FCC Verify SAR Test Report

Report No.	:	**W7L-P21080044SA01**
Applicant	:	**Belkin International, Inc.**
Address	:	**12045 East Waterfront Drive, Playa Vista, CA 90094 USA**
Product	:	**BOOST ↑ CHARGE™ Magnetic Wireless Power Bank**
FCC ID	:	**K7SBPD002**
Brand	:	**belkin**
Model No.	:	**BPD002**
Standards	:	**FCC 47 CFR Part 2 (2.1093) / IEEE C95.1:1992 / IEEE 1528:2013 KDB 865664 D01 v01r04 / KDB 865664 D02 v01r02 / /KDB 248227 D01 v02r02 KDB 447498 D01 v06 / KDB 648474 D03 v01r04 / KDB 648474 D04 v01r03 KDB 941225 D01 v03r01 / KDB 941225 D05 v02r05 / KDB 941225 D06 v02r01**
Sample Received Date	:	**Aug. 27, 2021**
Date of Testing	:	**Aug. 27, 2021 ~ Sep. 02, 2021**
FCC Designation No.	:	**CN1171**

CERTIFICATION: The above equipment have been tested by **BV 7LAYERS COMMUNICATIONS TECHNOLOGY (SHENZHEN) CO. LTD.**, 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 A2LA or any government agencies.

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Luke Lu / Manager

ACCREDITED
Certificate # 3939.01

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Release Control Record

Report No.	Reason for Change	Date Issued
W7L-P21080044SA01	Initial release	Sep. 13, 2021

1. Summary of Maximum SAR Value

Equipment Class	Mode	Highest Reported Head SAR_{1g} (W/kg)	Highest Reported Body-worn SAR_{1g} (1.5 cm Gap) (W/kg)	Highest Reported Hotspot SAR_{1g} (1.0 cm Gap) (W/kg)	Highest Reported Extremity SAR_{10g} (0 cm Gap) (W/kg)
PCE	GSM850	0.28	0.14	0.19	N/A
	GSM1900	0.01	0.06	0.67	N/A
	WCDMA II	0.15	0.16	1.04	2.23
	WCDMA IV	0.17	0.18	0.83	2.87
	WCDMA V	0.27	0.16	0.20	N/A
	LTE 2	0.15	0.24	0.73	1.60
	LTE 12	0.11	0.15	0.12	N/A
	LTE 13	0.25	0.19	0.22	N/A
	LTE 26	0.30	0.15	0.23	N/A
	LTE 66	0.04	0.13	0.19	N/A
	LTE 41	0.21	0.17	1.10	2.30
DTS	2.4G WLAN	0.06	0.01	0.01	N/A
NII	5.2G WLAN	N/A	N/A	N/A	N/A
	5.3G WLAN	0.48	0.25	N/A	0.10
	5.6G WLAN	0.17	0.34	N/A	0.19
	5.8G WLAN	0.31	0.35	0.40	N/A

Note:

1. The SAR limit **(Head & Body: SAR_{1g} 1.6 W/kg, 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. The verify results show on this report are smaller than the original report，Prove that then device combination with the mobile phone will not effect the RF exposure level.

2. Description of Equipment Under Test

EUT Type	BOOST ↑ CHARGE™ Magnetic Wireless Power Bank
FCC ID	K7SBPD002
Brand Name	belkin
Model Name	BPD002
POWER SUPPLY	Input USB-C: 5V⎓2A Output Wireless: 5V⎓5W Cell Capacity: 9.25Wh, 3.7V, 2500mAh
MODULATION TYPE	FSK
OPERATING FREQUENCY RANGE	111KHz ~ 148KHz
I/O PORTS	Coil Antenna

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.
2. This product can be combined with mobile phones and used under the portable RF Exposure condition，and will verify the RF Exposure level under combine with a mobile phone product that has grant by FCC(FCC ID: A3LSMG770F;Test report No.: HCT-SR-1911-FC001-R1);
3. For the WWAN part, the test configuration is set same with the original report; For Bluetooth/Wi-Fi Part, Restricted to the FTM and test tool can't provide by, it is tested in signaling mode, using a base station R&S CMW500 to setting the Band wide/Channel/maximum TX power level for testing.

EUT Type	Mobile Phone
FCC ID	A3LSMG770F
Model Name	SM-G770F/DS
Report No	HCT-SR-1911-FC001-R1
Date Issued	Nov. 08, 2019

4. All (*) data shown above are the worst of the original report (HCT-SR-1911-FC001-R1, FCC ID: A3LSMG770F).
5.

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 DASY System

DASY 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 DASY5 software defined. The DASY 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.

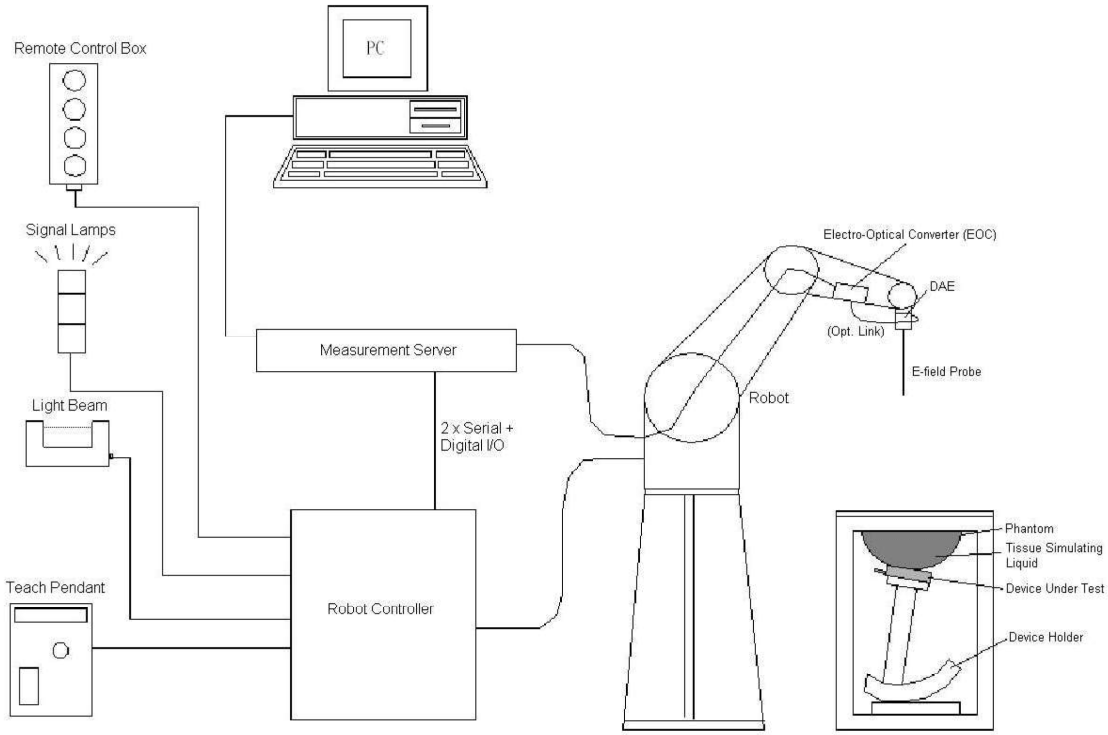


Fig-3.1 DASY System Setup

3.2.1 Robot

The DASY system uses the high precision robots from Stäubli SA (France). For the 6-axis controller system, the robot controller version (DASY5: 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 DASY5

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	10 MHz to 6 GHz Linearity: ± 0.2 dB
Directivity	± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (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

Model	ES3DV3
Construction	Symmetrical design with triangular core. Interleaved sensors. Built-in shielding against static charges. PEEK enclosure material (resistant to organic solvents, e.g., DGBE).
Frequency	10 MHz to 4 GHz Linearity: ± 0.2 dB
Directivity	± 0.2 dB in HSL (rotation around probe axis) ± 0.3 dB in tissue material (rotation normal to probe axis)
Dynamic Range	5 µW/g to 100 mW/g Linearity: ± 0.2 dB
Dimensions	Overall length: 337 mm (Tip: 20 mm) Tip diameter: 3.9 mm (Body: 12 mm) Distance from probe tip to dipole centers: 2.0 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

