FCC

SAR

TEST REPORT

ISSUED BY
Shenzhen BALUN Technology Co., Ltd.

FOR

Smart Phone

ISSUED TO
TRIMBLE EUROPE BV

Meerheide 45, 5521 DZ, Eersel, Netherlands

Report No.:	BL-EC18B0415-701
EUT Name:	Rugged Smart Phone
Model Name:	TDC600
Brand Name:	Trimble
Test Standard:	FCC 47 CFR Part 2.1093 ANSI C95.1: 1999, IEEE 1528: 2013
FCC ID:	NZI-11705900
Maximum SAR:	Head (1 g): 0.253 W/kg Body (1 g): 1.050 W/kg
Test Conclusion:	Pass
Test Date:	Nov. 22, 2018 ~ Dec. 07, 2018
Date of Issue:	Dec. 29, 2018

Tested by: Zonghyao
Zong Liyao
(Engineer)
Date Dec. 29, 2018

Approved by:
Wei Yanquan
(Chief Engineer)
Date Dec. 29. 2018

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Revision History

Version	Issue Date	Revisions Content
Rev. 01	Dec. 27, 2018	Initial Issue
Rev. 02	Dec. 29, 2018	Updated test plots in ANNEX C.

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1 GENERAL INFORMATION

1.1 Identification of the Testing Laboratory

Company Name	Shenzhen BALUN Technology Co.,Ltd.
Address	Block B, 1st FL, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province,P. R. China
Phone Number	+86 755 6685 0100
Fax Number	+86 755 6182 4271

1.2 Identification of the Responsible Testing Location

Test Location	Shenzhen BALUN Technology Co.,Ltd.
Address	Block B, 1st FL, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province,P. R. China
Accreditation Certificate	The laboratory has been listed by Industry Canada to perform electromagnetic emission measurements. The recognition numbers of test site are 11524A-1. The laboratory is a testing organizatin accredited by FCC as a accredited testing laboratory. The designation number is CN1196. The laboratory is a testing organization accredited by American Association for Laboratory Accreditation (A2LA) according to ISO/IEC 17025.The accreditation certificate is 4344.01. The laboratory is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L6791.
Description	All measurement facilities used to collect the measurement data are located at Block B, FL 1, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China 518055

1.3 Test Environment Condition

Ambient Temperature	20 to 23℃
Ambient Relative Humidity	38 to 49%
Ambient Pressure	100 to 102KPa

1.4 Announce

(1) The test report reference to the report template version v2.2.

(2) The test report is invalid if not marked with the signatures of the persons responsible for preparing and approving the test report.

(3) The test report is invalid if there is any evidence and/or falsification.

(4) The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein.

(5) This document may not be altered or revised in any way unless done so by BALUN and all revisions are duly noted in the revisions section.

(6) Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.

2 PRODUCT INFORMATION

2.1 Applicant Information

Applicant	TRIMBLE EUROPE BV
Address	Meerheide 45, 5521 DZ, Eersel, Netherlands

2.2 Manufacturer Information

Manufacturer	TRIMBLE EUROPE BV
Address	Meerheide 45, 5521 DZ, Eersel, Netherlands

2.3 Factory Information

Factory	Shenzhen UniStrong Science & Technology Co.,Ltd.
Address	B, 4-4Factory, Zhengcheng Road, FuyongBaoan District, Shenzhen, China

2.4 General Description for Equipment under Test (EUT)

EUT Name	Rugged Smart Phone
Model Name Under Test	TDC600
Series Model Name	N/A
Description of Model Name Differentiation	N/A
Hardware Version	C601_V1.00_PCB
Software Version	TDC600.53.80.10
Dimensions (Approx.)	N/A
Weight (Approx.)	N/A
Network and Wireless connectivity	2G Network GSM/GPRS/EDGE 850/900/1800/1900 MHz GPRS/EDGE Class 12 3G Network WCDMA/HSDPA/HSUPA Band 1/2/5/8, 4G Network FDD LTE Band 1/2/3/4/5/7/8/12/1317/20/25/28 TDD LTE Band 38/40/41 Bluetooth, WIFI, GPS, GLONASS, NFC

2.5 Ancillary Equipment

Ancillary Equipment 1	Battery	
	Brand Name	SJYEnergy
	Model No.	BA7800
	Serial No.	N/A
	Capacity	8000 mAh
	Rated Voltage	3.8 V
	Limit Charge Voltage	4.35 V
Ancillary Equipment 2 Note	Adapter	
	Brand Name	N/A
	Model No.	ASUC71W-050912300
	Serial No.	ASUC71z-050912300 (z= a, e, i, w)
	Rated Input	100-220 V~, 0.7 A, 50/60 Hz
	Rated Output	5 V⎓ 3 A
Ancillary Equipment 3	USB Cable	
	Length (Approx.)	1.0 m
Note: All adapter are same with electrical parameters and internal circuit structure, but only differ in model name and plug type.		

2.6 Technical Information

The requirement for the following technical information of the EUT was tested in this report:

Operating Mode	GSM, WCDMA, LTE, 2.4G WLAN, 5G WLAN, Bluetooth		
Frequency Range	GSM 850	TX: 824 MHz ~ 849 MHz	RX: 869 MHz ~ 894 MHz
	GSM 1900	TX: 1850 MHz ~ 1910 MHz	RX: 1930 MHz ~ 1990 MHz
	WCDMA Band 2	TX: 1850 MHz ~ 1910 MHz	RX: 1930 MHz ~ 1990 MHz
	WCDMA Band 5	TX: 824 MHz ~ 849 MHz	RX: 869 MHz ~ 894 MHz
	LTE Band 2	TX: 1850 MHz ~ 1910 MHz	RX: 1930 MHz ~ 1990 MHz
	LTE Band 4	TX: 1710 MHz ~ 1755 MHz	RX: 2110 MHz ~ 2155 MHz
	LTE Band 5	TX: 824 ~ 849 MHz	RX: 869 ~ 894 MHz
	LTE Band 7	TX: 2500 MHz ~ 2570 MHz	RX: 2620 MHz ~ 2690 MHz
	LTE Band 12	TX: 698 ~ 716 MHz	RX: 728 ~ 746 MHz
	LTE Band 13	TX: 777 ~ 787 MHz	RX: 746 ~ 756 MHz
	LTE Band 17	TX: 704 MHz ~ 716 MHz	RX: 734 MHz ~ 746 MHz
	LTE Band 25	TX: 1850 MHz ~ 1915 MHz	RX: 1930 MHz ~ 1995 MHz
	LTE Band 41	TX: 2555 ~ 2655 MHz	RX: 2555 ~ 2655 MHz
	802.11b/g /n(HT20)	2400~2483.5 MHz	
	802.11n(HT20)/ ac(VHT20/VHT 40/VHT80)	5150 MHz ~ 5250 MHz	
		5725 MHz~ 5850 MHz	
	Bluetooth	2400~2483.5 MHz	
Antenna Type	WWAN: PIFA Antenna WLAN: PIFA Antenna Bluetooth: PIFA Antenna		
Hotspot Function	Support		
Power Reduction	Not Support		
Exposure Category	General Population/Uncontrolled exposure		
EUT Stage	Portable Device		
Product	Type		
	☒ Production unit	☐ Identical prototype	

3 SUMMARY OF TEST RESULT

3.1 Test Standards

No.	Identity	Document Title
1	47 CFR Part 2	Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
2	ANSI/IEEE Std. C95.1-1999	IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz
3	IEEE Std. 1528-2013	Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques
4	FCC KDB 447498 D01 v06	Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies
5	FCC KDB 941225 D01 v03r01	3G SAR MEAUREMENT PROCEDURES
6	FCC KDB 941225 D05 v02r05	SAR Evaluation Considerations for LTE Devices
7	FCC KDB 941225 D06 v02r01	SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities
8	FCC KDB 865664 D01 v01r04	SAR Measurement 100 MHz to 6 GHz
9	FCC KDB 865664 D02 v01r02	RF Exposure Reporting
10	FCC KDB 648474 D04 v01r03	SAR Evaluation Considerations for Wireless Handsets
11	KDB 248227 D01 v02r02	SAR Guidance for IEEE 802.11 (Wi-Fi) Transmitters

3.2 Device Category and SAR Limit

This device belongs to portable device category because its radiating structure is allowed to be used within 20 centimeters of the body of the user.

Limit for General Population/Uncontrolled exposure should be applied for this device, it is 1.6 W/kg as averaged over any 1 gram of tissue.

Table of Exposure Limits:

Body Position	SAR Value (W/Kg)	
	General Population/ Uncontrolled Exposure	Occupational/ ControlledExposure
Whole-Body SAR (averaged over the entire body)	0.08	0.4
Partial-Body SAR (averaged over any 1 gram of tissue)	1.60	8.0
SAR for hands, wrists, feet and ankles (averaged over any 10 grams of tissue)	4.0	20.0

NOTE:

General Population/Uncontrolled Exposure: Locations where there is the exposure of individuals who have no knowledge or control of their exposure. General population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity.

Occupational/Controlled Exposure: Locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. This exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

3.3 Test Result Summary

3.3.1 Highest SAR (1 g Value)

Band	Maximum Scaled SAR (W/kg)			Maximum Report SAR (W/kg)	
	Head	Body		Head	Body
		Body-worn	Hotspot		
GSM 850	**0.253**	0.555	0.701	0.253	1.050
GSM 1900	0.127	0.743	1.028		
WCDMA Band 2	0.158	0.759	0.759		
WCDMA Band 5	0.243	0.523	0.523		
LTE Band 2	0.155	0.908	0.908		
LTE Band 4	0.130	**1.050**	**1.050**		
LTE Band 5	0.229	0.529	0.529		
LTE Band 7	0.123	0.455	0.455		
LTE Band 12	0.178	0.249	0.249		
LTE Band 13	0.140	0.309	0.309		
LTE Band 17	0.161	0.251	0.251		
LTE Band 25	0.141	0.685	0.685		
LTE Band 41	0.085	0.185	0.185		
2.4G WLAN	0.199	0.098	0.098		
5.2G WLAN	0.153	0.059	0.059		
5.8G WLAN	0.173	0.068	0.068		
Limit (W/kg)	1.60				
Verdict	Pass				

3.3.2 Highest Simultaneous SAR

Position	Simultaneous Configuration	Simultaneous SAR (W/kg)	Limit (W/kg)	Verdict
Head	GSM Voice + 2.4G WLAN	0.452	1.6	Pass
Body-worn	LTE QPSK + 2.4G WLAN	1.148	1.6	Pass
Hotspot Mode	LTE QPSK + 2.4G WLAN	1.148	1.6	Pass

3.4 Test Uncertainty

According to KDB 865664 D01, When the highest measured 1 g SAR within a frequency band is < 1.5 W/kg, the extensive SAR measurement uncertainty analysis is not required in SAR reports submitted for equipment approval.

The maximum 1 g SAR for the EUT in this report is 1.050 W/kg, which is lower than 1.5 W/kg, so the extensive SAR measurement uncertainty analysis is not required in this report.

4 MEASUREMENT SYSTEM

4.1 Specific Absorption Rate (SAR) Definition

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.

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

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

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

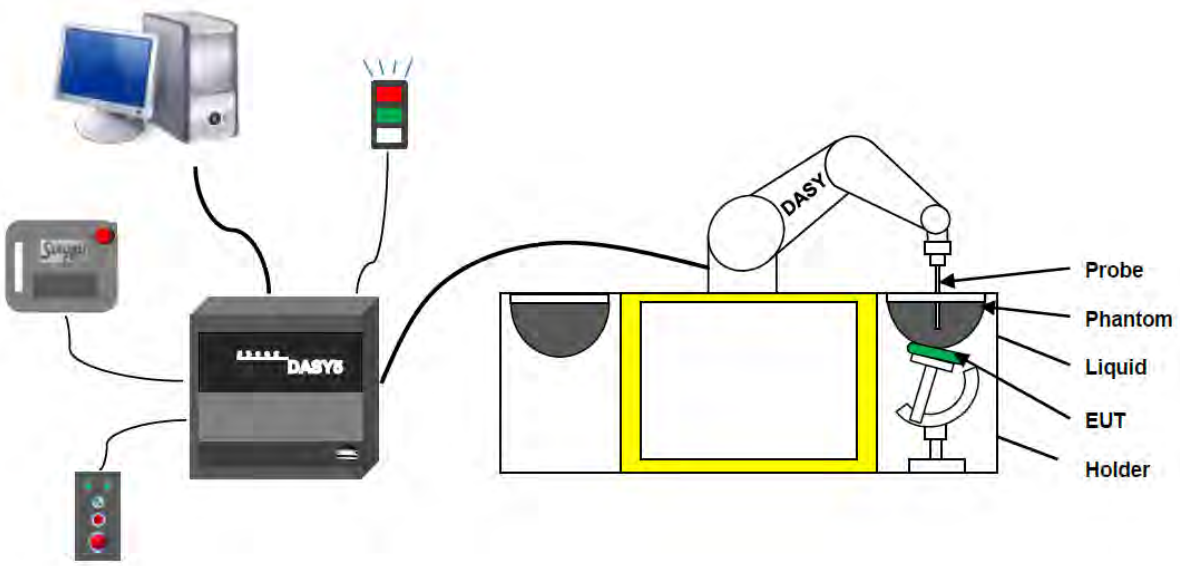
$$\mathbf{SAR} = \frac{\sigma E^2}{\rho}$$

Where: σ is the conductivity of the tissue,

ρ is the mass density of the tissue and E is the RMS electrical field strength.

4.2 DASY SAR System

4.2.1 DASY SAR System Diagram



The DASY5 system for performing compliance tests consists of the following items:

1. A standard high precision 6-axis robot (Stäubli RX family) with controller and software. An arm extension for accommodating the data acquisition electronics (DAE).
2. A dosimetric probe, i.e. an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with an optical surface detector system.
3. A data acquisition electronic (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.
4. A unit to operate the optical surface detector which is connected to the EOC.
5. The Electro-Optical Coupler (EOC) performs the conversion from the optical into a digital electric signal of the DAE. The EOC is connected to the DASY5 measurement server.
6. The DASY5 measurement server, which performs all real-time data evaluation for field measurements and surface detection, controls robot movements and handles safety operation.
7. DASY5 software and SEMCAD data evaluation software.
8. Remote control with teach panel and additional circuitry for robot safety such as warning lamps, etc.
9. The generic twin phantom enabling the testing of left-hand and right-hand usage.
10. The device holder for handheld mobile phones.
11. Tissue simulating liquid mixed according to the given recipes.
12. System validation dipoles allowing to validate the proper functioning of the system.

4.2.2 Robot

The Dasy SAR system uses the high precision robots. Symmetrical design with triangular core Built-in optical fiber for surface detection system For the 6-axis controller system, Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents). The robot series have many features that are important for our application:

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

4.2.3 E-Field Probe

The probe is specially designed and calibrated for use in liquids with high permittivities for the measurements the Specific Dosimetric E-Field Probe EX3DV4-SN:7510 with following specifications is used.

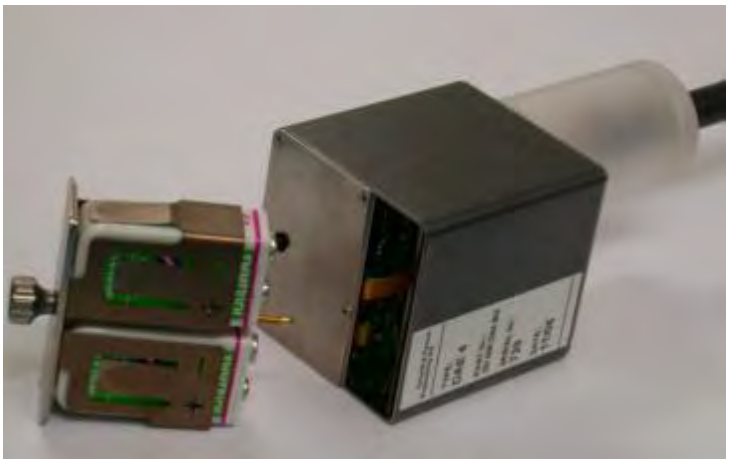
Construction	Symmetrical design with triangular core Built-in optical fiber for surface detection systemBuilt-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., glycolether)
Calibration	ISO/IEC 17025 calibration service available
Frequency	10 MHz to 6 GHz; Linearity: ± 0.2 dB (30 MHz to 6 GHz)
Directivity	± 0.2 dB in HSL (rotation around probe axis) ; ± 0.4 dB in HSL (rotation normal to probe axis)
Dynamic range	5 μW/g to > 100 mW/g; Linearity: ± 0.2 dB
Dimensions	Overall length: 337 mm (Tip: 9 mm) Tip diameter: 2.5 mm (Body: 10 mm) Distance from probe tip to dipole centers: 1.0 mm
Application	General dosimetry up to 3 GHz Compliance tests of mobile phones Fast automatic scanning in arbitrary phantoms (EX3DV4)

E-Field Probe Calibration Process

Probe calibration is realized, in compliance with CENELEC EN 62209-1/-2 and IEEE 1528 std, with CALISAR, Antennessa proprietary calibration system. The calibration is performed with the EN 62209-1/2 annexe technique using reference guide at the five frequencies.

4.2.4 Data Acquisition Electronics

The data acquisition electronics (DAE) consist of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converte 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.



- Input Impedance: 200MOhm
- The Inputs: Symmetrical and Floating
- Commom Mode Rejection: Above 80dB

4.2.5 Phantoms

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

- Left hand
- Right hand
- Flat phantom

Photo of Phantom SN1857

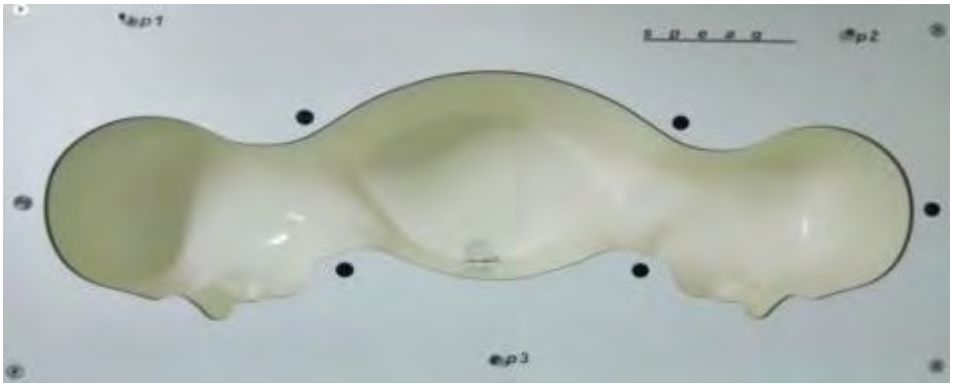
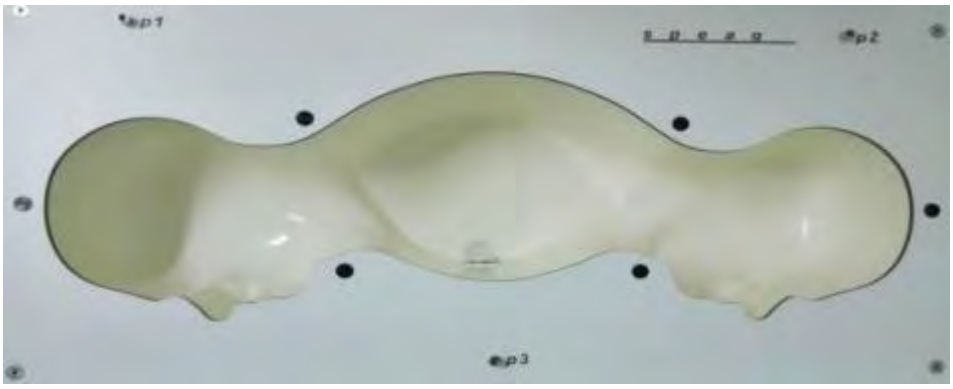


Photo of Phantom SN1859



Serial Number	Material	Length	Height
SN 1857 SAM1	Vinylester, glass fiber reinforced	1000	500
SN 1859 SAM2	Vinylester, glass fiber reinforced	1000	500

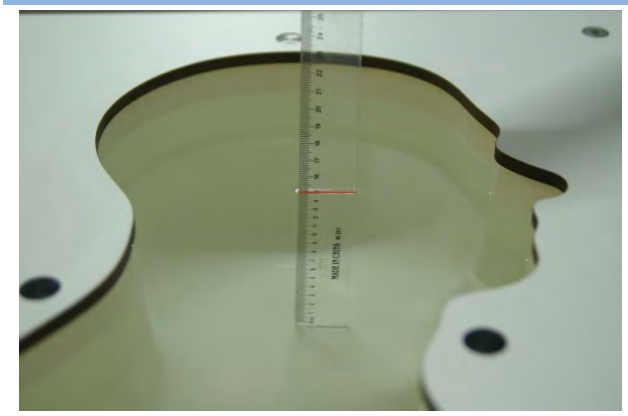
4.2.6 Device Holder

The DASY5 device holder has two scales for device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear openings). The plane between the ear openings and the mouth tip has a rotation angle of 65°. The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. This device holder is used for standard mobile phones or PDA"s only. If necessary an additional support of polystyrene material is used. Larger DUT"s (e.g. notebooks) cannot be tested using this device holder. Instead a support of bigger polystyrene cubes and thin polystyrene plates is used to position the DUT in all relevant positions to find and measure spots with maximum SAR values. Therefore those devices are normally only tested at the flat part of the SAM.

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

4.2.7 Simulating Liquid

For SAR measurement of the field distribution inside the phantom, the phantom must be filled with homogeneous tissue simulating liquid to a depth of at least 15 cm. For head SAR testing, the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15 cm. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15 cm. The nominal dielectric values of the tissue simulating liquids in the phantom and the tolerance of 5%.

Head Liquid Depth	Body Liquid Depth
	

The following table gives the recipes for tissue simulating liquid and the theoretical Conductivity/Permittivity.

Head (Reference IEEE1528)								
Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity σ (S/m)	Permittivity ε
750	41.1	57.0	0.2	1.4	0.2	0	0.89	41.9
835	40.3	57.9	0.2	1.4	0.2	0	0.90	41.5
900	40.3	57.9	0.2	1.4	0.2	0	0.97	41.5
1800, 1900, 2000	55.2	0	0	0.3	0	44.5	1.4	40.0
2450	55.0	0	0	0.1	0	44.9	1.80	39.2
2600	54.9	0	0	0.1	0	45.0	1.96	39.0
Frequency (MHz)	Water (%)	Hexyl Carbitol (%)			Triton X-100 (%)		Conductivity σ (S/m)	Permittivity ε
5200	62.52	17.24			17.24		4.66	36.0
5800	62.52	17.24			17.24		5.27	35.3
Body (From instrument manufacturer)								
Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity σ (S/m)	Permittivity ε
750	51.7	47.2	0	0.9	0.1	0	0.96	55.5
835	50.8	48.2	0	0.9	0.1	0	0.97	55.2
900	50.8	48.2	0	0.9	0.1	0	1.05	55.0
1800, 1900, 2000	70.2	0	0	0.4	0	29.4	1.52	53.3
2450	68.6	0	0	0.1	0	31.3	1.95	52.7
2600	68.2	0	0	0.1	0	31.7	2.16	52.5
Frequency(MHz)	Water	DGBE (%)			Salt (%)		Conductivity σ (S/m)	Permittivity ε
5200	78.60	21.40			/		5.54	47.86
5800	78.50	21.40			0.1		6.0	48.20

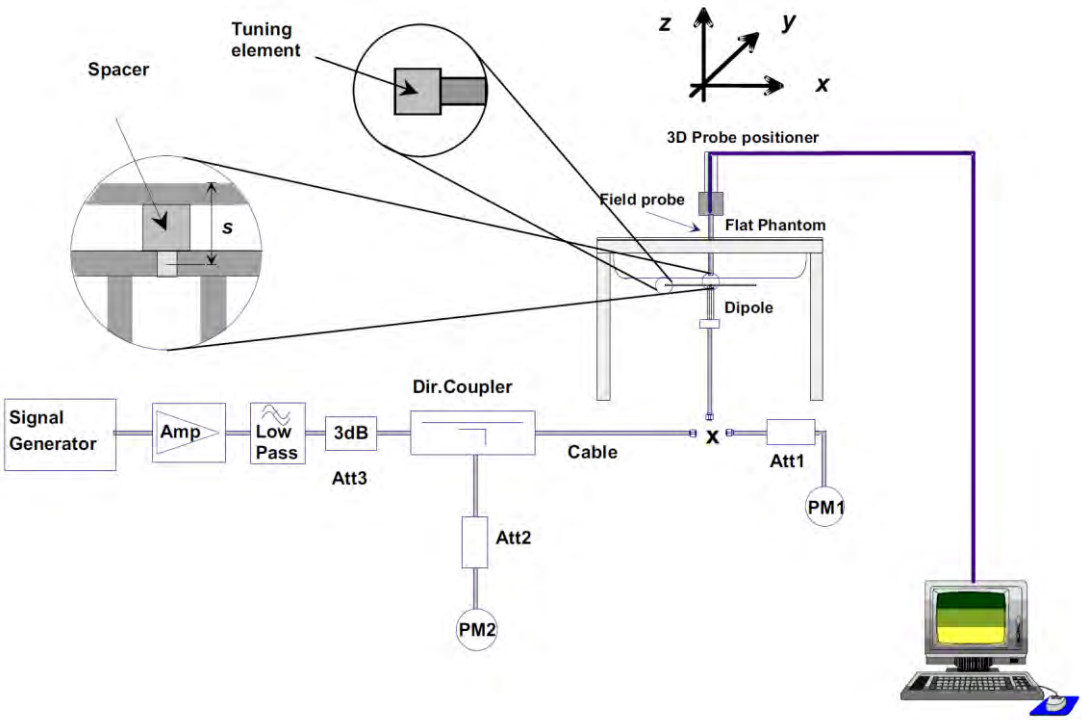
5 SYSTEM VERIFICATION

5.1 Purpose of System Check

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

5.2 System Check Setup

In the simplified setup for system evaluation, the EUT is replaced by a calibrated dipole and the power source is replaced by a continuous wave 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:



6 TEST POSITION CONFIGURATIONS

According to KDB 648474 D04 Handset, handsets are tested for SAR compliance in head, body-worn accessory and other use configurations described in the following subsections.

6.1 Head Exposure Conditions

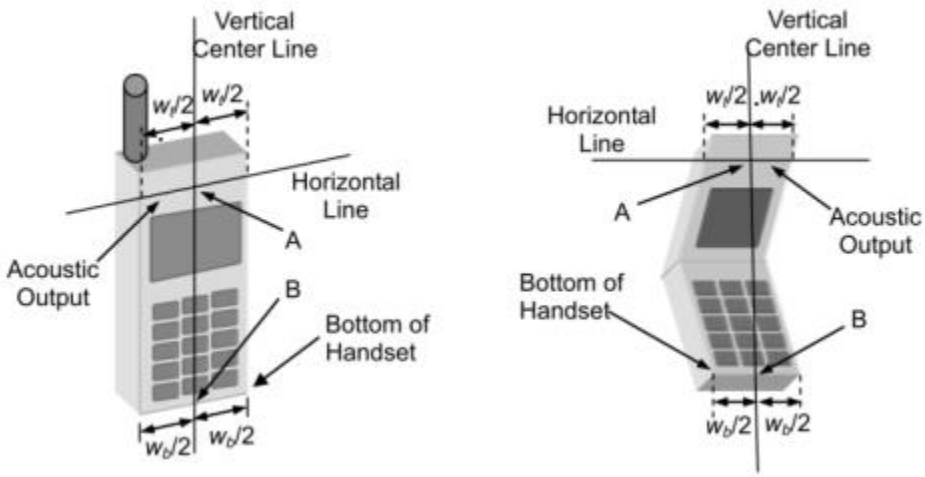
Head exposure is limited to next to the ear voice mode operations. Head SAR compliance is tested according to the test positions defined in IEEE Std 1528-2013 using the SAM phantom illustrated as below.

6.1.1 Two Imaginary Lines on the Handset

(a) The vertical center line passes through two points on the front side of the handset - the midpoint of the width w t of the handset at the level of the acoustic output, and the midpoint of the width w b of the bottom of the handset.

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

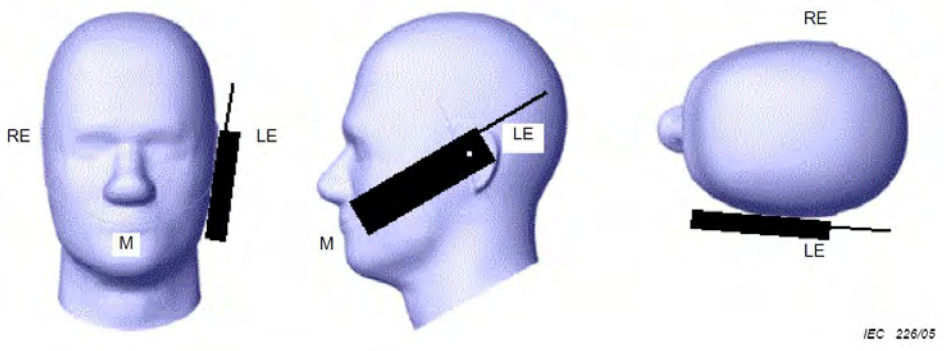
(c) The two lines intersect at point A. Note that for many handsets, point A coincides with the center of the acoustic output; however, the acoustic output may be located elsewhere on the horizontal line. Also note that the vertical center line is not necessarily parallel to the front face of the handset,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



6.1.2 Cheek Position

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

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



6.1.3 Tilted Position

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

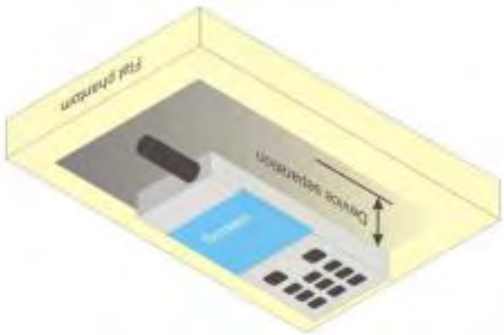
(b) While maintaining the device the reference plane described above and pivoting against the ear, moves it outward away from the mouth by an angle of 15 degrees or until contact with the ear is lost.

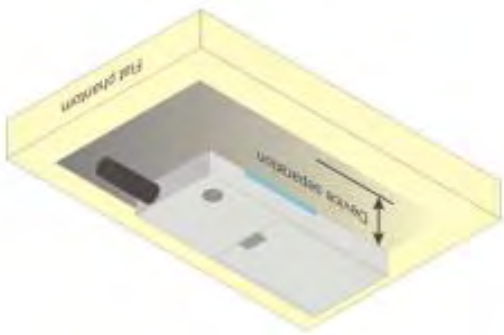
6.2 Body-worn Position Conditions

Body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in KDB 447498 are used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode. When the reported SAR for a body-worn accessory.

Body-worn accessories that do not contain metallic or conductive components may be tested according to worst-case exposure configurations, typically according to the smallest test separation distance required for the group of body-worn accessories with similar operating and exposure characteristics. All body-worn accessories containing metallic components are tested in conjunction with the host device.

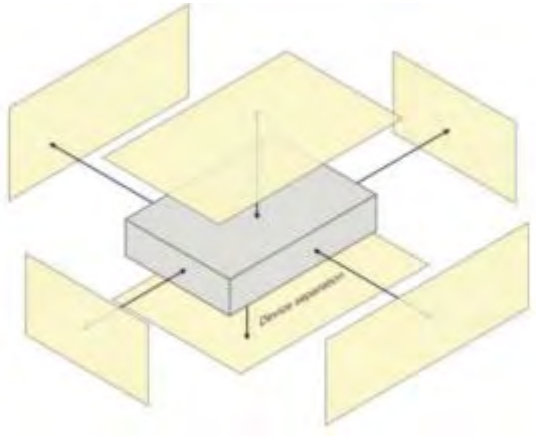
Body-worn accessory SAR compliance is based on a single minimum test separation distance for all wireless and operating modes applicable to each body-worn accessory used by the host, and according to the relevant voice and/or data mode transmissions and operations. If a body-worn accessory supports voice only operations in its normal and expected use conditions, testing of data mode for body-worn compliance is not required. A conservative minimum test separation distance for supporting off-the-shelf body-worn accessories that may be acquired by users of consumer handsets is used to test for body-worn accessory SAR compliance. This distance is determined by the handset manufacturer, according to the requirements of Supplement C 01-01. Devices that are designed to operate on the body of users using lanyards and straps, or without requiring additional body-worn accessories, will be tested using a conservative minimum test separation distance <= 5 mm to support compliance.





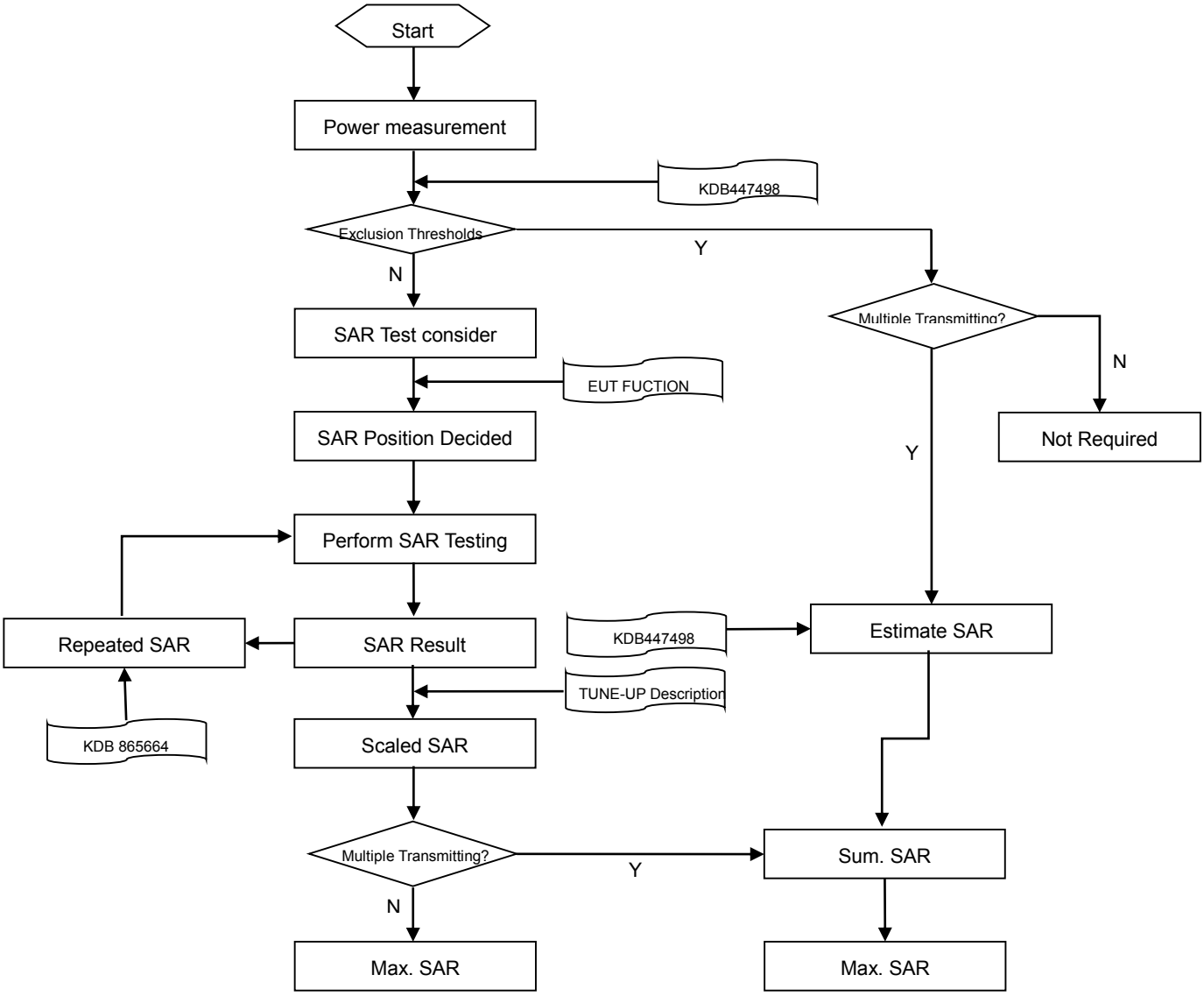
6.3 Hotspot Mode Exposure Position Conditions

For handsets that support hotspot mode operations, with wireless router capabilities and various web browsing functions, the relevant hand and body exposure conditions are tested according to the hotspot SAR procedures in KDB 941225. A test separation distance of 10 mm is required between the phantom and all surfaces and edges with a transmitting antenna located within 25 mm from that surface or edge. When the form factor of a handset is smaller than 9 cm x 5 cm, a test separation distance of 5 mm (instead of 10 mm) is required for testing hotspot mode. When the separation distance required for body-worn accessory testing is larger than or equal to that tested for hotspot mode, in the same wireless mode and for the same surface of the phone, the hotspot mode SAR data may be used to support body-worn accessory SAR compliance for that particular configuration (surface).



7 MEASUREMENT PROCEDURE

7.1 Measurement Process Diagram



7.2 SAR Scan General Requirement

Probe boundary effect error compensation is required for measurements with the probe tip closer than half a probe tip diameter to the phantom surface. Boththe 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.

<table>
<tr><th colspan="3"></th><th>≤3GHz</th><th>>3GHz</th></tr>
<tr><td colspan="3">Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface</td><td>5±1 mm</td><td>½·δ·ln(2)±0.5 mm</td></tr>
<tr><td colspan="3">Maximum probe angle from probe axis to phantom surface normal at the measurement location</td><td>30°±1°</td><td>20°±1°</td></tr>
<tr><td colspan="3" rowspan="2">Maximum area scan spatial resolution: Δx Area , Δy Area</td><td>≤ 2 GHz: ≤ 15 mm
2 – 3 GHz: ≤ 12 mm</td><td>3–4 GHz: ≤ 12 mm
4 – 6 GHz: ≤ 10 mm</td></tr>
<tr><td colspan="2">When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.</td></tr>
<tr><td colspan="3">Maximum zoom scan spatial resolution: Δx Zoom , Δy Zoom</td><td>≤ 2 GHz: ≤ 8 mm
2 –3 GHz: ≤ 5 mm*</td><td>3–4 GHz: ≤ 5 mm*
4 – 6 GHz: ≤ 4 mm*</td></tr>
<tr><td rowspan="7">Maximum zoom scan spatial resolution, normal to phantom surface</td><td colspan="2" rowspan="3">uniform grid: Δz Zoom (n)</td><td rowspan="3">≤ 5 mm</td><td>3–4 GHz: ≤ 4 mm</td></tr>
<tr><td>4–5 GHz: ≤ 3 mm</td></tr>
<tr><td>5–6 GHz: ≤ 2 mm</td></tr>
<tr><td rowspan="3">graded grid</td><td rowspan="2">Δz Zoom (1): between 1st two points closest to phantom surface</td><td rowspan="2">≤ 4 mm</td><td>3–4 GHz: ≤ 3 mm</td></tr>
<tr><td>4–5 GHz: ≤ 2.5 mm</td></tr>
<tr><td>5–6 GHz: ≤ 2 mm</td></tr>
<tr><td>Δz Zoom (n>1): between subsequent points</td><td colspan="2">≤ 1.5·Δz Zoom (n-1)</td></tr>
<tr><td rowspan="3">Minimum zoom scan volume</td><td colspan="2" rowspan="3">x, y, z</td><td rowspan="3">≥30 mm</td><td>3–4 GHz: ≥ 28 mm</td></tr>
<tr><td>4–5 GHz: ≥ 25 mm</td></tr>
<tr><td>5–6 GHz: ≥ 22 mm</td></tr>
<tr><td colspan="5">Note:
1. δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.
2. * When zoom scan is required and the reported SAR from the area scan based 1 g SAR estimation procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.</td></tr>
</table>

7.3 Measurement Procedure

The following steps are used for each test position

a. Establish a call with the maximum output power with a base station simulator. The connection between the mobile and the base station simulator is established via air interface

b. Measurement of the local E-field value at a fixed location. This value serves as a reference value for calculating a possible power drift.

c. Measurement of the SAR distribution with a grid of 8 to 16mm * 8 to16 mm and a constant distance to the inner surface of the phantom. Since the sensors cannot directly measure at the inner phantom surface, the values between the sensors and the inner phantom surface are extrapolated. With these values the area of the maximum SAR is calculated by an interpolation scheme.

d. Around this point, a cube of 30 * 30 * 30 mm or 32 * 32 *32 mm is assessed by measuring 5 or 8 * 5 or 8*4 or 5 mm. With these data, the peak spatial-average SAR value can be calculated.

