TEST REPORT

No. I19D00121-SAR01

For

Client:	**Shanghai Sunmi Technology Co.,Ltd.**
Production:	**Smart POS system**
Model Name:	**T6900**
Brand Name:	**SUNMI**
FCC ID:	**2AH25T6900**
Hardware Version:	**B1691_MAIN_PCB**
Software Version:	**V1.0.1**
Issued date:	**2019-09-03**

NOTE

1. The test results in this test report relate only to the devices specified in this report.
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3. KDB has not been approved by A2LA.
4. It has been confirmed with the customer that the Tune-up Power information provided by the customer may affect the validity of the measurement results in this report, and the impact and consequences will be borne by the customer.
5. For the test results, the uncertainty of measurement is not taken into account when judging the compliance with specification, and the results of measurement or the average value of measurement results are taken as the criterion of the compliance with specification directly.

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Revision Version

Report Number	Revision	Date	Memo
I19D00121-SAR01	00	2019-09-03	Initial creation of test report

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1. Test Laboratory

1.1. Testing Location

Company Name	East China Institute of Telecommunications
Address	7-8/F., Area G, No.668, Beijing East Road, Shanghai, China
Postal Code	200001
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1.2. Testing Environment

Normal Temperature	18℃-25℃
Relative Humidity	25%-75%

1.3. Project Data

Project Leader	Chen Minfei
Testing Start Date	2019-08-13
Testing End Date	2019-08-27

1.4. Signature

Yan Hang
(Prepared this test report)

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(Reviewed this test report)

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2. Client Information

2.1. Applicant Information

Company Name	Shanghai Sunmi Technology Co.,Ltd.
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Telephone	+86-187 2176 3396
Postcode	/

2.2. Manufacturer Information

Company Name	Shanghai Sunmi Technology Co.,Ltd.
Address	Room 605, Block 7, KIC Plaza, No.388 Song Hu Road, Yang Pu District, Shanghai, China
Telephone	+86-187 2176 3396
Postcode	/

3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

Description:	Smart POS system
Model Name:	T6900
Operation Model(s):	GSM850/GSM900/GSM1800/GSM1900 WCDMA Band I/Band II/Band IV/Band V/BandVIII LTE 1/2/3/4/5/7/17/28/38/41 BT4.2,BLE;WiFi GPS;AGPS;
Tx Frequency:	824.2-848.8MHz(GSM850) 1850.2-1909.8MHz（GSM1900） 1852.4-1907.6 MHz (WCDMA Band II) 1712.4-1752.6 MHz (WCDMA Band IV) 826.4-846.6MHz (WCDMA Band V) 1850.7 -1909.3 MHz (LTE Band 2) 1710.7 -1754.3 MHz (LTE Band 4) 824.7 -848.3 MHz (LTE Band 5) 2502.5 – 2567.5 MHz (LTE Band 7) 706.5 -713.5 MHz (LTE Band 17) 2535 - 2655MHz (LTE Band 41) 2412- 2462 MHz (WiFi) 5180-5240 MHz(U-NII-1) 5260-5320 MHz(U-NII-2A) 5745-5825 MHz(U-NII-3)
Test device Production Information: GPRS Class Mode: GPRS Multislot Class:	Production unit B 12
WLAN Mode:	WLAN 2.4GHz 802.11b/g/n HT20/n HT40 WLAN 5GHz 802.11 a/n HT20/n HT40
Device Type:	Portable device
Antenna Type:	Inner antenna
Accessories/Body-worn Configurations:	Battery
Dimensions: Hotspot Mode:	222x81.6x17.6mm Support
Note: Photographs of EUT are shown in ANNEX C of this test report.	

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version	Date of receipt
N05	865150030742925	B1691_MAIN_PCB	V1.0.1	2019-07-19

*EUT ID: is used to identify the test sample in the lab internally.

Note: The product has two SIM cards, SIM 1 and SIM 2 does not support simultaneous work, only supports a single transmitter; When SIM 1 is working, SIM 2 will be suspended until SIM 2 is selected. When stop using the SIM 1, SIM 2 would work.

3.3. Internal Identification of AE used during the test

AE ID*	Description	Type	Manufacturer
BA10	Battery	N/A	N/A

*AE ID: is used to identify the test sample in the lab internally.

4. Reference Documents

4.1. Documents supplied by applicant

All technical documents are supplied by the client or manufacturer, which is the basis of testing.

4.2. Reference Documents

The following documents listed in this section are referred for testing.

Reference	Title	Version
ANSI C95.1	IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.	**1999**
IEEE 1528	Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Body Due to Wireless Communications Devices: Experimental Techniques.	**2013**
KDB648474	Handset SAR	**D04 v01r03**
KDB648474	Wireless Chargers Battery Cover	**D03 v01r04**
KDB248227	802 11 WiFi SAR	**D01 v02r02**
KDB447498	General RF Exposure Guidance	**D01 v06**
KDB865664	SAR Measurement 100 MHz to 6 GHz	**D01 v01r04**
KDB865664	RF Exposure Reporting	**D02 v01r02**
KDB941225	3G SAR Procedures	**D01 v03r01**
KDB941225	SAR for LTE Devices	**D05 v02r05**
KDB941225	Hotspot SAR	**D06 v02r01**
KDB616217	SAR for laptop and tablets	**D04 v01r02**

4.3. Criterion

At frequencies between 100 kHz and 6 GHz, the MPE (Maximum Permissible Exposure) in population/ uncontrolled environments for electromagnetic field strengths may be exceeded if

a) The exposure conditions can be shown by appropriate techniques to produce SARs below 0.08W/kg, as averaged over the whole body, and spatial peak SAR values not exceeding 1.6 W/kg, as averaged over any 1g of tissue (defined as a tissue volume in the shape of a cube), except for the hands, wrists, feet, and ankles where the spatial peak SAR shall not exceed 4 W/kg, as averaged over any 10g of tissue (defined as a tissue volume in the shape of a cube); and

b) The induced currents in the body confirm with the MPE in table 2, Part B in ANSI C95.1-1999.

5. Test Summary and Statement of Compliance

5.1. Test Summary

The maximum results of Specific Absorption Rate (SAR) in standalone mode are as follows.

Table 5.1: Standalone Max. Reported SAR

Band	SAR 1g(W/kg)	SAR 10g(W/kg)
	Body (5mm)	Limb(0mm)
GSM 850	1.22	1.533
GSM 1900	1.077	2.274
WCDMA Band2	1.2	2.07
WCDMA Band4	1.142	1.518
WCDMA Band5	0.543	0.67
LTE Band2	0.867	1.472
LTE Band4	**1.262**	**2.586**
LTE Band5	0.724	0.915
LTE Band7	0.663	0.936
LTE Band17	0.556	0.656
LTE Band41	0.432	0.457
2.4G WiFi	0.356	0.323
5G WiFi	0.385	0.222

The maximum results of Specific Absorption Rate (SAR) in simultaneous mode are as follows.

Table 5.2: Simultaneous Transmission SAR

Highest SAR 10g(W/kg)		
Mode	Position	Results
GSM850&WIFI 2.4G	Body(5mm)	1.433
LTE B4&BT	Limb(0mm)	2.646

5.2. Statement of Compliance

The **T6900** manufactured by **Shanghai Sunmi Technology Co.,Ltd.** is a parent model for testing.

ECIT has verified that the compliance of the tested device specified in section 3 of this test report is successfully evaluated according to the procedure and test methods as defined in type certification requirement listed in section 4 of this test report.

For body worn operation mode, this device with any accessory that contained in this report has been tested and the values meet FCC RF exposure guidelines. Use of other accessories may not ensure compliance with FCC RF exposure guidelines.

6. Specific Absorption Rate (SAR)

6.1. 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.

6.2. SAR Definition

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

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

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

$$SAR = c(\frac{\delta T}{\delta t})$$

Where: C is the specific head capacity, δT is the temperature rise and δt is the exposure duration, or related to the electrical field in the tissue by

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

Where:

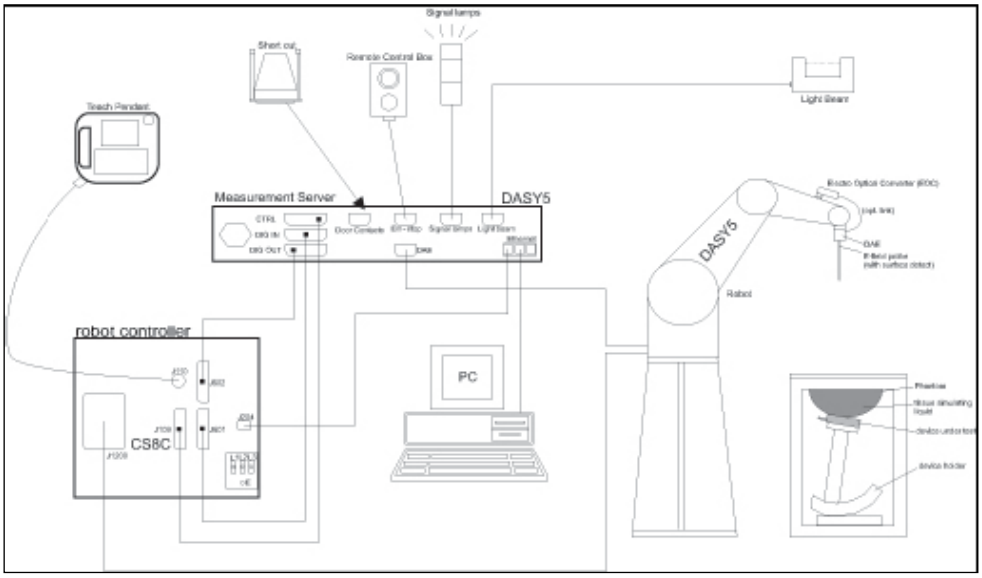
- σ is the conductivity of the tissue
- ρ is the mass density of tissue, which is normally set to 1g/cm^3
- E is the RMS electrical field strength

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

7. SAR Measurement System Introduction

7.1. Measurement Set-up

The DASY5 system for performing compliance tests is illustrated above graphically. This system consists of the following items:



Picture 7-1 SAR Measurement Set-up

- A standard high precision 6-axis robot (Stäubli TX=RX family) with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running WinXP and the DASY5 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

7.2. E-field Probe System

The SAR measurements were conducted with the dosimetric probe designed in the classical triangular configuration and optimized for dosimetric evaluation. The probe is constructed using the thick film technique; with printed resistive lines on ceramic substrates. The probe is equipped with an optical multi-fiber line ending at the front of the probe tip. It is connected to the EOC box on the robot arm and provides an automatic detection of the phantom surface. Half of the fibers are connected to a pulsed infrared transmitter, the other half to a synchronized receiver. As the probe approaches the surface, the reflection from the surface produces a coupling from the transmitting to the receiving fibers. This reflection increases first during the approach, reaches maximum and then decreases. If the probe is flatly touching the surface, the coupling is zero. The distance of the coupling maximum to the surface is independent of the surface reflectivity and largely independent of the surface to probe angle. The DASY5 software reads the reflection during a software approach and looks for the maximum using 2nd ord curve fitting. The approach is stopped at reaching the maximum.

Probe Specifications:	
Model:	**ES3DV3,EX3DV4**
Frequency Range:	**10MHz — 6GHz(EX3DV4)**
	10MHz — 4GHz(ES3DV3)
Calibration:	**In head and body simulating tissue at frequency from 650MHz to 5900MHz**
Linearity:	**± 0.2 dB(30 MHz to 4 GHz) for ES3DV3** **± 0.2 dB(30 MHz to 6 GHz) for EX3DV4**
Dynamic Range:	**10 mW/kg — 100 W/kg**
Probe Length:	**330 mm**
Probe Tip Length:	**20 mm**
Body Diameter:	**12 mm**
Tip Diameter: **Tip-Center:**	**2.5 mm (3.9 mm for ES3DV3)** **1 mm (2.0mm for ES3DV3)**
Application:	**SAR Dosimetry Testing** **Compliance tests of mobile phones** **Dosimetry in strong gradient fields**

Picture 7-2 Detail of Probe

Picture 7-3 E-field Probe

7.3. E-field Probe Calibration

Each E-Probe/Probe Amplifier combination has unique calibration parameters. A TEM cell 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^2) using an RF Signal generator, TEM cell, and RF Power Meter.

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 inn 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 then rotated 360 degrees until the three channels show the maximum reading. The power density readings equates to 1 mW/cm^2.

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

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

Where:

Δt = Exposure time (30 seconds),

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

ΔT = Temperature increase due to RF exposure.

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

Where:

σ = Simulated tissue conductivity,

ρ = Tissue density (kg/m^3).

7.4. Other Test Equipment

7.4.1. Data Acquisition Electronics (DAE)

The data acquisition electronics consist of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder with a control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information, as well as an optical uplink for commands and the clock.

The mechanical probe mounting device includes two different sensor systems for frontal and sideways probe contacts. They are used for mechanical surface detection and probe collision detection.

The input impedance of the DAE is 200M Ohm; the inputs are symmetrical and floating. Common mode rejection is above 80dB.

Picture 7-4: DAE

7.4.2. Robot

The SPEAG DASY system uses the high precision robots (DASY5: TX90) type from Stäubli SA (France).

For the 6-axis controller system, the robot controller version from Stäubli is used. The Stäubli robot series have many features that are important for our application:

- High precision (repeatability 0.02mm)
- High reliability (industrial design)
- Low maintenance costs (virtually maintenance free due to direct drive gears; no belt drives)
- Jerk-free straight movements (brushless synchronal motors; no stepper motors)
- Low ELF interference (motor control fields shielded via the closed metallic construction shields)

Picture 7-5: DASY 5

7.4.3. Measurement Server

The Measurement server is based on a PC/104 CPU broad with CPU (DASY5: 400 MHz, Intel Celeron), chip disk (DASY5: 128MB), RAM (DASY5: 128MB). The necessary circuits for communication with the DAE electronic box, as well as the 16 bit AD converter system for optical detection and digital I/O interface are contained on the DASY I/O broad, which is directly connected to the PC/104 bus of the CPU broad.

Picture 7-6: Server for DASY 5

The measurement server performs all real-time data evaluation of field measurements and surface detection, controls robot movements and handles safety operation. The PC operating system cannot interfere with these time critical processes. All connections are supervised by a watchdog, and disconnection of any of the cables to the measurement server will automatically disarm the robot and disable all program-controlled robot movements. Furthermore, the measurement server is equipped with an expansion port which is reserved for future applications. Please note that this expansion port does not have a standardized pinout, and therefore only devices provided by SPEAG can be connected. Devices from any other supplier could seriously damage the measurement server.

7.4.4. Device Holder for Phantom

The SAR in the phantom is approximately inversely proportional to the square of the distance between the source and the liquid surface. For a source at 5mm distance, a positioning uncertainty of ±0.5mm would produce a SAR uncertainty of ±20%. Accurate device positioning is therefore crucial for accurate and repeatable measurements. The positions in which the devices must be measured are defined by the standards.

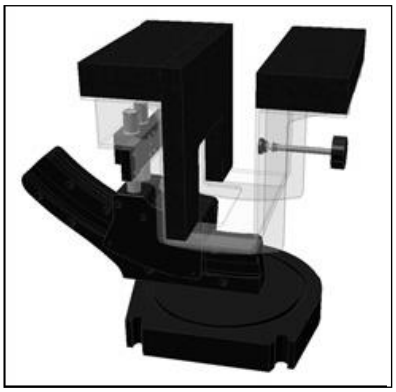
The DASY device holder is designed to cope with the different positions given in the standard. It has two scales for device rotation (with respect to the body axis) and device inclination (with respect to the line between the ear reference points). The rotation centers for both scales is the ear reference point (ERP). Thus the device needs no repositioning when changing the angles.

The DASY device holder is constructed of low-loss POM material having the following dielectric parameters: relative permittivity ε =3 and loss tangent δ =0.02. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered.

Picture 7-7: Device Holder

The extension is lightweight and made of POM, acrylic glass and foam. It fits easily on the upper part of the Mounting Device in place of the phone positioner. The extension is fully compatible with the Twin-SAM and ELI phantoms.

The DASY device holder is constructed of low-loss POM material having the following dielectric parameters: relative permittivity ε =3 and loss tangent δ =0.02. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered.



Picture 7-8: Laptop Extension Kit

7.4.5. Phantom

The SAM Twin Phantom V4.0 is constructed of a fiberglass shell integrated in a table. The shape of the shell is based on data from an anatomical study designed to represent the 90th percentile of the

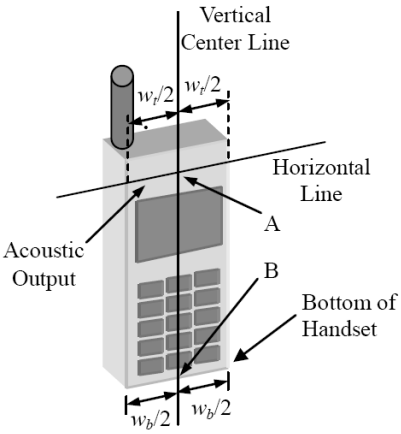
population. The phantom enables the dissymmetric evaluation of SAR for both left and right handed handset usage, as well as body-worn usage using the flat phantom region. Reference markings on the Phantom allow the complete setup of all predefined phantom positions and measurement grids by manually teaching three points in the robot. The shell phantom has a 2mm shell thickness (except the ear region where shell thickness increases to 6 mm).

Shell Thickness:	2 ± 0.2 mm	**Picture 7-9: SAM Twin Phantom**
Available:	Special	
Filling Volume:	Approx. 25 liters	
Dimensions:	810 x l000 x 500 mm (H x L x W)	

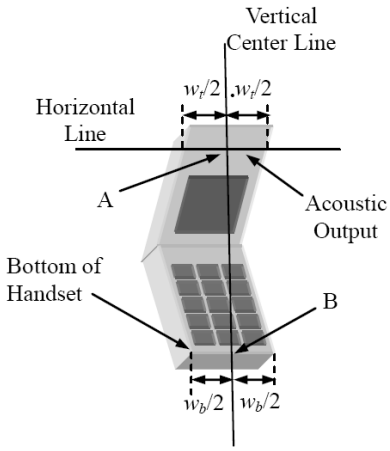
8. Test Position in Relation to the Phantom

8.1. General considerations

This standard specifies two handset test positions against the head phantom – the “cheek” position and the “tilt” position.

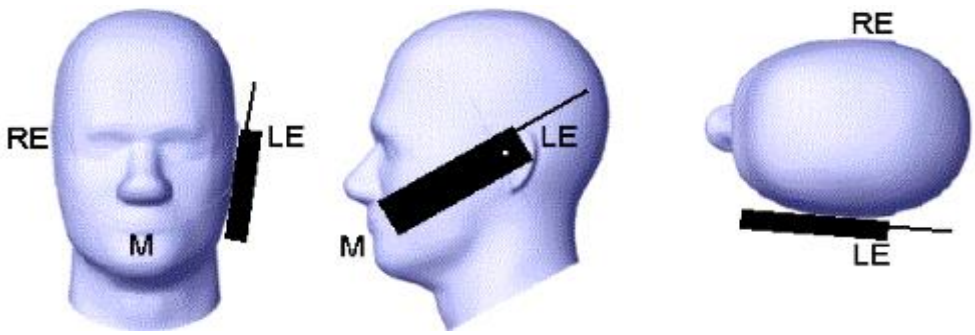


Picture 8-1 Typical “fixed” case handset

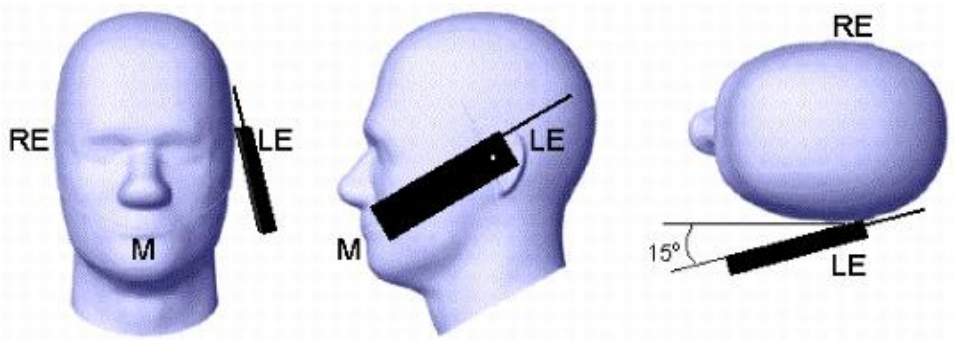


Picture 8-2 Typical “clam-shell” case handset

W_t	Width of the handset at the level of the acoustic
W_b	Width of the bottom of the handset
A	Midpoint of the width W_t of the handset at the level of the acoustic output
B	Midpoint of the width W_b of the bottom of the handset



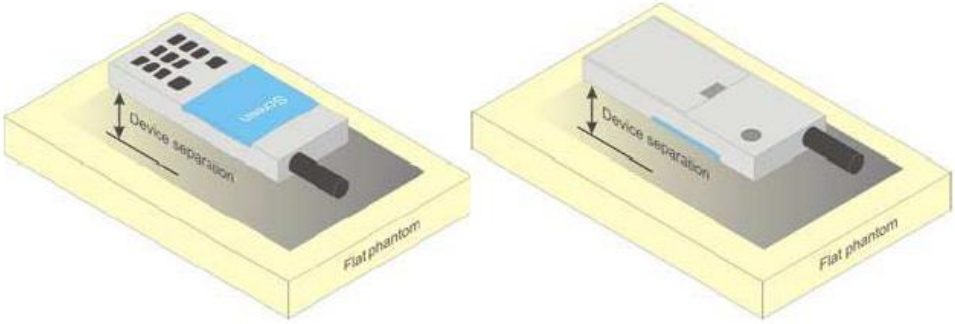
Picture 8-3 Cheek position of the wireless device on the left side of SAM



Picture 8-4 Tilt position of the wireless device on the left side of SAM

8.2. Body-worn device

A typical example of a body-worn device is a mobile phone, wireless enabled PDA (personal digital assistant) or other battery operated wireless device with the ability to transmit while mounted on a person's body using a carry accessory approved by the wireless device manufacturer.



Picture 8-5 Test positions for body-worn devices

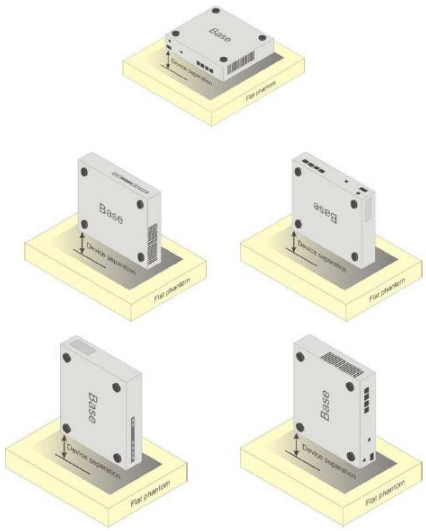
8.3. Desktop device

A typical example of a desktop device is a wireless enabled desktop computer placed on a table or desk when used.

The DUT shall be positioned at the distance and in the orientation to the phantom that corresponds to the intended use as specified by the manufacturer in the user instructions. For devices that employ an external antenna with variable positions.

Tests shall be performed for all antenna positions specified.

Picture 8-6 shows positions for desktop device SAR tests. If the intended use is not specified, the device shall be tested directly against the flat phantom.



Picture 8-6 Test positions for desktop devices

9. Tissue Simulating Liquids

9.1. Equivalent Tissues Composition

The liquid used for the frequency range of 650-6000 MHz consisted of water, sugar, salt, preventol, glycol monobutyl and Cellulose. The liquid has been previously proven to be suited for worst-case. The Table 9.1 shows the detail solution. It's satisfying the latest tissue dielectric parameters requirements proposed by the IEEE 1528 and IEC 62209.

Table 9.1: Composition of the Head Tissue Equivalent Matter

Frequency (MHz)	835	900	1800	1950	2300	2450	2600	5800
Ingredients (% by weight)								
Water	41.45	40.92	55.242	54.89	56.34	58.79	58.79	65.53
Sugar	56.0	56.5	/	/	/	/	/	
Salt	1.45	1.48	0.306	0.18	0.14	0.06	0.06	
Preventol	0.1	0.1	/	/	/	/	/	
Cellulose	1.0	1.0	/	/	/	/	/	
GlycolMonobutyl	/	/	44.452	44.93	43.52	41.15	41.15	
Diethylenglycol momohexylether	/	/	/	/	/	/	/	17.24
Triton X-100	/	/	/	/	/	/	/	17.23
Dielectric Parameters Target Value	ε=41.5 σ=0.90	ε=41.5 σ=0.97	ε=40.0 σ=1.40	ε=40.0 σ=1.40	ε=39.5 σ=1.67	ε=39.2 σ=1.80	ε=39.0 σ=1.96	ε=35.3 σ=5.27

Table 9.2: Targets for tissue simulating liquid

Frequency (MHz)	Liquid Type	Conductivity (σ)	± 5% Range	Permittivity (ε)	± 5% Range
835	Head	0.90	0.874~0.97	41.5	39.4~43.6
900	Head	0.97	0.92~1.02	41.5	39.4~43.6
1800	Head	1.40	1.33~1.47	40.0	38.0~42.0
1950	Head	1.40	1.33~1.47	40.0	38.0~42.0
2300	Head	1.67	1.59~1.75	39.5	37.5~41.4
2450	Head	1.80	1.71~1.89	39.2	37.2~41.2
2600	Head	1.96	1.86~2.06	39.0	37.5~40.95
5200	Head	4.66	4.43~4.89	35.99	34.19~37.79
5300	Head	4.76	4.52~4.99	35.87	34.08~37.66
5500	Head	4.96	4.71~5.2	35.6	33.82~37.38
5600	Head	5.07	4.82~5.32	35.53	33.75~37.30
5800	Head	5.27	5.01~5.53	35.3	33.54~37.05

Note: Effective February 19, 2019, FCC has permitted the use of single head-tissue simulating liquid specified in IEC 62209-1 for all SAR tests.

9.2. Dielectric Performance of TSL

Table 9.3: Dielectric Performance of Head Tissue Simulating Liquid

Tissue Simulating Liquid								
Frequency (MHz)	Head(Standard)		Temperature	Date	Test Result		Deviation	
	Permittivity ε	Conductivity σ			Permittivity ε	Conductivity σ	Permittivity ε	Conductivity σ
750	41.90	0.89	22.6℃	2019-08-18	42.605	0.886	1.68%	-0.45%
835	41.50	0.90	22.6℃	2019-08-13	41.97	0.915	1.13%	1.67%
1750	40.10	1.37	22.6℃	2019-08-24	39.328	1.384	-1.93%	1.02%
1900	40.00	1.40	22.6℃	2019-08-27	38.984	1.426	-2.54%	1.86%
2450	39.20	1.80	22.6℃	2019-08-22	38.258	1.831	-2.40%	1.72%
2600	39.00	1.96	22.6℃	2019-08-20	38.709	2.003	-0.75%	2.19%
5200	36	4.66	22.6℃	2019-08-15	37.18	4.643	3.28%	-0.36%
5800	35.3	5.27	22.6℃	2019-08-15	36.03	5.303	2.07%	0.63%

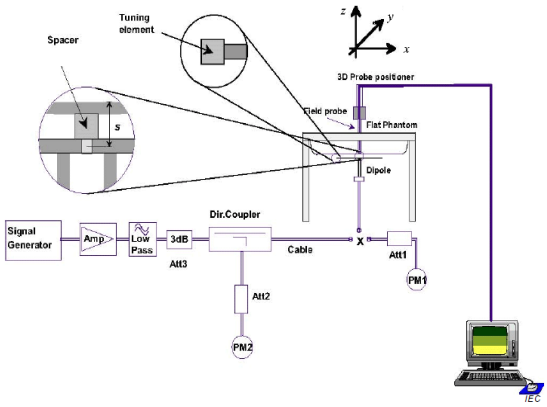
10. System Validation

10.1. System Validation

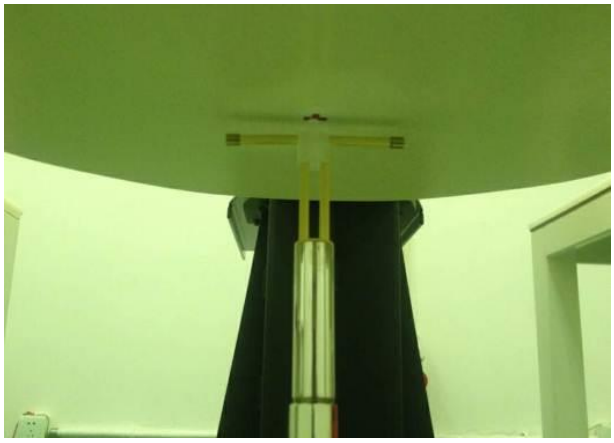
Each DASY system is equipped with one or more system validation kits. These units, together with the predefined measurement procedures within the DASY software, enable the user to conduct the system performance check and system validation. System validation kit includes a dipole, tripod holder to fix it underneath the flat phantom and a corresponding distance holder.

10.2. System Setup

In the simplified setup for system evaluation, the DUT is replaced by a calibrated dipole and the power source is replaced by a continuous wave that comes from a signal generator. 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. The equipment setup is shown below:



Picture 10-1 Setup for System Evaluation



Picture 10-2. Setup for Dipole

10.3. System Validation Result

Table 10.1: System Validation Result of SAR

SAR System Validation								
Frequency (MHz)	Average Target Value (w/kg)		Temperature	Date	Test Result (w/kg)		Deviation (w/kg)	
	10g	1g			10g	1g	10g	1g
750	5.59	8.5	22.6℃	2019-08-18	5.52	8.36	-1.25%	-1.65%
835	6.25	9.63	22.6℃	2019-08-13	6.2	9.52	-0.80%	-1.14%
1750	19.4	36.5	22.6℃	2019-08-24	19.8	36.88	2.06%	1.04%
1900	21.1	40.5	22.6℃	2019-08-27	20.28	39	-3.89%	-3.70%
2450	24.4	52.4	22.6℃	2019-08-22	25.52	55.2	4.59%	5.34%
2600	25.4	57.2	22.6℃	2019-08-20	26	59.2	2.36%	3.50%
5200	21.4	74.9	22.6℃	2019-08-15	21.1	73.9	-1.40%	-1.34%
5800	20.7	73.7	22.6℃	2019-08-15	20.2	72.5	-2.42%	-1.63%
Note:The input power level is equivalent to 1w								

11. Measurement Procedures

11.1. Test Steps

According to the SAR test standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:

(a) Power reference measurement

The reference and drift jobs are useful for monitoring the power drift of the device under test in the batch process. Both jobs measure the electric field strength at a specified reference position, at a selectable distance from the phantom surface. The reference position can be either the selected section's grid reference point or a user point in this section. The reference job projects the selected point onto the phantom surface, orients the probe perpendicularly to the surface, and approaches the surface using the selected detection method.

(b) Area scan

The area scan is used as a fast scan in two dimensions to find the area of high field values, before doing a finer measurement around the hot spot. The sophisticated interpolation routines implemented in DASY software can find the maximum locations even in relatively coarse grids. The scan area is defined by an editable grid. This grid is anchored at the grid reference point of the selected section in the phantom. When the area scan's property sheet is brought up, grid was at to 15mm * 15mm and can be edited by users.

(c) Zoom scan

Zoom scans are used to assess the peak spatial SAR values within a cubic averaging volume containing 1g and 10g of simulated tissue. The default zoom scan measures 5 * 5 * 7 points within a cube whose base faces are centered around the maximum found in a preceding area scan job within the same procedure. If the preceding Area Scan job indicates more than one maximum, the number of Zoom Scans has to be enlarged accordingly.

(d) Power drift measurement

The drift job measures the field at the same location as the most recent reference job within the same procedure, and with the same setting. The drift measurement gives the field difference in dB from the reading conducted within the last reference measurement. Several drift measurements are possible for one reference measurement. This allows a user to monitor the power drift of the device under within a batch process. In the properties of the drift job, the user can specify a limit for the drift and have DASY software stop the measurements if this limit is exceeded. This ensures that the power drift during one measurement is within 5%.

The SAR measurement procedures for each of test conditions are as follows:

(a) Make EUT to transmit it maximum output power

(b) Measure conducted output power through RF cable

(c) Place the EUT in the specific position of phantom

(d) Measure SAR results for Middle channel or the highest power channel on each testing position

(e) Measure SAR results for other channels in worst SAR testing position if the reported SAR of highest power channel is larger than 0.8 W/kg

(f) Record the SAR value

11.2. Spatial Peak SAR Evaluation

The procedure for spatial peak SAR evaluation has been implemented according to the IEEE1529 standard. It can be conducted for 1g and 10g.

