FCC SAR Test Report

APPLICANT	:	Elo Touch Solutions, Inc.
EQUIPMENT	:	Handheld wireless data terminal
BRAND NAME	:	ELO or elo
MODEL NAME	:	EMC0550C
FCC ID	:	RBWEMC0550C
STANDARD	:	FCC 47 CFR Part 2 (2.1093)

The product was received on Oct. 19, 2020 and testing was started from Oct. 29, 2020 and completed on Dec. 09, 2020. We, Sporton International (Kunshan) Inc., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

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

Rose Wang

Reviewed by: Rose Wang / Supervisor

Kat Yin

Approved by: Kat Yin / Manager

ilac-MRA A2LA ACCREDITED Cert #5145.02

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

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History of this test report

Report No.	Version	Description	Issued Date
FA072709-01	01	Initial issue of report	Dec. 29, 2020

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **Elo Touch Solutions, Inc., Handheld wireless data terminal, EMC0550C,** are as follows.

Highest 1g SAR Summary				
Equipment Class	Frequency Band		Hotspot (Separation 10mm)	Highest Simultaneous Transmission 1g SAR (W/kg)
Licensed	WCDMA	Band II	0.19	1.09
		Band IV	0.51	
		Band V	0.14	
	LTE	Band 2	0.19	
		Band 4	**0.58**	
		Band 12	<0.10	
		Band 66	0.56	
DTS	WLAN	2.4GHz WLAN	0.24	0.97
NII		5GHz WLAN	0.38	1.09
DSS	Bluetooth	2.4GHz Bluetooth	<0.10	1.09
Highest 10g SAR Summary				
Equipment Class	Frequency Band		Limbs (Separation 0mm)	Highest Simultaneous Transmission 10g SAR (W/kg)
Licensed	WCDMA	Band II	0.55	1.96
		Band IV	1.25	
		Band V	0.39	
	LTE	Band 2	0.55	
		Band 4	**1.35**	
		Band 12	0.23	
		Band 66	1.13	
DTS	WLAN	2.4GHz WLAN	0.43	1.96
NII		5GHz WLAN	0.48	1.89
DSS	Bluetooth	2.4GHz Bluetooth	<0.10	1.80
Date of Testing:			2020/10/29 ~ 2020/12/9	

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

This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg for Partial-Body 1g SAR, 4.0 W/kg for Limbs 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

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

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

Applicant	
Company Name	Elo Touch Solutions, Inc.
Address	670 N. McCarthy Blvd. Suite 100, Milpitas, CA 95035, United States

Manufacturer	
Company Name	Elo Touch Solutions, Inc.
Address	670 N. McCarthy Blvd. Suite 100, Milpitas, CA 95035, United States

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
- FCC KDB 941225 D06 Hotspot Mode SAR v02r01

4. Equipment Under Test (EUT) Information

4.1 General Information

Product Feature & Specification	
Equipment Name	Handheld wireless data terminal
Brand Name	ELO or elo
Model Name	EMC0550C
FCC ID	RBWEMC0550C
IMEI Code	866834041613337
Wireless Technology and Frequency Range	WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz WCDMA Band IV: 1712.4 MHz ~ 1752.6 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 12: 699.7 MHz ~ 715.3 MHz LTE Band 66: 1710.7 MHz ~ 1779.3 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
Mode	RMC 12.2Kbps HSDPA HSUPA DC-HSDPA HSPA+ (16QAM uplink is not supported) LTE: QPSK, 16QAM WLAN 2.4GHz : 802.11b/g/n HT20/HT40 WLAN 5GHz 802.11a/n HT20/HT40 WLAN 5GHz 802.11ac VHT20/VHT40/VHT80//VHT80+VHT80 Bluetooth BR/EDR/LE NFC:ASK
HW Version	A01
SW Version	5.0.120+p
EUT Stage	Production Unit
Remark: 1. This device does not support voice function. 2. This device 2.4GHz WLAN/5.2GHz WLAN/5.8GHz WLAN support hotspot operation, and 5.2GHz WLAN/5.8GHz WLAN supports WiFi Direct (GC/GO), and 5.3GHz / 5.5GHz supports WiFi Direct (GC only).	

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>RBWEMC0550C</td></tr>
<tr><td>Equipment Name</td><td>Handheld wireless data terminal</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 12: 699.7 MHz ~ 715.3 MHz
LTE Band 66: 1710.7 MHz ~ 1779.3 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 12:1.4MHz, 3MHz, 5MHz, 10MHz
LTE Band 66:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz</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 Category Version</td><td>R11 ,Cat 4</td></tr>
<tr><td>CA Support</td><td>Not Supported</td></tr>
<tr><td>LTE MPR permanently built-in by design</td><td>Table 6.2.3E-1: Maximum Power Reduction (MPR) for Power Class 3
<table>
<tr><th rowspan="2">Modulation</th><th colspan="6">Channel bandwidth / Transmission bandwidth (N_{RB})</th><th rowspan="2">MPR (dB)</th></tr>
<tr><th>1.4 MHz</th><th>3.0 MHz</th><th>5 MHz</th><th>10 MHz</th><th>15 MHz</th><th>20 MHz</th></tr>
<tr><td>QPSK</td><td>>2</td><td>>2</td><td>>1</td><td>>4</td><td>-</td><td>-</td><td>≤ 1</td></tr>
<tr><td>QPSK</td><td>>5</td><td>>5</td><td>-</td><td>-</td><td>-</td><td>-</td><td>≤ 2</td></tr>
<tr><td>16 QAM</td><td>≤ 2</td><td>≤ 2</td><td>>1</td><td>>3</td><td>-</td><td>-</td><td>≤ 1</td></tr>
<tr><td>16QAM</td><td>>2</td><td>>2</td><td>>3</td><td>>5</td><td>-</td><td>-</td><td>≤ 2</td></tr>
</table></td></tr>
<tr><td>LTE A-MPR</td><td>In the base station simulator configuration, Network Setting value is set to NS_01 to disable A-MPR during SAR testing and the LTE SAR tests was transmitting on all TTI frames (Maximum TTI)</td></tr>
<tr><td>Spectrum plots for RB configuration</td><td>A properly configured base station simulator was used for the SAR and power measurement; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.</td></tr>
</table>

Transmission (H, M, L) channel numbers and frequencies in each LTE band												
LTE Band 2												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	18607	1850.7	18615	1851.5	18625	1852.5	18650	1855	18675	1857.5	18700	1860
M	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880
H	19193	1909.3	19185	1908.5	19175	1907.5	19150	1905	19125	1902.5	19100	1900
LTE Band 4												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	19957	1710.7	19965	1711.5	19975	1712.5	20000	1715	20025	1717.5	20050	1720
M	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5
H	20393	1754.3	20385	1753.5	20375	1752.5	20350	1750	20325	1747.5	20300	1745
LTE Band 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 66												
	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	131979	1710.7	131987	1711.5	131997	1712.5	132022	1715	132047	1717.5	132072	1720
M	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745
H	132665	1779.3	132657	1778.5	132647	1777.5	132622	1775	132597	1772.5	132572	1770

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:

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

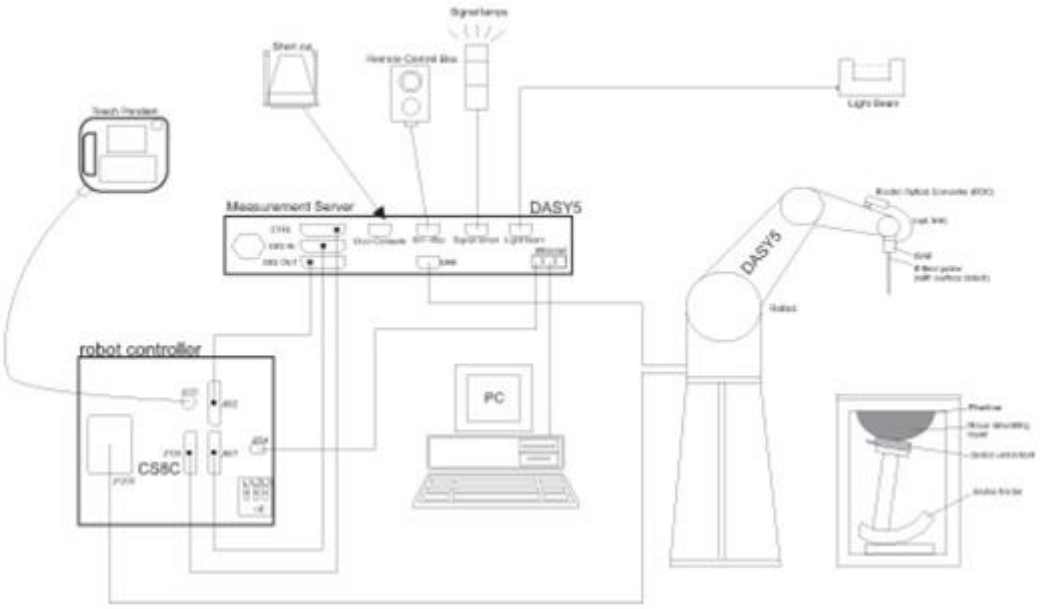
SAR is expressed in units of Watts per kilogram (W/kg)

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

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.

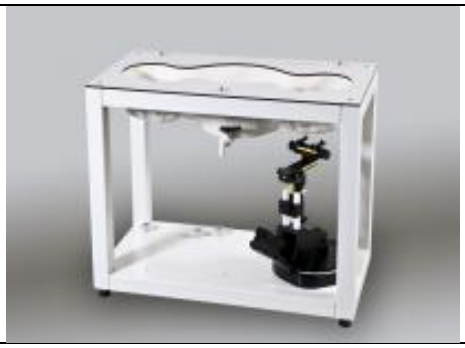
The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

Photo of DAE

7.3 Phantom

<SAM Twin Phantom>

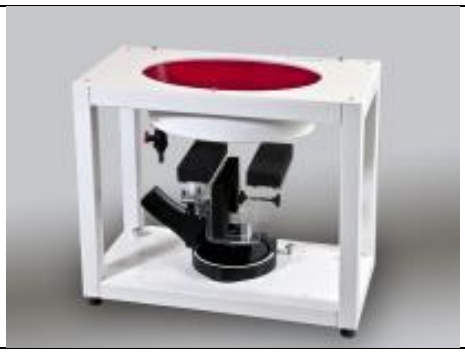
Shell Thickness	2 ± 0.2 mm; Center ear point: 6 ± 0.2 mm
Filling Volume	Approx. 25 liters
Dimensions	Length: 1000 mm; Width: 500 mm; Height: adjustable feet
Measurement Areas	Left Hand, Right Hand, Flat Phantom



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	1087	2019/3/27	2022/3/26
SPEAG	835MHz System Validation Kit	D835V2	4d151	2019/3/27	2022/3/26
SPEAG	1750MHz System Validation Kit	D1750V2	1090	2019/3/27	2022/3/26
SPEAG	1900MHz System Validation Kit	D1900V2	5d170	2019/3/26	2022/3/25
SPEAG	2450MHz System Validation Kit	D2450V2	908	2019/3/25	2022/3/24
SPEAG	5000MHz System Validation Kit	D5GHzV2	1128	2019/12/16	2020/12/15
SPEAG	Data Acquisition Electronics	DAE4	656	2019/12/17	2020/12/16
SPEAG	Dosimetric E-Field Probe	EX3DV4	3843	2020/9/23	2021/9/22
SPEAG	SAM Twin Phantom	QD 000 P40 CB	TP-1753	NCR	NCR
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
Anritsu	Radio Communication Analyzer	MT8821C	6201432831	2020/4/14	2021/4/13
Agilent	Wireless Communication Test Set	E5515C	MY52102706	2020/5/19	2021/5/18
Agilent	ENA Series Network Analyzer	E5071C	MY46106933	2020/8/1	2021/7/31
SPEAG	Dielectric Probe Kit	DAK-3.5	1138	2020/5/19	2021/5/18
Anritsu	Vector Signal Generator	MG3710A	6201682672	2020/1/8	2021/1/7
Rohde & Schwarz	Power Meter	NRVD	102081	2020/8/13	2021/8/12
Rohde & Schwarz	Power Sensor	NRV-Z5	100538	2020/8/13	2021/8/12
Rohde & Schwarz	Power Sensor	NRV-Z5	100539	2020/8/13	2021/8/12
R&S	CBT BLUETOOTH TESTER	CBT	101246	2020/4/14	2021/4/13
EXA	Spectrum Analyzer	FSV7	101631	2020/1/8	2021/1/7
Testo	Hygrometer	608-H1	1241332088	2020/1/8	2021/1/7
FLUKE	DIGITAC THERMOMETER	51II	97240029	2020/8/14	2021/8/13
ARRA	Power Divider	A3200-2	N/A	Note 1	
MCL	Attenuation1	BW-S10W5+	N/A	Note 1	
MCL	Attenuation2	BW-S10W5+	N/A	Note 1	
MCL	Attenuation3	BW-S10W5+	N/A	Note 1	
Agilent	Dual Directional Coupler	778D	20500	Note 1	
Agilent	Dual Directional Coupler	11691D	MY48151020	Note 1	
BONN	POWER AMPLIFIER	BLMA 0830-3	087193A	Note 1	
BONN	POWER AMPLIFIER	BLMA 2060-2	087193B	Note 1	

Note:

1. Prior to system verification and validation, the path loss from the signal generator to the system check source and the power meter, which includes the amplifier, cable, attenuator and directional coupler, was measured by the network analyzer. The reading of the power meter was offset by the path loss difference between the path to the power meter and the path to the system check source to monitor the actual power level fed to the system check source.
2. Referring to KDB 865664 D01v01r04, the dipole calibration interval can be extended to 3 years with justification. The dipoles are also not physically damaged, or repaired during the interval.
3. The justification data of dipole can be found in appendix C. The return loss is < -20dB, within 20% of prior calibration, the impedance is within 5 ohm of prior calibration.

