FCC SAR Test Report

APPLICANT	:	**Innowi Inc.**
EQUIPMENT	:	**ChecOut M**
BRAND NAME	:	**Innowi**
MODEL NAME	:	**IWCHT-M102**
FCC ID	:	**2AO2Y-IWCHTM102**
STANDARD	:	**FCC 47 CFR Part 2 (2.1093)** **ANSI/IEEE C95.1-1992** **IEEE 1528-2013**

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

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

Mark Qu

Approved by: Mark Qu / Manager

NVLAP TESTING
NVLAP LAB CODE 600156-0

Sporton International (Shenzhen) Inc.
1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen City, Guangdong Province 518055, China

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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA7D0101-01	Rev. 01	Initial issue of report	Sep. 27, 2018

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **Innowi Inc., ChecOut M, IWCHT-M102**, are as follows.

Highest 1g SAR Summary				
Equipment Class	Frequency Band		Body-worn (Separation 10mm) 1g SAR (W/kg)	Highest Simultaneous Transmission 1g SAR (W/kg)
Licensed	WCDMA	Band V	0.45	1.54
		Band II	0.95	
	LTE	Band 12	0.31	
		Band 13	0.47	
		Band 5	0.28	
		Band 4	**1.08**	
		Band 2	0.96	
DTS	WLAN	2.4GHz WLAN	0.37	1.54
NII		5GHz WLAN	0.32	1.49
Highest 10g SAR Summary				
Equipment Class	Frequency Band		Product Specific 10g SAR (W/kg) (Separation 0mm)	Highest Simultaneous Transmission 10g SAR (W/kg)
Licensed	WCDMA	Band V	1.09	3.92
		Band II	2.39	
	LTE	Band 12	0.94	
		Band 13	1.16	
		Band 5	1.00	
		Band 4	**2.76**	
		Band 2	2.44	
DTS	WLAN	2.4GHz WLAN	1.27	3.92
NII		5GHz WLAN	1.04	3.67
Date of Testing:			2018/8/18~2018/9/12	

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, 4.0 W/kg for Product Specific 10g 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

Testing Laboratory	
Test Site	Sporton International (Shenzhen) Inc.
Test Site Location	1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen City, Guangdong Province 518055, China TEL: +86-755-8637-9589 FAX: +86-755-8637-9595

Applicant	
Company Name	Innowi Inc.
Address	3240 Scott Blvd. Santa Clara CA 95054 USA

Manufacturer	
Company Name	Innowi Inc.
Address	3240 Scott Blvd. Santa Clara CA 95054 USA

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 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

<table>
<tr><th colspan="2">Product Feature & Specification</th></tr>
<tr><td>Equipment Name</td><td>ChecOut M</td></tr>
<tr><td>Brand Name</td><td>Innowi</td></tr>
<tr><td>Model Name</td><td>IWCHT-M102</td></tr>
<tr><td>FCC ID</td><td>2AO2Y-IWCHTM102</td></tr>
<tr><td>IMEI</td><td>358148060039943</td></tr>
<tr><td>Wireless Technology and Frequency Range</td><td>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 5: 824.7 MHz ~ 848.3 MHz
LTE Band 12: 699.7 MHz ~ 715.3 MHz
LTE Band 13: 779.5 MHz ~ 784.5 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 ~ 5700 MHz
WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz
Bluetooth: 2402 MHz ~ 2480 MHz
NFC : 13.56 MHz</td></tr>
<tr><td>Mode</td><td>RMC/AMR 12.2Kbps
HSDPA
HSUPA
HSPA+ (16QAM uplink is not supported)
LTE: QPSK, 16QAM
WLAN 2.4GHz 802.11b/g/n HT20
WLAN 5GHz 802.11a/n HT20/HT40
WLAN 5GHz 802.11ac VHT80
Bluetooth v2.0+EDR, Bluetooth v4.1 LE
NFC: ASK</td></tr>
<tr><td>HW Version</td><td>ChecOut M HW v1.0</td></tr>
<tr><td>SW Version</td><td>ChecOut M A-LTE v1.0</td></tr>
<tr><td>WLAN Antenna Function for Transmitter</td><td><table><tr><td></td><td>Ant.1</td><td>Ant.2</td></tr><tr><td>802.11a/b/g/n/ac SISO</td><td>V</td><td>V</td></tr><tr><td>802.11n/ac MIMO</td><td>V</td><td>V</td></tr></table></td></tr>
<tr><td>GSM / (E)GPRS Transfer mode</td><td>Class B – EUT cannot support Packet Switched and Circuit Switched Network simultaneously but can automatically switch between Packet and Circuit Switched Network.</td></tr>
<tr><td>EUT Stage</td><td>Identical Prototype</td></tr>
<tr><td colspan="2">Remark:
1. WLAN operation in 5600 MHz ~ 5650 MHz is notched.
2. This device has no voice function.</td></tr>
</table>

4.2 General LTE SAR Test and Reporting Considerations

<table>
<tr><th colspan="2">Summarized necessary items addressed in KDB 941225 D05 v02r05</th></tr>
<tr><td>FCC ID</td><td>2AO2Y-IWCHTM102</td></tr>
<tr><td>Equipment Name</td><td>ChecOut M</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 5: 824.7 MHz ~ 848.3 MHz
LTE Band 12: 699.7 MHz ~ 715.3 MHz
LTE Band 13: 779.5 MHz ~ 784.5 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 5:1.4MHz, 3MHz, 5MHz, 10MHz
LTE Band 12:1.4MHz, 3MHz, 5MHz, 10MHz
LTE Band 13: 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>R9, Cat 4</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 5								
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20407	824.7	20415	825.5	20425	826.5	20450	829
M	20525	836.5	20525	836.5	20525	836.5	20525	836.5
H	20643	848.3	20635	847.5	20625	846.5	20600	844
LTE Band 12								
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	23017	699.7	23025	700.5	23035	701.5	23060	704
M	23095	707.5	23095	707.5	23095	707.5	23095	707.5
H	23173	715.3	23165	714.5	23155	713.5	23130	711
LTE Band 13				
	Bandwidth 5 MHz		Bandwidth 10 MHz	
	Channel #	Freq.(MHz)	Channel #	Freq.(MHz)
L	23205	779.5	23230	782
M	23230	782		
H	23255	784.5		

5. RF Exposure Limits

5.1 Uncontrolled Environment

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

5.2 Controlled Environment

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

Limits for Occupational/Controlled Exposure (W/kg)

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

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

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

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:

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

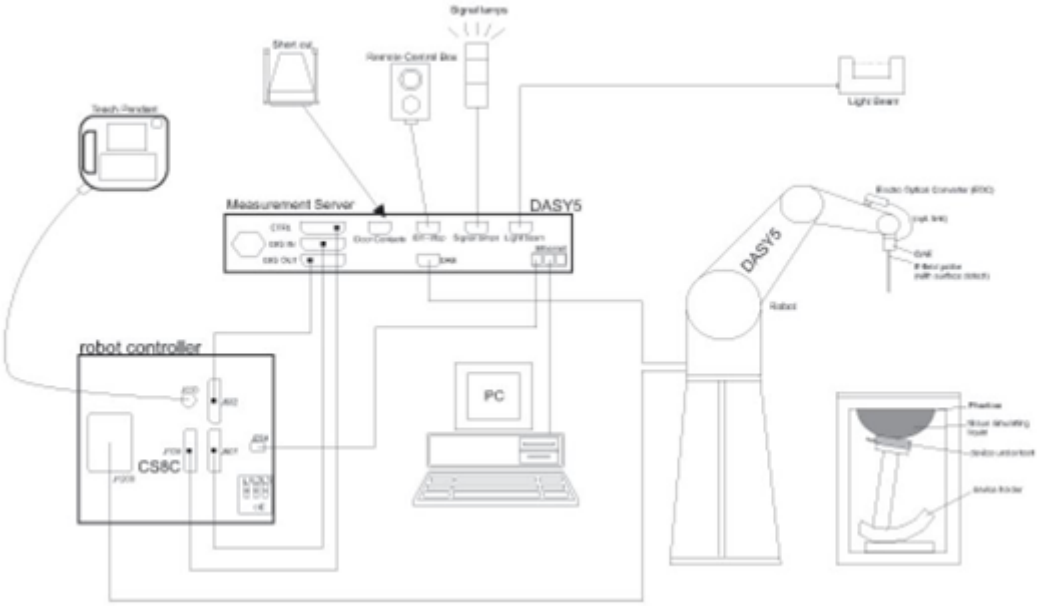
SAR is expressed in units of Watts per kilogram (W/kg)

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

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.

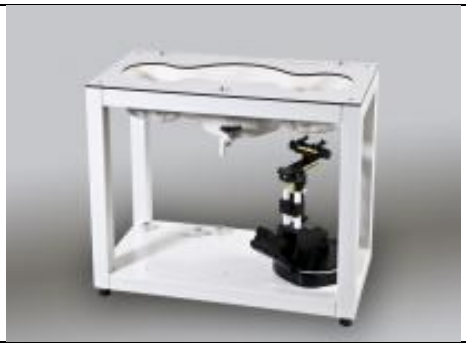
The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

Fig 5.1 Photo of DAE

7.3 Phantom

<SAM Twin Phantom>

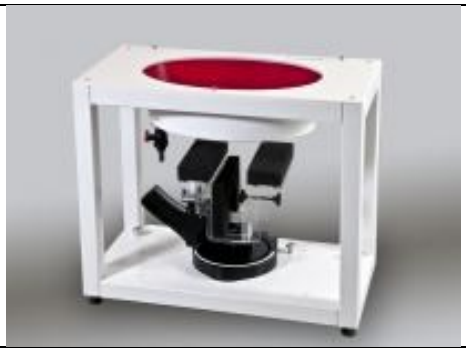
Shell Thickness	2 ± 0.2 mm; Center ear point: 6 ± 0.2 mm
Filling Volume	Approx. 25 liters
Dimensions	Length: 1000 mm; Width: 500 mm; Height: adjustable feet
Measurement Areas	Left Hand, Right Hand, Flat Phantom



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	½·δ·ln(2) ± 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.

			≤ 3 GHz	> 3 GHz
Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	≤ 1.5·$\Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm

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 *reported* SAR from the *area scan based 1-g SAR estimation* procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.

8.5 Volume Scan Procedures

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

8.6 Power Drift Monitoring

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

9. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit	D750V3	1099	Dec. 04, 2017	Dec. 03, 2018
SPEAG	835MHz System Validation Kit	D835V2	4d162	Dec. 05, 2017	Dec. 04, 2018
SPEAG	1750MHz System Validation Kit	D1750V2	1137	Jul. 30, 2018	Jul. 29, 2019
SPEAG	1900MHz System Validation Kit	D1900V2	5d182	Dec. 06, 2017	Dec. 05, 2018
SPEAG	2450MHz System Validation Kit	D2450V2	924	Mar. 22, 2018	Mar. 21, 2019
SPEAG	5000MHz System Validation Kit	D5GHzV2	1167	Aug. 03, 2018	Aug. 02, 2019
SPEAG	Data Acquisition Electronics	DAE4	1437	Sep. 15, 2017	Sep. 14, 2018
SPEAG	Dosimetric E-Field Probe	EX3DV4	3819	Jan. 31, 2018	Jan. 30, 2019
SPEAG	ELI4 Phantom	QD OVA 001 BB	TP-1233	NCR	NCR
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
Anritsu	Radio communication analyzer	MT8820C	6201300653	Jul. 18, 2018	Jul. 17, 2019
Agilent	Network Analyzer	E5071C	MY46523671	Oct. 18, 2017	Oct. 17, 2018
Speag	Dielectric Assessment KIT	DAK-3.5	1071	Nov. 28, 2017	Nov. 27, 2018
Agilent	Signal Generator	N5181A	MY50145381	Dec. 26, 2017	Dec. 25, 2018
Anritsu	Power Senor	MA2411B	1306099	Jul. 30, 2018	Jul. 29, 2019
Anritsu	Power Meter	ML2495A	1349001	Jul. 26, 2018	Jul. 25, 2019
Anritsu	Power Sensor	MA2411B	1306099	Jul. 30, 2018	Jul. 29, 2019
Anritsu	Power Meter	ML2495A	1349001	Jul. 26, 2018	Jul. 25, 2019
R&S	Spectrum Analyzer	FSP7	100818	Jul. 18, 2018	Jul. 17, 2019
LKM electronic	Hygrometer	DTM3000	3241	Aug. 10, 2018	Jul. 09, 2019
Anymetre	Thermo-Hygrometer	JR593	2015030904	Apr. 19, 2018	Apr. 18, 2019
Anymetre	Thermo-Hygrometer	JR593	2015030903	Jan. 01, 2018	Dec. 31, 2018
Anymetre	Thermo-Hygrometer	JR593	2015102801	Jan. 01, 2018	Dec. 31, 2018
ARRA	Power Divider	A3200-2	N/A	Note	
PASTERNACK	Dual Directional Coupler	PE2214-10	N/A	Note	
Agilent	Dual Directional Coupler	778D	50422	Note	
MCL	Attenuation1	BW-S10W5	N/A	Note	
Weinschel	Attenuation2	3M-20	N/A	Note	
Zhongjilianhe	Attenuation3	MVE2214-03	N/A	Note	
mini-circuits	Amplifier	ZHL-42W+	QA1341002	Note	
mini-circuits	Amplifier	ZVE-3W-83+	599201528	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

10. System Verification

10.1 Tissue Simulating Liquids

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

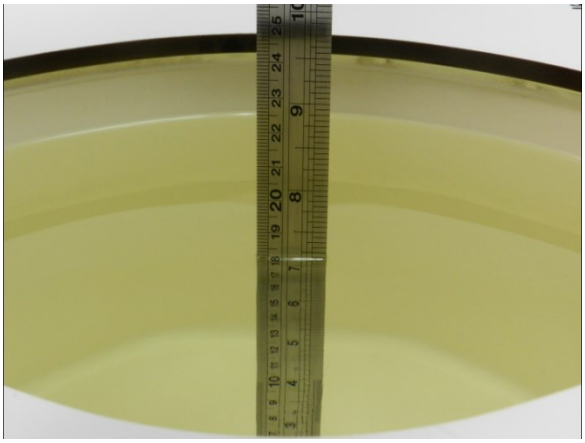


Fig 10.1 Photo of Liquid Height for Body SAR

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 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

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	Body	22.7	0.961	53.931	0.96	55.50	0.10	-2.83	±5	2018/8/23
835	Body	22.8	0.977	54.442	0.97	55.20	0.72	-1.37	±5	2018/8/24
1750	Body	22.7	1.527	52.039	1.49	53.40	2.48	-2.55	±5	2018/8/19
1900	Body	22.9	1.545	53.535	1.52	53.30	1.64	0.44	±5	2018/8/18
2450	Body	22.6	1.991	52.320	1.95	52.70	2.10	-0.72	±5	2018/9/12
5250	Body	22.5	5.290	50.923	5.36	48.95	-1.31	4.03	±5	2018/9/12
5600	Body	22.5	5.884	50.283	5.77	48.50	1.98	3.68	±5	2018/9/12
5750	Body	22.6	6.113	49.934	5.94	48.28	2.91	3.43	±5	2018/9/12

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.

<1g SAR>

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 1g SAR (W/kg)	Targeted 1g SAR (W/kg)	Normalized 1g SAR (W/kg)	Deviation (%)
2018/8/23	750	Body	250	1099	3819	1437	2.05	8.64	8.2	-5.09
2018/8/24	835	Body	250	4d162	3819	1437	2.38	9.56	9.52	-0.42
2018/8/19	1750	Body	250	1137	3819	1437	9.37	37.00	37.48	1.30
2018/8/18	1900	Body	250	5d182	3819	1437	9.90	40.40	39.6	-1.98
2018/9/12	2450	Body	250	924	3819	1437	12.20	50.70	48.8	-3.75
2018/9/12	5250	Body	100	1167	3819	1437	8.02	74.40	80.2	7.80
2018/9/12	5600	Body	100	1167	3819	1437	8.13	77.10	81.3	5.45
2018/9/12	5750	Body	100	1167	3819	1437	8.09	74.30	80.9	8.88

<10g SAR>

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 10g SAR (W/kg)	Targeted 10g SAR (W/kg)	Normalized 10g SAR (W/kg)	Deviation (%)
2018/8/23	750	Body	250	1099	3819	1437	1.38	5.72	5.52	-3.50
2018/8/24	835	Body	250	4d162	3819	1437	1.58	6.34	6.32	-0.32
2018/8/19	1750	Body	250	1137	3819	1437	4.93	20.30	19.72	-2.86
2018/8/18	1900	Body	250	5d182	3819	1437	5.03	21.00	20.12	-4.19
2018/9/12	2450	Body	250	924	3819	1437	5.87	23.30	23.48	0.77
2018/9/12	5250	Body	100	1167	3819	1437	2.22	20.90	22.2	6.22
2018/9/12	5600	Body	100	1167	3819	1437	2.31	21.50	23.1	7.44
2018/9/12	5750	Body	100	1167	3819	1437	2.21	20.80	22.1	6.25

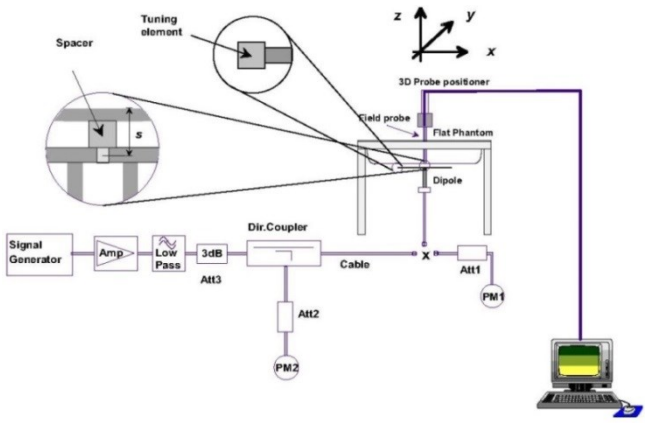


Fig 8.3.1 System Performance Check Setup

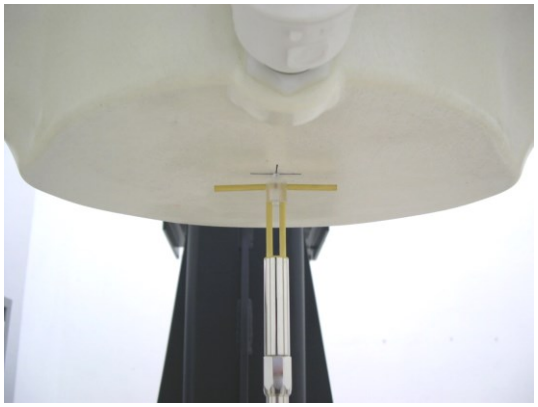


Fig 8.3.2 Setup Photo

11. RF Exposure Positions

11.1 Body Exposure

(a) To position the device parallel to the phantom surface with either keypad up or down.
(b) To adjust the device parallel to the flat phantom.
(c) To adjust the distance between the device surface and the flat phantom to 10 mm.

11.2 Product Specific 10g SAR Exposure

(a) The device shall be placed directly against the flat phantom, for those sides of the device that are in contact with the hand during intended use.
(b) To adjust the device parallel to the flat phantom.
(c) To adjust the distance between the device surface and the flat phantom to 0 mm.

<EUT Setup Photos>

Please refer to Appendix D for the test setup photos.

12. 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 β_{hs} = 30/15 * β_c.

