SAR Test Report

Report No.	:	**SFBHDC-WTW-P20120816 R1**
Applicant	:	**FCNT Limited**
Address	:	**Chuorinkan 7-10-1 Yamato, Kanagawa 242-0007, Japan**
Product	:	**Smart Phone**
FCC ID	:	**2AYY9FMP182**
Brand	:	**FUJITSU**
Model No.	:	**F-41B**
Standards	:	**FCC 47 CFR Part 2 (2.1093), IEEE C95.1:1992, IEEE Std 1528:2013 KDB 865664 D01 v01r04, KDB 865664 D02 v01r02 KDB 248227 D01 v02r02 , KDB 447498 D01 v06, KDB 648474 D04 v01r03, KDB 941225 D01 v03r01, KDB 941225 D05 v02r05, KDB 941225 D06 v02r01**
Sample Received Date	:	**Dec. 30, 2020**
Date of Testing	:	**Jan. 07, 2021 ~ Apr 06, 2021**
Lab Address	:	**No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan**
Test Location	:	**No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City, Taiwan**

CERTIFICATION: The above equipment have been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch–Lin Kou Laboratories**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's SAR characteristics under the conditions specified in this report. It should not be reproduced except in full, without the written approval of our laboratory. The client should not use it to claim product certification, approval, or endorsement by TAF or any government agencies.

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Approved By : Gordon Lin

Gordon Lin / Manager

Testing Laboratory 2021

FCC Accredited No.: TW0003

Table of Contents

Release Control Record

Report No.	Reason for Change	Date Issued
SFBHDC-WTW-P20120816	Initial release	Feb. 05, 2021
SFBHDC-WTW-P20120816 R1	1. Revise FCC ID 2. Revise applicant	Apr. 09, 2021

1. Summary of Maximum SAR Value

Equipment Class	Mode	Highest SAR-1g Head (W/kg)	Highest SAR-1g Body-worn Tested at 5 mm (W/kg)	Highest SAR-1g Hotspot Tested at 5 mm (W/kg)
PCE	GSM850	0.24	0.76	0.76
	GSM1900	0.12	0.73	0.73
	WCDMA V	0.24	0.91	0.91
	LTE 5	0.17	0.82	0.82
	LTE 12	0.01	0.07	0.07
DTS	2.4G WLAN	0.36	0.59	0.59
NII	5.3G WLAN	0.39	0.66	N/A
	5.6G WLAN	0.59	0.66	N/A
	5.8G WLAN	0.25	0.47	N/A
DSS	Bluetooth	0.16	0.14	0.14

Highest Simultaneous Transmission SAR	Highest SAR-1g Head (W/kg)	Highest SAR-1g Body-worn Tested at 5 mm (W/kg)	Highest SAR-1g Hotspot Tested at 5 mm (W/kg)
	0.79	1.57	1.50

Note:

1. The SAR criteria **(Head & Body: SAR-1g1.6 W/kg, and Extremity: SAR-10g 4.0 W/kg)**for general population/uncontrolled exposure is specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1992.

2. Description of Equipment Under Test

EUT Type	Smart Phone
FCC ID	2AYY9FMP182
Brand Name	FUJITSU
Model Name	F-41B
Tx Frequency Bands (Unit: MHz)	GSM850 : 824.2 ~ 848.8 GSM1900 : 1850.2 ~ 1909.8 WCDMA Band V : 826.4 ~ 846.6 LTE Band 5 : 824.7 ~ 848.3 (BW: 1.4M, 3M, 5M, 10M) LTE Band 12 : 699.7 ~ 715.3 (BW: 1.4M, 3M, 5M, 10M) WLAN : 2412 ~ 2462, 5180 ~ 5240, 5260 ~ 5320, 5500 ~5720, 5745 ~ 5825 Bluetooth : 2402 ~ 2480
Uplink Modulations	WCDMA : QPSK LTE : QPSK, 16QAM 802.11b : DSSS 802.11a/g/n/ac : OFDM Bluetooth : GFSK, π/4-DQPSK, 8DPSK
Maximum Tune-up Conducted Power (Unit: dBm)	Please refer to section 4.5.1 of this report
Antenna Type	Monopole Antenna
EUT Stage	Engineering Sample

Note:

1. The above EUT information is declared by manufacturer and for more detailed features description please refers to the manufacturer's specifications or User's Manual.

List of Accessory:

Battery	**Brand Name**	N/A
	Model Name	CA54310-0081
	Power Rating	3.85Vdc, 3500mAh, 13.47Wh
	Type	Li-ion

3. SAR Measurement System

3.1 Definition of Specific Absorption Rate (SAR)

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:

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

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

SAR measurement can be related to the electrical field in the tissue by

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

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

3.2 SPEAG DASY6 System

DASY6 system consists of high precision robot, probe alignment sensor, phantom, robot controller, controlled measurement server and near-field probe. The robot includes six axes that can move to the precision position of the DASY6 software defined. The DASY6 software can define the area that is detected by the probe. The robot is connected to controlled box. Controlled measurement server is connected to the controlled robot box. The DAE includes amplifier, signal multiplexing, AD converter, offset measurement and surface detection. It is connected to the Electro-optical coupler (ECO). The ECO performs the conversion form the optical into digital electric signal of the DAE and transfers data to the PC.

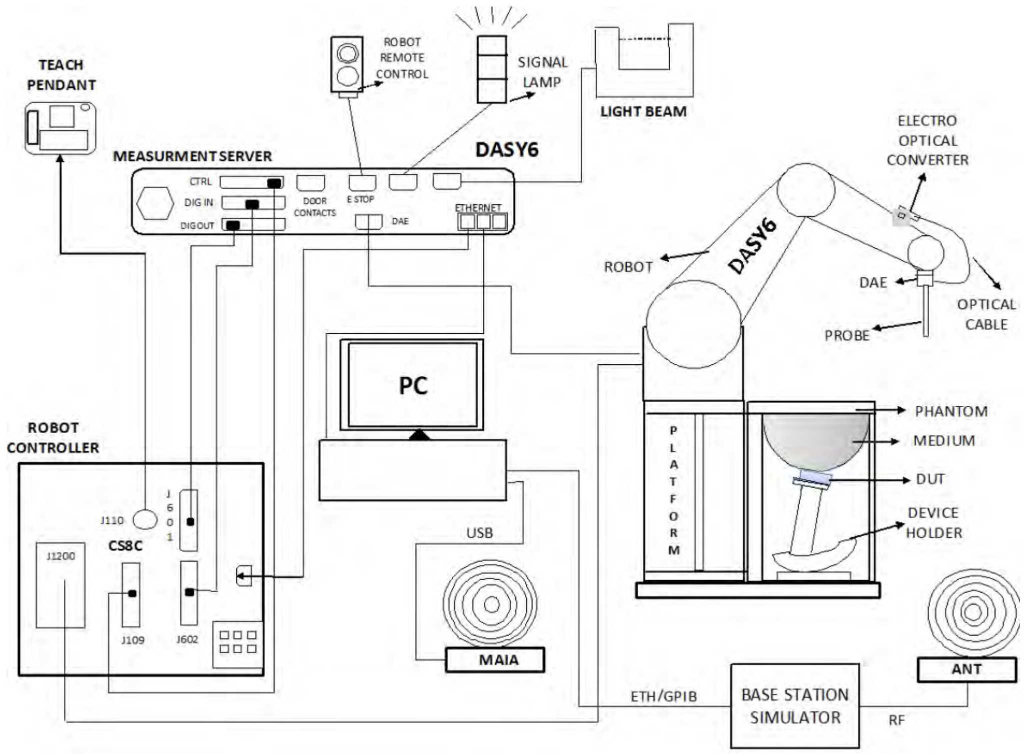


Fig-3.1 SPEAG DASY6 System Setup

3.2.1 Robot

The DASY6 systems use the high precision robots from Stäubli SA (France). For the 6-axis controller system, the robot controller version of CS8c from Stäubli is used. The Stäubli robot series have many features that are important for our application:

- High precision (repeatability ±0.035 mm)
- High reliability (industrial design)
- Jerk-free straight movements
- Low ELF interference (the closed metallic construction shields against motor control fields)

Fig-3.2 SPEAG DASY6 System

3.2.2 Probes

The SAR measurement is conducted with the dosimetric probe. The probe is specially designed and calibrated for use in liquid with high permittivity. The dosimetric probe has special calibration in liquid at different frequency.

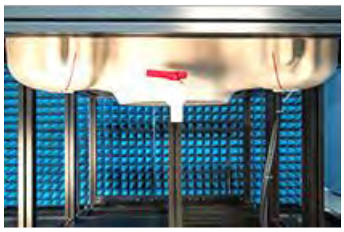
Model	EX3DV4
Construction	Symmetrical design with triangular core. Built-in shielding against static charges. PEEK enclosure material (resistant to organic solvents, e.g., DGBE).
Frequency	4 MHz to 10 GHz Linearity: ± 0.2 dB
Directivity	± 0.1 dB in TSL (rotation around probe axis) ± 0.3 dB in TSL (rotation normal to probe axis)
Dynamic Range	10 μW/g to 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 μW/g)
Dimensions	Overall length: 337 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm

3.2.3 Data Acquisition Electronics (DAE)

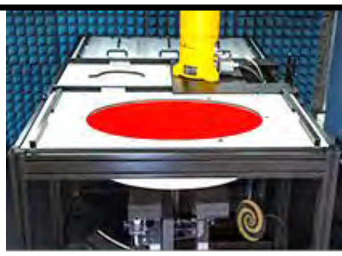
Model	DAE3, DAE4
Construction	Signal amplifier, multiplexer, A/D converter and control logic. Serial optical link for communication with DASY embedded system (fully remote controlled). Two step probe touch detector for mechanical surface detection and emergency robot stop.
Measurement Range	-100 to +300 mV (16 bit resolution and two range settings: 4mV, 400mV)
Input Offset Voltage	< 5μV (with auto zero)
Input Bias Current	< 50 fA
Dimensions	60 x 60 x 68 mm

3.2.4 Phantoms

Model	SAM-Twin Phantom
Construction	The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE Std 1528 and IEC 62209-1. It enables the dosimetric evaluation of left and right hand phone usage as well as body-mounted usage at the flat phantom region. A cover prevents evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by teaching three points with the robot.
Material	Vinylester, fiberglass reinforced (VE-GF)
Shell Thickness	2 ± 0.2 mm (6 ± 0.2 mm at ear point)
Dimensions	Length: 1000 mm Width: 500 mm Height: adjustable feet
Filling Volume	approx. 25 liters



Model	ELI
Construction	The ELI phantom is used for compliance testing of handheld and body-mounted wireless devices. ELI is fully compatible with the IEC 62209-2 standard and all known tissue simulating liquids. ELI has been optimized regarding its performance and can be integrated into our standard phantom tables. A cover prevents evaporation of the liquid. Reference markings on the phantom allow installation of the complete setup, including all predefined phantom positions and measurement grids, by teaching three points. The phantom is compatible with all SPEAG dosimetric probes and dipoles.
Material	Vinylester, fiberglass reinforced (VE-GF)
Shell Thickness	2.0 ± 0.2 mm (bottom plate)
Dimensions	Major axis: 600 mm Minor axis: 400 mm
Filling Volume	approx. 30 liters



3.2.5 Device Holder

Model	MD4HHTV5 - Mounting Device for Hand-Held Transmitters
Construction	In combination with the Twin SAM or ELI phantoms, the Mounting Device for Hand-Held Transmitters enables rotation of the mounted transmitter device to specified spherical coordinates. At the heads, the rotation axis is at the ear opening. Transmitter devices can be easily and accurately positioned according to IEC 62209-1, IEEE 1528, FCC, or other specifications. The device holder can be locked for positioning at different phantom sections (left head, right head, flat).
Material	Polyoxymethylene (POM)

Model	MDA4WTV5 - Mounting Device Adaptor for Ultra Wide Transmitters
Construction	An upgrade kit to Mounting Device to enable easy mounting of wider devices like big smart-phones, e-books, small tablets, etc. It holds devices with width up to 140 mm.
Material	Polyoxymethylene (POM)

Model	MDA4SPV6 - Mounting Device Adaptor for Smart Phones
Construction	The solid low-density MDA4SPV6 adaptor assuring no impact on the DUT radiation performance and is conform with any DUT design and shape.
Material	ROHACELL

Model	MD4LAPV5 - Mounting Device for Laptops and other Body-Worn Transmitters
Construction	In combination with the Twin SAM or ELI phantoms, the Mounting Device (Body-Worn) enables testing of transmitter devices according to IEC 62209-2 specifications. The device holder can be locked for positioning at a flat phantom section.
Material	Polyoxymethylene (POM), PET-G, Foam

3.2.6 System Validation Dipoles

Model	D-Serial
Construction	Symmetrical dipole with l/4 balun. Enables measurement of feed point impedance with NWA. Matched for use near flat phantoms filled with tissue simulating solutions.
Frequency	750 MHz to 5800 MHz
Return Loss	> 20 dB
Power Capability	> 100 W (f < 1GHz), > 40 W (f > 1GHz)

3.2.7 Power Source

Model	Powersource1
Signal Type	Continuous Wave
Operating Frequencies	600 MHz to 5850 MHz
Output Power	-5.0 dBm to +17.0 dBm
Power Supply	5V DC, via USB jack
Power Consumption	<3 W
Applications	System performance check and validation with a CW signal.

3.2.8 Tissue Simulating Liquids

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 10 % are listed in Table-3.1.

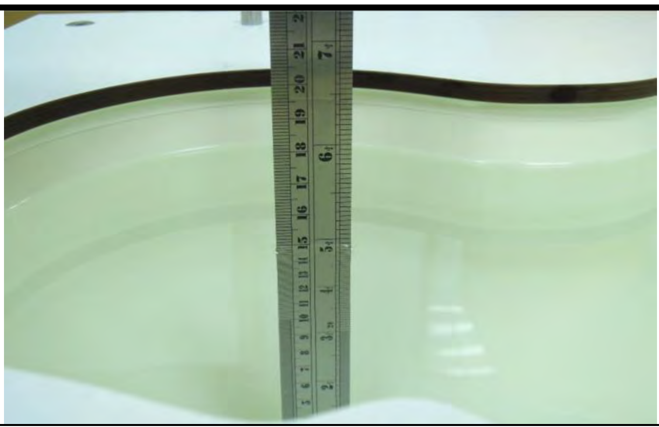


Photo of Liquid Height for Head Position

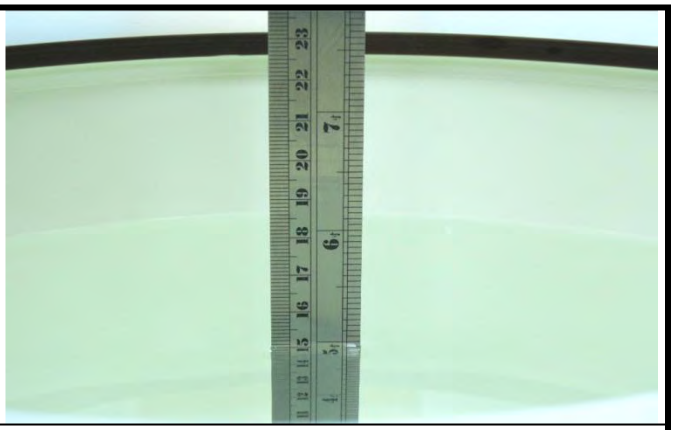


Photo of Liquid Height for Body Position

Table-3.1 Targets of Tissue Simulating Liquid

Frequency (MHz)	Target Permittivity	Range of ±10 %	Target Conductivity	Range of ±10 %
450	43.5	39.2 ~ 47.9	0.87	0.78 ~ 0.96
750	41.9	37.7 ~ 46.1	0.89	0.80 ~ 0.98
835	41.5	37.4 ~ 45.7	0.90	0.81 ~ 0.99
900	41.5	37.4 ~ 45.7	0.97	0.87 ~ 1.07
1450	40.5	36.5 ~ 44.6	1.20	1.08 ~ 1.32
1500	40.4	36.4 ~ 44.4	1.23	1.11 ~ 1.35
1640	40.2	36.2 ~ 44.2	1.31	1.18 ~ 1.44
1750	40.1	36.1 ~ 44.1	1.37	1.23 ~ 1.51
1800	40.0	36.0 ~ 44.0	1.40	1.26 ~ 1.54
1900	40.0	36.0 ~ 44.0	1.40	1.26 ~ 1.54
2000	40.0	36.0 ~ 44.0	1.40	1.26 ~ 1.54
2100	39.8	35.8 ~ 43.8	1.49	1.34 ~ 1.64
2300	39.5	35.6 ~ 43.5	1.67	1.50 ~ 1.84
2450	39.2	35.3 ~ 43.1	1.80	1.62 ~ 1.98
2600	39.0	35.1 ~ 42.9	1.96	1.76 ~ 2.16
3000	38.5	34.7 ~ 42.4	2.40	2.16 ~ 2.64
3500	37.9	34.1 ~ 41.7	2.91	2.62 ~ 3.20
4000	37.4	33.7 ~ 41.1	3.43	3.09 ~ 3.77
4500	36.8	33.1 ~ 40.5	3.94	3.55 ~ 4.33
5000	36.2	32.6 ~ 39.8	4.45	4.01 ~ 4.90
5200	36.0	32.4 ~ 39.6	4.66	4.19 ~ 5.13
5400	35.8	32.2 ~ 39.4	4.86	4.37 ~ 5.35
5600	35.5	32.0 ~ 39.1	5.07	4.56 ~ 5.58
5800	35.3	31.8 ~ 38.8	5.27	4.74 ~ 5.80
6000	35.1	31.6 ~ 38.6	5.48	4.93 ~ 6.03

The dielectric properties of the tissue simulating liquids are defined in IEC 62209-1 and IEC 62209-2. The dielectric properties of the tissue simulating liquids were verified prior to the SAR evaluation using a dielectric assessment kit and a network analyzer.

Since the range of ±10 % of the required target values is used to measure relative permittivity and conductivity, the SAR correction procedure is applied to correct measured SAR for the deviations in permittivity and conductivity. Only positive correction has been used to scale up the measured SAR, and SAR result would not be corrected if the correction △SAR has a negative sign.

The following table gives the recipes for tissue simulating liquids.

Table-3.2 Recipes of Tissue Simulating Liquid

Tissue Type	Bactericide	DGBE	HEC	NaCl	Sucrose	Triton X-100	Water	Diethylene Glycol Mono-hexylether
H750	0.2	-	0.2	1.5	56.0	-	42.1	-
H835	0.2	-	0.2	1.5	57.0	-	41.1	-
H900	0.2	-	0.2	1.4	58.0	-	40.2	-
H1450	-	43.3	-	0.6	-	-	56.1	-
H1640	-	45.8	-	0.5	-	-	53.7	-
H1750	-	47.0	-	0.4	-	-	52.6	-
H1800	-	44.5	-	0.3	-	-	55.2	-
H1900	-	44.5	-	0.2	-	-	55.3	-
H2000	-	44.5	-	0.1	-	-	55.4	-
H2300	-	44.9	-	0.1	-	-	55.0	-
H2450	-	45.0	-	0.1	-	-	54.9	-
H2600	-	45.1	-	0.1	-	-	54.8	-
H3500	-	8.0	-	0.2	-	20.0	71.8	-
H5G	-	-	-	-	-	17.2	65.5	17.3

3.3 SAR System Verification

The system check verifies that the system operates within its specifications. It is performed daily or before every SAR measurement. The system check uses normal SAR measurements in the flat section of the phantom with a matched dipole at a specified distance. The system verification setup is shown as below.

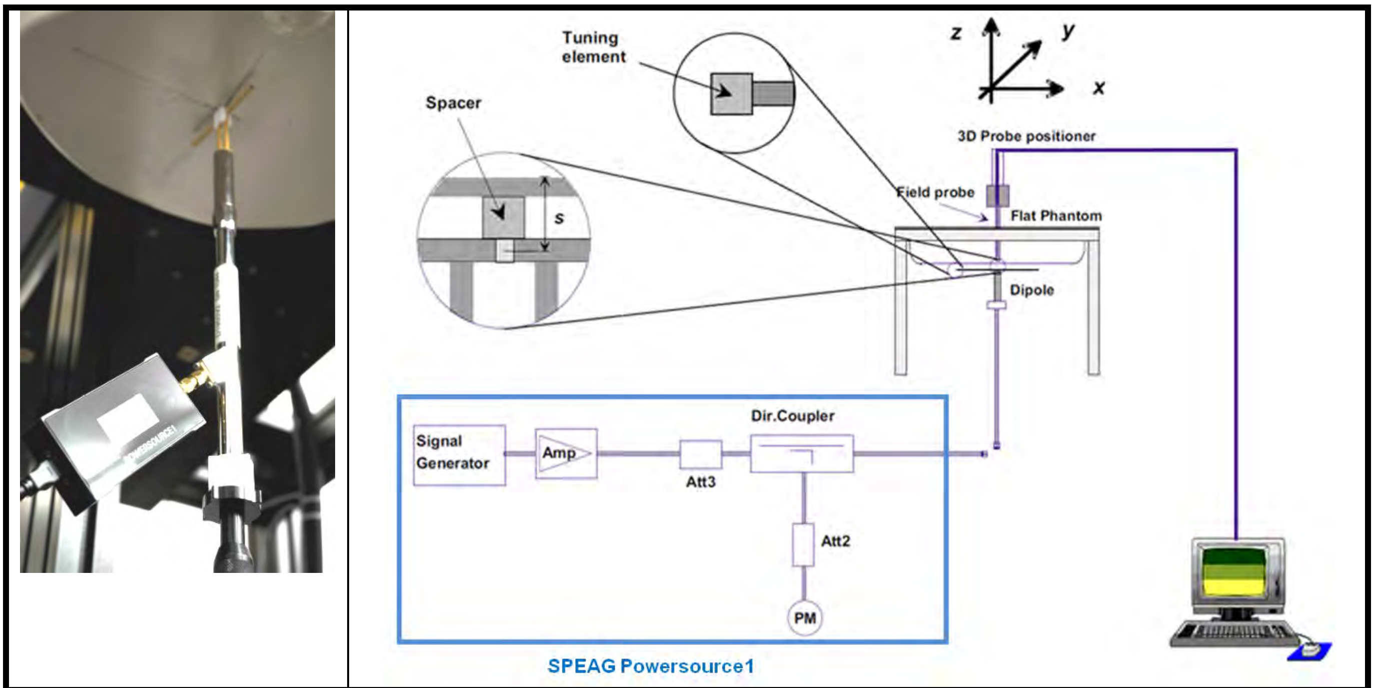


Fig-3.3 System Verification Setup

The SPEAG Powersource1 is a portable and very stable RF source providing a continuous wave (CW) signal. It is designed for conducting SAR system checks and SAR system validation of DASY and is compatible with IEC 62209-1, IEC 62209-2 and IEEE Std 1528 standards. The Powersource1 has been calibrated by SPEAG's ISO/IEC 17025-accredited calibration center. When using Powersource1, the setup can be simplified, as shown in Fig-3.3. The signal purity is warranted by design. Since the Powersource1 is calibrated, no additional equipment is needed and the Powersource1 can directly be connected to the SMA connector of the dipole without a cable as all separate components (signal generator, amplifier, coupler and power meter) are built into the unit.

The validation dipole is placed beneath the flat phantom with the specific spacer in place. The distance spacer is touch the phantom surface with a light pressure at the reference marking and be oriented parallel to the long side of the phantom. The Powersource1 is adjusted for the desired forward power of 17 dBm at the dipole connector and the RF output power would be turned on. After system check testing, the SAR result will be normalized to 1W forward input power and compared with the reference SAR value derived from validation dipole certificate report. The deviation of system check should be within 10 %.

3.4 SAR Measurement Procedure

According to the SAR test standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:
(a) Power reference measurement
(b) Area scan
(c) Zoom scan
(d) Power drift measurement

The SAR measurement procedures for each of test conditions are as follows:
(a) Make EUT to transmit maximum output power
(b) Measure conducted output power through RF cable
(c) Place the EUT in the specific position of phantom
(d) Perform SAR testing steps on the DASY system
(e) Record the SAR value

3.4.1 Area Scan and 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.

Measure the local SAR at a test point at 1.4 mm of the inner surface of the phantom recommended by SEPAG. The area scan (two-dimensional SAR distribution) is performed cover at least an area larger than the projection of the EUT or antenna. The measurement resolution and spatial resolution for interpolation shall be chosen to allow identification of the local peak locations to within one-half of the linear dimension of the corresponding side of the zoom scan volume. Following table provides the measurement parameters required for the area scan.

Parameter	$f \leqq$ 3 GHz	3 GHz < $f \leqq$ 6 GHz
Maximum distance from closest measurement point to phantom surface	5 ± 1	δ ln(2)/2 ±0.5
Maximum probe angle from probe axis to phantom surface normal at the measurement location	30° ±1°	20° ±1°
Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}	≦2 GHz: ≦15 mm 2 – 3 GHz: ≦12 mm	3 – 4 GHz: ≦12 mm 4 – 6 GHz: ≦10 mm

From the scanned SAR distribution, identify the position of the maximum SAR value, in addition identify the positions of any local maxima with SAR values within 2 dB of the maximum value that will not be within the zoom scan of other peaks. Additional peaks shall be measured only when the primary peak is within 2 dB of the SAR compliance limit (e.g. 1 W/kg for 1.6 W/kg, 1 g limit; or 1.26 W/kg for 2 W/kg, 10 g limit).

The zoom scan (three-dimensional SAR distribution) is performed at the local maxima locations identified in previous area scan procedure. The zoom scan volume must be larger than the required minimum dimensions. When graded grids are used, which only applies in the direction normal to the phantom surface, the initial grid separation closest to the phantom surface and subsequent graded grid increment ratios must satisfy the required protocols. The 1-g SAR averaging volume must be fully contained within the zoom scan measurement volume boundaries; otherwise, the measurement must be repeated by shifting or expanding the zoom scan volume. The similar requirements also apply to 10-g SAR measurements. Following table provides the measurement parameters required for the zoom scan.

Parameter		$f \leqq$ 3 GHz	3 GHz < $f \leqq$ 6 GHz
Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}		≦2 GHz: ≦8 mm 2 – 3 GHz: ≦5 mm	3 – 4 GHz: ≦5 mm 4 – 6 GHz: ≦4 mm
Maximum zoom scan spatial resolution, normal to phantom surface	*uniform grid:* $\Delta z_{Zoom}(n)$	≦5 mm	3 – 4 GHz: ≦4 mm 4 – 5 GHz: ≦3 mm 5 – 6 GHz: ≦2 mm
	graded grids: $\Delta z_{Zoom}(1)$	≦4 mm	3 – 4 GHz: ≦3.0 mm 4 – 5 GHz: ≦2.5 mm 5 – 6 GHz: ≦2.0 mm
	$\Delta z_{Zoom}(n>1)$	≦1.5·$\Delta z_{Zoom}(n-1)$ mm	
Minimum zoom scan volume (x, y, z)		≥30 mm	3 – 4 GHz: ≥28 mm 4 – 5 GHz: ≥25 mm 5 – 6 GHz: ≥22 mm

Per IEC 62209-2 AMD1, the successively higher resolution zoom scan is required if the zoom scan measured as defined above complies with both of the following criteria, or if the peak spatial-average SAR is below 0.1 W/kg, no additional measurements are needed:

(1) The smallest horizontal distance from the local SAR peaks to all points 3 dB below the SAR peak shall be larger than the horizontal grid steps in both x and y directions (Δx, Δy). This shall be checked for the measured zoom scan plane conformal to the phantom at the distance zM1.

(2) The ratio of the SAR at the second measured point (M2) to the SAR at the closest measured point (M1) at the x-y location of the measured maximum SAR value shall be at least 30 %.

If one or both of the above criteria are not met, the zoom scan measurement shall be repeated using a finer resolution. New horizontal and vertical grid steps shall be determined from the measured SAR distribution so that the above criteria are met. Compliance with the above two criteria shall be demonstrated for the new measured zoom scan.

3.4.2 Volume Scan Procedure

The volume scan is used for assess overlapping SAR distributions for antennas transmitting in different frequency bands. It is equivalent to an oversized zoom scan used in standalone measurements. The measurement volume will be used to enclose all the simultaneous transmitting antennas. For antennas transmitting simultaneously in different frequency bands, the volume scan is measured separately in each frequency band. In order to sum correctly to compute the 1g aggregate SAR, the EUT remain in the same test position for all measurements and all volume scan use the same spatial resolution and grid spacing. When all volume scan were completed, the software, SEMCAD postprocessor can combine and subsequently superpose these measurement data to calculating the multiband SAR.

3.4.3 Power Drift Monitoring

All SAR testing is under the EUT install full charged battery and transmit maximum output power. In DASY measurement software, the power reference measurement and power drift measurement procedures are used for monitoring the power drift of EUT during SAR test. Both these procedures measure the field at a specified reference position before and after the SAR testing. The software will calculate the field difference in dB. If the power drift more than 5%, the SAR will be retested.

3.4.4 Spatial Peak SAR Evaluation

The procedure for spatial peak SAR evaluation has been implemented according to the test standard. It can be conducted for 1g and 10g, as well as for user-specific masses. The DASY software includes all numerical procedures necessary to evaluate the spatial peak SAR value.

The base for the evaluation is a "cube" measurement. The measured volume must include the 1g and 10g cubes with the highest averaged SAR values. For that purpose, the center of the measured volume is aligned to the interpolated peak SAR value of a previously performed area scan.

The entire evaluation of the spatial peak values is performed within the post-processing engine (SEMCAD). The system always gives the maximum values for the 1g and 10g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:

(a) Extraction of the measured data (grid and values) from the Zoom Scan
(b) Calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
(c) Generation of a high-resolution mesh within the measured volume
(d) Interpolation of all measured values form the measurement grid to the high-resolution grid
(e) Extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
(f) Calculation of the averaged SAR within masses of 1g and 10g

3.4.5 SAR Averaged Methods

In DASY, the interpolation and extrapolation are both based on the modified Quadratic Shepard's method. The interpolation scheme combines a least-square fitted function method and a weighted average method which are the two basic types of computational interpolation and approximation.

Extrapolation routines are used to obtain SAR values between the lowest measurement points and the inner phantom surface. The extrapolation distance is determined by the surface detection distance and the probe sensor offset. The uncertainty increases with the extrapolation distance. To keep the uncertainty within 1% for the 1 g and 10 g cubes, the extrapolation distance should not be larger than 5 mm.

4. SAR Measurement Evaluation

4.1 EUT Configuration and Setting

<Connections between EUT and System Simulator>

For WWAN SAR testing, the EUT was linked and controlled by base station emulator. Communication between the EUT and the emulator was established by air link. The distance between the EUT and the communicating antenna of the emulator is larger than 50 cm and the output power radiated from the emulator antenna is at least 30 dB smaller than the output power of EUT. The EUT was set from the emulator to radiate maximum output power during SAR testing.

<Considerations Related to GSM / GPRS / EDGE for Setup and Testing>

The maximum multi-slot capability supported by this device is as below.

1. This EUT is class B device
2. This EUT supports GPRS multi-slot class 33 (max. uplink: 4, max. downlink: 5, total timeslots: 6)

For GSM850 frequency band, the power control level is set to 5 for GSM mode and GPRS (GMSK: CS1), and set to 8 for EDGE (GMSK: MCS1, 8PSK: MCS9). For GSM1900 frequency band, the power control level is set to 0 for GSM mode and GPRS (GMSK: CS1), and set to 2 for EDGE (GMSK: MCS1, 8PSK: MCS9).

SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power specified for production units, including tune-up tolerance. The data mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested.

<Considerations Related to WCDMA for Setup and Testing>

WCDMA Handsets Head SAR

SAR for next to the ear head exposure is measured using a 12.2 kbps RMC with TPC bits configured to all “1’s”. The 3G SAR test reduction procedure is applied to AMR configurations with 12.2 kbps RMC as the primary mode.

WCDMA Handsets Body-worn SAR

SAR for body-worn configurations is measured using a 12.2 kbps RMC with TPC bits configured to all “1’s”. The 3G SAR test reduction procedure is applied to other spreading codes and multiple $DPDCH_n$ configurations supported by the handset with 12.2 kbps RMC as the primary mode.

Handsets with Release 5 HSDPA

The 3G SAR test reduction procedure is applied to HSDPA body-worn configurations with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured for HSDPA using the HSDPA body SAR procedures in the “Release 5 HSDPA Data Devices”, for the highest reported SAR body-worn exposure configuration in 12.2 kbps RMC. Handsets with both HSDPA and HSUPA are tested according to Release 6 HSPA test procedures.

Handsets with Release 6 HSUPA

The 3G SAR test reduction procedure is applied to HSPA (HSUPA/HSDPA with RMC) body-worn configurations with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured for HSPA using the HSPA body SAR procedures in the “Release 6 HSPA Data Devices”, for the highest reported body-worn exposure SAR configuration in 12.2 kbps RMC. When VOIP is applicable for next to the ear head exposure in HSPA, the 3G SAR test reduction procedure is applied to HSPA with 12.2 kbps RMC as the primary mode; otherwise, the same HSPA configuration used for body-worn measurements is tested for next to the ear head exposure.

Release 5 HSDPA Data Devices

The 3G SAR test reduction procedure is applied to body SAR with 12.2 kbps RMC as the primary mode. Otherwise, body SAR for HSDPA is measured using an FRC with H-Set 1 in Sub-test 1 and a 12.2 kbps RMC configured in Test Loop Mode 1, for the highest reported SAR configuration in 12.2 kbps RMC without HSDPA.HSDPA is configured according to the applicable UE category of a test device. The number of HS-DSCH/HS-PDSCHs, HARQ processes, minimum inter-TTI interval, transport block sizes and RV coding sequence are defined by the H-set. To maintain a consistent test configuration and stable transmission conditions, QPSK is used in the H-set for SAR testing. HS-DPCCH should be configured with a CQI feedback cycle of 4 ms and a CQI repetition factor of 2 to maintain a constant rate of active CQI slots. DPCCH and DPDCH gain factors(β_c, β_d), and HS-DPCCH power offset parameters (Δ_{ACK}, Δ_{NACK}, Δ_{CQI}) are set according to values indicated in below. The CQI value is determined by the UE category, transport block size, number of HS-PDSCHs and modulation used in the H-set.

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (1)(2)	CM (3) (dB)	MPR (3) (dB)
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15 (4)	15/15 (4)	64	12/15 (4)	24/15	1.0	0.0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{HS} =30/15*β_c.
Note 2: For the HS-DPCCH power mask requirement test in clause 5.2C, 5.7A, and the Error Vector Magnitude (EVM) with HS-DPCCH test in clause 5.13.1A, and HSDPA EVM with phase discontinuity in clause 5.13.1AA, Δ_{ACK} and Δ_{NACK} = 30/15 with β_{HS} =30/15*β_c, and Δ_{CQI}=24/15 with β_{HS} =24/15*β_c.
Note 3: CM = 1 for β_c/β_d =12/15, β_{HS}/β_c =24/15. For all other combinations of DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.
Note 4: For subtest 2 the β_c/β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to β_c = 11/15 and β_d= 15/15.

Release 6 HSUPA Data Devices

The 3G SAR test reduction procedure is applied to body SAR with 12.2 kbps RMC as the primary mode. Otherwise, body SAR for HSPA is measured with E-DCH Sub-test 5, using H-Set 1 and QPSK for FRC and a 12.2 kbps RMC configured in Test Loop Mode 1 and power control algorithm 2, according to the highest reported body SAR configuration in 12.2 kbps RMC without HSPA. When VOIP applies to head exposure, the 3G SAR test reduction procedure is applied with 12.2 kbps RMC as the primary mode. Otherwise, the same HSPA configuration used for body SAR measurements are applied to head exposure testing. Due to inner loop power control requirements in HSPA, a communication test set is required for output power and SAR tests. The 12.2 kbps RMC, FRC H-set 1 and E-DCH configurations for HSPA are configured according to the β values indicated in below.

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (1)	β_{ec}	β_{ed} (4)(5)	β_{ed} (SF)	β_{ed} (Codes)	CM(2) (dB)	MPR(2)(6) (dB)	AG(5) Index	E-TFCI
1	11/15(3)	15/15(3)	64	11/15(3)	22/15	209/225	1309/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	β_{ed}1: 47/15 β_{ed}2: 47/15	4 4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15	0	-	-	5/15	5/15	47/15	4	1	1.0	0.0	12	67

Note 1:For sub-test 1 to 4, Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{HS} =30/15 * β_c. For sub-test 5, Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 5/15 with β_{HS} =5/15* β_c.
Note 2:CM = 1 for β_c/β_d =12/15, β_{HS}/β_c =24/15. For all other combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.
Note 3:For subtest 1 the β_c/β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to β_c = 10/15 and β_d = 15/15.
Note 4:In case of testing by UE using E-DPDCH Physical Layer category 1, Sub-test 3 is omitted according to TS25.306 Table 5.1g.
Note 5: β_{ed} can not be set directly; it is set by Absolute Grant Value.
Note 6:For subtests 2, 3 and 4, UE may perform E-DPDCH power scaling at max power which could results in slightly smaller MPR values.

<Considerations Related to LTE for Setup and Testing>

This device contains LTE transmitter which follows 3GPP standards, is category 3, supports both QPSK and QAM modulations, and supported LTE band and channel bandwidth is listed in below. The output power was tested per 3GPP TS 36.521-1 maximum transmit procedures for both QPSK and QAM modulation. The results please refer to section 4.6 of this report.

EUT Supported LTE Band and Channel Bandwidth						
LTE Band	BW 1.4 MHz	BW 3 MHz	BW 5 MHz	BW 10 MHz	BW 15 MHz	BW 20 MHz
5	V	V	V	V		
12	V	V	V	V		

The LTE maximum power reduction (MPR) in accordance with 3GPP TS 36.101 is active all times during LTE operation. The allowed MPR for the maximum output power is specified in below.

Modulation	Channel Bandwidth / RB Configurations						LTE MPR Setting (dB)
	BW 1.4 MHz	BW 3 MHz	BW 5 MHz	BW 10 MHz	BW 15 MHz	BW 20 MHz	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	1
16QAM	<= 5	<= 4	<= 8	<= 12	<= 16	<= 18	1
16QAM	> 5	> 4	> 8	> 12	> 16	> 18	2

Note: MPR is according to the standard and implemented in the circuit (mandatory).

In addition, the device is compliant with additional maximum power reduction (A-MPR) requirements defined in 3GPP TS 36.101 section 6.2.4 that was disabled for all FCC compliance testing.

During LTE SAR testing, the related parameters of operating band, channel bandwidth, uplink channel number, modulation type, and RB was set in base station simulator. When the EUT has registered and communicated to base station simulator, the simulator set to make EUT transmitting the maximum radiated power.

<Considerations Related to WLAN for Setup and Testing>

In general, various vendor specific external test software and chipset based internal test modes are typically used for SAR measurement. These chipset based test mode utilities are generally hardware and manufacturer dependent, and often include substantial flexibility to reconfigure or reprogram a device. A Wi-Fi device must be configured to transmit continuously at the required data rate, channel bandwidth and signal modulation, using the highest transmission duty factor supported by the test mode tools for SAR measurement. The test frequencies established using test mode must correspond to the actual channel frequencies. When 802.11 frame gaps are accounted for in the transmission, a maximum transmission duty factor of 92 - 96% is typically achievable in most test mode configurations. A minimum transmission duty factor of 85% is required to avoid certain hardware and device implementation issues related to wide range SAR scaling. In addition, a periodic transmission duty factor is required for current generation SAR systems to measure SAR correctly. The reported SAR must be scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit.

According to KDB 248227 D01,this device has installed WLAN engineering testing software which can provide continuous transmitting RF signal. During WLAN SAR testing, this device was operated to transmit continuously at the maximum transmission duty with specified transmission mode, operating frequency, lowest data rate, and maximum output power.

Initial Test Configuration

An initial test configuration is determined for OFDM transmission modes in 2.4 GHz and 5 GHz bands according to the channel bandwidth, modulation and data rate combination(s) with the highest maximum output power specified for production units in each standalone and aggregated frequency band. 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 in the initial test configuration, for each frequency band.

Subsequent Test Configuration

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. Additional power measurements may be required to determine if SAR measurements are required for subsequent highest output power channels in a subsequent test configuration. When the highest reported SAR for the initial test configuration 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.

SAR Test Configuration and Channel Selection

When multiple channel bandwidth configurations in a frequency band have the same specified maximum output power, the initial test configuration is using largest channel bandwidth, lowest order modulation, lowest data rate, and lowest order 802.11 mode (i.e., 802.11a is chosen over 802.11n then 802.11ac or 802.11g is chosen over 802.11n).After an initial test configuration is determined, if multiple test channels have the same measured maximum output power, the channel chosen for SAR measurement is determined according to the following.

1) The channel closest to mid-band frequency is selected for SAR measurement.

2) For channels with equal separation from mid-band frequency; for example, high and low channels or two mid-band channels, the higher frequency (number) channel is selected for SAR measurement.

Test Reduction for U-NII-1 (5.2 GHz) and U-NII-2A (5.3 GHz) Bands

For devices that operate in both U-NII bands using the same transmitter and antenna(s), SAR test reduction is determined according to the following.

1) When the same maximum output power is specified for both bands, begin SAR measurement in U-NII-2A band by applying the OFDM SAR requirements. If the highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band for that configuration (802.11 mode and exposure condition).

2) When different maximum output power is specified for the bands, begin SAR measurement in the band with higher specified maximum output power. The highest reported SAR for the tested configuration is adjusted by the ratio of lower to higher specified maximum output power for the two bands. When the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for the band with lower maximum output power in that test configuration.

<Considerations Related to Bluetooth for Setup and Testing>

This device has installed Bluetooth engineering testing software which can provide continuous transmitting RF signal. During Bluetooth SAR testing, this device was operated to transmit continuously at the maximum transmission duty with specified transmission mode, operating frequency, lowest data rate, and maximum output power.

The Bluetooth call box has been used during SAR measurement and the EUT was set to DH5 mode at the maximum output power. Its duty factor was calculated as below and the measured SAR for Bluetooth would be scaled to the 100% transmission duty factor to determine compliance.

Time-domain plot for Bluetooth transmission signal

The duty factor of Bluetooth signal has been calculated as following.

Duty Factor = Pulse Width / Total Period = (4.39 - 1.5) / (5.25 - 1.5) = 77. 07 %

4.2 EUT Testing Position

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

4.2.1 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 1528-2003 using the SAM phantom illustrated as below.

1. Define two imaginary lines on the handset

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

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

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

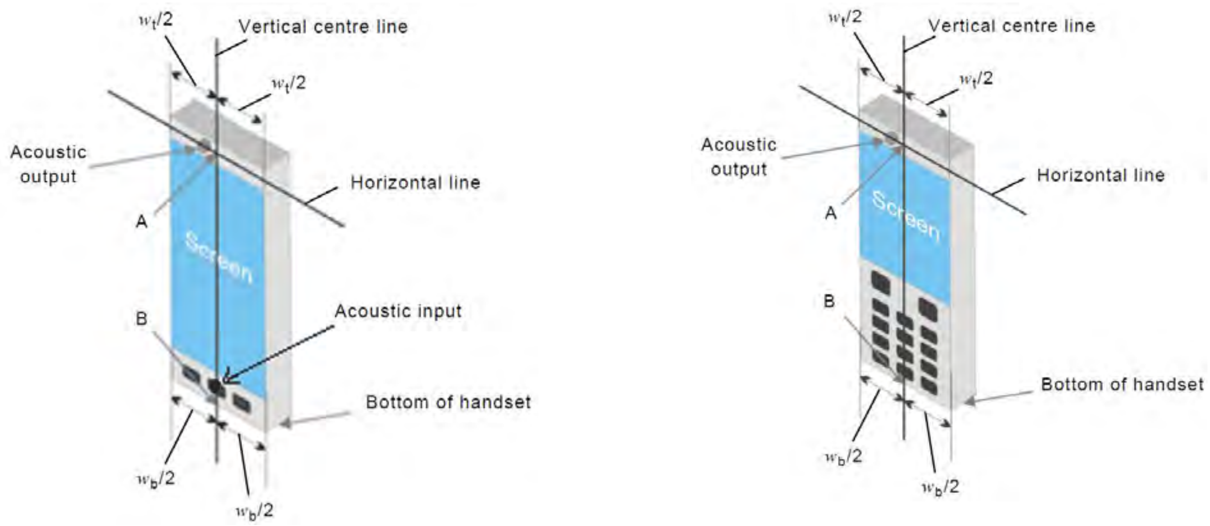


Fig-4.1 Illustration for Handset Vertical and Horizontal Reference Lines

2. Cheek Position
(a) To position the device with the vertical center line of the body of the device and the horizontal line crossing the center piece in a plane parallel to the sagittal plane of the phantom. While maintaining the device in this plane, align the vertical center line with the reference plane containing the three ear and mouth reference point (M: Mouth, RE: Right Ear, and LE: Left Ear) and align the center of the ear piece with the line RE-LE.
(b) To move the device towards the phantom with the ear piece aligned with the line LE-RE until the phone touched the ear. While maintaining the device in the reference plane and maintaining the phone contact with the ear, move the bottom of the phone until any point on the front side is in contact with the cheek of the phantom or until contact with the ear is lost (see Fig-4.2).