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.

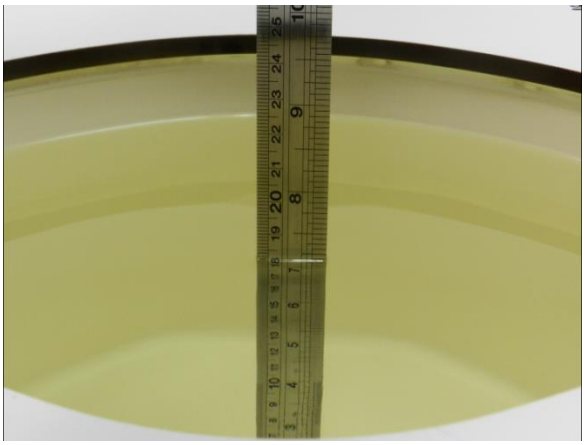


Fig 10.1 Photo of Liquid Height for Body SAR

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 Head								
750	41.1	57.0	0.2	1.4	0.2	0	0.89	41.9
835	40.3	57.9	0.2	1.4	0.2	0	0.90	41.5
1800, 1900, 2000	55.2	0	0	0.3	0	44.5	1.40	40.0
2450	55.0	0	0	0	0	45.0	1.80	39.2

Simulating Liquid for 5GHz, Manufactured by SPEAG

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

<Tissue Dielectric Parameter Check Results>

Frequency (MHz)	Tissue Type	Liquid Temp. (℃)	Conductivity (σ)	Permittivity (ε_r)	Conductivity Target (σ)	Permittivity Target (ε_r)	Delta (σ) (%)	Delta (ε_r) (%)	Limit (%)	Date
750	Head	22.8	0.904	42.287	0.89	41.90	1.57	0.92	±5	2020/10/29
835	Head	22.7	0.896	41.115	0.90	41.50	-0.44	-0.93	±5	2020/10/31
1750	Head	22.6	1.365	40.507	1.37	40.10	-0.36	1.01	±5	2020/10/30
1900	Head	22.9	1.373	39.730	1.40	40.00	-1.93	-0.68	±5	2020/10/30
2450	Head	22.6	1.885	40.793	1.80	39.20	4.72	4.06	±5	2020/12/2
5250	Head	22.8	4.734	35.989	4.71	35.90	0.51	0.25	±5	2020/12/4
5600	Head	22.7	5.161	35.332	5.07	35.50	1.79	-0.47	±5	2020/12/7
5750	Head	22.6	5.331	35.060	5.22	35.40	2.13	-0.96	±5	2020/12/9

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 (%)
2020/10/29	750	Head	250	1087	3843	656	2.17	8.36	8.68	3.83
2020/10/31	835	Head	250	4d151	3843	656	2.36	9.30	9.44	1.51
2020/10/30	1750	Head	250	1090	3843	656	9.57	36.40	38.28	5.16
2020/10/30	1900	Head	250	5d170	3843	656	9.52	39.00	38.08	-2.36
2020/12/2	2450	Head	250	908	3843	656	13.80	52.80	55.2	4.55
2020/12/4	5250	Head	100	1128	3843	656	8.21	80.00	82.1	2.63
2020/12/7	5600	Head	100	1128	3843	656	8.15	82.40	81.5	-1.09
2020/12/9	5750	Head	100	1128	3843	656	8.30	79.10	83	4.93

<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 (%)
2020/10/29	750	Head	250	1087	3843	656	1.43	5.65	5.72	1.24
2020/10/31	835	Head	250	4d151	3843	656	1.52	6.16	6.08	-1.30
2020/10/30	1750	Head	250	1090	3843	656	5.08	19.20	20.32	5.83
2020/10/30	1900	Head	250	5d170	3843	656	4.91	20.30	19.64	-3.25
2020/12/2	2450	Head	250	908	3843	656	6.53	24.20	26.12	7.93
2020/12/4	5250	Head	100	1128	3843	656	2.25	22.90	22.5	-1.75
2020/12/7	5600	Head	100	1128	3843	656	2.18	23.60	21.8	-7.63
2020/12/9	5750	Head	100	1128	3843	656	2.28	22.60	22.8	0.88

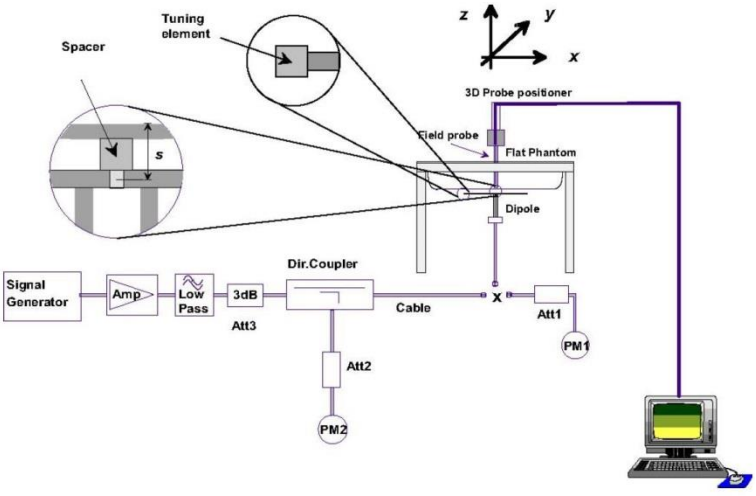


Fig 10.3.1 System Performance Check Setup

Fig 10.3.2 Setup Photo

11. RF Exposure Positions

11.1 Wireless Router

Some battery-operated handsets have the capability to transmit and receive user through simultaneous transmission of WIFI simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC KDB Publication 941225 D06 v02r01 where SAR test considerations for handsets (L x W ≥ 9 cm x 5 cm) are based on a composite test separation distance of 10mm from the front, back and edges of the device containing transmitting antennas within 2.5cm of their edges, determined form general mixed use conditions for this type of devices. Since the hotspot SAR results may overlap with the body-worn accessory SAR requirements, the more conservative configurations can be considered, thus excluding some body-worn accessory SAR tests.

When the user enables the personal wireless router functions for the handset, actual operations include simultaneous transmission of both the WIFI transmitter and another licensed transmitter. Both transmitters often do not transmit at the same transmitting frequency and thus cannot be evaluated for SAR under actual use conditions due to the limitations of the SAR assessment probes. Therefore, SAR must be evaluated for each frequency transmission and mode separately and spatially summed with the WIFI transmitter according to FCC KDB Publication 447498 D01v06 publication procedures. The “Portable Hotspot” feature on the handset was NOT activated during SAR assessments, to ensure the SAR measurements were evaluated for a single transmission frequency RF signal at a time.

11.2 SAR Testing for Device

(a) To position the device parallel to the phantom surface with all surfaces of the device.

(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.

Please refer to Appendix D for the test setup photos.

12. UMTS/LTE Output Power (Unit: dBm)

The detailed conducted power table can refer to Appendix E.

<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.
3. For DC-HSDPA, the device was configured according to the H-Set 12, Fixed Reference Channel (FRC) configuration in Table C.8.1.12 of 3GPP TS 34.121-1, with the primary and the secondary serving HS-DSCH Cell enabled during the power measurement.

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

DC-HSDPA 3GPP release 8 Setup Configuration:

a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration below
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 RMC 12.2Kbps + HSDPA mode.
   ii. Set Cell Power = -25 dBm
   iii. Set HS-DSCH Configuration Type to FRC (H-set 12, QPSK)
   iv. Select HSDPA Uplink Parameters
   v. Set Gain Factors (β_c and β_d) and parameters were set according to each Specific sub-test in the following table, C10.1.4, quoted from the TS 34.121
      a). Subtest 1: β_c/β_d=2/15
      b). Subtest 2: β_c/β_d=12/15
      c). Subtest 3: β_c/β_d=15/8
      d). Subtest 4: β_c/β_d=15/4
   vi. Set Delta ACK, Delta NACK and Delta CQI = 8
   vii. Set Ack-Nack Repetition Factor to 3
   viii. Set CQI Feedback Cycle (k) to 4 ms
   ix. Set CQI Repetition Factor to 2
   x. Power Ctrl Mode = All Up bits
d. The transmitted maximum output power was recorded.

The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification.
A summary of these settings are illustrated below:

C.8.1.12 Fixed Reference Channel Definition H-Set 12

Table C.8.1.12: Fixed Reference Channel H-Set 12

Parameter	Unit	Value
Nominal Avg. Inf. Bit Rate	kbps	60
Inter-TTI Distance	TTI's	1
Number of HARQ Processes	Proces ses	6
Information Bit Payload (N_{INF})	Bits	120
Number Code Blocks	Blocks	1
Binary Channel Bits Per TTI	Bits	960
Total Available SML's in UE	SML's	19200
Number of SML's per HARQ Proc.	SML's	3200
Coding Rate		0.15
Number of Physical Channel Codes	Codes	1
Modulation		QPSK
Note 1: The RMC is intended to be used for DC-HSDPA mode and both cells shall transmit with identical parameters as listed in the table.		
Note 2: Maximum number of transmission is limited to 1, i.e., retransmission is not allowed. The redundancy and constellation version 0 shall be used.		

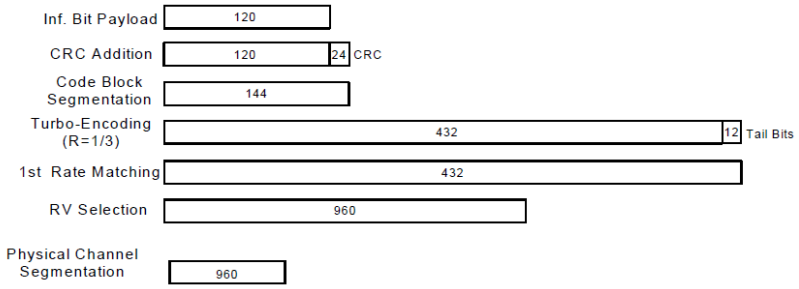


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

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 / DC-HSDPA 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 / DC-HSDPA to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA, and according to the following RF output power, the output power results of the secondary modes (HSDPA / HSUPA / DC-HSDPA) are less than ¼ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA.

<LTE Conducted Power>

General Note:

1. Anritsu MT8820C base station simulator was used to setup the connection with EUT; the frequency band, channel bandwidth, RB allocation configuration, modulation type are set in the base station simulator to configure EUT transmitting at maximum power and at different configurations which are requested to be reported to FCC, for conducted power measurement and SAR testing.
2. Per KDB 941225 D05v02r05, when a properly configured base station simulator is used for the SAR and power measurements, spectrum plots for each RB allocation and offset configuration is not required.
3. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
4. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05v02r05, for QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
6. Per KDB 941225 D05v02r05, 16QAM output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM SAR testing is not required.
7. Per KDB 941225 D05v02r05, smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
8. For LTE B4 / 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.

13. WiFi/Bluetooth Output Power (Unit: dBm)

<WLAN Conducted Power>

General Note:

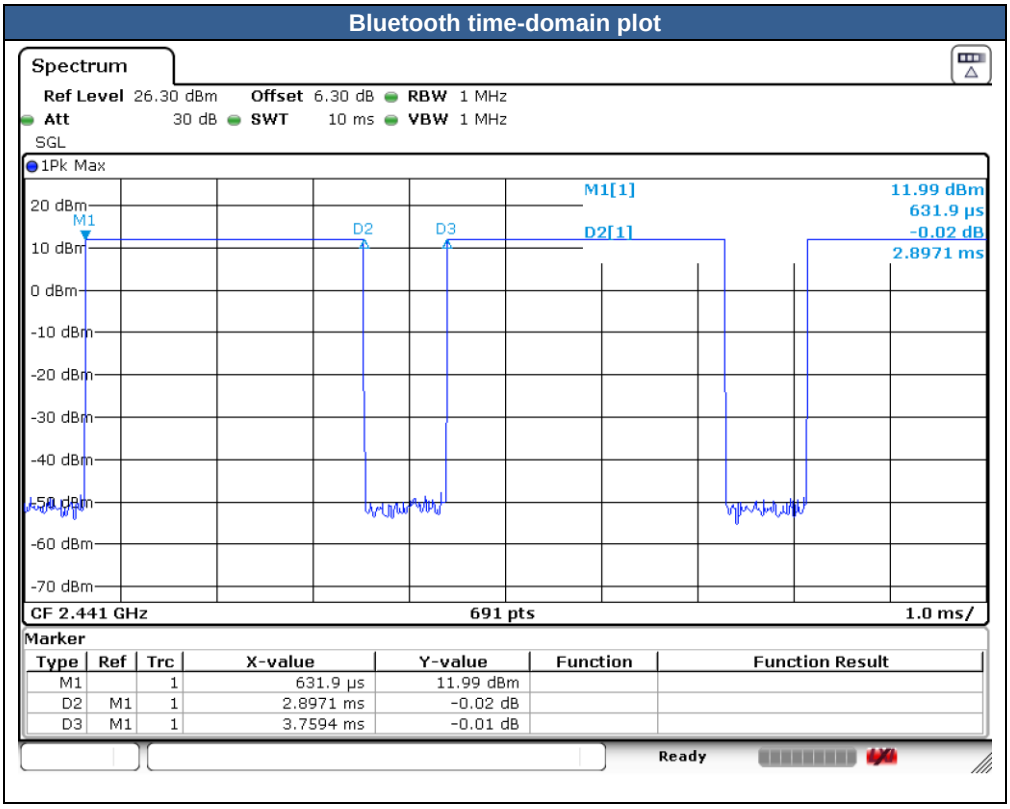
1. The reported TX power in EMC report is per actual shipping power setting and measured in this unit, the power set for SAR test is included the tune-up tolerance which is considered as worst case.
2. For the conducted power measurement is MIMO chains transmitting simultaneously and measured the separately conducted power for both chains and then based on the conducted power of antenna 1 and antenna 2 respectively to calculate sum of the power for MIMO mode.
3. 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.
4. 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).
5. 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.
6. 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 Bluetooth>

General Note:

1. For 2.4GHz Bluetooth SAR testing was selected 1Mbps, due to its highest average power.
2. The Bluetooth duty cycle is 77.06 % as following figure, according to 2016 Oct. TCB workshop for Bluetooth SAR scaling need further consideration and the theoretical duty cycle is 100%, therefore the actual duty cycle will be scaled up to the theoretical value of Bluetooth reported SAR calculation

Bluetooth time-domain plot



14. Antenna Location

The detailed antenna location information can refer to SAR Test Setup Photos.

