TEST REPORT

Reference No.	:	WTX20X08056125W
Applicant	:	ATID Co. Ltd
Address	:	#1211 Byuksan/Kyungin Digitalvalley, 11, 184, Gasan digital 2-ro, Geumcheon-gu, Seoul, South Korea
Product Name	:	Portable reader
Test Model	:	AT911 PLUS
Standards	:	FCC Part 2.1093 ANSI / IEEE C95.1 : 2005+A1:2010 ANSI / IEEE C95.3 : 2002(R2008) IEEE 1528 :2013
Date of Receipt sample	:	Aug.17, 2020
Date of Test	:	Aug.18, 2020 to Sept.11, 2020
Date of Issue	:	Sept.14, 2020
Test Result	:	**Pass**

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

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1. General Information

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: ATID Co. Ltd

Address of applicant: #1211 Byuksan/Kyungin Digitalvalley, 11, 184, Gasan digital 2-ro, Geumcheon-gu, Seoul, South Korea

Manufacturer: ATID Co. Ltd

Address of manufacturer: #1211 Byuksan/Kyungin Digitalvalley, 11, 184, Gasan digital 2-ro, Geumcheon-gu, Seoul, South Korea

General Description of EUT:	
Product Name:	Portable reader
Brand Name:	/
Model No.:	AT911 PLUS
Adding Model(s):	/
Rated Voltage:	DC3.7V by Battery
Battery:	2200mAh
Device Category:	Portable Device
Note: The test data is gathered from a production sample provided by the manufacturer.	

Technical Characteristics of EUT:	
2G	
Support Networks:	GSM, GPRS, EDGE
Support Band:	GSM850/PCS1900
Uplink Frequency:	GSM/GPRS/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: 33.71Bm, GSM1900: 29.31dBm EDGE850: 25.43dBm, EDGE1900: 27.22dBm
Type of Modulation:	GMSK, 8PSK
Type of Antenna:	Internal Antenna
Antenna Gain:	GSM850: 4dBi; GSM1900: 4dBi
GPRS/EDGE Class:	Class 12
3G	
Support Networks:	WCDMA, HSDPA, HSUPA
Support Band:	WCDMA Band 2, WCDMA Band 5
Uplink Frequency:	WCDMA Band 2: 1850~1910MHz WCDMA Band 5: 824~849MHz
Downlink Frequency:	WCDMA Band 2: 1930~1990MHz WCDMA Band 5: 869~894MHz
RF Output Power:	WCDMA Band 2: 22.38dBm, WCDMA Band 5: 24.46dBm
Type of Modulation:	BPSK
Antenna Type:	Internal Antenna
Antenna Gain:	WCDMA Band 2: 4dBi, WCDMA Band 5: 4dBi,
4G	
Support Networks:	FDD-LTE, TDD-LTE
Support Band:	FDD-LTE Band 5, 7, 38, 41
Uplink Frequency:	FDD-LTE Band 5: Tx: 824-849MHz, FDD-LTE Band 7: Tx: 2500-2570MHz, TDD-LTE Band 38: Tx: 2570-2620MHz, TDD-LTE Band 41: Tx: 2496-2690MHz,
Downlink Frequency:	FDD-LTE Band 5: Rx: 869-894MHz, FDD-LTE Band 7: Rx: 2620-2690MHz, TDD-LTE Band 38: Rx: 2570-2620MHz, TDD-LTE Band 41: Rx: 2496-2690MHz,
RF Output Power:	FDD-LTE Band 5: 24.17dBm, FDD-LTE Band 7: 23.69dBm, FDD-LTE Band 38: 23.02dBm,

	FDD-LTE Band 41: 23.50dBm,
Type of Modulation:	QPSK, 16QAM
Antenna Type:	Internal Antenna
Antenna Gain:	FDD-LTE Band 5: 4dBi, FDD-LTE Band 7: 4dBi, FDD-LTE Band 38: 4dBi, FDD-LTE Band 41: 4dBi,
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:	9.39Bm (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:	Internal Antenna
Antenna Gain:	4dBi,
Bluetooth	
Bluetooth Version:	V4.2
Frequency Range:	2402-2480MHz
RF Output Power:	5.455dBm (Conducted)
Data Rate:	1Mbps, 2Mbps, 3Mbps
Modulation:	GFSK, Pi/4 QDPSK, 8DPSK
Quantity of Channels:	79/40
Channel Separation:	1MHz/2MHz
Antenna Type:	Internal Antenna
Antenna Gain:	4dBi,
RFID	
Frequency Range:	902.75-927.25MHz
RF Output Power:	8.40dBm
Type of Modulation:	ASK
Quantity of Channels	50
Channel Separation:	0.5MHz
Antenna Type:	Integral Antenna
Antenna Gain:	4dBi

1.2 Test Standards

The following report is prepared on behalf of the ATID Co. Ltd 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 648474 D04 v01r03, KDB 248227 D01 v02r02, KDB 941225 D01 v03r01, KDB 941225 D05 v02r05 , and KDB 865664 D01 v01r04 and KDB 865664 D02 v01r02.

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

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

1.3 Test Methodology

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

1.4 Test Facility

Address of the test laboratory
Laboratory: Waltek Testing Group (Shenzhen) Co., Ltd.
Address: 1/F., Room 101, Building 1, Hongwei Industrial Park, Liuxian 2nd Road,Block 70 Bao'an District, Shenzhen, Guangdong, China

FCC – Registration No.: 125990
Waltek Testing Group (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. The Designation Number is CN5010.Test Firm Registration Number is 125990.

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

2. Summary of Test Results

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

Frequency Band	Head SAR	Body-worn (10mm Gap)	Hotspot (10mm Gap)	SAR_{1g} Limit (W/kg)
	Maximum SAR_{1g} (W/kg)	Maximum SAR_{1g} (W/kg)	Maximum SAR_{1g} (W/kg)	
GSM	**1.014**	0.569	**1.246**	1.6
WCDMA	0.353	**0.611**	0.678	1.6
LTE	0.340	0.580	1.127	1.6
WLAN 2.4G	0.072	0.145	0.341	1.6
Simultaneous Transmission	1.073	0.756	**1.278**	1.6

Remark:

*The highest reported SAR values for head, body-worn, router(hotspot), and simultaneous transmission conditions are **1.014W/kg, 0.611 W/kg, 1.246W/kg, and 1.278W/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:

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

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

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

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

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

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

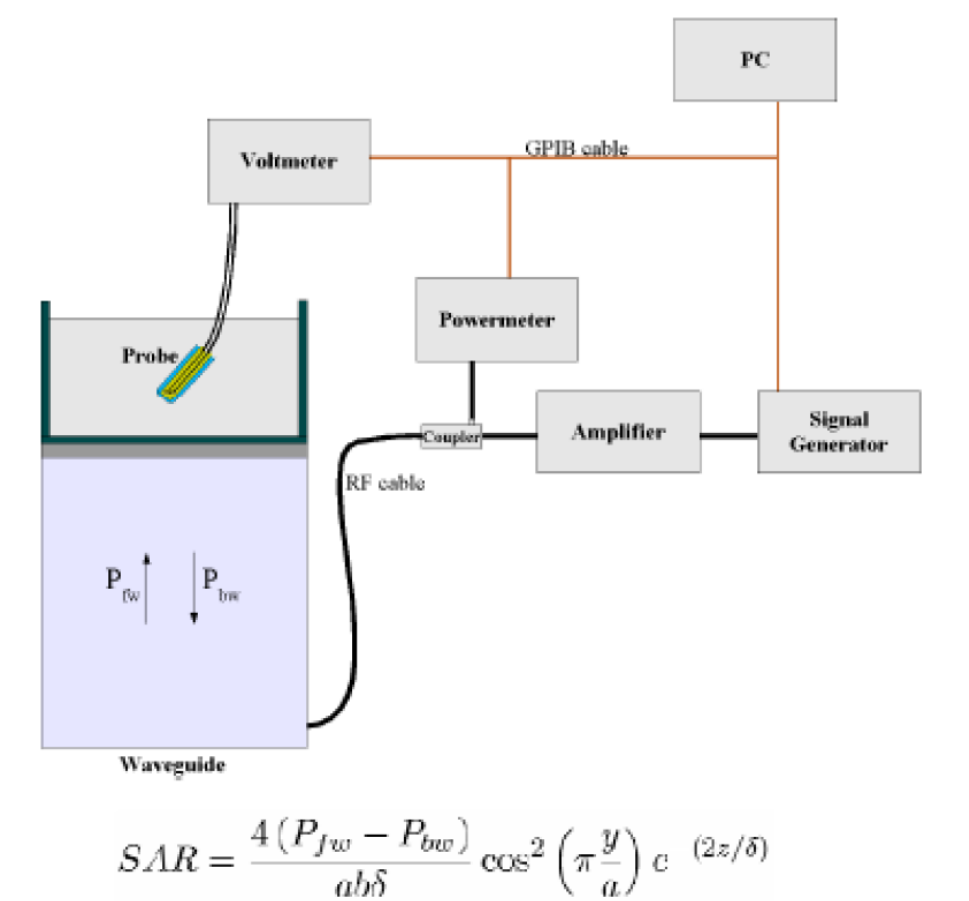
For the measurements the Specific Dosimetric E-Field Probe SSE2 SN 45/15 EPGO280 with following specifications is used

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

- Distance between dipoles / probe extremity: 2.7mm
- Probe linearity: ＜0.25 dB
- Axial Isotropy: ＜0.25 dB
- Spherical Isotropy: ＜0.50 dB
- Calibration range: 700 to 3000MHz for head & body simulating liquid.

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

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



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

Where :

Pfw = Forward Power

Pbw = Backward Power

a and b =Waveguide dimensions

I = Skin depth

Keithley configuration:

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

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

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

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

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

where DCP is the diode compression point in mV.

4.3 Probe Calibration Process

Dosimetric Assessment Procedure

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

Free Space Assessment Procedure

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

Temperature Assessment Procedure

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

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

Where:

Δt = exposure time (30 seconds),

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

ΔT = temperature increase due to RF exposure.

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

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

Where:

σ = simulated tissue conductivity,

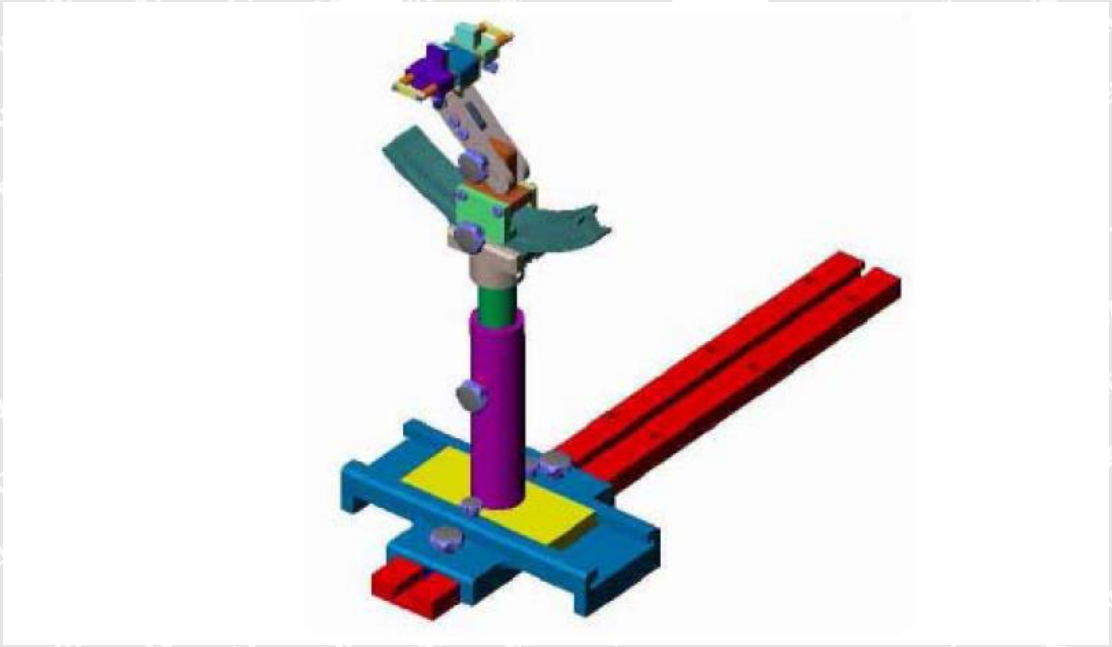
ρ = Tissue density (1.25 g/cm3 for brain tissue)

4.4 Phantom

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

4.5 Device Holder

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



System Material	Permittivity	Loss Tangent
Delrin	3.7	0.005

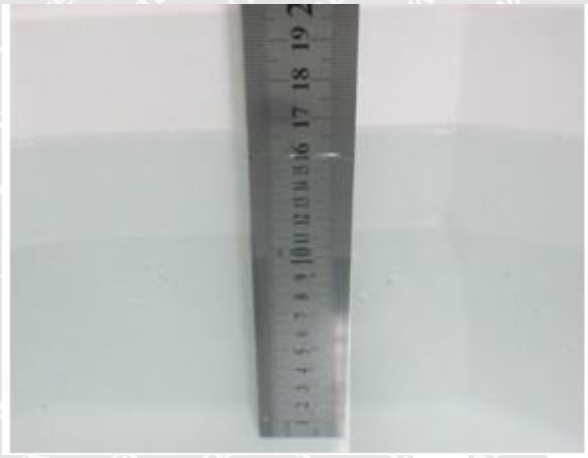
4.6 Test Equipment List

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
E-Field Probe	MVG	SSE2	SN 45/15 EPGO280	2020-07-03	2021-07-02
750MHz Dipole	MVG	SID750	SN 47/12 DIP 0G750-203	2020-03-11	2021-03-10
835MHz Dipole	MVG	SID835	SN 47/12 DIP 0G835-204	2020-03-11	2021-03-10
1800MHz Dipole	MVG	SID1800	SN 47/12 DIP 1G800-206	2020-03-11	2021-03-10
1900MHz Dipole	MVG	SID1900	SN 47/12 DIP 1G900-207	2020-03-11	2021-03-10
2450MHz Dipole	MVG	SID2450	SN 13/15 DIP 2G450-364	2020-03-11	2021-03-10
2600MHz Dipole	MVG	SID2600	SN 13/15 DIP 2G600-365	2020-03-11	2021-03-10
5 GHz Waveguide	MVG	SWG5500	SN 49/16 WGA45	2020-07-03	2021-07-02
Dielectric Probe Kit	MVG	SCLMP	SN 47/12 OCPG49	2020-03-11	2021-03-10
SAM Phantom	MVG	SAM	SN/ 47/12 SAM95	N/A	N/A
MULTIMETER	KEITHLEY	Keithley 2000	4006367	2020-04-28	2021-04-27
Signal Generator	Rohde & Schwarz	SMR20	100047	2020-04-28	2021-04-27
Universal Tester	Rohde & Schwarz	CMU200	112012	2020-04-28	2021-04-27
Communications Tester	Rohde & Schwarz	CMW500	148650	2020-04-28	2021-04-27
Network Analyzer	HP	8753C	2901A00831	2020-04-28	2021-04-27
Directional Couplers	Agilent	778D	20160	2020-04-28	2021-04-27

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 (%)
Head						
750	41.1	1.4	57.0	0.2	0.3	0
835	40.3	1.4	57.9	0.2	0.2	0
1700-1900	55.2	0.3	0	0	0	44.5
2450	55.0	0.1	0	0	0	44.9
2600	54.9	0.1	0	0	0	45.0
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 (%)
Head			
5000-6000	65.52	17.24	17.24
Body			

5000-6000	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

Head 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	0.86	0.89	-3.37	41.32	41.90	-1.38	±5	2020-08-26
835	21.2	0.87	0.90	-3.33	41.11	41.50	-0.94	±5	2020-08-26
1750	21.3	1.37	1.37	0.00	39.02	40.1	-2.69	±5	2020-08-29
1900	21.3	1.38	1.40	-1.43	38.56	40.00	-3.60	±5	2020-08-29
2450	21.3	1.74	1.80	-3.33	38.15	39.20	-2.68	±5	2020-09-10
2600	21.3	1.93	1.96	-1.53	38.63	39.0	-0.95	±5	2020-09-10

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	2020-08-26
835	21.2	0.95	0.97	-2.06	54.85	55.20	-0.63	±5	2020-08-26
1750	21.3	1.46	1.49	-2.01	51.22	53.40	-4.08	±5	2020-08-29
1900	21.3	1.50	1.52	-1.32	52.42	53.30	-1.65	±5	2020-08-29
2450	21.3	1.91	1.95	-2.05	52.01	52.70	-1.31	±5	2020-09-10
2600	21.3	2.12	2.16	-1.85	52.24	52.50	-0.50	±5	2020-09-10

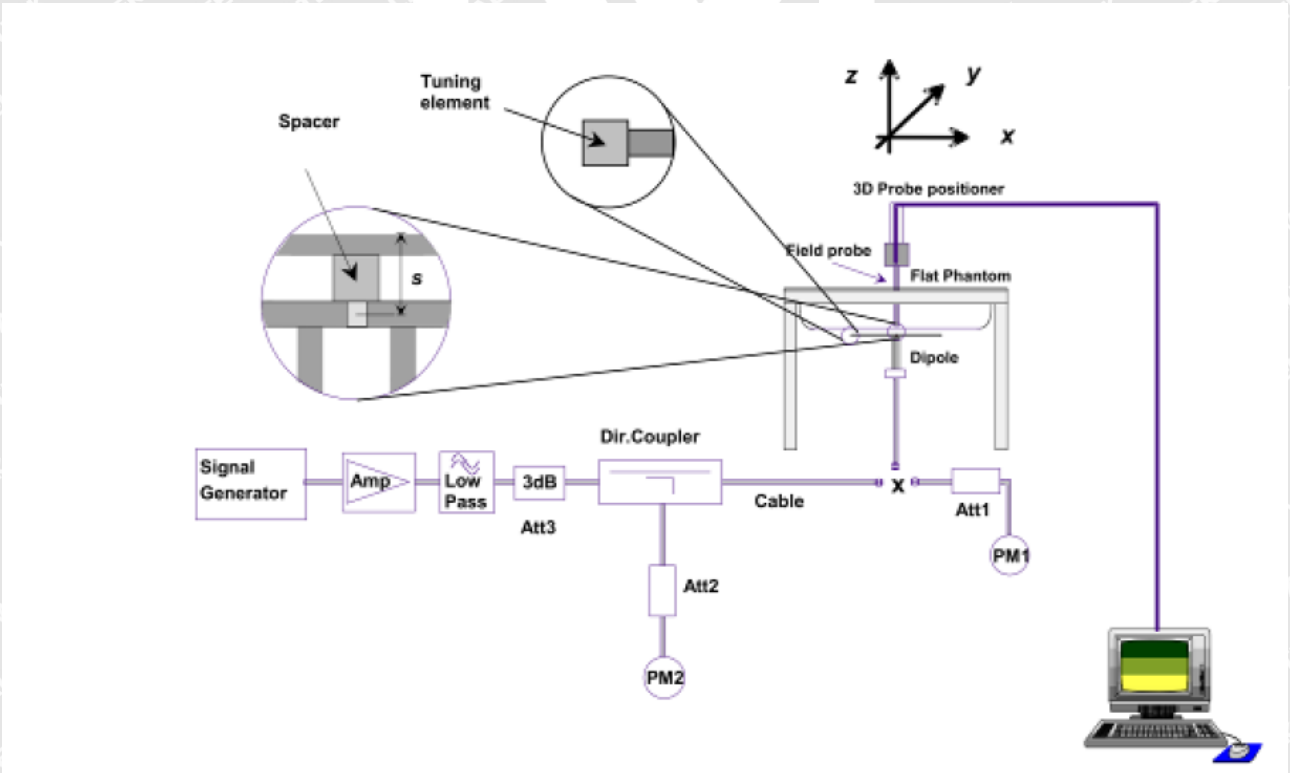
6. SAR Measurement Evaluation

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 835MHz ,1800MHz, 1900MHz 2450MHz,2600MHz,and 5GHz. 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	Targeted SAR_{1g}	Measured SAR_{1g}	Normalized SAR_{1g}	Tolerance
MHz	(W/kg)	(W/kg)	(W/kg)	(%)
Head				
750	8.40	2.16	8.64	2.86
835	9.65	2.41	9.64	-0.10
1800	38.49	9.61	38.44	-0.13
1900	39.59	9.91	39.64	0.13
2450	53.76	13.45	53.8	0.07
2600	55.07	13.67	54.68	-0.71
Body				
750	8.40	2.12	8.48	0.95
835	9.36	2.35	9.4	0.43
1800	38.29	9.58	38.32	0.08

1900	39.01	9.78	39.12	0.28
2450	50.33	12.59	50.36	0.06
2600	53.92	13.43	53.72	-0.37

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 Define Two Imaginary Lines on The Handset

(a) The vertical centerline passes through two points on the front side of the handset - the midpoint of the width w_t of the handset at the level of the acoustic output, and the midpoint of the width w_b of the bottom of the handset.

(b) The horizontal line is perpendicular to the vertical centerline and passes through the center of the acoustic output. The horizontal line is also tangential to the face of the handset at point A.

(c) The two lines intersect at point A. Note that for many handsets, point A coincides with the center of the acoustic output; however, the acoustic output may be located elsewhere on the horizontal line. Also note that the vertical centerline is not necessarily parallel to the front face of the handset, especially for clamshell handsets, handsets with flip covers, and other irregularly shaped handsets.

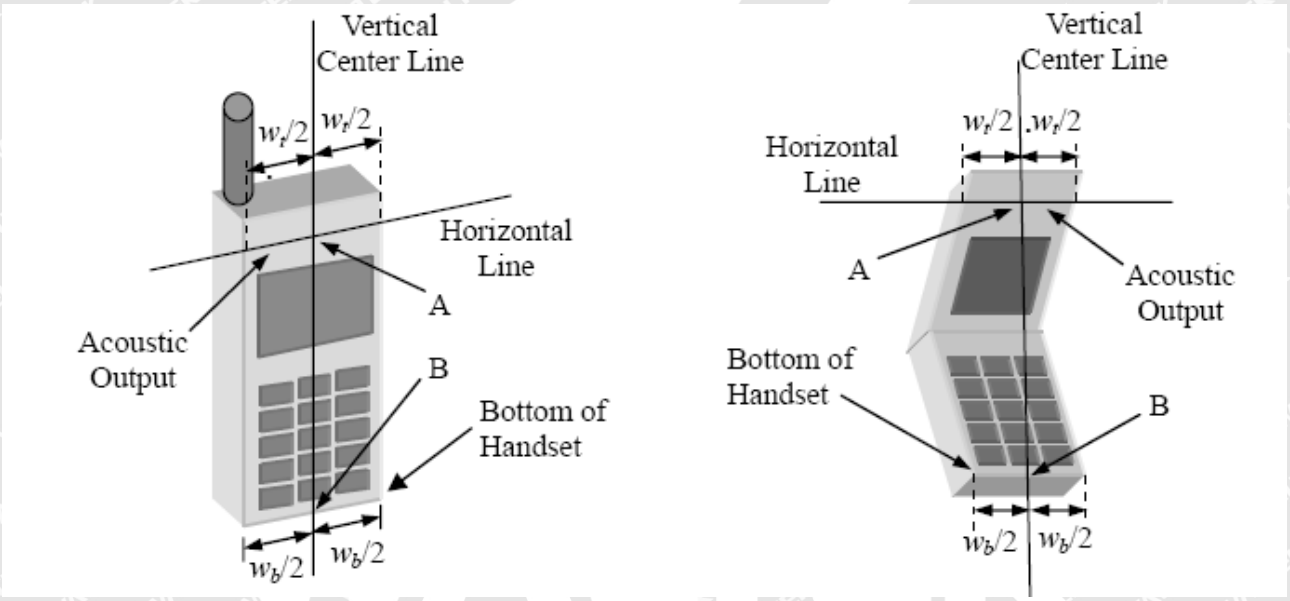


Illustration for Handset Vertical and Horizontal Reference Lines

7.2 Cheek Position

(a) To position the device with the vertical center line of the body of the device and the horizontal line crossing the center piece in a plane parallel to the sagittal plane of the phantom. While maintaining the device in this plane, align the vertical center line with the reference plane containing the three ear and mouth reference point (M: Mouth, RE: Right Ear, and LE: Left Ear) and align the center of the ear piece with the line RE-LE.
(b) To move the device towards the phantom with the ear piece aligned with the line LE-RE until the phone touched the ear. While maintaining the device in the reference plane and maintaining the phone contact with the ear, move the bottom of the phone until any point on the front side is in contact with the cheek of the phantom or until contact with the ear is lost (see Fig. 7.2).

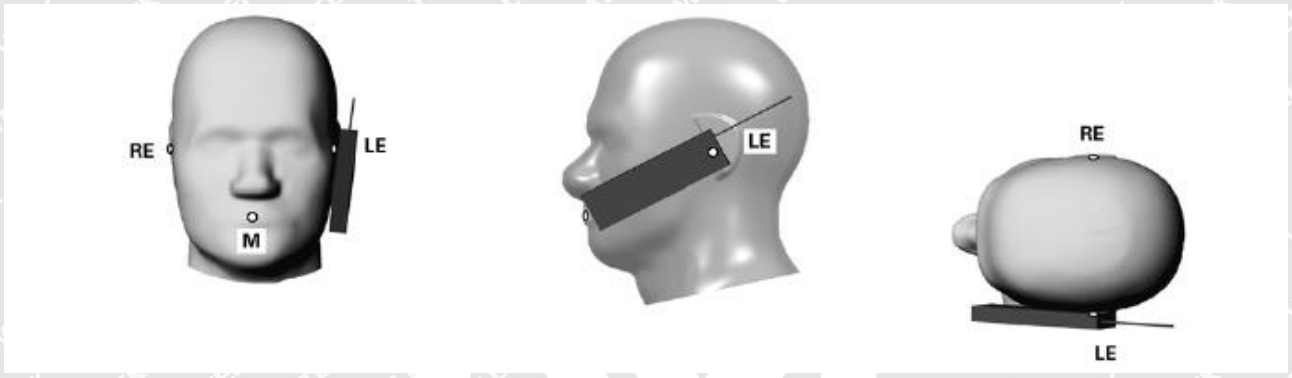


Illustration for Cheek Position

7.3 Tilted Position

(a) To position the device in the “cheek” position described above.
(b) While maintaining the device the reference plane described above and pivoting against the ear, moves it outward away from the mouth by an angle of 15 degrees or until contact with the ear is lost (see Fig. 7.3).

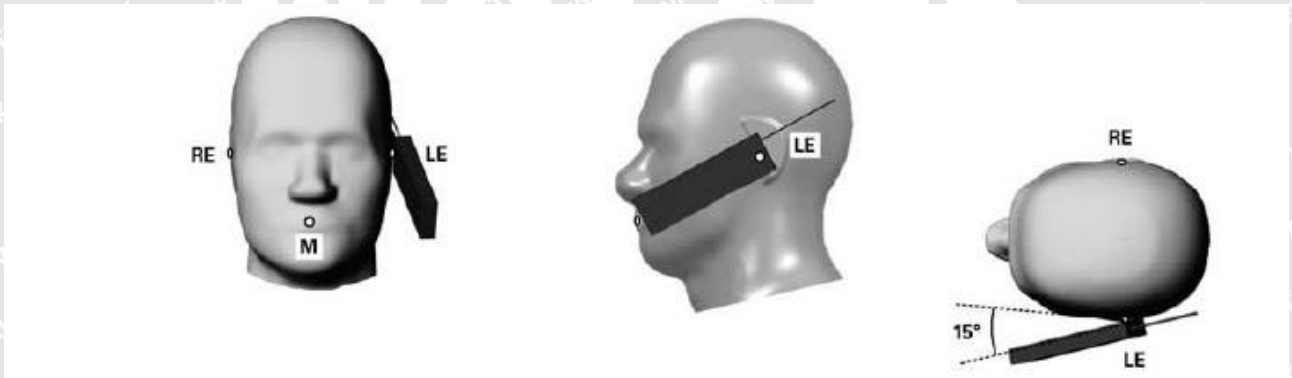


Illustration for Tilted Position

7.4 Body Position

(a) To position the device parallel to the phantom surface with each side.
(b) To adjust the device parallel to the flat phantom.
(c) To adjust the distance between the device surface and the flat phantom to 10mm.

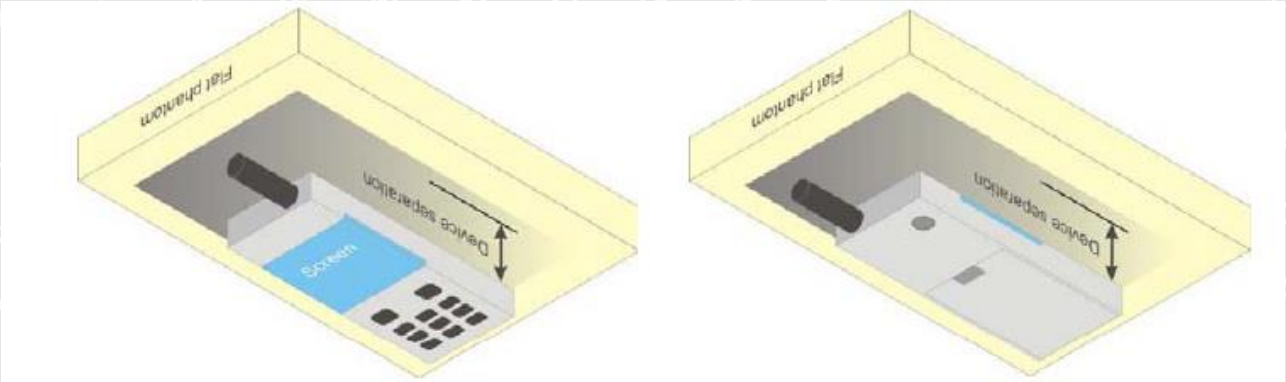
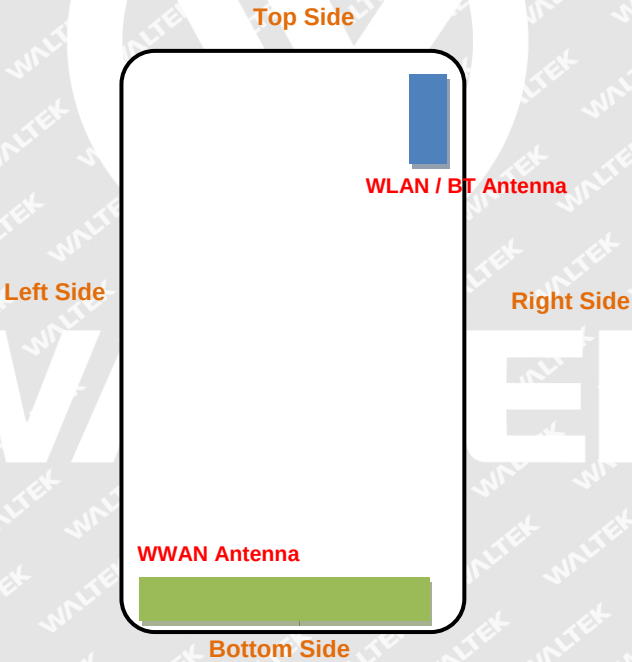


Illustration for Body Position

7.5 EUT Antenna Position



<EUT Front View>

Distance of EUT antenna-to-edge/surface(mm), Test distance:10mm						
Antennas	Back side	Front side	Left Edge	Right Edge	Top Edge	Bottom Edge
WWAN	<25	<25	<25	<25	135	<25
WLAN	<25	<25	<25	30	<25	160

7.6 EUT Testing Position

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

Head SAR tests				
Antennas	**Right Cheek**	**Left Cheek**	**Right Tilted**	**Left Tilted**
WWAN	Yes	Yes	Yes	Yes
WLAN	Yes	Yes	Yes	Yes

Body SAR tests, Test distance: 10mm						
Antennas	**Front**	**Back**	**Right Side**	**Left Side**	**Top Side**	**Bottom Side**
WWAN	Yes	Yes	Yes	Yes	No	Yes
WLAN	Yes	Yes	No	Yes	Yes	No

Body-worn SAR tests, Test distance: 10mm		
Antennas	**Front**	**Back**
WWAN	Yes	Yes
WLAN	Yes	Yes

Remark:

1. Referring to KDB 941225 D06, when the overall device length and width are >= 9cm*5cm, the test separation distances is 10 mm. SAR must be measured for all sides and surfaces with a transmitting antenna located within 25mm from that surface or edge.

2. Referring to KDB 648474 D04 Handset SAR v01r03, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg

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	33.71	33.46	33.56	34.0	29.31	29.29	29.18	29.5
GPRS (1 slot)	33.33	33.48	33.55	34.0	29.25	29.28	29.13	29.5
GPRS (2 slots)	31.81	31.7	31.78	32.0	28.19	27.89	27.78	28.5
GPRS (3 slots)	30.32	30.28	30.24	30.5	26.56	26.24	26.85	27.0
GPRS (4 slots)	29.01	29.03	29.03	29.5	25.36	25.07	25.69	26.0
EDGE (1 slot)	25.43	25.4	25.28	25.5	27.22	27.22	27.17	27.5
EDGE (2 slots)	24.59	24.51	24.52	25.0	26.42	26.12	26.69	27.0
EDGE (3 slots)	23.4	23.16	23.02	23.5	25.93	25.68	25.23	26.0
EDGE (4 slots)	21.93	21.82	21.69	22.0	24.58	24.55	24.47	25.0

GSM - Source-Based Time-Average Power (dBm)								
Band	GSM850			Tune-up power (dBm)	PCS1900			Tune-up power (dBm)
Channel	128	190	251		512	661	810	
Frequency (MHz)	824.2	836.6	848.8		1850.2	1880	1909.8	
GSM	24.71	24.46	24.56	25.0	20.31	20.29	20.18	20.5
GPRS (1 slot)	24.33	24.48	24.55	25.0	20.25	20.28	20.13	20.5
GPRS (2 slots)	25.81	25.70	25.78	26.0	22.19	21.89	21.78	22.5
GPRS (3 slots)	26.07	26.03	25.99	26.5	22.31	21.99	22.60	23.0
GPRS (4 slots)	26.01	26.03	26.03	26.5	22.36	22.07	22.69	23.0
EDGE (1 slot)	16.43	16.40	16.28	16.5	18.22	18.22	18.17	18.5
EDGE (2 slots)	18.59	18.51	18.52	19.0	20.42	20.12	20.69	21.0
EDGE (3 slots)	19.15	18.91	18.77	19.5	21.68	21.43	20.98	22.0
EDGE (4 slots)	18.93	18.82	18.69	19.0	21.58	21.55	21.47	22.0
Note: The source-based time-averaged power is linearly scaled the maximum burst averaged power based on time slots. The calculated method are shown as below: Source based time-average power = Burst averaged power - Duty cycle factor in dB Duty cycle factor = 9 dB for 1 Tx slot, 6 dB for 2 Tx slots, 4.25 dB for 3 Tx slots, 3 dB for 4 Tx slots								

Remark:

1. For Head SAR testing, GSM should be evaluated, therefore the EUT was set in GSM for GSM850 and GSM1900 due to its highest source-based time-average power.
2. For Body SAR testing, GPRS should be evaluated, therefore the EUT was set in GPRS (3TX slots) for GSM850 and

GPRS (4TX slots) for GSM1900 due to its highest source-based time-average power.

3. Per KDB 447498 D01 v06, the maximum output power channel is used for SAR testing and for further SAR test reduction.

4. The DUT do not support DTM function.

5. The DUT do not support Hotspot function.

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**	**836.4**	**846.6**	
RMC 12.2k	22.16	22.38	22.37	22.50	24.40	24.38	24.46	24.50
HSDPA Subtest-1	21.17	21.35	21.29	21.50	23.4	23.39	23.46	23.50
HSDPA Subtest-2	21.31	21.44	21.22	21.50	22.98	23.17	22.95	23.50
HSDPA Subtest-3	20.27	20.45	20.09	20.50	21.99	22.05	22	22.5
HSDPA Subtest-4	20.31	20.29	20.17	20.50	21.77	22.01	22.02	22.5
HSUPA Subtest-1	20.59	22.00	20.72	21.00	21.53	23.2	21.89	23.5
HSUPA Subtest-2	21.03	20.87	21.06	21.50	23.33	23.36	23.23	23.5
HSUPA Subtest-3	20.83	21.12	20.54	21.50	21.44	21.91	23.33	23.5
HSUPA Subtest-4	21.45	21.03	21.48	21.50	23.42	23.39	22.02	23.50
HSUPA Subtest-5	20.71	21.54	20.9	22.00	21.95	22.84	23.45	23.50

Remark:

1. per KDB 941225 D01 v03, The 12.2kbps RMC mode was selected for SAR testing(the primary mode).