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

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

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

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	$\beta_{ed}1$: 47/15 $\beta_{ed}2$: 47/15	4 4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15	0	-	-	5/15	5/15	47/15	4	1	1.0	0.0	12	67

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

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

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

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

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

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

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 (HSDPA / HSUPA) 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	22.35	**22.59**	22.48	23.00	23.06	**23.19**	23.17	23.50
3GPP Rel 6	HSDPA Subtest-1	22.37	22.53	22.46	22.50	23.10	23.11	23.17	23.00
3GPP Rel 6	HSDPA Subtest-2	21.91	22.18	22.07	22.50	22.65	22.70	22.68	23.00
3GPP Rel 6	HSDPA Subtest-3	21.42	21.69	21.57	22.00	22.12	22.24	22.15	22.50
3GPP Rel 6	HSDPA Subtest-4	21.20	21.45	21.36	22.00	21.90	21.93	21.91	22.50
3GPP Rel 6	HSUPA Subtest-1	21.42	21.25	21.18	22.50	21.69	21.75	21.72	22.50
3GPP Rel 6	HSUPA Subtest-2	19.66	20.04	19.90	20.50	20.25	20.43	20.37	21.50
3GPP Rel 6	HSUPA Subtest-3	20.70	21.02	20.96	21.50	21.30	21.36	21.37	22.50
3GPP Rel 6	HSUPA Subtest-4	19.98	20.21	20.04	20.50	20.63	20.57	20.62	21.50
3GPP Rel 6	HSUPA Subtest-5	22.00	22.20	22.10	22.50	22.60	22.70	22.70	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/64QAM 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/64QAM SAR testing is not required.
7. Per KDB 941225 D05v02r05, smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
8. For LTE B4 / B5 / B12 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	22.47	22.35	**22.53**	23	0
20	QPSK	1	49	22.02	22.16	22.33		
20	QPSK	1	99	21.97	22.05	22.13		
20	QPSK	50	0	21.20	21.24	21.41	22	1
20	QPSK	50	24	21.07	20.95	21.17		
20	QPSK	50	50	20.97	20.91	21.14		
20	QPSK	100	0	21.18	21.20	21.29		
20	16QAM	1	0	21.83	21.71	21.81	22	1
20	16QAM	1	49	21.32	21.10	21.41		
20	16QAM	1	99	20.93	21.02	21.26		
20	16QAM	50	0	20.51	20.34	20.53	21	2
20	16QAM	50	24	20.23	20.05	20.27		
20	16QAM	50	50	20.10	19.98	20.23		
20	16QAM	100	0	20.25	20.16	20.34		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	22.49	22.39	22.46	23	0
15	QPSK	1	37	22.11	21.89	22.15		
15	QPSK	1	74	21.86	21.93	22.10		
15	QPSK	36	0	21.38	21.28	21.40	22	1
15	QPSK	36	20	21.15	21.07	21.21		
15	QPSK	36	39	21.07	21.04	21.19		
15	QPSK	75	0	21.22	21.19	21.33		
15	16QAM	1	0	21.92	21.77	21.93	22	1
15	16QAM	1	37	21.54	21.29	21.50		
15	16QAM	1	74	21.34	21.33	21.48		
15	16QAM	36	0	20.53	20.39	20.53	21	2
15	16QAM	36	20	20.30	20.15	20.31		
15	16QAM	36	39	20.21	20.12	20.29		
15	16QAM	75	0	20.34	20.24	20.39		

Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	22.36	22.20	22.41	23	0
10	QPSK	1	25	22.08	21.89	22.15		
10	QPSK	1	49	22.01	21.92	22.05		
10	QPSK	25	0	21.25	21.13	21.31	22	1
10	QPSK	25	12	21.11	21.03	21.22		
10	QPSK	25	25	21.09	20.99	21.19		
10	QPSK	50	0	21.18	21.10	21.28		
10	16QAM	1	0	21.73	21.55	21.77	22	1
10	16QAM	1	25	21.47	21.31	21.49		
10	16QAM	1	49	21.41	21.31	21.44		
10	16QAM	25	0	20.42	20.25	20.46	21	2
10	16QAM	25	12	20.27	20.11	20.33		
10	16QAM	25	25	20.22	20.10	20.35		
10	16QAM	50	0	20.32	20.20	20.37		
Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	22.13	21.97	22.22	23	0
5	QPSK	1	12	22.10	21.96	22.20		
5	QPSK	1	24	21.94	21.85	22.14		
5	QPSK	12	0	21.19	21.07	21.31	22	1
5	QPSK	12	7	21.10	21.00	21.18		
5	QPSK	12	13	21.09	20.96	21.18		
5	QPSK	25	0	21.12	21.01	21.27		
5	16QAM	1	0	21.52	21.33	21.59	22	1
5	16QAM	1	12	21.47	21.30	21.61		
5	16QAM	1	24	21.38	21.23	21.46		
5	16QAM	12	0	20.35	20.18	20.39	21	2
5	16QAM	12	7	20.32	20.16	20.36		
5	16QAM	12	13	20.24	20.08	20.31		
5	16QAM	25	0	20.27	20.13	20.39		

Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	22.11	21.93	22.21	23	0
3	QPSK	1	8	22.07	21.92	22.20		
3	QPSK	1	14	22.05	21.87	22.14		
3	QPSK	8	0	21.14	21.03	21.31	22	1
3	QPSK	8	4	21.11	20.99	21.27		
3	QPSK	8	7	21.10	20.99	21.22		
3	QPSK	15	0	21.12	21.00	21.24		
3	16QAM	1	0	21.42	21.18	21.50	22	1
3	16QAM	1	8	21.41	21.20	21.47		
3	16QAM	1	14	21.30	21.16	21.41		
3	16QAM	8	0	20.30	20.15	20.39	21	2
3	16QAM	8	4	20.24	20.09	20.35		
3	16QAM	8	7	20.28	20.10	20.37		
3	16QAM	15	0	20.31	20.16	20.38		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	22.09	21.96	22.23	23	0
1.4	QPSK	1	3	22.10	21.92	22.21		
1.4	QPSK	1	5	22.11	21.94	22.21		
1.4	QPSK	3	0	22.15	22.02	22.24		
1.4	QPSK	3	1	22.06	21.96	22.18		
1.4	QPSK	3	3	22.12	21.99	22.19		
1.4	QPSK	6	0	21.10	20.99	21.22	22	1
1.4	16QAM	1	0	21.49	21.32	21.58	22	1
1.4	16QAM	1	3	21.49	21.31	21.58		
1.4	16QAM	1	5	21.47	21.30	21.54		
1.4	16QAM	3	0	21.25	21.13	21.39		
1.4	16QAM	3	1	21.26	21.12	21.41		
1.4	16QAM	3	3	21.25	21.13	21.36		
1.4	16QAM	6	0	20.31	20.17	20.43	21	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	22.21	**22.38**	22.19	22.5	0
20	QPSK	1	49	22.01	22.05	21.96		
20	QPSK	1	99	21.73	21.74	21.66		
20	QPSK	50	0	21.04	21.11	20.98	21.5	1
20	QPSK	50	24	20.78	20.83	20.64		
20	QPSK	50	50	20.69	20.63	20.53		
20	QPSK	100	0	20.84	20.93	20.74		
20	16QAM	1	0	21.41	21.48	21.45	21.5	1
20	16QAM	1	49	20.94	20.92	20.84		
20	16QAM	1	99	20.69	20.62	20.57		
20	16QAM	50	0	20.07	20.08	19.99	20.5	2
20	16QAM	50	24	19.79	19.79	19.69		
20	16QAM	50	50	19.69	19.67	19.58		
20	16QAM	100	0	19.85	19.83	19.77		
Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	22.26	22.35	22.26	22.5	0
15	QPSK	1	37	21.80	21.84	21.71		
15	QPSK	1	74	21.72	21.75	21.61		
15	QPSK	36	0	21.00	21.09	20.95	21.5	1
15	QPSK	36	20	20.79	20.81	20.68		
15	QPSK	36	39	20.76	20.75	20.63		
15	QPSK	75	0	20.88	20.91	20.78		
15	16QAM	1	0	21.41	21.40	21.50	21.5	1
15	16QAM	1	37	21.11	21.08	20.98		
15	16QAM	1	74	21.02	20.98	20.92		
15	16QAM	36	0	20.09	20.05	20.01	20.5	2
15	16QAM	36	20	19.89	19.78	19.75		
15	16QAM	36	39	19.83	19.75	19.67		
15	16QAM	75	0	19.91	19.88	19.81		

Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	22.12	22.10	22.01	22.5	0
10	QPSK	1	25	21.84	21.78	21.68		
10	QPSK	1	49	21.77	21.70	21.64		
10	QPSK	25	0	20.87	20.89	20.82	21.5	1
10	QPSK	25	12	20.76	20.76	20.67		
10	QPSK	25	25	20.73	20.70	20.64		
10	QPSK	50	0	20.81	20.81	20.72		
10	16QAM	1	0	21.40	21.34	21.29	21.5	1
10	16QAM	1	25	21.13	21.05	20.96		
10	16QAM	1	49	21.08	20.95	20.88		
10	16QAM	25	0	19.99	19.97	19.89	20.5	2
10	16QAM	25	12	19.85	19.81	19.74		
10	16QAM	25	25	19.83	19.76	19.71		
10	16QAM	50	0	19.90	19.89	19.81		
Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	21.87	21.86	21.76	22.5	0
5	QPSK	1	12	21.84	21.74	21.70		
5	QPSK	1	24	21.75	21.67	21.59		
5	QPSK	12	0	20.85	20.82	20.72	21.5	1
5	QPSK	12	7	20.81	20.74	20.62		
5	QPSK	12	13	20.78	20.71	20.62		
5	QPSK	25	0	20.77	20.72	20.65		
5	16QAM	1	0	21.09	21.14	21.03	21.5	1
5	16QAM	1	12	21.04	21.03	20.92		
5	16QAM	1	24	21.00	20.94	20.84		
5	16QAM	12	0	19.90	19.89	19.80	20.5	2
5	16QAM	12	7	19.81	19.81	19.77		
5	16QAM	12	13	19.81	19.77	19.71		
5	16QAM	25	0	19.84	19.79	19.74		

Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	21.89	21.88	21.78	22.5	0
3	QPSK	1	8	21.82	21.83	21.68		
3	QPSK	1	14	21.77	21.77	21.63		
3	QPSK	8	0	20.80	20.80	20.66	21.5	1
3	QPSK	8	4	20.79	20.76	20.63		
3	QPSK	8	7	20.76	20.73	20.61		
3	QPSK	15	0	20.79	20.73	20.64		
3	16QAM	1	0	21.06	21.01	20.95	21.5	1
3	16QAM	1	8	21.04	20.97	20.93		
3	16QAM	1	14	20.99	20.90	20.85		
3	16QAM	8	0	19.89	19.86	19.76	20.5	2
3	16QAM	8	4	19.89	19.78	19.70		
3	16QAM	8	7	19.87	19.81	19.75		
3	16QAM	15	0	19.89	19.84	19.77		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	21.86	21.85	21.77	22.5	0
1.4	QPSK	1	3	21.83	21.83	21.76		
1.4	QPSK	1	5	21.86	21.84	21.75		
1.4	QPSK	3	0	21.87	21.89	21.78		
1.4	QPSK	3	1	21.85	21.88	21.73		
1.4	QPSK	3	3	21.85	21.88	21.75		
1.4	QPSK	6	0	20.79	20.76	20.62	21.5	1
1.4	16QAM	1	0	21.17	21.13	21.01	21.5	1
1.4	16QAM	1	3	21.17	21.16	21.01		
1.4	16QAM	1	5	21.08	21.12	20.95		
1.4	16QAM	3	0	20.87	20.90	20.80		
1.4	16QAM	3	1	20.85	20.89	20.77		
1.4	16QAM	3	3	20.85	20.86	20.76		
1.4	16QAM	6	0	19.90	19.89	19.77	20.5	2

<LTE Band 5>

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				20450	20525	20600		
Frequency (MHz)				829	836.5	844		
10	QPSK	1	0	**22.71**	22.53	22.37	23	0
10	QPSK	1	25	22.63	22.43	22.37		
10	QPSK	1	49	22.39	22.17	22.20		
10	QPSK	25	0	21.63	21.48	21.37	22	1
10	QPSK	25	12	21.57	21.40	21.31		
10	QPSK	25	25	21.51	21.31	21.29		
10	QPSK	50	0	21.58	21.41	21.34		
10	16QAM	1	0	21.86	21.85	21.75	22	1
10	16QAM	1	25	21.81	21.77	21.71		
10	16QAM	1	49	21.75	21.55	21.53		
10	16QAM	25	0	20.69	20.53	20.40	21	2
10	16QAM	25	12	20.60	20.46	20.38		
10	16QAM	25	25	20.52	20.34	20.29		
10	16QAM	50	0	20.60	20.45	20.39		
Channel				20425	20525	20625	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	22.67	22.44	22.28	23	0
5	QPSK	1	12	22.60	22.42	22.31		
5	QPSK	1	24	22.52	22.29	22.26		
5	QPSK	12	0	21.67	21.47	21.32	22	1
5	QPSK	12	7	21.62	21.42	21.33		
5	QPSK	12	13	21.59	21.35	21.29		
5	QPSK	25	0	21.63	21.42	21.35		
5	16QAM	1	0	21.98	21.79	21.70	22	1
5	16QAM	1	12	21.95	21.74	21.71		
5	16QAM	1	24	21.82	21.61	21.61		
5	16QAM	12	0	20.69	20.53	20.40	21	2
5	16QAM	12	7	20.65	20.50	20.36		
5	16QAM	12	13	20.62	20.42	20.34		
5	16QAM	25	0	20.62	20.48	20.40		

Channel				20415	20525	20635	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	22.70	22.44	22.31	23	0
3	QPSK	1	8	22.62	22.42	22.36		
3	QPSK	1	14	22.58	22.38	22.31		
3	QPSK	8	0	21.66	21.43	21.34	22	1
3	QPSK	8	4	21.67	21.42	21.34		
3	QPSK	8	7	21.64	21.40	21.35		
3	QPSK	15	0	21.65	21.43	21.35		
3	16QAM	1	0	21.95	21.72	21.61	22	1
3	16QAM	1	8	21.95	21.71	21.65		
3	16QAM	1	14	21.83	21.59	21.59		
3	16QAM	8	0	20.67	20.51	20.43	21	2
3	16QAM	8	4	20.66	20.45	20.35		
3	16QAM	8	7	20.63	20.45	20.39		
3	16QAM	15	0	20.73	20.52	20.44		
Channel				20407	20525	20643	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	22.70	22.49	22.38	23	0
1.4	QPSK	1	3	22.64	22.44	22.40		
1.4	QPSK	1	5	22.70	22.47	22.39		
1.4	QPSK	3	0	22.67	22.47	22.38		
1.4	QPSK	3	1	22.67	22.45	22.38		
1.4	QPSK	3	3	22.67	22.47	22.40		
1.4	QPSK	6	0	21.60	21.46	21.40	22	1
1.4	16QAM	1	0	21.99	21.86	21.68	22	1
1.4	16QAM	1	3	21.94	21.84	21.65		
1.4	16QAM	1	5	21.98	21.82	21.66		
1.4	16QAM	3	0	21.77	21.56	21.41		
1.4	16QAM	3	1	21.75	21.55	21.42		
1.4	16QAM	3	3	21.79	21.54	21.45		
1.4	16QAM	6	0	20.70	20.52	20.40	21	2

<LTE Band 12>

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				23060	23095	23130		
Frequency (MHz)				704	707.5	711		
10	QPSK	1	0	**22.62**	22.47	22.34	23	0
10	QPSK	1	25	22.40	22.34	22.33		
10	QPSK	1	49	22.26	22.23	22.18		
10	QPSK	25	0	21.51	21.42	21.35	22	1
10	QPSK	25	12	21.45	21.39	21.30		
10	QPSK	25	25	21.40	21.38	21.27		
10	QPSK	50	0	21.42	21.41	21.40		
10	16QAM	1	0	21.77	21.82	21.80	22	1
10	16QAM	1	25	21.78	21.79	21.78		
10	16QAM	1	49	21.60	21.64	21.66		
10	16QAM	25	0	20.58	20.59	20.54	21	2
10	16QAM	25	12	20.55	20.51	20.49		
10	16QAM	25	25	20.50	20.48	20.51		
10	16QAM	50	0	20.49	20.51	20.53		
Channel				23035	23095	23155	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				701.5	707.5	713.5		
5	QPSK	1	0	22.44	22.32	22.26	23	0
5	QPSK	1	12	22.53	22.33	22.31		
5	QPSK	1	24	22.37	22.26	22.25		
5	QPSK	12	0	21.54	21.43	21.41	22	1
5	QPSK	12	7	21.48	21.39	21.37		
5	QPSK	12	13	21.45	21.38	21.37		
5	QPSK	25	0	21.47	21.39	21.37		
5	16QAM	1	0	21.86	21.76	21.70	22	1
5	16QAM	1	12	21.84	21.72	21.72		
5	16QAM	1	24	21.69	21.64	21.63		
5	16QAM	12	0	20.60	20.55	20.52	21	2
5	16QAM	12	7	20.63	20.51	20.50		
5	16QAM	12	13	20.59	20.51	20.48		
5	16QAM	25	0	20.57	20.49	20.53		

Channel				23025	23095	23165	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				700.5	707.5	714.5		
3	QPSK	1	0	22.46	22.34	22.28	23	0
3	QPSK	1	8	22.47	22.32	22.31		
3	QPSK	1	14	22.47	22.31	22.29		
3	QPSK	8	0	21.56	21.42	21.39	22	1
3	QPSK	8	4	21.55	21.43	21.38		
3	QPSK	8	7	21.48	21.37	21.36		
3	QPSK	15	0	21.50	21.42	21.37		
3	16QAM	1	0	21.79	21.73	21.63	22	1
3	16QAM	1	8	21.86	21.73	21.70		
3	16QAM	1	14	21.75	21.65	21.62		
3	16QAM	8	0	20.61	20.52	20.54	21	2
3	16QAM	8	4	20.61	20.50	20.47		
3	16QAM	8	7	20.63	20.51	20.50		
3	16QAM	15	0	20.67	20.56	20.53		
Channel				23017	23095	23173	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				699.7	707.5	715.3		
1.4	QPSK	1	0	22.43	22.37	22.34	23	0
1.4	QPSK	1	3	22.43	22.35	22.35		
1.4	QPSK	1	5	22.46	22.38	22.38		
1.4	QPSK	3	0	22.44	22.37	22.36		
1.4	QPSK	3	1	22.49	22.39	22.36		
1.4	QPSK	3	3	22.40	22.37	22.38		
1.4	QPSK	6	0	21.55	21.43	21.42	22	1
1.4	16QAM	1	0	21.87	21.76	21.78	22	1
1.4	16QAM	1	3	21.91	21.78	21.75		
1.4	16QAM	1	5	21.87	21.76	21.85		
1.4	16QAM	3	0	21.70	21.58	21.55		
1.4	16QAM	3	1	21.69	21.56	21.53		
1.4	16QAM	3	3	21.70	21.54	21.54		
1.4	16QAM	6	0	20.67	20.55	20.53	21	2

<LTE Band 13>

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					23230			
Frequency (MHz)					782			
10	QPSK	1	0		22.09		23	0
10	QPSK	1	25		**22.45**			
10	QPSK	1	49		22.03			
10	QPSK	25	0		21.41		22	1
10	QPSK	25	12		21.35			
10	QPSK	25	25		21.26			
10	QPSK	50	0		21.31			
10	16QAM	1	0		21.32		22	1
10	16QAM	1	25		21.46			
10	16QAM	1	49		20.95			
10	16QAM	25	0		20.40		21	2
10	16QAM	25	12		20.37			
10	16QAM	25	25		20.34			
10	16QAM	50	0		20.42			
Channel				23205	23230	23255	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				779.5	782	784.5		
5	QPSK	1	0	22.37	22.35	22.34	23	0
5	QPSK	1	12	22.37	22.39	22.32		
5	QPSK	1	24	22.32	22.24	22.23		
5	QPSK	12	0	21.39	21.36	21.37	22	1
5	QPSK	12	7	21.37	21.35	21.30		
5	QPSK	12	13	21.31	21.33	21.24		
5	QPSK	25	0	21.31	21.31	21.29		
5	16QAM	1	0	21.61	21.63	21.65	22	1
5	16QAM	1	12	21.64	21.61	21.58		
5	16QAM	1	24	21.54	21.53	21.46		
5	16QAM	12	0	20.44	20.48	20.43	21	2
5	16QAM	12	7	20.42	20.47	20.37		
5	16QAM	12	13	20.41	20.43	20.35		
5	16QAM	25	0	20.39	20.38	20.37		

<WLAN Conducted Power>

General Note:

1. For each antenna, transmit power in SISO operation is larger than (or equal to) the power in MIMO operation, RF exposure compliance of MIMO mode can be deduced from the compliance simultaneous transmission of antennas operating in SISO mode.
2. 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.
3. 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).
4. 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.
5. 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 Ant.1>

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN Ant.1	802.11b	CH 1	2412	1Mbps	17.45	19.00	100.00
		CH 6	2437		18.12	19.00	
		CH 11	2462		18.58	19.00	
	802.11g	CH 1	2412	6Mbps	14.02	15.00	98.26
		CH 6	2437		14.41	15.00	
		CH 11	2462		14.80	15.00	
	802.11n-HT20	CH 1	2412	MCS0	12.11	13.00	97.40
		CH 6	2437		12.54	13.00	
		CH 11	2462		12.61	13.00	

<2.4GHz WLAN Ant.2>

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN Ant.2	802.11b	CH 1	2412	1Mbps	17.99	18.50	100.00
		CH 6	2437		17.78	18.50	
		CH 11	2462		17.70	18.50	
	802.11g	CH 1	2412	6Mbps	14.29	14.50	98.96
		CH 6	2437		14.33	14.50	
		CH 11	2462		14.22	14.50	
	802.11n-HT20	CH 1	2412	MCS0	11.98	12.50	98.88
		CH 6	2437		11.93	12.50	
		CH 11	2462		11.82	12.50	

<2.4GHz WLAN Ant.1+2>

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN Ant.1+2	802.11b	CH 1	2412	1Mbps	20.73	21.50	100.00
		CH 6	2437		20.81	21.50	
		CH 11	2462		21.03	21.50	
	802.11g	CH 1	2412	6Mbps	17.14	18.00	98.96
		CH 6	2437		17.27	18.00	
		CH 11	2462		17.45	18.00	
	802.11n-HT20	CH 1	2412	MCS0	15.04	15.50	97.84
		CH 6	2437		15.18	15.50	
		CH 11	2462		15.23	15.50	

<5GHz WLAN Ant.1>

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN Ant.1	802.11a	CH 36	5180	6Mbps	15.05	15.50	98.75
		CH 40	5200		14.95	15.50	
		CH 44	5220		14.96	15.50	
		CH 48	5240		14.95	15.50	
	802.11n-HT20	CH 36	5180	MCS0	13.19	13.50	98.27
		CH 40	5200		13.10	13.50	
		CH 44	5220		13.02	13.50	
		CH 48	5240		13.23	13.50	
	802.11n-HT40	CH 38	5190	MCS0	13.87	14.00	96.08
		CH 46	5230		13.77	14.00	
	802.11ac-VHT80	CH 42	5210	MCS0	11.37	12.00	92.67

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN Ant.1	802.11a	CH 52	5260	6Mbps	14.61	15.50	98.75
		CH 56	5280		14.37	15.50	
		CH 60	5300		14.35	15.50	
		CH 64	5320		14.23	15.50	
	802.11n-HT20	CH 52	5260	MCS0	12.78	13.50	98.27
		CH 56	5280		12.68	13.50	
		CH 60	5300		12.72	13.50	
		CH 64	5320		12.58	13.50	
	802.11n-HT40	CH 54	5270	MCS0	13.57	14.00	96.08
		CH 62	5310		13.41	14.00	
	802.11ac-VHT80	CH 58	5290	MCS0	11.15	12.00	92.67

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN Ant.1	802.11a	CH 100	5500	6Mbps	13.86	14.50	98.75
		CH 116	5580		14.25	14.50	
		CH 132	5660		14.13	14.50	
		CH 140	5700		14.16	14.50	
	802.11n-HT20	CH 100	5500	MCS0	12.28	13.00	98.27
		CH 116	5580		12.21	13.00	
		CH 132	5660		12.36	13.00	
		CH 140	5700		12.43	13.00	
	802.11n-HT40	CH 102	5510	MCS0	12.97	13.50	96.08
		CH 110	5550		12.97	13.50	
		CH 134	5670		12.97	13.50	
	802.11ac-VHT80	CH 106	5530	MCS0	10.57	11.00	92.67

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN Ant.1	802.11a	CH 149	5745	6Mbps	14.90	15.00	98.75
		CH 157	5785		14.85	15.00	
		CH 165	5825		14.78	15.00	
	802.11n-HT20	CH 149	5745	MCS0	12.70	13.00	98.27
		CH 157	5785		12.69	13.00	
		CH 165	5825		12.92	13.00	
	802.11n-HT40	CH 151	5755	MCS0	13.57	14.00	96.08
		CH 159	5795		13.71	14.00	
	802.11ac-VHT80	CH 155	5775	MCS0	11.08	11.50	92.67

<5GHz WLAN Ant.2>

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN Ant.2	802.11a	CH 36	5180	6Mbps	12.57	13.00	99.24
		CH 40	5200		12.54	13.00	
		CH 44	5220		12.66	13.00	
		CH 48	5240		12.95	13.00	
	802.11n-HT20	CH 36	5180	MCS0	10.50	11.00	97.83
		CH 40	5200		10.58	11.00	
		CH 44	5220		10.70	11.00	
		CH 48	5240		10.92	11.00	
	802.11n-HT40	CH 38	5190	MCS0	11.16	11.50	96.35
		CH 46	5230		11.38	11.50	
	802.11ac-VHT80	CH 42	5210	MCS0	8.93	9.50	92.67

