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TEST REPORT

Report Reference No. ..... :	**TRE18050139**	R/C…….: 13566
FCC ID ..... :	**2ADE3NMC001**	
Applicant's name ..... :	**WUXI IDATA TECHNOLOGY COMPANY LTD.**	
Address.....:	Floor 11, Building B1, Wuxi Binhu National Sensing Information Center, No.999 Gaolang East Road, Wuxi City, P.R.C	
Manufacturer.....:	WUXI IDATA TECHNOLOGY COMPANY LTD.	
Address.....:	Floor 11, Building B1, Wuxi Binhu National Sensing Information Center, No.999 Gaolang East Road, Wuxi City, P.R.C	
Test item description ..... :	**NEW MOBILE COMPUTER**	
Trade Mark .....:	iData	
Model/Type reference.....:	iData 50	
Listed Model(s) .....:	iData 55HC	
Standard ..... :	**FCC 47 CFR Part2.1093** **IEEE 1528: 2013 ANSI/IEEE C95.1: 1999**	
Date of receipt of test sample…….:	May.16,2018	
Date of testing……...:	May.17,2018- May.28,2018	
Date of issue…….:	May.28,2018	
Result..... ……..:	**PASS**	

Compiled by (position+printedname+signature)...:	File administrators:Xiaodong Zhao	Xiaodong Zhao
Supervised by (position+printedname+signature)...:	Test Engineer: Xiaodong Zhao	Xiaodong Zhao
Approved by (position+printedname+signature)...:	Manager: Hans Hu	Hans Hu

Testing Laboratory Name ..... :	**Shenzhen Huatongwei International Inspection Co., Ltd**
Address.....:	1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China

Contents

1 . Test Standards and Report version

1.1. Test Standards

The tests were performed according to following standards:

FCC 47 Part 2.1093: Radiofrequency Radiation Exposure Evaluation:Portable Devices

IEEE Std C95.1,1999: IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 KHz to 300 GHz.

IEEE Std 1528™-2013: IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques.

KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04: SAR Measurement Requirements for 100 MHz to 6 GHz

KDB 865664 D02 RF Exposure Reporting v01r02: RF Exposure Compliance Reporting and Documentation Considerations

KDB 447498 D01 General RF Exposure Guidance v06: Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies

KDB 248227 D01 802 11 Wi-Fi SAR v02r02: SAR Measurement Proceduresfor802.11 a/b/g Transmitters

KDB 941225 D01 3G SAR Procedures v03r01: SAR Measurement Procedures for 3G Devices

KDB 941225 D05 SAR for LTE Devices v02r05: SAR Evaluation Considerations for LTE Devices

KDB 648474 D04 Handset SAR v01r03: SAR Evaluation Considerations for Wireless Handsets

KDB 941225 D06 Hotspot Mode v02r01: SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities

1.2. Report version information

Revision No.	Date of issue	Description
N/A	2018-05-28	Original

2. Summary

2.1. Client Information

Applicant:	WUXI IDATA TECHNOLOGY COMPANY LTD.
Address:	Floor 11, Building B1, Wuxi Binhu National Sensing Information Center, No.999 Gaolang East Road, Wuxi City, P.R.C
Manufacturer:	WUXI IDATA TECHNOLOGY COMPANY LTD.
Address:	Floor 11, Building B1, Wuxi Binhu National Sensing Information Center, No.999 Gaolang East Road, Wuxi City, P.R.C

2.2. Product Description

Name of EUT:	NEW MOBILE COMPUTER			
Trade Mark:	iData			
Model No.:	iData 50			
Listed Model(s):	iData 55HC			
Power supply:	DC 3.7V			
Device Category:	Portable			
Product stage:	Production unit			
RF Exposure Environment:	General Population / Uncontrolled			
IMEI:	359157093486921			
Hardware version:	A20			
Software version:	Android.Marshmallow.V6.0			
Maximum SAR Value				
Separation Distance:	Head: 0mm Body: 10mm			
Max Report SAR Value (1g):	Test location:	PCE	DTS/U-NII	Simultaneous TX
	Head:	0.241 W/Kg	0.420 W/Kg	0.661 W/Kg
	Body:	0.827 W/Kg	0.149 W/Kg	0.976 W/Kg
	Hotsopt:	0.827 W/Kg	0.097 W/Kg	0.924 W/Kg
GSM				
Support Network:	GSM, GPRS, EGPRS			
Support Band:	GSM850, PCS1900			
Modulation:	GSM/GPRS/EGPRS: GMSK EGPRS: 8PSK			
GPRS Class:	12			
EGPRS Class:	12			
Antenna type:	PIFA Antenna			

WCDMA	
Operation Band:	WCDMA Band II, WCDMA Band V
Power Class:	Power Class 3
Modilation Type:	QPSK/16QAM/64QAM/HSUPA/HSDPA
DC-HSUPA Release Version:	Not Supported
Antenna type:	PIFA Antenna
LTE	
Operation Band:	FDD Band 2, FDD Band 4, FDD Band 5, FDD Band 17
Modilation Type:	QPSK,16QAM
Antenna type:	PIFA Antenna
WIFI 2.4G	
Supported type:	802.11b/802.11g/802.11n(HT20)/802.11n(HT40)
Modulation:	DSSS for 802.11b OFDM for 802.11g/802.11n(HT20)/802.11n(HT40)
Operation frequency:	2412MHz~2462MHz
Channel number:	11
Channel separation:	5MHz
Antenna type:	PIFA Antenna
WIFI 5G	
Supported type:	802.11a/802.11n(HT20)/802.11n(HT40)/802.11ac(HT20)/802.11ac(HT40)/ 802.11ac(HT80)
Modulation:	BPSK, QPSK, 16QAM, 64QAM
Operation frequency:	Band U-NII-1:5150MHz~5250MHz Band U-NII-2A: 5250MHz~5350MHz Band U-NII-3: 5725MHz~5850MHz
Supported Bandwidth:	20MHz: 802.11n, 802.11a, 802.11ac 40MHz: 802.11n, 802.11ac 80MHz: 802.11ac
Antenna type:	PIFA Antenna
Bluetooth	
Version:	Supported BT4.0+EDR
Modulation:	GFSK, π/4DQPSK, 8DPSK
Operation frequency:	2402MHz~2480MHz
Channel number:	79
Channel separation:	1MHz
Antenna type:	PIFA Antenna

Bluetooth-BLE	
Version:	Supported BT4.0+BLE
Modulation:	GFSK
Operation frequency:	2402MHz~2480MHz
Channel number:	40
Channel separation:	2MHz
Antenna type:	PIFA Antenna
Remark: *1. The EUT battery must be fully charged and checked periodically during the test to ascertain uniform power* *2. WIFI 5G not supported Hotsopt.*	

3. Test Environment

3.1. Test laboratory

Laboratory:Shenzhen Huatongwei International Inspection Co., Ltd.
Address: 1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China

3.2. Test Facility

CNAS-Lab Code: L1225

Shenzhen Huatongwei International Inspection Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025:2005 General Requirements) for the Competence of Testing and Calibration Laboratories

A2LA-Lab Cert. No. 3902.01

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

FCC-Registration No.: 762235

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files.

IC-Registration No.:5377B

Two 3m Alternate Test Site of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No.: 5377B

ACA

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our A2LA accreditation.

4. Equipments Used during the Test

Test Equipment	Manufacturer	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
Data Acquisition Electronics DAEx	SPEAG	DAE4	1549	2018/04/25	2019/04/24
E-field Probe	SPEAG	EX3DV4	7494	2018/02/26	2019/02/25
System Validation Dipole	SPEAG	D750V3	1180	2018/02/07	2021/02/06
System Validation Dipole	SPEAG	D835V2	4d238	2018/02/19	2021/02/18
System Validation Dipole	SPEAG	D1750V2	1164	2018/02/06	2021/02/05
System Validation Dipole	SPEAG	D1900V2	5d226	2018/02/22	2021/02/21
System Validation Dipole	SPEAG	D2450V2	1009	2018/02/05	2021/02/04
System Validation Dipole	SPEAG	D2600V2	1150	2018/02/05	2021/02/04
System Validation Dipole	SPEAG	D5GHzV2	1273	2018/02/21	2021/02/20
Dielectric Assessment Kit	SPEAG	DAK-3.5	1267	2018/03/01	2019/02/28
Network analyzer	Agilent	N9923A	MY51491493	2017/09/05	2018/09/04
Power meter	Agilent	N1914A	MY52090010	2018/03/22	2019/03/21
Power sensor	Agilent	E9304A	MY52140008	2018/03/22	2019/03/21
Power sensor	Agilent	E9301H	MY54470001	2017/06/02	2018/06/01
Signal Generator	ROHDE & SCHWARZ	SMB100A	175248	2017/09/02	2018/09/01
Universal Radio Communication Tester	ROHDE & SCHWARZ	CMU200	112012	2017/11/11	2018/11/10
Universal Radio Communication Tester	ROHDE & SCHWARZ	CMW500	137668	2017/10/26	2018/10/25
Dual Directional Coupler	Agilent	772D	MY46151257	2018/03/22	2019/03/21
Dual Directional Coupler	Agilent	778D	MY48220612	2018/03/22	2019/03/21
Power Amplifier	Mini-Circuits	ZHL-42W	QA1202003	2017/11/27	2018/11/26
Power Amplifier	Mini-Circuits	ZVE-8G+	421401127	2018/03/22	2019/03/21

Note:

1. *The Probe,Dipole and DAE calibration reference to the Appendix A and B.*
2. *Referring to KDB865664 D01, the dipole calibration interval can be extended to 3 years with justifcatio. The dipole are also not physically damaged or repaired during the interval.*

5. Measurement Uncertainty

Measurement Uncertainty										
No.	Error Description	Type	Uncertainty Value	Probably Distribution	Div.	(Ci) 1g	(Ci) 10g	Std. Unc. (1g)	Std. Unc. (10g)	Degree of freedom
Measurement System										
1	Probe calibration	B	6.0%	N	1	1	1	6.0%	6.0%	∞
2	Axial isotropy	B	4.70%	R	$\sqrt{3}$	0.7	0.7	1.90%	1.90%	∞
3	Hemispherical isotropy	B	9.60%	R	$\sqrt{3}$	0.7	0.7	3.90%	3.90%	∞
4	Boundary Effects	B	1.00%	R	$\sqrt{3}$	1	1	0.60%	0.60%	∞
5	Probe Linearity	B	4.70%	R	$\sqrt{3}$	1	1	2.70%	2.70%	∞
6	Detection limit	B	1.00%	R	$\sqrt{3}$	1	1	0.60%	0.60%	∞
7	RF ambient conditions-noise	B	0.00%	R	$\sqrt{3}$	1	1	0.00%	0.00%	∞
8	RF ambient conditions-reflection	B	0.00%	R	$\sqrt{3}$	1	1	0.00%	0.00%	∞
9	Response time	B	0.80%	R	$\sqrt{3}$	1	1	0.50%	0.50%	∞
10	Integration time	B	5.00%	R	$\sqrt{3}$	1	1	2.90%	2.90%	∞
11	RF ambient	B	3.00%	R	$\sqrt{3}$	1	1	1.70%	1.70%	∞
12	Probe positioned mech. restrictions	B	0.40%	R	$\sqrt{3}$	1	1	0.20%	0.20%	∞
13	Probe positioning with respect to phantom shell	B	2.90%	R	$\sqrt{3}$	1	1	1.70%	1.70%	∞
14	Max.SAR evalation	B	3.90%	R	$\sqrt{3}$	1	1	2.30%	2.30%	∞
Test Sample Related										
15	Test sample positioning	A	1.86%	N	1	1	1	1.86%	1.86%	∞
16	Device holder uncertainty	A	1.70%	N	1	1	1	1.70%	1.70%	∞
17	Drift of output power	B	5.00%	R	$\sqrt{3}$	1	1	2.90%	2.90%	∞
Phantom and Set-up										
18	Phantom uncertainty	B	4.00%	R	$\sqrt{3}$	1	1	2.30%	2.30%	∞
19	Liquid conductivity (target)	B	5.00%	R	$\sqrt{3}$	0.64	0.43	1.80%	1.20%	∞
20	Liquid conductivity (meas.)	A	0.50%	N	1	0.64	0.43	0.32%	0.26%	∞
21	Liquid permittivity (target)	B	5.00%	R	$\sqrt{3}$	0.64	0.43	1.80%	1.20%	∞
22	Liquid cpermittivity (meas.)	A	0.16%	N	1	0.64	0.43	0.10%	0.07%	∞
Combined standard uncertainty		$u_c = \sqrt{\sum_{i=1}^{22} c_i^2 u_i^2}$		/	/	/	/	9.79%	9.67%	∞
Expanded uncertainty (confidence interval of 95 %)		$u_e = 2u_c$		R	K=2	/	/	19.57%	19.34%	∞

System Check Uncertainty										
No.	Error Description	Type	Uncertainty Value	Probably Distribution	Div.	(Ci) 1g	(Ci) 10g	Std. Unc. (1g)	Std. Unc. (10g)	Degree of freedom
Measurement System										
1	Probe calibration	B	6.0%	N	1	1	1	6.0%	6.0%	∞
2	Axial isotropy	B	4.70%	R	$\sqrt{3}$	0.7	0.7	1.90%	1.90%	∞
3	Hemispherical isotropy	B	9.60%	R	$\sqrt{3}$	0.7	0.7	3.90%	3.90%	∞
4	Boundary Effects	B	1.00%	R	$\sqrt{3}$	1	1	0.60%	0.60%	∞
5	Probe Linearity	B	4.70%	R	$\sqrt{3}$	1	1	2.70%	2.70%	∞
6	Detection limit	B	1.00%	R	$\sqrt{3}$	1	1	0.60%	0.60%	∞
7	RF ambient conditions-noise	B	0.00%	R	$\sqrt{3}$	1	1	0.00%	0.00%	∞
8	RF ambient conditions-reflection	B	0.00%	R	$\sqrt{3}$	1	1	0.00%	0.00%	∞
9	Response time	B	0.80%	R	$\sqrt{3}$	1	1	0.50%	0.50%	∞
10	Integration time	B	5.00%	R	$\sqrt{3}$	1	1	2.90%	2.90%	∞
11	RF ambient	B	3.00%	R	$\sqrt{3}$	1	1	1.70%	1.70%	∞
12	Probe positioned mech. restrictions	B	0.40%	R	$\sqrt{3}$	1	1	0.20%	0.20%	∞
13	Probe positioning with respect to phantom shell	B	2.90%	R	$\sqrt{3}$	1	1	1.70%	1.70%	∞
14	Max.SAR evalation	B	3.90%	R	$\sqrt{3}$	1	1	2.30%	2.30%	∞
System validation source-dipole										
15	Deviation of experimental dipole from numerical dipole	A	1.58%	N	1	1	1	1.58%	1.58%	∞
16	Dipole axis to liquid distance	A	1.35%	N	1	1	1	1.35%	1.35%	∞
17	Input power and SAR drift	B	4.00%	R	$\sqrt{3}$	1	1	2.30%	2.30%	∞
Phantom and Set-up										
18	Phantom uncertainty	B	4.00%	R	$\sqrt{3}$	1	1	2.30%	2.30%	∞
20	Liquid conductivity (meas.)	A	0.50%	N	1	0.64	0.43	0.32%	0.26%	∞
22	Liquid cpermittivity (meas.)	A	0.16%	N	1	0.64	0.43	0.10%	0.07%	∞
Combined standard uncertainty			$u_c = \sqrt{\sum_{i=1}^{22} c_i^2 u_i^2}$	/	/	/	/	8.80%	8.79%	∞
Expanded uncertainty (confidence interval of 95 %)			$u_e = 2u_c$	R	K=2	/	/	17.59%	17.58%	∞

6. SAR Measurements System Configuration

6.1. SAR Measurement Set-up

The DASY5 system for performing compliance tests consists of the following items:

A standard high precision 6-axis robot (Stäubli RX family) with controller and software. An arm extension for accommodating the data acquisition electronics (DAE).

A dosimetric probe, i.e. an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with an optical surface detector system.

A data acquisition electronic (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.

A unit to operate the optical surface detector which is connected to the EOC.

The Electro-Optical Coupler (EOC) performs the conversion from the optical into a digital electric signal of the DAE. The EOC is connected to the DASY5 measurement server.

The DASY5 measurement server, which performs all real-time data evaluation for field measurements and surface detection, controls robot movements and handles safety operation. A computer operating Windows 2003.

DASY5 software and SEMCAD data evaluation software.

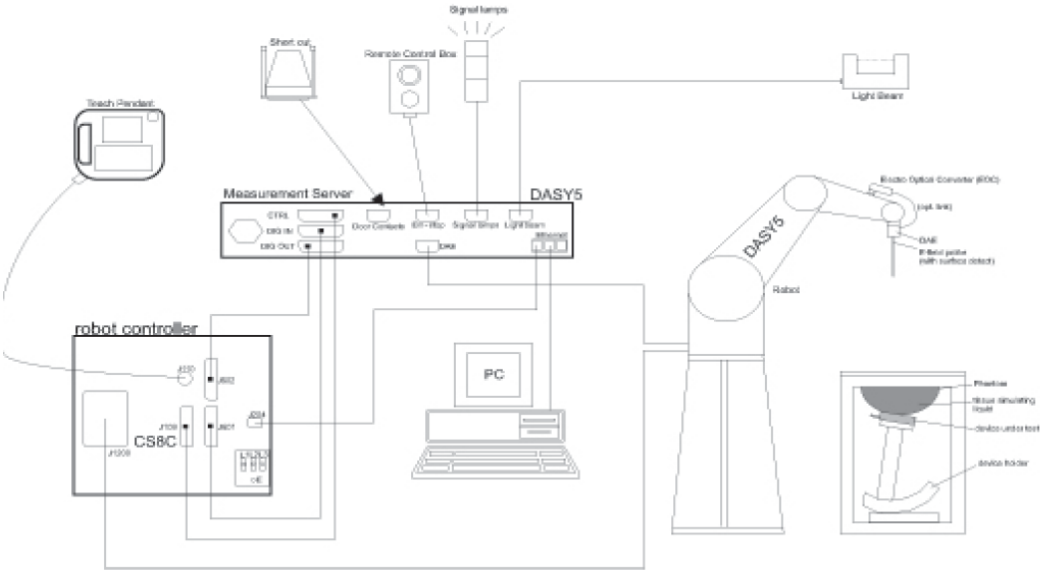
Remote control with teach panel and additional circuitry for robot safety such as warning lamps, etc.

The generic twin phantom enabling the testing of left-hand and right-hand usage.

The device holder for handheld Mobile Phones.

Tissue simulating liquid mixed according to the given recipes.

System validation dipoles allowing to validate the proper functioning of the system.



6.2. DASY5 E-field Probe System

The SAR measurements were conducted with the dosimetric probe EX3DV4 (manufactured by SPEAG), designed in the classical triangular configuration and optimized for dosimetric evaluation.

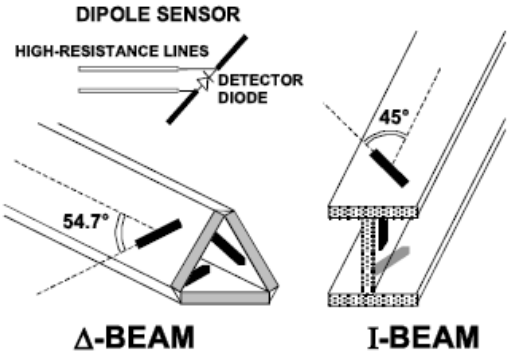
- **Probe Specification**

Construction	Symmetrical design with triangular core Interleaved sensors Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Calibration	ISO/IEC 17025 calibration service available.
Frequency	10 MHz to 6 GHz; Linearity: ± 0.2 dB (30 MHz to 6 GHz)
Directivity	± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis)
Dynamic Range	10 µW/g to > 100 W/kg; Linearity: ± 0.2 dB
Dimensions	Overall length: 337 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Distance from probe tip to dipole centers: 1.0 mm
Application	General dosimetry up to 6 GHz Dosimetry in strong gradient fields Compliance tests of Mobile Phones
Compatibility	DASY3, DASY4, DASY52 SAR and higher, EASY4/MRI

- **Isotropic E-Field Probe**

The isotropic E-Field probe has been fully calibrated and assessed for isotropicity, and boundary effect within a controlled environment. Depending on the frequency for which the probe is calibrated the method utilized for calibration will change.

The E-Field probe utilizes a triangular sensor arrangement as detailed in the diagram below:



6.3. Phantoms

The phantom used for all tests i.e. for both system checks and device testing, was the twin-headed "SAM Phantom", manufactured by SPEAG. The SAM twin phantom is a fiberglass shell phantom with 2mm shell thickness (except the ear region, where shell thickness increases to 6mm).
System checking was performed using the flat section, whilst Head SAR tests used the left and right head profile sections. Body SAR testing also used the flat section between the head profiles.

SAM Twin Phantom

6.4. Device Holder

The device was placed in the device holder (illustrated below) that is supplied by SPEAG as an integral part of the DASY system.
The DASY device holder is designed to cope with the different positions given in the standard. It has two scales for device rotation (with respect to the body axis) and device inclination (with respect to the line between the ear reference points). The rotation centers for both scales is the ear reference point (ERP). Thus the device needs no repositioning when changing the angles.

Device holder supplied by SPEAG

7. SAR Test Procedure

7.1. Scanning Procedure

The DASY5 installation includes predefined files with recommended procedures for measurements and validation. They are read-only document files and destined as fully defined but unmeasured masks. All test positions (head or body-worn) are tested with the same configuration of test steps differing only in the grid definition for the different test positions.

The “reference” and “drift” measurements are located at the beginning and end of the batch process. They measure the field drift at one single point in the liquid over the complete procedure. The indicated drift is mainly the variation of the DUT’s output power and should vary max. ± 5 %.

The “surface check” measurement tests the optical surface detection system of the DASY5 system by repeatedly detecting the surface with the optical and mechanical surface detector and comparing the results. The output gives the detecting heights of both systems, the difference between the two systems and the standard deviation of the detection repeatability. Air bubbles or refraction in the liquid due to separation of the sugar-water mixture gives poor repeatability (above ± 0.1mm). To prevent wrong results tests are only executed when the liquid is free of air bubbles. The difference between the optical surface detection and the actual surface depends on the probe and is specified with each probe (It does not depend on the surface reflectivity or the probe angle to the surface within ± 30°.)

Area Scan
The Area Scan is used as a fast scan in two dimensions to find the area of high field values before running a detailed measurement around the hot spot.Before starting the area scan a grid spacing of 15 mm x 15 mm is set. During the scan the distance of the probe to the phantom remains unchanged. After finishing area scan, the field maxima within a range of 2 dB will be ascertained.

Zoom Scan
After the maximum interpolated values were calculated between the points in the cube, the SAR was averaged over the spatial volume (1g or 10g) using a 3D-Spline interpolation algorithm. The 3D-spline is composed of three one-dimensional splines with the “Not a knot” condition (in x, y, and z directions). The volume was then integrated with the trapezoidal algorithm.

Spatial Peak Detection
The procedure for spatial peak SAR evaluation has been implemented and can determine values of masses of 1g and 10g, as well as for user-specific masses.The DASY5 system allows evaluations that combine measured data and robot positions, such as:
• maximum search
• extrapolation
• boundary correction
• peak search for averaged SAR
During a maximum search, global and local maxima searches are automatically performed in 2-D after each Area Scan measurement with at least 6 measurement points. It is based on the evaluation of the local SAR gradient calculated by the Quadratic Shepard’s method. The algorithm will find the global maximum and all local maxima within -2 dB of the global maxima for all SAR distributions.
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. Several measurements at different distances are necessary for the extrapolation. Extrapolation routines require at least 10 measurement points in 3-D space.
They are used in the Zoom Scan to obtain SAR values between the lowest measurement points and the inner phantom surface. The routine uses the modified Quadratic Shepard’s method for extrapolation.

A Z-axis scan measures the total SAR value at the x-and y-position of the maximum SAR value found during the cube scan. The probe is moved away in z-direction from the bottom of the SAM phantom in 5mm steps.

Table 1: Area and Zoom Scan Resolutions per FCC KDB Publication 865664 D01v04

			≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface			5 mm ± 1 mm	½·δ·ln(2) mm ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location			30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}			≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
			When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	
Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	≤ 1.5·$\Delta z_{Zoom}(n-1)$ mm	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm

Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see IEEE Std 1528-2013 for details.

