

# FCC SAR

## Measurement and Test Report

For

**Fortune Ship International Industrial Limited**

**Unit C, 24/F, Golden Bear Industrial Centre, 66-82 Chai Wan Kok Street,**

**Tsuen Wan NT, HONGKONG, China**

**FCC ID: 2AVFE-E1PLUS**

<b>Test Standards:</b>	FCC Part 2.1093 ANSI / IEEE C95.1 :2005+A1:2010 ANSI / IEEE C95.3 : 2002(R2008) <u>IEEE 1528 :2013</u>
<b>Product Description:</b>	<u>4G Smart Phone</u>
<b>Tested Model:</b>	<u>Wildfire E1</u>
<b>Report No.:</b>	<u>WTX19X11081161W</u>
<b>Sample Received Date:</b>	<u>2019-11-22</u>
<b>Tested Date:</b>	<u>2019-11-22 to 2019-12-26</u>
<b>Issued Date:</b>	<u>2019-12-27</u>
<b>Tested By:</b>	<u>Ruler Liu / Engineer</u> <i>Ruler Liu</i>
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Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior permitted by Shenzhen SEM Test Technology Co., Ltd.

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## 1. General Information

### 1.1 Product Description for Equipment Under Test (EUT)

#### Client Information

Applicant: Fortune Ship International Industrial Limited  
Address of applicant: Unit C, 24/F, Golden Bear Industrial Centre, 66-82 Chai Wan Kok Street, Tsuen Wan NT, HONGKONG, China

Manufacturer: Guizhou Fortuneship Technology Co., Ltd  
Address of manufacturer: No. 4 Plant, High-tech Industrial Park, Xinpu Economic Development Zone, Zunyi, China

General Description of EUT:	
Product Name:	4G Smart Phone
Brand Name:	HTC
Model No.:	Wildfire E1
Adding Model(s):	Wildfire E1 PLUS
Rated Voltage:	DC3.85V by Battery
Battery:	2950mAh
Device Category:	Portable Device
<i>Note: The test data is gathered from a production sample provided by the manufacturer. The appearance of others models listed in the report is different from main-test model Wildfire E1, but the circuit and the electronic construction do not change, declared by the manufacturer.</i>	

<b>Technical Characteristics of EUT:</b>	
<b>2G</b>	
Support Networks:	GSM, GPRS, EDGE
Support Band:	GSM850/PCS1900
Uplink Frequency:	GSM/GPRS/EDGE 850: 824~849MHz GSM/GPRS/EDGE 1900: 1850~1910MHz
Downlink Frequency:	GSM/GPRS/EDGE 850: 869~894MHz GSM/GPRS/EDGE 1900: 1930~1990MHz
RF Output Power:	GSM850: 31.34dBm, GSM1900: 29.75dBm EDGE850: 25.26dBm, EDGE1900: 25.79dBm
Type of Modulation:	GMSK, 8PSK
Type of Antenna:	Integral Antenna
Antenna Gain:	<b>Bottom:</b> GSM850: -0.83dBi; GSM1900: 0.59dBi <b>Top:</b> GSM1900: 0.59dBi
GPRS/EDGE Class:	Class 12
<b>3G</b>	
Support Networks:	WCDMA, HSDPA, HSUPA
Support Band:	WCDMA Band 2, WCDMA Band 4, WCDMA Band 5
Uplink Frequency:	WCDMA Band 2: 1850~1910MHz WCDMA Band 4: 1710~1755MHz WCDMA Band 5: 824~849MHz
Downlink Frequency:	WCDMA Band 2: 1930~1990MHz WCDMA Band 4: 2110~2155MHz WCDMA Band 5: 869~894MHz
RF Output Power:	WCDMA Band 2: 21.33dBm, WCDMA Band 4: 21.63dBm WCDMA Band 5: 22.51dBm
Type of Modulation:	BPSK
Antenna Type:	Integral Antenna
Antenna Gain:	<b>Bottom:</b> WCDMA Band 2: 0.60dBi, WCDMA Band 4: 0.54dBi, WCDMA Band 5: -0.82dBi <b>Top:</b> WCDMA Band 2: 0.60dBi, WCDMA Band 4: 0.54dBi
<b>4G</b>	
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: 22.96dBm, FDD-LTE Band 4: 23.77dBm, FDD-LTE Band 5: 23.52dBm, FDD-LTE Band 7: 23.22dBm, FDD-LTE Band 17: 23.11dBm
Type of Modulation:	QPSK, 16QAM
Antenna Type:	Integral Antenna
Antenna Gain:	<b>Antenna (Bottom):</b> FDD-LTE Band 2: 0.59dBi, FDD-LTE Band 4: 0.55dBi, FDD-LTE Band 5: -0.84dBi, FDD-LTE Band 7: 0.75dBi, FDD-LTE Band 17: -0.66dBi <b>Antenna (Top):</b> FDD-LTE Band 4: 0.55dBi, FDD-LTE Band 5: -0.84dBi, FDD-LTE Band 7: 0.75dBi
<b>WIFI(2.4G)</b>	
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:	14.65dBm (Conducted)
Type of Modulation:	CCK, OFDM, QPSK, BPSK, 16QAM, 64QAM
Data Rate:	1-11Mbps, 6-54Mbps, up to 150Mbps
Quantity of Channels:	11 for 802.11b/g/n(HT20) 7 for 802.11n(HT40)
Channel Separation:	5MHz
Antenna Type:	Integral Antenna
Antenna Gain:	1.08dBi
<b>Bluetooth</b>	
Bluetooth Version:	V4.2
Frequency Range:	2402-2480MHz
RF Output Power:	3.819dBm (Conducted)
Data Rate:	1Mbps, 2Mbps, 3Mbps
Modulation:	GFSK, Pi/4 QDPSK, 8DPSK
Quantity of Channels:	79/40

Channel Separation:	1MHz/2MHz
Antenna Type:	Integral Antenna
Antenna Gain:	1.08dBi
<b>WIFI(5G)</b>	
Support Standards:	802.11a,802.11n(HT20) , 802.11n-HT40, 802.11ac-VH80
Frequency Range:	Band 1: 5150-5250MHz, Band 4: 5725-5850MHz
RF Output Power:	11.19dBm (Conducted)
Type of Modulation:	QPSK, 16QAM, 64QAM
Type of Antenna:	Integral Antenna
Antenna Gain:	1.15dBi

## 1.2 Test Standards

The following report is prepared on behalf of the SC GOLD STANDARD INTERNATIONAL SRL in accordance with FCC 47 CFR Part 2.1093, ANSI/IEEE C95.1-2005, ANSI / IEEE C95.3 :2002, IEEE 1528-2013, KDB 447498 D01 v06, KDB 648474 D04 v01r03, KDB 248227 D01 v02r02, KDB 941225 D01 v03r01, KDB 941225 D05 v02r05 , and KDB 865664 D01 v01r04 and KDB 865664 D02 v01r02.

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

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

## 1.3 Test Methodology

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

## 1.4 Test Facility

Address of the test laboratory

Laboratory: Shenzhen SEM Test Technology Co., Ltd.

Address: 1/F, Building A, Hongwei Industrial Park, Liuxian 2nd Road, Bao'an District, Shenzhen, P.R.C. (518101)

### **FCC – Registration No.: 125990**

Shenzhen SEM Test Technology Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. The Designation Number is CN5010. Test Firm Registration Number is 125990.

### **Industry Canada (IC) Registration No.: 11464A**

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

## 2. Summary of Test Results

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

Frequency Band	Head SAR	Body-worn (10mm Gap)	Hotspot (10mm Gap)	SAR <sub>1g</sub> Limit (W/kg)
	Maximum SAR <sub>1g</sub> (W/kg)	Maximum SAR <sub>1g</sub> (W/kg)	Maximum SAR <sub>1g</sub> (W/kg)	
GSM	0.939	0.599	<b>0.935</b>	1.6
WCDMA	0.620	<b>0.722</b>	0.722	1.6
LTE	<b>1.080</b>	0.702	0.702	1.6
WLAN 2.4G	0.026	0.037	0.037	1.6
WLAN 5.2G	0.220	0.075	0.089	1.6
WLAN 5.8G	0.046	0.041	0.118	1.6
Simultaneous Transmission	<b>1.195</b>	0.797	1.010	1.6

**Remark:**

*The highest reported SAR values for head, body-worn, router(hotspot), and simultaneous transmission conditions are 1.080W/kg, 0.722 W/kg, 0.935W/kg, and 1.195W/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)

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#### 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 techniques 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 ( $\rho$ ). The equation description is as below:

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

SAR is expressed in units of Watts per kilogram (W/kg)

SAR measurement can be either related to the temperature elevation in tissue by

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

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

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

Where:  $\sigma$  is the conductivity of the tissue,  $\rho$  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

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### 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.

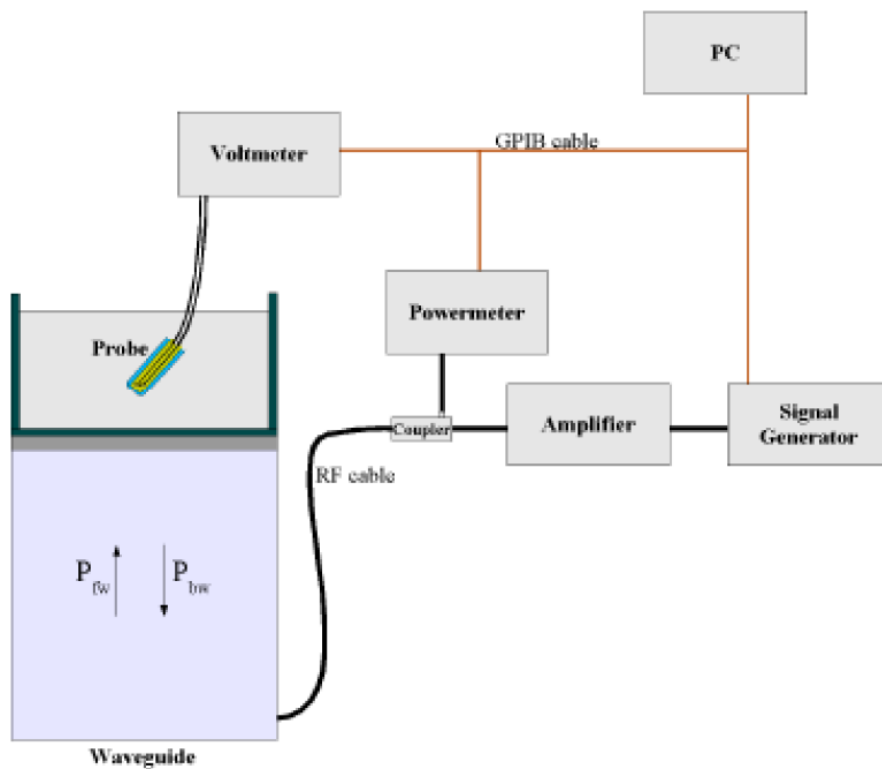
### 4.2 Probe

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 surface normal line: less than 30°

Probe calibration is realized, in compliance with EN 62209-1 and IEEE 1528 STD, with CALISAR, Antenna 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 :

$P_{fw}$  = Forward Power

$P_{bw}$  = Backward Power

a and b = Waveguide dimensions

$\delta$  = 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:

$$CF(N)=SAR(N)/V_{lin}(N) \quad (N=1,2,3)$$

The linearised output voltage  $V_{lin}(N)$  is obtained from the displayed output voltage  $V(N)$  using

$$V_{lin}(N)=V(N)*(1+V(N)/DCP(N)) \quad (N=1,2,3)$$

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/cm<sup>2</sup>) 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/cm<sup>2</sup>.

#### 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.

Where:

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

$\Delta t$  = exposure time (30 seconds),

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

$\Delta T$  = 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:

$\sigma$  = simulated tissue conductivity,

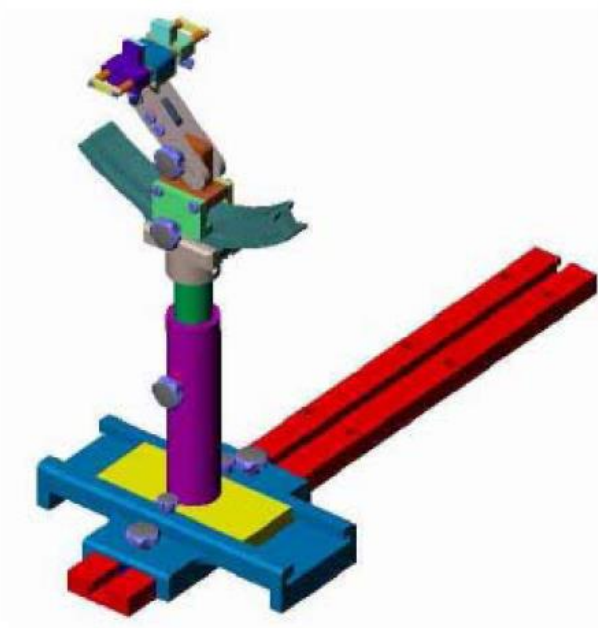
$\rho$  = Tissue density (1.25 g/cm<sup>3</sup> for brain tissue)

#### 4.4 Phantom

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

#### 4.5 Device Holder

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



System Material	Permittivity	Loss Tangent
Delrin	3.7	0.005

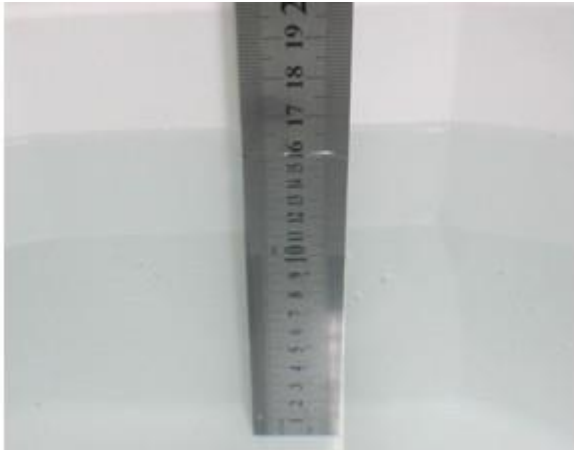
#### 4.6 Test Equipment List

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
E-Field Probe	MVG	SSE5	SN 09/13 EP168	2019-05-22	2020-05-21
E-Field Probe	MVG	SSE2	SN 45/15 EPGO280	2019-07-08	2020-07-07
750MHz Dipole	MVG	SID750	SN 47/12 DIP 0G750-203	2019-03-16	2020-03-15
835MHz Dipole	MVG	SID835	SN 47/12 DIP 0G835-204	2019-03-16	2020-03-15
1800MHz Dipole	MVG	SID1800	SN 47/12 DIP 1G800-206	2019-03-16	2020-03-15
1900MHz Dipole	MVG	SID1900	SN 47/12 DIP 1G900-207	2019-03-16	2020-03-15
2450MHz Dipole	MVG	SID2450	SN 13/15 DIP 2G450-364	2019-03-16	2020-03-15
2600MHz Dipole	MVG	SID2600	SN 13/15 DIP 2G600-365	2019-03-16	2020-03-15
5 GHz Waveguide	MVG	SWG5500	SN 49/16 WGA45	2019-07-15	2020-07-14
Dielectric Probe Kit	MVG	SCLMP	SN 47/12 OCPG49	2019-03-16	2020-03-15
SAM Phantom	MVG	SAM	SN/ 47/12 SAM95	N/A	N/A
MULTIMETER	KEITHLEY	Keithley 2000	4006367	2019-04-30	2020-04-29
Signal Generator	Rohde & Schwarz	SMR20	100047	2019-04-30	2020-04-29
Universal Tester	Rohde & Schwarz	CMU200	112012	2019-04-30	2020-04-29
Communications Tester	Rohde & Schwarz	CMW500	148650	2019-04-30	2020-04-29
Network Analyzer	HP	8753C	2901A00831	2019-04-30	2020-04-29
Directional Couplers	Agilent	778D	20160	2019-04-30	2020-04-29

## 5. Tissue Simulating Liquids

### 5.1 Composition of Tissue Simulating Liquid

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



**Liquid Height for Head SAR**



**Liquid Height for Body SAR**

#### The Composition of Tissue Simulating Liquid

Frequency (MHz)	Water (%)	Salt (%)	Sugar (%)	HEC (%)	Preventol (%)	DGBE (%)
<b>Head</b>						
750	41.1	1.4	57.0	0.2	0.3	0
835	40.3	1.4	57.9	0.2	0.2	0
1700-1900	55.2	0.3	0	0	0	44.5
2450	55.0	0.1	0	0	0	44.9
2600	54.9	0.1	0	0	0	45.0
<b>Body</b>						
750	50.0	0.8	48.8	0.2	0.2	0
835	50.8	0.9	48.1	0.1	0.1	0
1700-1900	70.2	0.4	0	0	0	29.4
2450	68.6	0.1	0	0	0	31.3
2600	68.2	0.1	0	0	0	31.7

Frequency (MHz)	Water (%)	Hexyl Carbitol (%)	Triton X-100 (%)
<b>Head</b>			
5000-6000	65.52	17.24	17.24
<b>Body</b>			
5000-6000	78.6	10.7	10.7

## 5.2 Tissue Dielectric Parameters for Head and Body Phantoms

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

Target Frequency (MHz)	Head		Body	
	Conductivity ( $\sigma$ )	Permittivity ( $\epsilon_r$ )	Conductivity ( $\sigma$ )	Permittivity ( $\epsilon_r$ )
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
<b>750</b>	<b>0.89</b>	<b>41.9</b>	<b>0.96</b>	<b>55.5</b>
<b>835</b>	<b>0.90</b>	<b>41.5</b>	<b>0.97</b>	<b>55.2</b>
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
<b>1750</b>	<b>1.37</b>	<b>40.1</b>	<b>1.49</b>	<b>53.4</b>
<b>1800-2000</b>	<b>1.40</b>	<b>40.0</b>	<b>1.52</b>	<b>53.3</b>
<b>2450</b>	<b>1.80</b>	<b>39.2</b>	<b>1.95</b>	<b>52.7</b>
3000	2.40	38.5	2.73	52.0
<b>5200</b>	<b>4.66</b>	<b>36.0</b>	<b>5.30</b>	<b>49.0</b>
<b>5800</b>	<b>5.27</b>	<b>35.3</b>	<b>6.00</b>	<b>48.2</b>



### 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. (°C)	Conductivity			Permittivity			Limit (%)	Date
		Reading ( $\sigma$ )	Target ( $\sigma$ )	Delta (%)	Reading ( $\epsilon_r$ )	Target ( $\epsilon_r$ )	Delta (%)		
750	21.2	0.86	0.89	-3.37	41.32	41.90	-1.38	±5	2019-12-16
835	21.2	0.87	0.90	-3.33	41.11	41.50	-0.94	±5	2019-12-16
1750	21.3	1.37	1.37	0.00	39.02	40.1	-2.69	±5	2019-12-17
1900	21.3	1.38	1.40	-1.43	38.56	40.00	-3.60	±5	2019-12-17
2450	21.3	1.74	1.80	-3.33	38.15	39.20	-2.68	±5	2019-12-18
2600	21.3	1.93	1.96	-1.53	38.63	39.0	-0.95	±5	2019-12-18
5200	21.3	4.87	4.66	4.51	35.6	36.0	-1.11	±5	2019-12-19
5800	21.3	5.17	5.27	-1.90	35.6	35.3	0.85	±5	2019-12-19

Body Tissue Simulating Liquid									
Freq. MHz.	Temp. (°C)	Conductivity			Permittivity			Limit (%)	Date
		Reading ( $\sigma$ )	Target ( $\sigma$ )	Delta (%)	Reading ( $\epsilon_r$ )	Target ( $\epsilon_r$ )	Delta (%)		
750	21.2	0.93	0.96	-3.12	54.96	55.50	-0.97	±5	2019-12-16
835	21.2	0.95	0.97	-2.06	54.85	55.20	-0.63	±5	2019-12-16
1750	21.3	1.46	1.49	-2.01	51.22	53.40	-4.08	±5	2019-12-17
1900	21.3	1.50	1.52	-1.32	52.42	53.30	-1.65	±5	2019-12-17
2450	21.3	1.91	1.95	-2.05	52.01	52.70	-1.31	±5	2019-12-18
2600	21.3	2.12	2.16	-1.85	52.24	52.50	-0.50	±5	2019-12-18
5200	21.3	5.16	5.30	-2.64	48.50	49.0	-1.02	±5	2019-12-19
5800	21.3	5.76	6.00	-4.00	48.50	48.2	0.62	±5	2019-12-19