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/Bluetooth: 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 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.
4. Based on WLAN2.4GHz and Bluetooth share the same antenna1, so Bluetooth RF exposure evaluation chose the worst positon of WLAN 2.4GHz Ant 1 to perform Bluetooth SAR test, and used this Bluetooth SAR value conservatively represent other position do co-located analysis with WWAN.
5. While 1-g SAR thresholds are specified in the procedures for SAR test reduction and exclusion, these thresholds should be multiplied by 2.5 when 10-g extremity SAR is considered.

UMTS 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 / DC-HSDPA 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 / DC-HSDPA to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA, and according to the following RF output power, the output power results of the secondary modes (HSUPA, HSDPA, DC-HSDPA) are less than ¼ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA.

LTE Note:

1. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
2. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
3. Per KDB 941225 D05v02r05, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
4. Per KDB 941225 D05v02r05, 16QAM output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM SAR testing is not required.
5. Per KDB 941225 D05v02r05, Smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
6. For LTE B4 / 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. During SAR testing the WLAN transmission was verified using a spectrum analyzer.
6. While 1-g SAR thresholds are specified in the procedures for SAR test reduction and exclusion, these thresholds should be multiplied by 2.5 when 10-g extremity SAR is considered.

15.1 Hotspot 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 II	RMC 12.2Kbps	Front	10mm	9400	1880	22.57	24.00	1.390	0.08	0.106	0.147
	WCDMA II	RMC 12.2Kbps	Back	10mm	9400	1880	22.57	24.00	1.390	-0.01	0.127	0.177
	WCDMA II	RMC 12.2Kbps	Left Side	10mm	9400	1880	22.57	24.00	1.390	-0.06	0.109	0.152
	WCDMA II	RMC 12.2Kbps	Right Side	10mm	9400	1880	22.57	24.00	1.390	-0.05	0.003	0.004
	WCDMA II	RMC 12.2Kbps	Bottom Side	10mm	9400	1880	22.57	24.00	1.390	0.07	0.049	0.068
01	WCDMA II	RMC 12.2Kbps	Back	10mm	9262	1852.4	22.42	24.00	1.439	-0.19	0.133	**0.191**
	WCDMA II	RMC 12.2Kbps	Back	10mm	9538	1907.6	22.56	24.00	1.393	0.08	0.098	0.137
02	WCDMA IV	RMC 12.2Kbps	Front	10mm	1413	1732.6	22.65	24.00	1.365	-0.07	0.371	**0.506**
	WCDMA IV	RMC 12.2Kbps	Back	10mm	1413	1732.6	22.65	24.00	1.365	0.13	0.317	0.433
	WCDMA IV	RMC 12.2Kbps	Left Side	10mm	1413	1732.6	22.65	24.00	1.365	0.13	0.316	0.431
	WCDMA IV	RMC 12.2Kbps	Right Side	10mm	1413	1732.6	22.65	24.00	1.365	0.08	0.086	0.117
	WCDMA IV	RMC 12.2Kbps	Bottom Side	10mm	1413	1732.6	22.65	24.00	1.365	0.02	0.264	0.360
	WCDMA IV	RMC 12.2Kbps	Front	10mm	1312	1712.4	22.57	24.00	1.390	0.04	0.340	0.473
	WCDMA IV	RMC 12.2Kbps	Front	10mm	1513	1752.6	22.60	24.00	1.380	0.02	0.298	0.411
	WCDMA V	RMC 12.2Kbps	Front	10mm	4182	836.4	22.82	24.00	1.312	0.06	0.091	0.119
03	WCDMA V	RMC 12.2Kbps	Back	10mm	4182	836.4	22.82	24.00	1.312	0.06	0.104	**0.136**
	WCDMA V	RMC 12.2Kbps	Left Side	10mm	4182	836.4	22.82	24.00	1.312	0.08	0.081	0.106
	WCDMA V	RMC 12.2Kbps	Right Side	10mm	4182	836.4	22.82	24.00	1.312	0.01	0.087	0.114
	WCDMA V	RMC 12.2Kbps	Bottom Side	10mm	4182	836.4	22.82	24.00	1.312	0.11	0.081	0.106
	WCDMA V	RMC 12.2Kbps	Back	10mm	4132	826.4	22.79	24.00	1.321	0.06	0.091	0.120
	WCDMA V	RMC 12.2Kbps	Back	10mm	4233	846.6	22.75	24.00	1.334	0.02	0.094	0.125

<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 2	20M	QPSK	1	0	Front	10mm	18900	1880	23.01	24.00	1.256	-0.05	0.120	0.151
	LTE Band 2	20M	QPSK	50	0	Front	10mm	18900	1880	21.96	23.00	1.271	0.06	0.091	0.116
	LTE Band 2	20M	QPSK	1	0	Back	10mm	18900	1880	23.01	24.00	1.256	0.04	0.126	0.158
	LTE Band 2	20M	QPSK	50	0	Back	10mm	18900	1880	21.96	23.00	1.271	-0.05	0.100	0.127
	LTE Band 2	20M	QPSK	1	0	Left Side	10mm	18900	1880	23.01	24.00	1.256	0.1	0.117	0.147
	LTE Band 2	20M	QPSK	50	0	Left Side	10mm	18900	1880	21.96	23.00	1.271	0.04	0.089	0.113
	LTE Band 2	20M	QPSK	1	0	Right Side	10mm	18900	1880	23.01	24.00	1.256	0.06	0.003	0.004
	LTE Band 2	20M	QPSK	50	0	Right Side	10mm	18900	1880	21.96	23.00	1.271	-0.16	0.002	0.003
	LTE Band 2	20M	QPSK	1	0	Bottom Side	10mm	18900	1880	23.01	24.00	1.256	0.05	0.063	0.079
	LTE Band 2	20M	QPSK	50	0	Bottom Side	10mm	18900	1880	21.96	23.00	1.271	0.06	0.047	0.060
04	LTE Band 2	20M	QPSK	1	0	Back	10mm	18700	1860	22.93	24.00	1.279	-0.04	0.145	**0.186**
	LTE Band 2	20M	QPSK	1	0	Back	10mm	19100	1900	22.77	24.00	1.327	0.04	0.120	0.159
05	LTE Band 4	20M	QPSK	1	0	Front	10mm	20175	1732.5	23.04	24.00	1.247	-0.04	0.463	**0.578**
	LTE Band 4	20M	QPSK	50	0	Front	10mm	20175	1732.5	22.16	23.00	1.213	0.06	0.353	0.428
	LTE Band 4	20M	QPSK	1	0	Back	10mm	20175	1732.5	23.04	24.00	1.247	0.05	0.448	0.559
	LTE Band 4	20M	QPSK	50	0	Back	10mm	20175	1732.5	22.16	23.00	1.213	-0.06	0.341	0.414
	LTE Band 4	20M	QPSK	1	0	Left Side	10mm	20175	1732.5	23.04	24.00	1.247	0.01	0.400	0.499
	LTE Band 4	20M	QPSK	50	0	Left Side	10mm	20175	1732.5	22.16	23.00	1.213	0.06	0.312	0.379
	LTE Band 4	20M	QPSK	1	0	Right Side	10mm	20175	1732.5	23.04	24.00	1.247	0.08	0.107	0.133
	LTE Band 4	20M	QPSK	50	0	Right Side	10mm	20175	1732.5	22.16	23.00	1.213	0.07	0.081	0.098
	LTE Band 4	20M	QPSK	1	0	Bottom Side	10mm	20175	1732.5	23.04	24.00	1.247	0.09	0.356	0.444
	LTE Band 4	20M	QPSK	50	0	Bottom Side	10mm	20175	1732.5	22.16	23.00	1.213	0.11	0.273	0.331
	LTE Band 12	10M	QPSK	1	0	Front	10mm	23095	707.5	23.49	24.00	1.125	0.06	0.006	0.007
	LTE Band 12	10M	QPSK	25	0	Front	10mm	23095	707.5	22.69	23.00	1.074	0.04	0.007	0.008
	LTE Band 12	10M	QPSK	1	0	Back	10mm	23095	707.5	23.49	24.00	1.125	0.02	0.022	0.025
06	LTE Band 12	10M	QPSK	25	0	Back	10mm	23095	707.5	22.69	23.00	1.074	-0.1	0.024	**0.026**
	LTE Band 12	10M	QPSK	1	0	Left Side	10mm	23095	707.5	23.49	24.00	1.125	0.06	0.002	0.002
	LTE Band 12	10M	QPSK	25	0	Left Side	10mm	23095	707.5	22.69	23.00	1.074	0.04	0.002	0.002
	LTE Band 12	10M	QPSK	1	0	Right Side	10mm	23095	707.5	23.49	24.00	1.125	-0.01	0.001	0.001
	LTE Band 12	10M	QPSK	25	0	Right Side	10mm	23095	707.5	22.69	23.00	1.074	0.05	0.001	0.001
	LTE Band 12	10M	QPSK	1	0	Bottom Side	10mm	23095	707.5	23.49	24.00	1.125	0.02	0.009	0.010
	LTE Band 12	10M	QPSK	25	0	Bottom Side	10mm	23095	707.5	22.69	23.00	1.074	0.02	0.009	0.010
07	LTE Band 66	20M	QPSK	1	0	Front	10mm	132322	1745	23.06	24.00	1.242	0.1	0.454	**0.564**
	LTE Band 66	20M	QPSK	50	0	Front	10mm	132322	1745	22.24	23.00	1.191	0.01	0.353	0.421
	LTE Band 66	20M	QPSK	1	0	Back	10mm	132322	1745	23.06	24.00	1.242	0.07	0.198	0.246
	LTE Band 66	20M	QPSK	50	0	Back	10mm	132322	1745	22.24	23.00	1.191	-0.06	0.144	0.172
	LTE Band 66	20M	QPSK	1	0	Left Side	10mm	132322	1745	23.06	24.00	1.242	0.02	0.374	0.464
	LTE Band 66	20M	QPSK	50	0	Left Side	10mm	132322	1745	22.24	23.00	1.191	0.06	0.287	0.342
	LTE Band 66	20M	QPSK	1	0	Right Side	10mm	132322	1745	23.06	24.00	1.242	-0.05	0.109	0.135
	LTE Band 66	20M	QPSK	50	0	Right Side	10mm	132322	1745	22.24	23.00	1.191	0.02	0.080	0.095
	LTE Band 66	20M	QPSK	1	0	Bottom Side	10mm	132322	1745	23.06	24.00	1.242	0.01	0.345	0.428
	LTE Band 66	20M	QPSK	50	0	Bottom Side	10mm	132322	1745	22.24	23.00	1.191	0.04	0.264	0.314
	LTE Band 66	20M	QPSK	1	0	Front	10mm	132072	1720	23.02	24.00	1.253	-0.08	0.438	0.549
	LTE Band 66	20M	QPSK	1	0	Front	10mm	132572	1770	22.94	24.00	1.276	0.07	0.411	0.525

<WLAN 2.4GHz SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN2.4GHz	802.11b 1Mbps	Front	10mm	Ant 1	6	2437	16.41	18.00	1.442	100	1.000	0.01	0.057	0.082
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 1	6	2437	16.41	18.00	1.442	100	1.000	0.06	0.086	0.124
	WLAN2.4GHz	802.11b 1Mbps	Left Side	10mm	Ant 1	6	2437	16.41	18.00	1.442	100	1.000	0.17	0.006	0.009
	WLAN2.4GHz	802.11b 1Mbps	Right Side	10mm	Ant 1	6	2437	16.41	18.00	1.442	100	1.000	0.06	0.114	0.164
	WLAN2.4GHz	802.11b 1Mbps	Top Side	10mm	Ant 1	6	2437	16.41	18.00	1.442	100	1.000	0.11	0.033	0.048
	WLAN2.4GHz	802.11b 1Mbps	Right Side	10mm	Ant 1	1	2412	16.33	18.00	1.469	100	1.000	0.09	0.088	0.129
	WLAN2.4GHz	802.11b 1Mbps	Right Side	10mm	Ant 1	11	2462	16.37	18.00	1.455	100	1.000	-0.07	0.120	0.175
	WLAN2.4GHz	802.11b 1Mbps	Front	10mm	Ant 2	11	2462	16.42	18.00	1.439	100	1.000	0.01	0.146	0.210
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 2	11	2462	16.42	18.00	1.439	100	1.000	0.03	0.099	0.142
08	WLAN2.4GHz	802.11b 1Mbps	Left Side	10mm	Ant 2	11	2462	16.42	18.00	1.439	100	1.000	-0.09	0.165	**0.237**
	WLAN2.4GHz	802.11b 1Mbps	Right Side	10mm	Ant 2	11	2462	16.42	18.00	1.439	100	1.000	0.05	0.006	0.009
	WLAN2.4GHz	802.11b 1Mbps	Top Side	10mm	Ant 2	11	2462	16.42	18.00	1.439	100	1.000	0.06	0.148	0.213
	WLAN2.4GHz	802.11b 1Mbps	Left Side	10mm	Ant 2	1	2412	16.38	18.00	1.452	100	1.000	-0.05	0.100	0.145
	WLAN2.4GHz	802.11b 1Mbps	Left Side	10mm	Ant 2	6	2437	16.28	18.00	1.486	100	1.000	-0.03	0.083	0.123

