FCC SAR Test Report

APPLICANT	:	Gosuncn Technology Group Co., Ltd.
EQUIPMENT	:	Automatic Database Diagnostic Monitor (LTE OBD II Dongle)
BRAND NAME	:	GOSUNCN
MODEL NAME	:	GD201
FCC ID	:	2APNR-GD201
STANDARD	:	FCC 47 CFR Part 2 (2.1093)

We, Sporton International (ShenZhen) Inc., would like to declare that the tested sample has been evaluated in accordance with the procedures and had been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International (ShenZhen) Inc., the test report shall not be reproduced except in full.

Hank Huang

Reviewed by: Hank Huang / Supervisor

Johnny Chen

Approved by: Johnny Chen / Manager

ACCREDITED Cert #5145.01

Sporton International (ShenZhen) Inc.
1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen, 518055
People's Republic of China

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History of this test report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA171528	Rev. 01	Initial issue of report	Aug. 19, 2021

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **Gosuncn Technology Group Co., Ltd., Automatic Database Diagnostic Monitor (LTE OBD II Dongle), GD201,** are as follows.

Highest 1g SAR Summary				Highest Simultaneous Transmission 1g SAR (W/kg)
Equipment Class	Frequency Band		Body (Separation 10mm) 1g SAR (W/kg)	
Licensed	GSM	GSM850	0.94	1.34
		GSM1900	**1.29**	
	LTE	Band 12	<0.10	
		Band 13	<0.10	
		Band 26/Band 5	0.17	
		Band 4	0.18	
		Band 2	0.20	
Date of Testing:			2021/8/10 ~ 2021/8/13	
Remark: This device supports LTE B5 and B26. Since the supported frequency span for LTE B5 falls completely within the supports frequency span for LTE B26, both LTE bands have the same target power, and both LTE bands share the same transmission path; therefore, SAR was only assessed for LTE B26.				

Declaration of Conformity:
The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
Comments and Explanations:
The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg for Partial-Body 1g SAR) specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1992, and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528-2013 and FCC KDB publications.

2. Administration Data

Sporton International (Shenzhen) Inc. is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.01.

Testing Laboratory			
Test Firm	Sporton International (Shenzhen) Inc.		
Test Site Location	1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen, 518055 People’s Republic of China TEL: +86-755-86379589 FAX: +86-755-86379595		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	SAR05-SZ	CN1256	421272

Applicant	
Company Name	Gosuncn Technology Group Co., Ltd.
Address	6F, 2819 KaiChuang Blvd., Science Town, Huangpu District, Guangzhou City, Guangdong, China.

Manufacturer	
Company Name	Gosuncn Technology Group Co., Ltd.
Address	6F, 2819 KaiChuang Blvd., Science Town, Huangpu District, Guangzhou City, Guangdong, China.

3. Guidance Applied

The Specific Absorption Rate (SAR) testing specification, method, and procedure for this device is in accordance with the following standards:

- FCC 47 CFR Part 2 (2.1093)
- ANSI/IEEE C95.1-1992
- IEEE 1528-2013
- FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04
- FCC KDB 865664 D02 SAR Reporting v01r02
- FCC KDB 447498 D01 General RF Exposure Guidance v06
- FCC KDB 941225 D01 3G SAR Procedures v03r01
- FCC KDB 941225 D05 SAR for LTE Devices v02r05

4. Equipment Under Test (EUT) Information

4.1 General Information

Product Feature & Specification	
Equipment Name	Automatic Database Diagnostic Monitor (LTE OBD II Dongle)
Brand Name	GOSUNCN
Model Name	GD201
FCC ID	2APNR-GD201
IMEI Code	864341050000101
Wireless Technology and Frequency Range	GSM850: 824 MHz ~ 849 MHz GSM1900: 1850 MHz ~ 1910 MHz LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 26: 814 MHz ~ 849 MHz Bluetooth LE: 2402 MHz ~ 2480 MHz
Mode	GPRS/EGPRS CAT M1 LTE: QPSK, 16QAM Bluetooth LE
HW Version	GD201_MB_A
SW Version	MCU_EN_GD201V1.1.1B02
EUT Stage	Identical Prototype

4.2 General LTE SAR Test and Reporting Considerations

<table>
<tr><th colspan="2">Summarized necessary items addressed in KDB 941225 D05 v02r05</th></tr>
<tr><td>FCC ID</td><td>2APNR-GD201</td></tr>
<tr><td>Equipment Name</td><td>Automatic Database Diagnostic Monitor (LTE OBD II Dongle)</td></tr>
<tr><td>Operating Frequency Range of each LTE transmission band</td><td>LTE Band 2: 1850 MHz ~ 1910 MHz
LTE Band 4: 1710 MHz ~ 1755 MHz
LTE Band 5: 824 MHz ~ 849 MHz
LTE Band 12: 699 MHz ~ 716 MHz
LTE Band 13: 777 MHz ~ 787 MHz
LTE Band 26: 814 MHz ~ 849 MHz</td></tr>
<tr><td>Channel Bandwidth</td><td>LTE Band 2:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 4:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 5:1.4MHz, 3MHz, 5MHz, 10MHz
LTE Band 12:1.4MHz, 3MHz, 5MHz, 10MHz
LTE Band 13: 5MHz, 10MHz
LTE Band 26:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz</td></tr>
<tr><td>uplink modulations used</td><td>QPSK / 16QAM</td></tr>
<tr><td>LTE Voice / Data requirements</td><td>Data only</td></tr>
<tr><td>LTE Release Version</td><td>R17, Cat M1</td></tr>
<tr><td>CA Support</td><td>Not Supported</td></tr>
<tr><td>LTE MPR permanently built-in by design</td><td>
Table 6.2.3E-1: Maximum Power Reduction (MPR) for Power Class 3
<table>
<tr><th rowspan="2">Modulation</th><th colspan="6">Channel bandwidth / Transmission bandwidth (N_{RB})</th><th rowspan="2">MPR (dB)</th></tr>
<tr><th>1.4 MHz</th><th>3.0 MHz</th><th>5 MHz</th><th>10 MHz</th><th>15 MHz</th><th>20 MHz</th></tr>
<tr><td>QPSK</td><td>>2</td><td>>2</td><td>>1</td><td>>4</td><td>-</td><td>-</td><td>≤ 1</td></tr>
<tr><td>QPSK</td><td>>5</td><td>>5</td><td>-</td><td>-</td><td>-</td><td>-</td><td>≤ 2</td></tr>
<tr><td>16 QAM</td><td>≤ 2</td><td>≤ 2</td><td>>1</td><td>>3</td><td>-</td><td>-</td><td>≤ 1</td></tr>
<tr><td>16QAM</td><td>>2</td><td>>2</td><td>>3</td><td>>5</td><td>-</td><td>-</td><td>≤ 2</td></tr>
</table>
</td></tr>
<tr><td>LTE A-MPR</td><td>In the base station simulator configuration, Network Setting value is set to NS_01 to disable A-MPR during SAR testing and the LTE SAR tests was transmitting on all TTI frames (Maximum TTI)</td></tr>
<tr><td>Spectrum plots for RB configuration</td><td>A properly configured base station simulator was used for the SAR and power measurement; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.</td></tr>
</table>

Transmission (H, M, L) channel numbers and frequencies in each LTE band

LTE Band 2

	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	18607	1850.7	18615	1851.5	18625	1852.5	18650	1855	18675	1857.5	18700	1860
M	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880
H	19193	1909.3	19185	1908.5	19175	1907.5	19150	1905	19125	1902.5	19100	1900

LTE Band 4

	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	19957	1710.7	19965	1711.5	19975	1712.5	20000	1715	20025	1717.5	20050	1720
M	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5
H	20393	1754.3	20385	1753.5	20375	1752.5	20350	1750	20325	1747.5	20300	1745

LTE Band 5

	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20407	824.7	20415	825.5	20425	826.5	20450	829
M	20525	836.5	20525	836.5	20525	836.5	20525	836.5
H	20643	848.3	20635	847.5	20625	846.5	20600	844

LTE Band 12

	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	23017	699.7	23025	700.5	23035	701.5	23060	704
M	23095	707.5	23095	707.5	23095	707.5	23095	707.5
H	23173	715.3	23165	714.5	23155	713.5	23130	711

LTE Band 13

	Bandwidth 5 MHz		Bandwidth 10 MHz	
	Channel #	Freq.(MHz)	Channel #	Freq.(MHz)
L	23205	779.5		
M	23230	782	23230	782
H	23255	784.5		

LTE Band 26

	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	26697	814.7	26705	815.5	26715	816.5	26740	819	26765	821.5
M	26865	831.5	26865	831.5	26865	831.5	26865	831.5	26865	831.5
H	27033	848.3	27025	847.5	27015	846.5	26990	844	26965	841.5

5. RF Exposure Limits

5.1 Uncontrolled Environment

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

5.2 Controlled Environment

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

Limits for Occupational/Controlled Exposure (W/kg)

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.4	8.0	20.0

Limits for General Population/Uncontrolled Exposure (W/kg)

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.08	1.6	4.0

1. Whole-Body SAR is averaged over the entire body, partial-body SAR is averaged over any 1gram of tissue defined as a tissue volume in the shape of a cube. SAR for hands, wrists, feet and ankles is averaged over any 10 grams of tissue defined as a tissue volume in the shape of a cube.

6. Specific Absorption Rate (SAR)

6.1 Introduction

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling. The standard recommends limits for two tiers of groups, occupational/controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.

6.2 SAR Definition

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

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

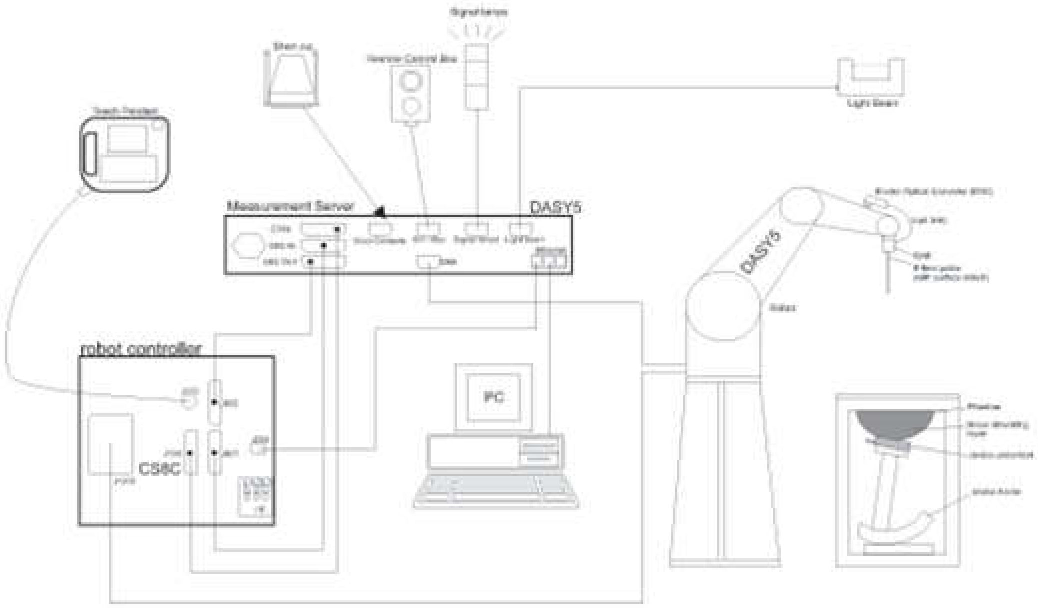
SAR is expressed in units of Watts per kilogram (W/kg)

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

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

7. System Description and Setup

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



- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic Field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running WinXP or Win7 and the DASY5 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

7.1 E-Field Probe

The SAR measurement is conducted with the dosimetric probe (manufactured by SPEAG).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. This probe has a built in optical surface detection system to prevent from collision with phantom.

<EX3DV4 Probe>

Construction	Symmetric design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
Frequency	10 MHz – >6 GHz Linearity: ±0.2 dB (30 MHz – 6 GHz)	
Directivity	±0.3 dB in TSL (rotation around probe axis) ±0.5 dB in TSL (rotation normal to probe axis)	
Dynamic Range	10 µW/g – >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	

7.2 Data Acquisition Electronics (DAE)

The data acquisition electronics (DAE) consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information as well as an optical uplink for commands and the clock.
The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

Photo of DAE

7.3 Phantom

<SAM Twin Phantom>

Shell Thickness	2 ± 0.2 mm; Center ear point: 6 ± 0.2 mm
Filling Volume	Approx. 25 liters
Dimensions	Length: 1000 mm; Width: 500 mm; Height: adjustable feet
Measurement Areas	Left Hand, Right Hand, Flat Phantom

The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. A white cover is provided to tap the phantom during off-periods to prevent water evaporation and changes in the liquid parameters. On the phantom top, three reference markers are provided to identify the phantom position with respect to the robot.

<ELI Phantom>

Shell Thickness	2 ± 0.2 mm (sagging: <1%)
Filling Volume	Approx. 30 liters
Dimensions	Major ellipse axis: 600 mm Minor axis: 400 mm

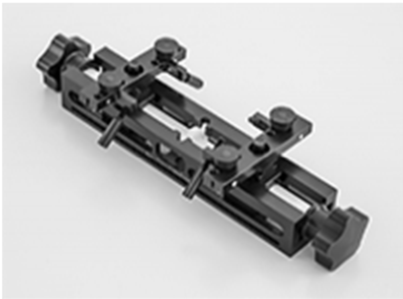
The ELI phantom is intended for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI4 is fully compatible with standard and all known tissue simulating liquids.

7.4 Device Holder

<Mounting Device for Hand-Held Transmitter>

In combination with the Twin SAM V5.0/V5.0c 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). And 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.

