FCC SAR
Measurement and Test Report

For

E-matic

3435 Ocean Park Blvd#107 PMB$444 Santa Monica CA 90405, Los Angeles,

CA 90405

FCC ID: XHWEGQ101

FCC Rules:	FCC Part 2.1093 ANSI / IEEE C95.1 :2005+A1:2010 ANSI / IEEE C95.3 :2002(R2008)
Product Description:	10.1inch phone tablet
Tested Model:	EGQ101
Report No.:	WTX19X12086090W
Sample Received Date:	2019-12-11
Tested Date:	2019-12-11 to 2019-12-30
Issued Date:	2019-12-31
Tested By:	Ruler Liu / Engineer
Reviewed By:	Silin Chen / EMC Manager
Approved & Authorized By:	Jandy So / PSQ Manager
Prepared By:	

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1. General Information

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant:	E-matic
Address of applicant:	3435 Ocean Park Blvd#107 PMB$444 Santa Monica CA 90405, Los Angeles, CA 90405
Manufacturer:	SHENZHEN NST INDUSTRY AND TRADE CO.LTD
Address of manufacturer:	3/F, Bldg 1, Hongbang Intelligent Technology Park, No.30 Cuibao Road, Baolong Street, Longgang District, Shenzhen, China
Importer：	Shaghal Ltd
Address of Importer:	10880 Wilshire Blvd #2250, Los Angeles, California, 90024

General Description of EUT	
Product Name:	10.1inch phone tablet
Brand Name:	Motile
Model No.:	EGQ101
Adding Model:	EGQ101BL, EGQ101GL, EGQ101SL, EGQ101RD, EGQ101PR, EGQ101PN, EGQ101DG
Rated Voltage:	DC 3.7V Battery
Battery Capacity:	5000mAh
Note: The test data is gathered from a production sample, provided by the manufacturer. For more information see the following datasheet. The appearance of others models listed in the report is different from main-test model EGQ101, but the circuit and the electronic construction do not change, declared by the manufacturer.	

Technical Characteristics of EUT	
2G	
Support Networks:	GSM, GPRS
Support Band:	GSM850/PCS1900
Uplink Frequency:	GSM/GPRS 850: 824~849MHz GSM/GPRS 1900: 1850~1910MHz
Downlink Frequency:	GSM/GPRS 850: 869~894MHz GSM/GPRS 1900: 1930~1990MHz
Max RF Output Power:	GSM850: 32.15dBm, GSM1900: 29.15dBm
Type of Modulation:	GMSK,8PSK
Antenna Type:	Internal Antenna
Antenna Gain:	GSM850: -0.52dBi; GSM1900: 0.72dBi

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: 22.23Bm, WCDMA Band 5: 22.09dBm
Type of Modulation:	BPSK, QPSK, 16QAM
Antenna Type:	Integral Antenna
Antenna Gain:	WCDMA Band 2: 0.72dBi, WCDMA Band 5: -0.52dBi
4G	
Support Networks:	FDD-LTE
Support Band:	FDD-LTE Band 2, 4, 7, 17
Uplink Frequency:	FDD-LTE Band 2: Tx: 1850-1910MHz, FDD-LTE Band 4: Tx: 1710-1755MHz, FDD-LTE Band 7: Tx: 2500-2570MHz, FDD-LTE Band 17: Tx: 704-716MHz
Downlink Frequency:	FDD-LTE Band 2: Rx: 1930-1990MHz, FDD-LTE Band 4: Rx: 2110-2155MHz, FDD-LTE Band 7: Rx: 2620-2690MHz, FDD-LTE Band 17: Rx: 734-746MHz
RF Output Power:	FDD-LTE Band 2: 24.09dBm, FDD-LTE Band 4: 24.94dBm, FDD-LTE Band 7: 24.22dBm, FDD-LTE Band 17: 23.64dBm
Type of Modulation:	QPSK, 16QAM
Antenna Type:	Integral Antenna
Antenna Gain:	FDD-LTE Band 2: 0.72dBi, FDD-LTE Band 4: 0.55dBi, FDD-LTE Band 7: 1.15dBi, FDD-LTE Band 17: -1.02dBi,
WIFI	
Support Standards:	802.11b, 802.11g, 802.11n-HT20/40
Frequency Range:	2412-2462MHz for 11b/g/n(HT20), 11n(HT40)
RF Output Power:	8.997m (Conducted)
Type of Modulation:	CCK, OFDM, QPSK, BPSK, 16QAM, 64QAM
Data Rate:	1-11Mbps, 6-54Mbps, up to 72.2Mbps
Quantity of Channels:	11
Channel Separation:	5MHz
Antenna Type:	Integral Antenna

Antenna Gain:	-1.1dBi
Bluetooth	
Bluetooth Version:	V4.2
Frequency Range:	2402-2480MHz
RF Output Power:	2.645dBm (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:	-1.1dBi

1.2 Test Standards

The following report is prepared on behalf of the E-matic accordance with FCC 47 CFR Part 2.1093, ANSI/IEEE C95.1 :2005+A1:2010, KDB 865664 D01 v01r04, KDB 865664 D02 v01r02, KDB 447498 D01 v06, and KDB 941225 D01 v03r01.

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

Address of the test laboratory
Laboratory: Shenzhen SEM Test Technology Co., Ltd.
Address: 1/F, Building A, Hongwei Industrial Park, Liuxian 2nd Road, Bao'an District, Shenzhen, P.R.C. (518101）

FCC – Registration No.: 125990
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. The Designation Number is CN5010.Test Firm Registration Number is 125990.

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

2. Summary of Test Results

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

Frequency Band	Body (0mm Gap) Maximum SAR_{1g} (W/kg)	SAR_{1g} Limit (W/kg)
GSM850	0.611	1.6
GSM1900	0.739	1.6
WCDMA Band V	0.197	1.6
WCDMA Band II	1.069	1.6
LTE Band 2	0.851	1.6
LTE Band 4	**1.283**	1.6
LTE Band 7	0.501	1.6
LTE Band 17	0.742	1.6
WLAN 2.4GHz	0.067	1.6
Simultaneous Transmission	**1.367**	1.6

The highest reported SAR values for body and simultaneous transmission conditions are ***1.283W/kg and 1.367 W/kg***

The device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg) specified in FCC 47 CFR Part 2.1093 and ANSI/IEEE C95.1 :2005+A1:2010, and had been tested in accordance with the measurement methods and procedure specified in IEEE 1528-2013 and 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

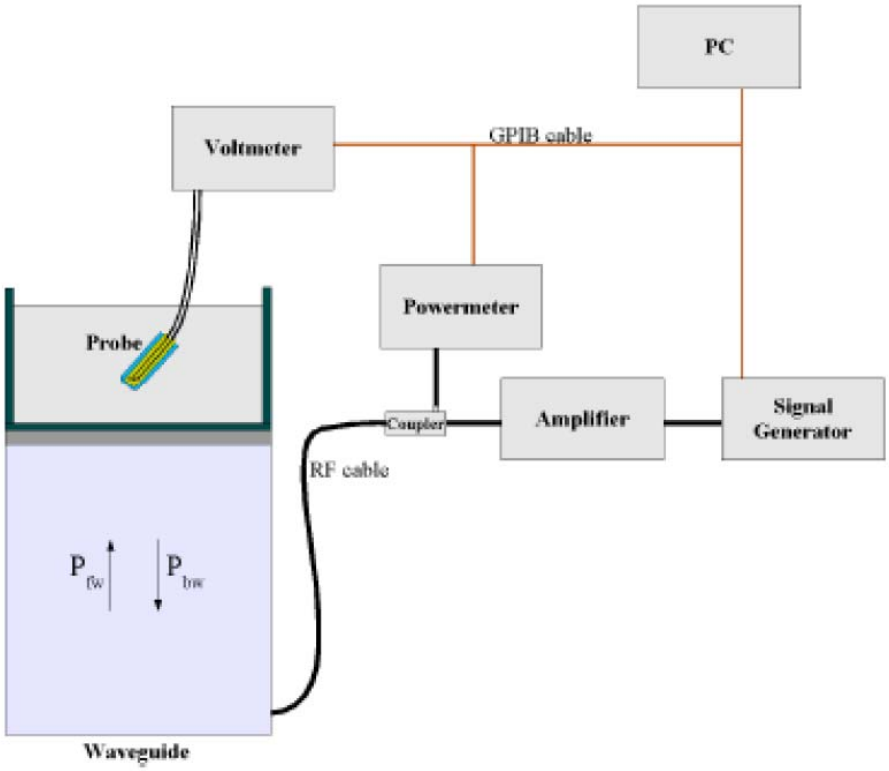
For the measurements the Specific Dosimetric E-Field Probe SSE5 SN 09/13 EP168 with following specifications is used

- 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.

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

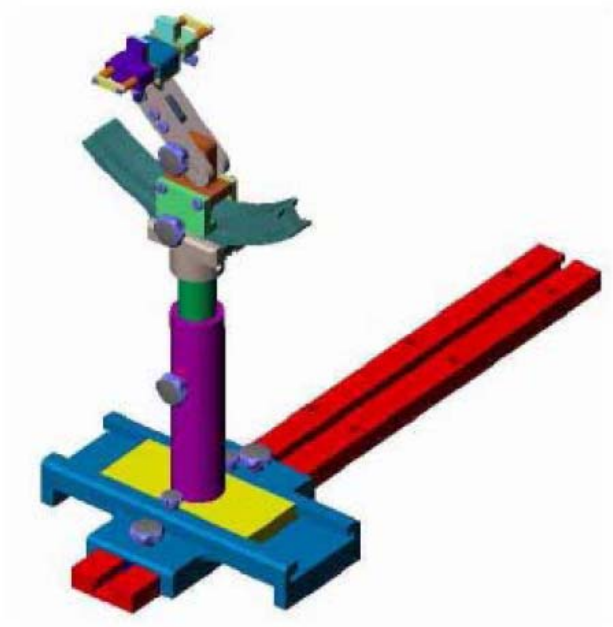
Where:
σ = simulated tissue conductivity,
ρ = Tissue density (1.25 g/cm3 for brain tissue)

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

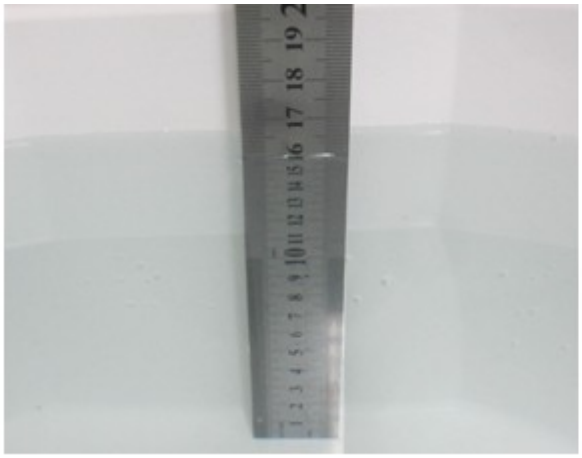
4.6 Test Equipment List

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
E-Field Probe	MVG	SSE5	SN 09/13 EP168	2019-05-22	2020-05-21
750MHz Dipole	MVG	SID750	SN 47/12 DIP 0G750-203	2019-03-16	2020-03-15
835MHz Dipole	MVG	SID835	SN 47/12 DIP 0G835-204	2019-03-16	2020-03-15
1800MHz Dipole	MVG	SID1800	SN 47/12 DIP 1G800-206	2019-03-16	2020-03-15
1900MHz Dipole	MVG	SID1900	SN 47/12 DIP 1G900-207	2019-03-16	2020-03-15
2450MHz Dipole	MVG	SID2450	SN 13/15 DIP 2G450-364	2019-03-16	2020-03-15
2600MHz Dipole	MVG	SID2600	SN 13/15 DIP 2G600-365	2019-03-16	2020-03-15
Dielectric Probe Kit	MVG	SCLMP	SN 47/12 OCPG49	2019-03-16	2020-03-15
SAM Phantom	MVG	SAM	SN/ 47/12 SAM95	N/A	N/A
MULTIMETER	KEITHLEY	Keithley 2000	4006367	2019-04-30	2020-04-29
Signal Generator	Rohde & Schwarz	SMR20	100047	2019-04-30	2020-04-29
Universal Tester	Rohde & Schwarz	CMU200	112012	2019-04-30	2020-04-29
Communications Tester	Rohde & Schwarz	CMW500	148650	2019-04-30	2020-04-29
Network Analyzer	HP	8753C	2901A00831	2019-04-30	2020-04-29
Directional Couplers	Agilent	778D	20160	2019-04-30	2020-04-29

5. Tissue Simulating Liquids

5.1 Composition of Tissue Simulating Liquid

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



Liquid Height for Head SAR

Liquid Height for Body SAR

The Composition of Tissue Simulating Liquid

Frequency (MHz)	Water (%)	Salt (%)	Sugar (%)	HEC (%)	Preventol (%)	DGBE (%)
Body						
750	50.0	0.8	48.8	0.2	0.2	0
835	50.8	0.9	48.2	0	0.1	0.00
1800-1900	70.2	0.4	0	0	0	29.4
2450	68.6	0.1	0	0	0	31.3
2600	68.2	0.1	0	0	0	31.7

5.2 Tissue Dielectric Parameters for Head and Body Phantoms

The head tissue dielectric parameters recommended by the IEEE SCC-34/SC-2 in P1528 have been incorporated in the following table. These head parameters are derived from planar layer models simulating the highest expected SAR for the dielectric properties and tissue thickness variations in a human head. Other head and body tissue parameters that have not been specified in P1528 are derived from the tissue dielectric parameters computed from the 4-Cole-Cole equations described in Reference [12] and extrapolated according to the head parameters specified in P1528.

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

5.3 Tissue Calibration Result

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

Calibration Result for Dielectric Parameters of Tissue Simulating Liquid

Body Tissue Simulating Liquid									
Freq. MHz.	Temp. (℃)	Conductivity			Permittivity			Limit (%)	Date
		Reading (σ)	Target (σ)	Delta (%)	Reading (ε r)	Target (ε r)	Delta (%)		
750	21.2	0.93	0.96	-3.12	54.96	55.50	-0.97	±5	2019-12-23
835	21.2	0.95	0.97	-2.06	54.85	55.20	-0.63	±5	2019-12-23
1750	21.3	1.46	1.49	-2.01	51.22	53.40	-4.08	±5	2019-12-24
1800	21.3	1.46	1.52	-3.95	51.22	53.30	-3.90	±5	2019-12-24
1900	21.3	1.50	1.52	-1.32	52.42	53.30	-1.65	±5	2019-12-24
2450	21.3	1.91	1.95	-2.05	52.01	52.70	-1.31	±5	2019-12-25
2600	21.3	2.12	2.16	-1.85	52.24	52.50	-0.50	±5	2019-12-25

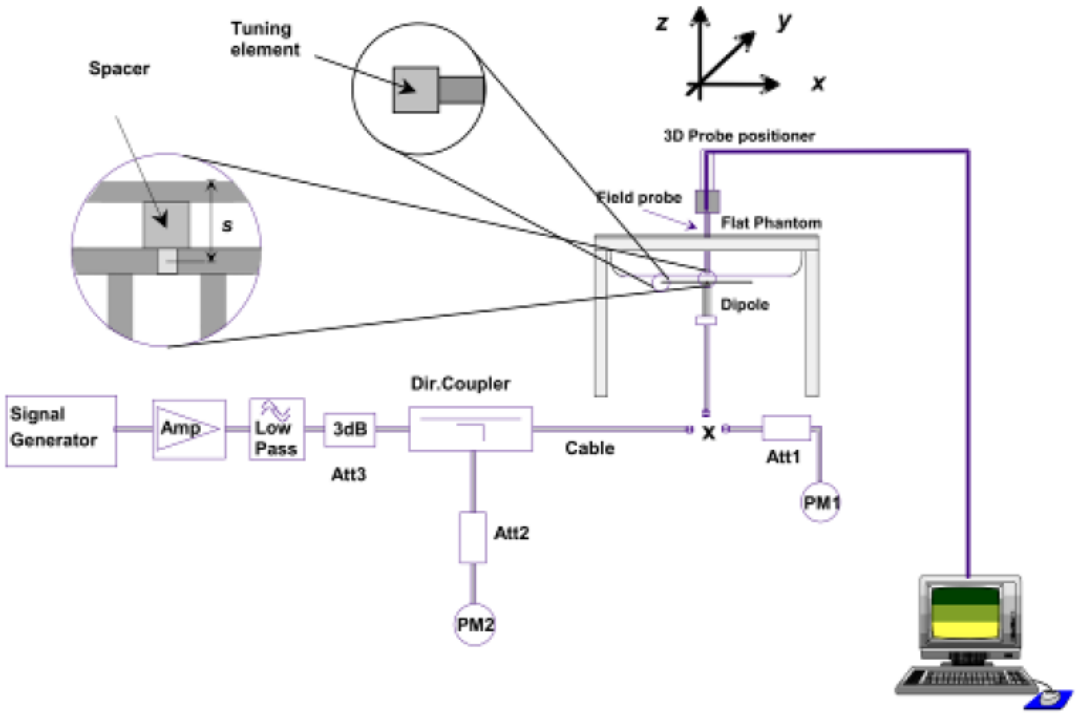
6. SAR Measurement Evaluation

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 24 dBm (250 mW) 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.

