FCC SAR
Measurement and Test Report

For

Ciontek Technology Corp.

B501, Chanxueyan Building Wuhan University, No.6 Of Yuexing 2nd Road,

Nanshan District, Shenzhen

FCC ID: 2APBP-CS10

Test Standards:	FCC Part 2.1093 ANSI / IEEE C95.1 :2005+A1:2010 ANSI / IEEE C95.3 : 2002(R2008) IEEE 1528 :2013 IEC 62209-2 :2010
Product Description:	Smart POS Payment Terminal
Tested Model:	CS10
Report No.:	STR18038328H
Sample Received Date:	2018-04-09
Tested Date:	2018-04-09 to 2018-05-17
Issued Date:	2018-05-18
Tested By:	Lucy Wei / Engineer
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Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior permitted by Shenzhen SEM Test Technology Co., Ltd.

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1. General Information

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant:	Ciontek Technology Corp.
Address of applicant:	B501, Chanxueyan Building Wuhan University, No.6 Of Yuexing 2nd Road, Nanshan District, Shenzhen
Manufacturer:	Ciontek Technology Corp.
Address of manufacturer:	B501, Chanxueyan Building Wuhan University, No.6 Of Yuexing 2nd Road, Nanshan District, Shenzhen

General Description of EUT:	
Product Name:	Smart POS Payment Terminal
Brand Name:	Ciontek
Model No.:	CS10
Adding Model(s):	CS10A, CS10B, CS10C, CS10D, CS10E, CS10F, CS11, CS12, CS13
Rated Voltage:	DC 7.4V by battery
Battery Capacity:	2600mAh
Device Category:	Portable Device
The EUT Main board support GSM850/ PCS1900, WCDMA Band 2/4/5, LTE Band 2/4/5/12/17 function. It is intended for speech, Multimedia Message Service (MMS) transmission. It is equipped with GPRS/EDGE class 12 for GSM850/900/DCS1800/PCS1900, Bluetooth, and Wi-Fi functions. For more information see the following datasheet	
Note: The test data is gathered from a production sample provided by the manufacturer. The appearance of others models listed in the report is different from main-test model CS10, but the circuit and the electronic construction do not change, declared by the manufacturer.	

Technical Characteristics of EUT:	
2G	
Support Networks:	GSM, GPRS, EDGE
Support Band:	GSM850/PCS1900
Uplink Frequency:	GSM/GPRS/EDGE 850: 824~849MHz GSM/GPRS/EDGE 1900: 1850~1910MHz
Downlink Frequency:	GSM/GPRS/EDGE 850: 869~894MHz GSM/GPRS/EDGE 1900: 1930~1990MHz
RF Output Power:	GSM850: 32.6dBm, GSM1900: 29.6dBm EDGE850: 26.42dBm, EDGE1900: 25.47dBm
Type of Modulation:	GMSK, 8PSK
Type of Antenna:	SMA-reverse Antenna
Antenna Gain:	GSM850: -2.17dBi; GSM1900: -1.42dBi
GPRS/EDGE Class:	Class 12
3G	
Support Networks:	WCDMA, HSDPA, HSUPA
Support Band:	WCDMA Band 2, WCDMA Band 5, WCDMA Band 4
Uplink Frequency:	WCDMA Band 2: 1850~1910MHz WCDMA Band 5: 824~849MHz WCDMA Band 4: 1710~1755MHz
Downlink Frequency:	WCDMA Band 2: 1930~1990MHz WCDMA Band 5: 869~894MHz WCDMA Band 4: 2110~2155MHz
RF Output Power:	WCDMA Band 2: 22.5dBm, WCDMA Band 5: 23.06dBm WCDMA Band4: 22.41dBm
Type of Modulation:	BPSK
Antenna Type:	SMA-reverse Antenna
Antenna Gain:	WCDMA Band 2: -1.97dBi, WCDMA Band 5: -2.17dBi WCDMA Band 4: -2.16dBi
4G	
Support Networks:	FDD-LTE
Support Band:	FDD-LTE Band 2, 4, 5,12, 17
Uplink Frequency:	FDD-LTE Band 2: Tx: 1850-1910MHz, FDD-LTE Band 4: Tx: 1710-1755MHz, FDD-LTE Band 5: Tx: 824-849MHz, FDD-LTE Band 12: Tx: 699-716MHz, 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 5: Rx: 869-894MHz, FDD-LTE Band 12: Tx:729-746MHz, FDD-LTE Band 17: Tx: 734-746MHz,

RF Output Power:	FDD-LTE Band 2: 23.73dBm, FDD-LTE Band 4: 24.49dBm, FDD-LTE Band 5: 24.14dBm, FDD-LTE Band 12: 25.18dBm, FDD-LTE Band 17: 24.82dBm
Type of Modulation:	QPSK, 16QAM
Antenna Type:	SMA-reverse Antenna
Antenna Gain:	FDD-LTE Band 2: -1.42dBi, FDD-LTE Band 4: -2.16dBi, FDD-LTE Band 5: -2.17dBi,FDD-LTE Band 12: -2.32dBi, FDD-LTE Band 17: -2.3dBi
WIFI(2.4G)	
Support Standards:	802.11b, 802.11g, 802.11n
Frequency Range:	2412-2462MHz for 11b/g/n(HT20) 2422-2452MHz for 11n(HT40)
RF Output Power:	16.00dBm (Conducted)
Type of Modulation:	CCK, OFDM, QPSK, BPSK, 16QAM, 64QAM
Data Rate:	1-11Mbps, 6-54Mbps, up to 150Mbps
Quantity of Channels:	11 for 802.11b/g/n(HT20) 7 for 802.11n(HT40)
Channel Separation:	5MHz
Antenna Type:	Integral Antenna
Antenna Gain:	-0.39dBi
Bluetooth	
Bluetooth Version:	V4.0
Frequency Range:	2402-2480MHz
RF Output Power:	2.81dBm (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:	-0.39dBi
WIFI(5G)	
Support Standards:	802.11a, 802.11n-HT20, 802.11n-HT40
Frequency Range:	Band 1: 5150-5250MHz, Band 4: 5725-5850MHz
RF Output Power:	13.23dBm (Conducted)
Type of Modulation:	QPSK, 16QAM, 64QAM
Type of Antenna:	Internal Antenna
Antenna Gain:	Band 1: -1.46dBi, Band 4: -1.81dBi
NFC	
Support Standards:	NFC
Frequency Range:	13.56MHz

Max. Field Strength:	52.73dBuV/m (at 3m)/ -42.5dBm
Antenna Type:	Integral Antenna

1.2 Test Standards

The following report is prepared on behalf of the Ciontek Technology Corp. in accordance with FCC 47 CFR Part 2.1093, ANSI/IEEE C95.1-2005, ANSI / IEEE C95.3 :2002, IEEE 1528-2013, KDB 447498 D01 v06, KDB 248227 D01 v02r02, KDB 941225 D01 v03r01, KDB 941225 D05 v02r05 ,KDB 941225 D07 v01r02, and KDB 865664 D01 v01r04 and KDB 865664 D02 v01r02 and IEC 62209-2 :2010.

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

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

1.3 Test Methodology

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

1.4 Test Facility

FCC – Registration No.: 125990

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

Industry Canada (IC) Registration No.: 11464A

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

2. Summary of Test Results

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

Body SAR(5mm Gap)

Frequency Band	Maximum SAR_{1g} (W/kg)	SAR_{1g} Limit (W/kg)
GSM	0.797	1.6
WCDMA	**1.159**	1.6
LTE	1.091	1.6
WLAN 2.4GHz	0.574	1.6
WLAN 5GHz	0.298	1.6
Simultaneous Transmission	**1.346**	1.6

Hand SAR(0mm Gap)

Frequency Band	Maximum SAR_{10g} (W/kg)	SAR_{10g} Limit (W/kg)
GSM	1.006	4.0
WCDMA	1.179	4.0
LTE	**1.207**	4.0
WLAN 2.4GHz	0.353	4.0
WLAN 5GHz	0.279	4.0
Simultaneous Transmission	1.207	4.0

Remark:

The highest reported SAR values for body, Hand, and simultaneous transmission conditions are ***1.159W/kg , 1.207W/kg, and 1.346W/kg*** *respectively.*

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

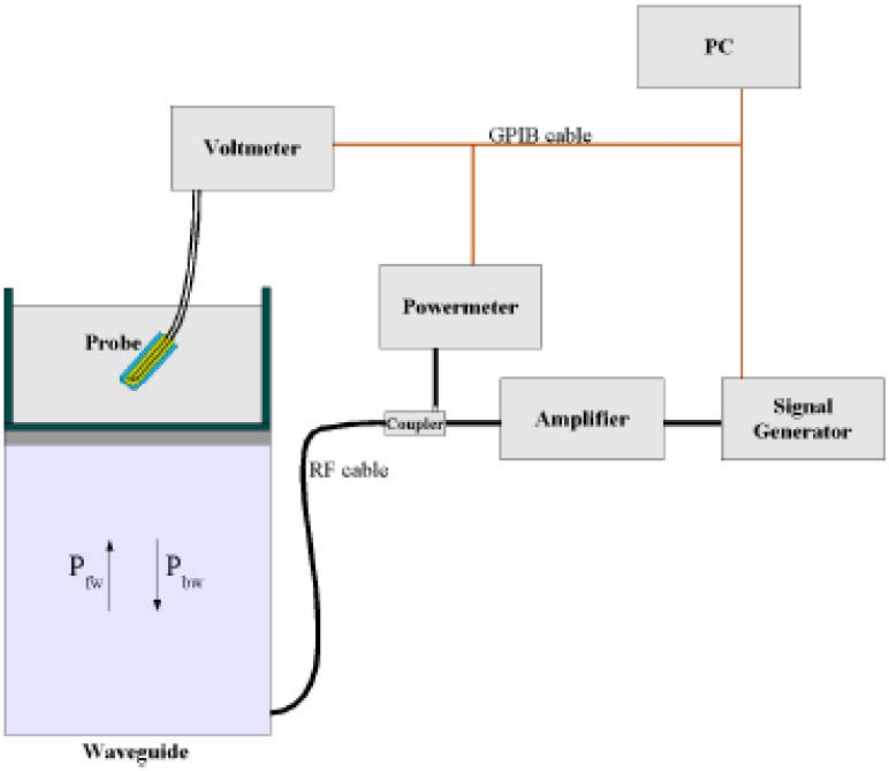
4.2 Probe

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.



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

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) (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)) (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.

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

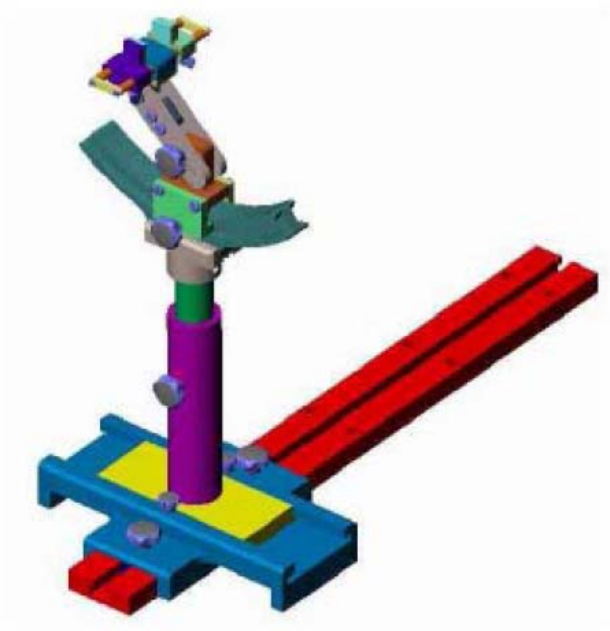
Where:
σ = simulated tissue conductivity,
ρ = Tissue density (1.25 g/cm3 for brain tissue)

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

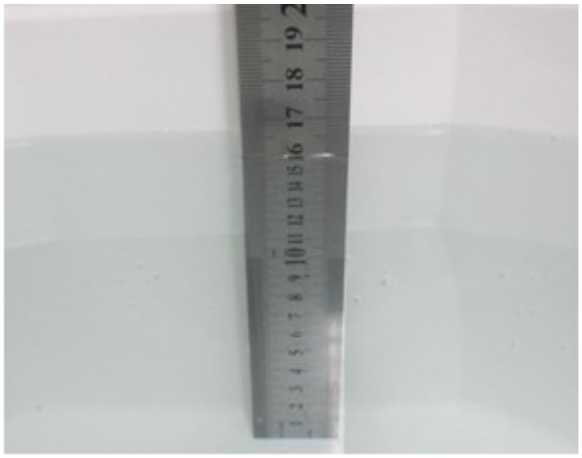
4.6 Test Equipment List

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
E-Field Probe	MVG	SSE5	SN 09/13 EP168	2017-06-01	2018-05-31
E-Field Probe	MVG	SSE2	SN 08/16 EPGO298	2017-09-18	2018-09-17
750MHz Dipole	MVG	SID750	SN 47/12 DIP 0G750-203	2018-03-20	2019-03-19
835MHz Dipole	MVG	SID835	SN 47/12 DIP 0G835-204	2018-03-20	2019-03-19
1800MHz Dipole	MVG	SID1800	SN 47/12 DIP 1G800-206	2018-03-20	2019-03-19
1900MHz Dipole	MVG	SID1900	SN 47/12 DIP 1G900-207	2018-03-20	2019-03-19
2450MHz Dipole	MVG	SID2450	SN 13/15 DIP 2G450-364	2018-03-20	2019-03-19
2600MHz Dipole	MVG	SID2600	SN 13/15 DIP 2G600-365	2018-03-20	2019-03-19
5 GHz Waveguide	MVG	SWG5500	SN 49/16 WGA45	2017-08-07	2018-08-06
Dielectric Probe Kit	MVG	SCLMP	SN 47/12 OCPG49	2018-03-20	2019-03-19
SAM Phantom	MVG	SAM	SN/ 47/12 SAM95	N/A	N/A
MULTIMETER	KEITHLEY	Keithley 2000	4006367	2017-06-12	2018-06-11
Signal Generator	Rohde & Schwarz	SMR20	100047	2017-06-12	2018-06-11
Universal Tester	Rohde & Schwarz	CMU200	112012	2017-06-12	2018-06-11
Communications Tester	Rohde & Schwarz	CMW500	148650	2017-06-12	2018-06-11
Network Analyzer	HP	8753C	2901A00831	2017-06-12	2018-06-11
Directional Couplers	Agilent	778D	20160	2017-06-12	2018-06-11

5. Tissue Simulating Liquids

5.1 Composition of Tissue Simulating Liquid

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



Liquid Height for Head SAR

Liquid Height for Body SAR

The Composition of Tissue Simulating Liquid

Frequency (MHz)	Water (%)	Salt (%)	Sugar (%)	HEC (%)	Preventol (%)	DGBE (%)
Body						
750	50.0	0.8	48.8	0.2	0.2	0
835	50.8	0.9	48.1	0.1	0.1	0
1700-1900	70.2	0.4	0	0	0	29.4
2450	68.6	0.1	0	0	0	31.3
2600	68.2	0.1	0	0	0	31.7

Frequency (MHz)	Water (%)	Hexyl Carbitol (%)	Triton X-100 (%)
Body			
5200/5800	78.6	10.7	10.7

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
5200	4.66	36.0	**5.30**	**49.0**
5800	5.27	35.3	**6.00**	**48.2**

5.3 Tissue Calibration Result

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

Calibration Result for Dielectric Parameters of Tissue Simulating Liquid

Body Tissue Simulating Liquid									
Freq. MHz.	Temp. (℃)	Conductivity			Permittivity			Limit (%)	Date
		Reading (σ)	Target (σ)	Delta (%)	Reading (ε r)	Target (ε r)	Delta (%)		
750	21.2	0.93	0.96	-3.12	54.96	55.50	-0.97	±5	2018-04-09
835	21.2	0.95	0.97	-2.06	54.85	55.20	-0.63	±5	2018-04-09
1750	21.3	1.46	1.49	-2.01	51.22	53.40	-4.08	±5	2018-04-10
1800	21.3	1.46	1.52	-3.95	51.22	53.30	-3.90	±5	2018-04-10
1900	21.3	1.50	1.52	-1.32	52.42	53.30	-1.65	±5	2018-04-10
2450	21.3	1.91	1.95	-2.05	52.01	52.70	-1.31	±5	2018-04-11
2600	21.3	2.12	2.16	-1.85	52.24	52.50	-0.50	±5	2018-04-11
5200	21.3	5.16	5.30	-2.64	48.50	49.0	-1.02	±5	2018-04-12
5800	21.3	5.76	6.00	-4.00	47.50	48.20	-1.45	±5	2018-04-12

Body Tissue Simulating Liquid									
Freq. MHz.	Temp. (℃)	Conductivity			Permittivity			Limit (%)	Date
		Reading (σ)	Target (σ)	Delta (%)	Reading (ε r)	Target (ε r)	Delta (%)		
2450	21.3	1.93	1.95	-1.03	52.32	52.70	-0.72	±5	2018-05-17

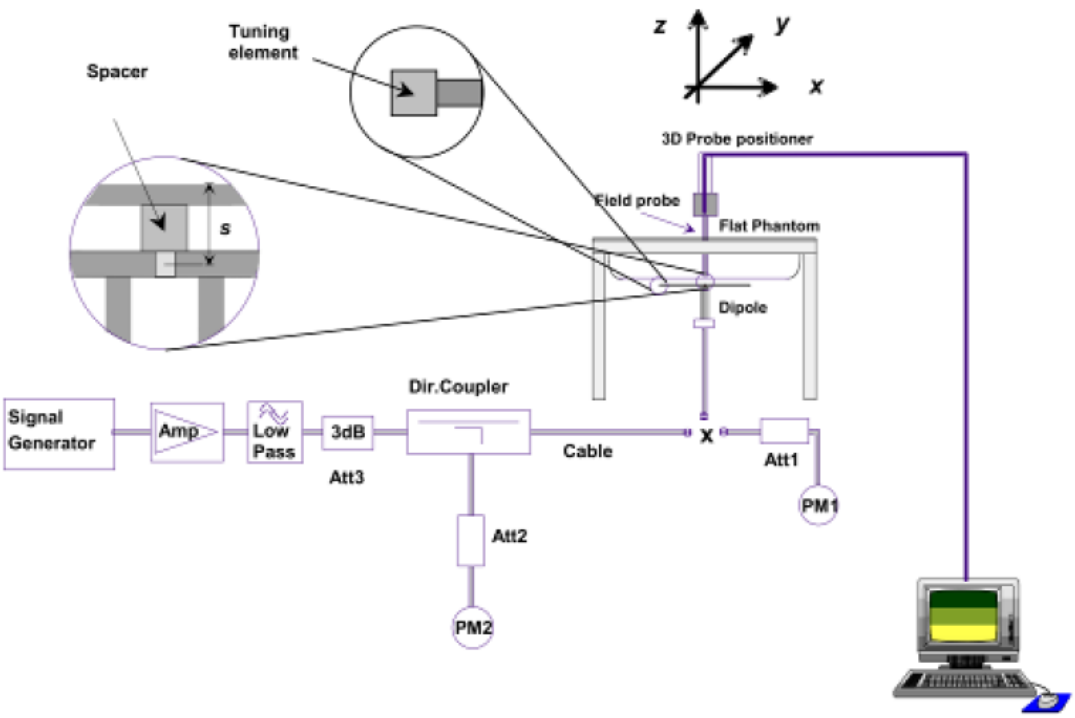
6. SAR Measurement Evaluation

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

6.3 Validation Results

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

Frequency MHz	Targeted SAR_{1g} (W/kg)	Measured SAR_{1g} (W/kg)	Normalized SAR_{1g} (W/kg)	Tolerance (%)	Date
Body					
750	8.40	2.12	8.48	0.95	2018-04-09
835	9.38	2.35	9.4	0.21	2018-04-09
1800	38.31	9.58	38.32	0.03	2018-04-10
1900	39.10	9.78	39.12	0.05	2018-04-10
2450	50.41	12.59	50.36	-0.10	2018-04-11
2600	53.89	13.43	53.72	-0.32	2018-04-11

Frequency	Liquid	Power (mw)	Targeted SAR1g	Measured SAR1g	Normalized SAR1g	Tolerance	Date
5200	Body	100	154.45	16.681	166.81	8.00	2018-04-12
5800	Body	100	170.71	16.946	169.46	-0.73	2018-04-12

Frequency	Targeted SAR_{1g}	Measured SAR_{1g}	Normalized SAR_{1g}	Tolerance	Date
MHz	(W/kg)	(W/kg)	(W/kg)	(%)	
Body					
2450	50.41	12.78	51.12	1.41	2018-05-17

Remark: Referring to IEEE 1528-2013, Section 8.2, The system check shall be performed at a test frequency that is within ±10% or ±100 MHz of the compliance test mid-band frequency, so the 1750 MHz system verification is made of 1800MHz Dipole.

Targeted and Measurement SAR

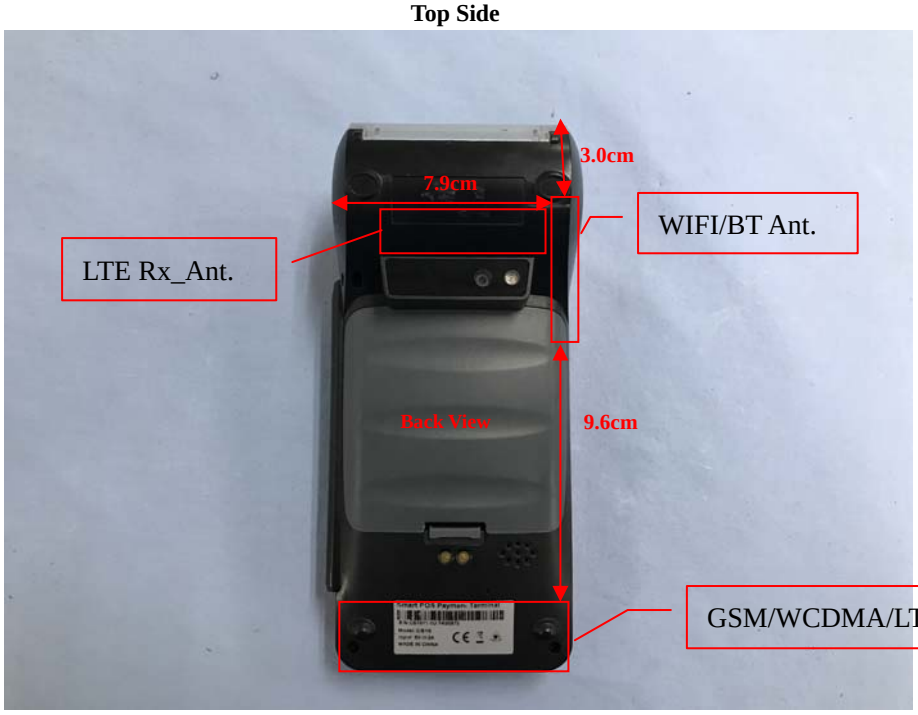
Please refer to Annex A for the plots of system performance check.

7. EUT Testing Position

7.1 EUT Antenna Position

Top Side

Right Side



Left Side

Bottom Side

Block Diagram for EUT Antenna Position

7.2 EUT Testing Position

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

Body SAR tests, Test distance: 5mm						
Antennas	**Front**	**Back**	**Right Side**	**Left Side**	**Top Side**	**Bottom Side**
WWAN	Yes	Yes	Yes	Yes	No	Yes
WLAN	Yes	Yes	No	Yes	No	No

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

Remark:

1. Referring to KDB 447498 D01v06, Devices that are designed to operate on the body of users using lanyards and straps or without requiring additional body-worn accessories must be tested for SAR compliance using a conservative minimum test separation distance ≤ 5 mm to support compliance, so the test separation distances of body and hand is 5 mm and 0mm *respectively*. SAR must be measured for all sides and surfaces with a transmitting antenna located within 25mm from that surface or edge.

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

8. SAR Measurement Procedures

8.1 Measurement Procedures

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

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

8.2 Spatial Peak SAR Evaluation

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

8.3 Area & Zoom Scan Procedures

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

8.4 Volume Scan Procedures

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

8.5 SAR Averaged Methods

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

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

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

8.6 Power Drift Monitoring

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

9. SAR Test Result

9.1 Conducted RF Output Power

GSM - Burst Average Power (dBm)								
Band	**GSM850**			**Tune-up power (dBm)**	**PCS1900**			**Tune-up power (dBm)**
Channel	**128**	**190**	**251**		**512**	**661**	**810**	
Frequency (MHz)	**824.2**	**836.6**	**848.8**		**1850.2**	**1880**	**1909.8**	
GSM	32.6	32.4	32.2	33.0	29.6	29.2	28.9	30.0
GPRS (1 slot)	32.51	32.37	32.16	33.0	29.5	29.13	28.83	30.0
GPRS (2 slots)	31.44	31.3	31.13	32.0	28.47	28.1	27.76	29.0
GPRS (3 slots)	29.58	29.49	29.29	30.0	26.96	26.52	26.18	27.5
GPRS (4 slots)	28.57	28.46	28.2	29.0	25.90	25.48	25.56	26.0
EDGE (1 slot)	26.42	26.16	25.88	27.0	25.47	24.99	24.37	26.0
EDGE (2 slots)	25.17	24.93	24.61	25.5	23.84	23.38	22.79	24.0
EDGE (3 slots)	23.26	22.83	22.53	23.5	21.67	21.08	20.37	22.0
EDGE (4 slots)	21.74	21.76	21.16	22.0	20.16	19.79	19.07	20.5

GSM - Source-Based Time-Average Power (dBm)								
Band	**GSM850**			**Tune-up power (dBm)**	**PCS1900**			**Tune-up power (dBm)**
Channel	**128**	**190**	**251**		**512**	**661**	**810**	
Frequency (MHz)	**824.2**	**836.6**	**848.8**		**1850.2**	**1880**	**1909.8**	
GSM	23.60	23.40	23.20	24.0	20.60	20.20	19.90	21.0
GPRS (1 slot)	23.51	23.37	23.16	24.0	20.50	20.13	19.83	21.0
GPRS (2 slots)	25.44	25.30	25.13	26.0	22.47	22.10	21.76	23.0
GPRS (3 slots)	25.33	25.24	25.04	25.5	22.71	22.27	21.93	23.0
GPRS (4 slots)	25.57	25.46	25.20	26.0	22.90	22.48	22.56	23.0
EDGE (1 slot)	17.42	17.16	16.88	18.0	16.47	15.99	15.37	17.0
EDGE (2 slots)	19.17	18.93	18.61	19.5	17.84	17.38	16.79	18.0
EDGE (3 slots)	19.01	18.58	18.28	19.5	17.42	16.83	16.12	18.0
EDGE (4 slots)	18.74	18.76	18.16	19.0	17.16	16.79	16.07	17.5
Note: The source-based time-averaged power is linearly scaled the maximum burst averaged power based on time slots. The calculated method are shown as below: Source based time-average power = Burst averaged power - Duty cycle factor in dB Duty cycle factor = 9 dB for 1 Tx slot, 6 dB for 2 Tx slots, 4.25 dB for 3 Tx slots, 3 dB for 4 Tx slots								

Remark:

1. For Body/Hand 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.

3. The DUT do not support DTM function.

4. This device supports VOIP capability through 3rd party apps software.

WCDMA - Average Power (dBm)								
Band	**WCDMA Band II**				**WCDMA Band V**			
Channel	**9262**	**9400**	**9538**	**Tune-up power (dBm)**	**4132**	**4183**	**4233**	**Tune-up power (dBm)**
Frequency (MHz)	**1852.4**	**1880.0**	**1907.6**		**826.4**	**836.6**	**846.6**	
RMC 12.2k	22.42	22.5	22.5	23.0	22.43	23.06	23.05	23.5
AMR 12.2k	22.38	22.45	22.42	23.0	22.41	23.06	22.98	23.5
HSDPA Subtest-1	22.37	22.39	22.34	22.5	22.35	22.97	22.93	23.5
HSDPA Subtest-2	22.35	22.32	22.28	22.5	22.31	22.95	22.89	23.5
HSDPA Subtest-3	22.35	22.28	22.24	22.5	22.25	22.86	22.81	23.5
HSDPA Subtest-4	22.28	22.26	22.22	22.5	22.17	22.85	22.81	23.5
HSUPA Subtest-1	22.27	22.19	22.15	22.5	22.13	22.81	22.73	23.0
HSUPA Subtest-2	22.21	22.12	22.06	22.5	22.06	22.73	22.72	23.0
HSUPA Subtest-3	22.14	22.1	21.98	22.5	22.05	22.7	22.68	23.0
HSUPA Subtest-4	22.06	22.08	21.91	22.5	21.98	22.61	22.65	23.0
HSUPA Subtest-5	21.99	22.01	21.82	22.5	21.96	22.6	22.62	23.0

WCDMA - Average Power (dBm)								
Band	**WCDMA Band IV**							
Channel	**1312**	**1413**	**1513**	**Tune-up power (dBm)**				
Frequency (MHz)	**1712.4**	**1732.6**	**1752.6**					
RMC 12.2k	22.32	22.41	22.28	23.0				
AMR 12.2k	22.25	22.38	22.27	22.5				
HSDPA Subtest-1	22.24	22.36	22.19	22.5				
HSDPA Subtest-2	22.15	22.29	22.18	22.5				
HSDPA Subtest-3	22.12	22.26	22.12	22.5				
HSDPA Subtest-4	22.03	22.19	22.06	22.5				
HSUPA Subtest-1	21.97	22.13	22.05	22.5				
HSUPA Subtest-2	21.91	22.05	22.02	22.5				
HSUPA Subtest-3	21.82	22	21.93	22.5				
HSUPA Subtest-4	21.82	21.97	21.85	22.5				
HSUPA Subtest-5	21.78	21.93	21.78	22.5				

Remark:

1. For Body/Hand SAR, per KDB 941225 D01 v03, RMC 12.2kbps setting is used to evaluate SAR. If AMR 12.2kbps power is < 1/4 dB higher than RMC, SAR tests with AMR 12.2kbps can be excluded.

2. For Body/Hand SAR, per KDB 941225 D01 v03, RMC 12.2kbps setting is used to evaluate SAR. If HSDPA subset-1 output power is < 1/4 dB higher than RMC, and SAR with RMC 12.2kbps setting is ≦1.2W/kg, HSDPA SAR evaluation can be excluded

FDD-LTE Band 2:

Channel Bandwidth: 1.4 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	23.53	0
		1	3	23.59	0
		1	5	23.56	0
		3	0	22.64	0
		3	2	22.64	0
		3	3	22.63	0
		6	0	22.44	1
	MCH	1	0	23.69	0
		1	3	23.68	0
		1	5	23.65	0
		3	0	22.79	0
		3	2	22.70	0
		3	3	22.77	0
		6	0	22.72	1
	HCH	1	0	22.84	0
		1	3	22.61	0
		1	5	22.66	0
		3	0	22.84	0
		3	2	22.70	0
		3	3	22.66	0
		6	0	22.24	1
16QAM	LCH	1	0	22.62	1
		1	3	22.72	1
		1	5	22.64	1
		3	0	22.45	1
		3	2	22.45	1
		3	3	22.47	1
		6	0	21.70	2
	MCH	1	0	22.65	1
		1	3	22.74	1
		1	5	22.64	1
		3	0	22.58	1
		3	2	22.52	1
		3	3	22.55	1
		6	0	21.56	2
	HCH	1	0	22.34	1
		1	3	22.22	1

		1	5	22.15	1
		3	0	22.08	1
		3	2	22.02	1
		3	3	21.98	1
		6	0	21.47	2

Channel Bandwidth: 3 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	23.50	0
		1	7	23.51	0
		1	14	23.53	0
		8	0	22.67	1
		8	4	22.68	1
		8	7	22.68	1
		15	0	22.61	1
	MCH	1	0	23.54	0
		1	7	23.58	0
		1	14	23.47	0
		8	0	22.68	1
		8	4	22.69	1
		8	7	22.67	1
		15	0	22.60	1
	HCH	1	0	22.62	0
		1	7	22.60	0
		1	14	22.34	0
		8	0	22.06	1
		8	4	22.11	1
		8	7	22.12	1
		15	0	22.11	1
16QAM	LCH	1	0	22.64	1
		1	7	22.74	1
		1	14	22.63	1
		8	0	21.61	2
		8	4	21.61	2
		8	7	21.59	2
		15	0	21.47	2
	MCH	1	0	22.67	1
		1	7	22.71	1
		1	14	22.66	1
		8	0	21.61	2
		8	4	21.61	2
		8	7	21.59	2

		15	0	21.45	2
	HCH	1	0	21.97	1
		1	7	22.05	1
		1	14	21.96	1
		8	0	21.17	2
		8	4	21.26	2
		8	7	21.36	2
		15	0	21.27	2

Channel Bandwidth: 5 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	23.29	0
		1	12	23.13	0
		1	24	23.58	0
		12	0	22.63	1
		12	6	22.62	1
		12	13	22.68	1
		25	0	22.62	1
	MCH	1	0	23.71	0
		1	12	23.33	0
		1	24	23.55	0
		12	0	22.71	1
		12	6	22.68	1
		12	13	22.65	1
		25	0	22.61	1
	HCH	1	0	22.78	0
		1	12	22.77	0
		1	24	22.81	0
		12	0	21.84	1
		12	6	21.81	1
		12	13	21.91	1
		25	0	21.83	1
16QAM	LCH	1	0	22.81	1
		1	12	22.62	1
		1	24	22.76	1
		12	0	21.67	2
		12	6	21.65	2
		12	13	21.65	2
		25	0	21.54	2
	MCH	1	0	22.86	1
		1	12	22.80	1
		1	24	22.76	1

		12	0	21.70	2
		12	6	21.69	2
		12	13	21.68	2
		25	0	21.55	2
	HCH	1	0	21.27	1
		1	12	21.21	1
		1	24	21.65	1
		12	0	20.51	2
		12	6	20.56	2
		12	13	20.87	2
		25	0	20.67	2

Channel Bandwidth: 10 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	22.89	0
		1	24	23.24	0
		1	49	23.38	0
		25	0	22.58	1
		25	12	22.60	1
		25	25	22.63	1
		50	0	22.60	1
	MCH	1	0	23.33	0
		1	24	23.25	0
		1	49	23.07	0
		25	0	22.66	1
		25	12	22.62	1
		25	25	22.53	1
		50	0	22.60	1
	HCH	1	0	22.64	0
		1	24	22.77	0
		1	49	22.02	0
		25	0	21.79	1
		25	12	21.73	1
		25	25	21.90	1
		50	0	21.77	1
16QAM	LCH	1	0	22.37	1
		1	24	22.69	1
		1	49	22.73	1
		25	0	21.54	2
		25	12	21.51	2
		25	25	21.50	2
		50	0	21.51	2

	MCH	1	0	22.78	1
		1	24	22.69	1
		1	49	22.46	1
		25	0	21.55	2
		25	12	21.54	2
		25	25	21.52	2
		50	0	21.53	2
	HCH	1	0	21.16	1
		1	24	21.26	1
		1	49	21.55	1
		25	0	20.41	2
		25	12	20.43	2
		25	25	20.57	2
		50	0	20.49	2

Channel Bandwidth: 15 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	23.08	0
		1	37	23.47	0
		1	74	23.65	0
		37	0	22.71	1
		37	18	22.81	1
		37	38	22.77	1
		75	0	22.70	1
	MCH	1	0	23.55	0
		1	37	23.22	0
		1	74	23.29	0
		37	0	22.80	1
		37	18	22.58	1
		37	38	22.53	1
		75	0	22.66	1
	HCH	1	0	22.47	0
		1	37	22.41	0
		1	74	22.27	0
		37	0	21.51	1
		37	18	21.24	1
		37	38	21.31	1
		75	0	21.41	1
16QAM	LCH	1	0	22.55	1
		1	37	22.78	1
		1	74	22.73	1
		37	0	21.67	2

		37	18	21.66	2
		37	38	21.62	2
		75	0	21.65	2
	MCH	1	0	22.82	1
		1	37	22.65	1
		1	74	22.67	1
		37	0	21.70	2
		37	18	21.64	2
		37	38	21.58	2
		75	0	21.64	2
	HCH	1	0	21.97	1
		1	37	21.14	1
		1	74	21.69	1
		37	0	21.24	2
		37	18	20.99	2
		37	38	21.03	2
		75	0	21.15	2

Channel Bandwidth: 20 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	23.29	0
		1	49	23.71	0
		1	99	23.72	0
		50	0	22.63	1
		50	25	22.58	1
		50	50	22.61	1
		100	0	22.60	1
	MCH	1	0	23.73	0
		1	49	23.32	0
		1	99	23.45	0
		50	0	22.85	1
		50	25	22.58	1
		50	50	22.55	1
		100	0	22.71	1
	HCH	1	0	23.37	0
		1	49	22.79	0
		1	99	22.37	0
		50	0	22.08	1
		50	25	21.47	1
		50	50	21.30	1
		100	0	21.79	1
16QAM	LCH	1	0	22.65	1

		1	49	22.76	1
		1	99	22.85	1
		50	0	21.50	2
		50	25	21.47	2
		50	50	21.46	2
		100	0	21.50	2
	MCH	1	0	22.87	1
		1	49	22.64	1
		1	99	22.67	1
		50	0	21.54	2
		50	25	21.50	2
		50	50	21.45	2
		100	0	21.51	2
	HCH	1	0	22.77	1
		1	49	21.29	1
		1	99	21.82	1
		50	0	21.36	2
		50	25	20.77	2
		50	50	20.55	2
		100	0	21.05	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	24.38	0
		1	3	24.39	0
		1	5	24.35	0
		3	0	23.65	0
		3	2	23.64	0
		3	3	23.62	0
		6	0	23.41	1
	MCH	1	0	24.11	0
		1	3	24.13	0
		1	5	24.11	0
		3	0	23.66	0
		3	2	23.60	0
		3	3	23.64	0
		6	0	23.15	1
	HCH	1	0	24.22	0
		1	3	24.25	0

		1	5	24.24	0
		3	0	23.78	0
		3	2	23.76	0
		3	3	23.78	0
		6	0	23.31	1
16QAM	LCH	1	0	23.44	1
		1	3	23.52	1
		1	5	23.42	1
		3	0	23.41	1
		3	2	23.35	1
		3	3	23.37	1
		6	0	22.30	2
	MCH	1	0	23.31	1
		1	3	23.39	1
		1	5	23.36	1
		3	0	23.06	1
		3	2	23.04	1
		3	3	23.08	1
		6	0	22.07	2
	HCH	1	0	23.36	1
		1	3	23.49	1
		1	5	23.40	1
		3	0	23.29	1
		3	2	23.24	1
		3	3	23.27	1
		6	0	22.33	2

Channel Bandwidth: 3 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	24.25	0
		1	7	24.28	0
		1	14	24.19	0
		8	0	23.31	1
		8	4	23.38	1
		8	7	23.38	1
		15	0	23.36	1
	MCH	1	0	24.02	0
		1	7	24.06	0
		1	14	24.02	0
		8	0	23.19	1
		8	4	23.19	1
		8	7	23.19	1

		15	0	23.15	1
	HCH	1	0	24.21	0
		1	7	24.29	0
		1	14	24.23	0
		8	0	23.32	1
		8	4	23.29	1
		8	7	23.31	1
		15	0	23.22	1
16QAM	LCH	1	0	23.44	1
		1	7	23.51	1
		1	14	23.39	1
		8	0	22.39	2
		8	4	22.39	2
		8	7	22.38	2
		15	0	22.31	2
	MCH	1	0	23.20	1
		1	7	23.29	1
		1	14	23.17	1
		8	0	22.20	2
		8	4	22.20	2
		8	7	22.17	2
		15	0	22.09	2
	HCH	1	0	23.47	1
		1	7	23.53	1
		1	14	23.45	1
		8	0	22.25	2
		8	4	22.24	2
		8	7	22.23	2
		15	0	22.21	2

Channel Bandwidth: 5 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	24.38	0
		1	12	24.38	0
		1	24	24.31	0
		12	0	23.36	1
		12	6	23.33	1
		12	13	23.32	1
		25	0	23.35	1
	MCH	1	0	24.17	0
		1	12	23.96	0
		1	24	24.10	0