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

7.2. Data Storage and Evaluation

Data Storage

The DASY5 software stores the acquired data from the data acquisition electronics as raw data (in microvolt readings from the probe sensors),s together with all necessary software parameters for the data evaluation (probe calibration data, liquid parameters and device frequency and modulation data) in measurement files with the extension ".DA4". The software evaluates the desired unit and format for output each time the data is visualized or exported. This allows verification of the complete software setup even after the measurement and allows correction of incorrect parameter settings. For example, if a measurement has been performed with a wrong crest factor parameter in the device setup, the parameter can be corrected afterwards and the data can be re-evaluated.

The measured data can be visualized or exported in different units or formats, depending on the selected probe type ([V/m], [A/m], [°C], [W/kg], [mW/cm²], [dBrel], etc.). Some of these units are not available in certain situations or show meaningless results, e.g., a SAR output in a lossless media will always be zero. Raw data can also be exported to perform the evaluation with other software packages.

Data Evaluation

The SEMCAD software automatically executes the following procedures to calculate the field units from the microvolt readings at the probe connector. The parameters used in the evaluation are stored in the configuration modules of the software:

Probe parameters:	Sensitivity:	Normi, ai0, ai1, ai2
	Conversion factor:	ConvFi
	Diode compression point:	Dcpi
Device parameters:	Frequency:	f
	Crest factor:	cf
Media parameters:	Conductivity:	σ
	Density:	ρ

These parameters must be set correctly in the software. They can be found in the component documents or they can be imported into the software from the configuration files issued for the DASY5 components. In the direct measuring mode of the multimeter option, the parameters of the actual system setup are used. In the scan visualization and export modes, the parameters stored in the corresponding document files are used.

The first step of the evaluation is a linearization of the filtered input signal to account for the compression characteristics of the detector diode. The compensation depends on the input signal, the diode type and the DC-transmission factor from the diode to the evaluation electronics. If the exciting field is pulsed, the crest factor of the signal must be known to correctly compensate for peak power. The formula for each channel can be given as:

$$V_i = U_i + U_i^2 \cdot \frac{cf}{dcp_i}$$

Vi: compensated signal of channel (i = x, y, z)
Ui: input signal of channel (i = x, y, z)
cf: crest factor of exciting field (DASY parameter)
dcpi: diode compression point (DASY parameter)

From the compensated input signals the primary field data for each channel can be evaluated:

$$\mathrm{E-fieldprobes}: \qquad E_i = \sqrt{\frac{V_i}{Norm_i \cdot ConvF}}$$

$$\mathrm{H-fieldprobes}: \qquad H_i = \sqrt{V_i} \cdot \frac{a_{i0} + a_{i1} f + a_{i2} f^2}{f}$$

Vi: compensated signal of channel (i = x, y, z)
Normi: sensor sensitivity of channel (i = x, y, z), [mV/(V/m)2] for E-field Probes
ConvF: sensitivity enhancement in solution
aij: sensor sensitivity factors for H-field probes
f: carrier frequency [GHz]
Ei: electric field strength of channel i in V/m
Hi: magnetic field strength of channel i in A/m

The RSS value of the field components gives the total field strength (Hermitian magnitude):

$$E_{tot} = \sqrt{E_x^2 + E_y^2 + E_z^2}$$

The primary field data are used to calculate the derived field units.

$$SAR = E_{tot}^2 \cdot \frac{\sigma}{\rho \cdot 1'000}$$

SAR: local specific absorption rate in W/kg
Etot: total field strength in V/m
σ: conductivity in [mho/m] or [Siemens/m]
ρ: equivalent tissue density in g/cm3

Note that the density is normally set to 1 (or 1.06), to account for actual brain density rather than the density of the simulation liquid.

8. Position of the wireless device in relation to the phantom

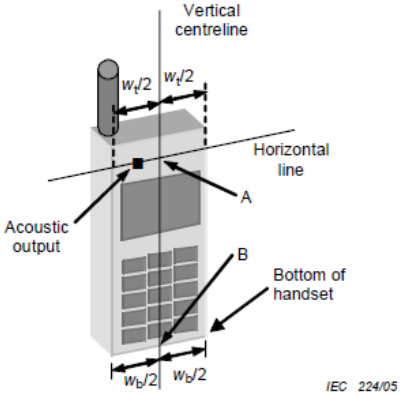
8.1. Head Position

The wireless device define two imaginary lines on the handset, the vertical centreline and the horizontal line, for the handset in vertical orientation as shown in Figures 5a and 5b.

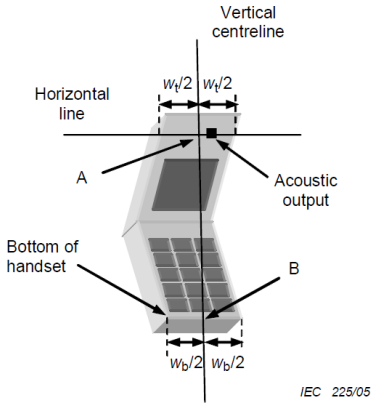
The vertical centreline passes through two points on the front side of the handset: the midpoint of the width W_t of the handset at the level of the acoustic output (point A in Figures 5a and 5b), and the midpoint of the width W_b of the bottom of the handset (point B).

The horizontal line is perpendicular to the vertical centreline and passes through the centre of the acoustic output (see Figures 5a and 5b). The two lines intersect at point A.

Note that for many handsets, point A coincides with the centre of the acoustic output. However, the acoustic output may be located elsewhere on the horizontal line. Also note that the vertical centreline is not necessarily parallel to the front face of the handset (see Figure 5b), especially for clam-shell handsets, handsets with flip cover pieces, and other irregularly shaped handsets.



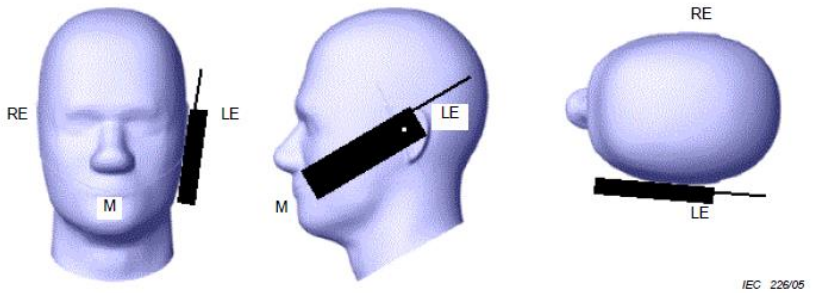
Figures 5a



Figures 5b

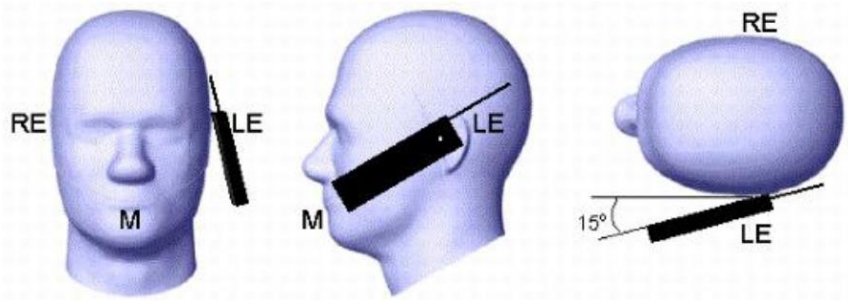
W_t Width of the handset at the level of the acoustic
W_b Width of the bottom of the handset
A Midpoint of the widthwt of the handset at the level of the acoustic output
B Midpoint of the width wb of the bottom of the handset

Cheek position



Picture 2 Cheek position of the wireless device on the left side of SAM

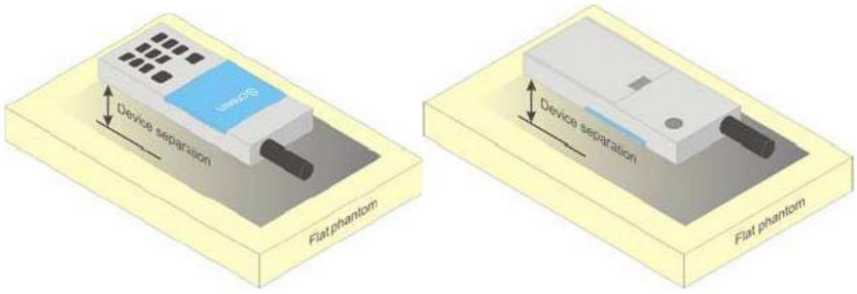
Tilt position



Picture 3 Tilt position of the wireless device on the left side of SAM

8.2. Body Position

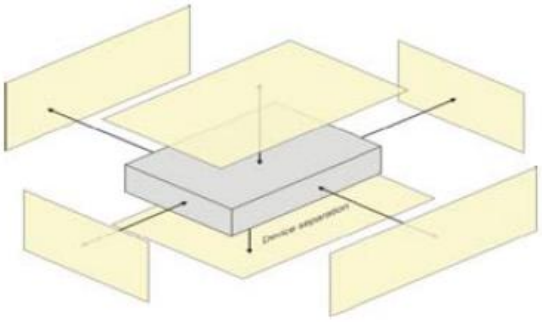
Devices that support transmission while used with body-worn accessories must be tested for body-worn accessory SAR compliance, typically according to the smallest test separation distance required for the group of body-worn accessories with similar operating and exposure characteristics.
Devices that are designed to operate on the body of users using lanyards and straps or without requiring additional body-worn accessories must be tested for SAR compliance using a conservative minimum test separation distance **≤ 10 mm** to support compliance.



Picture 4 Test positions for body-worn devices

8.3. Hotspot Mode Exposure conditions

The hotspot mode and body-worn accessory SAR test configurations may overlap for handsets. When the same wireless mode transmission configurations for voice and data are required for SAR measurements, the more conservative configuration with a smaller separation distance should be tested for the overlapping SAR configurations. This typically applies to the back and front surfaces of a handset when SAR is required for both hotspot mode and body-worn accessory exposure conditions. Depending on the form factor and dimensions of a device, the test separation distance used for hotspot mode SAR measurement is either **10 mm** or that used in the body-worn accessory configuration, whichever is less for devices with dimension > 9 cm x 5 cm. For smaller devices with dimensions ≤ 9 cm x 5 cm because of a greater potential for next to body use a test separation of ≤ 5 mm must be used.



Picture 5 Test positions for Hotspot Mode

9. System Check

9.1. Tissue Dielectric Parameters

It's satisfying the latest tissue dielectric parameters requirements proposed by the KDB865664.

Tissue dielectric parameters for head and body phantoms				
Target Frequency	Head		Body	
(MHz)	εr	σ(s/m)	εr	σ(s/m)
750	41.9	0.89	55.5	0.96
835	41.5	0.90	55.2	0.97
1750	40.1	1.37	53.4	1.49
1800-2000	40.0	1.40	53.3	1.52
2450	39.2	1.80	52.7	1.95
5200	36.0	4.66	49.0	5.30
5300	35.9	4.76	48.9	5.42
5600	35.5	5.07	48.5	5.77
5800	35.3	5.27	48.2	6.00

Check Result:

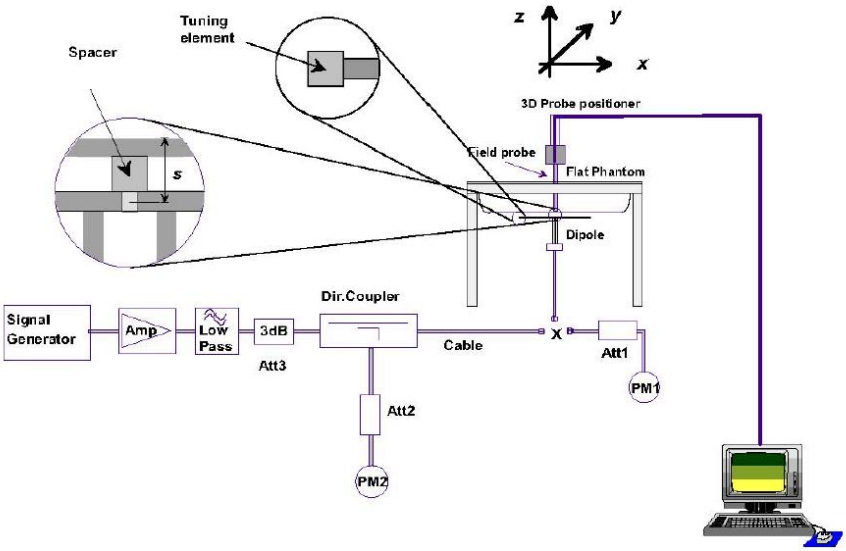
Dielectric performance of Head tissue simulating liquid									
Frequency (MHz)	εr		σ(s/m)		Delta (εr)	Delta (σ)	Limit	Temp (℃)	Date
	Target	Measured	Target	Measured					
750	41.90	42.90	0.89	0.90	2.39%	1.24%	±10%	22	2018-05-23
835	41.50	42.50	0.90	0.93	2.41%	3.56%	±10%	22	2018-05-17
1750	40.10	41.93	1.37	1.38	4.56%	0.36%	±10%	22	2018-05-23
1900	40.00	41.67	1.40	1.47	4.16%	4.71%	±10%	22	2018-05-21
2450	39.20	40.96	1.80	1.84	4.48%	2.11%	±10%	22	2018-05-24
5300	35.90	36.03	4.76	4.63	0.37%	-2.65%	±10%	22	2018-05-25
5800	35.30	35.17	5.27	5.20	-0.38%	-1.39%	±10%	22	2018-05-25

Dielectric performance of Body tissue simulating liquid									
Frequency (MHz)	εr		σ(s/m)		Delta (εr)	Delta (σ)	Limit	Temp (℃)	Date
	Target	Measured	Target	Measured					
750	55.50	55.63	0.96	0.94	0.23%	-2.60%	±10%	22	2018-05-23
835	55.20	55.40	0.97	0.97	0.36%	-0.41%	±10%	22	2018-05-18
1750	53.40	53.91	1.49	1.44	0.96%	-3.36%	±10%	22	2018-05-23
1900	53.30	53.72	1.52	1.55	0.79%	1.97%	±10%	22	2018-05-22
2450	52.70	53.03	1.95	2.00	0.63%	2.56%	±10%	22	2018-05-24
5300	48.90	47.94	5.42	5.52	-1.97%	1.75%	±10%	22	2018-05-25
5800	48.20	46.94	6.00	6.27	-2.61%	4.50%	±10%	22	2018-05-25

9.2. SAR System Check

The purpose of the system check is to verify that the system operates within its specifications at the decice test frequency.The system check is simple check of repeatability to make sure that the system works correctly at the time of the compliance test;

System check results have to be equal or near the values determined during dipole calibration with the relevant liquids and test system (±10%).
System check is performed regularly on all frequency bands where tests are performed with the DASY5 system.



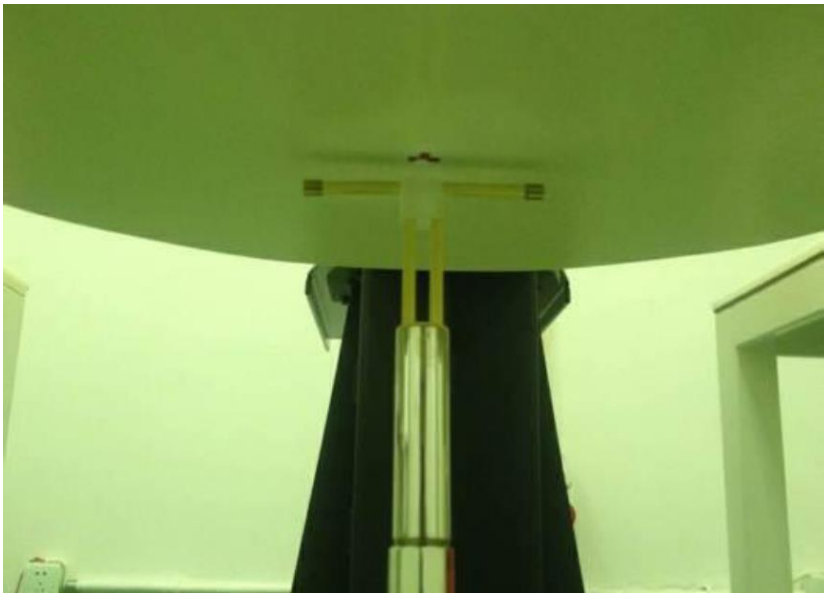


Photo of Dipole Setup

Check Result:

Head									
Frequency (MHz)	1g SAR(1W)		10g SAR(1W)		Delta (1g)	Delta (10g)	Limit	Temp (℃)	Date
	Target	Measured	Target	Measured					
750	8.22	8.48	5.39	5.60	3.16%	3.90%	±10%	22	2018-05-23
835	9.51	9.92	6.15	6.52	4.31%	6.02%	±10%	22	2018-05-17
1750	36.60	36.24	19.40	19.44	-0.98%	0.21%	±10%	22	2018-05-23
1900	40.30	41.60	21.10	21.68	3.23%	2.75%	±10%	22	2018-05-21
2450	51.50	50.40	24.10	23.44	-2.14%	-2.74%	±10%	22	2018-05-24
5300	81.40	76.70	23.40	21.80	-5.77%	-6.84%	±10%	22	2018-05-25
5800	79.40	77.90	22.50	21.90	-1.89%	-2.67%	±10%	22	2018-05-25

Body									
Frequency (MHz)	1g SAR(1W)		10g SAR(1W)		Delta (1g)	Delta (10g)	Limit	Temp (℃)	Date
	Target	Measured	Target	Measured					
750	8.55	8.40	5.68	5.60	-1.75%	-1.41%	±10%	22	2018-05-23
835	9.64	10.08	6.32	6.64	4.56%	5.06%	±10%	22	2018-05-18
1750	36.70	37.56	19.50	20.16	2.34%	3.38%	±10%	22	2018-05-23
1900	39.80	41.60	20.90	21.68	4.52%	3.73%	±10%	22	2018-05-22
2450	49.40	50.00	23.30	23.32	1.21%	0.09%	±10%	22	2018-05-24
5300	75.60	73.70	21.10	20.70	-2.51%	-1.90%	±10%	22	2018-05-25
5800	76.50	72.80	21.10	20.20	-4.84%	-4.27%	±10%	22	2018-05-25

Plots of System Performance Check

System Performance Check-Head 750MHz

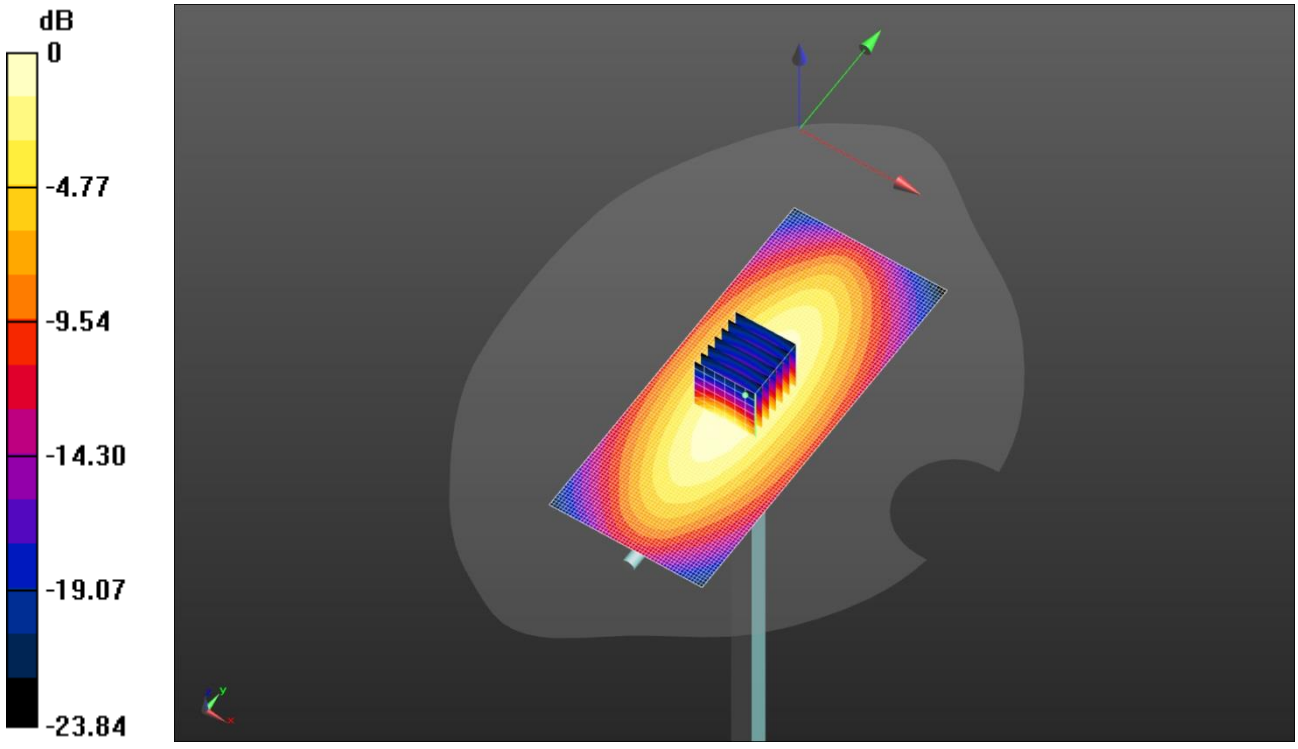
DUT: D750V3; Type: D750V3; Serial: 1180
Date: 2018-05-23
Communication System: UID 0, A-CW (0); Frequency: 750 MHz
Medium parameters used: f = 750 MHz; σ = 0.901 S/m; ε_r = 42.90; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7494;ConvF(11.02, 11.02, 11.02); Calibrated: 2/26/2018;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn1549; Calibrated: 4/25/2018
- Phantom: Twin-SAM V8.0 ; Type: QD 000 P41 AA; Serial: 1974
- DASY52 52.10.1(1476); SEMCAD X 14.6.11(7437)

Head/d=15mm, Pin=250mW/Area Scan (41x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 2.75 W/kg

Head/d=15mm, Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 58.45 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 3.20 W/kg
SAR(1 g) = 2.12 W/kg; SAR(10 g) = 1.4 W/kg
Maximum value of SAR (measured) = 2.82 W/kg



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

System Performance Check-Body 750MHz

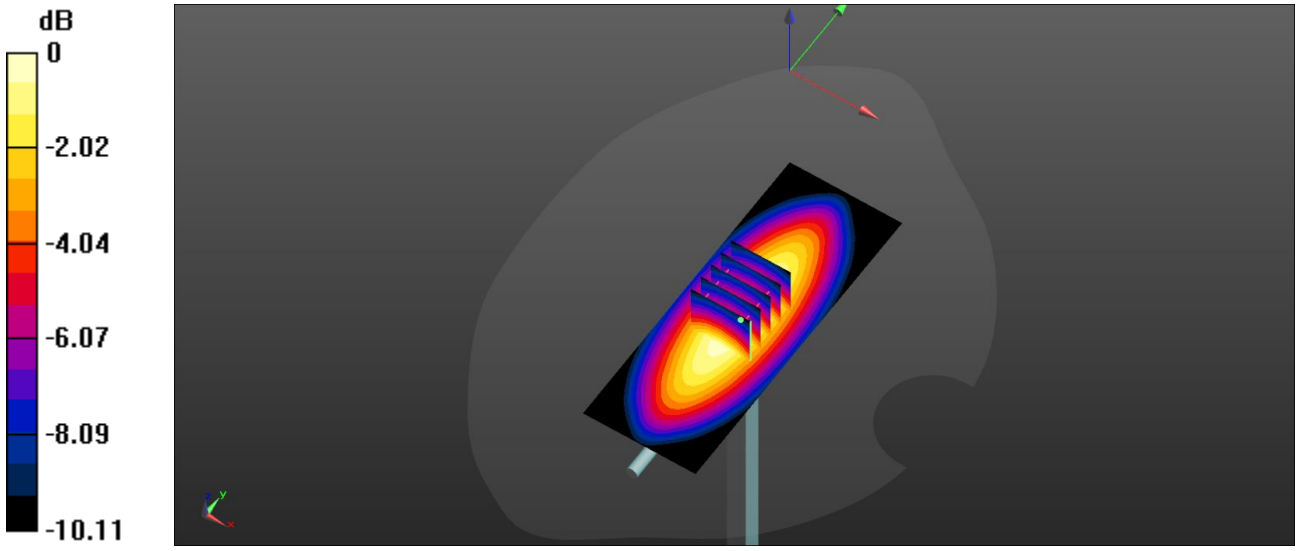
DUT: D750V3; Type: D750V3; Serial: 1180
Date: 2018-05-23
Communication System: UID 0, CW (0); Frequency: 750 MHz
Medium parameters used: f = 750 MHz; σ = 0.935 S/m; ε_r = 55.625; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7494;ConvF(10.87, 10.87, 10.87); Calibrated: 2/26/2018;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn1549; Calibrated: 4/25/2018
- Phantom: Twin-SAM V8.0 ; Type: QD 000 P41 AA; Serial: 1974
- DASY52 52.10.0(1446); SEMCAD X 14.6.11(7437)