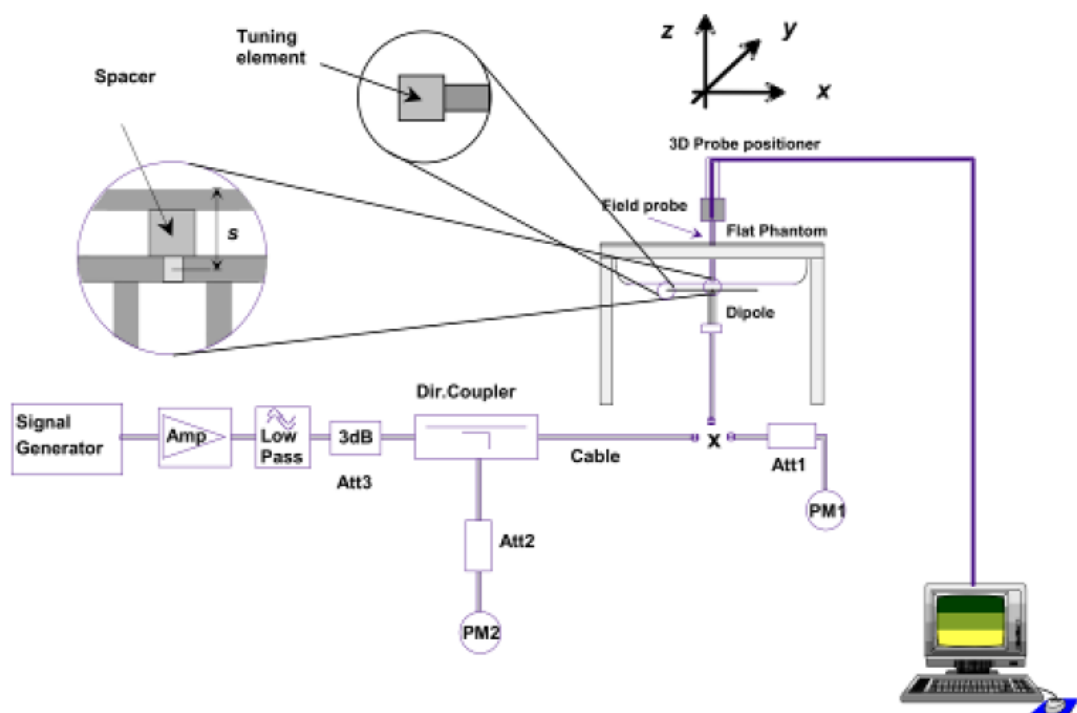
## 6. SAR Measurement Evaluation

### 6.1 Purpose of System Performance Check

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

### 6.2 System Setup

In the simplified setup for system evaluation, the EUT is replaced by a calibrated dipole and the power source is replaced by a continuous wave which comes from a signal generator at frequency 835MHz, 1800MHz, 1900MHz, 2450MHz, 2600MHz, and 5GHz. The calibrated dipole must be placed beneath the flat phantom section of the SAM twin phantom with the correct distance holder. The distance holder should touch the phantom surface with a light pressure at the reference marking and be oriented parallel to the long side of the phantom. A field probe is used to measure the field strength at the dipole location.



System Verification Setup Block Diagram



**Setup Photo of Dipole Antenna**

The output power on dipole port must be calibrated to 24 dBm(250 mW) before dipole is connected.  
The output power on 5 GHz Waveguide must be calibrated to 20 dBm (100mW) before 5 GHz Waveguide is connected.

### 6.3 Validation Results

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

Frequency MHz	Targeted SAR <sub>1g</sub> (W/kg)	Measured SAR <sub>1g</sub> (W/kg)	Normalized SAR <sub>1g</sub> (W/kg)	Tolerance (%)	Date
Head					
750	8.40	2.16	8.64	2.86	2019-12-16
835	9.65	2.41	9.64	-0.10	2019-12-16
1800	38.49	9.61	38.44	-0.13	2019-12-17
1900	39.59	9.91	39.64	0.13	2019-12-17
2450	53.76	13.45	53.8	0.07	2019-12-18
2600	55.07	13.67	54.68	-0.71	2019-12-18
Body					
750	8.40	2.12	8.48	0.95	2019-12-16
835	9.36	2.35	9.4	0.43	2019-12-16
1800	38.29	9.58	38.32	0.08	2019-12-17
1900	39.01	9.78	39.12	0.28	2019-12-17
2450	50.33	12.59	50.36	0.06	2019-12-18

2600	53.92	13.43	53.72	-0.37	2019-12-18
------	-------	-------	-------	-------	------------

Frequency	Liquid	Power (mw)	Targeted SAR1g	Measured SAR1g	Normalized SAR1g	Tolerance
5200	Head	100	161.23	16.946	169.46	5.10
5200	Body	100	154.45	16.681	166.81	8.00
5800	Head	100	179.32	17.191	171.91	-4.13
5800	Body	100	170.71	16.980	169.8	-0.53

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

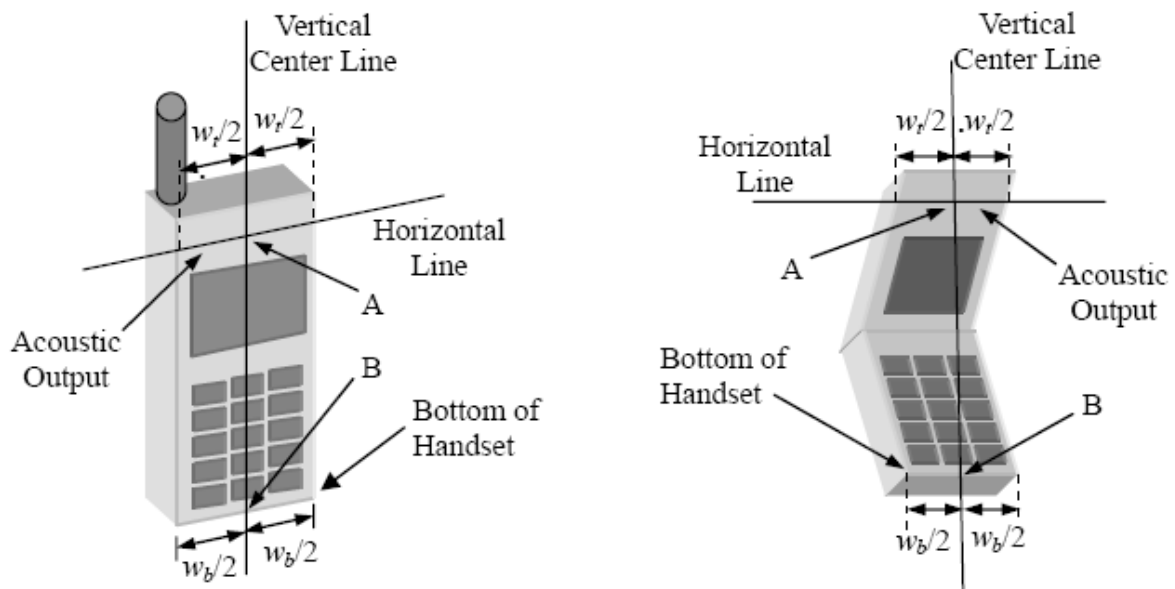
Targeted and Measurement SAR

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

## 7. EUT Testing Position

### 7.1 Define Two Imaginary Lines on The Handset

- (a) The vertical centerline passes through two points on the front side of the handset - the midpoint of the width  $w_t$  of the handset at the level of the acoustic output, and the midpoint of the width  $w_b$  of the bottom of the handset.
- (b) The horizontal line is perpendicular to the vertical centerline and passes through the center of the acoustic output. The horizontal line is also tangential to the face of the handset at point A.
- (c) The two lines intersect at point A. Note that for many handsets, point A coincides with the center of the acoustic output; however, the acoustic output may be located elsewhere on the horizontal line. Also note that the vertical centerline is not necessarily parallel to the front face of the handset, especially for clamshell handsets, handsets with flip covers, and other irregularly shaped handsets.



**Illustration for Handset Vertical and Horizontal Reference Lines**

## 7.2 Cheek Position

(a) To position the device with the vertical center line of the body of the device and the horizontal line crossing the center piece in a plane parallel to the sagittal plane of the phantom. While maintaining the device in this plane, align the vertical center line with the reference plane containing the three ear and mouth reference point (M: Mouth, RE: Right Ear, and LE: Left Ear) and align the center of the ear piece with the line RE-LE.

(b) To move the device towards the phantom with the ear piece aligned with the line LE-RE until the phone touched the ear. While maintaining the device in the reference plane and maintaining the phone contact with the ear, move the bottom of the phone until any point on the front side is in contact with the cheek of the phantom or until contact with the ear is lost (see Fig. 7.2).

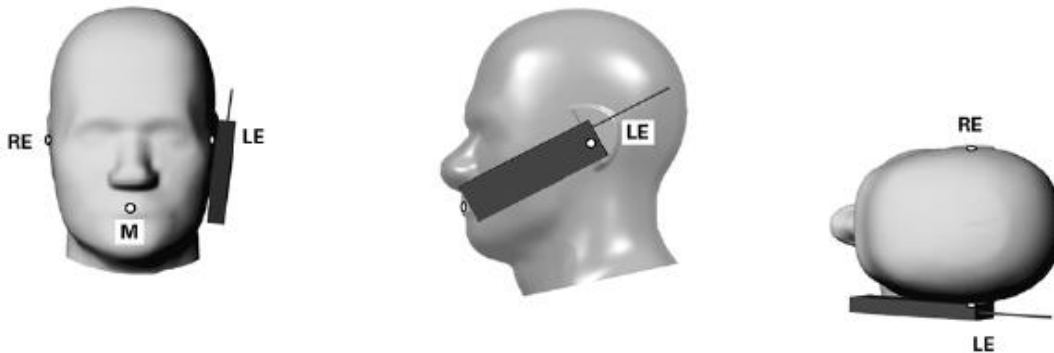


Illustration for Cheek Position

## 7.3 Tilted Position

(a) To position the device in the “cheek” position described above.

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

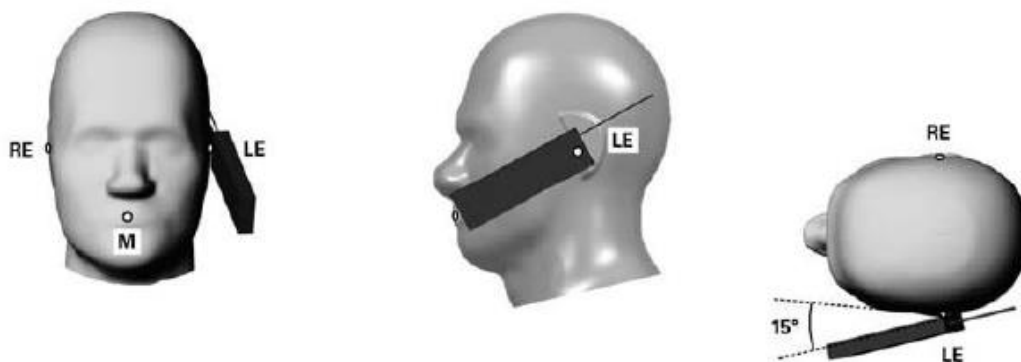


Illustration for Tilted Position

## 7.4 Body Position

- To position the device parallel to the phantom surface with each side.
- To adjust the device parallel to the flat phantom.
- To adjust the distance between the device surface and the flat phantom to 10mm.

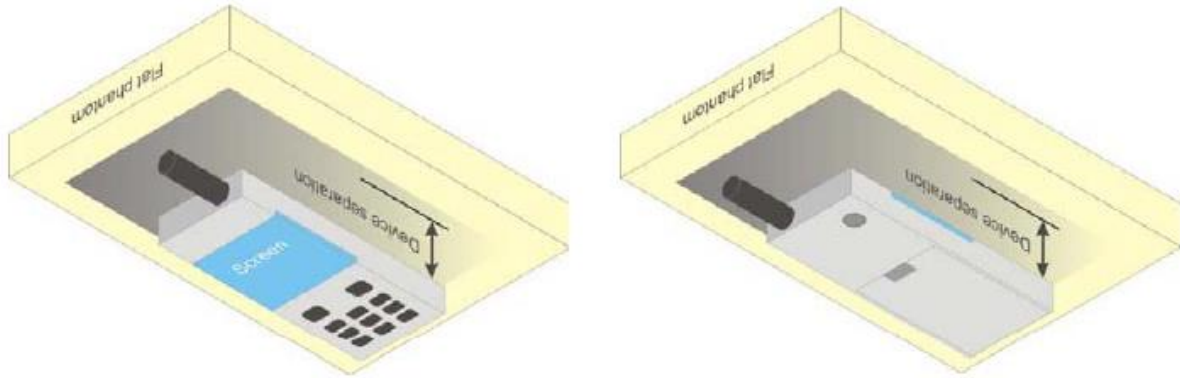
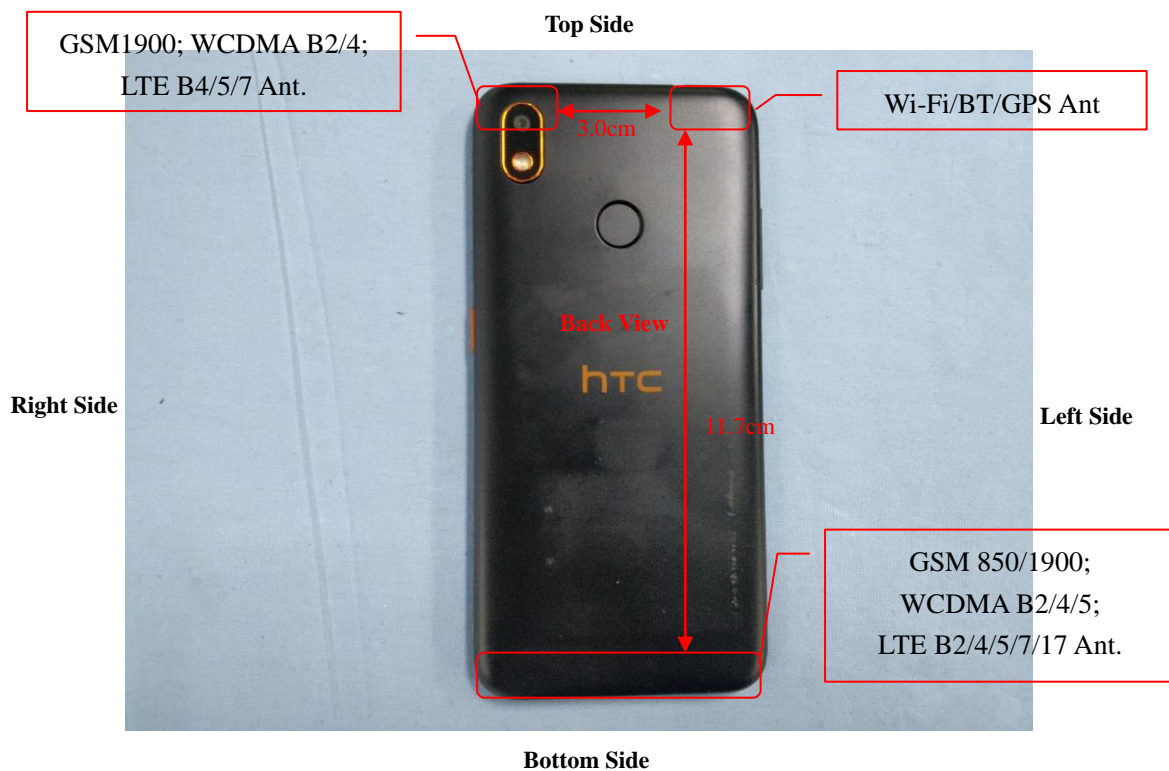


Illustration for Body Position

## 7.5 EUT Antenna Position





**Block Diagram for EUT Antenna Position**



## 7.6 EUT Testing Position

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

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

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

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

### Remark:

- Referring to KDB 941225 D06, when the overall device length and width are  $\geq 9\text{cm} \times 5\text{cm}$ , 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.
- Referring to KDB 648474 D04 Handset SAR v01r03, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR  $> 1.2\text{ W/kg}$

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

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## 8. SAR Measurement Procedures

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### 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 from 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	31.19	31.28	31.28	31.5	29.75	29.63	29.5	30.0
GPRS (1 slot)	31.23	31.34	31.34	31.5	29.69	29.61	29.47	30.0
GPRS (2 slots)	30.23	30.33	30.37	30.5	29.02	28.76	28.53	29.5
GPRS (3 slots)	28.22	28.37	28.37	28.5	27.06	26.83	26.57	27.5
GPRS (4 slots)	27.01	27.23	27.23	27.5	25.85	25.62	25.43	26.0
EDGE (1 slot)	25.14	25.25	25.26	25.5	25.79	25.54	25.26	26.0
EDGE (2 slots)	23.94	24.12	24.13	24.5	24.89	24.59	24.4	25.0
EDGE (3 slots)	21.88	22.02	22.07	22.5	23.02	22.80	22.54	23.5
EDGE (4 slots)	20.72	20.97	20.93	21.0	21.96	21.78	21.63	22.0

GSM - Source-Based Time-Average Power (dBm)								
Band	GSM850			Tune-up power (dBm)	PCS1900			Tune-up power (dBm)
Channel	128	190	251		512	661	810	
Frequency (MHz)	824.2	836.6	848.8		1850.2	1880	1909.8	
GSM	22.19	22.28	22.28	22.5	20.75	20.63	20.50	21.0
GPRS (1 slot)	22.23	22.34	22.34	22.5	20.69	20.61	20.47	21.0
GPRS (2 slots)	24.23	24.33	24.37	24.5	23.02	22.76	22.53	23.5
GPRS (3 slots)	23.97	24.12	24.12	24.5	22.81	22.58	22.32	23.0
GPRS (4 slots)	24.01	24.23	24.23	24.5	22.85	22.62	22.43	23.0
EDGE (1 slot)	16.14	16.25	16.26	26.5	16.79	16.54	16.26	17.0
EDGE (2 slots)	17.94	18.12	18.13	18.5	18.89	18.59	18.40	19.0
EDGE (3 slots)	17.63	17.77	17.82	18.0	18.77	18.55	18.29	19.0
EDGE (4 slots)	17.72	17.97	17.93	18.0	18.96	18.78	18.63	19.0

Note: The source-based time-averaged power is linearly scaled the maximum burst averaged power based on time slots. The calculated method are shown as below:

Source based time-average power = Burst averaged power - Duty cycle factor in dB

Duty cycle factor = 9 dB for 1 Tx slot, 6 dB for 2 Tx slots, 4.25 dB for 3 Tx slots, 3 dB for 4 Tx slots

#### Remark:

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

3. Per KDB 447498 D01 v06, the maximum output power channel is used for SAR testing and for further SAR test reduction.
4. The DUT do not support DTM function.
5. The DUT do not support Hotspot function.