		12	0	23.24	1
		12	6	23.21	1
		12	13	23.23	1
		25	0	23.15	1
	HCH	1	0	24.33	0
		1	12	24.41	0
		1	24	24.35	0
		12	0	23.29	1
		12	6	23.29	1
		12	13	23.32	1
		25	0	23.27	1
16QAM	LCH	1	0	23.61	1
		1	12	23.65	1
		1	24	23.56	1
		12	0	22.53	2
		12	6	22.50	2
		12	13	22.53	2
		25	0	22.38	2
	MCH	1	0	23.42	1
		1	12	23.41	1
		1	24	23.35	1
		12	0	22.30	2
		12	6	22.30	2
		12	13	22.30	2
		25	0	22.15	2
	HCH	1	0	23.23	1
		1	12	23.27	1
		1	24	23.20	1
		12	0	22.31	2
		12	6	22.29	2
		12	13	22.29	2
		25	0	22.29	2

Channel Bandwidth: 10 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	24.33	0
		1	24	24.28	0
		1	49	24.22	0
		25	0	23.36	1
		25	12	23.36	1
		25	25	23.34	1
		50	0	23.35	1
	MCH	1	0	24.17	0
		1	24	23.88	0
		1	49	23.67	0
		25	0	23.20	1
		25	12	23.18	1
		25	25	23.17	1
		50	0	23.18	1
	HCH	1	0	24.23	0
		1	24	24.24	0
		1	49	24.29	0
		25	0	23.25	1
		25	12	23.24	1
		25	25	23.27	1
		50	0	23.26	1
16QAM	LCH	1	0	23.54	1
		1	24	23.50	1
		1	49	23.43	1
		25	0	22.36	2
		25	12	22.34	2
		25	25	22.31	2
		50	0	22.35	2
	MCH	1	0	23.38	1
		1	24	23.30	1
		1	49	23.11	1
		25	0	22.19	2
		25	12	22.16	2
		25	25	22.18	2
		50	0	22.17	2
	HCH	1	0	23.55	1
		1	24	23.54	1
		1	49	23.57	1
		25	0	22.26	2

		25	12	22.26	2
		25	25	22.27	2
		50	0	22.30	2

Channel Bandwidth: 15 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	24.34	0
		1	37	24.28	0
		1	74	24.23	0
		37	0	23.39	1
		37	18	23.34	1
		37	38	23.32	1
		75	0	23.40	1
	MCH	1	0	24.20	0
		1	37	23.82	0
		1	74	24.08	0
		37	0	23.36	1
		37	18	23.22	1
		37	38	23.17	1
		75	0	23.33	1
	HCH	1	0	24.23	0
		1	37	24.30	0
		1	74	24.35	0
		37	0	23.33	1
		37	18	23.34	1
		37	38	23.37	1
		75	0	23.36	1
16QAM	LCH	1	0	23.53	1
		1	37	23.53	1
		1	74	23.43	1
		37	0	22.40	2
		37	18	22.37	2
		37	38	22.34	2
		75	0	22.39	2
	MCH	1	0	23.39	1
		1	37	23.25	1
		1	74	23.32	1
		37	0	22.27	2
		37	18	22.23	2
		37	38	22.22	2
		75	0	22.25	2
	HCH	1	0	23.42	1

		1	37	23.48	1
		1	74	23.49	1
		37	0	22.31	2
		37	18	22.31	2
		37	38	22.32	2
		75	0	22.30	2

Channel Bandwidth: 20 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	24.49	0
		1	49	24.38	0
		1	99	24.26	0
		50	0	23.78	1
		50	25	23.33	1
		50	50	23.28	1
		100	0	23.40	1
	MCH	1	0	24.40	0
		1	49	24.01	0
		1	99	24.27	0
		50	0	23.23	1
		50	25	23.18	1
		50	50	23.18	1
		100	0	23.22	1
	HCH	1	0	24.12	0
		1	49	24.30	0
		1	99	24.44	0
		50	0	23.22	1
		50	25	23.23	1
		50	50	23.29	1
		100	0	23.27	1
16QAM	LCH	1	0	23.58	1
		1	49	23.48	1
		1	99	23.41	1
		50	0	22.33	2
		50	25	22.27	2
		50	50	22.23	2
		100	0	22.28	2
	MCH	1	0	23.48	1
		1	49	23.31	1
		1	99	23.38	1
		50	0	22.21	2
		50	25	22.13	2

		50	50	22.16	2
		100	0	22.20	2
	HCH	1	0	23.49	1
		1	49	23.54	1
		1	99	23.68	1
		50	0	22.26	2
		50	25	22.27	2
		50	50	22.32	2
		100	0	22.25	2

FDD-LTE Band 5:

Channel Bandwidth: 1.4 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	23.95	0
		1	3	23.98	0
		1	5	23.94	0
		3	0	23.36	0
		3	2	23.20	0
		3	3	23.26	0
		6	0	23.08	1
	MCH	1	0	23.86	0
		1	3	23.90	0
		1	5	23.91	0
		3	0	23.35	0
		3	2	23.26	0
		3	3	23.24	0
		6	0	22.96	1
	HCH	1	0	23.90	0
		1	3	23.71	0
		1	5	23.52	0
		3	0	22.71	0
		3	2	22.78	0
		3	3	22.78	0
		6	0	23.10	1
16QAM	LCH	1	0	22.72	1
		1	3	22.83	1
		1	5	22.72	1
		3	0	22.57	1
		3	2	22.58	1
		3	3	22.56	1
		6	0	21.75	2
	MCH	1	0	22.81	1
		1	3	22.85	1
		1	5	22.78	1
		3	0	22.45	1
		3	2	22.33	1
		3	3	22.42	1
		6	0	21.62	2
	HCH	1	0	23.21	1
		1	3	23.20	1
		1	5	23.07	1

		3	0	23.22	1
		3	2	23.10	1
		3	3	23.09	1
		6	0	22.05	2

Channel Bandwidth: 3 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	23.79	0
		1	7	23.68	0
		1	14	23.61	0
		8	0	22.93	1
		8	4	22.78	1
		8	7	22.78	1
		15	0	22.75	1
	MCH	1	0	23.68	0
		1	7	23.81	0
		1	14	23.86	0
		8	0	22.77	1
		8	4	22.89	1
		8	7	22.90	1
		15	0	22.73	1
	HCH	1	0	24.00	0
		1	7	24.00	0
		1	14	23.99	0
		8	0	23.08	1
		8	4	23.05	1
		8	7	23.07	1
		15	0	23.08	1
16QAM	LCH	1	0	22.60	1
		1	7	22.67	1
		1	14	22.70	1
		8	0	21.76	2
		8	4	21.76	2
		8	7	21.71	2
		15	0	21.63	2
	MCH	1	0	22.69	1
		1	7	22.71	1
		1	14	22.76	1
		8	0	21.74	2
		8	4	21.74	2
		8	7	21.72	2
		15	0	21.61	2

	HCH	1	0	23.32	1
		1	7	23.28	1
		1	14	23.08	1
		8	0	22.17	2
		8	4	22.16	2
		8	7	22.14	2
		15	0	22.13	2

Channel Bandwidth: 5 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	23.93	0
		1	12	23.69	0
		1	24	23.65	0
		12	0	22.70	1
		12	6	22.63	1
		12	13	22.55	1
		25	0	22.83	1
	MCH	1	0	23.93	0
		1	12	23.83	0
		1	24	23.80	0
		12	0	22.77	1
		12	6	22.79	1
		12	13	22.81	1
		25	0	22.68	1
	HCH	1	0	24.07	0
		1	12	24.10	0
		1	24	24.06	0
		12	0	23.17	1
		12	6	23.17	1
		12	13	23.13	1
		25	0	23.08	1
16QAM	LCH	1	0	22.83	1
		1	12	22.82	1
		1	24	23.06	1
		12	0	21.90	2
		12	6	21.81	2
		12	13	21.98	2
		25	0	21.70	2
	MCH	1	0	22.96	1
		1	12	22.82	1
		1	24	22.82	1
		12	0	21.88	2

		12	6	21.78	2
		12	13	21.74	2
		25	0	21.66	2
	HCH	1	0	23.43	1
		1	12	23.33	1
		1	24	23.26	1
		12	0	22.34	2
		12	6	22.37	2
		12	13	22.35	2
		25	0	22.20	2

Channel Bandwidth: 10 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	24.03	0
		1	24	24.04	0
		1	49	24.14	0
		25	0	23.33	1
		25	12	23.08	1
		25	25	23.06	1
		50	0	23.03	1
	MCH	1	0	23.70	0
		1	24	23.88	0
		1	49	23.93	0
		25	0	22.75	1
		25	12	22.73	1
		25	25	22.77	1
		50	0	22.73	1
	HCH	1	0	23.90	0
		1	24	23.97	0
		1	49	23.97	0
		25	0	22.94	1
		25	12	23.01	1
		25	25	23.09	1
		50	0	22.97	1
16QAM	LCH	1	0	22.86	1
		1	24	23.04	1
		1	49	22.90	1
		25	0	21.70	2
		25	12	21.77	2
		25	25	21.73	2
		50	0	21.80	2
	MCH	1	0	23.10	1

		1	24	22.84	1
		1	49	22.90	1
		25	0	21.86	2
		25	12	21.68	2
		25	25	21.61	2
		50	0	21.76	2
	HCH	1	0	23.00	1
		1	24	23.22	1
		1	49	23.16	1
		25	0	21.87	2
		25	12	22.02	2
		25	25	22.08	2
		50	0	21.76	2

FDD-LTE Band 12:

Channel Bandwidth: 1.4 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	24.58	0
		1	3	24.66	0
		1	5	24.58	0
		3	0	24.13	0
		3	2	24.10	0
		3	3	24.10	0
		6	0	23.14	1
	MCH	1	0	24.67	0
		1	3	24.56	0
		1	5	24.44	0
		3	0	24.24	0
		3	2	24.20	0
		3	3	24.23	0
		6	0	23.71	1
	HCH	1	0	24.67	0
		1	3	24.65	0
		1	5	24.70	0
		3	0	24.30	0
		3	2	24.27	0
		3	3	24.20	0
		6	0	23.67	1
16QAM	LCH	1	0	24.22	1
		1	3	24.32	1
		1	5	24.19	1
		3	0	24.13	1
		3	2	24.08	1
		3	3	24.11	1
		6	0	23.22	2
	MCH	1	0	24.01	1
		1	3	24.15	1
		1	5	24.01	1
		3	0	24.02	1
		3	2	23.93	1
		3	3	23.98	1
		6	0	22.80	2
	HCH	1	0	23.85	1
		1	3	23.97	1
		1	5	23.98	1

		3	0	23.68	1
		3	2	23.71	1
		3	3	23.76	1
		6	0	22.65	2

Channel Bandwidth: 3 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	24.96	0
		1	7	24.92	0
		1	14	24.85	0
		8	0	24.04	1
		8	4	24.00	1
		8	7	23.98	1
		15	0	23.98	1
	MCH	1	0	24.60	0
		1	7	24.66	0
		1	14	24.55	0
		8	0	23.75	1
		8	4	23.71	1
		8	7	23.69	1
		15	0	23.73	1
	HCH	1	0	24.63	0
		1	7	24.62	0
		1	14	24.67	0
		8	0	23.68	1
		8	4	23.66	1
		8	7	23.68	1
		15	0	23.69	1
16QAM	LCH	1	0	24.18	1
		1	7	24.10	1
		1	14	24.03	1
		8	0	23.05	2
		8	4	23.02	2
		8	7	22.99	2
		15	0	22.93	2
	MCH	1	0	23.94	1
		1	7	24.01	1
		1	14	23.89	1
		8	0	22.91	2
		8	4	22.87	2
		8	7	22.83	2
		15	0	22.84	2

	HCH	1	0	23.80	1
		1	7	23.79	1
		1	14	23.95	1
		8	0	22.64	2
		8	4	22.64	2
		8	7	22.70	2
		15	0	22.67	2

Channel Bandwidth: 5 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	25.10	0
		1	12	24.98	0
		1	24	24.85	0
		12	0	24.09	1
		12	6	24.05	1
		12	13	24.00	1
		25	0	23.97	1
	MCH	1	0	24.81	0
		1	12	24.71	0
		1	24	24.59	0
		12	0	23.90	1
		12	6	23.82	1
		12	13	23.74	1
		25	0	23.72	1
	HCH	1	0	24.79	0
		1	12	24.78	0
		1	24	24.75	0
		12	0	23.73	1
		12	6	23.68	1
		12	13	23.71	1
		25	0	23.66	1
16QAM	LCH	1	0	24.37	1
		1	12	24.23	1
		1	24	24.12	1
		12	0	23.18	2
		12	6	23.17	2
		12	13	23.18	2
		25	0	23.05	2
	MCH	1	0	24.15	1
		1	12	24.18	1
		1	24	23.97	1
		12	0	23.15	2

		12	6	23.12	2
		12	13	23.01	2
		25	0	22.85	2
	HCH	1	0	23.68	1
		1	12	23.60	1
		1	24	23.61	1
		12	0	22.81	2
		12	6	22.78	2
		12	13	22.79	2
		25	0	22.75	2

Channel Bandwidth: 10 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	25.18	0
		1	24	24.84	0
		1	49	24.63	0
		25	0	24.33	1
		25	12	23.95	1
		25	25	23.87	1
		50	0	23.99	1
	MCH	1	0	24.90	0
		1	24	24.69	0
		1	49	24.56	0
		25	0	23.92	1
		25	12	23.79	1
		25	25	23.67	1
		50	0	23.73	1
	HCH	1	0	24.96	0
		1	24	24.62	0
		1	49	24.57	0
		25	0	23.76	1
		25	12	23.67	1
		25	25	23.61	1
		50	0	23.76	1
16QAM	LCH	1	0	24.30	1
		1	24	24.05	1
		1	49	24.00	1
		25	0	23.08	2
		25	12	23.03	2
		25	25	22.96	2
		50	0	23.04	2
	MCH	1	0	24.11	1

		1	24	24.03	1
		1	49	23.72	1
		25	0	23.02	2
		25	12	22.88	2
		25	25	22.72	2
		50	0	22.84	2
	HCH	1	0	24.22	1
		1	24	23.93	1
		1	49	23.91	1
		25	0	22.84	2
		25	12	22.75	2
		25	25	22.70	2
		50	0	22.86	2

FDD-LTE Band 17:

Channel Bandwidth: 5 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	24.82	0
		1	12	24.78	0
		1	24	24.68	0
		12	0	23.94	1
		12	6	23.91	1
		12	13	23.81	1
		25	0	23.81	1
	MCH	1	0	24.73	0
		1	12	24.75	0
		1	24	24.70	0
		12	0	23.78	1
		12	6	23.72	1
		12	13	23.67	1
		25	0	23.72	1
	HCH	1	0	24.60	0
		1	12	24.60	0
		1	24	24.62	0
		12	0	23.67	1
		12	6	23.64	1
		12	13	23.70	1
		25	0	23.57	1
16QAM	LCH	1	0	23.17	1
		1	12	23.29	1
		1	24	23.11	1
		12	0	22.16	2
		12	6	22.16	2
		12	13	22.11	2
		25	0	22.96	2
	MCH	1	0	23.85	1
		1	12	23.76	1
		1	24	23.56	1
		12	0	22.88	2
		12	6	22.80	2
		12	13	22.74	2
		25	0	22.78	2
	HCH	1	0	23.69	1
		1	12	23.61	1

		1	24	23.73	1
		12	0	22.70	2
		12	6	22.73	2
		12	13	22.79	2
		25	0	22.70	2

Channel Bandwidth: 10 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	24.82	0
		1	24	24.62	0
		1	49	24.52	0
		25	0	23.90	1
		25	12	23.76	1
		25	25	23.65	1
		50	0	23.75	1
	MCH	1	0	24.77	0
		1	24	24.64	0
		1	49	24.54	0
		25	0	23.81	1
		25	12	23.70	1
		25	25	23.61	1
		50	0	23.76	1
	HCH	1	0	24.79	0
		1	24	24.61	0
		1	49	24.58	0
		25	0	23.76	1
		25	12	23.67	1
		25	25	23.58	1
		50	0	23.73	1
16QAM	LCH	1	0	23.76	1
		1	24	23.68	1
		1	49	23.69	1
		25	0	22.98	2
		25	12	22.81	2
		25	25	22.74	2
		50	0	22.84	2
	MCH	1	0	23.77	1
		1	24	23.63	1
		1	49	23.70	1
		25	0	22.89	2
		25	12	22.75	2
		25	25	22.68	2

		50	0	22.84	2
	HCH	1	0	23.93	1
		1	24	23.90	1
		1	49	23.91	1
		25	0	22.85	2
		25	12	22.75	2
		25	25	22.68	2
		50	0	22.82	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)**	**Tune-up power (dBm)**
802.11b	1Mbps	CH 01	2412	14.59	15.0
		CH 06	2437	14.06	15.0
		CH 11	2462	14.00	15.0
802.11g	54Mbps	CH 01	2412	14.50	16.5
		CH 06	2437	15.91	16.5
		CH 11	2462	16.00	16.5
802.11n (20MHz)	MCS7	CH 01	2412	14.42	16.0
		CH 06	2437	15.83	16.0
		CH 11	2462	15.90	16.0
802.11n (40MHz)	MCS7	CH 03	2422	15.76	16.0
		CH 06	2437	15.61	16.0
		CH 09	2452	15.32	16.0

WLAN(5.2G) - Maximum Average Power				
Test Mode	**Channel**	**Frequency (MHz)**	**Average Power (dBm)**	**Tune-up power (dBm)**
A20	CH 36	5180	11.94	12.5
	CH 40	5200	12.08	12.5
	CH 48	5240	11.98	12.5
N20	CH 36	5180	12.05	13.0
	CH 40	5200	12.44	13.0
	CH 48	5240	12.04	13.0
N40	CH 38	5190	13.22	13.5
	CH46	5230	13.21	13.5

WLAN(5.8G) - Maximum Average Power				
Test Mode	**Channel**	**Frequency (MHz)**	**Average Power (dBm)**	**Tune-up power (dBm)**
A20	CH149	5745	11.91	12.5
	CH157	5785	12.05	12.5
	CH165	5825	11.93	12.5
N20	CH149	5745	12.12	12.5
	CH157	5785	12.34	12.5
	CH165	5825	12.08	12.5
N40	CH151	5755	13.18	13.5
	CH159	5795	13.23	13.5

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. In this report, the reported SAR of a DSSS mode is 0.465 W/kg and the maximum output power specified for the 802.11b and 11g mode are 31.62mW and 44.67mW, the scaled SAR would be 0.465 x (44.67/31.62) = 0.657 W/kg< 1.2W/kg, therefore, SAR is not required for the OFDM modes (802.11g/n) mode.

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

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

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

Bluetooth - Maximum Average Power			
Test Mode	**Data Rate**	**Average Power(dBm)**	**Tune-up power (dBm)**
GFSK	1Mbps	2.81	3.0
Pi/4 QDPSK	2Mbps	1.85	3.0
8DPSK	3Mbps	1.65	3.0

Bluetooth - Maximum Average Power					
Test Mode	**Data Rate**	**Channel**	**Frequency (MHz)**	**Average Power (dBm)**	**Tune-up power (dBm)**
BLE	1Mbps	CH 00	2402	0.91	3.0
		CH 19	2440	1.08	3.0
		CH 39	2480	2.74	3.0

NFC - Maximum Average Power			
Test Mode	**Frequency (MHz)**	**Average Power(dBm)**	**Tune-up power (dBm)**
NFC	13.56	-42.5	-40

Remark:

Bluetooth and NFC maximum output power is 2.81dBm and -42.5dBm re*spectively*, and Maximum Tune-Up output power is 3.0dBm and -40dBm. 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, 4.87mW)/(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

Bluetooth:

Tune-Up Power (dBm)	Max. Power (mW)	Distance (mm)	Frequency (GHz)	Result	Limit
3.0	2.00	5	2.480	0.63	3

The exclusion thresholds is 0.63< 3, therefore, the RF exposure evaluation is not required.

NFC:

Tune-Up Power (dBm)	Max. Power (mW)	Distance (mm)	Frequency (GHz)	Result	Limit
-40	0.0001	5	0.01356	0.000002	3

The exclusion thresholds is 0.000002< 3, therefore, the RF exposure evaluation is not required.

9.2 Test Results for Standalone SAR Test

Body SAR

GSM850 – Body SAR Test (Gap: 5mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
1.	GPRS_4TX	Back Side	128	824.2	28.57	29.0	1.104	0.722	0.797
2.	GPRS_4TX	Front Side	128	824.2	28.57	29.0	1.104	0.487	0.538
3.	GPRS_4TX	Bottom side	128	824.2	28.57	29.0	1.104	0.563	0.622
4.	GPRS_4TX	Right side	128	824.2	28.57	29.0	1.104	0.249	0.275
5.	GPRS_4TX	Left side	128	824.2	28.57	29.0	1.104	0.699	0.772

GSM1900 – Body SAR Test (Gap: 5mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
6.	GPRS_4TX	Back Side	512	1850.2	25.90	26.0	1.023	0.454	0.465
7.	GPRS_4TX	Front Side	512	1850.2	25.90	26.0	1.023	0.173	0.177
8.	GPRS_4TX	Bottom side	512	1850.2	25.90	26.0	1.023	0.588	0.602
9.	GPRS_4TX	Right side	512	1850.2	25.90	26.0	1.023	0.162	0.166
10.	GPRS_4TX	Left side	512	1850.2	25.90	26.0	1.023	0.067	0.069

WCDMA Band 2 – Body SAR Test (Gap: 5mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
11.	RMC 12.2k	Back Side	9400	1880.0	22.5	23.0	1.122	0.509	0.571
12.	RMC 12.2k	Front Side	9400	1880.0	22.5	23.0	1.122	0.196	0.220
13.	RMC 12.2k	Bottom side	9400	1880.0	22.5	23.0	1.122	0.660	0.741
14.	RMC 12.2k	Right side	9400	1880.0	22.5	23.0	1.122	0.160	0.180
15.	RMC 12.2k	Left side	9400	1880.0	22.5	23.0	1.122	0.062	0.070

WCDMA Band 5 – Body SAR Test (Gap: 5mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
16.	RMC 12.2k	Back Side	4183	836.6	23.06	23.5	1.107	0.448	0.496
17.	RMC 12.2k	Front Side	4183	836.6	23.06	23.5	1.107	0.248	0.274
18.	RMC 12.2k	Bottom side	4183	836.6	23.06	23.5	1.107	0.333	0.369
19.	RMC 12.2k	Right side	4183	836.6	23.06	23.5	1.107	0.098	0.108
20.	RMC 12.2k	Left side	4183	836.6	23.06	23.5	1.107	0.314	0.347

WCDMA Band 4 – Body SAR Test (Gap: 5mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
21.	RMC 12.2k	Back Side	1413	1732.6	22.41	23.0	1.146	0.645	0.739
22.	RMC 12.2k	Front Side	1413	1732.6	22.41	23.0	1.146	0.442	0.506
23.	RMC 12.2k	Bottom side	1413	1732.6	22.41	23.0	1.146	0.996	1.141
24.	RMC 12.2k	Bottom side	1312	1712.4	22.32	23.0	1.169	0.903	1.056
25.	RMC 12.2k	Bottom side	1513	1752.6	22.28	23.0	1.180	0.982	1.159
26.	RMC 12.2k	Right side	1413	1732.6	22.41	23.0	1.146	0.366	0.419
27.	RMC 12.2k	Left side	1413	1732.6	22.41	23.0	1.146	0.181	0.207

LTE Band 2–Body SAR Test (Gap: 5mm)								
Plot No.	Mode	Test Position Body	Frequency	Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth, RB		MHz					
28.	RMC QPSK 20MHz 1RB	Back Side	1880.0	23.73	24.0	1.064	0.387	0.412
29.	RMC QPSK 20MHz 1RB	Front Side	1880.0	23.73	24.0	1.064	0.153	0.163
30.	RMC QPSK 20MHz 1RB	Bottom side	1880.0	23.73	24.0	1.064	0.554	0.590
31.	RMC QPSK 20MHz 1RB	Right side	1880.0	23.73	24.0	1.064	0.279	0.297
32.	RMC QPSK 20MHz 1RB	Left side	1880.0	23.73	24.0	1.064	0.06	0.064
33.	RMC QPSK 20MHz 50%RB	Back Side	1880.0	22.85	23.0	1.035	0.332	0.344
34.	RMC QPSK 20MHz 50%RB	Front Side	1880.0	22.85	23.0	1.035	0.123	0.127
35.	RMC QPSK 20MHz 50%RB	Bottom side	1880.0	22.85	23.0	1.035	0.412	0.426
36.	RMC QPSK 20MHz 50%RB	Right side	1880.0	22.85	23.0	1.035	0.187	0.194
37.	RMC QPSK 20MHz 50%RB	Left side	1880.0	22.85	23.0	1.035	0.038	0.039

LTE Band 4–Body SAR Test (Gap: 5mm)								
Plot No.	Mode	Test Position Body	Frequency	Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth, RB		MHz					
38.	RMC QPSK 20MHz 1RB	Back Side	1720.0	24.49	25.0	1.125	0.528	0.594
39.	RMC QPSK 20MHz 1RB	Front Side	1720.0	24.49	25.0	1.125	0.391	0.440
40.	RMC QPSK 20MHz 1RB	Bottom side	1720.0	24.49	25.0	1.125	0.970	1.091
41.	RMC QPSK 20MHz 1RB	Bottom side	1732.5	24.40	25.0	1.148	0.912	1.047
42.	RMC QPSK 20MHz 1RB	Bottom side	1745.0	24.44	25.0	1.138	0.897	1.020
43.	RMC QPSK 20MHz 1RB	Right side	1720.0	24.49	25.0	1.125	0.385	0.433
44.	RMC QPSK 20MHz 1RB	Left side	1720.0	24.49	25.0	1.125	0.207	0.233

45.	RMC QPSK 20MHz 50%RB	Back Side	1720.0	23.78	24.0	1.052	0.41	0.431
46.	RMC QPSK 20MHz 50%RB	Front Side	1720.0	23.78	24.0	1.052	0.268	0.282
47.	RMC QPSK 20MHz 50%RB	Bottom side	1720.0	23.78	24.0	1.052	0.761	0.801
48.	RMC QPSK 20MHz 50%RB	Right side	1720.0	23.78	24.0	1.052	0.254	0.267
49.	RMC QPSK 20MHz 50%RB	Left side	1720.0	23.78	24.0	1.052	0.135	0.142
50.	RMC QPSK 20MHz 100%RB	Bottom side	1720.0	23.40	24.0	1.148	0.710	0.815

LTE Band 5–Body SAR Test (Gap: 5mm)								
Plot No.	**Mode**	**Test Position Body**	**Frequency**	**Output Power (dBm)**	**Rated Limit (dBm)**	**Scaling Factor**	**SAR1g (W/kg)**	**Scaled SAR1g (W/kg)**
	Modulation, Bandwidth, RB		**MHz**					
51.	RMC QPSK 10MHz 1RB	Back Side	829.0	24.14	24.5	1.086	0.475	0.516
52.	RMC QPSK 10MHz 1RB	Front Side	829.0	24.14	24.5	1.086	0.288	0.313
53.	RMC QPSK 10MHz 1RB	Bottom side	829.0	24.14	24.5	1.086	0.267	0.290
54.	RMC QPSK 10MHz 1RB	Right side	829.0	24.14	24.5	1.086	0.173	0.188
55.	RMC QPSK 10MHz 1RB	Left side	829.0	24.14	24.5	1.086	0.397	0.431
56.	RMC QPSK 10MHz 50%RB	Back Side	829.0	23.33	23.5	1.040	0.41	0.426
57.	RMC QPSK 10MHz 50%RB	Front Side	829.0	23.33	23.5	1.040	0.215	0.224
58.	RMC QPSK 10MHz 50%RB	Bottom side	829.0	23.33	23.5	1.040	0.211	0.219
59.	RMC QPSK 10MHz 50%RB	Right side	829.0	23.33	23.5	1.040	0.128	0.133
60.	RMC QPSK 10MHz 50%RB	Left side	829.0	23.33	23.5	1.040	0.258	0.268

LTE Band 12–Body SAR Test (Gap: 5mm)								
Plot No.	**Mode**	**Test Position Body**	**Frequency**	**Output Power (dBm)**	**Rated Limit (dBm)**	**Scaling Factor**	**SAR1g (W/kg)**	**Scaled SAR1g (W/kg)**
	Modulation, Bandwidth, RB		**MHz**					
61.	RMC QPSK 10MHz 1RB	Back Side	704.0	25.18	25.5	1.076	0.162	0.174
62.	RMC QPSK 10MHz 1RB	Front Side	704.0	25.18	25.5	1.076	0.073	0.079
63.	RMC QPSK 10MHz 1RB	Bottom side	704.0	25.18	25.5	1.076	0.089	0.096
64.	RMC QPSK 10MHz 1RB	Right side	704.0	25.18	25.5	1.076	0.091	0.098
65.	RMC QPSK 10MHz 1RB	Left side	704.0	25.18	25.5	1.076	0.044	0.047
66.	RMC QPSK 10MHz 50%RB	Back Side	704.0	24.33	24.5	1.040	0.138	0.144
67.	RMC QPSK 10MHz 50%RB	Front Side	704.0	24.33	24.5	1.040	0.052	0.054
68.	RMC QPSK 10MHz 50%RB	Bottom side	704.0	24.33	24.5	1.040	0.049	0.051
69.	RMC QPSK 10MHz 50%RB	Right side	704.0	24.33	24.5	1.040	0.037	0.038
70.	RMC QPSK 10MHz 50%RB	Left side	704.0	24.33	24.5	1.040	0.021	0.022

LTE Band 17–Body SAR Test (Gap: 5mm)								
Plot No.	Mode	Test Position Body	Frequency	Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth, RB		MHz					
71.	RMC QPSK 10MHz 1RB	Back Side	709.0	24.82	25.0	1.042	0.180	0.188
72.	RMC QPSK 10MHz 1RB	Front Side	709.0	24.82	25.0	1.042	0.072	0.075
73.	RMC QPSK 10MHz 1RB	Bottom side	709.0	24.82	25.0	1.042	0.067	0.070
74.	RMC QPSK 10MHz 1RB	Right side	709.0	24.82	25.0	1.042	0.094	0.098
75.	RMC QPSK 10MHz 1RB	Left side	709.0	24.82	25.0	1.042	0.073	0.076
76.	RMC QPSK 10MHz 50%RB	Back Side	709.0	23.90	24.0	1.023	0.100	0.102
77.	RMC QPSK 10MHz 50%RB	Front Side	709.0	23.90	24.0	1.023	0.054	0.055
78.	RMC QPSK 10MHz 50%RB	Bottom side	709.0	23.90	24.0	1.023	0.041	0.042
79.	RMC QPSK 10MHz 50%RB	Right side	709.0	23.90	24.0	1.023	0.062	0.063
80.	RMC QPSK 10MHz 50%RB	Left side	709.0	23.90	24.0	1.023	0.055	0.056

WLAN 2.4GHz –Body SAR Test(Gap: 5mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
81.	802.11b	Back Side	01	2412	14.59	15.0	1.099	0.021	0.023
82.	802.11b	Front Side	01	2412	14.59	15.0	1.099	0.027	0.030
83.	802.11b	Left side	01	2412	14.59	15.0	1.099	0.423	0.465

WLAN 5.2GHz –Body SAR Test(Gap: 5mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
84.	11n-40	Back Side	38	5190	13.22	13.5	1.067	0.005	0.005
85.	11n-40	Front Side	38	5190	13.22	13.5	1.067	0.008	0.009
86.	11n-40	Left side	38	5190	13.22	13.5	1.067	0.161	0.172

WLAN 5.8GHz –Body SAR Test(Gap: 5mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
87.	11n-40	Back Side	159	5795	13.23	13.5	1.064	0.027	0.029
88.	11n-40	Front Side	159	5795	13.23	13.5	1.064	0.049	0.052
89.	11n-40	Left side	159	5795	13.23	13.5	1.064	0.280	0.298

WLAN 2.4GHz –Body SAR Test(Gap: 5mm)									
Plot No.	**Mode**	**Test Position Body**	**Frequency**		**Output Power (dBm)**	**Rated Limit (dBm)**	**Scaling Factor**	**SAR1g (W/kg)**	**Scaled SAR1g (W/kg)**
			CH.	**MHz**					
174	802.11g	Back Side	11	2462	16.00	16.5	1.122	0.030	0.034
175	802.11g	Front Side	11	2462	16.00	16.5	1.122	0.022	0.025
176	802.11g	Left side	11	2462	16.00	16.5	1.122	0.512	0.574

Hand SAR

GSM850 –Hand SAR Test (Gap: 0mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR10 g (W/kg)	Scaled SAR10 g (W/kg)
			CH.	MHz					
90.	GPRS_4TX	Back Side	128	824.2	28.57	29.0	1.104	0.911	1.006
91.	GPRS_4TX	Front Side	128	824.2	28.57	29.0	1.104	0.468	0.517
92.	GPRS_4TX	Bottom side	128	824.2	28.57	29.0	1.104	0.885	0.977
93.	GPRS_4TX	Right side	128	824.2	28.57	29.0	1.104	0.185	0.204
94.	GPRS_4TX	Left side	128	824.2	28.57	29.0	1.104	0.446	0.492

GSM1900 –Hand SAR Test (Gap: 0mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR10 g (W/kg)	Scaled SAR10 g (W/kg)
			CH.	MHz					
95.	GPRS_4TX	Back Side	512	1850.2	25.90	26.0	1.023	0.396	0.405
96.	GPRS_4TX	Front Side	512	1850.2	25.90	26.0	1.023	0.147	0.150
97.	GPRS_4TX	Bottom side	512	1850.2	25.90	26.0	1.023	0.668	0.684
98.	GPRS_4TX	Right side	512	1850.2	25.90	26.0	1.023	0.142	0.145
99.	GPRS_4TX	Left side	512	1850.2	25.90	26.0	1.023	0.056	0.057

WCDMA Band 2 –Hand SAR Test (Gap: 0mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR10 g (W/kg)	Scaled SAR10 g (W/kg)
			CH.	MHz					
100.	RMC 12.2k	Back Side	9400	1880.0	22.5	23.0	1.122	0.493	0.553
101.	RMC 12.2k	Front Side	9400	1880.0	22.5	23.0	1.122	0.17	0.191
102.	RMC 12.2k	Bottom side	9400	1880.0	22.5	23.0	1.122	0.725	0.813
103.	RMC 12.2k	Right side	9400	1880.0	22.5	23.0	1.122	0.184	0.206
104.	RMC 12.2k	Left side	9400	1880.0	22.5	23.0	1.122	0.074	0.083

WCDMA Band 5 –Hand SAR Test (Gap: 0mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR10 g (W/kg)	Scaled SAR10 g (W/kg)
			CH.	MHz					
105.	RMC 12.2k	Back Side	4183	836.6	23.06	23.5	1.107	0.527	0.583
106.	RMC 12.2k	Front Side	4183	836.6	23.06	23.5	1.107	0.267	0.295

107.	RMC 12.2k	Bottom side	4183	836.6	23.06	23.5	1.107	0.503	0.557
108.	RMC 12.2k	Right side	4183	836.6	23.06	23.5	1.107	0.095	0.105
109.	RMC 12.2k	Left side	4183	836.6	23.06	23.5	1.107	0.237	0.262

WCDMA Band 4 –Hand SAR Test (Gap: 0mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR10 g (W/kg)	Scaled SAR10 g (W/kg)
			CH.	MHz					
110.	RMC 12.2k	Back Side	1413	1732.6	22.41	23.0	1.146	0.518	0.593
111.	RMC 12.2k	Front Side	1413	1732.6	22.41	23.0	1.146	0.387	0.443
112.	RMC 12.2k	Bottom side	1413	1732.6	22.41	23.0	1.146	1.029	1.179
113.	RMC 12.2k	Right side	1413	1732.6	22.41	23.0	1.146	0.378	0.433
114.	RMC 12.2k	Left side	1413	1732.6	22.41	23.0	1.146	0.103	0.118

LTE Band 2–Hand SAR Test (Gap: 0mm)								
Plot No.	Mode	Test Position Body	Frequency	Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR10 g (W/kg)	Scaled SAR10 g (W/kg)
	Modulation, Bandwidth, RB		MHz					
115.	RMC QPSK 20MHz 1RB	Back Side	1880.0	23.73	24.0	1.064	0.375	0.399
116.	RMC QPSK 20MHz 1RB	Front Side	1880.0	23.73	24.0	1.064	0.138	0.147
117.	RMC QPSK 20MHz 1RB	Bottom side	1880.0	23.73	24.0	1.064	0.701	0.746
118.	RMC QPSK 20MHz 1RB	Right side	1880.0	23.73	24.0	1.064	0.084	0.089
119.	RMC QPSK 20MHz 1RB	Left side	1880.0	23.73	24.0	1.064	0.057	0.061
120.	RMC QPSK 20MHz 50%RB	Back Side	1880.0	22.85	23.0	1.035	0.351	0.363
121.	RMC QPSK 20MHz 50%RB	Front Side	1880.0	22.85	23.0	1.035	0.122	0.126
122.	RMC QPSK 20MHz 50%RB	Bottom side	1880.0	22.85	23.0	1.035	0.612	0.634
123.	RMC QPSK 20MHz 50%RB	Right side	1880.0	22.85	23.0	1.035	0.067	0.069
124.	RMC QPSK 20MHz 50%RB	Left side	1880.0	22.85	23.0	1.035	0.038	0.039

LTE Band 4–Hand SAR Test (Gap: 0mm)								
Plot No.	Mode	Test Position Body	Frequency	Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR10 g (W/kg)	Scaled SAR10 g (W/kg)
	Modulation, Bandwidth, RB		MHz					
125.	RMC QPSK 20MHz 1RB	Back Side	1720.0	24.49	25.0	1.125	0.443	0.498
126.	RMC QPSK 20MHz 1RB	Front Side	1720.0	24.49	25.0	1.125	0.331	0.372
127.	RMC QPSK 20MHz 1RB	Bottom side	1720.0	24.49	25.0	1.125	1.073	1.207
128.	RMC QPSK 20MHz 1RB	Right side	1720.0	24.49	25.0	1.125	0.35	0.394
129.	RMC QPSK 20MHz 1RB	Left side	1720.0	24.49	25.0	1.125	0.092	0.103

130.	RMC QPSK 20MHz 50%RB	Back Side	1720.0	23.78	24.0	1.052	0.3	0.316
131.	RMC QPSK 20MHz 50%RB	Front Side	1720.0	23.78	24.0	1.052	0.256	0.269
132.	RMC QPSK 20MHz 50%RB	Bottom side	1720.0	23.78	24.0	1.052	0.011	0.012
133.	RMC QPSK 20MHz 50%RB	Right side	1720.0	23.78	24.0	1.052	0.274	0.288
134.	RMC QPSK 20MHz 50%RB	Left side	1720.0	23.78	24.0	1.052	0.039	0.041

LTE Band 5–Hand SAR Test (Gap: 0mm)								
Plot No.	**Mode**	**Test Position Body**	**Frequency**	**Output Power (dBm)**	**Rated Limit (dBm)**	**Scaling Factor**	**SAR10g (W/kg)**	**Scaled SAR10g (W/kg)**
	Modulation, Bandwidth, RB		**MHz**					
135.	RMC QPSK 10MHz 1RB	Back Side	829.0	24.14	24.5	1.086	0.538	0.584
136.	RMC QPSK 10MHz 1RB	Front Side	829.0	24.14	24.5	1.086	0.299	0.325
137.	RMC QPSK 10MHz 1RB	Bottom side	829.0	24.14	24.5	1.086	0.355	0.386
138.	RMC QPSK 10MHz 1RB	Right side	829.0	24.14	24.5	1.086	0.071	0.077
139.	RMC QPSK 10MHz 1RB	Left side	829.0	24.14	24.5	1.086	0.257	0.279
140.	RMC QPSK 10MHz 50%RB	Back Side	829.0	23.33	23.5	1.040	0.51	0.530
141.	RMC QPSK 10MHz 50%RB	Front Side	829.0	23.33	23.5	1.040	0.205	0.213
142.	RMC QPSK 10MHz 50%RB	Bottom side	829.0	23.33	23.5	1.040	0.311	0.323
143.	RMC QPSK 10MHz 50%RB	Right side	829.0	23.33	23.5	1.040	0.031	0.032
144.	RMC QPSK 10MHz 50%RB	Left side	829.0	23.33	23.5	1.040	0.125	0.130