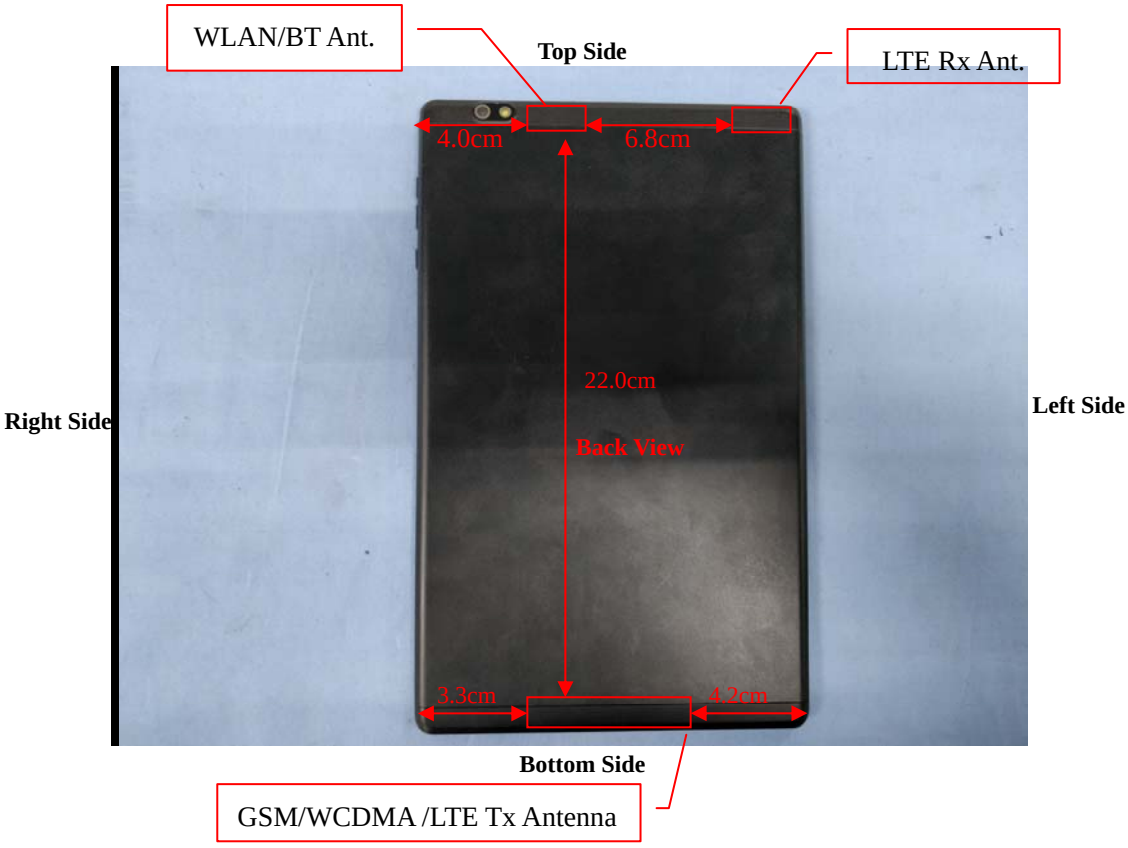
Frequency	Targeted SAR_{1g}	Measured SAR_{1g}	Normalized SAR_{1g}	Tolerance	Date
MHz	(W/kg)	(W/kg)	(W/kg)	(%)	
Body					
750	8.40	2.12	8.48	0.95	2019-12-23
835	9.38	2.36	9.44	0.64	2019-12-23
1800	38.29	9.58	38.32	0.08	2019-12-24
1900	39.10	9.80	39.2	0.26	2019-12-24
2450	50.41	12.59	50.36	-0.10	2019-12-25
2600	53.92	13.43	53.72	-0.37	2019-12-25

Targeted and Measurement SAR

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

7. EUT Testing Position

7.1 EUT Antenna Position



Block Diagram for EUT Antenna Position

7.2 EUT Testing Position

Exclusion Distance Calculation				
Frequency Bands	Service	Maximum Tune-up Power	Average Power	Exclusion Distance
GPRS850	GPRS(4slots)	32.5dBm	29.5dBm	190mm
GPRS1900	GPRS(4slots)	29.5dBm	26.5dBm	90mm
WCDMA Band V	RMC 12.2k	22.5dBm	22.5dBm	60mm
WCDMA Band II	RMC 12.2k	22.5dBm	22.5dBm	70mm
LTE Band 2	QPSK(20MHz)	24.5dBm	24.5dBm	80mm
LTE Band 4	QPSK(20MHz)	25.0dBm	25.0dBm	70mm
LTE Band 7	QPSK(20MHz)	24.5dBm	24.5dBm	70mm
LTE Band 17	QPSK(10MHz)	24.0dBm	24.0dBm	70mm
WLAN	11b	9.0dBm	9.0dBm	5mm
Note: Refer to Chapter 9.1 Conducted RF Output Power				

Remark:

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

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

Body SAR tests, Test distance: 0mm						
Frequency Bands	**Front**	**Back**	**Right Side**	**Left Side**	**Top Side**	**Bottom Side**
GPRS850	No	Yes	Yes	Yes	No	Yes
GPRS1900	No	Yes	Yes	Yes	No	Yes
WCDMA Band V	No	Yes	Yes	Yes	No	Yes
WCDMA Band II	No	Yes	Yes	Yes	No	Yes
LTE Band 2	No	Yes	Yes	Yes	No	Yes
LTE Band 4	No	Yes	Yes	Yes	No	Yes
LTE Band 12	No	Yes	Yes	Yes	No	Yes
LTE Band 17	No	Yes	Yes	Yes	No	Yes
WLAN	No	Yes	No	No	Yes	No

Remark:

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

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

8. SAR Measurement Procedures

8.1 Measurement Procedures

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

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

8.2 Spatial Peak SAR Evaluation

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

8.3 Area & Zoom Scan Procedures

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

8.4 Volume Scan Procedures

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

8.5 SAR Averaged Methods

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

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

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

8.6 Power Drift Monitoring

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

9. SAR Test Result

9.1 Conducted RF Output Power

GSM - Burst Average Power (dBm)						
Band	**GSM850**			**PCS1900**		
Channel	**128**	**190**	**251**	**512**	**661**	**810**
Frequency (MHz)	**824.2**	**836.4**	**848.8**	**1850.2**	**1880**	**1909.8**
GSM	31.98	32.08	32.15	29.15	28.23	28.13
GPRS (1 slot)	31.85	32.07	32.04	29.04	28.15	28.12
GPRS (2 slots)	31.89	31.99	32.11	29.12	28.20	28.06
GPRS (3 slots)	31.96	32.04	32.05	29.30	28.18	28.11
GPRS (4 slots)	31.94	32.06	32.09	29.15	28.20	28.07

GSM - Source-Based Time-Average Power (dBm)						
Band	**GSM850**			**PCS1900**		
Channel	**128**	**190**	**251**	**512**	**661**	**810**
Frequency (MHz)	**824.2**	**836.4**	**848.8**	**1850.2**	**1880**	**1909.8**
GSM	22.98	23.08	23.15	20.15	19.23	19.13
GPRS (1 slot)	22.85	23.07	23.04	20.04	19.15	19.12
GPRS (2 slots)	25.89	25.99	26.11	23.12	22.20	22.06
GPRS (3 slots)	27.71	27.79	27.80	25.05	23.93	23.86
GPRS (4 slots)	28.94	29.06	29.09	26.15	25.20	25.07
Note: The source-based time-averaged power is linearly scaled the maximum burst averaged power based on time slots. The calculated method are shown as below: Source based time-average power = Burst averaged power - Duty cycle factor in dB						

Remark:

1. For Body SAR testing, GPRS should be evaluated, therefore the EUT was set in GPRS (4Tx slots) for GSM850 and GPRS (4Tx slots) for 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.

WCDMA - Average Power (dBm)						
Band	**WCDMA Band II**			**WCDMA Band V**		
Channel	**9262**	**9400**	**9538**	**4132**	**4183**	**4233**
Frequency (MHz)	**1852.4**	**1880.0**	**1907.6**	**826.4**	**836.6**	**846.6**
RMC 12.2k	21.35	22.04	22.23	22.01	22.07	22.09
HSDPA Subtest-1	21.08	21.19	21.23	21.03	21.25	21.25
HSDPA Subtest-2	21.02	21.09	21.22	20.99	21.23	21.24
HSDPA Subtest-3	21.03	21.16	21.09	20.87	21.21	21.18
HSDPA Subtest-4	21.05	21.05	21.08	20.95	21.18	21.19
HSUPA Subtest-1	21.18	21.3	21.19	20.96	21.19	21.19
HSUPA Subtest-2	21.08	21.29	21.19	20.98	21.17	21.03
HSUPA Subtest-3	21.15	21.28	21.23	20.97	21.17	21.17
HSUPA Subtest-4	21.14	21.14	21.25	20.95	21.15	21.19
HSUPA Subtest-5	21.16	21.28	21.26	20.93	21.11	21.18

Remark:

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

FDD-LTE Band 2:

Channel Bandwidth: 1.4 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	24.00	0
		1	3	23.99	0
		1	5	24.01	0
		3	0	23.03	0
		3	2	23.00	0
		3	3	23.03	0
		6	0	23.01	1
	MCH	1	0	23.77	0
		1	3	23.79	0
		1	5	23.77	0
		3	0	23.28	0
		3	2	23.25	0
		3	3	23.21	0
		6	0	22.74	1
	HCH	1	0	23.48	0
		1	3	23.54	0
		1	5	23.45	0
		3	0	23.22	0
		3	2	23.26	0
		3	3	23.25	0
		6	0	22.25	1
16QAM	LCH	1	0	23.03	1
		1	3	23.05	1
		1	5	23.02	1
		3	0	23.16	1
		3	2	23.16	1
		3	3	23.13	1
		6	0	21.95	2
	MCH	1	0	22.89	1
		1	3	22.99	1
		1	5	22.98	1
		3	0	22.80	1
		3	2	22.81	1
		3	3	22.84	1
		6	0	21.76	2
	HCH	1	0	22.73	1
		1	3	22.76	1

		1	5	22.75	1
		3	0	22.49	1
		3	2	22.46	1
		3	3	22.46	1
		6	0	21.78	2

Channel Bandwidth: 3 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	23.86	0
		1	7	23.82	0
		1	14	23.84	0
		8	0	23.00	1
		8	4	22.90	1
		8	7	22.90	1
		15	0	22.88	1
	MCH	1	0	23.76	0
		1	7	23.78	0
		1	14	23.78	0
		8	0	22.84	1
		8	4	22.74	1
		8	7	22.79	1
		15	0	22.72	1
	HCH	1	0	23.53	0
		1	7	23.56	0
		1	14	23.47	0
		8	0	22.57	1
		8	4	22.50	1
		8	7	22.58	1
		15	0	22.60	1
16QAM	LCH	1	0	22.87	1
		1	7	22.81	1
		1	14	22.80	1
		8	0	21.99	2
		8	4	21.93	2
		8	7	21.92	2
		15	0	22.01	2
	MCH	1	0	23.12	1
		1	7	23.24	1
		1	14	23.21	1
		8	0	21.87	2
		8	4	21.95	2
		8	7	21.91	2

		15	0	21.89	2
	HCH	1	0	23.23	1
		1	7	23.21	1
		1	14	23.16	1
		8	0	21.71	2
		8	4	21.77	2
		8	7	21.76	2
		15	0	21.68	2

Channel Bandwidth: 5 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	23.95	0
		1	12	23.87	0
		1	24	23.79	0
		12	0	22.89	1
		12	6	22.90	1
		12	13	22.88	1
		25	0	22.99	1
	MCH	1	0	23.61	0
		1	12	23.67	0
		1	24	23.69	0
		12	0	22.80	1
		12	6	22.69	1
		12	13	22.79	1
		25	0	22.82	1
	HCH	1	0	23.69	0
		1	12	23.69	0
		1	24	23.72	0
		12	0	22.55	1
		12	6	22.51	1
		12	13	22.55	1
		25	0	22.53	1
16QAM	LCH	1	0	23.04	1
		1	12	22.99	1
		1	24	22.94	1
		12	0	22.06	2
		12	6	22.01	2
		12	13	21.94	2
		25	0	22.11	2
	MCH	1	0	23.29	1
		1	12	23.30	1
		1	24	23.32	1

		12	0	22.00	2
		12	6	21.94	2
		12	13	21.97	2
		25	0	22.09	2
	HCH	1	0	22.58	1
		1	12	22.64	1
		1	24	22.62	1
		12	0	21.42	2
		12	6	21.43	2
		12	13	21.51	2
		25	0	21.61	2

Channel Bandwidth: 10 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	24.08	0
		1	24	24.02	0
		1	49	23.70	0
		25	0	23.14	1
		25	12	22.90	1
		25	25	22.75	1
		50	0	22.86	1
	MCH	1	0	23.71	0
		1	24	23.75	0
		1	49	23.71	0
		25	0	22.87	1
		25	12	22.75	1
		25	25	22.82	1
		50	0	22.87	1
	HCH	1	0	23.52	0
		1	24	23.55	0
		1	49	23.56	0
		25	0	22.46	1
		25	12	22.42	1
		25	25	22.56	1
		50	0	22.56	1
16QAM	LCH	1	0	22.96	1
		1	24	22.91	1
		1	49	22.81	1
		25	0	21.95	2
		25	12	21.81	2
		25	25	21.90	2
		50	0	21.98	2

	MCH	1	0	23.38	1
		1	24	23.29	1
		1	49	23.31	1
		25	0	21.92	2
		25	12	21.94	2
		25	25	21.93	2
		50	0	21.98	2
	HCH	1	0	22.68	1
		1	24	22.68	1
		1	49	22.73	1
		25	0	21.58	2
		25	12	21.49	2
		25	25	21.60	2
		50	0	21.58	2

Channel Bandwidth: 15 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	23.88	0
		1	37	23.74	0
		1	74	23.70	0
		37	0	22.92	1
		37	18	22.89	1
		37	38	22.77	1
		75	0	22.75	1
	MCH	1	0	23.86	0
		1	37	23.89	0
		1	74	23.81	0
		37	0	22.70	1
		37	18	22.80	1
		37	38	22.79	1
		75	0	22.75	1
	HCH	1	0	23.73	0
		1	37	23.48	0
		1	74	23.45	0
		37	0	22.58	1
		37	18	22.45	1
		37	38	22.47	1
		75	0	22.51	1
16QAM	LCH	1	0	22.95	1
		1	37	22.82	1
		1	74	22.74	1
		37	0	21.86	2

		37	18	21.85	2
		37	38	21.90	2
		75	0	21.99	2
	MCH	1	0	22.76	1
		1	37	22.72	1
		1	74	22.64	1
		37	0	21.96	2
		37	18	21.88	2
		37	38	21.88	2
		75	0	21.89	2
	HCH	1	0	22.86	1
		1	37	22.61	1
		1	74	22.67	1
		37	0	21.69	2
		37	18	21.53	2
		37	38	21.62	2
		75	0	21.54	2

Channel Bandwidth: 20 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	24.09	0
		1	49	23.89	0
		1	99	23.97	0
		50	0	23.38	1
		50	25	22.84	1
		50	50	22.85	1
		100	0	22.92	1
	MCH	1	0	24.05	0
		1	49	24.03	0
		1	99	23.98	0
		50	0	22.82	1
		50	25	22.87	1
		50	50	22.81	1
		100	0	22.87	1
	HCH	1	0	24.03	0
		1	49	23.40	0
		1	99	23.31	0
		50	0	22.63	1
		50	25	22.59	1
		50	50	22.50	1
		100	0	22.53	1
16QAM	LCH	1	0	22.62	1

		1	49	22.51	1
		1	99	22.52	1
		50	0	21.90	2
		50	25	21.96	2
		50	50	21.91	2
		100	0	21.93	2
	MCH	1	0	22.52	1
		1	49	22.67	1
		1	99	22.54	1
		50	0	21.85	2
		50	25	21.96	2
		50	50	21.95	2
		100	0	21.98	2
	HCH	1	0	23.00	1
		1	49	22.76	1
		1	99	22.80	1
		50	0	21.73	2
		50	25	21.70	2
		50	50	21.59	2
		100	0	21.67	2

FDD-LTE Band 4:

Channel Bandwidth: 1.4 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	24.54	0
		1	3	24.52	0
		1	5	24.55	0
		3	0	23.65	0
		3	2	23.64	0
		3	3	23.58	0
		6	0	23.56	1
	MCH	1	0	24.61	0
		1	3	24.59	0
		1	5	24.64	0
		3	0	23.69	0
		3	2	23.74	0
		3	3	23.68	0
		6	0	23.59	1
	HCH	1	0	24.22	0
		1	3	24.17	0

		1	5	24.10	0
		3	0	23.37	0
		3	2	23.42	0
		3	3	23.36	0
		6	0	23.46	1
16QAM	LCH	1	0	23.67	1
		1	3	23.69	1
		1	5	23.63	1
		3	0	23.81	1
		3	2	23.76	1
		3	3	23.79	1
		6	0	22.44	2
	MCH	1	0	23.29	1
		1	3	23.29	1
		1	5	23.29	1
		3	0	23.53	1
		3	2	23.59	1
		3	3	23.55	1
		6	0	22.58	2
	HCH	1	0	23.46	1
		1	3	23.45	1
		1	5	23.46	1
		3	0	22.97	1
		3	2	22.96	1
		3	3	22.92	1
		6	0	22.55	2

Channel Bandwidth: 3 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	24.39	0
		1	7	24.43	0
		1	14	24.49	0
		8	0	23.56	1
		8	4	23.44	1
		8	7	23.49	1
		15	0	23.65	1
	MCH	1	0	24.61	0
		1	7	24.60	0
		1	14	24.55	0
		8	0	23.65	1
		8	4	23.71	1
		8	7	23.67	1

		15	0	23.66	1
	HCH	1	0	24.27	0
		1	7	24.19	0
		1	14	24.22	0
		8	0	23.38	1
		8	4	23.42	1
		8	7	23.40	1
		15	0	23.50	1
16QAM	LCH	1	0	23.52	1
		1	7	23.51	1
		1	14	23.58	1
		8	0	22.56	2
		8	4	22.62	2
		8	7	22.64	2
		15	0	22.73	2
	MCH	1	0	23.53	1
		1	7	23.60	1
		1	14	23.47	1
		8	0	22.70	1
		8	4	22.66	2
		8	7	22.72	2
		15	0	22.73	2
	HCH	1	0	23.23	2
		1	7	23.20	1
		1	14	23.12	1
		8	0	22.73	1
		8	4	22.67	1
		8	7	22.62	2
		15	0	22.68	2

Channel Bandwidth: 5 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	24.53	0
		1	12	24.55	0
		1	24	24.53	0
		12	0	23.59	1
		12	6	23.66	1
		12	13	23.57	1
		25	0	23.56	1
	MCH	1	0	24.55	0
		1	12	24.46	0
		1	24	24.52	0

		12	0	23.62	1
		12	6	23.61	1
		12	13	23.65	1
		25	0	23.66	1
	HCH	1	0	24.49	0
		1	12	24.47	0
		1	24	24.46	0
		12	0	23.49	1
		12	6	23.41	1
		12	13	23.52	1
		25	0	23.52	1
16QAM	LCH	1	0	23.39	1
		1	12	23.44	1
		1	24	23.40	1
		12	0	22.63	2
		12	6	22.63	2
		12	13	22.72	2
		25	0	22.86	2
	MCH	1	0	23.18	1
		1	12	23.26	1
		1	24	23.23	1
		12	0	22.80	2
		12	6	22.77	2
		12	13	22.81	2
		25	0	22.83	2
	HCH	1	0	23.15	1
		1	12	23.17	1
		1	24	23.13	1
		12	0	22.41	2
		12	6	22.45	2
		12	13	22.45	2
		25	0	22.68	2

