


# FCC SAR Test Report

Report No. : SA180208C04  
Applicant : Getac Technology Corporation.  
Address : 5F., Building A, No. 209, Sec.1, Nangang Rd., Nangang Dist., Taipei City 11568, Taiwan, R.O.C.  
Product : Notebook  
FCC ID : QYL8265NG  
Brand : Getac  
Model No. : V110  
Standards : FCC 47 CFR Part 2 (2.1093), IEEE C95.1:1992, IEEE Std 1528:2013  
KDB 865664 D01 v01r04, KDB 865664 D02 v01r02, KDB 248227 D01 v02r02  
KDB 447498 D01 v06, KDB 616217 D04 v01r02  
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Lab Address : No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan, R.O.C.  
Test Location : No. 19, Hwa Ya 2nd Rd, Wen Hwa Vil, Kwei Shan Dist., Taoyuan City 33383, Taiwan (R.O.C)

**CERTIFICATION:** The above equipment have been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch – Lin Kou Laboratories**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's SAR characteristics under the conditions specified in this report. It should not be reproduced except in full, without the written approval of our laboratory. The client should not use it to claim product certification, approval, or endorsement by TAF or any government agencies.

Prepared By :

  
Evonne Liu / Specialist

Approved By :

  
Eli Hsu / Senior Engineer



FCC Accredited No.: TW0003

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### 1. Summary of Maximum SAR Value

Equipment Class	Mode	Laptop PC Mode	Tablet PC Mode
		Highest SAR-1g Body Tested at 25 mm (W/kg)	Highest SAR-1g Body Tested at 0 mm (W/kg)
PCB	GSM850	N/A	1.15
	GSM1900	N/A	1.05
	WCDMA II	N/A	1.11
	WCDMA IV	N/A	1.09
	WCDMA V	N/A	1.18
	CDMA BC0	N/A	1.10
	CDMA BC1	N/A	1.17
	LTE 2	N/A	1.17
	LTE 4	N/A	1.18
	LTE 5	N/A	1.13
	LTE 13	N/A	1.14
	LTE 17	N/A	0.71
LTE 25	N/A	1.14	
DTS	2.4G WLAN	N/A	0.44
NII	5.3G WLAN	N/A	0.87
	5.6G WLAN	N/A	0.86
	5.8G WLAN	N/A	0.68
DSS	Bluetooth	N/A	0.03
DXX	NFC	N/A	N/A
Highest Simultaneous Transmission SAR		Body	
		N/A	1.58

**Note:**

- The SAR criteria (**Head & Body: SAR-1g 1.6 W/kg, and Extremity: SAR-10g 4.0 W/kg**) for general population / uncontrolled exposure is specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1992.

## 2. Description of Equipment Under Test

<b>EUT Type</b>	Notebook
<b>FCC ID</b>	QYL8265NG
<b>Brand Name</b>	Getac
<b>Model Name</b>	V110
<b>Tx Frequency Bands (Unit: MHz)</b>	GSM850 : 824.2 ~ 848.8 GSM1900 : 1850.2 ~ 1909.8 WCDMA Band II : 1852.4 ~ 1907.6 WCDMA Band IV : 1712.4 ~ 1752.6 WCDMA Band V : 826.4 ~ 846.6 CDMA BC0 : 824.7 ~ 848.31 CDMA BC1 : 1851.25 ~ 1908.75 LTE Band 2 : 1850.7 ~ 1909.3 (BW: 1.4M, 3M, 5M, 10M, 15M, 20M) LTE Band 4 : 1710.7 ~ 1754.3 (BW: 1.4M, 3M, 5M, 10M, 15M, 20M) LTE Band 5 : 824.7 ~ 848.3 (BW: 1.4M, 3M, 5M, 10M) LTE Band 13 : 779.5 ~ 784.5 (BW: 5M, 10M) LTE Band 17 : 706.5 ~ 713.5 (BW: 5M, 10M) LTE Band 25 : 1850.7 ~ 1914.3 (BW: 1.4M, 3M, 5M, 10M, 15M, 20M) WLAN : 2412 ~ 2462, 5180 ~ 5240, 5260 ~ 5320, 5500 ~ 5700, 5745 ~ 5825 Bluetooth : 2402 ~ 2480 NFC : 13.56
<b>Uplink Modulations</b>	GPRS : GMSK EDGE : 8PSK WCDMA : QPSK CDMA : QPSK LTE : QPSK, 16QAM 802.11b : DSSS 802.11a/g/n/ac : OFDM Bluetooth : GFSK, $\pi/4$ -DQPSK, 8-DPSK NFC : ASK
<b>Maximum Tune-up Conducted Power (Unit: dBm)</b>	Please refer to section 4.6.1 of this report
<b>Antenna Type</b>	WWAN: Fixed Internal Antenna WLAN/BT: PIFA Antenna
<b>EUT Stage</b>	Identical Prototype

**Note:**

- The above EUT information is declared by manufacturer and for more detailed features description please refers to the manufacturer's specifications or User's Manual.

**List of Accessory:**

<b>Battery</b>	<b>Brand Name</b>	Getac Technology Corp.
	<b>Model Name</b>	BP3S1P2100-S
	<b>Power Rating</b>	11.1Vdc, 2100mAh
	<b>Type</b>	Li-ion

### **3. SAR Measurement System**

#### **3.1 Definition of Specific Absorption Rate (SAR)**

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

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

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

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

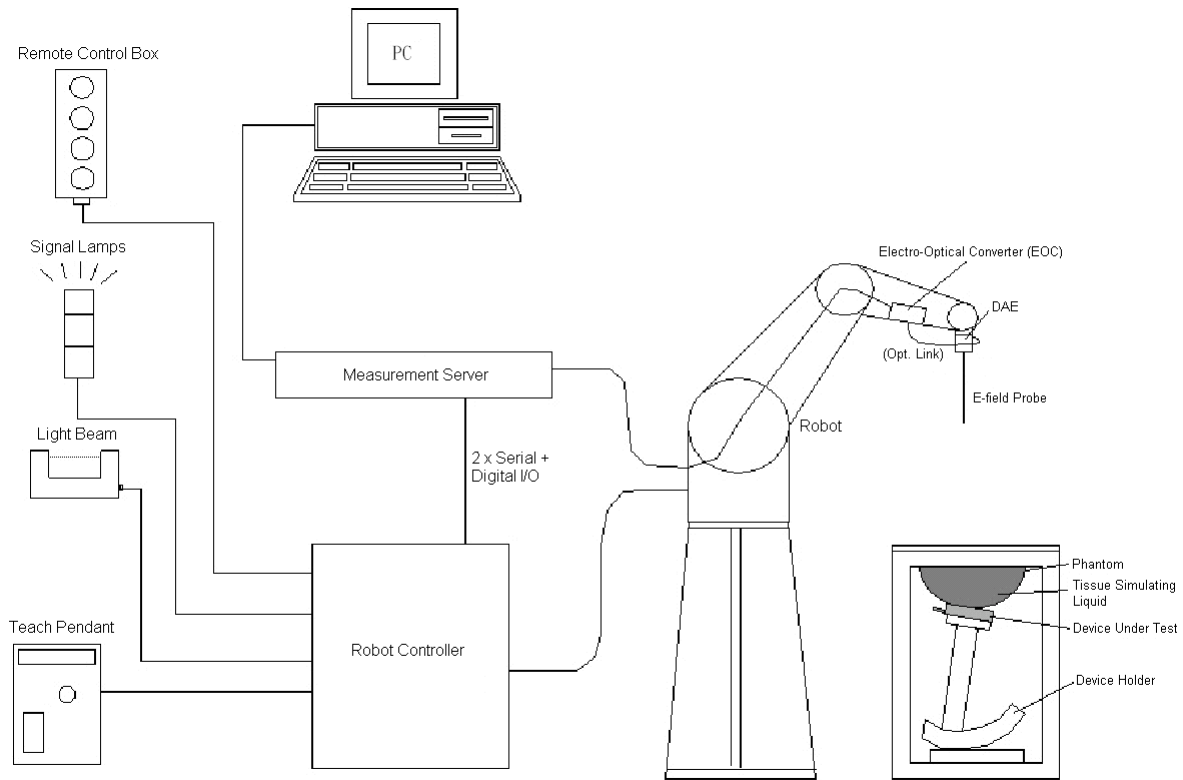
SAR measurement can be related to the electrical field in the tissue by

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

Where:  $\sigma$  is the conductivity of the tissue,  $\rho$  is the mass density of the tissue and E is the RMS electrical field strength.

#### **3.2 SPEAG DASY52 System**

DASY52 system consists of high precision robot, probe alignment sensor, phantom, robot controller, controlled measurement server and near-field probe. The robot includes six axes that can move to the precision position of the DASY52 software defined. The DASY52 software can define the area that is detected by the probe. The robot is connected to controlled box. Controlled measurement server is connected to the controlled robot box. The DAE includes amplifier, signal multiplexing, AD converter, offset measurement and surface detection. It is connected to the Electro-optical coupler (ECO). The ECO performs the conversion from the optical into digital electric signal of the DAE and transfers data to the PC.



**Fig-3.1 SPEAG DASY52 System Setup**

**3.2.1 Robot**

The DASY52 systems use the high precision robots from Stäubli SA (France). For the 6-axis controller system, the robot controller version of CS8c from Stäubli is used. The Stäubli robot series have many features that are important for our application:

- High precision (repeatability  $\pm 0.035$  mm)
- High reliability (industrial design)
- Jerk-free straight movements
- Low ELF interference (the closed metallic construction shields against motor control fields)





**Fig-3.2 SPEAG DASY52 System**


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## 3.2.2 Probes


The SAR measurement is conducted with the dosimetric probe. The probe is specially designed and calibrated for use in liquid with high permittivity. The dosimetric probe has special calibration in liquid at different frequency.

<b>Model</b>	EX3DV4	
<b>Construction</b>	Symmetrical design with triangular core. Built-in shielding against static charges. PEEK enclosure material (resistant to organic solvents, e.g., DGBE).	
<b>Frequency</b>	10 MHz to 6 GHz Linearity: $\pm 0.2$ dB	
<b>Directivity</b>	$\pm 0.3$ dB in HSL (rotation around probe axis) $\pm 0.5$ dB in tissue material (rotation normal to probe axis)	
<b>Dynamic Range</b>	10 $\mu$ W/g to 100 mW/g Linearity: $\pm 0.2$ dB (noise: typically $< 1$ $\mu$ W/g)	
<b>Dimensions</b>	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	

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

<b>Model</b>	ET3DV6	
<b>Construction</b>	Symmetrical design with triangular core Built-in optical fiber for surface detection system. Built-in shielding against static charges. PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
<b>Frequency</b>	10 MHz to 2.3 GHz; Linearity: $\pm 0.2$ dB	
<b>Directivity</b>	$\pm 0.2$ dB in TSL (rotation around probe axis) $\pm 0.4$ dB in TSL (rotation normal to probe axis)	
<b>Dynamic Range</b>	5 $\mu$ W/g to 100 mW/g; Linearity: $\pm 0.2$ dB	
<b>Dimensions</b>	Overall length: 337 mm (Tip: 16 mm) Tip diameter: 6.8 mm (Body: 12 mm) Distance from probe tip to dipole centers: 2.7 mm	


## 3.2.3 Data Acquisition Electronics (DAE)


<b>Model</b>	DAE3, DAE4	
<b>Construction</b>	Signal amplifier, multiplexer, A/D converter and control logic. Serial optical link for communication with DASY embedded system (fully remote controlled). Two step probe touch detector for mechanical surface detection and emergency robot stop.	
<b>Measurement Range</b>	-100 to +300 mV (16 bit resolution and two range settings: 4mV, 400mV)	
<b>Input Offset Voltage</b>	$< 5\mu$ V (with auto zero)	
<b>Input Bias Current</b>	$< 50$ fA	
<b>Dimensions</b>	60 x 60 x 68 mm	



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## 3.2.4 Phantoms


<b>Model</b>	Twin SAM	
<b>Construction</b>	The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE 1528 and IEC 62209-1. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. A cover prevents evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by teaching three points with the robot.	
<b>Material</b>	Vinylester, glass fiber reinforced (VE-GF)	
<b>Shell Thickness</b>	$2 \pm 0.2$ mm ( $6 \pm 0.2$ mm at ear point)	
<b>Dimensions</b>	Length: 1000 mm Width: 500 mm Height: adjustable feet	
<b>Filling Volume</b>	approx. 25 liters	

<b>Model</b>	ELI	
<b>Construction</b>	Phantom for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI is fully compatible with the IEC 62209-2 standard and all known tissue simulating liquids. ELI has been optimized regarding its performance and can be integrated into our standard phantom tables. A cover prevents evaporation of the liquid. Reference markings on the phantom allow installation of the complete setup, including all predefined phantom positions and measurement grids, by teaching three points. The phantom is compatible with all SPEAG dosimetric probes and dipoles.	
<b>Material</b>	Vinylester, glass fiber reinforced (VE-GF)	
<b>Shell Thickness</b>	$2.0 \pm 0.2$ mm (bottom plate)	
<b>Dimensions</b>	Major axis: 600 mm Minor axis: 400 mm	
<b>Filling Volume</b>	approx. 30 liters	


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### 3.2.5 Device Holder

<b>Model</b>	Mounting Device	
<b>Construction</b>	In combination with the Twin SAM Phantom or ELI4, the Mounting Device enables the rotation of the mounted transmitter device in spherical coordinates. Rotation point is the ear opening point. Transmitter devices can be easily and accurately positioned according to IEC, IEEE, FCC or other specifications. The device holder can be locked for positioning at different phantom sections (left head, right head, flat).	
<b>Material</b>	POM	

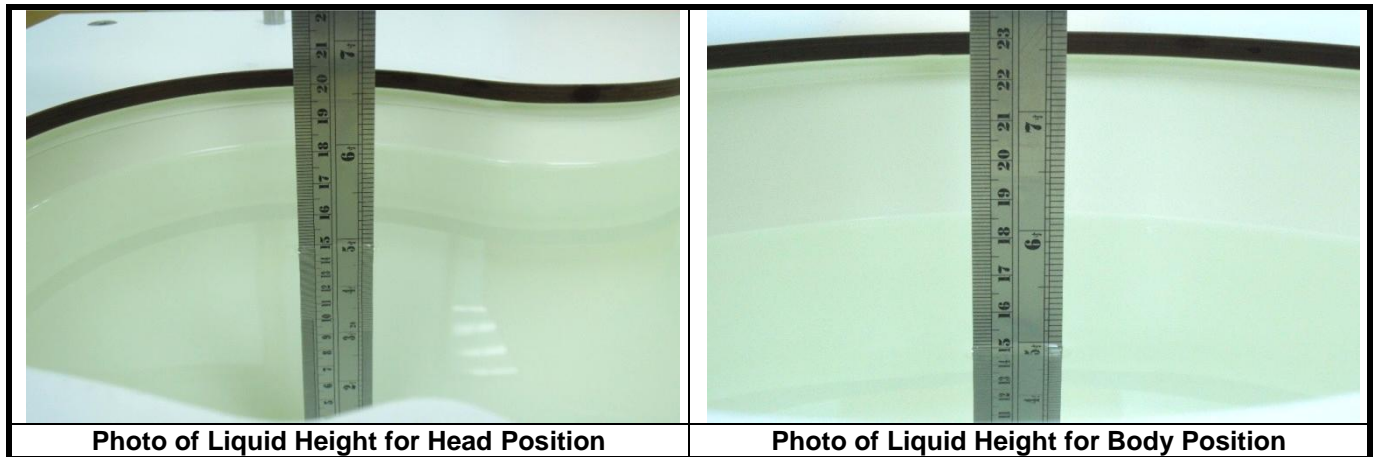
<b>Model</b>	Laptop Extensions Kit	
<b>Construction</b>	Simple but effective and easy-to-use extension for Mounting Device that facilitates the testing of larger devices according to IEC 62209-2 (e.g., laptops, cameras, etc.). It is lightweight and fits easily on the upper part of the Mounting Device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

### 3.2.6 System Validation Dipoles

<b>Model</b>	D-Serial	
<b>Construction</b>	Symmetrical dipole with 1/4 balun. Enables measurement of feed point impedance with NWA. Matched for use near flat phantoms filled with tissue simulating solutions.	
<b>Frequency</b>	750 MHz to 5800 MHz	
<b>Return Loss</b>	> 20 dB	
<b>Power Capability</b>	> 100 W (f < 1GHz), > 40 W (f > 1GHz)	

**3.2.7 Tissue Simulating Liquids**

For SAR measurement of the field distribution inside the phantom, the phantom must be filled with homogeneous tissue simulating liquid to a depth of at least 15 cm. For head SAR testing, the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15 cm. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15 cm. The nominal dielectric values of the tissue simulating liquids in the phantom and the tolerance of 5% are listed in Table-3.1.



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

Table-3.1 Targets of Tissue Simulating Liquid

Frequency (MHz)	Target Permittivity	Range of $\pm 5\%$	Target Conductivity	Range of $\pm 5\%$
<b>For Head</b>				
750	41.9	39.8 ~ 44.0	0.89	0.85 ~ 0.93
835	41.5	39.4 ~ 43.6	0.90	0.86 ~ 0.95
900	41.5	39.4 ~ 43.6	0.97	0.92 ~ 1.02
1450	40.5	38.5 ~ 42.5	1.20	1.14 ~ 1.26
1640	40.3	38.3 ~ 42.3	1.29	1.23 ~ 1.35
1750	40.1	38.1 ~ 42.1	1.37	1.30 ~ 1.44
1800	40.0	38.0 ~ 42.0	1.40	1.33 ~ 1.47
1900	40.0	38.0 ~ 42.0	1.40	1.33 ~ 1.47
2000	40.0	38.0 ~ 42.0	1.40	1.33 ~ 1.47
2300	39.5	37.5 ~ 41.5	1.67	1.59 ~ 1.75
2450	39.2	37.2 ~ 41.2	1.80	1.71 ~ 1.89
2600	39.0	37.1 ~ 41.0	1.96	1.86 ~ 2.06
3500	37.9	36.0 ~ 39.8	2.91	2.76 ~ 3.06
5200	36.0	34.2 ~ 37.8	4.66	4.43 ~ 4.89
5300	35.9	34.1 ~ 37.7	4.76	4.52 ~ 5.00
5500	35.6	33.8 ~ 37.4	4.96	4.71 ~ 5.21
5600	35.5	33.7 ~ 37.3	5.07	4.82 ~ 5.32
5800	35.3	33.5 ~ 37.1	5.27	5.01 ~ 5.53
<b>For Body</b>				
750	55.5	52.7 ~ 58.3	0.96	0.91 ~ 1.01
835	55.2	52.4 ~ 58.0	0.97	0.92 ~ 1.02
900	55.0	52.3 ~ 57.8	1.05	1.00 ~ 1.10
1450	54.0	51.3 ~ 56.7	1.30	1.24 ~ 1.37
1640	53.8	51.1 ~ 56.5	1.40	1.33 ~ 1.47
1750	53.4	50.7 ~ 56.1	1.49	1.42 ~ 1.56
1800	53.3	50.6 ~ 56.0	1.52	1.44 ~ 1.60
1900	53.3	50.6 ~ 56.0	1.52	1.44 ~ 1.60
2000	53.3	50.6 ~ 56.0	1.52	1.44 ~ 1.60
2300	52.9	50.3 ~ 55.5	1.81	1.72 ~ 1.90
2450	52.7	50.1 ~ 55.3	1.95	1.85 ~ 2.05
2600	52.5	49.9 ~ 55.1	2.16	2.05 ~ 2.27
3500	51.3	48.7 ~ 53.9	3.31	3.14 ~ 3.48
5200	49.0	46.6 ~ 51.5	5.30	5.04 ~ 5.57
5300	48.9	46.5 ~ 51.3	5.42	5.15 ~ 5.69
5500	48.6	46.2 ~ 51.0	5.65	5.37 ~ 5.93
5600	48.5	46.1 ~ 50.9	5.77	5.48 ~ 6.06
5800	48.2	45.8 ~ 50.6	6.00	5.70 ~ 6.30

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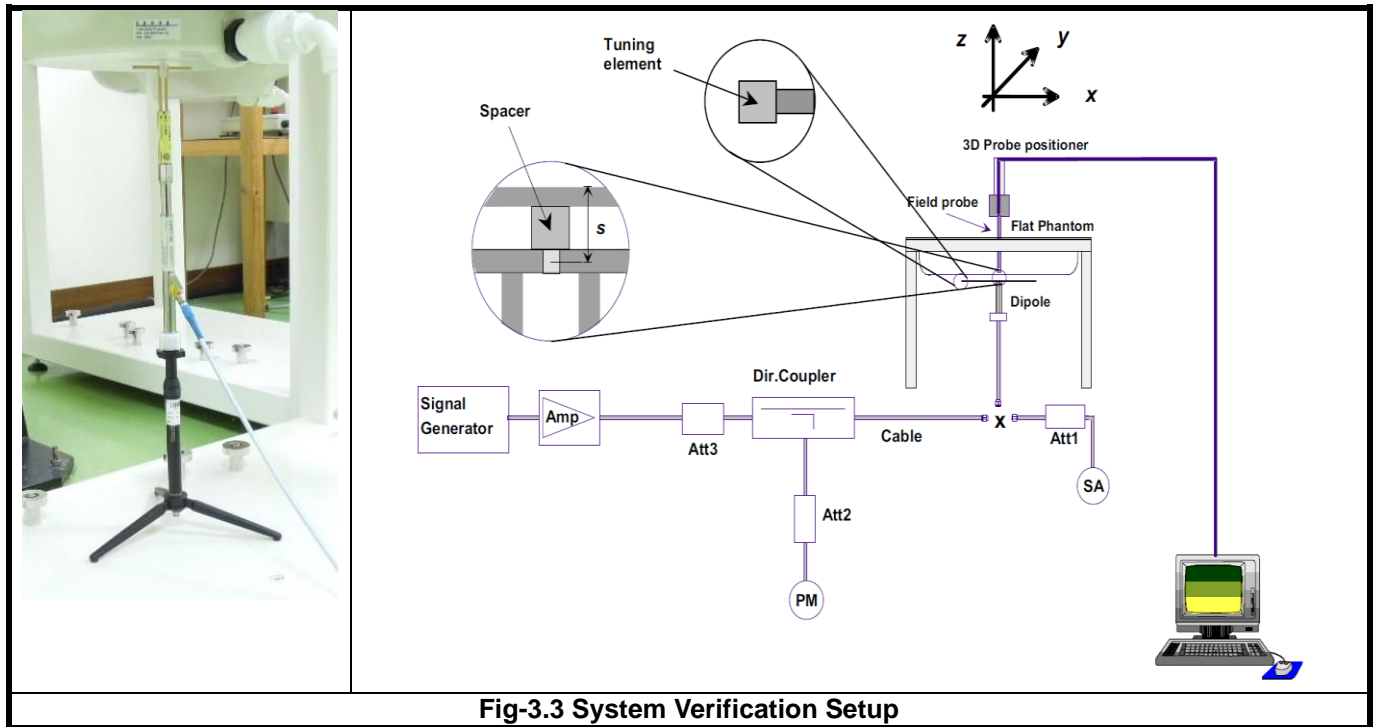
The following table gives the recipes for tissue simulating liquids.

**Table-3.2 Recipes of Tissue Simulating Liquid**

Tissue Type	Bactericide	DGBE	HEC	NaCl	Sucrose	Triton X-100	Water	Diethylene Glycol Mono-hexylether
H750	0.2	-	0.2	1.5	56.0	-	42.1	-
H835	0.2	-	0.2	1.5	57.0	-	41.1	-
H900	0.2	-	0.2	1.4	58.0	-	40.2	-
H1450	-	43.3	-	0.6	-	-	56.1	-
H1640	-	45.8	-	0.5	-	-	53.7	-
H1750	-	47.0	-	0.4	-	-	52.6	-
H1800	-	44.5	-	0.3	-	-	55.2	-
H1900	-	44.5	-	0.2	-	-	55.3	-
H2000	-	44.5	-	0.1	-	-	55.4	-
H2300	-	44.9	-	0.1	-	-	55.0	-
H2450	-	45.0	-	0.1	-	-	54.9	-
H2600	-	45.1	-	0.1	-	-	54.8	-
H3500	-	8.0	-	0.2	-	20.0	71.8	-
H5G	-	-	-	-	-	17.2	65.5	17.3
B750	0.2	-	0.2	0.8	48.8	-	50.0	-
B835	0.2	-	0.2	0.9	48.5	-	50.2	-
B900	0.2	-	0.2	0.9	48.2	-	50.5	-
B1450	-	34.0	-	0.3	-	-	65.7	-
B1640	-	32.5	-	0.3	-	-	67.2	-
B1750	-	31.0	-	0.2	-	-	68.8	-
B1800	-	29.5	-	0.4	-	-	70.1	-
B1900	-	29.5	-	0.3	-	-	70.2	-
B2000	-	30.0	-	0.2	-	-	69.8	-
B2300	-	31.0	-	0.1	-	-	68.9	-
B2450	-	31.4	-	0.1	-	-	68.5	-
B2600	-	31.8	-	0.1	-	-	68.1	-
B3500	-	28.8	-	0.1	-	-	71.1	-
B5G	-	-	-	-	-	10.7	78.6	10.7

**3.3 SAR System Verification**

The system check verifies that the system operates within its specifications. It is performed daily or before every SAR measurement. The system check uses normal SAR measurements in the flat section of the phantom with a matched dipole at a specified distance. The system verification setup is shown as below.



**Fig-3.3 System Verification Setup**

The validation dipole is placed beneath the flat phantom with the specific spacer in place. The distance spacer is touch the phantom surface with a light pressure at the reference marking and be oriented parallel to the long side of the phantom. The spectrum analyzer measures the forward power at the location of the system check dipole connector. The signal generator is adjusted for the desired forward power (250 mW is used for 700 MHz to 3 GHz, 100 mW is used for 3.5 GHz to 6 GHz) at the dipole connector and the power meter is read at that level. After connecting the cable to the dipole, the signal generator is readjusted for the same reading at power meter.

After system check testing, the SAR result will be normalized to 1W forward input power and compared with the reference SAR value derived from validation dipole certificate report. The deviation of system check should be within 10 %.

**3.4 SAR Measurement Procedure**

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

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

The SAR measurement procedures for each of test conditions are as follows:

- (a) Make EUT to transmit maximum output power
- (b) Measure conducted output power through RF cable
- (c) Place the EUT in the specific position of phantom
- (d) Perform SAR testing steps on the DASY system
- (e) Record the SAR value

**3.4.1 Area & Zoom Scan Procedure**

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

Items	<= 2 GHz	2-3 GHz	3-4 GHz	4-5 GHz	5-6 GHz
Area Scan ( $\Delta x, \Delta y$ )	<= 15 mm	<= 12 mm	<= 12 mm	<= 10 mm	<= 10 mm
Zoom Scan ( $\Delta x, \Delta y$ )	<= 8 mm	<= 5 mm	<= 5 mm	<= 4 mm	<= 4 mm
Zoom Scan ( $\Delta z$ )	<= 5 mm	<= 5 mm	<= 4 mm	<= 3 mm	<= 2 mm
Zoom Scan Volume	>= 30 mm	>= 30 mm	>= 28 mm	>= 25 mm	>= 22 mm

**Note:**

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

**3.4.2 Volume Scan Procedure**

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

### 3.4.3 Power Drift Monitoring

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

### 3.4.4 Spatial Peak SAR Evaluation

The procedure for spatial peak SAR evaluation has been implemented according to the test standard. It can be conducted for 1g and 10g, as well as for user-specific masses. The DASY software includes all numerical procedures necessary to evaluate the spatial peak SAR value.

The base for the evaluation is a "cube" measurement. The measured volume must include the 1g and 10g cubes with the highest averaged SAR values. For that purpose, the center of the measured volume is aligned to the interpolated peak SAR value of a previously performed area scan.

The entire evaluation of the spatial peak values is performed within the post-processing engine (SEMCAD). The system always gives the maximum values for the 1g and 10g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:

- (a) Extraction of the measured data (grid and values) from the Zoom Scan
- (b) Calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
- (c) Generation of a high-resolution mesh within the measured volume
- (d) Interpolation of all measured values from the measurement grid to the high-resolution grid
- (e) Extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
- (f) Calculation of the averaged SAR within masses of 1g and 10g

### 3.4.5 SAR Averaged Methods

In DASY, the interpolation and extrapolation are both based on the modified Quadratic Shepard's method. The interpolation scheme combines a least-square fitted function method and a weighted average method which are the two basic types of computational interpolation and approximation.

Extrapolation routines are used to obtain SAR values between the lowest measurement points and the inner phantom surface. The extrapolation distance is determined by the surface detection distance and the probe sensor offset. The uncertainty increases with the extrapolation distance. To keep the uncertainty within 1% for the 1 g and 10 g cubes, the extrapolation distance should not be larger than 5 mm.



## **4. SAR Measurement Evaluation**

### **4.1 EUT Configuration and Setting**

#### **<Connections between EUT and System Simulator>**

For WWAN SAR testing, the EUT was linked and controlled by base station emulator. Communication between the EUT and the emulator was established by air link. The distance between the EUT and the communicating antenna of the emulator is larger than 50 cm and the output power radiated from the emulator antenna is at least 30 dB smaller than the output power of EUT. The EUT was set from the emulator to radiate maximum output power during SAR testing.

#### **<Considerations Related to GSM / GPRS / EDGE for Setup and Testing>**

The maximum multi-slot capability supported by this device is as below.

1. This EUT is class B device
2. This EUT supports GPRS multi-slot class 10 (max. uplink: 2, max. downlink: 4, total timeslots: 5)
3. This EUT supports EDGE multi-slot class 12 (max. uplink: 4, max. downlink: 4, total timeslots: 5)

For GSM850 frequency band, the power control level is set to 5 for GSM mode and GPRS (GMSK: CS1), and set to 8 for EDGE (GMSK: MCS1, 8PSK: MCS9). For GSM1900 frequency band, the power control level is set to 0 for GSM mode and GPRS (GMSK: CS1), and set to 2 for EDGE (GMSK: MCS1, 8PSK: MCS9).

SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power specified for production units, including tune-up tolerance. The data mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested.

**<Considerations Related to WCDMA for Setup and Testing>**

**Release 5 HSDPA Data Devices**

The 3G SAR test reduction procedure is applied to body SAR with 12.2 kbps RMC as the primary mode. Otherwise, body SAR for HSDPA is measured using an FRC with H-Set 1 in Sub-test 1 and a 12.2 kbps RMC configured in Test Loop Mode 1, for the highest reported SAR configuration in 12.2 kbps RMC without HSDPA. HSDPA is configured according to the applicable UE category of a test device. The number of HS-DSCH / HS-PDSCHs, HARQ processes, minimum inter-TTI interval, transport block sizes and RV coding sequence are defined by the H-set. To maintain a consistent test configuration and stable transmission conditions, QPSK is used in the H-set for SAR testing. HS-DPCCH should be configured with a CQI feedback cycle of 4 ms and a CQI repetition factor of 2 to maintain a constant rate of active CQI slots. DPCCH and DPDCH gain factors ( $\beta_c$ ,  $\beta_d$ ), and HS-DPCCH power offset parameters ( $\Delta_{ACK}$ ,  $\Delta_{NACK}$ ,  $\Delta_{CQI}$ ) are set according to values indicated in below. The CQI value is determined by the UE category, transport block size, number of HS-PDSCHs and modulation used in the H-set.

Sub-test	$\beta_c$	$\beta_d$	$\beta_d$ (SF)	$\beta_c/\beta_d$	$\beta_{HS}^{(1)(2)}$	CM <sup>(3)</sup> (dB)	MPR <sup>(3)</sup> (dB)
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15 <sup>(4)</sup>	15/15 <sup>(4)</sup>	64	12/15 <sup>(4)</sup>	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:  $\Delta_{ACK}$ ,  $\Delta_{NACK}$  and  $\Delta_{CQI}$  = 30/15 with  $\beta_{HS}$  = 30/15 \*  $\beta_c$ .  
 Note 2: For the HS-DPCCH power mask requirement test in clause 5.2C, 5.7A, and the Error Vector Magnitude (EVM) with HS-DPCCH test in clause 5.13.1A, and HSDPA EVM with phase discontinuity in clause 5.13.1AA,  $\Delta_{ACK}$  and  $\Delta_{NACK}$  = 30/15 with  $\beta_{HS}$  = 30/15 \*  $\beta_c$ , and  $\Delta_{CQI}$  = 24/15 with  $\beta_{HS}$  = 24/15 \*  $\beta_c$ .  
 Note 3: CM = 1 for  $\beta_c/\beta_d$  = 12/15,  $\beta_{HS}/\beta_c$  = 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  $\beta_c/\beta_d$  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  $\beta_c$  = 11/15 and  $\beta_d$  = 15/15.