2. When the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤1/4 dB higher than the primary mode or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode

Band	Bandwidth (MHz)	UL Channel	RB Size	RB Position	Modulation	Power (dBm)	high Limit (dBm)	Verdict
FDD-LTE Band 38								
Band38	5	37775	1	#0	QPSK	23.02	37	PASS
Band38	5	37775	1	#Mid	QPSK	22.93	37	PASS
Band38	5	37775	1	#Max	QPSK	22.85	37	PASS
Band38	5	37775	12	#0	QPSK	21.94	37	PASS
Band38	5	37775	12	#Max	QPSK	21.86	37	PASS
Band38	5	37775	25	#0	QPSK	21.87	37	PASS
Band38	5	37775	1	#0	QAM16	21.99	37	PASS
Band38	5	37775	1	#Mid	QAM16	21.95	37	PASS
Band38	5	37775	1	#Max	QAM16	21.89	37	PASS
Band38	5	37775	12	#0	QAM16	20.90	37	PASS
Band38	5	37775	12	#Max	QAM16	20.85	37	PASS
Band38	5	37775	25	#0	QAM16	20.81	37	PASS
Band38	5	38000	1	#0	QPSK	22.73	37	PASS
Band38	5	38000	1	#Mid	QPSK	22.67	37	PASS
Band38	5	38000	1	#Max	QPSK	22.60	37	PASS
Band38	5	38000	12	#0	QPSK	21.82	37	PASS
Band38	5	38000	12	#Max	QPSK	21.78	37	PASS
Band38	5	38000	25	#0	QPSK	21.74	37	PASS
Band38	5	38000	1	#0	QAM16	22.04	37	PASS
Band38	5	38000	1	#Mid	QAM16	22.00	37	PASS
Band38	5	38000	1	#Max	QAM16	21.91	37	PASS
Band38	5	38000	12	#0	QAM16	20.87	37	PASS
Band38	5	38000	12	#Max	QAM16	20.80	37	PASS
Band38	5	38000	25	#0	QAM16	20.76	37	PASS
Band38	5	38225	1	#0	QPSK	22.47	37	PASS
Band38	5	38225	1	#Mid	QPSK	22.44	37	PASS
Band38	5	38225	1	#Max	QPSK	22.41	37	PASS
Band38	5	38225	12	#0	QPSK	21.48	37	PASS
Band38	5	38225	12	#Max	QPSK	21.44	37	PASS
Band38	5	38225	25	#0	QPSK	21.41	37	PASS
Band38	5	38225	1	#0	QAM16	21.73	37	PASS
Band38	5	38225	1	#Mid	QAM16	21.70	37	PASS
Band38	5	38225	1	#Max	QAM16	21.65	37	PASS
Band38	5	38225	12	#0	QAM16	20.44	37	PASS
Band38	5	38225	12	#Max	QAM16	20.42	37	PASS
Band38	5	38225	25	#0	QAM16	20.39	37	PASS
Band38	10	37800	1	#0	QPSK	22.90	37	PASS

Band38	10	37800	1	#Mid	QPSK	22.82	37	PASS
Band38	10	37800	1	#Max	QPSK	22.77	37	PASS
Band38	10	37800	25	#0	QPSK	21.87	37	PASS
Band38	10	37800	25	#Max	QPSK	21.80	37	PASS
Band38	10	37800	50	#0	QPSK	21.76	37	PASS
Band38	10	37800	1	#0	QAM16	22.16	37	PASS
Band38	10	37800	1	#Mid	QAM16	22.05	37	PASS
Band38	10	37800	1	#Max	QAM16	22.03	37	PASS
Band38	10	37800	25	#0	QAM16	20.92	37	PASS
Band38	10	37800	25	#Max	QAM16	20.84	37	PASS
Band38	10	38000	1	#0	QPSK	22.84	37	PASS
Band38	10	38000	1	#Mid	QPSK	22.77	37	PASS
Band38	10	38000	1	#Max	QPSK	22.70	37	PASS
Band38	10	38000	25	#0	QPSK	21.80	37	PASS
Band38	10	38000	25	#Max	QPSK	21.74	37	PASS
Band38	10	38000	50	#0	QPSK	21.79	37	PASS
Band38	10	38000	1	#0	QAM16	21.88	37	PASS
Band38	10	38000	1	#Mid	QAM16	21.80	37	PASS
Band38	10	38000	1	#Max	QAM16	21.73	37	PASS
Band38	10	38000	25	#0	QAM16	20.82	37	PASS
Band38	10	38000	25	#Max	QAM16	20.75	37	PASS
Band38	10	38200	1	#0	QPSK	22.52	37	PASS
Band38	10	38200	1	#Mid	QPSK	22.46	37	PASS
Band38	10	38200	1	#Max	QPSK	22.40	37	PASS
Band38	10	38200	25	#0	QPSK	21.46	37	PASS
Band38	10	38200	25	#Max	QPSK	21.38	37	PASS
Band38	10	38200	50	#0	QPSK	21.46	37	PASS
Band38	10	38200	1	#0	QAM16	21.37	37	PASS
Band38	10	38200	1	#Mid	QAM16	21.32	37	PASS
Band38	10	38200	1	#Max	QAM16	21.27	37	PASS
Band38	10	38200	25	#0	QAM16	20.48	37	PASS
Band38	10	38200	25	#Max	QAM16	20.42	37	PASS
Band38	15	37825	1	#0	QPSK	22.91	37	PASS
Band38	15	37825	1	#Mid	QPSK	22.80	37	PASS
Band38	15	37825	1	#Max	QPSK	22.78	37	PASS
Band38	15	37825	36	#0	QPSK	21.93	37	PASS
Band38	15	37825	36	#Max	QPSK	21.90	37	PASS
Band38	15	37825	75	#0	QPSK	21.96	37	PASS
Band38	15	37825	1	#0	QAM16	22.20	37	PASS
Band38	15	37825	1	#Mid	QAM16	22.04	37	PASS
Band38	15	37825	1	#Max	QAM16	22.08	37	PASS
Band38	15	37825	36	#0	QAM16	20.90	37	PASS
Band38	15	37825	36	#Max	QAM16	20.87	37	PASS

Band38	15	38000	1	#0	QPSK	22.87	37	PASS
Band38	15	38000	1	#Mid	QPSK	22.75	37	PASS
Band38	15	38000	1	#Max	QPSK	22.68	37	PASS
Band38	15	38000	36	#0	QPSK	21.89	37	PASS
Band38	15	38000	36	#Max	QPSK	21.80	37	PASS
Band38	15	38000	75	#0	QPSK	21.86	37	PASS
Band38	15	38000	1	#0	QAM16	21.88	37	PASS
Band38	15	38000	1	#Mid	QAM16	21.76	37	PASS
Band38	15	38000	1	#Max	QAM16	21.70	37	PASS
Band38	15	38000	36	#0	QAM16	20.86	37	PASS
Band38	15	38000	36	#Max	QAM16	20.77	37	PASS
Band38	15	38175	1	#0	QPSK	22.73	37	PASS
Band38	15	38175	1	#Mid	QPSK	22.59	37	PASS
Band38	15	38175	1	#Max	QPSK	22.55	37	PASS
Band38	15	38175	36	#0	QPSK	21.61	37	PASS
Band38	15	38175	36	#Max	QPSK	21.51	37	PASS
Band38	15	38175	75	#0	QPSK	21.57	37	PASS
Band38	15	38175	1	#0	QAM16	21.67	37	PASS
Band38	15	38175	1	#Mid	QAM16	21.51	37	PASS
Band38	15	38175	1	#Max	QAM16	21.44	37	PASS
Band38	15	38175	36	#0	QAM16	20.55	37	PASS
Band38	15	38175	36	#Max	QAM16	20.45	37	PASS
Band38	20	37850	1	#0	QPSK	22.98	37	PASS
Band38	20	37850	1	#Mid	QPSK	22.86	37	PASS
Band38	20	37850	1	#Max	QPSK	22.92	37	PASS
Band38	20	37850	50	#0	QPSK	21.86	37	PASS
Band38	20	37850	50	#Max	QPSK	21.85	37	PASS
Band38	20	37850	100	#0	QPSK	21.83	37	PASS
Band38	20	37850	1	#0	QAM16	22.00	37	PASS
Band38	20	37850	1	#Mid	QAM16	21.90	37	PASS
Band38	20	37850	1	#Max	QAM16	21.99	37	PASS
Band38	20	37850	50	#0	QAM16	20.83	37	PASS
Band38	20	37850	50	#Max	QAM16	20.85	37	PASS
Band38	20	38000	1	#0	QPSK	22.94	37	PASS
Band38	20	38000	1	#Mid	QPSK	22.84	37	PASS
Band38	20	38000	1	#Max	QPSK	22.77	37	PASS
Band38	20	38000	50	#0	QPSK	21.84	37	PASS
Band38	20	38000	50	#Max	QPSK	21.74	37	PASS
Band38	20	38000	100	#0	QPSK	21.78	37	PASS
Band38	20	38000	1	#0	QAM16	21.79	37	PASS
Band38	20	38000	1	#Mid	QAM16	21.70	37	PASS
Band38	20	38000	1	#Max	QAM16	21.63	37	PASS
Band38	20	38000	50	#0	QAM16	20.82	37	PASS

Band38	20	38000	50	#Max	QAM16	20.69	37	PASS
Band38	20	38150	1	#0	QPSK	22.78	37	PASS
Band38	20	38150	1	#Mid	QPSK	22.57	37	PASS
Band38	20	38150	1	#Max	QPSK	22.51	37	PASS
Band38	20	38150	50	#0	QPSK	21.62	37	PASS
Band38	20	38150	50	#Max	QPSK	21.48	37	PASS
Band38	20	38150	100	#0	QPSK	21.53	37	PASS
Band38	20	38150	1	#0	QAM16	21.43	37	PASS
Band38	20	38150	1	#Mid	QAM16	21.13	37	PASS
Band38	20	38150	1	#Max	QAM16	21.09	37	PASS
Band38	20	38150	50	#0	QAM16	20.64	37	PASS
Band38	20	38150	50	#Max	QAM16	20.49	37	PASS
FDD-LTE Band 41								
Band41	5	39675	1	#0	QPSK	21.53	37	PASS
Band41	5	39675	1	#Mid	QPSK	21.19	37	PASS
Band41	5	39675	1	#Max	QPSK	21.55	37	PASS
Band41	5	39675	12	#0	QPSK	22.36	37	PASS
Band41	5	39675	12	#Max	QPSK	21.74	37	PASS
Band41	5	39675	25	#0	QPSK	21.34	37	PASS
Band41	5	39675	1	#0	QAM16	23.50	37	PASS
Band41	5	39675	1	#Mid	QAM16	21.99	37	PASS
Band41	5	39675	1	#Max	QAM16	21.98	37	PASS
Band41	5	39675	12	#0	QAM16	21.66	37	PASS
Band41	5	39675	12	#Max	QAM16	21.11	37	PASS
Band41	5	39675	25	#0	QAM16	22.08	37	PASS
Band41	5	40620	1	#0	QPSK	21.25	37	PASS
Band41	5	40620	1	#Mid	QPSK	21.17	37	PASS
Band41	5	40620	1	#Max	QPSK	21.12	37	PASS
Band41	5	40620	12	#0	QPSK	21.16	37	PASS
Band41	5	40620	12	#Max	QPSK	22.19	37	PASS
Band41	5	40620	25	#0	QPSK	22.19	37	PASS
Band41	5	40620	1	#0	QAM16	21.85	37	PASS
Band41	5	40620	1	#Mid	QAM16	21.72	37	PASS
Band41	5	40620	1	#Max	QAM16	21.32	37	PASS
Band41	5	40620	12	#0	QAM16	22.12	37	PASS
Band41	5	40620	12	#Max	QAM16	22.29	37	PASS
Band41	5	40620	25	#0	QAM16	21.15	37	PASS
Band41	5	41565	1	#0	QPSK	22.27	37	PASS
Band41	5	41565	1	#Mid	QPSK	21.28	37	PASS
Band41	5	41565	1	#Max	QPSK	22.27	37	PASS
Band41	5	41565	12	#0	QPSK	23.00	37	PASS
Band41	5	41565	12	#Max	QPSK	21.89	37	PASS

Band41	5	41565	25	#0	QPSK	22.75	37	PASS
Band41	5	41565	1	#0	QAM16	21.92	37	PASS
Band41	5	41565	1	#Mid	QAM16	22.01	37	PASS
Band41	5	41565	1	#Max	QAM16	22.00	37	PASS
Band41	5	41565	12	#0	QAM16	21.73	37	PASS
Band41	5	41565	12	#Max	QAM16	22.67	37	PASS
Band41	5	41565	25	#0	QAM16	21.60	37	PASS
Band41	10	39700	1	#0	QPSK	22.52	37	PASS
Band41	10	39700	1	#Mid	QPSK	22.60	37	PASS
Band41	10	39700	1	#Max	QPSK	21.24	37	PASS
Band41	10	39700	25	#0	QPSK	22.15	37	PASS
Band41	10	39700	25	#Max	QPSK	21.76	37	PASS
Band41	10	39700	50	#0	QPSK	22.00	37	PASS
Band41	10	39700	1	#0	QAM16	22.07	37	PASS
Band41	10	39700	1	#Mid	QAM16	22.17	37	PASS
Band41	10	39700	1	#Max	QAM16	21.65	37	PASS
Band41	10	39700	25	#0	QAM16	21.48	37	PASS
Band41	10	39700	25	#Max	QAM16	22.41	37	PASS
Band41	10	40620	1	#0	QPSK	21.35	37	PASS
Band41	10	40620	1	#Mid	QPSK	22.33	37	PASS
Band41	10	40620	1	#Max	QPSK	21.20	37	PASS
Band41	10	40620	25	#0	QPSK	22.30	37	PASS
Band41	10	40620	25	#Max	QPSK	22.61	37	PASS
Band41	10	40620	50	#0	QPSK	21.46	37	PASS
Band41	10	40620	1	#0	QAM16	22.75	37	PASS
Band41	10	40620	1	#Mid	QAM16	22.71	37	PASS
Band41	10	40620	1	#Max	QAM16	21.75	37	PASS
Band41	10	40620	25	#0	QAM16	21.33	37	PASS
Band41	10	40620	25	#Max	QAM16	22.65	37	PASS
Band41	10	41540	1	#0	QPSK	21.76	37	PASS
Band41	10	41540	1	#Mid	QPSK	22.42	37	PASS
Band41	10	41540	1	#Max	QPSK	21.42	37	PASS
Band41	10	41540	25	#0	QPSK	22.87	37	PASS
Band41	10	41540	25	#Max	QPSK	21.97	37	PASS
Band41	10	41540	50	#0	QPSK	22.23	37	PASS
Band41	10	41540	1	#0	QAM16	22.37	37	PASS
Band41	10	41540	1	#Mid	QAM16	21.10	37	PASS
Band41	10	41540	1	#Max	QAM16	22.10	37	PASS
Band41	10	41540	25	#0	QAM16	21.01	37	PASS
Band41	10	41540	25	#Max	QAM16	11.89	37	PASS
Band41	15	39725	1	#0	QPSK	22.24	37	PASS
Band41	15	39725	1	#Mid	QPSK	22.48	37	PASS
Band41	15	39725	1	#Max	QPSK	21.82	37	PASS

Band41	15	39725	36	#0	QPSK	21.86	37	PASS
Band41	15	39725	36	#Max	QPSK	21.79	37	PASS
Band41	15	39725	75	#0	QPSK	22.00	37	PASS
Band41	15	39725	1	#0	QAM16	22.23	37	PASS
Band41	15	39725	1	#Mid	QAM16	21.66	37	PASS
Band41	15	39725	1	#Max	QAM16	21.97	37	PASS
Band41	15	39725	36	#0	QAM16	21.46	37	PASS
Band41	15	39725	36	#Max	QAM16	22.89	37	PASS
Band41	15	40620	1	#0	QPSK	21.32	37	PASS
Band41	15	40620	1	#Mid	QPSK	21.30	37	PASS
Band41	15	40620	1	#Max	QPSK	22.27	37	PASS
Band41	15	40620	36	#0	QPSK	21.34	37	PASS
Band41	15	40620	36	#Max	QPSK	21.46	37	PASS
Band41	15	40620	75	#0	QPSK	21.40	37	PASS
Band41	15	40620	1	#0	QAM16	22.69	37	PASS
Band41	15	40620	1	#Mid	QAM16	22.79	37	PASS
Band41	15	40620	1	#Max	QAM16	21.79	37	PASS
Band41	15	40620	36	#0	QAM16	21.47	37	PASS
Band41	15	40620	36	#Max	QAM16	22.49	37	PASS
Band41	15	41515	1	#0	QPSK	22.03	37	PASS
Band41	15	41515	1	#Mid	QPSK	21.84	37	PASS
Band41	15	41515	1	#Max	QPSK	21.98	37	PASS
Band41	15	41515	36	#0	QPSK	21.07	37	PASS
Band41	15	41515	36	#Max	QPSK	21.89	37	PASS
Band41	15	41515	75	#0	QPSK	22.64	37	PASS
Band41	15	41515	1	#0	QAM16	21.29	37	PASS
Band41	15	41515	1	#Mid	QAM16	21.83	37	PASS
Band41	15	41515	1	#Max	QAM16	21.81	37	PASS
Band41	15	41515	36	#0	QAM16	21.11	37	PASS
Band41	15	41515	36	#Max	QAM16	22.79	37	PASS
Band41	20	39750	1	#0	QPSK	21.95	37	PASS
Band41	20	39750	1	#Mid	QPSK	21.55	37	PASS
Band41	20	39750	1	#Max	QPSK	22.68	37	PASS
Band41	20	39750	50	#0	QPSK	22.62	37	PASS
Band41	20	39750	50	#Max	QPSK	21.78	37	PASS
Band41	20	39750	100	#0	QPSK	23.00	37	PASS
Band41	20	39750	1	#0	QAM16	22.40	37	PASS
Band41	20	39750	1	#Mid	QAM16	21.89	37	PASS
Band41	20	39750	1	#Max	QAM16	22.04	37	PASS
Band41	20	39750	50	#0	QAM16	22.37	37	PASS
Band41	20	39750	50	#Max	QAM16	22.00	37	PASS
Band41	20	40620	1	#0	QPSK	21.27	37	PASS
Band41	20	40620	1	#Mid	QPSK	21.30	37	PASS

Band41	20	40620	1	#Max	QPSK	21.19	37	PASS
Band41	20	40620	50	#0	QPSK	22.49	37	PASS
Band41	20	40620	50	#Max	QPSK	21.62	37	PASS
Band41	20	40620	100	#0	QPSK	21.54	37	PASS
Band41	20	40620	1	#0	QAM16	22.36	37	PASS
Band41	20	40620	1	#Mid	QAM16	22.37	37	PASS
Band41	20	40620	1	#Max	QAM16	22.62	37	PASS
Band41	20	40620	50	#0	QAM16	21.49	37	PASS
Band41	20	40620	50	#Max	QAM16	21.62	37	PASS
Band41	20	41490	1	#0	QPSK	22.33	37	PASS
Band41	20	41490	1	#Mid	QPSK	22.05	37	PASS
Band41	20	41490	1	#Max	QPSK	22.45	37	PASS
Band41	20	41490	50	#0	QPSK	22.19	37	PASS
Band41	20	41490	50	#Max	QPSK	21.68	37	PASS
Band41	20	41490	100	#0	QPSK	21.76	37	PASS
Band41	20	41490	1	#0	QAM16	22.26	37	PASS
Band41	20	41490	1	#Mid	QAM16	22.06	37	PASS
Band41	20	41490	1	#Max	QAM16	21.92	37	PASS
Band41	20	41490	50	#0	QAM16	22.19	37	PASS
Band41	20	41490	50	#Max	QAM16	21.94	37	PASS
FDD-LTE Band 5								
Band5	1.4	20407	1	#0	QPSK	24.12	37	PASS
Band5	1.4	20407	1	#Mid	QPSK	24.17	37	PASS
Band5	1.4	20407	1	#Max	QPSK	24.08	37	PASS
Band5	1.4	20407	3	#0	QPSK	23.96	37	PASS
Band5	1.4	20407	3	#Max	QPSK	23.96	37	PASS
Band5	1.4	20407	6	#0	QPSK	22.98	37	PASS
Band5	1.4	20407	1	#0	QAM16	22.82	37	PASS
Band5	1.4	20407	1	#Mid	QAM16	22.96	37	PASS
Band5	1.4	20407	1	#Max	QAM16	22.82	37	PASS
Band5	1.4	20407	3	#0	QAM16	22.99	37	PASS
Band5	1.4	20407	3	#Max	QAM16	23.01	37	PASS
Band5	1.4	20407	6	#0	QAM16	21.88	37	PASS
Band5	1.4	20525	1	#0	QPSK	23.81	37	PASS
Band5	1.4	20525	1	#Mid	QPSK	23.90	37	PASS
Band5	1.4	20525	1	#Max	QPSK	23.78	37	PASS
Band5	1.4	20525	3	#0	QPSK	23.66	37	PASS
Band5	1.4	20525	3	#Max	QPSK	23.67	37	PASS
Band5	1.4	20525	6	#0	QPSK	22.91	37	PASS
Band5	1.4	20525	1	#0	QAM16	22.81	37	PASS
Band5	1.4	20525	1	#Mid	QAM16	22.91	37	PASS
Band5	1.4	20525	1	#Max	QAM16	22.81	37	PASS

Band5	1.4	20525	3	#0	QAM16	22.59	37	PASS
Band5	1.4	20525	3	#Max	QAM16	22.59	37	PASS
Band5	1.4	20525	6	#0	QAM16	21.60	37	PASS
Band5	1.4	20643	1	#0	QPSK	23.94	37	PASS
Band5	1.4	20643	1	#Mid	QPSK	24.00	37	PASS
Band5	1.4	20643	1	#Max	QPSK	23.95	37	PASS
Band5	1.4	20643	3	#0	QPSK	23.70	37	PASS
Band5	1.4	20643	3	#Max	QPSK	23.65	37	PASS
Band5	1.4	20643	6	#0	QPSK	22.87	37	PASS
Band5	1.4	20643	1	#0	QAM16	22.54	37	PASS
Band5	1.4	20643	1	#Mid	QAM16	22.60	37	PASS
Band5	1.4	20643	1	#Max	QAM16	22.57	37	PASS
Band5	1.4	20643	3	#0	QAM16	22.56	37	PASS
Band5	1.4	20643	3	#Max	QAM16	22.50	37	PASS
Band5	1.4	20643	6	#0	QAM16	21.62	37	PASS
Band5	3	20415	1	#0	QPSK	23.95	37	PASS
Band5	3	20415	1	#Mid	QPSK	23.92	37	PASS
Band5	3	20415	1	#Max	QPSK	23.86	37	PASS
Band5	3	20415	8	#0	QPSK	22.99	37	PASS
Band5	3	20415	8	#Max	QPSK	22.97	37	PASS
Band5	3	20415	15	#0	QPSK	22.89	37	PASS
Band5	3	20415	1	#0	QAM16	22.99	37	PASS
Band5	3	20415	1	#Mid	QAM16	23.03	37	PASS
Band5	3	20415	1	#Max	QAM16	23.00	37	PASS
Band5	3	20415	8	#0	QAM16	21.97	37	PASS
Band5	3	20415	8	#Max	QAM16	21.94	37	PASS
Band5	3	20415	15	#0	QAM16	21.86	37	PASS
Band5	3	20525	1	#0	QPSK	23.79	37	PASS
Band5	3	20525	1	#Mid	QPSK	23.82	37	PASS
Band5	3	20525	1	#Max	QPSK	23.69	37	PASS
Band5	3	20525	8	#0	QPSK	22.93	37	PASS
Band5	3	20525	8	#Max	QPSK	22.90	37	PASS
Band5	3	20525	15	#0	QPSK	22.76	37	PASS
Band5	3	20525	1	#0	QAM16	22.79	37	PASS
Band5	3	20525	1	#Mid	QAM16	22.81	37	PASS
Band5	3	20525	1	#Max	QAM16	22.74	37	PASS
Band5	3	20525	8	#0	QAM16	21.72	37	PASS
Band5	3	20525	8	#Max	QAM16	21.71	37	PASS
Band5	3	20525	15	#0	QAM16	21.55	37	PASS
Band5	3	20635	1	#0	QPSK	23.79	37	PASS
Band5	3	20635	1	#Mid	QPSK	23.93	37	PASS
Band5	3	20635	1	#Max	QPSK	23.94	37	PASS
Band5	3	20635	8	#0	QPSK	22.85	37	PASS

Band5	3	20635	8	#Max	QPSK	22.87	37	PASS
Band5	3	20635	15	#0	QPSK	22.74	37	PASS
Band5	3	20635	1	#0	QAM16	22.51	37	PASS
Band5	3	20635	1	#Mid	QAM16	22.54	37	PASS
Band5	3	20635	1	#Max	QAM16	22.56	37	PASS
Band5	3	20635	8	#0	QAM16	21.71	37	PASS
Band5	3	20635	8	#Max	QAM16	21.70	37	PASS
Band5	3	20635	15	#0	QAM16	21.63	37	PASS
Band5	5	20425	1	#0	QPSK	24.06	37	PASS
Band5	5	20425	1	#Mid	QPSK	23.97	37	PASS
Band5	5	20425	1	#Max	QPSK	23.93	37	PASS
Band5	5	20425	12	#0	QPSK	22.98	37	PASS
Band5	5	20425	12	#Max	QPSK	22.97	37	PASS
Band5	5	20425	25	#0	QPSK	22.89	37	PASS
Band5	5	20425	1	#0	QAM16	23.12	37	PASS
Band5	5	20425	1	#Mid	QAM16	23.11	37	PASS
Band5	5	20425	1	#Max	QAM16	23.02	37	PASS
Band5	5	20425	12	#0	QAM16	21.92	37	PASS
Band5	5	20425	12	#Max	QAM16	21.92	37	PASS
Band5	5	20425	25	#0	QAM16	21.88	37	PASS
Band5	5	20525	1	#0	QPSK	24.02	37	PASS
Band5	5	20525	1	#Mid	QPSK	23.94	37	PASS
Band5	5	20525	1	#Max	QPSK	23.78	37	PASS
Band5	5	20525	12	#0	QPSK	22.83	37	PASS
Band5	5	20525	12	#Max	QPSK	22.78	37	PASS
Band5	5	20525	25	#0	QPSK	22.73	37	PASS
Band5	5	20525	1	#0	QAM16	22.86	37	PASS
Band5	5	20525	1	#Mid	QAM16	22.82	37	PASS
Band5	5	20525	1	#Max	QAM16	22.76	37	PASS
Band5	5	20525	12	#0	QAM16	21.63	37	PASS
Band5	5	20525	12	#Max	QAM16	21.63	37	PASS
Band5	5	20525	25	#0	QAM16	21.57	37	PASS
Band5	5	20625	1	#0	QPSK	23.69	37	PASS
Band5	5	20625	1	#Mid	QPSK	23.75	37	PASS
Band5	5	20625	1	#Max	QPSK	23.80	37	PASS
Band5	5	20625	12	#0	QPSK	22.78	37	PASS
Band5	5	20625	12	#Max	QPSK	22.79	37	PASS
Band5	5	20625	25	#0	QPSK	22.72	37	PASS
Band5	5	20625	1	#0	QAM16	22.93	37	PASS
Band5	5	20625	1	#Mid	QAM16	22.88	37	PASS
Band5	5	20625	1	#Max	QAM16	22.86	37	PASS
Band5	5	20625	12	#0	QAM16	21.79	37	PASS
Band5	5	20625	12	#Max	QAM16	21.70	37	PASS

Band5	5	20625	25	#0	QAM16	21.67	37	PASS
Band5	10	20450	1	#0	QPSK	24.02	37	PASS
Band5	10	20450	1	#Mid	QPSK	23.91	37	PASS
Band5	10	20450	1	#Max	QPSK	23.53	37	PASS
Band5	10	20450	25	#0	QPSK	22.90	37	PASS
Band5	10	20450	25	#Max	QPSK	22.84	37	PASS
Band5	10	20450	50	#0	QPSK	22.85	37	PASS
Band5	10	20450	1	#0	QAM16	23.10	37	PASS
Band5	10	20450	1	#Mid	QAM16	23.03	37	PASS
Band5	10	20450	1	#Max	QAM16	22.85	37	PASS
Band5	10	20450	25	#0	QAM16	21.97	37	PASS
Band5	10	20450	25	#Max	QAM16	21.80	37	PASS
Band5	10	20525	1	#0	QPSK	23.74	37	PASS
Band5	10	20525	1	#Mid	QPSK	23.82	37	PASS
Band5	10	20525	1	#Max	QPSK	23.72	37	PASS
Band5	10	20525	25	#0	QPSK	22.77	37	PASS
Band5	10	20525	25	#Max	QPSK	22.73	37	PASS
Band5	10	20525	50	#0	QPSK	22.70	37	PASS
Band5	10	20525	1	#0	QAM16	22.90	37	PASS
Band5	10	20525	1	#Mid	QAM16	22.84	37	PASS
Band5	10	20525	1	#Max	QAM16	22.83	37	PASS
Band5	10	20525	25	#0	QAM16	21.65	37	PASS
Band5	10	20525	25	#Max	QAM16	21.68	37	PASS
Band5	10	20600	1	#0	QPSK	23.85	37	PASS
Band5	10	20600	1	#Mid	QPSK	23.85	37	PASS
Band5	10	20600	1	#Max	QPSK	23.82	37	PASS
Band5	10	20600	25	#0	QPSK	22.69	37	PASS
Band5	10	20600	25	#Max	QPSK	22.71	37	PASS
Band5	10	20600	50	#0	QPSK	22.72	37	PASS
Band5	10	20600	1	#0	QAM16	22.54	37	PASS
Band5	10	20600	1	#Mid	QAM16	22.61	37	PASS
Band5	10	20600	1	#Max	QAM16	22.56	37	PASS
Band5	10	20600	25	#0	QAM16	21.68	37	PASS
Band5	10	20600	25	#Max	QAM16	21.65	37	PASS
FDD-LTE Band 7								
Band7	5	20775	1	#0	QPSK	23.28	37	PASS
Band7	5	20775	1	#Mid	QPSK	23.38	37	PASS
Band7	5	20775	1	#Max	QPSK	23.39	37	PASS
Band7	5	20775	12	#0	QPSK	22.14	37	PASS
Band7	5	20775	12	#Max	QPSK	22.23	37	PASS
Band7	5	20775	25	#0	QPSK	22.09	37	PASS
Band7	5	20775	1	#0	QAM16	22.10	37	PASS

Band7	5	20775	1	#Mid	QAM16	22.18	37	PASS
Band7	5	20775	1	#Max	QAM16	22.21	37	PASS
Band7	5	20775	12	#0	QAM16	21.05	37	PASS
Band7	5	20775	12	#Max	QAM16	21.11	37	PASS
Band7	5	20775	25	#0	QAM16	21.03	37	PASS
Band7	5	21100	1	#0	QPSK	23.31	37	PASS
Band7	5	21100	1	#Mid	QPSK	23.27	37	PASS
Band7	5	21100	1	#Max	QPSK	23.21	37	PASS
Band7	5	21100	12	#0	QPSK	22.34	37	PASS
Band7	5	21100	12	#Max	QPSK	22.29	37	PASS
Band7	5	21100	25	#0	QPSK	22.29	37	PASS
Band7	5	21100	1	#0	QAM16	22.47	37	PASS
Band7	5	21100	1	#Mid	QAM16	22.42	37	PASS
Band7	5	21100	1	#Max	QAM16	22.40	37	PASS
Band7	5	21100	12	#0	QAM16	21.34	37	PASS
Band7	5	21100	12	#Max	QAM16	21.30	37	PASS
Band7	5	21100	25	#0	QAM16	21.26	37	PASS
Band7	5	21425	1	#0	QPSK	23.06	37	PASS
Band7	5	21425	1	#Mid	QPSK	22.88	37	PASS
Band7	5	21425	1	#Max	QPSK	22.92	37	PASS
Band7	5	21425	12	#0	QPSK	22.06	37	PASS
Band7	5	21425	12	#Max	QPSK	21.94	37	PASS
Band7	5	21425	25	#0	QPSK	21.96	37	PASS
Band7	5	21425	1	#0	QAM16	22.17	37	PASS
Band7	5	21425	1	#Mid	QAM16	22.08	37	PASS
Band7	5	21425	1	#Max	QAM16	21.98	37	PASS
Band7	5	21425	12	#0	QAM16	21.02	37	PASS
Band7	5	21425	12	#Max	QAM16	20.94	37	PASS
Band7	5	21425	25	#0	QAM16	20.98	37	PASS
Band7	10	20800	1	#0	QPSK	23.24	37	PASS
Band7	10	20800	1	#Mid	QPSK	23.35	37	PASS
Band7	10	20800	1	#Max	QPSK	23.43	37	PASS
Band7	10	20800	25	#0	QPSK	22.14	37	PASS
Band7	10	20800	25	#Max	QPSK	22.30	37	PASS
Band7	10	20800	50	#0	QPSK	22.17	37	PASS
Band7	10	20800	1	#0	QAM16	22.14	37	PASS
Band7	10	20800	1	#Mid	QAM16	22.27	37	PASS
Band7	10	20800	1	#Max	QAM16	22.41	37	PASS
Band7	10	20800	25	#0	QAM16	21.16	37	PASS
Band7	10	20800	25	#Max	QAM16	21.29	37	PASS
Band7	10	21100	1	#0	QPSK	23.37	37	PASS
Band7	10	21100	1	#Mid	QPSK	23.30	37	PASS
Band7	10	21100	1	#Max	QPSK	23.28	37	PASS

Band7	10	21100	25	#0	QPSK	22.35	37	PASS
Band7	10	21100	25	#Max	QPSK	22.31	37	PASS
Band7	10	21100	50	#0	QPSK	22.33	37	PASS
Band7	10	21100	1	#0	QAM16	22.43	37	PASS
Band7	10	21100	1	#Mid	QAM16	22.37	37	PASS
Band7	10	21100	1	#Max	QAM16	22.32	37	PASS
Band7	10	21100	25	#0	QAM16	21.33	37	PASS
Band7	10	21100	25	#Max	QAM16	21.29	37	PASS
Band7	10	21400	1	#0	QPSK	23.10	37	PASS
Band7	10	21400	1	#Mid	QPSK	22.94	37	PASS
Band7	10	21400	1	#Max	QPSK	22.74	37	PASS
Band7	10	21400	25	#0	QPSK	22.12	37	PASS
Band7	10	21400	25	#Max	QPSK	22.00	37	PASS
Band7	10	21400	50	#0	QPSK	22.07	37	PASS
Band7	10	21400	1	#0	QAM16	22.00	37	PASS
Band7	10	21400	1	#Mid	QAM16	21.85	37	PASS
Band7	10	21400	1	#Max	QAM16	21.67	37	PASS
Band7	10	21400	25	#0	QAM16	21.11	37	PASS
Band7	10	21400	25	#Max	QAM16	20.99	37	PASS
Band7	15	20825	1	#0	QPSK	23.30	37	PASS
Band7	15	20825	1	#Mid	QPSK	23.43	37	PASS
Band7	15	20825	1	#Max	QPSK	23.52	37	PASS
Band7	15	20825	36	#0	QPSK	22.45	37	PASS
Band7	15	20825	36	#Max	QPSK	22.60	37	PASS
Band7	15	20825	75	#0	QPSK	22.52	37	PASS
Band7	15	20825	1	#0	QAM16	22.17	37	PASS
Band7	15	20825	1	#Mid	QAM16	22.35	37	PASS
Band7	15	20825	1	#Max	QAM16	22.55	37	PASS
Band7	15	20825	36	#0	QAM16	21.29	37	PASS
Band7	15	20825	36	#Max	QAM16	21.49	37	PASS
Band7	15	21100	1	#0	QPSK	23.48	37	PASS
Band7	15	21100	1	#Mid	QPSK	23.33	37	PASS
Band7	15	21100	1	#Max	QPSK	23.34	37	PASS
Band7	15	21100	36	#0	QPSK	22.55	37	PASS
Band7	15	21100	36	#Max	QPSK	22.50	37	PASS
Band7	15	21100	75	#0	QPSK	22.54	37	PASS
Band7	15	21100	1	#0	QAM16	22.53	37	PASS
Band7	15	21100	1	#Mid	QAM16	22.37	37	PASS
Band7	15	21100	1	#Max	QAM16	22.36	37	PASS
Band7	15	21100	36	#0	QAM16	21.44	37	PASS
Band7	15	21100	36	#Max	QAM16	21.38	37	PASS
Band7	15	21375	1	#0	QPSK	23.48	37	PASS
Band7	15	21375	1	#Mid	QPSK	22.90	37	PASS

Band7	15	21375	1	#Max	QPSK	22.82	37	PASS
Band7	15	21375	36	#0	QPSK	22.40	37	PASS
Band7	15	21375	36	#Max	QPSK	21.96	37	PASS
Band7	15	21375	75	#0	QPSK	22.13	37	PASS
Band7	15	21375	1	#0	QAM16	22.29	37	PASS
Band7	15	21375	1	#Mid	QAM16	21.91	37	PASS
Band7	15	21375	1	#Max	QAM16	21.85	37	PASS
Band7	15	21375	36	#0	QAM16	21.35	37	PASS
Band7	15	21375	36	#Max	QAM16	21.10	37	PASS
Band7	20	20850	1	#0	QPSK	23.48	37	PASS
Band7	20	20850	1	#Mid	QPSK	23.58	37	PASS
Band7	20	20850	1	#Max	QPSK	23.67	37	PASS
Band7	20	20850	50	#0	QPSK	22.28	37	PASS
Band7	20	20850	50	#Max	QPSK	22.51	37	PASS
Band7	20	20850	100	#0	QPSK	22.37	37	PASS
Band7	20	20850	1	#0	QAM16	22.24	37	PASS
Band7	20	20850	1	#Mid	QAM16	22.46	37	PASS
Band7	20	20850	1	#Max	QAM16	22.67	37	PASS
Band7	20	20850	50	#0	QAM16	21.23	37	PASS
Band7	20	20850	50	#Max	QAM16	21.47	37	PASS
Band7	20	21100	1	#0	QPSK	23.69	37	PASS
Band7	20	21100	1	#Mid	QPSK	23.50	37	PASS
Band7	20	21100	1	#Max	QPSK	23.59	37	PASS
Band7	20	21100	50	#0	QPSK	22.43	37	PASS
Band7	20	21100	50	#Max	QPSK	22.38	37	PASS
Band7	20	21100	100	#0	QPSK	22.39	37	PASS
Band7	20	21100	1	#0	QAM16	22.37	37	PASS
Band7	20	21100	1	#Mid	QAM16	22.17	37	PASS
Band7	20	21100	1	#Max	QAM16	22.22	37	PASS
Band7	20	21100	50	#0	QAM16	21.39	37	PASS
Band7	20	21100	50	#Max	QAM16	21.33	37	PASS
Band7	20	21350	1	#0	QPSK	23.51	37	PASS
Band7	20	21350	1	#Mid	QPSK	22.96	37	PASS
Band7	20	21350	1	#Max	QPSK	22.73	37	PASS
Band7	20	21350	50	#0	QPSK	22.34	37	PASS
Band7	20	21350	50	#Max	QPSK	22.04	37	PASS
Band7	20	21350	100	#0	QPSK	22.24	37	PASS
Band7	20	21350	1	#0	QAM16	22.06	37	PASS
Band7	20	21350	1	#Mid	QAM16	21.81	37	PASS
Band7	20	21350	1	#Max	QAM16	21.59	37	PASS
Band7	20	21350	50	#0	QAM16	21.34	37	PASS
Band7	20	21350	50	#Max	QAM16	21.13	37	PASS

Remark:

1. Per KDB941225 D05 v02r05, Start with the largest channel bandwidth then measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power among RB offsets at the upper edge, middle, and lower edge of each required test channel. When the reported SAR is≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required for 1 RB allocation; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel. 6 When the reported SAR of a required test channel is > 1.45 W/kg, SAR is required for all three RB offset configurations for that required test channel.
2. Per KDB941225 D05 v02r05, The procedures required for 1 RB allocation in 5.2.1 are applied to measure the SAR for QPSK with 50% RB allocation.
3. Per KDB941225 D05 v02r05, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations, and the highest reported SAR for 1 RB and 50% RB allocation in 5.2.1 and 5.2.2 are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
4. Per KDB941225 D05 v02r05, For each modulation besides QPSK; e.g., 16-QAM, 64-QAM, apply the QPSK procedures in 5.2.1, 5.2.2, and 5.2.3 to determine the QAM configurations that may need SAR measurement. For each configuration identified as required for testing, SAR is required only when the highest maximum output power for the configuration in the higher order modulation is > ½ dB higher than the same configuration in QPSK or when the reported SAR for the QPSK configuration is > 1.45 W/kg.

WLAN(2.4G) - Maximum Average Power					
Test Mode	**Data Rate**	**Channel**	**Frequency (MHz)**	**Average Power (dBm)**	**Tune-up power (dBm)**
802.11b	1Mbps	CH 01	2412	5.33	5.5
		CH 06	2437	5.39	5.5
		CH 11	2462	5.19	5.5
802.11g	6Mbps	CH 01	2412	4.39	4.5
		CH 06	2437	4.23	4.5
		CH 11	2462	4.2	4.5
802.11n (20MHz)	MCS7	CH 01	2412	3.46	3.5
		CH 06	2437	3.19	3.5
		CH 11	2462	3.13	3.5
802.11n (40MHz)	MCS7	CH 03	2422	2.41	2.5
		CH 07	2442	2.33	2.5
		CH 11	2462	2.41	2.5

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.

4. Per KDB 248227 D01 v02r02, When multiple channel bandwidth configurations in a frequency band have the same specified maximum output power, the initial test configuration is determined by applying the following steps sequentially.

1) The largest channel bandwidth configuration is selected among the multiple configurations in a frequency band with the same specified maximum output power.

2) If multiple configurations have the same specified maximum output power and largest channel bandwidth, the lowest order modulation among the largest channel bandwidth configurations is selected.

3) If multiple configurations have the same specified maximum output power, largest channel bandwidth and lowest order modulation, the lowest data rate configuration among these configurations is selected.

4) When multiple transmission modes (802.11a/g/n/ac) have the same specified maximum output power, largest channel bandwidth, lowest order modulation and lowest data rate, the lowest order 802.11 mode is selected; i.e., 802.11a is chosen over 802.11n then 802.11ac or 802.11g is chosen over 802.11n.

Bluetooth - Maximum Average Power			
Test Mode	**Data Rate**	**Average Power(dBm)**	**Tune-up power (dBm)**
GFSK	1Mbps	1.166	1.5
Pi/4 QDPSK	2Mbps	0.229	1.5
8DPSK	3Mbps	0.166	1.5

Bluetooth - Maximum Average Power					
Test Mode	**Data Rate**	**Channel**	**Frequency (MHz)**	**Average Power (dBm)**	**Tune-up power (dBm)**
BLE	1Mbps	CH 00	2402	-7.348	-6.5
		CH 19	2440	-6.995	-6.5
		CH 39	2480	-9.091	-6.5

RFID Power

Burst Average Power (dBm)						
Frequency (MHz)	**902.75**	**914.75**	**927.25**			
Power	8.40	8.40	8.17			

Remark:

Bluetooth and RFID maximum output power is 1.166dBm, 8.40dBm and Maximum Tune-Up output power is 1.5dBm,8.5 dBm. Per KDB 447498 D01 V06, the 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

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

- f(GHz) is the RF channel transmit frequency in GHz 1.416
- 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
1.5	1.41	5	2.441	0.44	3

RFID:

Tune-Up Power (dBm)	Max. Power (mW)	Distance (mm)	Frequency (GHz)	Result	Limit
8.5	7.08	5	0.91475	1.62	3

Bluetooth and RFID the exclusion thresholds is 0.44< 3 and 1.62< 3, therefore, the RF exposure evaluation is not required.