Body/d=15mm,Pin=250mW/Area Scan (41x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 2.80 W/kg

Body/d=15mm,Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 57.06 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 3.18 W/kg
SAR(1 g) = 2.1 W/kg; SAR(10 g) = 1.4 W/kg
Maximum value of SAR (measured) = 2.81 W/kg



0 dB = 2.81 W/kg = 4.49 dBW/kg

System Performance Check-Head 835MHz

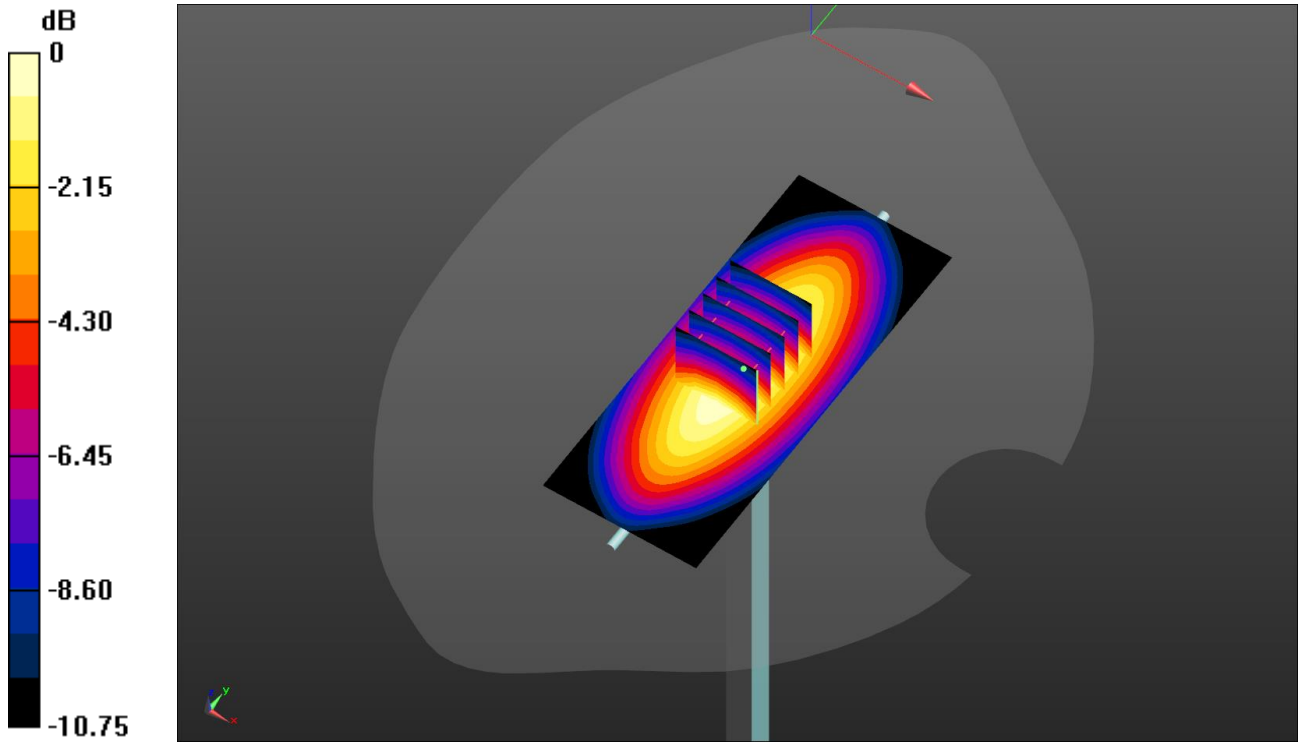
DUT: D835V2; Type: D835V2; Serial: 4d238
Date: 2018-05-17
Communication System: UID 0, CW (0); Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 0.932 S/m; ε_r = 42.5; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7494; ConvF(10.73, 10.73, 10.73); Calibrated: 2/26/2018;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn1549; Calibrated: 4/25/2018
- Phantom: Twin-SAM V8.0; Type: QD 000 P41 AA; Serial: 1947
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

Head/d=15mm, Pin=250mW/Area Scan (41x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 3.51 W/kg

Head/d=15mm, Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 66.38 V/m; Power Drift = -0.19 dB
Peak SAR (extrapolated) = 3.78 W/kg
SAR(1 g) = 2.48 W/kg; SAR(10 g) = 1.63 W/kg
Maximum value of SAR (measured) = 3.34 W/kg



0 dB = 3.34 W/kg = 5.24 dBW/kg

System Performance Check-Body 835MHz

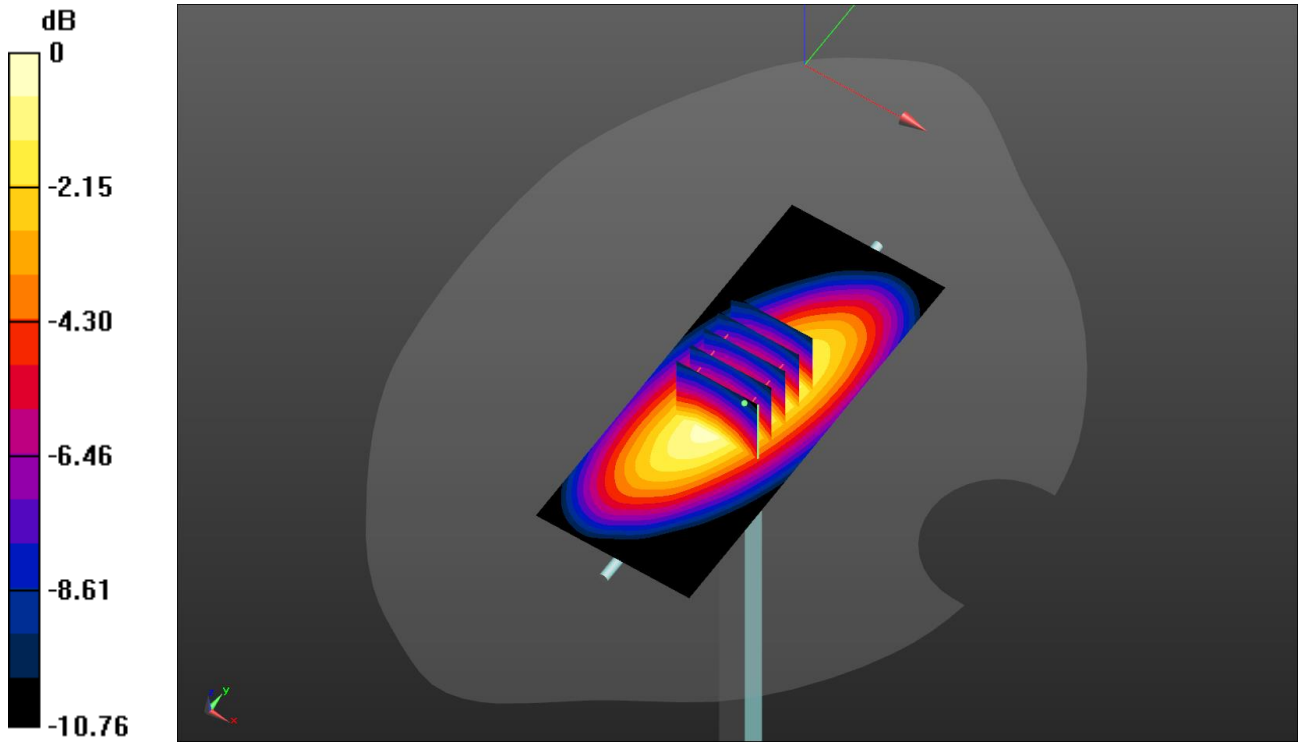
DUT: D835V2; Type: D835V2; Serial: 4d238
Date: 2018-05-18
Communication System: UID 0, CW (0); Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 0.966 S/m; ε_r = 55.403; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7494; ConvF(10.5, 10.5, 10.5); Calibrated: 2/26/2018;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn1549; Calibrated: 4/25/2018
- Phantom: Twin-SAM V8.0; Type: QD 000 P41 AA; Serial: 1947
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

Body/d=15mm,Pin=250mW/Area Scan (41x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 3.40 W/kg

Body/d=15mm,Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 61.67 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 3.97 W/kg
SAR(1 g) = 2.52 W/kg; SAR(10 g) = 1.66 W/kg
Maximum value of SAR (measured) = 3.44 W/kg



0 dB = 3.44 W/kg = 5.37 dBW/kg

System Performance Check-Head 1750MHz

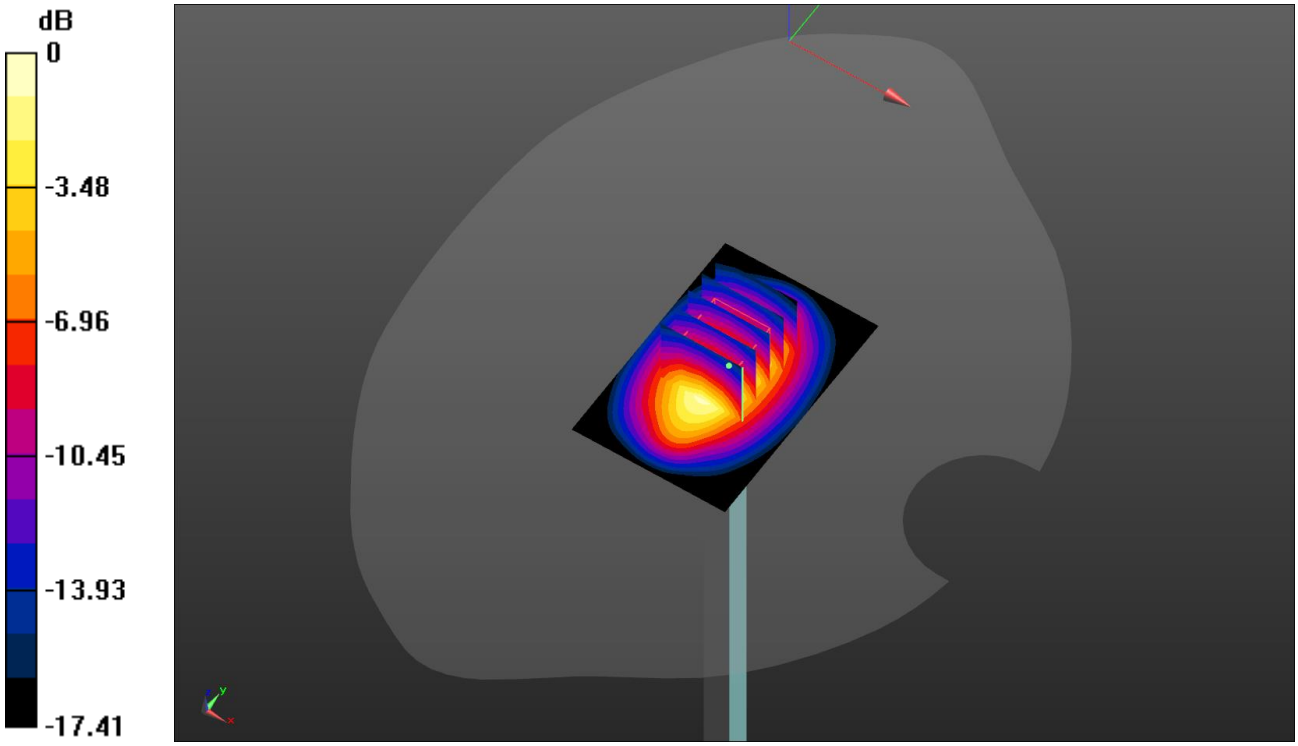
DUT: D1750V2; Type: D1750V2; Serial: 1164
Date: 2018-05-23
Communication System: UID 0, CW (0); Frequency: 1750 MHz
Medium parameters used: f = 1750 MHz; σ = 1.375 S/m; ε_r = 41.933; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7494; ConvF(9.23, 9.23, 9.23); Calibrated: 2/26/2018;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn1549; Calibrated: 4/25/2018
- Phantom: Twin-SAM V8.0; Type: QD 000 P41 AA; Serial: 1947
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

Head/d=10mm,Pin=250mW/Area Scan (41x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 14.1 W/kg

Head/d=10mm,Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 103.5 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 16.5 W/kg
SAR(1 g) = 9.06 W/kg; SAR(10 g) = 4.86 W/kg
Maximum value of SAR (measured) = 13.8 W/kg



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

System Performance Check-Body 1750MHz

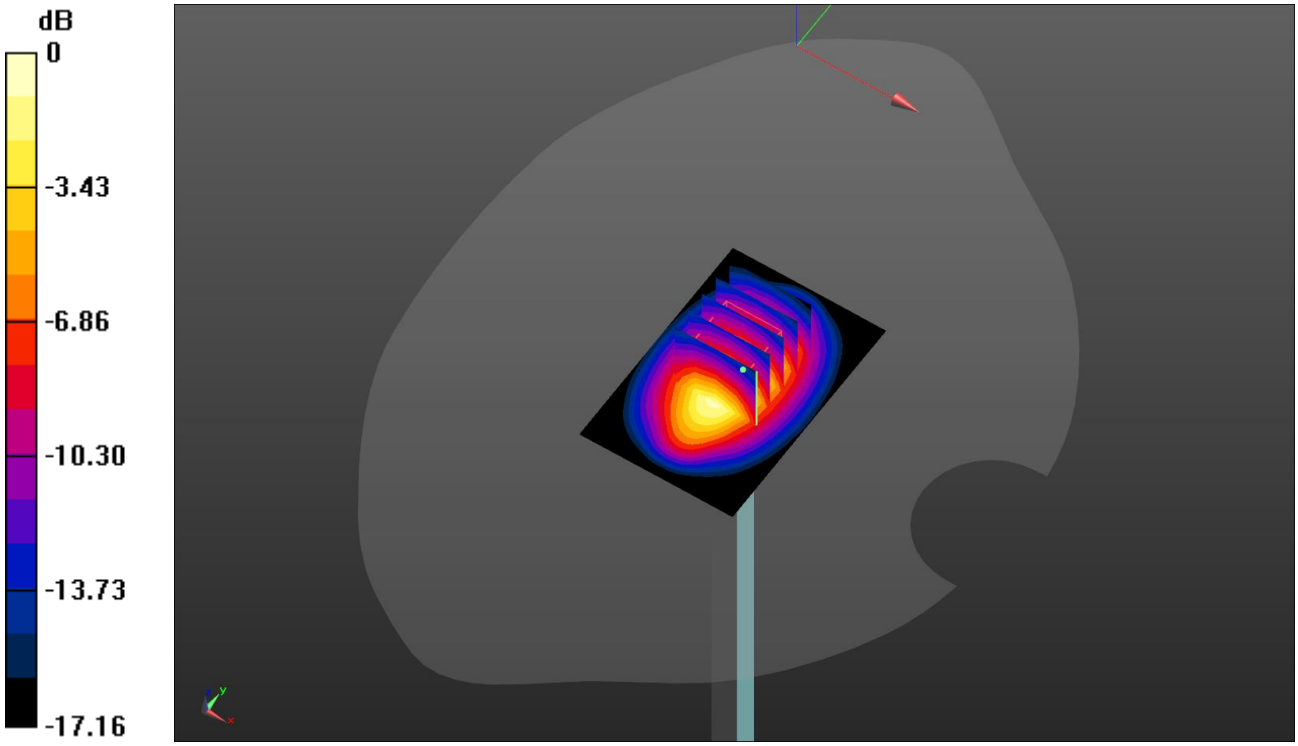
DUT: D1750V2; Type: D1750V2; Serial: 1164
Date: 2018-05-23
Communication System: UID 0, CW (0); Frequency: 1750 MHz
Medium parameters used: f = 1750 MHz; σ = 1.441 S/m; ε_r = 53.908; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7494; ConvF(8.77, 8.77, 8.77); Calibrated: 2/26/2018;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn1549; Calibrated: 4/25/2018
- Phantom: Twin-SAM V8.0; Type: QD 000 P41 AA; Serial: 1947
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

Body/d=10mm,Pin=250mW/Area Scan (41x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 14.7 W/kg

Body/d=10mm,Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 102.2 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 16.8 W/kg
SAR(1 g) = 9.39 W/kg; SAR(10 g) = 5.04 W/kg
Maximum value of SAR (measured) = 14.1 W/kg



0 dB = 14.1 W/kg = 11.49 dBW/kg

System Performance Check-Head 1900MHz

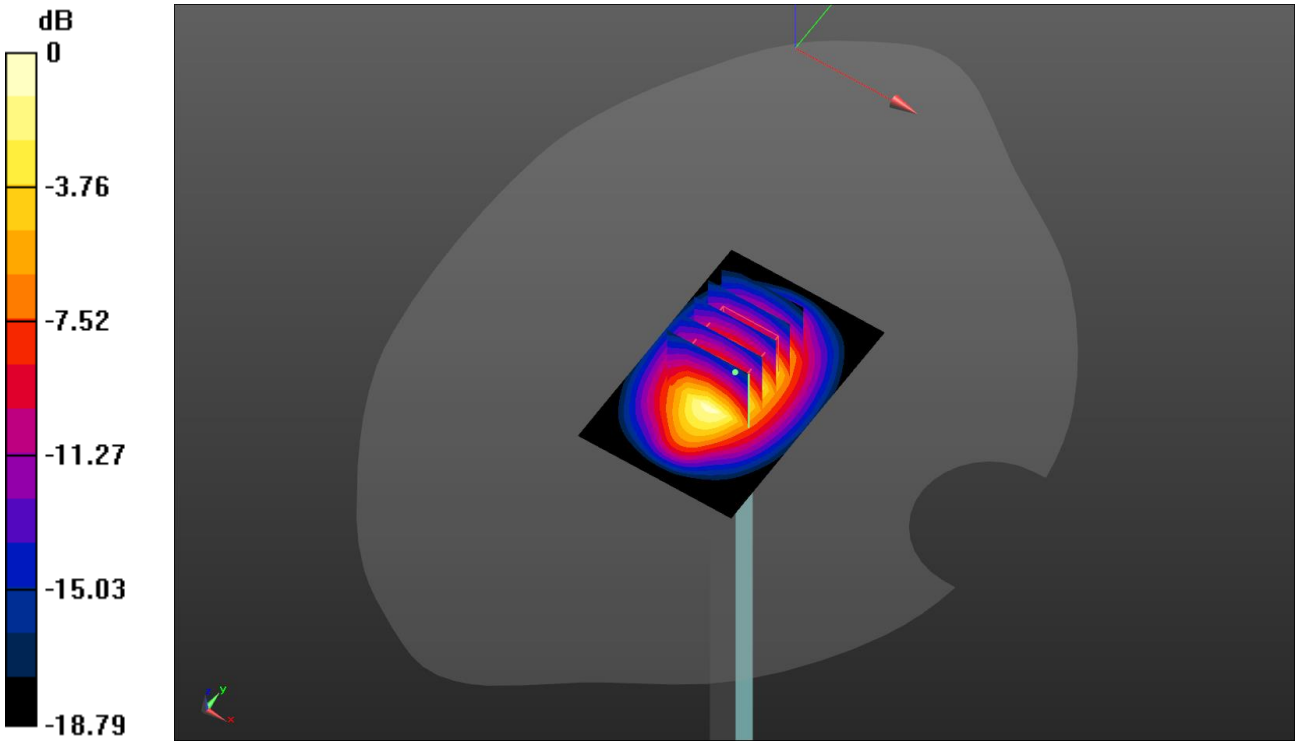
DUT: D1900V2; Type: D1900V2; Serial: 5d226
Date:2018-05-21
Communication System: UID 0, CW (0); Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.466 S/m; ε_r = 41.665; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7494; ConvF(8.83, 8.83, 8.83); Calibrated: 2/26/2018;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn1549; Calibrated: 4/25/2018
- Phantom: Twin-SAM V8.0; Type: QD 000 P41 AA; Serial: 1947
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

Head/d=10mm,Pin=250mW/Area Scan (41x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 17.1 W/kg

Head/d=10mm,Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 112.4 V/m; Power Drift = -0.17 dB
Peak SAR (extrapolated) = 19.5 W/kg
SAR(1 g) = 10.4 W/kg; SAR(10 g) = 5.42 W/kg
Maximum value of SAR (measured) = 16.1 W/kg



0 dB = 16.1 W/kg = 12.07 dBW/kg

System Performance Check-Body 1900MHz

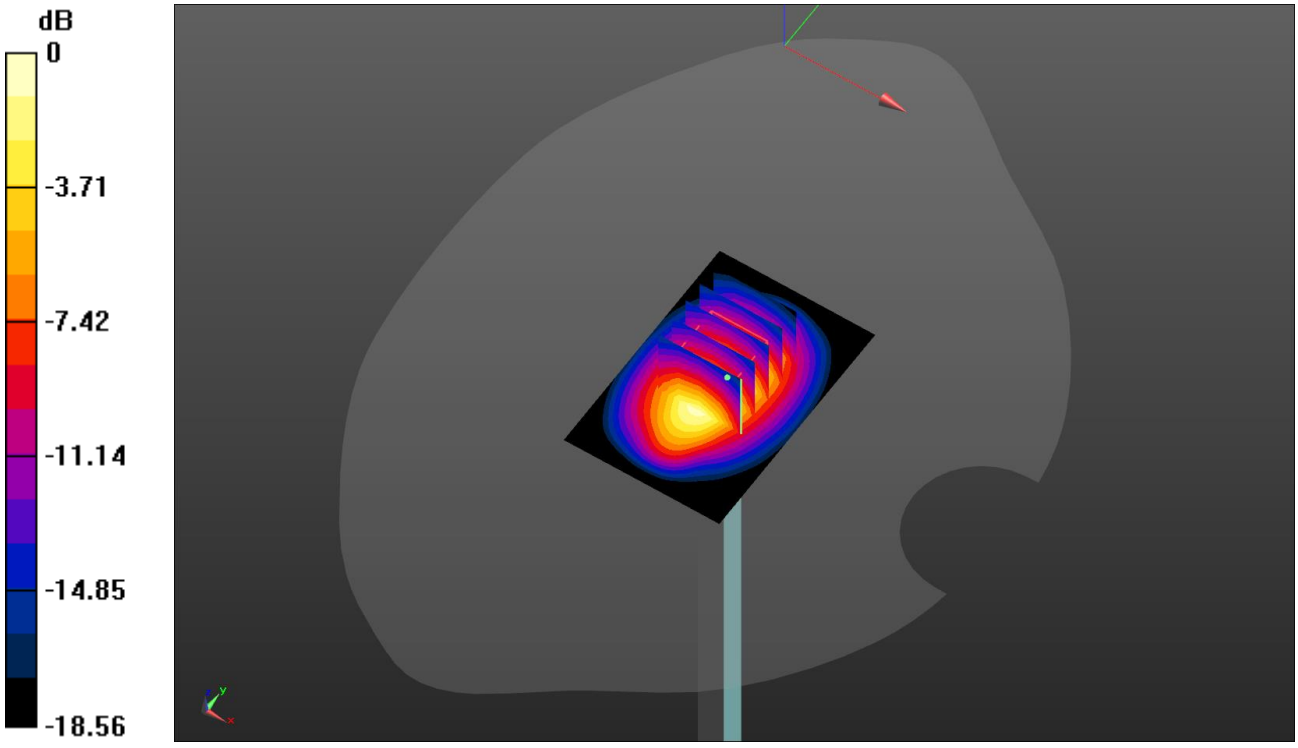
DUT: D1900V2; Type: D1900V2; Serial: 5d226
Date:2018-05-22
Communication System: UID 0, CW (0); Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.553 S/m; ε_r = 53.719; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7494; ConvF(8.42, 8.42, 8.42); Calibrated: 2/26/2018;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn1549; Calibrated: 4/25/2018
- Phantom: Twin-SAM V8.0; Type: QD 000 P41 AA; Serial: 1947
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