Mounting Device for Hand-Held Transmitters



Mounting Device Adaptor for Wide-Phones

<Mounting Device for Laptops and other Body-Worn Transmitters>

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

Mounting Device for Laptops

8. Measurement Procedures

The measurement procedures are as follows:

<Conducted power measurement>

(a) For WWAN power measurement, use base station simulator to configure EUT WWAN transmission in conducted connection with RF cable, at maximum power in each supported wireless interface and frequency band.
(b) Read the WWAN RF power level from the base station simulator.
(c) For WLAN/BT power measurement, use engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power in each supported wireless interface and frequency band
(d) Connect EUT RF port through RF cable to the power meter, and measure WLAN/BT output power

<SAR measurement>

(a) Use base station simulator to configure EUT WWAN transmission in radiated connection, and engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power, in the highest power channel.
(b) Place the EUT in the positions as Appendix D demonstrates.
(c) Set scan area, grid size and other setting on the DASY software.
(d) Measure SAR results for the highest power channel on each testing position.
(e) Find out the largest SAR result on these testing positions of each band
(f) Measure SAR results for other channels in worst SAR testing position if the reported SAR of highest power channel is larger than 0.8 W/kg

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

(a) Power reference measurement
(b) Area scan
(c) Zoom scan
(d) Power drift measurement

8.1 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

8.2 Power Reference Measurement

The Power Reference Measurement and Power Drift Measurements are for monitoring the power drift of the device under test in the batch process. The minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

8.3 Area Scan

The area scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot. The sophisticated interpolation routines implemented in DASY software can find the maximum found in the scanned area, within a range of the global maximum. The range (in dB0 is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE standard 1528 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan), if only one zoom scan follows the area scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of zoom scans has to be increased accordingly.

Area scan parameters extracted from FCC KDB 865664 D01v01r04 SAR measurement 100 MHz to 6 GHz.

<table>
<tr><td></td><td>≤ 3 GHz</td><td>> 3 GHz</td></tr>
<tr><td>Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface</td><td>5 ± 1 mm</td><td>½·δ·ln(2) ± 0.5 mm</td></tr>
<tr><td>Maximum probe angle from probe axis to phantom surface normal at the measurement location</td><td>30° ± 1°</td><td>20° ± 1°</td></tr>
<tr><td rowspan="2">Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}</td><td>≤ 2 GHz: ≤ 15 mm
2 – 3 GHz: ≤ 12 mm</td><td>3 – 4 GHz: ≤ 12 mm
4 – 6 GHz: ≤ 10 mm</td></tr>
<tr><td colspan="2">When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.</td></tr>
</table>

8.4 Zoom Scan

Zoom scans are used assess the peak spatial SAR values within a cubic averaging volume containing 1 gram and 10 gram of simulated tissue. The zoom scan measures points (refer to table below) within a cube shoes base faces are centered on the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the zoom scan evaluates the averaged SAR for 1 gram and 10 gram and displays these values next to the job's label.

Zoom scan parameters extracted from FCC KDB 865664 D01v01r04 SAR measurement 100 MHz to 6 GHz.

<table>
<tr><td colspan="3"></td><td>≤ 3 GHz</td><td>> 3 GHz</td></tr>
<tr><td colspan="3">Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}</td><td>≤ 2 GHz: ≤ 8 mm
2 – 3 GHz: ≤ 5 mm*</td><td>3 – 4 GHz: ≤ 5 mm*
4 – 6 GHz: ≤ 4 mm*</td></tr>
<tr><td rowspan="3">Maximum zoom scan spatial resolution, normal to phantom surface</td><td colspan="2">uniform grid: $\Delta z_{Zoom}(n)$</td><td>≤ 5 mm</td><td>3 – 4 GHz: ≤ 4 mm
4 – 5 GHz: ≤ 3 mm
5 – 6 GHz: ≤ 2 mm</td></tr>
<tr><td rowspan="2">graded grid</td><td>$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface</td><td>≤ 4 mm</td><td>3 – 4 GHz: ≤ 3 mm
4 – 5 GHz: ≤ 2.5 mm
5 – 6 GHz: ≤ 2 mm</td></tr>
<tr><td>$\Delta z_{Zoom}(n>1)$: between subsequent points</td><td colspan="2">$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$</td></tr>
<tr><td>Minimum zoom scan volume</td><td colspan="2">x, y, z</td><td>≥ 30 mm</td><td>3 – 4 GHz: ≥ 28 mm
4 – 5 GHz: ≥ 25 mm
5 – 6 GHz: ≥ 22 mm</td></tr>
<tr><td colspan="5">Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.
* When zoom scan is required and the <u>reported</u> SAR from the area scan based 1-g SAR estimation procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.</td></tr>
</table>

8.5 Volume Scan Procedures

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

8.6 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 drifts more than 5%, the SAR will be retested.

9. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit	D750V3	1099	Dec. 06, 2018	Nov. 24, 2021
SPEAG	835MHz System Validation Kit	D835V2	4d162	Dec. 05, 2018	Nov. 24, 2021
SPEAG	1750MHz System Validation Kit	D1750V2	1090	Mar. 27, 2019	Mar. 25, 2022
SPEAG	1900MHz System Validation Kit	D1900V2	5d182	Dec. 07, 2018	Nov. 24, 2021
SPEAG	Data Acquisition Electronics	DAE4	1664	Mar. 01, 2021	Feb. 28, 2022
SPEAG	Dosimetric E-Field Probe	EX3DV4	7576	Apr. 26, 2021	Apr. 25, 2022
SPEAG	SAM Twin Phantom	QD 000 P41 AA	2035	NCR	NCR
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
Anritsu	Radio communication analyzer	MT8820C	6201563813	Dec. 25, 2020	Dec. 24, 2021
Anritsu	Radio communication analyzer	MT8821C	6201588577	Apr. 08, 2021	Apr. 07, 2022
Agilent	Wireless Communication Test Set	E5515C	MY50267224	Jul. 14, 2021	Jul. 13, 2022
Agilent	Network Analyzer	E5071C	MY46523671	Oct. 15, 2020	Oct. 14, 2021
Speag	Dielectric Assessment KIT	DAK-3.5	1071	Dec. 23, 2020	Dec. 22, 2021
Agilent	Signal Generator	N5181A	MY50145381	Dec. 25, 2020	Dec. 24, 2021
Anritsu	Power Sensor	MA2411B	1207253	Dec. 25, 2020	Dec. 24, 2021
Anritsu	Power Meter	ML2495A	1218010	Dec. 25, 2020	Dec. 24, 2021
R&S	Power Sensor	NRP50S	101254	Apr. 09, 2021	Apr. 08, 2022
R&S	Power Sensor	NRP8S	109228	Apr. 09, 2021	Apr. 08, 2022
R&S	Spectrum Analyzer	FSP7	100818	Jul. 14, 2021	Jul. 13, 2022
TES	Hygrometer	1310	200505600	Jul. 17, 2021	Jul. 16, 2022
Anymetre	Thermo-Hygrometer	JR593	2020062101	Jul. 17, 2021	Jul. 16, 2022
SPEAG	Device Holder	N/A	N/A	N/A	N/A
AR	Amplifier	5S1G4	0333096	Note 1	
mini-circuits	Amplifier	ZVE-3W-83+	599201528	Note 1	
ARRA	Power Divider	A3200-2	N/A	Note 1	
ET Industries	Dual Directional Coupler	C-058-10	N/A	Note 1	
Weinschel	Attenuator 1	3M-10	N/A	Note 1	
Weinschel	Attenuator 2	3M-20	N/A	Note 1	

Note:

1. Prior to system verification and validation, the path loss from the signal generator to the system check source and the power meter, which includes the amplifier, cable, attenuator and directional coupler, was measured by the network analyzer. The reading of the power meter was offset by the path loss difference between the path to the power meter and the path to the system check source to monitor the actual power level fed to the system check source.
2. The dipole calibration interval can be extended to 3 years with justification according to KDB 865664 D01. The dipoles are also not physically damaged, or repaired during the interval. The justification data in appendix C can be found which the return loss is < -20dB, within 20% of prior calibration, the impedance is within 5 ohm of prior calibration for each dipole.

10. System Verification

10.1 Tissue Simulating Liquids

For the measurement of the field distribution inside the SAM phantom with DASY, the phantom must be filled with around 25 liters of homogeneous body tissue simulating liquid. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15 cm, which is shown in Fig. 10.1

Fig 10.1Photo of Liquid Height for Body SAR

10.2 Tissue Verification

The following tissue formulations are provided for reference only as some of the parameters have not been thoroughly verified. The composition of ingredients may be modified accordingly to achieve the desired target tissue parameters required for routine SAR evaluation.

Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity (σ)	Permittivity (εr)
For Head								
750	41.1	57.0	0.2	1.4	0.2	0	0.89	41.9
835	40.3	57.9	0.2	1.4	0.2	0	0.90	41.5
1800, 1900	55.2	0	0	0.3	0	44.5	1.40	40.0

<Tissue Dielectric Parameter Check Results>

Frequency (MHz)	Tissue Type	Liquid Temp. (℃)	Conductivity (σ)	Permittivity (ε_r)	Conductivity Target (σ)	Permittivity Target (ε_r)	Delta (σ) (%)	Delta (ε_r) (%)	Limit (%)	Date
750	Head	22.8	0.879	40.957	0.89	41.90	-1.24	-2.25	±5	2021/8/11
835	Head	22.4	0.914	41.826	0.90	41.50	1.56	0.79	±5	2021/8/10
1750	Head	22.6	1.405	41.417	1.37	40.10	2.55	3.28	±5	2021/8/12
1900	Head	22.5	1.448	39.105	1.40	40.00	3.43	-2.24	±5	2021/8/10
1900	Head	22.6	1.453	39.107	1.40	40.00	3.79	-2.23	±5	2021/8/13

10.3 System Performance Check Results

Comparing to the original SAR value provided by SPEAG, the verification data should be within its specification of 10 %. Below table shows the target SAR and measured SAR after normalized to 1W input power. The table below indicates the system performance check can meet the variation criterion and the plots can be referred to Appendix A of this report.

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 1g SAR (W/kg)	Targeted 1g SAR (W/kg)	Normalized 1g SAR (W/kg)	Deviation (%)
2021/8/11	750	Head	250	1099	7576	1664	2.20	8.52	8.8	3.29
2021/8/10	835	Head	250	4d162	7576	1664	2.42	9.61	9.68	0.73
2021/8/12	1750	Head	250	1090	7576	1664	9.30	36.40	37.2	2.20
2021/8/10	1900	Head	250	5d182	7576	1664	10.10	39.60	40.4	2.02
2021/8/13	1900	Head	250	5d182	7576	1664	10.20	39.60	40.8	3.03

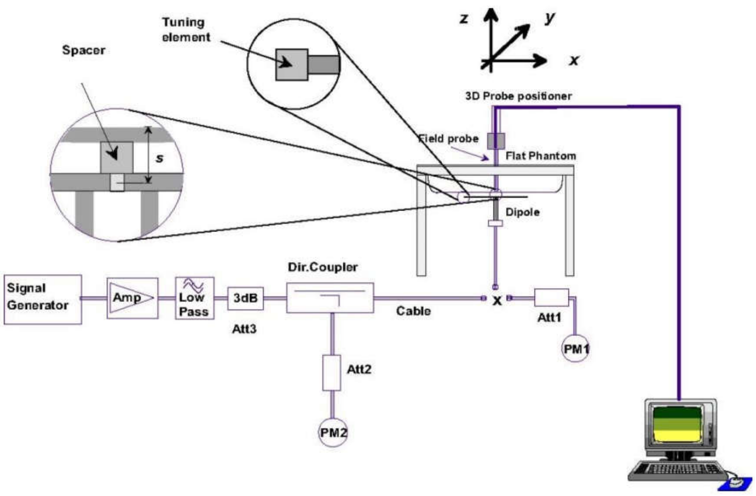


Fig 10.3.1 System Performance Check Setup

Fig 10.3.2 Setup Photo

11. RF Exposure Positions

11.1 SAR Testing for Dongle

This device is an Automatic Database Diagnostic Monitor (LTE OBD II Dongle) using at vehicle, it has a special connector not general USB type. So according to the manufacturer, the declared 10mm distance is used to perform SAR testing with

(A) Horizontal-Up, (B) Horizontal-Down, (C) Vertical-Front, and (D) Vertical-Back and tip.

The detailed information can refer to setup photo.

12. Conducted RF Output Power (Unit: dBm)

The detailed conducted power table can refer to Appendix E.

<GSM Conducted Power>

General Note:

1. Per KDB 447498 D01v06, the maximum output power channel is used for SAR testing and for further SAR test reduction.
2. Per KDB 941225 D01v03r01, for SAR test reduction for GPRS / EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance. The 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. Therefore, the GPRS (4Tx slots) for GSM850/GSM1900 is considered as the primary mode.
3. Other configurations of GPRS / EDGE are considered as secondary modes. The 3G SAR test reduction procedure is applied, when the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode, SAR measurement is not required for the secondary mode.

