FCC SAR Test Report

APPLICANT	:	Motorola Solutions Inc
EQUIPMENT	:	WAVE TWO-WAY RADIO
BRAND NAME	:	Motorola Solutions
MODEL NAME	:	TLK 100i
MODEL NUMBER	:	HK2123A
FCC ID	:	AZ489FT7136
STANDARD	:	FCC 47 CFR PART 2 (2.1093)

The product was received on Jan. 22, 2019 and testing was started from Mar. 11, 2019 and completed on Jul. 08, 2020. We, Sporton International (Kunshan) Inc., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has 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 (Kunshan) Inc., the test report shall not be reproduced except in full.

Rose Wang

Reviewed by: Rose Wang / Supervisor

Kat Yin

Approved by: Kat Yin / Manager

ilac-MRA

ACCREDITED
Cert #5145.02

Sporton International (Kunshan) Inc.
No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300
People's Republic of China

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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA8D1903-04	Rev. 01	Initial issue of report	Oct. 07, 2020

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **Motorola Solutions Inc, WAVE TWO-WAY RADIO , TLK 100i,** are as follows.

Highest SAR Summary					Highest Simultaneous Transmission 1g SAR (W/kg)
Equipment Class	Frequency Band		Face (Separation 25mm)	Body-worn (Separation 0mm)	
			1g SAR (W/kg)		
Licensed	WCDMA	Band V	**0.65**	**1.00**	1.15
		Band II	0.37	0.38	
	LTE	Band 17	0.37	0.61	
		Band 4	0.30	0.33	
		Band 2	0.41	0.43	
		Band 7	0.25	0.47	
DTS	WLAN	2.4GHz WLAN	0.10	0.15	1.15
NII		5GHz WLAN	0.13	0.17	1.09
DSS	2.4GHz Band	Bluetooth		<0.10	1.01
Date of Testing:			2019/3/11 ~ 2020/7/8		

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 (Kunshan) Inc. is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

Testing Laboratory			
Test Firm	Sporton International (Kunshan) Inc.		
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158 FAX : +86-512-57900958		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	SAR01-KS / SAR02-KS SAR03-KS /SAR04-KS	CN1257	314309

Applicant	
Company Name	Motorola Solutions Inc
Address	8000 W. Sunrise Blvd. Ft. Lauderdale FL 33322 United States Of America

Manufacturer	
Company Name	Motorola Solutions Malaysia Sdn. Bhd.
Address	No. 2A, Medan Bayan Lepas, Mukim 12, S.W.D., 11900 Bayan Lepas Penang, Malaysia

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 648474 D04 SAR Evaluation Considerations for Wireless Handsets v01r03
- FCC KDB 248227 D01 802.11 Wi-Fi SAR v02r02
- 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	WAVE TWO-WAY RADIO
Brand Name	Motorola Solutions
Model Name	TLK 100i
Model Number	HK2123A
FCC ID	AZ489FT7136
IMEI Code	Sample #01: 354124100003326 Sample #02: 354124100179795
Wireless Technology and Frequency Range	WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 7: 2502.5 MHz ~ 2567.5 MHz LTE Band 17: 706.5 MHz ~ 713.5 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz WLAN 5.5GHz Band: 5500 MHz ~ 5720 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz
Mode	RMC 12.2Kbps HSDPA HSUPA LTE: QPSK, 16QAM WLAN 2.4GHz : 802.11b/g/n HT20/HT40 WLAN 5GHz : 802.11a/n HT20/HT40 Bluetooth BR/EDR/LE
HW Version	P2.0
FVIN	BLUE_BASE_ENG_R03.01.03_APPS_R03.01.03
EUT Stage	Identical Prototype

Remark:
1. This device has PTT (push-to-talk) function, so perform 25mm in-front-of the face SAR. For the device can’t support held-to-ear operating mode, so no need to considering head SAR testing.
2. The device can use with assigned accessory manufacturer offered, so perform 0mm body worn accessory SAR.

4.2 Specification of Accessory

Specification of Accessory				
US AC Adapter 1 (Micrio USB Charger)	Brand Name	Motorola	Model Name	PS000150A11
	Power Rating	I/P: 100 - 240 Vac, 250 mA, O/P: 5 Vdc, 1000 mA		
	Power Cord	1 meter, non-shielded cable, with w/o ferrite core		
US AC Adapter 2 (SUC)	Brand Name	Motorola	Model Name	PMLN7109A
	Power Rating	I/P: 100 - 240 Vac, 250 mA, O/P: 5 Vdc, 1000 mA		
	Power Cord	___meter, non-shielded cable, with w/o ferrite core		
US AC Adapter 3 (MUC)	Brand Name	Motorola	Model Name	PMLN7101A
	Power Rating	I/P: 100 - 240 Vac, 1000 mA, O/P: 5 Vdc, 1000 mA		
	Power Cord	1 meter, non-shielded cable, with w/o ferrite core		
Battery 1	Brand Name	Motorola	Model Name	BT110（PMNN4578A）
	Power Rating	4.35 Vdc, 2500 mAh	Type	Li-ion
Earphone 1	Brand Name	Motorola	Model Name	PMLN7189A
	Signal Line	1.28 meter, non-shielded cable, with w/o ferrite core		
Earphone 2	Brand Name	Motorola	Model Name	PMLN7156A
	Signal Line	1.18 meter, non-shielded cable, with w/o ferrite core		
Earphone 3	Brand Name	Motorola	Model Name	PMLN7157A
	Signal Line	1.64 meter, non-shielded cable, with w/o ferrite core		
Earphone 4	Brand Name	Motorola	Model Name	PMLN7158A
	Signal Line	2.11 meter, non-shielded cable, with w/o ferrite core		
Earphone 5	Brand Name	Motorola	Model Name	PMLN7159A
	Signal Line	1.69 meter, non-shielded cable, with w/o ferrite core		
Earphone 6 (Receive-only earpiece with translucent tube)	Brand Name	Motorola	Model Name	PMLN7560A
Nylon Wrist Strap	Brand Name	Motorola	Model Name	PMLN6074A
Heavy Duty Swivel Belt Clip	Brand Name	Motorola	Model Name	PMLN7128A
Carry Holder/Holster with Swivel Belt Clip	Brand Name	Motorola	Model Name	PMLN7932A
AINA PTT voice responder	Brand Name	Motorola	Model Name	PMNN4126A
Wired Remote Speaker Mic	Brand Name	Motorola	Model Name	PMMN4125B
Earphone (Receive-only earpiece with translucent tube)	Brand Name	Motorola	Model Name	PMLN7560A

4.3 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>AZ489FT7136</td></tr>
<tr><td>Equipment Name</td><td>WAVE TWO-WAY RADIO</td></tr>
<tr><td>Operating Frequency Range of each LTE transmission band</td><td>LTE Band 2: 1850.7 MHz ~ 1909.3 MHz
LTE Band 4: 1710.7 MHz ~ 1754.3 MHz
LTE Band 7: 2502.5 MHz ~ 2567.5 MHz
LTE Band 17: 706.5 MHz ~ 713.5 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 7: 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 17: 5MHz, 10MHz</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>R8, Cat 1</td></tr>
<tr><td>CA Support</td><td>Not Supported</td></tr>
<tr><td>LTE MPR permanently built-in by design</td><td>Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 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>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 1</td></tr>
<tr><td>16 QAM</td><td>≤ 5</td><td>≤ 4</td><td>≤ 8</td><td>≤ 12</td><td>≤ 16</td><td>≤ 18</td><td>≤ 1</td></tr>
<tr><td>16 QAM</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 2</td></tr>
<tr><td>64 QAM</td><td>≤ 5</td><td>≤ 4</td><td>≤ 8</td><td>≤ 12</td><td>≤ 16</td><td>≤ 18</td><td>≤ 2</td></tr>
<tr><td>64 QAM</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 3</td></tr>
<tr><td>256 QAM</td><td colspan="6">≥ 1</td><td>≤ 5</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 7

	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20775	2502.5	20800	2505	20825	2507.5	20850	2510
M	21100	2535	21100	2535	21100	2535	21100	2535
H	21425	2567.5	21400	2565	21375	2562.5	21350	2560

LTE Band 17

	Bandwidth 5 MHz		Bandwidth 10 MHz	
	Channel #	Freq.(MHz)	Channel #	Freq. (MHz)
L	23755	706.5	23780	709
M	23790	710	23790	710
H	23825	713.5	23800	711

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

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:

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

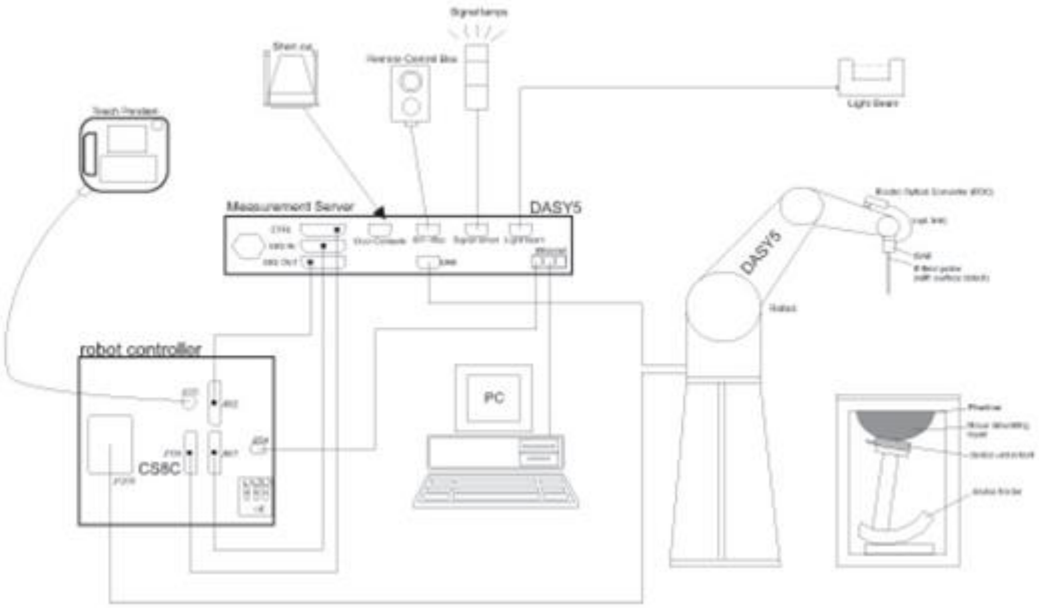
SAR is expressed in units of Watts per kilogram (W/kg)

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

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.

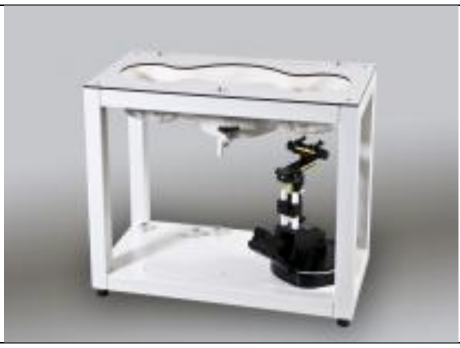
The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

Photo of DAE

7.3 Phantom

<SAM Twin Phantom>

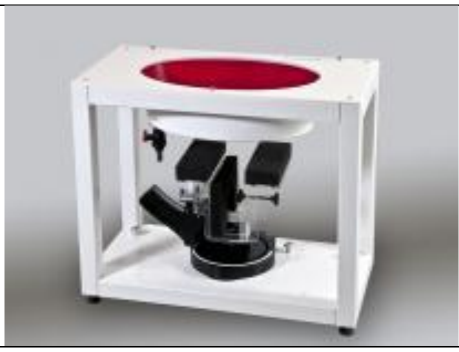
Shell Thickness	2 ± 0.2 mm; Center ear point: 6 ± 0.2 mm
Filling Volume	Approx. 25 liters
Dimensions	Length: 1000 mm; Width: 500 mm; Height: adjustable feet
Measurement Areas	Left Hand, Right Hand, Flat Phantom



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.

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 ± 1 mm	$\frac{1}{2}\cdot\delta\cdot\ln(2) \pm 0.5$ mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}	≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
	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.	

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><th colspan="3"></th><th>$\leq$ 3 GHz</th><th>> 3 GHz</th></tr>
<tr><td colspan="3">Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}</td><td>$\leq$ 2 GHz: $\leq$ 8 mm
2 – 3 GHz: $\leq$ 5 mm*</td><td>3 – 4 GHz: $\leq$ 5 mm*
4 – 6 GHz: $\leq$ 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>$\leq$ 5 mm</td><td>3 – 4 GHz: $\leq$ 4 mm
4 – 5 GHz: $\leq$ 3 mm
5 – 6 GHz: $\leq$ 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>$\leq$ 4 mm</td><td>3 – 4 GHz: $\leq$ 3 mm
4 – 5 GHz: $\leq$ 2.5 mm
5 – 6 GHz: $\leq$ 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>$\geq$ 30 mm</td><td>3 – 4 GHz: $\geq$ 28 mm
4 – 5 GHz: $\geq$ 25 mm
5 – 6 GHz: $\geq$ 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 $\leq$ 1.4 W/kg, $\leq$ 8 mm, $\leq$ 7 mm and $\leq$ 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	1087	2018/3/21	2019/3/20
SPEAG	835MHz System Validation Kit	D835V2	4d151	2018/3/26	2019/3/25
SPEAG	835MHz System Validation Kit	D835V2	4d151	2019/3/27	2022/3/26
SPEAG	1750MHz System Validation Kit	D1750V2	1090	2018/3/23	2019/3/22
SPEAG	1900MHz System Validation Kit	D1900V2	5d170	2018/3/25	2019/3/24
SPEAG	1900MHz System Validation Kit	D1900V2	5d170	2019/3/26	2022/3/25
SPEAG	2450MHz System Validation Kit	D2450V2	908	2018/3/22	2019/3/21
SPEAG	2450MHz System Validation Kit	D2450V2	908	2019/3/25	2022/3/24
SPEAG	2600MHz System Validation Kit	D2600V2	1061	2018/12/7	2021/12/6
SPEAG	5000MHz System Validation Kit	D5GHzV2	1006	2018/9/27	2019/9/26
SPEAG	5000MHz System Validation Kit	D5GHzV2	1113	2019/9/24	2020/9/23
SPEAG	5000MHz System Validation Kit	D5GHzV2	1167	2018/8/3	2021/8/2
SPEAG	Data Acquisition Electronics	DAE4	1338	2018/12/3	2019/12/2
SPEAG	Data Acquisition Electronics	DAE4	787	2020/3/12	2021/3/11
SPEAG	Data Acquisition Electronics	DAE4	799	2020/2/10	2021/2/9
SPEAG	Dosimetric E-Field Probe	EX3DV4	3753	2018/5/29	2019/5/28
SPEAG	Dosimetric E-Field Probe	EX3DV4	3843	2018/9/27	2019/9/26
SPEAG	Dosimetric E-Field Probe	EX3DV4	3843	2019/9/26	2020/9/25
SPEAG	Dosimetric E-Field Probe	EX3DV4	7475	2019/10/16	2020/10/15
SPEAG	SAM Twin Phantom	QD 000 P40 CB	TP-1503	NCR	NCR
SPEAG	SAM Twin Phantom	QD 000 P40 CB	TP-1839	NCR	NCR
SPEAG	SAM Twin Phantom	QD 000 P40 CB	TP-1753	NCR	NCR
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
Anritsu	Radio communication analyzer	MT8820C	6201274349	2018/8/16	2019/8/15
Anritsu	Radio Communication Analyzer	MT8821C	6201432831	2020/4/16	2021/4/15
Agilent	Wireless Communication Test Set	E5515C	MY52102706	2018/4/17	2019/4/16
Agilent	Wireless Communication Test Set	E5515C	MY52102706	2020/4/16	2021/4/15
Agilent	ENA Series Network Analyzer	E5071C	MY46111157	2018/4/17	2019/4/16
Agilent	ENA Series Network Analyzer	E5071C	MY46111157	2020/4/16	2021/4/15
SPEAG	Dielectric Probe Kit	DAK-3.5	1138	2018/11/20	2019/11/19
SPEAG	Dielectric Probe Kit	DAK-3.5	1071	2019/10/28	2020/10/27
Anritsu	Vector Signal Generator	MG3710A	6201682672	2019/1/14	2020/1/13
Anritsu	Vector Signal Generator	MG3710A	6201682672	2020/1/8	2021/1/7
Rohde & Schwarz	Power Meter	NRVD	102081	2018/8/20	2019/8/19
Rohde & Schwarz	Power Meter	NRVD	102081	2019/8/15	2020/8/14
Rohde & Schwarz	Power Sensor	NRV-Z5	100538	2018/8/20	2019/8/19
Rohde & Schwarz	Power Sensor	NRV-Z5	100538	2019/8/14	2020/8/13
Rohde & Schwarz	Power Sensor	NRV-Z5	100539	2018/8/20	2019/8/19
Rohde & Schwarz	Power Sensor	NRV-Z5	100539	2019/8/14	2020/8/13
R&S	CBT BLUETOOTH TESTER	CBT	101641	2019/1/14	2020/1/13
R&S	CBT BLUETOOTH TESTER	CBT	101641	2020/1/8	2021/1/7
EXA	Spectrum Analyzer	FSV7	101631	2019/1/14	2020/1/13
EXA	Spectrum Analyzer	FSV7	101631	2020/1/8	2021/1/7
Testo	Hygrometer	608-H1	1241332126	2018/8/21	2019/8/20
Testo	Hygrometer	608-H1	1241332088	2020/1/8	2021/1/7
FLUKE	DIGITAC THERMOMETER	51II	97240029	2018/8/8	2019/8/7
FLUKE	DIGITAC THERMOMETER	51II	97240029	2019/8/15	2020/8/14
ARRA	Power Divider	A3200-2	N/A	Note	
Agilent	Dual Directional Coupler	778D	20500	Note	
Agilent	Dual Directional Coupler	11691D	MY48151020	Note	
MCL	Attenuation1	BW-S10W5+	N/A	Note	

MCL	Attenuation2	BW-S10W5+	N/A	Note
MCL	Attenuation3	BW-S10W5+	N/A	Note
AR	Amplifier	5S1G4	333096	Note
mini-circuits	Amplifier	ZVE-3W-83+	162601250	Note
BONN	POWER AMPLIFIER	BLMA 0830-3	087193A	Note
BONN	POWER AMPLIFIER	BLMA 2060-2	087193B	Note

Note: 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.

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 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, which is shown in Fig. 10.1. 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. 10.2.