LTE Band 12–Hand SAR Test (Gap: 0mm)								
Plot No.	**Mode**	**Test Position Body**	**Frequency**	**Output Power (dBm)**	**Rated Limit (dBm)**	**Scaling Factor**	**SAR10g (W/kg)**	**Scaled SAR10g (W/kg)**
	Modulation, Bandwidth, RB		**MHz**					
145.	RMC QPSK 10MHz 1RB	Back Side	704.0	25.18	25.5	1.076	0.277	0.298
146.	RMC QPSK 10MHz 1RB	Front Side	704.0	25.18	25.5	1.076	0.102	0.110
147.	RMC QPSK 10MHz 1RB	Bottom side	704.0	25.18	25.5	1.076	0.194	0.209
148.	RMC QPSK 10MHz 1RB	Right side	704.0	25.18	25.5	1.076	0.095	0.102
149.	RMC QPSK 10MHz 1RB	Left side	704.0	25.18	25.5	1.076	0.06	0.065
150.	RMC QPSK 10MHz 50%RB	Back Side	704.0	24.33	24.5	1.040	0.225	0.234
151.	RMC QPSK 10MHz 50%RB	Front Side	704.0	24.33	24.5	1.040	0.098	0.102
152.	RMC QPSK 10MHz 50%RB	Bottom side	704.0	24.33	24.5	1.040	0.145	0.151
153.	RMC QPSK 10MHz 50%RB	Right side	704.0	24.33	24.5	1.040	0.061	0.063
154.	RMC QPSK 10MHz 50%RB	Left side	704.0	24.33	24.5	1.040	0.033	0.034

LTE Band 17–Hand SAR Test (Gap: 0mm)								
Plot No.	Mode	Test Position Body	Frequency	Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR10g (W/kg)	Scaled SAR10g (W/kg)
	Modulation, Bandwidth, RB		MHz					
155.	RMC QPSK 10MHz 1RB	Back Side	709.0	24.82	25.0	1.042	0.291	0.303
156.	RMC QPSK 10MHz 1RB	Front Side	709.0	24.82	25.0	1.042	0.106	0.110
157.	RMC QPSK 10MHz 1RB	Bottom side	709.0	24.82	25.0	1.042	0.143	0.149
158.	RMC QPSK 10MHz 1RB	Right side	709.0	24.82	25.0	1.042	0.098	0.102
159.	RMC QPSK 10MHz 1RB	Left side	709.0	24.82	25.0	1.042	0.063	0.066
160.	RMC QPSK 10MHz 50%RB	Back Side	709.0	23.90	24.0	1.023	0.228	0.233
161.	RMC QPSK 10MHz 50%RB	Front Side	709.0	23.90	24.0	1.023	0.098	0.100
162.	RMC QPSK 10MHz 50%RB	Bottom side	709.0	23.90	24.0	1.023	0.117	0.120
163.	RMC QPSK 10MHz 50%RB	Right side	709.0	23.90	24.0	1.023	0.061	0.062
164.	RMC QPSK 10MHz 50%RB	Left side	709.0	23.90	24.0	1.023	0.022	0.023

WLAN 2.4GHz –Hand SAR Test(Gap: 0mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR10g (W/kg)	Scaled SAR10g (W/kg)
			CH.	MHz					
165.	802.11b	Back Side	01	2412	14.59	15.0	1.099	0.01	0.011
166.	802.11b	Front Side	01	2412	14.59	15.0	1.099	0.019	0.021
167.	802.11b	Left side	01	2412	14.59	15.0	1.099	0.200	0.220

WLAN 5.2GHz –Hand SAR Test(Gap: 0mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR10g (W/kg)	Scaled SAR10g (W/kg)
			CH.	MHz					
168.	11n-40	Back Side	38	5190	13.22	13.5	1.067	0.006	0.006
169.	11n-40	Front Side	38	5190	13.22	13.5	1.067	0.016	0.017
170.	11n-40	Left side	38	5190	13.22	13.5	1.067	0.262	0.279

WLAN 5.8GHz –Hand SAR Test(Gap: 0mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR10g (W/kg)	Scaled SAR10g (W/kg)
			CH.	MHz					
171.	11n-40	Back Side	159	5795	13.23	13.5	1.064	0.041	0.044
172.	11n-40	Front Side	159	5795	13.23	13.5	1.064	0.024	0.026
173.	11n-40	Left side	159	5795	13.23	13.5	1.064	0.179	0.190

WLAN 2.4GHz –Hand SAR Test(Gap: 0mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR10g (W/kg)	Scaled SAR10g (W/kg)
			CH.	MHz					
177	802.11g	Back Side	11	2462	16.00	16.5	1.122	0.025	0.028
178	802.11g	Front Side	11	2462	16.00	16.5	1.122	0.031	0.035
179	802.11g	Left side	11	2462	16.00	16.5	1.122	0.315	0.353

9.3 Simultaneous Multi-band Transmission SAR Analysis

List of Mode for Simultaneous Multi-band Transmission

No.	Configurations	Body SAR	Hand SAR
1	GSM(Voice) + WLAN(Data)	Yes	Yes
2	GPRS/ EDGE(Data) + WLAN(Data)	Yes	Yes
3	WCDMA (Voice)+ WLAN(Data)	Yes	Yes
4	HSDPA(Data) + WLAN(Data)	Yes	Yes
5	HSUPA(Data) + WLAN(Data)	Yes	Yes
6	LTE(Data) + WLAN(Data)	Yes	Yes
7	GSM(Voice) + Bluetooth(Data)	Yes	Yes
8	GPRS/ EDGE(Data) + Bluetooth(Data)	Yes	Yes
9	WCDMA(Voice) + Bluetooth(Data)	Yes	Yes
10	HSDPA(Data)+ Bluetooth(Data)	Yes	Yes
11	HSUPA(Data) + Bluetooth(Data)	Yes	Yes
12	LTE(Data) + Bluetooth(Data)	Yes	Yes

Remark:

1. GSM ,WCDMA and LTE share the same antenna, and cannot transmit simultaneously.
2. WLAN and Bluetooth share the same antenna, and cannot transmit simultaneously.
3. According to the KDB 447498 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	SAR(10g) 5mm
3.0	2.00	5	2.480	7.5/18.75	0.084	0.034

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

Body SAR

WWAN and WLAN

	WWAN		WLAN(2.4G)	Summed SAR (W/kg)
Position	**Band**	**Scaled SAR (W/kg)**	**Scaled SAR (W/kg)**	
Back	GSM850	0.797	0.034	0.831
Front	GSM850	0.538	0.025	0.563
Top side	GSM850	--	--	--
Bottom side	GSM850	0.622	--	0.622
Right side	GSM850	0.275	--	0.275
Left side	GSM850	0.772	0.574	**1.346**
Back	GSM1900	0.465	0.034	0.499
Front	GSM1900	0.177	0.025	0.202
Top side	GSM1900	--	--	--
Bottom side	GSM1900	0.602	--	0.602
Right side	GSM1900	0.166	--	0.166
Left side	GSM1900	0.069	0.574	0.643
Back	WCDMA Band 2	0.571	0.034	0.605
Front	WCDMA Band 2	0.220	0.025	0.245
Top side	WCDMA Band 2	--	--	--
Bottom side	WCDMA Band 2	0.741	--	0.741
Right side	WCDMA Band 2	0.180	--	0.180
Left side	WCDMA Band 2	0.070	0.574	0.644
Back	WCDMA Band 5	0.496	0.034	0.53
Front	WCDMA Band 5	0.274	0.025	0.299
Top side	WCDMA Band 5	--	--	--
Bottom side	WCDMA Band 5	0.369	--	0.369
Right side	WCDMA Band 5	0.108	--	0.108
Left side	WCDMA Band 5	0.347	0.574	0.921
Back	WCDMA Band 4	0.739	0.034	0.773
Front	WCDMA Band 4	0.506	0.025	0.531
Top side	WCDMA Band 4	--	--	--
Bottom side	WCDMA Band 4	1.159	--	1.159
Right side	WCDMA Band 4	0.419	--	0.419
Left side	WCDMA Band 4	0.207	0.574	0.781
Back	LTE Band 2	0.412	0.034	0.446
Front	LTE Band 2	0.163	0.025	0.188
Top side	LTE Band 2	--	--	--
Bottom side	LTE Band 2	0.590	--	0.590
Right side	LTE Band 2	0.297	--	0.297
Left side	LTE Band 2	0.064	0.574	0.638
Back	LTE Band 4	0.594	0.034	0.628

Front	LTE Band 4	0.440	0.025	0.465
Top side	LTE Band 4	--	--	--
Bottom side	LTE Band 4	1.091	--	1.091
Right side	LTE Band 4	0.433	--	0.433
Left side	LTE Band 4	0.233	0.574	0.807
Back	LTE Band 5	0.516	0.034	0.55
Front	LTE Band 5	0.313	0.025	0.338
Top side	LTE Band 5	--	--	--
Bottom side	LTE Band 5	0.290	--	0.290
Right side	LTE Band 5	0.188	--	0.188
Left side	LTE Band 5	0.431	0.574	1.005
Back	LTE Band 12	0.174	0.034	0.208
Front	LTE Band 12	0.079	0.025	0.104
Top side	LTE Band 12	--	--	--
Bottom side	LTE Band 12	0.096	--	0.096
Right side	LTE Band 12	0.098	--	0.098
Left side	LTE Band 12	0.047	0.574	0.621
Back	LTE Band 17	0.188	0.034	0.222
Front	LTE Band 17	0.075	0.025	0.1
Top side	LTE Band 17	--	--	--
Bottom side	LTE Band 17	0.070	--	0.070
Right side	LTE Band 17	0.098	--	0.098
Left side	LTE Band 17	0.076	0.574	0.65

	WWAN		**WLAN(5.2G)**	**Summed SAR (W/kg)**
Position	**Band**	**Scaled SAR (W/kg)**	**Scaled SAR (W/kg)**	
Back	GSM850	0.797	0.005	0.802
Front	GSM850	0.538	0.009	0.547
Top side	GSM850	--	--	--
Bottom side	GSM850	0.622	--	0.622
Right side	GSM850	0.275	--	0.275
Left side	GSM850	0.772	0.172	0.944
Back	GSM1900	0.465	0.005	0.47
Front	GSM1900	0.177	0.009	0.186
Top side	GSM1900	--	--	--
Bottom side	GSM1900	0.602	--	0.602
Right side	GSM1900	0.166	--	0.166
Left side	GSM1900	0.069	0.172	0.241
Back	WCDMA Band 2	0.571	0.005	0.576
Front	WCDMA Band 2	0.220	0.009	0.229
Top side	WCDMA Band 2	--	--	--

Bottom side	WCDMA Band 2	0.741	--	0.741
Right side	WCDMA Band 2	0.180	--	0.180
Left side	WCDMA Band 2	0.070	0.172	0.242
Back	WCDMA Band 5	0.496	0.005	0.501
Front	WCDMA Band 5	0.274	0.009	0.283
Top side	WCDMA Band 5	--	--	--
Bottom side	WCDMA Band 5	0.369	--	0.369
Right side	WCDMA Band 5	0.108	--	0.108
Left side	WCDMA Band 5	0.347	0.172	0.519
Back	WCDMA Band 4	0.739	0.005	0.744
Front	WCDMA Band 4	0.506	0.009	0.515
Top side	WCDMA Band 4	--	--	--
Bottom side	WCDMA Band 4	1.159	--	**1.159**
Right side	WCDMA Band 4	0.419	--	0.419
Left side	WCDMA Band 4	0.207	0.172	0.379
Back	LTE Band 2	0.412	0.005	0.417
Front	LTE Band 2	0.163	0.009	0.172
Top side	LTE Band 2	--	--	--
Bottom side	LTE Band 2	0.590	--	0.590
Right side	LTE Band 2	0.297	--	0.297
Left side	LTE Band 2	0.064	0.172	0.236
Back	LTE Band 4	0.594	0.005	0.599
Front	LTE Band 4	0.440	0.009	0.449
Top side	LTE Band 4	--	--	--
Bottom side	LTE Band 4	1.091	--	1.091
Right side	LTE Band 4	0.433	--	0.433
Left side	LTE Band 4	0.233	0.172	0.405
Back	LTE Band 5	0.516	0.005	0.521
Front	LTE Band 5	0.313	0.009	0.322
Top side	LTE Band 5	--	--	--
Bottom side	LTE Band 5	0.290	--	0.290
Right side	LTE Band 5	0.188	--	0.188
Left side	LTE Band 5	0.431	0.172	0.603
Back	LTE Band 12	0.174	0.005	0.179
Front	LTE Band 12	0.079	0.009	0.088
Top side	LTE Band 12	--	--	--
Bottom side	LTE Band 12	0.096	--	0.096
Right side	LTE Band 12	0.098	--	0.098
Left side	LTE Band 12	0.047	0.172	0.219
Back	LTE Band 17	0.188	0.005	0.193
Front	LTE Band 17	0.075	0.009	0.084
Top side	LTE Band 17	--	--	--
Bottom side	LTE Band 17	0.070	--	0.070

Right side	LTE Band 17	0.098	--	0.098
Left side	LTE Band 17	0.076	0.172	0.248

	WWAN		WLAN(5.8G)	Summed SAR (W/kg)
Position	**Band**	**Scaled SAR (W/kg)**	**Scaled SAR (W/kg)**	
Back	GSM850	0.797	0.029	0.826
Front	GSM850	0.538	0.052	0.59
Top side	GSM850	--	--	--
Bottom side	GSM850	0.622	--	0.622
Right side	GSM850	0.275	--	0.275
Left side	GSM850	0.772	0.298	1.070
Back	GSM1900	0.465	0.029	0.494
Front	GSM1900	0.177	0.052	0.229
Top side	GSM1900	--	--	--
Bottom side	GSM1900	0.602	--	0.602
Right side	GSM1900	0.166	--	0.166
Left side	GSM1900	0.069	0.298	0.367
Back	WCDMA Band 2	0.571	0.029	0.6
Front	WCDMA Band 2	0.220	0.052	0.272
Top side	WCDMA Band 2	--	--	--
Bottom side	WCDMA Band 2	0.741	--	0.741
Right side	WCDMA Band 2	0.180	--	0.180
Left side	WCDMA Band 2	0.070	0.298	0.368
Back	WCDMA Band 5	0.496	0.029	0.525
Front	WCDMA Band 5	0.274	0.052	0.326
Top side	WCDMA Band 5	--	--	--
Bottom side	WCDMA Band 5	0.369	--	0.369
Right side	WCDMA Band 5	0.108	--	0.108
Left side	WCDMA Band 5	0.347	0.298	0.645
Back	WCDMA Band 4	0.739	0.029	0.768
Front	WCDMA Band 4	0.506	0.052	0.558
Top side	WCDMA Band 4	--	--	--
Bottom side	WCDMA Band 4	1.159	--	**1.159**
Right side	WCDMA Band 4	0.419	--	0.419
Left side	WCDMA Band 4	0.207	0.298	0.505
Back	LTE Band 2	0.412	0.029	0.441
Front	LTE Band 2	0.163	0.052	0.215
Top side	LTE Band 2	--	--	--
Bottom side	LTE Band 2	0.590	--	0.590
Right side	LTE Band 2	0.297	--	0.297
Left side	LTE Band 2	0.064	0.298	0.362
Back	LTE Band 4	0.594	0.029	0.623

Front	LTE Band 4	0.440	0.052	0.492
Top side	LTE Band 4	--	--	--
Bottom side	LTE Band 4	1.091	--	1.091
Right side	LTE Band 4	0.433	--	0.433
Left side	LTE Band 4	0.233	0.298	0.531
Back	LTE Band 5	0.516	0.029	0.545
Front	LTE Band 5	0.313	0.052	0.365
Top side	LTE Band 5	--	--	--
Bottom side	LTE Band 5	0.290	--	0.290
Right side	LTE Band 5	0.188	--	0.188
Left side	LTE Band 5	0.431	0.298	0.729
Back	LTE Band 12	0.174	0.029	0.203
Front	LTE Band 12	0.079	0.052	0.131
Top side	LTE Band 12	--	--	--
Bottom side	LTE Band 12	0.096	--	0.096
Right side	LTE Band 12	0.098	--	0.098
Left side	LTE Band 12	0.047	0.298	0.345
Back	LTE Band 17	0.188	0.029	0.217
Front	LTE Band 17	0.075	0.052	0.127
Top side	LTE Band 17	--	--	--
Bottom side	LTE Band 17	0.070	--	0.070
Right side	LTE Band 17	0.098	--	0.098
Left side	LTE Band 17	0.076	0.298	0.374

WWAN and Bluetooth

	WWAN		**Bluetooth**	**Summed SAR (W/kg)**
Position	**Band**	**Scaled SAR (W/kg)**	**Scaled SAR (W/kg)**	
Back	GSM850	0.797	0.084	0.881
Front	GSM850	0.538	0.084	0.622
Top side	GSM850	--	--	--
Bottom side	GSM850	0.622	--	0.622
Right side	GSM850	0.275	--	0.275
Left side	GSM850	0.772	0.084	0.856
Back	GSM1900	0.465	0.084	0.549
Front	GSM1900	0.177	0.084	0.261
Top side	GSM1900	--	--	--
Bottom side	GSM1900	0.602	--	0.602
Right side	GSM1900	0.166	--	0.166
Left side	GSM1900	0.069	0.084	0.153
Back	WCDMA Band 2	0.571	0.084	0.655
Front	WCDMA Band 2	0.220	0.084	0.304
Top side	WCDMA Band 2	--	--	--

Bottom side	WCDMA Band 2	0.741	--	0.741
Right side	WCDMA Band 2	0.180	--	0.180
Left side	WCDMA Band 2	0.070	0.084	0.154
Back	WCDMA Band 5	0.496	0.084	0.58
Front	WCDMA Band 5	0.274	0.084	0.358
Top side	WCDMA Band 5	--	--	--
Bottom side	WCDMA Band 5	0.369	--	0.369
Right side	WCDMA Band 5	0.108	--	0.108
Left side	WCDMA Band 5	0.347	0.084	0.431
Back	WCDMA Band 4	0.739	0.084	0.823
Front	WCDMA Band 4	0.506	0.084	0.59
Top side	WCDMA Band 4	--	--	--
Bottom side	WCDMA Band 4	1.159	--	**1.159**
Right side	WCDMA Band 4	0.419	--	0.419
Left side	WCDMA Band 4	0.207	0.084	0.291
Back	LTE Band 2	0.412	0.084	0.496
Front	LTE Band 2	0.163	0.084	0.247
Top side	LTE Band 2	--	--	--
Bottom side	LTE Band 2	0.590	--	0.590
Right side	LTE Band 2	0.297	--	0.297
Left side	LTE Band 2	0.064	0.084	0.148
Back	LTE Band 4	0.594	0.084	0.678
Front	LTE Band 4	0.440	0.084	0.524
Top side	LTE Band 4	--	--	--
Bottom side	LTE Band 4	1.091	--	1.091
Right side	LTE Band 4	0.433	--	0.433
Left side	LTE Band 4	0.233	0.084	0.317
Back	LTE Band 5	0.516	0.084	0.6
Front	LTE Band 5	0.313	0.084	0.397
Top side	LTE Band 5	--	--	--
Bottom side	LTE Band 5	0.290	--	0.290
Right side	LTE Band 5	0.188	--	0.188
Left side	LTE Band 5	0.431	0.084	0.515
Back	LTE Band 12	0.174	0.084	0.258
Front	LTE Band 12	0.079	0.084	0.163
Top side	LTE Band 12	--	--	--
Bottom side	LTE Band 12	0.096	--	0.096
Right side	LTE Band 12	0.098	--	0.098
Left side	LTE Band 12	0.047	0.084	0.131
Back	LTE Band 17	0.188	0.084	0.272
Front	LTE Band 17	0.075	0.084	0.159
Top side	LTE Band 17	--	--	--
Bottom side	LTE Band 17	0.070	--	0.070

Right side	LTE Band 17	0.098	--	0.098
Left side	LTE Band 17	0.076	0.084	0.16

Hand SAR

WWAN and WLAN

	WWAN		WLAN(2.4G)	Summed SAR (W/kg)
Position	**Band**	**Scaled SAR (W/kg)**	**Scaled SAR (W/kg)**	
Back	GSM850	1.006	0.028	1.034
Front	GSM850	0.517	0.035	0.552
Top side	GSM850	--	--	--
Bottom side	GSM850	0.977	--	0.977
Right side	GSM850	0.204	--	0.204
Left side	GSM850	0.492	0.353	0.845
Back	GSM1900	0.405	0.028	0.433
Front	GSM1900	0.150	0.035	0.185
Top side	GSM1900	--	--	--
Bottom side	GSM1900	0.684	--	0.684
Right side	GSM1900	0.145	--	0.145
Left side	GSM1900	0.057	0.353	0.41
Back	WCDMA Band 2	0.553	0.028	0.581
Front	WCDMA Band 2	0.191	0.035	0.226
Top side	WCDMA Band 2	--	--	--
Bottom side	WCDMA Band 2	0.813	--	0.813
Right side	WCDMA Band 2	0.206	--	0.206
Left side	WCDMA Band 2	0.083	0.353	0.436
Back	WCDMA Band 5	0.583	0.028	0.611
Front	WCDMA Band 5	0.295	0.035	0.33
Top side	WCDMA Band 5	--	--	--
Bottom side	WCDMA Band 5	0.557	--	0.557
Right side	WCDMA Band 5	0.105	--	0.105
Left side	WCDMA Band 5	0.262	0.353	0.615
Back	WCDMA Band 4	0.593	0.028	0.621
Front	WCDMA Band 4	0.443	0.035	0.478
Top side	WCDMA Band 4	--	--	--
Bottom side	WCDMA Band 4	1.179	--	1.179
Right side	WCDMA Band 4	0.433	--	0.433
Left side	WCDMA Band 4	0.118	0.353	0.471
Back	LTE Band 2	0.399	0.028	0.427
Front	LTE Band 2	0.147	0.035	0.182
Top side	LTE Band 2	--	--	--
Bottom side	LTE Band 2	0.746	--	0.746
Right side	LTE Band 2	0.089	--	0.089
Left side	LTE Band 2	0.061	0.353	0.414
Back	LTE Band 4	0.498	0.028	0.526

Front	LTE Band 4	0.372	0.035	0.407
Top side	LTE Band 4	--	--	--
Bottom side	LTE Band 4	1.207	--	**1.207**
Right side	LTE Band 4	0.394	--	0.394
Left side	LTE Band 4	0.103	0.353	0.456
Back	LTE Band 5	0.584	0.028	0.612
Front	LTE Band 5	0.325	0.035	0.36
Top side	LTE Band 5	--	--	--
Bottom side	LTE Band 5	0.386	--	0.386
Right side	LTE Band 5	0.077	--	0.077
Left side	LTE Band 5	0.279	0.353	0.632
Back	LTE Band 12	0.298	0.028	0.326
Front	LTE Band 12	0.110	0.035	0.145
Top side	LTE Band 12	--	--	--
Bottom side	LTE Band 12	0.209	--	0.209
Right side	LTE Band 12	0.102	--	0.102
Left side	LTE Band 12	0.065	0.353	0.418
Back	LTE Band 17	0.303	0.028	0.331
Front	LTE Band 17	0.110	0.035	0.145
Top side	LTE Band 17	--	--	--
Bottom side	LTE Band 17	0.149	--	0.149
Right side	LTE Band 17	0.102	--	0.102
Left side	LTE Band 17	0.066	0.353	0.419

	WWAN		**WLAN(5.2G)**	**Summed SAR (W/kg)**
Position	**Band**	**Scaled SAR (W/kg)**	**Scaled SAR (W/kg)**	
Back	GSM850	1.006	0.006	1.012
Front	GSM850	0.517	0.017	0.534
Top side	GSM850	--	--	--
Bottom side	GSM850	0.977	--	0.977
Right side	GSM850	0.204	--	0.204
Left side	GSM850	0.492	0.279	0.771
Back	GSM1900	0.405	0.006	0.411
Front	GSM1900	0.150	0.017	0.167
Top side	GSM1900	--	--	--
Bottom side	GSM1900	0.684	--	0.684
Right side	GSM1900	0.145	--	0.145
Left side	GSM1900	0.057	0.279	0.336
Back	WCDMA Band 2	0.553	0.006	0.559
Front	WCDMA Band 2	0.191	0.017	0.208
Top side	WCDMA Band 2	--	--	--
Bottom side	WCDMA Band 2	0.813	--	0.813

Right side	WCDMA Band 2	0.206	--	0.206
Left side	WCDMA Band 2	0.083	0.279	0.362
Back	WCDMA Band 5	0.583	0.006	0.589
Front	WCDMA Band 5	0.295	0.017	0.312
Top side	WCDMA Band 5	--	--	--
Bottom side	WCDMA Band 5	0.557	--	0.557
Right side	WCDMA Band 5	0.105	--	0.105
Left side	WCDMA Band 5	0.262	0.279	0.541
Back	WCDMA Band 4	0.593	0.006	0.599
Front	WCDMA Band 4	0.443	0.017	0.46
Top side	WCDMA Band 4	--	--	--
Bottom side	WCDMA Band 4	1.179	--	1.179
Right side	WCDMA Band 4	0.433	--	0.433
Left side	WCDMA Band 4	0.118	0.279	0.397
Back	LTE Band 2	0.399	0.006	0.405
Front	LTE Band 2	0.147	0.017	0.164
Top side	LTE Band 2	--	--	--
Bottom side	LTE Band 2	0.746	--	0.746
Right side	LTE Band 2	0.089	--	0.089
Left side	LTE Band 2	0.061	0.279	0.34
Back	LTE Band 4	0.498	0.006	0.504
Front	LTE Band 4	0.372	0.017	0.389
Top side	LTE Band 4	--	--	--
Bottom side	LTE Band 4	1.207	--	**1.207**
Right side	LTE Band 4	0.394	--	0.394
Left side	LTE Band 4	0.103	0.279	0.382
Back	LTE Band 5	0.584	0.006	0.59
Front	LTE Band 5	0.325	0.017	0.342
Top side	LTE Band 5	--	--	--
Bottom side	LTE Band 5	0.386	--	0.386
Right side	LTE Band 5	0.077	--	0.077
Left side	LTE Band 5	0.279	0.279	0.558
Back	LTE Band 12	0.298	0.006	0.304
Front	LTE Band 12	0.110	0.017	0.127
Top side	LTE Band 12	--	--	--
Bottom side	LTE Band 12	0.209	--	0.209
Right side	LTE Band 12	0.102	--	0.102
Left side	LTE Band 12	0.065	0.279	0.344
Back	LTE Band 17	0.303	0.006	0.309
Front	LTE Band 17	0.110	0.017	0.127
Top side	LTE Band 17	--	--	--
Bottom side	LTE Band 17	0.149	--	0.149
Right side	LTE Band 17	0.102	--	0.102

Left side	LTE Band 17	0.066	0.279	0.345

	WWAN		WLAN(5.8G)	Summed SAR (W/kg)
Position	**Band**	**Scaled SAR (W/kg)**	**Scaled SAR (W/kg)**	
Back	GSM850	1.006	0.044	1.05
Front	GSM850	0.517	0.026	0.543
Top side	GSM850	--	--	--
Bottom side	GSM850	0.977	--	0.977
Right side	GSM850	0.204	--	0.204
Left side	GSM850	0.492	0.190	0.682
Back	GSM1900	0.405	0.044	0.449
Front	GSM1900	0.150	0.026	0.176
Top side	GSM1900	--	--	--
Bottom side	GSM1900	0.684	--	0.684
Right side	GSM1900	0.145	--	0.145
Left side	GSM1900	0.057	0.190	0.247
Back	WCDMA Band 2	0.553	0.044	0.597
Front	WCDMA Band 2	0.191	0.026	0.217
Top side	WCDMA Band 2	--	--	--
Bottom side	WCDMA Band 2	0.813	--	0.813
Right side	WCDMA Band 2	0.206	--	0.206
Left side	WCDMA Band 2	0.083	0.190	0.273
Back	WCDMA Band 5	0.583	0.044	0.627
Front	WCDMA Band 5	0.295	0.026	0.321
Top side	WCDMA Band 5	--	--	--
Bottom side	WCDMA Band 5	0.557	--	0.557
Right side	WCDMA Band 5	0.105	--	0.105
Left side	WCDMA Band 5	0.262	0.190	0.452
Back	WCDMA Band 4	0.593	0.044	0.637
Front	WCDMA Band 4	0.443	0.026	0.469
Top side	WCDMA Band 4	--	--	--
Bottom side	WCDMA Band 4	1.179	--	1.179
Right side	WCDMA Band 4	0.433	--	0.433
Left side	WCDMA Band 4	0.118	0.190	0.308
Back	LTE Band 2	0.399	0.044	0.443
Front	LTE Band 2	0.147	0.026	0.173
Top side	LTE Band 2	--	--	--
Bottom side	LTE Band 2	0.746	--	0.746
Right side	LTE Band 2	0.089	--	0.089
Left side	LTE Band 2	0.061	0.190	0.251
Back	LTE Band 4	0.498	0.044	0.542
Front	LTE Band 4	0.372	0.026	0.398

Top side	LTE Band 4	--	--	--
Bottom side	LTE Band 4	1.207	--	**1.207**
Right side	LTE Band 4	0.394	--	0.394
Left side	LTE Band 4	0.103	0.190	0.293
Back	LTE Band 5	0.584	0.044	0.628
Front	LTE Band 5	0.325	0.026	0.351
Top side	LTE Band 5	--	--	--
Bottom side	LTE Band 5	0.386	--	0.386
Right side	LTE Band 5	0.077	--	0.077
Left side	LTE Band 5	0.279	0.190	0.469
Back	LTE Band 12	0.298	0.044	0.342
Front	LTE Band 12	0.110	0.026	0.136
Top side	LTE Band 12	--	--	--
Bottom side	LTE Band 12	0.209	--	0.209
Right side	LTE Band 12	0.102	--	0.102
Left side	LTE Band 12	0.065	0.190	0.255
Back	LTE Band 17	0.303	0.044	0.347
Front	LTE Band 17	0.110	0.026	0.136
Top side	LTE Band 17	--	--	--
Bottom side	LTE Band 17	0.149	--	0.149
Right side	LTE Band 17	0.102	--	0.102
Left side	LTE Band 17	0.066	0.190	0.256

WWAN and Bluetooth

	WWAN		**Bluetooth**	**Summed SAR (W/kg)**
Position	**Band**	**Scaled SAR (W/kg)**	**Scaled SAR (W/kg)**	
Back	GSM850	1.006	0.034	1.04
Front	GSM850	0.517	0.034	0.551
Top side	GSM850	--	--	--
Bottom side	GSM850	0.977	--	0.977
Right side	GSM850	0.204	--	0.204
Left side	GSM850	0.492	0.034	0.526
Back	GSM1900	0.405	0.034	0.439
Front	GSM1900	0.150	0.034	0.184
Top side	GSM1900	--	--	--
Bottom side	GSM1900	0.684	--	0.684
Right side	GSM1900	0.145	--	0.145
Left side	GSM1900	0.057	0.034	0.091
Back	WCDMA Band 2	0.553	0.034	0.587
Front	WCDMA Band 2	0.191	0.034	0.225
Top side	WCDMA Band 2	--	--	--
Bottom side	WCDMA Band 2	0.813	--	0.813

Right side	WCDMA Band 2	0.206	--	0.206
Left side	WCDMA Band 2	0.083	0.034	0.117
Back	WCDMA Band 5	0.583	0.034	0.617
Front	WCDMA Band 5	0.295	0.034	0.329
Top side	WCDMA Band 5	--	--	--
Bottom side	WCDMA Band 5	0.557	--	0.557
Right side	WCDMA Band 5	0.105	--	0.105
Left side	WCDMA Band 5	0.262	0.034	0.296
Back	WCDMA Band 4	0.593	0.034	0.627
Front	WCDMA Band 4	0.443	0.034	0.477
Top side	WCDMA Band 4	--	--	--
Bottom side	WCDMA Band 4	1.179	--	1.179
Right side	WCDMA Band 4	0.433	--	0.433
Left side	WCDMA Band 4	0.118	0.034	0.152
Back	LTE Band 2	0.399	0.034	0.433
Front	LTE Band 2	0.147	0.034	0.181
Top side	LTE Band 2	--	--	--
Bottom side	LTE Band 2	0.746	--	0.746
Right side	LTE Band 2	0.089	--	0.089
Left side	LTE Band 2	0.061	0.034	0.095
Back	LTE Band 4	0.498	0.034	0.532
Front	LTE Band 4	0.372	0.034	0.406
Top side	LTE Band 4	--	--	--
Bottom side	LTE Band 4	1.207	--	**1.207**
Right side	LTE Band 4	0.394	--	0.394
Left side	LTE Band 4	0.103	0.034	0.137
Back	LTE Band 5	0.584	0.034	0.618
Front	LTE Band 5	0.325	0.034	0.359
Top side	LTE Band 5	--	--	--
Bottom side	LTE Band 5	0.386	--	0.386
Right side	LTE Band 5	0.077	--	0.077
Left side	LTE Band 5	0.279	0.034	0.313
Back	LTE Band 12	0.298	0.034	0.332
Front	LTE Band 12	0.110	0.034	0.144
Top side	LTE Band 12	--	--	--
Bottom side	LTE Band 12	0.209	--	0.209
Right side	LTE Band 12	0.102	--	0.102
Left side	LTE Band 12	0.065	0.034	0.099
Back	LTE Band 17	0.303	0.034	0.337
Front	LTE Band 17	0.110	0.034	0.144
Top side	LTE Band 17	--	--	--
Bottom side	LTE Band 17	0.149	--	0.149
Right side	LTE Band 17	0.102	--	0.102

Left side	LTE Band 17	0.066	0.034	0.1

10. Measurement Uncertainty

10.1 Uncertainty for EUT SAR Test

a	b	c	d	e= f(d,k)	f	g	h= c*f/e	i= c*g/e	k
Uncertainty Component	**Sec.**	**Tol (+- %)**	**Prob. Dist.**	**Div.**	**Ci (1g)**	**Ci (10g)**	**1g Ui (+-%)**	**10g Ui (+-%)**	**Vi**
Measurement System									
Probe calibration	E.2.1	7.0	N	1	1	1	7.00	7.00	∝
Axial Isotropy	E.2.2	2.5	R	√3	(1_Cp)^1/2	(1_Cp)^1/2	1.02	1.02	∝
Hemispherical Isotropy	E.2.2	4.0	R	√3	(Cp)^1/2	(Cp)^1/2	1.63	1.63	∝
Boundary effect	E.2.3	1.0	R	√3	1	1	0.58	0.58	∝
Linearity	E.2.4	5.0	R	√3	1	1	2.89	2.89	∝
System detection limits	E.2.5	1.0	R	√3	1	1	0.58	0.58	∝
Readout Electronics	E.2.6	0.02	N	1	1	1	0.02	0.02	∝
Reponse Time	E.2.7	3.0	R	√3	1	1	1.73	1.73	∝
Integration Time	E.2.8	2.0	R	√3	1	1	1.15	1.15	∝
RF ambient Conditions – Noise	E.6.1	3.0	R	√3	1	1	1.73	1.73	∝
RF ambient Conditions - Reflections	E.6.1	3.0	R	√3	1	1	1.73	1.73	∝
Probe positioner Mechanical Tolerance	E.6.2	2.0	R	√3	1	1	1.15	1.15	∝
Probe positioning with respect to Phantom Shell	E.6.3	0.05	R	√3	1	1	0.03	0.03	∝
Extrapolation, interpolation and integration Algoritms for Max. SAR Evaluation	E.5	5.0	R	√3	1	1	2.89	2.89	∝
Test Sample Related									
Test sample positioning	E.4.2	0.03	N	1	1	1	0.03	0.03	N–1
Device Holder Uncertainty	E.4.1	5.00	N	1	1	1	5.00	5.00	
Output power Variation - SAR drift measurement	E.2.9	12.02	R	√3	1	1	6.94	6.94	∝
SAR scaling	E6.5	0.0	R	√3	1	1	0.0	0.0	∝
Phantom and Tissue Parameters									
Phantom Uncertainty (Shape and thickness tolerances)	E.3.1	0.05	R	√3	1	1	0.03	0.03	∝
Uncertainty in SAR correction for deviations in permittivity and conductivity	E3.2	1.9	R	√3	1	0.84	1.10	0.90	∝
Liquid conductivity - deviation	E.3.2	5.00	R	√3	0.64	0.43	1.85	1.24	∝

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

10.2 Uncertainty for System Performance Check

a	b	c	d	e= f(d,k)	f	g	h= c*f/e	i= c*g/e	k
Uncertainty Component	**Sec.**	**Tol (+- %)**	**Prob. Dist.**	**Div.**	**Ci (1g)**	**Ci (10g)**	**1g Ui (+-%)**	**10g Ui (+-%)**	**Vi**
Measurement System									
Probe calibration	E.2.1	7.0	N	1	1	1	7.00	7.00	∝
Axial Isotropy	E.2.2	2.5	R	√3	(1_Cp)^1/2	(1_Cp)^1/2	1.02	1.02	∝
Hemispherical Isotropy	E.2.2	4.0	R	√3	(Cp)^1/2	(Cp)^1/2	1.63	1.63	∝
Boundary effect	E.2.3	1.0	R	√3	1	1	0.58	0.58	∝
Linearity	E.2.4	5.0	R	√3	1	1	2.89	2.89	∝
System detection limits	E.2.5	1.0	R	√3	1	1	0.58	0.58	∝
Modulation response	E.2.5	0	R	√3	0	0	0.0	0.0	∝
Readout Electronics	E.2.6	0.02	N	1	1	1	0.02	0.02	∝
Reponse Time	E.2.7	3.0	R	√3	1	1	1.73	1.73	∝
Integration Time	E.2.8	2.0	R	√3	1	1	1.15	1.15	∝
RF ambient Conditions – Noise	E.6.1	3.0	R	√3	1	1	1.73	1.73	∝
RF ambient Conditions - Reflections	E.6.1	3.0	R	√3	1	1	1.73	1.73	∝
Probe positioner Mechanical Tolerance	E.6.2	2.0	R	√3	1	1	1.15	1.15	∝
Probe positioning with respect to Phantom Shell	E.6.3	0.05	R	√3	1	1	0.03	0.03	∝
Extrapolation, interpolation and integration Algoritms for Max.	E.5.2	5.0	R	√3	1	1	2.89	2.89	∝

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

Annex A. Plots of System Performance Check

MEASUREMENT 1

For Body Liquid

Type: Validation measurement (Fast, 75.00 %)

Date of measurement: 04/09/2018

Measurement duration: 12 minutes 21 seconds

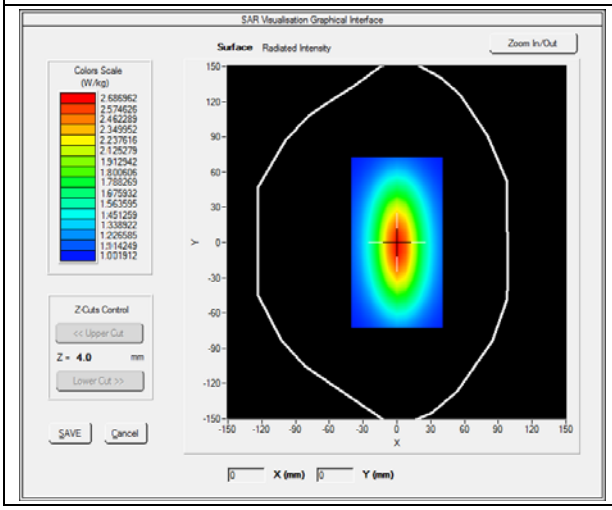
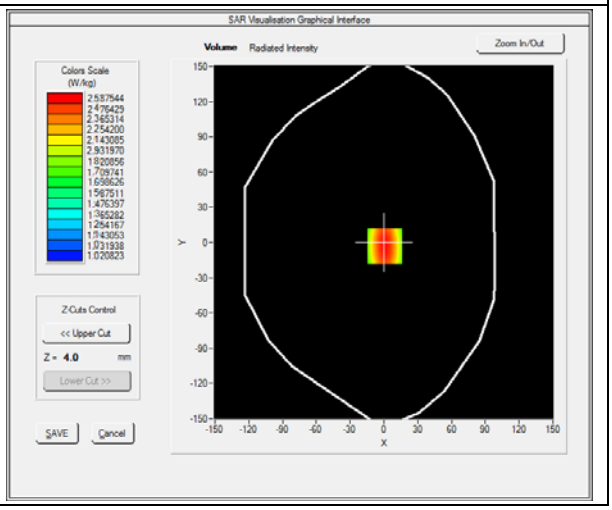
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 7.28; Calibrated: 06/01/2017