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN Ant.2	802.11a	CH 52	5260	6Mbps	12.51	13.00	99.24
		CH 56	5280		12.50	13.00	
		CH 60	5300		12.63	13.00	
		CH 64	5320		12.43	13.00	
	802.11n-HT20	CH 52	5260	MCS0	10.60	11.00	97.83
		CH 56	5280		10.46	11.00	
		CH 60	5300		10.66	11.00	
		CH 64	5320		10.73	11.00	
	802.11n-HT40	CH 54	5270	MCS0	11.12	12.00	96.35
		CH 62	5310		11.26	12.00	
	802.11ac-VHT80	CH 58	5290	MCS0	8.88	9.50	92.67

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN Ant.2	802.11a	CH 100	5500	6Mbps	12.35	12.50	99.24
		CH 116	5580		12.33	12.50	
		CH 132	5660		12.13	12.50	
		CH 140	5700		10.98	12.50	
	802.11n-HT20	CH 100	5500	MCS0	10.55	11.00	97.83
		CH 116	5580		10.37	11.00	
		CH 132	5660		10.40	11.00	
		CH 140	5700		9.92	11.00	
	802.11n-HT40	CH 102	5510	MCS0	11.10	11.50	96.35
		CH 110	5550		11.06	11.50	
		CH 134	5670		10.66	11.50	
	802.11ac-VHT80	CH 106	5530	MCS0	8.53	9.00	92.67

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN Ant.2	802.11a	CH 149	5745	6Mbps	11.73	12.00	99.24
		CH 157	5785		10.48	12.00	
		CH 165	5825		10.47	12.00	
	802.11n-HT20	CH 149	5745	MCS0	9.90	10.00	97.83
		CH 157	5785		9.81	10.00	
		CH 165	5825		9.50	10.00	
	802.11n-HT40	CH 151	5755	MCS0	10.57	11.00	96.35
		CH 159	5795		10.38	11.00	
	802.11ac-VHT80	CH 155	5775	MCS0	8.13	8.50	92.67

<5GHz WLAN Ant.1+2>

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN Ant.1+2	802.11a	CH 36	5180	6Mbps	17.02	17.50	98.75
		CH 40	5200		16.92	17.50	
		CH 44	5220		17.01	17.50	
		CH 48	5240		17.12	17.50	
	802.11n-HT20	CH 36	5180	MCS0	15.10	15.50	97.83
		CH 40	5200		15.01	15.50	
		CH 44	5220		15.08	15.50	
		CH 48	5240		15.26	15.50	
	802.11n-HT40	CH 38	5190	MCS0	15.77	16.00	96.08
		CH 46	5230		15.77	16.00	
	802.11ac-VHT80	CH 42	5210	MCS0	13.41	14.00	92.67

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN Ant.1+2	802.11a	CH 52	5260	6Mbps	16.76	17.50	98.75
		CH 56	5280		16.68	17.50	
		CH 60	5300		16.62	17.50	
		CH 64	5320		16.46	17.50	
	802.11n-HT20	CH 52	5260	MCS0	14.85	15.50	97.83
		CH 56	5280		14.75	15.50	
		CH 60	5300		14.84	15.50	
		CH 64	5320		14.78	15.50	
	802.11n-HT40	CH 54	5270	MCS0	15.57	16.00	96.08
		CH 62	5310		15.56	16.00	
	802.11ac-VHT80	CH 58	5290	MCS0	13.25	14.00	92.67

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN Ant.1+2	802.11a	CH 100	5500	6Mbps	16.24	16.50	98.75
		CH 116	5580		16.44	16.50	
		CH 132	5660		16.32	16.50	
		CH 140	5700		16.03	16.50	
	802.11n-HT20	CH 100	5500	MCS0	14.54	15.00	97.83
		CH 116	5580		14.42	15.00	
		CH 132	5660		14.41	15.00	
		CH 140	5700		14.39	15.00	
	802.11n-HT40	CH 102	5510	MCS0	15.19	15.50	96.08
		CH 110	5550		15.16	15.50	
		CH 134	5670		15.02	15.50	
	802.11ac-VHT80	CH 106	5530	MCS0	12.71	13.00	92.67

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN Ant.1+2	802.11a	CH 149	5745	6Mbps	16.65	17.00	98.75
		CH 157	5785		16.22	17.00	
		CH 165	5825		16.17	17.00	
	802.11n-HT20	CH 149	5745	MCS0	14.55	15.00	97.83
		CH 157	5785		14.52	15.00	
		CH 165	5825		14.56	15.00	
	802.11n-HT40	CH 151	5755	MCS0	15.37	16.00	96.08
		CH 159	5795		15.41	16.00	
	802.11ac-VHT80	CH 155	5775	MCS0	12.89	13.50	92.67

13. Bluetooth Exclusions Applied

Mode Band	Average power(dBm)	
	Bluetooth v2.0+EDR	Bluetooth v4.1 LE
2.4GHz Bluetooth	8.50	6.50

Note:

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

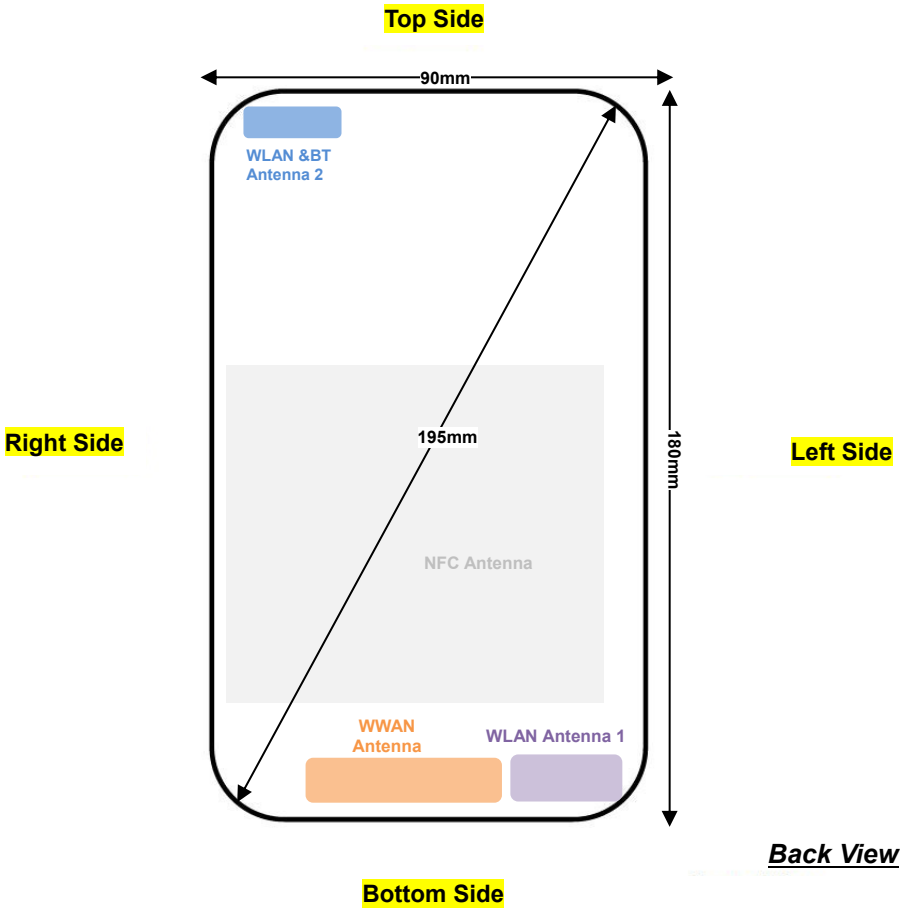
- f(GHz) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison

Bluetooth Max Power (dBm)	Frequency (GHz)	Separation Distance (mm)		Exclusion Thresholds	
		1-g SAR	10-g extremity SAR	1-g SAR	10-g extremity SAR
8.5	2.48	10	0	1.1	2.2

Note:

1. Per KDB 447498 D01v06, a distance of 10 mm is applied to determine 1g SAR test exclusion. The test exclusion threshold is 1.1 which is <= 3, SAR testing is not required.
2. Per KDB 447498 D01v06, when the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR 10g SAR test exclusion. The test exclusion threshold is 2.2 which is <= 7.5, SAR testing is not required.

14. Antenna Location



15. SAR Test Results

General Note:

1. Per KDB 447498 D01v06, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
   a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
   b. For 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: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
2. Per KDB 447498 D01v06, for each exposure position, testing of other required channels within the operating mode of a frequency band is not required when the *reported* 1-g or 10-g SAR for the mid-band or highest output power channel is:
   - ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
   - ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
   - ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
3. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is not required when the measured SAR is ≤ 0.8W/kg. Per KDB 865664 D01v01r04, if the extremity repeated SAR is necessary, the same procedures should be adapted for measurements according to extremity and occupational exposure limits by applying a factor of 2.5 for extremity exposure and a factor of 5 for occupational exposure to the corresponding SAR thresholds.

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 (HSDPA / HSUPA) 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/64QAM 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/64QAM SAR testing is not required.
5. Per KDB 941225 D05v02r05, smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
6. For LTE B4 / B5 / B12 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. For each antenna, transmit power in SISO operation is larger than (or equal to) the power in MIMO operation, RF exposure compliance of MIMO mode can be deduced from the compliance simultaneous transmission of antennas operating in SISO mode.
6. During SAR testing the WLAN transmission was verified using a spectrum analyzer.

15.1 Body 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	Front	10	4182	836.4	23.19	23.50	1.074	0.04	0.312	0.335
01	WCDMA Band V	RMC 12.2Kbps	Back	10	4182	836.4	23.19	23.50	1.074	0.09	0.422	**0.453**
	WCDMA Band II	RMC 12.2Kbps	Front	10	9400	1880	22.59	23.00	1.099	0.07	0.638	0.701
	WCDMA Band II	RMC 12.2Kbps	Back	10	9400	1880	22.59	23.00	1.099	0.09	0.772	0.848
02	WCDMA Band II	RMC 12.2Kbps	Back	10	9262	1852.4	22.35	23.00	1.161	0.07	0.815	**0.947**
	WCDMA Band II	RMC 12.2Kbps	Back	10	9538	1907.6	22.48	23.00	1.127	0.08	0.750	0.845

<FDD 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)
	LTE Band 12	10M	QPSK	1	0	Front	10	23095	707.5	22.47	23.00	1.130	0.01	0.124	0.140
03	LTE Band 12	10M	QPSK	1	0	Back	10	23095	707.5	22.47	23.00	1.130	0.07	0.272	**0.307**
	LTE Band 12	10M	QPSK	25	0	Front	10	23095	707.5	21.42	22.00	1.143	0.09	0.106	0.121
	LTE Band 12	10M	QPSK	25	0	Back	10	23095	707.5	21.42	22.00	1.143	-0.01	0.256	0.293
	LTE Band 13	10M	QPSK	1	25	Front	10	23230	782	22.45	23.00	1.135	0.05	0.326	0.370
04	LTE Band 13	10M	QPSK	1	25	Back	10	23230	782	22.45	23.00	1.135	0.07	0.411	**0.466**
	LTE Band 13	10M	QPSK	25	0	Front	10	23230	782	21.41	22.00	1.146	0.03	0.274	0.314
	LTE Band 13	10M	QPSK	25	0	Back	10	23230	782	21.41	22.00	1.146	0.05	0.371	0.425
05	LTE Band 5	10M	QPSK	1	0	Front	10	20525	836.5	22.53	23.00	1.114	0.04	0.250	**0.279**
	LTE Band 5	10M	QPSK	1	0	Back	10	20525	836.5	22.53	23.00	1.114	0.09	0.194	0.216
	LTE Band 5	10M	QPSK	25	0	Front	10	20525	836.5	21.48	22.00	1.127	0.01	0.196	0.221
	LTE Band 5	10M	QPSK	25	0	Back	10	20525	836.5	21.48	22.00	1.127	0.09	0.152	0.171
	LTE Band 4	20M	QPSK	1	0	Front	10	20175	1732.5	22.38	22.50	1.028	0.03	0.937	0.963
06	LTE Band 4	20M	QPSK	1	0	Back	10	20175	1732.5	22.38	22.50	1.028	0.03	1.050	**1.079**
	LTE Band 4	20M	QPSK	50	0	Front	10	20175	1732.5	21.11	21.50	1.094	0.03	0.815	0.892
	LTE Band 4	20M	QPSK	50	0	Back	10	20175	1732.5	21.11	21.50	1.094	0.08	0.904	0.989
	LTE Band 4	20M	QPSK	100	0	Front	10	20175	1732.5	20.93	21.50	1.140	0.04	0.731	0.834
	LTE Band 4	20M	QPSK	100	0	Back	10	20175	1732.5	20.93	21.50	1.140	0.02	0.884	1.008
	LTE Band 2	20M	QPSK	1	0	Front	10	19100	1900	22.53	23.00	1.114	0.06	0.597	0.665
	LTE Band 2	20M	QPSK	1	0	Back	10	19100	1900	22.53	23.00	1.114	0.08	0.835	0.930
07	LTE Band 2	20M	QPSK	1	0	Back	10	18700	1860	22.47	23.00	1.130	0.03	0.847	**0.957**
	LTE Band 2	20M	QPSK	1	0	Back	10	18900	1880	22.35	23.00	1.161	0.11	0.806	0.936
	LTE Band 2	20M	QPSK	50	0	Front	10	19100	1900	21.41	22.00	1.146	0.03	0.448	0.513
	LTE Band 2	20M	QPSK	50	0	Back	10	19100	1900	21.41	22.00	1.146	0.05	0.745	0.853
	LTE Band 2	20M	QPSK	50	0	Back	10	18700	1860	21.20	22.00	1.202	0.06	0.723	0.869
	LTE Band 2	20M	QPSK	50	0	Back	10	18900	1880	21.24	22.00	1.191	0.03	0.707	0.842
	LTE Band 2	20M	QPSK	100	0	Back	10	19100	1900	21.29	22.00	1.178	0.06	0.691	0.814

<WLAN 2.4GHz SAR>

Plot No.	Ant.	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	1	WLAN 2.4GHz	802.11b 1Mbps	Front	10	11	2462	18.58	19.00	1.102	100	1.000	0.05	0.336	**0.370**
	1	WLAN 2.4GHz	802.11b 1Mbps	Back	10	11	2462	18.58	19.00	1.102	100	1.000	0.03	0.040	0.044
09	2	WLAN 2.4GHz	802.11b 1Mbps	Front	10	1	2412	17.99	18.50	1.125	100	1.000	-0.09	0.184	**0.207**
	2	WLAN 2.4GHz	802.11b 1Mbps	Back	10	1	2412	17.99	18.50	1.125	100	1.000	0.04	0.132	0.148

<WLAN 5GHz SAR>

Plot No.	Ant.	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)
10	1	WLAN 5.3GHz	802.11a 6Mbps	Front	10	52	5260	14.61	15.50	1.226	98.75	1.013	0.07	0.261	**0.324**
	1	WLAN 5.3GHz	802.11a 6Mbps	Back	10	52	5260	14.61	15.50	1.226	98.75	1.013	0.04	0.249	0.309
11	2	WLAN 5.3GHz	802.11a 6Mbps	Front	10	60	5300	12.63	13.00	1.088	99.24	1.008	0.03	0.070	**0.077**
	2	WLAN 5.3GHz	802.11a 6Mbps	Back	10	60	5300	12.63	13.00	1.088	99.24	1.008	0.01	0.030	0.033
12	1	WLAN 5.5GHz	802.11a 6Mbps	Front	10	116	5580	14.25	14.50	1.058	98.75	1.013	0.13	0.247	**0.265**
	1	WLAN 5.5GHz	802.11a 6Mbps	Back	10	116	5580	14.25	14.50	1.058	98.75	1.013	0.05	0.081	0.087
13	2	WLAN 5.5GHz	802.11a 6Mbps	Front	10	100	5500	12.35	12.50	1.034	99.24	1.008	0.05	0.055	**0.057**
	2	WLAN 5.5GHz	802.11a 6Mbps	Back	10	100	5500	12.35	12.50	1.034	99.24	1.008	0.02	0.053	0.055
14	1	WLAN 5.8GHz	802.11a 6Mbps	Front	10	149	5745	14.90	15.00	1.022	98.75	1.013	-0.08	0.298	**0.309**
	1	WLAN 5.8GHz	802.11a 6Mbps	Back	10	149	5745	14.90	15.00	1.022	98.75	1.013	-0.01	0.104	0.108
15	2	WLAN 5.8GHz	802.11a 6Mbps	Front	10	149	5745	11.73	12.00	1.063	99.24	1.008	0.01	0.119	**0.128**
	2	WLAN 5.8GHz	802.11a 6Mbps	Back	10	149	5745	11.73	12.00	1.063	99.24	1.008	0.03	0.096	0.103

15.2 Product specific 10g 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 10g SAR (W/kg)	Reported 10g SAR (W/kg)
	WCDMA Band V	RMC 12.2Kbps	Front	0	4182	836.4	23.19	23.50	1.074	0.03	0.894	0.960
16	WCDMA Band V	RMC 12.2Kbps	Back	0	4182	836.4	23.19	23.50	1.074	0.05	1.010	**1.085**
	WCDMA Band V	RMC 12.2Kbps	Left Side	0	4182	836.4	23.19	23.50	1.074	0.06	0.061	0.066
	WCDMA Band V	RMC 12.2Kbps	Right Side	0	4182	836.4	23.19	23.50	1.074	-0.06	0.128	0.137
	WCDMA Band V	RMC 12.2Kbps	Top Side	0	4182	836.4	23.19	23.50	1.074	0.01	0.022	0.023
	WCDMA Band V	RMC 12.2Kbps	Bottom Side	0	4182	836.4	23.19	23.50	1.074	0.09	0.963	1.034
	WCDMA Band II	RMC 12.2Kbps	Front	0	9400	1880	22.59	23.00	1.099	0.01	1.950	2.143
	WCDMA Band II	RMC 12.2Kbps	Back	0	9400	1880	22.59	23.00	1.099	0.01	2.000	2.198
	WCDMA Band II	RMC 12.2Kbps	Left Side	0	9400	1880	22.59	23.00	1.099	0.07	0.111	0.122
	WCDMA Band II	RMC 12.2Kbps	Right Side	0	9400	1880	22.59	23.00	1.099	0.09	0.268	0.295
	WCDMA Band II	RMC 12.2Kbps	Top Side	0	9400	1880	22.59	23.00	1.099	0.03	0.009	0.010
	WCDMA Band II	RMC 12.2Kbps	Bottom Side	0	9400	1880	22.59	23.00	1.099	0.04	0.423	0.465
	WCDMA Band II	RMC 12.2Kbps	Front	0	9262	1852.4	22.35	23.00	1.161	0.01	2.020	2.346
	WCDMA Band II	RMC 12.2Kbps	Front	0	9538	1907.6	22.48	23.00	1.127	0.02	2.010	2.266
17	WCDMA Band II	RMC 12.2Kbps	Back	0	9262	1852.4	22.35	23.00	1.161	0.04	2.060	**2.393**
	WCDMA Band II	RMC 12.2Kbps	Back	0	9538	1907.6	22.48	23.00	1.127	0.06	1.770	1.995

<FDD 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 10g SAR (W/kg)	Reported 10g SAR (W/kg)
	LTE Band 12	10M	QPSK	1	0	Front	0	23095	707.5	22.47	23.00	1.130	0.04	0.808	0.913
	LTE Band 12	10M	QPSK	1	0	Back	0	23095	707.5	22.47	23.00	1.130	-0.03	0.465	0.525
	LTE Band 12	10M	QPSK	1	0	Left Side	0	23095	707.5	22.47	23.00	1.130	0.01	0.022	0.025
	LTE Band 12	10M	QPSK	1	0	Right Side	0	23095	707.5	22.47	23.00	1.130	0.12	0.057	0.064
	LTE Band 12	10M	QPSK	1	0	Top Side	0	23095	707.5	22.47	23.00	1.130	0.09	0.018	0.020
18	LTE Band 12	10M	QPSK	1	0	Bottom Side	0	23095	707.5	22.47	23.00	1.130	0.08	0.835	**0.943**
	LTE Band 12	10M	QPSK	25	0	Front	0	23095	707.5	21.42	22.00	1.143	0.02	0.691	0.790
	LTE Band 12	10M	QPSK	25	0	Back	0	23095	707.5	21.42	22.00	1.143	0.09	0.455	0.520
	LTE Band 12	10M	QPSK	25	0	Left Side	0	23095	707.5	21.42	22.00	1.143	0.01	0.018	0.020
	LTE Band 12	10M	QPSK	25	0	Right Side	0	23095	707.5	21.42	22.00	1.143	0.04	0.047	0.053
	LTE Band 12	10M	QPSK	25	0	Top Side	0	23095	707.5	21.42	22.00	1.143	0.05	0.014	0.016
	LTE Band 12	10M	QPSK	25	0	Bottom Side	0	23095	707.5	21.42	22.00	1.143	0.05	0.666	0.761
19	LTE Band 13	10M	QPSK	1	25	Front	0	23230	782	22.45	23.00	1.135	0.09	1.020	**1.158**
	LTE Band 13	10M	QPSK	1	25	Back	0	23230	782	22.45	23.00	1.135	0.01	0.931	1.057
	LTE Band 13	10M	QPSK	1	25	Left Side	0	23230	782	22.45	23.00	1.135	0.07	0.065	0.073
	LTE Band 13	10M	QPSK	1	25	Right Side	0	23230	782	22.45	23.00	1.135	0.03	0.124	0.141
	LTE Band 13	10M	QPSK	1	25	Top Side	0	23230	782	22.45	23.00	1.135	0.09	0.027	0.031
	LTE Band 13	10M	QPSK	1	25	Bottom Side	0	23230	782	22.45	23.00	1.135	-0.01	0.752	0.854
	LTE Band 13	10M	QPSK	25	0	Front	0	23230	782	21.41	22.00	1.146	0.05	0.873	1.000
	LTE Band 13	10M	QPSK	25	0	Back	0	23230	782	21.41	22.00	1.146	-0.09	0.847	0.970
	LTE Band 13	10M	QPSK	25	0	Left Side	0	23230	782	21.41	22.00	1.146	0.07	0.055	0.063
	LTE Band 13	10M	QPSK	25	0	Right Side	0	23230	782	21.41	22.00	1.146	0.03	0.107	0.123
	LTE Band 13	10M	QPSK	25	0	Top Side	0	23230	782	21.41	22.00	1.146	0.05	0.021	0.024
	LTE Band 13	10M	QPSK	25	0	Bottom Side	0	23230	782	21.41	22.00	1.146	0.08	0.597	0.684
	LTE Band 5	10M	QPSK	1	0	Front	0	20525	836.5	22.53	23.00	1.114	0.09	0.840	0.936
20	LTE Band 5	10M	QPSK	1	0	Back	0	20525	836.5	22.53	23.00	1.114	0.09	0.895	**0.997**
	LTE Band 5	10M	QPSK	1	0	Left Side	0	20525	836.5	22.53	23.00	1.114	0.03	0.053	0.059
	LTE Band 5	10M	QPSK	1	0	Right Side	0	20525	836.5	22.53	23.00	1.114	0.07	0.112	0.125
	LTE Band 5	10M	QPSK	1	0	Top Side	0	20525	836.5	22.53	23.00	1.114	0.01	0.016	0.018
	LTE Band 5	10M	QPSK	1	0	Bottom Side	0	20525	836.5	22.53	23.00	1.114	0.04	0.820	0.914
	LTE Band 5	10M	QPSK	25	0	Front	0	20525	836.5	21.48	22.00	1.127	0.01	0.650	0.733
	LTE Band 5	10M	QPSK	25	0	Back	0	20525	836.5	21.48	22.00	1.127	0.06	0.738	0.832
	LTE Band 5	10M	QPSK	25	0	Left Side	0	20525	836.5	21.48	22.00	1.127	0.03	0.041	0.046
	LTE Band 5	10M	QPSK	25	0	Right Side	0	20525	836.5	21.48	22.00	1.127	0.09	0.092	0.103
	LTE Band 5	10M	QPSK	25	0	Top Side	0	20525	836.5	21.48	22.00	1.127	0.04	0.013	0.015
	LTE Band 5	10M	QPSK	25	0	Bottom Side	0	20525	836.5	21.48	22.00	1.127	0.06	0.674	0.760
	LTE Band 4	20M	QPSK	1	0	Front	0	20175	1732.5	22.38	22.50	1.028	0.09	2.210	2.272
21	LTE Band 4	20M	QPSK	1	0	Back	0	20175	1732.5	22.38	22.50	1.028	0.04	2.680	**2.755**
	LTE Band 4	20M	QPSK	1	0	Left Side	0	20175	1732.5	22.38	22.50	1.028	-0.08	0.097	0.099
	LTE Band 4	20M	QPSK	1	0	Right Side	0	20175	1732.5	22.38	22.50	1.028	0.01	0.462	0.475
	LTE Band 4	20M	QPSK	1	0	Top Side	0	20175	1732.5	22.38	22.50	1.028	-0.04	0.009	0.009
	LTE Band 4	20M	QPSK	1	0	Bottom Side	0	20175	1732.5	22.38	22.50	1.028	0.03	0.843	0.867
	LTE Band 4	20M	QPSK	50	0	Front	0	20175	1732.5	21.11	21.50	1.094	0.01	1.690	1.849
	LTE Band 4	20M	QPSK	50	0	Back	0	20175	1732.5	21.11	21.50	1.094	0.02	2.250	2.461
	LTE Band 4	20M	QPSK	50	0	Left Side	0	20175	1732.5	21.11	21.50	1.094	0.03	0.071	0.078
	LTE Band 4	20M	QPSK	50	0	Right Side	0	20175	1732.5	21.11	21.50	1.094	-0.09	0.353	0.386