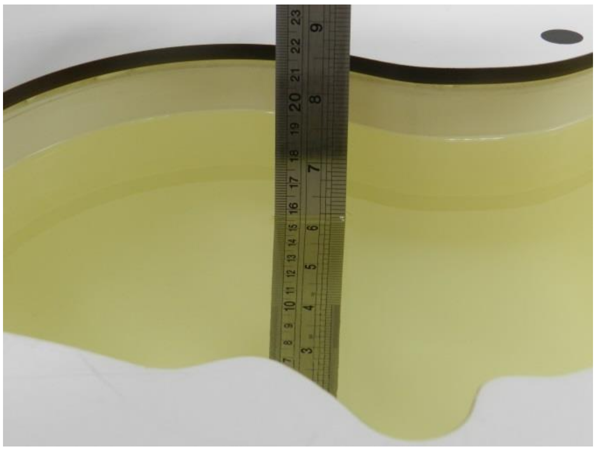


Fig 10.1Photo of Liquid Height for Head SAR

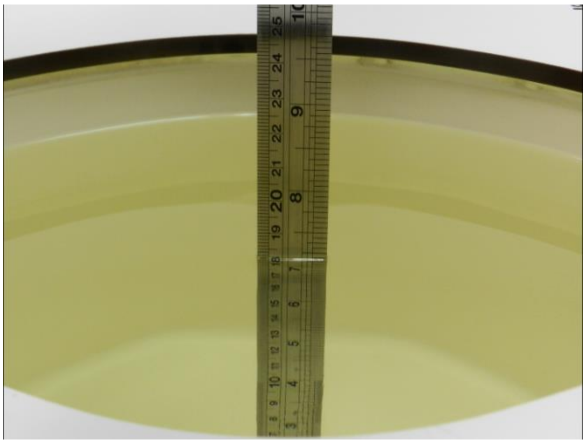


Fig 10.2 Photo of Liquid Height for Body SAR

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, 2000	55.2	0	0	0.3	0	44.5	1.40	40.0
2450	55.0	0	0	0	0	45.0	1.80	39.2
2600	54.8	0	0	0.1	0	45.1	1.96	39.0
For Body								
750	51.7	47.2	0	0.9	0.1	0	0.96	55.5
835	50.8	48.2	0	0.9	0.1	0	0.97	55.2
1800, 1900, 2000	70.2	0	0	0.4	0	29.4	1.52	53.3
2450	68.6	0	0	0	0	31.4	1.95	52.7
2600	68.1	0	0	0.1	0	31.8	2.16	52.5

Simulating Liquid for 5GHz, Manufactured by SPEAG

Ingredients	(% by weight)
Water	64~78%
Mineral oil	11~18%
Emulsifiers	9~15%
Additives and Salt	2~3%

<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	22.6	0.894	41.041	0.89	41.90	0.45	-2.05	±5	2019/3/11
835	Head	22.6	0.921	42.546	0.90	41.50	2.33	2.52	±5	2019/3/11
1750	Head	22.7	1.384	41.115	1.37	40.10	1.02	2.53	±5	2019/3/12
1900	Head	22.6	1.432	39.278	1.40	40.00	2.29	-1.81	±5	2019/3/13
2450	Head	22.8	1.855	38.945	1.80	39.20	3.06	-0.65	±5	2019/3/18
5250	Head	22.8	4.787	35.795	4.71	35.90	1.63	-0.29	±5	2019/3/20
5600	Head	22.7	5.143	35.264	5.07	35.50	1.44	-0.66	±5	2019/3/20
5750	Head	22.7	5.302	35.036	5.22	35.40	1.57	-1.03	±5	2019/3/20
750	Body	22.9	0.933	57.536	0.96	55.50	-2.81	3.67	±5	2019/3/15
835	Body	22.6	0.959	55.134	0.97	55.20	-1.13	-0.12	±5	2019/3/14
1750	Body	22.7	1.521	54.081	1.49	53.40	2.08	1.28	±5	2019/3/15
1900	Body	22.8	1.563	52.101	1.52	53.30	2.83	-2.25	±5	2019/3/15
2450	Body	22.9	2.007	53.184	1.95	52.70	2.92	0.92	±5	2019/3/18
5250	Body	22.9	5.452	48.884	5.36	48.90	1.72	-0.03	±5	2019/3/21
5600	Body	22.7	5.909	48.311	5.77	48.50	2.41	-0.39	±5	2019/3/21
5750	Body	22.7	6.119	48.065	5.94	48.30	3.01	-0.49	±5	2019/3/21

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
835	Head	22.7	0.944	41.247	0.90	41.50	4.89	-0.61	±5	2020/7/4
1900	Head	22.6	1.461	40.083	1.40	40.00	4.36	0.21	±5	2020/7/6
2450	Head	22.9	1.850	39.054	1.80	39.20	2.78	-0.37	±5	2020/7/8
2600	Head	22.6	1.981	39.059	1.96	39.00	1.07	0.15	±5	2020/7/5
5250	Head	22.8	4.678	36.999	4.71	35.90	-0.68	3.06	±5	2020/7/7
5600	Head	22.9	5.037	36.493	5.07	35.50	-0.65	2.80	±5	2020/7/6
5750	Head	22.7	5.200	36.307	5.22	35.40	-0.38	2.56	±5	2020/7/5
835	Body	22.7	0.992	53.671	0.97	55.20	2.27	-2.77	±5	2020/7/4
1900	Body	22.8	1.542	52.411	1.52	53.30	1.45	-1.67	±5	2020/7/6
2450	Body	22.9	1.989	52.517	1.95	52.70	2.00	-0.35	±5	2020/7/8
2600	Body	22.6	2.198	51.952	2.16	52.50	1.76	-1.04	±5	2020/7/5
5250	Body	22.9	5.501	49.524	5.36	48.90	2.63	1.28	±5	2020/7/7
5600	Body	22.7	5.970	48.961	5.77	48.50	3.47	0.95	±5	2020/7/7
5750	Body	22.8	6.185	48.733	5.94	48.30	4.12	0.90	±5	2020/7/7

<Tissue Dielectric Parameter Check for Low / Middle / High Frequencies>

General Note:

The tissue measure results for low / middle / high frequencies list below, the results were used in the Dasy SAR system to perform interpolation to determine the dielectric parameters on the SAR test device. The SAR test plots may slightly difference between the tables below due to the digit rounding in the software calculated.

CH	Frequency (MHz)	Conductivity (σ)	Permittivity (ε_r)	Conductivity Target (σ)	Permittivity Target (ε_r)	Delta (σ) (%)	Delta (ε_r) (%)	Limit (%)	Date
4132	826.4	0.911	42.602	0.90	41.54	1.22	2.66	±5	2019/3/11
4182	836.4	0.944	41.24	0.90	41.50	4.89	-0.63	±5	2020/7/4
4233	846.6	0.948	41.217	0.91	41.50	4.18	-0.68	±5	2020/7/4
9538	1907.6	1.44	39.239	1.40	40.00	2.86	-1.90	±5	2019/3/13
9262	1852.4	1.435	40.127	1.40	40.00	2.50	0.32	±5	2020/7/6
9400	1880	1.45	40.097	1.40	40.00	3.57	0.24	±5	2020/7/6
21350	2560	1.941	39.049	1.92	39.05	1.09	-0.13	±5	2020/7/5
21100	2535	1.911	39.047	1.89	39.09	1.11	-0.14	±5	2020/7/5
20850	2510	1.9	39.144	1.86	39.12	2.15	0.11	±5	2020/7/5
1	2412	1.81	39.104	1.77	39.27	2.26	-0.50	±5	2019/3/18
6	2437	1.834	39.033	1.79	39.22	2.46	-0.43	±5	2020/7/8
11	2462	1.866	39.091	1.81	39.18	3.09	-0.28	±5	2020/7/8
19100	1900	1.432	39.279	1.40	40.00	2.29	-1.80	±5	2019/3/13
18700	1860	1.439	40.123	1.40	40.00	2.79	0.31	±5	2020/7/6
18900	1880	1.45	40.097	1.40	40.00	3.57	0.24	±5	2020/7/6
20175	1732.5	1.365	41.188	1.36	40.13	0.37	2.71	±5	2019/3/12
23790	710	0.856	41.674	0.89	42.11	-3.82	-1.01	±5	2019/3/11
52	5260	4.797	35.781	4.72	35.94	1.63	-0.33	±5	2019/3/20
56	5280	4.711	36.95	4.74	35.92	-0.61	2.92	±5	2020/7/7
64	5320	4.749	36.909	4.78	35.87	-0.65	2.81	±5	2020/7/7
132	5660	5.206	35.17	5.13	35.44	1.48	-0.65	±5	2019/3/20
100	5500	4.932	36.642	4.97	35.63	-0.76	2.93	±5	2020/7/6
144	5720	5.169	36.326	5.19	35.38	-0.40	2.62	±5	2020/7/5
149	5745	5.297	35.043	5.22	35.36	1.48	-1.01	±5	2019/3/20
157	5785	5.226	36.255	5.26	35.32	-0.65	2.71	±5	2020/7/5
165	5825	5.282	36.176	5.30	35.28	-0.34	2.48	±5	2020/7/5
4132	826.4	0.951	55.22	0.97	55.23	-1.96	0.04	±5	2019/3/14
4182	836.4	0.993	53.661	0.97	55.20	2.37	-2.79	±5	2020/7/4
4233	846.6	1.004	53.595	0.98	55.16	2.45	-2.91	±5	2020/7/4
9538	1907.6	1.572	52.072	1.52	53.30	3.42	-2.30	±5	2019/3/15
9262	1852.4	1.493	52.568	1.52	53.30	-1.78	-1.37	±5	2020/7/6
9400	1880	1.522	52.475	1.52	53.30	0.13	-1.55	±5	2020/7/6
23790	710	0.894	57.918	0.94	55.66	-4.89	3.98	±5	2019/3/15

20175	17321.5	1.504	54.131	1.48	53.43	1.62	1.37	±5	2019/3/15
19100	1900	1.563	52.101	1.52	53.30	2.83	-2.25	±5	2019/3/15
18700	1860	1.501	52.544	1.52	53.30	-1.25	-1.42	±5	2020/7/6
18900	1880	1.522	52.475	1.52	53.30	0.13	-1.55	±5	2020/7/6
21350	2560	2.138	52.099	2.10	52.55	1.81	-0.95	±5	2020/7/5
21100	2535	2.106	52.207	2.07	52.59	1.74	-0.75	±5	2020/7/5
20850	2510	2.071	52.294	2.03	52.62	2.02	-0.58	±5	2020/7/5
1	2412	1.955	53.329	1.91	52.75	2.36	1.00	±5	2019/3/18
6	2437	1.972	52.575	1.94	52.72	1.65	-0.24	±5	2020/7/8
11	2462	2.005	52.466	1.97	52.68	1.78	-0.44	±5	2020/7/8
39	2441	1.994	53.218	1.94	52.71	2.78	0.98	±5	2019/3/18
0	2402	1.926	52.711	1.90	52.76	1.37	-0.17	±5	2020/7/8
78	2480	2.032	52.403	1.95	52.70	4.21	-0.56	±5	2020/7/8
52	5260	5.465	48.865	5.37	48.94	1.77	-0.07	±5	2019/3/21
56	5280	5.542	49.464	5.39	48.92	2.82	1.15	±5	2020/7/7
64	5320	5.594	49.406	5.44	48.67	2.83	1.45	±5	2020/7/7
132	5660	5.994	48.214	5.84	48.41	2.64	-0.38	±5	2019/3/21
100	5500	5.833	49.132	5.65	48.60	3.24	1.09	±5	2020/7/7
144	5720	6.143	48.778	5.91	48.32	3.94	0.99	±5	2020/7/7
149	5745	6.112	48.072	5.94	48.28	2.90	-0.47	±5	2019/3/21
157	5785	6.231	48.678	5.98	48.22	4.20	0.99	±5	2020/7/7
165	5825	6.292	48.612	6.00	48.20	4.87	0.85	±5	2020/7/7

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	Tissue Type	Frequency (MHz)	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 (%)
2019/3/11	Head	750	250	1087	3843	1338	2.07	8.25	8.28	0.36
2019/3/11	Head	835	250	4d151	3843	1338	2.44	9.66	9.76	1.04
2019/3/12	Head	1750	250	1090	3843	1338	9.46	37.40	37.84	1.18
2019/3/13	Head	1900	250	5d170	3843	1338	9.37	39.90	37.48	-6.07
2019/3/18	Head	2450	250	908	3843	1338	13.90	51.80	55.60	7.34
2019/3/20	Head	5250	100	1006	3753	1338	7.56	80.70	75.60	-6.32
2019/3/20	Head	5600	100	1006	3753	1338	7.70	83.30	77.00	-7.56
2019/3/20	Head	5750	100	1006	3753	1338	7.54	80.40	75.40	-6.22
2019/3/15	Body	750	250	1087	3843	1338	2.06	8.57	8.24	-3.85
2019/3/14	Body	835	250	4d151	3843	1338	2.26	9.58	9.04	-5.64
2019/3/15	Body	1750	250	1090	3843	1338	9.45	37.50	37.80	0.80
2019/3/15	Body	1900	250	5d170	3843	1338	9.70	40.70	38.80	-4.67
2019/3/18	Body	2450	250	908	3843	1338	13.20	50.70	52.80	4.14
2019/3/21	Body	5250	100	1006	3753	1338	7.23	78.30	72.30	-7.66
2019/3/21	Body	5600	100	1006	3753	1338	7.55	81.00	75.50	-6.79
2019/3/21	Body	5750	100	1006	3753	1338	7.23	77.40	72.30	-6.59
2020/7/4	Head	835	250	4d151	3843	799	2.52	9.30	10.08	8.39
2020/7/6	Head	1900	250	5d170	3843	799	9.50	39.00	38	-2.56
2020/7/8	Head	2450	250	908	3843	799	13.60	52.80	54.4	3.03
2020/7/5	Head	2600	250	1061	3843	799	14.70	57.70	58.8	1.91
2020/7/7	Head	5250	100	1113	3843	799	8.14	80.50	81.4	1.12
2020/7/6	Head	5600	100	1113	3843	799	8.83	83.40	88.3	5.88
2020/7/5	Head	5750	100	1113	3843	799	7.38	80.00	73.8	-7.75
2020/7/4	Body	835	250	4d151	7475	787	2.58	9.53	10.32	8.29
2020/7/6	Body	1900	250	5d170	7475	787	10.10	40.00	40.4	1.00
2020/7/8	Body	2450	250	908	7475	787	13.00	50.80	52	2.36
2020/7/5	Body	2600	250	1061	7475	787	13.80	54.20	55.2	1.85
2020/7/7	Body	5250	100	1167	7475	787	7.77	74.40	77.7	4.44
2020/7/7	Body	5600	100	1167	7475	787	7.60	77.10	76	-1.43
2020/7/7	Body	5750	100	1167	7475	787	7.27	74.30	72.7	-2.15

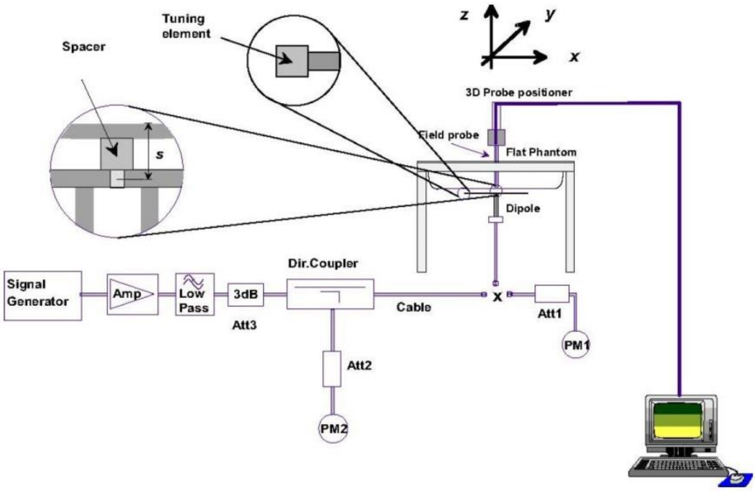


Fig 10.3.1 System Performance Check Setup

Fig 10.3.2 Setup Photo

11. Conducted RF Output Power (Unit: dBm)

<WCDMA Conducted Power>

1. The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification.
2. The procedures in KDB 941225 D01v03r01 are applied for 3GPP Rel. 6 HSPA to configure the device in the required sub-test mode(s) to determine SAR test exclusion.

A summary of these settings are illustrated below:

HSDPA Setup Configuration:

a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.
b. The RF path losses were compensated into the measurements.
c. A call was established between EUT and Base Station with following setting:
   i. Set Gain Factors (β_c and β_d) and parameters were set according to each
   ii. Specific sub-test in the following table, C10.1.4, quoted from the TS 34.121
   iii. Set RMC 12.2Kbps + HSDPA mode.
   iv. Set Cell Power = -86 dBm
   v. Set HS-DSCH Configuration Type to FRC (H-set 1, QPSK)
   vi. Select HSDPA Uplink Parameters
   vii. Set Delta ACK, Delta NACK and Delta CQI = 8
   viii. Set Ack-Nack Repetition Factor to 3
   ix. Set CQI Feedback Cycle (k) to 4 ms
   x. Set CQI Repetition Factor to 2
   xi. Power Ctrl Mode = All Up bits
d. The transmitted maximum output power was recorded.

Table C.10.1.4: β values for transmitter characteristics tests with HS-DPCCH

Sub-test	β_c	β_d	β_d *(SF)*	β_c/β_d	β_{HS} *(Note1, Note 2)*	CM (dB) *(Note 3)*	MPR (dB) *(Note 3)*
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15 *(Note 4)*	15/15 *(Note 4)*	64	12/15 *(Note 4)*	24/15	1.0	0.0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with $\beta_{hs} = 30/15 * \beta_c$.

Note 2: For the HS-DPCCH power mask requirement test in clause 5.2C, 5.7A, and the Error Vector Magnitude (EVM) with HS-DPCCH test in clause 5.13.1A, and HSDPA EVM with phase discontinuity in clause 5.13.1AA, Δ_{ACK} and Δ_{NACK} = 30/15 with $\beta_{hs} = 30/15 * \beta_c$, and Δ_{CQI} = 24/15 with $\beta_{hs} = 24/15 * \beta_c$.

Note 3: CM = 1 for β_c/β_d =12/15, β_{hs}/β_c=24/15. For all other combinations of DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

Note 4: For subtest 2 the β_c/β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to β_c = 11/15 and β_d = 15/15.

Setup Configuration

HSUPA Setup Configuration:

a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.

b. The RF path losses were compensated into the measurements.

c. A call was established between EUT and Base Station with following setting * :

  i. Call Configs = 5.2B, 5.9B, 5.10B, and 5.13.2B with QPSK

  ii. Set the Gain Factors (β_c and β_d) and parameters (AG Index) were set according to each specific sub-test in the following table, C11.1.3, quoted from the TS 34.121

  iii. Set Cell Power = -86 dBm

  iv. Set Channel Type = 12.2k + HSPA

  v. Set UE Target Power

  vi. Power Ctrl Mode= Alternating bits

  vii. Set and observe the E-TFCI

  viii. Confirm that E-TFCI is equal to the target E-TFCI of 75 for sub-test 1, and other subtest's E-TFCI

d. The transmitted maximum output power was recorded.