A. Experimental conditions

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

B. SAR Measurement Results

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

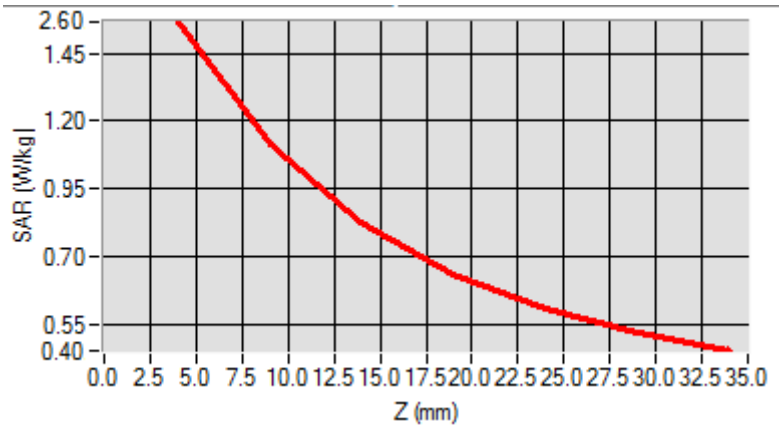
SURFACE SAR	VOLUME SAR
	

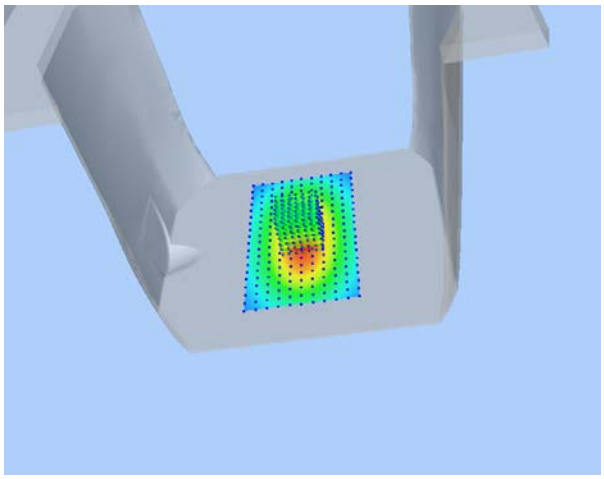
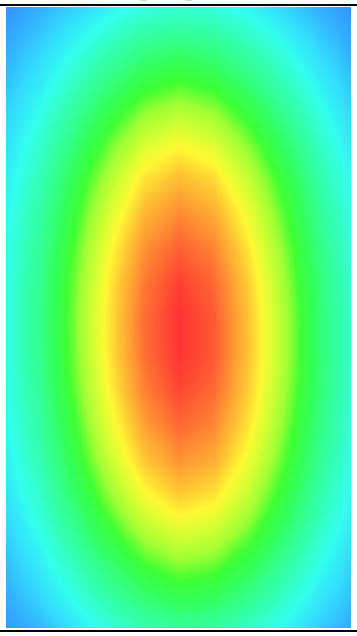
Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	**1.300865**
SAR 1g (W/Kg)	**2.124211**

Z Axis Scan

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



3D screen shot	**Hot spot position**
	

MEASUREMENT 2

For Body Liquid

Type: Validation measurement (Fast, 75.00 %)

Date of measurement: 04/09/2018

Measurement duration: 12 minutes 21 seconds

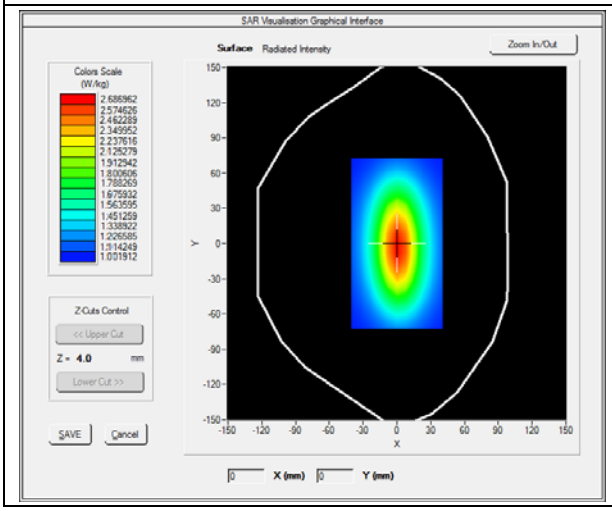
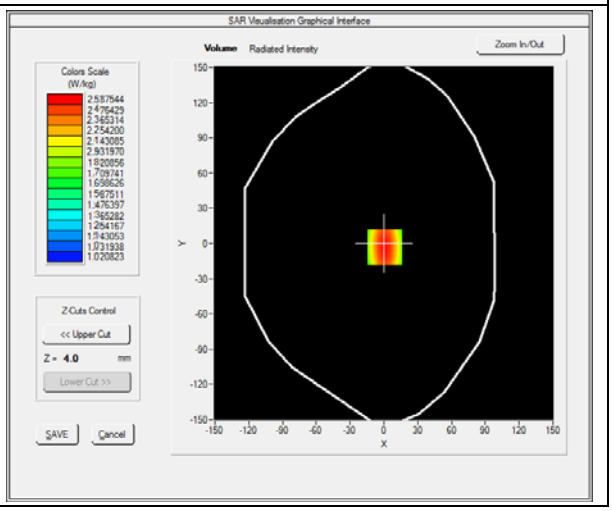
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 7.13; Calibrated: 06/01/2017

A. Experimental conditions

Area Scan	dx=8mm dy=8mm
	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

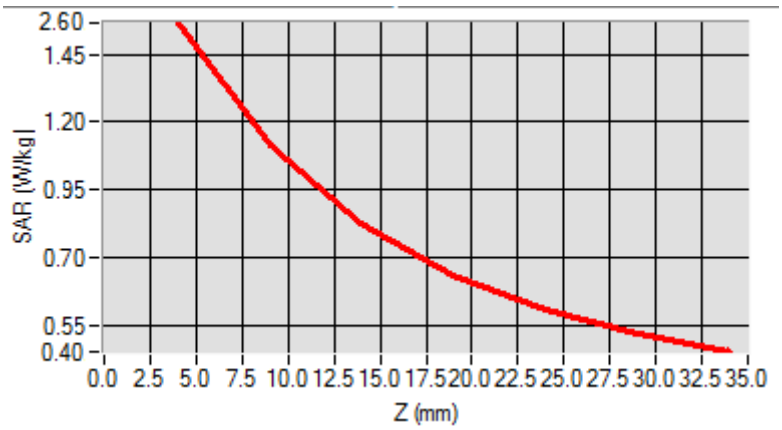
SURFACE SAR	VOLUME SAR
	

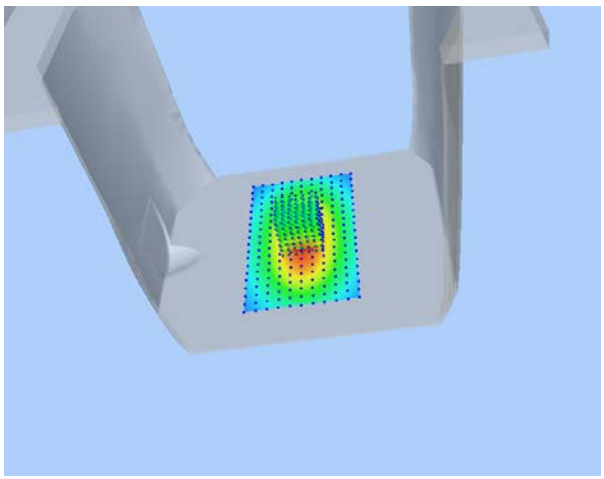
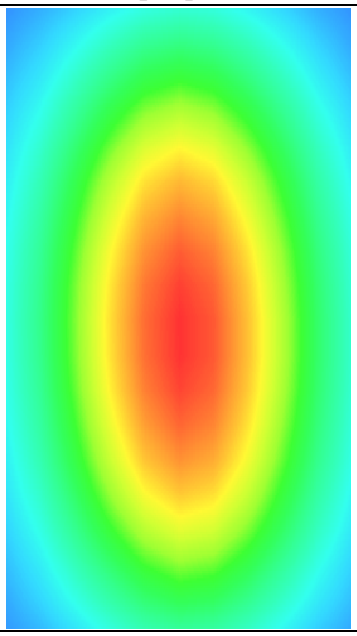
Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	**1.438956**
SAR 1g (W/Kg)	**2.354211**

Z Axis Scan

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



3D screen shot	**Hot spot position**
	

MEASUREMENT 3

For Body Liquid

Type: Validation measurement (Fast, 75.00 %)

Date of measurement: 04/10/2018

Measurement duration: 12 minutes 21 seconds

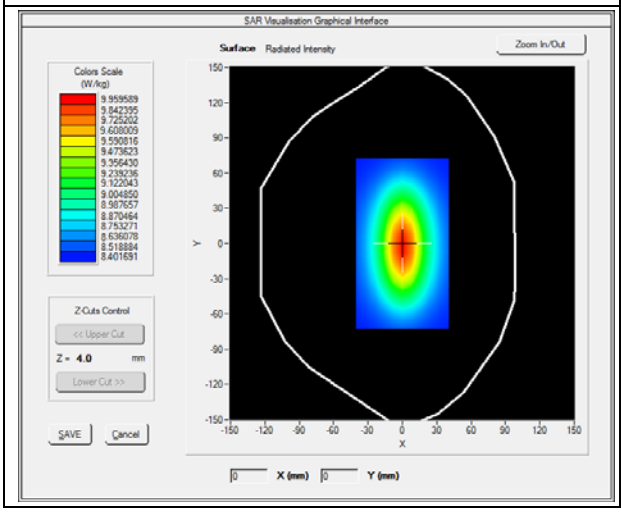
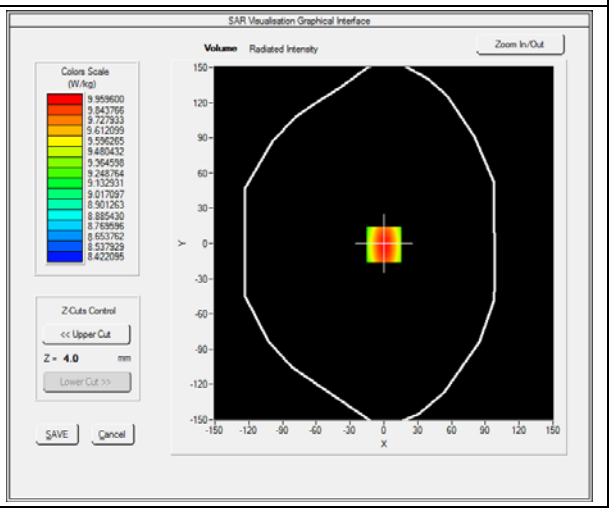
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.06; Calibrated: 06/01/2017

A. Experimental conditions

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

B. SAR Measurement Results

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

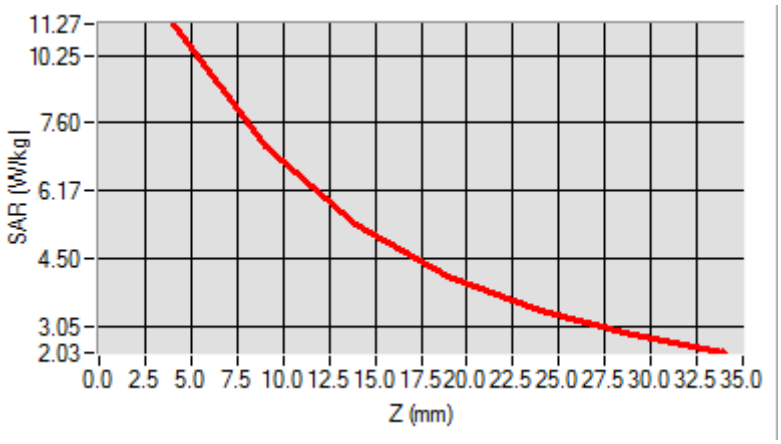
SURFACE SAR	VOLUME SAR
	

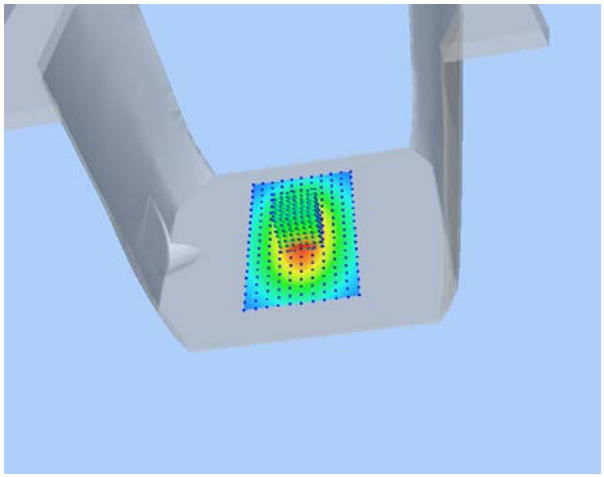
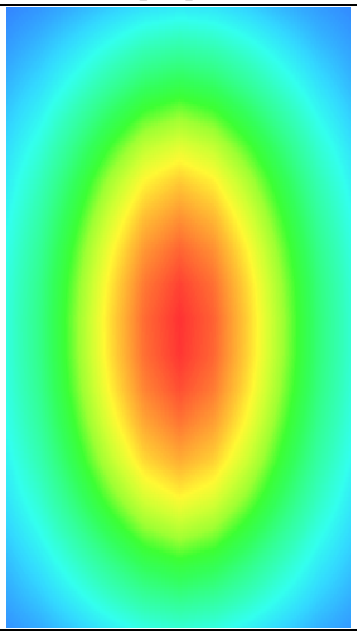
Maximum location: X=0.00, Y=0.00

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

Z Axis Scan

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



3D screen shot	**Hot spot position**
	

MEASUREMENT 4

For Body Liquid

Type: Validation measurement (Fast, 75.00 %)

Date of measurement: 04/10/2018

Measurement duration: 12 minutes 21 seconds

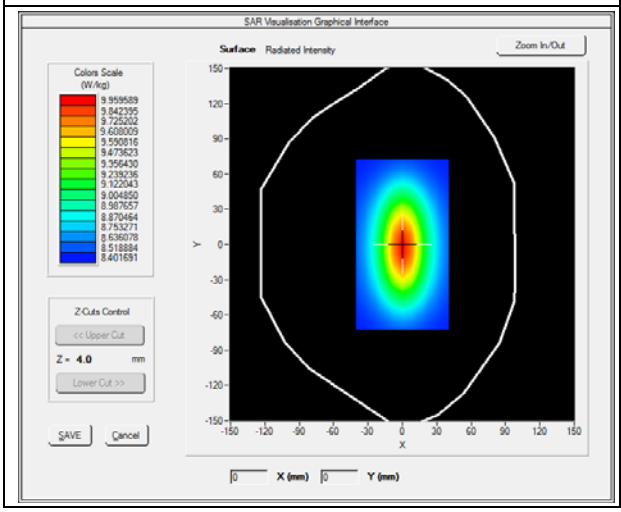
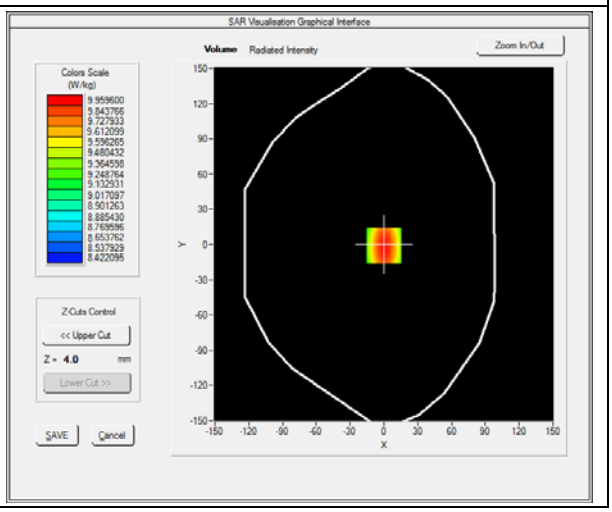
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.55; Calibrated: 06/01/2017

A. Experimental conditions

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

B. SAR Measurement Results

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

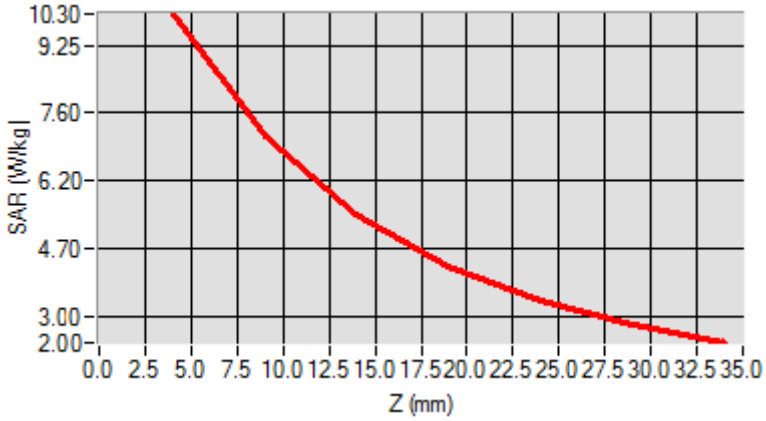
SURFACE SAR	VOLUME SAR
	

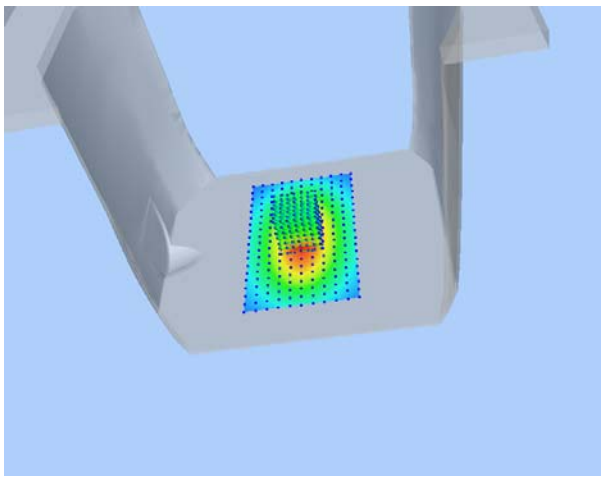
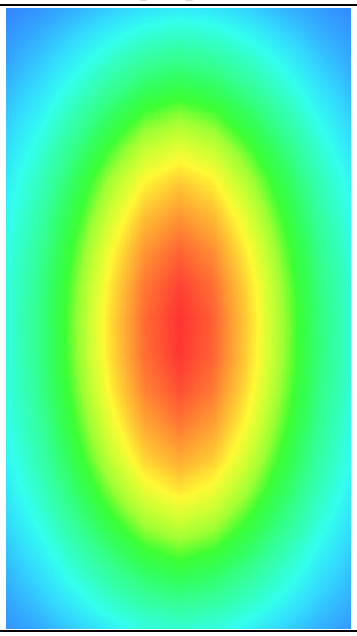
Maximum location: X=0.00, Y=0.00

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

Z Axis Scan

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



3D screen shot	**Hot spot position**
	

MEASUREMENT 5

For Body Liquid

Type: Validation measurement (Fast, 75.00 %)

Date of measurement: 04/11/2018

Measurement duration: 12 minutes 21 seconds

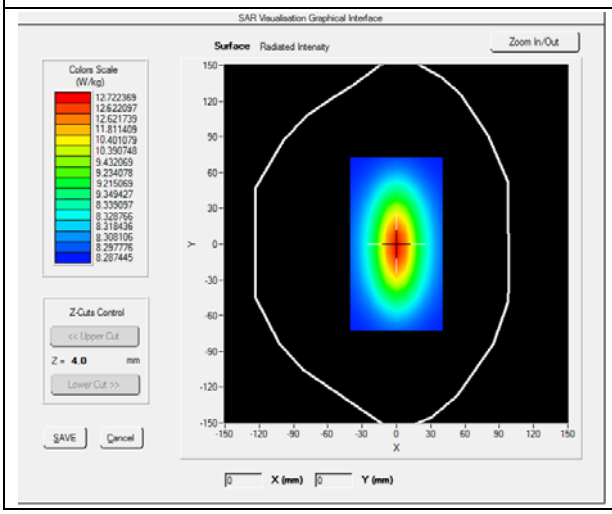
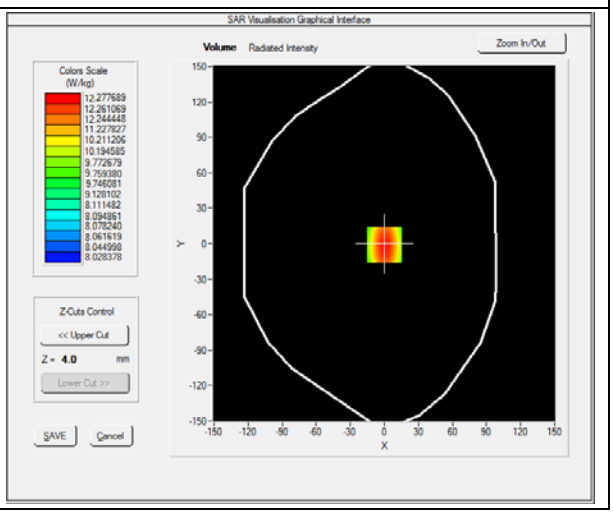
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 5.80; Calibrated: 06/01/2017

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

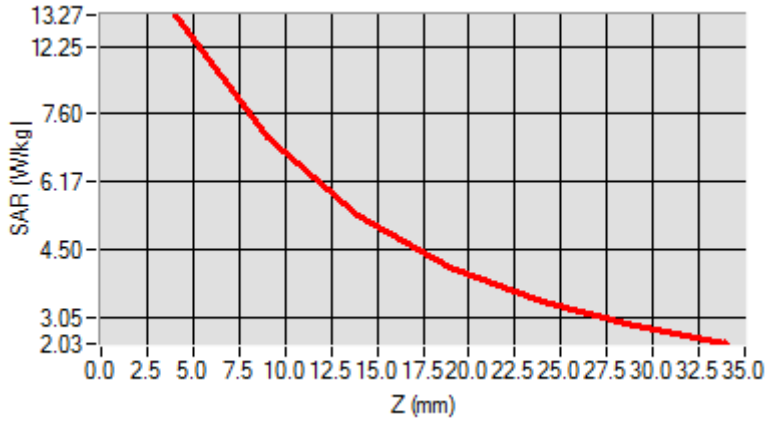
SURFACE SAR	VOLUME SAR
	

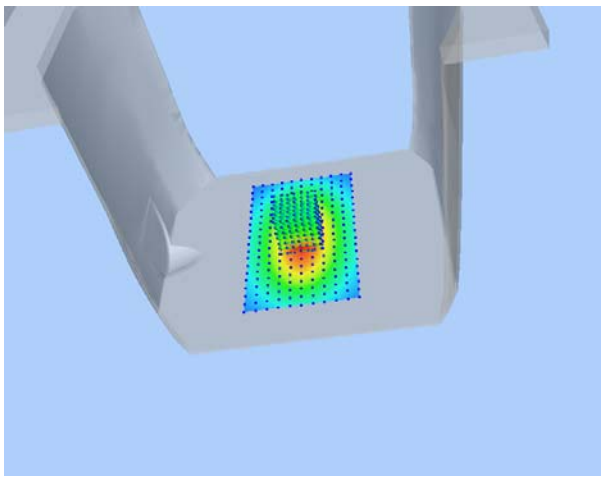
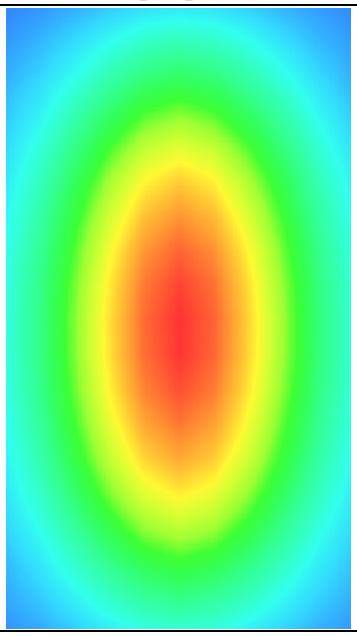
Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	**6.119522**
SAR 1g (W/Kg)	**12.592360**

Z Axis Scan

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**	**24.00**	**29.00**
SAR (W/Kg)	**0.0000**	**13.1911**	**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: 04/11/2018

Measurement duration: 12 minutes 21 seconds

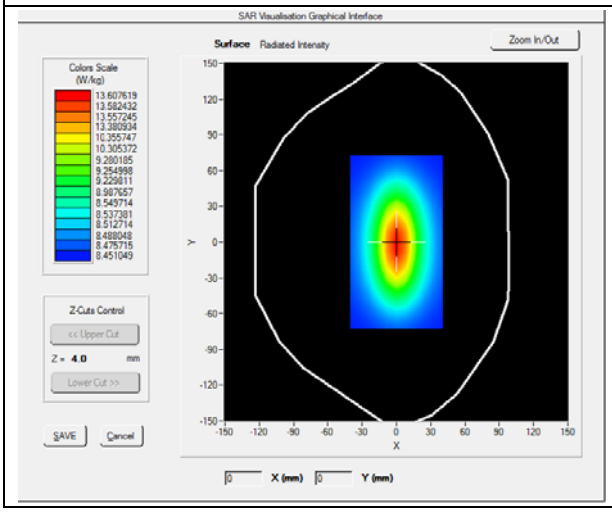
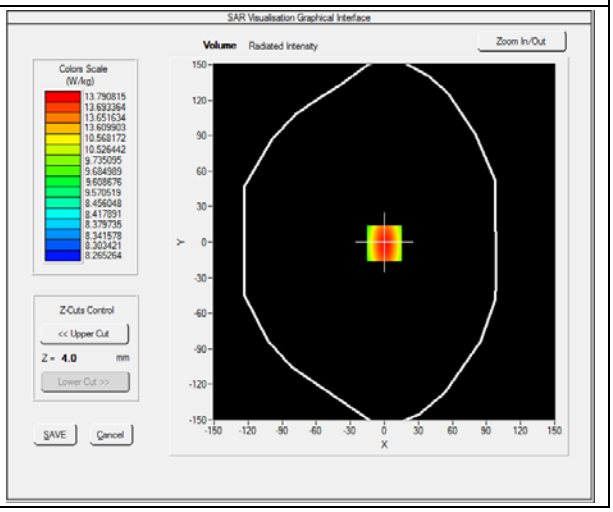
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 5.58; Calibrated: 06/01/2017

A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=8mm dy=8mm dz=5mm
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

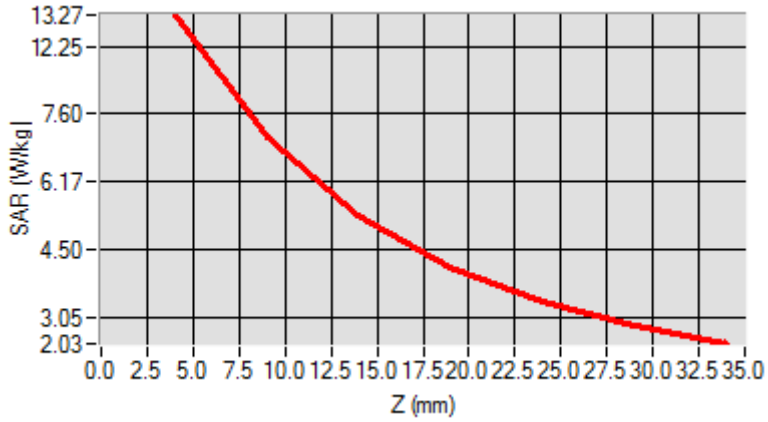
SURFACE SAR	VOLUME SAR
	

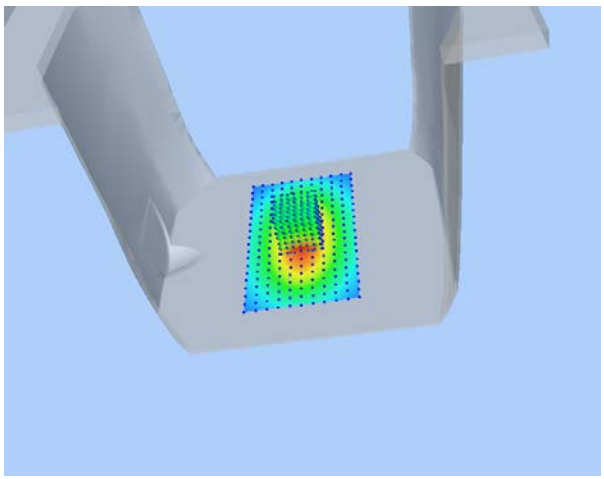
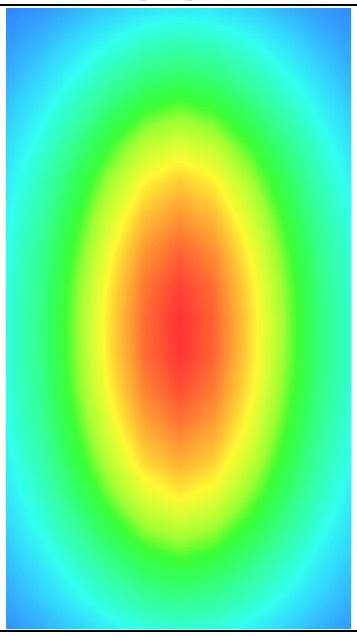
Maximum location: X=0.00, Y=0.00

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**
	

MEASUREMENT 7

For Body Liquid

Type: Validation measurement (Fast, 75.00 %)

Date of measurement: 04/12/2018

Measurement duration: 12 minutes 21 seconds

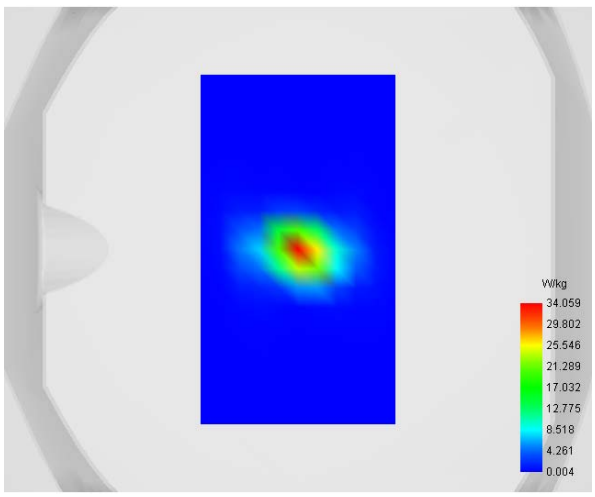
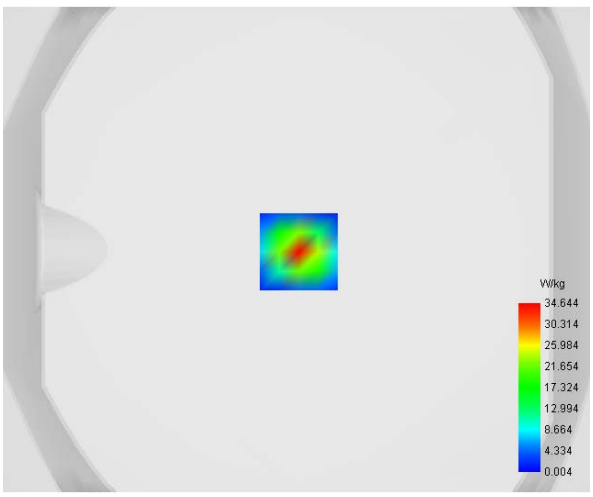
E-field Probe: SSE2 - SN 08/16 EPGO298; ConvF: 2.39; Calibrated: 2017/09/18

A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=4mm dy=4mm dz=2mm
Phantom	Validation plane
Device Position	Dipole
Band	CW5200
Signal	CW (Crest factor: 1.0)

B. SAR Measurement Results

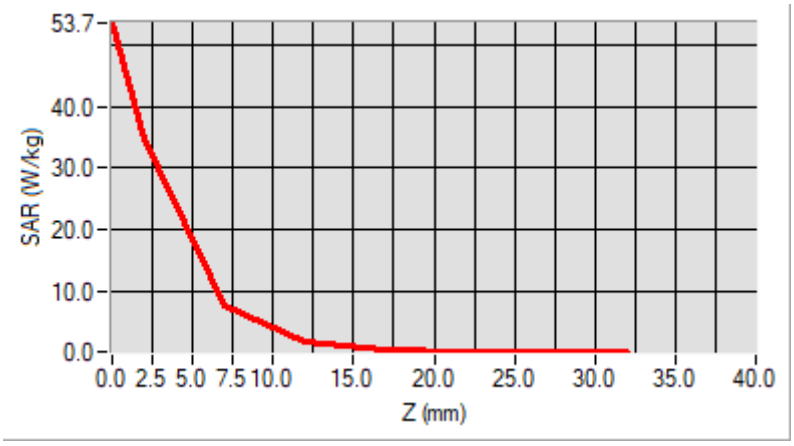
Frequency (MHz)	5200.000000
Relative Permittivity (real part)	48.502911
Conductivity (S/m)	5.161483
Power Variation (%)	0.943782
Ambient Temperature	21.1
Liquid Temperature	21.2

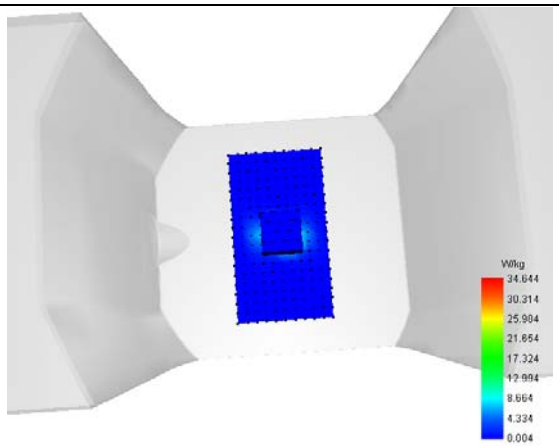
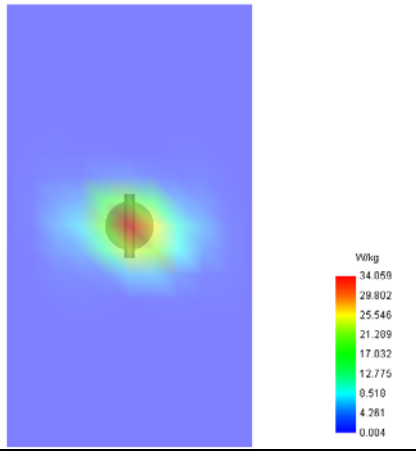
SURFACE SAR	VOLUME SAR
	

Maximum location: X=1.00, Y=-1.00

SAR 10g (W/Kg)	**5.534984**
SAR 1g (W/Kg)	**16.681104**

Z (mm)	0.00	2.00	7.00	12.00	17.00	22.00	27.00
SAR (W/Kg)	53.7412	34.6438	7.6928	1.6986	0.3713	0.0871	0.0117



3D screen shot	Hot spot position
	

MEASUREMENT 8

For Body Liquid

Type: Validation measurement (Fast, 75.00 %)

Date of measurement: 04/12/2018

Measurement duration: 12 minutes 21 seconds

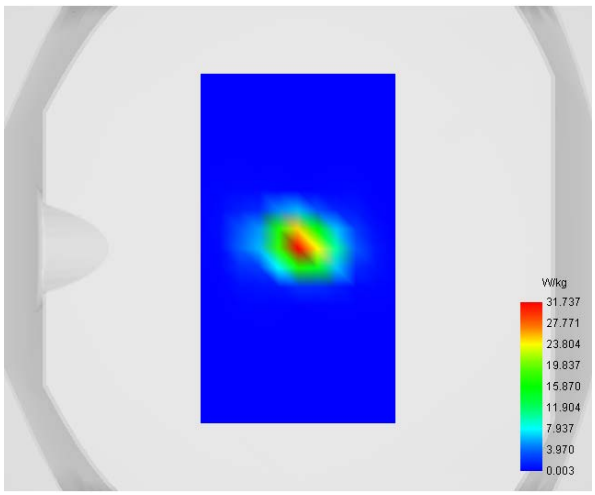
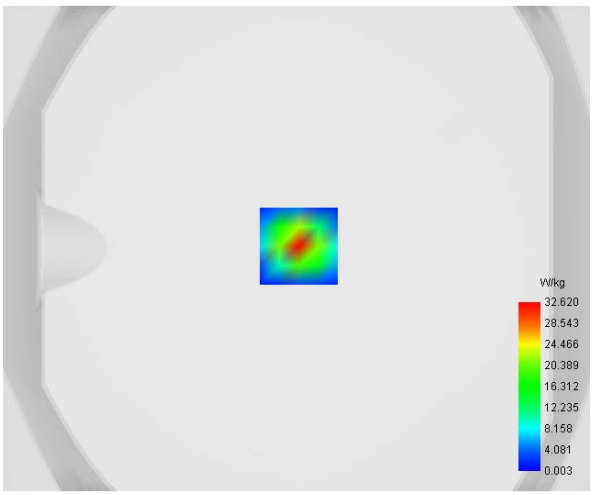
E-field Probe: SSE2 - SN 08/16 EPGO298; ConvF:2.50; Calibrated: 2017/09/18

A. Experimental conditions

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

B. SAR Measurement Results

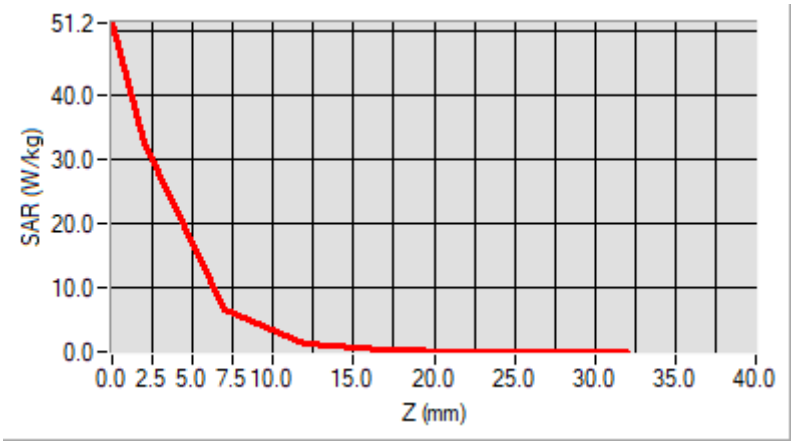
Frequency (MHz)	5800.000000
Relative Permittivity (real part)	47.501939
Conductivity (S/m)	5.761487
Power Variation (%)	0.749201
Ambient Temperature	21.1
Liquid Temperature	21.2

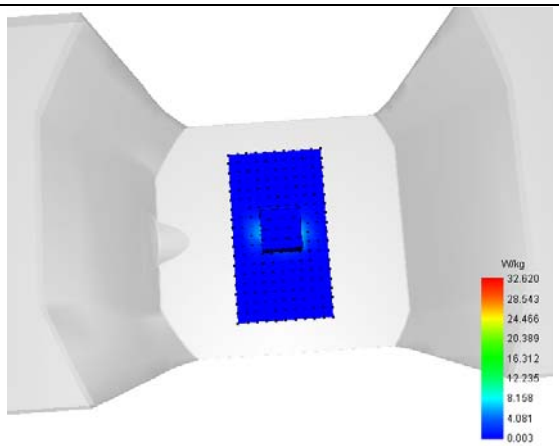
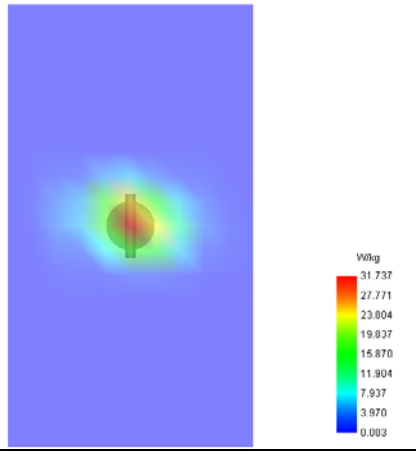
SURFACE SAR	VOLUME SAR
	

Maximum location: X=1.00, Y=1.00

SAR 10g (W/Kg)	**5.901454**
SAR 1g (W/Kg)	**16.946248**

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



3D screen shot	Hot spot position
	

MEASUREMENT 9

For Body Liquid

Type: Validation measurement (Fast, 75.00 %)

