.95	21.46	21.5	20.89	21.12	20.82	21.5
HSDPA Subtest-3	21.27	20.91	21.42	21.5	20.87	21.10	20.81	21.5
HSDPA Subtest-4	21.19	20.88	21.39	21.5	20.82	21.05	20.79	21.5
HSUPA Subtest-1	20.55	20.55	20.52	21.5	20.42	20.65	20.55	21.5
HSUPA Subtest-2	20.51	20.49	20.51	21.5	20.42	20.59	20.54	21.5
HSUPA Subtest-3	20.47	20.45	20.49	21.5	20.40	20.55	20.49	21.5
HSUPA Subtest-4	20.44	20.39	20.48	21.5	20.39	20.48	20.45	21.5
HSUPA Subtest-5	20.39	20.34	20.45	21.5	20.40	20.41	20.43	21.5

Remark:

1. For Body SAR, per KDB 941225 D01 v03, 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.

FDD-LTE Band 2:

Channel Bandwidth: 1.4 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	**Tune-up power (dBm)**
		Size	Offset		
QPSK	LCH	1	0	23.08	25.0
		1	3	23.27	25.0
		1	5	22.92	25.0
		3	0	23.00	25.0
		3	2	23.03	25.0
		3	3	22.98	25.0
		6	0	22.07	25.0
	MCH	1	0	23.87	25.0
		1	3	23.77	25.0
		1	5	23.73	25.0
		3	0	22.75	25.0
		3	2	22.74	25.0
		3	3	22.84	25.0
		6	0	22.79	25.0
	HCH	1	0	24.30	25.0
		1	3	24.33	25.0
		1	5	24.24	25.0
		3	0	22.35	25.0
		3	2	22.29	25.0
		3	3	22.51	25.0
		6	0	23.39	25.0
16QAM	LCH	1	0	22.51	25.0
		1	3	23.13	25.0
		1	5	22.94	25.0
		3	0	22.27	25.0
		3	2	22.26	25.0
		3	3	22.21	25.0
		6	0	21.09	25.0
	MCH	1	0	23.33	25.0
		1	3	23.38	25.0
		1	5	23.37	25.0
		3	0	22.71	25.0
		3	2	22.74	25.0
		3	3	22.61	25.0
		6	0	21.73	25.0
	HCH	1	0	23.72	25.0

		1	3	23.96	25.0
		1	5	23.95	25.0
		3	0	22.22	25.0
		3	2	22.21	25.0
		3	3	22.26	25.0
		6	0	22.72	25.0

Channel Bandwidth: 3 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	**Tune-up power (dBm)**
		Size	Offset		
QPSK	LCH	1	0	23.22	25.0
		1	7	23.15	25.0
		1	14	23.33	25.0
		8	0	22.10	25.0
		8	4	22.11	25.0
		8	7	22.12	25.0
		15	0	22.10	25.0
	MCH	1	0	23.77	25.0
		1	7	23.65	25.0
		1	14	24.05	25.0
		8	0	22.90	25.0
		8	4	22.84	25.0
		8	7	22.89	25.0
		15	0	22.90	25.0
	HCH	1	0	24.27	25.0
		1	7	24.08	25.0
		1	14	24.43	25.0
		8	0	22.28	25.0
		8	4	22.33	25.0
		8	7	22.25	25.0
		15	0	22.34	25.0
16QAM	LCH	1	0	22.99	25.0
		1	7	22.81	25.0
		1	14	22.93	25.0
		8	0	22.18	25.0
		8	4	22.10	25.0
		8	7	22.11	25.0
		15	0	22.10	25.0
	MCH	1	0	23.63	25.0
		1	7	23.60	25.0
		1	14	23.74	25.0
		8	0	22.01	25.0

		8	4	21.97	25.0
		8	7	22.00	25.0
		15	0	21.84	25.0
	HCH	1	0	23.81	25.0
		1	7	23.55	25.0
		1	14	24.09	25.0
		8	0	22.39	25.0
		8	4	22.30	25.0
		8	7	22.30	25.0
		15	0	22.24	25.0

Channel Bandwidth: 5 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	**Tune-up power (dBm)**
		Size	Offset		
QPSK	LCH	1	0	22.93	25.0
		1	12	23.22	25.0
		1	24	23.24	25.0
		12	0	22.21	25.0
		12	6	22.09	25.0
		12	13	22.31	25.0
		25	0	22.20	25.0
	MCH	1	0	23.74	25.0
		1	12	22.69	25.0
		1	24	24.02	25.0
		12	0	22.91	25.0
		12	6	22.84	25.0
		12	13	22.07	25.0
		25	0	21.91	25.0
	HCH	1	0	24.08	25.0
		1	12	24.21	25.0
		1	24	24.16	25.0
		12	0	22.34	25.0
		12	6	22.15	25.0
		12	13	22.32	25.0
		25	0	22.39	25.0
16QAM	LCH	1	0	22.63	25.0
		1	12	22.14	25.0
		1	24	22.92	25.0
		12	0	21.27	25.0
		12	6	21.20	25.0
		12	13	21.50	25.0
		25	0	21.28	25.0

	MCH	1	0	23.30	25.0
		1	12	23.32	25.0
		1	24	22.67	25.0
		12	0	21.89	25.0
		12	6	21.91	25.0
		12	13	21.16	25.0
		25	0	21.96	25.0
	HCH	1	0	23.22	25.0
		1	12	22.82	25.0
		1	24	23.06	25.0
		12	0	22.31	25.0
		12	6	22.28	25.0
		12	13	22.48	25.0
		25	0	22.65	25.0

Channel Bandwidth: 10 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	**Tune-up power (dBm)**
		Size	Offset		
QPSK	LCH	1	0	23.23	25.0
		1	24	23.01	25.0
		1	49	23.20	25.0
		25	0	22.23	25.0
		25	12	22.35	25.0
		25	25	22.26	25.0
		50	0	22.10	25.0
	MCH	1	0	23.80	25.0
		1	24	23.69	25.0
		1	49	24.07	25.0
		25	0	22.91	25.0
		25	12	22.82	25.0
		25	25	22.10	25.0
		50	0	21.94	25.0
	HCH	1	0	23.81	25.0
		1	24	24.04	25.0
		1	49	24.21	25.0
		25	0	22.20	25.0
		25	12	22.26	25.0
		25	25	22.31	25.0
		50	0	22.27	25.0
16QAM	LCH	1	0	22.77	25.0
		1	24	22.89	25.0
		1	49	22.79	25.0

		25	0	22.00	25.0
		25	12	21.97	25.0
		25	25	21.06	25.0
		50	0	21.17	25.0
	MCH	1	0	22.36	25.0
		1	24	22.53	25.0
		1	49	23.13	25.0
		25	0	21.90	25.0
		25	12	21.70	25.0
		25	25	21.99	25.0
		50	0	21.99	25.0
	HCH	1	0	23.50	25.0
		1	24	23.38	25.0
		1	49	23.84	25.0
		25	0	22.23	25.0
		25	12	22.21	25.0
		25	25	22.26	25.0
		50	0	22.15	25.0

Channel Bandwidth: 15 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	**Tune-up power (dBm)**
		Size	Offset		
QPSK	LCH	1	0	22.40	25.0
		1	37	22.10	25.0
		1	74	22.51	25.0
		37	0	21.21	25.0
		37	18	21.19	25.0
		37	38	21.34	25.0
		75	0	21.31	25.0
	MCH	1	0	22.83	25.0
		1	37	22.57	25.0
		1	74	23.30	25.0
		37	0	21.78	25.0
		37	18	21.72	25.0
		37	38	22.01	25.0
		75	0	21.82	25.0
	HCH	1	0	23.71	25.0
		1	37	24.14	25.0
		1	74	24.03	25.0
		37	0	22.89	25.0
		37	18	22.13	25.0
		37	38	22.29	25.0

		75	0	22.03	25.0
16QAM	LCH	1	0	21.47	25.0
		1	37	21.49	25.0
		1	74	22.16	25.0
		37	0	21.26	25.0
		37	18	21.21	25.0
		37	38	21.20	25.0
		75	0	21.18	25.0
	MCH	1	0	22.22	25.0
		1	37	22.00	25.0
		1	74	23.21	25.0
		37	0	21.70	25.0
		37	18	21.62	25.0
		37	38	21.86	25.0
		75	0	21.80	25.0
	HCH	1	0	23.58	25.0
		1	37	23.87	25.0
		1	74	24.21	25.0
		37	0	21.98	25.0
		37	18	21.94	25.0
		37	38	22.12	25.0
		75	0	21.99	25.0

Channel Bandwidth: 20 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	**Tune-up power (dBm)**
		Size	Offset		
QPSK	LCH	1	0	22.49	25.0
		1	49	22.33	25.0
		1	99	22.82	25.0
		50	0	21.28	25.0
		50	25	21.32	25.0
		50	50	21.44	25.0
		100	0	21.29	25.0
	MCH	1	0	22.81	25.0
		1	49	22.97	25.0
		1	99	23.54	25.0
		50	0	21.71	25.0
		50	25	21.79	25.0
		50	50	22.05	25.0
		100	0	21.87	25.0
	HCH	1	0	23.54	25.0
		1	49	23.97	25.0

		1	99	24.53	25.0
		50	0	22.74	25.0
		50	25	23.01	25.0
		50	50	23.29	25.0
		100	0	22.98	25.0
16QAM	LCH	1	0	21.10	25.0
		1	49	21.85	25.0
		1	99	21.91	25.0
		50	0	21.15	25.0
		50	25	21.23	25.0
		50	50	21.42	25.0
		100	0	21.30	25.0
	MCH	1	0	22.14	25.0
		1	49	21.50	25.0
		1	99	22.05	25.0
		50	0	21.75	25.0
		50	25	21.77	25.0
		50	50	21.94	25.0
		100	0	21.81	25.0
	HCH	1	0	22.59	25.0
		1	49	22.95	25.0
		1	99	23.79	25.0
		50	0	21.62	25.0
		50	25	21.97	25.0
		50	50	22.33	25.0
		100	0	21.93	25.0

FDD-LTE Band 5:

Channel Bandwidth: 1.4 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	**Tune-up power (dBm)**
		Size	Offset		
QPSK	LCH	1	0	24.46	26.0
		1	3	24.85	26.0
		1	5	24.76	26.0
		3	0	24.48	26.0
		3	2	24.73	26.0
		3	3	24.70	26.0
		6	0	23.58	26.0
	MCH	1	0	24.88	26.0
		1	3	24.71	26.0
		1	5	24.70	26.0
		3	0	24.83	26.0
		3	2	24.82	26.0
		3	3	24.86	26.0
		6	0	24.19	26.0
	HCH	1	0	25.50	26.0
		1	3	25.35	26.0
		1	5	25.37	26.0
		3	0	24.49	26.0
		3	2	24.38	26.0
		3	3	24.34	26.0
		6	0	23.45	26.0
16QAM	LCH	1	0	24.58	26.0
		1	3	24.63	26.0
		1	5	24.50	26.0
		3	0	23.96	26.0
		3	2	23.97	26.0
		3	3	23.95	26.0
		6	0	22.46	26.0
	MCH	1	0	24.44	26.0
		1	3	24.37	26.0
		1	5	24.42	26.0
		3	0	23.98	26.0
		3	2	24.00	26.0
		3	3	23.97	26.0
		6	0	22.85	26.0
	HCH	1	0	25.24	26.0

		1	3	25.37	26.0
		1	5	25.20	26.0
		3	0	24.78	26.0
		3	2	24.64	26.0
		3	3	24.71	26.0
		6	0	23.67	26.0

Channel Bandwidth: 3 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	**Tune-up power (dBm)**
		Size	Offset		
QPSK	LCH	1	0	24.53	26.0
		1	7	24.60	26.0
		1	14	25.03	26.0
		8	0	23.83	26.0
		8	4	23.85	26.0
		8	7	23.91	26.0
		15	0	23.80	26.0
	MCH	1	0	25.13	26.0
		1	7	24.79	26.0
		1	14	24.86	26.0
		8	0	24.11	26.0
		8	4	23.87	26.0
		8	7	24.00	26.0
		15	0	24.03	26.0
	HCH	1	0	25.46	26.0
		1	7	25.37	26.0
		1	14	25.16	26.0
		8	0	24.53	26.0
		8	4	24.50	26.0
		8	7	24.34	26.0
		15	0	24.44	26.0
16QAM	LCH	1	0	24.55	26.0
		1	7	24.41	26.0
		1	14	24.64	26.0
		8	0	22.94	26.0
		8	4	22.91	26.0
		8	7	22.93	26.0
		15	0	22.74	26.0
	MCH	1	0	24.99	26.0
		1	7	24.34	26.0
		1	14	24.25	26.0
		8	0	23.20	26.0

		8	4	22.96	26.0
		8	7	22.90	26.0
		15	0	22.94	26.0
	HCH	1	0	25.15	26.0
		1	7	25.30	26.0
		1	14	25.05	26.0
		8	0	23.95	26.0
		8	4	23.96	26.0
		8	7	23.83	26.0
		15	0	23.34	26.0

Channel Bandwidth: 5 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	**Tune-up power (dBm)**
		Size	Offset		
QPSK	LCH	1	0	24.64	26.0
		1	12	24.60	26.0
		1	24	25.08	26.0
		12	0	23.77	26.0
		12	6	23.80	26.0
		12	13	24.10	26.0
		25	0	23.77	26.0
	MCH	1	0	24.96	26.0
		1	12	24.61	26.0
		1	24	24.72	26.0
		12	0	24.04	26.0
		12	6	23.92	26.0
		12	13	24.04	26.0
		25	0	23.96	26.0
	HCH	1	0	25.30	26.0
		1	12	25.72	26.0
		1	24	25.38	26.0
		12	0	24.43	26.0
		12	6	24.56	26.0
		12	13	24.57	26.0
		25	0	24.44	26.0
16QAM	LCH	1	0	24.10	26.0
		1	12	24.20	26.0
		1	24	24.74	26.0
		12	0	22.67	26.0
		12	6	22.61	26.0
		12	13	23.14	26.0
		25	0	22.82	26.0

	MCH	1	0	24.53	26.0
		1	12	24.09	26.0
		1	24	23.98	26.0
		12	0	23.31	26.0
		12	6	23.06	26.0
		12	13	22.96	26.0
		25	0	23.09	26.0
	HCH	1	0	24.93	26.0
		1	12	25.15	26.0
		1	24	24.87	26.0
		12	0	23.52	26.0
		12	6	23.73	26.0
		12	13	23.71	26.0
		25	0	23.53	26.0

Channel Bandwidth: 10 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	**Tune-up power (dBm)**
		Size	Offset		
QPSK	LCH	1	0	24.62	26.0
		1	24	25.11	26.0
		1	49	25.14	26.0
		25	0	23.84	26.0
		25	12	24.12	26.0
		25	25	24.24	26.0
		50	0	23.94	26.0
	MCH	1	0	24.86	26.0
		1	24	24.52	26.0
		1	49	25.05	26.0
		25	0	24.22	26.0
		25	12	23.94	26.0
		25	25	24.04	26.0
		50	0	24.11	26.0
	HCH	1	0	25.12	26.0
		1	24	25.73	26.0
		1	49	25.73	26.0
		25	0	24.25	26.0
		25	12	24.66	26.0
		25	25	24.97	26.0
		50	0	24.52	26.0
16QAM	LCH	1	0	24.06	26.0
		1	24	24.96	26.0
		1	49	25.10	26.0

		25	0	22.75	26.0
		25	12	22.93	26.0
		25	25	23.11	26.0
		50	0	22.96	26.0
	MCH	1	0	24.92	26.0
		1	24	24.23	26.0
		1	49	24.27	26.0
		25	0	23.17	26.0
		25	12	22.85	26.0
		25	25	22.90	26.0
		50	0	23.17	26.0
	HCH	1	0	24.51	26.0
		1	24	25.70	26.0
		1	49	25.64	26.0
		25	0	23.10	26.0
		25	12	23.51	26.0
		25	25	23.61	26.0
		50	0	23.38	26.0

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 - Maximum Average Power				
Test Mode	**Data Rate**	**Channel**	**Frequency (MHz)**	**Average Power (dBm)**
802.11b	11Mbps	CH 01	2412	11.49
		CH 06	2437	15.0
		CH 11	2462	11.12
802.11g	54Mbps	CH 01	2412	11.66
		CH 06	2437	14.76
		CH 11	2462	11.19
802.11n (20MHz)	MCS7	CH 01	2412	11.26
		CH 06	2437	14.96
		CH 11	2462	11.44
802.11n (40MHz)	MCS7	CH 03	2422	9.53
		CH 06	2437	9.95
		CH 09	2452	10.8

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.

Bluetooth - Maximum Average Power		
Test Mode	**Data Rate**	**Average Power(dBm)**
GFSK	1Mbps	4.24
Pi/4 QDPSK	2Mbps	4.654
8DPSK	3Mbps	4.972

Bluetooth - Maximum Average Power				
Test Mode	**Data Rate**	**Channel**	**Frequency (MHz)**	**Average Power (dBm)**
BLE	1Mbps	CH 00	2402	0.288
		CH 19	2440	1.018
		CH 39	2480	-2.742

Remark:

Bluetooth maximum output power is 4.972dBm, and Tune-Up output power is 5.0dBm. 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
5.0	3.16	5	2.441	0.99	3

The exclusion thresholds is 0.99< 3, therefore, the RF exposure evaluation is not required.