Body/d=10mm,Pin=250mW/Area Scan (41x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 16.4 W/kg

Body/d=10mm,Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 105.9 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 18.9 W/kg
SAR(1 g) = 10.4 W/kg; SAR(10 g) = 5.42 W/kg
Maximum value of SAR (measured) = 15.7 W/kg



0 dB = 15.7 W/kg = 11.96 dBW/kg

SystemPerformanceCheck-Head 2450MHz

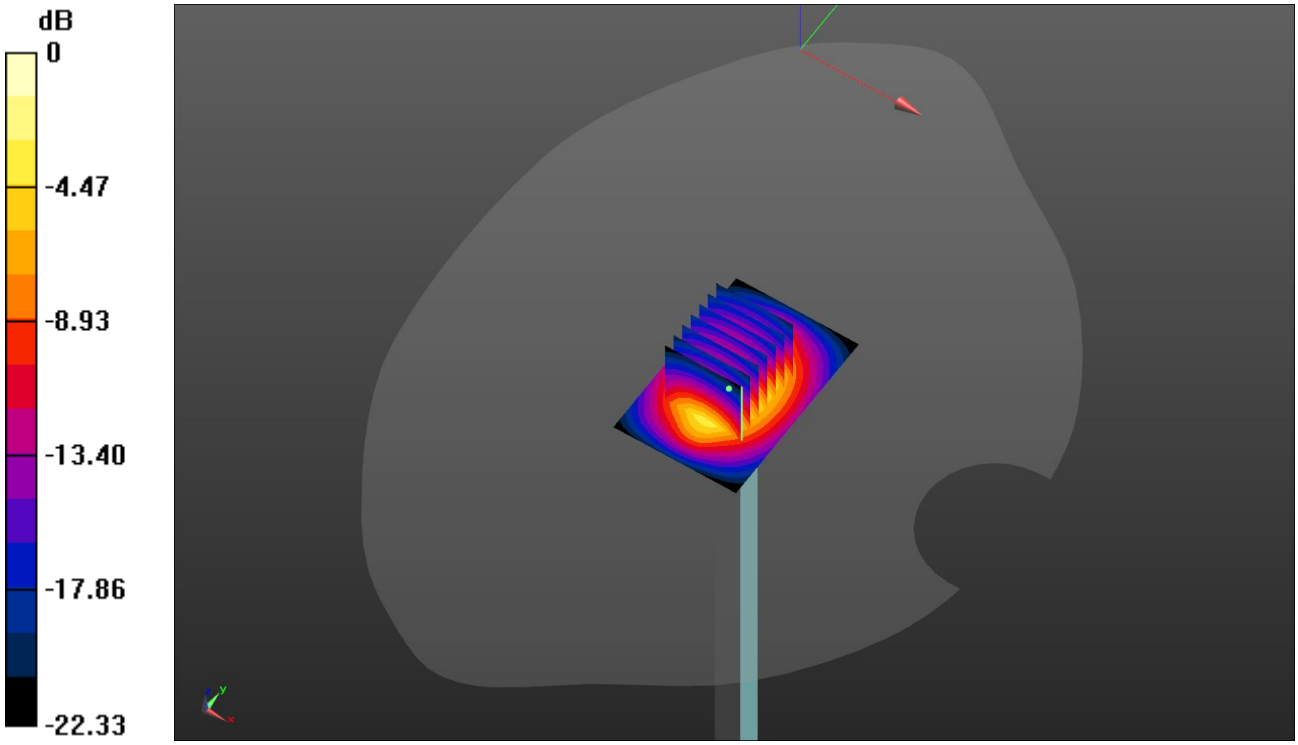
DUT: D2450V2; Type: D2450V2; Serial: 1009
Date:2018-05-24
Communication System: UID 0, CW (0); Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 1.838 S/m; ε_r = 40.956; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7494; ConvF(8.27, 8.27, 8.27); Calibrated: 2/26/2018;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn1549; Calibrated: 4/25/2018
- Phantom: Twin-SAM V8.0; Type: QD 000 P41 AA; Serial: 1947
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

Head/d=10mm,Pin=250mW/Area Scan (41x61x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 21.1 W/kg

Head/d=10mm,Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 110.0 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 26.2 W/kg
SAR(1 g) = 12.6 W/kg; SAR(10 g) = 5.86 W/kg
Maximum value of SAR (measured) = 20.8 W/kg



0 dB = 20.8 W/kg = 13.18 dBW/kg

SystemPerformanceCheck-Body 2450MHz

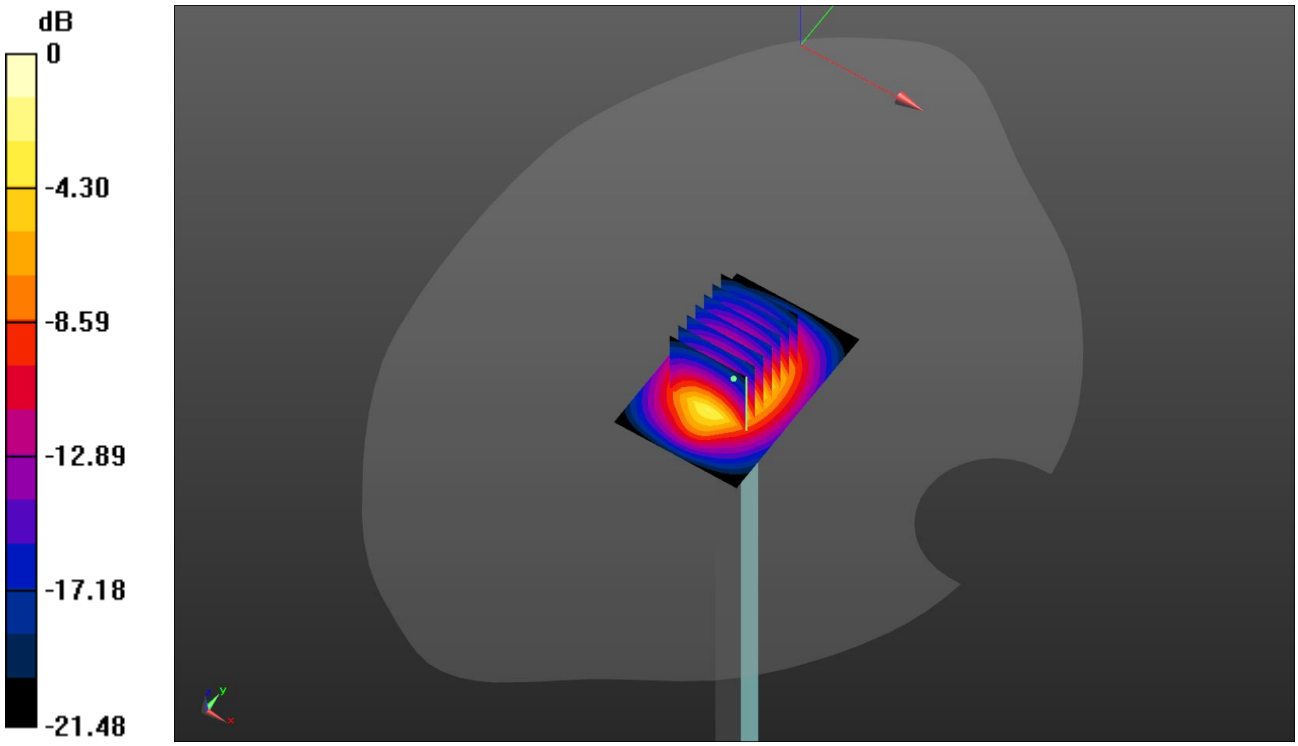
DUT: D2450V2; Type: D2450V2; Serial: 1009
Date:2018-05-24
Communication System: UID 0, CW (0); Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 2.001 S/m; ε_r = 53.03; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7494; ConvF(8.08, 8.08, 8.08); Calibrated: 2/26/2018;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn1549; Calibrated: 4/25/2018
- Phantom: Twin-SAM V8.0; Type: QD 000 P41 AA; Serial: 1947
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

Body/d=10mm,Pin=250mW/Area Scan (41x61x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 21.1 W/kg

Body/d=10mm,Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 105.6 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 25.7 W/kg
SAR(1 g) = 12.5 W/kg; SAR(10 g) = 5.83 W/kg
Maximum value of SAR (measured) = 20.7 W/kg



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

SystemPerformanceCheck-Head 5300MHz

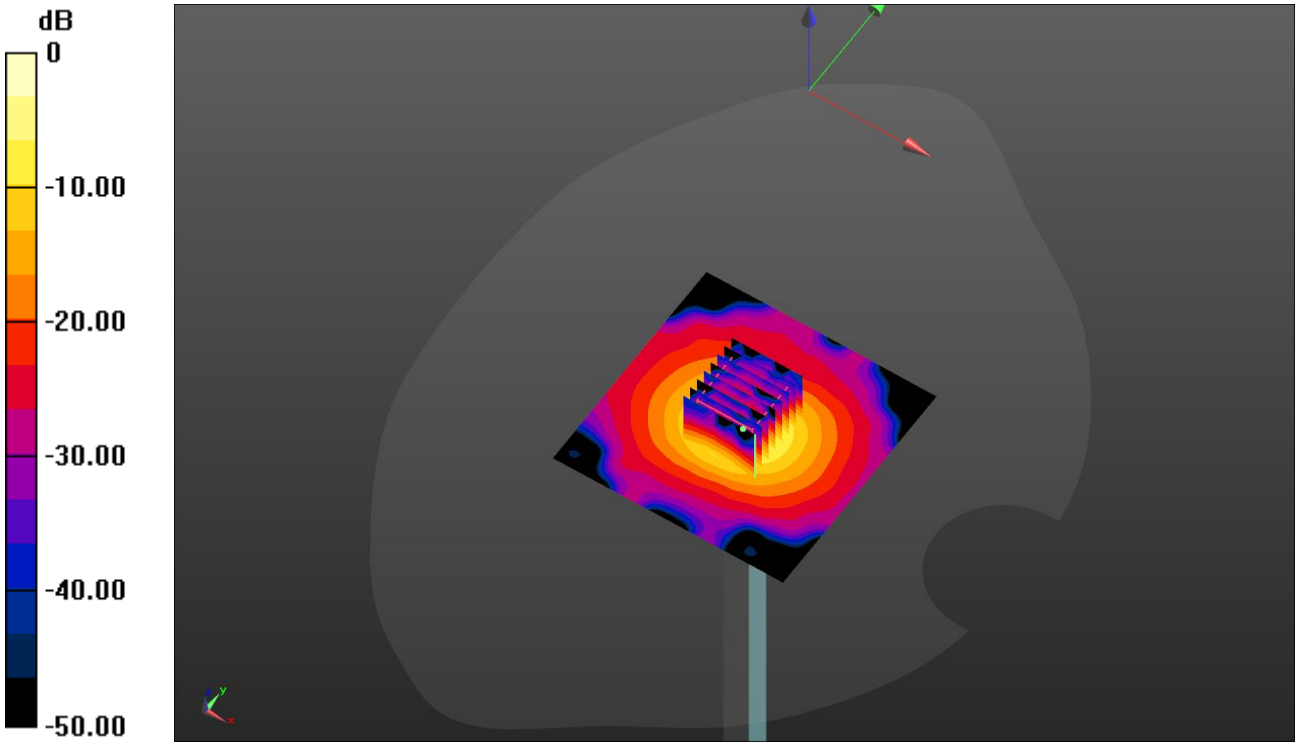
DUT: D5GHzV2; Type: D5GHzV2; Serial: 1273
Date:2018-05-25
Communication System: UID 0, A-CW (0); Frequency: 5300 MHz
Medium parameters used: f = 5300 MHz; σ = 4.634 S/m; ε_r = 36.033; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7494; ConvF(5.4, 5.4, 5.4); Calibrated: 2/26/2018;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection), z = 1.0, 25.0
- Electronics: DAE4 Sn1549; Calibrated: 4/25/2018
- Phantom: Twin-SAM V8.0; Type: QD 000 P41 AA; Serial: 1947
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

Head/d=10mm,Pin=100mW/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 18.1 W/kg

Head/d=10mm,Pin=100mW/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 71.24 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 32.1 W/kg
SAR(1 g) = 7.67 W/kg; SAR(10 g) = 2.18 W/kg
Maximum value of SAR (measured) = 18.2 W/kg



0 dB = 18.2 W/kg = 12.60 dBW/kg

SystemPerformanceCheck-Body 5300MHz

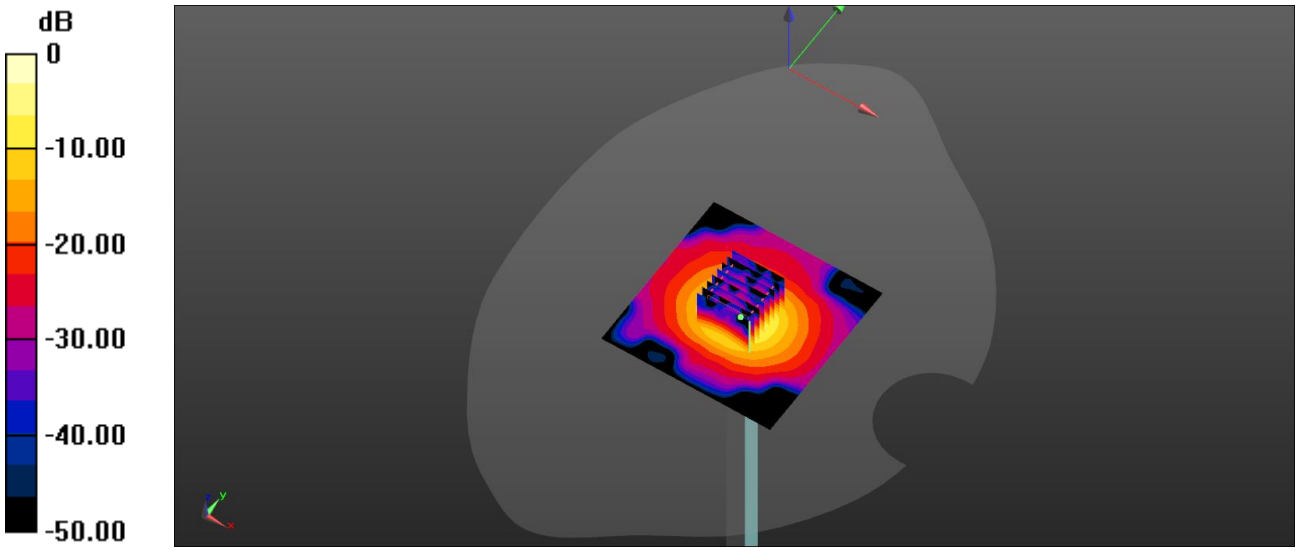
DUT: D5GHzV2; Type: D5GHzV2; Serial: 1273
Date:2018-05-25
Communication System: UID 0, A-CW (0); Frequency: 5300 MHz
Medium parameters used: f = 5300 MHz; σ = 5.515 S/m; ε_r = 47.936; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7494; ConvF(4.97, 4.97, 4.97); Calibrated: 2/26/2018;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection), z = 1.0, 25.0
- Electronics: DAE4 Sn1549; Calibrated: 4/25/2018
- Phantom: Twin-SAM V8.0; Type: QD 000 P41 AA; Serial: 1947
- DASY52 52.10.0(1446); SEMCAD X 14.6.11(7437)

Body/d=10mm,Pin=100mW/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 17.3 W/kg

Body/d=10mm,Pin=100mW/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 65.13 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 31.6 W/kg
SAR(1 g) = 7.37 W/kg; SAR(10 g) = 2.07 W/kg
Maximum value of SAR (measured) = 17.8 W/kg



0 dB = 17.8 W/kg = 12.50 dBW/kg

SystemPerformanceCheck-Head 5800MHz

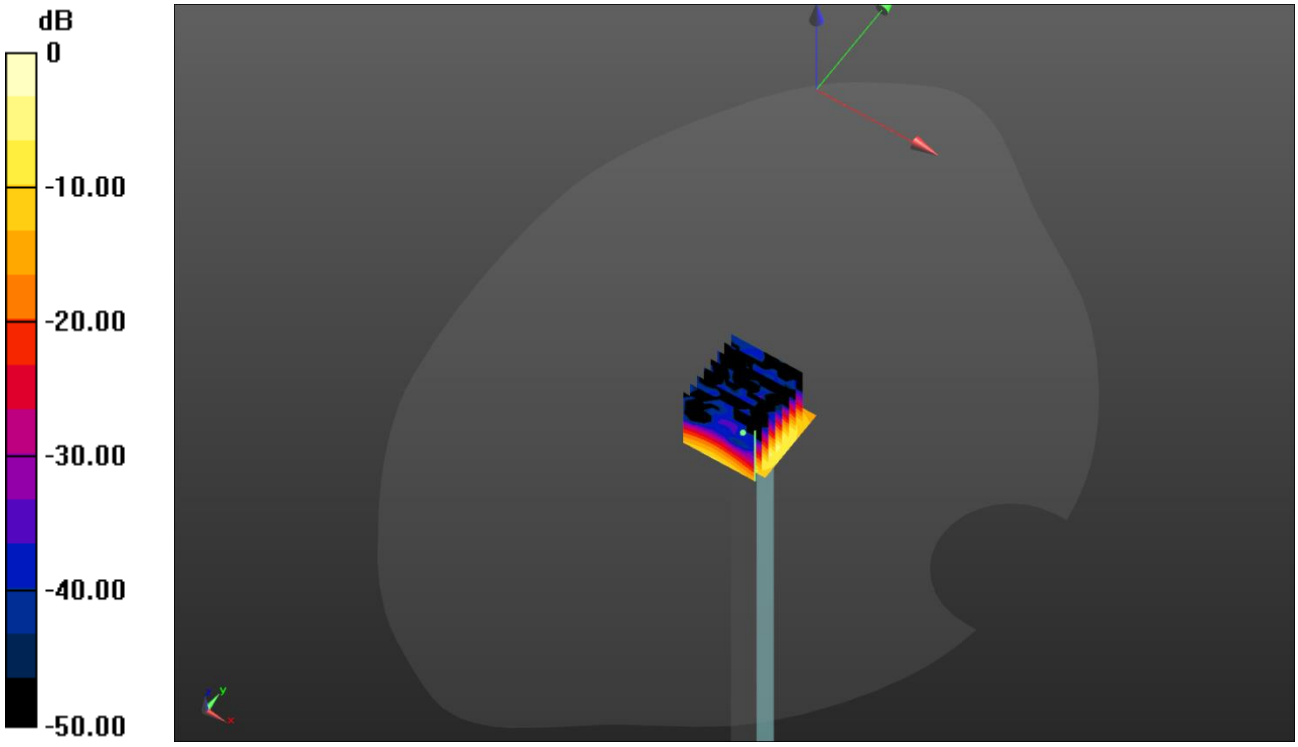
DUT: D5GHzV2; Type: D5GHzV2; Serial: 1273
Date:2018-05-25
Communication System: UID 0, CW (0); Frequency: 5800 MHz
Medium parameters used: f = 5800 MHz; σ = 5.197 S/m; ε_r = 35.167; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7494; ConvF(4.9, 4.9, 4.9); Calibrated: 2/26/2018;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection), z = 1.0, 29.0
- Electronics: DAE4 Sn1549; Calibrated: 4/25/2018
- Phantom: Twin-SAM V8.0; Type: QD 000 P41 AA; Serial: 1947
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

Head/d=10mm,Pin=100mW/Area Scan (31x31x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 19.2 W/kg

Head/d=10mm,Pin=100mW/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 63.74 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 35.4 W/kg
SAR(1 g) = 7.79 W/kg; SAR(10 g) = 2.19 W/kg
Maximum value of SAR (measured) = 18.9 W/kg



0 dB = 18.9 W/kg = 12.76 dBW/kg

SystemPerformanceCheck-Body 5800MHz

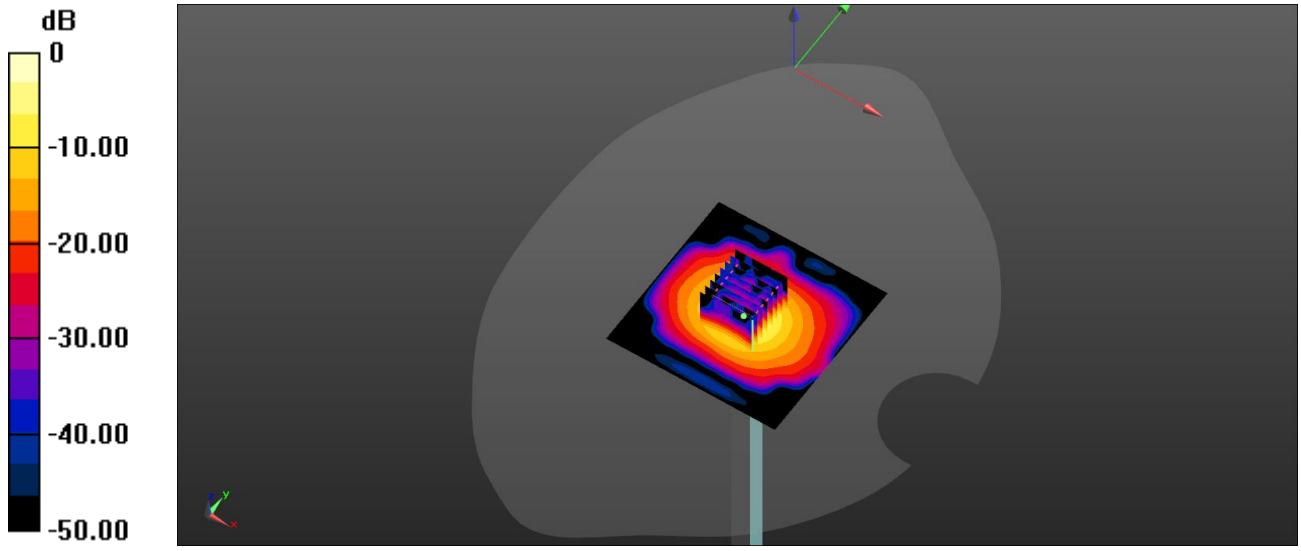
DUT: D5GHzV2; Type: D5GHzV2; Serial: 1273
Date:2018-05-25
Communication System: UID 0, A-CW (0); Frequency: 5800 MHz
Medium parameters used: f = 5800 MHz; σ = 6.27 S/m; ε_r = 46.943; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7494; ConvF(4.61, 4.61, 4.61); Calibrated: 2/26/2018;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection), z = 1.0, 25.0
- Electronics: DAE4 Sn1549; Calibrated: 4/25/2018
- Phantom: Twin-SAM V8.0; Type: QD 000 P41 AA; Serial: 1947
- DASY52 52.10.0(1446); SEMCAD X 14.6.11(7437)

Body/d=10mm,Pin=100mW/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 17.9 W/kg

Body/d=10mm,Pin=100mW/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 62.07 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 36.2 W/kg
SAR(1 g) = 7.28 W/kg; SAR(10 g) = 2.02 W/kg
Maximum value of SAR (measured) = 18.8 W/kg



0 dB = 18.8 W/kg = 12.74 dBW/kg

10. SAR Exposure Limits

SAR assessments have been made in line with the requirements of ANSI/IEEE C95.1-1992

Type Exposure	Limit (W/kg)	
	General Population / Uncontrolled Exposure Environment	Occupational / Controlled Exposure Environment
Spatial Average SAR (whole body)	0.08	0.4
Spatial Peak SAR (1g cube tissue for head and trunk)	1.6	8.0
Spatial Peak SAR (10g for limb)	4.0	20.0

Population/Uncontrolled Environments: are defined as locations where there is the exposure of individual who have no knowledge or control of their exposure.

Occupational/Controlled Environments: are defined as locations where there is exposure that may be incurred by people who are aware of the potential for exposure (i.e. as a result of employment or occupation).