WCDMA - Average Power (dBm)								
Band	WCDMA Band II				WCDMA Band V			
Channel	9262	9400	9538	Tune-up power (dBm)	4132	4183	4233	Tune-up power (dBm)
Frequency (MHz)	1852.4	1880.0	1907.6		826.4	836.4	846.6	
RMC 12.2k	21.24	21.26	21.33	21.5	22.51	22.43	22.40	22.5
HSDPA Subtest-1	20.42	20.43	20.39	20.5	21.41	21.43	21.39	21.5
HSDPA Subtest-2	20.41	20.41	20.35	20.5	21.38	21.42	21.35	21.5
HSDPA Subtest-3	20.39	20.42	20.38	20.5	21.39	21.41	21.35	21.5
HSDPA Subtest-4	20.38	20.40	20.37	20.5	21.38	21.41	21.36	21.5
HSUPA Subtest-1	20.42	20.48	20.35	20.5	21.34	21.36	21.38	21.5
HSUPA Subtest-2	20.38	20.42	20.32	20.5	21.31	21.35	21.35	21.5
HSUPA Subtest-3	20.39	20.43	20.33	20.5	21.32	21.35	21.36	21.5
HSUPA Subtest-4	20.39	20.45	20.33	20.5	21.32	21.34	21.34	21.5
HSUPA Subtest-5	20.37	20.46	20.31	20.5	21.31	21.34	21.35	21.5

WCDMA - Average Power (dBm)								
Band	WCDMA Band IV							
Channel	1312	1412	1513	Tune-up power (dBm)				
Frequency (MHz)	1712.4	1732.4	1752.6					
RMC 12.2k	21.63	21.54	21.41	22.0				
HSDPA Subtest-1	20.61	20.53	20.37	21.0				
HSDPA Subtest-2	20.57	20.51	20.35	21.0				
HSDPA Subtest-3	20.56	20.52	20.35	21.0				
HSDPA Subtest-4	20.57	20.51	20.36	21.0				
HSUPA Subtest-1	20.56	20.52	20.41	21.0				
HSUPA Subtest-2	20.55	20.49	20.37	21.0				
HSUPA Subtest-3	20.53	20.47	20.38	21.0				
HSUPA Subtest-4	20.52	20.47	20.38	21.0				
HSUPA Subtest-5	20.55	20.48	20.39	21.0				

**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  $\leq 1/4$  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  $\leq 1.2$  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	22.68	0
		1	3	22.91	0
		1	5	22.76	0
		3	0	21.64	0
		3	2	21.68	0
		3	3	21.54	0
		6	0	21.39	1
	MCH	1	0	22.30	0
		1	3	22.35	0
		1	5	22.23	0
		3	0	21.34	0
		3	2	21.37	0
		3	3	21.33	0
		6	0	21.24	1
	HCH	1	0	22.08	0
		1	3	22.23	0
		1	5	22.15	0
		3	0	21.21	0
		3	2	21.24	0
		3	3	21.23	0
		6	0	21.20	1
16QAM	LCH	1	0	21.01	1
		1	3	21.17	1
		1	5	21.06	1
		3	0	21.52	1
		3	2	21.58	1
		3	3	21.50	1
		6	0	20.35	2
	MCH	1	0	21.70	1
		1	3	21.67	1
		1	5	21.61	1
		3	0	21.35	1
		3	2	21.39	1
		3	3	21.38	1
		6	0	20.87	2
HCH	1	0	21.30	1	
	1	3	21.53	1	

		1	5	21.31	1
		3	0	21.25	1
		3	2	21.25	1
		3	3	21.31	1
		6	0	20.39	2

Channel Bandwidth: 3 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	22.31	0
		1	7	22.51	0
		1	14	22.35	0
		8	0	21.33	1
		8	4	21.37	1
		8	7	21.36	1
		15	0	21.33	1
	MCH	1	0	22.27	0
		1	7	22.42	0
		1	14	22.22	0
		8	0	21.22	1
		8	4	21.27	1
		8	7	21.21	1
		15	0	21.20	1
	HCH	1	0	22.13	0
		1	7	22.26	0
		1	14	22.10	0
		8	0	21.12	1
		8	4	21.12	1
		8	7	21.08	1
		15	0	21.11	1
16QAM	LCH	1	0	21.62	1
		1	7	21.79	1
		1	14	21.64	1
		8	0	20.73	2
		8	4	20.82	2
		8	7	20.96	2
		15	0	20.75	2
	MCH	1	0	21.67	1
		1	7	21.88	1
		1	14	21.62	1
		8	0	20.39	2
		8	4	20.58	2
		8	7	20.47	2

	HCH	15	0	20.69	2
		1	0	21.32	1
		1	7	21.55	1
		1	14	21.30	1
		8	0	20.69	2
		8	4	20.78	2
		8	7	20.52	2
		15	0	20.39	2

Channel Bandwidth: 5 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	22.24	0
		1	12	22.57	0
		1	24	22.33	0
		12	0	21.29	1
		12	6	21.36	1
		12	13	21.31	1
		25	0	21.36	1
	MCH	1	0	22.16	0
		1	12	22.58	0
		1	24	22.19	0
		12	0	21.24	1
		12	6	21.29	1
		12	13	21.23	1
		25	0	21.29	1
	HCH	1	0	22.06	0
		1	12	22.43	0
		1	24	22.06	0
		12	0	21.13	1
		12	6	21.16	1
		12	13	21.03	1
		25	0	21.14	1
16QAM	LCH	1	0	21.52	1
		1	12	21.93	1
		1	24	21.59	1
		12	0	20.43	2
		12	6	20.51	2
		12	13	20.45	2
		25	0	20.40	2
	MCH	1	0	21.50	1
		1	12	21.87	1
		1	24	21.52	1



		12	0	20.49	2
		12	6	20.48	2
		12	13	20.77	2
		25	0	20.76	2
	HCH	1	0	21.20	1
		1	12	21.54	1
		1	24	21.23	1
		12	0	20.66	2
		12	6	20.63	2
		12	13	20.99	2
		25	0	20.79	2

Channel Bandwidth: 10 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	22.25	0
		1	24	22.52	0
		1	49	22.26	0
		25	0	21.38	1
		25	12	21.43	1
		25	25	21.48	1
		50	0	21.41	1
	MCH	1	0	22.26	0
		1	24	22.37	0
		1	49	22.16	0
		25	0	21.37	1
		25	12	21.27	1
		25	25	21.24	1
		50	0	21.34	1
	HCH	1	0	22.11	0
		1	24	22.26	0
		1	49	22.08	0
		25	0	21.21	1
		25	12	21.14	1
		25	25	21.07	1
		50	0	21.12	1
16QAM	LCH	1	0	21.53	1
		1	24	21.81	1
		1	49	21.57	1
		25	0	20.44	2
		25	12	20.46	2
		25	25	20.51	2
		50	0	20.47	2

	MCH	1	0	21.69	1
		1	24	21.83	1
		1	49	21.56	1
		25	0	20.45	2
		25	12	20.77	2
		25	25	20.63	2
		50	0	20.43	2
	HCH	1	0	21.83	1
		1	24	21.50	1
		1	49	21.31	1
		25	0	20.74	2
		25	12	20.86	2
		25	25	20.91	2
		50	0	20.17	2

Channel Bandwidth: 15 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	22.27	0
		1	37	22.60	0
		1	74	22.26	0
		37	0	21.41	1
		37	18	21.41	1
		37	38	21.41	1
		75	0	21.45	1
	MCH	1	0	22.25	0
		1	37	22.39	0
		1	74	22.03	0
		37	0	21.37	1
		37	18	21.28	1
		37	38	21.20	1
		75	0	21.31	1
	HCH	1	0	22.14	0
		1	37	22.26	0
		1	74	22.06	0
		37	0	21.11	1
		37	18	21.19	1
		37	38	21.11	1
		75	0	21.13	1
16QAM	LCH	1	0	21.55	1
		1	37	21.83	1
		1	74	21.55	1
		37	0	20.38	2

		37	18	20.47	2
		37	38	20.44	2
		75	0	20.48	2
	MCH	1	0	21.59	1
		1	37	21.66	1
		1	74	21.36	1
		37	0	20.41	2
		37	18	20.38	2
		37	38	20.78	2
		75	0	20.85	2
	HCH	1	0	21.38	1
		1	37	21.55	1
		1	74	21.29	1
		37	0	20.85	2
37		18	20.91	2	
37		38	20.74	2	
75		0	20.95	2	

Channel Bandwidth: 20 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	22.96	0
		1	49	22.64	0
		1	99	22.27	0
		50	0	21.73	1
		50	25	21.41	1
		50	50	21.35	1
		100	0	21.31	1
	MCH	1	0	22.30	0
		1	49	22.44	0
		1	99	22.03	0
		50	0	21.42	1
		50	25	21.37	1
		50	50	21.16	1
		100	0	21.25	1
	HCH	1	0	21.95	0
		1	49	22.19	0
		1	99	21.93	0
		50	0	21.11	1
		50	25	21.12	1
		50	50	20.99	1
		100	0	21.01	1
16QAM	LCH	1	0	21.53	1

		1	49	21.80	1
		1	99	21.47	1
		50	0	20.38	2
		50	25	20.44	2
		50	50	20.51	2
		100	0	20.61	2
	MCH	1	0	21.64	1
		1	49	21.85	1
		1	99	21.40	1
		50	0	20.49	2
		50	25	20.44	2
		50	50	20.86	2
	HCH	100	0	20.91	2
		1	0	21.32	1
		1	49	21.47	1
		1	99	21.18	1
		50	0	20.84	2
		50	25	20.99	2
		50	50	20.73	2
	100	0	20.89	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	22.90	0
		1	3	23.06	0
		1	5	22.96	0
		3	0	22.08	0
		3	2	22.12	0
		3	3	22.09	0
		6	0	22.02	1
	MCH	1	0	23.65	0
		1	3	23.74	0
		1	5	23.61	0
		3	0	22.54	0
		3	2	22.51	0
		3	3	22.57	0
		6	0	22.62	1
	HCH	1	0	23.52	0
		1	3	23.74	0
		1	5	23.57	0
		3	0	22.66	0
		3	2	22.51	0
		3	3	22.66	0
		6	0	22.62	1
16QAM	LCH	1	0	22.27	1
		1	3	22.44	1
		1	5	22.32	1
		3	0	22.26	1
		3	2	22.27	1
		3	3	22.22	1
		6	0	21.04	2
	MCH	1	0	22.05	1
		1	3	22.22	1
		1	5	22.03	1
		3	0	22.74	1
		3	2	22.77	1
		3	3	22.76	1
		6	0	21.59	2
HCH	1	0	22.86	1	
	1	3	22.07	1	

		1	5	22.82	1
		3	0	22.72	1
		3	2	22.74	1
		3	3	22.75	1
		6	0	21.72	2

Channel Bandwidth: 3 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	23.23	0
		1	7	23.51	0
		1	14	23.30	0
		8	0	22.22	1
		8	4	22.30	1
		8	7	22.25	1
		15	0	22.24	1
	MCH	1	0	23.29	0
		1	7	23.52	0
		1	14	23.31	0
		8	0	22.35	1
		8	4	22.39	1
		8	7	22.33	1
		15	0	22.31	1
	HCH	1	0	23.57	0
		1	7	23.75	0
		1	14	23.49	0
		8	0	22.55	1
		8	4	22.60	1
		8	7	22.51	1
		15	0	22.51	1
16QAM	LCH	1	0	22.55	1
		1	7	22.75	1
		1	14	22.48	1
		8	0	21.31	2
		8	4	21.36	2
		8	7	21.28	2
		15	0	21.21	2
	MCH	1	0	22.77	1
		1	7	22.97	1
		1	14	22.79	1
		8	0	21.36	2
		8	4	21.37	2
		8	7	21.30	2

	HCH	15	0	21.31	2
		1	0	22.85	1
		1	7	22.08	1
		1	14	22.74	1
		8	0	21.51	2
		8	4	21.56	2
		8	7	21.45	2
		15	0	21.52	2

Channel Bandwidth: 5 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	23.10	0
		1	12	23.57	0
		1	24	23.15	0
		12	0	22.19	1
		12	6	22.24	1
		12	13	22.17	1
		25	0	22.23	1
	MCH	1	0	23.20	0
		1	12	23.63	0
		1	24	23.23	0
		12	0	22.20	1
		12	6	22.33	1
		12	13	22.24	1
		25	0	22.30	1
	HCH	1	0	23.43	0
		1	12	23.68	0
		1	24	23.41	0
		12	0	22.48	1
		12	6	22.56	1
		12	13	22.48	1
		25	0	22.53	1
16QAM	LCH	1	0	22.40	1
		1	12	22.90	1
		1	24	22.39	1
		12	0	21.30	2
		12	6	21.32	2
		12	13	21.24	2
		25	0	21.25	2
	MCH	1	0	22.43	1
		1	12	22.75	1
		1	24	22.50	1

		12	0	21.36	2
		12	6	21.45	2
		12	13	21.37	2
		25	0	21.29	2
	HCH	1	0	22.61	1
		1	12	22.54	1
		1	24	22.58	1
		12	0	21.50	2
		12	6	21.58	2
		12	13	21.51	2
		25	0	21.57	2

Channel Bandwidth: 10 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	23.11	0
		1	24	23.32	0
		1	49	23.17	0
		25	0	22.25	1
		25	12	22.18	1
		25	25	22.27	1
		50	0	22.27	1
	MCH	1	0	23.20	0
		1	24	23.38	0
		1	49	23.20	0
		25	0	22.27	1
		25	12	22.24	1
		25	25	22.26	1
		50	0	22.23	1
	HCH	1	0	23.35	0
		1	24	23.58	0
		1	49	23.45	0
		25	0	22.44	1
		25	12	22.44	1
		25	25	22.49	1
		50	0	22.38	1
16QAM	LCH	1	0	22.41	1
		1	24	22.59	1
		1	49	22.44	1
		25	0	21.28	2
		25	12	21.22	2
		25	25	21.25	2
		50	0	21.26	2



	MCH	1	0	22.59	1
		1	24	22.82	1
		1	49	22.65	1
		25	0	21.28	2
		25	12	21.29	2
		25	25	21.30	2
		50	0	21.25	2
	HCH	1	0	22.63	1
		1	24	22.81	1
		1	49	22.64	1
		25	0	21.44	2
		25	12	21.36	2
		25	25	21.51	2
		50	0	21.37	2

Channel Bandwidth: 15 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	23.05	0
		1	37	23.25	0
		1	74	22.91	0
		37	0	22.03	1
		37	18	22.09	1
		37	38	22.04	1
		75	0	22.16	1
	MCH	1	0	23.05	0
		1	37	23.25	0
		1	74	23.12	0
		37	0	22.12	1
		37	18	22.16	1
		37	38	22.21	1
		75	0	22.21	1
	HCH	1	0	23.16	0
		1	37	23.61	0
		1	74	23.29	0
		37	0	22.31	1
		37	18	22.23	1
		37	38	22.29	1
		75	0	22.11	1
16QAM	LCH	1	0	22.33	1
		1	37	22.57	1
		1	74	22.21	1
		37	0	21.13	2

		37	18	21.12	2
		37	38	21.12	2
		75	0	21.12	2
	MCH	1	0	22.38	1
		1	37	22.67	1
		1	74	22.42	1
		37	0	21.17	2
		37	18	21.19	2
		37	38	21.23	2
		75	0	21.19	2
	HCH	1	0	22.42	1
		1	37	22.76	1
		1	74	22.40	1
		37	0	21.27	2
37		18	21.16	2	
37		38	21.34	2	
75		0	21.25	2	

Channel Bandwidth: 20 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	23.77	0
		1	49	23.23	0
		1	99	22.85	0
		50	0	22.71	1
		50	25	22.13	1
		50	50	22.09	1
		100	0	22.07	1
	MCH	1	0	22.96	0
		1	49	23.29	0
		1	99	23.04	0
		50	0	22.04	1
		50	25	22.12	1
		50	50	22.06	1
		100	0	21.99	1
	HCH	1	0	22.93	0
		1	49	23.29	0
		1	99	23.12	0
		50	0	22.34	1
		50	25	22.29	1
		50	50	22.22	1
		100	0	22.27	1
16QAM	LCH	1	0	21.91	1

		1	49	22.51	1
		1	99	22.14	1
		50	0	21.09	2
		50	25	21.10	2
		50	50	21.09	2
		100	0	21.04	2
	MCH	1	0	22.32	1
		1	49	22.67	1
		1	99	22.43	1
		50	0	21.08	2
		50	25	21.15	2
		50	50	21.13	2
	HCH	100	0	21.02	2
		1	0	22.29	1
		1	49	22.63	1
		1	99	22.43	1
		50	0	21.36	2
		50	25	21.30	2
		50	50	21.24	2
	100	0	21.26	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	22.98	0
		1	3	22.97	0
		1	5	22.80	0
		3	0	22.35	0
		3	2	22.33	0
		3	3	22.34	0
		6	0	21.92	1
	MCH	1	0	23.11	0
		1	3	23.17	0
		1	5	23.14	0
		3	0	22.21	0
		3	2	22.19	0
		3	3	22.13	0
		6	0	22.19	1
	HCH	1	0	23.39	0
		1	3	23.04	0
		1	5	22.92	0
		3	0	22.38	0
		3	2	22.38	0
		3	3	22.37	0
		6	0	21.96	1
16QAM	LCH	1	0	22.03	1
		1	3	22.34	1
		1	5	22.04	1
		3	0	21.79	1
		3	2	21.99	1
		3	3	22.13	1
		6	0	21.04	2
	MCH	1	0	22.54	1
		1	3	22.62	1
		1	5	22.51	1
		3	0	22.19	1
		3	2	22.25	1
		3	3	22.25	1
		6	0	21.13	2
	HCH	1	0	22.18	1
		1	3	22.37	1
		1	5	22.13	1

		3	0	22.03	1
		3	2	22.03	1
		3	3	22.03	1
		6	0	21.03	2

Channel Bandwidth: 3 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	22.71	0
		1	7	22.62	0
		1	14	22.58	0
		8	0	21.80	1
		8	4	21.90	1
		8	7	21.96	1
		15	0	21.95	1
	MCH	1	0	23.12	0
		1	7	23.36	0
		1	14	23.11	0
		8	0	22.09	1
		8	4	22.19	1
		8	7	22.16	1
		15	0	22.14	1
	HCH	1	0	23.31	0
		1	7	23.37	0
		1	14	22.87	0
		8	0	21.95	1
		8	4	21.93	1
		8	7	21.86	1
		15	0	21.88	1
16QAM	LCH	1	0	21.79	1
		1	7	22.13	1
		1	14	22.00	1
		8	0	21.04	2
		8	4	21.09	2
		8	7	21.05	2
		15	0	20.96	2
	MCH	1	0	22.52	1
		1	7	22.76	1
		1	14	22.56	1
		8	0	21.11	2
		8	4	21.19	2
		8	7	21.13	2
		15	0	21.11	2

	HCH	1	0	22.16	1
		1	7	22.41	1
		1	14	22.16	1
		8	0	20.81	2
		8	4	20.91	2
		8	7	20.87	2
		15	0	20.82	2

Channel Bandwidth: 5 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	22.58	0
		1	12	22.86	0
		1	24	22.61	0
		12	0	21.78	1
		12	6	21.73	1
		12	13	21.71	1
		25	0	22.00	1
	MCH	1	0	23.03	0
		1	12	23.30	0
		1	24	23.05	0
		12	0	22.09	1
		12	6	22.18	1
		12	13	22.14	1
		25	0	22.19	1
	HCH	1	0	23.21	0
		1	12	23.34	0
		1	24	22.91	0
		12	0	22.04	1
		12	6	21.96	1
		12	13	21.80	1
		25	0	21.92	1
16QAM	LCH	1	0	21.72	1
		1	12	22.04	1
		1	24	21.81	1
		12	0	21.03	2
		12	6	21.03	2
		12	13	21.05	2
		25	0	20.99	2
	MCH	1	0	22.22	1
		1	12	22.72	1
		1	24	22.26	1
		12	0	21.26	2

		12	6	21.31	2
		12	13	21.27	2
		25	0	21.21	2
	HCH	1	0	22.02	1
		1	12	22.44	1
		1	24	22.08	1
		12	0	20.84	2
		12	6	21.09	2
		12	13	20.99	2
		25	0	21.09	2

Channel Bandwidth: 10 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	22.57	0
		1	24	22.79	0
		1	49	22.60	0
		25	0	21.97	1
		25	12	22.00	1
		25	25	22.13	1
		50	0	22.02	1
	MCH	1	0	22.81	0
		1	24	22.92	0
		1	49	22.86	0
		25	0	22.10	1
		25	12	22.13	1
		25	25	22.21	1
		50	0	22.17	1
	HCH	1	0	23.20	0
		1	24	23.52	0
		1	49	23.19	0
		25	0	22.31	1
		25	12	22.52	1
		25	25	22.13	1
		50	0	22.21	1
16QAM	LCH	1	0	21.84	1
		1	24	22.00	1
		1	49	21.85	1
		25	0	21.09	2
		25	12	21.13	2
		25	25	21.20	2
		50	0	21.16	2
	MCH	1	0	22.14	1