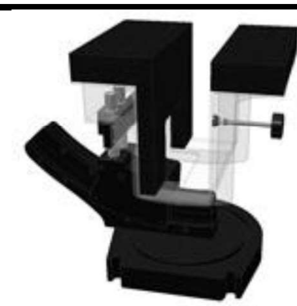
Model	Twin SAM
Construction	The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE 1528 and IEC 62209-1. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. A cover 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, glass fiber 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	Phantom for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. 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, glass fiber 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	Mounting Device
Construction	In combination with the Twin SAM Phantom or ELI4, the Mounting Device enables the rotation of the mounted transmitter device in spherical coordinates. Rotation point is the ear opening point. Transmitter devices can be easily and accurately positioned according to IEC, IEEE, FCC or other specifications. The device holder can be locked for positioning at different phantom sections (left head, right head, flat).
Material	POM

Model	Laptop Extensions Kit
Construction	Simple but effective and easy-to-use extension for Mounting Device that facilitates the testing of larger devices according to IEC 62209-2 (e.g., laptops, cameras, etc.). It is lightweight and fits easily on the upper part of the Mounting Device in place of the phone positioner.
Material	POM, Acrylic glass, Foam

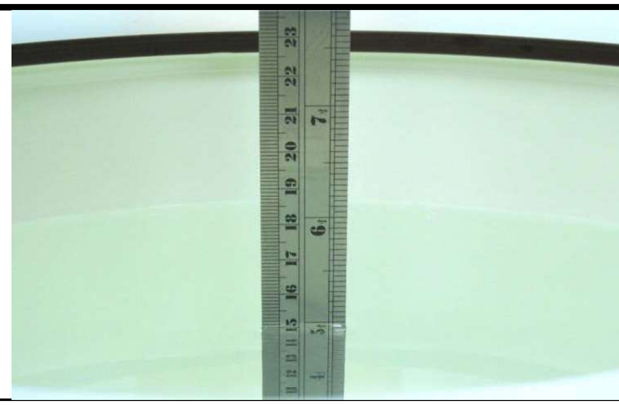


3.2.6 System Validation Dipoles

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 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 5% are listed in Table-3.1.

	
Photo of Liquid Height for Head Position	**Photo of Liquid Height for Body Position**

The dielectric properties of the head tissue simulating liquids are defined in IEEE 1528, and KDB 865664 D01 Appendix A. For the body tissue simulating liquids, the dielectric properties are defined in KDB 865664 D01 Appendix A. The dielectric properties of the tissue simulating liquids were verified prior to the SAR evaluation using a dielectric assessment kit and a network analyzer.

Table-3.1 Targets of Tissue Simulating Liquid

Frequency (MHz)	Target Permittivity	Range of ±5%	Target Conductivity	Range of ±5%
		For Head		
750	41.9	39.8 ~ 44.0	0.89	0.85 ~ 0.93
835	41.5	39.4 ~ 43.6	0.90	0.86 ~ 0.95
900	41.5	39.4 ~ 43.6	0.97	0.92 ~ 1.02
1450	40.5	38.5 ~ 42.5	1.20	1.14 ~ 1.26
1640	40.3	38.3 ~ 42.3	1.29	1.23 ~ 1.35
1750	40.1	38.1 ~ 42.1	1.37	1.30 ~ 1.44
1800	40.0	38.0 ~ 42.0	1.40	1.33 ~ 1.47
1900	40.0	38.0 ~ 42.0	1.40	1.33 ~ 1.47
2000	40.0	38.0 ~ 42.0	1.40	1.33 ~ 1.47
2300	39.5	37.5 ~ 41.5	1.67	1.59 ~ 1.75
2450	39.2	37.2 ~ 41.2	1.80	1.71 ~ 1.89
2600	39.0	37.1 ~ 41.0	1.96	1.86 ~ 2.06
3500	37.9	36.0 ~ 39.8	2.91	2.76 ~ 3.06
5200	36.0	34.2 ~ 37.8	4.66	4.43 ~ 4.89
5300	35.9	34.1 ~ 37.7	4.76	4.52 ~ 5.00
5500	35.6	33.8 ~ 37.4	4.96	4.71 ~ 5.21
5600	35.5	33.7 ~ 37.3	5.07	4.82 ~ 5.32
5800	35.3	33.5 ~ 37.1	5.27	5.01 ~ 5.53

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	-	28.0	-	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.

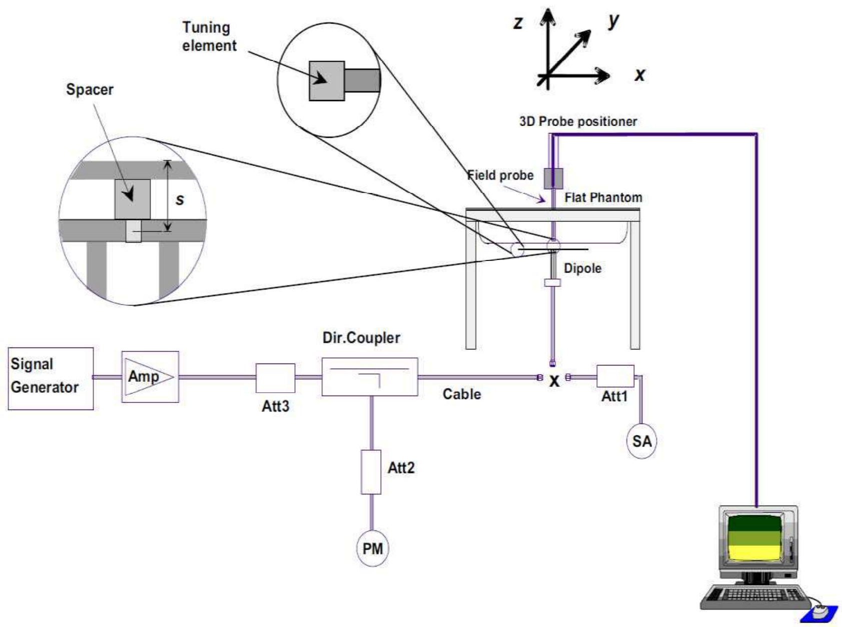


Fig-3.4 System Verification Setup

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 spectrum analyzer measures the forward power at the location of the system check dipole connector. The signal generator is adjusted for the desired forward power (250 mW is used for 700 MHz to 3 GHz, 100 mW is used for 3.5 GHz to 6 GHz) at the dipole connector and the power meter is read at that level. After connecting the cable to the dipole, the signal generator is readjusted for the same reading at power meter.

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 & Zoom Scan Procedure

First Area Scan is used to locate the approximate location(s) of the local peak SAR value(s). The measurement grid within an Area Scan is defined by the grid extent, grid step size and grid offset. Next, in order to determine the EM field distribution in a three-dimensional spatial extension, Zoom Scan is required. The Zoom Scan is performed around the highest E-field value to determine the averaged SAR-distribution over 10 g. According to KDB 865664 D01, the resolution for Area and Zoom scan is specified in the table below.

Items	<= 2 GHz	2-3 GHz	3-4 GHz	4-5 GHz	5-6 GHz
Area Scan (Δx, Δy)	<= 15 mm	<= 12 mm	<= 12 mm	<= 10 mm	<= 10 mm
Zoom Scan (Δx, Δy)	<= 8 mm	<= 5 mm	<= 5 mm	<= 4 mm	<= 4 mm
Zoom Scan (Δz)	<= 5 mm	<= 5 mm	<= 4 mm	<= 3 mm	<= 2 mm
Zoom Scan Volume	>= 30 mm	>= 30 mm	>= 28 mm	>= 25 mm	>= 22 mm

Note:
When zoom scan is required and report SAR is <= 1.4 W/kg, the zoom scan resolution of Δx / Δy (2-3GHz: <= 8 mm, 3-4GHz: <= 7 mm, 4-6GHz: <= 5 mm) may be applied.

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 (Agilent E5515C is used for GSM/WCDMA/CDMA, and Anritsu MT8820C is used for LTE). 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.

4.2 EUT Testing Position

This variant report is made for verification. All the worst SAR configurations specified in the original SAR report was repeated and verified to ensure the device remains compliant.

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 1528-2013 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.