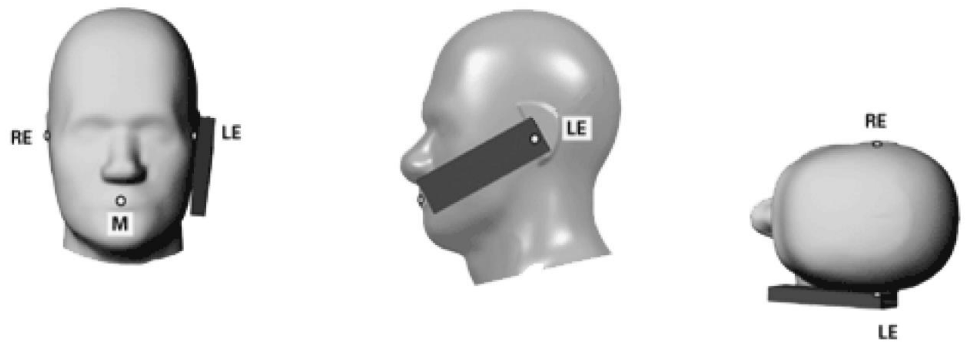


Fig-4.2 Illustration for Cheek Position

3. Tilted Position
(a) To position the device in the “cheek” position described above.
(b) While maintaining the device the reference plane described above and pivoting against the ear, moves it outward away from the mouth by an angle of 15 degrees or until contact with the ear is lost (see Fig-4.3).

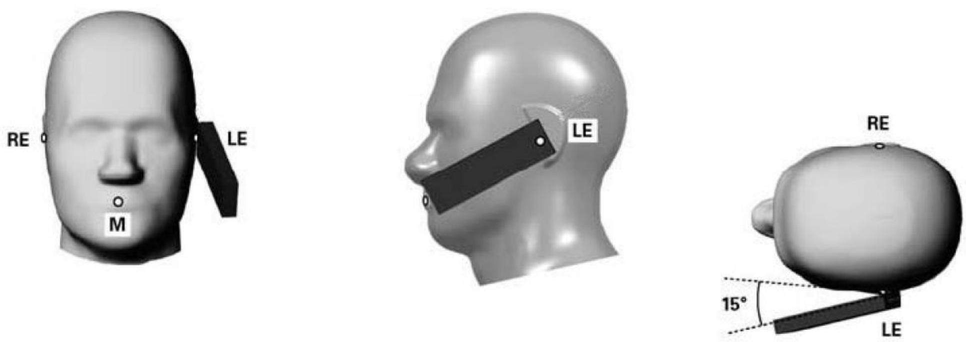


Fig-4.3 Illustration for Tilted Position

4.2.2 Body-worn Accessory Exposure 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 D01 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, measured without a headset connected to the handset, is> 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

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.

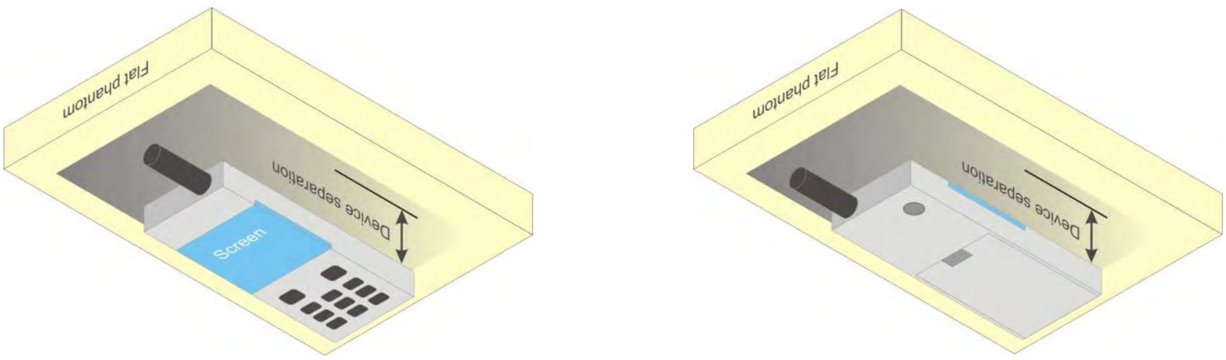
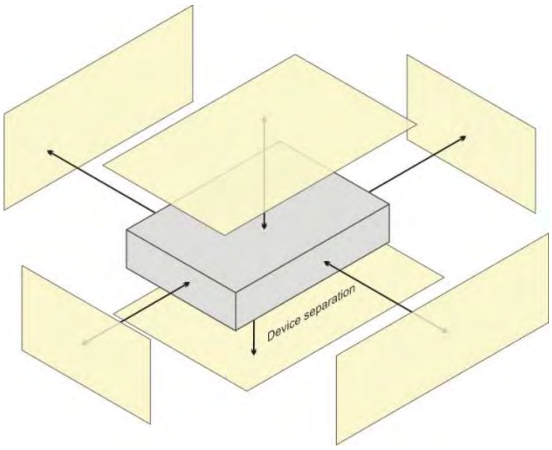


Fig-4.4 Illustration for Body Worn Position

4.2.3 Hotspot Mode Exposure 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 D06. 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).

Considering the minimum test separation distance <= 5 mm of Body-worn accessory, the hotspot test separation distance is 5 mm.



Based on the antenna location shown on appendix D of this report, the SAR testing required for hotspot mode is listed as below.

Antenna	Front Face	Rear Face	Left Side	Right Side	Top Side	Bottom Side
WWAN	V	V	V	V		V
WLAN / BT	V	V		V	V	

4.3 Tissue Verification

The measuring results for tissue simulating liquid are shown as below.

Head / Body-worn / Hotspot

Plot	Frequency (MHz)	Liquid Temp. (℃)	Measured Conductivity (σ)	Measured Permittivity (ε_r)	Target Conductivity (σ)	Target Permittivity (ε_r)	Conductivity Deviation (%)	Permittivity Deviation (%)	Test Date
S01	835	23.1	0.901	42.932	0.9	41.5	0.11	3.45	Jan. 12, 2021
S02	1900	23.1	1.454	39.605	1.4	40	3.86	-0.99	Jan. 12, 2021
S03	835	23.1	0.901	42.932	0.9	41.5	0.44	1.01	Jan. 12, 2021
S04	835	23.1	0.901	42.932	0.9	41.5	0.44	1.01	Jan. 12, 2021
S05	750	23.1	0.825	42.947	0.89	41.9	-7.30	2.50	Jan. 12, 2021
S06	2450	23.2	1.874	37.983	1.8	39.2	4.11	-3.10	Jan. 18, 2021
S07	5250	23.6	4.747	36.987	4.71	35.9	0.79	3.03	Jan. 19, 2021
S08	5600	23.6	5.102	36.509	5.07	35.5	0.63	2.84	Jan. 19, 2021
S09	5750	23.2	5.14	36.453	5.22	35.4	-1.53	2.97	Apr. 06, 2021
S10	2450	23.2	1.874	37.983	1.8	39.2	4.11	-3.10	Jan. 18, 2021
S11	835	23.2	0.904	41.921	0.9	41.5	0.44	1.01	Jan. 07, 2021
S12	1900	23.1	1.444	38.835	1.4	40	3.14	-2.91	Jan. 08, 2021
S13	835	23.2	0.904	41.921	0.9	41.5	0.44	1.01	Jan. 07, 2021
S14	835	23.1	0.921	42.331	0.9	41.5	2.33	2.00	Jan. 08, 2021
S15	750	23.4	0.886	42.919	0.89	41.9	-0.45	2.43	Jan. 11, 2021
S16	2450	23.1	1.868	37.896	1.8	39.2	3.78	-3.33	Jan. 16, 2021
S17	5250	23.1	4.726	34.979	4.71	35.9	0.34	-2.57	Jan. 16, 2021
S18	5600	23.1	5.043	34.467	5.07	35.5	-0.53	-2.91	Jan. 16, 2021
S19	5750	23.2	5.14	36.453	5.22	35.4	-1.53	2.97	Apr. 06, 2021
S20	2450	23.2	1.874	37.983	1.8	39.2	4.11	-3.10	Jan. 18, 2021
S21	835	23.2	0.904	41.921	0.9	41.5	0.44	1.01	Jan. 07, 2021
S22	1900	23.1	1.444	38.835	1.4	40	3.14	-2.91	Jan. 08, 2021
S23	835	23.2	0.904	41.921	0.9	41.5	0.44	1.01	Jan. 07, 2021
S24	835	23.1	0.921	42.331	0.9	41.5	2.33	2.00	Jan. 08, 2021
S25	750	23.4	0.886	42.919	0.89	41.9	-0.45	2.43	Jan. 11, 2021
S26	2450	23.1	1.868	37.896	1.8	39.2	3.78	-3.33	Jan. 16, 2021
S27	2450	23.2	1.874	37.983	1.8	39.2	4.11	-3.10	Jan. 18, 2021

Note:

The dielectric properties of the tissue simulating liquid have been measured within 24 hours before the SAR testing and within ±10 % of the target values. Liquid temperature during the SAR testing has kept within ±2 ℃.

4.4 System Validation

The SAR measurement system was validated according to procedures in KDB 865664 D01. The validation status in tabulated summary is as below.

Head / Body-worn / Hotspot

Plot	Test Date	Probe S/N	Calibration Point	Measured Conductivity (σ)	Measured Permittivity (ε_r)	Validation for CW			Validation for Modulation		
						Sensitivity Range	Probe Linearity	Probe Isotropy	Modulation Type	Duty Factor	PAR
S01	Jan. 12, 2021	7472	835	0.901	42.932	Pass	Pass	Pass	GMSK	Pass	N/A
S02	Jan. 12, 2021	7472	1900	1.454	39.605	Pass	Pass	Pass	GMSK	Pass	N/A
S03	Jan. 12, 2021	7472	835	0.901	42.932	Pass	Pass	Pass	GMSK	Pass	N/A
S04	Jan. 12, 2021	7472	835	0.901	42.932	Pass	Pass	Pass	GMSK	Pass	N/A
S05	Jan. 12, 2021	7472	750	0.825	42.947	Pass	Pass	Pass	N/A	N/A	N/A
S06	Jan. 18, 2021	7350	2450	1.874	37.983	Pass	Pass	Pass	OFDM	N/A	Pass
S07	Jan. 19, 2021	7350	5250	4.747	36.987	Pass	Pass	Pass	OFDM	N/A	Pass
S08	Jan. 19, 2021	7350	5600	5.102	36.509	Pass	Pass	Pass	OFDM	N/A	Pass
S09	Apr. 06, 2021	3887	5750	5.14	36.453	Pass	Pass	Pass	OFDM	N/A	Pass
S10	Jan. 18, 2021	7350	2450	1.874	37.983	Pass	Pass	Pass	OFDM	N/A	Pass
S11	Jan. 07, 2021	7472	835	0.904	41.921	Pass	Pass	Pass	GMSK	Pass	N/A
S12	Jan. 08, 2021	7472	1900	1.444	38.835	Pass	Pass	Pass	GMSK	Pass	N/A
S13	Jan. 07, 2021	7472	835	0.904	41.921	Pass	Pass	Pass	GMSK	Pass	N/A
S14	Jan. 08, 2021	7472	835	0.921	42.331	Pass	Pass	Pass	GMSK	Pass	N/A
S15	Jan. 11, 2021	3971	750	0.886	42.919	Pass	Pass	Pass	N/A	N/A	N/A
S16	Jan. 16, 2021	7472	2450	1.868	37.896	Pass	Pass	Pass	OFDM	N/A	Pass
S17	Jan. 16, 2021	7472	5250	4.726	34.979	Pass	Pass	Pass	OFDM	N/A	Pass
S18	Jan. 16, 2021	7472	5600	5.043	34.467	Pass	Pass	Pass	OFDM	N/A	Pass
S19	Apr. 06, 2021	3887	5750	5.14	36.453	Pass	Pass	Pass	OFDM	N/A	Pass
S20	Jan. 18, 2021	7350	2450	1.874	37.983	Pass	Pass	Pass	OFDM	N/A	Pass
S21	Jan. 07, 2021	7472	835	0.904	41.921	Pass	Pass	Pass	GMSK	Pass	N/A
S22	Jan. 08, 2021	7472	1900	1.444	38.835	Pass	Pass	Pass	GMSK	Pass	N/A
S23	Jan. 07, 2021	7472	835	0.904	41.921	Pass	Pass	Pass	GMSK	Pass	N/A
S24	Jan. 08, 2021	7472	835	0.921	42.331	Pass	Pass	Pass	GMSK	Pass	N/A
S25	Jan. 11, 2021	3971	750	0.886	42.919	Pass	Pass	Pass	N/A	N/A	N/A
S26	Jan. 16, 2021	7472	2450	1.868	37.896	Pass	Pass	Pass	OFDM	N/A	Pass
S27	Jan. 18, 2021	7350	2450	1.874	37.983	Pass	Pass	Pass	OFDM	N/A	Pass

4.5 System Verification

The measuring result for system verification is tabulated as below.

Head / Body-worn / Hotspot

Plot	Test Date	Frequency (MHz)	1W Target SAR-1g (W/kg)	Measured SAR-1g (W/kg)	Normalized to 1W SAR-1g (W/kg)	Deviation (%)	Dipole S/N	Probe S/N	DAE S/N
S01	Jan. 12, 2021	835	9.52	0.491	9.82	3.15	4d121	7472	1585
S02	Jan. 12, 2021	1900	40.30	1.96	39.20	-2.73	5d036	7472	1585
S03	Jan. 12, 2021	835	9.52	0.491	9.82	3.15	4d121	7472	1585
S04	Jan. 12, 2021	835	9.52	0.491	9.82	3.15	4d121	7472	1585
S05	Jan. 12, 2021	750	8.48	0.417	8.34	-1.65	1013	7472	1585
S06	Jan. 18, 2021	2450	51.60	2.73	54.60	5.81	737	7350	679
S07	Jan. 19, 2021	5250	79.70	3.6	72.00	-9.66	1019	7350	679
S08	Jan. 19, 2021	5600	83.80	4.46	89.20	6.44	1019	7350	679
S09	Apr. 06, 2021	5750	77.50	3.79	75.80	-2.19	1145	3887	905
S10	Jan. 18, 2021	2450	51.60	2.73	54.60	5.81	737	7350	679
S11	Jan. 07, 2021	835	9.52	0.509	10.18	6.93	4d121	7472	1585
S12	Jan. 08, 2021	1900	40.30	2.03	40.60	0.74	5d036	7472	1585
S13	Jan. 07, 2021	835	9.52	0.509	10.18	6.93	4d121	7472	1585
S14	Jan. 08, 2021	835	9.52	0.465	9.30	-2.31	4d121	7472	1585
S15	Jan. 11, 2021	750	8.48	0.388	7.76	-8.49	1013	3971	905
S16	Jan. 16, 2021	2450	51.60	2.74	54.80	6.20	737	7472	1585
S17	Jan. 16, 2021	5250	79.70	3.99	79.80	0.13	1019	7472	1585
S18	Jan. 16, 2021	5600	83.80	4.3	86.00	2.63	1019	7472	1585
S19	Apr. 06, 2021	5750	77.50	3.79	75.80	-2.19	1145	3887	905
S20	Jan. 18, 2021	2450	51.60	2.73	54.60	5.81	737	7350	679
S21	Jan. 07, 2021	835	9.52	0.509	10.18	6.93	4d121	7472	1585
S22	Jan. 08, 2021	1900	40.30	2.03	40.60	0.74	5d036	7472	1585
S23	Jan. 07, 2021	835	9.52	0.509	10.18	6.93	4d121	7472	1585
S24	Jan. 08, 2021	835	9.52	0.465	9.30	-2.31	4d121	7472	1585
S25	Jan. 11, 2021	750	8.48	0.388	7.76	-8.49	1013	3971	905
S26	Jan. 16, 2021	2450	51.60	2.74	54.80	6.20	737	7472	1585
S27	Jan. 18, 2021	2450	51.60	2.73	54.60	5.81	737	7350	679

Note:

Comparing to the reference SAR value provided by SPEAG in dipole calibration certificate, the deviation of system check results is within its specification of 10 %. The result indicates the system check can meet the variation criterion and the plots please refer to Appendix A of this report.

4.6 Maximum Output Power

4.6.1 Maximum Target Conducted Power

Refer to Appendix E.

4.6.2 Measured Conducted Power Result

Refer to Appendix F.

4.7 SAR Testing Results

4.7.1 SAR Test Reduction Considerations

<KDB 447498 D01, General RF Exposure Guidance>

Testing of other required channels within the operating mode of a frequency band is not required when the reported SAR for the mid-band or highest output power channel is:

(1) ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz

(2) ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz

(3) ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz

When SAR is not measured at the maximum power level allowed for production units, the measured SAR will be scaled to the maximum tune-up tolerance limit to determine compliance. The scaling factor for the tune-up power is defined as maximum tune-up limit (mW) / measured conducted power (mW). The reported SAR would be calculated by measured SAR x tune-up power scaling factor.

The SAR has been measured with highest transmission duty factor supported by the test mode tools for WLAN and/or Bluetooth. When the transmission duty factor could not achieve 100%, the reported SAR will be scaled to 100% transmission duty factor to determine compliance at the maximum tune-up power. The scaling factor for the duty factor is defined as 100% / transmission duty cycle (%). The reported SAR would be calculated by measured SAR x tune-up power scaling factor x duty cycle scaling factor.

<KDB 941225 D01, 3G SAR Measurement Procedures>

The mode tested for SAR is referred to as the primary mode. The equivalent modes considered for SAR test reduction are denoted as secondary modes. Both primary and secondary modes must be in the same frequency band. When the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ 1/4 dB higher than the primary mode or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode.

<KDB 941225 D05, SAR Evaluation Considerations for LTE Devices>

(1) QPSK with 1 RB and 50% RB allocation

Start with the largest channel bandwidth and measure SAR, using the RB offset and required test channel combination with the highest maximum output power among RB offsets at the upper edge, middle and lower edge of each required test channel. When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel. When the reported SAR of a required test channel is > 1.45 W/kg, SAR is required for all three RB offset configurations for that required test channel.

(2) QPSK with 100% RB allocation

SAR is not required when the highest maximum output power for 100% RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.

(3) Higher order modulations

SAR is required only when the highest maximum output power for the configuration in the higher order modulation is >1/2 dB higher than the same configuration in QPSK or when the reported SAR for the QPSK configuration is > 1.45 W/kg.

(4) Other channel bandwidth

SAR is required when the highest maximum output power of the smaller channel bandwidth is >1/2 dB higher than the equivalent channel configurations in the largest channel bandwidth configuration or the reported SAR of a configuration for the largest channel bandwidth is > 1.45 W/kg.

4.7.2 SAR Results for Head Exposure Condition

Plot No.	Band	Mode	Test Position	Ch.	Maximum Tune-up (dBm)	Conducted Power (dBm)	Scaling Factor	Power Drift	SAR 1g	Scaled 1g SAR
1	GSM850	GPRS12	Right Cheek	251	27.50	27.13	1.09	0.03	0.219	0.24
	GSM850	GPRS12	Right Tilted	251	27.50	27.13	1.09	0.17	0.136	0.15
	GSM850	GPRS12	Left Cheek	251	27.50	27.13	1.09	0.19	0.186	0.20
	GSM850	GPRS12	Left Tilted	251	27.50	27.13	1.09	-0.01	0.141	0.15
	GSM850	GPRS12	Right Cheek	128	27.50	27.07	1.10	-0.12	0.149	0.16
	GSM850	GPRS12	Right Cheek	189	27.50	27.11	1.09	-0.13	0.165	0.18
	GSM1900	GPRS12	Right Cheek	661	23.50	23.02	1.12	-0.19	0.095	0.11
	GSM1900	GPRS12	Right Tilted	661	23.50	23.02	1.12	0	<0.001	0.00
2	GSM1900	GPRS12	Left Cheek	661	23.50	23.02	1.12	-0.17	0.105	0.12
	GSM1900	GPRS12	Left Tilted	661	23.50	23.02	1.12	0	<0.001	0.00
	GSM1900	GPRS12	Left Cheek	512	23.50	22.73	1.19	0.13	0.096	0.11
	GSM1900	GPRS12	Left Cheek	810	23.50	22.77	1.18	-0.11	0.089	0.11
3	WCDMA V	RMC12.2K	Right Cheek	4233	23.00	22.91	1.02	0.01	0.236	0.24
	WCDMA V	RMC12.2K	Right Tilted	4233	23.00	22.91	1.02	0.07	0.125	0.13
	WCDMA V	RMC12.2K	Left Cheek	4233	23.00	22.91	1.02	-0.11	0.189	0.19
	WCDMA V	RMC12.2K	Left Tilted	4233	23.00	22.91	1.02	-0.16	0.147	0.15
	WCDMA V	RMC12.2K	Right Cheek	4132	23.00	22.86	1.03	0.01	0.226	0.23
	WCDMA V	RMC12.2K	Right Cheek	4182	23.00	22.88	1.03	-0.04	0.216	0.22

Plot No.	Band	Mode	Test Position	Ch.	RB	offset	Maximum Tune-up (dBm)	Conducted Power (dBm)	Scaling Factor	Power Drift	SAR 1g	Scaled 1g SAR
	LTE 5	QPSK10M	Right Cheek	20525	1	0	23.50	23.23	1.06	0.12	0.141	0.15
	LTE 5	QPSK10M	Right Tilted	20525	1	0	23.50	23.23	1.06	-0.1	0.115	0.12
	LTE 5	QPSK10M	Left Cheek	20525	1	0	23.50	23.23	1.06	0.18	0.149	0.16
	LTE 5	QPSK10M	Left Tilted	20525	1	0	23.50	23.23	1.06	0.01	0.125	0.13
	LTE 5	QPSK10M	Right Cheek	20525	25	0	22.50	22.15	1.08	-0.06	0.143	0.15
	LTE 5	QPSK10M	Right Tilted	20525	25	0	22.50	22.15	1.08	-0.04	0.097	0.10
	LTE 5	QPSK10M	Left Cheek	20525	25	0	22.50	22.15	1.08	0.07	0.116	0.13
	LTE 5	QPSK10M	Left Tilted	20525	25	0	22.50	22.15	1.08	-0.12	0.093	0.10
	LTE 5	QPSK10M	Left Cheek	20450	1	0	23.50	23.08	1.10	-0.08	0.121	0.13
4	LTE 5	QPSK10M	Left Cheek	20600	1	0	23.50	23.06	1.11	-0.03	0.156	0.17
5	LTE 12	QPSK10M	Right Cheek	23060	1	0	23.50	23.13	1.09	-0.15	0.012	0.01
	LTE 12	QPSK10M	Right Tilted	23060	1	0	23.50	23.13	1.09	0	0.00877	0.01
	LTE 12	QPSK10M	Left Cheek	23060	1	0	23.50	23.13	1.09	0.14	0.01	0.01
	LTE 12	QPSK10M	Left Tilted	23060	1	0	23.50	23.13	1.09	0	0.00651	0.01
	LTE 12	QPSK10M	Right Cheek	23060	25	0	22.50	22.07	1.10	0.05	0.011	0.01
	LTE 12	QPSK10M	Right Tilted	23060	25	0	22.50	22.07	1.10	0	0.00743	0.01
	LTE 12	QPSK10M	Left Cheek	23060	25	0	22.50	22.07	1.10	0.09	0.01	0.01
	LTE 12	QPSK10M	Left Tilted	23060	25	0	22.50	22.07	1.10	0	0.00539	0.01
	LTE 12	QPSK10M	Right Cheek	23095	1	0	23.50	23.08	1.10	0.16	0.00904	0.01
	LTE 12	QPSK10M	Right Cheek	23130	1	0	23.50	23.02	1.12	0.02	0.00894	0.01

Note:<0.001” means there is no SAR value or the SAR is too low to be measured.

Plot No.	Band	Mode	Test Position	Ch.	Duty Cycle	Crest Factor	Maximum Tune-up (dBm)	Conducted Power (dBm)	Scaling Factor	Power Drift	SAR 1g	Scaled 1g SAR
	WLAN2.4G	802.11b	Right Cheek	1	98.05	1.02	16.00	15.76	1.06	-0.16	0.259	0.28
	WLAN2.4G	802.11b	Right Tilted	1	98.05	1.02	16.00	15.76	1.06	0.05	0.24	0.26
6	WLAN2.4G	802.11b	Left Cheek	1	98.05	1.02	16.00	15.76	1.06	0.01	0.333	**0.36**
	WLAN2.4G	802.11b	Left Tilted	1	98.05	1.02	16.00	15.76	1.06	-0.13	0.277	0.30
	WLAN2.4G	802.11b	Left Cheek	6	98.05	1.02	16.00	15.58	1.10	0.08	0.26	0.29
	WLAN2.4G	802.11b	Left Cheek	11	98.05	1.02	16.00	15.60	1.10	0.14	0.312	0.35
	WLAN5.3G	802.11a	Right Cheek	60	97.29	1.03	15.00	14.59	1.10	-0.13	0.258	0.29
	WLAN5.3G	802.11a	Right Tilted	60	97.29	1.03	15.00	14.59	1.10	-0.05	0.221	0.25
	WLAN5.3G	802.11a	Left Cheek	60	97.29	1.03	15.00	14.59	1.10	0.11	0.291	0.33
	WLAN5.3G	802.11a	Left Tilted	60	97.29	1.03	15.00	14.59	1.10	0.11	0.257	0.29
	WLAN5.3G	802.11a	Left Cheek	52	97.29	1.03	15.00	14.53	1.11	0.14	0.291	0.33
	WLAN5.3G	802.11a	Left Cheek	56	97.29	1.03	15.00	14.55	1.11	0.02	0.295	0.34
7	WLAN5.3G	802.11a	Left Cheek	64	97.29	1.03	15.00	14.30	1.17	0.04	0.327	**0.39**
	WLAN5.6G	802.11a	Right Cheek	140	97.29	1.03	15.50	15.06	1.11	0.12	0.189	0.22
	WLAN5.6G	802.11a	Right Tilted	140	97.29	1.03	15.50	15.06	1.11	0.11	0.157	0.18
	WLAN5.6G	802.11a	Left Cheek	140	97.29	1.03	15.50	15.06	1.11	0.17	0.257	0.29
	WLAN5.6G	802.11a	Left Tilted	140	97.29	1.03	15.50	15.06	1.11	-0.15	0.166	0.19
8	WLAN5.6G	802.11a	Left Cheek	100	97.29	1.03	15.50	14.49	1.26	-0.05	0.457	**0.59**
	WLAN5.6G	802.11a	Left Cheek	116	97.29	1.03	15.50	14.54	1.25	-0.16	0.392	0.50
	WLAN5.6G	802.11a	Left Cheek	120	97.29	1.03	15.50	14.41	1.29	0.1	0.349	0.46
	WLAN5.6G	802.11a	Left Cheek	124	97.29	1.03	15.50	14.56	1.24	-0.13	0.315	0.40
	WLAN5.6G	802.11a	Left Cheek	132	97.29	1.03	15.50	14.62	1.22	0.1	0.316	0.40
	WLAN5.6G	802.11a	Left Cheek	144	97.29	1.03	15.50	15.01	1.12	-0.01	0.301	0.35
	WLAN5.8G	802.11a	Right Cheek	149	97.29	1.03	15.00	14.87	1.03	-0.19	0.172	0.18
	WLAN5.8G	802.11a	Right Tilted	149	97.29	1.03	15.00	14.87	1.03	-0.07	0.151	0.16
9	WLAN5.8G	802.11a	Left Cheek	149	97.29	1.03	15.00	14.87	1.03	-0.08	0.232	**0.25**
	WLAN5.8G	802.11a	Left Tilted	149	97.29	1.03	15.00	14.87	1.03	-0.11	0.19	0.20
	WLAN5.8G	802.11a	Left Cheek	153	97.29	1.03	15.00	14.75	1.06	-0.08	0.183	0.20
	WLAN5.8G	802.11a	Left Cheek	157	97.29	1.03	15.00	14.80	1.05	-0.03	0.176	0.19
	WLAN5.8G	802.11a	Left Cheek	161	97.29	1.03	15.00	14.71	1.07	0.09	0.181	0.20
	WLAN5.8G	802.11a	Left Cheek	165	97.29	1.03	15.00	14.85	1.04	0.13	0.197	0.21
	BT	BR / EDR	Right Cheek	0	77.07	1.30	12.00	11.57	1.10	-0.1	0.049	0.07
	BT	BR / EDR	Right Tilted	0	77.07	1.30	12.00	11.57	1.10	-0.19	0.051	0.07
	BT	BR / EDR	Left Cheek	0	77.07	1.30	12.00	11.57	1.10	0.06	0.094	0.13
	BT	BR / EDR	Left Tilted	0	77.07	1.30	12.00	11.57	1.10	0.09	0.061	0.09
	BT	BR / EDR	Left Cheek	39	77.07	1.30	12.00	11.56	1.11	0.02	0.031	0.04
10	BT	BR / EDR	Left Cheek	78	77.07	1.30	12.00	11.35	1.16	-0.03	0.109	**0.16**

4.7.3 SAR Results for Body-worn Exposure Condition (Test Separation Distance is 5 mm)

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Maximum Tune-up (dBm)	Conducted Power (dBm)	Scaling Factor	Power Drift	SAR 1g	Scaled 1g SAR
	GSM850	GPRS12	Front Face	5	251	27.50	27.13	1.09	0.02	0.181	0.20
11	GSM850	GPRS12	Rear Face	5	251	27.50	27.13	1.09	-0.08	0.701	0.76
	GSM850	GPRS12	Rear Face	5	128	27.50	27.07	1.10	0.01	0.481	0.53
	GSM850	GPRS12	Rear Face	5	189	27.50	27.11	1.09	0.02	0.559	0.61
	GSM1900	GPRS12	Front Face	5	661	23.50	23.02	1.12	0.08	0.263	0.29
12	GSM1900	GPRS12	Rear Face	5	661	23.50	23.02	1.12	0.02	0.656	0.73
	GSM1900	GPRS12	Rear Face	5	512	23.50	22.73	1.19	-0.03	0.372	0.44
	GSM1900	GPRS12	Rear Face	5	810	23.50	22.77	1.18	-0.08	0.524	0.62
	WCDMA V	RMC12.2K	Front Face	5	4233	23.00	22.91	1.02	0.02	0.273	0.28
13	WCDMA V	RMC12.2K	Rear Face	5	4233	23.00	22.91	1.02	0.15	0.889	0.91
	WCDMA V	RMC12.2K	Rear Face	5	4132	23.00	22.86	1.03	0.01	0.808	0.83
	WCDMA V	RMC12.2K	Rear Face	5	4182	23.00	22.88	1.03	-0.18	0.702	0.72
	WCDMA V	RMC12.2K	Rear Face	5	4233	23.00	22.91	1.02	0.12	0.878	0.90

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	RB	offset	Maximum Tune-up (dBm)	Conducted Power (dBm)	Scaling Factor	Power Drift	SAR 1g	Scaled 1g SAR
	LTE 5	QPSK10M	Front Face	5	20525	1	0	23.50	23.23	1.06	-0.09	0.204	0.22
14	LTE 5	QPSK10M	Rear Face	5	20525	1	0	23.50	23.23	1.06	0.04	0.773	0.82
	LTE 5	QPSK10M	Front Face	5	20525	25	0	22.50	22.15	1.08	0.15	0.18	0.19
	LTE 5	QPSK10M	Rear Face	5	20525	25	0	22.50	22.15	1.08	-0.08	0.613	0.66
	LTE 5	QPSK10M	Rear Face	5	20450	1	0	23.50	23.08	1.10	0.08	0.723	0.80
	LTE 5	QPSK10M	Rear Face	5	20600	1	0	23.50	23.06	1.11	0.14	0.732	0.81
	LTE 12	QPSK10M	Front Face	5	23060	1	0	23.50	23.13	1.09	-0.1	0.018	0.02
	LTE 12	QPSK10M	Rear Face	5	23060	1	0	23.50	23.13	1.09	-0.19	0.055	0.06
	LTE 12	QPSK10M	Front Face	5	23060	25	0	22.50	22.07	1.10	0.06	0.02	0.02
	LTE 12	QPSK10M	Rear Face	5	23060	25	0	22.50	22.07	1.10	0.05	0.045	0.05
	LTE 12	QPSK10M	Rear Face	5	23095	1	0	23.50	23.08	1.10	0.16	0.055	0.06
15	LTE 12	QPSK10M	Rear Face	5	23130	1	0	23.50	23.02	1.12	-0.16	0.065	0.07

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Duty Cycle	Crest Factor	Maximum Tune-up (dBm)	Conducted Power (dBm)	Scaling Factor	Power Drift	SAR 1g	Scaled 1g SAR
	WLAN2.4G	802.11b	Front Face	5	1	98.05	1.02	16.00	15.76	1.06	-0.12	0.22	0.24
	WLAN2.4G	802.11b	Rear Face	5	1	98.05	1.02	16.00	15.76	1.06	0.14	0.484	0.52
	WLAN2.4G	802.11b	Rear Face	5	6	98.05	1.02	16.00	15.58	1.10	0.15	0.396	0.44
16	WLAN2.4G	802.11b	Rear Face	5	11	98.05	1.02	16.00	15.60	1.10	-0.18	0.528	**0.59**
	WLAN5.3G	802.11a	Front Face	5	60	97.29	1.03	15.00	14.59	1.10	-0.16	0.212	0.24
17	WLAN5.3G	802.11a	Rear Face	5	60	97.29	1.03	15.00	14.59	1.10	-0.19	0.585	**0.66**
	WLAN5.3G	802.11a	Rear Face	5	52	97.29	1.03	15.00	14.53	1.11	0.13	0.489	0.56
	WLAN5.3G	802.11a	Rear Face	5	56	97.29	1.03	15.00	14.55	1.11	0.15	0.51	0.58
	WLAN5.3G	802.11a	Rear Face	5	64	97.29	1.03	15.00	14.30	1.17	-0.08	0.543	0.65
	WLAN5.6G	802.11a	Front Face	5	140	97.29	1.03	15.50	15.06	1.11	0.16	0.124	0.14
	WLAN5.6G	802.11a	Rear Face	5	140	97.29	1.03	15.50	15.06	1.11	0.14	0.322	0.37
18	WLAN5.6G	802.11a	Rear Face	5	100	97.29	1.03	15.50	14.49	1.26	0.07	0.51	**0.66**
	WLAN5.6G	802.11a	Rear Face	5	116	97.29	1.03	15.50	14.54	1.25	-0.12	0.405	0.52
	WLAN5.6G	802.11a	Rear Face	5	120	97.29	1.03	15.50	14.41	1.29	-0.13	0.385	0.51
	WLAN5.6G	802.11a	Rear Face	5	124	97.29	1.03	15.50	14.56	1.24	0.03	0.364	0.46
	WLAN5.6G	802.11a	Rear Face	5	132	97.29	1.03	15.50	14.62	1.22	-0.16	0.353	0.44
	WLAN5.6G	802.11a	Rear Face	5	144	97.29	1.03	15.50	15.01	1.12	-0.16	0.343	0.40
	WLAN5.8G	802.11a	Front Face	5	149	97.29	1.03	15.00	14.87	1.03	-0.07	0.11	0.12
	WLAN5.8G	802.11a	Rear Face	5	149	97.29	1.03	15.00	14.87	1.03	0.13	0.302	0.32
	WLAN5.8G	802.11a	Rear Face	5	153	97.29	1.03	15.00	14.75	1.06	-0.15	0.355	0.39
	WLAN5.8G	802.11a	Rear Face	5	157	97.29	1.03	15.00	14.80	1.05	-0.1	0.362	0.39
	WLAN5.8G	802.11a	Rear Face	5	161	97.29	1.03	15.00	14.71	1.07	0.08	0.356	0.39
19	WLAN5.8G	802.11a	Rear Face	5	165	97.29	1.03	15.00	14.85	1.04	-0.09	0.44	**0.47**
	BT	BR / EDR	Front Face	5	0	77.07	1.30	12.00	11.57	1.10	-0.19	0.046	0.07
20	BT	BR / EDR	Rear Face	5	0	77.07	1.30	12.00	11.57	1.10	0.04	0.098	**0.14**
	BT	BR / EDR	Rear Face	5	39	77.07	1.30	12.00	11.56	1.11	0.06	0.096	0.14
	BT	BR / EDR	Rear Face	5	78	77.07	1.30	12.00	11.35	1.16	-0.02	0.095	0.14

4.7.4 SAR Results for Hotspot Exposure Condition (Test Separation Distance is 5 mm)

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Maximum Tune-up (dBm)	Conducted Power (dBm)	Scaling Factor	Power Drift	SAR 1g	Scaled 1g SAR
	GSM850	GPRS12	Front Face	5	251	27.50	27.13	1.09	0.02	0.181	0.20
21	GSM850	GPRS12	Rear Face	5	251	27.50	27.13	1.09	-0.08	0.701	**0.76**
	GSM850	GPRS12	Left Side	5	251	27.50	27.13	1.09	-0.01	0.162	0.18
	GSM850	GPRS12	Right Side	5	251	27.50	27.13	1.09	0.05	0.245	0.27
	GSM850	GPRS12	Bottom Side	5	251	27.50	27.13	1.09	0.15	0.265	0.29
	GSM850	GPRS12	Rear Face	5	128	27.50	27.07	1.10	0.01	0.481	0.53
	GSM850	GPRS12	Rear Face	5	189	27.50	27.11	1.09	0.02	0.559	0.61
	GSM1900	GPRS12	Front Face	5	661	23.50	23.02	1.12	0.08	0.263	0.29
22	GSM1900	GPRS12	Rear Face	5	661	23.50	23.02	1.12	0.02	0.656	**0.73**
	GSM1900	GPRS12	Left Side	5	661	23.50	23.02	1.12	-0.14	0.117	0.13
	GSM1900	GPRS12	Right Side	5	661	23.50	23.02	1.12	0.01	0.073	0.08
	GSM1900	GPRS12	Bottom Side	5	661	23.50	23.02	1.12	-0.01	0.453	0.51
	GSM1900	GPRS12	Rear Face	5	512	23.50	22.73	1.19	-0.03	0.372	0.44
	GSM1900	GPRS12	Rear Face	5	810	23.50	22.77	1.18	-0.08	0.524	0.62
	WCDMA V	RMC12.2K	Front Face	5	4233	23.00	22.91	1.02	0.02	0.273	0.28
23	WCDMA V	RMC12.2K	Rear Face	5	4233	23.00	22.91	1.02	0.15	0.889	**0.91**
	WCDMA V	RMC12.2K	Left Side	5	4233	23.00	22.91	1.02	-0.11	0.255	0.26
	WCDMA V	RMC12.2K	Right Side	5	4233	23.00	22.91	1.02	-0.17	0.385	0.39
	WCDMA V	RMC12.2K	Bottom Side	5	4233	23.00	22.91	1.02	0.05	0.419	0.43
	WCDMA V	RMC12.2K	Rear Face	5	4132	23.00	22.86	1.03	0.01	0.808	0.83
	WCDMA V	RMC12.2K	Rear Face	5	4182	23.00	22.88	1.03	-0.18	0.702	0.72
	WCDMA V	RMC12.2K	Rear Face	5	4233	23.00	22.91	1.02	0.12	0.878	0.90

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	RB	offset	Maximum Tune-up (dBm)	Conducted Power (dBm)	Scaling Factor	Power Drift	SAR 1g	Scaled 1g SAR
	LTE 5	QPSK10M	Front Face	5	20525	1	0	23.50	23.23	1.06	-0.09	0.204	0.22
24	LTE 5	QPSK10M	Rear Face	5	20525	1	0	23.50	23.23	1.06	0.04	0.773	**0.82**
	LTE 5	QPSK10M	Left Side	5	20525	1	0	23.50	23.23	1.06	0.19	0.112	0.12
	LTE 5	QPSK10M	Right Side	5	20525	1	0	23.50	23.23	1.06	0.02	0.323	0.34
	LTE 5	QPSK10M	Bottom Side	5	20525	1	0	23.50	23.23	1.06	-0.1	0.229	0.24
	LTE 5	QPSK10M	Front Face	5	20525	25	0	22.50	22.15	1.08	0.15	0.18	0.19
	LTE 5	QPSK10M	Rear Face	5	20525	25	0	22.50	22.15	1.08	-0.08	0.613	0.66
	LTE 5	QPSK10M	Left Side	5	20525	25	0	22.50	22.15	1.08	0.19	0.099	0.11
	LTE 5	QPSK10M	Right Side	5	20525	25	0	22.50	22.15	1.08	-0.09	0.25	0.27
	LTE 5	QPSK10M	Bottom Side	5	20525	25	0	22.50	22.15	1.08	0.11	0.209	0.23
	LTE 5	QPSK10M	Rear Face	5	20450	1	0	23.50	23.08	1.10	0.08	0.723	0.80
	LTE 5	QPSK10M	Rear Face	5	20600	1	0	23.50	23.06	1.11	0.14	0.732	0.81
	LTE 12	QPSK10M	Front Face	5	23060	1	0	23.50	23.13	1.09	0.12	0.018	0.02
	LTE 12	QPSK10M	Rear Face	5	23060	1	0	23.50	23.13	1.09	0.04	0.055	0.06
	LTE 12	QPSK10M	Left Side	5	23060	1	0	23.50	23.13	1.09	-0.15	0.00982	0.01
	LTE 12	QPSK10M	Right Side	5	23060	1	0	23.50	23.13	1.09	-0.03	0.017	0.02
	LTE 12	QPSK10M	Bottom Side	5	23060	1	0	23.50	23.13	1.09	-0.18	0.012	0.01
	LTE 12	QPSK10M	Front Face	5	23060	25	0	22.50	22.07	1.10	-0.17	0.021	0.02
	LTE 12	QPSK10M	Rear Face	5	23060	25	0	22.50	22.07	1.10	-0.16	0.045	0.05
	LTE 12	QPSK10M	Left Side	5	23060	25	0	22.50	22.07	1.10	-0.12	0.00831	0.01
	LTE 12	QPSK10M	Right Side	5	23060	25	0	22.50	22.07	1.10	0.11	0.014	0.02
	LTE 12	QPSK10M	Bottom Side	5	23060	25	0	22.50	22.07	1.10	-0.11	0.012	0.01
	LTE 12	QPSK10M	Rear Face	5	23095	1	0	23.50	23.08	1.10	-0.14	0.055	0.06
25	LTE 12	QPSK10M	Rear Face	5	23130	1	0	23.50	23.02	1.12	-0.16	0.065	**0.07**

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Duty Cycle	Crest Factor	Maximum Tune-up (dBm)	Conducted Power (dBm)	Scaling Factor	Power Drift	SAR 1g	Scaled 1g SAR
	WLAN2.4G	802.11b	Front Face	5	1	98.05	1.02	16.00	15.76	1.06	0.12	0.22	0.24
	WLAN2.4G	802.11b	Rear Face	5	1	98.05	1.02	16.00	15.76	1.06	-0.17	0.484	0.52
	WLAN2.4G	802.11b	Right Side	5	1	98.05	1.02	16.00	15.76	1.06	0	<0.001	0.00
	WLAN2.4G	802.11b	Top Side	5	1	98.05	1.02	16.00	15.76	1.06	0.03	0.205	0.22
	WLAN2.4G	802.11b	Rear Face	5	6	98.05	1.02	16.00	15.58	1.10	-0.06	0.396	0.44
26	WLAN2.4G	802.11b	Rear Face	5	11	98.05	1.02	16.00	15.60	1.10	-0.18	0.528	**0.59**
	BT	BR / EDR	Front Face	5	0	77.07	1.30	12.00	11.57	1.10	0.02	0.046	0.07
27	BT	BR / EDR	Rear Face	5	0	77.07	1.30	12.00	11.57	1.10	0.04	0.098	**0.14**
	BT	BR / EDR	Right Side	5	0	77.07	1.30	12.00	11.57	1.10	0	<0.001	0.00
	BT	BR / EDR	Top Side	5	0	77.07	1.30	12.00	11.57	1.10	0.14	0.043	0.06
	BT	BR / EDR	Rear Face	5	39	77.07	1.30	12.00	11.56	1.11	-0.06	0.096	0.14
	BT	BR / EDR	Rear Face	5	78	77.07	1.30	12.00	11.35	1.16	0.07	0.095	0.14

Note:<0.001” means there is no SAR value or the SAR is too low to be measured.