11. Conducted Power Measurement Results

GSM Conducted Power

1. *Per KDB 447498 D01, the maximum output power channel is used for SAR testing and further SAR test reduction*
2. *Per KDB 941225 D01, considering the possibility of e.g. 3rd party VoIP operation for Head and Body-worn SAR test reduction for GSM and GPRS modes is determined by the source-base time-averaged output power including tune-up tolerance. The mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested. Therefore, the EUT was set in GPRS (3Tx slots) for GSM850 and GPRS (3Tx slots) for PCS1900.*
3. *Per KDB941225 D01, for hotspot SAR test reduction for GPRS modes is determined by the source-based time-averaged output power including tune-up tolerance, For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested. Therefore, the EUT was set in GPRS (3Tx slots) for GSM850 and GPRS (3Tx slots) for PCS1900.*

Mode: GSM850		Conducted Power (dBm)			Division Factors	Averager Power (dBm)		
		CH128	CH190	CH251		CH128	CH190	CH251
		824.2MHz	836.6MHz	848.8MHz		824.2MHz	836.6MHz	848.8MHz
GSM		33.77	33.89	33.73	-9.03	24.74	24.86	24.70
GPRS (GMSK)	1TXslot	33.67	33.76	33.58	-9.03	24.64	24.73	24.55
	2TXslots	33.31	33.52	33.34	-6.02	27.29	27.50	27.32
	3TXslots	32.09	31.97	31.73	-4.26	27.83	27.71	27.47
	4TXslots	30.34	30.41	30.12	-3.01	27.33	27.40	27.11
EGPRS (8PSK)	1TXslot	27.32	27.12	27.05	-9.03	18.29	18.09	18.02
	2TXslots	25.87	25.80	25.89	-6.02	19.85	19.78	19.87
	3TXslots	23.71	23.91	23.33	-4.26	19.45	19.65	19.07
	4TXslots	23.46	23.26	23.17	-3.01	20.45	20.25	20.16
Mode: PCS1900		**Conducted Power (dBm)**			Division Factors	**Averager Power (dBm)**		
		CH512	CH661	CH810		CH512	CH661	CH810
		1850.2MHz	1880.0MHz	1909.8MHz		1850.2MHz	1880.0MHz	1909.8MHz
GSM		30.94	31.53	31.23	-9.03	21.91	22.50	22.20
GPRS (GMSK)	1TXslot	30.88	31.46	31.17	-9.03	21.85	22.43	22.14
	2TXslots	30.49	31.00	30.86	-6.02	24.47	24.98	24.84
	3TXslots	29.04	29.33	29.38	-4.26	24.78	25.07	25.12
	4TXslots	26.80	27.12	27.48	-3.01	23.79	24.11	24.47
EGPRS (8PSK)	1TXslot	26.94	27.16	27.05	-9.03	17.91	18.13	18.02
	2TXslots	25.80	25.27	25.44	-6.02	19.78	19.25	19.42
	3TXslots	24.25	24.55	24.48	-4.26	19.99	20.29	20.22
	4TXslots	23.56	24.30	23.76	-3.01	20.55	21.29	20.75

Note:

1) Division Factors

To average the power, the division factor is as follows:

1TX-slot = 1 transmit time slot out of 8 time slots=> conducted power divided by (8/1) => -9.03dB

2TX-slots = 2 transmit time slots out of 8 time slots=> conducted power divided by (8/2) => -6.02dB

3TX-slots = 3 transmit time slots out of 8 time slots=> conducted power divided by (8/3) => -4.26dB

4TX-slots = 4 transmit time slots out of 8 time slots=> conducted power divided by (8/4) => -3.01dB

WCDMA Conducted Power

1. *The following tests were conducted according to the test requirements outlines in 3GPP TS34.121 specification.*
2. *The procedures in KDB 941225 D01 are applied for 3GPP Rel. 6 HSPA to configure the device in the required sub-test mode to determine SAR test exclusion*

A summary of thest setting are illustrated belowe:

HSDPA Setup Configureation:

a) The EUT was connected to base station RS CMU200 referred to the setup configuration
b) The RF path losses were compensated into the measurements
c) A call was established between EUT and base station with following setting:
   i. Set Gain Factors (βc and βd) and parameters were set according to each specific sub-test in the following table, C10.1.4, Quoted from the TS 34.121
   ii. Set RMC 12.2Kbps + HSDPA mode
   iii. Set Cell Power=-86dBm
   iv. Set HS-DSCH Configuration Type to FRC (H-set 1, QPSK)
   v. Select HSDPA uplink parameters
   vi. Set Delta ACK, Delta NACK and Delta CQI=8
   vii. Set Ack-Nack repetition Factor to 3
   viii. Set CQI Feedback Cycle (K) to 4ms
   ix. Set CQI repetition factor to 2
   x. Power ctrl mode= all up bits
d) The transmitter maximum output power waw recorded.

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

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

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

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

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

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

Setup Configuration

HSUPA Setup Configureation:

a) The EUT was connected to base station RS CMU200 referred to the setup configuration
b) The RF path losses were compensated into the measurements
c) A call was established between EUT and base station with following setting:
   i. Call configs = 5.2b, 5.9b, 5.10b, and 5.13.2B with QPSK
   ii. Set Gain Factors (βc and βd) and parameters (AG index) were set according to each specific sub-test in the following table, C11.1.3, Quoted from the TS 34.121
   iii. Set Cell Power=-86dBm
   iv. Set channel type= 12.2Kbps + HSPA mode
   v. Set UE Target power
   vi. Set Ctrl mode=Alternating bits
   vii. Set and observe the E-TFCI
   viii. Confirm that E-TFCI is equal the target E-TFCI of 75 for Sub-test 1, and other subtest's E-TFCI
d) The transmitter maximum output power waw recorded.

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

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note1)	β_{ec}	β_{ed} (Note 5) (Note 6)	β_{ed} (SF)	β_{ed} (Codes)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 6)	E-TFCI
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/225	1309/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	β_{ed}1: 47/15 β_{ed}2: 47/15	4 4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15 (Note 4)	15/15 (Note 4)	64	15/15 (Note 4)	30/15	24/15	134/15	4	1	1.0	0.0	21	81

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

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

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

Note 4: For subtest 5 the β_c/β_d ratio of 15/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to β_c = 14/15 and β_d = 15/15.

Note 5: 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 6: β_{ed} can not be set directly, it is set by Absolute Grant Value.

Setup Configuration

General Note:

1. Per KDB 941225 D01, SAR for Head / Hotsport / Body-worn Exposure is measured using a 12.2Kbps RMC with TPC bit ocnfigured to all 1s
2. Per KDB 941225 D01 RMC12.2Kbps setting is used to evaluate SAR. If the maximum output power and Tune-up tolerance specified for production units in HSDPA/HSUPA is ≦1/4dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio fo specified maximum output power and tune-up tolerance of HSDPA / HSUPA to RMC 12.2Kbps and the adjusted SAR is ≦1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA.

Mode		WCDMA Band II			WCDMA Band V		
		Conducted Power (dBm)			Conducted Power (dBm)		
		CH9262	CH9400	CH9538	CH4132	CH4183	CH4233
		1852.4	1880.0	1907.6	826.4	836.6	846.6
AMR 12.2K		23.57	23.86	23.66	23.35	23.90	23.77
RMC 12.2K		23.60	23.89	23.67	23.38	23.93	23.78
HSDPA	Subtest-1	22.39	22.77	21.95	22.21	22.91	21.84
	Subtest-2	21.89	22.26	21.55	21.81	22.35	21.31
	Subtest-3	21.93	21.66	21.58	21.81	22.39	21.36
	Subtest-4	21.89	21.91	21.54	21.80	22.36	21.35
HSUPA	Subtest-1	19.45	19.69	19.50	19.30	19.82	18.75
	Subtest-2	20.42	20.68	20.52	20.27	20.83	19.81
	Subtest-3	20.45	20.70	20.53	20.31	20.80	19.80
	Subtest-4	19.49	19.76	19.57	19.31	19.89	18.83
	Subtest-5	20.39	20.63	20.46	20.32	20.79	19.79

LTE Conducted Power

General Note:

1. CMW500 base station simulator was used to setup the connection with EUT; the frequency band, channel,bandwidth, RB allocation configuration, modulation type are set in the base station simulator to configure EUTtransmitting at maximum power and at different configurations which are requested to be reported to FCC, forconducted power measurement and SAR testing.
2. Per KDB 941225 D05v02r03, when a properly configured base station simulator is used for the SAR and powermeasurements, spectrum plots for each RB allocation and offset configuration is not required.
3. Per KDB 941225 D05v02r03, start with the largest channel bandwidth and measure SAR for QPSK with 1 RBallocation, using the RB offset and required test channel combination with the highest maximum output power for RBoffsets at the upper edge, middle and lower edge of each required test channel.
4. Per KDB 941225 D05v02r03, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05v02r03, for QPSK with 100% RB allocation, SAR is not required when the highest maximumoutput power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations andthe highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highestoutput power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also betested.
6. Per KDB 941225 D05v02r03, 16QAM output power for each RB allocation configuration is > not ½ dB higher than thesame configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225D05v02r03, 16QAM SAR testing is not required.
7. Per KDB 941225 D05v02r03, smaller bandwidth output power for each RB allocation configuration is > not ½ dBhigher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supportedbandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r03, smaller bandwidth SAR testing is not required.

LTE-FDD Band 2				Actual output Power (dBm)		
Band-width	Modulation	RB allocation	RB offset	Low	Middle	High
1.4	QPSK	1	Low	24.27	24.60	24.47
			Middle	24.16	24.49	24.36
			High	24.26	24.59	24.46
		3	Low	23.38	23.70	23.57
			Middle	23.39	23.71	23.58
			High	23.26	23.58	23.45
		6	/	23.56	23.88	23.76
	16QAM	1	Low	23.61	23.93	23.81
			Middle	23.70	24.02	23.90
			High	23.59	23.91	23.79
		3	Low	23.27	23.59	23.46
			Middle	23.25	23.57	23.44
			High	23.27	23.59	23.46
		6	/	22.41	22.71	22.60
3	QPSK	1	Low	24.38	24.71	24.58
			Middle	24.31	24.64	24.51
			High	24.36	24.69	24.56
		8	Low	23.54	23.86	23.74
			Middle	23.54	23.86	23.74
			High	23.54	23.86	23.74
		15	/	23.47	23.79	23.66
	16QAM	1	Low	23.53	23.85	23.73
			Middle	23.53	23.85	23.73
			High	23.45	23.77	23.64
		8	Low	22.49	22.79	22.68
			Middle	22.48	22.78	22.67
			High	22.44	22.74	22.63
		15	/	22.33	22.63	22.52

5	QPSK	1	Low	24.42	24.75	24.62
			Middle	24.07	24.40	24.27
			High	24.37	24.70	24.57
		12	Low	23.53	23.85	23.73
			Middle	23.48	23.80	23.67
			High	23.45	23.77	23.64
		25	/	23.43	23.75	23.62
	16QAM	1	Low	23.65	23.97	23.85
			Middle	23.41	23.73	23.60
			High	23.48	23.80	23.67
		12	Low	22.46	22.76	22.65
			Middle	22.43	22.73	22.62
			High	22.38	22.68	22.57
		25	/	22.35	22.65	22.54
10	QPSK	1	Low	24.49	24.82	24.69
			Middle	24.45	24.78	24.65
			High	24.37	24.70	24.57
		25	Low	23.45	23.77	23.64
			Middle	23.36	23.68	23.55
			High	23.33	23.65	23.52
		50	/	23.34	23.66	23.53
	16QAM	1	Low	23.65	23.97	23.85
			Middle	23.54	23.86	23.74
			High	23.50	23.82	23.69
		25	Low	22.36	22.66	22.55
			Middle	22.29	22.59	22.47
			High	22.23	22.53	22.41
		50	/	22.29	22.59	22.47

15	QPSK	1	Low	24.26	24.59	24.46
			Middle	24.14	24.47	24.34
			High	24.13	24.46	24.33
		38	Low	23.50	23.82	23.69
			Middle	23.41	23.73	23.60
			High	23.37	23.69	23.56
		75	/	23.42	23.74	23.61
	16QAM	1	Low	23.58	23.90	23.78
			Middle	23.38	23.70	23.57
			High	23.32	23.64	23.51
		38	Low	22.36	22.66	22.55
			Middle	22.27	22.57	22.45
			High	22.24	22.54	22.42
		75	/	22.30	22.60	22.48
20	QPSK	1	Low	24.24	24.57	24.44
			Middle	24.09	24.42	24.29
			High	24.03	24.36	24.23
		50	Low	23.30	23.62	23.49
			Middle	23.19	23.50	23.38
			High	23.15	23.46	23.34
		100	/	23.25	23.57	23.44
	16QAM	1	Low	23.55	23.87	23.75
			Middle	23.37	23.69	23.56
			High	23.25	23.57	23.44
		50	Low	22.22	22.52	22.40
			Middle	22.13	22.43	22.31
			High	22.11	22.41	22.29
		100	/	22.16	22.46	22.34

LTE-FDD Band 4				Actual output Power (dBm)		
Band-width	Modulation	RB allocation	RB offset	Low	Middle	High
1.4	QPSK	1	Low	24.53	24.61	24.46
			Middle	24.60	24.68	24.53
			High	24.55	24.63	24.48
		3	Low	23.49	23.57	23.43
			Middle	23.47	23.55	23.41
			High	23.49	23.57	23.43
		6	/	23.69	23.77	23.62
	16QAM	1	Low	23.55	23.63	23.49
			Middle	23.66	23.74	23.59
			High	23.56	23.64	23.50
		3	Low	23.42	23.50	23.36
			Middle	23.38	23.46	23.32
			High	23.43	23.51	23.37
		6	/	22.63	22.70	22.56
3	QPSK	1	Low	24.63	24.71	24.56
			Middle	24.64	24.72	24.57
			High	24.62	24.70	24.55
		8	Low	23.70	23.78	23.63
			Middle	23.70	23.78	23.63
			High	23.70	23.78	23.63
		15	/	23.56	23.64	23.50
	16QAM	1	Low	23.68	23.76	23.61
			Middle	23.74	23.82	23.67
			High	23.71	23.79	23.64
		8	Low	22.58	22.65	22.51
			Middle	22.58	22.65	22.51
			High	22.59	22.66	22.52
		15	/	22.51	22.58	22.44

5	QPSK	1	Low	24.70	24.78	24.63
			Middle	24.70	24.78	24.63
			High	24.63	24.71	24.56
		12	Low	23.61	23.69	23.55
			Middle	23.63	23.71	23.57
			High	23.60	23.68	23.54
		25	/	23.57	23.65	23.51
	16QAM	1	Low	23.66	23.74	23.59
			Middle	23.72	23.80	23.65
			High	23.70	23.78	23.63
		12	Low	22.62	22.69	22.55
			Middle	22.64	22.71	22.57
			High	22.65	22.72	22.58
		25	/	22.52	22.59	22.45
10	QPSK	1	Low	24.46	24.54	24.39
			Middle	24.64	24.72	24.57
			High	24.67	24.75	24.60
		25	Low	23.58	23.66	23.52
			Middle	23.60	23.68	23.54
			High	23.62	23.70	23.56
		50	/	23.57	23.65	23.51
	16QAM	1	Low	23.74	23.82	23.67
			Middle	23.77	23.85	23.70
			High	23.84	23.92	23.77
		25	Low	22.51	22.58	22.44
			Middle	22.55	22.62	22.48
			High	22.57	22.64	22.50
		50	/	22.56	22.63	22.49

15	QPSK	1	Low	24.44	24.52	24.37
			Middle	24.84	24.92	24.77
			High	24.83	24.91	24.76
		38	Low	23.91	23.99	23.84
			Middle	23.89	23.97	23.82
			High	23.91	23.99	23.84
		75	/	23.88	23.96	23.81
	16QAM	1	Low	23.80	23.88	23.73
			Middle	23.84	23.92	23.77
			High	23.92	24.00	23.85
		38	Low	22.78	22.85	22.71
			Middle	22.78	22.85	22.71
			High	22.84	22.91	22.77
		75	/	22.76	22.83	22.69
20	QPSK	1	Low	24.65	24.73	24.58
			Middle	24.88	24.96	24.81
			High	24.78	24.86	24.71
		50	Low	23.64	23.72	23.58
			Middle	23.66	23.74	23.59
			High	23.75	23.83	23.68
		100	/	23.72	23.80	23.65
	16QAM	1	Low	23.72	23.80	23.65
			Middle	23.90	23.98	23.83
			High	24.10	24.18	24.03
		50	Low	22.60	22.67	22.53
			Middle	22.65	22.72	22.58
			High	22.76	22.83	22.69
		100	/	22.65	22.72	22.58

LTE-FDD Band 5				Actual output Power (dBm)		
Band-width	Modulation	RB allocation	RB offset	Low	Middle	High
1.4	QPSK	1	Low	23.13	23.25	23.16
			Middle	23.16	23.28	23.19
			High	23.10	23.22	23.13
		3	Low	22.24	22.36	22.28
			Middle	22.36	22.48	22.40
			High	22.27	22.39	22.31
		6	/	22.20	22.32	22.24
	16QAM	1	Low	22.16	22.28	22.20
			Middle	22.26	22.38	22.30
			High	22.18	22.30	22.22
		3	Low	22.06	22.18	22.10
			Middle	22.06	22.18	22.10
			High	22.04	22.16	22.08
		6	/	21.09	21.20	21.12
3	QPSK	1	Low	23.04	23.16	23.07
			Middle	23.07	23.19	23.10
			High	23.03	23.15	23.06
		8	Low	22.13	22.25	22.17
			Middle	22.14	22.26	22.18
			High	22.14	22.26	22.18
		15	/	22.06	22.18	22.10
	16QAM	1	Low	22.23	22.35	22.27
			Middle	22.31	22.43	22.35
			High	22.30	22.42	22.34
		8	Low	21.06	21.17	21.09
			Middle	21.06	21.17	21.09
			High	21.07	21.18	21.10
		15	/	21.00	21.11	21.03

5	QPSK	1	Low	23.11	23.23	23.14
			Middle	23.13	23.25	23.16
			High	23.08	23.20	23.11
		12	Low	22.10	22.22	22.14
			Middle	22.10	22.22	22.14
			High	22.11	22.23	22.15
		25	/	22.06	22.18	22.10
	16QAM	1	Low	22.23	22.35	22.27
			Middle	22.31	22.43	22.35
			High	22.28	22.40	22.32
		12	Low	21.11	21.22	21.14
			Middle	21.12	21.23	21.15
			High	21.14	21.25	21.17
		25	/	21.00	21.11	21.03
10	QPSK	1	Low	23.03	23.15	23.06
			Middle	23.03	23.15	23.06
			High	23.13	23.25	23.16
		25	Low	22.01	22.13	22.05
			Middle	22.01	22.13	22.05
			High	22.08	22.20	22.12
		50	/	22.00	22.12	22.04
	16QAM	1	Low	22.30	22.42	22.34
			Middle	22.29	22.41	22.33
			High	22.51	22.63	22.54
		25	Low	20.96	21.07	20.99
			Middle	20.99	21.10	21.02
			High	21.04	21.15	21.07
		50	/	20.98	21.09	21.01

LTE-FDD Band 17				Actual output Power (dBm)		
Band-width	Modulation	RB allocation	RB offset	Low	Middle	High
5	QPSK	1	Low	23.76	23.94	23.84
			Middle	23.77	23.95	23.85
			High	23.57	23.75	23.65
		12	Low	22.67	22.84	22.75
			Middle	22.62	22.79	22.70
			High	22.56	22.73	22.64
		25	/	22.52	22.69	22.60
	16QAM	1	Low	22.94	23.11	23.02
			Middle	22.90	23.07	22.98
			High	22.70	22.87	22.78
		12	Low	21.64	21.80	21.71
			Middle	21.59	21.75	21.66
			High	21.57	21.73	21.64
		25	/	21.55	21.71	21.62
10	QPSK	1	Low	23.75	23.93	23.83
			Middle	23.62	23.80	23.70
			High	23.45	23.62	23.53
		25	Low	22.66	22.83	22.74
			Middle	22.59	22.76	22.67
			High	22.56	22.73	22.64
		50	/	22.53	22.70	22.61
	16QAM	1	Low	23.05	23.22	23.13
			Middle	22.97	23.14	23.05
			High	22.81	22.98	22.89
		25	Low	21.66	21.82	21.73
			Middle	21.58	21.74	21.65
			High	21.53	21.69	21.60
		50	/	21.57	21.73	21.64

WLAN Conducted Power

For 2.4GHz WLAN SAR testing, highest average RF output power channel for the lowest data rate for 802.11b were for SAR evaluation. 802.11g/n were not investigated since the average putput powers over all channels and data rates were not more than 0.25dB higher than the tested channel in the lowest data rate of 802.11b mode.

The maximum output power specified for production units are determined for all applicable 802.11 transmission modes in each standalone and aggregated frequency band. Maximum output power is measured for the highest maximum output power configuration(s) in each frequency band according to the default power measurement procedures

WIFI 2.4G			
Mode	Channel	Frequency (MHz)	Conducted Average Power (dBm)
802.11b	01	2412	14.71
	06	2437	14.15
	11	2462	13.88
802.11g	01	2412	11.72
	06	2437	10.98
	11	2462	11.07
802.11n(HT20)	01	2412	10.93
	06	2437	10.85
	11	2462	11.07
802.11n(HT40)	03	2422	10.28
	06	2437	10.29
	09	2452	10.22

WIFI 5G U-NII-1				
Bandwidth	Mode	Channel	Frequency (MHz)	Conducted Average Power (dBm)
20	802.11ac	36	5180	12.00
		40	5200	13.12
		48	5240	12.91
	802.11n	36	5180	12.95
		40	5200	13.87
		48	5240	13.28
	802.11a	36	5180	13.82
		40	5200	14.26
		48	5240	14.59
40	802.11ac	38	5190	10.90
		46	5230	11.21
	802.11n	38	5190	11.68
		46	5230	12.39

WIFI 5G U-NII-2A				
Bandwidth	Mode	Channel	Frequency (MHz)	Conducted Average Power (dBm)
20	802.11ac	52	5260	13.83
		56	5280	14.30
		64	5320	14.30
	802.11n	52	5260	13.56
		56	5280	13.87
		64	5320	13.98
	802.11a	52	5260	14.36
		56	5280	14.41
		64	5320	14.94
40	802.11ac	54	5270	12.32
		62	5310	12.87
	802.11n	54	5270	13.40
		62	5310	13.69

WIFI 5G U-NII-3				
Bandwidth	Mode	Channel	Frequency (MHz)	Conducted Average Power (dBm)
20	802.11ac	149	5745	11.92
		157	5785	11.39
		165	5825	11.84
	802.11n	149	5745	11.69
		157	5785	11.28
		165	5825	10.88
	802.11a	149	5745	12.58
		157	5785	11.58
		165	5825	11.98
40	802.11ac	151	5755	10.70
		159	5795	9.79
	802.11n	151	5755	11.38
		159	5795	10.64

Bluetooth Conducted Power

Bluetooth			
Mode	Channel	Frequency (MHz)	Conducted power (dBm)
GFSK	0	2402	4.29
	39	2441	4.58
	78	2480	4.79
π/4QPSK	0	2402	3.50
	39	2441	4.12
	78	2480	3.87
8DPSK	0	2402	3.67
	39	2441	3.84
	78	2480	4.06
BLE	0	2402	-3.21
	19	2440	-5.04
	39	2480	-3.50

12. Maximum Tune-up Limit

GSM		
Mode	Maximum Tune-up (dBm)	
	GSM850	PCS1900
GSM (GMSK, 1Tx Slot)	34.00	31.60
GPRS (GMSK, 1Tx Slot)	34.00	31.60
GPRS (GMSK, 2Tx Slot)	33.60	31.00
GPRS (GMSK, 3Tx Slot)	32.10	29.50
GPRS (GMSK, 4Tx Slot)	30.50	27.50
EGPRS (8PSK, 1Tx Slot)	27.50	27.50
EGPRS (8PSK, 2Tx Slot)	26.00	26.00
EGPRS (8PSK, 3Tx Slot)	24.00	25.00
EGPRS (8PSK, 4Tx Slot)	23.50	24.50

WCDMA		
Mode	Maximum Tune-up (dBm)	
	WCDMA Band II	WCDMA Band V
AMR 12.2Kbps	24.00	24.00
RMC 12.2Kbps	24.00	24.00
HSDPA Subtest-1	22.80	23.00
HSDPA Subtest-2	22.30	22.50
HSDPA Subtest-3	22.00	22.50
HSDPA Subtest-4	22.00	22.50
HSUPA Subtest-1	20.00	20.00
HSUPA Subtest-2	21.00	21.00
HSUPA Subtest-3	21.00	21.00
HSUPA Subtest-4	20.00	20.00
HSUPA Subtest-5	21.00	21.00