Table C.11.1.3: β values for transmitter characteristics tests with HS-DPCCH and E-DCH

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note1)	β_{ec}	β_{ed} (Note 4) (Note 5)	β_{ed} (SF)	β_{ed} (Codes)	CM (dB) (Note 2)	MPR (dB) (Note 2) (Note 6)	AG Index (Note 5)	E-TFCI
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/225	1309/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	β_{ed}1: 47/15 β_{ed}2: 47/15	4 4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15	0	-	-	5/15	5/15	47/15	4	1	1.0	0.0	12	67

Note 1: For sub-test 1 to 4, Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with $\beta_{hs} = 30/15 * \beta_c$. For sub-test 5, Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 5/15 with $\beta_{hs} = 5/15 * \beta_c$.

Note 2: CM = 1 for β_c/β_d =12/15, β_{hs}/β_c=24/15. For all other combinations of DPDCH, DPCCH, HS- DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.

Note 3: For subtest 1 the β_c/β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to β_c = 10/15 and β_d = 15/15.

Note 4: In case of testing by UE using E-DPDCH Physical Layer category 1, Sub-test 3 is omitted according to TS25.306 Table 5.1g.

Note 5: β_{ed} can not be set directly; it is set by Absolute Grant Value.

Note 6: For subtests 2, 3 and 4, UE may perform E-DPDCH power scaling at max power which could results in slightly smaller MPR values.

Setup Configuration

<WCDMA Conducted Power>

General Note:

1. Per KDB 941225 D01v03r01, for SAR testing is measured using a 12.2 kbps RMC with TPC bits configured to all "1's".
2. Per KDB 941225 D01v03r01, RMC 12.2kbps setting is used to evaluate SAR. The maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA is ≤ ¼ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA, and according to the following RF output power, the output power results of the secondary modes (HSUPA, HSDPA) are less than ¼ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA.

Band		WCDMA Band II			Tune-up Limit (dBm)	WCDMA Band V			Tune-up Limit (dBm)
Tx Channel		9262	9400	9538		4132	4182	4233	
Rx Channel		9662	9800	9938		4357	4407	4458	
Frequency (MHz)		1852.4	1880	1907.6		826.4	836.4	846.6	
3GPP Rel 99	RMC 12.2Kbps	22.90	22.83	**23.12**	24.50	**22.91**	22.79	22.77	24.50
3GPP Rel 5	HSDPA Subtest-1	21.95	21.90	22.03	23.50	21.90	21.81	21.74	23.50
3GPP Rel 5	HSDPA Subtest-2	21.92	21.85	22.01	23.50	21.88	21.80	21.72	23.50
3GPP Rel 5	HSDPA Subtest-3	21.44	21.35	21.55	23.00	21.32	21.27	21.25	23.00
3GPP Rel 5	HSDPA Subtest-4	21.51	21.32	21.51	23.00	21.30	21.24	21.20	23.00
3GPP Rel 6	HSUPA Subtest-1	21.50	21.52	21.60	23.50	21.40	21.23	21.19	23.50
3GPP Rel 6	HSUPA Subtest-2	20.98	20.92	21.11	22.00	20.91	20.74	20.69	22.00
3GPP Rel 6	HSUPA Subtest-3	20.61	20.58	20.69	22.50	20.66	20.51	20.35	22.50
3GPP Rel 6	HSUPA Subtest-4	21.24	21.21	21.41	22.00	21.41	21.29	21.20	22.00
3GPP Rel 6	HSUPA Subtest-5	21.88	21.84	22.01	23.50	21.92	21.88	21.77	23.50

<LTE Conducted Power>

General Note:

1. Anritsu MT8820C 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 4 / B17 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.

<LTE Band 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				18700	18900	19100		
Frequency (MHz)				1860	1880	1900		
20	QPSK	1	0	22.17	22.12	22.27	24	0
20	QPSK	1	49	22.31	22.35	**22.59**		
20	QPSK	1	99	22.11	22.10	22.09		
20	QPSK	50	0	21.17	21.03	21.29	23	1
20	QPSK	50	24	21.15	21.00	21.19		
20	QPSK	50	50	20.90	21.01	21.07		
20	QPSK	100	0	21.02	20.90	21.13		
20	16QAM	1	0	20.97	20.94	21.17	23	1
20	16QAM	1	49	21.04	20.94	21.03		
20	16QAM	1	99	20.80	20.82	20.70		
20	16QAM	12	0	21.10	20.80	21.27	22	2
20	16QAM	12	44	21.05	21.15	21.18		
20	16QAM	12	88	20.91	20.98	20.80		
20	16QAM	27	0	20.20	20.34	20.33		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	22.22	22.11	22.18	24	0
15	QPSK	1	37	22.26	22.40	22.53		
15	QPSK	1	74	22.04	22.14	22.06		
15	QPSK	36	0	21.01	21.09	21.10	23	1
15	QPSK	36	20	21.11	21.02	21.04		
15	QPSK	36	39	20.91	20.98	20.90		
15	QPSK	75	0	20.95	20.98	21.07		
15	16QAM	1	0	21.13	20.88	21.02	23	1
15	16QAM	1	37	20.99	21.15	21.09		
15	16QAM	1	74	20.66	20.75	20.85		
15	16QAM	12	0	21.23	20.93	21.15	22	2
15	16QAM	12	31	21.14	21.06	21.10		
15	16QAM	12	63	20.76	20.94	20.96		
15	16QAM	27	0	20.29	20.23	20.25		

Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	22.19	22.16	22.07	24	0
10	QPSK	1	25	22.23	22.51	22.36		
10	QPSK	1	49	22.01	22.04	22.10		
10	QPSK	25	0	20.98	21.08	21.05	23	1
10	QPSK	25	12	21.08	21.02	20.98		
10	QPSK	25	25	20.88	20.88	20.94		
10	QPSK	50	0	20.92	21.05	20.94		
10	16QAM	1	0	21.10	21.00	20.84	23	1
10	16QAM	1	25	20.96	21.07	21.11		
10	16QAM	1	49	20.63	20.83	20.71		
10	16QAM	12	0	21.20	21.13	20.89	22	2
10	16QAM	12	19	21.11	21.08	21.02		
10	16QAM	12	38	20.73	20.94	20.90		
10	16QAM	27	0	20.26	20.23	20.19		
Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	22.14	22.25	22.08	24	0
5	QPSK	1	12	22.28	22.55	22.31		
5	QPSK	1	24	22.08	22.07	22.06		
5	QPSK	12	0	21.14	21.27	20.99	23	1
5	QPSK	12	7	21.12	21.17	20.96		
5	QPSK	12	13	20.87	21.05	20.97		
5	QPSK	25	0	20.99	21.11	20.86		
5	16QAM	1	0	20.94	21.15	20.90	23	1
5	16QAM	1	12	21.01	21.01	20.90		
5	16QAM	1	24	20.77	20.68	20.78		
5	16QAM	12	0	21.07	21.25	20.76	22	2
5	16QAM	12	7	21.02	21.16	21.11		
5	16QAM	12	13	20.88	20.78	20.94		
5	16QAM	25	0	20.17	20.31	20.30		

Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	22.19	22.20	22.11	24	0
3	QPSK	1	8	22.54	22.24	22.40		
3	QPSK	1	14	22.07	22.02	22.14		
3	QPSK	8	0	21.11	20.99	21.09	23	1
3	QPSK	8	4	21.05	21.09	21.02		
3	QPSK	8	7	20.91	20.89	20.98		
3	QPSK	15	0	21.08	20.93	20.98		
3	16QAM	1	0	21.03	21.11	20.88	23	1
3	16QAM	1	8	21.10	21.13	21.13		
3	16QAM	1	14	20.86	20.73	20.73		
3	16QAM	8	0	21.16	20.91	20.91	22	2
3	16QAM	8	4	21.11	21.04	21.04		
3	16QAM	8	7	20.97	20.92	20.92		
3	16QAM	15	0	20.26	20.21	20.21		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	22.15	22.18	22.31	24	0
1.4	QPSK	1	3	22.38	22.32	22.53		
1.4	QPSK	1	5	22.13	22.12	22.13		
1.4	QPSK	3	0	22.23	22.20	22.15		
1.4	QPSK	3	1	22.27	22.55	22.44		
1.4	QPSK	3	3	22.05	22.08	22.18		
1.4	QPSK	6	0	20.93	21.03	21.17	23	1
1.4	16QAM	1	0	20.97	20.98	21.21	23	1
1.4	16QAM	1	3	20.97	21.05	21.05		
1.4	16QAM	1	5	20.85	20.72	20.72		
1.4	16QAM	3	0	20.83	21.29	21.29		
1.4	16QAM	3	1	21.18	21.20	21.20		
1.4	16QAM	3	3	21.01	20.82	20.82		
1.4	16QAM	6	0	20.37	20.35	20.35	22	2

<LTE Band 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20050	20175	20300		
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	23.08	23.07	23.20	24.5	0
20	QPSK	1	49	23.29	22.88	23.34		
20	QPSK	1	99	22.98	22.95	23.05		
20	QPSK	50	0	21.97	21.96	22.09	23.5	1
20	QPSK	50	24	22.02	21.77	22.01		
20	QPSK	50	50	21.97	21.73	22.07		
20	QPSK	100	0	22.03	21.92	22.17		
20	16QAM	1	0	21.68	21.86	21.85	23.5	1
20	16QAM	1	49	21.95	21.63	21.80		
20	16QAM	1	99	21.69	21.57	21.52		
20	16QAM	12	0	21.74	21.97	21.99	22.5	2
20	16QAM	12	44	21.84	21.75	21.98		
20	16QAM	12	88	21.91	21.70	21.71		
20	16QAM	27	0	20.89	20.89	20.93		
Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	23.04	23.08	23.04	24.5	0
15	QPSK	1	37	23.12	23.03	23.25		
15	QPSK	1	74	22.97	22.83	22.94		
15	QPSK	36	0	21.85	21.78	21.93	23.5	1
15	QPSK	36	20	21.85	21.65	22.08		
15	QPSK	36	39	21.91	21.70	21.93		
15	QPSK	75	0	21.99	21.78	21.99		
15	16QAM	1	0	21.56	21.80	21.64	23.5	1
15	16QAM	1	37	21.87	21.66	21.91		
15	16QAM	1	74	21.55	21.04	21.65		
15	16QAM	12	0	21.68	21.84	21.70	22.5	2
15	16QAM	12	31	21.76	21.72	21.80		
15	16QAM	12	63	21.80	21.41	21.87		
15	16QAM	27	0	20.86	20.87	20.85		

Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	23.00	23.02	23.04	24.5	0
10	QPSK	1	25	23.08	23.23	22.99		
10	QPSK	1	49	22.93	22.92	22.79		
10	QPSK	25	0	21.81	21.91	21.74	23.5	1
10	QPSK	25	12	21.81	22.06	21.61		
10	QPSK	25	25	21.87	21.91	21.66		
10	QPSK	50	0	21.95	21.97	21.74		
10	16QAM	1	0	21.52	21.62	21.76	23.5	1
10	16QAM	1	25	21.83	21.89	21.62		
10	16QAM	1	49	21.51	21.63	21.00		
10	16QAM	12	0	21.64	21.68	21.80	22.5	2
10	16QAM	12	19	21.72	21.78	21.68		
10	16QAM	12	38	21.76	21.85	21.37		
10	16QAM	27	0	20.82	20.83	20.83		
Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	23.17	23.18	23.04	24.5	0
5	QPSK	1	12	23.31	23.32	22.85		
5	QPSK	1	24	23.02	23.03	22.92		
5	QPSK	12	0	22.06	22.07	21.93	23.5	1
5	QPSK	12	7	21.98	21.99	21.74		
5	QPSK	12	13	22.07	22.08	21.70		
5	QPSK	25	0	22.14	22.15	21.89		
5	16QAM	1	0	21.82	21.83	21.83	23.5	1
5	16QAM	1	12	21.77	21.78	21.60		
5	16QAM	1	24	21.49	21.50	21.54		
5	16QAM	12	0	21.96	21.97	21.94	22.5	2
5	16QAM	12	7	21.95	21.96	21.72		
5	16QAM	12	13	21.68	21.69	21.67		
5	16QAM	25	0	20.90	20.91	20.86		

Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	23.01	23.02	22.99	24.5	0
3	QPSK	1	8	22.96	22.97	23.20		
3	QPSK	1	14	22.76	22.77	22.89		
3	QPSK	8	0	21.71	21.72	21.88	23.5	1
3	QPSK	8	4	21.58	21.59	22.03		
3	QPSK	8	7	21.63	21.64	21.88		
3	QPSK	15	0	21.71	21.72	21.94		
3	16QAM	1	0	21.73	21.74	21.59	23.5	1
3	16QAM	1	8	21.59	21.60	21.86		
3	16QAM	1	14	21.17	21.28	21.60		
3	16QAM	8	0	21.77	21.78	21.65	22.5	2
3	16QAM	8	4	21.65	21.66	21.75		
3	16QAM	8	7	21.34	21.35	21.82		
3	16QAM	15	0	20.80	20.81	20.80		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	23.01	23.07	23.06	24.5	0
1.4	QPSK	1	3	23.22	23.15	23.01		
1.4	QPSK	1	5	22.91	23.00	22.81		
1.4	QPSK	3	0	22.96	23.04	23.00		
1.4	QPSK	3	1	23.17	22.99	22.95		
1.4	QPSK	3	3	22.86	22.79	22.75		
1.4	QPSK	6	0	21.96	22.02	21.76	23.5	1
1.4	16QAM	1	0	21.61	21.59	21.78	23.5	1
1.4	16QAM	1	3	21.88	21.90	21.64		
1.4	16QAM	1	5	21.62	21.58	21.02		
1.4	16QAM	3	0	21.67	21.71	21.82		
1.4	16QAM	3	1	21.77	21.79	21.70		
1.4	16QAM	3	3	21.84	21.83	21.39		
1.4	16QAM	6	0	20.82	20.89	20.85	22.5	2

<LTE Band 7>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20850	21100	21350		
Frequency (MHz)				2510	2535	2560		
20	QPSK	1	0	23.26	23.25	23.35	24.5	0
20	QPSK	1	49	23.58	23.33	23.60		
20	QPSK	1	99	23.10	23.30	23.31		
20	QPSK	50	0	22.07	22.13	22.24	23.5	1
20	QPSK	50	24	22.12	22.18	22.30		
20	QPSK	50	50	22.12	22.15	22.17		
20	QPSK	100	0	22.16	22.13	22.18		
20	16QAM	1	0	22.08	21.65	22.02	23.5	1
20	16QAM	1	49	22.15	21.68	22.00		
20	16QAM	1	99	22.05	21.69	22.15		
20	16QAM	12	0	21.83	21.92	21.98	22.5	2
20	16QAM	12	44	21.93	21.93	21.97		
20	16QAM	12	88	21.98	21.93	21.95		
20	16QAM	27	0	20.95	21.03	21.00		
Channel				20825	21100	21375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	23.32	23.26	23.23	24.5	0
15	QPSK	1	37	23.56	23.50	23.31		
15	QPSK	1	74	23.28	23.58	23.28		
15	QPSK	36	0	22.21	22.26	22.11	23.5	1
15	QPSK	36	20	22.27	22.25	22.16		
15	QPSK	36	39	22.14	22.18	22.13		
15	QPSK	75	0	22.15	22.19	22.11		
15	16QAM	1	0	22.09	21.83	21.68	23.5	1
15	16QAM	1	37	21.97	21.82	21.66		
15	16QAM	1	74	22.12	21.75	21.77		
15	16QAM	12	0	21.95	21.96	21.90	22.5	2
15	16QAM	12	31	21.94	21.99	21.91		
15	16QAM	12	63	21.92	21.97	21.91		
15	16QAM	27	0	20.97	21.16	21.01		

Channel				20800	21100	21400	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	23.25	23.28	23.29	24.5	0
10	QPSK	1	25	23.33	23.56	23.53		
10	QPSK	1	49	23.30	23.24	23.57		
10	QPSK	25	0	22.13	22.17	22.29	23.5	1
10	QPSK	25	12	22.18	22.23	22.28		
10	QPSK	25	25	22.15	22.10	22.21		
10	QPSK	50	0	22.13	22.11	22.22		
10	16QAM	1	0	21.50	21.95	21.86	23.5	1
10	16QAM	1	25	21.58	21.93	21.85		
10	16QAM	1	49	21.69	21.98	21.68		
10	16QAM	12	0	21.92	21.91	21.99	22.5	2
10	16QAM	12	19	21.93	21.90	21.92		
10	16QAM	12	38	21.93	21.88	22.00		
10	16QAM	27	0	21.03	20.93	21.19		
Channel				20775	21100	21425	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	23.31	23.21	23.31	24.5	0
5	QPSK	1	12	23.55	23.29	23.59		
5	QPSK	1	24	23.52	23.26	23.27		
5	QPSK	12	0	22.31	22.09	22.20	23.5	1
5	QPSK	12	7	22.30	22.14	22.26		
5	QPSK	12	13	22.23	22.11	22.13		
5	QPSK	25	0	22.24	22.09	22.14		
5	16QAM	1	0	21.88	21.56	21.98	23.5	1
5	16QAM	1	12	21.87	21.54	21.96		
5	16QAM	1	24	21.70	21.65	21.91		
5	16QAM	12	0	21.98	21.88	21.94	22.5	2
5	16QAM	12	7	21.94	21.89	21.93		
5	16QAM	12	13	21.95	21.89	21.91		
5	16QAM	25	0	21.21	20.99	20.96		

<LTE Band 17>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				23780	23790	23800		
Frequency (MHz)				709	710	711		
10	QPSK	1	0	22.17	22.21	22.00	24	0
10	QPSK	1	25	22.28	22.34	22.04		
10	QPSK	1	49	22.14	22.01	22.06		
10	QPSK	25	0	21.00	21.02	21.06	23	1
10	QPSK	25	12	21.12	21.18	21.07		
10	QPSK	25	25	21.06	21.07	21.01		
10	QPSK	50	0	21.01	21.01	20.88		
10	16QAM	1	0	20.51	20.85	20.53	23	1
10	16QAM	1	25	21.13	21.13	21.11		
10	16QAM	1	49	21.01	20.70	20.68		
10	16QAM	12	0	20.87	20.79	20.62	22	2
10	16QAM	12	19	20.94	20.98	20.94		
10	16QAM	12	38	20.89	20.85	20.79		
10	16QAM	27	0	20.01	20.03	20.12		
Channel				23755	23790	23825	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				706.5	710	713.5		
5	QPSK	1	0	21.97	22.20	22.19	24	0
5	QPSK	1	12	22.01	22.31	22.32		
5	QPSK	1	24	22.03	22.17	21.99		
5	QPSK	12	0	21.03	21.03	21.00	23	1
5	QPSK	12	7	21.04	21.15	21.16		
5	QPSK	12	13	20.98	21.09	21.05		
5	QPSK	25	0	20.85	21.04	20.99		
5	16QAM	1	0	20.50	20.54	20.83	23	1
5	16QAM	1	12	21.08	21.16	21.11		
5	16QAM	1	24	20.65	21.04	20.68		
5	16QAM	12	0	20.59	20.90	20.77	22	2
5	16QAM	12	7	20.91	20.97	20.96		
5	16QAM	12	13	20.76	20.92	20.83		
5	16QAM	25	0	20.09	20.04	20.01		

<WLAN Conducted Power>

General Note:

1. Per KDB 248227 D01v02r02, SAR test reduction is determined according to 802.11 transmission mode configurations and certain exposure conditions with multiple test positions. In the 2.4 GHz band, separate SAR procedures are applied to DSSS and OFDM configurations to simplify DSSS test requirements. For OFDM, in both 2.4 and 5 GHz bands, an initial test configuration must be determined for each standalone and aggregated frequency band, according to the transmission mode configuration with the highest maximum output power specified for production units to perform SAR measurements. If the same highest maximum output power applies to different combinations of channel bandwidths, modulations and data rates, additional procedures are applied to determine which test configurations require SAR measurement. When applicable, an initial test position may be applied to reduce the number of SAR measurements required for next to the ear, UMPC mini-tablet or hotspot mode configurations with multiple test positions.
2. For 2.4 GHz 802.11b DSSS, either the initial test position procedure for multiple exposure test positions or the DSSS procedure for fixed exposure position is applied; these are mutually exclusive. For 2.4 GHz and 5 GHz OFDM configurations, the initial test configuration is applied to measure SAR using either the initial test position procedure for multiple exposure test position configurations or the initial test configuration procedures for fixed exposure test conditions. Based on the reported SAR of the measured configurations and maximum output power of the transmission mode configurations that are not included in the initial test configuration, the subsequent test configuration and initial test position procedures are applied to determine if SAR measurements are required for the remaining OFDM transmission configurations. In general, the number of test channels that require SAR measurement is minimized based on maximum output power measured for the test sample(s).
3. For OFDM transmission configurations in the 2.4 GHz and 5 GHz bands, When the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel for each frequency band.
4. DSSS and OFDM configurations are considered separately according to the required SAR procedures. SAR is measured in the initial test position using the 802.11 transmission mode configuration required by the DSSS procedure or initial test configuration and subsequent test configuration(s) according to the OFDM procedures.18 The initial test position procedure is described in the following:
   a. When the reported SAR of the initial test position is ≤ 0.4 W/kg, further SAR measurement is not required for the other test positions in that exposure configuration and 802.11 transmission mode combinations within the frequency band or aggregated band.
   b. When the reported SAR of the test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is ≤ 0.8 W/kg or all required test position are tested.
   c. For all positions/configurations, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.