		1	24	22.41	1
		1	49	22.37	1
		25	0	21.22	2
		25	12	21.23	2
		25	25	21.24	2
		50	0	21.21	2
	HCH	1	0	22.22	1
		1	24	22.72	1
		1	49	22.26	1
		25	0	21.47	2
		25	12	21.42	2
		25	25	21.23	2
		50	0	21.21	2



**FDD-LTE Band 7:**

Channel Bandwidth: 5 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	22.67	0
		1	12	22.91	0
		1	24	22.69	0
		12	0	21.21	1
		12	6	21.43	1
		12	13	21.36	1
		25	0	21.27	1
	MCH	1	0	22.53	0
		1	12	22.90	0
		1	24	22.57	0
		12	0	21.57	1
		12	6	21.65	1
		12	13	21.63	1
		25	0	21.67	1
	HCH	1	0	22.80	0
		1	12	23.14	0
		1	24	22.83	0
		12	0	21.83	1
		12	6	21.86	1
		12	13	21.82	1
		25	0	21.87	1
16QAM	LCH	1	0	21.89	1
		1	12	22.01	1
		1	24	21.75	1
		12	0	20.79	2
		12	6	20.86	2
		12	13	20.78	2
		25	0	20.69	2
	MCH	1	0	21.81	1
		1	12	22.09	1
		1	24	21.82	1
		12	0	20.68	2
		12	6	20.73	2
		12	13	20.70	2
		25	0	20.63	2
	HCH	1	0	21.93	1
		1	12	22.29	1
		1	24	21.99	1

		12	0	20.87	2
		12	6	20.89	2
		12	13	20.85	2
		25	0	20.92	2

Channel Bandwidth: 10 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	22.19	0
		1	24	22.43	0
		1	49	22.22	0
		25	0	21.23	1
		25	12	21.37	1
		25	25	21.45	1
		50	0	21.35	1
	MCH	1	0	22.54	0
		1	24	22.76	0
		1	49	22.58	0
		25	0	21.62	1
		25	12	21.66	1
		25	25	21.75	1
		50	0	21.68	1
	HCH	1	0	22.79	0
		1	24	22.99	0
		1	49	22.82	0
		25	0	21.87	1
		25	12	21.81	1
		25	25	21.87	1
		50	0	21.83	1
16QAM	LCH	1	0	21.49	1
		1	24	21.70	1
		1	49	21.54	1
		25	0	20.98	2
		25	12	20.73	2
		25	25	20.85	2
		50	0	20.64	2
	MCH	1	0	21.97	1
		1	24	22.16	1
		1	49	22.00	1
		25	0	20.63	2
		25	12	20.66	2
		25	25	20.79	2
		50	0	20.73	2

	HCH	1	0	22.08	1
		1	24	22.22	1
		1	49	22.02	1
		25	0	20.89	2
		25	12	20.85	2
		25	25	20.92	2
		50	0	20.86	2

Channel Bandwidth: 15 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	22.16	0
		1	37	22.41	0
		1	74	22.17	0
		37	0	21.24	1
		37	18	21.38	1
		37	38	21.37	1
		75	0	21.35	1
	MCH	1	0	22.47	0
		1	37	22.77	0
		1	74	22.56	0
		37	0	21.58	1
		37	18	21.63	1
		37	38	21.66	1
		75	0	21.65	1
	HCH	1	0	22.75	0
		1	37	23.06	0
		1	74	22.79	0
		37	0	21.82	1
		37	18	21.82	1
		37	38	21.81	1
		75	0	21.82	1
16QAM	LCH	1	0	21.47	1
		1	37	21.75	1
		1	74	21.48	1
		37	0	20.87	2
		37	18	20.89	2
		37	38	20.87	2
		75	0	20.64	2
	MCH	1	0	21.84	1
		1	37	22.17	1
		1	74	21.85	1
		37	0	20.63	2

		37	18	20.68	2
		37	38	20.74	2
		75	0	20.66	2
	HCH	1	0	22.04	1
		1	37	22.26	1
		1	74	22.00	1
		37	0	20.84	2
		37	18	20.83	2
		37	38	20.81	2
		75	0	20.86	2

Channel Bandwidth: 20 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	23.16	0
		1	49	22.59	0
		1	99	22.34	0
		50	0	21.21	1
		50	25	21.41	1
		50	50	21.26	1
		100	0	21.21	1
	MCH	1	0	23.11	0
		1	49	22.79	0
		1	99	22.55	0
		50	0	21.54	1
		50	25	21.66	1
		50	50	21.73	1
		100	0	21.60	1
	HCH	1	0	22.50	0
		1	49	23.22	0
		1	99	22.58	0
		50	0	21.90	1
		50	25	21.95	1
		50	50	21.79	1
		100	0	21.79	1
16QAM	LCH	1	0	21.46	1
		1	49	21.72	1
		1	99	21.52	1
		50	0	20.97	2
		50	25	20.84	2
		50	50	20.58	2
		100	0	20.97	2
	MCH	1	0	21.82	1

		1	49	22.20	1
		1	99	21.90	1
		50	0	20.97	2
		50	25	20.69	2
		50	50	20.79	2
		100	0	20.98	2
	HCH	1	0	21.85	1
		1	49	22.16	1
		1	99	21.92	1
		50	0	20.85	2
		50	25	20.85	2
		50	50	20.78	2
		100	0	20.76	2

**FDD-LTE Band 17:**

Channel Bandwidth: 5 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	22.73	0
		1	12	23.07	0
		1	24	22.73	0
		12	0	21.64	1
		12	6	21.69	1
		12	13	21.71	1
		25	0	21.80	1
	MCH	1	0	22.64	0
		1	12	22.71	0
		1	24	22.30	0
		12	0	21.52	1
		12	6	21.61	1
		12	13	21.63	1
		25	0	21.63	1
	HCH	1	0	22.54	0
		1	12	22.73	0
		1	24	22.26	0
		12	0	21.33	1
		12	6	21.39	1
		12	13	21.11	1
		25	0	21.36	1
16QAM	LCH	1	0	21.93	1
		1	12	22.30	1
		1	24	21.98	1
		12	0	20.76	2
		12	6	20.89	2
		12	13	20.86	2
		25	0	20.90	2
	MCH	1	0	21.60	1
		1	12	21.94	1
		1	24	21.40	1
		12	0	20.67	2
		12	6	20.65	2
		12	13	20.72	2
		25	0	20.89	2
	HCH	1	0	21.39	1
		1	12	21.65	1
		1	24	21.37	1

		12	0	20.59	2
		12	6	20.82	2
		12	13	20.61	2
		25	0	20.57	2

Channel Bandwidth: 10 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	MPR (dB)
		Size	Offset		
QPSK	LCH	1	0	22.72	0
		1	24	23.11	0
		1	49	22.24	0
		25	0	21.58	1
		25	12	21.75	1
		25	25	21.52	1
		50	0	21.73	1
	MCH	1	0	22.69	0
		1	24	22.65	0
		1	49	22.34	0
		25	0	21.64	1
		25	12	21.45	1
		25	25	21.53	1
		50	0	21.54	1
	HCH	1	0	22.70	0
		1	24	22.69	0
		1	49	22.46	0
		25	0	21.71	1
		25	12	21.35	1
		25	25	21.46	1
		50	0	21.76	1
16QAM	LCH	1	0	21.62	1
		1	24	21.83	1
		1	49	21.48	1
		25	0	20.76	2
		25	12	20.68	2
		25	25	20.60	2
		50	0	20.73	2
	MCH	1	0	21.84	1
		1	24	22.07	1
		1	49	21.56	1
		25	0	20.83	2
		25	12	20.87	2
		25	25	20.78	2
		50	0	20.87	2

HCH	1	0	21.71	1
	1	24	21.77	1
	1	49	21.60	1
	25	0	20.81	2
	25	12	20.77	2
	25	25	20.70	2
	50	0	20.78	2

**Remark:**

- 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  $\leq 0.8$  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.
- 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.
- 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  $\leq 0.8$  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.
- 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  $> \frac{1}{2}$  dB higher than the same configuration in QPSK or when the reported SAR for the QPSK configuration is  $> 1.45$  W/kg.



WLAN(2.4G) - Maximum Average Power					
Test Mode	Data Rate	Channel	Frequency (MHz)	Average Power (dBm)	Tune-up power (dBm)
802.11b	1Mbps	CH 01	2412	14.65	15.0
		CH 06	2437	13.96	15.0
		CH 11	2462	13.76	15.0
802.11g	6Mbps	CH 01	2412	13.15	13.5
		CH 06	2437	13.15	13.5
		CH 11	2462	12.65	13.5
802.11n (20MHz)	MCS0	CH 01	2412	12.00	13.
		CH 06	2437	11.70	13.
		CH 11	2462	12.96	13.
802.11n (40MHz)	MCS0	CH 03	2422	11.47	12.0
		CH 06	2437	11.84	12.0
		CH 09	2452	11.64	12.0

WLAN(5.2G)- Maximum Average Power				
Test Mode	Channel	Frequency	Average Power	Tune-up power
		(MHz)	(dBm)	(dBm)
802.11a	CH 36	5180	10.75	11.5
	CH 40	5200	11.19	11.5
	CH 48	5240	10.79	11.5
802.11n-20	CH 36	5180	10.35	11.0
	CH 40	5200	10.81	11.0
	CH 48	5240	10.76	11.0
802.11n -40	CH 38	5190	10.18	11.0
	CH46	5230	10.62	11.0

WLAN(5.8G) - Maximum Average Power				
Test Mode	Channel	Frequency	Average Power	Tune-up power
		(MHz)	(dBm)	(dBm)
802.11a	CH149	5745	10.47	10.5
	CH157	5785	9.67	10.5
	CH165	5825	10.07	10.5
802.11n-20	CH149	5745	9.24	10.0
	CH157	5785	9.20	10.0
	CH165	5825	9.66	10.0
802.11n -40	CH151	5755	9.38	9.5
	CH159	5795	8.93	9.5

**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  $\leq 0.8$  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  $\leq 1.2$ W/kg.
4. Per KDB 248227 D01 v02r02, When multiple channel bandwidth configurations in a frequency band have the same specified maximum output power, the initial test configuration is determined by applying the following steps sequentially.
  - 1) The largest channel bandwidth configuration is selected among the multiple configurations in a frequency band with the same specified maximum output power.
  - 2) If multiple configurations have the same specified maximum output power and largest channel bandwidth, the lowest order modulation among the largest channel bandwidth configurations is selected.
  - 3) If multiple configurations have the same specified maximum output power, largest channel bandwidth and lowest order modulation, the lowest data rate configuration among these configurations is selected.
  - 4) When multiple transmission modes (802.11a/g/n/ac) have the same specified maximum output power, largest channel bandwidth, lowest order modulation and lowest data rate, the lowest order 802.11 mode is selected; i.e., 802.11a is chosen over 802.11n then 802.11ac or 802.11g is chosen over 802.11n.

Bluetooth - Maximum Average Power			
Test Mode	Data Rate	Average Power(dBm)	Tune-up power (dBm)
GFSK	1Mbps	3.819	4.0
Pi/4 QDPSK	2Mbps	1.360	4.0
8DPSK	3Mbps	0.207	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	3.820	4.0
		CH 19	2440	1.178	4.0
		CH 39	2480	0.208	4.0

**Remark:**

Bluetooth maximum output power is 3.820dBm 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  $\leq 50$  mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$  for 1-g SAR and  $\leq 7.5$  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 calculation<sup>17</sup>
- The result is rounded to one decimal place for comparison

Bluetooth:

Tune-Up Power (dBm)	Max. Power (mW)	Distance (mm)	Frequency (GHz)	Result	Limit
4.0	2.51	5	2.402	0.778	3

The exclusion thresholds is  $0.778 < 3$ , 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	251	848.8	31.28	31.5	1.052	0.493	0.519
2.	GSM	Right Tilted	251	848.8	31.28	31.5	1.052	0.237	0.249
3.	GSM	Left Cheek	251	848.8	31.28	31.5	1.052	0.637	0.670
4.	GSM	Left Tilted	251	848.8	31.28	31.5	1.052	0.315	0.331

GSM1900 – Head SAR Test Ant 1									
Plot No.	Mode	Test Position Head	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	M Hz					
5.	GSM	Right Cheek	512	1850.2	29.75	30.0	1.059	0.230	0.244
6.	GSM	Right Tilted	512	1850.2	29.75	30.0	1.059	0.116	0.123
7.	GSM	Left Cheek	512	1850.2	29.75	30.0	1.059	0.132	0.140
8.	GSM	Left Tilted	512	1850.2	29.75	30.0	1.059	0.077	0.082

GSM1900 – Head SAR Test Ant 2									
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					
9.	GSM	Right Cheek	512	1850.2	29.75	30.0	1.059	0.122	0.129
10.	GSM	Right Tilted	512	1850.2	29.75	30.0	1.059	0.065	0.069
11.	GSM	Left Cheek	512	1850.2	29.75	30.0	1.059	0.372	0.394
12.	GSM	Left Tilted	512	1850.2	29.75	30.0	1.059	0.181	0.192

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					
13.	GPRS_2TX	Right Cheek	251	848.8	30.37	30.5	1.030	0.663	0.683
14.	GPRS_2TX	Right Tilted	251	848.8	30.37	30.5	1.030	0.336	0.346
15.	GPRS_2TX	Left Cheek	251	848.8	30.37	30.5	1.030	0.911	0.939
16.	GPRS_2TX	Left Cheek	128	824.2	30.23	30.5	1.064	0.599	0.637
17.	GPRS_2TX	Left Cheek	190	836.6	30.33	30.5	1.040	0.813	0.845
18.	GPRS_2TX	Left Tilted	251	848.8	30.37	30.5	1.030	0.453	0.467

GPRS1900 – Head SAR Test Ant 1									
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					
19.	GPRS_2TX	Right Cheek	512	1850.2	29.02	29.5	1.117	0.197	0.220
20.	GPRS_2TX	Right Tilted	512	1850.2	29.02	29.5	1.117	0.109	0.122
21.	GPRS_2TX	Left Cheek	512	1850.2	29.02	29.5	1.117	0.251	0.280
22.	GPRS_2TX	Left Tilted	512	1850.2	29.02	29.5	1.117	0.126	0.141

GPRS1900 – Head SAR Test Ant 2									
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					
23.	GPRS_4TX	Right Cheek	512	1850.2	29.02	29.5	1.117	0.227	0.254
24.	GPRS_4TX	Right Tilted	512	1850.2	29.02	29.5	1.117	0.119	0.133
25.	GPRS_4TX	Left Cheek	512	1850.2	29.02	29.5	1.117	0.677	0.756
26.	GPRS_4TX	Left Tilted	512	1850.2	29.02	29.5	1.117	0.329	0.367

WCDMA Band 2 – Head SAR Test Ant 1									
Plot No.	Mode	Test Position Head	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
27.	RMC	Right Cheek	9538	1907.6	21.33	21.5	1.040	0.148	0.154
28.	RMC	Right Tilted	9538	1907.6	21.33	21.5	1.040	0.073	0.076
29.	RMC	Left Cheek	9538	1907.6	21.33	21.5	1.040	0.220	0.229
30.	RMC	Left Tilted	9538	1907.6	21.33	21.5	1.040	0.119	0.124

WCDMA Band 2 – Head SAR Test Ant 2									
Plot No.	Mode	Test Position Head	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
31.	RMC	Right Cheek	9538	1907.6	21.33	21.5	1.040	0.224	0.233
32.	RMC	Right Tilted	9538	1907.6	21.33	21.5	1.040	0.128	0.133
33.	RMC	Left Cheek	9538	1907.6	21.33	21.5	1.040	0.596	0.620
34.	RMC	Left Tilted	9538	1907.6	21.33	21.5	1.040	0.336	0.349

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					
35.	RMC	Right Cheek	4132	826.4	22.51	23.0	1.119	0.248	0.278
36.	RMC	Right Tilted	4132	826.4	22.51	23.0	1.119	0.125	0.140
37.	RMC	Left Cheek	4132	826.4	22.51	23.0	1.119	0.346	0.387
38.	RMC	Left Tilted	4132	826.4	22.51	23.0	1.119	0.173	0.194

WCDMA Band 4 – Head SAR Test Ant 1									
Plot No.	Mode	Test Position Head	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
39.	RMC	Right Cheek	1312	1712.4	21.63	22.0	1.089	0.212	0.231
40.	RMC	Right Tilted	1312	1712.4	21.63	22.0	1.089	0.118	0.128
41.	RMC	Left Cheek	1312	1712.4	21.63	22.0	1.089	0.201	0.219
42.	RMC	Left Tilted	1312	1712.4	21.63	22.0	1.089	0.109	0.119

WCDMA Band 4 – Head SAR Test Ant 2									
Plot No.	Mode	Test Position Head	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
43.	RMC	Right Cheek	1312	1712.4	21.63	22.0	1.089	0.300	0.327
44.	RMC	Right Tilted	1312	1712.4	21.63	22.0	1.089	0.157	0.171
45.	RMC	Left Cheek	1312	1712.4	21.63	22.0	1.089	0.734	0.799
46.	RMC	Left Tilted	1312	1712.4	21.63	22.0	1.089	0.336	0.366

LTE Band 2– Head SAR Test									
Plot No.	Mode	Test Position Head	Frequency MHz	Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)	
	Modulation, Bandwidth, RB								
47.	QPSK 20MHz 1RB	Right Cheek	1860.0	22.96	23.0	1.009	0.140	0.141	
48.	QPSK 20MHz 1RB	Right Tilted	1860.0	22.96	23.0	1.009	0.071	0.072	
49.	QPSK 20MHz 1RB	Left Cheek	1860.0	22.96	23.0	1.009	0.171	0.173	
50.	QPSK 20MHz 1RB	Left Tilted	1860.0	22.96	23.0	1.009	0.092	0.093	
51.	QPSK 20MHz 50%RB	Right Cheek	1860.0	22.96	23.0	1.009	0.068	0.069	
52.	QPSK 20MHz 50%RB	Right Tilted	1860.0	22.96	23.0	1.009	0.035	0.035	
53.	QPSK 20MHz 50%RB	Left Cheek	1860.0	22.96	23.0	1.009	0.088	0.089	
54.	QPSK 20MHz 50%RB	Left Tilted	1860.0	22.96	23.0	1.009	0.042	0.042	

LTE Band 4– Head SAR Test Ant 1								
Plot No.	Mode	Test Position Head	Freque ncy	Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth, RB		MHz					
55.	QPSK 20MHz 1RB	Right Cheek	1720.0	23.77	24.0	1.054	0.246	0.259
56.	QPSK 20MHz 1RB	Right Tilted	1720.0	23.77	24.0	1.054	0.125	0.132
57.	QPSK 20MHz 1RB	Left Cheek	1720.0	23.77	24.0	1.054	0.200	0.211
58.	QPSK 20MHz 1RB	Left Tilted	1720.0	23.77	24.0	1.054	0.113	0.119
59.	QPSK 20MHz 50%RB	Right Cheek	1720.0	23.77	24.0	1.054	0.119	0.125
60.	QPSK 20MHz 50%RB	Right Tilted	1720.0	23.77	24.0	1.054	0.065	0.069
61.	QPSK 20MHz 50%RB	Left Cheek	1720.0	23.77	24.0	1.054	0.109	0.115
62.	QPSK 20MHz 50%RB	Left Tilted	1720.0	23.77	24.0	1.054	0.057	0.060

LTE Band 4– Head SAR Test Ant 2								
Plot No.	Mode	Test Position Head	Freque ncy	Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth, RB		MHz					
63.	QPSK 20MHz 1RB	Right Cheek	1720.0	23.77	24.0	1.054	0.380	0.401
64.	QPSK 20MHz 1RB	Right Tilted	1720.0	23.77	24.0	1.054	0.162	0.171
65.	QPSK 20MHz 1RB	Left Cheek	1720.0	23.77	24.0	1.054	0.887	0.935
66.	QPSK 20MHz 1RB	Left Cheek	1732.5	23.29	24.0	1.178	0.831	0.979
67.	QPSK 20MHz 1RB	Left Cheek	1745.0	23.29	24.0	1.178	0.848	0.999
68.	QPSK 20MHz 1RB	Left Tilted	1720.0	23.77	24.0	1.054	0.438	0.462
69.	QPSK 20MHz 50%RB	Right Cheek	1720.0	23.77	24.0	1.054	0.159	0.168
70.	QPSK 20MHz 50%RB	Right Tilted	1720.0	23.77	24.0	1.054	0.088	0.093
71.	QPSK 20MHz 50%RB	Left Cheek	1720.0	23.77	24.0	1.054	0.426	0.449
72.	QPSK 20MHz 50%RB	Left Tilted	1720.0	23.77	24.0	1.054	0.219	0.231

