FCC SAR
Measurement and Test Report

For

Servicios Troncalizados S.A. de C.V.

Av. Revolucion 639 piso 4 Col. San Pedro de los Pinos CP 03800,

Mexico City Mexico

FCC ID: 2AM58-TVX887PLUS

Test Standards:	FCC Part 2.1093 ANSI / IEEE C95.1 ::2005+A1:2010 ANSI / IEEE C95.3 : 2002(R2008) IEEE 1528 :2013
Product Description:	4G Smart POC Radio
Tested Model:	TVX887+
Report No.:	WTX19X09062275W-7
Sample Received Date:	2018-10-15
Tested Date:	2018-10-15 to 2018-10-19
Issued Date:	2019-09-06
Tested By:	Lucy Wei / Engineer
Reviewed By:	Silin Chen / EMC Manager
Approved & Authorized By:	Jandy So / PSQ Manager
Prepared By:	

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Report version

Version No.	Date of issue	Description
Rev.1	2019-09-06	Refer the old report STR18098267H(the original FCC ID: 2ARDS-E980, authorize by Timco Engineering Inc.), updated the name and address of the applicant &Manufacturer; different product name , brand name, and model name, but the circuit and the electronic construction do not change, declared by the manufacturer.so the test data from the original report.
/	/	/

1. General Information

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant:	Servicios Troncalizados S.A. de C.V.
Address of applicant:	Av. Revolucion 639 piso 4 Col. San Pedro de los Pinos CP 03800, Mexico City Mexico
Manufacturer:	Servicios Troncalizados S.A. de C.V.
Address of manufacturer:	Av. Revolucion 639 piso 4 Col. San Pedro de los Pinos CP 03800, Mexico City Mexico

General Description of EUT:	
Product Name:	4G Smart POC Radio
Brand Name:	Teamvox
Model No.:	TVX887+
Adding Model(s):	/
Rated Voltage:	Battery DC 3.8V
Battery:	4600mAh
Software Version:	E980_US_GMS_V005_20180925
Hardware Version:	K920_MB_P2_V01
Device Category:	Portable Device
The EUT Main board support GSM850/900/DCS1800/PCS1900, WCDMA Band 2/5, LTE Band 2/4/5/7/17 function. It is intended for speech, Multimedia Message Service (MMS) transmission. It is equipped with GPRS/EDGE class 12 for GSM850/900/DCS1800/PCS1900, GPS, FM, Bluetooth and Wi-Fi functions. For more information see the following datasheet	
Note: The test data is gathered from a production sample provided by the manufacturer.	

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
Max RF Output Power:	GSM850: 33.33dBm, GSM1900: 30.62dBm EDGE850: 27.79dBm, EDGE1900: 26.83dBm
Type of Modulation:	GMSK, 8PSK
Type of Antenna:	Integral Antenna
Antenna Gain:	GSM850: 0.86dBi; GSM1900: -0.74dBi
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: 24.37dBm, WCDMA Band 5: 24.54dBm
Type of Modulation:	BPSK, QPSK, 16QAM
Antenna Type:	Integral Antenna
Antenna Gain:	WCDMA Band 2:-0.74dBi, WCDMA Band 5: 0.86dBi
4G	
Support Networks:	FDD-LTE
Support Band:	FDD-LTE Band 2, 4, 5, 7, 17
Uplink Frequency:	FDD-LTE Band 2: Tx: 1850-1910MHz, FDD-LTE Band 4: Tx: 1710-1755MHz, FDD-LTE Band 5: Tx: 824-849MHz FDD-LTE Band 7: Tx: 2500-2570MHz, FDD-LTE Band 17: Tx: 704-716MHz
Downlink Frequency:	FDD-LTE Band 2: Rx: 1930-1990MHz, FDD-LTE Band 4: Rx: 2110-2155MHz, FDD-LTE Band 5: Rx: 869-894MHz FDD-LTE Band 7: Rx: 2620-2690MHz, FDD-LTE Band 17: Rx: 734-746MHz
RF Output Power:	FDD-LTE Band 2: 25.22dBm, FDD-LTE Band 4: 24.15dBm, FDD-LTE Band 5: 25.42dBm,

	FDD-LTE Band 7: 24.12dBm, FDD-LTE Band 17: 23.71dBm
Type of Modulation:	QPSK, 16QAM
Antenna Type:	Integral Antenna
Antenna Gain:	FDD-LTE Band 2: -0.75dBi, FDD-LTE Band 4: -0.64dBi, FDD-LTE Band 5: 0.86dBi, FDD-LTE Band 7: -1.29dBi, FDD-LTE Band 17: -2.25dBi,
WIFI	
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:	15.31dBm (Conducted)
Type of Modulation:	CCK, OFDM, QPSK, BPSK, 16QAM, 64QAM
Data Rate:	1-11Mbps, 6-54Mbps, up to 150Mbps
Quantity of Channels:	11/7
Channel Separation:	5MHz
Antenna Type:	Integral Antenna
Antenna Gain:	0dBi
Bluetooth	
Bluetooth Version:	V4.0
Frequency Range:	2402-2480MHz
RF Output Power:	3.694dBm (Conducted)
Data Rate:	1Mbps, 2Mbps, 3Mbps
Modulation:	GFSK, Pi/4 QDPSK, 8DPSK
Quantity of Channels:	79/40
Channel Separation:	1MHz/2MHz
Antenna Type:	Integral Antenna
Antenna Gain:	0dBi

1.2 Test Standards

The following report is prepared on behalf of the Servicios Troncalizados S.A. de C.V. 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 ,KDB 941225 D06 v02r01, and KDB 865664 D01 v01r04 and KDB 865664 D02 v01r02.

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

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

1.3 Test Methodology

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

1.4 Test Facility

FCC – Registration No.: 125990

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

Industry Canada (IC) Registration No.: 11464A

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

2. Summary of Test Results

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

Frequency Band	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	**1.074**	0.550	**1.060**	1.6
WCDMA	0.776	0.562	0.686	1.6
FDD-LTE	0.875	**1.035**	1.035	1.6
WLAN 2.4G	0.447	0.172	0.172	1.6
Simultaneous Transmission	**1.362**	1.194	1.219	1.6

Front-of the face SAR (25mm Gap)

Frequency Band	Maximum SAR_{1g} (W/kg)	SAR_{1g} Limit (W/kg)
GSM850	0.239	1.6
GSM1900	**0.240**	1.6

Remark:

The highest reported SAR values for head, body-worn accessory, wireless router(hotspot), Front-of the face SAR and simultaneous transmission conditions are ***1.074W/kg, 1.035W/kg , 1.060W/kg, 0.240W/kg, and 1.362W/kg*** *respectively.*

The device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg) specified in FCC 47 CFR Part 2.1093 and ANSI/IEEE C95.1-2005, and had been tested in accordance with the measurement methods and procedure specified in IEEE 1528-2013 and KDB 865664 D01 v01r04 and KDB 865664 D02 v01r02

3. Specific Absorption Rate (SAR)

3.1 Introduction

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techiques or numerical modeling. The standard recommends limits for two tiers of groups, occupational/controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.

3.2 SAR Definition

The SAR definition is the time derivative (rate) of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density (ρ). The equation description is as below:

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

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

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

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

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

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

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

4. SAR Measurement System

4.1 The Measurement System

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

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

The following figure shows the system.

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

4.2 Probe

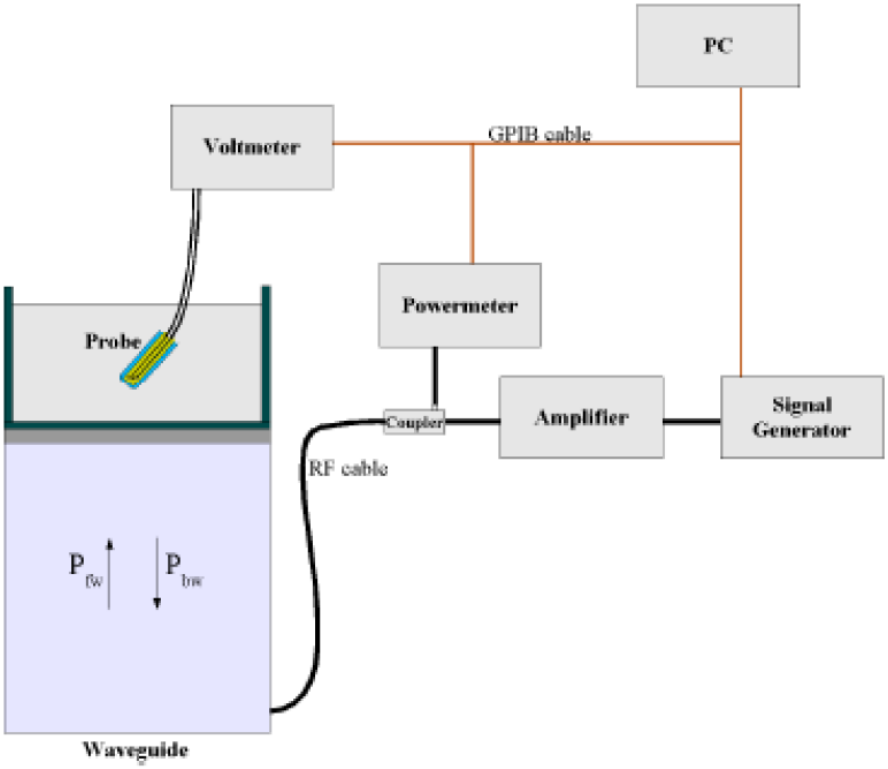
For the measurements the Specific Dosimetric E-Field Probe SSE5 SN 09/13 EP168 with following specifications is used

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

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

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

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



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

Where :

Pfw = Forward Power

Pbw = Backward Power

a and b =Waveguide dimensions

I = Skin depth

Keithley configuration:

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

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

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

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

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

where DCP is the diode compression point in mV.

4.3 Probe Calibration Process

Dosimetric Assessment Procedure

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

Free Space Assessment Procedure

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

Temperature Assessment Procedure

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

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

Where:

Δt = exposure time (30 seconds),

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

ΔT = temperature increase due to RF exposure.

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

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

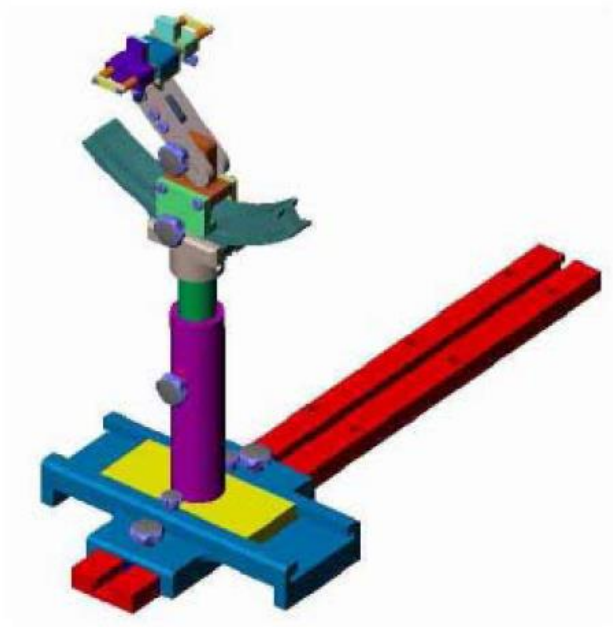
Where:
σ = simulated tissue conductivity,
ρ = Tissue density (1.25 g/cm3 for brain tissue)

4.4 Phantom

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

4.5 Device Holder

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



System Material	Permittivity	Loss Tangent
Delrin	3.7	0.005

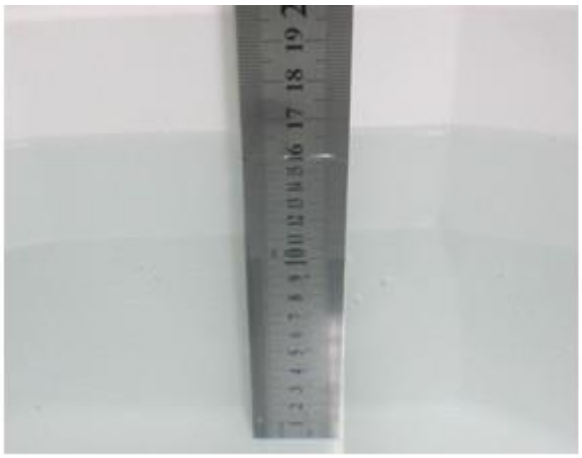
4.6 Test Equipment List

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
E-Field Probe	MVG	SSE5	SN 09/13 EP168	2018-06-01	2019-05-31
750MHz Dipole	MVG	SID750	SN 47/12 DIP 0G750-203	2018-03-20	2019-03-19
835MHz Dipole	MVG	SID835	SN 47/12 DIP 0G835-204	2018-03-20	2019-03-19
1800MHz Dipole	MVG	SID1800	SN 47/12 DIP 1G800-206	2018-03-20	2019-03-19
1900MHz Dipole	MVG	SID1900	SN 47/12 DIP 1G900-207	2018-03-20	2019-03-19
2450MHz Dipole	MVG	SID2450	SN 13/15 DIP 2G450-364	2018-03-20	2019-03-19
2600MHz Dipole	MVG	SID2600	SN 13/15 DIP 2G600-365	2018-03-20	2019-03-19
Dielectric Probe Kit	SATIMO	SCLMP	SN 47/12 OCPG49	2018-03-20	2019-03-19
SAM Phantom	SATIMO	SAM	SN/ 47/12 SAM95	N/A	N/A
MULTIMETER	KEITHLEY	Keithley 2000	4006367	2018-05-22	2019-05-21
Signal Generator	Rohde & Schwarz	SMR20	100047	2018-05-22	2019-05-21
Universal Tester	Rohde & Schwarz	CMU200	112012	2018-05-22	2019-05-21
Communications Tester	Rohde & Schwarz	CMW500	148650	2018-05-22	2019-05-21
Network Analyzer	HP	8753C	SEMT-1064	2018-05-22	2019-05-21
Directional Couplers	Agilent	778D	20160	2018-05-22	2019-05-21

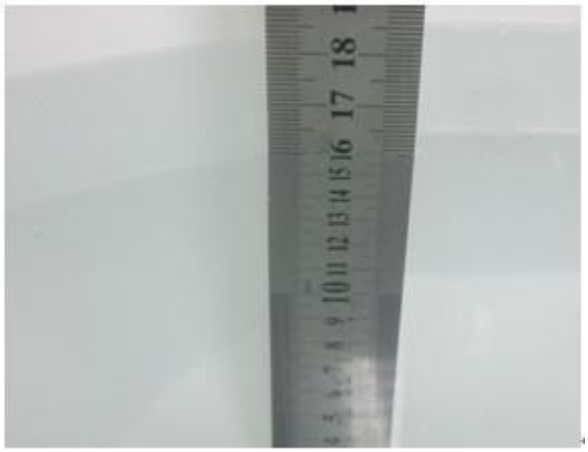
5. Tissue Simulating Liquids

5.1 Composition of Tissue Simulating Liquid

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



Liquid Height for Head SAR



Liquid Height for Body SAR

The Composition of Tissue Simulating Liquid

Frequency (MHz)	Water (%)	Salt (%)	Sugar (%)	HEC (%)	Preventol (%)	DGBE (%)
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
1800-1900	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
1800-1900	70.2	0.4	0	0	0	29.4
2450	68.6	0.1	0	0	0	31.3
2600	68.2	0.1	0	0	0	31.7

5.2 Tissue Dielectric Parameters for Head and Body Phantoms

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

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

5.3 Tissue Calibration Result

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

Calibration Result for Dielectric Parameters of Tissue Simulating Liquid

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	2018-10-15
835	21.2	0.87	0.90	-3.33	41.11	41.50	-0.94	±5	2018-10-15
1750	21.3	1.37	1.37	0.00	39.02	40.1	-2.69	±5	2018-10-16
1800	21.3	1.37	1.40	-2.14	39.02	40.0	-2.45	±5	2018-10-16
1900	21.3	1.38	1.40	-1.43	38.56	40.00	-3.60	±5	2018-10-16
2450	21.3	1.74	1.80	-3.33	38.15	39.20	-2.68	±5	2018-10-17
2600	21.3	1.93	1.96	-1.53	38.63	39.0	-0.95	±5	2018-10-17

Body Tissue Simulating Liquid									
Freq. MHz.	Temp. (℃)	Conductivity			Permittivity			Limit (%)	Date
		Reading (σ)	Target (σ)	Delta (%)	Reading (ε r)	Target (ε r)	Delta (%)		
750	21.2	0.93	0.96	-3.12	54.96	55.50	-0.97	±5	2018-10-15
835	21.2	0.95	0.97	-2.06	54.85	55.20	-0.63	±5	2018-10-15
1750	21.3	1.46	1.49	-2.01	51.22	53.40	-4.08	±5	2018-10-16
1800	21.3	1.46	1.52	-3.95	51.22	53.30	-3.90	±5	2018-10-16
1900	21.3	1.50	1.52	-1.32	52.42	53.30	-1.65	±5	2018-10-16
2450	21.3	1.91	1.95	-2.05	52.01	52.70	-1.31	±5	2018-10-17
2600	21.3	2.12	2.16	-1.85	52.24	52.50	-0.50	±5	2018-10-17

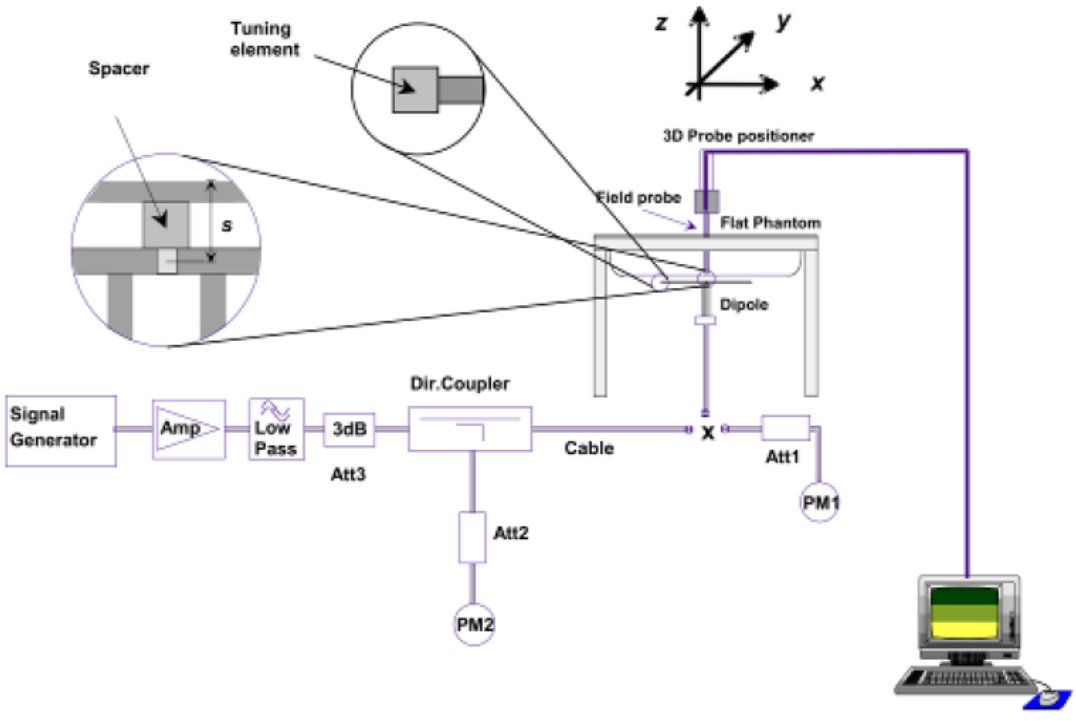
6. SAR Measurement Evaluation

6.1 Purpose of System Performance Check

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

6.2 System Setup

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



System Verification Setup Block Diagram

Setup Photo of Dipole Antenna

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

6.3 Validation Results

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

Frequency	Targeted SAR_{1g}	Measured SAR_{1g}	Normalized SAR_{1g}	Tolerance
MHz	(W/kg)	(W/kg)	(W/kg)	(%)
Head				
750	8.40	2.16	8.64	2.86
835	9.67	2.41	9.64	-0.31
1800	38.51	9.61	38.44	-0.18
1900	39.58	9.91	39.64	0.15
2450	53.69	13.45	53.8	0.20
2600	55.13	13.67	54.68	-0.82
Body				
750	8.40	2.12	8.48	0.95
835	9.38	2.35	9.4	0.21
1800	38.31	9.58	38.32	0.03
1900	39.10	9.78	39.12	0.05
2450	50.41	12.59	50.36	-0.10
2600	53.89	13.43	53.72	-0.32

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.