<2.4GHz WLAN>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN	802.11b 1Mbps	1	2412	19.03	20.00	100.00
		6	2437	18.11	20.00	
		11	2462	18.08	20.00	
	802.11g 6Mbps	1	2412	15.33	16.50	95.00
		6	2437	14.76	16.50	
		11	2462	14.73	16.50	
	802.11n-HT20 MCS0	1	2412	14.21	15.50	92.98
		6	2437	13.66	15.50	
		11	2462	13.56	15.50	
	802.11n-HT40 MCS0	3	2422	10.52	12.50	87.92
		6	2437	10.75	12.50	
		9	2452	11.15	12.50	

<5GHz WLAN>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN	802.11a 6Mbps	36	5180	15.18	17.00	95.00
		40	5200	15.23	17.00	
		44	5220	15.27	17.00	
		48	5240	15.15	17.00	
	802.11n-HT20 MCS0	36	5180	12.75	14.50	94.66
		40	5200	12.80	14.50	
		44	5220	12.93	14.50	
		48	5240	12.77	14.50	
	802.11n-HT40 MCS0	38	5190	11.84	13.50	90.97
		46	5230	11.99	13.50	

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN	802.11a 6Mbps	52	5260	15.30	17.00	95.00
		56	5280	15.20	17.00	
		60	5300	15.13	17.00	
		64	5320	15.11	17.00	
	802.11n-HT20 MCS0	52	5260	13.07	14.50	94.66
		56	5280	12.99	14.50	
		60	5300	12.96	14.50	
		64	5320	12.93	14.50	
	802.11n-HT40 MCS0	54	5270	11.85	13.50	90.97
		62	5310	12.02	13.50	

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN	802.11a 6Mbps	100	5500	14.83	16.50	95.00
		116	5580	14.99	16.50	
		124	5620	15.06	16.50	
		132	5660	**15.24**	16.50	
		140	5700	14.94	16.50	
		144	5720	14.98	16.50	
	802.11n-HT20 MCS0	100	5500	12.68	14.50	94.66
		116	5580	12.85	14.50	
		124	5620	12.97	14.50	
		132	5660	13.22	14.50	
		140	5700	12.96	14.50	
		144	5720	12.85	14.50	
	802.11n-HT40 MCS0	102	5510	11.65	13.50	90.97
		110	5550	11.73	13.50	
		126	5630	11.84	13.50	
		134	5670	12.02	13.50	
		142	5710	11.70	13.50	

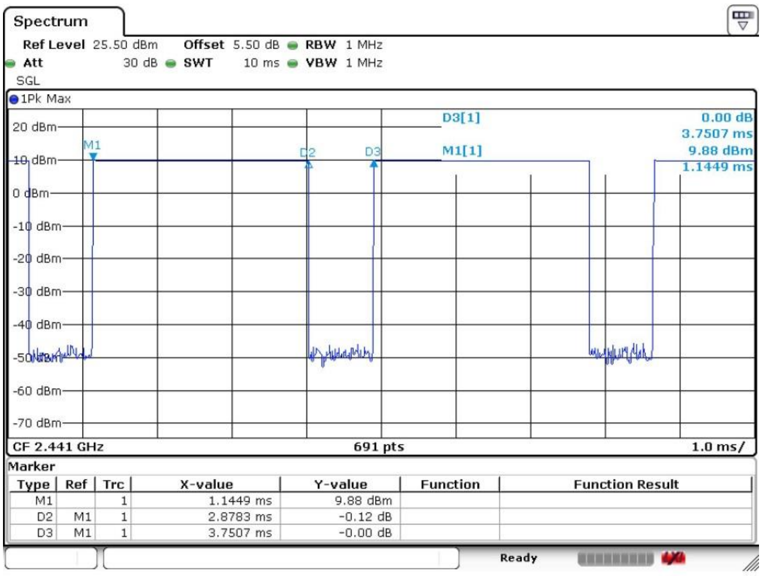
	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN	802.11a MCS0	149	5745	**15.30**	17.00	95.00
		157	5785	15.05	17.00	
		165	5825	15.19	17.00	
	802.11n-HT20 MCS0	149	5745	13.02	14.50	94.66
		157	5785	12.63	14.50	
		165	5825	12.66	14.50	
	802.11n-HT40 MCS0	151	5755	12.09	13.50	90.97
		159	5795	11.82	13.50	

<2.4GHz Bluetooth>

General Note:

1. For 2.4GHz Bluetooth SAR testing was selected 1Mbps, due to its highest average power.
2. The Bluetooth duty cycle is 76.74 % as following figure, according to 2016 Oct. TCB workshop for Bluetooth SAR scaling need further consideration and the theoretical duty cycle is 83.3%, therefore the actual duty cycle will be scaled up to the theoretical value of Bluetooth reported SAR calculation.

Bluetooth time-domain plot



Mode	Channel	Frequency (MHz)	Average power (dBm)
			1Mbps
BR/EDR	CH 00	2402	8.57
	CH 39	2441	**9.77**
	CH 78	2480	8.26
Tune-up limit (dBm)			10.00

Mode	Channel	Frequency (MHz)	Average power (dBm)
			GFSK
v4.0 LE	CH 00	2402	-0.70
	CH 19	2440	**1.33**
	CH 39	2480	-0.04
Tune-up limit (dBm)			2.00

12. Bluetooth Exclusions Applied

Mode Band	Max Average power(dBm)	
	BR/EDR	LE
2.4GHz Bluetooth	10.00	2.00

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
10.00	25	2.48	0.6

Note:

Per KDB 447498 D01v06, when the minimum test separation distance is 25 mm, a distance of 25 mm is applied to determine SAR test exclusion. The test exclusion threshold is 0.6 which is <= 3, SAR testing is not required.

13. Antenna Location

Please refer to appendix D for SAR test setup photo.

14. 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 SAR testing of WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)"
   c. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
   d. For WLAN/Bluetooth: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
2. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/kg.
3. This device has PTT (push-to-talk) function, so perform 25mm in-front-of the face SAR.
4. The device can use with assigned accessory manufacturer offered, so perform 0mm body worn accessory SAR.
5. For Swivel Carry Holster, when using body-worn accessory, the device can enclose the holster with front face or back face, so for body-worn SAR testing, evaluated front/back face when enclose to the holster. There is a swivel belt clip adhere to holster, only rotation for using.
6. Per KDB 648474 D04v01r03, when the reported SAR for a body-worn accessory measured without a headset connected to the handset is ≤ 1.2 W/kg, SAR testing with a headset connected to the handset is not required.

WCDMA Note:

1. Per KDB 941225 D01v03r01, for SAR testing is measured using a 12.2 kbps RMC with TPC bits configured to all “1’s”.
2. Per KDB 941225 D01v03r01, RMC 12.2kbps setting is used to evaluate SAR. The maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA is ≤ ¼ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA, and according to the following RF output power, the output power results of the secondary modes (HSUPA, HSDPA,) are less than ¼ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA.

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 / B17 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.

WLAN Note:

1. Per KDB 248227 D01v02r02, for 2.4GHz 802.11g/n SAR testing is not required when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.
2. Per KDB 248227 D01v02r02, U-NII-1 SAR testing is not required when the U-NII-2A band highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band.
3. When the reported SAR of the test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is ≤ 0.8 W/kg or all required test position are tested.
4. For all positions / configurations, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions / configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.
5. During SAR testing the WLAN transmission was verified using a spectrum analyzer.

14.1 Face SAR

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA Band V	RMC 12.2Kbps	In front of face	25	4132	826.4	22.91	24.50	1.442	0.08	0.299	0.431
	WCDMA Band V	RMC 12.2Kbps	In front of face	25	4182	836.4	22.79	24.50	1.483	0.03	0.388	0.575
01	WCDMA Band V	RMC 12.2Kbps	In front of face	25	4233	846.6	22.77	24.50	1.489	0.08	0.433	0.645
	WCDMA Band II	RMC 12.2Kbps	In front of face	25	9538	1907.6	23.12	24.50	1.374	-0.01	0.235	0.323
	WCDMA Band II	RMC 12.2Kbps	In front of face	25	9262	1852.4	22.90	24.50	1.445	-0.07	0.219	0.317
02	WCDMA Band II	RMC 12.2Kbps	In front of face	25	9400	1880	22.83	24.50	1.469	-0.07	0.252	0.370

<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	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
03	LTE Band 17	10M	QPSK	1	25	In front of face	25	23790	710	22.34	24.00	1.466	-0.11	0.255	0.374
	LTE Band 17	10M	QPSK	25	12	In front of face	25	23790	710	21.18	23.00	1.521	0.06	0.186	0.283
04	LTE Band 4	20M	QPSK	1	49	In front of face	25	20175	1732.5	22.88	24.50	1.452	-0.04	0.207	0.301
	LTE Band 4	20M	QPSK	50	0	In front of face	25	20175	1732.5	21.96	23.50	1.426	-0.06	0.172	0.245
05	LTE Band 2	20M	QPSK	1	49	In front of face	25	19100	1900	22.59	24.00	1.384	-0.04	0.298	0.412
	LTE Band 2	20M	QPSK	50	0	In front of face	25	19100	1900	21.29	23.00	1.483	0.01	0.231	0.342
	LTE Band 2	20M	QPSK	1	49	In front of face	25	18700	1860	22.31	24.00	1.476	-0.1	0.237	0.350
	LTE Band 2	20M	QPSK	1	49	In front of face	25	18900	1880	22.35	24.00	1.462	0.04	0.239	0.349
	LTE Band 7	20M	QPSK	1	49	In front of face	25	21350	2560	23.60	24.50	1.230	-0.11	0.175	0.215
	LTE Band 7	20M	QPSK	50	24	In front of face	25	21350	2560	22.30	23.50	1.318	-0.02	0.138	0.182
	LTE Band 7	20M	QPSK	1	49	In front of face	25	21100	2535	23.33	24.50	1.309	-0.11	0.183	0.240
06	LTE Band 7	20M	QPSK	1	49	In front of face	25	20850	2510	23.58	24.50	1.236	-0.04	0.201	0.248

<WLAN 2.4GHz 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 %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN2.4GHz	802.11b 1Mbps	In front of face	25	1	2412	19.03	20.00	1.250	100	1.000	0.01	0.071	0.089
	WLAN2.4GHz	802.11b 1Mbps	In front of face	25	6	2437	18.11	20.00	1.545	100	1.000	0.03	0.051	0.079
07	WLAN2.4GHz	802.11b 1Mbps	In front of face	25	11	2462	18.08	20.00	1.556	100	1.000	-0.07	0.062	0.097

<WLAN 5GHz 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 %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
08	WLAN5.3GHz	802.11a 6Mbps	In front of face	25	52	5260	15.30	17.00	1.478	95.00	1.053	-0.03	0.081	**0.127**
	WLAN5.3GHz	802.11a 6Mbps	In front of face	25	56	5280	15.20	17.00	1.514	95.00	1.053	0.07	0.075	0.119
	WLAN5.3GHz	802.11a 6Mbps	In front of face	25	64	5320	15.11	17.00	1.545	95.00	1.053	0.07	0.075	0.122
09	WLAN5.5GHz	802.11a 6Mbps	In front of face	25	132	5660	15.24	16.50	1.336	95.00	1.053	-0.04	0.047	**0.067**
	WLAN5.5GHz	802.11a 6Mbps	In front of face	25	100	5500	14.83	16.50	1.469	95.00	1.053	-0.04	0.043	0.067
	WLAN5.5GHz	802.11a 6Mbps	In front of face	25	144	5720	14.98	16.50	1.419	95.00	1.053	-0.01	0.037	0.055
10	WLAN5.8GHz	802.11a 6Mbps	In front of face	25	149	5745	15.30	17.00	1.478	95.00	1.053	-0.07	0.051	**0.080**
	WLAN5.8GHz	802.11a 6Mbps	In front of face	25	157	5785	15.05	17.00	1.567	95.00	1.053	-0.01	0.040	0.067
	WLAN5.8GHz	802.11a 6Mbps	In front of face	25	165	5825	15.19	17.00	1.517	95.00	1.053	-0.07	0.035	0.056

14.2 Body Worn Accessory SAR

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Carry Accessory	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA Band V	RMC 12.2Kbps	Front Face	Swivel Carry Holster	0	4132	826.4	22.91	24.50	1.442	0.02	0.423	0.610
	WCDMA Band V	RMC 12.2Kbps	Back Face	Swivel Carry Holster	0	4132	826.4	22.91	24.50	1.442	-0.05	0.512	0.738
	WCDMA Band V	RMC 12.2Kbps	Back Face	Belt Clip	0	4132	826.4	22.91	24.50	1.442	0.04	0.550	0.793
	WCDMA Band V	RMC 12.2Kbps	Back Face	Belt Clip	0	4182	836.4	22.79	24.50	1.483	0	0.669	0.992
11	WCDMA Band V	RMC 12.2Kbps	Back Face	Belt Clip	0	4233	846.6	22.77	24.50	1.489	-0.04	0.671	**0.999**
	WCDMA Band II	RMC 12.2Kbps	Front Face	Swivel Carry Holster	0	9538	1907.6	23.12	24.50	1.374	-0.17	0.185	0.254
	WCDMA Band II	RMC 12.2Kbps	Back Face	Swivel Carry Holster	0	9538	1907.6	23.12	24.50	1.374	0.01	0.131	0.180
	WCDMA Band II	RMC 12.2Kbps	Back Face	Belt Clip	0	9538	1907.6	23.12	24.50	1.374	0.01	0.181	0.249
12	WCDMA Band II	RMC 12.2Kbps	Front Face	Swivel Carry Holster	0	9262	1852.4	22.90	24.50	1.445	-0.08	0.262	**0.379**
	WCDMA Band II	RMC 12.2Kbps	Front Face	Swivel Carry Holster	0	9400	1880	22.83	24.50	1.469	-0.01	0.253	0.372

<LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB Offset	Test Position	Carry Accessory	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 17	10M	QPSK	1	25	Front Face	Swivel Carry Holster	0	23790	710	22.34	24.00	1.466	0.06	0.289	0.424
	LTE Band 17	10M	QPSK	25	12	Front Face	Swivel Carry Holster	0	23790	710	21.18	23.00	1.521	-0.04	0.234	0.356
	LTE Band 17	10M	QPSK	1	25	Back Face	Swivel Carry Holster	0	23790	710	22.34	24.00	1.466	0.13	0.365	0.535
	LTE Band 17	10M	QPSK	25	12	Back Face	Swivel Carry Holster	0	23790	710	21.18	23.00	1.521	-0.08	0.289	0.439
13	LTE Band 17	10M	QPSK	1	25	Back Face	Belt Clip	0	23790	710	22.34	24.00	1.466	0.12	0.413	**0.605**
	LTE Band 17	10M	QPSK	25	12	Back Face	Belt Clip	0	23790	710	21.18	23.00	1.521	0.09	0.338	0.514
	LTE Band 4	20M	QPSK	1	49	Front Face	Swivel Carry Holster	0	20175	1732.5	22.88	24.50	1.452	0.05	0.172	0.250
	LTE Band 4	20M	QPSK	50	0	Front Face	Swivel Carry Holster	0	20175	1732.5	21.96	23.50	1.426	-0.06	0.135	0.192
	LTE Band 4	20M	QPSK	1	49	Back Face	Swivel Carry Holster	0	20175	1732.5	22.88	24.50	1.452	0.05	0.157	0.228
	LTE Band 4	20M	QPSK	50	0	Back Face	Swivel Carry Holster	0	20175	1732.5	21.96	23.50	1.426	-0.01	0.123	0.175
14	LTE Band 4	20M	QPSK	1	49	Back Face	Belt Clip	0	20175	1732.5	22.88	24.50	1.452	0.05	0.227	**0.330**
	LTE Band 4	20M	QPSK	50	0	Back Face	Belt Clip	0	20175	1732.5	21.96	23.50	1.426	0.06	0.178	0.254
	LTE Band 2	20M	QPSK	1	49	Front Face	Swivel Carry Holster	0	19100	1900	22.59	24.00	1.384	0.01	0.222	0.307
	LTE Band 2	20M	QPSK	50	0	Front Face	Swivel Carry Holster	0	19100	1900	21.29	23.00	1.483	-0.02	0.173	0.256
	LTE Band 2	20M	QPSK	1	49	Back Face	Swivel Carry Holster	0	19100	1900	22.59	24.00	1.384	0.07	0.180	0.249
	LTE Band 2	20M	QPSK	50	0	Back Face	Swivel Carry Holster	0	19100	1900	21.29	23.00	1.483	0.05	0.144	0.213
	LTE Band 2	20M	QPSK	1	49	Back Face	Belt Clip	0	19100	1900	22.59	24.00	1.384	0.02	0.240	0.332
	LTE Band 2	20M	QPSK	50	0	Back Face	Belt Clip	0	19100	1900	21.29	23.00	1.483	-0.01	0.201	0.298
15	LTE Band 2	20M	QPSK	1	49	Back Face	Belt Clip	0	18700	1860	22.31	24.00	1.476	-0.11	0.293	**0.432**
	LTE Band 2	20M	QPSK	1	49	Back Face	Belt Clip	0	18900	1880	22.35	24.00	1.462	0.11	0.273	0.399
	LTE Band 7	20M	QPSK	1	49	Front Face	Swivel Carry Holster	0	21350	2560	23.60	24.50	1.230	-0.16	0.352	0.433
	LTE Band 7	20M	QPSK	50	24	Front Face	Swivel Carry Holster	0	21350	2560	22.30	23.50	1.318	-0.01	0.288	0.380
	LTE Band 7	20M	QPSK	1	49	Back Face	Swivel Carry Holster	0	21350	2560	23.60	24.50	1.230	0.01	0.159	0.196
	LTE Band 7	20M	QPSK	50	24	Back Face	Swivel Carry Holster	0	21350	2560	22.30	23.50	1.318	0.06	0.120	0.158
	LTE Band 7	20M	QPSK	1	49	Back Face	Belt Clip	0	21350	2560	23.60	24.50	1.230	0.09	0.189	0.233
	LTE Band 7	20M	QPSK	50	24	Back Face	Belt Clip	0	21350	2560	22.30	23.50	1.318	-0.07	0.154	0.203
16	LTE Band 7	20M	QPSK	1	49	Front Face	Swivel Carry Holster	0	21100	2535	23.33	24.50	1.309	-0.09	0.359	**0.470**
	LTE Band 7	20M	QPSK	1	49	Front Face	Swivel Carry Holster	0	20850	2510	23.58	24.50	1.236	-0.08	0.317	0.392