LTE Band 5– Head SAR Test Ant 1								
Plot No.	Mode	Test Position Head	Freque ncy	Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth		MHz					
73.	QPSK 10MHz 1RB	Right Cheek	844.0	23.52	24.0	1.117	0.310	0.346
74.	QPSK 10MHz 1RB	Right Tilted	844.0	23.52	24.0	1.117	0.159	0.178
75.	QPSK 10MHz 1RB	Left Cheek	844.0	23.52	24.0	1.117	0.423	0.472
76.	QPSK 10MHz 1RB	Left Tilted	844.0	23.52	24.0	1.117	0.213	0.238
77.	QPSK 10MHz 50%RB	Right Cheek	844.0	23.52	24.0	1.117	0.155	0.173
78.	QPSK 10MHz 50%RB	Right Tilted	844.0	23.52	24.0	1.117	0.081	0.090
79.	QPSK 10MHz 50%RB	Left Cheek	844.0	23.52	24.0	1.117	0.207	0.231
80.	QPSK 10MHz 50%RB	Left Tilted	844.0	23.52	24.0	1.117	0.108	0.121

LTE Band 5– Head SAR Test Ant 2								
Plot No.	Mode	Test Position Head	Freque ncy	Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth		MHz					
81.	QPSK 10MHz 1RB	Right Cheek	844.0	23.52	24.0	1.117	0.073	0.082
82.	QPSK 10MHz 1RB	Right Tilted	844.0	23.52	24.0	1.117	0.039	0.044
83.	QPSK 10MHz 1RB	Left Cheek	844.0	23.52	24.0	1.117	0.116	0.130
84.	QPSK 10MHz 1RB	Left Tilted	844.0	23.52	24.0	1.117	0.055	0.061
85.	QPSK 10MHz 50%RB	Right Cheek	844.0	23.52	24.0	1.117	0.036	0.040
86.	QPSK 10MHz 50%RB	Right Tilted	844.0	23.52	24.0	1.117	0.019	0.021
87.	QPSK 10MHz 50%RB	Left Cheek	844.0	23.52	24.0	1.117	0.057	0.064
88.	QPSK 10MHz 50%RB	Left Tilted	844.0	23.52	24.0	1.117	0.028	0.031

LTE Band 7– Head SAR Test Ant 1								
Plot No.	Mode	Test Position Head	Freque ncy	Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth		MHz					
89.	QPSK 20MHz 1RB	Right Cheek	2560.0	23.22	23.5	1.067	0.332	0.354
90.	QPSK 20MHz 1RB	Right Tilted	2560.0	23.22	23.5	1.067	0.162	0.173
91.	QPSK 20MHz 1RB	Left Cheek	2560.0	23.22	23.5	1.067	0.170	0.181
92.	QPSK 20MHz 1RB	Left Tilted	2560.0	23.22	23.5	1.067	0.087	0.093
93.	QPSK 20MHz 50%RB	Right Cheek	2560.0	23.22	23.5	1.067	0.157	0.167
94.	QPSK 20MHz 50%RB	Right Tilted	2560.0	23.22	23.5	1.067	0.073	0.078
95.	QPSK 20MHz 50%RB	Left Cheek	2560.0	23.22	23.5	1.067	0.081	0.086
96.	QPSK 20MHz 50%RB	Left Tilted	2560.0	23.22	23.5	1.067	0.044	0.047

LTE Band 7– Head SAR Test Ant 2								
Plot No.	Mode	Test Position Head	Freque ncy	Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth		MHz					
97.	QPSK 20MHz 1RB	Right Cheek	2560.0	23.22	23.5	1.067	0.413	0.441
98.	QPSK 20MHz 1RB	Right Tilted	2560.0	23.22	23.5	1.067	0.211	0.225
99.	QPSK 20MHz 1RB	Left Cheek	2560.0	23.22	23.5	1.067	0.951	1.014
100.	QPSK 20MHz 1RB	Left Cheek	2510.0	23.16	23.5	1.081	0.999	1.080
101.	QPSK 20MHz 1RB	Left Cheek	2535.0	23.11	23.5	1.094	0.981	1.073
102.	QPSK 20MHz 1RB	Left Tilted	2560.0	23.22	23.5	1.067	0.451	0.481
103.	QPSK 20MHz 50%RB	Right Cheek	2560.0	23.22	23.5	1.067	0.219	0.234
104.	QPSK 20MHz 50%RB	Right Tilted	2560.0	23.22	23.5	1.067	0.119	0.127
105.	QPSK 20MHz 50%RB	Left Cheek	2560.0	23.22	23.5	1.067	0.459	0.490
106.	QPSK 20MHz 50%RB	Left Tilted	2560.0	23.22	23.5	1.067	0.234	0.250



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		MHz					
107.	QPSK 10MHz 1RB	Right Cheek	709.0	23.11	23.5	1.094	0.380	0.416
108.	QPSK 10MHz 1RB	Right Tilted	709.0	23.11	23.5	1.094	0.199	0.218
109.	QPSK 10MHz 1RB	Left Cheek	709.0	23.11	23.5	1.094	0.444	0.486
110.	QPSK 10MHz 1RB	Left Tilted	709.0	23.11	23.5	1.094	0.223	0.244
111.	QPSK 10MHz 50%RB	Right Cheek	709.0	23.11	23.5	1.094	0.189	0.207
112.	QPSK 10MHz 50%RB	Right Tilted	709.0	23.11	23.5	1.094	0.101	0.110
113.	QPSK 10MHz 50%RB	Left Cheek	709.0	23.11	23.5	1.094	0.215	0.235
114.	QPSK 10MHz 50%RB	Left Tilted	709.0	23.11	23.5	1.094	0.117	0.128

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					
115.	802.11b	Right Cheek	01	2412	14.65	15.0	1.084	0.020	0.022
116.	802.11b	Right Tilted	01	2412	14.65	15.0	1.084	0.011	0.012
117.	802.11b	Left Cheek	01	2412	14.65	15.0	1.084	0.024	0.026
118.	802.11b	Left Tilted	01	2412	14.65	15.0	1.084	0.013	0.014

WLAN 5.2GHz – 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					
119.	802.11a	Right Cheek	40	5200	11.19	11.5	1.074	0.205	0.220
120.	802.11a	Right Tilted	40	5200	11.19	11.5	1.074	0.107	0.115
121.	802.11a	Left Cheek	40	5200	11.19	11.5	1.074	0.100	0.107
122.	802.11a	Left Tilted	40	5200	11.19	11.5	1.074	0.055	0.059

WLAN 5.8GHz – 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					
123.	802.11a	Right Cheek	149	5745	10.47	10.5	1.007	0.034	0.034
124.	802.11a	Right Tilted	149	5745	10.47	10.5	1.007	0.019	0.019
125.	802.11a	Left Cheek	149	5745	10.47	10.5	1.007	0.046	0.046
126.	802.11a	Left Tilted	149	5745	10.47	10.5	1.007	0.025	0.025

**Remark:** Per KDB 447498 D01 v06, if the highest output channel SAR for each exposure position  $\leq 0.8$  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					
127.	GSM	Back	251	848.8	31.28	31.5	1.052	0.569	0.599
128.	GSM	Front	251	848.8	31.28	31.5	1.052	0.369	0.388

GSM1900 – Body SAR Test (Gap: 10mm) Ant 1									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
129.	GSM	Back	512	1850.2	29.75	30.0	1.059	0.476	0.504
130.	GSM	Front	512	1850.2	29.75	30.0	1.059	0.314	0.333

GSM1900 – Body SAR Test (Gap: 10mm) Ant 2									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
131.	GSM	Back	512	1850.2	29.75	30.0	1.059	0.235	0.249
132.	GSM	Front	512	1850.2	29.75	30.0	1.059	0.210	0.222

WCDMA Band 2 – Body SAR Test (Gap: 10mm) Ant 1									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
133.	RMC 12.2k	Back Side	9538	1907.6	21.33	21.5	1.040	0.694	0.722
134.	RMC 12.2k	Front Side	9538	1907.6	21.33	21.5	1.040	0.464	0.483

WCDMA Band 2 – Body SAR Test (Gap: 10mm) Ant 2									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
135.	RMC 12.2k	Back Side	9538	1907.6	21.33	21.5	1.040	0.388	0.403
136.	RMC 12.2k	Front Side	9538	1907.6	21.33	21.5	1.040	0.314	0.327

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					
137.	RMC 12.2k	Back Side	4132	826.4	22.51	23.0	1.119	0.379	0.424
138.	RMC 12.2k	Front Side	4132	826.4	22.51	23.0	1.119	0.219	0.245

WCDMA Band 4 – Body SAR Test (Gap: 10mm) Ant 1									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
139.	RMC 12.2k	Back Side	1312	1712.4	21.63	22.0	1.089	0.566	0.616
140.	RMC 12.2k	Front Side	1312	1712.4	21.63	22.0	1.089	0.516	0.562

WCDMA Band 4 – Body SAR Test (Gap: 10mm) Ant 2									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
141.	RMC 12.2k	Back Side	1312	1712.4	21.63	22.0	1.089	0.273	0.297
142.	RMC 12.2k	Front Side	1312	1712.4	21.63	22.0	1.089	0.281	0.306

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
143.	RMC QPSK 20MHz 1RB	Back Side	1860.0	22.96	23.0	1.009	0.608	0.614	
144.	RMC QPSK 20MHz 1RB	Front Side	1860.0	22.96	23.0	1.009	0.408	0.412	
145.	RMC QPSK 20MHz 50%RB	Back Side	1860.0	22.96	23.0	1.009	0.332	0.335	
146.	RMC QPSK 20MHz 50%RB	Front Side	1860.0	22.96	23.0	1.009	0.215	0.217	

LTE Band 4–Body SAR Test (Gap: 10mm) Ant 1									
Plot No.	Mode	Test Position Body	Frequency	Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)	
	Modulation, Bandwidth, RB								MHz
147.	RMC QPSK 20MHz 1RB	Back Side	1720.0	23.77	24.0	1.054	0.666	0.702	
148.	RMC QPSK 20MHz 1RB	Front Side	1720.0	23.77	24.0	1.054	0.497	0.524	
149.	RMC QPSK 20MHz 50%RB	Back Side	1720.0	23.77	24.0	1.054	0.238	0.251	
150.	RMC QPSK 20MHz 50%RB	Front Side	1720.0	23.77	24.0	1.054	0.135	0.142	

LTE Band 4–Body SAR Test (Gap: 10mm) Ant 2									
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
151.	RMC QPSK 20MHz 1RB	Back Side	1720.0	23.77	24.0	1.054	0.227	0.239	
152.	RMC QPSK 20MHz 1RB	Front Side	1720.0	23.77	24.0	1.054	0.244	0.257	
153.	RMC QPSK 20MHz 50%RB	Back Side	1720.0	23.77	24.0	1.054	0.116	0.122	
154.	RMC QPSK 20MHz 50%RB	Front Side	1720.0	23.77	24.0	1.054	0.125	0.132	

LTE Band 5–Body SAR Test (Gap: 10mm) Ant 1								
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.	RMC QPSK 10MHz 1RB	Back Side	836.5	23.52	24.0	1.117	0.459	0.513
156.	RMC QPSK 10MHz 1RB	Front Side	836.5	23.52	24.0	1.117	0.267	0.298
157.	RMC QPSK 10MHz 50%RB	Back Side	836.5	23.52	24.0	1.117	0.237	0.265
158.	RMC QPSK 10MHz 50%RB	Front Side	836.5	23.52	24.0	1.117	0.139	0.155

LTE Band 5–Body SAR Test (Gap: 10mm) Ant 2								
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					
159.	RMC QPSK 10MHz 1RB	Back Side	836.5	23.52	24.0	1.117	0.034	0.038
160.	RMC QPSK 10MHz 1RB	Front Side	836.5	23.52	24.0	1.117	0.038	0.042
161.	RMC QPSK 10MHz 50%RB	Back Side	836.5	23.52	24.0	1.117	0.016	0.018
162.	RMC QPSK 10MHz 50%RB	Front Side	836.5	23.52	24.0	1.117	0.021	0.023

LTE Band 7–Body SAR Test (Gap: 10mm) Ant 1								
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					
163.	RMC QPSK 20MHz 1RB	Back Side	2560.0	23.22	23.5	1.067	0.620	0.661
164.	RMC QPSK 20MHz 1RB	Front Side	2560.0	23.22	23.5	1.067	0.511	0.545
165.	RMC QPSK 20MHz 50%RB	Back Side	2560.0	23.22	23.5	1.067	0.311	0.332
166.	RMC QPSK 20MHz 50%RB	Front Side	2560.0	23.22	23.5	1.067	0.266	0.284

LTE Band 7–Body SAR Test (Gap: 10mm) Ant 2								
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					
167.	RMC QPSK 20MHz 1RB	Back Side	2560.0	23.22	23.5	1.067	0.364	0.388
168.	RMC QPSK 20MHz 1RB	Front Side	2560.0	23.22	23.5	1.067	0.362	0.386
169.	RMC QPSK 20MHz 50%RB	Back Side	2560.0	23.22	23.5	1.067	0.186	0.198
170.	RMC QPSK 20MHz 50%RB	Front Side	2560.0	23.22	23.5	1.067	0.181	0.193

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					
171.	QPSK 10MHz 1RB	Back Side	709.0	23.11	23.5	1.094	0.609	0.666
172.	QPSK 10MHz 1RB	Back Side	709.0	23.11	23.5	1.094	0.328	0.359
173.	RMC QPSK 10MHz 50%RB	Back Side	709.0	23.11	23.5	1.094	0.322	0.352
174.	RMC QPSK 10MHz 50%RB	Front Side	709.0	23.11	23.5	1.094	0.163	0.178

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					
175.	802.11b	Back Side	01	2412	14.65	15.0	1.084	0.034	0.037
176.	802.11b	Front Side	01	2412	14.65	15.0	1.084	0.027	0.029

WLAN 5.2GHz –Body SAR Test (Gap: 10mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR10g (W/kg)	Scaled SAR10g (W/kg)
			CH.	MHz					
177.	802.11a	Back Side	40	5200	11.19	11.5	1.074	0.070	0.075
178.	802.11a	Front Side	40	5200	11.19	11.5	1.074	0.044	0.047

WLAN 5.8GHz –Body SAR Test									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR10g (W/kg)	Scaled SAR10g (W/kg)
			CH.	MHz					
179.	802.11a	Back Side	149	5745	10.47	10.5	1.007	0.031	0.031
180.	802.11a	Front Side	149	5745	10.47	10.5	1.007	0.041	0.041

**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					
181.	GPRS_2TX	Back Side	251	848.8	30.37	30.5	1.030	0.907	0.935
182.	GPRS_2TX	Back Side	128	824.2	30.23	30.5	1.064	0.553	0.588
183.	GPRS_2TX	Back Side	190	836.6	30.33	30.5	1.040	0.843	0.877
184.	GPRS_2TX	Front Side	251	848.8	30.37	30.5	1.030	0.604	0.622
185.	GPRS_2TX	Right side	251	848.8	30.37	30.5	1.030	0.193	0.199
186.	GPRS_2TX	Left side	251	848.8	30.37	30.5	1.030	0.168	0.173
187.	GPRS_2TX	Bottom side	251	848.8	30.37	30.5	1.030	0.351	0.362

GSM1900 – Body SAR Test (Gap: 10mm) Ant 1									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
188.	GPRS_2TX	Back Side	512	1850.2	29.02	29.5	1.117	0.712	0.795
189.	GPRS_2TX	Front Side	512	1850.2	29.02	29.5	1.117	0.515	0.575
190.	GPRS_2TX	Right side	512	1850.2	29.02	29.5	1.117	0.225	0.251
191.	GPRS_2TX	Left side	512	1850.2	29.02	29.5	1.117	0.207	0.231
192.	GPRS_2TX	Bottom side	512	1850.2	29.02	29.5	1.117	0.490	0.547

GSM1900 – Body SAR Test (Gap: 10mm) Ant 2									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
193.	GPRS_2TX	Back Side	512	1850.2	29.02	29.5	1.117	0.412	0.460
194.	GPRS_2TX	Front Side	512	1850.2	29.02	29.5	1.117	0.301	0.336
195.	GPRS_2TX	Right side	512	1850.2	29.02	29.5	1.117	0.139	0.155
196.	GPRS_2TX	Top side	512	1850.2	29.02	29.5	1.117	0.154	0.172

WCDMA Band 2 – Body SAR Test (Gap: 10mm) Ant 1									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
197.	RMC 12.2k	Back Side	9538	1907.6	21.33	21.5	1.040	0.694	0.722
198.	RMC 12.2k	Front Face	9538	1907.6	21.33	21.5	1.040	0.464	0.483
199.	RMC 12.2k	Right side	9538	1907.6	21.33	21.5	1.040	0.198	0.206
200.	RMC 12.2k	Left side	9538	1907.6	21.33	21.5	1.040	0.186	0.193
201.	RMC 12.2k	Bottom Side	9538	1907.6	21.33	21.5	1.040	0.410	0.426

WCDMA Band 2 – Body SAR Test (Gap: 10mm) Ant 2									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
202.	RMC 12.2k	Back Side	9538	1907.6	21.33	21.5	1.040	0.388	0.403
203.	RMC 12.2k	Front Face	9538	1907.6	21.33	21.5	1.040	0.314	0.327
204.	RMC 12.2k	Right side	9538	1907.6	21.33	21.5	1.040	0.168	0.175
205.	RMC 12.2k	Top side	9538	1907.6	21.33	21.5	1.040	0.197	0.205

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					
206.	RMC 12.2k	Back Side	4132	826.4	22.51	23.0	1.119	0.379	0.424
207.	RMC 12.2k	Front Side	4132	826.4	22.51	23.0	1.119	0.219	0.245
208.	RMC 12.2k	Right side	4132	826.4	22.51	23.0	1.119	0.115	0.129
209.	RMC 12.2k	Left side	4132	826.4	22.51	23.0	1.119	0.087	0.097
210.	RMC 12.2k	Bottom side	4132	826.4	22.51	23.0	1.119	0.108	0.121

WCDMA Band 4 – Body SAR Test (Gap: 10mm) Ant 1									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
211.	RMC 12.2k	Back Side	1312	1712.4	21.63	22.0	1.089	0.566	0.616
212.	RMC 12.2k	Front Face	1312	1712.4	21.63	22.0	1.089	0.516	0.562
213.	RMC 12.2k	Right side	1312	1712.4	21.63	22.0	1.089	0.234	0.255
214.	RMC 12.2k	Left side	1312	1712.4	21.63	22.0	1.089	0.211	0.230
215.	RMC 12.2k	Bottom Side	1312	1712.4	21.63	22.0	1.089	0.474	0.516

WCDMA Band 4 – Body SAR Test (Gap: 10mm) Ant 2									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
216.	RMC 12.2k	Back Side	1312	1712.4	21.63	22.0	1.089	0.273	0.297
217.	RMC 12.2k	Front Face	1312	1712.4	21.63	22.0	1.089	0.281	0.306
218.	RMC 12.2k	Right side	1312	1712.4	21.63	22.0	1.089	0.082	0.089
219.	RMC 12.2k	Top side	1312	1712.4	21.63	22.0	1.089	0.090	0.098

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					
220.	RMC QPSK 20MHz 1RB	Back Side	1860.0	22.96	23.0	1.009	0.608	0.614
221.	RMC QPSK 20MHz 1RB	Front Side	1860.0	22.96	23.0	1.009	0.408	0.412
222.	RMC QPSK 20MHz 1RB	Right side	1860.0	22.96	23.0	1.009	0.213	0.215
223.	RMC QPSK 20MHz 1RB	Left side	1860.0	22.96	23.0	1.009	0.194	0.196
224.	RMC QPSK 20MHz 1RB	Bottom side	1860.0	22.96	23.0	1.009	0.413	0.417
225.	RMC QPSK 20MHz 50%RB	Back Side	1860.0	22.96	23.0	1.009	0.332	0.335
226.	RMC QPSK 20MHz 50%RB	Front Side	1860.0	22.96	23.0	1.009	0.215	0.217
227.	RMC QPSK 20MHz 50%RB	Right side	1860.0	22.96	23.0	1.009	0.116	0.117
228.	RMC QPSK 20MHz 50%RB	Left side	1860.0	22.96	23.0	1.009	0.102	0.103
229.	RMC QPSK 20MHz 50%RB	Bottom side	1860.0	22.96	23.0	1.009	0.201	0.203