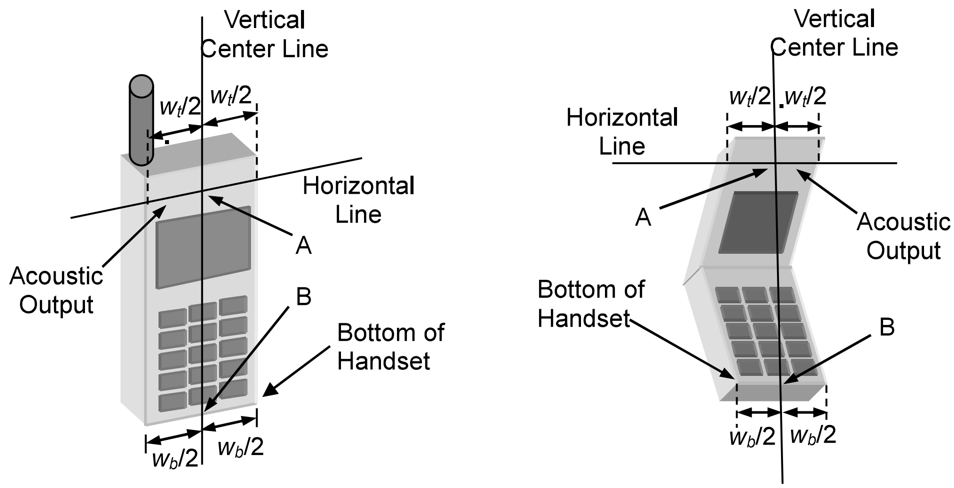


Fig-4.1 Illustration for Handset Vertical and Horizontal Reference Lines

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).

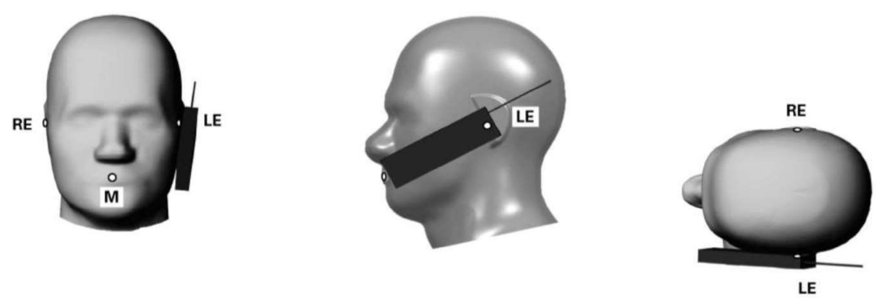


Fig-4.2 Illustration for Cheek Position

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).

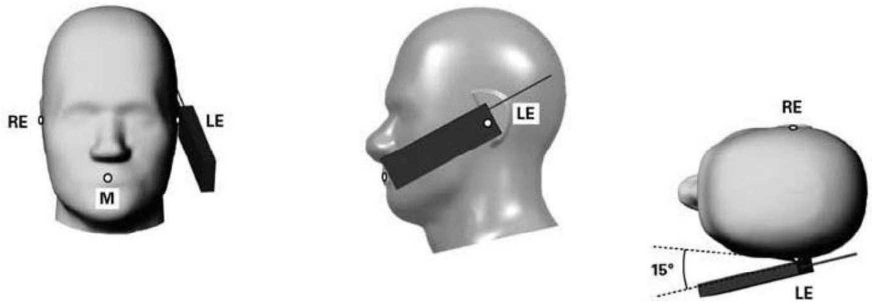


Fig-4.3 Illustration for Tilted Position

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.

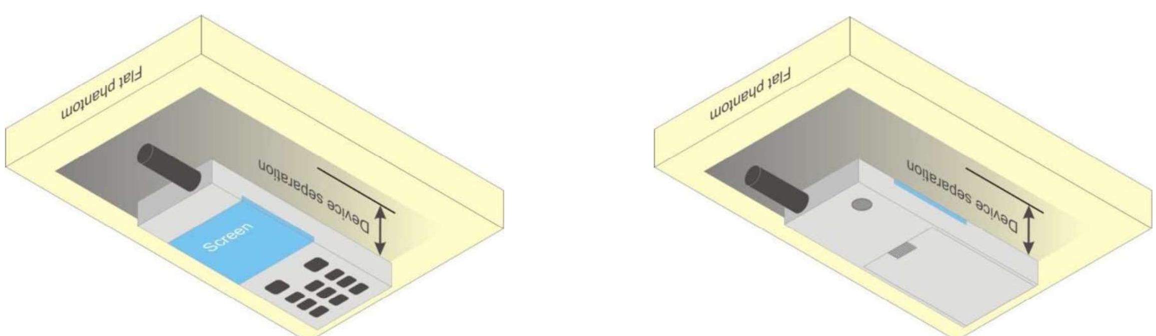
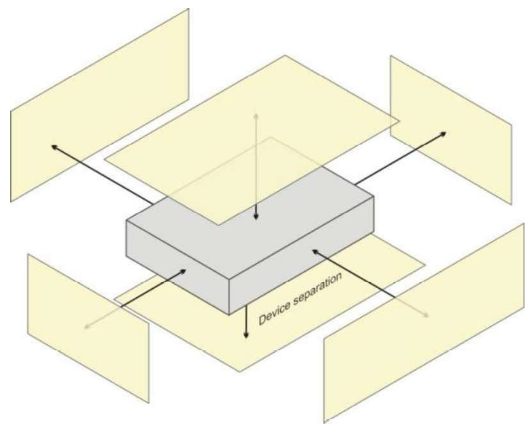


Fig-4.4 Illustration for Body Worn Position

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).



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4.2.4 Extremity Exposure Conditions

For smart phones with a display diagonal dimension > 15 cm or an overall diagonal dimension > 16 cm that provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets that support voice calls next to the ear, the following phablet procedures should be applied to evaluate SAR compliance for each applicable wireless modes and frequency band. Devices marketed as phablets, regardless of form factors and operating characteristics must be tested as a phablet to determine SAR compliance.

1. The normally required head and body-worn accessory SAR test procedures for handsets, including hotspot mode, must be applied.
2. The UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna located at <= 25 mm from that surface or edge, in direct contact with a flat phantom, for 10-g extremity SAR according to the body-equivalent tissue dielectric parameters in KDB 865664 to address interactive hand use exposure conditions. The UMPC mini-tablet 1-g SAR at 5 mm is not required. When hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g SAR > 1.2 W/kg. The normal tablet procedures in KDB 616217 are required when the over diagonal dimension of the device is > 20 cm. Hotspot mode SAR is not required when normal tablet procedures are applied. Extremity 10-g SAR is also not required for the front (top) surface of large form factor full size tablets. The more conservative tablet SAR results can be used to support the 10-g extremity SAR for phablet mode.
3. The simultaneous transmission operating configurations applicable to voice and data transmissions for both phone and mini-tablet modes must be taken into consideration separately for 1-g and 10-g SAR to determine the simultaneous transmission SAR test exclusion and measurement requirements for the relevant wireless modes and exposure conditions.

4.3 Tissue Verification

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

Test Date	Tissue Type	Frequency (MHz)	Liquid Temp. (℃)	Measured Conductivity (σ)	Measured Permittivity (ε_r)	Target Conductivity (σ)	Target Permittivity (ε_r)	Conductivity Deviation (%)	Permittivity Deviation (%)
Aug. 27, 2021	Head	750	22.3	0.909	40.259	0.89	41.90	2.13	-3.92
Aug. 27, 2021	Head	835	22.1	0.920	43.112	0.90	41.50	2.22	3.88
Aug. 28, 2021	Head	1750	22.7	1.350	41.859	1.37	40.10	-1.46	4.39
Aug. 29, 2021	Head	1900	22.2	1.430	40.323	1.40	40.00	2.14	0.81
Aug. 30, 2021	Head	2450	22.7	1.832	38.716	1.80	39.20	1.78	-1.23
Aug. 30, 2021	Head	2600	22.4	1.989	38.319	1.96	39.00	1.48	-1.75
Aug. 31, 2021	Head	5250	22.6	4.767	36.980	4.71	35.90	1.21	3.01
Sep. 01, 2021	Head	5600	22.8	5.211	36.228	5.07	35.50	2.78	2.05
Sep. 02, 2021	Head	5800	22.5	5.444	35.777	5.27	35.30	3.30	1.35

Note:

The dielectric properties of the tissue simulating liquid must be measured within 24 hours before the SAR testing and within ±5% of the target values. Liquid temperature during the SAR testing must be within ±2 ℃.

4.4 System Verification

The measuring result for system verification is tabulated as below.