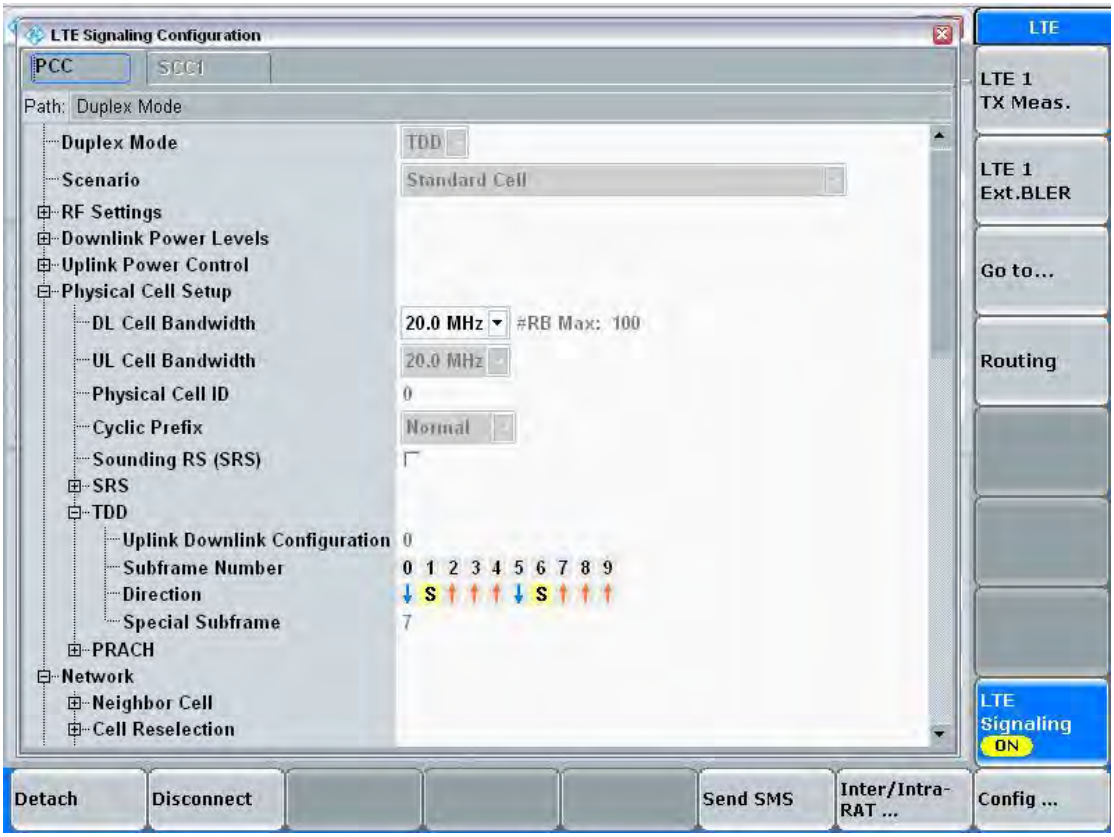
7.4 Area & Zoom Scan Procedure

First Area Scan is used to locate the approximate location(s) of the local peak SAR value(s). The measurement grid within an Area Scan is defined by the grid extent, grid step size and grid offset. Next, in order to determine the EM field distribution in a three-dimensional spatial extension, Zoom Scan is required. The Zoom Scan is performed around the highest E-field value to determine the averaged SAR-distribution over 10 g. Area scan and zoom scan resolution setting follows KDB 865664 D01v01r04 quoted below.

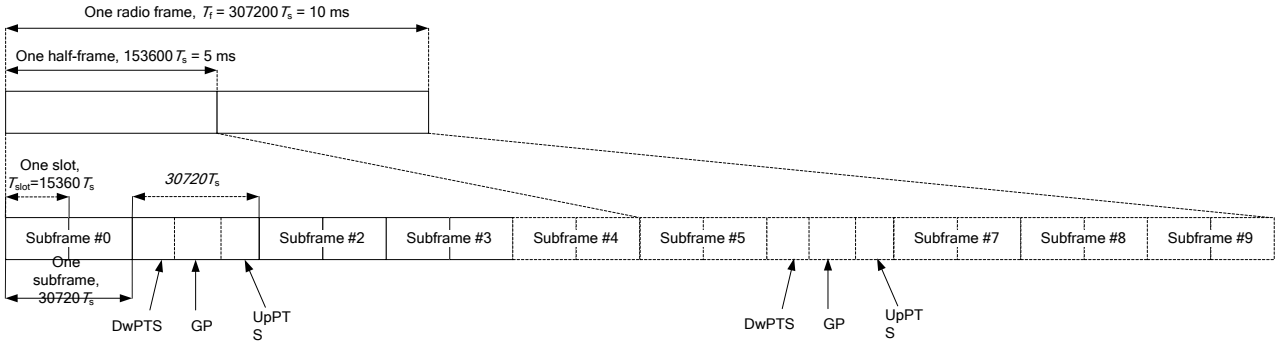
When the 1 g SAR of the highest peak is within 2 dB of the SAR limit, additional zoom scans are required for other peaks within 2 dB of the highest peak that have not been included in any zoom scan to ensure there is no increase in SAR.

7.5 LTE (TDD) Considerations

During TDD-LTE SAR testing, the EUT was commanded to transmit on maximum output power and maximum transmitting bandwidth. The uplink and downlink slot configuration as below in one radio frame.



According to 3GPP Per 3GPP TS 36.211. Each radio frame of length (Tf=307200*TS =10ms) of two half-frames of length (153600*TS =5ms). Each half-frame consists of five sub-frames of length (30720*TS =1ms)



And the special sub-frame with the three fields DwPTS, GP and UpPTS.

The length of DwPTS and UpPTS is given by below table subject to the total length of DwPTS, GP and UpPTS being equal to 30720*T_S =1ms.

Configuration of special sub-frame (lengths of DwPTS/GP/UpPTS)

Special sub-frame configuration	Normal cyclic prefix in downlink			Extended cyclic prefix in downlink		
	DwPTS	UpPTS		DwPTS	UpPTS	
		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink
0	$6592 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$	$7680 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$
1	$19760 \cdot T_s$			$20480 \cdot T_s$		
2	$21592 \cdot T_s$			$23040 \cdot T_s$		
3	$24144 \cdot T_s$			$25600 \cdot T_s$		
4	$26336 \cdot T_s$			$7680 \cdot T_s$	$2560 \cdot T_s$	$5120 \cdot T_s$
5	$6592 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$	$20480 \cdot T_s$		
6	$19760 \cdot T_s$			$23040 \cdot T_s$		
7	$21592 \cdot T_s$			$12800 \cdot T_s$		
8	$24144 \cdot T_s$			-	-	-
9	$13168 \cdot T_s$			-	-	-

For special sub-frame uplink time we used the largest cyclic prefix for duty cycle calculate;

Maximum uplink time of one special sub-frame=(largest cyclic prefix)/(one sub-frame of length)* time of one sub-frame=5120.Ts/30720.Ts*1ms=0.167ms

One radio frame with 6 uplink sub-frames and two special sub-frame,
there for the maximum Uplink time in one radio frame is: **6*1 ms+2*0.167 ms=6.334ms**
So, the duty cycle for TDD-LTE is: **6.334ms/10ms =1: 1.58**

8 CONDUCTED RF OUPUT POWER

8.1 GSM

GSM 850 Band	Burst Average Power(dBm)			Frame-averaged power(dBm)		
Channel	128	190	251	128	190	251
GSM (GMSK, 1-Slot)	32.57	32.66	**32.67**	23.57	23.66	**23.67**
GPRS (GMSK, 1-Slot)	32.58	32.65	32.69	23.58	23.65	23.69
GPRS (GMSK, 2-Slots)	28.99	31.59	31.60	22.99	25.59	25.60
GPRS (GMSK, 3-Slots)	30.44	30.41	30.57	26.18	26.15	26.31
GPRS (GMSK, 4-Slots)	29.22	29.31	29.40	26.22	26.31	**26.40**
EGPRS (8PSK, 1-Slot)	29.16	29.24	29.18	20.16	20.24	20.18
EGPRS (8PSK, 2-Slots)	27.89	27.93	27.96	21.89	21.93	21.96
EGPRS (8PSK, 3-Slots)	26.59	26.72	26.67	22.33	22.46	22.41
EGPRS (8PSK, 4-Slots)	25.43	25.57	25.58	22.43	22.57	**22.58**
GSM 1900 Band	Burst Average Power(dBm)			Frame-averaged power(dBm)		
Channel	512	661	810	512	661	810
GSM (GMSK, 1-Slot)	**29.93**	29.89	29.76	**20.93**	20.89	20.76
GPRS (GMSK, 1-Slot)	29.90	29.77	29.71	20.90	20.77	20.71
GPRS (GMSK, 2-Slots)	29.26	29.13	29.11	23.26	23.13	23.11
GPRS (GMSK, 3-Slots)	27.81	27.82	27.82	23.55	23.56	23.56
GPRS (GMSK, 4-Slots)	26.71	26.69	26.71	**23.71**	23.69	23.71
EGPRS (8PSK, 1-Slot)	28.36	28.10	28.20	19.36	19.10	19.20
EGPRS (8PSK, 2-Slots)	27.00	26.83	26.91	21.00	20.83	20.91
EGPRS (8PSK, 3-Slots)	25.77	25.64	25.59	21.51	21.38	21.33
EGPRS (8PSK, 4-Slots)	24.58	24.64	24.42	21.58	**21.64**	21.42

Note:

1. SAR testing was performed on the maximum frame-Peaked power mode.
2. The frame-averaged power is linearly proportion to the slot number configured and it is linearly scaled the maximum burst-averaged power based on time slots. The calculated method is shown as below:

   Frame-averaged power = Burst averaged power (1 Tx Slot) - 9 dB

   Frame-averaged power = Burst averaged power (2 Tx Slots) - 6 dB

   Frame-averaged power = Burst averaged power (3 Tx Slots) - 4.26 dB

   Frame-averaged power = Burst averaged power (4 Tx Slots) - 3 dB

8.2 WCDMA

WCDMA Band	Band 2			Band 5		
Channel	9262	9400	9538	4132	4182	4233
RMC 12.2Kbps	22.98	**23.06**	22.95	**23.15**	23.02	22.94
HSDPA Subtest-1	21.94	22.00	21.79	22.03	22.04	21.94
HSDPA Subtest-2	22.09	21.99	21.89	22.18	22.10	22.02
HSDPA Subtest-3	21.61	21.52	21.42	21.67	21.61	21.43
HSDPA Subtest-4	21.50	21.52	21.32	21.68	21.62	21.46
HSUPA Subtest-1	21.97	21.91	21.72	22.11	21.95	21.94
HSUPA Subtest-2	20.00	19.95	19.69	20.05	20.02	19.90
HSUPA Subtest-3	21.02	20.94	20.78	21.15	20.98	20.85
HSUPA Subtest-4	19.99	19.97	19.79	20.27	20.00	20.01
HSUPA Subtest-5	21.63	21.78	21.55	21.89	21.88	21.78

8.3 LTE

FDD LTE Band 2							
Bandwidth (MHz)	RB Set	Power (dBm)					
		QPSK			16QAM		
	Channel	18700	18900	19100	18700	18900	19100
20MHz	1 (RB_Pos:0)	23.89	23.64	23.47	22.88	22.28	22.41
	1 (RB_Pos:49)	**23.94**	23.83	23.61	22.99	22.37	22.40
	1 (RB_Pos:99)	23.49	23.72	23.32	22.18	22.27	22.15
	50 (RB_Pos:0)	22.86	22.60	22.69	21.66	21.52	21.65
	50 (RB_Pos:24)	**22.87**	22.52	22.65	21.86	21.44	21.51
	50 (RB_Pos:49)	22.74	22.51	22.53	21.82	21.43	21.41
	100 (RB_Pos:0)	22.89	22.62	22.59	21.79	21.43	21.48
Bandwidth (MHz)	RB Set	Power (dBm)					
		QPSK			16QAM		
	Channel	18675	18900	19125	18675	18900	19125
15MHz	1 (RB_Pos:0)	23.72	23.69	23.44	22.78	22.58	23.48
	1 (RB_Pos:37)	23.63	23.51	23.31	22.57	22.31	23.01
	1 (RB_Pos:74)	23.86	23.36	23.32	22.71	22.48	23.26
	36 (RB_Pos:0)	22.63	22.49	22.64	21.81	21.49	21.60
	36 (RB_Pos:18)	22.79	22.48	22.49	21.85	21.48	21.37
	36 (RB_Pos:37)	22.78	22.55	22.52	21.66	21.49	21.30
	75 (RB_Pos:0)	22.66	22.66	22.50	21.74	21.48	21.39
Bandwidth (MHz)	RB Set	Power (dBm)					
		QPSK			16QAM		
	Channel	18650	18900	19150	18650	18900	19150
10MHz	1 (RB_Pos:0)	23.78	23.72	23.53	23.10	22.48	22.49
	1 (RB_Pos:24)	23.99	23.81	23.54	22.95	22.25	22.47
	1 (RB_Pos:49)	24.03	23.82	23.77	23.00	22.47	22.30
	25 (RB_Pos:0)	22.73	22.50	22.52	22.01	21.49	21.67
	25 (RB_Pos:12)	22.75	22.52	22.47	21.83	21.45	21.49
	25 (RB_Pos:24)	22.78	22.63	22.52	21.67	21.56	21.39
	50 (RB_Pos:0)	23.05	22.47	22.57	21.71	21.39	21.40
Bandwidth (MHz)	RB Set	Power (dBm)					
		QPSK			16QAM		
	Channel	18625	18900	19175	18625	18900	19175
5MHz	1 (RB_Pos:0)	23.58	23.41	23.41	22.34	22.59	22.12
	1 (RB_Pos:12)	23.68	23.42	23.18	22.34	22.51	22.08
	1 (RB_Pos:24)	23.50	23.54	23.46	22.29	22.03	22.00
	12 (RB_Pos:0)	22.91	22.45	22.49	21.58	21.37	21.54
	12 (RB_Pos:6)	22.70	22.49	22.45	21.52	21.40	21.36
	12 (RB_Pos:11)	22.72	22.36	22.48	21.50	21.36	21.55
	25 (RB_Pos:0)	22.87	22.38	22.58	21.57	21.52	21.24
Bandwidth (MHz)	RB Set	Power (dBm)					
		QPSK			16QAM		
	Channel	18615	18900	19185	18615	18900	19185

3MHz	1 (RB_Pos:0)	23.74	23.42	23.36	22.62	22.19	22.43
	1 (RB_Pos:7)	23.87	23.21	23.16	22.86	22.20	22.31
	1 (RB_Pos:14)	23.59	23.80	23.29	22.55	22.33	22.30
	8 (RB_Pos:0)	22.53	22.60	22.47	21.69	21.30	21.69
	8 (RB_Pos:4)	22.56	22.43	22.44	21.52	21.24	21.58
	8 (RB_Pos:7)	22.47	22.39	22.43	21.34	21.37	21.22
	15 (RB_Pos:0)	22.73	22.49	22.44	21.75	21.32	21.48
Bandwidth (MHz)	RB Set	Power (dBm)					
		QPSK			16QAM		
	Channel	18607	18900	19193	18607	18900	19193
1.4MHz	1 (RB_Pos:0)	23.81	23.08	23.36	23.06	22.14	22.39
	1 (RB_Pos: 2)	23.56	23.29	23.74	23.18	22.17	22.56
	1 (RB_Pos:5)	23.86	23.17	23.53	23.03	22.06	22.46
	3 (RB_Pos:0)	23.76	23.28	23.44	23.00	22.21	23.00
	3 (RB_Pos:1)	23.73	23.28	23.37	22.57	22.37	22.94
	3 (RB_Pos:2)	23.72	23.39	23.36	22.52	22.18	22.91
	6 (RB_Pos:0)	22.61	22.24	22.41	21.62	21.12	21.62

FDD LTE Band 4							
Bandwidth (MHz)	RB Set	Power (dBm)					
		QPSK			16QAM		
	Channel	20050	20175	20300	20050	20175	20300
20MHz	1 (RB_Pos:0)	22.87	23.62	23.23	22.18	21.99	22.25
	1 (RB_Pos:49)	23.40	**23.69**	23.50	22.56	22.08	22.14
	1 (RB_Pos:99)	22.95	23.40	23.16	21.80	22.22	22.14
	50 (RB_Pos:0)	22.21	22.38	**22.53**	21.06	21.32	21.28
	50 (RB_Pos:24)	22.17	22.35	22.38	21.14	21.53	21.27
	50 (RB_Pos:49)	22.29	22.38	22.27	21.16	21.46	21.13
	100 (RB_Pos:0)	22.28	22.40	22.35	21.26	21.36	21.24
Bandwidth (MHz)	RB Set	Power (dBm)					
		QPSK			16QAM		
	Channel	20025	20175	20325	20025	20175	20325
15MHz	1 (RB_Pos:0)	23.07	23.28	23.50	22.22	22.28	22.98
	1 (RB_Pos:37)	23.21	23.24	23.17	22.73	22.14	23.00
	1 (RB_Pos:74)	23.11	23.36	23.37	22.18	22.19	22.96
	36 (RB_Pos:0)	22.09	22.45	22.34	21.22	21.31	21.22
	36 (RB_Pos:18)	22.13	22.39	22.19	21.16	21.29	21.15
	36 (RB_Pos:37)	22.28	22.35	22.17	21.06	21.26	21.11
	75 (RB_Pos:0)	22.11	22.34	22.27	21.11	21.31	21.26
Bandwidth (MHz)	RB Set	Power (dBm)					
		QPSK			16QAM		
	Channel	20000	20175	20350	20000	20175	20350
10MHz	1 (RB_Pos:0)	23.10	23.17	23.25	22.13	22.03	22.29
	1 (RB_Pos:24)	23.34	23.40	23.43	22.34	22.09	22.05
	1 (RB_Pos:49)	23.12	23.33	23.34	22.03	21.58	21.97
	25 (RB_Pos:0)	22.17	22.38	22.23	21.32	21.18	21.17

	25 (RB_Pos:12)	22.17	22.41	22.10	21.24	21.20	21.23
	25 (RB_Pos:24)	22.16	22.36	22.28	21.10	21.29	21.41
	50 (RB_Pos:0)	22.11	22.37	22.33	21.14	21.26	21.22
Bandwidth (MHz)	RB Set	Power (dBm)					
		QPSK			16QAM		
	Channel	19975	20175	20375	19975	20175	20375
5MHz	1 (RB_Pos:0)	22.88	23.25	23.03	21.42	22.38	22.49
	1 (RB_Pos:12)	22.94	23.37	23.38	21.83	22.43	22.82
	1 (RB_Pos:24)	22.90	23.22	23.46	21.42	22.24	22.37
	12 (RB_Pos:0)	22.04	22.36	22.21	21.07	21.14	21.04
	12 (RB_Pos:6)	22.03	22.34	22.33	21.03	21.17	21.27
	12 (RB_Pos:11)	22.08	22.29	22.51	20.89	21.18	21.34
	25 (RB_Pos:0)	22.11	22.33	22.42	21.18	21.35	21.26
Bandwidth (MHz)	RB Set	Power (dBm)					
		QPSK			16QAM		
	Channel	19965	20175	20385	19965	20175	20385
3.0MHz	1 (RB_Pos:0)	23.04	23.31	23.03	21.89	22.12	22.45
	1 (RB_Pos:7)	23.07	23.34	23.13	21.74	22.13	22.36
	1 (RB_Pos:14)	23.02	23.47	23.39	21.88	22.16	22.17
	8 (RB_Pos:0)	22.13	22.41	22.30	20.79	21.24	21.29
	8 (RB_Pos:4)	22.07	22.37	22.32	20.82	21.15	21.35
	8 (RB_Pos:7)	22.08	22.40	22.27	20.74	21.33	21.37
	15 (RB_Pos:0)	22.09	22.40	22.37	21.25	21.39	21.26
Bandwidth (MHz)	RB Set	Power (dBm)					
		QPSK			16QAM		
	Channel	19957	20175	20393	19957	20175	20393
1.4MHz	1 (RB_Pos:0)	22.88	23.11	23.15	22.39	22.25	22.22
	1 (RB_Pos:2)	23.03	23.31	23.35	22.56	22.21	22.40
	1 (RB_Pos:5)	23.05	23.18	23.45	22.42	21.71	22.38
	3 (RB_Pos:0)	23.16	23.27	23.38	22.42	22.17	22.66
	3 (RB_Pos:1)	23.14	23.41	23.45	22.41	22.39	22.57
	3 (RB_Pos:2)	23.08	23.33	23.32	22.36	22.22	22.33
	6 (RB_Pos:0)	22.11	22.44	22.30	21.31	21.13	21.27

FDD LTE Band 5							
Bandwidth (MHz)	RB Set	Power (dBm)					
		QPSK			16QAM		
	Channel	20450	20525	20600	20450	20525	20600
10 MHz	1 (RB_Pos:0)	22.94	22.98	22.96	21.85	21.97	22.09
	1 (RB_Pos:25)	23.41	23.04	**23.45**	22.51	21.94	22.30
	1 (RB_Pos:49)	22.84	23.04	23.10	21.90	22.07	22.04
	25 (RB_Pos:0)	22.01	22.04	21.97	20.96	21.03	21.25
	25 (RB_Pos:12)	22.08	22.04	**22.10**	21.05	21.05	21.27
	25 (RB_Pos:25)	22.03	22.08	22.05	21.08	21.04	21.28
	50 (RB_Pos:0)	22.17	22.10	22.17	21.11	20.98	21.03
Bandwidth (MHz)	RB Set	Power (dBm)					
		QPSK			16QAM		
	Channel	20425	20525	20625	20425	20525	20625
5MHz	1 (RB_Pos:0)	22.82	22.79	23.04	21.49	21.51	21.88
	1 (RB_Pos:13)	22.93	22.81	23.01	21.38	21.56	21.89
	1 (RB_Pos:24)	23.05	22.75	22.99	21.47	21.41	21.67
	12 (RB_Pos:0)	22.02	22.06	22.02	20.84	20.96	21.12
	12 (RB_Pos:6)	22.05	22.05	22.05	20.97	20.95	21.05
	12 (RB_Pos:13)	22.08	21.97	22.04	21.10	20.96	21.01
	25 (RB_Pos:0)	21.94	21.98	22.06	21.17	21.00	21.09
Bandwidth (MHz)	RB Set	Power (dBm)					
		QPSK			16QAM		
	Channel	20415	20525	20635	20415	20525	20635
3.0 MHz	1 (RB_Pos:0)	22.86	22.84	22.87	22.05	21.87	21.99
	1 (RB_Pos:8)	22.92	22.78	22.94	22.06	21.90	21.88
	1 (RB_Pos:14)	22.85	22.86	22.87	22.08	21.90	21.93
	8 (RB_Pos:0)	22.15	22.01	22.02	21.12	20.93	21.05
	8 (RB_Pos:3)	22.08	21.98	22.12	20.79	20.92	21.24
	8 (RB_Pos:7)	22.12	22.03	22.06	20.66	21.04	20.96
	15 (RB_Pos:0)	22.06	22.02	22.09	21.04	21.17	20.78
Bandwidth (MHz)	RB Set	Power (dBm)					
		QPSK			16QAM		
	Channel	20407	20525	20643	20407	20525	20643
1.4MHz	1 (RB_Pos:0)	22.83	22.72	23.08	21.83	21.90	22.03
	1 (RB_Pos:3)	22.94	22.96	23.22	21.77	21.87	22.09
	1 (RB_Pos:5)	22.91	22.81	23.08	21.75	21.83	21.98
	3 (RB_Pos:0)	22.89	22.85	23.09	21.87	21.93	22.30
	3 (RB_Pos:1)	22.92	22.92	23.01	21.89	21.98	22.32
	3 (RB_Pos:3)	22.95	22.98	22.99	21.98	21.82	22.19
	6 (RB_Pos:0)	21.85	22.05	22.05	20.94	20.70	21.01

FDD LTE Band 7			
Bandwidth (MHz)	RB Set	Power (dBm)	
		QPSK	16QAM

	Channel	20850	21100	21350	20850	21100	21350
20MHz	1 (RB_Pos:0)	21.26	21.78	20.53	20.71	21.20	19.94
	1 (RB_Pos:49)	22.53	**23.23**	22.24	22.06	21.46	21.70
	1 (RB_Pos:99)	21.86	21.84	21.55	21.25	21.23	21.00
	50 (RB_Pos:0)	21.84	21.67	21.87	20.93	20.67	20.79
	50 (RB_Pos:24)	21.81	21.76	**21.97**	20.91	20.67	20.80
	50 (RB_Pos:49)	21.73	21.66	21.89	20.73	20.64	20.77
	100 (RB_Pos:0)	21.82	21.73	21.93	20.79	20.72	20.77
Bandwidth (MHz)	RB Set	Power (dBm)					
		QPSK			16QAM		
	Channel	20825	21100	21375	20825	21100	21375
15MHz	1 (RB_Pos:0)	22.83	22.74	22.23	21.85	21.58	21.70
	1 (RB_Pos:37)	22.75	22.87	22.74	22.28	21.58	23.06
	1 (RB_Pos:74)	22.67	22.68	22.63	21.53	21.01	22.06
	36 (RB_Pos:0)	21.81	21.72	21.91	20.72	20.75	20.78
	36 (RB_Pos:18)	21.78	21.73	21.88	20.77	20.66	20.80
	36 (RB_Pos:37)	21.81	21.67	21.95	20.71	20.75	20.79
	75 (RB_Pos:0)	21.79	21.69	21.85	20.70	20.52	20.82
Bandwidth (MHz)	RB Set	Power (dBm)					
		QPSK			16QAM		
	Channel	20800	21100	21400	20800	21100	21400
10MHz	1 (RB_Pos:0)	22.80	22.70	22.61	21.70	21.54	21.67
	1 (RB_Pos:24)	22.98	23.33	23.09	22.20	21.33	21.74
	1 (RB_Pos:49)	22.69	22.82	22.77	21.56	21.03	21.85
	25 (RB_Pos:0)	21.82	21.66	21.86	20.71	20.69	20.90
	25 (RB_Pos:12)	21.85	21.74	21.97	20.74	20.66	21.06
	25 (RB_Pos:24)	21.80	21.71	21.97	20.66	20.77	20.98
	50 (RB_Pos:0)	21.80	21.67	21.86	20.78	20.68	20.79
Bandwidth (MHz)	RB Set	Power (dBm)					
		QPSK			16QAM		
	Channel	20775	21100	21425	20775	21100	21425
5MHz	1 (RB_Pos:0)	22.57	22.51	22.66	21.33	21.58	21.57
	1 (RB_Pos:12)	22.74	22.74	22.92	21.33	21.64	21.60
	1 (RB_Pos:24)	22.66	22.52	22.80	21.05	21.20	20.92
	12 (RB_Pos:0)	21.70	21.63	21.78	20.61	20.70	20.55
	12 (RB_Pos:6)	21.74	21.68	21.78	20.66	20.69	20.63
	12 (RB_Pos:11)	21.69	21.65	21.74	20.40	20.69	20.52
	25 (RB_Pos:0)	21.73	21.59	21.85	20.63	20.52	20.67

FDD LTE Band 12							
Bandwidth (MHz)	RB Set	Power (dBm)					
		QPSK			16QAM		
	Channel	23060	23095	23130	23060	23095	23130
10MHz	1 (RB_Pos:0)	23.00	22.82	22.99	21.90	21.69	22.07
	1 (RB_Pos:24)	22.95	**23.35**	23.34	22.53	21.81	21.97
	1 (RB_Pos:49)	22.94	22.85	22.99	21.80	21.24	21.48
	25 (RB_Pos:0)	22.03	22.08	**22.17**	20.85	21.02	21.07
	25 (RB_Pos:12)	22.07	22.11	22.09	20.94	21.21	20.98
	25 (RB_Pos:24)	22.12	22.05	22.07	21.03	20.99	20.97
	50 (RB_Pos:0)	22.06	22.06	22.08	20.98	21.13	20.95
Bandwidth (MHz)	RB Set	Power (dBm)					
		QPSK			16QAM		
	Channel	23035	23095	23155	23035	23095	23155
5MHz	1 (RB_Pos:0)	23.01	22.98	22.79	21.68	22.09	21.66
	1 (RB_Pos:12)	22.78	22.95	23.12	21.62	22.07	21.68
	1 (RB_Pos:24)	22.72	22.87	22.79	20.99	21.54	21.23
	12 (RB_Pos:0)	21.93	22.12	22.07	20.82	20.93	20.83
	12 (RB_Pos:6)	21.99	22.07	22.03	20.98	20.91	20.97
	12 (RB_Pos:11)	22.02	22.06	22.01	20.93	21.05	20.99
	25 (RB_Pos:0)	21.98	22.05	21.99	21.02	21.05	20.80
Bandwidth (MHz)	RB Set	Power (dBm)					
		QPSK			16QAM		
	Channel	23025	23095	23165	23025	23095	23165
3.0MHz	1 (RB_Pos:0)	22.98	23.18	23.11	21.87	21.77	22.10
	1 (RB_Pos:7)	22.96	22.98	23.05	22.42	21.81	21.95
	1 (RB_Pos:14)	22.86	22.93	23.13	22.22	21.85	21.98
	8 (RB_Pos:0)	22.05	22.14	22.02	21.11	20.97	20.80
	8 (RB_Pos:4)	21.99	22.24	22.01	21.10	20.90	20.74
	8 (RB_Pos:7)	22.03	22.15	22.03	21.10	20.98	20.82
	15 (RB_Pos:0)	22.08	22.13	22.04	21.01	21.09	20.76
Bandwidth (MHz)	RB Set	Power (dBm)					
		QPSK			16QAM		
	Channel	23017	23095	23173	23017	23095	23173
1.4MHz	1 (RB_Pos:0)	23.08	23.00	22.98	22.28	21.79	22.05
	1 (RB_Pos:2)	22.99	22.98	23.20	22.32	21.79	22.16
	1 (RB_Pos:5)	22.98	22.82	23.09	22.25	21.71	22.21
	3 (RB_Pos:0)	22.97	22.98	22.93	22.02	21.55	21.84
	3 (RB_Pos:1)	23.11	23.30	23.17	22.08	21.77	21.95
	3 (RB_Pos:2)	23.02	23.07	23.09	22.00	21.89	21.86
	6 (RB_Pos:0)	22.02	22.19	22.06	21.06	20.76	21.03

FDD LTE Band 13							
Bandwidth (MHz)	RB Set	Power (dBm)					
		QPSK			16QAM		
	Channel	--	23230	--	--	23230	--
10MHz	1 (RB_Pos:0)	--	23.32	--	--	22.14	--
	1 (RB_Pos:24)	--	**23.52**	--	--	22.76	--
	1 (RB_Pos:49)	--	22.79	--	--	21.77	--
	25 (RB_Pos:0)	--	**22.43**	--	--	21.48	--
	25 (RB_Pos:12)	--	22.38	--	--	21.35	--
	25 (RB_Pos:24)	--	22.41	--	--	21.30	--
	50 (RB_Pos:0)	--	22.42	--	--	21.37	--
Bandwidth (MHz)	RB Set	Power (dBm)					
		QPSK			16QAM		
	Channel	23205	23230	23255	23205	23230	23255
5MHz	1 (RB_Pos:0)	23.22	23.32	23.18	21.99	22.35	22.21
	1 (RB_Pos:12)	23.40	23.67	23.49	22.09	22.44	22.17
	1 (RB_Pos:24)	23.33	23.25	22.95	21.80	22.03	21.56
	12 (RB_Pos:0)	22.40	22.47	22.44	21.21	21.19	21.18
	12 (RB_Pos:6)	22.43	22.51	22.39	21.22	21.32	21.24
	12 (RB_Pos:11)	22.48	22.37	22.41	21.20	21.30	21.04
	25 (RB_Pos:0)	22.40	22.42	22.39	21.46	21.33	21.22

FDD LTE Band 17							
Bandwidth (MHz)	RB Set	Power (dBm)					
		QPSK			16QAM		
	Channel	23780	23790	23800	23780	23790	23800
10 MHz	1 (RB_Pos:0)	22.91	22.78	22.88	22.00	21.69	22.05
	1 (RB_Pos:25)	23.07	**23.48**	23.24	22.56	21.68	21.95
	1 (RB_Pos:49)	22.97	22.83	22.77	21.89	21.17	21.71
	25 (RB_Pos:0)	**22.16**	21.98	22.05	21.27	21.21	21.09
	25 (RB_Pos:12)	22.06	21.99	22.06	20.99	20.91	20.98
	25 (RB_Pos:25)	22.15	22.10	22.03	21.07	20.95	20.94
	50 (RB_Pos:0)	22.21	22.08	22.07	21.13	21.12	20.95
Bandwidth (MHz)	RB Set	Power (dBm)					
		QPSK			16QAM		
	Channel	23755	23790	23825	23755	23790	23825
5MHz	1 (RB_Pos:0)	22.79	22.83	23.10	21.91	21.98	21.65
	1 (RB_Pos:13)	23.04	22.85	23.09	21.60	22.06	21.58
	1 (RB_Pos:24)	22.84	22.79	22.85	21.33	21.40	21.02
	12 (RB_Pos:0)	21.90	22.05	22.05	20.72	20.95	20.82
	12 (RB_Pos:6)	21.98	22.02	22.09	21.00	20.94	20.95
	12 (RB_Pos:13)	21.93	22.08	21.88	20.77	20.81	20.86
	25 (RB_Pos:0)	22.02	21.98	21.96	20.93	21.15	20.88

FDD LTE Band 25							
Bandwidth (MHz)	RB Set	Power (dBm)					
		QPSK			16QAM		
	Channel	26140	26365	26590	26140	26365	26590
20MHz	1 (RB_Pos:0)	23.13	23.14	22.74	22.59	22.41	21.36
	1 (RB_Pos:49)	23.01	**23.37**	22.89	22.38	21.72	21.39
	1 (RB_Pos:99)	23.17	23.24	23.26	22.15	21.40	21.77
	50 (RB_Pos:0)	**22.20**	22.12	21.92	21.13	21.14	20.79
	50 (RB_Pos:24)	22.15	22.03	21.82	21.09	20.97	20.72
	50 (RB_Pos:49)	22.08	22.00	21.94	21.00	21.02	20.93
	100 (RB_Pos:0)	22.21	22.04	21.85	21.13	21.05	20.78
Bandwidth (MHz)	RB Set	Power (dBm)					
		QPSK			16QAM		
	Channel	26115	26365	26615	26115	26365	26615
15MHz	1 (RB_Pos:0)	23.68	23.08	22.67	22.64	22.06	22.45
	1 (RB_Pos:37)	23.11	23.02	22.63	22.28	21.81	22.41
	1 (RB_Pos:74)	23.12	22.87	22.89	21.89	21.61	22.97
	36 (RB_Pos:0)	22.26	22.09	21.91	21.16	20.98	20.89
	36 (RB_Pos:18)	22.22	22.07	21.86	21.22	21.03	20.77
	36 (RB_Pos:37)	22.23	21.96	21.88	21.14	20.89	20.81
	75 (RB_Pos:0)	22.14	21.99	21.85	21.20	20.84	20.68
Bandwidth (MHz)	RB Set	Power (dBm)					
		QPSK			16QAM		
	Channel	26090	26365	26640	26090	26365	26640
10MHz	1 (RB_Pos:0)	23.27	23.12	22.82	23.09	21.54	21.69
	1 (RB_Pos:24)	23.17	23.37	22.84	22.77	21.72	21.86
	1 (RB_Pos:49)	23.05	23.13	23.38	22.71	21.40	22.17
	25 (RB_Pos:0)	22.27	22.05	21.89	21.27	21.00	21.01
	25 (RB_Pos:12)	22.23	22.08	21.94	21.23	21.02	21.13
	25 (RB_Pos:24)	22.22	22.07	22.03	21.17	20.95	21.04
	50 (RB_Pos:0)	22.30	21.99	21.98	21.27	20.93	20.93
Bandwidth (MHz)	RB Set	Power (dBm)					
		QPSK			16QAM		
	Channel	26065	26365	26665	26065	26365	26665
5MHz	1 (RB_Pos:0)	23.37	22.92	22.72	21.67	22.04	21.77
	1 (RB_Pos:12)	23.30	22.92	22.92	21.50	22.07	21.50
	1 (RB_Pos:24)	23.10	23.16	22.84	21.30	21.90	21.64
	12 (RB_Pos:0)	22.32	22.05	22.03	21.21	20.96	20.83
	12 (RB_Pos:6)	22.28	22.02	22.02	21.11	20.95	20.90
	12 (RB_Pos:11)	22.26	21.97	22.02	21.23	20.95	21.06
	25 (RB_Pos:0)	22.18	22.00	22.04	21.38	20.86	20.85
Bandwidth (MHz)	RB Set	Power (dBm)					
		QPSK			16QAM		
	Channel	26055	26365	26675	26055	26365	26675
3.0MHz	1 (RB_Pos:0)	23.47	22.91	23.30	22.34	21.72	21.96
	1 (RB_Pos:7)	23.15	22.87	23.29	22.14	21.72	22.15

	1 (RB_Pos:14)	23.43	22.70	22.97	22.51	21.74	21.99
	8 (RB_Pos:0)	22.41	22.10	22.02	21.21	21.11	20.63
	8 (RB_Pos:4)	22.32	22.03	22.01	21.14	21.20	21.10
	8 (RB_Pos:7)	22.35	21.97	22.12	21.34	21.12	21.21
	15 (RB_Pos:0)	22.33	21.99	22.04	21.30	20.94	20.74
Bandwidth (MHz)	RB Set	Power (dBm)					
		QPSK			16QAM		
	Channel	26047	26365	26683	26047	26365	26683
1.4MHz	1 (RB_Pos:0)	23.63	22.74	22.94	22.33	21.84	21.93
	1 (RB_Pos:2)	23.78	22.96	23.07	22.29	21.79	22.07
	1 (RB_Pos:5)	23.55	22.75	23.12	22.13	21.60	22.01
	3 (RB_Pos:0)	23.26	22.88	22.92	22.38	21.75	21.85
	3 (RB_Pos:1)	23.47	23.11	23.21	22.30	21.72	21.92
	3 (RB_Pos:2)	23.61	22.94	23.17	22.26	21.55	21.78
	6 (RB_Pos:0)	22.43	22.07	22.06	21.39	20.66	20.94

FDD LTE Band 41							
Bandwidth (MHz)	RB Set	Power (dBm)					
		QPSK			16QAM		
	Channel	40340	40740	41140	40340	40740	41140
20MHz	1 (RB_Pos:0)	22.49	22.80	**23.09**	21.25	21.15	22.07
	1 (RB_Pos:50)	22.53	23.00	22.83	21.51	20.97	22.07
	1 (RB_Pos:99)	22.48	22.86	22.59	21.31	20.92	21.91
	50 (RB_Pos:0)	21.83	**22.05**	21.79	20.86	20.98	20.91
	50 (RB_Pos:25)	21.81	21.99	21.83	20.79	20.97	20.77
	50 (RB_Pos:50)	21.93	21.91	21.78	20.88	20.96	20.82
	100 (RB_Pos:0)	21.82	21.96	21.82	20.83	20.87	20.84
Bandwidth (MHz)	RB Set	Power (dBm)					
		QPSK			16QAM		
	Channel	40315	40740	41165	40315	40740	41165
15MHz	1 (RB_Pos:0)	22.66	23.07	22.73	22.21	21.44	21.74
	1 (RB_Pos:38)	22.80	23.01	22.67	21.98	21.17	21.69
	1 (RB_Pos:74)	22.82	23.03	22.54	22.19	21.33	21.81
	36 (RB_Pos:0)	21.83	22.03	21.86	20.62	21.13	20.70
	36 (RB_Pos:20)	21.84	22.03	21.87	20.56	20.85	20.81
	36 (RB_Pos:39)	21.82	21.96	21.90	20.58	20.92	20.71
	75 (RB_Pos:0)	21.78	22.00	21.85	20.95	21.13	20.86
Bandwidth (MHz)	RB Set	Power (dBm)					
		QPSK			16QAM		
	Channel	40290	40740	41190	40290	40740	41190
10MHz	1 (RB_Pos:0)	22.68	23.01	22.33	21.95	21.15	21.74
	1 (RB_Pos:25)	22.61	22.94	22.71	22.28	21.22	22.32
	1 (RB_Pos:49)	22.55	22.87	22.79	21.85	21.03	22.21
	25 (RB_Pos:0)	21.80	21.94	21.80	20.78	20.91	20.75
	25 (RB_Pos:12)	21.78	22.03	21.86	20.84	20.83	20.79
	25 (RB_Pos:25)	21.83	22.06	21.80	20.77	20.74	20.80

	50 (RB_Pos:0)	21.74	21.93	21.86	20.72	20.85	20.87
Bandwidth (MHz)	RB Set	Power (dBm)					
		QPSK			16QAM		
	Channel	40265	40740	41215	40265	40740	41215
5MHz	1 (RB_Pos:0)	22.58	22.70	22.45	21.16	21.52	21.55
	1 (RB_Pos:13)	22.61	22.87	23.01	21.16	21.37	21.62
	1 (RB_Pos:24)	22.58	22.50	22.95	21.18	21.25	21.51
	12 (RB_Pos:0)	21.74	21.92	21.86	20.60	20.74	20.94
	12 (RB_Pos:6)	21.75	21.94	21.82	20.93	21.02	20.95
	12 (RB_Pos:13)	21.77	21.81	21.84	20.57	20.97	20.82
	25 (RB_Pos:0)	21.74	21.92	21.86	20.91	20.85	20.70

8.4 WIFI

8.4.1 2.4G WIFI

Band (GHz)	Mode	Channel	Freq. (MHz)	Avg. Power (dBm)	SAR Test Require.
2.4 (2.4~2.4835)	802.11b	1	2412	**14.21**	Yes
		6	2437	12.80	No
		11	2462	11.99	No
	802.11g	1	2412	13.64	No
		6	2437	11.81	No
		11	2462	11.62	No
	802.11n(HT20)	1	2412	11.78	No
		6	2437	10.72	No
		11	2462	10.69	No
Note：According KDB 248227 D01 SAR is not required for the following 2.4 GHz OFDM conditions. 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. adjusted SAR = Report SAR * (max power(OFDM)/ max power(DSSS))=0.197 * 0.877=0.173, so the 2.4GHz OFDM SAR test is not required.					