9.2 Test Results for Standalone SAR Test

Head SAR

GSM850 – Head SAR Test									
Plot No.	Mode	Test Position Head	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
1.	GSM	Right Cheek	128	824.2	33.71	34.0	1.069	0.441	0.471
2.	GSM	Right Tilted	128	824.2	33.71	34.0	1.069	0.215	0.230
3.	GSM	Left Cheek	128	824.2	33.71	34.0	1.069	0.454	0.485
4.	GSM	Left Tilted	128	824.2	33.71	34.0	1.069	0.241	0.258

GSM1900 – Head SAR Test									
Plot No.	Mode	Test Position Head	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	M Hz					
5.	GSM	Right Cheek	512	1850.2	29.31	29.5	1.045	0.092	0.096
6.	GSM	Right Tilted	512	1850.2	29.31	29.5	1.045	0.045	0.047
7.	GSM	Left Cheek	512	1850.2	29.31	29.5	1.045	0.113	0.118
8.	GSM	Left Tilted	512	1850.2	29.31	29.5	1.045	0.052	0.054

GPRS850 – Head SAR Test									
Plot No.	Mode	Test Position Head	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
9.	GPRS_3TX	Right Cheek	251	848.8	30.32	30.5	1.042	0.931	0.970
10.	GPRS_3TX	Right Tilted	251	848.8	30.32	30.5	1.042	0.476	0.496
11.	GPRS_3TX	Left Cheek	251	848.8	30.32	30.5	1.042	0.942	0.982
12.	GPRS_3TX	Left Tilted	251	848.8	30.32	30.5	1.042	0.455	0.474
13.	GPRS_3TX	Left Cheek	128	824.2	30.28	30.5	1.052	0.964	1.014
14.	GPRS_3TX	Left Cheek	190	836.6	30.24	30.5	1.062	0.873	0.927
15.	GPRS_3TX	Right Cheek	128	824.2	30.28	30.5	1.052	0.83	0.873
16.	GPRS_3TX	Right Cheek	190	836.6	30.24	30.5	1.062	0.887	0.942

GPRS1900 – Head SAR Test									
Plot No.	Mode	Test Position Head	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	M Hz					
17.	GPRS_4TX	Right Cheek	810	1909.8	25.69	26.0	1.074	0.11	0.118
18.	GPRS_4TX	Right Tilted	810	1909.8	25.69	26.0	1.074	0.051	0.055
19.	GPRS_4TX	Left Cheek	810	1909.8	25.69	26.0	1.074	0.19	0.204
20.	GPRS_4TX	Left Tilted	810	1909.8	25.69	26.0	1.074	0.067	0.072

WCDMA Band 2 – Head SAR Test									
Plot No.	Mode	Test Position Head	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
21.	RMC	Right Cheek	9400	1880.0	22.38	22.5	1.028	0.129	0.133
22.	RMC	Right Tilted	9400	1880.0	22.38	22.5	1.028	0.064	0.066
23.	RMC	Left Cheek	9400	1880.0	22.38	22.5	1.028	0.204	0.210
24.	RMC	Left Tilted	9400	1880.0	22.38	22.5	1.028	0.109	0.112

WCDMA Band 5 – Head SAR Test									
Plot No.	Mode	Test Position Head	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
25.	RMC	Right Cheek	4233	846.6	24.46	24.50	1.009	0.344	0.347
26.	RMC	Right Tilted	4233	846.6	24.46	24.50	1.009	0.124	0.125
27.	RMC	Left Cheek	4233	846.6	24.46	24.50	1.009	0.35	0.353
28.	RMC	Left Tilted	4233	846.6	24.46	24.50	1.009	0.145	0.146

LTE Band 5– Head SAR Test								
Plot No.	Mode	Test Position Head	Frequency	Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth		MHz					
29.	QPSK 1.4MHz 1RB	Right Cheek	848.3	24.17	24.5	1.079	0.315	0.340
30.	QPSK 1.4MHz 1RB	Right Tilted	848.3	24.17	24.5	1.079	0.152	0.164
31.	QPSK 1.4MHz 1RB	Left Cheek	848.3	24.17	24.5	1.079	0.308	0.332
32.	QPSK 1.4MHz 1RB	Left Tilted	848.3	24.17	24.5	1.079	0.14	0.151
33.	QPSK 1.4MHz 6%RB	Right Cheek	848.3	22.98	23.0	1.005	0.282	0.283
34.	QPSK 1.4MHz 6%RB	Right Tilted	848.3	22.98	23.0	1.005	0.104	0.104
35.	QPSK 1.4MHz 6%RB	Left Cheek	848.3	22.98	23.0	1.005	0.17	0.171
36.	QPSK 1.4MHz 6%RB	Left Tilted	848.3	22.98	23.0	1.005	0.102	0.102

LTE Band 7– Head SAR Test								
Plot No.	Mode	Test Position Head	Frequency	Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth		MHz					
37.	QPSK 20MHz 1RB	Right Cheek	2510.0	23.69	24.0	1.074	0.049	0.053
38.	QPSK 20MHz 1RB	Right Tilted	2510.0	23.69	24.0	1.074	0.024	0.026
39.	QPSK 20MHz 1RB	Left Cheek	2510.0	23.69	24.0	1.074	0.04	0.043
40.	QPSK 20MHz 1RB	Left Tilted	2510.0	23.69	24.0	1.074	0.019	0.020
41.	QPSK 20MHz 50%RB	Right Cheek	2510.0	22.43	23.0	1.140	0.034	0.039
42.	QPSK 20MHz 50%RB	Right Tilted	2510.0	22.43	23.0	1.140	0.018	0.021
43.	QPSK 20MHz 50%RB	Left Cheek	2510.0	22.43	23.0	1.140	0.025	0.029
44.	QPSK 20MHz 50%RB	Left Tilted	2510.0	22.43	23.0	1.140	0.011	0.013

LTE Band 38– Head SAR Test								
Plot No.	Mode	Test Position Head	Frequency	Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth		MHz					
45.	QPSK 5MHz 1RB	Right Cheek	2572.5	23.02	23.5	1.117	0.012	0.013
46.	QPSK 5MHz 1RB	Right Tilted	2572.5	23.02	23.5	1.117	0.006	0.007
47.	QPSK 5MHz 1RB	Left Cheek	2572.5	23.02	23.5	1.117	0.018	0.020
48.	QPSK 5MHz 1RB	Left Tilted	2572.5	23.02	23.5	1.117	0.006	0.007
49.	QPSK 5MHz 25%RB	Right Cheek	2572.5	21.87	22.0	1.030	0.009	0.009
50.	QPSK 5MHz 25%RB	Right Tilted	2572.5	21.87	22.0	1.030	0.004	0.004
51.	QPSK 5MHz 25%RB	Left Cheek	2572.5	21.87	22.0	1.030	0.013	0.013
52.	QPSK 5MHz 25%RB	Left Tilted	2572.5	21.87	22.0	1.030	0.004	0.004

LTE Band 41– Head SAR Test								
Plot No.	Mode	Test Position Head	Frequency	Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth		MHz					
53.	RMC QPSK 5MHz 1RB	Right Cheek	2498.5	23.50	24.0	1.122	0.018	0.020
54.	RMC QPSK 5MHz 1RB	Right Tilted	2498.5	23.50	24.0	1.122	0.007	0.008
55.	RMC QPSK 5MHz 1RB	Left Cheek	2498.5	23.50	24.0	1.122	0.029	0.033
56.	RMC QPSK 5MHz 1RB	Left Tilted	2498.5	23.50	24.0	1.122	0.013	0.015
57.	RMC QPSK 5MHz 25%RB	Right Cheek	2498.5	22.08	22.5	1.102	0.01	0.011
58.	RMC QPSK 5MHz 25%RB	Right Tilted	2498.5	22.08	22.5	1.102	0.004	0.004
59.	RMC QPSK 5MHz 25%RB	Left Cheek	2498.5	22.08	22.5	1.102	0.017	0.019
60.	RMC QPSK 5MHz 25%RB	Left Tilted	2498.5	22.08	22.5	1.102	0.008	0.009

WLAN 2.4GHz – Head SAR Test									
Plot No.	Mode	Test Position Head	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
61.	802.11b	Right Cheek	06	2437	5.39	5.5	1.026	0.07	0.072
62.	802.11b	Right Tilted	06	2437	5.39	5.5	1.026	0.034	0.035
63.	802.11b	Left Cheek	06	2437	5.39	5.5	1.026	0.025	0.026
64.	802.11b	Left Tilted	06	2437	5.39	5.5	1.026	0.014	0.014

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

Body-worn SAR

GSM850 – Body SAR Test (Gap: 10mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
65.	GSM	Back	128	824.2	33.71	34.0	1.069	0.532	0.569
66.	GSM	Front	128	824.2	33.71	34.0	1.069	0.469	0.501

GSM1900 – Body SAR Test (Gap: 10mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
67.	GSM	Back	512	1850.2	29.31	29.5	1.045	0.413	0.431
68.	GSM	Front	512	1850.2	29.31	29.5	1.045	0.329	0.344

WCDMA Band 2 – Body SAR Test (Gap: 10mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
69.	RMC 12.2k	Back Side	9400	1880	22.38	22.5	1.028	0.553	0.568
70.	RMC 12.2k	Front Face	9400	1880	22.38	22.5	1.028	0.594	0.611

WCDMA Band 5 – Body SAR Test (Gap: 10mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
71.	RMC 12.2k	Back Side	4233	846.6	24.46	24.50	1.009	0.127	0.128
72.	RMC 12.2k	Front Side	4233	846.6	24.46	24.50	1.009	0.286	0.289

LTE Band 5–Body SAR Test (Gap: 10mm)								
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					
73.	RMC QPSK 10MHz 1RB	Back Side	844.0	24.17	24.5	1.079	0.153	0.165
74.	RMC QPSK 10MHz 1RB	Front Side	844.0	24.17	24.5	1.079	0.345	0.372
75.	RMC QPSK 10MHz 50%RB	Back Side	844.0	24.17	24.5	1.079	0.112	0.121
76.	RMC QPSK 10MHz 50%RB	Front Side	844.0	24.17	24.5	1.079	0.217	0.234

LTE Band 7–Body SAR Test (Gap: 10mm)								
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					
77.	RMC QPSK 20MHz 1RB	Back Side	2510.0	23.69	24.0	1.074	0.373	0.401
78.	RMC QPSK 20MHz 1RB	Front Side	2510.0	23.69	24.0	1.074	0.54	0.580
79.	RMC QPSK 20MHz 50%RB	Back Side	2510.0	22.43	23.0	1.140	0.255	0.291
80.	RMC QPSK 20MHz 50%RB	Front Side	2510.0	22.43	23.0	1.140	0.371	0.423

LTE Band 38–Body SAR Test (Gap: 10mm)								
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					
81.	RMC QPSK 20MHz 1RB	Back Side	2580.0	23.02	23.5	1.117	0.063	0.070
82.	RMC QPSK 20MHz 1RB	Front Side	2580.0	23.02	23.5	1.117	0.11	0.123
83.	RMC QPSK 20MHz 50%RB	Back Side	2580.0	21.87	22.0	1.030	0.031	0.032
84.	RMC QPSK 20MHz 50%RB	Front Side	2580.0	21.87	22.0	1.030	0.074	0.076

LTE Band 41:Body SAR Test (Gap: 10mm)								
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					
85.	RMC QPSK 20MHz 1RB	Back Side	2506.0	23.50	24.0	1.122	0.116	0.130
86.	RMC QPSK 20MHz 1RB	Front Side	2506.0	23.50	24.0	1.122	0.265	0.297
87.	RMC QPSK 20MHz 50%RB	Back Side	2506.0	22.08	22.5	1.102	0.084	0.093
88.	RMC QPSK 20MHz 50%RB	Front Side	2506.0	22.08	22.5	1.102	0.187	0.206

WLAN 2.4GHz –Body SAR Test									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
89.	802.11b	Back Side	06	2442	5.39	5.5	1.026	0.031	0.032
90.	802.11b	Front Side	06	2442	5.39	5.5	1.026	0.141	0.145

Hotspot SAR

GSM850 – Body SAR Test (Gap: 10mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
91.	GPRS_3TX	Back Side	251	848.8	30.32	30.5	1.042	1.191	1.241
92.	GPRS_3TX	Front Side	251	848.8	30.32	30.5	1.042	0.772	0.805
93.	GPRS_3TX	Right side	251	848.8	30.32	30.5	1.042	0.753	0.785
94.	GPRS_3TX	Left side	251	848.8	30.32	30.5	1.042	0.508	0.529
95.	GPRS_3TX	Bottom side	251	848.8	30.32	30.5	1.042	0.883	0.920
96.	GPRS_3TX	Bottom side	128	824.2	30.28	30.5	1.052	0.779	0.819
97.	GPRS_3TX	Bottom side	190	836.6	30.24	30.5	1.062	0.916	0.973
98.	GPRS_3TX	Back Side	128	824.2	30.28	30.5	1.052	1.118	1.176
99.	GPRS_3TX	Back Side	190	836.6	30.24	30.5	1.062	1.174	1.246

GSM1900 – Body SAR Test (Gap: 10mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
100.	GPRS_4TX	Back Side	810	1909.8	25.69	26.0	1.074	0.509	0.547
101.	GPRS_4TX	Front Side	810	1909.8	25.69	26.0	1.074	0.511	0.549
102.	GPRS_4TX	Right side	810	1909.8	25.69	26.0	1.074	0.19	0.204
103.	GPRS_4TX	Left side	810	1909.8	25.69	26.0	1.074	0.488	0.524
104.	GPRS_4TX	Bottom side	810	1909.8	25.69	26.0	1.074	0.667	0.716

WCDMA Band 2 – Body SAR Test (Gap: 10mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
105.	RMC 12.2k	Back Side	9400	1880	22.38	22.5	1.028	0.553	0.568
106.	RMC 12.2k	Front Face	9400	1880	22.38	22.5	1.028	0.594	0.611
107.	RMC 12.2k	Right side	9400	1880	22.38	22.5	1.028	0.225	0.231
108.	RMC 12.2k	Left side	9400	1880	22.38	22.5	1.028	0.588	0.604
109.	RMC 12.2k	Bottom Side	9400	1880	22.38	22.5	1.028	0.66	0.678

WCDMA Band 5 – Body SAR Test (Gap: 10mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
110.	RMC 12.2k	Back Side	4233	846.6	24.46	24.50	1.009	0.127	0.128
111.	RMC 12.2k	Front Side	4233	846.6	24.46	24.50	1.009	0.286	0.289
112.	RMC 12.2k	Right side	4233	846.6	24.46	24.50	1.009	0.18	0.182
113.	RMC 12.2k	Left side	4233	846.6	24.46	24.50	1.009	0.145	0.146
114.	RMC 12.2k	Bottom side	4233	846.6	24.46	24.50	1.009	0.278	0.281

LTE Band 5–Body SAR Test (Gap: 10mm)								
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					
115.	QPSK 1.4MHz 1RB	Back Side	848.3	24.17	24.5	1.079	0.153	0.165
116.	QPSK 1.4MHz 1RB	Front Side	848.3	24.17	24.5	1.079	0.345	0.372
117.	QPSK 1.4MHz 1RB	Right side	848.3	24.17	24.5	1.079	0.26	0.281
118.	QPSK 1.4MHz 1RB	Left side	848.3	24.17	24.5	1.079	0.152	0.164
119.	QPSK 1.4MHz 1RB	Bottom side	848.3	24.17	24.5	1.079	0.336	0.363
120.	QPSK 1.4MHz 6%RB	Back Side	848.3	24.17	24.5	1.079	0.112	0.121
121.	QPSK 1.4MHz 6%RB	Front Side	848.3	24.17	24.5	1.079	0.217	0.234
122.	QPSK 1.4MHz 6%RB	Right side	848.3	24.17	24.5	1.079	0.151	0.163
123.	QPSK 1.4MHz 6%RB	Left side	848.3	24.17	24.5	1.079	0.079	0.085
124.	QPSK 1.4MHz 6%RB	Bottom side	848.3	24.17	24.5	1.079	0.149	0.161

LTE Band 7–Body SAR Test (Gap: 10mm)								
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					
125.	RMC QPSK 20MHz 1RB	Back Side	2510.0	23.69	24.0	1.074	0.373	0.401
126.	RMC QPSK 20MHz 1RB	Front Side	2510.0	23.69	24.0	1.074	0.54	0.580
127.	RMC QPSK 20MHz 1RB	Right side	2510.0	23.69	24.0	1.074	0.16	0.172
128.	RMC QPSK 20MHz 1RB	Left side	2510.0	23.69	24.0	1.074	0.297	0.319
129.	RMC QPSK 20MHz 1RB	Bottom side	2510.0	23.69	24.0	1.074	0.815	0.875
130.	RMC QPSK 20MHz 1RB	Bottom side	2535.0	23.50	24.0	1.122	1.004	1.127
131.	RMC QPSK 20MHz 1RB	Bottom side	2560.0	23.59	24.0	1.099	0.652	0.717
132.	RMC QPSK 20MHz 50%RB	Back Side	2510.0	22.43	23.0	1.140	0.255	0.291
133.	RMC QPSK 20MHz 50%RB	Front Side	2510.0	22.43	23.0	1.140	0.371	0.423
134.	RMC QPSK 20MHz 50%RB	Right side	2510.0	22.43	23.0	1.140	0.104	0.119
135.	RMC QPSK 20MHz 50%RB	Left side	2510.0	22.43	23.0	1.140	0.086	0.098
136.	RMC QPSK 20MHz 50%RB	Bottom side	2510.0	22.43	23.0	1.140	0.579	0.660

LTE Band 38–Body SAR Test (Gap: 10mm)								
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					
137.	QPSK 5MHz 1RB	Back Side	2572.5	23.02	23.5	1.117	0.063	0.070
138.	QPSK 5MHz 1RB	Front Side	2572.5	23.02	23.5	1.117	0.11	0.123
139.	QPSK 5MHz 1RB	Right side	2572.5	23.02	23.5	1.117	0.048	0.054
140.	QPSK 5MHz 1RB	Left side	2572.5	23.02	23.5	1.117	0.114	0.127
141.	QPSK 5MHz 1RB	Bottom side	2572.5	23.02	23.5	1.117	0.248	0.277
142.	QPSK 5MHz 25%RB	Back Side	2572.5	21.87	22.0	1.030	0.031	0.032
143.	QPSK 5MHz 25%RB	Front Side	2572.5	21.87	22.0	1.030	0.074	0.076
144.	QPSK 5MHz 25%RB	Right side	2572.5	21.87	22.0	1.030	0.031	0.032
145.	QPSK 5MHz 25%RB	Left side	2572.5	21.87	22.0	1.030	0.082	0.084
146.	QPSK 5MHz 25%RB	Bottom side	2572.5	21.87	22.0	1.030	0.125	0.129

LTE Band 41:Body SAR Test (Gap: 10mm)								
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					
147.	RMC QPSK 5MHz 1RB	Back Side	2498.5	23.50	24.0	1.122	0.116	0.130
148.	RMC QPSK 5MHz 1RB	Front Side	2498.5	23.50	24.0	1.122	0.265	0.297
149.	RMC QPSK 5MHz 1RB	Right side	2498.5	23.50	24.0	1.122	0.111	0.125
150.	RMC QPSK 5MHz 1RB	Left side	2498.5	23.50	24.0	1.122	0.173	0.194
151.	RMC QPSK 5MHz 1RB	Bottom side	2498.5	23.50	24.0	1.122	0.466	0.523
152.	RMC QPSK 5MHz 25%RB	Back Side	2498.5	22.08	22.5	1.102	0.084	0.093
153.	RMC QPSK 5MHz 25%RB	Front Side	2498.5	22.08	22.5	1.102	0.187	0.206
154.	RMC QPSK 5MHz 25%RB	Bottom side	2498.5	22.08	22.5	1.102	0.062	0.068
155.	RMC QPSK 5MHz 25%RB	Left side	2498.5	22.08	22.5	1.102	0.296	0.326

WLAN 2.4GHz –Body SAR Test									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
156.	802.11b	Back Side	06	2437	5.39	5.5	1.026	0.031	0.032
157.	802.11b	Front Side	06	2437	5.39	5.5	1.026	0.141	0.145
158.	802.11b	Left side	06	2437	5.39	5.5	1.026	0.056	0.057
159.	802.11b	Top side	06	2437	5.39	5.5	1.026	0.332	0.341

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

9.3 Simultaneous Multi-band Transmission SAR Analysis

List of Mode for Simultaneous Multi-band Transmission

No.	Configurations	Head SAR	Body SAR
1	GSM(Voice/Data) + WLAN(2.4G)(Data)	Yes	Yes
2	WCDMA (Voice/Data)+ (2.4G)(Data)	Yes	Yes
3	LTE(Data) + (2.4G)(Data)	Yes	Yes
7	GSM(Voice/Data) + Bluetooth(Data)	Yes	Yes
8	WCDMA (Voice/Data) + Bluetooth(Data)	Yes	Yes
9	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(1g) 10mm
1.5	1.41	5/10	2.441	7.5	0.059	0.029

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

Head SAR

WWAN and WLAN

	WWAN		WLAN(2.4G)	Summed SAR (W/kg)
Position	Band	Scaled SAR (W/kg)	Scaled SAR (W/kg)	
Right Cheek	GPRS_3TX	0.970	0.072	1.042
Right Tilted	GPRS_3TX	0.496	0.035	0.531
Left Cheek	GPRS_3TX	1.014	0.026	1.040
Left Tilted	GPRS_3TX	0.474	0.014	0.488

WWAN and Bluetooth

	WWAN		Bluetooth	Summed SAR (W/kg)
Position	Band	Scaled SAR (W/kg)	Scaled SAR (W/kg)	
Right Cheek	GPRS_3TX	0.970	0.059	1.029
Right Tilted	GPRS_3TX	0.496	0.059	0.555
Left Cheek	GPRS_3TX	1.014	0.059	1.073
Left Tilted	GPRS_3TX	0.474	0.059	0.533

Body-worn SAR

WWAN and WLAN

	WWAN		WLAN(2.4G)	Summed SAR (W/kg)
Position	Band	Scaled SAR (W/kg)	Scaled SAR (W/kg)	
Back	WCDMA Band 2	0.568	0.032	0.600
Front	WCDMA Band 2	0.611	0.145	0.756

Hotspot SAR

WWAN and WLAN

	WWAN		WLAN(2.4G)	Summed SAR (W/kg)
Position	Band	Scaled SAR (W/kg)	Scaled SAR (W/kg)	
Back	GPRS850_3TX	1.246	0.032	1.278
Front	GPRS850_3TX	0.805	0.145	0.95
Right side	GPRS850_3TX	0.785	--	0.785
Left side	GPRS850_3TX	0.529	0.057	0.586
Bottom side	GPRS850_3TX	0.973	--	0.973
Top side	GPRS850_3TX	--	0.341	0.341

WWAN and Bluetooth

	WWAN		Bluetooth	Summed SAR (W/kg)
Position	Band	Scaled SAR (W/kg)	Scaled SAR (W/kg)	
Back	GPRS850_3TX	1.246	0.029	1.275
Front	GPRS850_3TX	0.805	0.029	0.834
Right side	GPRS850_3TX	0.785	0.029	0.814
Left side	GPRS850_3TX	0.529	0.029	0.558
Bottom side	GPRS850_3TX	0.973	0.029	1.002
Top side	GPRS850_3TX	--	0.029	0.029

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 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	∞
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	E.5.2	5.0	R	√3	1	1	2.89	2.89	∞

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

Annex A. Plots of System Performance Check

MEASUREMENT 1

For Head Liquid

Type: Validation measurement (Fast, 75.00 %)

Measurement duration: 7 minutes 21 seconds

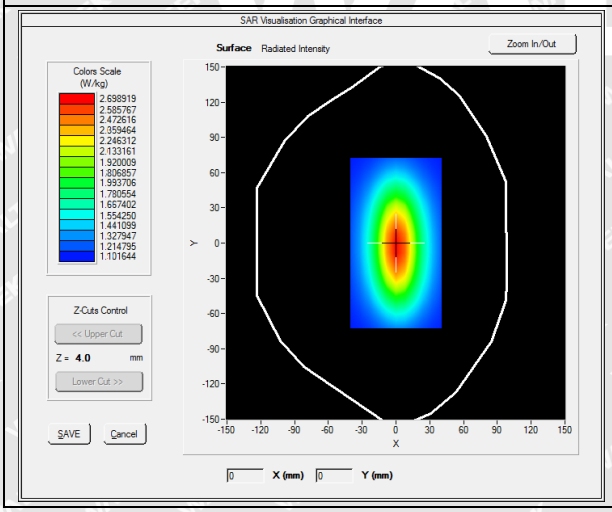
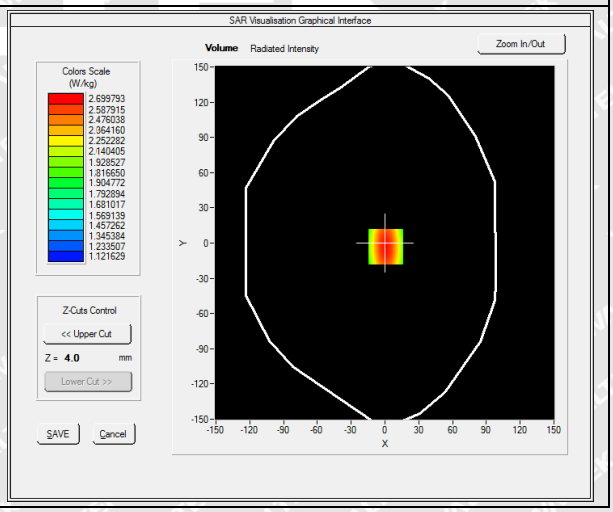
E-field Probe: SSE2 - SN 45/15 EPGO280; ConvF: Refer to the Calibration Certificate; Calibrated: 2020/07/03

A. Experimental conditions

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

B. SAR Measurement Results

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

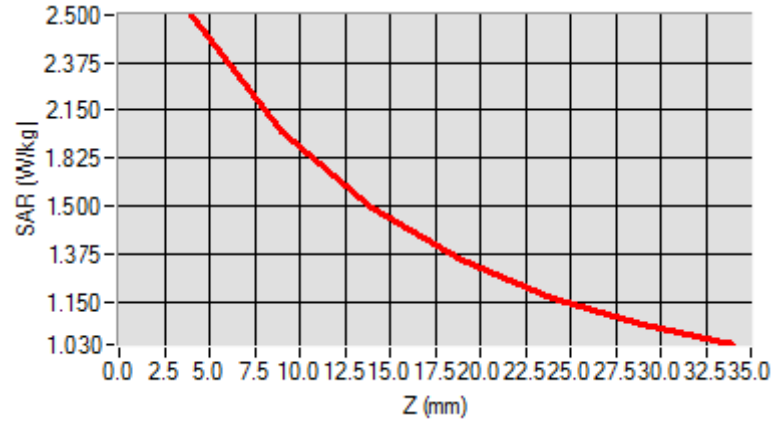
SURFACE SAR	VOLUME SAR
	

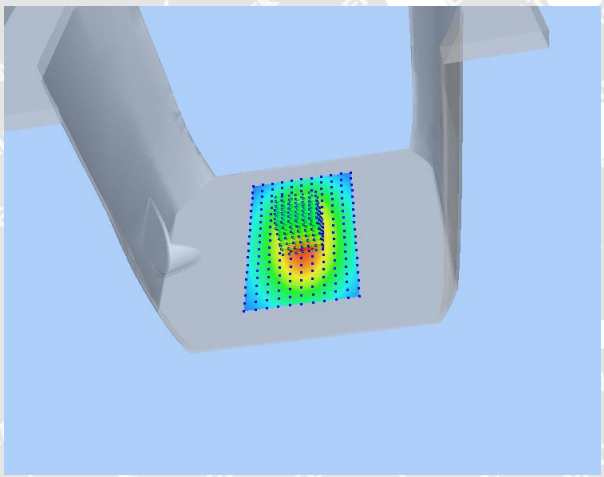
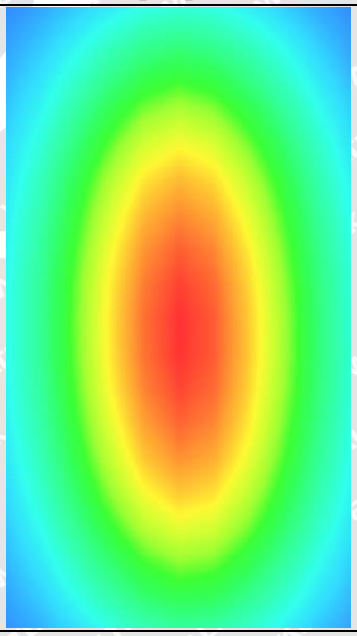
Maximum location: X=0.00, Y=0.00

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

Z Axis Scan

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



3D screen shot	Hot spot position
	

MEASUREMENT 2

For Head Liquid

Type: Validation measurement (Fast, 75.00 %)

Measurement duration: 7 minutes 21 seconds

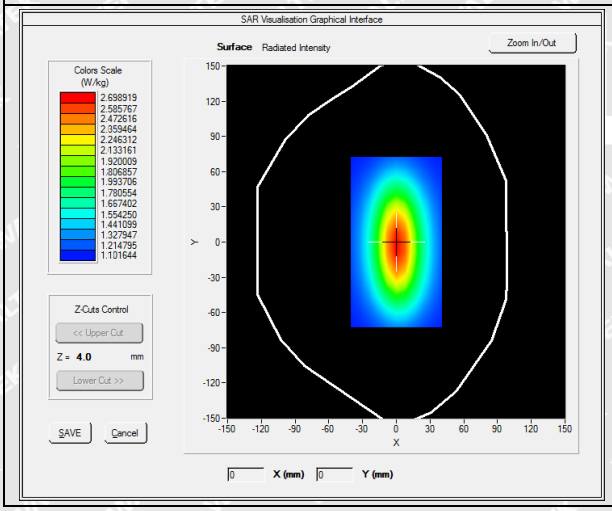
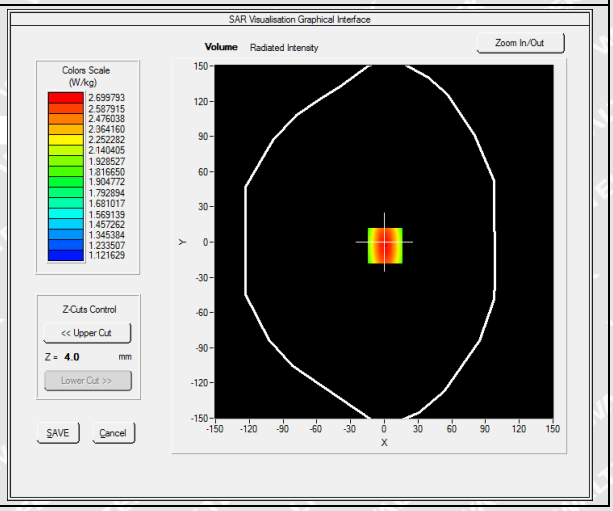
E-field Probe: SSE2 - SN 45/15 EPGO280; ConvF: Refer to the Calibration Certificate; Calibrated: 2020/07/03

A. Experimental conditions

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

B. SAR Measurement Results

Frequency (MHz)	835.000000
Relative Permittivity (real part)	41.110245
Conductivity (S/m)	0.871245
Power Variation (%)	0.038437
Ambient Temperature	21.1
Liquid Temperature	21.3

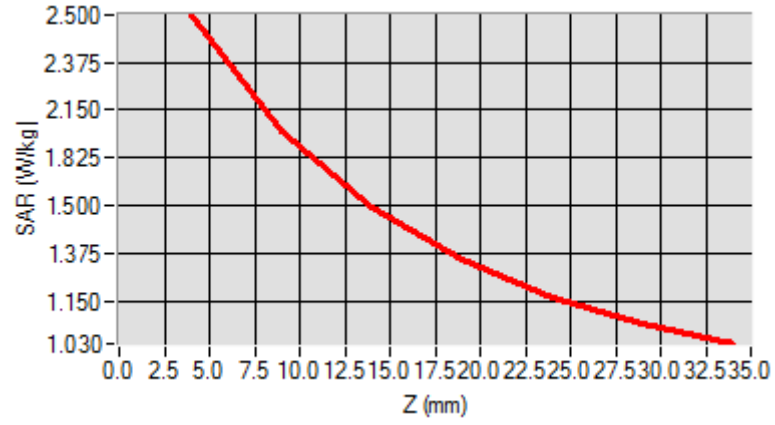
SURFACE SAR	VOLUME SAR
	

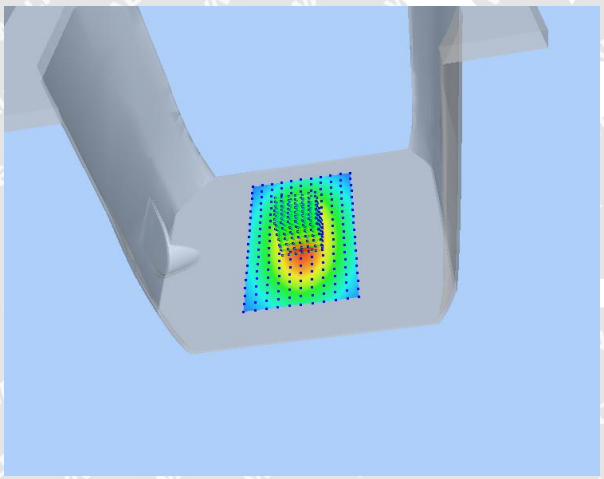
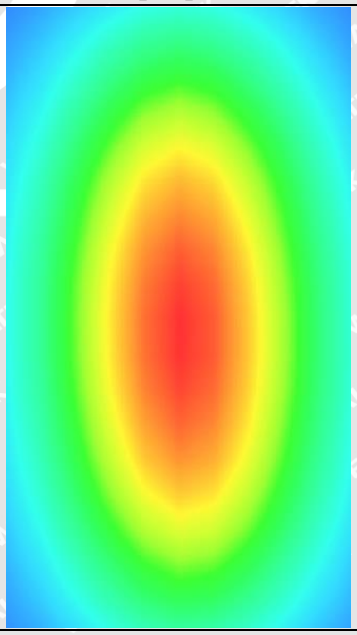
Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	1.519489
SAR 1g (W/Kg)	2.411253

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	2.4900	1.8942	1.4811	1.3541	1.1123	1.0539



3D screen shot	Hot spot position
	

MEASUREMENT 3

For Head Liquid

Type: Validation measurement (Fast, 75.00 %)

Measurement duration: 12 minutes 21 seconds

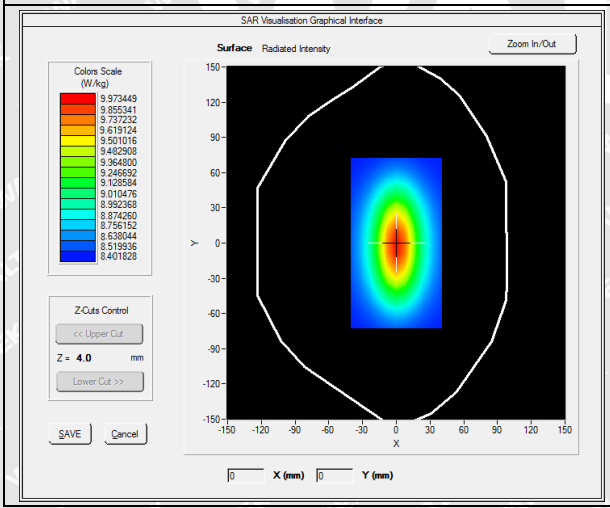
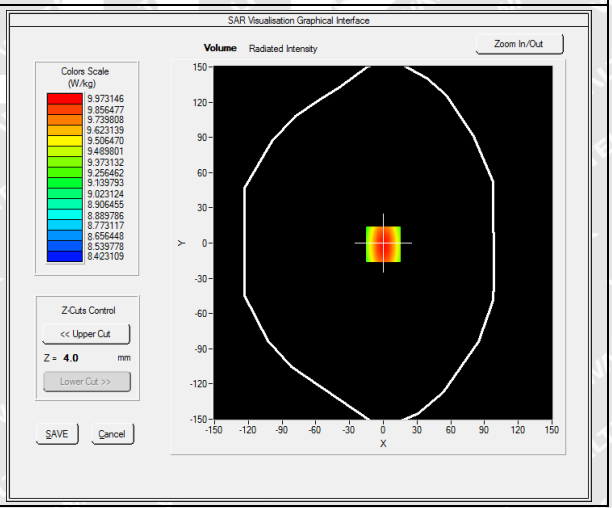
E-field Probe: SSE2 - SN 45/15 EPGO280; ConvF: Refer to the Calibration Certificate; Calibrated: 2020/07/03

A. Experimental conditions

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

B. SAR Measurement Results

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

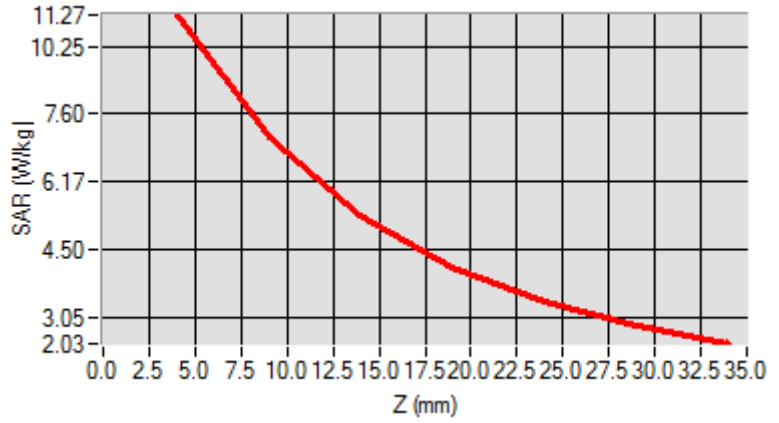
SURFACE SAR	VOLUME SAR
	

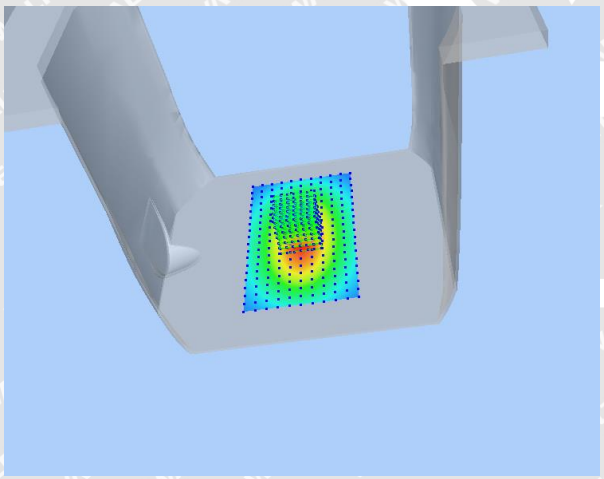
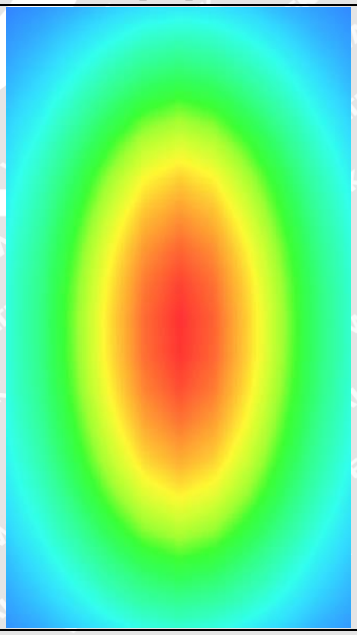
Maximum location: X=0.00, Y=0.00

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

Z Axis Scan

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



3D screen shot	Hot spot position
	

MEASUREMENT 4

For Head Liquid

Type: Validation measurement (Fast, 75.00 %)

Measurement duration: 12 minutes 21 seconds

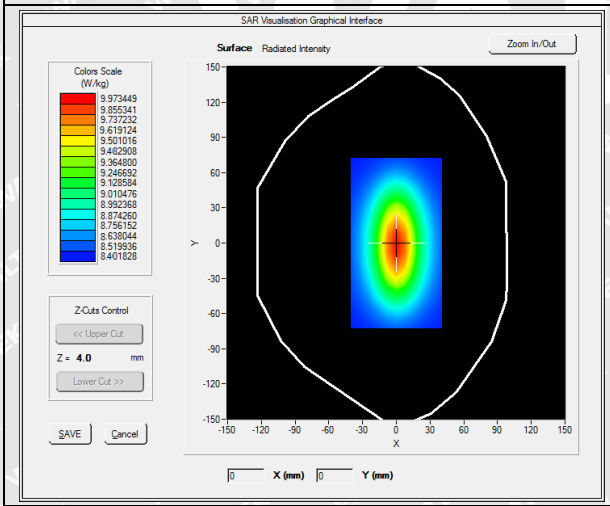
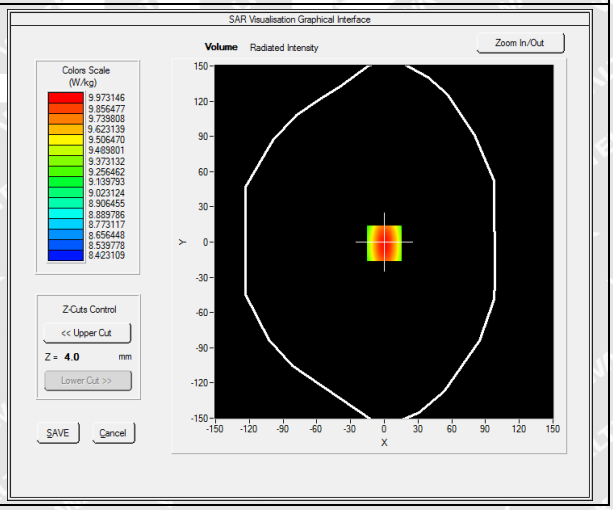
E-field Probe: SSE2 - SN 45/15 EPGO280; ConvF: Refer to the Calibration Certificate; Calibrated: 2020/07/03

A. Experimental conditions

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

B. SAR Measurement Results

Frequency (MHz)	1900.000000
Relative Permittivity (real part)	38.560124
Conductivity (S/m)	1.380369
Power Variation (%)	1.022540
Ambient Temperature	21.1
Liquid Temperature	21.3