LTE				
Fequency Band	Band-width(MHz)	Modulation	RB allocation	Maximum Tune-up (dBm)
LTE Band 2	1.4	QPSK	1	25.00
			3	24.00
			6	24.00
		16QAM	1	24.20
			3	24.00
			6	23.00
	3	QPSK	1	25.00
			8	24.00
			15	24.00
		16QAM	1	24.00
			8	23.00
			15	23.00
	5	QPSK	1	25.00
			12	24.00
			25	24.00
		16QAM	1	24.00
			12	23.00
			25	23.00
	10	QPSK	1	25.00
			25	24.00
			50	24.00
		16QAM	1	24.00
			25	23.00
			50	23.00
	15	QPSK	1	25.00
			38	24.00
			75	24.00
		16QAM	1	24.00
			38	23.00
			75	23.00
	20	QPSK	1	25.00
			50	24.00
			100	24.00
		16QAM	1	24.00
			50	23.00
			100	23.00

LTE				
Fequency Band	Band-width(MHz)	Modulation	RB allocation	Maximum Tune-up (dBm)
LTE Band 4	1.4	QPSK	1	25.00
			3	24.00
			6	24.00
		16QAM	1	24.00
			3	24.00
			6	23.00
	3	QPSK	1	25.00
			8	24.00
			15	24.00
		16QAM	1	24.00
			8	23.00
			15	23.00
	5	QPSK	1	25.00
			12	24.00
			25	24.00
		16QAM	1	24.00
			12	23.00
			25	23.00
	10	QPSK	1	25.00
			25	24.00
			50	24.00
		16QAM	1	24.00
			25	23.00
			50	23.00
	15	QPSK	1	25.00
			38	24.00
			75	24.00
		16QAM	1	24.00
			38	23.00
			75	23.00
	20	QPSK	1	25.00
			50	24.00
			100	24.00
		16QAM	1	24.00
			50	23.00
			100	23.00

LTE				
Fequency Band	Band-width(MHz)	Modulation	RB allocation	Maximum Tune-up (dBm)
LTE Band 5	1.4	QPSK	1	23.50
			3	22.50
			6	22.50
		16QAM	1	22.50
			3	22.50
			6	21.50
	3	QPSK	1	23.50
			8	22.50
			15	22.50
		16QAM	1	22.50
			8	21.50
			15	21.50
	5	QPSK	1	23.50
			12	22.50
			25	22.50
		16QAM	1	22.50
			12	21.50
			25	21.50
	10	QPSK	1	23.50
			25	22.50
			50	22.50
		16QAM	1	23.00
			25	21.50
			50	21.50

LTE				
Fequency Band	Band-width(MHz)	Modulation	RB allocation	Maximum Tune-up (dBm)
LTE Band 17	5	QPSK	1	24.00
			12	23.00
			25	23.00
		16QAM	1	23.50
			12	22.00
			25	22.00
	10	QPSK	1	24.00
			25	23.00
			50	23.00
		16QAM	1	23.50
			25	22.00
			50	22.00

LTE MPR will followup 3GPP setting as below:

Modulation	Channel bandwidth / Transmission bandwidth (NRB)						MPR (dB)
	1.4MHz	3.0MHz	5MHz	10MHz	15MHz	20MHz	
QPSK	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	0
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	1
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	1
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	2

WLAN 2.4G	
Mode	Maximum Tune-up (dBm) Burst Average Power
802.11b	15.00
802.11g	12.00
802.11n(HT20)	11.50
802.11n(HT40)	10.50

WLAN 5G U-NII-1	
Mode	Maximum Tune-up (dBm) Burst Average Power
802.11ac(HT20)	13.50
802.11n(HT20)	14.00
802.11a	14.60
802.11ac(HT20)	11.50
802.11n(HT20)	12.50

WLAN 5G U-NII-2A	
Mode	Maximum Tune-up (dBm) Burst Average Power
802.11ac(HT20)	14.50
802.11n(HT20)	14.00
802.11a	15.00
802.11ac(HT20)	13.00
802.11n(HT20)	14.00

WLAN 5G U-NII-3	
Mode	Maximum Tune-up (dBm) Burst Average Power
802.11ac(HT20)	12.00
802.11n(HT20)	12.00
802.11a	13.00
802.11ac(HT20)	11.00
802.11n(HT20)	11.50

Note:
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.

Bluetooth	
Mode	Maximum Tune-up (dBm)
GFSK	5.00
π/4QPSK	4.50
8DPSK	4.50
BLE	-3.20

Per KDB 447498 D01, the 1-g and 10-g SAR test exclusion thresholds for 100MHz to 6GHz at test separation distances ≦50mm are determined by:

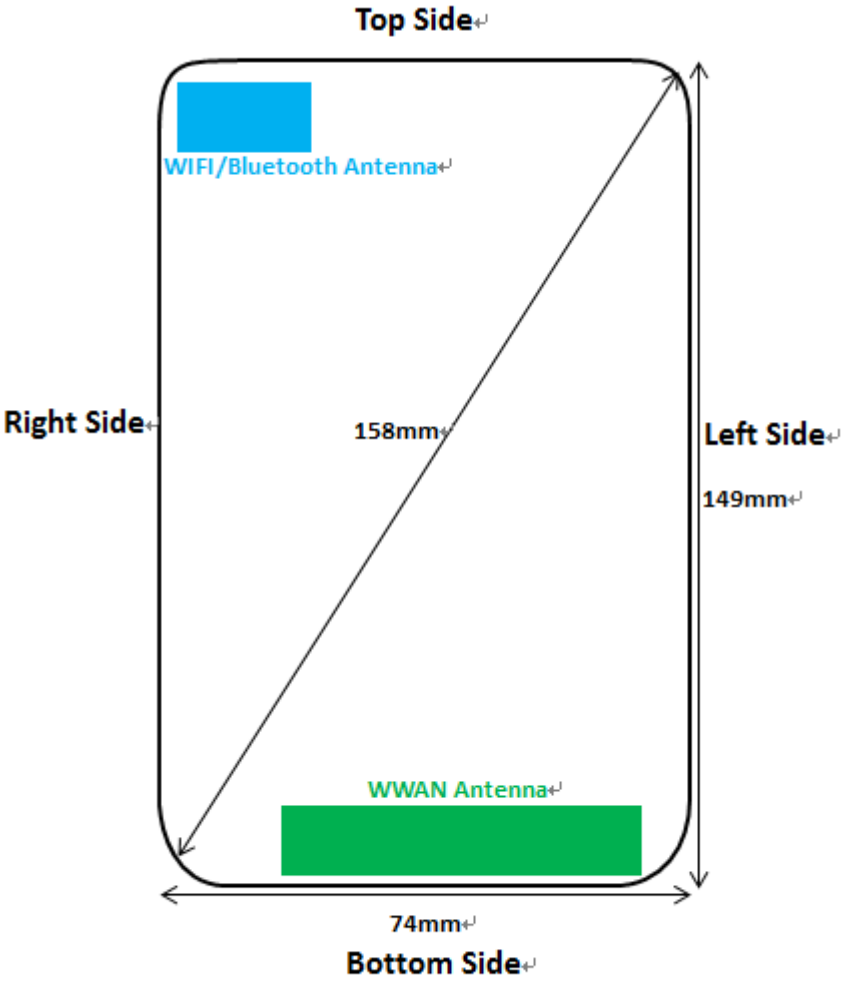
[(max. Power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)] * [√f(GHz)] ≦3.0 for 1-g SAR

Band/Mode	F(GHz)	Position	SAR test exclusion threshold (mW)	RF output power		SAR test exclusion
				dBm	mW	
Bluetooth	2.45	Head	10	5.00	3.16	Yes
		Body	19	5.00	3.16	Yes

Per KDB 447498 D01, when the minimum test separation distance is <5mm, a distance of 5mm is applied to determine SAR test exclusion.

The test exclusion thereshold is ≦3, SAR testing is not required.

13. Antenna Location



Back View

Distance of the Antenna to the EUT surface/edge(mm)						
Antenna	Rear	Front	Top side	Bottom side	Right side	Left side
WWAN	5	5	128	2	27	3
WIFI/BT	5	5	5	126	3	57

Positions for SAR tests; Hotspot mode						
Antenna	Back	Front	Top side	Bottom side	Right side	Left side
WWAN	Yes	Yes	No	Yes	No	Yes
WIFI/BT	Yes	Yes	Yes	No	Yes	No

General note:
Referring to KDB941225 D06, when the overall device length and width are >9cm*5cm, the test distance is 10mm. SAR must be measured for all sides and surfaces with a transmitting antenna located within 25mm from that surface or edge.

14. SAR Measurement Results

Head SAR

GSM850										
Mode	Test Position	Frequency		Conducted Power (dBm)	Tune up limit (dBm)	Tune up scaling factor	Power Drift(dB)	Measured SAR(1g) (W/kg)	Report SAR(1g) (W/kg)	Test Plot
		CH	MHz							
GPRS (3Tx slot)	Left-Cheek	128	824.2	32.09	32.10	1.00	-	-	-	-
		190	836.6	31.97	32.10	1.03	-0.04	0.126	0.130	H1
		251	848.8	31.73	32.10	1.09	-	-	-	-
	Left-Tilt	128	824.2	32.09	32.10	1.00	-	-	-	-
		190	836.6	31.97	32.10	1.03	0.04	0.096	0.099	-
		251	848.8	31.73	32.10	1.09	-	-	-	-
	Right-Cheek	128	824.2	32.09	32.10	1.00	-	-	-	-
		190	836.6	31.97	32.10	1.03	0.02	0.117	0.120	-
		251	848.8	31.73	32.10	1.09	-	-	-	-
	Right-Tilt	128	824.2	32.09	32.10	1.00	-	-	-	-
		190	836.6	31.97	32.10	1.03	-0.02	0.088	0.091	-
		251	848.8	31.73	32.10	1.09	-	-	-	-

PCS1900										
Mode	Test Position	Frequency		Conducted Power (dBm)	Tune up limit (dBm)	Tune up scaling factor	Power Drift(dB)	Measured SAR(1g) (W/kg)	Report SAR(1g) (W/kg)	Test Plot
		CH	MHz							
GPRS (3Tx slot)	Left-Cheek	512	1850.2	29.04	29.50	1.11	-	-	-	-
		661	1880.0	29.33	29.50	1.04	-0.11	0.212	0.220	H2
		810	1909.8	29.38	29.50	1.03	-	-	-	-
	Left-Tilt	512	1850.2	29.04	29.50	1.11	-	-	-	-
		661	1880.0	29.33	29.50	1.04	-0.08	0.171	0.177	-
		810	1909.8	29.38	29.50	1.03	-	-	-	-
	Right-Cheek	512	1850.2	29.04	29.50	1.11	-	-	-	-
		661	1880.0	29.33	29.50	1.04	0.06	0.204	0.212	-
		810	1909.8	29.38	29.50	1.03	-	-	-	-
	Right-Tilt	512	1850.2	29.04	29.50	1.11	-	-	-	-
		661	1880.0	29.33	29.50	1.04	0.07	0.160	0.167	-
		810	1909.8	29.38	29.50	1.03	-	-	-	-

Note:
Per KDB865664 D01v01r04, Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg

WCDMA Band II										
Mode	Test Position	Frequency		Conducted Power (dBm)	Tune up limit (dBm)	Tune up scaling factor	Power Drift(dB)	Measured SAR(1g) (W/kg)	Report SAR(1g) (W/kg)	Test Plot
		CH	MHz							
RMC 12.2K bps	Left-Cheek	9262	1852.4	23.60	24.00	1.10	-	-	-	-
		9400	1880.0	23.89	24.00	1.02	-0.14	0.169	0.173	H3
		9538	1907.6	23.67	24.00	1.08	-	-	-	-
	Left-Tilt	9262	1852.4	23.60	24.00	1.10	-	-	-	-
		9400	1880.0	23.89	24.00	1.02	-0.12	0.139	0.142	-
		9538	1907.6	23.67	24.00	1.08	-	-	-	-
	Right-Cheek	9262	1852.4	23.60	24.00	1.10	-	-	-	-
		9400	1880.0	23.89	24.00	1.02	-0.19	0.161	0.165	-
		9538	1907.6	23.67	24.00	1.08	-	-	-	-
	Right-Tilt	9262	1852.4	23.60	24.00	1.10	-	-	-	-
		9400	1880.0	23.89	24.00	1.02	0.06	0.129	0.132	-
		9538	1907.6	23.67	24.00	1.08	-	-	-	-

WCDMA Band V										
Mode	Test Position	Frequency		Conducted Power (dBm)	Tune up limit (dBm)	Tune up scaling factor	Power Drift(dB)	Measured SAR(1g) (W/kg)	Report SAR(1g) (W/kg)	Test Plot
		CH	MHz							
RMC 12.2K bps	Left-Cheek	4132	826.4	23.38	24.00	1.15	-	-	-	-
		4183	836.6	23.93	24.00	1.02	0.11	0.063	0.064	H4
		4233	846.6	23.78	24.00	1.05	-	-	-	-
	Left-Tilt	4132	826.4	23.38	24.00	1.15	-	-	-	-
		4183	836.6	23.93	24.00	1.02	0.06	0.051	0.051	-
		4233	846.6	23.78	24.00	1.05	-	-	-	-
	Right-Cheek	4132	826.4	23.38	24.00	1.15	-	-	-	-
		4183	836.6	23.93	24.00	1.02	-0.15	0.061	0.062	-
		4233	846.6	23.78	24.00	1.05	-	-	-	-
	Right-Tilt	4132	826.4	23.38	24.00	1.15	-	-	-	-
		4183	836.6	23.93	24.00	1.02	-0.06	0.048	0.049	-
		4233	846.6	23.78	24.00	1.05	-	-	-	-

Note:
Per KDB865664 D01v01r04, Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg

LTE Band 2										
Mode	Test Position	Frequency		Conducted Power (dBm)	Tune up limit (dBm)	Tune up scaling factor	Power Drift(dB)	Measured SAR(1g) (W/kg)	Report SAR(1g) (W/kg)	Test Plot
		CH	MHz							
20M_1RB	Left-Cheek	18700	1860.0	24.24	25.00	1.19	-	-	-	-
		18900	1880.0	24.57	25.00	1.10	0.08	0.042	0.046	H5
		19100	1900.0	24.44	25.00	1.14	-	-	-	-
	Left-Tilt	18700	1860.0	24.24	25.00	1.19	-	-	-	-
		18900	1880.0	24.57	25.00	1.10	-0.06	0.034	0.038	-
		19100	1900.0	24.44	25.00	1.14	-	-	-	-
	Right-Cheek	18700	1860.0	24.24	25.00	1.19	-	-	-	-
		18900	1880.0	24.57	25.00	1.10	-0.04	0.041	0.045	-
		19100	1900.0	24.44	25.00	1.14	-	-	-	-
	Right-Tilt	18700	1860.0	24.24	25.00	1.19	-	-	-	-
		18900	1880.0	24.57	25.00	1.10	0.05	0.033	0.036	-
		19100	1900.0	24.44	25.00	1.14	-	-	-	-
20M_50RB	Left-Cheek	18700	1860.0	23.30	24.00	1.17	-	-	-	-
		18900	1880.0	23.62	24.00	1.09	0.11	0.030	0.033	-
		19100	1900.0	23.49	24.00	1.12	-	-	-	-
	Left-Tilt	18700	1860.0	23.30	24.00	1.17	-	-	-	-
		18900	1880.0	23.62	24.00	1.09	-0.06	0.026	0.029	-
		19100	1900.0	23.49	24.00	1.12	-	-	-	-
	Right-Cheek	18700	1860.0	23.30	24.00	1.17	-	-	-	-
		18900	1880.0	23.62	24.00	1.09	-0.05	0.028	0.030	-
		19100	1900.0	23.49	24.00	1.12	-	-	-	-
	Right-Tilt	18700	1860.0	23.30	24.00	1.17	-	-	-	-
		18900	1880.0	23.62	24.00	1.09	0.04	0.024	0.026	-
		19100	1900.0	23.49	24.00	1.12	-	-	-	-

Note:

1. Per KDB865664 D01v01r04, Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg
2. Per KDB 941225 D05v02r03, for QPSK with 100% RB allocation, SAR is not required when the highest maximumoutput power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations andthe highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highestoutput power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also betested.

LTE Band 4										
Mode	Test Position	Frequency		Conducted Power (dBm)	Tune up limit (dBm)	Tune up scaling factor	Power Drift(dB)	Measured SAR(1g) (W/kg)	Report SAR(1g) (W/kg)	Test Plot
		CH	MHz							
20M_1RB	Left-Cheek	20050	1720.0	24.88	25.00	1.03	-	-	-	-
		20175	1732.5	24.96	25.00	1.01	-0.03	0.239	0.241	H6
		20300	1745.0	24.81	25.00	1.05	-	-	-	-
	Left-Tilt	20050	1720.0	24.88	25.00	1.03	-	-	-	-
		20175	1732.5	24.96	25.00	1.01	0.00	0.179	0.180	-
		20300	1745.0	24.81	25.00	1.05	-	-	-	-
	Right-Cheek	20050	1720.0	24.88	25.00	1.03	-	-	-	-
		20175	1732.5	24.96	25.00	1.01	0.01	0.232	0.234	-
		20300	1745.0	24.81	25.00	1.05	-	-	-	-
	Right-Tilt	20050	1720.0	24.88	25.00	1.03	-	-	-	-
		20175	1732.5	24.96	25.00	1.01	-0.01	0.180	0.182	-
		20300	1745.0	24.81	25.00	1.05	-	-	-	-
20M_50RB	Left-Cheek	20050	1720.0	23.75	24.00	1.06	-	-	-	-
		20175	1732.5	23.83	24.00	1.04	0.09	0.177	0.184	-
		20300	1745.0	23.68	24.00	1.08	-	-	-	-
	Left-Tilt	20050	1720.0	23.75	24.00	1.06	-	-	-	-
		20175	1732.5	23.83	24.00	1.04	-0.07	0.140	0.145	-
		20300	1745.0	23.68	24.00	1.08	-	-	-	-
	Right-Cheek	20050	1720.0	23.75	24.00	1.06	-	-	-	-
		20175	1732.5	23.83	24.00	1.04	-0.04	0.161	0.167	-
		20300	1745.0	23.68	24.00	1.08	-	-	-	-
	Right-Tilt	20050	1720.0	23.75	24.00	1.06	-	-	-	-
		20175	1732.5	23.83	24.00	1.04	0.05	0.114	0.119	-
		20300	1745.0	23.68	24.00	1.08	-	-	-	-

Note:

1. Per KDB865664 D01v01r04, Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg
2. Per KDB 941225 D05v02r03, for QPSK with 100% RB allocation, SAR is not required when the highest maximumoutput power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations andthe highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highestoutput power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also betested.

LTE Band 5										
Mode	Test Position	Frequency		Conducted Power (dBm)	Tune up limit (dBm)	Tune up scaling factor	Power Drift(dB)	Measured SAR(1g) (W/kg)	Report SAR(1g) (W/kg)	Test Plot
		CH	MHz							
10M_1 RB	Left-Cheek	20450	829.0	23.13	23.50	1.09	-	-	-	-
		20525	836.5	23.25	23.50	1.06	-0.08	0.027	0.029	H7
		20600	844.0	23.16	23.50	1.08	-	-	-	-
	Left-Tilt	20450	829.0	23.13	23.50	1.09	-	-	-	-
		20525	836.5	23.25	23.50	1.06	-0.04	0.023	0.024	-
		20600	844.0	23.16	23.50	1.08	-	-	-	-
	Right-Cheek	20450	829.0	23.13	23.50	1.09	-	-	-	-
		20525	836.5	23.25	23.50	1.06	0.06	0.026	0.028	-
		20600	844.0	23.16	23.50	1.08	-	-	-	-
	Right-Tilt	20450	829.0	23.13	23.50	1.09	-	-	-	-
		20525	836.5	23.25	23.50	1.06	-0.03	0.021	0.022	-
		20600	844.0	23.16	23.50	1.08	-	-	-	-
10M_2 5RB	Left-Cheek	20450	829.0	22.08	22.50	1.10	-	-	-	-
		20525	836.5	22.20	22.50	1.07	0.12	0.015	0.016	-
		20600	844.0	22.12	22.50	1.09	-	-	-	-
	Left-Tilt	20450	829.0	22.08	22.50	1.10	-	-	-	-
		20525	836.5	22.20	22.50	1.07	-0.07	0.012	0.012	-
		20600	844.0	22.12	22.50	1.09	-	-	-	-
	Right-Cheek	20450	829.0	22.08	22.50	1.10	-	-	-	-
		20525	836.5	22.20	22.50	1.07	0.06	0.015	0.016	-
		20600	844.0	22.12	22.50	1.09	-	-	-	-
	Right-Tilt	20450	829.0	22.08	22.50	1.10	-	-	-	-
		20525	836.5	22.20	22.50	1.07	0.07	0.012	0.013	-
		20600	844.0	22.12	22.50	1.09	-	-	-	-

Note:

1. Per KDB865664 D01v01r04, Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg
2. Per KDB 941225 D05v02r03, for QPSK with 100% RB allocation, SAR is not required when the highest maximumoutput power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations andthe highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highestoutput power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also betested.

LTE Band 17										
Mode	Test Position	Frequency		Conducted Power (dBm)	Tune up limit (dBm)	Tune up scaling factor	Power Drift(dB)	Measured SAR(1g) (W/kg)	Report SAR(1g) (W/kg)	Test Plot
		CH	MHz							
10M_1RB	Left-Cheek	23780	709	23.75	24.00	-	-	-	-	-
		23790	710	23.93	24.00	1.02	-0.13	0.094	0.096	H8
		23800	711	23.83	24.00	-	-	-	-	-
	Left-Tilt	23780	709	23.75	24.00	-	-	-	-	-
		23790	710	23.93	24.00	1.02	-0.07	0.079	0.080	-
		23800	711	23.83	24.00	-	-	-	-	-
	Right-Cheek	23780	709	23.75	24.00	-	-	-	-	-
		23790	710	23.93	24.00	1.02	0.10	0.091	0.092	-
		23800	711	23.83	24.00	-	-	-	-	-
	Right-Tilt	23780	709	23.75	24.00	-	-	-	-	-
		23790	710	23.93	24.00	1.02	-0.05	0.072	0.073	-
		23800	711	23.83	24.00	-	-	-	-	-
10M_25RB	Left-Cheek	23780	709	22.66	23.00	-	-	-	-	-
		23790	710	22.83	23.00	1.04	0.07	0.071	0.074	-
		23800	711	22.74	23.00	-	-	-	-	-
	Left-Tilt	23780	709	22.66	23.00	-	-	-	-	-
		23790	710	22.83	23.00	1.04	-0.04	0.055	0.057	-
		23800	711	22.74	23.00	-	-	-	-	-
	Right-Cheek	23780	709	22.66	23.00	-	-	-	-	-
		23790	710	22.83	23.00	1.04	0.03	0.071	0.073	-
		23800	711	22.74	23.00	-	-	-	-	-
	Right-Tilt	23780	709	22.66	23.00	-	-	-	-	-
		23790	710	22.83	23.00	1.04	0.04	0.058	0.060	-
		23800	711	22.74	23.00	-	-	-	-	-

Note:

1. Per KDB865664 D01v01r04, Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg
2. Per KDB 941225 D05v02r03, for QPSK with 100% RB allocation, SAR is not required when the highest maximumoutput power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations andthe highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highestoutput power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also betested.

WIFI 2.4G										
Mode	Test Position	Frequency		Conducted Power (dBm)	Tune up limit (dBm)	Tune up scaling factor	Power Drift(dB)	Measured SAR(1g) (W/kg)	Report SAR(1g) (W/kg)	Test Plot
		CH	MHz							
802.11b 1Mbps	Left-Cheek	01	2412	14.71	15.00	1.07	0.12	0.388	0.414	H9
		06	2437	14.15	15.00	1.22	-	-	-	-
		11	2462	13.88	15.00	1.29	-	-	-	-
	Left-Tilt	01	2412	14.71	15.00	1.07	-0.16	0.329	0.351	-
		06	2437	14.15	15.00	1.22	-	-	-	-
		11	2462	13.88	15.00	1.29	-	-	-	-
	Right-Cheek	01	2412	14.71	15.00	1.07	-0.07	0.373	0.398	-
		06	2437	14.15	15.00	1.22	-	-	-	-
		11	2462	13.88	15.00	1.29	-	-	-	-
	Right-Tilt	01	2412	14.71	15.00	1.07	0.09	0.313	0.334	-
		06	2437	14.15	15.00	1.22	-	-	-	-
		11	2462	13.88	15.00	1.29	-	-	-	-

Note:

1. According to the above table, the initial test position for head is “LeftCheek”, and its reported SAR is≤ 0.4W/kg. Thus further SAR measurement is not required for the other (remaining) test positions. Because the reported SAR of the highest measured maximum output power channel for the exposureconfiguration is ≤ 0.8W/kg, no further SAR testing is required for 802.11b DSSS in that exposureconfiguration.
2. When SAR measurement is required for 2.4 GHz 802.11g/n OFDM configurations, the measurement and test reduction procedures for OFDM are applied. SAR is not required for the following 2.4 GHz OFDM conditions.
   a) When KDB Publication 447498 D01 SAR test exclusion applies to the OFDM configuration.
   b) When the highest *reported* SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg,the 802.11g/n is not required.