LTE Band 4–Body SAR Test (Gap: 10mm) Ant 1								
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					
230.	RMC QPSK 20MHz 1RB	Back Side	1720.0	23.77	24.0	1.054	0.666	0.702
231.	RMC QPSK 20MHz 1RB	Front Side	1720.0	23.77	24.0	1.054	0.497	0.524
232.	RMC QPSK 20MHz 1RB	Right side	1720.0	23.77	24.0	1.054	0.237	0.250
233.	RMC QPSK 20MHz 1RB	Left side	1720.0	23.77	24.0	1.054	0.211	0.222
234.	RMC QPSK 20MHz 1RB	Bottom side	1720.0	23.77	24.0	1.054	0.445	0.469
235.	RMC QPSK 20MHz 50%RB	Back Side	1720.0	23.77	24.0	1.054	0.341	0.360
236.	RMC QPSK 20MHz 50%RB	Front Side	1720.0	23.77	24.0	1.054	0.238	0.251
237.	RMC QPSK 20MHz 50%RB	Right side	1720.0	23.77	24.0	1.054	0.135	0.142
238.	RMC QPSK 20MHz 50%RB	Left side	1720.0	23.77	24.0	1.054	0.122	0.129
239.	RMC QPSK 20MHz 50%RB	Bottom side	1720.0	23.77	24.0	1.054	0.218	0.230

LTE Band 4–Body SAR Test (Gap: 10mm) Ant 2								
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					
240.	RMC QPSK 20MHz 1RB	Back Side	1720.0	23.77	24.0	1.054	0.227	0.239
241.	RMC QPSK 20MHz 1RB	Front Side	1720.0	23.77	24.0	1.054	0.244	0.257
242.	RMC QPSK 20MHz 1RB	Right side	1720.0	23.77	24.0	1.054	0.071	0.075
243.	RMC QPSK 20MHz 1RB	Top side	1720.0	23.77	24.0	1.054	0.083	0.088
244.	RMC QPSK 20MHz 50%RB	Back Side	1720.0	23.77	24.0	1.054	0.116	0.122
245.	RMC QPSK 20MHz 50%RB	Front Side	1720.0	23.77	24.0	1.054	0.125	0.132
246.	RMC QPSK 20MHz 50%RB	Right side	1720.0	23.77	24.0	1.054	0.038	0.040
247.	RMC QPSK 20MHz 50%RB	Top side	1720.0	23.77	24.0	1.054	0.041	0.043



LTE Band 5–Body SAR Test (Gap: 10mm) Ant 1								
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					
248.	RMC QPSK 10MHz 1RB	Back Side	844.0	23.52	24.0	1.117	0.459	0.513
249.	RMC QPSK 10MHz 1RB	Front Side	844.0	23.52	24.0	1.117	0.267	0.298
250.	RMC QPSK 10MHz 1RB	Right side	844.0	23.52	24.0	1.117	0.143	0.160
251.	RMC QPSK 10MHz 1RB	Left side	844.0	23.52	24.0	1.117	0.125	0.140
252.	RMC QPSK 10MHz 1RB	Bottom side	844.0	23.52	24.0	1.117	0.171	0.191
253.	RMC QPSK 10MHz 50%RB	Back Side	844.0	23.52	24.0	1.117	0.237	0.265
254.	RMC QPSK 10MHz 50%RB	Front Side	844.0	23.52	24.0	1.117	0.139	0.155
255.	RMC QPSK 10MHz 50%RB	Right side	844.0	23.52	24.0	1.117	0.077	0.086
256.	RMC QPSK 10MHz 50%RB	Left side	844.0	23.52	24.0	1.117	0.068	0.076
257.	RMC QPSK 10MHz 50%RB	Bottom side	844.0	23.52	24.0	1.117	0.088	0.098

LTE Band 5–Body SAR Test (Gap: 10mm) Ant 2								
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					
258.	RMC QPSK 10MHz 1RB	Back Side	844.0	23.52	24.0	1.117	0.034	0.038
259.	RMC QPSK 10MHz 1RB	Front Side	844.0	23.52	24.0	1.117	0.038	0.042
260.	RMC QPSK 10MHz 1RB	Right side	844.0	23.52	24.0	1.117	0.031	0.035
261.	RMC QPSK 10MHz 1RB	Top side	844.0	23.52	24.0	1.117	0.041	0.046
262.	RMC QPSK 10MHz 50%RB	Back Side	844.0	23.52	24.0	1.117	0.016	0.018
263.	RMC QPSK 10MHz 50%RB	Front Side	844.0	23.52	24.0	1.117	0.021	0.023
264.	RMC QPSK 10MHz 50%RB	Right side	844.0	23.52	24.0	1.117	0.015	0.017
265.	RMC QPSK 10MHz 50%RB	Top side	844.0	23.52	24.0	1.117	0.022	0.025

LTE Band 7–Body SAR Test (Gap: 10mm) Ant 1								
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					
266.	RMC QPSK 20MHz 1RB	Back Side	2560.0	23.22	23.5	1.067	0.620	0.661
267.	RMC QPSK 20MHz 1RB	Front Side	2560.0	23.22	23.5	1.067	0.511	0.545
268.	RMC QPSK 20MHz 1RB	Right side	2560.0	23.22	23.5	1.067	0.276	0.294
269.	RMC QPSK 20MHz 1RB	Left side	2560.0	23.22	23.5	1.067	0.241	0.257
270.	RMC QPSK 20MHz 1RB	Bottom side	2560.0	23.22	23.5	1.067	0.415	0.443
271.	RMC QPSK 20MHz 50%RB	Back Side	2560.0	23.22	23.5	1.067	0.311	0.332
272.	RMC QPSK 20MHz 50%RB	Front Side	2560.0	23.22	23.5	1.067	0.266	0.284
273.	RMC QPSK 20MHz 50%RB	Right side	2560.0	23.22	23.5	1.067	0.141	0.150
274.	RMC QPSK 20MHz 50%RB	Left side	2560.0	23.22	23.5	1.067	0.127	0.135
275.	RMC QPSK 20MHz 50%RB	Bottom side	2560.0	23.22	23.5	1.067	0.208	0.222

LTE Band 7–Body SAR Test (Gap: 10mm) Ant 2								
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					
276.	RMC QPSK 20MHz 1RB	Back Side	2560.0	23.22	23.5	1.067	0.364	0.388
277.	RMC QPSK 20MHz 1RB	Front Side	2560.0	23.22	23.5	1.067	0.362	0.386
278.	RMC QPSK 20MHz 1RB	Right side	2560.0	23.22	23.5	1.067	0.199	0.212
279.	RMC QPSK 20MHz 1RB	Top side	2560.0	23.22	23.5	1.067	0.233	0.249
280.	RMC QPSK 20MHz 50%RB	Back Side	2560.0	23.22	23.5	1.067	0.186	0.198
281.	RMC QPSK 20MHz 50%RB	Front Side	2560.0	23.22	23.5	1.067	0.181	0.193
282.	RMC QPSK 20MHz 50%RB	Right side	2560.0	23.22	23.5	1.067	0.112	0.119
283.	RMC QPSK 20MHz 50%RB	Top side	2560.0	23.22	23.5	1.067	0.125	0.133

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					
284.	QPSK 10MHz 1RB	Back Side	709.0	23.11	23.5	1.094	0.609	0.666
285.	QPSK 10MHz 1RB	Front Side	709.0	23.11	23.5	1.094	0.328	0.359
286.	QPSK 10MHz 1RB	Right side	709.0	23.11	23.5	1.094	0.107	0.117
287.	QPSK 10MHz 1RB	Left side	709.0	23.11	23.5	1.094	0.089	0.097
288.	QPSK 10MHz 1RB	Bottom side	709.0	23.11	23.5	1.094	0.117	0.128
289.	QPSK 10MHz 50%RB	Back Side	709.0	23.11	23.5	1.094	0.322	0.352
290.	QPSK 10MHz 50%RB	Front Side	709.0	23.11	23.5	1.094	0.163	0.178
291.	QPSK 10MHz 50%RB	Right side	709.0	23.11	23.5	1.094	0.066	0.072
292.	QPSK 10MHz 50%RB	Left side	709.0	23.11	23.5	1.094	0.051	0.056
293.	QPSK 10MHz 50%RB	Bottom side	709.0	23.11	23.5	1.094	0.057	0.062

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					
294.	802.11b	Back Side	01	2412	14.65	15.0	1.084	0.034	0.037
295.	802.11b	Front Side	01	2412	14.65	15.0	1.084	0.027	0.029
296.	802.11b	Left side	01	2412	14.65	15.0	1.084	0.018	0.020
297.	802.11b	Top side	01	2412	14.65	15.0	1.084	0.018	0.020

WLAN 5.2GHz –Body SAR Test (Gap: 10mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR10g (W/kg)	Scaled SAR10g (W/kg)
			CH.	MHz					
298.	802.11a	Back Side	40	5200	11.19	11.5	1.074	0.070	0.075
299.	802.11a	Front Side	40	5200	11.19	11.5	1.074	0.044	0.047
300.	802.11a	Left side	40	5200	11.19	11.5	1.074	0.045	0.048
301.	802.11a	Top side	40	5200	11.19	11.5	1.074	0.083	0.089

WLAN 5.8GHz –Body SAR Test									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR10g (W/kg)	Scaled SAR10g (W/kg)
			CH.	MHz					
302.	802.11a	Back Side	149	5745	10.47	10.5	1.007	0.031	0.031
303.	802.11a	Front Side	149	5745	10.47	10.5	1.007	0.041	0.041
304.	802.11a	Left side	149	5745	10.47	10.5	1.007	0.070	0.070
305.	802.11a	Top side	149	5745	10.47	10.5	1.007	0.117	0.118

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

#### 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					
306.	GPRS_2TX	Left Cheek	251	848.8	30.37	30.5	1.030	0.891	0.918

LTE Band 4– Head SAR Test Ant 2									
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						
307.	QPSK 20MHz 1RB	Left Cheek	1720.0	23.77	24.0	1.054	23.77	25.063	

LTE Band 7– Head SAR Test Ant 2									
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						
308.	QPSK 20MHz 1RB	Left Cheek	2560.0	23.22	23.5	1.067	0.925	0.987	

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					
309.	GPRS_2TX	Back Side	251	848.8	30.37	30.5	1.030	0.885	0.912

**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  $\geq 0.80$  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  $\geq 1.45$  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  $\geq 1.5$  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 SAR
1	GSM(Voice/Data) + WLAN(2.4G)(Data)	Yes	Yes
2	WCDMA (Voice/Data)+ (2.4G)(Data)	Yes	Yes
3	LTE(Data) + (2.4G)(Data)	Yes	Yes
4	GSM(Voice/Data) + WLAN(5G)(Data)	Yes	Yes
5	WCDMA (Voice/Data)+ (5G)(Data)	Yes	Yes
6	LTE(Data) + (5G)(Data)	Yes	Yes
7	GSM(Voice/Data) + Bluetooth(Data)	Yes	Yes
8	WCDMA (Voice/Data) + Bluetooth(Data)	Yes	Yes
9	LTE(Data) + Bluetooth(Data)	Yes	Yes

#### Remark:

1. GSM ,WCDMA and LTE share the same antenna, and cannot transmit simultaneously.
2. WLAN and Bluetooth share the same antenna, and cannot transmit simultaneously.
3. According to the KDB 447498 D01 v06, when standalone SAR test exclusion applies to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to following to determine simultaneous transmission SAR test exclusion:  
 $(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm}) \cdot [\sqrt{f(\text{GHz})}/x] \text{ W/kg}$  for test separation distances  $\leq 50 \text{ mm}$ ;  
 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**

Position	WWAN		WLAN(2.4G)	Summed SAR (W/kg)
	Band	Scaled SAR (W/kg)	Scaled SAR (W/kg)	
Right Cheek	GSM850	0.519	0.022	0.541
Right Tilted	GSM850	0.249	0.012	0.261
Left Cheek	GSM850	0.670	0.026	0.696
Left Tilted	GSM850	0.331	0.014	0.345
Right Cheek	GSM1900	0.244	0.022	0.266
Right Tilted	GSM1900	0.123	0.012	0.135
Left Cheek	GSM1900	0.394	0.026	0.420
Left Tilted	GSM1900	0.192	0.014	0.206
Right Cheek	GPRS850	0.683	0.022	0.705
Right Tilted	GPRS850	0.346	0.012	0.358
Left Cheek	GPRS850	0.939	0.026	0.965
Left Tilted	GPRS850	0.467	0.014	0.481
Right Cheek	GPRS1900	0.254	0.022	0.276
Right Tilted	GPRS1900	0.133	0.012	0.145
Left Cheek	GPRS1900	0.756	0.026	0.782
Left Tilted	GPRS1900	0.367	0.014	0.381
Right Cheek	WCDMA Band 2	0.233	0.022	0.255
Right Tilted	WCDMA Band 2	0.133	0.012	0.145
Left Cheek	WCDMA Band 2	0.620	0.026	0.646
Left Tilted	WCDMA Band 2	0.349	0.014	0.363
Right Cheek	WCDMA Band 5	0.278	0.022	0.300
Right Tilted	WCDMA Band 5	0.140	0.012	0.152
Left Cheek	WCDMA Band 5	0.387	0.026	0.413
Left Tilted	WCDMA Band 5	0.194	0.014	0.208
Right Cheek	WCDMA Band 4	0.327	0.022	0.349
Right Tilted	WCDMA Band 4	0.171	0.012	0.183
Left Cheek	WCDMA Band 4	0.799	0.026	0.825
Left Tilted	WCDMA Band 4	0.366	0.014	0.380
Right Cheek	LTE Band 2	0.141	0.022	0.163
Right Tilted	LTE Band 2	0.072	0.012	0.084
Left Cheek	LTE Band 2	0.173	0.026	0.199
Left Tilted	LTE Band 2	0.093	0.014	0.107
Right Cheek	LTE Band 4	0.401	0.022	0.423
Right Tilted	LTE Band 4	0.171	0.012	0.183
Left Cheek	LTE Band 4	0.999	0.026	1.025
Left Tilted	LTE Band 4	0.462	0.014	0.476
Right Cheek	LTE Band 5	0.346	0.022	0.368

Right Tilted	LTE Band 5	0.178	0.012	0.190
Left Cheek	LTE Band 5	0.472	0.026	0.498
Left Tilted	LTE Band 5	0.238	0.014	0.252
Right Cheek	LTE Band 7	0.441	0.022	0.463
Right Tilted	LTE Band 7	1.080	0.012	<b>1.092</b>
Left Cheek	LTE Band 7	0.481	0.026	0.507
Left Tilted	LTE Band 7	0.183	0.014	0.197
Right Cheek	LTE Band 17	0.416	0.022	0.438
Right Tilted	LTE Band 17	0.218	0.012	0.230
Left Cheek	LTE Band 17	0.486	0.026	0.512
Left Tilted	LTE Band 17	0.244	0.014	0.258

Position	WWAN		WLAN(5.2G)	Summed SAR (W/kg)
	Band	Scaled SAR (W/kg)	Scaled SAR (W/kg)	
Right Cheek	GSM850	0.519	0.220	0.739
Right Tilted	GSM850	0.249	0.115	0.364
Left Cheek	GSM850	0.670	0.107	0.777
Left Tilted	GSM850	0.331	0.059	0.390
Right Cheek	GSM1900	0.244	0.220	0.464
Right Tilted	GSM1900	0.123	0.115	0.238
Left Cheek	GSM1900	0.394	0.107	0.501
Left Tilted	GSM1900	0.192	0.059	0.251
Right Cheek	GPRS850	0.683	0.220	0.903
Right Tilted	GPRS850	0.346	0.115	0.461
Left Cheek	GPRS850	0.939	0.107	1.046
Left Tilted	GPRS850	0.467	0.059	0.526
Right Cheek	GPRS1900	0.254	0.220	0.474
Right Tilted	GPRS1900	0.133	0.115	0.248
Left Cheek	GPRS1900	0.756	0.107	0.863
Left Tilted	GPRS1900	0.367	0.059	0.426
Right Cheek	WCDMA Band 2	0.233	0.220	0.453
Right Tilted	WCDMA Band 2	0.133	0.115	0.248
Left Cheek	WCDMA Band 2	0.620	0.107	0.727
Left Tilted	WCDMA Band 2	0.349	0.059	0.408
Right Cheek	WCDMA Band 5	0.278	0.220	0.498
Right Tilted	WCDMA Band 5	0.140	0.115	0.255
Left Cheek	WCDMA Band 5	0.387	0.107	0.494
Left Tilted	WCDMA Band 5	0.194	0.059	0.253
Right Cheek	WCDMA Band 4	0.327	0.220	0.547
Right Tilted	WCDMA Band 4	0.171	0.115	0.286
Left Cheek	WCDMA Band 4	0.799	0.107	0.906
Left Tilted	WCDMA Band 4	0.366	0.059	0.425

Right Cheek	LTE Band 2	0.141	0.220	0.361
Right Tilted	LTE Band 2	0.072	0.115	0.187
Left Cheek	LTE Band 2	0.173	0.107	0.280
Left Tilted	LTE Band 2	0.093	0.059	0.152
Right Cheek	LTE Band 4	0.401	0.220	0.621
Right Tilted	LTE Band 4	0.171	0.115	0.286
Left Cheek	LTE Band 4	0.999	0.107	1.106
Left Tilted	LTE Band 4	0.462	0.059	0.521
Right Cheek	LTE Band 5	0.346	0.220	0.566
Right Tilted	LTE Band 5	0.178	0.115	0.293
Left Cheek	LTE Band 5	0.472	0.107	0.579
Left Tilted	LTE Band 5	0.238	0.059	0.297
Right Cheek	LTE Band 7	0.441	0.220	0.661
Right Tilted	LTE Band 7	1.080	0.115	<b>1.195</b>
Left Cheek	LTE Band 7	0.481	0.107	0.588
Left Tilted	LTE Band 7	0.183	0.059	0.242
Right Cheek	LTE Band 17	0.416	0.220	0.636
Right Tilted	LTE Band 17	0.218	0.115	0.333
Left Cheek	LTE Band 17	0.486	0.107	0.593
Left Tilted	LTE Band 17	0.244	0.059	0.303

Position	WWAN		WLAN(5.8G)	Summed SAR (W/kg)
	Band	Scaled SAR (W/kg)	Scaled SAR (W/kg)	
Right Cheek	GSM850	0.519	0.034	0.553
Right Tilted	GSM850	0.249	0.019	0.268
Left Cheek	GSM850	0.670	0.046	0.716
Left Tilted	GSM850	0.331	0.025	0.356
Right Cheek	GSM1900	0.244	0.034	0.278
Right Tilted	GSM1900	0.123	0.019	0.142
Left Cheek	GSM1900	0.394	0.046	0.440
Left Tilted	GSM1900	0.192	0.025	0.217
Right Cheek	GPRS850	0.683	0.034	0.717
Right Tilted	GPRS850	0.346	0.019	0.365
Left Cheek	GPRS850	0.939	0.046	0.985
Left Tilted	GPRS850	0.467	0.025	0.492
Right Cheek	GPRS1900	0.254	0.034	0.288
Right Tilted	GPRS1900	0.133	0.019	0.152
Left Cheek	GPRS1900	0.756	0.046	0.802
Left Tilted	GPRS1900	0.367	0.025	0.392
Right Cheek	WCDMA Band 2	0.233	0.034	0.267
Right Tilted	WCDMA Band 2	0.133	0.019	0.152
Left Cheek	WCDMA Band 2	0.620	0.046	0.666