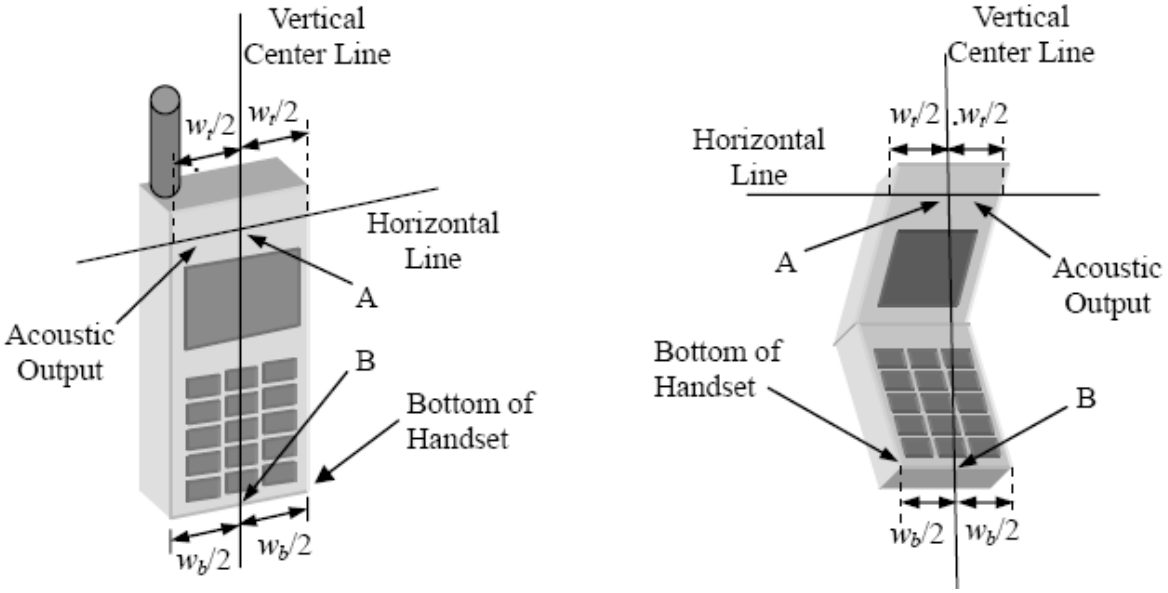


Illustration for Handset Vertical and Horizontal Reference Lines

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).

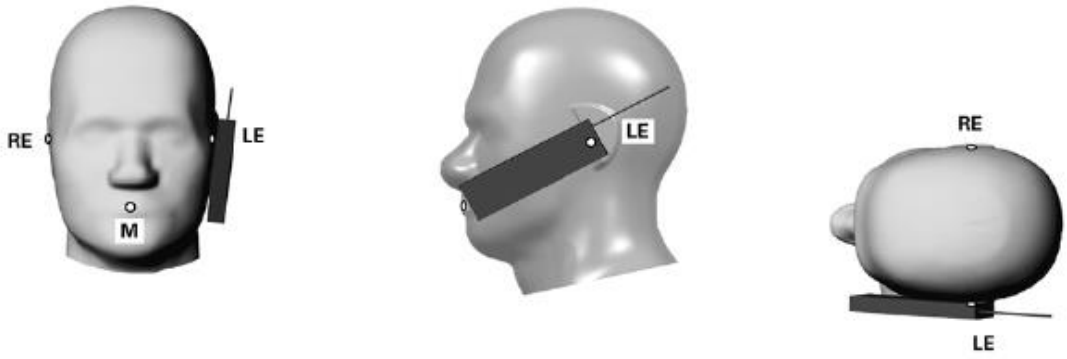


Illustration for Cheek Position

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).

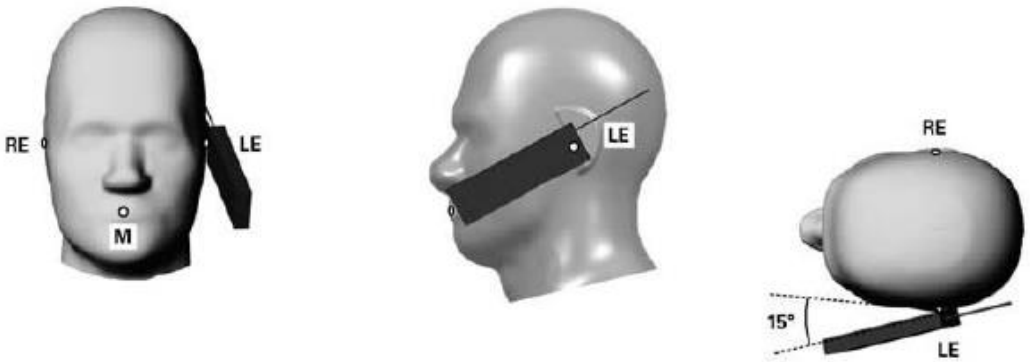


Illustration for Tilted Position

7.4 Body Worn Position

(a) To position the device parallel to the phantom surface with either keypad up or down.
(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.

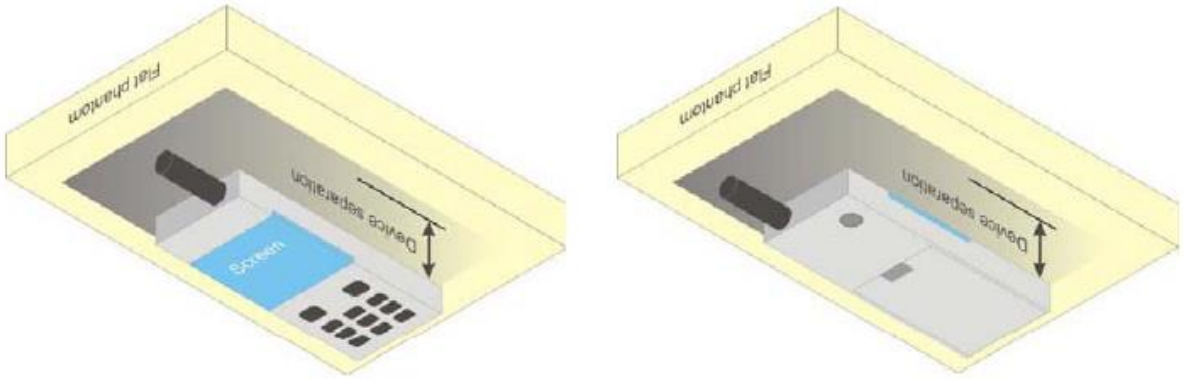
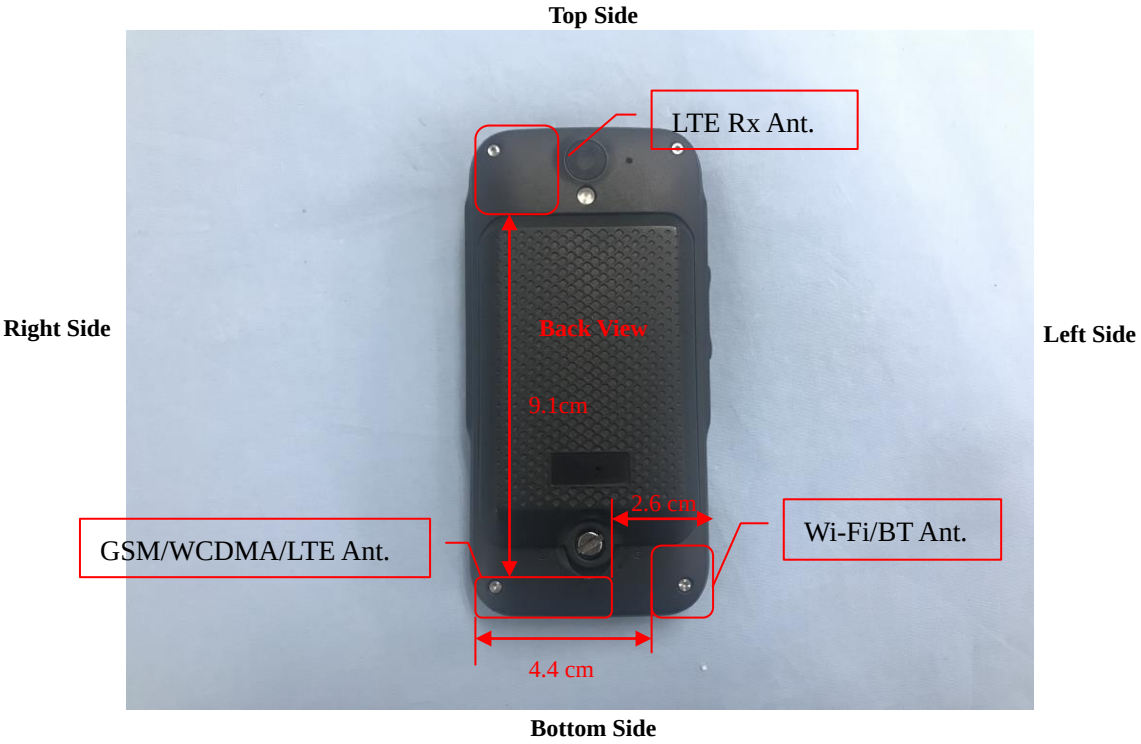


Illustration for Body Worn Position

7.5 EUT Antenna Position



Block Diagram for EUT Antenna Position

7.6 EUT Testing Position

Head/Body-worn/Hotspot/ Extremity 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

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

Body-worn SAR tests		
Antennas	**Front**	**Back**
WWAN	Yes	Yes
WLAN	Yes	Yes

Front-of the face SAR tests	
Antennas	**Front**
WWAN	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. The EUT supports PTT function only through GPRS/EDGE network function. With PTT mode, a test separation distance of 25 mm is used for in-front-of the face SAR.

3. For Body-worn SAR testing ,this distance is determined by the handset manufacturer according to the typical body-worn accessories users may acquire at the time of equipment certification, 1.0 cm, the body-worn accessories is supplied with the phone.

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	33.32	33.33	33.31	33.5	30.30	30.38	30.56	31.0
GPRS (1 slot)	33.31	33.29	33.25	33.5	30.39	30.48	30.62	31.0
GPRS (2 slots)	32.52	32.50	32.49	33.0	29.98	29.89	29.96	30.5
GPRS (3 slots)	30.58	30.59	30.60	31.0	27.98	27.88	27.87	28.5
GPRS (4 slots)	29.46	29.44	29.47	30.0	26.92	26.78	26.78	27.5
EDGE (1 slot)	27.79	27.74	27.56	28.0	26.83	26.48	26.45	27.0
EDGE (2 slots)	26.63	26.54	26.31	27.0	26.12	25.70	25.58	26.0
EDGE (3 slots)	24.40	24.28	24.08	24.5	24.39	23.83	23.72	24.5
EDGE (4 slots)	23.23	23.05	22.83	23.5	23.15	22.64	22.62	23.5

GSM - Source-Based Time-Average Power (dBm)								
Band	**GSM850**			**Tune-up power (dBm)**	**PCS1900**			**Tune-up power (dBm)**
Channel	**128**	**190**	**251**		**512**	**661**	**810**	
Frequency (MHz)	**824.2**	**836.6**	**848.8**		**1850.2**	**1880**	**1909.8**	
GSM	24.32	24.33	24.31	24.5	21.30	21.38	21.56	22.0
GPRS (1 slot)	24.31	24.29	24.25	24.5	21.39	21.48	21.62	22.0
GPRS (2 slots)	26.52	26.50	26.49	27.0	23.98	23.89	23.96	24.5
GPRS (3 slots)	26.33	26.34	26.35	26.5	23.73	23.63	23.62	24.0
GPRS (4 slots)	26.46	26.44	26.47	27.0	23.92	23.78	23.78	24.5
EDGE (1 slot)	18.79	18.74	18.56	19.0	17.83	17.48	17.45	18.0
EDGE (2 slots)	20.63	20.54	20.31	21.0	20.12	19.70	19.58	20.5
EDGE (3 slots)	20.15	20.03	19.83	20.5	20.14	19.58	19.47	20.5
EDGE (4 slots)	20.23	20.05	19.83	20.5	20.15	19.64	19.62	20.5
Note: The source-based time-averaged power is linearly scaled the maximum burst averaged power based on time slots. The calculated method are shown as below: Source based time-average power = Burst averaged power - Duty cycle factor in dB Duty cycle factor = 9 dB for 1 Tx slot, 6 dB for 2 Tx slots, 4.25 dB for 3 Tx slots, 3 dB for 4 Tx slots								

Remark:

1. For Head SAR testing, GSM and GPRS (2TX slots) should be evaluated, therefore the EUT was set in GSM and GPRS (2TX slots) 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 (2TX slots) for GSM850 and 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. This device supports VOIP capability through 3rd party apps software.

WCDMA - Average Power (dBm)								
Band	**WCDMA Band II**				**WCDMA Band V**			
Channel	**9262**	**9400**	**9538**	**Tune-up power (dBm)**	**4132**	**4182**	**4233**	**Tune-up power (dBm)**
Frequency (MHz)	**1852.4**	**1880.0**	**1907.6**		**826.4**	**836.6**	**846.6**	
RMC 12.2k	24.37	24.32	24.08	24.5	24.29	24.37	24.54	25.0
HSDPA Subtest-1	23.41	23.24	23.10	24.0	23.25	23.37	23.56	24.0
HSDPA Subtest-2	23.38	23.21	23.08	24.0	23.21	23.34	23.53	24.0
HSDPA Subtest-3	23.40	23.22	23.07	24.0	23.20	23.35	23.54	24.0
HSDPA Subtest-4	23.37	23.23	23.08	24.0	23.22	23.35	23.54	24.0
HSUPA Subtest-1	23.49	23.27	23.02	24.0	23.22	23.33	23.54	24.0
HSUPA Subtest-2	23.45	23.25	23.01	24.0	23.19	23.3	23.51	24.0
HSUPA Subtest-3	23.46	23.25	23.02	24.0	23.18	23.31	23.51	24.0
HSUPA Subtest-4	23.45	23.24	23	24.0	23.17	23.31	23.52	24.0
HSUPA Subtest-5	23.46	23.24	23	24.0	23.18	23.32	23.53	24.0

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

FDD-LTE Band 2:

Channel Bandwidth: 1.4 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	25.12	0
		1	3	25.21	0
		1	5	25.05	0
		3	0	24.18	0
		3	2	24.14	0
		3	3	24.15	0
		6	0	23.2	1
	MCH	1	0	24.13	0
		1	3	24.26	0
		1	5	24.16	0
		3	0	24.19	0
		3	2	24.18	0
		3	3	24.19	0
		6	0	23.26	1
	HCH	1	0	24.1	0
		1	3	24.22	0
		1	5	24.21	0
		3	0	24.03	0
		3	2	24.08	0
		3	3	23.92	0
		6	0	22.92	1
16QAM	LCH	1	0	23.83	1
		1	3	24.01	1
		1	5	23.81	1
		3	0	23.74	1
		3	2	23.76	1
		3	3	23.73	1
		6	0	22.82	2
	MCH	1	0	23.4	1
		1	3	23.54	1
		1	5	23.38	1
		3	0	23.13	1
		3	2	23.14	1
		3	3	23.11	1
		6	0	22.14	2
	HCH	1	0	23.1	1
		1	3	23.25	1