9.2 Test Results for Standalone SAR Test

Body SAR

GSM850 – Body SAR Test (Gap: 5mm)									
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	190	836.6	31.79	32.0	1.0495	0.3366	0.3533
2.	GPRS_4TX	Front Side	190	836.6	31.79	32.0	1.0495	0.5791	0.6078
3.	GPRS_4TX	Right side	190	836.6	31.79	32.0	1.0495	0.1392	0.1461
4.	GPRS_4TX	Left side	190	836.6	31.79	32.0	1.0495	0.6541	0.6865

GSM1900 – Body SAR Test(Gap: 5mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
5.	GPRS_4TX	Back Side	810	1909.8	28.22	28.5	1.0666	1.0377	1.1068
6.	GPRS_4TX	Back Side	512	1850.2	27.41	28.5	1.2853	0.8294	1.0660
7.	GPRS_4TX	Back Side	661	1880.0	27.68	28.5	1.2078	0.8954	1.0815
8.	GPRS_4TX	Front Side	810	1909.8	28.22	28.5	1.0666	0.1203	0.1283
9.	GPRS_4TX	Right side	810	1909.8	28.22	28.5	1.0666	0.0474	0.0506
10.	GPRS_4TX	Left side	810	1909.8	28.22	28.5	1.0666	0.4301	0.4587

WCDMA Band 2 – Body SAR Test (Gap: 5mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
11.	RMC 12.2k	Back Side	9262	1852.4	22.33	22.5	1.0399	0.4307	0.4479
12.	RMC 12.2k	Front Side	9262	1852.4	22.33	22.5	1.0399	0.0686	0.0713
13.	RMC 12.2k	Right side	9262	1852.4	22.33	22.5	1.0399	0.0509	0.0529
14.	RMC 12.2k	Left side	9262	1852.4	22.33	22.5	1.0399	0.2223	0.2312

WCDMA Band V – Body SAR Test (Gap: 5mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
15.	RMC 12.2k	Back Side	4183	836.6	22.21	22.5	1.0691	0.1261	0.1348
16.	RMC 12.2k	Front Side	4183	836.6	22.21	22.5	1.0691	0.1026	0.1097
17.	RMC 12.2k	Right side	4183	836.6	22.21	22.5	1.0691	0.0062	0.0066
18.	RMC 12.2k	Left side	4183	836.6	22.21	22.5	1.0691	0.2643	0.2826

LTE Band 2–Body SAR Test(Gap: 5mm)								
Plot No.	Mode Modulation, Bandwidth, RB	Test Position Body	Frequency MHz	Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
19.	RMC QPSK 20MHz 1RB	Back Side	1900.0	24.53	25.0	1.1143	0.7133	0.7948
20.	RMC QPSK 20MHz 1RB	Front Side	1900.0	24.53	25.0	1.1143	0.0485	0.0540
21.	RMC QPSK 20MHz 1RB	Right side	1900.0	24.53	25.0	1.1143	0.0723	0.0806
22.	RMC QPSK 20MHz 1RB	Left side	1900.0	24.53	25.0	1.1143	0.0717	0.0799
23.	RMC QPSK 20MHz 50%RB	Back Side	1900.0	23.29	23.5	1.0495	0.6546	0.6870
24.	RMC QPSK 20MHz 50%RB	Front Side	1900.0	23.29	23.5	1.0495	0.0234	0.0246
25.	RMC QPSK 20MHz 50%RB	Right side	1900.0	23.29	23.5	1.0495	0.0755	0.0792
26.	RMC QPSK 20MHz 50%RB	Left side	1900.0	23.29	23.5	1.0495	0.0425	0.0446

LTE Band 5–Body SAR Test (Gap: 5mm)								
Plot No.	Mode Modulation, Bandwidth, RB	Test Position Body	Frequency MHz	Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
27.	RMC QPSK 10MHz 1RB	Back Side	844.0	25.73	26.0	1.0641	0.5600	0.5959
28.	RMC QPSK 10MHz 1RB	Front Side	844.0	25.73	26.0	1.0641	0.0444	0.0472
29.	RMC QPSK 10MHz 1RB	Right side	844.0	25.73	26.0	1.0641	0.0382	0.0407
30.	RMC QPSK 10MHz 1RB	Left side	844.0	25.73	26.0	1.0641	0.0304	0.0323
31.	RMC QPSK 10MHz 50%RB	Back Side	844.0	24.97	25.0	1.0069	0.4829	0.4862
32.	RMC QPSK 10MHz 50%RB	Front Side	844.0	24.97	25.0	1.0069	0.0333	0.0335
33.	RMC QPSK 10MHz 50%RB	Right side	844.0	24.97	25.0	1.0069	0.0213	0.0214
34.	RMC QPSK 10MHz 50%RB	Left side	844.0	24.97	25.0	1.0069	0.0103	0.0104

WLAN 2.4GHz –Body SAR Test (Gap: 5mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
35.	802.11b	Back Side	06	2437	15.0	15.5	1.1220	0.1855	0.2081
36.	802.11b	Front Side	06	2437	15.0	15.5	1.1220	0.1290	0.1447
37.	802.11b	Right side	06	2437	15.0	15.5	1.1220	0.2239	0.2512

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.

Hand SAR

GSM850 – Body SAR Test(Gap: 0mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR10 g (W/kg)	Scaled SAR10 g (W/kg)
			CH.	MHz					
38.	GPRS_4TX	Back Side	190	836.6	31.79	32.0	1.0495	0.8652	0.9081
39.	GPRS_4TX	Front Side	190	836.6	31.79	32.0	1.0495	0.7075	0.7426
40.	GPRS_4TX	Right side	190	836.6	31.79	32.0	1.0495	0.3454	0.3625
41.	GPRS_4TX	Left side	190	836.6	31.79	32.0	1.0495	0.8797	0.9233

GSM1900 – Body SAR Test(Gap: 0mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR10 g (W/kg)	Scaled SAR10 g (W/kg)
			CH.	MHz					
42.	GPRS_4TX	Back Side	810	1909.8	28.22	28.5	1.0666	2.3014	2.4547
43.	GPRS_4TX	Back Side	512	1850.2	27.41	28.5	1.2853	1.8525	2.3810
44.	GPRS_4TX	Back Side	661	1880.0	27.68	28.5	1.2078	1.9783	2.3894
45.	GPRS_4TX	Front Side	810	1909.8	28.22	28.5	1.0666	0.1776	0.1894
46.	GPRS_4TX	Right side	810	1909.8	28.22	28.5	1.0666	0.0394	0.0420
47.	GPRS_4TX	Left side	810	1909.8	28.22	28.5	1.0666	1.1566	1.2336

WCDMA Band 2 – Body SAR Test (Gap: 0mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR10 g (W/kg)	Scaled SAR10 g (W/kg)
			CH.	MHz					
48.	RMC 12.2k	Back Side	9262	1852.4	22.33	22.5	1.0399	0.5708	0.5936
49.	RMC 12.2k	Front Side	9262	1852.4	22.33	22.5	1.0399	0.0444	0.0462
50.	RMC 12.2k	Right side	9262	1852.4	22.33	22.5	1.0399	0.0339	0.0353
51.	RMC 12.2k	Left side	9262	1852.4	22.33	22.5	1.0399	0.2116	0.2200

WCDMA Band V – Body SAR Test (Gap: 0mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR10 g (W/kg)	Scaled SAR10 g (W/kg)
			CH.	MHz					
52.	RMC 12.2k	Back Side	4183	836.6	22.21	22.5	1.0691	0.1420	0.1518
53.	RMC 12.2k	Front Side	4183	836.6	22.21	22.5	1.0691	0.1565	0.1673

54.	RMC 12.2k	Right side	4183	836.6	22.21	22.5	1.0691	0.0042	0.0045
55.	RMC 12.2k	Left side	4183	836.6	22.21	22.5	1.0691	0.3084	0.3297

LTE Band 2–Body SAR Test(Gap: 0mm)								
Plot No.	Mode	Test Position Body	Frequency	Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR10g (W/kg)	Scaled SAR10g (W/kg)
	Modulation, Bandwidth, RB		MHz					
56.	RMC QPSK 20MHz 1RB	Back Side	1900.0	24.53	25.0	1.1143	0.9165	1.0213
57.	RMC QPSK 20MHz 1RB	Front Side	1900.0	24.53	25.0	1.1143	0.0375	0.0418
58.	RMC QPSK 20MHz 1RB	Right side	1900.0	24.53	25.0	1.1143	0.0892	0.0994
59.	RMC QPSK 20MHz 1RB	Left side	1900.0	24.53	25.0	1.1143	0.1237	0.1378
60.	RMC QPSK 20MHz 50%RB	Back Side	1900.0	23.29	23.5	1.0495	0.7555	0.7929
61.	RMC QPSK 20MHz 50%RB	Front Side	1900.0	23.29	23.5	1.0495	0.0322	0.0338
62.	RMC QPSK 20MHz 50%RB	Right side	1900.0	23.29	23.5	1.0495	0.0644	0.0676
63.	RMC QPSK 20MHz 50%RB	Left side	1900.0	23.29	23.5	1.0495	0.1021	0.1072

LTE Band 5–Body SAR Test (Gap: 0mm)								
Plot No.	Mode	Test Position Body	Frequency	Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR10g (W/kg)	Scaled SAR10g (W/kg)
	Modulation, Bandwidth, RB		MHz					
64.	RMC QPSK 10MHz 1RB	Back Side	844.0	25.73	26.0	1.0641	0.8025	0.8540
65.	RMC QPSK 10MHz 1RB	Front Side	844.0	25.73	26.0	1.0641	0.0753	0.0801
66.	RMC QPSK 10MHz 1RB	Right side	844.0	25.73	26.0	1.0641	0.0410	0.0436
67.	RMC QPSK 10MHz 1RB	Left side	844.0	25.73	26.0	1.0641	0.0327	0.0348
68.	RMC QPSK 10MHz 50%RB	Back Side	844.0	24.97	25.0	1.0069	0.6387	0.6431
69.	RMC QPSK 10MHz 50%RB	Front Side	844.0	24.97	25.0	1.0069	0.0472	0.0475
70.	RMC QPSK 10MHz 50%RB	Right side	844.0	24.97	25.0	1.0069	0.0322	0.0324
71.	RMC QPSK 10MHz 50%RB	Left side	844.0	24.97	25.0	1.0069	0.0280	0.0282

WLAN 2.4GHz –Body SAR Test (Gap: 0mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR10g (W/kg)	Scaled SAR10g (W/kg)
			CH.	MHz					
72.	802.11b	Back Side	06	2437	15.0	15.5	1.1220	0.1394	0.1564
73.	802.11b	Front Side	06	2437	15.0	15.5	1.1220	0.0568	0.0637
74.	802.11b	Right side	06	2437	15.0	15.5	1.1220	0.2707	0.3037

Remark: Per KDB 447498 D01 v06 , if the highest output channel SAR for each exposure position ≤ 2.0 W/kg other channels SAR tests are not necessary.

9.3 Simultaneous Multi-band Transmission SAR Analysis

List of Mode for Simultaneous Multi-band Transmission

No.	Configurations	Hand SAR	Body SAR
1	GPRS/ EDGE(Data) + WLAN(2.4G)(Data)	Yes	Yes
2	WCDMA(Data)/HSDPA(Data)/ HSUPA(Data)+WLAN(2.4G)(Data)	Yes	Yes
3	LTE(Data) + WLAN(2.4G)(Data)	Yes	Yes
4	GPRS/ EDGE(Data) + Bluetooth(Data)	Yes	Yes
5	WCDMA(Data)/HSDPA(Data)/ HSUPA(Data) + Bluetooth(Data)	Yes	Yes
6	LTE(Data) + Bluetooth(Data)	Yes	Yes

Remark:

1. WLAN and Bluetooth share the same antenna, and cannot transmit simultaneously.

2. 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	SAR(10g) 5mm
5.0	3.16	5	2.441	7.5/18.75	0.1317	0.0527

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

Body SAR

WWAN and WLAN

	WWAN		WLAN	Summed SAR (W/kg)
Position	**Band**	**Scaled SAR (W/kg)**	**Scaled SAR (W/kg)**	
Back	GSM850	0.3533	0.2081	0.5614
Front	GSM850	0.6078	0.1447	0.7525
Top side	GSM850	--	--	--
Bottom side	GSM850	--	--	--
Right side	GSM850	0.1461	0.2512	0.3973
Left side	GSM850	0.6865	--	0.6865
Back	GSM1900	1.1068	0.2081	**1.3149**
Front	GSM1900	0.1283	0.1447	0.273
Top side	GSM1900	--	--	--
Bottom side	GSM1900	--	--	--
Right side	GSM1900	0.0506	0.2512	0.3018
Left side	GSM1900	0.4587	--	0.4587
Back	WCDMA Band 2	0.4479	0.2081	0.656
Front	WCDMA Band 2	0.0713	0.1447	0.216
Top side	WCDMA Band 2	--	--	--
Bottom side	WCDMA Band 2	--	--	--
Right side	WCDMA Band 2	0.0529	0.2512	0.3041
Left side	WCDMA Band 2	0.2312	--	0.2312
Back	WCDMA Band 5	0.1348	0.2081	0.3429
Front	WCDMA Band 5	0.1097	0.1447	0.2544
Top side	WCDMA Band 5	--	--	--
Bottom side	WCDMA Band 5	--	--	--
Right side	WCDMA Band 5	0.0066	0.2512	0.2578
Left side	WCDMA Band 5	0.2826	--	0.2826
Back	LTE Band 2	0.7948	0.2081	1.0029
Front	LTE Band 2	0.0540	0.1447	0.1987
Top side	LTE Band 2	--	--	--
Bottom side	LTE Band 2	--	--	--
Right side	LTE Band 2	0.0806	0.2512	0.3318
Left side	LTE Band 2	0.0799	--	0.0799
Back	LTE Band 5	0.5959	0.2081	0.804
Front	LTE Band 5	0.0472	0.1447	0.1919
Top side	LTE Band 5	--	--	--
Bottom side	LTE Band 5	--	--	--
Right side	LTE Band 5	0.0407	0.2512	0.2919
Left side	LTE Band 5	0.0323	--	0.0323

WWAN and Bluetooth

	WWAN		Bluetooth	Summed SAR (W/kg)
Position	**Band**	**Scaled SAR (W/kg)**	**Scaled SAR (W/kg)**	
Back	GSM850	0.3533	0.1317	0.485
Front	GSM850	0.6078	0.1317	0.7395
Top side	GSM850	--	--	--
Bottom side	GSM850	--	--	--
Right side	GSM850	0.1461	0.1317	0.2778
Left side	GSM850	0.6865	--	0.6865
Back	GSM1900	1.1068	0.1317	**1.2385**
Front	GSM1900	0.1283	0.1317	0.26
Top side	GSM1900	--	--	--
Bottom side	GSM1900	--	--	--
Right side	GSM1900	0.0506	0.1317	0.1823
Left side	GSM1900	0.4587	--	0.4587
Back	WCDMA Band 2	0.4479	0.1317	0.5796
Front	WCDMA Band 2	0.0713	0.1317	0.203
Top side	WCDMA Band 2	--	--	--
Bottom side	WCDMA Band 2	--	--	--
Right side	WCDMA Band 2	0.0529	0.1317	0.1846
Left side	WCDMA Band 2	0.2312	--	0.2312
Back	WCDMA Band 5	0.1348	0.1317	0.2665
Front	WCDMA Band 5	0.1097	0.1317	0.2414
Top side	WCDMA Band 5	--	--	--
Bottom side	WCDMA Band 5	--	--	--
Right side	WCDMA Band 5	0.0066	0.1317	0.1383
Left side	WCDMA Band 5	0.2826	--	0.2826
Back	LTE Band 2	0.7948	0.1317	0.9265
Front	LTE Band 2	0.0540	0.1317	0.1857
Top side	LTE Band 2	--	--	--
Bottom side	LTE Band 2	--	--	--
Right side	LTE Band 2	0.0806	0.1317	0.2123
Left side	LTE Band 2	0.0799	--	0.0799
Back	LTE Band 5	0.5959	0.1317	0.7276
Front	LTE Band 5	0.0472	0.1317	0.1789
Top side	LTE Band 5	--	--	--
Bottom side	LTE Band 5	--	--	--
Right side	LTE Band 5	0.0407	0.1317	0.1724
Left side	LTE Band 5	0.0323	--	0.0323