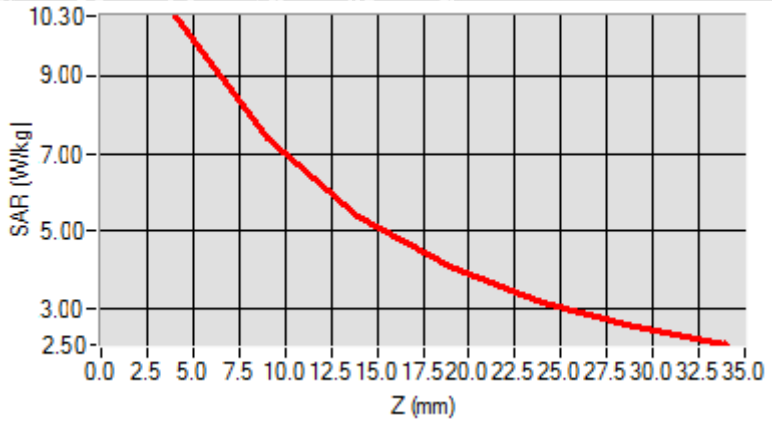
SURFACE SAR	VOLUME SAR
	

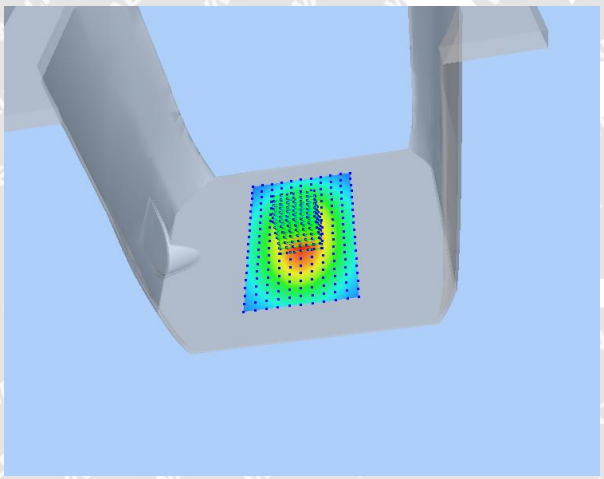
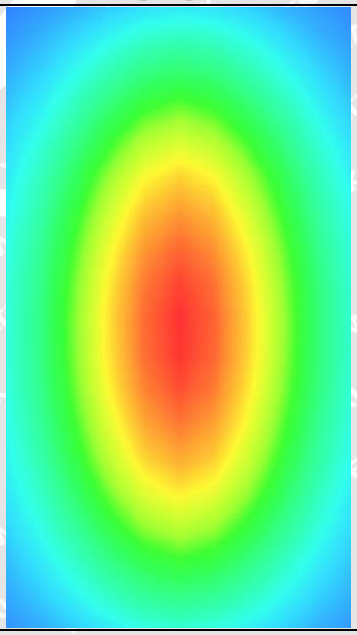
Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	5.174526
SAR 1g (W/Kg)	9.913214

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	10.2354	6.8400	5.0121	4.1189	3.0522	2.8424



3D screen shot	Hot spot position
	

MEASUREMENT 5

For Head Liquid

Type: Validation measurement (Fast, 75.00 %)

Measurement duration: 12 minutes 21 seconds

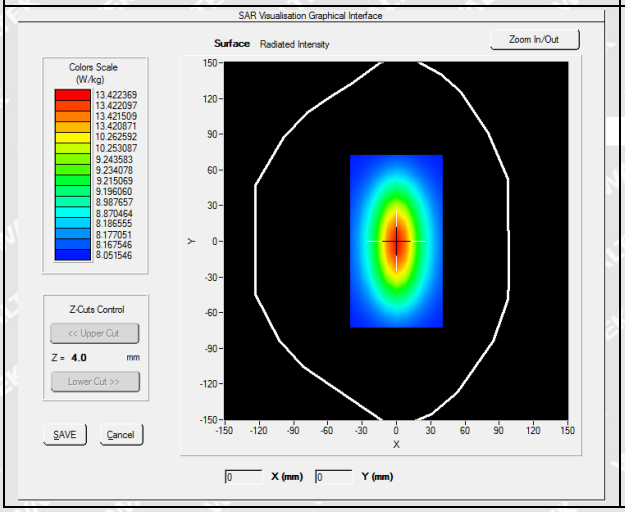
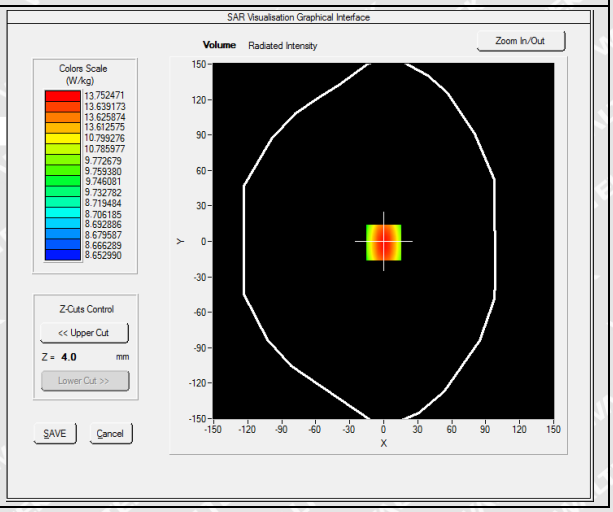
E-field Probe: SSE2 - SN 45/15 EPGO280; ConvF: Refer to the Calibration Certificate; Calibrated: 2020/07/03

A. Experimental conditions

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

B. SAR Measurement Results

Frequency (MHz)	2450.000000
Relative Permittivity (real part)	38.153660
Conductivity (S/m)	1.740236
Power Variation (%)	1.141452
Ambient Temperature	21.1
Liquid Temperature	21.2

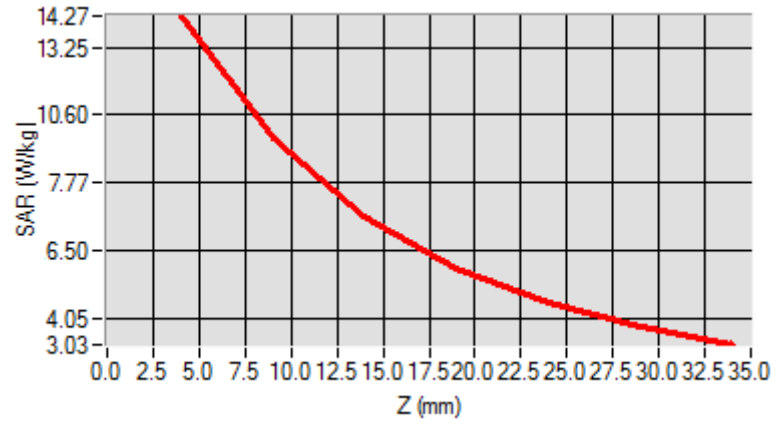
SURFACE SAR	VOLUME SAR
	

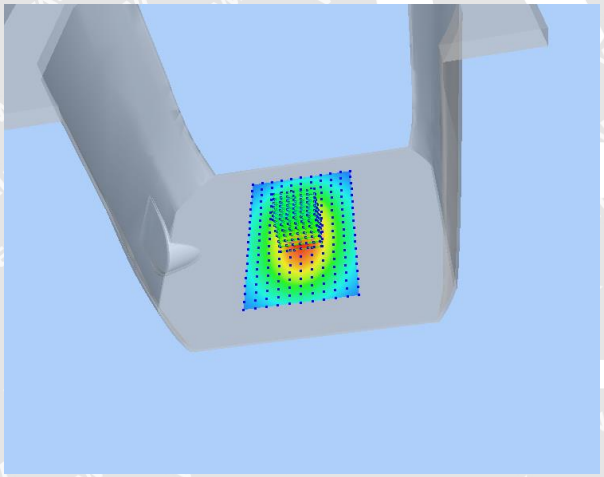
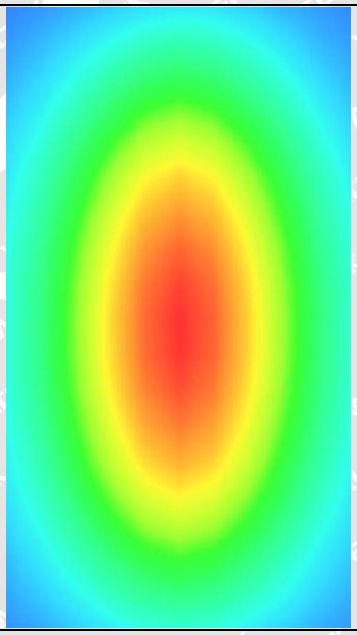
Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	8.020427
SAR 1g (W/Kg)	13.452457

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	14.1034	12.0012	10.2624	7.4715	5.9022	4.5114



3D screen shot	Hot spot position
	

MEASUREMENT 6

For Head Liquid

Type: Validation measurement (Fast, 75.00 %)

Measurement duration: 12 minutes 21 seconds

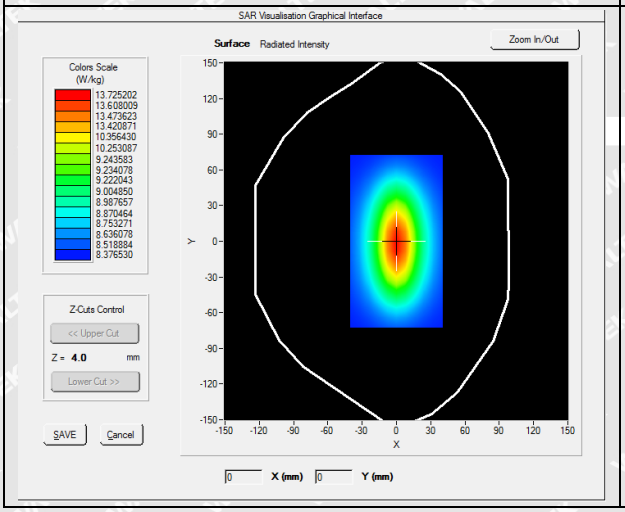
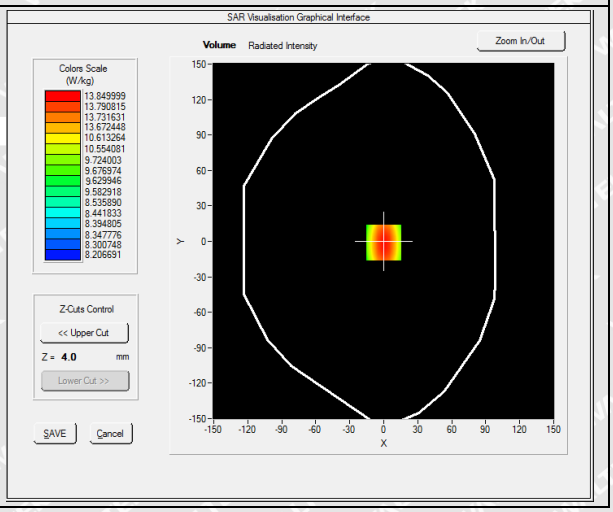
E-field Probe: SSE2 - SN 45/15 EPGO280; ConvF: Refer to the Calibration Certificate; Calibrated: 2020/07/03

A. Experimental conditions

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

B. SAR Measurement Results

Frequency (MHz)	2600.000000
Relative Permittivity (real part)	38.631092
Conductivity (S/m)	1.930182
Power Variation (%)	1.028221
Ambient Temperature	21.1
Liquid Temperature	21.2

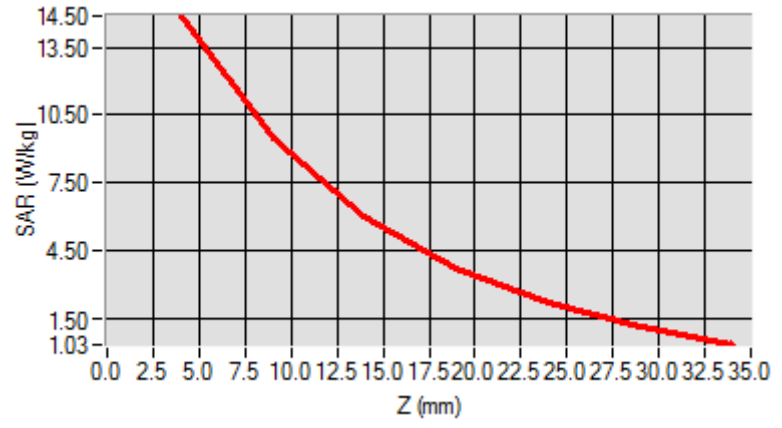
SURFACE SAR	VOLUME SAR
	

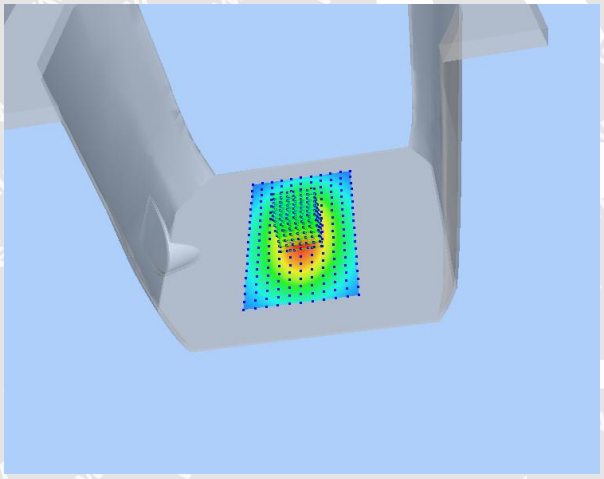
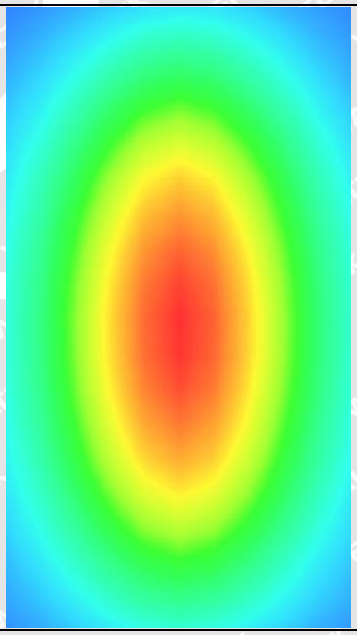
Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	8.270822
SAR 1g (W/Kg)	13.670282

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	14.0426	12.1354	10.2965	7.4854	5.9354	4.5186



3D screen shot	Hot spot position
	

MEASUREMENT 7

For Head Liquid

Type: Validation measurement (Fast, 75.00 %)

Measurement duration: 12 minutes 21 seconds

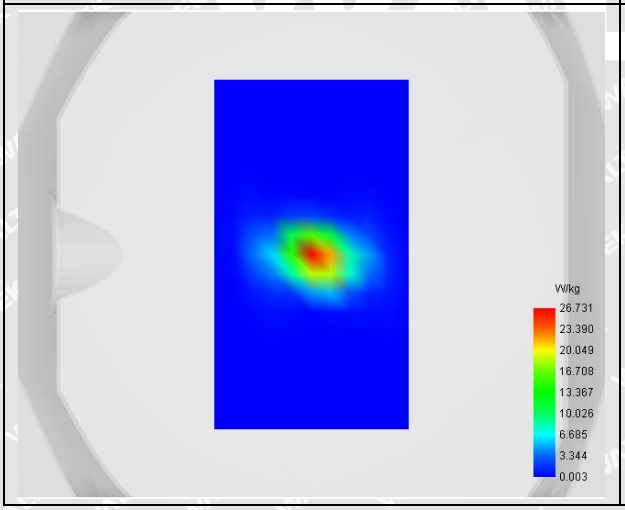
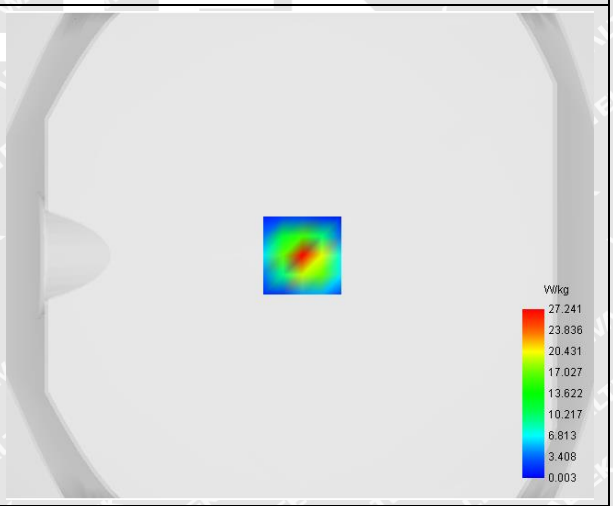
E-field Probe: SSE2 - SN 45/15 EPGO280; ConvF: Refer to the Calibration Certificate; Calibrated: 2020/07/03

A. Experimental conditions

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

B. SAR Measurement Results

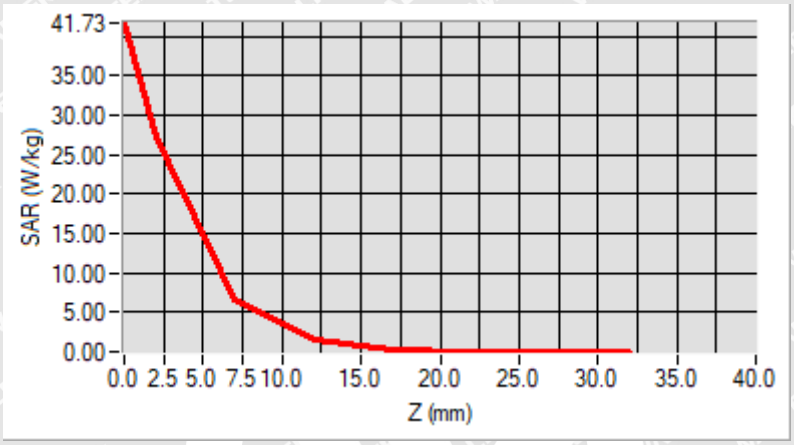
Frequency (MHz)	5200.000000
Relative Permittivity (real part)	35.612911
Conductivity (S/m)	4.871483
Power Variation (%)	0.943213
Ambient Temperature	21.1
Liquid Temperature	21.2

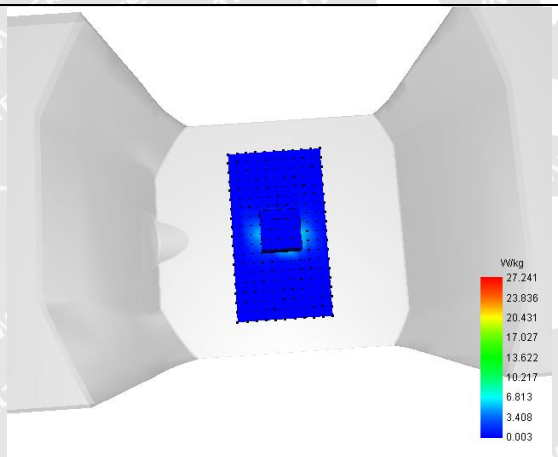
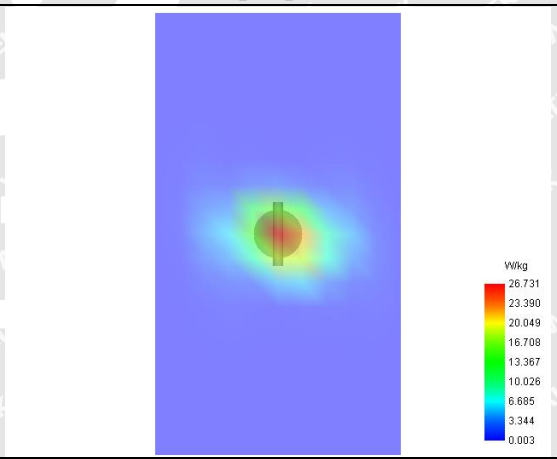
SURFACE SAR	VOLUME SAR
	

Maximum location: X=1.00, Y=0.00

SAR 10g (W/Kg)	5.310334
SAR 1g (W/Kg)	16.946226

Z (mm)	0.00	2.00	7.00	12.00	17.00	22.00	27.00
SAR (W/Kg)	41.7264	27.2408	6.5746	1.6234	0.3765	0.0793	0.0129



3D screen shot	Hot spot position
	

MEASUREMENT 8

For Head Liquid

Type: Validation measurement (Fast, 75.00 %)

Measurement duration: 12 minutes 21 seconds

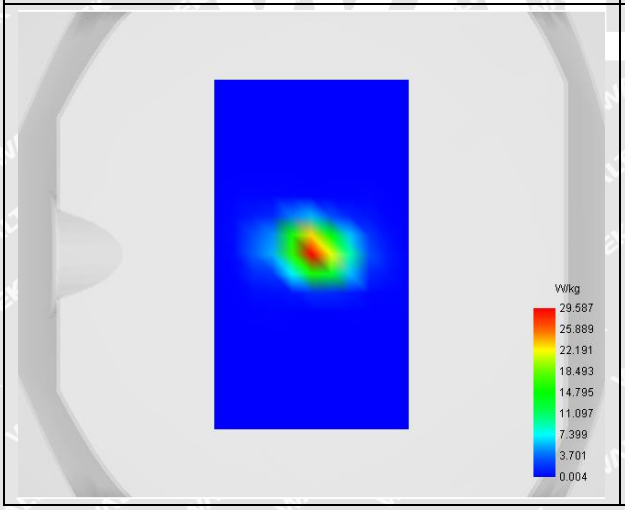
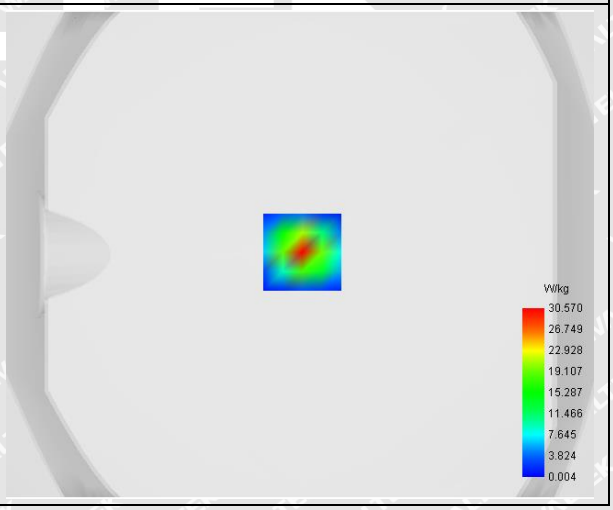
E-field Probe: SSE2 - SN 45/15 EPGO280; ConvF: Refer to the Calibration Certificate; Calibrated: 2020/07/03

A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Phantom	Validation plane
Device Position	Dipole
Band	CW5800
Signal	CW (Crest factor: 1.0)

B. SAR Measurement Results

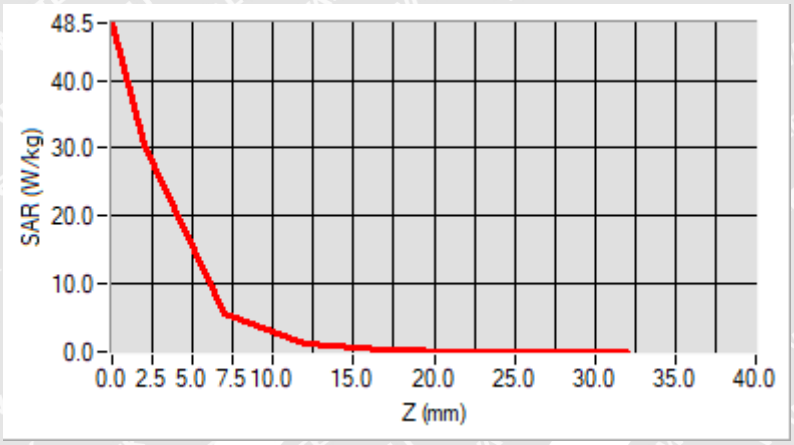
Frequency (MHz)	5800.000000
Relative Permittivity (real part)	35.612911
Conductivity (S/m)	5.171483
Power Variation (%)	0.943782
Ambient Temperature	21.1
Liquid Temperature	21.2

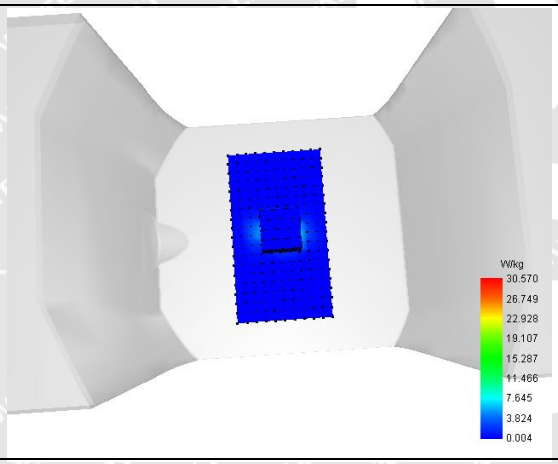
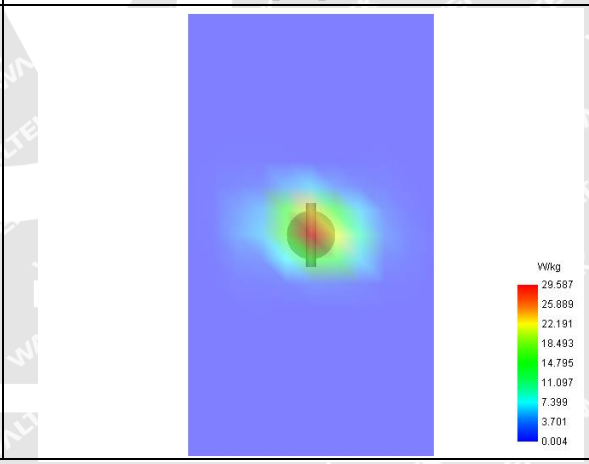
SURFACE SAR	VOLUME SAR
	

Maximum location: X=1.00, Y=1.00

SAR 10g (W/Kg)	5.879544
SAR 1g (W/Kg)	17.190731

Z (mm)	0.00	2.00	7.00	12.00	17.00	22.00	27.00
SAR (W/Kg)	48.4695	30.5699	5.7100	1.0698	0.1906	0.0364	0.0052



3D screen shot	Hot spot position
	

MEASUREMENT 9

For Body Liquid

Type: Validation measurement (Fast, 75.00 %)

Measurement duration: 12 minutes 21 seconds

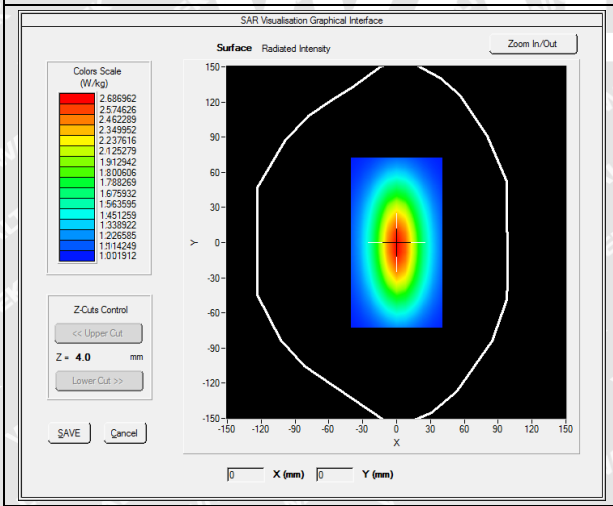
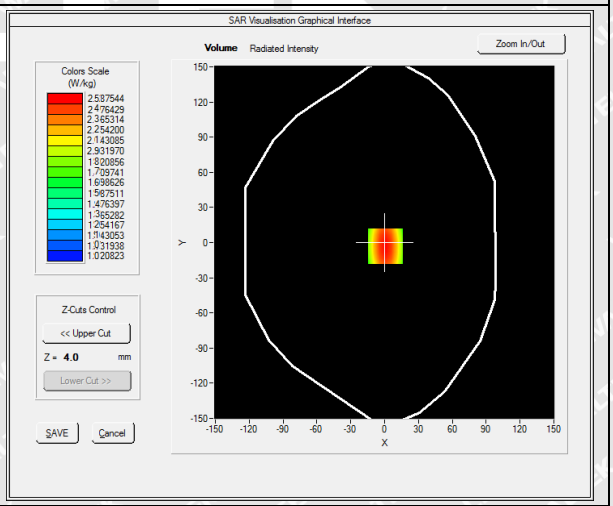
E-field Probe: SSE2 - SN 45/15 EPGO280; ConvF: Refer to the Calibration Certificate; Calibrated: 2020/07/03

A. Experimental conditions

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

B. SAR Measurement Results

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

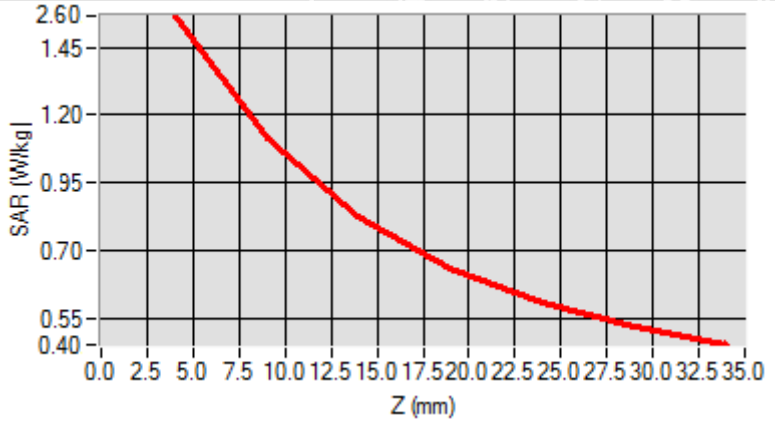
SURFACE SAR	VOLUME SAR
	

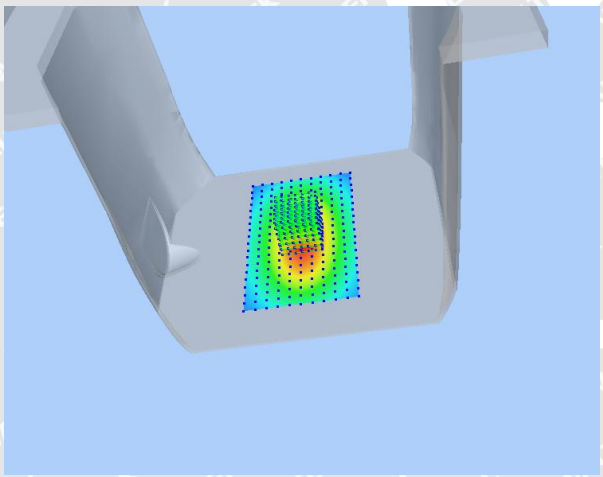
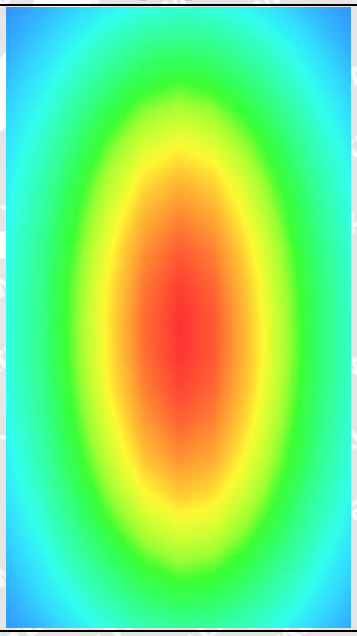
Maximum location: X=0.00, Y=0.00

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

Z Axis Scan

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



3D screen shot	Hot spot position
	

MEASUREMENT 10

For Body Liquid

Type: Validation measurement (Fast, 75.00 %)

Measurement duration: 12 minutes 21 seconds

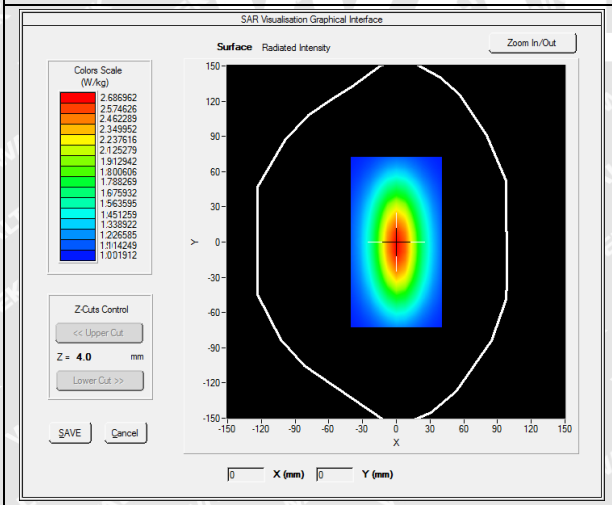
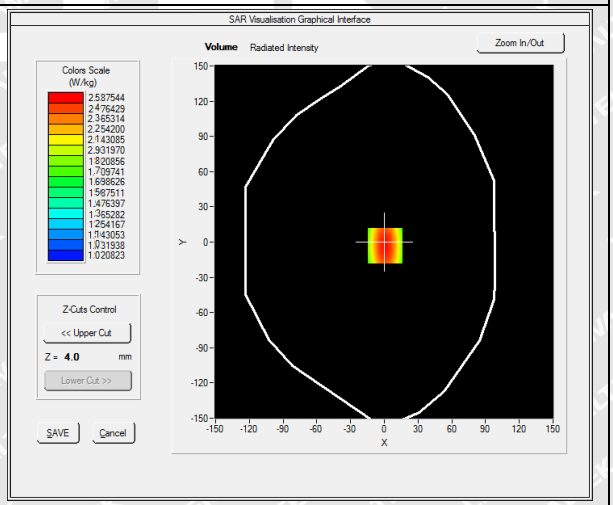
E-field Probe: SSE2 - SN 45/15 EPGO280; ConvF: Refer to the Calibration Certificate; Calibrated: 2020/07/03

A. Experimental conditions

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

B. SAR Measurement Results

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

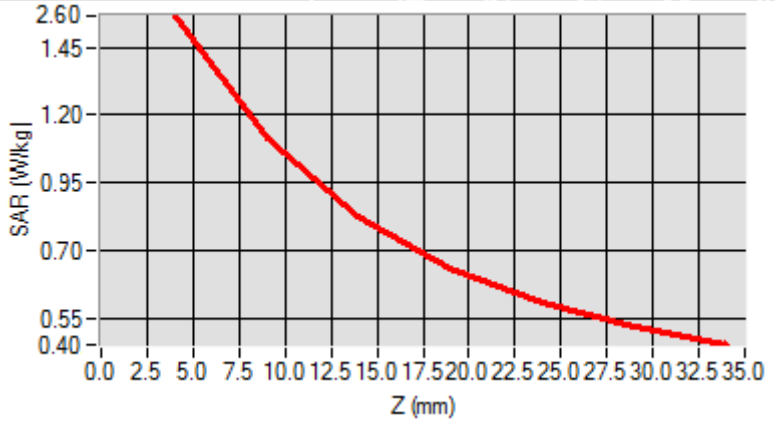
SURFACE SAR	VOLUME SAR
	

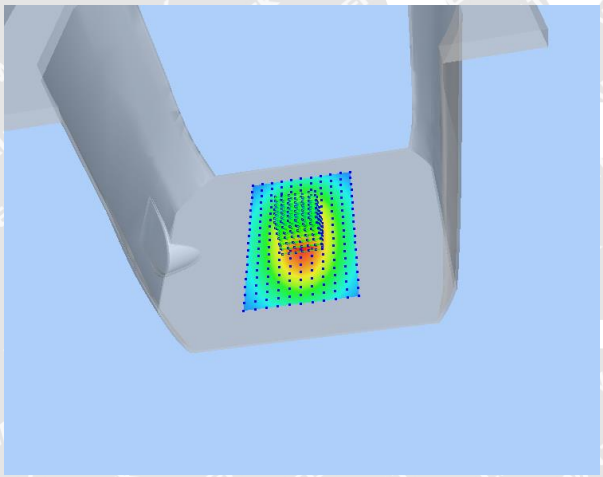
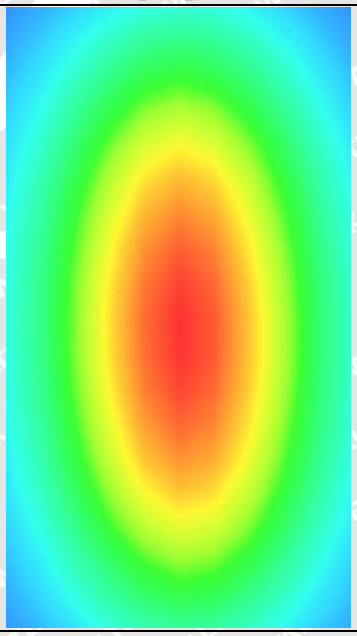
Maximum location: X=0.00, Y=0.00

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

Z Axis Scan

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



3D screen shot	Hot spot position
	

MEASUREMENT 11

For Body Liquid

Type: Validation measurement (Fast, 75.00 %)

Measurement duration: 12 minutes 21 seconds

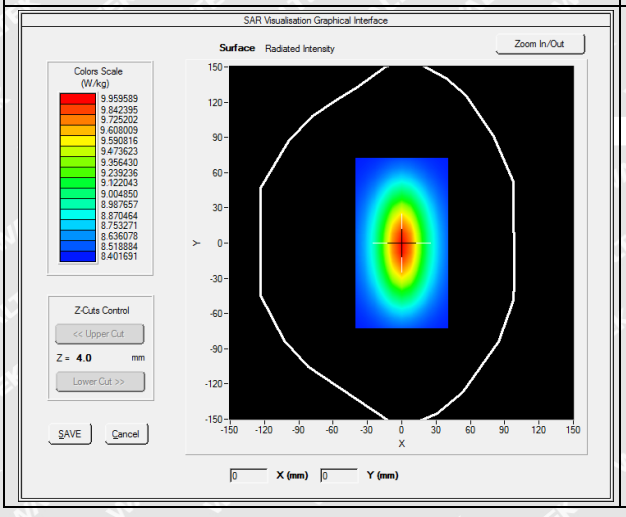
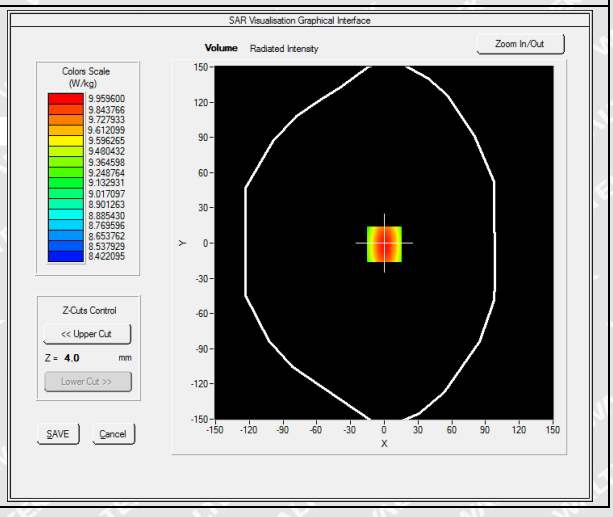
E-field Probe: SSE2 - SN 45/15 EPGO280; ConvF: Refer to the Calibration Certificate; Calibrated: 2020/07/03

A. Experimental conditions

Area Scan	dx=8mm dy=8mm
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

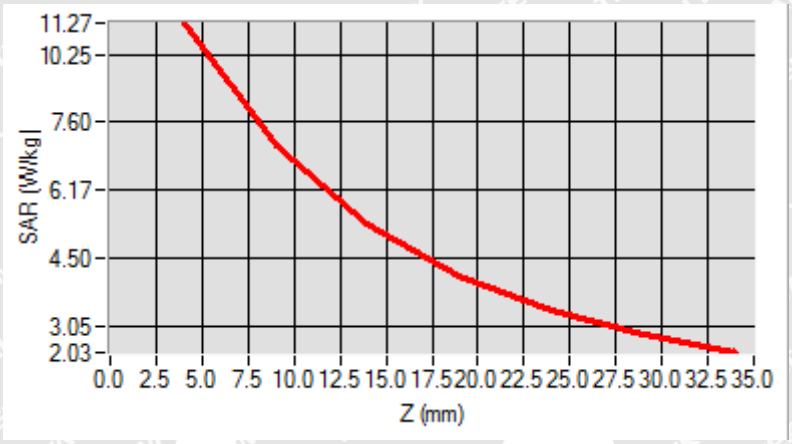
SURFACE SAR	VOLUME SAR
	

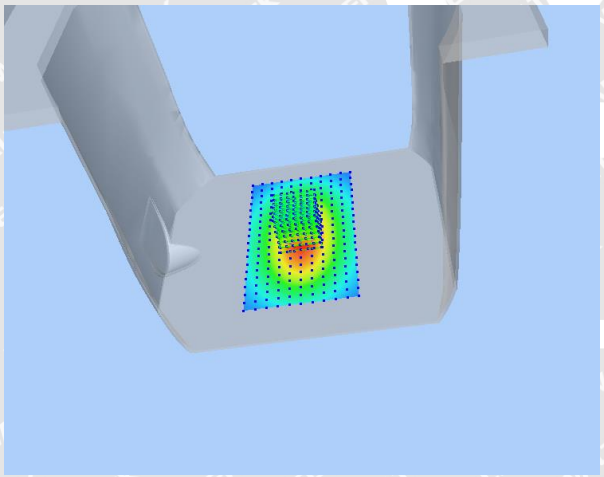
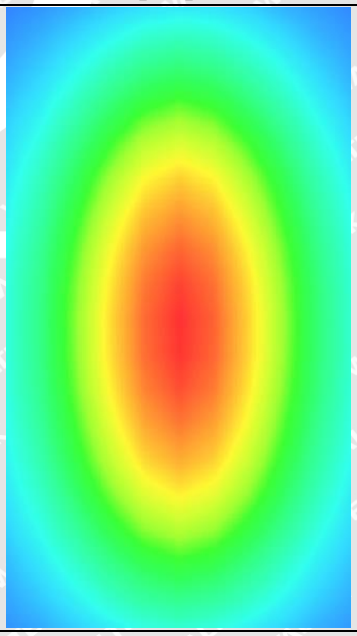
Maximum location: X=0.00, Y=0.00