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	Bluetooth	Bluetooth	Right Side	10mm	Ant 1	0	2402	10.50	12.00	1.412	77.06	1.298	0.03	0.024	0.044
09	Bluetooth	Bluetooth	Right Side	10mm	Ant 1	39	2441	11.82	12.00	1.042	77.06	1.298	-0.05	0.035	**0.047**
	Bluetooth	Bluetooth	Right Side	10mm	Ant 1	79	2480	10.48	12.00	1.419	77.06	1.298	0.13	0.016	0.029

<WLAN 5GHz SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN5.2GHz	802.11a 6Mbps	Front	10mm	Ant 1	36	5180	12.21	13.50	1.347	98.28	1.018	0.08	0.026	0.036
	WLAN5.2GHz	802.11a 6Mbps	Back	10mm	Ant 1	36	5180	12.21	13.50	1.347	98.28	1.018	0.01	0.026	0.036
	WLAN5.2GHz	802.11a 6Mbps	Left Side	10mm	Ant 1	36	5180	12.21	13.50	1.347	98.28	1.018	0.11	0.017	0.023
	WLAN5.2GHz	802.11a 6Mbps	Right Side	10mm	Ant 1	36	5180	12.21	13.50	1.347	98.28	1.018	-0.09	0.027	0.037
	WLAN5.2GHz	802.11a 6Mbps	Top Side	10mm	Ant 1	36	5180	12.21	13.50	1.347	98.28	1.018	-0.11	0.014	0.019
	WLAN5.2GHz	802.11a 6Mbps	Right Side	10mm	Ant 1	40	5200	12.15	13.50	1.366	98.28	1.018	0.08	0.018	0.025
	WLAN5.2GHz	802.11a 6Mbps	Right Side	10mm	Ant 1	48	5240	11.79	13.50	1.484	98.28	1.018	0.01	0.023	0.035
	WLAN5.2GHz	802.11a 6Mbps	Front	10mm	Ant 2	40	5200	12.21	13.50	1.347	98.28	1.018	0.08	0.139	0.191
	WLAN5.2GHz	802.11a 6Mbps	Back	10mm	Ant 2	40	5200	12.21	13.50	1.347	98.28	1.018	0.02	0.210	0.288
10	WLAN5.2GHz	802.11a 6Mbps	Left Side	10mm	Ant 2	40	5200	12.21	13.50	1.347	98.28	1.018	0.01	0.279	**0.383**
	WLAN5.2GHz	802.11a 6Mbps	Right Side	10mm	Ant 2	40	5200	12.21	13.50	1.347	98.28	1.018	0.02	0.091	0.125
	WLAN5.2GHz	802.11a 6Mbps	Top Side	10mm	Ant 2	40	5200	12.21	13.50	1.347	98.28	1.018	0.16	0.106	0.145
	WLAN5.2GHz	802.11a 6Mbps	Left Side	10mm	Ant 2	36	5180	12.02	13.50	1.408	98.28	1.018	0.19	0.239	0.342
	WLAN5.2GHz	802.11a 6Mbps	Left Side	10mm	Ant 2	48	5240	11.97	13.50	1.424	98.28	1.018	0.03	0.211	0.306
	WLAN5.8GHz	802.11a 6Mbps	Front	10mm	Ant 1	165	5825	12.30	13.50	1.320	98.28	1.018	0.19	0.017	0.023
	WLAN5.8GHz	802.11a 6Mbps	Back	10mm	Ant 1	165	5825	12.30	13.50	1.320	98.28	1.018	0.02	0.030	0.041
	WLAN5.8GHz	802.11a 6Mbps	Left Side	10mm	Ant 1	165	5825	12.30	13.50	1.320	98.28	1.018	0.16	0.025	0.034
	WLAN5.8GHz	802.11a 6Mbps	Right Side	10mm	Ant 1	165	5825	12.30	13.50	1.320	98.28	1.018	0.05	0.024	0.032
	WLAN5.8GHz	802.11a 6Mbps	Top Side	10mm	Ant 1	165	5825	12.30	13.50	1.320	98.28	1.018	-0.02	0.027	0.036
	WLAN5.8GHz	802.11a 6Mbps	Back	10mm	Ant 1	157	5785	12.11	13.50	1.379	98.28	1.018	0.11	0.017	0.024
	WLAN5.8GHz	802.11a 6Mbps	Back	10mm	Ant 1	149	5745	11.89	13.50	1.449	98.28	1.018	0.03	0.025	0.037
	WLAN5.8GHz	802.11a 6Mbps	Front	10mm	Ant 2	149	5745	11.95	13.50	1.430	98.28	1.018	0.07	0.085	0.124
	WLAN5.8GHz	802.11a 6Mbps	Back	10mm	Ant 2	149	5745	11.95	13.50	1.430	98.28	1.018	0.06	0.112	0.163
11	WLAN5.8GHz	802.11a 6Mbps	Left Side	10mm	Ant 2	149	5745	11.95	13.50	1.430	98.28	1.018	0.02	0.177	**0.258**
	WLAN5.8GHz	802.11a 6Mbps	Right Side	10mm	Ant 2	149	5745	11.95	13.50	1.430	98.28	1.018	0.08	0.064	0.093
	WLAN5.8GHz	802.11a 6Mbps	Top Side	10mm	Ant 2	149	5745	11.95	13.50	1.430	98.28	1.018	0.07	0.064	0.093
	WLAN5.8GHz	802.11a 6Mbps	Left Side	10mm	Ant 2	157	5785	11.80	13.50	1.481	98.28	1.018	-0.09	0.141	0.213
	WLAN5.8GHz	802.11a 6Mbps	Left Side	10mm	Ant 2	165	5825	11.77	13.50	1.489	98.28	1.018	0.03	0.151	0.229

15.2 Limbs 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 II	RMC 12.2Kbps	Front	0mm	9400	1880	22.57	24.00	1.390	0.08	0.292	0.406
	WCDMA II	RMC 12.2Kbps	Back	0mm	9400	1880	22.57	24.00	1.390	0.03	0.290	0.403
	WCDMA II	RMC 12.2Kbps	Left Side	0mm	9400	1880	22.57	24.00	1.390	-0.09	0.360	0.500
	WCDMA II	RMC 12.2Kbps	Right Side	0mm	9400	1880	22.57	24.00	1.390	-0.01	0.002	0.003
	WCDMA II	RMC 12.2Kbps	Bottom Side	0mm	9400	1880	22.57	24.00	1.390	-0.14	0.203	0.282
12	WCDMA II	RMC 12.2Kbps	Left Side	0mm	9262	1852.4	22.42	24.00	1.439	-0.03	0.381	**0.548**
	WCDMA II	RMC 12.2Kbps	Left Side	0mm	9538	1907.6	22.56	24.00	1.393	0.01	0.291	0.405
	WCDMA IV	RMC 12.2Kbps	Front	0mm	1413	1732.6	22.65	24.00	1.365	0.01	0.875	1.194
	WCDMA IV	RMC 12.2Kbps	Back	0mm	1413	1732.6	22.65	24.00	1.365	0.05	0.736	1.004
	WCDMA IV	RMC 12.2Kbps	Left Side	0mm	1413	1732.6	22.65	24.00	1.365	0.06	0.757	1.033
	WCDMA IV	RMC 12.2Kbps	Right Side	0mm	1413	1732.6	22.65	24.00	1.365	-0.05	0.093	0.127
	WCDMA IV	RMC 12.2Kbps	Bottom Side	0mm	1413	1732.6	22.65	24.00	1.365	0.02	0.443	0.605
13	WCDMA IV	RMC 12.2Kbps	Front	0mm	1312	1712.4	22.57	24.00	1.390	0.05	0.897	**1.247**
	WCDMA IV	RMC 12.2Kbps	Front	0mm	1513	1752.6	22.60	24.00	1.380	0.13	0.770	1.063
	WCDMA IV	RMC 12.2Kbps	Back	0mm	1312	1712.4	22.57	24.00	1.390	0.04	0.734	1.020
	WCDMA IV	RMC 12.2Kbps	Back	0mm	1513	1752.6	22.60	24.00	1.380	0.02	0.655	0.904
	WCDMA IV	RMC 12.2Kbps	Left Side	0mm	1312	1712.4	22.57	24.00	1.390	0.01	0.766	1.065
	WCDMA IV	RMC 12.2Kbps	Left Side	0mm	1513	1752.6	22.60	24.00	1.380	0.02	0.697	0.962
14	WCDMA V	RMC 12.2Kbps	Front	0mm	4182	836.4	22.82	24.00	1.312	-0.03	0.295	**0.387**
	WCDMA V	RMC 12.2Kbps	Back	0mm	4182	836.4	22.82	24.00	1.312	-0.06	0.228	0.299
	WCDMA V	RMC 12.2Kbps	Left Side	0mm	4182	836.4	22.82	24.00	1.312	0.09	0.057	0.075
	WCDMA V	RMC 12.2Kbps	Right Side	0mm	4182	836.4	22.82	24.00	1.312	0.06	0.106	0.139
	WCDMA V	RMC 12.2Kbps	Bottom Side	0mm	4182	836.4	22.82	24.00	1.312	0.09	0.190	0.249
	WCDMA V	RMC 12.2Kbps	Front	0mm	4132	826.4	22.79	24.00	1.321	-0.03	0.215	0.284
	WCDMA V	RMC 12.2Kbps	Front	0mm	4233	846.6	22.75	24.00	1.334	0.01	0.261	0.348

<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 2	20M	QPSK	1	0	Front	0mm	18900	1880	23.01	24.00	1.256	-0.05	0.338	0.425
	LTE Band 2	20M	QPSK	50	0	Front	0mm	18900	1880	21.96	23.00	1.271	0.11	0.258	0.328
	LTE Band 2	20M	QPSK	1	0	Back	0mm	18900	1880	23.01	24.00	1.256	0.16	0.349	0.438
	LTE Band 2	20M	QPSK	50	0	Back	0mm	18900	1880	21.96	23.00	1.271	0.06	0.271	0.344
	LTE Band 2	20M	QPSK	1	0	Left Side	0mm	18900	1880	23.01	24.00	1.256	0.16	0.377	0.474
	LTE Band 2	20M	QPSK	50	0	Left Side	0mm	18900	1880	21.96	23.00	1.271	-0.09	0.302	0.384
	LTE Band 2	20M	QPSK	1	0	Right Side	0mm	18900	1880	23.01	24.00	1.256	0.06	0.026	0.033
	LTE Band 2	20M	QPSK	50	0	Right Side	0mm	18900	1880	21.96	23.00	1.271	0.08	0.022	0.028
	LTE Band 2	20M	QPSK	1	0	Bottom Side	0mm	18900	1880	23.01	24.00	1.256	0.07	0.230	0.289
	LTE Band 2	20M	QPSK	50	0	Bottom Side	0mm	18900	1880	21.96	23.00	1.271	0.11	0.182	0.231
15	LTE Band 2	20M	QPSK	1	0	Left Side	0mm	18700	1860	22.93	24.00	1.279	-0.06	0.426	**0.545**
	LTE Band 2	20M	QPSK	1	0	Left Side	0mm	19100	1900	22.77	24.00	1.327	0.07	0.347	0.461
16	LTE Band 4	20M	QPSK	1	0	Front	0mm	20175	1732.5	23.04	24.00	1.247	0.03	1.080	**1.347**
	LTE Band 4	20M	QPSK	50	0	Front	0mm	20175	1732.5	22.16	23.00	1.213	0.06	0.802	0.973
	LTE Band 4	20M	QPSK	1	0	Back	0mm	20175	1732.5	23.04	24.00	1.247	0.04	0.874	1.090
	LTE Band 4	20M	QPSK	50	0	Back	0mm	20175	1732.5	22.16	23.00	1.213	-0.01	0.671	0.814
	LTE Band 4	20M	QPSK	1	0	Left Side	0mm	20175	1732.5	23.04	24.00	1.247	0.05	0.948	1.183
	LTE Band 4	20M	QPSK	50	0	Left Side	0mm	20175	1732.5	22.16	23.00	1.213	0.02	0.716	0.869
	LTE Band 4	20M	QPSK	1	0	Right Side	0mm	20175	1732.5	23.04	24.00	1.247	0.02	0.117	0.146
	LTE Band 4	20M	QPSK	50	0	Right Side	0mm	20175	1732.5	22.16	23.00	1.213	0.09	0.091	0.110
	LTE Band 4	20M	QPSK	1	0	Bottom Side	0mm	20175	1732.5	23.04	24.00	1.247	0.11	0.502	0.626
	LTE Band 4	20M	QPSK	50	0	Bottom Side	0mm	20175	1732.5	22.16	23.00	1.213	0.06	0.382	0.464
	LTE Band 12	10M	QPSK	1	0	Front	0mm	23095	707.5	23.49	24.00	1.125	0.05	0.141	0.159
	LTE Band 12	10M	QPSK	25	0	Front	0mm	23095	707.5	22.69	23.00	1.074	0.06	0.150	0.161
17	LTE Band 12	10M	QPSK	1	0	Back	0mm	23095	707.5	23.49	24.00	1.125	-0.06	0.200	**0.225**
	LTE Band 12	10M	QPSK	25	0	Back	0mm	23095	707.5	22.69	23.00	1.074	-0.05	0.205	0.220
	LTE Band 12	10M	QPSK	1	0	Left Side	0mm	23095	707.5	23.49	24.00	1.125	-0.05	0.043	0.048
	LTE Band 12	10M	QPSK	25	0	Left Side	0mm	23095	707.5	22.69	23.00	1.074	0.1	0.039	0.042
	LTE Band 12	10M	QPSK	1	0	Right Side	0mm	23095	707.5	23.49	24.00	1.125	0.04	0.001	0.001
	LTE Band 12	10M	QPSK	25	0	Right Side	0mm	23095	707.5	22.69	23.00	1.074	0.06	0.001	0.001
	LTE Band 12	10M	QPSK	1	0	Bottom Side	0mm	23095	707.5	23.49	24.00	1.125	-0.16	0.132	0.148
	LTE Band 12	10M	QPSK	25	0	Bottom Side	0mm	23095	707.5	22.69	23.00	1.074	0.09	0.135	0.145
18	LTE Band 66	20M	QPSK	1	0	Front	0mm	132322	1745	23.06	24.00	1.242	0.04	0.907	**1.126**
	LTE Band 66	20M	QPSK	50	0	Front	0mm	132322	1745	22.24	23.00	1.191	0.01	0.713	0.849
	LTE Band 66	20M	QPSK	1	0	Back	0mm	132322	1745	23.06	24.00	1.242	-0.02	0.244	0.303
	LTE Band 66	20M	QPSK	50	0	Back	0mm	132322	1745	22.24	23.00	1.191	0.07	0.181	0.216
	LTE Band 66	20M	QPSK	1	0	Left Side	0mm	132322	1745	23.06	24.00	1.242	0.03	0.735	0.912
	LTE Band 66	20M	QPSK	50	0	Left Side	0mm	132322	1745	22.24	23.00	1.191	-0.06	0.587	0.700
	LTE Band 66	20M	QPSK	1	0	Right Side	0mm	132322	1745	23.06	24.00	1.242	0.01	0.095	0.118
	LTE Band 66	20M	QPSK	50	0	Right Side	0mm	132322	1745	22.24	23.00	1.191	0.08	0.072	0.086
	LTE Band 66	20M	QPSK	1	0	Bottom Side	0mm	132322	1745	23.06	24.00	1.242	0.07	0.425	0.528
	LTE Band 66	20M	QPSK	50	0	Bottom Side	0mm	132322	1745	22.24	23.00	1.191	0.03	0.333	0.397
	LTE Band 66	20M	QPSK	1	0	Front	0mm	132072	1720	23.02	24.00	1.253	-0.09	0.898	1.125
	LTE Band 66	20M	QPSK	1	0	Front	0mm	132572	1770	22.94	24.00	1.276	0.03	0.848	1.082