<LTE Conducted Power>

General Note:

1. Anritsu MT8821C base station simulator was used to setup the connection with EUT; the frequency band, channel bandwidth, RB allocation configuration, modulation type are set in the base station simulator to configure EUT transmitting at maximum power and at different configurations which are requested to be reported to FCC, for conducted power measurement and SAR testing.
2. Per KDB 941225 D05v02r05, when a properly configured base station simulator is used for the SAR and power measurements, spectrum plots for each RB allocation and offset configuration is not required.
3. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
4. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05v02r05, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
6. Per KDB 941225 D05v02r05, 16QAM output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM SAR testing is not required.
7. Per KDB 941225 D05v02r05, Smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
8. For LTE B4 / B5 / B12 / B26 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
9. LTE band 5 SAR test was covered by Band 26; according to April 2015 TCB workshop, SAR test for overlapping LTE bands can be reduced if
   a. the maximum output power, including tolerance, for the smaller band is ≤ the larger band to qualify for the SAR test exclusion
   b. the channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band

13. Bluetooth Exclusions Applied

Mode Band	Max Average power(dBm)
	LE
2.4GHz Bluetooth	4

Note:

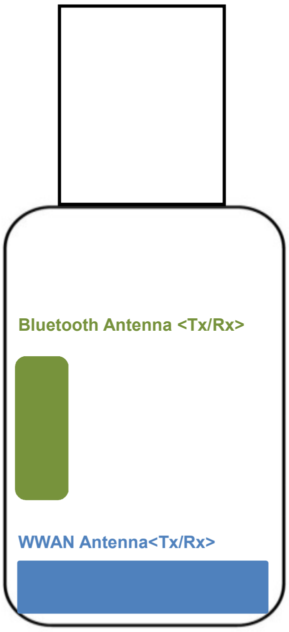
1. Per KDB 447498 D01v06, the 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at *test separation distances* ≤ 50 mm are determined by:
   [(*max. power of channel, including tune-up tolerance, mW*)/(*min. test separation distance, mm*)] ·[√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR
   - f(GHz) is the RF channel transmit frequency in GHz
   - Power and distance are rounded to the nearest mW and mm before calculation
   - The result is rounded to one decimal place for comparison

Bluetooth Max Power (dBm)	Separation Distance (mm)	Frequency (GHz)	exclusion thresholds
4	10	2.48	0.4

Note:

Per KDB 447498 D01v06, a distance of 10 mm is applied to determine SAR test exclusion. The test exclusion threshold is 0.4 which is < 3.0, SAR testing is not required.

14. Antenna Location



Back View

Antennas	DUT Test Position				
	Horizontal Up	Horizontal Down	Vertical Front	Vertical Back	Tip Mode
WWAN Main Antenna	Yes	Yes	Yes	Yes	Yes

15. SAR Test Results

General Note:

1. Per KDB 447498 D01v06, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
   a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
   b. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
2. Per KDB 447498 D01v06, for each exposure position, testing of other required channels within the operating mode of a frequency band is not required when the *reported* 1-g or 10-g SAR for the mid-band or highest output power channel is:
   · ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
   · ≤ 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
   · ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
3. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/kg.

GSM Note:

1. Per KDB 941225 D01v03r01, for SAR test reduction for GPRS / EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance. The 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. Therefore, the GPRS (4Tx slots) for GSM850/GSM1900 are considered as the primary mode.
2. Other configurations of GPRS / EDGE are considered as secondary modes. The 3G SAR test reduction procedure is applied, when the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode, SAR measurement is not required for the secondary mode.

LTE Note:

1. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
2. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
3. Per KDB 941225 D05v02r05, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
4. Per KDB 941225 D05v02r05, 16QAM output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM SAR testing is not required.
5. Per KDB 941225 D05v02r05, Smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
6. For LTE B4 / B5 / B12 / B26 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
7. LTE band 5 SAR test was covered by Band 26; according to April 2015 TCB workshop, SAR test for overlapping LTE bands can be reduced if
   a. the maximum output power, including tolerance, for the smaller band is ≤ the larger band to qualify for the SAR test exclusion
   b. the channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band

15.1 Body SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	GSM850	GPRS (4 Tx slots)	Horizontal Up	10mm	128	824.2	30.22	32.00	1.507	1.000	0.05	0.565	0.851
	GSM850	GPRS (4 Tx slots)	Horizontal Down	10mm	128	824.2	30.22	32.00	1.507	1.000	0.04	0.338	0.509
	GSM850	GPRS (4 Tx slots)	Vertical Back	10mm	128	824.2	30.22	32.00	1.507	1.000	-0.06	0.239	0.360
	GSM850	GPRS (4 Tx slots)	Vertical Front	10mm	128	824.2	30.22	32.00	1.507	1.000	0.02	0.254	0.383
	GSM850	GPRS (4 Tx slots)	Tip Mode	10mm	128	824.2	30.22	32.00	1.507	1.000	0.08	0.206	0.310
	GSM850	GPRS (4 Tx slots)	Horizontal Up	10mm	189	836.4	30.21	32.00	1.510	1.000	0.04	0.477	0.720
01	GSM850	GPRS (4 Tx slots)	Horizontal Up	10mm	251	848.8	30.19	32.00	1.517	1.000	-0.08	0.620	**0.941**
02	GSM1900	GPRS (4 Tx slots)	Horizontal Up	10mm	661	1880	27.18	28.50	1.355	1.000	0.07	0.948	**1.285**
	GSM1900	GPRS (4 Tx slots)	Horizontal Down	10mm	661	1880	27.18	28.50	1.355	1.000	-0.05	0.797	1.080
	GSM1900	GPRS (4 Tx slots)	Vertical Back	10mm	661	1880	27.18	28.50	1.355	1.000	0.01	0.646	0.875
	GSM1900	GPRS (4 Tx slots)	Vertical Front	10mm	661	1880	27.18	28.50	1.355	1.000	0.05	0.607	0.823
	GSM1900	GPRS (4 Tx slots)	Tip Mode	10mm	661	1880	27.18	28.50	1.355	1.000	0.08	0.364	0.493
	GSM1900	GPRS (4 Tx slots)	Horizontal Up	10mm	512	1850.2	27.10	28.50	1.380	1.000	0.04	0.891	1.230
	GSM1900	GPRS (4 Tx slots)	Horizontal Up	10mm	810	1909.8	27.09	28.50	1.384	1.000	0.01	0.816	1.129
	GSM1900	GPRS (4 Tx slots)	Horizontal Down	10mm	512	1850.2	27.10	28.50	1.380	1.000	0.13	0.783	1.081
	GSM1900	GPRS (4 Tx slots)	Horizontal Down	10mm	810	1909.8	27.09	28.50	1.384	1.000	0.08	0.671	0.928
	GSM1900	GPRS (4 Tx slots)	Vertical Back	10mm	512	1850.2	27.10	28.50	1.380	1.000	0.13	0.521	0.719
	GSM1900	GPRS (4 Tx slots)	Vertical Back	10mm	810	1909.8	27.09	28.50	1.384	1.000	0.08	0.699	0.967
	GSM1900	GPRS (4 Tx slots)	Vertical Front	10mm	512	1850.2	27.10	28.50	1.380	1.000	0.13	0.579	0.799
	GSM1900	GPRS (4 Tx slots)	Vertical Front	10mm	810	1909.8	27.09	28.50	1.384	1.000	0.08	0.597	0.826

<LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
03	LTE Band 12	10M	QPSK	1	0	Horizontal Up	10mm	23095	707.5	23.55	24.00	1.109	1.000	0.06	0.047	**0.052**
	LTE Band 12	10M	QPSK	1	0	Horizontal Down	10mm	23095	707.5	23.55	24.00	1.109	1.000	0.06	0.037	0.041
	LTE Band 12	10M	QPSK	1	0	Vertical Back	10mm	23095	707.5	23.55	24.00	1.109	1.000	0.01	0.020	0.022
	LTE Band 12	10M	QPSK	1	0	Vertical Front	10mm	23095	707.5	23.55	24.00	1.109	1.000	0.08	0.021	0.023
	LTE Band 12	10M	QPSK	1	0	Tip Mode	10mm	23095	707.5	23.55	24.00	1.109	1.000	0.05	0.021	0.023
	LTE Band 12	10M	QPSK	3	0	Horizontal Up	10mm	23095	707.5	23.39	24.00	1.151	1.000	0.08	0.045	0.051
	LTE Band 12	10M	QPSK	3	0	Horizontal Down	10mm	23095	707.5	23.39	24.00	1.151	1.000	0.01	0.036	0.041
	LTE Band 12	10M	QPSK	3	0	Vertical Back	10mm	23095	707.5	23.39	24.00	1.151	1.000	0.03	0.020	0.023
	LTE Band 12	10M	QPSK	3	0	Vertical Front	10mm	23095	707.5	23.39	24.00	1.151	1.000	0.07	0.021	0.024
	LTE Band 12	10M	QPSK	3	0	Tip Mode	10mm	23095	707.5	23.39	24.00	1.151	1.000	-0.05	0.020	0.023
04	LTE Band 13	10M	QPSK	1	0	Horizontal Up	10mm	23230	782	23.42	24.00	1.143	1.000	0.05	0.081	**0.093**
	LTE Band 13	10M	QPSK	1	0	Horizontal Down	10mm	23230	782	23.42	24.00	1.143	1.000	0.06	0.061	0.070
	LTE Band 13	10M	QPSK	1	0	Vertical Back	10mm	23230	782	23.42	24.00	1.143	1.000	-0.08	0.035	0.040
	LTE Band 13	10M	QPSK	1	0	Vertical Front	10mm	23230	782	23.42	24.00	1.143	1.000	0.01	0.038	0.043
	LTE Band 13	10M	QPSK	1	0	Tip Mode	10mm	23230	782	23.42	24.00	1.143	1.000	0.02	0.026	0.030
	LTE Band 13	10M	QPSK	3	3	Horizontal Up	10mm	23230	782	23.34	24.00	1.164	1.000	-0.08	0.079	0.092
	LTE Band 13	10M	QPSK	3	3	Horizontal Down	10mm	23230	782	23.34	24.00	1.164	1.000	0.05	0.060	0.070
	LTE Band 13	10M	QPSK	3	3	Vertical Back	10mm	23230	782	23.34	24.00	1.164	1.000	0.03	0.035	0.041
	LTE Band 13	10M	QPSK	3	3	Vertical Front	10mm	23230	782	23.34	24.00	1.164	1.000	0.02	0.037	0.043
	LTE Band 13	10M	QPSK	3	3	Tip Mode	10mm	23230	782	23.34	24.00	1.164	1.000	0.09	0.025	0.029
05	LTE Band 26	15M	QPSK	1	0	Horizontal Up	10mm	26865	831.5	23.51	24.00	1.119	1.000	0.03	0.152	**0.170**
	LTE Band 26	15M	QPSK	1	0	Horizontal Down	10mm	26865	831.5	23.51	24.00	1.119	1.000	-0.07	0.112	0.125
	LTE Band 26	15M	QPSK	1	0	Vertical Back	10mm	26865	831.5	23.51	24.00	1.119	1.000	0.05	0.067	0.075
	LTE Band 26	15M	QPSK	1	0	Vertical Front	10mm	26865	831.5	23.51	24.00	1.119	1.000	0.06	0.068	0.076
	LTE Band 26	15M	QPSK	1	0	Tip Mode	10mm	26865	831.5	23.51	24.00	1.119	1.000	0.02	0.050	0.056
	LTE Band 26	15M	QPSK	3	3	Horizontal Up	10mm	26865	831.5	23.41	24.00	1.146	1.000	-0.09	0.147	0.168
	LTE Band 26	15M	QPSK	3	3	Horizontal Down	10mm	26865	831.5	23.41	24.00	1.146	1.000	0.05	0.106	0.121
	LTE Band 26	15M	QPSK	3	3	Vertical Back	10mm	26865	831.5	23.41	24.00	1.146	1.000	0.01	0.066	0.076
	LTE Band 26	15M	QPSK	3	3	Vertical Front	10mm	26865	831.5	23.41	24.00	1.146	1.000	0.06	0.066	0.076
	LTE Band 26	15M	QPSK	3	3	Tip Mode	10mm	26865	831.5	23.41	24.00	1.146	1.000	0.05	0.049	0.056
	LTE Band 4	20M	QPSK	1	0	Horizontal Up	10mm	20175	1732.5	23.69	24.00	1.074	1.000	-0.08	0.142	0.153
	LTE Band 4	20M	QPSK	1	0	Horizontal Down	10mm	20175	1732.5	23.69	24.00	1.074	1.000	0.04	0.110	0.118
	LTE Band 4	20M	QPSK	1	0	Vertical Back	10mm	20175	1732.5	23.69	24.00	1.074	1.000	0.06	0.083	0.089
	LTE Band 4	20M	QPSK	1	0	Vertical Front	10mm	20175	1732.5	23.69	24.00	1.074	1.000	0.02	0.070	0.075
	LTE Band 4	20M	QPSK	1	0	Tip Mode	10mm	20175	1732.5	23.69	24.00	1.074	1.000	-0.08	0.065	0.070
06	LTE Band 4	20M	QPSK	3	0	Horizontal Up	10mm	20175	1732.5	23.01	24.00	1.256	1.000	-0.09	0.139	**0.175**
	LTE Band 4	20M	QPSK	3	0	Horizontal Down	10mm	20175	1732.5	23.01	24.00	1.256	1.000	-0.08	0.108	0.136
	LTE Band 4	20M	QPSK	3	0	Vertical Back	10mm	20175	1732.5	23.01	24.00	1.256	1.000	0.05	0.083	0.104
	LTE Band 4	20M	QPSK	3	0	Vertical Front	10mm	20175	1732.5	23.01	24.00	1.256	1.000	0.13	0.069	0.087
	LTE Band 4	20M	QPSK	3	0	Tip Mode	10mm	20175	1732.5	23.01	24.00	1.256	1.000	0.05	0.064	0.080
	LTE Band 2	20M	QPSK	1	0	Horizontal Up	10mm	18900	1880	22.73	24.00	1.340	1.000	0.09	0.134	0.180
	LTE Band 2	20M	QPSK	1	0	Horizontal Down	10mm	18900	1880	22.73	24.00	1.340	1.000	0.05	0.119	0.159
	LTE Band 2	20M	QPSK	1	0	Vertical Back	10mm	18900	1880	22.73	24.00	1.340	1.000	0.12	0.118	0.158
	LTE Band 2	20M	QPSK	1	0	Vertical Front	10mm	18900	1880	22.73	24.00	1.340	1.000	0.05	0.116	0.155
	LTE Band 2	20M	QPSK	1	0	Tip Mode	10mm	18900	1880	22.73	24.00	1.340	1.000	0.06	0.064	0.086
07	LTE Band 2	20M	QPSK	3	0	Horizontal Up	10mm	18900	1880	22.62	24.00	1.374	1.000	-0.08	0.142	**0.195**
	LTE Band 2	20M	QPSK	3	0	Horizontal Down	10mm	18900	1880	22.62	24.00	1.374	1.000	0.16	0.115	0.158
	LTE Band 2	20M	QPSK	3	0	Vertical Back	10mm	18900	1880	22.62	24.00	1.374	1.000	0.05	0.117	0.161
	LTE Band 2	20M	QPSK	3	0	Vertical Front	10mm	18900	1880	22.62	24.00	1.374	1.000	0.02	0.113	0.155
	LTE Band 2	20M	QPSK	3	0	Tip Mode	10mm	18900	1880	22.62	24.00	1.374	1.000	0.09	0.062	0.085

15.2 Repeated SAR Measurement

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Ratio	Reported 1g SAR (W/kg)
1st	GSM1900	GPRS (4 Tx slots)	Horizontal Up	10mm	661	1880	27.18	28.50	1.355	1.000	0.07	0.948	1	1.285
2nd	GSM1900	GPRS (4 Tx slots)	Horizontal Up	10mm	661	1880	27.18	28.50	1.355	1.000	0.06	0.946	1.002	1.282

General Note:

1. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/kg.
2. Per KDB 865664 D01v01r04, if the ratio among the repeated measurement is ≤ 1.2 and the measured SAR <1.45W/kg, only one repeated measurement is required.
3. The ratio is the difference in percentage between original and repeated *measured SAR*.
4. All measurement SAR result is scaled-up to account for tune-up tolerance and is compliant.