Test Date	Mode	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
Aug. 27, 2021	Head	750	8.58	2.08	8.32	-3.03	1078	7515	905
Aug. 27, 2021	Head	835	9.49	2.54	10.16	7.06	4d092	7515	905
Aug. 28, 2021	Head	1750	36.40	9.40	37.60	3.30	1111	7515	905
Aug. 29, 2021	Head	1900	40.10	9.46	37.84	-5.64	5d142	7515	905
Aug. 30, 2021	Head	2450	52.50	13.30	53.20	1.33	735	7515	905
Aug. 30, 2021	Head	2600	55.30	14.80	59.20	7.05	1077	7515	905
Aug. 31, 2021	Head	5250	78.50	8.45	84.50	7.64	1203	7515	905
Sep. 01, 2021	Head	5600	81.60	7.88	78.80	-3.43	1203	7515	905
Sep. 02, 2021	Head	5800	76.70	7.52	75.20	-1.96	1203	7515	905

Note:

Comparing to the reference SAR value provided by SPEAG, the validation data should be within its specification of 10 %. The result indicates the system check can meet the variation criterion and the plots can be referred to Appendix A of this report.

4.5 SAR Testing Results

4.5.1 SAR Results for Head Exposure Condition

Plot No	Band	Mode	Test Position	Ch.	RB#	RB Offset	Duty Cycle	Max. Tune-up Power (dBm)	Measured Conducted Power (dBm)	Power Drift (dB)	Measured SAR-1g (W/kg)	Duty Cycle Factor	Scaling Factor	Scaled SAR-1g (W/kg)
*	GSM850	GSM	Right Cheek	190	-	-	-	34.5	32.53	0.19	0.074	1.00	1.57	0.12
1	GSM850	GSM	Right Cheek	190	-	-		34.5	32.53	-0.03	0.177	1.00	1.57	0.28
*	GSM1900	GSM	Left Tilted	661	-	-	-	32.0	31.62	0.18	0.023	1.00	1.09	0.03
2	GSM1900	GSM	Left Tilted	661	-	-	-	32.0	31.62	0	0.012	1.00	1.09	0.01
*	WCDMA V	RMC12.2K	Right Cheek	4183	-	-	-	25.2	24.45	-0.17	0.078	1.00	1.19	0.09
3	WCDMA V	RMC12.2K	Right Cheek	4183	-	-	-	25.2	24.45	0.02	0.226	1.00	1.19	0.27
*	WCDMA IV	RMC12.2K	Left Cheek	1412	-	-	-	25.0	23.55	-0.18	0.105	1.00	1.40	0.15
4	WCDMA IV	RMC12.2K	Left Cheek	1412	-	-	-	25.0	23.55	0.09	0.119	1.00	1.40	0.17
*	WCDMA II	RMC12.2K	Left Cheek	9400	-	-	-	24.5	23.83	0.16	0.103	1.00	1.17	0.12
5	WCDMA II	RMC12.2K	Left Cheek	9400	-	-	-	24.5	23.83	0	0.126	1.00	1.17	0.15
*	LTE 2	QPSK20M	Right Cheek	19100	1	0	-	25.0	23.93	0.01	0.115	1.00	1.28	0.15
6	LTE 2	QPSK20M	Right Cheek	19100	1	0	-	25.0	23.93	0.07	0.116	1.00	1.28	0.15
*	LTE 12	QPSK10M	Right Cheek	23095	1	0	-	25.3	24.35	-0.18	0.081	1.00	1.24	0.10
7	LTE 12	QPSK10M	Right Cheek	23095	1	0	-	25.3	24.35	0.03	0.089	1.00	1.24	0.11
*	LTE 13	QPSK10M	Right Cheek	23230	1	0	-	25.0	23.93	-0.15	0.103	1.00	1.28	0.13
8	LTE 13	QPSK10M	Right Cheek	23230	1	0	-	25.0	23.93	0	0.196	1.00	1.28	0.25
*	LTE 26	QPSK15M	Right Cheek	26965	1	36	-	25.5	24.31	-0.11	0.112	1.00	1.32	0.15
9	LTE 26	QPSK15M	Right Cheek	26965	1	36	-	25.5	24.31	0.06	0.231	1.00	1.32	0.30
*	LTE 41	QPSK20M	Right Tilted	40620	1	49	-	24.7	24.13	0.15	0.077	1.00	1.14	0.09
10	LTE 41	QPSK20M	Right Tilted	40620	1	49	-	24.7	24.13	0.04	0.031	1.00	1.14	0.04
*	LTE 66	QPSK20M	Left Cheek	132572	1	99	-	25.0	24.17	-0.16	0.115	1.00	1.21	0.14
11	LTE 66	QPSK20M	Left Cheek	132572	1	99	-	25.0	24.17	0.04	0.173	1.00	1.21	0.21
*	WLAN2.4G	802.11b	Right Cheek	1	-	-	98.92	17.0	16.92	0.11	0.672	1.01	1.02	0.69
12	WLAN2.4G	802.11b	Right Cheek	1	-	-	98.92	17.0	16.92	0	0.059	1.01	1.02	0.06
*	WLAN5G	802.11n40	Right Tilted	62	-	-	94.77	15.0	14.90	0.17	0.172	1.06	1.02	0.19
13	WLAN5G	802.11n40	Right Tilted	62	-	-	94.77	15.0	14.90	0.05	0.441	1.06	1.02	0.48
*	WLAN5G	802.11n40	Right Cheek	142	-	-	94.77	15.0	14.46	0.12	0.192	1.06	1.13	0.23
14	WLAN5G	802.11n40	Right Cheek	142	-	-	94.77	15.0	14.46	0.08	0.143	1.06	1.13	0.17
*	WLAN5G	802.11n40	Right Tilted	151	-	-	94.77	15.0	14.45	0.1	0.246	1.06	1.14	0.29
15	WLAN5G	802.11n40	Right Tilted	151	-	-	94.77	15.0	14.45	-0.03	0.261	1.06	1.14	0.31

4.5.2 SAR Results for Body-worn Exposure Condition (Separation Distance is 1.5 cm Gap)

Plot No	Band	Mode	Test Position	Ch.	RB#	RB Offset	Duty Cycle	Max. Tune-up Power (dBm)	Measured Conducted Power (dBm)	Power Drift (dB)	Measured SAR-1g (W/kg)	Duty Cycle Factor	Scaling Factor	Scaled SAR-1g (W/kg)
*	GSM850	GSM	Rear Face	190	-	-	-	34.5	32.53	0.11	0.109	1.00	1.57	0.17
16	GSM850	GSM	Rear Face	190	-	-	-	34.5	32.53	-0.06	0.091	1.00	1.57	0.14
*	GSM1900	GSM	Rear Face	661	-	-	-	32.0	31.62	0.18	0.185	1.00	1.09	0.20
17	GSM1900	GSM	Rear Face	661	-	-	-	32.0	31.62	0.06	0.059	1.00	1.09	0.06
*	WCDMA V	RMC12.2K	Rear Face	4183	-	-	-	25.2	24.45	-0.09	0.162	1.00	1.19	0.19
18	WCDMA V	RMC12.2K	Rear Face	4183	-	-	-	25.2	24.45	-0.01	0.134	1.00	1.19	0.16
*	WCDMA IV	RMC12.2K	Rear Face	1312	-	-	-	25.0	23.88	-0.06	0.687	1.00	1.29	0.89
19	WCDMA IV	RMC12.2K	Rear Face	1312	-	-	-	25.0	23.88	-0.18	0.142	1.00	1.29	0.18
*	WCDMA IV	RMC12.2K	Rear Face	1412	-	-	-	25.0	23.55	0.04	0.668	1.00	1.40	0.93
20	WCDMA IV	RMC12.2K	Rear Face	1412	-	-	-	25.0	23.55	0	0.115	1.00	1.40	0.16
*	WCDMA II	RMC12.2K	Rear Face	9400	-	-	-	24.5	23.83	-0.04	0.434	1.00	1.17	0.51
21	WCDMA II	RMC12.2K	Rear Face	9400	-	-	-	24.5	23.83	0.02	0.134	1.00	1.17	0.16
*	LTE 2	QPSK20M	Rear Face	19100	1	0	-	25.0	23.93	0.08	0.675	1.00	1.28	0.86
22	LTE 2	QPSK20M	Rear Face	19100	1	0	-	25.0	23.93	-0.12	0.186	1.00	1.28	0.24
*	LTE 12	QPSK10M	Rear Face	23095	1	0	-	25.3	24.35	-0.11	0.022	1.00	1.24	0.03
23	LTE 12	QPSK10M	Rear Face	23095	1	0	-	25.3	24.35	0.09	0.118	1.00	1.24	0.15
*	LTE 13	QPSK10M	Rear Face	23230	1	0	-	25.0	23.93	0.01	0.155	1.00	1.28	0.20
24	LTE 13	QPSK10M	Rear Face	23230	1	0	-	25.0	23.93	-0.19	0.150	1.00	1.28	0.19
*	LTE 26	QPSK15M	Rear Face	26965	1	36	-	25.5	24.31	0.01	0.199	1.00	1.32	0.26
25	LTE 26	QPSK15M	Rear Face	26965	1	36	-	25.5	24.31	-0.18	0.116	1.00	1.32	0.15
*	LTE 41	QPSK20M	Rear Face	40620	1	49	-	24.7	24.13	-0.1	0.478	1.00	1.14	0.55
26	LTE 41	QPSK20M	Rear Face	40620	1	49	-	24.7	24.13	-0.08	0.115	1.00	1.14	0.13
*	LTE 66	QPSK20M	Rear Face	132572	1	99	-	25.0	24.17	-0.03	0.622	1.00	1.21	0.75
27	LTE 66	QPSK20M	Rear Face	132572	1	99	-	25.0	24.17	0.05	0.142	1.00	1.21	0.17
*	WLAN2.4G	802.11n20	Rear Face	11	-	-	97.42	21.0	19.77	0.04	0.097	1.03	1.33	0.13
28	WLAN2.4G	802.11n20	Rear Face	11	-	-	97.42	21.0	19.77	0.06	0.006	1.03	1.33	0.01
*	WLAN5G	802.11n20	Rear Face	52	-	-	97.22	20.0	18.10	-0.18	0.249	1.03	1.55	0.40
29	WLAN5G	802.11n20	Rear Face	52	-	-	97.22	20.0	18.10	0.03	0.158	1.03	1.55	0.25
*	WLAN5G	802.11n20	Rear Face	120	-	-	97.22	20.0	18.04	-0.11	0.185	1.03	1.57	0.30
30	WLAN5G	802.11n20	Rear Face	120	-	-	97.22	20.0	18.04	0	0.213	1.03	1.57	0.34
*	WLAN5G	802.11n20	Rear Face	157	-	-	97.22	20.0	18.15	0.17	0.27	1.03	1.53	0.43
31	WLAN5G	802.11n20	Rear Face	157	-	-	97.22	20.0	18.15	0	0.221	1.03	1.53	0.35