<WLAN 2.4GHz SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	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)
	WLAN2.4GHz	802.11b 1Mbps	Front	0mm	Ant 1	6	2437	16.41	18.00	1.442	100	1.000	-0.05	0.155	0.224
	WLAN2.4GHz	802.11b 1Mbps	Back	0mm	Ant 1	6	2437	16.41	18.00	1.442	100	1.000	0.14	0.215	0.310
	WLAN2.4GHz	802.11b 1Mbps	Left Side	0mm	Ant 1	6	2437	16.41	18.00	1.442	100	1.000	-0.04	0.050	0.072
	WLAN2.4GHz	802.11b 1Mbps	Right Side	0mm	Ant 1	6	2437	16.41	18.00	1.442	100	1.000	-0.18	0.220	0.317
	WLAN2.4GHz	802.11b 1Mbps	Top Side	0mm	Ant 1	6	2437	16.41	18.00	1.442	100	1.000	0.05	0.072	0.104
	WLAN2.4GHz	802.11b 1Mbps	Right Side	0mm	Ant 1	1	2412	16.33	18.00	1.469	100	1.000	0.07	0.197	0.289
	WLAN2.4GHz	802.11b 1Mbps	Right Side	0mm	Ant 1	11	2462	16.37	18.00	1.455	100	1.000	-0.08	0.206	0.300
	WLAN2.4GHz	802.11b 1Mbps	Front	0mm	Ant 2	11	2462	16.42	18.00	1.439	100	1.000	0.14	0.270	0.388
	WLAN2.4GHz	802.11b 1Mbps	Back	0mm	Ant 2	11	2462	16.42	18.00	1.439	100	1.000	0.08	0.166	0.239
19	WLAN2.4GHz	802.11b 1Mbps	Left Side	0mm	Ant 2	11	2462	16.42	18.00	1.439	100	1.000	-0.14	0.301	**0.433**
	WLAN2.4GHz	802.11b 1Mbps	Right Side	0mm	Ant 2	11	2462	16.42	18.00	1.439	100	1.000	-0.05	0.002	0.003
	WLAN2.4GHz	802.11b 1Mbps	Top Side	0mm	Ant 2	11	2462	16.42	18.00	1.439	100	1.000	-0.11	0.279	0.401
	WLAN2.4GHz	802.11b 1Mbps	Left Side	0mm	Ant 2	1	2412	16.38	18.00	1.452	100	1.000	0.06	0.189	0.274
	WLAN2.4GHz	802.11b 1Mbps	Left Side	0mm	Ant 2	6	2437	16.28	18.00	1.486	100	1.000	-0.03	0.210	0.312

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	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)
20	Bluetooth	Bluetooth	Right Side	0mm	Ant 1	0	2402	10.50	12.00	1.412	77.06	1.298	-0.02	0.048	**0.088**
	Bluetooth	Bluetooth	Right Side	0mm	Ant 1	39	2441	11.82	12.00	1.042	77.06	1.298	-0.01	0.057	0.077
	Bluetooth	Bluetooth	Right Side	0mm	Ant 1	79	2480	10.48	12.00	1.419	77.06	1.298	0.06	0.028	0.052

<WLAN 5GHz SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	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)
	WLAN5.3GHz	802.11a 6Mbps	Front	0mm	Ant 1	56	5280	12.04	13.50	1.401	98.28	1.018	0.06	0.031	0.044
	WLAN5.3GHz	802.11a 6Mbps	Back	0mm	Ant 1	56	5280	12.04	13.50	1.401	98.28	1.018	-0.12	0.041	0.058
	WLAN5.3GHz	802.11a 6Mbps	Left Side	0mm	Ant 1	56	5280	12.04	13.50	1.401	98.28	1.018	-0.16	0.026	0.037
	WLAN5.3GHz	802.11a 6Mbps	Right Side	0mm	Ant 1	56	5280	12.04	13.50	1.401	98.28	1.018	-0.09	0.043	0.061
	WLAN5.3GHz	802.11a 6Mbps	Top Side	0mm	Ant 1	56	5280	12.04	13.50	1.401	98.28	1.018	-0.15	0.024	0.034
	WLAN5.3GHz	802.11a 6Mbps	Right Side	0mm	Ant 1	52	5260	12.00	13.50	1.414	98.28	1.018	0.08	0.034	0.049
	WLAN5.3GHz	802.11a 6Mbps	Right Side	0mm	Ant 1	64	5320	11.96	13.50	1.427	98.28	1.018	-0.09	0.037	0.054
	WLAN5.3GHz	802.11a 6Mbps	Front	0mm	Ant 2	52	5260	12.23	13.50	1.341	98.28	1.018	0.05	0.135	0.184
	WLAN5.3GHz	802.11a 6Mbps	Back	0mm	Ant 2	52	5260	12.23	13.50	1.341	98.28	1.018	-0.11	0.301	0.411
21	WLAN5.3GHz	802.11a 6Mbps	Left Side	0mm	Ant 2	52	5260	12.23	13.50	1.341	98.28	1.018	-0.09	0.351	**0.479**
	WLAN5.3GHz	802.11a 6Mbps	Right Side	0mm	Ant 2	52	5260	12.23	13.50	1.341	98.28	1.018	-0.04	0.085	0.116
	WLAN5.3GHz	802.11a 6Mbps	Top Side	0mm	Ant 2	52	5260	12.23	13.50	1.341	98.28	1.018	0.11	0.110	0.150
	WLAN5.3GHz	802.11a 6Mbps	Left Side	0mm	Ant 2	64	5320	12.19	13.50	1.354	98.28	1.018	0.16	0.306	0.422
	WLAN5.3GHz	802.11a 6Mbps	Left Side	0mm	Ant 2	56	5280	12.18	13.50	1.355	98.28	1.018	0.03	0.251	0.346
	WLAN5.5GHz	802.11a 6Mbps	Front	0mm	Ant 1	100	5500	11.81	13.50	1.477	98.28	1.018	0.05	0.021	0.032
	WLAN5.5GHz	802.11a 6Mbps	Back	0mm	Ant 1	100	5500	11.81	13.50	1.477	98.28	1.018	-0.06	0.017	0.026
	WLAN5.5GHz	802.11a 6Mbps	Left Side	0mm	Ant 1	100	5500	11.81	13.50	1.477	98.28	1.018	0.01	0.022	0.033
	WLAN5.5GHz	802.11a 6Mbps	Right Side	0mm	Ant 1	100	5500	11.81	13.50	1.477	98.28	1.018	-0.01	0.026	0.039
	WLAN5.5GHz	802.11a 6Mbps	Top Side	0mm	Ant 1	100	5500	11.81	13.50	1.477	98.28	1.018	0.19	0.021	0.032
	WLAN5.5GHz	802.11a 6Mbps	Right Side	0mm	Ant 1	132	5660	11.77	13.50	1.489	98.28	1.018	0.05	0.021	0.032
	WLAN5.5GHz	802.11a 6Mbps	Right Side	0mm	Ant 1	140	5700	11.67	13.50	1.524	98.28	1.018	-0.11	0.023	0.036
	WLAN5.5GHz	802.11a 6Mbps	Front	0mm	Ant 2	116	5580	11.87	13.50	1.455	98.28	1.018	0.11	0.215	0.319
	WLAN5.5GHz	802.11a 6Mbps	Back	0mm	Ant 2	116	5580	11.87	13.50	1.455	98.28	1.018	0.19	0.094	0.139
22	WLAN5.5GHz	802.11a 6Mbps	Left Side	0mm	Ant 2	116	5580	11.87	13.50	1.455	98.28	1.018	-0.05	0.286	**0.424**
	WLAN5.5GHz	802.11a 6Mbps	Right Side	0mm	Ant 2	116	5580	11.87	13.50	1.455	98.28	1.018	0.06	0.110	0.163
	WLAN5.5GHz	802.11a 6Mbps	Top Side	0mm	Ant 2	116	5580	11.87	13.50	1.455	98.28	1.018	-0.06	0.141	0.209
	WLAN5.5GHz	802.11a 6Mbps	Left Side	0mm	Ant 2	100	5500	11.70	13.50	1.514	98.28	1.018	0.03	0.249	0.384
	WLAN5.5GHz	802.11a 6Mbps	Left Side	0mm	Ant 2	140	5700	11.77	13.50	1.491	98.28	1.018	0.03	0.261	0.396
	WLAN5.8GHz	802.11a 6Mbps	Front	0mm	Ant 1	165	5825	12.30	13.50	1.320	98.28	1.018	0.07	0.014	0.019
	WLAN5.8GHz	802.11a 6Mbps	Back	0mm	Ant 1	165	5825	12.30	13.50	1.320	98.28	1.018	0.01	0.020	0.026
	WLAN5.8GHz	802.11a 6Mbps	Left Side	0mm	Ant 1	165	5825	12.30	13.50	1.320	98.28	1.018	0.04	0.011	0.015
	WLAN5.8GHz	802.11a 6Mbps	Right Side	0mm	Ant 1	165	5825	12.30	13.50	1.320	98.28	1.018	0.06	0.017	0.023
	WLAN5.8GHz	802.11a 6Mbps	Top Side	0mm	Ant 1	165	5825	12.30	13.50	1.320	98.28	1.018	0.04	0.014	0.019
	WLAN5.8GHz	802.11a 6Mbps	Back	0mm	Ant 1	157	5785	12.11	13.50	1.379	98.28	1.018	-0.11	0.009	0.013
	WLAN5.8GHz	802.11a 6Mbps	Back	0mm	Ant 1	149	5745	11.89	13.50	1.449	98.28	1.018	0.02	0.011	0.016
	WLAN5.8GHz	802.11a 6Mbps	Front	0mm	Ant 2	149	5745	11.95	13.50	1.430	98.28	1.018	0.04	0.098	0.143
	WLAN5.8GHz	802.11a 6Mbps	Back	0mm	Ant 2	149	5745	11.95	13.50	1.430	98.28	1.018	0.11	0.202	0.294
23	WLAN5.8GHz	802.11a 6Mbps	Left Side	0mm	Ant 2	149	5745	11.95	13.50	1.430	98.28	1.018	-0.09	0.226	**0.329**
	WLAN5.8GHz	802.11a 6Mbps	Right Side	0mm	Ant 2	149	5745	11.95	13.50	1.430	98.28	1.018	-0.03	0.084	0.122
	WLAN5.8GHz	802.11a 6Mbps	Top Side	0mm	Ant 2	149	5745	11.95	13.50	1.430	98.28	1.018	0.08	0.107	0.156
	WLAN5.8GHz	802.11a 6Mbps	Left Side	0mm	Ant 2	157	5785	11.80	13.50	1.481	98.28	1.018	-0.09	0.182	0.274
	WLAN5.8GHz	802.11a 6Mbps	Left Side	0mm	Ant 2	165	5825	11.77	13.50	1.489	98.28	1.018	0.01	0.189	0.287

16. Simultaneous Transmission Analysis

No.	Simultaneous Transmission Configurations	Handheld wireless data terminal	
		Hotspot	Limbs
1.	WWAN+WIFI 2.4G SISO	Yes	Yes
2.	WWAN+WIFI 2.4G MIMO	Yes	Yes
3.	WWAN+ WLAN5.3/5.5GHz SISO		Yes
4.	WWAN + WLAN5.2/5.8GHz SISO	Yes	Yes
5.	WWAN+ WLAN5.3/5.5GHz MIMO		Yes
6.	WWAN + WLAN5.2/5.8GHz MIMO	Yes	Yes
7.	WWAN+WIFI 2.4G ANT1+ WLAN5.3/5.5GHz ANT2		Yes
8.	WWAN+WIFI 2.4G ANT1+ WLAN5.2/5.8GHz ANT2	Yes	Yes
9.	WWAN+BT	Yes	Yes
10.	BT+ WLAN5.3/5.5GHz SISO		Yes
11.	BT+ WLAN5.2/5.8GHz SISO	Yes	Yes
12.	BT+ WLAN5.3/5.5GHz MIMO		Yes
13.	BT+ WLAN5.2/5.8GHz MIMO	Yes	Yes
14.	WWAN+BT+ WLAN5.3/5.5GHz SISO		Yes
15.	WWAN+BT+ WLAN5.2/5.8GHz SISO	Yes	Yes
16.	WWAN+BT+ WLAN5.3/5.5GHz MIMO		Yes
17.	WWAN+BT+ WLAN5.2/5.8GHz MIMO	Yes	Yes

General Note:

1. EUT will choose each WCDMA and LTE according to the network signal condition; therefore, they will not operate simultaneously at any moment.
2. This device 2.4GHz WLAN/ 5.2GHz WLAN/5.8GHz WLAN support hotspot operation, and 5.2GHz WLAN/5.8GHz WLAN supports WLAN Direct (GC/GO), and 5.3GHz / 5.5GHz supports WLAN Direct (GC only).
3. WLAN 2.4GHz and Bluetooth share the same antenna, and cannot transmit simultaneously.
4. According to the character of EUT, WLAN5GHz and Bluetooth can transmit simultaneously.
5. For simultaneously analysis, since the SAR summation of 3 transmitters can cover others combination of 2 transmitters, therefore in this section did not additional to evaluate 2TX combination of simultaneously transmission.
6. The worst case 5 GHz WLAN SAR for each configuration was used for SAR summation.
7. Chose the worst zoom scan SAR of WLAN correspondingly for co-located with WWAN analysis.
8. The reported SAR summation is calculated based on the same configuration and test position.
9. 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 and SPLSR≤ 0.10 for 10g SAR , simultaneously transmission SAR measurement is not necessary.
   iv) Simultaneously transmission SAR measurement, and the reported multi-band 1g SAR < 1.6W/kg and 10g SAR < 4.0W/kg.