		1	5	23.11	1
		3	0	22.71	1
		3	2	22.72	1
		3	3	22.69	1
		6	0	21.94	2

Channel Bandwidth: 3 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	24.73	0
		1	7	24.64	0
		1	14	24.42	0
		8	0	23.62	1
		8	4	23.61	1
		8	7	23.54	1
		15	0	23.46	1
	MCH	1	0	23.82	0
		1	7	23.99	0
		1	14	23.78	0
		8	0	23.15	1
		8	4	23.17	1
		8	7	22.91	1
		15	0	23.29	1
	HCH	1	0	23.74	0
		1	7	23.96	0
		1	14	23.74	0
		8	0	22.75	1
		8	4	22.81	1
		8	7	22.81	1
		15	0	22.7	1
16QAM	LCH	1	0	23.54	1
		1	7	23.71	1
		1	14	23.45	1
		8	0	22.48	2
		8	4	22.51	2
		8	7	22.45	2
		15	0	22.33	2
	MCH	1	0	23.11	1
		1	7	23.3	1
		1	14	23.06	1
		8	0	22.28	2
		8	4	22.22	2
		8	7	22.26	2

		15	0	22.23	2
	HCH	1	0	22.83	1
		1	7	22.97	1
		1	14	22.74	1
		8	0	21.61	2
		8	4	21.65	2
		8	7	21.62	2
		15	0	21.61	2

Channel Bandwidth: 5 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	24.51	0
		1	12	24.73	0
		1	24	24.35	0
		12	0	23.5	1
		12	6	23.5	1
		12	13	23.37	1
		25	0	23.44	1
	MCH	1	0	23.81	0
		1	12	24.04	0
		1	24	23.73	0
		12	0	22.83	1
		12	6	22.86	1
		12	13	22.77	1
		25	0	22.78	1
	HCH	1	0	23.69	0
		1	12	24.01	0
		1	24	23.76	0
		12	0	22.66	1
		12	6	22.76	1
		12	13	22.75	1
		25	0	22.67	1
16QAM	LCH	1	0	23.47	1
		1	12	23.75	1
		1	24	23.38	1
		12	0	22.4	2
		12	6	22.44	2
		12	13	22.34	2
		25	0	22.36	2
	MCH	1	0	22.94	1
		1	12	23.19	1
		1	24	22.87	1

		12	0	21.92	2
		12	6	21.91	2
		12	13	21.86	2
		25	0	21.78	2
	HCH	1	0	22.73	1
		1	12	23.02	1
		1	24	22.73	1
		12	0	21.64	2
		12	6	21.69	2
		12	13	21.67	2
		25	0	21.64	2

Channel Bandwidth: 10 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	24.56	0
		1	24	24.48	0
		1	49	24.26	0
		25	0	23.48	1
		25	12	23.45	1
		25	25	23.42	1
		50	0	23.4	1
	MCH	1	0	23.9	0
		1	24	23.93	0
		1	49	23.76	0
		25	0	22.93	1
		25	12	22.9	1
		25	25	22.83	1
		50	0	22.85	1
	HCH	1	0	23.68	0
		1	24	23.81	0
		1	49	23.73	0
		25	0	22.77	1
		25	12	22.73	1
		25	25	22.79	1
		50	0	22.71	1
16QAM	LCH	1	0	23.55	1
		1	24	23.56	1
		1	49	23.4	1
		25	0	22.36	2
		25	12	22.35	2
		25	25	22.37	2
		50	0	22.33	2

	MCH	1	0	23.19	1
		1	24	23.24	1
		1	49	23.01	1
		25	0	21.91	2
		25	12	21.86	2
		25	25	21.79	2
		50	0	21.8	2
	HCH	1	0	22.76	1
		1	24	22.9	1
		1	49	22.77	1
		25	0	21.67	2
		25	12	21.64	2
		25	25	21.7	2
		50	0	21.68	2

Channel Bandwidth: 15 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	24.46	0
		1	37	24.52	0
		1	74	23.96	0
		37	0	23.68	1
		37	18	23.58	1
		37	38	23.46	1
		75	0	23.56	1
	MCH	1	0	23.89	0
		1	37	24.04	0
		1	74	23.64	0
		37	0	23.02	1
		37	18	23.01	1
		37	38	22.94	1
		75	0	23.01	1
	HCH	1	0	23.58	0
		1	37	23.94	0
		1	74	23.61	0
		37	0	22.92	1
		37	18	22.9	1
		37	38	22.89	1
		75	0	22.96	1
16QAM	LCH	1	0	23.5	1
		1	37	23.65	1
		1	74	23.16	1
		37	0	22.46	2

		37	18	22.47	2
		37	38	22.34	2
		75	0	22.41	2
	MCH	1	0	23.1	1
		1	37	23.19	1
		1	74	22.81	1
		37	0	21.95	2
		37	18	21.96	2
		37	38	21.87	2
		75	0	21.85	2
	HCH	1	0	22.69	1
		1	37	22.99	1
		1	74	22.69	1
		37	0	21.79	2
		37	18	21.74	2
		37	38	21.76	2
		75	0	21.81	2

Channel Bandwidth: 20 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	25.22	0
		1	49	25.1	0
		1	99	25.01	0
		50	0	24.34	1
		50	25	24.29	1
		50	50	24.25	1
		100	0	23.26	1
	MCH	1	0	24.84	0
		1	49	24.03	0
		1	99	23.88	0
		50	0	23.9	1
		50	25	23.86	1
		50	50	23.7	1
		100	0	23.76	1
	HCH	1	0	24.74	0
		1	49	24.76	0
		1	99	24.67	0
		50	0	23.77	1
		50	25	23.67	1
		50	50	23.68	1
		100	0	23.7	1
16QAM	LCH	1	0	23.35	1

		1	49	23.57	1
		1	99	22.96	1
		50	0	22.22	2
		50	25	22.18	2
		50	50	22.16	2
		100	0	22.15	2
	MCH	1	0	23.1	1
		1	49	23.26	1
		1	99	22.72	1
		50	0	21.89	2
		50	25	21.86	2
		50	50	21.73	2
		100	0	21.7	2
	HCH	1	0	22.54	1
		1	49	22.87	1
		1	99	22.89	1
		50	0	21.7	2
		50	25	21.6	2
		50	50	21.58	2
		100	0	21.64	2

FDD-LTE Band 4:

Channel Bandwidth: 1.4 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	23.31	0
		1	3	23.22	0
		1	5	23.42	0
		3	0	23.18	0
		3	2	23.03	0
		3	3	22.68	0
		6	0	22.91	1
	MCH	1	0	23.63	0
		1	3	23.72	0
		1	5	23.66	0
		3	0	22.74	0
		3	2	22.55	0
		3	3	22.78	0
		6	0	22.69	1
	HCH	1	0	23.02	0
		1	3	23.78	0

		1	5	22.97	0
		3	0	23.05	0
		3	2	23.15	0
		3	3	22.86	0
		6	0	22.1	1
16QAM	LCH	1	0	22.46	1
		1	3	22.35	1
		1	5	21.64	1
		3	0	22.18	1
		3	2	22.02	1
		3	3	21.71	1
		6	0	21.91	2
	MCH	1	0	21.88	1
		1	3	22.01	1
		1	5	22.34	1
		3	0	21.88	1
		3	2	21.64	1
		3	3	21.59	1
		6	0	20.65	2
	HCH	1	0	21.97	1
		1	3	21.56	1
		1	5	21.76	1
		3	0	21.68	1
		3	2	21.68	1
		3	3	21.65	1
		6	0	21.74	2

Channel Bandwidth: 3 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	23.51	0
		1	7	23.69	0
		1	14	23.38	0
		8	0	22.54	1
		8	4	22.49	1
		8	7	22.48	1
		15	0	22.47	1
	MCH	1	0	22.69	0
		1	7	22.62	0
		1	14	22.68	0
		8	0	22.49	1
		8	4	22.46	1
		8	7	22.44	1

		15	0	22.43	1
	HCH	1	0	23.31	0
		1	7	23.49	0
		1	14	23.34	0
		8	0	22.36	1
		8	4	22.35	1
		8	7	22.33	1
		15	0	22.27	1
16QAM	LCH	1	0	22.77	1
		1	7	22.78	1
		1	14	22.57	1
		8	0	21.56	2
		8	4	21.59	2
		8	7	21.53	2
		15	0	21.49	2
	MCH	1	0	21.81	1
		1	7	21.89	1
		1	14	21.78	1
		8	0	20.53	1
		8	4	21.48	2
		8	7	21.44	2
		15	0	21.46	2
	HCH	1	0	22.42	2
		1	7	22.66	1
		1	14	22.45	1
		8	0	21.61	1
		8	4	21.26	1
		8	7	21.22	2
		15	0	21.26	2

Channel Bandwidth: 5 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	23.52	0
		1	12	23.79	0
		1	24	23.25	0
		12	0	22.44	1
		12	6	22.48	1
		12	13	22.35	1
		25	0	22.39	1
	MCH	1	0	22.5	0
		1	12	22.75	0
		1	24	23.35	0

		12	0	22.49	1
		12	6	22.49	1
		12	13	22.41	1
		25	0	22.46	1
	HCH	1	0	22.65	0
		1	12	22.59	0
		1	24	23.35	0
		12	0	22.31	1
		12	6	22.35	1
		12	13	22.21	1
		25	0	22.31	1
16QAM	LCH	1	0	22.75	1
		1	12	22.81	1
		1	24	22.45	1
		12	0	21.5	2
		12	6	21.54	2
		12	13	21.43	2
		25	0	21.47	2
	MCH	1	0	21.7	1
		1	12	21.95	1
		1	24	21.63	1
		12	0	20.7	2
		12	6	20.67	2
		12	13	20.62	2
		25	0	20.58	2
	HCH	1	0	22.33	1
		1	12	21.53	1
		1	24	22.4	1
		12	0	22.32	2
		12	6	22.41	2
		12	13	22.25	2
		25	0	22.29	2

Channel Bandwidth: 10 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	23.49	0
		1	24	23.37	0
		1	49	22.96	0
		25	0	22.39	1
		25	12	22.34	1
		25	25	22.22	1
		50	0	22.29	1
	MCH	1	0	22.57	0
		1	24	22.63	0
		1	49	22.69	0
		25	0	21.71	1
		25	12	21.78	1
		25	25	21.98	1
		50	0	21.6	1
	HCH	1	0	22.98	0
		1	24	22.68	0
		1	49	22.76	0
		25	0	22.51	1
		25	12	22.28	1
		25	25	22.19	1
		50	0	22.24	1
16QAM	LCH	1	0	22.71	1
		1	24	22.58	1
		1	49	22.17	1
		25	0	21.44	2
		25	12	21.33	2
		25	25	21.25	2
		50	0	21.38	2
	MCH	1	0	21.97	1
		1	24	22.01	1
		1	49	21.69	1
		25	0	20.78	2
		25	12	20.61	2
		25	25	20.6	2
		50	0	20.67	2
	HCH	1	0	22.4	1
		1	24	21.55	1
		1	49	22.35	1
		25	0	21.28	2

		25	12	21.24	2
		25	25	21.15	2
		50	0	21.2	2

Channel Bandwidth: 15 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	23.44	0
		1	37	23.3	0
		1	74	22.68	0
		37	0	22.42	1
		37	18	22.28	1
		37	38	22.08	1
		75	0	22.27	1
	MCH	1	0	22.61	0
		1	37	22.72	0
		1	74	22.98	0
		37	0	21.77	1
		37	18	21.6	1
		37	38	22.41	1
		75	0	22.64	1
	HCH	1	0	23.2	0
		1	37	23.45	0
		1	74	23.21	0
		37	0	22.29	1
		37	18	22.36	1
		37	38	22.29	1
		75	0	22.33	1
16QAM	LCH	1	0	22.66	1
		1	37	22.55	1
		1	74	21.89	1
		37	0	21.39	2
		37	18	21.27	2
		37	38	21.06	2
		75	0	21.27	2
	MCH	1	0	21.9	1
		1	37	21.9	1
		1	74	21.84	1
		37	0	21.35	2
		37	18	21.63	2
		37	38	21.54	2
		75	0	21.6	2
	HCH	1	0	22.42	1

		1	37	22.6	1
		1	74	22.35	1
		37	0	21.25	2
		37	18	21.27	2
		37	38	21.21	2
		75	0	21.24	2

Channel Bandwidth: 20 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	24.07	0
		1	49	24.15	0
		1	99	24.01	0
		50	0	23.38	1
		50	25	23.26	1
		50	50	23.26	1
		100	0	23.06	1
	MCH	1	0	23.79	0
		1	49	23.68	0
		1	99	23.87	0
		50	0	22.78	1
		50	25	22.76	1
		50	50	22.54	1
		100	0	22.89	1
	HCH	1	0	23.21	0
		1	49	23.43	0
		1	99	23.26	0
		50	0	23.18	1
		50	25	23.09	1
		50	50	23.04	1
		100	0	23.09	1
16QAM	LCH	1	0	23.14	1
		1	49	23.26	1
		1	99	23.07	1
		50	0	22.17	2
		50	25	22.14	2
		50	50	22.12	2
		100	0	21.48	2
	MCH	1	0	21.77	1
		1	49	21.9	1
		1	99	21.71	1
		50	0	22.49	2
		50	25	22.32	2

		50	50	22.21	2
		100	0	21.74	2
	HCH	1	0	21.98	1
		1	49	21.6	1
		1	99	22.35	1
		50	0	22.31	2
		50	25	22.36	2
		50	50	22.35	2
		100	0	22.28	2

FDD-LTE Band 5:

Channel Bandwidth: 1.4 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	25.29	0
		1	3	25.4	0
		1	5	25.29	0
		3	0	24.21	0
		3	2	24.14	0
		3	3	24.2	0
		6	0	23.3	1
	MCH	1	0	24.97	0
		1	3	25.07	0
		1	5	24.93	0
		3	0	24.05	0
		3	2	24	0
		3	3	24.04	0
		6	0	23.07	1
	HCH	1	0	24.54	0
		1	3	24.69	0
		1	5	24.52	0
		3	0	23.57	0
		3	2	23.59	0
		3	3	23.55	0
		6	0	22.67	1
16QAM	LCH	1	0	24.42	1
		1	3	24.08	1
		1	5	24.46	1
		3	0	23.42	1
		3	2	23.4	1
		3	3	23.39	1
		6	0	23.18	2
	MCH	1	0	24.36	1
		1	3	24.47	1
		1	5	24.31	1
		3	0	23.09	1
		3	2	23.11	1
		3	3	23.06	1
		6	0	23	2
	HCH	1	0	23.73	1
		1	3	23.87	1

		1	5	23.71	1
		3	0	23.76	1
		3	2	23.73	1
		3	3	23.7	1
		6	0	22.57	2

Channel Bandwidth: 3 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	25.18	0
		1	7	25.41	0
		1	14	25.18	0
		8	0	24.27	1
		8	4	24.28	1
		8	7	24.21	1
		15	0	23.2	1
	MCH	1	0	25.04	0
		1	7	25.16	0
		1	14	24.77	0
		8	0	23.77	1
		8	4	23.84	1
		8	7	23.6	1
		15	0	23.53	1
	HCH	1	0	24.51	0
		1	7	24.76	0
		1	14	24.35	0
		8	0	23.41	1
		8	4	23.62	1
		8	7	23.42	1
		15	0	23.56	1
16QAM	LCH	1	0	24.4	1
		1	7	24.35	1
		1	14	24.41	1
		8	0	23.25	2
		8	4	23.3	2
		8	7	23.24	2
		15	0	23.1	2
	MCH	1	0	24.13	1
		1	7	24.31	1
		1	14	23.95	1
		8	0	22.62	2
		8	4	22.75	2
		8	7	22.63	2

		15	0	22.48	2
	HCH	1	0	23.59	1
		1	7	23.93	1
		1	14	23.63	1
		8	0	22.68	2
		8	4	22.72	2
		8	7	22.62	2
		15	0	22.49	2

Channel Bandwidth: 5 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	25.19	0
		1	12	25.32	0
		1	24	24.83	0
		12	0	23.65	1
		12	6	23.81	1
		12	13	23.8	1
		25	0	23.56	1
	MCH	1	0	24.59	0
		1	12	24.73	0
		1	24	24.35	0
		12	0	23.55	1
		12	6	23.55	1
		12	13	23.39	1
		25	0	23.51	1
	HCH	1	0	24.17	0
		1	12	24.42	0
		1	24	24.02	0
		12	0	23.3	1
		12	6	23.43	1
		12	13	23.39	1
		25	0	23.49	1
16QAM	LCH	1	0	23.97	1
		1	12	24.09	1
		1	24	23.9	1
		12	0	22.73	2
		12	6	22.89	2
		12	13	23.04	2
		25	0	22.72	2
	MCH	1	0	23.76	1
		1	12	24.22	1
		1	24	23.52	1

		12	0	22.67	2
		12	6	22.68	2
		12	13	22.54	2
		25	0	22.52	2
	HCH	1	0	23.42	1
		1	12	23.68	1
		1	24	23.34	1
		12	0	22.5	2
		12	6	22.67	2
		12	13	22.51	2
		25	0	22.57	2

Channel Bandwidth: 10 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	25.42	0
		1	24	25.03	0
		1	49	24.69	0
		25	0	24.35	1
		25	12	23.99	1
		25	25	23.68	1
		50	0	23.93	1
	MCH	1	0	25.34	0
		1	24	24.65	0
		1	49	24.27	0
		25	0	23.71	1
		25	12	23.48	1
		25	25	23.55	1
		50	0	23.58	1
	HCH	1	0	24.92	0
		1	24	24.27	0
		1	49	23.99	0
		25	0	23.81	1
		25	12	23.19	1
		25	25	23.04	1
		50	0	23.15	1
16QAM	LCH	1	0	23.9	1
		1	24	24.06	1
		1	49	23.89	1
		25	0	22.73	2
		25	12	22.74	2
		25	25	22.72	2
		50	0	22.65	2
	MCH	1	0	24.01	1
		1	24	24	1
		1	49	23.59	1
		25	0	22.74	2
		25	12	22.59	2
		25	25	22.55	2
		50	0	22.61	2
	HCH	1	0	23.59	1
		1	24	23.52	1
		1	49	23.25	1
		25	0	22.23	2