Channel Bandwidth: 10 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	24.37	0
		1	24	24.40	0
		1	49	24.48	0
		25	0	23.61	1
		25	12	23.45	1
		25	25	23.70	1
		50	0	23.61	1

	MCH	1	0	24.73	0
		1	24	24.57	0
		1	49	24.59	0
		25	0	23.73	1
		25	12	23.59	1
		25	25	23.73	1
		50	0	23.59	1
	HCH	1	0	24.43	0
		1	24	24.37	0
		1	49	24.29	0
		25	0	23.42	1
		25	12	23.51	1
		25	25	23.38	1
		50	0	23.37	1
16QAM	LCH	1	0	23.49	1
		1	24	23.46	1
		1	49	23.56	1
		25	0	22.73	2
		25	12	22.65	2
		25	25	22.77	2
		50	0	22.71	2
	MCH	1	0	23.34	1
		1	24	23.24	1
		1	49	23.22	1
		25	0	22.80	2
		25	12	22.76	2
		25	25	22.79	2
		50	0	22.77	2
	HCH	1	0	23.76	1
		1	24	23.69	1
		1	49	23.60	1
		25	0	22.59	2
		25	12	22.58	2
		25	25	22.64	2
		50	0	22.65	2

Channel Bandwidth: 15 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	24.47	0
		1	37	24.54	0
		1	74	24.59	0
		37	0	23.49	1

		37	18	23.72	1
		37	38	23.78	1
		75	0	23.57	1
	MCH	1	0	24.68	0
		1	37	24.55	0
		1	74	24.65	0
		37	0	23.70	1
		37	18	23.60	1
		37	38	23.62	1
		75	0	23.65	1
	HCH	1	0	24.61	0
		1	37	24.45	0
		1	74	24.34	0
		37	0	23.44	1
		37	18	23.46	1
		37	38	23.47	1
		75	0	23.50	1
16QAM	LCH	1	0	23.53	1
		1	37	23.62	1
		1	74	23.70	1
		37	0	22.76	2
		37	18	22.83	2
		37	38	22.90	2
		75	0	22.84	2
	MCH	1	0	23.69	1
		1	37	23.62	1
		1	74	23.60	1
		37	0	22.89	2
		37	18	22.76	2
		37	38	22.77	2
		75	0	22.71	2
	HCH	1	0	23.81	1
		1	37	23.76	1
		1	74	23.59	1
		37	0	22.70	2
		37	18	22.65	2
		37	38	22.53	2
		75	0	22.68	2

Channel Bandwidth: 20 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	23.54	0
		1	49	24.69	0
		1	99	24.77	0
		50	0	23.56	1
		50	25	23.51	1
		50	50	23.53	1
		100	0	23.65	1
	MCH	1	0	24.58	0
		1	49	24.44	0
		1	99	24.41	0
		50	0	23.78	1
		50	25	23.62	1
		50	50	23.55	1
		100	0	23.66	1
	HCH	1	0	24.94	0
		1	49	24.86	0
		1	99	24.77	0
		50	0	23.83	1
		50	25	23.46	1
		50	50	23.54	1
		100	0	23.61	1
16QAM	LCH	1	0	23.60	1
		1	49	23.64	1
		1	99	23.79	1
		50	0	22.72	2
		50	25	22.77	2
		50	50	22.89	2
		100	0	22.65	2
	MCH	1	0	23.91	1
		1	49	23.92	1
		1	99	23.89	1
		50	0	22.90	2
		50	25	22.77	2
		50	50	22.72	2
		100	0	22.70	2
	HCH	1	0	23.90	1
		1	49	23.81	1
		1	99	23.71	1
		50	0	22.67	2

		50	25	22.69	2
		50	50	22.56	2
		100	0	22.64	2

FDD-LTE Band 7:

Channel Bandwidth: 5 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	23.91	0
		1	12	23.83	0
		1	24	23.80	0
		12	0	22.94	1
		12	6	22.98	1
		12	13	22.92	1
		25	0	22.90	1
	MCH	1	0	23.97	0
		1	12	23.91	0
		1	24	23.93	0
		12	0	22.93	1
		12	6	22.92	1
		12	13	22.92	1
		25	0	22.99	1
	HCH	1	0	23.57	0
		1	12	23.52	0
		1	24	22.52	0
		12	0	23.05	1
		12	6	23.04	1
		12	13	22.92	1
		25	0	23.07	1
16QAM	LCH	1	0	22.56	1
		1	12	22.66	1
		1	24	22.64	1
		12	0	22.12	2
		12	6	22.13	2
		12	13	22.12	2
		25	0	22.28	2
	MCH	1	0	22.56	1
		1	12	22.60	1
		1	24	22.54	1
		12	0	21.95	2

		12	6	21.90	2
		12	13	21.99	2
		25	0	22.15	2
	HCH	1	0	23.06	1
		1	12	22.97	1
		1	24	22.74	1
		12	0	22.08	2
		12	6	22.13	2
		12	13	22.15	2
		25	0	22.34	2

Channel Bandwidth: 10 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	23.82	0
		1	24	23.87	0
		1	49	23.73	0
		25	0	22.92	1
		25	12	22.96	1
		25	25	22.99	1
		50	0	22.91	1
	MCH	1	0	23.80	0
		1	24	23.74	0
		1	49	23.81	0
		25	0	22.81	1
		25	12	22.79	1
		25	25	22.92	1
		50	0	22.86	1
	HCH	1	0	24.17	0
		1	24	24.09	0
		1	49	23.09	0
		25	0	23.02	1
		25	12	23.09	1
		25	25	23.11	1
		50	0	23.12	1
16QAM	LCH	1	0	22.95	1
		1	24	22.91	1
		1	49	22.82	1
		25	0	22.08	2
		25	12	22.06	2
		25	25	21.98	2
		50	0	22.05	2
	MCH	1	0	22.94	1

		1	24	22.79	1
		1	49	22.82	1
		25	0	22.08	2
		25	12	21.90	2
		25	25	21.91	2
		50	0	22.06	2
	HCH	1	0	22.71	1
		1	24	22.81	1
		1	49	22.53	1
		25	0	22.23	2
		25	12	22.24	2
		25	25	22.24	2
		50	0	22.22	2

Channel Bandwidth: 15 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	23.74	0
		1	37	23.87	0
		1	74	23.91	0
		37	0	22.78	1
		37	18	22.72	1
		37	38	22.75	1
		75	0	22.85	1
	MCH	1	0	23.99	0
		1	37	23.92	0
		1	74	23.64	0
		37	0	22.98	1
		37	18	22.84	1
		37	38	22.90	1
		75	0	22.91	1
	HCH	1	0	23.83	0
		1	37	23.99	0
		1	74	22.83	0
		37	0	23.02	1
		37	18	23.07	1
		37	38	23.11	1
		75	0	23.09	1
16QAM	LCH	1	0	22.97	1
		1	37	22.76	1
		1	74	22.77	1
		37	0	22.08	2
		37	18	22.05	2

		37	38	22.01	2
		75	0	22.10	2
	MCH	1	0	23.07	1
		1	37	23.09	1
		1	74	23.08	1
		37	0	22.14	2
		37	18	22.06	2
		37	38	21.99	2
		75	0	21.98	2
	HCH	1	0	22.93	1
		1	37	23.04	1
		1	74	23.09	1
		37	0	22.16	2
		37	18	22.20	2
		37	38	22.30	2
		75	0	22.13	2

Channel Bandwidth: 20 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	24.22	0
		1	49	24.11	0
		1	99	23.95	0
		50	0	23.19	1
		50	25	22.94	1
		50	50	22.81	1
		100	0	22.92	1
	MCH	1	0	24.14	0
		1	49	24.13	0
		1	99	24.01	0
		50	0	22.93	1
		50	25	22.81	1
		50	50	22.89	1
		100	0	22.87	1
	HCH	1	0	23.79	0
		1	49	24.08	0
		1	99	23.28	0
		50	0	22.98	1
		50	25	23.13	1
		50	50	23.17	1
		100	0	23.06	1
16QAM	LCH	1	0	23.38	1
		1	49	23.15	1

		1	99	23.16	1
		50	0	22.22	2
		50	25	22.01	2
		50	50	22.13	2
		100	0	22.00	2
	MCH	1	0	23.14	1
		1	49	23.17	1
		1	99	23.21	1
		50	0	22.13	2
		50	25	22.05	2
		50	50	22.01	2
		100	0	22.02	2
	HCH	1	0	23.45	1
		1	49	23.48	1
		1	99	23.44	1
		50	0	22.12	2
		50	25	22.20	2
		50	50	22.24	2
		100	0	22.07	2

FDD-LTE Band 17:

Channel Bandwidth: 5 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	23.51	0
		1	12	23.48	0
		1	24	23.53	0
		12	0	22.47	1
		12	6	22.51	1
		12	13	22.51	1
		25	0	22.55	1
	MCH	1	0	23.30	0
		1	12	23.23	0
		1	24	23.22	0
		12	0	22.42	1
		12	6	22.55	1
		12	13	22.39	1
		25	0	22.46	1
	HCH	1	0	23.45	0
		1	12	23.37	0
		1	24	22.97	0
		12	0	22.49	1
		12	6	22.38	1
		12	13	22.37	1
		25	0	22.38	1
16QAM	LCH	1	0	22.35	1
		1	12	22.31	1
		1	24	22.31	1
		12	0	21.58	2
		12	6	21.48	2
		12	13	21.40	2
		25	0	21.66	2
	MCH	1	0	22.89	1
		1	12	22.74	1
		1	24	22.79	1
		12	0	21.56	2
		12	6	21.43	2
		12	13	21.53	2
		25	0	21.65	2
	HCH	1	0	22.00	1
		1	12	22.18	1

		1	24	21.98	1
		12	0	21.32	2
		12	6	21.29	2
		12	13	21.37	2
		25	0	21.43	2

Channel Bandwidth: 10 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	23.32	0
		1	24	23.33	0
		1	49	23.11	0
		25	0	22.53	1
		25	12	22.52	1
		25	25	22.41	1
		50	0	22.44	1
	MCH	1	0	23.55	0
		1	24	23.56	0
		1	49	23.64	0
		25	0	22.52	1
		25	12	22.42	1
		25	25	22.61	1
		50	0	22.46	1
	HCH	1	0	23.30	0
		1	24	23.30	0
		1	49	23.03	0
		25	0	22.48	1
		25	12	22.35	1
		25	25	22.34	1
		50	0	22.41	1
16QAM	LCH	1	0	22.23	1
		1	24	22.19	1
		1	49	22.09	1
		25	0	21.53	2
		25	12	21.46	2
		25	25	21.36	2
		50	0	21.45	2
	MCH	1	0	23.00	1
		1	24	23.00	1
		1	49	22.75	1
		25	0	21.55	2
		25	12	21.51	2
		25	25	21.54	2

		50	0	21.49	2
	HCH	1	0	22.58	1
		1	24	22.60	1
		1	49	22.36	1
		25	0	21.47	2
		25	12	21.44	2
		25	25	21.37	2
		50	0	21.44	2

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	8.582
		CH 06	2437	8.997
		CH 11	2462	8.786
802.11g	54Mbps	CH 01	2412	7.093
		CH 06	2437	7.629
		CH 11	2462	7.897
802.11n (20MHz)	MCS7	CH 01	2412	5.909
		CH 06	2437	6.41
		CH 11	2462	6.554
802.11n (40MHz)	MCS7	CH 03	2422	4.957
		CH 06	2437	5.318
		CH 09	2452	5.599

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	1.943
Pi/4 QDPSK	2Mbps	2.643
8DPSK	3Mbps	2.645

Bluetooth - Maximum Average Power				
Test Mode	**Data Rate**	**Channel**	**Frequency (MHz)**	**Average Power (dBm)**
BLE	1Mbps	CH 00	2402	-1.756
		CH 19	2440	-1.880
		CH 39	2480	-1.709

Remark:

Bluetooth maximum output power is 4.851dBm res*pectively*, 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

BT:

Tune-Up Power (dBm)	Max. Power (mW)	Distance (mm)	Frequency (GHz)	Result	Limit
3.0	2.0	5	2.480	0.630	3

The exclusion thresholds is 0.630< 3, therefore, the RF exposure evaluation is not required.

9.2 Test Results for Standalone SAR Test

Body SAR

GSM850 – Body SAR Test (Gap: 0mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
1.	GPRS_4TX	Back Side	251	848.8	32.09	32.5	1.099	0.556	0.611
2.	GPRS_4TX	Right side	251	848.8	32.09	32.5	1.099	0.189	0.208
3.	GPRS_4TX	Left side	251	848.8	32.09	32.5	1.099	0.172	0.189
4.	GPRS_4TX	Bottom side	251	848.8	32.09	32.5	1.099	0.366	0.402

GSM1900 – Body SAR Test (Gap: 0mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
5.	GPRS_4TX	Back Side	512	1850.2	29.15	29.5	1.084	0.644	0.698
6.	GPRS_4TX	Right side	512	1850.2	29.15	29.5	1.084	0.291	0.315
7.	GPRS_4TX	Left side	512	1850.2	29.15	29.5	1.084	0.275	0.298
8.	GPRS_4TX	Bottom side	512	1850.2	29.15	29.5	1.084	0.682	0.739

WCDMA Band V – Body SAR Test (Gap: 0mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
9.	RMC 12.2k	Back Side	4233	846.6	22.09	22.5	1.099	0.179	0.197
10.	RMC 12.2k	Right side	4233	846.6	22.09	22.5	1.099	0.112	0.123
11.	RMC 12.2k	Left side	4233	846.6	22.09	22.5	1.099	0.103	0.113
12.	RMC 12.2k	Bottom side	4233	846.6	22.09	22.5	1.099	0.157	0.173

WCDMA Band II – Body SAR Test (Gap: 0mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
13.	RMC 12.2k	Back Side	9538	1907.6	22.23	22.5	1.064	0.620	0.660
14.	RMC 12.2k	Right side	9538	1907.6	22.23	22.5	1.064	0.366	0.389
15.	RMC 12.2k	Left side	9538	1907.6	22.23	22.5	1.064	0.334	0.355
16.	RMC 12.2k	Bottom side	9538	1907.6	22.23	22.5	1.064	0.791	0.842
17.	RMC 12.2k	Bottom side	9262	1852.4	21.35	22.5	1.303	0.820	1.069
18.	RMC 12.2k	Bottom side	9400	1880.0	22.04	22.5	1.112	0.785	0.873

LTE Band 2–Body SAR Test (Gap: 0mm)								
Plot No.	Mode	Test Position	Frequency	Output Power	Rated Limit	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth, RB	Body	MHz	(dBm)	(dBm)			
19.	QPSK 20MHz 1RB	Back Side	1860.0	24.09	24.5	1.099	0.522	0.574
20.	QPSK 20MHz 1RB	Right side	1860.0	24.09	24.5	1.099	0.298	0.328
21.	QPSK 20MHz 1RB	Left side	1860.0	24.09	24.5	1.099	0.276	0.303
22.	QPSK 20MHz 1RB	Bottom side	1860.0	24.09	24.5	1.099	0.774	0.851
23.	QPSK 20MHz 50%RB	Back Side	1860.0	24.09	24.5	1.099	0.278	0.306
24.	QPSK 20MHz 50%RB	Right side	1860.0	24.09	24.5	1.099	0.157	0.173
25.	QPSK 20MHz 50%RB	Left side	1860.0	24.09	24.5	1.099	0.132	0.145
26.	QPSK 20MHz 50%RB	Bottom side	1860.0	24.09	24.5	1.099	0.337	0.370

LTE Band 4–Body SAR Test (Gap: 0mm)								
Plot No.	Mode	Test Position	Frequency	Output Power	Rated Limit	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth, RB	Body	MHz	(dBm)	(dBm)			
27.	QPSK 20MHz 1RB	Back Side	1745.0	24.94	25.0	1.014	1.125	1.141
28.	QPSK 20MHz 1RB	Back Side	1720.0	24.77	25.0	1.054	1.136	1.198
29.	QPSK 20MHz 1RB	Back Side	1732.5	24.58	25.0	1.102	1.165	1.283
30.	QPSK 20MHz 1RB	Right side	1745.0	24.94	25.0	1.014	0.556	0.564
31.	QPSK 20MHz 1RB	Left side	1745.0	24.94	25.0	1.014	0.532	0.539
32.	QPSK 20MHz 1RB	Bottom side	1745.0	24.94	25.0	1.014	1.045	1.060
33.	QPSK 20MHz 1RB	Bottom side	1720.0	24.77	25.0	1.054	1.079	1.138
34.	QPSK 20MHz 1RB	Bottom side	1732.5	24.58	25.0	1.102	1.086	1.196
35.	QPSK 20MHz 50%RB	Back Side	1745.0	24.94	25.0	1.014	0.589	0.597
36.	QPSK 20MHz 50%RB	Right side	1745.0	24.94	25.0	1.014	0.279	0.283
37.	QPSK 20MHz 50%RB	Left side	1745.0	24.94	25.0	1.014	0.265	0.269
38.	QPSK 20MHz 50%RB	Bottom side	1745.0	24.94	25.0	1.014	0.561	0.569

LTE Band 7–Body SAR Test (Gap: 0mm)								
Plot No.	Mode	Test Position Body	Frequency	Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth, RB		MHz					
39.	20MHz 1RB	Back Side	2510.0	24.22	24.5	1.067	0.470	0.501
40.	20MHz 1RB	Right side	2510.0	24.22	24.5	1.067	0.273	0.291
41.	20MHz 1RB	Left side	2510.0	24.22	24.5	1.067	0.262	0.279
42.	20MHz 1RB	Bottom side	2510.0	24.22	24.5	1.067	0.420	0.448
43.	20MHz 50%RB	Back Side	2510.0	24.22	24.5	1.067	0.237	0.253
44.	20MHz 50%RB	Right side	2510.0	24.22	24.5	1.067	0.138	0.147
45.	20MHz 50%RB	Left side	2510.0	24.22	24.5	1.067	0.126	0.134
46.	20MHz 50%RB	Bottom side	2510.0	24.22	24.5	1.067	0.224	0.239

LTE Band 17–Body SAR Test (Gap: 0mm)								
Plot No.	Mode	Test Position Body	Frequency	Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth, RB		MHz					
47.	QPSK 10MHz 1RB	Back Side	710.0	23.64	24.0	1.086	0.683	0.742
48.	QPSK 10MHz 1RB	Right side	710.0	23.64	24.0	1.086	0.271	0.294
49.	QPSK 10MHz 1RB	Left side	710.0	23.64	24.0	1.086	0.254	0.276
50.	QPSK 10MHz 1RB	Bottom side	710.0	23.64	24.0	1.086	0.478	0.519
51.	QPSK 10MHz 50%RB	Back Side	710.0	23.64	24.0	1.086	0.348	0.378
52.	QPSK 10MHz 50%RB	Right side	710.0	23.64	24.0	1.086	0.144	0.156
53.	QPSK 10MHz 50%RB	Left side	710.0	23.64	24.0	1.086	0.132	0.143
54.	QPSK 10MHz 50%RB	Bottom side	710.0	23.64	24.0	1.086	0.237	0.257

WLAN 2.4GHz –Body SAR Test(Gap: 0mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
55.	802.11b	Back Side	06	2437	8.997	9.0	1.001	0.067	0.067
56.	802.11b	Top Side	06	2437	8.997	9.0	1.001	0.056	0.056

Remark:1. Per KDB447498 D01 v06, if the highest output channel SAR for each exposure position ≤ 0.8 W/kg other channels SAR tests are not necessary.