**Release 6 HSUPA Data Devices**

The 3G SAR test reduction procedure is applied to body SAR with 12.2 kbps RMC as the primary mode. Otherwise, body SAR for HSPA is measured with E-DCH Sub-test 5, using H-Set 1 and QPSK for FRC and a 12.2 kbps RMC configured in Test Loop Mode 1 and power control algorithm 2, according to the highest reported body SAR configuration in 12.2 kbps RMC without HSPA. When VOIP applies to head exposure, the 3G SAR test reduction procedure is applied with 12.2 kbps RMC as the primary mode. Otherwise, the same HSPA configuration used for body SAR measurements are applied to head exposure testing. Due to inner loop power control requirements in HSPA, a communication test set is required for output power and SAR tests. The 12.2 kbps RMC, FRC H-set 1 and E-DCH configurations for HSPA are configured according to the  $\beta$  values indicated in below.

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Sub-test	$\beta_c$	$\beta_d$	$\beta_d$ (SF)	$\beta_c / \beta_d$	$\beta_{HS}^{(1)}$	$\beta_{ec}$	$\beta_{ed}^{(4)(5)}$	$\beta_{ed}$ (SF)	$\beta_{ed}$ (Codes)	CM <sup>(2)</sup> (dB)	MPR <sup>(2)(6)</sup> (dB)	AG <sup>(5)</sup> Index	E-TFCI
1	11/15 <sup>(3)</sup>	15/15 <sup>(3)</sup>	64	11/15 <sup>(3)</sup>	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	$\beta_{ed1}$ : 47/15 $\beta_{ed2}$ : 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,  $\Delta_{ACK}$ ,  $\Delta_{NACK}$  and  $\Delta_{CQI} = 30/15$  with  $\beta_{HS} = 30/15 * \beta_c$ . For sub-test 5,  $\Delta_{ACK}$ ,  $\Delta_{NACK}$  and  $\Delta_{CQI} = 5/15$  with  $\beta_{HS} = 5/15 * \beta_c$ .  
Note 2: CM = 1 for  $\beta_c/\beta_d = 12/15$ ,  $\beta_{HS}/\beta_c = 24/15$ . 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  $\beta_c/\beta_d$  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  $\beta_c = 10/15$  and  $\beta_d = 15/15$ .  
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:  $\beta_{ed}$  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.

## HSPA+ SAR Guidance

The 3G SAR test reduction procedure is applied to HSPA+ (uplink) with 12.2 kbps RMC as the primary mode. Otherwise, when SAR is required for Rel. 6 HSPA, SAR is required for Rel. 7 HSPA+. Power is measured for HSPA+ that supports uplink 16QAM according to configurations in Table C.11.1.4 of 3GPP TS 34.121-1 to determine SAR test reduction.

## DC-HSDPA SAR Guidance

The 3G SAR test reduction procedure is applied to DC-HSDPA with 12.2 kbps RMC as the primary mode. Otherwise, when SAR is required for Rel. 5 HSDPA, SAR is required for Rel. 8 DC-HSDPA. Power is measured for DC-HSDPA according to the H-Set 12, FRC configuration in Table C.8.1.12 of 3GPP TS 34.121-1 to determine SAR test reduction. A primary and a secondary serving HS-DSCH Cell are required to perform the power measurement and for the results to be acceptable.

## <Considerations Related to CDMA for Setup and Testing>

### EV-DO Data Devices

SAR is measured using the F/R TAP configurations required for Rev. 0, Rev. A and Rev. B. The AT is tested with a Reverse Data Channel rate of 153.6 kbps in Subtype 0/1 Physical Layer configurations. A Reverse Data Channel payload size of 4096 bits and Termination Target of 16 slots are used for Subtype 2 and 3. FTAP, FETAP and FMCTAP are all configured with a Forward Traffic Channel data rate corresponding to the 2-slot version of 307.2 kbps with ACK Channel transmitting in all slots. AT power control is in "All Bits Up" conditions for the TAP / ETAP / MCTAP. Body-worn and other body SAR are measured using Subtype 0/1 Physical Layer configurations for Rev. 0. The 3G SAR test reduction procedure is applied to Rev. A, Subtype 2 Physical layer configuration, with Rev. 0 as the primary mode. Otherwise, SAR is measured for Rev. A using the highest reported SAR configuration for body-worn exposure in Rev. 0. SAR is required for Rev. B, Subtype 3; it is measured by applying both the "test 2" and "test 3" configurations used for power measurement.

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## EV-DO Data Devices Support 1xRTT

The 3G SAR test reduction procedure is applied to 1xRTT RC3 and RC1 with EV-DO Rev. 0, Rev. A and Rev. B as the respective primary modes. Otherwise, the “CDMA 1xRTT Handsets Body-worn SAR” procedures are applied.

## 1x-Advanced SAR Guidance

The 3G SAR test reduction procedure is applied to 1x-Advanced with 1xRTT RC3 as the primary mode. When SAR measurement is required, the 1x-Advanced power measurement configurations are used. The 1x Advanced SAR procedures are applied separately to head, body-worn and other exposure conditions.

## <Considerations Related to LTE for Setup and Testing>

This device contains LTE transmitter which follows 3GPP standards, is category 3, supports both QPSK and QAM modulations, and supported LTE band and channel bandwidth is listed in below. The output power was tested per 3GPP TS 36.521-1 maximum transmit procedures for both QPSK and QAM modulation. The results please refer to section 4.6 of this report.

EUT Supported LTE Band and Channel Bandwidth						
LTE Band	BW 1.4 MHz	BW 3 MHz	BW 5 MHz	BW 10 MHz	BW 15 MHz	BW 20 MHz
2	V	V	V	V	V	V
4	V	V	V	V	V	V
5	V	V	V	V		
13			V	V		
17			V	V		
25	V	V	V	V	V	V

The LTE maximum power reduction (MPR) in accordance with 3GPP TS 36.101 is active all times during LTE operation. The allowed MPR for the maximum output power is specified in below.

LTE Band	Modulation	Channel Bandwidth / RB Configurations						LTE MPR Setting (dB)
		BW 1.4 MHz	BW 3 MHz	BW 5 MHz	BW 10 MHz	BW 15 MHz	BW 20 MHz	
17	QPSK	> 5	> 4	> 8	> 12	> 16	> 18	1
	16QAM	<= 5	<= 4	<= 8	<= 12	<= 16	<= 18	1
	16QAM	> 5	> 4	> 8	> 12	> 16	> 18	2

LTE Band	Modulation	Channel Bandwidth / RB Configurations						LTE MPR Setting (dB)
		BW 1.4 MHz	BW 3 MHz	BW 5 MHz	BW 10 MHz	BW 15 MHz	BW 20 MHz	
2, 4, 5, 13, 25	QPSK	> 5	> 4	> 8	> 12	> 16	> 18	0
	16QAM	<= 5	<= 4	<= 8	<= 12	<= 16	<= 18	0
	16QAM	> 5	> 4	> 8	> 12	> 16	> 18	0

**Note:** MPR is according to the standard and implemented in the circuit (mandatory).

In addition, the device is compliant with additional maximum power reduction (A-MPR) requirements defined in 3GPP TS 36.101 section 6.2.4 that was disabled for all FCC compliance testing.

During LTE SAR testing, the related parameters of operating band, channel bandwidth, uplink channel number, modulation type, and RB was set in base station simulator. When the EUT has registered and communicated to base station simulator, the simulator set to make EUT transmitting the maximum radiated power.

### <Considerations Related to WLAN for Setup and Testing>

In general, various vendor specific external test software and chipset based internal test modes are typically used for SAR measurement. These chipset based test mode utilities are generally hardware and manufacturer dependent, and often include substantial flexibility to reconfigure or reprogram a device. A Wi-Fi device must be configured to transmit continuously at the required data rate, channel bandwidth and signal modulation, using the highest transmission duty factor supported by the test mode tools for SAR measurement. The test frequencies established using test mode must correspond to the actual channel frequencies. When 802.11 frame gaps are accounted for in the transmission, a maximum transmission duty factor of 92 - 96% is typically achievable in most test mode configurations. A minimum transmission duty factor of 85% is required to avoid certain hardware and device implementation issues related to wide range SAR scaling. In addition, a periodic transmission duty factor is required for current generation SAR systems to measure SAR correctly. The reported SAR must be scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit.

According to KDB 248227 D01, this device has installed WLAN engineering testing software which can provide continuous transmitting RF signal. During WLAN SAR testing, this device was operated to transmit continuously at the maximum transmission duty with specified transmission mode, operating frequency, lowest data rate, and maximum output power.

### Initial Test Configuration

An initial test configuration is determined for OFDM transmission modes in 2.4 GHz and 5 GHz bands according to the channel bandwidth, modulation and data rate combination(s) with the highest maximum output power specified for production units in each standalone and aggregated frequency band. 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 in the initial test configuration, for each frequency band.

### Subsequent Test Configuration

SAR measurement requirements for the remaining 802.11 transmission mode configurations that have not been tested in the initial test configuration are determined separately for each standalone and aggregated frequency band, in each exposure condition, according to the maximum output power specified for production units. Additional power measurements may be required to determine if SAR measurements are required for subsequent highest output power channels in a subsequent test configuration. When the highest reported SAR for the initial test configuration according to the initial test position or fixed exposure position requirements, is adjusted by the ratio of the subsequent test configuration to initial test configuration specified maximum output power and the adjusted SAR is  $\leq 1.2$  W/kg, SAR is not required for that subsequent test configuration.

### **SAR Test Configuration and Channel Selection**

When multiple channel bandwidth configurations in a frequency band have the same specified maximum output power, the initial test configuration is using largest channel bandwidth, lowest order modulation, lowest data rate, and lowest order 802.11 mode (i.e., 802.11a is chosen over 802.11n then 802.11ac or 802.11g is chosen over 802.11n). After an initial test configuration is determined, if multiple test channels have the same measured maximum output power, the channel chosen for SAR measurement is determined according to the following.

- 1) The channel closest to mid-band frequency is selected for SAR measurement.
- 2) For channels with equal separation from mid-band frequency; for example, high and low channels or two mid-band channels, the higher frequency (number) channel is selected for SAR measurement.

### **Test Reduction for U-NII-1 (5.2 GHz) and U-NII-2A (5.3 GHz) Bands**

For devices that operate in both U-NII bands using the same transmitter and antenna(s), SAR test reduction is determined according to the following.

- 1) When the same maximum output power is specified for both bands, begin SAR measurement in U-NII-2A band by applying the OFDM SAR requirements. If the highest reported SAR for a test configuration is  $\leq 1.2$  W/kg, SAR is not required for U-NII-1 band for that configuration (802.11 mode and exposure condition).
- 2) When different maximum output power is specified for the bands, begin SAR measurement in the band with higher specified maximum output power. The highest reported SAR for the tested configuration is adjusted by the ratio of lower to higher specified maximum output power for the two bands. When the adjusted SAR is  $\leq 1.2$  W/kg, SAR is not required for the band with lower maximum output power in that test configuration.

### **<Considerations Related to Bluetooth for Setup and Testing>**

This device has installed Bluetooth engineering testing software which can provide continuous transmitting RF signal. During Bluetooth SAR testing, this device was operated to transmit continuously at the maximum transmission duty with specified transmission mode, operating frequency, lowest data rate, and maximum output power.

## 4.2 EUT Testing Position

### 4.2.1 Body Exposure Conditions

For full-size tablet, according to KDB 616217 D04, SAR evaluation is required for back surface and edges of the devices. The back surface and edges of the tablet are tested with the tablet touching the phantom. Exposures from antennas through the front surface of the display section of a tablet are generally limited to the user's hands. Exposures to hands for typical consumer transmitters used in tablets are not expected to exceed the extremity SAR limit; therefore, SAR evaluation for the front surface of tablet display screens are generally not necessary. When voice mode is supported on a tablet and it is limited to speaker mode or headset operations only, additional SAR testing for this type of voice use is not required.

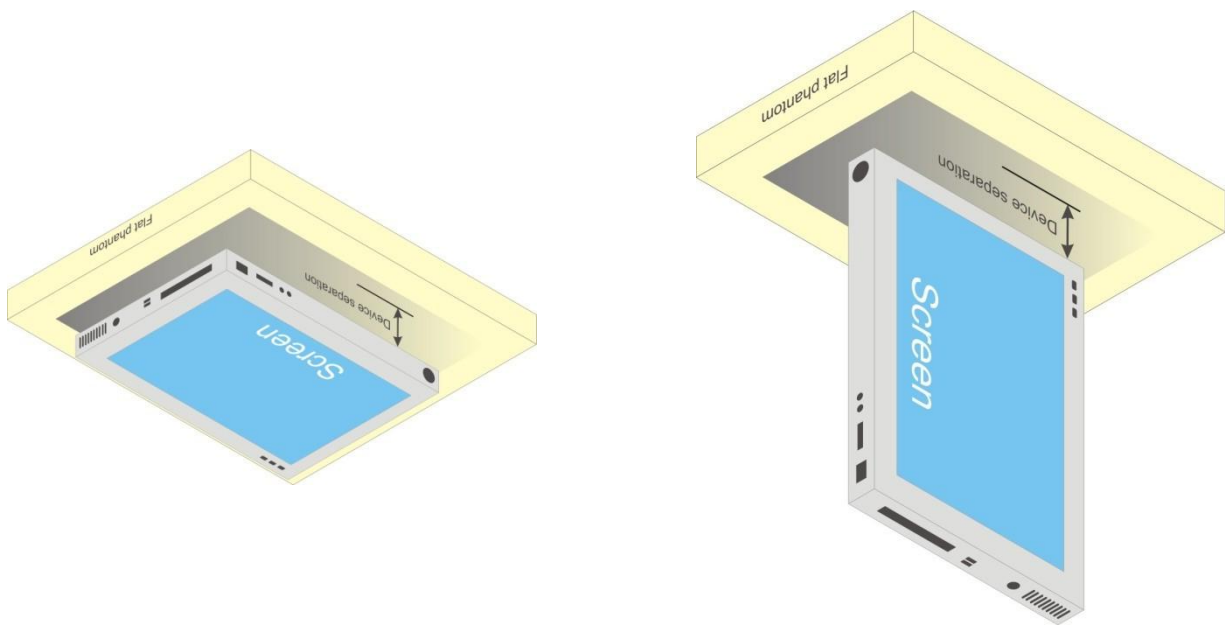


Fig-4.1 Illustration for Tablet Setup

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## 4.2.2 SAR Test Exclusion Evaluations

According to KDB 447498 D01, the SAR test exclusion condition is based on source-based time-averaged maximum conducted output power, adjusted for tune-up tolerance, and the minimum test separation distance required for the exposure conditions. The SAR exclusion threshold is determined by the following formula.

1. For the test separation distance  $\leq 50$  mm

$$\frac{\text{Max. Tune up Power}_{(mW)}}{\text{Min. Test Separation Distance}_{(mm)}} \times \sqrt{f_{(GHz)}} \leq 3.0 \text{ for SAR-1g, } \leq 7.5 \text{ for SAR-10g}$$

When the minimum test separation distance is  $< 5$  mm, a distance of 5 mm is applied to determine SAR test exclusion.

2. For the test separation distance  $> 50$  mm, and the frequency at 100 MHz to 1500 MHz

$$\left[ (\text{Threshold at 50 mm in Step 1}) + (\text{Test Separation Distance} - 50 \text{ mm}) \times \left( \frac{f_{(MHz)}}{150} \right) \right]_{(mW)}$$

3. For the test separation distance  $> 50$  mm, and the frequency at  $> 1500$  MHz to 6 GHz

$$[(\text{Threshold at 50 mm in Step 1}) + (\text{Test Separation Distance} - 50 \text{ mm}) \times 10]_{(mW)}$$

### Laptop PC:

#### <For WLAN Ant-0>

Mode	Max. Tune-up Power (dBm)	Max. Tune-up Power (mW)	Body-Worn		
			Ant. to Surface (mm)	Calculated Result	Require SAR Testing?
WLAN 2.4G	20.3	107.15	183	1426 mW	No
WLAN 5.2G	20.8	120.23	183	1396 mW	No
WLAN 5.3G	20.8	120.23	183	1395 mW	No
WLAN 5.6G	20.8	120.23	183	1393 mW	No
WLAN 5.8G	20.8	120.23	183	1392 mW	No

#### <For WLAN Ant-1>

Mode	Max. Tune-up Power (dBm)	Max. Tune-up Power (mW)	Body-Worn		
			Ant. to Surface (mm)	Calculated Result	Require SAR Testing?
WLAN 2.4G	20.3	107.15	183	1426 mW	No
WLAN 5.2G	20.8	120.23	183	1396 mW	No
WLAN 5.3G	20.8	120.23	183	1395 mW	No
WLAN 5.6G	20.8	120.23	183	1393 mW	No
WLAN 5.8G	20.8	120.23	183	1392 mW	No
BT	12.0	15.85	183	1425 mW	No



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## <For WLAN Ant-0 + Ant-1>

Mode	Max. Tune-up Power (dBm)	Max. Tune-up Power (mW)	Body-Worn		
			Ant. to Surface (mm)	Calculated Result	Require SAR Testing?
WLAN 2.4G	21.8	151.36	183	1426 mW	No
WLAN 5.2G	22.3	169.82	183	1396 mW	No
WLAN 5.3G	22.3	169.82	183	1395 mW	No
WLAN 5.6G	23.3	213.8	183	1393 mW	No
WLAN 5.8G	23.8	239.88	183	1392 mW	No

## Tablet

### <For WWAN Ant-0>

Mode	Max. Tune-up Power (dBm)	Max. Tune-up Power (mW)	Rear Face			Top Side			Bottom Side			Left Side			Right Side		
			Ant. to Surface (mm)	Calculated Result	Require SAR Testing?	Ant. to Surface (mm)	Calculated Result	Require SAR Testing?	Ant. to Surface (mm)	Calculated Result	Require SAR Testing?	Ant. to Surface (mm)	Calculated Result	Require SAR Testing?	Ant. to Surface (mm)	Calculated Result	Require SAR Testing?
GSM 850	22.5	177.83	5	33	Yes	5	32.77	Yes	213	1085 mW	No	30	5.46	Yes	210	1068 mW	No
GSM 1900	19.0	79.43	5	22	Yes	5	21.95	Yes	213	1739 mW	No	30	3.66	Yes	210	1709 mW	No
WCDMA II	19.0	79.43	5	22	Yes	5	21.94	Yes	213	1739 mW	No	30	3.66	Yes	210	1709 mW	No
WCDMA IV	21.0	125.89	5	33	Yes	5	33.33	Yes	213	1743 mW	No	30	5.56	Yes	210	1713 mW	No
WCDMA V	22.0	158.49	5	29	Yes	5	29.17	Yes	213	1083 mW	No	30	4.86	Yes	210	1066 mW	No
CDMA BC0	20.0	100	5	18	Yes	5	18.42	Yes	213	1085 mW	No	30	3.07	Yes	210	1068 mW	No
CDMA BC1	19.0	79.43	5	22	Yes	5	21.95	Yes	213	1739 mW	No	30	3.66	Yes	210	1709 mW	No
LTE 2	19.0	79.43	5	22	Yes	5	21.95	Yes	213	1739 mW	No	30	3.66	Yes	210	1709 mW	No
LTE 4	22.0	158.49	5	42	Yes	5	41.98	Yes	213	1743 mW	No	30	7.00	Yes	210	1713 mW	No
LTE 5	22.0	158.49	5	29	Yes	5	29.19	Yes	213	1085 mW	No	30	4.87	Yes	210	1068 mW	No
LTE 13	22.0	158.49	5	28	Yes	5	28.08	Yes	213	1022 mW	No	30	4.68	Yes	210	1006 mW	No
LTE 17	23.0	199.53	5	34	Yes	5	33.71	Yes	213	953 mW	No	30	5.62	Yes	210	939 mW	No
LTE 25	19.0	79.43	5	22	Yes	5	21.98	Yes	213	1738 mW	No	30	3.66	Yes	210	1708 mW	No

### Note:

1. When separation distance  $\leq 50$  mm and the calculated result shown in above table is  $\leq 3.0$  for SAR-1g exposure condition, or  $\leq 7.5$  for SAR-10g exposure condition, the SAR testing exclusion is applied.
2. When separation distance  $> 50$  mm and the device output power is less than the calculated result (power threshold, mW) shown in above table, the SAR testing exclusion is applied.

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## <For WLAN Ant-0>

Mode	Max. Tune-up Power (dBm)	Max. Tune-up Power (mW)	Rear Face			Left Side			Right Side			Top Side			Bottom Side		
			Ant. to Surface (mm)	Calculated Result	Require SAR Testing?	Ant. to Surface (mm)	Calculated Result	Require SAR Testing?	Ant. to Surface (mm)	Calculated Result	Require SAR Testing?	Ant. to Surface (mm)	Calculated Result	Require SAR Testing?	Ant. to Surface (mm)	Calculated Result	Require SAR Testing?
WLAN 2.4G	20.3	107.15	5	34	Yes	2	33.63	Yes	283	2426 mW	No	68	276 mW	No	131	906 mW	No
WLAN 5.2G	20.8	120.23	5	55	Yes	2	55.04	Yes	283	2396 mW	No	68	246 mW	No	131	876 mW	No
WLAN 5.3G	20.8	120.23	5	56	Yes	2	55.46	Yes	283	2395 mW	No	68	245 mW	No	131	875 mW	No
WLAN 5.6G	20.8	120.23	5	57	Yes	2	57.41	Yes	283	2393 mW	No	68	243 mW	No	131	873 mW	No
WLAN 5.8G	20.8	120.23	5	58	Yes	2	58.04	Yes	283	2392 mW	No	68	242 mW	No	131	872 mW	No

## <For WLAN Ant-1/BT>

Mode	Max. Tune-up Power (dBm)	Max. Tune-up Power (mW)	Rear Face			Left Side			Right Side			Top Side			Bottom Side		
			Ant. to Surface (mm)	Calculated Result	Require SAR Testing?	Ant. to Surface (mm)	Calculated Result	Require SAR Testing?	Ant. to Surface (mm)	Calculated Result	Require SAR Testing?	Ant. to Surface (mm)	Calculated Result	Require SAR Testing?	Ant. to Surface (mm)	Calculated Result	Require SAR Testing?
WLAN 2.4G	20.3	107.15	5	34	Yes	283	2426 mW	No	2	33.63	Yes	68	276 mW	No	131	906 mW	No
WLAN 5.2G	20.8	120.23	5	55	Yes	283	2396 mW	No	2	55.04	Yes	68	246 mW	No	131	876 mW	No
WLAN 5.3G	20.8	120.23	5	56	Yes	283	2395 mW	No	2	55.46	Yes	68	245 mW	No	131	875 mW	No
WLAN 5.6G	20.8	120.23	5	57	Yes	283	2393 mW	No	2	57.41	Yes	68	243 mW	No	131	873 mW	No
WLAN 5.8G	20.8	120.23	5	58	Yes	283	2392 mW	No	2	58.04	Yes	68	242 mW	No	131	872 mW	No
BT	12.0	15.85	5	5	Yes	283	2425 mW	No	2	4.99	Yes	68	275 mW	No	131	905 mW	No

## <For WLAN Ant-0 + Ant-1>

Mode	Max. Tune-up Power (dBm)	Max. Tune-up Power (mW)	Rear Face			Left Side			Right Side			Top Side			Bottom Side		
			Ant. to Surface (mm)	Calculated Result	Require SAR Testing?	Ant. to Surface (mm)	Calculated Result	Require SAR Testing?	Ant. to Surface (mm)	Calculated Result	Require SAR Testing?	Ant. to Surface (mm)	Calculated Result	Require SAR Testing?	Ant. to Surface (mm)	Calculated Result	Require SAR Testing?
WLAN 2.4G	21.8	151.36	5	48	Yes	2	47.50	Yes	2	47.50	Yes	68	276 mW	No	131	906 mW	No
WLAN 5.2G	22.3	169.82	5	78	Yes	2	77.75	Yes	2	77.75	Yes	68	246 mW	No	131	876 mW	No
WLAN 5.3G	22.3	169.82	5	78	Yes	2	78.34	Yes	2	78.34	Yes	68	245 mW	No	131	875 mW	No
WLAN 5.6G	23.3	213.8	5	102	Yes	2	102.09	Yes	2	102.09	Yes	68	243 mW	No	131	873 mW	No
WLAN 5.8G	23.8	239.88	5	116	Yes	2	115.79	Yes	2	115.79	Yes	68	242 mW	No	131	872 mW	No

**4.3 Tissue Verification**

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

Test Date	Tissue Type	Frequency (MHz)	Liquid Temp. (°C)	Measured Conductivity (σ)	Measured Permittivity (ε <sub>r</sub> )	Target Conductivity (σ)	Target Permittivity (ε <sub>r</sub> )	Conductivity Deviation (%)	Permittivity Deviation (%)
Feb. 27, 2018	Body	750	23.3	0.961	54.281	0.96	55.5	0.10	-2.20
Mar. 14, 2018	Body	750	23.4	0.967	56.078	0.96	55.5	0.73	1.04
Apr. 02, 2018	Body	750	23.3	0.959	53.094	0.96	55.5	-0.10	-4.34
Feb. 27, 2018	Body	835	23.3	0.997	55.088	0.97	55.2	2.78	-0.20
Mar. 14, 2018	Body	835	23.4	0.967	57.538	0.97	55.2	-0.31	4.24
Apr. 02, 2018	Body	835	23.4	1.002	54.22	0.97	55.2	3.30	-1.78
Feb. 27, 2018	Body	1750	23.3	1.44	51.726	1.49	53.4	-3.36	-3.13
Mar. 14, 2018	Body	1750	23.4	1.434	52.025	1.49	53.4	-3.76	-2.57
Apr. 02, 2018	Body	1750	23.4	1.439	51.495	1.49	53.4	-3.42	-3.57
Feb. 27, 2018	Body	1900	23.3	1.556	51.466	1.52	53.3	2.37	-3.44
Mar. 14, 2018	Body	1900	23.4	1.585	51.611	1.52	53.3	4.28	-3.17
Apr. 02, 2018	Body	1900	23.3	1.578	51.14	1.52	53.3	3.82	-4.05
Mar. 23, 2018	Body	2450	23.2	2.014	50.654	1.95	52.7	3.28	-3.88
Mar. 26, 2018	Body	2450	23.3	2.022	50.687	1.95	52.7	3.69	-3.82
Mar. 23, 2018	Body	5250	23.2	5.482	46.96	5.36	48.9	2.28	-3.97
Mar. 26, 2018	Body	5250	23.3	5.397	47.023	5.36	48.9	0.69	-3.84
Mar. 26, 2018	Body	5600	23.3	5.843	46.493	5.77	48.5	1.27	-4.14
Mar. 26, 2018	Body	5800	23.3	6.104	46.118	6	48.2	1.73	-4.32

**Note:**

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

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## 4.4 System Validation

The SAR measurement system was validated according to procedures in KDB 865664 D01. The validation status in tabulated summary is as below.

Test Date	Probe S/N	Calibration Point		Measured Conductivity ( $\sigma$ )	Measured Permittivity ( $\epsilon_r$ )	Validation for CW			Validation for Modulation		
						Sensitivity Range	Probe Linearity	Probe Isotropy	Modulation Type	Duty Factor	PAR
Feb. 27, 2018	7375	Body	750	0.961	54.281	Pass	Pass	Pass	N/A	N/A	N/A
Mar. 14, 2018	3578	Body	750	0.967	56.078	Pass	Pass	Pass	N/A	N/A	N/A
Apr. 02, 2018	3650	Body	750	0.959	53.094	Pass	Pass	Pass	N/A	N/A	N/A
Feb. 27, 2018	7375	Body	835	0.997	55.088	Pass	Pass	Pass	N/A	N/A	N/A
Mar. 14, 2018	3578	Body	835	0.967	57.538	Pass	Pass	Pass	GMSK	Pass	N/A
Apr. 02, 2018	3650	Body	835	1.002	54.22	Pass	Pass	Pass	GMSK	Pass	N/A
Feb. 27, 2018	7375	Body	1750	1.44	51.726	Pass	Pass	Pass	N/A	N/A	N/A
Mar. 14, 2018	3578	Body	1750	1.434	52.025	Pass	Pass	Pass	N/A	N/A	N/A
Apr. 02, 2018	3650	Body	1750	1.439	51.495	Pass	Pass	Pass	N/A	N/A	N/A
Feb. 27, 2018	7375	Body	1900	1.556	51.466	Pass	Pass	Pass	N/A	N/A	N/A
Mar. 14, 2018	3578	Body	1900	1.585	51.611	Pass	Pass	Pass	GMSK	Pass	N/A
Apr. 02, 2018	3650	Body	1900	1.578	51.14	Pass	Pass	Pass	GMSK	Pass	N/A
Mar. 23, 2018	3650	Body	2450	2.014	50.654	Pass	Pass	Pass	OFDM	N/A	Pass
Mar. 26, 2018	3820	Body	2450	2.022	50.687	Pass	Pass	Pass	OFDM	N/A	Pass
Mar. 23, 2018	3650	Body	5250	5.482	46.96	Pass	Pass	Pass	OFDM	N/A	Pass
Mar. 26, 2018	3820	Body	5250	5.397	47.023	Pass	Pass	Pass	OFDM	N/A	Pass
Mar. 26, 2018	3820	Body	5600	5.843	46.493	Pass	Pass	Pass	OFDM	N/A	Pass
Mar. 26, 2018	3820	Body	5800	6.104	46.118	Pass	Pass	Pass	OFDM	N/A	Pass

## 4.5 System Verification

The measuring result for system verification is tabulated as below.

Test Date	Mode	Frequency (MHz)	1W Target SAR-1g (W/kg)	Measured SAR-1g (W/kg)	Normalized to 1W SAR-1g (W/kg)	Deviation (%)	Dipole S/N	Probe S/N	DAE S/N
Feb. 27, 2018	Body	750	8.72	2.07	8.28	-5.05	1013	7375	917
Mar. 14, 2018	Body	750	8.72	2.09	8.36	-4.13	1013	3578	360
Apr. 02, 2018	Body	750	8.72	2.07	8.28	-5.05	1013	3650	861
Feb. 27, 2018	Body	835	9.61	2.35	9.40	-2.19	4d121	7375	917
Mar. 14, 2018	Body	835	9.61	2.31	9.24	-3.85	4d121	3578	360
Apr. 02, 2018	Body	835	9.61	2.27	9.08	-5.52	4d121	3650	861
Feb. 27, 2018	Body	1750	37.10	8.56	34.24	-7.71	1055	7375	917
Mar. 14, 2018	Body	1750	37.10	8.72	34.88	-5.98	1055	3578	360
Apr. 02, 2018	Body	1750	37.10	8.76	35.04	-5.55	1055	3650	861
Feb. 27, 2018	Body	1900	40.20	9.58	38.32	-4.68	5d036	7375	917
Mar. 14, 2018	Body	1900	40.20	9.91	39.64	-1.39	5d036	3578	360
Apr. 02, 2018	Body	1900	40.20	10.4	41.60	3.48	5d036	3650	861
Mar. 23, 2018	Body	2450	49.70	12.4	49.60	-0.20	737	3650	861
Mar. 26, 2018	Body	2450	49.70	13.2	52.80	6.24	737	3820	917
Mar. 23, 2018	Body	5250	76.50	7.43	74.30	-2.88	1019	3650	861
Mar. 26, 2018	Body	5250	76.50	7.47	74.70	-2.35	1019	3820	917
Mar. 26, 2018	Body	5600	79.70	8.5	85.00	6.65	1019	3820	917
Mar. 26, 2018	Body	5800	76.90	8.29	82.90	7.80	1019	3820	917

### Note:

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

**4.6 Maximum Output Power**

**4.6.1 Maximum Target Conducted Power**

The maximum conducted average power (Unit: dBm) including tune-up tolerance is shown as below.