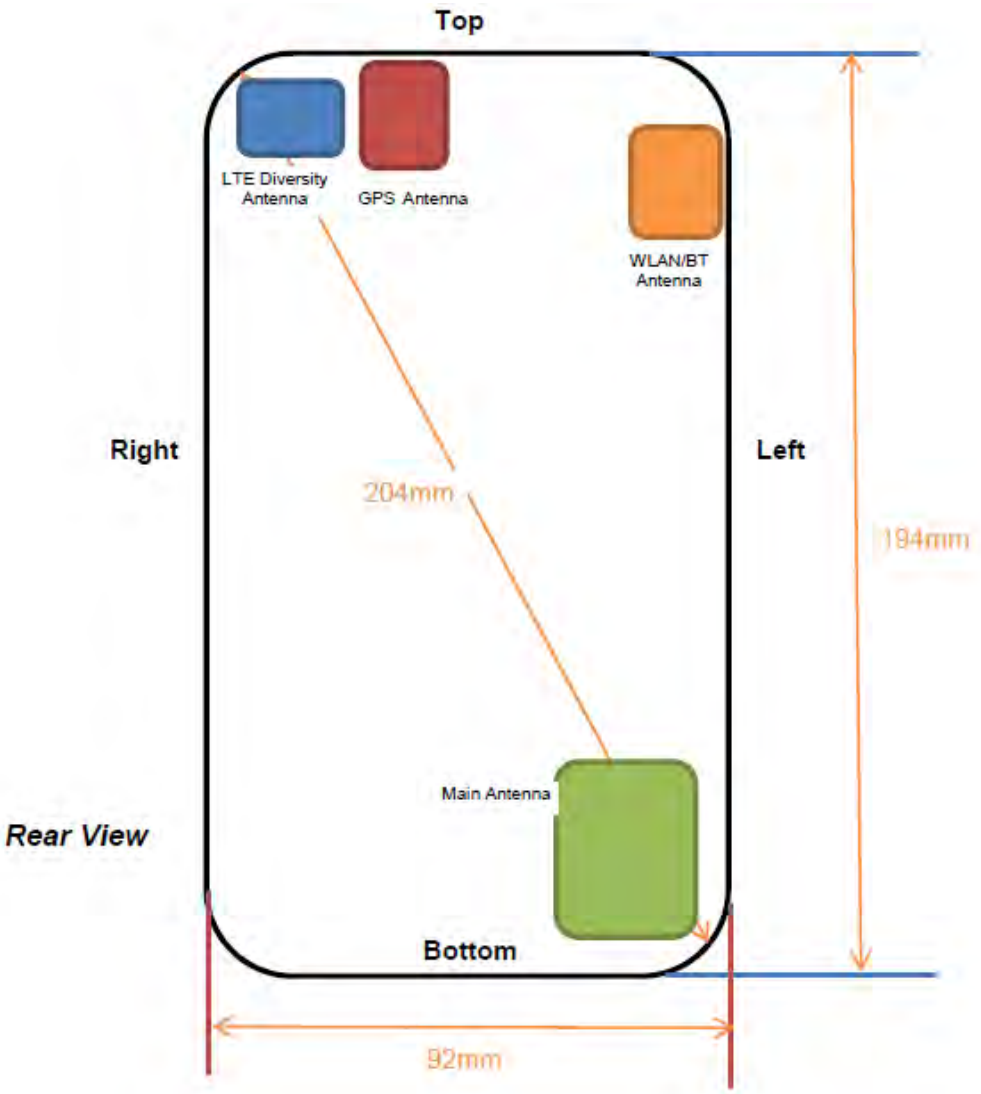
8.4.2 5G WIFI

Band (GHz)	Mode	Channel	Freq. (MHz)	Avg. Power (dBm)	SAR Test Require.
5.2 (5.15~5.25)	802.11n(HT20)	36	5180	10.61	No
		44	5220	10.61	No
		48	5240	11.26	No
	802.11ac(VHT20)	36	5180	10.81	No
		44	5220	10.76	No
		48	5240	11.42	No
	802.11ac(VHT40)	38	5190	12.60	No
		46	5230	**13.21**	Yes
	802.11ac(VHT80)	42	5210	10.95	No
5.8 (5.725~5.850)	802.11n(HT20)	149	5745	10.72	Yes
		157	5785	10.72	No
		165	5825	10.81	No
	802.11ac(VHT20)	149	5745	10.84	No
		157	5785	10.97	No
		165	5825	11.02	No
	802.11ac(VHT40)	151	5755	10.89	No
		159	5795	**11.31**	Yes
	802.11ac(VHT80)	155	5775	11.12	No

8.5 Bluetooth

Mode	GFSK			π/4-DQPSK		
Channel	0	39	78	0	39	78
Frequency (MHz)	2402	2441	2480	2402	2441	2480
Avg. Power (dBm)	2.01	4.43	0.97	2.34	4.36	1.24
Mode	8-DPSK			BLE		
Channel	0	39	78	0	19	39
Frequency (MHz)	2402	2441	2480	2402	2440	2480
Avg. Power (dBm)	2.59	**4.77**	1.14	-1.68	0.50	-2.93
Note: Per KDB 447498 D01v06, when the test separation distance is 10 mm. The test exclusion threshold is 0.49 which is< 3.0, SAR testing is not required.						

9 TEST EXCLUSION CONSIDERATION



9.1 SAR Test Exclusion Consideration Table

According with FCC KDB 447498 D01, Appendix A, <SAR Test Exclusion Thresholds for 100 MHz – 6 GHz and ≤ 50 mm> Table, this Device SAR test configurations consider as following :

Band	Mode	Max. Peak Power		Test Position Configurations					
		dBm	mW	Head	Front/ Back	Left Edge	Right Edge	Top Edge	Bottom Edge
GSM 850	Distance to User			<5mm	<10mm	16mm	77mm	182mm	4.3mm
	Voice	33.00	1995.26	Yes	Yes	Yes	No	No	Yes
	Data	29.50	891.25	No	Yes	Yes	No	No	Yes
GSM 1900	Distance to User			<5mm	<10mm	16mm	77mm	182mm	4.3mm
	Voice	30.50	1122.02	Yes	Yes	Yes	No	No	Yes
	Data	27.00	501.19	No	Yes	Yes	No	No	Yes
WCDMA Band 2	Distance to User			<5mm	<10mm	16mm	77mm	182mm	4.3mm
	RMC	23.20	208.93	Yes	Yes	Yes	No	No	Yes
WCDMA Band 5	Distance to User			<5mm	<10mm	16mm	77mm	182mm	4.3mm
	RMC	23.20	208.93	Yes	Yes	Yes	No	No	Yes
LTE Band 2	Distance to User			<5mm	<10mm	16mm	77mm	182mm	4.3mm
	VOIP	24.00	251.19	Yes	Yes	Yes	No	No	Yes
LTE Band 4	Distance to User			<5mm	<10mm	16mm	77mm	182mm	4.3mm
	VOIP	24.00	251.19	Yes	Yes	Yes	No	No	Yes
LTE Band 5	Distance to User			<5mm	<10mm	16mm	77mm	182mm	4.3mm
	VOIP	23.50	223.87	Yes	Yes	Yes	No	No	Yes
LTE Band 7	Distance to User			<5mm	<10mm	16mm	77mm	182mm	4.3mm
	VOIP	23.50	223.87	Yes	Yes	Yes	No	No	Yes
LTE Band 12	Distance to User			<5mm	<10mm	16mm	77mm	182mm	4.3mm
	VOIP	23.50	223.87	Yes	Yes	Yes	No	No	Yes
LTE Band 13	Distance to User			<5mm	<10mm	16mm	77mm	182mm	4.3mm
	VOIP	24.00	251.19	Yes	Yes	Yes	No	No	Yes
LTE Band 17	Distance to User			<5mm	<10mm	16mm	77mm	182mm	4.3mm
	VOIP	23.50	223.87	Yes	Yes	Yes	No	No	Yes
LTE Band 25	Distance to User			<5mm	<10mm	16mm	77mm	182mm	4.3mm
	VOIP	23.50	223.87	Yes	Yes	Yes	No	No	Yes
LTE Band 41	Distance to User			<5mm	<10mm	16mm	77mm	182mm	4.3mm
	VOIP	23.50	223.87	Yes	Yes	Yes	No	No	Yes
WLAN 2.4 G	Distance to User			<5mm	<10mm	11mm	80mm	17mm	178mm
	802.11b	14.50	28.18	Yes	Yes	Yes	No	Yes	No
	802.11g	14.00	25.12	No	No	No	No	No	No
	802.11n(HT20)	12.00	15.85	No	No	No	No	No	No
WLAN 5.2 G	Distance to User			<5mm	<10mm	11mm	80mm	17mm	178mm
	802.11n(HT20)	11.50	14.13	No	No	No	No	No	No
	802.11ac(VHT20)	11.50	14.13	No	No	No	No	No	No
	802.11ac(VHT40)	13.50	22.39	Yes	Yes	Yes	No	Yes	No

	802.11ac(VHT80)	11.00	12.59	No	No	No	No	No	No
WLAN 5.8 G	Distance to User			<5mm	<10mm	11mm	80mm	17mm	178mm
	802.11n(HT20)	11.00	12.59	No	No	No	No	No	No
	802.11ac(VHT20)	11.50	14.13	No	No	No	No	No	No
	802.11ac(VHT40)	11.50	14.13	Yes	Yes	Yes	No	Yes	No
	802.11ac(VHT80)	11.50	14.13	No	No	No	No	No	No
Bluetooth	Distance to User			<5mm	<10mm	11mm	80mm	17mm	178mm
	BR/EDR	5	3.16	No	No	No	No	No	No
	BLE	5	3.16	No	No	No	No	No	No

Note:

1. Maximum power is the source-based time-average power and represents the maximum RF output power including tune-up tolerance among production units
2. Per KDB 447498 D01, for larger devices, the test separation distance of adjacent edge configuration is determined by the closest separation between the antenna and the user.
3. Per KDB 447498 D01, standalone SAR test exclusion threshold is applied; If the distance of the antenna to the user is < 5mm, 5mm is used to determine SAR exclusion threshold
4. Per KDB 447498 D01, the 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:
   [(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] ·[√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR
   a. f(GHz) is the RF channel transmit frequency in GHz
   b. Power and distance are rounded to the nearest mW and mm before calculation
   c. The result is rounded to one decimal place for comparison
   d. For < 50 mm distance, we just calculate mW of the exclusion threshold value (3.0) to do compare.
   This formula is [3.0] / [√f(GHz)] ·[(min. test separation distance, mm)] = exclusion threshold of mW.
5. Per KDB 447498 D01, at 100 MHz to 6 GHz and for test separation distances > 50 mm, the SAR test exclusion threshold is determined according to the following
   a. [Threshold at 50 mm in step 1) + (test separation distance - 50 mm)·(f(MHz)/150)] mW, at 100 MHz to 1500 MHz
   b. [Threshold at 50 mm in step 1) + (test separation distance - 50 mm)·10] mW at > 1500 MHz and ≤ 6 GHz
6. Per KDB 941225 D01, RMC 12.2kbps setting is used to evaluate SAR. If HSDPA /HSUPA /DC-HSDPA output power is < 0.25dB higher than RMC12.2Kbps, or reported SAR with RMC 12.2kbps setting is ≤ 1.2W/kg, HSDPA/HSUPA/DC-HSDPA SAR evaluation can be excluded.
7. Per KDB 248227 D01 SAR is not required for the following 2.4 GHz OFDM conditions.
   a. When the reported SAR of the highest measured maximum output power channel for the exposure configuration is ⩽ 0.8 W/kg, no further SAR testing is required for 802.11b DSSS in that exposure 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.
8. For OFDM transmission configurations in the 2.4 GHz and 5 GHz bands, When the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel for each frequency band.
9. Per KDB 248227 D01 5G WLAN Subsequent Test Configuration Procedures
   SAR measurement requirements for the remaining 802.11 transmission mode configurations that have not been tested in the initial test configuration are determined separately for each standalone and aggregated frequency band, in each exposure condition, according to the maximum output power specified for production units.
   a. When SAR test exclusion provisions of KDB Publication 447498 D01 are applicable and SAR measurement is not

required for the initial test configuration, SAR is also not required for the next highest maximum output power transmission mode subsequent test configuration(s) in that frequency band or aggregated band and exposure configuration.

b. When the highest reported SAR for the initial test configuration (when applicable, include subsequent highest output channels), according to the initial test position or fixed exposure position requirements, is adjusted by the ratio of the subsequent test configuration to initial test configuration specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for that subsequent test configuration.

9.2 10g Extremity Exposure Consideration

According with FCC KDB 648474 D04, for smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm that provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets that support voice calls next to the ear, unless it is confirmed otherwise through KDB inquiries, the following phablet procedures should be applied to evaluate SAR compliance for each applicable wireless modes and frequency band. Devices marketed as phablets, regardless of form factors and operating characteristics must be tested as a phablet to determine SAR compliance;

The UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna located at ≤ 25 mm from that surface or edge, in direct contact with a flat phantom, for 10-g extremity SAR according to the body-equivalent tissue dielectric parameters in KDB 865664 to address interactive hand use exposure conditions. The UMPC mini-tablet 1-g SAR at 5 mm is not required. When hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg.

Conclusion:
The EUT hotspot mode 1-g reported SAR is 1.050 W/kg, which is less than 1.2 W/kg, 10 g extremity SAR is not required.

10 TEST RESULT

10.1 GSM 850

Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	Power Drift (dB)	1 g Meas. SAR (W/Kg)	Meas. Power (dBm)	Max. tune-up Power(dBm)	Scaling Factor	1 g Scaled SAR (W/Kg)	Meas. No.
Head											
Voice	Right Cheek	0	190	836.60	0.053	0.228	32.66	33.00	1.081	0.247	/
	Right Tilt	0	190	836.60	-0.048	0.141	32.66	33.00	1.081	0.152	/
	Left Cheek	0	190	836.60	-0.032	0.234	32.66	33.00	1.081	**0.253**	1#
	Left Tilt	0	190	836.60	0.043	0.161	32.66	33.00	1.081	0.174	/
Body-worn Accessory											
Voice	Front Side	10	190	836.60	-0.018	0.513	32.66	33.00	1.081	**0.555**	2#
	Back Side	10	190	836.60	0.051	0.346	32.66	33.00	1.081	0.374	/
Hotspot											
GPRS 4 slots	Front Side	10	190	836.60	-0.002	0.685	29.40	29.50	1.023	**0.701**	3#
	Back Side	10	190	836.60	0.032	0.458	29.40	29.50	1.023	0.469	/
	Left Edge	10	190	836.60	0.026	0.217	29.40	29.50	1.023	0.222	/
	Bottom Edge	10	190	836.60	0.032	0.290	29.40	29.50	1.023	0.297	/
Note: SAR is not required for EGPRS (8PSK) mode because its output power is less than that of GPRS Mode.											

10.2 GSM 1900

Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	Power Drift (dB)	1 g Meas. SAR (W/Kg)	Meas. Power (dBm)	Max. tune-up Power(dBm)	Scaling Factor	1 g Scaled SAR (W/Kg)	Meas. No.
Head											
Voice	Right Cheek	0	661	1880.00	-0.067	0.053	29.89	30.50	1.151	0.061	/
	Right Tilt	0	661	1880.00	-0.069	0.039	29.89	30.50	1.151	0.045	/
	Left Cheek	0	661	1880.00	-0.030	0.110	29.89	30.50	1.151	**0.127**	4#
	Left Tilt	0	661	1880.00	-0.015	0.039	29.89	30.50	1.151	0.045	/
Body-worn Accessory											
Voice	Front Side	10	661	1880.00	-0.001	0.646	29.89	30.50	1.151	**0.743**	5#
	Back Side	10	661	1880.00	-0.085	0.252	29.89	30.50	1.151	0.290	/
Hotspot											
GPRS 4 slots	Front Side	10	661	1880.00	-0.051	0.919	26.69	27.00	1.074	0.987	/
		10	512	1850.20	0.153	0.848	26.71	27.00	1.069	0.907	/
		10	810	1909.80	-0.044	0.962	26.71	27.00	1.069	**1.028**	6#
	Back Side	10	661	1880.00	-0.032	0.425	26.69	27.00	1.074	0.456	/
	Left Edge	10	661	1880.00	0.036	0.319	26.69	27.00	1.074	0.343	/
	Bottom Edge	10	661	1880.00	-0.015	0.408	26.69	27.00	1.074	0.438	/
Note: SAR is not required for EGPRS (8PSK) mode because its output power is less than that of GPRS Mode.											

10.3 WCDMA Band 2

Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	Power Drift (dB)	1 g Meas. SAR (W/Kg)	Meas. Power (dBm)	Max. tune-up Power(dBm)	Scaling Factor	1 g Scaled SAR (W/Kg)	Meas. No.
Head											
RMC	Right Cheek	0	9400	1880.00	-0.013	0.063	23.06	23.20	1.033	0.065	/
	Right Tilt	0	9400	1880.00	0.140	0.053	23.06	23.20	1.033	0.055	/
	Left Cheek	0	9400	1880.00	-0.039	0.153	23.06	23.20	1.033	**0.158**	7#
	Left Tilt	0	9400	1880.00	0.169	0.050	23.06	23.20	1.033	0.052	/
Body-worn Accessory & Hotspot											
RMC	Front Side	10	9400	1880.00	0.107	0.735	23.06	23.20	1.033	**0.759**	8#
	Back Side	10	9400	1880.00	-0.146	0.210	23.06	23.20	1.033	0.217	/
	Left Edge	10	9400	1880.00	0.084	0.204	23.06	23.20	1.033	0.211	/
	Bottom Edge	10	9400	1880.00	0.095	0.399	23.06	23.20	1.033	0.412	/

10.4 WCDMA Band 5

Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	Power Drift (dB)	1 g Meas. SAR (W/Kg)	Meas. Power (dBm)	Max. tune-up Power(dBm)	Scaling Factor	1 g Scaled SAR (W/Kg)	Meas. No.
Head											
RMC	Right Cheek	0	4182	836.40	-0.057	0.233	23.02	23.20	1.042	**0.243**	9#
	Right Tilt	0	4182	836.40	0.075	0.125	23.02	23.20	1.042	0.130	/
	Left Cheek	0	4182	836.40	0.139	0.230	23.02	23.20	1.042	0.240	/
	Left Tilt	0	4182	836.40	0.051	0.161	23.02	23.20	1.042	0.168	/
Body-worn Accessory & Hotspot											
RMC	Front Side	10	4182	836.40	-0.009	0.502	23.02	23.20	1.042	**0.523**	10#
	Back Side	10	4182	836.40	0.035	0.343	23.02	23.20	1.042	0.358	/
	Left Edge	10	4182	836.40	0.029	0.218	23.02	23.20	1.042	0.227	/
	Bottom Edge	10	4182	836.40	0.046	0.269	23.02	23.20	1.042	0.280	/

10.5 LTE Band 2 (20MHz Bandwidth)

Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	RB Numb.	RB Start	Power Drift (dB)	1 g Meas. SAR (W/Kg)	Meas. Power (dBm)	Max. tune-up Power (dBm)	Scaling Factor	1 g Scaled SAR (W/Kg)	Meas. No.
Head													
QPSK	Right Cheek	0	18700	1860.00	1	Mid	-0.129	0.078	23.940	24.000	1.014	0.079	/
			18700	1860.00	50	Mid	-0.147	0.065	22.870	23.000	1.030	0.067	/
	Right Tilt	0	18700	1860.00	1	Mid	0.013	0.048	23.940	24.000	1.014	0.049	/
			18700	1860.00	50	Mid	0.198	0.035	22.870	23.000	1.030	0.036	/
	Left Cheek	0	18700	1860.00	1	Mid	0.086	0.153	23.940	24.000	1.014	**0.155**	11#
			18700	1860.00	50	Mid	0.115	0.126	22.870	23.000	1.030	0.130	/
	Left Tilt	0	18700	1860.00	1	Mid	-0.086	0.045	23.940	24.000	1.014	0.045	/
			18700	1860.00	50	Mid	0.075	0.035	22.870	23.000	1.030	0.036	/
Body-worn Accessory& Hotspot													
QPSK	Front Side	10	18900	1880.00	1	Mid	0.061	0.800	23.83	24.000	1.040	0.832	/
			18700	1860.00	1	Mid	0.020	0.791	23.94	24.000	1.014	0.802	/
			19100	1900.00	1	Mid	0.096	0.830	23.61	24.000	1.094	**0.908**	12#
			18700	1860.00	50	Mid	0.085	0.653	22.870	23.000	1.030	0.673	/
			18700	1860.00	100	Low	-0.037	0.580	22.890	23.000	1.026	0.595	/
	Back Side	10	18700	1860.00	1	Mid	-0.070	0.379	23.940	24.000	1.014	0.384	/
			18700	1860.00	50	Mid	-0.038	0.306	22.870	23.000	1.030	0.315	/
	Left Edge	10	18700	1860.00	1	Mid	0.167	0.284	23.940	24.000	1.014	0.288	/
			18700	1860.00	50	Mid	-0.053	0.215	22.870	23.000	1.030	0.222	/
	Bottom Edge	10	18700	1860.00	1	Mid	-0.110	0.517	23.940	24.000	1.014	0.524	/
			18700	1860.00	50	Mid	-0.127	0.429	22.870	23.000	1.030	0.442	/

10.6 LTE Band 4 (20MHz Bandwidth)

Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	RB Numb.	RB Start	Power Drift (dB)	1 g Meas. SAR (W/Kg)	Meas. Power (dBm)	Max. tune-up Power (dBm)	Scaling Factor	1 g Scaled SAR (W/Kg)	Meas. No.
Head													
QPSK	Right Cheek	0	20175	1732.50	1	Mid	0.134	0.051	23.690	24.000	1.074	0.054	/
			20300	1745.00	50	Low	-0.104	0.041	22.530	23.000	1.114	0.046	/
	Right Tilt	0	20175	1732.50	1	Mid	0.051	0.042	23.690	24.000	1.074	0.046	/
			20300	1745.00	50	Low	0.055	0.034	22.530	23.000	1.114	0.038	/
	Left Cheek	0	20175	1732.50	1	Mid	0.063	0.121	23.690	24.000	1.074	**0.130**	13#
			20300	1745.00	50	Low	0.041	0.093	22.530	23.000	1.114	0.103	/
	Left Tilt	0	20175	1732.50	1	Mid	0.111	0.050	23.690	24.000	1.074	0.054	/
			20300	1745.00	50	Low	0.136	0.041	22.530	23.000	1.114	0.046	/
Body-worn Accessory& Hotspot													
QPSK	Front Side	10	20175	1732.50	1	Mid	0.021	0.815	23.690	24.000	1.074	0.875	/
			20050	1720.00	1	Mid	0.033	0.706	23.400	24.000	1.148	0.811	/
			20300	1745.00	1	Mid	0.104	0.936	23.500	24.000	1.122	**1.050**	14#
			20300	1745.00	50	Low	-0.045	0.616	22.530	23.000	1.114	0.686	/
			20175	1732.50	100	Low	0.092	0.600	22.400	23.000	1.148	0.689	/
	Back Side	10	20175	1732.50	1	Mid	0.057	0.354	23.690	24.000	1.074	0.380	/
			20300	1745.00	50	Low	-0.046	0.296	22.530	23.000	1.114	0.330	/
	Left Edge	10	20175	1732.50	1	Mid	0.039	0.373	23.690	24.000	1.074	0.401	/
			20300	1745.00	50	Low	-0.021	0.300	22.530	23.000	1.114	0.334	/
	Bottom Edge	10	20175	1732.50	1	Mid	0.092	0.599	23.690	24.000	1.074	0.643	/
			20300	1745.00	50	Low	-0.059	0.454	22.530	23.000	1.114	0.506	/

10.7 LTE Band 5 (10MHz Bandwidth)

Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	RB Numb.	RB Start	Power Drift (dB)	1 g Meas. SAR (W/Kg)	Meas. Power (dBm)	Max. tune-up Power (dBm)	Scaling Factor	1 g Scaled SAR (W/Kg)	Meas. No.
Head													
QPSK	Right Cheek	0	20600	844.00	1	Mid	0.080	0.223	23.450	23.500	1.012	0.226	/
			20600	844.00	25	Mid	0.128	0.176	22.100	22.500	1.096	0.193	/
	Right Tilt	0	20600	844.00	1	Mid	0.106	0.127	23.450	23.500	1.012	0.128	/
			20600	844.00	25	Mid	0.071	0.099	22.100	22.500	1.096	0.109	/
	Left Cheek	0	20600	844.00	1	Mid	-0.019	0.226	23.450	23.500	1.012	**0.229**	15#
			20600	844.00	25	Mid	-0.016	0.178	22.100	22.500	1.096	0.195	/
	Left Tilt	0	20600	844.00	1	Mid	0.036	0.145	23.450	23.500	1.012	0.147	/
			20600	844.00	25	Mid	0.100	0.116	22.100	22.500	1.096	0.127	/
Body-worn Accessory& Hotspot													
QPSK	Front Side	10	20600	844.00	1	Mid	0.109	0.523	23.450	23.500	1.012	**0.529**	16#
			20600	844.00	25	Mid	-0.020	0.398	22.100	22.500	1.096	0.436	/
	Back Side	10	20600	844.00	1	Mid	0.038	0.329	23.450	23.500	1.012	0.333	/
			20600	844.00	25	Mid	0.027	0.256	22.100	22.500	1.096	0.281	/
	Left Edge	10	20600	844.00	1	Mid	0.033	0.173	23.450	23.500	1.012	0.175	/
			20600	844.00	25	Mid	0.049	0.135	22.100	22.500	1.096	0.148	/
	Bottom Edge	10	20600	844.00	1	Mid	0.021	0.259	23.450	23.500	1.012	0.262	/
			20600	844.00	25	Mid	0.015	0.196	22.100	22.500	1.096	0.215	/

10.8 LTE Band 7 (20MHz Bandwidth)

Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	RB Numb.	RB Start	Power Drift (dB)	1 g Meas. SAR (W/Kg)	Meas. Power (dBm)	Max. tune-up Power (dBm)	Scaling Factor	1 g Scaled SAR (W/Kg)	Meas. No.
Head													
QPSK	Right Cheek	0	21100	2535.00	1	Mid	0.089	0.096	23.230	23.500	1.064	0.102	/
			21350	2560.00	50	Mid	-0.052	0.071	21.970	22.000	1.007	0.072	/
	Right Tilt	0	21100	2535.00	1	Mid	0.192	0.045	23.230	23.500	1.064	0.047	/
			21350	2560.00	50	Mid	0.158	0.039	21.970	22.000	1.007	0.039	/
	Left Cheek	0	21100	2535.00	1	Mid	-0.138	0.116	23.230	23.500	1.064	**0.123**	17#
			21350	2560.00	50	Mid	0.174	0.101	21.970	22.000	1.007	0.102	/
	Left Tilt	0	21100	2535.00	1	Mid	0.014	0.024	23.230	23.500	1.064	0.026	/
			21350	2560.00	50	Mid	0.105	0.022	21.970	22.000	1.007	0.022	/
Body-worn Accessory& Hotspot													
QPSK	Front Side	10	21100	2535.00	1	Mid	0.159	0.428	23.230	23.500	1.064	**0.455**	18#
			21350	2560.00	50	Mid	0.161	0.400	21.970	22.000	1.007	0.403	/
	Back Side	10	21100	2535.00	1	Mid	-0.183	0.186	23.230	23.500	1.064	0.198	/
			21350	2560.00	50	Mid	-0.082	0.171	21.970	22.000	1.007	0.172	/
	Left Edge	10	21100	2535.00	1	Mid	0.028	0.038	23.230	23.500	1.064	0.040	/
			21350	2560.00	50	Mid	0.134	0.037	21.970	22.000	1.007	0.037	/
	Bottom Edge	10	21100	2535.00	1	Mid	0.060	0.135	23.230	23.500	1.064	0.144	/
			21350	2560.00	50	Mid	0.036	0.135	21.970	22.000	1.007	0.136	/

10.9 LTE Band 12 (10MHz Bandwidth)

Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	RB Numb.	RB Start	Power Drift (dB)	1 g Meas. SAR (W/Kg)	Meas. Power (dBm)	Max. tune-up Power (dBm)	Scaling Factor	1 g Scaled SAR (W/Kg)	Meas. No.
Head													
QPSK	Right Cheek	0	23095	707.50	1	Mid	0.074	0.154	23.350	23.500	1.035	0.159	/
			23130	711.00	25	Low	0.070	0.142	22.170	22.500	1.079	0.153	/
	Right Tilt	0	23095	707.50	1	Mid	0.099	0.068	23.350	23.500	1.035	0.070	/
			23130	711.00	25	Low	0.158	0.062	22.170	22.500	1.079	0.067	/
	Left Cheek	0	23095	707.50	1	Mid	-0.107	0.172	23.350	23.500	1.035	**0.178**	19#
			23130	711.00	25	Low	-0.176	0.158	22.170	22.500	1.079	0.170	/
	Left Tilt	0	23095	707.50	1	Mid	-0.011	0.079	23.350	23.500	1.035	0.082	/
			23130	711.00	25	Low	0.195	0.073	22.170	22.500	1.079	0.079	/
Body-worn Accessory& Hotspot													
QPSK	Front Side	10	23095	707.50	1	Mid	-0.011	0.239	23.350	23.500	1.035	0.247	/
			23130	711.00	25	Low	-0.017	0.231	22.170	22.500	1.079	**0.249**	20#
	Back Side	10	23095	707.50	1	Mid	0.026	0.201	23.350	23.500	1.035	0.208	/
			23130	711.00	25	Low	0.027	0.190	22.170	22.500	1.079	0.205	/
	Left Edge	10	23095	707.50	1	Mid	0.003	0.212	23.350	23.500	1.035	0.219	/
			23130	711.00	25	Low	-0.045	0.195	22.170	22.500	1.079	0.210	/
	Bottom Edge	10	23095	707.50	1	Mid	-0.062	0.145	23.350	23.500	1.035	0.150	/
			23130	711.00	25	Low	0.006	0.138	22.170	22.500	1.079	0.149	/

10.10 LTE Band 13 (10MHz Bandwidth)

Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	RB Numb.	RB Start	Power Drift (dB)	1 g Meas. SAR (W/Kg)	Meas. Power (dBm)	Max. tune-up Power (dBm)	Scaling Factor	1 g Scaled SAR (W/Kg)	Meas. No.
Head													
QPSK	Right Cheek	0	23230	782.00	1	Mid	0.018	0.119	23.520	24.000	1.117	0.133	/
			23230	782.00	25	Low	0.145	0.102	22.430	22.500	1.016	0.104	/
	Right Tilt	0	23230	782.00	1	Mid	0.126	0.057	23.520	24.000	1.117	0.063	/
			23230	782.00	25	Low	0.021	0.049	22.430	22.500	1.016	0.050	/
	Left Cheek	0	23230	782.00	1	Mid	-0.049	0.125	23.520	24.000	1.117	**0.140**	21#
			23230	782.00	25	Low	0.137	0.107	22.430	22.500	1.016	0.109	/
	Left Tilt	0	23230	782.00	1	Mid	-0.009	0.064	23.520	24.000	1.117	0.072	/
			23230	782.00	25	Low	0.200	0.056	22.430	22.500	1.016	0.057	/
Body-worn Accessory& Hotspot													
QPSK	Front Side	10	23230	782.00	1	Mid	0.004	0.277	23.520	24.000	1.117	**0.309**	22#
			23230	782.00	25	Low	0.006	0.252	22.430	22.500	1.016	0.256	/
	Back Side	10	23230	782.00	1	Mid	0.039	0.148	23.520	24.000	1.117	0.165	/
			23230	782.00	25	Low	0.072	0.133	22.430	22.500	1.016	0.135	/
	Left Edge	10	23230	782.00	1	Mid	-0.002	0.119	23.520	24.000	1.117	0.133	/
			23230	782.00	25	Low	-0.021	0.103	22.430	22.500	1.016	0.105	/
	Bottom Edge	10	23230	782.00	1	Mid	0.000	0.165	23.520	24.000	1.117	0.184	/
			23230	782.00	25	Low	-0.012	0.148	22.430	22.500	1.016	0.150	/

10.11 LTE Band 17 (10MHz Bandwidth)

Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	RB Numb.	RB Start	Power Drift (dB)	1 g Meas. SAR (W/Kg)	Meas. Power (dBm)	Max. tune-up Power (dBm)	Scaling Factor	1 g Scaled SAR (W/Kg)	Meas. No.
Head													
QPSK	Right Cheek	0	23790	710.00	1	Mid	0.189	0.113	23.480	23.500	1.005	0.114	/
			23780	709.00	25	Low	0.105	0.129	22.160	22.500	1.081	0.140	/
	Right Tilt	0	23790	710.00	1	Mid	0.152	0.051	23.480	23.500	1.005	0.051	/
			23780	709.00	25	Low	0.049	0.061	22.160	22.500	1.081	0.065	/
	Left Cheek	0	23790	710.00	1	Mid	0.181	0.127	23.480	23.500	1.005	0.128	/
			23780	709.00	25	Low	0.163	0.149	22.160	22.500	1.081	**0.161**	23#
	Left Tilt	0	23790	710.00	1	Mid	0.002	0.056	23.480	23.500	1.005	0.056	/
			23780	709.00	25	Low	0.045	0.066	22.160	22.500	1.081	0.071	/
Body-worn Accessory& Hotspot													
QPSK	Front Side	10	23790	710.00	1	Mid	0.017	0.194	23.480	23.500	1.005	0.195	/
			23780	709.00	25	Low	-0.018	0.232	22.160	22.500	1.081	**0.251**	24#
	Back Side	10	23790	710.00	1	Mid	0.042	0.153	23.480	23.500	1.005	0.154	/
			23780	709.00	25	Low	0.036	0.184	22.160	22.500	1.081	0.199	/
	Left Edge	10	23790	710.00	1	Mid	-0.053	0.163	23.480	23.500	1.005	0.164	/
			23780	709.00	25	Low	-0.050	0.183	22.160	22.500	1.081	0.198	/
	Bottom Edge	10	23790	710.00	1	Mid	0.085	0.114	23.480	23.500	1.005	0.115	/
			23780	709.00	25	Low	0.000	0.139	22.160	22.500	1.081	0.150	/

10.12 LTE Band 25 (20MHz Bandwidth)

Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	RB Numb.	RB Start	Power Drift (dB)	1 g Meas. SAR (W/Kg)	Meas. Power (dBm)	Max. tune-up Power (dBm)	Scaling Factor	1 g Scaled SAR (W/Kg)	Meas. No.
Head													
QPSK	Right Cheek	0	26365	1882.50	1	Mid	0.113	0.076	23.370	23.500	1.030	0.078	/
			26140	1860.00	50	Low	-0.089	0.063	22.200	22.500	1.072	0.067	/
	Right Tilt	0	26365	1882.50	1	Mid	-0.056	0.044	23.370	23.500	1.030	0.045	/
			26140	1860.00	50	Low	0.056	0.036	22.200	22.500	1.072	0.038	/
	Left Cheek	0	26365	1882.50	1	Mid	0.072	0.137	23.370	23.500	1.030	**0.141**	25#
			26140	1860.00	50	Low	0.094	0.117	22.200	22.500	1.072	0.125	/
	Left Tilt	0	26365	1882.50	1	Mid	0.052	0.044	23.370	23.500	1.030	0.045	/
			26140	1860.00	50	Low	0.156	0.034	22.200	22.500	1.072	0.037	/
Body-worn Accessory& Hotspot													
QPSK	Front Side	10	26365	1882.50	1	Mid	0.021	0.665	23.370	23.500	1.030	**0.685**	26#
			26140	1860.00	50	Low	-0.022	0.568	22.200	22.500	1.072	0.609	/
	Back Side	10	26365	1882.50	1	Mid	-0.077	0.349	23.370	23.500	1.030	0.360	/
			26140	1860.00	50	Low	-0.087	0.308	22.200	22.500	1.072	0.330	/
	Left Edge	10	26365	1882.50	1	Mid	-0.021	0.255	23.370	23.500	1.030	0.263	/
			26140	1860.00	50	Low	0.001	0.209	22.200	22.500	1.072	0.224	/
	Bottom Edge	10	26365	1882.50	1	Mid	0.034	0.487	23.370	23.500	1.030	0.502	/
			26140	1860.00	50	Low	0.066	0.425	22.200	22.500	1.072	0.455	/

10.13 LTE Band 41 (20MHz Bandwidth)

Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	RB Numb.	RB Start	Power Drift (dB)	1 g Meas. SAR (W/Kg)	Meas. Power (dBm)	Max. tune-up Power (dBm)	Scaling Factor	1 g Scaled SAR (W/Kg)	Meas. No.
Head													
QPSK	Right Cheek	0	41140	2645.00	1	Low	-0.136	0.040	23.090	23.500	1.099	0.044	/
			40740	2605.00	50	Low	0.046	0.037	22.050	22.500	1.109	0.041	/
	Right Tilt	0	41140	2645.00	1	Low	0.187	0.024	23.090	23.500	1.099	0.026	/
			40740	2605.00	50	Low	-0.010	0.021	22.050	22.500	1.109	0.023	/
	Left Cheek	0	41140	2645.00	1	Low	-0.169	0.078	23.090	23.500	1.099	**0.085**	27#
			40740	2605.00	50	Low	-0.123	0.076	22.050	22.500	1.109	0.084	/
	Left Tilt	0	41140	2645.00	1	Low	0.066	0.017	23.090	23.500	1.099	0.018	/
			40740	2605.00	50	Low	0.157	0.018	22.050	22.500	1.109	0.020	/
Body-worn Accessory& Hotspot													
QPSK	Front Side	10	41140	2645.00	1	Low	-0.111	0.168	23.090	23.500	1.099	**0.185**	28#
			40740	2605.00	50	Low	0.082	0.154	22.050	22.500	1.109	0.171	/
	Back Side	10	41140	2645.00	1	Low	-0.106	0.070	23.090	23.500	1.099	0.077	/
			40740	2605.00	50	Low	0.032	0.062	22.050	22.500	1.109	0.069	/
	Left Edge	10	41140	2645.00	1	Low	-0.004	0.024	23.090	23.500	1.099	0.026	/
			40740	2605.00	50	Low	0.158	0.021	22.050	22.500	1.109	0.023	/
	Bottom Edge	10	41140	2645.00	1	Low	-0.017	0.098	23.090	23.500	1.099	0.108	/
			40740	2605.00	50	Low	0.024	0.090	22.050	22.500	1.109	0.100	/

10.14 WIFI 2.4GHz

Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	Power Drift (dB)	1 g Meas. SAR (W/Kg)	Meas. Power (dBm)	Max. tune-up Power (dBm)	Scaling Factor	Duty Cycle (%)	Duty Cycle Scaling Factor	1 g Scaled SAR (W/Kg)	Meas. No.
Head													
802.11 b	Right Cheek	0	1	2412	0.010	0.180	14.21	14.50	1.069	96.7	1.034	**0.199**	29#
	Right Tilt	0	1	2412	0.061	0.079	14.21	14.50	1.069	96.7	1.034	0.087	/
	Left Cheek	0	1	2412	0.046	0.075	14.21	14.50	1.069	96.7	1.034	0.083	/
	Left Tilt	0	1	2412	0.122	0.051	14.21	14.50	1.069	96.7	1.034	0.057	/
Body-worn Accessory& Hotspot													
802.11 b	Front Side	10	1	2412	0.184	0.089	14.21	14.50	1.069	96.7	1.034	**0.098**	30#
	Back Side	10	1	2412	-0.089	0.036	14.21	14.50	1.069	96.7	1.034	0.040	/
	Left Edge	10	1	2412	-0.157	0.032	14.21	14.50	1.069	96.7	1.034	0.035	/
	Top Edge	10	1	2412	-0.074	0.026	14.21	14.50	1.069	96.7	1.034	0.029	/

10.15 WIFI 5GHz

Fre. Band	Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	Power Drift (dB)	1 g Meas. SAR (W/Kg)	Meas. Power (dBm)	Max. tune-up Power (dBm)	Scaling Factor	Duty Cycle (%)	Duty Cycle Scaling Factor	1 g Scaled SAR (W/Kg)	Meas. No.
Head														
5.2G	802.11 ac(VHT40)	Right Cheek	0	46	5230	-0.113	0.079	13.21	13.50	1.069	55.9	1.789	**0.152**	31#
		Right Tilt	0	46	5230	-0.016	0.033	13.21	13.50	1.069	55.9	1.789	0.063	/
		Left Cheek	0	46	5230	0.181	0.054	13.21	13.50	1.069	55.9	1.789	0.103	/
		Left Tilt	0	46	5230	-0.149	0.048	13.21	13.50	1.069	55.9	1.789	0.091	/
Body-worn Accessory& Hotspot														
5.2G	802.11 ac(VHT40)	Front Side	10	46	5230	0.115	0.025	13.21	13.50	1.069	55.9	1.789	0.047	/
		Back Side	10	46	5230	0.045	0.004	13.21	13.50	1.069	55.9	1.789	0.008	/
		Left Edge	10	46	5230	0.047	0.031	13.21	13.50	1.069	55.9	1.789	**0.059**	32#
		Top Edge	10	46	5230	-0.081	0.009	13.21	13.50	1.069	55.9	1.789	0.018	/
Head														
5.8G	802.11 ac(VHT40)	Right Cheek	0	159	5795	-0.117	0.093	11.31	11.50	1.045	55.9	1.789	**0.173**	33#
		Right Tilt	0	159	5795	0.019	0.044	11.31	11.50	1.045	55.9	1.789	0.081	/
		Left Cheek	0	159	5795	0.177	0.075	11.31	11.50	1.045	55.9	1.789	0.141	/
		Left Tilt	0	159	5795	-0.181	0.062	11.31	11.50	1.045	55.9	1.789	0.116	/
Body-worn Accessory& Hotspot														
5.8G	802.11 ac(VHT40)	Front Side	10	159	5795	0.000	0.027	11.31	11.50	1.045	55.9	1.789	0.050	/
		Back Side	10	159	5795	0.136	0.000	11.31	11.50	1.045	55.9	1.789	0.001	/
		Left Edge	10	159	5795	0.200	0.036	11.31	11.50	1.045	55.9	1.789	**0.068**	34#
		Top Edge	10	159	5795	0.031	0.034	11.31	11.50	1.045	55.9	1.789	0.063	/
Note: For this band, the EUT does not support Power Reduction under Hotspot mode.														