16. Simultaneous Transmission Analysis

NO.	Simultaneous Transmission Configurations	Body
1.	GSM + Bluetooth	Yes
2.	LTE + Bluetooth	Yes

General Note:

1. EUT will choose either GSM or LTE according to the network signal condition; therefore, they will not operate simultaneously at any moment.
2. The reported SAR summation is calculated based on the same configuration and test position.
3. Per KDB 447498 D01v06, simultaneous transmission SAR is compliant if,
   i) Scalar SAR summation < 1.6W/kg.
   ii) SPLSR = (SAR1 + SAR2)^1.5 / (min. separation distance, mm), and the peak separation distance is determined from the square root of [(x1-x2)2 + (y1-y2)2 + (z1-z2)2], where (x1, y1, z1) and (x2, y2, z2) are the coordinates of the extrapolated peak SAR locations in the zoom scan.
   iii) If SPLSR ≤ 0.04, simultaneously transmission SAR measurement is not necessary.
   iv) Simultaneously transmission SAR measurement, and the reported multi-band SAR < 1.6W/kg.
4. For simultaneous transmission analysis, Bluetooth SAR is estimated per KDB 447498 D01v06 based on the formula below:
   i) (*max. power of channel, including tune-up tolerance, mW*)/(*min. test separation distance, mm*)]·[√f(GHz)/*x*] W/kg for *test separation distances* ≤ 50 mm; where *x* = 7.5 for 1-g SAR, and *x* = 18.75 for 10-g SAR.
   ii) When the minimum separation distance is < 5mm, the distance is used 5mm to determine SAR test exclusion.
   iii) 0.4 W/kg for 1-g SAR and 1.0 W/kg for 10-g SAR, when the test separation distances is > 50 mm.
   iv) Bluetooth estimated SAR is conservatively determined by 10 mm separation, for all applicable exposure positions.

Bluetooth Max Power	Exposure Position	All Positions
4.0 dBm	Estimated SAR (W/kg)	0.053 W/kg

16.1 Body Exposure Conditions

WWAN Band	Exposure Position	1	9	1+9
		WWAN	Bluetooth	Summed
		1g SAR (W/kg)	Estimated 1g SAR (W/kg)	1g SAR (W/kg)
GSM850	Horizontal Up at 10mm	0.941	0.053	0.99
	Horizontal Down at 10mm	0.509	0.053	0.56
	Vertical Back at 10mm	0.360	0.053	0.41
	Vertical Front at 10mm	0.383	0.053	0.44
	Tip Mode at 10mm	0.310	0.053	0.36
GSM1900	Horizontal Up at 10mm	1.285	0.053	**1.34**
	Horizontal Down at 10mm	1.080	0.053	1.13
	Vertical Back at 10mm	0.967	0.053	1.02
	Vertical Front at 10mm	0.826	0.053	0.88
	Tip Mode at 10mm	0.493	0.053	0.55
LTE Band 12	Horizontal Up at 10mm	0.052	0.053	0.11
	Horizontal Down at 10mm	0.041	0.053	0.09
	Vertical Back at 10mm	0.023	0.053	0.08
	Vertical Front at 10mm	0.024	0.053	0.08
	Tip Mode at 10mm	0.023	0.053	0.08
LTE Band 13	Horizontal Up at 10mm	0.093	0.053	0.15
	Horizontal Down at 10mm	0.070	0.053	0.12
	Vertical Back at 10mm	0.041	0.053	0.09
	Vertical Front at 10mm	0.043	0.053	0.10
	Tip Mode at 10mm	0.030	0.053	0.08
LTE Band 26	Horizontal Up at 10mm	0.170	0.053	0.22
	Horizontal Down at 10mm	0.125	0.053	0.18
	Vertical Back at 10mm	0.076	0.053	0.13
	Vertical Front at 10mm	0.076	0.053	0.13
	Tip Mode at 10mm	0.056	0.053	0.11
LTE Band 4	Horizontal Up at 10mm	0.175	0.053	0.23
	Horizontal Down at 10mm	0.136	0.053	0.19
	Vertical Back at 10mm	0.104	0.053	0.16
	Vertical Front at 10mm	0.087	0.053	0.14
	Tip Mode at 10mm	0.080	0.053	0.13
LTE Band 2	Horizontal Up at 10mm	0.195	0.053	0.25
	Horizontal Down at 10mm	0.159	0.053	0.21
	Vertical Back at 10mm	0.161	0.053	0.21
	Vertical Front at 10mm	0.155	0.053	0.21
	Tip Mode at 10mm	0.086	0.053	0.14

Test Engineer : Hank Huang, Kevin Xu, David Dai

17. Uncertainty Assessment

Per KDB 865664 D01 SAR measurement 100MHz to 6GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg. The expanded SAR measurement uncertainty must be ≤ 30%, for a confidence interval of k = 2. If these conditions are met, extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval. For this device, the highest measured1-g SAR is less 1.5W/kg. Therefore, the measurement uncertainty table is not required in this report.

18. References

[1] FCC 47 CFR Part 2 “Frequency Allocations and Radio Treaty Matters; General Rules and Regulations”

[2] ANSI/IEEE Std. C95.1-1992, “IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz”, September 1992

[3] IEEE Std. 1528-2013, “IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques”, Sep 2013

[4] SPEAG DASY System Handbook

[5] FCC KDB 447498 D01 v06, “Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies”, Oct 2015

[6] FCC KDB 941225 D01 v03r01, “3G SAR MEAUREMENT PROCEDURES”, Oct 2015

[7] FCC KDB 941225 D05 v02r05, “SAR Evaluation Considerations for LTE Devices”, Dec 2015

[8] FCC KDB 865664 D01 v01r04, "SAR Measurement Requirements for 100 MHz to 6 GHz", Aug 2015.

[9] FCC KDB 865664 D02 v01r02, “RF Exposure Compliance Reporting and Documentation Considerations” Oct 2015.

------THE END------

Appendix A. Plots of System Performance Check

The plots are shown as follows.

System Check_Head_750MHz

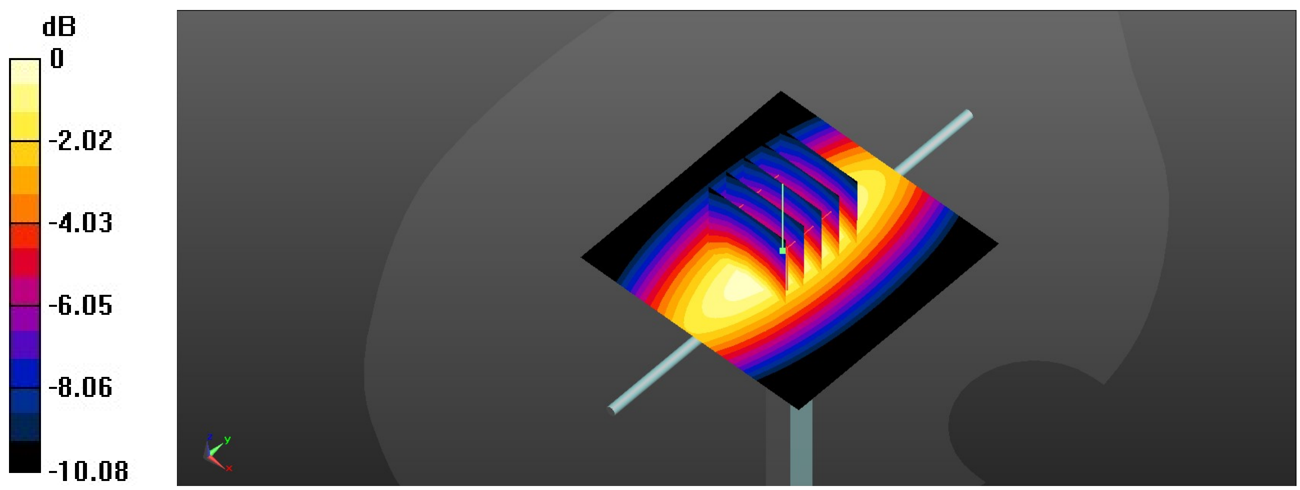
DUT: D750V3-SN:1099

Communication System: UID 0, CW (0); Frequency: 750 MHz;Duty Cycle: 1:1
Medium: HSL_750_210811 Medium parameters used: f = 750 MHz; $\sigma = 0.879$ S/m; $\varepsilon_r = 40.957$; $\rho = 1000$ kg/m^3
Ambient Temperature : 23.4 ℃; Liquid Temperature : 22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7576; ConvF(10.47, 10.47, 10.47); Calibrated: 2021/4/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1664; Calibrated: 2021/3/1
- Phantom: Twin-SAM V8.0 (Left); Type: QD 000 P41 AA; Serial: 2035
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 2.91 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 61.22 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 3.25 W/kg
SAR(1 g) = 2.2 W/kg; SAR(10 g) = 1.47 W/kg
Maximum value of SAR (measured) = 2.88 W/kg



0 dB = 2.88 W/kg

System Check_Head_835MHz

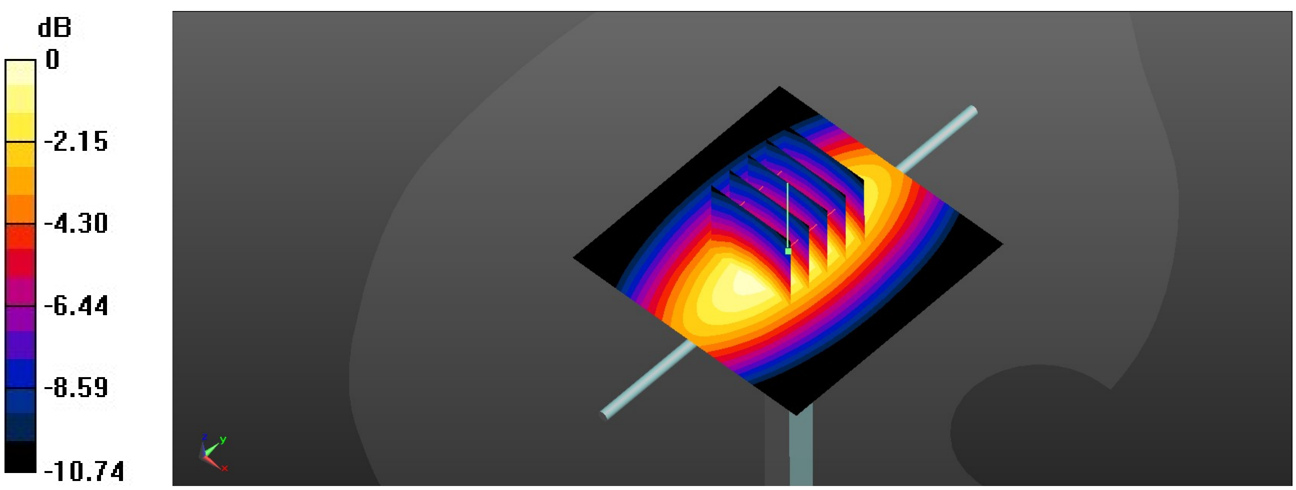
DUT: D835V2-SN:4d162

Communication System: UID 0, CW (0); Frequency: 835 MHz;Duty Cycle: 1:1
Medium: HSL_835_210810 Medium parameters used: f = 835 MHz; σ = 0.914 S/m; ε_r = 41.826; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.4 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7576; ConvF(10.19, 10.19, 10.19); Calibrated: 2021/4/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1664; Calibrated: 2021/3/1
- Phantom: Twin-SAM V8.0 (Left); Type: QD 000 P41 AA; Serial: 2035
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 3.25 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 62.99 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 3.64 W/kg
SAR(1 g) = 2.42 W/kg; SAR(10 g) = 1.59 W/kg
Maximum value of SAR (measured) = 3.22 W/kg