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 12

For Body Liquid

Type: Validation measurement (Fast, 75.00 %)

Measurement duration: 12 minutes 21 seconds

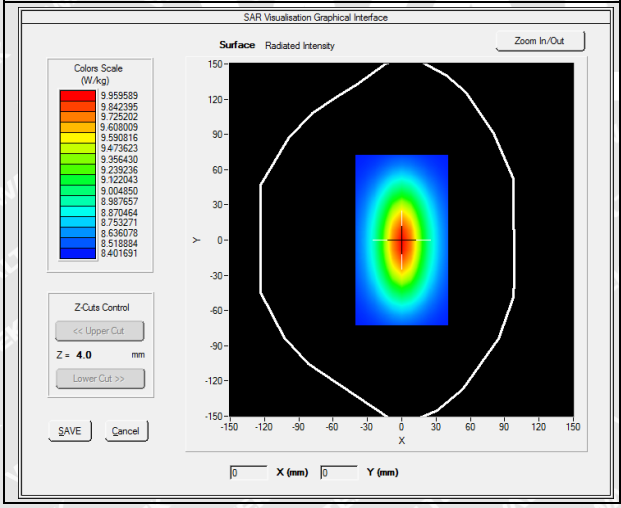
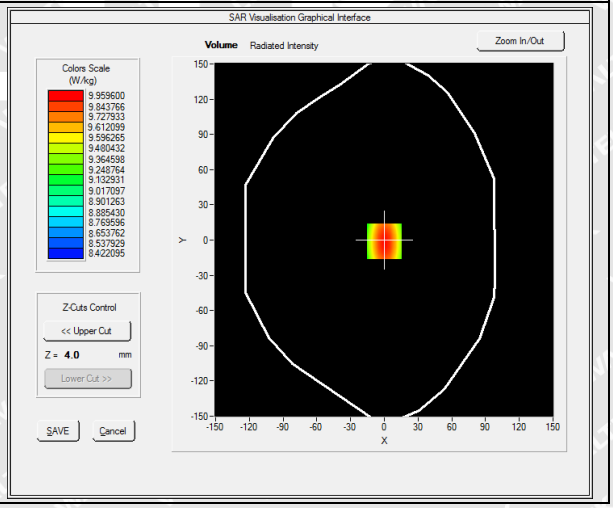
E-field Probe: SSE2 - SN 45/15 EPGO280; ConvF: Refer to the Calibration Certificate; Calibrated: 2020/07/03

A. Experimental conditions

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

B. SAR Measurement Results

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

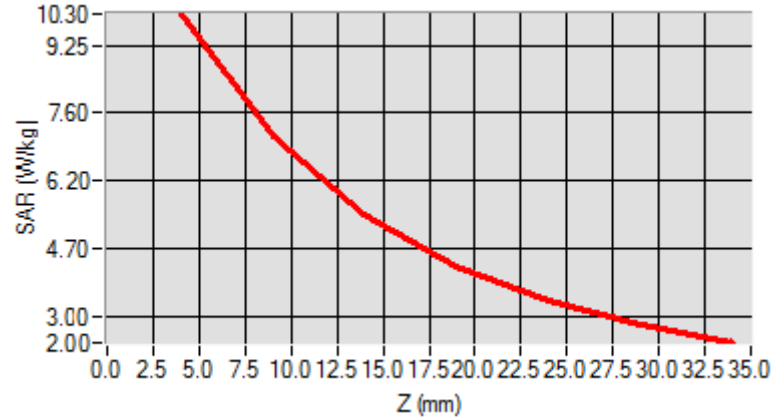
SURFACE SAR	VOLUME SAR
	

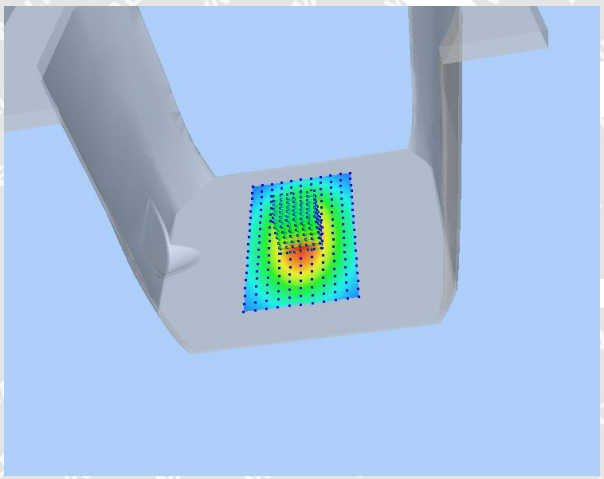
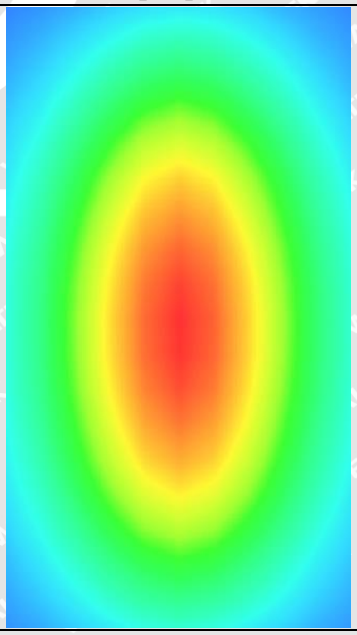
Maximum location: X=0.00, Y=0.00

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

Z Axis Scan

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



3D screen shot	Hot spot position
	

MEASUREMENT 13

For Body Liquid

Type: Validation measurement (Fast, 75.00 %)

Measurement duration: 12 minutes 21 seconds

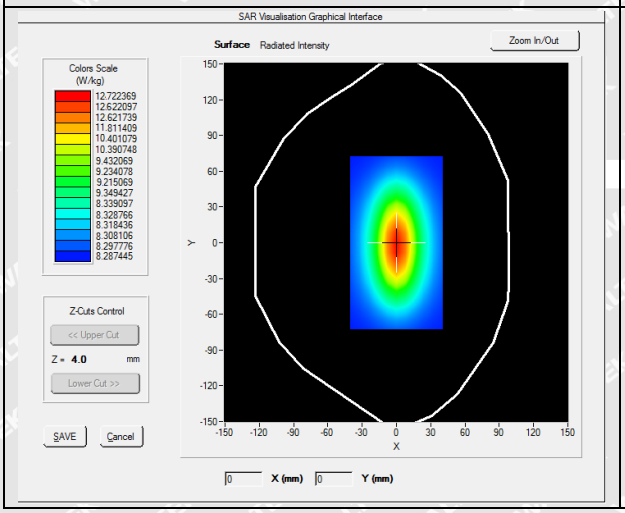
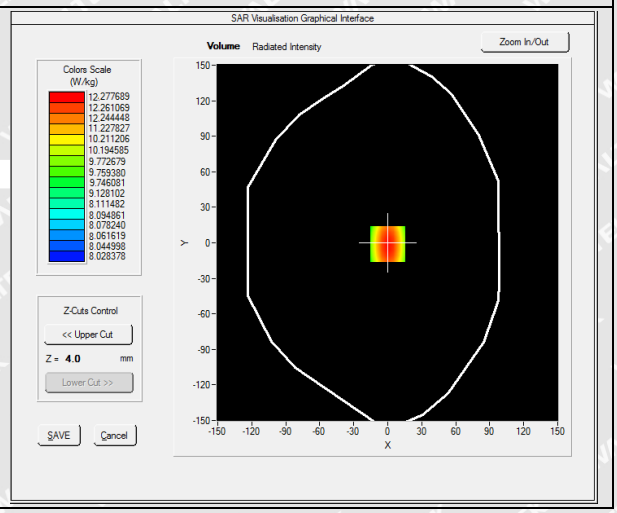
E-field Probe: SSE2 - SN 45/15 EPGO280; ConvF: Refer to the Calibration Certificate; Calibrated: 2020/07/03

A. Experimental conditions

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

B. SAR Measurement Results

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

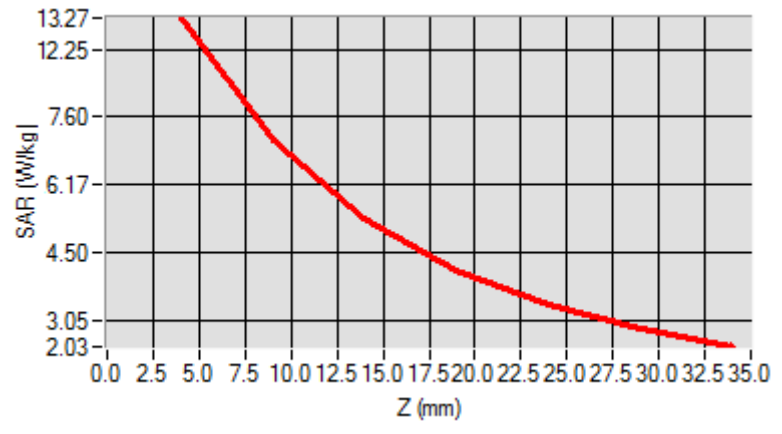
SURFACE SAR	VOLUME SAR
	

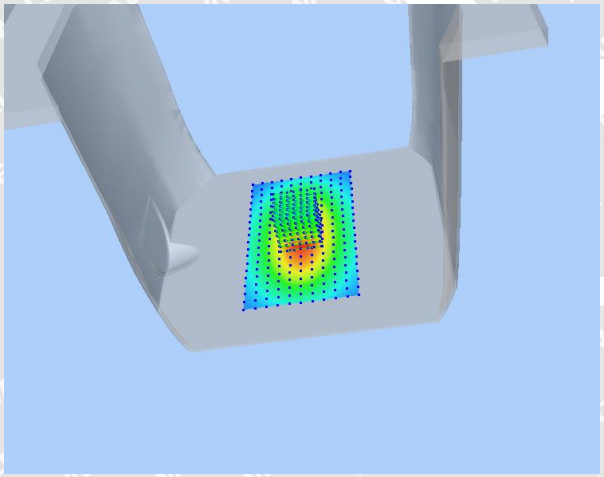
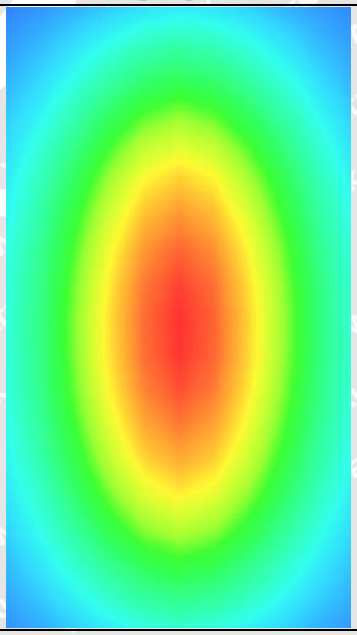
Maximum location: X=0.00, Y=0.00

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

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	13.1911	11.7951	9.2945	8.5400	6.3712	4.6225



3D screen shot	Hot spot position
	

MEASUREMENT 14

For Body Liquid

Type: Validation measurement (Fast, 75.00 %)

Measurement duration: 12 minutes 21 seconds

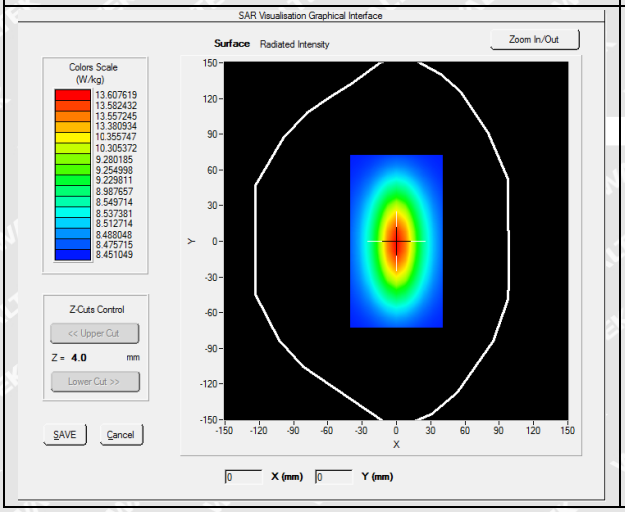
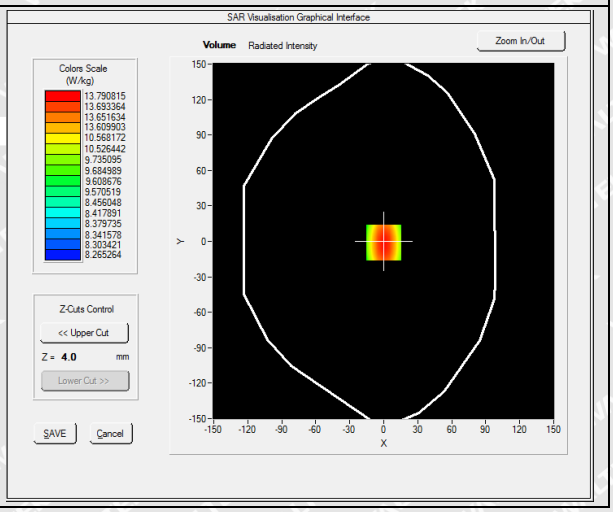
E-field Probe: SSE2 - SN 45/15 EPGO280; ConvF: Refer to the Calibration Certificate; Calibrated: 2020/07/03

A. Experimental conditions

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

B. SAR Measurement Results

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

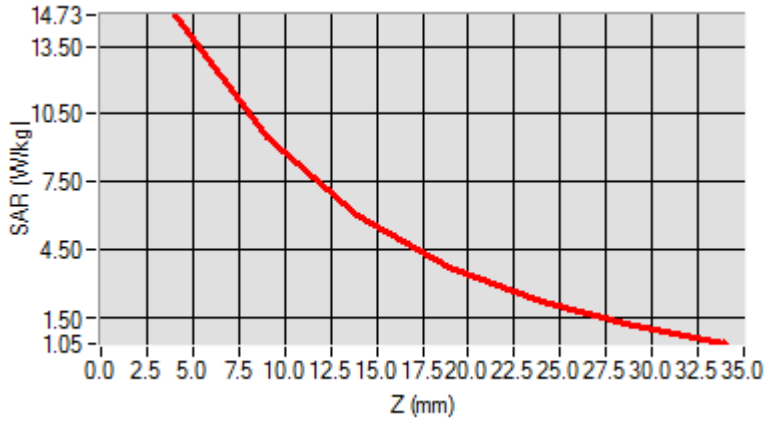
SURFACE SAR	VOLUME SAR
	

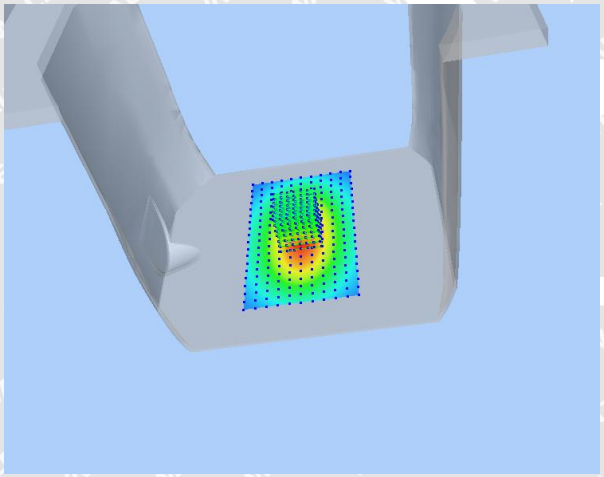
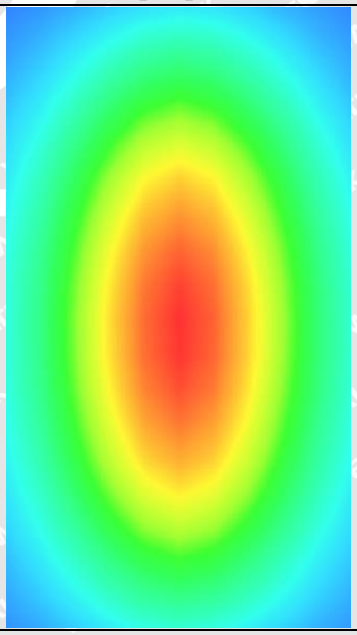
Maximum location: X=0.00, Y=0.00

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

Z Axis Scan

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



3D screen shot	Hot spot position
	

Annex B. Plots of SAR Measurement

TYPE	BAND	PARAMETERS
Portable reader	GSM850	Measurement 3: Left Head with Cheek device position on Low Channel in GSM mode
Portable reader	GSM1900	Measurement 7: Left Head with Cheek device position on Low Channel in GSM mode
Portable reader	GPRS850_3TX	Measurement 13: Left Head with Cheek device position on Low Channel in GPRS mode
Portable reader	GPRS1900_4TX	Measurement 19: Left Head with Cheek device position on High Channel in GPRS mode
Portable reader	WCDMA1900_RMC	Measurement 23: Left Head with Cheek device position on Middle Channel in WCDMA mode
Portable reader	WCDMA850_RMC	Measurement 27: Left Head with Cheek device position on High Channel in WCDMA mode
Portable reader	LTE Band 5_RMC	Measurement 29: Right Head with Cheek device position on High Channel in LTE mode
Portable reader	LTE Band 7_RMC	Measurement 37: Right Head with Cheek device position on Low Channel in LTE mode
Portable reader	LTE Band 38_RMC	Measurement 47: Left Head with Cheek device position on Low Channel in LTE mode
Portable reader	LTE Band 41_RMC	Measurement 55: Left Head with Cheek device position on Low Channel in LTE mode
Portable reader	WiFi_802.11b	Measurement 61: Right Head with Cheek device position on Middle Channel in 802.11b mode
Portable reader	GSM850	Measurement 65: Flat Plane with Body-worn device position on Low Channel in GSM mode
Portable reader	GSM1900	Measurement 67: Flat Plane with Body-worn device position on Low Channel in GSM mode
Portable reader	GPRS850_3TX	Measurement 99: Flat Plane with Back device position on Middle Channel in GPRS mode
Portable reader	GPRS1900_4TX	Measurement 104: Flat Plane with Bottom device position on High Channel in GPRS mode
Portable reader	WCDMA1900_RMC	Measurement 109: Flat Plane with Bottom side device position on Middle Channel in WCDMA mode
Portable reader	WCDMA850_RMC	Measurement 111: Flat Plane with Front side device position on High Channel in WCDMA mode
Portable reader	LTE Band 5_RMC	Measurement 116: Flat Plane with Front device position on High Channel in LTE mode

Portable reader	**LTE Band 7_RMC**	Measurement 130: Flat Plane with Bottom device position on High Channel in LTE mode
Portable reader	**LTE Band 38_RMC**	Measurement 141: Flat Plane with Bottom device position on Low Channel in LTE mode
Portable reader	**LTE Band 41_RMC**	Measurement 151: Flat Plane with Bottom device position on Low Channel in LTE mode
Portable reader	**WiFi_802.11b**	Measurement 159: Flat Plane with Top side device position on Middle Channel in 802.11b mode
Remark: SAR plot is showed the highest measured SAR in each exposure configuration, wireless mode and frequency band combination.		

MEASUREMENT 3

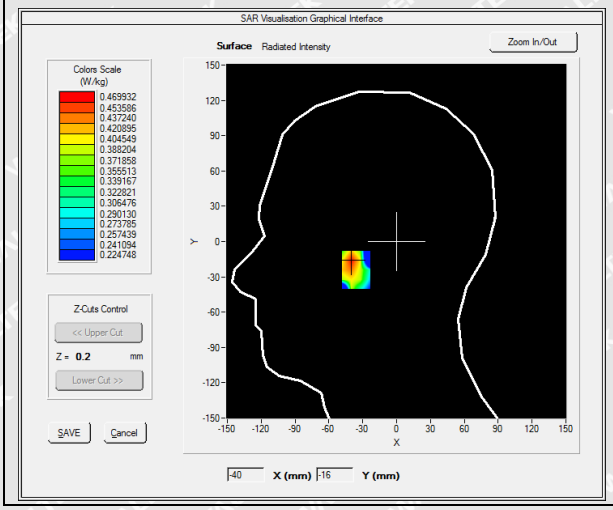
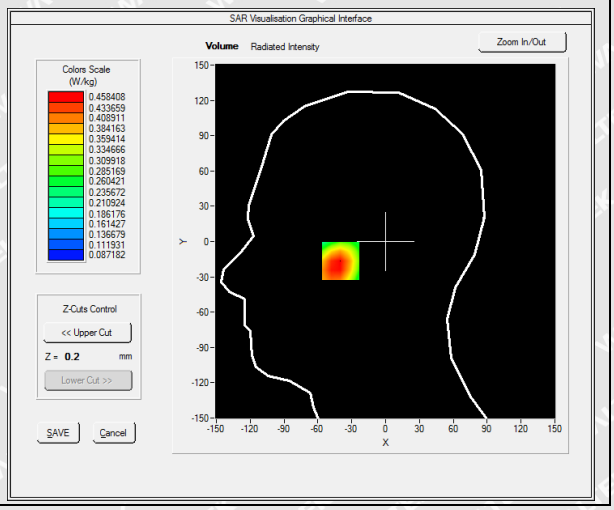
Type: Phone measurement (Complete)
Date of measurement: 2020-08-26
Measurement duration: 11 minutes 48 seconds
E-field Probe: SSE2 - SN 45/15 EPGO280; ConvF: Refer to the Calibration Certificate; Calibrated: 2020/07/03

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Left head
Device Position	Cheek
Band	GSM850
Channels	Low
Signal	TDMA (Crest factor: 8.0)

B. SAR Measurement Results

Frequency (MHz)	824.200000
Relative Permittivity (real part)	41.110245
Conductivity (S/m)	0.871245
Power Variation (%)	1.144536
Ambient Temperature	21.1
Liquid Temperature	21.3

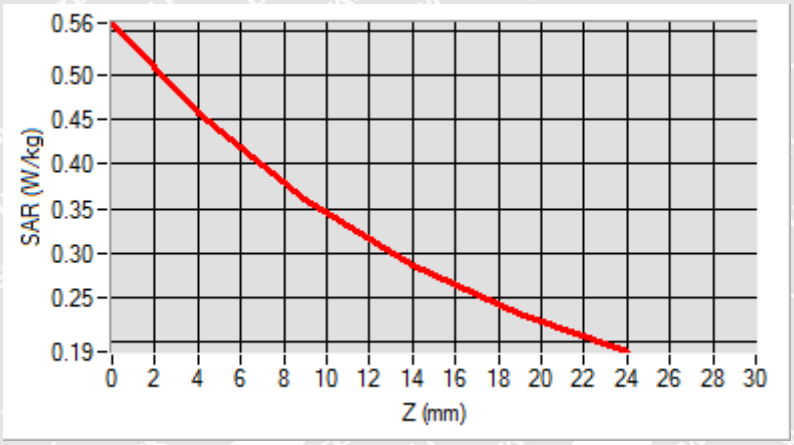
SURFACE SAR	VOLUME SAR
	

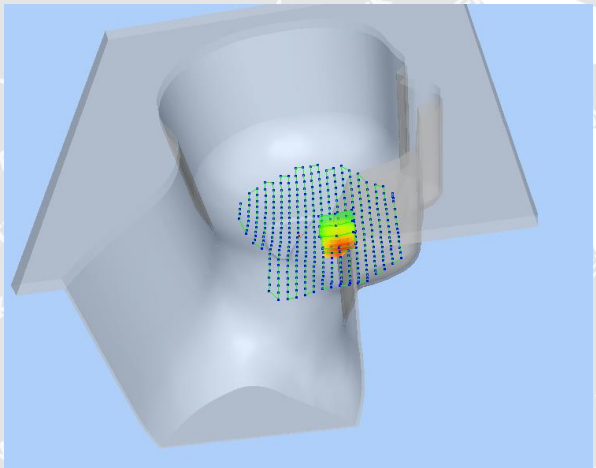
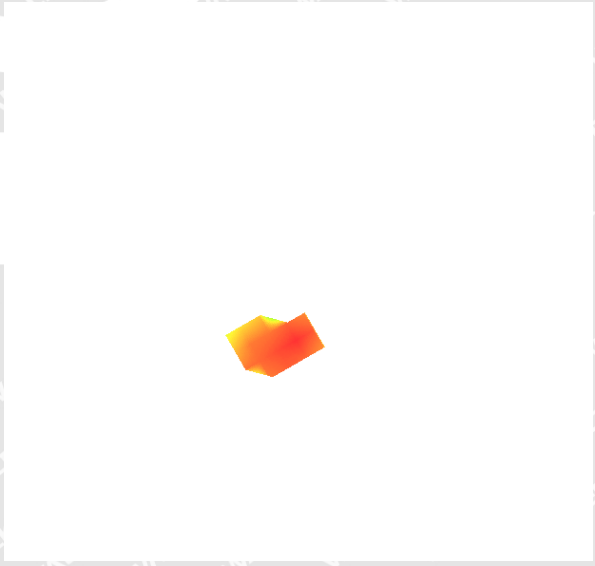
Maximum location: X=-40.00, Y=-16.00

SAR Peak: 0.57 W/kg

SAR 10g (W/Kg)	0.340878
SAR 1g (W/Kg)	0.453761

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.5588	0.4584	0.3601	0.2872	0.2330



3D screen shot	Hot spot position
	

MEASUREMENT 7

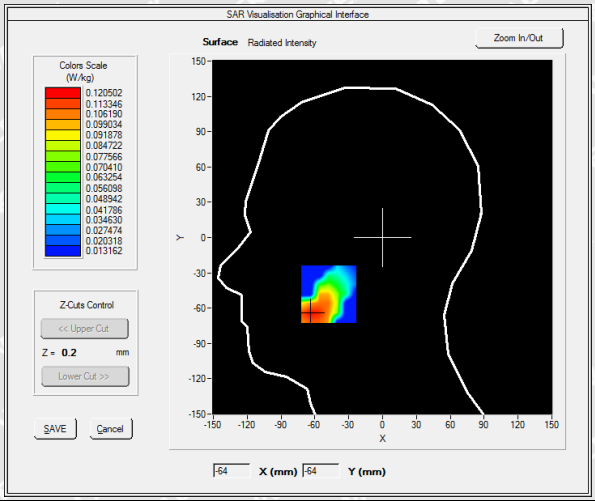
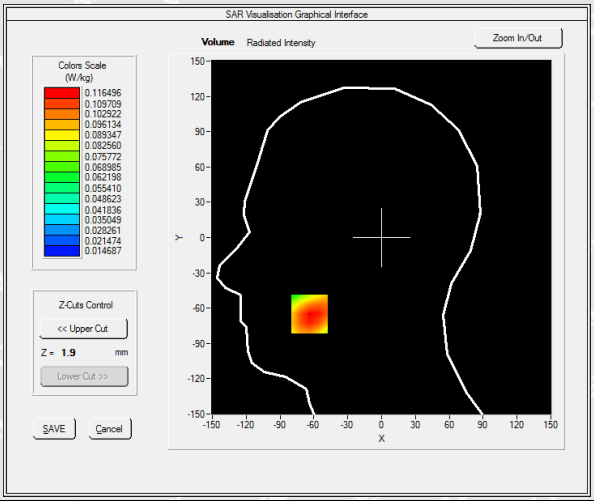
Type: Phone measurement (Complete)
Date of measurement: 2020-08-29
Measurement duration: 11 minutes 48 seconds
E-field Probe: SSE2 - SN 45/15 EPGO280; ConvF: Refer to the Calibration Certificate; Calibrated: 2020/07/03

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Right head
Device Position	Cheek
Band	GSM1900
Channels	Low
Signal	TDMA (Crest factor: 8.0)

B. SAR Measurement Results

Frequency (MHz)	1850.200000
Relative Permittivity (real part)	38.560124
Conductivity (S/m)	1.380369
Power Variation (%)	1.442440
Ambient Temperature	21.1
Liquid Temperature	21.3

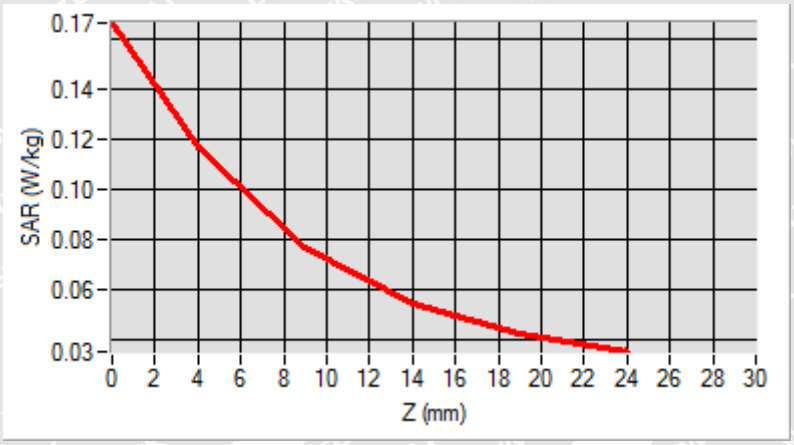
SURFACE SAR	VOLUME SAR
	

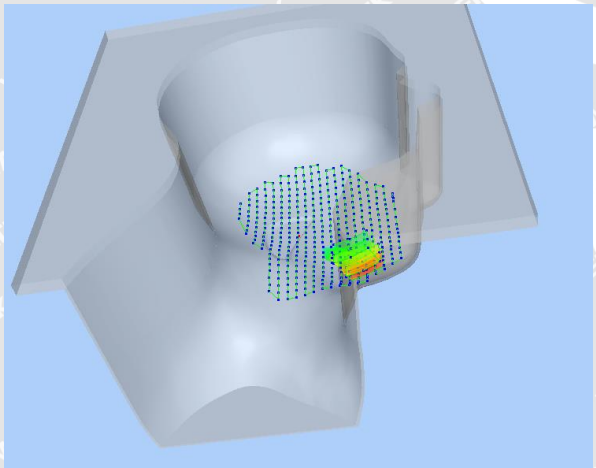
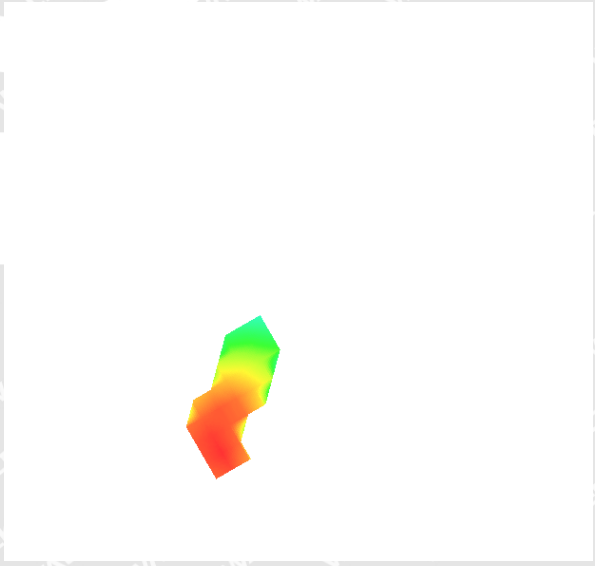
Maximum location: X=-64.00, Y=-65.00

SAR Peak: 0.17 W/kg

SAR 10g (W/Kg)	0.075367
SAR 1g (W/Kg)	0.112637

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.1661	0.1165	0.0763	0.0537	0.0419



3D screen shot	Hot spot position
	

MEASUREMENT 13

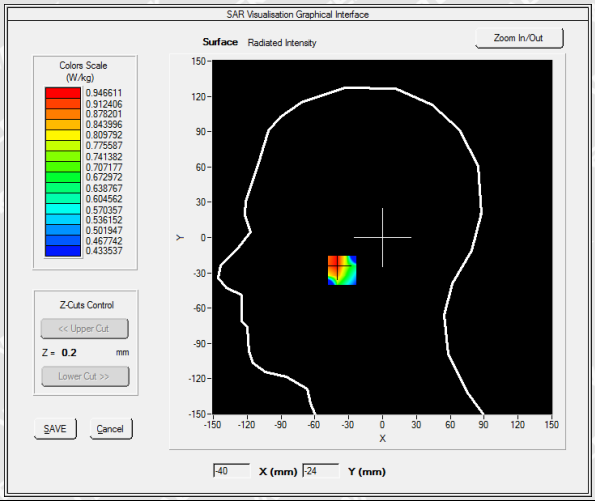
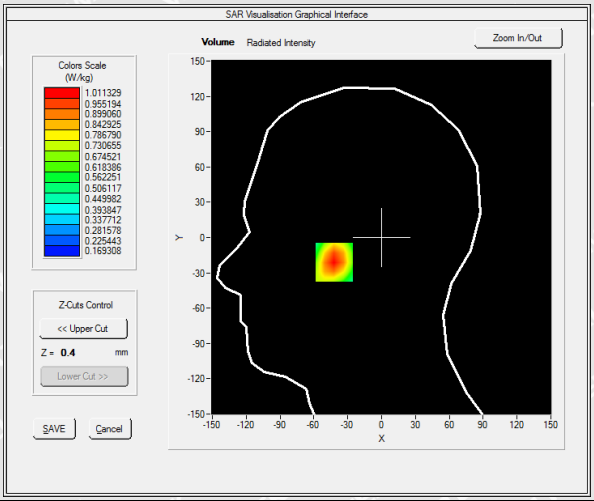
Type: Phone measurement (Complete)
Date of measurement: 2020-08-26
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE2 - SN 45/15 EPGO280; ConvF: Refer to the Calibration Certificate; Calibrated: 2020/07/03

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Left head
Device Position	Cheek
Band	GPRS850_3TX
Channels	Low
Signal	Duty Cycle: 1:266

B. SAR Measurement Results

Frequency (MHz)	824.200000
Relative Permittivity (real part)	41.110245
Conductivity (S/m)	0.871245
Power Variation (%)	1.536272
Ambient Temperature	21.1
Liquid Temperature	21.3

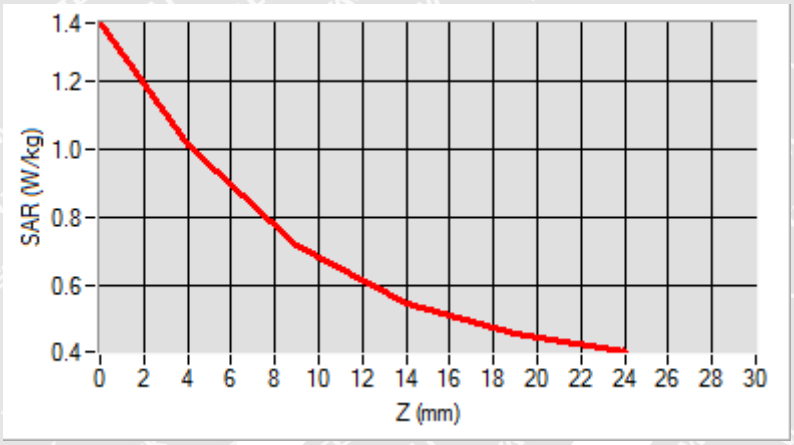
SURFACE SAR	VOLUME SAR
	

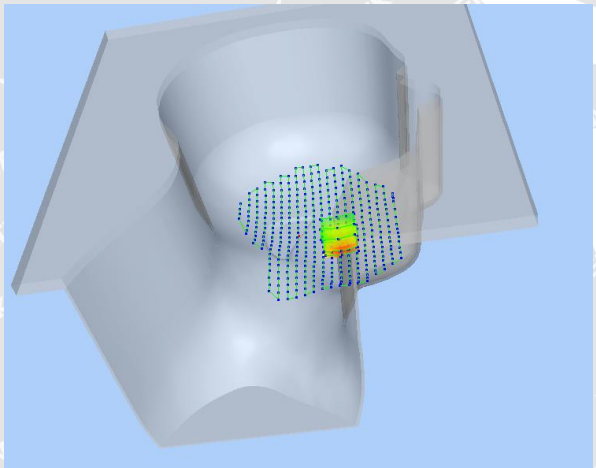
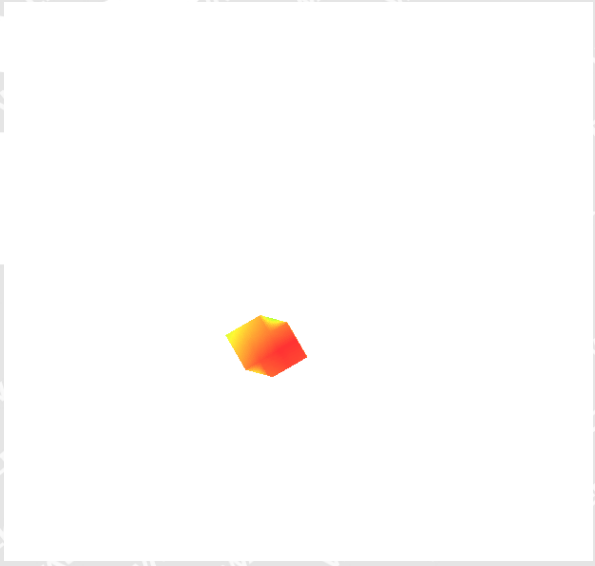
Maximum location: X=-42.00, Y=-21.00

SAR Peak: 1.38 W/kg

SAR 10g (W/Kg)	0.666456
SAR 1g (W/Kg)	0.964417

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.3682	1.0113	0.7150	0.5454	0.4581



3D screen shot	Hot spot position
	

MEASUREMENT 19

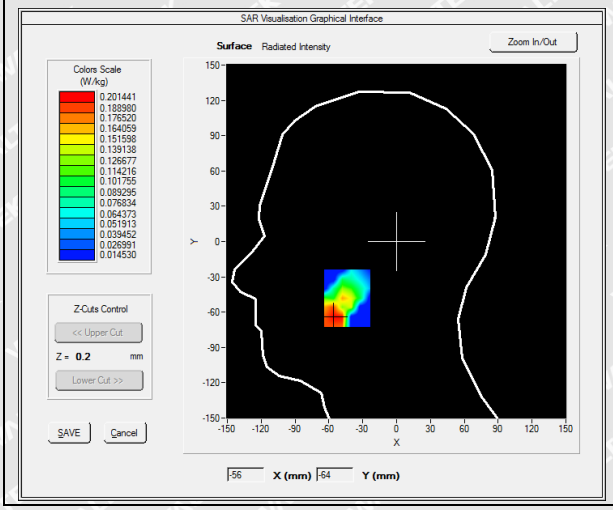
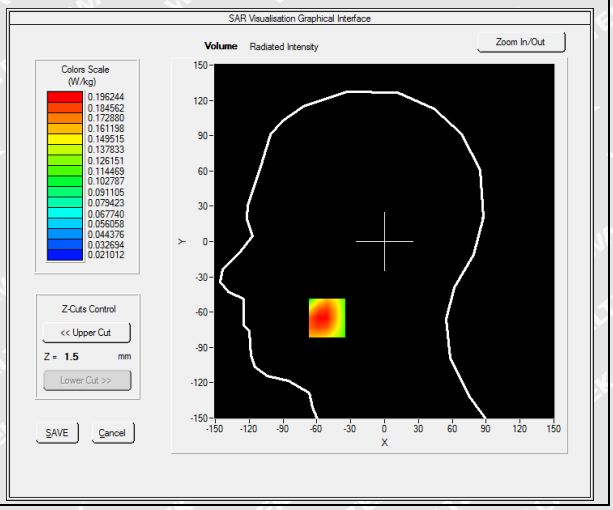
Type: Phone measurement (Complete)
Date of measurement: 2020-08-29
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE2 - SN 45/15 EPGO280; ConvF: Refer to the Calibration Certificate; Calibrated: 2020/07/03

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Left head
Device Position	Cheek
Band	GPRS1900_4TX
Channels	High
Signal	Duty Cycle: 1:2

B. SAR Measurement Results

Frequency (MHz)	1909.800000
Relative Permittivity (real part)	38.560124
Conductivity (S/m)	1.380369
Power Variation (%)	1.536272
Ambient Temperature	21.1
Liquid Temperature	21.3