Mode	Maximum Burst-Averaged Output Power		Maximum Frame-Averaged Output Power	
	GSM850	GSM1900	GSM850	GSM1900
GPRS (GMSK, 1Tx-slot)	31.0	27.0	22.00	18.00
GPRS (GMSK, 2Tx-slot)	28.5	25.0	22.50	19.00
EDGE (8PSK, 1Tx-slot)	27.0	25.0	18.00	16.00
EDGE (8PSK, 2Tx-slot)	27.0	24.0	21.00	18.00
EDGE (8PSK, 3Tx-slot)	26.0	23.0	21.74	18.74
EDGE (8PSK, 4Tx-slot)	25.0	21.0	22.00	18.00

**Note:**

1. SAR testing was performed on the maximum frame-averaged power mode.
2. The frame-averaged power is linearly proportion to the slot number configured and it is linearly scaled the maximum burst-averaged power based on time slots. The calculated method is shown as below:

$$\text{Frame-averaged power} = 10 \times \log (\text{Burst-averaged power mW} \times \text{Slot used} / 8)$$

Mode	WCDMA Band II	WCDMA Band IV	WCDMA Band V
RMC 12.2K	19.0	21.0	22.0
HSDPA / HSUPA / DC-HSDPA	19.0	21.0	21.0

Mode	CDMA BC0	CDMA BC1
1xRTT / EVDO	20.0	19.0

Mode	LTE 2	LTE 4	LTE 5
Maximum Target Power	19.0	22.0	22.0

Mode	LTE 13	LTE 17	LTE 25
Maximum Target Power	22.0	23.0	19.0

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## <WLAN 2.4G>

Mode	Channel	Frequency (MHz)	Ant-0	Ant-1	Ant-0 + Ant-1
802.11b	1	2412	18.8	18.3	N/A
	6	2437	20.3	20.3	N/A
	11	2462	18.8	19.3	N/A
802.11g	1	2412	16.8	18.3	N/A
	6	2437	20.3	20.8	N/A
	11	2462	17.3	18.3	N/A
802.11n (HT20)	1	2412	16.8	16.8	18.3
	6	2437	20.3	20.8	21.8
	11	2462	16.3	17.3	18.8
802.11n (HT40)	3	2422	13.3	15.8	16.3
	6	2437	16.3	16.3	18.3
	9	2452	15.3	15.3	16.3

## <WLAN 5.2G>

Mode	Channel	Frequency (MHz)	Ant-0	Ant-1	Ant-0 + Ant-1
802.11a	36	5180	17.8	18.3	N/A
	40	5200	20.8	20.8	N/A
	44	5220	20.8	20.8	N/A
	48	5240	20.8	20.8	N/A
802.11n (HT20)	36	5180	18.3	17.8	19.3
	40	5200	20.8	20.3	22.3
	44	5220	20.8	20.8	22.3
	48	5240	20.8	20.8	22.3
802.11n (HT40)	38	5190	17.3	17.3	15.3
	46	5230	20.8	20.8	22.3
802.11ac (VHT80)	42	5210	13.3	13.3	13.3

## <WLAN 5.3G>

Mode	Channel	Frequency (MHz)	Ant-0	Ant-1	Ant-0 + Ant-1
802.11a	52	5260	20.8	20.8	N/A
	56	5280	20.8	20.3	N/A
	60	5300	20.8	20.3	N/A
	64	5320	17.3	17.8	N/A
802.11n (HT20)	52	5260	20.8	20.3	22.3
	56	5280	20.8	20.3	22.3
	60	5300	20.8	20.3	22.3
	64	5320	17.3	17.3	16.3
802.11n (HT40)	54	5270	20.8	19.8	22.3
	62	5310	13.3	14.3	14.8
802.11ac (VHT80)	58	5290	11.8	12.3	12.3

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## <WLAN 5.6G>

Mode	Channel	Frequency (MHz)	Ant-0	Ant-1	Ant-0 + Ant-1
802.11a	100	5500	17.8	18.3	N/A
	116	5580	20.3	20.3	N/A
	120	5600	20.3	20.3	N/A
	124	5620	20.3	20.3	N/A
	132	5660	20.3	20.3	N/A
	140	5700	18.3	18.8	N/A
802.11n (HT20)	100	5500	17.8	17.8	19.3
	116	5580	20.3	20.3	22.3
	120	5600	20.3	20.3	22.3
	124	5620	20.3	20.3	22.3
	132	5660	20.3	20.3	21.3
	140	5700	17.8	18.3	18.8
802.11n (HT40)	102	5510	18.8	16.3	15.8
	110	5550	20.8	20.8	21.3
	118	5590	20.8	20.8	23.3
	126	5630	20.8	20.8	22.8
	134	5670	19.3	19.3	20.8
	142	5710	19.8	20.8	22.8
802.11ac (VHT80)	106	5530	12.8	15.8	13.8
	122	5610	19.8	18.3	20.3
	138	5690	19.8	20.3	23.3

## <WLAN 5.8G>

Mode	Channel	Frequency (MHz)	Ant-0	Ant-1	Ant-0 + Ant-1
802.11a	149	5745	20.3	20.8	N/A
	153	5765	20.8	20.8	N/A
	157	5785	20.8	20.8	N/A
	161	5805	20.8	20.8	N/A
	165	5825	20.8	20.3	N/A
802.11n (HT20)	149	5745	20.3	20.3	23.3
	153	5765	20.3	20.8	23.8
	157	5785	20.3	20.8	23.8
	161	5805	20.3	20.8	23.8
	165	5825	20.3	20.3	22.8
802.11n (HT40)	151	5755	20.8	20.8	21.8
	159	5795	20.8	20.8	23.8
802.11ac (VHT80)	155	5775	18.8	17.8	19.8

## <Bluetooth>

Mode	Channel	Frequency (MHz)	Tune-up
Bluetooth EDR	0	2402	12.0
	39	2441	12.0
	78	2480	12.0
Bluetooth LE	0	2402	8.3
	19	2440	9.3
	39	2480	9.3

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## 4.6.2 Measured Conducted Power Result

The measuring conducted average power (Unit: dBm) is shown as below.

Band Channel	GSM850			GSM1900		
	128	189	251	512	661	810
Frequency (MHz)	824.2	836.4	848.8	1850.2	1880.0	1909.8
GPRS (GMSK, 1Tx-slot)	29.57	29.52	29.49	25.04	25.08	25.10
GPRS (GMSK, 2Tx-slot)	28.12	28.07	28.04	24.93	24.97	24.99
EDGE (8PSK, 1Tx-slot)	25.90	25.85	25.82	23.42	23.46	23.48
EDGE (8PSK, 2Tx-slot)	25.47	25.42	25.39	22.47	22.51	22.53
EDGE (8PSK, 3Tx-slot)	24.10	24.05	24.02	21.41	21.45	21.47
EDGE (8PSK, 4Tx-slot)	23.86	23.81	23.78	20.51	20.55	20.56

Band Channel	WCDMA Band II			WCDMA Band IV			WCDMA Band V			3GPP MPR (dB)
	9262	9400	9538	1312	1413	1513	4132	4182	4233	
Frequency (MHz)	1852.4	1880.0	1907.6	1712.4	1732.6	1752.6	826.4	836.4	846.6	
RMC 12.2K	18.76	18.84	18.97	20.57	20.66	20.71	21.45	21.52	21.57	-
HSDPA Subtest-1	17.85	17.93	18.06	19.69	19.78	19.83	20.24	20.31	20.36	0
HSDPA Subtest-2	18.02	18.10	18.23	19.83	19.92	19.97	20.32	20.39	20.44	0
HSDPA Subtest-3	17.13	17.21	17.34	19.29	19.38	19.43	19.78	19.85	19.90	0.5
HSDPA Subtest-4	17.47	17.55	17.68	19.27	19.36	19.41	19.40	19.47	19.52	0.5
DC-HSDPA Subtest-1	17.71	17.78	17.85	19.48	19.57	19.63	20.04	20.11	20.17	0
DC-HSDPA Subtest-2	17.92	17.97	18.11	19.61	19.72	19.80	20.13	20.21	20.28	0
DC-HSDPA Subtest-3	16.98	17.02	17.14	19.05	19.19	19.21	19.57	19.62	19.69	0.5
DC-HSDPA Subtest-4	17.32	17.42	17.52	19.03	19.11	19.17	19.23	19.27	19.31	0.5
HSUPA Subtest-1	17.51	17.59	17.72	19.31	19.40	19.45	20.10	20.17	20.22	0
HSUPA Subtest-2	16.44	16.52	16.65	18.27	18.36	18.41	18.77	18.84	18.89	2
HSUPA Subtest-3	17.07	17.15	17.28	18.34	18.43	18.48	18.98	19.05	19.10	1
HSUPA Subtest-4	17.20	17.28	17.41	18.92	19.01	19.06	19.08	19.15	19.20	2
HSUPA Subtest-5	18.12	18.20	18.33	19.97	20.06	20.11	20.38	20.45	20.50	0

Band Channel	CDMA BC0			CDMA BC1		
	1013	384	777	25	600	1175
Frequency (MHz)	824.70	836.52	848.31	1851.25	1880.00	1908.75
1xRTT RC1+SO55	19.49	19.41	19.15	18.83	18.36	18.94
1xRTT RC3+SO55	19.72	19.76	19.69	18.87	18.50	18.98
1xRTT RC3+SO32 (FCH)	19.40	19.47	19.21	18.79	18.43	18.89
1xRTT RC3+SO32 (SCH)	19.44	19.37	19.19	18.83	18.46	18.85
1xEVDO Rev.0 RTAP 153.6	19.42	19.64	19.39	18.87	18.50	18.94
1xEVDO Rev.A RETAP 4096	19.36	19.62	19.35	18.93	18.81	18.84



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LTE Band 2															
BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
		Channel		18700	18900	19100				Channel		18675	18900	19125	
		Frequency (MHz)		1860.0	1880.0	1900.0				Frequency (MHz)		1857.5	1880.0	1902.5	
20M	QPSK	1	0	18.86	19.00	18.77	0	15M	QPSK	1	0	18.85	18.91	18.74	0
		1	50	18.78	18.92	18.69	0			1	37	18.78	18.92	18.60	0
		1	99	18.73	18.87	18.64	0			1	74	18.65	18.83	18.59	0
		50	0	18.65	18.79	18.56	0			36	0	18.57	18.70	18.50	0
		50	25	18.63	18.77	18.54	0			36	19	18.58	18.74	18.44	0
		50	50	18.56	18.70	18.47	0			36	39	18.51	18.70	18.40	0
		100	0	18.67	18.81	18.58	0			75	0	18.59	18.81	18.48	0
	16QAM	1	0	18.86	18.98	18.76	0		16QAM	1	0	18.86	18.91	18.77	0
		1	50	18.74	18.93	18.67	0			1	37	18.64	18.84	18.60	0
		1	99	18.72	18.79	18.59	0			1	74	18.59	18.82	18.54	0
		50	0	18.61	18.74	18.49	0			36	0	18.55	18.67	18.47	0
		50	25	18.57	18.73	18.48	0			36	19	18.61	18.72	18.48	0
		50	50	18.53	18.65	18.37	0			36	39	18.50	18.65	18.38	0
		100	0	18.63	18.72	18.58	0			75	0	18.56	18.73	18.48	0
10M	QPSK	1	0	18.81	18.97	18.64	0	5M	QPSK	1	0	18.74	18.85	18.60	0
		1	24	18.59	18.76	18.49	0			1	12	18.72	18.84	18.46	0
		1	49	18.58	18.69	18.46	0			1	24	18.55	18.77	18.38	0
		25	0	18.53	18.74	18.46	0			12	0	18.56	18.75	18.54	0
		25	12	18.59	18.63	18.35	0			12	6	18.53	18.65	18.48	0
		25	25	18.37	18.65	18.29	0			12	13	18.43	18.58	18.14	0
		50	0	18.58	18.67	18.43	0			25	0	18.46	18.72	18.38	0
	16QAM	1	0	18.73	18.68	18.48	0		16QAM	1	0	18.63	18.91	18.63	0
		1	24	18.67	18.64	18.52	0			1	12	18.55	18.72	18.56	0
		1	49	18.43	18.69	18.49	0			1	24	18.58	18.67	18.51	0
		25	0	18.54	18.70	18.34	0			12	0	18.54	18.59	18.39	0
		25	12	18.54	18.57	18.37	0			12	6	18.53	18.67	18.42	0
		25	25	18.40	18.55	18.25	0			12	13	18.34	18.62	18.33	0
		50	0	18.49	18.50	18.38	0			25	0	18.54	18.52	18.32	0
3M	QPSK	1	0	18.68	18.94	18.74	0	1.4M	QPSK	1	0	18.68	18.83	18.63	0
		1	7	18.71	18.87	18.66	0			1	2	18.68	18.79	18.57	0
		1	14	18.61	18.80	18.46	0			1	5	18.58	18.68	18.57	0
		8	0	18.62	18.62	18.41	0			3	0	18.52	18.56	18.46	0
		8	3	18.45	18.55	18.52	0			3	1	18.42	18.62	18.44	0
		8	7	18.46	18.48	18.25	0			3	3	18.48	18.47	18.36	0
		15	0	18.53	18.73	18.37	0			6	0	18.61	18.60	18.54	0
	16QAM	1	0	18.74	18.82	18.59	0		16QAM	1	0	18.59	18.87	18.49	0
		1	7	18.59	18.68	18.55	0			1	2	18.60	18.75	18.51	0
		1	14	18.58	18.70	18.43	0			1	5	18.52	18.64	18.42	0
		8	0	18.55	18.61	18.44	0			3	0	18.49	18.65	18.41	0
		8	3	18.44	18.62	18.41	0			3	1	18.48	18.63	18.38	0
		8	7	18.32	18.57	18.38	0			3	3	18.40	18.55	18.34	0
		15	0	18.58	18.70	18.40	0			6	0	18.49	18.60	18.35	0

# FCC SAR Test Report

LTE Band 4															
BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
		Channel		20050	20175	20300				Channel		20025	20175	20325	
		Frequency (MHz)		1720.0	1732.5	1745.0				Frequency (MHz)		1717.5	1732.5	1747.5	
20M	QPSK	1	0	21.77	21.75	21.84	0	15M	QPSK	1	0	21.74	21.65	21.78	0
		1	50	21.82	21.80	21.89	0			1	37	21.78	21.71	21.80	0
		1	99	21.79	21.77	21.86	0			1	74	21.74	21.69	21.79	0
		50	0	21.34	21.32	21.41	0			36	0	21.32	21.27	21.36	0
		50	25	21.38	21.36	21.45	0			36	19	21.34	21.33	21.40	0
		50	50	21.36	21.34	21.43	0			36	39	21.31	21.28	21.36	0
	100	0	21.33	21.31	21.40	0	75		0	21.26	21.31	21.32	0		
	16QAM	1	0	21.71	21.71	21.77	0		1	0	21.71	21.75	21.77	0	
		1	50	21.77	21.74	21.80	0		1	37	21.80	21.65	21.75	0	
		1	99	21.79	21.71	21.77	0		1	74	21.68	21.65	21.85	0	
		50	0	21.28	21.23	21.36	0		36	0	21.16	21.25	21.34	0	
		50	25	21.30	21.30	21.38	0		36	19	21.26	21.23	21.29	0	
		50	50	21.34	21.31	21.40	0		36	39	21.25	21.26	21.32	0	
		100	0	21.26	21.21	21.39	0		75	0	21.23	21.22	21.31	0	
10M		QPSK	1	0	21.70	21.72	21.71	0	5M	QPSK	1	0	21.67	21.58	21.76
	1		24	21.69	21.72	21.78	0	1			12	21.73	21.59	21.61	0
	1		49	21.63	21.57	21.81	0	1			24	21.67	21.63	21.65	0
	25		0	21.20	21.20	21.27	0	12			0	21.26	21.27	21.25	0
	25		12	21.33	21.29	21.29	0	12			6	21.21	21.14	21.20	0
	25		25	21.17	21.29	21.29	0	12			13	21.31	21.32	21.29	0
	50	0	21.17	21.24	21.28	0	25	0		21.33	21.12	21.20	0		
	16QAM	1	0	21.65	21.56	21.68	0	1		0	21.61	21.54	21.57	0	
		1	24	21.63	21.51	21.65	0	1		12	21.64	21.49	21.79	0	
		1	49	21.57	21.68	21.78	0	1		24	21.57	21.66	21.57	0	
		25	0	21.18	21.24	21.31	0	12		0	21.08	21.12	21.23	0	
		25	12	21.23	21.15	21.21	0	12		6	21.24	21.13	21.21	0	
		25	25	21.28	21.20	21.29	0	12		13	21.13	21.04	21.23	0	
		50	0	21.12	21.09	21.26	0	25		0	21.26	20.99	21.21	0	
3M		QPSK	1	0	21.62	21.72	21.68	0	1.4M	QPSK	1	0	21.65	21.63	21.63
	1		7	21.61	21.70	21.83	0	1			2	21.69	21.79	21.86	0
	1		14	21.55	21.69	21.74	0	1			5	21.71	21.60	21.72	0
	8		0	21.26	21.17	21.36	0	3			0	21.24	21.27	21.34	0
	8		3	21.26	21.22	21.34	0	3			1	21.15	21.22	21.31	0
	8		7	21.23	21.24	21.31	0	3			3	21.25	21.16	21.30	0
	15	0	21.24	21.27	21.37	0	6	0		21.26	21.17	21.35	0		
	16QAM	1	0	21.57	21.61	21.65	0	1		0	21.46	21.57	21.70	0	
		1	7	21.61	21.67	21.72	0	1		2	21.58	21.63	21.63	0	
		1	14	21.57	21.69	21.60	0	1		5	21.59	21.65	21.57	0	
		8	0	21.18	21.07	21.18	0	3		0	21.30	21.04	21.14	0	
		8	3	21.18	21.23	21.43	0	3		1	21.25	21.09	21.28	0	
		8	7	21.12	21.21	21.19	0	3		3	21.20	21.13	21.25	0	
		15	0	21.13	21.20	21.28	0	6		0	21.01	21.21	21.17	0	

# FCC SAR Test Report

## LTE Band 5

BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
		Channel		20450	20525	20600				Channel		20425	20525	20625	
		Frequency (MHz)		829.0	836.5	844.0				Frequency (MHz)		826.5	836.5	846.5	
10M	QPSK	1	0	21.55	21.65	21.76	0	5M	QPSK	1	0	21.49	21.61	21.72	0
		1	24	21.52	21.62	21.73	0			1	12	21.45	21.56	21.66	0
		1	49	21.41	21.51	21.62	0			1	24	21.39	21.46	21.62	0
		25	0	21.43	21.53	21.64	0			12	0	21.43	21.48	21.62	0
		25	12	21.40	21.50	21.61	0			12	6	21.31	21.40	21.58	0
		25	25	21.42	21.52	21.63	0			12	13	21.39	21.51	21.62	0
	50	0	21.30	21.40	21.51	0	25		0	21.22	21.31	21.43	0		
	16QAM	1	0	21.54	21.62	21.69	0		1	0	21.49	21.57	21.60	0	
		1	24	21.44	21.58	21.63	0		1	12	21.44	21.48	21.64	0	
		1	49	21.32	21.43	21.61	0		1	24	21.35	21.38	21.49	0	
		25	0	21.39	21.43	21.54	0		12	0	21.32	21.38	21.52	0	
		25	12	21.33	21.40	21.57	0		12	6	21.27	21.42	21.51	0	
		25	25	21.35	21.42	21.61	0		12	13	21.34	21.36	21.46	0	
		50	0	21.26	21.36	21.41	0		25	0	21.15	21.31	21.42	0	
3M		QPSK	1	0	21.48	21.59	21.70	0	1.4M	QPSK	1	0	21.42	21.50	21.50
	1		7	21.33	21.54	21.55	0	1			2	21.45	21.56	21.48	0
	1		14	21.33	21.41	21.61	0	1			5	21.33	21.40	21.43	0
	8		0	21.35	21.49	21.52	0	3			0	21.26	21.40	21.39	0
	8		3	21.38	21.27	21.51	0	3			1	21.27	21.38	21.50	0
	8		7	21.25	21.35	21.54	0	3			3	21.30	21.39	21.46	0
	15		0	21.05	21.20	21.28	0	6			0	21.13	21.30	21.25	0
	16QAM	1	0	21.38	21.53	21.54	0	16QAM		1	0	21.32	21.47	21.59	0
		1	7	21.29	21.35	21.53	0			1	2	21.45	21.60	21.50	0
		1	14	21.27	21.34	21.42	0			1	5	21.17	21.38	21.49	0
		8	0	21.20	21.35	21.43	0			3	0	21.21	21.38	21.47	0
		8	3	21.28	21.31	21.44	0			3	1	21.21	21.36	21.49	0
		8	7	21.32	21.48	21.44	0			3	3	21.27	21.42	21.49	0
		15	0	21.12	21.18	21.28	0			6	0	21.14	21.24	21.40	0

# FCC SAR Test Report

LTE Band 13															
BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
		Channel		23230	Channel					23205	23230	23225			
		Frequency (MHz)		782.0	Frequency (MHz)					779.5	782.0	784.5			
10M	QPSK	1	0		21.35		0	5M	QPSK	1	0	21.36	21.52	21.54	0
		1	24		21.64		0			1	12	21.43	21.59	21.61	0
		1	49		21.51		0			1	24	21.39	21.55	21.57	0
		25	0		21.43		0			12	0	21.24	21.40	21.42	0
		25	12		21.54		0			12	6	21.41	21.57	21.59	0
		25	25		21.45		0			12	13	21.38	21.54	21.56	0
	50	0		21.36		0	25		0	21.29	21.45	21.47	0		
	16QAM	1	0		21.34		0		16QAM	1	0	21.31	21.45	21.51	0
		1	24		21.62		0			1	12	21.37	21.49	21.59	0
		1	49		21.49		0			1	24	21.29	21.55	21.50	0
		25	0		21.40		0			12	0	21.16	21.30	21.35	0
		25	12		21.53		0			12	6	21.41	21.54	21.50	0
		25	25		21.44		0			12	13	21.33	21.52	21.49	0
		50	0		21.32		0			25	0	21.19	21.39	21.39	0

LTE Band 17															
BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
		Channel		23780	23790	23800				Channel		23755	23790	23825	
		Frequency (MHz)		709.0	710.0	711.0				Frequency (MHz)		706.5	710.0	713.5	
10M	QPSK	1	0	22.82	22.65	22.84	0	5M	QPSK	1	0	22.73	22.56	22.75	0
		1	24	22.95	22.78	22.97	0			1	12	22.86	22.69	22.88	0
		1	49	22.65	22.48	22.67	0			1	24	22.56	22.39	22.58	0
		25	0	21.91	21.74	21.93	1			12	0	21.82	21.65	21.84	1
		25	12	21.96	21.79	21.98	1			12	6	21.87	21.70	21.89	1
		25	25	21.75	21.58	21.77	1			12	13	21.66	21.49	21.68	1
	50	0	21.78	21.61	21.80	1	25		0	21.69	21.52	21.71	1		
	16QAM	1	0	21.78	21.61	21.80	1		16QAM	1	0	21.69	21.52	21.71	1
		1	24	21.91	21.74	21.93	1			1	12	21.82	21.65	21.84	1
		1	49	21.61	21.44	21.63	1			1	24	21.52	21.35	21.54	1
		25	0	20.87	20.70	20.89	2			12	0	20.78	20.61	20.80	2
		25	12	20.92	20.75	20.94	2			12	6	20.83	20.66	20.85	2
		25	25	20.71	20.54	20.73	2			12	13	20.62	20.45	20.64	2
		50	0	20.74	20.57	20.76	2			25	0	20.65	20.48	20.67	2

# FCC SAR Test Report

## LTE Band 25

BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
		Channel		26140	26365	26590				Channel		26115	26365	26615	
		Frequency (MHz)		1860.0	1882.5	1905.0				Frequency (MHz)		1857.5	1882.5	1907.5	
20M	QPSK	1	0	18.88	18.91	18.82	0	15M	QPSK	1	0	18.81	18.85	18.74	0
		1	50	18.84	18.87	18.78	0			1	37	18.84	18.77	18.70	0
		1	99	18.78	18.81	18.72	0			1	74	18.73	18.81	18.68	0
		50	0	18.82	18.85	18.76	0			36	0	18.74	18.76	18.69	0
		50	25	18.70	18.73	18.64	0			36	19	18.62	18.67	18.62	0
		50	50	18.61	18.64	18.55	0			36	39	18.57	18.55	18.53	0
	100	0	18.69	18.72	18.63	0	75		0	18.62	18.72	18.62	0		
	16QAM	1	0	18.85	18.84	18.80	0		1	0	18.74	18.83	18.66	0	
		1	50	18.77	18.77	18.74	0		1	37	18.76	18.84	18.65	0	
		1	99	18.75	18.81	18.67	0		1	74	18.73	18.71	18.67	0	
		50	0	18.75	18.82	18.66	0		36	0	18.71	18.79	18.76	0	
		50	25	18.68	18.66	18.54	0		36	19	18.56	18.63	18.53	0	
		50	50	18.59	18.64	18.51	0		36	39	18.57	18.59	18.44	0	
		100	0	18.69	18.68	18.57	0		75	0	18.64	18.53	18.51	0	
10M		QPSK	1	0	18.83	18.88	18.65	0	5M	QPSK	1	0	18.78	18.77	18.72
	1		24	18.73	18.71	18.62	0	1			12	18.84	18.72	18.70	0
	1		49	18.75	18.73	18.57	0	1			24	18.55	18.65	18.50	0
	25		0	18.63	18.79	18.61	0	12			0	18.77	18.78	18.63	0
	25		12	18.65	18.61	18.61	0	12			6	18.56	18.56	18.50	0
	25		25	18.49	18.43	18.40	0	12			13	18.50	18.49	18.20	0
	50	0	18.58	18.63	18.46	0	25	0		18.62	18.63	18.27	0		
	16QAM	1	0	18.70	18.68	18.64	0	1		0	18.71	18.74	18.67	0	
		1	24	18.53	18.70	18.64	0	1		12	18.65	18.67	18.52	0	
		1	49	18.63	18.62	18.57	0	1		24	18.62	18.59	18.67	0	
		25	0	18.63	18.61	18.47	0	12		0	18.80	18.59	18.55	0	
		25	12	18.44	18.68	18.43	0	12		6	18.63	18.54	18.50	0	
		25	25	18.45	18.54	18.46	0	12		13	18.46	18.55	18.43	0	
		50	0	18.39	18.47	18.49	0	25		0	18.38	18.41	18.36	0	
3M		QPSK	1	0	18.79	18.70	18.78	0	1.4M	QPSK	1	0	18.70	18.80	18.59
	1		7	18.76	18.78	18.65	0	1			2	18.71	18.70	18.78	0
	1		14	18.69	18.67	18.60	0	1			5	18.72	18.75	18.69	0
	8		0	18.67	18.71	18.56	0	3			0	18.68	18.78	18.65	0
	8		3	18.53	18.54	18.39	0	3			1	18.64	18.56	18.54	0
	8		7	18.46	18.45	18.31	0	3			3	18.44	18.46	18.39	0
	15	0	18.49	18.56	18.47	0	6	0		18.67	18.66	18.54	0		
	16QAM	1	0	18.81	18.84	18.65	0	1		0	18.74	18.70	18.60	0	
		1	7	18.58	18.71	18.55	0	1		2	18.59	18.65	18.52	0	
		1	14	18.55	18.69	18.72	0	1		5	18.76	18.56	18.52	0	
		8	0	18.78	18.72	18.66	0	3		0	18.54	18.65	18.57	0	
		8	3	18.63	18.44	18.44	0	3		1	18.62	18.63	18.51	0	
		8	7	18.46	18.40	18.40	0	3		3	18.49	18.39	18.39	0	
		15	0	18.46	18.64	18.57	0	6		0	18.50	18.54	18.50	0	

# FCC SAR Test Report

## <WLAN 2.4G>

Mode	Channel	Frequency (MHz)	Average Power (Ant-0)	Average Power (Ant-1)	Average Power (Ant-0 + Ant-1)
802.11b	1	2412	18	17.83	N/A
	6	2437	19.77	19.75	N/A
	11	2462	18.27	18.24	N/A
802.11n (HT20)	1	2412	-	-	17.94
	6	2437	-	-	21.41
	11	2462	-	-	18.1

## <WLAN 5.3G>

Mode	Channel	Frequency (MHz)	Average Power (Ant-0)	Average Power (Ant-1)	Average Power (Ant-0 + Ant-1)
802.11a	52	5260	-	20.01	N/A
	56	5280	-	19.81	N/A
	60	5300	-	19.72	N/A
	64	5320	-	17.04	N/A
802.11n (HT40)	54	5270	20.21	-	21.99
	62	5310	12.81	-	14.13

## <WLAN 5.6G>

Mode	Channel	Frequency (MHz)	Average Power (Ant-0)	Average Power (Ant-1)	Average Power (Ant-0 + Ant-1)
802.11n (HT40)	102	5510	18.22	16.02	-
	110	5550	20.22	20.15	-
	118	5590	20.16	20.12	-
	126	5630	20.11	20.14	-
	134	5670	18.82	18.97	-
	142	5710	19.49	20.14	-
802.11ac (VHT80)	106	5530	-	-	13.43
	122	5610	-	-	20.17
	138	5690	-	-	22.72

## <WLAN 5.8G>

Mode	Channel	Frequency (MHz)	Average Power (Ant-0)	Average Power (Ant-1)	Average Power (Ant-0 + Ant-1)
802.11n (HT40)	151	5755	20.51	20.17	21.64
	159	5795	20.23	20.48	23.43

## <Bluetooth>

Mode	Channel	Frequency (MHz)	Average Power
Bluetooth EDR	0	2402	11.52
	39	2441	11.84
	78	2480	11.87
Bluetooth LE	0	2402	8.04
	19	2440	8.74
	39	2480	8.97

## 4.7 SAR Testing Results

### 4.7.1 SAR Test Reduction Considerations

#### <KDB 447498 D01, General RF Exposure Guidance>

Testing of other required channels within the operating mode of a frequency band is not required when the reported SAR for the mid-band or highest output power channel is:

- (1)  $\leq 0.8$  W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is  $\leq 100$  MHz
- (2)  $\leq 0.6$  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
- (3)  $\leq 0.4$  W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is  $\geq 200$  MHz

#### <KDB 941225 D01, 3G SAR Measurement Procedures>

The mode tested for SAR is referred to as the primary mode. The equivalent modes considered for SAR test reduction are denoted as secondary modes. Both primary and secondary modes must be in the same frequency band. When the maximum output power and tune-up tolerance specified for production units in a secondary mode is  $\leq 1/4$  dB higher than the primary mode or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is  $\leq 1.2$  W/kg, SAR measurement is not required for the secondary mode.

#### <KDB 941225 D05, SAR Evaluation Considerations for LTE Devices>

- (1) QPSK with 1 RB and 50% RB allocation

Start with the largest channel bandwidth and measure SAR, using the RB offset and required test channel combination with the highest maximum output power among RB offsets at the upper edge, middle and lower edge of each required test channel. When the reported SAR is  $\leq 0.8$  W/kg, testing of the remaining RB offset configurations and required test channels is not required; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel. When the reported SAR of a required test channel is  $> 1.45$  W/kg, SAR is required for all three RB offset configurations for that required test channel.

- (2) 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  $\leq 0.8$  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.

- (3) Higher order modulations

SAR is required only when the highest maximum output power for the configuration in the higher order modulation is  $> 1/2$  dB higher than the same configuration in QPSK or when the reported SAR for the QPSK configuration is  $> 1.45$  W/kg.

- (4) Other channel bandwidth

SAR is required when the highest maximum output power of the smaller channel bandwidth is  $> 1/2$  dB higher than the equivalent channel configurations in the largest channel bandwidth configuration or the reported SAR of a configuration for the largest channel bandwidth is  $> 1.45$  W/kg.

### <KDB 248227 D01, SAR Guidance for Wi-Fi Transmitters>

- (1) For handsets operating next to ear, hotspot mode or mini-tablet configurations, the initial test position procedures were applied. The test position with the highest extrapolated peak SAR will be used as the initial test position. When the reported SAR of initial test position is  $\leq 0.4$  W/kg, SAR testing for remaining test positions is not required. Otherwise, SAR is evaluated at the subsequent highest peak SAR positions until the reported SAR result is  $\leq 0.8$  W/kg or all test positions are measured.
- (2) For WLAN 2.4 GHz, the highest measured maximum output power channel for DSSS was selected for SAR measurement. When the reported SAR is  $\leq 0.8$  W/kg, no further SAR testing is required. Otherwise, SAR is evaluated at the next highest measured output power channel. When any reported SAR is  $> 1.2$  W/kg, SAR is required for the third channel. For OFDM modes (802.11g/n), SAR is not required when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and it is  $\leq 1.2$  W/kg.
- (3) For WLAN 5 GHz, the initial test configuration was selected according to the transmission mode with the highest maximum output power. When the reported SAR of initial test configuration is  $> 0.8$  W/kg, SAR is required for the subsequent highest measured output power channel until the reported SAR result is  $\leq 1.2$  W/kg or all required channels are measured. For other transmission modes, SAR is not required when the highest reported SAR for initial test configuration is adjusted by the ratio of subsequent test configuration to initial test configuration specified maximum output power and it is  $\leq 1.2$  W/kg.
- (4) For WLAN MIMO mode, the power-based standalone SAR test exclusion or the sum of SAR provision in KDB 447498 to determine simultaneous transmission SAR test exclusion should be applied. Otherwise, SAR for MIMO mode will be measured with all applicable antennas transmitting simultaneously at the specified maximum output power of MIMO operation.