The DASY system allows evaluations that combine measured data and robot positions, such as:

a) Maximum Search

During a maximum search, global and local maximum searches are automatically performed in 2D after each Area Scan measurement with at least 6 measurement points. It is based on the evaluation of the local SAR gradient calculated by the Quadratic Shepard's method. The algorithm will find the global maximum and all local maxima within -2dB of the global maxima for all SAR distributions.

b) Extrapolation

Extrapolation routines are used to obtain SAR values between the lowest measurement points and the inner phantom surface. The extrapolation distance is determined by the surface detection distance and the probe sensor offset. Several measurements at different distances are necessary for the extrapolation. Extrapolation routines require at least 10 measurement points in 3D space. They are used in the Cube Scan to obtain SAR values between the lowest measurement points and the inner phantom surface. The routine uses the modified Quadratic Shepard's method for extrapolation. For a grid using 5*5*5 measurement points with 5mm resolution amounting to 343 measurement points, the uncertainty of the extrapolation routines is less than 1% for 1g and 10 cubes.

c) Boundary effect

For measurements in the immediate vicinity of a phantom surface, the field coupling effects between the probe and the boundary influence the probe characteristics. Boundary effect errors of different dosi-metric probe types have been analyzed by measurements and using a numerical probe model. As expected, both methods showed an enhanced sensitivity in the immediate vicinity of the boundary. The effect strongly depends on the probe dimensions and disappears with increasing distance from the boundary. The sensitivity can be approximately given as:

$$S \approx So + Sb * \exp\left(-\frac{z}{a}\right) * \cos(\pi\frac{z}{\lambda})$$

Since the decay of the boundary effect dominates for small probe ($a \ll \lambda$), the cos-term can be omitted. Factors Sb (parameter Alpha in the DASY software) and a (parameter Delta in the DASY software) ard assessed during probe calibration and used for numerical compensation of the boundary effect. Several simulations and measurements have confirmed that the compensation is valid for different field and boundary configurations.

This simple compensation procedure can largely reduce the probe uncertainty near boundaries. It works well as long as:

- The boundary curvature is small
- The probe axis is angled less than 30_to the boundary normal
- The distance between probe and boundary is larger than 25% of the probe diameter
- The probe is symmetric (all sensors have the same offset from the probe tip)

Since all of these requirements are fulfilled in a DASY system, the correction of the probe boundary effect in the vicinity of the phantom surface is performed in a fully automated manner via the measurement data extraction during post processing.

11.3. General Measurement Procedure

The area and zoom scan resolutions specified in the table below must be applied to the SAR measurements and fully documented in SAR reports to qualify for TCB approval. Probe boundary effect error compensation is required for measurements with the probe tip closer than half a probe tip diameter to the phantom surface. Both the probe tip diameter and sensor offset distance must satisfy measurement protocols; to ensure probe boundary effect errors are minimized and the higher fields closest to the phantom surface can be correctly measured and extrapolated to the phantom surface for computing 1-g SAR. Tolerances of the post-processing algorithms must be verified by the test laboratory for the scan resolutions used in the SAR measurements, according to the reference distribution functions specified in IEEE Std 1528-2013. The results should be documented as part of the system validation records and may be requested to support test results when all the measurement parameters in the following table are not satisfied.

Table 11.1: Test Resolution Requirement

Items			≤3GHz	>3GHz
Maximum Distance			5mm ±1mm	$\frac{1}{2} * \delta * \ln(2)$ mm ±0.5mm
Maximum probe angle			30±1°	20±1°
Maximum Area Scan spatial resolution: Δx_{Area}, Δy_{Area}			≤2GHz: ≤15mm	3-4GHz: ≤12mm
			2-3GHz: ≤12mm	4-6GHz: ≤10mm
			when the x or y dimension of the device , in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the device with at least one measurement point on the device	
Maximum Zoom Scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}			≤2GHz: ≤8mm	3-4GHz: ≤5mm
			2-3GHz: ≤5mm	4-6GHz: ≤4mm
maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤5mm	3-4GHz: ≤4mm 4-5GHz: ≤3mm 5-6GHz: ≤2mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface	≤4mm	3-4GHz: ≤3mm 4-5GHz: ≤2.5mm 5-6GHz: ≤2mm
		$\Delta z_{Zoom}(n>1)$ between subsequent points	≤1.5*	
minimum zoom scan volume	x, y, z		≥30mm	3-4GHz: ≥28mm 4-5GHz: ≥25mm 5-6GHz: ≥22mm

Notes:

δ is the penetration depth of a plane-wave at normal incidence to the tissue medium in IEEE 1528-2013.

When Zoom Scan is required and reported SAR from the Area Scan based 1-g SAR estimation procedure of KDB publication 447498 is ≤1.4 W/kg, ≤8mm for 2GHz-3GHz, ≤7mm for 3GHz-4GHz, ≤5mm for 4GHz-6GHz Zoom Scan resolution may be applied.

11.4. WCDMA Measurement Procedures

The following procedures are applicable to WCDMA handsets operating under 3GPP Release99, Release 5 and Release 6. The default test configuration is to measure SAR with an established radio link between the DUT and a communication test set using a 12.2kbps RMC (reference measurement channel) configured in Test Loop Mode 1. SAR is selectively confirmed for other physical channel configurations (DPCCH & DPDCHn), HSDPA and HSPA (HSUPA/HSDPA) modes according to output power, exposure conditions and device operating capabilities. Both uplink and downlink should be configured with the same RMC or AMR, when required. SAR for Release 5 HSDPA and Release 6 HSPA are measured using the applicable FRC (fixed reference channel) and E-DCH reference channel configurations. Maximum output power is verified according to applicable versions of 3GPP TS 34.121 and SAR must be measured according to these maximum output conditions. When Maximum Power Reduction (MPR) is not implemented according to Cubic Metric (CM) requirements for Release 6 HSPA, the following procedures do not apply.

Table 11.2: HSDPA setting for Release 5

Sub-test	β_c	β_d	β_d (SF)	β_c / β_d	β_{hs}	CM (dB)	MPR (dB)
1	2/15	15/15	64	2/15	4/15	1.5	0.5
2	12/15	15/15	64	12/15	24/25	2.0	1
3	15/15	8/15	64	15/8	30/15	2.0	1
4	15/15	4/15	64	15/4	30/15	2.0	1

Table 11.3: HSUPA setting for Release 6

Sub-test	β_c	β_d	β_d (SF)	β_c / β_d	β_{hs}	β_{ec}	β_{ed}	β_{ed} (SF)	β_{ed} (codes)	CM (dB)	MPR (dB)	AG Index	E-TFCI
1	11/15	15/15	64	11/15	22/15	209/225	1039/225	4	1	2.0	1.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	12/15	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	β_{ed1}:47/15 β_{ed2}:47/15	4	2	3.0	2.0	15	92
4	2/15	15/15	64	2/15	4/15	4/15	56/75	4	1	2.0	1.0	17	71
5	15/15	15/15	64	15/15	24/15	30/15	134/15	4	1	2.0	1.0	21	81

Note:

A KDB inquiry is required to address test and approval requirements when the maximum output power measured in HS-DPCCH Sub-test 2 – 4 is higher than Sub-test 1.

A KDB inquiry is required to determine test and approval requirements when the maximum output power measured in E-DCH Sub-test 2 – 4 is higher than Sub-test 5.

11.5. LTE Measurement Procedure

SAR tests for LTE are performed with a base station simulator. Closed loop power control was used so the UE transmits with maximum output power during SAR testing.

1. Per KDB 941225 D05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
2. 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
3. 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 are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
4. 16QAM/64QAM output power for each RB allocation configuration is > not $\frac{1}{2}$dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; 16QAM/64QAM SAR testing is not required.
5. Smaller bandwidth output power for each RB allocation configuration is > not $\frac{1}{2}$dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; smaller bandwidth SAR testing is not required.
6. For LTE B12 / B26 the maximum bandwidth does not support three non-overlapping channels, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
7. LTE band 17 / 2 / 5 / 38 / 4 SAR test was covered by Band 12 / 25 / 26 / 41 / 66; according to TCB workshop, SAR test for overlapping LTE bands can be reduced if

a. The maximum output power, including tolerance, for the smaller band is ≤ the larger band to qualify for the SAR test exclusion.

b. The channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band.

LTE Carrier Aggregation Conducted Power (Downlink)

According to KDB941225 D05A v01r02, Uplink maximum output power measurement with downlink carrier aggregation active should be measured, using the highest output channel measured without downlink carrier aggregation, to confirm that uplink maximum output power with downlink carrier aggregation active remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output measured without downlink carrier aggregation active.

LTE TDD Considerations

According to KDB 941225 D05 SAR for LTE Devices, for Time-Division Duplex (TDD) systems, SAR must be tested using a fixed periodic duty factor according to the highest transmission duty factor implemented for the device and supported by the defined 3GPP LTE TDD configurations.

SAR was tested with the highest transmission duty factor (63.33%) using Uplink-downlink configuration 0 and Special sub-frame configuration 7.

LTE TDD Band 41 supports 3GPP TS 36.211 section 4.2 for Type 2 Frame Structure and Table 4.2-2 for uplink-downlink configurations and Table 4.2-1 for Special sub-frame configurations.

Table 11.4 Calculated Duty Cycle for LTE TDD

Uplink-Downlink Configuration		Sub-frame Number										Calculated
0	Periodicity	1	2	3	4	5	6	7	8	9	10	Duty Cycle (%)
0	5 ms	D	S	U	U	U	D	S	U	U	U	63.33
1	5 ms	D	S	U	U	D	D	S	U	U	D	43.33
2	5 ms	D	S	U	D	D	D	S	U	D	D	23.33
3	10 ms	D	S	U	U	U	D	D	D	D	D	31.67
4	10 ms	D	S	U	U	D	D	D	D	D	D	21.67
5	10 ms	D	S	U	D	D	D	D	D	D	D	11.67
6	5 ms	D	S	U	U	U	D	S	U	U	D	53.33

Example for Calculated Duty Cycle for Uplink-Downlink Configuration 0:
Calculated Duty Cycle = (5120 × Ts × 2 + 6 ms) / 10ms = 63.33%
Where
Ts = 1/(15000 x 2048) seconds

11.6. Bluetooth & WiFi Measurement Procedures

Normal network operating configurations are not suitable for measuring the SAR of 802.11 transmitters in general. Unpredictable fluctuations in network traffic and antenna diversity conditions can introduce undesirable variations in SAR results. The SAR for these devices should be measured using chipset based test mode software to ensure that the results are consistent and reliable.
Chipset based test mode software is hardware dependent and generally varies among manufacturers. The device operating parameters established in a test mode for SAR measurements must be identical to those programmed in production units, including output power levels, amplifier gain settings and other RF performance tuning parameters. The test frequencies should correspond to actual channel frequencies defined for domestic use. SAR for devices with switched diversity should be measured with only one antenna transmitting at a time during each SAR measurement, according to a fixed modulation and data rate. The same data pattern should be used for all measurements.

12. Simultaneous Transmission SAR Considerations

12.1. Reference Document

The following procedures adopted from “FCC SAR Considerations for Cell Phones with Multiple Transmitters” are applicable to handsets with built-in unlicensed transmitters such as 802.11 a/b/g and Bluetooth devices which may simultaneously transmit with the licensed transmitter.

12.2. Antenna Separation Distances

Picture 12-1 Antenna Locations

12.3. SAR Measurement Positions

According to the KDB941225 D06 Hot Spot SAR v01, the edges with less than 2.5 cm distance to the antennas need to be tested for SAR.

Table 12.1: SAR measurement Positions

Antenna Mode	Front	Back	Left	Right	Top	Bottom
2/3/4G	Yes	Yes	Yes	Yes	No	Yes
BT/WiFi	Yes	Yes	No	Yes	Yes	No

12.4. Low Power Transmitters SAR Consideration

Standalone 1-g head or body SAR evaluation by measurement or numerical simulation for low power transmitters is not required when the corresponding SAR Exclusion Threshold condition, listed below, is satisfied.

The 1-g SAR test exclusion threshold for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$$\frac{\text{(max. power of channel, including tune-up tolerance, mW)}}{\text{(min. test separation distance, mm)}} * \sqrt{\text{Frequency (GHz)}} \leqslant 3.0$$

Where

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

According to the KDB447498 appendix A, the SAR test exclusion threshold for 2450MHz at 5mm test separation distances is 10mW. That means the transmitters with tune-up power below 10mW are excluded for SAR measurement.

12.5. Simultaneous Transmission Analysis

KDB 447498 D01 General RF Exposure Guidance introduces a new formula for calculating the SPLSR (SAR to Peak Location Ratio) between pairs of simultaneously transmitting antennas:

$$\text{SPLSR} = \sqrt{(\text{SAR1} + \text{SAR2})^3}/\text{Ri}$$

Where

- SAR1 is the highest measured or estimated SAR for the first of a pair of simultaneous transmitting antennas, in a specific test operating mode and exposure condition.
- SAR2 is the highest measured or estimated SAR for the second of a pair of simultaneous transmitting antennas, in the same test operating mode and exposure condition as the first.
- Ri is the separation distance between the pair of simultaneous transmitting antennas. When the SAR is measured, for both antennas in the pair, it is determined by the actual x, y and z coordinates in the 1-g SAR for each SAR peak location , based on the extrapolated and interpolated result in the zoom scan measurement, using the formula of

$$(\text{x1} - \text{x2})^2 + (\text{y1} - \text{y2})^2 + (z1 - z2)^2$$

In order for a pair of simultaneous transmitting antennas with the sum of 1-g SAR > 1.6 W/kg to qualify for exemption from Simultaneous Transmission SAR measurements, it has to satisfy the condition of:

$$\sqrt{(SAR1 + SAR2)^3}/Ri < 0.04$$

12.6. Simultaneous Transmission Table

Table 12.2: Simultaneous Transmission Configurations

Items	Capable Transmit Configurations
1	GSM/EGPRS/EDGE + BT
2	GSM/EGPRS/EDGE + WiFi2.4G
3	GSM/EGPRS/EDGE + WiFi5G
4	WCDMA + BT
5	WCDMA+ WiFi2.4G
6	WCDMA+ WiFi5G
7	LTE + BT
8	LTE + WiFi2.4G
9	LTE + WiFi5G
Note: Note: Note: For the DUT, the WLAN and BT modules sharing a single antenna, and so these two modules can't transmit signal simultaneously. LTE/WCDMA /GSM modules sharing a single antenna, so these two modules can't transmit signal simultaneously. So we can get above combination that can transmit signal simultaneously.	

13. Conducted Output Power

13.1. GSM Measurement result

Table 13.1: The conducted power measurement results for GSM850

GSM			GSM850							
Model	Modulation	Time Slot	Tune up (dBm)	Measure Power(dBm)			Cal. Factor(dB)	Average Power(dBm)		
				128	190	251		128	190	251
GPRS	GMSK	1 Tx	32.5	32.29	32.19	32.32	-9.03	23.26	23.16	23.29
		2 Tx	32	31.7	31.59	31.77	-6.02	25.68	25.57	25.75
		3 Tx	30.5	30.14	30.01	30.17	-4.26	25.88	25.75	25.91
		4 Tx	29.5	28.93	28.85	29.01	-3.01	25.92	25.84	**26**

Table 13.2: The conducted power measurement results for GSM1900

GSM			GSM1900							
Model	Modulation	Time Slot	Tune up (dBm)	Measure Power(dBm)			Cal. Factor(dB)	Average Power(dBm)		
				512	661	810		512	661	810
GPRS	GMSK	1 Tx	29.5	28.95	29.07	29.12	-9.03	19.92	20.04	20.09
		2 Tx	29	28.4	28.52	28.59	-6.02	22.38	22.5	22.57
		3 Tx	27.5	26.98	27.11	27.15	-4.26	22.72	22.85	22.89
		4 Tx	26.5	25.97	26.07	26.12	-3.01	22.96	23.06	**23.11**

NOTES:

1) Division Factors

To average the power, the division factor is as follows:

1TX-slot = 1 transmit time slot out of 8 time slots=> conducted power divided by (8/1) => -9.03dB

2TX-slots = 2 transmit time slots out of 8 time slots=> conducted power divided by (8/2) => -6.02dB

3TX-slots = 3 transmit time slots out of 8 time slots=> conducted power divided by (8/3) => -4.26dB

4TX-slots = 4 transmit time slots out of 8 time slots=> conducted power divided by (8/4) => -3.01dB

According to the conducted power as above, the body measurements are performed with 4Txslots for GSM850 and 4Txslots for GSM1900.

13.2. WCDMA Measurement result

Table 13.3: The conducted Power for WCDMA Band2

WCDMA		WCDMA B2			
Mode	Test Mode	Tune up	Channel		
			9262	9400	9538
WCDMA	RMC	23	22.38	22.47	22.65
HSDPA	Subtest1	22	21.17	21.24	21.4
	Subtest2	22	21.27	21.35	21.52
	Subtest3	22	21.22	21.3	21.47
	Subtest4	22	21.25	21.31	21.48
HSUPA	Subtest1	22	21.15	21.23	21.4
	Subtest2	22	21.37	21.44	21.63
	Subtest3	22	21.25	21.34	21.49
	Subtest4	22	21.28	21.37	21.54
	Subtest5	22	21.19	21.27	21.44

Table 13.4: The conducted Power for WCDMA Band4

WCDMA		WCDMA B4			
Mode	Test Mode	Tune up	Channel		
			1312	1413	1513
WCDMA	RMC	23	22.57	22.6	22.55
HSDPA	Subtest1	23	21.34	21.26	21.13
	Subtest2	23	21.14	21.22	21.3
	Subtest3	21	20.8	20.77	20.74
	Subtest4	21	20.92	20.87	20.81
HSUPA	Subtest1	21	20.7	20.87	20.9
	Subtest2	21	20.25	20.21	20.24
	Subtest3	21	20.24	20.35	20.17
	Subtest4	22	21.05	21.05	21.08
	Subtest5	21	20.85	20.95	20.97

Table 13.5: The conducted Power for WCDMA Band5

WCDMA		WCDMA B5			
Mode	Test Mode	Tune up	Channel		
			4132	4183	4233
WCDMA	RMC	23	22.79	22.8	22.69
HSDPA	Subtest1	22	21.62	21.54	21.14
	Subtest2	22	21.42	21.5	21.31
	Subtest3	22	21.08	21.05	20.75
	Subtest4	22	21.2	21.15	20.82
HSUPA	Subtest1	22	20.98	21.15	20.91
	Subtest2	21	20.53	20.49	20.25
	Subtest3	21	20.52	20.63	20.18
	Subtest4	22	21.33	21.33	21.09
	Subtest5	22	21.13	21.23	20.98

13.3. LTE Measurement result

Table 13.6: The conducted Power for LTE Band 2/4/5/7/17/41

LTE			LTE B2			
Modulation	RB	RB Offset	Tune up	1.4MHz		
				19193	18900	18607
QPSK	1	Low	22.5	21.85	21.71	21.60
		Middle		21.98	21.86	21.70
		High		21.85	21.73	21.57
	50%	Low	22.5	21.96	21.80	21.68
		Middle		21.96	21.88	21.74
		High		21.92	21.78	21.66
	100%	/	21.5	21.05	20.91	20.77
16QAM	1	Low	21.5	21.15	21.03	20.93
		Middle		21.19	21.11	21.06
		High		21.10	21.08	20.86
	5	Low	21.5	20.99	20.90	20.77
		Middle		21.08	20.95	20.82
		High		21.00	20.89	20.77
	100%	/	20.5	20.04	19.96	19.82
Modulation	RB	RB Offset	Tune up	3MHz		
				19185	18900	18615
QPSK	1	Low	22.5	21.94	21.84	21.39
		Middle		22.15	22.05	21.75
		High		21.97	21.81	21.66
	50%	Low	21.5	21.08	20.95	20.72
		Middle		21.10	20.98	20.83
		High		21.06	20.93	20.78
	100%	/	21.5	21.06	20.94	20.73
16QAM	1	Low	21.5	20.75	20.60	20.50
		Middle		20.87	20.79	20.58
		High		20.71	20.65	20.45
	50%	Low	21.5	19.57	19.44	19.28
		Middle		19.57	19.44	19.29
		High		19.53	19.43	19.29
	100%	/	20.5	19.54	19.38	19.25
Modulation	RB	RB Offset	Tune up	5MHz		
				19175	18900	18625
QPSK	1	Low	22.5	21.31	21.21	21.08
		Middle		21.58	21.46	21.45
		High		21.34	21.24	21.07
	50%	Low	21.5	20.56	20.42	20.21
		Middle		20.61	20.48	20.27

		High		20.49	20.44	20.23
	100%	/	21.5	20.56	20.47	20.29
16QAM	1	Low	21.5	20.62	20.57	20.41
		Middle		20.89	20.86	20.64
		High		20.65	20.51	20.38
	50%	Low	21.5	19.53	19.42	19.21
		Middle		19.57	19.44	19.28
		High		19.47	19.40	19.23
	100%	/	20.5	19.51	19.42	19.25
Modulation	RB	RB Offset	Tune up	10MHz		
				19150	18900	18650
QPSK	1	Low	22.5	21.38	21.24	21.20
		Middle		21.57	21.46	21.36
		High		21.43	21.28	21.18
	50%	Low	21.5	20.62	20.45	20.25
		Middle		20.61	20.50	20.32
		High		20.58	20.42	20.26
	100%	/	21.5	20.61	20.45	20.30
16QAM	1	Low	21.5	20.72	20.64	20.52
		Middle		20.91	20.77	20.53
		High		20.73	20.65	20.44
	50%	Low	21.5	19.55	19.39	19.21
		Middle		19.57	19.42	19.26
		High		19.51	19.42	19.17
	100%	/	20.5	19.54	19.42	19.24
Modulation	RB	RB Offset	Tune up	15MHz		
				19125	18900	18675
QPSK	1	Low	22.5	21.33	21.24	21.16
		Middle		21.48	21.37	21.27
		High		21.38	21.21	21.08
	50%	Low	21.5	20.57	20.44	20.31
		Middle		20.58	20.50	20.32
		High		20.56	20.44	20.30
	100%	/	21.5	20.62	20.48	20.31
16QAM	1	Low	21.5	20.63	20.58	20.47
		Middle		20.80	20.65	20.53
		High		20.69	20.54	20.38
	50%	Low	21.5	19.55	19.39	19.25
		Middle		19.54	19.47	19.27
		High		19.51	19.42	19.24
	100%	/	20.5	19.52	19.41	19.24
Modulation	RB	RB Offset	Tune up	20MHz		
				19100	18900	18700

QPSK	1	Low	22.5	21.17	21.06	21.06
		Middle		21.54	21.46	21.40
		High		21.23	21.06	20.91
	50%	Low	21.5	20.65	20.45	20.31
		Middle		20.61	20.50	20.37
		High		20.54	20.49	20.37
	100%	/	21.5	20.60	20.47	20.31
16QAM	1	Low	21.5	20.54	20.40	20.34
		Middle		20.87	20.76	20.65
		High		20.46	20.40	20.15
	50%	Low	21.5	19.60	19.41	19.29
		Middle		19.56	19.45	19.32
		High		19.50	19.45	19.29
	100%	/	20.5	19.53	19.42	19.25
LTE			LTE B4			
Modulation	RB	RB Offset	Tune up	1.4MHz		
				20393	20175	19957
QPSK	1	Low	22	21.40	21.46	21.53
		Middle		21.51	21.59	21.67
		High		21.39	21.45	21.51
	50%	Low	22	21.49	21.56	21.62
		Middle		21.55	21.61	21.66
		High		21.49	21.55	21.59
	100%	/	21	20.50	20.58	20.60
16QAM	1	Low	21	20.69	20.76	20.76
		Middle		20.78	20.80	20.91
		High		20.67	20.74	20.78
	5	Low	21	20.48	20.52	20.59
		Middle		20.57	20.60	20.67
		High		20.53	20.51	20.60
	100%	/	20	19.56	19.55	19.65
Modulation	RB	RB Offset	Tune up	3MHz		
				20385	20175	19965
QPSK	1	Low	22	21.50	21.53	21.58
		Middle		21.56	21.72	21.77
		High		21.48	21.52	21.54
	50%	Low	22	20.50	20.55	20.61
		Middle		20.51	20.57	20.63
		High		20.50	20.53	20.60
	100%	/	21	20.52	20.55	20.63
16QAM	1	Low	21	20.74	20.79	20.87
		Middle		20.76	20.94	20.93
		High		20.71	20.75	20.85

	50%	Low	21	19.53	19.60	19.64
		Middle		19.53	19.57	19.66
		High		19.55	19.56	19.62
	100%	/	20	19.48	19.52	19.60
Modulation	RB	RB Offset	Tune up	5MHz		
				20375	20175	19975
QPSK	1	Low	22	21.40	21.44	21.52
		Middle		21.64	21.72	21.75
		High		21.36	21.43	21.43
	50%	Low	22	20.48	20.53	20.57
		Middle		20.52	20.59	20.63
		High		20.42	20.47	20.54
	100%	/	21	20.49	20.56	20.59
16QAM	1	Low	21	20.66	20.63	20.79
		Middle		20.93	20.93	21.03
		High		20.62	20.67	20.74
	50%	Low	21	19.50	19.54	19.56
		Middle		19.53	19.59	19.64
		High		19.44	19.48	19.53
	100%	/	20	19.44	19.48	19.58
Modulation	RB	RB Offset	Tune up	10MHz		
				20350	20175	20000
QPSK	1	Low	22	21.61	21.58	21.64
		Middle		21.65	21.58	21.70
		High		21.47	21.52	21.58
	50%	Low	22	20.66	20.64	20.64
		Middle		20.63	20.65	20.64
		High		20.52	20.54	20.65
	100%	/	21	20.60	20.61	20.65
16QAM	1	Low	21	20.86	20.80	20.89
		Middle		20.88	20.86	20.92
		High		20.71	20.72	20.79
	50%	Low	21	19.60	19.58	19.55
		Middle		19.57	19.56	19.61
		High		19.50	19.49	19.63
	100%	/	20	19.59	19.57	19.59
Modulation	RB	RB Offset	Tune up	15MHz		
				20325	20175	20025
QPSK	1	Low	22	21.53	21.55	21.57
		Middle		21.59	21.59	21.62
		High		21.43	21.45	21.43
	50%	Low	22	20.65	20.63	20.60
		Middle		20.62	20.63	20.63

		High		20.55	20.55	20.61
	100%	/	21	20.65	20.62	20.65
16QAM	1	Low	21	20.79	20.75	20.83
		Middle		20.82	20.81	20.93
		High		20.66	20.71	20.69
	50%	Low	21	19.67	19.61	19.58
		Middle		19.63	19.60	19.66
		High		19.55	19.55	19.59
	100%	/	20	19.58	19.56	19.62
Modulation	RB	RB Offset	Tune up	20MHz		
				20300	20175	20050
QPSK	1	Low	22	21.36	21.35	21.42
		Middle		21.70	21.65	21.65
		High		21.22	21.29	21.25
	50%	Low	22	20.73	20.69	20.63
		Middle		20.66	20.66	20.69
		High		20.56	20.52	20.63
	100%	/	21	20.67	20.59	20.57
16QAM	1	Low	21	20.61	20.65	20.64
		Middle		20.96	20.88	21.00
		High		20.49	20.48	20.56
	50%	Low	21	19.72	19.67	19.59
		Middle		19.64	19.58	19.64
		High		19.54	19.47	19.60
	100%	/	20	19.63	19.57	19.56
LTE			LTE B5			
Modulation	RB	RB Offset	Tune up	1.4MHz		
				20643	20525	20407
QPSK	1	Low	23	22.05	22.03	22.12
		Middle		22.24	22.15	22.22
		High		22.09	22.06	22.04
	50%	Low	23	22.16	22.13	22.21
		Middle		22.21	22.19	22.23
		High		22.17	22.10	22.18
	100%	/	22	21.26	21.22	21.25
16QAM	1	Low	22	21.32	21.39	21.48
		Middle		21.48	21.40	21.55
		High		21.37	21.26	21.33
	5	Low	22	21.20	21.16	21.29
		Middle		21.29	21.24	21.29
		High		21.24	21.15	21.24
	100%	/	21	20.28	20.24	20.28
Modulation	RB	RB Offset	Tune up	3MHz		

				20635	20525	20415
QPSK	1	Low	23	22.11	22.08	22.17
		Middle		22.19	22.19	22.24
		High		22.11	22.13	22.12
	50%	Low	23	21.20	21.19	21.20
		Middle		21.26	21.26	21.26
		High		21.21	21.24	21.22
	100%	/	22	21.18	21.19	21.21
16QAM	1	Low	22	21.40	21.41	21.50
		Middle		21.53	21.50	21.61
		High		21.44	21.42	21.44
	50%	Low	22	20.20	20.18	20.24
		Middle		20.24	20.23	20.24
		High		20.18	20.24	20.23
	100%	/	21	20.19	20.19	20.18
Modulation	RB	RB Offset	Tune up	5MHz		
				20625	20525	20425
QPSK	1	Low	23	22.04	22.02	22.03
		Middle		22.20	22.16	22.29
		High		22.00	22.00	22.01
	50%	Low	23	21.18	21.19	21.18
		Middle		21.21	21.25	21.24
		High		21.15	21.22	21.21
	100%	/	22	21.17	21.27	21.23
16QAM	1	Low	22	21.35	21.33	21.39
		Middle		21.56	21.55	21.51
		High		21.34	21.43	21.35
	50%	Low	22	20.17	20.16	20.14
		Middle		20.21	20.24	20.20
		High		20.14	20.19	20.19
	100%	/	21	20.11	20.20	20.15
Modulation	RB	RB Offset	Tune up	10MHz		
				20600	20525	20450
QPSK	1	Low	23	22.11	22.13	22.18
		Middle		22.20	22.19	22.23
		High		22.10	22.11	22.13
	50%	Low	23	21.31	21.31	21.25
		Middle		21.29	21.27	21.27
		High		21.26	21.31	21.27
	100%	/	22	21.28	21.32	21.25
16QAM	1	Low	22	21.45	21.46	21.50
		Middle		21.51	21.54	21.54
		High		21.48	21.45	21.46

	50%	Low	22	20.26	20.23	20.22
		Middle		20.25	20.22	20.22
		High		20.21	20.24	20.21
	100%	/	21	20.28	20.28	20.21
LTE			LTE B7			
Modulation	RB	RB Offset	Tune up	5MHz		
				21425	21100	20775
QPSK	1	Low	23	22.15	22.05	22.09
		Middle		22.42	22.29	22.39
		High		22.16	22.05	22.10
	50%	Low	22	21.29	21.14	21.21
		Middle		21.35	21.20	21.30
		High		21.30	21.15	21.21
	100%	/	22	21.32	21.19	21.27
16QAM	1	Low	22	21.44	21.26	21.27
		Middle		21.68	21.58	21.61
		High		21.40	21.27	21.35
	5	Low	21	20.26	20.12	20.18
		Middle		20.31	20.19	20.25
		High		20.30	20.14	20.19
	100%	/	21	20.28	20.12	20.18
Modulation	RB	RB Offset	Tune up	10MHz		
				21400	21100	20800
QPSK	1	Low	23	22.26	22.17	22.18
		Middle		22.47	22.28	22.41
		High		22.35	22.21	22.28
	50%	Low	22	21.37	21.26	21.34
		Middle		21.45	21.26	21.33
		High		21.47	21.29	21.32
	100%	/	22	21.43	21.28	21.34
16QAM	1	Low	22	21.45	21.31	21.36
		Middle		21.63	21.48	21.44
		High		21.50	21.40	21.45
	50%	Low	21	20.28	20.18	20.26
		Middle		20.37	20.23	20.27
		High		20.38	20.21	20.24
	100%	/	21	20.33	20.24	20.26
Modulation	RB	RB Offset	Tune up	15MHz		
				21375	21100	20825
QPSK	1	Low	23	22.20	22.11	22.14
		Middle		22.39	22.23	22.32
		High		22.33	22.16	22.29
	50%	Low	22	21.34	21.25	21.33