Left Tilted	WCDMA Band 2	0.349	0.025	0.374
Right Cheek	WCDMA Band 5	0.278	0.034	0.312
Right Tilted	WCDMA Band 5	0.140	0.019	0.159
Left Cheek	WCDMA Band 5	0.387	0.046	0.433
Left Tilted	WCDMA Band 5	0.194	0.025	0.219
Right Cheek	WCDMA Band 4	0.327	0.034	0.361
Right Tilted	WCDMA Band 4	0.171	0.019	0.190
Left Cheek	WCDMA Band 4	0.799	0.046	0.845
Left Tilted	WCDMA Band 4	0.366	0.025	0.391
Right Cheek	LTE Band 2	0.141	0.034	0.175
Right Tilted	LTE Band 2	0.072	0.019	0.091
Left Cheek	LTE Band 2	0.173	0.046	0.219
Left Tilted	LTE Band 2	0.093	0.025	0.118
Right Cheek	LTE Band 4	0.401	0.034	0.435
Right Tilted	LTE Band 4	0.171	0.019	0.190
Left Cheek	LTE Band 4	0.999	0.046	1.045
Left Tilted	LTE Band 4	0.462	0.025	0.487
Right Cheek	LTE Band 5	0.346	0.034	0.380
Right Tilted	LTE Band 5	0.178	0.019	0.197
Left Cheek	LTE Band 5	0.472	0.046	0.518
Left Tilted	LTE Band 5	0.238	0.025	0.263
Right Cheek	LTE Band 7	0.441	0.034	0.475
Right Tilted	LTE Band 7	1.080	0.019	<b>1.099</b>
Left Cheek	LTE Band 7	0.481	0.046	0.527
Left Tilted	LTE Band 7	0.183	0.025	0.208
Right Cheek	LTE Band 17	0.416	0.034	0.450
Right Tilted	LTE Band 17	0.218	0.019	0.237
Left Cheek	LTE Band 17	0.486	0.046	0.532
Left Tilted	LTE Band 17	0.244	0.025	0.269

**WWAN and Bluetooth**

Position	WWAN		Bluetooth	Summed SAR (W/kg)
	Band	Scaled SAR (W/kg)	Scaled SAR (W/kg)	
Right Cheek	GSM850	0.519	0.104	0.623
Right Tilted	GSM850	0.249	0.104	0.353
Left Cheek	GSM850	0.670	0.104	0.774
Left Tilted	GSM850	0.331	0.104	0.435
Right Cheek	GSM1900	0.244	0.104	0.348
Right Tilted	GSM1900	0.123	0.104	0.227
Left Cheek	GSM1900	0.394	0.104	0.498
Left Tilted	GSM1900	0.192	0.104	0.296
Right Cheek	GPRS850	0.683	0.104	0.787
Right Tilted	GPRS850	0.346	0.104	0.450
Left Cheek	GPRS850	0.939	0.104	1.043
Left Tilted	GPRS850	0.467	0.104	0.571
Right Cheek	GPRS1900	0.254	0.104	0.358
Right Tilted	GPRS1900	0.133	0.104	0.237
Left Cheek	GPRS1900	0.756	0.104	0.860
Left Tilted	GPRS1900	0.367	0.104	0.471
Right Cheek	WCDMA Band 2	0.233	0.104	0.337
Right Tilted	WCDMA Band 2	0.133	0.104	0.237
Left Cheek	WCDMA Band 2	0.620	0.104	0.724
Left Tilted	WCDMA Band 2	0.349	0.104	0.453
Right Cheek	WCDMA Band 5	0.278	0.104	0.382
Right Tilted	WCDMA Band 5	0.140	0.104	0.244
Left Cheek	WCDMA Band 5	0.387	0.104	0.491
Left Tilted	WCDMA Band 5	0.194	0.104	0.298
Right Cheek	WCDMA Band 4	0.327	0.104	0.431
Right Tilted	WCDMA Band 4	0.171	0.104	0.275
Left Cheek	WCDMA Band 4	0.799	0.104	0.903
Left Tilted	WCDMA Band 4	0.366	0.104	0.470
Right Cheek	LTE Band 2	0.141	0.104	0.245
Right Tilted	LTE Band 2	0.072	0.104	0.176
Left Cheek	LTE Band 2	0.173	0.104	0.277
Left Tilted	LTE Band 2	0.093	0.104	0.197
Right Cheek	LTE Band 4	0.401	0.104	0.505
Right Tilted	LTE Band 4	0.171	0.104	0.275
Left Cheek	LTE Band 4	0.999	0.104	1.103
Left Tilted	LTE Band 4	0.462	0.104	0.566
Right Cheek	LTE Band 5	0.346	0.104	0.450
Right Tilted	LTE Band 5	0.178	0.104	0.282

Left Cheek	LTE Band 5	0.472	0.104	0.576
Left Tilted	LTE Band 5	0.238	0.104	0.342
Right Cheek	LTE Band 7	0.441	0.104	0.545
Right Tilted	LTE Band 7	1.080	0.104	<b>1.184</b>
Left Cheek	LTE Band 7	0.481	0.104	0.585
Left Tilted	LTE Band 7	0.183	0.104	0.287
Right Cheek	LTE Band 17	0.416	0.104	0.520
Right Tilted	LTE Band 17	0.218	0.104	0.322
Left Cheek	LTE Band 17	0.486	0.104	0.590
Left Tilted	LTE Band 17	0.244	0.104	0.348

**Body-worn SAR**
**WWAN and WLAN**

Position	WWAN		WLAN(2.4G)	Summed SAR (W/kg)
	Band	Scaled SAR (W/kg)	Scaled SAR (W/kg)	
Back	GSM850	0.599	0.037	0.636
Front	GSM850	0.388	0.029	0.417
Back	GSM1900	0.504	0.037	0.541
Front	GSM1900	0.333	0.029	0.362
Back	WCDMA Band 2	0.722	0.037	<b>0.759</b>
Front	WCDMA Band 2	0.483	0.029	0.512
Back	WCDMA Band 5	0.424	0.037	0.461
Front	WCDMA Band 5	0.245	0.029	0.274
Back	WCDMA Band 4	0.616	0.037	0.653
Front	WCDMA Band 4	0.562	0.029	0.591
Back	LTE Band 2	0.614	0.037	0.651
Front	LTE Band 2	0.412	0.029	0.441
Back	LTE Band 4	0.702	0.037	0.739
Front	LTE Band 4	0.524	0.029	0.553
Back	LTE Band 5	0.513	0.037	0.550
Front	LTE Band 5	0.298	0.029	0.327
Back	LTE Band 7	0.661	0.037	0.698
Front	LTE Band 7	0.545	0.029	0.574
Back	LTE Band 17	0.666	0.037	0.703
Front	LTE Band 17	0.359	0.029	0.388

Position	WWAN		WLAN(5.2G)	Summed SAR (W/kg)
	Band	Scaled SAR (W/kg)	Scaled SAR (W/kg)	
Back	GSM850	0.599	0.075	0.674
Front	GSM850	0.388	0.047	0.435
Back	GSM1900	0.504	0.075	0.579
Front	GSM1900	0.333	0.047	0.380
Back	WCDMA Band 2	0.722	0.075	<b>0.797</b>
Front	WCDMA Band 2	0.483	0.047	0.530
Back	WCDMA Band 5	0.424	0.075	0.499
Front	WCDMA Band 5	0.245	0.047	0.292
Back	WCDMA Band 4	0.616	0.075	0.691
Front	WCDMA Band 4	0.562	0.047	0.609
Back	LTE Band 2	0.614	0.075	0.689
Front	LTE Band 2	0.412	0.047	0.459
Back	LTE Band 4	0.702	0.075	0.777

Front	LTE Band 4	0.524	0.047	0.571
Back	LTE Band 5	0.513	0.075	0.588
Front	LTE Band 5	0.298	0.047	0.345
Back	LTE Band 7	0.661	0.075	0.736
Front	LTE Band 7	0.545	0.047	0.592
Back	LTE Band 17	0.666	0.075	0.741
Front	LTE Band 17	0.359	0.047	0.406

Position	WWAN		WLAN(5.8G)	Summed SAR (W/kg)
	Band	Scaled SAR (W/kg)	Scaled SAR (W/kg)	
Back	GSM850	0.599	0.031	0.630
Front	GSM850	0.388	0.041	0.429
Back	GSM1900	0.504	0.031	0.535
Front	GSM1900	0.333	0.041	0.374
Back	WCDMA Band 2	0.722	0.031	<b>0.753</b>
Front	WCDMA Band 2	0.483	0.041	0.524
Back	WCDMA Band 5	0.424	0.031	0.455
Front	WCDMA Band 5	0.245	0.041	0.286
Back	WCDMA Band 4	0.616	0.031	0.647
Front	WCDMA Band 4	0.562	0.041	0.603
Back	LTE Band 2	0.614	0.031	0.645
Front	LTE Band 2	0.412	0.041	0.453
Back	LTE Band 4	0.702	0.031	0.733
Front	LTE Band 4	0.524	0.041	0.565
Back	LTE Band 5	0.513	0.031	0.544
Front	LTE Band 5	0.298	0.041	0.339
Back	LTE Band 7	0.661	0.031	0.692
Front	LTE Band 7	0.545	0.041	0.586
Back	LTE Band 17	0.666	0.031	0.697
Front	LTE Band 17	0.359	0.041	0.400

**Hotspot SAR**
**WWAN and WLAN**

Position	WWAN		WLAN(2.4G)	Summed SAR (W/kg)
	Band	Scaled SAR (W/kg)	Scaled SAR (W/kg)	
Back	GSM850	0.935	0.037	<b>0.972</b>
Front	GSM850	0.622	0.029	0.651
Right side	GSM850	0.199	--	0.199
Left side	GSM850	0.173	0.020	0.193
Bottom side	GSM850	0.362	--	0.362
Top side	GSM850	--	0.020	0.020
Back	GSM1900	0.795	0.037	0.832
Front	GSM1900	0.575	0.029	0.604
Right side	GSM1900	0.251	--	0.251
Left side	GSM1900	0.231	0.020	0.251
Bottom side	GSM1900	0.547	--	0.547
Top side	GSM1900	0.172	0.020	0.192
Back	WCDMA Band 2	0.722	0.037	0.759
Front	WCDMA Band 2	0.483	0.029	0.512
Right side	WCDMA Band 2	0.206	--	0.206
Left side	WCDMA Band 2	0.193	0.020	0.213
Bottom side	WCDMA Band 2	0.426	--	0.426
Top side	WCDMA Band 2	0.205	0.020	0.225
Back	WCDMA Band 5	0.424	0.037	0.461
Front	WCDMA Band 5	0.245	0.029	0.274
Right side	WCDMA Band 5	0.129	--	0.129
Left side	WCDMA Band 5	0.097	0.020	0.117
Bottom side	WCDMA Band 5	0.121	--	0.121
Top side	WCDMA Band 5	--	0.020	0.020
Back	WCDMA Band 4	0.616	0.037	0.653
Front	WCDMA Band 4	0.562	0.029	0.591
Right side	WCDMA Band 4	0.255	--	0.255
Left side	WCDMA Band 4	0.230	0.020	0.250
Bottom side	WCDMA Band 4	0.516	--	0.516
Top side	WCDMA Band 4	0.098	0.020	0.118
Back	LTE Band 2	0.614	0.037	0.651
Front	LTE Band 2	0.412	0.029	0.441
Right side	LTE Band 2	0.215	--	0.215
Left side	LTE Band 2	0.196	0.020	0.216
Bottom side	LTE Band 2	0.417	--	0.417
Top side	LTE Band 2	--	0.020	0.020

Back	LTE Band 4	0.702	0.037	0.739
Front	LTE Band 4	0.524	0.029	0.553
Right side	LTE Band 4	0.250	--	0.250
Left side	LTE Band 4	0.222	0.020	0.242
Bottom side	LTE Band 4	0.469	--	0.469
Top side	LTE Band 4	0.088	0.020	0.108
Back	LTE Band 5	0.513	0.037	0.550
Front	LTE Band 5	0.298	0.029	0.327
Right side	LTE Band 5	0.160	--	0.160
Left side	LTE Band 5	0.140	0.020	0.160
Bottom side	LTE Band 5	0.191	--	0.191
Top side	LTE Band 5	0.018	0.020	0.038
Back	LTE Band 7	0.661	0.037	0.698
Front	LTE Band 7	0.545	0.029	0.574
Right side	LTE Band 7	0.294	--	0.294
Left side	LTE Band 7	0.257	0.020	0.277
Bottom side	LTE Band 7	0.443	--	0.443
Top side	LTE Band 7	0.249	0.020	0.269
Back	LTE Band 17	0.666	0.037	0.703
Front	LTE Band 17	0.359	0.029	0.388
Right side	LTE Band 17	0.117	--	0.117
Left side	LTE Band 17	0.097	0.020	0.117
Bottom side	LTE Band 17	0.128	--	0.128
Top side	LTE Band 17	--	0.020	0.020

Position	WWAN		WLAN(5.2G)	Summed SAR (W/kg)
	Band	Scaled SAR (W/kg)	Scaled SAR (W/kg)	
Back	GSM850	0.935	0.075	<b>1.010</b>
Front	GSM850	0.622	0.047	0.669
Right side	GSM850	0.199	--	0.199
Left side	GSM850	0.173	0.048	0.221
Bottom side	GSM850	0.362	--	0.362
Top side	GSM850	--	0.089	0.089
Back	GSM1900	0.795	0.075	0.870
Front	GSM1900	0.575	0.047	0.622
Right side	GSM1900	0.251	--	0.251
Left side	GSM1900	0.231	0.048	0.279
Bottom side	GSM1900	0.547	--	0.547
Top side	GSM1900	0.172	0.089	0.261
Back	WCDMA Band 2	0.722	0.075	0.797
Front	WCDMA Band 2	0.483	0.047	0.530
Right side	WCDMA Band 2	0.206	--	0.206

Left side	WCDMA Band 2	0.193	0.048	0.241
Bottom side	WCDMA Band 2	0.426	--	0.426
Top side	WCDMA Band 2	0.205	0.089	0.294
Back	WCDMA Band 5	0.424	0.075	0.499
Front	WCDMA Band 5	0.245	0.047	0.292
Right side	WCDMA Band 5	0.129	--	0.129
Left side	WCDMA Band 5	0.097	0.048	0.145
Bottom side	WCDMA Band 5	0.121	--	0.121
Top side	WCDMA Band 5	--	0.089	0.089
Back	WCDMA Band 4	0.616	0.075	0.691
Front	WCDMA Band 4	0.562	0.047	0.609
Right side	WCDMA Band 4	0.255	--	0.255
Left side	WCDMA Band 4	0.230	0.048	0.278
Bottom side	WCDMA Band 4	0.516	--	0.516
Top side	WCDMA Band 4	0.098	0.089	0.187
Back	LTE Band 2	0.614	0.075	0.689
Front	LTE Band 2	0.412	0.047	0.459
Right side	LTE Band 2	0.215	--	0.215
Left side	LTE Band 2	0.196	0.048	0.244
Bottom side	LTE Band 2	0.417	--	0.417
Top side	LTE Band 2	--	0.089	0.089
Back	LTE Band 4	0.702	0.075	0.777
Front	LTE Band 4	0.524	0.047	0.571
Right side	LTE Band 4	0.250	--	0.250
Left side	LTE Band 4	0.222	0.048	0.270
Bottom side	LTE Band 4	0.469	--	0.469
Top side	LTE Band 4	0.088	0.089	0.177
Back	LTE Band 5	0.513	0.075	0.588
Front	LTE Band 5	0.298	0.047	0.345
Right side	LTE Band 5	0.160	--	0.160
Left side	LTE Band 5	0.140	0.048	0.188
Bottom side	LTE Band 5	0.191	--	0.191
Top side	LTE Band 5	0.018	0.089	0.107
Back	LTE Band 7	0.661	0.075	0.736
Front	LTE Band 7	0.545	0.047	0.592
Right side	LTE Band 7	0.294	--	0.294
Left side	LTE Band 7	0.257	0.048	0.305
Bottom side	LTE Band 7	0.443	--	0.443
Top side	LTE Band 7	0.249	0.089	0.338
Back	LTE Band 17	0.666	0.075	0.741
Front	LTE Band 17	0.359	0.047	0.406
Right side	LTE Band 17	0.117	--	0.117
Left side	LTE Band 17	0.097	0.048	0.145



Bottom side	LTE Band 17	0.128	--	0.128
Top side	LTE Band 17	--	0.089	0.089

Position	WWAN		WLAN(5.8G)	Summed SAR (W/kg)
	Band	Scaled SAR (W/kg)	Scaled SAR (W/kg)	
Back	GSM850	0.935	0.031	<b>0.966</b>
Front	GSM850	0.622	0.041	0.663
Right side	GSM850	0.199	--	0.199
Left side	GSM850	0.173	0.070	0.243
Bottom side	GSM850	0.362	--	0.362
Top side	GSM850	--	0.118	0.118
Back	GSM1900	0.795	0.031	0.826
Front	GSM1900	0.575	0.041	0.616
Right side	GSM1900	0.251	--	0.251
Left side	GSM1900	0.231	0.070	0.301
Bottom side	GSM1900	0.547	--	0.547
Top side	GSM1900	0.172	0.118	0.290
Back	WCDMA Band 2	0.722	0.031	0.753
Front	WCDMA Band 2	0.483	0.041	0.524
Right side	WCDMA Band 2	0.206	--	0.206
Left side	WCDMA Band 2	0.193	0.070	0.263
Bottom side	WCDMA Band 2	0.426	--	0.426
Top side	WCDMA Band 2	0.205	0.118	0.323
Back	WCDMA Band 5	0.424	0.031	0.455
Front	WCDMA Band 5	0.245	0.041	0.286
Right side	WCDMA Band 5	0.129	--	0.129
Left side	WCDMA Band 5	0.097	0.070	0.167
Bottom side	WCDMA Band 5	0.121	--	0.121
Top side	WCDMA Band 5	--	0.118	0.118
Back	WCDMA Band 4	0.616	0.031	0.647
Front	WCDMA Band 4	0.562	0.041	0.603
Right side	WCDMA Band 4	0.255	--	0.255
Left side	WCDMA Band 4	0.230	0.070	0.300
Bottom side	WCDMA Band 4	0.516	--	0.516
Top side	WCDMA Band 4	0.098	0.118	0.216
Back	LTE Band 2	0.614	0.031	0.645
Front	LTE Band 2	0.412	0.041	0.453
Right side	LTE Band 2	0.215	--	0.215
Left side	LTE Band 2	0.196	0.070	0.266
Bottom side	LTE Band 2	0.417	--	0.417
Top side	LTE Band 2	--	0.118	0.118

Back	LTE Band 4	0.702	0.031	0.733
Front	LTE Band 4	0.524	0.041	0.565
Right side	LTE Band 4	0.250	--	0.250
Left side	LTE Band 4	0.222	0.070	0.292
Bottom side	LTE Band 4	0.469	--	0.469
Top side	LTE Band 4	0.088	0.118	0.206
Back	LTE Band 5	0.513	0.031	0.544
Front	LTE Band 5	0.298	0.041	0.339
Right side	LTE Band 5	0.160	--	0.160
Left side	LTE Band 5	0.140	0.070	0.210
Bottom side	LTE Band 5	0.191	--	0.191
Top side	LTE Band 5	0.018	0.118	0.136
Back	LTE Band 7	0.661	0.031	0.692
Front	LTE Band 7	0.545	0.041	0.586
Right side	LTE Band 7	0.294	--	0.294
Left side	LTE Band 7	0.257	0.070	0.327
Bottom side	LTE Band 7	0.443	--	0.443
Top side	LTE Band 7	0.249	0.118	0.367
Back	LTE Band 17	0.666	0.031	0.697
Front	LTE Band 17	0.359	0.041	0.400
Right side	LTE Band 17	0.117	--	0.117
Left side	LTE Band 17	0.097	0.070	0.167
Bottom side	LTE Band 17	0.128	--	0.128
Top side	LTE Band 17	--	0.118	0.118