16.1 Hotspot Exposure Conditions

WWAN Band		Exposure Position	1	2	3	4	5	6	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	1+4+6 Summed 1g SAR (W/kg)	1+5+6 Summed 1g SAR (W/kg)	1+2+5 Summed 1g SAR (W/kg)	1+2+3 Summed 1g SAR (W/kg)	1+4+5+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 1							
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)							
WCDMA	WCDMA II	Front	0.147	0.082	0.210	0.036	0.191	0.173	0.23	0.36	0.36	0.51	0.42	0.44	0.55
		Back	0.191	0.124	0.142	0.041	0.288	0.173	0.32	0.33	0.41	0.65	0.60	0.46	0.69
		Left side	0.152	0.009	0.237	0.034	0.383	0.173	0.16	0.39	0.36	0.71	0.54	0.40	0.74
		Right side	0.004	0.175	0.009	0.037	0.125	0.173	0.18	0.01	0.21	0.30	0.30	0.19	0.34
		Top side		0.048	0.213	0.036	0.145	0.173	0.05	0.21	0.21	0.32	0.19	0.26	0.35
		Bottom side	0.068					0.173	0.07	0.07	0.24	0.24	0.07	0.07	0.24
	WCDMA IV	Front	0.506	0.082	0.210	0.036	0.191	0.173	0.59	0.72	0.72	0.87	0.78	0.80	0.91
		Back	0.433	0.124	0.142	0.041	0.288	0.173	0.56	0.58	0.65	0.89	0.85	0.70	0.94
		Left side	0.431	0.009	0.237	0.034	0.383	0.173	0.44	0.67	0.64	0.99	0.82	0.68	1.02
		Right side	0.117	0.175	0.009	0.037	0.125	0.173	0.29	0.13	0.33	0.42	0.42	0.30	0.45
		Top side		0.048	0.213	0.036	0.145	0.173	0.05	0.21	0.21	0.32	0.19	0.26	0.35
		Bottom side	0.360					0.173	0.36	0.36	0.53	0.53	0.36	0.36	0.53
	WCDMA V	Front	0.119	0.082	0.210	0.036	0.191	0.173	0.20	0.33	0.33	0.48	0.39	0.41	0.52
		Back	0.136	0.124	0.142	0.041	0.288	0.173	0.26	0.28	0.35	0.60	0.55	0.40	0.64
		Left side	0.106	0.009	0.237	0.034	0.383	0.173	0.12	0.34	0.31	0.66	0.50	0.35	0.70
		Right side	0.114	0.175	0.009	0.037	0.125	0.173	0.29	0.12	0.32	0.41	0.41	0.30	0.45
		Top side		0.048	0.213	0.036	0.145	0.173	0.05	0.21	0.21	0.32	0.19	0.26	0.35
		Bottom side	0.106					0.173	0.11	0.11	0.28	0.28	0.11	0.11	0.28
LTE	LTE Band 2	Front	0.151	0.082	0.210	0.036	0.191	0.173	0.23	0.36	0.36	0.52	0.42	0.44	0.55
		Back	0.186	0.124	0.142	0.041	0.288	0.173	0.31	0.33	0.40	0.65	0.60	0.45	0.69
		Left side	0.147	0.009	0.237	0.034	0.383	0.173	0.16	0.38	0.35	0.70	0.54	0.39	0.74
		Right side	0.004	0.175	0.009	0.037	0.125	0.173	0.18	0.01	0.21	0.30	0.30	0.19	0.34
		Top side		0.048	0.213	0.036	0.145	0.173	0.05	0.21	0.21	0.32	0.19	0.26	0.35
		Bottom side	0.079					0.173	0.08	0.08	0.25	0.25	0.08	0.08	0.25
	LTE Band 4	Front	0.578	0.082	0.210	0.036	0.191	0.173	0.66	0.79	0.79	0.94	0.85	0.87	0.98
		Back	0.559	0.124	0.142	0.041	0.288	0.173	0.68	0.70	0.77	1.02	**0.97**	0.83	1.06
		Left side	0.499	0.009	0.237	0.034	0.383	0.173	0.51	0.74	0.71	1.06	0.89	0.75	**1.09**
		Right side	0.133	0.175	0.009	0.037	0.125	0.173	0.31	0.14	0.34	0.43	0.43	0.32	0.47
		Top side		0.048	0.213	0.036	0.145	0.173	0.05	0.21	0.21	0.32	0.19	0.26	0.35
		Bottom side	0.444					0.173	0.44	0.44	0.62	0.62	0.44	0.44	0.62
	LTE Band 12	Front	0.008	0.082	0.210	0.036	0.191	0.173	0.09	0.22	0.22	0.37	0.28	0.30	0.41
		Back	0.026	0.124	0.142	0.041	0.288	0.173	0.15	0.17	0.24	0.49	0.44	0.29	0.53
		Left side	0.002	0.009	0.237	0.034	0.383	0.173	0.01	0.24	0.21	0.56	0.39	0.25	0.59
		Right side	0.001	0.175	0.009	0.037	0.125	0.173	0.18	0.01	0.21	0.30	0.30	0.19	0.34
		Top side		0.048	0.213	0.036	0.145	0.173	0.05	0.21	0.21	0.32	0.19	0.26	0.35
		Bottom side	0.010					0.173	0.01	0.01	0.18	0.18	0.01	0.01	0.18
	LTE Band 66	Front	0.564	0.082	0.210	0.036	0.191	0.173	0.86	0.77	0.77	0.93	0.84	0.86	0.96
		Back	0.246	0.124	0.142	0.041	0.288	0.173	0.51	0.39	0.46	0.71	0.66	0.51	0.75
		Left side	0.464	0.009	0.237	0.034	0.383	0.173	0.71	0.70	0.67	1.02	0.86	0.71	1.05
		Right side	0.135	0.175	0.009	0.037	0.125	0.173	0.32	0.14	0.35	0.43	0.44	0.32	0.47
		Top side		0.048	0.213	0.036	0.145	0.173	0.26	0.21	0.21	0.32	0.19	0.26	0.35
		Bottom side	0.428					0.173	0.43	0.43	0.60	0.60	0.43	0.43	0.60

16.2 Limbs Exposure Conditions

WWAN Band		Exposure Position	1	2	3	4	5	6	1+2 Summed 10g SAR (W/kg)	1+3 Summed 10g SAR (W/kg)	1+4+6 Summed 10g SAR (W/kg)	1+5+6 Summed 10g SAR (W/kg)	1+2+5 Summed 10g SAR (W/kg)	1+2+3 Summed 10g SAR (W/kg)	1+4+5+6 Summed 10g SAR (W/kg)
			WWAN	2.4GHz WLAN Ant 1	2.4GHz WLAN Ant 2	5GHz WLAN Ant 1	5GHz WLAN Ant 2	Bluetooth Ant 1							
			10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)							
WCDMA	WCDMA II	Front	0.406	0.224	0.388	0.044	0.319	0.088	0.63	0.79	0.54	0.81	0.95	1.02	0.86
		Back	0.403	0.310	0.239	0.058	0.411	0.088	0.71	0.64	0.55	0.90	1.12	0.95	0.96
		Left side	0.548	0.072	0.433	0.037	0.479	0.088	0.62	0.98	0.67	1.12	1.10	1.05	1.15
		Right side	0.003	0.317	0.003	0.061	0.163	0.088	0.32	0.01	0.15	0.25	0.48	0.32	0.32
		Top side		0.104	0.401	0.034	0.209	0.088	0.10	0.40	0.12	0.30	0.31	0.51	0.33
		Bottom side	0.282					0.088	0.28	0.28	0.37	0.37	0.28	0.28	0.37
	WCDMA IV	Front	1.247	0.224	0.388	0.044	0.319	0.088	1.47	1.64	1.38	1.65	1.79	1.86	1.70
		Back	1.020	0.310	0.239	0.058	0.411	0.088	1.33	1.26	1.17	1.52	1.74	1.57	1.58
		Left side	1.065	0.072	0.433	0.037	0.479	0.088	1.14	1.50	1.19	1.63	1.62	1.57	1.67
		Right side	0.127	0.317	0.003	0.061	0.163	0.088	0.44	0.13	0.28	0.38	0.61	0.45	0.44
		Top side		0.104	0.401	0.034	0.209	0.088	0.10	0.40	0.12	0.30	0.31	0.51	0.33
		Bottom side	0.605					0.088	0.61	0.61	0.69	0.69	0.61	0.61	0.69
	WCDMA V	Front	0.387	0.224	0.388	0.044	0.319	0.088	0.61	0.78	0.52	0.79	0.93	1.00	0.84
		Back	0.299	0.310	0.239	0.058	0.411	0.088	0.61	0.54	0.45	0.80	1.02	0.85	0.86
		Left side	0.075	0.072	0.433	0.037	0.479	0.088	0.15	0.51	0.20	0.64	0.63	0.58	0.68
		Right side	0.139	0.317	0.003	0.061	0.163	0.088	0.46	0.14	0.29	0.39	0.62	0.46	0.45
		Top side		0.104	0.401	0.034	0.209	0.088	0.10	0.40	0.12	0.30	0.31	0.51	0.33
		Bottom side	0.249					0.088	0.25	0.25	0.34	0.34	0.25	0.25	0.34
LTE	LTE Band 2	Front	0.425	0.224	0.388	0.044	0.319	0.088	0.65	0.81	0.56	0.83	0.97	1.04	0.88
		Back	0.438	0.310	0.239	0.058	0.411	0.088	0.75	0.68	0.58	0.94	1.16	0.99	1.00
		Left side	0.545	0.072	0.433	0.037	0.479	0.088	0.62	0.98	0.67	1.11	1.10	1.05	1.15
		Right side	0.033	0.317	0.003	0.061	0.163	0.088	0.35	0.04	0.18	0.28	0.51	0.35	0.35
		Top side		0.104	0.401	0.034	0.209	0.088	0.10	0.40	0.12	0.30	0.31	0.51	0.33
		Bottom side	0.289					0.088	0.29	0.29	0.38	0.38	0.29	0.29	0.38
	LTE Band 4	Front	1.347	0.224	0.388	0.044	0.319	0.088	1.57	1.74	1.48	1.75	**1.89**	**1.96**	**1.80**
		Back	1.090	0.310	0.239	0.058	0.411	0.088	1.40	1.33	1.24	1.59	1.81	1.64	1.65
		Left side	1.183	0.072	0.433	0.037	0.479	0.088	1.26	1.62	1.31	1.75	1.73	1.69	1.79
		Right side	0.146	0.317	0.003	0.061	0.163	0.088	0.46	0.15	0.30	0.40	0.63	0.47	0.46
		Top side		0.104	0.401	0.034	0.209	0.088	0.10	0.40	0.12	0.30	0.31	0.51	0.33
		Bottom side	0.626					0.088	0.63	0.63	0.71	0.71	0.63	0.63	0.71
	LTE Band 12	Front	0.161	0.224	0.388	0.044	0.319	0.088	0.39	0.55	0.29	0.57	0.70	0.77	0.61
		Back	0.225	0.310	0.239	0.058	0.411	0.088	0.54	0.46	0.37	0.72	0.95	0.77	0.78
		Left side	0.048	0.072	0.433	0.037	0.479	0.088	0.12	0.48	0.17	0.62	0.60	0.55	0.65
		Right side	0.001	0.317	0.003	0.061	0.163	0.088	0.32	0.00	0.15	0.25	0.48	0.32	0.31
		Top side		0.104	0.401	0.034	0.209	0.088	0.10	0.40	0.12	0.30	0.31	0.51	0.33
		Bottom side	0.148					0.088	0.15	0.15	0.24	0.24	0.15	0.15	0.24
	LTE Band 66	Front	1.126	0.224	0.388	0.044	0.319	0.088	1.35	1.51	1.26	1.53	1.67	1.74	1.58
		Back	0.303	0.310	0.239	0.058	0.411	0.088	0.61	0.54	0.45	0.80	1.02	0.85	0.86
		Left side	0.912	0.072	0.433	0.037	0.479	0.088	0.98	1.35	1.04	1.48	1.46	1.42	1.52
		Right side	0.118	0.317	0.003	0.061	0.163	0.088	0.44	0.12	0.27	0.37	0.60	0.44	0.43
		Top side		0.104	0.401	0.034	0.209	0.088	0.10	0.40	0.12	0.30	0.31	0.51	0.33
		Bottom side	0.528					0.088	0.53	0.53	0.62	0.62	0.53	0.53	0.62

Test Engineer : Nick Hu, John Liu, Hank Chang, Yuankai Kong

17. Uncertainty Assessment

Per KDB 865664 D01 SAR measurement 100MHz to 6GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg 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 248227 D01 v02r02, “SAR Guidance for IEEE 802.11 (WiFi) Transmitters”, Oct 2015.