Repeated SAR

WCDMA Band II – Body SAR Test (Gap: 0mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
57.	RMC 12.2k	Bottom side	9262	1852.4	21.35	22.5	1.303	0.803	1.046

LTE Band 4–Body SAR Test (Gap: 0mm)								
Plot No.	Mode	Test Position Body	Frequency	Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth, RB		MHz					
58.	QPSK 20MHz 1RB	Back Side	1745.0	24.94	25.0	1.014	1.068	1.083
59.	QPSK 20MHz 1RB	Bottom side	1745.0	24.94	25.0	1.014	0.994	1.008

Remark:

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

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

3) Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 W/kg (~ 10% from the 1-g SAR limit).

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

9.3 Simultaneous Multi-band Transmission SAR Analysis

List of Mode for Simultaneous Multi-band Transmission

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

Remark:

1. GSM and WCDMA cannot transmit simultaneously.

2. According to the KDB 447498 D01 v06, 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 D01 v06 as below:

Bluetooth:

Tune-Up Power (dBm)	Max. Power (mW)	Distance (mm)	Frequency (GHz)	X	SAR(1g) 5mm
3.0	2.0	5	2.480	7.5	0.084

4. 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	0.611	0.067	0.678
Front	GSM850	--	--	--
Top side	GSM850	--	0.056	0.056
Bottom side	GSM850	0.402	--	0.402
Right side	GSM850	0.208	--	0.208
Left side	GSM850	0.189	--	0.189
Back	GSM1900	0.698	0.067	0.765
Front	GSM1900	--	--	--
Top side	GSM1900	--	0.056	0.056
Bottom side	GSM1900	0.739	--	0.739
Right side	GSM1900	0.315	--	0.315
Left side	GSM1900	0.298	--	0.298
Back	WCDMA Band V	0.197	0.067	0.264
Front	WCDMA Band V	--	--	--
Top side	WCDMA Band V	--	0.056	0.056
Bottom side	WCDMA Band V	0.173	--	0.173
Right side	WCDMA Band V	0.123	--	0.123
Left side	WCDMA Band V	0.113	--	0.113
Back	WCDMA Band II	0.660	0.067	0.727
Front	WCDMA Band II	--	--	--
Top side	WCDMA Band II	--	0.056	0.056
Bottom side	WCDMA Band II	1.069	--	1.069
Right side	WCDMA Band II	0.389	--	0.389
Left side	WCDMA Band II	0.355	--	0.355
Back	LTE Band 2	0.574	0.067	0.641
Front	LTE Band 2	--	--	--
Top side	LTE Band 2	--	0.056	0.056
Bottom side	LTE Band 2	0.851	--	0.851
Right side	LTE Band 2	0.328	--	0.328
Left side	LTE Band 2	0.303	--	0.303
Back	LTE Band 4	1.283	0.067	**1.350**
Front	LTE Band 4	--	--	--
Top side	LTE Band 4	--	0.056	0.056
Bottom side	LTE Band 4	1.196	--	1.196
Right side	LTE Band 4	0.564	--	0.564
Left side	LTE Band 4	0.539	--	0.539

Back	LTE Band 7	0.501	0.067	0.568
Front	LTE Band 7	--	--	--
Top side	LTE Band 7	--	0.056	0.056
Bottom side	LTE Band 7	0.448	--	0.448
Right side	LTE Band 7	0.291	--	0.291
Left side	LTE Band 7	0.279	--	0.279
Back	LTE Band 17	0.742	0.067	0.809
Front	LTE Band 17	--	--	--
Top side	LTE Band 17	--	0.056	0.056
Bottom side	LTE Band 17	0.519	--	0.519
Right side	LTE Band 17	0.294	--	0.294
Left side	LTE Band 17	0.276	--	0.276

WWAN and Bluetooth

	WWAN		Bluetooth	Summed SAR (W/kg)
Position	Band	Scaled SAR (W/kg)	Scaled SAR (W/kg)	
Back	GSM850	0.611	0.084	0.695
Front	GSM850	--	0.084	0.084
Top side	GSM850	--	0.084	0.084
Bottom side	GSM850	0.402	0.084	0.486
Right side	GSM850	0.208	0.084	0.292
Left side	GSM850	0.189	0.084	0.273
Back	GSM1900	0.698	0.084	0.782
Front	GSM1900	--	0.084	0.084
Top side	GSM1900	--	0.084	0.084
Bottom side	GSM1900	0.739	0.084	0.823
Right side	GSM1900	0.315	0.084	0.399
Left side	GSM1900	0.298	0.084	0.382
Back	WCDMA Band V	0.197	0.084	0.281
Front	WCDMA Band V	--	0.084	0.084
Top side	WCDMA Band V	--	0.084	0.084
Bottom side	WCDMA Band V	0.173	0.084	0.257
Right side	WCDMA Band V	0.123	0.084	0.207
Left side	WCDMA Band V	0.113	0.084	0.197
Back	WCDMA Band II	0.660	0.084	0.744
Front	WCDMA Band II	--	0.084	0.084
Top side	WCDMA Band II	--	0.084	0.084
Bottom side	WCDMA Band II	1.069	0.084	1.153
Right side	WCDMA Band II	0.389	0.084	0.473
Left side	WCDMA Band II	0.355	0.084	0.439
Back	LTE Band 2	0.574	0.084	0.658
Front	LTE Band 2	--	0.084	0.084

Top side	LTE Band 2	--	0.084	0.084
Bottom side	LTE Band 2	0.851	0.084	0.935
Right side	LTE Band 2	0.328	0.084	0.412
Left side	LTE Band 2	0.303	0.084	0.387
Back	LTE Band 4	1.283	0.084	**1.367**
Front	LTE Band 4	--	0.084	0.084
Top side	LTE Band 4	--	0.084	0.084
Bottom side	LTE Band 4	1.196	0.084	1.280
Right side	LTE Band 4	0.564	0.084	0.648
Left side	LTE Band 4	0.539	0.084	0.623
Back	LTE Band 7	0.501	0.084	0.585
Front	LTE Band 7	--	0.084	0.084
Top side	LTE Band 7	--	0.084	0.084
Bottom side	LTE Band 7	0.448	0.084	0.532
Right side	LTE Band 7	0.291	0.084	0.375
Left side	LTE Band 7	0.279	0.084	0.363
Back	LTE Band 17	0.742	0.084	0.826
Front	LTE Band 17	--	0.084	0.084
Top side	LTE Band 17	--	0.084	0.084
Bottom side	LTE Band 17	0.519	0.084	0.603
Right side	LTE Band 17	0.294	0.084	0.378
Left side	LTE Band 17	0.276	0.084	0.360

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 Head Liquid

Type: Validation measurement (Fast, 75.00 %)

Date of measurement: 12/23/2019

Measurement duration: 7 minutes 21 seconds

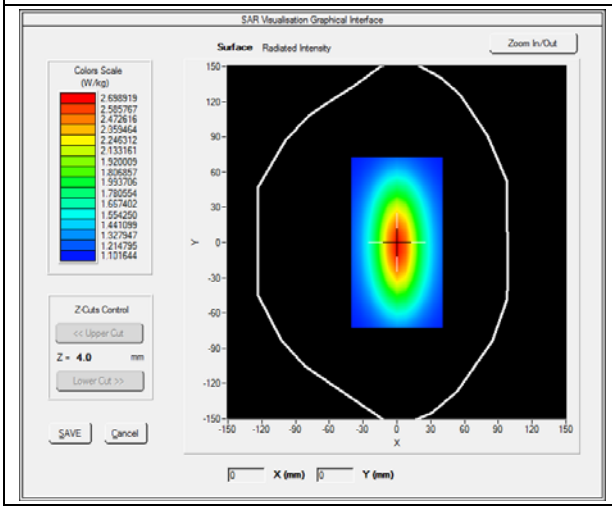
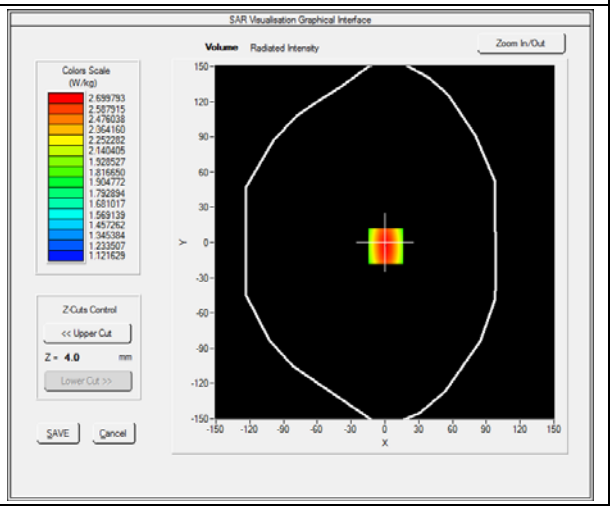
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.99; Calibrated: 05/22/2019

A. Experimental conditions

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

B. SAR Measurement Results

Frequency (MHz)	750.000000
Relative Permittivity (real part)	41.320574
Conductivity (S/m)	0.862373
Power Variation (%)	0.038363
Ambient Temperature	21.1
Liquid Temperature	21.3

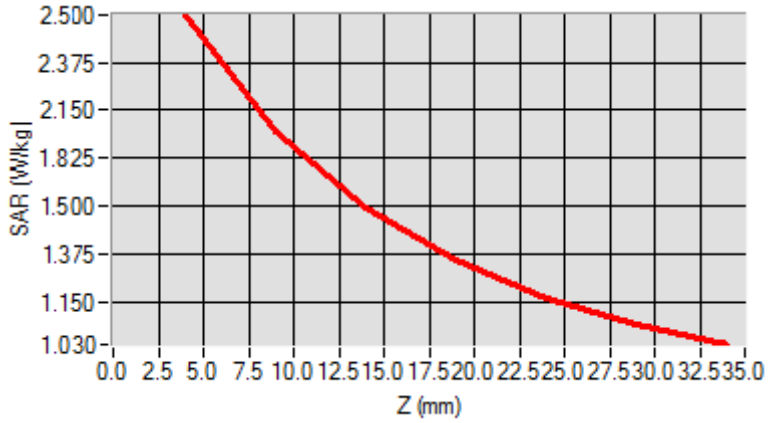
SURFACE SAR	VOLUME SAR
	

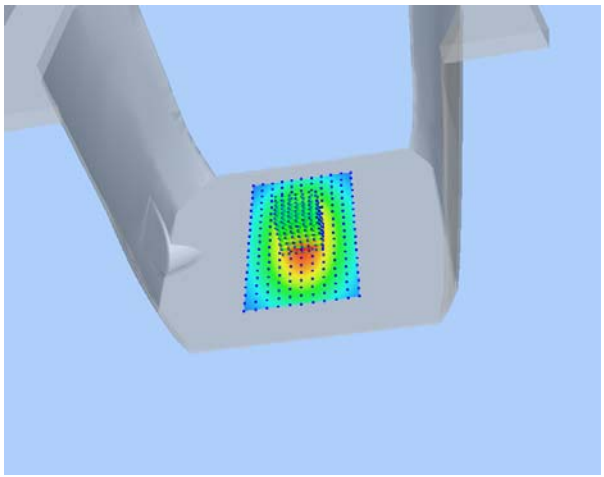
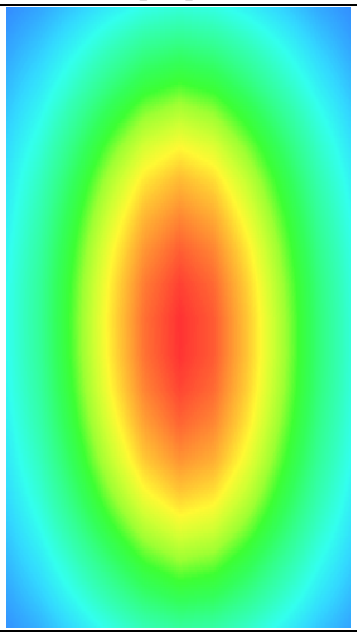
Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	**1.042744**
SAR 1g (W/Kg)	**2.164534**

Z Axis Scan

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**	**24.00**	**29.00**
SAR (W/Kg)	**0.0000**	**2.3634**	**1.8023**	**1.4523**	**1.2514**	**1.1005**	**1.0245**



3D screen shot	**Hot spot position**
	

MEASUREMENT 2

For Body Liquid

Type: Validation measurement (Fast, 75.00 %)

Date of measurement: 12/23/2019

Measurement duration: 12 minutes 21 seconds

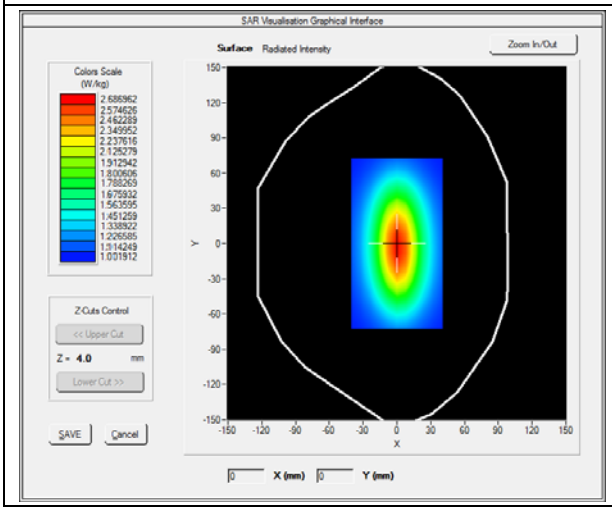
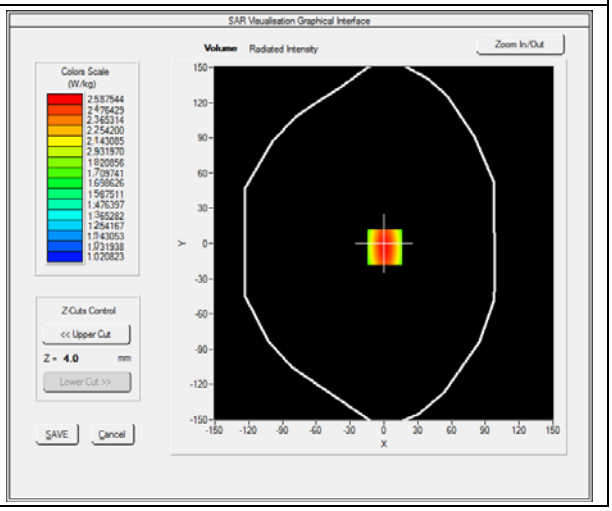
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 7.13; Calibrated: 05/22/2019

A. Experimental conditions

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

B. SAR Measurement Results

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

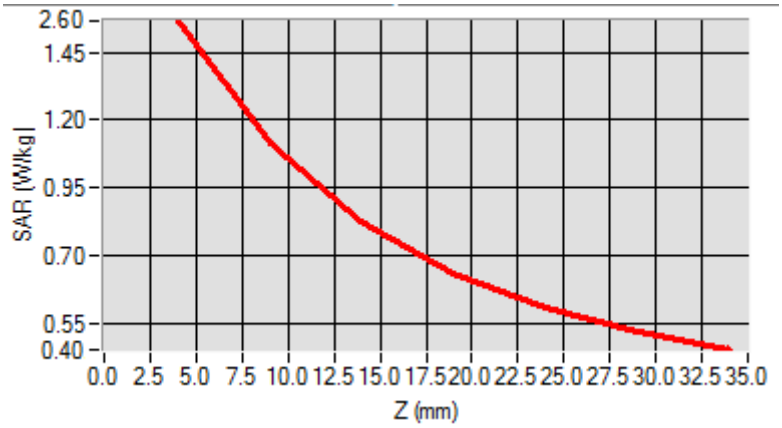
SURFACE SAR	VOLUME SAR
	

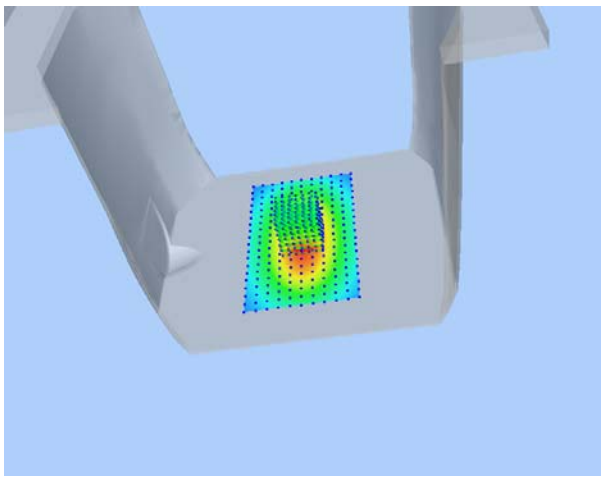
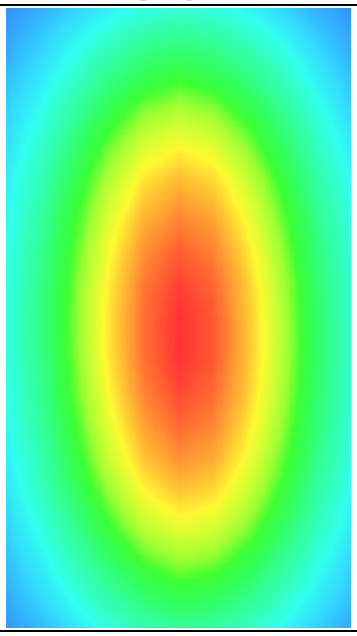
Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	1.028956
SAR 1g (W/Kg)	2.364211

Z Axis Scan

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



3D screen shot	Hot spot position
	

MEASUREMENT 3

For Head Liquid

Type: Validation measurement (Fast, 75.00 %)