		25	12	22.24	2
		25	25	22.2	2
		50	0	22.34	2

FDD-LTE Band 7:

Channel Bandwidth: 5 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	24.09	0
		1	12	24.05	0
		1	24	23.92	0
		12	0	23.01	1
		12	6	23.08	1
		12	13	22.99	1
		25	0	22.99	1
	MCH	1	0	23.16	0
		1	12	23.42	0
		1	24	23.05	0
		12	0	22.23	1
		12	6	22.25	1
		12	13	22.17	1
		25	0	22.18	1
	HCH	1	0	22.5	0
		1	12	22.86	0
		1	24	22.59	0
		12	0	21.57	1
		12	6	21.6	1
		12	13	21.59	1
		25	0	21.5	1
16QAM	LCH	1	0	22.99	1
		1	12	23.17	1
		1	24	22.95	1
		12	0	21.91	2
		12	6	21.98	2
		12	13	21.89	2
		25	0	21.88	2
	MCH	1	0	22.28	1
		1	12	22.5	1
		1	24	22.19	1
		12	0	21.31	2
		12	6	21.34	2

		12	13	21.25	2
		25	0	21.18	2
	HCH	1	0	21.57	1
		1	12	21.88	1
		1	24	21.6	1
		12	0	20.52	2
		12	6	20.52	2
		12	13	20.54	2
		25	0	20.52	2

Channel Bandwidth: 10 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	24.08	0
		1	24	24.03	0
		1	49	24.11	0
		25	0	23	1
		25	12	23.02	1
		25	25	23.05	1
		50	0	22.94	1
	MCH	1	0	23.29	0
		1	24	23.32	0
		1	49	23.1	0
		25	0	22.27	1
		25	12	22.23	1
		25	25	22.24	1
		50	0	22.2	1
	HCH	1	0	22.57	0
		1	24	22.62	0
		1	49	22.56	0
		25	0	21.58	1
		25	12	21.53	1
		25	25	21.62	1
		50	0	21.56	1
16QAM	LCH	1	0	23.07	1
		1	24	23.18	1
		1	49	23	1
		25	0	21.87	2
		25	12	21.87	2
		25	25	21.89	2
		50	0	21.87	2
	MCH	1	0	22.49	1
		1	24	22.48	1

		1	49	22.2	1
		25	0	21.23	2
		25	12	21.2	2
		25	25	21.22	2
		50	0	21.22	2
	HCH	1	0	21.59	1
		1	24	21.71	1
		1	49	21.59	1
		25	0	20.68	2
		25	12	20.87	2
		25	25	20.54	2
		50	0	20.51	2

Channel Bandwidth: 15 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	23.71	0
		1	37	24.05	0
		1	74	23.33	0
		37	0	22.88	1
		37	18	22.88	1
		37	38	22.73	1
		75	0	22.8	2
	MCH	1	0	23.32	0
		1	37	23.47	0
		1	74	22.9	0
		37	0	22.29	1
		37	18	22.25	1
		37	38	22.17	1
		75	0	22.2	2
	HCH	1	0	22.97	0
		1	37	22.69	0
		1	74	22.74	0
		37	0	21.64	1
		37	18	21.58	1
		37	38	21.55	1
		75	0	21.63	2
16QAM	LCH	1	0	22.93	1
		1	37	23.15	1
		1	74	22.44	1
		37	0	21.67	2
		37	18	21.69	2
		37	38	21.52	2

		75	0	21.63	2
	MCH	1	0	22.42	1
		1	37	22.58	1
		1	74	21.86	1
		37	0	21.32	2
		37	18	21.23	2
		37	38	21.16	2
		75	0	21.15	2
	HCH	1	0	21.51	1
		1	37	21.68	1
		1	74	21.78	1
		37	0	20.52	2
		37	18	20.53	2
		37	38	20.67	2
		75	0	20.55	2

Channel Bandwidth: 20 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	24.05	0
		1	49	24.12	0
		1	99	23.87	0
		50	0	23.31	1
		50	25	23.33	1
		50	50	23.21	1
		100	0	23.21	1
	MCH	1	0	23.41	0
		1	49	23.87	0
		1	99	23.1	0
		50	0	22.48	1
		50	25	22.43	1
		50	50	22.37	1
		100	0	22.44	1
	HCH	1	0	23.67	0
		1	49	23.74	0
		1	99	23.98	0
		50	0	22.86	1
		50	25	22.83	1
		50	50	22.8	1
		100	0	22.82	1
16QAM	LCH	1	0	22.99	1
		1	49	23.13	1
		1	99	22.71	1

		50	0	22.06	2
		50	25	22.05	2
		50	50	21.94	2
		100	0	22	2
	MCH	1	0	22.43	1
		1	49	22.42	1
		1	99	21.99	1
		50	0	21.36	2
		50	25	21.3	2
		50	50	21.22	2
		100	0	21.3	2
	HCH	1	0	22.57	1
		1	49	22.73	1
		1	99	22.53	1
		50	0	21.66	2
		50	25	21.64	2
		50	50	21.61	2
		100	0	21.65	2

FDD-LTE Band 17:

Channel Bandwidth: 5 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	23.7	0
		1	12	23.61	0
		1	24	23.1	0
		12	0	22.42	1
		12	6	22.37	1
		12	13	22.29	1
		25	0	22.32	1
	MCH	1	0	23.14	0
		1	12	23.33	0
		1	24	22.97	0
		12	0	22.15	1
		12	6	22.15	1
		12	13	22.07	1
		25	0	22.17	1
	HCH	1	0	23.02	0
		1	12	23.24	0
		1	24	22.85	0
		12	0	22.05	1
		12	6	22.03	1

		12	13	21.87	1
		25	0	21.96	1
16QAM	LCH	1	0	22.63	1
		1	12	22.88	1
		1	24	22.39	1
		12	0	21.54	2
		12	6	21.51	2
		12	13	21.35	2
		25	0	21.44	2
	MCH	1	0	22.37	1
		1	12	22.54	1
		1	24	22.18	1
		12	0	21.31	2
		12	6	21.37	2
		12	13	21.26	2
		25	0	21.22	2
	HCH	1	0	22.14	1
		1	12	22.49	1
		1	24	21.99	1
		12	0	21.1	2
		12	6	21.14	2
		12	13	20.93	2
		25	0	21.02	2

Channel Bandwidth: 10 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	23.71	0
		1	24	23.26	0
		1	49	22.86	0
		25	0	22.76	1
		25	12	22.24	1
		25	25	22.2	1
		50	0	22.69	1
	MCH	1	0	23.29	0
		1	24	23.26	0
		1	49	22.46	0
		25	0	22.36	1
		25	12	22.16	1
		25	25	22.1	1
		50	0	22.19	1
	HCH	1	0	23.23	0
		1	24	23.23	0
		1	49	22.86	0
		25	0	22.24	1
		25	12	22.12	1
		25	25	21.99	1
		50	0	22.1	1
16QAM	LCH	1	0	22.63	1
		1	24	22.59	1
		1	49	22.16	1
		25	0	21.54	2
		25	12	21.29	2
		25	25	21.22	2
		50	0	21.37	2
	MCH	1	0	22.73	1
		1	24	22.67	1
		1	49	22.27	1
		25	0	21.43	2
		25	12	21.24	2
		25	25	21.16	2
		50	0	21.27	2
	HCH	1	0	22.55	1
		1	24	22.5	1
		1	49	22.14	1
		25	0	21.29	2

		25	12	21.22	2
		25	25	21.03	2
		50	0	21.12	2

Remark:

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

WLAN - Maximum Average Power					
Test Mode	**Data Rate**	**Channel**	**Frequency (MHz)**	**Average Power (dBm)**	**Tune-up power (dBm)**
802.11b	1Mbps	CH 01	2412	15.31	15.5
		CH 06	2437	14.72	15.5
		CH 11	2462	14.89	15.5
802.11g	6Mbps	CH 01	2412	10.59	13.5
		CH 06	2437	12.61	13.5
		CH 11	2462	12.97	13.5
802.11n (20MHz)	MCS0	CH 01	2412	10.27	13.0
		CH 06	2437	12.28	13.0
		CH 11	2462	12.66	13.0
802.11n (40MHz)	MCS0	CH 03	2422	11.36	12.5
		CH 06	2437	11.89	12.5
		CH 09	2452	12.07	12.5

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.

Bluetooth - Maximum Average Power			
Test Mode	**Data Rate**	**Average Power(dBm)**	**Tune-up power (dBm)**
GFSK	1Mbps	3.593	4.0
Pi/4 QDPSK	2Mbps	2.99	4.0
8DPSK	3Mbps	3.084	4.0

Bluetooth - Maximum Average Power					
Test Mode	**Data Rate**	**Channel**	**Frequency (MHz)**	**Average Power (dBm)**	**Tune-up power (dBm)**
BLE	1Mbps	CH 00	2402	3.694	4.0
		CH 19	2440	3.007	4.0
		CH 39	2480	3.609	4.0

Remark:

Bluetooth maximum output power is 3.694dBm, and Maximum Tune-Up output power is 4.0dBm. Per KDB 447498 D01 V06, the 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

[(max. power of channel, including tune-up tolerance, 4.87mW)/(min. test separation distance, mm)] · [√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR,16 where

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

Tune-Up Power (dBm)	Max. Power (mW)	Distance (mm)	Frequency (GHz)	Result	Limit
4.0	2.51	5	2.402	0.78	3

The exclusion thresholds is 0.78< 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	190	836.6	33.33	33.5	1.040	0.251	0.261
2.	GSM	Right Tilted	190	836.6	33.33	33.5	1.040	0.113	0.118
3.	GSM	Left Cheek	190	836.6	33.33	33.5	1.040	0.476	0.495
4.	GSM	Left Tilted	190	836.6	33.33	33.5	1.040	0.157	0.163

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	810	1909.8	30.56	31.0	1.107	0.491	0.543
6.	GSM	Right Tilted	810	1909.8	30.56	31.0	1.107	0.217	0.240
7.	GSM	Left Cheek	810	1909.8	30.56	31.0	1.107	0.29	0.321
8.	GSM	Left Tilted	810	1909.8	30.56	31.0	1.107	0.117	0.129

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_2TX	Right Cheek	128	824.2	32.52	33.0	1.117	0.634	0.708
10.	GPRS_2TX	Right Tilted	128	824.2	32.52	33.0	1.117	0.303	0.338
11.	GPRS_2TX	Left Cheek	128	824.2	32.52	33.0	1.117	0.819	0.915
12.	GPRS_2TX	Left Cheek	190	836.6	32.50	33.0	1.122	0.479	0.537
13.	GPRS_2TX	Left Cheek	251	848.8	32.49	33.0	1.125	0.487	0.548
14.	GPRS_2TX	Left Tilted	128	824.2	32.52	33.0	1.117	0.324	0.362

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					
15.	GPRS_2TX	Right Cheek	512	1850.2	29.98	30.5	1.127	0.844	0.951
16.	GPRS_2TX	Right Cheek	661	1880	29.89	30.5	1.151	0.924	1.063
17.	GPRS_2TX	Right Cheek	810	1909.8	29.96	30.5	1.132	0.948	1.074
18.	GPRS_2TX	Right Tilted	512	1850.2	29.98	30.5	1.127	0.327	0.369
19.	GPRS_2TX	Left Cheek	512	1850.2	29.98	30.5	1.127	0.299	0.337

20.	GPRS_2TX	Left Tilted	512	1850.2	29.98	30.5	1.127	0.117	0.132

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	9262	1852.4	24.37	24.5	1.030	0.753	0.776
22.	RMC	Right Tilted	9262	1852.4	24.37	24.5	1.030	0.325	0.335
23.	RMC	Left Cheek	9262	1852.4	24.37	24.5	1.030	0.558	0.575
24.	RMC	Left Tilted	9262	1852.4	24.37	24.5	1.030	0.253	0.261

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	24.54	25.0	1.112	0.263	0.292
26.	RMC	Right Tilted	4233	846.6	24.54	25.0	1.112	0.113	0.126
27.	RMC	Left Cheek	4233	846.6	24.54	25.0	1.112	0.236	0.262
28.	RMC	Left Tilted	4233	846.6	24.54	25.0	1.112	0.107	0.119

LTE 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)
	Modulation, Bandwidth, RB		MHz					
29.	QPSK 20MHz 1RB	Right Cheek	1860.0	25.22	25.5	1.067	0.739	0.788
30.	QPSK 20MHz 1RB	Right Tilted	1860.0	25.22	25.5	1.067	0.331	0.353
31.	QPSK 20MHz 1RB	Left Cheek	1860.0	25.22	25.5	1.067	0.375	0.400
32.	QPSK 20MHz 1RB	Left Tilted	1860.0	25.22	25.5	1.067	0.118	0.126
33.	QPSK 20MHz 50%RB	Right Cheek	1860.0	24.34	24.5	1.038	0.307	0.319
34.	QPSK 20MHz 50%RB	Right Tilted	1860.0	24.34	24.5	1.038	0.157	0.163
35.	QPSK 20MHz 50%RB	Left Cheek	1860.0	24.34	24.5	1.038	0.168	0.174
36.	QPSK 20MHz 50%RB	Left Tilted	1860.0	24.34	24.5	1.038	0.047	0.049

LTE Band 4– 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, RB		MHz					
37.	QPSK 20MHz 1RB	Right Cheek	1720.0	24.15	24.5	1.084	0.496	0.538
38.	QPSK 20MHz 1RB	Right Tilted	1720.0	24.15	24.5	1.084	0.207	0.224
39.	QPSK 20MHz 1RB	Left Cheek	1720.0	24.15	24.5	1.084	0.268	0.290
40.	QPSK 20MHz 1RB	Left Tilted	1720.0	24.15	24.5	1.084	0.127	0.138
41.	QPSK 20MHz 50%RB	Right Cheek	1720.0	23.38	23.5	1.028	0.202	0.208
42.	QPSK 20MHz 50%RB	Right Tilted	1720.0	23.38	23.5	1.028	0.104	0.107
43.	QPSK 20MHz 50%RB	Left Cheek	1720.0	23.38	23.5	1.028	0.118	0.121
44.	QPSK 20MHz 50%RB	Left Tilted	1720.0	23.38	23.5	1.028	0.051	0.052

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, RB		MHz					
45.	QPSK 10MHz 1RB	Right Cheek	829.0	25.42	25.5	1.019	0.359	0.366
46.	QPSK 10MHz 1RB	Right Tilted	829.0	25.42	25.5	1.019	0.189	0.193
47.	QPSK 10MHz 1RB	Left Cheek	829.0	25.42	25.5	1.019	0.381	0.388
48.	QPSK 10MHz 1RB	Left Tilted	829.0	25.42	25.5	1.019	0.191	0.195
49.	QPSK 10MHz 50%RB	Right Cheek	829.0	24.35	24.5	1.035	0.173	0.179
50.	QPSK 10MHz 50%RB	Right Tilted	829.0	24.35	24.5	1.035	0.113	0.117
51.	QPSK 10MHz 50%RB	Left Cheek	829.0	24.35	24.5	1.035	0.168	0.174
52.	QPSK 10MHz 50%RB	Left Tilted	829.0	24.35	24.5	1.035	0.101	0.105

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					
53.	QPSK 20MHz 1RB	Right Cheek	2510.0	24.12	24.5	1.091	0.786	0.858
54.	QPSK 20MHz 1RB	Right Cheek	2535.0	23.87	24.5	1.156	0.757	0.875
55.	QPSK 20MHz 1RB	Right Cheek	2560.0	23.98	24.5	1.127	0.768	0.866
56.	QPSK 20MHz 1RB	Right Tilted	2510.0	24.12	24.5	1.091	0.372	0.406
57.	QPSK 20MHz 1RB	Left Cheek	2510.0	24.12	24.5	1.091	0.769	0.839
58.	QPSK 20MHz 1RB	Left Cheek	2535.0	23.87	24.5	1.156	0.717	0.829
59.	QPSK 20MHz 1RB	Left Cheek	2560.0	23.98	24.5	1.127	0.701	0.790
60.	QPSK 20MHz 1RB	Left Tilted	2510.0	24.12	24.5	1.091	0.328	0.358
61.	QPSK 20MHz 50%RB	Right Cheek	2510.0	23.33	23.5	1.040	0.507	0.527
62.	QPSK 20MHz 50%RB	Right Tilted	2510.0	23.33	23.5	1.040	0.217	0.226
63.	QPSK 20MHz 50%RB	Left Cheek	2510.0	23.33	23.5	1.040	0.307	0.319
64.	QPSK 20MHz 50%RB	Left Tilted	2510.0	23.33	23.5	1.040	0.119	0.124

65.	QPSK 20MHz 100%RB	Right Cheek	2510.0	23.21	23.5	1.069	0.483	0.516

LTE Band 17– 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, RB		**MHz**					
66.	QPSK 10MHz 1RB	Right Cheek	709.0	23.71	24.0	1.069	0.626	0.669
67.	QPSK 10MHz 1RB	Right Tilted	709.0	23.71	24.0	1.069	0.310	0.331
68.	QPSK 10MHz 1RB	Left Cheek	709.0	23.71	24.0	1.069	0.743	0.794
69.	QPSK 10MHz 1RB	Left Tilted	709.0	23.71	24.0	1.069	0.321	0.343
70.	QPSK 10MHz 50%RB	Right Cheek	709.0	22.76	23.0	1.057	0.301	0.318
71.	QPSK 10MHz 50%RB	Right Tilted	709.0	22.76	23.0	1.057	0.137	0.145
72.	QPSK 10MHz 50%RB	Left Cheek	709.0	22.76	23.0	1.057	0.317	0.335
73.	QPSK 10MHz 50%RB	Left Tilted	709.0	22.76	23.0	1.057	0.128	0.135

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**					
74.	802.11b	Right Cheek	01	2412	15.31	15.5	1.045	0.228	0.238
75.	802.11b	Right Tilted	01	2412	15.31	15.5	1.045	0.153	0.160
76.	802.11b	Left Cheek	01	2412	15.31	15.5	1.045	0.428	0.447
77.	802.11b	Left Tilted	01	2412	15.31	15.5	1.045	0.216	0.226