11 SAR Measurement Variability

According to KDB 865664 D01, SAR measurement variability was 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. Alternatively, if the highest measured SAR for both head and body tissue-equivalent media are ≤ 1.45 W/kg and the ratio of these highest SAR values, i.e., largest divided by smallest value, is ≤ 1.10, the highest SAR configuration for either head or body tissue-equivalent medium may be used to perform the repeated measurement. These additional measurements are repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device should be returned to ambient conditions (normal room temperature) with the battery fully charged before it is re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

SAR repeated measurement procedure:

1. When the highest measured SAR is < 0.80 W/kg, repeated measurement is not required.
2. When the highest measured SAR is >= 0.80 W/kg, repeat that measurement once.
3. If the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20, or when the original or repeated measurement is >= 1.45 W/kg, perform a second repeated measurement.
4. If the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20, and the original, first or second repeated measurement is >= 1.5 W/kg, perform a third repeated measurement.

Frequency Band (MHz)	Wireless Band	RF Exposure Conditions	Test Position	Highest Measured SAR (W/kg)	Repeated SAR (Yes/No)	Highest Measured SAR (W/kg)	Largest to Smallest SAR Radio
1750	LTE Band 4	Body	Front Side	0.936	Yes	0.927	1.01
1900	LTE Band 2	Body	Front Side	0.830	Yes	0.754	1.10
	GPRS 1900	Body	Front Side	0.962	Yes	0.962	1.00
Note: the ratio of largest to smallest SAR for the original and first repeated measurements is < 1.20, the second repeated measurement is not required.							

12 SIMULTANEOUS TRANSMISSION

Simultaneous transmission SAR test exclusion is determined for each operating configuration and exposure condition according to the reported standalone SAR of each applicable simultaneous transmitting antenna. When the sum of SAR 1g of all simultaneously transmitting antennas in an operating mode and exposure condition combination is within the SAR limit (SAR 1g 1.6 W/kg), the simultaneous transmission SAR is not required. When the sum of SAR 1g is greater than the SAR limit (SAR 1g 1.6 W/kg), SAR test exclusion is determined by the SAR to Peak Location Ratio (SPLSR).

12.1 Simultaneous Transmission Mode Consider

NO.	Mode	2.4G WLAN & 5G WLAN & 2.4G Bluetooth		
		Head	Body-worn	Hotspot
1	GSM (Voice)	+ 2.4G WLAN	+ 2.4G WLAN	--
		+ 5G WLAN	+ 5G WLAN	--
		--	+ Bluetooth	--
2	GSM (Data)	--	--	+ 2.4G WLAN
		--	--	+ 5G WLAN
3	CDMA/EV DO	+ 2.4G WLAN	+ 2.4G WLAN	+ 2.4G WLAN
		+ 5G WLAN	+ 5G WLAN	+ 5G WLAN
		--	+ Bluetooth	--
4	WCDMA RMC	+ 2.4G WLAN	+ 2.4G WLAN	+ 2.4G WLAN
		+ 5G WLAN	+ 5G WLAN	+ 5G WLAN
		--	+ Bluetooth	--
5	LTE	+ 2.4G WLAN	+ 2.4G WLAN	+ 2.4G WLAN
		+ 5G WLAN	+ 5G WLAN	+ 5G WLAN
		--	+ Bluetooth	--

Note:

1. 2G&3G&4G share the same antenna and can't transmit simultaneously.
2. The Bluetooth and 2.4G WLAN share the same antenna, can't transmitting together.
3. The 2.4G WLAN or 5G WLAN can transmit simultaneously with each WWAN.
4. Both 2.4G WLAN and 5G WLAN supports hotspot mode.

12.2 Estimated SAR Calculation

According to KDB 447498 D01, when standalone SAR test exclusion applies to an antenna that transmits simultaneously with other antennas, the standalone SAR was estimated according to following formula to result in substantially conservative SAR values of <= 0.4 W/kg to determine simultaneous transmission SAR test exclusion.

$$\text{Estimated SAR} = \frac{Max.Tune\ Up\ Power(mw)}{Min\ Test\ Separation\ Distance} * \frac{\sqrt{f_{GHz}}}{x}$$ (where x = 7.5 for 1-g SAR)

If the minimum test separation distance is < 5 mm, a distance of 5 mm is used for estimated SAR calculation. When the test separation distance is > 50 mm, the 0.4 W/kg is used for SAR-1g.

Band	Mode	Position	Antenna To user (mm)	SAR Testing	Max. Tune-up Power (dBm)	Max. Tune-up Power (mW)	Frequency (GHz)	Calculation Distance/Gap (mm)	Estimated SAR (W/kg)
Bluetooth	8-DPSK	Front side	10	NO	5	3.16	2.441	10	0.066
		Back Side	10	NO	5	3.16	2.441	10	0.066
		Left Edge	10	NO	5	3.16	2.441	10	0.066
		Bottom Edge	10	NO	5	3.16	2.441	10	0.066

12.3 Sum SAR of Simultaneous Transmission

12.3.1 Sum Head SAR of Simultaneous Transmission

Simultaneous Mode	Mode	Max. 1g SAR (W/kg)	1g Sum SAR (W/kg)	SPLSR (Yes/No)
GSM Voice + 2.4G WLAN	GSM Voice	0.253	**0.452**	No
	2.4G WLAN	0.199		
GSM Voice + 5G WLAN	GSM Voice	0.253	0.426	No
	5G WLAN	0.173		
WCDMA RMC + 2.4G WLAN	WCDMA RMC	0.243	0.442	No
	2.4G WLAN	0.199		
WCDMA RMC + 5G WLAN	WCDMA RMC	0.243	0.416	No
	5G WLAN	0.173		
LTE QPSK + 2.4G WLAN	LTE QPSK	0.229	0.428	No
	2.4G WLAN	0.199		
LTE QPSK + 5G WLAN	LTE QPSK	0.229	0.402	No
	5G WLAN	0.173		

12.3.2 Sum Body-worn SAR of Simultaneous Transmission

Simultaneous Mode	Mode	Max. 1g SAR (W/kg)	1g Sum SAR (W/kg)	SPLSR (Yes/No)
GSM Voice +Bluetooth	GSM Voice	0.743	0.809	No
	Bluetooth	0.066		
GSM Voice + 2.4G WLAN	GSM Voice	0.743	0.841	No
	2.4G WLAN	0.098		
GSM Voice + 5G WLAN	GSM Voice	0.743	0.811	No
	5G WLAN	0.068		
WCDMA RMC +Bluetooth	WCDMA RMC	0.759	0.825	No
	Bluetooth	0.066		
WCDMA RMC +2.4G WLAN	WCDMA RMC	0.759	0.857	No
	2.4G WLAN	0.098		
WCDMA RMC +5G WLAN	WCDMA RMC	0.759	0.827	No
	5G WLAN	0.068		
LTE QPSK + Bluetooth	LTE QPSK	1.050	1.116	No
	Bluetooth	0.066		
LTE QPSK + 2.4G WLAN	LTE QPSK	1.050	**1.148**	No
	2.4G WLAN	0.098		
LTE QPSK + 5G WLAN	LTE QPSK	1.050	1.118	No
	5G WLAN	0.068		

12.3.3 Sum Hotspot mode SAR of Simultaneous Transmission

Simultaneous Mode	Mode	Max. 1g SAR (W/kg)	1g Sum SAR (W/kg)	SPLSR (Yes/No)
GSM DATA + 2.4G WLAN	GSM DATA	1.028	1.126	No
	2.4G WLAN	0.098		
GSM DATA + 5G WLAN	GSM DATA	1.028	1.096	No
	5G WLAN	0.068		
WCDMA RMC +2.4G WLAN	WCDMA RMC	0.759	0.857	No
	2.4G WLAN	0.098		
WCDMA RMC +5G WLAN	WCDMA RMC	0.759	0.827	No
	5G WLAN	0.068		
LTE QPSK + 2.4G WLAN	LTE QPSK	1.050	**1.148**	No
	2.4G WLAN	0.098		
LTE QPSK + 5G WLAN	LTE QPSK	1.050	1.118	No
	5G WLAN	0.068		

13 TEST EQUIPMENTS LIST

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
PC	Dell	N/A	N/A	N/A	N/A
750MHz Validation Dipole	Speag	D750V3	SN: 1055	2017/06/26	2020/06/25
835MHz Validation Dipole	Speag	D835V2	SN: 4d187	2017/06/26	2020/06/25
1750MHz Validation Dipole	Speag	D1750V2	SN: 1130	2017/07/01	2020/06/30
1900MHz Validation Dipole	Speag	D1900V2	SN: 5d193	2017/06/30	2020/06/29
2450MHz Validation Dipole	Speag	D2450V2	SN: 952	2017/03/21	2020/03/20
2600MHz Validation Dipole	Speag	D2600V2	SN: 1095	2017/07/10	2020/07/09
5GHz Validation Dipole	Speag	D5GHzV2	SN: 1200	2017/06/29	2020/06/28
E-Field Probe	Speag	EX3DV4	SN: 7510	2018/07/14	2019/07/13
Data acquisition electronics	Speag	DAE4	SN: 1454	2018/01/11	2019/01/10
Signal Generator	R&S	SMBV100A	260592	2018/06/15	2019/06/15
Power Meter	Agilent	E4417A	MY58250003	2018/06/02	2019/06/01
Power Sensor	Agilent	E9322A	MY58260002	2018/07/02	2019/07/01
Power Sensor	Agilent	E9322A	MY58260004	2018/07/02	2019/07/01
Wireless Communication Test Set	Agilent	8960-E5515C	MY47510286	2018/06/15	2019/06/14
Wireless Communication Test Set	R&S	CMW 500	151885	2018/06/15	2019/06/15
Network Analyzer	Agilent	5071B	MY42404001	2018/06/15	2019/06/15
Thermometer	Elitech	RC-4HC	N/A	2018/03/21	2019/03/20
Phantom1	Speag	SAM	SN: 1859	N/A	N/A
Phantom2	Speag	SAM	SN: 1857	N/A	N/A
Attenuator	COM-MW	ZA-S1-31	1305003187	N/A	N/A
Directional coupler	AA-MCS	AAMCS-UDC	000272	N/A	N/A
Dielectric Probe Kit	SATIMO	SCLMP	SN 25/13 OCPG56	N/A	N/A
Power Amplifier	SATIMO	6552B	22374	N/A	N/A

Note:

Per KDB 865664 D01, Dipole SAR Validation Verification, BALUN LAB has adopted 3 years calibration intervals. On annual basis, every measurement dipole has been evaluated and is in compliance with the following criteria:

1. There is no physical damage on the dipole;
2. System validation with specific dipole is within 10% of calibrated value;
3. Return-loss in within 20% of calibrated measurement.
4. Impedance (real or imaginary parts) in within 5 Ohms of calibrated measurement.

ANNEX A SIMULATING LIQUID VERIFICATION RESULT

The dielectric parameters of the liquids were verified prior to the SAR evaluation using an SCLMP Dielectric Probe Kit.

Date	Liquid Type	Fre. (MHz)	Temp. (℃)	Meas. Conductivity (σ) (S/m)	Meas. Permittivity (ε)	Target Conductivity (σ) (S/m)	Target Permittivity (ε)	Conductivity Tolerance (%)	Permittivity Tolerance (%)
2018.11.30	Head	750	21.2	0.87	43.11	0.89	41.90	-2.47	2.89
2018.11.28	Body	750	21.2	0.99	57.63	0.96	55.50	3.13	3.84
2018.12.03	Head	835	21.0	0.94	41.63	0.90	41.50	4.22	0.31
2018.11.29	Body	835	21.6	1.00	56.15	0.97	55.20	2.58	1.72
2018.12.04	Head	1750	20.9	1.41	38.52	1.37	40.10	2.92	-3.94
2018.11.23	Body	1750	21.1	1.53	55.33	1.49	53.40	2.68	3.61
2018.12.04	Head	1900	21.5	1.38	40.10	1.40	40.00	-1.79	0.25
2018.11.22	Body	1900	21.4	1.49	54.72	1.52	53.30	-1.97	2.66
2018.12.06	Head	2450	20.9	1.82	38.50	1.80	39.20	1.11	-1.79
2018.12.06	Body	2450	21.7	1.99	52.64	1.95	52.70	2.05	-0.11
2018.12.05	Head	2600	20.8	2.01	38.32	1.96	39.00	2.55	-1.74
2018.11.27	Body	2600	21.8	2.21	52.92	2.16	52.50	2.31	0.80
2018.12.07	Head	5250	21.0	4.72	35.73	4.71	35.93	0.21	-0.56
2018.12.07	Body	5250	21.4	5.42	49.10	5.36	48.95	1.12	0.31
2018.12.07	Head	5750	21.0	5.18	35.13	5.22	35.36	-0.86	-0.65
2018.12.07	Body	5750	21.4	6.06	48.21	5.94	48.27	2.02	-0.12
Note: The tolerance limit of Conductivity and Permittivity is± 5%.									

ANNEX B SYSTEM CHECK RESULT

Comparing to the original SAR value provided by SPEAG, the validation data should be within its specification of 10 %(for 1 g).

Date	Liquid Type	Freq. (MHz)	Power (mW)	Measured SAR (W/kg)	Normalized SAR (W/kg)	Dipole SAR (W/kg)	Tolerance (%)	Targeted SAR(W/kg)	Tolerance (%)
2018.11.30	Head	750	250	2.13	8.52	8.27	3.02	8.49	0.35
2018.11.28	Body	750	250	2.20	8.80	8.64	1.85	8.49	3.65
2018.12.03	Head	835	250	2.48	9.92	9.75	1.74	9.56	3.77
2018.11.29	Body	835	250	2.38	9.52	9.53	-0.10	9.56	-0.42
2018.12.04	Head	1750	250	9.71	38.84	36.90	5.26	36.40	6.70
2018.11.23	Body	1750	250	9.81	39.24	36.70	6.92	36.40	7.80
2018.12.04	Head	1900	250	10.22	40.88	39.90	2.46	39.70	2.97
2018.11.22	Body	1900	250	10.10	40.40	39.90	1.25	39.70	1.76
2018.12.06	Head	2450	250	13.32	53.28	52.40	1.68	52.40	1.68
2018.12.06	Body	2450	250	13.00	52.00	50.50	2.97	52.40	-0.76
2018.12.05	Head	2600	250	14.25	57.00	56.40	1.06	55.30	3.07
2018.11.27	Body	2600	250	13.62	54.48	54.30	0.33	55.30	-1.48
2018.12.07	Head	5250	250	19.42	77.68	76.20	1.94	76.50	1.54
2018.12.07	Body	5250	250	19.13	76.52	75.20	1.76	76.50	0.03
2018.12.07	Head	5750	250	20.25	81.00	80.80	0.25	78.00	3.85
2018.12.07	Body	5750	250	19.30	77.20	75.00	2.93	78.00	-1.03
Note: The tolerance limit of System validation ±10%.									

System Performance Check Data (750MHz Head)

Date: 2018.11.30

Communication System: CW; Frequency: 750 MHz;Duty Cycle: 1:1
Medium parameters used: f = 750 MHz; σ = 0.868 mho/m; ε_r = 43.11; ρ = 1000 kg/m^3
Phantom section: Flat Section

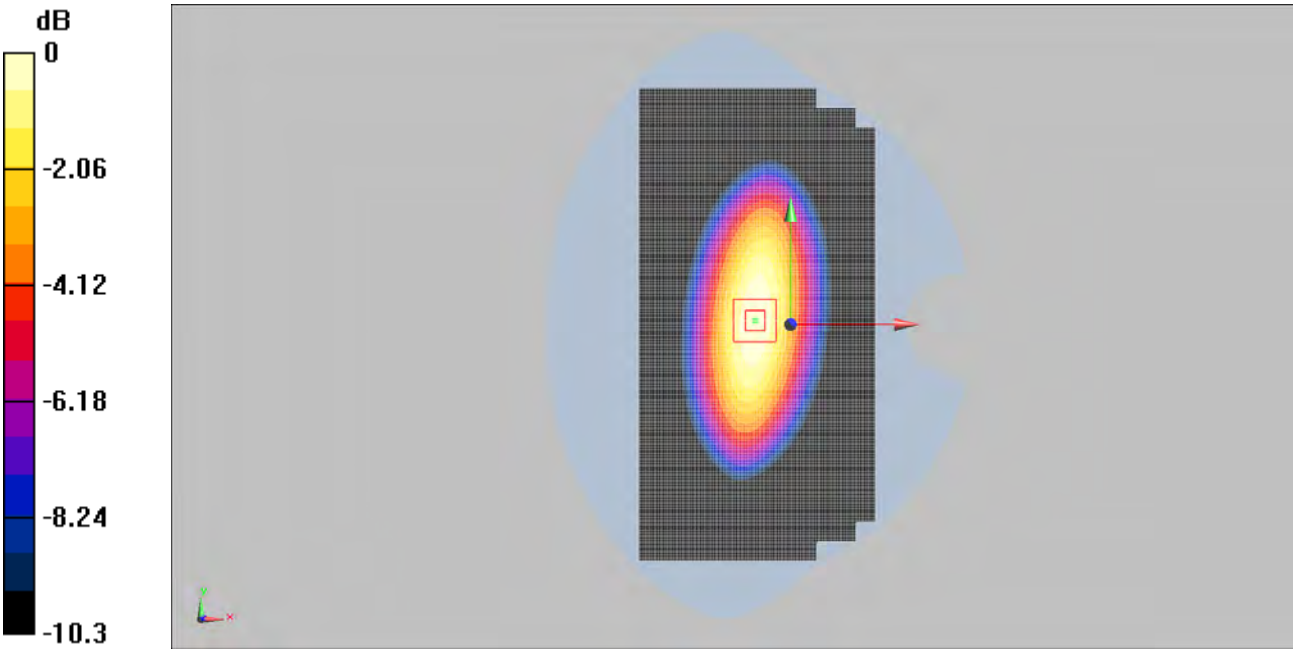
Ambient Temperature:22.5 Liquid Temperature:21.2

DASY5 Configuration:

- Probe: EX3DV4 – SN7510; ConvF(10.37, 10.37, 10.37); Calibrated: 2018.07.14
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2018.01.11
- Phantom: SAM (30deg probe tilt) with CRP v5.0 on left 1859; Type: QD000P40CD; Serial: TP:1859
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Dipole 750MHz/Area Scan (121x241x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 2.25 W/kg

Dipole 750MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 50.8 V/m; Power Drift = 0.101 dB
Peak SAR (extrapolated) = 3.15 W/kg
SAR(1 g) = 2.13 W/kg; SAR(10 g) = 1.39 W/kg
Maximum value of SAR (measured) = 2.26 W/kg



0 dB = 2.26W/kg

System Performance Check Data (835MHz Head)

Date: 2018.12.03

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used: f = 835 MHz; σ = 0.938 mho/m; ε_r = 41.63; ρ = 1000 kg/m^3
Phantom section: Flat Section

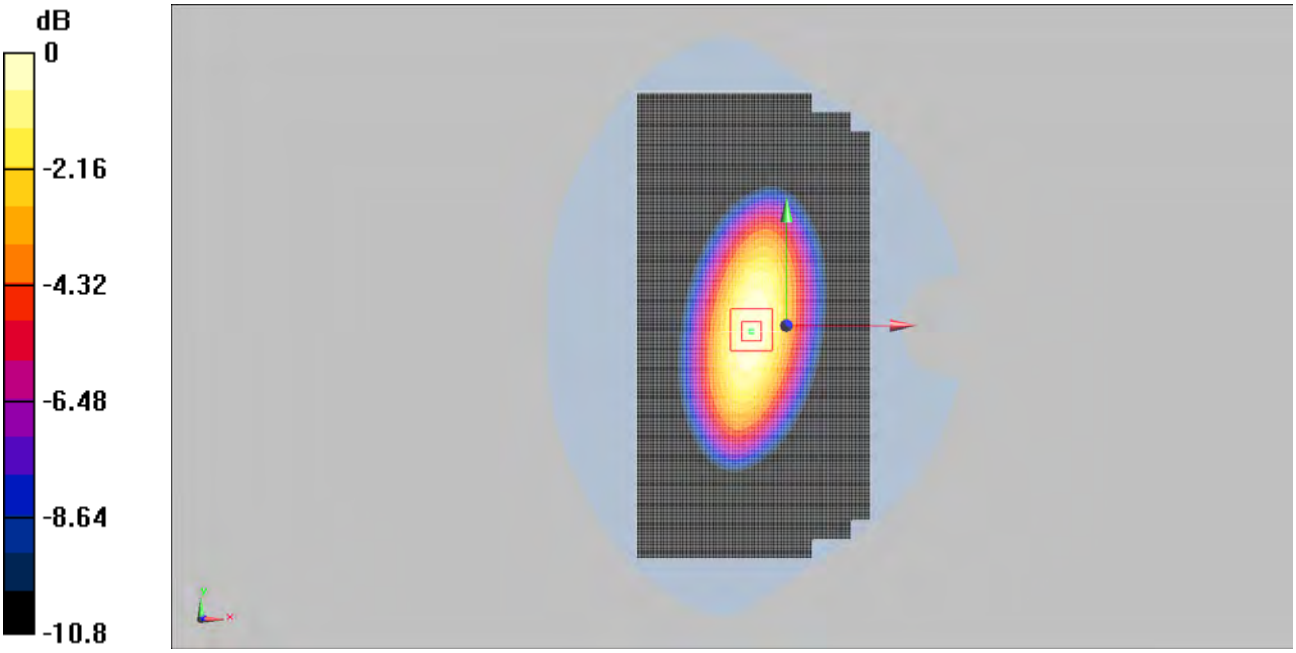
Ambient Temperature:22.1 Liquid Temperature:21.0

DASY5 Configuration:

- Probe: EX3DV4 – SN7510; ConvF(10.06, 10.06, 10.06); Calibrated: 2018.07.14
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2018.01.11
- Phantom: SAM (30deg probe tilt) with CRP v5.0 on left 1859; Type: QD000P40CD; Serial: TP:1859
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Dipole 835MHz 3/Area Scan (121x241x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 2.66 W/kg

Dipole 835MHz 3/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 52.9 V/m; Power Drift = 0.011 dB
Peak SAR (extrapolated) = 3.75 W/kg
SAR(1 g) = 2.48 W/kg; SAR(10 g) = 1.62 W/kg
Maximum value of SAR (measured) = 2.66 W/kg



0 dB = 2.66W/kg

System Performance Check Data (1750MHz Head)

Date: 2018.12.04

Communication System: CW; Frequency: 1750 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1750 MHz; σ = 1.41 mho/m; ε_r = 38.52;ρ = 1000 kg/m^3
Phantom section: Flat Section

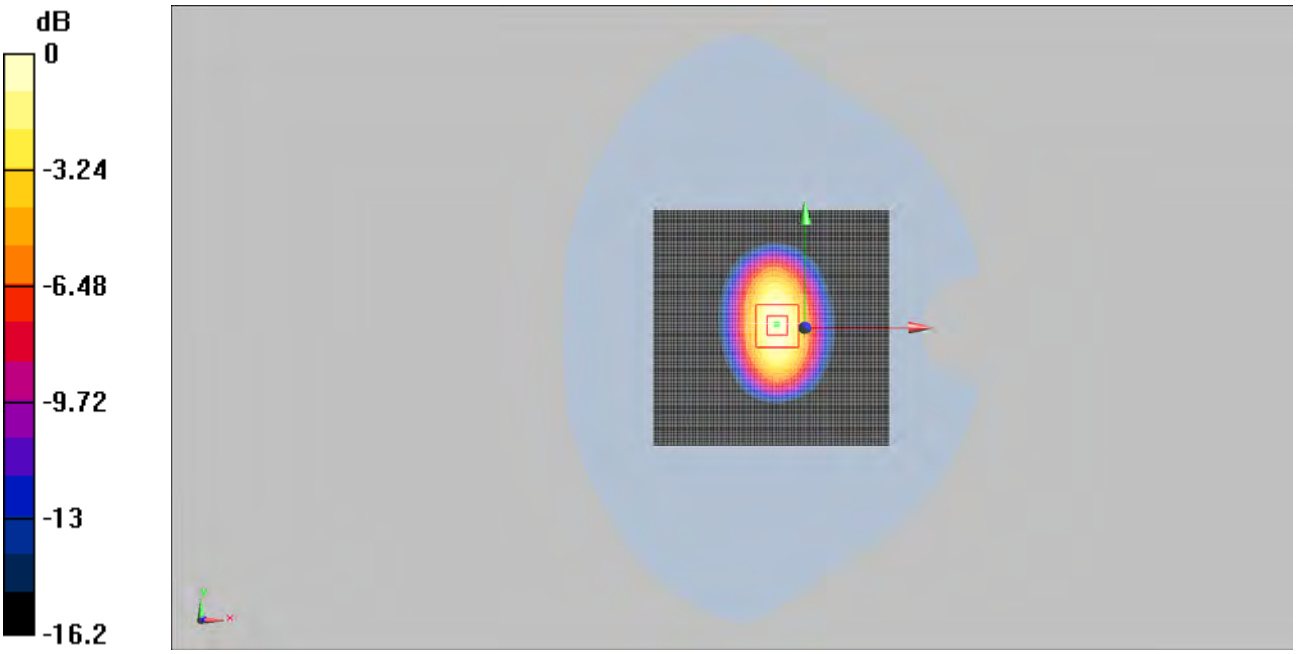
Ambient Temperature:21.9 Liquid Temperature:20.9

DASY5 Configuration:

- Probe: EX3DV4 – SN7510; ConvF(8.68, 8.68, 8.68); Calibrated: 2018.07.14
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2018.01.11
- Phantom: SAM (30deg probe tilt) with CRP v5.0 Right 1857; Type: QD000P40CD; Serial: TP1857
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Dipole 1750MHz/Area Scan (121x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 11.1 W/kg

Dipole 1750MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 85.8 V/m; Power Drift = 0.052dB
Peak SAR (extrapolated) = 17.7 W/kg
SAR(1 g) = 9.71 W/kg; SAR(10 g) = 5.15 W/kg
Maximum value of SAR (measured) = 11 W/kg



0 dB = 11W/kg

System Performance Check Data (1900MHz Head)

Date: 2018.12.04

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.375 mho/m; ε_r = 40.1; ρ = 1000 kg/m^3
Phantom section: Flat Section

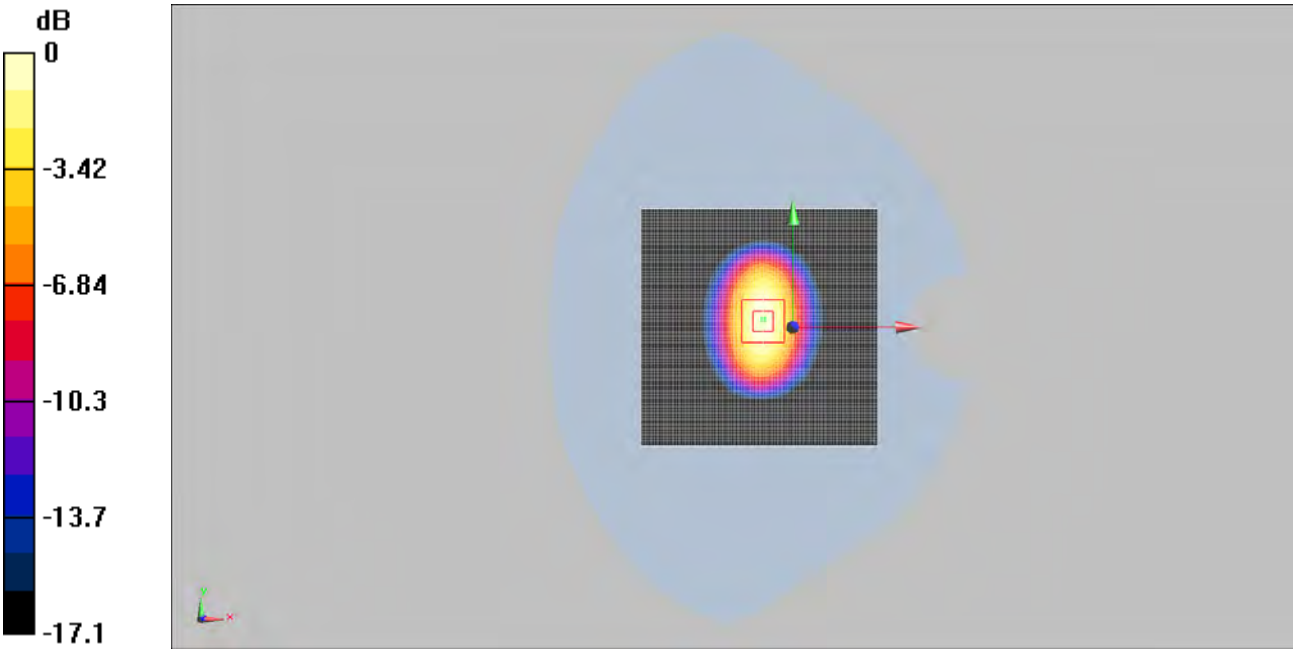
Ambient Temperature:22.3 Liquid Temperature:21.5

DASY5 Configuration:

- Probe: EX3DV4 – SN7510; ConvF(8.31, 8.31, 8.31); Calibrated: 2018.07.14
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2018.01.11
- Phantom: SAM (30deg probe tilt) with CRP v5.0 Right 1857; Type: QD000P40CD; Serial: TP1857
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Dipole 1900MHz/Area Scan (121x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 11.6 W/kg

Dipole 1900MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 89.8 V/m; Power Drift = -0.121 dB
Peak SAR (extrapolated) = 18.9 W/kg
SAR(1 g) = 10.22 W/kg; SAR(10 g) = 5.34 W/kg
Maximum value of SAR (measured) = 11.6 W/kg



0 dB = 11.6W/kg

System Performance Check Data (2450MHz Head)

Date: 2018.12.06

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.82 mho/m; ε_r = 38.5; ρ = 1000 kg/m^3
Phantom section: Flat Section

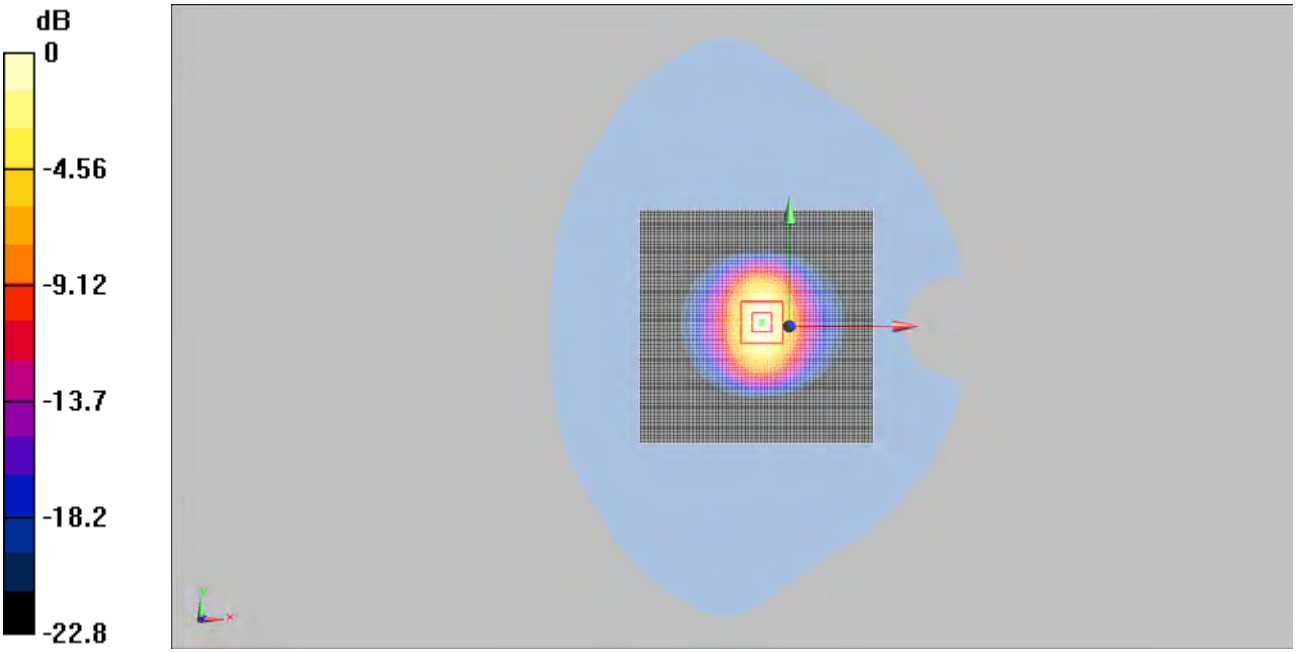
Ambient Temperature:22.1 Liquid Temperature:20.9

DASY5 Configuration:

- Probe: EX3DV4 – SN7510; ConvF(7.88, 7.88, 7.88); Calibrated: 2018.07.14
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2018.01.11
- Phantom: SAM (30deg probe tilt) with CRP v5.0 on left 1859; Type: QD000P40CD; Serial: TP:1859
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Dipole 2450MHz/Area Scan (121x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 15.4 W/kg

Dipole 2450MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 87.9 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 29 W/kg
SAR(1 g) = 13.32 W/kg; SAR(10 g) = 6.06 W/kg
Maximum value of SAR (measured) = 15.4 W/kg



0 dB = 15.4W/kg

System Performance Check Data (2600MHz Head)

Date: 2018.12.05

Communication System: CW; Frequency: 2600 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2600 MHz; σ = 2.01 mho/m; ε_r = 38.32; ρ = 1000 kg/m^3
Phantom section: Flat Section

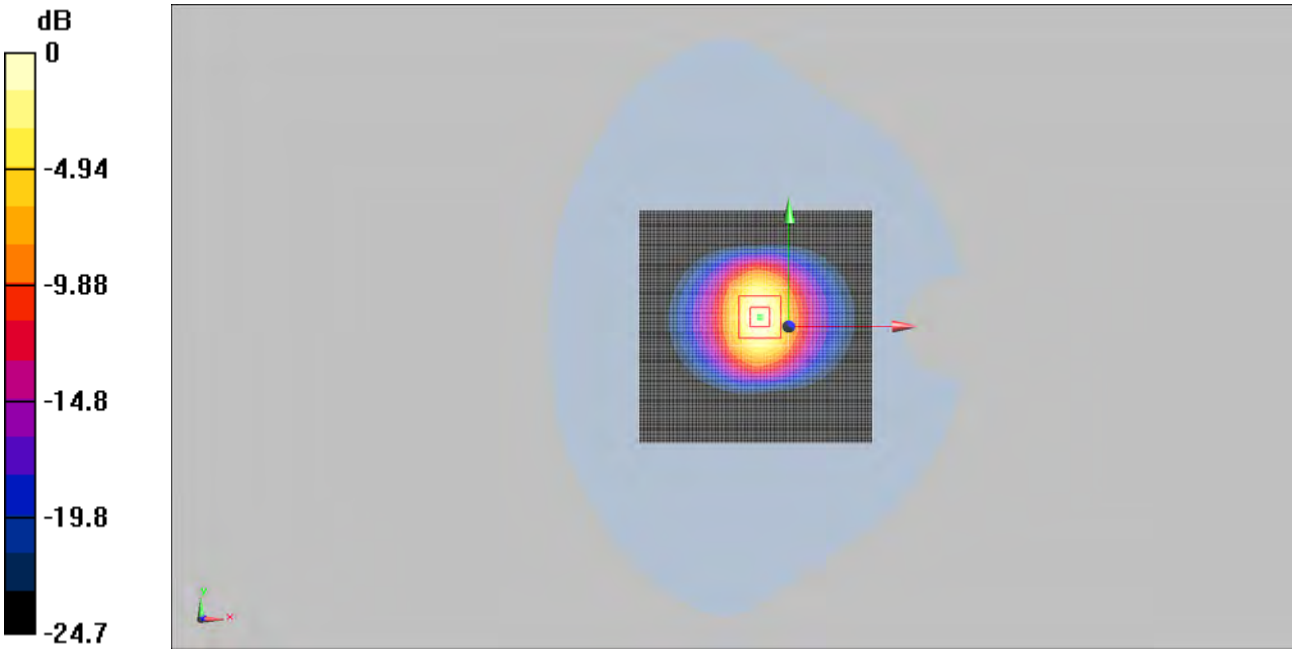
Ambient Temperature:21.8 Liquid Temperature:20.8

DASY5 Configuration:

- Probe: EX3DV4 – SN7510; ConvF(7.6, 7.6, 7.6); Calibrated: 2018.07.14
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2018.01.11
- Phantom: Phantom: SAM (30deg probe tilt) with CRP v5.0 on left 1859; Type: QD000P40CD; Serial: TP:1859
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Dipole 2600MHz/Area Scan (121x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 16.8 W/kg