Date of measurement: 12/24/2019

Measurement duration: 12 minutes 21 seconds

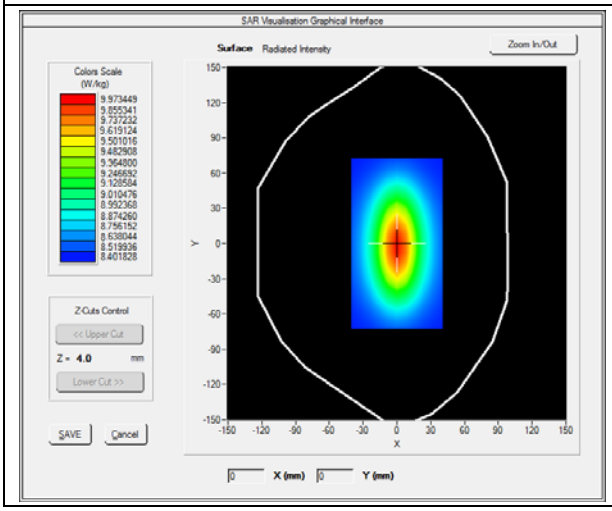
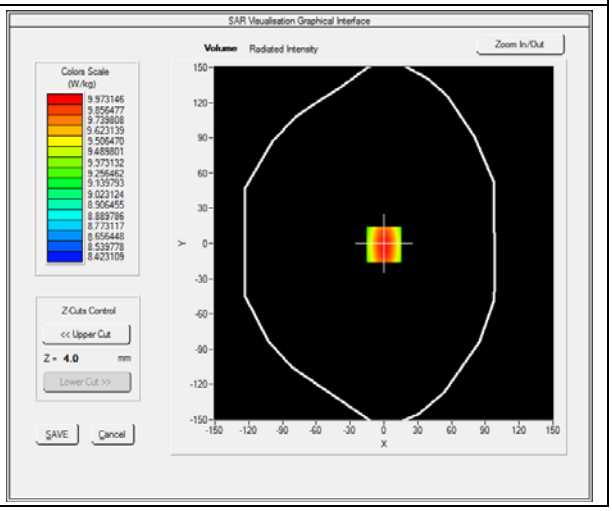
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 5.84; Calibrated: 05/22/2019

A. Experimental conditions

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

B. SAR Measurement Results

Frequency (MHz)	1800.000000
Relative Permittivity (real part)	39.024890
Conductivity (S/m)	1.371250
Power Variation (%)	1.401232
Ambient Temperature	21.1
Liquid Temperature	21.2

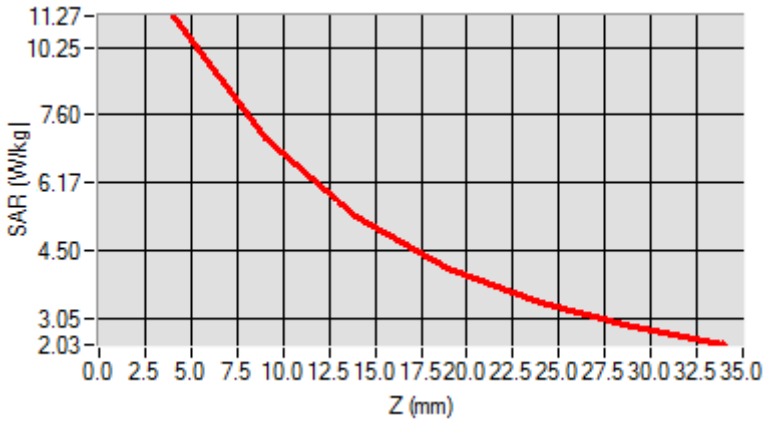
SURFACE SAR	VOLUME SAR
	

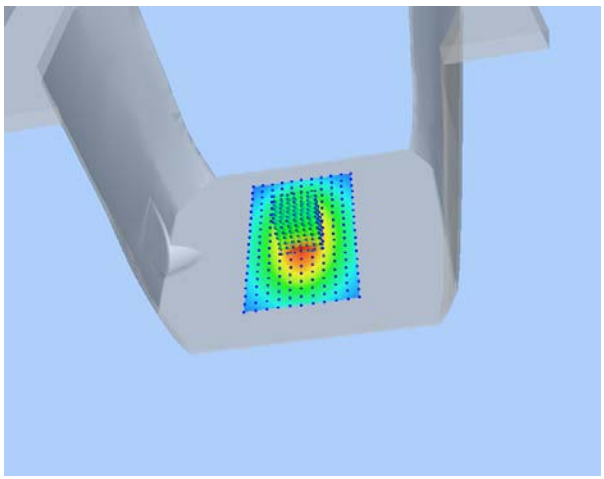
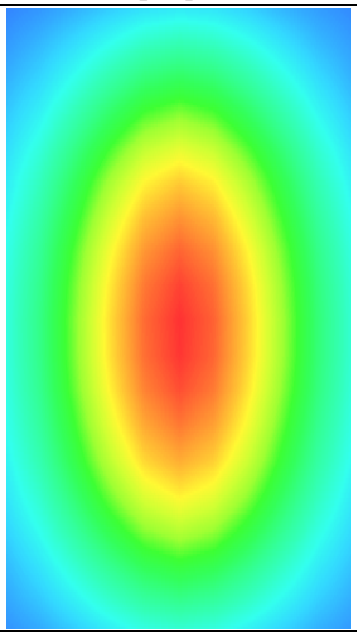
Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	**5.171252**
SAR 1g (W/Kg)	**9.611250**

Z Axis Scan

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**	**24.00**	**29.00**
SAR (W/Kg)	**0.0000**	**10.3455**	**7.1125**	**5.1026**	**3.425**	**3.0242**	**2.1125**



3D screen shot	**Hot spot position**
	

MEASUREMENT 4

For Body Liquid

Type: Validation measurement (Fast, 75.00 %)

Date of measurement: 12/24/2019

Measurement duration: 12 minutes 21 seconds

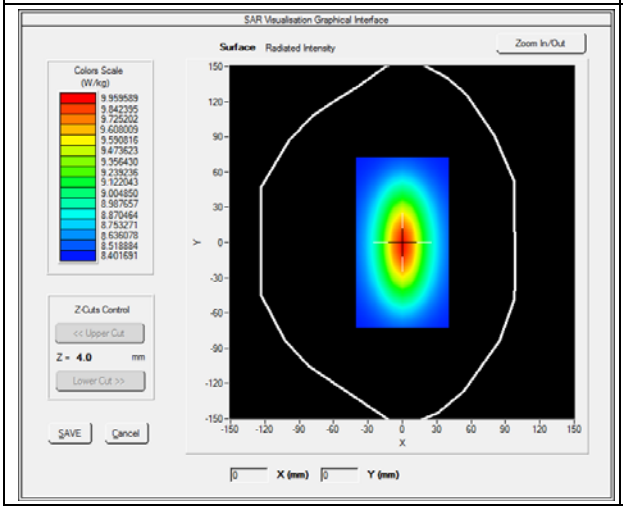
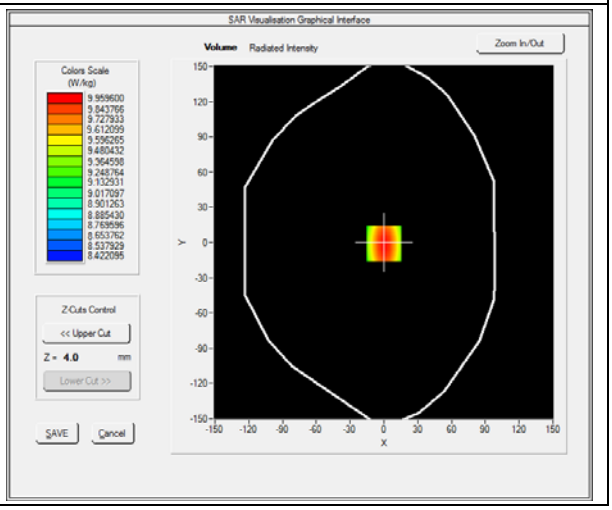
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.55; Calibrated: 05/22/2019

A. Experimental conditions

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

B. SAR Measurement Results

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

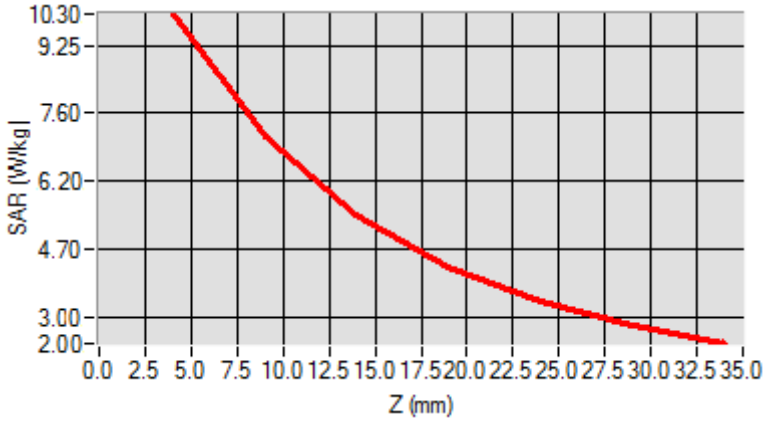
SURFACE SAR	VOLUME SAR
	

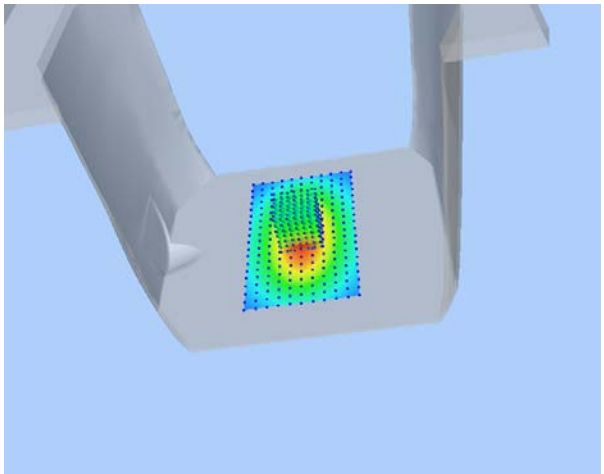
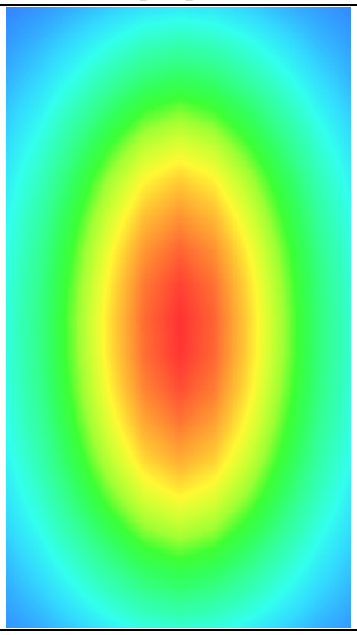
Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	5.134651
SAR 1g (W/Kg)	9.801550

Z Axis Scan

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



3D screen shot	Hot spot position
	

MEASUREMENT 5

For Body Liquid

Type: Validation measurement (Fast, 75.00 %)

Date of measurement: 12/25/2019

Measurement duration: 12 minutes 21 seconds

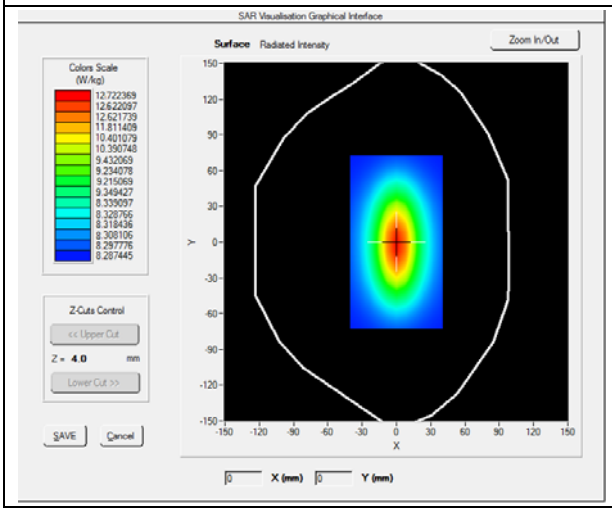
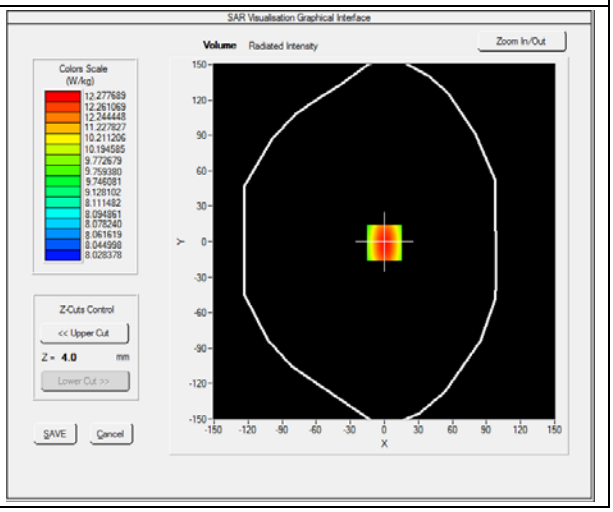
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 5.80; Calibrated: 05/22/2019

A. Experimental conditions

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

B. SAR Measurement Results

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

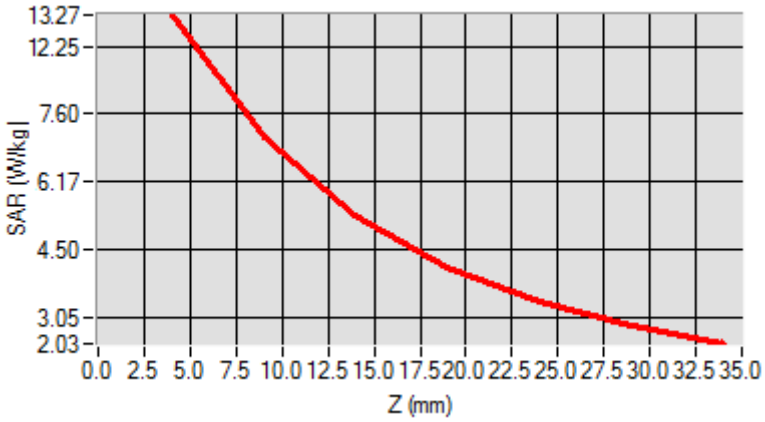
SURFACE SAR	VOLUME SAR
	

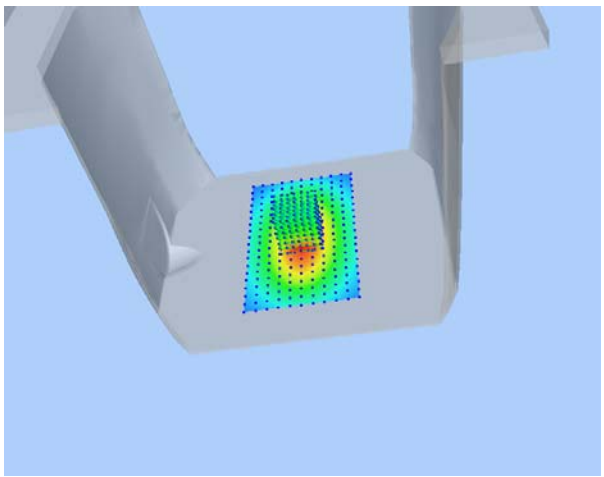
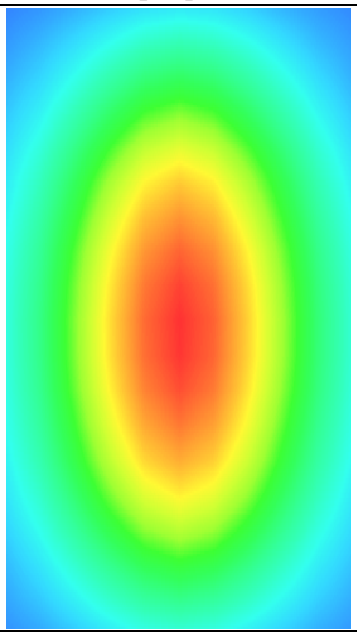
Maximum location: X=0.00, Y=0.00

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

Z Axis Scan

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



3D screen shot	Hot spot position
	

MEASUREMENT 6

For Body Liquid

Type: Validation measurement (Fast, 75.00 %)

Date of measurement: 12/25/2019

Measurement duration: 12 minutes 21 seconds

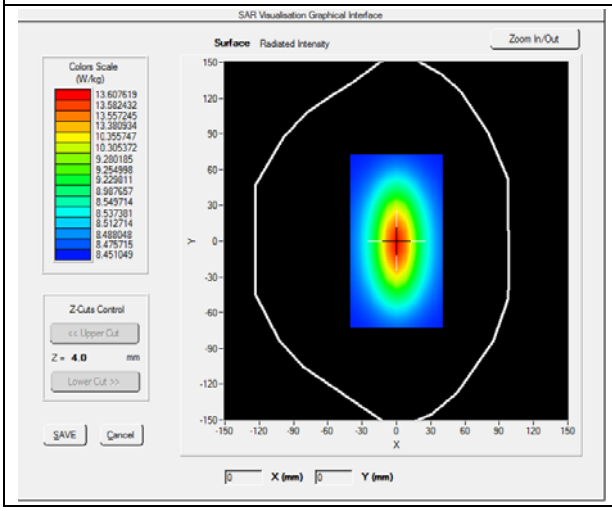
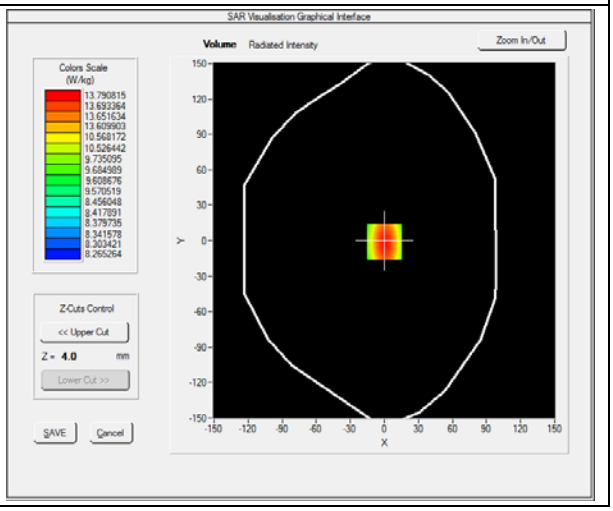
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 5.58; Calibrated: 05/22/2019

A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Phantom	Validation plane
Device Position	Dipole
Band	CW2600
Signal	Duty Cycle 1:1