4.7.5 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 maybe 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.

Band	Mode	Test Position	Ch.	Original Measured SAR-1g (W/kg)	1st Repeated SAR-1g (W/kg)	L/S Ratio	2nd Repeated SAR-1g (W/kg)	L/S Ratio	3rd Repeated SAR-1g (W/kg)	L/S Ratio
WCDMA V	RMC12.2K	Rear Face	4233	0.889	0.878	1.01	N/A	N/A	N/A	N/A

4.7.6 Simultaneous Multi-band Transmission Evaluation

<Possibilities of Simultaneous Transmission>

The simultaneous transmission possibilities for this device are listed as below.

Simultaneous TX Combination	Capable Transmit Configurations	Head Exposure Condition	Body Exposure Condition	Hotspot Exposure Condition
1	WWAN + WLAN	Yes	Yes	Yes
2	WWAN + BT	Yes	Yes	Yes

Note :
1. The WLAN 2.4G and WLAN 5G cannot transmit simultaneously.
2. The WLAN and Bluetooth cannot transmit simultaneously.
3. Only WLAN 2.4G supports wireless hotspot capability. WLAN 5Gdoes not support wireless hotspot mode.

<SAR Summation Analysis>

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 SPLSR.

Refer to Appendix G

Test Engineer： Peter Hsu, and Jacob Wu

5. Calibration of Test Equipment

Equipment	Manufacturer	Model	SN	Cal. Date	Cal. Interval
System Validation Dipole	SPEAG	D750V3	1013	Aug. 13, 2020	1 Year
System Validation Dipole	SPEAG	D835V2	4d121	Aug. 13, 2020	1 Year
System Validation Dipole	SPEAG	D1900V2	5d036	Jan. 21, 2020	1 Year
System Validation Dipole	SPEAG	D2450V2	737	Aug. 13, 2020	1 Year
System Validation Dipole	SPEAG	D5GHzV2	1019	Mar. 13, 2020	1 Year
System Validation Dipole	SPEAG	D5GHzV2	1145	Nov. 09, 2020	1 Year
Dosimetric E-Field Probe	SPEAG	EX3DV4	3971	Jan. 27, 2020	1 Year
Dosimetric E-Field Probe	SPEAG	EX3DV4	7472	Aug. 24, 2020	1 Year
Dosimetric E-Field Probe	SPEAG	EX3DV4	7350	Dec. 21, 2020	1 Year
Dosimetric E-Field Probe	SPEAG	EX3DV4	3887	Oct. 22, 2020	1 Year
Data Acquisition Electronics	SPEAG	DAE4	1585	May. 28, 2020	1 Year
Data Acquisition Electronics	SPEAG	DAE4	905	Jun. 22, 2020	1 Year
Data Acquisition Electronics	SPEAG	DAE4	679	May. 06, 2020	1 Year
Universal Radio Communication Tester	R&S	CMW500	164864	Apr. 16, 2020	1 Year
Spectrum Analyzer	R&S	FSL6	102006	Mar. 26, 2020	1 Year
Universal Wireless Test Set	Anritsu	MT8870A/MU887000A	6201699387	Sep. 28, 2020	1 Year
Thermometer	YFE	YF-160A	150601220	May. 25, 2020	1 Year
Dielectric Assessment Kit	SPEAG	DAKS-3.5	1092	May. 26, 2020	1 Year
Powersource1	SPEAG	SE_UMS_160 BA	4010	Aug. 13, 2020	1 Year

6. Measurement Uncertainty

According to KDB 865664 D01, SAR measurement uncertainty analysis is required in SAR reports only when the highest measured SAR in a frequency band is ≥ 1.5 W/kg for 1-g SAR, and ≥ 3.75 W/kg for 10-g SAR. The procedures described in IEEE Std 1528-2013should be applied. The expanded SAR measurement uncertainty must be ≤ 30%,for a confidence interval of k = 2. When the highest measured SAR within a frequency band is < 1.5 W/kg for 1-g and < 3.75 W/kg for 10-g, the extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval. Hence, the measurement uncertainty analysis is not required in this SAR report because the test result met the condition.

7. Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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Email: service.adt@tw.bureauveritas.com
Web Site: https://ee.bureauveritas.com.tw/BVInternet/Default

The road map of all our labs can be found in our web site also.

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Appendix A. SAR Plots of System Verification

The plots for system verification with largest deviation for each SAR system combination are shown as follows.

S01 System Check_H835_200112

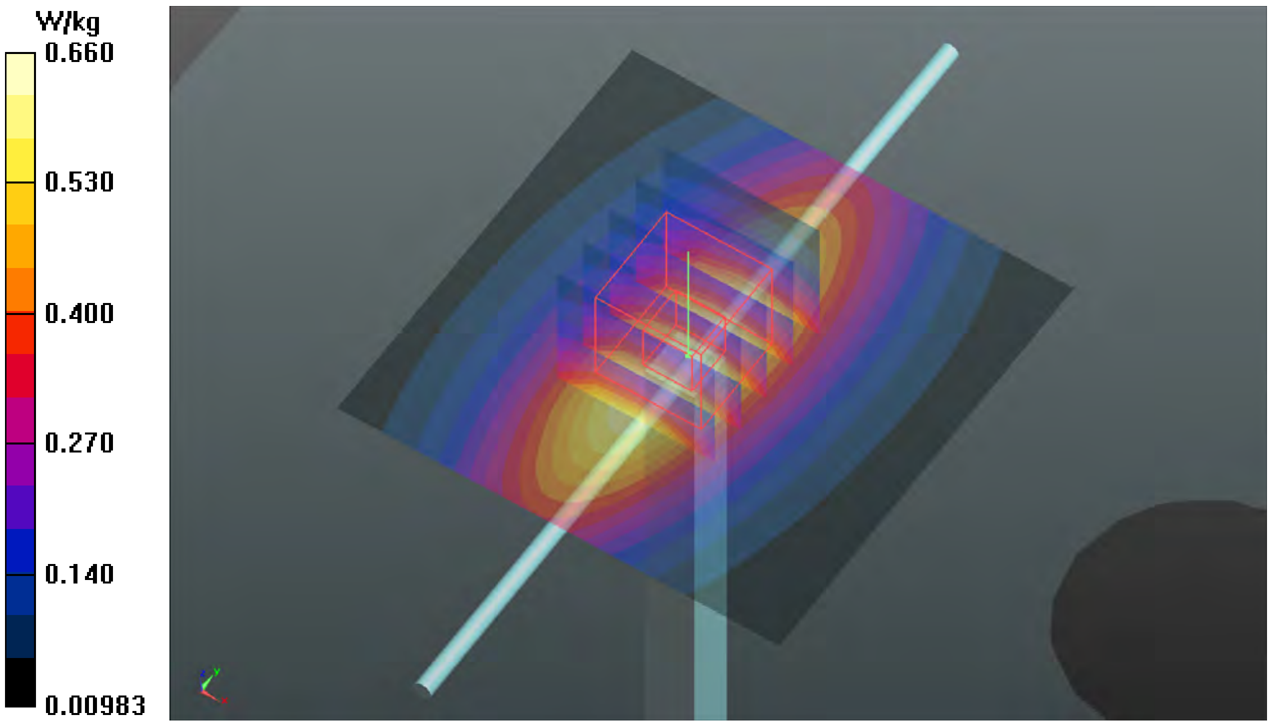
DUT: Dipole 835 MHz; Type: D835V2; SN: 4d121

Communication System: UID 0, CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: H07T10N3_0112 Medium parameters used: f = 835 MHz; σ = 0.901 S/m; ε_r = 42.932; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃； Liquid Temperature：23.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7472; ConvF(10.11, 10.11, 10.11) @ 835 MHz; Calibrated: 2020/08/24
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1585; Calibrated: 2020/05/28
- Phantom: Twin SAM Phantom_1823; Type: QD000P40;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=50mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.660 W/kg

Pin=50mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.83 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.728 W/kg
SAR(1 g) = 0.491 W/kg; SAR(10 g) = 0.325 W/kg (SAR corrected for target medium)
Maximum value of SAR (measured) = 0.646 W/kg



S02 System Check_H1900_200112

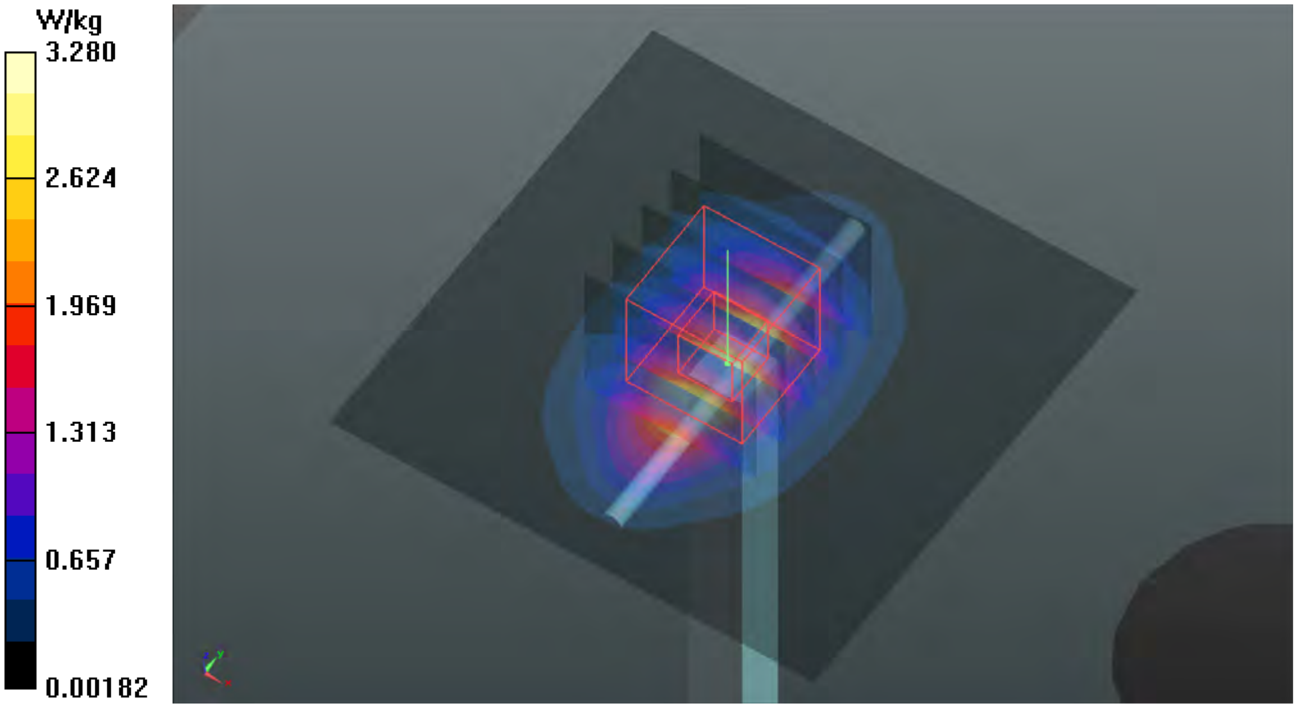
DUT: Dipole 1900 MHz; Type: D1900V2; SN: 5d036

Communication System: UID 0, CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: H16T20N1_0112 Medium parameters used: f = 1900 MHz; σ = 1.454 S/m; ε_r = 39.605; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃； Liquid Temperature：23.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7472; ConvF(8.35, 8.35, 8.35) @ 1900 MHz; Calibrated: 2020/08/24
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1585; Calibrated: 2019/06/07
- Phantom: Twin SAM Phantom_1823; Type: QD000P40;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=50mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 3.28 W/kg

Pin=50mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 47.62 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 3.70 W/kg
SAR(1 g) = 1.96 W/kg; SAR(10 g) = 1.03 W/kg (SAR corrected for target medium)
Maximum value of SAR (measured) = 3.13 W/kg



S03 System Check_H835_200112

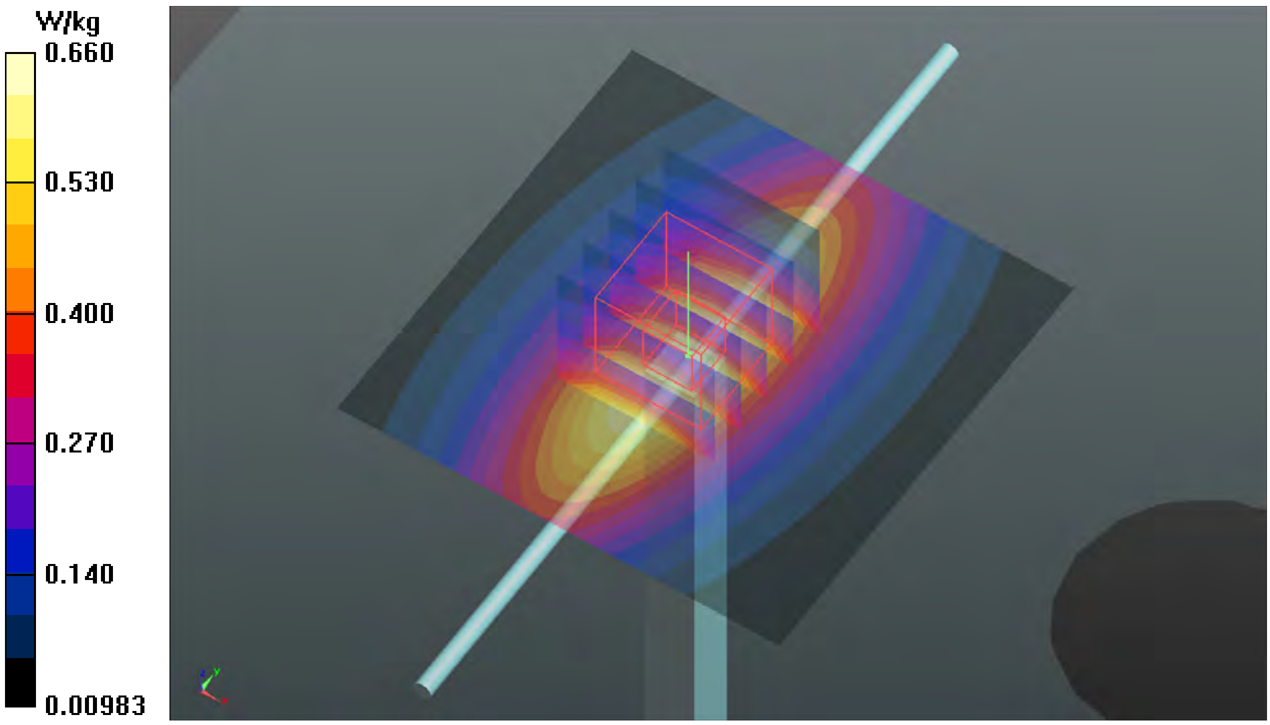
DUT: Dipole 835 MHz; Type: D835V2; SN: 4d121

Communication System: UID 0, CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: H07T10N3_0112 Medium parameters used: f = 835 MHz; $\sigma = 0.901$ S/m; $\varepsilon_r = 42.932$; $\rho = 1000$ kg/m^3
Ambient Temperature：23.3 ℃；Liquid Temperature：23.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7472; ConvF(10.11, 10.11, 10.11) @ 835 MHz; Calibrated: 2020/08/24
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1585; Calibrated: 2020/05/28
- Phantom: Twin SAM Phantom_1823; Type: QD000P40;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=50mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.660 W/kg

Pin=50mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.83 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.728 W/kg
SAR(1 g) = 0.491 W/kg; SAR(10 g) = 0.325 W/kg (SAR corrected for target medium)
Maximum value of SAR (measured) = 0.646 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab   Date: 2021/01/12

S04 System Check_H835_200112

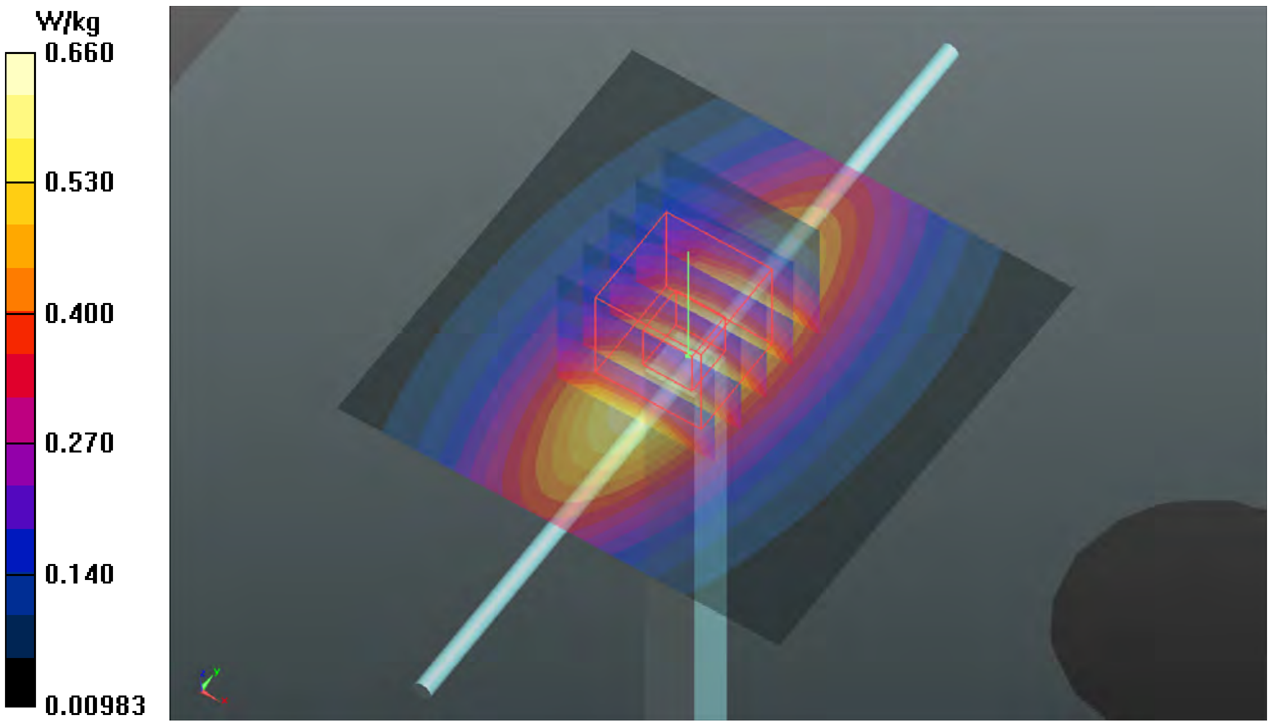
DUT: Dipole 835 MHz; Type: D835V2; SN: 4d121

Communication System: UID 0, CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: H07T10N3_0112 Medium parameters used: f = 835 MHz; σ = 0.901 S/m; ε_r = 42.932; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃；Liquid Temperature：23.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7472; ConvF(10.11, 10.11, 10.11) @ 835 MHz; Calibrated: 2020/08/24
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1585; Calibrated: 2020/05/28
- Phantom: Twin SAM Phantom_1823; Type: QD000P40;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=50mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.660 W/kg

Pin=50mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.83 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.728 W/kg
SAR(1 g) = 0.491 W/kg; SAR(10 g) = 0.325 W/kg (SAR corrected for target medium)
Maximum value of SAR (measured) = 0.646 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/01/12

S05 System Check_H750_200112

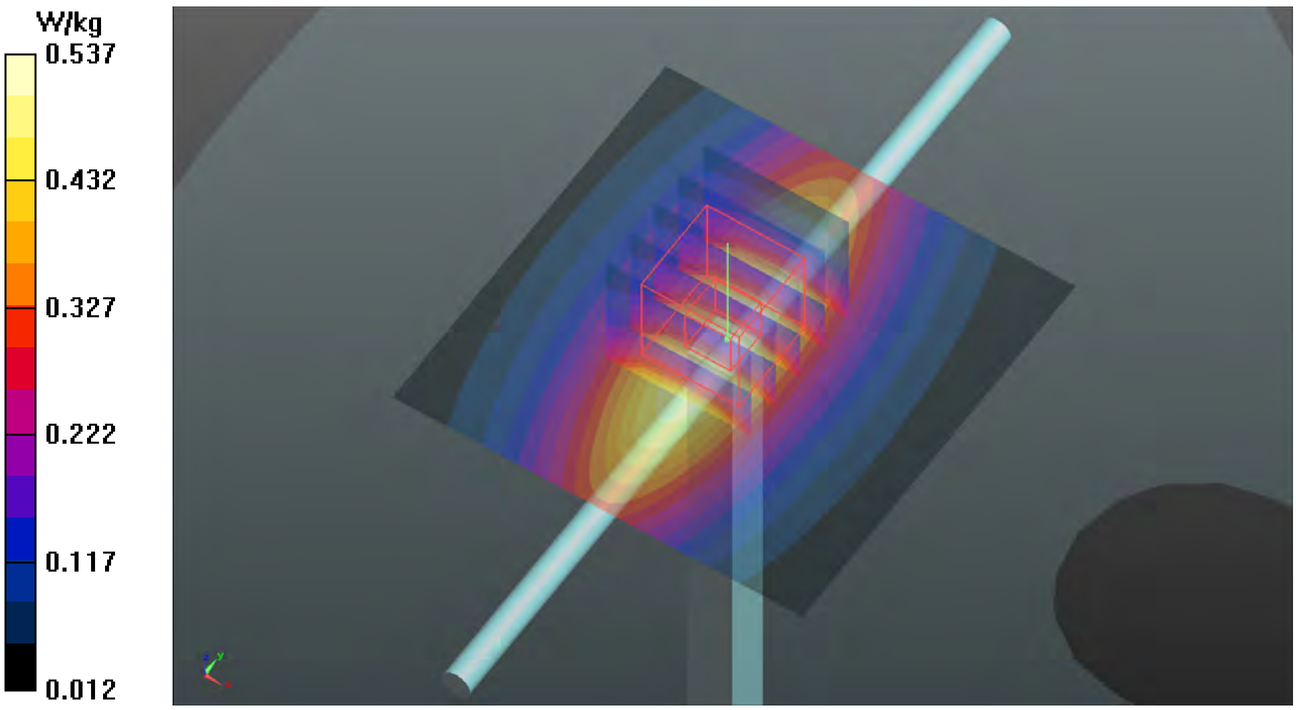
DUT: Dipole 750 MHz D750V3; SN: 1013

Communication System: UID 0, CW; Frequency: 750 MHz;Duty Cycle: 1:1
Medium: H07T10N1_0112 Medium parameters used: f = 750 MHz; σ = 0.825 S/m; ε_r = 42.947; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃； Liquid Temperature：23.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7472; ConvF(10.54, 10.54, 10.54) @ 750 MHz; Calibrated: 2020/08/24
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1585; Calibrated: 2019/06/07
- Phantom: Twin SAM Phantom_1823; Type: QD000P40;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=50mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.537 W/kg

Pin=50mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.79 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.618 W/kg
SAR(1 g) = 0.417 W/kg; SAR(10 g) = 0.273 W/kg (SAR corrected for target medium)
Maximum value of SAR (measured) = 0.532 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab   Date: 2021/01/18

S06 System Check_H2450_210118

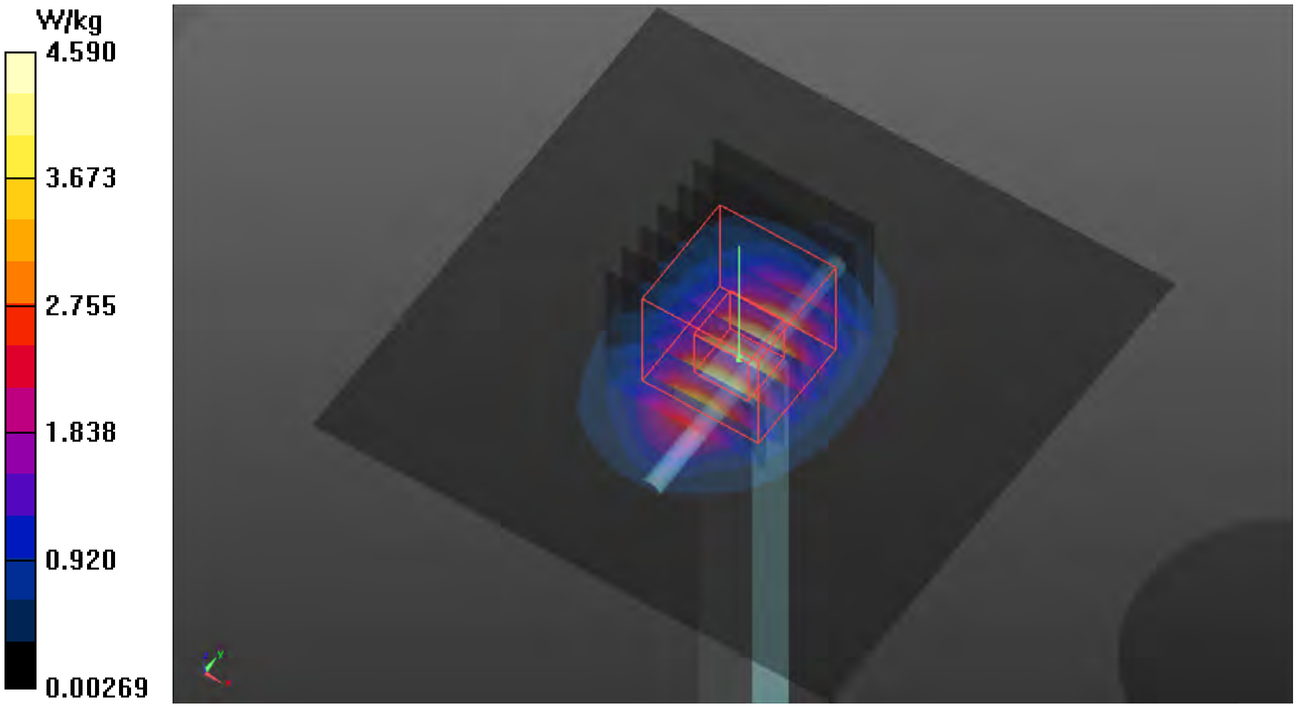
DUT: Dipole 2450 MHz; Type: D2450V2; SN: 737

Communication System: UID 0, CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: H19T27N1_0118 Medium parameters used (interpolated): f = 2450 MHz; σ = 1.874 S/m; ε_r = 37.983; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃； Liquid Temperature：23.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7350; ConvF(7.72, 7.72, 7.72) @ 2450 MHz; Calibrated: 2020/12/21
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2020/05/06
- Phantom: SAM Phantom_1985; Type: QD 000 P41 AA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=50mW/Area Scan (81x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 4.59 W/kg

Pin=50mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 51.25 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 5.74 W/kg
SAR(1 g) = 2.73 W/kg; SAR(10 g) = 1.31 W/kg (SAR corrected for target medium)
Maximum value of SAR (measured) = 4.66 W/kg



S07 System Check_H5250_210119

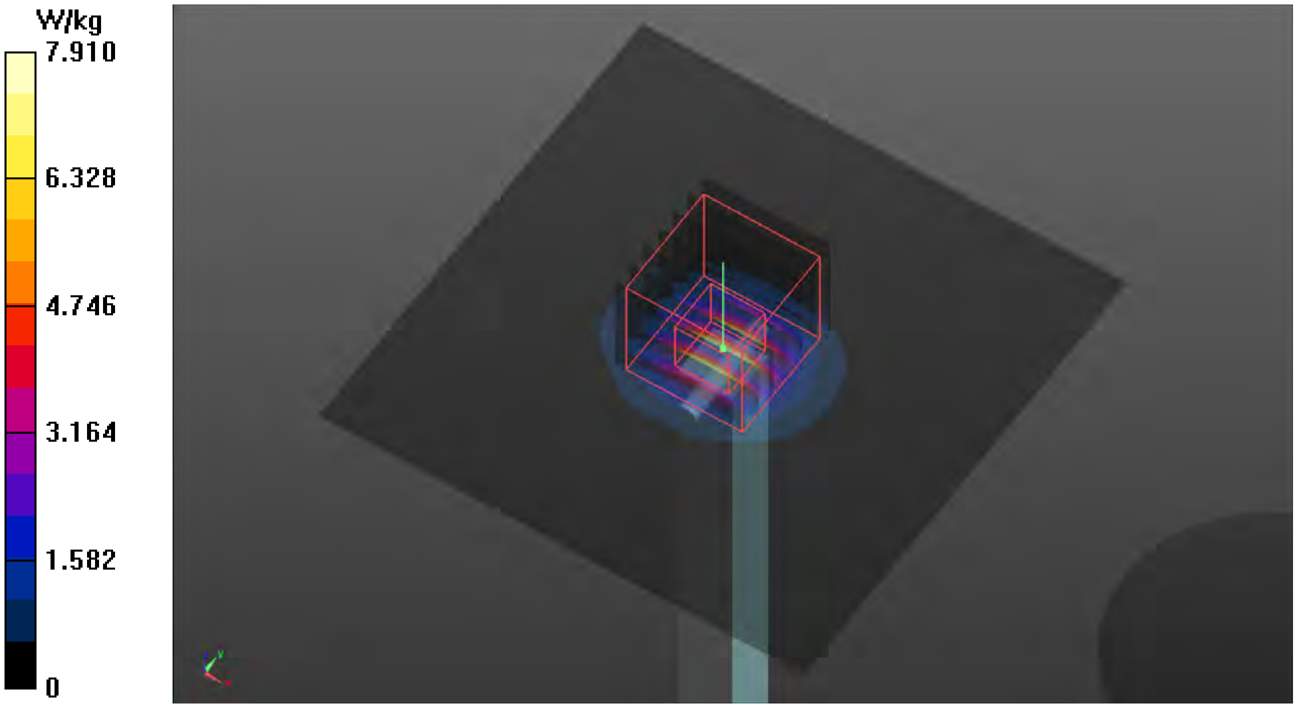
DUT: Dipole 5 GHz; Type: D5GHzV2; SN: 1019

Communication System: UID 0, CW; Frequency: 5250 MHz;Duty Cycle: 1:1
Medium: H34T60N1_0119 Medium parameters used (interpolated): f = 5250 MHz; σ = 4.747 S/m; ε_r = 36.987; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃； Liquid Temperature：23.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7350; ConvF(5.23, 5.23, 5.23) @ 5250 MHz; Calibrated: 2020/12/21
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2020/05/06
- Phantom: SAM Phantom_1985; Type: QD 000 P41 AA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=50mW/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 7.91 W/kg

Pin=50mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 48.02 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 14.8 W/kg
SAR(1 g) = 3.6 W/kg; SAR(10 g) = 0.998 W/kg (SAR corrected for target medium)
Maximum value of SAR (measured) = 8.80 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/01/19

S08 System Check_H5600_210119

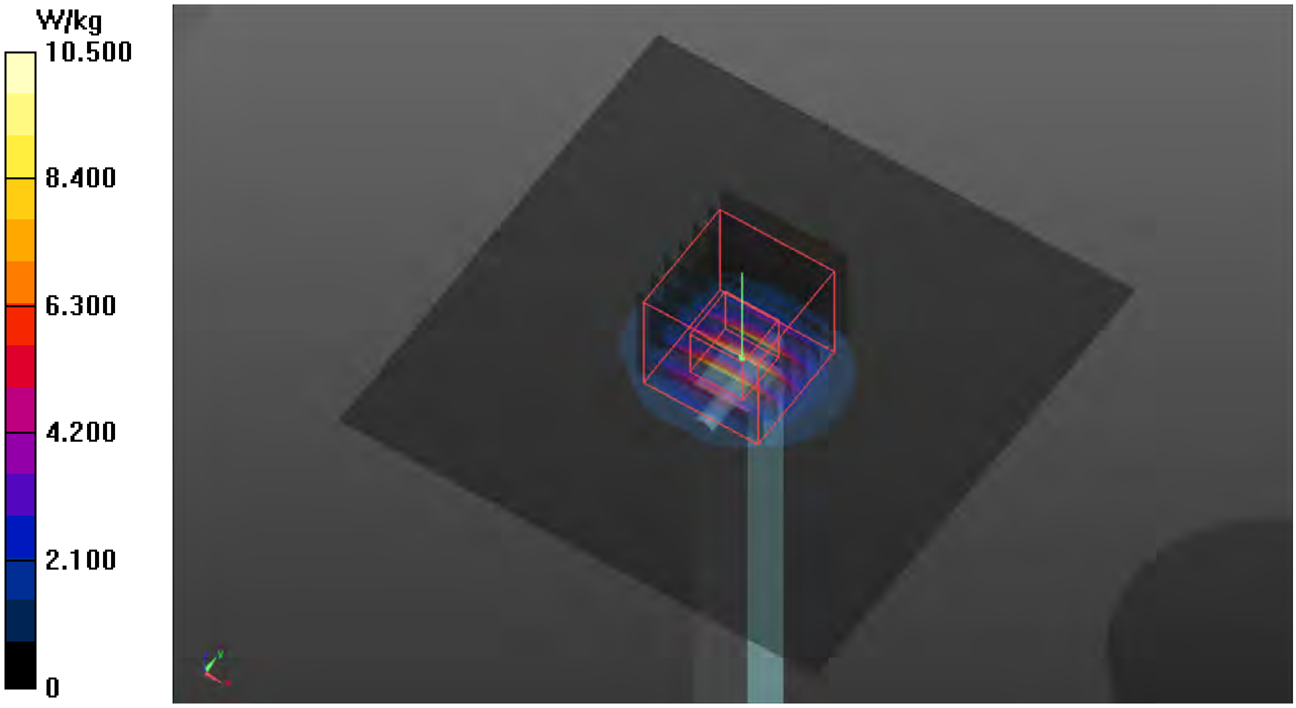
DUT: Dipole 5 GHz; Type: D5GHzV2; SN: 1019

Communication System: UID 0, CW; Frequency: 5600 MHz;Duty Cycle: 1:1
Medium: H34T60N1_0119 Medium parameters used: f = 5600 MHz; σ = 5.102 S/m; ε_r = 36.509; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃； Liquid Temperature：23.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7350; ConvF(4.53, 4.53, 4.53) @ 5600 MHz; Calibrated: 2020/12/21
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2020/05/06
- Phantom: SAM Phantom_1985; Type: QD 000 P41 AA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=50mW/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 10.5 W/kg

Pin=50mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 52.54 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 19.4 W/kg
SAR(1 g) = 4.46 W/kg; SAR(10 g) = 1.27 W/kg (SAR corrected for target medium)
Maximum value of SAR (measured) = 11.4 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/04/06

S09 System Check_H5750_210406

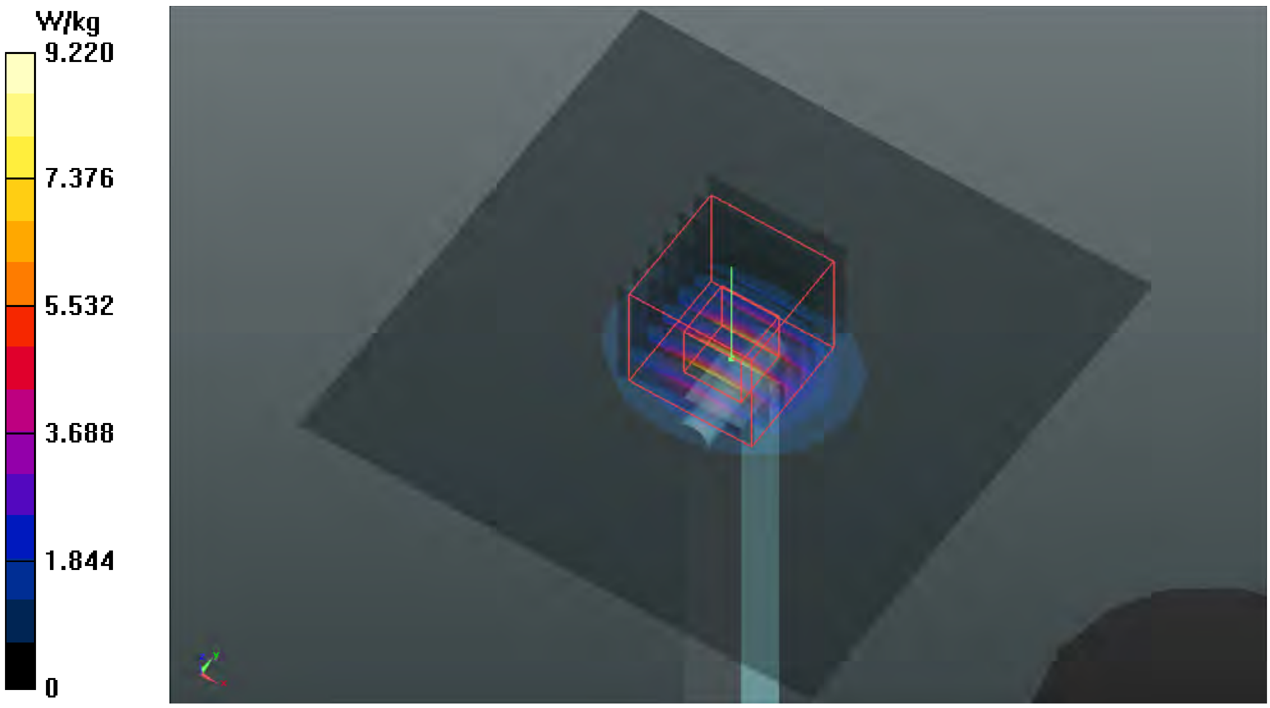
DUT: Dipole 5 GHz; Type: D5GHzV2; SN: 1145

Communication System: UID 0, CW; Frequency: 5750 MHz;Duty Cycle: 1:1
Medium: H34T60N1_0406 Medium parameters used: f = 5750 MHz; σ = 5.14 S/m; ε_r = 36.453; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃； Liquid Temperature：23.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3887; ConvF(4.36, 4.36, 4.36) @ 5750 MHz; Calibrated: 2020/10/22
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn905; Calibrated: 2020/06/22
- Phantom: Twin SAM Phantom_1653; Type: QD000P40CD;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=50mW/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 9.22 W/kg

Pin=50mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 48.30 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 17.0 W/kg
SAR(1 g) = 3.79 W/kg; SAR(10 g) = 1.08 W/kg (SAR corrected for target medium)
Maximum value of SAR (measured) = 9.93 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/01/18

S10 System Check_H2450_210118

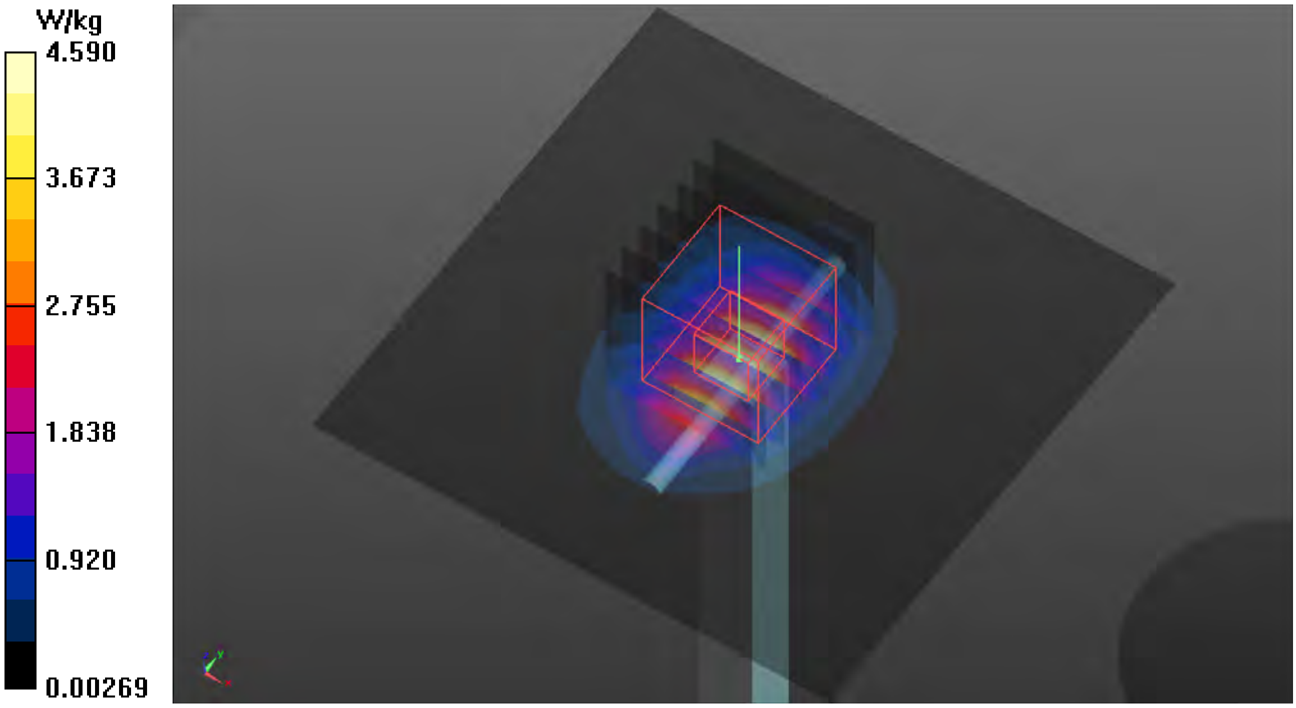
DUT: Dipole 2450 MHz; Type: D2450V2; SN: 737

Communication System: UID 0, CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: H19T27N1_0118 Medium parameters used (interpolated): f = 2450 MHz; σ = 1.874 S/m; ε_r = 37.983; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃； Liquid Temperature：23.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7350; ConvF(7.72, 7.72, 7.72) @ 2450 MHz; Calibrated: 2020/12/21
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2020/05/06
- Phantom: SAM Phantom_1985; Type: QD 000 P41 AA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=50mW/Area Scan (81x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 4.59 W/kg

Pin=50mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 51.25 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 5.74 W/kg
SAR(1 g) = 2.73 W/kg; SAR(10 g) = 1.31 W/kg (SAR corrected for target medium)
Maximum value of SAR (measured) = 4.66 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab   Date: 2021/01/07