Date of measurement: 05/17/2018

Measurement duration: 12 minutes 21 seconds

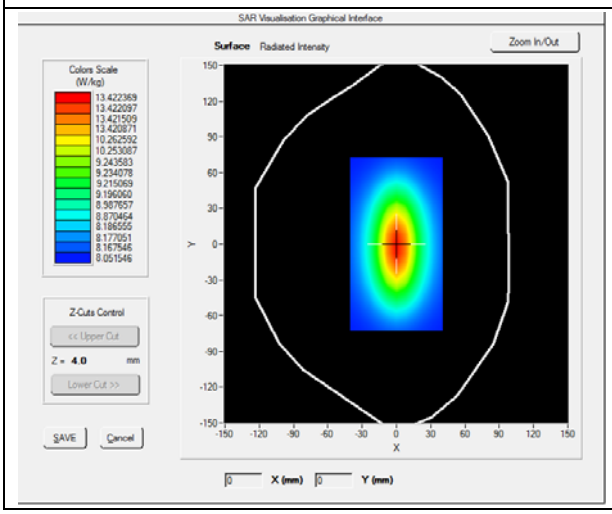
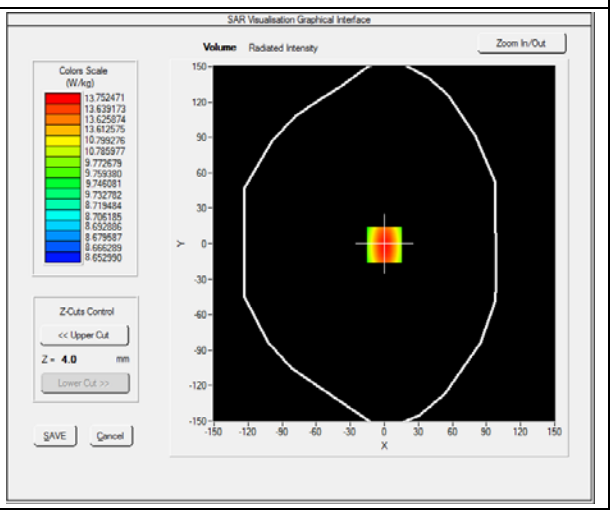
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 5.80; Calibrated: 06/01/2017

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)	52.320754
Conductivity (S/m)	1.930132
Power Variation (%)	1.369745
Ambient Temperature	21.1
Liquid Temperature	21.2

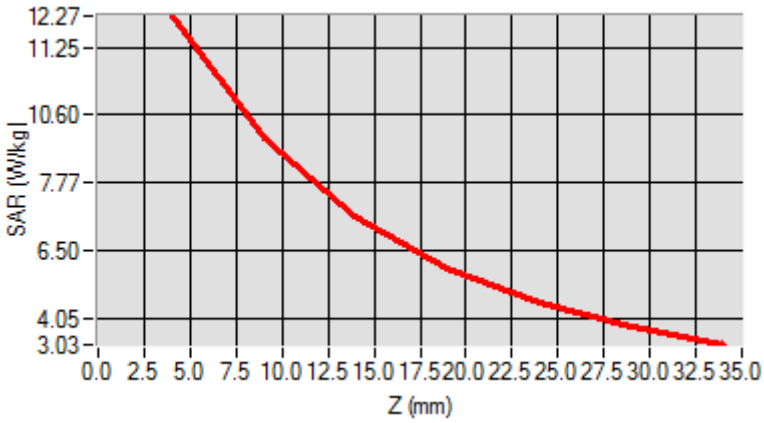
SURFACE SAR	VOLUME SAR
	

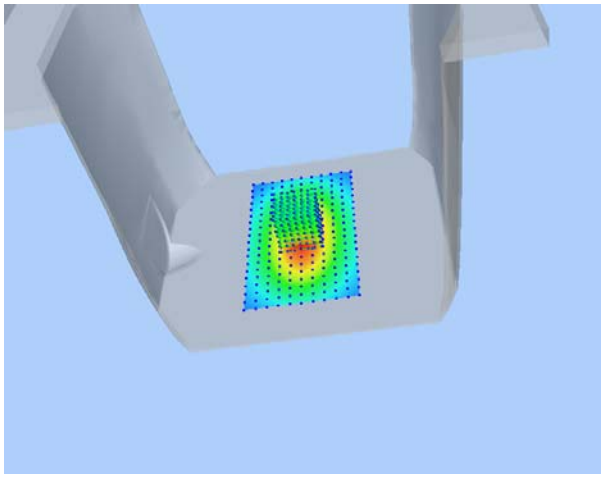
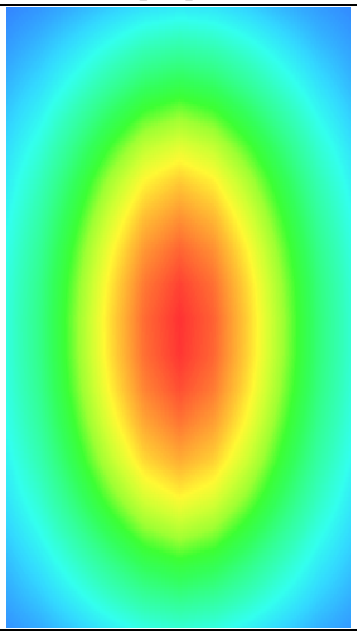
Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	**6.209178**
SAR 1g (W/Kg)	**12.78348**

Z Axis Scan

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**	**24.00**	**29.00**
SAR (W/Kg)	**0.0000**	**12.1355**	**10.3301**	**8.4512**	**6.4365**	**5.6123**	**3.5621**



3D screen shot	**Hot spot position**
	

Annex B. Plots of SAR Measurement

Body mode Exposure Conditions:

TYPE	BAND	PARAMETERS
Phone	**GPRS850_4TX**	Measurement 1: Flat Plane with Back device position on Low Channel in GPRS mode
Phone	**GPRS1900_4TX**	Measurement 8: Flat Plane with Bottom device position on Low Channel in GPRS mode
Phone	**WCDMA1900_RMC**	Measurement 13: Flat Plane with Bottom side device position on Middle Channel in WCDMA mode
Phone	**WCDMA850_RMC**	Measurement 16: Flat Plane with Back side device position on Middle Channel in WCDMA mode
Phone	**WCDMA1700_RMC**	Measurement 23: Flat Plane with Bottom side device position on Middle Channel in WCDMA mode
Phone	**LTE Band 2_RMC**	Measurement 30: Flat Plane with Bottom device position on Middle Channel in LTE mode
Phone	**LTE Band 4_RMC**	Measurement 40: Flat Plane with Bottom device position on Low Channel in LTE mode
Phone	**LTE Band 5_RMC**	Measurement 51: Flat Plane with Back device position on Low Channel in LTE mode
Phone	**LTE Band 12_RMC**	Measurement 61: Flat Plane with Back device position on Low Channel in LTE mode
Phone	**LTE Band 17_RMC**	Measurement 71: Flat Plane with Back device position on Low Channel in LTE mode
Phone	**WiFi(2.4G)_802.11b**	Measurement 83: Flat Plane with Left side device position on Low Channel in 802.11b mode
Phone	**WiFi(5.2G)_802.11N(40)**	Measurement 86: Flat Plane with Left side device position on Left Channel in 802.11n mode
Phone	**WiFi(5.8G)_802.11N(40)**	Measurement 89: Flat Plane with Left side device position on High Channel in 802.11n mode
Remark: SAR plot is showed the highest measured SAR in each exposure configuration, wireless mode and frequency band combination.		

Hand exposure Conditions:

TYPE	BAND	PARAMETERS
Phone	**GPRS850_4TX**	Measurement 90: Flat Plane with Back device position on Low Channel in GPRS mode
Phone	**GPRS1900_4TX**	Measurement 97: Flat Plane with Bottom device position on Low Channel in GPRS mode
Phone	**WCDMA1900_RMC**	Measurement 102: Flat Plane with Bottom side device position on Middle Channel in WCDMA mode
Phone	**WCDMA850_RMC**	Measurement 105: Flat Plane with Back side device position on Middle Channel in WCDMA mode
Phone	**WCDMA1700_RMC**	Measurement 112: Flat Plane with Bottom side device position on Middle Channel in WCDMA mode
Phone	**LTE Band 2_RMC**	Measurement 117: Flat Plane with Bottom device position on Middle Channel in LTE mode
Phone	**LTE Band 4_RMC**	Measurement 127: Flat Plane with Bottom device position on Low Channel in LTE mode
Phone	**LTE Band 5_RMC**	Measurement 135: Flat Plane with Back device position on Low Channel in LTE mode
Phone	**LTE Band 12_RMC**	Measurement 145: Flat Plane with Back device position on Low Channel in LTE mode
Phone	**LTE Band 17_RMC**	Measurement 155: Flat Plane with Back device position on Low Channel in LTE mode
Phone	**WiFi(2.4G)_802.11b**	Measurement 167: Flat Plane with Left side device position on Low Channel in 802.11b mode
Phone	**WiFi(5.2G)_802.11N(40)**	Measurement 170: Flat Plane with Left side device position on Left Channel in 802.11n mode
Phone	**WiFi(5.8G)_802.11N(40)**	Measurement 173: Flat Plane with Left side device position on High Channel in 802.11n mode
Remark: SAR plot is showed the highest measured SAR in each exposure configuration, wireless mode and frequency band combination.		

Body mode Exposure Conditions:

Phone	**WiFi(2.4G)_802.11g**	Measurement 176: Flat Plane with Left side device position on High Channel in 802.11g mode
Remark: SAR plot is showed the highest measured SAR in each exposure configuration, wireless mode and frequency band combination.		

Hand exposure Conditions:

Phone	**WiFi(2.4G)_802.11g**	Measurement 179: Flat Plane with Left side device position on High Channel in 802.11g mode

Remark: SAR plot is showed the highest measured SAR in each exposure configuration, wireless mode and frequency band combination.

MEASUREMENT 1

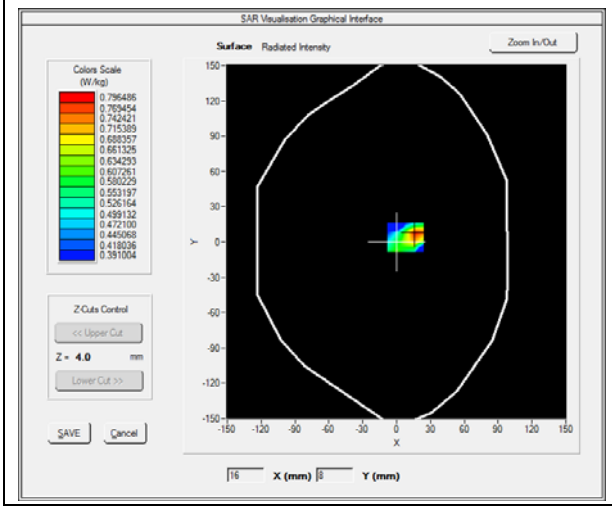
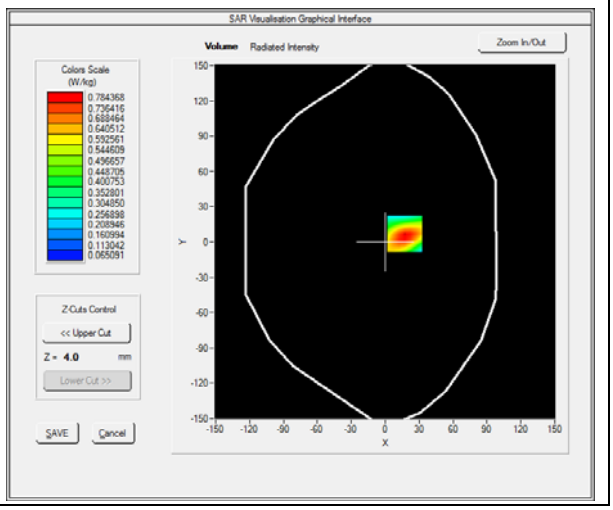
Type: Phone measurement (Complete)
Date of measurement: 04/09/2018
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 7.13; Calibrated: 06/01/2017

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	Low
Signal	Duty Cycle: 1:2

B. SAR Measurement Results

Frequency (MHz)	824.200000
Relative Permittivity (real part)	54.851214
Conductivity (S/m)	0.951454
Power Variation (%)	0.901472
Ambient Temperature	21.1
Liquid Temperature	21.3

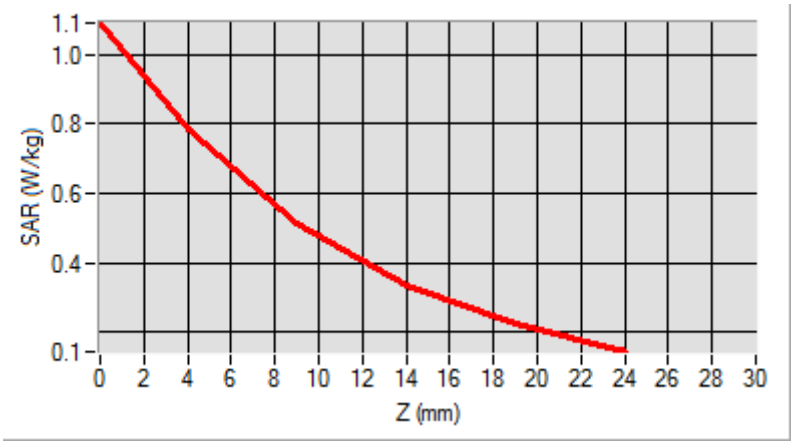
SURFACE SAR	VOLUME SAR
	

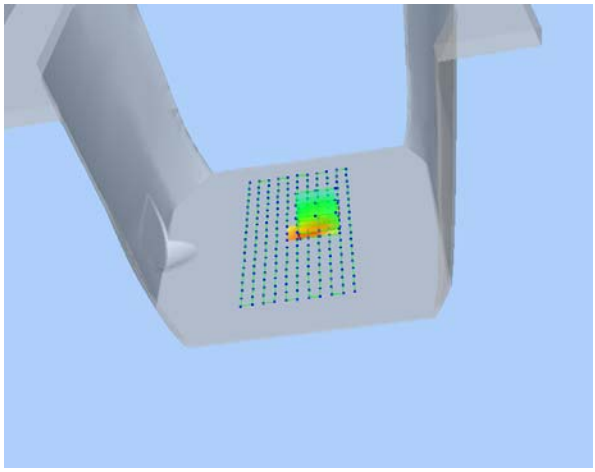
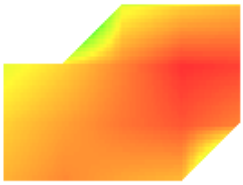
Maximum location: X=17.00, Y=7.00

SAR Peak: 1.12 W/kg

SAR 10g (W/Kg)	**0.442832**
SAR 1g (W/Kg)	**0.722130**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**1.0921**	**0.7844**	**0.5131**	**0.3364**	**0.2227**



3D screen shot	**Hot spot position**
	

MEASUREMENT 8

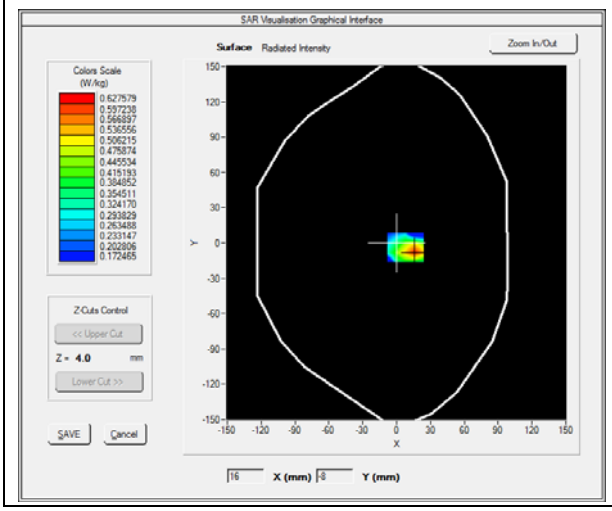
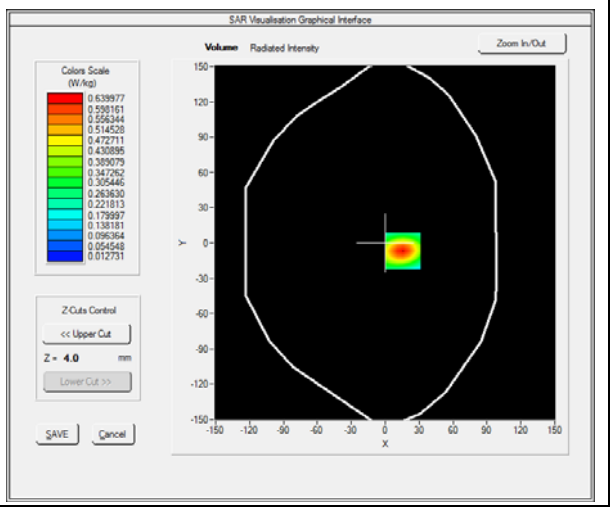
Type: Phone measurement (Complete)
Date of measurement: 04/10/2018
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.55; Calibrated: 06/01/2017

A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=8mm dy=8mm dz=5mm
Phantom	Flat plane
Device Position	Bottom
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 (%)	2.483762
Ambient Temperature	21.1
Liquid Temperature	21.3

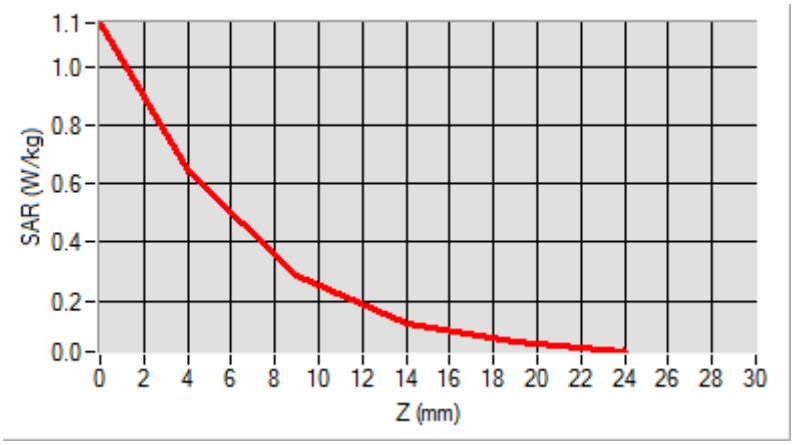
SURFACE SAR	VOLUME SAR
	

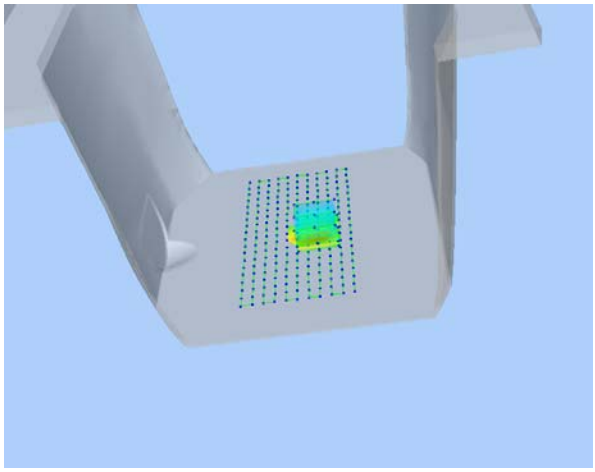
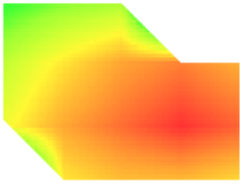
Maximum location: X=16.00, Y=-7.00

SAR Peak: 1.15 W/kg

SAR 10g (W/Kg)	**0.279647**
SAR 1g (W/Kg)	**0.587741**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**1.1471**	**0.6400**	**0.2870**	**0.1253**	**0.0590**



3D screen shot	**Hot spot position**
	

MEASUREMENT 13

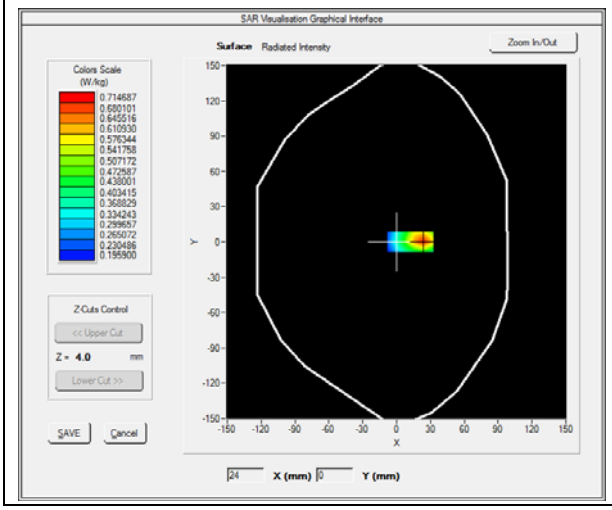
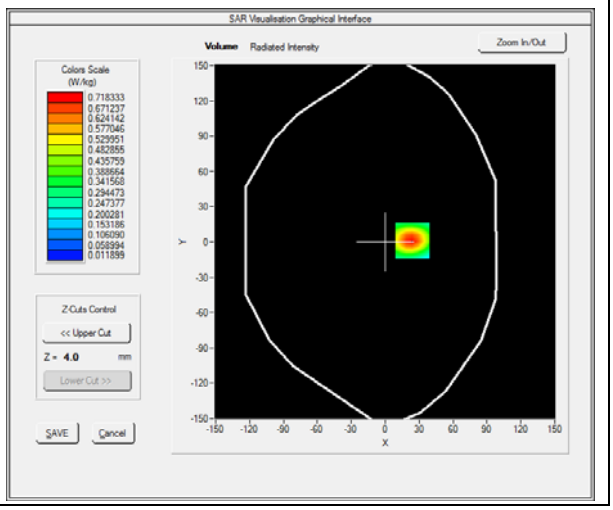
Type: Phone measurement (Complete)
Date of measurement: 04/10/2018
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.55; Calibrated: 06/01/2017

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	Middle
Signal	Duty Cycle 1:1

B. SAR Measurement Results

Frequency (MHz)	1880.000000
Relative Permittivity (real part)	52.420415
Conductivity (S/m)	1.501966
Power Variation (%)	1.163283
Ambient Temperature	21.1
Liquid Temperature	21.3

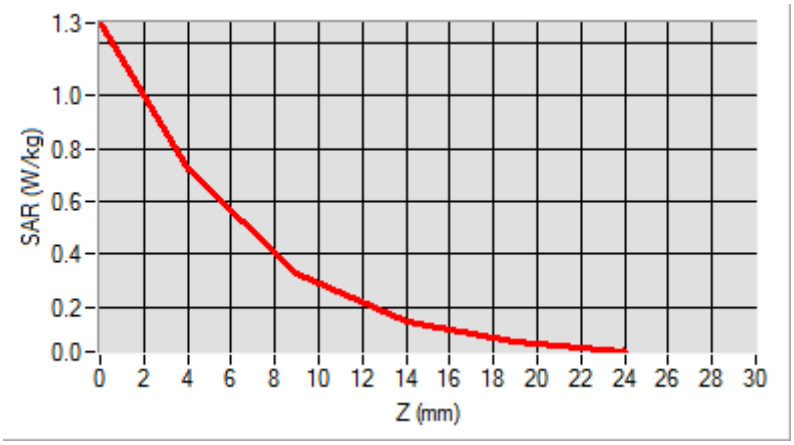
SURFACE SAR	VOLUME SAR
	

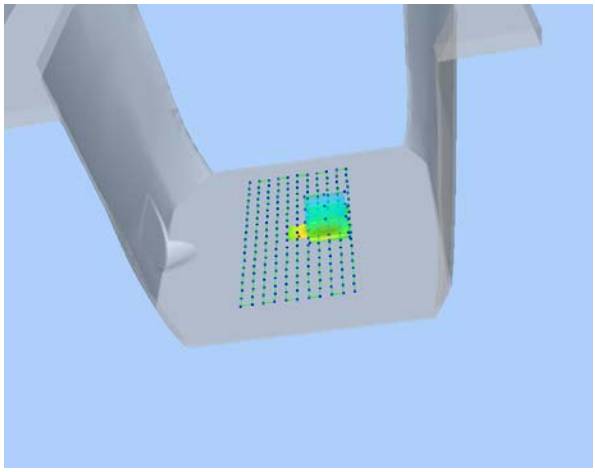
Maximum location: X=24.00, Y=1.00

SAR Peak: 1.27 W/kg

SAR 10g (W/Kg)	**0.315673**
SAR 1g (W/Kg)	**0.660172**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**1.2744**	**0.7183**	**0.3274**	**0.1451**	**0.0686**



3D screen shot	**Hot spot position**
	

MEASUREMENT 16

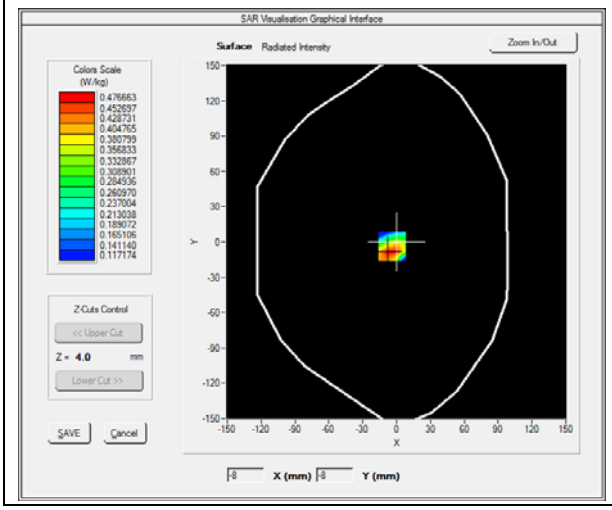
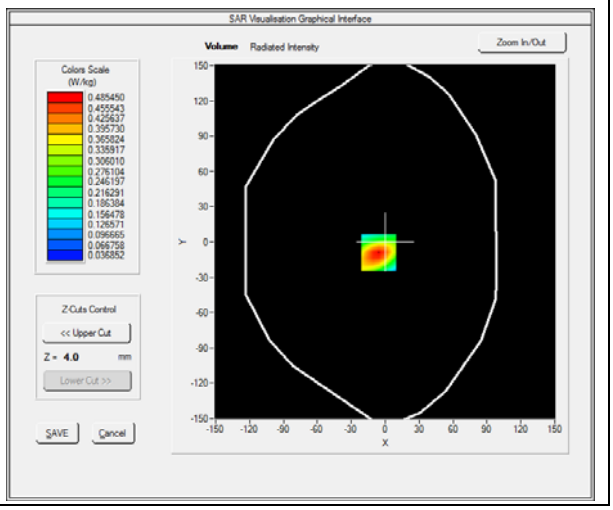
Type: Phone measurement (Complete)
Date of measurement: 04/09/2018
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 7.13; Calibrated: 06/01/2017

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	Middle
Signal	Duty Cycle 1:1

B. SAR Measurement Results

Frequency (MHz)	836.600000
Relative Permittivity (real part)	54.851214
Conductivity (S/m)	0.951454
Power Variation (%)	2.341234
Ambient Temperature	21.1
Liquid Temperature	21.3

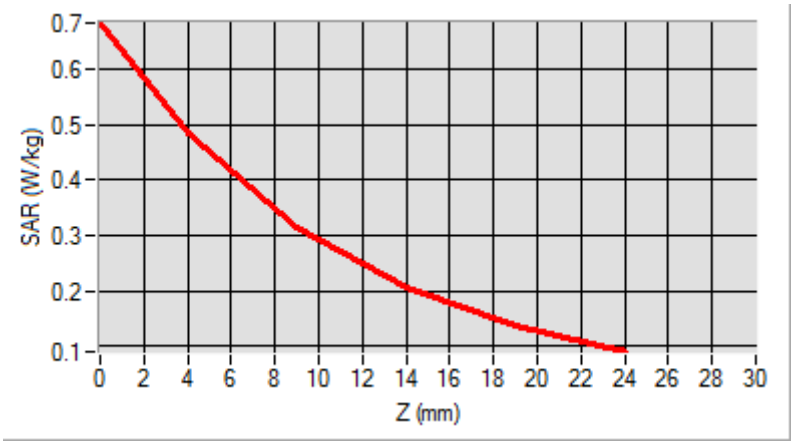
SURFACE SAR	VOLUME SAR
	

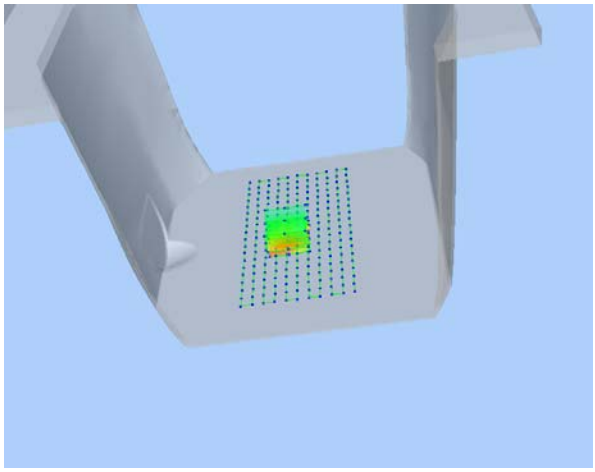
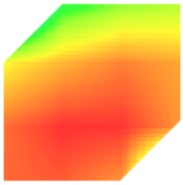
Maximum location: X=-6.00, Y=-9.00

SAR Peak: 0.69 W/kg

SAR 10g (W/Kg)	**0.267182**
SAR 1g (W/Kg)	**0.447504**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.6838**	**0.4854**	**0.3139**	**0.2051**	**0.1372**



3D screen shot	**Hot spot position**
	

MEASUREMENT 23

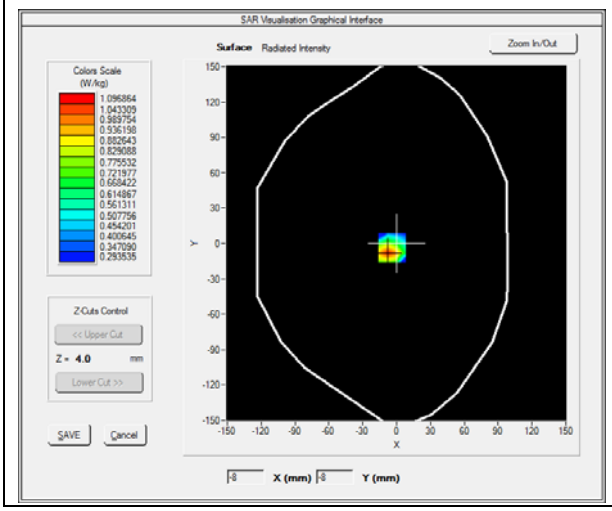
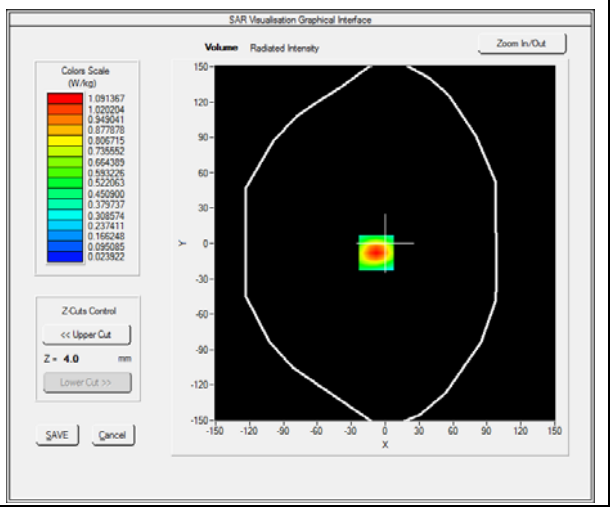
Type: Phone measurement (Complete)
Date of measurement: 04/10/2018
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.06; Calibrated: 06/01/2017

A. Experimental conditions

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

B. SAR Measurement Results

Frequency (MHz)	1732.600000
Relative Permittivity (real part)	51.224510
Conductivity (S/m)	1.461261
Power Variation (%)	2.341221
Ambient Temperature	21.1
Liquid Temperature	21.3

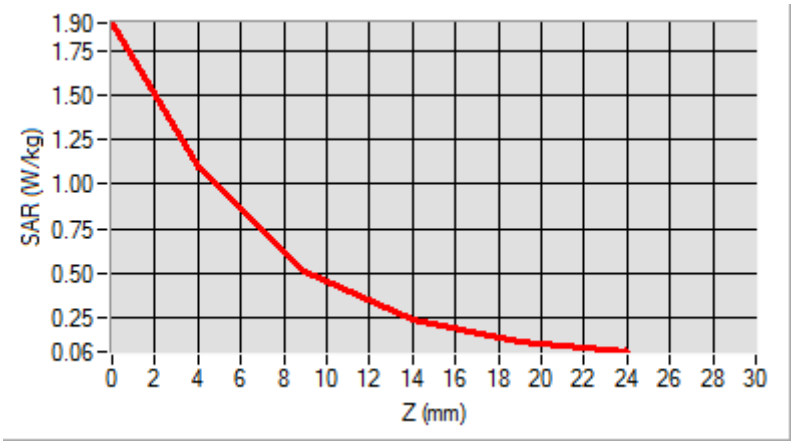
SURFACE SAR	VOLUME SAR
	

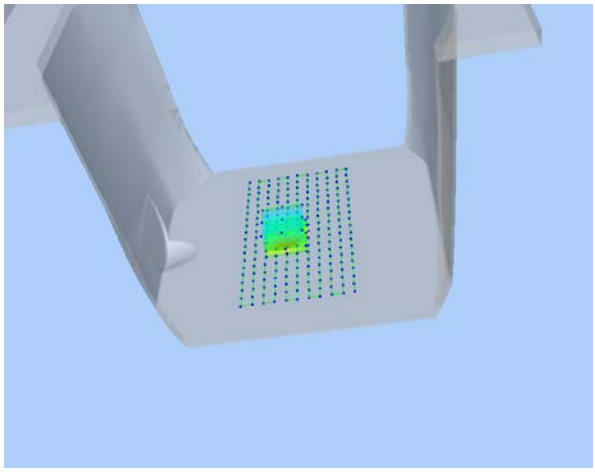
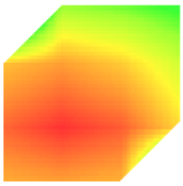
Maximum location: X=-8.00, Y=-8.00

SAR Peak: 1.90 W/kg

SAR 10g (W/Kg)	**0.482146**
SAR 1g (W/Kg)	**0.995954**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**1.9044**	**1.0914**	**0.5129**	**0.2380**	**0.1194**



3D screen shot	**Hot spot position**
	

MEASUREMENT 30

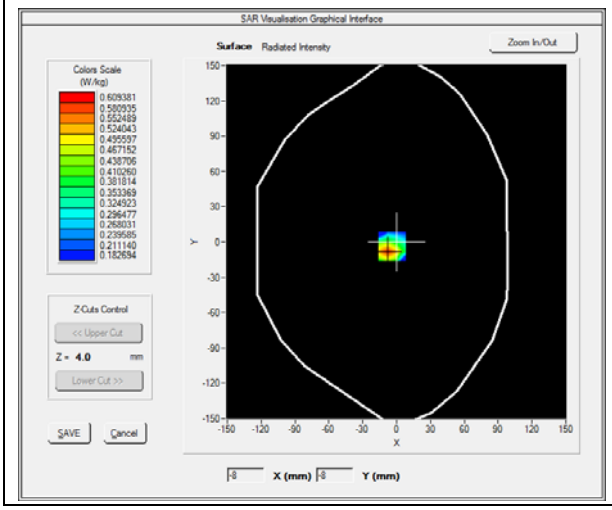
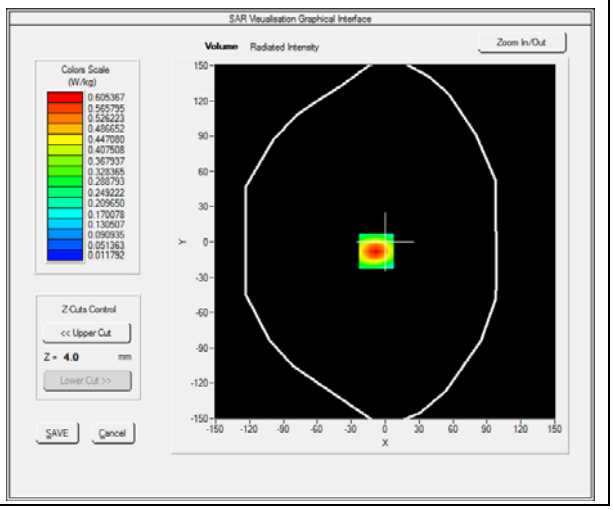
Type: Phone measurement (Complete)
Date of measurement: 04/10/2018
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.55; Calibrated: 06/01/2017

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_RMC
Channels	QPSK, 20MHz, 1RB, Middle
Signal	Duty Cycle 1:1

B. SAR Measurement Results

Frequency (MHz)	1880.000000
Relative Permittivity (real part)	52.420415
Conductivity (S/m)	1.501966
Power Variation (%)	1.327810
Ambient Temperature	21.1
Liquid Temperature	21.3

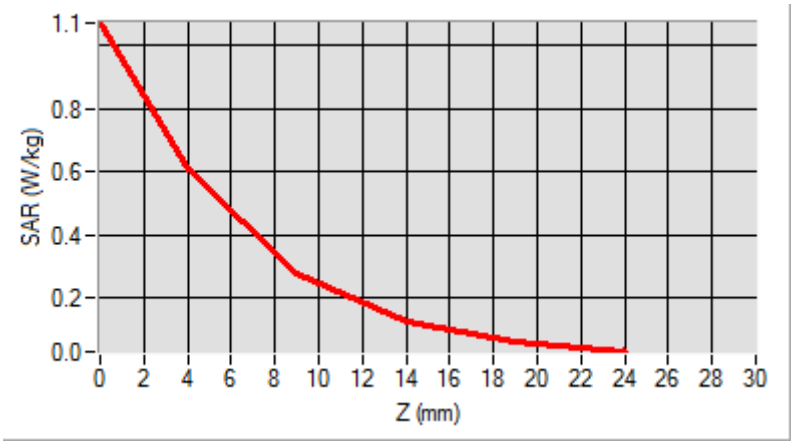
SURFACE SAR	VOLUME SAR
	

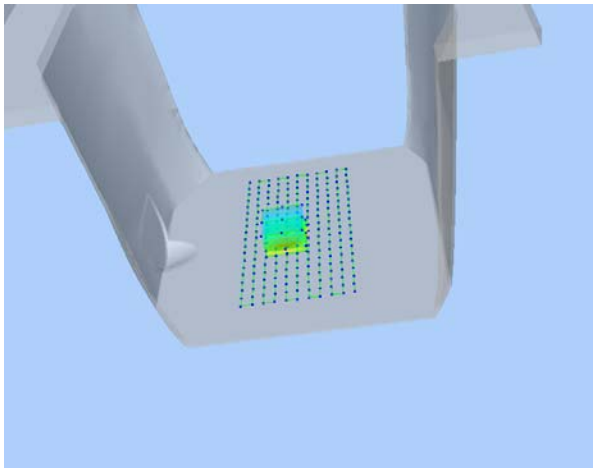
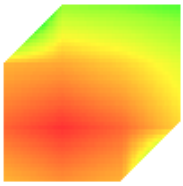
Maximum location: X=-8.00, Y=-8.00

SAR Peak: 1.07 W/kg

SAR 10g (W/Kg)	**0.266777**
SAR 1g (W/Kg)	**0.554444**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**1.0723**	**0.6054**	**0.2767**	**0.1232**	**0.0585**



3D screen shot	**Hot spot position**
	

MEASUREMENT 40

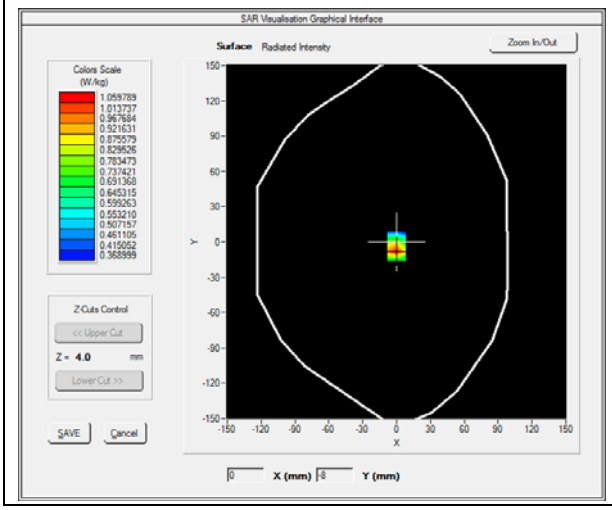
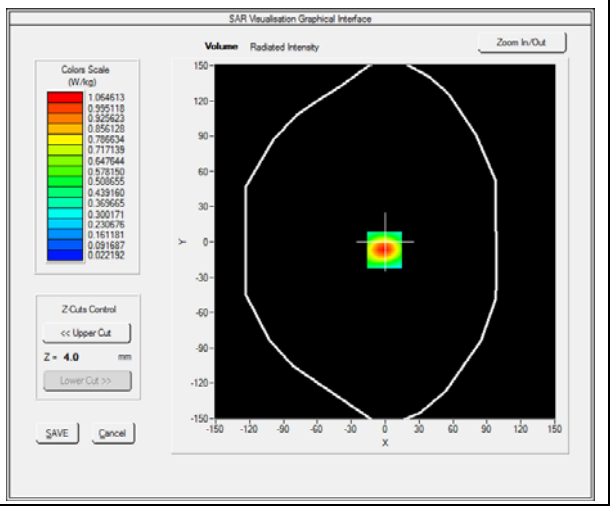
Type: Phone measurement (Complete)
Date of measurement: 04/10/2018
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.06; Calibrated: 06/01/2017