B. SAR Measurement Results

Frequency (MHz)	2600.000000
Relative Permittivity (real part)	52.241202
Conductivity (S/m)	2.120943
Power Variation (%)	1.038832
Ambient Temperature	21.1
Liquid Temperature	21.2

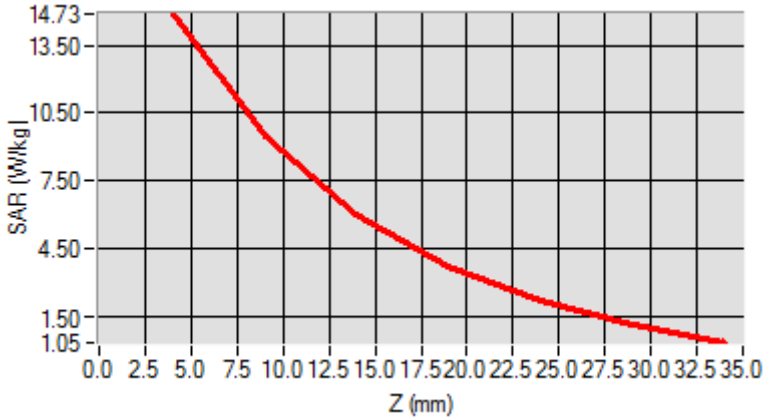
SURFACE SAR	VOLUME SAR
	

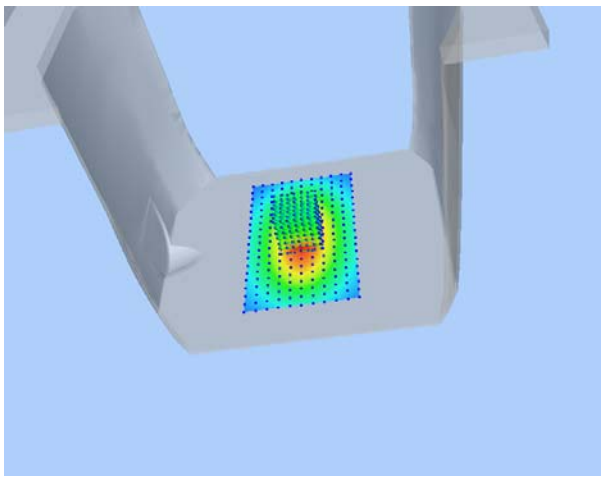
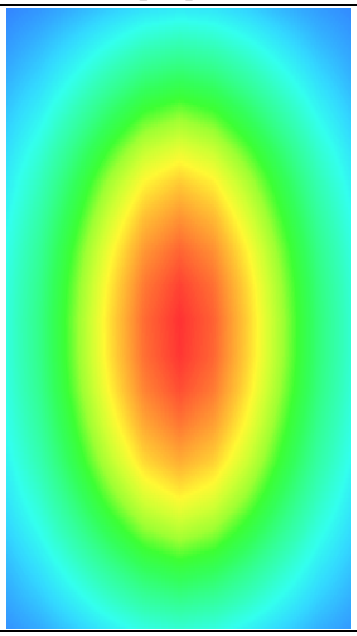
Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	6.083781
SAR 1g (W/Kg)	13.430481

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	13.6473	11.8441	9.3627	8.5782	6.4357	4.6342



3D screen shot	Hot spot position
	

Annex B. Plots of SAR Measurement

TYPE	BAND	PARAMETERS
Tablet	**GPRS850_4TX**	Measurement 1: Flat Plane with Back device position on High Channel in GPRS mode
Tablet	**GPRS1900_4TX**	Measurement 8: Flat Plane with Bottom device position on Low Channel in GPRS mode
Tablet	**WCDMA850_RMC**	Measurement 9: Flat Plane with Back device position on High Channel in WCDMA mode
Tablet	**WCDMA1900_RMC**	Measurement 17: Flat Plane with Bottom device position on Low Channel in WCDMA mode
Tablet	**LTE Band 2**	Measurement 22: Flat Plane with Bottom device position on Low Channel in LTE mode
Tablet	**LTE Band 4**	Measurement 29: Flat Plane with Back device position on Middle Channel in LTE mode
Tablet	**LTE Band 7**	Measurement 39: Flat Plane with Back device position on Low Channel in LTE mode
Tablet	**LTE Band 17**	Measurement 47: Flat Plane with Back device position on Middle Channel in LTE mode
Tablet	**WIFI_802.11b**	Measurement 55: Flat Plane with Back side device position on Middle Channel in WIFI mode
Remark: SAR plot is showed the highest measured SAR in each exposure configuration, wireless mode and frequency band combination.		

MEASUREMENT 1

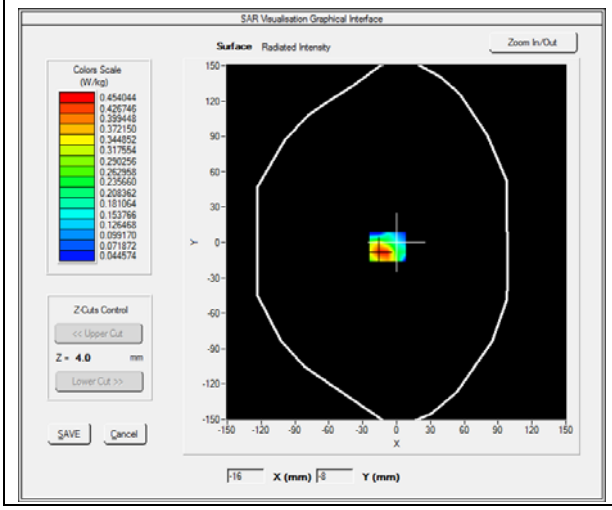
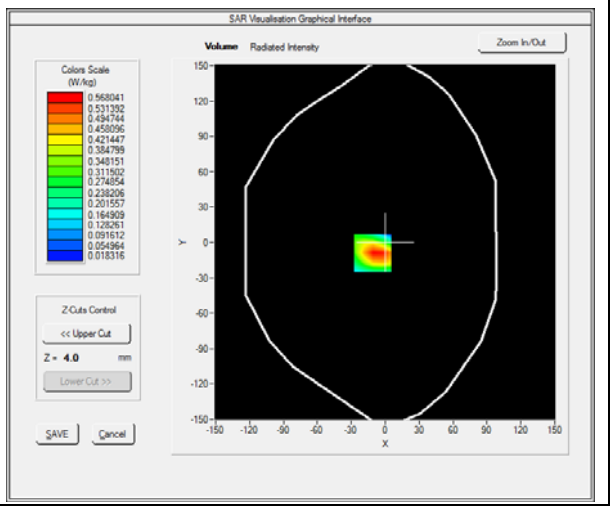
Type: Phone measurement (Complete)
Date of measurement: 12/23/2019
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 7.13; Calibrated: 05/22/2019

A. Experimental conditions

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

B. SAR Measurement Results

Frequency (MHz)	848.800000
Relative Permittivity (real part)	54.851214
Conductivity (S/m)	0.951454
Power Variation (%)	0.562472
Ambient Temperature	21.1
Liquid Temperature	21.3

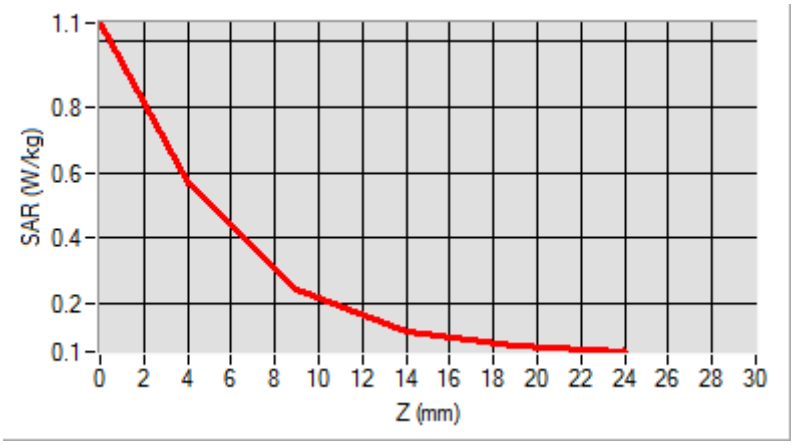
SURFACE SAR	VOLUME SAR
	

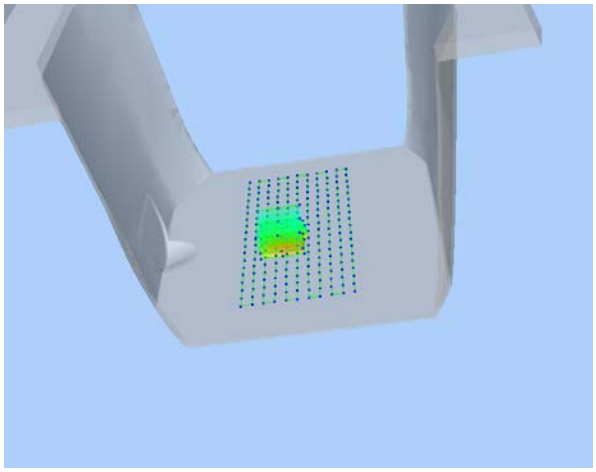
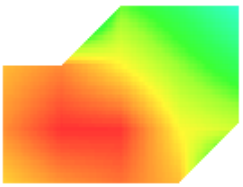
Maximum location: X=-11.00, Y=-9.00

SAR Peak: 1.18 W/kg

SAR 10g (W/Kg)	0.270077
SAR 1g (W/Kg)	0.555621

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.0566	0.5680	0.2467	0.1146	0.0702



3D screen shot	Hot spot position
	

MEASUREMENT 8

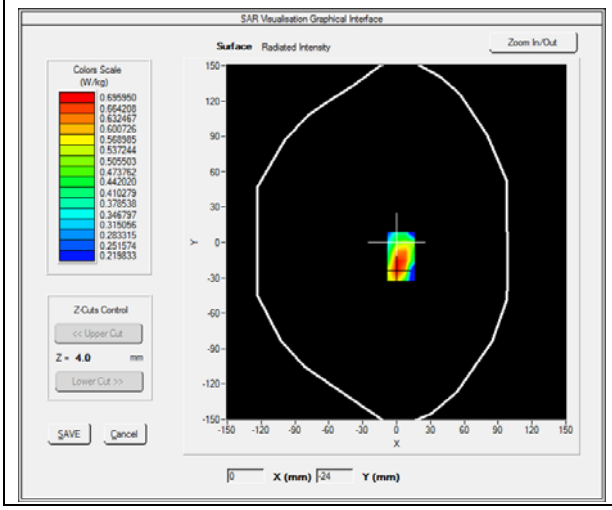
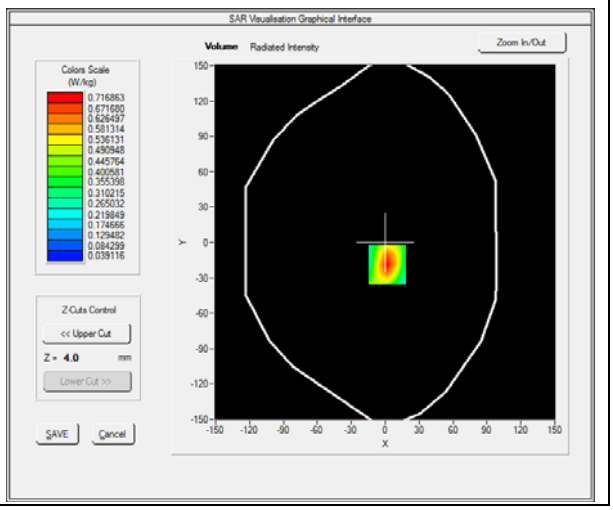
Type: Phone measurement (Complete)
Date of measurement: 12/24/2019
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.55; Calibrated: 05/22/2019

A. Experimental conditions

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

B. SAR Measurement Results

Frequency (MHz)	1850.200000
Relative Permittivity (real part)	52.420415
Conductivity (S/m)	1.501966
Power Variation (%)	0.986340
Ambient Temperature	21.1
Liquid Temperature	21.3

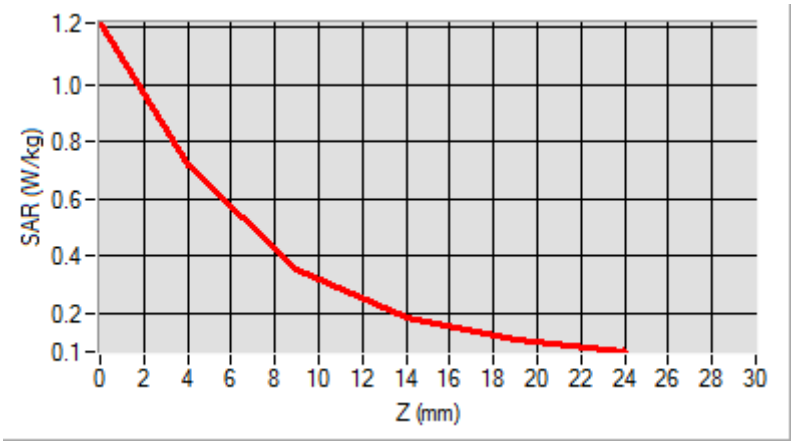
SURFACE SAR	VOLUME SAR
	

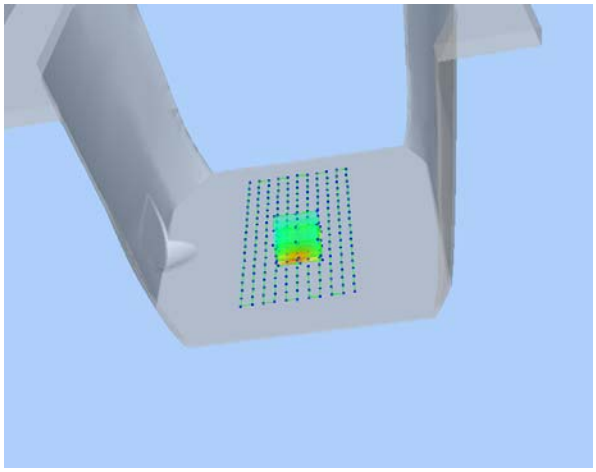
Maximum location: X=2.00, Y=-19.00

SAR Peak: 1.21 W/kg

SAR 10g (W/Kg)	0.367022
SAR 1g (W/Kg)	0.682457

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.2163	0.7169	0.3569	0.1830	0.1065



3D screen shot	Hot spot position
	

MEASUREMENT 9

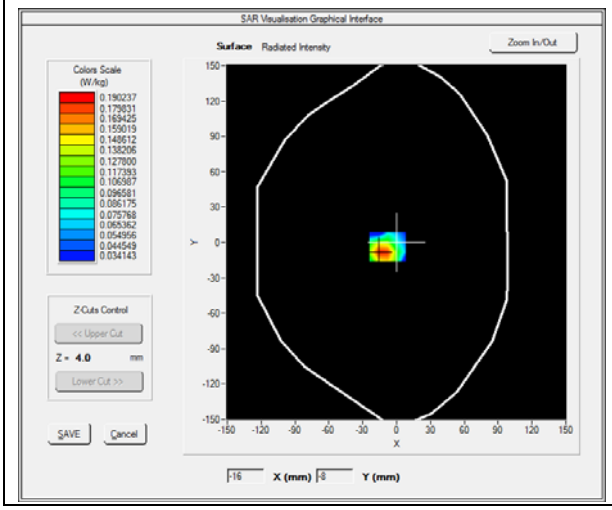
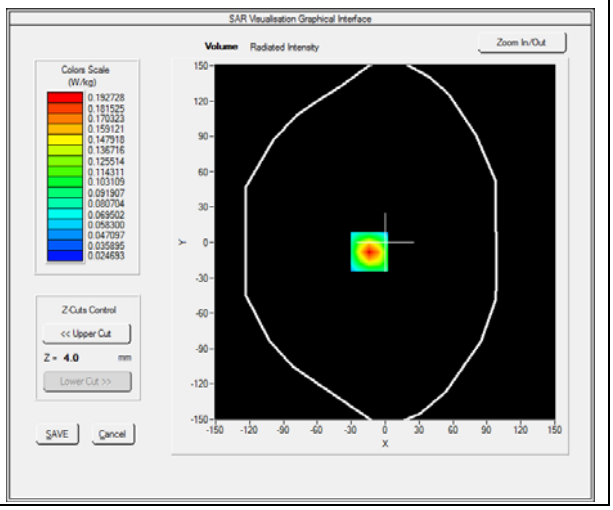
Type: Phone measurement (Complete)
Date of measurement: 12/23/2019
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 7.13; Calibrated: 05/22/2019

A. Experimental conditions

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

B. SAR Measurement Results

Frequency (MHz)	846.600000
Relative Permittivity (real part)	54.851214
Conductivity (S/m)	0.951454
Power Variation (%)	0.986458
Ambient Temperature	21.1
Liquid Temperature	21.3

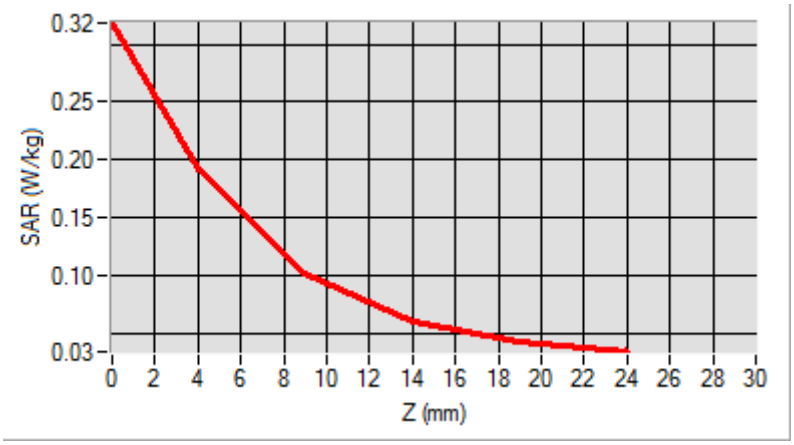
SURFACE SAR	VOLUME SAR
	

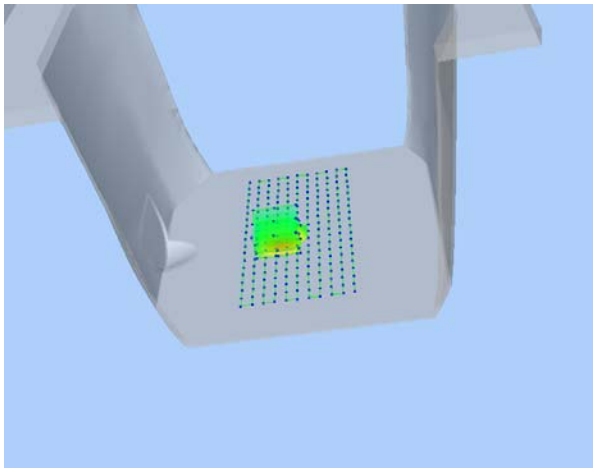
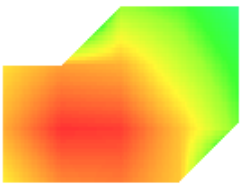
Maximum location: X=-14.00, Y=-8.00