Hand SAR

WWAN and WLAN

	WWAN		WLAN	Summed SAR (W/kg)
Position	**Band**	**Scaled SAR (W/kg)**	**Scaled SAR (W/kg)**	
Back	GSM850	0.9081	0.1564	1.0645
Front	GSM850	0.7426	0.0637	0.8063
Top side	GSM850	--	--	--
Bottom side	GSM850	--	--	--
Right side	GSM850	0.3625	0.3037	0.6662
Left side	GSM850	0.9233	--	0.9233
Back	GSM1900	2.4547	0.1564	**2.6111**
Front	GSM1900	0.1894	0.0637	0.2531
Top side	GSM1900	--	--	--
Bottom side	GSM1900	--	--	--
Right side	GSM1900	0.0420	0.3037	0.3457
Left side	GSM1900	1.2336	--	1.2336
Back	WCDMA Band 2	0.5936	0.1564	0.75
Front	WCDMA Band 2	0.0462	0.0637	0.1099
Top side	WCDMA Band 2	--	--	--
Bottom side	WCDMA Band 2	--	--	--
Right side	WCDMA Band 2	0.0353	0.3037	0.339
Left side	WCDMA Band 2	0.2200	--	0.2200
Back	WCDMA Band 5	0.1518	0.1564	0.3082
Front	WCDMA Band 5	0.1673	0.0637	0.231
Top side	WCDMA Band 5	--	--	--
Bottom side	WCDMA Band 5	--	--	--
Right side	WCDMA Band 5	0.0045	0.3037	0.3082
Left side	WCDMA Band 5	0.3297	--	0.3297
Back	LTE Band 2	1.0213	0.1564	1.1777
Front	LTE Band 2	0.0418	0.0637	0.1055
Top side	LTE Band 2	--	--	--
Bottom side	LTE Band 2	--	--	--
Right side	LTE Band 2	0.0994	0.3037	0.4031
Left side	LTE Band 2	0.1378	--	0.1378
Back	LTE Band 5	0.8540	0.1564	1.0104
Front	LTE Band 5	0.0801	0.0637	0.1438
Top side	LTE Band 5	--	--	--
Bottom side	LTE Band 5	--	--	--
Right side	LTE Band 5	0.0436	0.3037	0.3473
Left side	LTE Band 5	0.0348	--	0.0348

WWAN and Bluetooth

	WWAN		Bluetooth	Summed SAR (W/kg)
Position	**Band**	**Scaled SAR (W/kg)**	**Scaled SAR (W/kg)**	
Back	GSM850	0.9081	0.0527	0.9608
Front	GSM850	0.7426	0.0527	0.7953
Top side	GSM850	--	--	--
Bottom side	GSM850	--	--	--
Right side	GSM850	0.3625	0.0527	0.4152
Left side	GSM850	0.9233	--	0.9233
Back	GSM1900	2.4547	0.0527	**2.5074**
Front	GSM1900	0.1894	0.0527	0.2421
Top side	GSM1900	--	--	--
Bottom side	GSM1900	--	--	--
Right side	GSM1900	0.0420	0.0527	0.0947
Left side	GSM1900	1.2336	--	1.2336
Back	WCDMA Band 2	0.5936	0.0527	0.6463
Front	WCDMA Band 2	0.0462	0.0527	0.0989
Top side	WCDMA Band 2	--	--	--
Bottom side	WCDMA Band 2	--	--	--
Right side	WCDMA Band 2	0.0353	0.0527	0.088
Left side	WCDMA Band 2	0.2200	--	0.2200
Back	WCDMA Band 5	0.1518	0.0527	0.2045
Front	WCDMA Band 5	0.1673	0.0527	0.22
Top side	WCDMA Band 5	--	--	--
Bottom side	WCDMA Band 5	--	--	--
Right side	WCDMA Band 5	0.0045	0.0527	0.0572
Left side	WCDMA Band 5	0.3297	--	0.3297
Back	LTE Band 2	1.0213	0.0527	1.074
Front	LTE Band 2	0.0418	0.0527	0.0945
Top side	LTE Band 2	--	--	--
Bottom side	LTE Band 2	--	--	--
Right side	LTE Band 2	0.0994	0.0527	0.1521
Left side	LTE Band 2	0.1378	--	0.1378
Back	LTE Band 5	0.8540	0.0527	0.9067
Front	LTE Band 5	0.0801	0.0527	0.1328
Top side	LTE Band 5	--	--	--
Bottom side	LTE Band 5	--	--	--
Right side	LTE Band 5	0.0436	0.0527	0.0963
Left side	LTE Band 5	0.0348	--	0.0348

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: 05/15/2017

Measurement duration: 12 minutes 21 seconds

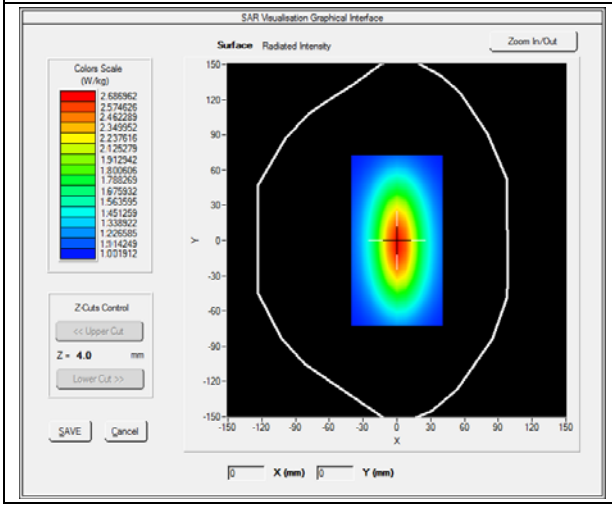
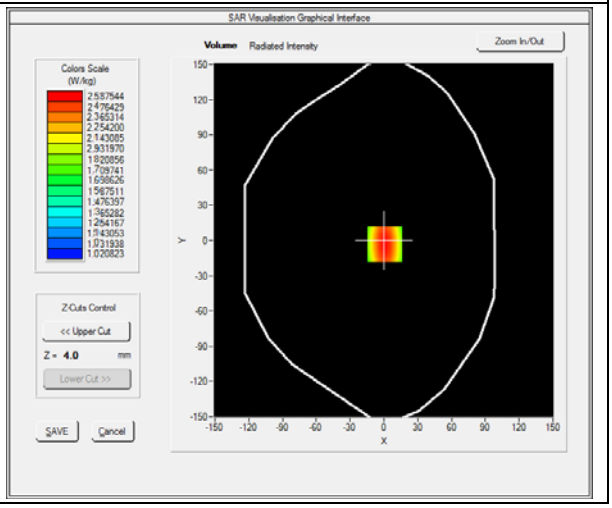
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 7.13; Calibrated: 06/01/2016

A. Experimental conditions

Area Scan	dx=8mm dy=8mm
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

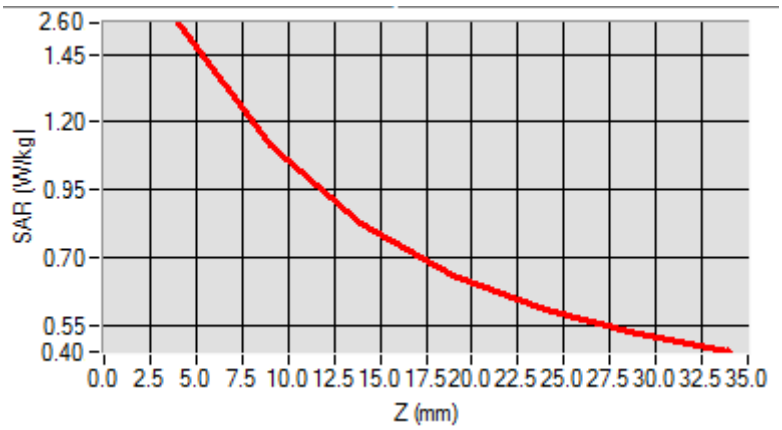
SURFACE SAR	VOLUME SAR
	

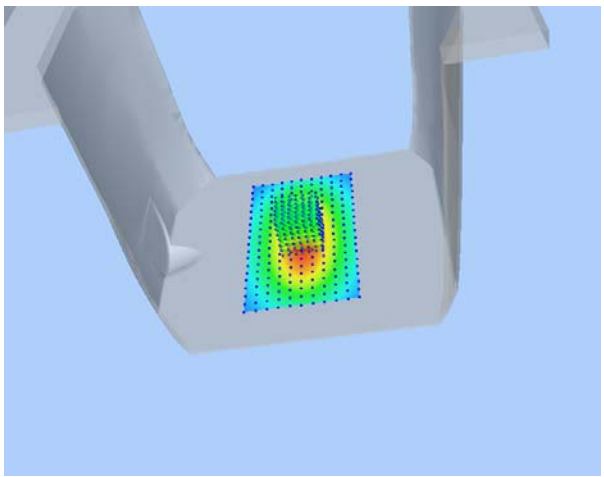
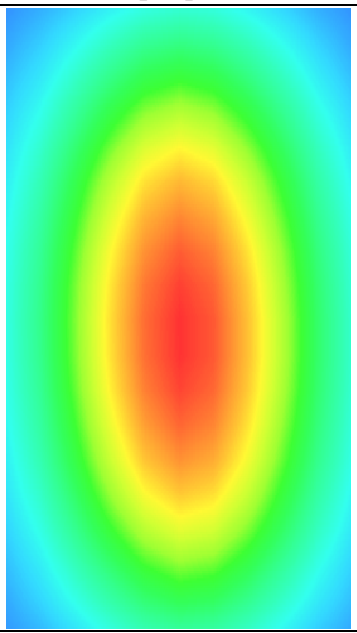
Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	1.438956
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 2

For Body Liquid

Type: Validation measurement (Fast, 75.00 %)

Date of measurement: 05/15/2017

Measurement duration: 12 minutes 21 seconds

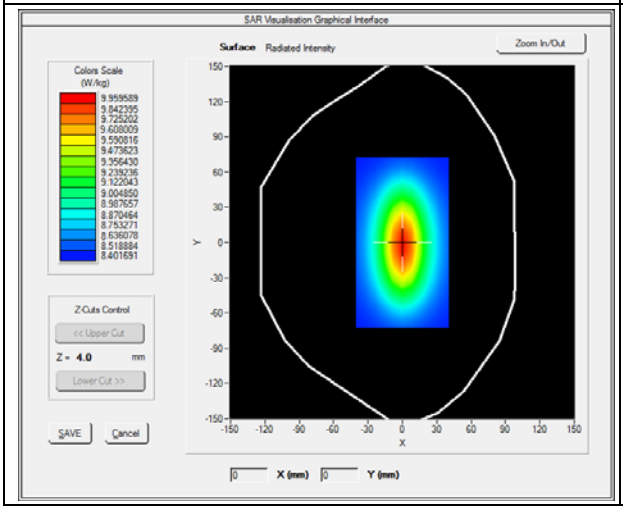
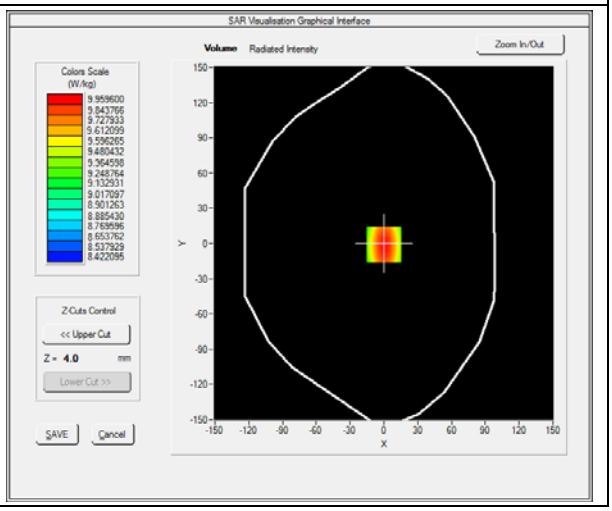
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.55; Calibrated: 06/01/2016

A. Experimental conditions

Area Scan	dx=8mm dy=8mm
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

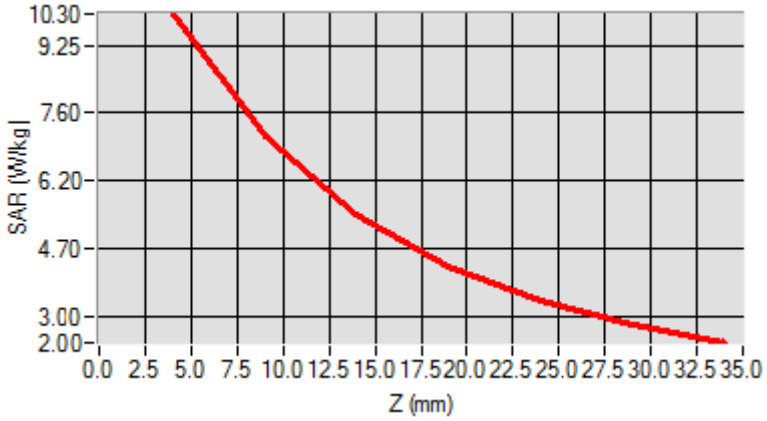
SURFACE SAR	VOLUME SAR
	

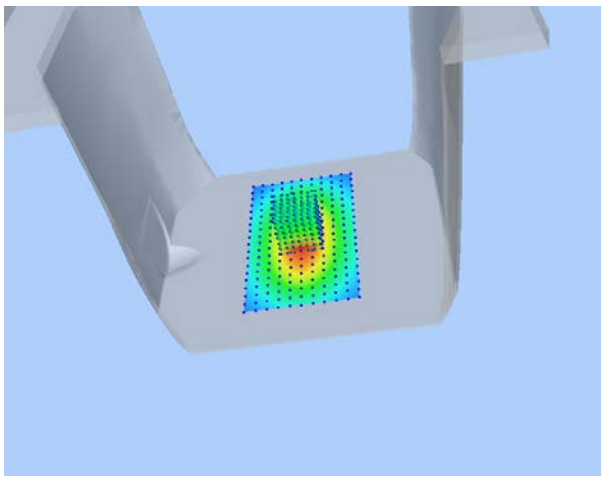
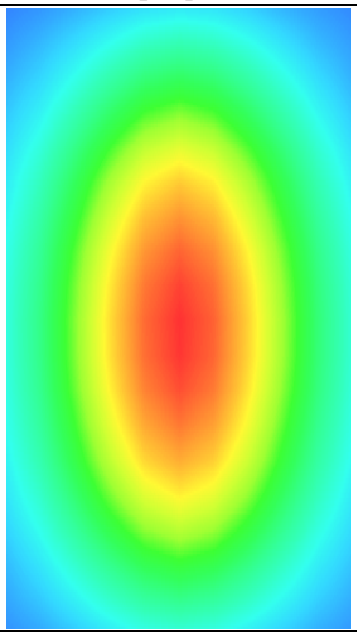
Maximum location: X=0.00, Y=0.00

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 3

For Body Liquid

Type: Validation measurement (Fast, 75.00 %)

Date of measurement: 05/15/2017

Measurement duration: 12 minutes 21 seconds

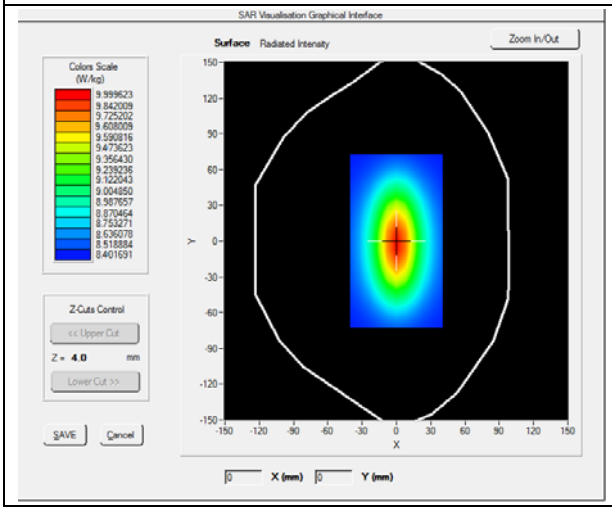
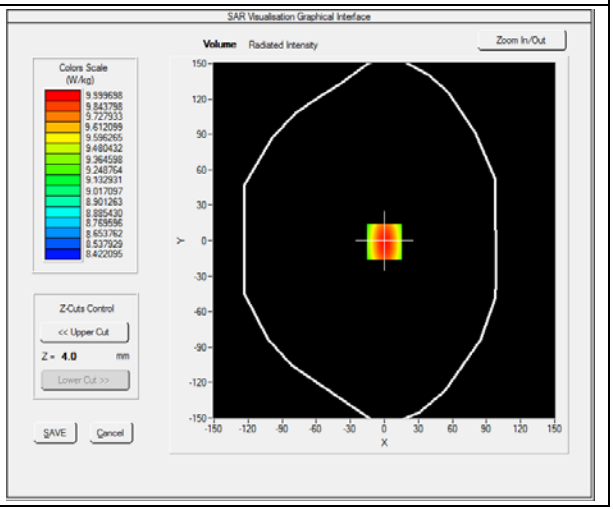
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 5.80; Calibrated: 06/01/2016