0 dB = 3.22 W/kg

System Check_Head_1750MHz

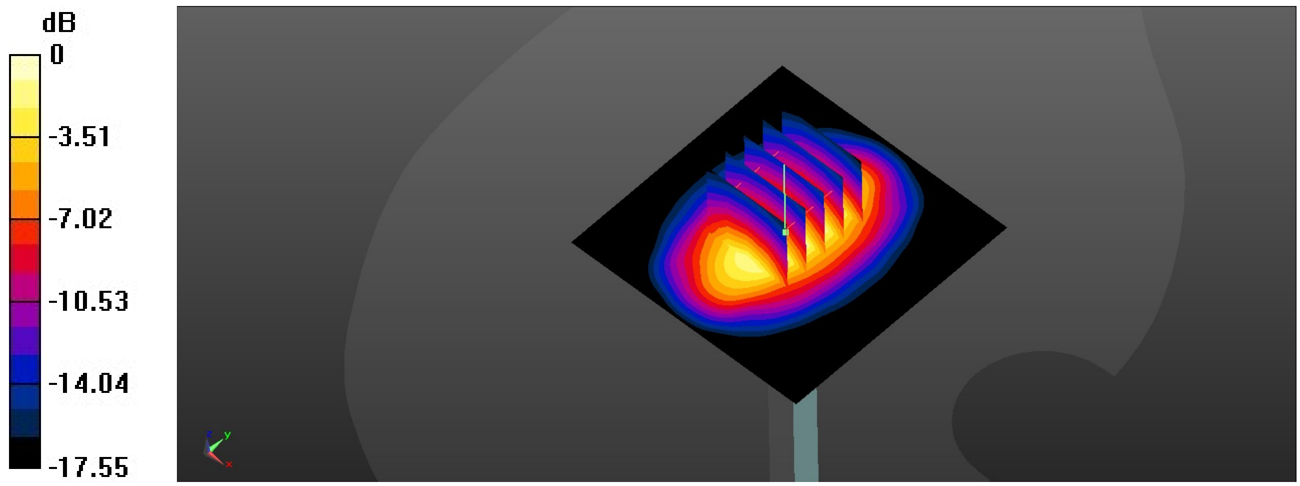
DUT: D1750V2-SN:1090

Communication System: UID 0, CW; Frequency: 1750 MHz;Duty Cycle: 1:1
Medium: HSL_1750_210812 Medium parameters used: f = 1750 MHz; σ = 1.405 S/m; ε_r = 41.417; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7576; ConvF(8.73, 8.73, 8.73); Calibrated: 2021/4/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1664; Calibrated: 2021/3/1
- Phantom: Twin-SAM V8.0 (Left); Type: QD 000 P41 AA; Serial: 2035
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 14.5 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 102.1 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 17.4 W/kg
SAR(1 g) = 9.3 W/kg; SAR(10 g) = 4.94 W/kg
Maximum value of SAR (measured) = 14.3 W/kg



0 dB = 14.3 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2021/8/10

System Check_Head_1900MHz

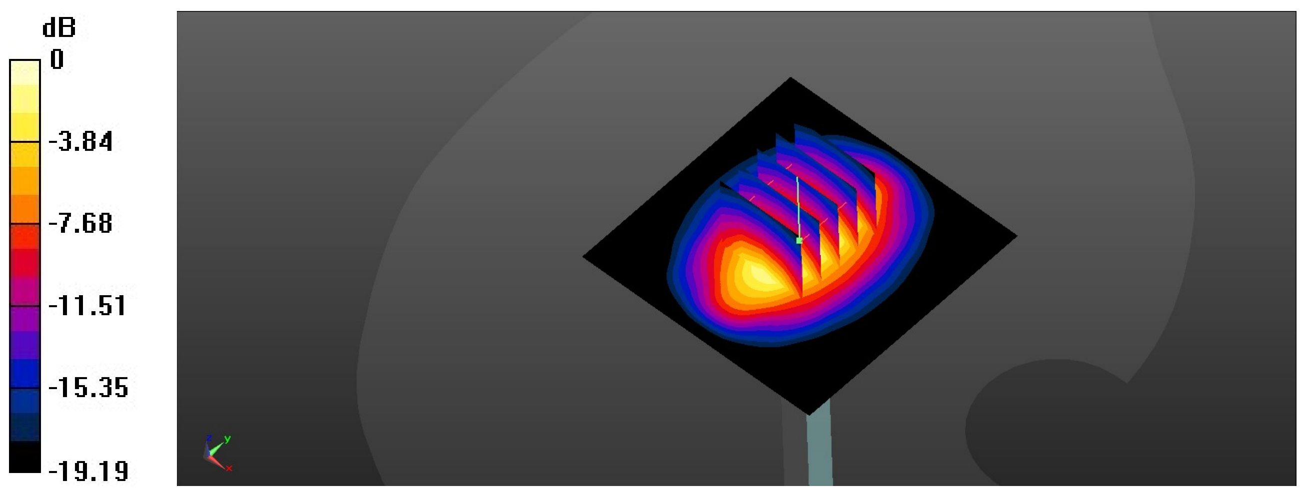
DUT: D1900V2-SN:5d182

Communication System: UID 0, CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: HSL_1900_210810 Medium parameters used: f = 1900 MHz; σ = 1.448 S/m; ε_r = 39.105; ρ = 1000 kg/m^3
Ambient Temperature : 23.6 ℃; Liquid Temperature : 22.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7576; ConvF(8.33, 8.33, 8.33); Calibrated: 2021/4/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1664; Calibrated: 2021/3/1
- Phantom: Twin-SAM V8.0 (Left); Type: QD 000 P41 AA; Serial: 2035
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 16.1 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 108.6 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 19.7 W/kg
SAR(1 g) = 10.1 W/kg; SAR(10 g) = 5.11 W/kg
Maximum value of SAR (measured) = 16.2 W/kg



0 dB = 16.2 W/kg

System Check_Head_1900MHz

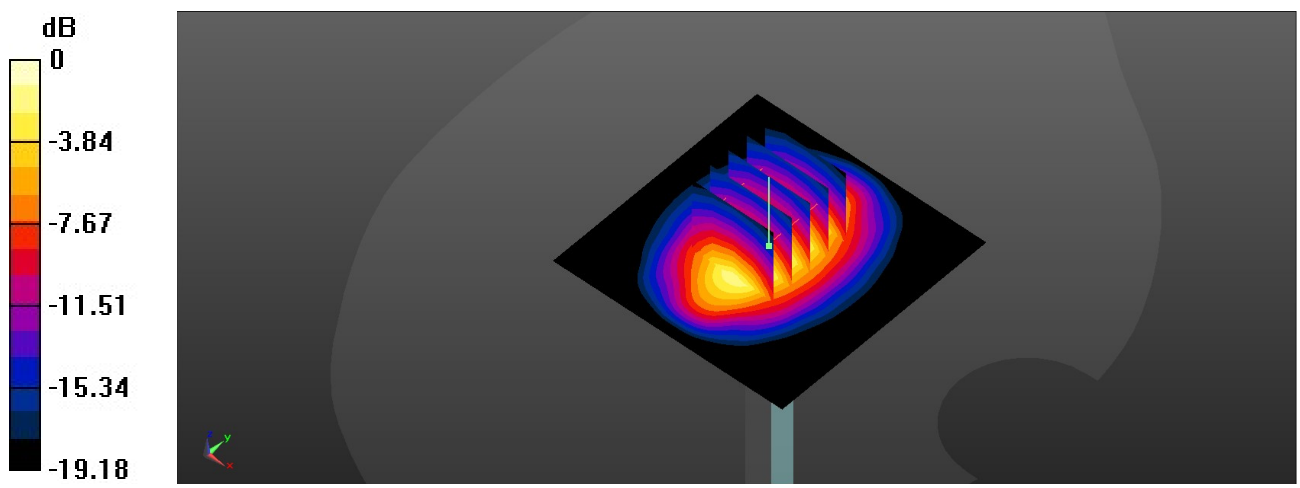
DUT: D1900V2-SN:5d182

Communication System: UID 0, CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: HSL_1900_210813 Medium parameters used: f = 1900 MHz; σ = 1.453 S/m; ε_r = 39.107; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7576; ConvF(8.33, 8.33, 8.33); Calibrated: 2021/4/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1664; Calibrated: 2021/3/1
- Phantom: Twin-SAM V8.0 (Left); Type: QD 000 P41 AA; Serial: 2035
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 16.2 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 108.8 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 19.8 W/kg
SAR(1 g) = 10.2 W/kg; SAR(10 g) = 5.23 W/kg
Maximum value of SAR (measured) = 16.2 W/kg



0 dB = 16.3 W/kg

Appendix B. Plots of SAR Measurement

The plots are shown as follows.

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab   Date: 2021/8/10

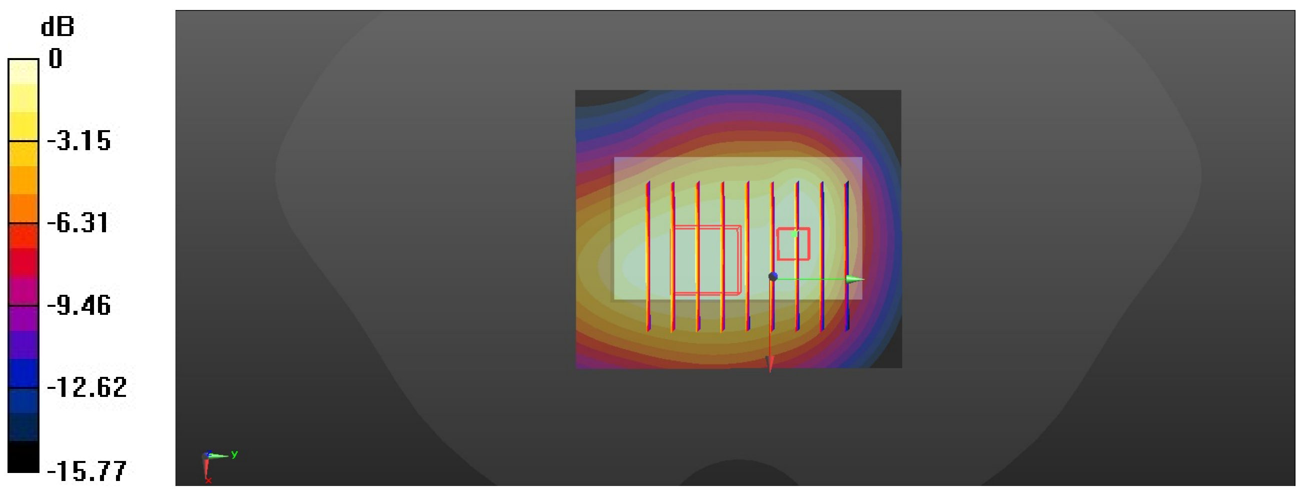
01_GSM850_GPRS (4 Tx slots)_Horizontal Up_10mm_Ch251

Communication System: UID 0, GPRS/EDGE12 (0); Frequency: 848.8 MHz;Duty Cycle: 1:2.08
Medium: HSL_835_210810 Medium parameters used: f = 849 MHz; σ = 0.925 S/m; ε_r = 41.676; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.4 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7576; ConvF(10.19, 10.19, 10.19); Calibrated: 2021/4/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1664; Calibrated: 2021/3/1
- Phantom: Twin-SAM V8.0 (Left); Type: QD 000 P41 AA; Serial: 2035
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Ch251/Area Scan (61x71x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.05 W/kg

Ch251/Zoom Scan (7x9x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 29.89 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 1.08 W/kg
SAR(1 g) = 0.620 W/kg; SAR(10 g) = 0.421 W/kg
Maximum value of SAR (measured) = 0.904 W/kg



0 dB = 0.904 W/kg

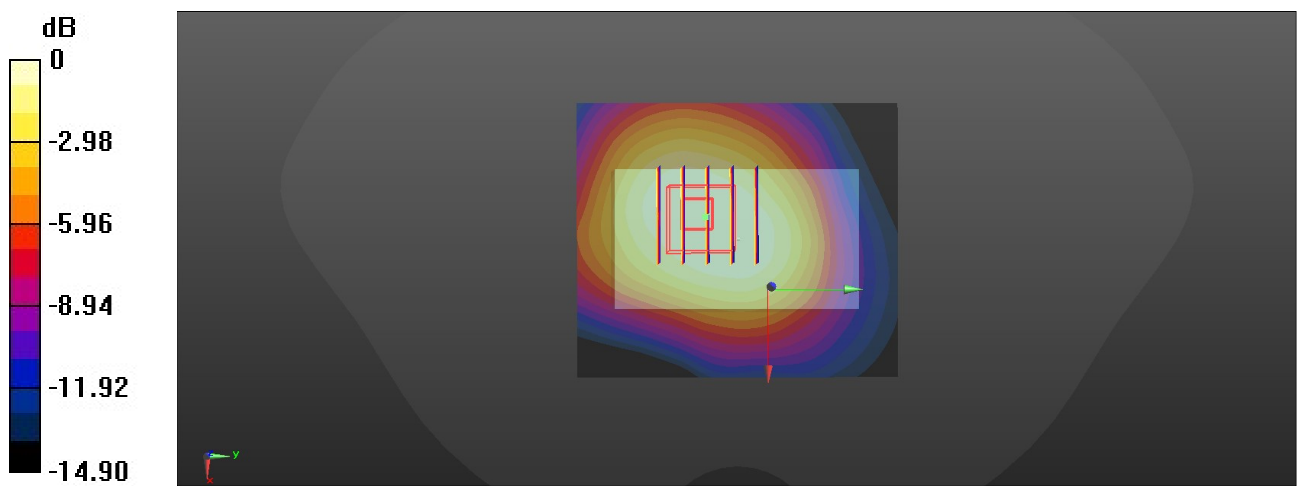
02_GSM1900_GPRS (4 Tx slots)_Horizontal Up_10mm_Ch661

Communication System: UID 0, GPRS/EDGE12 (0); Frequency: 1880 MHz;Duty Cycle: 1:2.08
Medium: HSL_1900_210813 Medium parameters used: f = 1880 MHz; σ = 1.427 S/m; ε_r = 39.177; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7576; ConvF(8.33, 8.33, 8.33); Calibrated: 2021/4/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1664; Calibrated: 2021/3/1
- Phantom: Twin-SAM V8.0 (Left); Type: QD 000 P41 AA; Serial: 2035
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Ch661/Area Scan (61x71x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.39 W/kg

Ch661/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 28.03 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 1.56 W/kg
SAR(1 g) = 0.948 W/kg; SAR(10 g) = 0.598 W/kg
Maximum value of SAR (measured) = 1.33 W/kg