<WLAN 2.4GHz SAR>

Plot No.	Band	Mode	Test Position	Carry Accessory	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN2.4GHz	802.11b 1Mbps	Front Face	Swivel Carry Holster	0	1	2412	19.03	20.00	1.250	100	1.000	0.03	0.079	0.099
	WLAN2.4GHz	802.11b 1Mbps	Back Face	Swivel Carry Holster	0	1	2412	19.03	20.00	1.250	100	1.000	0.06	0.086	0.108
	WLAN2.4GHz	802.11b 1Mbps	Back Face	Belt Clip	0	1	2412	19.03	20.00	1.250	100	1.000	0.14	0.117	0.146
	WLAN2.4GHz	802.11b 1Mbps	Back Face	Belt Clip	0	6	2437	18.11	20.00	1.545	100	1.000	-0.03	0.088	0.136
17	WLAN2.4GHz	802.11b 1Mbps	Back Face	Belt Clip	0	11	2462	18.08	20.00	1.556	100	1.000	-0.08	0.099	**0.153**

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Carry Accessory	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	Bluetooth	1Mbps	Front Face	Swivel Carry Holster	0	39	2441	9.77	10.00	1.054	76.74	1.085	-0.04	0.007	0.008
	Bluetooth	1Mbps	Back Face	Swivel Carry Holster	0	39	2441	9.77	10.00	1.054	76.74	1.085	0.05	0.007	0.008
18	Bluetooth	1Mbps	Back Face	Belt Clip	0	39	2441	9.77	10.00	1.054	76.74	1.085	-0.09	0.008	**0.009**
	Bluetooth	1Mbps	Back Face	Belt Clip	0	0	2402	8.57	10.00	1.390	76.74	1.085	0.04	0.004	0.006
	Bluetooth	1Mbps	Back Face	Belt Clip	0	78	2480	8.26	10.00	1.493	76.74	1.085	0.01	0.002	0.003

<WLAN 5GHz SAR>

Plot No.	Band	Mode	Test Position	Carry Accessory	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN5.3GHz	802.11a 6Mbps	Front Face	Swivel Carry Holster	0	52	5260	15.30	17.00	1.478	95	1.053	-0.01	0.076	0.118
19	WLAN5.3GHz	802.11a 6Mbps	Back Face	Swivel Carry Holster	0	52	5260	15.30	17.00	1.478	95	1.053	-0.06	0.096	**0.149**
	WLAN5.3GHz	802.11a 6Mbps	Back Face	Belt Clip	0	52	5260	15.30	17.00	1.478	95	1.053	0.03	0.058	0.091
	WLAN5.3GHz	802.11a 6Mbps	Front Face	Swivel Carry Holster	0	56	5280	15.20	17.00	1.514	95	1.053	0.02	0.024	0.039
	WLAN5.3GHz	802.11a 6Mbps	Front Face	Swivel Carry Holster	0	64	5320	15.11	17.00	1.545	95	1.053	0.07	0.045	0.074
	WLAN5.5GHz	802.11a 6Mbps	Front Face	Swivel Carry Holster	0	132	5660	15.24	16.50	1.336	95	1.053	-0.17	0.077	0.109
20	WLAN5.5GHz	802.11a 6Mbps	Back Face	Swivel Carry Holster	0	132	5660	15.24	16.50	1.336	95	1.053	-0.10	0.097	**0.136**
	WLAN5.5GHz	802.11a 6Mbps	Back Face	Belt Clip	0	132	5660	15.24	16.50	1.336	95	1.053	-0.01	0.054	0.076
	WLAN5.5GHz	802.11a 6Mbps	Back Face	Swivel Carry Holster	0	100	5500	14.83	16.50	1.469	95	1.053	0.03	0.054	0.084
	WLAN5.5GHz	802.11a 6Mbps	Back Face	Swivel Carry Holster	0	144	5720	14.98	16.50	1.419	95	1.053	0.01	0.035	0.053
	WLAN5.8GHz	802.11a 6Mbps	Front Face	Swivel Carry Holster	0	149	5745	15.30	17.00	1.478	95	1.053	-0.09	0.092	0.142
21	WLAN5.8GHz	802.11a 6Mbps	Back Face	Swivel Carry Holster	0	149	5745	15.30	17.00	1.478	95	1.053	-0.03	0.109	**0.170**
	WLAN5.8GHz	802.11a 6Mbps	Back Face	Belt Clip	0	149	5745	15.30	17.00	1.478	95	1.053	-0.09	0.054	0.083
	WLAN5.8GHz	802.11a 6Mbps	Back Face	Swivel Carry Holster	0	157	5785	15.05	17.00	1.567	95	1.053	0.03	0.059	0.097
	WLAN5.8GHz	802.11a 6Mbps	Back Face	Swivel Carry Holster	0	165	5825	15.19	17.00	1.517	95	1.053	0.09	0.066	0.105

15. Simultaneous Transmission Analysis

No.	Simultaneous Transmission Configurations	WAVE TWO-WAY RADIO	
		Face	Body-worn
1.	WCDMA + WLAN2.4GHz	Yes	Yes
2.	LTE + WLAN2.4GHz	Yes	Yes
3.	WCDMA + WLAN5GHz	Yes	Yes
4.	LTE + WLAN5GHz	Yes	Yes
5.	WCDMA+ Bluetooth	Yes	Yes
6.	LTE + Bluetooth	Yes	Yes

General Note:

1. EUT will choose each WCDMA and LTE according to the network signal condition; therefore, they will not operate simultaneously at any moment.
2. WLAN and Bluetooth share the same antenna so can't transmit simultaneously.
3. All licensed modes share the same antenna part and cannot transmit simultaneously.
4. EUT will choose either WLAN 2.4GHz or WLAN 5GHz according to the network signal condition; therefore, 2.4GHz WLAN and 5GHz WLAN will not operate simultaneously at any moment.
5. The worst case 5 GHz WLAN SAR for each configuration was used for SAR summation.
6. 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.
7. 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.

Bluetooth Max Power	Exposure Position	Face
	Test separation	25 mm
10.00 dBm	Estimated 1g SAR (W/kg)	0.084 W/kg

15.1 Head Exposure Conditions

WWAN Band		Exposure Position	1 WWAN 1g SAR (W/kg)	2 2.4GHz WLAN 1g SAR (W/kg)	3 5GHz WLAN 1g SAR (W/kg)	4 Bluetooth Exclusion 1g SAR (W/kg)	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	1+4 Summed 1g SAR (W/kg)
WCDMA	WCDMA II	In the front of face at 25mm	0.370	0.097	0.127	0.084	0.47	0.50	0.45
	WCDMA V	In the front of face at 25mm	0.645	0.097	0.127	0.084	0.74	0.77	0.73
LTE	LTE Band 2	In the front of face at 25mm	0.412	0.097	0.127	0.084	0.51	0.54	0.50
	LTE Band 4	In the front of face at 25mm	0.301	0.097	0.127	0.084	0.40	0.43	0.39
	LTE Band 7	In the front of face at 25mm	0.248	0.097	0.127	0.084	0.35	0.38	0.33
	LTE Band 17	In the front of face at 25mm	0.374	0.097	0.127	0.084	0.47	0.50	0.46

15.2 Body-Worn Accessory Exposure Conditions

WWAN Band		Exposure Position	1 WWAN 1g SAR (W/kg)	2 2.4GHz WLAN 1g SAR (W/kg)	3 5GHz WLAN 1g SAR (W/kg)	4 Bluetooth 1g SAR (W/kg)	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	1+4 Summed 1g SAR (W/kg)
WCDMA	WCDMA II	Front Face at 0mm Swivel Carry Holster	0.379	0.099	0.142	0.008	0.48	0.52	0.39
		Back Face at 0mm Swivel Carry Holster	0.180	0.108	0.170	0.008	0.29	0.35	0.19
		Back Face at 0mm Belt Clip	0.249	0.153	0.091	0.009	0.40	0.34	0.26
	WCDMA V	Front Face at 0mm Swivel Carry Holster	0.610	0.099	0.142	0.008	0.71	0.75	0.62
		Back Face at 0mm Swivel Carry Holster	0.738	0.108	0.170	0.008	0.85	0.91	0.75
		Back Face at 0mm Belt Clip	0.999	0.153	0.091	0.009	**1.15**	**1.09**	**1.01**
LTE	LTE Band 2	Front Face at 0mm Swivel Carry Holster	0.307	0.099	0.142	0.008	0.41	0.45	0.32
		Back Face at 0mm Swivel Carry Holster	0.249	0.108	0.170	0.008	0.36	0.42	0.26
		Back Face at 0mm Belt Clip	0.432	0.153	0.091	0.009	0.59	0.52	0.44
	LTE Band 4	Front Face at 0mm Swivel Carry Holster	0.250	0.099	0.142	0.008	0.35	0.39	0.26
		Back Face at 0mm Swivel Carry Holster	0.228	0.108	0.170	0.008	0.34	0.40	0.24
		Back Face at 0mm Belt Clip	0.330	0.153	0.091	0.009	0.48	0.42	0.34
	LTE Band 7	Front Face at 0mm Swivel Carry Holster	0.470	0.099	0.142	0.008	0.57	0.61	0.48
		Back Face at 0mm Swivel Carry Holster	0.196	0.108	0.170	0.008	0.30	0.37	0.20
		Back Face at 0mm Belt Clip	0.233	0.153	0.091	0.009	0.39	0.32	0.24
	LTE Band 17	Front Face at 0mm Swivel Carry Holster	0.424	0.099	0.142	0.008	0.52	0.57	0.43
		Back Face at 0mm Swivel Carry Holster	0.535	0.108	0.170	0.008	0.64	0.71	0.54
		Back Face at 0mm Belt Clip	0.605	0.153	0.091	0.009	0.76	0.70	0.61

Test Engineer : Nick Hu, Yuan Zhao, Jiaxing Chang, Yuankai Kong

16. 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 and the measured 10-g SAR within a frequency band is < 3.75 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 measured 1-g SAR is less 1.5W/kg and highest measured 10-g SAR is less 3.75W/kg. Therefore, the measurement uncertainty table is not required in this report.

17. 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 865664 D01 v01r04, "SAR Measurement Requirements for 100 MHz to 6 GHz", Aug 2015.

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

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

[8] FCC KDB 648474 D04 v01r03, “SAR Evaluation Considerations for Wireless Handsets”, Oct 2015.

[9] FCC KDB 248227 D01 v02r02, “SAR Guidance for IEEE 802.11 (WiFi) Transmitters”, Oct 2015.

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

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

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

Appendix A. Plots of System Performance Check

The plots are shown as follows.

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2019.3.11

System Check_Head_750MHz

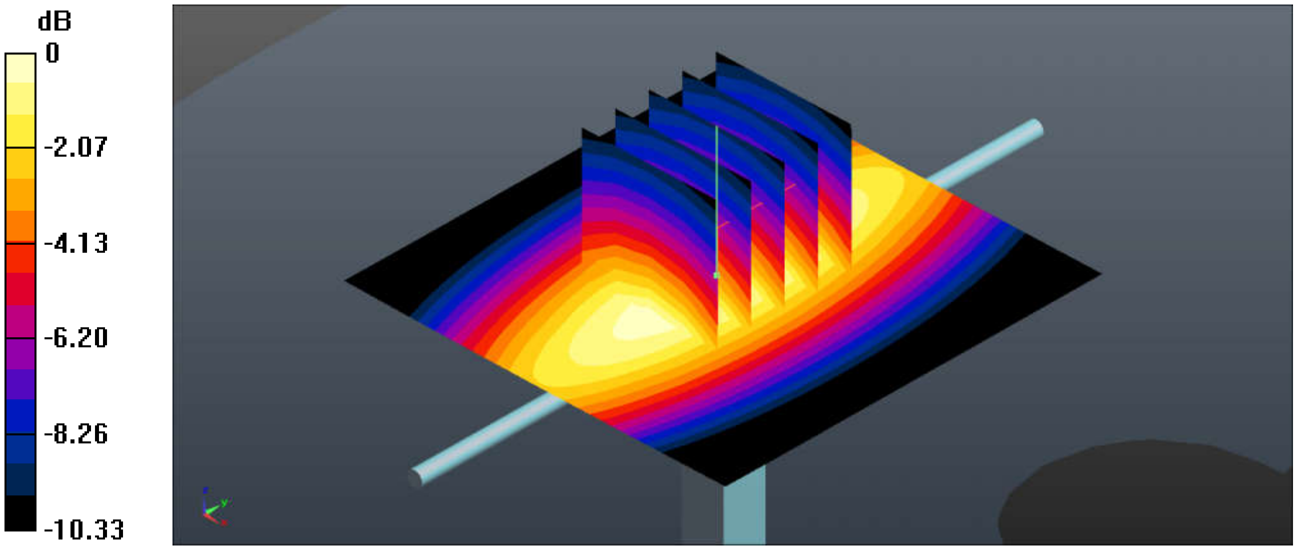
DUT: D750V3 - SN:1087

Communication System: UID 0, CW (0); Frequency: 750 MHz;Duty Cycle: 1:1
Medium: HSL_750 Medium parameters used: f = 750 MHz; σ = 0.894 S/m; ε_r = 41.041; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3843; ConvF(9.27, 9.27, 9.27); Calibrated: 2018.9.27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1338; Calibrated: 2018.12.3
- Phantom: SAM1; Type: SAM; Serial: TP-1839
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 2.65 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 50.03 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 3.19 W/kg
SAR(1 g) = 2.07 W/kg; SAR(10 g) = 1.37 W/kg
Maximum value of SAR (measured) = 2.65 W/kg



0 dB = 2.65 W/kg = 4.23 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2019.3.11

System Check_Head_835MHz

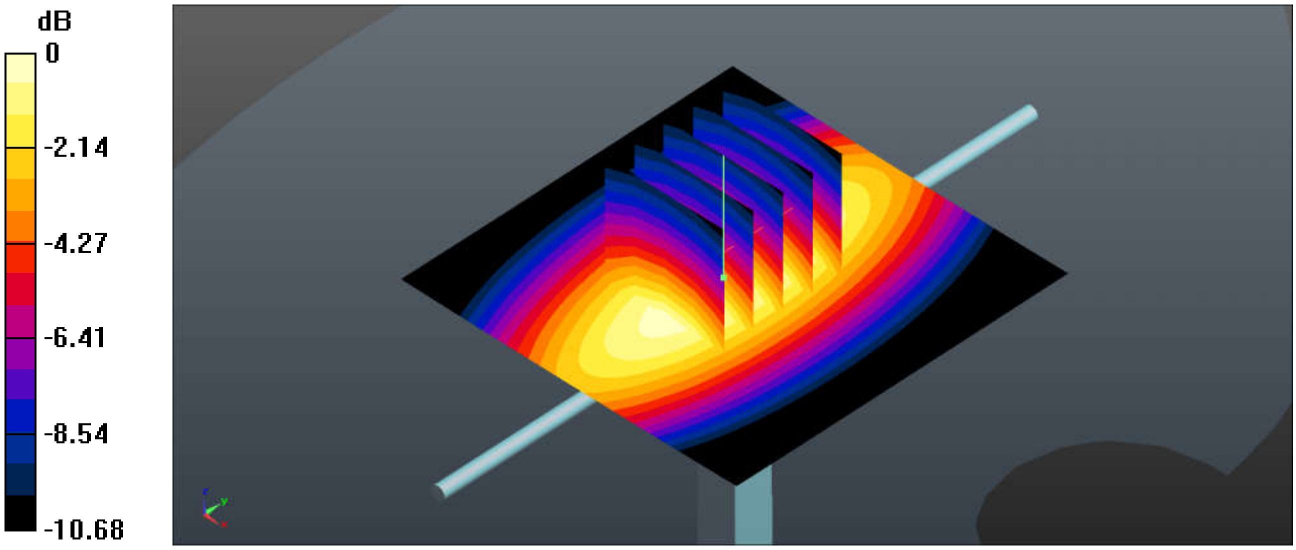
DUT: D835V2 - SN:4d151

Communication System: UID 0, CW (0); Frequency: 835 MHz;Duty Cycle: 1:1
Medium: HSL_850 Medium parameters used: f = 835 MHz; σ = 0.921 S/m; ε_r = 42.546; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3843; ConvF(9.01, 9.01, 9.01); Calibrated: 2018.9.27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1338; Calibrated: 2018.12.3
- Phantom: SAM1; Type: SAM; Serial: TP-1839
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 2.84 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 57.34 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 3.63 W/kg
SAR(1 g) = 2.44 W/kg; SAR(10 g) = 1.59 W/kg
Maximum value of SAR (measured) = 2.86 W/kg



0 dB = 2.86 W/kg = 4.56 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2019.3.12