WIFI 2.4G- Scaled Reported SAR							
Mode	Test Position	Frequency		Actual duty factor	maximum duty factor	Reported SAR (1g)(W/kg)	Scaled reported SAR (1g)(W/kg)
		CH	MHz				
802.11b 1Mbps	Left-Cheek	01	2412	98.75%	100%	0.414	0.420
	Left-Tilt	01	2412	98.75%	100%	0.351	0.356
	Right-Cheek	01	2412	98.75%	100%	0.398	0.403
	Right-Tilt	01	2412	98.75%	100%	0.334	0.339

Note:

1. According to the KDB 248227 D01, The reported SAR must be scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit. A maximum transmission duty factor of 98.75% is achievable for WLAN in this project.

WLAN 5G										
Mode	Test Position	Frequency		Conducted Power (dBm)	Tune up limit (dBm)	Tune up scaling factor	Power Drift(dB)	Measured SAR(1g) (W/kg)	Report SAR(1g) (W/kg)	Test Plot
		CH	MHz							
U-NII-2A 802.11a	Left-Cheek	64	5320	14.94	15.00	1.01	-0.15	0.191	0.193	H10
	Left-Tilt	64	5320	14.94	15.00	1.01	0.20	0.162	0.164	-
	Right-Cheek	64	5320	14.94	15.00	1.01	0.08	0.184	0.186	-
	Right-Tilt	64	5320	14.94	15.00	1.01	-0.11	0.154	0.156	-
U-NII-3 8.2.11a	Left-Cheek	149	5745	12.58	13.00	1.10	0.12	0.124	0.137	-
	Left-Tilt	149	5745	12.58	13.00	1.10	-0.16	0.105	0.116	-
	Right-Cheek	149	5745	12.58	13.00	1.10	-0.07	0.119	0.131	-
	Right-Tilt	149	5745	12.58	13.00	1.10	0.09	0.100	0.110	-

Note:
When SAR measurement is required for 802.11 a/g/n/ac OFDM configurations, each standalone and aggregated frequency band is considered separately for SAR test reduction. When the same transmitter and antenna(s) are used for U-NII-1 and U-NII-2A bands, additional SAR test reduction applies.

a) 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 ≤ 1.2 W/kg, SAR is not required for U-NII-1 band for that configuration (802.11 mode and exposure condition); otherwise, each band is tested independently for SAR.

b) b) 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 ≤ 1.2 W/kg, SAR is not required for the band with lower maximum output power in that test configuration; otherwise, each band is tested independently for SAR.

WLAN 5G- Scaled Reported SAR							
Mode	Test Position	Frequency		Actual duty factor	maximum duty factor	Reported SAR (1g)(W/kg)	Scaled reported SAR (1g)(W/kg)
		CH	MHz				
U-NII-2A 802.11a	Left-Cheek	64	5320	98.59%	100%	0.193	0.196
	Left-Tilt	64	5320	98.59%	100%	0.164	0.166
	Right-Cheek	64	5320	98.59%	100%	0.186	0.189
	Right-Tilt	64	5320	98.59%	100%	0.156	0.158

Note:
According to the KDB 248227 D01, The reported SAR must be scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit. A maximum transmission duty factor of 98.59% is achievable for WLAN in this project.

Body SAR

GSM850										
Mode	Test Position	Frequency		Conducted Power (dBm)	Tune up limit (dBm)	Tune up scaling factor	Power Drift(dB)	Measured SAR(1g) (W/kg)	Report SAR(1g) (W/kg)	Test Plot
		CH	MHz							
GPRS (3Tx slot)	Front	128	824.2	32.09	32.10	1.00	-	-	-	-
		190	836.6	31.97	32.10	1.03	0.02	0.125	0.129	-
		251	848.8	31.73	32.10	1.09	-	-	-	-
	Back	128	824.2	32.09	32.10	1.00	-	-	-	-
		190	836.6	31.97	32.10	1.03	-0.05	0.190	0.196	B1
		251	848.8	31.73	32.10	1.09	-	-	-	-

PCS1900										
Mode	Test Position	Frequency		Conducted Power (dBm)	Tune up limit (dBm)	Tune up scaling factor	Power Drift(dB)	Measured SAR(1g) (W/kg)	Report SAR(1g) (W/kg)	Test Plot
		CH	MHz							
GPRS (3Tx slot)	Front	512	1850.2	29.04	29.50	1.11	-	-	-	-
		661	1880.0	29.33	29.50	1.04	0.03	0.449	0.466	-
		810	1909.8	29.38	29.50	1.03	-	-	-	-
	Back	512	1850.2	29.04	29.50	1.11	-	-	-	-
		661	1880.0	29.33	29.50	1.04	-0.04	0.709	0.737	B2
		810	1909.8	29.38	29.50	1.03	-	-	-	-

WCDMA Band II										
Mode	Test Position	Frequency		Conducted Power (dBm)	Tune up limit (dBm)	Tune up scaling factor	Power Drift(dB)	Measured SAR(1g) (W/kg)	Report SAR(1g) (W/kg)	Test Plot
		CH	MHz							
RMC 12.2Kbps	Front	9262	1852.4	23.60	24.00	1.10	-	-	-	-
		9400	1880.0	23.89	24.00	1.02	0.05	0.503	0.516	-
		9538	1907.6	23.67	24.00	1.08	-	-	-	-
	Back	9262	1852.4	23.60	24.00	1.10	-	-	-	-
		9400	1880.0	23.89	24.00	1.02	-0.14	0.707	0.725	B3
		9538	1907.6	23.67	24.00	1.08	-	-	-	-

WCDMA Band V										
Mode	Test Position	Frequency		Conducted Power (dBm)	Tune up limit (dBm)	Tune up scaling factor	Power Drift(dB)	Measured SAR(1g) (W/kg)	Report SAR(1g) (W/kg)	Test Plot
		CH	MHz							
RMC 12.2Kbps	Front	4132	826.4	23.38	24.00	1.15	-	-	-	-
		4183	836.6	23.93	24.00	1.02	-0.01	0.054	0.054	-
		4233	846.6	23.78	24.00	1.05	-	-	-	-
	Back	4132	826.4	23.38	24.00	1.15	-	-	-	-
		4183	836.6	23.93	24.00	1.02	-0.03	0.087	0.088	B4
		4233	846.6	23.78	24.00	1.05	-	-	-	-

Note:
Per KDB865664 D01v01r04, Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg

LTE Band 2										
Mode	Test Position	Frequency		Conducted Power (dBm)	Tune up limit (dBm)	Tune up scaling factor	Power Drift(dB)	Measured SAR(1g) (W/kg)	Report SAR(1g) (W/kg)	Test Plot
		CH	MHz							
20M_1RB	Front	18700	1860.0	24.24	25.00	1.19	-	-	-	-
		18900	1880.0	24.57	25.00	1.10	0.06	0.450	0.497	-
		19100	1900.0	24.44	25.00	1.14	-	-	-	-
	Back	18700	1860.0	24.24	25.00	1.19	-	-	-	-
		18900	1880.0	24.57	25.00	1.10	-0.12	0.749	0.827	B5
		19100	1900.0	24.44	25.00	1.14	-	-	-	-
20M_50RB	Front	18700	1860.0	23.30	24.00	1.10	-	-	-	-
		18900	1880.0	23.62	24.00	1.10	-0.02	0.336	0.367	-
		19100	1900.0	23.49	24.00	1.10	-	-	-	-
	Back	18700	1860.0	23.30	24.00	1.10	-	-	-	-
		18900	1880.0	23.62	24.00	1.17	0.12	0.593	0.648	-
		19100	1900.0	23.49	24.00	1.09	-	-	-	-

LTE Band 4										
Mode	Test Position	Frequency		Conducted Power (dBm)	Tune up limit (dBm)	Tune up scaling factor	Power Drift(dB)	Measured SAR(1g) (W/kg)	Report SAR(1g) (W/kg)	Test Plot
		CH	MHz							
20M_1RB	Front	20050	1720.0	24.88	25.00	1.03	-	-	-	-
		20175	1732.5	24.96	25.00	1.01	-0.03	0.329	0.332	-
		20300	1745.0	24.81	25.00	1.05	-	-	-	-
	Back	20050	1720.0	24.88	25.00	1.03	-	-	-	-
		20175	1732.5	24.96	25.00	1.01	-0.11	0.706	0.713	B6
		20300	1745.0	24.81	25.00	1.05	-	-	-	-
20M_50RB	Front	20050	1720.0	23.75	24.00	1.01	-	-	-	-
		20175	1732.5	23.83	24.00	1.01	-0.01	0.251	0.261	-
		20300	1745.0	23.68	24.00	1.01	-	-	-	-
	Back	20050	1720.0	23.75	24.00	1.01	-	-	-	-
		20175	1732.5	23.83	24.00	1.06	0.09	0.574	0.597	-
		20300	1745.0	23.68	24.00	1.04	-	-	-	-

Note:

1. Per KDB865664 D01v01r04, Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg
2. Per KDB 941225 D05v02r03, for QPSK with 100% RB allocation, SAR is not required when the highest maximumoutput power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations andthe highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highestoutput power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also betested.

LTE Band 5										
Mode	Test Position	Frequency		Conducted Power (dBm)	Tune up limit (dBm)	Tune up scaling factor	Power Drift(dB)	Measured SAR(1g) (W/kg)	Report SAR(1g) (W/kg)	Test Plot
		CH	MHz							
10M_1RB	Front	20450	829.0	23.13	23.50	1.09	-	-	-	-
		20525	836.5	23.25	23.50	1.06	0.03	0.044	0.046	-
		20600	844.0	23.16	23.50	1.08	-	-	-	-
	Back	20450	829.0	23.13	23.50	1.09	-	-	-	-
		20525	836.5	23.25	23.50	1.06	-0.05	0.065	0.069	B7
		20600	844.0	23.16	23.50	1.08	-	-	-	-
10M_25RB	Front	20450	829.0	22.08	22.50	1.06	-	-	-	-
		20525	836.5	22.20	22.50	1.06	-0.06	0.023	0.025	-
		20600	844.0	22.12	22.50	1.06	-	-	-	-
	Back	20450	829.0	22.08	22.50	1.06	-	-	-	-
		20525	836.5	22.20	22.50	1.10	0.10	0.042	0.045	-
		20600	844.0	22.12	22.50	1.07	-	-	-	-

LTE Band 17										
Mode	Test Position	Frequency		Conducted Power (dBm)	Tune up limit (dBm)	Tune up scaling factor	Power Drift(dB)	Measured SAR(1g) (W/kg)	Report SAR(1g) (W/kg)	Test Plot
		CH	MHz							
10M_1RB	Front	23780	709	23.75	24.00	-	-	-	-	-
		23790	710	23.93	24.00	1.02	0.08	0.187	0.190	-
		23800	711	23.83	24.00	-	-	-	-	-
	Back	23780	709	23.75	24.00	-	-	-	-	-
		23790	710	23.93	24.00	1.02	-0.12	0.277	0.282	B8
		23800	711	23.83	24.00	-	-	-	-	-
10M_25RB	Front	23780	709	22.66	23.00	1.02	-	-	-	-
		23790	710	22.83	23.00	1.02	-0.05	0.107	0.111	-
		23800	711	22.74	23.00	1.02	-	-	-	-
	Back	23780	709	22.66	23.00	1.02	-	-	-	-
		23790	710	22.83	23.00	-	0.08	0.195	0.203	-
		23800	711	22.74	23.00	1.04	-	-	-	-

Note:

3. Per KDB865664 D01v01r04, Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg
4. Per KDB 941225 D05v02r03, for QPSK with 100% RB allocation, SAR is not required when the highest maximumoutput power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations andthe highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highestoutput power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also betested.

WIFI 2.4G										
Mode	Test Position	Frequency		Conducted Power (dBm)	Tune up limit (dBm)	Tune up scaling factor	Power Drift(dB)	Measured SAR(1g) (W/kg)	Report SAR(1g) (W/kg)	Test Plot
		CH	MHz							
802.11b 1Mbps	Front	1	2412	14.71	15.00	1.07	0.19	0.061	0.066	-
		6	2437	14.15	15.00	1.22	-	-	-	-
		11	2462	13.88	15.00	1.29	-	-	-	-
	Back	1	2412	14.71	15.00	1.07	-0.13	0.090	0.096	B9
		6	2437	14.15	15.00	1.22	-	-	-	-
		11	2462	13.88	15.00	1.29	-	-	-	-

Note:

1. According to the above table, the initial test position for body is “Back”, and its reported SAR is≤ 0.4W/kg. Thus further SAR measurement is not required for the other (remaining) test positions. Because the reported SAR of the highest measured maximum output power channel for the exposureconfiguration is ≤ 0.8W/kg, no further SAR testing is required for 802.11b DSSS in that exposureconfiguration.
2. When SAR measurement is required for 2.4 GHz 802.11g/n OFDM configurations, the measurement and test reduction procedures for OFDM are applied. SAR is not required for the following 2.4 GHz OFDM conditions.
   a) When KDB Publication 447498 D01 SAR test exclusion applies to the OFDM configuration.
   b) When the highest *reported* SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg. the 802.11g/n is not required

WIFI 2.4G- Scaled Reported SAR							
Mode	Test Position	Frequency		Actual duty factor	maximum duty factor	Reported SAR (1g)(W/kg)	Scaled reported SAR (1g)(W/kg)
		CH	MHz				
802.11b 1Mbps	Front	1	2412	98.75%	100%	0.066	0.066
	Back	1	2412	98.75%	100%	0.096	0.097

Note:

1. According to the KDB248227 D01, The reported SAR must be scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit. A maximum transmission duty factor of 98.75% is achievable for WLAN in this project.

WIFI 5G										
Mode	Test Position	Frequency		Conducted Power (dBm)	Tune up limit (dBm)	Tune up scaling factor	Power Drift(dB)	Measured SAR(1g) (W/kg)	Report SAR(1g) (W/kg)	Test Plot
		CH	MHz							
U-NII-2A 802.11a	Front	52	5260	14.36	15.00	1.16	-	-	-	-
		56	5280	14.41	15.00	1.15	-	-	-	-
		64	5320	14.94	15.00	1.01	0.16	0.099	0.100	-
	Rear	52	5260	14.36	15.00	1.16	-	-	-	-
		56	5280	14.41	15.00	1.15	-	-	-	-
		64	5320	14.94	15.00	1.01	-0.11	0.145	0.147	B10
U-NII-3 8.2.11a	Front	149	5745	12.58	13.00	1.10	-0.12	0.070	0.077	-
		157	5785	11.58	13.00	1.39	-	-	-	-
		165	5825	11.98	13.00	1.26	-	-	-	-
	Rear	149	5745	12.58	13.00	1.10	0.08	0.103	0.113	-
		157	5785	11.58	13.00	1.39	-	-	-	-
		165	5825	11.98	13.00	1.26	-	-	-	-

Note:
When SAR measurement is required for 802.11 a/g/n/ac OFDM configurations, each standalone and aggregated frequency band is considered separately for SAR test reduction. When the same transmitter and antenna(s) are used for U-NII-1 and U-NII-2A bands, additional SAR test reduction applies.

c) 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.19 If the highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band for that configuration (802.11 mode and exposure condition); otherwise, each band is tested independently for SAR.

d) 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 ≤ 1.2 W/kg, SAR is not required for the band with lower maximum output power in that test configuration; otherwise, each band is tested independently for SAR.

WIFI 5G- Scaled Reported SAR							
Mode	Test Position	Frequency		Actual duty factor	maximum duty factor	Reported SAR (1g)(W/kg)	Scaled reported SAR (1g)(W/kg)
		CH	MHz				
U-NII-1 802.11a	Front	64	5320	98.59%	100%	0.100	0.102
	Rear	64	5320	98.59%	100%	0.147	0.149

Note:
According to the KDB248227 D01, The reported SAR must be scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit. A maximum transmission duty factor of 98.75% is achievable for WLAN in this project.

Hotspot SAR

Positions for SAR tests; Hotspot mode						
Antenna	Back	Front	Top side	Bottom side	Right side	Left side
WWAN	Yes	Yes	No	Yes	No	Yes
WIFI / BT	Yes	Yes	Yes	No	Yes	No

General note:
Referring to KDB941225 D06, when the overall device length and width are >9cm*5cm, the test distance is 10mm. SAR must be measured for all sides and surfaces with a transmitting antenna located within 25mm from that surface or edge.

GSM850										
Mode	Test Position	Frequency		Conducted Power (dBm)	Tune up limit (dBm)	Tune up scaling factor	Power Drift(dB)	Measured SAR(1g) (W/kg)	Report SAR(1g) (W/kg)	Test Plot
		CH	MHz							
GPRS (3Tx slot)	Front	128	824.2	32.09	32.10	1.00	-	-	-	-
		190	836.6	31.97	32.10	1.03	0.02	0.125	0.129	-
		251	848.8	31.73	32.10	1.09	-	-	-	-
	Back	128	824.2	32.09	32.10	1.00	-	-	-	-
		190	836.6	31.97	32.10	1.03	-0.05	0.190	0.196	B1
		251	848.8	31.73	32.10	1.09	-	-	-	-
	Left	190	836.6	31.97	32.10	1.03	0.03	0.136	0.140	-
	Right	190	836.6	31.97	32.10	1.03	-	-	-	-
	Top	190	836.6	31.97	32.10	1.03	-	-	-	-
	Bottom	190	836.6	31.97	32.10	1.03	-0.02	0.129	0.133	-

PCS1900										
Mode	Test Position	Frequency		Conducted Power (dBm)	Tune up limit (dBm)	Tune up scaling factor	Power Drift(dB)	Measured SAR(1g) (W/kg)	Report SAR(1g) (W/kg)	Test Plot
		CH	MHz							
GPRS (3Tx slot)	Front	512	1850.2	29.04	29.50	1.11	-	-	-	-
		661	1880.0	29.33	29.50	1.04	0.03	0.449	0.466	-
		810	1909.8	29.38	29.50	1.03	-	-	-	-
	Back	512	1850.2	29.04	29.50	1.11	-	-	-	-
		661	1880.0	29.33	29.50	1.04	-0.04	0.709	0.737	B2
		810	1909.8	29.38	29.50	1.03	-	-	-	-
	Left	661	1880.0	29.33	29.50	1.04	0.02	0.429	0.446	-
	Right	661	1880.0	29.33	29.50	1.04	-	-	-	-
	Top	661	1880.0	29.33	29.50	1.04	-	-	-	-
	Bottom	661	1880.0	29.33	29.50	1.04	-0.04	0.445	0.463	-

Note:
Per KDB865664 D01v01r04, Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg

WCDMA Band II										
Mode	Test Position	Frequency		Conducted Power (dBm)	Tune up limit (dBm)	Tune up scaling factor	Power Drift(dB)	Measured SAR(1g) (W/kg)	Report SAR(1g) (W/kg)	Test Plot
		CH	MHz							
RMC 12.2Kbps	Front	9262	1852.4	23.60	24.00	1.10	-	-	-	-
		9400	1880.0	23.89	24.00	1.02	0.05	0.503	0.516	-
		9538	1907.6	23.67	24.00	1.08	-	-	-	-
	Back	9262	1852.4	23.60	24.00	1.10	-	-	-	-
		9400	1880.0	23.89	24.00	1.02	-0.14	0.707	0.725	B3
		9538	1907.6	23.67	24.00	1.08	-	-	-	-
	Left	9400	1880.0	23.89	24.00	1.02	-0.07	0.481	0.493	-
	Right	9400	1880.0	23.89	24.00	1.02	-	-	-	-
	Top	9400	1880.0	23.89	24.00	1.02	-	-	-	-
	Bottom	9400	1880.0	23.89	24.00	1.02	0.04	0.465	0.477	-

WCDMA Band V										
Mode	Test Position	Frequency		Conducted Power (dBm)	Tune up limit (dBm)	Tune up scaling factor	Power Drift(dB)	Measured SAR(1g) (W/kg)	Report SAR(1g) (W/kg)	Test Plot
		CH	MHz							
RMC 12.2Kbps	Front	4132	826.4	23.38	24.00	1.15	-	-	-	-
		4183	836.6	23.93	24.00	1.02	-0.01	0.054	0.054	-
		4233	846.6	23.78	24.00	1.05	-	-	-	-
	Back	4132	826.4	23.38	24.00	1.15	-	-	-	-
		4183	836.6	23.93	24.00	1.02	-0.03	0.087	0.088	B4
		4233	846.6	23.78	24.00	1.05	-	-	-	-
	Left	4183	836.6	23.93	24.00	1.02	0.02	0.053	0.054	-
	Right	4183	836.6	23.93	24.00	1.02	-	-	-	-
	Top	4183	836.6	23.93	24.00	1.02	-	-	-	-
	Bottom	4183	836.6	23.93	24.00	1.02	-0.02	0.053	0.054	-

Note:
Per KDB865664 D01v01r04, Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg

LTE Band 2										
Mode	Test Position	Frequency		Conducted Power (dBm)	Tune up limit (dBm)	Tune up scaling factor	Power Drift(dB)	Measured SAR(1g) (W/kg)	Report SAR(1g) (W/kg)	Test Plot
		CH	MHz							
20M_1RB	Front	18700	1860.0	24.24	25.00	1.19	-	-	-	-
		18900	1880.0	24.57	25.00	1.10	0.06	0.450	0.497	-
		19100	1900.0	24.44	25.00	1.14	-	-	-	-
	Back	18700	1860.0	24.24	25.00	1.19	-	-	-	-
		18900	1880.0	24.57	25.00	1.10	-0.12	0.749	0.827	B5
		19100	1900.0	24.44	25.00	1.14	-	-	-	-
	Left	18900	1880.0	24.57	25.00	1.10	0.07	0.433	0.478	-
	Right	18900	1880.0	24.57	25.00	1.10	-	-	-	-
	Top	18900	1880.0	24.57	25.00	1.10	-	-	-	-
	Bottom	18900	1880.0	24.57	25.00	1.10	-0.12	0.469	0.518	-
20M_50RB	Front	18700	1860.0	23.30	24.00	1.17	-	-	-	-
		18900	1880.0	23.62	24.00	1.09	-0.02	0.336	0.367	-
		19100	1900.0	23.49	24.00	1.12	-	-	-	-
	Back	18700	1860.0	23.30	24.00	1.17	-	-	-	-
		18900	1880.0	23.62	24.00	1.09	0.12	0.593	0.648	-
		19100	1900.0	23.49	24.00	1.12	-	-	-	-
	Left	18900	1880.0	23.62	24.00	1.09	-0.03	0.384	0.419	-
	Right	18900	1880.0	23.62	24.00	1.09	-	-	-	-
	Top	18900	1880.0	23.62	24.00	1.09	-	-	-	-
	Bottom	18900	1880.0	23.62	24.00	1.09	0.12	0.375	0.410	-

Note:

1. Per KDB865664 D01v01r04, Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg
2. Per KDB 941225 D05v02r03, for QPSK with 100% RB allocation, SAR is not required when the highest maximumoutput power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations andthe highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highestoutput power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also betested.