Dipole 2600MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 85.2 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 32.5 W/kg
SAR(1 g) = 14.25 W/kg; SAR(10 g) = 6.21 W/kg
Maximum value of SAR (measured) = 16.4 W/kg



0 dB = 16.4W/kg

System Performance Check Data (5250MHz Head)

Date: 2018.12.07

Communication System: CW; Frequency: 5250 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5250 MHz; σ = 4.72 mho/m; ε_r = 35.73; ρ = 1000 kg/m^3
Phantom section: Flat Section

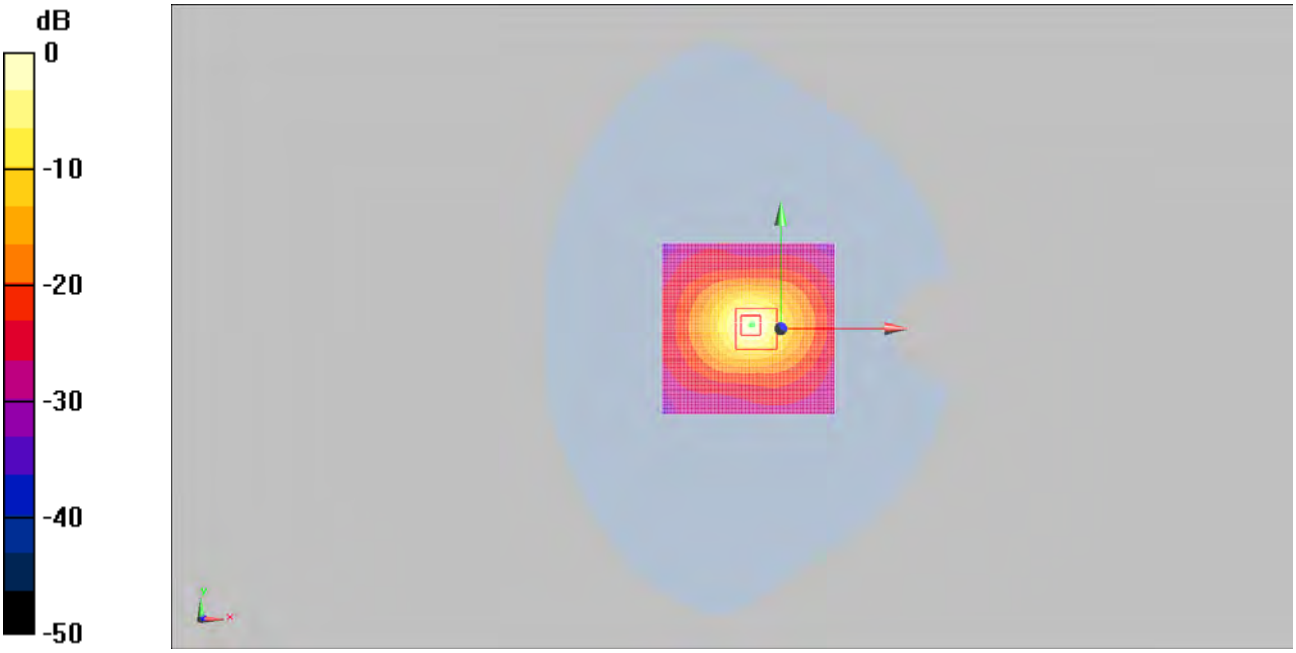
Ambient Temperature:21.9 Liquid Temperature:21.0

DASY5 Configuration:

- Probe: EX3DV4 – SN7510; ConvF(5.48, 5.48, 5.48); Calibrated: 2018.07.14
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2018.01.11
- Phantom: SAM (30deg probe tilt) with CRP v5.0 Right 1857; Type: QD000P40CD; Serial: TP1857
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Dipole 5250MHz/Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 19.4 W/kg

Dipole 5250MHz/Zoom Scan (7x7x13)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 64.92 V/m; Power Drift = -0.092 dB
Peak SAR (extrapolated) = 92.4 W/kg
SAR(1 g) = 19.42 W/kg; SAR(10 g) = 5.19 W/kg
Maximum value of SAR (measured) = 20.2 W/kg



0 dB = 20.2W/kg

System Performance Check Data (5750MHz Head)

Date: 2018.12.07

Communication System: CW; Frequency: 5750 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5750 MHz; σ = 5.175 mho/m; ε_r = 35.13; ρ = 1000 kg/m^3
Phantom section: Flat Section

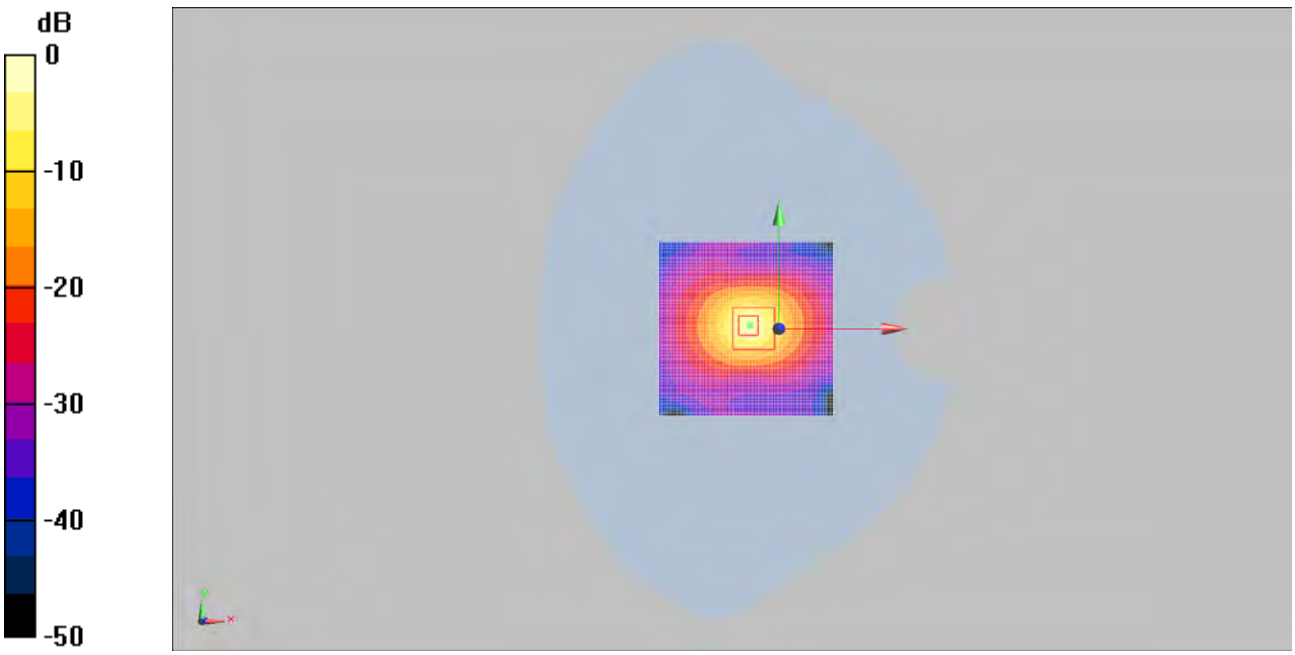
Ambient Temperature:21.9 Liquid Temperature:21.0

DASY5 Configuration:

- Probe: EX3DV4 – SN7510; ConvF(5.03, 5.03, 5.03); Calibrated: 2018.07.14
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2018.01.11
- Phantom: SAM (30deg probe tilt) with CRP v5.0 Right 1857; Type: QD000P40CD; Serial: TP1857
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Dipole 5750MHz/Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 19.31 W/kg

Dipole 5750MHz/Zoom Scan (7x7x13)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 61.8 V/m; Power Drift = 0.038 dB
Peak SAR (extrapolated) = 106.1 W/kg
SAR(1 g) = 20.25 W/kg; SAR(10 g) = 5.41 W/kg
Maximum value of SAR (measured) = 43.6 W/kg



0 dB = 43.6W/kg

System Performance Check Data (750MHz Body)

Date: 2018.11.28

Communication System: CW; Frequency: 750 MHz;Duty Cycle: 1:1
Medium parameters used: f = 750 MHz; σ = 0.99 mho/m; ε_r = 57.63; ρ = 1000 kg/m^3
Phantom section: Flat Section

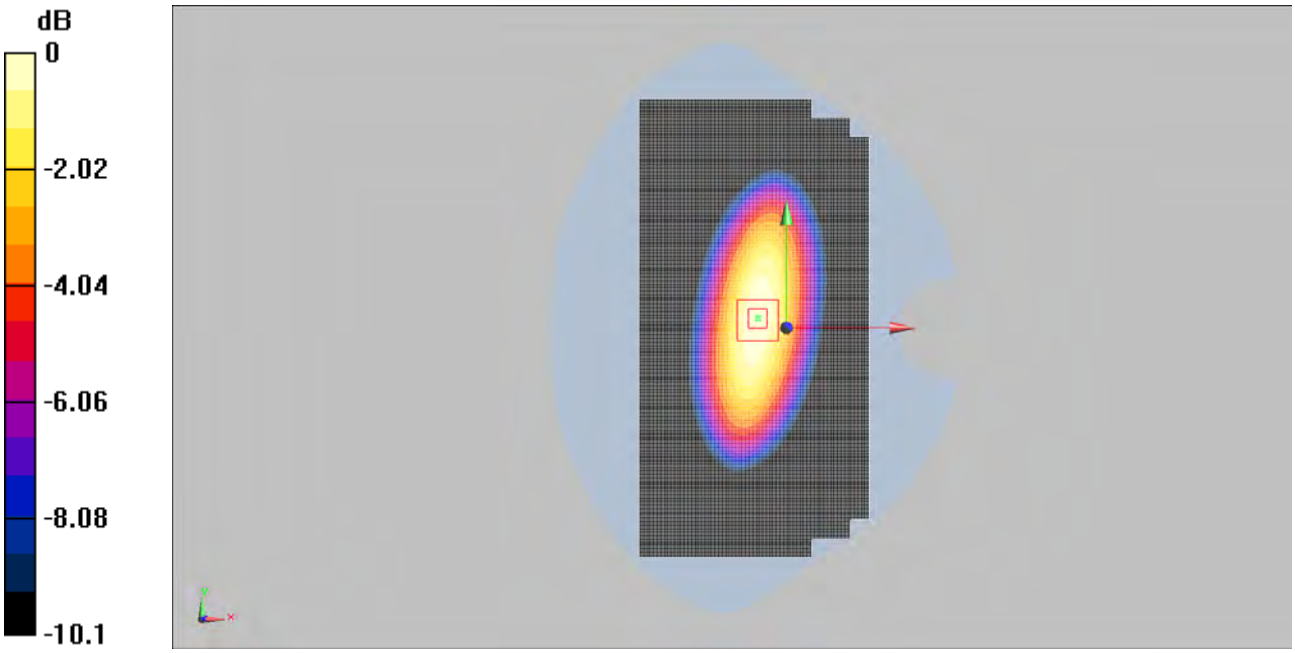
Ambient Temperature:22.3 Liquid Temperature:21.2

DASY5 Configuration:

- Probe: EX3DV4 – SN7510; ConvF(10.53, 10.53, 10.53); Calibrated: 2018.07.14
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2018.01.11
- Phantom: SAM (30deg probe tilt) with CRP v5.0 Right 1857; Type: QD000P40CD; Serial: TP1857
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Dipole 750MHz/Area Scan (121x241x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 2.4 W/kg

Dipole 750MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 48.9 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 3.34 W/kg
SAR(1 g) = 2.2 W/kg; SAR(10 g) = 1.44 W/kg
Maximum value of SAR (measured) = 2.41 W/kg



0 dB = 2.41W/kg

System Performance Check Data (835MHz Body)

Date: 2018.11.29

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used: f = 835 MHz; σ = 0.995 mho/m; ε_r = 56.15; ρ = 1000 kg/m^3
Phantom section: Flat Section

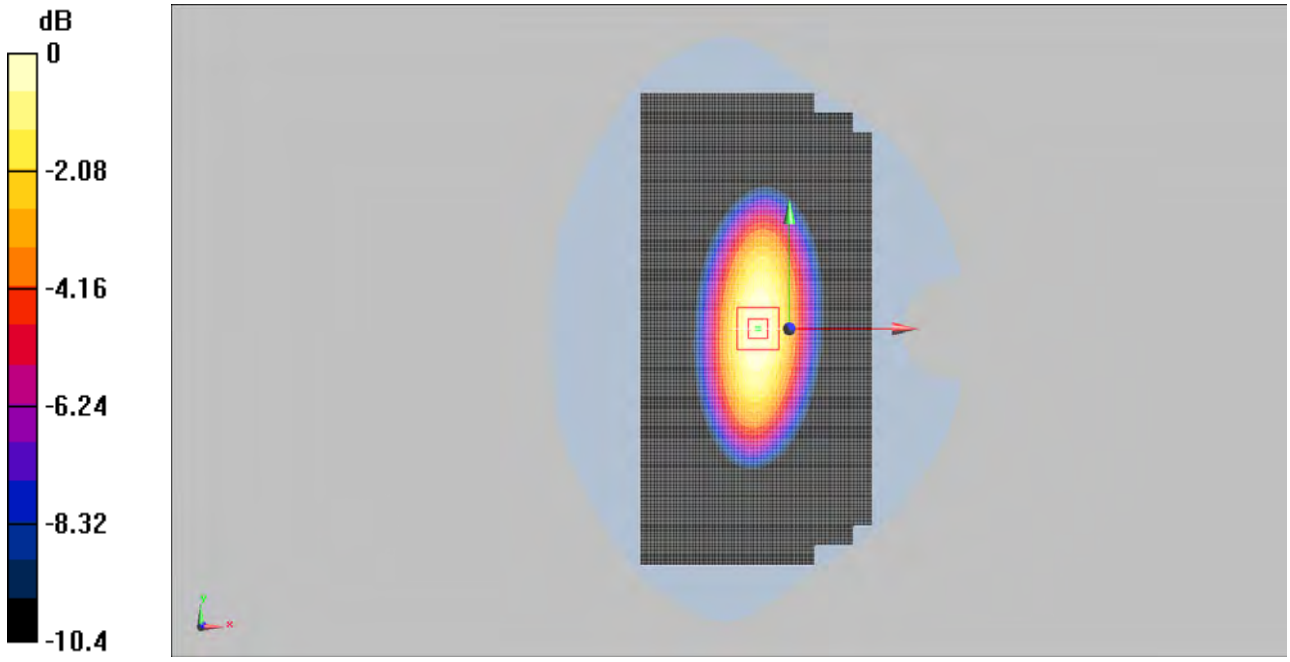
Ambient Temperature:22.7 Liquid Temperature:21.6

DASY5 Configuration:

- Probe: EX3DV4 – SN7510; ConvF(10.14, 10.14, 10.14); Calibrated: 2018.07.14
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2018.01.11
- Phantom: SAM (30deg probe tilt) with CRP v5.0 Right 1857; Type: QD000P40CD; Serial: TP1857
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Dipole 835MHz/Area Scan (121x241x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 2.55 W/kg

Dipole 835MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 50 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 3.52 W/kg
SAR(1 g) = 2.38 W/kg; SAR(10 g) = 1.57 W/kg
Maximum value of SAR (measured) = 2.55 W/kg



0 dB = 2.55W/kg

System Performance Check Data (1750MHz Body)

Date: 2018.11.23

Communication System: CW; Frequency: 1750 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1750 MHz; σ = 1.53 mho/m; ε_r = 55.33; ρ = 1000 kg/m^3
Phantom section: Flat Section

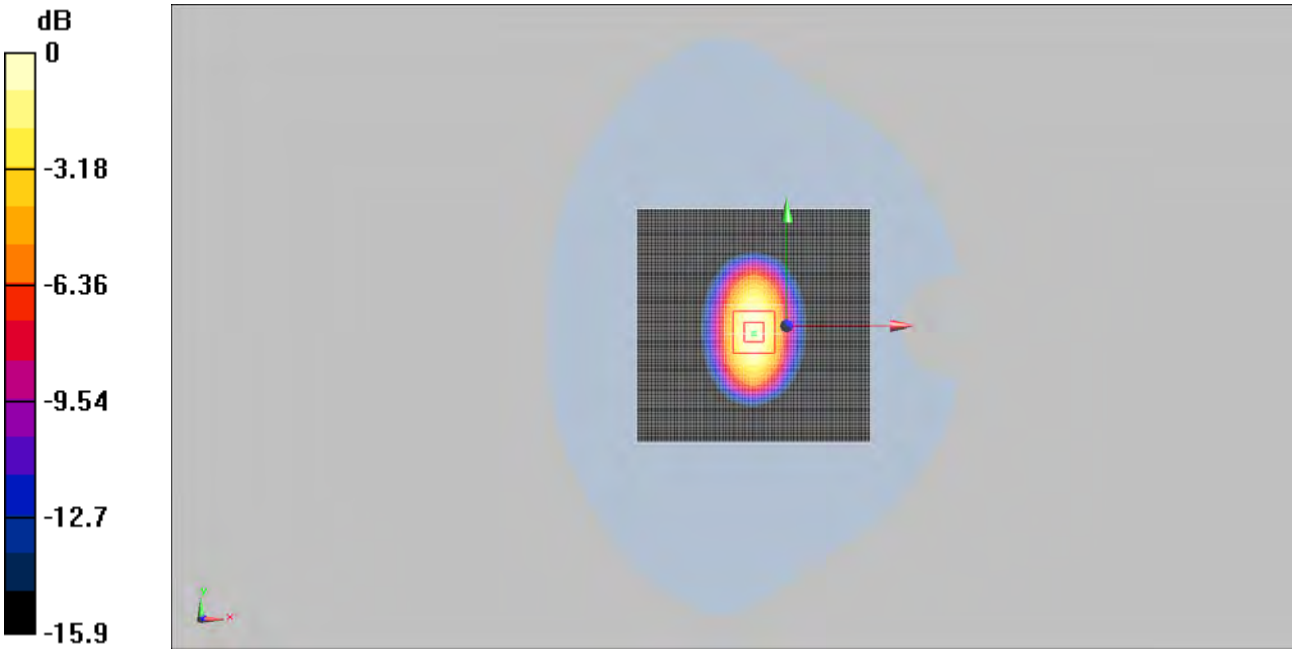
Ambient Temperature:22.0 Liquid Temperature:21.1

DASY5 Configuration:

- Probe: EX3DV4 – SN7510; ConvF(8.2, 8.2, 8.2); Calibrated: 2018.07.14
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2018.01.11
- Phantom: Phantom: SAM (30deg probe tilt) with CRP v5.0 on left 1859; Type: QD000P40CD; Serial: TP:1859
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Dipole 1750MHz 2/Area Scan (121x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 11.32 W/kg

Dipole 1750MHz 2/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 84.21 V/m; Power Drift = 0.031 dB
Peak SAR (extrapolated) = 17.3 W/kg
SAR(1 g) = 9.81 W/kg; SAR(10 g) = 5.24 W/kg
Maximum value of SAR (measured) = 11.1 W/kg



0 dB = 11.1W/kg

System Performance Check Data (1900MHz Body)

Date: 2018.11.22

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.49 mho/m; ε_r = 54.72; ρ = 1000 kg/m^3
Phantom section: Flat Section

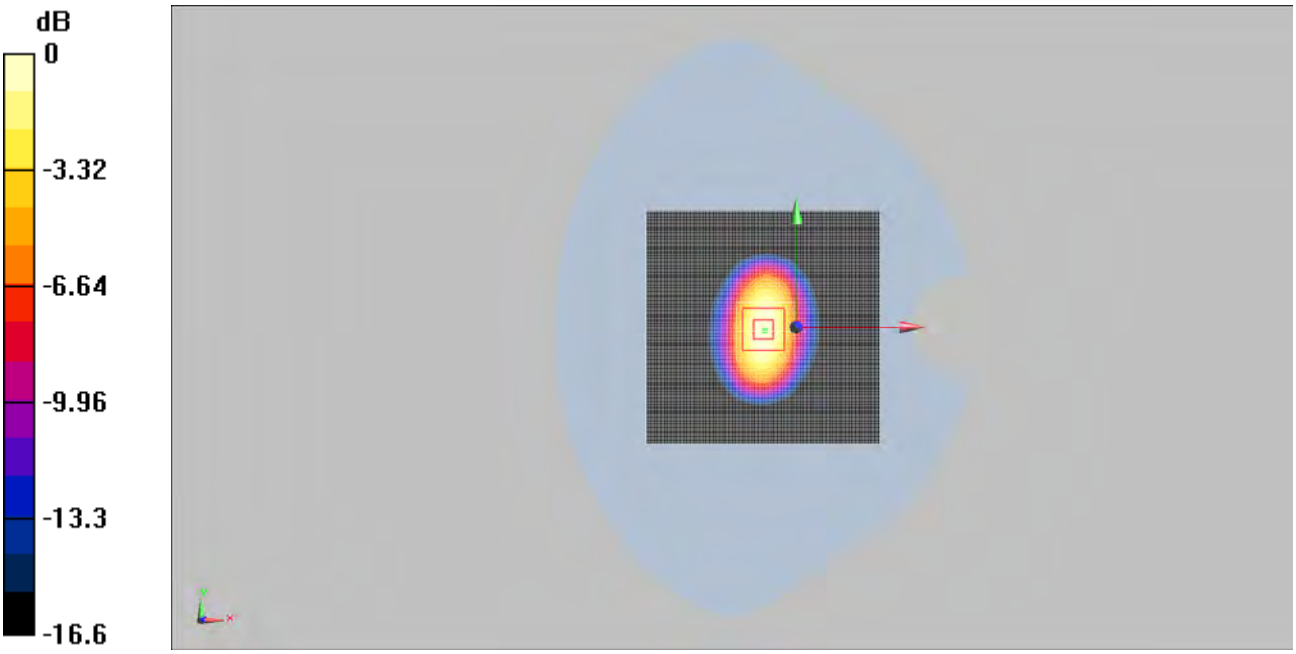
Ambient Temperature:22.3 Liquid Temperature:21.4

DASY5 Configuration:

- Probe: EX3DV4 – SN7510; ConvF(7.86, 7.86, 7.86); Calibrated: 2018.07.14
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2018.01.11
- Phantom: SAM (30deg probe tilt) with CRP v5.0 on left 1859; Type: QD000P40CD; Serial: TP:1859
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Dipole 1900MHz/Area Scan (121x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 11.41 W/kg

Dipole 1900MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 87.8 V/m; Power Drift = 0.021 dB
Peak SAR (extrapolated) = 18 W/kg
SAR(1 g) = 10.1 W/kg; SAR(10 g) = 5.29 W/kg
Maximum value of SAR (measured) = 11.3 W/kg



0 dB = 11.3W/kg

System Performance Check Data (2450MHz Body)

Date: 2018.12.06

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.99 mho/m; ε_r = 52.64; ρ = 1000 kg/m^3
Phantom section: Flat Section

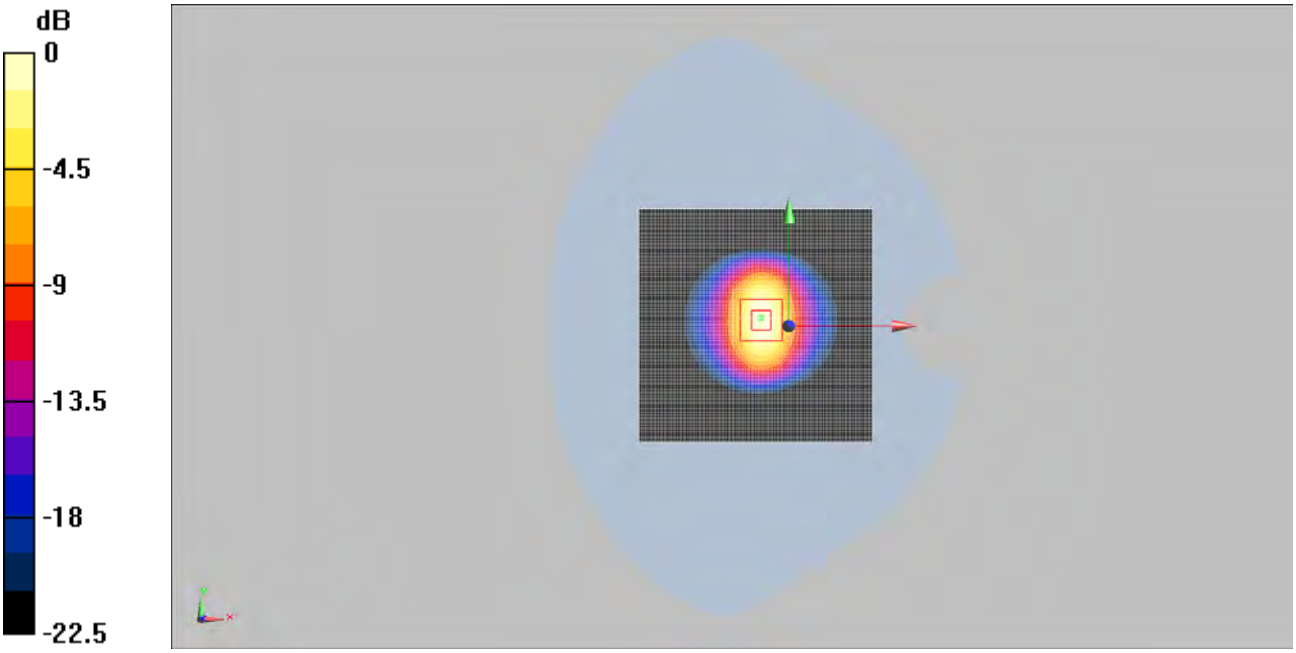
Ambient Temperature:21.8 Liquid Temperature:21.7

DASY5 Configuration:

- Probe: EX3DV4 – SN7510; ConvF(7.8, 7.8, 7.8); Calibrated: 2018.07.14
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2018.01.11
- Phantom: SAM (30deg probe tilt) with CRP v5.0 Right 1857; Type: QD000P40CD; Serial: TP1857
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Dipole 2450MHz/Area Scan (121x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 15.43 W/kg

Dipole 2450MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 81.3 V/m; Power Drift = -0.054 dB
Peak SAR (extrapolated) = 26.9 W/kg
SAR(1 g) = 13 W/kg; SAR(10 g) = 5.92 W/kg
Maximum value of SAR (measured) = 15.2 W/kg



0 dB = 15.2W/kg

System Performance Check Data (2600MHz Body)

Date: 2018.11.27

Communication System: CW; Frequency: 2600 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2600 MHz; σ = 2.21 mho/m; ε_r = 52.92; ρ = 1000 kg/m^3
Phantom section: Flat Section

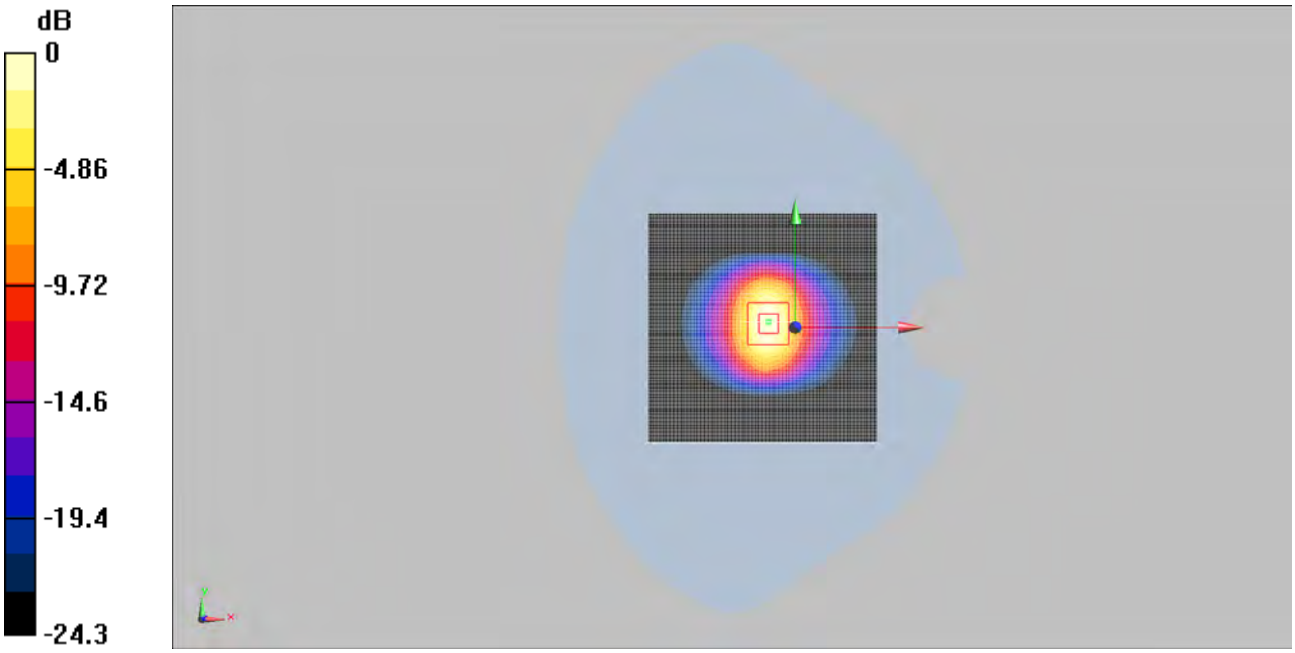
Ambient Temperature:22.9 Liquid Temperature:21.8

DASY5 Configuration:

- Probe: EX3DV4 – SN7510; ConvF(7.33, 7.33, 7.33); Calibrated: 2018.07.14
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2018.01.11
- Phantom: SAM (30deg probe tilt) with CRP v5.0 Right 1857; Type: QD000P40CD; Serial: TP1857
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Dipole 2600MHz/Area Scan (121x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 16.2 W/kg

Dipole 2600MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 81.5 V/m; Power Drift = -0.031 dB
Peak SAR (extrapolated) = 29.1 W/kg
SAR(1 g) = 13.62 W/kg; SAR(10 g) = 5.96 W/kg
Maximum value of SAR (measured) = 15.7 W/kg



0 dB = 15.7W/kg

System Performance Check Data (5250MHz Body)

Date: 2018.12.07

Communication System: CW; Frequency: 5250 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5250 MHz; σ = 5.42 mho/m; ε_r = 49.1; ρ = 1000 kg/m^3
Phantom section: Flat Section

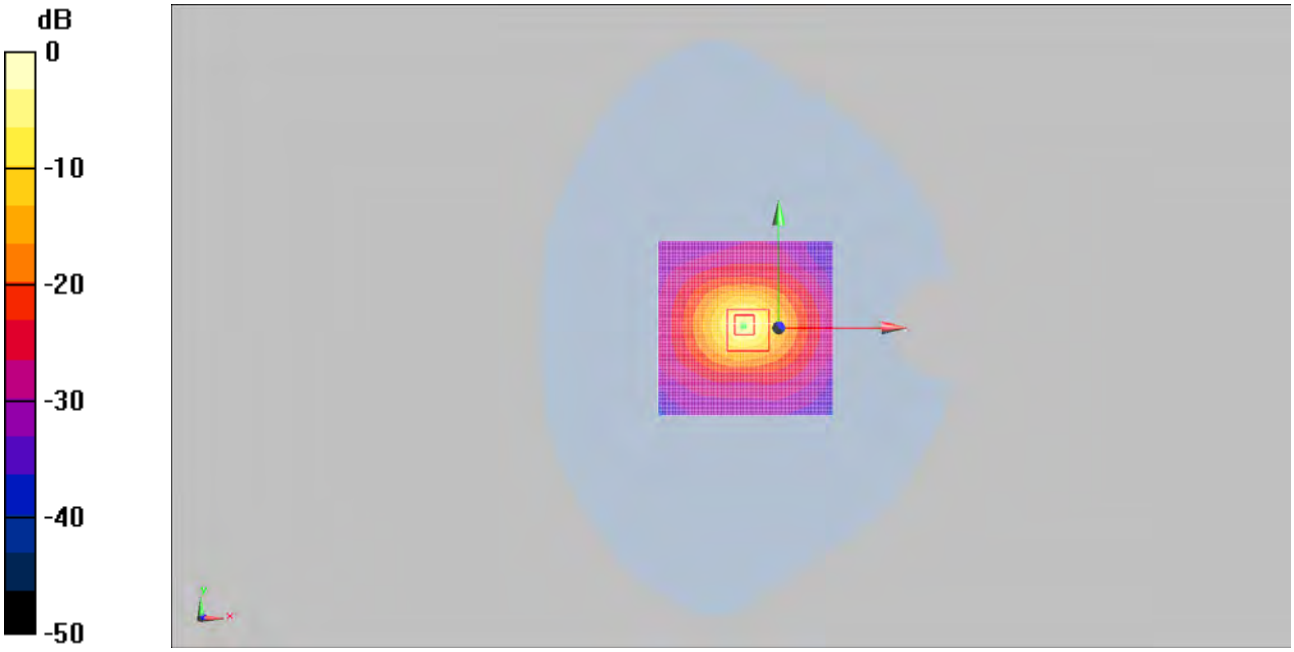
Ambient Temperature:22.5 Liquid Temperature:21.4

DASY5 Configuration:

- Probe: EX3DV4 – SN7510; ConvF(5.09, 5.09, 5.09); Calibrated: 2018.07.14
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2018.01.11
- Phantom: Phantom: SAM (30deg probe tilt) with CRP v5.0 on left 1859; Type: QD000P40CD; Serial: TP:1859
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Dipole 5250MHz/Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 18.9 W/kg

Dipole 5250MHz/Zoom Scan (7x7x13)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 61.7 V/m; Power Drift = -0.111 dB
Peak SAR (extrapolated) = 94.5 W/kg
SAR(1 g) = 19.13 W/kg; SAR(10 g) = 5.06 W/kg
Maximum value of SAR (measured) = 40.5 W/kg



0 dB = 40.5W/kg

System Performance Check Data (5750MHz Body)

Date: 2018.12.07

Communication System: CW; Frequency: 5750 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5750 MHz; σ = 6.06 mho/m; ε_r = 48.21; ρ = 1000 kg/m^3
Phantom section: Flat Section

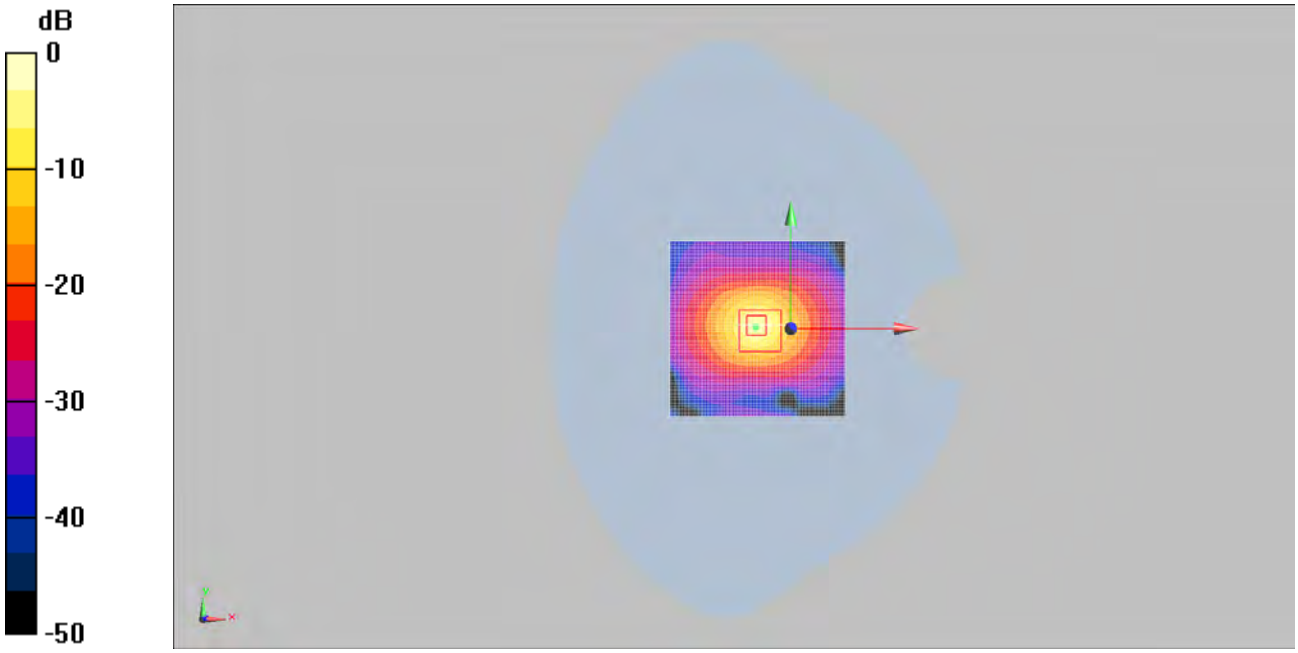
Ambient Temperature:22.5 Liquid Temperature:21.4

DASY5 Configuration:

- Probe: EX3DV4 – SN7510; ConvF(4.52, 4.52, 4.52); Calibrated: 2018.07.14
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2018.01.11
- Phantom: Phantom: SAM (30deg probe tilt) with CRP v5.0 on left 1859; Type: QD000P40CD; Serial: TP:1859
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Dipole 5750MHz/Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 16.8 W/kg

Dipole 5750MHz/Zoom Scan (7x7x13)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 54.7 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 109.5 W/kg
SAR(1 g) = 19.3 W/kg; SAR(10 g) = 4.99 W/kg
Maximum value of SAR (measured) = 41 W/kg



0 dB = 41W/kg

ANNEX C TEST DATA

MEAS. 1 Left Head with Cheek on Middle Channel in GSM 850 mode
Date: 2018.12.03

Communication System: GSM 850; Frequency: 836.6 MHz;Duty Cycle: 1:8.3
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.942 mho/m; ε_r = 41.6; ρ = 1000 kg/m^3
Phantom section: Right Section

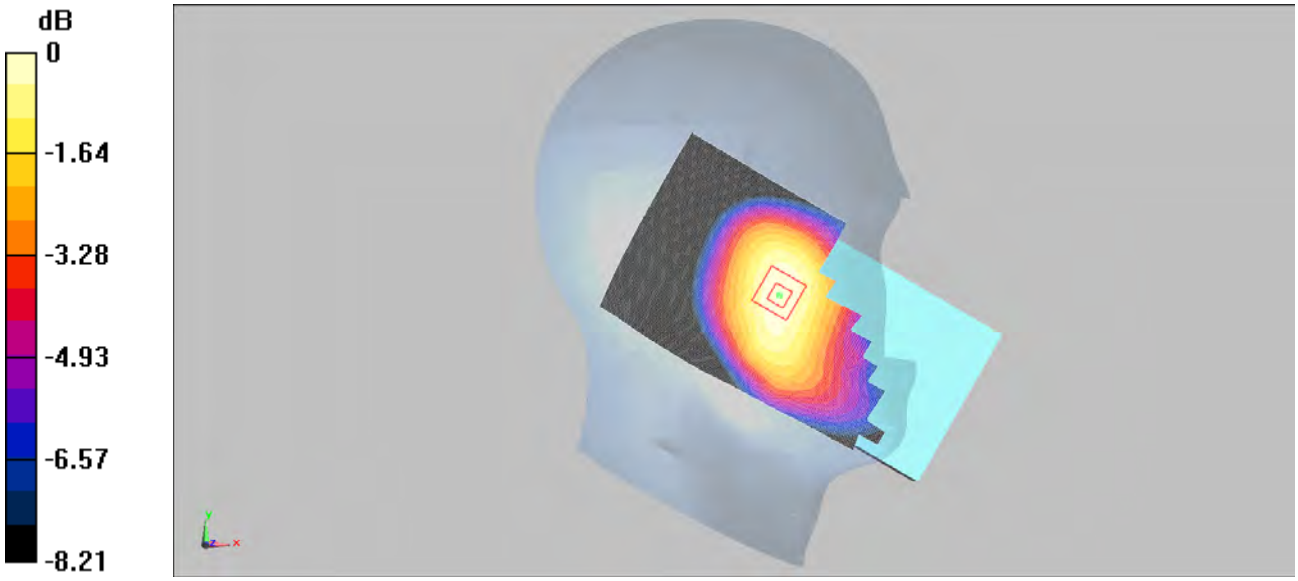
Ambient Temperature:22.1 Liquid Temperature:21.0

DASY5 Configuration:

- Probe: EX3DV4 – SN7510; ConvF(10.06, 10.06, 10.06); Calibrated: 2018.07.14
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2018.01.11
- Phantom: SAM (30deg probe tilt) with CRP v5.0 on left 1859; Type: QD000P40CD; Serial: TP1859
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Left Head Touch Middle/Area Scan (111x221x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.243 W/kg