System Check_Head_1750MHz

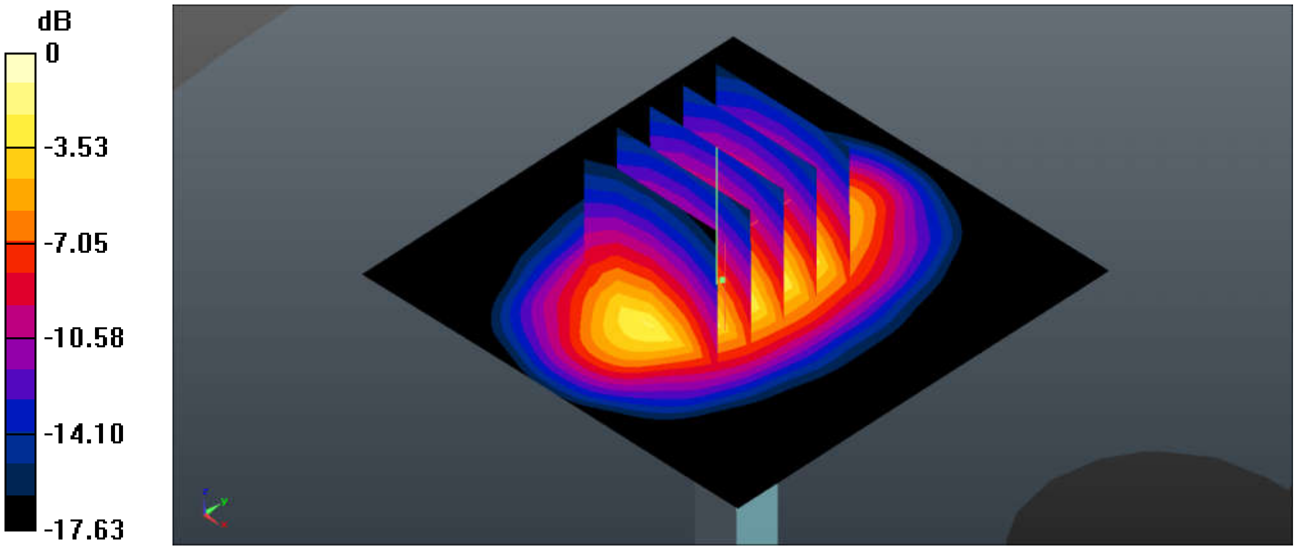
DUT: D1750V2 - SN:1090

Communication System: UID 0, CW; Frequency: 1750 MHz;Duty Cycle: 1:1
Medium: HSL_1750 Medium parameters used: f = 1750 MHz; σ = 1.384 S/m; ε_r = 41.115; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3843; ConvF(7.79, 7.79, 7.79); Calibrated: 2018.9.27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1338; Calibrated: 2018.12.3
- Phantom: SAM2; Type: SAM; Serial: TP-1503
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 13.6 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 87.12 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 17.0 W/kg
SAR(1 g) = 9.46 W/kg; SAR(10 g) = 5.01 W/kg
Maximum value of SAR (measured) = 13.4 W/kg



0 dB = 13.4 W/kg = 11.27 dBW/kg

System Check_Head_1900MHz

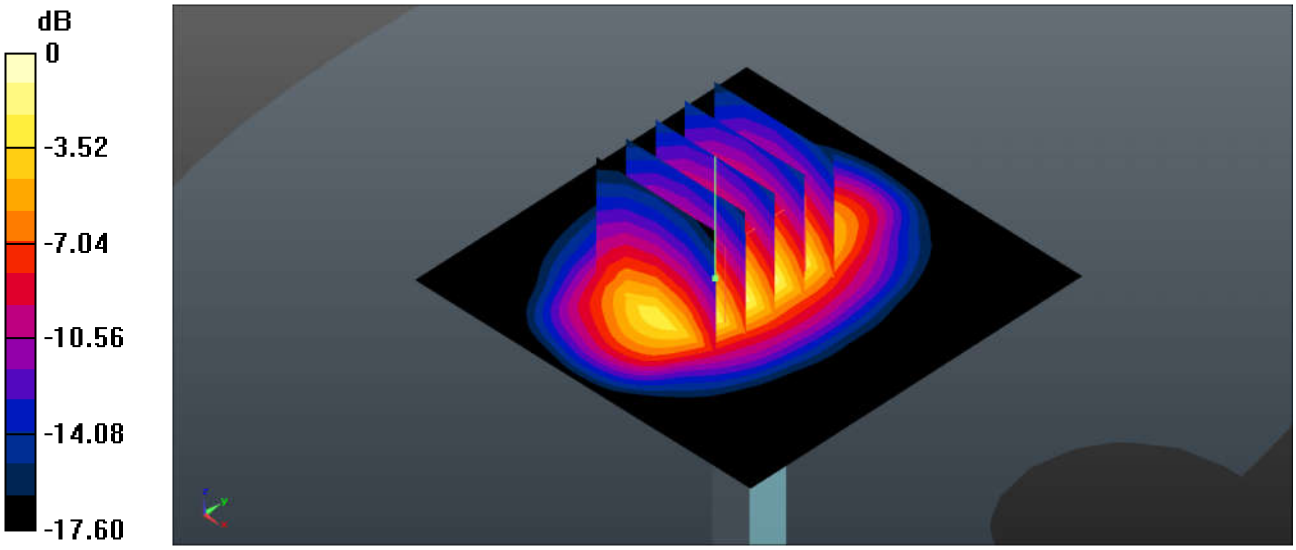
DUT: D1900V2 - SN:5d170

Communication System: UID 0, CW (0); Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: HSL_1900 Medium parameters used: f = 1900 MHz; σ = 1.432 S/m; ε_r = 39.278; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3843; ConvF(7.4, 7.4, 7.4); Calibrated: 2018.9.27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1338; Calibrated: 2018.12.3
- Phantom: SAM2; Type: SAM; Serial: TP-1503
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 12.1 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 88.16 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 16.8 W/kg
SAR(1 g) = 9.37 W/kg; SAR(10 g) = 4.96 W/kg
Maximum value of SAR (measured) = 11.7 W/kg



0 dB = 11.7 W/kg = 10.68 dBW/kg

System Check_Head_2450MHz

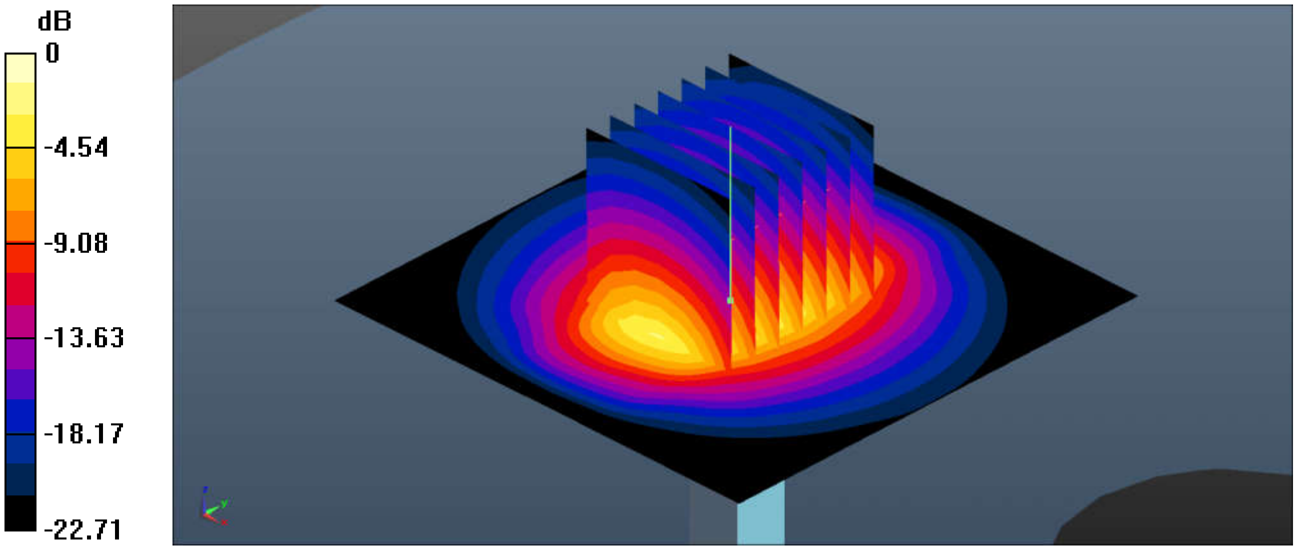
DUT: D2450V2 - SN:908

Communication System: UID 0, CW (0); Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: HSL_2450 Medium parameters used: f = 2450 MHz; σ = 1.855 S/m; ε_r = 38.945; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3843; ConvF(7.08, 7.08, 7.08); Calibrated: 2018.9.27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1338; Calibrated: 2018.12.3
- Phantom: SAM2; Type: SAM; Serial: TP-1503
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Pin=250mW/Area Scan (71x71x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 22.4 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 93.12 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 30.2 W/kg
SAR(1 g) = 13.9 W/kg; SAR(10 g) = 6.45 W/kg
Maximum value of SAR (measured) = 22.1 W/kg



0 dB = 22.1 W/kg = 13.44 dBW/kg

System Check_Head_5250MHz

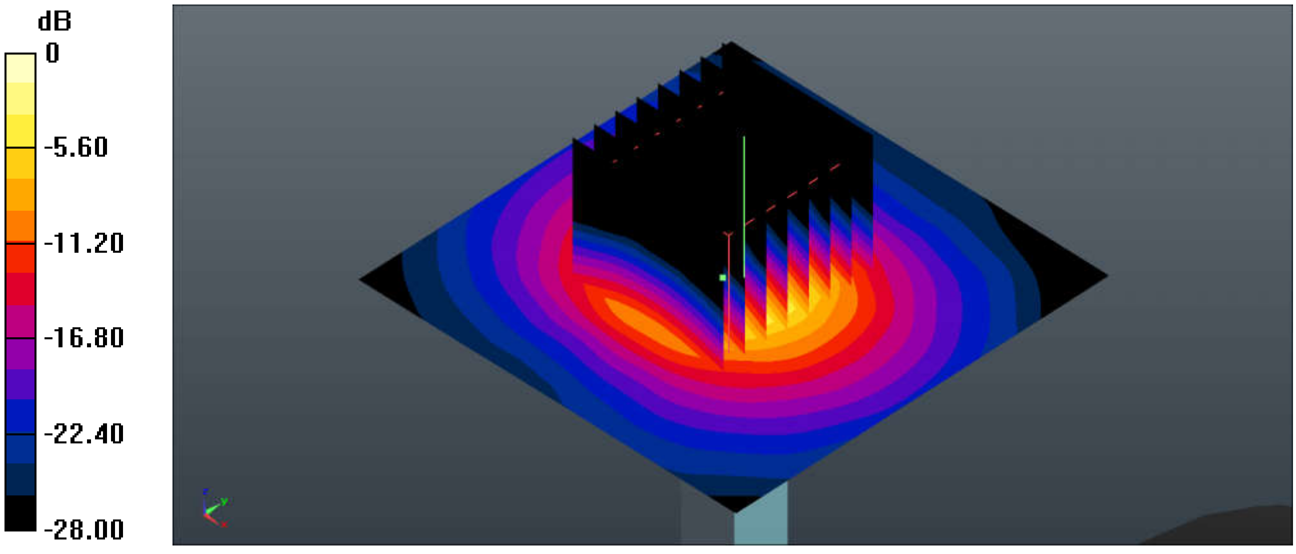
DUT: D5GHzV2-SN:1006

Communication System: UID 0, CW (0); Frequency: 5250 MHz;Duty Cycle: 1:1
Medium: HSL_5000 Medium parameters used: f = 5250 MHz; σ = 4.787 S/m; ε_r = 35.795; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3753; ConvF(5.41, 5.41, 5.41); Calibrated: 2018.5.29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1338; Calibrated: 2018.12.3
- Phantom: SAM1; Type: SAM; Serial: TP-1839
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 18.3 W/kg

Pin=100mW/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 42.84 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 32.2 W/kg
SAR(1 g) = 7.56 W/kg; SAR(10 g) = 2.14 W/kg
Maximum value of SAR (measured) = 18.3 W/kg



0 dB = 18.3 W/kg = 12.62 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2019.3.20

System Check_Head_5600MHz

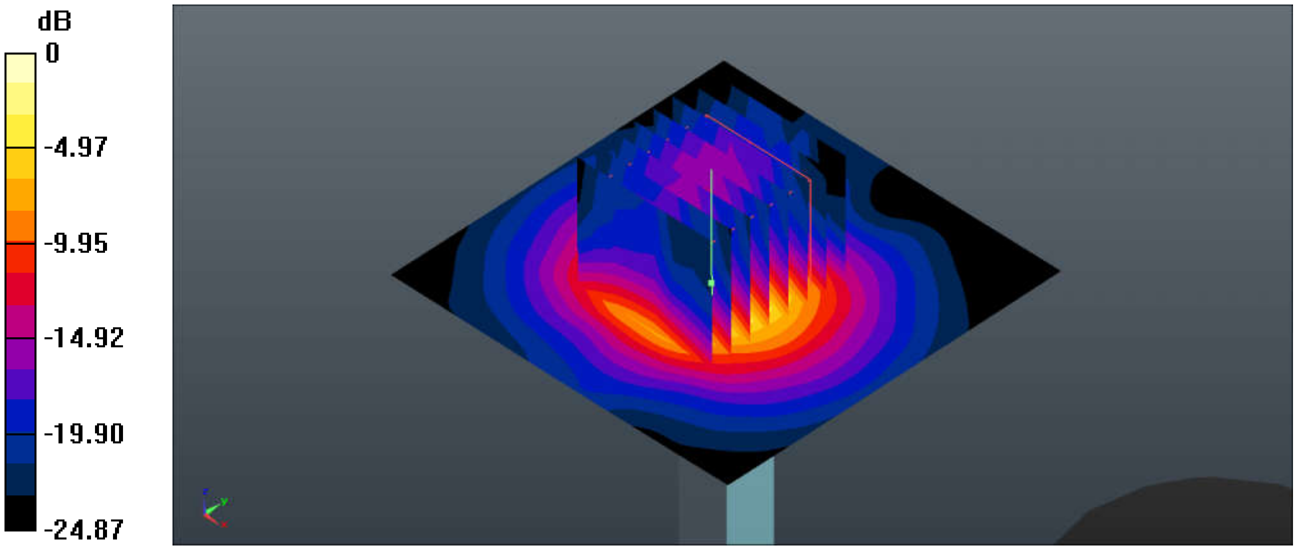
DUT: D5GHzV2-SN:1006

Communication System: UID 0, CW (0); Frequency: 5600 MHz;Duty Cycle: 1:1
Medium: HSL_5000 Medium parameters used: f = 5600 MHz; σ = 5.143 S/m; ε_r = 35.264; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3753; ConvF(4.76, 4.76, 4.76); Calibrated: 2018.5.29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1338; Calibrated: 2018.12.3
- Phantom: SAM1; Type: SAM; Serial: TP-1839
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 18.0 W/kg

Pin=100mW/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 38.89 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 28.8 W/kg
SAR(1 g) = 7.7 W/kg; SAR(10 g) = 2.38 W/kg
Maximum value of SAR (measured) = 17.6 W/kg



0 dB = 17.6 W/kg = 12.46 dBW/kg

System Check_Head_5750MHz

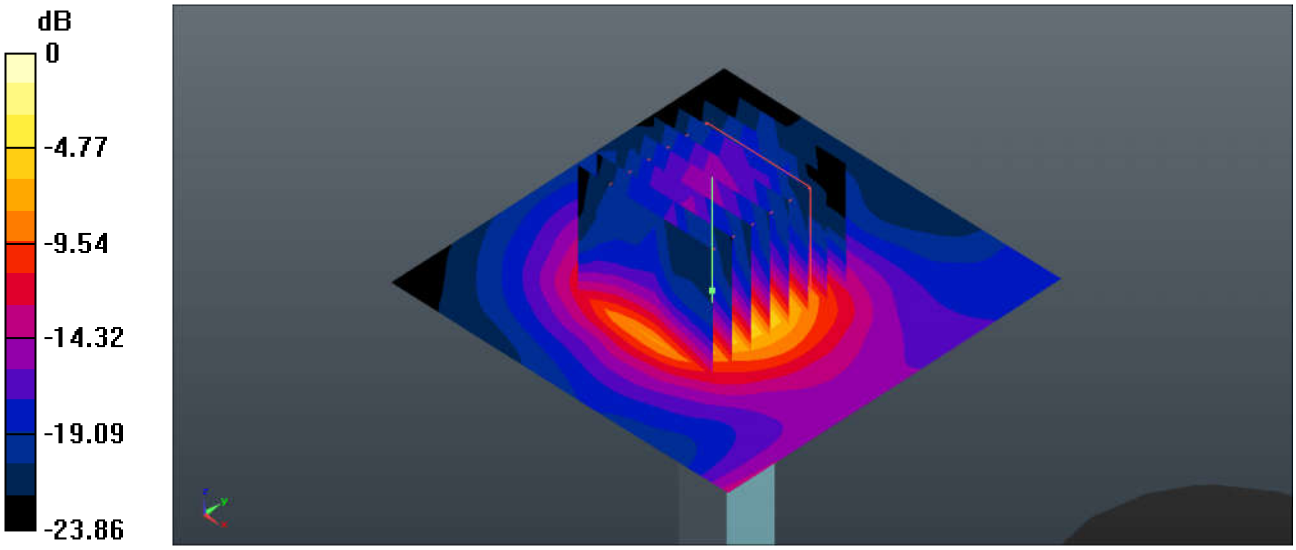
DUT: D5GHzV2-SN:1006

Communication System: UID 0, CW (0); Frequency: 5750 MHz;Duty Cycle: 1:1
Medium: HSL_5000 Medium parameters used: f = 5750 MHz; σ = 5.302 S/m; ε_r = 35.036; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3753; ConvF(4.79, 4.79, 4.79); Calibrated: 2018.5.29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1338; Calibrated: 2018.12.3
- Phantom: SAM1; Type: SAM; Serial: TP-1839
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 16.9 W/kg

Pin=100mW/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 37.55 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 28.1 W/kg
SAR(1 g) = 7.54 W/kg; SAR(10 g) = 2.34 W/kg
Maximum value of SAR (measured) = 17.4 W/kg