A. Experimental conditions

Area Scan	dx=8mm dy=8mm
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

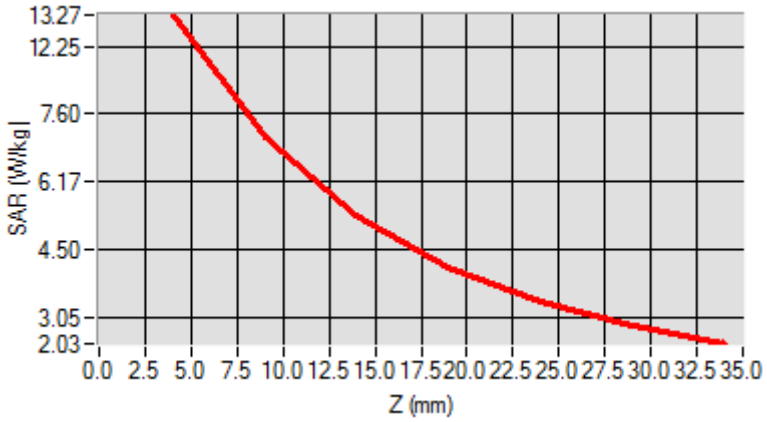
SURFACE SAR	VOLUME SAR
	

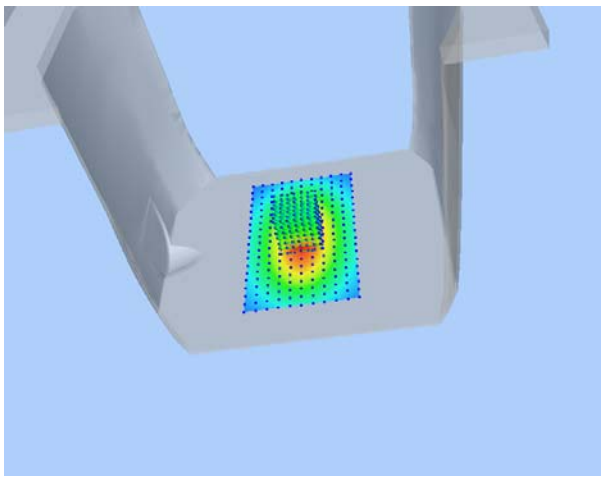
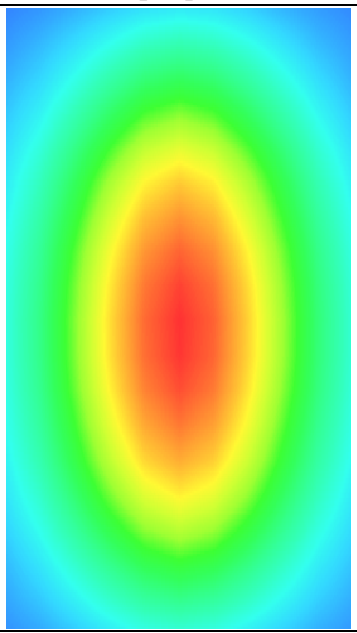
Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	6.119522
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
	

Annex B. Plots of SAR Measurement

Body mode Exposure Conditions:

TYPE	BAND	PARAMETERS
Tablet	**GPRS850_4TX**	Measurement 4: Flat Plane with Left device position on Middle Channel in GPRS mode
Tablet	**GPRS1900_4TX**	Measurement 5: Flat Plane with Back device position on High Channel in GPRS mode
Tablet	**WCDMA1900_RMC**	Measurement 11: Flat Plane with Back side device position on Low Channel in WCDMA mode
Tablet	**WCDMA850_RMC**	Measurement 18: Flat Plane with Left device position on Middle Channel in WCDMA mode
Tablet	**LTE Band 2_RMC**	Measurement 19: Flat Plane with Back device position on High Channel in LTE mode
Tablet	**LTE Band 5_RMC**	Measurement 27: Flat Plane with Back device position on High Channel in LTE mode
Tablet	**WiFi_802.11b**	Measurement 37: Flat Plane with Right side device position on Middle Channel in 802.11b mode
Remark: SAR plot is showed the highest measured SAR in each exposure configuration, wireless mode and frequency band combination.		

Hand exposure Conditions:

TYPE	BAND	PARAMETERS
Tablet	**GPRS850_4TX**	Measurement 41: Flat Plane with Left device position on Middle Channel in GPRS mode
Tablet	**GPRS1900_4TX**	Measurement 42: Flat Plane with Back device position on High Channel in GPRS mode
Tablet	**WCDMA1900_RMC**	Measurement 48: Flat Plane with Back side device position on Low Channel in WCDMA mode
Tablet	**WCDMA850_RMC**	Measurement 55: Flat Plane with Left device position on Middle Channel in WCDMA mode
Tablet	**LTE Band 2_RMC**	Measurement 56: Flat Plane with Back device position on High Channel in LTE mode
Tablet	**LTE Band 5_RMC**	Measurement 64: Flat Plane with Back device position on High Channel in LTE mode
Tablet	**WiFi_802.11b**	Measurement 74: Flat Plane with Right side device position on Middle Channel in 802.11b mode
Remark: SAR plot is showed the highest measured SAR in each exposure configuration, wireless mode and frequency band combination.		

MEASUREMENT 4

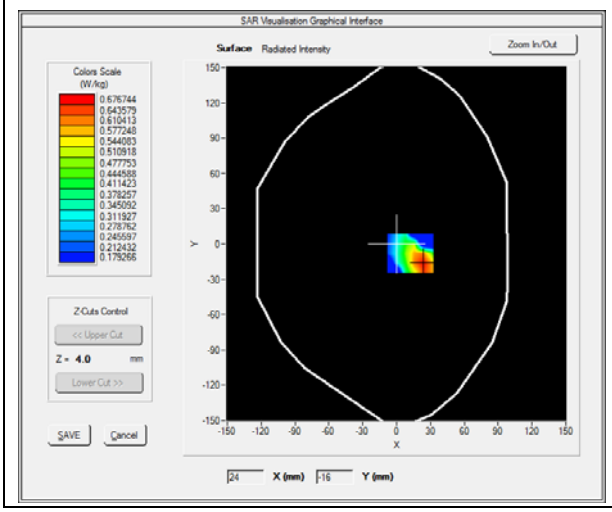
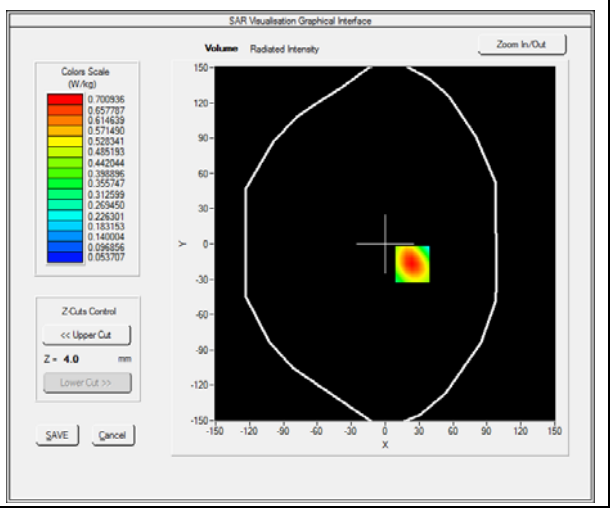
Type: Phone measurement (Complete)
Date of measurement: 05/15/2017
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 7.13; Calibrated: 06/01/2016

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Flat plane
Device Position	Left
Band	GPRS850_4TX
Channels	Middle
Signal	Duty Cycle: 1:2

B. SAR Measurement Results

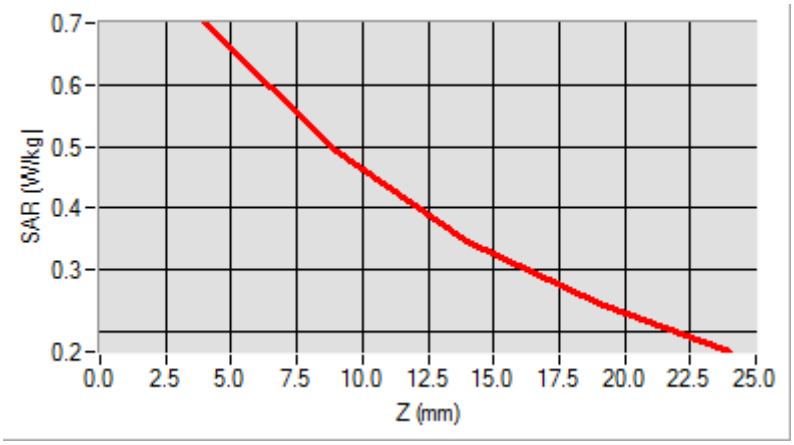
Frequency (MHz)	836.600000
Relative Permittivity (real part)	54.851214
Conductivity (S/m)	0.951454
Power Variation (%)	0.901472
Ambient Temperature	21.1
Liquid Temperature	21.3

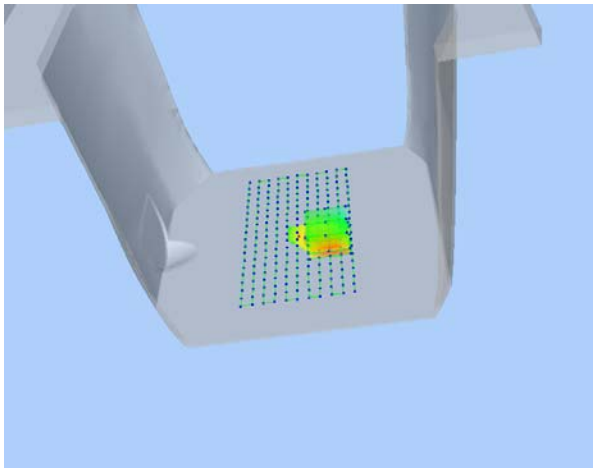
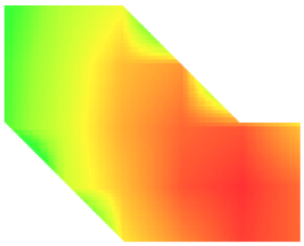
SURFACE SAR	VOLUME SAR
	

Maximum location: X=24.00, Y=-17.00

SAR 10g (W/Kg)	**0.425806**
SAR 1g (W/Kg)	**0.654051**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.0000**	**0.7009**	**0.4935**	**0.3471**	**0.2441**



3D screen shot	**Hot spot position**
	

MEASUREMENT 5

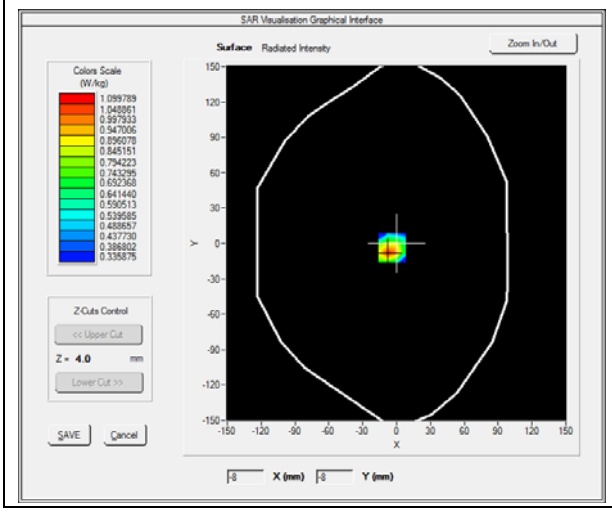
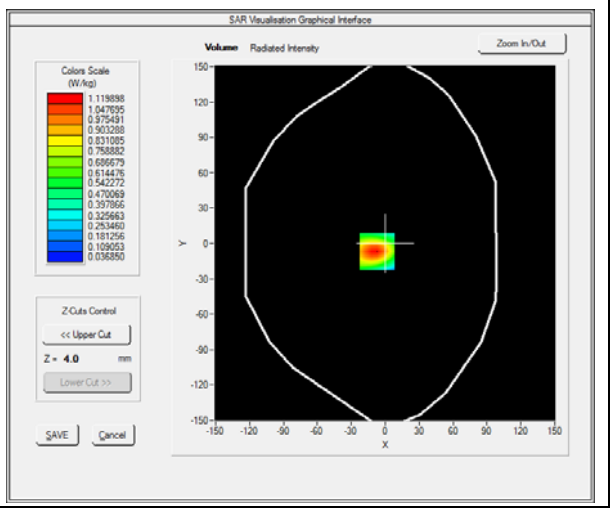
Type: Phone measurement (Complete)
Date of measurement: 05/15/2017
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.55; Calibrated: 06/01/2016

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Flat plane
Device Position	Back
Band	GPRS1900_4TX
Channels	High
Signal	Duty Cycle: 1:2

B. SAR Measurement Results

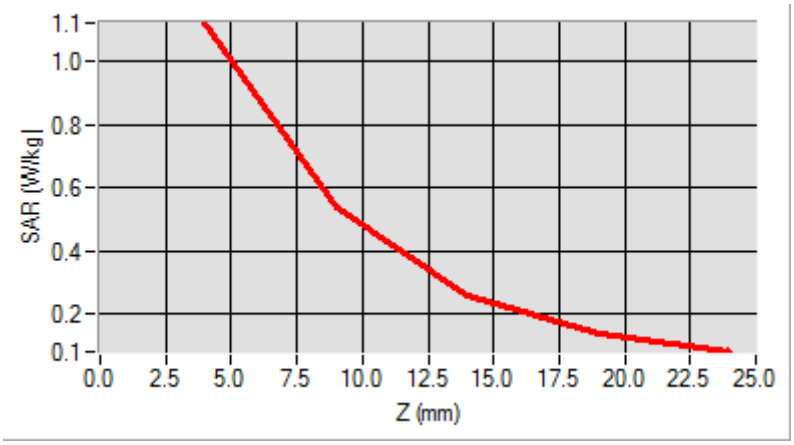
Frequency (MHz)	1909.800000
Relative Permittivity (real part)	52.420415
Conductivity (S/m)	1.501966
Power Variation (%)	2.483762
Ambient Temperature	21.1
Liquid Temperature	21.3

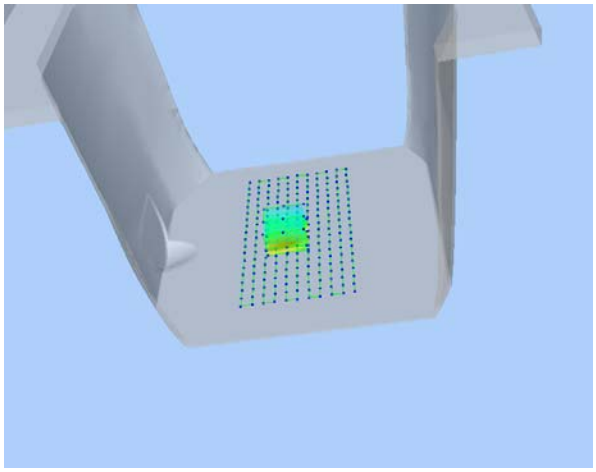
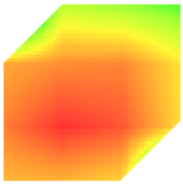
SURFACE SAR	VOLUME SAR
	

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

SAR 10g (W/Kg)	0.529841
SAR 1g (W/Kg)	1.037659

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	1.1199	0.5347	0.2582	0.1400



3D screen shot	Hot spot position
	

MEASUREMENT 11

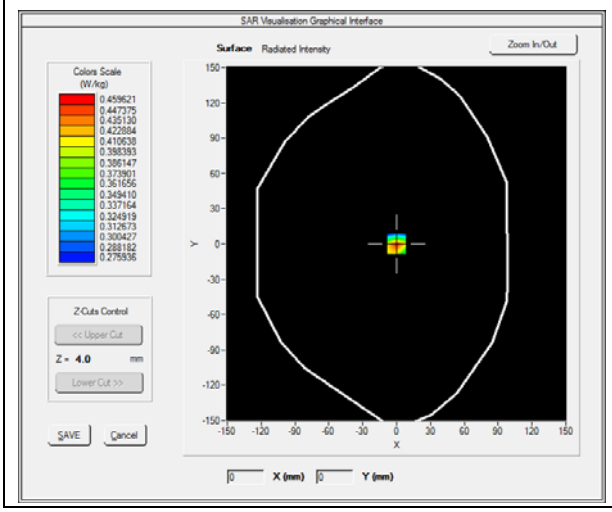
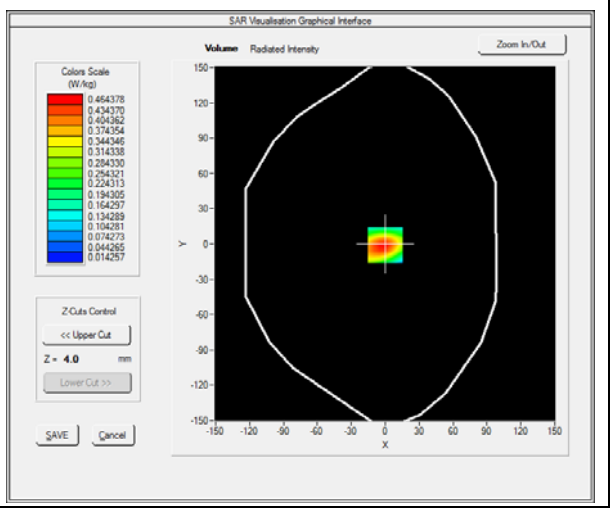
Type: Phone measurement (Complete)
Date of measurement: 05/15/2017
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.55; Calibrated: 06/01/2016

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Flat Plane
Device Position	Back
Band	WCDMA1900_RMC
Channels	Low
Signal	Duty Cycle 1:1