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					
78.	GSM	Back	190	836.6	33.33	33.5	1.040	0.212	0.220
79.	GSM	Front	190	836.6	33.33	33.5	1.040	0.529	0.550

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					
80.	GSM	Back	810	1909.8	30.56	31.0	1.107	0.263	0.291
81.	GSM	Front	810	1909.8	30.56	31.0	1.107	0.365	0.404

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					
92	RMC 12.2k	Back Side	9262	1852.4	24.37	24.5	1.030	0.416	0.429
93	RMC 12.2k	Front Side	9262	1852.4	24.37	24.5	1.030	0.545	0.562

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					
96	RMC 12.2k	Back Side	4233	846.6	24.54	25.0	1.112	0.120	0.133
97	RMC 12.2k	Front Side	4233	846.6	24.54	25.0	1.112	0.251	0.279

LTE 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)
	Modulation, Bandwidth, RB		MHz					
100	QPSK 20MHz 1RB	Back Side	1860.0	25.22	25.5	1.067	0.395	0.421
101	QPSK 20MHz 1RB	Front Side	1860.0	25.22	25.5	1.067	0.494	0.527
104	QPSK 20MHz 50%RB	Back Side	1860.0	24.34	24.5	1.038	0.147	0.153
105	QPSK 20MHz 50%RB	Front Side	1860.0	24.34	24.5	1.038	0.207	0.215

LTE Band 4–Body SAR Test (Gap: 10mm)								
Plot No.	Mode	Test Position	Frequency	Output Power	Rated Limit	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth, RB	Body	MHz	(dBm)	(dBm)			
108	QPSK 20MHz 1RB	Back Side	1720.0	24.15	24.5	1.084	0.359	0.389
109	QPSK 20MHz 1RB	Front Side	1720.0	24.15	24.5	1.084	0.403	0.437
112	QPSK 20MHz 50%RB	Back Side	1720.0	23.38	23.5	1.028	0.143	0.147
113	QPSK 20MHz 50%RB	Front Side	1720.0	23.38	23.5	1.028	0.178	0.183

LTE Band 5–Body SAR Test (Gap: 10mm)								
Plot No.	Mode	Test Position	Frequency	Output Power	Rated Limit	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth, RB	Body	MHz	(dBm)	(dBm)			
116	QPSK 10MHz 1RB	Back Side	829.0	25.42	25.5	1.019	0.185	0.188
117	QPSK 10MHz 1RB	Front Side	829.0	25.42	25.5	1.019	0.352	0.359
120	QPSK 10MHz 50%RB	Back Side	829.0	24.35	24.5	1.035	0.087	0.090
121	QPSK 10MHz 50%RB	Front Side	829.0	24.35	24.5	1.035	0.134	0.139

LTE Band 7–Body SAR Test (Gap: 10mm)								
Plot No.	Mode	Test Position	Frequency	Output Power	Rated Limit	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth, RB	Body	MHz	(dBm)	(dBm)			
124	QPSK 20MHz 1RB	Back Side	2510.0	24.12	24.5	1.091	0.388	0.423
125	QPSK 20MHz 1RB	Front Side	2510.0	24.12	24.5	1.091	0.818	0.893
126	QPSK 20MHz 1RB	Front Side	2535.0	23.87	24.5	1.156	0.862	0.997
127	QPSK 20MHz 1RB	Front Side	2560.0	23.98	24.5	1.127	0.918	1.035
132	QPSK 20MHz 50%RB	Back Side	2510.0	23.33	23.5	1.040	0.157	0.163
133	QPSK 20MHz 50%RB	Front Side	2510.0	23.33	23.5	1.040	0.667	0.694
136	QPSK 20MHz 100%RB	Front Side	2510.0	23.21	23.5	1.069	0.656	0.701

LTE Band 17–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					
138	QPSK 10MHz 1RB	Back Side	709.0	23.71	24.0	1.069	0.577	0.617
139	QPSK 10MHz 1RB	Front Side	709.0	23.71	24.0	1.069	0.568	0.607
142	QPSK 10MHz 50%RB	Back Side	709.0	22.76	23.0	1.057	0.254	0.268
143	QPSK 10MHz 50%RB	Front Side	709.0	22.76	23.0	1.057	0.231	0.244

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					
146	802.11b	Back Side	01	2412	15.31	15.5	1.045	0.165	0.172
147	802.11b	Front Side	01	2412	15.31	15.5	1.045	0.152	0.159

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.

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					
82.	GPRS_2TX	Back Side	128	824.2	32.52	33.0	1.117	0.335	0.374
83.	GPRS_2TX	Front Side	128	824.2	32.52	33.0	1.117	0.949	1.060
84.	GPRS_2TX	Front Side	190	836.6	32.50	33.0	1.122	0.862	0.967
85.	GPRS_2TX	Front Side	251	848.8	32.49	33.0	1.125	0.722	0.812
86.	GPRS_2TX	Bottom side	128	824.2	32.52	33.0	1.117	0.357	0.399
87.	GPRS_2TX	Right side	128	824.2	32.52	33.0	1.117	0.191	0.213

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					
88.	GPRS_2TX	Back Side	512	1850.2	29.98	30.5	1.127	0.458	0.516
89.	GPRS_2TX	Front Side	512	1850.2	29.98	30.5	1.127	0.544	0.613
90.	GPRS_2TX	Bottom side	512	1850.2	29.98	30.5	1.127	0.242	0.273
91.	GPRS_2TX	Right side	512	1850.2	29.98	30.5	1.127	0.669	0.754

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					
92.	RMC 12.2k	Back Side	9262	1852.4	24.37	24.5	1.030	0.416	0.429
93.	RMC 12.2k	Front Side	9262	1852.4	24.37	24.5	1.030	0.545	0.562
94.	RMC 12.2k	Bottom side	9262	1852.4	24.37	24.5	1.030	0.262	0.270
95.	RMC 12.2k	Right side	9262	1852.4	24.37	24.5	1.030	0.666	0.686

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					
96.	RMC 12.2k	Back Side	4233	846.6	24.54	25.0	1.112	0.120	0.133
97.	RMC 12.2k	Front Side	4233	846.6	24.54	25.0	1.112	0.251	0.279
98.	RMC 12.2k	Bottom side	4233	846.6	24.54	25.0	1.112	0.115	0.128
99.	RMC 12.2k	Right side	4233	846.6	24.54	25.0	1.112	0.083	0.092

LTE 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)
	Modulation, Bandwidth, RB		MHz					
100.	QPSK 20MHz 1RB	Back Side	1860.0	25.22	25.5	1.067	0.395	0.421
101.	QPSK 20MHz 1RB	Front Side	1860.0	25.22	25.5	1.067	0.494	0.527
102.	QPSK 20MHz 1RB	Bottom side	1860.0	25.22	25.5	1.067	0.243	0.259
103.	QPSK 20MHz 1RB	Right side	1860.0	25.22	25.5	1.067	0.583	0.622
104.	QPSK 20MHz 50%RB	Back Side	1860.0	24.34	24.5	1.038	0.147	0.153
105.	QPSK 20MHz 50%RB	Front Side	1860.0	24.34	24.5	1.038	0.207	0.215
106.	QPSK 20MHz 50%RB	Bottom side	1860.0	24.34	24.5	1.038	0.113	0.117
107.	QPSK 20MHz 50%RB	Right side	1860.0	24.34	24.5	1.038	0.231	0.240

LTE Band 4–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					
108.	QPSK 20MHz 1RB	Back Side	1720.0	24.15	24.5	1.084	0.359	0.389
109.	QPSK 20MHz 1RB	Front Side	1720.0	24.15	24.5	1.084	0.403	0.437
110.	QPSK 20MHz 1RB	Bottom side	1720.0	24.15	24.5	1.084	0.126	0.137
111.	QPSK 20MHz 1RB	Right side	1720.0	24.15	24.5	1.084	0.395	0.428
112.	QPSK 20MHz 50%RB	Back Side	1720.0	23.38	23.5	1.028	0.143	0.147
113.	QPSK 20MHz 50%RB	Front Side	1720.0	23.38	23.5	1.028	0.178	0.183
114.	QPSK 20MHz 50%RB	Bottom side	1720.0	23.38	23.5	1.028	0.067	0.069
115.	QPSK 20MHz 50%RB	Right side	1720.0	23.38	23.5	1.028	0.137	0.141

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					
116.	QPSK 10MHz 1RB	Back Side	829.0	25.42	25.5	1.019	0.185	0.188
117.	QPSK 10MHz 1RB	Front Side	829.0	25.42	25.5	1.019	0.352	0.359
118.	QPSK 10MHz 1RB	Bottom side	829.0	25.42	25.5	1.019	0.089	0.091
119.	QPSK 10MHz 1RB	Right side	829.0	25.42	25.5	1.019	0.089	0.091
120.	QPSK 10MHz 50%RB	Back Side	829.0	24.35	24.5	1.035	0.087	0.090
121.	QPSK 10MHz 50%RB	Front Side	829.0	24.35	24.5	1.035	0.134	0.139
122.	QPSK 10MHz 50%RB	Bottom side	829.0	24.35	24.5	1.035	0.033	0.034
123.	QPSK 10MHz 50%RB	Right side	829.0	24.35	24.5	1.035	0.034	0.035

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					
124.	QPSK 20MHz 1RB	Back Side	2510.0	24.12	24.5	1.091	0.388	0.423
125.	QPSK 20MHz 1RB	Front Side	2510.0	24.12	24.5	1.091	0.818	0.893
126.	QPSK 20MHz 1RB	Front Side	2535.0	23.87	24.5	1.156	0.862	0.997
127.	QPSK 20MHz 1RB	Front Side	2560.0	23.98	24.5	1.127	0.918	1.035
128.	QPSK 20MHz 1RB	Bottom side	2510.0	24.12	24.5	1.091	0.818	0.893
129.	QPSK 20MHz 1RB	Bottom side	2535.0	23.87	24.5	1.156	0.856	0.990
130.	QPSK 20MHz 1RB	Bottom side	2560.0	23.98	24.5	1.127	0.873	0.984
131.	QPSK 20MHz 1RB	Right side	2510.0	24.12	24.5	1.091	0.653	0.713
132.	QPSK 20MHz 50%RB	Back Side	2510.0	23.33	23.5	1.040	0.157	0.163
133.	QPSK 20MHz 50%RB	Front Side	2510.0	23.33	23.5	1.040	0.667	0.694
134.	QPSK 20MHz 50%RB	Bottom side	2510.0	23.33	23.5	1.040	0.338	0.351
135.	QPSK 20MHz 50%RB	Right side	2510.0	23.33	23.5	1.040	0.301	0.313
136.	QPSK 20MHz 100%RB	Front Side	2510.0	23.21	23.5	1.069	0.656	0.701
137.	QPSK 20MHz 100%RB	Bottom side	2510.0	23.21	23.5	1.069	0.613	0.655

LTE Band 17–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					
138.	QPSK 10MHz 1RB	Back Side	709.0	23.71	24.0	1.069	0.577	0.617
139.	QPSK 10MHz 1RB	Front Side	709.0	23.71	24.0	1.069	0.568	0.607
140.	QPSK 10MHz 1RB	Bottom side	709.0	23.71	24.0	1.069	0.116	0.124
141.	QPSK 10MHz 1RB	Right side	709.0	23.71	24.0	1.069	0.494	0.528
142.	QPSK 10MHz 50%RB	Back Side	709.0	22.76	23.0	1.057	0.254	0.268
143.	QPSK 10MHz 50%RB	Front Side	709.0	22.76	23.0	1.057	0.231	0.244
144.	QPSK 10MHz 50%RB	Bottom side	709.0	22.76	23.0	1.057	0.047	0.050
145.	QPSK 10MHz 50%RB	Right side	709.0	22.76	23.0	1.057	0.221	0.234

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					
146.	802.11b	Back Side	01	2412	15.31	15.5	1.045	0.165	0.172
147.	802.11b	Front Side	01	2412	15.31	15.5	1.045	0.152	0.159
148.	802.11b	Left side	01	2412	15.31	15.5	1.045	0.137	0.143
149.	802.11b	Top Side	01	2412	15.31	15.5	1.045	0.137	0.143

Front-of the face SAR

GSM850 – Head SAR Test (Gap: 25mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
150.	GPRS_2TX	Front	128	824.2	32.52	33.0	1.117	0.214	0.239

GSM1900 –Head SAR Test (Gap: 25mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
151.	GPRS_2TX	Front	512	1850.2	29.98	30.5	1.127	0.213	0.240

Repeated SAR

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					
152.	GPRS_2TX	Left Cheek	128	824.2	32.52	33.0	1.117	0.811	0.906

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					
153.	GPRS_2TX	Right Cheek	810	1909.8	29.96	30.5	1.132	0.939	1.063

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					
154.	GPRS_2TX	Front Side	128	824.2	32.52	33.0	1.117	0.941	1.051

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					
155.	QPSK 20MHz 1RB	Front Side	2560.0	23.98	24.5	1.127	0.910	1.026

Remark:

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

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

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

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

9.3 Simultaneous Multi-band Transmission SAR Analysis

List of Mode for Simultaneous Multi-band Transmission

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

Remark:

1. GSM and WCDMA 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
4.0	2.51	5/10	2.402	7.5	0.104	0.052

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

Head SAR

WWAN and WLAN

	WWAN		WLAN	Summed SAR (W/kg)
Position	**Band**	**Scaled SAR (W/kg)**	**Scaled SAR (W/kg)**	
Right Cheek	GSM850	0.261	0.238	0.499
Right Tilted	GSM850	0.118	0.160	0.278
Left Cheek	GSM850	0.495	0.447	0.942
Left Tilted	GSM850	0.163	0.226	0.389
Right Cheek	GSM1900	0.543	0.238	0.781
Right Tilted	GSM1900	0.240	0.160	0.4
Left Cheek	GSM1900	0.321	0.447	0.768
Left Tilted	GSM1900	0.129	0.226	0.355
Right Cheek	GPRS850	0.708	0.238	0.946
Right Tilted	GPRS850	0.338	0.160	0.498
Left Cheek	GPRS850	0.915	0.447	**1.362**
Left Tilted	GPRS850	0.362	0.226	0.588
Right Cheek	GPRS1900	1.074	0.238	1.312
Right Tilted	GPRS1900	0.369	0.160	0.529
Left Cheek	GPRS1900	0.337	0.447	0.784
Left Tilted	GPRS1900	0.132	0.226	0.358
Right Cheek	WCDMA Band 2	0.776	0.238	1.014
Right Tilted	WCDMA Band 2	0.335	0.160	0.495
Left Cheek	WCDMA Band 2	0.575	0.447	1.022
Left Tilted	WCDMA Band 2	0.261	0.226	0.487
Right Cheek	WCDMA Band 5	0.292	0.238	0.53
Right Tilted	WCDMA Band 5	0.126	0.160	0.286
Left Cheek	WCDMA Band 5	0.262	0.447	0.709
Left Tilted	WCDMA Band 5	0.119	0.226	0.345
Right Cheek	LTE Band 2	0.788	0.238	1.026
Right Tilted	LTE Band 2	0.353	0.160	0.513
Left Cheek	LTE Band 2	0.400	0.447	0.847
Left Tilted	LTE Band 2	0.126	0.226	0.352
Right Cheek	LTE Band 4	0.538	0.238	0.776
Right Tilted	LTE Band 4	0.224	0.160	0.384
Left Cheek	LTE Band 4	0.290	0.447	0.737
Left Tilted	LTE Band 4	0.138	0.226	0.364
Right Cheek	LTE Band 5	0.366	0.238	0.604
Right Tilted	LTE Band 5	0.193	0.160	0.353
Left Cheek	LTE Band 5	0.388	0.447	0.835
Left Tilted	LTE Band 5	0.195	0.226	0.421
Right Cheek	LTE Band 7	0.875	0.238	1.113

Right Tilted	LTE Band 7	0.406	0.160	0.566
Left Cheek	LTE Band 7	0.839	0.447	1.286
Left Tilted	LTE Band 7	0.358	0.226	0.584
Right Cheek	LTE Band 17	0.669	0.238	0.907
Right Tilted	LTE Band 17	0.331	0.160	0.491
Left Cheek	LTE Band 17	0.794	0.447	1.241
Left Tilted	LTE Band 17	0.343	0.226	0.569

WWAN and Bluetooth

	WWAN		Bluetooth	Summed SAR (W/kg)
Position	**Band**	**Scaled SAR (W/kg)**	**Scaled SAR (W/kg)**	
Right Cheek	GSM850	0.261	0.104	0.365
Right Tilted	GSM850	0.118	0.104	0.222
Left Cheek	GSM850	0.495	0.104	0.599
Left Tilted	GSM850	0.163	0.104	0.267
Right Cheek	GSM1900	0.543	0.104	0.647
Right Tilted	GSM1900	0.240	0.104	0.344
Left Cheek	GSM1900	0.321	0.104	0.425
Left Tilted	GSM1900	0.129	0.104	0.233
Right Cheek	GPRS850	0.708	0.104	0.812
Right Tilted	GPRS850	0.338	0.104	0.442
Left Cheek	GPRS850	0.915	0.104	1.019
Left Tilted	GPRS850	0.362	0.104	0.466
Right Cheek	GPRS1900	1.074	0.104	**1.178**
Right Tilted	GPRS1900	0.369	0.104	0.473
Left Cheek	GPRS1900	0.337	0.104	0.441
Left Tilted	GPRS1900	0.132	0.104	0.236
Right Cheek	WCDMA Band 2	0.776	0.104	0.88
Right Tilted	WCDMA Band 2	0.335	0.104	0.439
Left Cheek	WCDMA Band 2	0.575	0.104	0.679
Left Tilted	WCDMA Band 2	0.261	0.104	0.365
Right Cheek	WCDMA Band 5	0.292	0.104	0.396
Right Tilted	WCDMA Band 5	0.126	0.104	0.23
Left Cheek	WCDMA Band 5	0.262	0.104	0.366
Left Tilted	WCDMA Band 5	0.119	0.104	0.223
Right Cheek	LTE Band 2	0.788	0.104	0.892
Right Tilted	LTE Band 2	0.353	0.104	0.457
Left Cheek	LTE Band 2	0.400	0.104	0.504
Left Tilted	LTE Band 2	0.126	0.104	0.23
Right Cheek	LTE Band 4	0.538	0.104	0.642
Right Tilted	LTE Band 4	0.224	0.104	0.328
Left Cheek	LTE Band 4	0.290	0.104	0.394
Left Tilted	LTE Band 4	0.138	0.104	0.242
Right Cheek	LTE Band 5	0.366	0.104	0.47
Right Tilted	LTE Band 5	0.193	0.104	0.297
Left Cheek	LTE Band 5	0.388	0.104	0.492
Left Tilted	LTE Band 5	0.195	0.104	0.299
Right Cheek	LTE Band 7	0.875	0.104	0.979
Right Tilted	LTE Band 7	0.406	0.104	0.51