SAR Peak: 0.32 W/kg

SAR 10g (W/Kg)	0.096483
SAR 1g (W/Kg)	0.179117

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.3183	0.1927	0.1024	0.0596	0.0421



3D screen shot	Hot spot position
	

MEASUREMENT 17

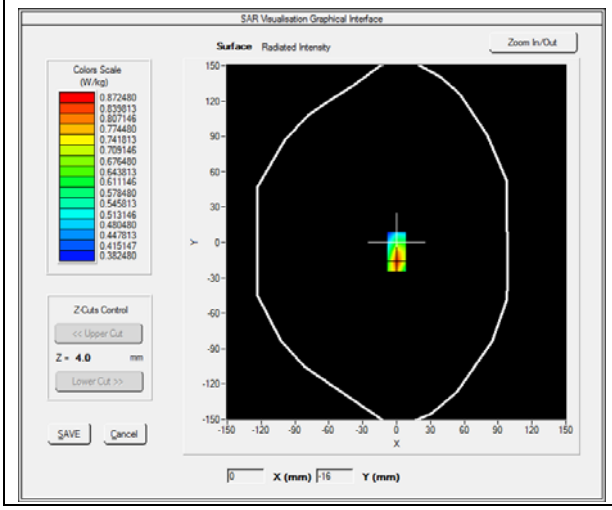
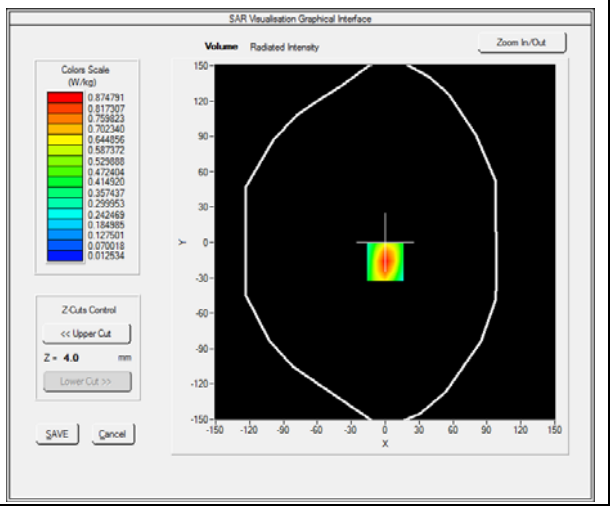
Type: Phone measurement (Complete)
Date of measurement: 12/24/2019
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.55; Calibrated: 05/22/2019

A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=8mm dy=8mm dz=5mm
Phantom	Flat Plane
Device Position	Bottom
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 (%)	0.687492
Ambient Temperature	21.1
Liquid Temperature	21.3

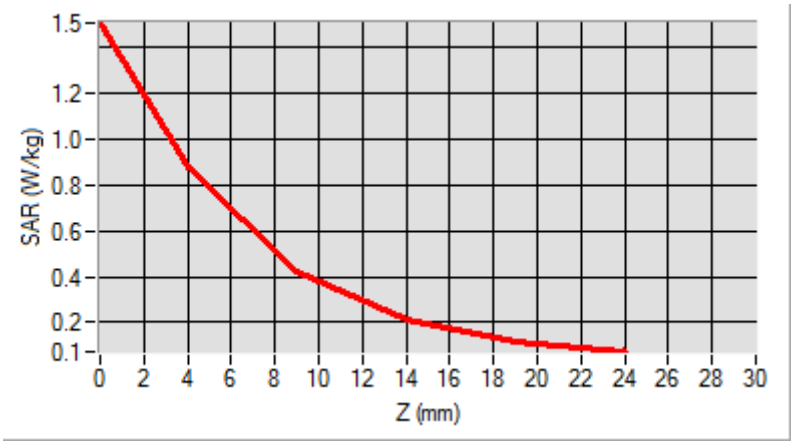
SURFACE SAR	VOLUME SAR
	

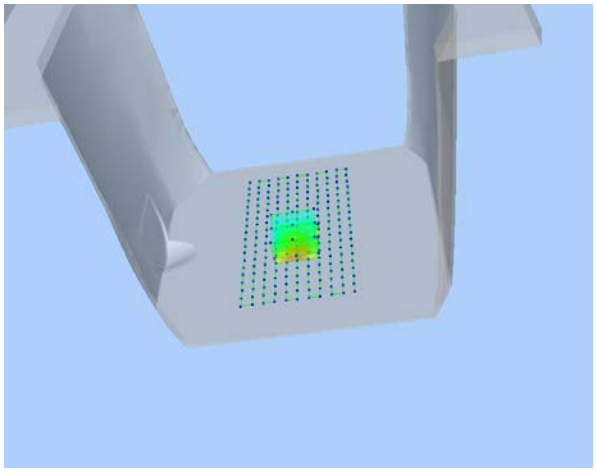
Maximum location: X=0.00, Y=-16.00

SAR Peak: 1.51 W/kg

SAR 10g (W/Kg)	0.433526
SAR 1g (W/Kg)	0.819727

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.5072	0.8748	0.4242	0.2103	0.1184



3D screen shot	Hot spot position
	

MEASUREMENT 22

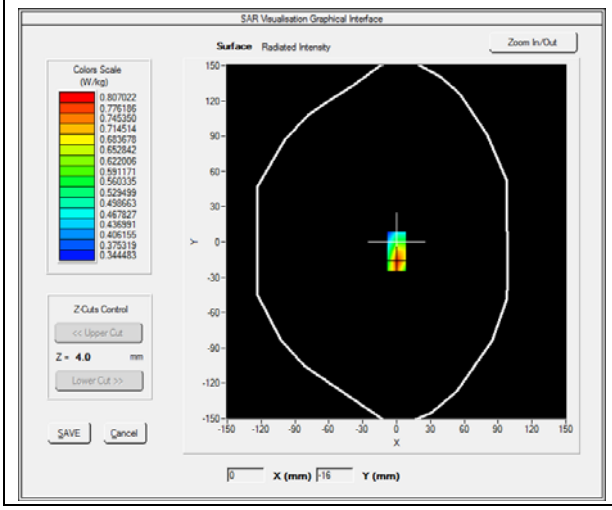
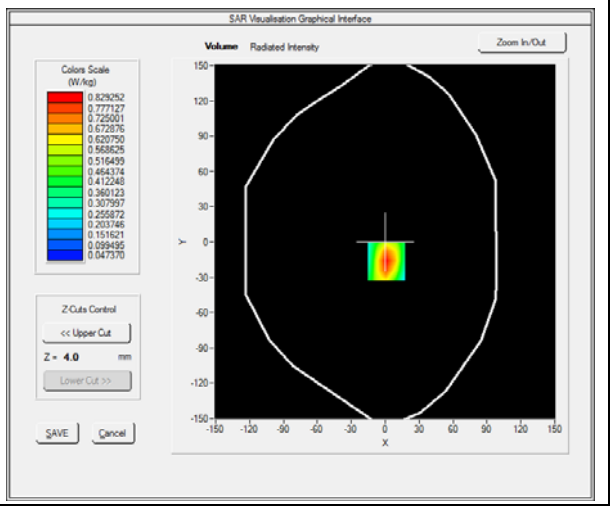
Type: Phone measurement (Complete)
Date of measurement: 12/24/2019
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.55; Calibrated: 05/22/2019

A. Experimental conditions

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

B. SAR Measurement Results

Frequency (MHz)	1860.000000
Relative Permittivity (real part)	52.420415
Conductivity (S/m)	1.501966
Power Variation (%)	1.523573
Ambient Temperature	21.1
Liquid Temperature	21.3

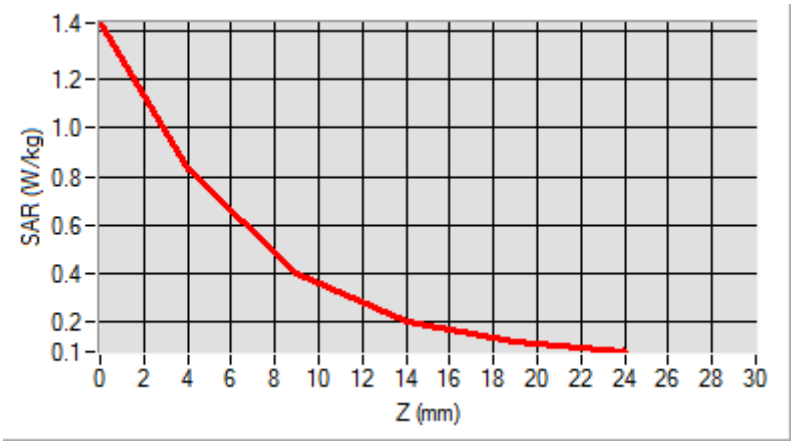
SURFACE SAR	VOLUME SAR
	

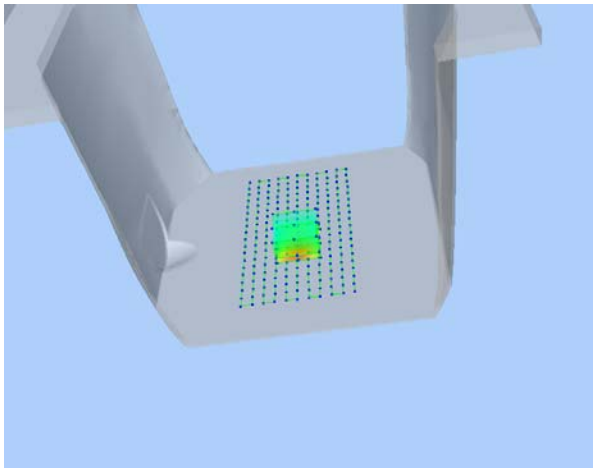
Maximum location: X=1.00, Y=-16.00

SAR Peak: 1.44 W/kg

SAR 10g (W/Kg)	0.395974
SAR 1g (W/Kg)	0.773679

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.4354	0.8293	0.4005	0.1997	0.1153



3D screen shot	Hot spot position
	

MEASUREMENT 29

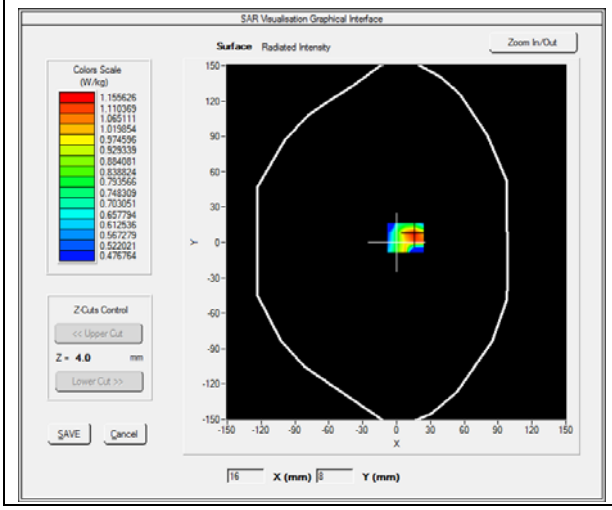
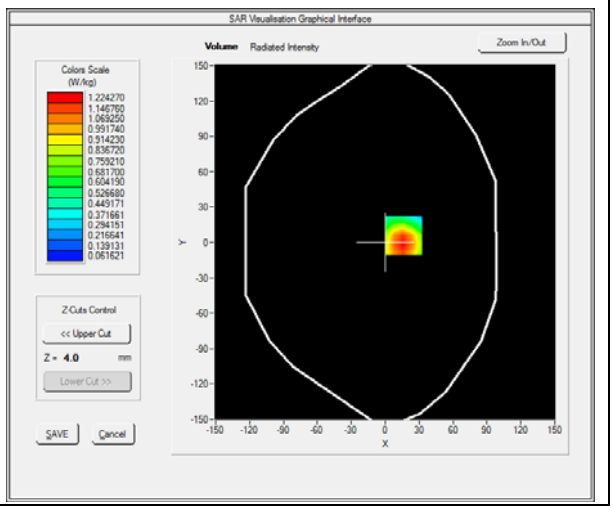
Type: Phone measurement (Complete)
Date of measurement: 12/24/2019
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.06; Calibrated: 05/22/2019

A. Experimental conditions

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

B. SAR Measurement Results

Frequency (MHz)	1732.500000
Relative Permittivity (real part)	51.220432
Conductivity (S/m)	1.460124
Power Variation (%)	0.858383
Ambient Temperature	21.1
Liquid Temperature	21.2

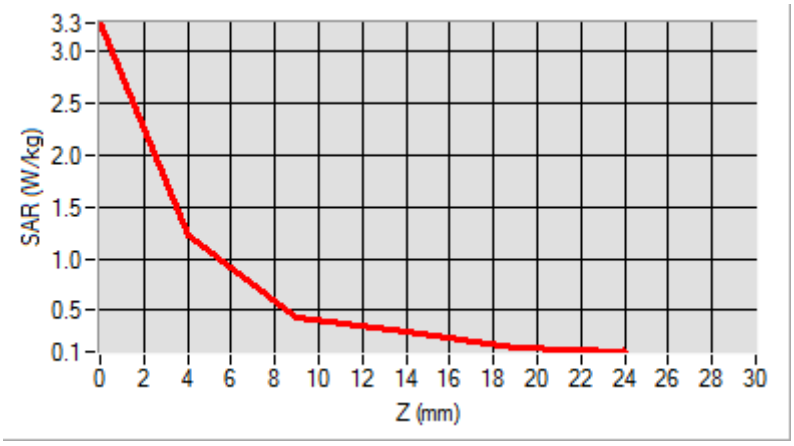
SURFACE SAR	VOLUME SAR
	

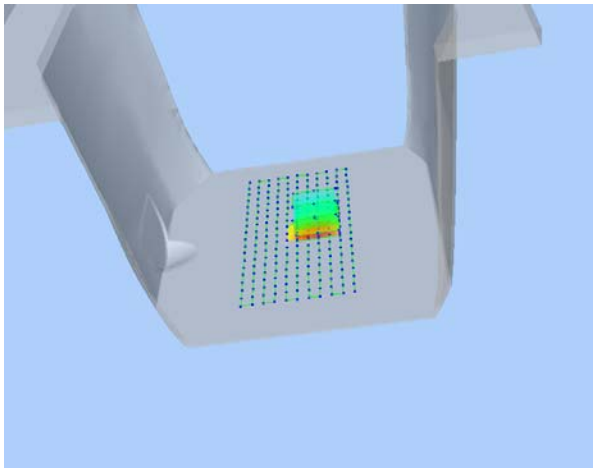
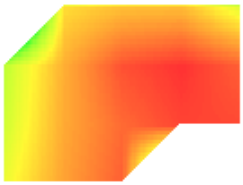
Maximum location: X=16.00, Y=6.00

SAR Peak: 2.15 W/kg

SAR 10g (W/Kg)	0.616629
SAR 1g (W/Kg)	1.165471

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	3.2803	1.2243	0.4302	0.2875	0.1339



3D screen shot	Hot spot position
	

MEASUREMENT 39

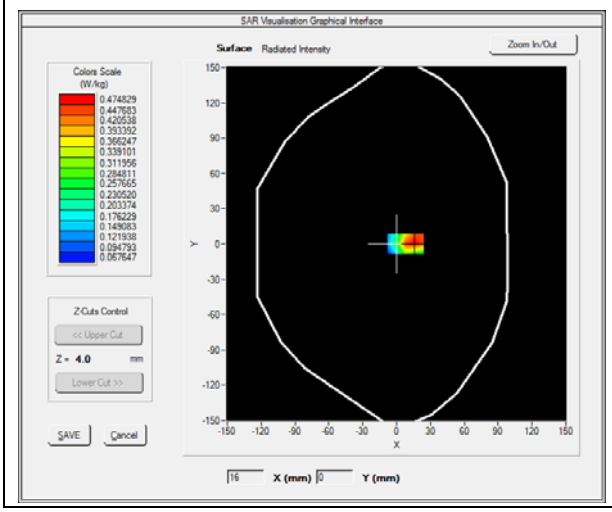
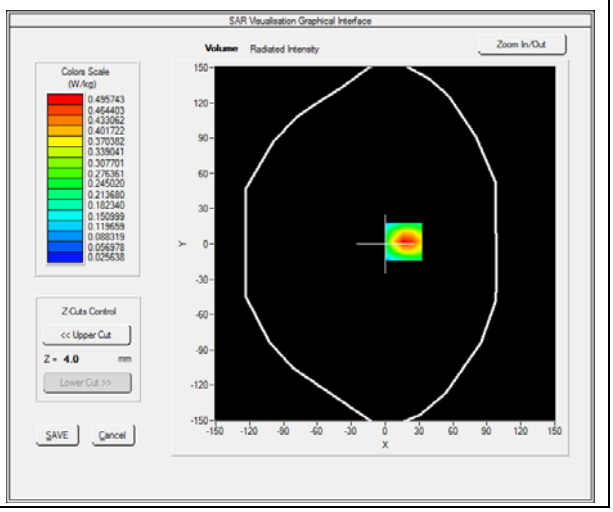
Type: Phone measurement (Complete)
Date of measurement: 12/25/2019
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 5.58; Calibrated: 05/22/2019

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Flat Plane
Device Position	Back
Band	LTE Band 7
Channels	QPSK, 20MHz, 1RB, Low
Signal	Duty Cycle 1:1

B. SAR Measurement Results

Frequency (MHz)	2510.000000
Relative Permittivity (real part)	52.241202
Conductivity (S/m)	2.120943
Power Variation (%)	3.672346
Ambient Temperature	21.1
Liquid Temperature	21.2