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## 4.7.2 SAR Results for Body Exposure Condition (Tablet PC Mode, Test Separation Distance is 0 mm)

Plot No.	Band	Mode	Test Position	Ch.	Max. Tune-up Power (dBm)	Measured Conducted Power (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR-1g (W/kg)	Scaled SAR-1g (W/kg)
	GSM850	GPRS10	Rear Face	128	28.5	28.12	1.09	0.15	0.009	0.01
	GSM850	GPRS10	Left Side	128	28.5	28.12	1.09	0.13	0.056	0.06
	GSM850	GPRS10	Right Side	128	28.5	28.12	1.09	0.11	0.001	0.00
01	GSM850	GPRS10	Top Side	128	28.5	28.12	1.09	0.07	1.05	1.15
	GSM850	GPRS10	Bottom Side	128	28.5	28.12	1.09	0.11	0.001	0.00
	GSM850	GPRS10	Top Side	189	28.5	28.07	1.10	0.15	0.963	1.06
	GSM850	GPRS10	Top Side	251	28.5	28.04	1.11	0.13	1.01	1.12
	GSM850	GPRS10	Top Side	128	28.5	28.12	1.09	0.02	1.02	1.11
	GSM1900	GPRS10	Rear Face	810	25.0	24.99	1.00	0.15	0.022	0.02
	GSM1900	GPRS10	Left Side	810	25.0	24.99	1.00	0.11	0.064	0.06
	GSM1900	GPRS10	Top Side	810	25.0	24.99	1.00	0.15	0.772	0.77
02	GSM1900	GPRS10	Top Side	512	25.0	24.93	1.02	-0.08	1.03	1.05
	GSM1900	GPRS10	Top Side	661	25.0	24.97	1.01	0.15	0.873	0.88
	GSM1900	GPRS10	Top Side	512	25.0	24.93	1.02	0.01	0.964	0.98
	WCDMA II	RMC12.2K	Rear Face	9538	19.0	18.97	1.01	0.11	0.026	0.03
	WCDMA II	RMC12.2K	Left Side	9538	19.0	18.97	1.01	0.15	0.065	0.07
	WCDMA II	RMC12.2K	Top Side	9538	19.0	18.97	1.01	0.13	0.663	0.67
03	WCDMA II	RMC12.2K	Top Side	9262	19.0	18.76	1.06	-0.02	1.05	1.11
	WCDMA II	RMC12.2K	Top Side	9400	19.0	18.84	1.04	0.15	0.925	0.96
	WCDMA II	RMC12.2K	Top Side	9262	19.0	18.76	1.06	-0.02	0.983	1.04
	WCDMA IV	RMC12.2K	Rear Face	1513	21.0	20.71	1.07	0.15	0.007	0.01
	WCDMA IV	RMC12.2K	Left Side	1513	21.0	20.71	1.07	0.11	0.037	0.04
	WCDMA IV	RMC12.2K	Top Side	1513	21.0	20.71	1.07	0.13	0.545	0.58
04	WCDMA IV	RMC12.2K	Top Side	1312	21.0	20.57	1.10	-0.04	0.984	1.09
	WCDMA IV	RMC12.2K	Top Side	1413	21.0	20.66	1.08	0.15	0.708	0.77
	WCDMA IV	RMC12.2K	Top Side	1312	21.0	20.57	1.10	0.03	0.971	1.07
	WCDMA V	RMC12.2K	Rear Face	4233	22.0	21.57	1.10	0.15	0.001	0.00
	WCDMA V	RMC12.2K	Left Side	4233	22.0	21.57	1.10	0.13	0.039	0.04
	WCDMA V	RMC12.2K	Right Side	4233	22.0	21.57	1.10	0.11	0.001	0.00
05	WCDMA V	RMC12.2K	Top Side	4233	22.0	21.57	1.10	-0.03	1.07	1.18
	WCDMA V	RMC12.2K	Bottom Side	4233	22.0	21.57	1.10	0.15	0.001	0.00
	WCDMA V	RMC12.2K	Top Side	4132	22.0	21.45	1.14	0.12	0.851	0.97
	WCDMA V	RMC12.2K	Top Side	4182	22.0	21.52	1.12	0.11	0.942	1.05
	WCDMA V	RMC12.2K	Top Side	4233	22.0	21.57	1.10	0.02	1.03	1.14
	CDMA BC0	RTAP153.6	Rear Face	384	20.0	19.64	1.09	0.15	0.001	0.00
	CDMA BC0	RTAP153.6	Left Side	384	20.0	19.64	1.09	0.11	0.034	0.04
	CDMA BC0	RTAP153.6	Right Side	384	20.0	19.64	1.09	0.13	0.001	0.00
	CDMA BC0	RTAP153.6	Top Side	384	20.0	19.64	1.09	0.15	0.949	1.03
	CDMA BC0	RTAP153.6	Bottom Side	384	20.0	19.64	1.09	0.12	0.001	0.00
	CDMA BC0	RTAP153.6	Top Side	1013	20.0	19.42	1.14	0.13	0.833	0.95
06	CDMA BC0	RTAP153.6	Top Side	777	20.0	19.39	1.15	-0.05	0.955	1.10
	CDMA BC0	RTAP153.6	Top Side	777	20.0	19.39	1.15	-0.01	0.942	1.08
	CDMA BC1	RTAP153.6	Rear Face	1175	19.0	18.94	1.01	0.15	0.024	0.02
	CDMA BC1	RTAP153.6	Left Side	1175	19.0	18.94	1.01	0.11	0.064	0.06
	CDMA BC1	RTAP153.6	Top Side	1175	19.0	18.94	1.01	0.15	0.736	0.75
07	CDMA BC1	RTAP153.6	Top Side	25	19.0	18.87	1.03	0.07	1.14	1.17
	CDMA BC1	RTAP153.6	Top Side	600	19.0	18.50	1.12	0.13	1.03	1.16
	CDMA BC1	RTAP153.6	Top Side	25	19.0	18.87	1.03	0.04	1.11	1.14

Note: The "< 0.001" means there is no SAR value or the SAR is too low to be measured.

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Plot No.	Band	Mode	RB#	RB Offset	Test Position	Ch.	Max. Tune-up Power (dBm)	Measured Conducted Power (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR-1g (W/kg)	Scaled SAR-1g (W/kg)
	LTE 2	QPSK20M	1	0	Rear Face	18900	19.0	19.00	1.00	0.15	0.035	0.04
	LTE 2	QPSK20M	1	0	Left Side	18900	19.0	19.00	1.00	0.11	0.067	0.07
	LTE 2	QPSK20M	1	0	Top Side	18900	19.0	19.00	1.00	0.13	1.09	1.09
	LTE 2	QPSK20M	50	0	Rear Face	18900	19.0	18.79	1.05	0.15	0.005	0.01
	LTE 2	QPSK20M	50	0	Left Side	18900	19.0	18.79	1.05	0.14	0.054	0.06
	LTE 2	QPSK20M	50	0	Top Side	18900	19.0	18.79	1.05	0.11	0.835	0.88
08	LTE 2	QPSK20M	1	0	Top Side	18700	19.0	18.86	1.03	-0.01	1.13	1.17
	LTE 2	QPSK20M	1	0	Top Side	19100	19.0	18.77	1.05	0.08	0.841	0.89
	LTE 2	QPSK20M	50	0	Top Side	18700	19.0	18.65	1.08	0.15	0.854	0.93
	LTE 2	QPSK20M	50	0	Top Side	19100	19.0	18.56	1.11	0.05	0.565	0.63
	LTE 2	QPSK20M	100	0	Top Side	18900	19.0	18.81	1.04	0.13	0.719	0.75
	LTE 2	QPSK20M	1	0	Top Side	18700	19.0	18.86	1.03	0.02	1.07	1.11
	LTE 4	QPSK20M	1	50	Rear Face	20300	22.0	21.89	1.03	0.13	0.027	0.03
	LTE 4	QPSK20M	1	50	Left Side	20300	22.0	21.89	1.03	0.15	0.038	0.04
	LTE 4	QPSK20M	1	50	Top Side	20300	22.0	21.89	1.03	0.11	0.747	0.77
	LTE 4	QPSK20M	50	25	Rear Face	20300	22.0	21.45	1.14	0.12	0.005	0.01
	LTE 4	QPSK20M	50	25	Left Side	20300	22.0	21.45	1.14	-0.05	0.026	0.03
	LTE 4	QPSK20M	50	25	Top Side	20300	22.0	21.45	1.14	0.15	0.543	0.62
09	LTE 4	QPSK20M	1	50	Top Side	20050	22.0	21.82	1.04	-0.16	1.13	1.18
	LTE 4	QPSK20M	1	50	Top Side	20175	22.0	21.80	1.05	0.13	0.929	0.97
	LTE 4	QPSK20M	100	0	Top Side	20300	22.0	21.40	1.15	-0.15	0.512	0.59
	LTE 4	QPSK20M	1	50	Top Side	20050	22.0	21.82	1.04	0.04	1.09	1.14
	LTE 5	QPSK10M	1	0	Rear Face	20600	22.0	21.76	1.06	0.11	0.037	0.04
	LTE 5	QPSK10M	1	0	Left Side	20600	22.0	21.76	1.06	0.13	0.047	0.05
	LTE 5	QPSK10M	1	0	Right Side	20600	22.0	21.76	1.06	0.15	0.001	0.00
10	LTE 5	QPSK10M	1	0	Top Side	20600	22.0	21.76	1.06	-0.10	1.07	1.13
	LTE 5	QPSK10M	1	0	Bottom Side	20600	22.0	21.76	1.06	0.12	0.001	0.00
	LTE 5	QPSK10M	25	0	Rear Face	20600	22.0	21.64	1.09	0.15	0.003	0.00
	LTE 5	QPSK10M	25	0	Left Side	20600	22.0	21.64	1.09	0.13	0.007	0.01
	LTE 5	QPSK10M	25	0	Right Side	20600	22.0	21.64	1.09	0.11	0.001	0.00
	LTE 5	QPSK10M	25	0	Top Side	20600	22.0	21.64	1.09	0.15	0.848	0.92
	LTE 5	QPSK10M	25	0	Bottom Side	20600	22.0	21.64	1.09	0.13	0.001	0.00
	LTE 5	QPSK10M	1	0	Top Side	20450	22.0	21.55	1.11	0.11	0.932	1.03
	LTE 5	QPSK10M	1	0	Top Side	20525	22.0	21.65	1.08	0.08	1.01	1.09
	LTE 5	QPSK10M	25	0	Top Side	20450	22.0	21.43	1.14	0.15	0.758	0.86
	LTE 5	QPSK10M	25	0	Top Side	20525	22.0	21.53	1.11	-0.11	0.825	0.92
	LTE 5	QPSK10M	50	0	Top Side	20600	22.0	21.51	1.12	0.13	0.856	0.96
	LTE 5	QPSK10M	1	0	Top Side	20600	22.0	21.76	1.06	0.12	1.02	1.08
	LTE 13	QPSK10M	1	24	Rear Face	23230	22.0	21.64	1.09	0.13	0.001	0.00
	LTE 13	QPSK10M	1	24	Left Side	23230	22.0	21.64	1.09	0.13	0.064	0.07
	LTE 13	QPSK10M	1	24	Right Side	23230	22.0	21.64	1.09	0.15	0.001	0.00
11	LTE 13	QPSK10M	1	24	Top Side	23230	22.0	21.64	1.09	-0.07	1.05	1.14
	LTE 13	QPSK10M	1	24	Bottom Side	23230	22.0	21.64	1.09	0.12	0.001	0.00
	LTE 13	QPSK10M	25	12	Rear Face	23230	22.0	21.54	1.11	0.08	0.001	0.00
	LTE 13	QPSK10M	25	12	Left Side	23230	22.0	21.54	1.11	0.15	0.006	0.01
	LTE 13	QPSK10M	25	12	Right Side	23230	22.0	21.54	1.11	0.12	0.001	0.00
	LTE 13	QPSK10M	25	12	Top Side	23230	22.0	21.54	1.11	0.09	0.851	0.95
	LTE 13	QPSK10M	25	12	Bottom Side	23230	22.0	21.54	1.11	0.15	0.001	0.00
	LTE 13	QPSK10M	50	0	Top Side	23230	22.0	21.36	1.16	0.16	0.791	0.92
	LTE 13	QPSK10M	1	24	Top Side	23230	22.0	21.64	1.09	0.04	1.02	1.11

Note: The "< 0.001" means there is no SAR value or the SAR is too low to be measured.

# FCC SAR Test Report

Plot No.	Band	Mode	RB#	RB Offset	Test Position	Ch.	Max. Tune-up Power (dBm)	Measured Conducted Power (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR-1g (W/kg)	Scaled SAR-1g (W/kg)
	LTE 17	QPSK10M	1	24	Rear Face	23800	23.0	22.97	1.01	0.15	0.001	0.00
	LTE 17	QPSK10M	1	24	Left Side	23800	23.0	22.97	1.01	0.11	0.001	0.00
	LTE 17	QPSK10M	1	24	Right Side	23800	23.0	22.97	1.01	0.13	0.001	0.00
12	LTE 17	QPSK10M	1	24	Top Side	23800	23.0	22.97	1.01	-0.10	0.704	0.71
	LTE 17	QPSK10M	1	24	Bottom Side	23800	23.0	22.97	1.01	0.12	0.001	0.00
	LTE 17	QPSK10M	25	12	Rear Face	23800	22.0	21.98	1.00	0.15	0.001	0.00
	LTE 17	QPSK10M	25	12	Left Side	23800	22.0	21.98	1.00	0.14	0.001	0.00
	LTE 17	QPSK10M	25	12	Right Side	23800	22.0	21.98	1.00	0.11	0.001	0.00
	LTE 17	QPSK10M	25	12	Top Side	23800	22.0	21.98	1.00	0.12	0.563	0.57
	LTE 17	QPSK10M	25	12	Bottom Side	23800	22.0	21.98	1.00	0.15	0.001	0.00
	LTE 17	QPSK10M	1	24	Top Side	23780	23.0	22.95	1.01	0.13	0.607	0.61
	LTE 17	QPSK10M	1	24	Top Side	23790	23.0	22.78	1.05	-0.15	0.438	0.46
	LTE 25	QPSK20M	1	0	Rear Face	26365	19.0	18.91	1.02	0.15	0.029	0.03
	LTE 25	QPSK20M	1	0	Left Side	26365	19.0	18.91	1.02	0.11	0.076	0.08
	LTE 25	QPSK20M	1	0	Top Side	26365	19.0	18.91	1.02	0.13	0.988	1.01
	LTE 25	QPSK20M	50	0	Rear Face	26365	19.0	18.85	1.04	0.12	0.017	0.02
	LTE 25	QPSK20M	50	0	Left Side	26365	19.0	18.85	1.04	0.15	0.063	0.07
	LTE 25	QPSK20M	50	0	Top Side	26365	19.0	18.85	1.04	0.11	0.828	0.86
13	LTE 25	QPSK20M	1	0	Top Side	26140	19.0	18.88	1.03	-0.05	1.11	1.14
	LTE 25	QPSK20M	1	0	Top Side	26590	19.0	18.82	1.04	0.05	0.771	0.80
	LTE 25	QPSK20M	50	0	Top Side	26140	19.0	18.82	1.04	0.13	0.661	0.69
	LTE 25	QPSK20M	50	0	Top Side	26590	19.0	18.76	1.06	0.12	0.516	0.55
	LTE 25	QPSK20M	100	0	Top Side	26365	19.0	18.72	1.07	-0.15	0.821	0.88
	LTE 25	QPSK20M	1	0	Top Side	26140	19.0	18.88	1.03	0.01	1.07	1.10

Note: The "< 0.001" means there is no SAR value or the SAR is too low to be measured.

Plot No.	Band	Mode	Test Position	Ch.	Tx Antenna	Max. Tune-up Power (dBm)	Measured Conducted Power (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR-1g (W/kg)	Scaled SAR-1g (W/kg)
	WLAN2.4G	802.11b	Rear Face	6	Ant 0	20.3	19.77	1.13	0.00	0.001	0.00
	WLAN2.4G	802.11b	Left Side	6	Ant 0	20.3	19.77	1.13	-0.18	0.343	0.39
	WLAN2.4G	802.11b	Rear Face	6	Ant 1	20.3	19.75	1.14	0.00	0.001	0.00
14	WLAN2.4G	802.11b	Right Side	6	Ant 1	20.3	19.75	1.14	0.11	0.392	0.44
	WLAN2.4G	802.11n HT20	Rear Face	6	Ant 0+1	21.8	21.41	1.09	0.00	0.001	0.00
	WLAN2.4G	802.11n HT20	Left Side	6	Ant 0+1	21.8	21.41	1.09	-0.13	0.271	0.30
	WLAN2.4G	802.11n HT20	Right Side	6	Ant 0+1	21.8	21.41	1.09	0.14	0.238	0.26
	WLAN2.4G	802.11b	Right Side	1	Ant 1	18.3	17.83	1.11	0.12	0.201	0.22
	WLAN2.4G	802.11b	Right Side	11	Ant 1	19.3	18.24	1.28	0.11	0.270	0.34
	WLAN5G	802.11n HT40	Rear Face	54	Ant 0	20.8	20.21	1.15	0.00	0.001	0.00
15	WLAN5G	802.11n HT40	Left Side	54	Ant 0	20.8	20.21	1.15	-0.17	0.760	0.87
	WLAN5G	802.11n HT40	Right Side	54	Ant 0	20.8	20.21	1.15	0.00	0.001	0.00
	WLAN5G	802.11n HT40	Top Side	54	Ant 0	20.8	20.21	1.15	0.00	0.001	0.00
	WLAN5G	802.11n HT40	Bottom Side	54	Ant 0	20.8	20.21	1.15	0.00	0.001	0.00
	WLAN5G	802.11a	Rear Face	52	Ant 1	20.8	20.01	1.20	0.00	0.001	0.00
	WLAN5G	802.11a	Left Side	52	Ant 1	20.8	20.01	1.20	0.00	0.001	0.00
	WLAN5G	802.11a	Right Side	52	Ant 1	20.8	20.01	1.20	-0.15	0.614	0.74
	WLAN5G	802.11a	Top Side	52	Ant 1	20.8	20.01	1.20	0.00	0.001	0.00
	WLAN5G	802.11a	Bottom Side	52	Ant 1	20.8	20.01	1.20	0.00	0.001	0.00
	WLAN5G	802.11n HT40	Rear Face	54	Ant 0+1	22.3	21.99	1.07	0.00	0.001	0.00
	WLAN5G	802.11n HT40	Left Side	54	Ant 0+1	22.3	21.99	1.07	0.11	0.384	0.41
	WLAN5G	802.11n HT40	Right Side	54	Ant 0+1	22.3	21.99	1.07	-0.16	0.605	0.65
	WLAN5G	802.11n HT40	Top Side	54	Ant 0+1	22.3	21.99	1.07	0.00	0.001	0.00
	WLAN5G	802.11n HT40	Bottom Side	54	Ant 0+1	22.3	21.99	1.07	0.00	0.001	0.00
	WLAN5G	802.11a	Left Side	62	Ant 0	13.3	12.81	1.12	0.15	0.138	0.15

Note: The "< 0.001" means there is no SAR value or the SAR is too low to be measured.

# FCC SAR Test Report

Plot No.	Band	Mode	Test Position	Ch.	Tx Antenna	Max. Tune-up Power (dBm)	Measured Conducted Power (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR-1g (W/kg)	Scaled SAR-1g (W/kg)
	WLAN5G	802.11n HT40	Rear Face	110	Ant 0	20.8	20.22	1.14	0.00	0.001	0.00
	WLAN5G	802.11n HT40	Left Side	110	Ant 0	20.8	20.22	1.14	0.12	0.444	0.51
	WLAN5G	802.11n HT40	Right Side	110	Ant 0	20.8	20.22	1.14	0.00	0.001	0.00
	WLAN5G	802.11n HT40	Top Side	110	Ant 0	20.8	20.22	1.14	0.00	0.001	0.00
	WLAN5G	802.11n HT40	Bottom Side	110	Ant 0	20.8	20.22	1.14	0.00	0.001	0.00
	WLAN5G	802.11n HT40	Rear Face	110	Ant 1	20.8	20.15	1.16	0.00	0.001	0.00
	WLAN5G	802.11n HT40	Left Side	110	Ant 1	20.8	20.15	1.16	0.00	0.001	0.00
16	WLAN5G	802.11n HT40	Right Side	110	Ant 1	20.8	20.15	1.16	-0.13	0.739	0.86
	WLAN5G	802.11n HT40	Top Side	110	Ant 1	20.8	20.15	1.16	0.00	0.001	0.00
	WLAN5G	802.11n HT40	Bottom Side	110	Ant 1	20.8	20.15	1.16	0.00	0.001	0.00
	WLAN5G	802.11ac VHT80	Rear Face	138	Ant 0+1	23.3	22.72	1.14	0.00	0.001	0.00
	WLAN5G	802.11ac VHT80	Left Side	138	Ant 0+1	23.3	22.72	1.14	0.15	0.483	0.55
	WLAN5G	802.11ac VHT80	Right Side	138	Ant 0+1	23.3	22.72	1.14	-0.15	0.665	0.76
	WLAN5G	802.11ac VHT80	Top Side	138	Ant 0+1	23.3	22.72	1.14	0.00	0.001	0.00
	WLAN5G	802.11ac VHT80	Bottom Side	138	Ant 0+1	23.3	22.72	1.14	0.00	0.001	0.00
	WLAN5G	802.11n HT40	Right Side	102	Ant 1	16.3	16.02	1.07	0.15	0.299	0.32
	WLAN5G	802.11n HT40	Right Side	118	Ant 1	20.8	20.12	1.17	0.13	0.702	0.82
	WLAN5G	802.11n HT40	Right Side	126	Ant 1	20.8	20.14	1.16	0.11	0.709	0.83
	WLAN5G	802.11n HT40	Right Side	134	Ant 1	19.3	18.97	1.08	0.12	0.481	0.52
	WLAN5G	802.11n HT40	Right Side	142	Ant 1	20.8	20.14	1.16	0.15	0.677	0.79
	WLAN5G	802.11n HT40	Rear Face	151	Ant 0	20.8	20.51	1.07	0.00	0.001	0.00
	WLAN5G	802.11n HT40	Left Side	151	Ant 0	20.8	20.51	1.07	0.14	0.472	0.50
	WLAN5G	802.11n HT40	Right Side	151	Ant 0	20.8	20.51	1.07	0.00	0.001	0.00
	WLAN5G	802.11n HT40	Top Side	151	Ant 0	20.8	20.51	1.07	0.00	0.001	0.00
	WLAN5G	802.11n HT40	Bottom Side	151	Ant 0	20.8	20.51	1.07	0.00	0.001	0.00
	WLAN5G	802.11n HT40	Rear Face	159	Ant 1	20.8	20.48	1.08	0.00	0.001	0.00
	WLAN5G	802.11n HT40	Left Side	159	Ant 1	20.8	20.48	1.08	0.00	0.001	0.00
	WLAN5G	802.11n HT40	Right Side	159	Ant 1	20.8	20.48	1.08	-0.12	0.567	0.61
	WLAN5G	802.11n HT40	Top Side	159	Ant 1	20.8	20.48	1.08	0.00	0.001	0.00
	WLAN5G	802.11n HT40	Bottom Side	159	Ant 1	20.8	20.48	1.08	0.00	0.001	0.00
	WLAN5G	802.11n HT40	Rear Face	159	Ant 0+1	23.8	23.43	1.09	0.00	0.001	0.00
	WLAN5G	802.11n HT40	Left Side	159	Ant 0+1	23.8	23.43	1.09	0.11	0.466	0.51
17	WLAN5G	802.11n HT40	Right Side	159	Ant 0+1	23.8	23.43	1.09	-0.16	0.625	0.68
	WLAN5G	802.11n HT40	Top Side	159	Ant 0+1	23.8	23.43	1.09	0.00	0.001	0.00
	WLAN5G	802.11n HT40	Bottom Side	159	Ant 0+1	23.8	23.43	1.09	0.00	0.001	0.00
	WLAN5G	802.11n HT40	Right Side	151	Ant 0+1	21.8	21.64	1.04	0.13	0.392	0.41

Note: The "< 0.001" means there is no SAR value or the SAR is too low to be measured.

Plot No.	Band	Mode	Test Position	Ch.	Tx Antenna	Max. Tune-up Power (dBm)	Measured Conducted Power (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR-1g (W/kg)	Scaled SAR-1g (W/kg)
	BT	BR / EDR	Rear Face	39	Ant 1	12.0	11.84	1.04	0.00	0.001	0.00
18	BT	BR / EDR	Right Side	39	Ant 1	12.0	11.84	1.04	-0.12	0.025	0.03
	BT	BR / EDR	Right Side	0	Ant 1	12.0	11.52	1.12	0.03	0.017	0.02
	BT	BR / EDR	Right Side	78	Ant 1	12.0	11.87	1.03	0.07	0.020	0.02

Note: The "< 0.001" means there is no SAR value or the SAR is too low to be measured.

**4.7.3 SAR Measurement Variability**

According to KDB 865664 D01, SAR measurement variability was assessed for each frequency band, which is determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. When both head and body tissue-equivalent media are required for SAR measurements in a frequency band, the variability measurement procedures should be applied to the tissue medium with the highest measured SAR, using the highest measured SAR configuration for that tissue-equivalent medium. Alternatively, if the highest measured SAR for both head and body tissue-equivalent media are  $\leq 1.45$  W/kg and the ratio of these highest SAR values, i.e., largest divided by smallest value, is  $\leq 1.10$ , the highest SAR configuration for either head or body tissue-equivalent medium may be used to perform the repeated measurement. These additional measurements are repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device should be returned to ambient conditions (normal room temperature) with the battery fully charged before it is re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

SAR repeated measurement procedure:

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

Band	Mode	Test Position	Ch.	Original Measured SAR-1g (W/kg)	1st Repeated SAR-1g (W/kg)	L/S Ratio	2nd Repeated SAR-1g (W/kg)	L/S Ratio	3rd Repeated SAR-1g (W/kg)	L/S Ratio
GSM850	GPRS10	Top Side	128	1.05	1.02	1.03	N/A	N/A	N/A	N/A
GSM1900	GPRS10	Top Side	512	1.03	0.964	1.07	N/A	N/A	N/A	N/A
WCDMA II	RMC12.2K	Top Side	9262	1.05	0.983	1.07	N/A	N/A	N/A	N/A
WCDMA IV	RMC12.2K	Top Side	1312	0.984	0.971	1.01	N/A	N/A	N/A	N/A
WCDMA V	RMC12.2K	Top Side	4233	1.07	1.03	1.04	N/A	N/A	N/A	N/A
CDMA BC0	RTAP153.6	Top Side	777	0.955	0.942	1.01	N/A	N/A	N/A	N/A
CDMA BC1	RTAP153.6	Top Side	25	1.14	1.11	1.03	N/A	N/A	N/A	N/A
LTE 2	QPSK20M	Top Side	18700	1.13	1.07	1.06	N/A	N/A	N/A	N/A
LTE 4	QPSK20M	Top Side	20050	1.13	1.09	1.04	N/A	N/A	N/A	N/A
LTE 5	QPSK10M	Top Side	20600	1.07	1.02	1.05	N/A	N/A	N/A	N/A
LTE 13	QPSK10M	Top Side	23230	1.05	1.02	1.03	N/A	N/A	N/A	N/A
LTE 17	QPSK20M	Top Side	26140	1.11	1.07	1.04	N/A	N/A	N/A	N/A

## 4.7.4 Simultaneous Multi-band Transmission Evaluation

### <Possibilities of Simultaneous Transmission>

The simultaneous transmission possibilities for this device are listed as below.

Simultaneous TX Combination	Capable Transmit Configurations	Body Exposure Condition
1	GSM + WLAN 2.4G	Yes
2	GSM + WLAN 5G	Yes
3	GSM + BT (Data)	Yes
4	WCDMA + WLAN 2.4G	Yes
5	WCDMA + WLAN 5G	Yes
6	WCDMA + BT	Yes
7	CDMA + WLAN 2.4G	Yes
8	CDMA + WLAN 5G	Yes
9	CDMA + BT	Yes
10	LTE + WLAN 2.4G	Yes
11	LTE + WLAN 5G	Yes
12	LTE + BT	Yes

#### Note :

1. The WLAN 2.4G and WLAN 5G cannot transmit simultaneously.

# FCC SAR Test Report

## <Estimated SAR Calculation>

According to KDB 447498 D01, when standalone SAR test exclusion applies to an antenna that transmits simultaneously with other antennas, the standalone SAR was estimated according to following formula to result in substantially conservative SAR values of  $\leq 0.4$  W/kg to determine simultaneous transmission SAR test exclusion.

$$\text{Estimated SAR} = \frac{\text{Max. Tune up Power}_{(mW)}}{\text{Min. Test Separation Distance}_{(mm)}} \times \frac{\sqrt{f_{(GHz)}}}{7.5}$$

If the minimum test separation distance is  $< 5$  mm, a distance of 5 mm is used for estimated SAR calculation. When the test separation distance is  $> 50$  mm, the 0.4 W/kg is used for SAR-1g.

Mode / Band	Frequency (GHz)	Max. Tune-up Power (dBm)	Test Position	Separation Distance (mm)	Estimated SAR (W/kg)
GSM850	0.8488	22.5 (Max Frame-Averaged Power)	Body	5	0.40
GSM1900	1.9098	19.0 (Max Frame-Averaged Power)	Body	5	0.40
WCDMA II	1.9076	19.0	Body	5	0.40
WCDMA IV	1.7526	21.0	Body	5	0.40
WCDMA V	0.8466	22.0	Body	5	0.40
CDMA BC0	0.84831	20.0	Body	5	0.40
CDMA BC1	1.90875	19.0	Body	5	0.40
LTE 2	1.9093	19.0	Body	5	0.40
LTE 4	1.7543	22.0	Body	5	0.40
LTE 5	0.8483	22.0	Body	5	0.40
LTE 13	0.7845	22.0	Body	5	0.40
LTE 17	0.7135	23.0	Body	5	0.40
LTE 25	1.9143	19.0	Body	5	0.40
WLAN (DTS)	2.462	21.8	Body	5	0.40
WLAN (NII)	5.24	22.3	Body	5	0.40
WLAN (NII)	5.32	22.3	Body	5	0.40
WLAN (NII)	5.7	23.3	Body	5	0.40
WLAN (NII)	5.825	23.8	Body	5	0.40
BT (DSS)	2.48	12.0	Body	5	0.40

### Note:

1. The separation distance is determined from the outer housing of the EUT to the user.
2. When standalone SAR testing is not required, an estimated SAR can be applied to determine simultaneous transmission SAR test exclusion.

# FCC SAR Test Report

## <SAR Summation Analysis>

Simultaneous transmission SAR test exclusion is determined for each operating configuration and exposure condition according to the reported standalone SAR of each applicable simultaneous transmitting antenna. When the sum of SAR<sub>1g</sub> of all simultaneously transmitting antennas in an operating mode and exposure condition combination is within the SAR limit (SAR<sub>1g</sub> 1.6 W/kg), the simultaneous transmission SAR is not required. When the sum of SAR<sub>1g</sub> is greater than the SAR limit (SAR<sub>1g</sub> 1.6 W/kg), SAR test exclusion is determined by the SPLSR.