Left Cheek	LTE Band 7	0.839	0.104	0.943
Left Tilted	LTE Band 7	0.358	0.104	0.462
Right Cheek	LTE Band 17	0.669	0.104	0.773
Right Tilted	LTE Band 17	0.331	0.104	0.435
Left Cheek	LTE Band 17	0.794	0.104	0.898
Left Tilted	LTE Band 17	0.343	0.104	0.447

Body-worn SAR

WWAN and WLAN

	WWAN		WLAN	Summed SAR (W/kg)
Position	**Band**	**Scaled SAR (W/kg)**	**Scaled SAR (W/kg)**	
Back	GSM850	0.220	0.172	0.392
Front	GSM850	0.550	0.159	0.709
Back	GSM1900	0.291	0.172	0.463
Front	GSM1900	0.404	0.159	0.563
Back	WCDMA Band 2	0.429	0.172	0.601
Front	WCDMA Band 2	0.562	0.159	0.721
Back	WCDMA Band 5	0.133	0.172	0.305
Front	WCDMA Band 5	0.279	0.159	0.438
Back	LTE Band 2	0.421	0.172	0.593
Front	LTE Band 2	0.527	0.159	0.686
Back	LTE Band 4	0.389	0.172	0.561
Front	LTE Band 4	0.437	0.159	0.596
Back	LTE Band 5	0.188	0.172	0.36
Front	LTE Band 5	0.359	0.159	0.518
Back	LTE Band 7	0.423	0.172	0.595
Front	LTE Band 7	1.035	0.159	**1.194**
Back	LTE Band 17	0.617	0.172	0.789
Front	LTE Band 17	0.607	0.159	0.766

WWAN and Bluetooth

	WWAN		Bluetooth	Summed SAR (W/kg)
Position	**Band**	**Scaled SAR (W/kg)**	**Scaled SAR (W/kg)**	
Back	GSM850	0.220	0.052	0.272
Front	GSM850	0.550	0.052	0.602
Back	GSM1900	0.291	0.052	0.343
Front	GSM1900	0.404	0.052	0.456
Back	WCDMA Band 2	0.429	0.052	0.481
Front	WCDMA Band 2	0.562	0.052	0.614
Back	WCDMA Band 5	0.133	0.052	0.185
Front	WCDMA Band 5	0.279	0.052	0.331
Back	LTE Band 2	0.421	0.052	0.473
Front	LTE Band 2	0.527	0.052	0.579
Back	LTE Band 4	0.389	0.052	0.441
Front	LTE Band 4	0.437	0.052	0.489
Back	LTE Band 5	0.188	0.052	0.24
Front	LTE Band 5	0.359	0.052	0.411

Back	LTE Band 7	0.423	0.052	0.475
Front	LTE Band 7	1.035	0.052	**1.087**
Back	LTE Band 17	0.617	0.052	0.669
Front	LTE Band 17	0.607	0.052	0.659

Hotspot SAR

WWAN and WLAN

	WWAN		WLAN	Summed SAR (W/kg)
Position	**Band**	**Scaled SAR (W/kg)**	**Scaled SAR (W/kg)**	
Back	GSM850	0.374	0.172	0.546
Front	GSM850	1.060	0.159	**1.219**
Top side	GSM850	--	0.143	0.143
Bottom side	GSM850	0.399	--	0.399
Right side	GSM850	0.213	--	0.213
Left side	GSM850	--	0.143	0.143
Back	GSM1900	0.516	0.172	0.688
Front	GSM1900	0.613	0.159	0.772
Top side	GSM1900	--	0.143	0.143
Bottom side	GSM1900	0.273	--	0.273
Right side	GSM1900	0.754	--	0.754
Left side	GSM1900	--	0.143	0.143
Back	WCDMA Band 2	0.429	0.172	0.601
Front	WCDMA Band 2	0.562	0.159	0.721
Top side	WCDMA Band 2	--	0.143	0.143
Bottom side	WCDMA Band 2	0.270	--	0.270
Right side	WCDMA Band 2	0.686	--	0.686
Left side	WCDMA Band 2	--	0.143	0.143
Back	WCDMA Band 5	0.133	0.172	0.305
Front	WCDMA Band 5	0.279	0.159	0.438
Top side	WCDMA Band 5	--	0.143	0.143
Bottom side	WCDMA Band 5	0.128	--	0.128
Right side	WCDMA Band 5	0.092	--	0.092
Left side	WCDMA Band 5	--	0.143	0.143
Back	LTE Band 2	0.421	0.172	0.593
Front	LTE Band 2	0.527	0.159	0.686
Top side	LTE Band 2	--	0.143	0.143
Bottom side	LTE Band 2	0.259	--	0.259
Right side	LTE Band 2	0.622	--	0.622
Left side	LTE Band 2	--	0.143	0.143
Back	LTE Band 4	0.389	0.172	0.561
Front	LTE Band 4	0.437	0.159	0.596
Top side	LTE Band 4	--	0.143	0.143

Bottom side	LTE Band 4	0.137	--	0.137
Right side	LTE Band 4	0.428	--	0.428
Left side	LTE Band 4	--	0.143	0.143
Back	LTE Band 5	0.188	0.172	0.36
Front	LTE Band 5	0.359	0.159	0.518
Top side	LTE Band 5	--	0.143	0.143
Bottom side	LTE Band 5	0.091	--	0.091
Right side	LTE Band 5	0.091	--	0.091
Left side	LTE Band 5	--	0.143	0.143
Back	LTE Band 7	0.423	0.172	0.595
Front	LTE Band 7	1.035	0.159	1.194
Top side	LTE Band 7	--	0.143	0.143
Bottom side	LTE Band 7	0.990	--	0.990
Right side	LTE Band 7	0.713	--	0.713
Left side	LTE Band 7	--	0.143	0.143
Back	LTE Band 17	0.617	0.172	0.789
Front	LTE Band 17	0.607	0.159	0.766
Top side	LTE Band 17	--	0.143	0.143
Bottom side	LTE Band 17	0.124	--	0.124
Right side	LTE Band 17	0.528	--	0.528
Left side	LTE Band 17	--	0.143	0.143

10. Measurement Uncertainty

10.1 Uncertainty for EUT SAR Test

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

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

10.2 Uncertainty for System Performance Check

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

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

Annex A. Plots of System Performance Check

MEASUREMENT 1

For Head Liquid

Type: Validation measurement (Fast, 75.00 %)

Date of measurement: 10/15/2018

Measurement duration: 7 minutes 21 seconds

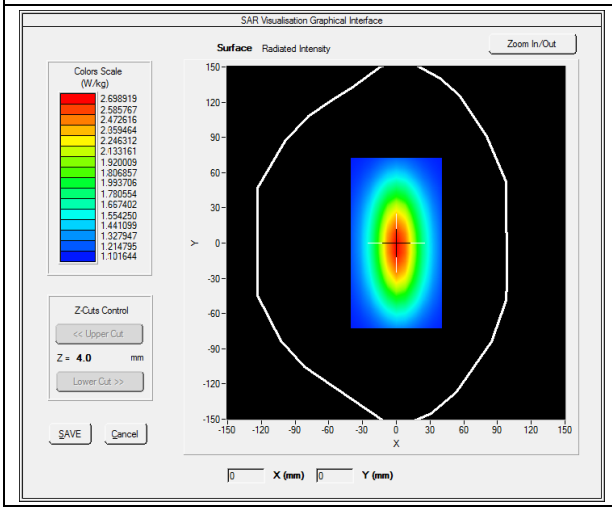
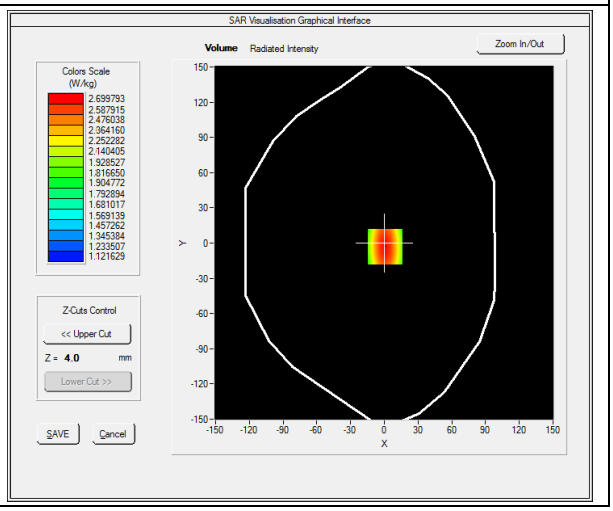
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.99; Calibrated: 06/01/2018

A. Experimental conditions

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

B. SAR Measurement Results

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

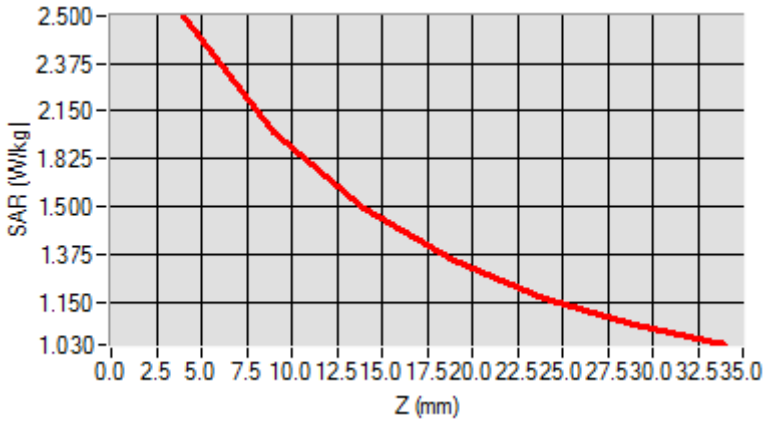
SURFACE SAR	VOLUME SAR
	

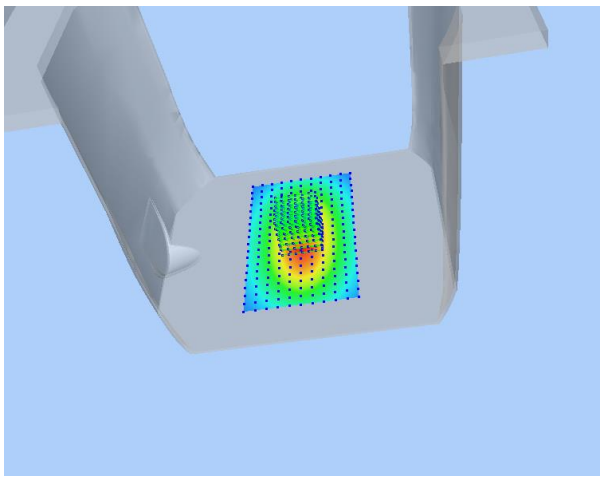
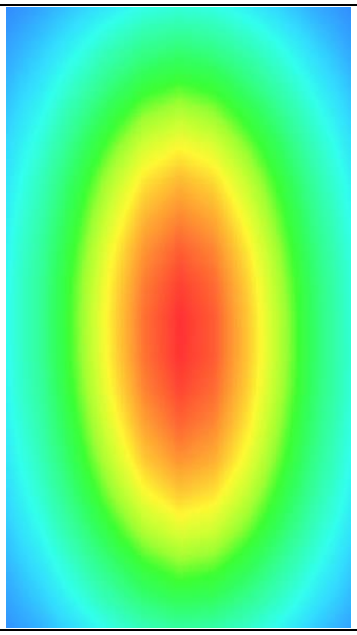
Maximum location: X=0.00, Y=0.00

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 %)

Date of measurement: 10/15/2018

Measurement duration: 7 minutes 21 seconds

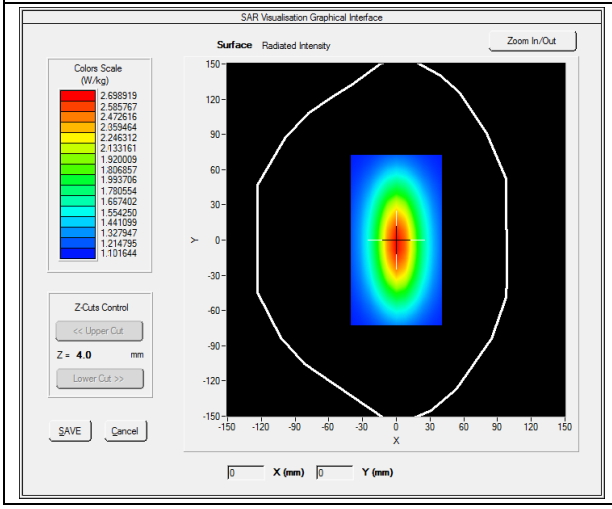
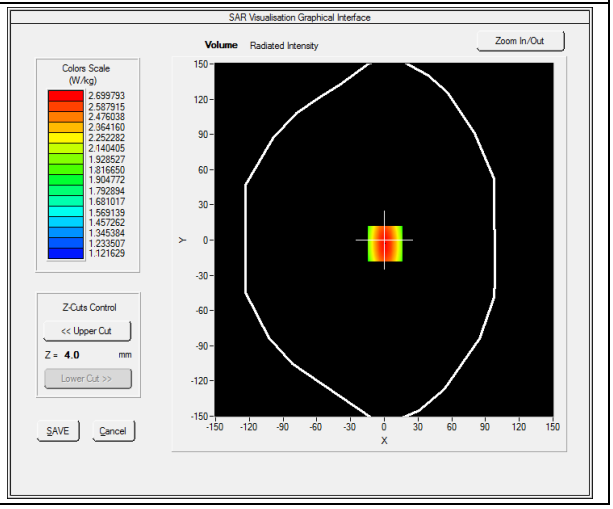
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.93; Calibrated: 06/01/2018

A. Experimental conditions

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

B. SAR Measurement Results

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

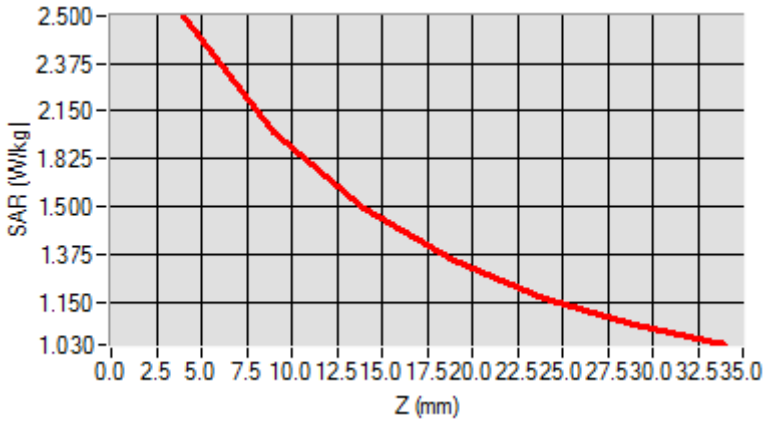
SURFACE SAR	VOLUME SAR
	

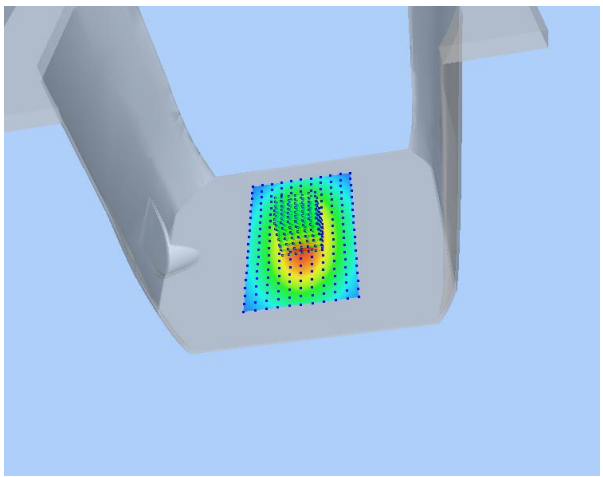
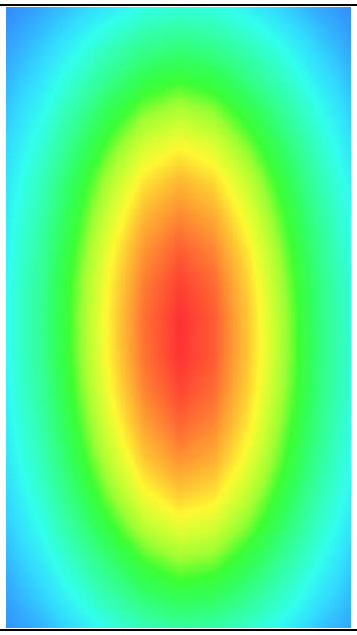
Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	1.129489
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 %)