S11 System Check_H835_210107

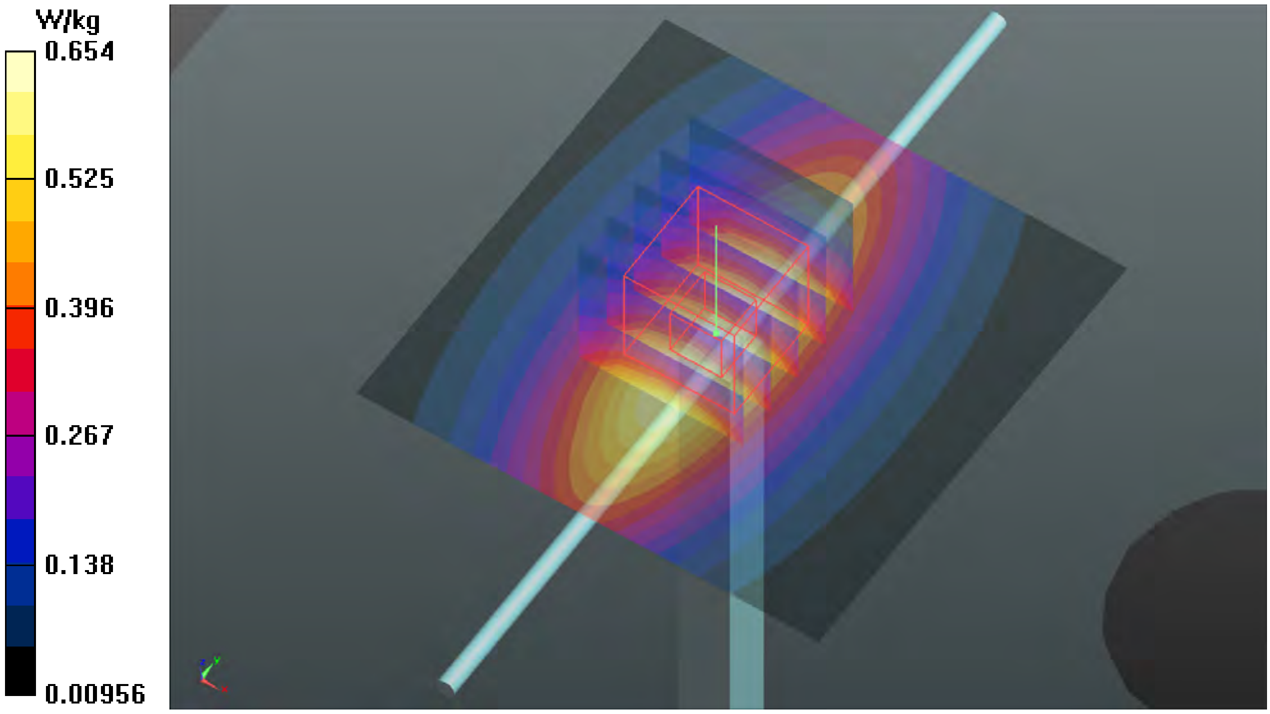
DUT: Dipole 835 MHz; Type: D835V2; SN: 4d121

Communication System: UID 0, CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: H07T10N1_0107 Medium parameters used: f = 835 MHz; σ = 0.904 S/m; ε_r = 41.921; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃； Liquid Temperature：23.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7472; ConvF(10.11, 10.11, 10.11) @ 835 MHz; Calibrated: 2020/08/24
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1585; Calibrated: 2020/05/28
- Phantom: Twin SAM Phantom_1823; Type: QD000P40;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=50mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.654 W/kg

Pin=50mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 28.03 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.759 W/kg
SAR(1 g) = 0.509 W/kg; SAR(10 g) = 0.337 W/kg (SAR corrected for target medium)
Maximum value of SAR (measured) = 0.673 W/kg



S12 System Check_H1900_210108

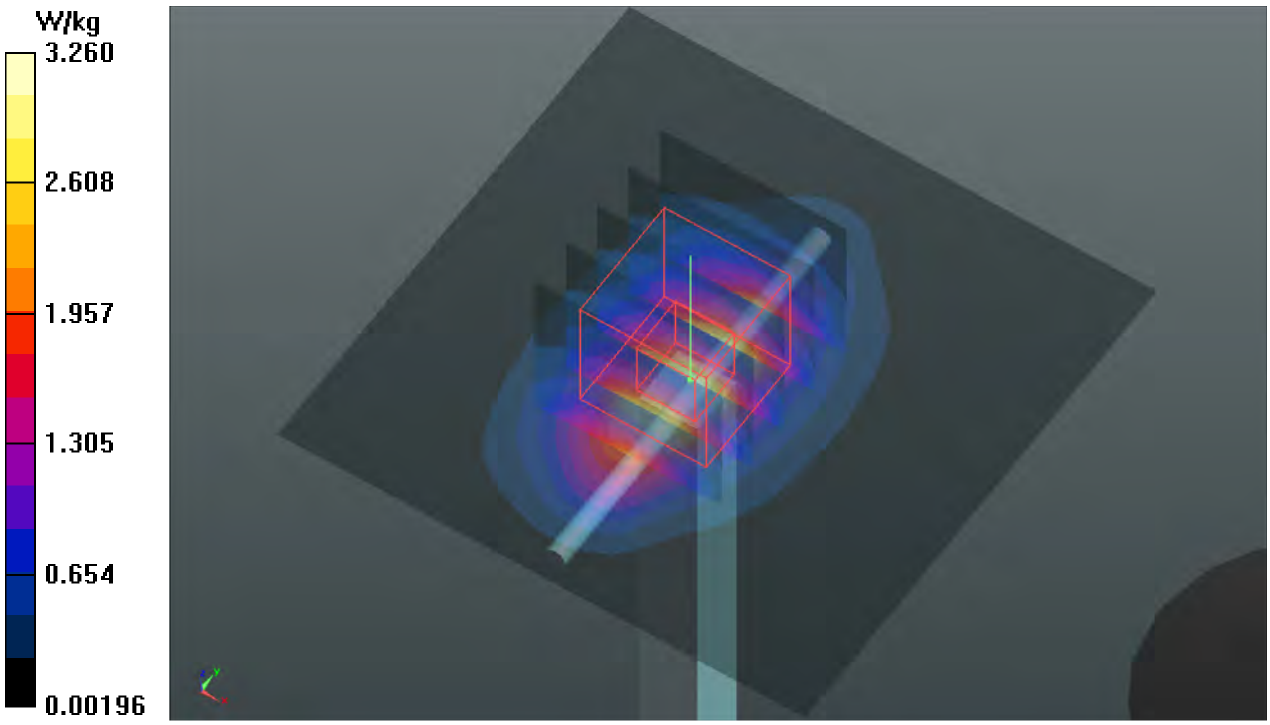
DUT: Dipole 1900 MHz; Type: D1900V2; SN: 5d036

Communication System: UID 0, CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: H16T20N1_0108 Medium parameters used: f = 1900 MHz; σ = 1.444 S/m; ε_r = 38.835; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃；Liquid Temperature：23.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7472; ConvF(8.35, 8.35, 8.35) @ 1900 MHz; Calibrated: 2020/08/24
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1585; Calibrated: 2020/05/28
- Phantom: Twin SAM Phantom_1823; Type: QD000P40;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=50mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 3.26 W/kg

Pin=50mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 47.53 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 3.82 W/kg
SAR(1 g) = 2.03 W/kg; SAR(10 g) = 1.07 W/kg (SAR corrected for target medium)
Maximum value of SAR (measured) = 3.22 W/kg



S13 System Check_H835_210107

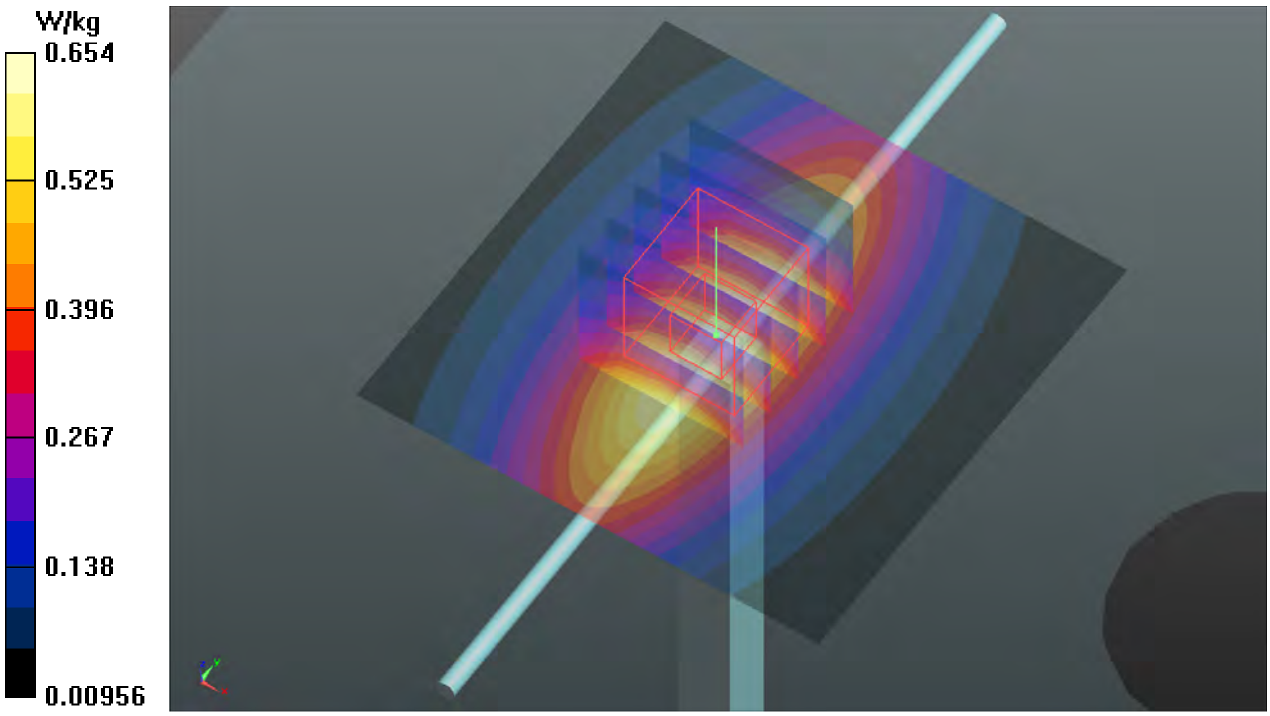
DUT: Dipole 835 MHz; Type: D835V2; SN: 4d121

Communication System: UID 0, CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: H07T10N1_0107 Medium parameters used: f = 835 MHz; $\sigma = 0.904$ S/m; $\varepsilon_r = 41.921$; $\rho = 1000$ kg/m^3
Ambient Temperature：23.8 ℃； Liquid Temperature：23.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7472; ConvF(10.11, 10.11, 10.11) @ 835 MHz; Calibrated: 2020/08/24
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1585; Calibrated: 2020/05/28
- Phantom: Twin SAM Phantom_1823; Type: QD000P40;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=50mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.654 W/kg

Pin=50mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 28.03 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.759 W/kg
SAR(1 g) = 0.509 W/kg; SAR(10 g) = 0.337 W/kg (SAR corrected for target medium)
Maximum value of SAR (measured) = 0.673 W/kg



S14 System Check_H835_210108

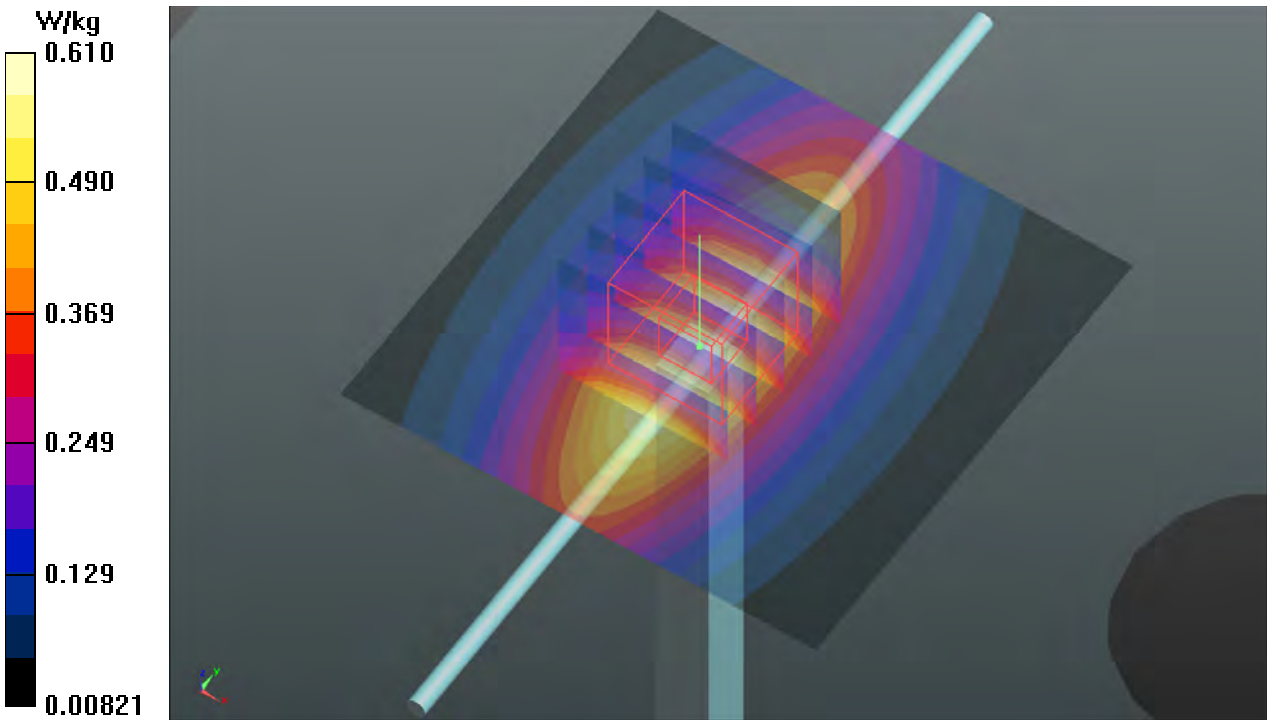
DUT: Dipole 835 MHz; Type: D835V2; SN: 4d121

Communication System: UID 0, CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: H07T10N1_0108 Medium parameters used: f = 835 MHz; σ = 0.921 S/m; ε_r = 42.331; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃； Liquid Temperature：23.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7472; ConvF(10.11, 10.11, 10.11) @ 835 MHz; Calibrated: 2020/08/24
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1585; Calibrated: 2020/05/28
- Phantom: Twin SAM Phantom_1823; Type: QD000P40;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=50mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.610 W/kg

Pin=50mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.56 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.705 W/kg
SAR(1 g) = 0.465 W/kg; SAR(10 g) = 0.308 W/kg (SAR corrected for target medium)
Maximum value of SAR (measured) = 0.625 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/01/11

S15 System Check_H750_210111

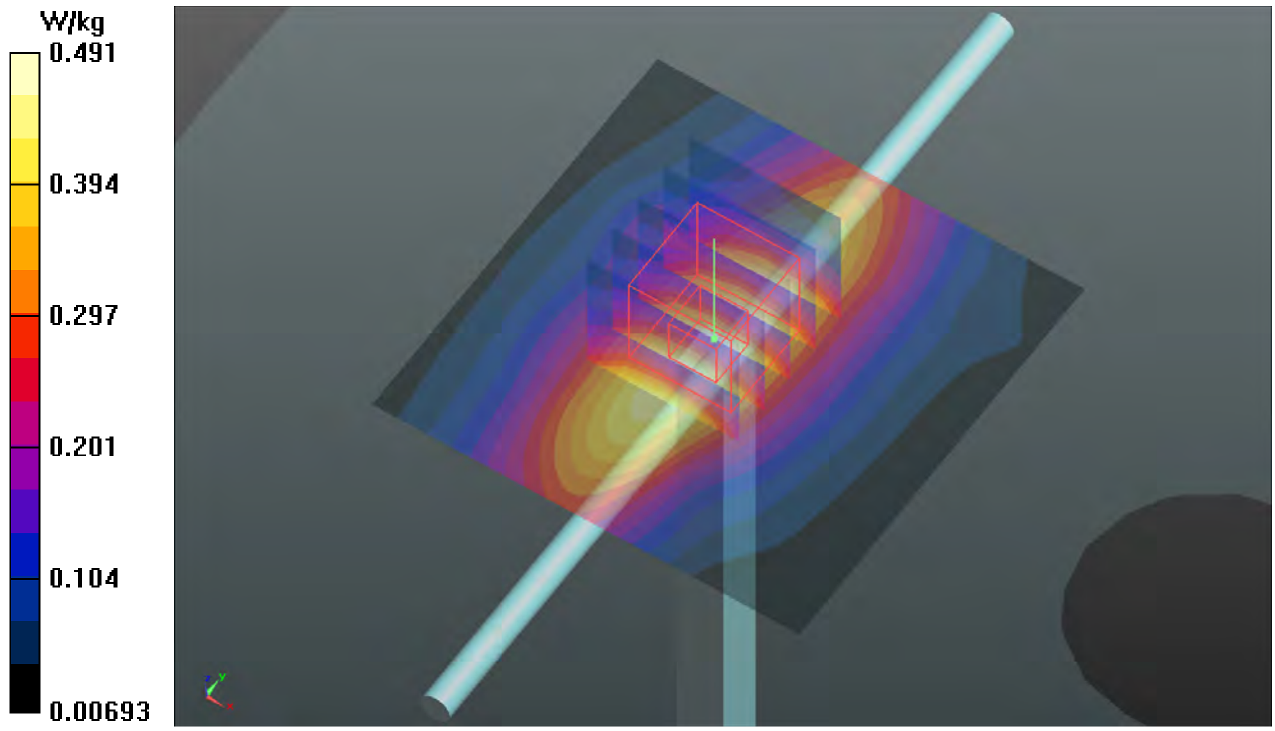
DUT: Dipole 750 MHz; Type: D750V3; SN: 1013

Communication System: UID 0, CW; Frequency: 750 MHz;Duty Cycle: 1:1
Medium: H06T09N1_0111 Medium parameters used: f = 750 MHz; σ = 0.886 S/m; ε_r = 42.919; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃； Liquid Temperature：23.4 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3971; ConvF(10.6, 10.6, 10.6) @ 750 MHz; Calibrated: 2020/01/27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn905; Calibrated: 2020/06/22
- Phantom: Twin SAM Phantom_1653; Type: QD000P40CD;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=50mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.491 W/kg

Pin=50mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 24.78 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.553 W/kg
SAR(1 g) = 0.388 W/kg; SAR(10 g) = 0.243 W/kg (SAR corrected for target medium)
Maximum value of SAR (measured) = 0.499 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/01/16

S16 System Check_H2450_210116

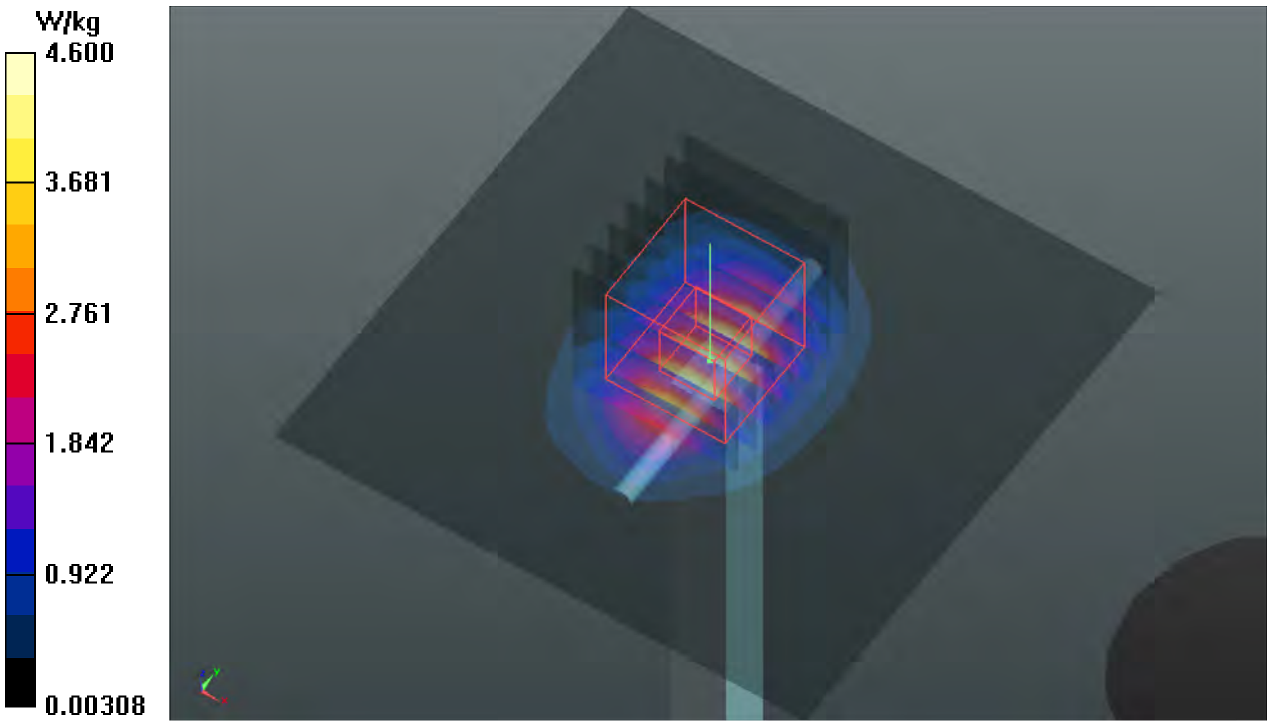
DUT: Dipole 2450 MHz; Type: D2450V2; SN: 737

Communication System: UID 0, CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: H19T27N1_0116 Medium parameters used (interpolated): f = 2450 MHz; σ = 1.868 S/m; ε_r = 37.896; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃；Liquid Temperature：23.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7472; ConvF(7.69, 7.69, 7.69) @ 2450 MHz; Calibrated: 2020/08/24
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1585; Calibrated: 2020/05/28
- Phantom: Twin SAM Phantom_1823; Type: QD000P40;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=50mW/Area Scan (81x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 4.60 W/kg

Pin=50mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 51.52 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 5.62 W/kg
SAR(1 g) = 2.74 W/kg; SAR(10 g) = 1.31 W/kg (SAR corrected for target medium)
Maximum value of SAR (measured) = 4.63 W/kg



S17 System Check_H5250_210116

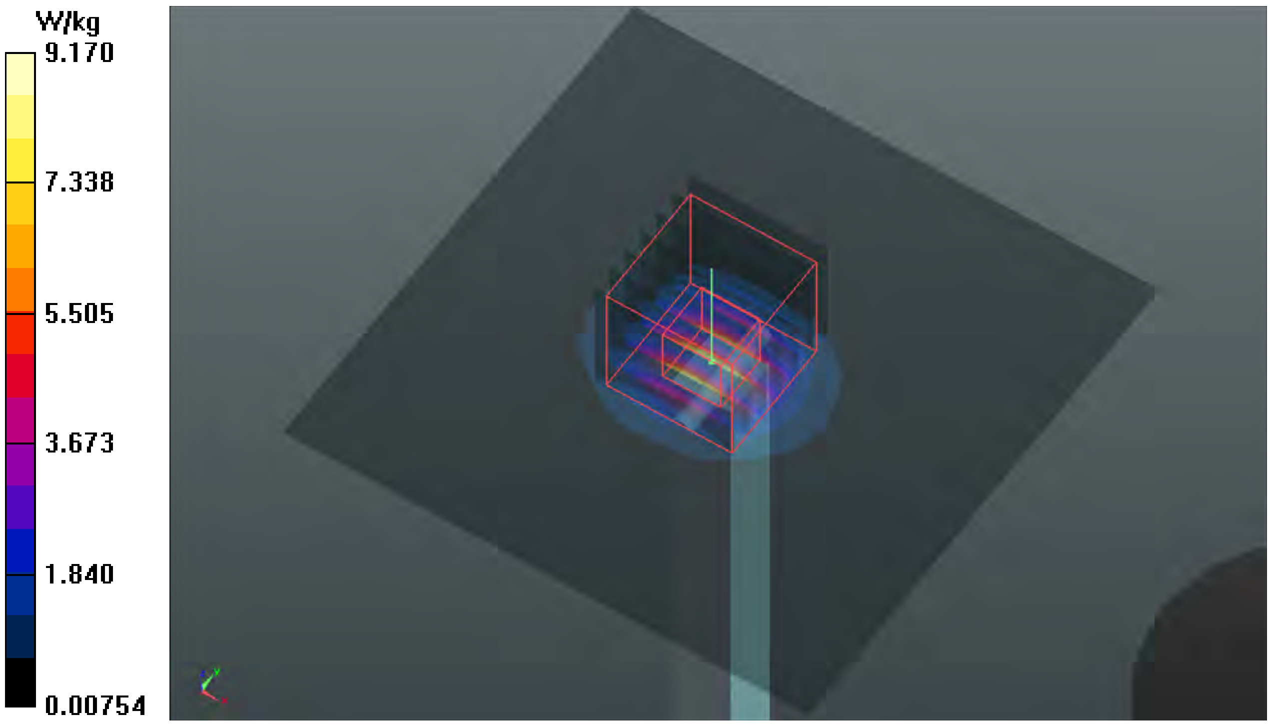
DUT: Dipole 5 GHz; Type: D5GHzV2; SN: 1019

Communication System: UID 0, CW; Frequency: 5250 MHz;Duty Cycle: 1:1
Medium: H34T60N3_0116 Medium parameters used (interpolated): f = 5250 MHz; σ = 4.726 S/m; ε_r = 34.979; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃；Liquid Temperature：23.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7472; ConvF(5.72, 5.72, 5.72) @ 5250 MHz; Calibrated: 2020/08/24
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1585; Calibrated: 2020/05/28
- Phantom: Twin SAM Phantom_1823; Type: QD000P40;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=50mW/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 9.17 W/kg

Pin=50mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 50.26 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 15.4 W/kg
SAR(1 g) = 3.99 W/kg; SAR(10 g) = 1.16 W/kg (SAR corrected for target medium)
Maximum value of SAR (measured) = 9.91 W/kg



S18 System Check_H5600_210116

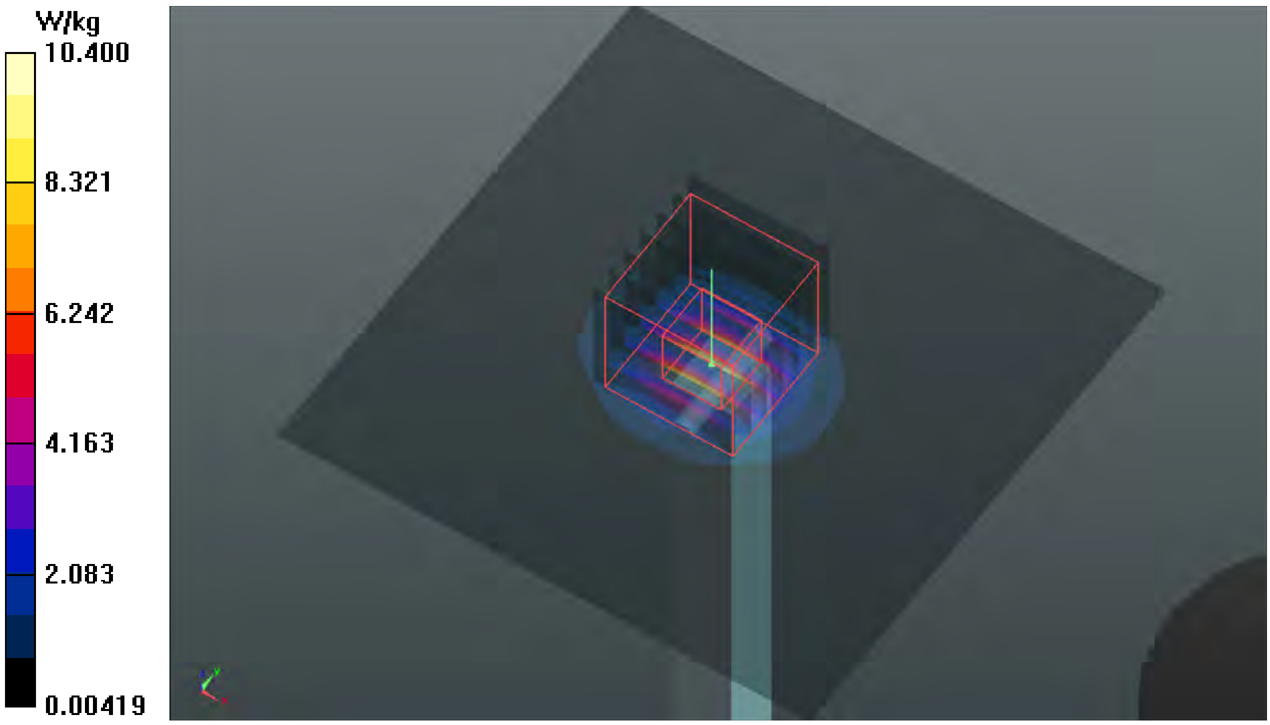
DUT: Dipole 5 GHz; Type: D5GHzV2; SN: 1019

Communication System: UID 0, CW; Frequency: 5600 MHz;Duty Cycle: 1:1
Medium: H34T60N3_0116 Medium parameters used: f = 5600 MHz; σ = 5.043 S/m; ε_r = 34.467; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃；Liquid Temperature：23.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7472; ConvF(5.04, 5.04, 5.04) @ 5600 MHz; Calibrated: 2020/08/24
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1585; Calibrated: 2020/05/28
- Phantom: Twin SAM Phantom_1823; Type: QD000P40;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=50mW/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 10.4 W/kg

Pin=50mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 51.03 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 18.1 W/kg
SAR(1 g) = 4.3 W/kg; SAR(10 g) = 1.24 W/kg (SAR corrected for target medium)
Maximum value of SAR (measured) = 11.0 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab   Date: 2021/04/06

S19 System Check_H5750_210406

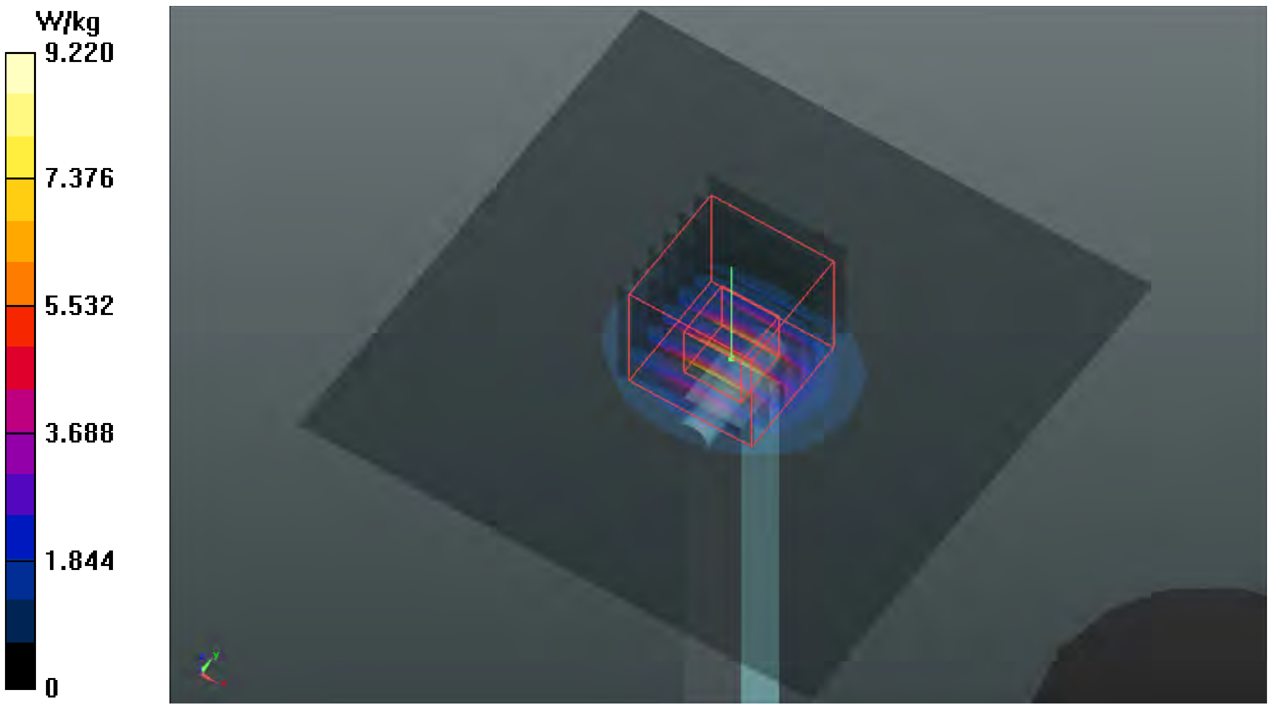
DUT: Dipole 5 GHz; Type: D5GHzV2; SN: 1145

Communication System: UID 0, CW; Frequency: 5750 MHz;Duty Cycle: 1:1
Medium: H34T60N1_0406 Medium parameters used: f = 5750 MHz; σ = 5.14 S/m; ε_r = 36.453; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃；Liquid Temperature：23.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3887; ConvF(4.36, 4.36, 4.36) @ 5750 MHz; Calibrated: 2020/10/22
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn905; Calibrated: 2020/06/22
- Phantom: Twin SAM Phantom_1653; Type: QD000P40CD;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=50mW/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 9.22 W/kg

Pin=50mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 48.30 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 17.0 W/kg
SAR(1 g) = 3.79 W/kg; SAR(10 g) = 1.08 W/kg (SAR corrected for target medium)
Maximum value of SAR (measured) = 9.93 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/01/18

S20 System Check_H2450_210118

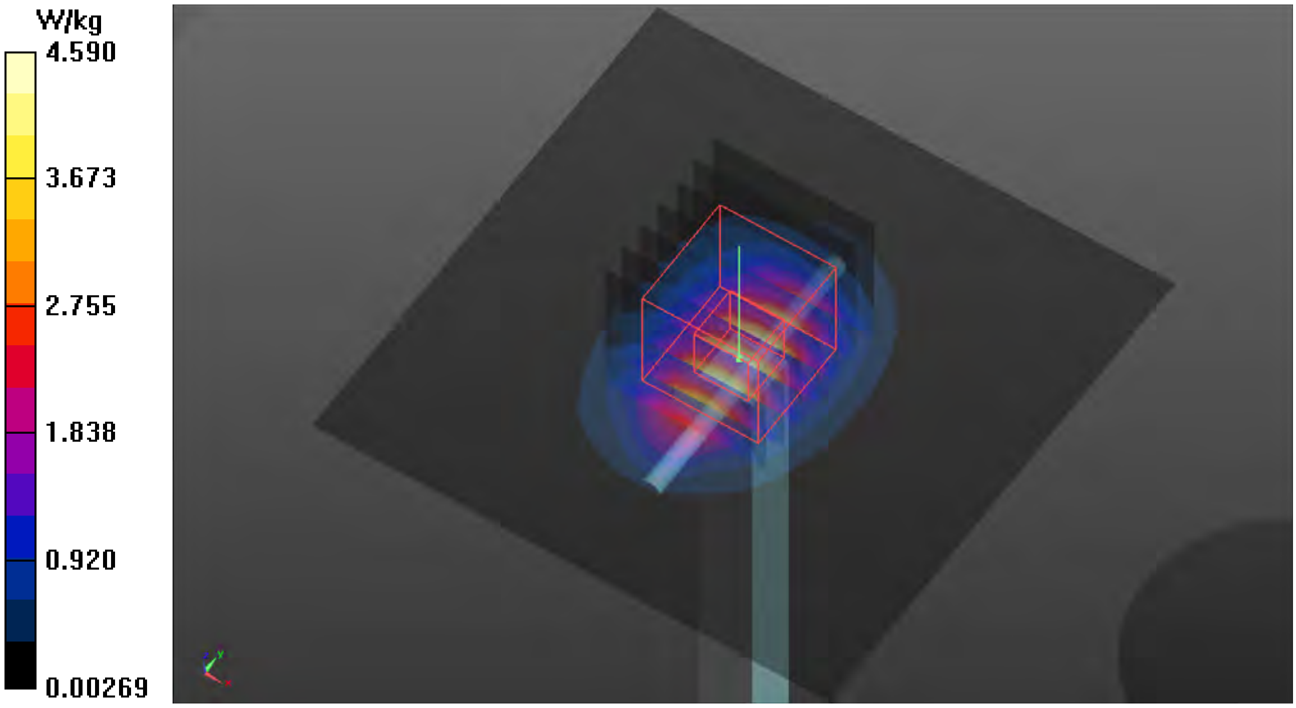
DUT: Dipole 2450 MHz; Type: D2450V2; SN: 737

Communication System: UID 0, CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: H19T27N1_0118 Medium parameters used (interpolated): f = 2450 MHz; σ = 1.874 S/m; ε_r = 37.983; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃；Liquid Temperature：23.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7350; ConvF(7.72, 7.72, 7.72) @ 2450 MHz; Calibrated: 2020/12/21
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2020/05/06
- Phantom: SAM Phantom_1985; Type: QD 000 P41 AA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=50mW/Area Scan (81x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 4.59 W/kg

Pin=50mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 51.25 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 5.74 W/kg
SAR(1 g) = 2.73 W/kg; SAR(10 g) = 1.31 W/kg (SAR corrected for target medium)
Maximum value of SAR (measured) = 4.66 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/01/07

S21 System Check_H835_210107

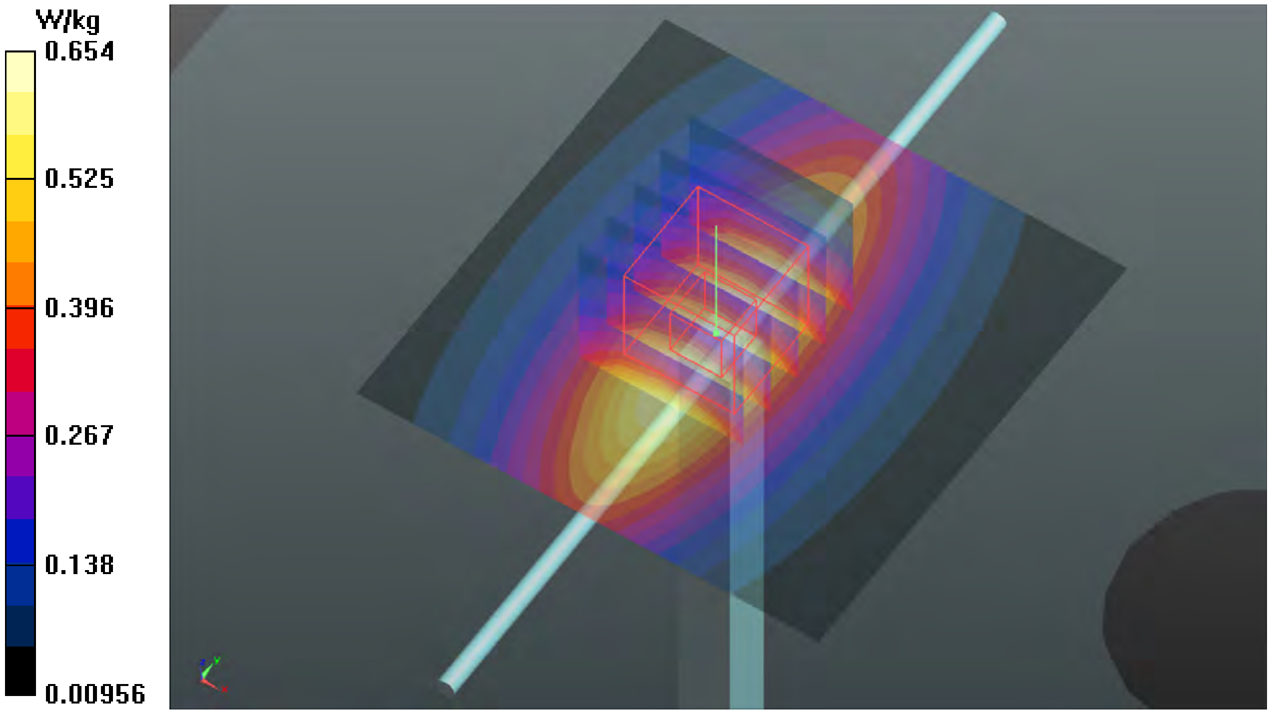
DUT: Dipole 835 MHz; Type: D835V2; SN: 4d121

Communication System: UID 0, CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: H07T10N1_0107 Medium parameters used: f = 835 MHz; σ = 0.904 S/m; ε_r = 41.921; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃；Liquid Temperature：23.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7472; ConvF(10.11, 10.11, 10.11) @ 835 MHz; Calibrated: 2020/08/24
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1585; Calibrated: 2020/05/28
- Phantom: Twin SAM Phantom_1823; Type: QD000P40;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=50mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.654 W/kg

Pin=50mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 28.03 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.759 W/kg
SAR(1 g) = 0.509 W/kg; SAR(10 g) = 0.337 W/kg (SAR corrected for target medium)
Maximum value of SAR (measured) = 0.673 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab   Date: 2021/01/08

S22 System Check_H1900_210108

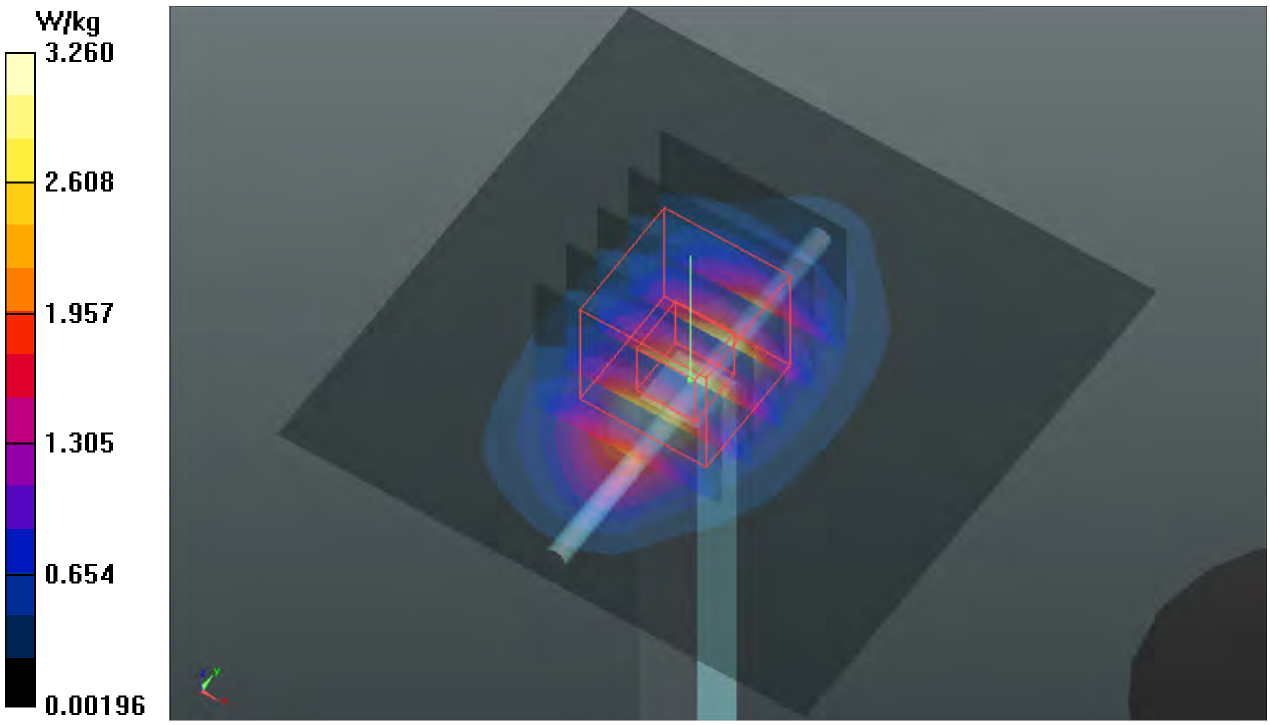
DUT: Dipole 1900 MHz; Type: D1900V2; SN: 5d036

Communication System: UID 0, CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: H16T20N1_0108 Medium parameters used: f = 1900 MHz; σ = 1.444 S/m; ε_r = 38.835; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃； Liquid Temperature：23.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7472; ConvF(8.35, 8.35, 8.35) @ 1900 MHz; Calibrated: 2020/08/24
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1585; Calibrated: 2020/05/28
- Phantom: Twin SAM Phantom_1823; Type: QD000P40;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=50mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 3.26 W/kg

Pin=50mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 47.53 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 3.82 W/kg
SAR(1 g) = 2.03 W/kg; SAR(10 g) = 1.07 W/kg (SAR corrected for target medium)
Maximum value of SAR (measured) = 3.22 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/01/07