B. SAR Measurement Results

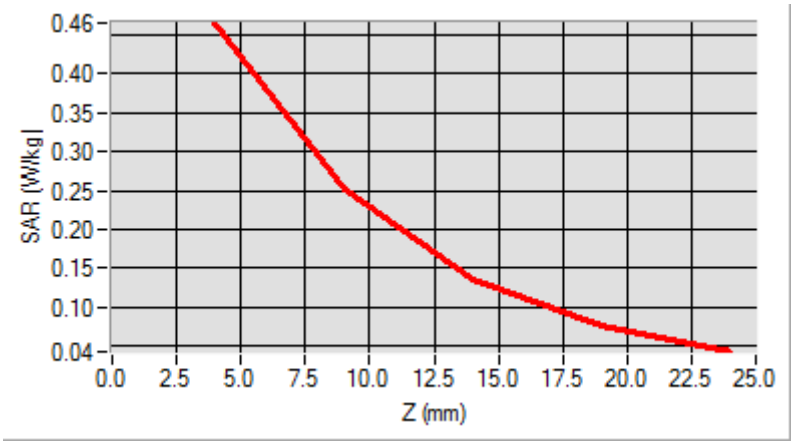
Frequency (MHz)	1852.400000
Relative Permittivity (real part)	52.420415
Conductivity (S/m)	1.501966
Power Variation (%)	1.847552
Ambient Temperature	21.1
Liquid Temperature	21.3

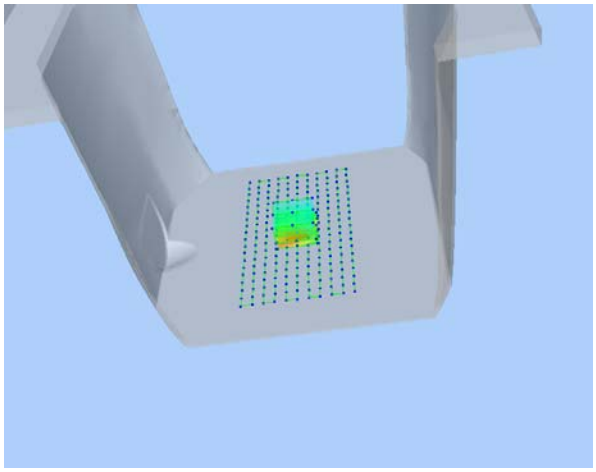
SURFACE SAR	VOLUME SAR
	

Maximum location: X=0.00, Y=-1.00

SAR 10g (W/Kg)	0.232113
SAR 1g (W/Kg)	0.430717

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.4644	0.2502	0.1353	0.0770



3D screen shot	Hot spot position
	

MEASUREMENT 18

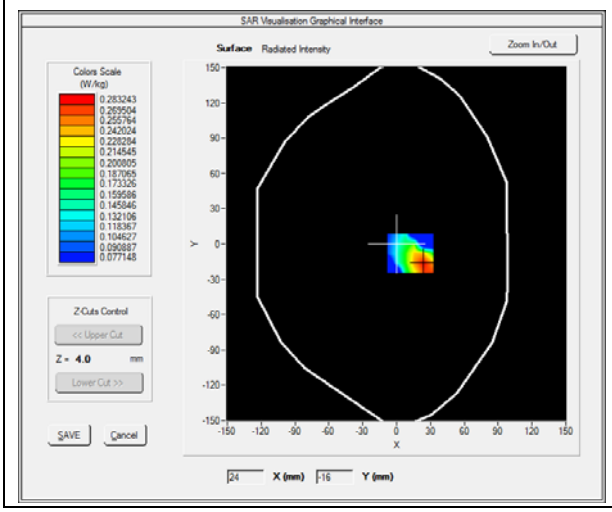
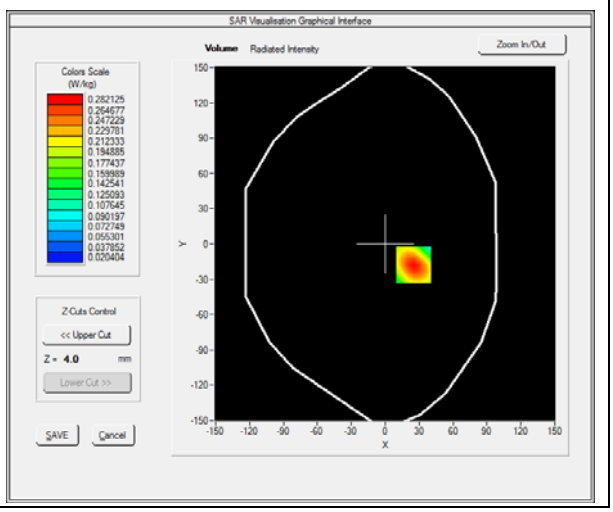
Type: Phone measurement (Complete)
Date of measurement: 05/15/2017
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 7.13; Calibrated: 06/01/2016

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Flat Plane
Device Position	Left
Band	WCDMA850_RMC
Channels	Middle
Signal	Duty Cycle 1:1

B. SAR Measurement Results

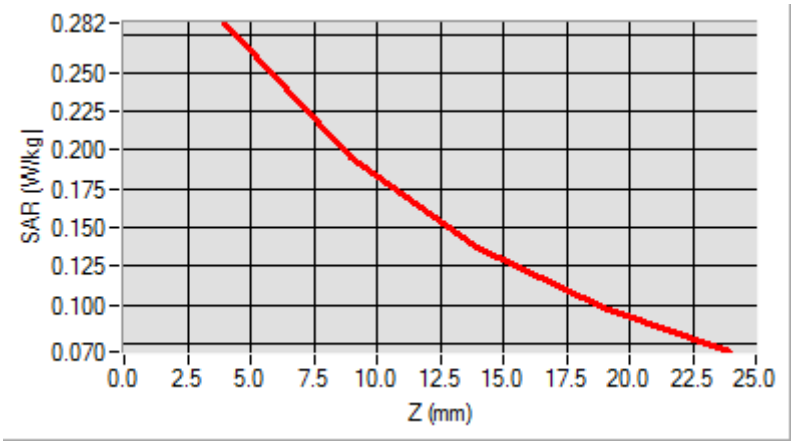
Frequency (MHz)	836.600000
Relative Permittivity (real part)	54.851214
Conductivity (S/m)	0.951454
Power Variation (%)	0.754261
Ambient Temperature	21.1
Liquid Temperature	21.3

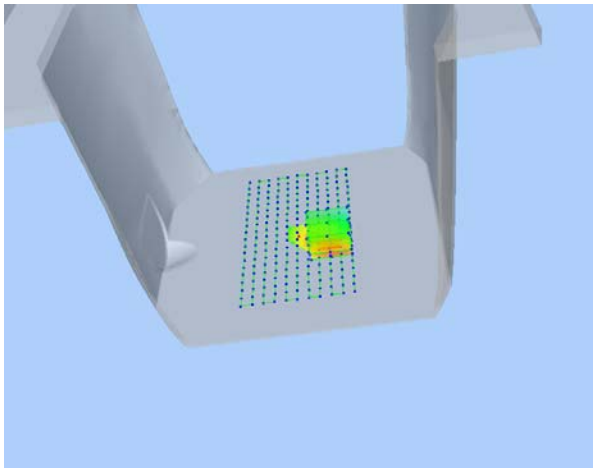
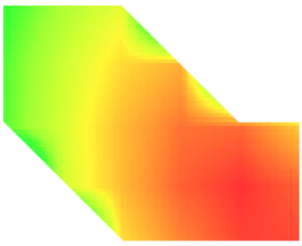
SURFACE SAR	VOLUME SAR
	

Maximum location: X=25.00, Y=-18.00

SAR 10g (W/Kg)	**0.174224**
SAR 1g (W/Kg)	**0.264269**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.0000**	**0.2821**	**0.1949**	**0.1366**	**0.0980**



3D screen shot	**Hot spot position**
	

MEASUREMENT 19

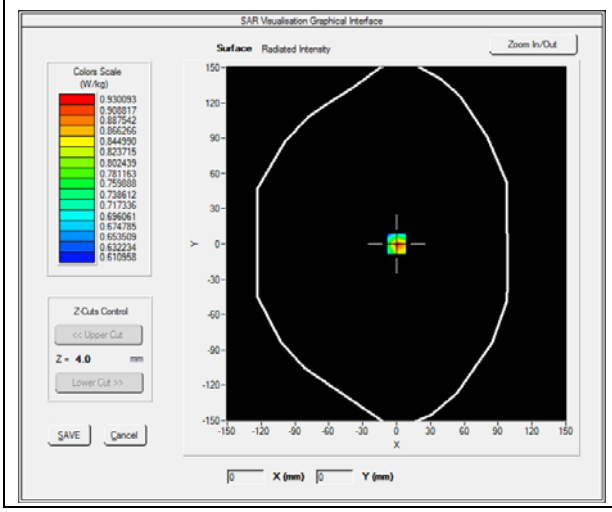
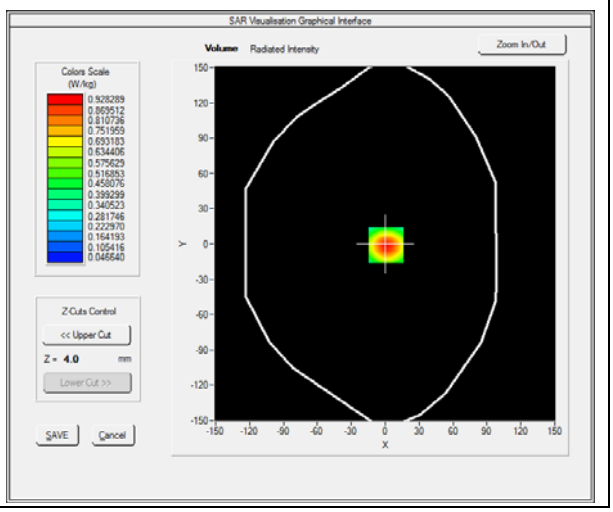
Type: Phone measurement (Complete)
Date of measurement: 05/15/2017
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.55; Calibrated: 06/01/2016

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Flat Plane
Device Position	Back
Band	LTE Band 2_RMC
Channels	QPSK, 20MHz, 1RB, High
Signal	Duty Cycle 1:1

B. SAR Measurement Results

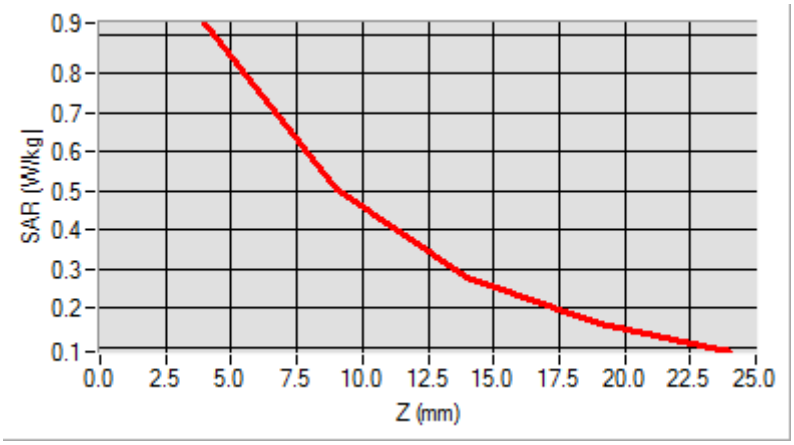
Frequency (MHz)	1900.000000
Relative Permittivity (real part)	52.420415
Conductivity (S/m)	1.501966
Power Variation (%)	1.523573
Ambient Temperature	21.1
Liquid Temperature	21.3

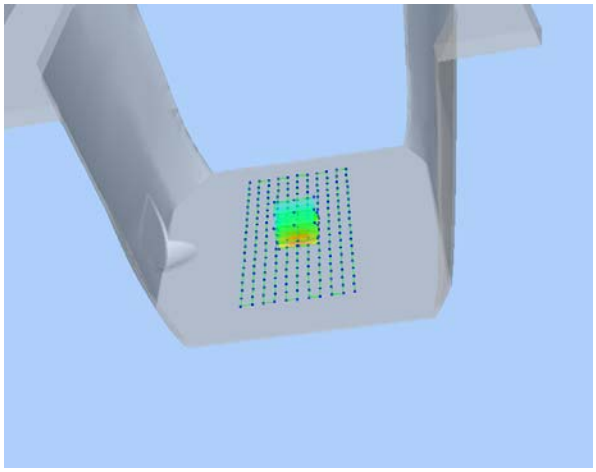
SURFACE SAR	VOLUME SAR
	

Maximum location: X=1.00, Y=-1.00

SAR 10g (W/Kg)	**0.406556**
SAR 1g (W/Kg)	**0.713320**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.0000**	**0.9283**	**0.5053**	**0.2757**	**0.1574**



3D screen shot	**Hot spot position**
	

MEASUREMENT 27

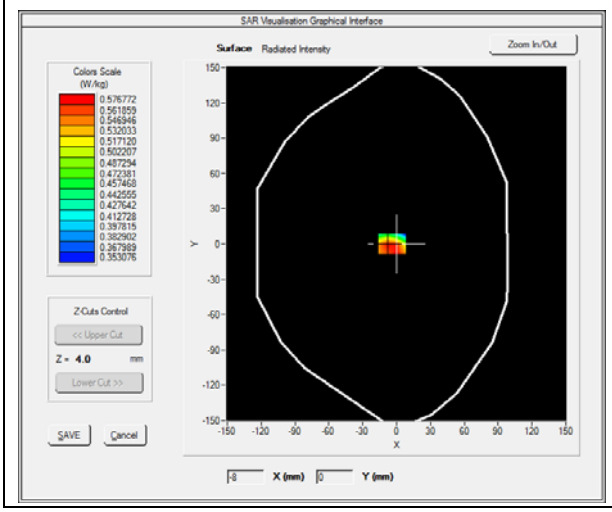
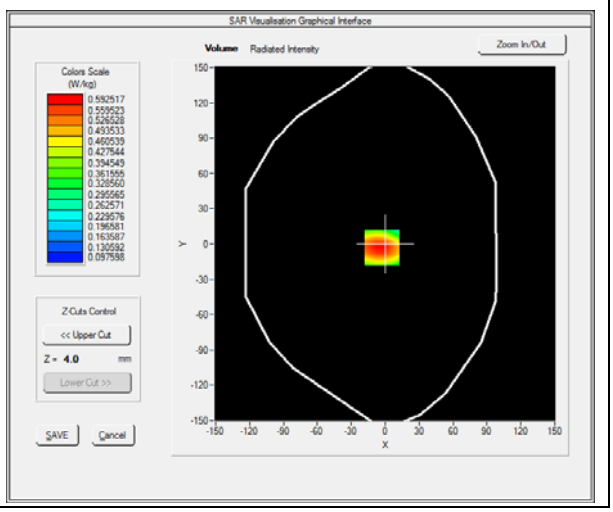
Type: Phone measurement (Complete)
Date of measurement: 05/15/2017
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 7.13; Calibrated: 06/01/2016

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
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

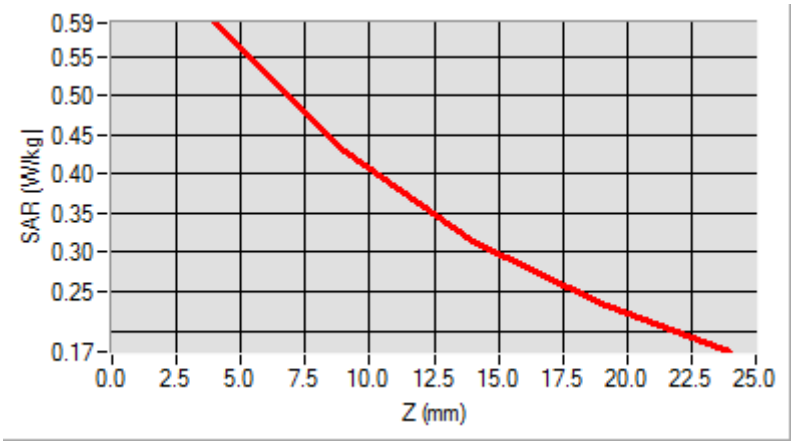
Frequency (MHz)	844.000000
Relative Permittivity (real part)	54.851214
Conductivity (S/m)	0.951454
Power Variation (%)	1.523573
Ambient Temperature	21.1
Liquid Temperature	21.3

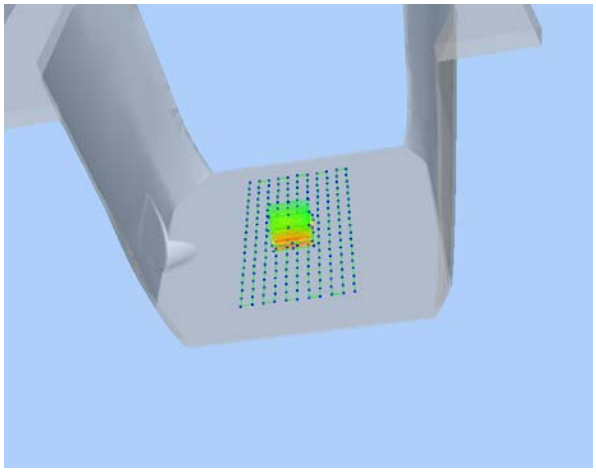
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-3.00, Y=-3.00