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 4_RMC
Channels	QPSK, 20MHz, 1RB, Low
Signal	Duty Cycle 1:1

B. SAR Measurement Results

Frequency (MHz)	1720.000000
Relative Permittivity (real part)	51.224510
Conductivity (S/m)	1.461261
Power Variation (%)	0.858383
Ambient Temperature	21.1
Liquid Temperature	21.2

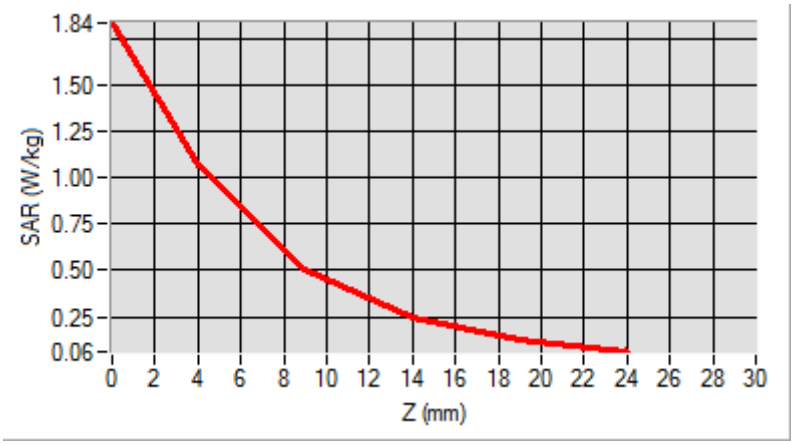
SURFACE SAR	VOLUME SAR
	

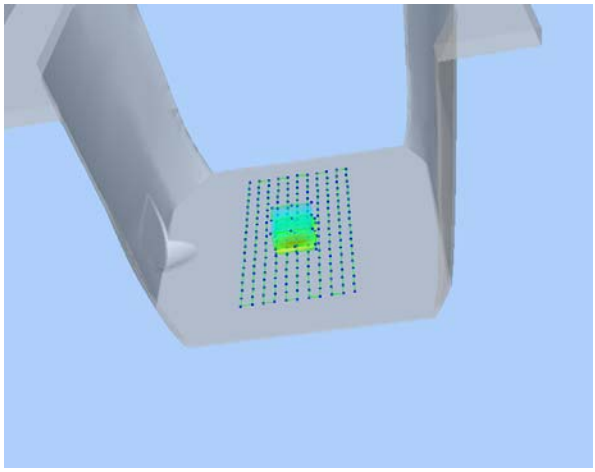
Maximum location: X=-1.00, Y=-7.00

SAR Peak: 1.83 W/kg

SAR 10g (W/Kg)	**0.469757**
SAR 1g (W/Kg)	**0.969894**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**1.8379**	**1.0646**	**0.5085**	**0.2396**	**0.1207**



3D screen shot	**Hot spot position**
	

MEASUREMENT 51

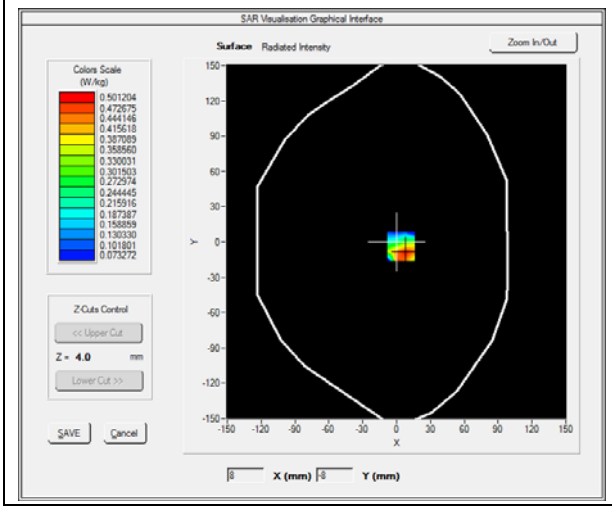
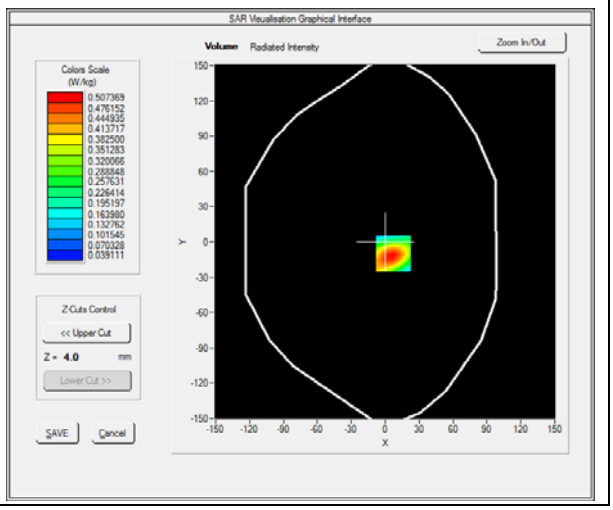
Type: Phone measurement (Complete)
Date of measurement: 04/09/2018
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 7.13; Calibrated: 06/01/2017

A. Experimental conditions

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

B. SAR Measurement Results

Frequency (MHz)	829.000000
Relative Permittivity (real part)	54.851214
Conductivity (S/m)	0.951454
Power Variation (%)	1.037332
Ambient Temperature	21.1
Liquid Temperature	21.2

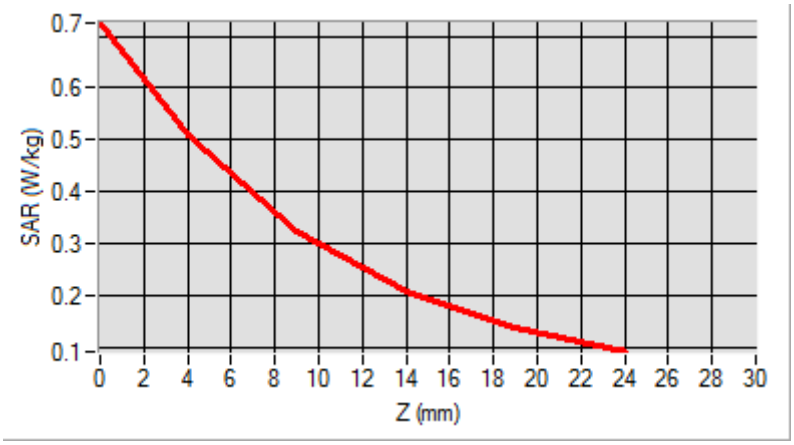
SURFACE SAR	VOLUME SAR
	

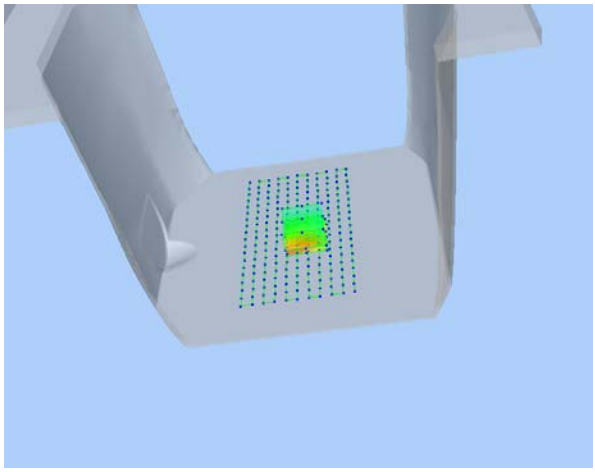
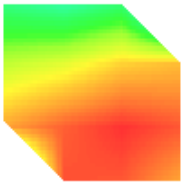
Maximum location: X=7.00, Y=-10.00

SAR Peak: 0.73 W/kg

SAR 10g (W/Kg)	**0.280800**
SAR 1g (W/Kg)	**0.474814**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.7253**	**0.5074**	**0.3221**	**0.2075**	**0.1380**



3D screen shot	**Hot spot position**
	

MEASUREMENT 61

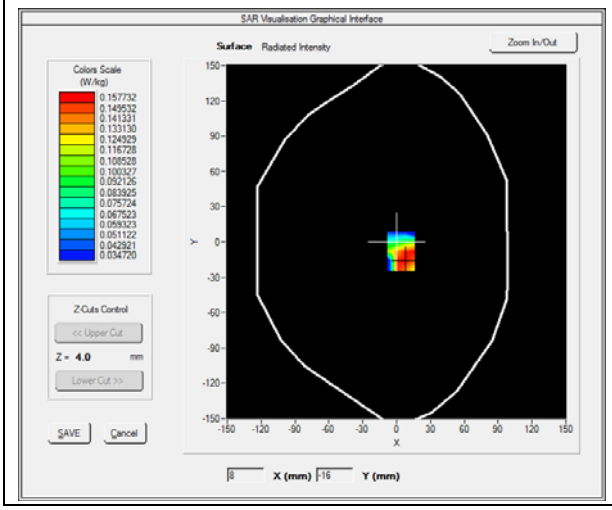
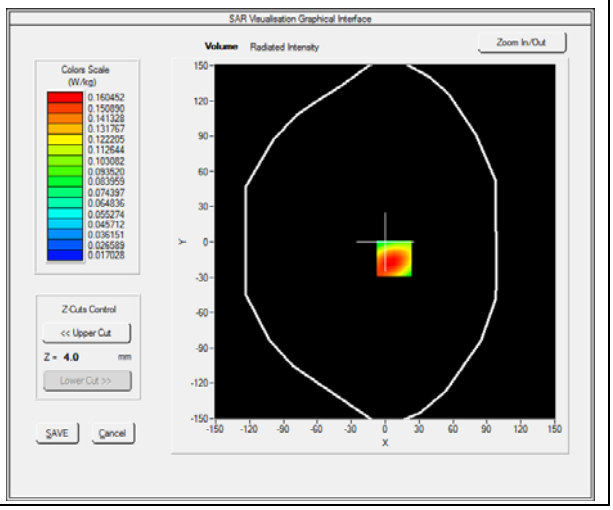
Type: Phone measurement (Complete)
Date of measurement: 04/09/2018
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 7.28; Calibrated: 06/01/2017

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 12_RMC
Channels	QPSK, 10MHz, 1RB, Low
Signal	Duty Cycle 1:1

B. SAR Measurement Results

Frequency (MHz)	704.000000
Relative Permittivity (real part)	54.964739
Conductivity (S/m)	0.931048
Power Variation (%)	3.672346
Ambient Temperature	21.1
Liquid Temperature	21.2

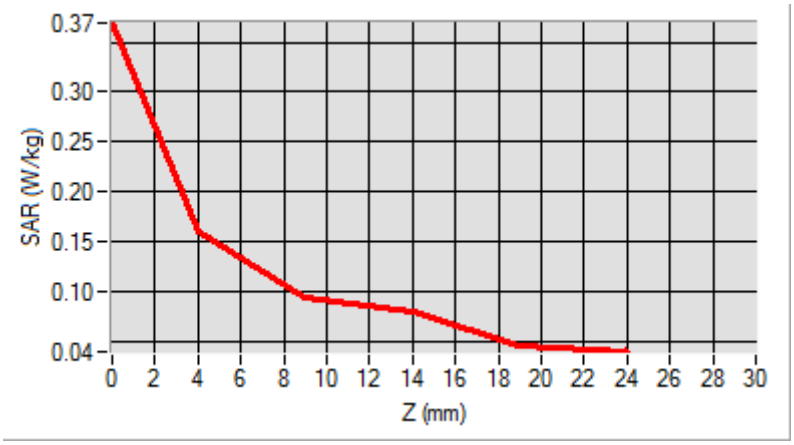
SURFACE SAR	VOLUME SAR
	

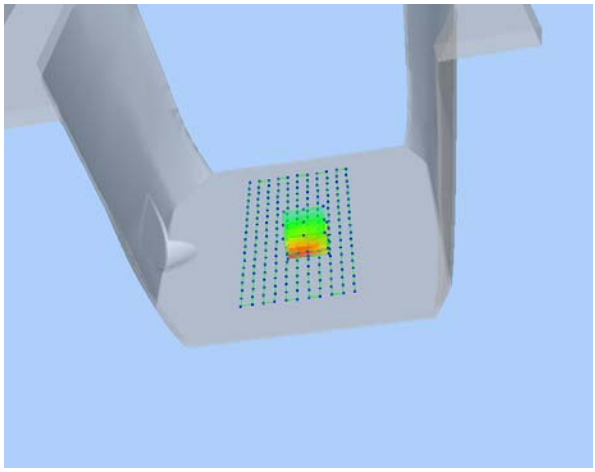
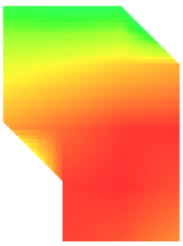
Maximum location: X=8.00, Y=-14.00

SAR Peak: 0.22 W/kg

SAR 10g (W/Kg)	**0.106518**
SAR 1g (W/Kg)	**0.161792**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.3691**	**0.1605**	**0.0948**	**0.0796**	**0.0459**



3D screen shot	**Hot spot position**
	

MEASUREMENT 71

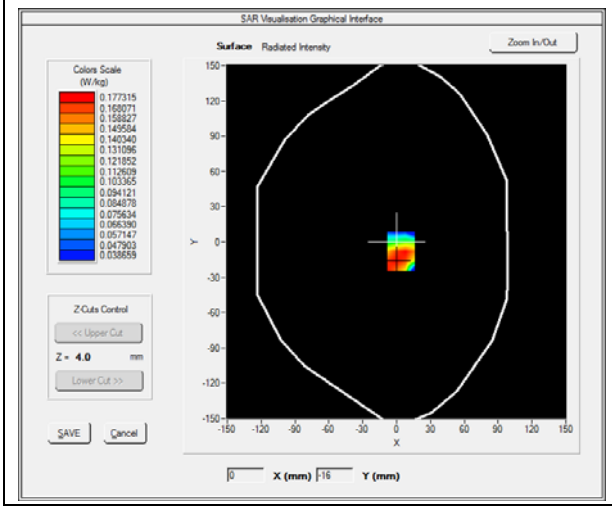
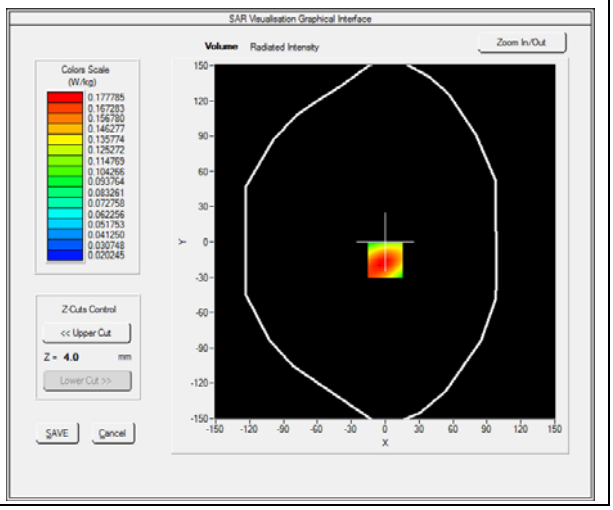
Type: Phone measurement (Complete)
Date of measurement: 04/09/2018
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 7.28; Calibrated: 06/01/2017

A. Experimental conditions

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

B. SAR Measurement Results

Frequency (MHz)	709.000000
Relative Permittivity (real part)	54.964739
Conductivity (S/m)	0.931048
Power Variation (%)	3.108329
Ambient Temperature	21.1
Liquid Temperature	21.2

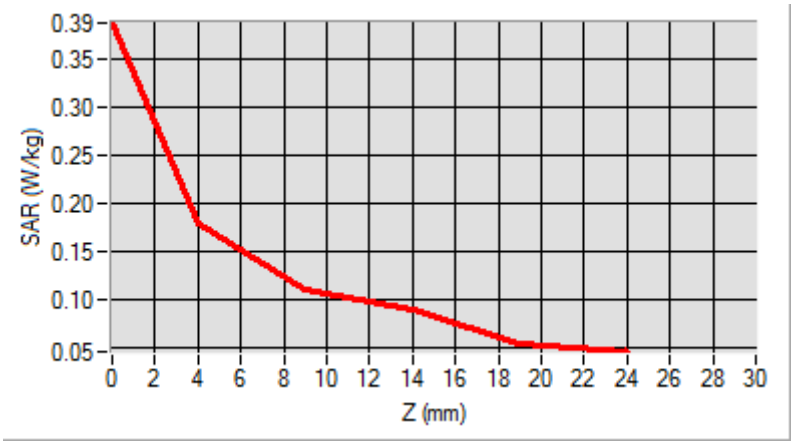
SURFACE SAR	VOLUME SAR
	

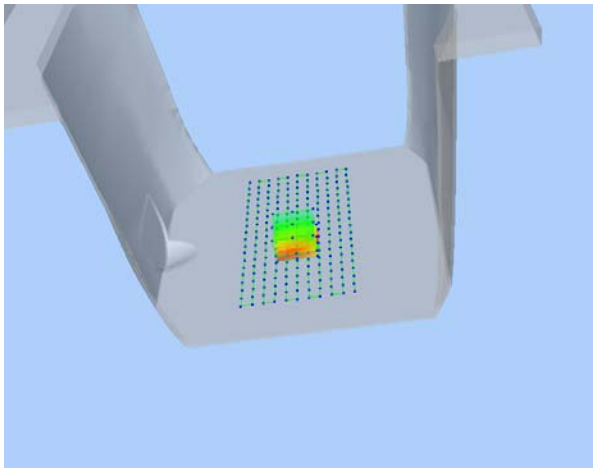
Maximum location: X=0.00, Y=-15.00

SAR Peak: 0.24 W/kg

SAR 10g (W/Kg)	**0.119790**
SAR 1g (W/Kg)	**0.179742**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.3868**	**0.1778**	**0.1090**	**0.0898**	**0.0529**



3D screen shot	**Hot spot position**
	

MEASUREMENT 83

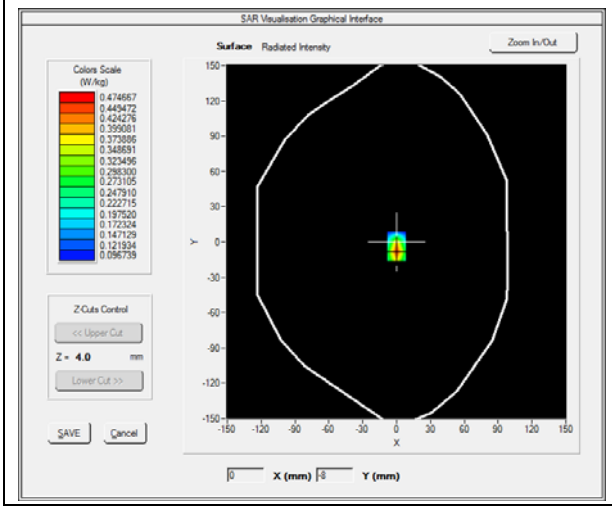
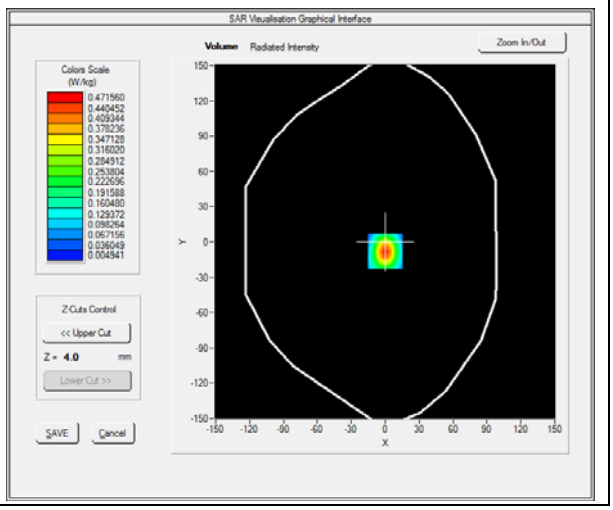
Type: Phone measurement (Complete)
Date of measurement: 04/11/2018
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 5.80; Calibrated: 06/01/2017

A. Experimental conditions

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

B. SAR Measurement Results

Frequency (MHz)	2412.000000
Relative Permittivity (real part)	52.010212
Conductivity (S/m)	1.910255
Power Variation (%)	2.492743
Ambient Temperature	21.1
Liquid Temperature	21.2

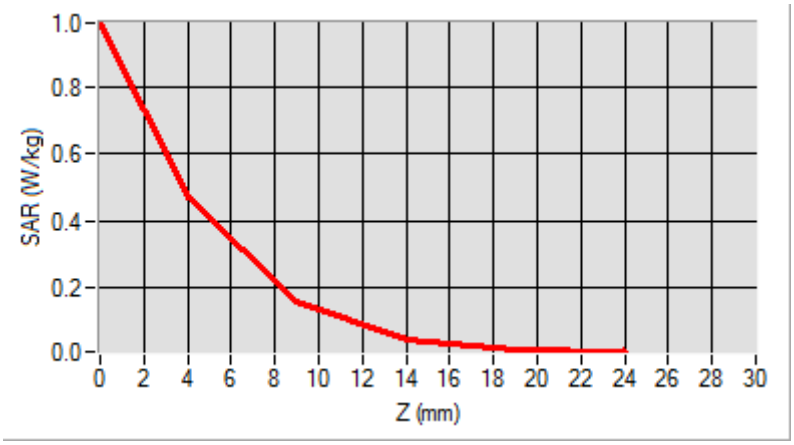
SURFACE SAR	VOLUME SAR
	

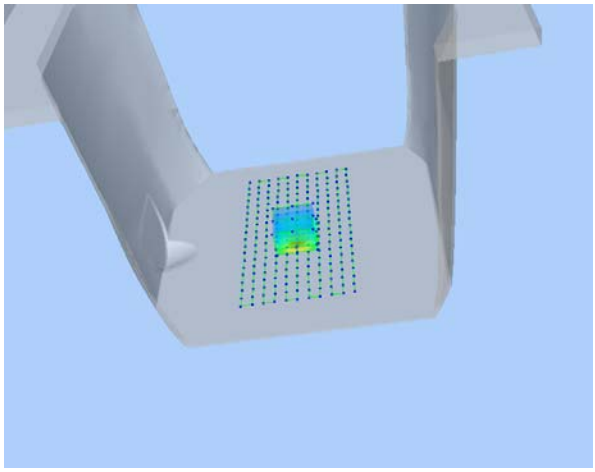
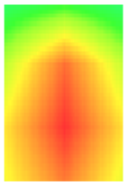
Maximum location: X=0.00, Y=-8.00

SAR Peak: 0.98 W/kg

SAR 10g (W/Kg)	**0.166543**
SAR 1g (W/Kg)	**0.423247**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.9898**	**0.4716**	**0.1589**	**0.0487**	**0.0188**



3D screen shot	**Hot spot position**
	

MEASUREMENT 86

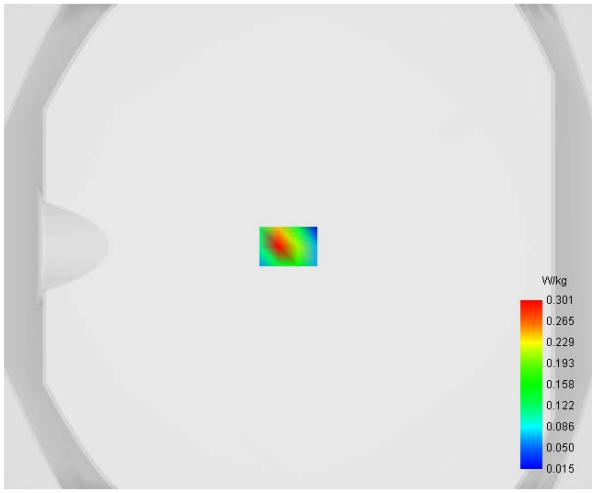
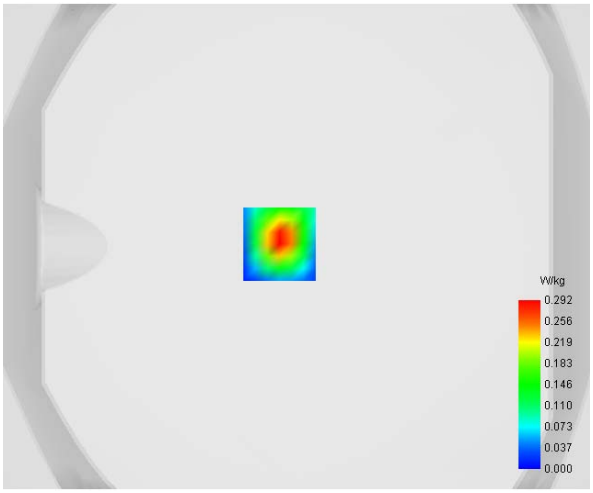
Type: Phone measurement (Complete)
Date of measurement: 04/12/2018
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE2 - SN 08/16 EPGO298; ConvF: 2.39; Calibrated: 2017/09/18

A. Experimental conditions

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

B. SAR Measurement Results

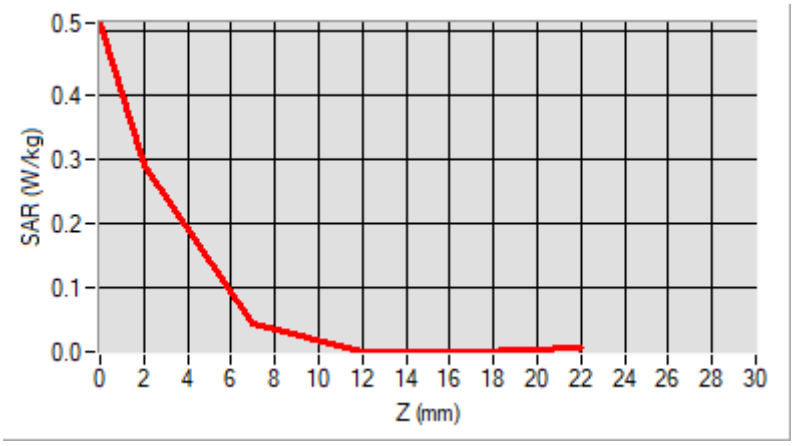
Frequency (MHz)	5190.000000
Relative Permittivity (real part)	48.502911
Conductivity (S/m)	5.161483
Power Variation (%)	0.848378
Ambient Temperature	21.1
Liquid Temperature	21.2

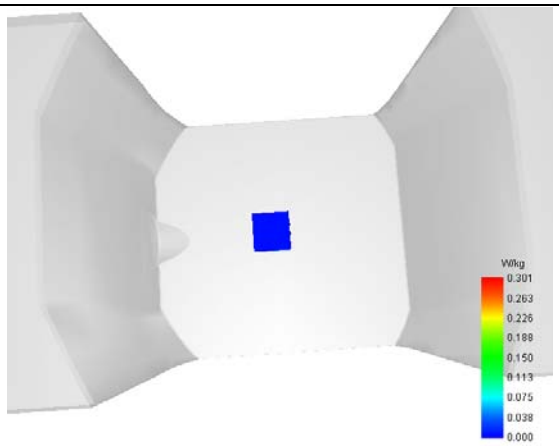
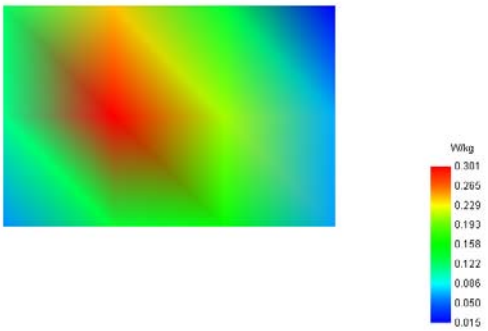
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-7.00, Y=1.00

SAR 10g (W/Kg)	**0.058485**
SAR 1g (W/Kg)	**0.161073**

Z (mm)	0.00	2.00	7.00	12.00	17.00
SAR (W/Kg)	0.5137	0.2925	0.0432	0.0019	0.0006



3D screen shot	Hot spot position
	

MEASUREMENT 89

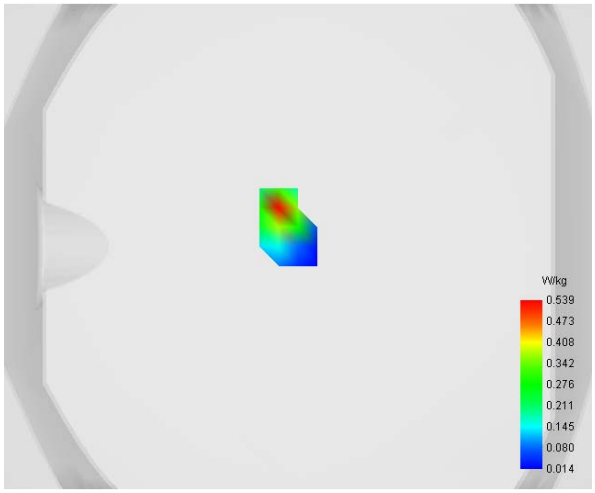
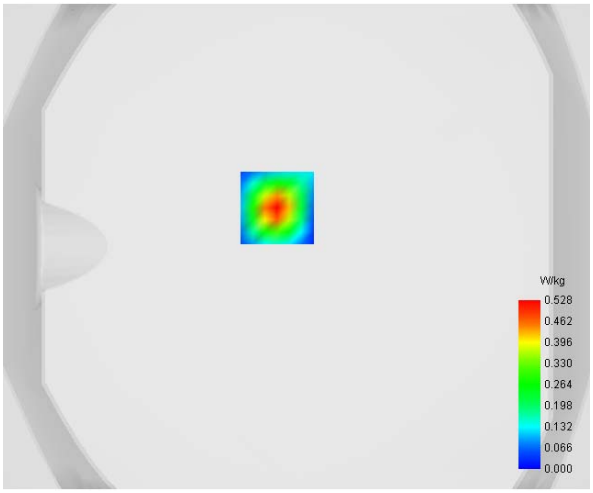
Type: Phone measurement (Complete)
Date of measurement: 04/12/2018
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE2 - SN 08/16 EPGO298; ConvF: 2.50; Calibrated: 2017/09/18

A. Experimental conditions

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

B. SAR Measurement Results

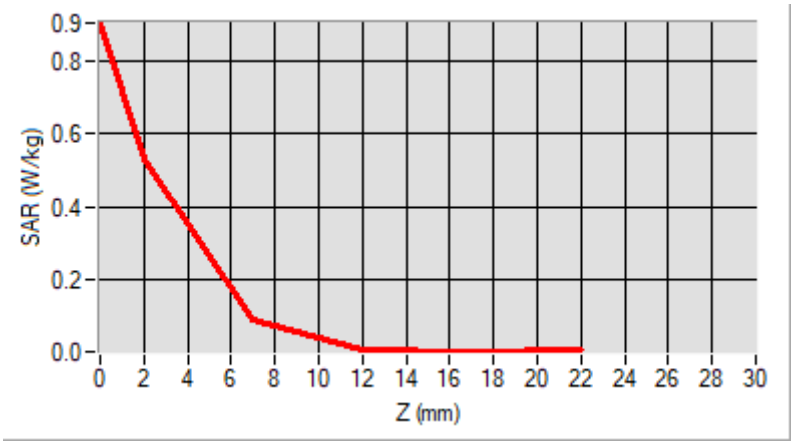
Frequency (MHz)	5795.000000
Relative Permittivity (real part)	47.501939
Conductivity (S/m)	5.761487
Power Variation (%)	1.083921
Ambient Temperature	21.1
Liquid Temperature	21.2

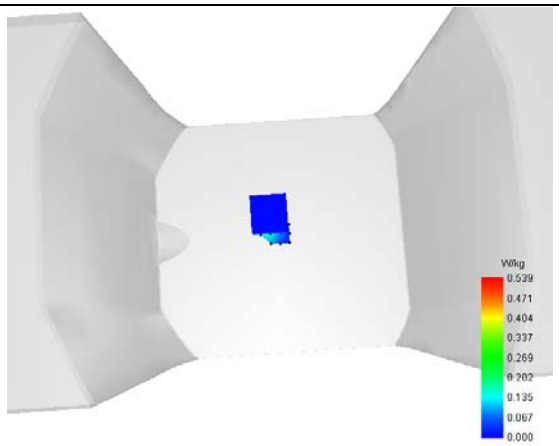
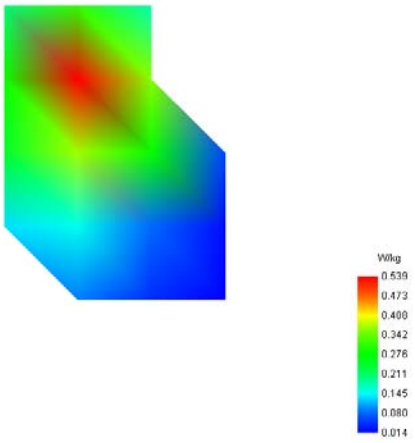
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-8.00, Y=16.00

SAR 10g (W/Kg)	**0.098943**
SAR 1g (W/Kg)	**0.279671**

Z (mm)	0.00	2.00	7.00	12.00	17.00
SAR (W/Kg)	0.9045	0.5283	0.0897	0.0061	0.0011



3D screen shot	Hot spot position
	

MEASUREMENT 90

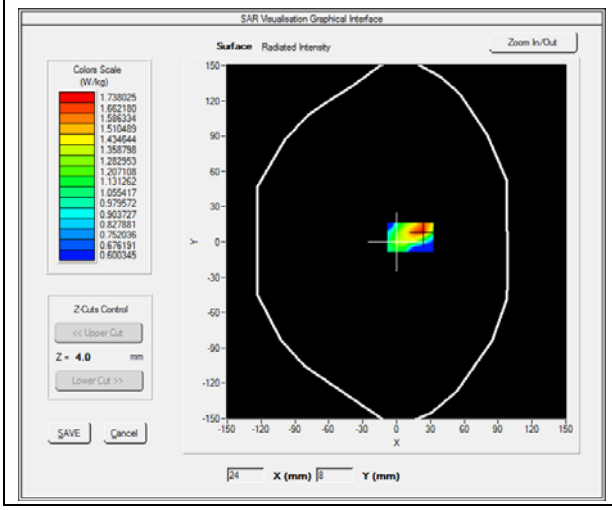
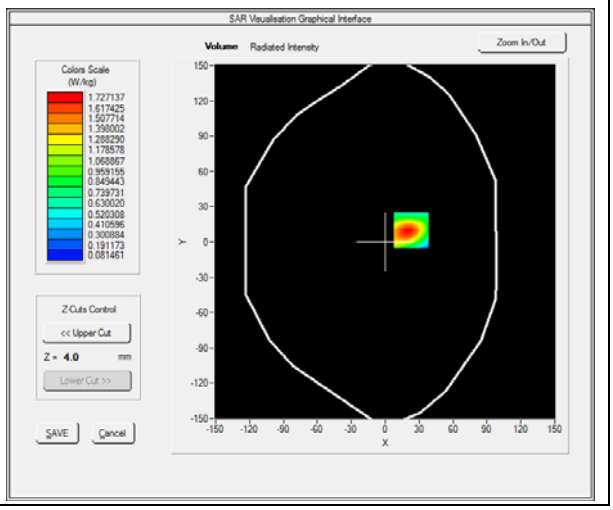
Type: Phone measurement (Complete)
Date of measurement: 04/09/2018
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 7.13; Calibrated: 06/01/2017

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	Low
Signal	Duty Cycle: 1:2

B. SAR Measurement Results

Frequency (MHz)	824.200000
Relative Permittivity (real part)	54.851214
Conductivity (S/m)	0.951454
Power Variation (%)	0.901472
Ambient Temperature	21.1
Liquid Temperature	21.3

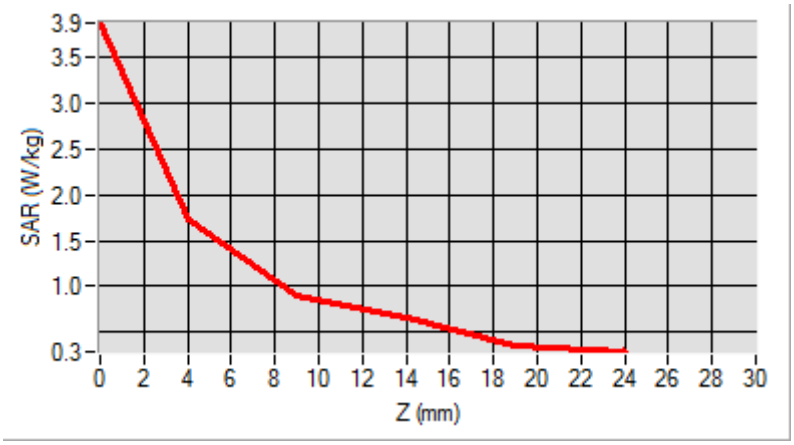
SURFACE SAR	VOLUME SAR
	

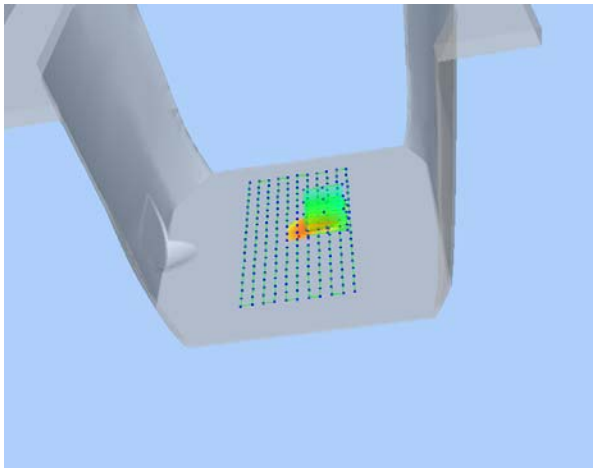
Maximum location: X=23.00, Y=10.00

SAR Peak: 2.64 W/kg

SAR 10g (W/Kg)	**0.911265**
SAR 1g (W/Kg)	**1.614760**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**3.8722**	**1.7271**	**0.8926**	**0.6568**	**0.3602**



3D screen shot	**Hot spot position**
	

MEASUREMENT 97

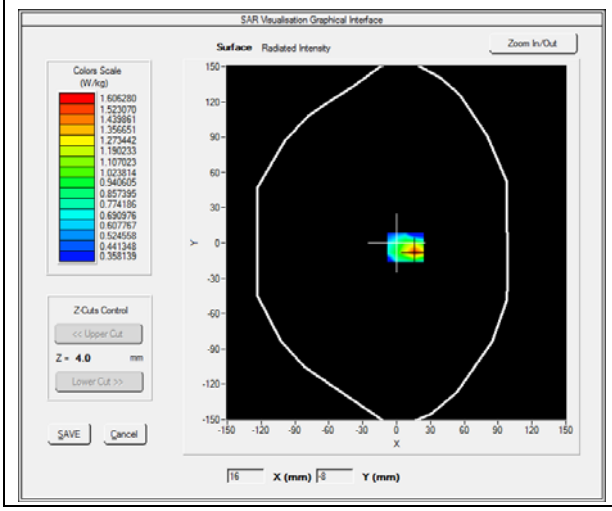
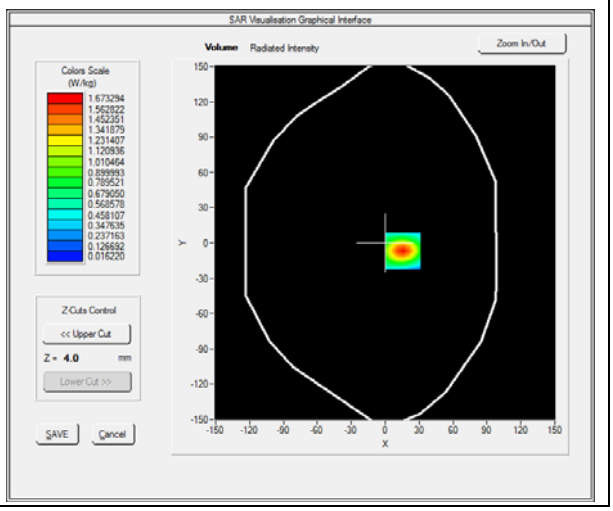
Type: Phone measurement (Complete)
Date of measurement: 04/10/2018
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.55; Calibrated: 06/01/2017