Left Head Touch Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.06 V/m; Power Drift = -0.032 dB
Peak SAR (extrapolated) = 0.290 W/kg
SAR(1 g) = 0.234 W/kg; SAR(10 g) = 0.182 W/kg
Maximum value of SAR (measured) = 0.245 W/kg



0 dB = 0.245W/kg

MEAS. 2 Body Plan with Front Side 10mm on Middle Channel in GSM 850 mode
Date: 2018.11.29

Communication System: GSM 850; Frequency: 836.6 MHz;Duty Cycle: 1:8.3
Medium parameters used (interpolated): f = 836.6 MHz; σ = 1.01 mho/m; ε_r = 56.1; ρ = 1000 kg/m^3
Phantom section: Flat Section

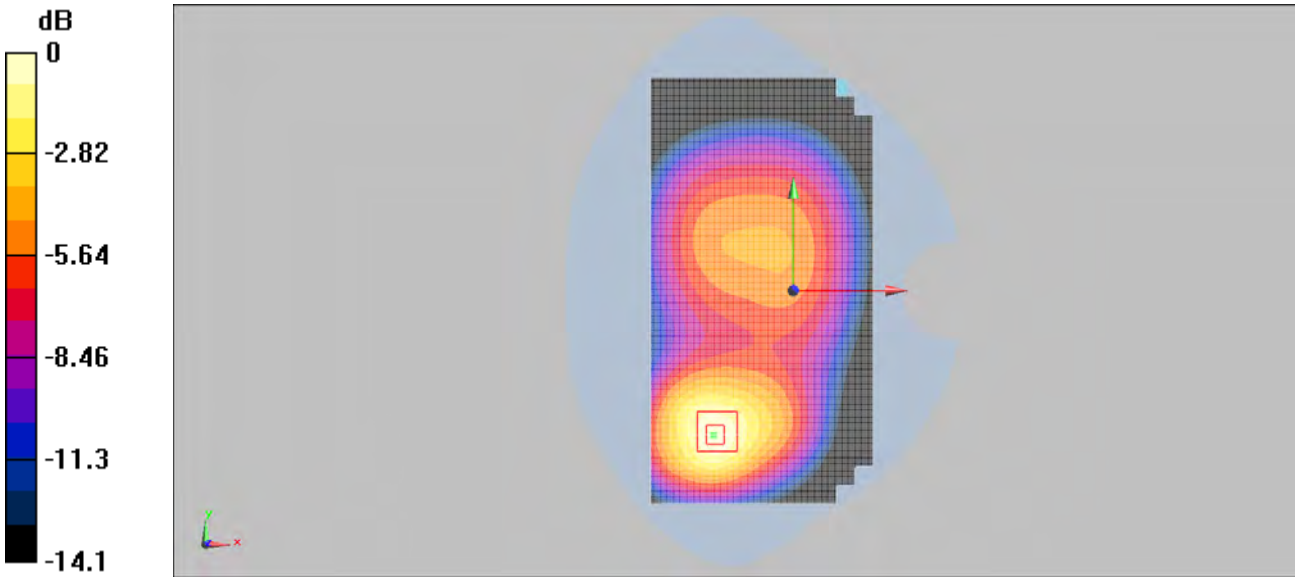
Ambient Temperature:22.7 Liquid Temperature:21.6

DASY5 Configuration:

- Probe: EX3DV4 – SN7510; ConvF(10.14, 10.14, 10.14); Calibrated: 2018.07.14
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2018.01.11
- Phantom: SAM (30deg probe tilt) with CRP v5.0 on Right 1857; Type: QD000P40CD; Serial: TP1857
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Body Front Middle/Area Scan (121x231x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.552 W/kg

Body Front Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13 V/m; Power Drift = -0.018 dB
Peak SAR (extrapolated) = 0.794 W/kg
SAR(1 g) = 0.513 W/kg; SAR(10 g) = 0.325 W/kg
Maximum value of SAR (measured) = 0.558 W/kg



0 dB = 0.558W/kg

MEAS. 3 Body Plan with Front Side 10mm on Middle Channel in GPRS 850(4TX) mode
Date: 2018.11.29

Communication System: GSM 850 class 12; Frequency: 836.6 MHz;Duty Cycle: 1:2
Medium parameters used (interpolated): f = 836.6 MHz; σ = 1.01 mho/m; ε_r = 56.1; ρ = 1000 kg/m^3
Phantom section: Flat Section

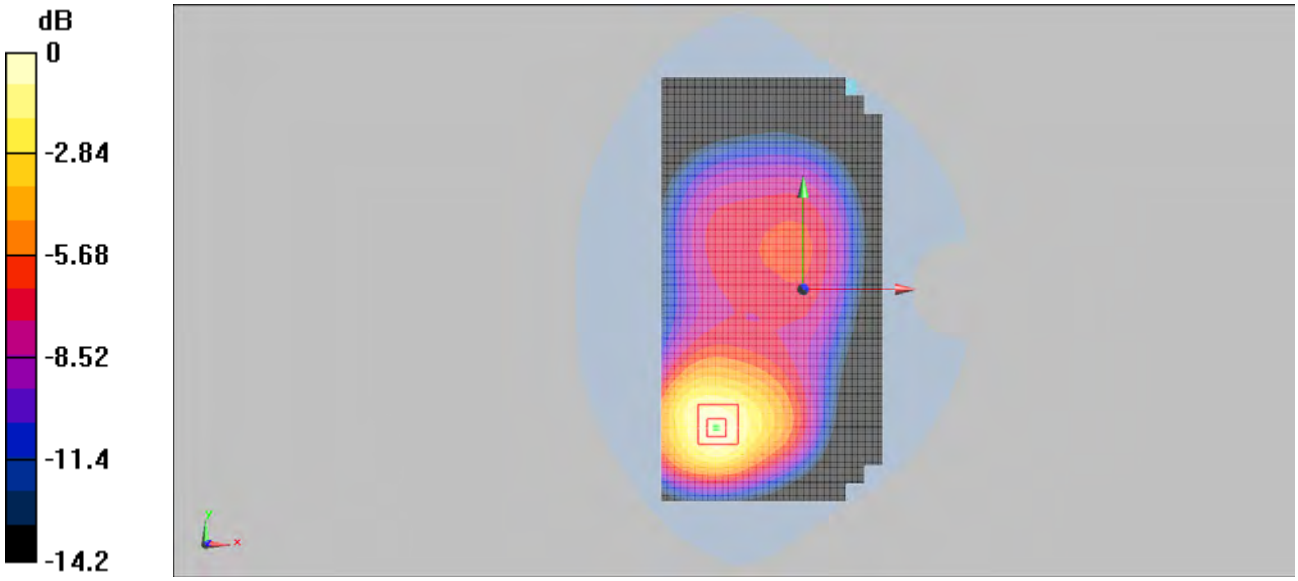
Ambient Temperature:22.7 Liquid Temperature:21.6

DASY5 Configuration:

- Probe: EX3DV4 – SN7510; ConvF(10.14, 10.14, 10.14); Calibrated: 2018.07.14
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2018.01.11
- Phantom: SAM (30deg probe tilt) with CRP v5.0 on Right 1857; Type: QD000P40CD; Serial: TP1857
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Body Front Middle/Area Scan (121x231x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.743 W/kg

Body Front Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.2 V/m; Power Drift = -0.00181 dB
Peak SAR (extrapolated) = 1.05 W/kg
SAR(1 g) = 0.685 W/kg; SAR(10 g) = 0.438 W/kg
Maximum value of SAR (measured) = 0.746 W/kg



0 dB = 0.746W/kg

MEAS. 4 Left Head with Cheek on Middle Channel in GSM 1900 mode
Date: 2018.12.04

Communication System: GSM1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 1880 MHz; σ = 1.36 mho/m; ε_r = 40.1; ρ = 1000 kg/m^3
Phantom section: Left Section

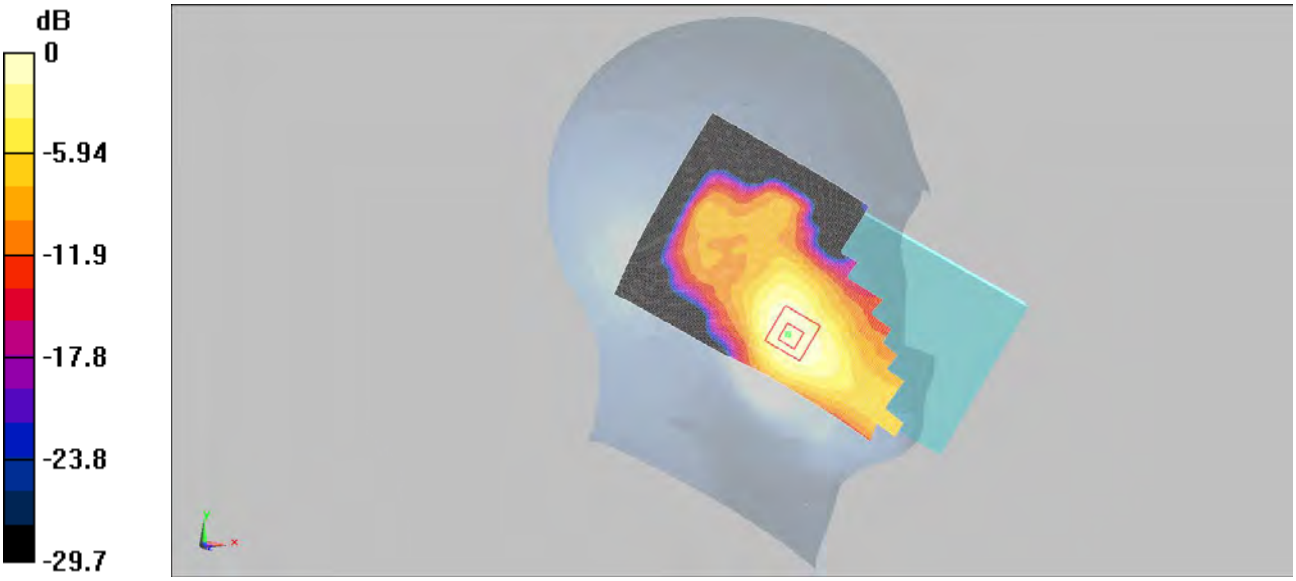
Ambient Temperature:22.3 Liquid Temperature:21.5

DASY5 Configuration:

- Probe: EX3DV4 – SN7510; ConvF(8.31, 8.31, 8.31); Calibrated: 2018.07.14
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2018.01.11
- Phantom: SAM (30deg probe tilt) with CRP v5.0 on left 1859; Type: QD000P40CD; Serial: TP1859
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Left Head Touch Middle/Area Scan (111x221x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.121 W/kg

Left Head Touch Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.2 V/m; Power Drift = -0.030 dB
Peak SAR (extrapolated) = 0.166 W/kg
SAR(1 g) = 0.110 W/kg; SAR(10 g) = 0.065 W/kg
Maximum value of SAR (measured) = 0.121 W/kg



0 dB = 0.121W/kg

MEAS. 5 Body Plan with Front Side 10mm on Middle Channel in GSM 1900 mode
Date: 2018.11.22

Communication System: GSM1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 1880 MHz; σ = 1.47 mho/m; ε_r = 54.8; ρ = 1000 kg/m^3
Phantom section: Flat Section

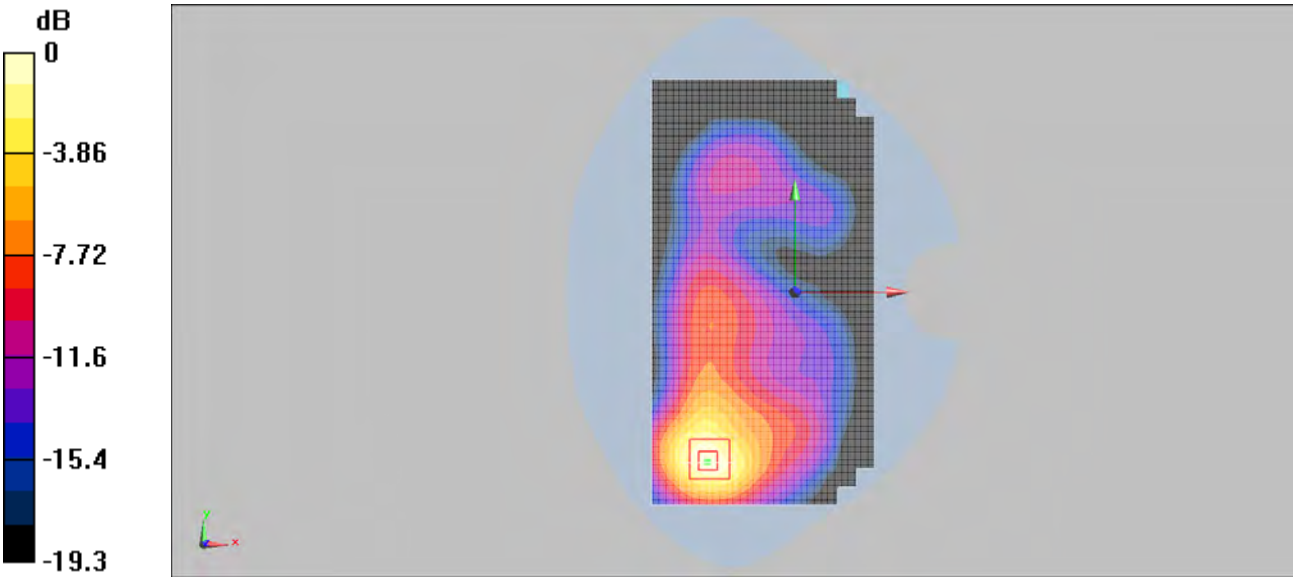
Ambient Temperature:22.3 Liquid Temperature:21.4

DASY5 Configuration:

- Probe: EX3DV4 – SN7510; ConvF(7.86, 7.86, 7.86); Calibrated: 2018.07.14
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2018.01.11
- Phantom: SAM (30deg probe tilt) with CRP v5.0 on Right 1857; Type: QD000P40CD; Serial: TP1857
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Body Front Middle/Area Scan (121x231x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.736 W/kg

Body Front Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.53 V/m; Power Drift = -0.00127 dB
Peak SAR (extrapolated) = 1.09 W/kg
SAR(1 g) = 0.646 W/kg; SAR(10 g) = 0.351 W/kg
Maximum value of SAR (measured) = 0.728 W/kg



0 dB = 0.728W/kg

MEAS. 6 Body Plan with Front Side 10mm on Middle Channel in GPRS 1900(4TX) mode
Date: 2018.11.22

Communication System: GSM1900 class 12; Frequency: 1880 MHz;Duty Cycle: 1:2
Medium parameters used: f = 1880 MHz; σ = 1.47 mho/m; ε_r = 54.8; ρ = 1000 kg/m3
Phantom section: Flat Section

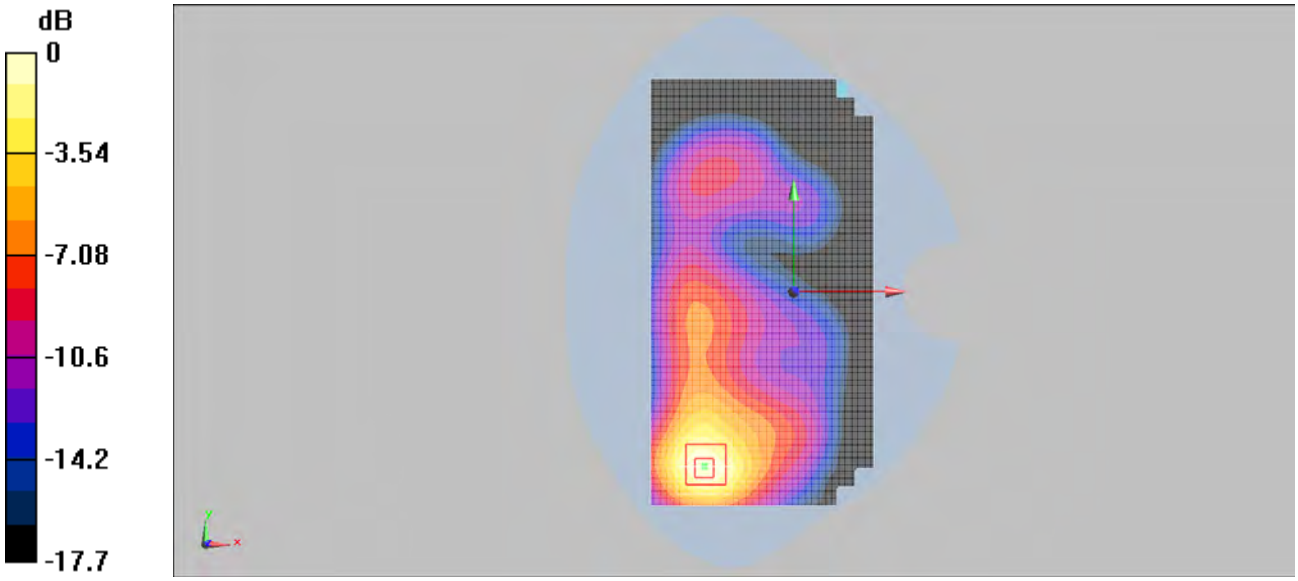
Ambient Temperature:22.3 Liquid Temperature:21.4

DASY5 Configuration:

- Probe: EX3DV4 – SN7510; ConvF(7.86, 7.86, 7.86); Calibrated: 2018.07.14
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2018.01.11
- Phantom: SAM (30deg probe tilt) with CRP v5.0 on Right 1857; Type: QD000P40CD; Serial: TP1857
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Body Front High/Area Scan (121x231x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.07 W/kg

Body Front High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.88 V/m; Power Drift = -0.044 dB
Peak SAR (extrapolated) = 1.6 W/kg
SAR(1 g) = 0.962 W/kg; SAR(10 g) = 0.539 W/kg
Maximum value of SAR (measured) = 1.07 W/kg



0 dB = 1.07W/kg

MEAS. 7 Left Head with Cheek on Middle Channel in WCDMA Band 2 mode
Date: 2018.12.04

Communication System: WCDMA Band II; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.36 mho/m; ε_r = 40.1; ρ = 1000 kg/m^3
Phantom section: Left Section

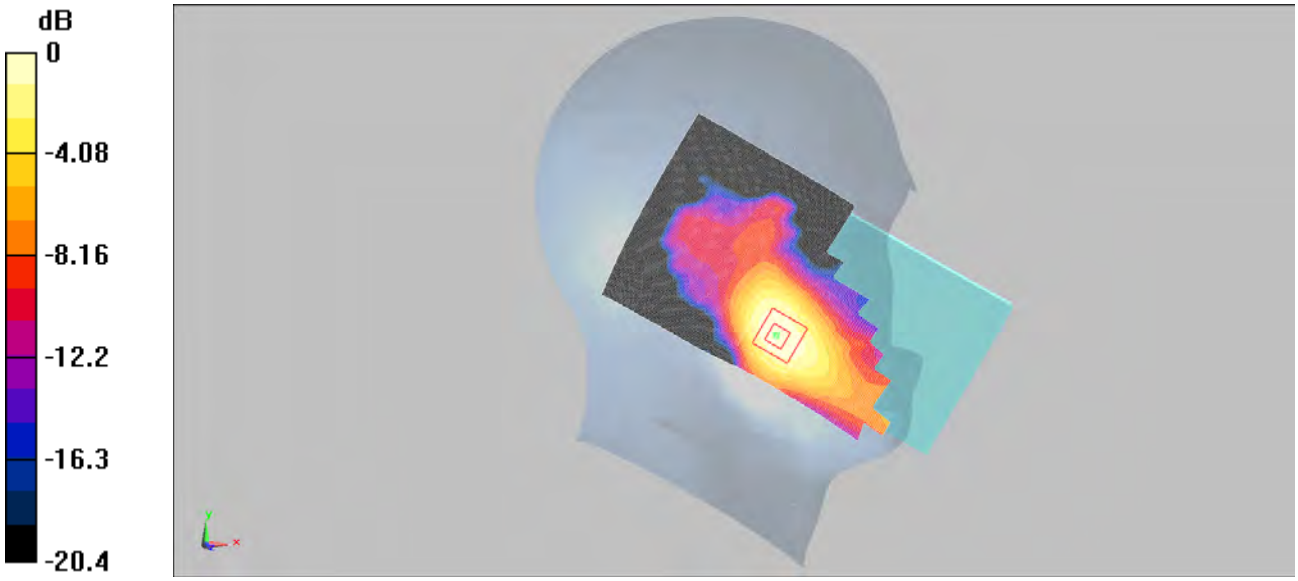
Ambient Temperature:22.3 Liquid Temperature:21.5

DASY5 Configuration:

- Probe: EX3DV4 – SN7510; ConvF(8.31, 8.31, 8.31); Calibrated: 2018.07.14
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2018.01.11
- Phantom: SAM (30deg probe tilt) with CRP v5.0 on Right 1857; Type: QD000P40CD; Serial: TP1857
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Left Head Touch Middle/Area Scan (111x221x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.169 W/kg

Left Head Touch Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.93 V/m; Power Drift = -0.039 dB
Peak SAR (extrapolated) = 0.232 W/kg
SAR(1 g) = 0.153 W/kg; SAR(10 g) = 0.092 W/kg
Maximum value of SAR (measured) = 0.170 W/kg



0 dB = 0.170W/kg

MEAS. 8 Body Plan with Front Side 10mm on Middle Channel in WCDMA Band 2 mode
Date: 2018.11.22

Communication System: WCDMA Band II; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1880 MHz; σ = 1.47 mho/m; ε_r = 54.8; ρ = 1000 kg/m^3
Phantom section: Flat Section

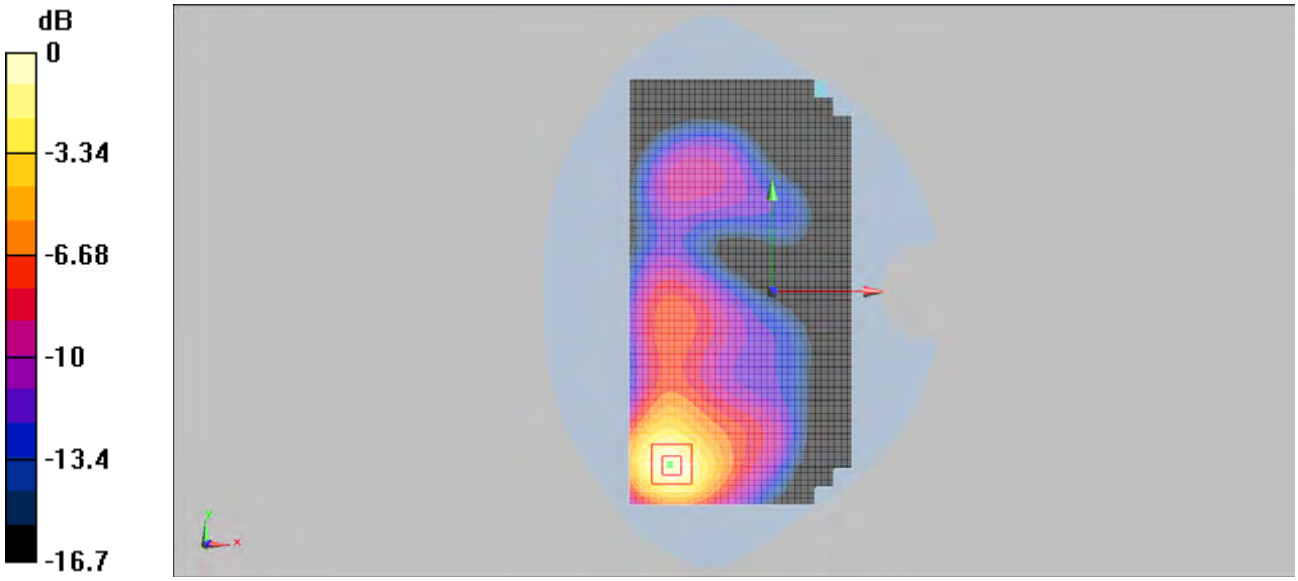
Ambient Temperature:22.3 Liquid Temperature:21.4

DASY5 Configuration:

- Probe: EX3DV4 – SN7510; ConvF(7.86, 7.86, 7.86); Calibrated: 2018.07.14
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2018.01.11
- Phantom: SAM (30deg probe tilt) with CRP v5.0 on left 1859; Type: QD000P40CD; Serial: TP1859
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Body Front Middle/Area Scan (121x231x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.822 W/kg

Body Front Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.22 V/m; Power Drift = 0.107 dB
Peak SAR (extrapolated) = 1.22 W/kg
SAR(1 g) = 0.735 W/kg; SAR(10 g) = 0.414 W/kg
Maximum value of SAR (measured) = 0.817 W/kg



0 dB = 0.817W/kg

MEAS. 9 Right Head with Cheek on Middle Channel in WCDMA Band 5 mode
Date: 2018.12.03

Communication System: WCDMA Band V; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium parameters used: f = 836.4 MHz; σ = 0.942 mho/m; ε_r = 41.6; ρ = 1000 kg/m^3
Phantom section: Right Section

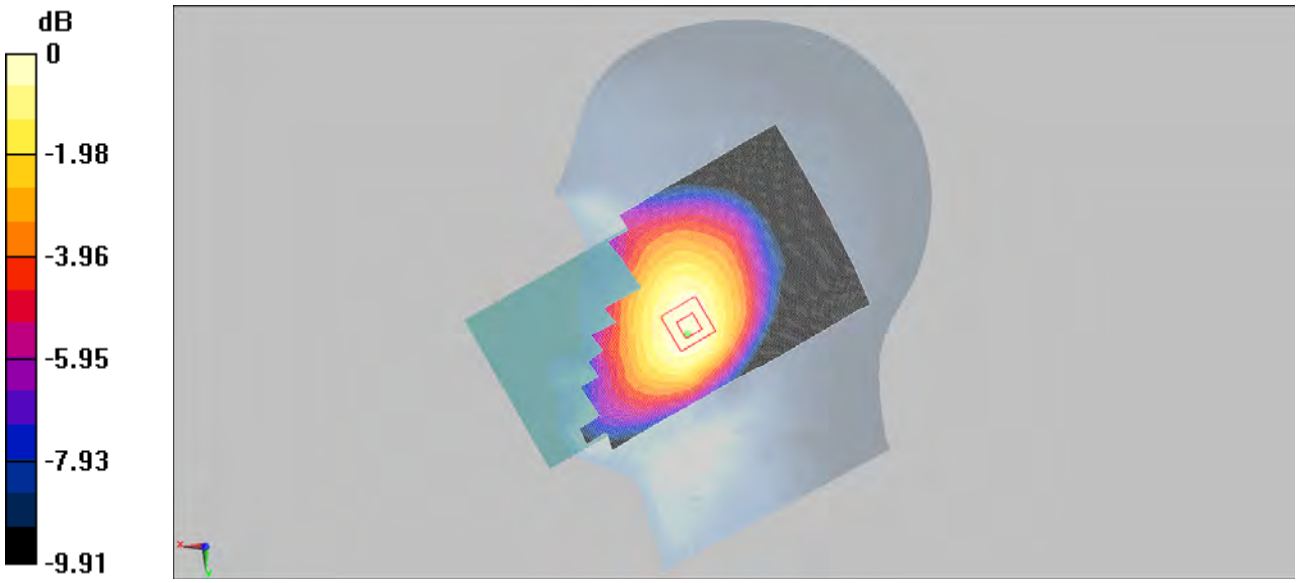
Ambient Temperature:22.1 Liquid Temperature:21.0

DASY5 Configuration:

- Probe: EX3DV4 – SN7510; ConvF(10.06, 10.06, 10.06); Calibrated: 2018.07.14
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2018.01.11
- Phantom: SAM (30deg probe tilt) with CRP v5.0 on left 1859; Type: QD000P40CD; Serial: TP1859
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Right Head Touch Middle/Area Scan (111x221x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.249 W/kg

Right Head Touch Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.68 V/m; Power Drift = -0.057 dB
Peak SAR (extrapolated) = 0.297 W/kg
SAR(1 g) = 0.233 W/kg; SAR(10 g) = 0.175 W/kg
Maximum value of SAR (measured) = 0.244 W/kg



0 dB = 0.244W/kg

MEAS. 10 Body Plan with Front Side 10mm on Middle Channel in WCDMA Band 5 mode
Date: 2018.11.29

Communication System: WCDMA Band V; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium parameters used: f = 836.41 MHz; σ = 1.01 mho/m; ε_r = 56.1; ρ = 1000 kg/m^3
Phantom section: Flat Section

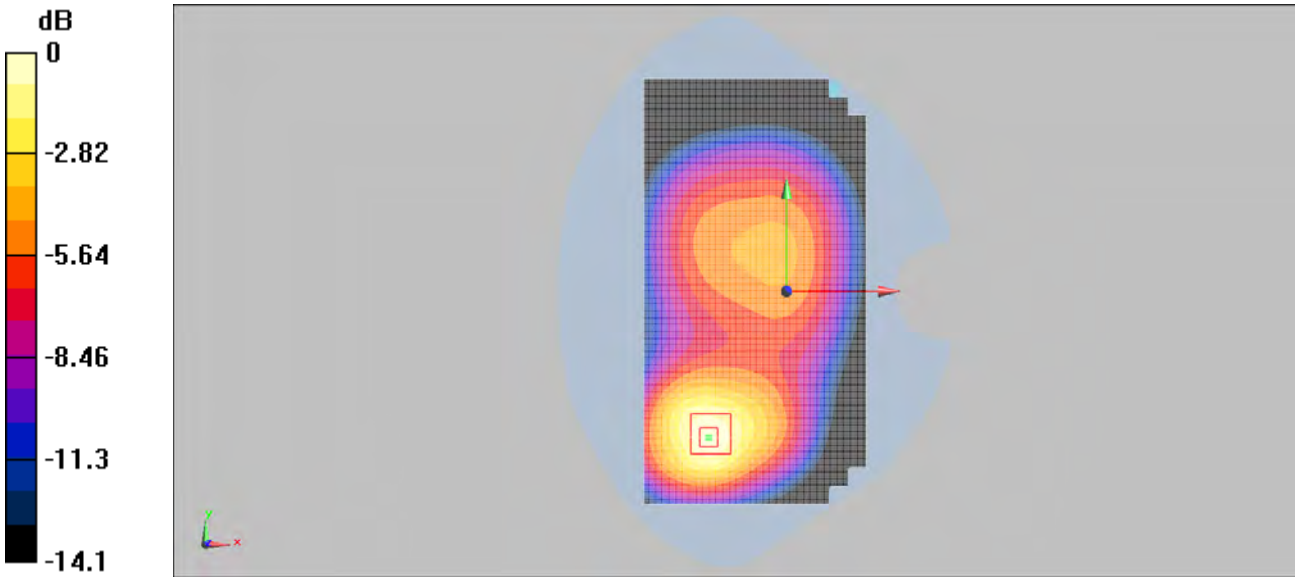
Ambient Temperature:22.7 Liquid Temperature:21.6

DASY5 Configuration:

- Probe: EX3DV4 – SN7510; ConvF(10.14, 10.14, 10.14); Calibrated: 2018.07.14
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2018.01.11
- Phantom: SAM (30deg probe tilt) with CRP v5.0 Right 1857; Type: QD000P40CD; Serial: TP1857
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Body Front Middle/Area Scan (121x231x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.543 W/kg

Body Front Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13 V/m; Power Drift = -0.00936 dB
Peak SAR (extrapolated) = 0.783 W/kg
SAR(1 g) = 0.502 W/kg; SAR(10 g) = 0.318 W/kg
Maximum value of SAR (measured) = 0.546 W/kg



0 dB = 0.546W/kg

MEAS. 11 Left Head with Cheek on Low Channel in LTE Band 2 mode
Date: 2018.12.04

Communication System: LTE Band 2; Frequency: 1860 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1860 MHz; σ = 1.33 mho/m; ε_r = 40.15; ρ = 1000 kg/m^3
Phantom section: Left Section

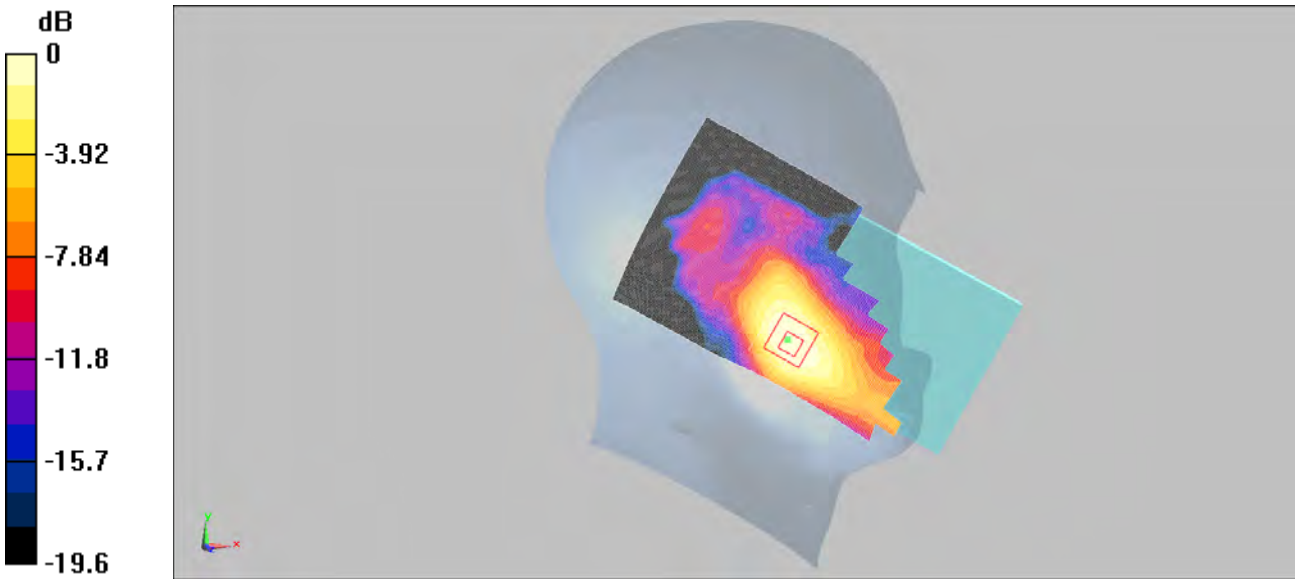
Ambient Temperature:22.3 Liquid Temperature:21.5

DASY5 Configuration:

- Probe: EX3DV4 – SN7510; ConvF(8.31, 8.31, 8.31); Calibrated: 2018.07.14
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2018.01.11
- Phantom: SAM (30deg probe tilt) with CRP v5.0 on Right 1857; Type: QD000P40CD; Serial: TP1857
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Left Head Touch Low 1RB 50/Area Scan (111x221x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.171 W/kg

Left Head Touch Low 1RB 50/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.49 V/m; Power Drift = 0.085 dB
Peak SAR (extrapolated) = 0.229 W/kg
SAR(1 g) = 0.153 W/kg; SAR(10 g) = 0.093 W/kg
Maximum value of SAR (measured) = 0.164 W/kg



0 dB = 0.164W/kg

MEAS. 12 Body Plan with Front Side 10mm on High Channel in LTE Band 2 mode
Date: 2018.11.22

Communication System: LTE Band 2; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.49 mho/m; ε_r = 54.72; ρ = 1000 kg/m^3
Phantom section: Flat Section

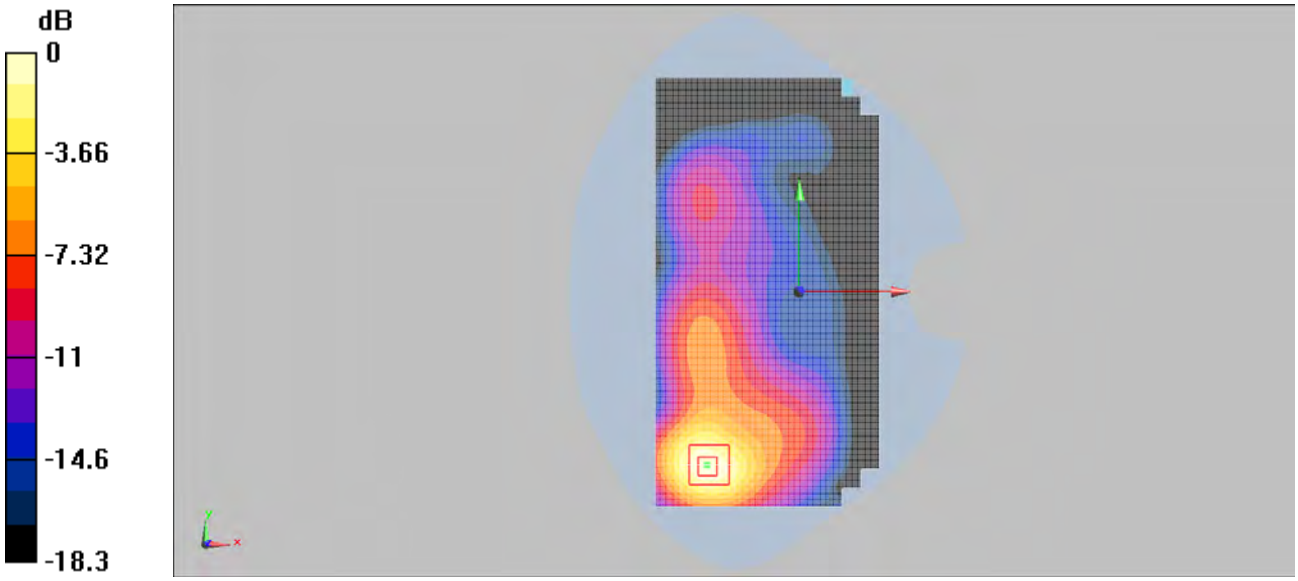
Ambient Temperature:22.3 Liquid Temperature:21.4

DASY5 Configuration:

- Probe: EX3DV4 – SN7510; ConvF(7.86, 7.86, 7.86); Calibrated: 2018.07.14
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2018.01.11
- Phantom: SAM (30deg probe tilt) with CRP v5.0 on left 1859; Type: QD000P40CD; Serial: TP1859
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Body Front High 1RB 50/Area Scan (121x231x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.929 W/kg

Body Front High 1RB 50/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.42 V/m; Power Drift = 0.096 dB
Peak SAR (extrapolated) = 1.38 W/kg
SAR(1 g) = 0.830 W/kg; SAR(10 g) = 0.462 W/kg
Maximum value of SAR (measured) = 0.924 W/kg



0 dB = 0.924W/kg

MEAS. 13 Left Head with Cheek on Middle Channel in LTE Band 4 mode
Date: 2018.12.04

Communication System: LTE Band 4; Frequency: 1732.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.36 mho/m; ε_r = 38.6; ρ = 1000 kg/m^3
Phantom section: Left Section

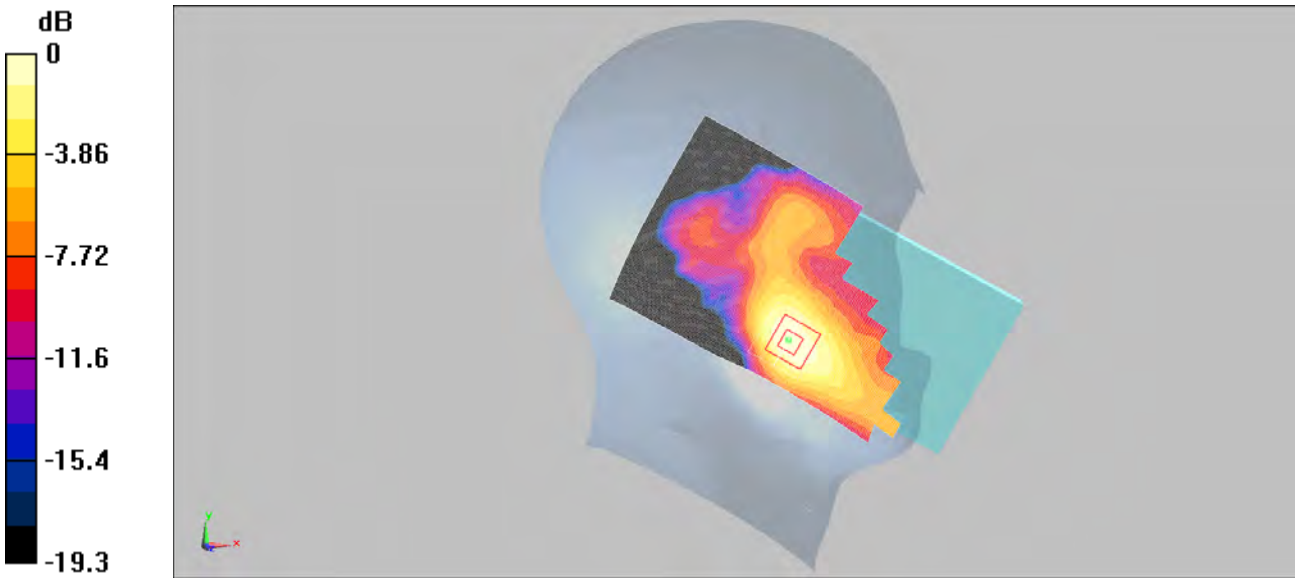
Ambient Temperature:21.9 Liquid Temperature:20.9