### Tablet PC

No.	Conditions (SAR1+SAR2+SAR3)	Exposure Condition	Test Position	Max. SAR1	Max. SAR2	SAR Summation	SPLSR Analysis
1	GSM850 + WLAN (DTS)	Body	Rear Face	0.01	0.00	0.01	Σ SAR < 1.6, Not required
			Left Side	0.06	0.39	0.45	Σ SAR < 1.6, Not required
			Right Side	0.00	0.44	0.44	Σ SAR < 1.6, Not required
			Top Side	1.15	0.40	1.55	Σ SAR < 1.6, Not required
			Bottom Side	0.00	0.40	0.40	Σ SAR < 1.6, Not required
2	GSM850 + WLAN (NII)	Body	Rear Face	0.01	0.00	0.01	Σ SAR < 1.6, Not required
			Left Side	0.06	0.87	0.93	Σ SAR < 1.6, Not required
			Right Side	0.00	0.86	0.86	Σ SAR < 1.6, Not required
			Top Side	1.15	0.00	1.15	Σ SAR < 1.6, Not required
			Bottom Side	0.00	0.00	0.00	Σ SAR < 1.6, Not required
3	GSM850 + BT (DSS)	Body	Rear Face	0.01	0.00	0.01	Σ SAR < 1.6, Not required
			Left Side	0.06	0.40	0.46	Σ SAR < 1.6, Not required
			Right Side	0.00	0.03	0.03	Σ SAR < 1.6, Not required
			Top Side	1.15	0.40	1.55	Σ SAR < 1.6, Not required
			Bottom Side	0.00	0.40	0.40	Σ SAR < 1.6, Not required



# FCC SAR Test Report

No.	Conditions (SAR1+SAR2+SAR3)	Exposure Condition	Test Position	Max. SAR1	Max. SAR2	SAR Summation	SPLSR Analysis
4	GSM1900 + WLAN (DTS)	Body	Rear Face	0.02	0.00	0.02	$\Sigma$ SAR < 1.6, Not required
			Left Side	0.06	0.39	0.45	$\Sigma$ SAR < 1.6, Not required
			Right Side	0.40	0.44	0.84	$\Sigma$ SAR < 1.6, Not required
			Top Side	0.98	0.40	1.38	$\Sigma$ SAR < 1.6, Not required
			Bottom Side	0.40	0.40	0.80	$\Sigma$ SAR < 1.6, Not required
5	GSM1900 + WLAN (NII)	Body	Rear Face	0.02	0.00	0.02	$\Sigma$ SAR < 1.6, Not required
			Left Side	0.06	0.87	0.93	$\Sigma$ SAR < 1.6, Not required
			Right Side	0.40	0.86	1.26	$\Sigma$ SAR < 1.6, Not required
			Top Side	0.98	0.00	0.98	$\Sigma$ SAR < 1.6, Not required
			Bottom Side	0.40	0.00	0.40	$\Sigma$ SAR < 1.6, Not required
6	GSM1900 + BT (DSS)	Body	Rear Face	0.02	0.00	0.02	$\Sigma$ SAR < 1.6, Not required
			Left Side	0.06	0.40	0.46	$\Sigma$ SAR < 1.6, Not required
			Right Side	0.40	0.03	0.43	$\Sigma$ SAR < 1.6, Not required
			Top Side	0.98	0.40	1.38	$\Sigma$ SAR < 1.6, Not required
			Bottom Side	0.40	0.40	0.80	$\Sigma$ SAR < 1.6, Not required

No.	Conditions (SAR1+SAR2+SAR3)	Exposure Condition	Test Position	Max. SAR1	Max. SAR2	SAR Summation	SPLSR Analysis
7	WCDMA II + WLAN (DTS)	Body	Rear Face	0.03	0.00	0.03	$\Sigma$ SAR < 1.6, Not required
			Left Side	0.07	0.39	0.46	$\Sigma$ SAR < 1.6, Not required
			Right Side	0.40	0.44	0.84	$\Sigma$ SAR < 1.6, Not required
			Top Side	1.11	0.40	1.51	$\Sigma$ SAR < 1.6, Not required
			Bottom Side	0.40	0.40	0.80	$\Sigma$ SAR < 1.6, Not required
8	WCDMA II + WLAN (NII)	Body	Rear Face	0.03	0.00	0.03	$\Sigma$ SAR < 1.6, Not required
			Left Side	0.07	0.87	0.94	$\Sigma$ SAR < 1.6, Not required
			Right Side	0.40	0.86	1.26	$\Sigma$ SAR < 1.6, Not required
			Top Side	1.11	0.00	1.11	$\Sigma$ SAR < 1.6, Not required
			Bottom Side	0.40	0.00	0.40	$\Sigma$ SAR < 1.6, Not required
9	WCDMA II + BT (DSS)	Body	Rear Face	0.03	0.00	0.03	$\Sigma$ SAR < 1.6, Not required
			Left Side	0.07	0.40	0.47	$\Sigma$ SAR < 1.6, Not required
			Right Side	0.40	0.03	0.43	$\Sigma$ SAR < 1.6, Not required
			Top Side	1.11	0.40	1.51	$\Sigma$ SAR < 1.6, Not required
			Bottom Side	0.40	0.40	0.80	$\Sigma$ SAR < 1.6, Not required

# FCC SAR Test Report

No.	Conditions (SAR1+SAR2+SAR3)	Exposure Condition	Test Position	Max. SAR1	Max. SAR2	SAR Summation	SPLSR Analysis
10	WCDMA IV + WLAN (DTS)	Body	Rear Face	0.01	0.00	0.01	$\Sigma$ SAR < 1.6, Not required
			Left Side	0.04	0.39	0.43	$\Sigma$ SAR < 1.6, Not required
			Right Side	0.40	0.44	0.84	$\Sigma$ SAR < 1.6, Not required
			Top Side	1.09	0.40	1.49	$\Sigma$ SAR < 1.6, Not required
			Bottom Side	0.40	0.40	0.80	$\Sigma$ SAR < 1.6, Not required
11	WCDMA IV + WLAN (NII)	Body	Rear Face	0.01	0.00	0.01	$\Sigma$ SAR < 1.6, Not required
			Left Side	0.04	0.87	0.91	$\Sigma$ SAR < 1.6, Not required
			Right Side	0.40	0.86	1.26	$\Sigma$ SAR < 1.6, Not required
			Top Side	1.09	0.00	1.09	$\Sigma$ SAR < 1.6, Not required
			Bottom Side	0.40	0.00	0.40	$\Sigma$ SAR < 1.6, Not required
12	WCDMA IV + BT (DSS)	Body	Rear Face	0.01	0.00	0.01	$\Sigma$ SAR < 1.6, Not required
			Left Side	0.04	0.40	0.44	$\Sigma$ SAR < 1.6, Not required
			Right Side	0.40	0.03	0.43	$\Sigma$ SAR < 1.6, Not required
			Top Side	1.09	0.40	1.49	$\Sigma$ SAR < 1.6, Not required
			Bottom Side	0.40	0.40	0.80	$\Sigma$ SAR < 1.6, Not required

No.	Conditions (SAR1+SAR2+SAR3)	Exposure Condition	Test Position	Max. SAR1	Max. SAR2	SAR Summation	SPLSR Analysis
13	WCDMA V + WLAN (DTS)	Body	Rear Face	0.00	0.00	0.00	$\Sigma$ SAR < 1.6, Not required
			Left Side	0.04	0.39	0.43	$\Sigma$ SAR < 1.6, Not required
			Right Side	0.00	0.44	0.44	$\Sigma$ SAR < 1.6, Not required
			Top Side	1.18	0.40	1.58	$\Sigma$ SAR < 1.6, Not required
			Bottom Side	0.00	0.40	0.40	$\Sigma$ SAR < 1.6, Not required
14	WCDMA V + WLAN (NII)	Body	Rear Face	0.00	0.00	0.00	$\Sigma$ SAR < 1.6, Not required
			Left Side	0.04	0.87	0.91	$\Sigma$ SAR < 1.6, Not required
			Right Side	0.00	0.86	0.86	$\Sigma$ SAR < 1.6, Not required
			Top Side	1.18	0.00	1.18	$\Sigma$ SAR < 1.6, Not required
			Bottom Side	0.00	0.00	0.00	$\Sigma$ SAR < 1.6, Not required
15	WCDMA V + BT (DSS)	Body	Rear Face	0.00	0.00	0.00	$\Sigma$ SAR < 1.6, Not required
			Left Side	0.04	0.40	0.44	$\Sigma$ SAR < 1.6, Not required
			Right Side	0.00	0.03	0.03	$\Sigma$ SAR < 1.6, Not required
			Top Side	1.18	0.40	1.58	$\Sigma$ SAR < 1.6, Not required
			Bottom Side	0.00	0.40	0.40	$\Sigma$ SAR < 1.6, Not required

# FCC SAR Test Report

No.	Conditions (SAR1+SAR2+SAR3)	Exposure Condition	Test Position	Max. SAR1	Max. SAR2	SAR Summation	SPLSR Analysis
16	CDMA BC0 + WLAN (DTS)	Body	Rear Face	0.00	0.00	0.00	$\Sigma$ SAR < 1.6, Not required
			Left Side	0.04	0.39	0.43	$\Sigma$ SAR < 1.6, Not required
			Right Side	0.00	0.44	0.44	$\Sigma$ SAR < 1.6, Not required
			Top Side	1.10	0.40	1.50	$\Sigma$ SAR < 1.6, Not required
			Bottom Side	0.00	0.40	0.40	$\Sigma$ SAR < 1.6, Not required
17	CDMA BC0 + WLAN (NII)	Body	Rear Face	0.00	0.00	0.00	$\Sigma$ SAR < 1.6, Not required
			Left Side	0.04	0.87	0.91	$\Sigma$ SAR < 1.6, Not required
			Right Side	0.00	0.86	0.86	$\Sigma$ SAR < 1.6, Not required
			Top Side	1.10	0.00	1.10	$\Sigma$ SAR < 1.6, Not required
			Bottom Side	0.00	0.00	0.00	$\Sigma$ SAR < 1.6, Not required
18	CDMA BC0 + BT (DSS)	Body	Rear Face	0.00	0.00	0.00	$\Sigma$ SAR < 1.6, Not required
			Left Side	0.04	0.40	0.44	$\Sigma$ SAR < 1.6, Not required
			Right Side	0.00	0.03	0.03	$\Sigma$ SAR < 1.6, Not required
			Top Side	1.10	0.40	1.50	$\Sigma$ SAR < 1.6, Not required
			Bottom Side	0.00	0.40	0.40	$\Sigma$ SAR < 1.6, Not required

No.	Conditions (SAR1+SAR2+SAR3)	Exposure Condition	Test Position	Max. SAR1	Max. SAR2	SAR Summation	SPLSR Analysis
19	CDMA BC1 + WLAN (DTS)	Body	Rear Face	0.02	0.00	0.02	$\Sigma$ SAR < 1.6, Not required
			Left Side	0.06	0.39	0.45	$\Sigma$ SAR < 1.6, Not required
			Right Side	0.40	0.44	0.84	$\Sigma$ SAR < 1.6, Not required
			Top Side	1.17	0.40	1.57	$\Sigma$ SAR < 1.6, Not required
			Bottom Side	0.40	0.40	0.80	$\Sigma$ SAR < 1.6, Not required
20	CDMA BC1 + WLAN (NII)	Body	Rear Face	0.02	0.00	0.02	$\Sigma$ SAR < 1.6, Not required
			Left Side	0.06	0.87	0.93	$\Sigma$ SAR < 1.6, Not required
			Right Side	0.40	0.86	1.26	$\Sigma$ SAR < 1.6, Not required
			Top Side	1.17	0.00	1.17	$\Sigma$ SAR < 1.6, Not required
			Bottom Side	0.40	0.00	0.40	$\Sigma$ SAR < 1.6, Not required
21	CDMA BC1 + BT (DSS)	Body	Rear Face	0.02	0.00	0.02	$\Sigma$ SAR < 1.6, Not required
			Left Side	0.06	0.40	0.46	$\Sigma$ SAR < 1.6, Not required
			Right Side	0.40	0.03	0.43	$\Sigma$ SAR < 1.6, Not required
			Top Side	1.17	0.40	1.57	$\Sigma$ SAR < 1.6, Not required
			Bottom Side	0.40	0.40	0.80	$\Sigma$ SAR < 1.6, Not required

# FCC SAR Test Report

No.	Conditions (SAR1+SAR2+SAR3)	Exposure Condition	Test Position	Max. SAR1	Max. SAR2	SAR Summation	SPLSR Analysis
22	LTE 2 + WLAN (DTS)	Body	Rear Face	0.04	0.00	0.04	$\Sigma$ SAR < 1.6, Not required
			Left Side	0.07	0.39	0.46	$\Sigma$ SAR < 1.6, Not required
			Right Side	0.40	0.44	0.84	$\Sigma$ SAR < 1.6, Not required
			Top Side	1.17	0.40	1.57	$\Sigma$ SAR < 1.6, Not required
			Bottom Side	0.40	0.40	0.80	$\Sigma$ SAR < 1.6, Not required
23	LTE 2 + WLAN (NII)	Body	Rear Face	0.04	0.00	0.04	$\Sigma$ SAR < 1.6, Not required
			Left Side	0.07	0.87	0.94	$\Sigma$ SAR < 1.6, Not required
			Right Side	0.40	0.86	1.26	$\Sigma$ SAR < 1.6, Not required
			Top Side	1.17	0.00	1.17	$\Sigma$ SAR < 1.6, Not required
			Bottom Side	0.40	0.00	0.40	$\Sigma$ SAR < 1.6, Not required
24	LTE 2 + BT (DSS)	Body	Rear Face	0.04	0.00	0.04	$\Sigma$ SAR < 1.6, Not required
			Left Side	0.07	0.40	0.47	$\Sigma$ SAR < 1.6, Not required
			Right Side	0.40	0.03	0.43	$\Sigma$ SAR < 1.6, Not required
			Top Side	1.17	0.40	1.57	$\Sigma$ SAR < 1.6, Not required
			Bottom Side	0.40	0.40	0.80	$\Sigma$ SAR < 1.6, Not required

No.	Conditions (SAR1+SAR2+SAR3)	Exposure Condition	Test Position	Max. SAR1	Max. SAR2	SAR Summation	SPLSR Analysis
25	LTE 4 + WLAN (DTS)	Body	Rear Face	0.03	0.00	0.03	$\Sigma$ SAR < 1.6, Not required
			Left Side	0.04	0.39	0.43	$\Sigma$ SAR < 1.6, Not required
			Right Side	0.40	0.44	0.84	$\Sigma$ SAR < 1.6, Not required
			Top Side	1.18	0.40	1.58	$\Sigma$ SAR < 1.6, Not required
			Bottom Side	0.40	0.40	0.80	$\Sigma$ SAR < 1.6, Not required
26	LTE 4 + WLAN (NII)	Body	Rear Face	0.03	0.00	0.03	$\Sigma$ SAR < 1.6, Not required
			Left Side	0.04	0.87	0.91	$\Sigma$ SAR < 1.6, Not required
			Right Side	0.40	0.86	1.26	$\Sigma$ SAR < 1.6, Not required
			Top Side	1.18	0.00	1.18	$\Sigma$ SAR < 1.6, Not required
			Bottom Side	0.40	0.00	0.40	$\Sigma$ SAR < 1.6, Not required
27	LTE 4 + BT (DSS)	Body	Rear Face	0.03	0.00	0.03	$\Sigma$ SAR < 1.6, Not required
			Left Side	0.04	0.40	0.44	$\Sigma$ SAR < 1.6, Not required
			Right Side	0.40	0.03	0.43	$\Sigma$ SAR < 1.6, Not required
			Top Side	1.18	0.40	1.58	$\Sigma$ SAR < 1.6, Not required
			Bottom Side	0.40	0.40	0.80	$\Sigma$ SAR < 1.6, Not required

# FCC SAR Test Report

No.	Conditions (SAR1+SAR2+SAR3)	Exposure Condition	Test Position	Max. SAR1	Max. SAR2	SAR Summation	SPLSR Analysis
28	LTE 5 + WLAN (DTS)	Body	Rear Face	0.04	0.00	0.04	$\Sigma$ SAR < 1.6, Not required
			Left Side	0.05	0.39	0.44	$\Sigma$ SAR < 1.6, Not required
			Right Side	0.00	0.44	0.44	$\Sigma$ SAR < 1.6, Not required
			Top Side	1.13	0.40	1.53	$\Sigma$ SAR < 1.6, Not required
			Bottom Side	0.00	0.40	0.40	$\Sigma$ SAR < 1.6, Not required
29	LTE 5 + WLAN (NII)	Body	Rear Face	0.04	0.00	0.04	$\Sigma$ SAR < 1.6, Not required
			Left Side	0.05	0.87	0.92	$\Sigma$ SAR < 1.6, Not required
			Right Side	0.00	0.86	0.86	$\Sigma$ SAR < 1.6, Not required
			Top Side	1.13	0.00	1.13	$\Sigma$ SAR < 1.6, Not required
			Bottom Side	0.00	0.00	0.00	$\Sigma$ SAR < 1.6, Not required
30	LTE 5 + BT (DSS)	Body	Rear Face	0.04	0.00	0.04	$\Sigma$ SAR < 1.6, Not required
			Left Side	0.05	0.40	0.45	$\Sigma$ SAR < 1.6, Not required
			Right Side	0.00	0.03	0.03	$\Sigma$ SAR < 1.6, Not required
			Top Side	1.13	0.40	1.53	$\Sigma$ SAR < 1.6, Not required
			Bottom Side	0.00	0.40	0.40	$\Sigma$ SAR < 1.6, Not required

No.	Conditions (SAR1+SAR2+SAR3)	Exposure Condition	Test Position	Max. SAR1	Max. SAR2	SAR Summation	SPLSR Analysis
31	LTE 13 + WLAN (DTS)	Body	Rear Face	0.00	0.00	0.00	$\Sigma$ SAR < 1.6, Not required
			Left Side	0.07	0.39	0.46	$\Sigma$ SAR < 1.6, Not required
			Right Side	0.00	0.44	0.44	$\Sigma$ SAR < 1.6, Not required
			Top Side	1.14	0.40	1.54	$\Sigma$ SAR < 1.6, Not required
			Bottom Side	0.00	0.40	0.40	$\Sigma$ SAR < 1.6, Not required
32	LTE 13 + WLAN (NII)	Body	Rear Face	0.00	0.00	0.00	$\Sigma$ SAR < 1.6, Not required
			Left Side	0.07	0.87	0.94	$\Sigma$ SAR < 1.6, Not required
			Right Side	0.00	0.86	0.86	$\Sigma$ SAR < 1.6, Not required
			Top Side	1.14	0.00	1.14	$\Sigma$ SAR < 1.6, Not required
			Bottom Side	0.00	0.00	0.00	$\Sigma$ SAR < 1.6, Not required
33	LTE 13 + BT (DSS)	Body	Rear Face	0.00	0.00	0.00	$\Sigma$ SAR < 1.6, Not required
			Left Side	0.07	0.40	0.47	$\Sigma$ SAR < 1.6, Not required
			Right Side	0.00	0.03	0.03	$\Sigma$ SAR < 1.6, Not required
			Top Side	1.14	0.40	1.54	$\Sigma$ SAR < 1.6, Not required
			Bottom Side	0.00	0.40	0.40	$\Sigma$ SAR < 1.6, Not required

# FCC SAR Test Report

No.	Conditions (SAR1+SAR2+SAR3)	Exposure Condition	Test Position	Max. SAR1	Max. SAR2	SAR Summation	SPLSR Analysis
34	LTE 17 + WLAN (DTS)	Body	Rear Face	0.00	0.00	0.00	$\Sigma$ SAR < 1.6, Not required
			Left Side	0.00	0.39	0.39	$\Sigma$ SAR < 1.6, Not required
			Right Side	0.00	0.44	0.44	$\Sigma$ SAR < 1.6, Not required
			Top Side	0.71	0.40	1.11	$\Sigma$ SAR < 1.6, Not required
			Bottom Side	0.00	0.40	0.40	$\Sigma$ SAR < 1.6, Not required
35	LTE 17 + WLAN (NII)	Body	Rear Face	0.00	0.00	0.00	$\Sigma$ SAR < 1.6, Not required
			Left Side	0.00	0.87	0.87	$\Sigma$ SAR < 1.6, Not required
			Right Side	0.00	0.86	0.86	$\Sigma$ SAR < 1.6, Not required
			Top Side	0.71	0.00	0.71	$\Sigma$ SAR < 1.6, Not required
			Bottom Side	0.00	0.00	0.00	$\Sigma$ SAR < 1.6, Not required
36	LTE 17 + BT (DSS)	Body	Rear Face	0.00	0.00	0.00	$\Sigma$ SAR < 1.6, Not required
			Left Side	0.00	0.40	0.40	$\Sigma$ SAR < 1.6, Not required
			Right Side	0.00	0.03	0.03	$\Sigma$ SAR < 1.6, Not required
			Top Side	0.71	0.40	1.11	$\Sigma$ SAR < 1.6, Not required
			Bottom Side	0.00	0.40	0.40	$\Sigma$ SAR < 1.6, Not required

No.	Conditions (SAR1+SAR2+SAR3)	Exposure Condition	Test Position	Max. SAR1	Max. SAR2	SAR Summation	SPLSR Analysis
37	LTE 25 + WLAN (DTS)	Body	Rear Face	0.03	0.00	0.03	$\Sigma$ SAR < 1.6, Not required
			Left Side	0.08	0.39	0.47	$\Sigma$ SAR < 1.6, Not required
			Right Side	0.40	0.44	0.84	$\Sigma$ SAR < 1.6, Not required
			Top Side	1.14	0.40	1.54	$\Sigma$ SAR < 1.6, Not required
			Bottom Side	0.40	0.40	0.80	$\Sigma$ SAR < 1.6, Not required
38	LTE 25 + WLAN (NII)	Body	Rear Face	0.03	0.00	0.03	$\Sigma$ SAR < 1.6, Not required
			Left Side	0.08	0.87	0.95	$\Sigma$ SAR < 1.6, Not required
			Right Side	0.40	0.86	1.26	$\Sigma$ SAR < 1.6, Not required
			Top Side	1.14	0.00	1.14	$\Sigma$ SAR < 1.6, Not required
			Bottom Side	0.40	0.00	0.40	$\Sigma$ SAR < 1.6, Not required
39	LTE 25 + BT (DSS)	Body	Rear Face	0.03	0.00	0.03	$\Sigma$ SAR < 1.6, Not required
			Left Side	0.08	0.40	0.48	$\Sigma$ SAR < 1.6, Not required
			Right Side	0.40	0.03	0.43	$\Sigma$ SAR < 1.6, Not required
			Top Side	1.14	0.40	1.54	$\Sigma$ SAR < 1.6, Not required
			Bottom Side	0.40	0.40	0.80	$\Sigma$ SAR < 1.6, Not required

Test Engineer : Blake Wang, and Isaac Liao

## 5. Calibration of Test Equipment

Equipment	Manufacturer	Model	SN	Cal. Date	Cal. Interval
System Validation Dipole	SPEAG	D750V3	1013	Aug. 21, 2017	1 Year
System Validation Dipole	SPEAG	D835V2	4d121	Aug. 21, 2017	1 Year
System Validation Dipole	SPEAG	D1750V2	1055	Aug. 21, 2017	1 Year
System Validation Dipole	SPEAG	D1900V2	5d036	Jan. 18, 2018	1 Year
System Validation Dipole	SPEAG	D2450V2	737	Aug. 17, 2017	1 Year
System Validation Dipole	SPEAG	D5GHzV2	1019	Aug. 23, 2017	1 Year
Dosimetric E-Field Probe	SPEAG	EX3DV4	3820	Jun. 27, 2018	1 Year
Dosimetric E-Field Probe	SPEAG	ET3DV6	3650	Jul. 24, 2017	1 Year
Dosimetric E-Field Probe	SPEAG	EX3DV4	3578	May. 05, 2017	1 Year
Dosimetric E-Field Probe	SPEAG	EX3DV4	7375	Dec. 18, 2017	1 Year
Data Acquisition Electronics	SPEAG	DAE3	360	Nov. 02, 2017	1 Year
Data Acquisition Electronics	SPEAG	DAE4	861	May. 22, 2017	1 Year
Data Acquisition Electronics	SPEAG	DAE4	917	Dec. 14, 2017	1 Year
Wireless Communication Test Set	Agilent	E5515C	MY50260642	Nov. 23, 2017	1 Year
Radio Communication Analyzer	Anritsu	MT8820C	6201381727	May. 26, 2017	1 Year
Universal Radio Communication Tester	Anritsu	MT8821C	6261786083	Dec. 21, 2017	1 Year
Spectrum Analyzer	R&S	FSL6	102006	Mar. 27, 2017	1 Year
EXA Spectrum Analyzer	Agilent	N9010A	MY53470455	May. 19, 2017	N/A
ENA Series Network Analyzer	Agilent	E5071C	MY46214281	Jun. 09, 2017	1 Year
MXG Analog Signal Generator	Agilent	N5181A	MY50143868	Jul. 10, 2017	1 Year
Vector Signal Generator	Anritsu	MG3710A	6201599977	Mar. 27, 2017	1 Year
Power Meter	Anritsu	ML2495A	1218009	Jul. 12, 2017	1 Year
Power Sensor	Anritsu	MA2411B	1207252	Jul. 12, 2017	1 Year
Thermometer	YFE	YF-160A	130504591	Mar. 24, 2017	1 Year
Thermometer	YFE	YF-160A	120702365	Aug. 15, 2017	1 Year
Dielectric Assessment Kit	SPEAG	DAK-3.5	1047	Aug. 15, 2017	1 Year

## 6. Measurement Uncertainty

Source of Uncertainty	Uncertainty (± %)	Probability Distribution	Divisor	Ci (1g)	Ci (10g)	Standard Uncertainty (± %, 1g)	Standard Uncertainty (± %, 10g)	Vi
<b>Measurement System</b>								
Probe Calibration	6.0	Normal	1	1	1	6.0	6.0	∞
Axial Isotropy	4.7	Rectangular	√3	√0.5	√0.5	1.9	1.9	∞
Hemispherical Isotropy	9.6	Rectangular	√3	√0.5	√0.5	3.9	3.9	∞
Boundary Effect	1.0	Rectangular	√3	1	1	0.6	0.6	∞
Linearity	4.7	Rectangular	√3	1	1	2.7	2.7	∞
Detection Limits	0.25	Rectangular	√3	1	1	0.14	0.14	∞
Probe Modulation Response	3.5	Rectangular	√3	1	1	2.0	2.0	∞
Readout Electronics	0.3	Normal	1	1	1	0.3	0.3	∞
Response Time	0.0	Rectangular	√3	1	1	0.0	0.0	∞
Integration Time	1.7	Rectangular	√3	1	1	1.0	1.0	∞
RF Ambient Conditions – Noise	3.0	Rectangular	√3	1	1	1.7	1.7	∞
RF Ambient Conditions – Reflections	3.0	Rectangular	√3	1	1	1.7	1.7	∞
Probe Positioner Mechanical Tolerance	0.4	Rectangular	√3	1	1	0.2	0.2	∞
Probe Positioning with Respect to Phantom	2.9	Rectangular	√3	1	1	1.7	1.7	∞
Post-processing	2.0	Rectangular	√3	1	1	1.2	1.2	∞
<b>Test Sample Related</b>								
Test Sample Positioning	4.38 / 1.35	Normal	1	1	1	4.4	1.4	29
Device Holder Uncertainty	2.9 / 4.1	Normal	1	1	1	2.9	4.1	11
Power Drift of Measurement	5.0	Rectangular	√3	1	1	2.9	2.9	∞
Power Scaling	0.0	Rectangular	√3	1	1	0.0	0.0	∞
<b>Phantom and Setup</b>								
Phantom Uncertainty (Shape and Thickness Tolerances)	7.2	Rectangular	√3	1	1	4.2	4.2	∞
Liquid Conductivity ( Temperature Uncertainty)	3.24	Rectangular	√3	0.78	0.71	1.5	1.3	∞
Liquid Conductivity (Measured)	2.88	Normal	1	0.78	0.71	2.2	2.0	43
Liquid Permittivity (Temperature Uncertainty)	1.13	Rectangular	√3	0.23	0.26	0.2	0.2	∞
Liquid Permittivity (Measured)	2.50	Normal	1	0.23	0.26	0.6	0.7	54
<b>Combined Standard Uncertainty</b>						± 11.8 %	± 11.3 %	
<b>Expanded Uncertainty (K=2)</b>						± 23.6 %	± 22.6 %	

Body SAR Uncertainty Budget for Frequency Range of 300 MHz to 3 GHz



# FCC SAR Test Report

Source of Uncertainty	Uncertainty (± %)	Probability Distribution	Divisor	Ci (1g)	Ci (10g)	Standard Uncertainty (± %, 1g)	Standard Uncertainty (± %, 10g)	Vi
<b>Measurement System</b>								
Probe Calibration	6.55	Normal	1	1	1	6.55	6.55	∞
Axial Isotropy	4.7	Rectangular	√3	0.7	0.7	1.9	1.9	∞
Hemispherical Isotropy	9.6	Rectangular	√3	0.7	0.7	3.9	3.9	∞
Boundary Effect	2.0	Rectangular	√3	1	1	1.2	1.2	∞
Linearity	4.7	Rectangular	√3	1	1	2.7	2.7	∞
Detection Limits	0.25	Rectangular	√3	1	1	0.14	0.14	∞
Probe Modulation Response	3.5	Rectangular	√3	1	1	2.0	2.0	∞
Readout Electronics	0.3	Normal	1	1	1	0.3	0.3	∞
Response Time	0.0	Rectangular	√3	1	1	0.0	0.0	∞
Integration Time	1.7	Rectangular	√3	1	1	1.0	1.0	∞
RF Ambient Conditions – Noise	3.0	Rectangular	√3	1	1	1.7	1.7	∞
RF Ambient Conditions – Reflections	3.0	Rectangular	√3	1	1	1.7	1.7	∞
Probe Positioner Mechanical Tolerance	0.4	Rectangular	√3	1	1	0.2	0.2	∞
Probe Positioning with Respect to Phantom	6.7	Rectangular	√3	1	1	3.9	3.9	∞
Post-processing	4.0	Rectangular	√3	1	1	2.3	2.3	∞
<b>Test Sample Related</b>								
Test Sample Positioning	4.38 / 1.35	Normal	1	1	1	4.4	1.4	29
Device Holder Uncertainty	2.9 / 4.1	Normal	1	1	1	2.9	4.1	11
Power Drift of Measurement	5.0	Rectangular	√3	1	1	2.9	2.9	∞
Power Scaling	0.0	Rectangular	√3	1	1	0.0	0.0	∞
<b>Phantom and Setup</b>								
Phantom Uncertainty (Shape and Thickness Tolerances)	7.6	Rectangular	√3	1	1	4.4	4.4	∞
Liquid Conductivity ( Temperature Uncertainty)	3.24	Rectangular	√3	0.78	0.71	1.5	1.3	∞
Liquid Conductivity (Measured)	2.88	Normal	1	0.78	0.71	2.2	2.0	43
Liquid Permittivity (Temperature Uncertainty)	1.13	Rectangular	√3	0.23	0.26	0.2	0.2	∞
Liquid Permittivity (Measured)	2.50	Normal	1	0.23	0.26	0.6	0.7	54
<b>Combined Standard Uncertainty</b>						± 12.8 %	± 12.4 %	
<b>Expanded Uncertainty (K=2)</b>						± 25.6 %	± 24.8 %	

**Body SAR Uncertainty Budget for Frequency Range of 3 GHz to 6 GHz**

## **7. Information on the Testing Laboratories**

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

**Taiwan HwaYa EMC/RF/Safety/Telecom Lab:**

Add: No. 19, Hwa Ya 2nd Rd, Wen Hwa Vil., Kwei Shan Hsiang, Taoyuan Hsien 333, Taiwan, R.O.C.

Tel: 886-3-318-3232

Fax: 886-3-327-0892

**Taiwan LinKo EMC/RF Lab:**

Add: No. 47-2, 14th Ling, Chia Pau Vil., Linkou Dist., New Taipei City 244, Taiwan, R.O.C.

Tel: 886-2-2605-2180

Fax: 886-2-2605-1924

**Taiwan HsinChu EMC/RF Lab:**

Add: E-2, No.1, Li Hsin 1<sup>st</sup> Road, Hsinchu Science Park, Hsinchu City 30078, Taiwan, R.O.C.

Tel: 886-3-593-5343

Fax: 886-3-593-5342

**Email:** [service.adt@tw.bureauveritas.com](mailto:service.adt@tw.bureauveritas.com)

**Web Site:** [www.bureauveritas-adt.com](http://www.bureauveritas-adt.com)

The road map of all our labs can be found in our web site also.

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## Appendix A. SAR Plots of System Verification

The plots for system verification with largest deviation for each SAR system combination are shown as follows.