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

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

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

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

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

Appendix A. Plots of System Performance Check

The plots are shown as follows.

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2020.10.29

System Check_Head_750MHz

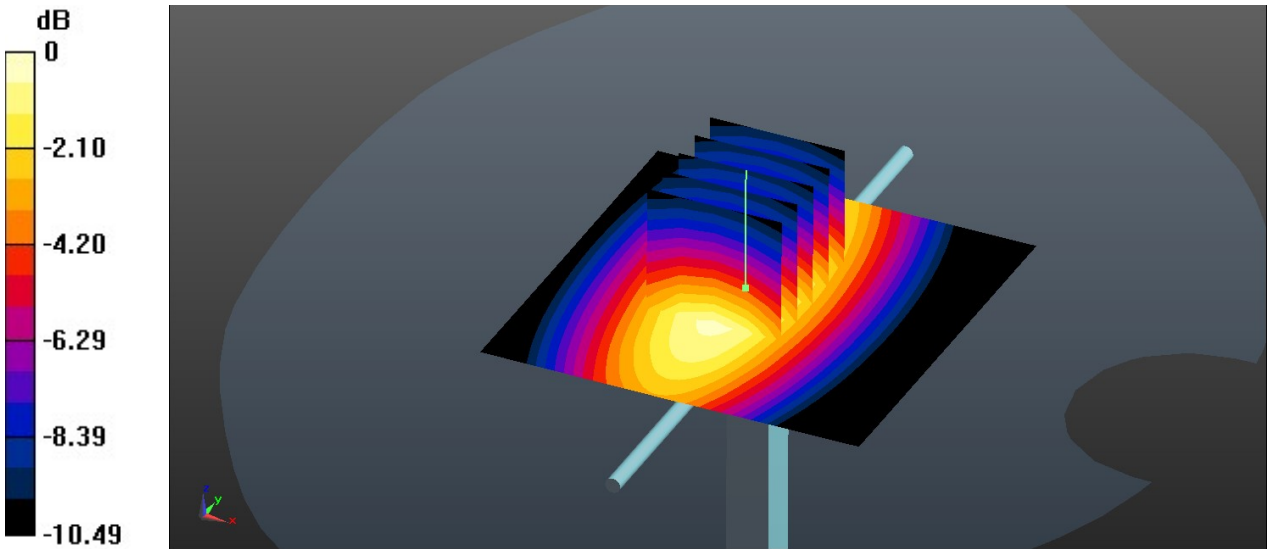
DUT: D750V3 - SN:1087

Communication System: UID 0, CW (0); Frequency: 750 MHz;Duty Cycle: 1:1
Medium: HSL_750 Medium parameters used: f = 750 MHz; σ = 0.904 S/m; ε_r = 42.287; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3843; ConvF(9.06, 9.06, 9.06); Calibrated: 2020.9.23
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn656; Calibrated: 2019.12.17
- Phantom: SAM1; Type: SAM; Serial: TP-1753
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 2.68 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 49.18 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 3.20 W/kg
SAR(1 g) = 2.17 W/kg; SAR(10 g) = 1.43 W/kg
Maximum value of SAR (measured) = 2.74 W/kg



0 dB = 2.74 W/kg = 4.38 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2020.10.31

System Check_Head_835MHz

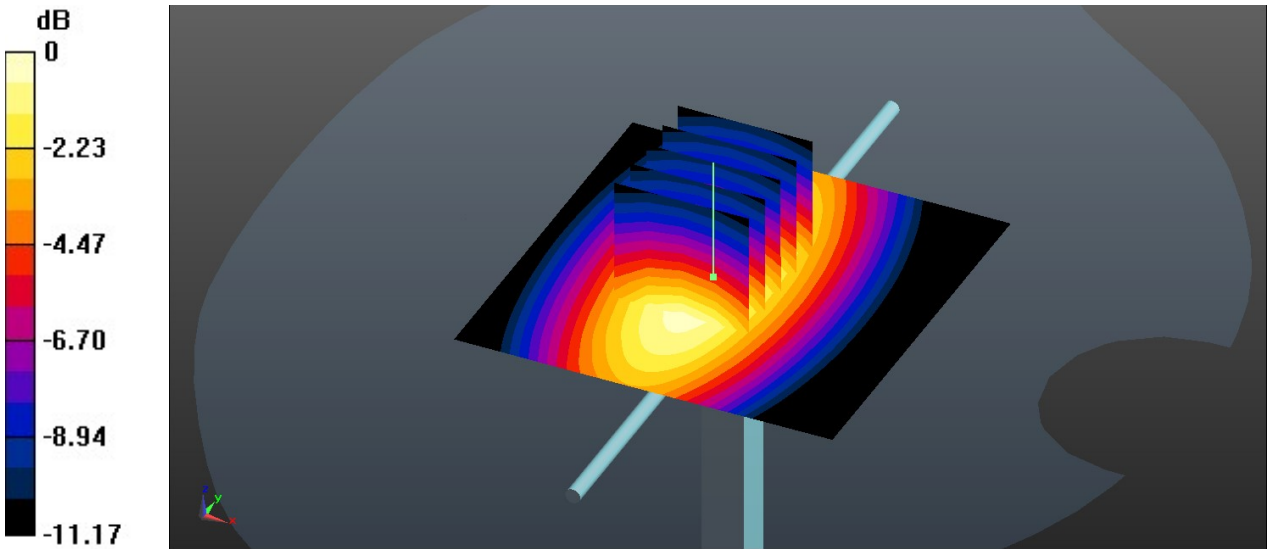
DUT: D835V2 - SN:4d151

Communication System: UID 0, CW (0); Frequency: 835 MHz;Duty Cycle: 1:1
Medium: HSL_835 Medium parameters used: f = 835 MHz; σ = 0.896 S/m; ε_r = 41.115; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3843; ConvF(8.69, 8.69, 8.69); Calibrated: 2020.9.23
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn656; Calibrated: 2019.12.17
- Phantom: SAM1; Type: SAM; Serial: TP-1753
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 2.98 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 52.23 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 3.56 W/kg
SAR(1 g) = 2.36 W/kg; SAR(10 g) = 1.52 W/kg
Maximum value of SAR (measured) = 3.01 W/kg



0 dB = 3.01 W/kg = 4.79 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2020.10.30

System Check_Head_1750MHz

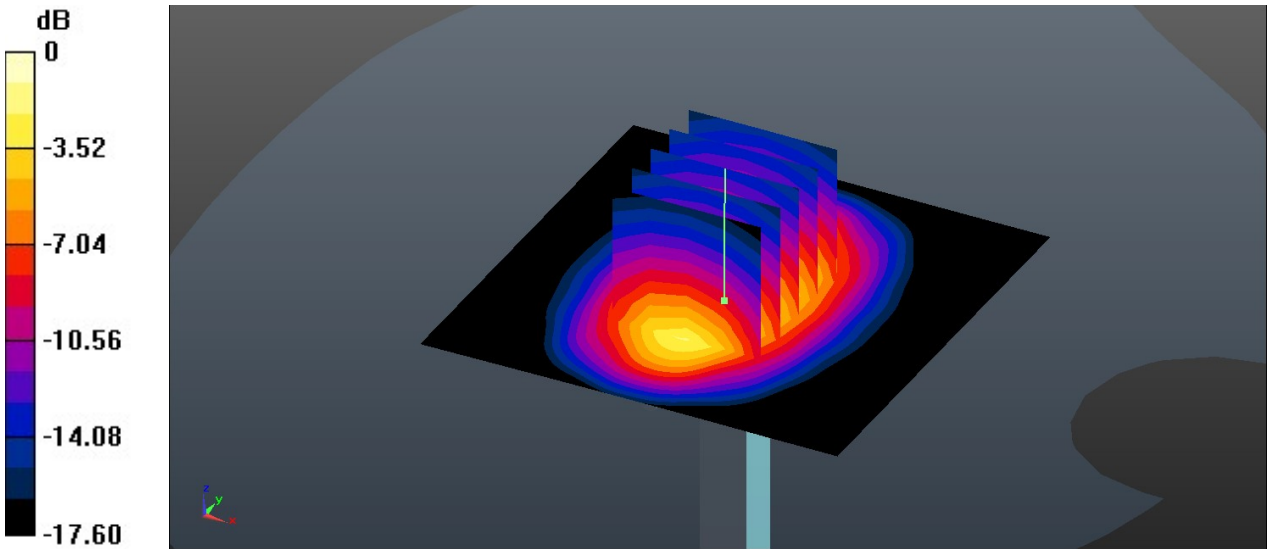
DUT: D1750V2 - SN:1090

Communication System: UID 0, CW; Frequency: 1750 MHz;Duty Cycle: 1:1
Medium: HSL_1750 Medium parameters used: f = 1750 MHz; σ = 1.365 S/m; ε_r = 40.507; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3843; ConvF(7.72, 7.72, 7.72); Calibrated: 2020.9.23
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn656; Calibrated: 2019.12.17
- Phantom: SAM1; Type: SAM; Serial: TP-1753
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 13.8 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 88.95 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 17.2 W/kg
SAR(1 g) = 9.57 W/kg; SAR(10 g) = 5.08 W/kg
Maximum value of SAR (measured) = 13.5 W/kg



0 dB = 13.5 W/kg = 11.30 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2020.10.30

System Check_Head_1900MHz

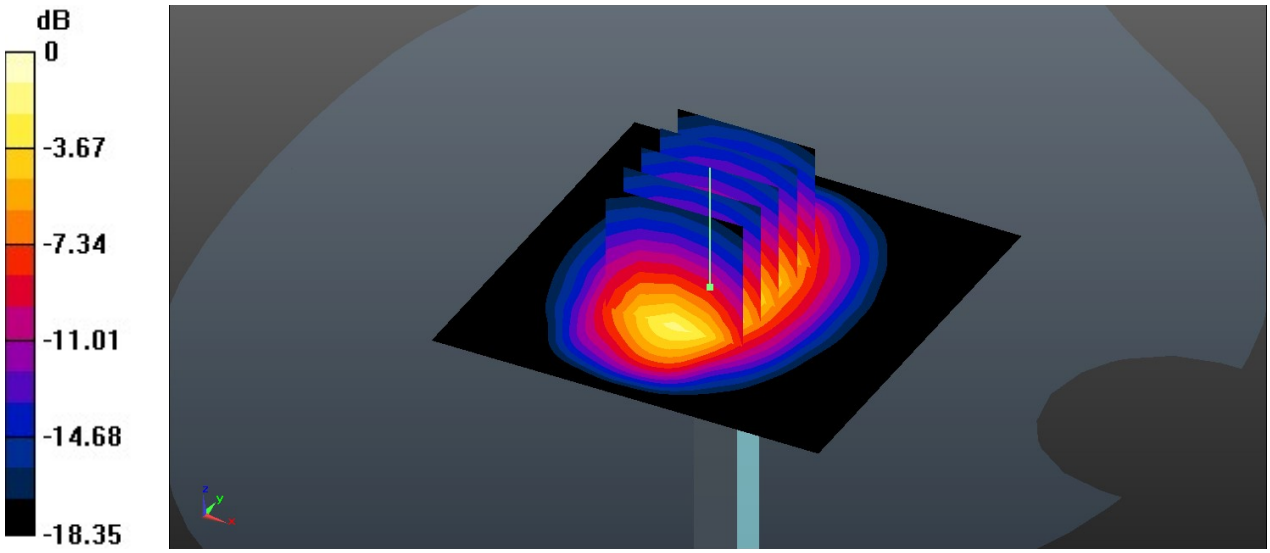
DUT: D1900V2 - SN:5d170

Communication System: UID 0, CW (0); Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: HSL_1900 Medium parameters used: f = 1900 MHz; σ = 1.373 S/m; ε_r = 39.73; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3843; ConvF(7.41, 7.41, 7.41); Calibrated: 2020.9.23
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn656; Calibrated: 2019.12.17
- Phantom: SAM1; Type: SAM; Serial: TP-1753
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 13.7 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 85.64 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 17.7 W/kg
SAR(1 g) = 9.52 W/kg; SAR(10 g) = 4.91 W/kg
Maximum value of SAR (measured) = 13.8 W/kg



0 dB = 13.8 W/kg = 11.40 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2020.12.2