Date of measurement: 10/16/2018

Measurement duration: 12 minutes 21 seconds

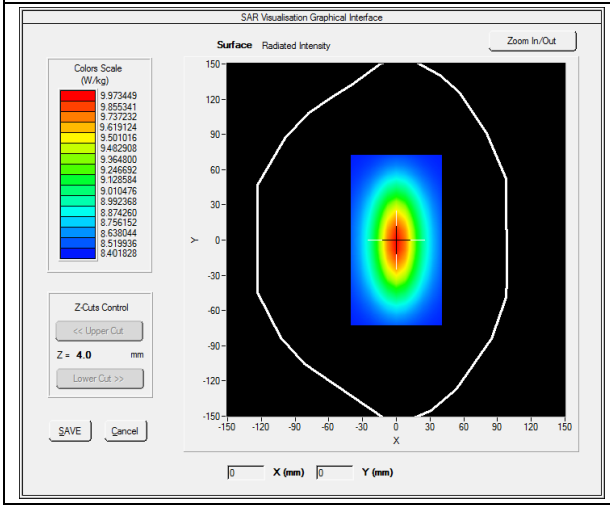
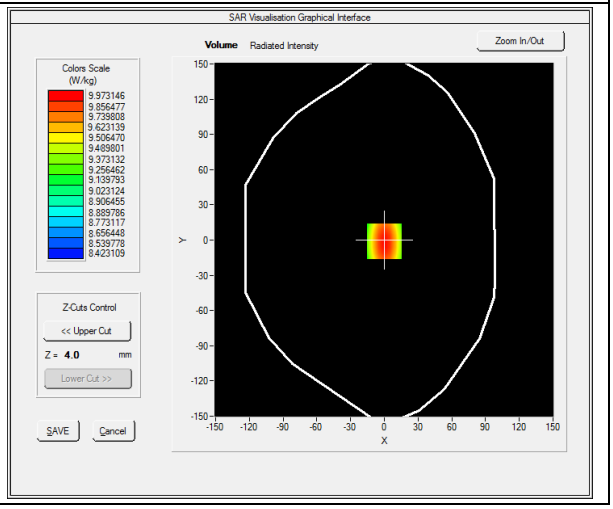
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 5.84; Calibrated: 06/01/2018

A. Experimental conditions

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

B. SAR Measurement Results

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

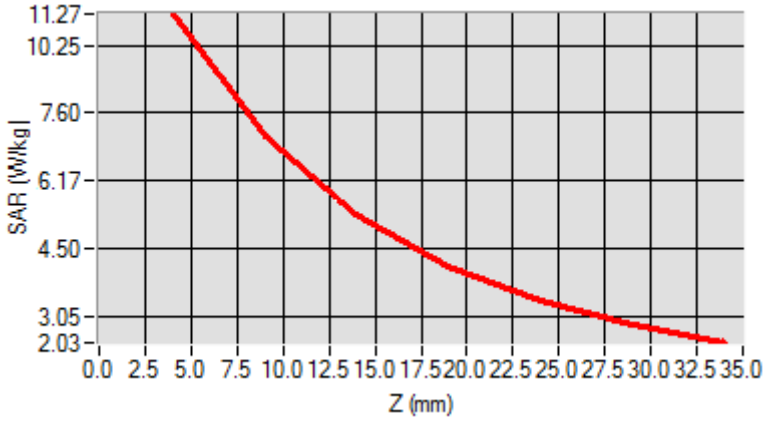
SURFACE SAR	VOLUME SAR
	

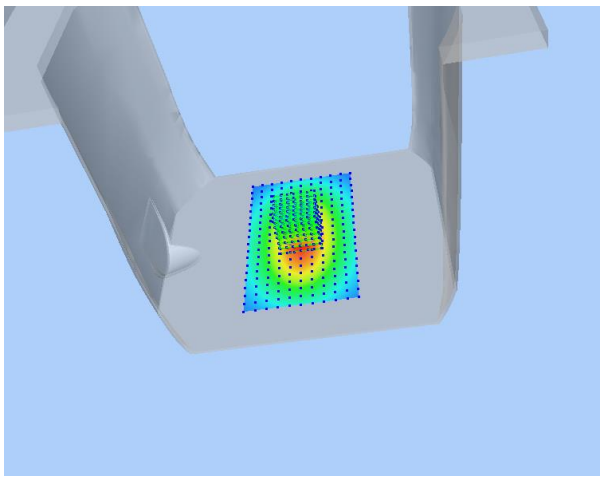
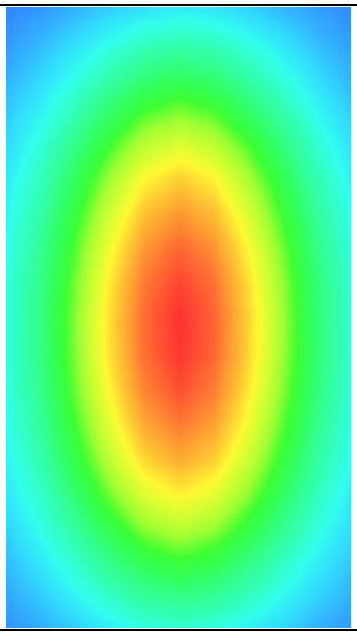
Maximum location: X=0.00, Y=0.00

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 %)

Date of measurement: 10/16/2018

Measurement duration: 12 minutes 21 seconds

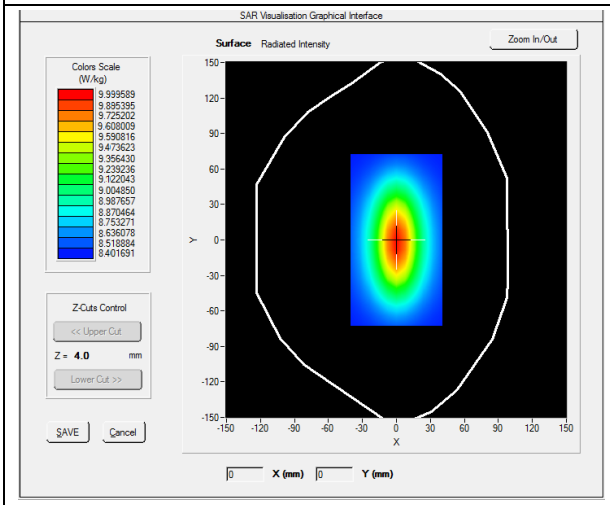
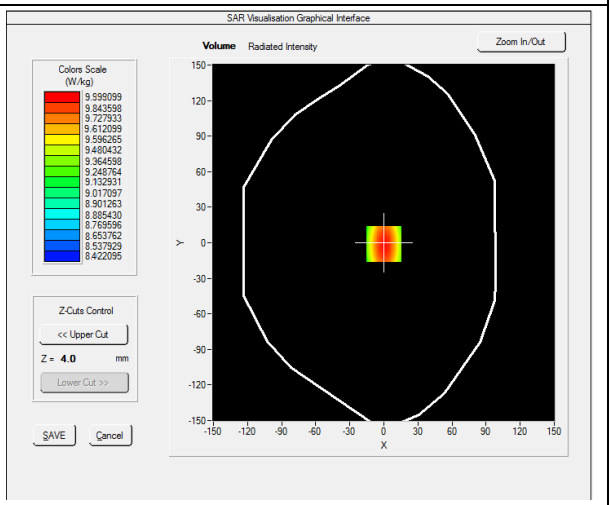
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.35; Calibrated: 06/01/2018

A. Experimental conditions

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

B. SAR Measurement Results

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

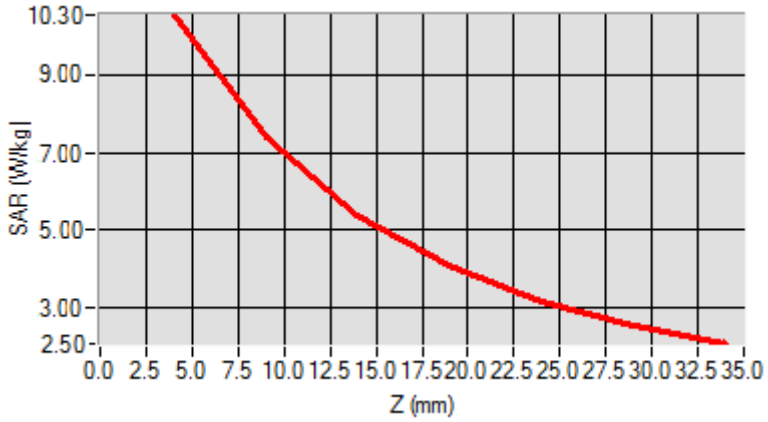
SURFACE SAR	VOLUME SAR
	

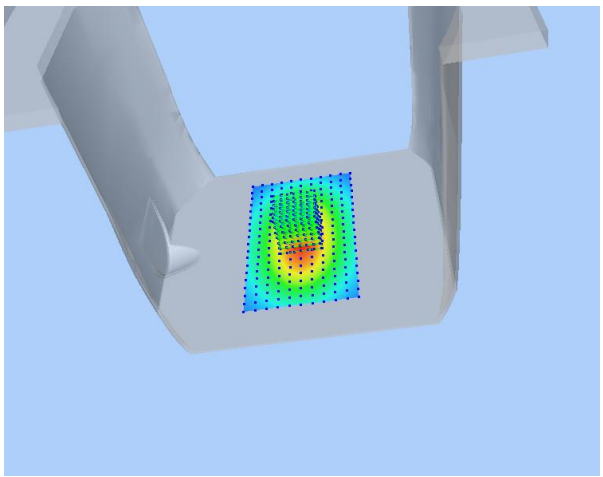
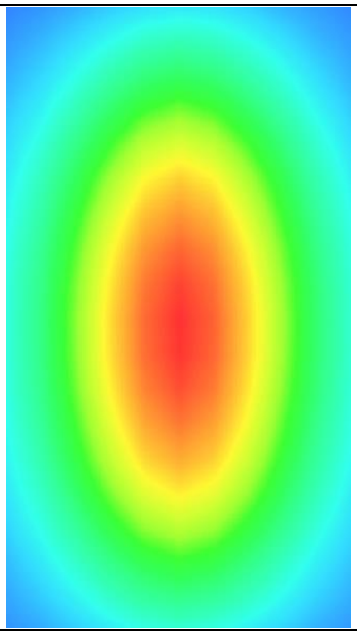
Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	7.174526
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 %)

Date of measurement: 10/17/2018

Measurement duration: 12 minutes 21 seconds

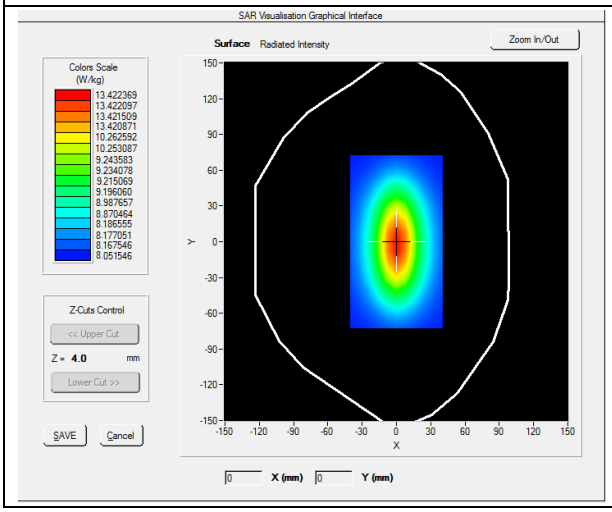
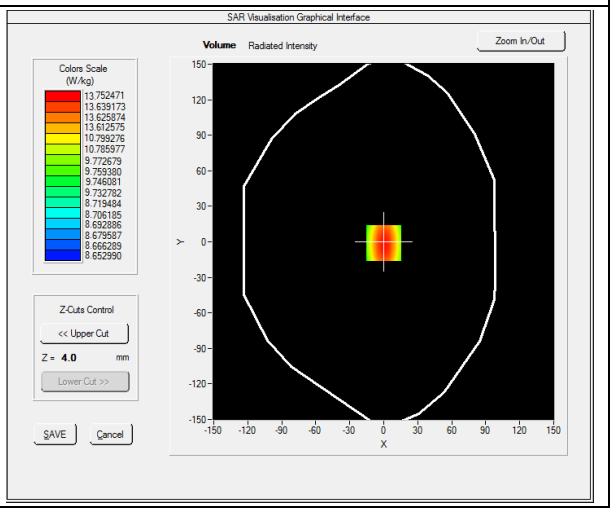
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 5.64; Calibrated: 06/01/2018

A. Experimental conditions

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

B. SAR Measurement Results

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

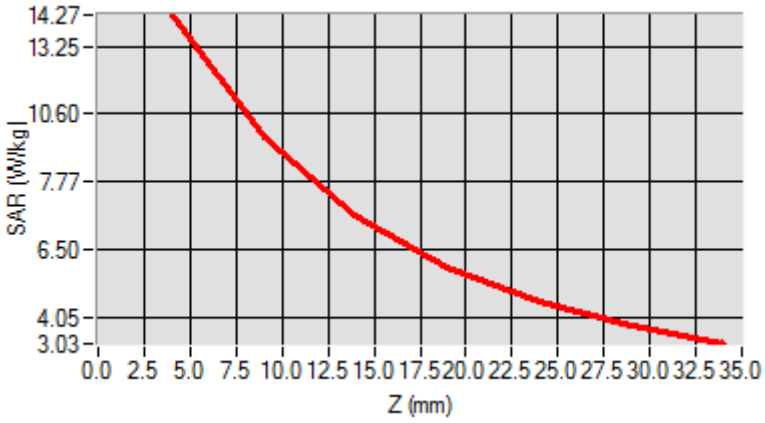
SURFACE SAR	VOLUME SAR
	

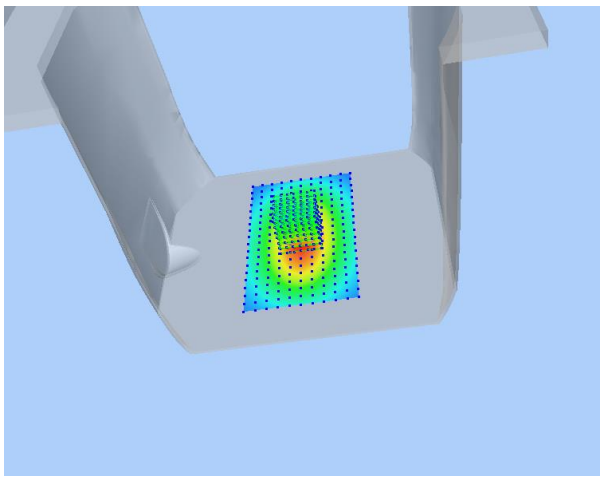
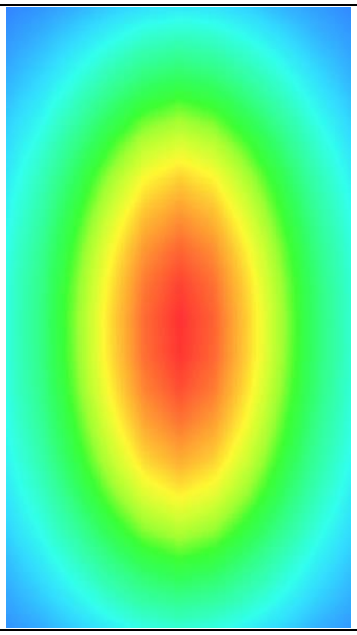
Maximum location: X=0.00, Y=0.00

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 %)

Date of measurement: 10/17/2018

Measurement duration: 12 minutes 21 seconds

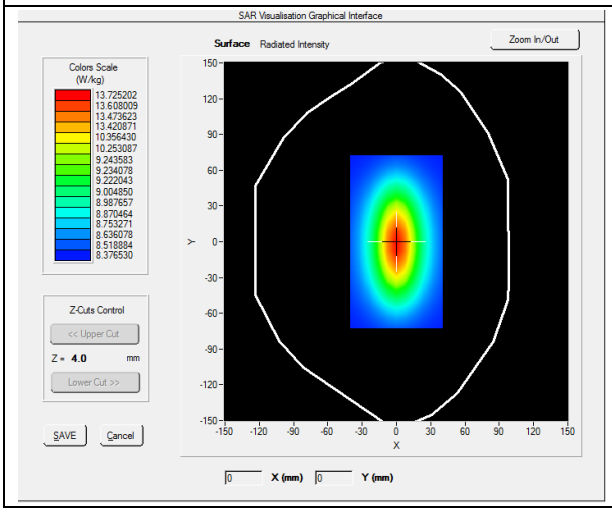
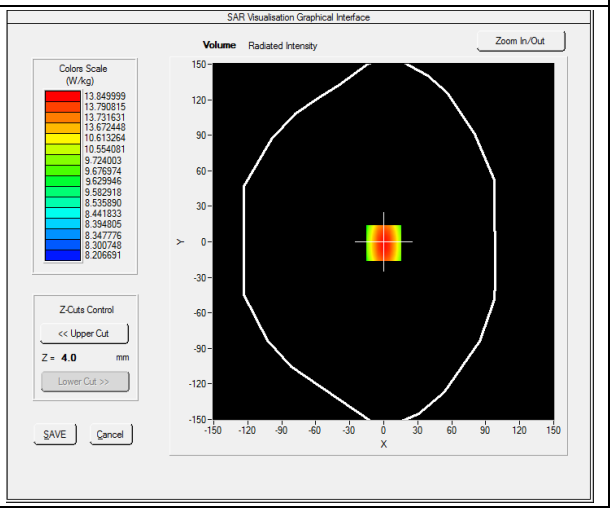
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 5.37; Calibrated: 06/01/2018

A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Zoom Scan	dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Dipole
Band	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