	LTE Band 4	20M	QPSK	50	0	Top Side	0	20175	1732.5	21.11	21.50	1.094	0.09	0.008	0.008
	LTE Band 4	20M	QPSK	50	0	Bottom Side	0	20175	1732.5	21.11	21.50	1.094	0.04	0.633	0.692
	LTE Band 4	20M	QPSK	100	0	Front	0	20175	1732.5	20.93	21.50	1.140	0.07	1.600	1.824
	LTE Band 4	20M	QPSK	100	0	Back	0	20175	1732.5	20.93	21.50	1.140	0.02	1.430	1.631
	LTE Band 2	20M	QPSK	1	0	Front	0	19100	1900	22.53	23.00	1.114	0.04	1.590	1.772
	LTE Band 2	20M	QPSK	1	0	Back	0	19100	1900	22.53	23.00	1.114	0.01	2.080	2.318
	LTE Band 2	20M	QPSK	1	0	Left Side	0	19100	1900	22.53	23.00	1.114	0.03	0.085	0.095
	LTE Band 2	20M	QPSK	1	0	Right Side	0	19100	1900	22.53	23.00	1.114	0.08	0.323	0.360
	LTE Band 2	20M	QPSK	1	0	Top Side	0	19100	1900	22.53	23.00	1.114	0.01	0.018	0.020
	LTE Band 2	20M	QPSK	1	0	Bottom Side	0	19100	1900	22.53	23.00	1.114	0.04	0.444	0.495
22	LTE Band 2	20M	QPSK	1	0	Back	0	18700	1860	22.47	23.00	1.130	0.09	2.160	**2.440**
	LTE Band 2	20M	QPSK	1	0	Back	0	18900	1880	22.35	23.00	1.161	0.06	1.990	2.311
	LTE Band 2	20M	QPSK	50	0	Front	0	19100	1900	21.41	22.00	1.146	0.01	1.220	1.398
	LTE Band 2	20M	QPSK	50	0	Back	0	19100	1900	21.41	22.00	1.146	0.08	1.720	1.970
	LTE Band 2	20M	QPSK	50	0	Left Side	0	19100	1900	21.41	22.00	1.146	0.09	0.073	0.084
	LTE Band 2	20M	QPSK	50	0	Right Side	0	19100	1900	21.41	22.00	1.146	0.02	0.247	0.283
	LTE Band 2	20M	QPSK	50	0	Top Side	0	19100	1900	21.41	22.00	1.146	0.06	<0.001	<0.001
	LTE Band 2	20M	QPSK	50	0	Bottom Side	0	19100	1900	21.41	22.00	1.146	-0.04	0.344	0.394
	LTE Band 2	20M	QPSK	100	0	Back	0	19100	1900	21.29	22.00	1.178	0.08	1.620	1.908

<WLAN 2.4GHz SAR>

Plot No.	Ant.	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 10g SAR (W/kg)	Reported 10g SAR (W/kg)
23	1	WLAN 2.4GHz	802.11b 1Mbps	Front	0	11	2462	18.58	19.00	1.102	100	1.000	0.08	1.150	**1.267**
	1	WLAN 2.4GHz	802.11b 1Mbps	Back	0	11	2462	18.58	19.00	1.102	100	1.000	0.03	0.066	0.073
	1	WLAN 2.4GHz	802.11b 1Mbps	Left Side	0	11	2462	18.58	19.00	1.102	100	1.000	0.01	0.028	0.030
	1	WLAN 2.4GHz	802.11b 1Mbps	Right Side	0	11	2462	18.58	19.00	1.102	100	1.000	0.04	0.470	0.518
	1	WLAN 2.4GHz	802.11b 1Mbps	Top Side	0	11	2462	18.58	19.00	1.102	100	1.000	0.1	0.123	0.135
	1	WLAN 2.4GHz	802.11b 1Mbps	Bottom Side	0	11	2462	18.58	19.00	1.102	100	1.000	0.02	<0.001	<0.001
24	2	WLAN 2.4GHz	802.11b 1Mbps	Front	0	1	2412	17.99	18.50	1.125	100	1.000	0.05	0.784	**0.882**
	2	WLAN 2.4GHz	802.11b 1Mbps	Back	0	1	2412	17.99	18.50	1.125	100	1.000	0.09	0.528	0.594
	2	WLAN 2.4GHz	802.11b 1Mbps	Left Side	0	1	2412	17.99	18.50	1.125	100	1.000	0.02	0.107	0.120
	2	WLAN 2.4GHz	802.11b 1Mbps	Right Side	0	1	2412	17.99	18.50	1.125	100	1.000	0.01	0.010	0.011
	2	WLAN 2.4GHz	802.11b 1Mbps	Top Side	0	1	2412	17.99	18.50	1.125	100	1.000	0.07	0.008	0.009
	2	WLAN 2.4GHz	802.11b 1Mbps	Bottom Side	0	1	2412	17.99	18.50	1.125	100	1.000	0.02	0.131	0.147

<WLAN 5GHz SAR>

Plot No.	Ant.	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 10g SAR (W/kg)	Reported 10g SAR (W/kg)
25	1	WLAN 5.3GHz	802.11a 6Mbps	Front	0	52	5260	14.61	15.50	1.226	98.75	1.013	0.07	0.835	**1.037**
	1	WLAN 5.3GHz	802.11a 6Mbps	Back	0	52	5260	14.61	15.50	1.226	98.75	1.013	0.05	0.422	0.524
	1	WLAN 5.3GHz	802.11a 6Mbps	Left Side	0	52	5260	14.61	15.50	1.226	98.75	1.013	0.02	0.058	0.072
	1	WLAN 5.3GHz	802.11a 6Mbps	Right Side	0	52	5260	14.61	15.50	1.226	98.75	1.013	0.04	0.092	0.114
	1	WLAN 5.3GHz	802.11a 6Mbps	Top Side	0	52	5260	14.61	15.50	1.226	98.75	1.013	0.09	0.251	0.312
	1	WLAN 5.3GHz	802.11a 6Mbps	Bottom Side	0	52	5260	14.61	15.50	1.226	98.75	1.013	0.03	0.001	0.001
	2	WLAN 5.3GHz	802.11a 6Mbps	Front	0	60	5300	12.63	13.00	1.088	99.24	1.008	0.03	0.171	0.188
	2	WLAN 5.3GHz	802.11a 6Mbps	Back	0	60	5300	12.63	13.00	1.088	99.24	1.008	0.04	0.056	0.061
	2	WLAN 5.3GHz	802.11a 6Mbps	Left Side	0	60	5300	12.63	13.00	1.088	99.24	1.008	0.09	0.045	0.050
	2	WLAN 5.3GHz	802.11a 6Mbps	Right Side	0	60	5300	12.63	13.00	1.088	99.24	1.008	0.02	<0.001	<0.001
	2	WLAN 5.3GHz	802.11a 6Mbps	Top Side	0	60	5300	12.63	13.00	1.088	99.24	1.008	0.05	0.001	0.001
26	2	WLAN 5.3GHz	802.11a 6Mbps	Bottom Side	0	60	5300	12.63	13.00	1.088	99.24	1.008	0.04	0.231	**0.253**
27	1	WLAN 5.5GHz	802.11a 6Mbps	Front	0	116	5580	14.25	14.50	1.058	98.75	1.013	0.05	0.686	**0.735**
	1	WLAN 5.5GHz	802.11a 6Mbps	Back	0	116	5580	14.25	14.50	1.058	98.75	1.013	0.04	0.249	0.267
	1	WLAN 5.5GHz	802.11a 6Mbps	Left Side	0	116	5580	14.25	14.50	1.058	98.75	1.013	0.02	0.131	0.140
	1	WLAN 5.5GHz	802.11a 6Mbps	Right Side	0	116	5580	14.25	14.50	1.058	98.75	1.013	0.06	0.069	0.074
	1	WLAN 5.5GHz	802.11a 6Mbps	Top Side	0	116	5580	14.25	14.50	1.058	98.75	1.013	0.15	0.640	0.686
	1	WLAN 5.5GHz	802.11a 6Mbps	Bottom Side	0	116	5580	14.25	14.50	1.058	98.75	1.013	0.02	<0.001	<0.001
28	2	WLAN 5.5GHz	802.11a 6Mbps	Front	0	100	5500	12.35	12.50	1.034	99.24	1.008	-0.09	0.082	**0.085**
	2	WLAN 5.5GHz	802.11a 6Mbps	Back	0	100	5500	12.35	12.50	1.034	99.24	1.008	0.11	0.042	0.044
	2	WLAN 5.5GHz	802.11a 6Mbps	Left Side	0	100	5500	12.35	12.50	1.034	99.24	1.008	0.04	0.020	0.021
	2	WLAN 5.5GHz	802.11a 6Mbps	Right Side	0	100	5500	12.35	12.50	1.034	99.24	1.008	0.02	<0.001	<0.001
	2	WLAN 5.5GHz	802.11a 6Mbps	Top Side	0	100	5500	12.35	12.50	1.034	99.24	1.008	0.02	<0.001	<0.001
	2	WLAN 5.5GHz	802.11a 6Mbps	Bottom Side	0	100	5500	12.35	12.50	1.034	99.24	1.008	0.03	0.068	0.071
	1	WLAN 5.8GHz	802.11a 6Mbps	Front	0	149	5745	14.90	15.00	1.022	98.75	1.013	0.09	0.579	0.600
	1	WLAN 5.8GHz	802.11a 6Mbps	Back	0	149	5745	14.90	15.00	1.022	98.75	1.013	0.01	0.249	0.258
	1	WLAN 5.8GHz	802.11a 6Mbps	Left Side	0	149	5745	14.90	15.00	1.022	98.75	1.013	0.04	0.088	0.091
	1	WLAN 5.8GHz	802.11a 6Mbps	Right Side	0	149	5745	14.90	15.00	1.022	98.75	1.013	0.05	0.184	0.191
29	1	WLAN 5.8GHz	802.11a 6Mbps	Top Side	0	149	5745	14.90	15.00	1.022	98.75	1.013	0.02	0.747	**0.774**
	1	WLAN 5.8GHz	802.11a 6Mbps	Bottom Side	0	149	5745	14.90	15.00	1.022	98.75	1.013	0.08	0.006	0.006
	2	WLAN 5.8GHz	802.11a 6Mbps	Front	0	149	5745	11.73	12.00	1.063	99.24	1.008	0.04	0.269	0.288
	2	WLAN 5.8GHz	802.11a 6Mbps	Back	0	149	5745	11.73	12.00	1.063	99.24	1.008	0.11	0.087	0.093
	2	WLAN 5.8GHz	802.11a 6Mbps	Left Side	0	149	5745	11.73	12.00	1.063	99.24	1.008	0.02	0.057	0.061
	2	WLAN 5.8GHz	802.11a 6Mbps	Right Side	0	149	5745	11.73	12.00	1.063	99.24	1.008	0.04	0.001	0.001
	2	WLAN 5.8GHz	802.11a 6Mbps	Top Side	0	149	5745	11.73	12.00	1.063	99.24	1.008	0.03	0.001	0.001
30	2	WLAN 5.8GHz	802.11a 6Mbps	Bottom Side	0	149	5745	11.73	12.00	1.063	99.24	1.008	0.02	0.322	**0.345**

15.3 Repeated SAR Measurement

<1g SAR>

No.	Band	Mode	BW (MHz)	Modulation	RB Size	RB Offset	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Ratio	Reported 1g SAR (W/kg)
1st	LTE Band 4	-	20M	QPSK	1	0	Back	10	20175	1732.5	22.38	22.50	1.028	-	-	0.03	1.050	1	1.079
2nd	LTE Band 4	-	20M	QPSK	1	0	Back	10	20175	1732.5	22.38	22.50	1.028	-	-	0.07	1.010	1.040	1.038
1st	LTE Band 2	-	20M	QPSK	1	0	Back	10	18700	1860	22.47	23.00	1.130	-	-	0.03	0.847	1	0.957
2nd	LTE Band 2	-	20M	QPSK	1	0	Back	10	18700	1860	22.47	23.00	1.130	-	-	0.08	0.835	1.014	0.943

<10g SAR>

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 10g SAR (W/kg)	Ratio	Reported 10g SAR (W/kg)
1st	LTE Band 4	20M	QPSK	1	0	Back	0	20175	1732.5	22.38	22.50	1.028	0.04	2.680	1	2.755
2nd	LTE Band 4	20M	QPSK	1	0	Back	0	20175	1732.5	22.38	22.50	1.028	0.05	2.610	1.027	2.683
1st	LTE Band 2	20M	QPSK	1	0	Back	0	18700	1860	22.47	23.00	1.130	0.09	2.160	1	2.440
2nd	LTE Band 2	20M	QPSK	1	0	Back	0	18700	1860	22.47	23.00	1.130	0.05	2.090	1.033	2.361

General Note:

1. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/kg for 1g SAR and measured SAR is ≥1.0W/kg.
2. Per KDB 865664 D01v01r04, if the ratio among the repeated measurement is ≤ 1.2 and the measured SAR <1.45W/kg, only one repeated measurement is required.
3. Per KDB 865664 D01v01r04, if the extremity repeated SAR is necessary, the same procedures should be adapted for measurements according to extremity and occupational exposure limits by applying a factor of 2.5 for extremity exposure and a factor of 5 for occupational exposure to the corresponding SAR thresholds.
4. The ratio is the difference in percentage between original and repeated *measured SAR*.
5. All measurement SAR result is scaled-up to account for tune-up tolerance and is compliant.

16. Simultaneous Transmission Analysis

No.	Simultaneous Transmission Configurations	Supported
1.	WCDMA + Bluetooth	Yes
2.	LTE + Bluetooth	Yes
3.	WCDMA + 2.4GHz WLAN Ant.1+ 2.4GHz WLAN Ant.2	Yes
4.	LTE + 2.4GHz WLAN Ant.1+ 2.4GHz WLAN Ant.2	Yes
5.	WCDMA + WLAN 5GHz Ant.1 + WLAN 5GHz Ant.2	Yes
6.	LTE + WLAN 5GHz Ant.1 + WLAN 5GHz Ant.2	Yes

General Note:

1. Bluetooth and WLAN share the same antenna 2, and cannot transmit simultaneously.
2. EUT will choose each WCDMA and LTE according to the network signal condition; therefore, they will not operate simultaneously at any moment.
3. 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.
4. For SAR testing was performed on single antenna RF power in SISO mode is larger or equal to the single antenna RF power in MIMO mode, and for RF exposure assessment of MIMO mode simultaneous transmission exclusion analysis was performed with SAR test results of each antenna in SISO mode.
5. According to the character of EUT, WLAN5GHz and Bluetooth and can't transmit simultaneously.
6. The reported SAR summation is calculated based on the same configuration and test position.
7. Per KDB 447498 D01v06, simultaneous transmission SAR is compliant if,
   i) 1g Scalar SAR summation < 1.6W/kg and 10g Scalar SAR summation < 4.0W/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 for 1g SAR, SPLSR ≤ 0.10 for 10g SAR simultaneously transmission SAR measurement is not necessary.
   iv) The SPLSR calculated results please refer to section 16.3.
8. 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.

<1g SAR>

Bluetooth Max Power (dBm)	Exposure Position	Body SAR
	Test separation	10 mm
8.5	Estimated 1g SAR (W/kg)	0.149

<10g SAR>

Bluetooth Max Power (dBm)	Exposure Position	Product specific 10g SAR
	Test separation	0 mm
8.5	Estimated 10g SAR (W/kg)	0.119

16.1 Body Exposure Conditions

WWAN Band		Exposure Position	1	2	3	4	5	6	1+2+3 Summed 1g SAR (W/kg)	1+4+5 Summed 1g SAR (W/kg)	1+6 Summed 1g SAR (W/kg)
			WWAN	2.4GHz WLAN Ant.1	2.4GHz WLAN Ant.2	5GHz WLAN Ant.1	5GHz WLAN Ant.2	Bluetooth Ant.2			
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	Estimated 1g SAR (W/kg)			
WCDMA	Band V	Front	0.335	0.370	0.207	0.324	0.128	0.149	0.91	0.79	0.48
		Back	0.453	0.044	0.148	0.309	0.103	0.149	0.65	0.87	0.60
	Band II	Front	0.701	0.370	0.207	0.324	0.128	0.149	1.28	1.15	0.85
		Back	0.947	0.044	0.148	0.309	0.103	0.149	1.14	1.36	1.10
LTE	Band 12	Front	0.140	0.370	0.207	0.324	0.128	0.149	0.72	0.59	0.29
		Back	0.293	0.044	0.148	0.309	0.103	0.149	0.49	0.71	0.44
	Band 13	Front	0.370	0.370	0.207	0.324	0.128	0.149	0.95	0.82	0.52
		Back	0.466	0.044	0.148	0.309	0.103	0.149	0.66	0.88	0.62
	Band 5	Front	0.279	0.370	0.207	0.324	0.128	0.149	0.86	0.73	0.43
		Back	0.216	0.044	0.148	0.309	0.103	0.149	0.41	0.63	0.37
	Band 4	Front	0.963	0.370	0.207	0.324	0.128	0.149	**1.54**	1.42	1.11
		Back	1.079	0.044	0.148	0.309	0.103	0.149	1.27	**1.49**	1.23
	Band 2	Front	0.665	0.370	0.207	0.324	0.128	0.149	1.24	1.12	0.81
		Back	0.957	0.044	0.148	0.309	0.103	0.149	1.15	1.37	1.11