0 dB = 1.33 W/kg

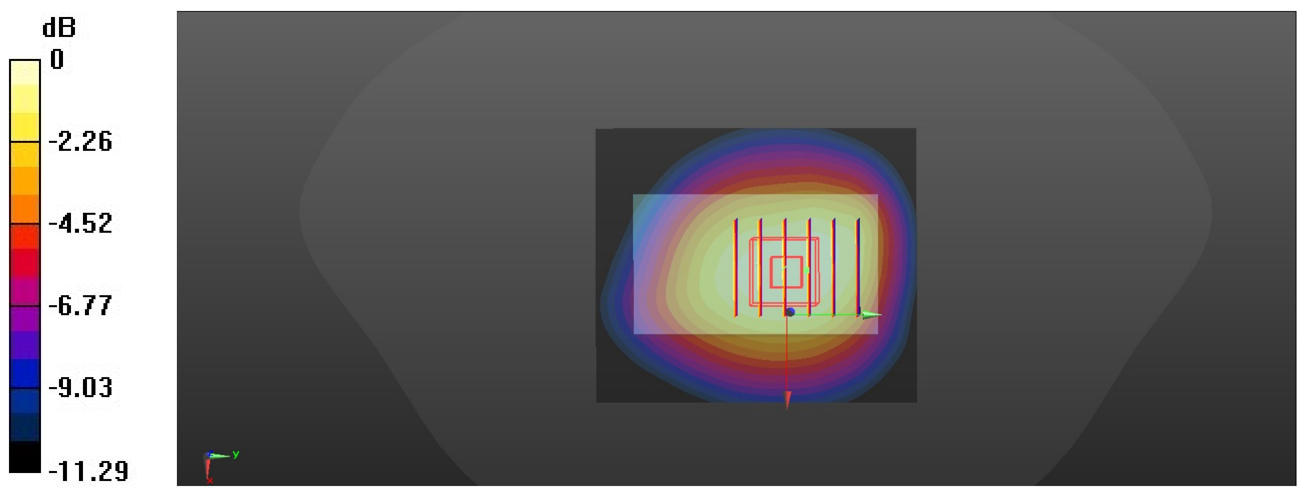
03_LTE Band 12_10M_QPSK_1RB_0Offset_Horizontal Up_10mm_Ch23095

Communication System: UID 0, LTE (0); Frequency: 707.5 MHz;Duty Cycle: 1:1
Medium: HSL_750_210811 Medium parameters used: f = 707.5 MHz; σ = 0.856 S/m; ε_r = 41.885; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7576; ConvF(10.47, 10.47, 10.47); Calibrated: 2021/4/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1664; Calibrated: 2021/3/1
- Phantom: Twin-SAM V8.0 (Left); Type: QD 000 P41 AA; Serial: 2035
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Ch23095/Area Scan (61x71x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.0598 W/kg

Ch23095/Zoom Scan (5x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.439 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.0650 W/kg
SAR(1 g) = 0.047 W/kg; SAR(10 g) = 0.033 W/kg
Maximum value of SAR (measured) = 0.0588 W/kg



0 dB = 0.0588 W/kg

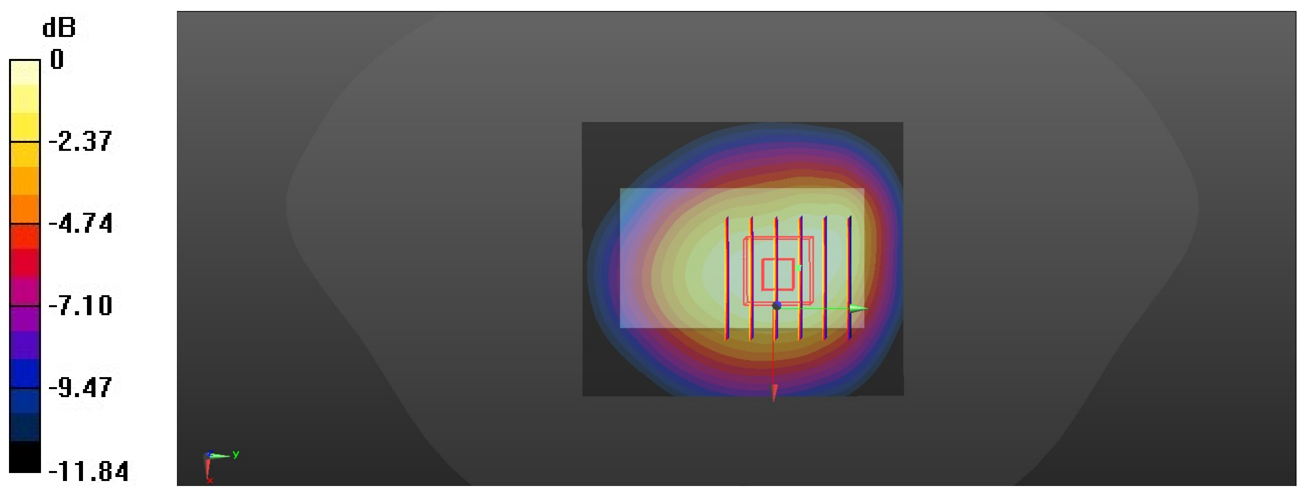
04_LTE Band 13_10M_QPSK_1RB_0Offset_Horizontal Up_10mm_Ch23230

Communication System: UID 0, LTE (0); Frequency: 782 MHz;Duty Cycle: 1:1
Medium: HSL_750_210811 Medium parameters used: f = 782 MHz; σ = 0.897 S/m; ε_r = 40.237; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7576; ConvF(10.47, 10.47, 10.47); Calibrated: 2021/4/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1664; Calibrated: 2021/3/1
- Phantom: Twin-SAM V8.0 (Left); Type: QD 000 P41 AA; Serial: 2035
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Ch23230/Area Scan (61x71x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.105 W/kg

Ch23230/Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.56 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.117 W/kg
SAR(1 g) = 0.081 W/kg; SAR(10 g) = 0.057 W/kg
Maximum value of SAR (measured) = 0.102 W/kg



0 dB = 0.102 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2021/8/10

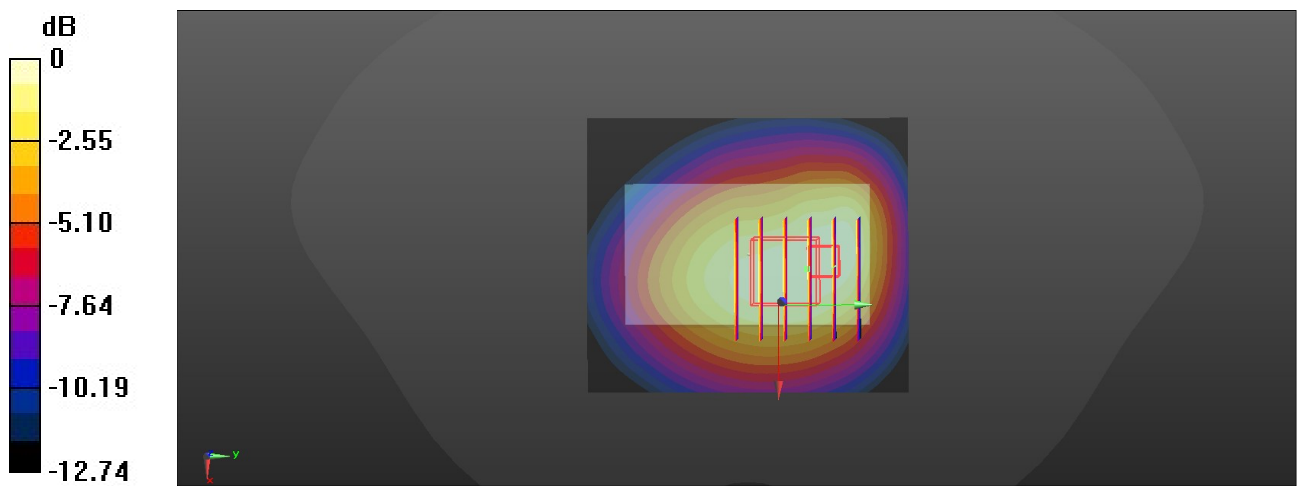
05_LTE Band 26_15M_QPSK_1RB_0Offset_Horizontal Up_10mm_Ch26865

Communication System: UID 0, LTE (0); Frequency: 831.5 MHz;Duty Cycle: 1:1
Medium: HSL_835_210810 Medium parameters used: f = 831.5 MHz; σ = 0.911 S/m; ε_r = 41.858; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.4 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7576; ConvF(10.19, 10.19, 10.19); Calibrated: 2021/4/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1664; Calibrated: 2021/3/1
- Phantom: Twin-SAM V8.0 (Left); Type: QD 000 P41 AA; Serial: 2035
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Ch26865/Area Scan (61x71x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.202 W/kg

Ch26865/Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.20 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.243 W/kg
SAR(1 g) = 0.152 W/kg; SAR(10 g) = 0.105 W/kg
Maximum value of SAR (measured) = 0.206 W/kg



0 dB = 0.206 W/kg

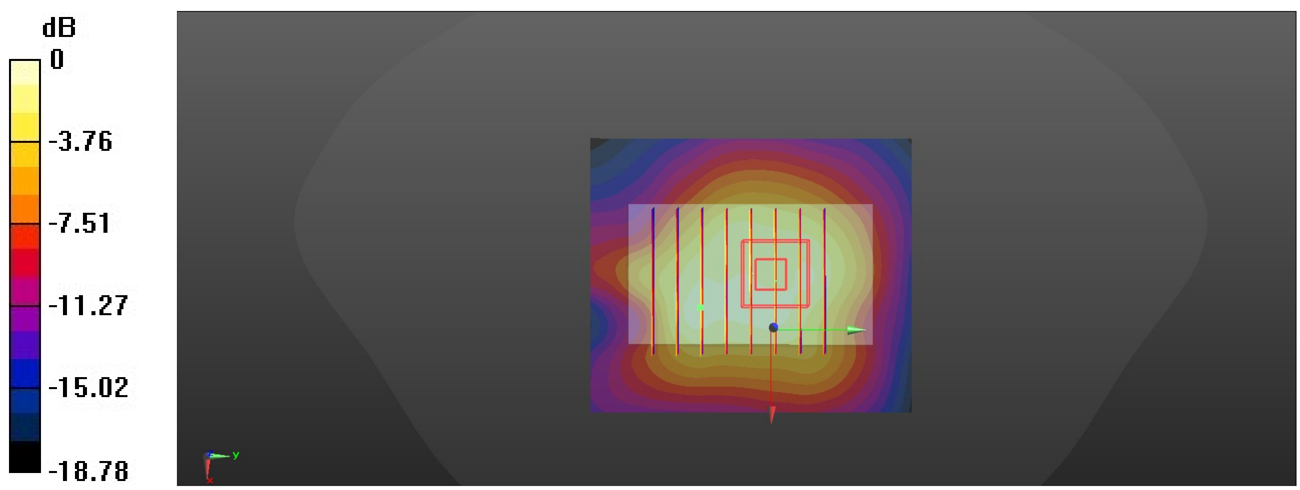
06_LTE Band 4_20M_QPSK_3RB_0Offset_Horizontal Up_10mm_Ch20175

Communication System: UID 0, LTE (0); Frequency: 1732.5 MHz;Duty Cycle: 1:1
Medium: HSL_1750_210812 Medium parameters used: f = 1732.5 MHz; σ = 1.383 S/m; ε_r = 41.467; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7576; ConvF(8.73, 8.73, 8.73); Calibrated: 2021/4/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1664; Calibrated: 2021/3/1
- Phantom: Twin-SAM V8.0 (Left); Type: QD 000 P41 AA; Serial: 2035
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Ch20175/Area Scan (61x71x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.168 W/kg

Ch20175/Zoom Scan (7x8x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.81 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 0.222 W/kg
SAR(1 g) = 0.139 W/kg; SAR(10 g) = 0.084 W/kg
Maximum value of SAR (measured) = 0.190 W/kg



0 dB = 0.190 W/kg

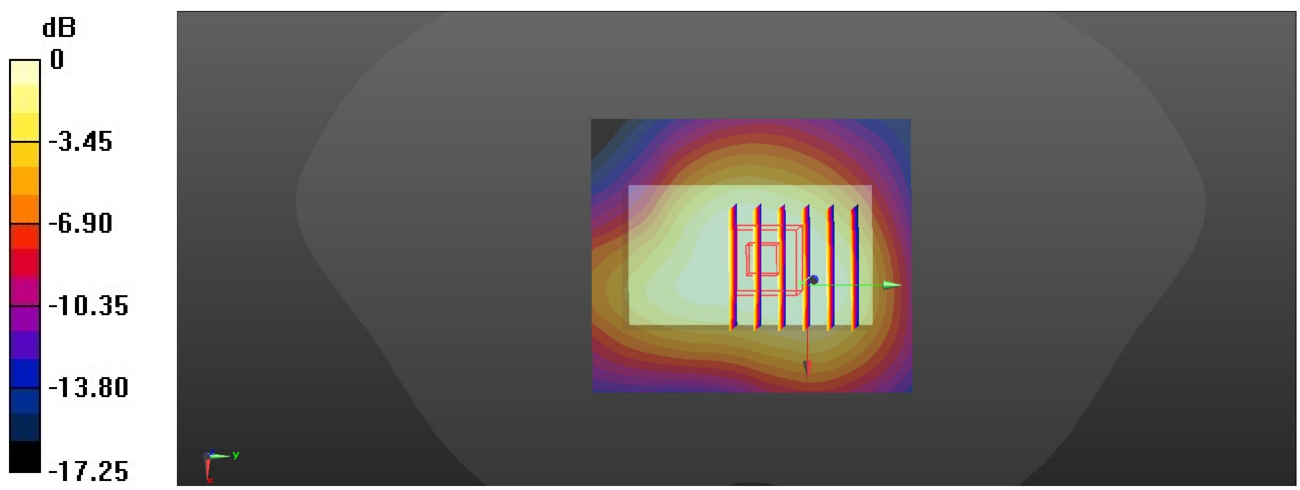
07_LTE Band 2_20M_QPSK_3RB_0Offset_Horizontal Up_10mm_Ch18900

Communication System: UID 0, LTE (0); Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: HSL_1900_210810 Medium parameters used: f = 1880 MHz; σ = 1.427 S/m; ε_r = 39.177; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃; Liquid Temperature：22.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7576; ConvF(8.33, 8.33, 8.33); Calibrated: 2021/4/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1664; Calibrated: 2021/3/1
- Phantom: Twin-SAM V8.0 (Left); Type: QD 000 P41 AA; Serial: 2035
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Ch18900/Area Scan (61x71x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.226 W/kg

Ch18900/Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.67 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 0.241 W/kg
SAR(1 g) = 0.142 W/kg; SAR(10 g) = 0.090 W/kg
Maximum value of SAR (measured) = 0.202 W/kg



0 dB = 0.202 W/kg

Appendix C. DASY Calibration Certificate

The DASY calibration certificates are shown as follows.