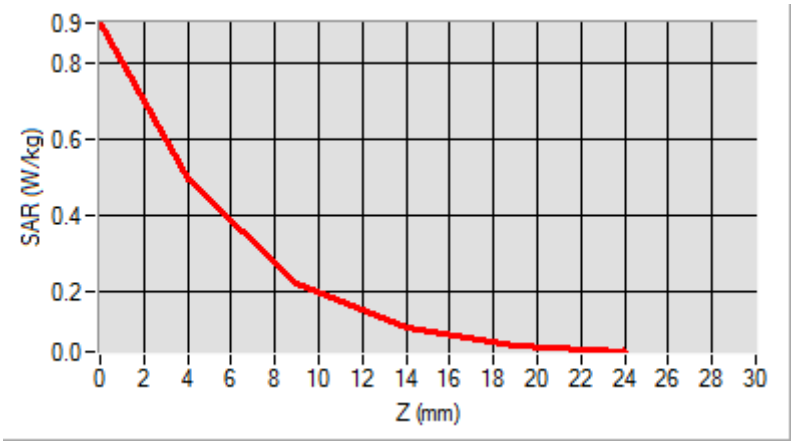
SURFACE SAR	VOLUME SAR
	

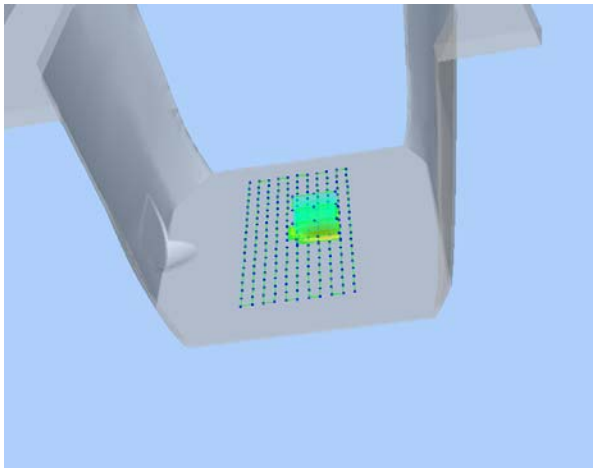
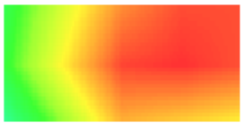
Maximum location: X=16.00, Y=2.00

SAR Peak: 0.92 W/kg

SAR 10g (W/Kg)	0.230009
SAR 1g (W/Kg)	0.470126

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.9062	0.4957	0.2201	0.1019	0.0588



3D screen shot	Hot spot position
	

MEASUREMENT 47

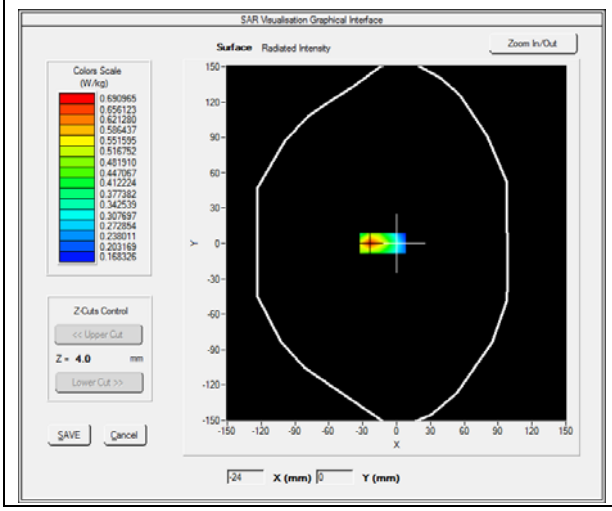
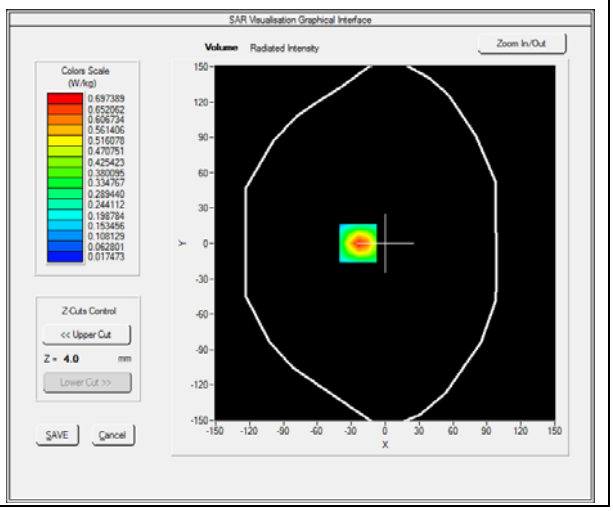
Type: Phone measurement (Complete)
Date of measurement: 12/23/2019
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 7.28; Calibrated: 05/22/2019

A. Experimental conditions

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

B. SAR Measurement Results

Frequency (MHz)	710.000000
Relative Permittivity (real part)	54.964739
Conductivity (S/m)	0.931048
Power Variation (%)	3.108329
Ambient Temperature	21.1
Liquid Temperature	21.2

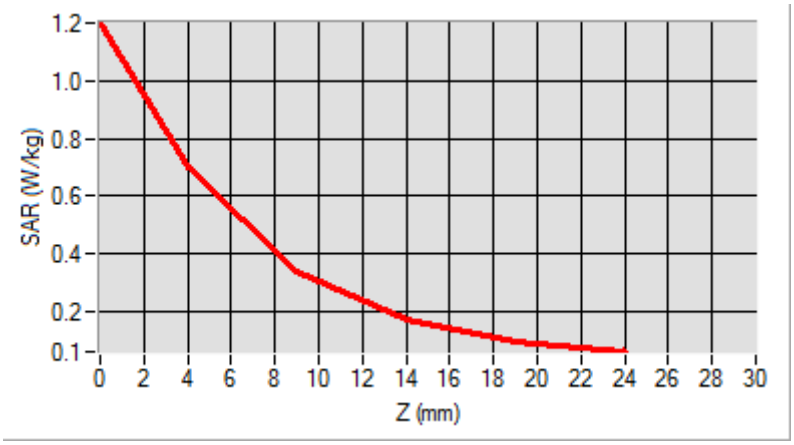
SURFACE SAR	VOLUME SAR
	

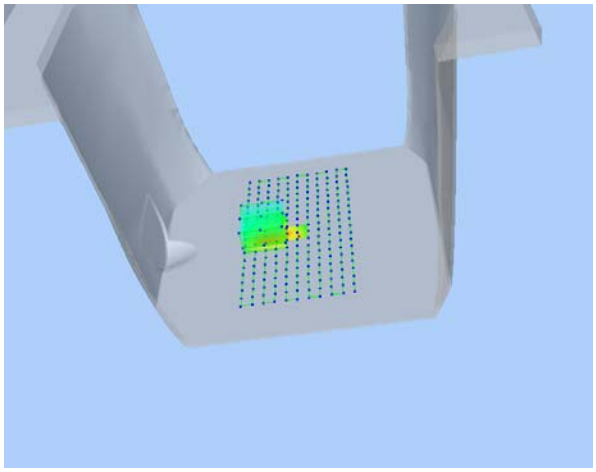
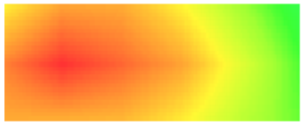
Maximum location: X=-24.00, Y=0.00

SAR Peak: 1.21 W/kg

SAR 10g (W/Kg)	0.338001
SAR 1g (W/Kg)	0.682970

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.2026	0.6974	0.3380	0.1678	0.0949



3D screen shot	Hot spot position
	

MEASUREMENT 55

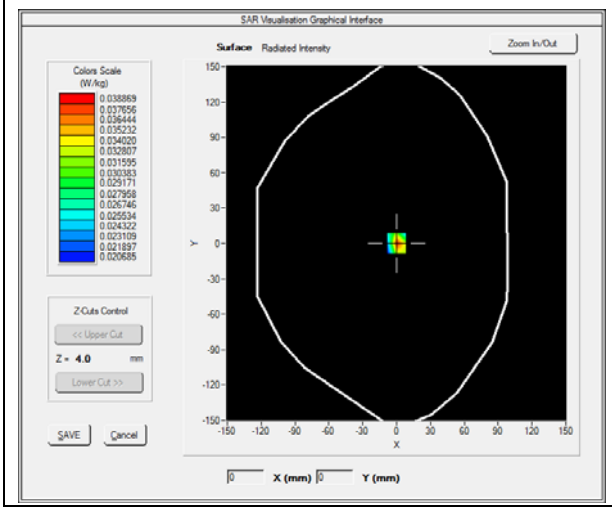
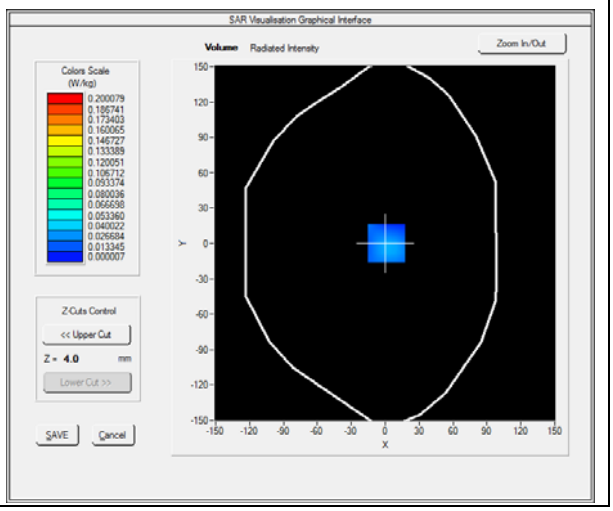
Type: Phone measurement (Complete)
Date of measurement: 12/25/2019
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 5.80; Calibrated: 05/22/2019

A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=8mm dy=8mm dz=5mm
Phantom	Flat Plane
Device Position	Back
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

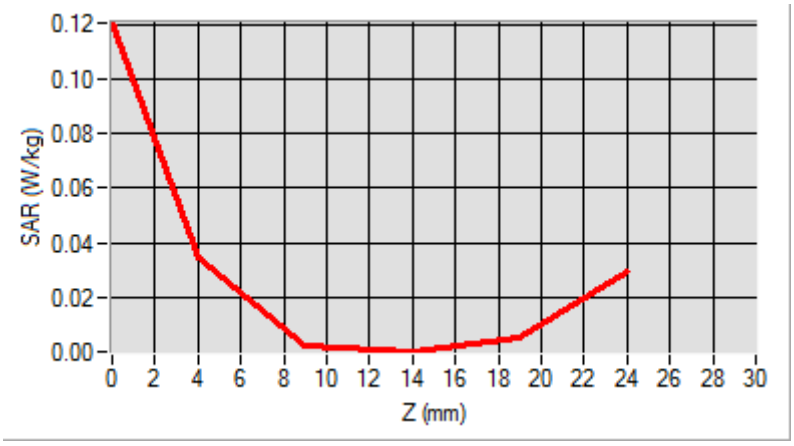
SURFACE SAR	VOLUME SAR
	

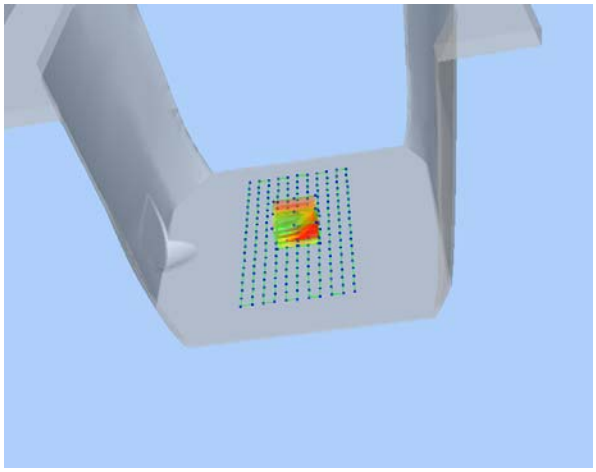
Maximum location: X=1.00, Y=0.00

SAR Peak: 0.12 W/kg

SAR 10g (W/Kg)	0.042213
SAR 1g (W/Kg)	0.066550

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.1204	0.0344	0.0023	0.0002	0.0051



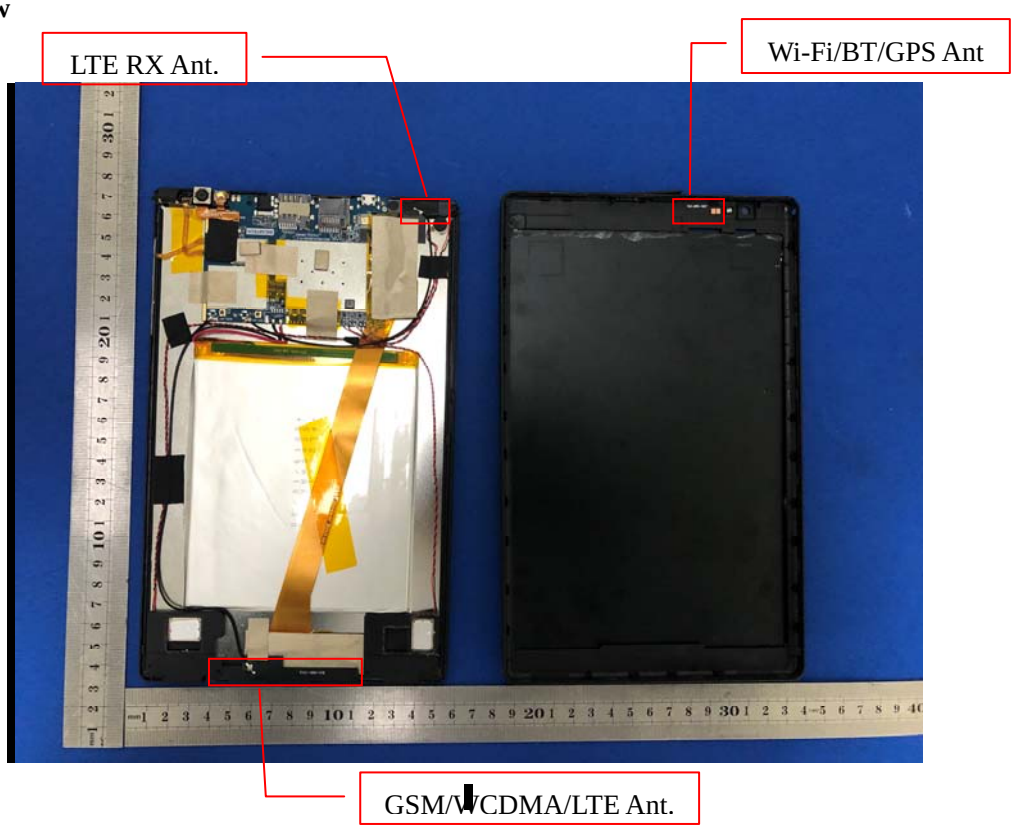
3D screen shot	Hot spot position
	

Annex C. EUT Photos

EUT View Front

EUT View Back

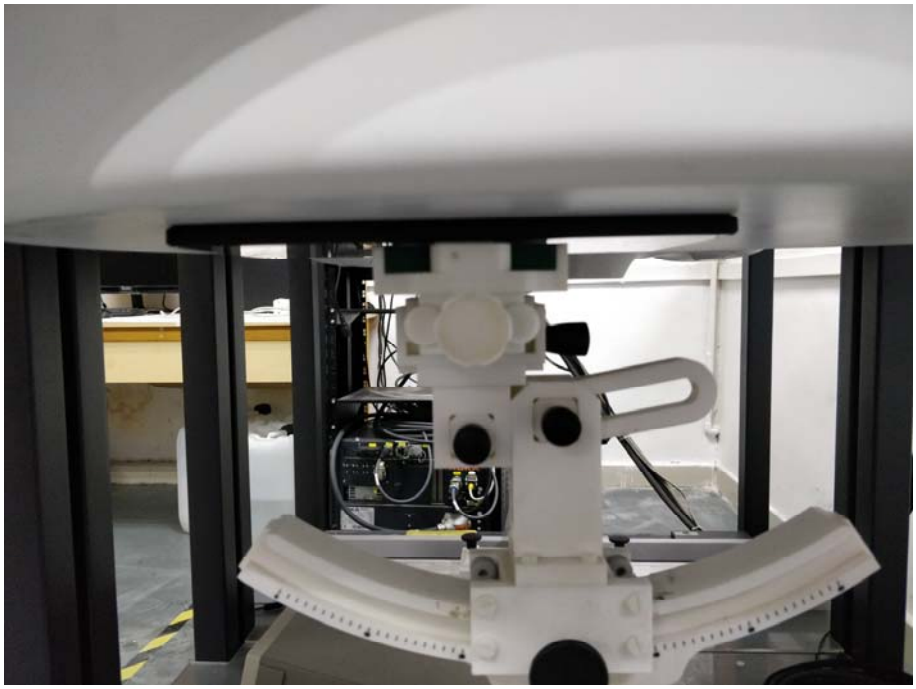
AAntenna View



Annex D. Test Setup Photos

Body mode Exposure Conditions

Body Back

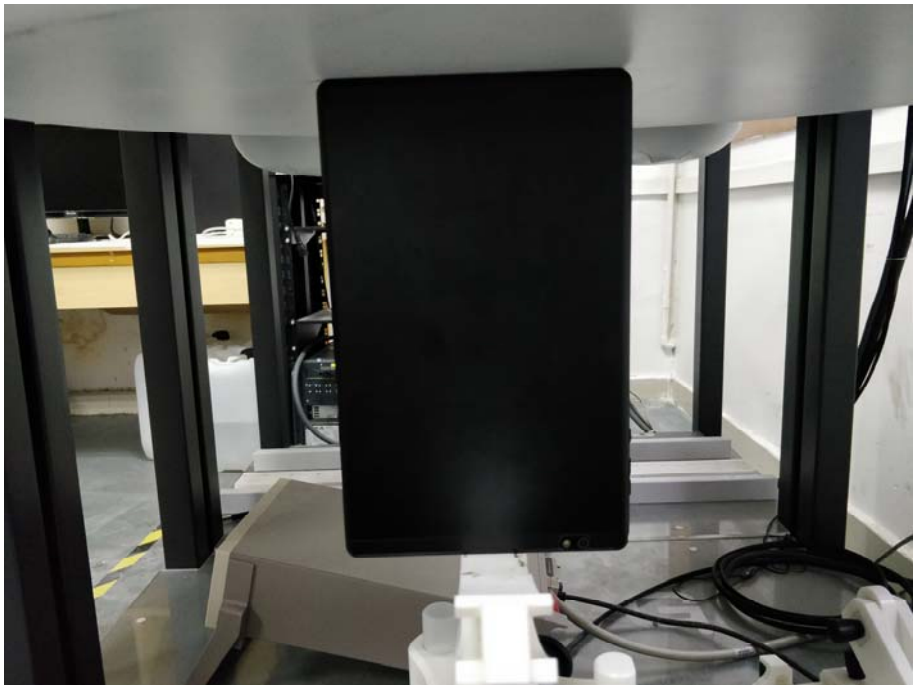


Body Right

Body Left

Body Top

Body Bottom



Annex E. Calibration Certificate

Please refer to the Exhibit for the Calibration Certificate

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