A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=8mm dy=8mm dz=5mm
Phantom	Flat plane
Device Position	Bottom
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 (%)	2.483762
Ambient Temperature	21.1
Liquid Temperature	21.3

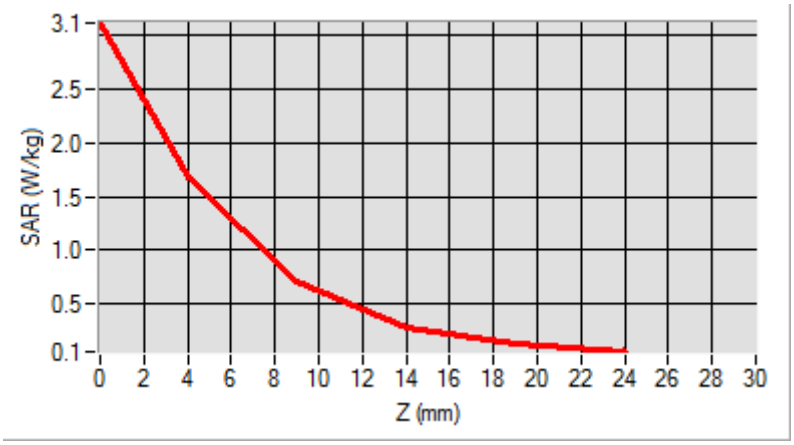
SURFACE SAR	VOLUME SAR
	

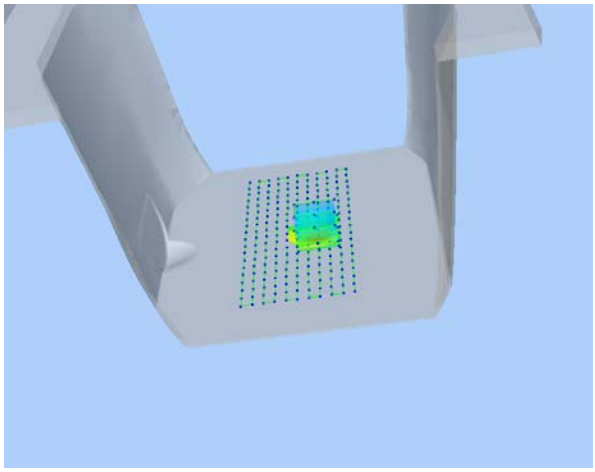
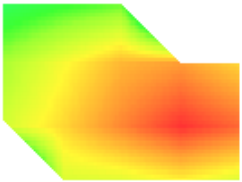
Maximum location: X=16.00, Y=-7.00

SAR Peak: 3.11 W/kg

SAR 10g (W/Kg)	**0.668099**
SAR 1g (W/Kg)	**1.510980**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**3.1167**	**1.6733**	**0.7022**	**0.2823**	**0.1240**



3D screen shot	**Hot spot position**
	

MEASUREMENT 102

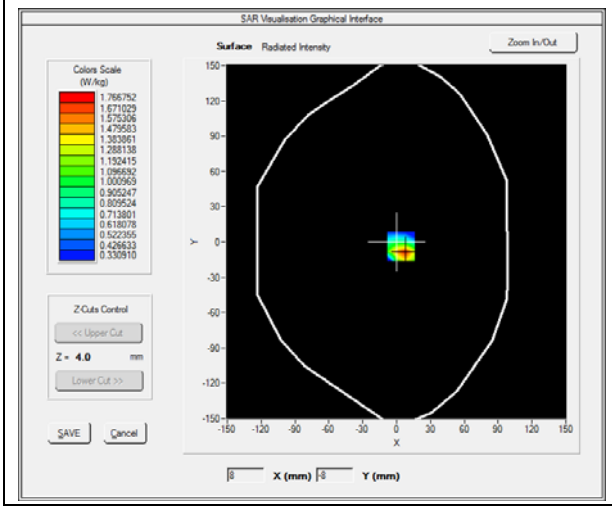
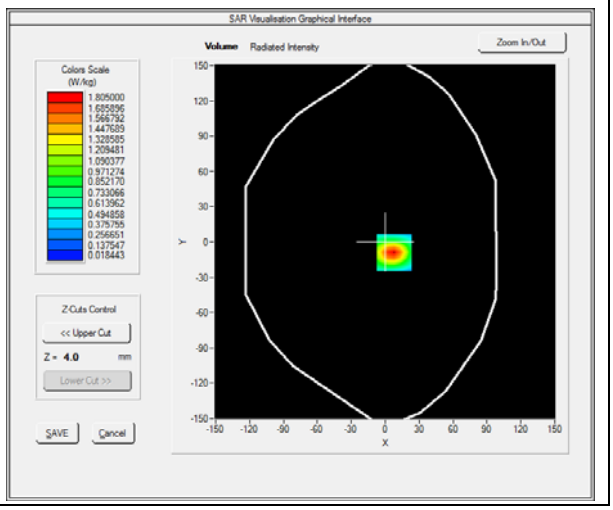
Type: Phone measurement (Complete)
Date of measurement: 04/10/2018
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.55; Calibrated: 06/01/2017

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	Middle
Signal	Duty Cycle 1:1

B. SAR Measurement Results

Frequency (MHz)	1880.000000
Relative Permittivity (real part)	52.420415
Conductivity (S/m)	1.501966
Power Variation (%)	1.163283
Ambient Temperature	21.1
Liquid Temperature	21.3

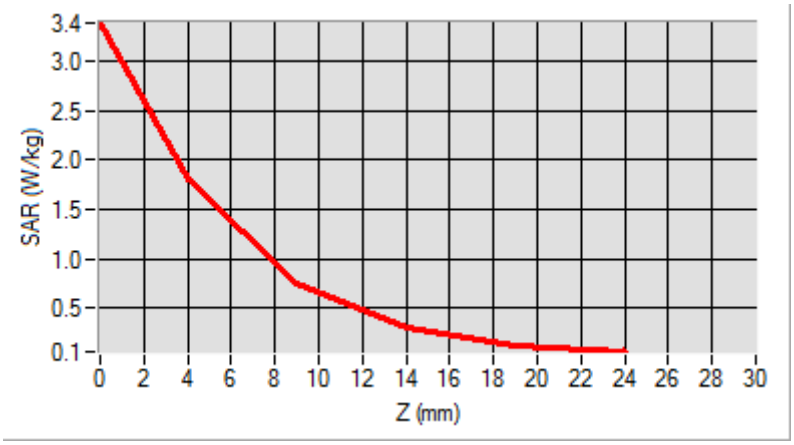
SURFACE SAR	VOLUME SAR
	

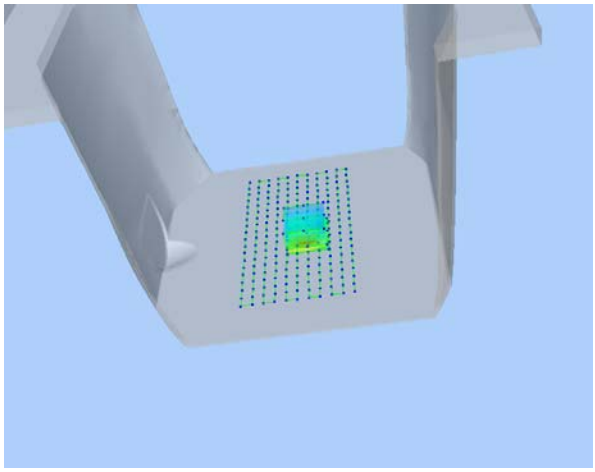
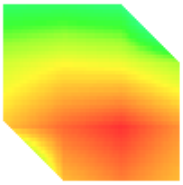
Maximum location: X=8.00, Y=-9.00

SAR Peak: 3.39 W/kg

SAR 10g (W/Kg)	**0.724520**
SAR 1g (W/Kg)	**1.632948**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**3.3879**	**1.8050**	**0.7487**	**0.2985**	**0.1324**



3D screen shot	**Hot spot position**
	

MEASUREMENT 105

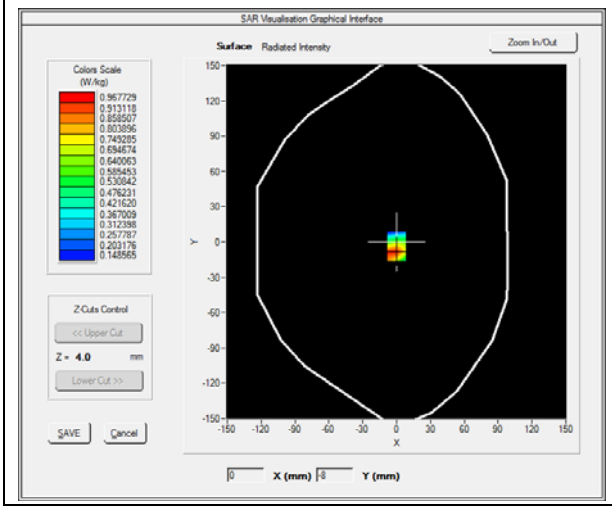
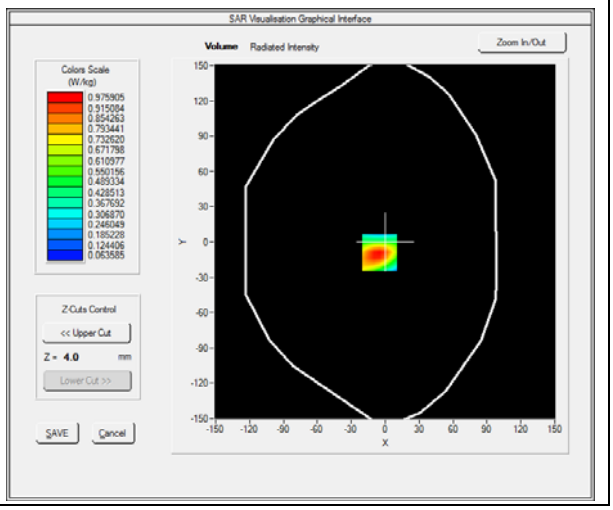
Type: Phone measurement (Complete)
Date of measurement: 04/09/2018
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 7.13; Calibrated: 06/01/2017

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	Middle
Signal	Duty Cycle 1:1

B. SAR Measurement Results

Frequency (MHz)	836.600000
Relative Permittivity (real part)	54.851214
Conductivity (S/m)	0.951454
Power Variation (%)	2.341234
Ambient Temperature	21.1
Liquid Temperature	21.3

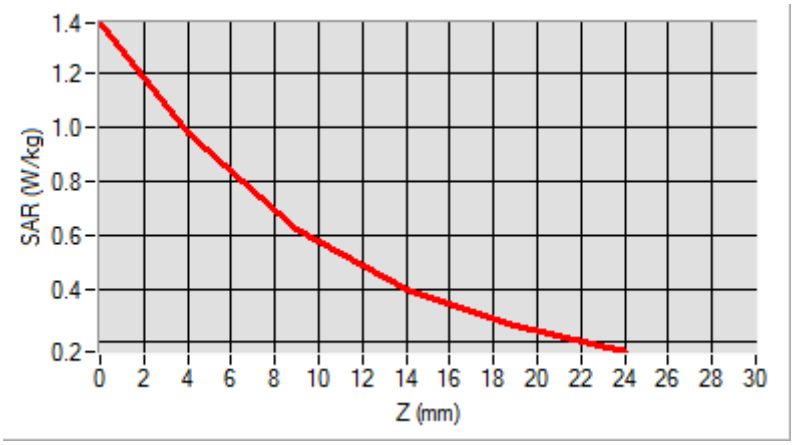
SURFACE SAR	VOLUME SAR
	

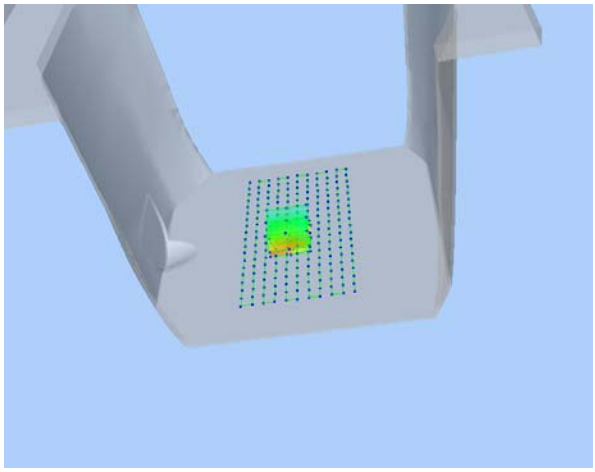
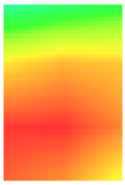
Maximum location: X=-5.00, Y=-9.00

SAR Peak: 1.40 W/kg

SAR 10g (W/Kg)	**0.526681**
SAR 1g (W/Kg)	**0.906966**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**1.3887**	**0.9759**	**0.6210**	**0.3978**	**0.2598**



3D screen shot	**Hot spot position**
	

MEASUREMENT 112

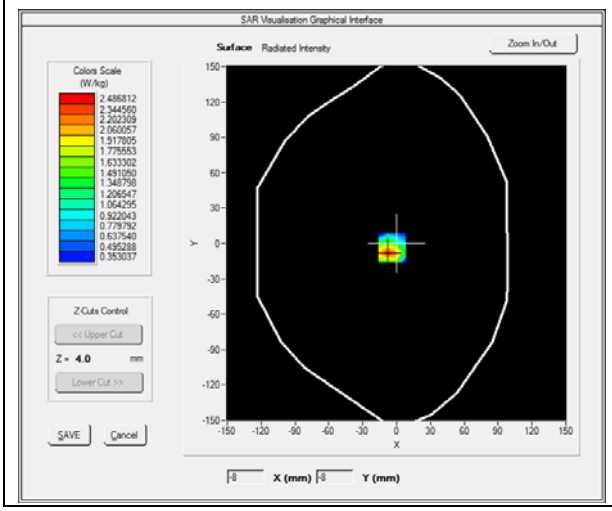
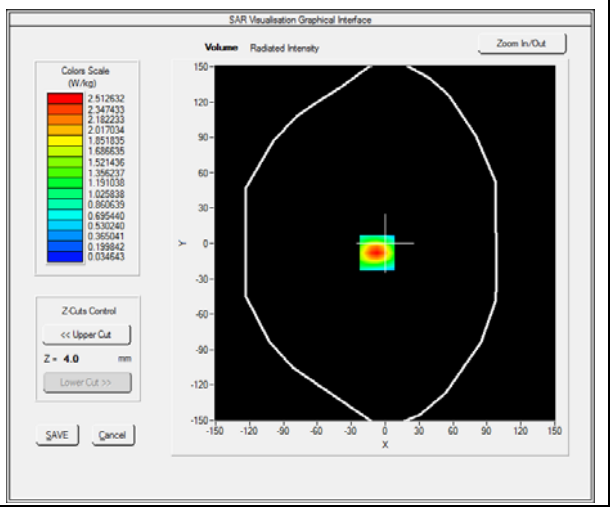
Type: Phone measurement (Complete)
Date of measurement: 04/10/2018
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.06; Calibrated: 06/01/2017

A. Experimental conditions

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

B. SAR Measurement Results

Frequency (MHz)	1732.600000
Relative Permittivity (real part)	51.224510
Conductivity (S/m)	1.461261
Power Variation (%)	2.341221
Ambient Temperature	21.1
Liquid Temperature	21.3

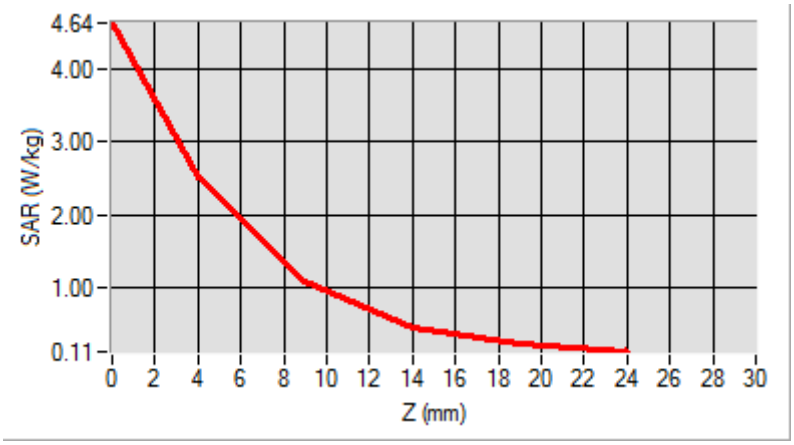
SURFACE SAR	VOLUME SAR
	

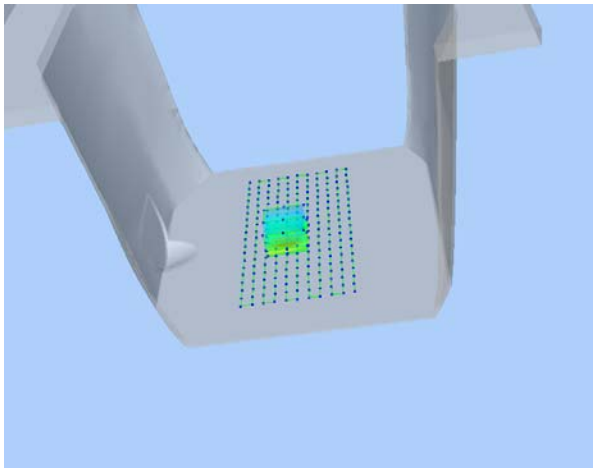
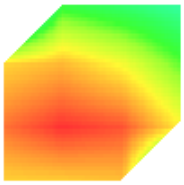
Maximum location: X=-7.00, Y=-8.00

SAR Peak: 4.63 W/kg

SAR 10g (W/Kg)	**1.029335**
SAR 1g (W/Kg)	**2.274827**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**4.6419**	**2.5126**	**1.0751**	**0.4499**	**0.2123**



3D screen shot	**Hot spot position**
	

MEASUREMENT 117

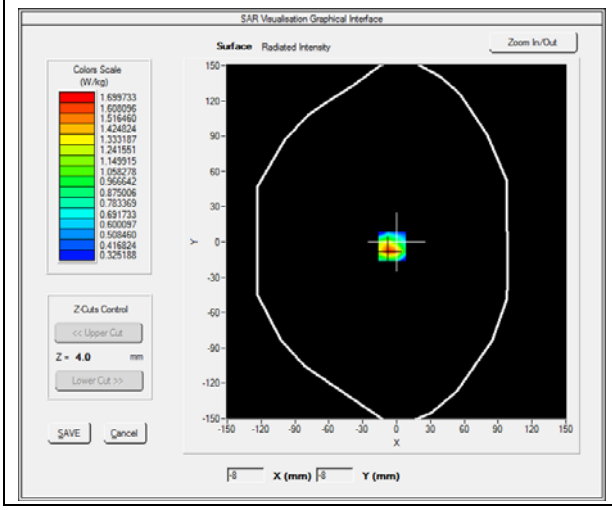
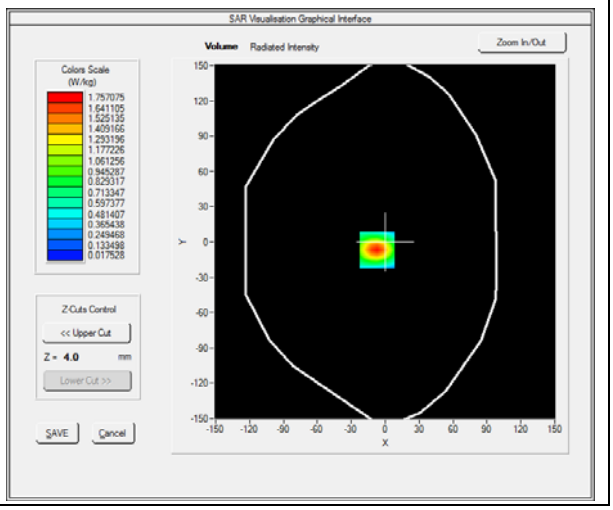
Type: Phone measurement (Complete)
Date of measurement: 04/10/2018
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.55; Calibrated: 06/01/2017

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_RMC
Channels	QPSK, 20MHz, 1RB, Middle
Signal	Duty Cycle 1:1

B. SAR Measurement Results

Frequency (MHz)	1880.000000
Relative Permittivity (real part)	52.420415
Conductivity (S/m)	1.501966
Power Variation (%)	1.327810
Ambient Temperature	21.1
Liquid Temperature	21.3

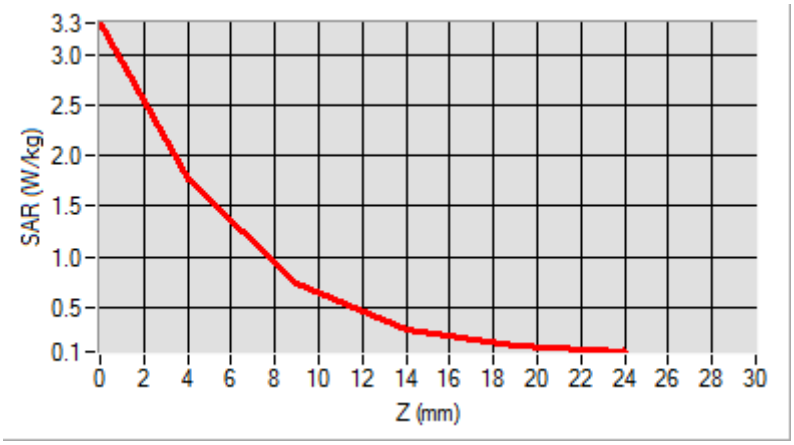
SURFACE SAR	VOLUME SAR
	

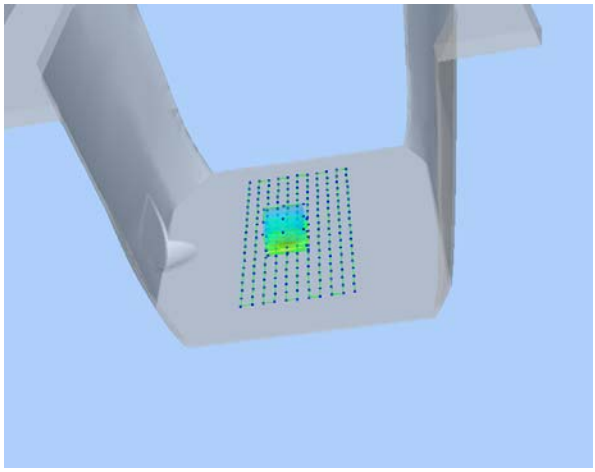
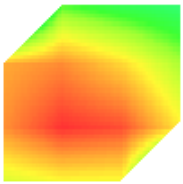
Maximum location: X=-7.00, Y=-7.00

SAR Peak: 3.30 W/kg

SAR 10g (W/Kg)	**0.701177**
SAR 1g (W/Kg)	**1.590040**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**3.3079**	**1.7571**	**0.7254**	**0.2880**	**0.1280**



3D screen shot	**Hot spot position**
	

MEASUREMENT 127

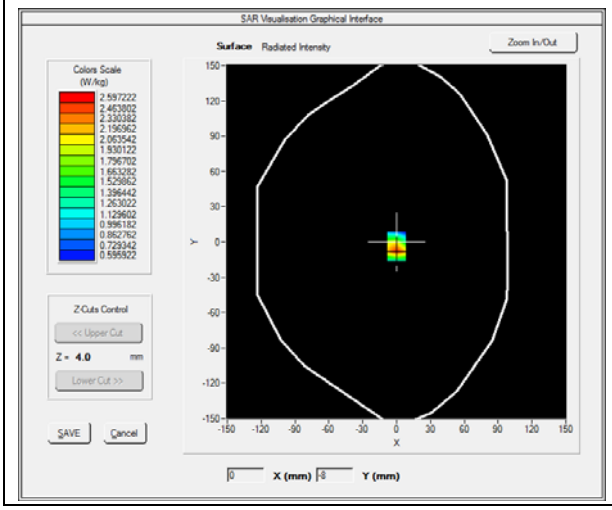
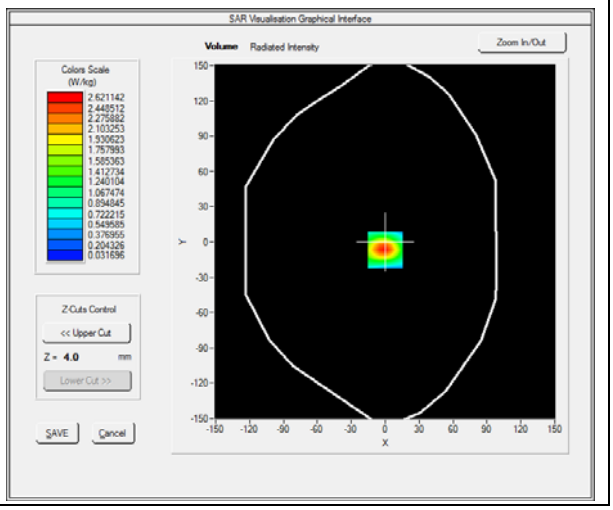
Type: Phone measurement (Complete)
Date of measurement: 04/10/2018
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.06; Calibrated: 06/01/2017

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 4_RMC
Channels	QPSK, 20MHz, 1RB, Low
Signal	Duty Cycle 1:1

B. SAR Measurement Results

Frequency (MHz)	1720.000000
Relative Permittivity (real part)	51.224510
Conductivity (S/m)	1.461261
Power Variation (%)	0.858383
Ambient Temperature	21.1
Liquid Temperature	21.2

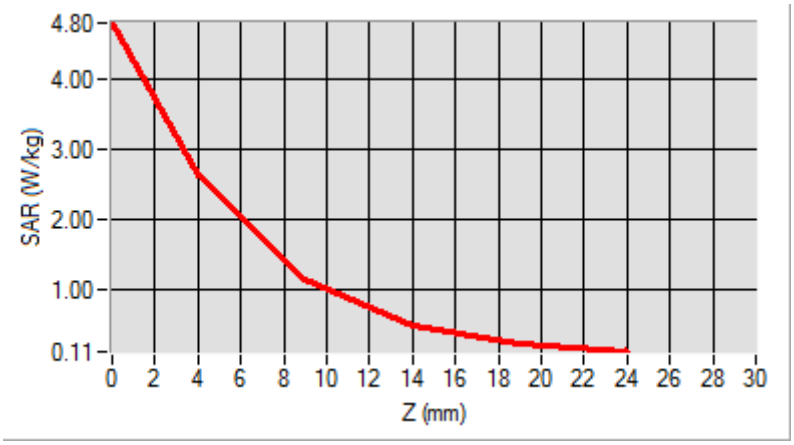
SURFACE SAR	VOLUME SAR
	

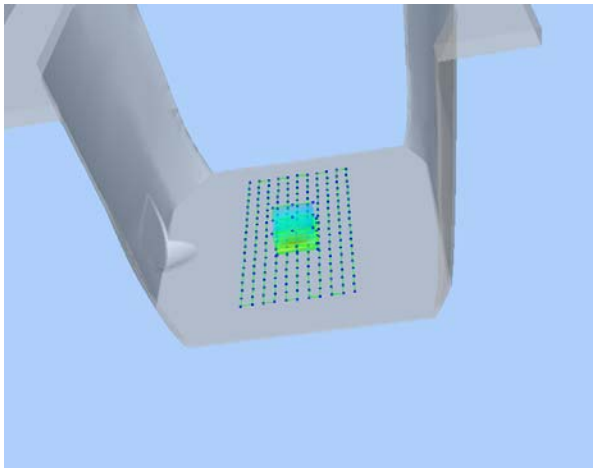
Maximum location: X=0.00, Y=-7.00

SAR Peak: 4.81 W/kg

SAR 10g (W/Kg)	**1.073364**
SAR 1g (W/Kg)	**2.375549**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**4.8043**	**2.6211**	**1.1359**	**0.4813**	**0.2275**



3D screen shot	**Hot spot position**
	

MEASUREMENT 135

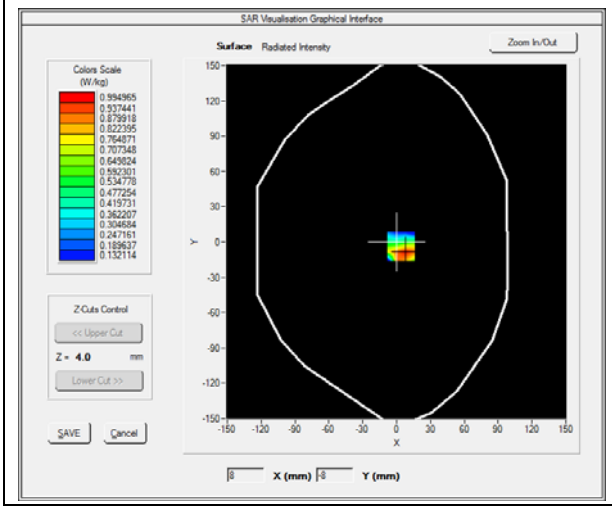
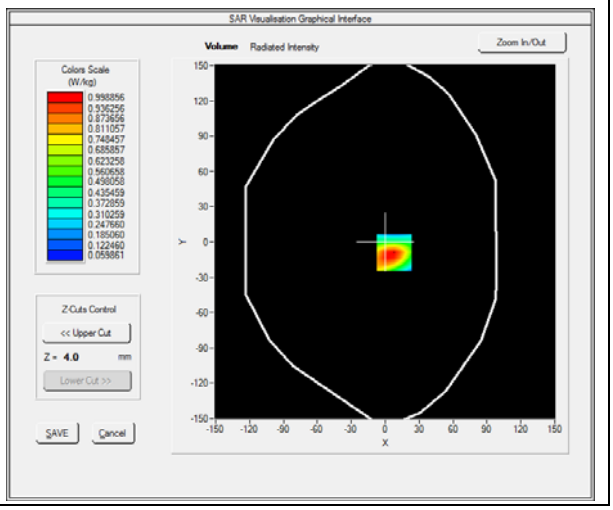
Type: Phone measurement (Complete)
Date of measurement: 04/09/2018
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 7.13; Calibrated: 06/01/2017

A. Experimental conditions

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

B. SAR Measurement Results

Frequency (MHz)	829.000000
Relative Permittivity (real part)	54.851214
Conductivity (S/m)	0.951454
Power Variation (%)	1.037332
Ambient Temperature	21.1
Liquid Temperature	21.2

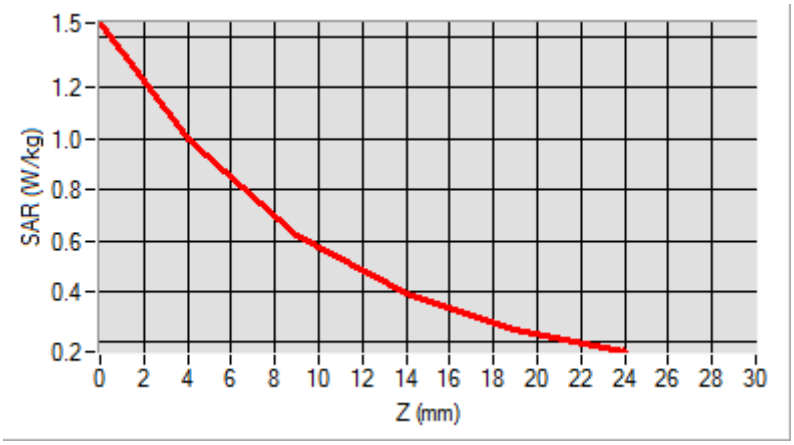
SURFACE SAR	VOLUME SAR
	

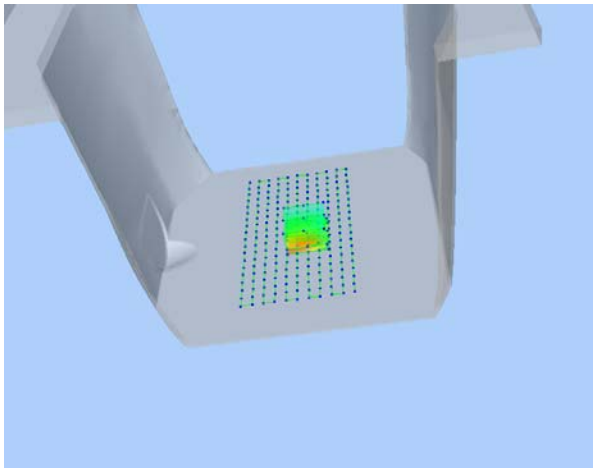
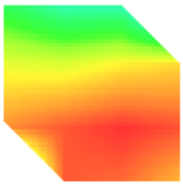
Maximum location: X=8.00, Y=-9.00

SAR Peak: 1.48 W/kg

SAR 10g (W/Kg)	**0.538424**
SAR 1g (W/Kg)	**0.940259**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**1.4547**	**0.9989**	**0.6181**	**0.3882**	**0.2529**



3D screen shot	**Hot spot position**
	

MEASUREMENT 145

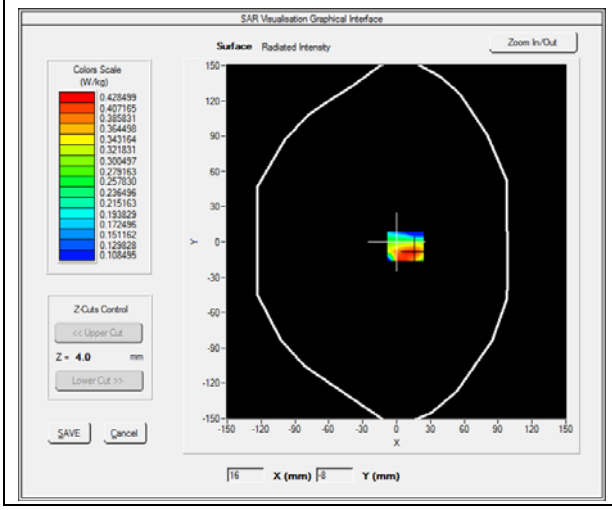
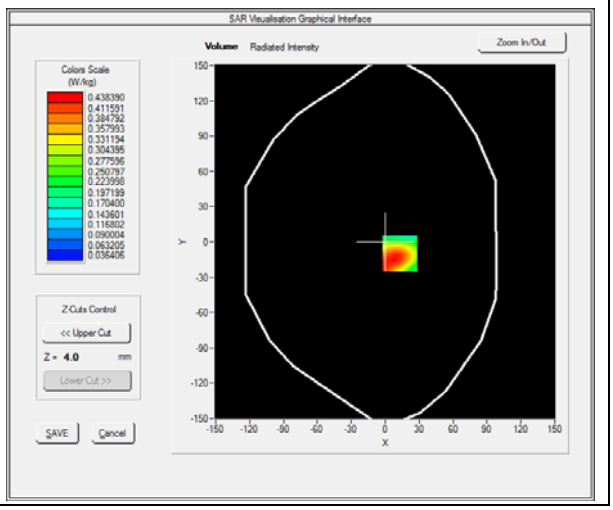
Type: Phone measurement (Complete)
Date of measurement: 04/09/2018
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 7.28; Calibrated: 06/01/2017

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 12_RMC
Channels	QPSK, 10MHz, 1RB, Low
Signal	Duty Cycle 1:1

B. SAR Measurement Results

Frequency (MHz)	704.000000
Relative Permittivity (real part)	54.964739
Conductivity (S/m)	0.931048
Power Variation (%)	3.672346
Ambient Temperature	21.1
Liquid Temperature	21.2

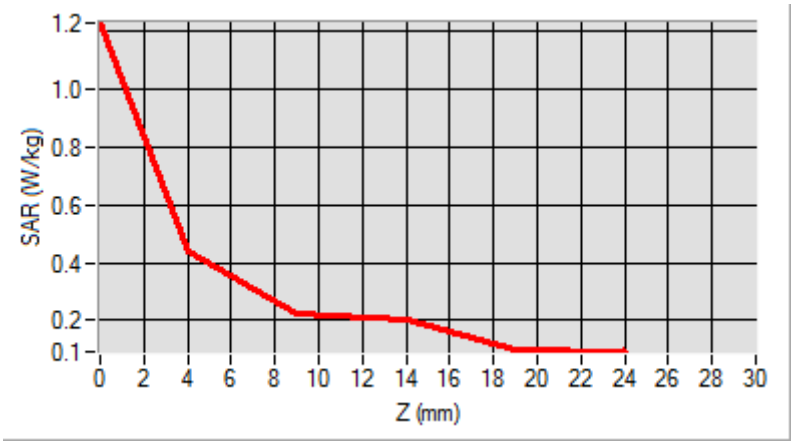
SURFACE SAR	VOLUME SAR
	

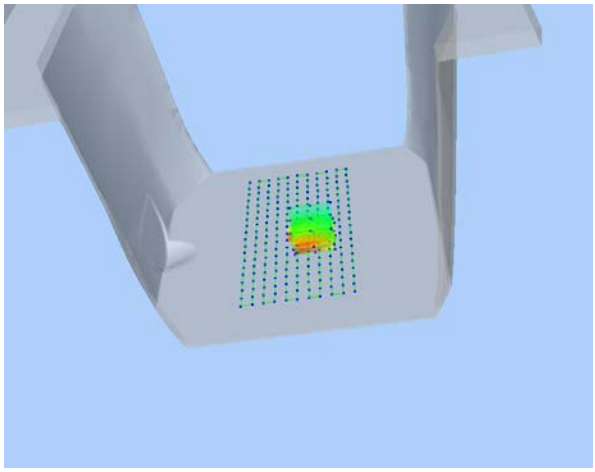
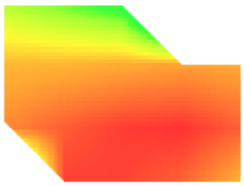
Maximum location: X=13.00, Y=-10.00

SAR Peak: 0.60 W/kg

SAR 10g (W/Kg)	**0.277032**
SAR 1g (W/Kg)	**0.434214**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**1.2276**	**0.4384**	**0.2230**	**0.2032**	**0.1010**



3D screen shot	**Hot spot position**
	

MEASUREMENT 155

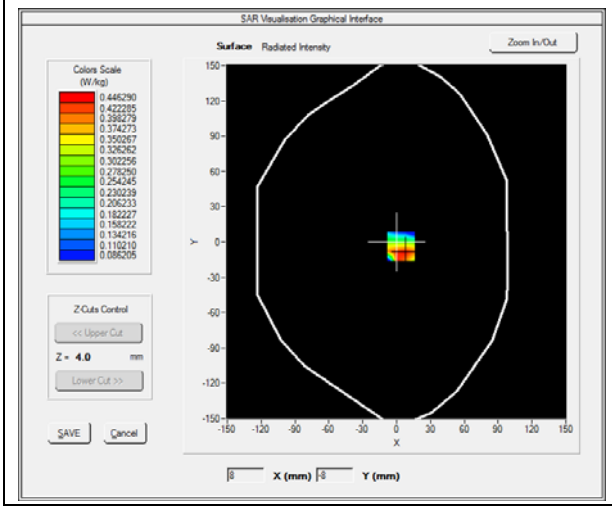
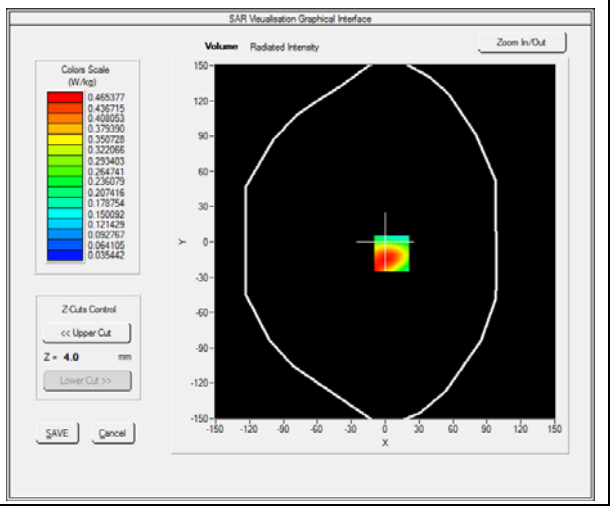
Type: Phone measurement (Complete)
Date of measurement: 04/09/2018
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 7.28; Calibrated: 06/01/2017

A. Experimental conditions

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

B. SAR Measurement Results

Frequency (MHz)	709.000000
Relative Permittivity (real part)	54.964739
Conductivity (S/m)	0.931048
Power Variation (%)	3.108329
Ambient Temperature	21.1
Liquid Temperature	21.2