SAR 10g (W/Kg)	**0.383055**
SAR 1g (W/Kg)	**0.560037**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.0000**	**0.5925**	**0.4285**	**0.3139**	**0.2341**



3D screen shot	**Hot spot position**
	

MEASUREMENT 37

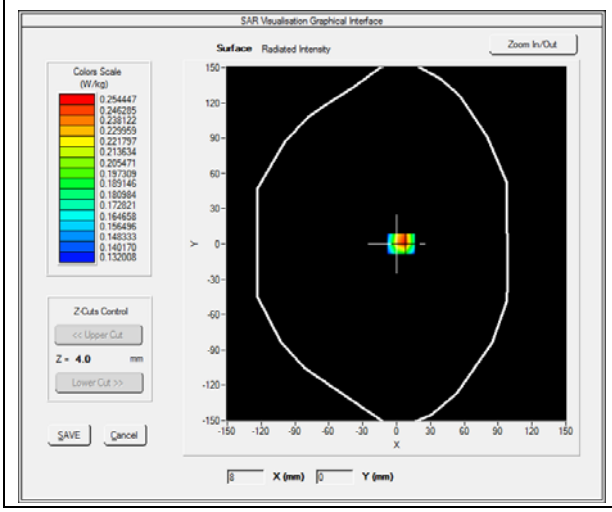
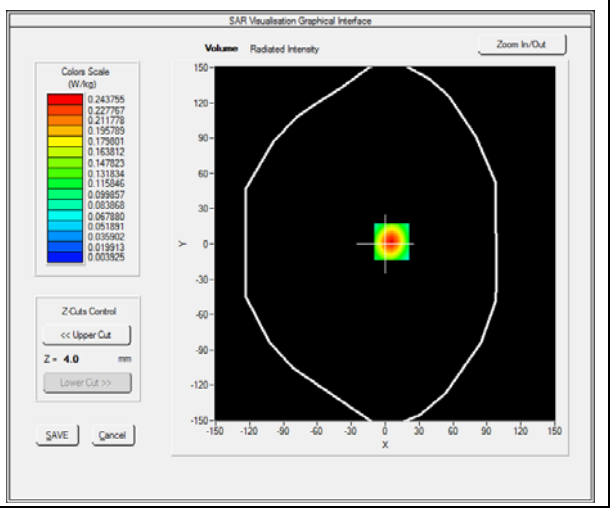
Type: Phone measurement (Complete)
Date of measurement: 05/15/2017
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 5.80; Calibrated: 06/01/2016

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Flat Plane
Device Position	Right
Band	WiFi_802.11b
Channels	Middle
Signal	Duty Cycle 1:1

B. SAR Measurement Results

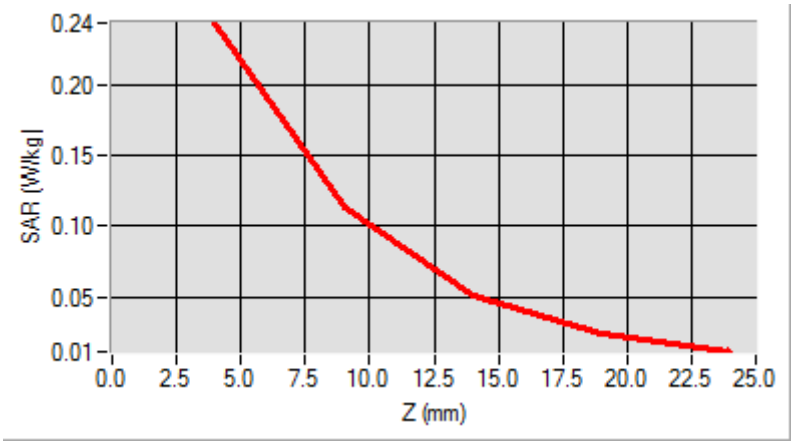
Frequency (MHz)	2437.000000
Relative Permittivity (real part)	52.010212
Conductivity (S/m)	1.910255
Power Variation (%)	0.462345
Ambient Temperature	21.1
Liquid Temperature	21.2

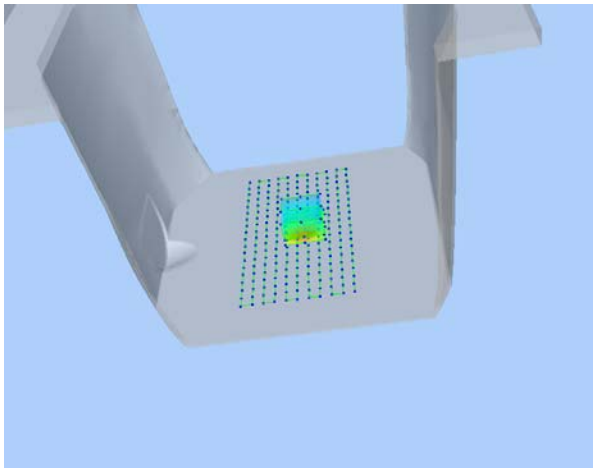
SURFACE SAR	VOLUME SAR
	

Maximum location: X=6.00, Y=2.00

SAR 10g (W/Kg)	0.108961
SAR 1g (W/Kg)	0.223929

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.2438	0.1128	0.0508	0.0242



3D screen shot	Hot spot position
	

MEASUREMENT 41

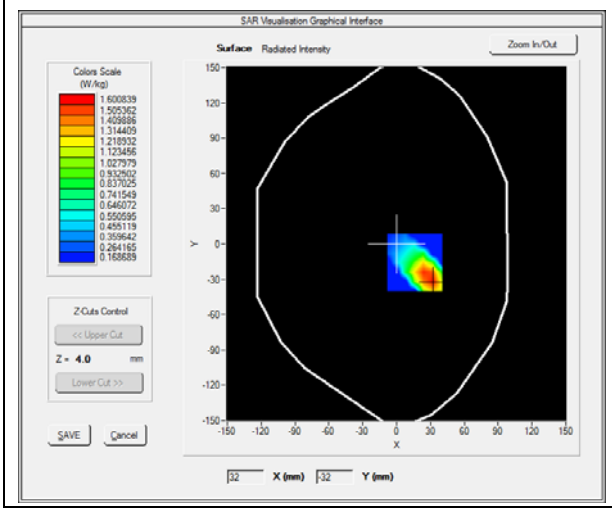
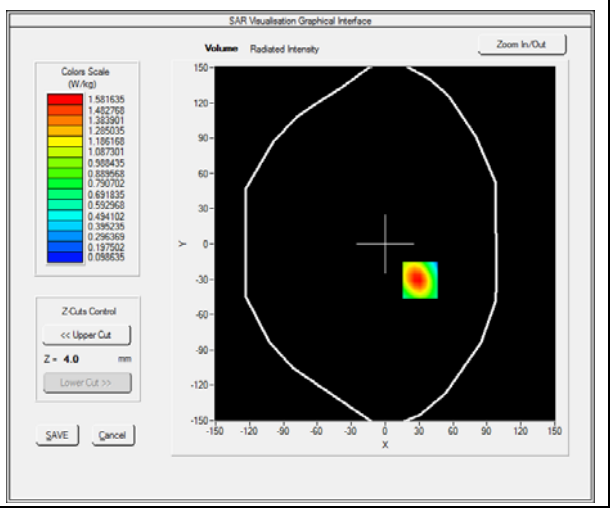
Type: Phone measurement (Complete)
Date of measurement: 05/15/2017
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 7.13; Calibrated: 06/01/2016

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Flat plane
Device Position	Left
Band	GPRS850_4TX
Channels	Middle
Signal	Duty Cycle: 1:2

B. SAR Measurement Results

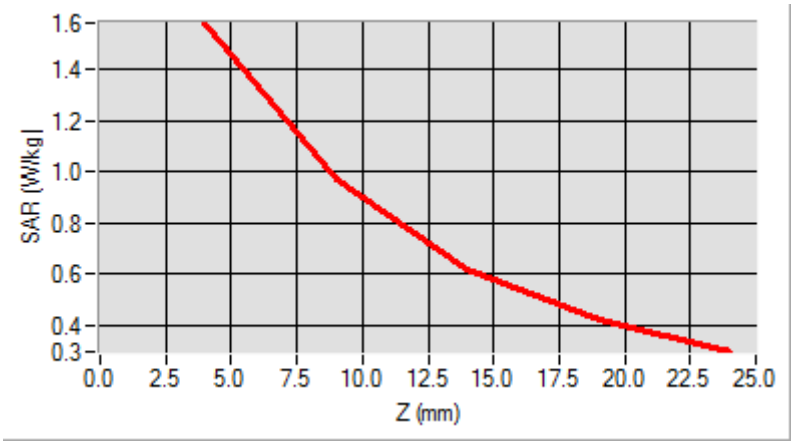
Frequency (MHz)	836.600000
Relative Permittivity (real part)	54.851214
Conductivity (S/m)	0.951454
Power Variation (%)	0.748393
Ambient Temperature	21.1
Liquid Temperature	21.3

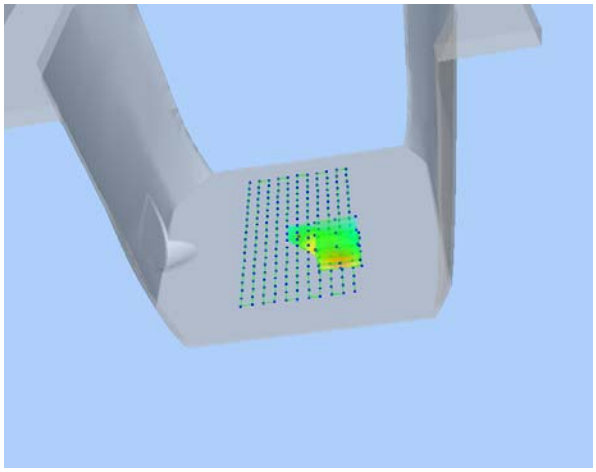
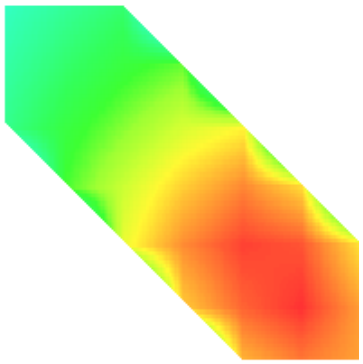
SURFACE SAR	VOLUME SAR
	

Maximum location: X=31.00, Y=-31.00

SAR 10g (W/Kg)	0.879690
SAR 1g (W/Kg)	1.477145

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	1.5816	0.9715	0.6192	0.4235



3D screen shot	Hot spot position
	

MEASUREMENT 42

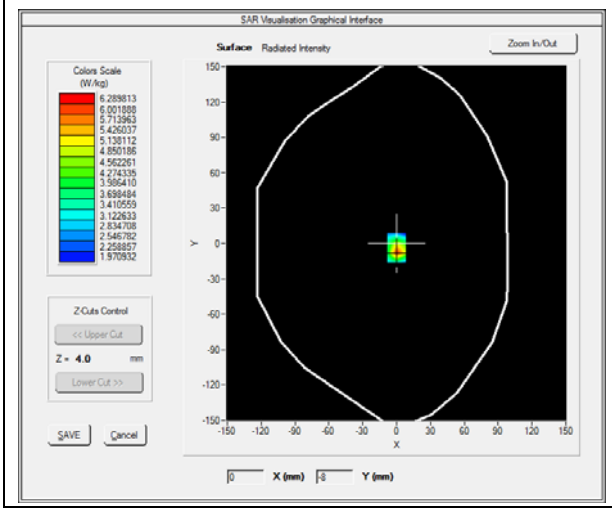
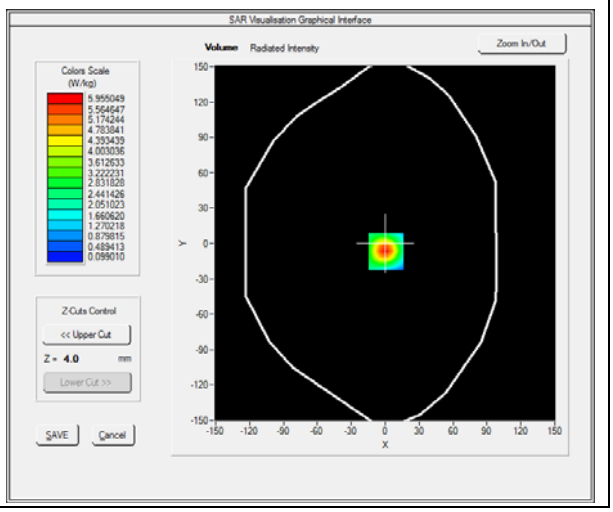
Type: Phone measurement (Complete)
Date of measurement: 05/15/2017
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.55; Calibrated: 06/01/2016

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Flat plane
Device Position	Back
Band	GPRS1900_4TX
Channels	High
Signal	Duty Cycle: 1:2

B. SAR Measurement Results

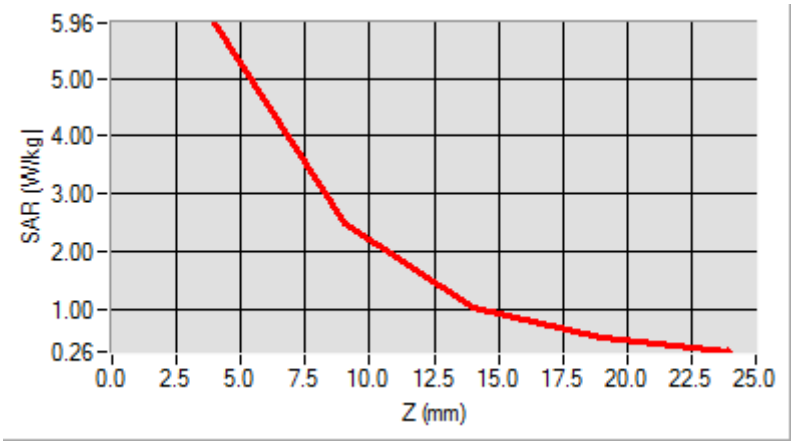
Frequency (MHz)	1909.800000
Relative Permittivity (real part)	52.420415
Conductivity (S/m)	1.501966
Power Variation (%)	1.048393
Ambient Temperature	21.1
Liquid Temperature	21.3

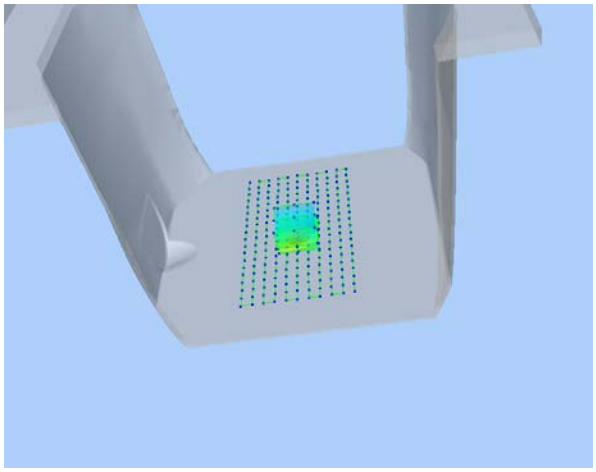
SURFACE SAR	VOLUME SAR
	

Maximum location: X=1.00, Y=-7.00

SAR 10g (W/Kg)	2.301412
SAR 1g (W/Kg)	5.385323

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	5.9550	2.5019	1.0332	0.4936



3D screen shot	Hot spot position
	

MEASUREMENT 48

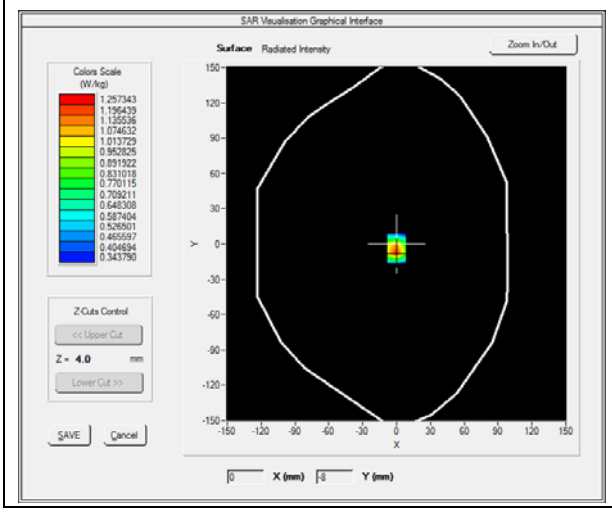
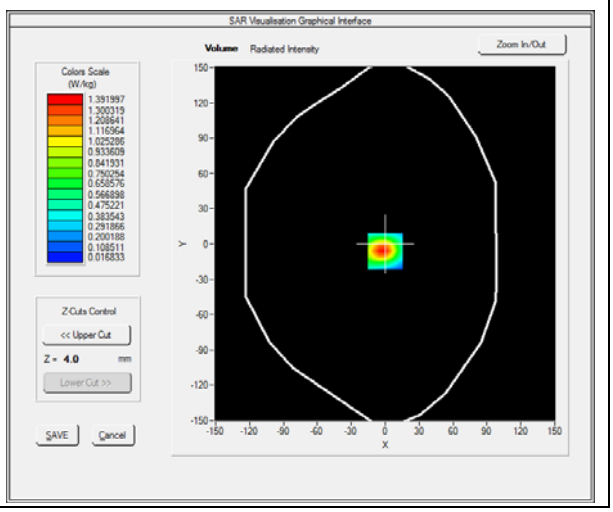
Type: Phone measurement (Complete)
Date of measurement: 05/15/2017
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.55; Calibrated: 06/01/2016