16.2 Product specific 10g SAR Exposure Conditions

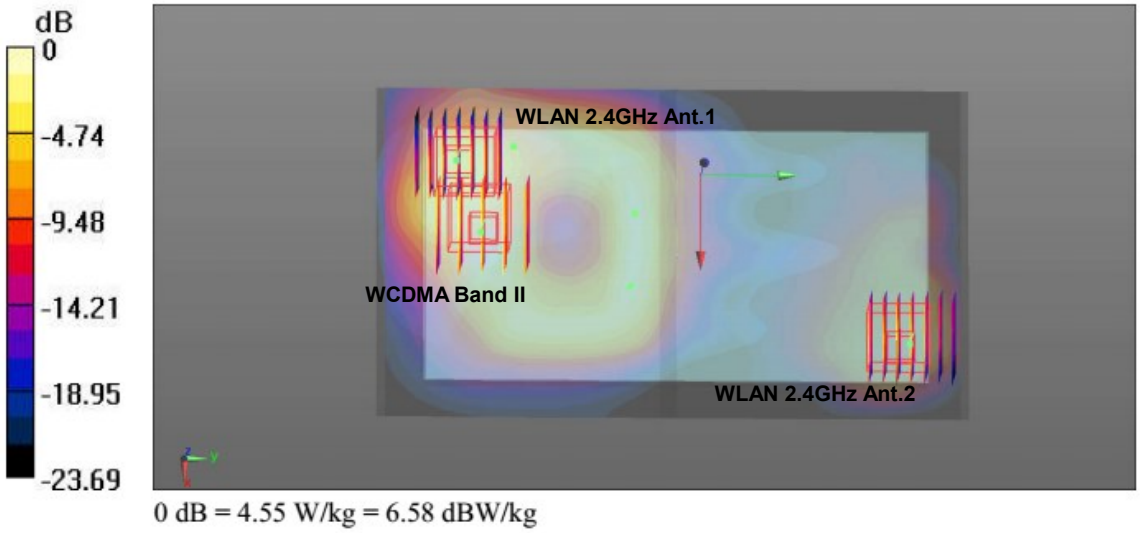
WWAN Band		Exposure Position	1	2	3	4	5	6	1+2+3			1+4+5	1+6
			WWAN	2.4GHz WLAN Ant.1	2.4GHz WLAN Ant.2	5GHz WLAN Ant.1	5GHz WLAN Ant.2	Bluetooth Ant.2	Summed 10g SAR (W/kg)	SPLSR	Case No	Summed 10g SAR (W/kg)	Summed 10g SAR (W/kg)
			10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	Estimated 10g SAR (W/kg)					
WCDMA	Band V	Front	0.960	1.267	0.882	1.037	0.288	0.119	3.11			2.29	1.08
		Back	1.085	0.073	0.594	0.524	0.093	0.119	1.75			1.70	1.20
		Left Side	0.066	0.030	0.120	0.140	0.061	0.119	0.22			0.27	0.19
		Right Side	0.137	0.518	0.011	0.191	0.001	0.119	0.67			0.33	0.26
		Top Side	0.023	0.135	0.009	0.774	0.001	0.119	0.17			0.80	0.14
		Bottom Side	1.034	<0.001	0.147	0.006	0.345	0.119	1.18			1.39	1.15
	Band II	Front	2.346	1.267	0.882	1.037	0.288	0.119	**4.50**	**0.10**	**#01**	**3.67**	2.47
		Back	2.393	0.073	0.594	0.524	0.093	0.119	3.06			3.01	2.51
		Left Side	0.122	0.030	0.120	0.140	0.061	0.119	0.27			0.32	0.24
		Right Side	0.295	0.518	0.011	0.191	0.001	0.119	0.82			0.49	0.41
		Top Side	0.010	0.135	0.009	0.774	0.001	0.119	0.15			0.79	0.13
		Bottom Side	0.465	<0.001	0.147	0.006	0.345	0.119	0.61			0.82	0.58
LTE	Band 12	Front	0.913	1.267	0.882	1.037	0.288	0.119	3.06			2.24	1.03
		Back	0.525	0.073	0.594	0.524	0.093	0.119	1.19			1.14	0.64
		Left Side	0.025	0.030	0.120	0.140	0.061	0.119	0.18			0.23	0.14
		Right Side	0.064	0.518	0.011	0.191	0.001	0.119	0.59			0.26	0.18
		Top Side	0.020	0.135	0.009	0.774	0.001	0.119	0.16			0.80	0.14
		Bottom Side	0.943	<0.001	0.147	0.006	0.345	0.119	1.09			1.29	1.06
	Band 13	Front	1.158	1.267	0.882	1.037	0.288	0.119	3.31			2.48	1.28
		Back	1.057	0.073	0.594	0.524	0.093	0.119	1.72			1.67	1.18
		Left Side	0.073	0.030	0.120	0.140	0.061	0.119	0.22			0.27	0.19
		Right Side	0.141	0.518	0.011	0.191	0.001	0.119	0.67			0.33	0.26
		Top Side	0.031	0.135	0.009	0.774	0.001	0.119	0.18			0.81	0.15
		Bottom Side	0.854	<0.001	0.147	0.006	0.345	0.119	1.00			1.21	0.97
	Band 5	Front	0.936	1.267	0.882	1.037	0.288	0.119	3.09			2.26	1.06
		Back	0.997	0.073	0.594	0.524	0.093	0.119	1.66			1.61	1.12
		Left Side	0.059	0.030	0.120	0.140	0.061	0.119	0.21			0.26	0.18
		Right Side	0.125	0.518	0.011	0.191	0.001	0.119	0.65			0.32	0.24
		Top Side	0.018	0.135	0.009	0.774	0.001	0.119	0.16			0.79	0.14
		Bottom Side	0.914	<0.001	0.147	0.006	0.345	0.119	1.06			1.27	1.03
	Band 4	Front	2.272	1.267	0.882	1.037	0.288	0.119	**4.42**	**0.10**	**#02**	3.60	2.39
		Back	2.755	0.073	0.594	0.524	0.093	0.119	3.42			3.37	2.87
		Left Side	0.099	0.030	0.120	0.140	0.061	0.119	0.25			0.30	0.22
		Right Side	0.475	0.518	0.011	0.191	0.001	0.119	1.00			0.67	0.59
		Top Side	0.009	0.135	0.009	0.774	0.001	0.119	0.15			0.78	0.13
		Bottom Side	0.867	<0.001	0.147	0.006	0.345	0.119	1.02			1.22	0.99
	Band 2	Front	1.772	1.267	0.882	1.037	0.288	0.119	**3.92**			3.10	1.89
		Back	2.440	0.073	0.594	0.524	0.093	0.119	3.11			3.06	2.56
		Left Side	0.095	0.030	0.120	0.140	0.061	0.119	0.25			0.30	0.21
		Right Side	0.360	0.518	0.011	0.191	0.001	0.119	0.89			0.55	0.48
		Top Side	0.020	0.135	0.009	0.774	0.001	0.119	0.16			0.80	0.14
		Bottom Side	0.495	<0.001	0.147	0.006	0.345	0.119	0.64			0.85	0.61

16.3 SPLSR Evaluation and Analysis

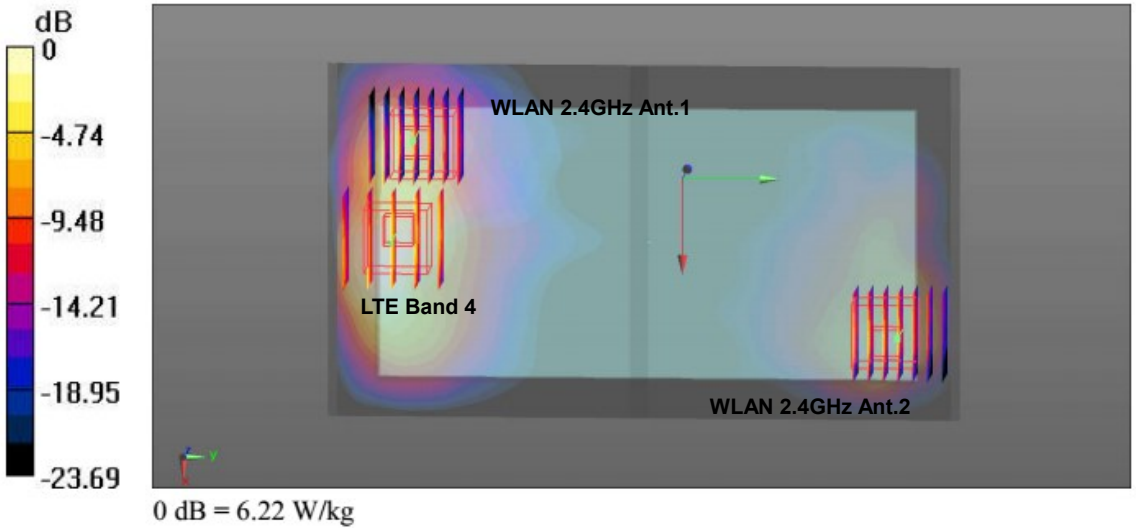
General Note:

1. When standalone SAR is measured for both antennas in the pair, the peak location separation distance is computed by the square root of [(x1−x2)2 + (y1−y2)2 + (z1−z2)2], where (x1, y1, z1) and (x2, y2, z2) are the coordinates in the area scans or extrapolated peak SAR locations in the zoom scans, as appropriate.
2. SPLSR = $(SAR_1 + SAR_2)^{1.5}$ / (*min. separation distance, mm*). If SPLSR ≤ 0.04 for 1g SAR and SPLSR ≤ 0.10 for 10g SAR, simultaneously transmission SAR measurement is not necessary.

	Band	Position	10g SAR (W/kg)	Gap (mm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed 10g SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case #01	WCDMA Band II	Front	2.346	0	-0.0075	-0.0305	-0.182	121.3	3.61	0.06	Not required
	WLAN 2.4GHz Ant.2		1.267	0	0.0324	0.084	-0.182				
	WCDMA Band II		2.346	0	-0.0075	-0.0305	-0.182	55.3	3.23	0.10	Not required
	WLAN 2.4GHz Ant.1		0.882	0	-0.0336	-0.0792	-0.182				
	WLAN 2.4GHz Ant.2		1.267	0	0.0324	0.084	-0.182	176.0	2.15	0.02	Not required
	WLAN 2.4GHz Ant.1		0.882	0	-0.0336	-0.0792	-0.182				



	Band	Position	10g SAR (W/kg)	Gap (mm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed 10g SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case #02	LTE Band 4	Front	2.272	0	0.0015	-0.037	-0.18	124.9	3.54	0.05	Not required
	WLAN 2.4GHz Ant.2		1.267	0	0.0324	0.084	-0.182				
	LTE Band 4		2.272	0	0.0015	-0.037	-0.18	54.9	3.15	0.10	Not required
	WLAN 2.4GHz Ant.1		0.882	0	-0.0336	-0.0792	-0.182				
	WLAN 2.4GHz Ant.2		1.267	0	0.0324	0.084	-0.182	176.0	2.15	0.02	Not required
	WLAN 2.4GHz Ant.1		0.882	0	-0.0336	-0.0792	-0.182				



0 dB = 6.22 W/kg

Test Engineer: Johnny. Chen

17. Uncertainty Assessment

Pre 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.

18. References

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

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

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

[4] SPEAG DASY System Handbook

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

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

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

Appendix A. Plots of System Performance Check

The plots are shown as follows.

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2018.08.23

System Check_Body_750MHz_180823

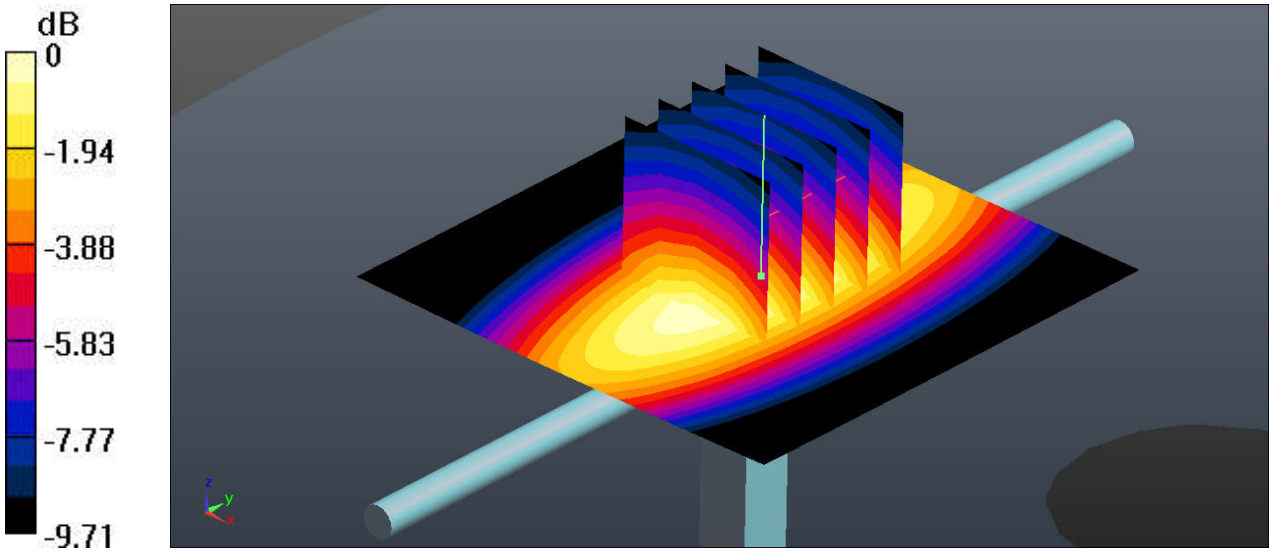
DUT: D750V3-SN:1099

Communication System: UID 0, CW (0); Frequency: 750 MHz;Duty Cycle: 1:1
Medium: MSL_750_180823 Medium parameters used: f = 750 MHz; σ = 0.961 S/m; ε_r = 53.931; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(9.7, 9.7, 9.7); Calibrated: 2018.01.31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1437; Calibrated: 2017.09.15
- Phantom: SAM2; Type: QDOVA001BB; Serial: TP:1233
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.59 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 53.19 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 2.94 W/kg
SAR(1 g) = 2.05 W/kg; SAR(10 g) = 1.38 W/kg
Maximum value of SAR (measured) = 2.55 W/kg



0 dB = 2.55 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2018.08.24

System Check_Body_835MHz_180824

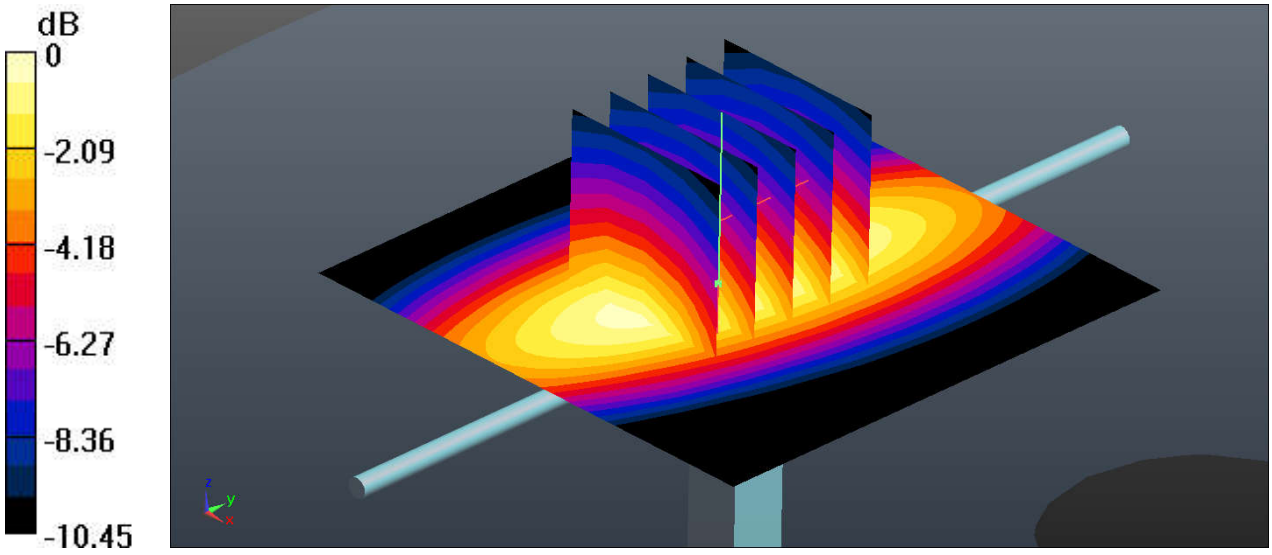
DUT: D835V2-SN:4d162

Communication System: UID 0, CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: MSL_835_180824 Medium parameters used: f = 835 MHz; σ = 0.977 S/m; ε_r = 54.442; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(9.49, 9.49, 9.49); Calibrated: 2018.01.31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1437; Calibrated: 2017.09.15
- Phantom: SAM2; Type: QDOVA001BB; Serial: TP:1233
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15 mm
Maximum value of SAR (interpolated) = 3.00 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 56.77 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 3.45 W/kg
SAR(1 g) = 2.38 W/kg; SAR(10 g) = 1.58 W/kg
Maximum value of SAR (measured) = 2.98 W/kg



0 dB = 2.98 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2018.08.19

System Check_Body_1750MHz_180819

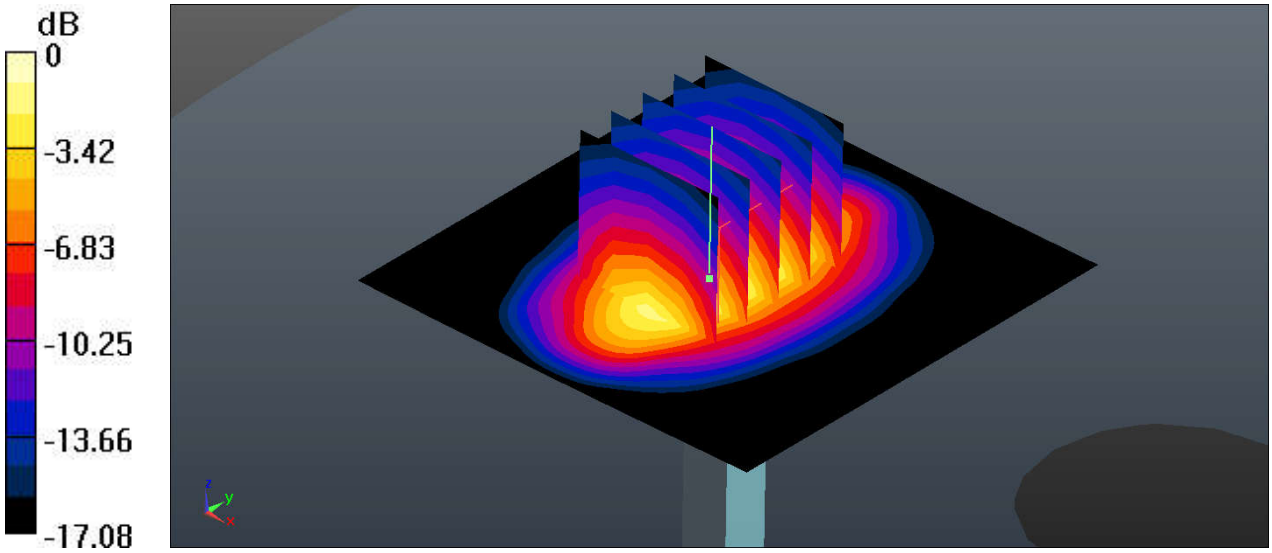
DUT: D1750V2-SN:1137

Communication System: UID 0, CW; Frequency: 1750 MHz;Duty Cycle: 1:1
Medium: MSL_1750_180819 Medium parameters used: f = 1750 MHz; σ = 1.527 S/m; ε_r = 52.039; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(7.93, 7.93, 7.93); Calibrated: 2018.01.31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1437; Calibrated: 2017.09.15
- Phantom: SAM2; Type: QDOVA001BB; Serial: TP:1233
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 13.3 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 94.09 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 16.7 W/kg
SAR(1 g) = 9.37 W/kg; SAR(10 g) = 4.93 W/kg
Maximum value of SAR (measured) = 13.3 W/kg



0 dB = 13.3 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2018.08.18

System Check_Body_1900MHz_180818

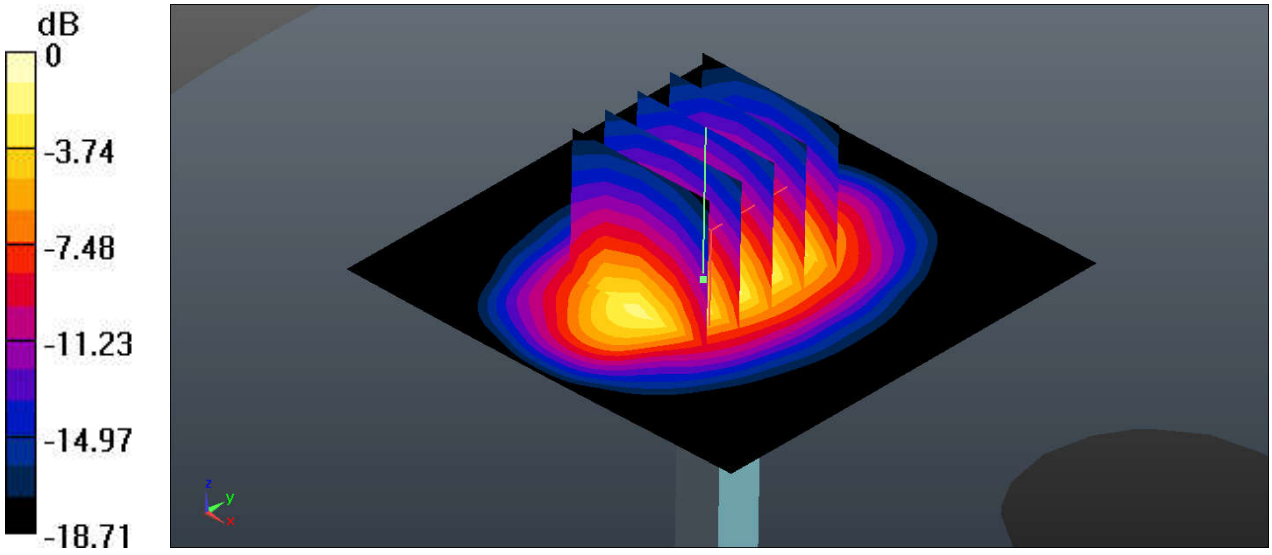
DUT: D1900V2-SN:5d182

Communication System: UID 0, CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: MSL_1900_180818 Medium parameters used: f = 1900 MHz; σ = 1.545 S/m; ε_r = 53.535; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(7.69, 7.69, 7.69); Calibrated: 2018.01.31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1437; Calibrated: 2017.09.15
- Phantom: SAM2; Type: QDOVA001BB; Serial: TP:1233
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 14.5 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 85.07 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 18.1 W/kg
SAR(1 g) = 9.9 W/kg; SAR(10 g) = 5.03 W/kg
Maximum value of SAR (measured) = 14.3 W/kg



0 dB = 14.3 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2018.09.12

System Check_Body_2450MHz_180912

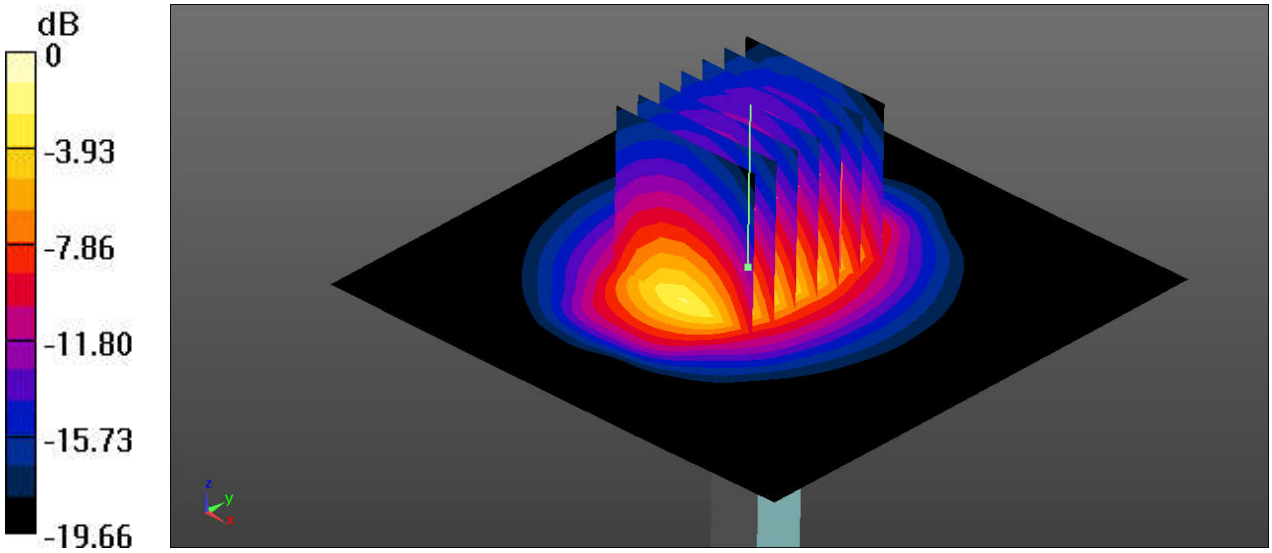
DUT: D2450V2-SN:924

Communication System: UID 0, CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: MSL_2450_180912 Medium parameters used: f = 2450 MHz; σ = 1.991 S/m; ε_r = 52.32; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(7.46, 7.46, 7.46); Calibrated: 2018.01.31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1437; Calibrated: 2017.09.15
- Phantom: SAM2; Type: QDOVA001BB; Serial: TP:1233
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (81x81x1): Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 18.0 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 75.91 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 23.4 W/kg
SAR(1 g) = 12.2 W/kg; SAR(10 g) = 5.87 W/kg
Maximum value of SAR (measured) = 18.1 W/kg