**WWAN and Bluetooth**

Position	WWAN		Bluetooth	Summed SAR (W/kg)
	Band	Scaled SAR (W/kg)	Scaled SAR (W/kg)	
Back	GSM850	0.935	0.052	<b>0.987</b>
Front	GSM850	0.622	0.052	0.674
Right side	GSM850	0.199	0.052	0.251
Left side	GSM850	0.173	0.052	0.225
Bottom side	GSM850	0.362	0.052	0.414
Top side	GSM850	--	0.052	0.052
Back	GSM1900	0.795	0.052	0.847
Front	GSM1900	0.575	0.052	0.627
Right side	GSM1900	0.251	0.052	0.303
Left side	GSM1900	0.231	0.052	0.283
Bottom side	GSM1900	0.547	0.052	0.599
Top side	GSM1900	0.172	0.052	0.224
Back	WCDMA Band 2	0.722	0.052	0.774

Front	WCDMA Band 2	0.483	0.052	0.535
Right side	WCDMA Band 2	0.206	0.052	0.258
Left side	WCDMA Band 2	0.193	0.052	0.245
Bottom side	WCDMA Band 2	0.426	0.052	0.478
Top side	WCDMA Band 2	0.205	0.052	0.257
Back	WCDMA Band 5	0.424	0.052	0.476
Front	WCDMA Band 5	0.245	0.052	0.297
Right side	WCDMA Band 5	0.129	0.052	0.181
Left side	WCDMA Band 5	0.097	0.052	0.149
Bottom side	WCDMA Band 5	0.121	0.052	0.173
Top side	WCDMA Band 5	--	0.052	0.052
Back	WCDMA Band 4	0.616	0.052	0.668
Front	WCDMA Band 4	0.562	0.052	0.614
Right side	WCDMA Band 4	0.255	0.052	0.307
Left side	WCDMA Band 4	0.230	0.052	0.282
Bottom side	WCDMA Band 4	0.516	0.052	0.568
Top side	WCDMA Band 4	0.098	0.052	0.150
Back	LTE Band 2	0.614	0.052	0.666
Front	LTE Band 2	0.412	0.052	0.464
Right side	LTE Band 2	0.215	0.052	0.267
Left side	LTE Band 2	0.196	0.052	0.248
Bottom side	LTE Band 2	0.417	0.052	0.469
Top side	LTE Band 2	--	0.052	0.052
Back	LTE Band 4	0.702	0.052	0.754
Front	LTE Band 4	0.524	0.052	0.576
Right side	LTE Band 4	0.250	0.052	0.302
Left side	LTE Band 4	0.222	0.052	0.274
Bottom side	LTE Band 4	0.469	0.052	0.521
Top side	LTE Band 4	0.088	0.052	0.140
Back	LTE Band 5	0.513	0.052	0.565
Front	LTE Band 5	0.298	0.052	0.350
Right side	LTE Band 5	0.160	0.052	0.212
Left side	LTE Band 5	0.140	0.052	0.192
Bottom side	LTE Band 5	0.191	0.052	0.243
Top side	LTE Band 5	0.018	0.052	0.070
Back	LTE Band 7	0.661	0.052	0.713
Front	LTE Band 7	0.545	0.052	0.597
Right side	LTE Band 7	0.294	0.052	0.346
Left side	LTE Band 7	0.257	0.052	0.309
Bottom side	LTE Band 7	0.443	0.052	0.495
Top side	LTE Band 7	0.249	0.052	0.301
Back	LTE Band 17	0.666	0.052	0.718
Front	LTE Band 17	0.359	0.052	0.411

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Right side	LTE Band 17	0.117	0.052	0.169
Left side	LTE Band 17	0.097	0.052	0.149
Bottom side	LTE Band 17	0.128	0.052	0.180
Top side	LTE Band 17	--	0.052	0.052

## 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
<b>Measurement System</b>									
Probe calibration	E.2.1	7.0	N	1	1	1	7.00	7.00	$\infty$
Axial Isotropy	E.2.2	2.5	R	$\sqrt{3}$	$(1_{Cp})^{1/2}$	$(1_{Cp})^{1/2}$	1.02	1.02	$\infty$
Hemispherical Isotropy	E.2.2	4.0	R	$\sqrt{3}$	$(Cp)^{1/2}$	$(Cp)^{1/2}$	1.63	1.63	$\infty$
Boundary effect	E.2.3	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	$\infty$
Linearity	E.2.4	5.0	R	$\sqrt{3}$	1	1	2.89	2.89	$\infty$
System detection limits	E.2.5	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	$\infty$
Readout Electronics	E.2.6	0.02	N	1	1	1	0.02	0.02	$\infty$
Reponse Time	E.2.7	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	$\infty$
Integration Time	E.2.8	2.0	R	$\sqrt{3}$	1	1	1.15	1.15	$\infty$
RF ambient Conditions – Noise	E.6.1	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	$\infty$
RF ambient Conditions - Reflections	E.6.1	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	$\infty$
Probe positioner Mechanical Tolerance	E.6.2	2.0	R	$\sqrt{3}$	1	1	1.15	1.15	$\infty$
Probe positioning with respect to Phantom Shell	E.6.3	0.05	R	$\sqrt{3}$	1	1	0.03	0.03	$\infty$
Extrapolation, interpolation and integration Algorithms for Max. SAR Evaluation	E.5	5.0	R	$\sqrt{3}$	1	1	2.89	2.89	$\infty$
<b>Test Sample Related</b>									
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	$\sqrt{3}$	1	1	6.94	6.94	$\infty$
SAR scaling	E6.5	0.0	R	$\sqrt{3}$	1	1	0.0	0.0	$\infty$
<b>Phantom and Tissue Parameters</b>									
Phantom Uncertainty (Shape and thickness tolerances)	E.3.1	0.05	R	$\sqrt{3}$	1	1	0.03	0.03	$\infty$
Uncertainty in SAR correction for deviations in permittivity and conductivity	E3.2	1.9	R	$\sqrt{3}$	1	0.84	1.10	0.90	$\infty$
Liquid conductivity - deviation	E.3.2	5.00	R	$\sqrt{3}$	0.64	0.43	1.85	1.24	$\infty$

from target value										
Liquid conductivity measurement uncertainty	E.3.3	5.00	N	1	0.64	0.43	3.20	2.15	$\infty$	
Liquid permittivity - deviation from target value	E.3.2	0.37	R	$\sqrt{3}$	0.6	0.49	0.13	0.10	$\infty$	
Liquid permittivity measurement uncertainty	E.3.3	10.00	N	1	0.6	0.49	6.00	4.90	$\infty$	
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
<b>Measurement System</b>									
Probe calibration	E.2.1	7.0	N	1	1	1	7.00	7.00	$\infty$
Axial Isotropy	E.2.2	2.5	R	$\sqrt{3}$	$(1_{Cp})^{1/2}$	$(1_{Cp})^{1/2}$	1.02	1.02	$\infty$
Hemispherical Isotropy	E.2.2	4.0	R	$\sqrt{3}$	$(Cp)^{1/2}$	$(Cp)^{1/2}$	1.63	1.63	$\infty$
Boundary effect	E.2.3	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	$\infty$
Linearity	E.2.4	5.0	R	$\sqrt{3}$	1	1	2.89	2.89	$\infty$
System detection limits	E.2.5	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	$\infty$
Modulation response	E.2.5	0	R	$\sqrt{3}$	0	0	0.0	0.0	$\infty$
Readout Electronics	E.2.6	0.02	N	1	1	1	0.02	0.02	$\infty$
Reponse Time	E.2.7	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	$\infty$
Integration Time	E.2.8	2.0	R	$\sqrt{3}$	1	1	1.15	1.15	$\infty$
RF ambient Conditions – Noise	E.6.1	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	$\infty$
RF ambient Conditions - Reflections	E.6.1	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	$\infty$
Probe positioner Mechanical Tolerance	E.6.2	2.0	R	$\sqrt{3}$	1	1	1.15	1.15	$\infty$
Probe positioning with respect to Phantom Shell	E.6.3	0.05	R	$\sqrt{3}$	1	1	0.03	0.03	$\infty$
Extrapolation, interpolation and integration Algorithms for Max.	E.5.2	5.0	R	$\sqrt{3}$	1	1	2.89	2.89	$\infty$

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

## Annex A. Plots of System Performance Check

# MEASUREMENT 1

### For Head Liquid

Type: Validation measurement (Fast, 75.00 %)

Date of measurement: 12/16/2019

Measurement duration: 7 minutes 21 seconds

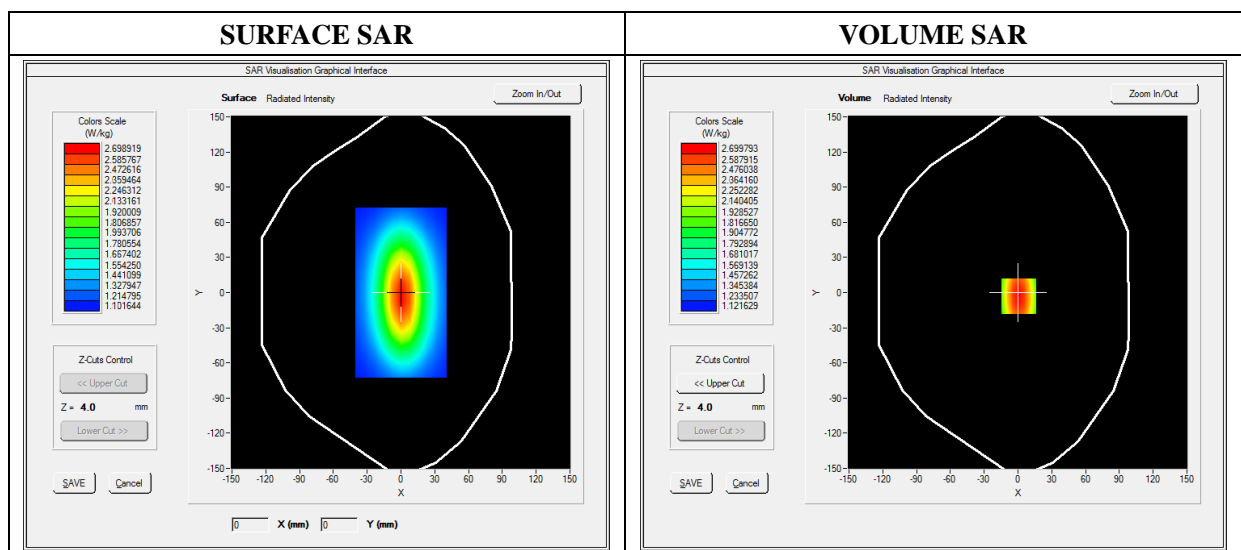
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.99; Calibrated: 05/22/2019

### A. Experimental conditions

Area Scan	dx=8mm dy=8mm
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



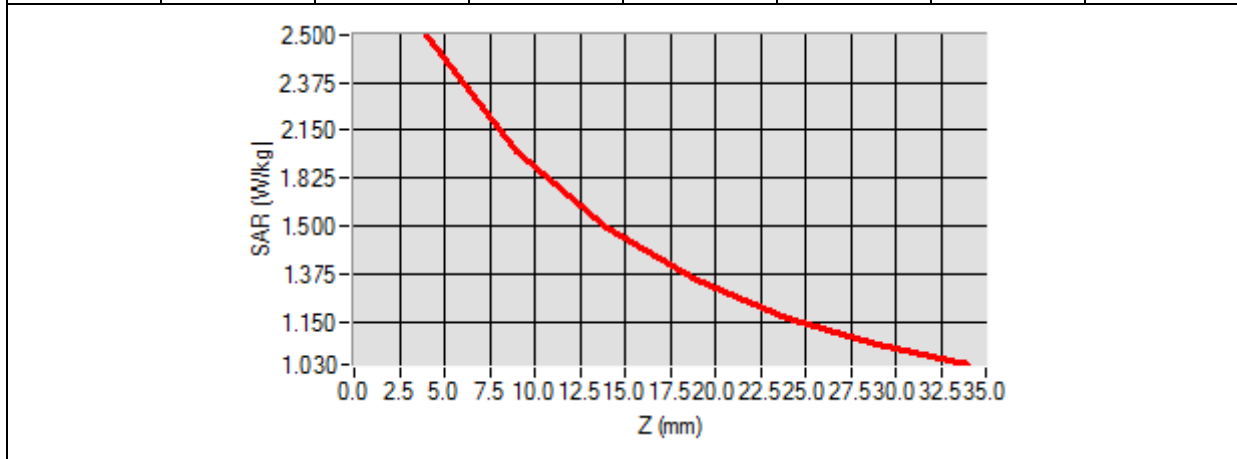


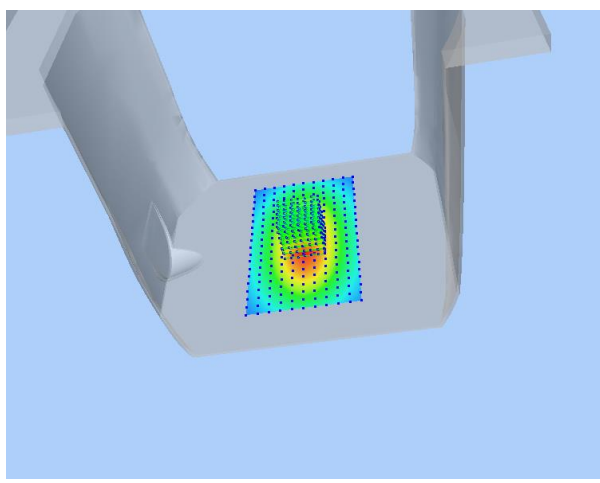
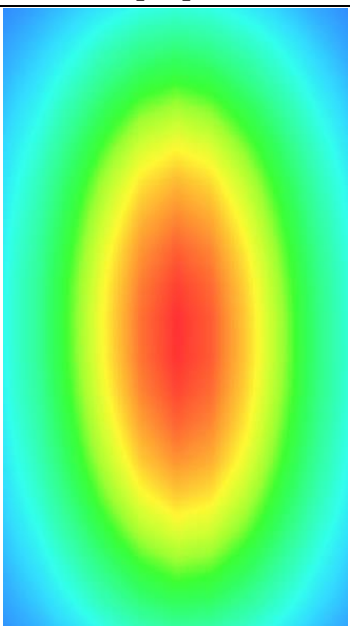
Maximum location: X=0.00, Y=0.00

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: 12/16/2019

Measurement duration: 7 minutes 21 seconds

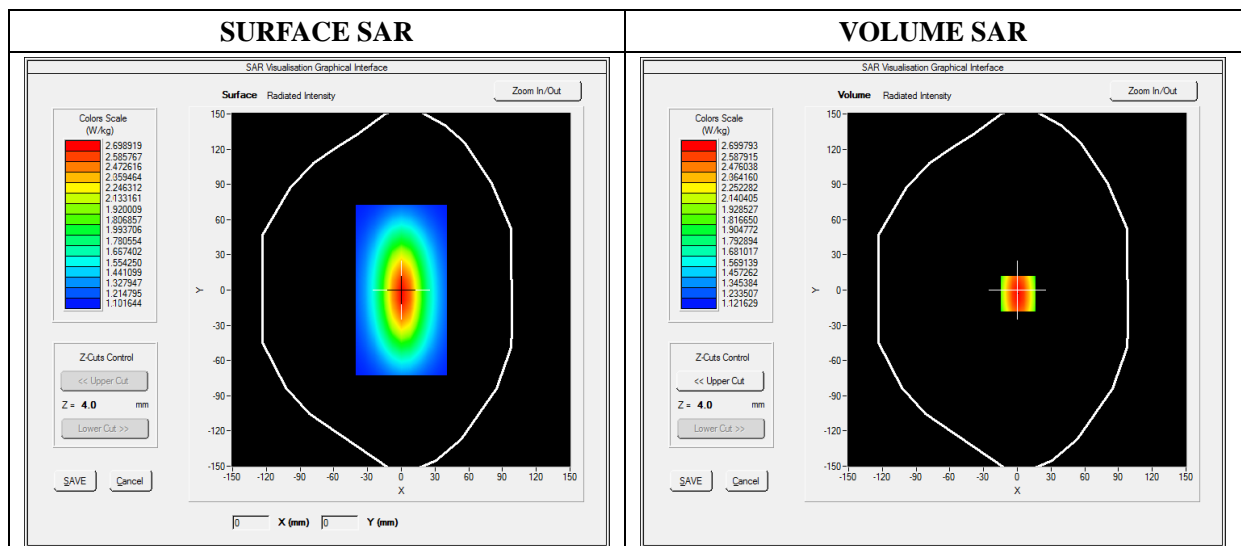
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.93; Calibrated: 05/22/2019

**A. Experimental conditions**

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

**B. SAR Measurement Results**

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

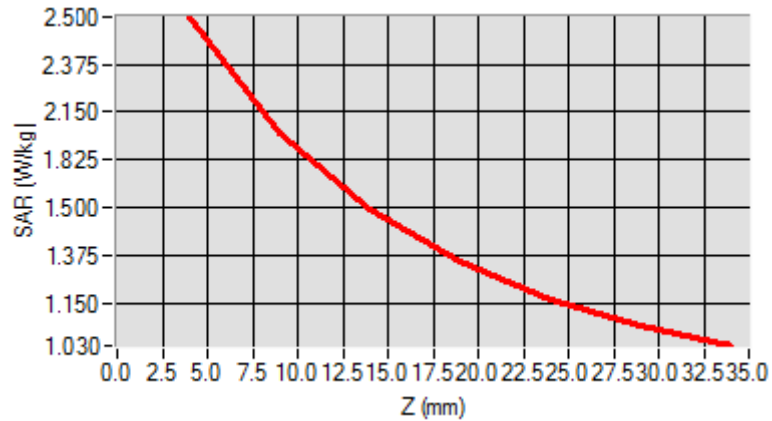


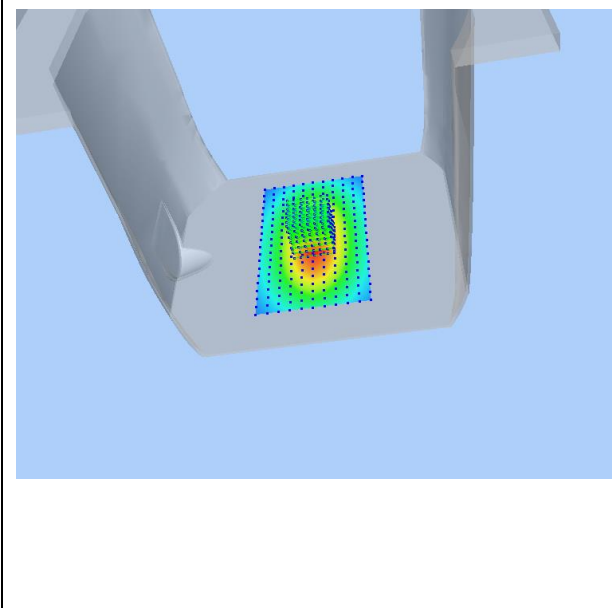
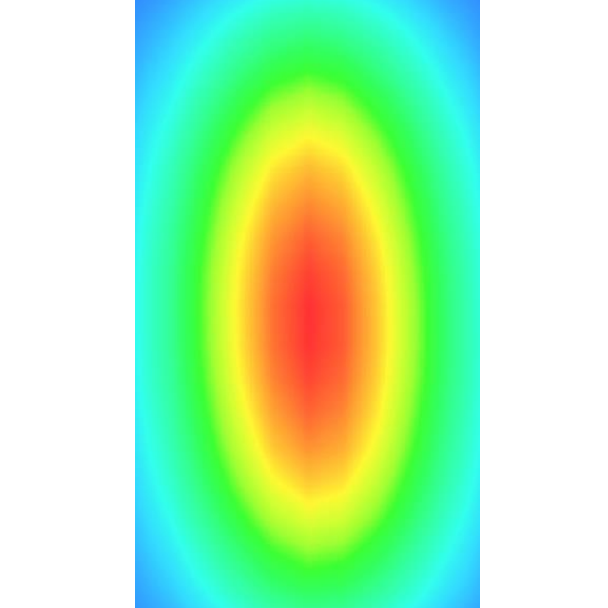
Maximum location: X=0.00, Y=0.00

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

Z Axis Scan

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



3D screen shot	Hot spot position
	

# MEASUREMENT 3

## For Head Liquid

Type: Validation measurement (Fast, 75.00 %)

Date of measurement: 12/17/2019

Measurement duration: 12 minutes 21 seconds

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

### A. Experimental conditions

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

### B. SAR Measurement Results

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