4.5.3 SAR Results for Hotspot Exposure Condition (Separation Distance is 1.0 cm Gap)

Plot No	Band	Mode	Test Position	Ch.	RB#	RB Offset	Duty Cycle	Max. Tune-up Power (dBm)	Measured Conducted Power (dBm)	Power Drift (dB)	Measured SAR-1g (W/kg)	Duty Cycle Factor	Scaling Factor	Scaled SAR-1g (W/kg)
*	GSM850	GPRS11	Rear Face	251	-	-	-	33.0	31.38	0.01	0.446	1.00	1.45	0.65
32	GSM850	GPRS11	Rear Face	251	-	-	-	33.0	31.38	-0.13	0.131	1.00	1.45	0.19
*	GSM1900	GPRS10	Bottom Side	661	-	-	-	30.5	29.78	-0.07	0.673	1.00	1.18	0.79
33	GSM1900	GPRS10	Bottom Side	661	-	-	-	30.5	29.78	-0.08	0.565	1.00	1.18	0.67
*	WCDMA V	RMC12.2K	Rear Face	4183	-	-	-	25.2	24.45	0.19	0.329	1.00	1.19	0.39
34	WCDMA V	RMC12.2K	Rear Face	4183	-	-	-	25.2	24.45	-0.07	0.168	1.00	1.19	0.20
*	WCDMA IV	RMC12.2K	Bottom Side	1412	-	-	-	20.5	19.10	0.05	0.445	1.00	1.38	0.61
35	WCDMA IV	RMC12.2K	Bottom Side	1412	-	-	-	20.5	19.10	0.04	0.603	1.00	1.38	0.83
*	WCDMA II	RMC12.2K	Bottom Side	9400	-	-	-	21.0	19.30	0.1	0.568	1.00	1.48	0.84
36	WCDMA II	RMC12.2K	Bottom Side	9400	-	-	-	21.0	19.30	-0.04	0.706	1.00	1.48	1.04
*	LTE 2	QPSK20M	Bottom Side	18700	50	49	-	20.5	19.66	0.16	0.882	1.00	1.21	1.07
37	LTE 2	QPSK20M	Bottom Side	18700	50	49	-	20.5	19.66	0.05	0.598	1.00	1.21	0.73
*	LTE 12	QPSK10M	Rear Face	23095	1	0	-	25.3	24.35	0.19	0.046	1.00	1.24	0.06
38	LTE 12	QPSK10M	Rear Face	23095	1	0	-	25.3	24.35	-0.1	0.097	1.00	1.24	0.12
*	LTE 13	QPSK10M	Rear Face	23230	1	0	-	25.0	23.93	0.01	0.268	1.00	1.28	0.34
39	LTE 13	QPSK10M	Rear Face	23230	1	0	-	25.0	23.93	-0.01	0.172	1.00	1.28	0.22
*	LTE 26	QPSK15M	Rear Face	26965	1	36	-	25.5	24.31	-0.03	0.413	1.00	1.32	0.54
40	LTE 26	QPSK15M	Rear Face	26965	1	36	-	25.5	24.31	-0.02	0.172	1.00	1.32	0.23
*	LTE 41	QPSK20M	Rear Face	40620	1	49	-	23.0	22.53	-0.11	0.548	1.00	1.11	0.61
41	LTE 41	QPSK20M	Rear Face	40620	1	49	-	23.0	22.53	0.04	0.173	1.00	1.11	0.19
*	LTE 66	QPSK20M	Bottom Side	132572	50	25	-	20.0	19.51	0.06	0.815	1.00	1.12	0.91
42	LTE 66	QPSK20M	Bottom Side	132572	50	25	-	20.0	19.51	0.04	0.979	1.00	1.12	1.10
*	WLAN2.4G	802.11n20	Left Side	11	-	-	97.42	21.0	19.77	0.01	0.288	1.03	1.33	0.39
43	WLAN2.4G	802.11n20	Left Side	11	-	-	97.42	21.0	19.77	0.07	0.009	1.03	1.33	0.01
*	WLAN5G	802.11n20	Rear Face	157	-	-	97.22	20.0	18.15	0.17	0.357	1.03	1.53	0.56
44	WLAN5G	802.11n20	Rear Face	157	-	-	97.22	20.0	18.15	0.01	0.253	1.03	1.53	0.40

4.5.4 SAR Results for Extremity Exposure Condition (Separation Distance is 0 cm Gap)

Plot No	Band	Mode	Test Position	Ch.	RB#	RB Offset	Duty Cycle	Max. Tune-up Power (dBm)	Measured Conducted Power (dBm)	Power Drift (dB)	Measured SAR-10g (W/kg)	Duty Cycle Factor	Scaling Factor	Scaled SAR-1g (W/kg)
*	WCDMA IV	RMC12.2K	Bottom Side	1312	-	-	-	20.5	19.43	0.19	1.72	1.00	1.28	2.20
45	WCDMA IV	RMC12.2K	Bottom Side	1312	-	-	-	20.5	19.43	-0.18	1.57	1.00	1.28	2.01
*	WCDMA IV	RMC12.2K	Bottom Side	1412	-	-	-	20.5	19.06	0.19	1.62	1.00	1.39	2.26
46	WCDMA IV	RMC12.2K	Bottom Side	1412	-	-	-	20.5	19.06	0	2.06	1.00	1.39	2.87
*	WCDMA II	RMC12.2K	Front Face	9400	-	-	-	21.0	19.31	0.01	0.925	1.00	1.48	1.37
47	WCDMA II	RMC12.2K	Front Face	9400	-	-	-	21.0	19.31	0.09	1.51	1.00	1.48	2.23
*	LTE 2	QPSK20M	Bottom Side	19100	100	0	-	20.5	19.30	0.15	1.98	1.00	1.32	2.61
48	LTE 2	QPSK20M	Bottom Side	19100	100	0	-	20.5	19.30	-0.01	1.21	1.00	1.32	1.60
*	LTE 41	QPSK20M	Bottom Side	40620	50	0	-	23.0	22.79	0.11	1.28	1.00	1.05	1.34
49	LTE 41	QPSK20M	Bottom Side	40620	50	0	-	23.0	22.79	0.03	2.19	1.00	1.05	2.30
*	WLAN5G	802.11n20	Rear Face	52	-	-	97.22	20.0	18.10	-0.14	1.19	1.03	1.55	1.90
50	WLAN5G	802.11n20	Rear Face	52	-	-	97.22	20.0	18.10	0.07	0.064	1.03	1.55	0.10
*	WLAN5G	802.11n20	Rear Face	120	-	-	97.22	20.0	18.04	0.01	0.95	1.03	1.57	1.53
51	WLAN5G	802.11n20	Rear Face	120	-	-	97.22	20.0	18.04	-0.02	0.116	1.03	1.57	0.19

Note: All (*) data shown above are the worst of the original report (HCT-SR-1911-FC001-R1, FCC ID: A3LSMG770F).