0 dB = 18.0 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2018.09.12

System Check_Body_5250MHz_180912

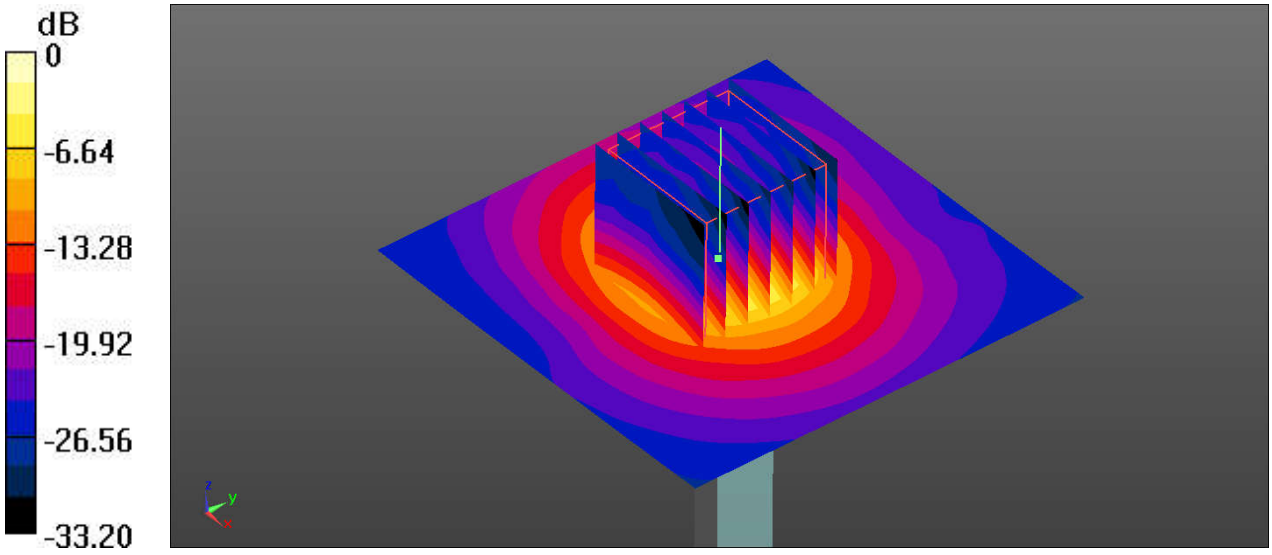
DUT: D5GHzV2-SN:1167

Communication System: UID 0, CW (0); Frequency: 5250 MHz;Duty Cycle: 1:1
Medium: MSL_5250_180912 Medium parameters used: f = 5250 MHz; σ = 5.29 S/m; ε_r = 50.923; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(4.7, 4.7, 4.7); Calibrated: 2018.01.31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1437; Calibrated: 2017.09.15
- Phantom: SAM2; Type: QDOVA001BB; Serial: TP:1233
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 19.2 W/kg

Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 43.11 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 35.1 W/kg
SAR(1 g) = 8.02 W/kg; SAR(10 g) = 2.22 W/kg
Maximum value of SAR (measured) = 19.9 W/kg



0 dB = 19.2 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2018.09.12

System Check_Body_5600MHz_180912

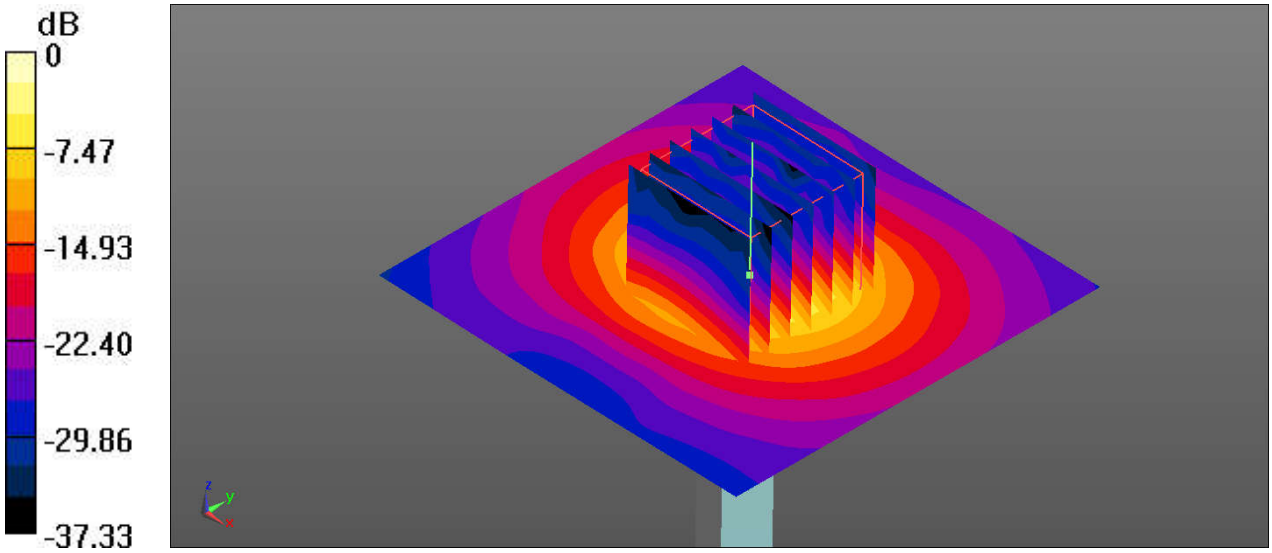
DUT: D5GHzV2-SN:1167

Communication System: UID 0, CW (0); Frequency: 5600 MHz;Duty Cycle: 1:1
Medium: MSL_5600_180912 Medium parameters used: f = 5600 MHz; σ = 5.884 S/m; ε_r = 50.283; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：22.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(4.18, 4.18, 4.18); Calibrated: 2018.01.31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1437; Calibrated: 2017.09.15
- Phantom: SAM2; QDOVA001BB; Serial: TP:1233
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 20.4 W/kg

Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 48.96 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 34.6 W/kg
SAR(1 g) = 8.13 W/kg; SAR(10 g) = 2.31 W/kg
Maximum value of SAR (measured) = 22.2 W/kg



0 dB = 22.2 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2018.09.12

System Check_Body_5750MHz_180912

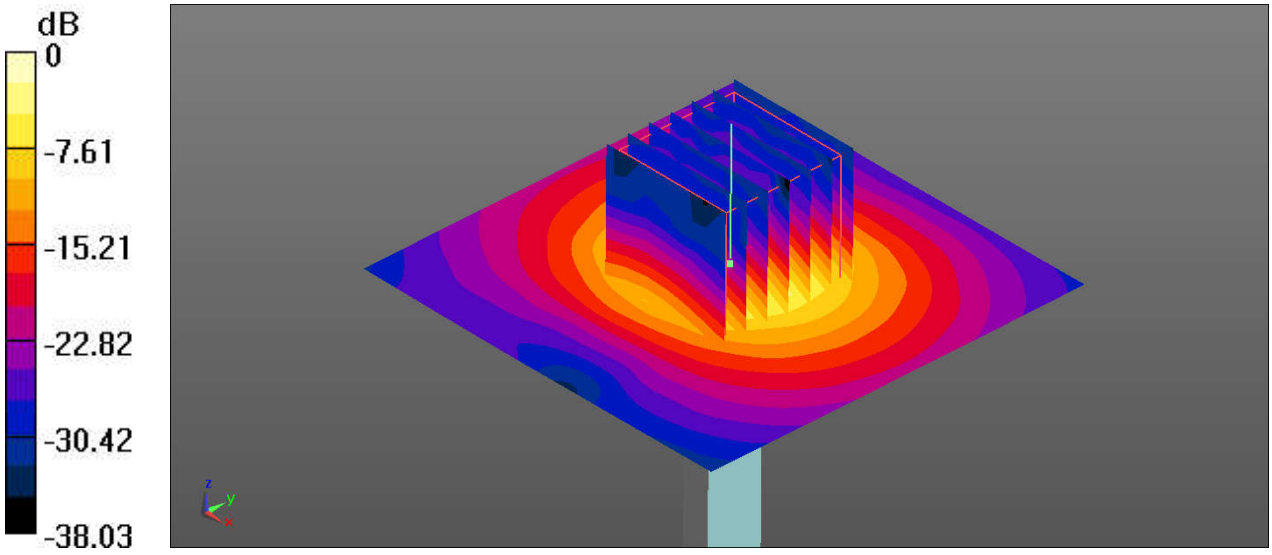
DUT: D5GHzV2-SN:1167

Communication System: UID 0, CW (0); Frequency: 5750 MHz;Duty Cycle: 1:1
Medium: MSL_5750_180912 Medium parameters used: f = 5750 MHz; σ = 6.113 S/m; ε_r = 49.934; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(4.32, 4.32, 4.32); Calibrated: 2018.01.31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 2015.11.24
- Phantom: SAM2; QDOVA001BB; Serial: TP:1233
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 19.8 W/kg

Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 45.83 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 35.1 W/kg
SAR(1 g) = 8.09 W/kg; SAR(10 g) = 2.21 W/kg
Maximum value of SAR (measured) = 20.4 W/kg



0 dB = 20.4 W/kg

Appendix B. Plots of High SAR Measurement

The plots are shown as follows.

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2018.08.24

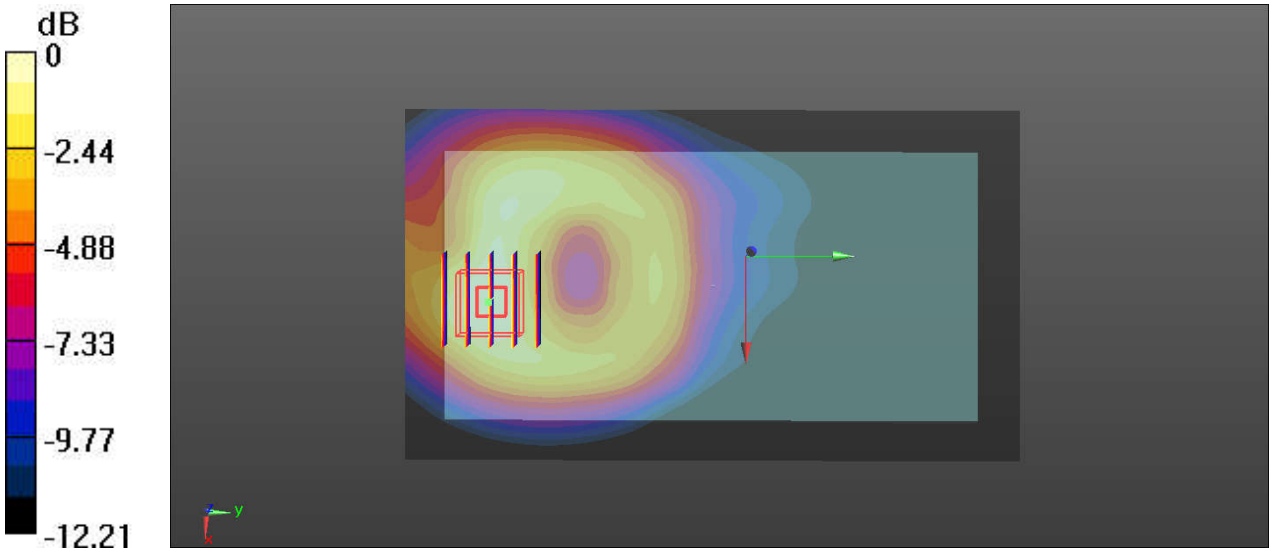
01_WCDMA V_RMC 12.2Kbps_Back_10mm_Ch4182

Communication System: UID 0, UMTS (0); Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium: MSL_835_180824 Medium parameters used: f = 836.4 MHz; σ = 0.979 S/m; ε_r = 54.429; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(9.49, 9.49, 9.49); Calibrated: 2018.01.31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1437; Calibrated: 2017.09.15
- Phantom: SAM2; Type: QDOVA001BB; Serial: TP:1233
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch4182/Area Scan (81x141x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.577 W/kg

Ch4182/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.094 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 0.706 W/kg
SAR(1 g) = 0.422 W/kg; SAR(10 g) = 0.260 W/kg
Maximum value of SAR (measured) = 0.563 W/kg



0 dB = 0.577 W/kg

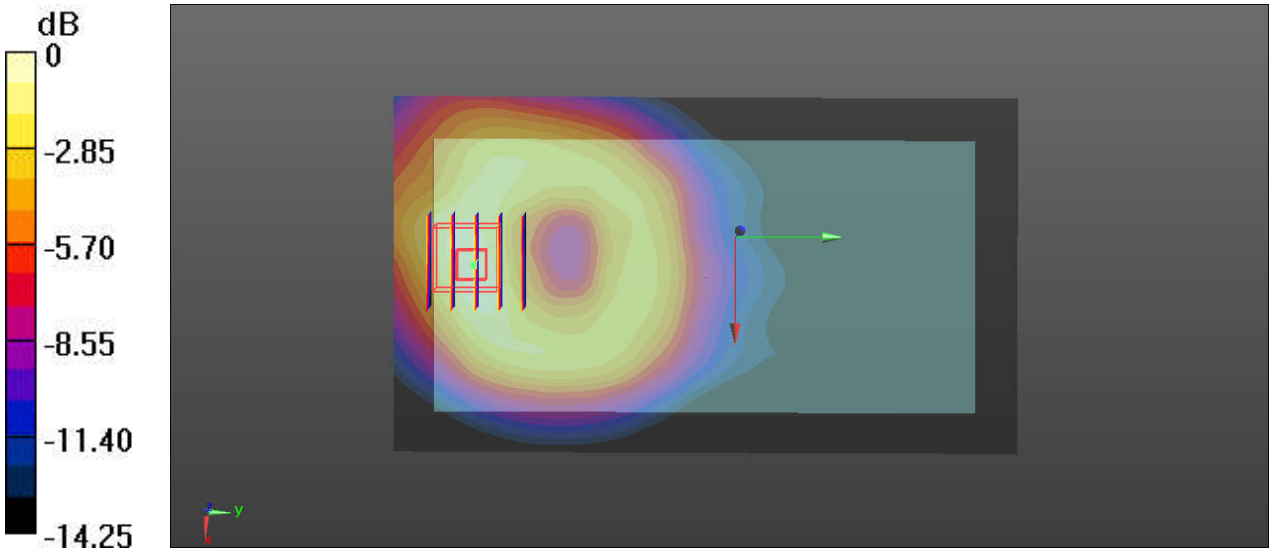
02_WCDMA II_RMC 12.2Kbps_Back_10mm_Ch9262

Communication System: UID 0, UMTS (0); Frequency: 1852.4 MHz;Duty Cycle: 1:1
Medium: MSL_1900_180818 Medium parameters used: f = 1852.4 MHz; σ = 1.49 S/m; ε_r = 53.632; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(7.69, 7.69, 7.69); Calibrated: 2018.01.31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1437; Calibrated: 2017.09.15
- Phantom: SAM2; Type: QDOVA001BB; Serial: TP:1233
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch9262/Area Scan (81x141x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.11 W/kg

Ch9262/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.530 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 1.38 W/kg
SAR(1 g) = 0.815 W/kg; SAR(10 g) = 0.486 W/kg
Maximum value of SAR (measured) = 1.10 W/kg



0 dB = 1.11 W/kg

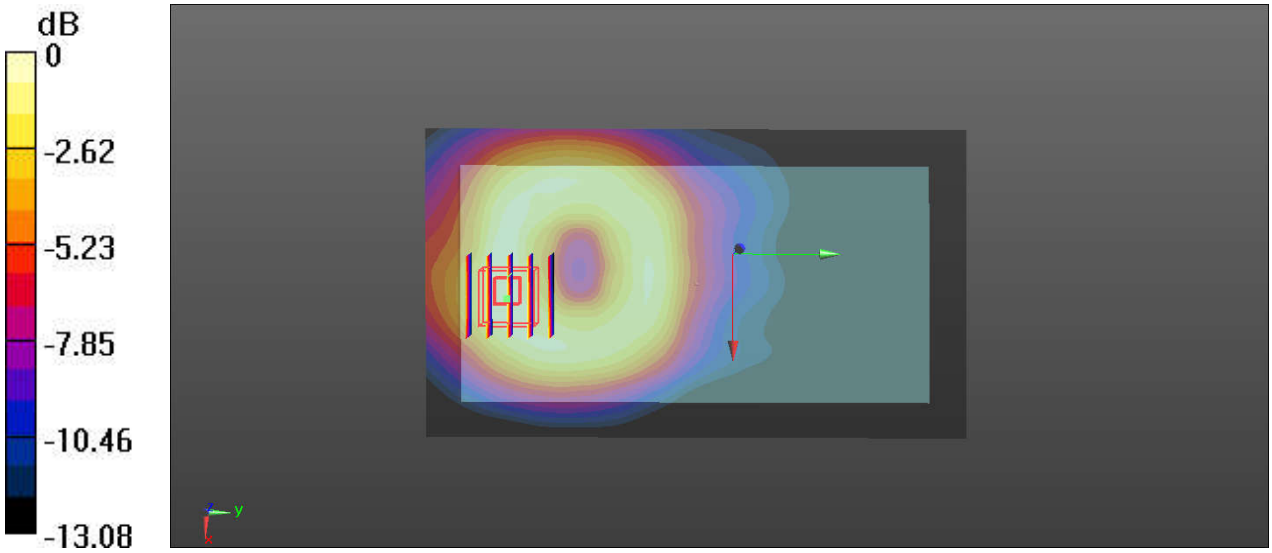
03_LTE Band 12_10M_QPSK_1RB_0Offset_Back_10mm_Ch23095

Communication System: UID 0, LTE (0); Frequency: 707.5 MHz;Duty Cycle: 1:1
Medium: MSL_750_180823 Medium parameters used: f = 707.5 MHz; σ = 0.931 S/m; ε_r = 54.903; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(9.7, 9.7, 9.7); Calibrated: 2018.01.31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1437; Calibrated: 2017.09.15
- Phantom: SAM2; Type: QDOVA001BB; Serial: TP:1233
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch23095/Area Scan (81x141x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.374 W/kg

Ch23095/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.9860 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 0.478 W/kg
SAR(1 g) = 0.272 W/kg; SAR(10 g) = 0.163 W/kg
Maximum value of SAR (measured) = 0.373 W/kg



0 dB = 0.374 W/kg

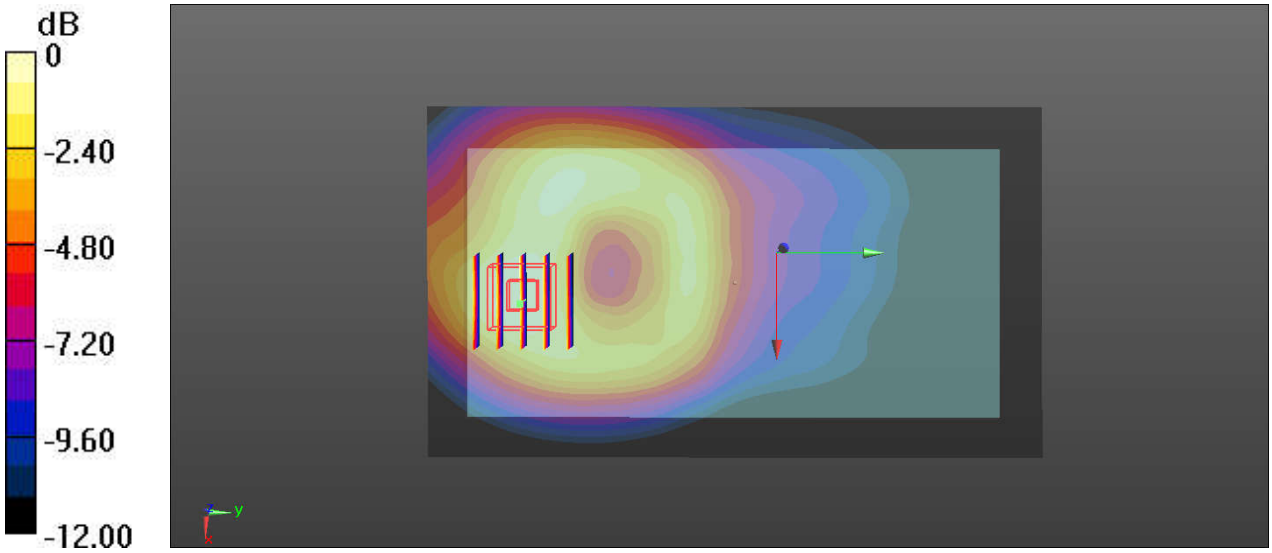
04_LTE Band 13_10M_QPSK_1RB_25Offset_Back_10mm_Ch23230

Communication System: UID 0, LTE (0); Frequency: 782 MHz;Duty Cycle: 1:1
Medium: MSL_750_180823 Medium parameters used: f = 782 MHz; σ = 0.986 S/m; ε_r = 53.239; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(9.7, 9.7, 9.7); Calibrated: 2018.01.31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1437; Calibrated: 2017.09.15
- Phantom: SAM2; Type: QDOVA001BB; Serial: TP:1233
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch23230/Area Scan (81x141x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.542 W/kg

Ch23230/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.450 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 0.683 W/kg
SAR(1 g) = 0.411 W/kg; SAR(10 g) = 0.255 W/kg
Maximum value of SAR (measured) = 0.540 W/kg