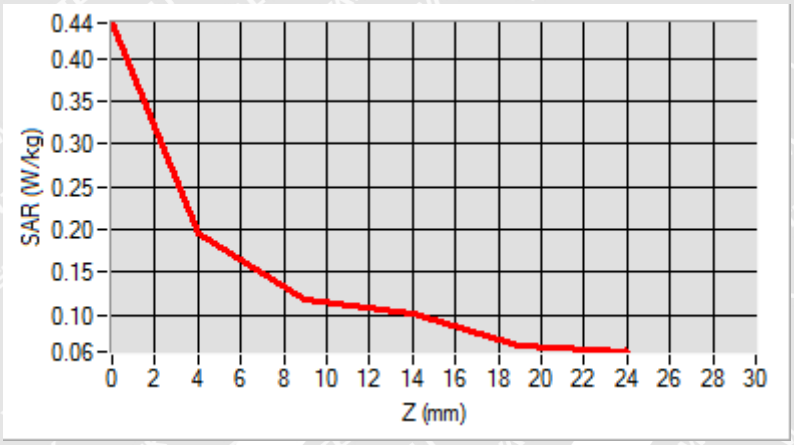
SURFACE SAR	VOLUME SAR
	

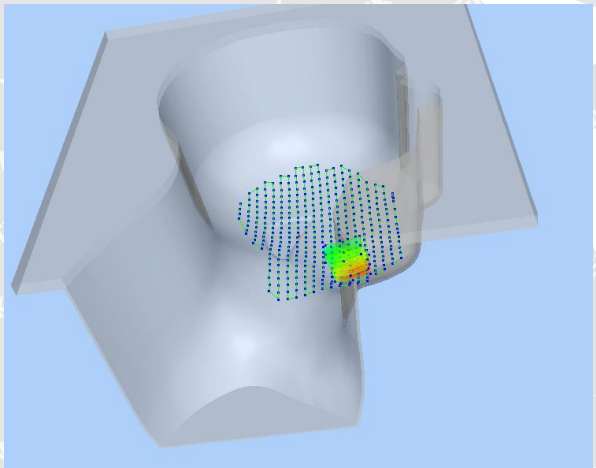
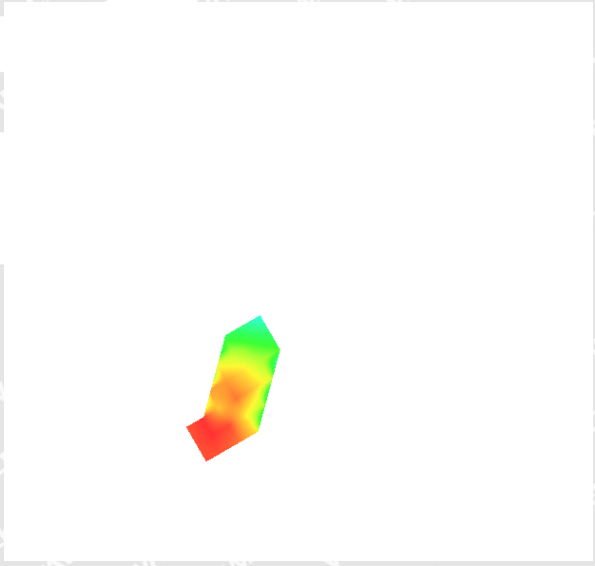
Maximum location: X=-51.00, Y=-65.00

SAR Peak: 0.26 W/kg

SAR 10g (W/Kg)	0.129517
SAR 1g (W/Kg)	0.190396

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.4415	0.1962	0.1189	0.1015	0.0631



3D screen shot	Hot spot position
	

MEASUREMENT 23

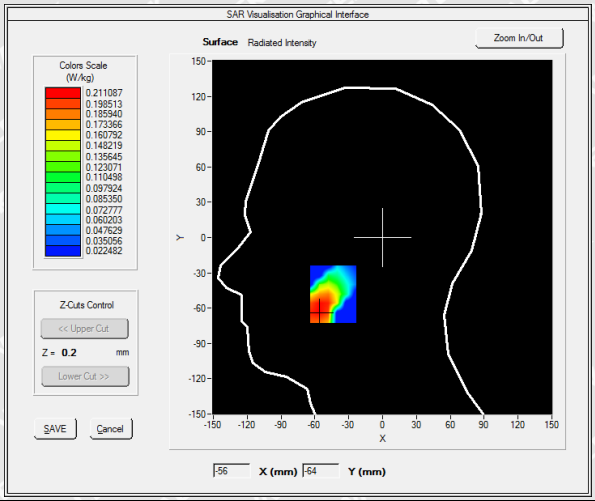
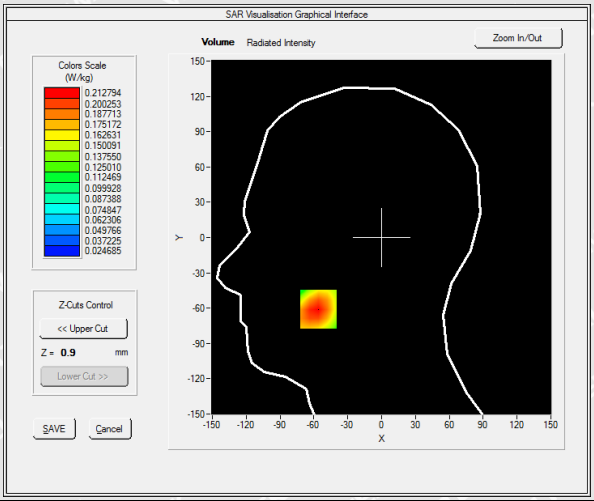
Type: Phone measurement (Complete)
Date of measurement: 2020-08-29
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE2 - SN 45/15 EPGO280; ConvF: Refer to the Calibration Certificate; Calibrated: 2020/07/03

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Left head
Device Position	Cheek
Band	WCDMA1900_RMC
Channels	Middle
Signal	Duty Cycle 1:1

B. SAR Measurement Results

Frequency (MHz)	1880.000000
Relative Permittivity (real part)	38.560124
Conductivity (S/m)	1.380369
Power Variation (%)	1.524540
Ambient Temperature	21.1
Liquid Temperature	21.3

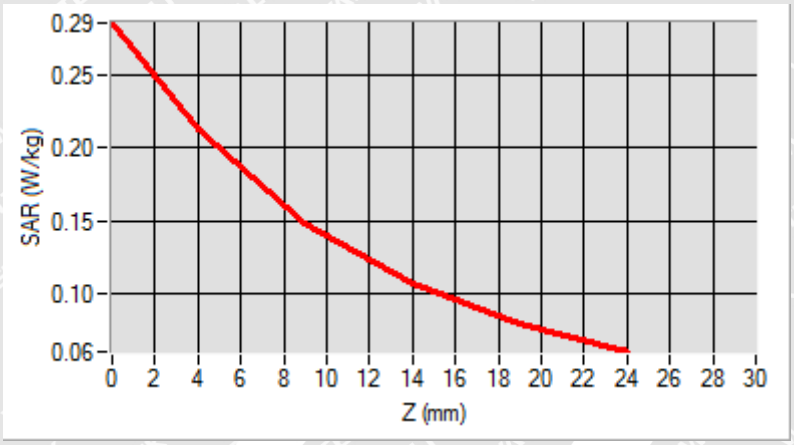
SURFACE SAR	VOLUME SAR
	

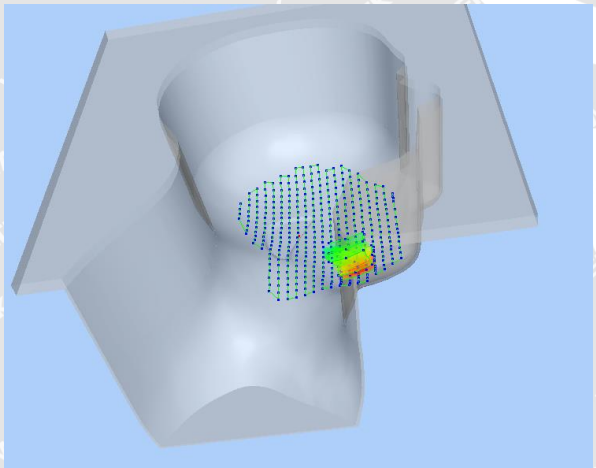
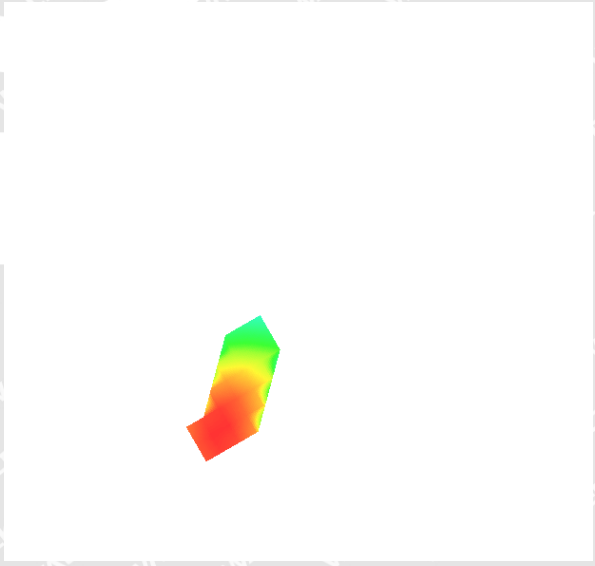
Maximum location: X=-56.00, Y=-61.00

SAR Peak: 0.29 W/kg

SAR 10g (W/Kg)	0.137880
SAR 1g (W/Kg)	0.203934

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.2851	0.2128	0.1486	0.1067	0.0798



3D screen shot	Hot spot position
	

MEASUREMENT 27

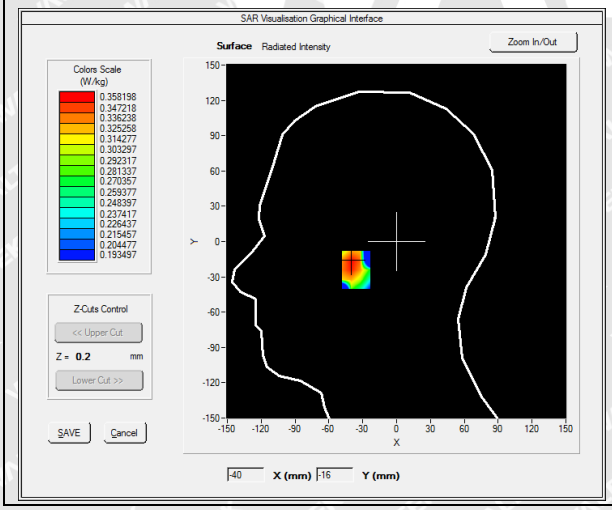
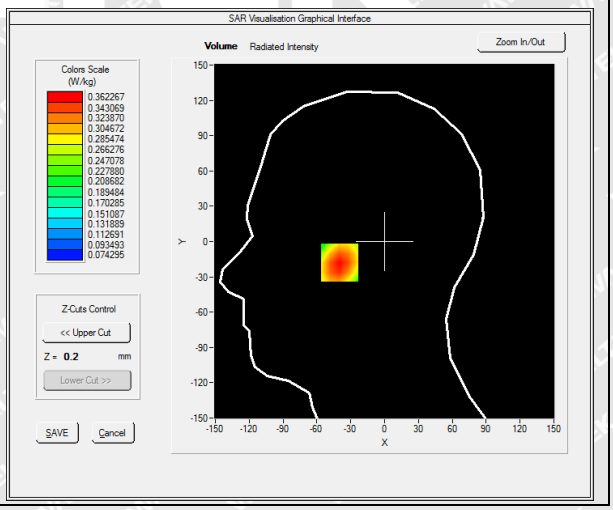
Type: Phone measurement (Complete)
Date of measurement: 2020-08-26
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE2 - SN 45/15 EPGO280; ConvF: Refer to the Calibration Certificate; Calibrated: 2020/07/03

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Left head
Device Position	Cheek
Band	WCDMA850_RMC
Channels	High
Signal	Duty Cycle 1:1

B. SAR Measurement Results

Frequency (MHz)	846.600000
Relative Permittivity (real part)	41.110245
Conductivity (S/m)	0.871245
Power Variation (%)	1.342427
Ambient Temperature	21.1
Liquid Temperature	21.3

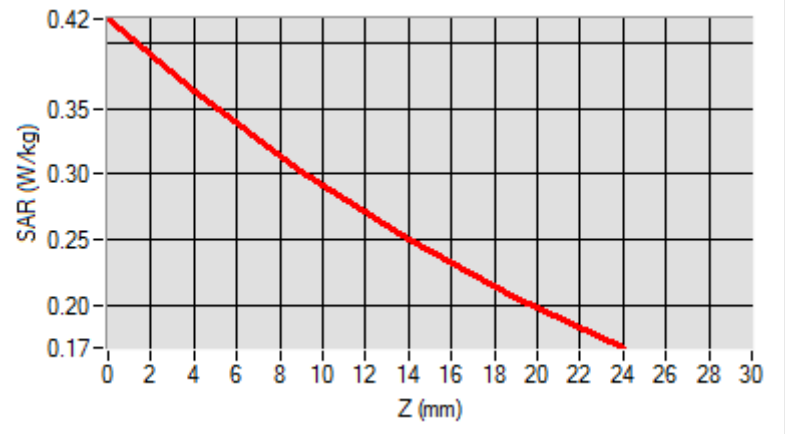
SURFACE SAR	VOLUME SAR
	

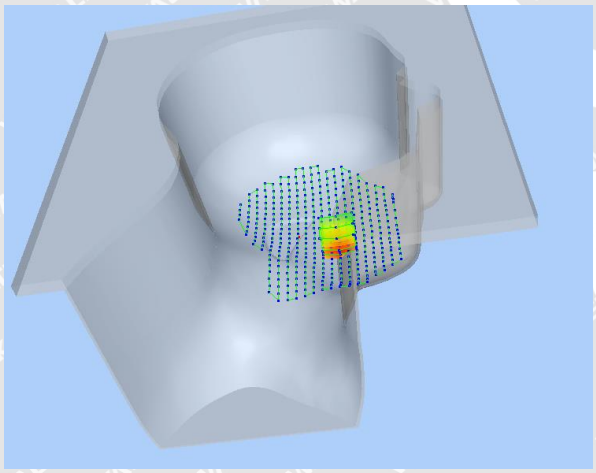
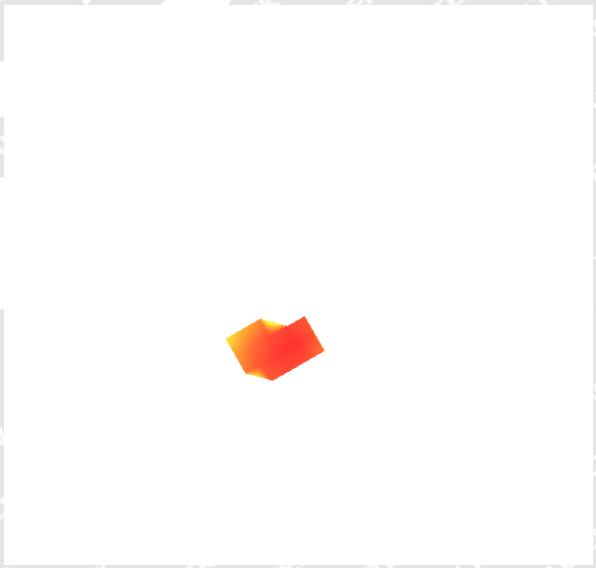
Maximum location: X=-40.00, Y=-18.00

SAR Peak: 0.42 W/kg

SAR 10g (W/Kg)	**0.268393**
SAR 1g (W/Kg)	**0.350089**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.4178**	**0.3623**	**0.3018**	**0.2505**	**0.2066**



3D screen shot	**Hot spot position**
	

MEASUREMENT 29

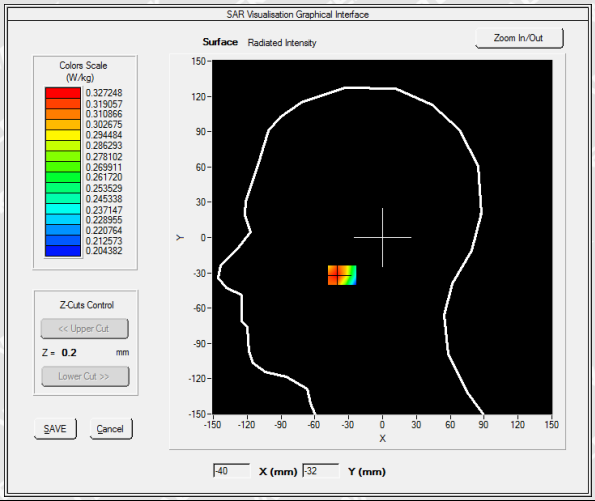
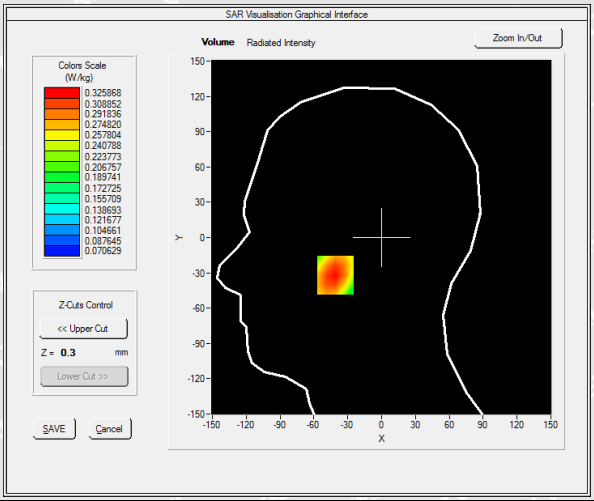
Type: Phone measurement (Complete)
Date of measurement: 2020-08-26
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE2 - SN 45/15 EPGO280; ConvF: Refer to the Calibration Certificate; Calibrated: 2020/07/03

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Right head
Device Position	Cheek
Band	LTE Band 5
Channels	QPSK, 1.4MHz, 1RB,High
Signal	Duty Cycle 1:1

B. SAR Measurement Results

Frequency (MHz)	848.3000000
Relative Permittivity (real part)	39.024890
Conductivity (S/m)	1.371250
Power Variation (%)	1.374628
Ambient Temperature	21.1
Liquid Temperature	21.2

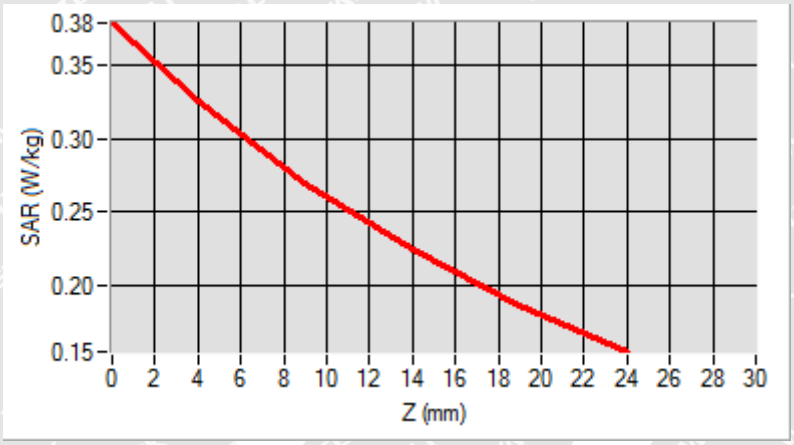
SURFACE SAR	VOLUME SAR
	

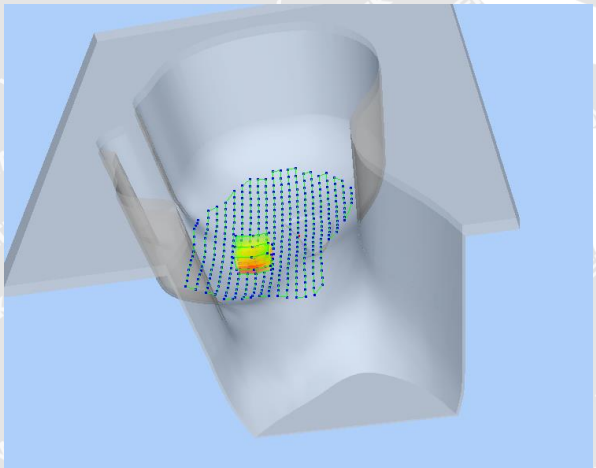
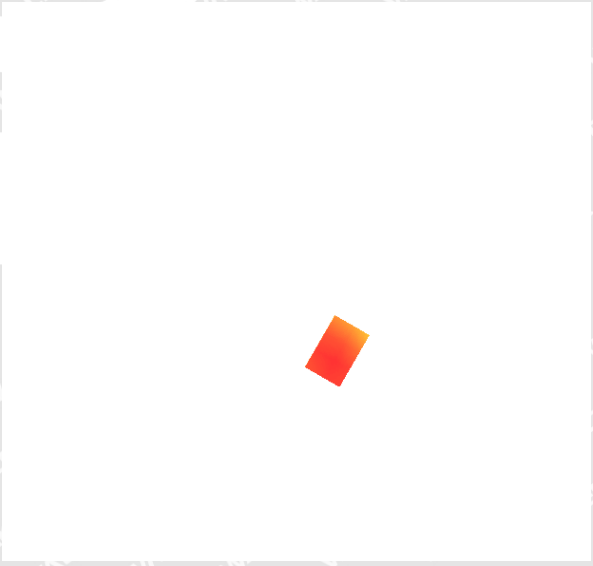
Maximum location: X=-41.00, Y=-32.00

SAR Peak: 0.38 W/kg

SAR 10g (W/Kg)	0.241808
SAR 1g (W/Kg)	0.315258

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.3794	0.3259	0.2697	0.2240	0.1867



3D screen shot	Hot spot position
	

MEASUREMENT 37

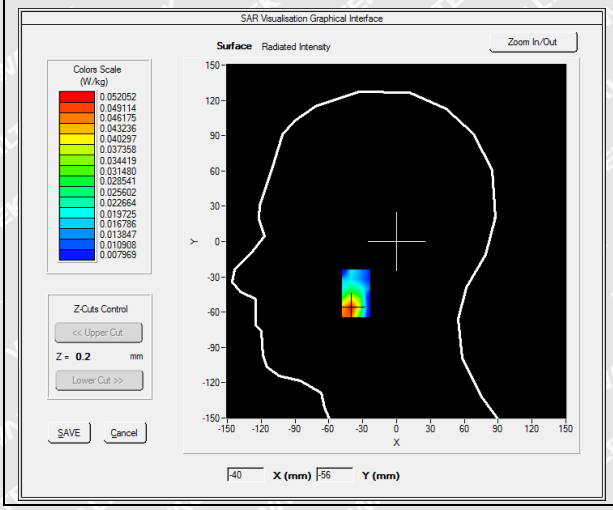
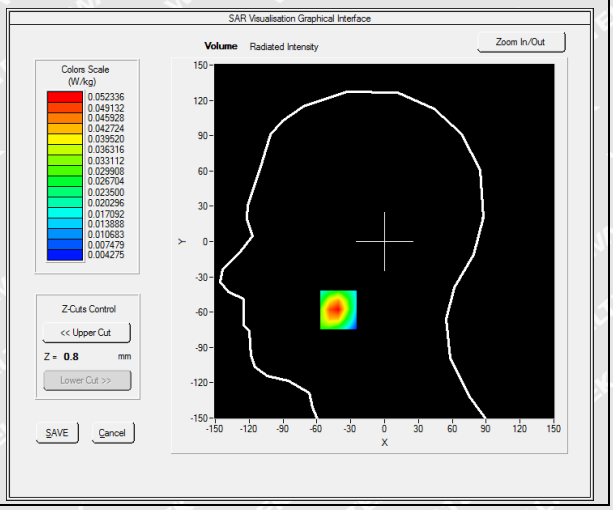
Type: Phone measurement (Complete)
Date of measurement: 2020-09-10
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE2 - SN 45/15 EPGO280; ConvF: Refer to the Calibration Certificate; Calibrated: 2020/07/03

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Right head
Device Position	Cheek
Band	LTE Band 7
Channels	QPSK, 20MHz, 1RB, Low
Signal	Duty Cycle 1:1

B. SAR Measurement Results

Frequency (MHz)	2510.000000
Relative Permittivity (real part)	41.110245
Conductivity (S/m)	0.871245
Power Variation (%)	0.924535
Ambient Temperature	21.1
Liquid Temperature	21.2

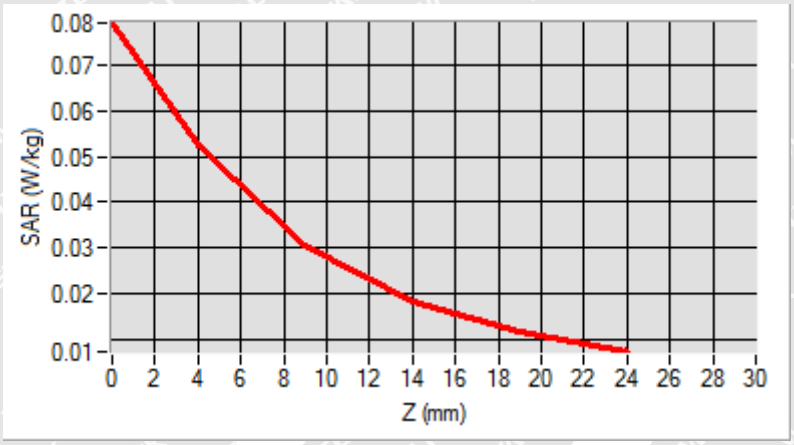
SURFACE SAR	VOLUME SAR
	

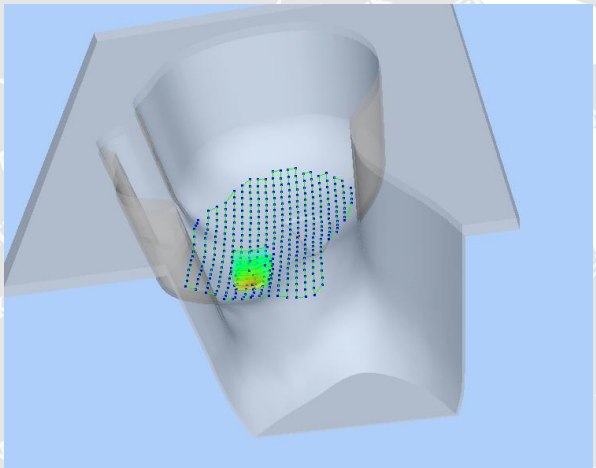
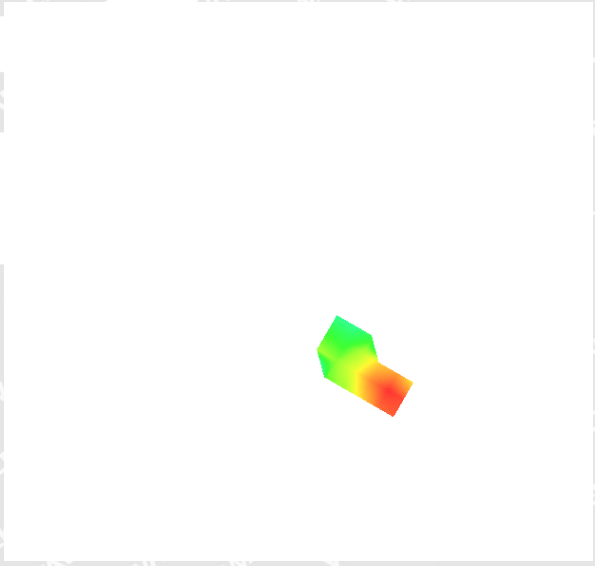
Maximum location: X=-41.00, Y=-58.00

SAR Peak: 0.08 W/kg

SAR 10g (W/Kg)	0.026643
SAR 1g (W/Kg)	0.049232

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0793	0.0523	0.0307	0.0183	0.0115



3D screen shot	Hot spot position
	

MEASUREMENT 47

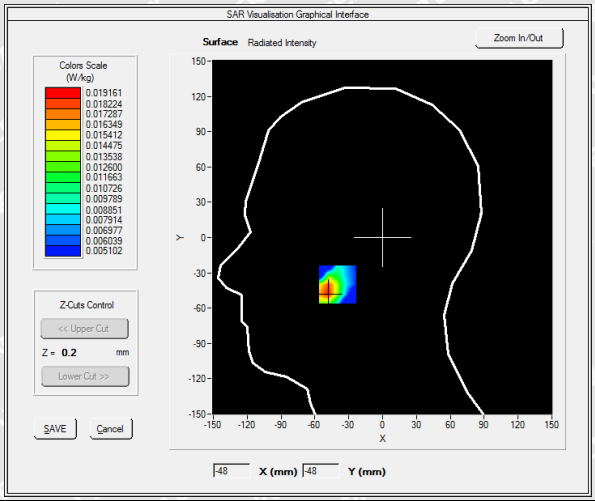
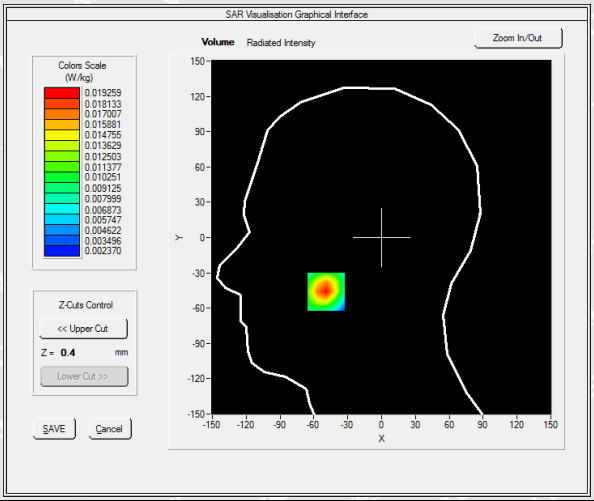
Type: Phone measurement (Complete)
Date of measurement: 2020-09-10
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE2 - SN 45/15 EPGO280; ConvF: Refer to the Calibration Certificate; Calibrated: 2020/07/03

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Right head
Device Position	Cheek
Band	LTE Band 38
Channels	QPSK, 5MHz, 1RB, Low
Signal	Duty Cycle 1:1

B. SAR Measurement Results

Frequency (MHz)	2572.500000
Relative Permittivity (real part)	38.631092
Conductivity (S/m)	1.930182
Power Variation (%)	0.924535
Ambient Temperature	21.1
Liquid Temperature	21.2

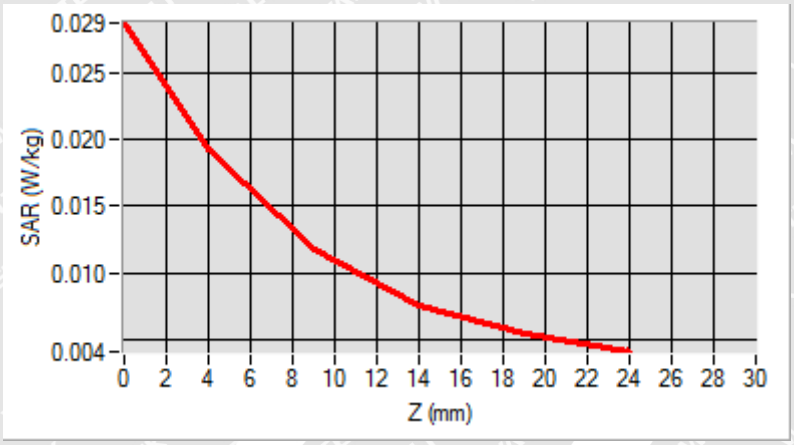
SURFACE SAR	VOLUME SAR
	

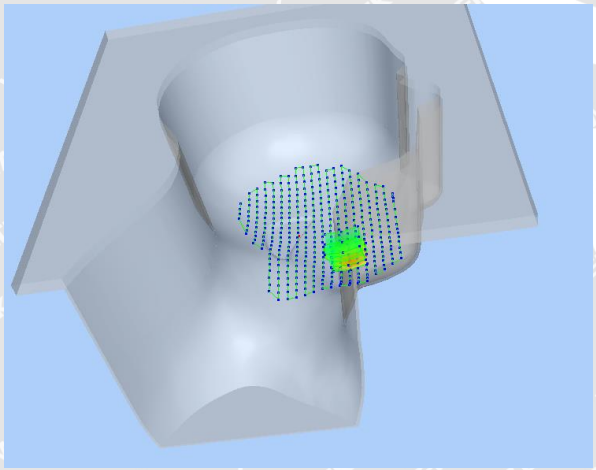
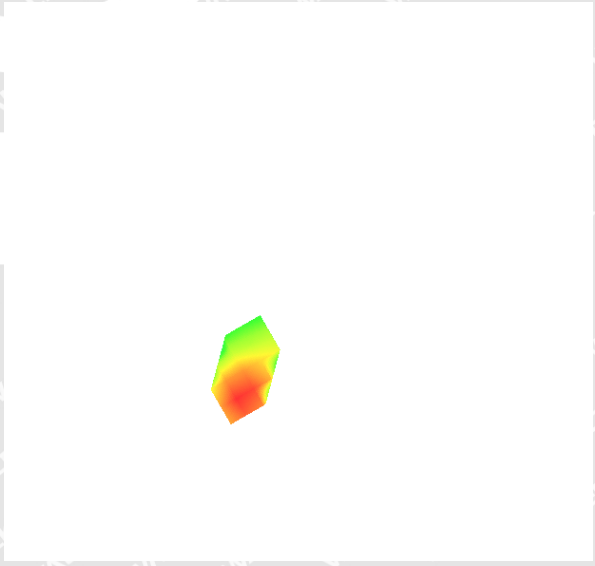
Maximum location: X=-49.00, Y=-46.00

SAR Peak: 0.03 W/kg

SAR 10g (W/Kg)	0.010638
SAR 1g (W/Kg)	0.018478

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0287	0.0193	0.0117	0.0076	0.0054



3D screen shot	Hot spot position
	

MEASUREMENT 55

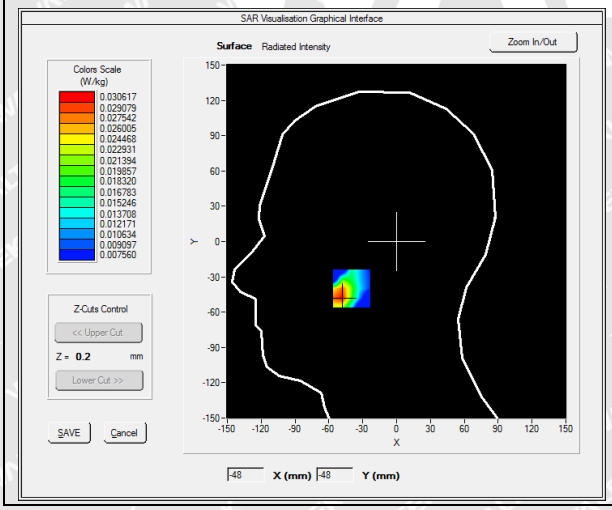
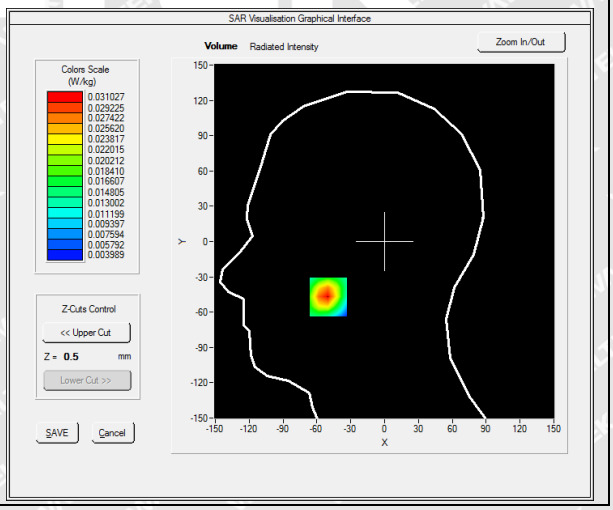
Type: Phone measurement (Complete)
Date of measurement: 2020-09-10
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 5.37; Calibrated: 06/01/2018

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Left head
Device Position	Cheek
Band	LTE Band 41_RMC
Channels	QPSK, 5MHz, 1RB, Low
Signal	Duty Cycle 1:1

B. SAR Measurement Results

Frequency (MHz)	2498.5000000
Relative Permittivity (real part)	38.631092
Conductivity (S/m)	1.930182
Power Variation (%)	3.027673
Ambient Temperature	21.1
Liquid Temperature	21.2

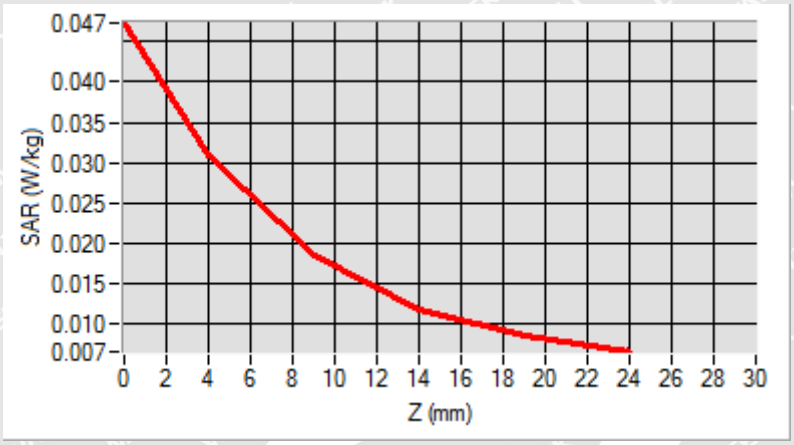
SURFACE SAR	VOLUME SAR
	

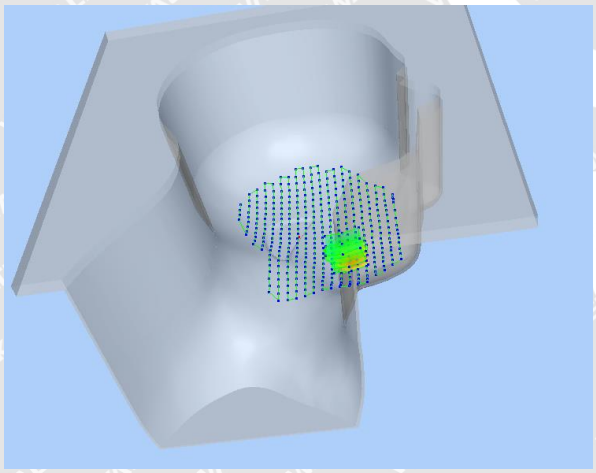
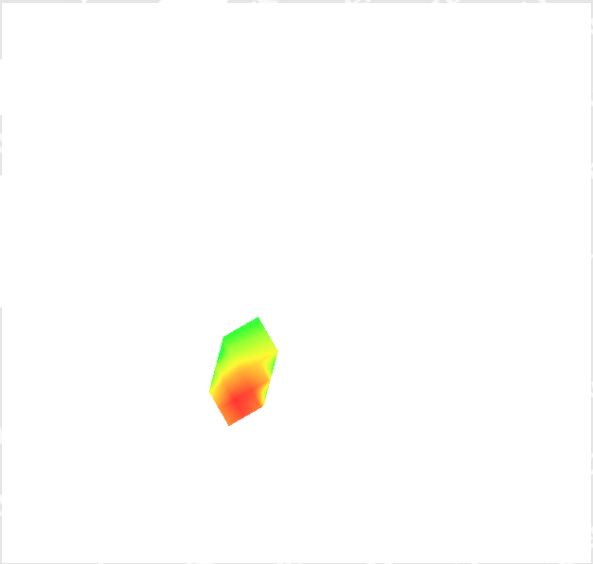
Maximum location: X=-50.00, Y=-47.00

SAR Peak: 0.05 W/kg

SAR 10g (W/Kg)	**0.016782**
SAR 1g (W/Kg)	**0.029197**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.0473**	**0.0310**	**0.0184**	**0.0117**	**0.0084**



3D screen shot	**Hot spot position**
	

MEASUREMENT 61

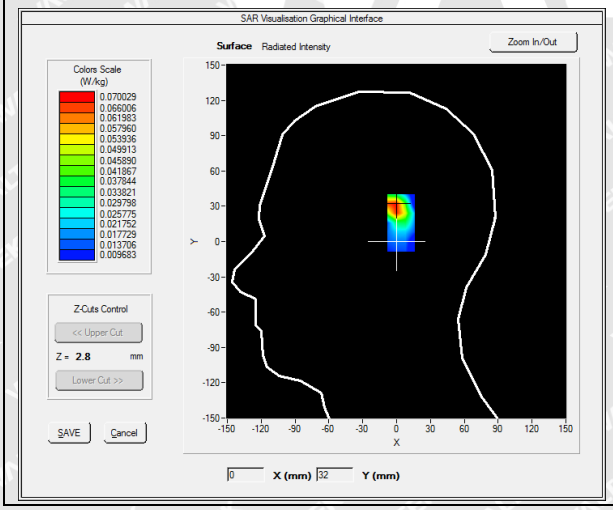
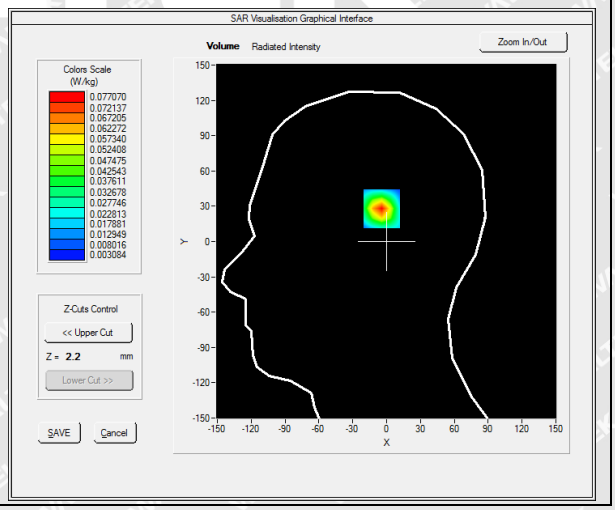
Type: Phone measurement (Complete)
Date of measurement: 2020-09-10
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE2 - SN 45/15 EPGO280; ConvF: Refer to the Calibration Certificate; Calibrated: 2020/07/03