		Middle		21.45	21.30	21.36
		High		21.49	21.30	21.44
	100%	/	22	21.46	21.31	21.41
16QAM	1	Low	22	21.39	21.30	21.29
		Middle		21.60	21.41	21.53
		High		21.53	21.37	21.51
	50%	Low	21	20.29	20.23	20.29
		Middle		20.41	20.27	20.31
		High		20.43	20.26	20.38
	100%	/	21	20.38	20.22	20.36
Modulation	RB	RB Offset	Tune up	20MHz		
				21350	21100	20850
QPSK	1	Low	23	21.94	21.94	21.97
		Middle		22.84	22.29	22.38
		High		22.58	22.03	22.10
	50%	Low	22	21.25	21.25	21.36
		Middle		21.43	21.34	21.41
		High		21.46	21.27	21.51
	100%	/	22	21.35	21.27	21.43
16QAM	1	Low	22	21.18	21.16	21.12
		Middle		21.68	21.53	21.62
		High		21.34	21.31	21.40
	50%	Low	21	20.25	20.22	20.33
		Middle		20.40	20.29	20.37
		High		20.48	20.24	20.46
	100%	/	21	20.32	20.21	20.33
LTE			LTE B17			
Modulation	RB	RB Offset	Tune up	5MHz		
				23825	23790	23755
QPSK	1	Low	23	22.24	22.27	22.22
		Middle		22.50	22.50	22.48
		High		22.25	22.23	22.25
	50%	Low	22	21.35	21.33	21.28
		Middle		21.40	21.39	21.39
		High		21.38	21.32	21.44
	100%	/	22	21.38	21.36	21.37
16QAM	1	Low	22	21.40	21.38	21.48
		Middle		21.69	21.75	21.70
		High		21.37	21.45	21.56
	5	Low	21	20.29	20.29	20.27
		Middle		20.37	20.36	20.35
		High		20.30	20.25	20.37
	100%	/	21	20.31	20.28	20.32

Modulation	RB	RB Offset	Tune up	10MHz		
				23800	23790	23780
QPSK	1	Low	23	22.27	22.27	22.32
		Middle		22.47	22.45	22.49
		High		22.35	22.32	22.37
	50%	Low	22	21.42	21.38	21.33
		Middle		21.44	21.42	21.42
		High		21.43	21.37	21.38
	100%	/	22	21.44	21.41	21.36
16QAM	1	Low	22	21.51	21.47	21.54
		Middle		21.73	21.66	21.75
		High		21.50	21.54	21.62
	50%	Low	21	20.35	20.28	20.23
		Middle		20.38	20.38	20.37
		High		20.36	20.30	20.29
	100%	/	21	20.36	20.32	20.30
LTE			LTE B41			
Modulation	RB	RB Offset	Tune up	5MHz		
				40065	40640	41215
QPSK	1	Low	23	22.42	22.43	22.45
		Middle		22.56	22.53	22.56
		High		22.40	22.41	22.43
	50%	Low	22	20.97	20.99	21.03
		Middle		21.04	21.06	21.07
		High		21.05	21.28	21.01
	100%	/	22	21.04	20.99	21.06
16QAM	1	Low	22	21.42	21.42	21.47
		Middle		21.54	21.51	21.54
		High		21.29	21.34	21.30
	5	Low	21	20.03	19.91	20.04
		Middle		19.97	20.03	20.14
		High		20.07	20.30	19.89
	100%	/	21	19.94	19.95	20.04
Modulation	RB	RB Offset	Tune up	10MHz		
				40090	40640	41190
QPSK	1	Low	23	22.52	22.50	22.53
		Middle		22.11	22.11	22.19
		High		22.50	22.34	22.20
	50%	Low	22	21.36	21.45	21.56
		Middle		21.61	21.55	21.66
		High		21.66	21.59	21.62
	100%	/	22	21.63	21.61	21.69
16QAM	1	Low	22	21.32	21.39	21.44

		Middle		21.09	21.12	21.11
		High		21.39	21.38	21.07
	50%	Low	21	20.42	20.37	20.51
		Middle		20.56	20.52	20.73
		High		20.68	20.49	20.50
	100%	/	21	20.53	20.57	20.47
Modulation	RB	RB Offset	Tune up	15MHz		
				40115	40640	41165
QPSK	1	Low	23	21.94	21.93	21.94
		Middle		21.99	22.00	22.07
		High		21.86	21.92	21.98
	50%	Low	22	21.54	21.59	21.63
		Middle		21.59	21.59	21.56
		High		21.54	21.60	21.53
	100%	/	22	21.53	21.49	21.57
16QAM	1	Low	22	20.99	20.90	20.96
		Middle		20.98	21.07	20.95
		High		20.85	20.86	20.78
	50%	Low	21	20.61	20.51	20.03
		Middle		20.52	20.65	20.63
		High		20.46	20.62	20.45
	100%	/	21	20.43	20.45	20.55
Modulation	RB	RB Offset	Tune up	20MHz		
				40140	40640	41140
QPSK	1	Low	23	21.80	21.77	21.76
		Middle		22.10	22.08	22.16
		High		21.77	21.79	21.81
	50%	Low	22	20.94	20.88	21.11
		Middle		21.03	21.11	21.17
		High		21.07	21.10	21.03
	100%	/	22	21.04	21.05	21.09
16QAM	1	Low	22	20.83	20.73	20.78
		Middle		21.08	21.16	21.05
		High		20.76	20.72	20.61
	50%	Low	21	20.00	19.83	19.86
		Middle		19.98	20.18	20.24
		High		19.98	20.13	19.95
	100%	/	21	19.93	19.99	20.04

13.4. BT Measurement result

Table 13.7: The conducted power for Bluetooth

Bluetooth		BT Output Power					
Mode	Packet Type	2402 MHz		2441 MHz		2480 MHz	
		Tune up	Tx Power	Tune up	Tx Power	Tune up	Tx Power
GFSK	DH1	5.5	5.15	5.5	4.5	5.5	4.93
DQPSK	2DH1	5	4	5	3.54	5	3.72
8DPSK	3DH1	5	4.01	5	3.56	5	3.73

BlueTooth		BLE Output Power	
Mode	Channel	Tune up	Tx Power
BLE	0	4	3.28
	19	4	2.81
	39	4	3.12

NOTE: According to KDB447498 D01 BT standalone SAR are not required, because maximum average output power is less than 10mW.

Evaluation=1.118 ＜ 3.0

When the standalone SAR test exclusion is applied to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to the following to determine simultaneous transmission SAR test exclusion:

$$SAR = \frac{P(Max.Power\ of\ channel, including\ tuneup\ tolerance, mW)}{D(Min.test\ separation\ distance,\ mm)} * \frac{\sqrt{frequency(GHz)}}{x}$$

Where

- D (Min, test separation distances, mm) is always set to 50 mm for Head SAR evaluation
- Frequency(GHz) is the center frequency in GHz
- where x = 7.5 for 1-g SAR, and x = 18.75 for 10-g SAR

Therefor

- SAR body value of BT is 0.149 W/Kg for 1g where D is set to 5mm
- SAR body value of BT is 0.06 W/Kg for 10g where D is set to 5mm

13.5. WiFi Measurement result

Table 13.8: The average conducted power for WiFi

Mode	Channel	Frequency	Tune up	Average power(dBm)
802.11 b	1	2412 MHZ	19	17.68
	6	2437 MHZ	19	18.09
	11	2462 MHZ	19	18.16
802.11 g	1	2412 MHZ	16	15.06
	6	2437 MHZ	16	15.13
	11	2462 MHZ	16	15.37
802.11 n 20M	1	2412 MHZ	16	15.03
	6	2437 MHZ	16	15.42
	11	2462 MHZ	16	15.35
802.11 n 40M	3	2422 MHZ	16	15.03
	6	2437 MHz	16	14.72
	9	2452 MHz	16	14.73
Mode	Channel	Frequency	Tune up	Average power(dBm)
802.11 a	36	5180 MHZ	14	13.35
	40	5200 MHZ	14	12.86
	48	5240 MHZ	14	12.79
	52	5260 MHZ	12	11.82
	56	5280 MHZ	12	11.85
	64	5320 MHZ	12	11.5
	149	5745 MHZ	12.5	11.84
	157	5785 MHZ	12.5	12.02
	165	5825 MHZ	12.5	11.87
802.11 n 20M	36	5180 MHZ	14	13.38
	40	5200 MHZ	14	12.85
	48	5240 MHZ	14	12.87
	52	5260 MHZ	12	11.58
	56	5280 MHZ	12	11.9
	64	5320 MHZ	12	11.57
	149	5745 MHZ	12.5	11.87
	157	5785 MHZ	12.5	12.0
	165	5825 MHZ	12.5	11.9
802.11 n 40M	38	5190 MHZ	14	13.27
	46	5230 MHZ	14	13.18
	54	5270 MHZ	14	13.08
	62	5310 MHZ	14	12.72
	151	5755 MHZ	14	13.55
	159	5795 MHZ	14	13.65

2.4 GHz 802.11g/n OFDM SAR Test Exclusion Requirements

When SAR measurement is required for 2.4 GHz 802.11g/n OFDM configurations, the measurement and test reduction procedures for OFDM are applied. SAR is not required for the following 2.4 GHz OFDM conditions.

a) When KDB Publication 447498 D01 SAR test exclusion applies to the OFDM configuration.

b) When the highest *reported* SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.

The default power measurement procedures are:

a) Power must be measured at each transmit antenna port according to the DSSS and OFDM transmission configurations in each standalone and aggregated frequency band.

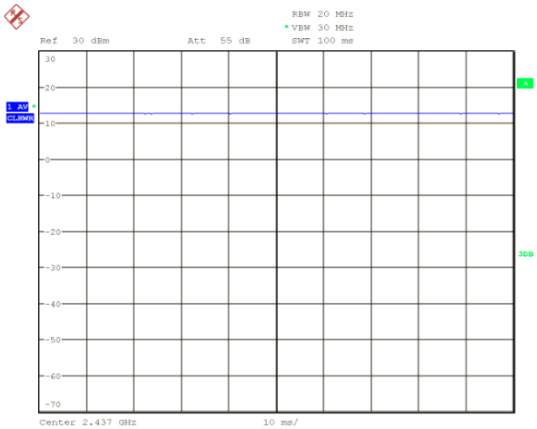
b) Power measurement is required for the transmission mode configuration with the highest maximum output power specified for production units.

1) When the same highest maximum output power specification applies to multiple transmission modes, the largest channel bandwidth configuration with the lowest order modulation and lowest data rate is measured.

2) When the same highest maximum output power is specified for multiple largest channel bandwidth configurations with the same lowest order modulation or lowest order modulation and lowest data rate, power measurement is required for all equivalent 802.11 configurations with the same maximum output power.

c) For each transmission mode configuration, power must be measured for the highest and lowest channels; and at the mid-band channel(s) when there are at least 3 channels. For configurations with multiple mid-band channels, due to an even number of channels, both channels should be measured.

During WiFi SAR testing EUT is configured with the WiFi continuous TX tool, and the transmission duty factor was monitored on the spectrum analyzer with zero-span setting，the duty cycle is 100%.



Picture 13-1 WiFi 11b duty factor

14. SAR Measurement Result

14.1. Standalone SAR Test Result

Table 14.1: SAR Values for GSM850

Test Position	Cover Type	Mode	Channel	Frequency (MHz)	Measured power (dBm)	Tune-up (dBm)	Power Drift (dB)	Limit of 1gSAR 1.6 W/kg (mW/g)			Figure No.
								Measured SAR1g	Scaling Factor	Report SAR1g	
Body SAR (Define 5mm)											
Left Side	Standard	GPRS 4TS	190	836.6	28.85	29.5	0.040	0.238	1.16	0.276	/
Right Side	Standard	GPRS 4TS	190	836.6	28.85	29.5	0.160	0.411	1.16	0.477	/
Front Side	Standard	GPRS 4TS	190	836.6	28.85	29.5	0.020	0.856	1.16	0.994	/
Back Side	Standard	GPRS 4TS	190	836.6	28.85	29.5	0.080	0.824	1.16	0.957	/
Bottom Side	Standard	GPRS 4TS	190	836.6	28.85	29.5	0.020	0.378	1.16	0.439	/
Front Side	Standard	GPRS 4TS	128	824.2	28.93	29.5	-0.020	0.777	1.14	0.886	/
Front Side	Standard	GPRS 4TS	251	848.8	29.01	29.5	0.040	1.08	1.12	1.209	/
Back Side	Standard	GPRS 4TS	128	824.2	28.93	29.5	0.040	0.617	1.14	0.704	/
Back Side	Standard	GPRS 4TS	251	848.8	29.01	29.5	0.010	0.963	1.12	1.078	/
Body SAR (Define 5mm repeated)											
Front Side	Standard	GPRS 4TS	251	848.8	29.01	29.5	0.080	1.09	1.12	**1.220**	**1**
Back Side	Standard	GPRS 4TS	251	848.8	29.01	29.5	0.050	0.984	1.12	1.102	/
Test Position	**Cover Type**	**Mode**	**Channel**	**Frequency (MHz)**	**Measured power (dBm)**	**Tune-up (dBm)**	**Power Drift (dB)**	**Limit of 10gSAR 4.0 W/kg (mW/g)**			**Figure No.**
								Measured SAR10g	**Scaling Factor**	**Report SAR10g**	
Limb SAR (Distance 0mm)											
Left Side	Standard	GPRS 4TS	190	836.6	28.85	29.5	-0.01	0.206	1.16	0.239	/
Right Side	Standard	GPRS 4TS	190	836.6	28.85	29.5	-0.17	0.363	1.16	0.422	/
Front Side	Standard	GPRS 4TS	190	836.6	28.85	29.5	-0.08	1.32	1.16	**1.533**	**2**
Back Side	Standard	GPRS 4TS	190	836.6	28.85	29.5	0.02	1.24	1.16	1.440	/
Bottom Side	Standard	GPRS 4TS	190	836.6	28.85	29.5	0.01	0.462	1.16	0.537	/

Table 14.2: SAR Values for GSM190

Test Position	Cover Type	Mode	Channel	Frequency (MHz)	Measured power (dBm)	Tune-up (dBm)	Power Drift (dB)	Limit of 1gSAR 1.6 W/kg (mW/g)			Figure No.
								Measured SAR1g	Scaling Factor	Report SAR1g	
Body SAR (Define 5mm)											
Left Side	Standard	GPRS 4TS	661	1880	26.07	26.5	0.130	0.121	1.10	0.134	/
Right Side	Standard	GPRS 4TS	661	1880	26.07	26.5	0.150	0.075	1.10	0.083	/
Front Side	Standard	GPRS 4TS	661	1880	26.07	26.5	0.020	0.719	1.10	0.794	/
Back Side	Standard	GPRS 4TS	661	1880	26.07	26.5	0.040	0.600	1.10	0.662	/
Bottom Side	Standard	GPRS 4TS	661	1880	26.07	26.5	0.180	0.902	1.10	0.996	/
Bottom Side	Standard	GPRS 4TS	512	1850.2	25.97	26.5	0.180	0.628	1.13	0.710	/
Bottom Side	Standard	GPRS 4TS	810	1909.8	26.12	26.5	0.130	0.982	1.09	1.072	/
Body SAR (Define 5mm Repeated)											
Bottom Side	Standard	GPRS 4TS	810	1909.8	26.12	26.5	0.120	0.987	1.09	**1.077**	**3**
Test Position	**Cover Type**	**Mode**	**Channel**	**Frequency (MHz)**	**Measured power (dBm)**	**Tune-up (dBm)**	**Power Drift (dB)**	**Limit of 10gSAR 4.0 W/kg (mW/g)**			**Figure No.**
								Measured SAR10g	**Scaling Factor**	**Report SAR10g**	
Limb SAR (Distance 0mm)											
Left Side	Standard	GPRS 4TS	661	1880	26.07	26.5	0.04	0.196	1.10	0.216	/
Right Side	Standard	GPRS 4TS	661	1880	26.07	26.5	0.03	0.0688	1.10	0.076	/
Front Side	Standard	GPRS 4TS	661	1880	26.07	26.5	-0.16	2.06	1.10	**2.274**	**4**
Back Side	Standard	GPRS 4TS	661	1880	26.07	26.5	0.06	1.99	1.10	2.197	/
Bottom Side	Standard	GPRS 4TS	661	1880	26.07	26.5	0.08	2.05	1.10	2.263	/
Front Side	Standard	GPRS 4TS	512	1850.2	25.97	26.5	0.05	1.67	1.13	1.887	/
Front Side	Standard	GPRS 4TS	810	1909.8	26.12	26.5	0.05	2.03	1.09	2.216	/
Limb SAR (Distance 0mm Repeated)											
Front Side	Standard	GPRS 4TS	661	1880	26.07	26.5	0.04	2.05	1.10	2.263	/

Table 14.3: SAR Values for WCDMA Band2

Test Position	Cover Type	Mode	Channel	Frequency (MHz)	Measured power (dBm)	Tune-up (dBm)	Power Drift (dB)	Limit of 1gSAR 1.6 W/kg (mW/g)			Figure No.
								Measured SAR1g	Scaling Factor	Report SAR1g	
Body SAR (Define 5mm)											
Left Side	Standard	RMC12.2k	9538	1907.6	22.65	23	0.180	0.036	1.08	0.039	/
Right Side	Standard	RMC12.2k	9538	1907.6	22.65	23	0.170	0.032	1.08	0.034	/
Front Side	Standard	RMC12.2k	9538	1907.6	22.65	23	0.130	0.392	1.08	0.425	/
Back Side	Standard	RMC12.2k	9538	1907.6	22.65	23	0.180	0.340	1.08	0.369	/
Bottom Side	Standard	RMC12.2k	9538	1907.6	22.65	23	0.120	0.679	1.08	0.736	/
Bottom Side	Standard	RMC12.2k	9400	1880	22.47	23	0.120	0.869	1.13	0.982	/
Bottom Side	Standard	RMC12.2k	9262	1852.4	22.38	23	0.130	1.04	1.15	**1.200**	**5**
Body SAR (Define 5mm Repeated)											
Bottom Side	Standard	RMC12.2k	9262	1852.4	22.38	23	0.140	1.04	1.15	**1.200**	/
Test Position	**Cover Type**	**Mode**	**Channel**	**Frequency (MHz)**	**Measured power (dBm)**	**Tune-up (dBm)**	**Power Drift (dB)**	**Limit of 10gSAR 4.0 W/kg (mW/g)**			**Figure No.**
								Measured SAR10g	**Scaling Factor**	**Report SAR10g**	
Limb SAR (Distance 0mm)											
Left Side	Standard	RMC12.2k	9538	1907.6	22.65	23	0.07	0.138	1.08	0.150	/
Right Side	Standard	RMC12.2k	9538	1907.6	22.65	23	0.08	0.0637	1.08	0.069	/
Front Side	Standard	RMC12.2k	9538	1907.6	22.65	23	0.03	1.91	1.08	**2.070**	**6**
Back Side	Standard	RMC12.2k	9538	1907.6	22.65	23	0.02	1.65	1.08	1.788	/
Bottom Side	Standard	RMC12.2k	9538	1907.6	22.65	23	0.01	1.7	1.08	1.843	/
Front Side	Standard	RMC12.2k	9400	1880	22.47	23	0.03	1.82	1.13	2.056	/
Front Side	Standard	RMC12.2k	9262	1852.4	22.38	23	0.06	1.55	1.15	1.788	/

Table 14.4: SAR Values for WCDMA Band4

Test Position	Cover Type	Mode	Channel	Frequency (MHz)	Measured power (dBm)	Tune-up (dBm)	Power Drift (dB)	Limit of 1gSAR 1.6 W/kg (mW/g)			Figure No.
								Measured SAR1g	Scaling Factor	Report SAR1g	
Body SAR (Define 5mm)											
Left Side	Standard	RMC12.2k	1413	1732.6	22.6	23	-0.070	0.031	1.10	0.033	/
Right Side	Standard	RMC12.2k	1413	1732.6	22.6	23	0.020	0.018	1.10	0.019	/
Front Side	Standard	RMC12.2k	1413	1732.6	22.6	23	0.070	0.216	1.10	0.237	/
Back Side	Standard	RMC12.2k	1413	1732.6	22.6	23	0.040	0.265	1.10	0.291	/
Bottom Side	Standard	RMC12.2k	1413	1732.6	22.6	23	0.190	0.888	1.10	0.974	/
Bottom Side	Standard	RMC12.2k	1312	1712.4	22.57	23	0.140	0.838	1.10	0.925	/
Bottom Side	Standard	RMC12.2k	1513	1752.6	22.55	23	0.170	1.03	1.11	**1.142**	**7**
Body SAR (Define 5mm Repeated)											
Bottom Side	Standard	RMC12.2k	1513	1752.6	22.55	23	0.180	0.963	1.11	1.068	/
Test Position	**Cover Type**	**Mode**	**Channel**	**Frequency (MHz)**	**Measured power (dBm)**	**Tune-up (dBm)**	**Power Drift (dB)**	**Limit of 10gSAR 4.0 W/kg (mW/g)**			**Figure No.**
								Measured SAR10g	**Scaling Factor**	**Report SAR10g**	
Limb SAR (Distance 0mm)											
Left Side	Standard	RMC12.2k	1413	1732.6	22.6	23	0.03	0.0916	1.10	0.100	/
Right Side	Standard	RMC12.2k	1413	1732.6	22.6	23	0.09	0.0885	1.10	0.097	/
Front Side	Standard	RMC12.2k	1413	1732.6	22.6	23	0.08	1.49	1.10	1.634	/
Back Side	Standard	RMC12.2k	1413	1732.6	22.6	23	0.01	1.36	1.10	1.491	/
Bottom Side	Standard	RMC12.2k	1413	1732.6	22.6	23	-0.09	2.22	1.10	2.434	/
Bottom Side	Standard	RMC12.2k	1312	1712.4	22.57	23	0.16	2.01	1.10	2.219	/
Bottom Side	Standard	RMC12.2k	1513	1752.6	22.55	23	0.10	2.27	1.11	**2.518**	**8**
Limb SAR (Distance 0mm Repeated)											
Bottom Side	Standard	RMC12.2k	1513	1752.6	22.55	23	0.08	1.65	1.11	1.830	/

Table 14.5: SAR Values for WCDMA Band5

Test Position	Cover Type	Mode	Channel	Frequency (MHz)	Measured power (dBm)	Tune-up (dBm)	Power Drift (dB)	Limit of 1gSAR 1.6 W/kg (mW/g)			Figure No.
								Measured SAR1g	Scaling Factor	Report SAR1g	
Body SAR (Define 5mm)											
Left Side	Standard	RMC12.2k	4183	836.6	22.8	23	-0.080	0.118	1.05	0.124	/
Right Side	Standard	RMC12.2k	4183	836.6	22.8	23	-0.050	0.183	1.05	0.192	/
Front Side	Standard	RMC12.2k	4183	836.6	22.8	23	-0.020	0.519	1.05	**0.543**	**9**
Back Side	Standard	RMC12.2k	4183	836.6	22.8	23	-0.030	0.354	1.05	0.371	/
Bottom Side	Standard	RMC12.2k	4183	836.6	22.8	23	-0.030	0.189	1.05	0.198	/
Test Position	**Cover Type**	**Mode**	**Channel**	**Frequency (MHz)**	**Measured power (dBm)**	**Tune-up (dBm)**	**Power Drift (dB)**	**Limit of 10gSAR 4.0 W/kg (mW/g)**			**Figure No.**
								Measured SAR10g	**Scaling Factor**	**Report SAR10g**	
Limb SAR (Distance 0mm)											
Left Side	Standard	RMC12.2k	4183	836.6	22.8	23	-0.03	0.11	1.05	0.115	/
Right Side	Standard	RMC12.2k	4183	836.6	22.8	23	0.10	0.204	1.05	0.214	/
Front Side	Standard	RMC12.2k	4183	836.6	22.8	23	-0.13	0.64	1.05	**0.670**	**10**
Back Side	Standard	RMC12.2k	4183	836.6	22.8	23	0.11	0.554	1.05	0.580	/
Bottom Side	Standard	RMC12.2k	4183	836.6	22.8	23	0.05	0.25	1.05	0.262	/

Table 14.6: SAR Values for LTE Band2

Test Position	Cover Type	Mode				Channel	Frequency (MHz)	Measured power (dBm)	Tune-up (dBm)	Power Drift (dB)	Limit of 1gSAR 1.6 W/kg (mW/g)			Figure No.
		Modulation	BW(MHz)	RB Allocation	RB Offset						Measured SAR1g	Scaling Factor	Report SAR1g	
Body SAR (Define 5mm)														
Left Side	Standard	QPSK	20	1	mid	19100	1900	21.54	22.5	0.150	0.030	1.25	0.038	/
Right Side	Standard	QPSK	20	1	mid	19100	1900	21.54	22.5	-0.090	0.015	1.25	0.019	/
Front Side	Standard	QPSK	20	1	mid	19100	1900	21.54	22.5	0.080	0.486	1.25	0.606	/
Back Side	Standard	QPSK	20	1	mid	19100	1900	21.54	22.5	0.150	0.432	1.25	0.539	/
Bottom Side	Standard	QPSK	20	1	mid	19100	1900	21.54	22.5	-0.130	0.588	1.25	0.733	/
Left Side	Standard	QPSK	20	50%	low	19100	1900	20.65	21.5	0.080	0.036	1.22	0.043	/
Right Side	Standard	QPSK	20	50%	low	19100	1900	20.65	21.5	-0.170	0.018	1.22	0.022	/
Front Side	Standard	QPSK	20	50%	low	19100	1900	20.65	21.5	0.070	0.552	1.22	0.671	/
Back Side	Standard	QPSK	20	50%	low	19100	1900	20.65	21.5	0.160	0.494	1.22	0.601	/
Bottom Side	Standard	QPSK	20	50%	low	19100	1900	20.65	21.5	0.050	0.713	1.22	**0.867**	**11**
Bottom Side	Standard	QPSK	20	50%	low	18900	1880	20.5	21.5	0.080	0.650	1.26	0.818	/
Bottom Side	Standard	QPSK	20	50%	low	18700	1860	20.37	21.5	0.100	0.666	1.30	0.864	/
Test Position	Cover Type	Mode				Channel	Frequency (MHz)	Measured power (dBm)	Tune-up (dBm)	Power Drift (dB)	Limit of 10gSAR 4.0 W/kg (mW/g)			Figure No.
		Modulation	BW(MHz)	RB Allocation	RB Offset						Measured SAR10g	Scaling Factor	Report SAR10g	
Limb SAR (Distance 0mm)														
Left Side	Standard	QPSK	20	1	mid	19100	1900	21.54	22.5	0.12	0.0848	1.25	0.106	/
Right Side	Standard	QPSK	20	1	mid	19100	1900	21.54	22.5	0.13	0.0384	1.25	0.048	/
Front Side	Standard	QPSK	20	1	mid	19100	1900	21.54	22.5	-0.13	1.16	1.25	1.447	/
Back Side	Standard	QPSK	20	1	mid	19100	1900	21.54	22.5	0.15	1.03	1.25	1.285	/
Bottom Side	Standard	QPSK	20	1	mid	19100	1900	21.54	22.5	0.13	1.18	1.25	**1.472**	**12**
Left Side	Standard	QPSK	20	50%	low	19100	1900	20.65	21.5	-0.13	0.033	1.22	0.040	/
Right Side	Standard	QPSK	20	50%	low	19100	1900	20.65	21.5	0.05	0.0139	1.22	0.017	/
Front Side	Standard	QPSK	20	50%	low	19100	1900	20.65	21.5	0.09	0.446	1.22	0.542	/
Back Side	Standard	QPSK	20	50%	low	19100	1900	20.65	21.5	0.07	0.343	1.22	0.417	/
Bottom Side	Standard	QPSK	20	50%	low	19100	1900	20.65	21.5	0.06	0.486	1.22	0.591	/

Table 14.7: SAR Values for LTE Band4

Test Position	Cover Type	Mode				Channel	Frequency (MHz)	Measured power (dBm)	Tune-up (dBm)	Power Drift (dB)	Limit of 1gSAR 1.6 W/kg (mW/g)			Figure No.
		Modulation	BW(MHz)	RB Allocation	RB Offset						Measured SAR1g	Scaling Factor	Report SAR1g	
Body SAR (Define 5mm)														
Left Side	Standard	QPSK	20	1	mid	20300	1745	21.7	22	0.030	0.042	1.07	0.045	/
Right Side	Standard	QPSK	20	1	mid	20300	1745	21.7	22	0.160	0.048	1.07	0.051	/
Front Side	Standard	QPSK	20	1	mid	20300	1745	21.7	22	-0.040	0.657	1.07	0.704	/
Back Side	Standard	QPSK	20	1	mid	20300	1745	21.7	22	0.010	0.633	1.07	0.678	/
Bottom Side	Standard	QPSK	20	1	mid	20300	1745	21.7	22	0.180	0.938	1.07	1.005	/
Left Side	Standard	QPSK	20	50%	low	20300	1745	20.73	22	0.010	0.040	1.34	0.053	/
Right Side	Standard	QPSK	20	50%	low	20300	1745	20.73	22	0.020	0.046	1.34	0.062	/
Front Side	Standard	QPSK	20	50%	low	20300	1745	20.73	22	0.060	0.594	1.34	0.796	/
Back Side	Standard	QPSK	20	50%	low	20300	1745	20.73	22	0.040	0.640	1.34	0.857	/
Bottom Side	Standard	QPSK	20	50%	low	20300	1745	20.73	22	0.170	0.942	1.34	**1.262**	**13**
Bottom Side	Standard	QPSK	20	1	mid	20050	1720	21.65	22	0.140	0.787	1.08	0.853	/
Bottom Side	Standard	QPSK	20	1	mid	20175	1732.5	21.65	22	0.150	0.862	1.08	0.934	/
Bottom Side	Standard	QPSK	20	50%	low	20050	1720	20.63	22	0.160	0.750	1.37	1.028	/
Bottom Side	Standard	QPSK	20	50%	low	20175	1732.5	20.69	22	0.170	0.814	1.35	1.101	/
Body SAR (Define 5mm Repeated)														
Bottom Side	Standard	QPSK	20	50%	low	20300	1745	20.73	22	0.090	0.829	1.34	1.111	/
Test Position	Cover Type	Mode				Channel	Frequency (MHz)	Measured power (dBm)	Tune-up (dBm)	Power Drift (dB)	Limit of 10gSAR 4.0 W/kg (mW/g)			Figure No.
		Modulation	BW(MHz)	RB Allocation	RB Offset						Measured SAR10g	Scaling Factor	Report SAR10g	
Limb SAR (Distance 0mm)														
Left Side	Standard	QPSK	20	1	mid	20300	1745	21.7	22	0.04	0.103	1.07	0.110	/
Right Side	Standard	QPSK	20	1	mid	20300	1745	21.7	22	0.18	0.0754	1.07	0.081	/
Front Side	Standard	QPSK	20	1	mid	20300	1745	21.7	22	0.12	1.49	1.07	1.597	/
Back Side	Standard	QPSK	20	1	mid	20300	1745	21.7	22	0.07	1.32	1.07	1.414	/
Bottom Side	Standard	QPSK	20	1	mid	20300	1745	21.7	22	0.14	2.23	1.07	2.389	/
Left Side	Standard	QPSK	20	50%	low	20300	1745	20.73	22	0.04	0.0728	1.34	0.098	/
Right Side	Standard	QPSK	20	50%	low	20300	1745	20.73	22	0.08	0.0747	1.34	0.100	/
Front Side	Standard	QPSK	20	50%	low	20300	1745	20.73	22	-0.01	1.36	1.34	1.822	/
Back Side	Standard	QPSK	20	50%	low	20300	1745	20.73	22	0.08	1.21	1.34	1.621	/
Bottom Side	Standard	QPSK	20	50%	low	20300	1745	20.73	22	-0.09	1.93	1.34	**2.586**	**14**
Bottom Side	Standard	QPSK	20	1	mid	20050	1720	21.65	22	0.08	1.24	1.08	1.344	/
Bottom Side	Standard	QPSK	20	1	mid	20175	1732.5	21.65	22	0.08	1.36	1.08	1.474	/
Bottom Side	Standard	QPSK	20	50%	low	20050	1720	20.63	22	0.17	0.982	1.37	1.346	/
Bottom Side	Standard	QPSK	20	50%	low	20175	1732.5	20.69	22	0.15	1.07	1.35	1.447	/
Limb SAR (Distance 0mm Repeated)														
Bottom Side	Standard	QPSK	20	1	mid	20300	1745	21.7	22	0.16	1.51	1.07	1.618	/