0 dB = 0.542 W/kg

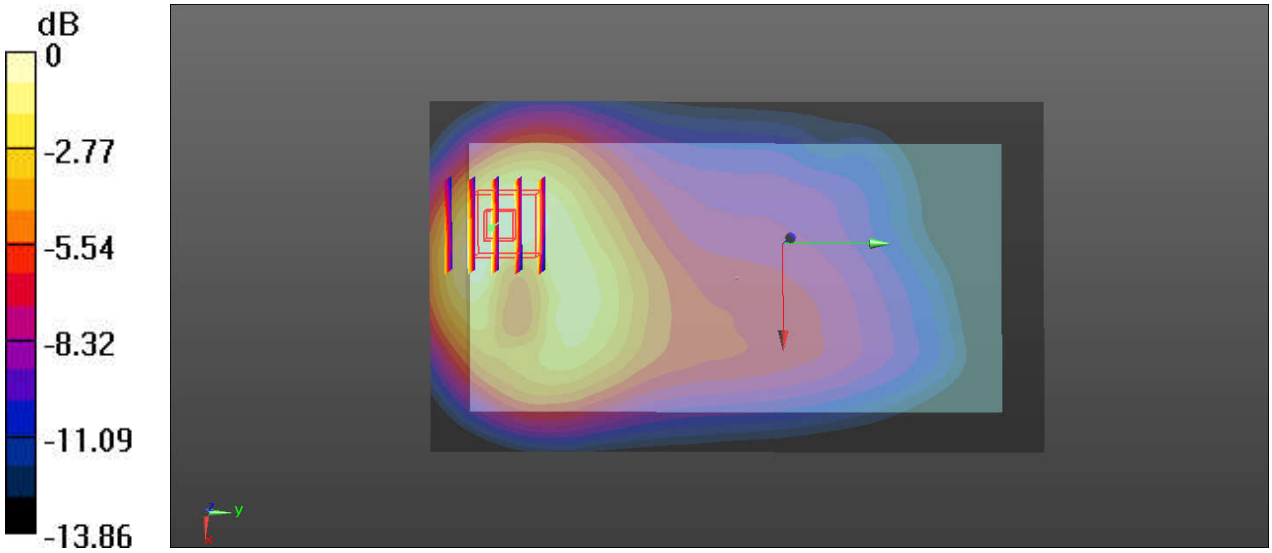
05_LTE Band 5_10M_QPSK_1RB_0Offset_Front_10mm_Ch20525

Communication System: UID 0, LTE (0); Frequency: 836.5 MHz;Duty Cycle: 1:1
Medium: MSL_835_180824 Medium parameters used: f = 836.5 MHz; σ = 0.979 S/m; ε_r = 54.428; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(9.49, 9.49, 9.49); Calibrated: 2018.01.31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1437; Calibrated: 2017.09.15
- Phantom: SAM2; Type: QDOVA001BB; Serial: TP:1233
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch20525/Area Scan (81x141x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.310 W/kg

Ch20525/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.6790 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.384 W/kg
SAR(1 g) = 0.250 W/kg; SAR(10 g) = 0.159 W/kg
Maximum value of SAR (measured) = 0.318 W/kg



0 dB = 0.310 W/kg

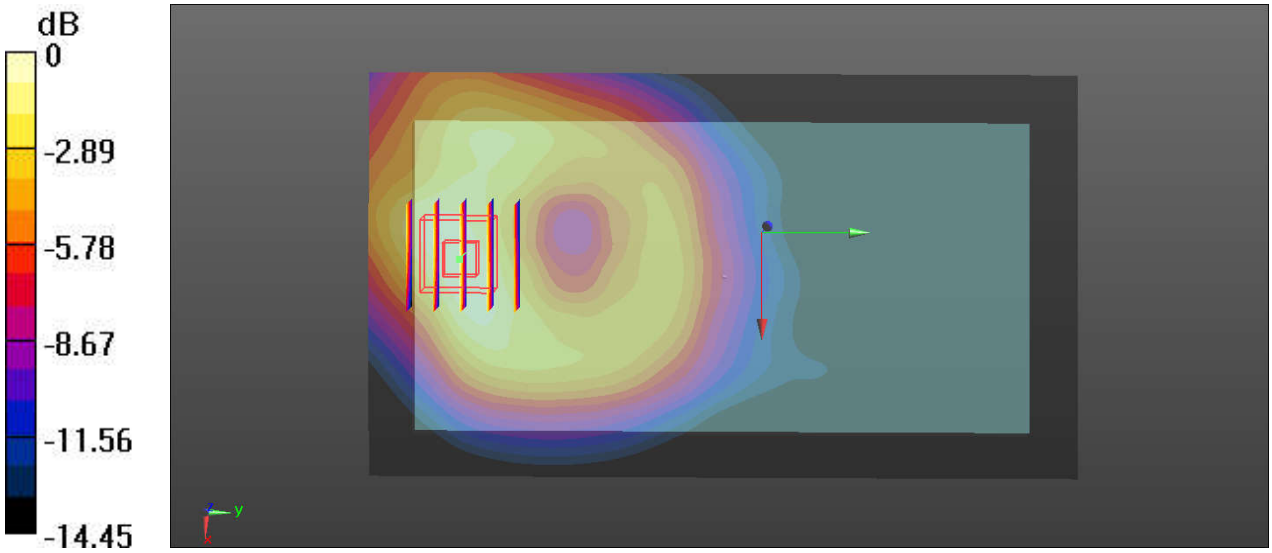
06_LTE Band 4_20M_QPSK_1RB_0Offset_Back_10mm_Ch20175

Communication System: UID 0, LTE (0); Frequency: 1732.5 MHz;Duty Cycle: 1:1
Medium: MSL_1750_180819 Medium parameters used: f = 1732.5 MHz; σ = 1.507 S/m; ε_r = 52.114; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(7.93, 7.93, 7.93); Calibrated: 2018.01.31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1437; Calibrated: 2017.09.15
- Phantom: SAM2; Type: QDOVA001BB; Serial: TP:1233
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch20175/Area Scan (81x141x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.38 W/kg

Ch20175/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.555 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 1.67 W/kg
SAR(1 g) = 1.05 W/kg; SAR(10 g) = 0.649 W/kg
Maximum value of SAR (measured) = 1.36 W/kg



0 dB = 1.38 W/kg

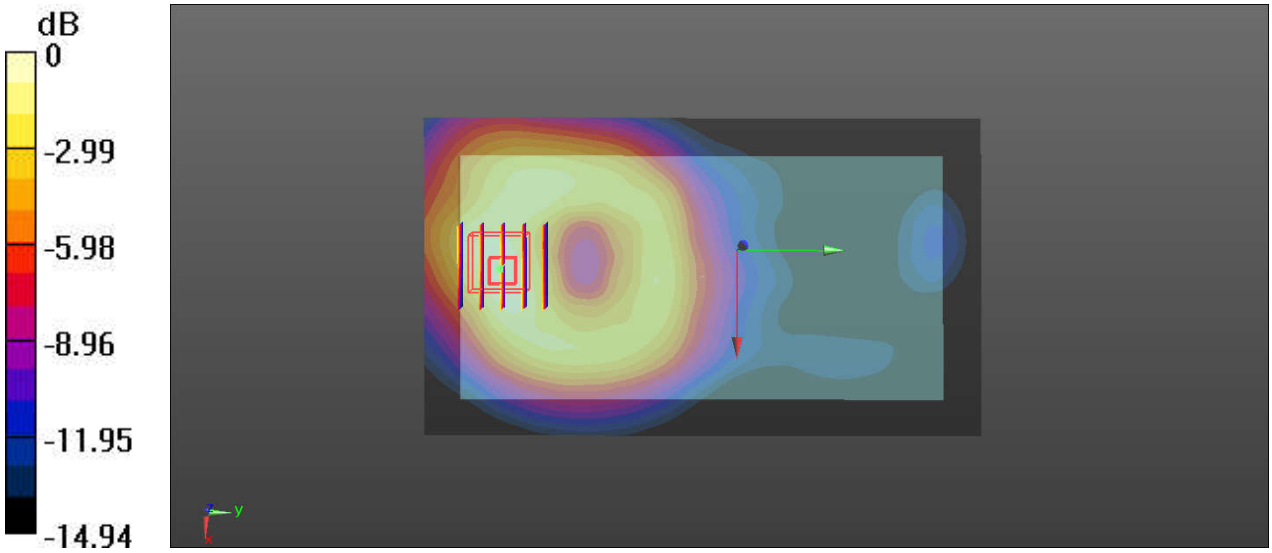
07_LTE Band 2_20M_QPSK_1RB_0Offset_Back_10mm_Ch18700

Communication System: UID 0, LTE (0); Frequency: 1860 MHz;Duty Cycle: 1:1
Medium: MSL_1900_180818 Medium parameters used: f = 1860 MHz; σ = 1.498 S/m; ε_r = 53.615; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(7.69, 7.69, 7.69); Calibrated: 2018.01.31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1437; Calibrated: 2017.09.15
- Phantom: SAM2; Type: QDOVA001BB; Serial: TP:1233
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch18700/Area Scan (81x141x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.16 W/kg

Ch18700/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.672 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 1.42 W/kg
SAR(1 g) = 0.847 W/kg; SAR(10 g) = 0.510 W/kg
Maximum value of SAR (measured) = 1.12 W/kg



0 dB = 1.16 W/kg

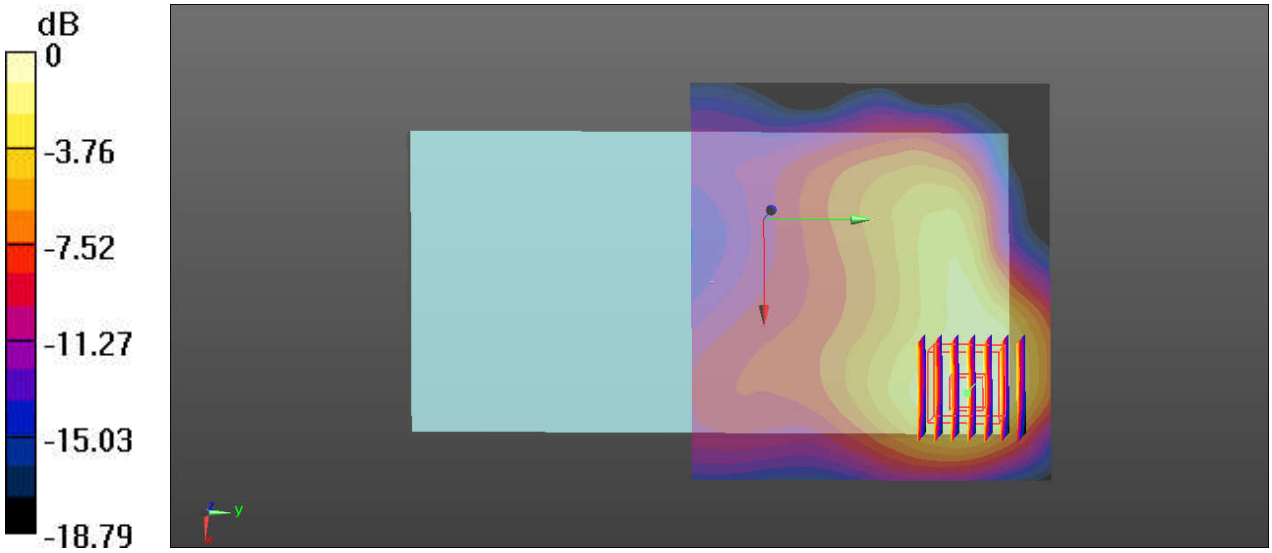
08_WLAN2.4GHz_802.11b 1Mbps_Front_10mm_Ch11

Communication System: UID 0, WIFI (0); Frequency: 2462 MHz;Duty Cycle: 1:1
Medium: MSL_2450_180912 Medium parameters used: f = 2462 MHz; σ = 2.011 S/m; ε_r = 52.249; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(7.46, 7.46, 7.46); Calibrated: 2018.01.31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1437; Calibrated: 2017.09.15
- Phantom: SAM2; Type: QDOVA001BB; Serial: TP:1233
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch11/Area Scan (101x91x1): Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.573 W/kg

Ch11/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.9970 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.651 W/kg
SAR(1 g) = 0.336 W/kg; SAR(10 g) = 0.179 W/kg
Maximum value of SAR (measured) = 0.527 W/kg



0 dB = 0.573 W/kg

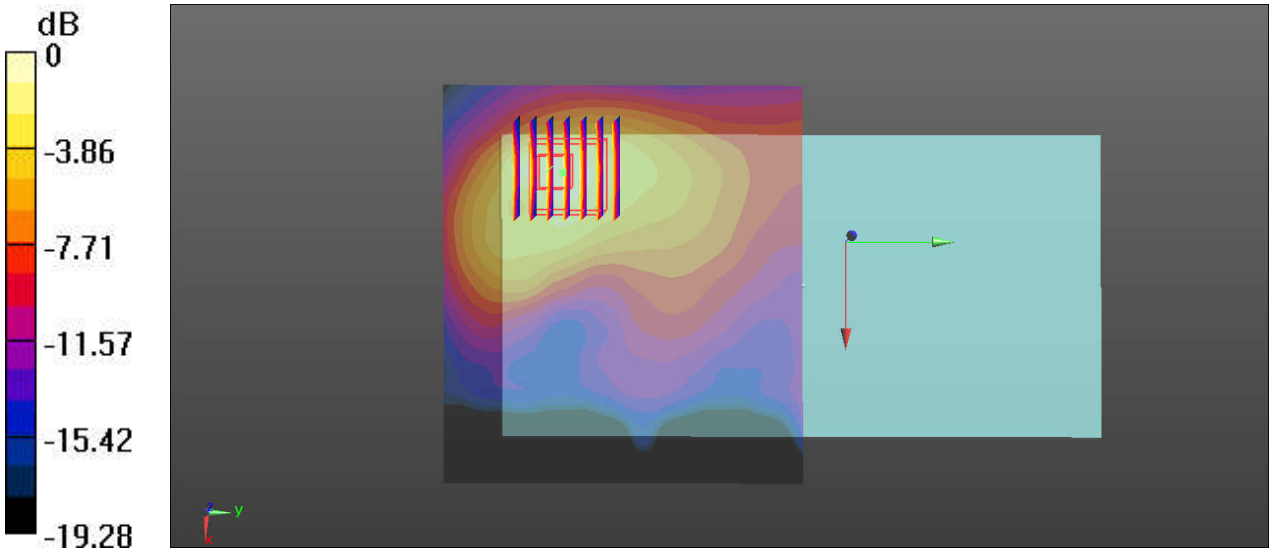
09_WLAN2.4GHz_802.11b 1Mbps_Front_10mm_Ch1

Communication System: UID 0, WIFI (0); Frequency: 2412 MHz;Duty Cycle: 1:1
Medium: MSL_2450_180912 Medium parameters used: f = 2412 MHz; σ = 1.946 S/m; ε_r = 52.484; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(7.46, 7.46, 7.46); Calibrated: 2018.01.31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1437; Calibrated: 2017.09.15
- Phantom: SAM2; Type: QDOVA001BB; Serial: TP:1233
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch1/Area Scan (101x91x1): Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.276 W/kg

Ch1/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.120 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 0.348 W/kg
SAR(1 g) = 0.184 W/kg; SAR(10 g) = 0.095 W/kg
Maximum value of SAR (measured) = 0.287 W/kg



0 dB = 0.276 W/kg

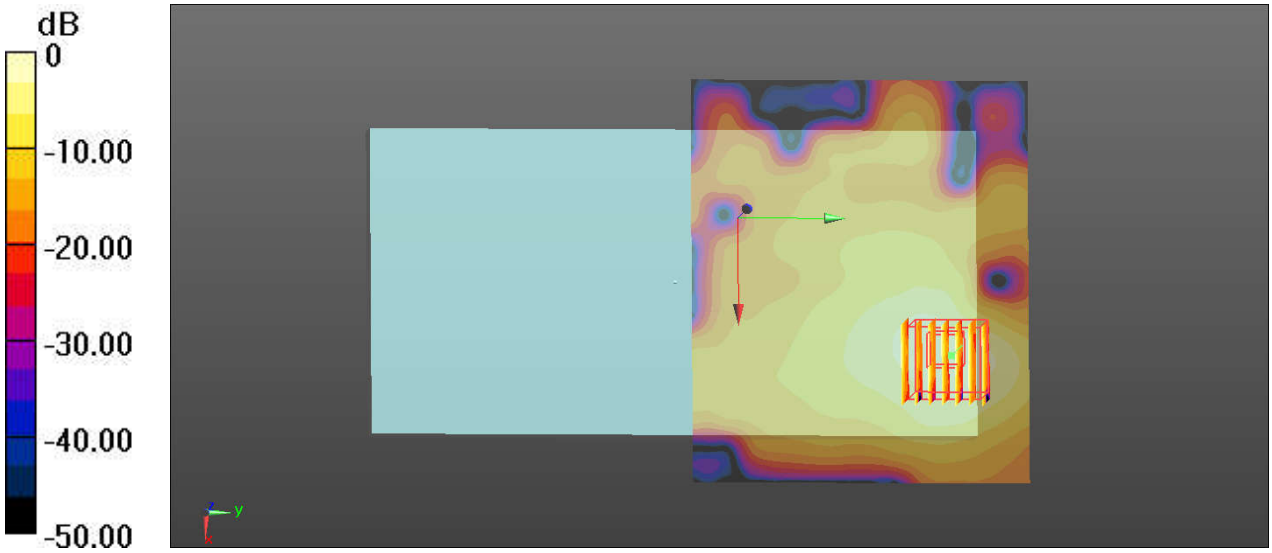
10_WLAN5GHz_802.11a 6Mbps_Front_10mm_Ch52

Communication System: UID 0, WIFI (0); Frequency: 5260 MHz;Duty Cycle: 1:1.013
Medium: MSL_5250_180912 Medium parameters used: f = 5260 MHz; σ = 5.309 S/m; ε_r = 50.918; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(4.7, 4.7, 4.7); Calibrated: 2018.01.31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1437; Calibrated: 2017.09.15
- Phantom: SAM2; Type: QDOVA001BB; Serial: TP:1233
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch52/Area Scan (121x101x1): Interpolated grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.615 W/kg

Ch52/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 0 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 0.981 W/kg
SAR(1 g) = 0.261 W/kg; SAR(10 g) = 0.098 W/kg
Maximum value of SAR (measured) = 0.585 W/kg



0 dB = 0.615 W/kg

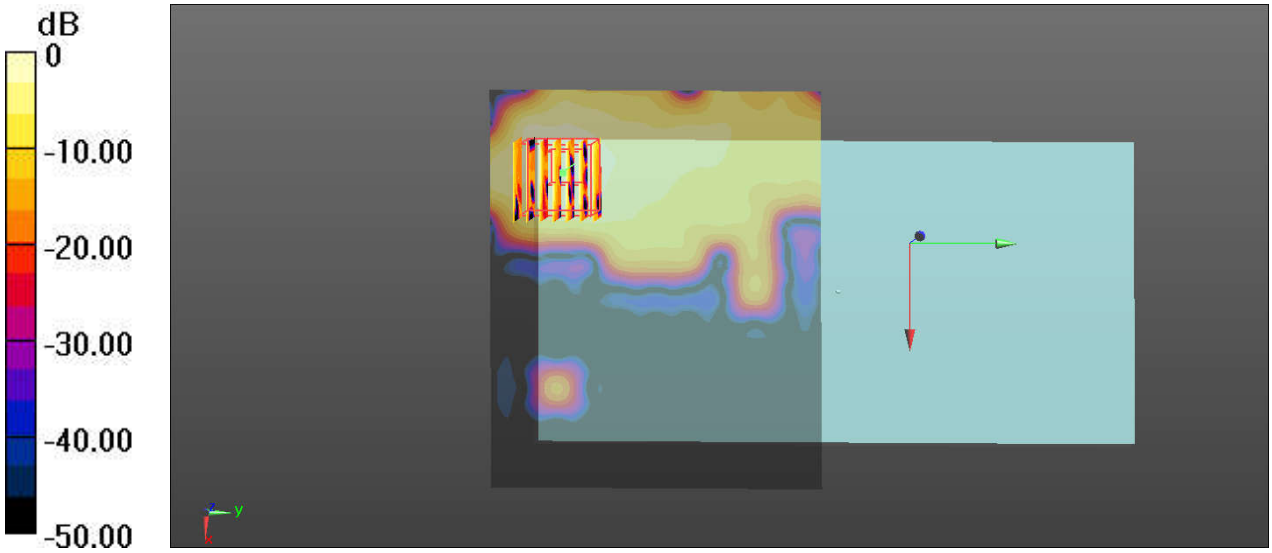
11_WLAN5GHz_802.11a 6Mbps_Front_10mm_Ch60

Communication System: UID 0, WIFI (0); Frequency: 5300 MHz;Duty Cycle: 1:1.008
Medium: MSL_5250_180912 Medium parameters used: f = 5300 MHz; σ = 5.369 S/m; ε_r = 50.868; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(4.7, 4.7, 4.7); Calibrated: 2018.01.31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1437; Calibrated: 2017.09.15
- Phantom: SAM2; Type: QDOVA001BB; Serial: TP:1233
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch60/Area Scan (121x101x1): Interpolated grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.172 W/kg

Ch60/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 1.254 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.283 W/kg
SAR(1 g) = 0.070 W/kg; SAR(10 g) = 0.023 W/kg
Maximum value of SAR (measured) = 0.175 W/kg



0 dB = 0.172 W/kg

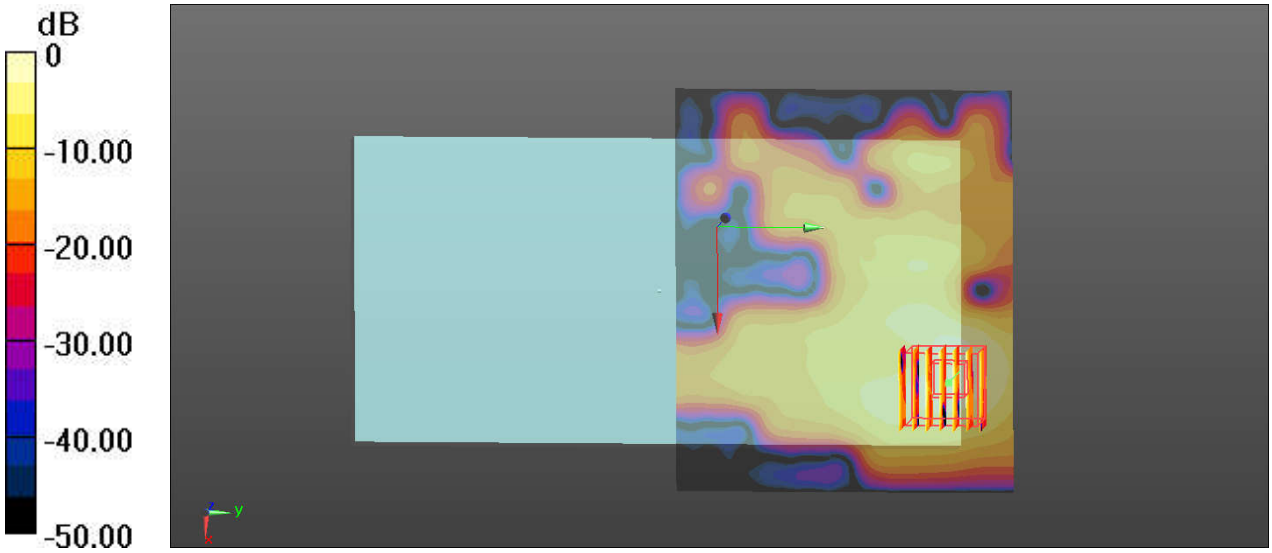
12_WLAN5GHz_802.11a 6Mbps_Front_10mm_Ch116