A. Experimental conditions

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

B. SAR Measurement Results

Frequency (MHz)	2437.000000
Relative Permittivity (real part)	38.153660
Conductivity (S/m)	1.740236
Power Variation (%)	3.234772
Ambient Temperature	21.1
Liquid Temperature	21.2

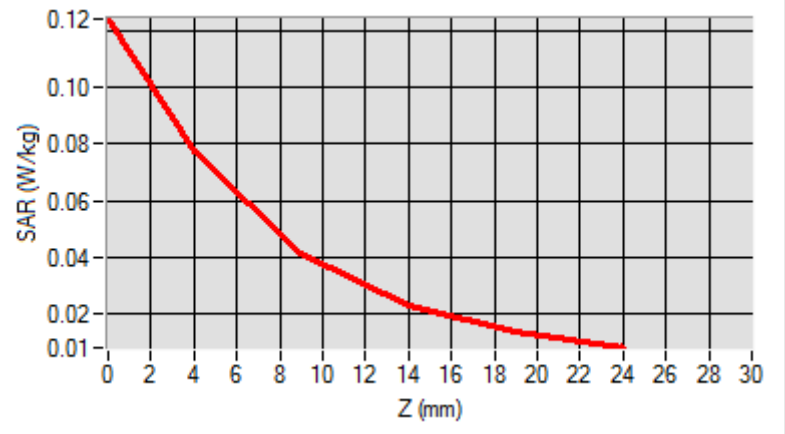
SURFACE SAR	VOLUME SAR
	

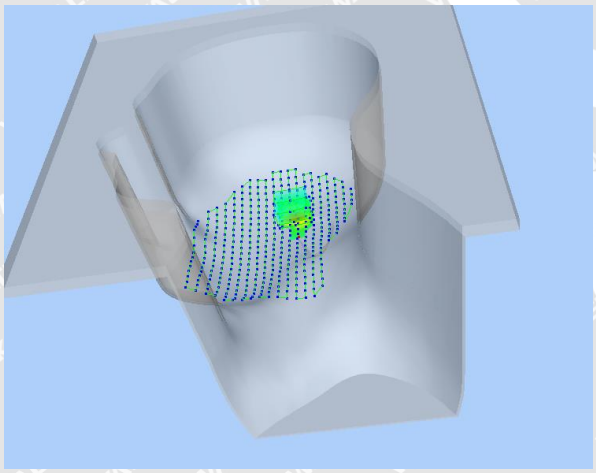
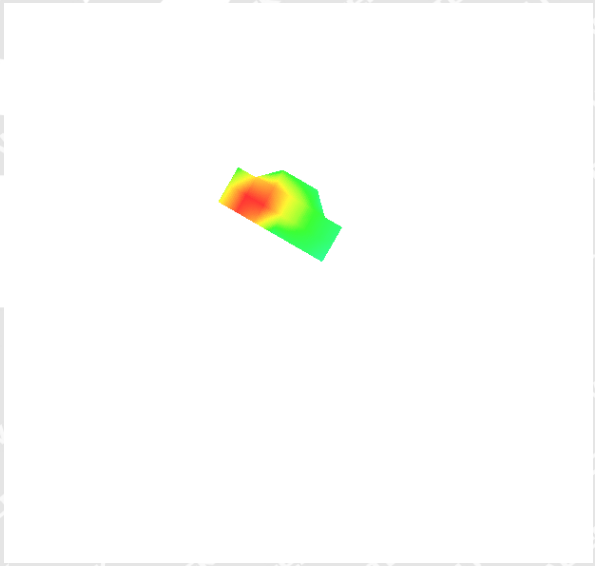
Maximum location: X=-2.00, Y=30.00

SAR Peak: 0.13 W/kg

SAR 10g (W/Kg)	**0.034076**
SAR 1g (W/Kg)	**0.070058**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.1239**	**0.0771**	**0.0414**	**0.0227**	**0.0134**



3D screen shot	**Hot spot position**
	

MEASUREMENT 65

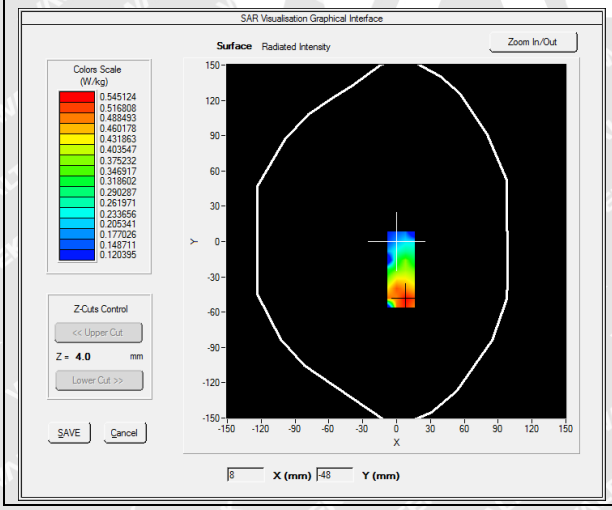
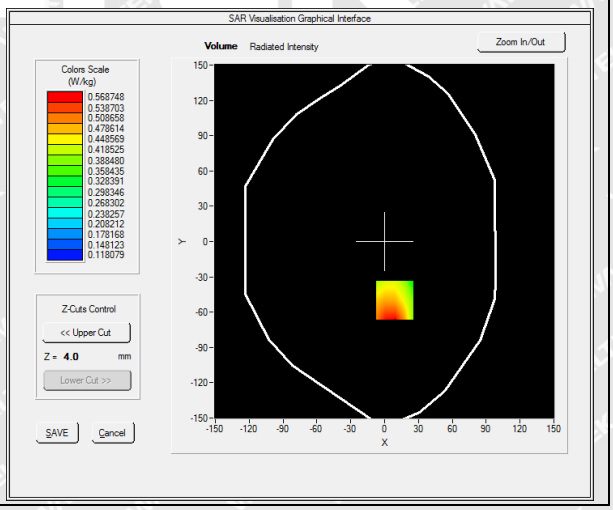
Type: Phone measurement (Complete)
Date of measurement: 2020-08-26
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE2 - SN 45/15 EPGO280; ConvF: Refer to the Calibration Certificate; Calibrated: 2020/07/03

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Flat Plane
Device Position	Back
Band	GSM850
Channels	Low
Signal	TDMA (Crest factor: 8.0)

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

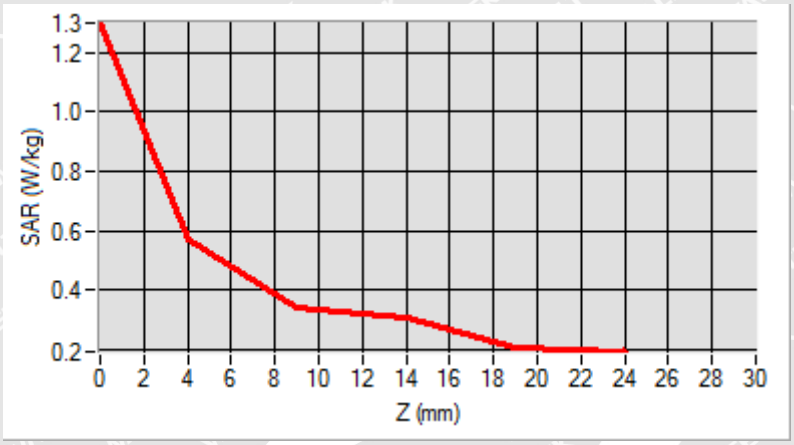
SURFACE SAR	VOLUME SAR
	

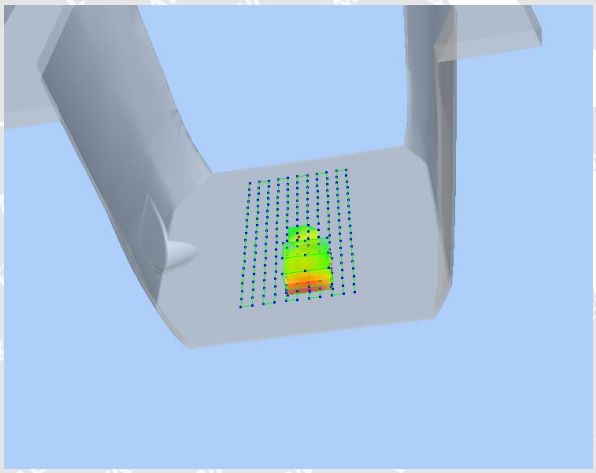
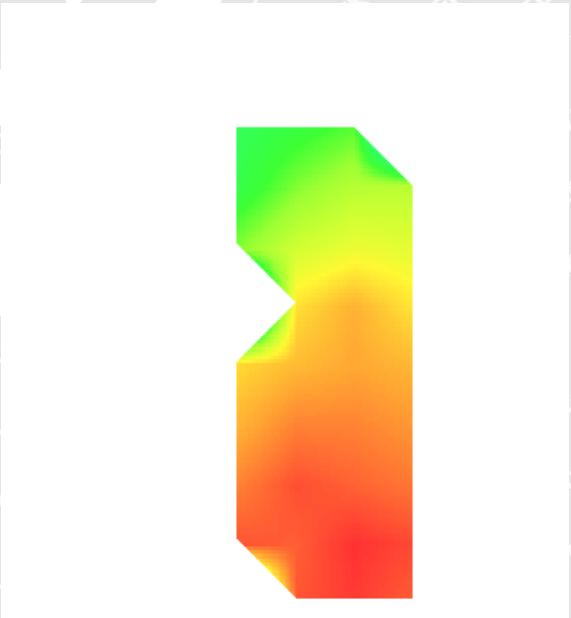
Maximum location: X=9.00, Y=-50.00

SAR Peak: 0.76 W/kg

SAR 10g (W/Kg)	**0.386440**
SAR 1g (W/Kg)	**0.531931**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**1.2981**	**0.5687**	**0.3441**	**0.3057**	**0.2071**



3D screen shot	**Hot spot position**
	

MEASUREMENT 67

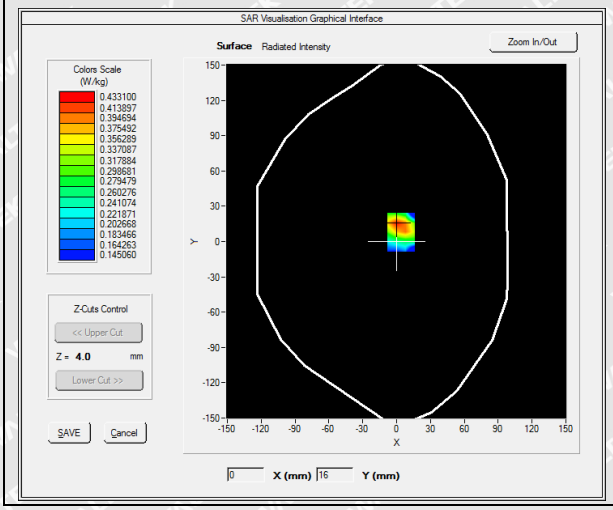
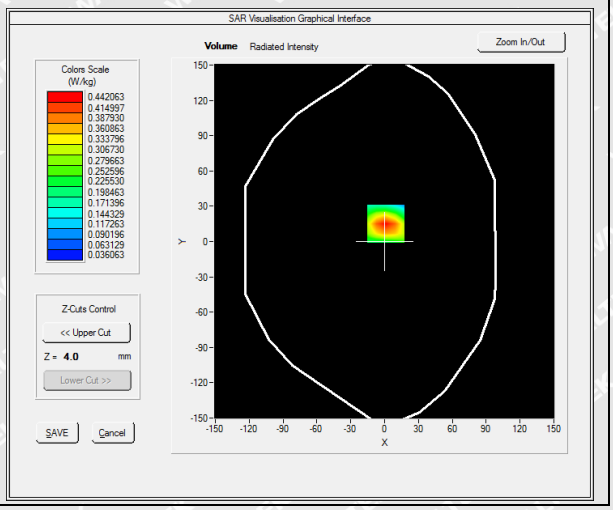
Type: Phone measurement (Complete)
Date of measurement: 2020-08-29
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE2 - SN 45/15 EPGO280; ConvF: Refer to the Calibration Certificate; Calibrated: 2020/07/03

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Flat Plane
Device Position	Back
Band	GSM1900
Channels	Low
Signal	TDMA (Crest factor: 8.0)

B. SAR Measurement Results

Frequency (MHz)	1850.200000
Relative Permittivity (real part)	52.420415
Conductivity (S/m)	1.501966
Power Variation (%)	1.474622
Ambient Temperature	21.1
Liquid Temperature	21.3

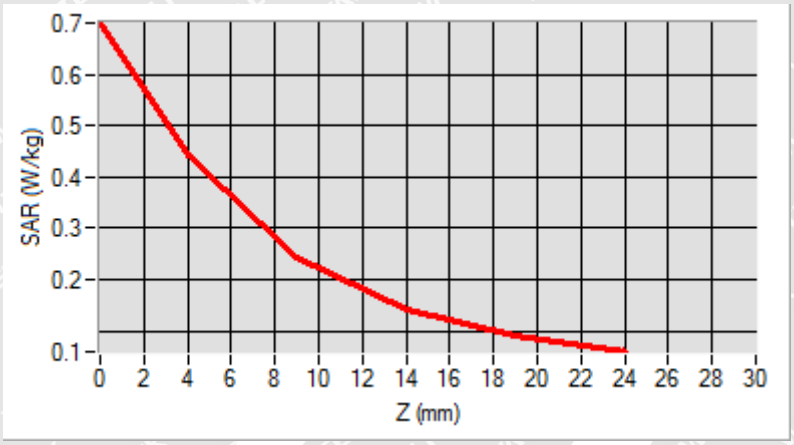
SURFACE SAR	VOLUME SAR
	

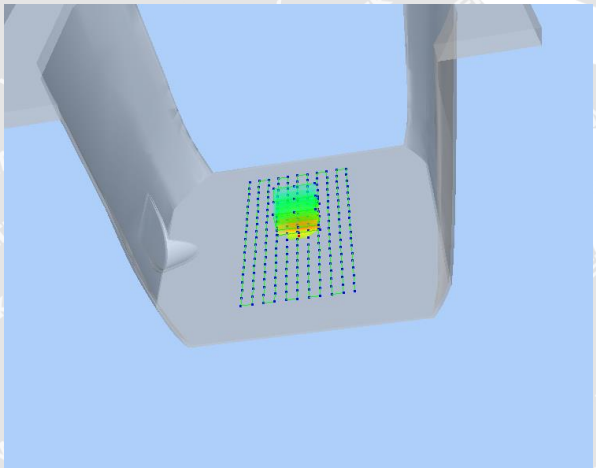
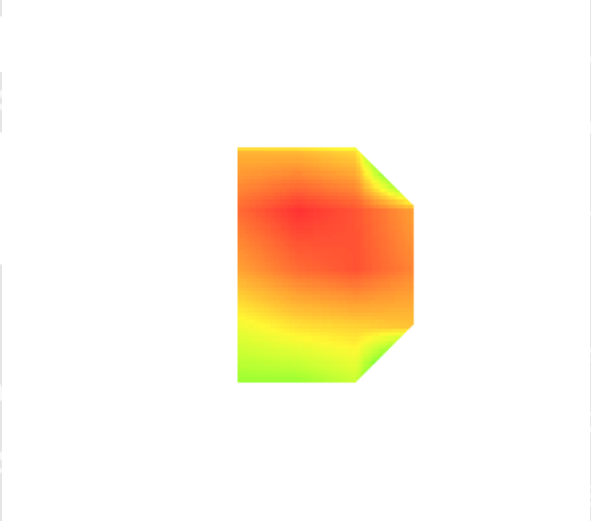
Maximum location: X=1.00, Y=15.00

SAR Peak: 0.70 W/kg

SAR 10g (W/Kg)	0.227815
SAR 1g (W/Kg)	0.413077

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.7007	0.4421	0.2446	0.1404	0.0888



3D screen shot	Hot spot position
	

MEASUREMENT 91

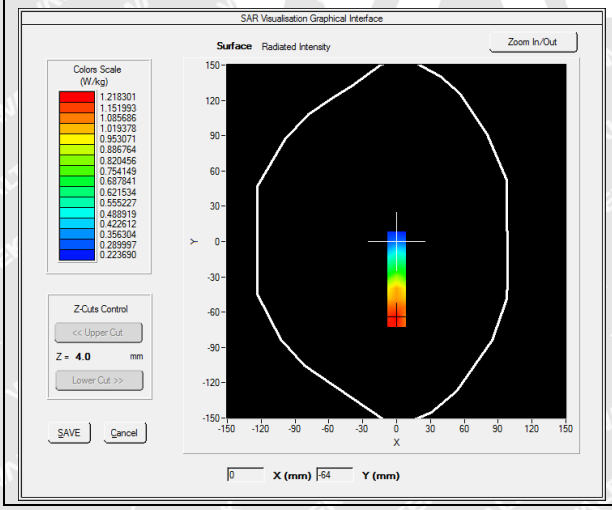
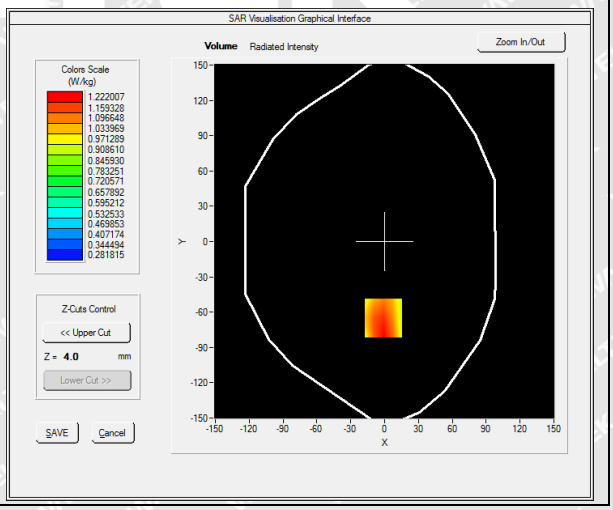
Type: Phone measurement (Complete)
Date of measurement: 2020-08-26
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE2 - SN 45/15 EPGO280; ConvF: Refer to the Calibration Certificate; Calibrated: 2020/07/03

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Flat plane
Device Position	Back
Band	GPRS850_3TX
Channels	Middle
Signal	Duty Cycle: 1:266

B. SAR Measurement Results

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

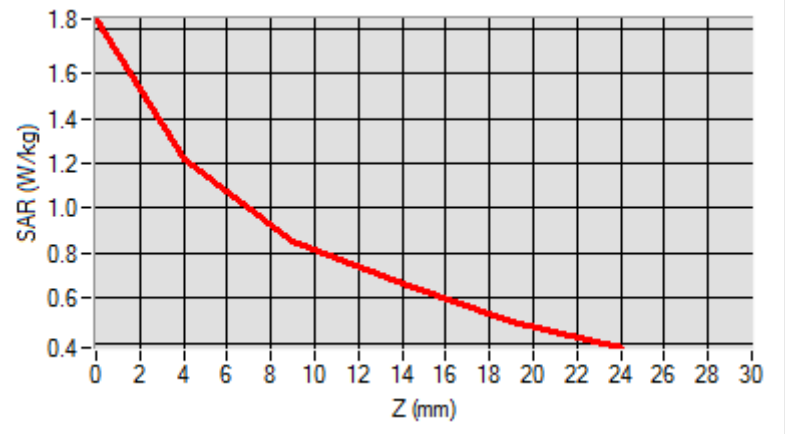
SURFACE SAR	VOLUME SAR
	

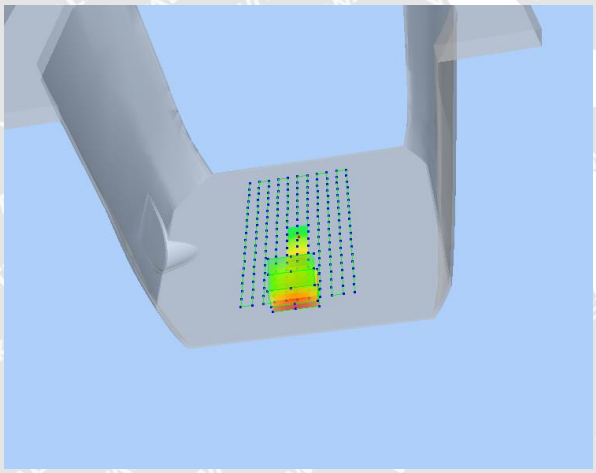
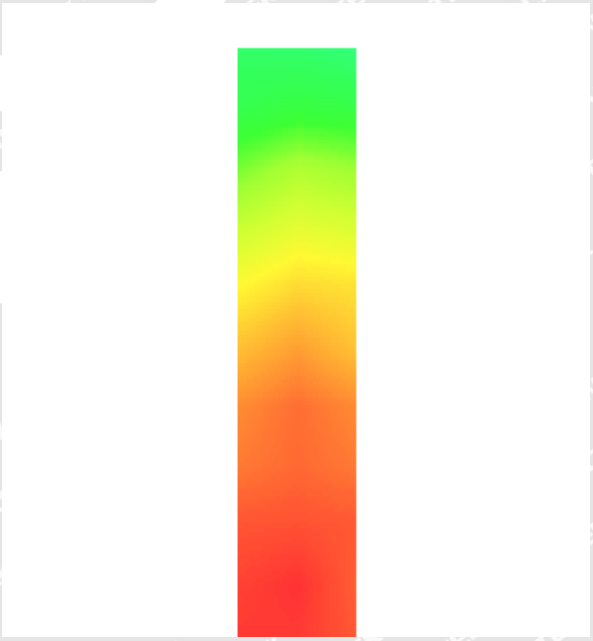
Maximum location: X=-1.00, Y=-65.00

SAR Peak: 1.57 W/kg

SAR 10g (W/Kg)	**0.859775**
SAR 1g (W/Kg)	**1.174391**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**1.8460**	**1.2220**	**0.8556**	**0.6620**	**0.4950**



3D screen shot	**Hot spot position**
	

MEASUREMENT 104

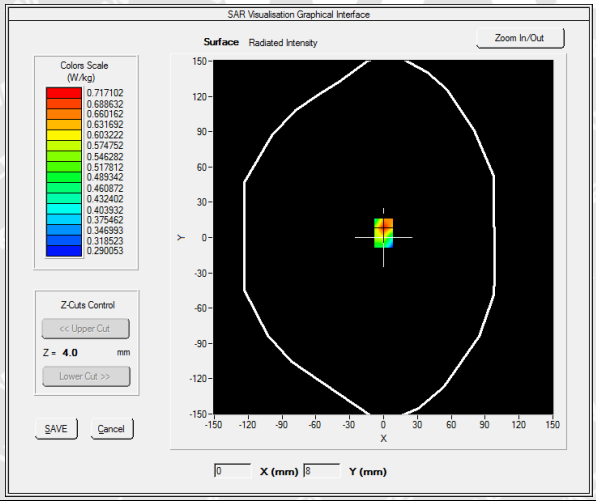
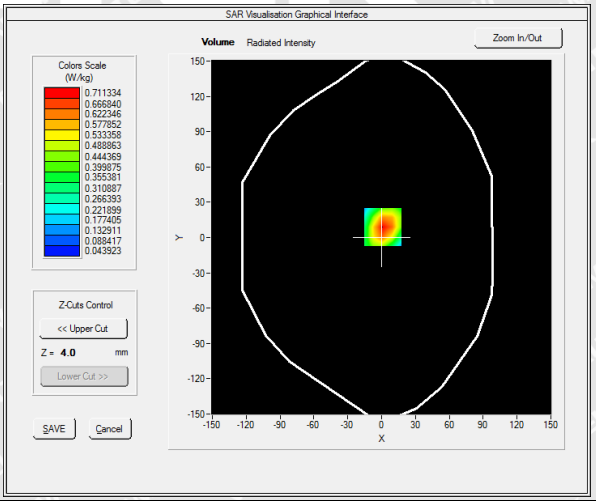
Type: Phone measurement (Complete)
Date of measurement: 2020-08-29
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE2 - SN 45/15 EPGO280; ConvF: Refer to the Calibration Certificate; Calibrated: 2020/07/03

A. Experimental conditions

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

B. SAR Measurement Results

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

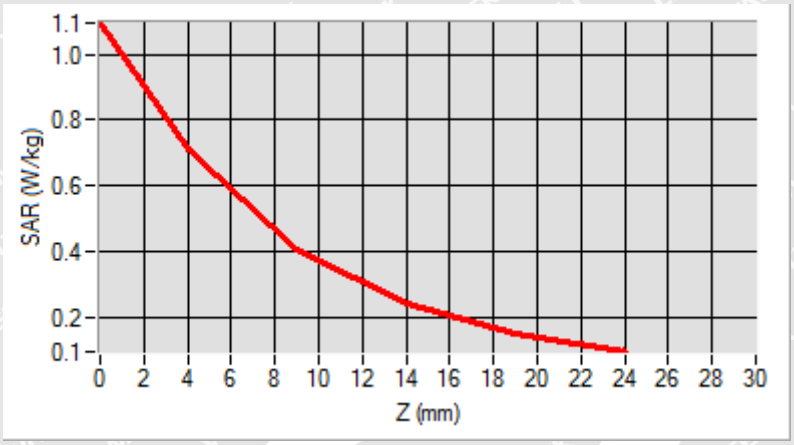
SURFACE SAR	VOLUME SAR
	

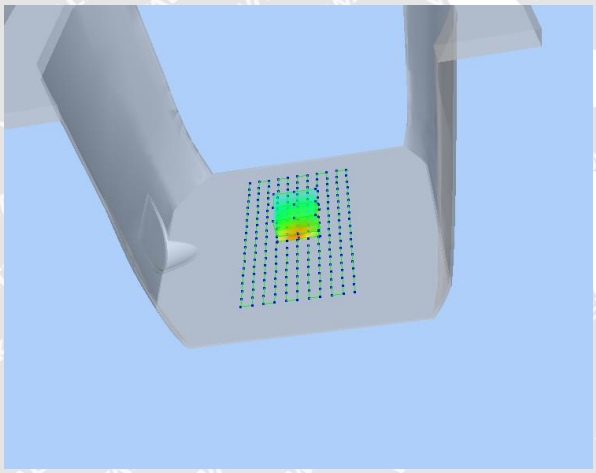
Maximum location: X=1.00, Y=9.00

SAR Peak: 1.10 W/kg

SAR 10g (W/Kg)	**0.372619**
SAR 1g (W/Kg)	**0.667125**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**1.0958**	**0.7113**	**0.4080**	**0.2394**	**0.1498**



3D screen shot	**Hot spot position**
	

MEASUREMENT 109

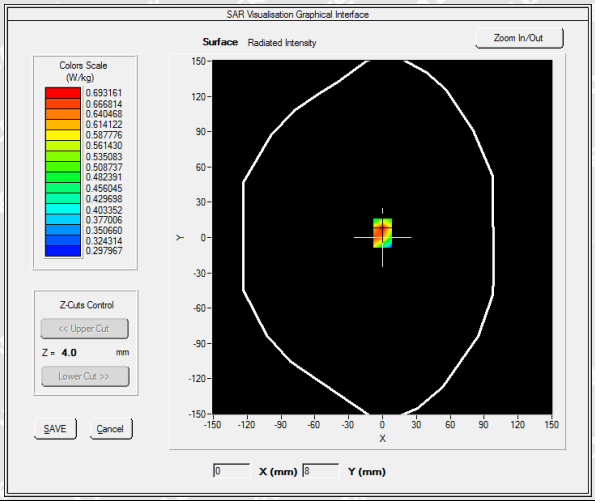
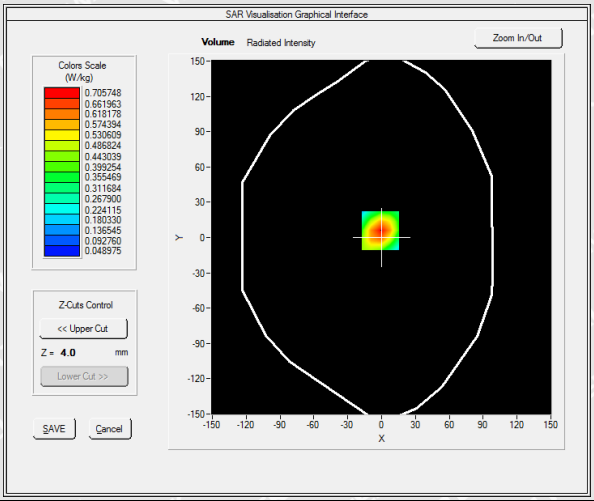
Type: Phone measurement (Complete)
Date of measurement: 2020-08-29
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE2 - SN 45/15 EPGO280; ConvF: Refer to the Calibration Certificate; Calibrated: 2020/07/03

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
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

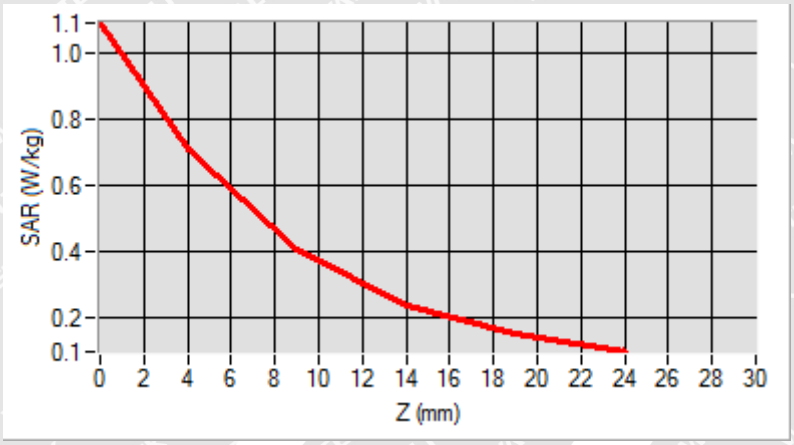
SURFACE SAR	VOLUME SAR
	

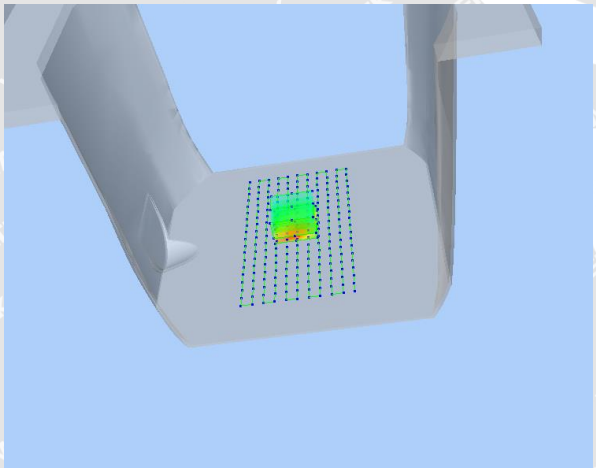
Maximum location: X=-1.00, Y=6.00

SAR Peak: 1.09 W/kg

SAR 10g (W/Kg)	0.370934
SAR 1g (W/Kg)	0.659686

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.0876	0.7057	0.4053	0.2391	0.1515



3D screen shot	Hot spot position
	

MEASUREMENT 111

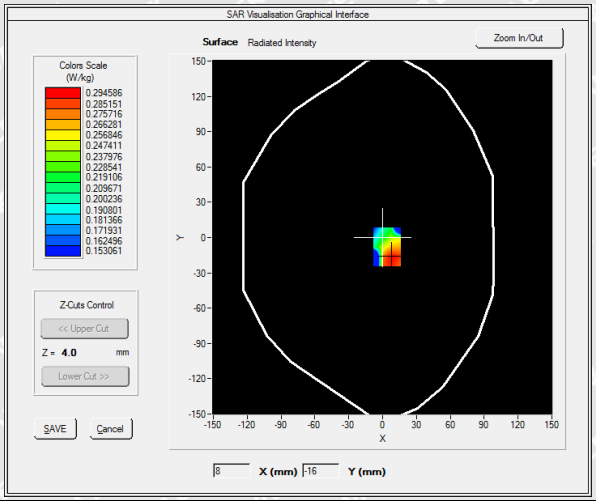
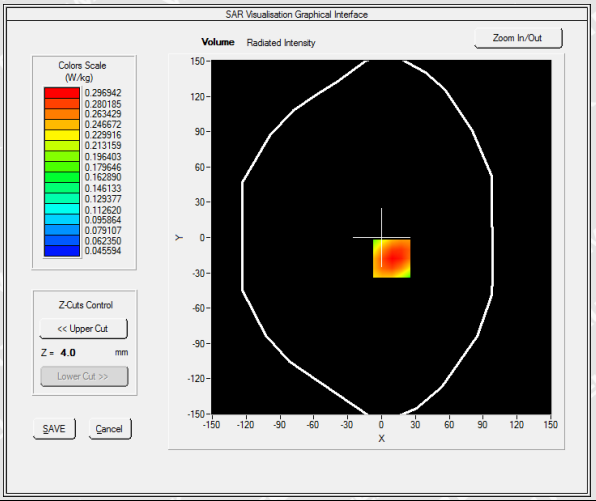
Type: Phone measurement (Complete)
Date of measurement: 2020-08-26
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE2 - SN 45/15 EPGO280; ConvF: Refer to the Calibration Certificate; Calibrated: 2020/07/03

A. Experimental conditions

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

B. SAR Measurement Results

Frequency (MHz)	846.600000
Relative Permittivity (real part)	54.851214
Conductivity (S/m)	0.951454
Power Variation (%)	2.341234
Ambient Temperature	21.1
Liquid Temperature	21.3

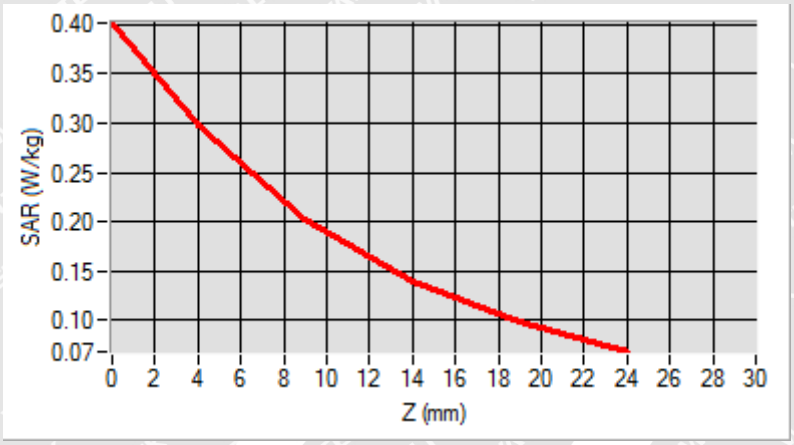
SURFACE SAR	VOLUME SAR
	

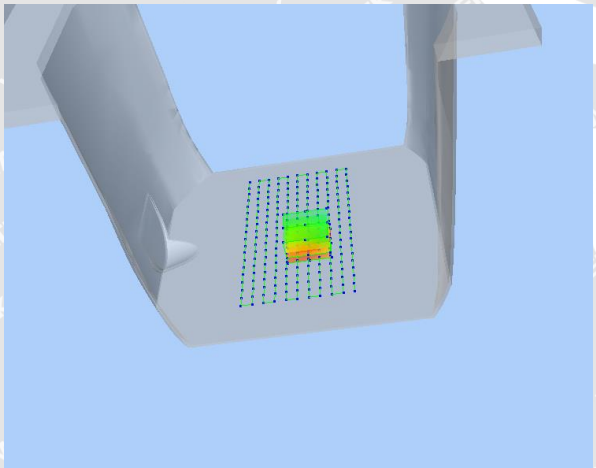
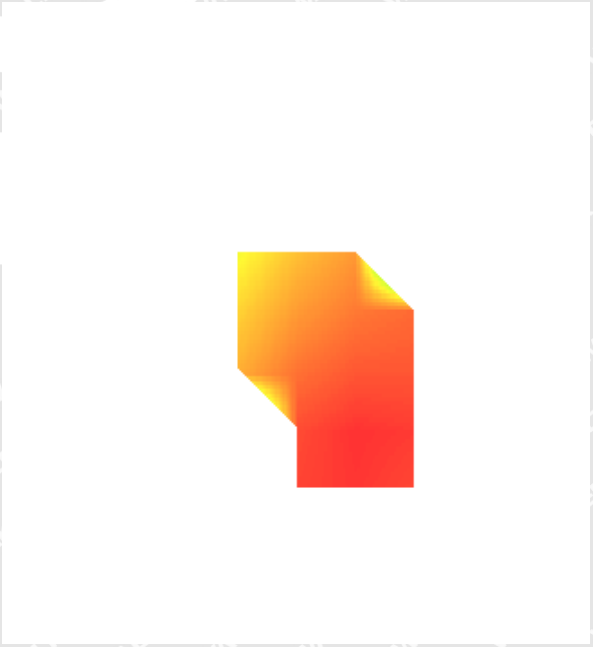
Maximum location: X=9.00, Y=-18.00

SAR Peak: 0.41 W/kg

SAR 10g (W/Kg)	0.196166
SAR 1g (W/Kg)	0.285749

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.4015	0.2969	0.2029	0.1402	0.0986



3D screen shot	Hot spot position
	

MEASUREMENT 116

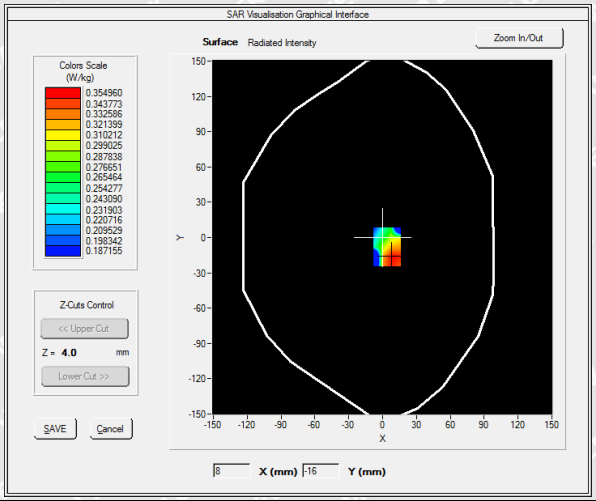
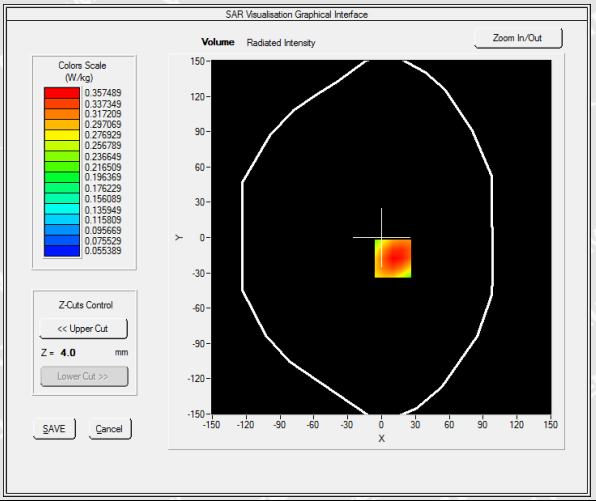
Type: Phone measurement (Complete)
Date of measurement: 2020-08-26
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE2 - SN 45/15 EPGO280; ConvF: Refer to the Calibration Certificate; Calibrated: 2020/07/03

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Flat Plane
Device Position	Front
Band	LTE Band 5
Channels	QPSK, 1.4MHz, 1RB, High
Signal	Duty Cycle 1:1

B. SAR Measurement Results

Frequency (MHz)	848.3000000
Relative Permittivity (real part)	51.224510
Conductivity (S/m)	1.461261
Power Variation (%)	0.858383
Ambient Temperature	21.1
Liquid Temperature	21.2