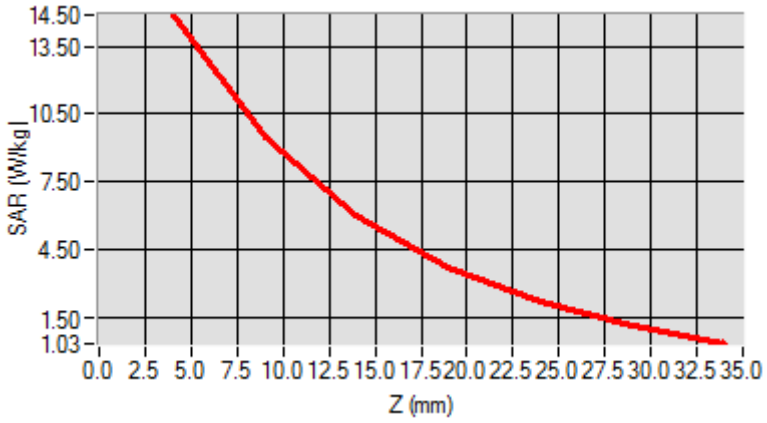
SURFACE SAR	VOLUME SAR
	

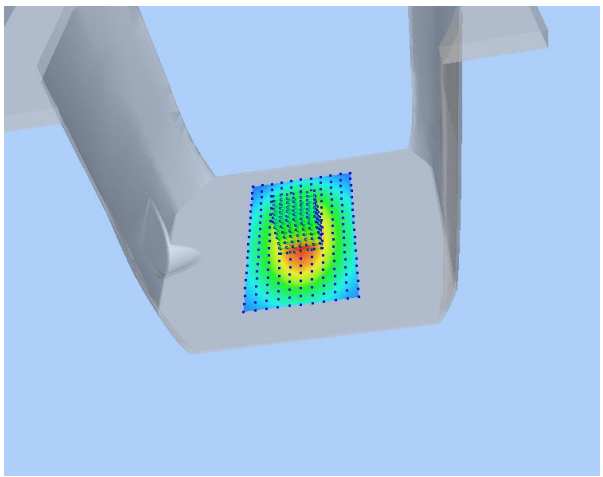
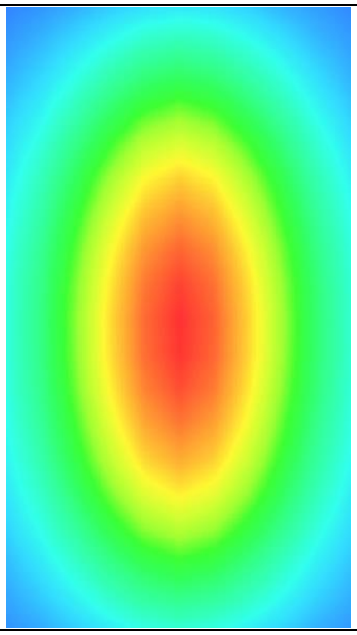
Maximum location: X=0.00, Y=0.00

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 Body Liquid

Type: Validation measurement (Fast, 75.00 %)

Date of measurement: 10/15/2018

Measurement duration: 12 minutes 21 seconds

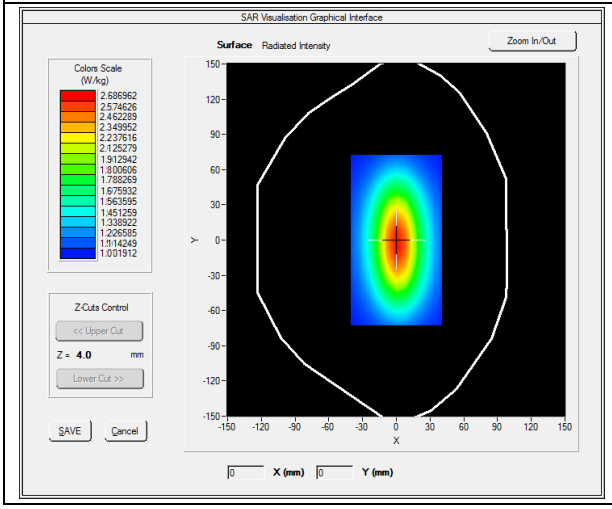
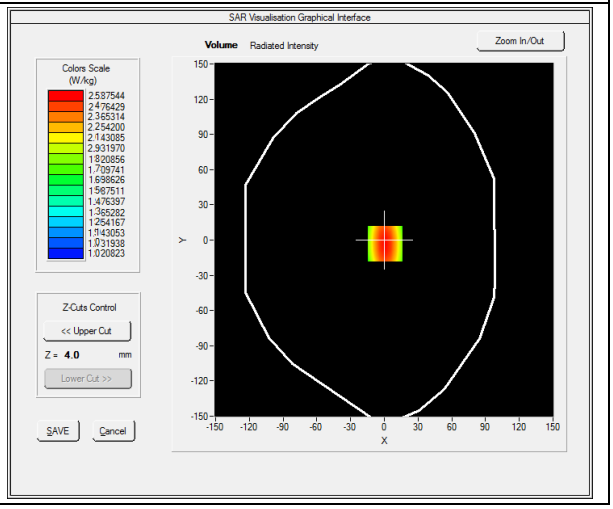
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 7.28; Calibrated: 06/01/2018

A. Experimental conditions

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

B. SAR Measurement Results

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

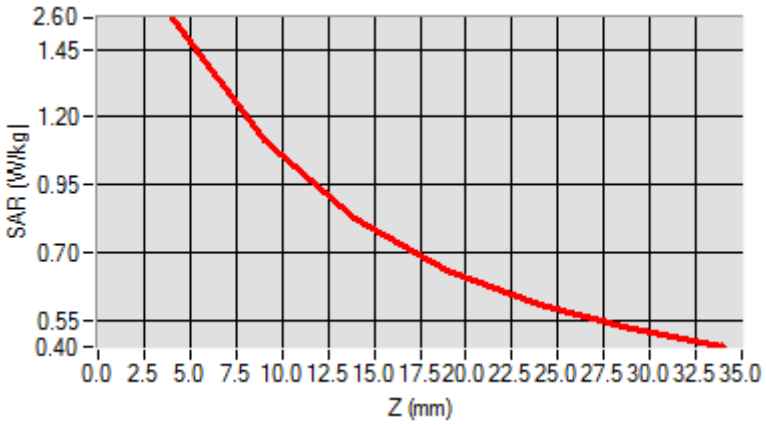
SURFACE SAR	VOLUME SAR
	

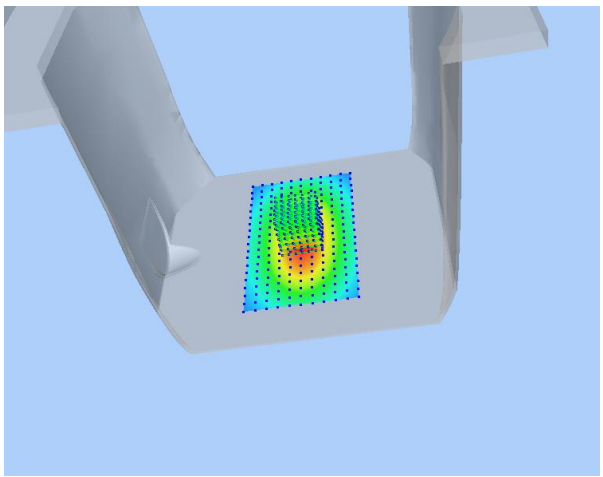
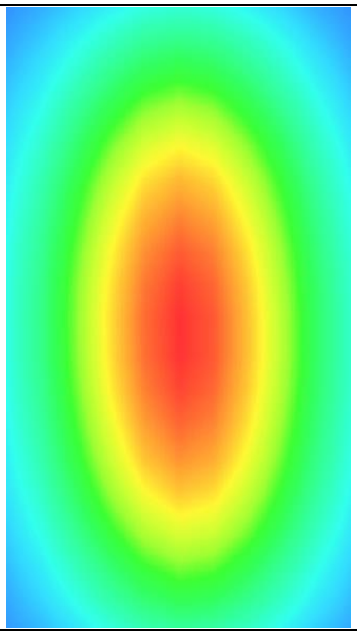
Maximum location: X=0.00, Y=0.00

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

Z Axis Scan

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



3D screen shot	Hot spot position
	

MEASUREMENT 8

For Body Liquid

Type: Validation measurement (Fast, 75.00 %)

Date of measurement: 10/15/2018

Measurement duration: 12 minutes 21 seconds

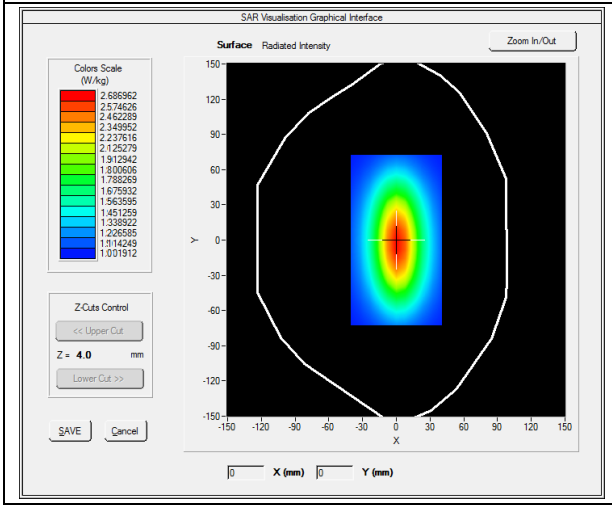
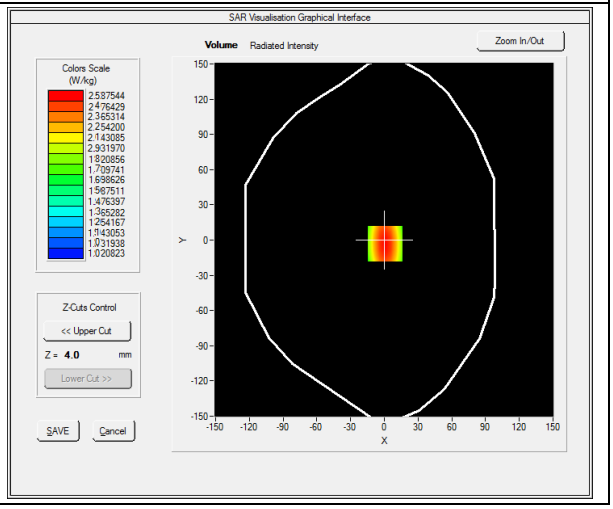
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 7.13; Calibrated: 06/01/2018

A. Experimental conditions

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

B. SAR Measurement Results

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

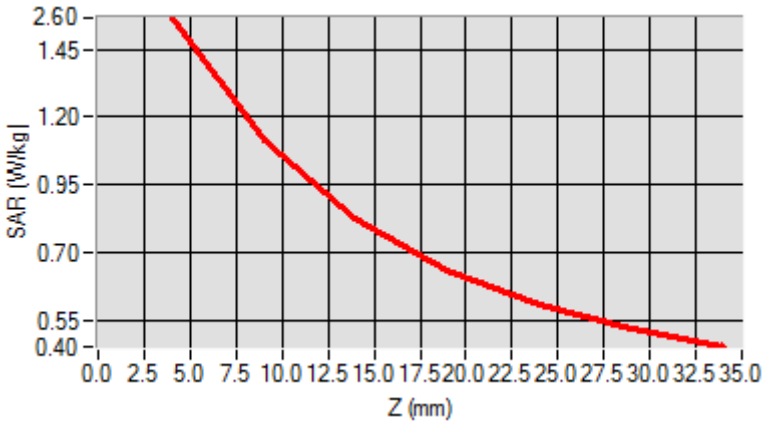
SURFACE SAR	VOLUME SAR
	

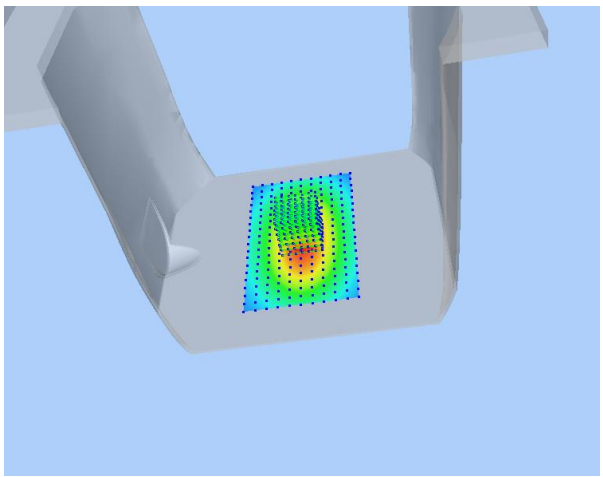
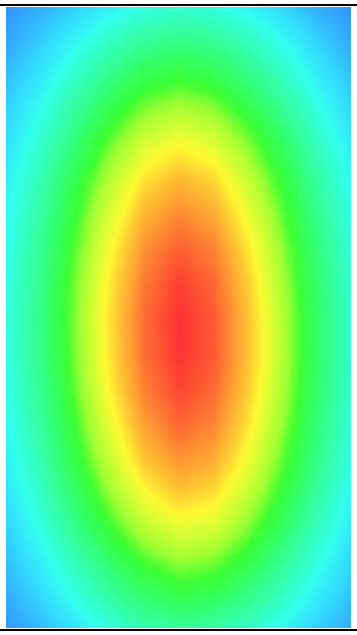
Maximum location: X=0.00, Y=0.00

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

Z Axis Scan

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



3D screen shot	Hot spot position
	

MEASUREMENT 9

For Body Liquid

Type: Validation measurement (Fast, 75.00 %)

Date of measurement: 10/16/2018

Measurement duration: 12 minutes 21 seconds

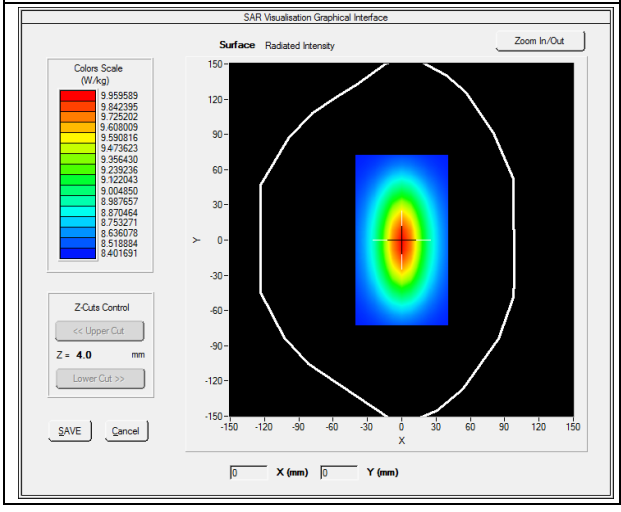
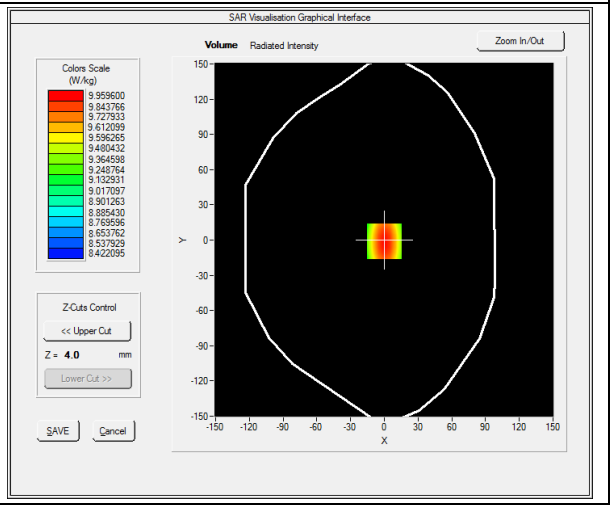
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.06; Calibrated: 06/01/2018

A. Experimental conditions

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

B. SAR Measurement Results

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

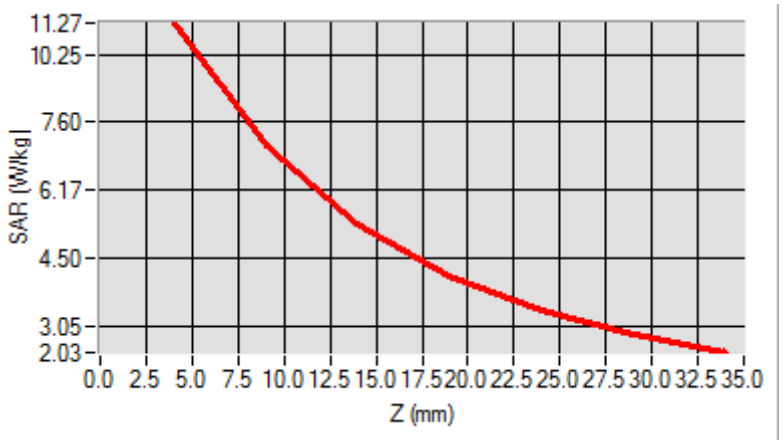
SURFACE SAR	VOLUME SAR
	

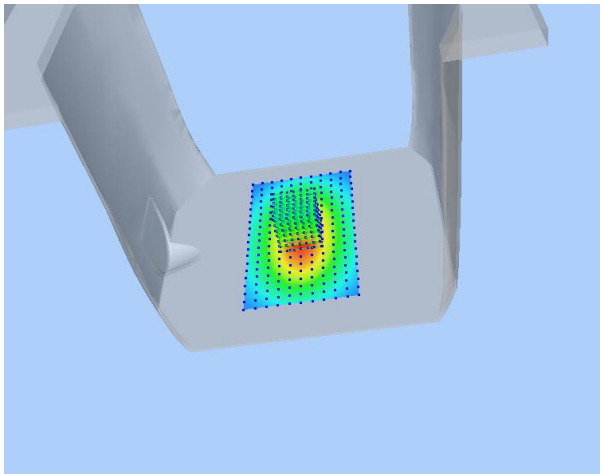
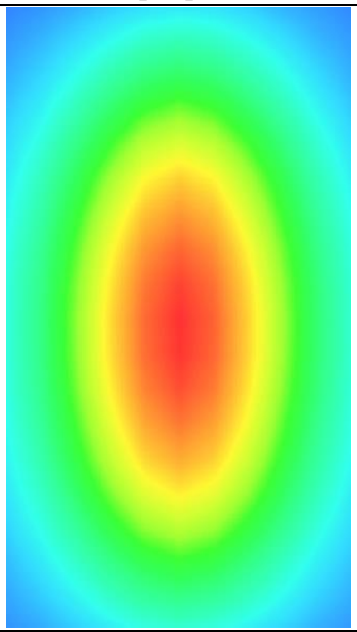
Maximum location: X=0.00, Y=0.00

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

Z Axis Scan

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



3D screen shot	Hot spot position
	

MEASUREMENT 10

For Body Liquid

Type: Validation measurement (Fast, 75.00 %)

Date of measurement: 10/16/2018

Measurement duration: 12 minutes 21 seconds

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

A. Experimental conditions

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

B. SAR Measurement Results

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

SURFACE SAR	VOLUME SAR