### System Check\_B750\_180227

**DUT: Dipole 750 MHz; Type: D750V3; SN: 1013**

Communication System: CW; Frequency: 750 MHz; Duty Cycle: 1:1

Medium: B06T09N1\_0227 Medium parameters used:  $f = 750 \text{ MHz}$ ;  $\sigma = 0.961 \text{ S/m}$ ;  $\epsilon_r = 54.281$ ;  $\rho = 1000 \text{ kg/m}^3$

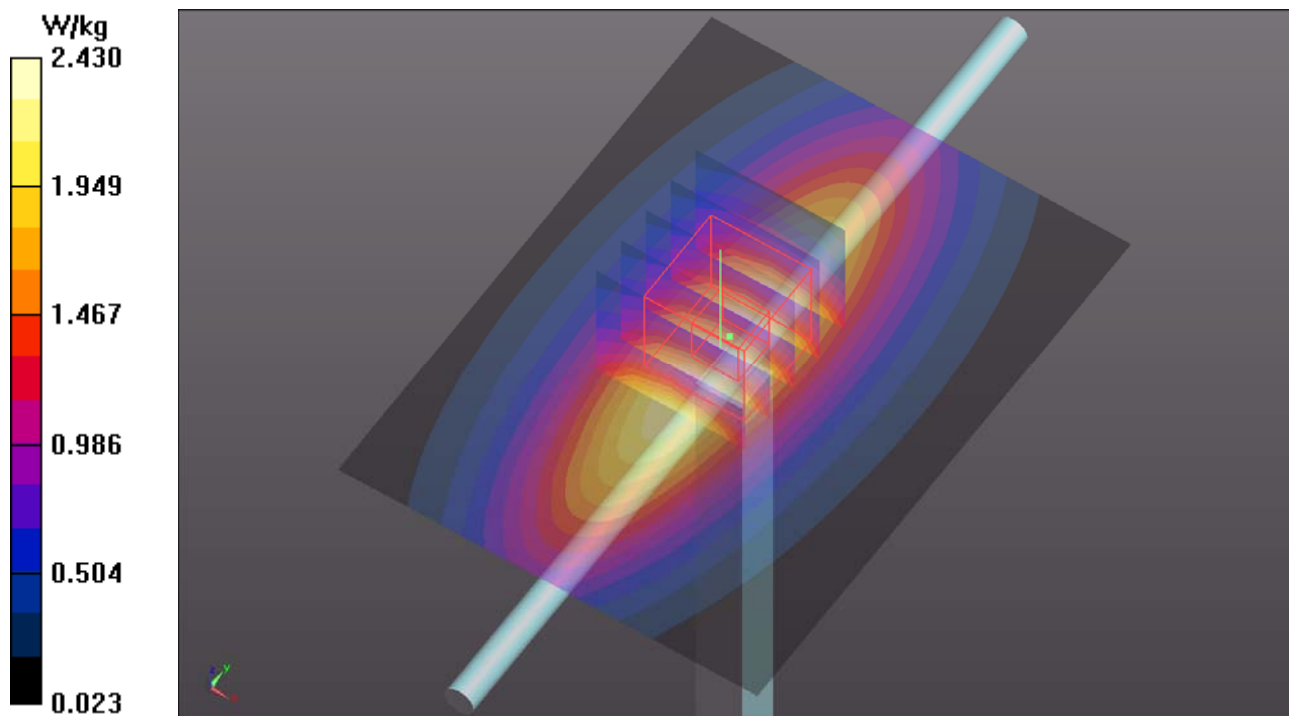
Ambient Temperature : 23.5 °C ; Liquid Temperature : 23.3 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN7375; ConvF(10.49, 10.49, 10.49); Calibrated: 2017/12/18;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn917; Calibrated: 2017/12/14
- Phantom: ELI Phantom\_1204; Type: QDOVA;
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)

**Pin=250mW/Area Scan (61x81x1):** Interpolated grid:  $dx=1.500 \text{ mm}$ ,  $dy=1.500 \text{ mm}$   
Maximum value of SAR (interpolated) = 2.43 W/kg

**Pin=250mW/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$   
Reference Value = 51.59 V/m; Power Drift = 0.01 dB  
Peak SAR (extrapolated) = 2.77 W/kg  
**SAR(1 g) = 2.07 W/kg; SAR(10 g) = 1.43 W/kg**  
Maximum value of SAR (measured) = 2.43 W/kg



## System Check\_B835\_180402

**DUT: Dipole 835 MHz; Type: D835V2; SN: 4d121**

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: B07T10N3\_0402 Medium parameters used:  $f = 835 \text{ MHz}$ ;  $\sigma = 1.002 \text{ S/m}$ ;  $\epsilon_r = 54.22$ ;  $\rho = 1000 \text{ kg/m}^3$

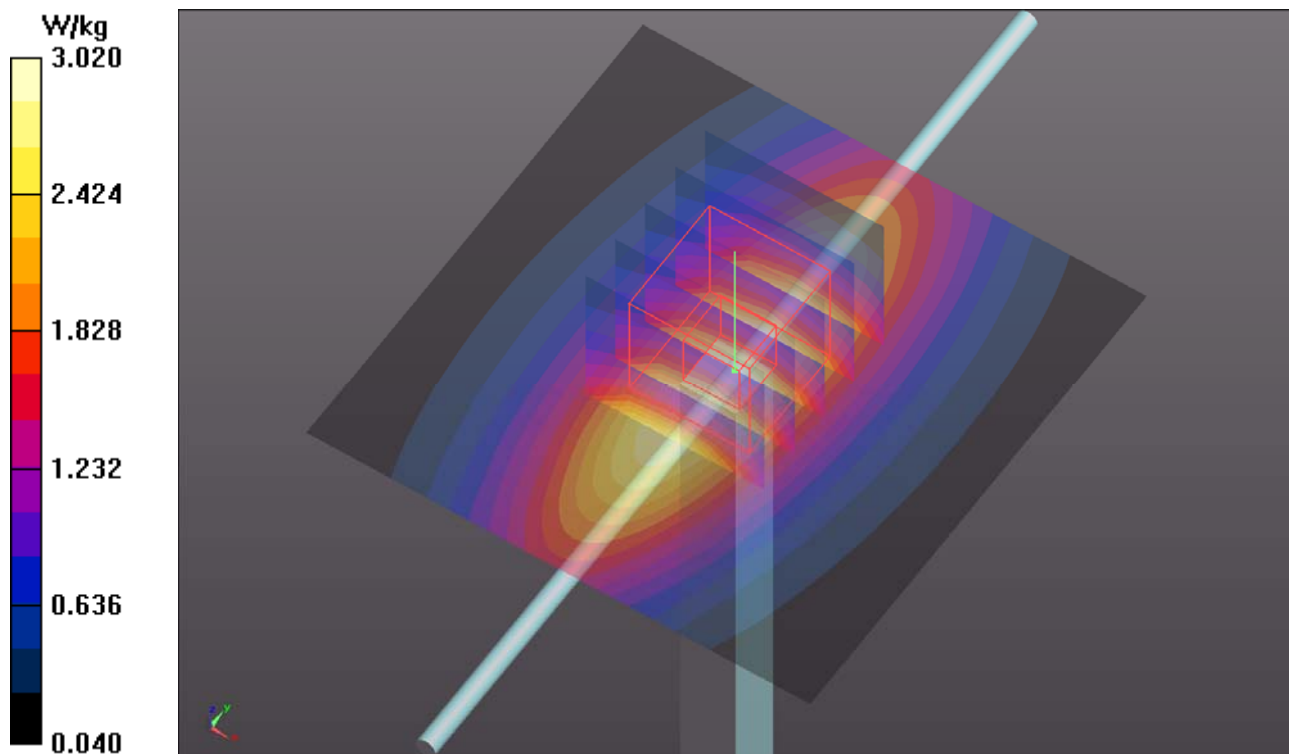
Ambient Temperature :  $23.6 \text{ }^\circ\text{C}$  ; Liquid Temperature :  $23.4 \text{ }^\circ\text{C}$

DASY5 Configuration:

- Probe: EX3DV4 - SN3650; ConvF(9.76, 9.76, 9.76); Calibrated: 2017/07/24;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2017/05/22
- Phantom: ELI Phantom\_1206; Type: QDOVA;
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)

**Pin=250mW/Area Scan (61x61x1):** Interpolated grid:  $dx=1.500 \text{ mm}$ ,  $dy=1.500 \text{ mm}$   
Maximum value of SAR (interpolated) =  $3.02 \text{ W/kg}$

**Pin=250mW/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$   
Reference Value =  $57.36 \text{ V/m}$ ; Power Drift =  $-0.06 \text{ dB}$   
Peak SAR (extrapolated) =  $3.40 \text{ W/kg}$   
**SAR(1 g) =  $2.27 \text{ W/kg}$ ; SAR(10 g) =  $1.49 \text{ W/kg}$**   
Maximum value of SAR (measured) =  $3.03 \text{ W/kg}$



### System Check\_B1750\_180227

**DUT: Dipole 1750 MHz; Type: D1750V2; SN: 1055**

Communication System: CW; Frequency: 1750 MHz; Duty Cycle: 1:1

Medium: B16T20N1\_0227 Medium parameters used:  $f = 1750$  MHz;  $\sigma = 1.44$  S/m;  $\epsilon_r = 51.726$ ;  $\rho = 1000$  kg/m<sup>3</sup>

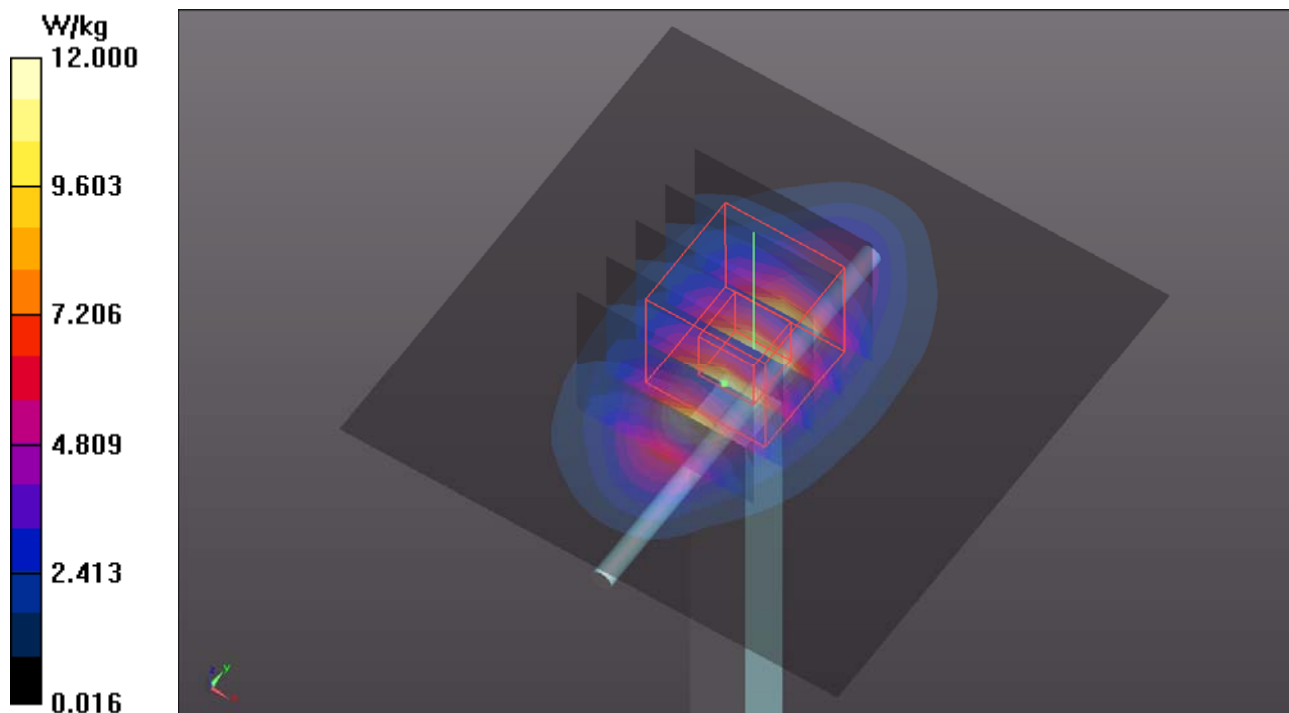
Ambient Temperature : 23.5 °C ; Liquid Temperature : 23.3 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN7375; ConvF(8.99, 8.99, 8.99); Calibrated: 2017/12/18;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn917; Calibrated: 2017/12/14
- Phantom: ELI Phantom\_1204; Type: QDOVA;
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)

**Pin=250mW/Area Scan (61x61x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm  
Maximum value of SAR (interpolated) = 12.0 W/kg

**Pin=250mW/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm  
Reference Value = 91.53 V/m; Power Drift = 0.02 dB  
Peak SAR (extrapolated) = 14.5 W/kg  
**SAR(1 g) = 8.56 W/kg; SAR(10 g) = 4.72 W/kg**  
Maximum value of SAR (measured) = 11.7 W/kg



### System Check\_B1900\_180227

**DUT: Dipole 1900 MHz; Type: D1900V2; SN: 5d036**

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: B16T20N1\_0227 Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.556$  S/m;  $\epsilon_r = 51.466$ ;  $\rho = 1000$  kg/m<sup>3</sup>

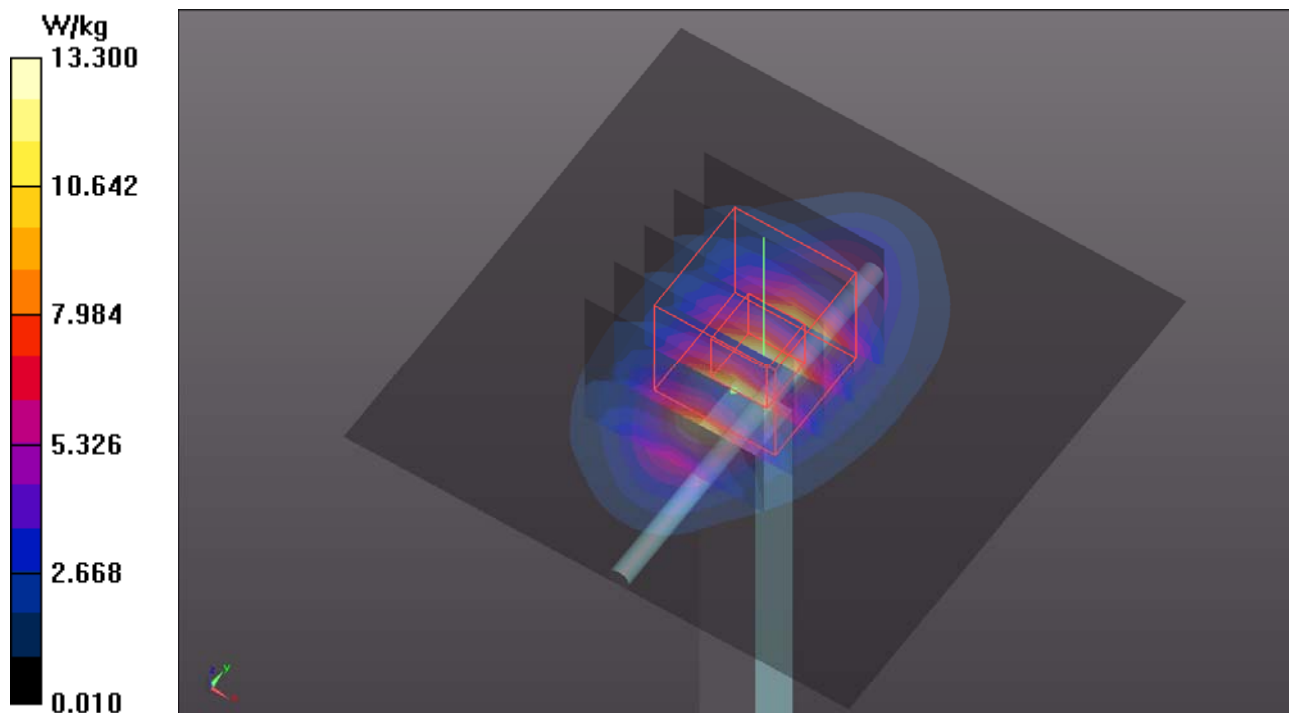
Ambient Temperature : 23.5 °C ; Liquid Temperature : 23.3 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN7375; ConvF(8.44, 8.44, 8.44); Calibrated: 2017/12/18;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn917; Calibrated: 2017/12/14
- Phantom: ELI Phantom\_1204; Type: QDOVA;
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)

**Pin=250mW/Area Scan (61x61x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm  
Maximum value of SAR (interpolated) = 13.3 W/kg

**Pin=250mW/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm  
Reference Value = 93.32 V/m; Power Drift = 0.00 dB  
Peak SAR (extrapolated) = 16.5 W/kg  
**SAR(1 g) = 9.58 W/kg; SAR(10 g) = 4.92 W/kg**  
Maximum value of SAR (measured) = 13.2 W/kg



### System Check\_B2450\_180326

**DUT: Dipole 2450 MHz; Type: D2450V2; SN: 737**

Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: B19T27N2\_0326 Medium parameters used:  $f = 2450$  MHz;  $\sigma = 2.022$  S/m;  $\epsilon_r = 50.687$ ;  $\rho = 1000$  kg/m<sup>3</sup>

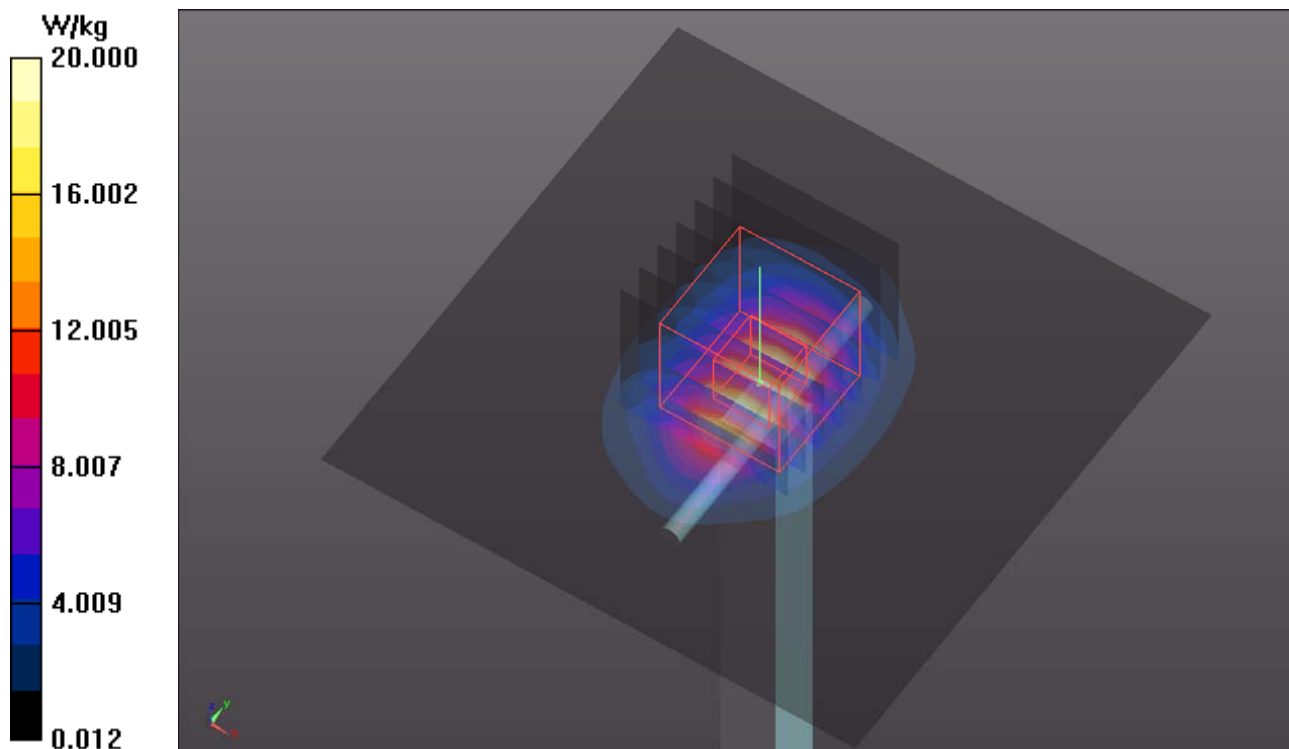
Ambient Temperature : 23.6 °C ; Liquid Temperature : 23.3 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3820; ConvF(7.1, 7.1, 7.1); Calibrated: 2017/06/27;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn917; Calibrated: 2017/12/14
- Phantom: ELI Phantom\_1206; Type: QDOVA;
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)

**Pin=250mW/Area Scan (81x81x1):** Interpolated grid: dx=1.200 mm, dy=1.200 mm  
Maximum value of SAR (interpolated) = 20.0 W/kg

**Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm  
Reference Value = 100.7 V/m; Power Drift = 0.02 dB  
Peak SAR (extrapolated) = 26.4 W/kg  
**SAR(1 g) = 13.2 W/kg; SAR(10 g) = 6.18 W/kg**  
Maximum value of SAR (measured) = 20.0 W/kg





### System Check\_B5250\_180323

**DUT: Dipole 5 GHz; Type: D5GHzV2; SN: 1019**

Communication System: CW; Frequency: 5250 MHz; Duty Cycle: 1:1

Medium: B34T60N1\_0323 Medium parameters used:  $f = 5250$  MHz;  $\sigma = 5.482$  S/m;  $\epsilon_r = 46.96$ ;  $\rho = 1000$  kg/m<sup>3</sup>

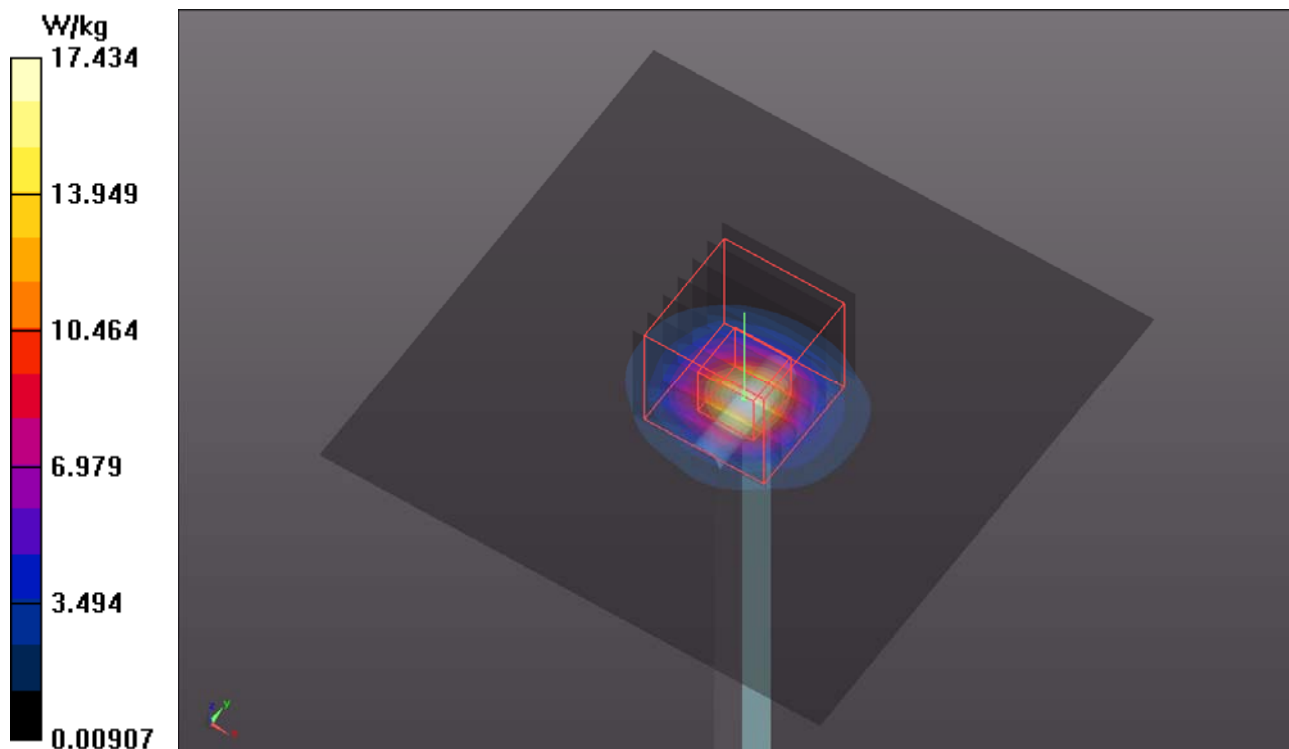
Ambient Temperature : 23.5 °C ; Liquid Temperature : 23.2 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3650; ConvF(5.28, 5.28, 5.28); Calibrated: 2017/07/24;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2017/05/22
- Phantom: ELI Phantom\_1206; Type: QDOVA;
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)

**Pin=100mW/Area Scan (91x91x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm  
Maximum value of SAR (interpolated) = 17.4 W/kg

**Pin=100mW/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm  
Reference Value = 55.86 V/m; Power Drift = -0.17 dB  
Peak SAR (extrapolated) = 30.7 W/kg  
**SAR(1 g) = 7.43 W/kg; SAR(10 g) = 2.13 W/kg**  
Maximum value of SAR (measured) = 18.6 W/kg



### System Check\_B5600\_180326

**DUT: Dipole 5 GHz; Type: D5GHzV2; SN: 1019**

Communication System: CW; Frequency: 5600 MHz; Duty Cycle: 1:1

Medium: B34T60N1\_0326 Medium parameters used:  $f = 5600$  MHz;  $\sigma = 5.843$  S/m;  $\epsilon_r = 46.493$ ;  $\rho = 1000$  kg/m<sup>3</sup>

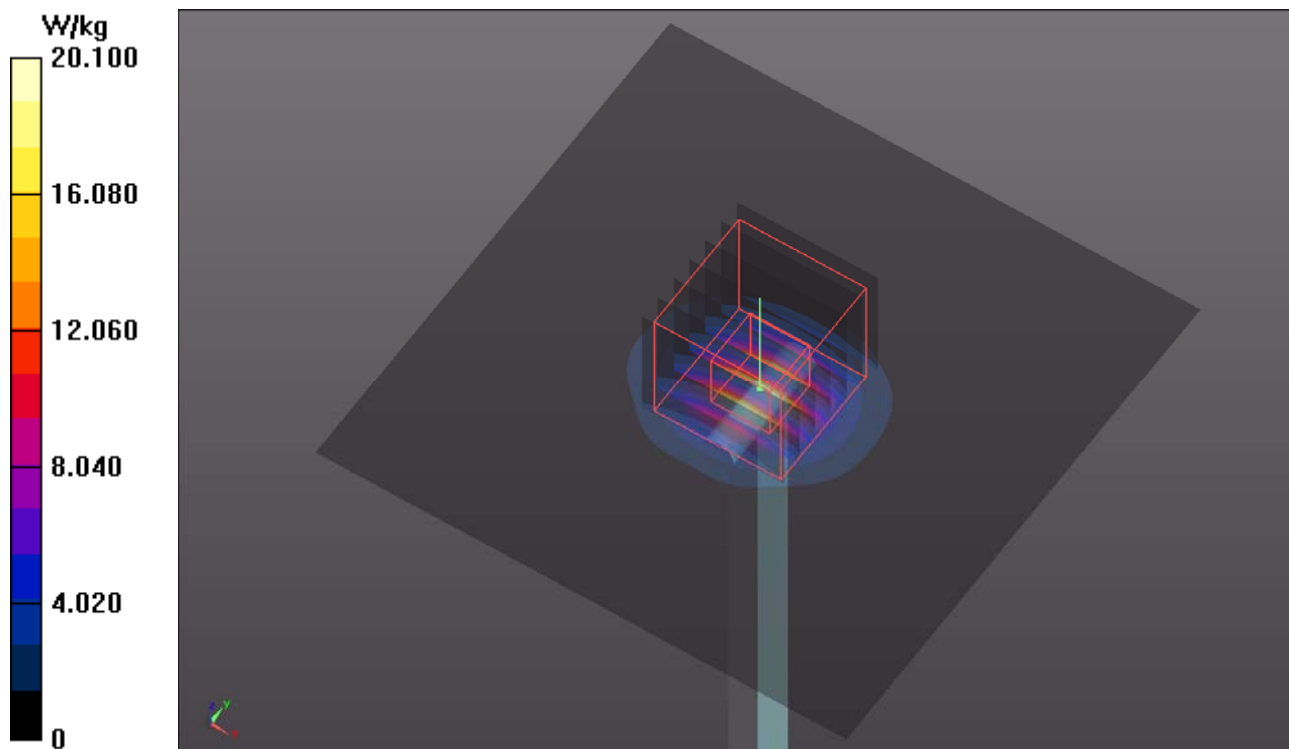
Ambient Temperature : 23.6 °C ; Liquid Temperature : 23.3 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3820; ConvF(3.8, 3.8, 3.8); Calibrated: 2017/06/27;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn917; Calibrated: 2017/12/14
- Phantom: ELI Phantom\_1206; Type: QDOVA;
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)

**Pin=100mW/Area Scan (91x91x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm  
Maximum value of SAR (interpolated) = 20.1 W/kg

**Pin=100mW/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm  
Reference Value = 69.27 V/m; Power Drift = -0.08 dB  
Peak SAR (extrapolated) = 37.1 W/kg  
**SAR(1 g) = 8.5 W/kg; SAR(10 g) = 2.37 W/kg**  
Maximum value of SAR (measured) = 22.1 W/kg



### System Check\_B5800\_180326

**DUT: Dipole 5 GHz; Type: D5GHzV2; SN: 1019**

Communication System: CW; Frequency: 5800 MHz; Duty Cycle: 1:1

Medium: B34T60N1\_0326 Medium parameters used:  $f = 5800$  MHz;  $\sigma = 6.104$  S/m;  $\epsilon_r = 46.118$ ;  $\rho = 1000$  kg/m<sup>3</sup>

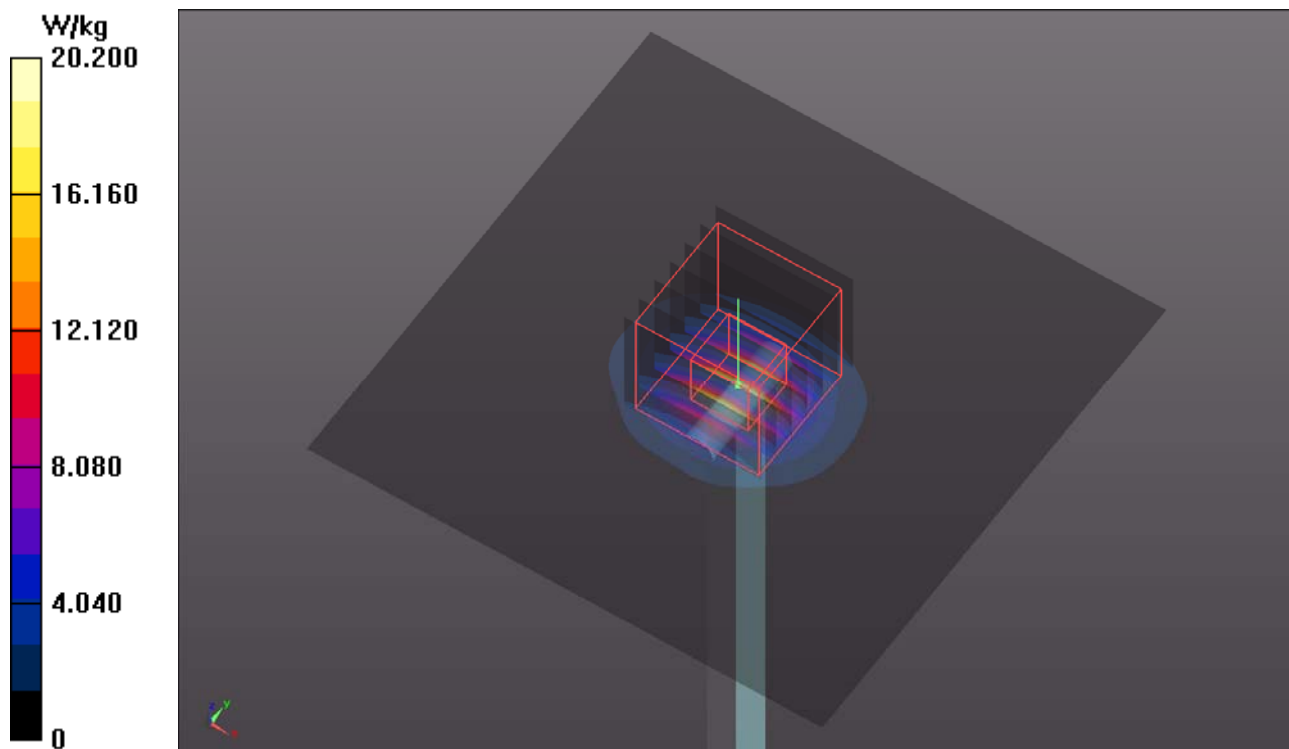
Ambient Temperature : 23.6 °C ; Liquid Temperature : 23.3 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3820; ConvF(4.04, 4.04, 4.04); Calibrated: 2017/06/27;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn917; Calibrated: 2017/12/14
- Phantom: ELI Phantom\_1206; Type: QDOVA;
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)

**Pin=100mW/Area Scan (91x91x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm  
Maximum value of SAR (interpolated) = 20.2 W/kg

**Pin=100mW/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm  
Reference Value = 67.98 V/m; Power Drift = -0.11 dB  
Peak SAR (extrapolated) = 38.4 W/kg  
**SAR(1 g) = 8.29 W/kg; SAR(10 g) = 2.26 W/kg**  
Maximum value of SAR (measured) = 22.1 W/kg



## Appendix B. SAR Plots of SAR Measurement

The SAR plots for highest measured SAR in each exposure configuration, wireless mode and frequency band combination, and measured SAR > 1.5 W/kg are shown as follows.