S23 System Check_H835_210107

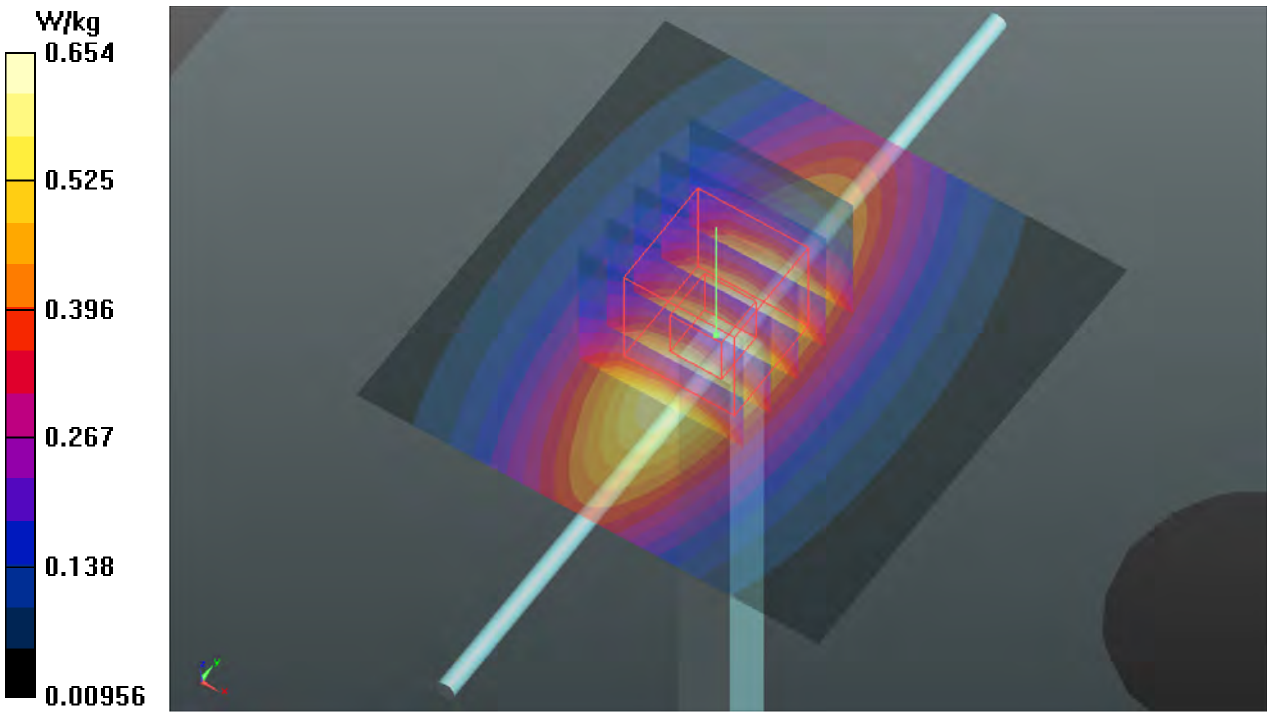
DUT: Dipole 835 MHz; Type: D835V2; SN: 4d121

Communication System: UID 0, CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: H07T10N1_0107 Medium parameters used: f = 835 MHz; σ = 0.904 S/m; ε_r = 41.921; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃； Liquid Temperature：23.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7472; ConvF(10.11, 10.11, 10.11) @ 835 MHz; Calibrated: 2020/08/24
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1585; Calibrated: 2020/05/28
- Phantom: Twin SAM Phantom_1823; Type: QD000P40;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=50mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.654 W/kg

Pin=50mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 28.03 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.759 W/kg
SAR(1 g) = 0.509 W/kg; SAR(10 g) = 0.337 W/kg (SAR corrected for target medium)
Maximum value of SAR (measured) = 0.673 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/01/08

S24 System Check_H835_210108

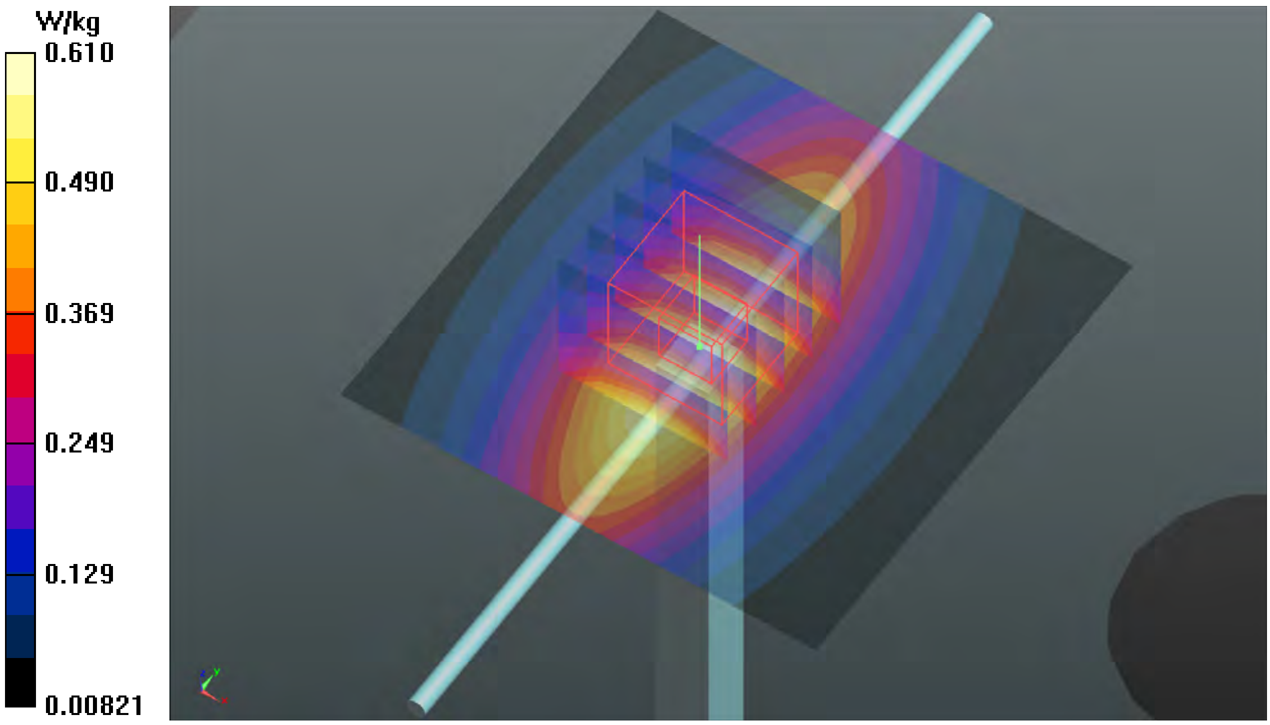
DUT: Dipole 835 MHz; Type: D835V2; SN: 4d121

Communication System: UID 0, CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: H07T10N1_0108 Medium parameters used: f = 835 MHz; σ = 0.921 S/m; ε_r = 42.331; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃；Liquid Temperature：23.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7472; ConvF(10.11, 10.11, 10.11) @ 835 MHz; Calibrated: 2020/08/24
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1585; Calibrated: 2020/05/28
- Phantom: Twin SAM Phantom_1823; Type: QD000P40;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=50mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.610 W/kg

Pin=50mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.56 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.705 W/kg
SAR(1 g) = 0.465 W/kg; SAR(10 g) = 0.308 W/kg (SAR corrected for target medium)
Maximum value of SAR (measured) = 0.625 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab   Date: 2021/01/11

S25 System Check_H750_210111

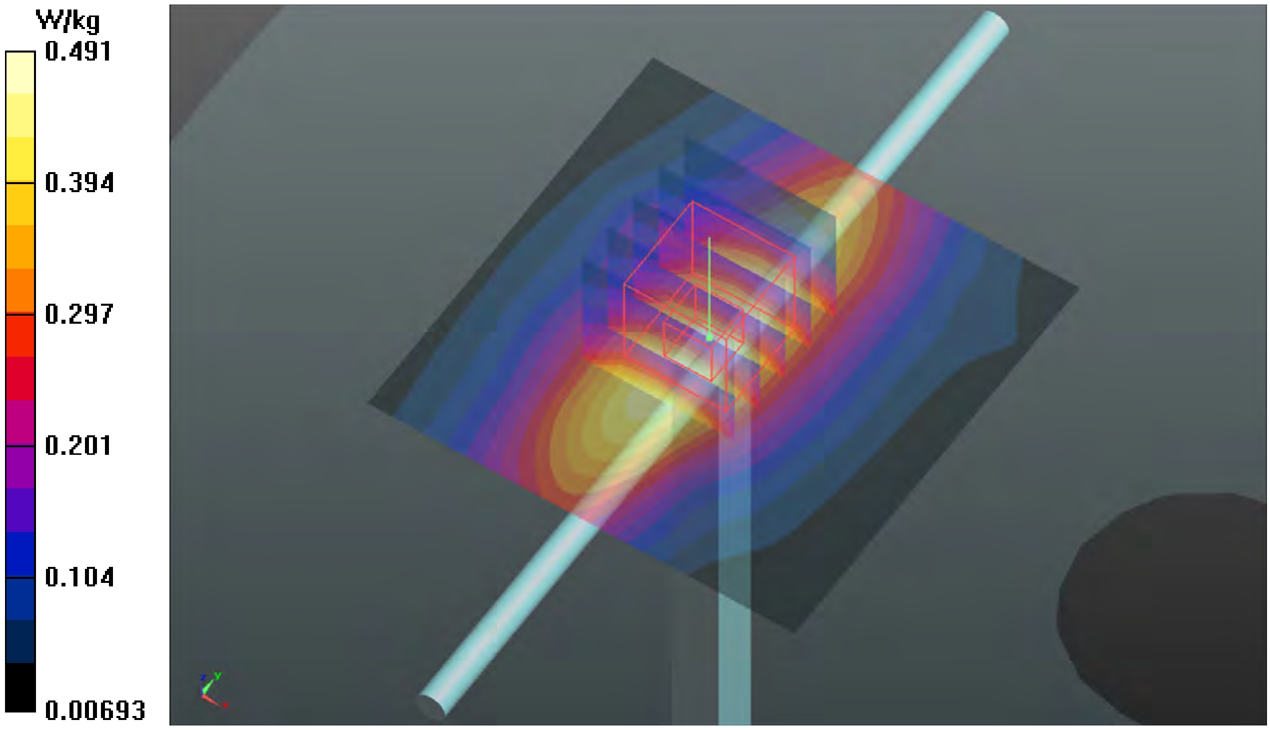
DUT: Dipole 750 MHz; Type: D750V3; SN: 1013

Communication System: UID 0, CW; Frequency: 750 MHz;Duty Cycle: 1:1
Medium: H06T09N1_0111 Medium parameters used: f = 750 MHz; σ = 0.886 S/m; ε_r = 42.919; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃；Liquid Temperature：23.4 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3971; ConvF(10.6, 10.6, 10.6) @ 750 MHz; Calibrated: 2020/01/27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn905; Calibrated: 2020/06/22
- Phantom: Twin SAM Phantom_1653; Type: QD000P40CD;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=50mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.491 W/kg

Pin=50mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 24.78 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.553 W/kg
SAR(1 g) = 0.388 W/kg; SAR(10 g) = 0.243 W/kg (SAR corrected for target medium)
Maximum value of SAR (measured) = 0.499 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/01/16

S26 System Check_H2450_210116

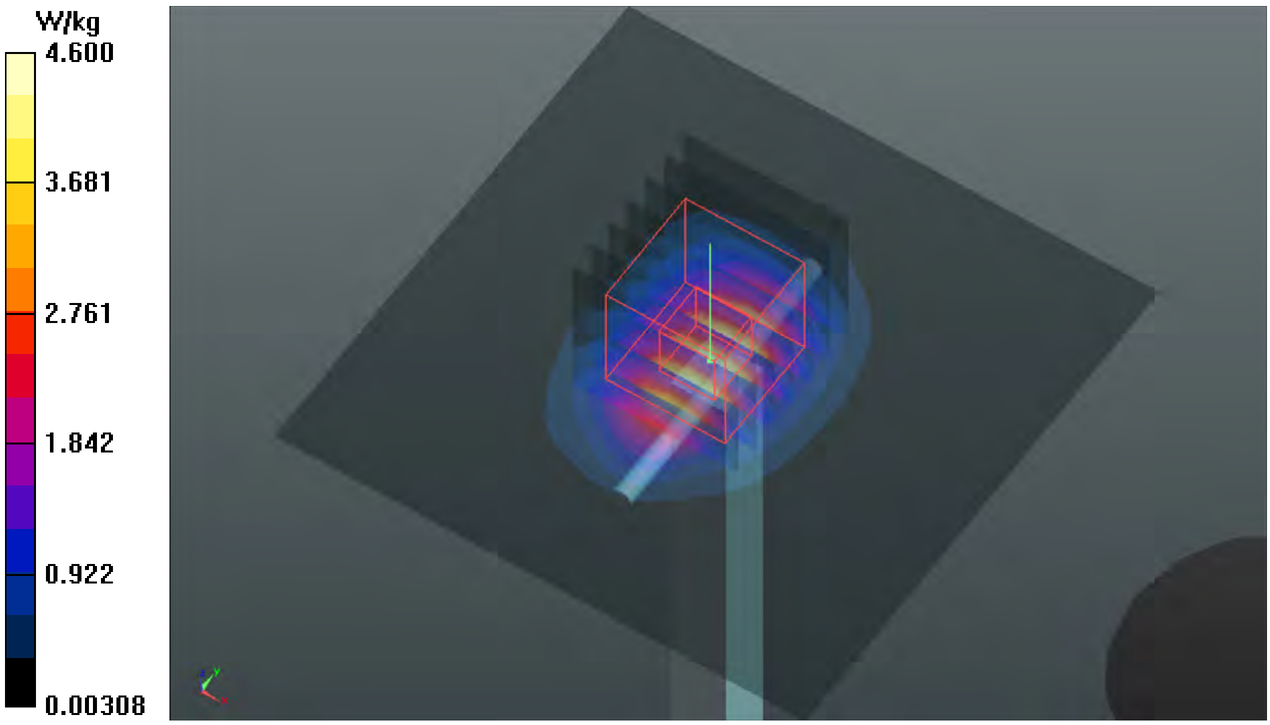
DUT: Dipole 2450 MHz; Type: D2450V2; SN: 737

Communication System: UID 0, CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: H19T27N1_0116 Medium parameters used (interpolated): f = 2450 MHz; σ = 1.868 S/m; ε_r = 37.896; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃； Liquid Temperature：23.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7472; ConvF(7.69, 7.69, 7.69) @ 2450 MHz; Calibrated: 2020/08/24
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1585; Calibrated: 2020/05/28
- Phantom: Twin SAM Phantom_1823; Type: QD000P40;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=50mW/Area Scan (81x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 4.60 W/kg

Pin=50mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 51.52 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 5.62 W/kg
SAR(1 g) = 2.74 W/kg; SAR(10 g) = 1.31 W/kg (SAR corrected for target medium)
Maximum value of SAR (measured) = 4.63 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/01/18

S27 System Check_H2450_210118

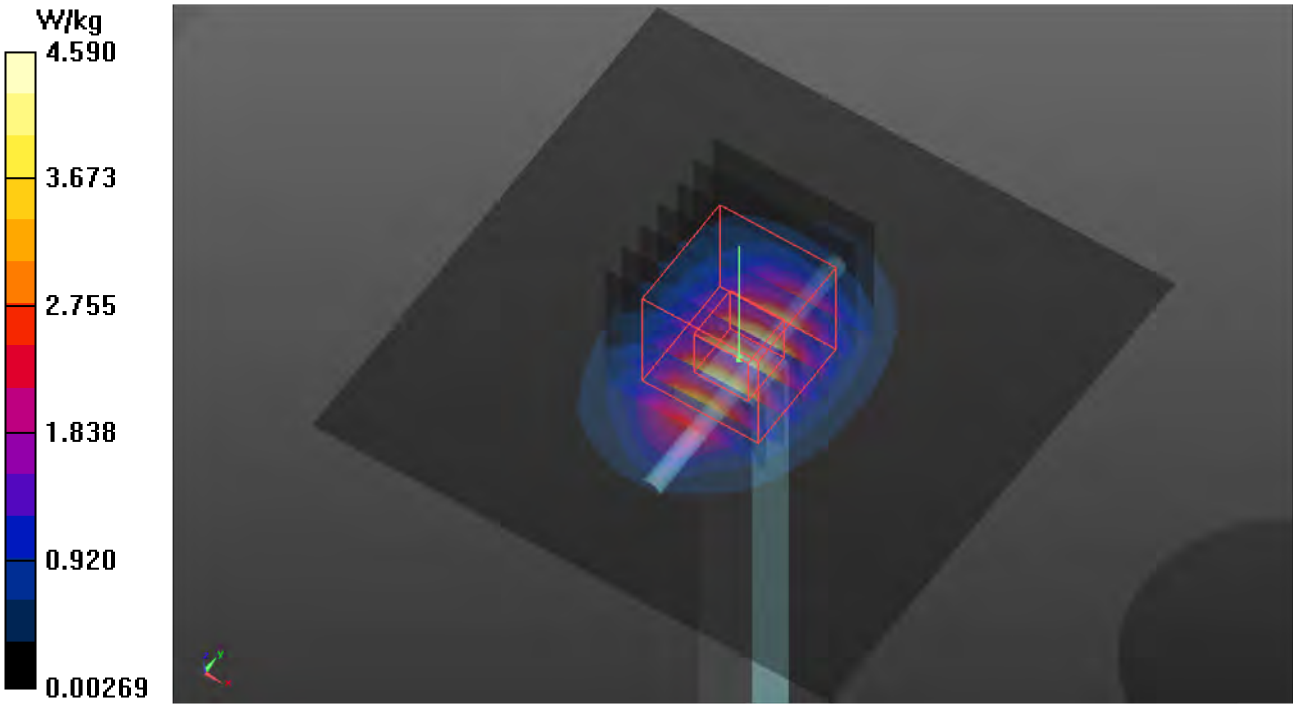
DUT: Dipole 2450 MHz; Type: D2450V2; SN: 737

Communication System: UID 0, CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: H19T27N1_0118 Medium parameters used (interpolated): f = 2450 MHz; σ = 1.874 S/m; ε_r = 37.983; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃；Liquid Temperature：23.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7350; ConvF(7.72, 7.72, 7.72) @ 2450 MHz; Calibrated: 2020/12/21
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2020/05/06
- Phantom: SAM Phantom_1985; Type: QD 000 P41 AA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=50mW/Area Scan (81x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 4.59 W/kg

Pin=50mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 51.25 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 5.74 W/kg
SAR(1 g) = 2.73 W/kg; SAR(10 g) = 1.31 W/kg (SAR corrected for target medium)
Maximum value of SAR (measured) = 4.66 W/kg



Appendix B. SAR Plots of SAR Measurement

The SAR plots for highest measured SAR in each exposure configuration, wireless mode and frequency band combination, and measured SAR > 1.5 W/kg are shown as follows.

Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/01/12

P01 GSM850_GPRS12_Right Cheek_Ch251

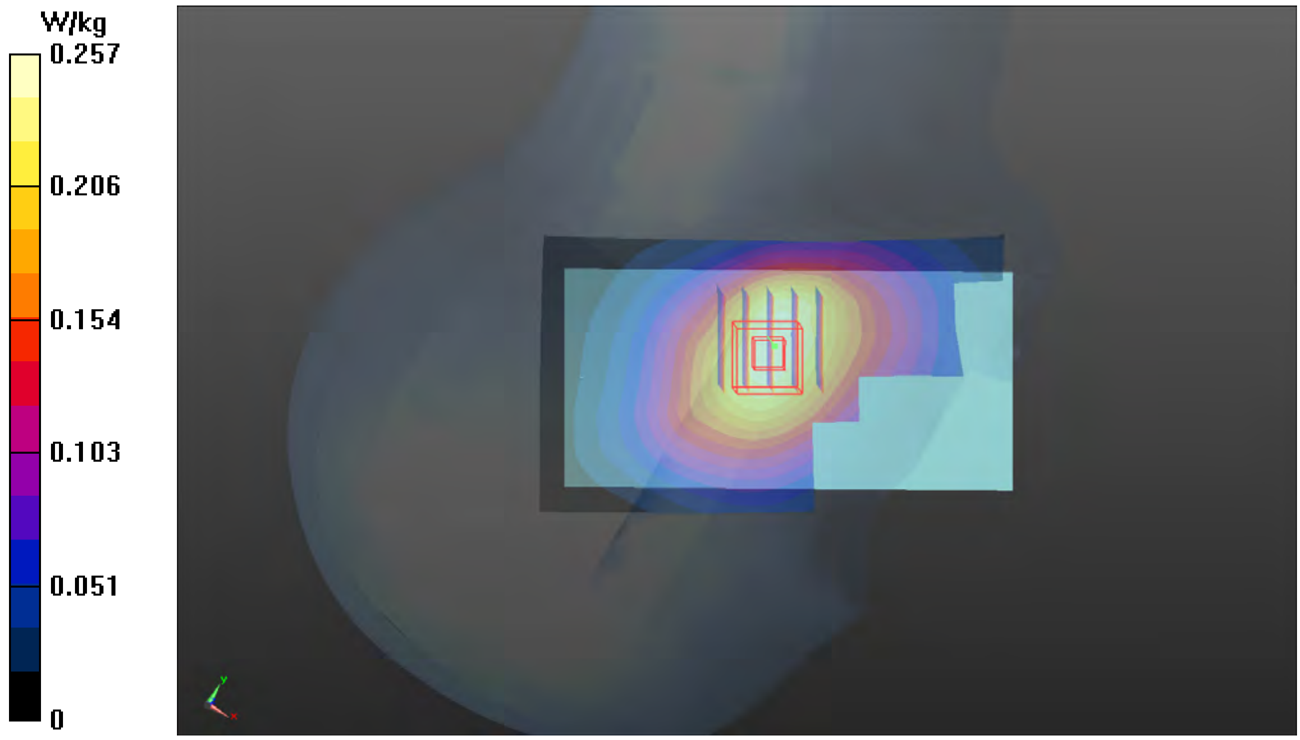
DUT: P20120816

Communication System: UID 10028 - DAC, GPRS-FDD (TDMA, GMSK, TN 0-1-2-3); Frequency: 848.8 MHz;Duty Cycle: 1:2.26
Medium: H07T10N3_0112 Medium parameters used: f = 849 MHz; σ = 0.914 S/m; ε_r = 42.782; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃；Liquid Temperature：23.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7472; ConvF(10.11, 10.11, 10.11) @ 848.8 MHz; Calibrated: 2020/08/24
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1585; Calibrated: 2020/05/28
- Phantom: Twin SAM Phantom_1823; Type: QD000P40;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (61x111x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.257 W/kg

Zoom Scan (5x5x5)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.07 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.268 W/kg
SAR(1 g) = 0.219 W/kg; SAR(10 g) = 0.170 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 8.2 mm
Ratio of SAR at M2 to SAR at M1 = 81.2%
Maximum value of SAR (measured) = 0.253 W/kg



P02 GSM1900_GPRS12_Left Cheek_Ch661

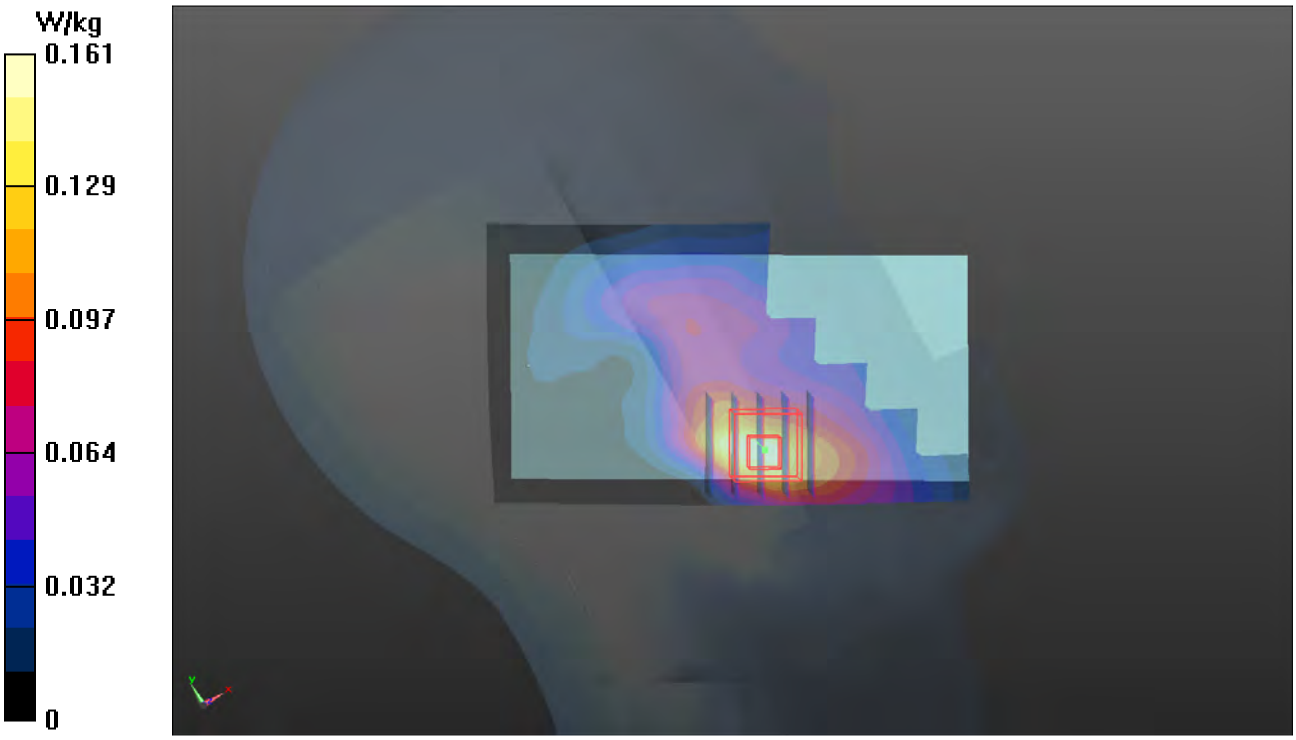
DUT: P20120816

Communication System: UID 10028 - DAC, GPRS-FDD (TDMA, GMSK, TN 0-1-2-3); Frequency: 1880 MHz;Duty Cycle: 1:2.26
Medium: H16T20N2_0112 Medium parameters used: f = 1880 MHz; σ = 1.451 S/m; ε_r = 41.255; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃； Liquid Temperature：23.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7472; ConvF(8.35, 8.35, 8.35) @ 1880 MHz; Calibrated: 2020/08/24
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1585; Calibrated: 2020/05/28
- Phantom: Twin SAM Phantom_1823; Type: QD000P40;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (61x111x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.161 W/kg

Zoom Scan (5x5x5)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.50 V/m; Power Drift = -0.17 dB
Peak SAR (extrapolated) = 0.160 W/kg
SAR(1 g) = 0.105 W/kg; SAR(10 g) = 0.068 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 13 mm
Ratio of SAR at M2 to SAR at M1 = 68.1%
Maximum value of SAR (measured) = 0.142 W/kg



P03 WCDMA V_RMC12.2K_Right Cheek_Ch4233

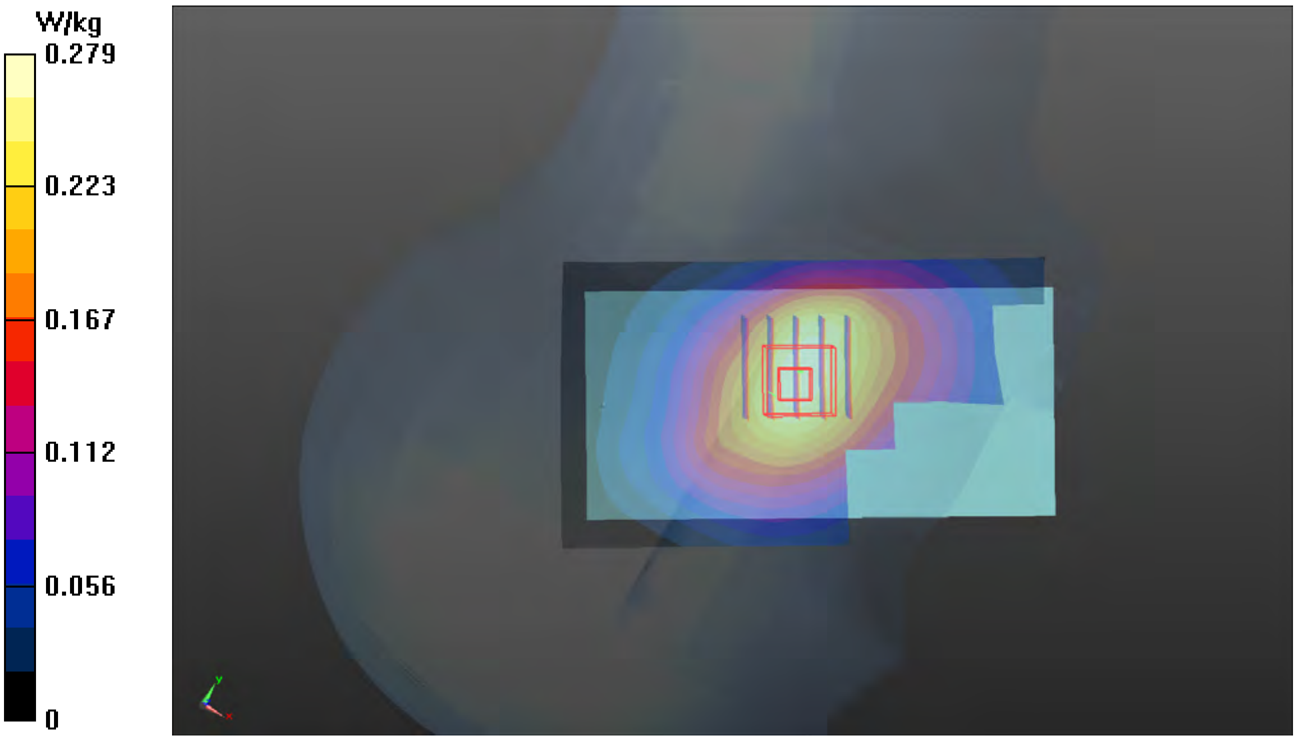
DUT: P20120816

Communication System: UID 10011 - CAB, UMTS-FDD (WCDMA); Frequency: 846.6 MHz;Duty Cycle: 1:1.95
Medium: H07T10N3_0112 Medium parameters used: f = 847 MHz; σ = 0.912 S/m; ε_r = 42.804; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃； Liquid Temperature：23.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7472; ConvF(10.11, 10.11, 10.11) @ 846.6 MHz; Calibrated: 2020/08/24
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1585; Calibrated: 2020/05/28
- Phantom: Twin SAM Phantom_1823; Type: QD000P40;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (61x111x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.279 W/kg

Zoom Scan (5x5x5)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.75 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.297 W/kg
SAR(1 g) = 0.236 W/kg; SAR(10 g) = 0.183 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below: Larger than measurement grid
Ratio of SAR at M2 to SAR at M1 = 78.1%
Maximum value of SAR (measured) = 0.272 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/01/12

P04 LTE 5_QPSK10M_Left Cheek_Ch20600_1RB_OS0

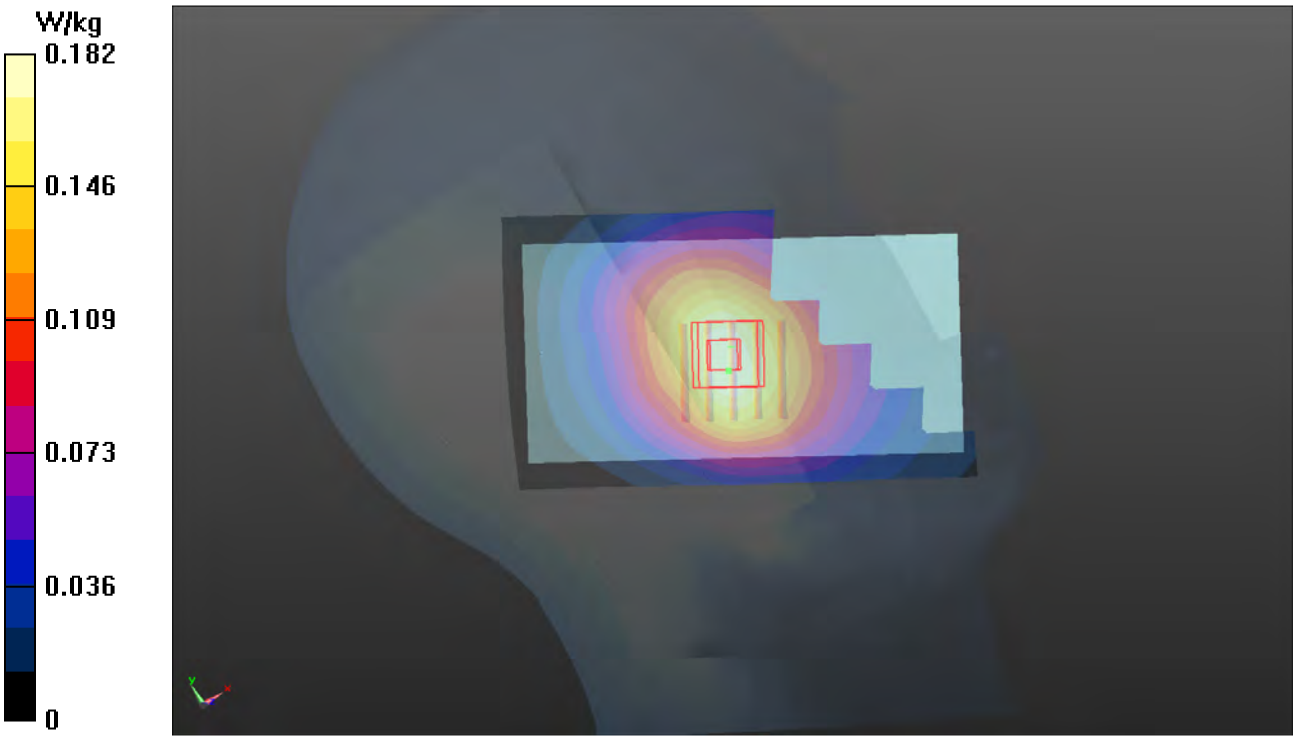
DUT: P20120816

Communication System: UID 10175 - CAG, LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK);
Frequency: 844 MHz;Duty Cycle: 1:3.73
Medium: H07T10N3_0112 Medium parameters used: f = 844 MHz; σ = 0.91 S/m; ε_r = 42.838; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃； Liquid Temperature：23.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7472; ConvF(10.11, 10.11, 10.11) @ 844 MHz; Calibrated: 2020/08/24
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1585; Calibrated: 2020/05/28
- Phantom: Twin SAM Phantom_1823; Type: QD000P40;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (61x111x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.182 W/kg

Zoom Scan (5x5x5)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.74 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.192 W/kg
SAR(1 g) = 0.156 W/kg; SAR(10 g) = 0.121 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 8.2 mm
Ratio of SAR at M2 to SAR at M1 = 80.7%
Maximum value of SAR (measured) = 0.180 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/01/12

P05 LTE 12_QPSK10M_Right Cheek_Ch23060_1RB_OS0

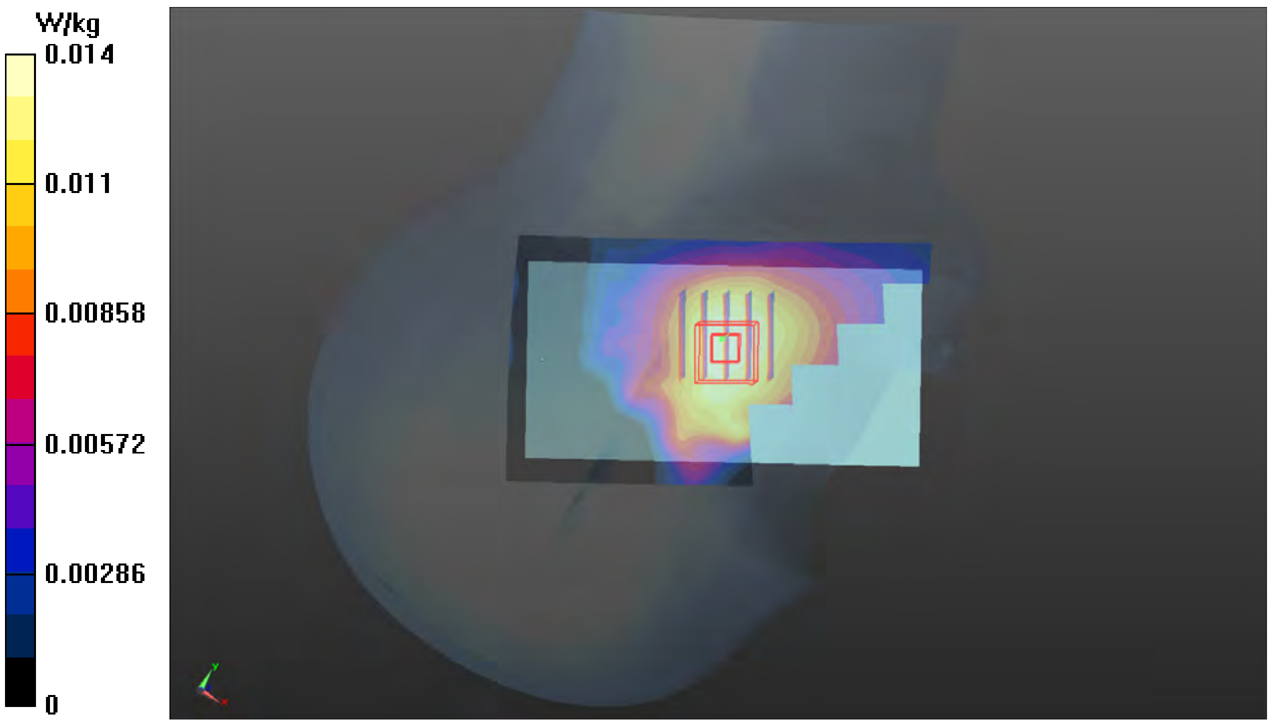
DUT: P20120816

Communication System: UID 10175 - CAG, LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK);
Frequency: 704 MHz;Duty Cycle: 1:3.74
Medium: H06T09N1_0112 Medium parameters used: f = 704 MHz; σ = 0.849 S/m; ε_r = 43.514; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃； Liquid Temperature：23.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7472; ConvF(10.54, 10.54, 10.54) @ 704 MHz; Calibrated: 2020/08/24
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1585; Calibrated: 2020/05/28
- Phantom: Twin SAM Phantom_1823; Type: QD000P40;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (61x111x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.0143 W/kg

Zoom Scan (5x5x5)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.974 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 0.0160 W/kg
SAR(1 g) = 0.012 W/kg; SAR(10 g) = 0.00984 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below: Larger than measurement grid
Ratio of SAR at M2 to SAR at M1 = 77.9%
Maximum value of SAR (measured) = 0.0141 W/kg



P06 WLAN2.4G_802.11b_Left Cheek_Ch1

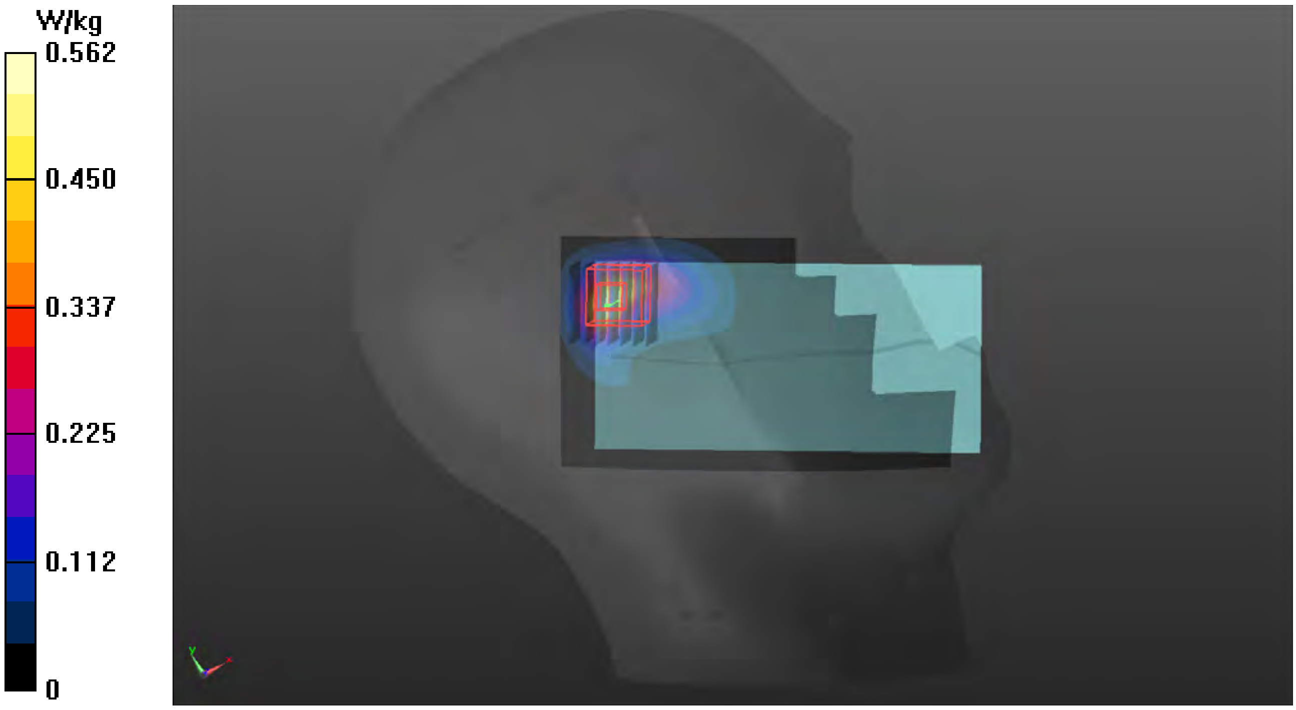
DUT: P20120816

Communication System: UID 10012 - CAB, IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps);
Frequency: 2412 MHz;Duty Cycle: 1:1.02
Medium: H19T27N1_0118 Medium parameters used: f = 2412 MHz; σ = 1.837 S/m; ε_r = 38.144; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：23.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7350; ConvF(7.72, 7.72, 7.72) @ 2412 MHz; Calibrated: 2020/12/21
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2020/05/06
- Phantom: SAM Phantom_1985; Type: QD 000 P41 AA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (81x141x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.562 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.20 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.751 W/kg
SAR(1 g) = 0.333 W/kg; SAR(10 g) = 0.155 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 7.8 mm
Ratio of SAR at M2 to SAR at M1 = 46.7%
Maximum value of SAR (measured) = 0.572 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab   Date: 2021/01/19

P07 WLAN5.3G_802.11a_Left Cheek_Ch64

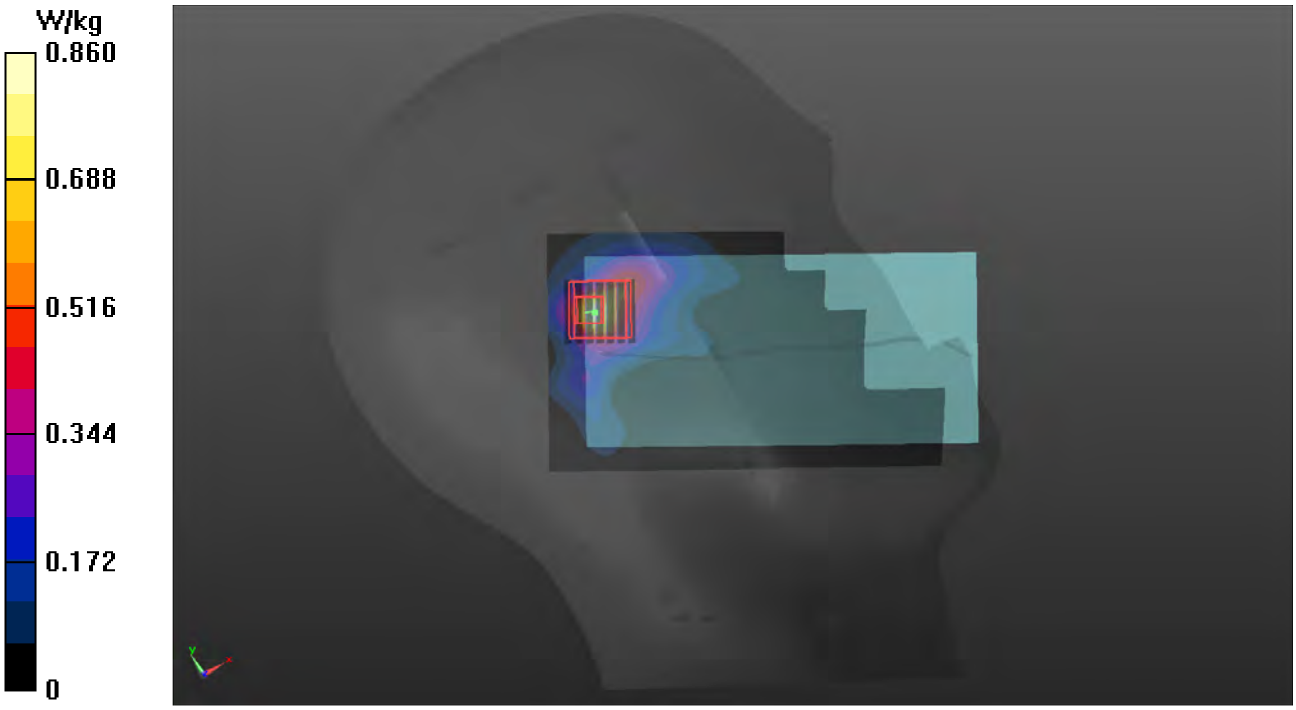
DUT: P20120816

Communication System: UID 10062 - CAD, IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps);
Frequency: 5320 MHz;Duty Cycle: 1:1.03
Medium: H34T60N1_0119 Medium parameters used: f = 5320 MHz; σ = 4.82 S/m; ε_r = 36.887; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃；Liquid Temperature：23.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7350; ConvF(5.23, 5.23, 5.23) @ 5320 MHz; Calibrated: 2020/12/21
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2020/05/06
- Phantom: SAM Phantom_1985; Type: QD 000 P41 AA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (91x171x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.860 W/kg