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Flat Plane
Device Position	Back
Band	WCDMA1900_RMC
Channels	Low
Signal	Duty Cycle 1:1

B. SAR Measurement Results

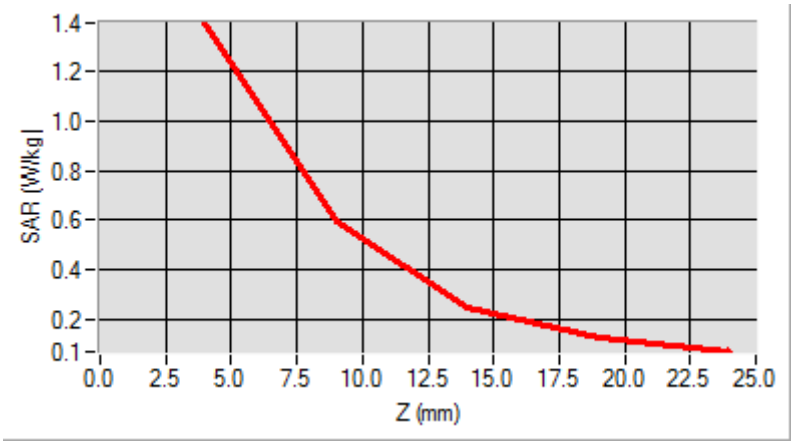
Frequency (MHz)	1852.400000
Relative Permittivity (real part)	52.420415
Conductivity (S/m)	1.501966
Power Variation (%)	1.546637
Ambient Temperature	21.1
Liquid Temperature	21.3

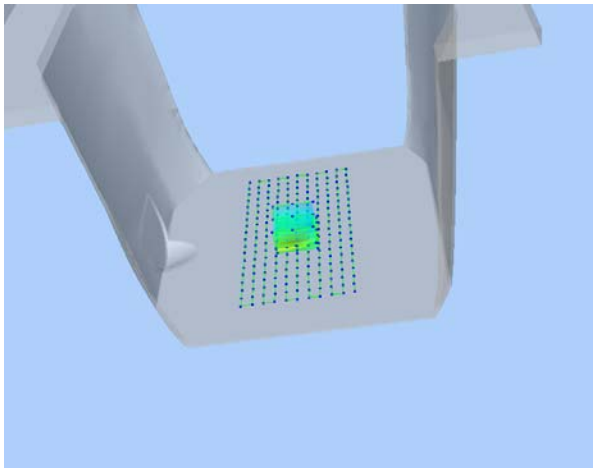
SURFACE SAR	VOLUME SAR
	

Maximum location: X=0.00, Y=-6.00

SAR 10g (W/Kg)	0.570831
SAR 1g (W/Kg)	1.270153

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	1.3920	0.5917	0.2509	0.1256



3D screen shot	Hot spot position
	

MEASUREMENT 55

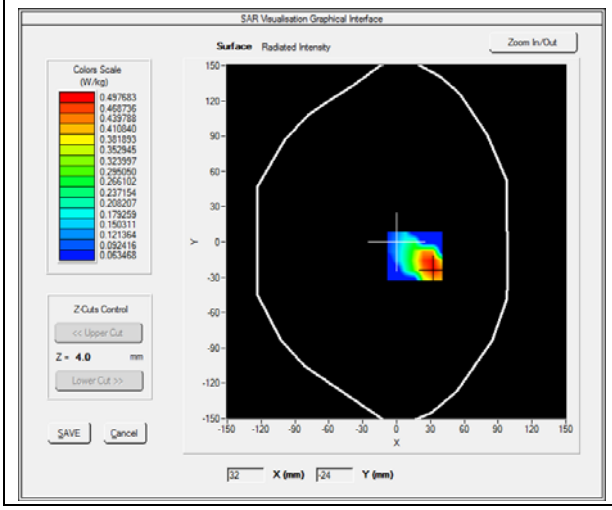
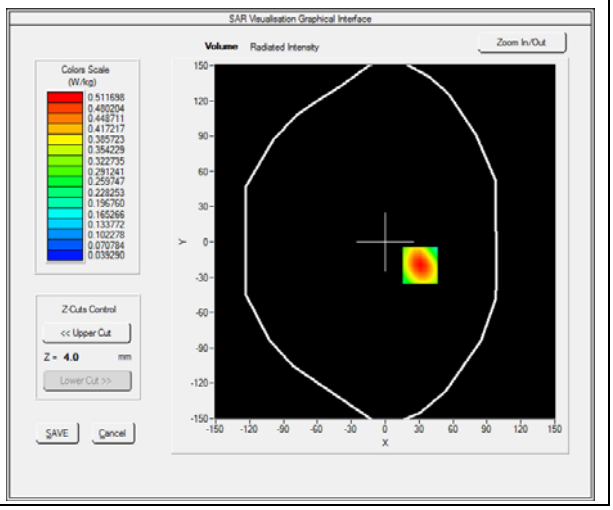
Type: Phone measurement (Complete)
Date of measurement: 05/15/2017
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 7.13; Calibrated: 06/01/2016

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Flat Plane
Device Position	Left
Band	WCDMA850_RMC
Channels	Middle
Signal	Duty Cycle 1:1

B. SAR Measurement Results

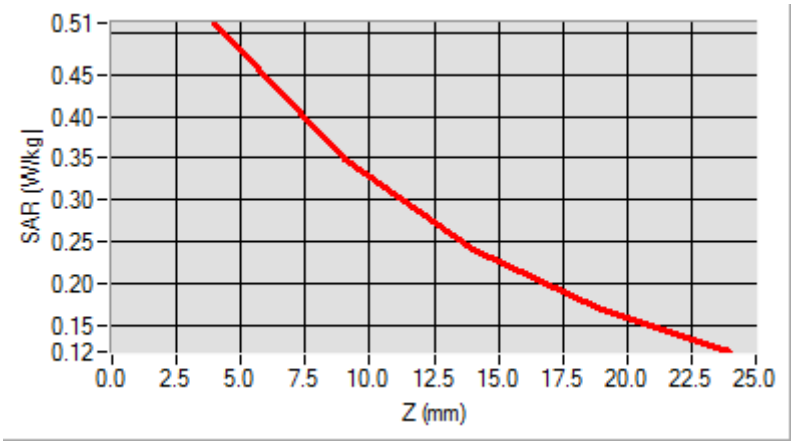
Frequency (MHz)	836.600000
Relative Permittivity (real part)	54.851214
Conductivity (S/m)	0.951454
Power Variation (%)	0.983832
Ambient Temperature	21.1
Liquid Temperature	21.3

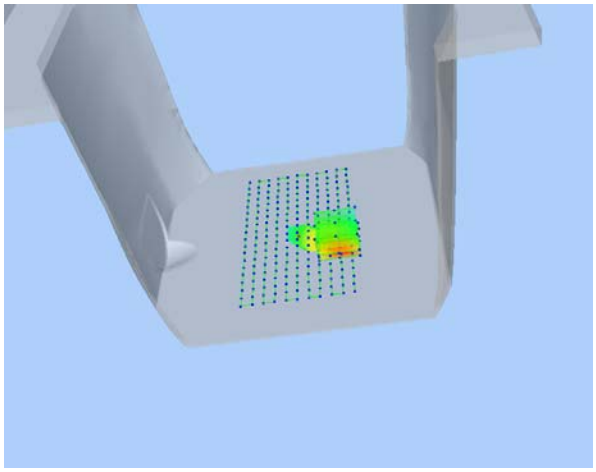
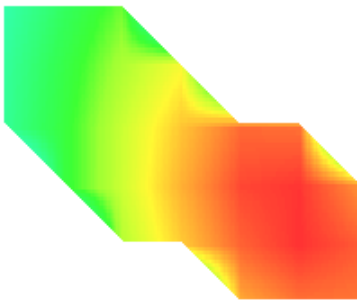
SURFACE SAR	VOLUME SAR
	

Maximum location: X=31.00, Y=-20.00

SAR 10g (W/Kg)	**0.308424**
SAR 1g (W/Kg)	**0.478701**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.0000**	**0.5117**	**0.3483**	**0.2403**	**0.1696**



3D screen shot	**Hot spot position**
	

MEASUREMENT 56

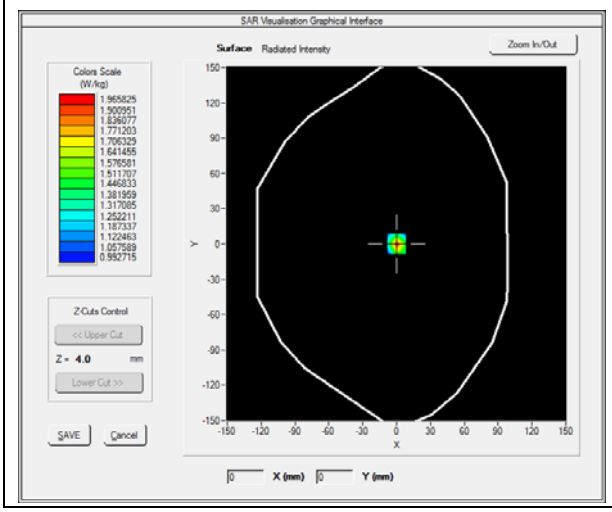
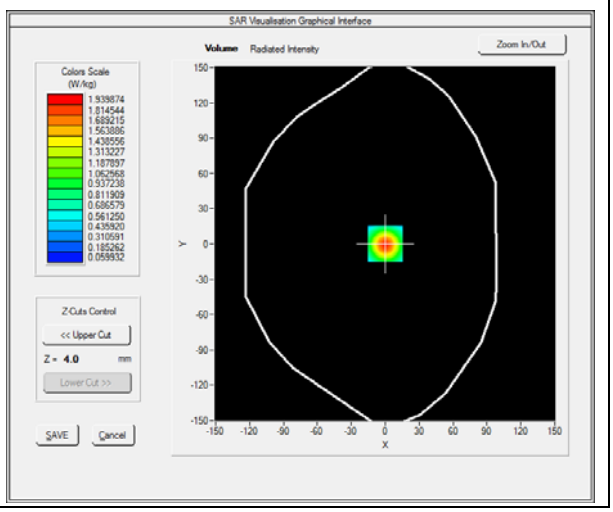
Type: Phone measurement (Complete)
Date of measurement: 05/15/2017
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.55; Calibrated: 06/01/2016

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Flat Plane
Device Position	Back
Band	LTE Band 2_RMC
Channels	QPSK, 20MHz, 1RB, High
Signal	Duty Cycle 1:1

B. SAR Measurement Results

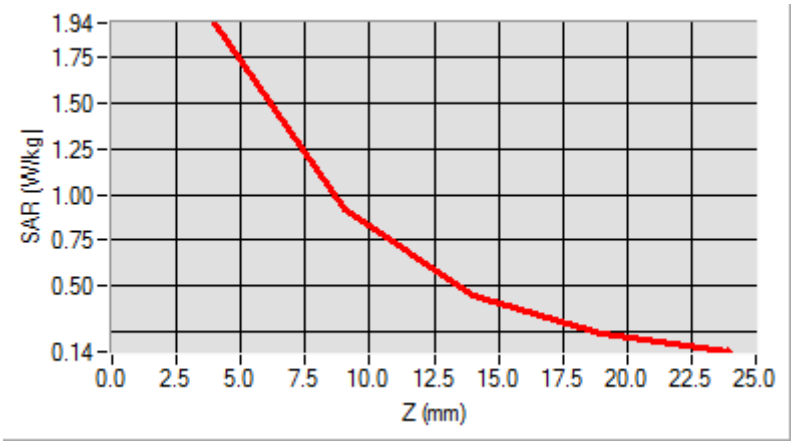
Frequency (MHz)	1900.000000
Relative Permittivity (real part)	52.420415
Conductivity (S/m)	1.501966
Power Variation (%)	1.393909
Ambient Temperature	21.1
Liquid Temperature	21.3

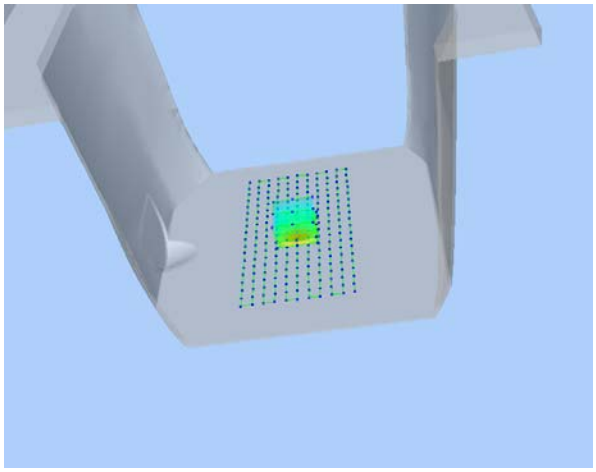
SURFACE SAR	VOLUME SAR
	

Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	**0.916516**
SAR 1g (W/Kg)	**1.909501**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.0000**	**1.9399**	**0.9189**	**0.4400**	**0.2372**



3D screen shot	**Hot spot position**
	

MEASUREMENT 64

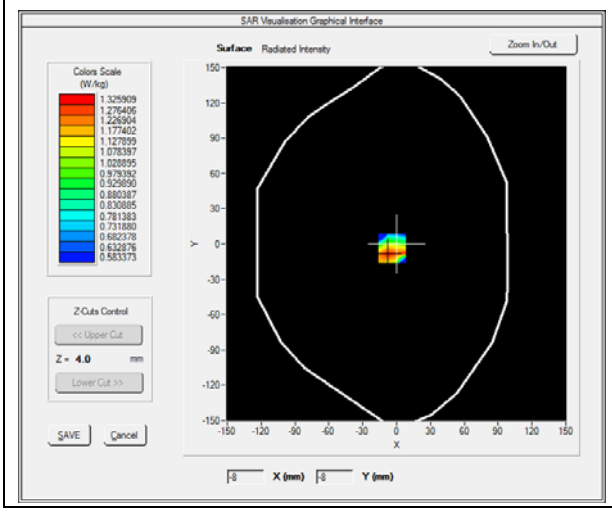
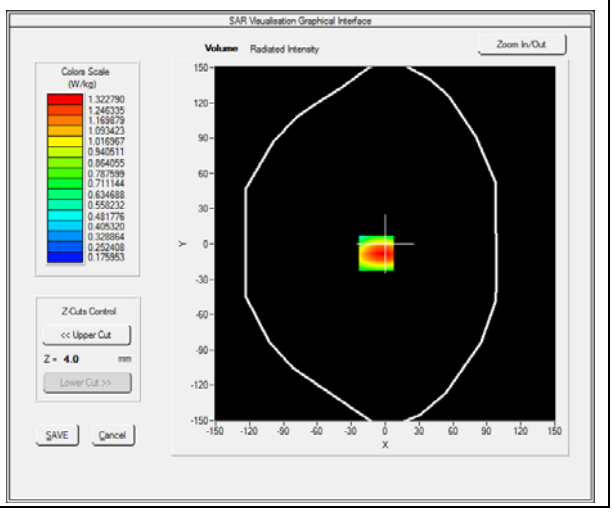
Type: Phone measurement (Complete)
Date of measurement: 05/15/2017
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 7.13 Calibrated: 06/01/2016

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
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

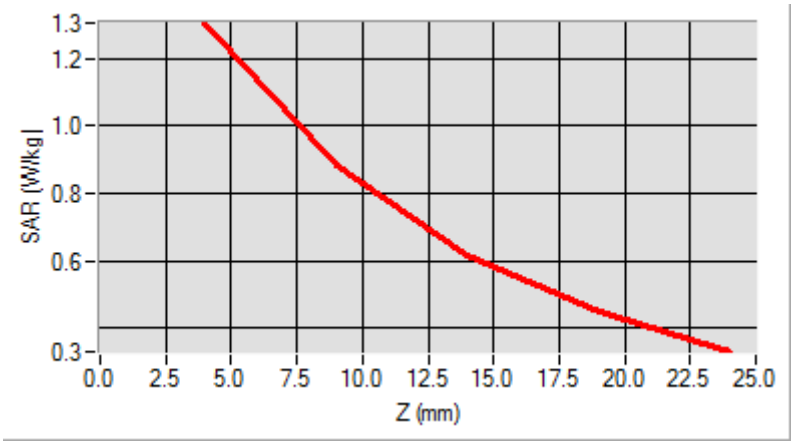
Frequency (MHz)	844.000000
Relative Permittivity (real part)	54.851214
Conductivity (S/m)	0.951454
Power Variation (%)	1.291911
Ambient Temperature	21.1
Liquid Temperature	21.3