0 dB = 17.4 W/kg = 12.41 dBW/kg

System Check_Body_750MHz

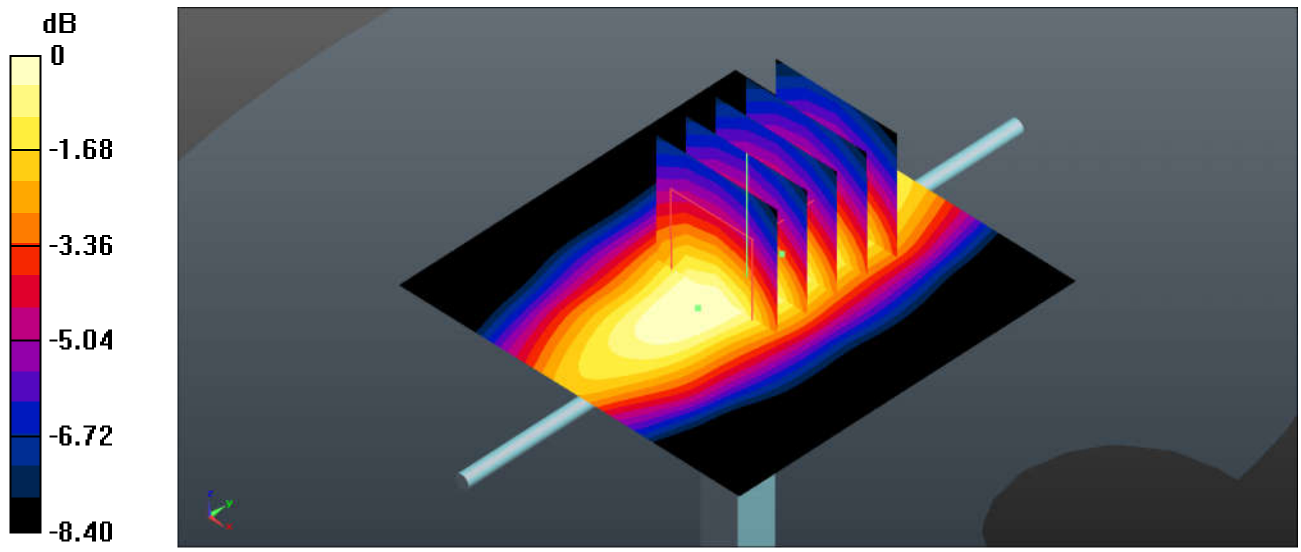
DUT: D750V3 - SN:1087

Communication System: UID 0, CW (0); Frequency: 750 MHz;Duty Cycle: 1:1
Medium: MSL_750 Medium parameters used: f = 750 MHz; σ = 0.933 S/m; ε_r = 57.536; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3843; ConvF(9.31, 9.31, 9.31); Calibrated: 2018.9.27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1338; Calibrated: 2018.12.3
- Phantom: SAM2; Type: SAM; Serial: TP-1503
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 2.54 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 47.77 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 2.55 W/kg
SAR(1 g) = 2.06 W/kg; SAR(10 g) = 1.48 W/kg
Maximum value of SAR (measured) = 2.39 W/kg



0 dB = 2.39 W/kg = 3.78 dBW/kg

System Check_Body_835MHz

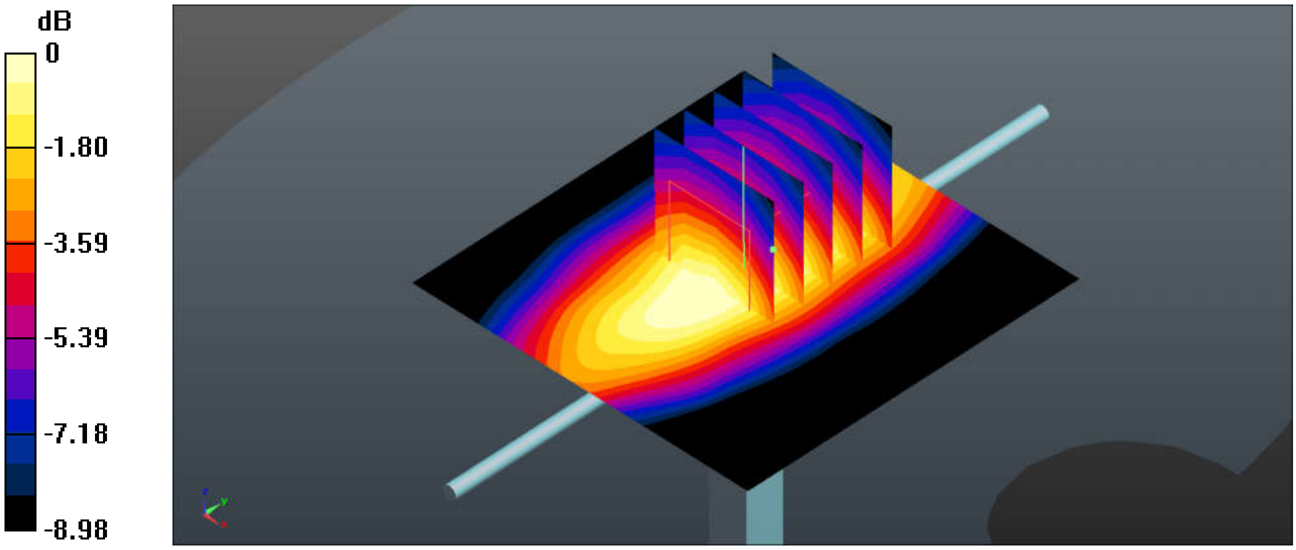
DUT: D835V2 - SN:4d151

Communication System: UID 0, CW (0); Frequency: 835 MHz;Duty Cycle: 1:1
Medium: MSL_835 Medium parameters used: f = 835 MHz; σ = 0.959 S/m; ε_r = 55.134; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3843; ConvF(9.03, 9.03, 9.03); Calibrated: 2018.9.27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1338; Calibrated: 2018.12.3
- Phantom: SAM2; Type: SAM; Serial: TP-1503
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 2.78 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 47.22 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 2.81 W/kg
SAR(1 g) = 2.26 W/kg; SAR(10 g) = 1.6 W/kg
Maximum value of SAR (measured) = 2.63 W/kg



0 dB = 2.63 W/kg = 4.20 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab   Date: 2019.3.15

System Check_Body_1750MHz

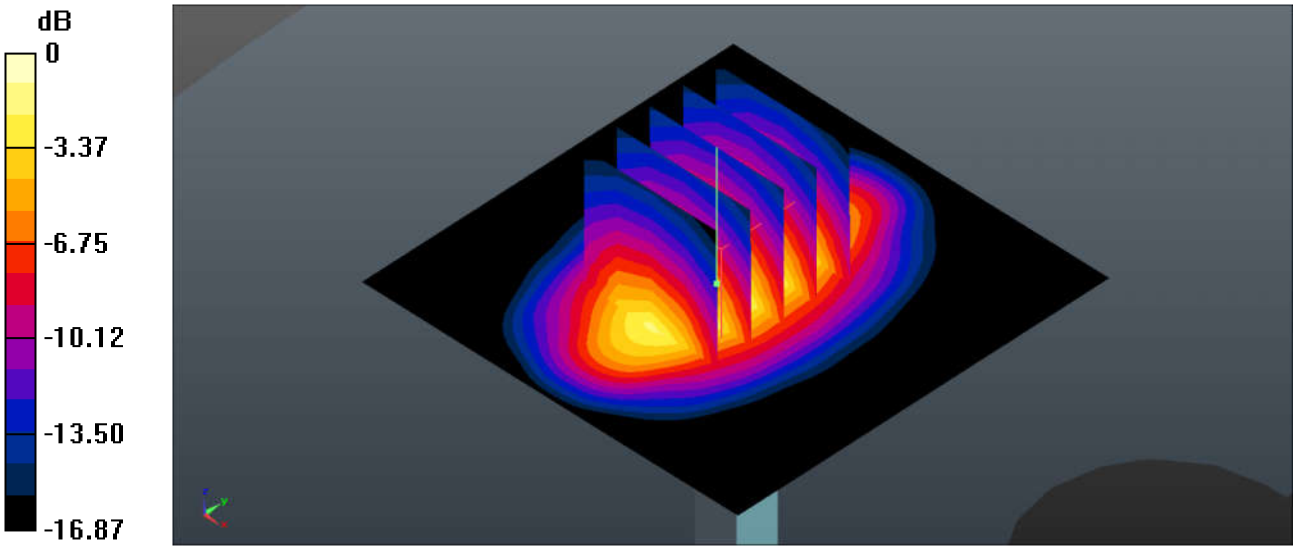
DUT: D1750V2 - SN:1090

Communication System: UID 0, CW (0); Frequency: 1750 MHz;Duty Cycle: 1:1
Medium: MSL_1750 Medium parameters used: f = 1750 MHz; σ = 1.521 S/m; ε_r = 54.081; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3843; ConvF(7.41, 7.41, 7.41); Calibrated: 2018.9.27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1338; Calibrated: 2018.12.3
- Phantom: SAM1; Type: SAM; Serial: TP-1839
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 13.4 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 82.39 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 16.9 W/kg
SAR(1 g) = 9.45 W/kg; SAR(10 g) = 5.01 W/kg
Maximum value of SAR (measured) = 13.4 W/kg



0 dB = 13.4 W/kg = 11.27 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2019.3.15

System Check_Body_1900MHz

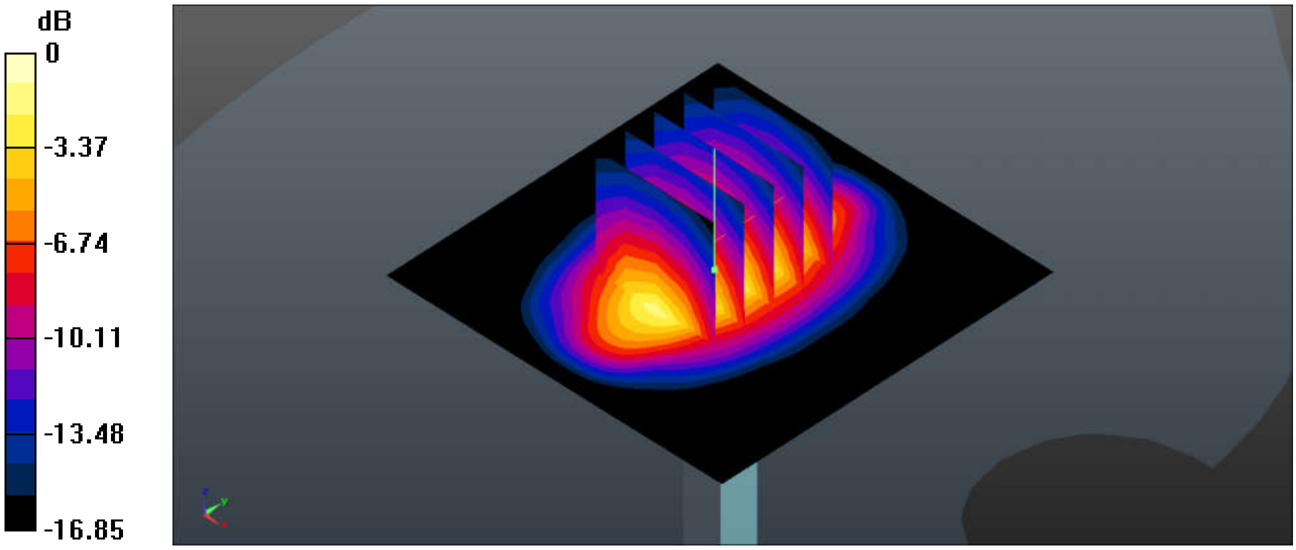
DUT: D1900V2 - SN:5d170

Communication System: UID 0, CW (0); Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: MSL_1900 Medium parameters used: f = 1900 MHz; σ = 1.563 S/m; ε_r = 52.101; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3843; ConvF(7.07, 7.07, 7.07); Calibrated: 2018.9.27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1338; Calibrated: 2018.12.3
- Phantom: SAM1; Type: SAM; Serial: TP-1839
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 15.6 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 91.18 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 20.9 W/kg
SAR(1 g) = 9.7 W/kg; SAR(10 g) = 5.01 W/kg
Maximum value of SAR (measured) = 16.7 W/kg



0 dB = 16.7 W/kg = 12.23 dBW/kg

System Check_Body_2450MHz

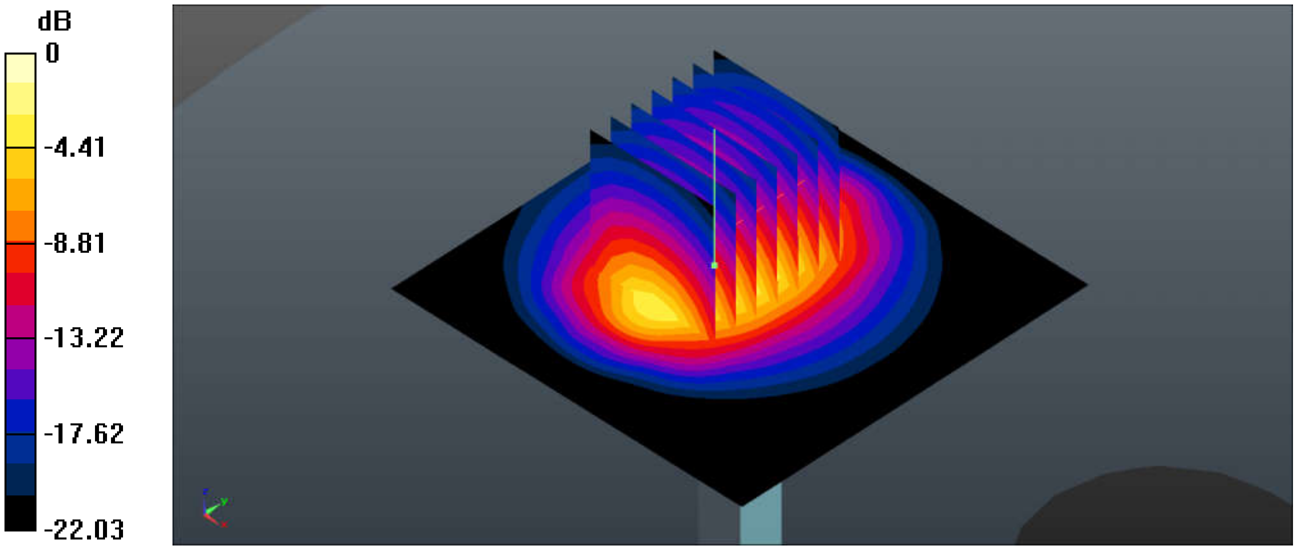
DUT: D2450V2 - SN:908

Communication System: UID 0, CW (0); Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: MSL_2450 Medium parameters used: f = 2450 MHz; σ = 2.007 S/m; ε_r = 53.184; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3843; ConvF(7.02, 7.02, 7.02); Calibrated: 2018.9.27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1338; Calibrated: 2018.12.3
- Phantom: SAM2; Type: SAM; Serial: TP-1503
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Pin=250mW/Area Scan (71x71x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 20.7 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 72.10 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 27.2 W/kg
SAR(1 g) = 13.2 W/kg; SAR(10 g) = 6.08 W/kg
Maximum value of SAR (measured) = 20.2 W/kg



0 dB = 20.2 W/kg = 13.05 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab   Date: 2019.3.21

System Check_Body_5250MHz

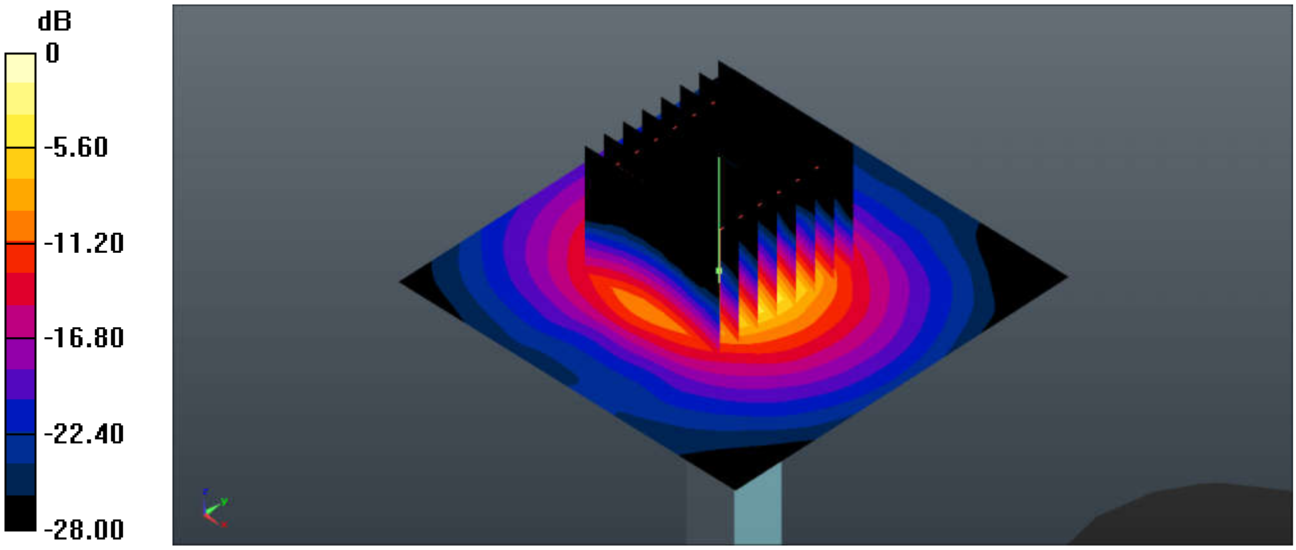
DUT: D5GHzV2-SN:1006

Communication System: UID 0, CW (0); Frequency: 5250 MHz;Duty Cycle: 1:1
Medium: MSL_5000 Medium parameters used: f = 5250 MHz; σ = 5.452 S/m; ε_r = 48.884; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3753; ConvF(4.88, 4.88, 4.88); Calibrated: 2018.5.29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1338; Calibrated: 2018.12.3
- Phantom: SAM1; Type: SAM; Serial: TP-1839
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 16.5 W/kg

Pin=100mW/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 37.89 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 27.8 W/kg
SAR(1 g) = 7.23 W/kg; SAR(10 g) = 2.08 W/kg
Maximum value of SAR (measured) = 16.2 W/kg



0 dB = 16.2 W/kg = 12.10 dBW/kg

System Check_Body_5600MHz

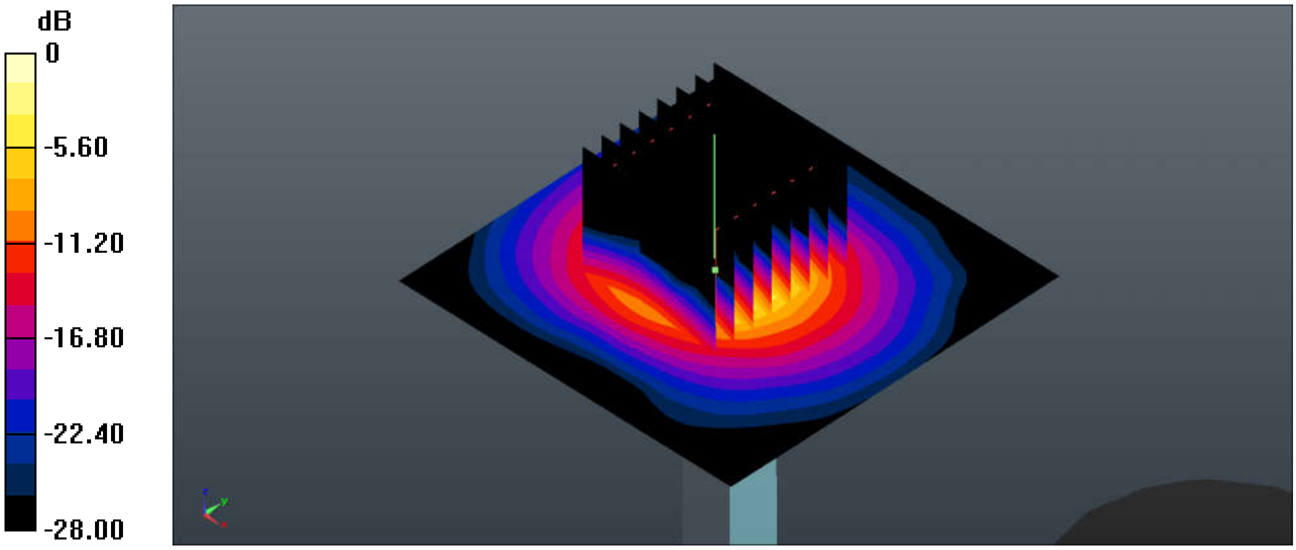
DUT: D5GHzV2-SN:1006

Communication System: UID 0, CW (0); Frequency: 5600 MHz;Duty Cycle: 1:1
Medium: MSL_5000 Medium parameters used: f = 5600 MHz; σ = 5.909 S/m; ε_r = 48.311; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3753; ConvF(4.28, 4.28, 4.28); Calibrated: 2018.5.29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1338; Calibrated: 2018.12.3
- Phantom: SAM1; Type: SAM; Serial: TP-1839
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 18.4 W/kg