Zoom Scan (7x7x8)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 13.57 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 1.33 W/kg
SAR(1 g) = 0.327 W/kg; SAR(10 g) = 0.114 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 7.4 mm
Ratio of SAR at M2 to SAR at M1 = 65.3%
Maximum value of SAR (measured) = 0.792 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/01/19

P08 WLAN5.6G_802.11a_Left Cheek_Ch100

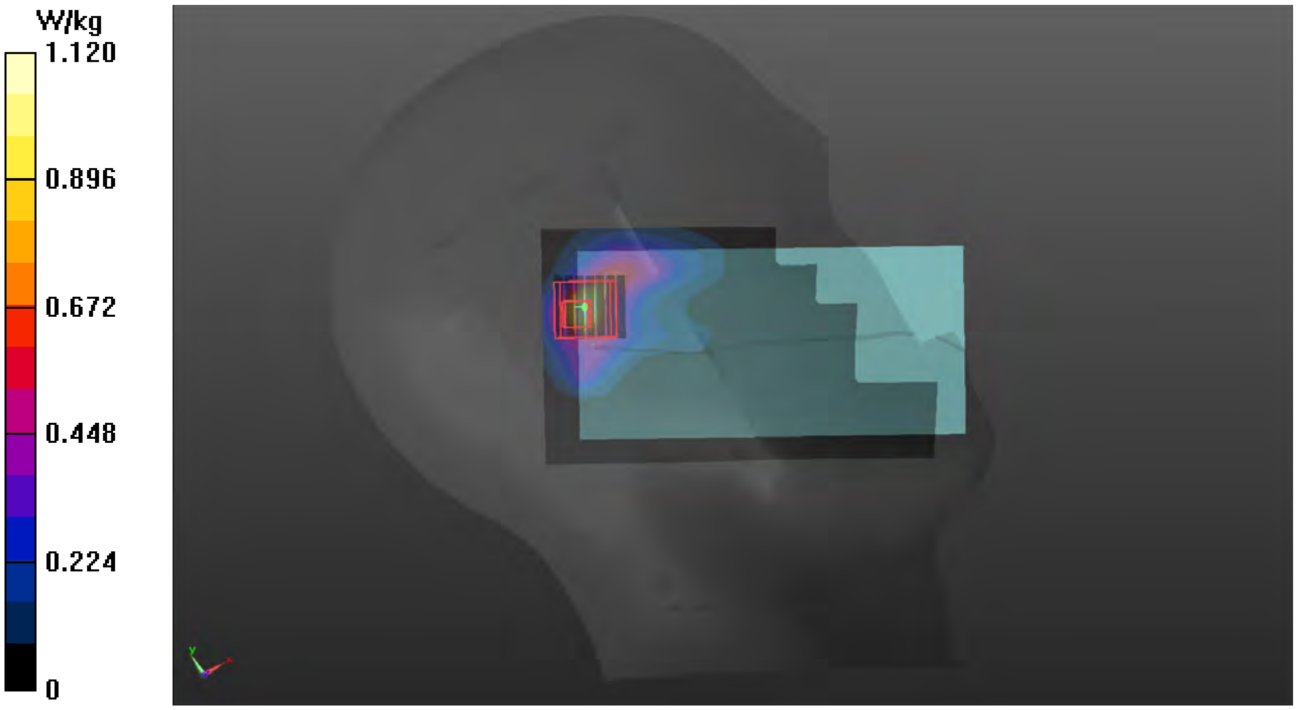
DUT: P20120816

Communication System: UID 10062 - CAD, IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps);
Frequency: 5500 MHz;Duty Cycle: 1:1.03
Medium: H34T60N1_0119 Medium parameters used: f = 5500 MHz; σ = 4.993 S/m; ε_r = 36.654; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃； Liquid Temperature：23.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7350; ConvF(4.53, 4.53, 4.53) @ 5500 MHz; Calibrated: 2020/12/21
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2020/05/06
- Phantom: SAM Phantom_1985; Type: QD 000 P41 AA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (91x171x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.12 W/kg

Zoom Scan (7x7x8)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 15.86 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 1.83 W/kg
SAR(1 g) = 0.457 W/kg; SAR(10 g) = 0.138 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 5.6 mm
Ratio of SAR at M2 to SAR at M1 = 64.4%
Maximum value of SAR (measured) = 1.07 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/04/06

P09 WLAN5.8G_802.11a_Left Cheek_Ch149

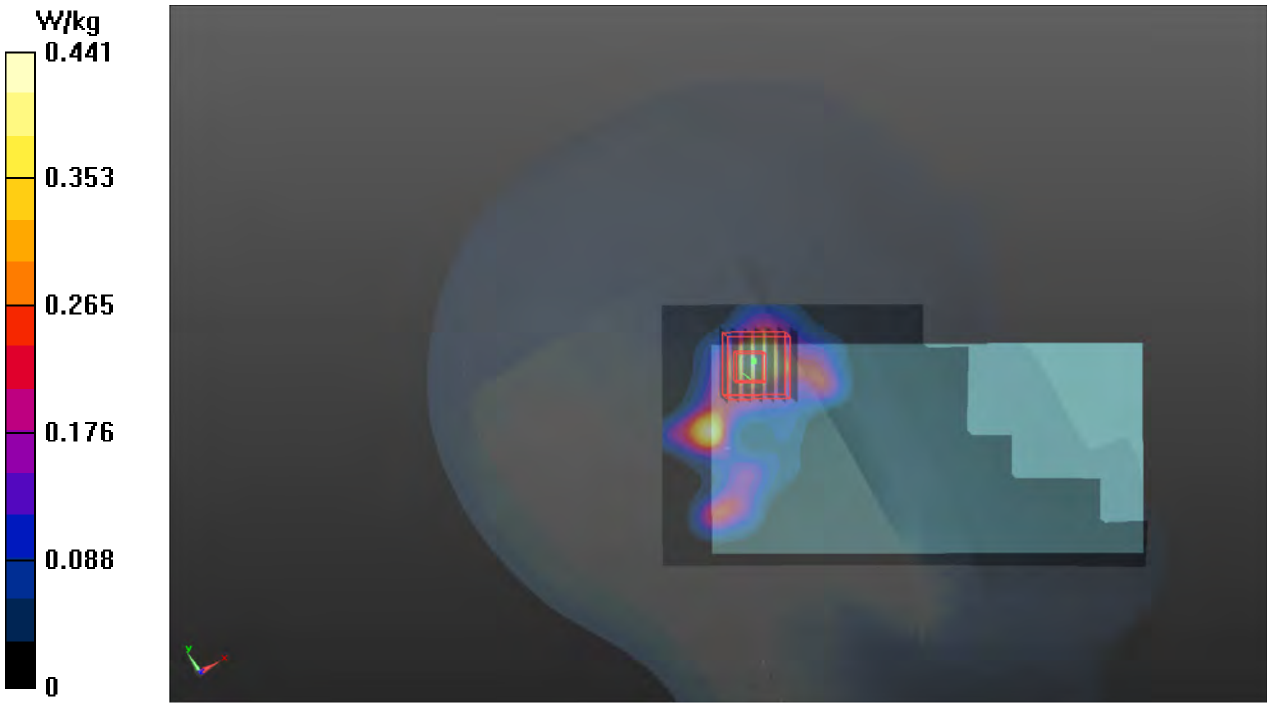
DUT: P20120816

Communication System: UID 10062 - CAD, IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps);
Frequency: 5745 MHz;Duty Cycle: 1:1.03
Medium: H34T60N1_0406 Medium parameters used (interpolated): f = 5745 MHz; σ = 5.134 S/m; ε_r = 36.456; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃；Liquid Temperature：23.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3887; ConvF(4.36, 4.36, 4.36) @ 5745 MHz; Calibrated: 2020/10/22
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn905; Calibrated: 2020/06/22
- Phantom: Twin SAM Phantom_1653; Type: QD000P40CD;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (91x171x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.441 W/kg

Zoom Scan (7x7x8)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 9.727 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 1.04 W/kg
SAR(1 g) = 0.232 W/kg; SAR(10 g) = 0.068 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 6.8 mm
Ratio of SAR at M2 to SAR at M1 = 60.1%
Maximum value of SAR (measured) = 0.579 W/kg



P10 BT_BR_EDR_Left Cheek_Ch78

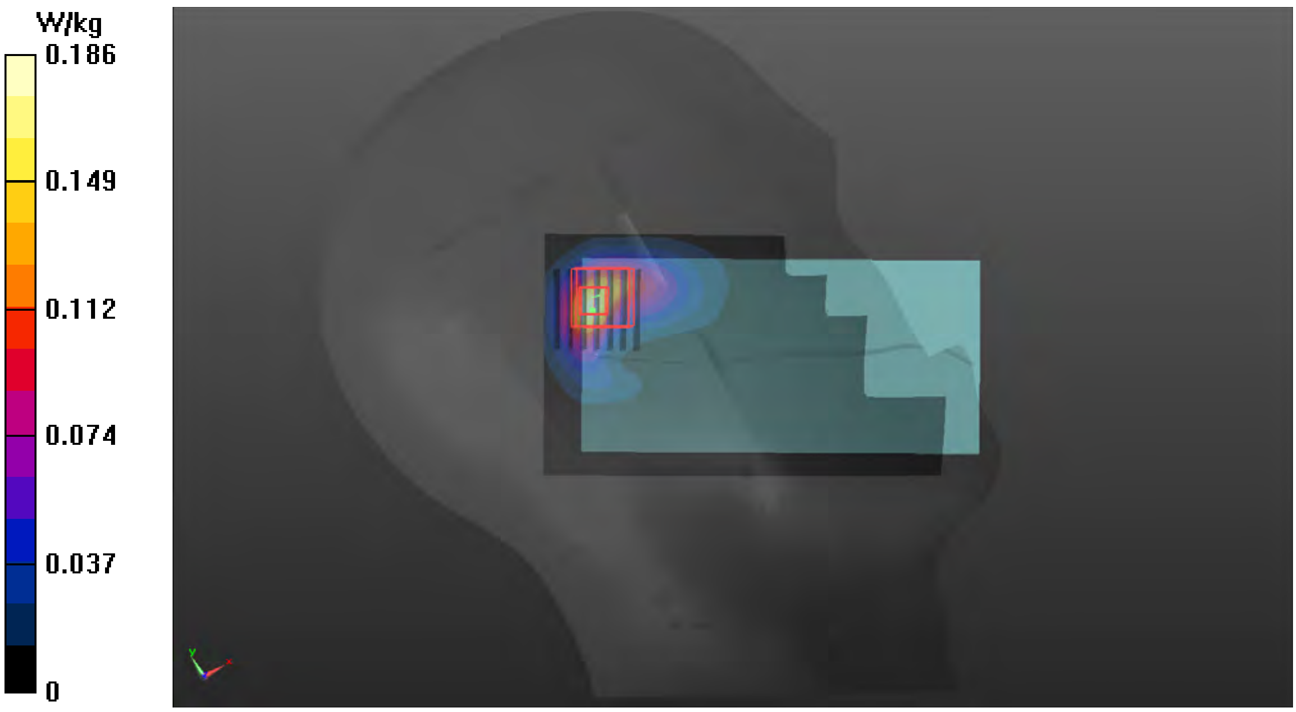
DUT: P20120816

Communication System: UID 10032 - CAA, IEEE 802.15.1 Bluetooth (GFSK, DH5); Frequency: 2480 MHz;Duty Cycle: 1:1.3
Medium: H19T27N1_0118 Medium parameters used: f = 2480 MHz; σ = 1.906 S/m; ε_r = 37.885; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：23.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7350; ConvF(7.72, 7.72, 7.72) @ 2480 MHz; Calibrated: 2020/12/21
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2020/05/06
- Phantom: SAM Phantom_1985; Type: QD 000 P41 AA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (81x141x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.186 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.722 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.249 W/kg
SAR(1 g) = 0.109 W/kg; SAR(10 g) = 0.050 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 7.8 mm
Ratio of SAR at M2 to SAR at M1 = 47.3%
Maximum value of SAR (measured) = 0.193 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab   Date: 2021/01/07

P11 GSM850_GPRS12_Rear Face_5mm_Ch251

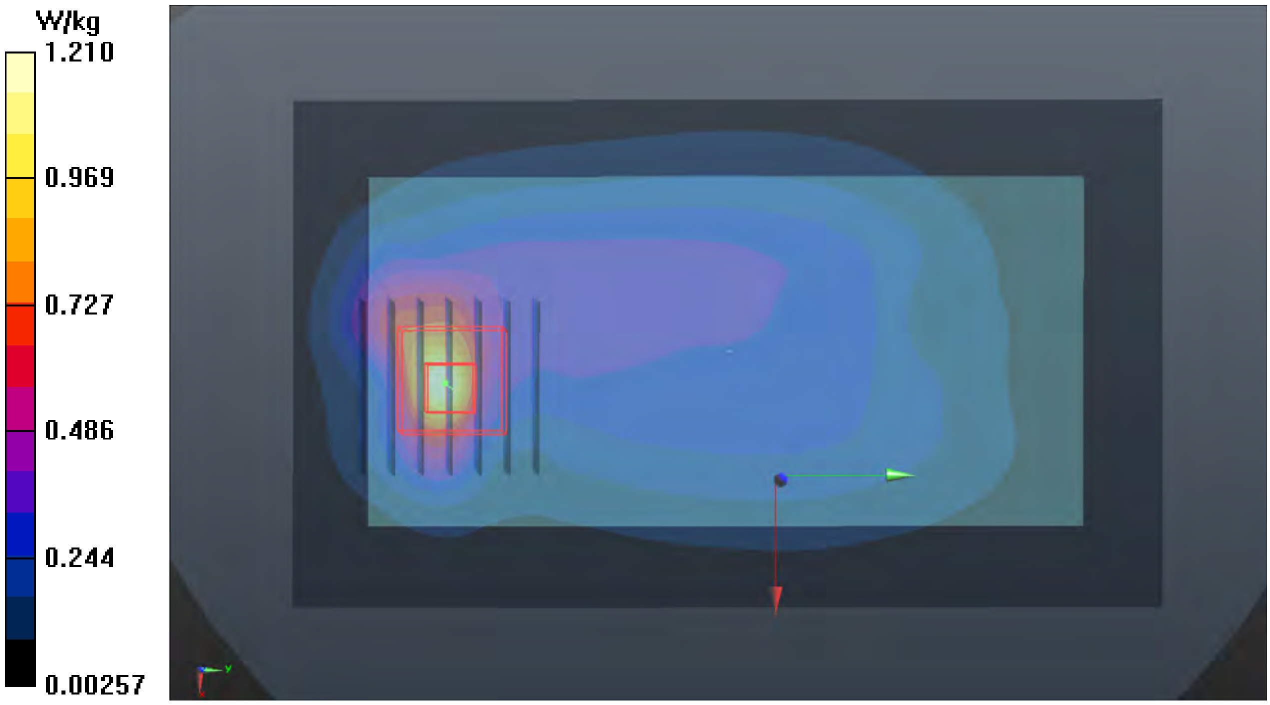
DUT: WTW-20120816

Communication System: UID 10028 - DAC, GPRS-FDD (TDMA, GMSK, TN 0-1-2-3); Frequency: 848.8 MHz;Duty Cycle: 1:2.27
Medium: H07T10N1_0107 Medium parameters used: f = 849 MHz; σ = 0.917 S/m; ε_r = 41.753; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃； Liquid Temperature：23.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7472; ConvF(10.11, 10.11, 10.11) @ 848.8 MHz; Calibrated: 2020/08/24
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1585; Calibrated: 2020/05/28
- Phantom: Twin SAM Phantom_1823; Type: QD000P40;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.21 W/kg

Zoom Scan 2 (7x7x8)/Cube 0: Measurement grid: dx=6mm, dy=6mm, dz=1.4mm
Reference Value = 37.18 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 1.76 W/kg
SAR(1 g) = 0.701 W/kg; SAR(10 g) = 0.337 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 7.3 mm
Ratio of SAR at M2 to SAR at M1 = 76.4%
Maximum value of SAR (measured) = 1.26 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/01/08

P12 GSM1900_GPRS12_Rear Face_5mm_Ch661

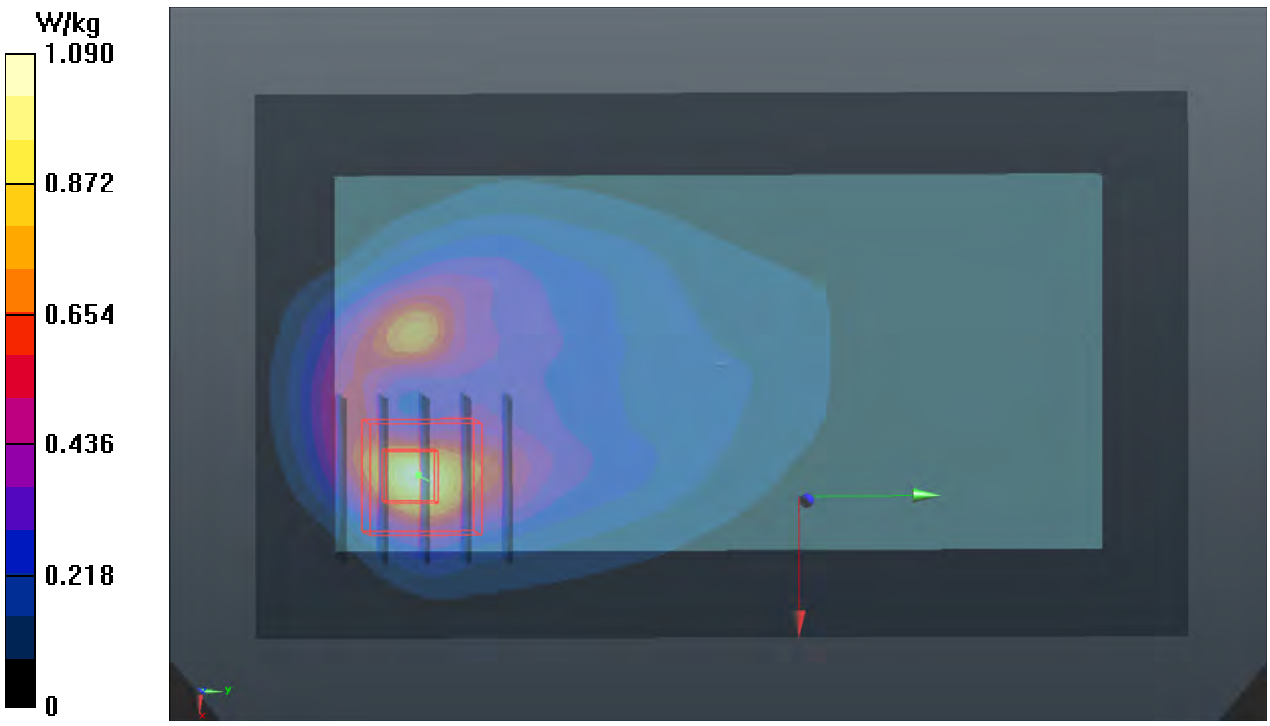
DUT: WTW-20120816

Communication System: UID 10028 - DAC, GPRS-FDD (TDMA, GMSK, TN 0-1-2-3); Frequency: 1880 MHz;Duty Cycle: 1:2.27
Medium: H16T20N1_0108 Medium parameters used: f = 1880 MHz; σ = 1.425 S/m; ε_r = 38.93; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃； Liquid Temperature：23.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7472; ConvF(8.35, 8.35, 8.35) @ 1880 MHz; Calibrated: 2020/08/24
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1585; Calibrated: 2020/05/28
- Phantom: Twin SAM Phantom_1823; Type: QD000P40;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.09 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.83 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 1.38 W/kg
SAR(1 g) = 0.656 W/kg; SAR(10 g) = 0.329 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 8.5 mm
Ratio of SAR at M2 to SAR at M1 = 54.2%
Maximum value of SAR (measured) = 1.03 W/kg



P13 WCDMA V_RMC12.2K_Rear Face_5mm_Ch4233

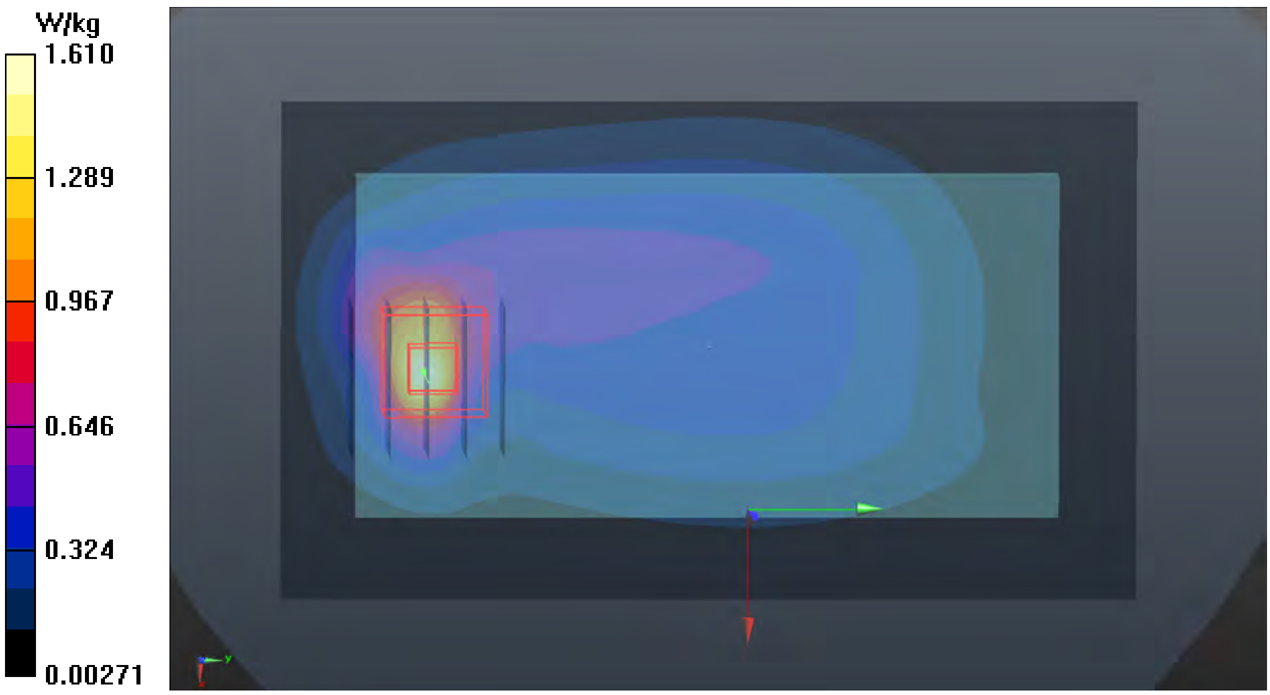
DUT: WTW-20120816

Communication System: UID 10011 - CAB, UMTS-FDD (WCDMA); Frequency: 846.6 MHz;Duty Cycle: 1:1.95
Medium: H07T10N1_0107 Medium parameters used: f = 847 MHz; σ = 0.915 S/m; ε_r = 41.779; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃； Liquid Temperature：23.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7472; ConvF(10.11, 10.11, 10.11) @ 846.6 MHz; Calibrated: 2020/08/24
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1585; Calibrated: 2020/05/28
- Phantom: Twin SAM Phantom_1823; Type: QD000P40;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.61 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 42.24 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 1.97 W/kg
SAR(1 g) = 0.889 W/kg; SAR(10 g) = 0.442 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 8.1 mm
Ratio of SAR at M2 to SAR at M1 = 47.6%
Maximum value of SAR (measured) = 1.58 W/kg



P14 LTE 5_QPSK10M_Rear Face_5mm_Ch20525_1RB_OS0

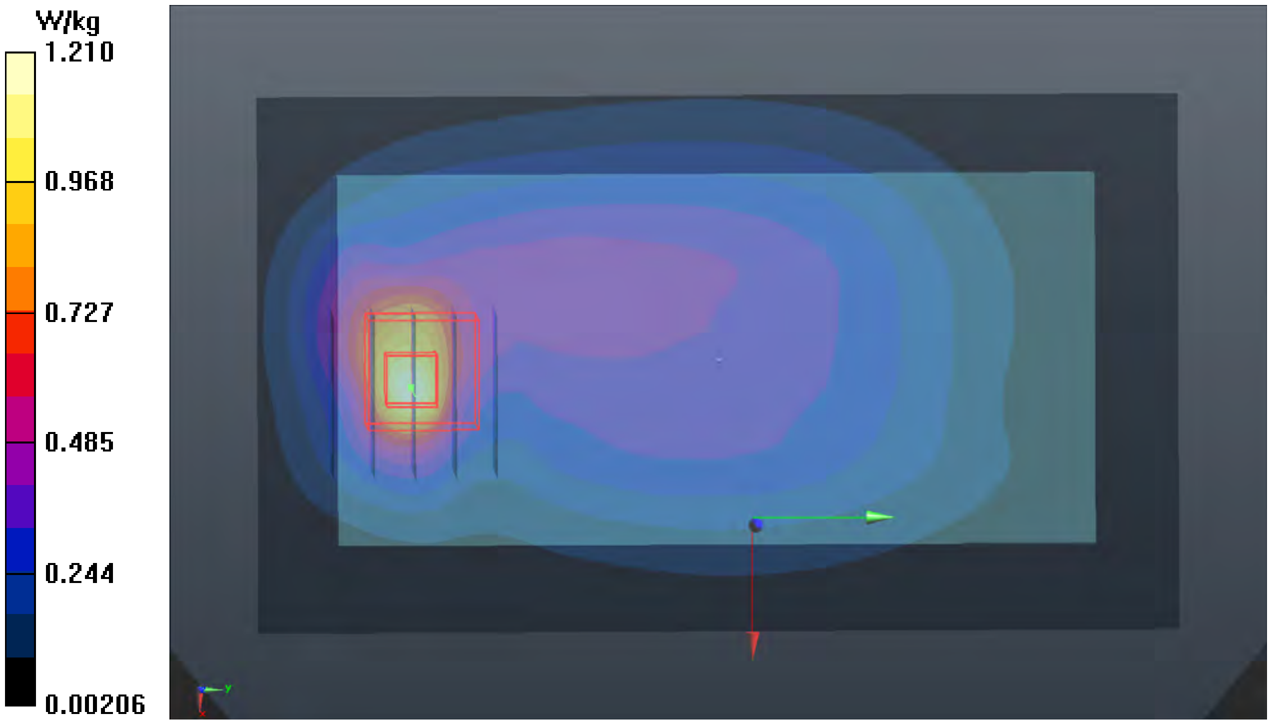
DUT: WTW-20120816

Communication System: UID 10175 - CAG, LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK);
Frequency: 836.5 MHz;Duty Cycle: 1:3.74
Medium: H07T10N1_0108 Medium parameters used (interpolated): f = 836.5 MHz; σ = 0.922 S/m; ε_r = 42.308; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃；Liquid Temperature：23.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7472; ConvF(10.11, 10.11, 10.11) @ 836.5 MHz; Calibrated: 2020/08/24
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1585; Calibrated: 2020/05/28
- Phantom: Twin SAM Phantom_1823; Type: QD000P40;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.21 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 37.90 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 1.73 W/kg
SAR(1 g) = 0.773 W/kg; SAR(10 g) = 0.392 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 8.5 mm
Ratio of SAR at M2 to SAR at M1 = 46.7%
Maximum value of SAR (measured) = 1.39 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/01/11

P15 LTE 12_QPSK10M_Rear Face_5mm_Ch23130_1RB_OS0

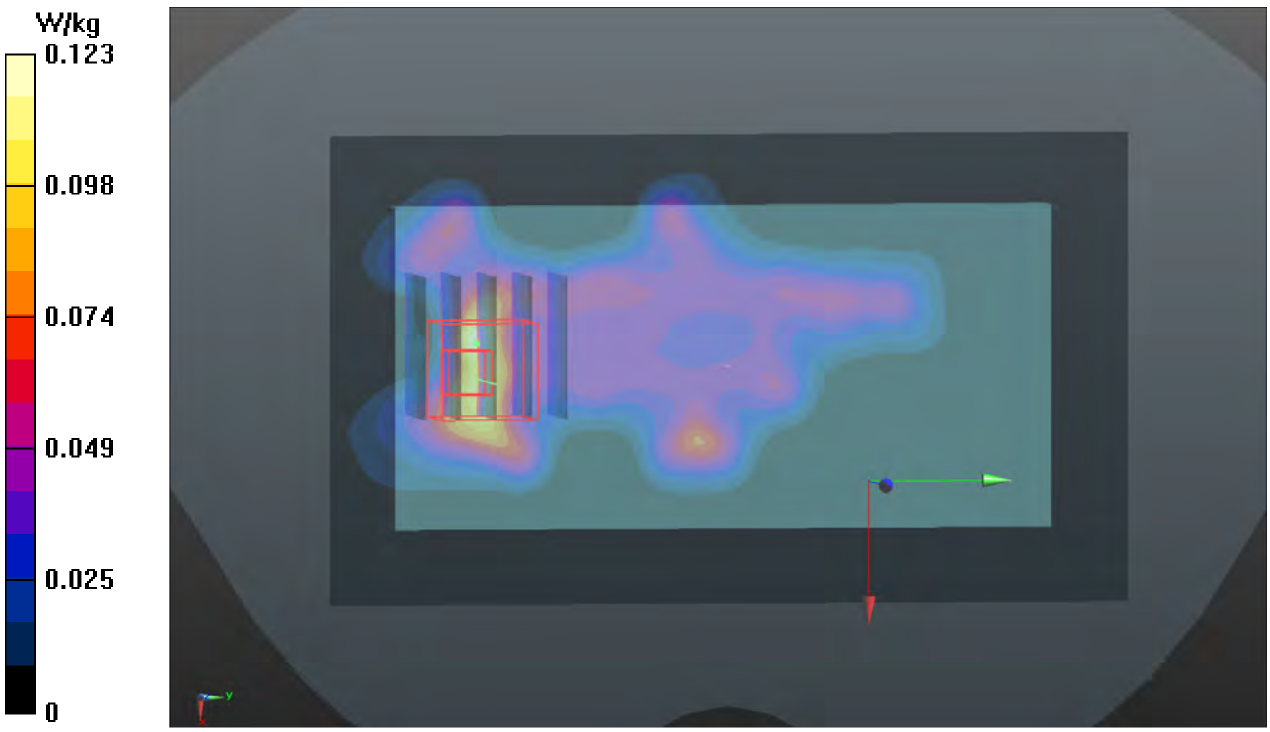
DUT: WTW-20120816

Communication System: UID 10175 - CAG, LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK);
Frequency: 711 MHz;Duty Cycle: 1:3.74
Medium: H06T09N1_0111 Medium parameters used: f = 711 MHz; $\sigma = 0.851$ S/m; $\varepsilon_r = 43.425$; $\rho = 1000$ kg/m^3
Ambient Temperature：23.8 ℃； Liquid Temperature：23.4 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3971; ConvF(10.6, 10.6, 10.6) @ 711 MHz; Calibrated: 2020/01/27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn905; Calibrated: 2020/06/22
- Phantom: Twin SAM Phantom_1653; Type: QD000P40CD;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.123 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.33 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 0.131 W/kg
SAR(1 g) = 0.065 W/kg; SAR(10 g) = 0.034 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 9.3 mm
Ratio of SAR at M2 to SAR at M1 = 50.3%
Maximum value of SAR (measured) = 0.0995 W/kg



P16 WLAN2.4G_802.11b_Rear Face_5mm_Ch11

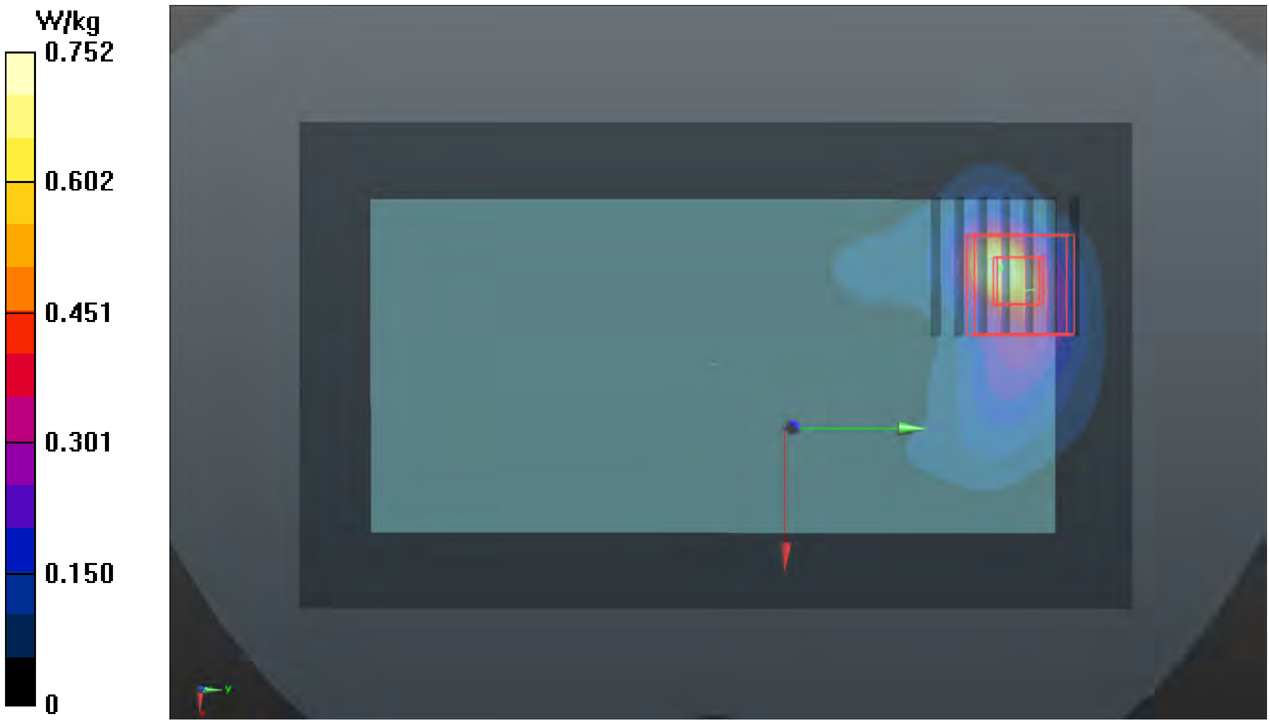
DUT: WTW-20120816

Communication System: UID 10012 - CAB, IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps);
Frequency: 2462 MHz;Duty Cycle: 1:1
Medium: H19T27N1_0116 Medium parameters used: f = 2462 MHz; σ = 1.881 S/m; ε_r = 37.875; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃； Liquid Temperature：23.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7472; ConvF(7.69, 7.69, 7.69) @ 2462 MHz; Calibrated: 2020/08/24
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1585; Calibrated: 2020/05/28
- Phantom: Twin SAM Phantom_1823; Type: QD000P40;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (91x151x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.752 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 20.45 V/m; Power Drift = -0.18 dB
Peak SAR (extrapolated) = 1.30 W/kg
SAR(1 g) = 0.528 W/kg; SAR(10 g) = 0.207 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 6.7 mm
Ratio of SAR at M2 to SAR at M1 = 45.3%
Maximum value of SAR (measured) = 0.968 W/kg



P17 WLAN5.3G_802.11a_Rear Face_5mm_Ch60

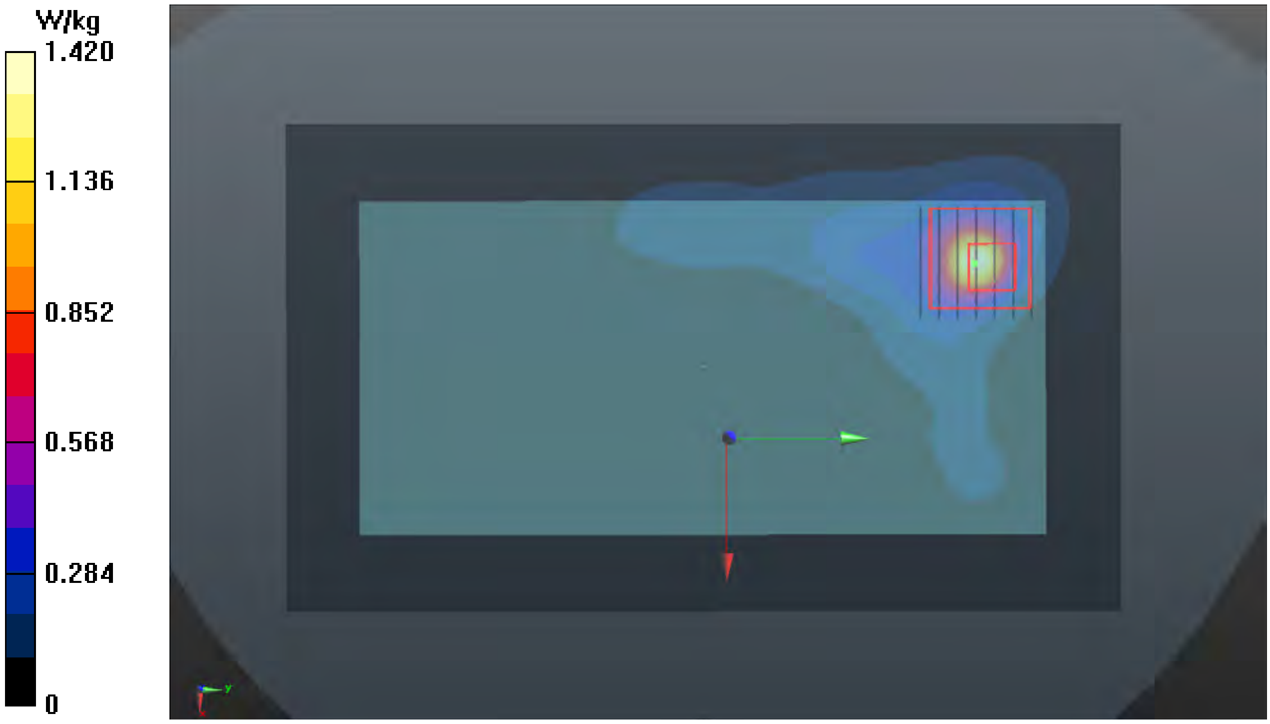
DUT: WTW-20120816

Communication System: UID 10062 - CAD, IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps);
Frequency: 5300 MHz;Duty Cycle: 1:1
Medium: H34T60N3_0116 Medium parameters used (interpolated): f = 5300 MHz; σ = 4.77 S/m; ε_r = 34.895; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃； Liquid Temperature：23.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7472; ConvF(5.72, 5.72, 5.72) @ 5300 MHz; Calibrated: 2020/08/24
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1585; Calibrated: 2020/05/28
- Phantom: Twin SAM Phantom_1823; Type: QD000P40;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (111x181x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.42 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 18.79 V/m; Power Drift = -0.19 dB
Peak SAR (extrapolated) = 2.53 W/kg
SAR(1 g) = 0.585 W/kg; SAR(10 g) = 0.177 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 5.1 mm
Ratio of SAR at M2 to SAR at M1 = 64.7%
Maximum value of SAR (measured) = 1.52 W/kg



P18 WLAN5.6G_802.11a_Rear Face_5mm_Ch100

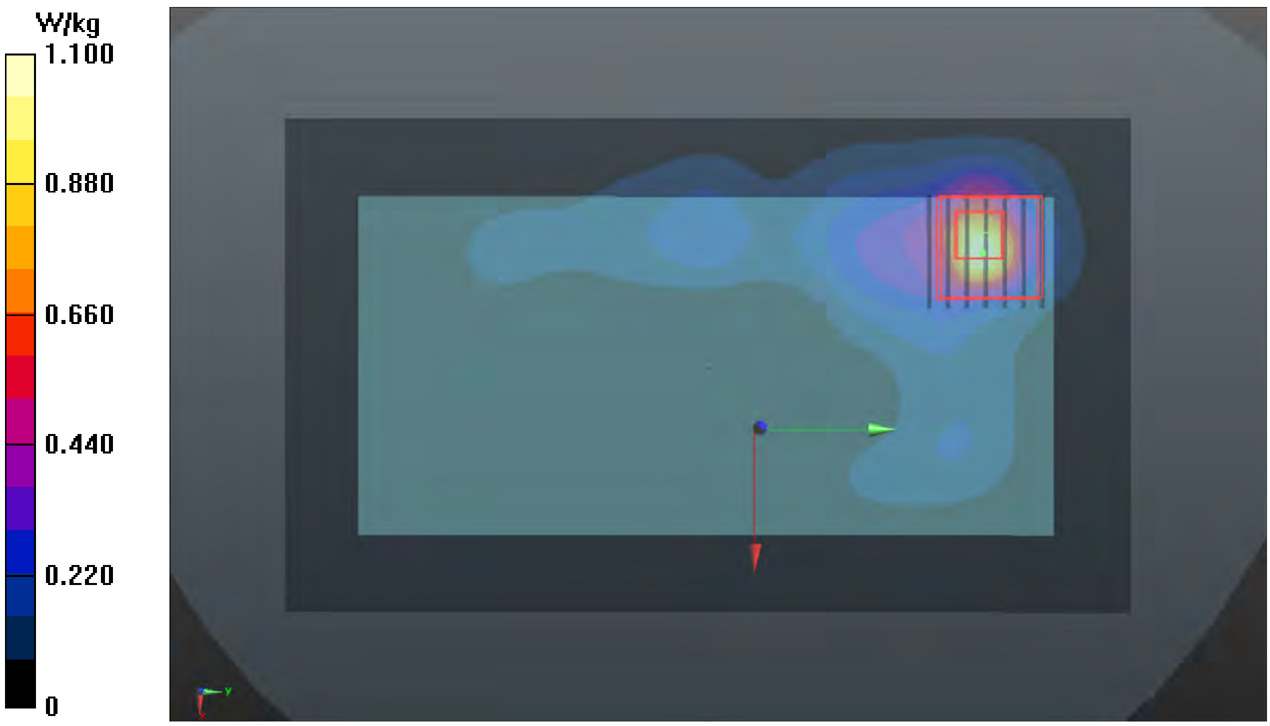
DUT: WTW-20120816

Communication System: UID 10062 - CAD, IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps);
Frequency: 5500 MHz;Duty Cycle: 1:1
Medium: H34T60N3_0116 Medium parameters used: f = 5500 MHz; σ = 4.945 S/m; ε_r = 34.616; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃； Liquid Temperature：23.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7472; ConvF(5.04, 5.04, 5.04) @ 5500 MHz; Calibrated: 2020/08/24
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1585; Calibrated: 2020/05/28
- Phantom: Twin SAM Phantom_1823; Type: QD000P40;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (111x181x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.10 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 15.82 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 2.36 W/kg
SAR(1 g) = 0.510 W/kg; SAR(10 g) = 0.184 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 5.1 mm
Ratio of SAR at M2 to SAR at M1 = 60.5%
Maximum value of SAR (measured) = 1.32 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab   Date: 2021/04/06