DASY5 Configuration:

- Probe: EX3DV4 – SN7510; ConvF(8.68, 8.68, 8.68); Calibrated: 2018.07.14
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2018.01.11
- Phantom: SAM (30deg probe tilt) with CRP v5.0 on Right 1857; Type: QD000P40CD; Serial: TP1857
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Left Head Touch Middle 1RB 50/Area Scan (111x221x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.130 W/kg

Left Head Touch Middle 1RB 50/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.37 V/m; Power Drift = 0.063 dB
Peak SAR (extrapolated) = 0.176 W/kg
SAR(1 g) = 0.121 W/kg; SAR(10 g) = 0.075 W/kg
Maximum value of SAR (measured) = 0.133 W/kg



0 dB = 0.133W/kg

MEAS. 14 Body Plan with Front Side 10mm on High Channel in LTE Band 4 mode
Date: 2018.11.23

Communication System: LTE Band 4; Frequency: 1745 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1745 MHz; σ = 1.5 mho/m; ε_r = 55.5; ρ = 1000 kg/m^3
Phantom section: Flat Section

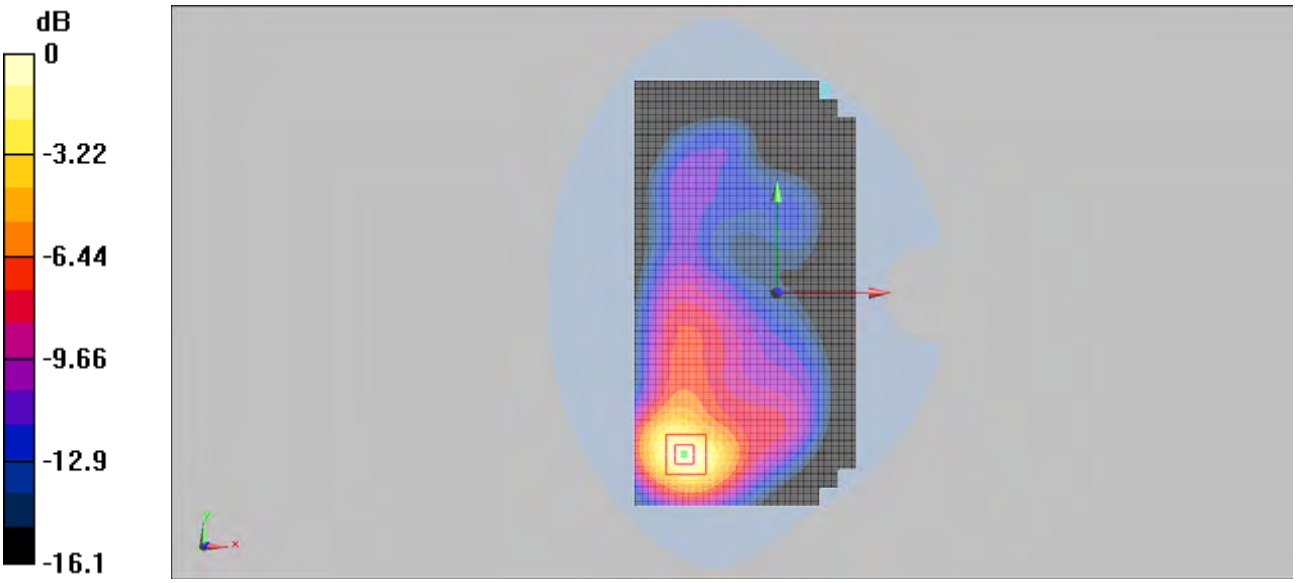
Ambient Temperature:22.0 Liquid Temperature:21.1

DASY5 Configuration:

- Probe: EX3DV4 – SN7510; ConvF(8.2, 8.2, 8.2); Calibrated: 2018.07.14
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2018.01.11
- Phantom: SAM (30deg probe tilt) with CRP v5.0 on left 1859; Type: QD000P40CD; Serial: TP1859
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Body Front High 1RB 50/Area Scan (121x231x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.03 W/kg

Body Front High 1RB 50/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.67 V/m; Power Drift = 0.104 dB
Peak SAR (extrapolated) = 1.54 W/kg
SAR(1 g) = 0.936 W/kg; SAR(10 g) = 0.529 W/kg
Maximum value of SAR (measured) = 1.06 W/kg



0 dB = 1.06W/kg

MEAS. 15 Left Head with Cheek on High Channel in LTE Band 5 mode
Date: 2018.12.03

Communication System: LTE Band 5; Frequency: 844 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 844 MHz; σ = 0.944 mho/m; ε_r = 41.57; ρ = 1000 kg/m^3
Phantom section: Right Section

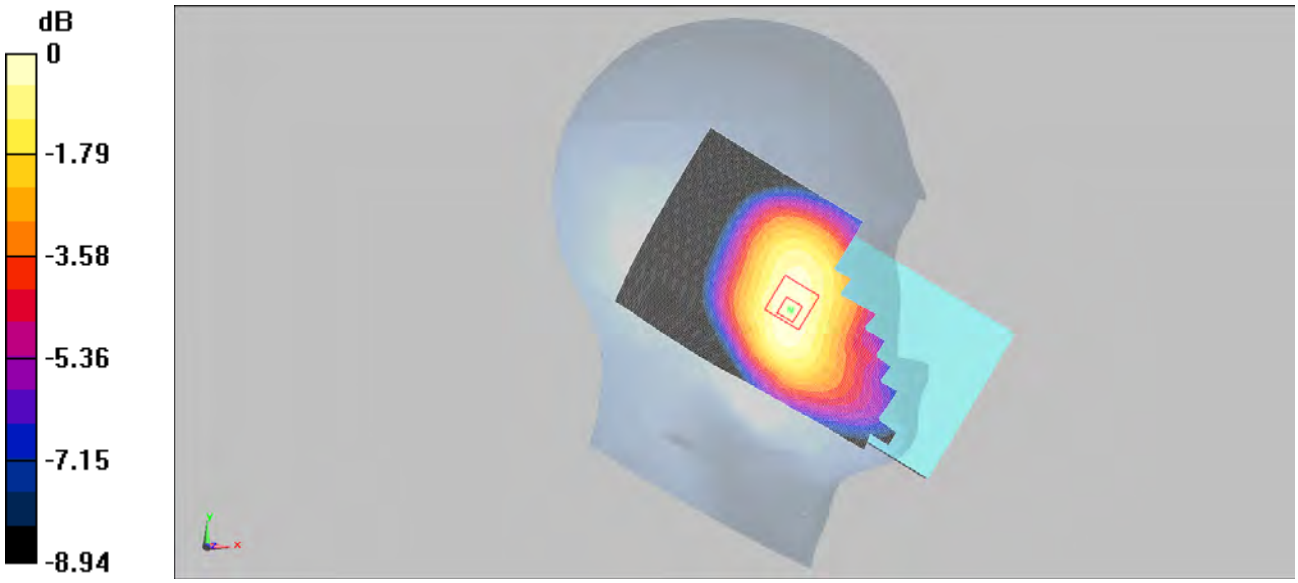
Ambient Temperature:22.1 Liquid Temperature:21.0

DASY5 Configuration:

- Probe: EX3DV4 – SN7510; ConvF(10.06, 10.06, 10.06); Calibrated: 2018.07.14
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2018.01.11
- Phantom: SAM (30deg probe tilt) with CRP v5.0 on left 1859; Type: QD000P40CD; Serial: TP1859
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Left Head Touch High 1RB 25/Area Scan (111x221x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.225 W/kg

Left Head Touch High 1RB 25/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.45 V/m; Power Drift = -0.019 dB
Peak SAR (extrapolated) = 0.294 W/kg
SAR(1 g) = 0.226 W/kg; SAR(10 g) = 0.171 W/kg
Maximum value of SAR (measured) = 0.241 W/kg



0 dB = 0.241W/kg

MEAS. 16 Body Plan with Front Side 10mm on High Channel in LTE Band 5 mode
Date: 2018.11.29

Communication System: LTE Band 5; Frequency: 844 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 844 MHz; σ = 1.02 mho/m; ε_r = 56.07; ρ = 1000 kg/m^3
Phantom section: Flat Section

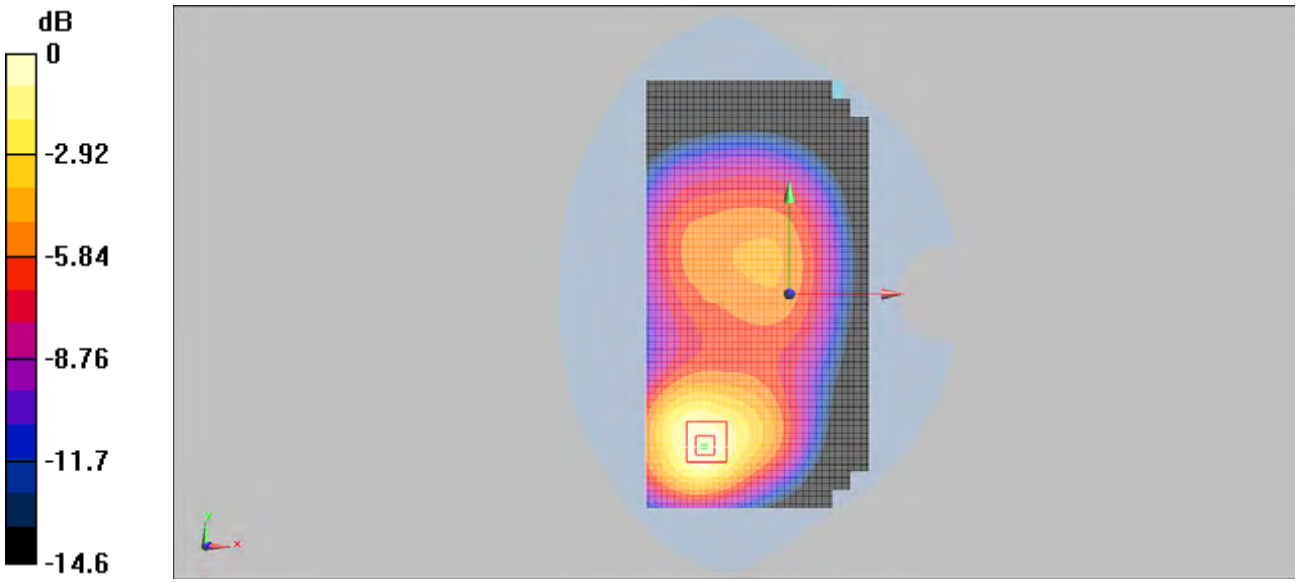
Ambient Temperature:22.7 Liquid Temperature:21.6

DASY5 Configuration:

- Probe: EX3DV4 – SN7510; ConvF(10.14, 10.14, 10.14); Calibrated: 2018.07.14
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2018.01.11
- Phantom: SAM (30deg probe tilt) with CRP v5.0 on Right 1857; Type: QD000P40CD; Serial: TP1857
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Body Front High 1RB 25/Area Scan (121x231x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.583 W/kg

Body Front High 1RB 25/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.1 V/m; Power Drift = 0.109 dB
Peak SAR (extrapolated) = 0.814 W/kg
SAR(1 g) = 0.523 W/kg; SAR(10 g) = 0.329 W/kg
Maximum value of SAR (measured) = 0.570 W/kg



0 dB = 0.570W/kg

MEAS. 17 Left Head with Cheek on Middle Channel in LTE Band 7 mode
Date: 2018.12.05

Communication System: LTE Band 7; Frequency: 2535 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2535 MHz; σ = 1.96 mho/m; ε_r = 38.5; ρ = 1000 kg/m^3
Phantom section: Left Section

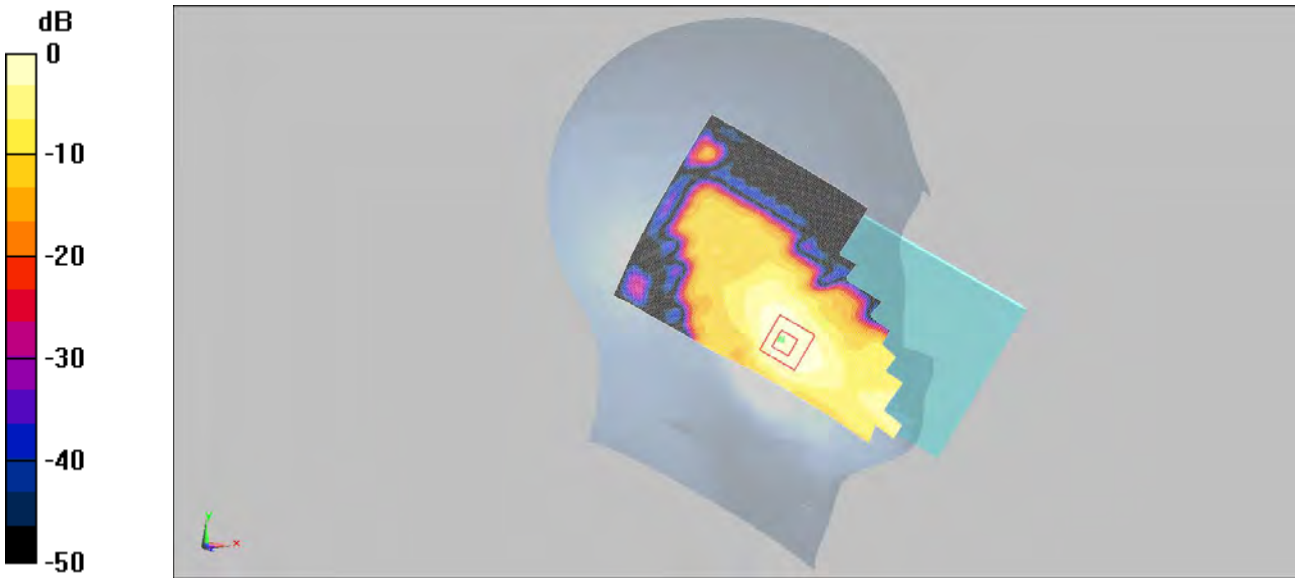
Ambient Temperature:21.8 Liquid Temperature:20.8

DASY5 Configuration:

- Probe: EX3DV4 – SN7510; ConvF(7.6, 7.6, 7.6); Calibrated: 2018.07.14
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2018.01.11
- Phantom: SAM (30deg probe tilt) with CRP v5.0 on left 1859; Type: QD000P40CD; Serial: TP1859
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Left Head Touch Middle 1RB 50/Area Scan (111x221x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.133 W/kg

Left Head Touch Middle 1RB 50/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.26 V/m; Power Drift = -0.138 dB
Peak SAR (extrapolated) = 0.214 W/kg
SAR(1 g) = 0.116 W/kg; SAR(10 g) = 0.056 W/kg
Maximum value of SAR (measured) = 0.130 W/kg



0 dB = 0.130W/kg

MEAS. 18 Body Plan with Front Side 10mm on Middle Channel in LTE Band 7 mode
Date: 2018.11.27

Communication System: LTE Band 7; Frequency: 2535 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2535 MHz; σ = 2.13 mho/m; ε_r = 53.1; ρ = 1000 kg/m^3
Phantom section: Flat Section

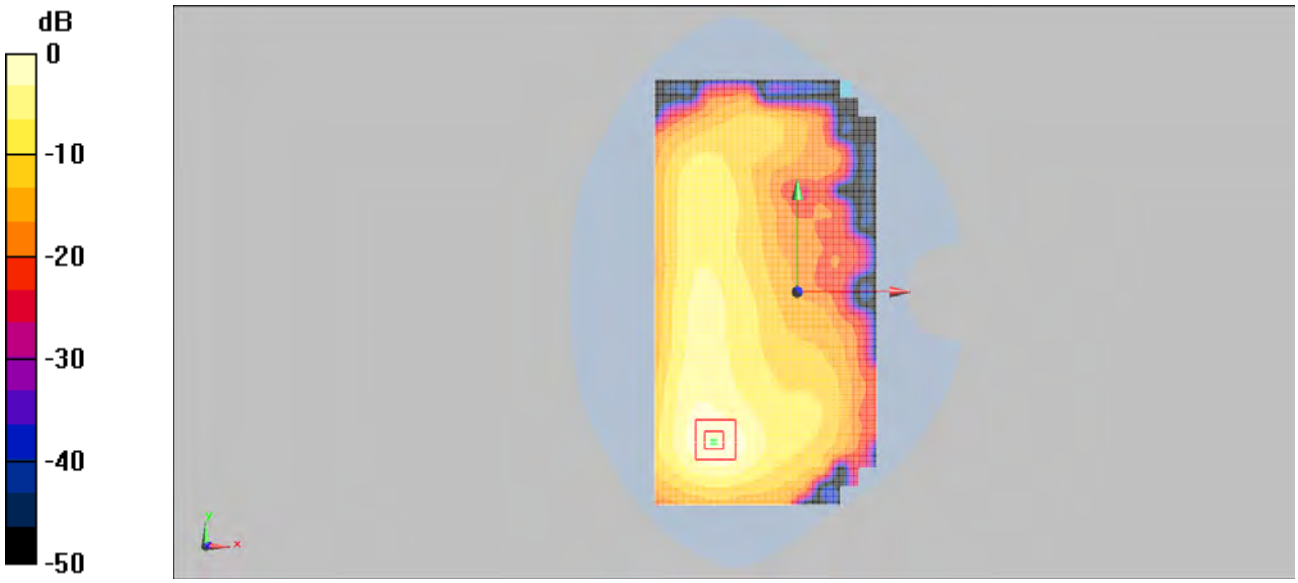
Ambient Temperature:22.9 Liquid Temperature:21.8

DASY5 Configuration:

- Probe: EX3DV4 – SN7510; ConvF(7.33, 7.33, 7.33); Calibrated: 2018.07.14
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2018.01.11
- Phantom: SAM (30deg probe tilt) with CRP v5.0 on Right 1857; Type: QD000P40CD; Serial: TP1857
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Body Front Middle 1RB 50/Area Scan (121x231x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.496 W/kg

Body Front Middle 1RB 50/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.9 V/m; Power Drift = 0.159 dB
Peak SAR (extrapolated) = 0.850 W/kg
SAR(1 g) = 0.428 W/kg; SAR(10 g) = 0.205 W/kg
Maximum value of SAR (measured) = 0.482 W/kg



0 dB = 0.482W/kg

MEAS. 19 Left Head with Cheek on Middle Channel in LTE Band 12 mode
Date: 2018.11.30

Communication System: LTE Band 12; Frequency: 707.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 707.5 MHz; σ = 0.848 mho/m; ε_r = 43.22; ρ = 1000 kg/m^3
Phantom section: Left Section

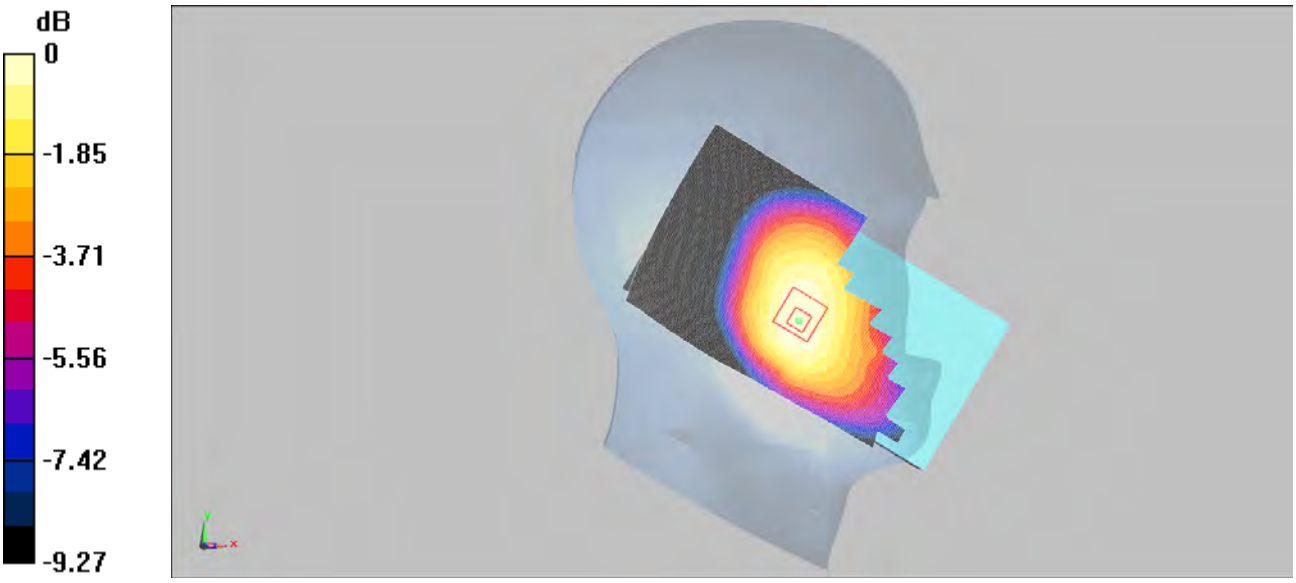
Ambient Temperature:22.5 Liquid Temperature:21.2

DASY5 Configuration:

- Probe: EX3DV4 – SN7510; ConvF(10.37, 10.37, 10.37); Calibrated: 2018.07.14
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2018.01.11
- Phantom: SAM (30deg probe tilt) with CRP v5.0 on left 1859; Type: QD000P40CD; Serial: TP1859
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Left Head Touch Middle 1RB 25/Area Scan (111x221x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.180 W/kg

Left Head Touch Middle 1RB 25/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.35 V/m; Power Drift = -0.107 dB
Peak SAR (extrapolated) = 0.214 W/kg
SAR(1 g) = 0.172 W/kg; SAR(10 g) = 0.136 W/kg
Maximum value of SAR (measured) = 0.180 W/kg



0 dB = 0.180W/kg

MEAS. 20 Body Plan with Front Side 10mm on High Channel in LTE Band 12 mode
Date: 2018.11.28

Communication System: LTE Band 12; Frequency: 711 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 711 MHz; σ = 0.96 mho/m; ε_r = 57.8; ρ = 1000 kg/m^3
Phantom section: Flat Section

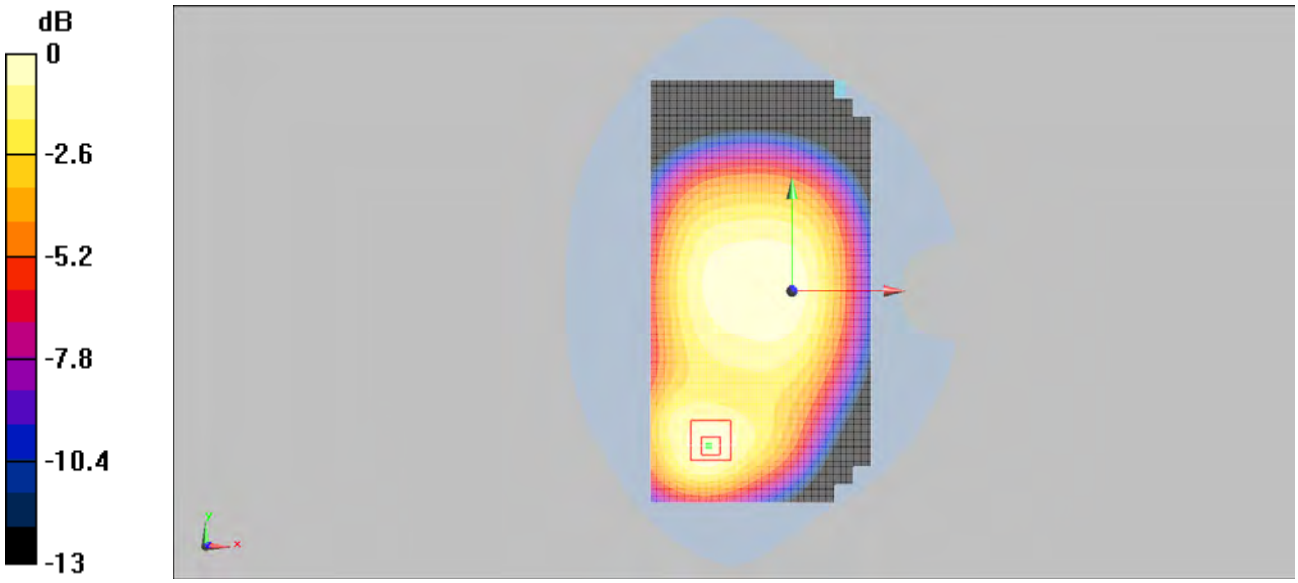
Ambient Temperature:22.3 Liquid Temperature:21.2

DASY5 Configuration:

- Probe: EX3DV4 – SN7510; ConvF(10.53, 10.53, 10.53); Calibrated: 2018.07.14
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2018.01.11
- Phantom: SAM (30deg probe tilt) with CRP v5.0 on Right 1857; Type: QD000P40CD; Serial: TP1857
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Body Front High 25RB 0/Area Scan (121x231x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.251 W/kg

Body Front High 25RB 0/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16 V/m; Power Drift = -0.017 dB
Peak SAR (extrapolated) = 0.355 W/kg
SAR(1 g) = 0.231 W/kg; SAR(10 g) = 0.150 W/kg
Maximum value of SAR (measured) = 0.249 W/kg



0 dB = 0.249W/kg

MEAS. 21 Left Head with Cheek on Middle Channel in LTE Band 13 mode
Date: 2018.11.30

Communication System: LTE Band 13; Frequency: 782 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 782 MHz; σ = 0.889 mho/m; εr = 42.8; ρ = 1000 kg/m3
Phantom section: Left Section

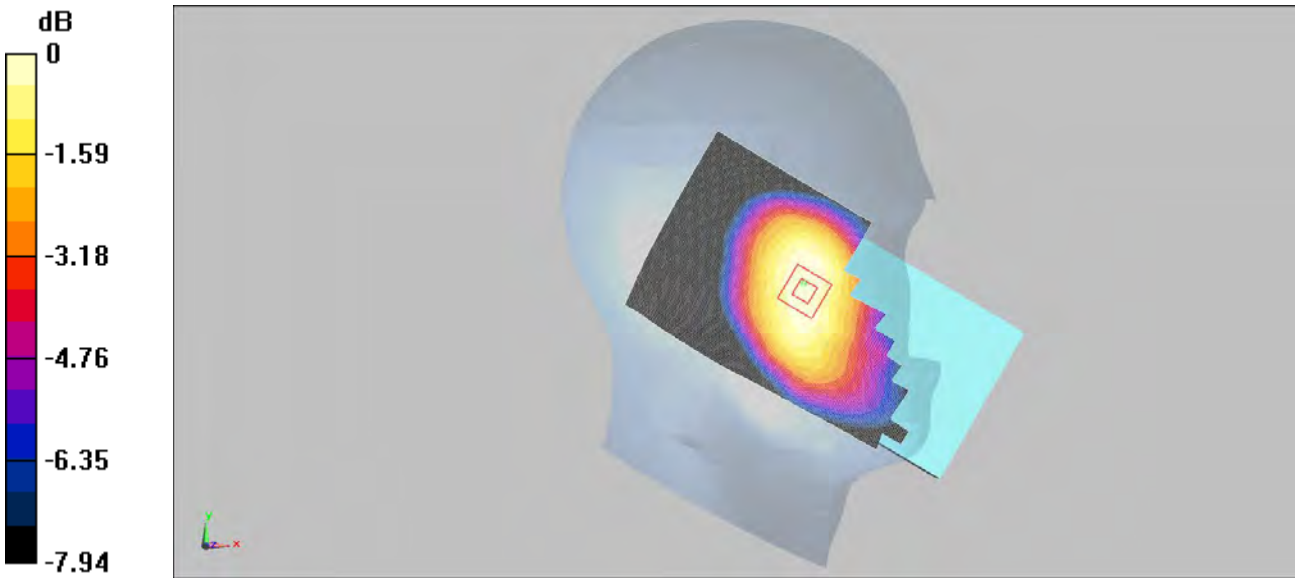
Ambient Temperature:22.5 Liquid Temperature:21.2

DASY5 Configuration:

- Probe: EX3DV4 – SN7510; ConvF(10.37, 10.37, 10.37); Calibrated: 2018.07.14
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2018.01.11
- Phantom: SAM (30deg probe tilt) with CRP v5.0 on left 1859; Type: QD000P40CD; Serial: TP1859
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Left Head Touch Middle 1RB 25/Area Scan (111x221x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.131 W/kg

Left Head Touch Middle 1RB 25/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.09 V/m; Power Drift = -0.049 dB
Peak SAR (extrapolated) = 0.152 W/kg
SAR(1 g) = 0.125 W/kg; SAR(10 g) = 0.099 W/kg
Maximum value of SAR (measured) = 0.130 W/kg



0 dB = 0.130W/kg

MEAS. 22 Body Plan with Front Side 10mm on Middle Channel in LTE Band 13 mode
Date: 2018.11.28

Communication System: LTE Band 13; Frequency: 782 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 782 MHz; σ = 1.01 mho/m; ε_r = 57.57; ρ = 1000 kg/m^3
Phantom section: Flat Section

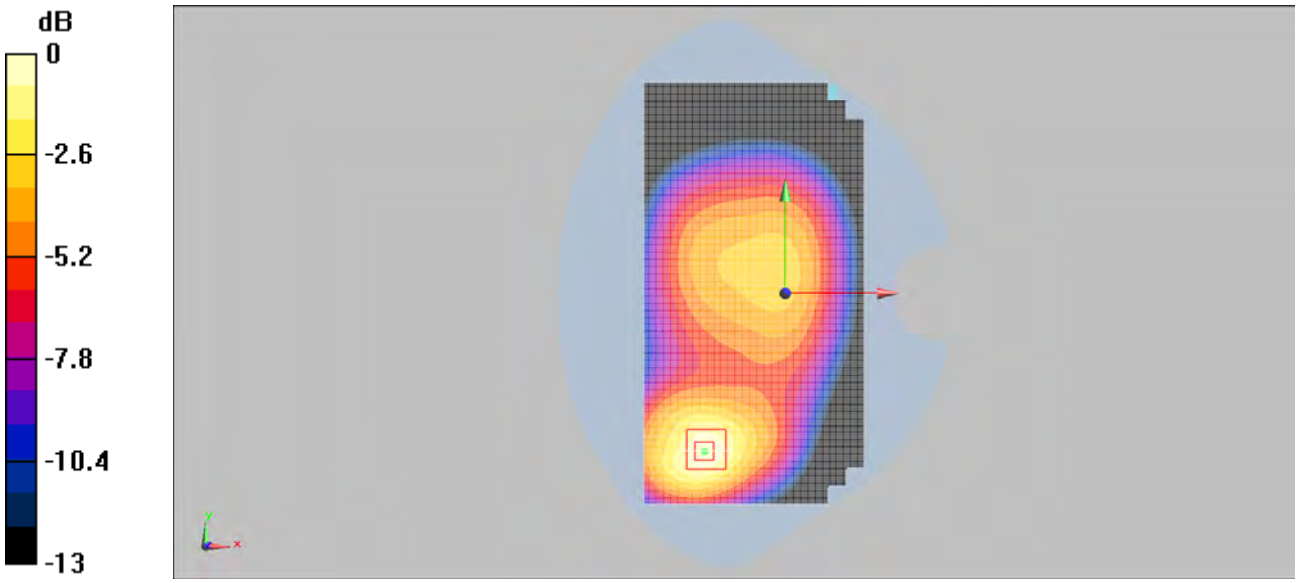
Ambient Temperature:22.3 Liquid Temperature:21.2

DASY5 Configuration:

- Probe: EX3DV4 – SN7510; ConvF(10.53, 10.53, 10.53); Calibrated: 2018.07.14
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2018.01.11
- Phantom: SAM (30deg probe tilt) with CRP v5.0 on Right 1857; Type: QD000P40CD; Serial: TP1857
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Body Front Middle 1RB 25/Area Scan (121x231x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.300 W/kg

Body Front Middle 1RB 25/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.8 V/m; Power Drift = 0.0044 dB
Peak SAR (extrapolated) = 0.440 W/kg
SAR(1 g) = 0.277 W/kg; SAR(10 g) = 0.172 W/kg
Maximum value of SAR (measured) = 0.302 W/kg



0 dB = 0.302W/kg

MEAS. 23 Left Head with Cheek on Low Channel in LTE Band 17 mode
Date: 2018.11.30

Communication System: LTE Band 17; Frequency: 709 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 709 MHz; σ = 0.847 mho/m; ε_r = 43.22; ρ = 1000 kg/m^3
Phantom section: Left Section

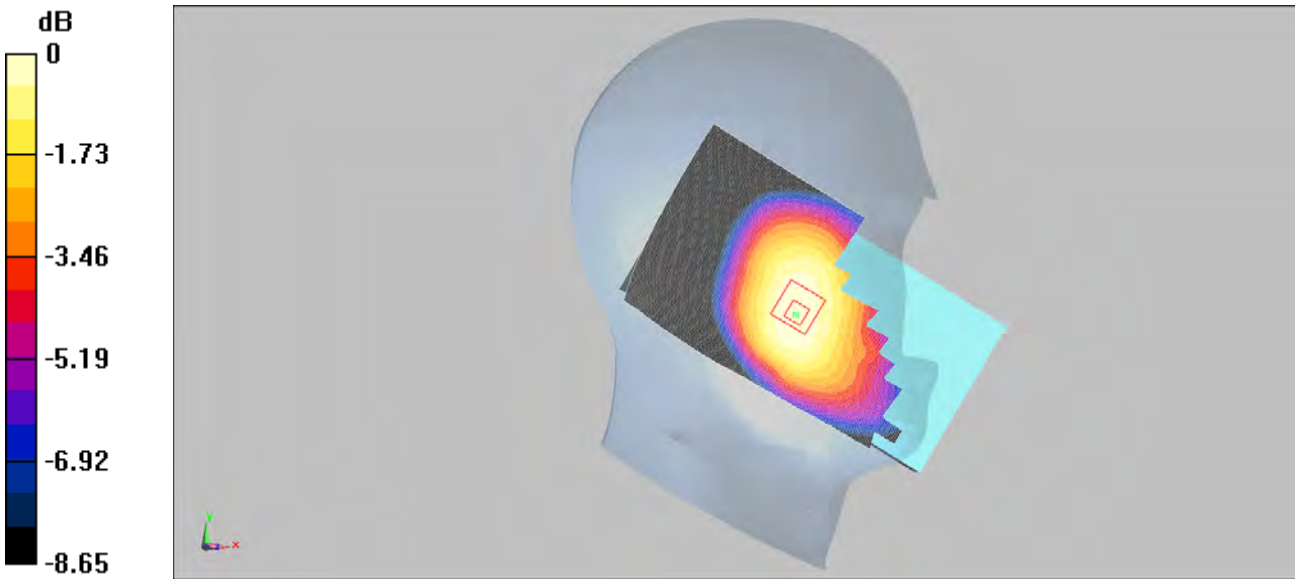
Ambient Temperature:22.5 Liquid Temperature:21.2

DASY5 Configuration:

- Probe: EX3DV4 – SN7510; ConvF(10.37, 10.37, 10.37); Calibrated: 2018.07.14
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2018.01.11
- Phantom: SAM (30deg probe tilt) with CRP v5.0 on left 1859; Type: QD000P40CD; Serial: TP1859
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Left Head Touch Low 25RB 0/Area Scan (111x221x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.155 W/kg

Left Head Touch Low 25RB 0/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.26 V/m; Power Drift = 0.163 dB
Peak SAR (extrapolated) = 0.181 W/kg
SAR(1 g) = 0.149 W/kg; SAR(10 g) = 0.119 W/kg
Maximum value of SAR (measured) = 0.155 W/kg



0 dB = 0.155W/kg

MEAS. 24 Body Plan with Front Side 10mm on Low Channel in LTE Band 17 mode
Date: 2018.11.28

Communication System: LTE Band 17; Frequency: 709 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 709 MHz; σ = 0.96 mho/m; ε_r = 57.8; ρ = 1000 kg/m^3
Phantom section: Flat Section

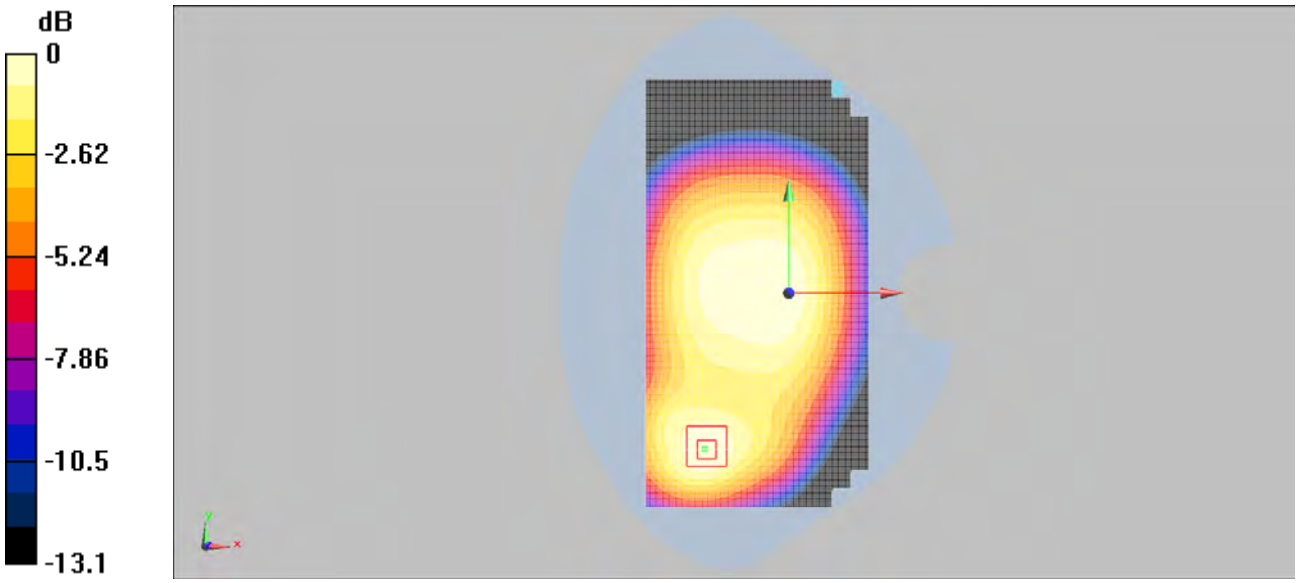
Ambient Temperature:22.3 Liquid Temperature:21.2

DASY5 Configuration:

- Probe: EX3DV4 – SN7510; ConvF(10.53, 10.53, 10.53); Calibrated: 2018.07.14
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2018.01.11
- Phantom: SAM (30deg probe tilt) with CRP v5.0 on Right 1857; Type: QD000P40CD; Serial: TP1857
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Body Front Low 25RB 0/Area Scan (121x231x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.252 W/kg

Body Front Low 25RB 0/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.3 V/m; Power Drift = -0.018 dB
Peak SAR (extrapolated) = 0.358 W/kg
SAR(1 g) = 0.232 W/kg; SAR(10 g) = 0.151 W/kg
Maximum value of SAR (measured) = 0.250 W/kg



0 dB = 0.250W/kg

MEAS. 25 Left Head with Cheek on Middle Channel in LTE Band 25 mode
Date: 2018.12.04

Communication System: LTE Band 25; Frequency: 1882.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1882.5 MHz; σ = 1.36 mho/m; ε_r = 40.1; ρ = 1000 kg/m^3
Phantom section: Left Section