System Check_Head_2450MHz

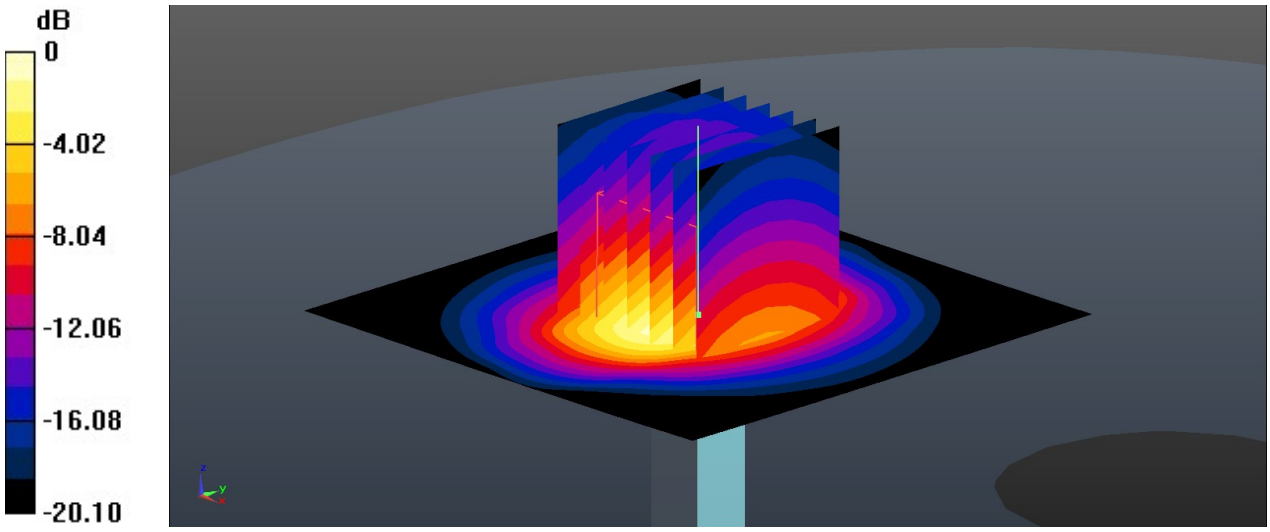
DUT: D2450V2 - SN:908

Communication System: UID 0, CW (0); Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: HSL_2450 Medium parameters used: f = 2450 MHz; σ = 1.885 S/m; ε_r = 40.793; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3843; ConvF(6.85, 6.85, 6.85); Calibrated: 2020.9.23
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn656; Calibrated: 2019.12.17
- Phantom: SAM1; Type: SAM; Serial: TP-1753
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=250mW/Area Scan (71x71x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 21.4 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 89.82 V/m; Power Drift = -0.17 dB
Peak SAR (extrapolated) = 27.4 W/kg
SAR(1 g) = 13.8 W/kg; SAR(10 g) = 6.53 W/kg
Maximum value of SAR (measured) = 20.7 W/kg



0 dB = 20.7 W/kg = 13.16 dBW/kg

System Check_Head_5250MHz

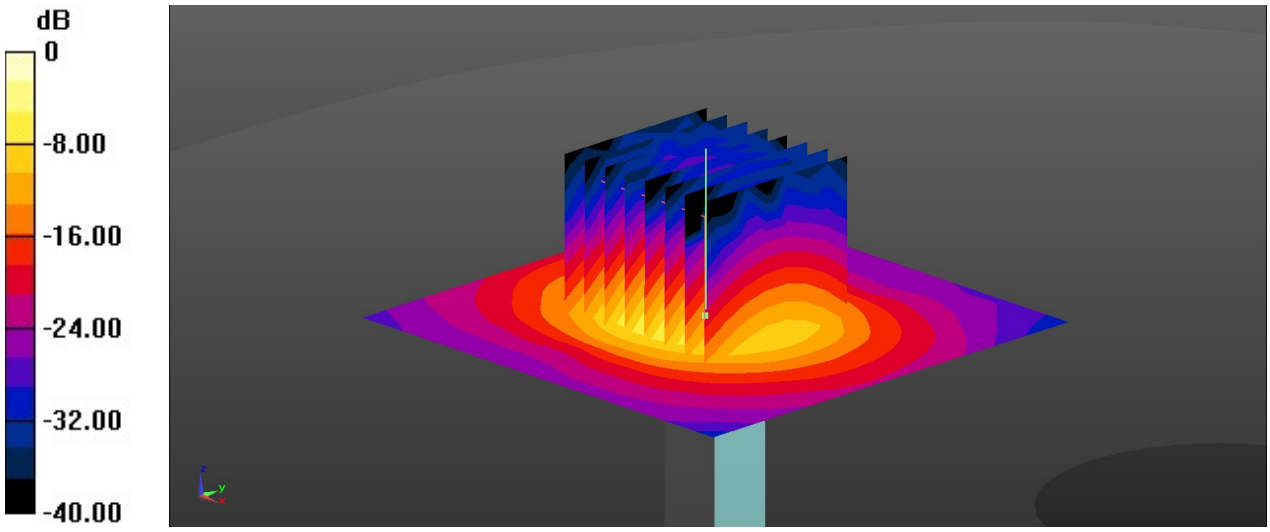
DUT: D5GHzV2 - SN:1128

Communication System: UID 0, CW (0); Frequency: 5250 MHz;Duty Cycle: 1:1
Medium: HSL_5000 Medium parameters used: f = 5250 MHz; σ = 4.734 S/m; ε_r = 35.989; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3843; ConvF(4.66, 4.66, 4.66); Calibrated: 2020.9.23
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn656; Calibrated: 2019.12.17
- Phantom: SAM1; Type: SAM; Serial: TP-1753
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 20.6 W/kg

Pin=100mW/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 46.59 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 31.8 W/kg
SAR(1 g) = 8.21 W/kg; SAR(10 g) = 2.25 W/kg
Maximum value of SAR (measured) = 19.5 W/kg



0 dB = 19.5 W/kg = 12.90 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2020.12.7

System Check_Head_5600MHz

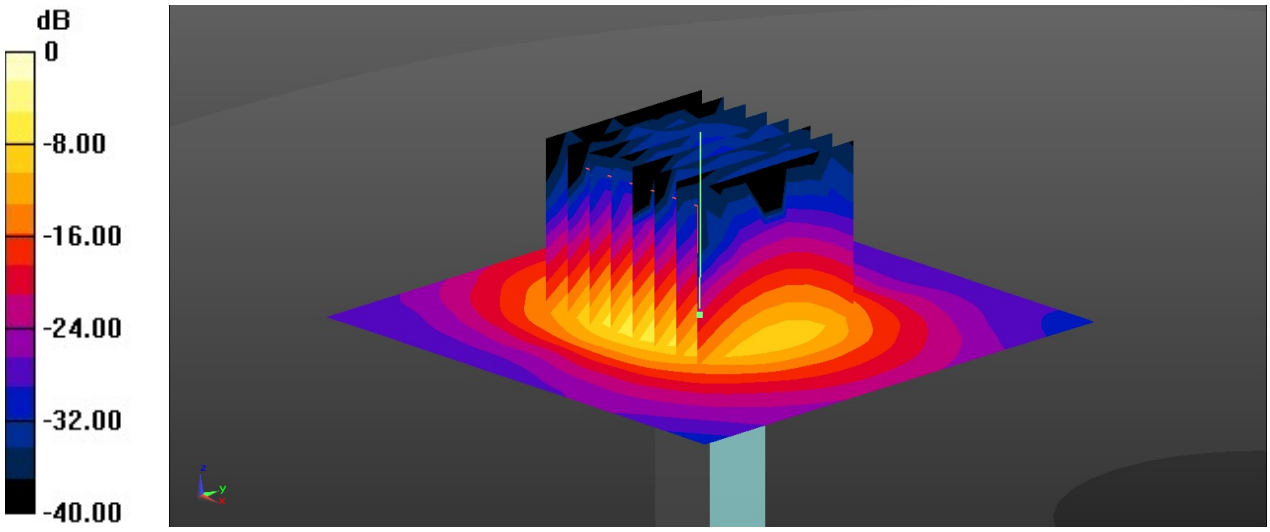
DUT: D5GHzV2 - SN:1128

Communication System: UID 0, CW (0); Frequency: 5600 MHz;Duty Cycle: 1:1
Medium: HSL_5000 Medium parameters used: f = 5600 MHz; σ = 5.161 S/m; ε_r = 35.332; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3843; ConvF(4.3, 4.3, 4.3); Calibrated: 2020.9.23
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn656; Calibrated: 2019.12.17
- Phantom: SAM1; Type: SAM; Serial: TP-1753
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 22.7 W/kg

Pin=100mW/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 45.01 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 36.0 W/kg
SAR(1 g) = 8.15 W/kg; SAR(10 g) = 2.18 W/kg
Maximum value of SAR (measured) = 21.2 W/kg



0 dB = 21.2 W/kg = 13.26 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2020.12.9

System Check_Head_5750MHz

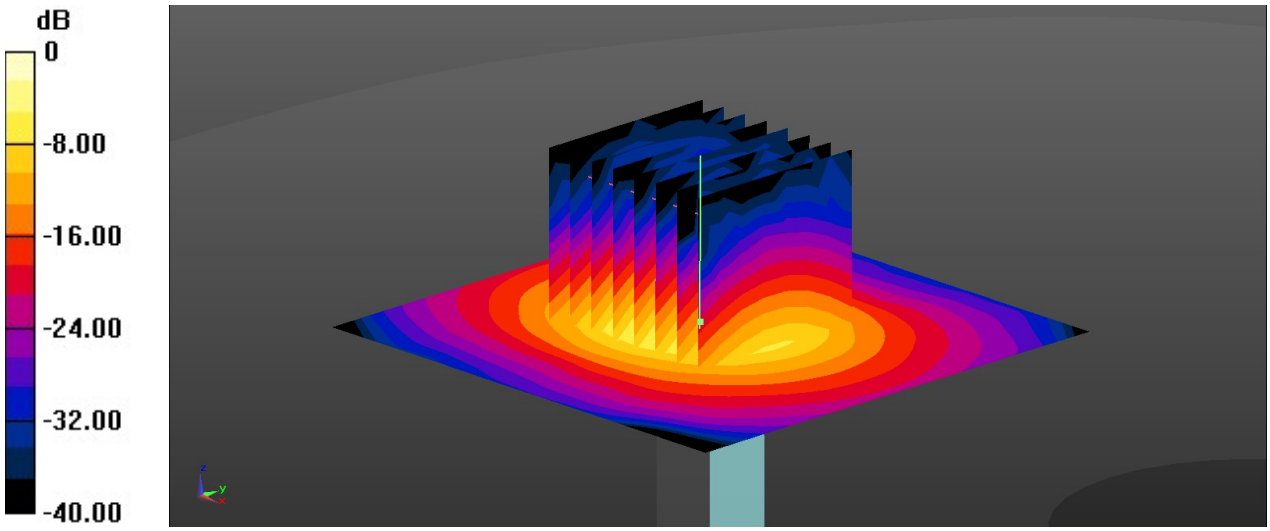
DUT: D5GHzV2 - SN:1128

Communication System: UID 0, CW (0); Frequency: 5750 MHz;Duty Cycle: 1:1
Medium: HSL_5000 Medium parameters used: f = 5750 MHz; σ = 5.331 S/m; ε_r = 35.06; ρ = 1000 kg/m^3
Ambient Temperature：23.1 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3843; ConvF(4.35, 4.35, 4.35); Calibrated: 2020.9.23
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn656; Calibrated: 2019.12.17
- Phantom: SAM1; Type: SAM; Serial: TP-1753
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 21.0 W/kg

Pin=100mW/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 41.83 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 35.7 W/kg
SAR(1 g) = 8.3 W/kg; SAR(10 g) = 2.28 W/kg
Maximum value of SAR (measured) = 20.7 W/kg



0 dB = 20.7 W/kg = 13.16 dBW/kg

Appendix B. Plots of High SAR Measurement

The plots are shown as follows.

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2020.10.30

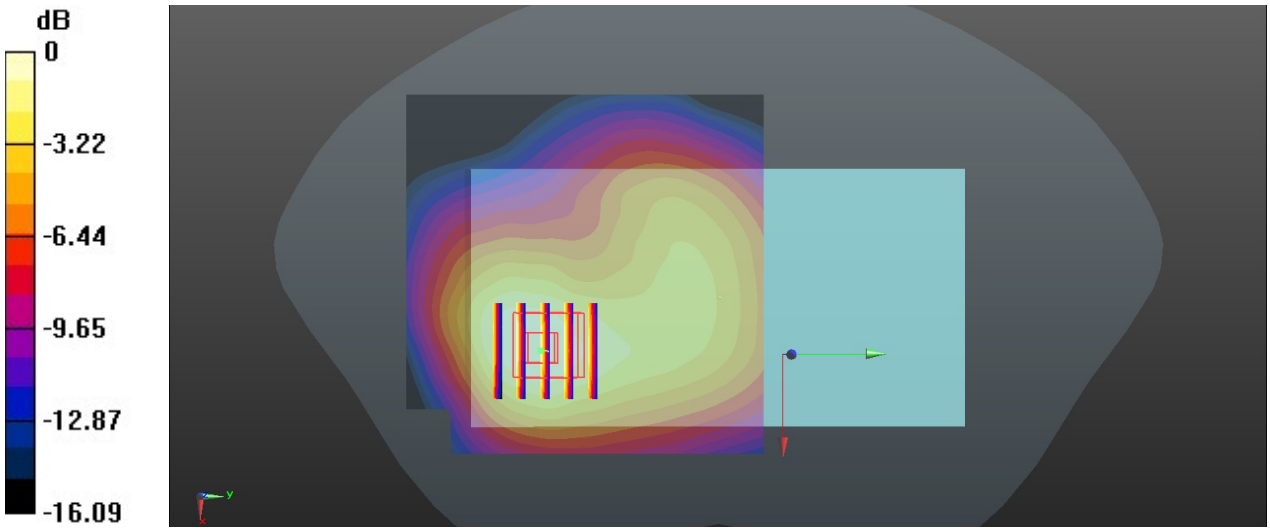
01_WCDMA II_RMC 12.2Kbps_Back_10mm_Ch9262

Communication System: UID 0, WCDMA (0); Frequency: 1852.4 MHz;Duty Cycle: 1:1
Medium: HSL_1900 Medium parameters used: f = 1852.4 MHz; σ = 1.336 S/m; ε_r = 39.796; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3843; ConvF(7.41, 7.41, 7.41); Calibrated: 2020.9.23
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn656; Calibrated: 2019.12.17
- Phantom: SAM1; Type: SAM; Serial: TP-1753
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (81x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.194 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.366 V/m; Power Drift = -0.19 dB
Peak SAR (extrapolated) = 0.219 W/kg
SAR(1 g) = 0.133 W/kg; SAR(10 g) = 0.081 W/kg
Maximum value of SAR (measured) = 0.188 W/kg



0 dB = 0.188 W/kg = -7.26 dBW/kg