4.5.5 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 may be used to perform the repeated measurement. These additional measurements are repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device should be returned to ambient conditions (normal room temperature) with the battery fully charged before it is re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

SAR repeated measurement procedure:

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

Band	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
LTE 66	Bottom Side	132572	0.979	0.934	1.05	N/A	N/A	N/A	N/A

Band	Test Position	Ch.	Original Measured SAR-10g (W/kg)	1st Repeated SAR-10g (W/kg)	L/S Ratio	2nd Repeated SAR-10g (W/kg)	L/S Ratio	3rd Repeated SAR-10g (W/kg)	L/S Ratio
WCDMA IV	Bottom Side	1412	2.06	1.99	1.04	N/A	N/A	N/A	N/A
LTE 41	Bottom Side	40620	2.19	2.07	1.06	N/A	N/A	N/A	N/A

Test Engineer： Dennis Ye, and Rikou Lu

5. Calibration of Test Equipment

Equipment	Manufacturer	Model	SN	Cal. Date	Cal. Interval
System Validation Dipole	SPEAG	D750V3	1078	Jun. 21, 2021	1 Year
System Validation Dipole	SPEAG	D835V2	4d092	Jun. 23, 2021	1 Year
System Validation Dipole	SPEAG	D1750V2	1111	Apr. 14, 2021	1 Year
System Validation Dipole	SPEAG	D1900V2	5d142	Jun. 25, 2021	1 Year
System Validation Dipole	SPEAG	D2450V2	735	Dec. 22, 2020	1 Year
System Validation Dipole	SPEAG	D2600V2	1077	Apr. 15, 2021	1 Year
System Validation Dipole	SPEAG	D5GHzV2	1203	Dec. 22, 2020	1 Year
Dosimetric E-Field Probe	SPEAG	EX3DV4	7515	Nov. 30, 2020	1 Year
Data Acquisition Electronics	SPEAG	DAE4	905	Jun. 22, 2021	1 Year
ENA Series Network Analyzer	Agilent	E5071C	MY46214638	Jun. 03, 2021	1 Year
Spectrum Analyzer	KEYSIGHT	N9010A	MY54510355	Jun. 03, 2021	1Year
MXG Analog Signal Generator	KEYSIGHT	N5183A	MY50143024	Mar. 09, 2021	1 Year
Power Meter	Agilent	N1914A	MY52180044	Mar. 02, 2021	1 Year
Power Sensor	Agilent	E9304A H18	MY52050011	Feb. 25, 2021	1 Year
Power Meter	ANRITSU	ML2495A	1506002	Apr. 07, 2021	1 Year
Power Sensor	ANRITSU	MA2411B	1339353	May. 07, 2021	1 Year
Temp. & Humi. Recorder	CLOCK	HTC-1	157248	Jun. 02, 2021	1 Year
Electronic Thermometer	YONGFA	YF-160A	120100323	Jun. 02, 2021	1 Year
Coupler	Woken	0110A056020-10	COM27RW1A3	Jun. 02, 2021	1 Year

6. Measurement Uncertainty

DASY5 Uncertainty Budget								
Error Description	**Uncertainty Value (±%)**	**Probability**	**Divisor**	**(Ci) 1g**	**(Ci) 10g**	**Standard Uncertainty (1g) (±%)**	**Standard Uncertainty (10g) (±%)**	**(Vi) Veff**
Measurement System								
Probe Calibration	6.0	N	1	1	1	6.0	6.0	∞
Axial Isotropy	4.7	R	1.732	0.7	0.7	1.9	1.9	∞
Hemispherical Isotropy	9.6	R	1.732	0.7	0.7	3.9	3.9	∞
Boundary Effects	1.0	R	1.732	1	1	0.6	0.6	∞
Linearity	4.7	R	1.732	1	1	2.7	2.7	∞
System Detection Limits	1.0	R	1.732	1	1	0.6	0.6	∞
Modulation Response	3.2	R	1.732	1	1	1.8	1.8	∞
Readout Electronics	0.3	N	1	1	1	0.3	0.3	∞
Response Time	0.0	R	1.732	1	1	0.0	0.0	∞
Integration Time	2.6	R	1.732	1	1	1.5	1.5	∞
RF Ambient Noise	3.0	R	1.732	1	1	1.7	1.7	∞
RF Ambient Reflections	3.0	R	1.732	1	1	1.7	1.7	∞
Probe Positioner	0.4	R	1.732	1	1	0.2	0.2	∞
Probe Positioning	2.9	R	1.732	1	1	1.7	1.7	∞
Max. SAR Eval.	2.0	R	1.732	1	1	1.2	1.2	∞
Test Sample Related								
Device Positioning	3.0	N	1	1	1	3.0	3.0	35
Device Holder	3.6	N	1	1	1	3.6	3.6	12
Power Drift	5.0	R	1.732	1	1	2.9	2.9	∞
Power Scaling	0.0	R	1.732	1	1	0.0	0.0	∞
Phantom and Setup								
Phantom Uncertainty	6.1	R	1.732	1	1	3.5	3.5	∞
SAR correction	0.0	R	1.732	1	0.84	0.0	0.0	∞
Liquid Conductivity Repeatability	0.2	N	1	0.78	0.71	0.1	0.1	5
Liquid Conductivity (target)	5.0	R	1.732	0.78	0.71	2.3	2.0	∞
Liquid Conductivity (mea.)	2.5	R	1.732	0.78	0.71	1.1	1.0	∞
Temp. unc. - Conductivity	3.4	R	1.732	0.78	0.71	1.5	1.4	∞
Liquid Permittivity Repeatability	0.15	N	1	0.23	0.26	0.0	0.0	5
Liquid Permittivity (target)	5.0	R	1.732	0.23	0.26	0.7	0.8	∞
Liquid Permittivity (mea.)	2.5	R	1.732	0.23	0.26	0.3	0.4	∞
Temp. unc. - Permittivity	0.83	R	1.732	0.23	0.26	0.1	0.1	∞
Combined Std. Uncertainty						11.4%	11.4%	1013
Coverage Factor for 95 %						K=2	K=2	
Expanded STD Uncertainty						22.9%	22.7%	

Uncertainty budget for frequency range 30 MHz to 3 GHz

DASY5 Uncertainty Budget								
Error Description	**Uncertainty Value (±%)**	**Probability**	**Divisor**	**(Ci) 1g**	**(Ci) 10g**	**Standard Uncertainty (1g) (±%)**	**Standard Uncertainty (10g) (±%)**	**(Vi) Veff**
Measurement System								
Probe Calibration	6.55	N	1	1	1	6.5	6.5	∞
Axial Isotropy	4.7	R	1.732	0.7	0.7	1.9	1.9	∞
Hemispherical Isotropy	9.6	R	1.732	0.7	0.7	3.9	3.9	∞
Boundary Effects	2.0	R	1.732	1	1	1.2	1.2	∞
Linearity	4.7	R	1.732	1	1	2.7	2.7	∞
System Detection Limits	1.0	R	1.732	1	1	0.6	0.6	∞
Modulation Response	3.2	R	1.732	1	1	1.8	1.8	∞
Readout Electronics	0.3	N	1	1	1	0.3	0.3	∞
Response Time	0.0	R	1.732	1	1	0.0	0.0	∞
Integration Time	2.6	R	1.732	1	1	1.5	1.5	∞
RF Ambient Noise	3.0	R	1.732	1	1	1.7	1.7	∞
RF Ambient Reflections	3.0	R	1.732	1	1	1.7	1.7	∞
Probe Positioner	0.4	R	1.732	1	1	0.2	0.2	∞
Probe Positioning	6.7	R	1.732	1	1	3.9	3.9	∞
Max. SAR Eval.	4.0	R	1.732	1	1	2.3	2.3	∞
Test Sample Related								
Device Positioning	3.0	N	1	1	1	3.0	3.0	35
Device Holder	3.6	N	1	1	1	3.6	3.6	12
Power Drift	5.0	R	1.732	1	1	2.9	2.9	∞
Power Scaling	0.0	R	1.732	1	1	0.0	0.0	∞
Phantom and Setup								
Phantom Uncertainty	6.6	R	1.732	1	1	3.8	3.8	∞
SAR correction	0.0	R	1.732	1	0.84	0.0	0.0	∞
Liquid Conductivity Repeatability	0.2	N	1	0.78	0.71	0.1	0.1	5
Liquid Conductivity (target)	5.0	R	1.732	0.78	0.71	2.3	2.0	∞
Liquid Conductivity (mea.)	2.5	R	1.732	0.78	0.71	1.1	1.0	∞
Temp. unc. - Conductivity	3.4	R	1.732	0.78	0.71	1.5	1.4	∞
Liquid Permittivity Repeatability	0.15	N	1	0.23	0.26	0.0	0.0	5
Liquid Permittivity (target)	5.0	R	1.732	0.23	0.26	0.7	0.8	∞
Liquid Permittivity (mea.)	2.5	R	1.732	0.23	0.26	0.3	0.4	∞
Temp. unc. - Permittivity	0.83	R	1.732	0.23	0.26	0.1	0.1	∞
Combined Std. Uncertainty						12.5%	12.5%	1458
Coverage Factor for 95 %						K=2	K=2	
Expanded STD Uncertainty						25.0%	24.9%	