Table 14.8: SAR Values for LTE Band5

Test Position	Cover Type	Mode				Channel	Frequency (MHz)	Measured power (dBm)	Tune-up (dBm)	Power Drift (dB)	Limit of 1gSAR 1.6 W/kg (mW/g)			Figure No.
		Modulation	BW(MHz)	RB Allocation	RB Offset						Measured SAR1g	Scaling Factor	Report SAR1g	
Body SAR (Define 5mm)														
Left Side	Standard	QPSK	10	1	mid	20450	829	22.23	23	-0.080	0.170	1.19	0.203	/
Right Side	Standard	QPSK	10	1	mid	20450	829	22.23	23	0.090	0.244	1.19	0.291	/
Front Side	Standard	QPSK	10	1	mid	20450	829	22.23	23	0.070	0.593	1.19	0.708	/
Back Side	Standard	QPSK	10	1	mid	20450	829	22.23	23	0.010	0.606	1.19	**0.724**	**15**
Bottom Side	Standard	QPSK	10	1	mid	20450	829	22.23	23	0.180	0.209	1.19	0.250	/
Left Side	Standard	QPSK	10	50%	low	20525	836.5	21.31	23	0.030	0.123	1.48	0.182	/
Right Side	Standard	QPSK	10	50%	low	20525	836.5	21.31	23	0.160	0.185	1.48	0.273	/
Front Side	Standard	QPSK	10	50%	low	20525	836.5	21.31	23	0.120	0.490	1.48	0.723	/
Back Side	Standard	QPSK	10	50%	low	20525	836.5	21.31	23	0.010	0.433	1.48	0.639	/
Bottom Side	Standard	QPSK	10	50%	low	20525	836.5	21.31	23	0.130	0.214	1.48	0.316	/
Test Position	Cover Type	Mode				Channel	Frequency (MHz)	Measured power (dBm)	Tune-up (dBm)	Power Drift (dB)	Limit of 10gSAR 4.0 W/kg (mW/g)			Figure No.
		Modulation	BW(MHz)	RB Allocation	RB Offset						Measured SAR10g	Scaling Factor	Report SAR10g	
Limb SAR (Distance 0mm)														
Left Side	Standard	QPSK	10	1	mid	20450	829	22.23	23	0.11	0.142	1.19	0.170	/
Right Side	Standard	QPSK	10	1	mid	20450	829	22.23	23	0.01	0.216	1.19	0.258	/
Front Side	Standard	QPSK	10	1	mid	20450	829	22.23	23	-0.13	0.734	1.19	0.876	/
Back Side	Standard	QPSK	10	1	mid	20450	829	22.23	23	0.02	0.583	1.19	0.696	/
Bottom Side	Standard	QPSK	10	1	mid	20450	829	22.29	23	0.16	0.27	1.18	0.318	/
Left Side	Standard	QPSK	10	50%	low	20525	836.5	21.31	23	-0.07	0.101	1.48	0.149	/
Right Side	Standard	QPSK	10	50%	low	20525	836.5	21.31	23	0.08	0.176	1.48	0.260	/
Front Side	Standard	QPSK	10	50%	low	20525	836.5	21.31	23	-0.17	0.62	1.48	**0.915**	**16**
Back Side	Standard	QPSK	10	50%	low	20525	836.5	21.31	23	-0.17	0.516	1.48	0.761	/
Bottom Side	Standard	QPSK	10	50%	low	20525	836.5	21.31	23	0.14	0.276	1.48	0.407	/

Table 14.9: SAR Values for LTE Band7

Test Position	Cover Type	Mode				Channel	Frequency (MHz)	Measured power (dBm)	Tune-up (dBm)	Power Drift (dB)	Limit of 1gSAR 1.6 W/kg (mW/g)			Figure No.
		Modulation	BW(MHz)	RB Allocation	RB Offset						Measured SAR1g	Scaling Factor	Report SAR1g	
Body SAR (Define 5 mm)														
Left Side	Standard	QPSK	20	1	mid	21350	2560	22.84	23	0.040	0.280	1.04	0.291	/
Right Side	Standard	QPSK	20	1	mid	21350	2560	22.84	23	0.060	0.047	1.04	0.049	/
Front Side	Standard	QPSK	20	1	mid	21350	2560	22.84	23	-0.110	0.591	1.04	0.613	/
Back Side	Standard	QPSK	20	1	mid	21350	2560	22.84	23	0.090	0.635	1.04	0.659	/
Bottom Side	Standard	QPSK	20	1	mid	21350	2560	22.84	23	0.180	0.621	1.04	0.644	/
Left Side	Standard	QPSK	20	50%	high	20850	2510	21.51	22	0.070	0.282	1.12	0.316	/
Right Side	Standard	QPSK	20	50%	high	20850	2510	21.51	22	0.040	0.044	1.12	0.049	/
Front Side	Standard	QPSK	20	50%	high	20850	2510	21.51	22	-0.040	0.578	1.12	0.647	/
Back Side	Standard	QPSK	20	50%	high	20850	2510	21.51	22	0.060	0.592	1.12	**0.663**	**17**
Bottom Side	Standard	QPSK	20	50%	high	20850	2510	21.51	22	0.020	0.572	1.12	0.640	/
Test Position	Cover Type	Mode				Channel	Frequency (MHz)	Measured power (dBm)	Tune-up (dBm)	Power Drift (dB)	Limit of 10gSAR 4.0 W/kg (mW/g)			Figure No.
		Modulation	BW(MHz)	RB Allocation	RB Offset						Measured SAR10g	Scaling Factor	Report SAR10g	
Limb SAR (Distance 0mm)														
Left Side	Standard	QPSK	20	1	mid	21350	2560	22.84	23	0.19	0.259	1.04	0.269	/
Right Side	Standard	QPSK	20	1	mid	21350	2560	22.84	23	-0.15	0.0375	1.04	0.039	/
Front Side	Standard	QPSK	20	1	mid	21350	2560	22.84	23	0.05	0.855	1.04	0.887	/
Back Side	Standard	QPSK	20	1	mid	21350	2560	22.84	23	0.12	0.671	1.04	0.696	/
Bottom Side	Standard	QPSK	20	1	mid	21350	2560	22.84	23	0.13	0.588	1.04	0.610	/
Left Side	Standard	QPSK	20	50%	high	20850	2510	21.51	22	0.19	0.264	1.12	0.296	/
Right Side	Standard	QPSK	20	50%	high	20850	2510	21.51	22	0.13	0.0372	1.12	0.042	/
Front Side	Standard	QPSK	20	50%	high	20850	2510	21.51	22	0.16	0.836	1.12	**0.936**	**18**
Back Side	Standard	QPSK	20	50%	high	20850	2510	21.51	22	0.16	0.687	1.12	0.769	/
Bottom Side	Standard	QPSK	20	50%	high	20850	2510	21.51	22	0.13	0.596	1.12	0.667	/

Table 14.10: SAR Values for LTE Band17

Test Position	Cover Type	Mode				Channel	Frequency (MHz)	Measured power (dBm)	Tune-up (dBm)	Power Drift (dB)	Limit of 1gSAR 1.6 W/kg (mW/g)			Figure No.
		Modulation	BW(MHz)	RB Allocation	RB Offset						Measured SAR1g	Scaling Factor	Report SAR1g	
Body SAR (Define 5mm)														
Left Side	Standard	QPSK	10	1	mid	23780	709	22.49	23	-0.040	0.172	1.12	0.193	/
Right Side	Standard	QPSK	10	1	mid	23780	709	22.49	23	-0.040	0.214	1.12	0.241	/
Front Side	Standard	QPSK	10	1	mid	23780	709	22.49	23	-0.090	0.494	1.12	**0.556**	**19**
Back Side	Standard	QPSK	10	1	mid	23780	709	22.49	23	-0.080	0.302	1.12	0.340	/
Bottom Side	Standard	QPSK	10	1	mid	23780	709	22.49	23	0.070	0.192	1.12	0.216	/
Left Side	Standard	QPSK	10	50%	mid	23800	711	21.44	22	-0.040	0.065	1.14	0.074	/
Right Side	Standard	QPSK	10	50%	mid	23800	711	21.44	22	-0.130	0.132	1.14	0.150	/
Front Side	Standard	QPSK	10	50%	mid	23800	711	21.44	22	-0.080	0.347	1.14	0.395	/
Back Side	Standard	QPSK	10	50%	mid	23800	711	21.44	22	0.150	0.249	1.14	0.283	/
Bottom Side	Standard	QPSK	10	50%	mid	23800	711	21.44	22	-0.170	0.148	1.14	0.168	/
Test Position	Cover Type	Mode				Channel	Frequency (MHz)	Measured power (dBm)	Tune-up (dBm)	Power Drift (dB)	Limit of 10gSAR 4.0 W/kg (mW/g)			Figure No.
		Modulation	BW(MHz)	RB Allocation	RB Offset						Measured SAR10g	Scaling Factor	Report SAR10g	
Limb SAR (Distance 0mm)														
Left Side	Standard	QPSK	10	1	mid	23780	709	22.49	23	0.020	0.168	1.12	0.189	/
Right Side	Standard	QPSK	10	1	mid	23780	709	22.49	23	0.050	0.212	1.12	0.238	/
Front Side	Standard	QPSK	10	1	mid	23780	709	22.49	23	-0.020	0.583	1.12	**0.656**	**20**
Back Side	Standard	QPSK	10	1	mid	23780	709	22.49	23	0.080	0.406	1.12	0.457	/
Bottom Side	Standard	QPSK	10	1	mid	23780	709	22.49	23	0.010	0.269	1.12	0.303	/
Left Side	Standard	QPSK	10	50%	mid	23800	711	21.44	22	0.050	0.129	1.14	0.147	/
Right Side	Standard	QPSK	10	50%	mid	23800	711	21.44	22	0.110	0.163	1.14	0.185	/
Front Side	Standard	QPSK	10	50%	mid	23800	711	21.44	22	-0.050	0.448	1.14	0.510	/
Back Side	Standard	QPSK	10	50%	mid	23800	711	21.44	22	0.070	0.307	1.14	0.349	/
Bottom Side	Standard	QPSK	10	50%	mid	23800	711	21.44	22	0.050	0.207	1.14	0.235	/

Table 14.11: SAR Values for LTE Band41

Test Position	Cover Type	Mode				Channel	Frequency (MHz)	Measured power (dBm)	Tune-up (dBm)	Power Drift (dB)	Limit of 1gSAR 1.6 W/kg (mW/g)			Figure No.
		Modulation	BW(MHz)	RB Allocation	RB Offset						Measured SAR1g	Scaling Factor	Report SAR1g	
Body SAR (Define 5mm)														
Left Side	Standard	QPSK	20	1	mid	41140	2645	22.16	23	0.030	0.110	1.21	0.133	/
Right Side	Standard	QPSK	20	1	mid	41140	2645	22.16	23	0.000	0.029	1.21	0.035	/
Front Side	Standard	QPSK	20	1	mid	41140	2645	22.16	23	0.050	0.255	1.21	0.309	/
Back Side	Standard	QPSK	20	1	mid	41140	2645	22.16	23	0.040	0.327	1.21	0.397	/
Bottom Side	Standard	QPSK	20	1	mid	41140	2645	22.16	23	-0.090	0.356	1.21	**0.432**	**21**
Left Side	Standard	QPSK	20	50%	mid	41140	2645	21.17	22	0.010	0.114	1.21	0.138	/
Right Side	Standard	QPSK	20	50%	mid	41140	2645	21.17	22	0.010	0.028	1.21	0.033	/
Front Side	Standard	QPSK	20	50%	mid	41140	2645	21.17	22	0.090	0.254	1.21	0.307	/
Back Side	Standard	QPSK	20	50%	mid	41140	2645	21.17	22	0.090	0.310	1.21	0.375	/
Bottom Side	Standard	QPSK	20	50%	mid	41140	2645	21.17	22	0.040	0.340	1.21	0.412	/
Test Position	Cover Type	Mode				Channel	Frequency (MHz)	Measured power (dBm)	Tune-up (dBm)	Power Drift (dB)	Limit of 10gSAR 4.0 W/kg (mW/g)			Figure No.
		Modulation	BW(MHz)	RB Allocation	RB Offset						Measured SAR10g	Scaling Factor	Report SAR10g	
Limb SAR (Distance 0mm)														
Left Side	Standard	QPSK	20	1	mid	41140	2645	22.16	23	0.12	0.105	1.21	0.127	/
Right Side	Standard	QPSK	20	1	mid	41140	2645	22.16	23	0.01	0.0196	1.21	0.024	/
Front Side	Standard	QPSK	20	1	mid	41140	2645	22.16	23	0.15	0.377	1.21	**0.457**	**22**
Back Side	Standard	QPSK	20	1	mid	41140	2645	22.16	23	-0.08	0.322	1.21	0.391	/
Bottom Side	Standard	QPSK	20	1	mid	41140	2645	22.16	23	0.16	0.33	1.21	0.400	/
Left Side	Standard	QPSK	20	50%	mid	41140	2645	21.17	22	0.17	0.115	1.21	0.139	/
Right Side	Standard	QPSK	20	50%	mid	41140	2645	21.17	22	0.06	0.02	1.21	0.024	/
Front Side	Standard	QPSK	20	50%	mid	41140	2645	21.17	22	-0.11	0.362	1.21	0.438	/
Back Side	Standard	QPSK	20	50%	mid	41140	2645	21.17	22	0.03	0.308	1.21	0.373	/
Bottom Side	Standard	QPSK	20	50%	mid	41140	2645	21.17	22	0.19	0.32	1.21	0.387	/

Table 14.12: SAR Values for WIFI 11b

Test Position	Cover Type	Mode	BW(MHz)	Duty Cycle	Channel	Frequency (MHz)	Measured power (dBm)	Tune-up (dBm)	Power Drift (dB)	Limit of 1gSAR 1.6 W/kg (mW/g)			Figure No.
										Measured SAR1g	Scaling Factor	Report SAR1g	
Body SAR (Define 5mm)													
Left Side	Standard	802.11b	20	1:1	11	2462	18.16	19	0.020	0.027	1.21	0.033	/
Right Side	Standard	802.11b	20	1:1	11	2462	18.16	19	0.110	0.036	1.21	0.044	/
Front Side	Standard	802.11b	20	1:1	11	2462	18.16	19	0.030	0.021	1.21	0.025	/
Back Side	Standard	802.11b	20	1:1	11	2462	18.16	19	0.030	0.273	1.21	0.331	/
Top Side	Standard	802.11b	20	1:1	11	2462	18.16	19	0.070	0.293	1.21	**0.356**	**23**
Test Position	**Cover Type**	**Mode**	**BW(MHz)**	**Duty Cycle**	**Channel**	**Frequency (MHz)**	**Measured power (dBm)**	**Tune-up (dBm)**	**Power Drift (dB)**	**Limit of 10gSAR 4.0 W/kg (mW/g)**			**Figure No.**
										Measured SAR10g	**Scaling Factor**	**Report SAR10g**	
Limb SAR (Distance 0mm)													
Left Side	Standard	802.11b	20	1:1	11	2462	18.16	19	0.13	0.0251	1.21	0.030	/
Right Side	Standard	802.11b	20	1:1	11	2462	18.16	19	0.13	0.0411	1.21	0.050	/
Front Side	Standard	802.11b	20	1:1	11	2462	18.16	19	0.16	0.0107	1.21	0.013	/
Back Side	Standard	802.11b	20	1:1	11	2462	18.16	19	0.15	0.169	1.21	0.205	/
Top Side	Standard	802.11b	20	1:1	11	2462	18.16	19	0.13	0.266	1.21	**0.323**	**24**

Table 14.13: SAR Values for WIFI 11a

Test Position	Cover Type	Mode	BW(MHz)	Duty Cycle	Channel	Frequency (MHz)	Measured power (dBm)	Tune-up (dBm)	Power Drift (dB)	Limit of 1gSAR 1.6 W/kg (mW/g)			Figure No.
										Measured SAR1g	Scaling Factor	Report SAR1g	
Body SAR (Define 5mm)													
Front Side	Standard	802.11a	20	1:1	36	5180	13.35	13.5	0.190	0.098	1.04	0.101	/
Back Side	Standard	802.11a	20	1:1	36	5180	13.35	13.5	0.110	0.271	1.04	**0.281**	**25**
Left Side	Standard	802.11a	20	1:1	36	5180	13.35	13.5	0.140	0.080	1.04	0.083	/
Right Side	Standard	802.11a	20	1:1	36	5180	13.35	13.5	0.120	0.064	1.04	0.066	/
Top Side	Standard	802.11a	20	1:1	36	5180	13.35	13.5	0.150	0.253	1.04	0.262	/
Test Position	**Cover Type**	**Mode**	**BW(MHz)**	**Duty Cycle**	**Channel**	**Frequency (MHz)**	**Measured power (dBm)**	**Tune-up (dBm)**	**Power Drift (dB)**	**Limit of 10gSAR 4.0 W/kg (mW/g)**			**Figure No.**
										Measured SAR10g	**Scaling Factor**	**Report SAR10g**	
Limb SAR (Distance 0mm)													
Front Side	Standard	802.11a	20	1:1	36	5180	13.35	13.5	0.19	0.0525	1.04	0.054	/
Back Side	Standard	802.11a	20	1:1	36	5180	13.35	13.5	0.10	0.214	1.04	**0.222**	**26**
Left Side	Standard	802.11a	20	1:1	36	5180	13.35	13.5	0.12	0.0104	1.04	0.011	/
Right Side	Standard	802.11a	20	1:1	36	5180	13.35	13.5	0.14	0.0346	1.04	0.036	/
Top Side	Standard	802.11a	20	1:1	36	5180	13.35	13.5	-0.13	0.0828	1.04	0.086	/

Table 14.14: SAR Values for WIFI 11n

Test Position	Cover Type	Mode	BW(MHz)	Duty Cycle	Channel	Frequency (MHz)	Measured power (dBm)	Tune-up (dBm)	Power Drift (dB)	Limit of 1gSAR 1.6 W/kg (mW/g)			Figure No.
										Measured SAR1g	Scaling Factor	Report SAR1g	
Body SAR (Define 5mm)													
Top Side	Standard	802.11n	40	1:1	159	5795	13.65	14	-0.070	0.355	1.08	**0.385**	**27**
Left Side	Standard	802.11n	40	1:1	159	5795	13.65	14	0.060	0.043	1.08	0.047	/
Right Side	Standard	802.11n	40	1:1	159	5795	13.65	14	0.130	0.089	1.08	0.096	/
Front Side	Standard	802.11n	40	1:1	159	5795	13.65	14	0.050	0.171	1.08	0.185	/
Back Side	Standard	802.11n	40	1:1	159	5795	13.65	14	0.140	0.227	1.08	0.246	/
Test Position	**Cover Type**	**Mode**	**BW(MHz)**	**Duty Cycle**	**Channel**	**Frequency (MHz)**	**Measured power (dBm)**	**Tune-up (dBm)**	**Power Drift (dB)**	**Limit of 10gSAR 4.0 W/kg (mW/g)**			**Figure No.**
										Measured SAR10g	**Scaling Factor**	**Report SAR10g**	
Limb SAR (Distance 0mm)													
Front Side	Standard	802.11n	40	1:1	159	5795	13.65	14	0.19	0.0539	1.00	0.054	/
Back Side	Standard	802.11n	40	1:1	159	5795	13.65	14	0.11	0.185	1.08	**0.201**	**28**
Left Side	Standard	802.11n	40	1:1	159	5795	13.65	14	0.13	0.0396	1.00	0.040	/
Right Side	Standard	802.11n	40	1:1	159	5795	13.65	14	0.17	0.0551	1.08	0.060	/
Top Side	Standard	802.11n	40	1:1	159	5795	13.65	14	0.18	0.149	1.08	0.162	/

14.2. Simultaneous SAR Evaluation

Table 14.4 Simultaneous transmission SAR

Standalone SAR for 2G(W/Kg)				
Test Position		GSM 850	GSM 1900	Highest SAR
Body 5mm	Phantom Side	1.22	0.794	1.22
	Ground Side	1.102	0.662	1.102
	Left Side	0.276	0.134	0.276
	Right Side	0.477	0.083	0.477
	Top Side	-	-	-
	Bottom Side	0.439	1.077	1.077
Limb 0mm	Phantom Side	1.533	2.274	2.274
	Ground Side	1.44	2.197	2.197
	Left Side	0.239	0.216	0.239
	Right Side	0.422	0.076	0.422
	Top Side	-	-	-
	Bottom Side	0.537	2.263	2.263

Standalone SAR for 3G(W/Kg)					
Test Position		WCDMA Band II	WCDMA Band IV	WCDMA Band V	Highest SAR
Body 5mm	Phantom Side	0.425	0.237	0.543	0.543
	Ground Side	0.369	0.291	0.371	0.371
	Left Side	0.039	0.033	0.124	0.124
	Right Side	0.034	0.019	0.192	0.192
	Top Side	-	-	-	-
	Bottom Side	1.2	1.142	0.198	1.2
Limb 0mm	Phantom Side	2.07	1.634	0.67	2.07
	Ground Side	1.788	1.491	0.58	1.788
	Left Side	0.15	0.1	0.115	0.15
	Right Side	0.069	0.097	0.214	0.214
	Top Side	-	-	-	-
	Bottom Side	1.843	2.518	0.262	2.518

Standalone SAR for 4G(W/Kg)								
Test Position		LTE Band 2	LTE Band 4	LTE Band 5	LTE Band7	LTE Band17	LTE Band41	Highest SAR
Body 5mm	Phantom Side	0.671	0.796	0.723	0.647	0.556	0.309	0.796
	Ground Side	0.601	0.857	0.724	0.663	0.34	0.397	0.857
	Left Side	0.043	0.053	0.203	0.316	0.193	0.138	0.316
	Right Side	0.022	0.062	0.291	0.049	0.241	0.035	0.291
	Top Side	-	-	-	-	-	-	-
	Bottom Side	0.867	1.262	0.316	0.644	0.216	0.432	1.262
Limb 0mm	Phantom Side	1.447	1.822	0.915	0.936	0.656	0.457	1.822
	Ground Side	1.285	1.621	0.761	0.769	0.457	0.391	1.621
	Left Side	0.106	0.11	0.17	0.296	0.189	0.139	0.296
	Right Side	0.048	0.1	0.26	0.042	0.238	0.024	0.26
	Top Side	-	-	-	-	-	-	-
	Bottom Side	1.472	2.586	0.407	0.667	0.303	0.391	2.586

Simultaneous multi-band transmission									
Test Position		2G	3G	4G	2.4GHz		WiFi	SUM	SUM
					BT	WiFi	5G	2.4GHz	5G
Body 5mm	Phantom Side	1.22	0.543	0.796	0.149	0.025	0.185	1.369	1.405
	Ground Side	1.102	0.371	0.857	0.149	0.331	0.281	**1.433**	1.383
	Left Side	0.276	0.124	0.316	0.149	0.033	0.083	0.465	0.399
	Right Side	0.477	0.192	0.291	0.149	0.044	0.096	0.626	0.573
	Top Side	-	-	-	0.149	0.356	0.385	0.356	0.385
	Bottom Side	1.077	1.2	1.262	0.149	-	-	1.411	1.262
Limb 0mm	Phantom Side	2.274	2.07	1.822	0.06	0.013	0.054	2.334	2.328
	Ground Side	2.197	1.788	1.621	0.06	0.205	0.222	2.402	2.419
	Left Side	0.239	0.15	0.296	0.06	0.03	0.04	0.356	0.336
	Right Side	0.422	0.214	0.26	0.06	0.05	0.06	0.482	0.482
	Top Side	-	-	-	0.06	0.323	0.162	0.323	0.162
	Bottom Side	2.263	2.518	2.586	0.06	-	-	**2.646**	2.586

According to the conducted power measurement result, we can draw the conclusion that: stand-alone SAR for WiFi should be performed. Then, simultaneous transmission SAR for WiFi/BT is considered with measurement results of GSM/WCDMA/LTE/CDMA and WiFi/BT. According to the above table, the sum of reported SAR values for GSM/WCDMA/LTECDMA and WiFi<1.6W/kg. So the simultaneous transmission SAR is not required for WiFi/BT transmitter.

14.3. SAR Measurement Variability

SAR measurement variability must be assessed for each frequency band, which is determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. When both head and body tissue-equivalent media are required for SAR measurements in a frequency band, the variability measurement procedures should be applied to the tissue medium with the highest measured SAR, using the highest measured SAR configuration for that tissue-equivalent medium.

The following procedures are applied to determine if repeated measurements are required.

1) Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg; steps2) through 4) do not apply.

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

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

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

Table 14.5: SAR Measurement Variability (1g)

Frequency		Configuration	Test Position	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio
MHz	Ch.					
848.8	251	GPRS 4TS	Front Side	1.08	1.09	1.009
848.8	251	GPRS 4TS	Back Side	0.963	0.984	1.022
1909.8	810	GPRS 4TS	Bottom side	0.982	0.987	1.005
1852.4	9262	RMC 12.2k	Bottom side	1.04	1.04	1
1752.6	1513	RMC 12.2k	Bottom side	1.03	0.963	1.07
1745	20300	QPSK 20M 50RB0 offset	Bottom side	0.942	0.829	1.136

Note: According to the KDB 865664 D01 repeated measurement is not required when the original highest measured SAR is < 0.8 W/kg.

15. Test Equipment Utilized

Table 15.1 SAR Test System Equipment List

Item	Instrument Name	Type	Serial Number	Manufacturer	Cal. Date	Cal. interval
1	Network analyzer	N5242A	MY51221755	Agilent	2018-12-17	1 year
2	Power meter	NRVD	102257	RS	2019-5-10	1 year
3	Power sensor	NRV-Z5	100241			
			100644			
4	Signal Generator	E4438C	MY49072044	Agilent	2019-5-10	1 Year
5	Amplifier	NTWPA-0086010F	12023024	rflight	No Calibration Requested	
6	Coupler	778D	MY4825551	Agilent	2019-5-10	1 year
7	BTS	E5515C	MY50266468	Agilent	2018-12-17	1 year
		MT8820C	6201240338	Anritsu	2018-12-17	1 year
8	E-field Probe	ES3DV3	3252	SPEAG	2018-9-4	1 year
		EX3DV4	7401	SPEAG	2019-1-5	1 year
9	DAE	SPEAG DAE4	1244	SPEAG	2018-12-13	1 year
10	Dipole Validation Kit	SPEAG D750V3	1144	SPEAG	2018-10-26	3 year
		SPEAG D835V2	4d112	SPEAG	2018-10-25	3 year
		SPEAG D1750V2	1044	SPEAG	2018-10-31	3 year
		SPEAG D1900V2	5d151	SPEAG	2017-12-6	3 year
		SPEAG D2450V2	858	SPEAG	2018-10-26	3 year
		SPEAG D2600V2	1031	SPEAG	2018-11-1	3 year
		SPEAG D5GHzV2	1172	SPEAG	2018-3-30	3 year

16. Measurement Uncertainty

Table 16.1 Measurement Uncertainty Evaluation for SAR test

Uncertainty Factors	Unc. value, ±%	Prob. Dist.	Div.	c_i 1g	c_i 10g	Std.Unc. ±%,1g	Std.Unc. ±%,10g	V_i v_{eff}
Measurement System								
Probe Calibration	6	N	1	1	1	6	6	∞
Axial Isotropy	0.5	R	√3	0.7	0.7	0.2	0.2	∞
Hemispherical Isotropy	2.6	R	√3	0.7	0.7	1.1	1.1	∞
Boundary Effects	0.8	R	√3	1	1	0.5	0.5	∞
Linearity	0.6	R	√3	1	1	0.3	0.3	∞
System Detection Limits	1	R	√3	1	1	0.6	0.6	∞
Readout Electronics	0.7	N	1	1	1	0.7	0.7	∞
Response Time	0	R	√3	1	1	0	0	∞
Integration Time	2.6	R	√3	1	1	1.5	1.5	∞
RF Ambient Noise	3	R	√3	1	1	1.7	1.7	∞
RF Ambient Reflections	3	R	√3	1	1	1.7	1.7	∞
Probe Positioner	1.5	R	√3	1	1	0.9	0.9	∞
Probe Positioning	2.9	R	√3	1	1	1.7	1.7	∞
Max. SAR Eval.	1	R	√3	1	1	0.6	0.6	∞
Test Sample Related								
Device Positioning	2.9	N	1	1	1	2.9	2.9	145
Device Holder	3.6	N	1	1	1	3.6	3.6	5
Phantom and Setup								
Phantom Uncertainty	4	R	√3	1	1	2.3	2.3	∞
Liquid Conductivity (target)	5	R	√3	0.64	0.43	1.8	1.2	∞
Liquid Conductivity (meas.)	2.5	N	1	0.64	0.43	1.6	1.1	∞
Liquid Permittivity (target)	5	R	√3	0.6	0.49	1.7	1.4	∞
Liquid Permittivity (meas.)	2.5	N	1	0.6	0.49	1.5	1.2	∞
Combined Std. Uncertainty		RSS				**±9.27%**	**±9.07%**	
Expanded Std. Uncertainty		k=2				**±18.53%**	**±18.14%**	

Table 16.2 Measurement Uncertainty Evaluation for System Validation

Uncertainty Factors	Unc. value, ±%	Prob. Dist.	Div.	c_i 1g	c_i 10g	Std.Unc. ±%,1g	Std.Unc. ±%,10g	V_i v_{eff}
Measurement System								
Probe Calibration	6	N	1	1	1	6	6	∞
Axial Isotropy	0.5	R	√3	0.7	0.7	0.2	0.2	∞
Hemispherical Isotropy	2.6	R	√3	0.7	0.7	1.1	1.1	∞
Boundary Effects	0.8	R	√3	1	1	0.5	0.5	∞
Linearity	0.6	R	√3	1	1	0.3	0.3	∞
System Detection Limits	1	R	√3	1	1	0.6	0.6	∞
Readout Electronics	0.7	N	1	1	1	0.7	0.7	∞
Response Time	0	R	√3	1	1	0	0	∞
Integration Time	2.6	R	√3	1	1	1.5	1.5	∞
RF Ambient Noise	3	R	√3	1	1	1.7	1.7	∞
RF Ambient Reflections	3	R	√3	1	1	1.7	1.7	∞
Probe Positioner	1.5	R	√3	1	1	0.9	0.9	∞
Probe Positioning	2.9	R	√3	1	1	1.7	1.7	∞
Max. SAR Eval.	1	R	√3	1	1	0.6	0.6	∞
Diople								
Power Drift	5	R	√3	1	1	2.9	2.9	∞
Dipole Positioning	2	N	1	1	1	2	2	∞
Dipole Input Power	5	N	1	1	1	5	5	∞
Phantom and Setup								
Phantom Uncertainty	4	R	√3	1	1	2.3	2.3	∞
Liquid Conductivity (target)	5	R	√3	0.64	0.43	1.8	1.2	∞
Liquid Conductivity (meas.)	2.5	N	1	0.64	0.43	1.6	1.1	∞
Liquid Permittivity (target)	5	R	√3	0.6	0.49	1.7	1.4	∞
Liquid Permittivity (meas.)	2.5	N	1	0.6	0.49	1.5	1.2	∞
Combined Std. Uncertainty		RSS				**±11.2%**	**±10.9%**	387
Expanded Std. Uncertainty		k=2				**±22.4%**	**±21.8%**	

Table 16.3 Measurement Uncertainty Evaluation for Fast SAR test

Uncertainty Factors	Unc. value, ±%	Prob. Dist.	Div.	c_i 1g	c_i 10g	Std.Unc. ±%,1g	Std.Unc. ±%,10g	Vi veff
Measurement System								
Probe Calibration	6	N	1	1	1	6	6	∞
Axial Isotropy	0.5	R	√3	0.7	0.7	0.2	0.2	∞
Hemispherical Isotropy	2.6	R	√3	1	1	1.5	1.5	∞
Boundary Effects	0.8	R	√3	0.7	0.7	0.32	0.32	∞
Linearity	0.6	R	√3	1	1	0.35	0.35	∞
System Detection Limits	1	R	√3	1	1	0.58	0.58	∞
Readout Electronics	0.7	R	√3	1	1	0.4	0.4	∞
Response Time	0	N	1	1	1	0	0	∞
Integration Time	2.6	R	√3	1	1	1.5	1.5	∞
RF Ambient Noise	3	R	√3	1	1	1.73	1.73	∞
RF Ambient Reflections	3	R	√3	1	1	1.73	1.73	∞
Probe Positioner	1.5	R	√3	1	1	0.87	0.87	∞
Probe Positioning	2.9	R	√3	1	1	1.67	1.67	∞
Max. SAR Eval.	1	R	√3	1	1	0.58	0.58	∞
Fast SAR z-Approximation	7	R	√3	1	1	4.04	4.04	∞
Test sample Related								
Test sample Positioning	2.9	N	1	1	1	2.9	2.9	145
Device Holder Uncertainty	3.6	N	1	1	1	3.6	3.6	5
Phantom and Tissue Parameters								
Phantom Uncertainty	4	R	√3	1	1	2.31	2.31	∞
Liquid Conductivity (target)	5	R	√3	0.64	0.43	1.85	1.24	∞
Liquid Conductivity (meas)	2.5	N	1	0.64	0.43	0.92	0.62	∞
Liquid Permittivity (target)	5	R	√3	0.6	0.49	1.73	1.41	∞
Liquid Permittivity (meas)	2.5	N	1	0.6	0.49	0.87	0.71	∞
Combined Std. Uncertainty		RSS				**±10.11%**	**±9.93%**	
Expanded Std. Uncertainty		k=2				**±20.22%**	**±19.86%**	