P19 WLAN5.8G_802.11a_Rear Face_5mm_Ch165

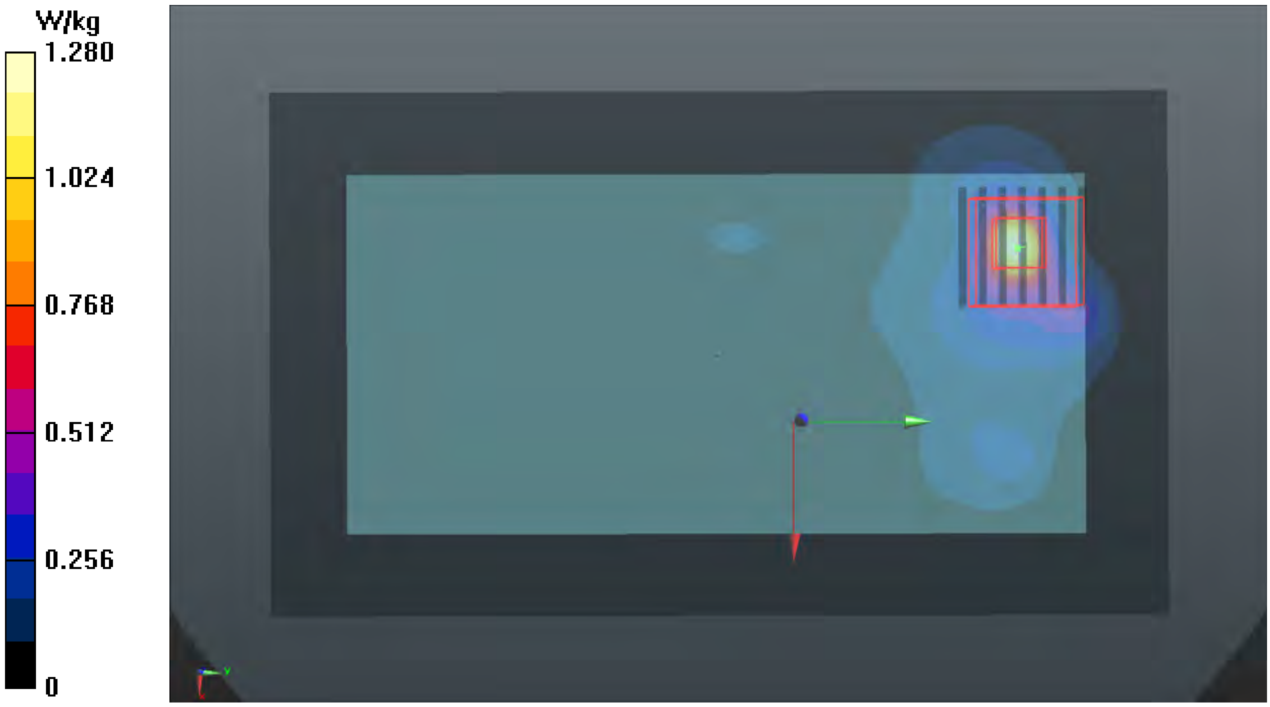
DUT: WTW-20120816

Communication System: UID 10062 - CAD, IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps);
Frequency: 5825 MHz;Duty Cycle: 1:1.03
Medium: H34T60N1_0406 Medium parameters used (interpolated): f = 5825 MHz; σ = 5.214 S/m; ε_r = 36.393; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃； Liquid Temperature：23.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3887; ConvF(4.36, 4.36, 4.36) @ 5825 MHz; Calibrated: 2020/10/22
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn905; Calibrated: 2020/06/22
- Phantom: Twin SAM Phantom_1653; Type: QD000P40CD;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (111x181x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.28 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 17.33 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 2.44 W/kg
SAR(1 g) = 0.440 W/kg; SAR(10 g) = 0.124 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 5.1 mm
Ratio of SAR at M2 to SAR at M1 = 58%
Maximum value of SAR (measured) = 1.28 W/kg



P20 BT_BR_EDR_Rear Face_5mm_Ch0

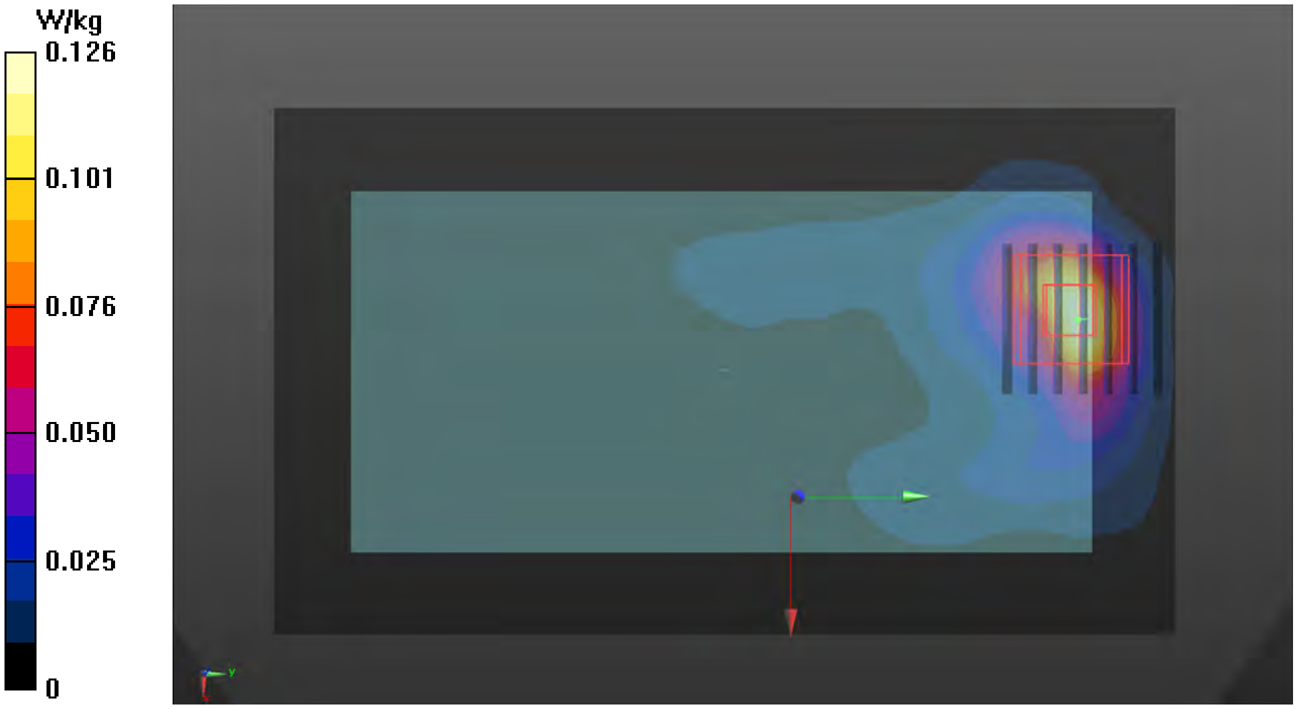
DUT: WTW-20120816

Communication System: UID 10032 - CAA, IEEE 802.15.1 Bluetooth (GFSK, DH5); Frequency: 2402 MHz;Duty Cycle: 1:1.3
Medium: H19T27N1_0118 Medium parameters used (interpolated): f = 2402 MHz; σ = 1.828 S/m; ε_r = 38.178; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃；Liquid Temperature：23.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7350; ConvF(7.72, 7.72, 7.72) @ 2402 MHz; Calibrated: 2020/12/21
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2020/05/06
- Phantom: SAM Phantom_1985; Type: QD 000 P41 AA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (91x151x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.126 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.861 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.234 W/kg
SAR(1 g) = 0.098 W/kg; SAR(10 g) = 0.040 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 7.2 mm
Ratio of SAR at M2 to SAR at M1 = 47.6%
Maximum value of SAR (measured) = 0.174 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/01/07

P21 GSM850_GPRS12_Rear Face_5mm_Ch251

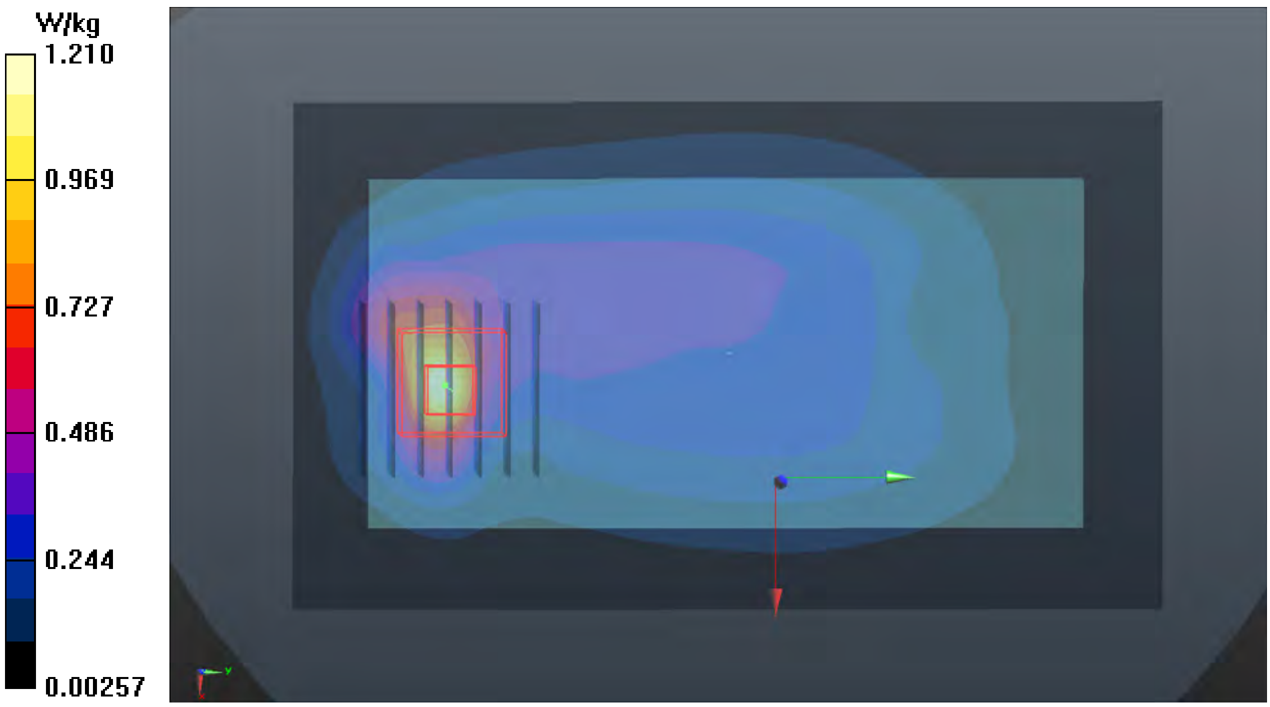
DUT: WTW-20120816

Communication System: UID 10028 - DAC, GPRS-FDD (TDMA, GMSK, TN 0-1-2-3); Frequency: 848.8 MHz;Duty Cycle: 1:2.27
Medium: H07T10N1_0107 Medium parameters used: f = 849 MHz; σ = 0.917 S/m; ε_r = 41.753; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃； Liquid Temperature：23.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7472; ConvF(10.11, 10.11, 10.11) @ 848.8 MHz; Calibrated: 2020/08/24
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1585; Calibrated: 2020/05/28
- Phantom: Twin SAM Phantom_1823; Type: QD000P40;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.21 W/kg

Zoom Scan 2 (7x7x8)/Cube 0: Measurement grid: dx=6mm, dy=6mm, dz=1.4mm
Reference Value = 37.18 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 1.76 W/kg
SAR(1 g) = 0.701 W/kg; SAR(10 g) = 0.337 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 7.3 mm
Ratio of SAR at M2 to SAR at M1 = 76.4%
Maximum value of SAR (measured) = 1.26 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab   Date: 2021/01/08

P22 GSM1900_GPRS12_Rear Face_5mm_Ch661

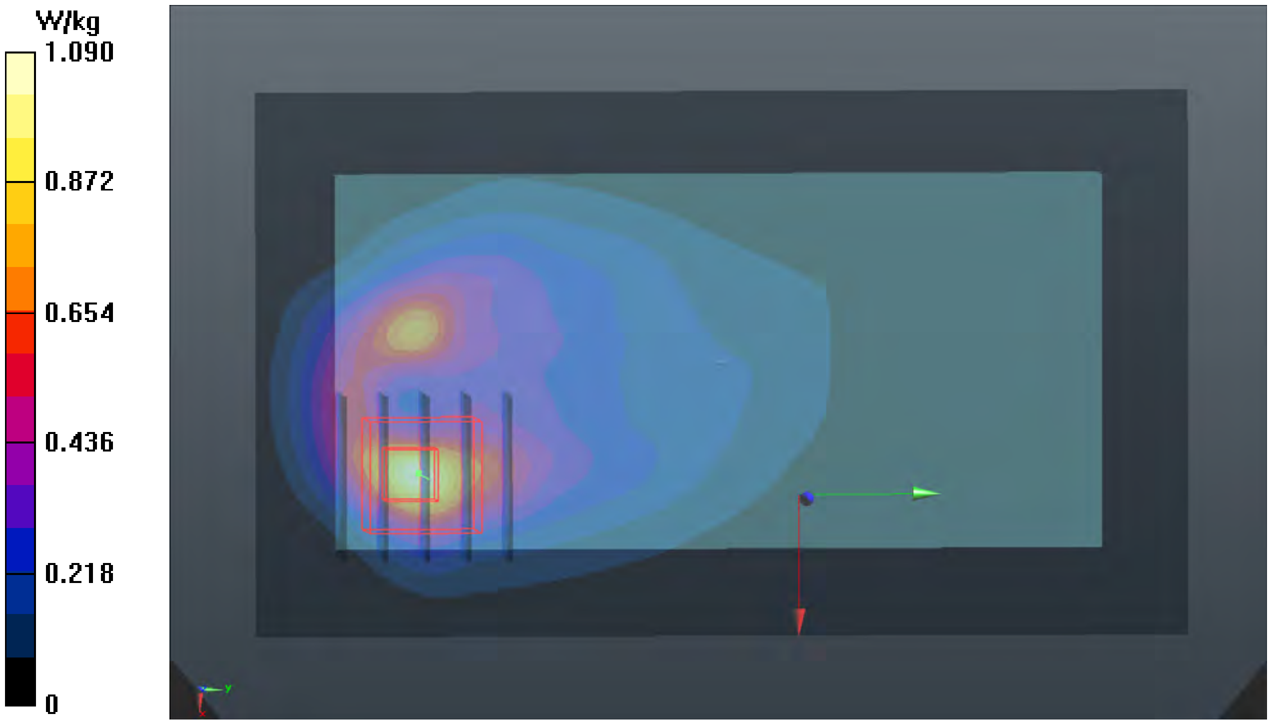
DUT: WTW-20120816

Communication System: UID 10028 - DAC, GPRS-FDD (TDMA, GMSK, TN 0-1-2-3); Frequency: 1880 MHz;Duty Cycle: 1:2.27
Medium: H16T20N1_0108 Medium parameters used: f = 1880 MHz; σ = 1.425 S/m; ε_r = 38.93; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃； Liquid Temperature：23.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7472; ConvF(8.35, 8.35, 8.35) @ 1880 MHz; Calibrated: 2020/08/24
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1585; Calibrated: 2020/05/28
- Phantom: Twin SAM Phantom_1823; Type: QD000P40;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.09 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.83 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 1.38 W/kg
SAR(1 g) = 0.656 W/kg; SAR(10 g) = 0.329 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 8.5 mm
Ratio of SAR at M2 to SAR at M1 = 54.2%
Maximum value of SAR (measured) = 1.03 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/01/07

P23 WCDMA V_RMC12.2K_Rear Face_5mm_Ch4233

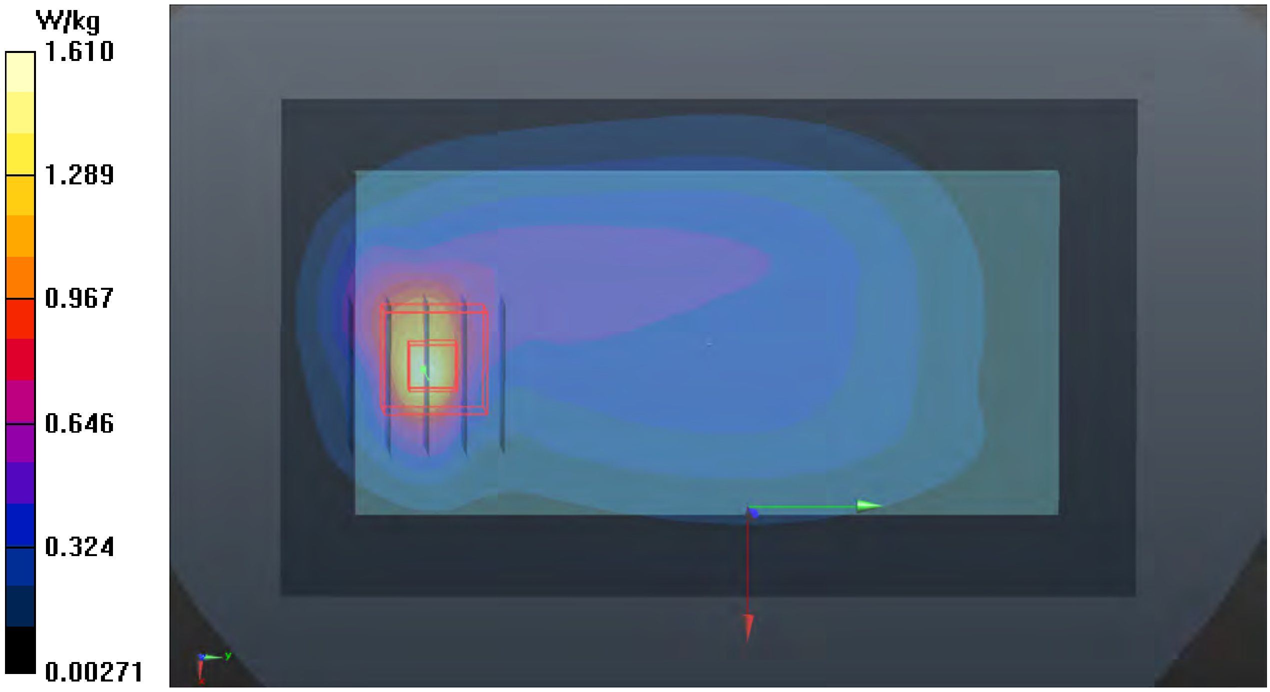
DUT: WTW-20120816

Communication System: UID 10011 - CAB, UMTS-FDD (WCDMA); Frequency: 846.6 MHz;Duty Cycle: 1:1.95
Medium: H07T10N1_0107 Medium parameters used: f = 847 MHz; σ = 0.915 S/m; ε_r = 41.779; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃； Liquid Temperature：23.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7472; ConvF(10.11, 10.11, 10.11) @ 846.6 MHz; Calibrated: 2020/08/24
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1585; Calibrated: 2020/05/28
- Phantom: Twin SAM Phantom_1823; Type: QD000P40;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.61 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 42.24 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 1.97 W/kg
SAR(1 g) = 0.889 W/kg; SAR(10 g) = 0.442 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 8.1 mm
Ratio of SAR at M2 to SAR at M1 = 47.6%
Maximum value of SAR (measured) = 1.58 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab　　　　　　Date: 2021/01/08

P24 LTE 5_QPSK10M_Rear Face_5mm_Ch20525_1RB_OS0

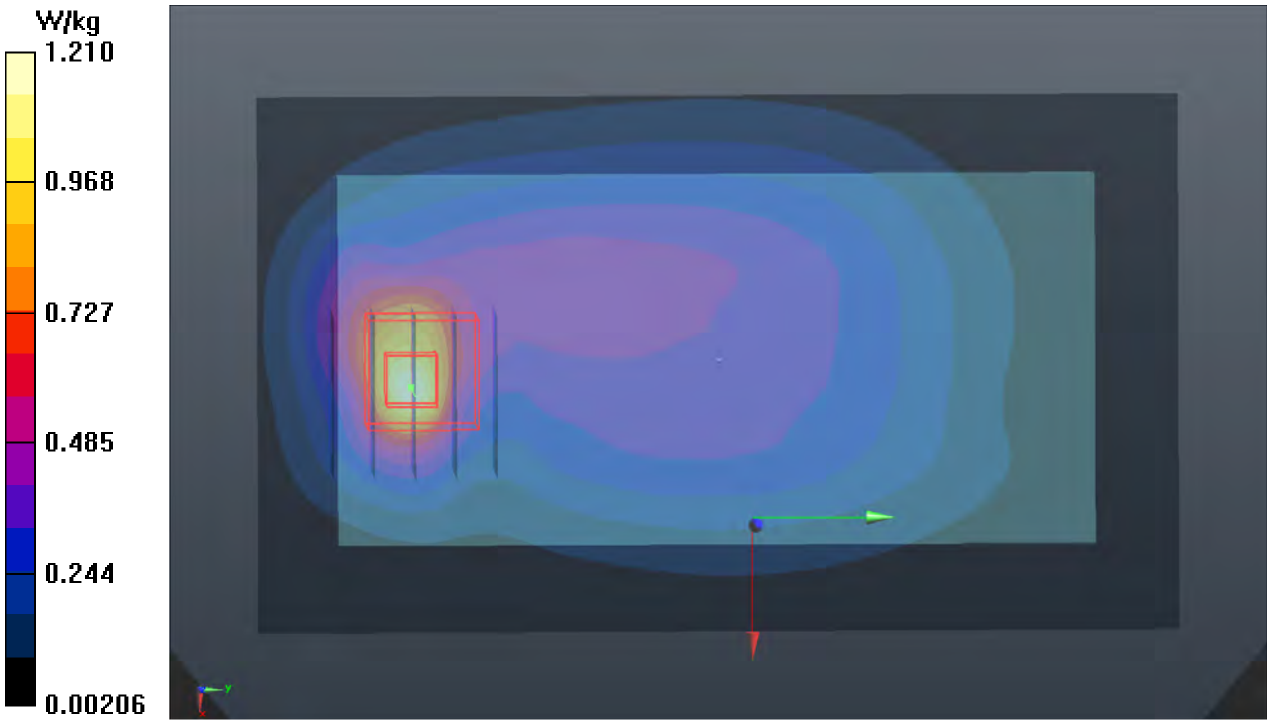
DUT: WTW-20120816

Communication System: UID 10175 - CAG, LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK);
Frequency: 836.5 MHz;Duty Cycle: 1:3.74
Medium: H07T10N1_0108 Medium parameters used (interpolated): f = 836.5 MHz; σ = 0.922 S/m; ε_r = 42.308; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃； Liquid Temperature：23.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7472; ConvF(10.11, 10.11, 10.11) @ 836.5 MHz; Calibrated: 2020/08/24
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1585; Calibrated: 2020/05/28
- Phantom: Twin SAM Phantom_1823; Type: QD000P40;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.21 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 37.90 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 1.73 W/kg
SAR(1 g) = 0.773 W/kg; SAR(10 g) = 0.392 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 8.5 mm
Ratio of SAR at M2 to SAR at M1 = 46.7%
Maximum value of SAR (measured) = 1.39 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/01/11

P25 LTE12_QPSK10M_Rear Face_5mm_Ch23130_1RB_OS0

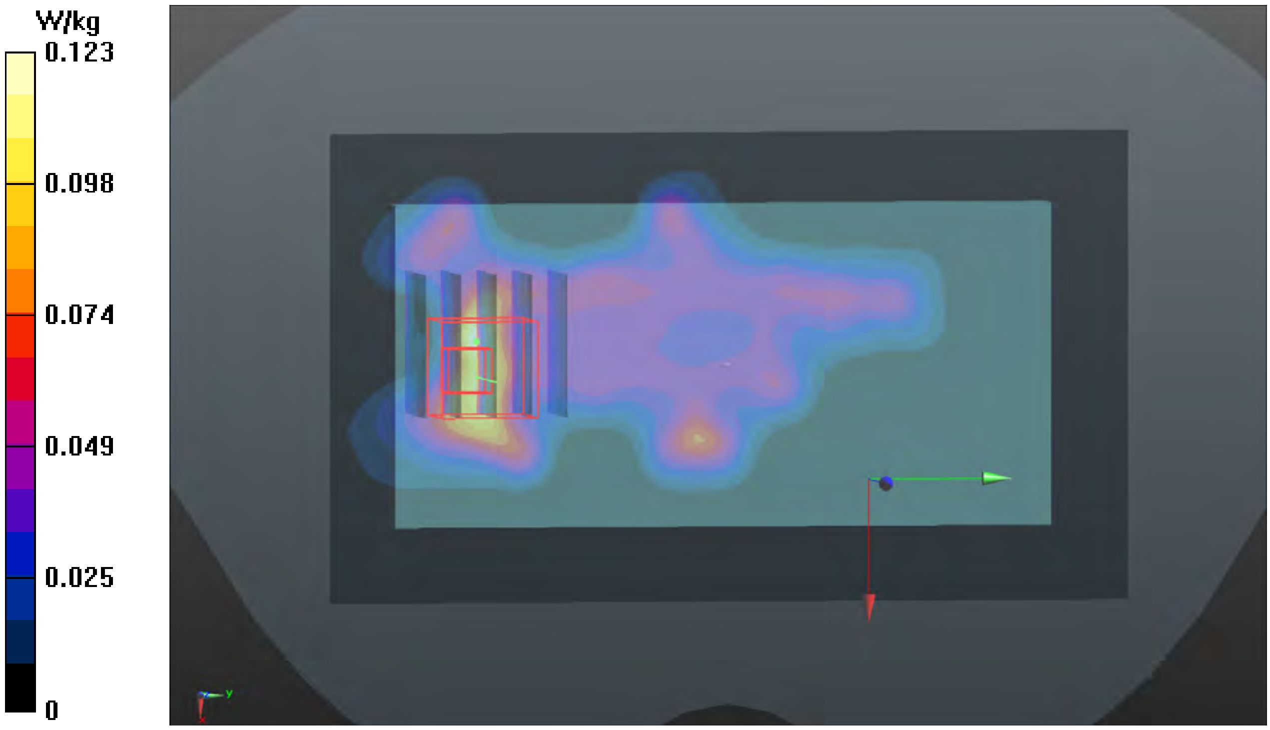
DUT: WTW-20120816

Communication System: UID 10175 - CAG, LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK);
Frequency: 711 MHz;Duty Cycle: 1:3.74
Medium: H06T09N1_0111 Medium parameters used: f = 711 MHz; σ = 0.851 S/m; ε_r = 43.425; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃； Liquid Temperature：23.4 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3971; ConvF(10.6, 10.6, 10.6) @ 711 MHz; Calibrated: 2020/01/27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn905; Calibrated: 2020/06/22
- Phantom: Twin SAM Phantom_1653; Type: QD000P40CD;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.123 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.33 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 0.131 W/kg
SAR(1 g) = 0.065 W/kg; SAR(10 g) = 0.034 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 9.3 mm
Ratio of SAR at M2 to SAR at M1 = 50.3%
Maximum value of SAR (measured) = 0.0995 W/kg



P26 WLAN2.4G_802.11b_Rear Face_5mm_Ch11

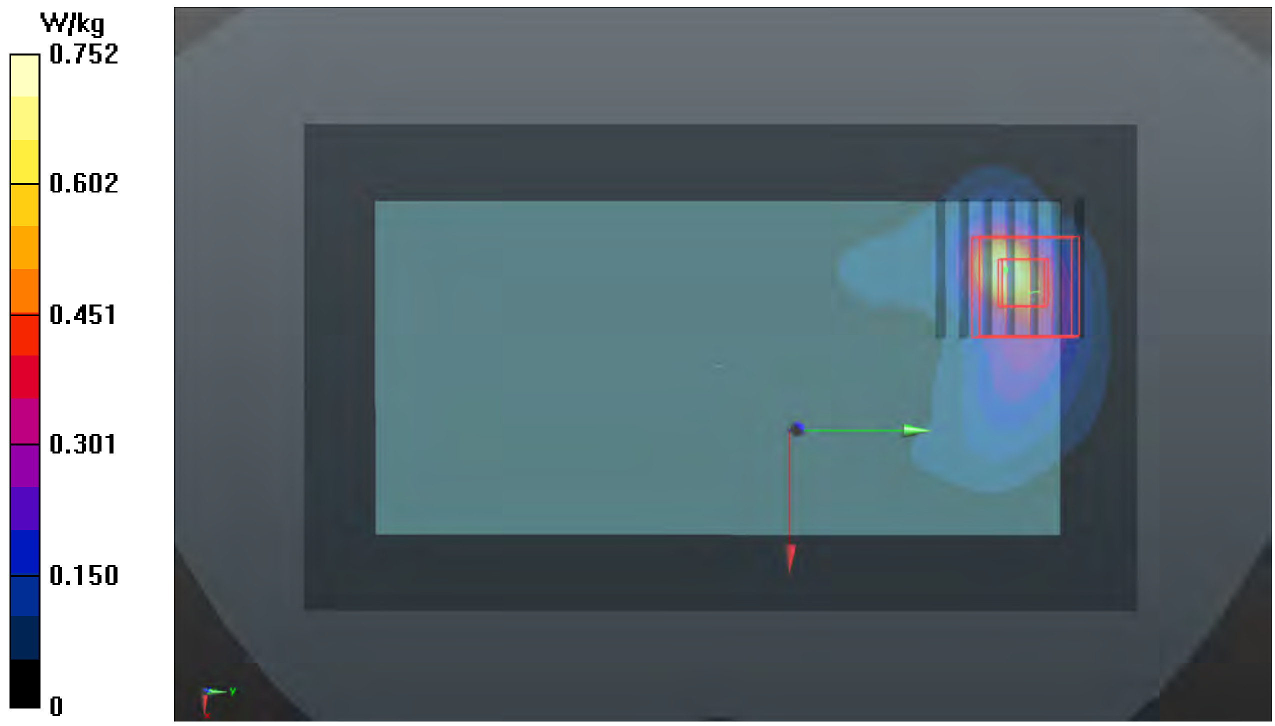
DUT: WTW-20120816

Communication System: UID 10012 - CAB, IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps);
Frequency: 2462 MHz;Duty Cycle: 1:1.02
Medium: H19T27N1_0116 Medium parameters used: f = 2462 MHz; σ = 1.881 S/m; ε_r = 37.875; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃； Liquid Temperature：23.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7472; ConvF(7.69, 7.69, 7.69) @ 2462 MHz; Calibrated: 2020/08/24
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1585; Calibrated: 2020/05/28
- Phantom: Twin SAM Phantom_1823; Type: QD000P40;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (91x151x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.752 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 20.45 V/m; Power Drift = -0.18 dB
Peak SAR (extrapolated) = 1.30 W/kg
SAR(1 g) = 0.528 W/kg; SAR(10 g) = 0.207 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 6.7 mm
Ratio of SAR at M2 to SAR at M1 = 45.3%
Maximum value of SAR (measured) = 0.968 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/01/18

P27 BT_BR_EDR_Rear Face_5mm_Ch0

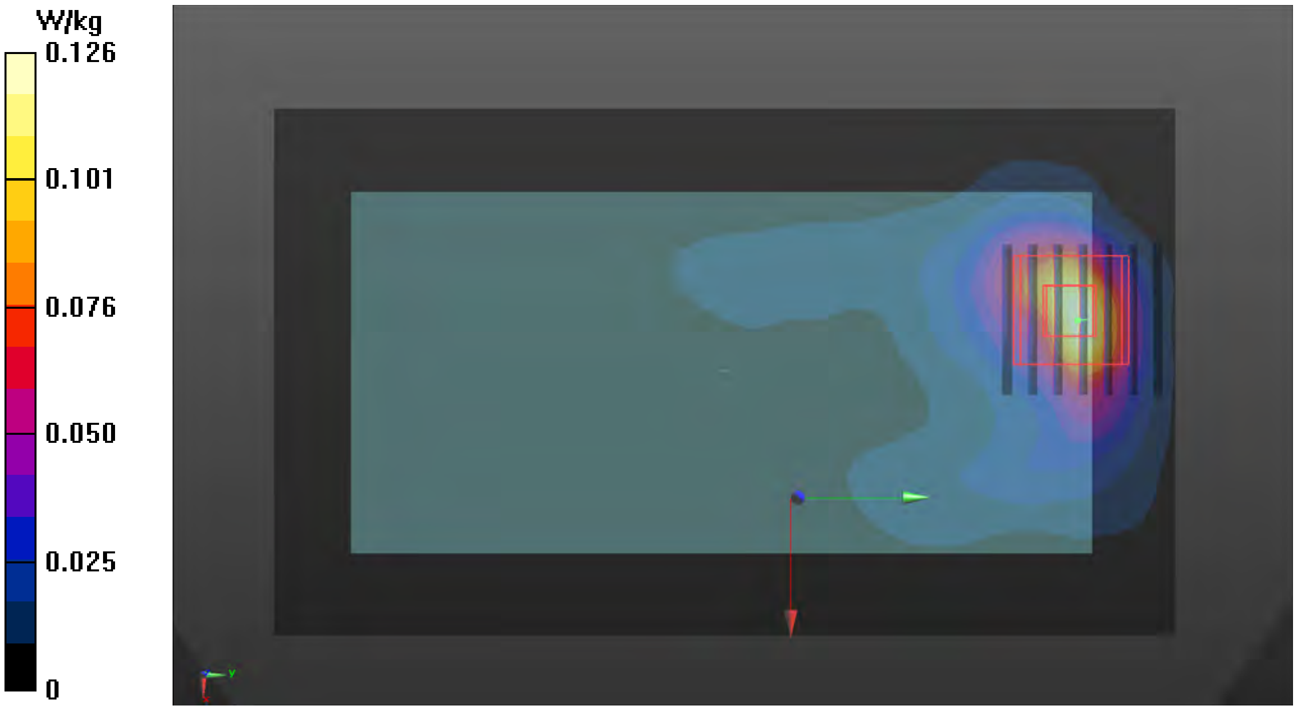
DUT: WTW-20120816

Communication System: UID 10032 - CAA, IEEE 802.15.1 Bluetooth (GFSK, DH5); Frequency: 2402 MHz;Duty Cycle: 1:1.3
Medium: H19T27N1_0118 Medium parameters used (interpolated): f = 2402 MHz; σ = 1.828 S/m; ε_r = 38.178; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃；Liquid Temperature：23.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7350; ConvF(7.72, 7.72, 7.72) @ 2402 MHz; Calibrated: 2020/12/21
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2020/05/06
- Phantom: SAM Phantom_1985; Type: QD 000 P41 AA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (91x151x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.126 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.861 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.234 W/kg
SAR(1 g) = 0.098 W/kg; SAR(10 g) = 0.040 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 7.2 mm
Ratio of SAR at M2 to SAR at M1 = 47.6%
Maximum value of SAR (measured) = 0.174 W/kg



Appendix C. Calibration Certificate for Probe and Dipole

The SPEAG calibration certificates are shown as follows.

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Client **B.V. ADT (Auden)**

Certificate No: D750V3-1013_Aug20

CALIBRATION CERTIFICATE

Object: D750V3 - SN:1013

Calibration procedure(s): QA CAL-05.v11
Calibration Procedure for SAR Validation Sources between 0.7-3 GHz

Calibration date: August 13, 2020

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	01-Apr-20 (No. 217-03100/03101)	Apr-21
Power sensor NRP-Z91	SN: 103244	01-Apr-20 (No. 217-03100)	Apr-21
Power sensor NRP-Z91	SN: 103245	01-Apr-20 (No. 217-03101)	Apr-21
Reference 20 dB Attenuator	SN: BH9394 (20k)	31-Mar-20 (No. 217-03106)	Apr-21
Type-N mismatch combination	SN: 310982 / 06327	31-Mar-20 (No. 217-03104)	Apr-21
Reference Probe EX3DV4	SN: 7349	29-Jun-20 (No. EX3-7349_Jun20)	Jun-21
DAE4	SN: 601	27-Dec-19 (No. DAE4-601_Dec19)	Dec-20

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB39512475	30-Oct-14 (in house check Feb-19)	In house check: Oct-20
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-18)	In house check: Oct-20
Network Analyzer Agilent E8358A	SN: US41080477	31-Mar-14 (in house check Oct-19)	In house check: Oct-20

	Name	Function	Signature
Calibrated by:	Jeffrey Katzman	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: August 14, 2020

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.10.4
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	750 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	41.9	0.89 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	42.4 ± 6 %	0.91 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.15 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**8.48 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.40 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**5.53 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	53.0 Ω - 0.8 jΩ
Return Loss	- 30.5 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.036 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG

DASY5 Validation Report for Head TSL

Date: 13.08.2020

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN:1013

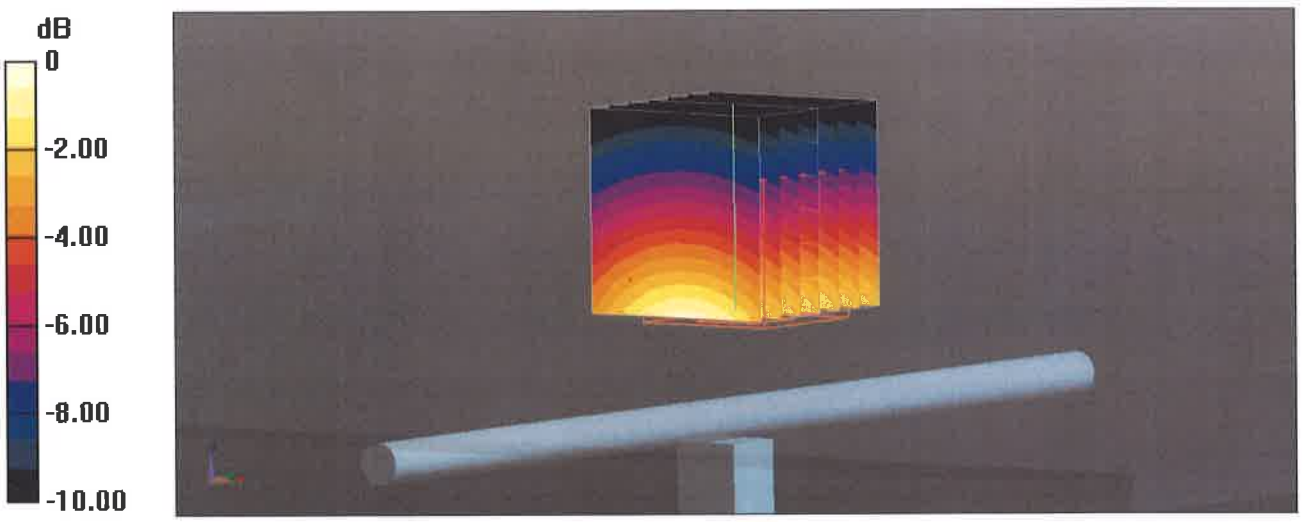
Communication System: UID 0 - CW; Frequency: 750 MHz
Medium parameters used: f = 750 MHz; $\sigma = 0.91$ S/m; $\varepsilon_r = 42.4$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(9.97, 9.97, 9.97) @ 750 MHz; Calibrated: 29.06.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 27.12.2019
- Phantom: Flat Phantom 4.9 (front); Type: QD 00L P49 AA; Serial: 1001
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

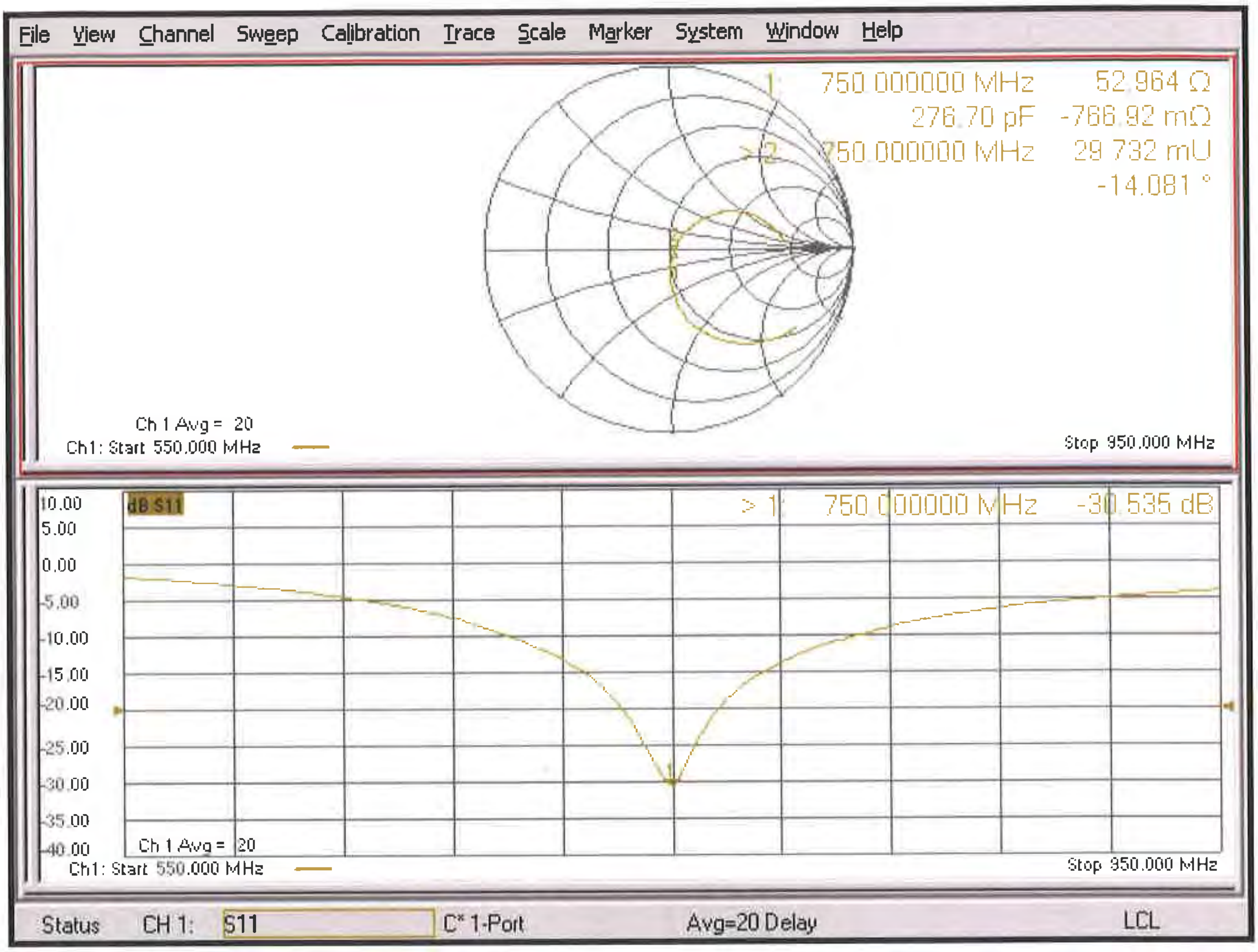
Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 59.14 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 3.22 W/kg
SAR(1 g) = 2.15 W/kg; SAR(10 g) = 1.4 W/kg
Smallest distance from peaks to all points 3 dB below = 17 mm
Ratio of SAR at M2 to SAR at M1 = 66.8%
Maximum value of SAR (measured) = 2.83 W/kg



0 dB = 2.83 W/kg = 4.52 dBW/kg

Impedance Measurement Plot for Head TSL



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Accreditation No.: SCS 0108

Client **B.V. ADT (Auden)**

Certificate No: D835V2-4d121_Aug20

CALIBRATION CERTIFICATE

Object	D835V2 - SN:4d121
Calibration procedure(s)	QA CAL-05.v11 Calibration Procedure for SAR Validation Sources between 0.7-3 GHz
Calibration date:	August 13, 2020

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	01-Apr-20 (No. 217-03100/03101)	Apr-21
Power sensor NRP-Z91	SN: 103244	01-Apr-20 (No. 217-03100)	Apr-21
Power sensor NRP-Z91	SN: 103245	01-Apr-20 (No. 217-03101)	Apr-21
Reference 20 dB Attenuator	SN: BH9394 (20k)	31-Mar-20 (No. 217-03106)	Apr-21
Type-N mismatch combination	SN: 310982 / 06327	31-Mar-20 (No. 217-03104)	Apr-21
Reference Probe EX3DV4	SN: 7349	29-Jun-20 (No. EX3-7349_Jun20)	Jun-21
DAE4	SN: 601	27-Dec-19 (No. DAE4-601_Dec19)	Dec-20