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校准
CALIBRATION
CNAS L0570

Client **Sporton** **Certificate No: Z18-60532**

CALIBRATION CERTIFICATE

Object	D750V3 - SN: 1099
Calibration Procedure(s)	FF-Z11-003-01 Calibration Procedures for dipole validation kits
Calibration date:	December 6, 2018

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Power Meter NRVD	102196	07-Mar-18 (CTTL, No.J18X01510)	Mar-19
Power sensor NRV-Z5	100596	07-Mar-18 (CTTL, No.J18X01510)	Mar-19
Reference Probe EX3DV4	SN 7514	27-Aug-18(SPEAG,No.EX3-7514_Aug18)	Aug-19
DAE4	SN 1555	20-Aug-18(SPEAG,No.DAE4-1555_Aug18)	Aug-19
Secondary Standards	**ID #**	**Cal Date(Calibrated by, Certificate No.)**	**Scheduled Calibration**
Signal Generator E4438C	MY49071430	23-Jan-18 (CTTL, No.J18X00560)	Jan-19
NetworkAnalyzer E5071C	MY46110673	24-Jan-18 (CTTL, No.J18X00561)	Jan-19

	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: December 9, 2018

Add: No.51 Xueyuan Road, Haidian District, Beijing, 100191, China
Tel: +86-10-62304633-2079 Fax: +86-10-62304633-2504
E-mail: cttl@chinattl.com http://www.chinattl.cn

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	52.10.2.1495
Extrapolation	Advanced Extrapolation	
Phantom	Triple Flat Phantom 5.1C	
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	43.1 ± 6 %	0.87 mho/m ± 6 %
Head TSL temperature change during test	<1.0 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.07 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**8.52 mW /g ± 18.8 % (k=2)**
SAR averaged over 10 cm^3 (10 g) of Head TSL	Condition	
SAR measured	250 mW input power	1.38 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**5.64 mW /g ± 18.7 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	55.5	0.96 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	54.0 ± 6 %	0.95 mho/m ± 6 %
Body TSL temperature change during test	<1.0 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.15 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**8.61 mW /g ± 18.8 % (k=2)**
SAR averaged over 10 cm^3 (10 g) of Body TSL	Condition	
SAR measured	250 mW input power	1.44 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**5.77 mW /g ±18.7 % (k=2)**

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Appendix (Additional assessments outside the scope of CNAS L0570)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	54.2Ω- 1.12jΩ
Return Loss	- 27.7dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	49.8Ω- 3.37jΩ
Return Loss	- 29.4dB

General Antenna Parameters and Design

Electrical Delay (one direction)	0.900 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: 12.05.2018

Test Laboratory: CTTL, Beijing, China

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1099

Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1

Medium parameters used: f = 750 MHz; σ = 0.865 S/m; ε_r = 43.13; ρ = 1000 kg/m3

Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7514; ConvF(9.47, 9.47, 9.47) @ 750 MHz; Calibrated: 8/27/2018
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1555; Calibrated: 8/20/2018
- Phantom: MFP_V5.1C ; Type: QD 000 P51CA; Serial: 1062
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

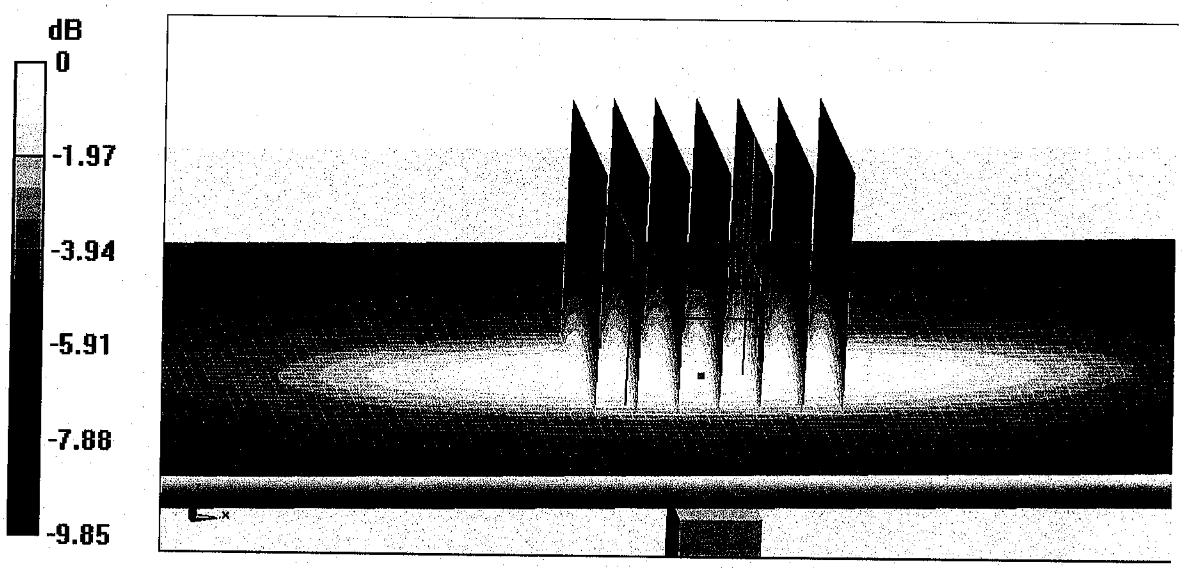
Dipole Calibration/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 53.37 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 3.12 W/kg

SAR(1 g) = 2.07 W/kg; SAR(10 g) = 1.38 W/kg

Maximum value of SAR (measured) = 2.75 W/kg



0 dB = 2.75 W/kg = 4.39 dBW/kg

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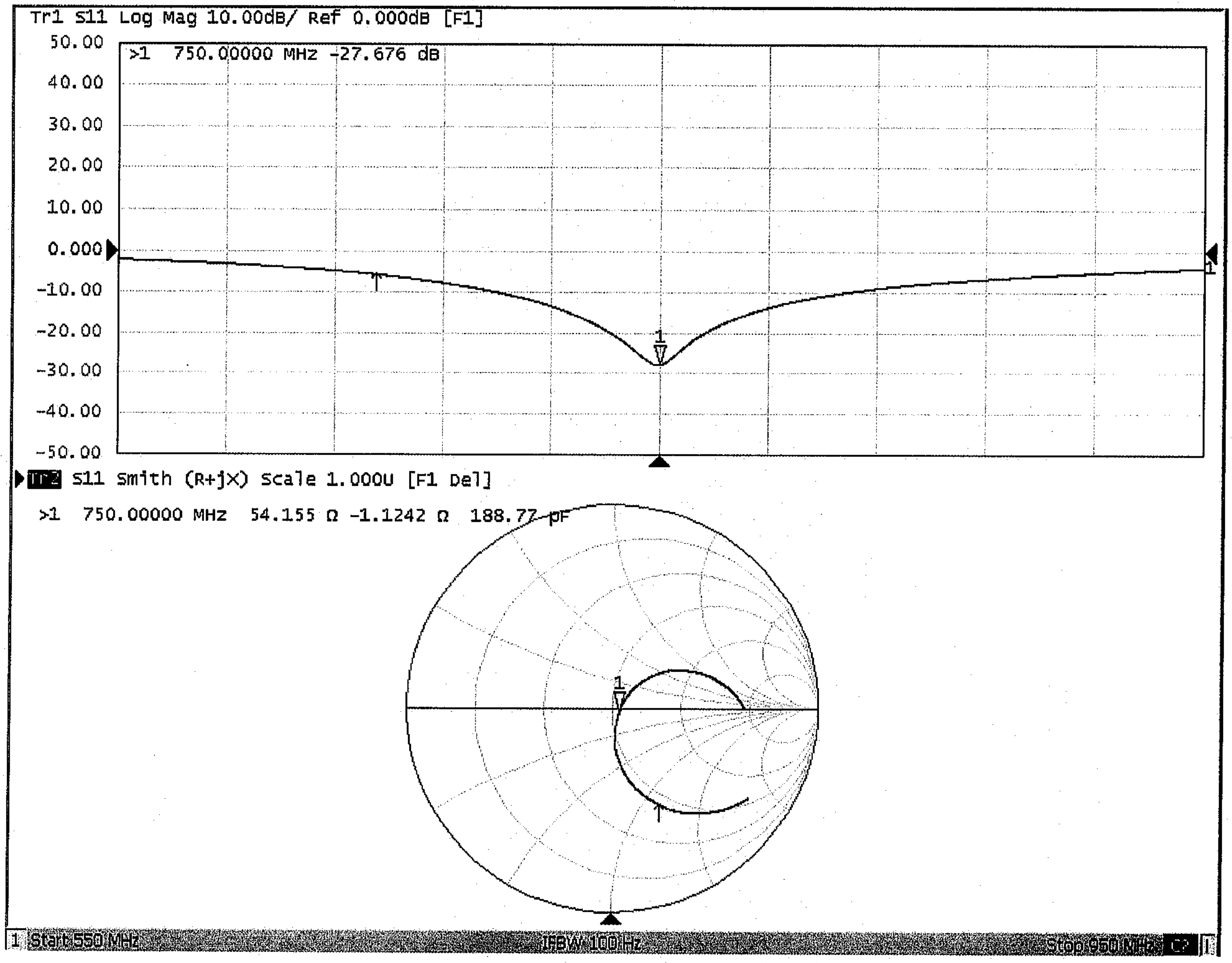
Impedance Measurement Plot for Head TSL



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DASY5 Validation Report for Body TSL Date: 12.05.2018

Test Laboratory: CTTL, Beijing, China

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1099

Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1

Medium parameters used: f = 750 MHz; σ = 0.951 S/m; ε_r = 54.02; ρ = 1000 kg/m3

Phantom section: Center Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7514; ConvF(9.68, 9.68, 9.68) @ 750 MHz; Calibrated: 8/27/2018
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1555; Calibrated: 8/20/2018
- Phantom: MFP_V5.1C ; Type: QD 000 P51CA; Serial: 1062
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

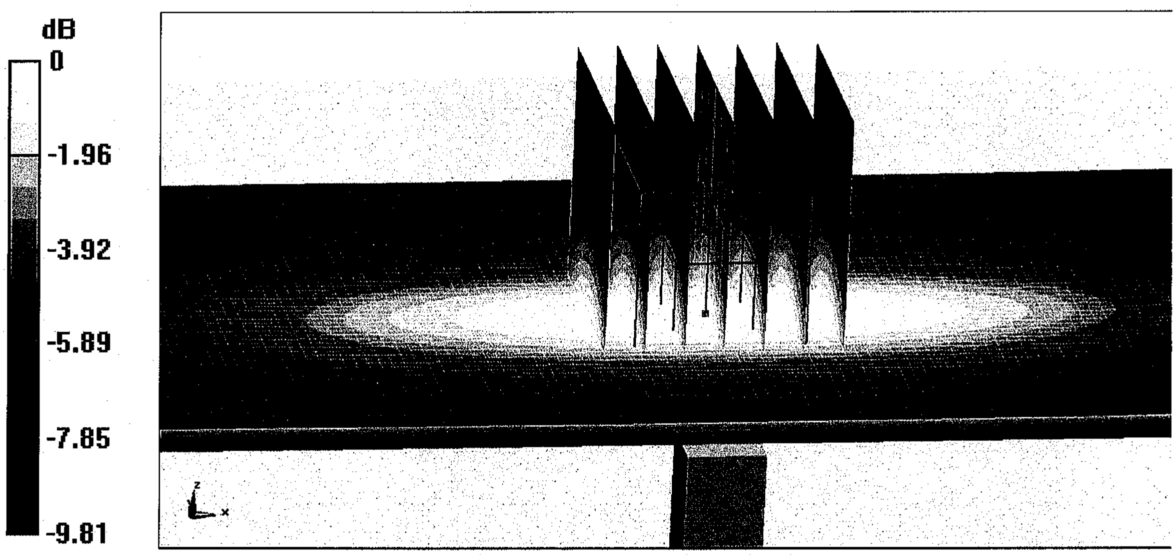
Dipole Calibration/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 51.51 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 3.29 W/kg