END OF REPORT BODY

ANNEX A. Graph Results

Fig.1 GPRS 850MHz Body Toward Phantom High With 5mm

Date/Time: 2019/8/13

Electronics: DAE4 Sn1244

Medium parameters used: f = 849 MHz; σ = 0.928 S/m; εr = 41.81; ρ = 1000 kg/m3

Ambient Temperature:22.5°C Liquid Temperature:22.5°C

Communication System: GRPS 4TS ; Frequency: 848.6 MHz; Duty Cycle: 1:2

Probe: ES3DV3 - SN3252ConvF(6.36, 6.36, 6.36); Calibrated: 9/4/2018

High Toward Phantom GPRS 850 With 5mm /Area Scan (8x17x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 1.08 W/kg

High Toward Phantom GPRS 850 With 5mm/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 21.26 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 2.00 W/kg

SAR(1 g) = 1.09 W/kg; SAR(10 g) = 0.626 W/kg

Maximum value of SAR (measured) = 1.17 W/kg

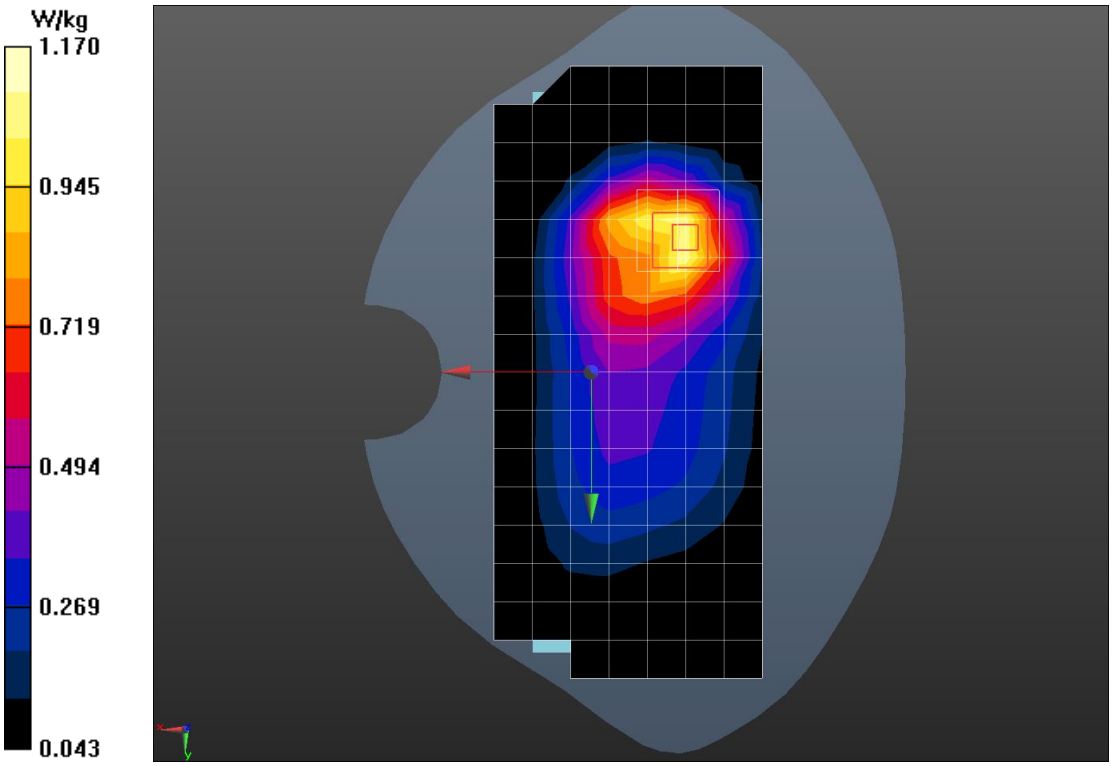


Fig.2 GPRS 850MHz Body Toward Phantom Middle With 0mm
Date/Time: 2019/8/13
Electronics: DAE4 Sn1244
Medium parameters used: f = 837 MHz; σ = 0.917 S/m; εr = 41.945; ρ = 1000 kg/m3
Ambient Temperature:22.5°C Liquid Temperature:22.5°C
Communication System: GRPS 4TS ; Frequency: 836.8 MHz; Duty Cycle: 1:2
Probe: ES3DV3 - SN3252ConvF(6.36, 6.36, 6.36); Calibrated: 9/4/2018
Middle Toward Phantom GPRS 850 With 0mm/Area Scan (8x17x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 2.74 W/kg
Middle Toward Phantom GPRS 850 With 0mm/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.48 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 5.36 W/kg
SAR(1 g) = 2.45 W/kg; SAR(10 g) = 1.32 W/kg
Maximum value of SAR (measured) = 2.62 W/kg

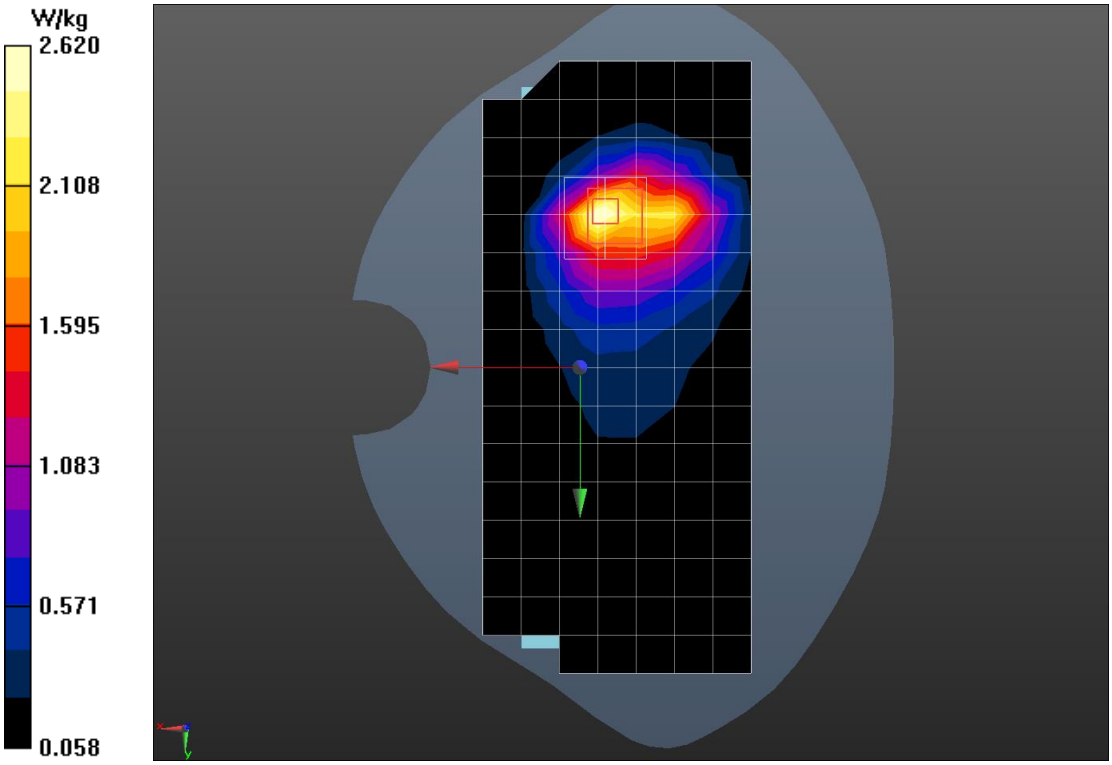


Fig.3 GPRS 1900MHz Body Bottom High With 5mm

Date/Time: 2019/8/27

Electronics: DAE4 Sn1244

Medium parameters used: f = 1910 MHz; σ = 1.428 S/m; εr = 41.376; ρ = 1000 kg/m3

Ambient Temperature:22.5°C Liquid Temperature:22.5°C

Communication System: GRPS 4TS; Frequency: 1909.8 MHz; Duty Cycle: 1:2

Probe: ES3DV3 - SN3252ConvF(5.18, 5.18, 5.18); Calibrated: 9/4/2018

High Bottom GPRS 1900 With 5mm /Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 1.11 W/kg

High Bottom GPRS 1900 With 5mm/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 20.34 V/m; Power Drift = 0.12 dB

Peak SAR (extrapolated) = 1.88 W/kg

SAR(1 g) = 0.987 W/kg; SAR(10 g) = 0.485 W/kg

Maximum value of SAR (measured) = 1.08 W/kg

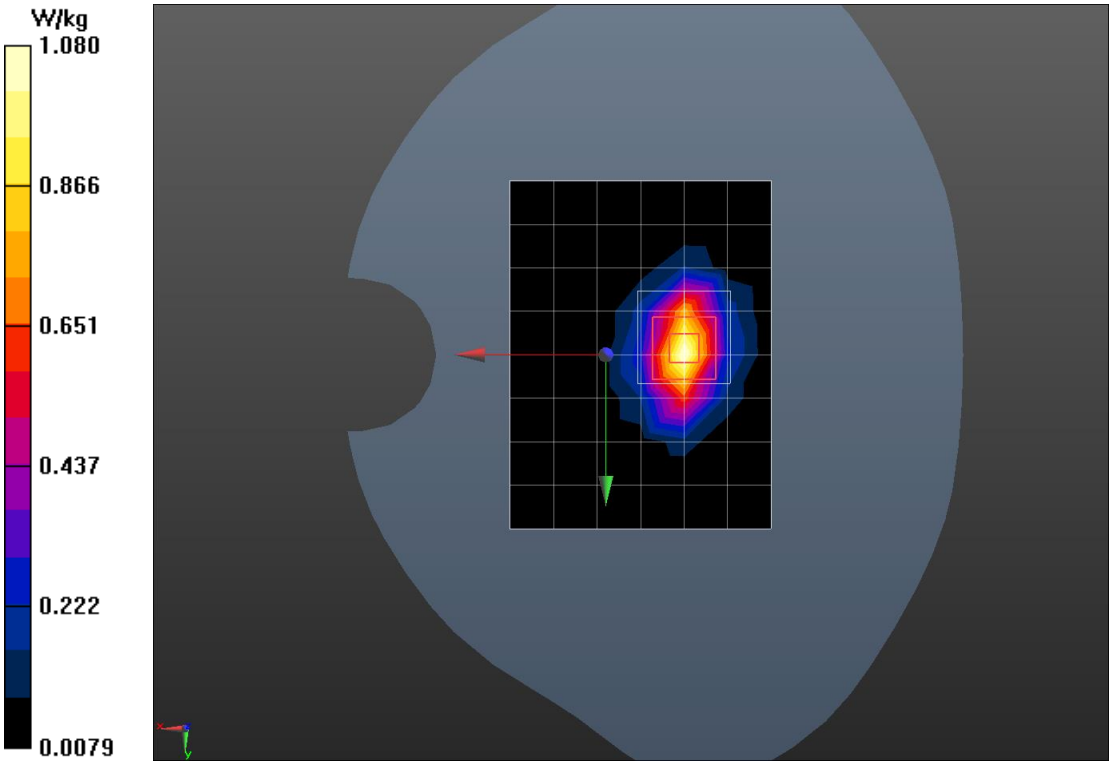


Fig.4 GPRS 1900MHz Body Toward Phantom Middle With 0mm
Date/Time: 2019/8/27
Electronics: DAE4 Sn1244
Medium parameters used: f = 1880 MHz; σ = 1.397 S/m; εr = 41.081; ρ = 1000 kg/m3
Ambient Temperature:22.5°C Liquid Temperature:22.5°C
Communication System: GRPS 4TS ; Frequency: 1880 MHz; Duty Cycle: 1:2
Probe: ES3DV3 - SN3252ConvF(5.18, 5.18, 5.18); Calibrated: 9/4/2018
Middle Toward Phantom GPRS 1900 With 0mm/Area Scan (8x17x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 3.38 W/kg
Middle Toward Phantom GPRS 1900 With 0mm/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.231 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 10.1 W/kg
SAR(1 g) = 4.56 W/kg; SAR(10 g) = 2.06 W/kg
Maximum value of SAR (measured) = 5.32 W/kg

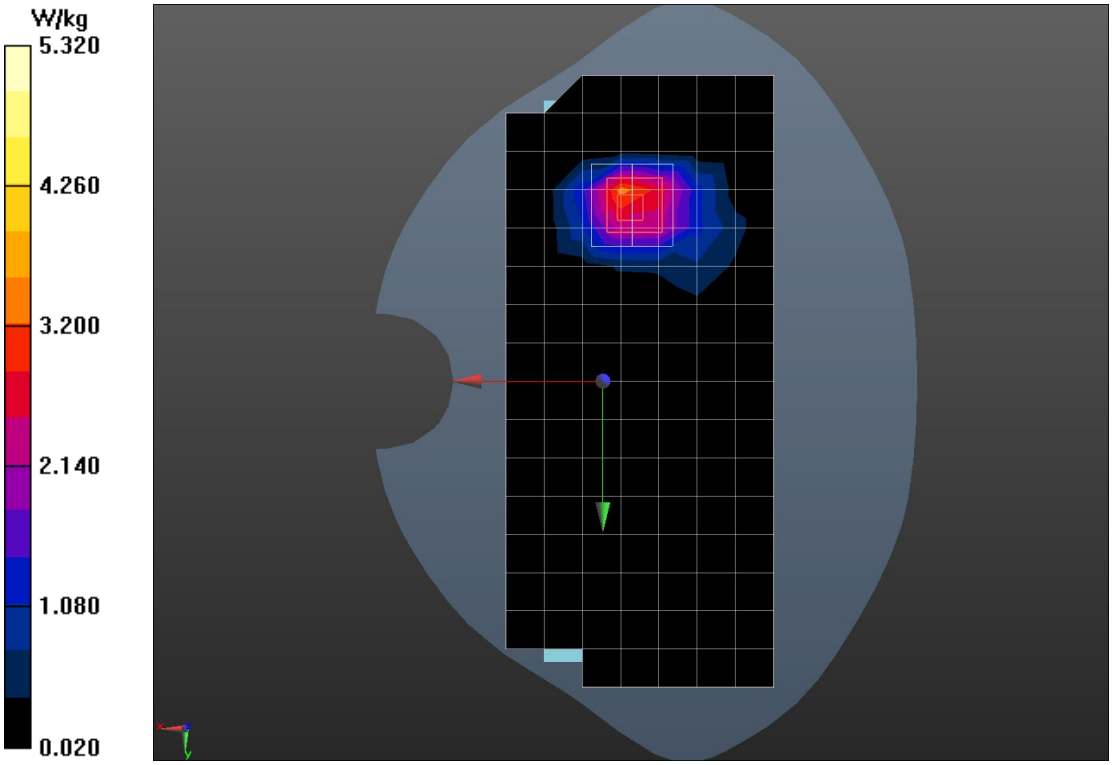


Fig.5 WCDMA Band Ⅱ Body Bottom Low With 5mm

Date/Time: 2019/8/27

Electronics: DAE4 Sn1244

Medium parameters used: f = 1852.4 MHz; σ = 1.371 S/m; εr = 40.476; ρ = 1000 kg/m3

Ambient Temperature:22.5°C Liquid Temperature:22.5°C

Communication System: WCDMA Band 2; Frequency: 1852.4 MHz; Duty Cycle: 1:1

Probe: ES3DV3 - SN3252ConvF(5.18, 5.18, 5.18); Calibrated: 9/4/2018

Low Bottom WCDMA Band2 With 5mm/Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 1.13 W/kg

Low Bottom WCDMA Band2 With 5mm/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 19.81 V/m; Power Drift = 0.13 dB

Peak SAR (extrapolated) = 1.95 W/kg

SAR(1 g) = 1.04 W/kg; SAR(10 g) = 0.520 W/kg

Maximum value of SAR (measured) = 1.17 W/kg

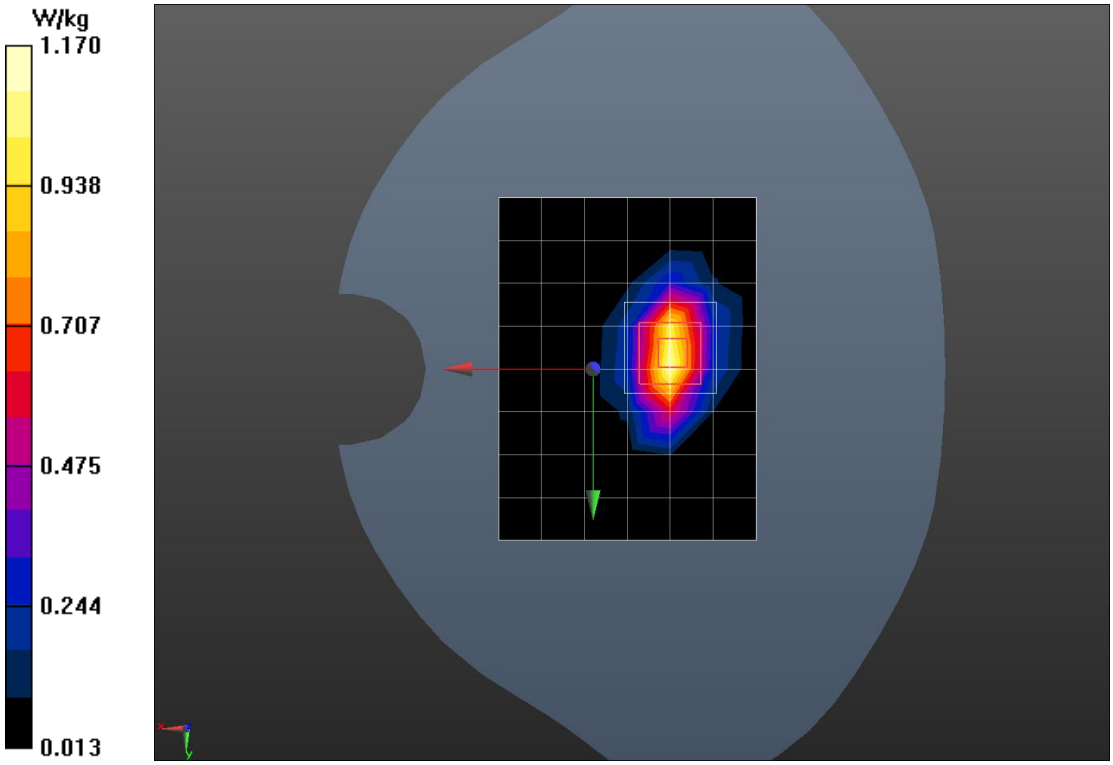


Fig.6 WCDMA Band Ⅱ Body Toward Phantom High With 0mm

Date/Time: 2019/8/27

Electronics: DAE4 Sn1244

Medium parameters used: f = 1908 MHz; σ = 1.426 S/m; εr = 41.374; ρ = 1000 kg/m3

Ambient Temperature:22.5°C Liquid Temperature:22.5°C

Communication System: WCDMA Band 2; Frequency: 1907.6 MHz; Duty Cycle: 1:1

Probe: ES3DV3 - SN3252ConvF(5.18, 5.18, 5.18); Calibrated: 9/4/2018

High Toward Phantom WCDMA Band2 With 0mm/Area Scan (8x17x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 3.67 W/kg

High Toward Phantom WCDMA Band2 With 0mm/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 4.717 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 9.72 W/kg

SAR(1 g) = 4.34 W/kg; SAR(10 g) = 1.91 W/kg

Maximum value of SAR (measured) = 5.17 W/kg

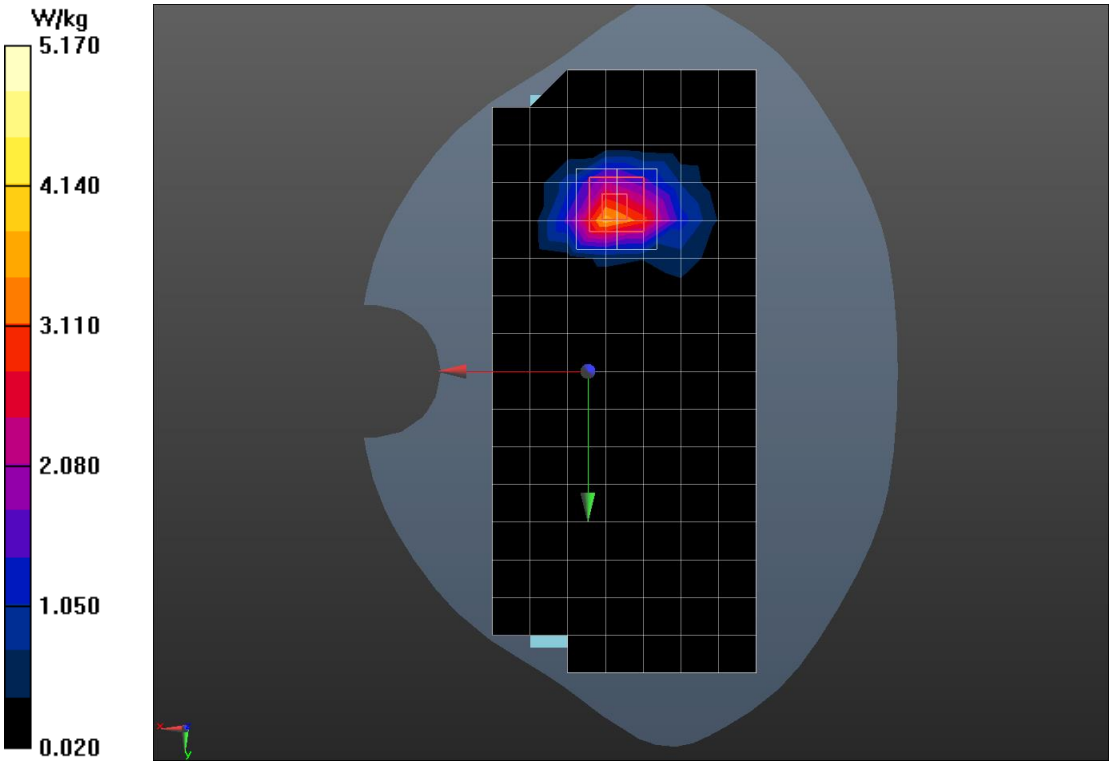


Fig.7 WCDMA Band Ⅳ Body Bottom High With 5mm

Date/Time: 2019/8/24

Electronics: DAE4 Sn1244

Medium parameters used: f = 1753 MHz; σ = 1.4 S/m; εr = 39.698; ρ = 1000 kg/m3

Ambient Temperature:22.5°C Liquid Temperature:22.5°C

Communication System: WCDMA Band 4; Frequency: 1752.6 MHz; Duty Cycle: 1:1

Probe: ES3DV3 - SN3252ConvF(5.39, 5.39, 5.39); Calibrated: 9/4/2018

High Bottom WCDMA Band4 With 5mm/Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 1.06 W/kg

High Bottom WCDMA Band4 With 5mm/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 24.88 V/m; Power Drift = 0.17 dB

Peak SAR (extrapolated) = 1.87 W/kg

SAR(1 g) = 1.03 W/kg; SAR(10 g) = 0.528 W/kg

Maximum value of SAR (measured) = 1.13 W/kg

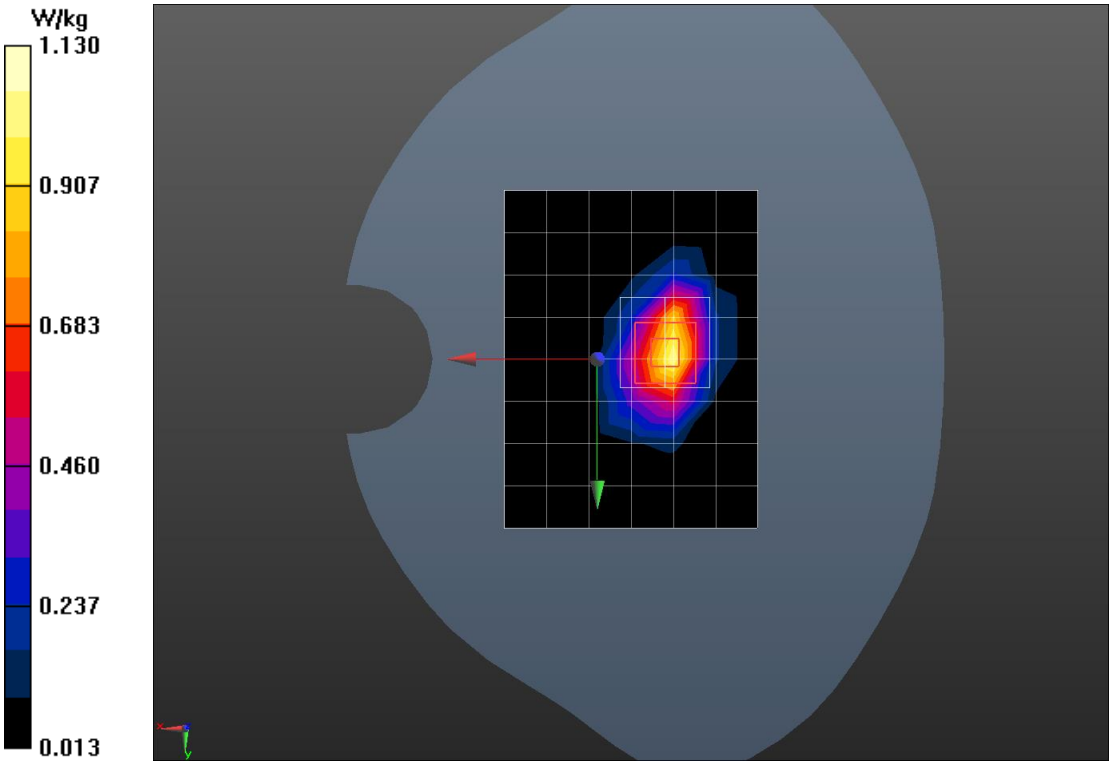


Fig.8 WCDMA Band Ⅳ Body Bottom High With 0mm

Date/Time: 2019/8/24

Electronics: DAE4 Sn1244

Medium parameters used: f = 1753 MHz; σ = 1.4 S/m; εr = 39.698; ρ = 1000 kg/m3

Ambient Temperature:22.5°C Liquid Temperature:22.5°C

Communication System: WCDMA Band 4; Frequency: 1752.6 MHz; Duty Cycle: 1:1

Probe: ES3DV3 - SN3252ConvF(5.39, 5.39, 5.39); Calibrated: 9/4/2018

High Bottom WCDMA Band4 With 0mm/Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 4.75 W/kg

High Bottom WCDMA Band4 With 0mm/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 54.95 V/m; Power Drift = 0.10 dB

Peak SAR (extrapolated) = 10.1 W/kg

SAR(1 g) = 4.89 W/kg; SAR(10 g) = 2.27 W/kg

Maximum value of SAR (measured) = 5.65 W/kg

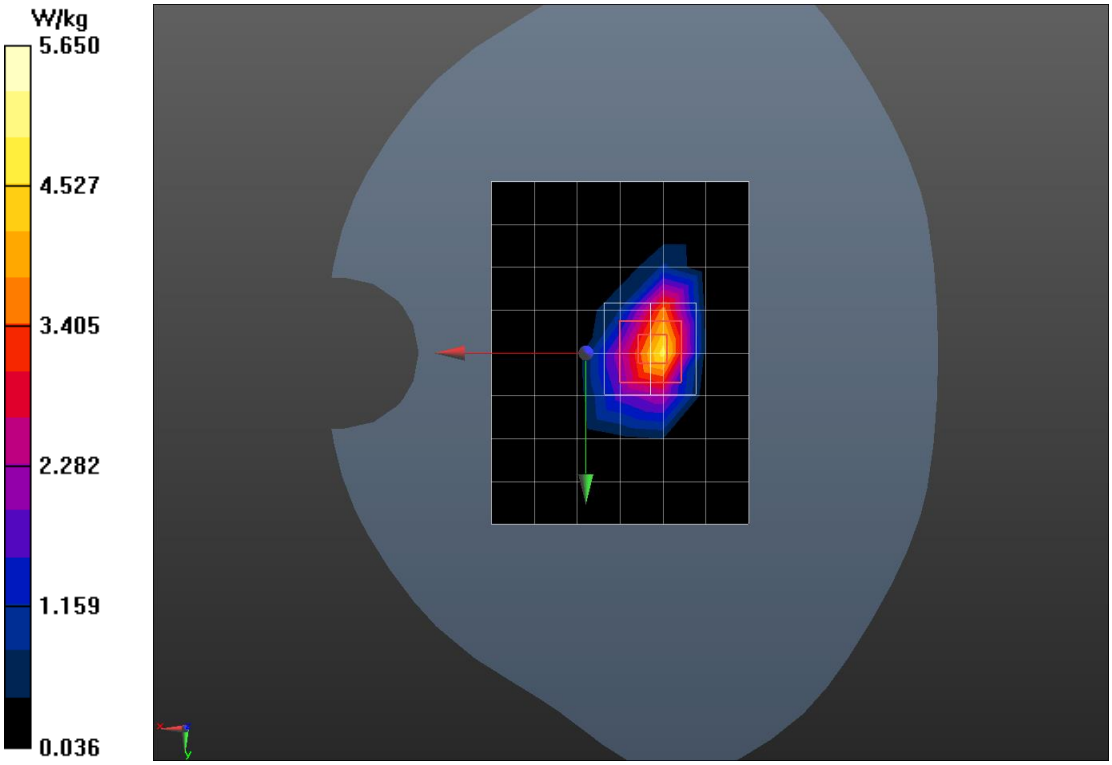


Fig.9 WCDMA Band V Body Toward Phantom Middle With 5mm
Date/Time: 2019/8/13
Electronics: DAE4 Sn1244
Medium parameters used: f = 837 MHz; σ = 0.917 S/m; εr = 41.945; ρ = 1000 kg/m3
Ambient Temperature:22.5°C Liquid Temperature:22.5°C
Communication System: WCDMA Band 5 Frequency: 836.6 MHz; Duty Cycle: 1:1
Probe: ES3DV3 - SN3252ConvF(6.36, 6.36, 6.36); Calibrated: 9/4/2018
Middle Toward Phantom WCDMA Band5 With 5mm/Area Scan (8x17x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.534 W/kg
Middle Toward Phantom WCDMA Band5 With 5mm/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.54 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.951 W/kg
SAR(1 g) = 0.519 W/kg; SAR(10 g) = 0.297 W/kg
Maximum value of SAR (measured) = 0.574 W/kg

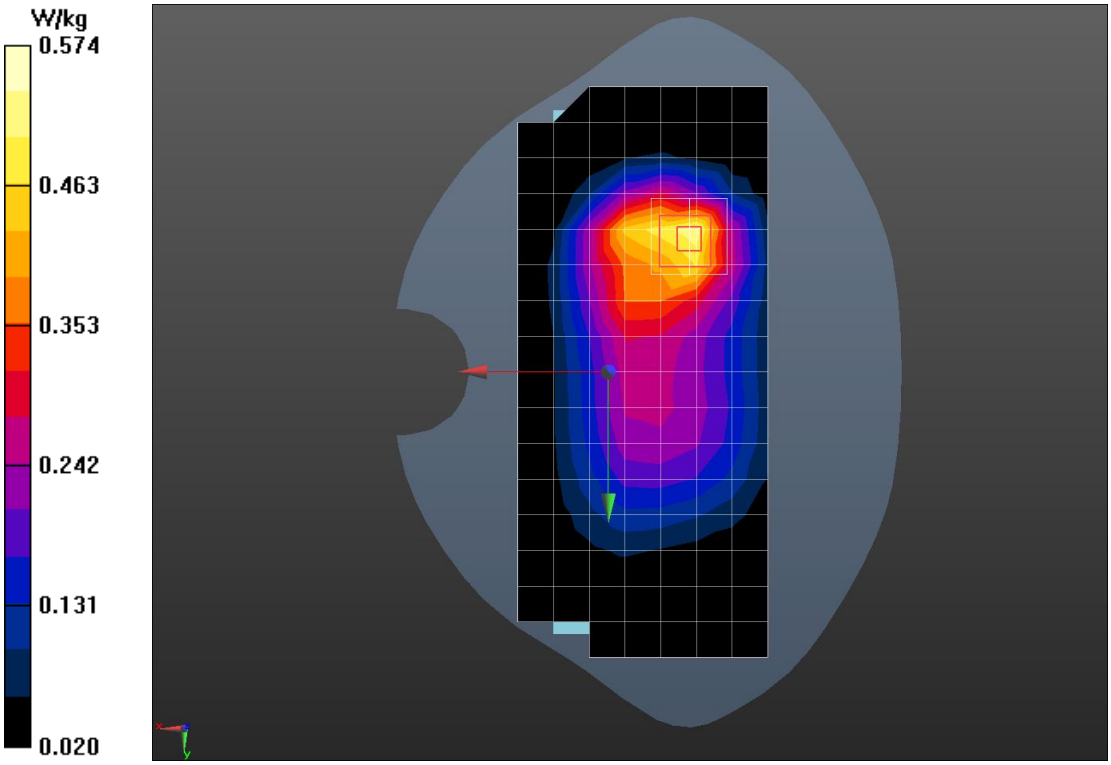


Fig.10 WCDMA Band V Body Toward Phantom Middle With 0mm
Date/Time: 2019/8/13
Electronics: DAE4 Sn1244
Medium parameters used: f = 837 MHz; σ = 0.917 S/m; εr = 41.945; ρ = 1000 kg/m3
Ambient Temperature:22.5°C Liquid Temperature:22.5°C
Communication System: WCDMA Band 5; Frequency: 836.6 MHz; Duty Cycle: 1:1
Probe: ES3DV3 - SN3252ConvF(6.36, 6.36, 6.36); Calibrated: 9/4/2018
Middle Toward Phantom WCDMA Band5 With 0mm/Area Scan (8x17x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.38 W/kg
Middle Toward Phantom WCDMA Band5 With 0mm/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.94 V/m; Power Drift = -0.13 dB
Peak SAR (extrapolated) = 2.63 W/kg
SAR(1 g) = 1.2 W/kg; SAR(10 g) = 0.640 W/kg
Maximum value of SAR (measured) = 1.37 W/kg