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB39512475	30-Oct-14 (in house check Feb-19)	In house check: Oct-20
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-18)	In house check: Oct-20
Network Analyzer Agilent E8358A	SN: US41080477	31-Mar-14 (in house check Oct-19)	In house check: Oct-20

	Name	Function	Signature
Calibrated by:	Jeffrey Katzman	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: August 14, 2020

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Accreditation No.: SCS 0108

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.10.4
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	835 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	41.5	0.90 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	42.2 ± 6 %	0.93 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.43 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**9.52 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.58 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**6.21 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	49.8 Ω - 3.4 jΩ
Return Loss	- 29.4 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.394 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG

DASY5 Validation Report for Head TSL

Date: 13.08.2020

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:4d121

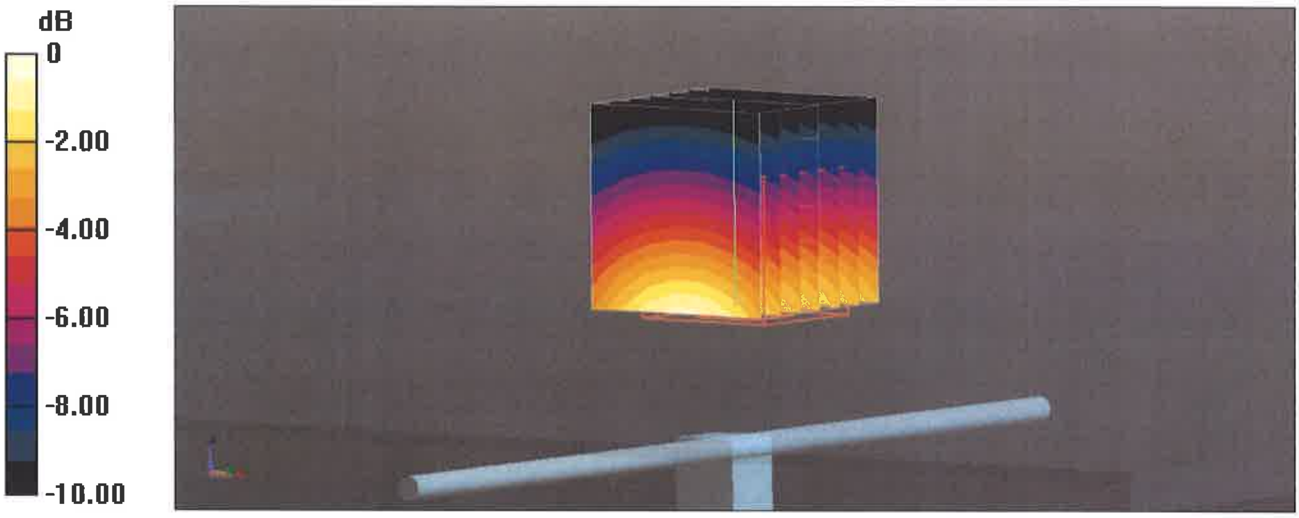
Communication System: UID 0 - CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 0.93 S/m; ε_r = 42.2; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(9.69, 9.69, 9.69) @ 835 MHz; Calibrated: 29.06.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 27.12.2019
- Phantom: Flat Phantom 4.9 (front); Type: QD 00L P49 AA; Serial: 1001
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

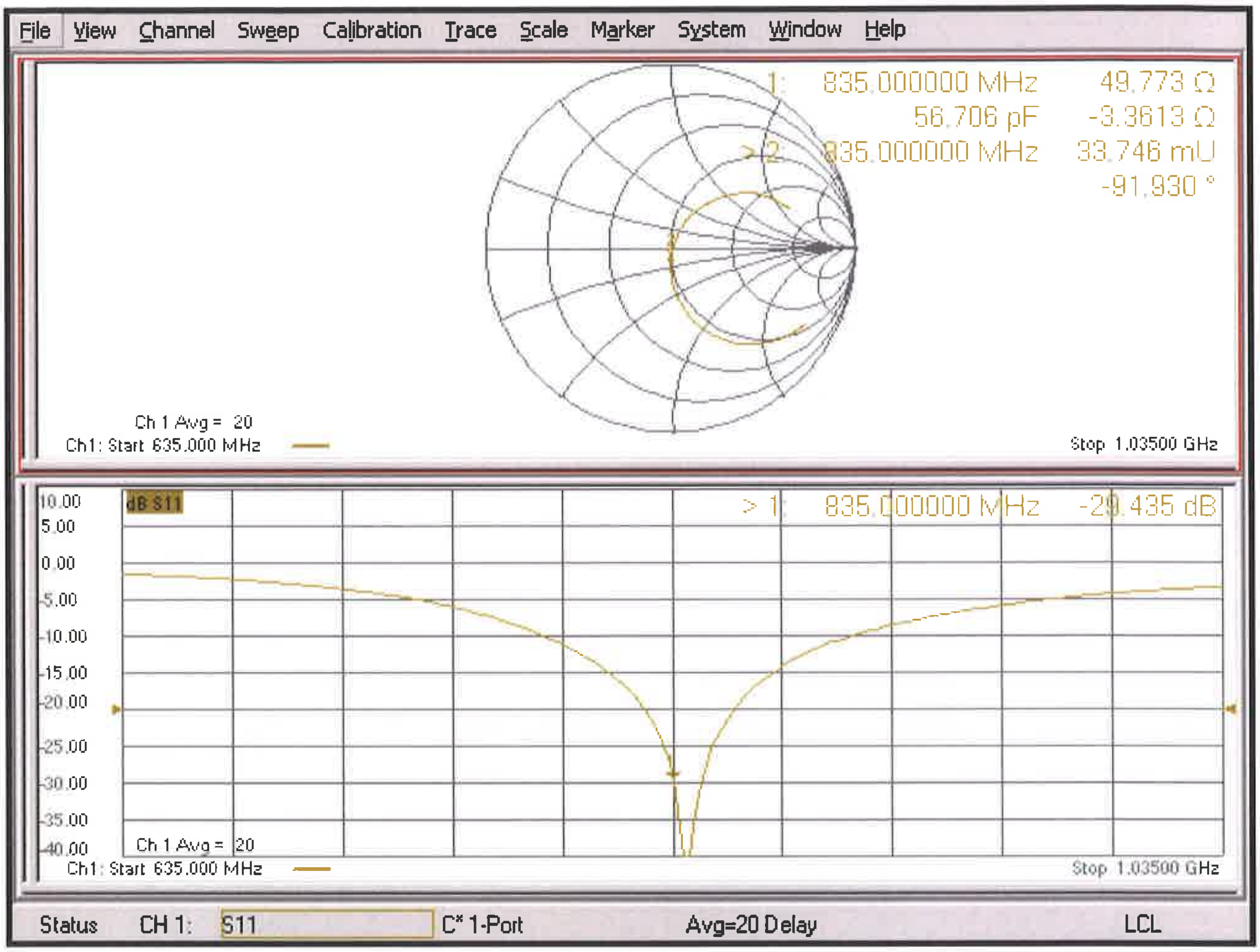
Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 62.61 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 3.60 W/kg
SAR(1 g) = 2.43 W/kg; SAR(10 g) = 1.58 W/kg
Smallest distance from peaks to all points 3 dB below = 17 mm
Ratio of SAR at M2 to SAR at M1 = 67.5%
Maximum value of SAR (measured) = 3.21 W/kg



0 dB = 3.21 W/kg = 5.07 dBW/kg

Impedance Measurement Plot for Head TSL



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Accreditation No.: SCS 0108

Client **B.V. ADT (Auden)**

Certificate No: D1900V2-5d036_Jan20

CALIBRATION CERTIFICATE

Object	D1900V2 - SN:5d036
Calibration procedure(s)	QA CAL-05.v11 Calibration Procedure for SAR Validation Sources between 0.7-3 GHz
Calibration date:	January 21, 2020

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	03-Apr-19 (No. 217-02892/02893)	Apr-20
Power sensor NRP-Z91	SN: 103244	03-Apr-19 (No. 217-02892)	Apr-20
Power sensor NRP-Z91	SN: 103245	03-Apr-19 (No. 217-02893)	Apr-20
Reference 20 dB Attenuator	SN: 5058 (20k)	04-Apr-19 (No. 217-02894)	Apr-20
Type-N mismatch combination	SN: 5047.2 / 06327	04-Apr-19 (No. 217-02895)	Apr-20
Reference Probe EX3DV4	SN: 7349	31-Dec-19 (No. EX3-7349_Dec19)	Dec-20
DAE4	SN: 601	27-Dec-19 (No. DAE4-601_Dec19)	Dec-20

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB39512475	30-Oct-14 (in house check Feb-19)	In house check: Oct-20
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-18)	In house check: Oct-20
Network Analyzer Agilent E8358A	SN: US41080477	31-Mar-14 (in house check Oct-19)	In house check: Oct-20

	Name	Function	Signature
Calibrated by:	Claudio Leubler	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: January 22, 2020

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Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.10.3
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1900 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	41.4 ± 6 %	1.39 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.95 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**40.3 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.18 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**20.9 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	50.8 Ω + 5.4 jΩ
Return Loss	- 25.3 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.195 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG

DASY5 Validation Report for Head TSL

Date: 21.01.2020

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d036

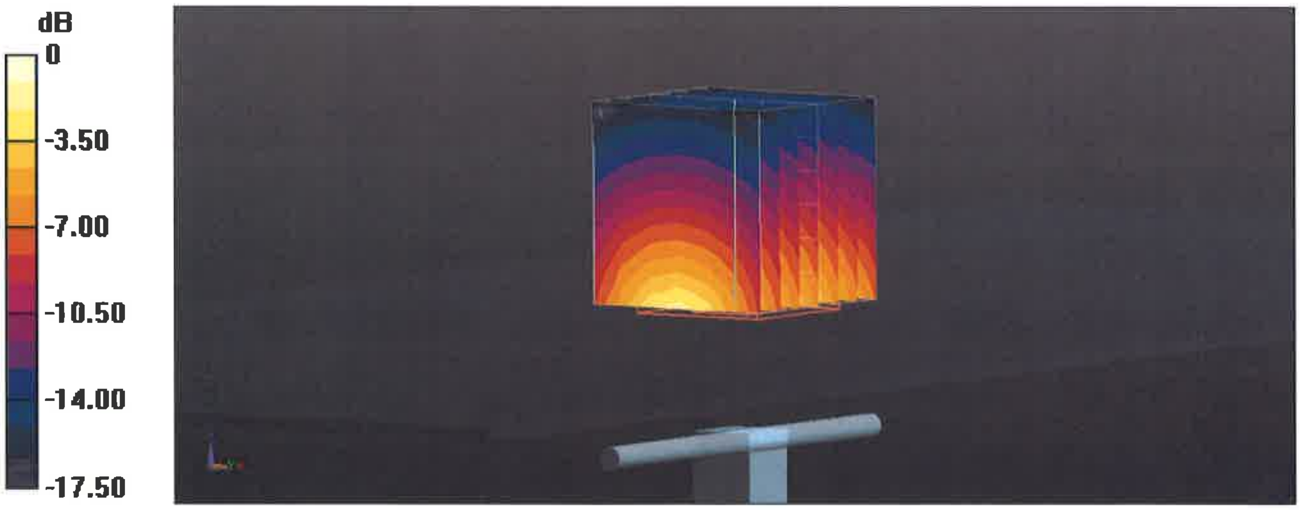
Communication System: UID 0 - CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.39 S/m; ε_r = 41.4; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(8.6, 8.6, 8.6) @ 1900 MHz; Calibrated: 31.12.2019
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 27.12.2019
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.3(1513); SEMCAD X 14.6.13(7474)

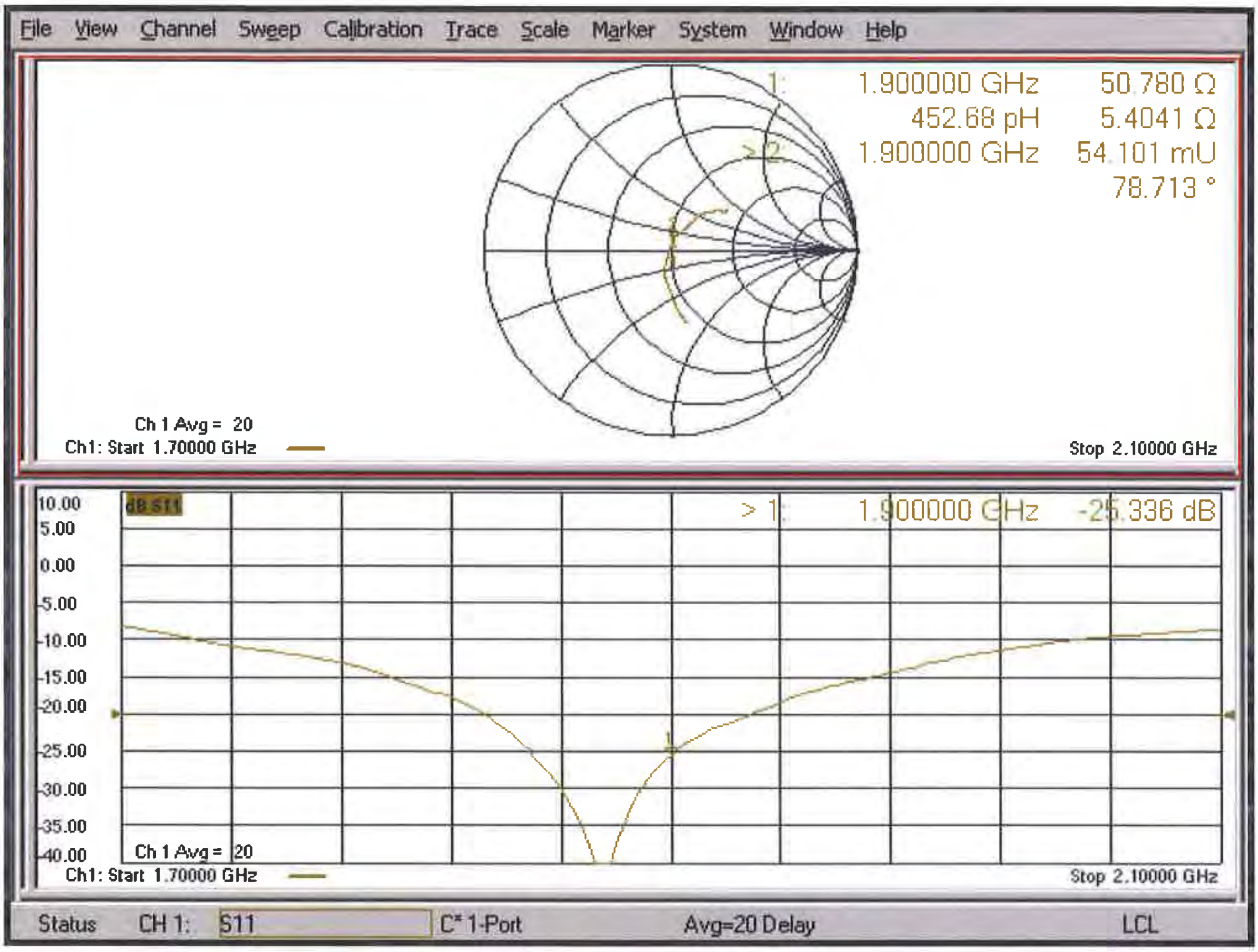
Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 109.0 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 18.6 W/kg
SAR(1 g) = 9.95 W/kg; SAR(10 g) = 5.18 W/kg
Smallest distance from peaks to all points 3 dB below = 9.8 mm
Ratio of SAR at M2 to SAR at M1 = 54.4%
Maximum value of SAR (measured) = 15.5 W/kg



0 dB = 15.5 W/kg = 11.90 dBW/kg

Impedance Measurement Plot for Head TSL



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Accreditation No.: SCS 0108

Client **B.V. ADT (Auden)**

Certificate No: D2450V2-737_Aug20

CALIBRATION CERTIFICATE

Object	D2450V2 - SN:737
Calibration procedure(s)	QA CAL-05.v11 Calibration Procedure for SAR Validation Sources between 0.7-3 GHz
Calibration date:	August 13, 2020

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	01-Apr-20 (No. 217-03100/03101)	Apr-21
Power sensor NRP-Z91	SN: 103244	01-Apr-20 (No. 217-03100)	Apr-21
Power sensor NRP-Z91	SN: 103245	01-Apr-20 (No. 217-03101)	Apr-21
Reference 20 dB Attenuator	SN: BH9394 (20k)	31-Mar-20 (No. 217-03106)	Apr-21
Type-N mismatch combination	SN: 310982 / 06327	31-Mar-20 (No. 217-03104)	Apr-21
Reference Probe EX3DV4	SN: 7349	29-Jun-20 (No. EX3-7349_Jun20)	Jun-21
DAE4	SN: 601	27-Dec-19 (No. DAE4-601_Dec19)	Dec-20

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB39512475	30-Oct-14 (in house check Feb-19)	In house check: Oct-20
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-18)	In house check: Oct-20
Network Analyzer Agilent E8358A	SN: US41080477	31-Mar-14 (in house check Oct-19)	In house check: Oct-20

	Name	Function	Signature
Calibrated by:	Jeffrey Katzman	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: August 14, 2020

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.10.4
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2450 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	39.2	1.80 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	38.9 ± 6 %	1.84 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	13.1 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**51.6 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.12 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**24.3 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	54.8 Ω + 4.7 jΩ
Return Loss	- 23.9 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.162 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG

DASY5 Validation Report for Head TSL

Date: 13.08.2020

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:737

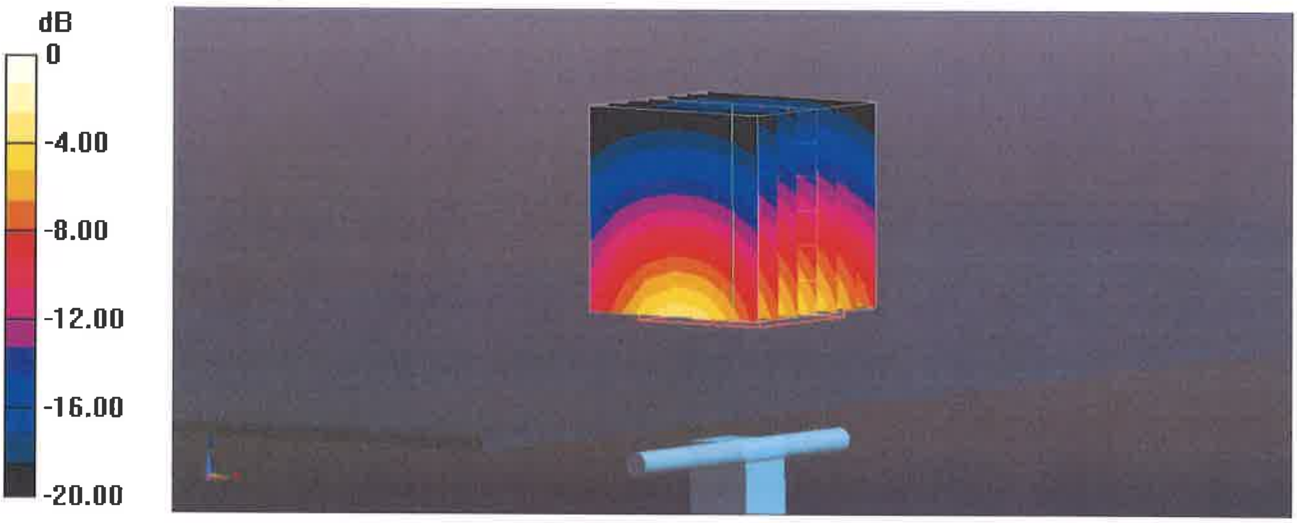
Communication System: UID 0 - CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 1.84 S/m; ε_r = 38.9; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(7.74, 7.74, 7.74) @ 2450 MHz; Calibrated: 29.06.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 27.12.2019
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

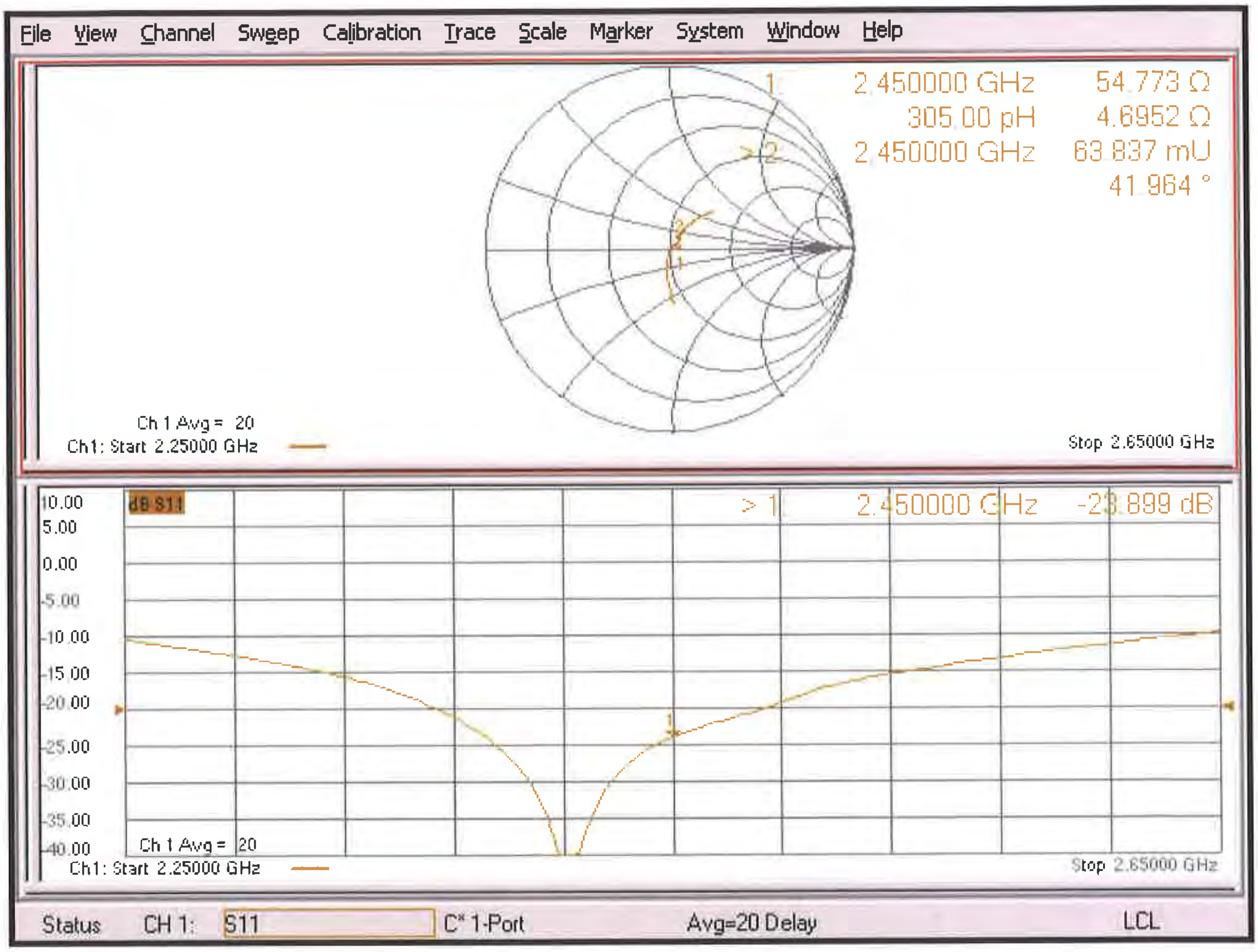
Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 114.4 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 25.6 W/kg
SAR(1 g) = 13.1 W/kg; SAR(10 g) = 6.12 W/kg
Smallest distance from peaks to all points 3 dB below = 9 mm
Ratio of SAR at M2 to SAR at M1 = 51.2%
Maximum value of SAR (measured) = 21.2 W/kg



0 dB = 21.2 W/kg = 13.27 dBW/kg

Impedance Measurement Plot for Head TSL



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The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Client **B.V. ADT (Auden)**

Certificate No: D5GHzV2-1019_Mar20

CALIBRATION CERTIFICATE

Object	D5GHzV2 - SN:1019
Calibration procedure(s)	QA CAL-22.v4 Calibration Procedure for SAR Validation Sources between 3-6 GHz
Calibration date:	March 13, 2020

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	03-Apr-19 (No. 217-02892/02893)	Apr-20
Power sensor NRP-Z91	SN: 103244	03-Apr-19 (No. 217-02892)	Apr-20
Power sensor NRP-Z91	SN: 103245	03-Apr-19 (No. 217-02893)	Apr-20
Reference 20 dB Attenuator	SN: 5058 (20k)	04-Apr-19 (No. 217-02894)	Apr-20
Type-N mismatch combination	SN: 5047.2 / 06327	04-Apr-19 (No. 217-02895)	Apr-20
Reference Probe EX3DV4	SN: 3503	31-Dec-19 (No. EX3-3503_Dec19)	Dec-20
DAE4	SN: 601	27-Dec-19 (No. DAE4-601_Dec19)	Dec-20

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB39512475	30-Oct-14 (in house check Feb-19)	In house check: Oct-20
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-18)	In house check: Oct-20
Network Analyzer Agilent E8358A	SN: US41080477	31-Mar-14 (in house check Oct-19)	In house check: Oct-20

	Name	Function	Signature
Calibrated by:	Jeton Kastrati	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: March 13, 2020

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, “IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques”, June 2013
b) IEC 62209-1, “Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)”, July 2016
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, “SAR Measurement Requirements for 100 MHz to 6 GHz”

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.10.4
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy = 4.0 mm, dz = 1.4 mm	Graded Ratio = 1.4 (Z direction)
Frequency	5250 MHz ± 1 MHz 5600 MHz ± 1 MHz 5750 MHz ± 1 MHz 5850 MHz ± 1 MHz	

Head TSL parameters at 5250 MHz

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	35.9	4.71 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	34.9 ± 6 %	4.49 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5250 MHz

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.03 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**79.7 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.30 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**22.8 W/kg ± 19.5 % (k=2)**

Head TSL parameters at 5600 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.5	5.07 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	34.4 ± 6 %	4.84 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5600 MHz

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.45 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**83.8 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.39 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**23.7 W/kg ± 19.5 % (k=2)**

Head TSL parameters at 5750 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.4	5.22 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	34.2 ± 6 %	4.99 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5750 MHz

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.11 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**80.4 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.30 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**22.8 W/kg ± 19.5 % (k=2)**

Head TSL parameters at 5850 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.2	5.32 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	34.1 ± 6 %	5.10 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5850 MHz

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.24 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**81.7 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.33 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**23.1 W/kg ± 19.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL at 5250 MHz

Impedance, transformed to feed point	54.6 Ω - 5.1 jΩ
Return Loss	- 23.7 dB

Antenna Parameters with Head TSL at 5600 MHz

Impedance, transformed to feed point	58.1 Ω - 1.2 jΩ
Return Loss	- 22.4 dB

Antenna Parameters with Head TSL at 5750 MHz

Impedance, transformed to feed point	58.4 Ω + 3.9 jΩ
Return Loss	- 21.3 dB

Antenna Parameters with Head TSL at 5850 MHz

Impedance, transformed to feed point	55.8 Ω + 0.6 jΩ
Return Loss	- 25.1 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.204 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG

DASY5 Validation Report for Head TSL

Date: 13.03.2020

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:1019

Communication System: UID 0 - CW; Frequency: 5250 MHz, Frequency: 5600 MHz, Frequency: 5750 MHz, Frequency: 5850 MHz
Medium parameters used: f = 5250 MHz; σ = 4.49 S/m; ε_r = 34.9; ρ = 1000 kg/m^3 ,
Medium parameters used: f = 5600 MHz; σ = 4.84 S/m; ε_r = 34.4; ρ = 1000 kg/m^3 ,
Medium parameters used: f = 5750 MHz; σ = 4.99 S/m; ε_r = 34.2; ρ = 1000 kg/m^3 ,
Medium parameters used: f = 5850 MHz; σ = 5.1 S/m; ε_r = 34.1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

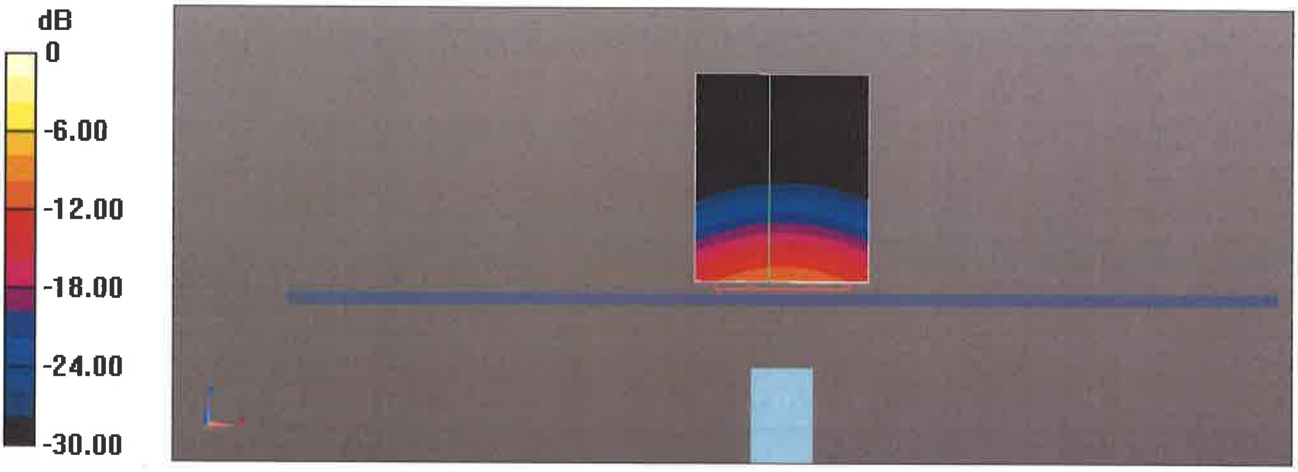
- Probe: EX3DV4 - SN3503; ConvF(5.5, 5.5, 5.5) @ 5250 MHz, ConvF(5.1, 5.1, 5.1) @ 5600 MHz, ConvF(5.08, 5.08, 5.08) @ 5750 MHz, ConvF(4.99, 4.99, 4.99) @ 5850 MHz; Calibrated: 31.12.2019
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 27.12.2019
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5250 MHz/Zoom Scan, dist=1.4mm (8x8x8)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 77.45 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 27.9 W/kg
SAR(1 g) = 8.03 W/kg; SAR(10 g) = 2.30 W/kg
Smallest distance from peaks to all points 3 dB below = 7.2 mm
Ratio of SAR at M2 to SAR at M1 = 69.7%
Maximum value of SAR (measured) = 17.9 W/kg

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5600 MHz/Zoom Scan, dist=1.4mm (8x8x8)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 77.30 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 31.9 W/kg
SAR(1 g) = 8.45 W/kg; SAR(10 g) = 2.39 W/kg
Smallest distance from peaks to all points 3 dB below = 7.2 mm
Ratio of SAR at M2 to SAR at M1 = 67.1%
Maximum value of SAR (measured) = 19.4 W/kg

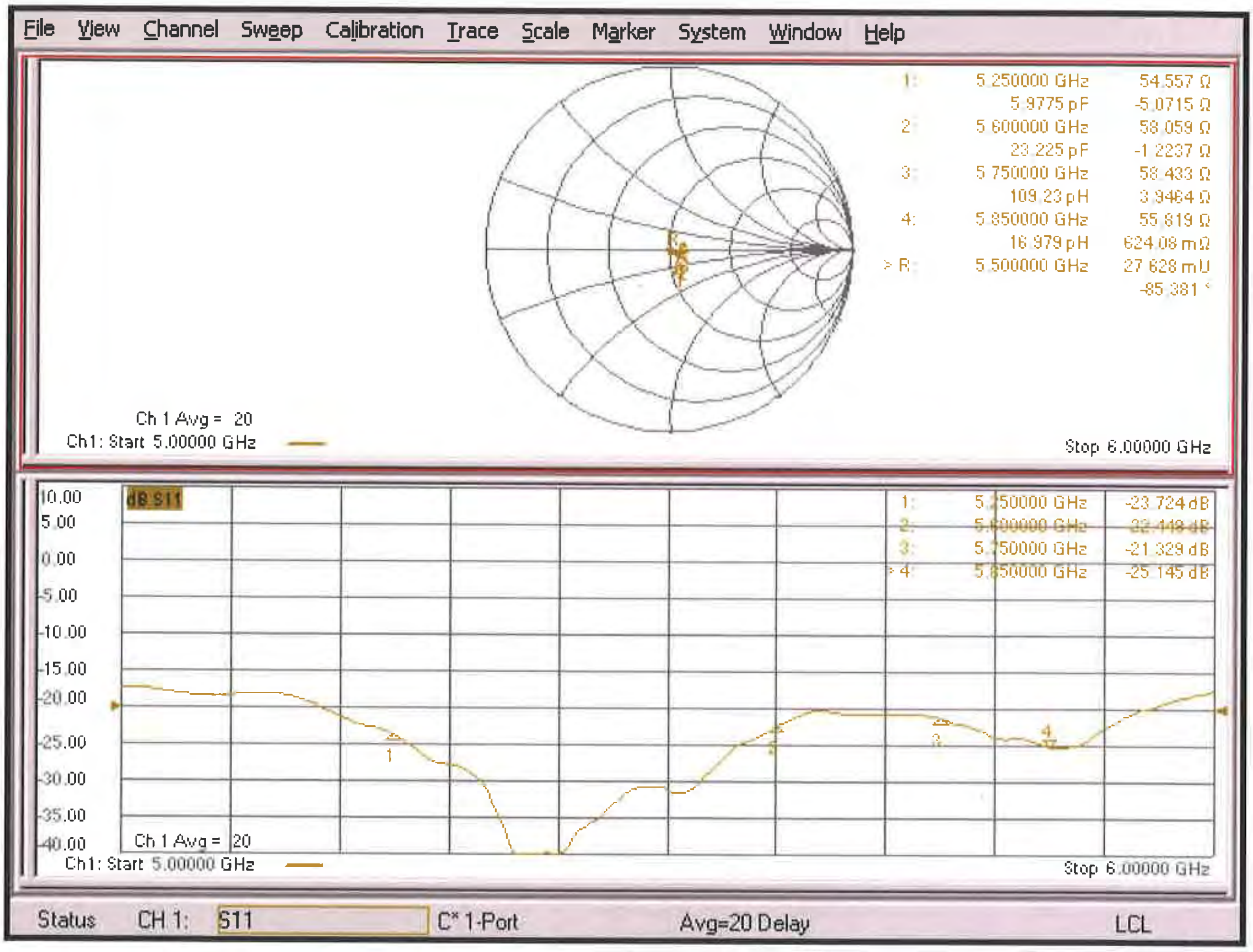
Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5750 MHz/Zoom Scan, dist=1.4mm (8x8x8)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 75.26 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 32.0 W/kg
SAR(1 g) = 8.11 W/kg; SAR(10 g) = 2.30 W/kg
Smallest distance from peaks to all points 3 dB below = 7.2 mm
Ratio of SAR at M2 to SAR at M1 = 65.4%
Maximum value of SAR (measured) = 19.0 W/kg

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5850 MHz/Zoom Scan, dist=1.4mm (8x8x8)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 75.08 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 33.4 W/kg
SAR(1 g) = 8.24 W/kg; SAR(10 g) = 2.33 W/kg
Smallest distance from peaks to all points 3 dB below = 7.2 mm
Ratio of SAR at M2 to SAR at M1 = 64.7%
Maximum value of SAR (measured) = 19.4 W/kg



0 dB = 19.4 W/kg = 12.88 dBW/kg

Impedance Measurement Plot for Head TSL



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CNAS L0570

Client **AUDEN** **Certificate No: Z20-60430**

CALIBRATION CERTIFICATE

Object: D5GHzV2 - SN: 1145

Calibration Procedure(s): FF-Z11-003-01
Calibration Procedures for dipole validation kits

Calibration date: November 9, 2020

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Power Meter NRP2	106276	12-May-20 (CTTL, No.J20X02965)	May-21
Power sensor NRP6A	101369	12-May-20 (CTTL, No.J20X02965)	May-21
ReferenceProbe EX3DV4	SN 3617	30-Jan-20(SPEAG,No.EX3-3617_Jan20)	Jan-21
DAE4	SN 771	10-Feb-20(CTTL-SPEAG,No.Z20-60017)	Feb-21
Secondary Standards	**ID #**	**Cal Date(Calibrated by, Certificate No.)**	**Scheduled Calibration**
Signal Generator E4438C	MY49071430	25-Feb-20 (CTTL, No.J20X00516)	Feb-21
NetworkAnalyzerE5071C	MY46110673	10-Feb-20 (CTTL, No.J20X00515)	Feb-21

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

Issued: November 19, 2020

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Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORMx,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Measurement procedure for assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices- Part 1: Device used next to the ear (Frequency range of 300MHz to 6GHz)", July 2016
c) IEC 62209-2, "Procedure to measure the Specific Absorption Rate (SAR) For wireless communication devices used in close proximity to the human body (frequency range of 30MHz to 6GHz)", March 2010
d) KDB865664, SAR Measurement Requirements for 100 MHz to 6 GHz

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of Measurement multiplied by the coverage factor k=2, which for a normal distribution Corresponds to a coverage probability of approximately 95%.

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Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY52	V52.10.4
Extrapolation	Advanced Extrapolation	
Phantom	Triple Flat Phantom 5.1C	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy = 4 mm, dz = 1.4 mm	Graded Ratio = 1.4 (Z direction)
Frequency	5250 MHz ± 1 MHz 5600 MHz ± 1 MHz 5750 MHz ± 1 MHz	

Head TSL parameters at 5250 MHz

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	35.9	4.71 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	35.1 ± 6 %	4.76 mho/m ± 6 %
Head TSL temperature change during test	<1.0 °C	----	----

SAR result with Head TSL at 5250 MHz

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	7.78 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**77.5 W/kg ± 24.4 % (*k*=2)**
SAR averaged over 10 cm^3 (10 g) of Head TSL	Condition	
SAR measured	100 mW input power	2.22 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**22.1 W/kg ± 24.2 % (*k*=2)**

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Head TSL parameters at 5600 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.5	5.07 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	34.5 ± 6 %	5.14 mho/m ± 6 %
Head TSL temperature change during test	<1.0 °C	----	----

SAR result with Head TSL at 5600 MHz

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.07 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**80.3 W/kg ± 24.4 % (*k*=2)**
SAR averaged over 10 cm^3 (10 g) of Head TSL	Condition	
SAR measured	100 mW input power	2.30 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**22.9 W/kg ± 24.2 % (*k*=2)**

Head TSL parameters at 5750 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.4	5.22 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	34.4 ± 6 %	5.31 mho/m ± 6 %
Head TSL temperature change during test	<1.0 °C	----	----

SAR result with Head TSL at 5750 MHz

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	7.79 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**77.5 W/kg ± 24.4 % (*k*=2)**
SAR averaged over 10 cm^3 (10 g) of Head TSL	Condition	
SAR measured	100 mW input power	2.22 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**22.1 W/kg ± 24.2 % (*k*=2)**

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Appendix (Additional assessments outside the scope of CNAS L0570)

Antenna Parameters with Head TSL at 5250 MHz

Impedance, transformed to feed point	53.1Ω - 9.17jΩ
Return Loss	- 20.6dB

Antenna Parameters with Head TSL at 5600 MHz

Impedance, transformed to feed point	58.7Ω - 0.77jΩ
Return Loss	- 21.9dB

Antenna Parameters with Head TSL at 5750 MHz

Impedance, transformed to feed point	56.5Ω - 2.83jΩ
Return Loss	- 23.5dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.067 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG

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DASY5 Validation Report for Head TSL Date: 11.09.2020

Test Laboratory: CTTL, Beijing, China

DUT: Dipole 5GHz; Type: D5GHzV2; Serial: D5GHzV2 - SN: 1145

Communication System: CW; Frequency: 5250 MHz, Frequency: 5600 MHz, Frequency: 5750 MHz,

Medium parameters used: f = 5250 MHz; σ = 4.756 S/m; ε_r = 35.12; ρ = 1000 kg/m^3, Medium parameters used: f = 5600 MHz; σ = 5.14 S/m; ε_r = 34.53; ρ = 1000 kg/m^3, Medium parameters used: f = 5750 MHz; σ = 5.306 S/m; ε_r = 34.41; ρ = 1000 kg/m^3,

Phantom section: Center Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3617; ConvF(5.39, 5.39, 5.39) @ 5250 MHz; ConvF(4.99, 4.99, 4.99) @ 5600 MHz; ConvF(5.1, 5.1, 5.1) @ 5750 MHz; Calibrated: 2020-01-30
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn771; Calibrated: 2020-02-10
- Phantom: MFP_V5.1C (20deg probe tilt); Type: QD 000 P51 Cx; Serial: 1062
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Dipole Calibration /Pin=100mW, d=10mm, f=5250 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 71.55 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 31.1 W/kg
SAR(1 g) = 7.78 W/kg; SAR(10 g) = 2.22 W/kg
Smallest distance from peaks to all points 3 dB below = 7.2 mm
Ratio of SAR at M2 to SAR at M1 = 65.5%
Maximum value of SAR (measured) = 17.9 W/kg

Dipole Calibration /Pin=100mW, d=10mm, f=5600 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 70.50 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 35.7 W/kg
SAR(1 g) = 8.07 W/kg; SAR(10 g) = 2.3 W/kg
Smallest distance from peaks to all points 3 dB below = 7.2 mm
Ratio of SAR at M2 to SAR at M1 = 62%
Maximum value of SAR (measured) = 19.6 W/kg

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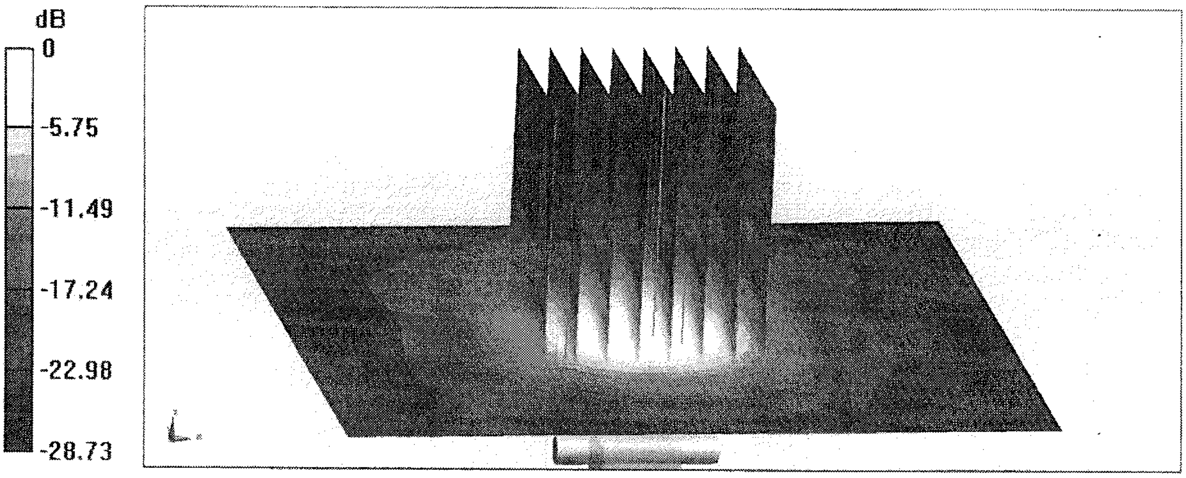
Dipole Calibration /Pin=100mW, d=10mm, f=5750 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 68.32 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 34.7 W/kg
SAR(1 g) = 7.79 W/kg; SAR(10 g) = 2.22 W/kg
Smallest distance from peaks to all points 3 dB below = 7.4 mm
Ratio of SAR at M2 to SAR at M1 = 61.8%
Maximum value of SAR (measured) = 19.0 W/kg



0 dB = 19.0 W/kg = 12.79 dBW/kg

In Collaboration with
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CALIBRATION LABORATORY

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Impedance Measurement Plot for Head TSL