## P01 GSM850\_GPRS10\_Top Side\_0cm\_Ch128

**DUT: 180207C04**

Communication System: GPRS10; Frequency: 824.2 MHz; Duty Cycle: 1:4

Medium: B07T10N1\_0314 Medium parameters used:  $f = 824.2$  MHz;  $\sigma = 0.957$  S/m;  $\epsilon_r = 57.632$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.7 °C ; Liquid Temperature : 23.4 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3578; ConvF(9.53, 9.53, 9.53); Calibrated: 2017/05/05;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn360; Calibrated: 2017/11/02
- Phantom: ELI Phantom\_1206; Type: QDOVA;
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)

- **Area Scan (71x221x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.05 W/kg

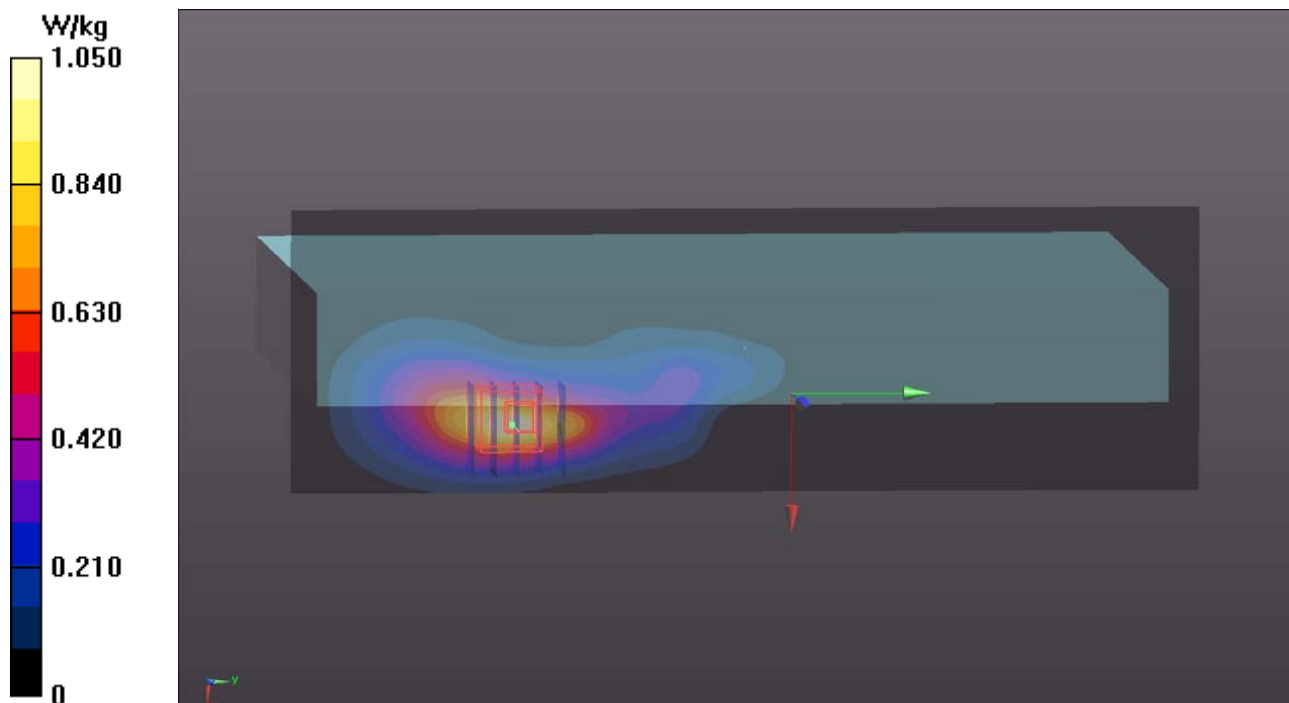
- **Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 30.85 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 2.42 W/kg

**SAR(1 g) = 1.05 W/kg; SAR(10 g) = 0.536 W/kg**

Maximum value of SAR (measured) = 1.41 W/kg



## P02 GSM1900\_GPRS10\_Top Side\_0cm\_Ch512

**DUT: 180207C04**

Communication System: GPRS10; Frequency: 1850.2 MHz; Duty Cycle: 1:4

Medium: B16T20N1\_0314 Medium parameters used:  $f = 1850.2$  MHz;  $\sigma = 1.535$  S/m;  $\epsilon_r = 51.746$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.7 °C ; Liquid Temperature : 23.4 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3578; ConvF(7.79, 7.79, 7.79); Calibrated: 2017/05/05;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn360; Calibrated: 2017/11/02
- Phantom: ELI Phantom\_1206; Type: QDOVA;
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)

- **Area Scan (71x231x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.928 W/kg

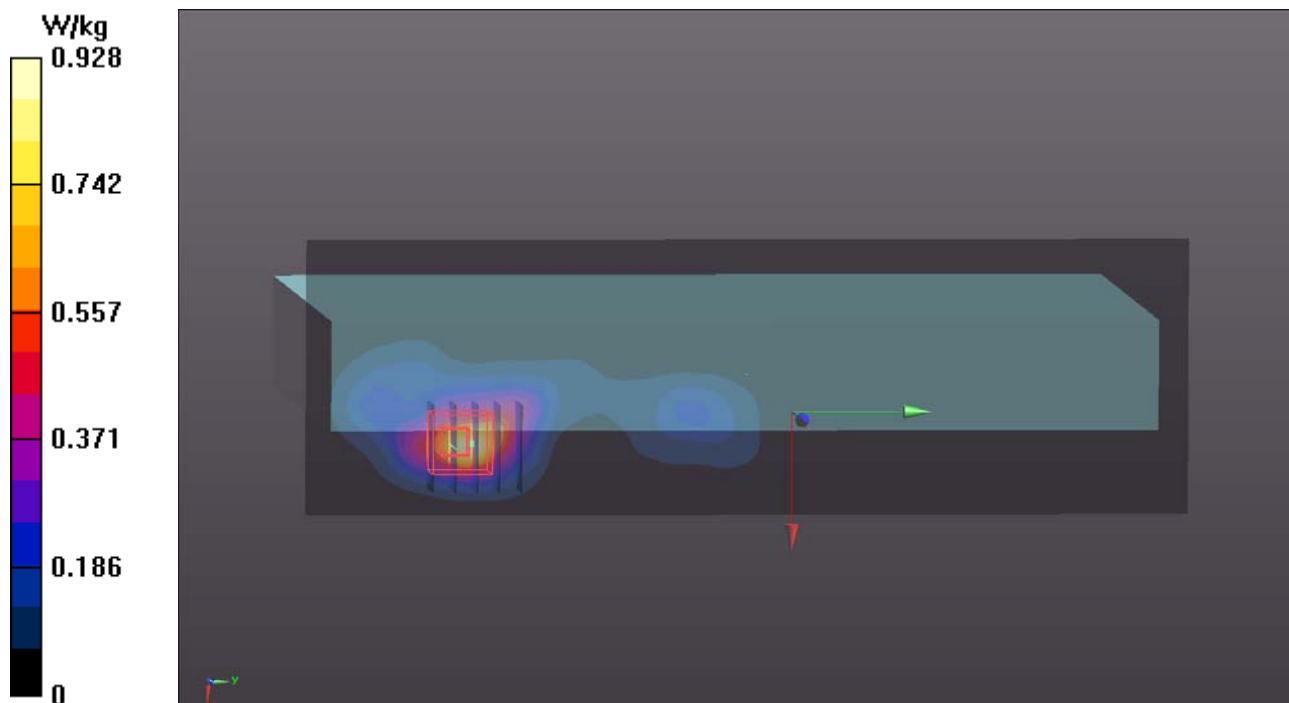
- **Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 21.61 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 2.26 W/kg

**SAR(1 g) = 1.03 W/kg; SAR(10 g) = 0.468 W/kg**

Maximum value of SAR (measured) = 1.92 W/kg



### P03 WCDMA II\_RMC12.2K\_Top Side\_0cm\_Ch9262

**DUT: 180207C04**

Communication System: WCDMA; Frequency: 1852.4 MHz; Duty Cycle: 1:1

Medium: B16T20N1\_0314 Medium parameters used:  $f = 1852.4$  MHz;  $\sigma = 1.537$  S/m;  $\epsilon_r = 51.736$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.7 °C ; Liquid Temperature : 23.4 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3578; ConvF(7.79, 7.79, 7.79); Calibrated: 2017/05/05;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn360; Calibrated: 2017/11/02
- Phantom: ELI Phantom\_1206; Type: QDOVA;
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)

- **Area Scan (71x151x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.70 W/kg

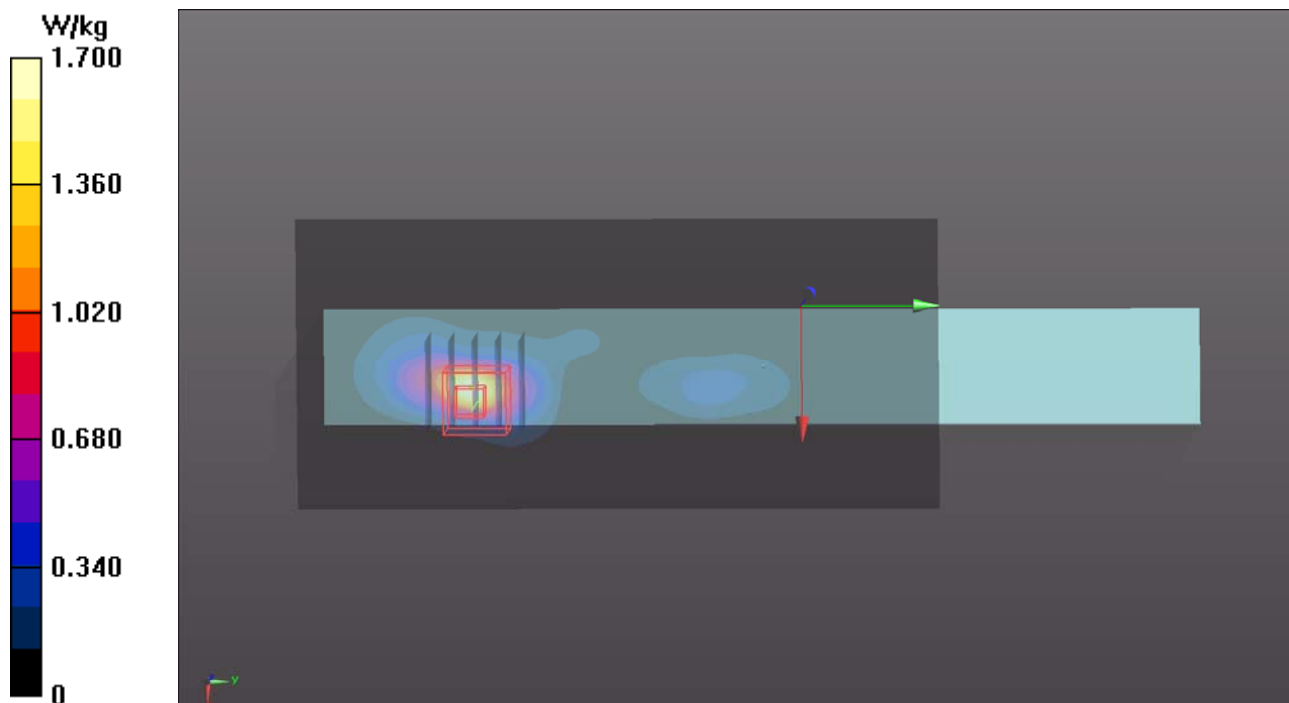
- **Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 31.16 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 2.30 W/kg

**SAR(1 g) = 1.05 W/kg; SAR(10 g) = 0.464 W/kg**

Maximum value of SAR (measured) = 1.58 W/kg



### P04 WCDMA IV\_RMC12.2K\_Top Side\_0cm\_Ch1312

**DUT: 180207C04**

Communication System: WCDMA; Frequency: 1712.4 MHz; Duty Cycle: 1:1

Medium: B16T20N1\_0314 Medium parameters used:  $f = 1712.4$  MHz;  $\sigma = 1.399$  S/m;  $\epsilon_r = 52.156$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.7 °C ; Liquid Temperature : 23.4 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3578; ConvF(8.08, 8.08, 8.08); Calibrated: 2017/05/05;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn360; Calibrated: 2017/11/02
- Phantom: ELI Phantom\_1206; Type: QDOVA;
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)

- **Area Scan (71x151x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.65 W/kg

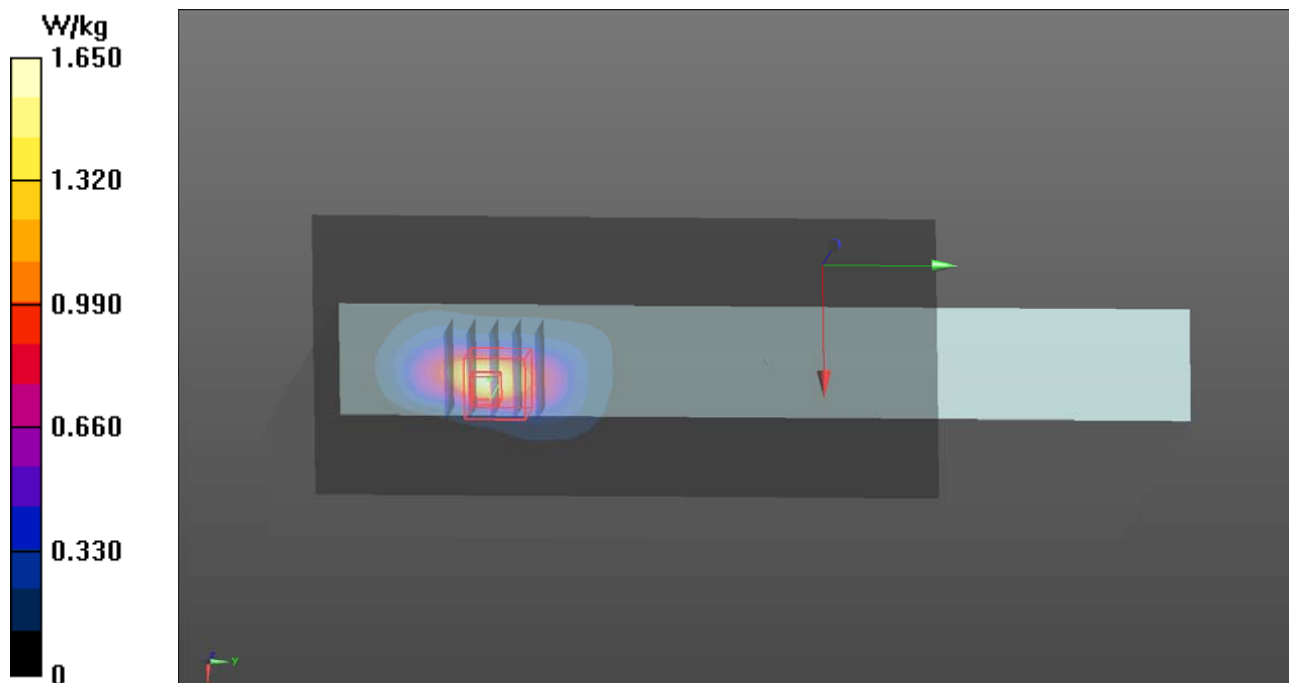
- **Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 31.81 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 2.14 W/kg

**SAR(1 g) = 0.984 W/kg; SAR(10 g) = 0.475 W/kg**

Maximum value of SAR (measured) = 1.42 W/kg





### P05 WCDMA V\_RMC12.2K\_Top Side\_0cm\_Ch4233

**DUT: 180207C04**

Communication System: WCDMA; Frequency: 846.6 MHz; Duty Cycle: 1:1

Medium: B07T10N1\_0314 Medium parameters used:  $f = 847$  MHz;  $\sigma = 0.979$  S/m;  $\epsilon_r = 57.432$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.7 °C ; Liquid Temperature : 23.4 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3578; ConvF(9.53, 9.53, 9.53); Calibrated: 2017/05/05;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn360; Calibrated: 2017/11/02
- Phantom: ELI Phantom\_1206; Type: QDOVA;
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)

- **Area Scan (71x151x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.64 W/kg

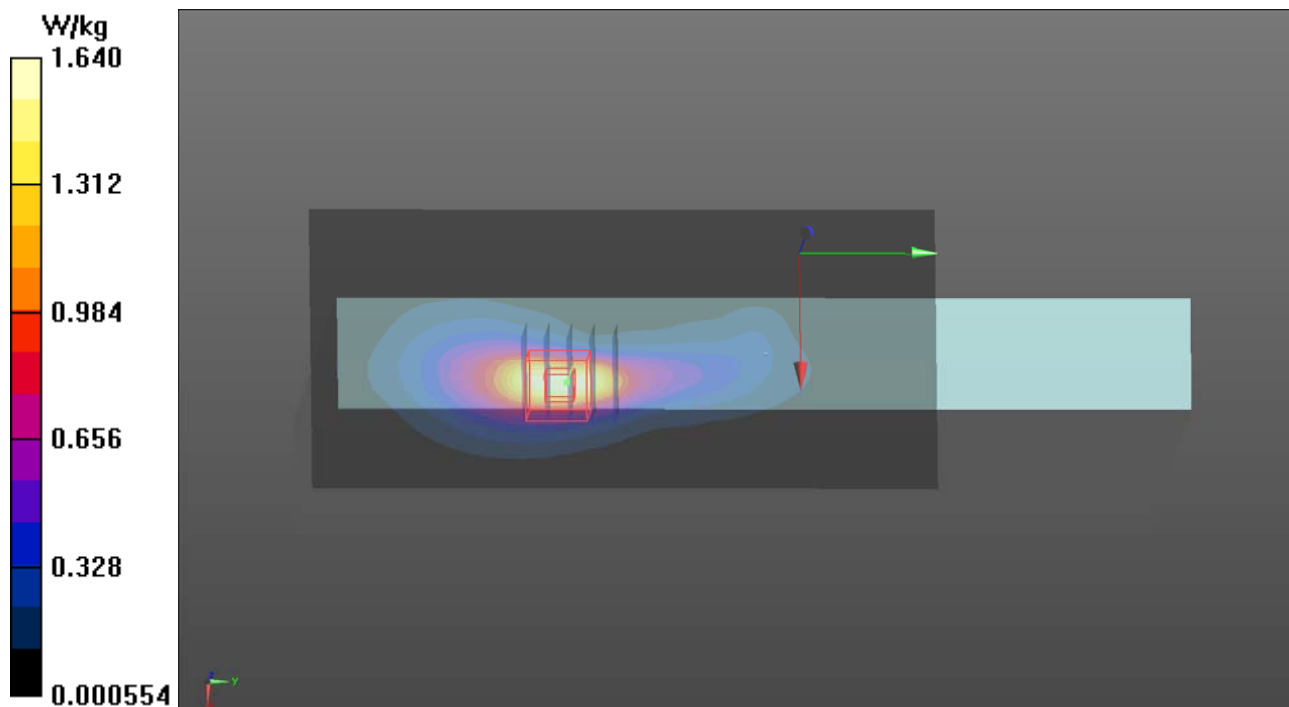
- **Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 37.31 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 2.43 W/kg

**SAR(1 g) = 1.07 W/kg; SAR(10 g) = 0.552 W/kg**

Maximum value of SAR (measured) = 1.87 W/kg



### P06 CDMA2000 BC0\_RTAP153.6\_Top Side\_0cm\_Ch777

**DUT: 180207C04**

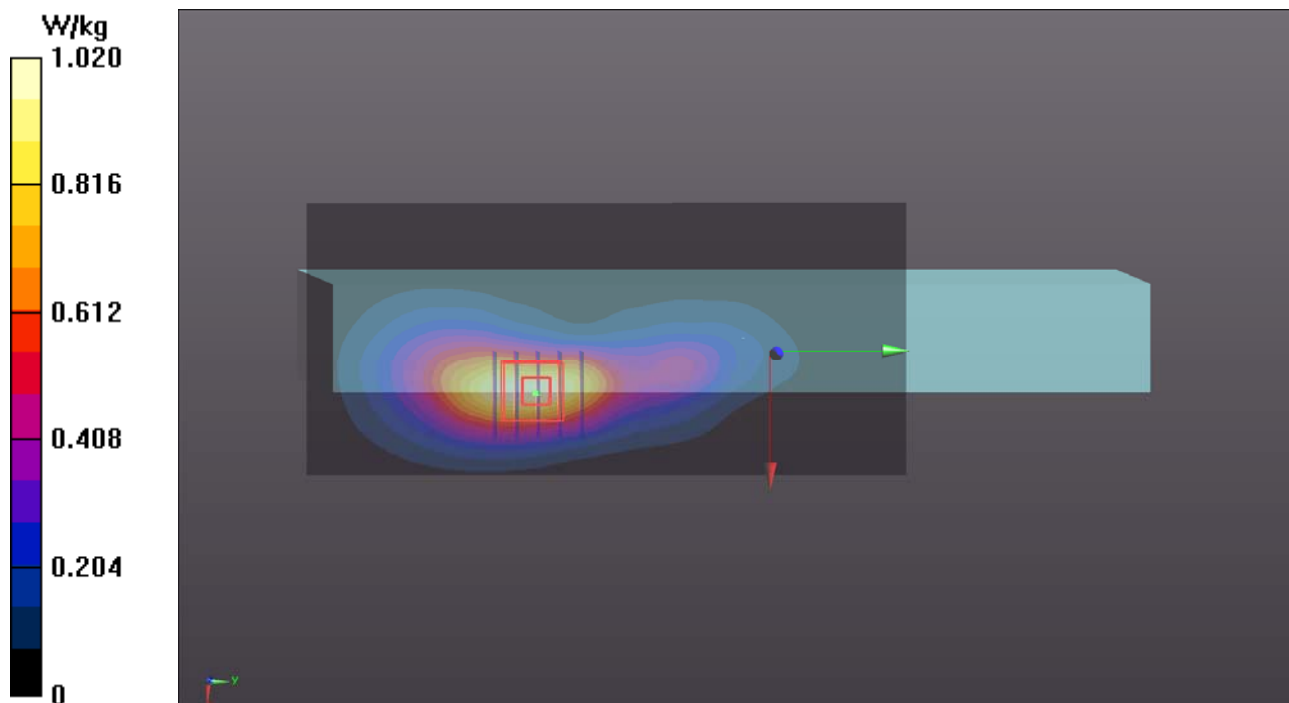
Communication System: CDMA2000; Frequency: 848.31 MHz; Duty Cycle: 1:1  
Medium: B07T10N1\_0314 Medium parameters used:  $f = 848.31$  MHz;  $\sigma = 0.98$  S/m;  $\epsilon_r = 57.421$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Ambient Temperature : 23.7 °C ; Liquid Temperature : 23.4 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3578; ConvF(9.53, 9.53, 9.53); Calibrated: 2017/05/05;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn360; Calibrated: 2017/11/02
- Phantom: ELI Phantom\_1206; Type: QDOVA;
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)

- **Area Scan (71x151x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm  
Maximum value of SAR (interpolated) = 1.02 W/kg

- **Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm  
Reference Value = 27.19 V/m; Power Drift = -0.05 dB  
Peak SAR (extrapolated) = 1.88 W/kg  
**SAR(1 g) = 0.955 W/kg; SAR(10 g) = 0.532 W/kg**  
Maximum value of SAR (measured) = 1.51 W/kg



## P07 CDMA2000 BC1\_RTAP153.6\_Top Side\_0cm\_Ch25

**DUT: 180207C04**

Communication System: CDMA2000; Frequency: 1851.25 MHz; Duty Cycle: 1:1

Medium: B16T20N1\_0314 Medium parameters used:  $f = 1851.25$  MHz;  $\sigma = 1.536$  S/m;  $\epsilon_r = 51.742$ ;

$\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.7 °C ; Liquid Temperature : 23.4 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3578; ConvF(7.79, 7.79, 7.79); Calibrated: 2017/05/05;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn360; Calibrated: 2017/11/02
- Phantom: ELI Phantom\_1206; Type: QDOVA;
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)

- **Area Scan (71x151x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 2.04 W/kg

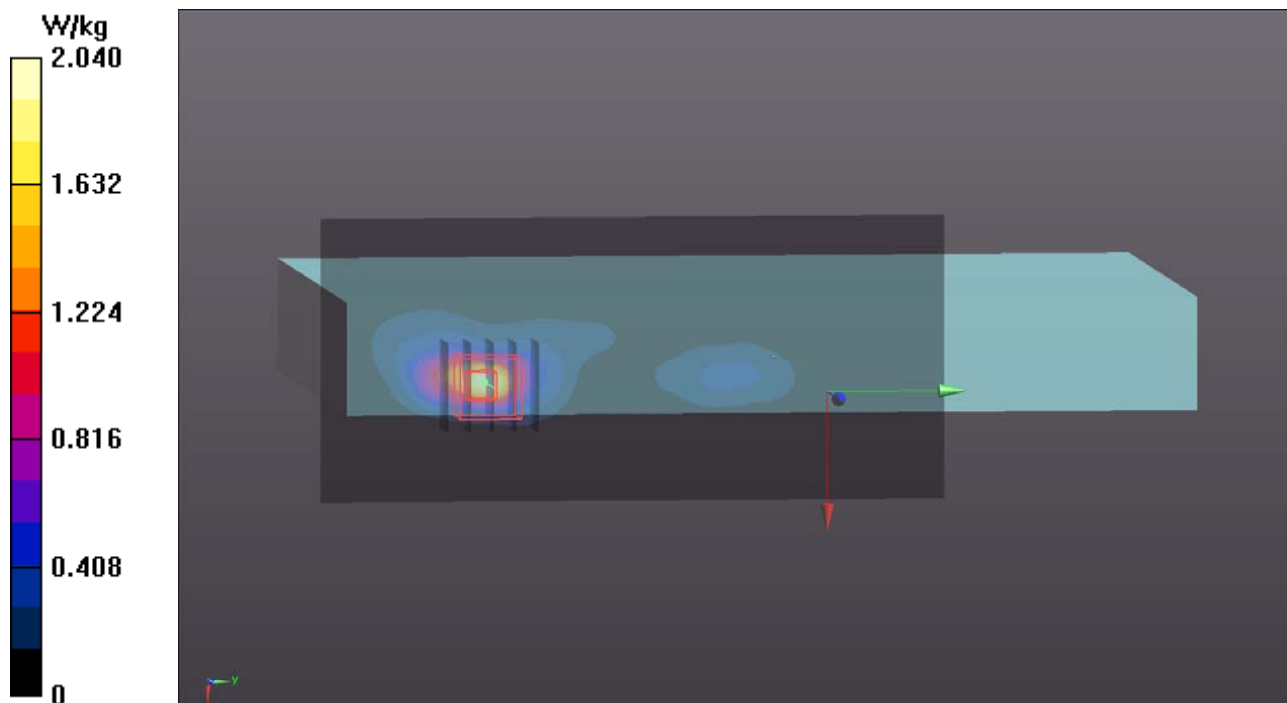
- **Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 33.04 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 2.54 W/kg

**SAR(1 g) = 1.14 W/kg; SAR(10 g) = 0.496 W/kg**

Maximum value of SAR (measured) = 2.13 W/kg



### P08 LTE2\_QPSK20M\_Top Side\_0cm\_Ch18700\_1RB\_OS0

**DUT: 180207C04**

Communication System: LTE; Frequency: 1860 MHz; Duty Cycle: 1:1

Medium: B16T20N1\_0314 Medium parameters used:  $f = 1860$  MHz;  $\sigma = 1.545$  S/m;  $\epsilon_r = 51.713$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.7 °C ; Liquid Temperature : 23.4 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3578; ConvF(7.79, 7.79, 7.79); Calibrated: 2017/05/05;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn360; Calibrated: 2017/11/02
- Phantom: ELI Phantom\_1206; Type: QDOVA;
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)

- **Area Scan (71x151x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.65 W/kg

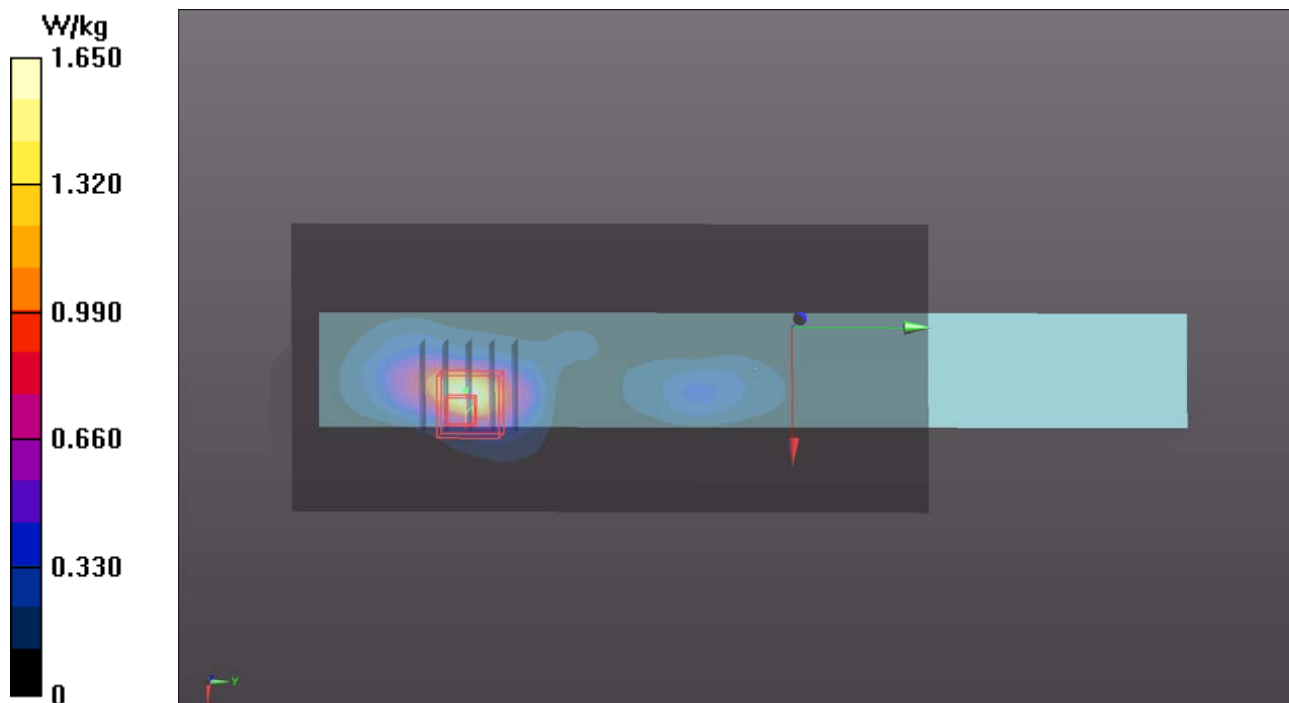
- **Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 31.23 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 2.47 W/kg

**SAR(1 g) = 1.13 W/kg; SAR(10 g) = 0.497 W/kg**

Maximum value of SAR (measured) = 1.94 W/kg



### P09 LTE4\_QPSK20M\_Top Side\_0cm\_Ch20050\_1RB\_OS0

**DUT: 180207C04**

Communication System: LTE; Frequency: 1720 MHz; Duty Cycle: 1:1

Medium: B16T20N1\_0314 Medium parameters used:  $f = 1720$  MHz;  $\sigma = 1.405$  S/m;  $\epsilon_r = 52.13$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.7 °C ; Liquid Temperature : 23.4 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3578; ConvF(8.08, 8.08, 8.08); Calibrated: 2017/05/05;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn360; Calibrated: 2017/11/02
- Phantom: ELI Phantom\_1206; Type: QDOVA;
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)

- **Area Scan (71x151x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.60 W/kg

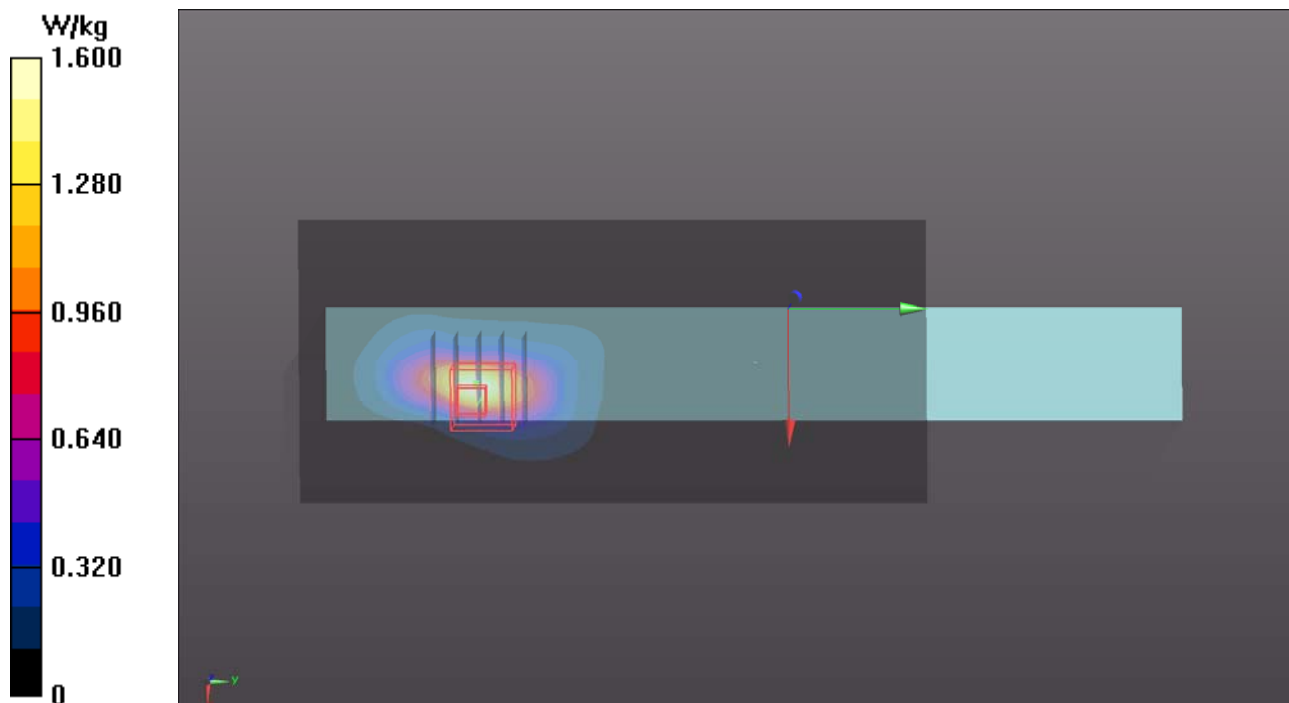
- **Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 31.85 V/m; Power Drift = -0.16 dB

Peak SAR (extrapolated) = 2.46 W/kg

**SAR(1 g) = 1.13 W/kg; SAR(10 g) = 0.550 W/kg**

Maximum value of SAR (measured) = 1.83 W/kg



### P10 LTE5\_QPSK10M\_Top Side\_0cm\_Ch20600\_1RB\_OS0

**DUT: 180207C04**

Communication System: LTE; Frequency: 844 MHz; Duty Cycle: 1:1

Medium: B07T10N1\_0314 Medium parameters used:  $f = 844 \text{ MHz}$ ;  $\sigma = 0.975 \text{ S/m}$ ;  $\epsilon_r = 57.468$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature : 23.7 °C ; Liquid Temperature : 23.4 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3578; ConvF(9.53, 9.53, 9.53); Calibrated: 2017/05/05;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn360; Calibrated: 2017/11/02
- Phantom: ELI Phantom\_1206; Type: QDOVA;
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)

- **Area Scan (71x151x1):** Interpolated grid:  $dx=1.500 \text{ mm}$ ,  $dy=1.500 \text{ mm}$