Uncertainty budget for frequency range 3 GHz to 6 GHz

7. Information on the Testing Laboratories

We, BV 7LAYERS COMMUNICATIONS TECHNOLOGY (SHENZHEN) CO. LTD., were founded in 2015 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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Web Site: www.bureauveritas.com

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.

System Check_HSL750_210827

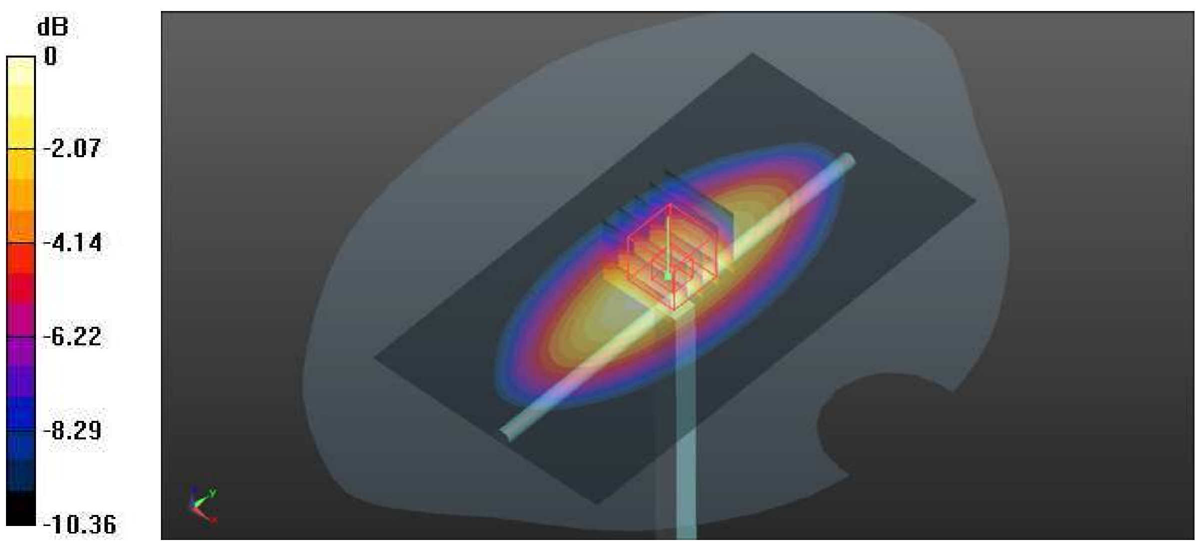
DUT: Dipole:750 MHz;Type:D750V3

Communication System: CW; Frequency: 750 MHz;Duty Cycle: 1:1
Medium: HSL750_0827 Medium parameters used: f = 750 MHz; σ = 0.909 S/m; ε_r = 40.259; ρ = 1000 kg/m^3
Ambient Temperature：23.6℃; Liquid Temperature：22.3℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7515; ConvF(10.09, 10.09, 10.09); Calibrated: 2020/11/30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn905; Calibrated: 2021/6/22
- Phantom: SAM (30deg probe tilt) with CRP v5.0; Type: QD000P40CD; Serial: TP:1781
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Pin=250mW/Area Scan (71x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 2.71 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 54.473 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 3.10 W/kg
SAR(1 g) = 2.08 W/kg; SAR(10 g) = 1.38 W/kg
Maximum value of SAR (measured) = 2.77 W/kg



0 dB = 2.77 W/kg

System Check_HSL835_210827

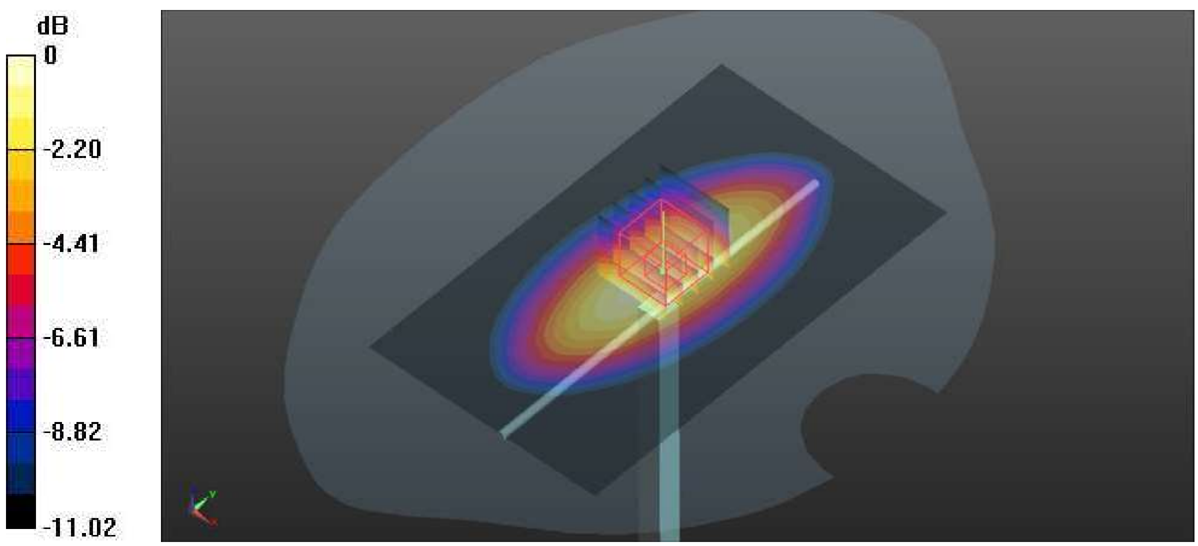
DUT: Dipole:835 MHz;Type:D835V2

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: HSL835_0827 Medium parameters used: f = 835 MHz; σ = 0.92 S/m; ε_r = 43.112; ρ = 1000 kg/m^3
Ambient Temperature：23.7℃; Liquid Temperature：22.1℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7515; ConvF(9.74, 9.74, 9.74); Calibrated: 2020/11/30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn905; Calibrated: 2021/6/22
- Phantom: SAM (30deg probe tilt) with CRP v5.0; Type: QD000P40CD; Serial: TP:1781
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Pin=250mW/Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 3.38 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 59.652 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 3.91 W/kg
SAR(1 g) = 2.54 W/kg; SAR(10 g) = 1.65 W/kg
Maximum value of SAR (measured) = 3.44 W/kg