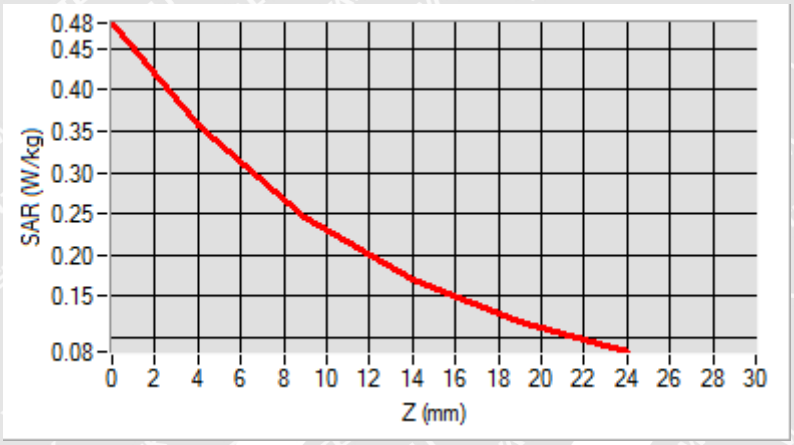
SURFACE SAR	VOLUME SAR
	

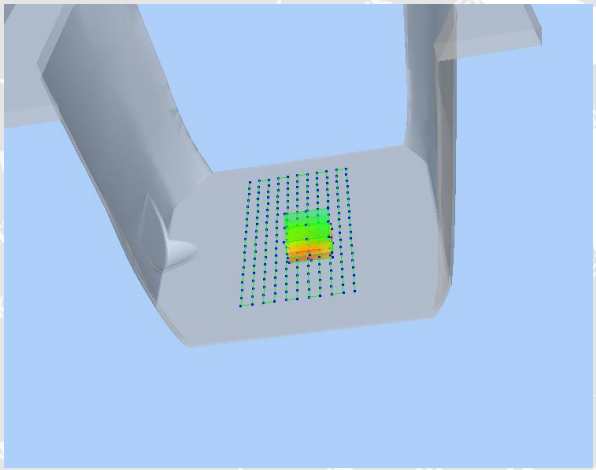
Maximum location: X=10.00, Y=-18.00

SAR Peak: 0.49 W/kg

SAR 10g (W/Kg)	0.236445
SAR 1g (W/Kg)	0.344656

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.4813	0.3575	0.2456	0.1703	0.1200



3D screen shot	Hot spot position
	

MEASUREMENT 130

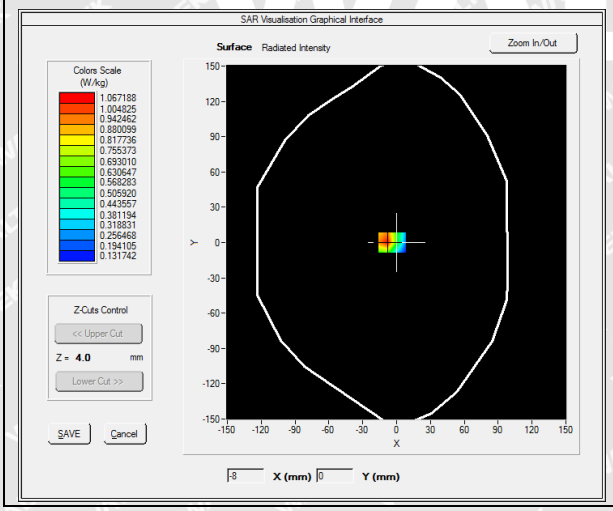
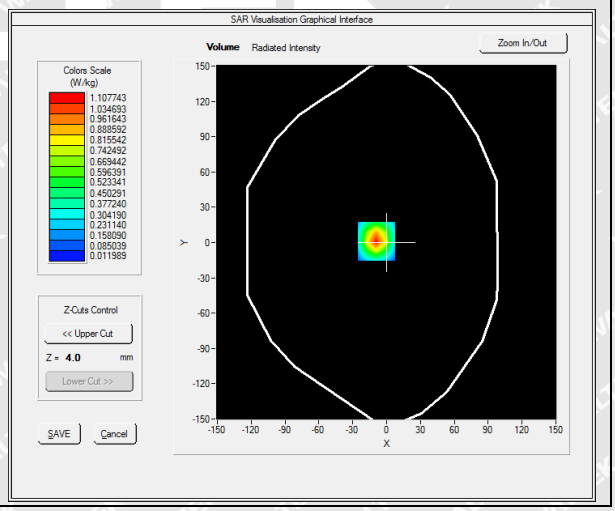
Type: Phone measurement (Complete)
Date of measurement: 2020-09-10
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE2 - SN 45/15 EPGO280; ConvF: Refer to the Calibration Certificate; Calibrated: 2020/07/03

A. Experimental conditions

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

B. SAR Measurement Results

Frequency (MHz)	2535.000000
Relative Permittivity (real part)	54.851214
Conductivity (S/m)	0.951454
Power Variation (%)	1.210493
Ambient Temperature	21.1
Liquid Temperature	21.2

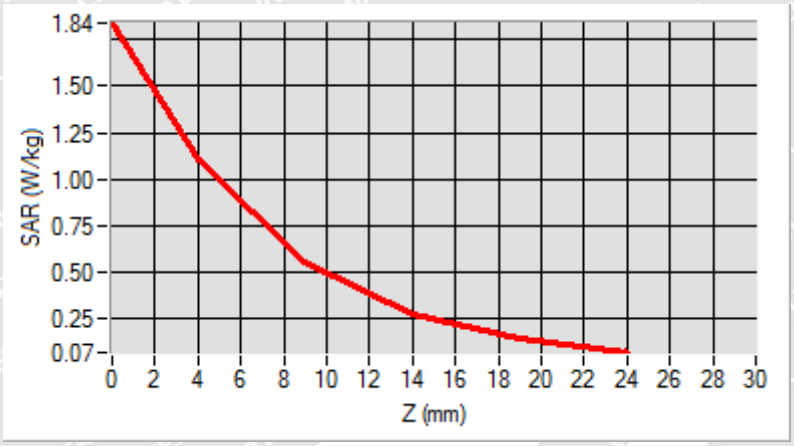
SURFACE SAR	VOLUME SAR
	

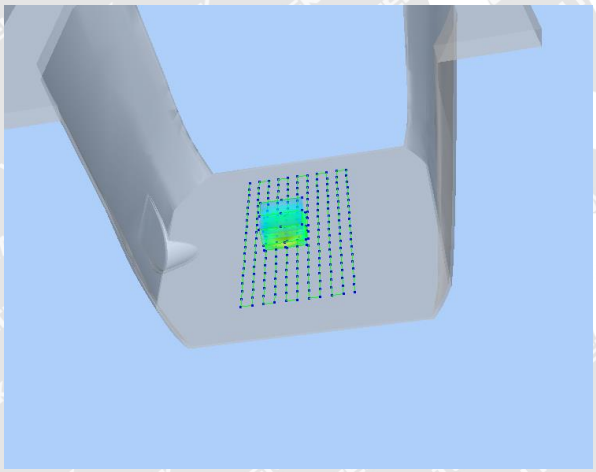
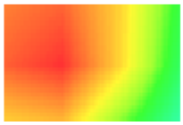
Maximum location: X=-9.00, Y=1.00

SAR Peak: 1.84 W/kg

SAR 10g (W/Kg)	0.459851
SAR 1g (W/Kg)	1.003523

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.8388	1.1077	0.5611	0.2800	0.1449



3D screen shot	Hot spot position
	

MEASUREMENT 141

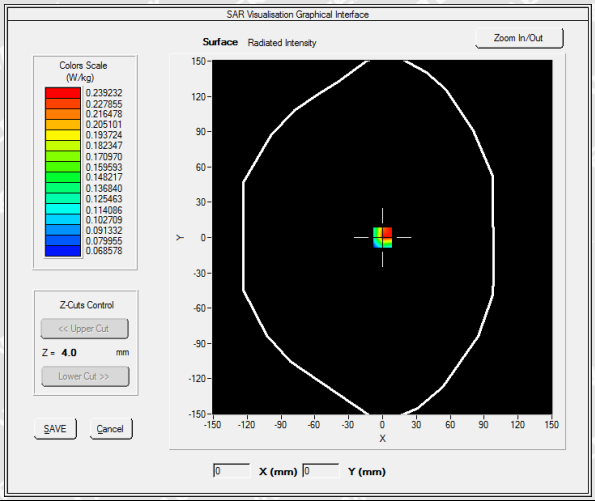
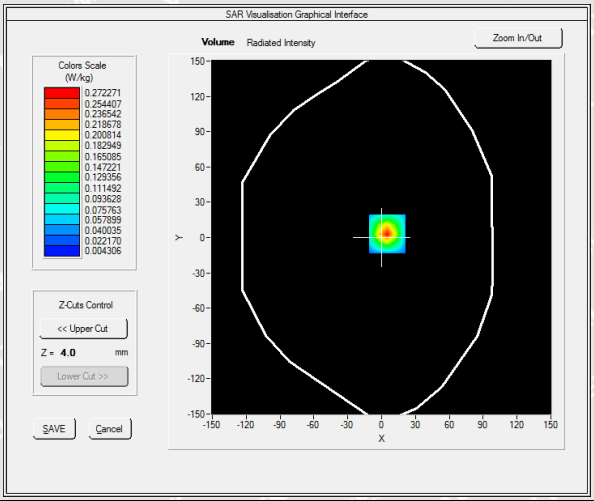
Type: Phone measurement (Complete)
Date of measurement: 2020-09-10
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE2 - SN 45/15 EPGO280; ConvF: Refer to the Calibration Certificate; Calibrated: 2020/07/03

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Flat Plane
Device Position	Bottom
Band	LTE Band 38
Channels	QPSK, 5MHz, 1RB, Low
Signal	Duty Cycle 1:1

B. SAR Measurement Results

Frequency (MHz)	2572.500000
Relative Permittivity (real part)	52.241202
Conductivity (S/m)	2.120943
Power Variation (%)	3.672346
Ambient Temperature	21.1
Liquid Temperature	21.2

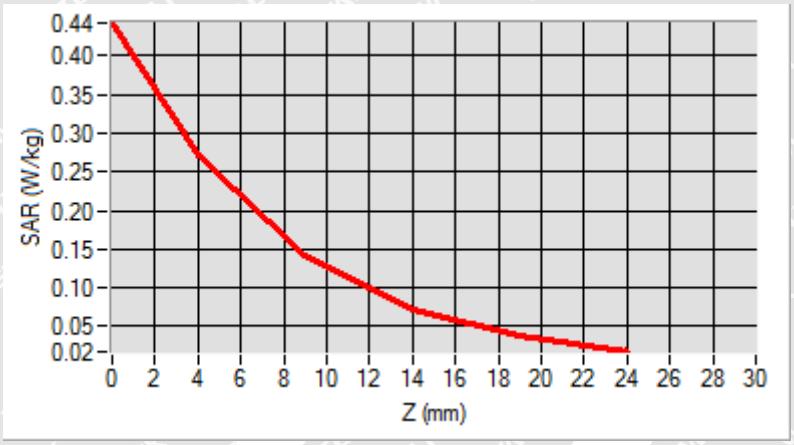
SURFACE SAR	VOLUME SAR
	

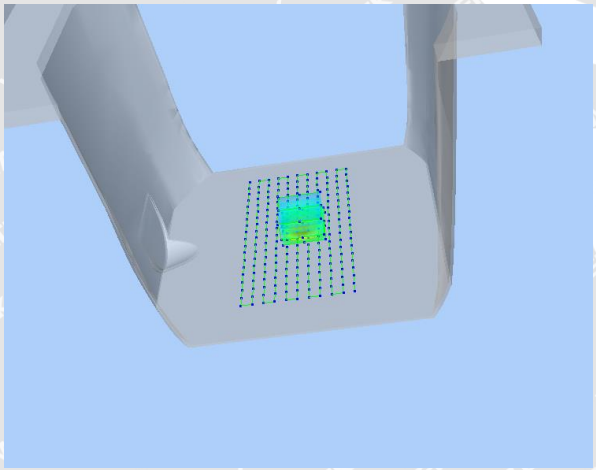
Maximum location: X=5.00, Y=3.00

SAR Peak: 0.44 W/kg

SAR 10g (W/Kg)	0.110343
SAR 1g (W/Kg)	0.248289

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.4422	0.2723	0.1420	0.0723	0.0371



3D screen shot	Hot spot position
	

MEASUREMENT 151

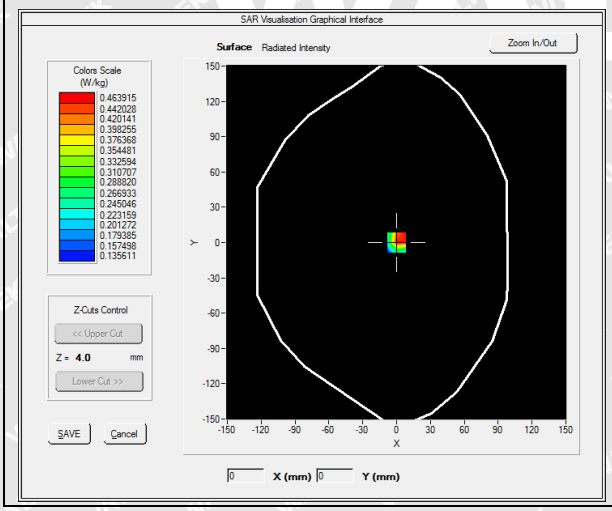
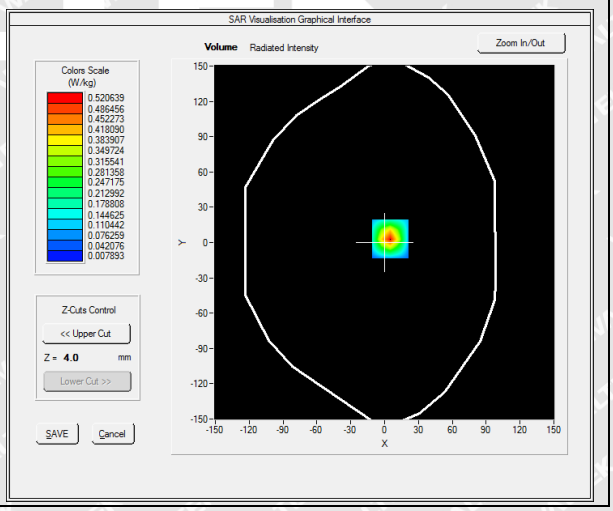
Type: Phone measurement (Complete)
Date of measurement: 2020-09-10
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 5.58; Calibrated: 2020/07/03

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Flat Plane
Device Position	Bottom
Band	LTE Band 41_RMC
Channels	QPSK, 5MHz, 1RB, Low
Signal	Duty Cycle 1:1

B. SAR Measurement Results

Frequency (MHz)	2498.500000
Relative Permittivity (real part)	52.241202
Conductivity (S/m)	2.120943
Power Variation (%)	3.672346
Ambient Temperature	21.1
Liquid Temperature	21.2

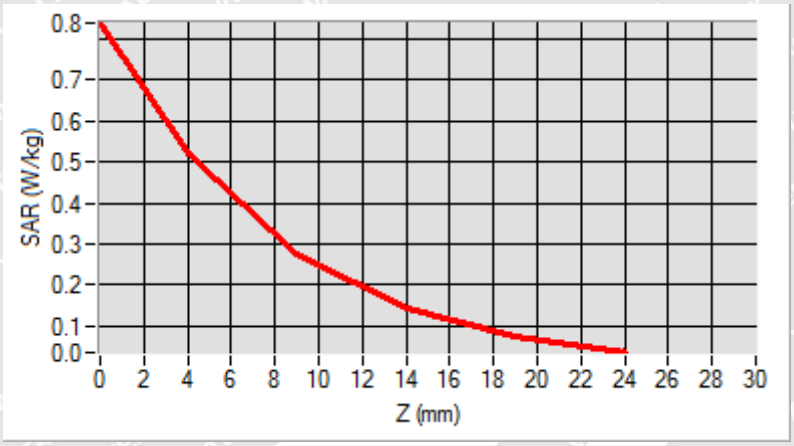
SURFACE SAR	VOLUME SAR
	

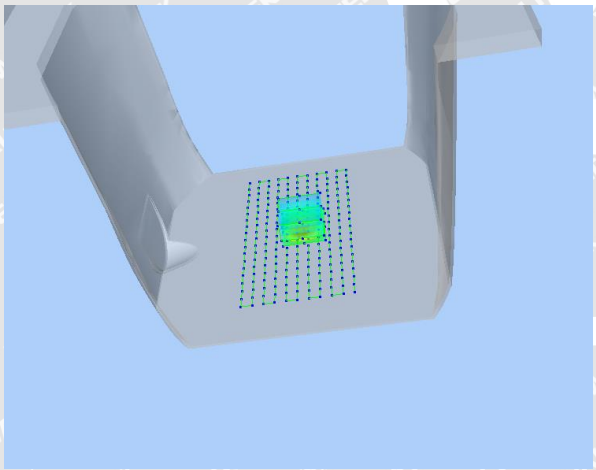
Maximum location: X=5.00, Y=3.00

SAR Peak: 0.84 W/kg

SAR 10g (W/Kg)	0.209948
SAR 1g (W/Kg)	0.466092

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.8390	0.5206	0.2746	0.1414	0.0732



3D screen shot	Hot spot position
	

MEASUREMENT 159

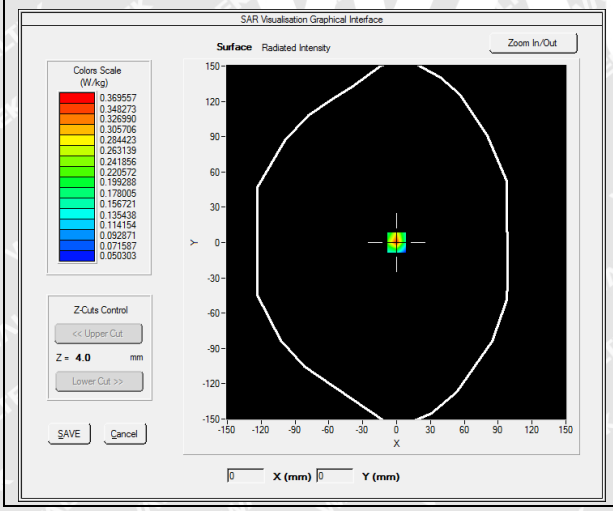
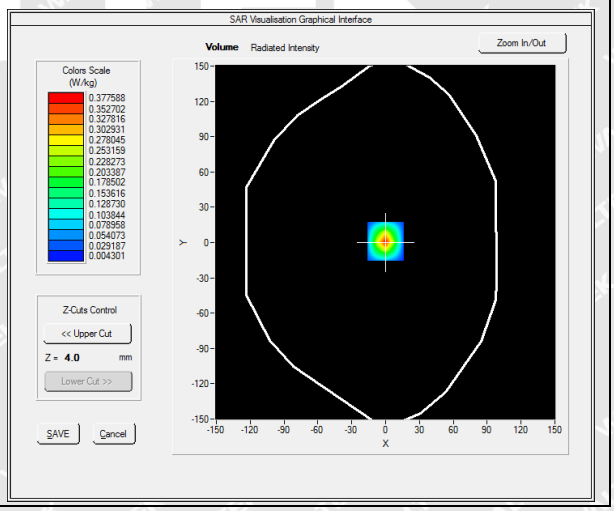
Type: Phone measurement (Complete)
Date of measurement: 2020-09-10
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE2 - SN 45/15 EPGO280; ConvF: Refer to the Calibration Certificate; Calibrated: 2020/07/03

A. Experimental conditions

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

B. SAR Measurement Results

Frequency (MHz)	2437.000000
Relative Permittivity (real part)	52.010212
Conductivity (S/m)	1.910255
Power Variation (%)	2.492743
Ambient Temperature	21.1
Liquid Temperature	21.2

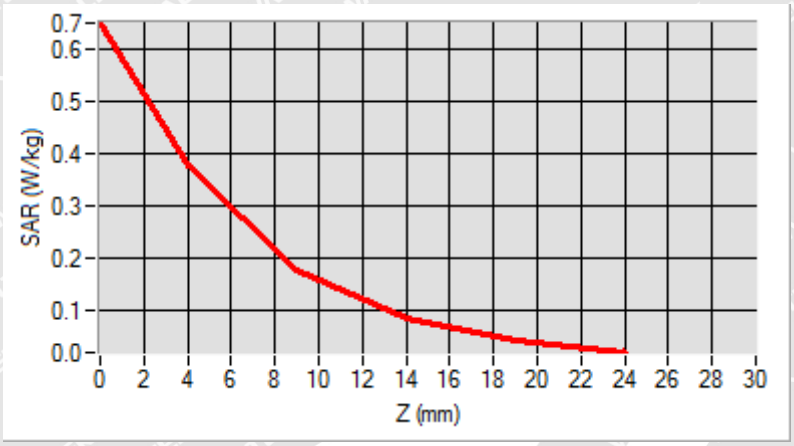
SURFACE SAR	VOLUME SAR
	

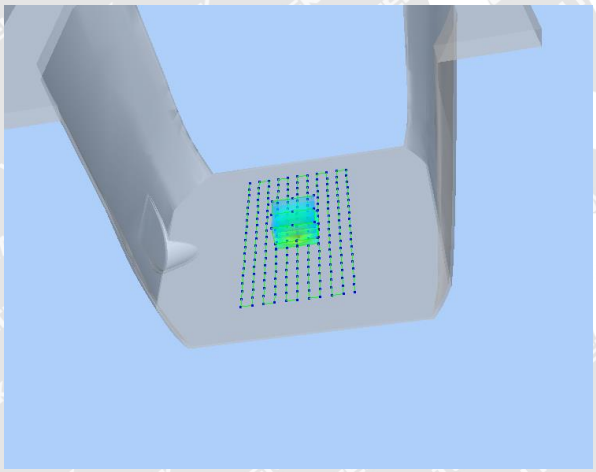
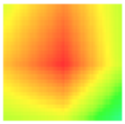
Maximum location: X=0.00, Y=1.00

SAR Peak: 0.65 W/kg

SAR 10g (W/Kg)	0.137828
SAR 1g (W/Kg)	0.332185

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.6516	0.3776	0.1803	0.0846	0.0422

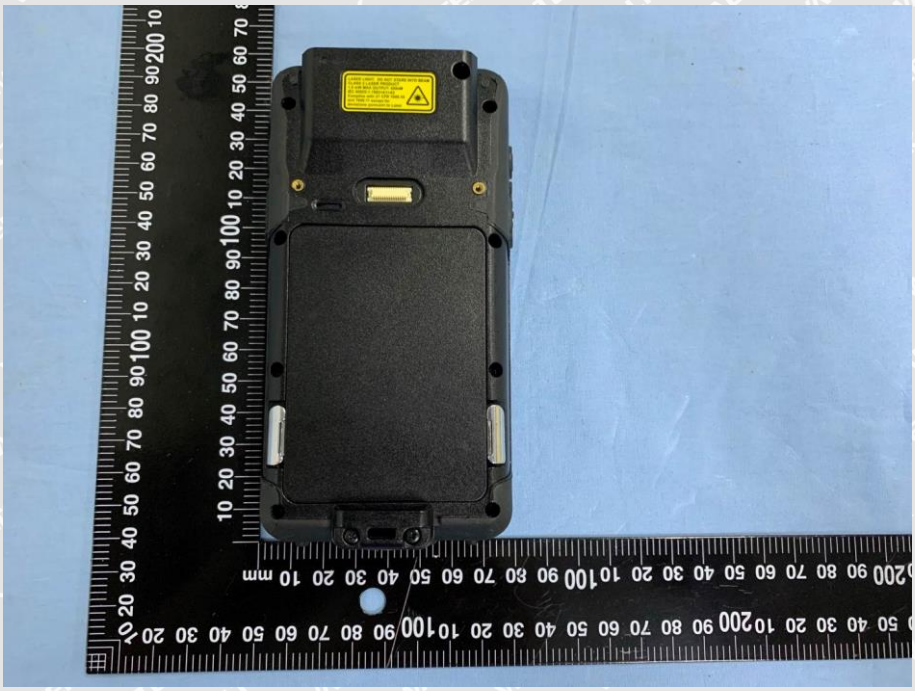


3D screen shot	Hot spot position
	

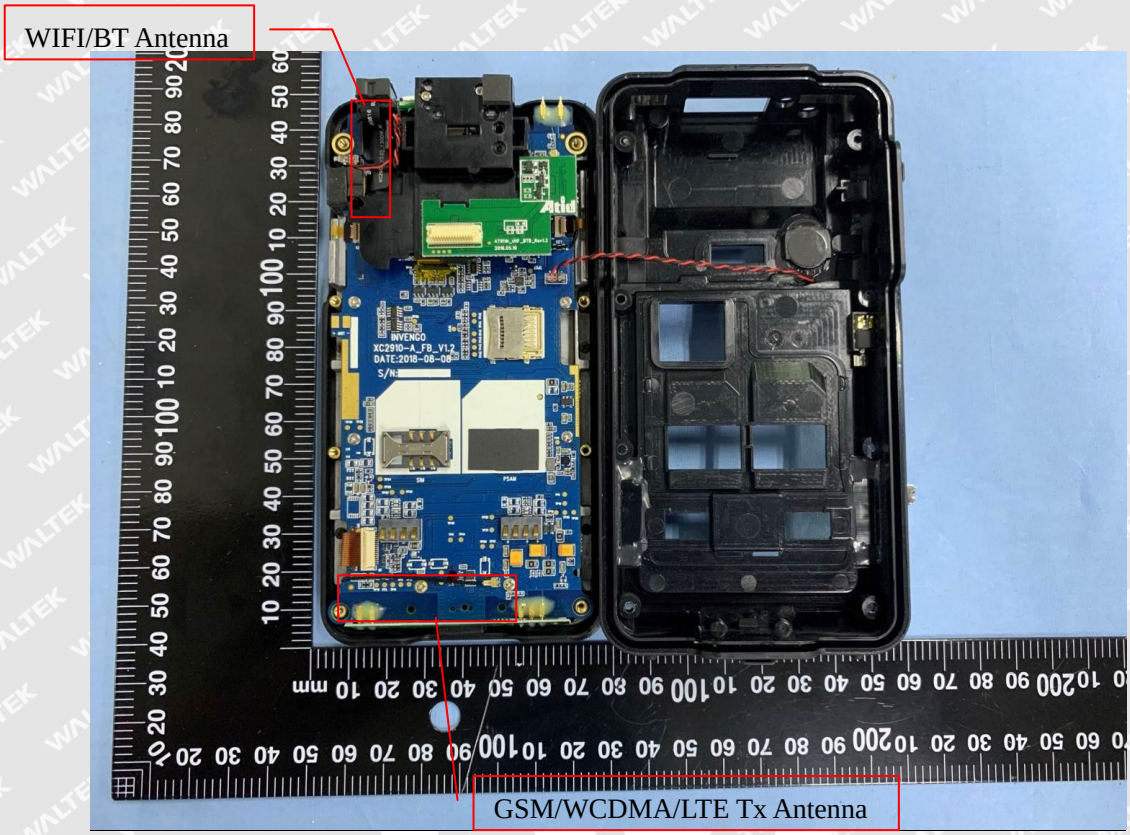
Annex C. EUT Photos

EUT View Front

EUT View Back



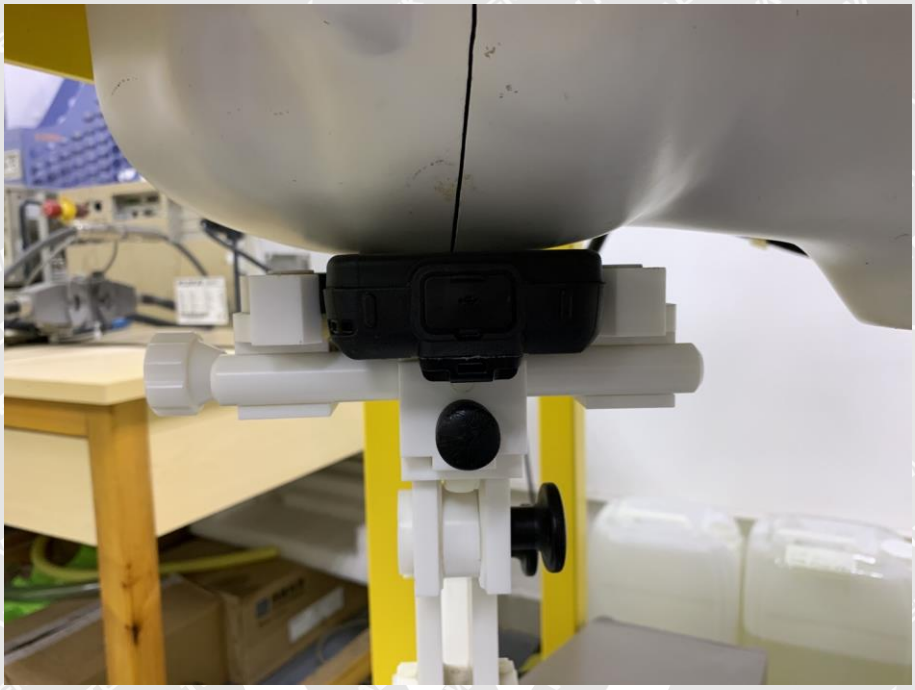
Antenna View



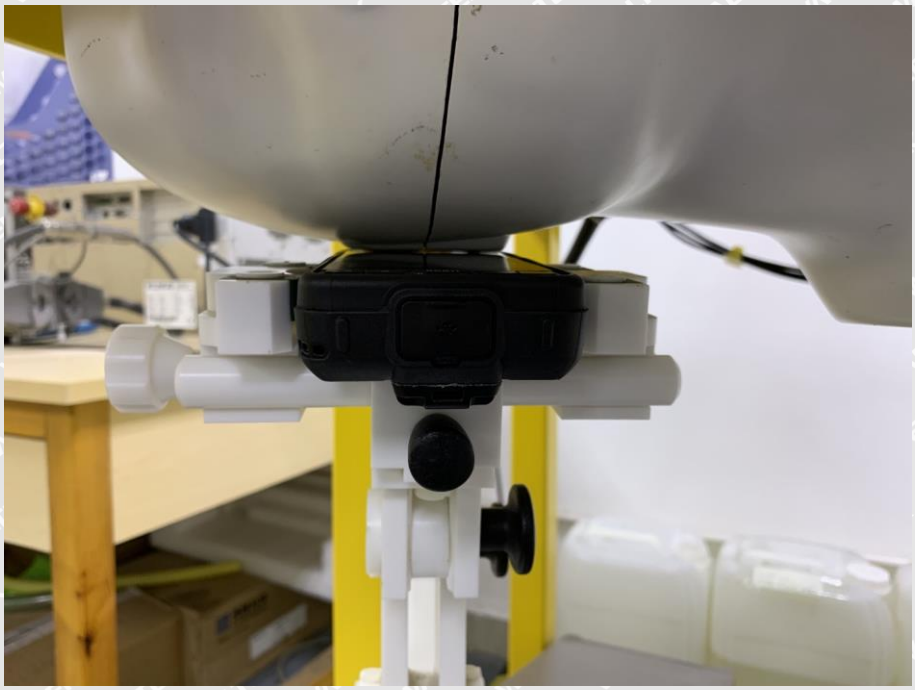
Annex D. Test Setup Photos

Head Exposure Conditions

Right Cheek



Tilt

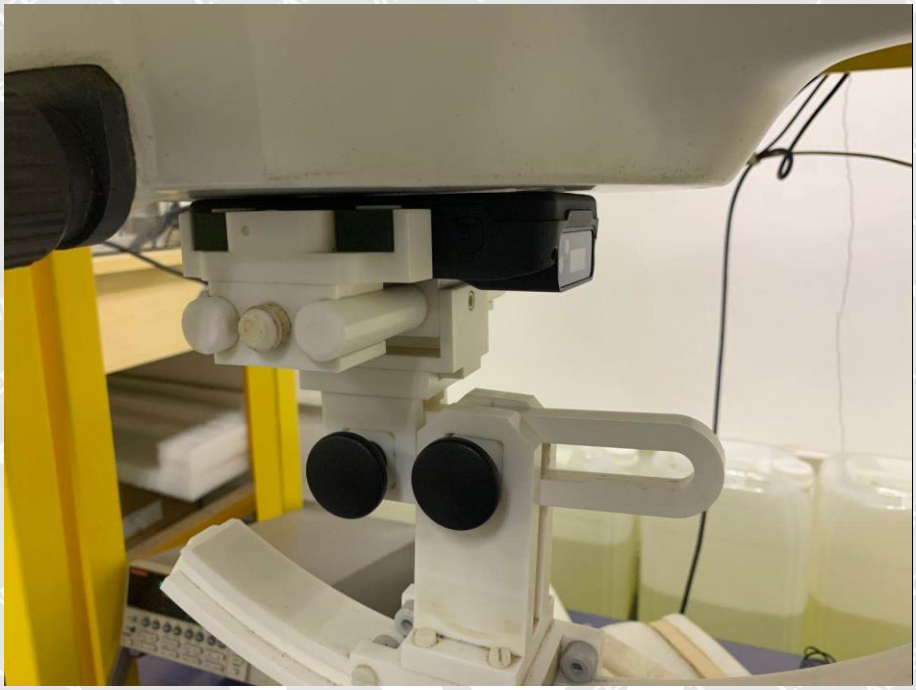


Left Cheek

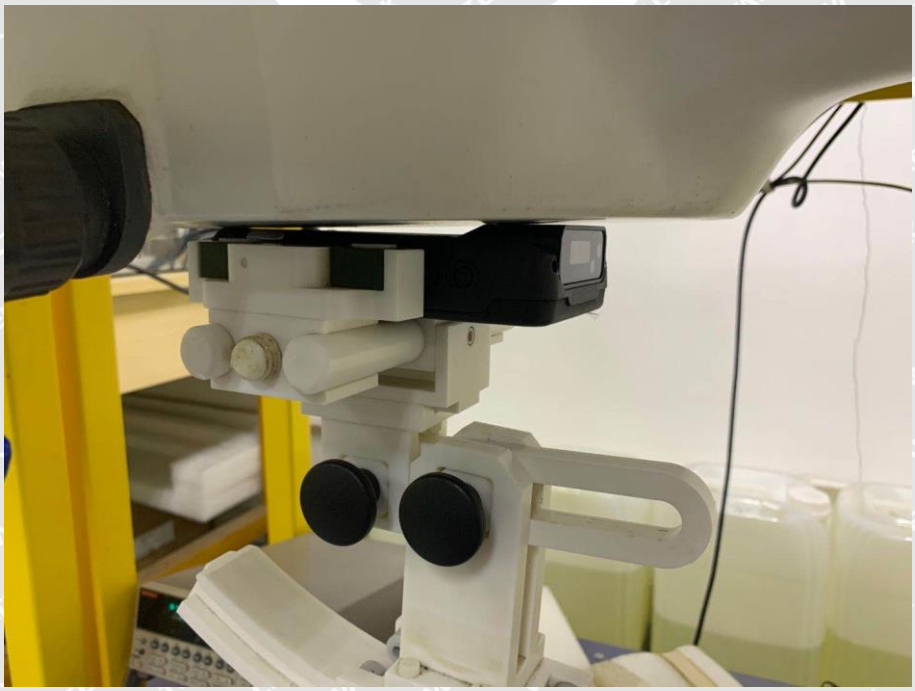
Tilt

Body mode Exposure Conditions

Body Front

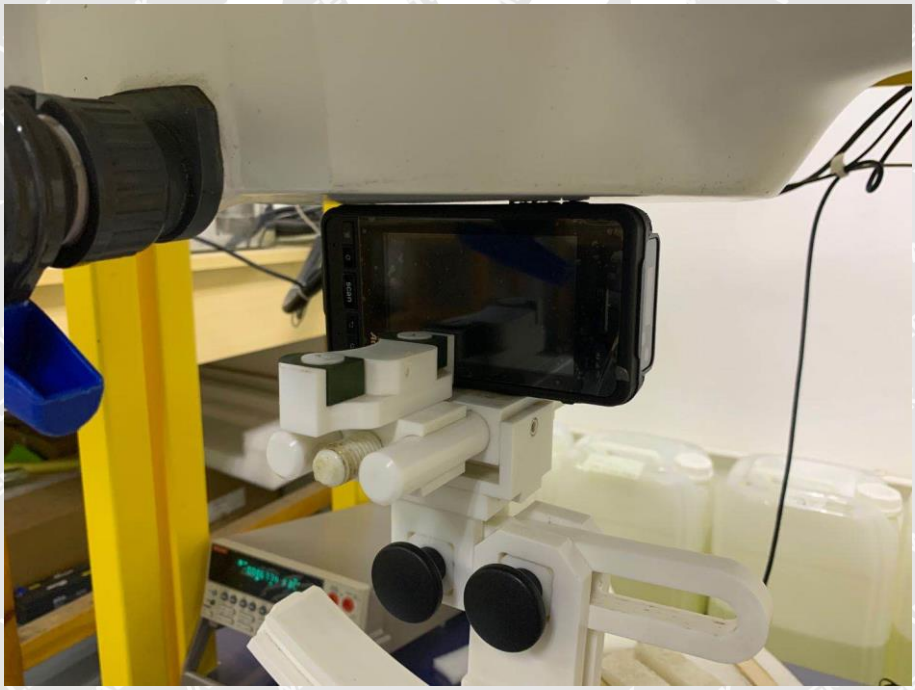


Body Back

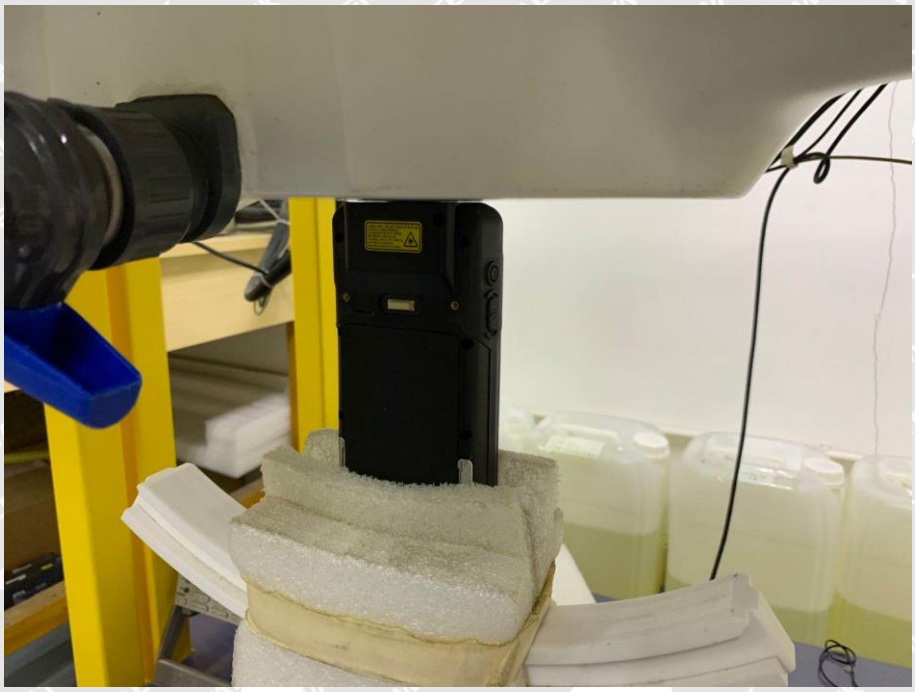


Body Right

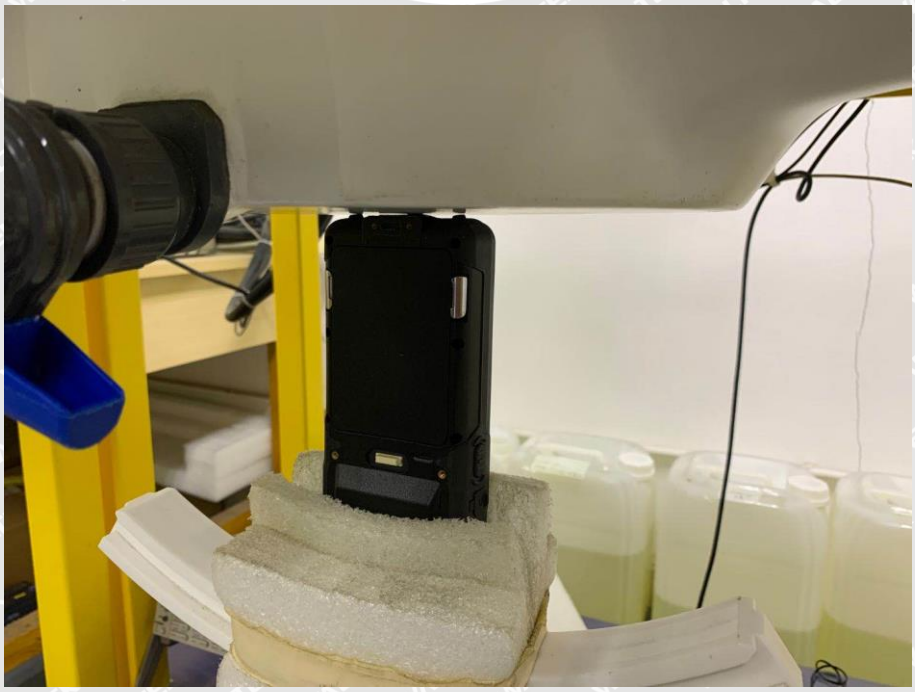
Body Left



Body Top



Body Bottom



Annex E. Calibration Certificate

Please refer to the exhibit for the calibration certificate

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