Maximum value of SAR (interpolated) = 1.49 W/kg

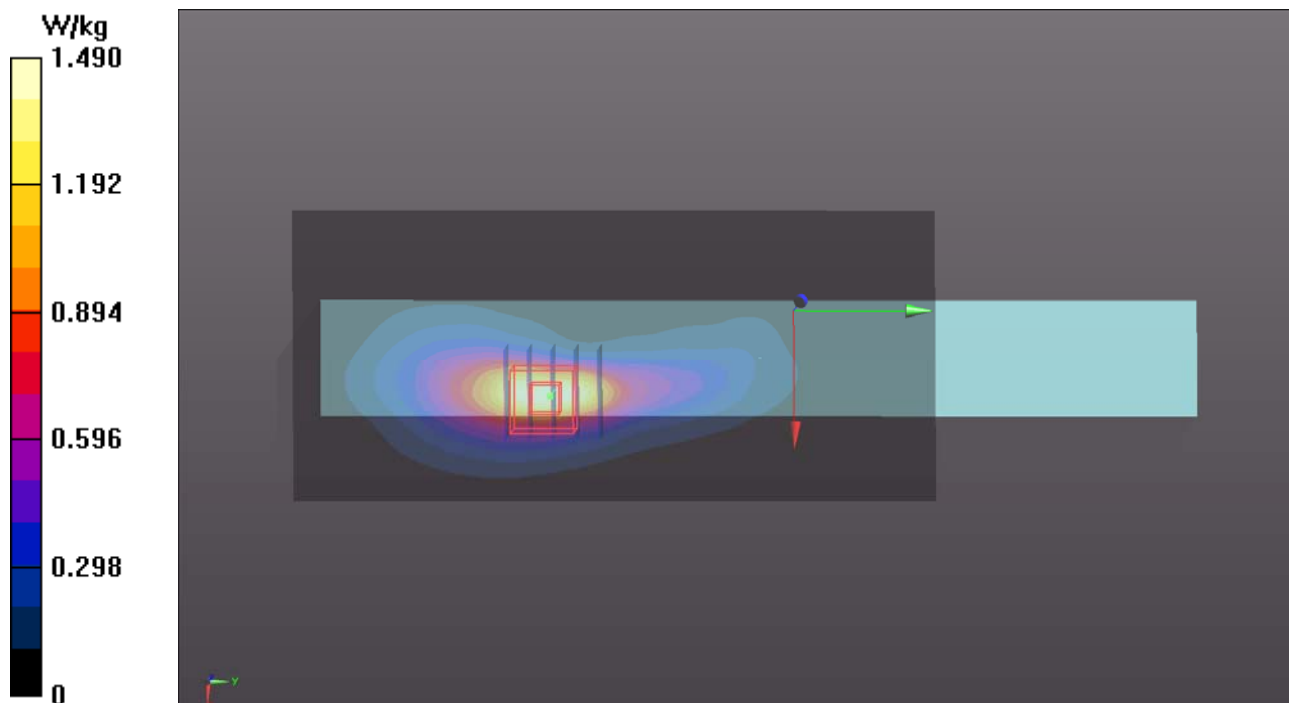
- **Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 35.43 V/m; Power Drift = -0.10 dB

Peak SAR (extrapolated) = 2.36 W/kg

**SAR(1 g) = 1.07 W/kg; SAR(10 g) = 0.563 W/kg**

Maximum value of SAR (measured) = 1.88 W/kg



### P11 LTE13\_QPSK10M\_Top Side\_0cm\_Ch23230\_1RB\_OS24

**DUT: 180207C04**

Communication System: LTE; Frequency: 782 MHz; Duty Cycle: 1:1

Medium: B06T09N1\_0314 Medium parameters used:  $f = 782 \text{ MHz}$ ;  $\sigma = 0.996 \text{ S/m}$ ;  $\epsilon_r = 55.785$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature :  $23.7 \text{ }^\circ\text{C}$  ; Liquid Temperature :  $23.4 \text{ }^\circ\text{C}$

DASY5 Configuration:

- Probe: EX3DV4 - SN3578; ConvF(9.77, 9.77, 9.77); Calibrated: 2017/05/05;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn360; Calibrated: 2017/11/02
- Phantom: ELI Phantom\_1206; Type: QDOVA;
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)

- **Area Scan (71x151x1):** Interpolated grid:  $dx=1.500 \text{ mm}$ ,  $dy=1.500 \text{ mm}$

Maximum value of SAR (interpolated) =  $1.46 \text{ W/kg}$

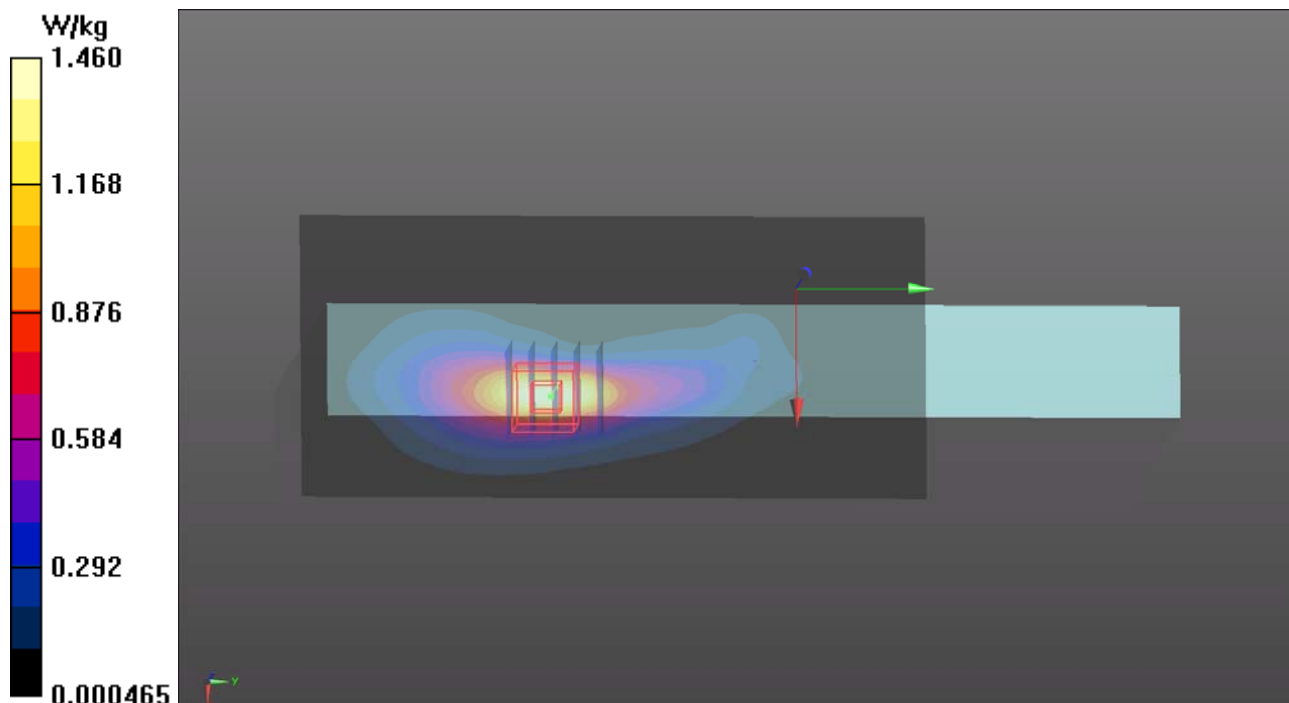
- **Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $34.73 \text{ V/m}$ ; Power Drift =  $-0.07 \text{ dB}$

Peak SAR (extrapolated) =  $2.26 \text{ W/kg}$

**SAR(1 g) =  $1.05 \text{ W/kg}$ ; SAR(10 g) =  $0.559 \text{ W/kg}$**

Maximum value of SAR (measured) =  $1.81 \text{ W/kg}$



### P12 LTE17\_QPSK10M\_Top Side\_0cm\_Ch23800\_1RB\_OS24

**DUT: 180207C04**

Communication System: LTE; Frequency: 711 MHz; Duty Cycle: 1:1

Medium: B06T09N1\_0314 Medium parameters used:  $f = 711 \text{ MHz}$ ;  $\sigma = 0.932 \text{ S/m}$ ;  $\epsilon_r = 56.437$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature : 23.7 °C ; Liquid Temperature : 23.4 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3578; ConvF(9.77, 9.77, 9.77); Calibrated: 2017/05/05;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn360; Calibrated: 2017/11/02
- Phantom: ELI Phantom\_1206; Type: QDOVA;
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)

- **Area Scan (71x151x1):** Interpolated grid:  $dx=1.500 \text{ mm}$ ,  $dy=1.500 \text{ mm}$

Maximum value of SAR (interpolated) = 0.975 W/kg

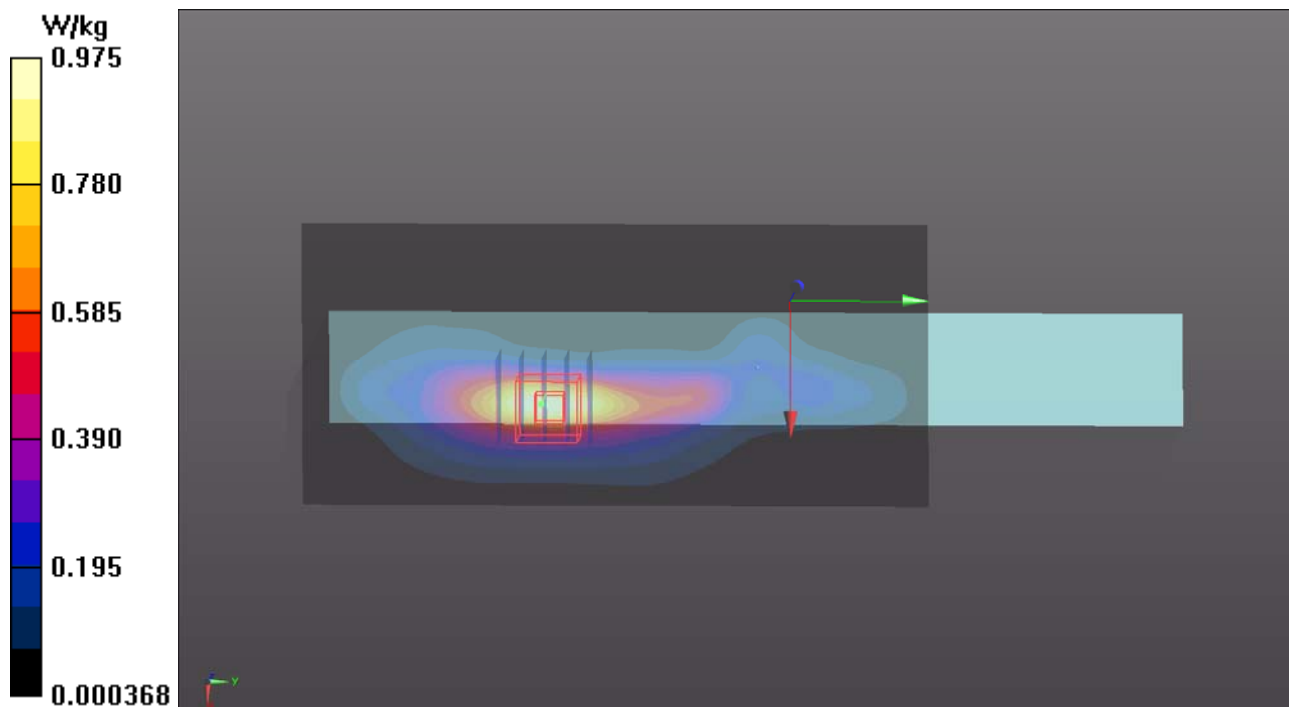
- **Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 28.86 V/m; Power Drift = -0.10 dB

Peak SAR (extrapolated) = 1.43 W/kg

**SAR(1 g) = 0.704 W/kg; SAR(10 g) = 0.392 W/kg**

Maximum value of SAR (measured) = 1.15 W/kg





### P13 LTE25\_QPSK20M\_Top Side\_0cm\_Ch26140\_1RB\_OS0

**DUT: 180207C04**

Communication System: LTE; Frequency: 1860 MHz; Duty Cycle: 1:1

Medium: B16T20N1\_0314 Medium parameters used:  $f = 1860$  MHz;  $\sigma = 1.545$  S/m;  $\epsilon_r = 51.713$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.7 °C ; Liquid Temperature : 23.4 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3578; ConvF(7.79, 7.79, 7.79); Calibrated: 2017/05/05;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn360; Calibrated: 2017/11/02
- Phantom: ELI Phantom\_1206; Type: QDOVA;
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)

- **Area Scan (71x151x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.80 W/kg

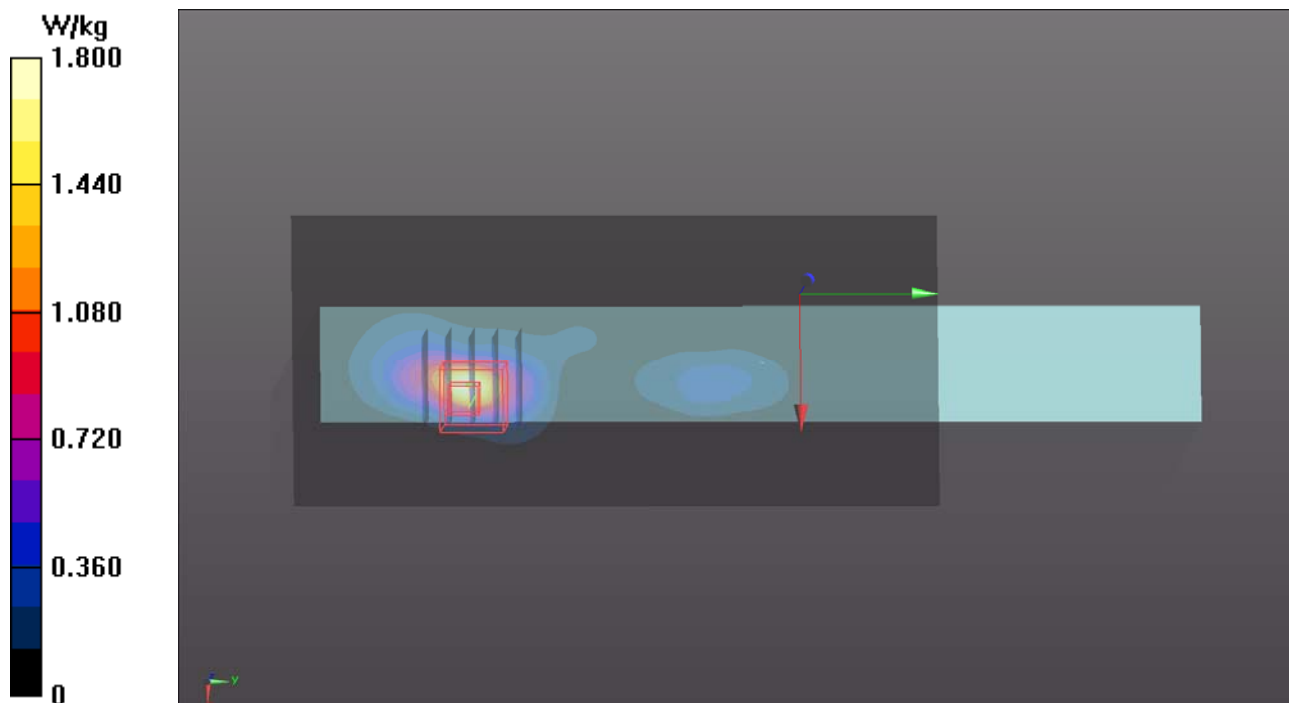
- **Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 32.10 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 2.44 W/kg

**SAR(1 g) = 1.11 W/kg; SAR(10 g) = 0.492 W/kg**

Maximum value of SAR (measured) = 1.66 W/kg



### P14 WLAN2.4G\_802.11b\_Right Side\_0cm\_Ch6\_Ant1

**DUT: 180207C04**

Communication System: WLAN\_2.4G; Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: B19T27N1\_0323 Medium parameters used:  $f = 2437$  MHz;  $\sigma = 2$  S/m;  $\epsilon_r = 50.694$ ;  $\rho =$

$1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.6 °C ; Liquid Temperature : 23.2 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3650; ConvF(7.68, 7.68, 7.68); Calibrated: 2017/07/24;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2017/05/22
- Phantom: ELI Phantom\_1206; Type: QDOVA;
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)

- **Area Scan (91x201x1):** Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 0.643 W/kg

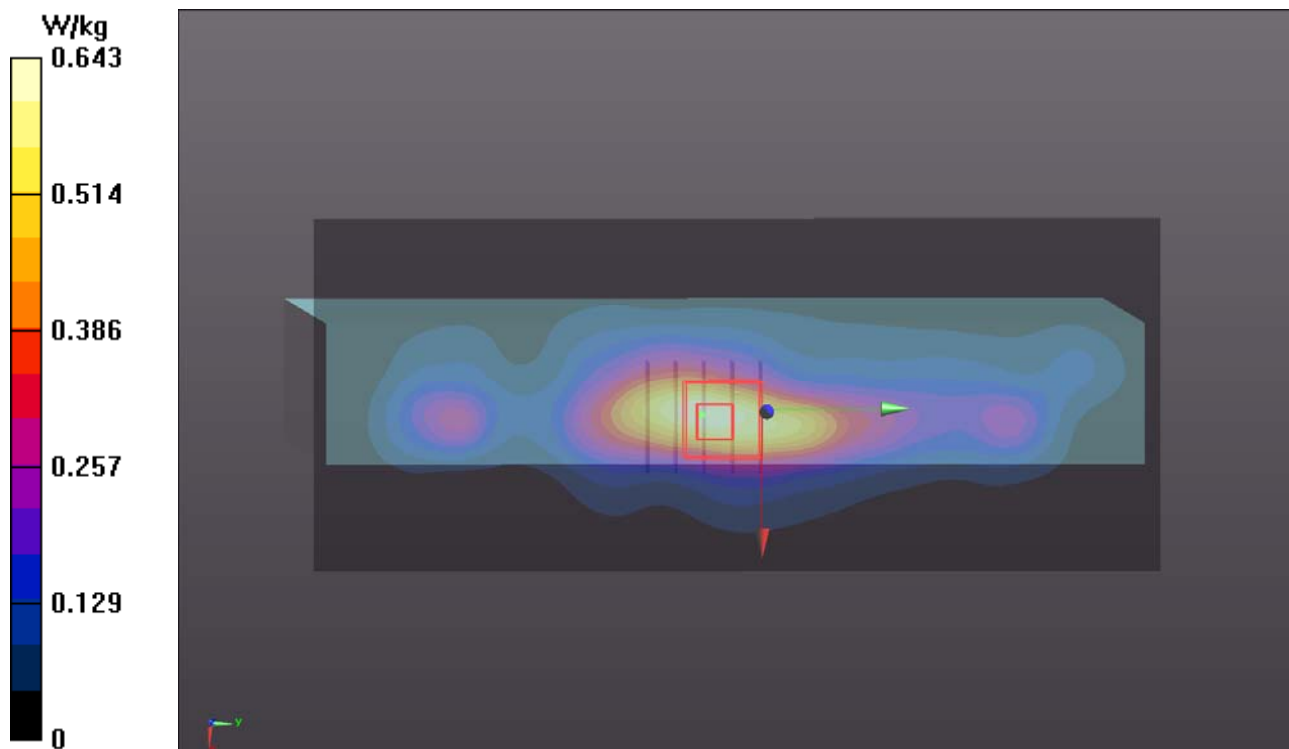
- **Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 16.60 V/m; Power Drift = 0.11 dB

Peak SAR (extrapolated) = 0.798 W/kg

**SAR(1 g) = 0.392 W/kg; SAR(10 g) = 0.204 W/kg**

Maximum value of SAR (measured) = 0.623 W/kg



### P15 WLAN5G\_802.11n HT40\_Left Side\_0cm\_Ch54\_Ant0

**DUT: 180207C04**

Communication System: WLAN\_5G; Frequency: 5270 MHz; Duty Cycle: 1:1

Medium: B34T60N1\_0323 Medium parameters used:  $f = 5270$  MHz;  $\sigma = 5.501$  S/m;  $\epsilon_r = 46.916$ ;  $\rho = 1000$  kg/m<sup>3</sup>

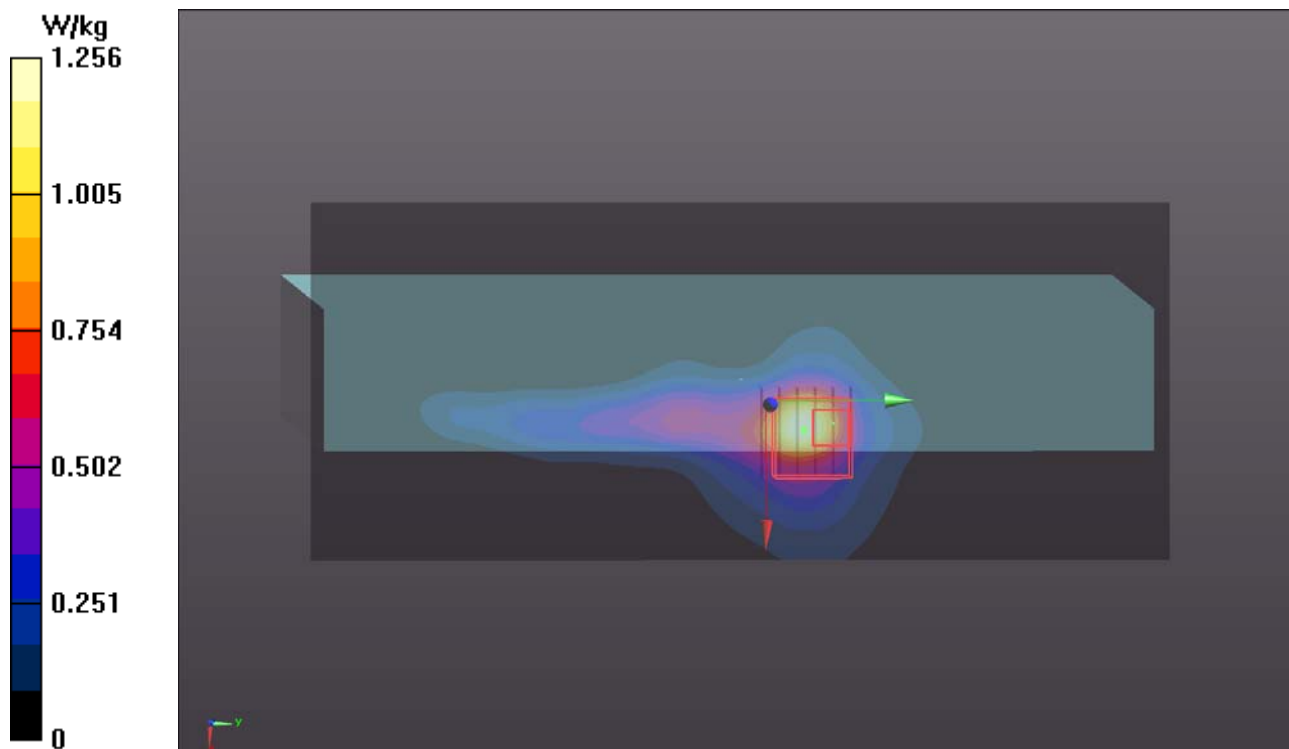
Ambient Temperature : 23.5 °C ; Liquid Temperature : 23.2 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3650; ConvF(5.28, 5.28, 5.28); Calibrated: 2017/07/24;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2017/05/22
- Phantom: ELI Phantom\_1206; Type: QDOVA;
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)

- **Area Scan (101x241x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm  
Maximum value of SAR (interpolated) = 1.26 W/kg

- **Zoom Scan (6x6x12)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=2mm  
Reference Value = 13.68 V/m; Power Drift = -0.17 dB  
Peak SAR (extrapolated) = 3.66 W/kg  
**SAR(1 g) = 0.760 W/kg; SAR(10 g) = 0.212 W/kg**  
Maximum value of SAR (measured) = 1.96 W/kg



### P16 WLAN5G 802.11n HT40\_Right Side\_0cm\_Ch110\_Ant1

**DUT: 180207C04**

Communication System: WLAN\_5G; Frequency: 5550 MHz; Duty Cycle: 1:1

Medium: B34T60N1\_0326 Medium parameters used:  $f = 5550$  MHz;  $\sigma = 5.752$  S/m;  $\epsilon_r = 46.549$ ;  $\rho = 1000$  kg/m<sup>3</sup>

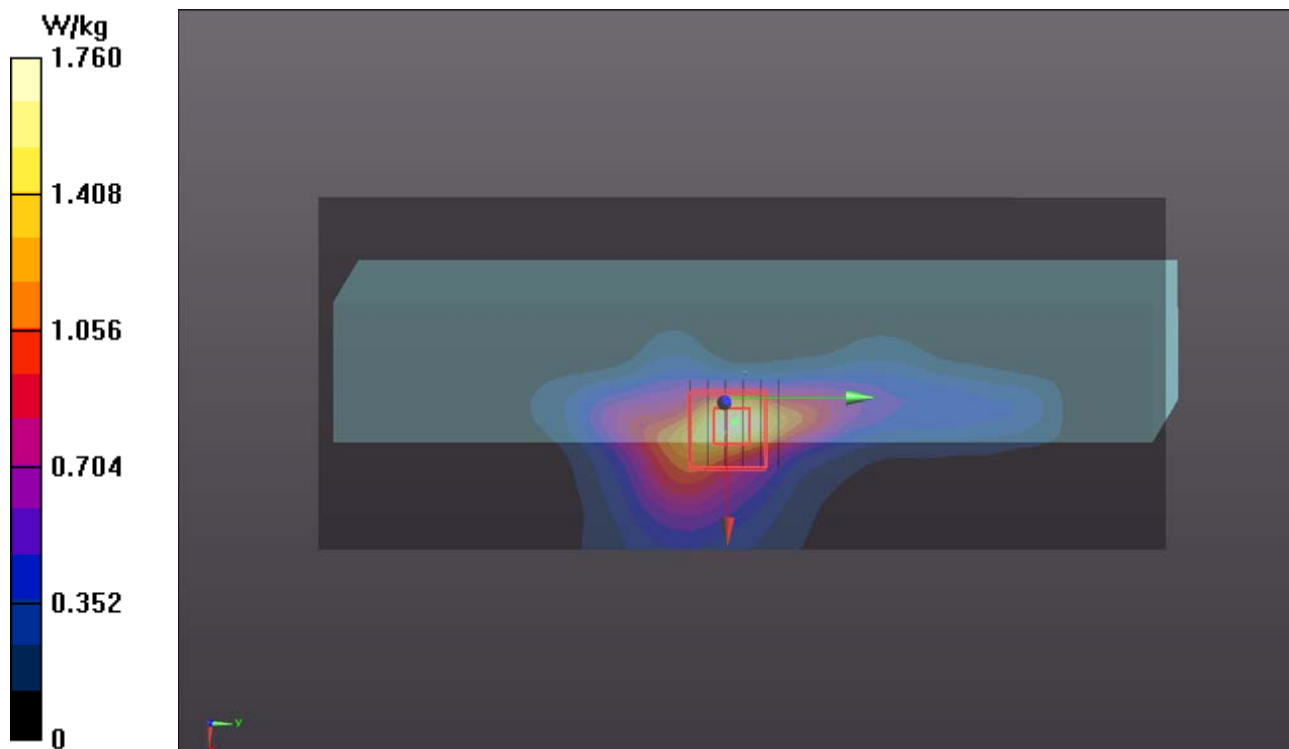
Ambient Temperature : 23.6 °C ; Liquid Temperature : 23.3 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3820; ConvF(3.94, 3.94, 3.94); Calibrated: 2017/06/27;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn917; Calibrated: 2017/12/14
- Phantom: ELI Phantom\_1206; Type: QDOVA;
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)

- **Area Scan (101x241x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm  
Maximum value of SAR (interpolated) = 1.76 W/kg

- **Zoom Scan (6x6x12)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=2mm  
Reference Value = 15.89 V/m; Power Drift = -0.13 dB  
Peak SAR (extrapolated) = 2.84 W/kg  
**SAR(1 g) = 0.739 W/kg; SAR(10 g) = 0.270 W/kg**  
Maximum value of SAR (measured) = 1.68 W/kg



### P17 WLAN5G\_802.11n HT40\_Right Side\_0cm\_Ch159\_Ant0+1

**DUT: 180207C04**

Communication System: WLAN\_5G; Frequency: 5795 MHz; Duty Cycle: 1:1

Medium: B34T60N1\_0326 Medium parameters used:  $f = 5795$  MHz;  $\sigma = 6.092$  S/m;  $\epsilon_r = 46.116$ ;  $\rho = 1000$  kg/m<sup>3</sup>

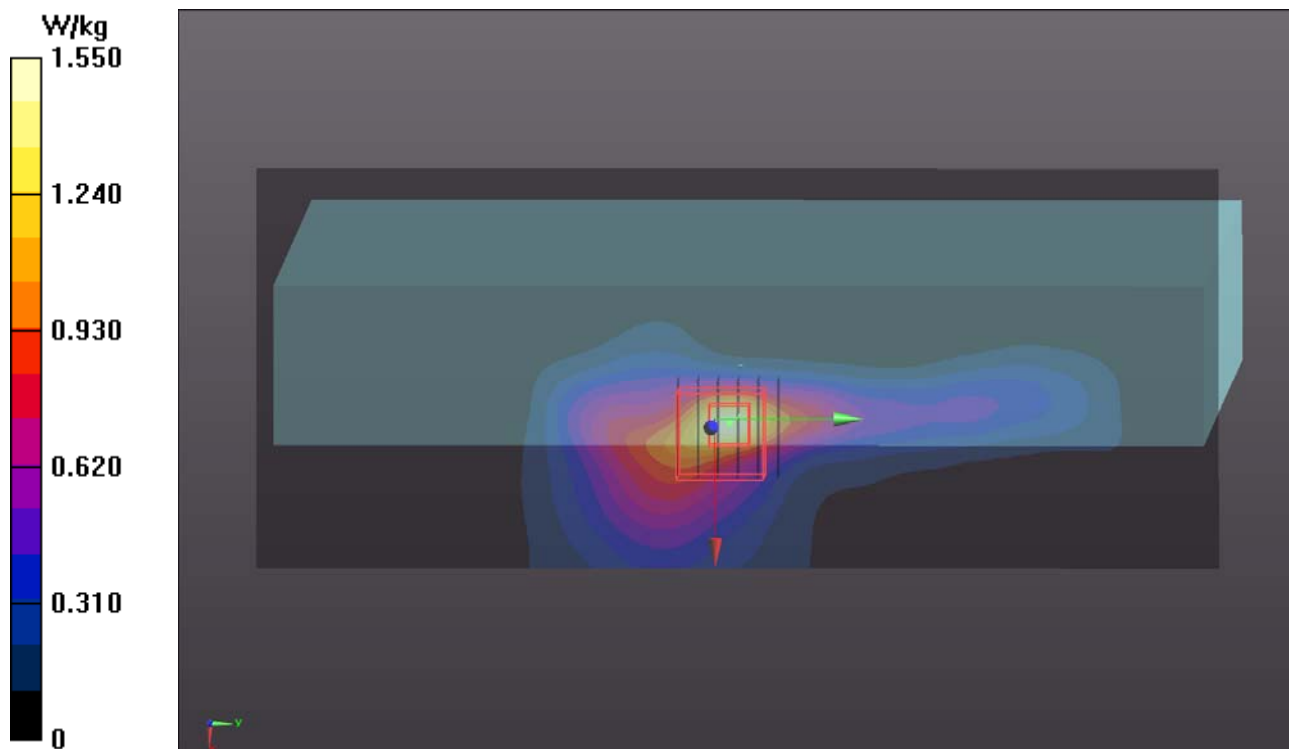
Ambient Temperature : 23.6 °C ; Liquid Temperature : 23.3 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3820; ConvF(4.04, 4.04, 4.04); Calibrated: 2017/06/27;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn917; Calibrated: 2017/12/14
- Phantom: ELI Phantom\_1206; Type: QDOVA;
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)

- **Area Scan (101x241x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm  
Maximum value of SAR (interpolated) = 1.55 W/kg

- **Zoom Scan (6x6x12)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=2mm  
Reference Value = 14.46 V/m; Power Drift = -0.16 dB  
Peak SAR (extrapolated) = 2.59 W/kg  
**SAR(1 g) = 0.625 W/kg; SAR(10 g) = 0.221 W/kg**  
Maximum value of SAR (measured) = 1.39 W/kg



### P18 BT\_BR\_EDR\_Right Side\_0cm\_Ch39\_Ant1

**DUT: 180207C04**

Communication System: BT; Frequency: 2441 MHz; Duty Cycle: 1:1

Medium: B19T27N2\_0326 Medium parameters used:  $f = 2441$  MHz;  $\sigma = 2.013$  S/m;  $\epsilon_r = 50.736$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.6 °C ; Liquid Temperature : 23.3 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3820; ConvF(7.1, 7.1, 7.1); Calibrated: 2017/06/27;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn917; Calibrated: 2017/12/14
- Phantom: ELI Phantom\_1206; Type: QDOVA;
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)

- **Area Scan (91x201x1):** Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 0.0378 W/kg

- **Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 3.784 V/m; Power Drift = -0.12 dB

Peak SAR (extrapolated) = 0.0520 W/kg

**SAR(1 g) = 0.025 W/kg; SAR(10 g) = 0.012 W/kg**

Maximum value of SAR (measured) = 0.0403 W/kg