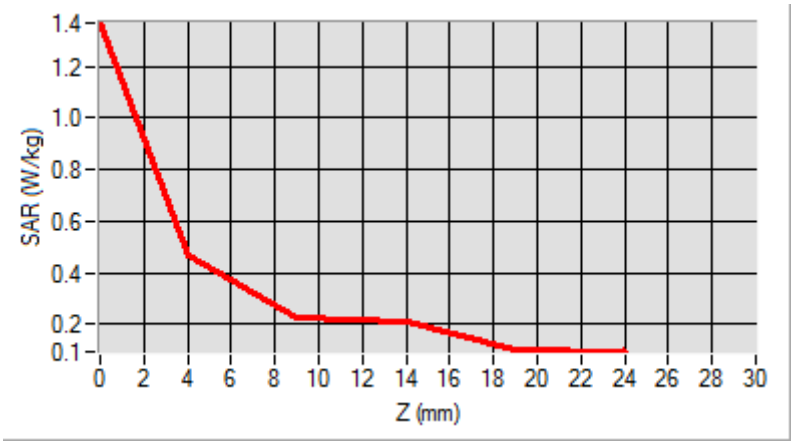
SURFACE SAR	VOLUME SAR
	

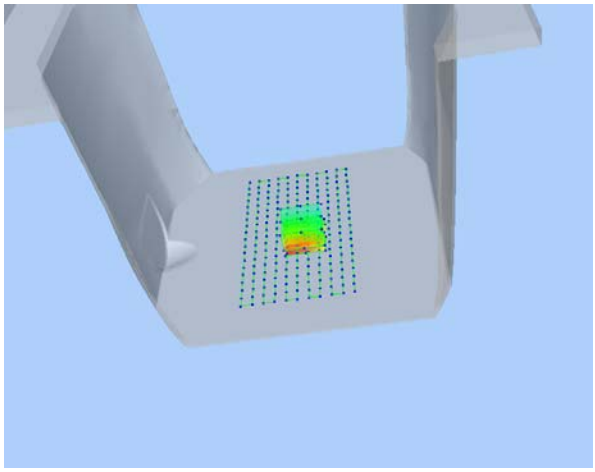
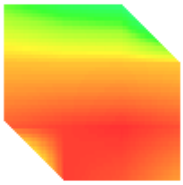
Maximum location: X=6.00, Y=-10.00

SAR Peak: 0.65 W/kg

SAR 10g (W/Kg)	**0.291374**
SAR 1g (W/Kg)	**0.459218**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**1.3681**	**0.4654**	**0.2255**	**0.2111**	**0.1009**



3D screen shot	**Hot spot position**
	

MEASUREMENT 167

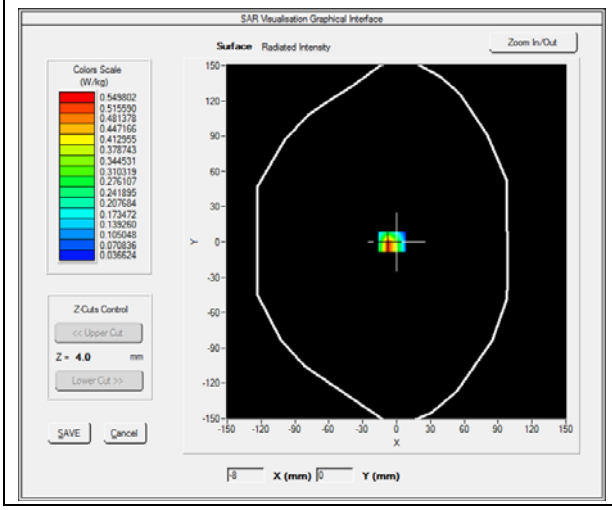
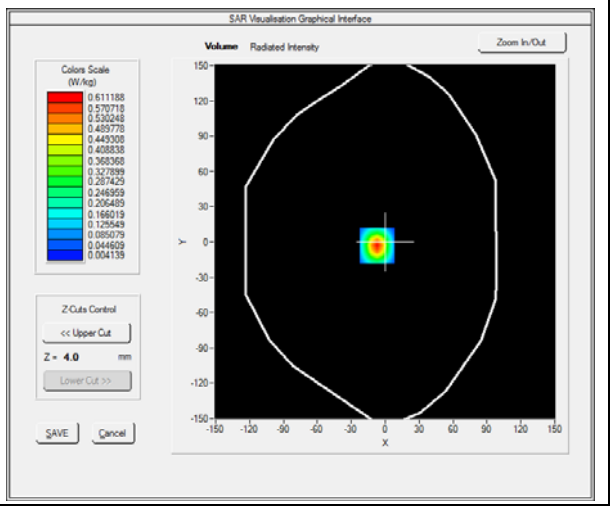
Type: Phone measurement (Complete)
Date of measurement: 04/11/2018
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 5.80; Calibrated: 06/01/2017

A. Experimental conditions

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

B. SAR Measurement Results

Frequency (MHz)	2412.000000
Relative Permittivity (real part)	52.010212
Conductivity (S/m)	1.910255
Power Variation (%)	2.492743
Ambient Temperature	21.1
Liquid Temperature	21.2

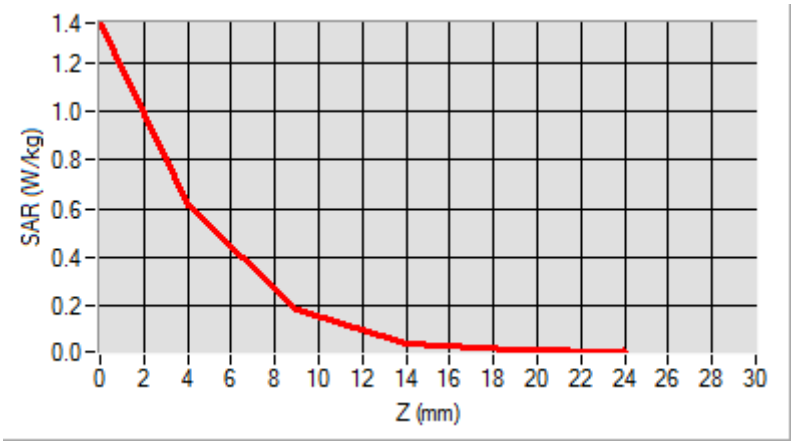
SURFACE SAR	VOLUME SAR
	

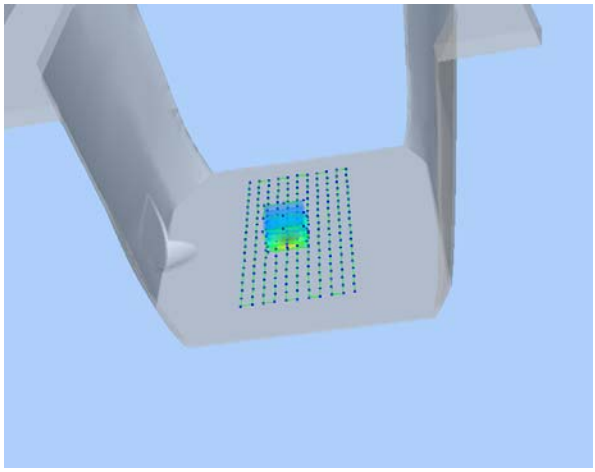
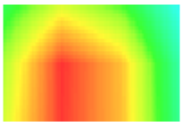
Maximum location: X=-7.00, Y=-3.00

SAR Peak: 1.36 W/kg

SAR 10g (W/Kg)	**0.200006**
SAR 1g (W/Kg)	**0.545934**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**1.3667**	**0.6112**	**0.1800**	**0.0450**	**0.0154**



3D screen shot	**Hot spot position**
	

MEASUREMENT 170

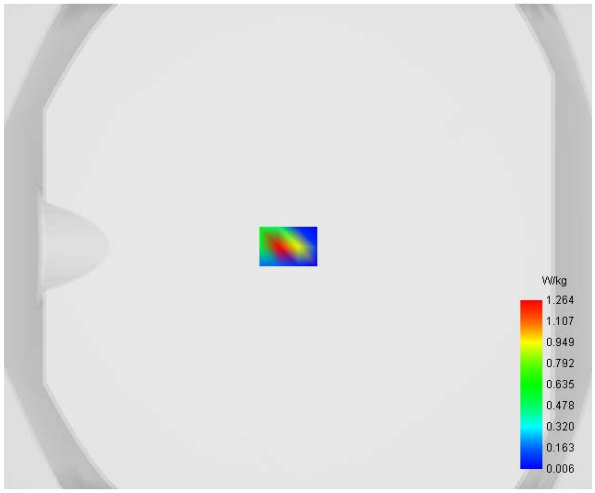
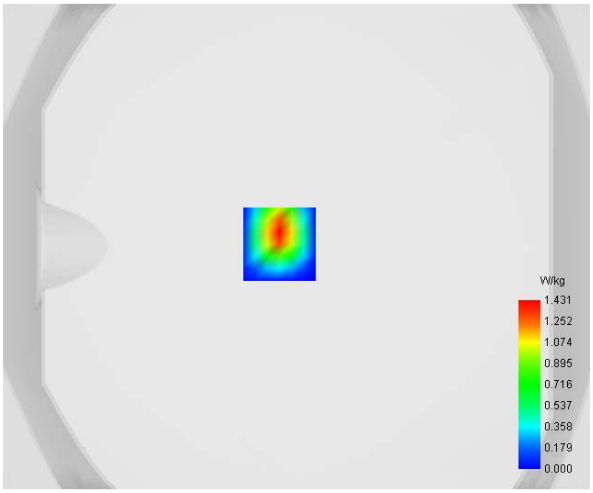
Type: Phone measurement (Complete)
Date of measurement: 04/12/2018
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE2 - SN 08/16 EPGO298; ConvF: 2.39; Calibrated: 2017/09/18

A. Experimental conditions

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

B. SAR Measurement Results

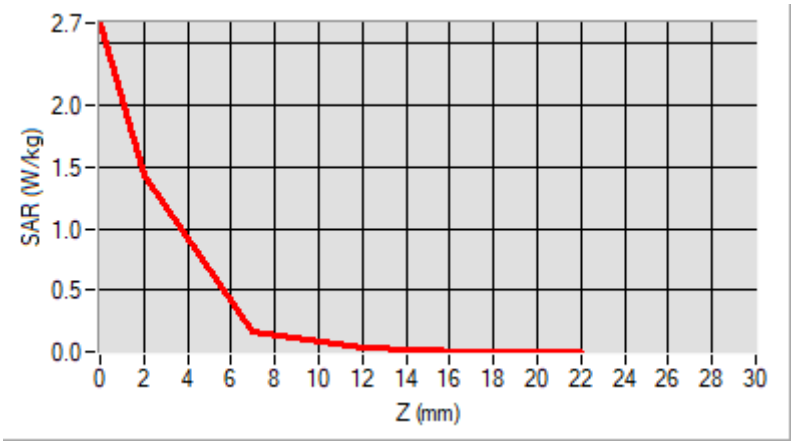
Frequency (MHz)	5190.000000
Relative Permittivity (real part)	48.502911
Conductivity (S/m)	5.161483
Power Variation (%)	0.848378
Ambient Temperature	21.1
Liquid Temperature	21.2

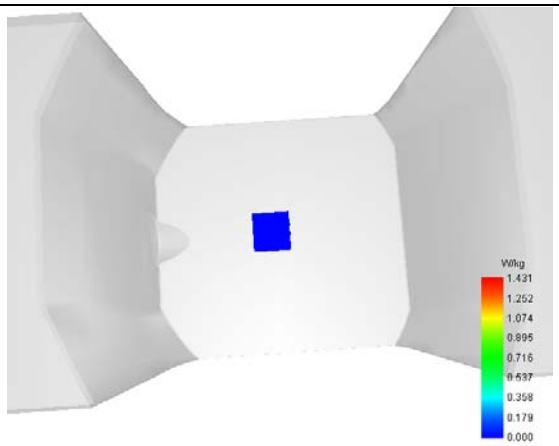
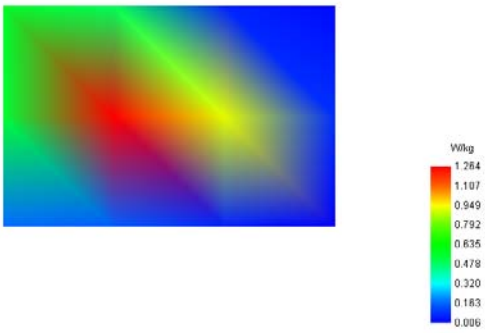
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-7.00, Y=1.00

SAR 10g (W/Kg)	**0.261845**
SAR 1g (W/Kg)	**0.775661**

Z (mm)	0.00	2.00	7.00	12.00	17.00
SAR (W/Kg)	2.6633	1.4314	0.1680	0.0330	0.0028



3D screen shot	Hot spot position
	

MEASUREMENT 173

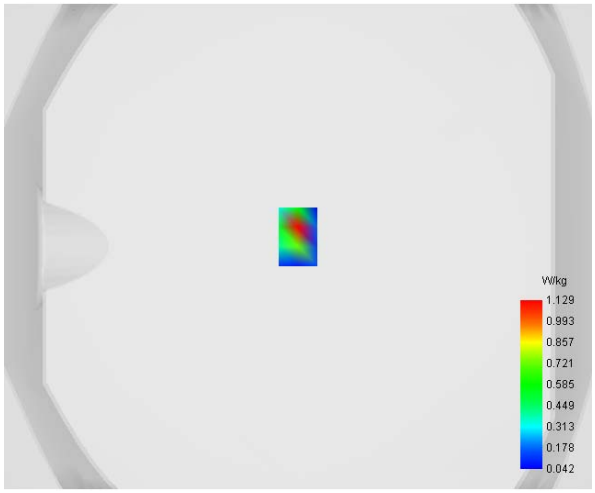
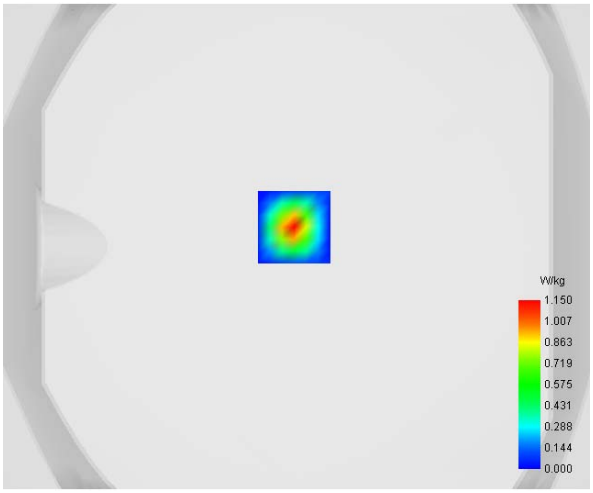
Type: Phone measurement (Complete)
Date of measurement: 04/12/2018
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE2 - SN 08/16 EPGO298; ConvF: 2.50; Calibrated: 2017/09/18

A. Experimental conditions

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

B. SAR Measurement Results

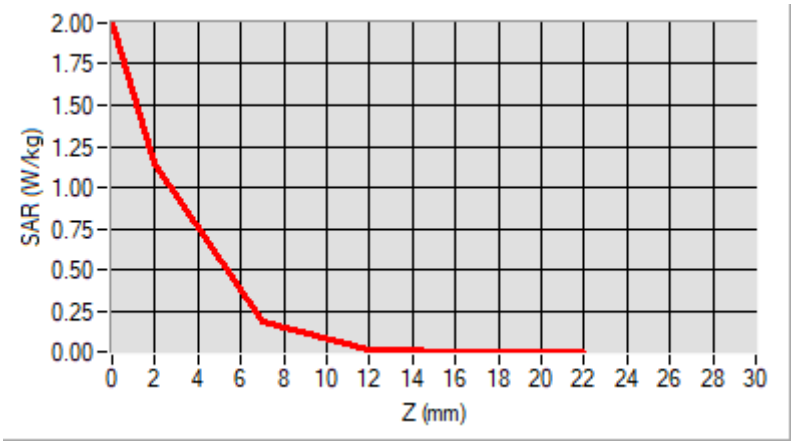
Frequency (MHz)	5795.000000
Relative Permittivity (real part)	47.501939
Conductivity (S/m)	5.761487
Power Variation (%)	1.083921
Ambient Temperature	21.1
Liquid Temperature	21.2

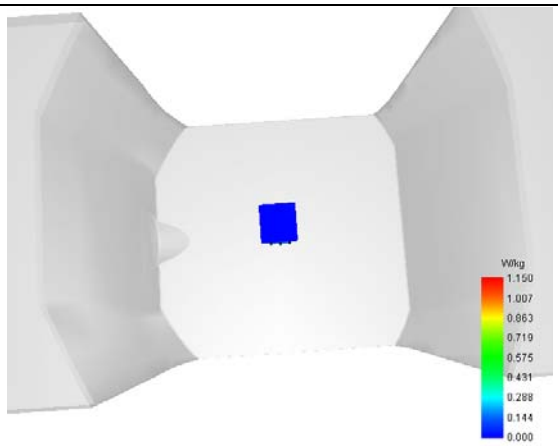
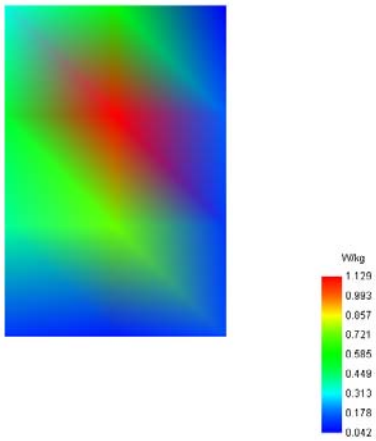
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-1.00, Y=8.00

SAR 10g (W/Kg)	**0.178607**
SAR 1g (W/Kg)	**0.578390**

Z (mm)	0.00	2.00	7.00	12.00	17.00
SAR (W/Kg)	2.0000	1.1504	0.1774	0.0069	0.0002



3D screen shot	Hot spot position
	

MEASUREMENT 176

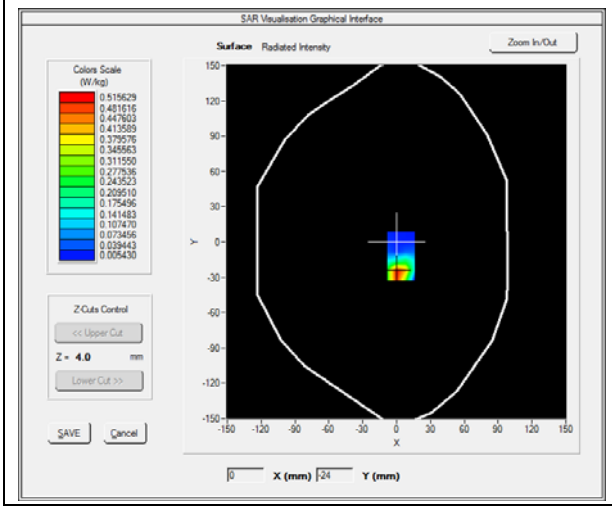
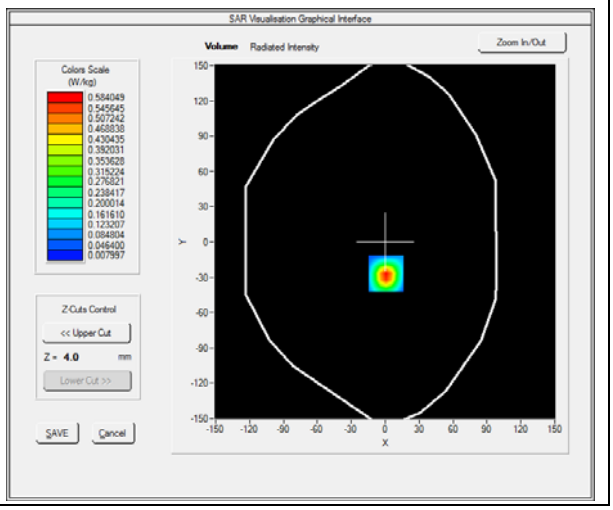
Type: Phone measurement (Complete)
Date of measurement: 05/17/2018
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 5.80; Calibrated: 06/01/2017

A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=8mm dy=8mm dz=5mm
Phantom	Flat Plane
Device Position	Left_Body SAR
Band	WiFi_802.11g
Channels	High
Signal	Duty Cycle 1:1

B. SAR Measurement Results

Frequency (MHz)	2462.000000
Relative Permittivity (real part)	52.320754
Conductivity (S/m)	1.930132
Power Variation (%)	2.492743
Ambient Temperature	21.1
Liquid Temperature	21.2

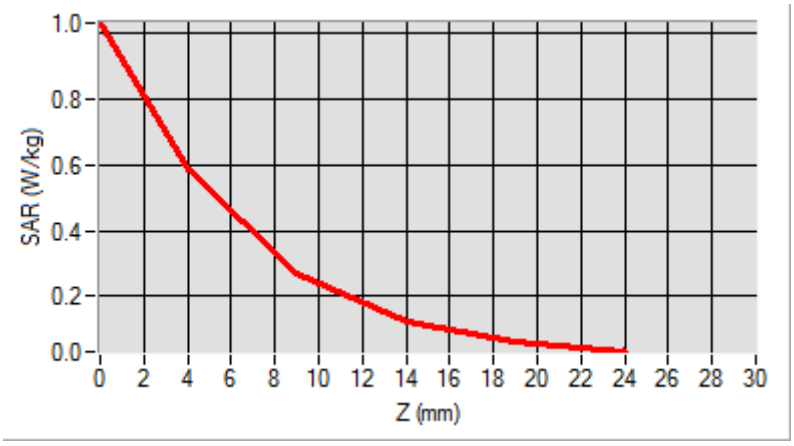
SURFACE SAR	VOLUME SAR
	

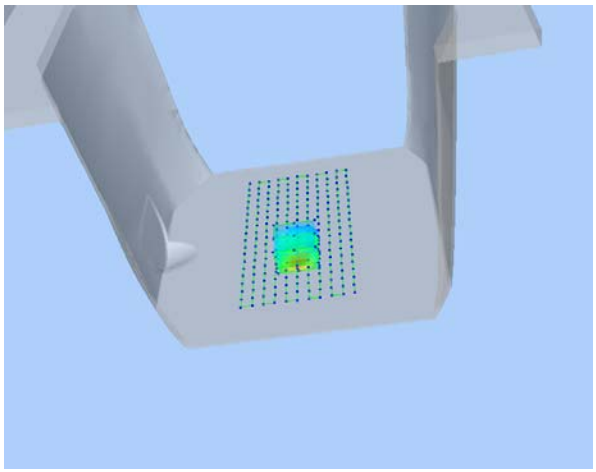
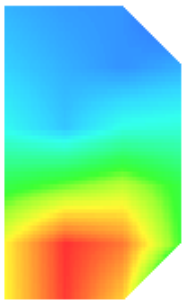
Maximum location: X=1.00, Y=-27.00

SAR Peak: 1.05 W/kg

SAR 10g (W/Kg)	**0.213823**
SAR 1g (W/Kg)	**0.511804**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**1.0322**	**0.5840**	**0.2691**	**0.1224**	**0.0608**



3D screen shot	**Hot spot position**
	

MEASUREMENT 179

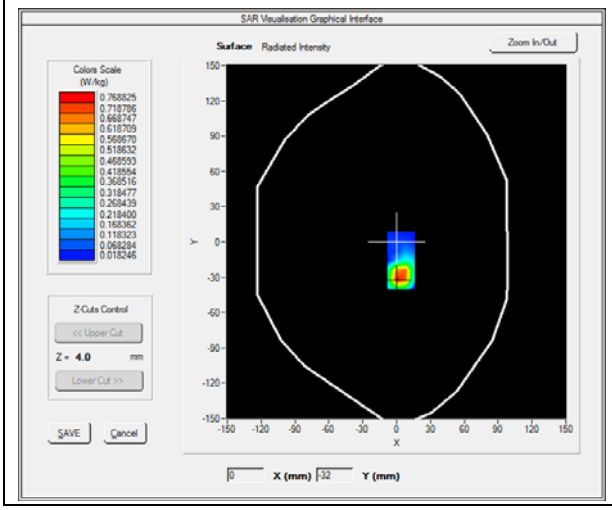
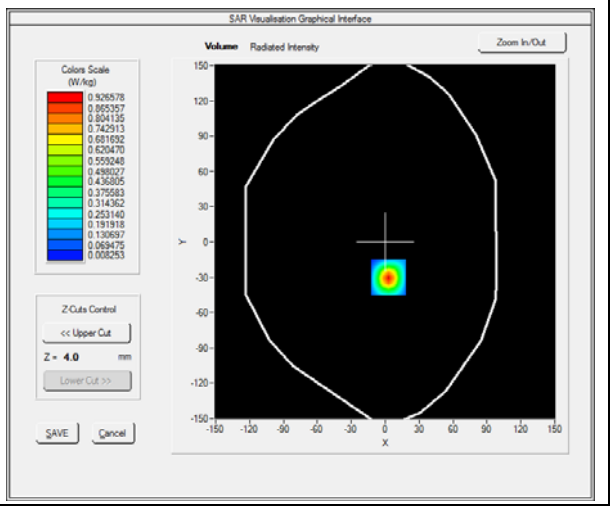
Type: Phone measurement (Complete)
Date of measurement: 05/17/2018
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 5.80; Calibrated: 06/01/2017

A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=8mm dy=8mm dz=5mm
Phantom	Flat Plane
Device Position	Left_hand SAR
Band	WiFi_802.11g
Channels	High
Signal	Duty Cycle 1:1

B. SAR Measurement Results

Frequency (MHz)	2462.000000
Relative Permittivity (real part)	52.320754
Conductivity (S/m)	1.930132
Power Variation (%)	2.018383
Ambient Temperature	21.1
Liquid Temperature	21.2

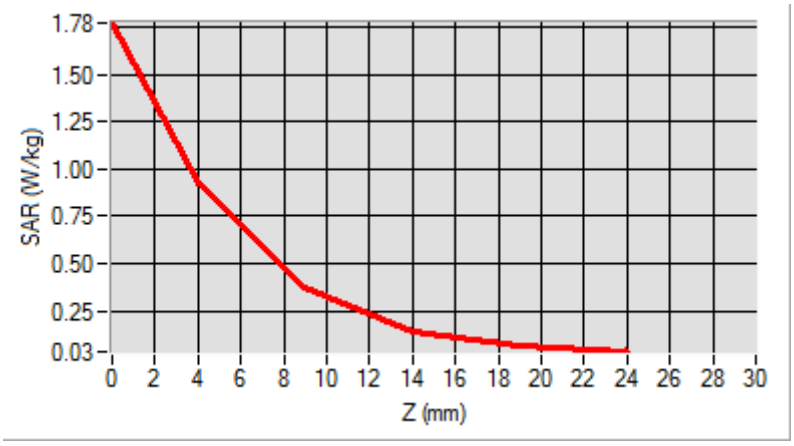
SURFACE SAR	VOLUME SAR
	

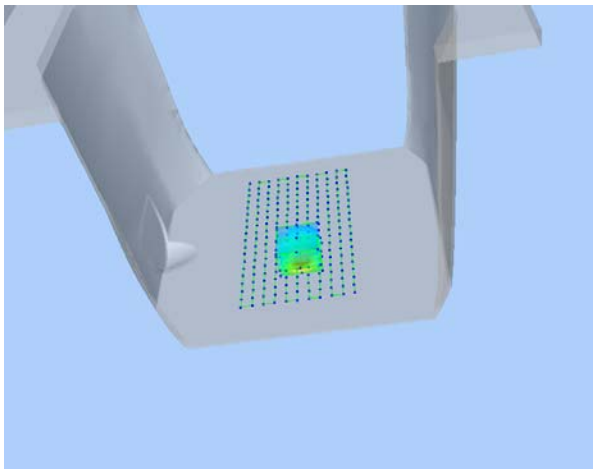
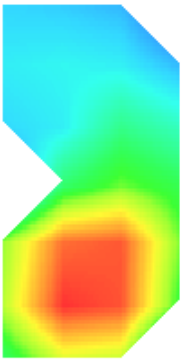
Maximum location: X=3.00, Y=-30.00

SAR Peak: 1.77 W/kg

SAR 10g (W/Kg)	**0.314879**
SAR 1g (W/Kg)	**0.805953**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**1.7752**	**0.9266**	**0.3719**	**0.1440**	**0.0646**



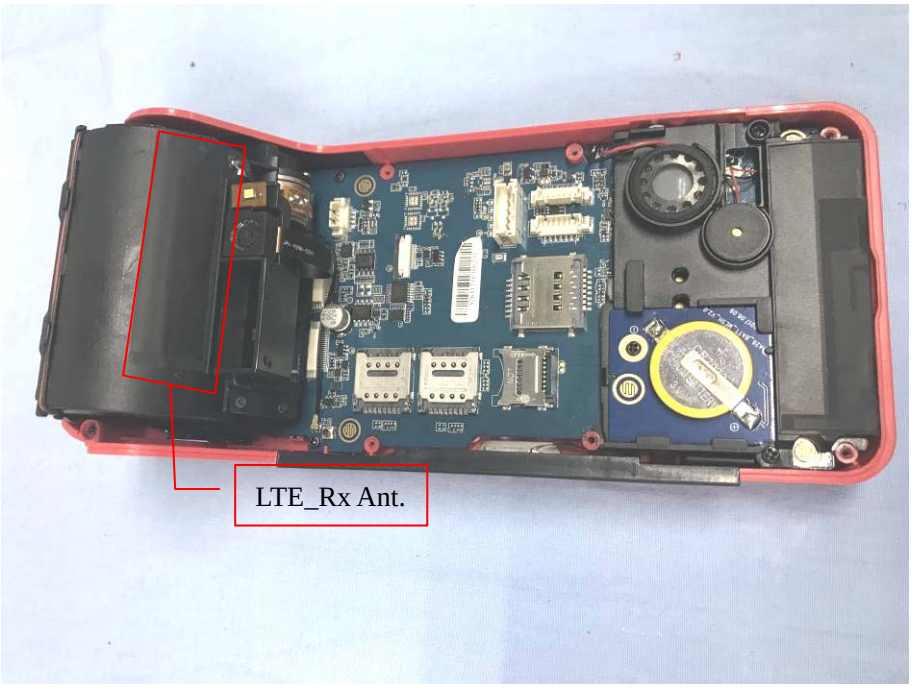
3D screen shot	**Hot spot position**
	

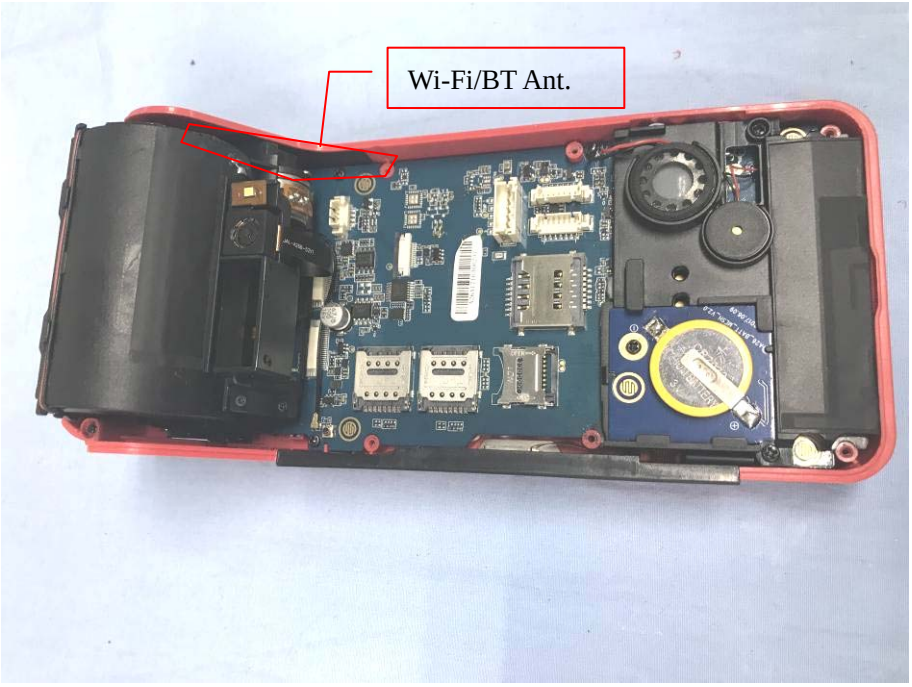
Annex C. EUT Photos

EUT View Front

EUT View Back

Antenna View

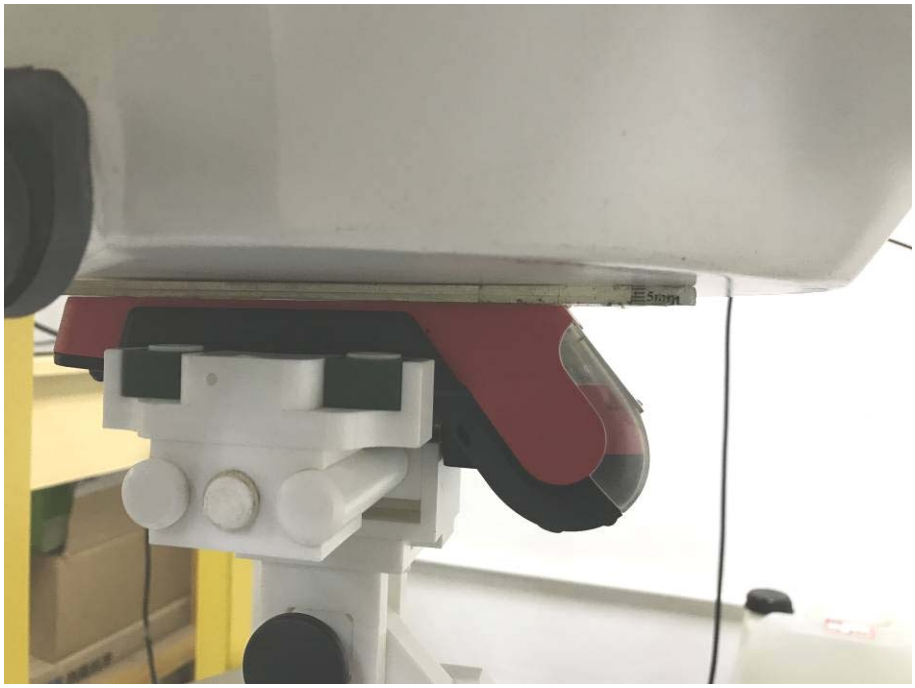



Wi-Fi/BT Ant.

Annex D. Test Setup Photos

Body mode Exposure Conditions

Body Front

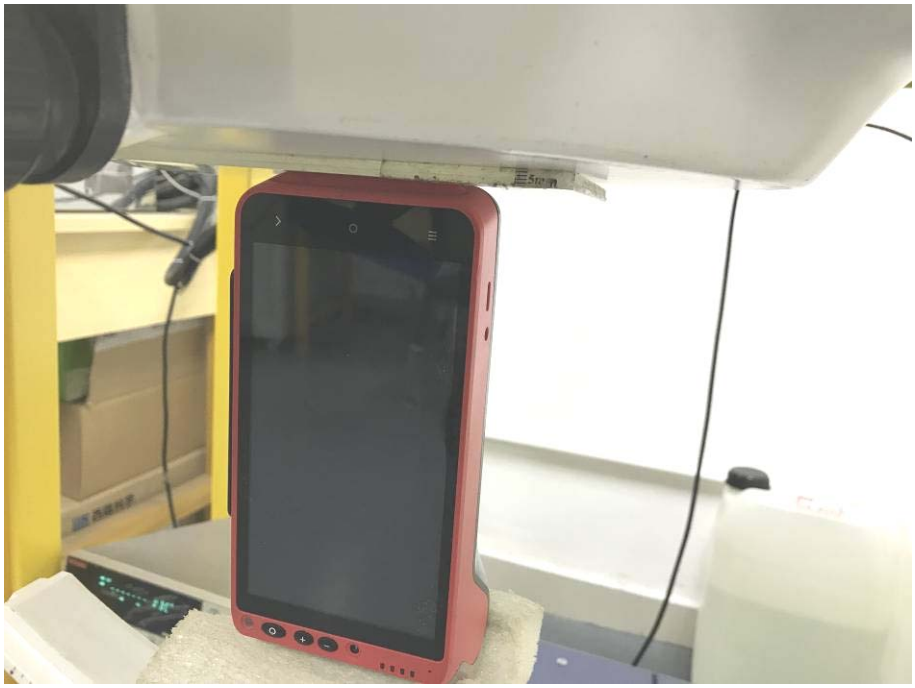


Body Back

Body Left

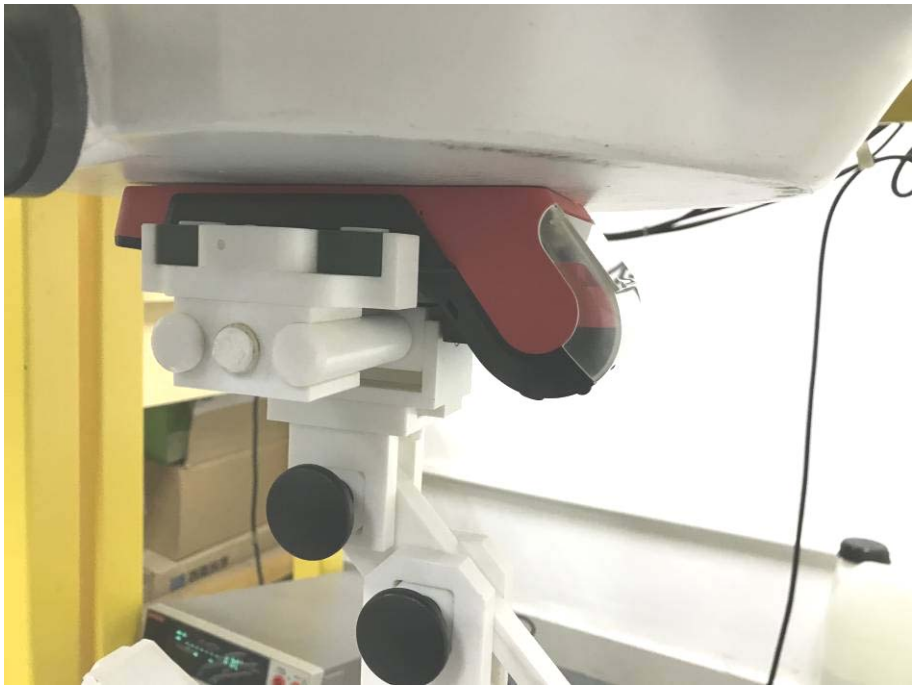
Body Right

Body Bottom

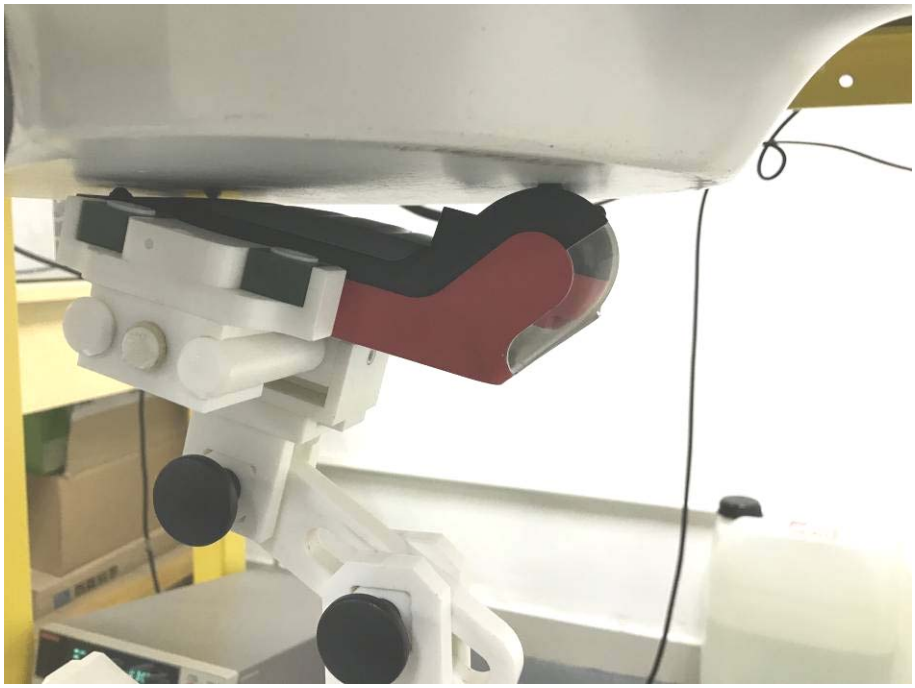


Hand mode Exposure Conditions

Body Front



Body Back



Body Left

Body Right

Body Bottom

Annex E. Calibration Certificate

Please refer to the exhibit for the calibration certificate

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