SAR(1 g) = 2.15 W/kg; SAR(10 g) = 1.44 W/kg

Maximum value of SAR (measured) = 2.88 W/kg



0 dB = 2.88 W/kg = 4.59 dBW/kg

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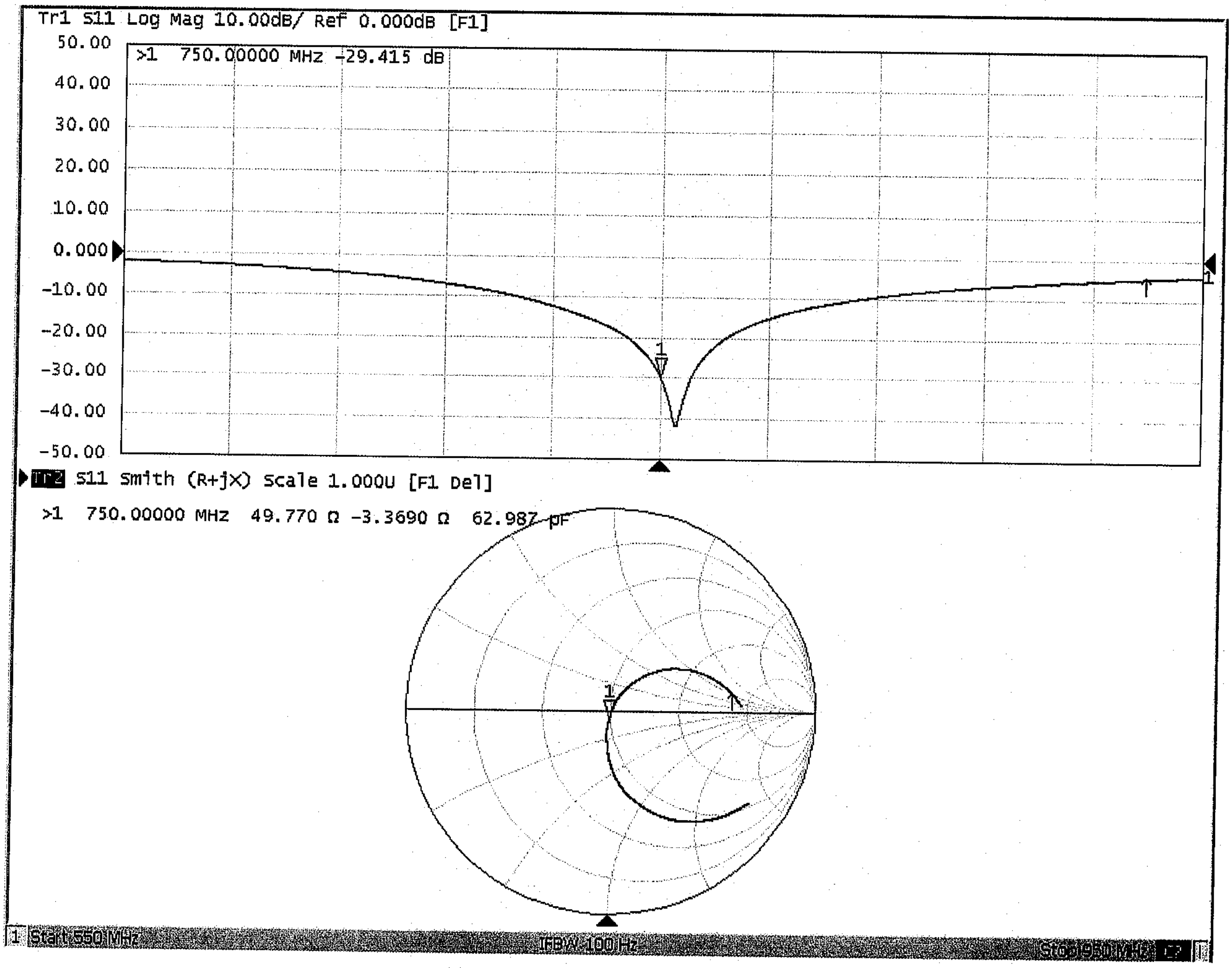
Impedance Measurement Plot for Body TSL



D750V3, Serial No. 1099 Extended Dipole Calibrations

Referring to KDB 865664 D01 v01r02, if dipoles are verified in return loss (<-20dB, within 20% of prior calibration), and in impedance (within 5 ohm of prior calibration), the annual calibration is not necessary and the calibration interval can be extended.

D750V3 – serial no. 1099												
	750 Head						750 Body					
Date of Measurement	Return-Loss (dB)	Delta (%)	Real Impedance (ohm)	Delta (ohm)	Imaginary Impedance (ohm)	Delta (ohm)	Return-Loss (dB)	Delta (%)	Real Impedance (ohm)	Delta (ohm)	Imaginary Impedance (ohm)	Delta (ohm)
2018.12.6	-27.7		54.2		-1.12		-29.4		49.8		-3.37	
2019.11.25	-27.9	-0.7	53.0	-1.2	-1.46	-0.34	-29.2	0.7	48.7	-1.1	-3.17	0.2
2020.11.25	-27.6	-0.4	53.2	-1	-1.79	-0.67	-29.8	1.4	50.4	0.6	-3.23	0.14

<Justification of the extended calibration>

The return loss is < -20dB, within 20% of prior calibration; the impedance is within 5 ohm of prior calibration. Therefore the verification result should support extended calibration.

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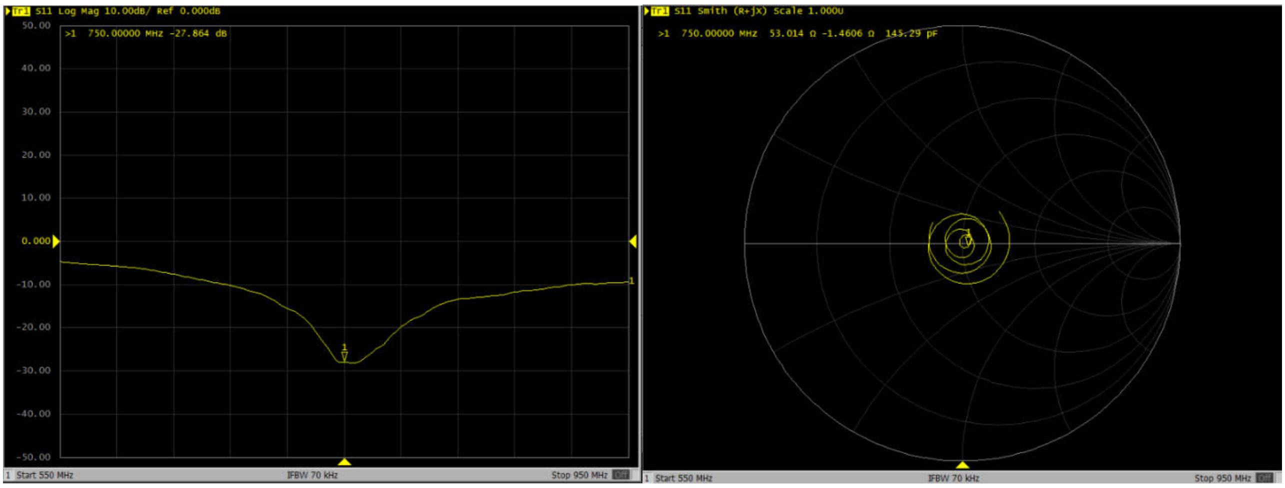
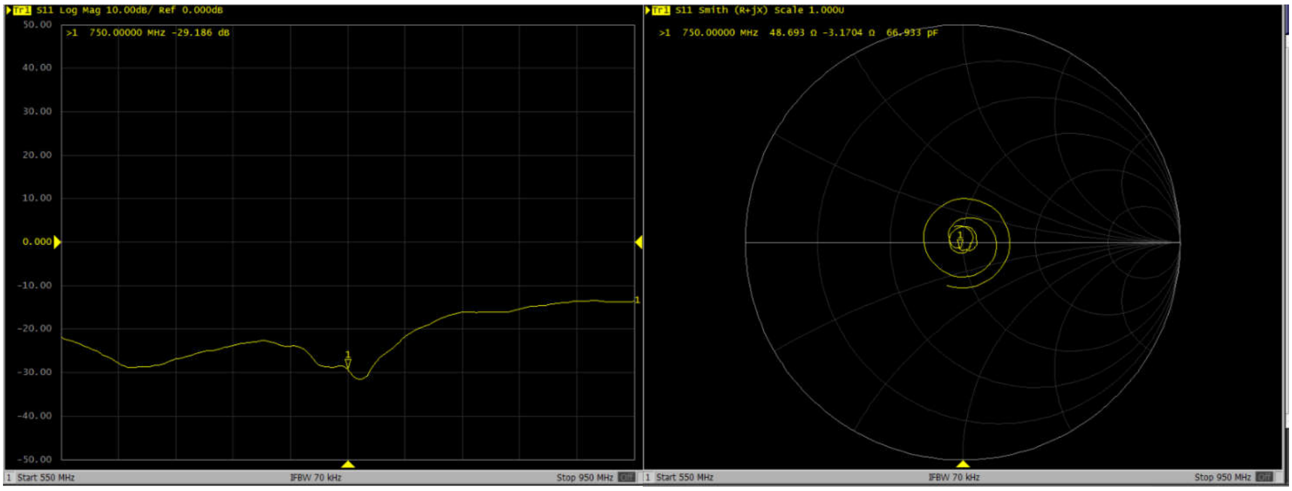
Dipole Verification Data> D750V3, serial no. 1099

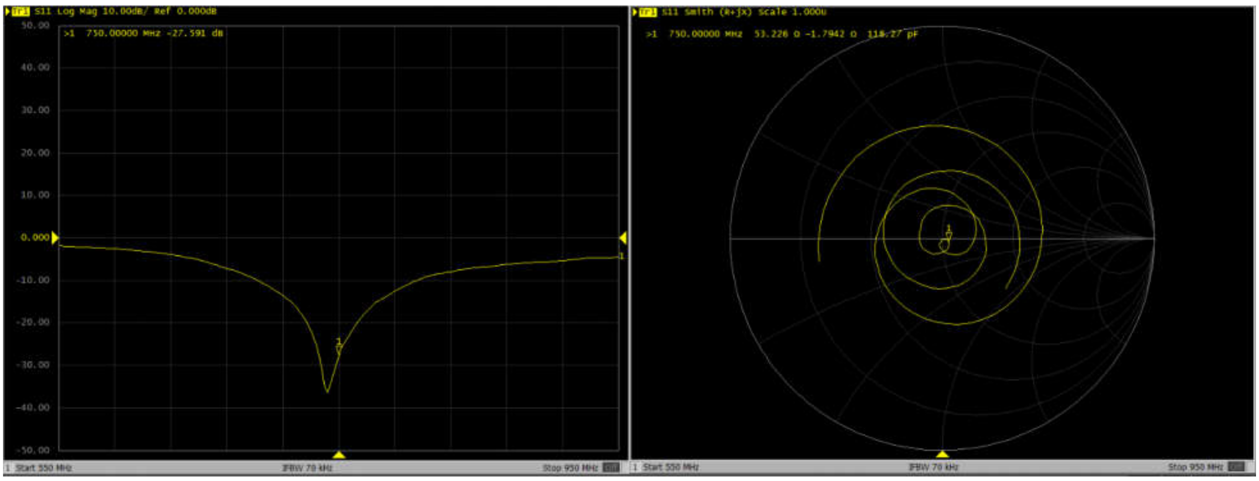
750MHz – Head----2019.11.25



750MHz – Body----2019.11.25



750MHz – Head----2020.11.25



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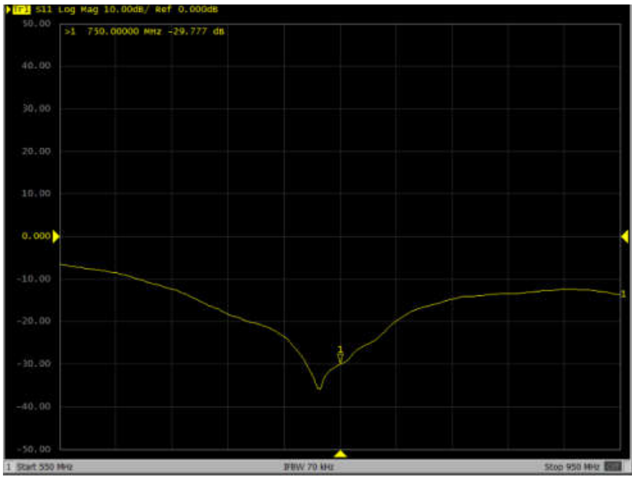
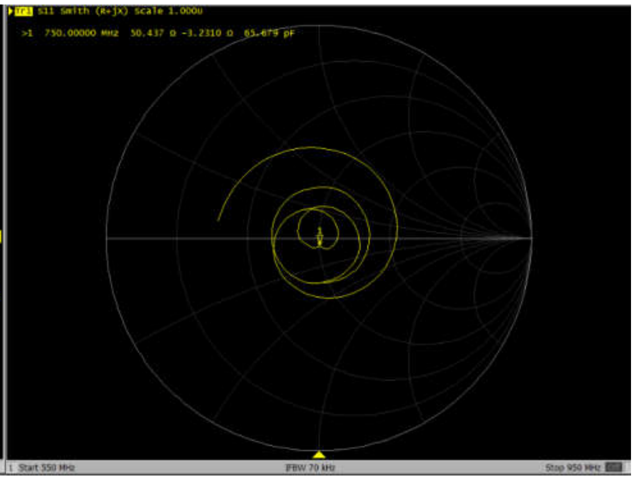
750MHz – Body----2020.11.25





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Client **Sporton** **Certificate No: Z18-60533**

CALIBRATION CERTIFICATE

Object: D835V2 - SN: 4d162

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

Calibration date: December 5, 2018

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Power Meter NRVD	102196	07-Mar-18 (CTTL, No.J18X01510)	Mar-19
Power sensor NRV-Z5	100596	07-Mar-18 (CTTL, No.J18X01510)	Mar-19
Reference Probe EX3DV4	SN 7514	27-Aug-18(SPEAG,No.EX3-7514_Aug18)	Aug-19
DAE4	SN 1555	20-Aug-18(SPEAG,No.DAE4-1555_Aug18)	Aug-19
Secondary Standards	**ID #**	**Cal Date(Calibrated by, Certificate No.)**	**Scheduled Calibration**
Signal Generator E4438C	MY49071430	23-Jan-18 (CTTL, No.J18X00560)	Jan-19
NetworkAnalyzer E5071C	MY46110673	24-Jan-18 (CTTL, No.J18X00561)	Jan-19

	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: December 8, 2018

Add: No.51 Xueyuan Road, Haidian District, Beijing, 100191, China
Tel: +86-10-62304633-2079 Fax: +86-10-62304633-2504
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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%.