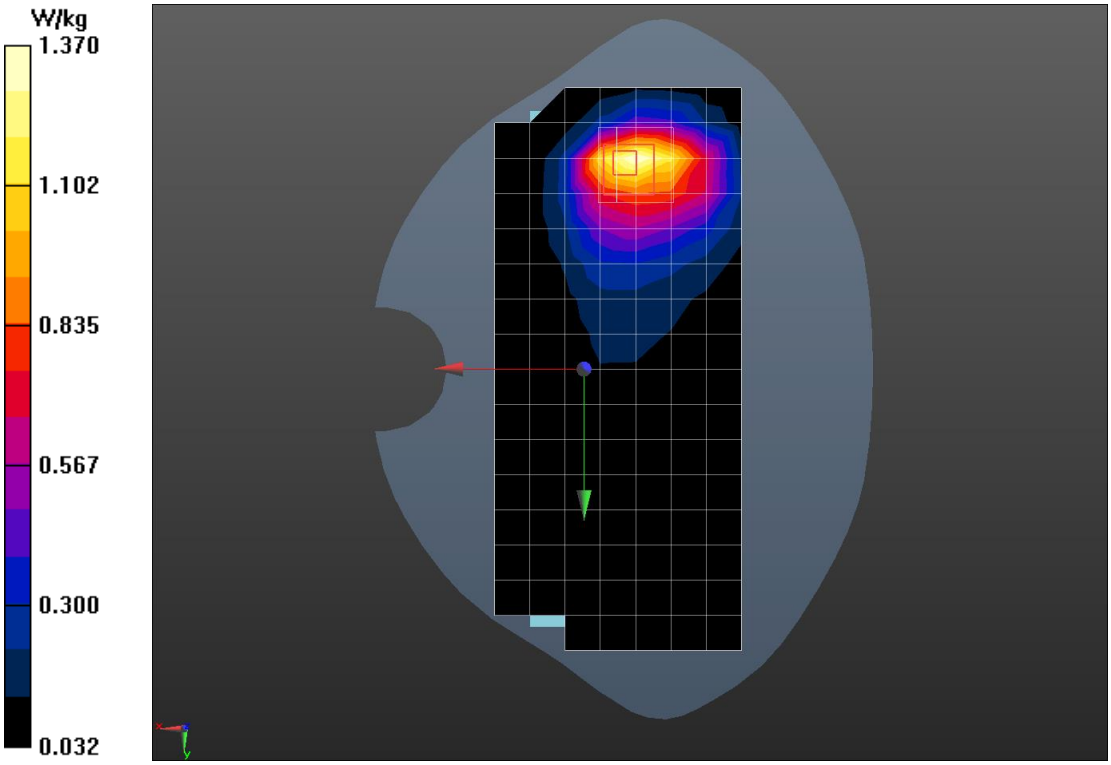


Fig.11 LTE Band 2 Body Bottom High With 5mm

Date/Time: 2019/8/27

Electronics: DAE4 Sn1244

Medium parameters used: f = 1900 MHz; σ = 1.417 S/m; εr = 41.306; ρ = 1000 kg/m3

Ambient Temperature:22.5°C Liquid Temperature:22.5°C

Communication System: LTE Band 2; Frequency: 1900 MHz; Duty Cycle: 1:1

Probe: ES3DV3 - SN3252ConvF(5.18, 5.18, 5.18); Calibrated: 9/4/2018

High Bottom LTE Band 2 20MHz 50RB 0 With 5mm/Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.695 W/kg

High Bottom LTE Band 2 20MHz 50RB 0 With 5mm/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 19.76 V/m; Power Drift = 0.05dB

Peak SAR (extrapolated) = 1.37 W/kg

SAR(1 g) = 0.713 W/kg; SAR(10 g) = 0.348 W/kg

Maximum value of SAR (measured) = 0.782 W/kg

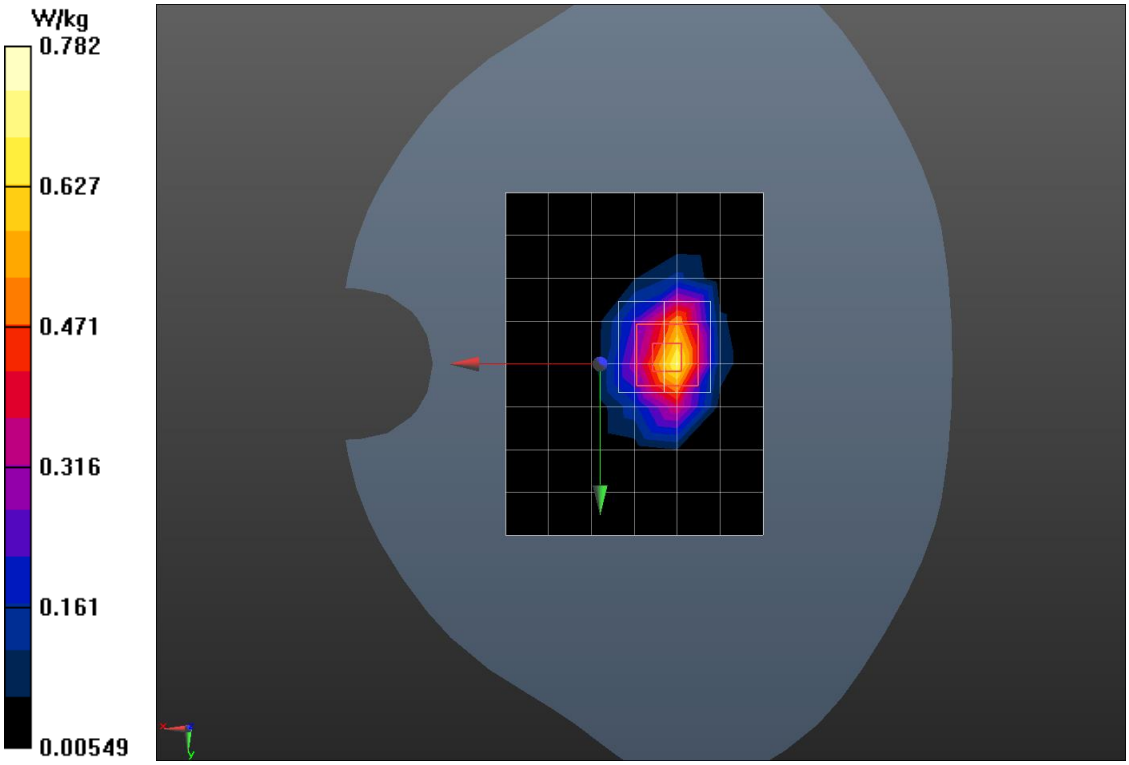


Fig.12 LTE Band 2 Body Bottom High With 0mm

Date/Time: 2019/8/27

Electronics: DAE4 Sn1244

Medium parameters used: f = 1908.5 MHz; σ = 1.426 S/m; εr = 41.374; ρ = 1000 kg/m3

Ambient Temperature:22.5°C Liquid Temperature:22.5°C

Communication System: LTE Band 2 ; Frequency: 1908.5 MHz; Duty Cycle: 1:1

Probe: ES3DV3 - SN3252ConvF(5.18, 5.18, 5.18); Calibrated: 9/4/2018

High Bottom LTE Band 2 1RB 7 With 0mm/Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 2.83 W/kg

High Bottom LTE Band 2 1RB 7 With 0mm/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 36.32 V/m; Power Drift = 0.13 dB

Peak SAR (extrapolated) = 5.53 W/kg

SAR(1 g) = 2.63 W/kg; SAR(10 g) = 1.18 W/kg

Maximum value of SAR (measured) = 3.06 W/kg

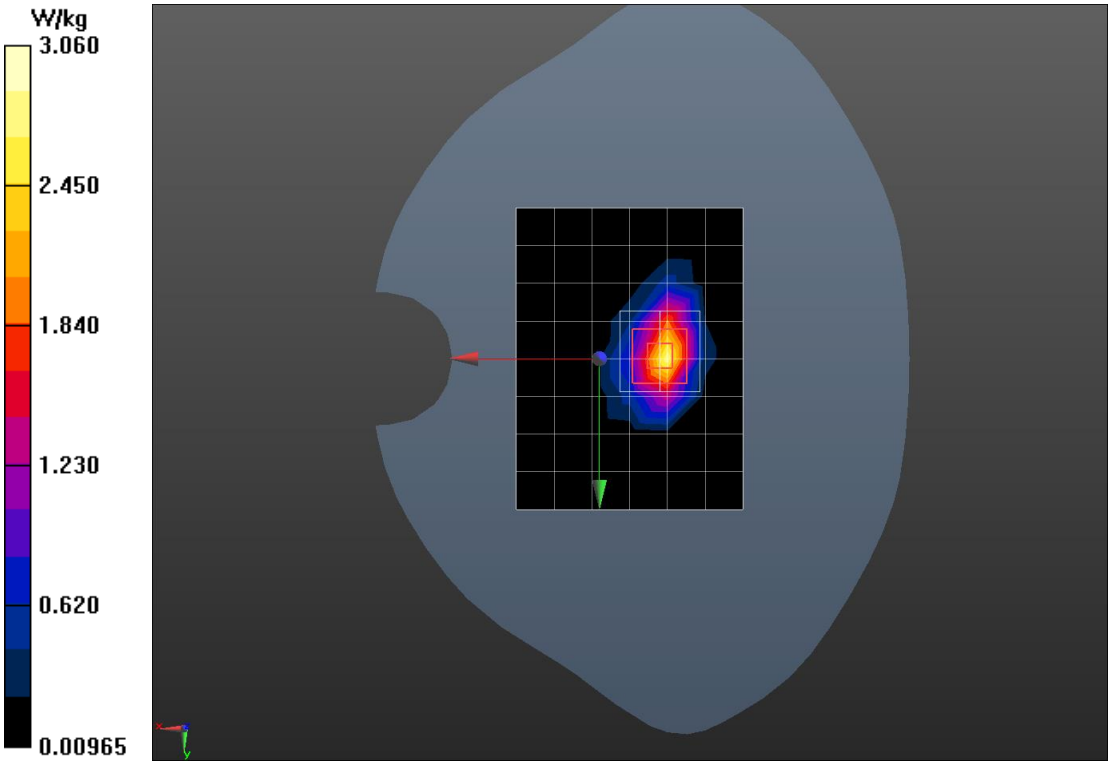


Fig.13 LTE Band 4 Body Bottom High With 5mm

Date/Time: 2019/8/24

Electronics: DAE4 Sn1244

Medium parameters used: f = 1745 MHz; σ = 1.394 S/m; εr = 39.623; ρ = 1000 kg/m3

Ambient Temperature:22.5°C Liquid Temperature:22.5°C

Communication System: LTE Band 4 ; Frequency: 1745 MHz; Duty Cycle: 1:1

Probe: ES3DV3 - SN3252ConvF(5.39, 5.39, 5.39); Calibrated: 9/4/2018

High Bottom LTE Band 4 50RB 0 With 5mm/Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.980 W/kg

High Bottom LTE Band 4 50RB 0 With 5mm/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 23.55 V/m; Power Drift = 0.17 dB

Peak SAR (extrapolated) = 1.71 W/kg

SAR(1 g) = 0.942 W/kg; SAR(10 g) = 0.481 W/kg

Maximum value of SAR (measured) = 1.04 W/kg

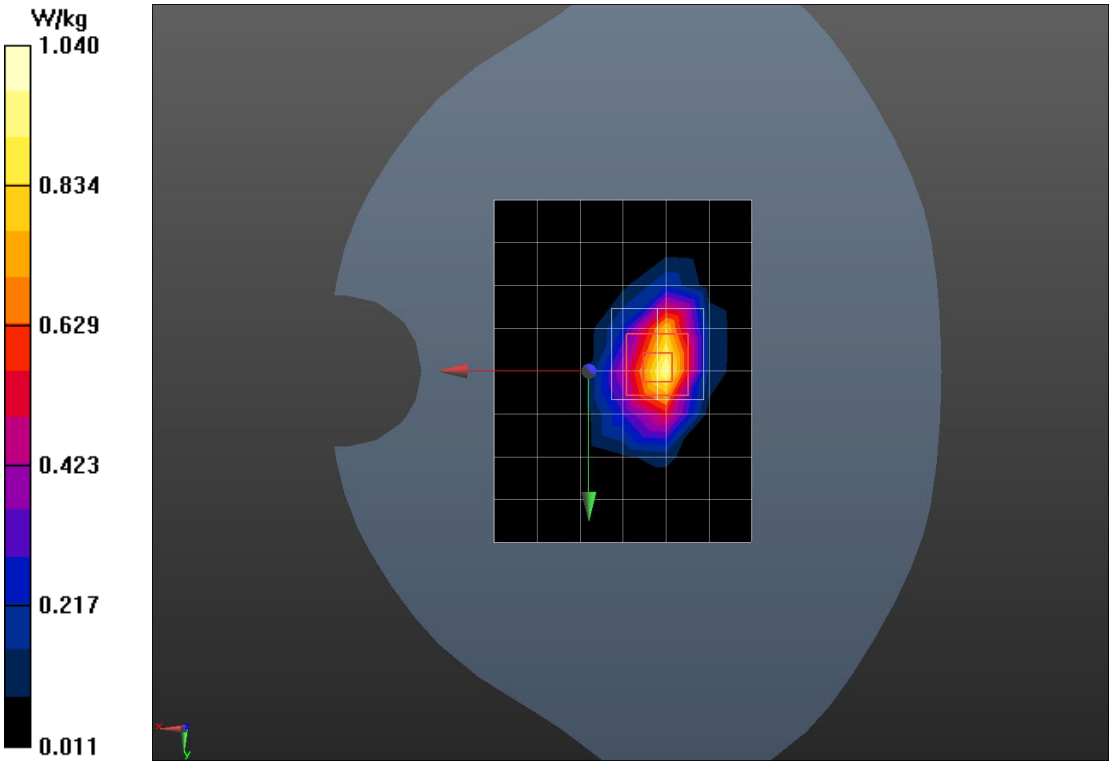


Fig.14 LTE Band 4 Body Bottom High With 0mm

Date/Time: 2019/8/24

Electronics: DAE4 Sn1244

Medium parameters used: f = 1745 MHz; σ = 1.394 S/m; εr = 39.623; ρ = 1000 kg/m3

Ambient Temperature:22.5°C Liquid Temperature:22.5°C

Communication System: LTE Band 4; Frequency: 1745 MHz; Duty Cycle: 1:1

Probe: ES3DV3 - SN3252ConvF(5.39, 5.39, 5.39); Calibrated: 9/4/2018

High Bottom LTE Band 4 50RB 0 With 0mm/Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 4.78 W/kg

High Bottom LTE Band 4 50RB 0 With 0mm/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 42.57 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 8.06 W/kg

SAR(1 g) = 4.05 W/kg; SAR(10 g) = 1.93 W/kg

Maximum value of SAR (measured) = 4.53 W/kg

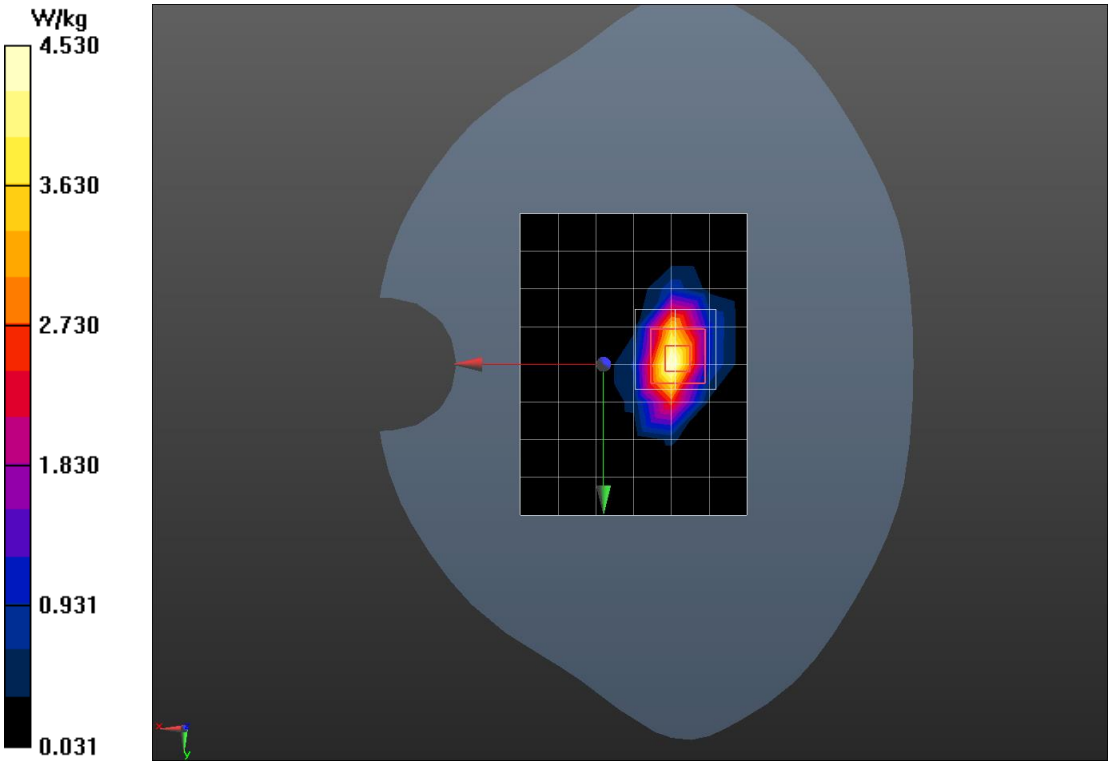


Fig.15 LTE Band 5 Body Toward Ground Low With 5mm

Date/Time: 2019/8/13

Electronics: DAE4 Sn1244

Medium parameters used: f = 826.5 MHz; σ = 0.907 S/m; εr = 42.069; ρ = 1000 kg/m3

Ambient Temperature:22.5°C Liquid Temperature:22.5°C

Communication System: LTE band 5; Frequency: 826.5 MHz; Duty Cycle: 1:1

Probe: ES3DV3 - SN3252ConvF(6.36, 6.36, 6.36); Calibrated: 9/4/2018

Low Toward Ground LTE Band5 1RB 25 With 5mm/Area Scan (8x17x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.627 W/kg

Low Toward Ground LTE Band5 1RB 25 With 5mm/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 7.055 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 1.08 W/kg

SAR(1 g) = 0.606 W/kg; SAR(10 g) = 0.357 W/kg

Maximum value of SAR (measured) = 0.647 W/kg

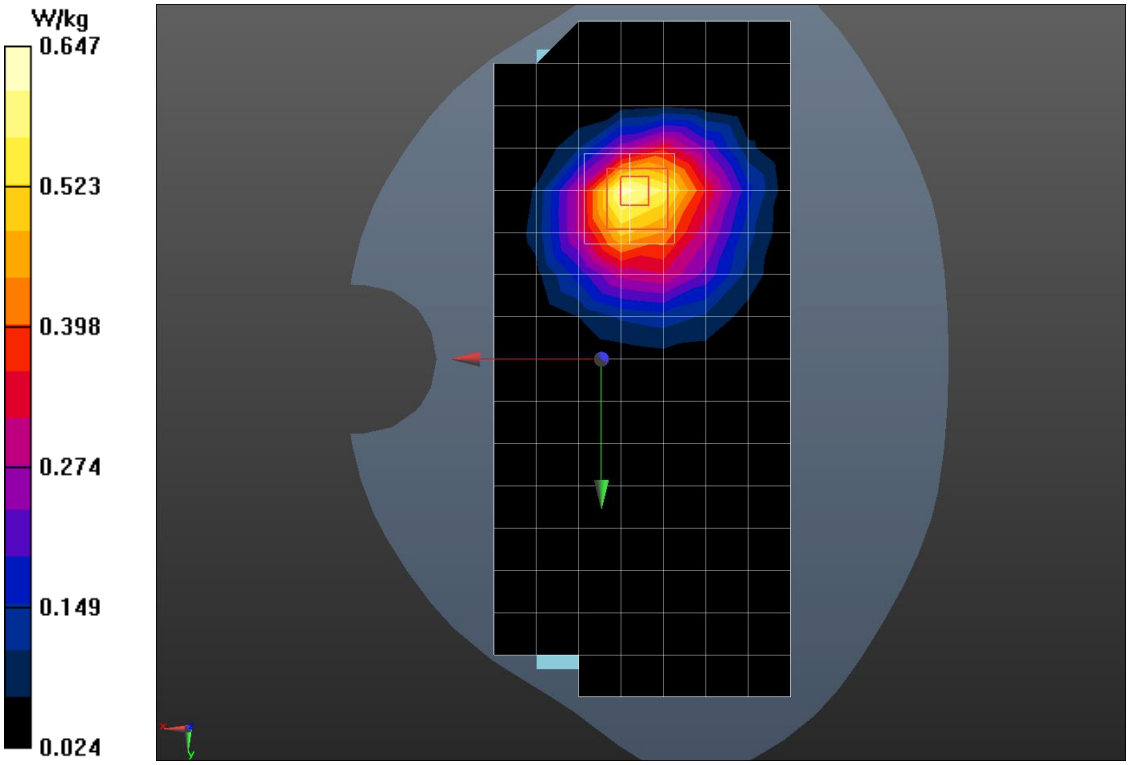


Fig.16 LTE Band 5 Body Toward Phantom Middle With 0mm

Date/Time: 2019/8/13

Electronics: DAE4 Sn1244

Medium parameters used: f = 836.5 MHz; σ = 0.916 S/m; εr = 41.951; ρ = 1000 kg/m3

Ambient Temperature:22.5°C Liquid Temperature:22.5°C

Communication System: LTE band 5 ; Frequency: 836.5 MHz; Duty Cycle: 1:1

Probe: ES3DV3 - SN3252ConvF(6.36, 6.36, 6.36); Calibrated: 9/4/2018

Middle Toward Phantom LTE Band5 10MHz 25RB 25 With 0mm/Area Scan (8x17x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 1.18 W/kg

Middle Toward Phantom LTE Band5 10MHz 25RB 25 With 0mm/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 11.39 V/m; Power Drift = -0.17 dB

Peak SAR (extrapolated) = 2.67 W/kg

SAR(1 g) = 1.18 W/kg; SAR(10 g) = 0.620 W/kg

Maximum value of SAR (measured) = 1.33 W/kg

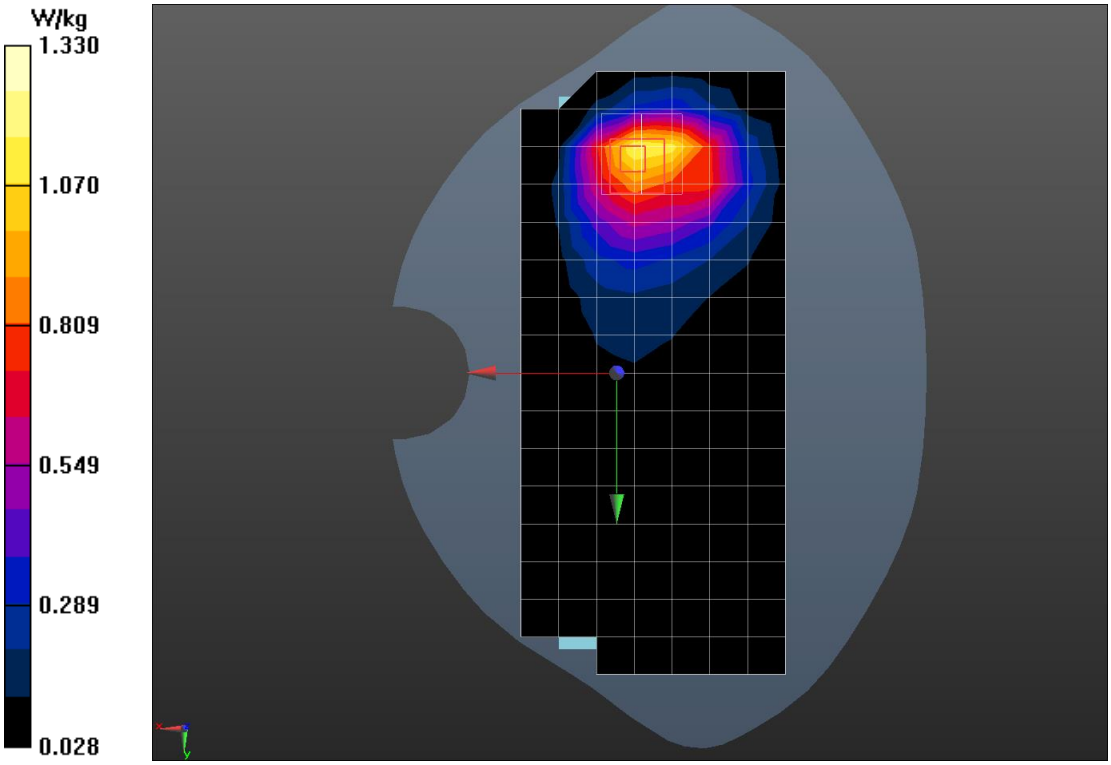


Fig.17 LTE Band 7 Body Toward Ground Low With 5mm
Date/Time: 2019/8/20
Electronics: DAE4 Sn1244
Medium parameters used: f = 2510 MHz; σ = 1.921 S/m; εr = 40.229; ρ = 1000 kg/m3
Ambient Temperature:22.5°C Liquid Temperature:22.5°C
Communication System: LTE Band 7 ; Frequency: 2510 MHz; Duty Cycle: 1:1
Probe: ES3DV3 - SN3252ConvF(4.46, 4.46, 4.46); Calibrated: 9/4/2018
Low Toward Ground LTE Band 7 20MHz 50RB 50 With 5mm/Area Scan (8x17x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.592 W/kg
Low Toward Ground LTE Band 7 20MHz 50RB 50 With 5mm/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.275 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 1.35 W/kg
SAR(1 g) = 0.592 W/kg; SAR(10 g) = 0.271 W/kg
Maximum value of SAR (measured) = 0.654 W/kg

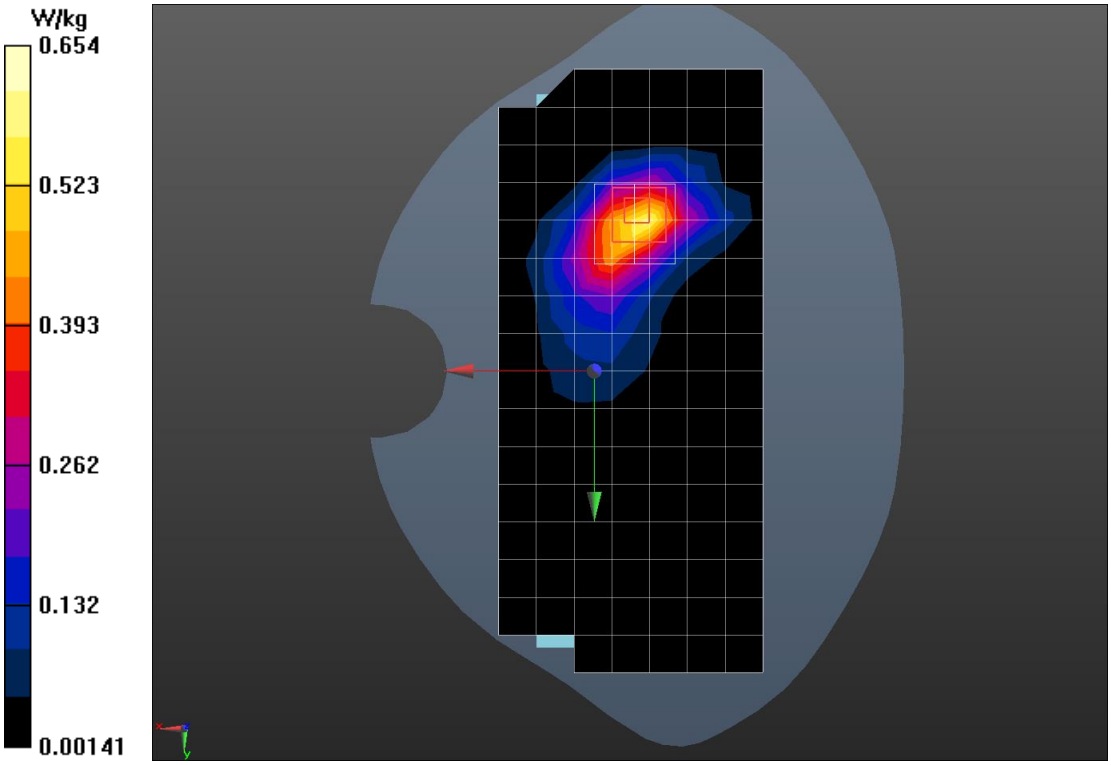


Fig.18 LTE Band 7 Body Toward Phantom Low With 0mm

Date/Time: 2019/8/20

Electronics: DAE4 Sn1244

Medium parameters used: f = 2510 MHz; σ = 1.921 S/m; εr = 40.229; ρ = 1000 kg/m3

Ambient Temperature:22.5°C Liquid Temperature:22.5°C

Communication System: LTE Band 7; Frequency: 2510 MHz; Duty Cycle: 1:1

Probe: ES3DV3 - SN3252ConvF(4.46, 4.46, 4.46); Calibrated: 9/4/2018

Low Toward Phantom LTE Band 7 50RB 50 With 0mm/Area Scan (8x17x1):

Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 2.02 W/kg

Low Toward Phantom LTE Band 7 50RB 50 With 0mm/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 4.361 V/m; Power Drift = 0.16 dB

Peak SAR (extrapolated) = 4.97 W/kg

SAR(1 g) = 1.83 W/kg; SAR(10 g) = 0.836 W/kg

Maximum value of SAR (measured) = 1.95 W/kg

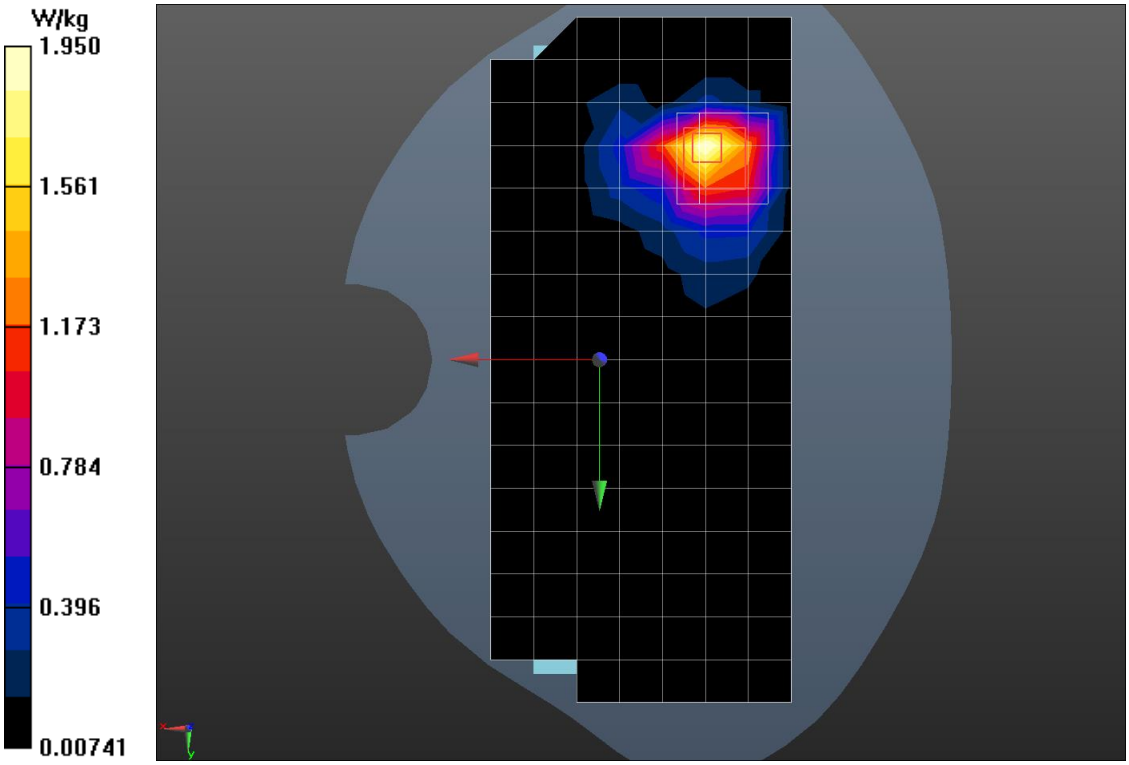


Fig.19 LTE Band 17 Body Toward Phantom Low With 5mm

Date/Time: 2019/8/18

Electronics: DAE4 Sn1244

Medium parameters used: f = 710 MHz; σ = 0.891 S/m; εr = 41.151; ρ = 1000 kg/m3

Ambient Temperature:22.5°C Liquid Temperature:22.5°C

Communication System: LTE Band 17; Frequency: 710 MHz; Duty Cycle: 1:1

Probe: ES3DV3 - SN3252ConvF(6.51, 6.51, 6.51); Calibrated: 9/4/2018

Low Toward Phantom LTE Band 17 1RB 25 With 5mm/Area Scan (8x17x1):

Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.526 W/kg

Low Toward Phantom LTE Band 17 1RB 25 With 5mm/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 17.91 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 0.837 W/kg

SAR(1 g) = 0.494 W/kg; SAR(10 g) = 0.335 W/kg

Maximum value of SAR (measured) = 0.518 W/kg

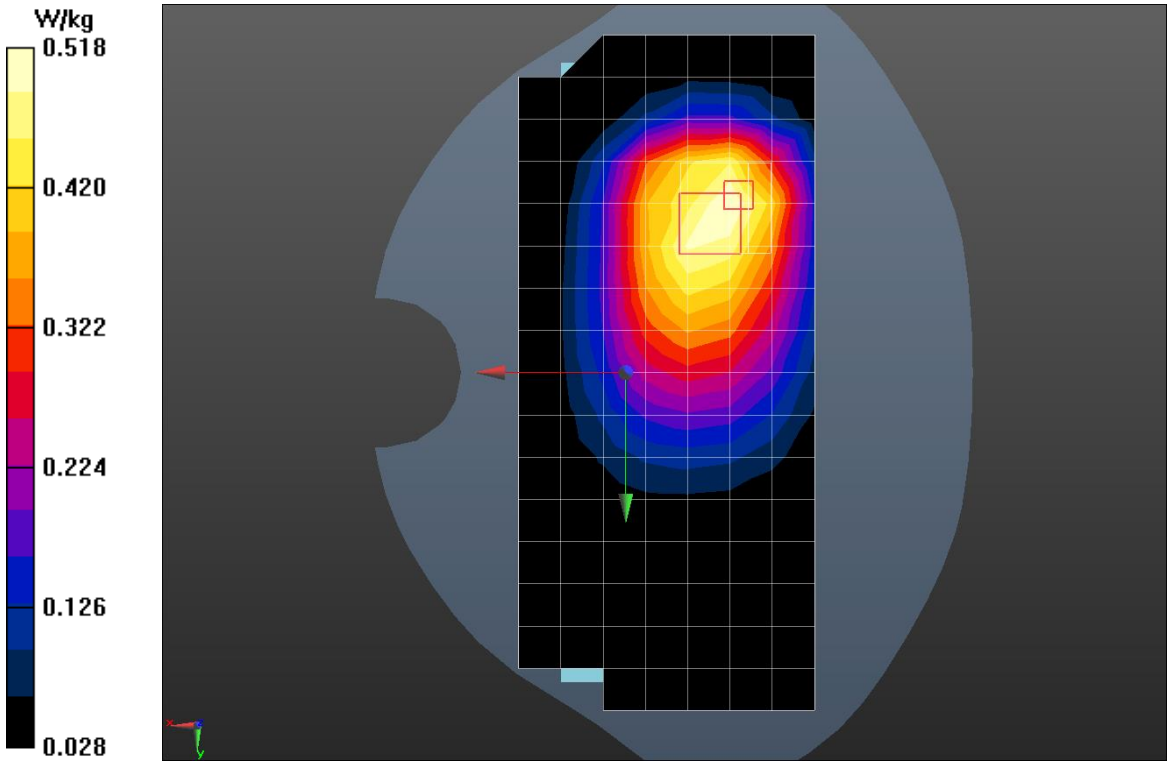


Fig.20 LTE Band 17 Body Toward Phantom Low With 0mm

Date/Time: 2019/8/18

Electronics: DAE4 Sn1244

Medium parameters used: f = 709 MHz; σ = 0.89 S/m; εr = 41.159; ρ = 1000 kg/m3

Ambient Temperature:22.5°C Liquid Temperature:22.5°C

Communication System: LTE Band 17 ; Frequency: 709 MHz; Duty Cycle: 1:1

Probe: ES3DV3 - SN3252ConvF(6.51, 6.51, 6.51); Calibrated: 9/4/2018

Low Toward Phantom LTE Band 17 1RB 25 With 0mm/Area Scan (8x17x1):

Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 1.01 W/kg

Low Toward Phantom LTE Band 17 1RB 25 With 0mm/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 15.52 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 2.68 W/kg

SAR(1 g) = 1.11 W/kg; SAR(10 g) = 0.583 W/kg

Maximum value of SAR (measured) = 1.27 W/kg

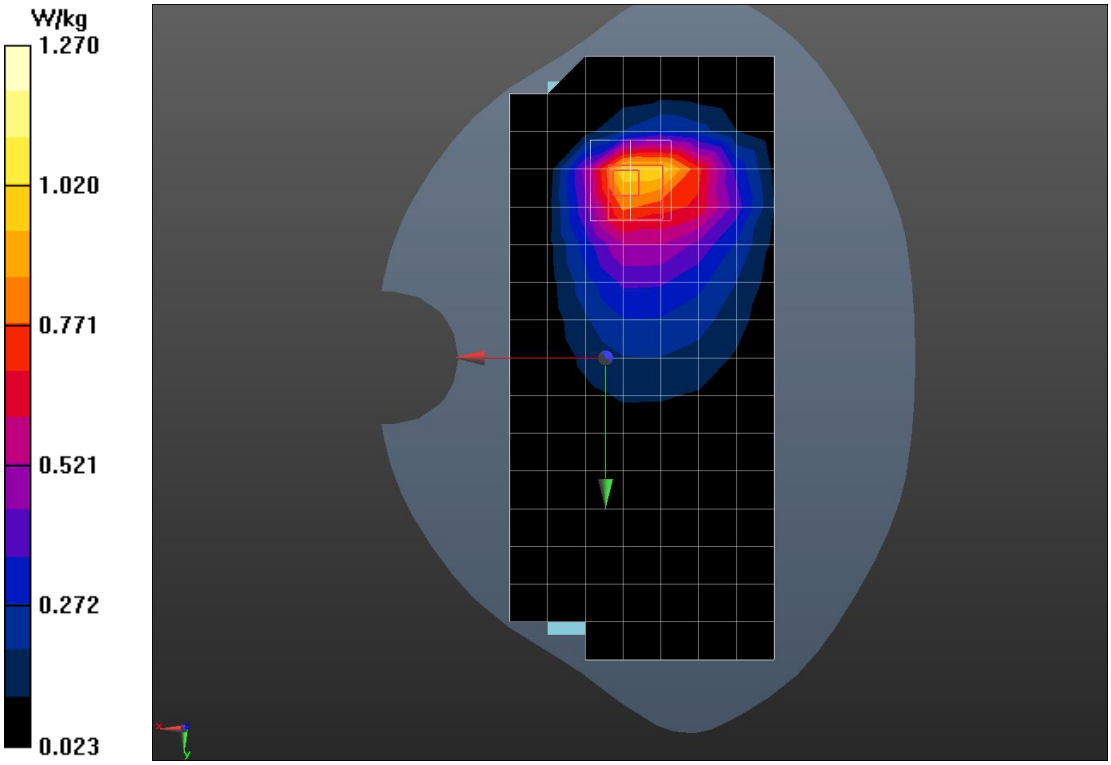


Fig.21 LTE Band 41 Body Bottom High With 5mm

Date/Time: 2019/8/20

Electronics: DAE4 Sn1244

Medium parameters used: f = 2645 MHz; σ = 2.028 S/m; εr = 38.55; ρ = 1000 kg/m3

Ambient Temperature:22.5°C Liquid Temperature:22.5°C

Communication System:LTE Band 41; Frequency: 2645 MHz; Duty Cycle: 1:1.59001

Probe: ES3DV3 - SN3252ConvF(4.46, 4.46, 4.46); Calibrated: 9/4/2018

High Bottom LTE Band 41 20MHz 1RB 50 With 5mm/Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.385 W/kg

High Bottom LTE Band 41 20MHz 1RB 50 With 5mm/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 8.261 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 0.849 W/kg

SAR(1 g) = 0.356 W/kg; SAR(10 g) = 0.157 W/kg

Maximum value of SAR (measured) = 0.405 W/kg

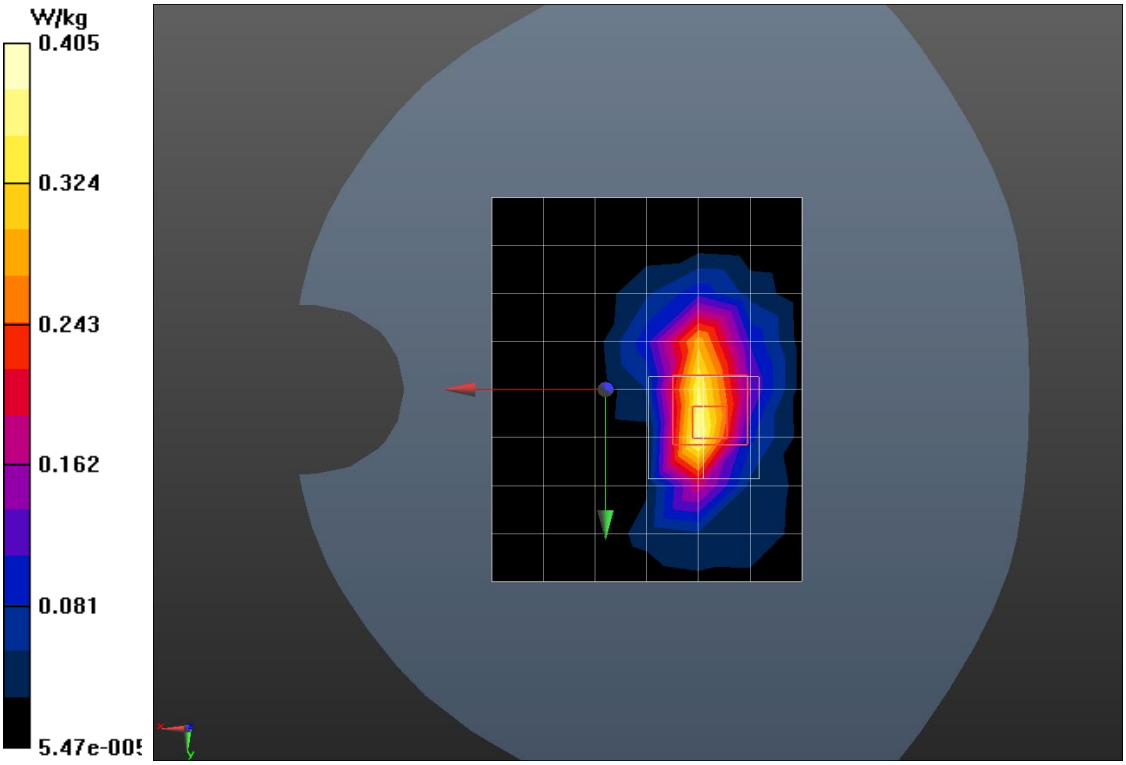


Fig.22 LTE Band 41 Body Toward Phantom High With 0mm

Date/Time: 2019/8/20

Electronics: DAE4 Sn1244

Medium parameters used: f = 2645 MHz; σ = 2.028 S/m; εr = 38.55; ρ = 1000 kg/m3

Ambient Temperature:22.5°C Liquid Temperature:22.5°C

Communication System:LTE Band 41; Frequency: 2645 MHz; Duty Cycle: 1:1.59

Probe: ES3DV3 - SN3252ConvF(4.46, 4.46, 4.46); Calibrated: 9/4/2018

High Toward Phantom LTE Band 41 1RB 50 With 0mm/Area Scan (8x17x1):

Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.977 W/kg

High Toward Phantom LTE Band 41 1RB 50 With 0mm/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 1.933 V/m; Power Drift = 0.15 dB

Peak SAR (extrapolated) = 2.55 W/kg

SAR(1 g) = 0.920 W/kg; SAR(10 g) = 0.377 W/kg

Maximum value of SAR (measured) = 1.01 W/kg

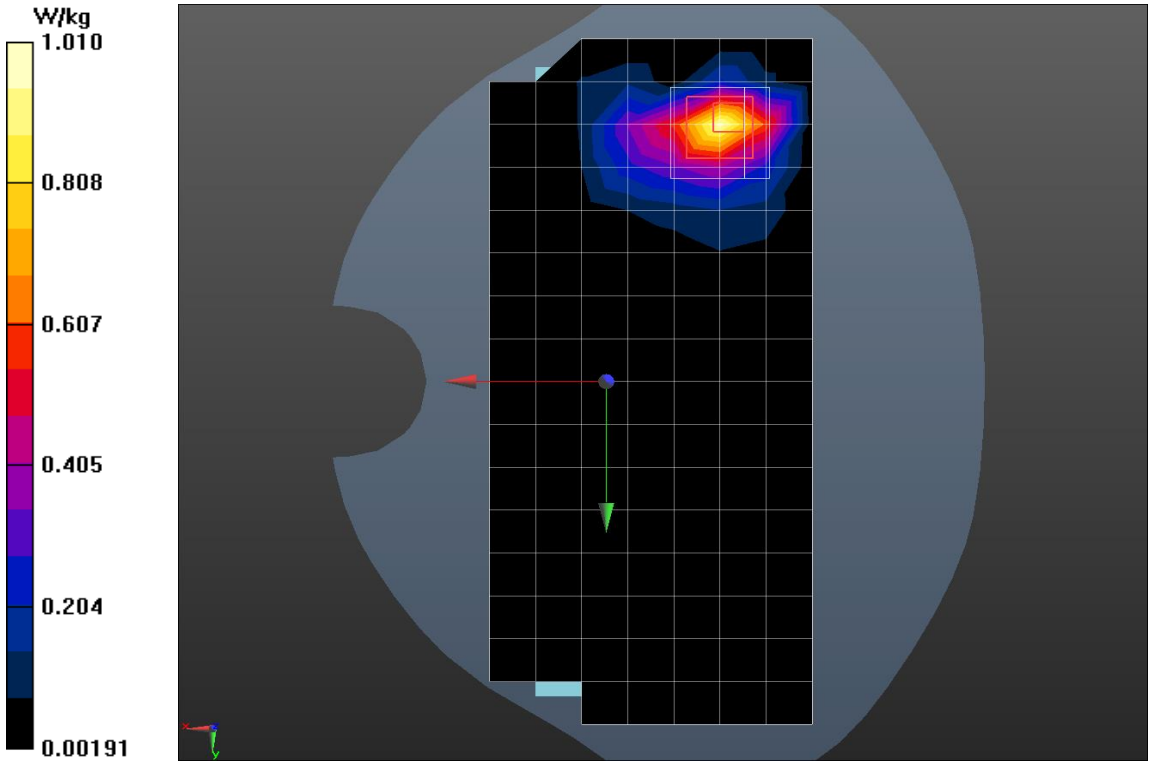


Fig.23 WIFI 802.11b Body Top High With 5mm
Date/Time: 2019/8/22
Electronics: DAE4 Sn1244
Medium parameters used: f = 2462 MHz; σ = 1.844 S/m; εr = 38.224; ρ = 1000 kg/m3
Ambient Temperature:22.5°C Liquid Temperature:22.5°C
Communication System: Wi-Fi ; Frequency: 2462 MHz; Duty Cycle: 1:1
Probe: ES3DV3 - SN3252ConvF(4.74, 4.74, 4.74); Calibrated: 9/4/2018
High Top WIFI 802.11b 11M With 5mm/Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.310 W/kg
High Top WIFI 802.11b 11M With 5mm/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 2.235 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 0.606 W/kg
SAR(1 g) = 0.293 W/kg; SAR(10 g) = 0.141 W/kg
Maximum value of SAR (measured) = 0.309 W/kg

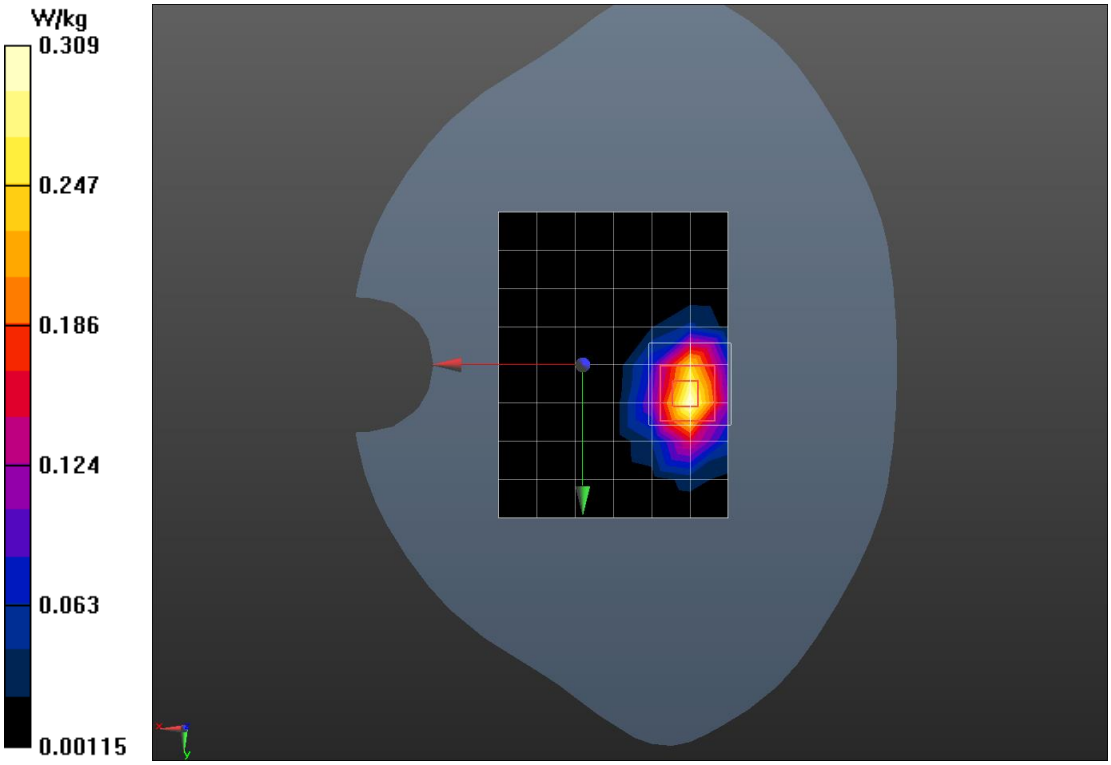


Fig.24 WIFI 802.11b Body Top High With 0mm
Date/Time: 2019/8/22
Electronics: DAE4 Sn1244
Medium parameters used: f = 2462 MHz; σ = 1.844 S/m; εr = 38.224; ρ = 1000 kg/m3
Ambient Temperature:22.5°C Liquid Temperature:22.5°C
Communication System: Wi-Fi ; Frequency: 2462 MHz; Duty Cycle: 1:1
Probe: ES3DV3 - SN3252ConvF(4.74, 4.74, 4.74); Calibrated: 9/4/2018
High Top WIFI 802.11b 11M With 0mm/Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.584 W/kg
High Top WIFI 802.11b 11M With 0mm/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.465 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 1.30 W/kg
SAR(1 g) = 0.599 W/kg; SAR(10 g) = 0.266 W/kg
Maximum value of SAR (measured) = 0.688 W/kg

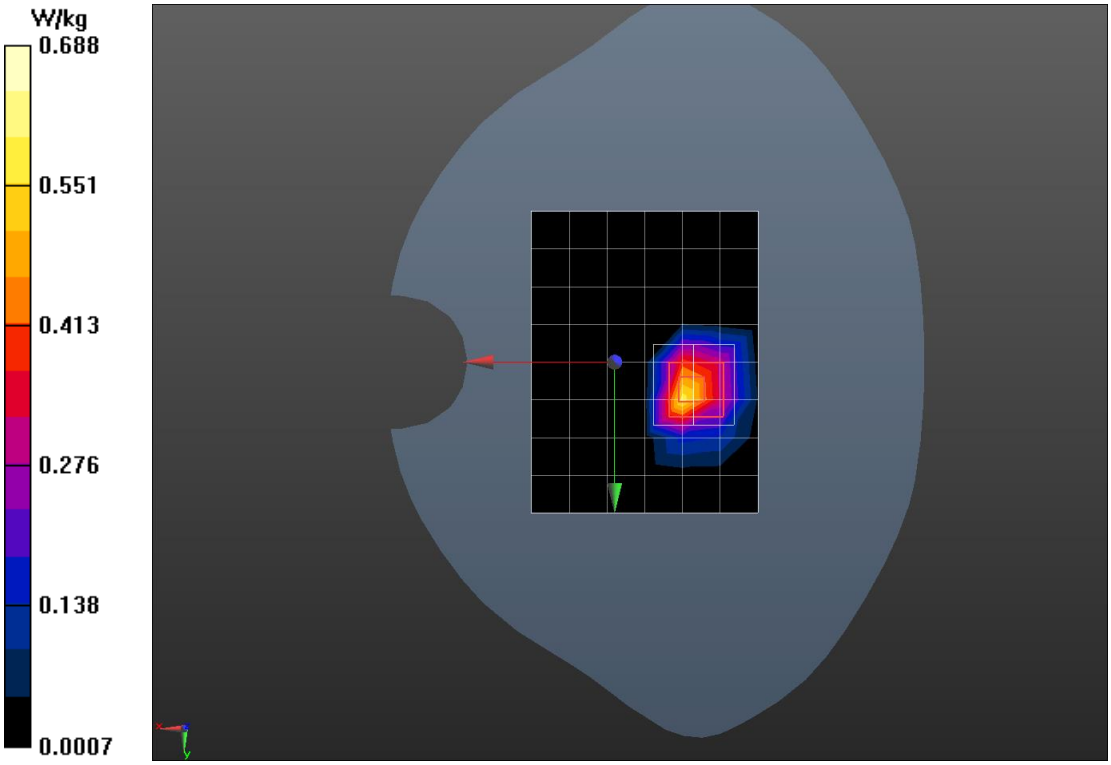


Fig.25 802.11a Ground Mode Low 5mm

Date/Time: 2019/08/15

Electronics: DAE4 Sn1244

Medium parameters used: f = 5180 MHz; σ = 4.621 S/m; ε_r = 37.216; ρ = 1000 kg/m^3

Ambient Temperature:22.5°C Liquid Temperature:22.5°C

Communication System: 5GHz U-NII-1 5GHz; Frequency: 5180 MHz; Duty Cycle: 1:1

Probe: EX3DV4 - SN7401ConvF(5.82, 5.82, 5.82); Calibrated: 1/15/2019

802.11a Ground Mode Middle 5mm/Area Scan (121x241x1):

Measurement grid: dx=10 mm, dy=10 mm

Maximum value of SAR (Measurement) = 0.655 W/kg

802.11a Ground Mode Middle 5mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=1.4mm

Reference Value = 0 V/m; Power Drift = 0.11 dB

Peak SAR (extrapolated) = 1.13 W/kg

SAR(1 g) = 0.271 W/kg; SAR(10 g) = 0.093 W/kg

Maximum of SAR (measured) = 0.662 W/kg

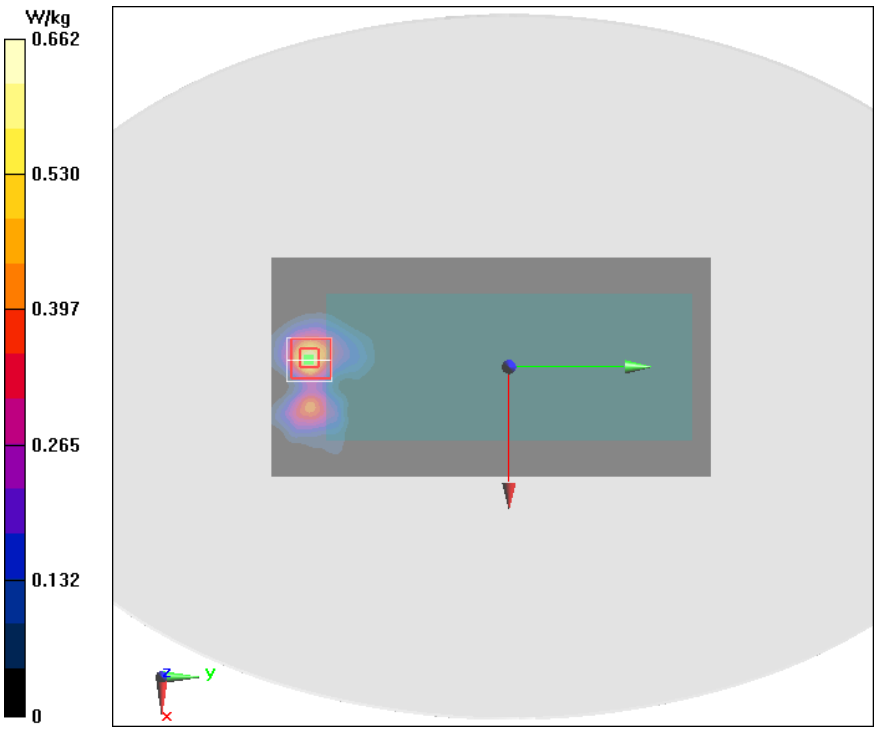


Fig.26 802.11a Ground Mode Low 0mm

Date/Time: 2019/08/15

Electronics: DAE4 Sn1244

Medium parameters used: f = 5180 MHz; σ = 4.621 S/m; ε_r = 37.216; ρ = 1000 kg/m^3

Ambient Temperature:22.5°C Liquid Temperature:22.5°C

Communication System: 5GHz U-NII-1 5GHz; Frequency: 5180 MHz; Duty Cycle: 1:1

Probe: EX3DV4 - SN7401ConvF(5.82, 5.82, 5.82); Calibrated: 1/15/2019

802.11a Ground Mode Middle 0mm/Area Scan 2 (61x111x1):

Measurement grid: dx=10 mm, dy=10 mm

Maximum value of SAR (Measurement) = 0.624 W/kg

802.11a Ground Mode Middle 0mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=1.4mm

Reference Value = 0 V/m; Power Drift = 0.1 dB

Peak SAR (extrapolated) = 1.93 W/kg

SAR(1 g) = 0.645 W/kg; SAR(10 g) = 0.214 W/kg

Maximum value of SAR (measured) = 0.789 W/kg

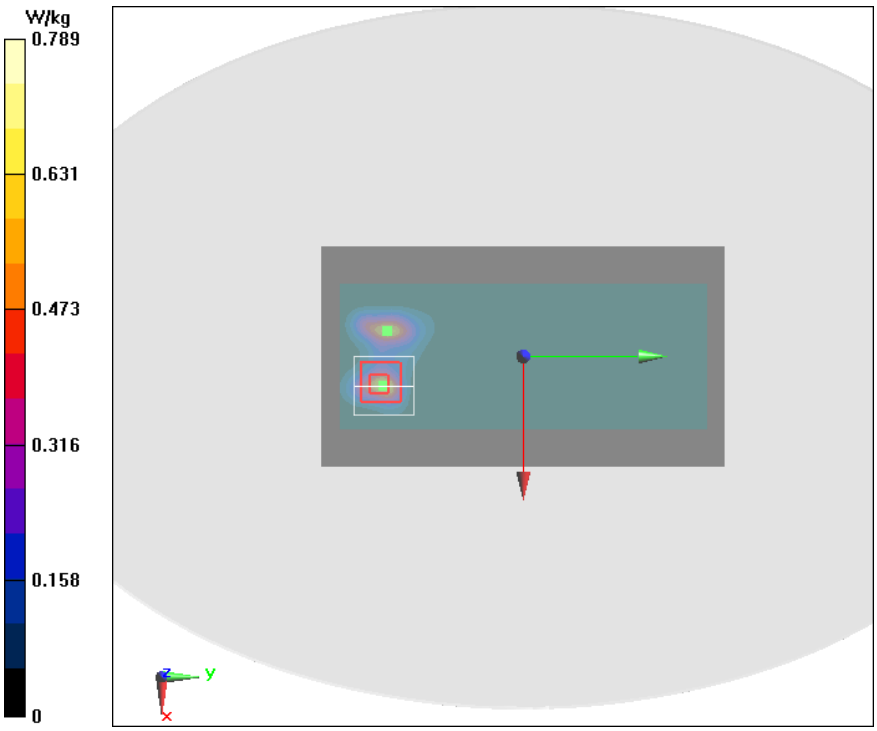


Fig.27 802.11n40 Top Mode High 5mm

Date/Time: 2019/08/15

Electronics: DAE4 Sn1244

Medium parameters used: f = 5795 MHz; σ = 5.297 S/m; ε_r = 36.034; ρ = 1000 kg/m^3

Ambient Temperature:22.5°C Liquid Temperature:22.5°C

Communication System: 5GHz U-NII-3 5GHz; Frequency: 5795 MHz; Duty Cycle: 1:1

Probe: EX3DV4 - SN7401ConvF(5.25, 5.25, 5.25); Calibrated: 1/15/2019

802.11n40 Top Mode Middle 5mm/Area Scan (81x121x1):

Measurement grid: dx=10 mm, dy=10 mm

Maximum value of SAR (Measurement) = 0.939 W/kg

802.11n40 Top Mode Middle 5mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=1.4mm

Reference Value = 3.232 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 1.53 W/kg

SAR(1 g) = 0.355 W/kg; SAR(10 g) = 0.121 W/kg

Maximum of SAR (measured) = 0.898 W/kg

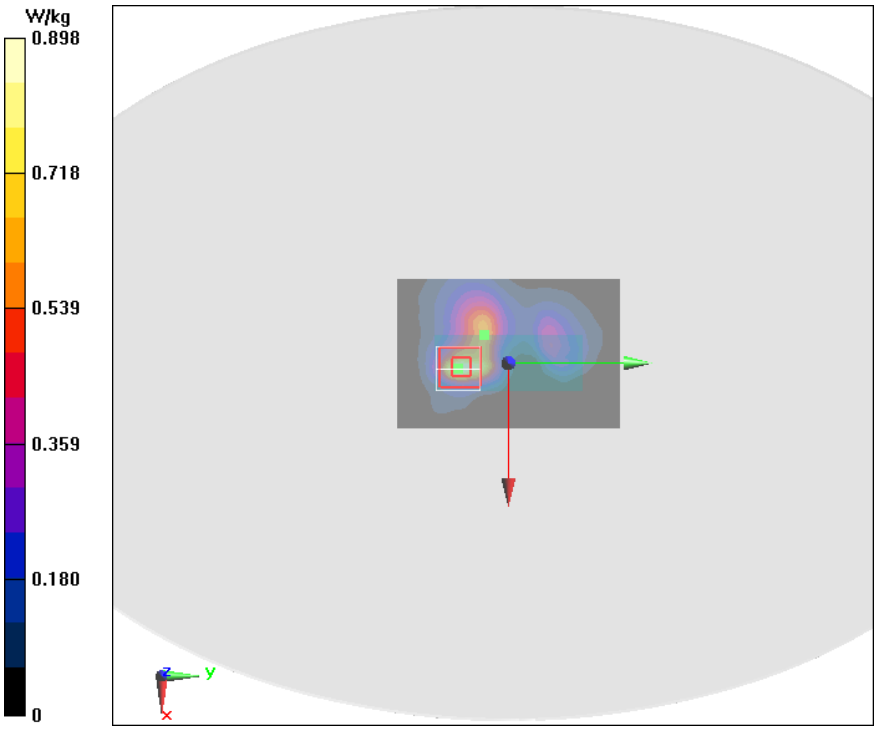


Fig.28 802.11n40 Ground Mode High 0mm

Date/Time: 2019/08/15

Electronics: DAE4 Sn1244

Medium parameters used: f = 5795 MHz; σ = 5.297 S/m; ε_r = 36.034; ρ = 1000 kg/m^3

Ambient Temperature:22.5°C Liquid Temperature:22.5°C

Communication System: 5GHz U-NII-3 5GHz; Frequency: 5795 MHz; Duty Cycle: 1:1

Probe: EX3DV4 - SN7401ConvF(5.25, 5.25, 5.25); Calibrated: 1/15/2019

802.11n40 Ground Mode Middle 0mm/Area Scan 2 (61x111x1):