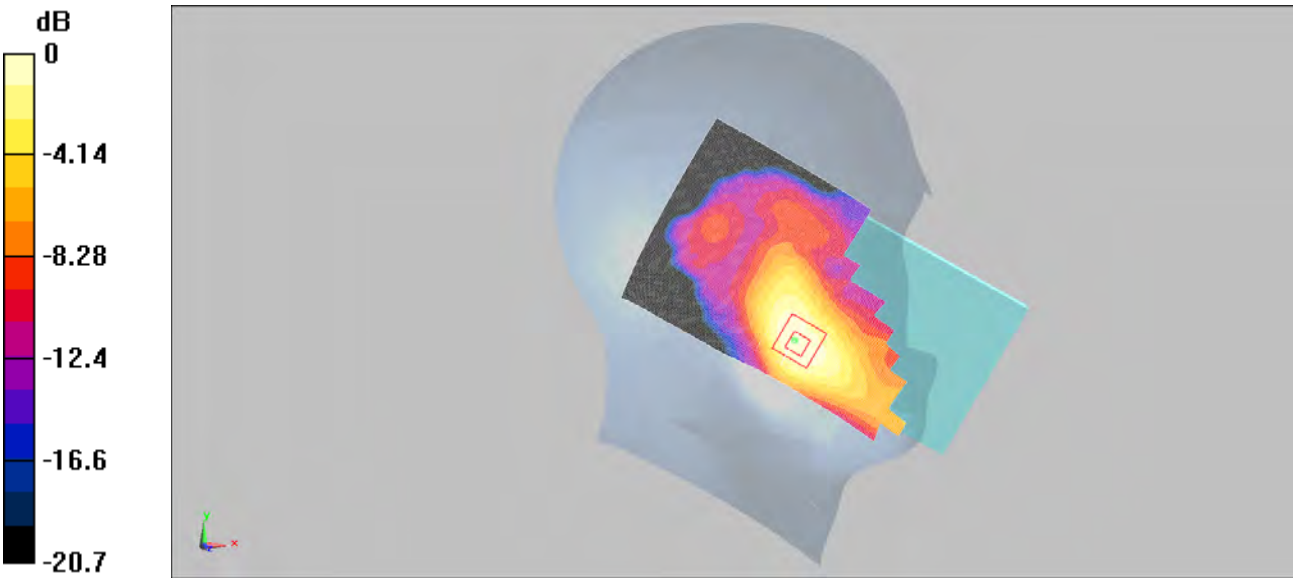
Ambient Temperature:22.3 Liquid Temperature:21.5

DASY5 Configuration:

- Probe: EX3DV4 – SN7510; ConvF(8.31, 8.31, 8.31); Calibrated: 2018.07.14
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2018.01.11
- Phantom: SAM (30deg probe tilt) with CRP v5.0 on Right 1857; Type: QD000P40CD; Serial: TP1857
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Left Head Touch Middle 1RB 50/Area Scan (111x221x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.150 W/kg

Left Head Touch Middle 1RB 50/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.53 V/m; Power Drift = 0.072 dB
Peak SAR (extrapolated) = 0.211 W/kg
SAR(1 g) = 0.137 W/kg; SAR(10 g) = 0.082 W/kg
Maximum value of SAR (measured) = 0.151 W/kg



0 dB = 0.151W/kg

MEAS. 26 Body Plan with Front Side 10mm on Middle Channel in LTE Band 25 mode
Date: 2018.11.22

Communication System: LTE Band 25; Frequency: 1882.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1882.5 MHz; σ = 1.47 mho/m; ε_r = 54.8; ρ = 1000 kg/m^3
Phantom section: Flat Section

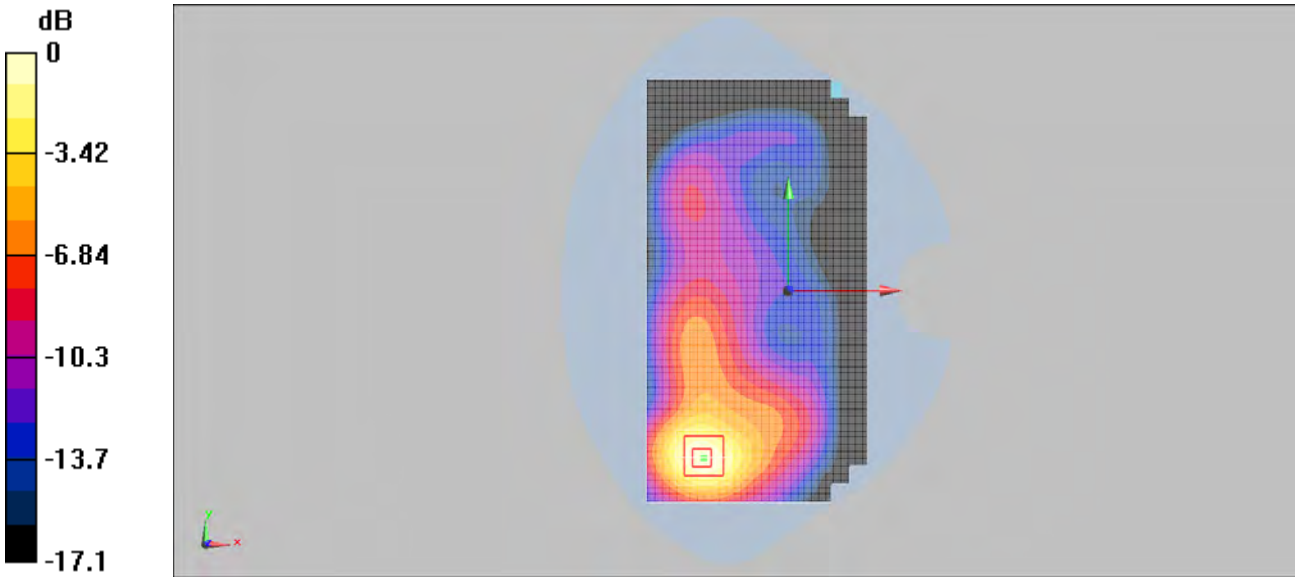
Ambient Temperature:22.3 Liquid Temperature:21.4

DASY5 Configuration:

- Probe: EX3DV4 – SN7510; ConvF(7.86, 7.86, 7.86); Calibrated: 2018.07.14
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2018.01.11
- Phantom: SAM (30deg probe tilt) with CRP v5.0 on left 1859; Type: QD000P40CD; Serial: TP1859
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Body Front Middle 1RB 50/Area Scan (121x231x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.747 W/kg

Body Front Middle 1RB 50/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.14 V/m; Power Drift = 0.021 dB
Peak SAR (extrapolated) = 1.07 W/kg
SAR(1 g) = 0.665 W/kg; SAR(10 g) = 0.378 W/kg
Maximum value of SAR (measured) = 0.739 W/kg



0 dB = 0.739W/kg

MEAS. 27 Left Head with Cheek on High Channel in LTE Band 41 mode
Date: 2018.12.05

Communication System: LTE Band 41(2555MHz-2655MHz); Frequency: 2645 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2645 MHz; σ = 2.05 mho/m; ε_r = 38.2; ρ = 1000 kg/m^3
Phantom section: Left Section

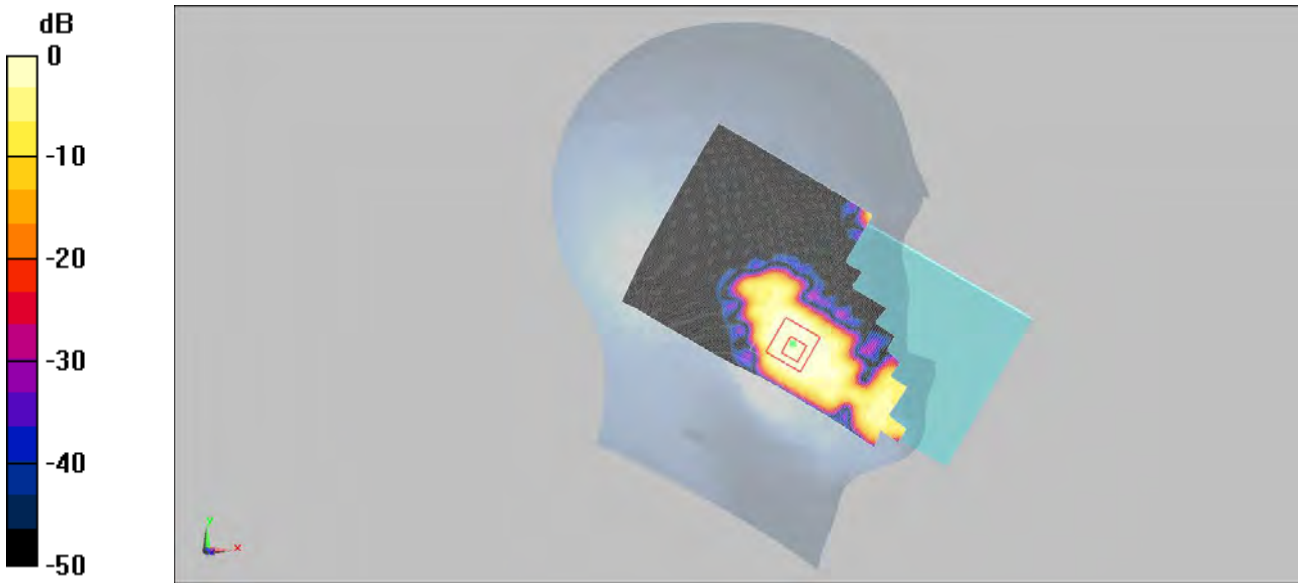
Ambient Temperature:21.8 Liquid Temperature:20.8

DASY5 Configuration:

- Probe: EX3DV4 – SN7510; ConvF(7.6, 7.6, 7.6); Calibrated: 2018.07.14
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2018.01.11
- Phantom: SAM (30deg probe tilt) with CRP v5.0 on left 1859; Type: QD000P40CD; Serial: TP1859
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Left Head Touch High 1RB 0/Area Scan (111x221x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.092 W/kg

Left Head Touch High 1RB 0/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.17 V/m; Power Drift = -0.169 dB
Peak SAR (extrapolated) = 0.190 W/kg
SAR(1 g) = 0.078 W/kg; SAR(10 g) = 0.035 W/kg
Maximum value of SAR (measured) = 0.083 W/kg



0 dB = 0.083W/kg

MEAS. 28 Body Plan with Front Side 10mm on High Channel in LTE Band 41 mode
Date: 2018.11.27

Communication System: LTE Band 41(2555MHz-2655MHz); Frequency: 2645 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2645 MHz; σ = 2.27 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section

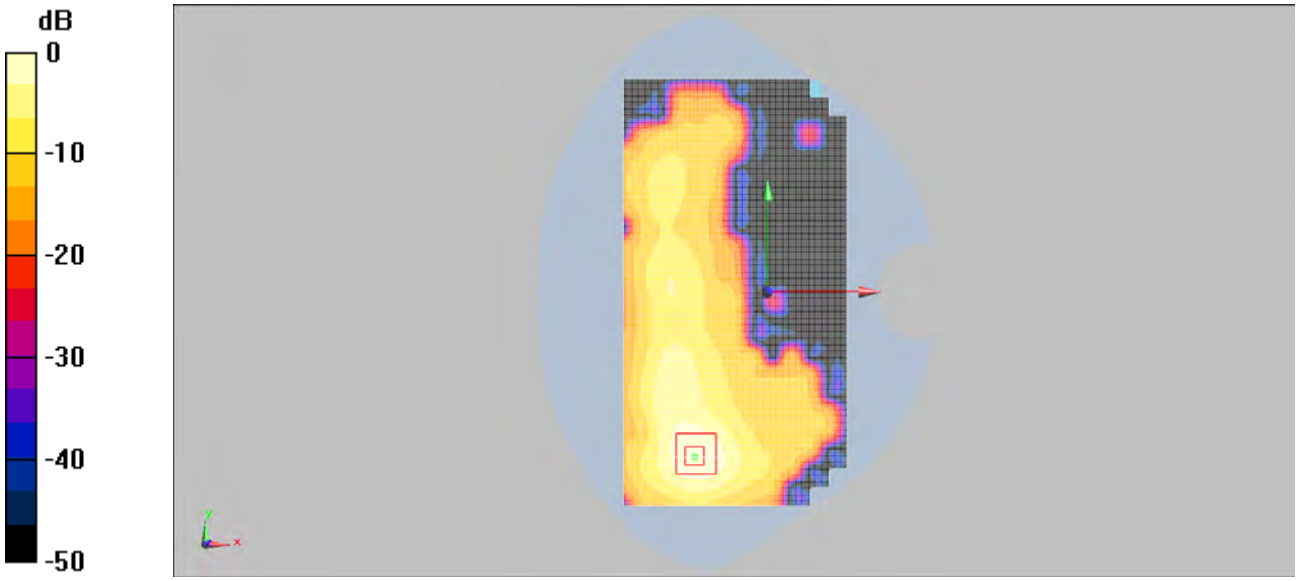
Ambient Temperature:22.9 Liquid Temperature:21.8

DASY5 Configuration:

- Probe: EX3DV4 – SN7510; ConvF(7.33, 7.33, 7.33); Calibrated: 2018.07.14
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2018.01.11
- Phantom: SAM (30deg probe tilt) with CRP v5.0 on Right 1857; Type: QD000P40CD; Serial: TP1857
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Body Front High 1RB 0/Area Scan (121x231x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.190 W/kg

Body Front High 1RB 0/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.83 V/m; Power Drift = -0.111 dB
Peak SAR (extrapolated) = 0.342 W/kg
SAR(1 g) = 0.168 W/kg; SAR(10 g) = 0.077 W/kg
Maximum value of SAR (measured) = 0.190 W/kg



0 dB = 0.190W/kg

MEAS. 29 Right Head with Cheek on Low Channel in 802.11 b mode
Date: 2018.12.06

Communication System: WLAN 802.11b; Frequency: 2412 MHz;Duty Cycle: 1:1.03
Medium parameters used (interpolated): f = 2412 MHz; σ = 1.8 mho/m; ε_r = 38.4; ρ = 1000 kg/m^3
Phantom section: Right Section

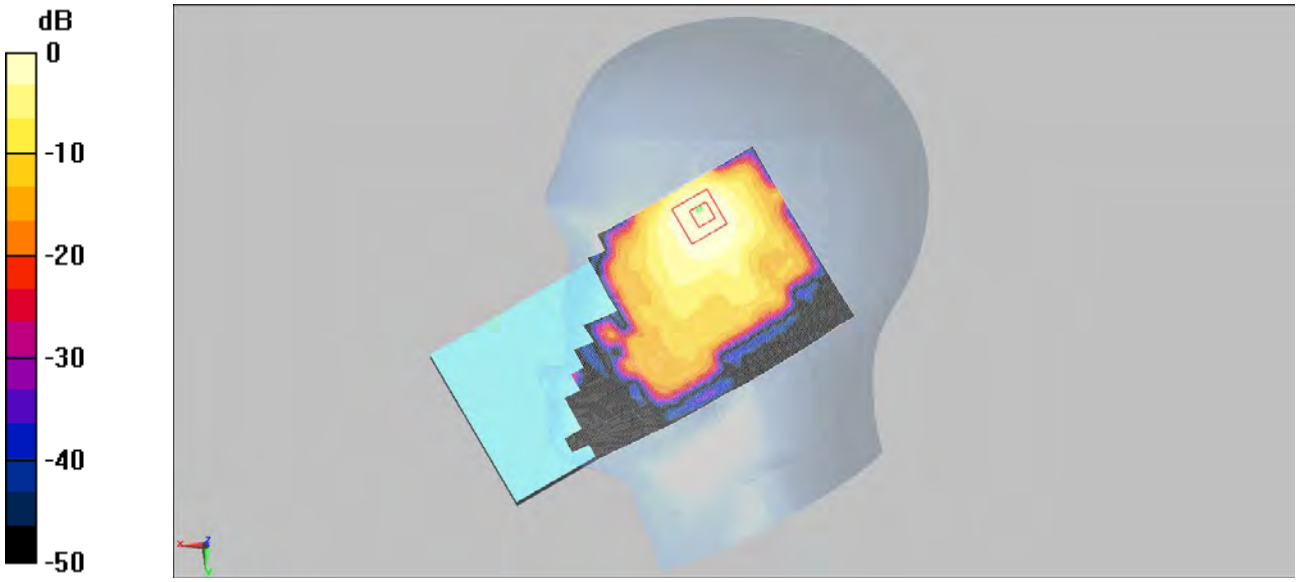
Ambient Temperature:22.1 Liquid Temperature:20.9

DASY5 Configuration:

- Probe: EX3DV4 – SN7510; ConvF(7.88, 7.88, 7.88); Calibrated: 2018.07.14
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2018.01.11
- Phantom: SAM (30deg probe tilt) with CRP v5.0 on left 1859; Type: QD000P40CD; Serial: TP1859
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Right Head Touch Low/Area Scan (111x221x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.205 W/kg

Right Head Touch Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.14 V/m; Power Drift = 0.010 dB
Peak SAR (extrapolated) = 0.383 W/kg
SAR(1 g) = 0.180 W/kg; SAR(10 g) = 0.086 W/kg
Maximum value of SAR (measured) = 0.199 W/kg



0 dB = 0.199W/kg

MEAS. 30 Body Plan with Front Side 10mm on Low Channel in 802.11b mode
Date: 2018.12.06

Communication System: WLAN 802.11b; Frequency: 2412 MHz;Duty Cycle: 1:1.03
Medium parameters used (interpolated): f = 2412 MHz; σ = 1.98 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section

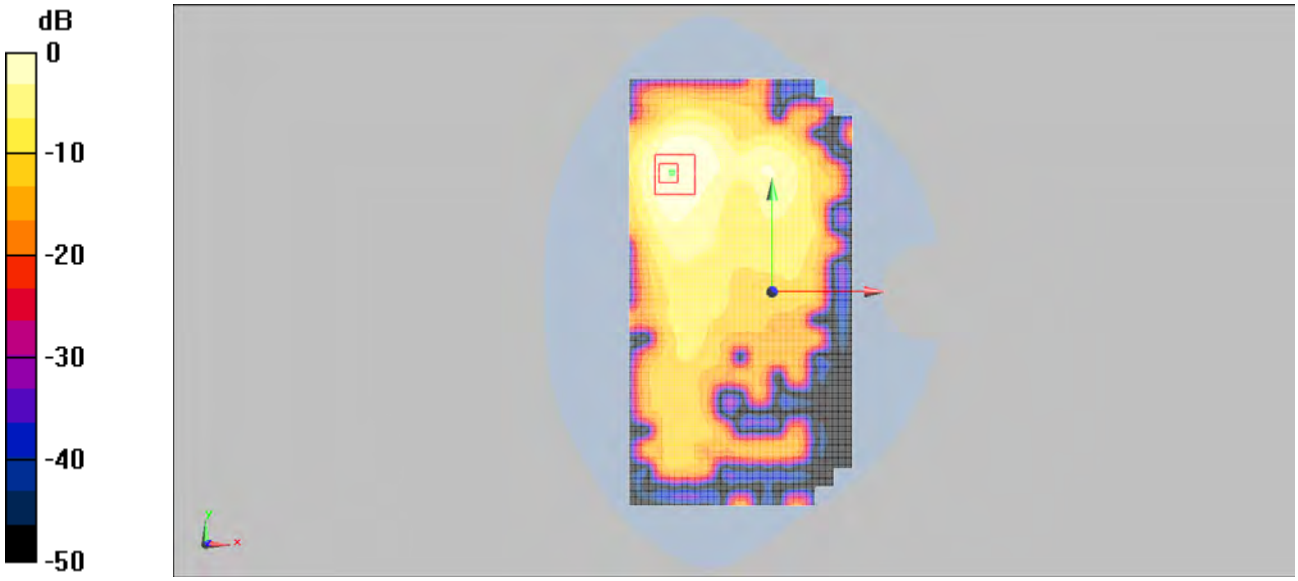
Ambient Temperature:21.8 Liquid Temperature:21.7

DASY5 Configuration:

- Probe: EX3DV4 – SN7510; ConvF(7.8, 7.8, 7.8); Calibrated: 2018.07.14
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2018.01.11
- Phantom: SAM (30deg probe tilt) with CRP v5.0 on Right 1857; Type: QD000P40CD; Serial: TP1857
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Body Front Low/Area Scan (121x231x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.102 W/kg

Body Front Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.89 V/m; Power Drift = 0.184 dB
Peak SAR (extrapolated) = 0.230 W/kg
SAR(1 g) = 0.088 W/kg; SAR(10 g) = 0.044 W/kg
Maximum value of SAR (measured) = 0.095 W/kg



0 dB = 0.095W/kg

MEAS. 31 Right Head with Cheek on Channel 46 in 802.11ac VHT40 mode
Date: 2018.12.07

Communication System: WLAN 802.11ac VHT40; Frequency: 5230 MHz;Duty Cycle: 1:1.42
Medium parameters used (interpolated): f = 5230 MHz; σ = 4.69 mho/m; ε_r = 35.77; ρ = 1000 kg/m^3
Phantom section: Right Section

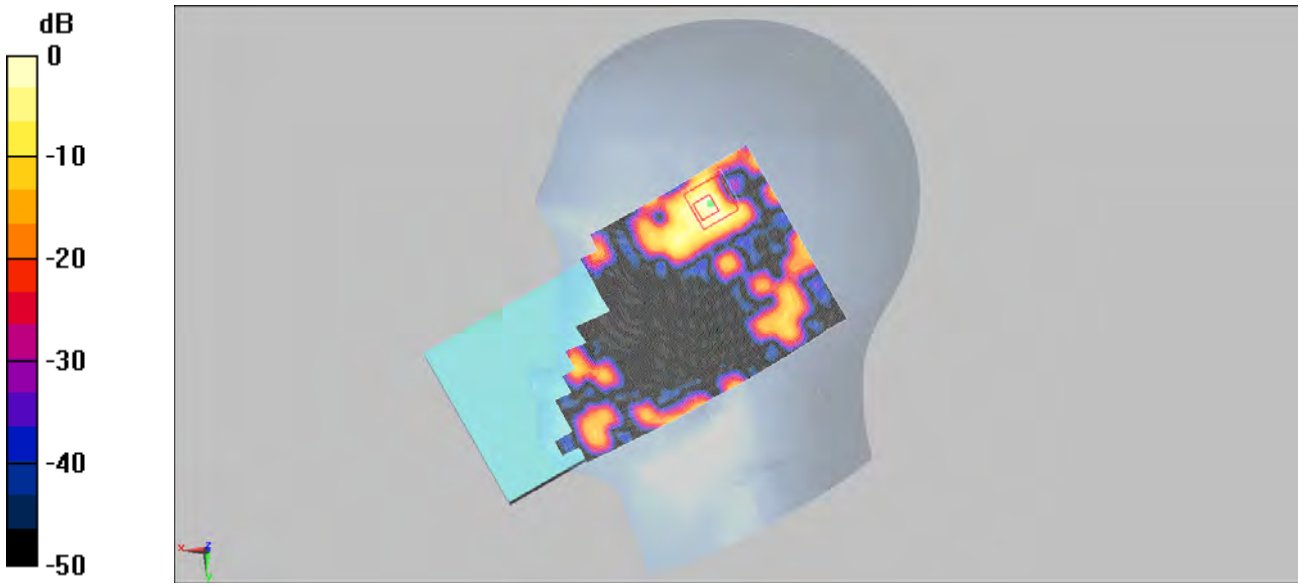
Ambient Temperature:21.9 Liquid Temperature:21.0

DASY5 Configuration:

- Probe: EX3DV4 – SN7510; ConvF(5.48, 5.48, 5.48); Calibrated: 2018.07.14
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2018.01.11
- Phantom: SAM (30deg probe tilt) with CRP v5.0 on Right 1857; Type: QD000P40CD; Serial: TP1857
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Right Head Touch High/Area Scan (111x221x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.130 W/kg

Right Head Touch High/Zoom Scan (7x7x13)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.14 V/m; Power Drift = -0.113 dB
Peak SAR (extrapolated) = 0.366 W/kg
SAR(1 g) = 0.079 W/kg; SAR(10 g) = 0.023 W/kg
Maximum value of SAR (measured) = 0.178 W/kg



0 dB = 0.178W/kg

MEAS. 32 Body Plan with Left Edge 10mm on Channel 46 in 802.11ac VHT40 mode
Date: 2018.12.07

Communication System: WLAN 802.11ac VHT40; Frequency: 5230 MHz;Duty Cycle: 1:1.42
Medium parameters used (interpolated): f = 5230 MHz; σ = 5.39 mho/m; ε_r = 49.2; ρ = 1000 kg/m^3
Phantom section: Flat Section

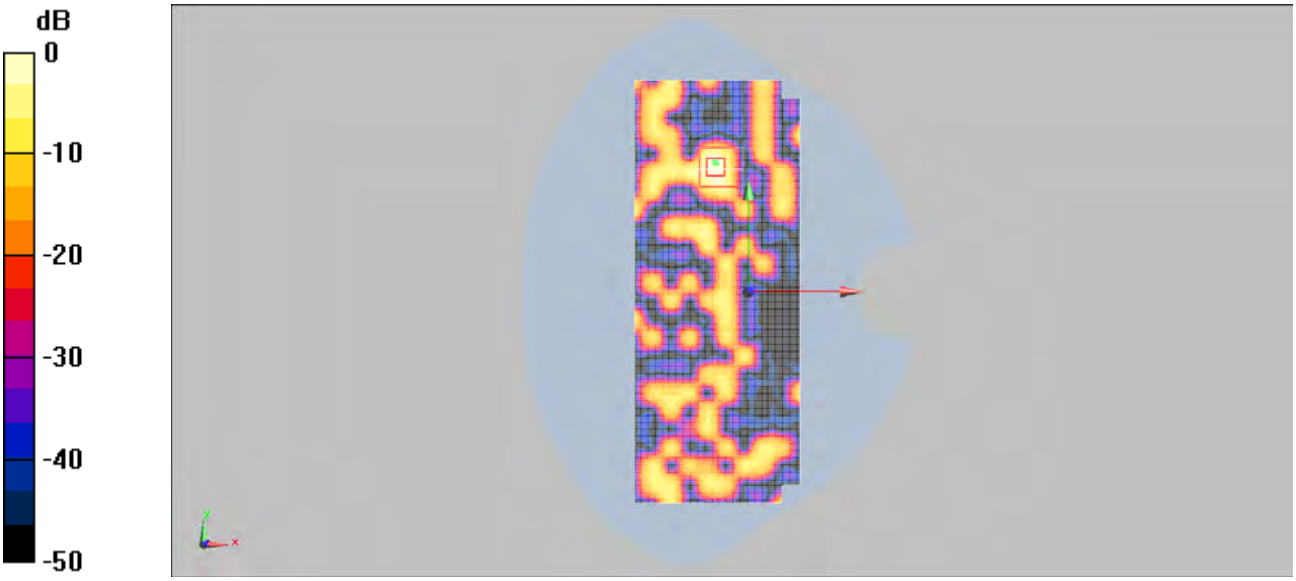
Ambient Temperature:22.5 Liquid Temperature:21.4

DASY5 Configuration:

- Probe: EX3DV4 – SN7510; ConvF(5.09, 5.09, 5.09); Calibrated: 2018.07.14
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2018.01.11
- Phantom: SAM (30deg probe tilt) with CRP v5.0 on left 1859; Type: QD000P40CD; Serial: TP1859
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Body Left High/Area Scan (91x231x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.100 W/kg

Body Left High/Zoom Scan (7x7x13)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.44 V/m; Power Drift = 0.047 dB
Peak SAR (extrapolated) = 0.201 W/kg
SAR(1 g) = 0.031 W/kg; SAR(10 g) = 0.011 W/kg
Maximum value of SAR (measured) = 0.077 W/kg



0 dB = 0.077W/kg

MEAS. 33 Right Head with Cheek on Channel 159 in 802.11ac VHT40 mode
Date: 2018.12.07

Communication System: WLAN 802.11ac VHT40; Frequency: 5795 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5795 MHz; σ = 5.18 mho/m; ε_r = 35.1; ρ = 1000 kg/m^3
Phantom section: Right Section

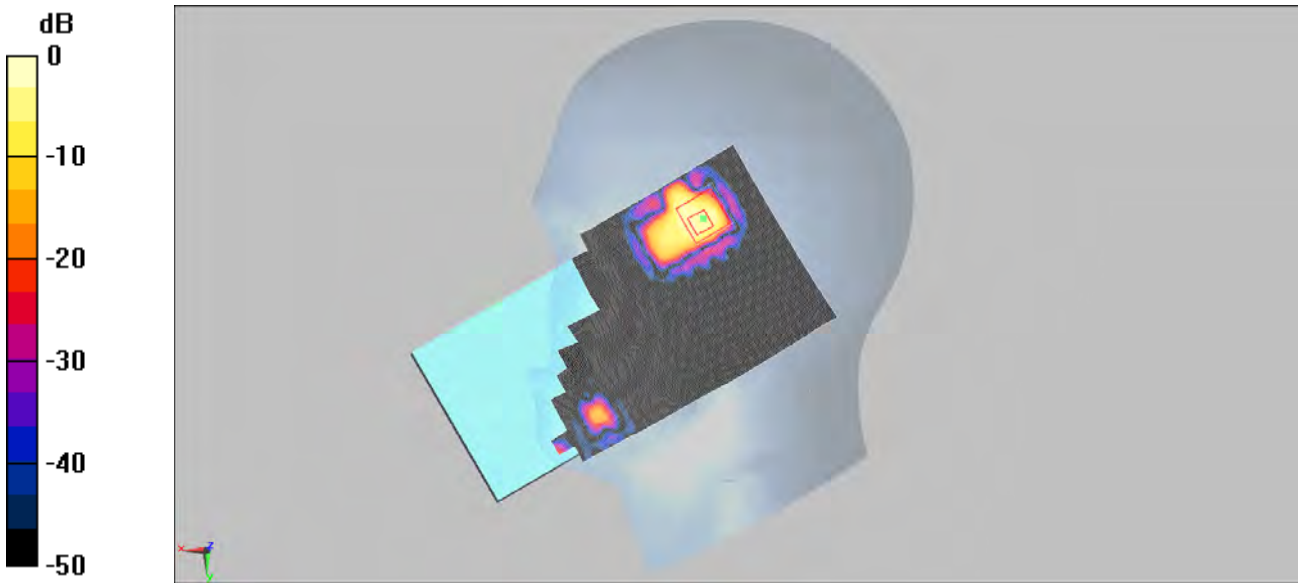
Ambient Temperature:21.9 Liquid Temperature:21.0

DASY5 Configuration:

- Probe: EX3DV4 – SN7510; ConvF(5.03, 5.03, 5.03); Calibrated: 2018.07.14
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2018.01.11
- Phantom: SAM (30deg probe tilt) with CRP v5.0 on Right 1857; Type: QD000P40CD; Serial: TP1857
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Right Head Touch High/Area Scan (111x221x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.090 W/kg

Right Head Touch High/Zoom Scan (7x7x13)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.953 V/m; Power Drift = -0.117 dB
Peak SAR (extrapolated) = 0.467 W/kg
SAR(1 g) = 0.093 W/kg; SAR(10 g) = 0.025 W/kg
Maximum value of SAR (measured) = 0.216 W/kg



0 dB = 0.216W/kg

MEAS. 34 Body Plan with Left Edge 10mm on Channel 159 in 802.11ac VHT40 mode
Date: 2018.12.07

Communication System: WLAN 802.11ac VHT40; Frequency: 5795 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5795 MHz; σ = 6.11 mho/m; ε_r = 48.1; ρ = 1000 kg/m^3
Phantom section: Flat Section

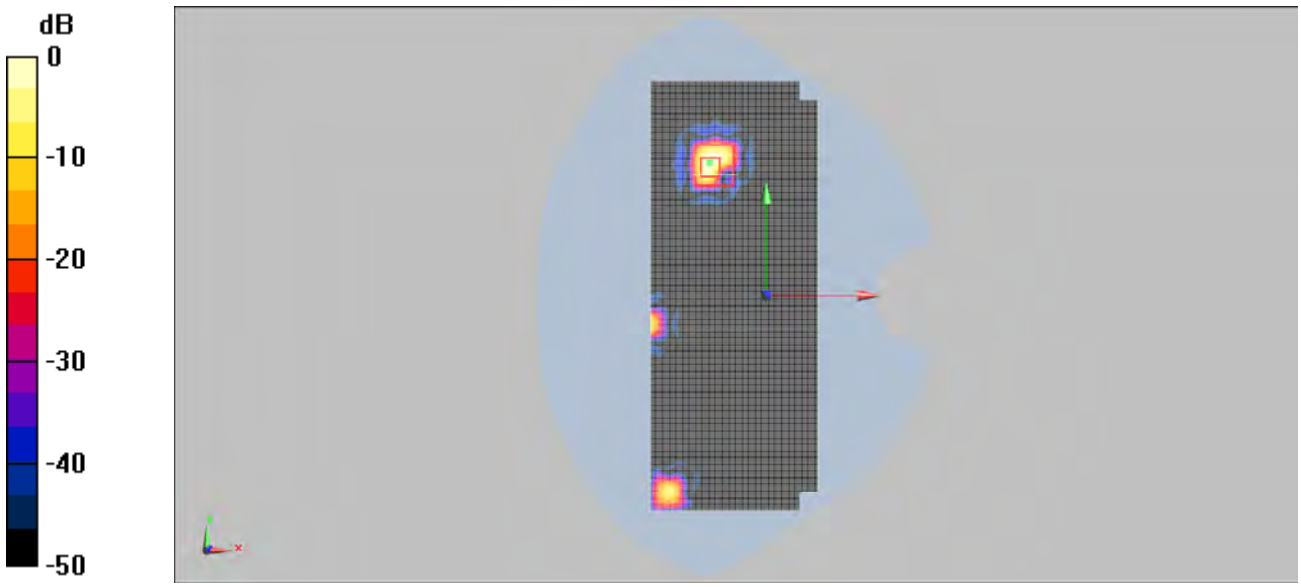
Ambient Temperature:22.5 Liquid Temperature:21.4

DASY5 Configuration:

- Probe: EX3DV4 – SN7510; ConvF(4.52, 4.52, 4.52); Calibrated: 2018.07.14
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1454; Calibrated: 2018.01.11
- Phantom: SAM (30deg probe tilt) with CRP v5.0 on left 1859; Type: QD000P40CD; Serial: TP1859
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Body Left High /Area Scan (91x231x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.095 W/kg

Body Left High /Zoom Scan (7x7x13)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.959 V/m; Power Drift = 0.200 dB
Peak SAR (extrapolated) = 0.387 W/kg
SAR(1 g) = 0.036 W/kg; SAR(10 g) = 0.013 W/kg
Maximum value of SAR (measured) = 0.088 W/kg



0 dB = 0.088W/kg

ANNEX D EUT EXTERNAL PHOTOS

Please refer the document “BL-EC18B0415-AW.pdf”.

Front of the sample

Rear of the sample

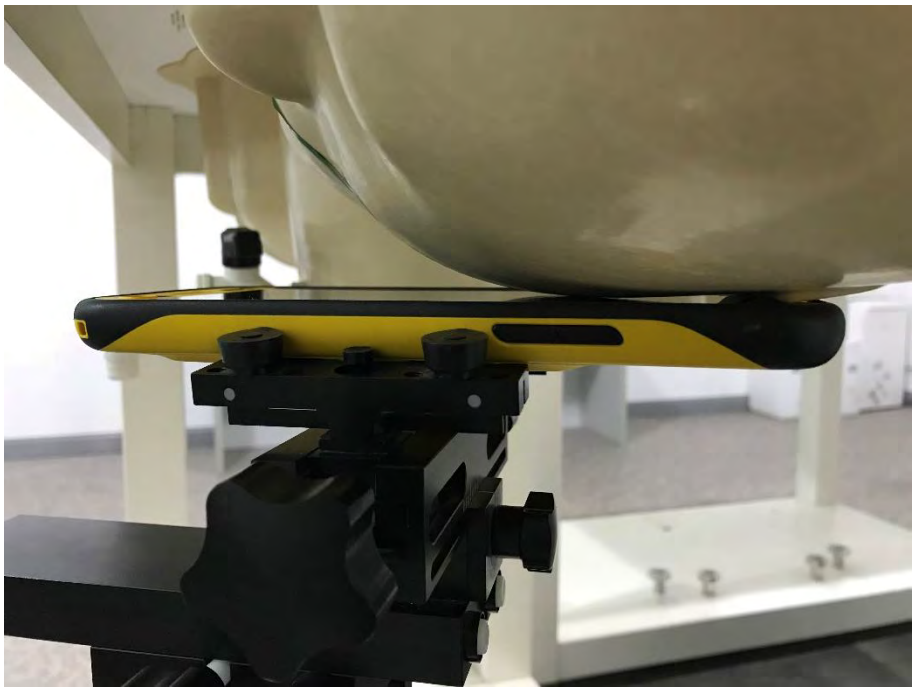
Rear of the sample (without buckles)

ANNEX E SAR TEST SETUP PHOTOS

Please refer the document “BL- EC18B0415-AS.pdf”.

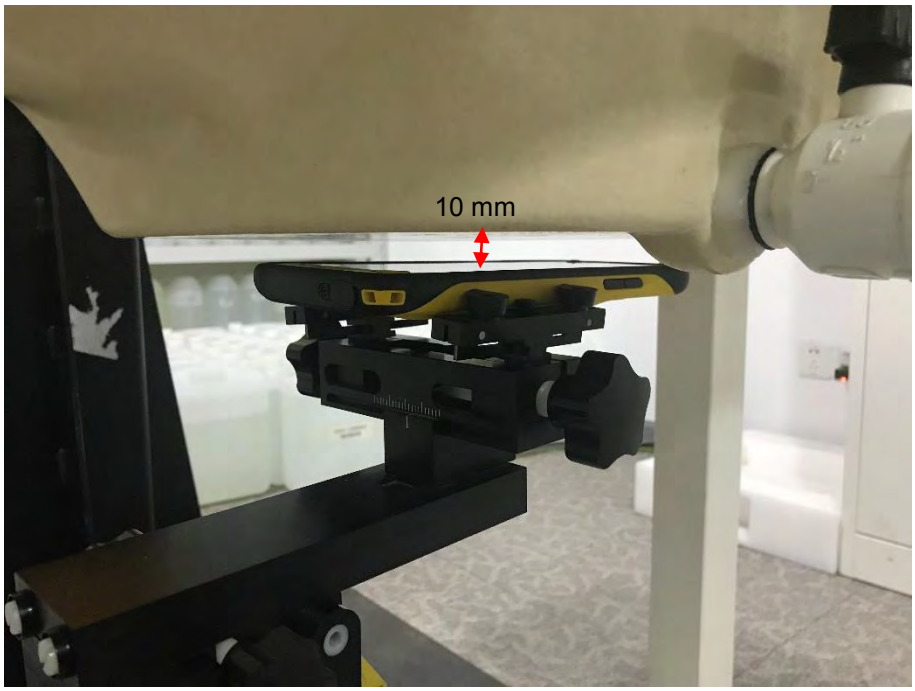
Right Touch

Right Tilt



Left Touch

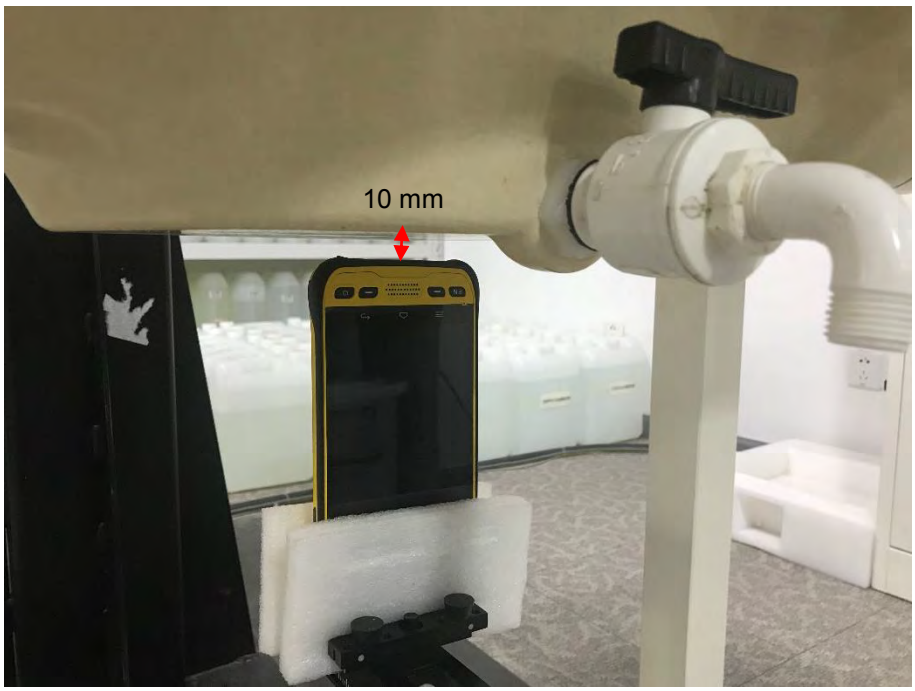
Left Tilt



Front

Back

Left



Bottom

Top

ANNEX F CALIBRATION REPORT

Please refer the document “CALIBRATION REPORT.pdf”.

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