Communication System: UID 0, WIFI (0); Frequency: 5580 MHz;Duty Cycle: 1:1.013
Medium: MSL_5600_180912 Medium parameters used: f = 5580 MHz; σ = 5.845 S/m; ε_r = 50.313; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：22.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(4.18, 4.18, 4.18); Calibrated: 2018.01.31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1437; Calibrated: 2017.09.15
- Phantom: SAM2; Type: QDOVA001BB; Serial: TP:1233
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch116/Area Scan (121x101x1): Interpolated grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.612 W/kg

Ch116/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 0.8080 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 1.10 W/kg
SAR(1 g) = 0.247 W/kg; SAR(10 g) = 0.076 W/kg
Maximum value of SAR (measured) = 0.596 W/kg



0 dB = 0.596 W/kg

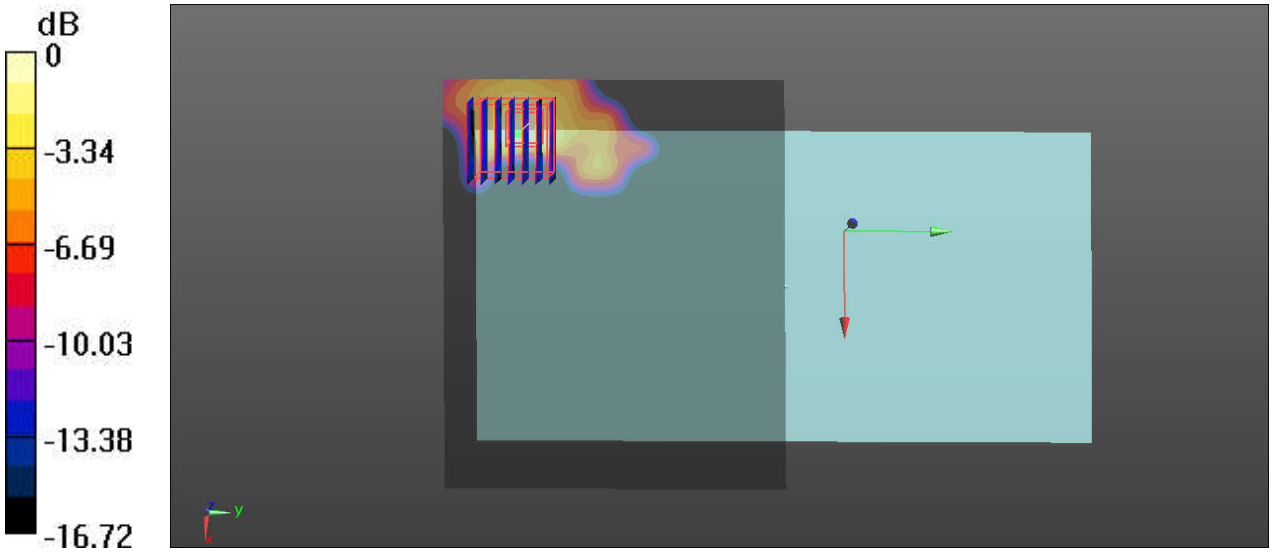
13_WLAN5GHz_802.11a 6Mbps_Front_10mm_Ch100

Communication System: UID 0, WIFI (0); Frequency: 5500 MHz;Duty Cycle: 1:1.008
Medium: MSL_5600_180912 Medium parameters used: f = 5500 MHz; σ = 5.718 S/m; ε_r = 50.529; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：22.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(4.18, 4.18, 4.18); Calibrated: 2018.01.31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1437; Calibrated: 2017.09.15
- Phantom: SAM2; Type: QDOVA001BB; Serial: TP:1233
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch100/Area Scan (121x101x1): Interpolated grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.175 W/kg

Ch100/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 1.738 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.205 W/kg
SAR(1 g) = 0.055 W/kg; SAR(10 g) = 0.020 W/kg
Maximum value of SAR (measured) = 0.130 W/kg



0 dB = 0.175 W/kg

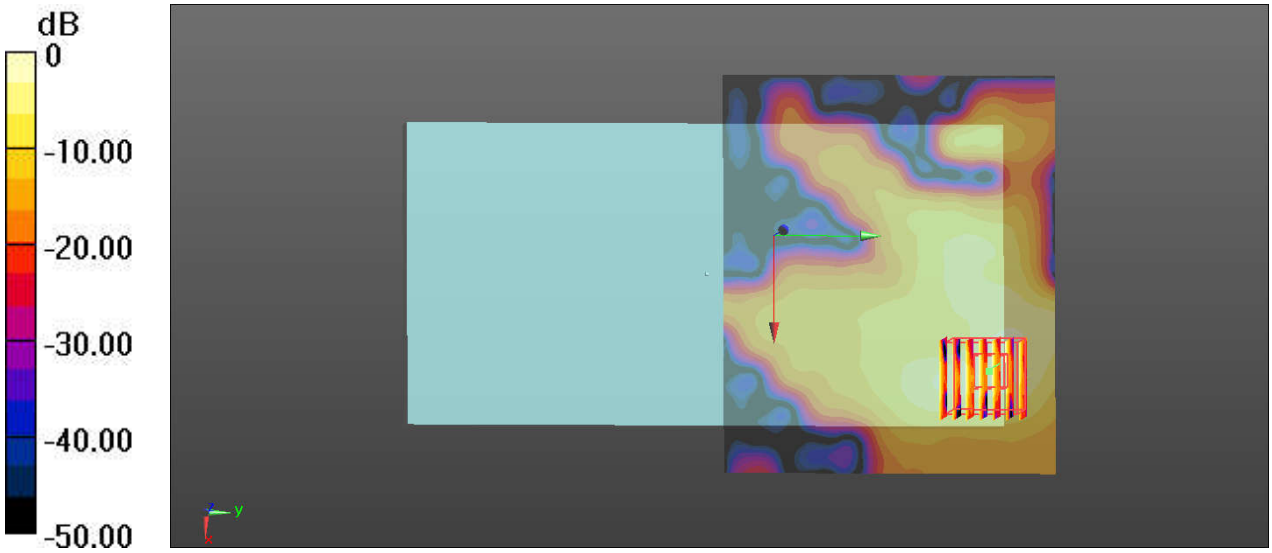
14_WLAN5GHz_802.11a 6Mbps_Front_10mm_Ch149

Communication System: UID 0, WIFI (0); Frequency: 5745 MHz;Duty Cycle: 1:1.013
Medium: MSL_5750_180912 Medium parameters used: f = 5745 MHz; σ = 6.105 S/m; ε_r = 49.947; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(4.32, 4.32, 4.32); Calibrated: 2018.01.31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1437; Calibrated: 2017.09.15
- Phantom: SAM2; Type: QDOVA001BB; Serial: TP:1233
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch149/Area Scan (121x101x1): Interpolated grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.753 W/kg

Ch149/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 0.7860 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 1.36 W/kg
SAR(1 g) = 0.298 W/kg; SAR(10 g) = 0.094 W/kg
Maximum value of SAR (measured) = 0.728 W/kg



0 dB = 0.753 W/kg

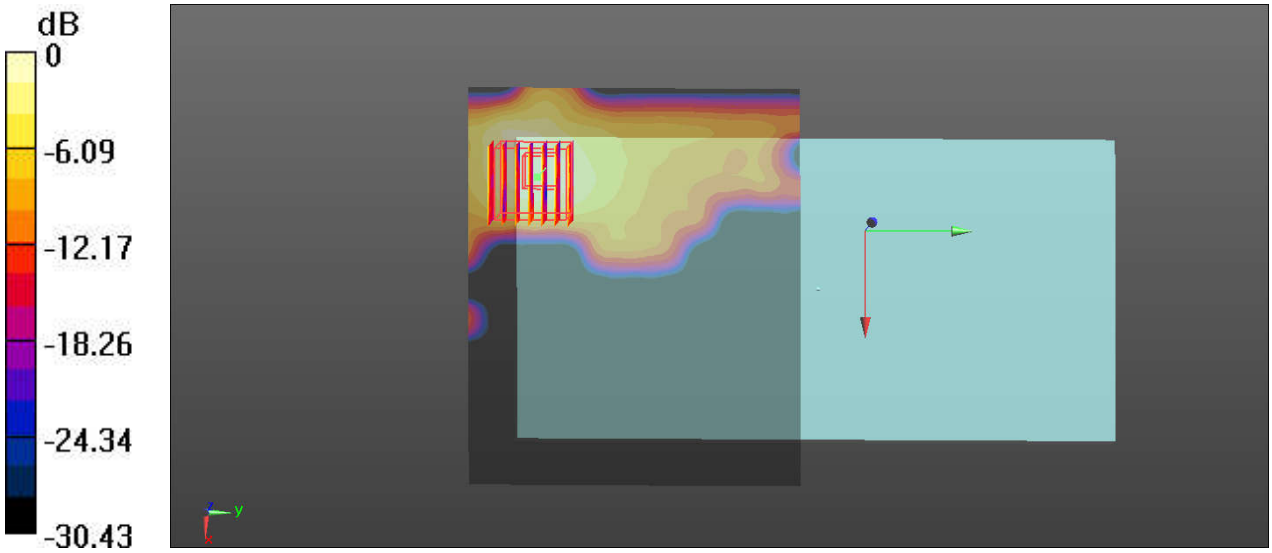
15_WLAN5GHz_802.11a 6Mbps_Front_10mm_Ch149

Communication System: UID 0, WIFI (0); Frequency: 5745 MHz;Duty Cycle: 1:1.008
Medium: MSL_5750_180912 Medium parameters used: f = 5745 MHz; σ = 6.105 S/m; ε_r = 49.947; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(4.32, 4.32, 4.32); Calibrated: 2018.01.31;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1437; Calibrated: 2017.09.15
- Phantom: SAM2; Type: QDOVA001BB; Serial: TP:1233
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch149/Area Scan (121x101x1): Interpolated grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.280 W/kg

Ch149/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 0 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.488 W/kg
SAR(1 g) = 0.119 W/kg; SAR(10 g) = 0.040 W/kg
Maximum value of SAR (measured) = 0.278 W/kg



0 dB = 0.280 W/kg

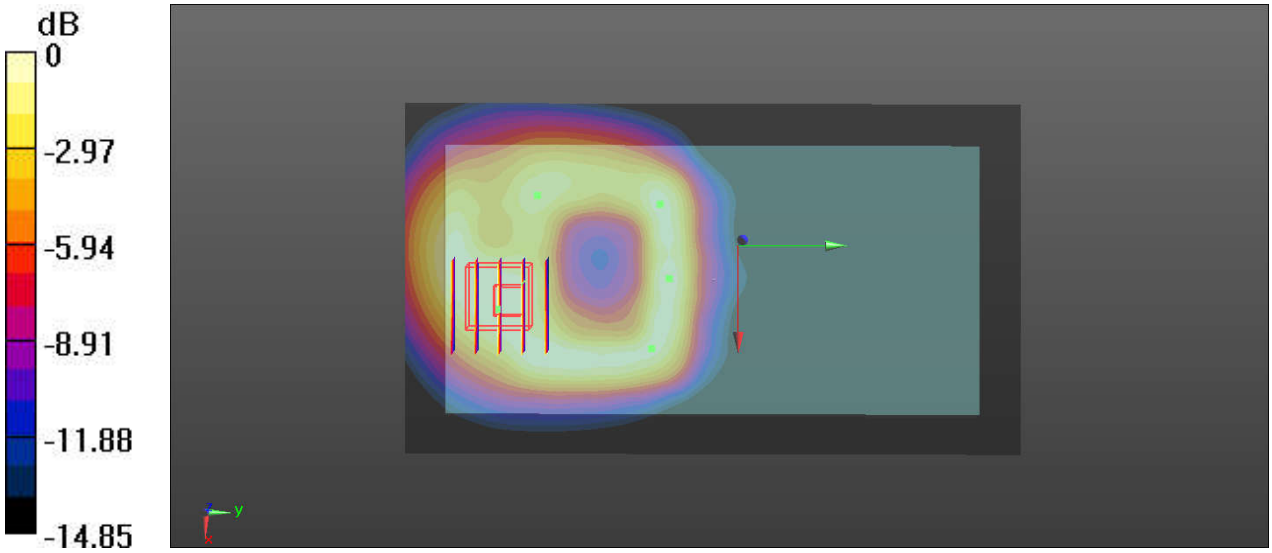
16_WCDMA V_RMC 12.2Kbps_Back_0mm_Ch4182

Communication System: UID 0, UMTS (0); Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium: MSL_835_180824 Medium parameters used: f = 836.4 MHz; σ = 0.979 S/m; ε_r = 54.429; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(9.49, 9.49, 9.49); Calibrated: 2018.01.31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1437; Calibrated: 2017.09.15
- Phantom: SAM2; Type: QDOVA001BB; Serial: TP:1233
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch4182/Area Scan (81x141x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.03 W/kg

Ch4182/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.733 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 3.49 W/kg
SAR(1 g) = 1.74 W/kg; SAR(10 g) = 1.01 W/kg
Maximum value of SAR (measured) = 2.43 W/kg



0 dB = 2.03 W/kg

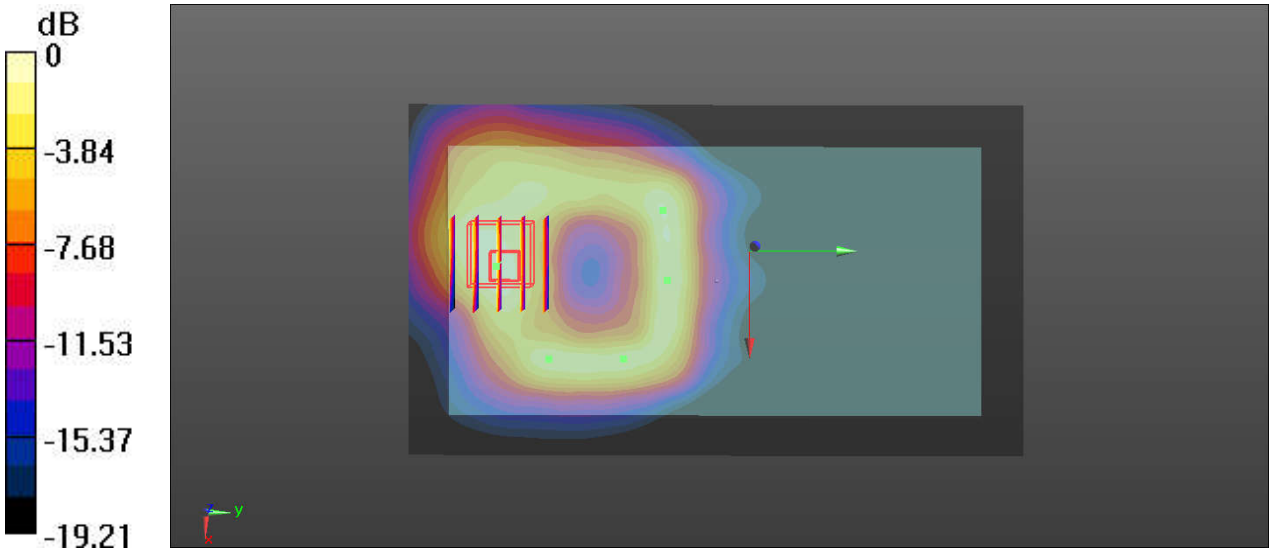
17_WCDMA II_RMC 12.2Kbps_Back_0mm_Ch9262

Communication System: UID 0, UMTS (0); Frequency: 1852.4 MHz;Duty Cycle: 1:1
Medium: MSL_1900_180818 Medium parameters used: f = 1852.4 MHz; σ = 1.49 S/m; ε_r = 53.632; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(7.69, 7.69, 7.69); Calibrated: 2018.01.31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1437; Calibrated: 2017.09.15
- Phantom: SAM2; Type: QDOVA001BB; Serial: TP:1233
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch9262/Area Scan (81x141x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 5.22 W/kg

Ch9262/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 2.167 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 7.47 W/kg
SAR(1 g) = 3.86 W/kg; SAR(10 g) = 2.06 W/kg
Maximum value of SAR (measured) = 5.13 W/kg



0 dB = 5.22 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2018.08.23

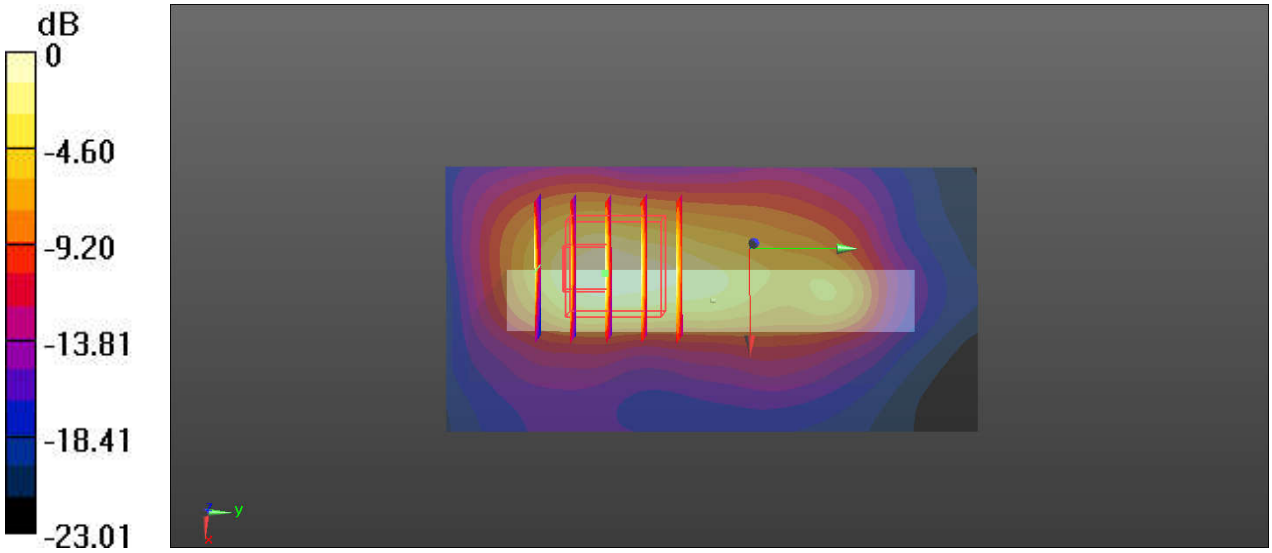
18_LTE Band 12_10M_QPSK_1RB_0Offset_Bottom Side_0mm_Ch23095

Communication System: UID 0, LTE (0); Frequency: 707.5 MHz;Duty Cycle: 1:1
Medium: MSL_750_180823 Medium parameters used: f = 707.5 MHz; σ = 0.931 S/m; ε_r = 54.903; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(9.7, 9.7, 9.7); Calibrated: 2018.01.31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1437; Calibrated: 2017.09.15
- Phantom: SAM2; Type: QDOVA001BB; Serial: TP:1233
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch23095/Area Scan (41x81x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.00 W/kg

Ch23095/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.802 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 10.0 W/kg
SAR(1 g) = 2.03 W/kg; SAR(10 g) = 0.835 W/kg
Maximum value of SAR (measured) = 4.78 W/kg



0 dB = 2.00 W/kg

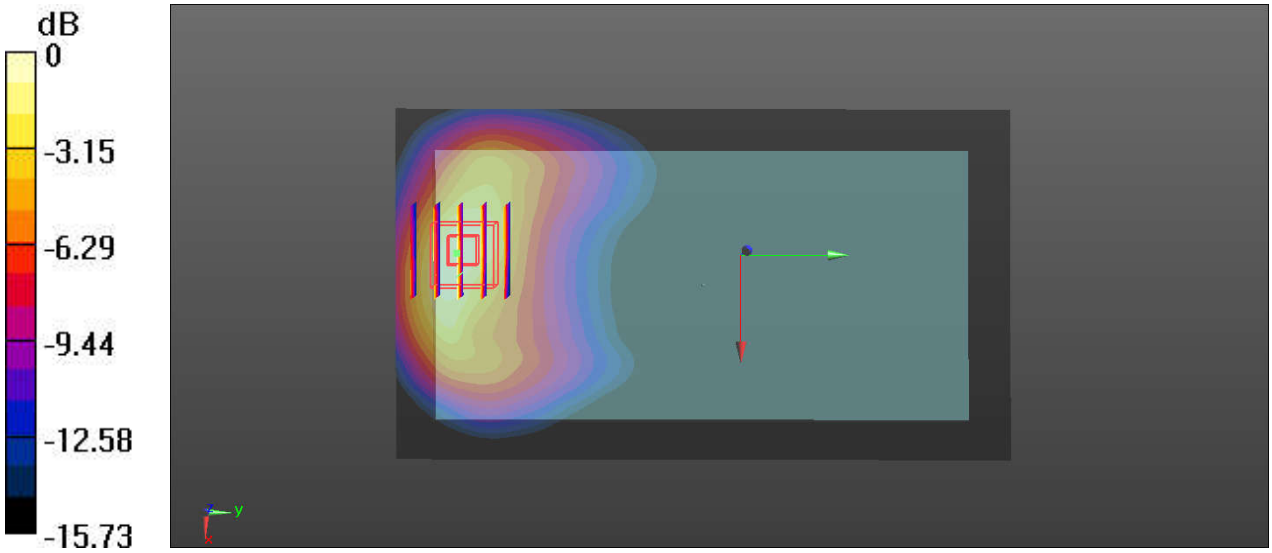
19_LTE Band 13_10M_QPSK_1RB_25Offset_Front_0mm_Ch23230

Communication System: UID 0, LTE (0); Frequency: 782 MHz;Duty Cycle: 1:1
Medium: MSL_750_180823 Medium parameters used: f = 782 MHz; σ = 0.986 S/m; ε_r = 53.239; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(9.7, 9.7, 9.7); Calibrated: 2018.01.31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1437; Calibrated: 2017.09.15
- Phantom: SAM2; Type: QDOVA001BB; Serial: TP:1233
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch23230/Area Scan (81x141x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.37 W/kg

Ch23230/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.318 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 3.69 W/kg
SAR(1 g) = 1.85 W/kg; SAR(10 g) = 1.02 W/kg
Maximum value of SAR (measured) = 2.72 W/kg



0 dB = 2.37 W/kg