Measurement grid: dx=10 mm, dy=10 mm

Maximum value of SAR (Measurement) = 0.885 W/kg

802.11n40 Ground Mode Middle 0mm/Zoom Scan (7x7x7)/Cube 0:

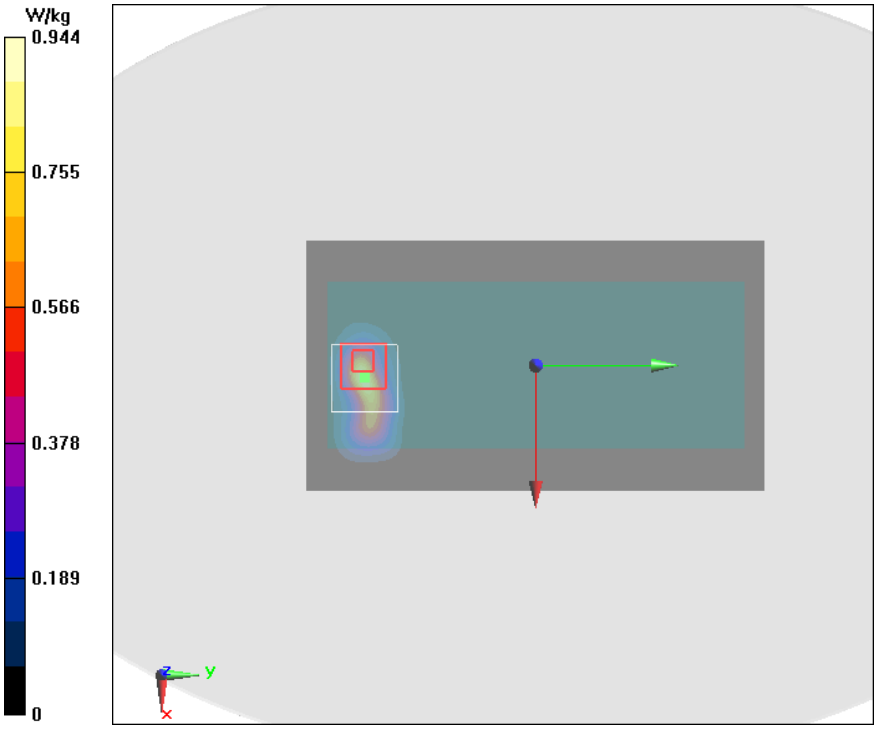
Measurement grid: dx=5mm, dy=5mm, dz=1.4mm

Reference Value = 0 V/m; Power Drift = 0.11 dB

Peak SAR (extrapolated) = 2.49 W/kg

SAR(1 g) = 0.596 W/kg; SAR(10 g) = 0.185 W/kg

Maximum of SAR (measured) = 0.944 W/kg



ANNEX B. System Validation Plot

Head 750MHz

Date/Time: 2019/8/18

Electronics: DAE4 Sn1244

Medium parameters used: f = 750 MHz; σ = 0.886 S/m; εr = 42.605; ρ = 1000 kg/m3

Ambient Temperature:22.5°C Liquid Temperature:22.5°C

Communication System: CW; Frequency: 750 MHz; Duty Cycle: 1:1

Probe: ES3DV3 - SN3252ConvF(6.51, 6.51, 6.51); Calibrated: 9/4/2018

System Check Dipole 750 MHz/Area Scan (5x20x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 2.16 W/kg

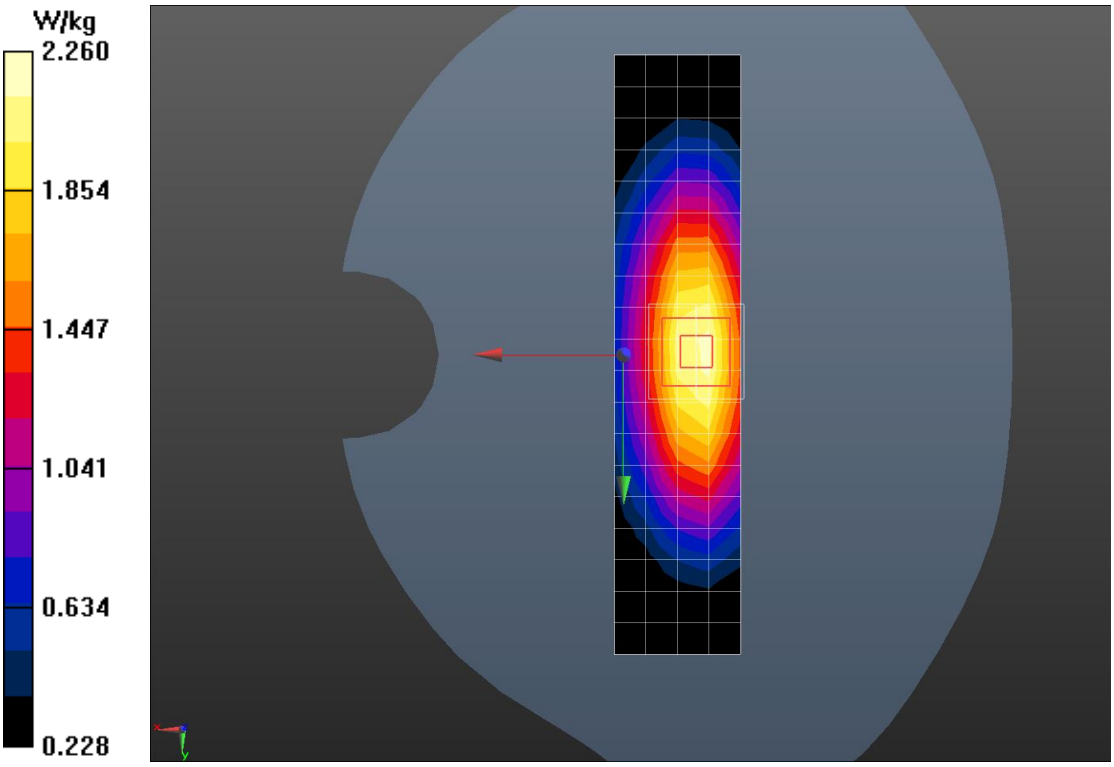
System Check Dipole 750 MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 48.27 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 3.14 W/kg

SAR(1 g) = 2.09 W/kg; SAR(10 g) = 1.38 W/kg

Maximum value of SAR (measured) = 2.26 W/kg



Head 835MHz

Date/Time: 2019/8/13

Electronics: DAE4 Sn1244

Medium parameters used: f = 835 MHz; σ = 0.915 S/m; εr = 41.97; ρ = 1000 kg/m3

Ambient Temperature:22.5°C Liquid Temperature:22.5°C

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1

Probe: ES3DV3 - SN3252ConvF(6.51, 6.51, 6.51); Calibrated: 9/4/2018

System Check Dipole 835 MHz/Area Scan (5x18x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 2.49 W/kg

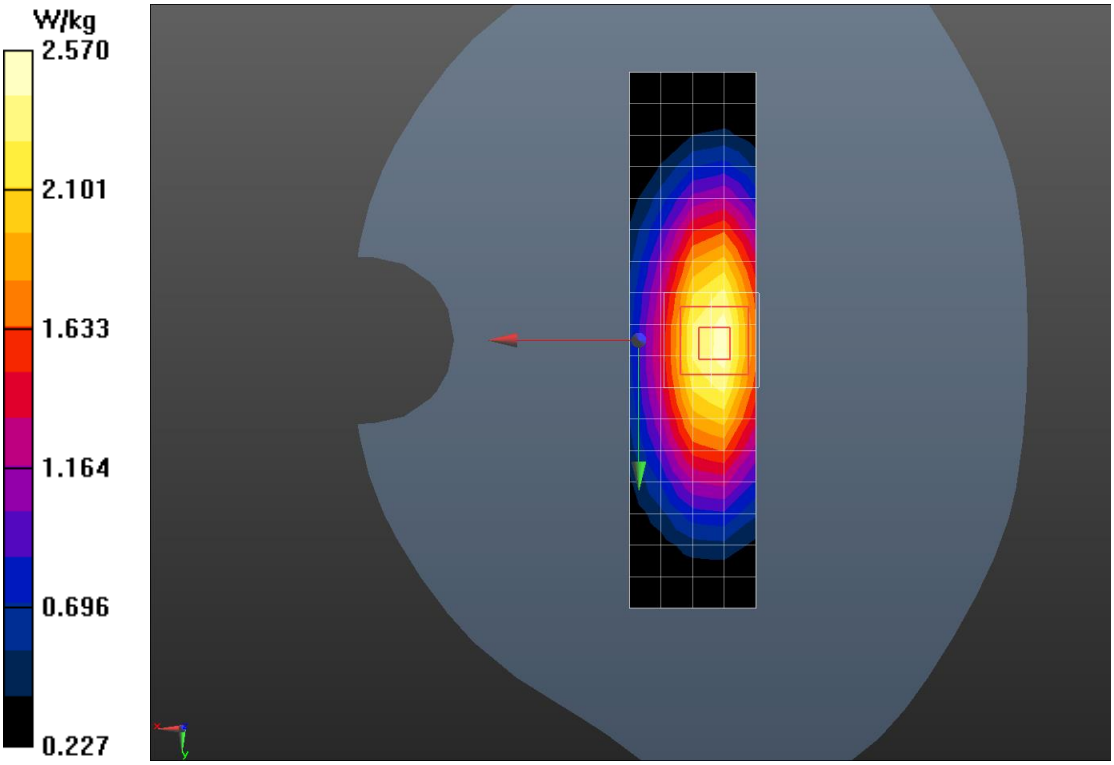
System Check Dipole 835 MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 50.16 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 3.57 W/kg

SAR(1 g) = 2.38 W/kg; SAR(10 g) = 1.55 W/kg

Maximum value of SAR (measured) = 2.57 W/kg



Head 1750MHz

Date/Time: 2019/8/24

Electronics: DAE4 Sn1244

Medium parameters used: f = 1750 MHz; σ = 1.384 S/m; εr = 39.328; ρ = 1000 kg/m3

Ambient Temperature:22.5°C Liquid Temperature:22.5°C

Communication System: CW; Frequency: 1750 MHz; Duty Cycle: 1:1

Probe: ES3DV3 - SN3252ConvF(6.51, 6.51, 6.51); Calibrated: 9/4/2018

System Head 1750MHz/Area Scan (6x11x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 10.2 W/kg

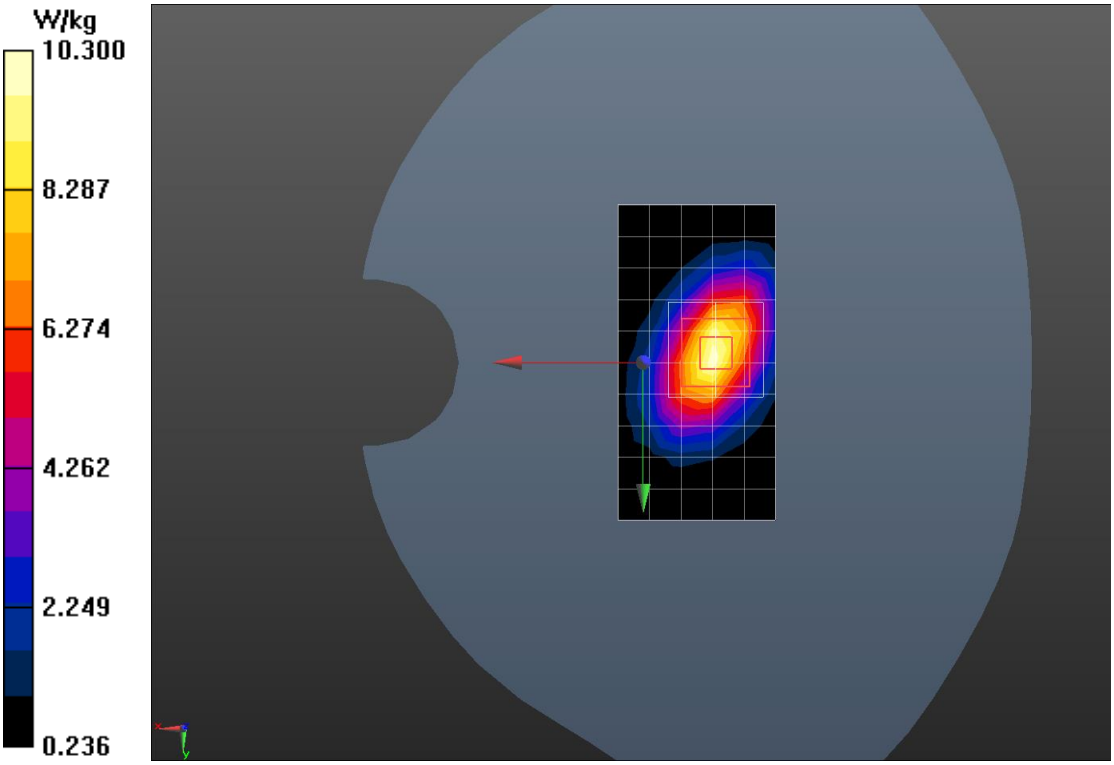
System Head 1750MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 81.63 V/m; Power Drift = 0.05 dB

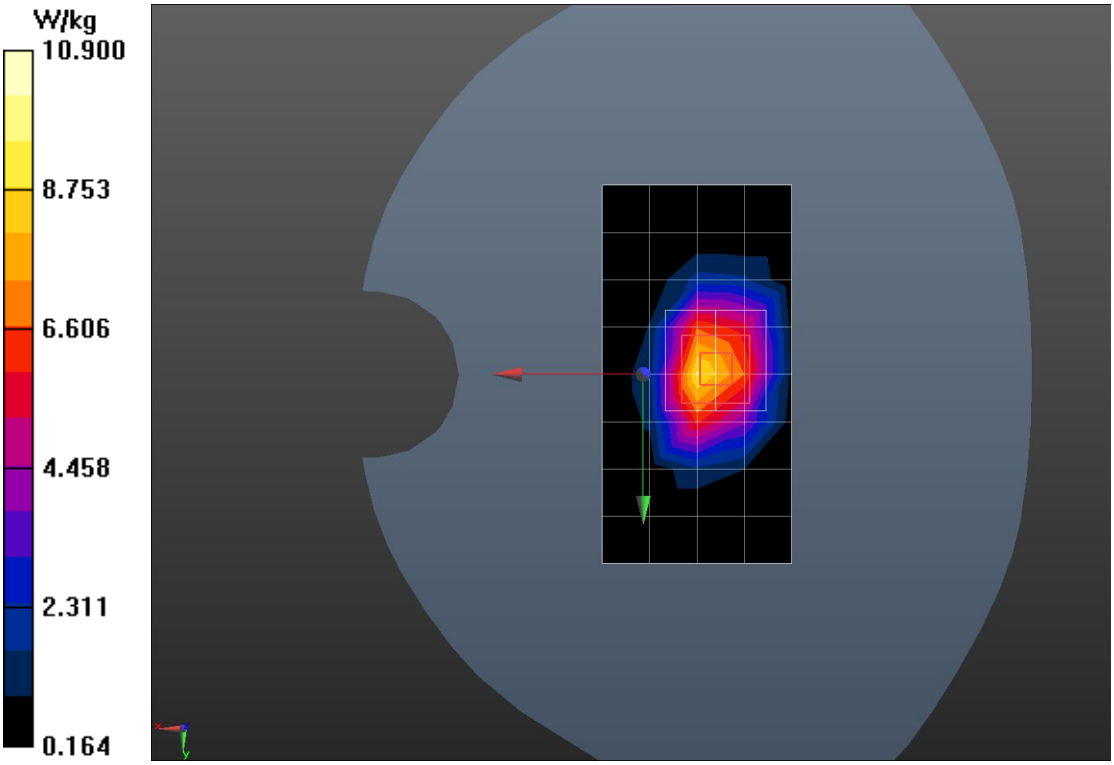
Peak SAR (extrapolated) = 16.7 W/kg

SAR(1 g) = 9.22 W/kg; SAR(10 g) = 4.95 W/kg

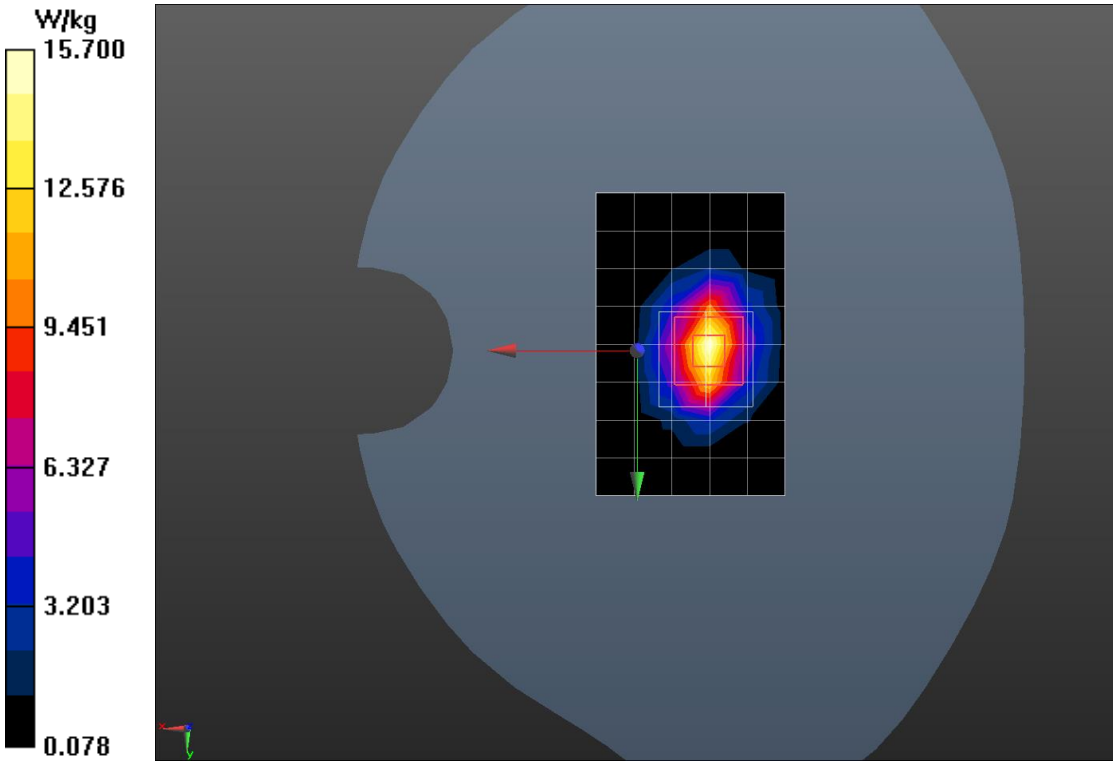
Maximum value of SAR (measured) = 10.3 W/kg



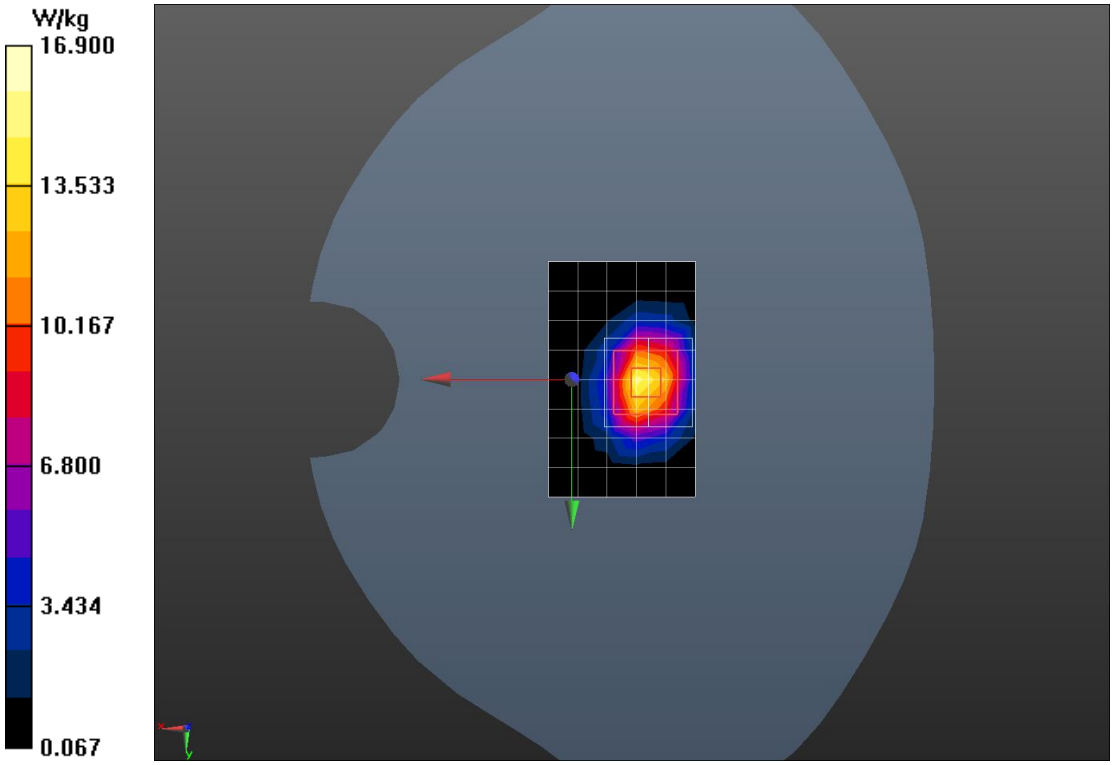
Head 1900MHz
Date/Time: 2019/8/27
Electronics: DAE4 Sn1244
Medium parameters used: f = 1900 MHz; σ = 1.416 S/m; εr = 38.984; ρ = 1000 kg/m3
Ambient Temperature:22.5°C Liquid Temperature:22.5°C
Communication System: CW ;Frequency: 1900 MHz; Duty Cycle: 1:1
Probe: ES3DV3 - SN3252ConvF(6.51, 6.51, 6.51); Calibrated: 9/4/2018
System Head 1900MHz/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 8.97 W/kg
System Head 1900MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 79.89 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 18.0 W/kg
SAR(1 g) = 9.75 W/kg; SAR(10 g) = 5.07 W/kg
Maximum value of SAR (measured) = 10.9 W/kg



Head 2450MHz
Date/Time: 2019/8/22
Electronics: DAE4 Sn1244
Medium parameters used: f = 2450 MHz; σ = 1.831 S/m; εr = 38.258; ρ = 1000 kg/m3
Ambient Temperature:22.5°C Liquid Temperature:22.5°C
Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Probe: ES3DV3 - SN3252ConvF(6.51, 6.51, 6.51); Calibrated: 9/4/2018
System Check Dipole 2450 MHz/Area Scan (6x9x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 15.8 W/kg
System Check Dipole 2450 MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 82.67 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 29.1 W/kg
SAR(1 g) = 13.8 W/kg; SAR(10 g) = 6.38 W/kg
Maximum value of SAR (measured) = 15.7 W/kg



Head 2600MHz
Date/Time: 2019/8/20
Electronics: DAE4 Sn1244
Medium parameters used: f = 2600 MHz; σ = 2.003 S/m; εr = 38.709; ρ = 1000 kg/m3
Ambient Temperature:22.5°C Liquid Temperature:22.5°C
Communication System: CW; Frequency: 2600 MHz; Duty Cycle: 1:1
Probe: ES3DV3 - SN3252ConvF(6.51, 6.51, 6.51); Calibrated: 9/4/2018
System Head 2600MHz/Area Scan (6x9x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 15.3 W/kg
System Head 2600MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 70.42 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 32.7 W/kg
SAR(1 g) = 14.8 W/kg; SAR(10 g) = 6.5 W/kg
Maximum value of SAR (measured) = 16.9 W/kg



Head 5200MHz

Date/Time: 2019/08/15

Electronics: DAE4 Sn1244

Medium parameters used: f = 5200 MHz; σ = 4.643 S/m; ε_r = 37.175; ρ = 1000 kg/m^3

Ambient Temperature:22.5°C Liquid Temperature:22.5°C

Communication System: 5000MHz; Frequency: 5200 MHz; Duty Cycle: 1:1

Probe: EX3DV4 - SN7401ConvF(5.82, 5.82, 5.82); Calibrated: 1/15/2019

System Validation 5200MHz/Area Scan (71x71x1):

Measurement grid: dx=10 mm, dy=10 mm

Maximum value of SAR (Measurement) = 19.1 W/kg

System Validation 5200MHz/Zoom Scan (4x4x1.4mm, graded), dist=1.4mm (7x7x7)/Cube 0:

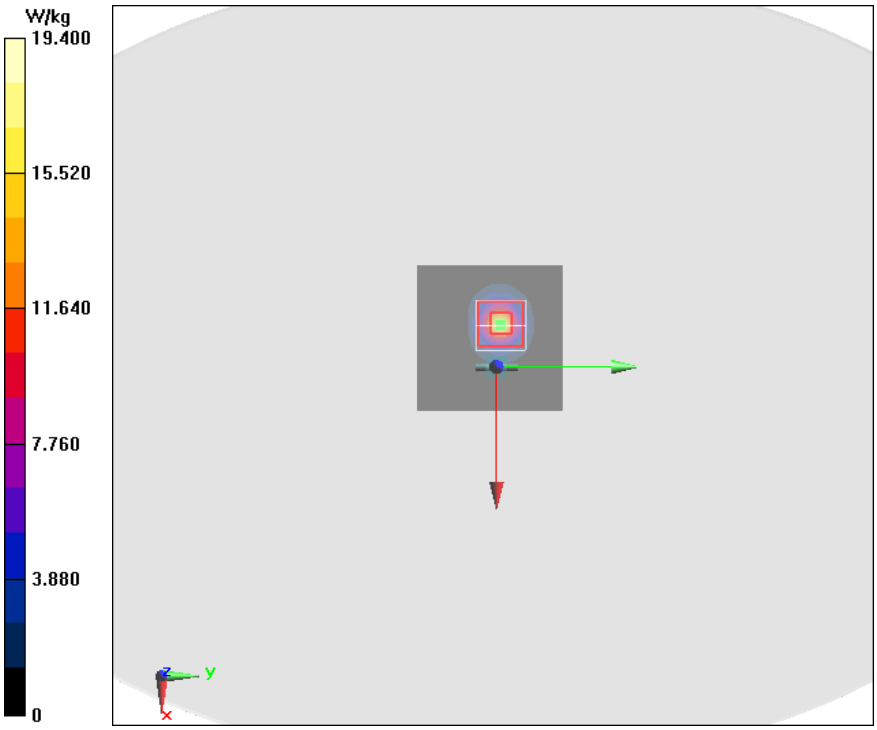
Measurement grid: dx=5mm, dy=5mm, dz=1.4mm

Reference Value = 62.37 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 32.5 W/kg

SAR(1 g) = 7.39 W/kg; SAR(10 g) = 2.11 W/kg

Maximum of SAR (measured) = 19.4 W/kg



Head 5800MHz

Date/Time: 2019/08/15

Electronics: DAE4 Sn1244

Medium parameters used: f = 5800 MHz; σ = 5.303 S/m; ε_r = 36.027; ρ = 1000 kg/m^3

Ambient Temperature:22.5°C Liquid Temperature:22.5°C

Communication System: CW 5000MHz; Frequency: 5800 MHz; Duty Cycle: 1:1

Probe: EX3DV4 - SN7401ConvF(5.25, 5.25, 5.25); Calibrated: 1/15/2019

System Validation 5800MHz 2/Area Scan (91x91x1):

Measurement grid: dx=10 mm, dy=10 mm

Maximum value of SAR (Measurement) = 19.4 W/kg

System Validation 5800MHz 2/Zoom Scan (4x4x1.4mm, graded), dist=1.4mm (7x7x7)/Cube 0:

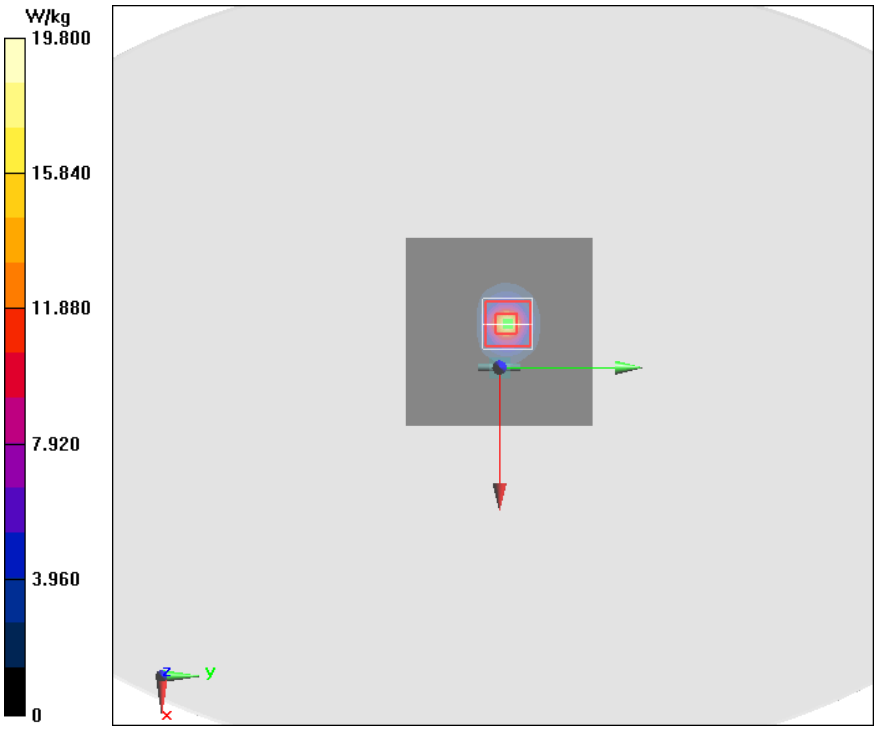
Measurement grid: dx=5mm, dy=5mm, dz=1.4mm

Reference Value = 56.62 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 35.0 W/kg

SAR(1 g) = 7.25 W/kg; SAR(10 g) = 2.02 W/kg

Maximum value of SAR (measured) = 19.8 W/kg



ANNEX C. Calibration Certification

In Collaboration with
s p e a g
CALIBRATION LABORATORY
Add: No.51 Xueyuan Road, Haidian District, Beijing, 100191, China
Tel: +86-10-62304633-2512 Fax: +86-10-62304633-2504
E-mail: cttl@chinattl.com Http://www.chinattl.cn

中国认可
国际互认
校准
CALIBRATION
CNAS L0570

Client : ECIT

Certificate No: Z18-60529

CALIBRATION CERTIFICATE

Object	DAE4 - SN: 1244
Calibration Procedure(s)	FF-Z11-002-01 Calibration Procedure for the Data Acquisition Electronics (DAEx)
Calibration date:	December 03, 2018

This calibration Certificate documents the traceability to national standards, which realize the physical units of measurements(SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature(22±3)℃ and humidity<70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Process Calibrator 753	1971018	20-Jun-18 (CTTL, No.J18X05034)	June-19

	Name	Function	Signature
Calibrated by:	Yu Zongying	SAR Test Engineer	
Reviewed by:	Lin Hao	SAR Test Engineer	
Approved by:	Qi Dianyuan	SAR Project Leader	

Issued: December 05, 2018

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Certificate No: Z18-60529 Page 1 of 3

In Collaboration with
CTTL speag CALIBRATION LABORATORY
Add: No.51 Xueyuan Road, Haidian District, Beijing, 100191, China
Tel: +86-10-62304633-2512 Fax: +86-10-62304633-2504
E-mail: cttl@chinattl.com Http://www.chinattl.cn

Glossary:

DAE	data acquisition electronics
Connector angle	information used in DASY system to align probe sensor X to the robot coordinate system.

Methods Applied and Interpretation of Parameters:

- *DC Voltage Measurement*: Calibration Factor assessed for use in DASY system by comparison with a calibrated instrument traceable to national standards. The figure given corresponds to the full scale range of the voltmeter in the respective range.
- *Connector angle*: The angle of the connector is assessed measuring the angle mechanically by a tool inserted. Uncertainty is not required.
- The report provide only calibration results for DAE, it does not contain other performance test results.

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E-mail: cttl@chinattl.com Http://www.chinattl.cn

DC Voltage Measurement

A/D - Converter Resolution nominal

High Range: 1LSB = 6.1μV , full range = -100...+300 mV

Low Range: 1LSB = 61nV , full range = -1.....+3mV

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

Calibration Factors	X	Y	Z
High Range	403.818 ± 0.15% (k=2)	403.555 ± 0.15% (k=2)	404.470 ± 0.15% (k=2)
Low Range	3.95395 ± 0.7% (k=2)	3.97087 ± 0.7% (k=2)	3.97994 ± 0.7% (k=2)

Connector Angle

Connector Angle to be used in DASY system	22.5° ± 1 °