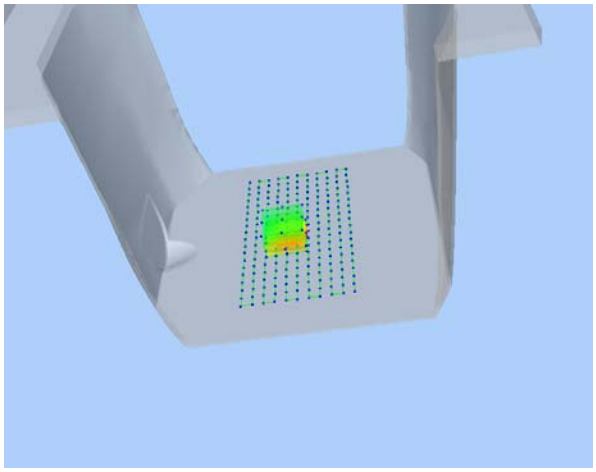
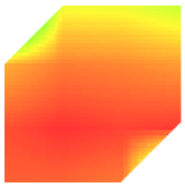
SURFACE SAR	VOLUME SAR
	

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

SAR 10g (W/Kg)	0.802490
SAR 1g (W/Kg)	1.240834

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	1.3052	0.8832	0.6156	0.4489



3D screen shot	Hot spot position
	

MEASUREMENT 74

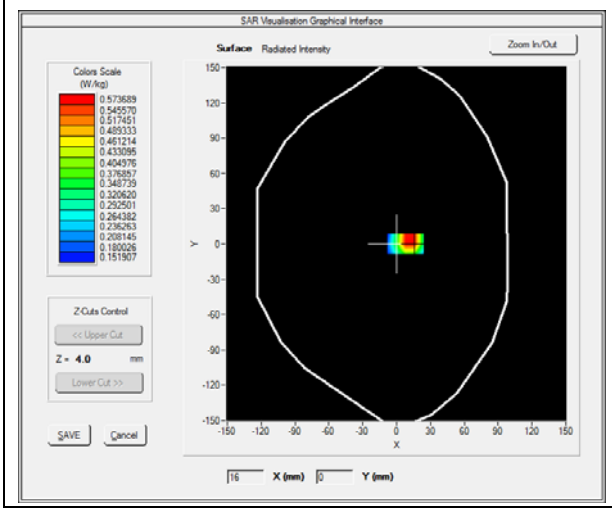
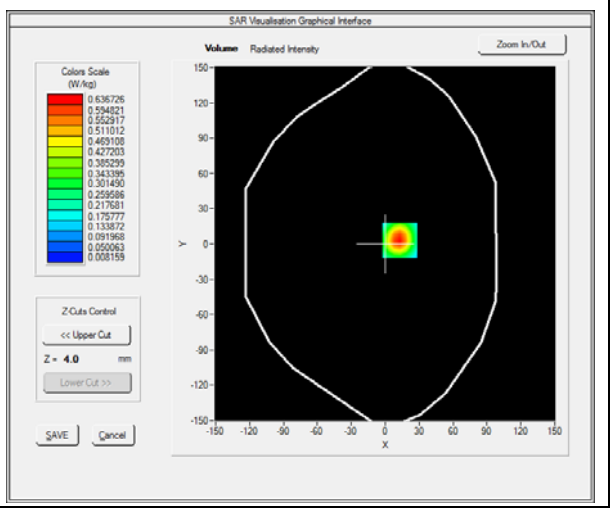
Type: Phone measurement (Complete)
Date of measurement: 05/15/2017
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 5.80; Calibrated: 06/01/2016

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Flat Plane
Device Position	Right
Band	WiFi_802.11b
Channels	Middle
Signal	Duty Cycle 1:1

B. SAR Measurement Results

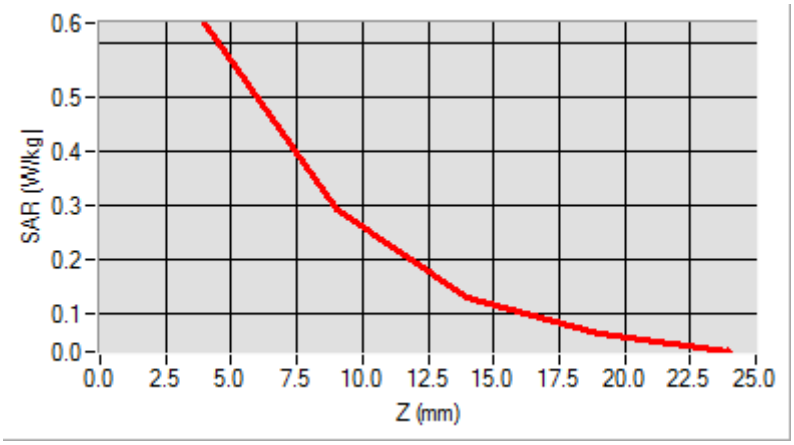
Frequency (MHz)	2437.000000
Relative Permittivity (real part)	52.010212
Conductivity (S/m)	1.910255
Power Variation (%)	0.498890
Ambient Temperature	21.1
Liquid Temperature	21.2

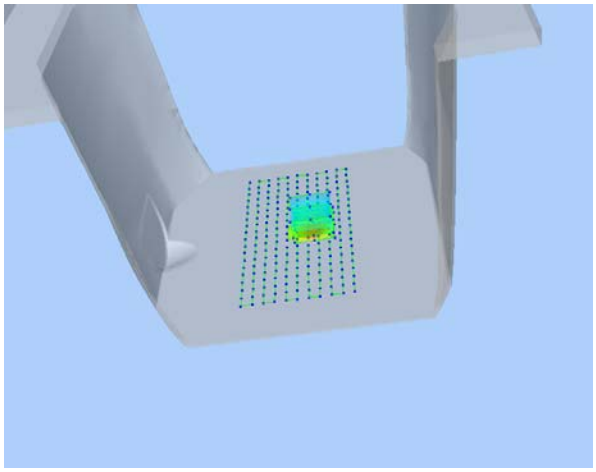
SURFACE SAR	VOLUME SAR
	

Maximum location: X=13.00, Y=3.00

SAR 10g (W/Kg)	**0.270743**
SAR 1g (W/Kg)	**0.579573**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.0000**	**0.6367**	**0.2926**	**0.1309**	**0.0622**



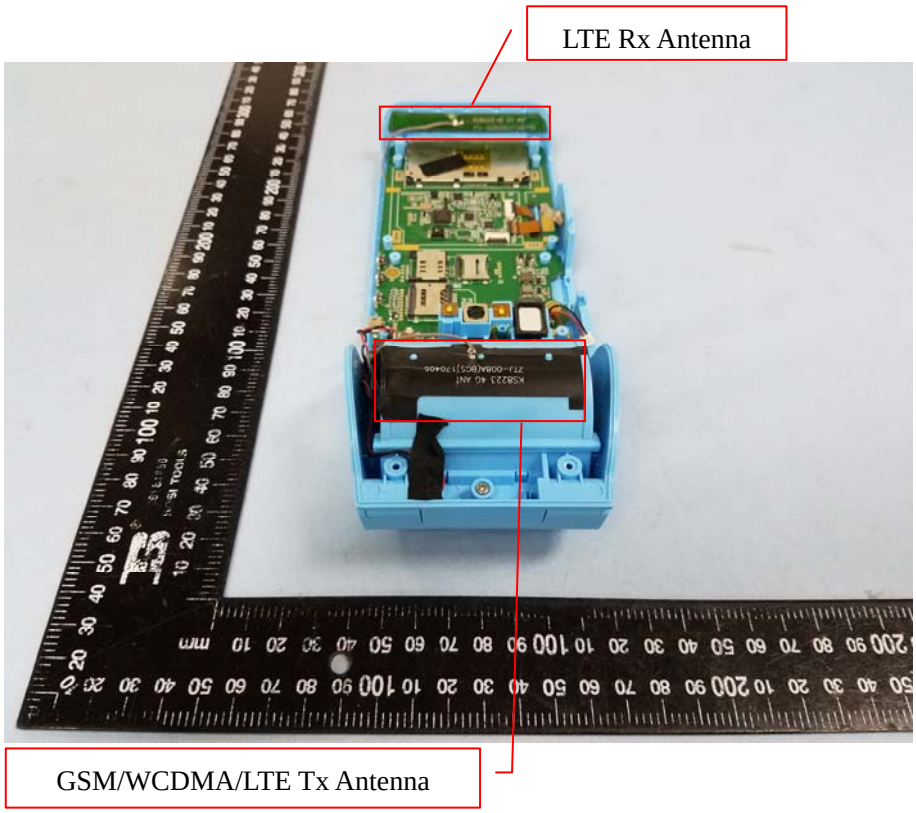
3D screen shot	**Hot spot position**
	

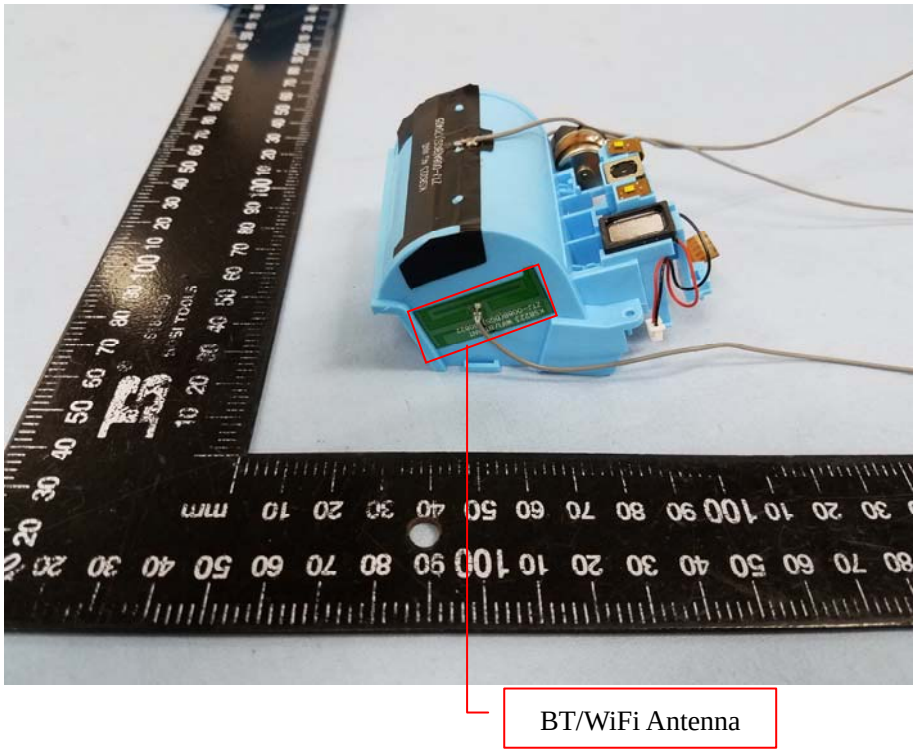
Annex C. EUT Photos

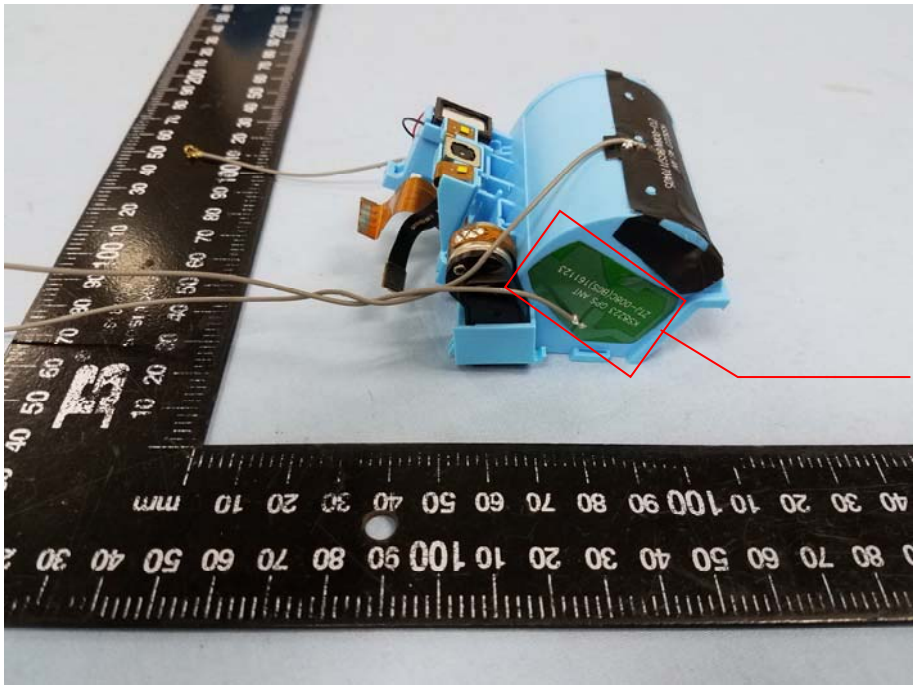
EUT View Front

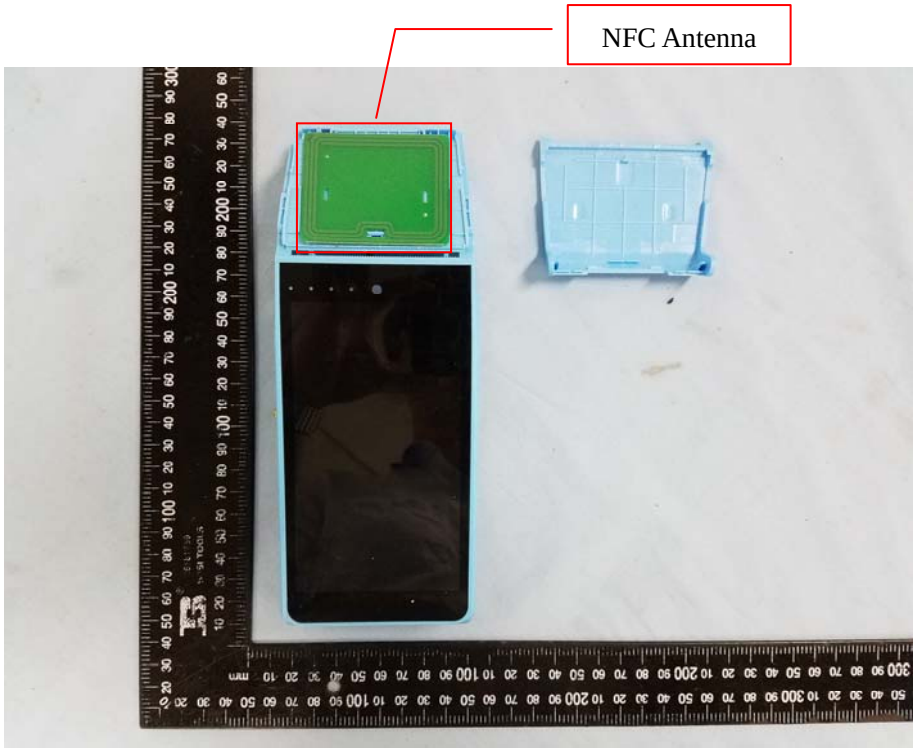
EUT View Back

Antenna View






GPS Antenna


NFC Antenna

Annex D. Test Setup Photos

Body mode Exposure Conditions

Body Front

Body Back

Body Right

Body Left

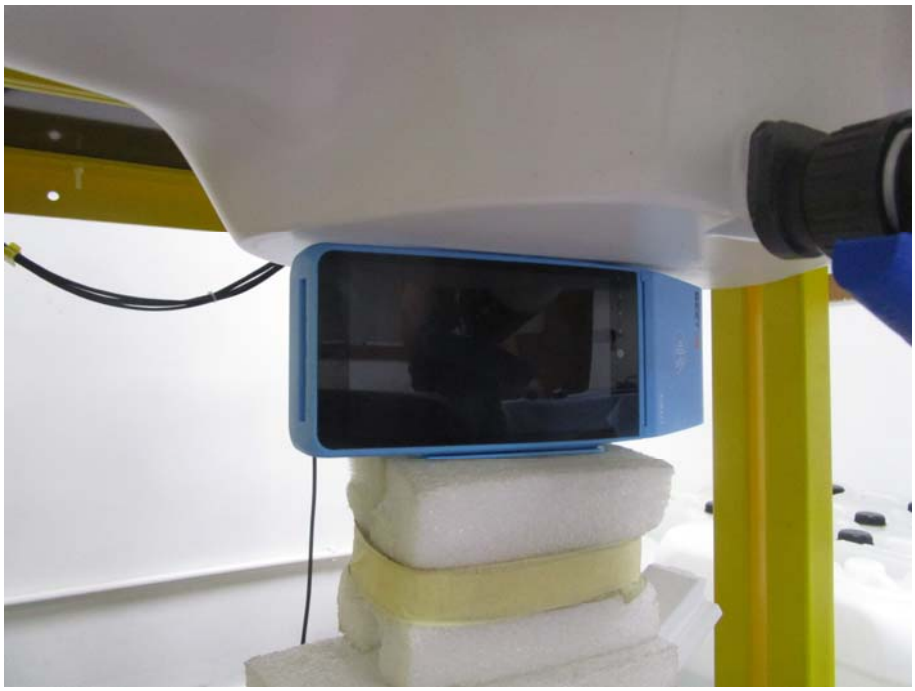
Hand exposure Conditions

Body Front

Body Back

Body Right

Body Left



Annex E. Calibration Certificate

Please refer to the Exhibit for the Calibration Certificate

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