0 dB = 3.44 W/kg

System Check_HSL1750_210828

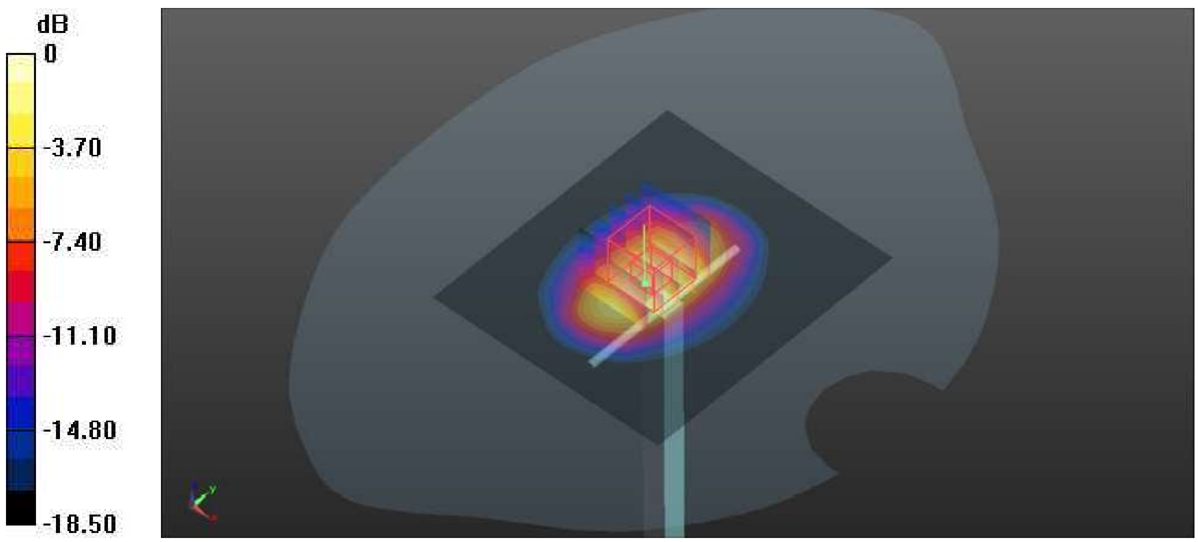
DUT: Dipole:1750 MHz;Type:D1750V2

Communication System: CW; Frequency: 1750 MHz;Duty Cycle: 1:1
Medium: HSL1750_0828 Medium parameters used: f = 1750 MHz; σ = 1.35 S/m; ε_r = 41.859; ρ = 1000 kg/m^3
Ambient Temperature：23.1℃; Liquid Temperature：22.7℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7515; ConvF(8.53, 8.53, 8.53); Calibrated: 2020/11/30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn905; Calibrated: 2021/6/22
- Phantom: SAM (30deg probe tilt) with CRP v5.0; Type: QD000P40CD; Serial: TP:1781
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Pin=250mW/Area Scan (71x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 14.8 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 105.0 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 17.6 W/kg
SAR(1 g) = 9.4 W/kg; SAR(10 g) = 4.91 W/kg
Maximum value of SAR (measured) = 14.5 W/kg



0 dB = 14.5 W/kg

System Check_HSL1900_210829

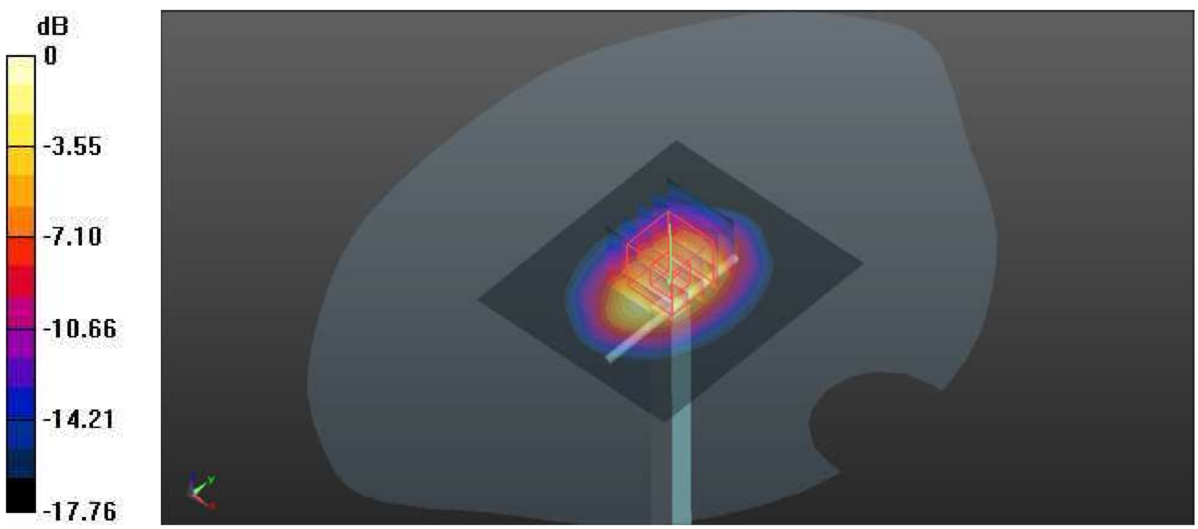
DUT: Dipole:1900MHz;Type:D1900V2

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: HSL1900_0829 Medium parameters used: f = 1900 MHz; σ = 1.43 S/m; ε_r = 40.323; ρ = 1000 kg/m^3
Ambient Temperature：23.5℃; Liquid Temperature：22.2℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7515; ConvF(8.13, 8.13, 8.13); Calibrated: 2020/11/30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn905; Calibrated: 2021/6/22
- Phantom: SAM (30deg probe tilt) with CRP v5.0; Type: QD000P40CD; Serial: TP:1781
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Pin=250mW/Area Scan (61x71x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 15.5 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 98.510 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 17.5 W/kg
SAR(1 g) = 9.46 W/kg; SAR(10 g) = 4.94 W/kg
Maximum value of SAR (measured) = 14.7 W/kg



0 dB = 14.7 W/kg

System Check_HSL2450_210830

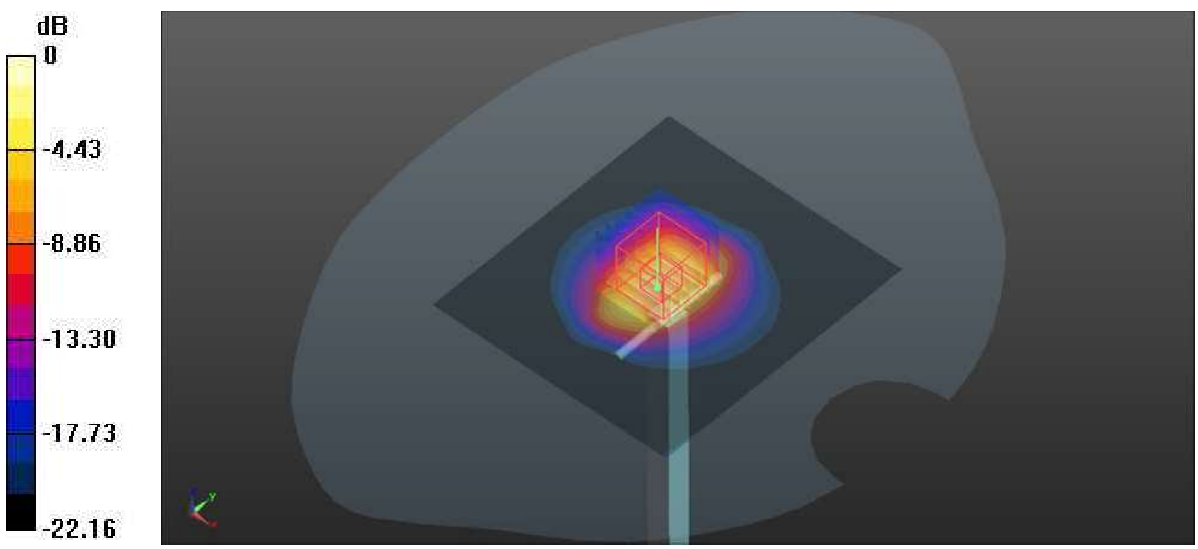
DUT: Dipole:2450 MHz;Type:D2450V2

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: HSL2450_0830 Medium parameters used: f = 2450 MHz; σ = 1.832 S/m; ε_r = 38.716; ρ = 1000 kg/m^3
Ambient Temperature：23.3℃; Liquid Temperature：22.7℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7515; ConvF(7.34, 7.34, 7.34); Calibrated: 2020/11/30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn905; Calibrated: 2021/6/22
- Phantom: SAM (30deg probe tilt) with CRP v5.0; Type: QD000P40CD; Serial: TP:1781
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Pin=250mW/Area Scan (91x101x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 22.2 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 112.8 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 27.3 W/kg
SAR(1 g) = 13.3 W/kg; SAR(10 g) = 6.23 W/kg
Maximum value of SAR (measured) = 22.1 W/kg



0 dB = 22.1 W/kg