Pin=100mW/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 36.76 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 31.5 W/kg
SAR(1 g) = 7.55 W/kg; SAR(10 g) = 2.13 W/kg
Maximum value of SAR (measured) = 17.9 W/kg



0 dB = 17.9 W/kg = 12.53 dBW/kg

System Check_Body_5750MHz

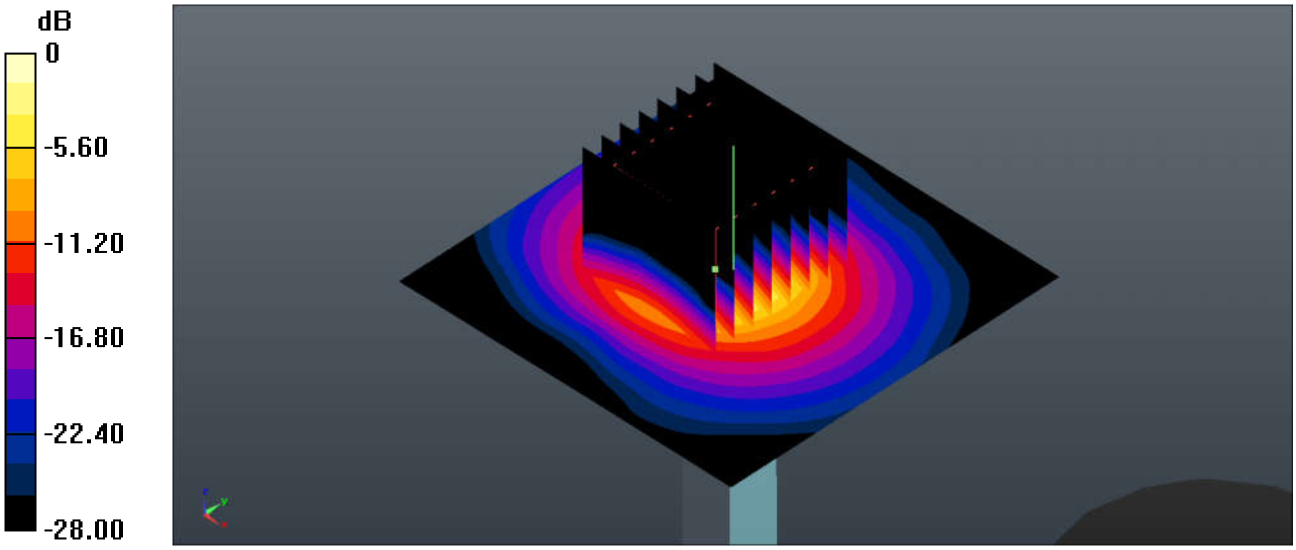
DUT: D5GHzV2-SN:1006

Communication System: UID 0, CW (0); Frequency: 5750 MHz;Duty Cycle: 1:1
Medium: MSL_5000 Medium parameters used: f = 5750 MHz; σ = 6.119 S/m; ε_r = 48.065; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3753; ConvF(4.53, 4.53, 4.53); Calibrated: 2018.5.29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1338; Calibrated: 2018.12.3
- Phantom: SAM1; Type: SAM; Serial: TP-1839
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 16.4 W/kg

Pin=100mW/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 35.26 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 28.2 W/kg
SAR(1 g) = 7.23 W/kg; SAR(10 g) = 1.97 W/kg
Maximum value of SAR (measured) = 16.2 W/kg



0 dB = 16.2 W/kg = 12.10 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab   Date: 2020.7.4

System Check_Head_835MHz

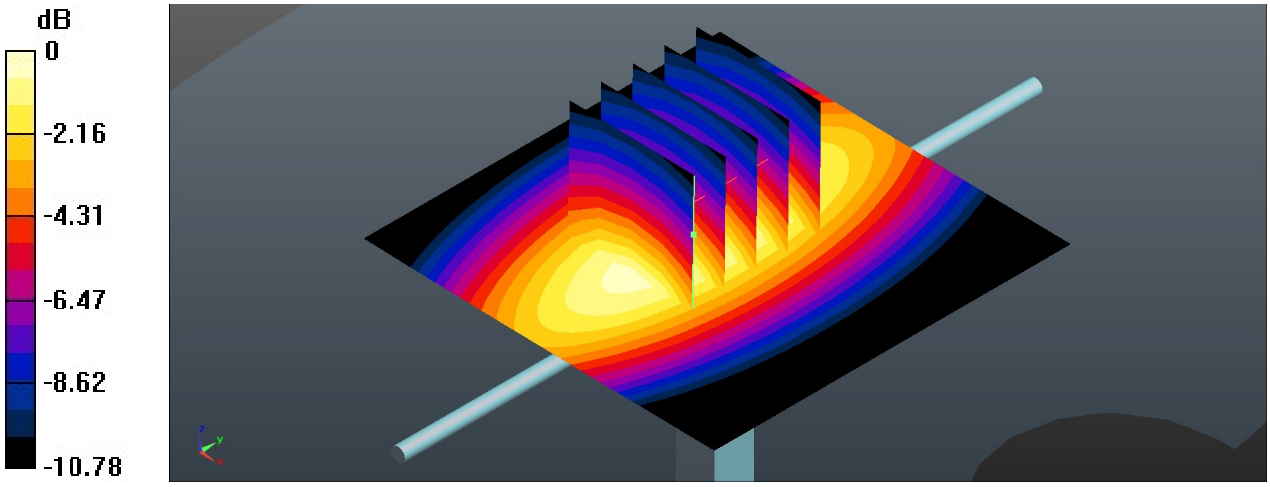
DUT: D835V2 - SN:4d151

Communication System: UID 0, CW (0); Frequency: 835 MHz;Duty Cycle: 1:1
Medium: HSL_850 Medium parameters used: f = 835 MHz; σ = 0.944 S/m; ε_r = 41.247; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3843; ConvF(9.07, 9.07, 9.07); Calibrated: 2019.9.26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn799; Calibrated: 2020.2.10
- Phantom: SAM1; Type: SAM; Serial: TP-1753
- 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) = 2.94 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 56.68 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 3.75 W/kg
SAR(1 g) = 2.52 W/kg; SAR(10 g) = 1.64 W/kg
Maximum value of SAR (measured) = 2.96 W/kg



0 dB = 2.96 W/kg = 4.71 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2020.7.6

System Check_Head_1900MHz

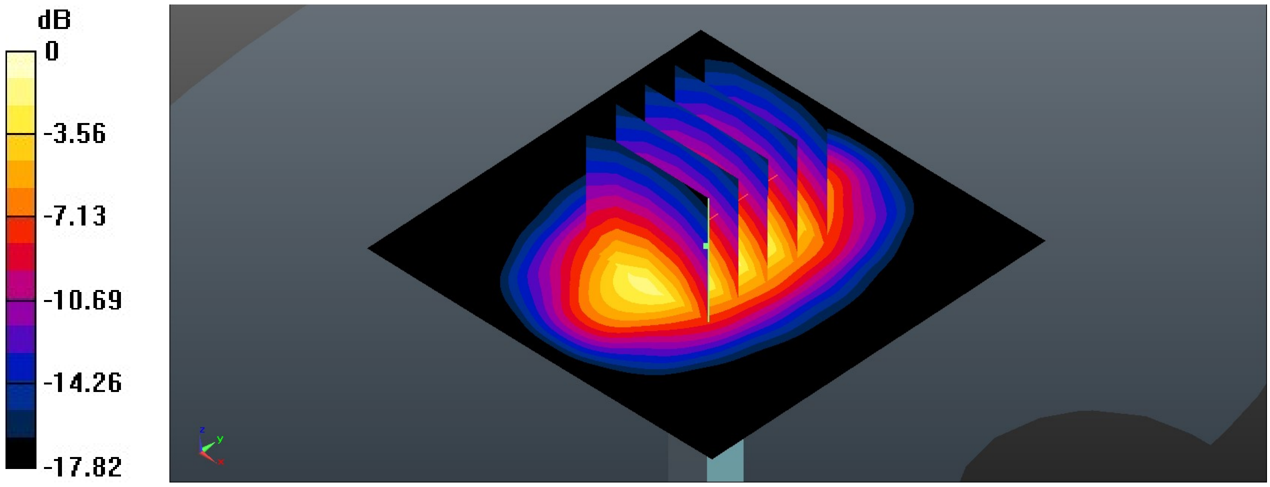
DUT: D1900V2 - SN:5d170

Communication System: UID 0, CW (0); Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: HSL_1900 Medium parameters used: f = 1900 MHz; σ = 1.461 S/m; ε_r = 40.083; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3843; ConvF(7.67, 7.67, 7.67); Calibrated: 2019.9.26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn799; Calibrated: 2020.2.10
- Phantom: SAM1; Type: SAM; Serial: TP-1753
- 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) = 12.1 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 94.48 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 17.1 W/kg
SAR(1 g) = 9.5 W/kg; SAR(10 g) = 4.93 W/kg
Maximum value of SAR (measured) = 12.1 W/kg



0 dB = 12.1 W/kg = 10.83 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2020.7.8

System Check_Head_2450MHz

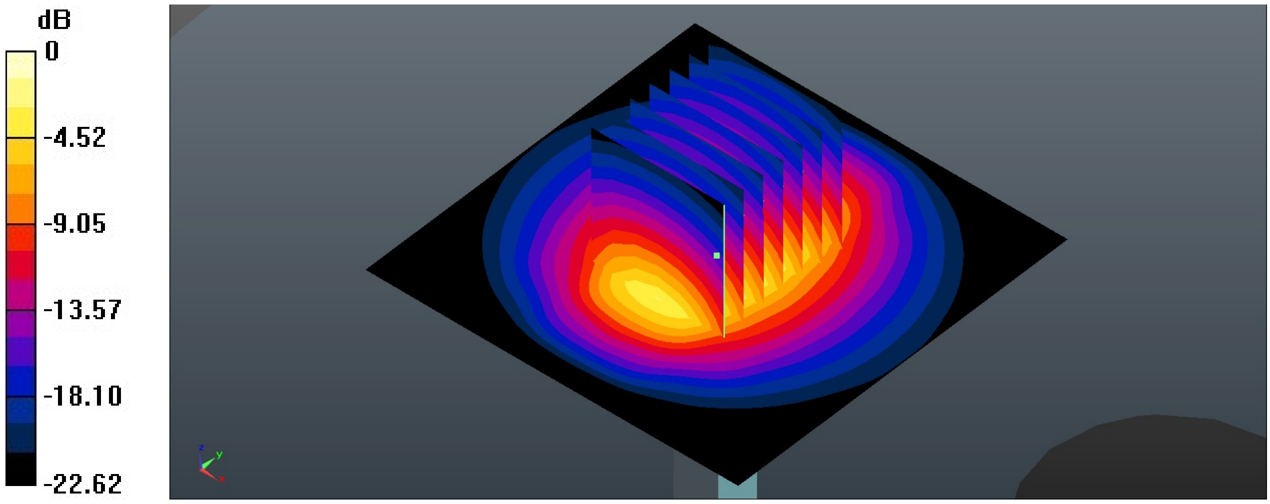
DUT: D2450V2 - SN:908

Communication System: UID 0, CW (0); Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: HSL_2450 Medium parameters used: f = 2450 MHz; σ = 1.85 S/m; ε_r = 39.054; ρ = 1000 kg/m^3
Ambient Temperature：23.1 ℃; Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3843; ConvF(7.06, 7.06, 7.06); Calibrated: 2019.9.26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn799; Calibrated: 2020.2.10
- Phantom: SAM1; Type: SAM; Serial: TP-1753
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=250mW/Area Scan (71x71x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 19.0 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 100.3 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 28.0 W/kg
SAR(1 g) = 13.6 W/kg; SAR(10 g) = 6.25 W/kg
Maximum value of SAR (measured) = 17.9 W/kg



0 dB = 17.9 W/kg = 12.53 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab   Date: 2020.7.5

System Check_Head_2600MHz

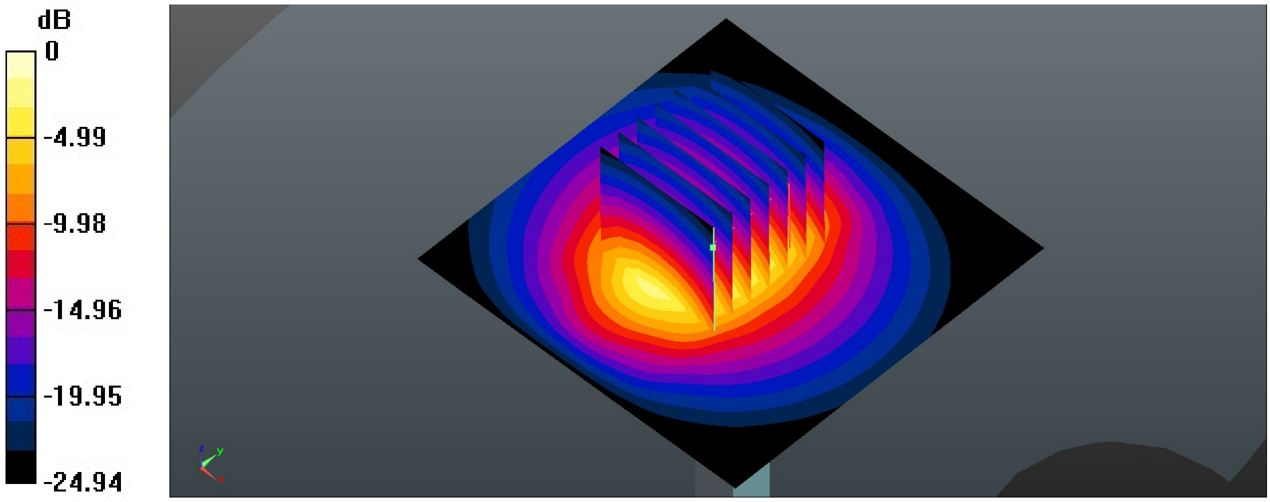
DUT: D2600V2 - SN:1061

Communication System: UID 0, CW (0); Frequency: 2600 MHz;Duty Cycle: 1:1
Medium: HSL_2600 Medium parameters used: f = 2600 MHz; σ = 1.981 S/m; ε_r = 39.059; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3843; ConvF(6.9, 6.9, 6.9); Calibrated: 2019.9.26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn799; Calibrated: 2020.2.10
- Phantom: SAM1; Type: SAM; Serial: TP-1753
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=250mW/Area Scan (71x71x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 20.5 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 94.63 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 34.5 W/kg
SAR(1 g) = 14.7 W/kg; SAR(10 g) = 6.36 W/kg
Maximum value of SAR (measured) = 19.9 W/kg



0 dB = 19.9 W/kg = 12.99 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2020.7.7

System Check_Head_5250MHz

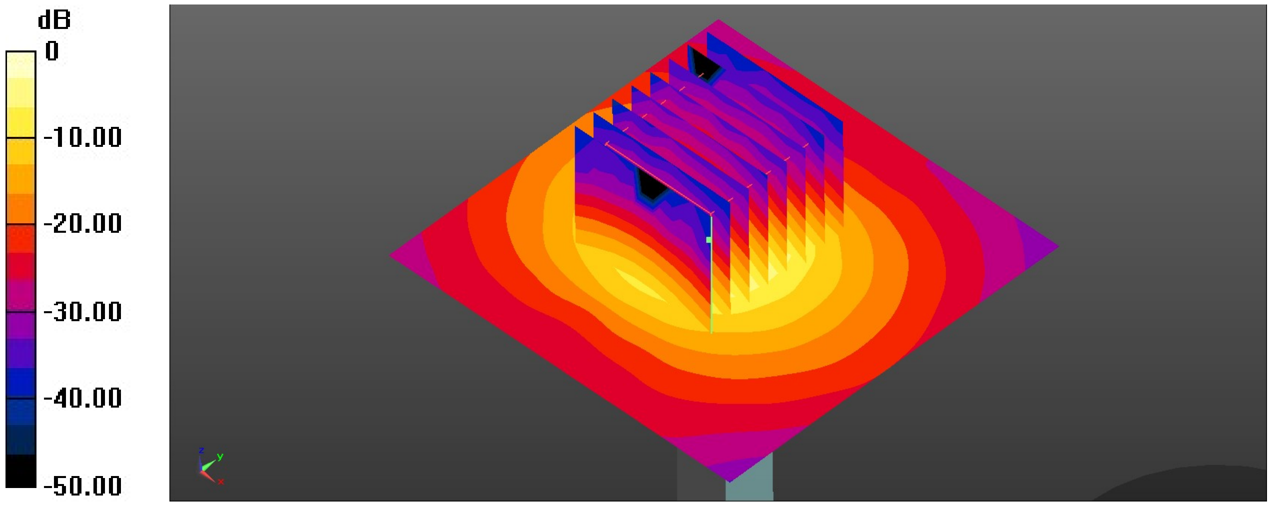
DUT: D5GHzV2 - SN:1113

Communication System: UID 0, CW (0); Frequency: 5250 MHz;Duty Cycle: 1:1
Medium: HSL_5000 Medium parameters used: f = 5250 MHz; σ = 4.678 S/m; ε_r = 36.999; ρ = 1000 kg/m^3
Ambient Temperature：23.3 °C; Liquid Temperature：22.8 °C

DASY5 Configuration:
- Probe: EX3DV4 - SN3843; ConvF(4.74, 4.74, 4.74); Calibrated: 2019.9.26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn799; Calibrated: 2020.2.10
- Phantom: SAM1; Type: SAM; Serial: TP-1753
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 19.6 W/kg

Pin=100mW/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 42.83 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 32.6 W/kg
SAR(1 g) = 8.14 W/kg; SAR(10 g) = 2.32 W/kg
Maximum value of SAR (measured) = 19.2 W/kg



0 dB = 19.2 W/kg = 12.83 dBW/kg