LTE Band 4										
Mode	Test Position	Frequency		Conducted Power (dBm)	Tune up limit (dBm)	Tune up scaling factor	Power Drift(dB)	Measured SAR(1g) (W/kg)	Report SAR(1g) (W/kg)	Test Plot
		CH	MHz							
20M_1RB	Front	20050	1720.0	24.88	25.00	1.03	-	-	-	-
		20175	1732.5	24.96	25.00	1.01	-0.03	0.329	0.332	-
		20300	1745.0	24.81	25.00	1.05	-	-	-	-
	Back	20050	1720.0	24.88	25.00	1.03	-	-	-	-
		20175	1732.5	24.96	25.00	1.01	-0.11	0.706	0.713	B6
		20300	1745.0	24.81	25.00	1.05	-	-	-	-
	Left	20175	1732.5	24.96	25.00	1.01	0.08	0.427	0.431	-
	Right	20175	1732.5	24.96	25.00	1.01	-	-	-	-
	Top	20175	1732.5	24.96	25.00	1.01	-	-	-	-
	Bottom	20175	1732.5	24.96	25.00	1.01	-0.04	0.433	0.437	-
20M_50RB	Front	20050	1720.0	23.75	24.00	1.06	-	-	-	-
		20175	1732.5	23.83	24.00	1.04	-0.01	0.251	0.261	-
		20300	1745.0	23.68	24.00	1.08	-	-	-	-
	Back	20050	1720.0	23.75	24.00	1.06	-	-	-	-
		20175	1732.5	23.83	24.00	1.04	0.09	0.574	0.597	-
		20300	1745.0	23.68	24.00	1.08	-	-	-	-
	Left	20175	1732.5	23.83	24.00	1.04	-0.06	0.391	0.406	-
	Right	20175	1732.5	23.83	24.00	1.04	-	-	-	-
	Top	20175	1732.5	23.83	24.00	1.04	-	-	-	-
	Bottom	20175	1732.5	23.83	24.00	1.04	0.02	0.380	0.395	-

Note:

1. Per KDB865664 D01v01r04, Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg
2. Per KDB 941225 D05v02r03, for QPSK with 100% RB allocation, SAR is not required when the highest maximumoutput power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations andthe highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highestoutput power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also betested.

LTE Band 5										
Mode	Test Position	Frequency		Conducted Power (dBm)	Tune up limit (dBm)	Tune up scaling factor	Power Drift(dB)	Measured SAR(1g) (W/kg)	Report SAR(1g) (W/kg)	Test Plot
		CH	MHz							
10M_1RB	Front	20450	829.0	23.13	23.50	1.09	-	-	-	-
		20525	836.5	23.25	23.50	1.06	0.03	0.044	0.046	-
		20600	844.0	23.16	23.50	1.08	-	-	-	-
	Back	20450	829.0	23.13	23.50	1.09	-	-	-	-
		20525	836.5	23.25	23.50	1.06	-0.05	0.065	0.069	B7
		20600	844.0	23.16	23.50	1.08	-	-	-	-
	Left	20525	836.5	23.25	23.50	1.06	0.02	0.046	0.049	-
	Right	20525	836.5	23.25	23.50	1.06	-	-	-	-
	Top	20525	836.5	23.25	23.50	1.06	-	-	-	-
	Bottom	20525	836.5	23.25	23.50	1.06	-0.03	0.039	0.042	-
10M_25RB	Front	20450	829.0	22.08	22.50	1.10	-	-	-	-
		20525	836.5	22.20	22.50	1.07	-0.06	0.023	0.025	-
		20600	844.0	22.12	22.50	1.09	-	-	-	-
	Back	20450	829.0	22.08	22.50	1.10	-	-	-	-
		20525	836.5	22.20	22.50	1.07	0.10	0.042	0.045	-
		20600	844.0	22.12	22.50	1.09	-	-	-	-
	Left	20525	836.5	22.20	22.50	1.07	-0.08	0.028	0.030	-
	Right	20525	836.5	22.20	22.50	1.07	-	-	-	-
	Top	20525	836.5	22.20	22.50	1.07	-	-	-	-
	Bottom	20525	836.5	22.20	22.50	1.07	0.01	0.023	0.025	-

Note:

1. Per KDB865664 D01v01r04, Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg
2. Per KDB 941225 D05v02r03, for QPSK with 100% RB allocation, SAR is not required when the highest maximumoutput power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations andthe highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highestoutput power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also betested.

LTE Band 17										
Mode	Test Position	Frequency		Conducted Power (dBm)	Tune up limit (dBm)	Tune up scaling factor	Power Drift(dB)	Measured SAR(1g) (W/kg)	Report SAR(1g) (W/kg)	Test Plot
		CH	MHz							
10M_1RB	Front	23780	709	23.75	24.00	-	-	-	-	-
		23790	710	23.93	24.00	1.02	0.08	0.187	0.190	-
		23800	711	23.83	24.00	-	-	-	-	-
	Back	23780	709	23.75	24.00	-	-	-	-	-
		23790	710	23.93	24.00	1.02	-0.12	0.277	0.282	B8
		23800	711	23.83	24.00	-	-	-	-	-
	Left	23790	710	23.93	24.00	1.02	0.04	0.196	0.199	-
	Right	23790	710	23.93	24.00	1.02	-	-	-	-
	Top	23790	710	23.93	24.00	1.02	-	-	-	-
	Bottom	23790	710	23.93	24.00	1.02	-0.08	0.168	0.170	-
10M_25RB	Front	23780	709	22.66	23.00	-	-	-	-	-
		23790	710	22.83	23.00	1.04	-0.05	0.107	0.111	-
		23800	711	22.74	23.00	-	-	-	-	-
	Back	23780	709	22.66	23.00	-	-	-	-	-
		23790	710	22.83	23.00	1.04	0.08	0.195	0.203	-
		23800	711	22.74	23.00	-	-	-	-	-
	Left	23790	710	22.83	23.00	1.04	-0.06	0.129	0.134	-
	Right	23790	710	22.83	23.00	1.04	-	-	-	-
	Top	23790	710	22.83	23.00	1.04	-	-	-	-
	Bottom	23790	710	22.83	23.00	1.04	0.01	0.107	0.111	-

Note:

1. Per KDB865664 D01v01r04, Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg
2. Per KDB 941225 D05v02r03, for QPSK with 100% RB allocation, SAR is not required when the highest maximumoutput power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations andthe highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highestoutput power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also betested.

WIFI 2.4G										
Mode	Test Position	Frequency		Conducted Power (dBm)	Tune up limit (dBm)	Tune up scaling factor	Power Drift(dB)	Measured SAR(1g) (W/kg)	Report SAR(1g) (W/kg)	Test Plot
		CH	MHz							
802.11b 1Mbps	Front	1	2412	14.71	15.00	1.07	0.19	0.061	0.066	-
		6	2437	14.15	15.00	1.22	-	-	-	-
		11	2462	13.88	15.00	1.29	-	-	-	-
	Back	1	2412	14.71	15.00	1.07	-0.13	0.090	0.096	B9
		6	2437	14.15	15.00	1.22	-	-	-	-
		11	2462	13.88	15.00	1.29	-	-	-	-
	Left	1	2412	14.71	15.00	1.07	-	-	-	-
	Right	1	2412	14.71	15.00	1.07	-0.10	0.075	0.080	-
	Top	1	2412	14.71	15.00	1.07	0.04	0.059	0.063	-
	Bottom	1	2412	14.71	15.00	1.07	-	-	-	-

Note:

1. According to the above table, the initial test position for body is “Back”, and its reported SAR is≤ 0.4W/kg. Thus further SAR measurement is not required for the other (remaining) test positions. Because the reported SAR of the highest measured maximum output power channel for the exposureconfiguration is ≤ 0.8W/kg, no further SAR testing is required for 802.11b DSSS in that exposureconfiguration.
2. When SAR measurement is required for 2.4 GHz 802.11g/n OFDM configurations, the measurement and test reduction procedures for OFDM are applied. SAR is not required for the following 2.4 GHz OFDM conditions.
   c) When KDB Publication 447498 D01 SAR test exclusion applies to the OFDM configuration.
   d) When the highest *reported* SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg. the 802.11g/n is not required

WIFI 2.4G- Scaled Reported SAR							
Mode	Test Position	Frequency		Actual duty factor	maximum duty factor	Reported SAR (1g)(W/kg)	Scaled reported SAR (1g)(W/kg)
		CH	MHz				
802.11b 1Mbps	Front	1	2412	98.75%	100%	0.066	0.066
	Back	1	2412	98.75%	100%	0.096	0.097
	Right	1	2412	98.75%	100%	0.080	0.081
	Top	1	2412	98.75%	100%	0.063	0.064

Note:

According to the KDB248227 D01, The reported SAR must be scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit. A maximum transmission duty factor of 98.75%is achievable for WLAN in this project.

SAR Test Data Plots

Test mode:	GPRS850 3Tx slot	Test Position:	Left Touch Cheek	Test Plot:	H1

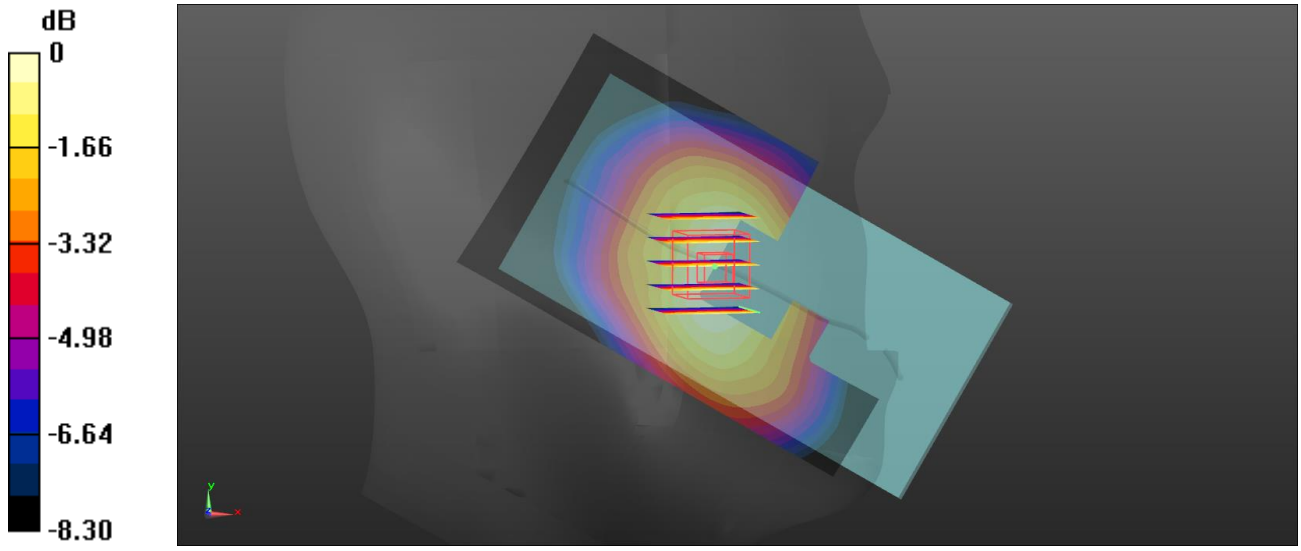
Date:2018-05-17
Communication System: UID 0, Generic GPRS(TDMA, GMSK, TN 0-1-2) (0); Frequency: 836.6 MHz;Duty Cycle: 1:2.67
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.933 S/m; ε_r = 42.499; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7494; ConvF(10.73, 10.73, 10.73); Calibrated: 2/26/2018;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1549; Calibrated: 4/25/2018
- Phantom: Twin-SAM V8.0 ; Type: QD 000 P41 AA; Serial: 1974
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7437)

Left Touch Cheek/Procedure/Area Scan (61x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.157 W/kg

Left Touch Cheek/Procedure/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.795 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.164 W/kg
SAR(1 g) = 0.126 W/kg; SAR(10 g) = 0.095 W/kg
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.151 W/kg



0 dB = 0.151 W/kg = -8.21 dBW/kg

Test mode: GPRS1900 3Tx slot Test Position: Left Touch Cheek Test Plot: H2

Date:2018-05-21
Communication System: UID 0, Generic GPRS(TDMA, GMSK, TN 0-1-2) (0); Frequency: 1880 MHz;Duty Cycle: 1:2.67
Medium parameters used: f = 1880 MHz; σ = 1.455 S/m; ε_r = 41.738; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY5 Configuration:

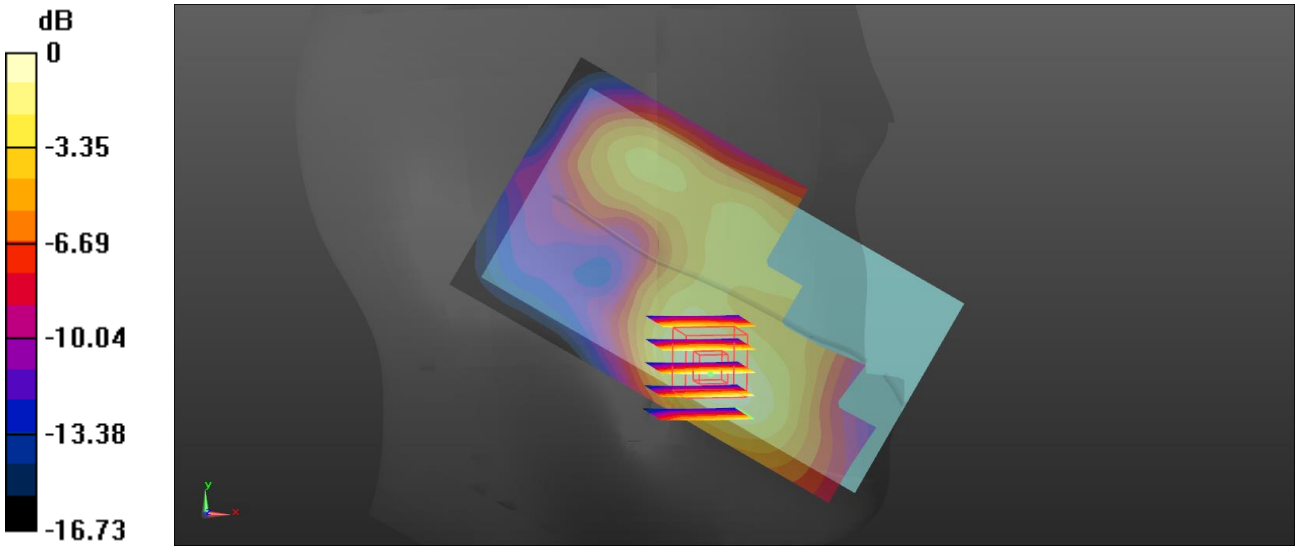
- Probe: EX3DV4 - SN7494; ConvF(8.83, 8.83, 8.83); Calibrated: 2/26/2018;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1549; Calibrated: 4/25/2018
- Phantom: Twin-SAM V8.0 ; Type: QD 000 P41 AA; Serial: 1974
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7437)

Left Touch Cheek/Procedure/Area Scan (61x111x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.316 W/kg

Left Touch Cheek/Procedure/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 4.874 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 0.356 W/kg
SAR(1 g) = 0.212 W/kg; SAR(10 g) = 0.128 W/kg
Maximum value of SAR (measured) = 0.306 W/kg



0 dB = 0.306 W/kg = -5.14 dBW/kg

Test mode:	WCDMA Band II	Test Position:	Left Touch Cheek	Test Plot:	H3

Date:2018-05-21
Communication System: UID 0, Generic UMTS (0); Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.455 S/m; ε_r = 41.738; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY5 Configuration:

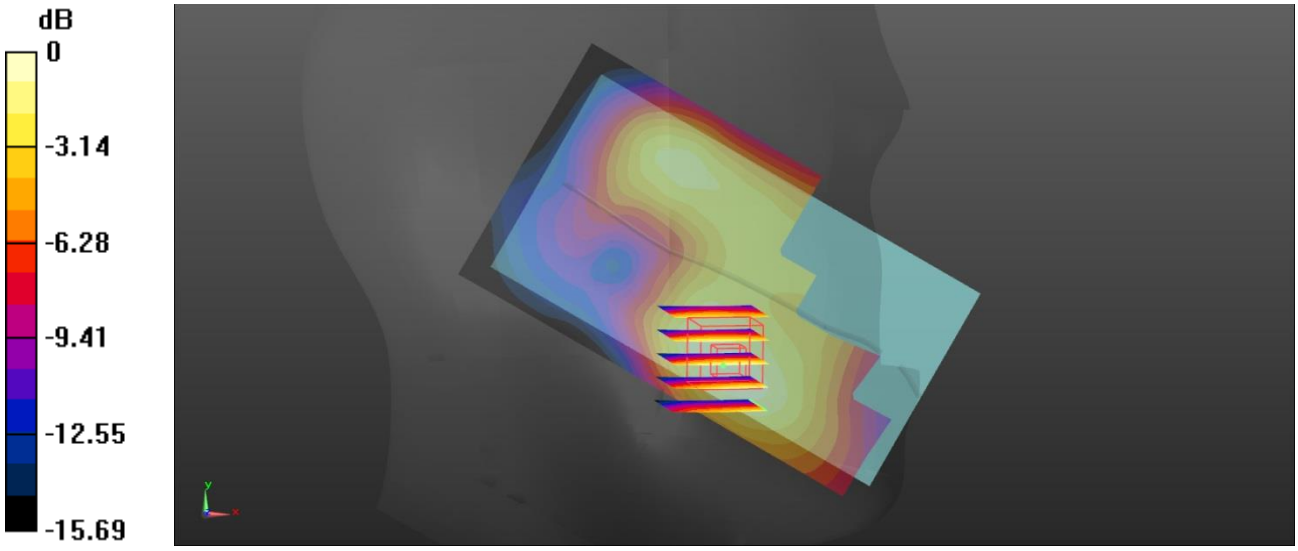
- Probe: EX3DV4 - SN7494; ConvF(8.83, 8.83, 8.83); Calibrated: 2/26/2018;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1549; Calibrated: 4/25/2018
- Phantom: Twin-SAM V8.0 ; Type: QD 000 P41 AA; Serial: 1974
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7437)

Left Touch Cheek/Procedure/Area Scan (61x111x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.250 W/kg

Left Touch Cheek/Procedure/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 3.456 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 0.281 W/kg
SAR(1 g) = 0.169 W/kg; SAR(10 g) = 0.104 W/kg
Maximum value of SAR (measured) = 0.240 W/kg



0 dB = 0.240 W/kg = -6.20 dBW/kg

Test mode:	WCDMA Band V	Test Position:	Left Touch Cheek	Test Plot:	H4

Date:2018-05-17
Communication System: UID 0, Generic UMTS (0); Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.933 S/m; ε_r = 42.499; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY5 Configuration:

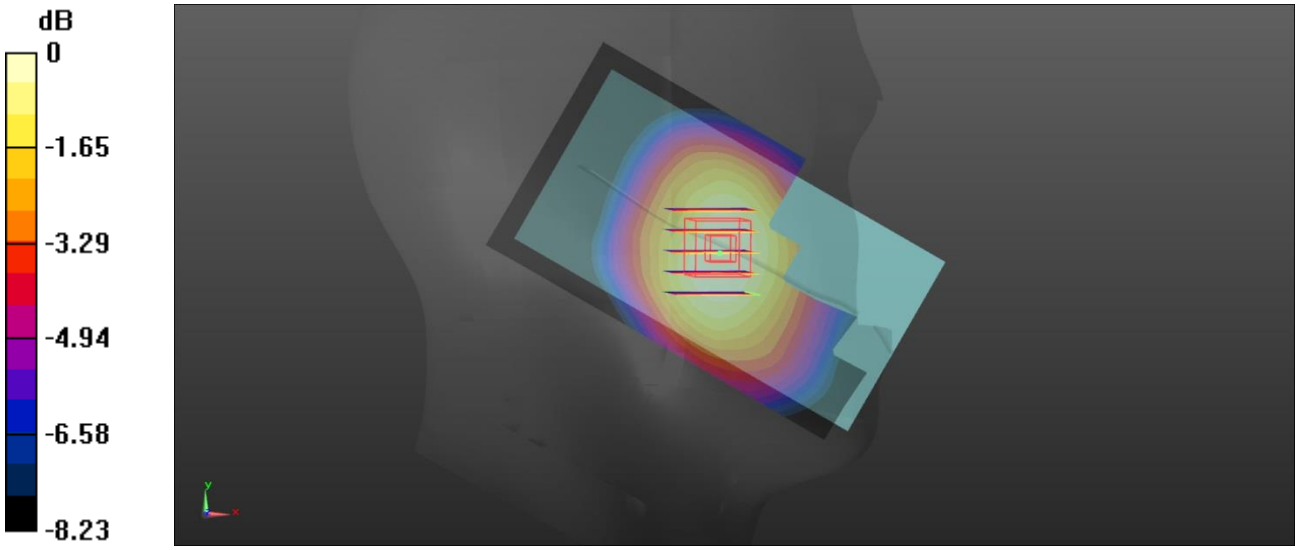
- Probe: EX3DV4 - SN7494; ConvF(10.73, 10.73, 10.73); Calibrated: 2/26/2018;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1549; Calibrated: 4/25/2018
- Phantom: Twin-SAM V8.0 ; Type: QD 000 P41 AA; Serial: 1974
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7437)

Left Touch Cheek/Procedure/Area Scan (61x111x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.0772 W/kg

Left Touch Cheek/Procedure/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 2.015 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 0.0800 W/kg
SAR(1 g) = 0.063 W/kg; SAR(10 g) = 0.048 W/kg
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.0746 W/kg



0 dB = 0.0746 W/kg = -11.27 dBW/kg

Test mode:	LTE Band 2	Test Position:	Left Touch Cheek	Test Plot:	H5

Date:2018-05-21
Communication System: UID 0, Generic LTE-FDD (0); Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.455 S/m; ε_r = 41.738; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY5 Configuration:

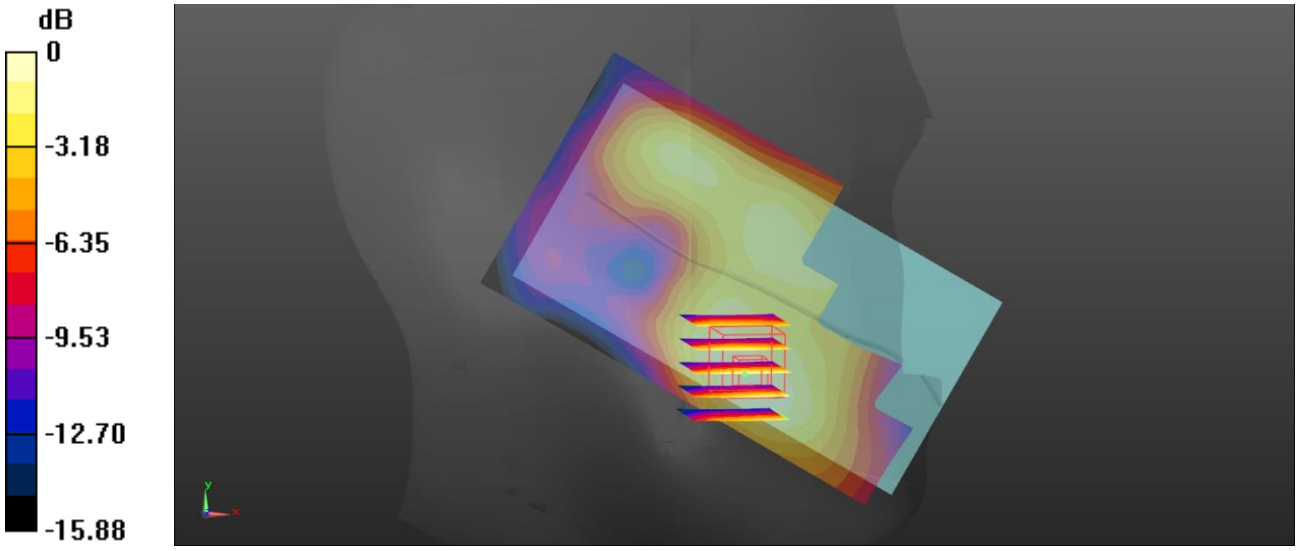
- Probe: EX3DV4 - SN7494; ConvF(8.83, 8.83, 8.83); Calibrated: 2/26/2018;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1549; Calibrated: 4/25/2018
- Phantom: Twin-SAM V8.0 ; Type: QD 000 P41 AA; Serial: 1974
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7437)

Left Touch Cheek/Procedure/Area Scan (61x111x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.0653 W/kg

Left Touch Cheek/Procedure/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 2.454 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.0710 W/kg
SAR(1 g) = 0.042 W/kg; SAR(10 g) = 0.026 W/kg
Maximum value of SAR (measured) = 0.0601 W/kg



0 dB = 0.0601 W/kg = -12.21 dBW/kg

Test mode: LTE Band 4 Test Position: Left Touch Cheek Test Plot: H6

Date:2018-05-23
Communication System: UID 0, Generic LTE-FDD (0); Frequency: 1732.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.363 S/m; ε_r = 41.972; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY5 Configuration:

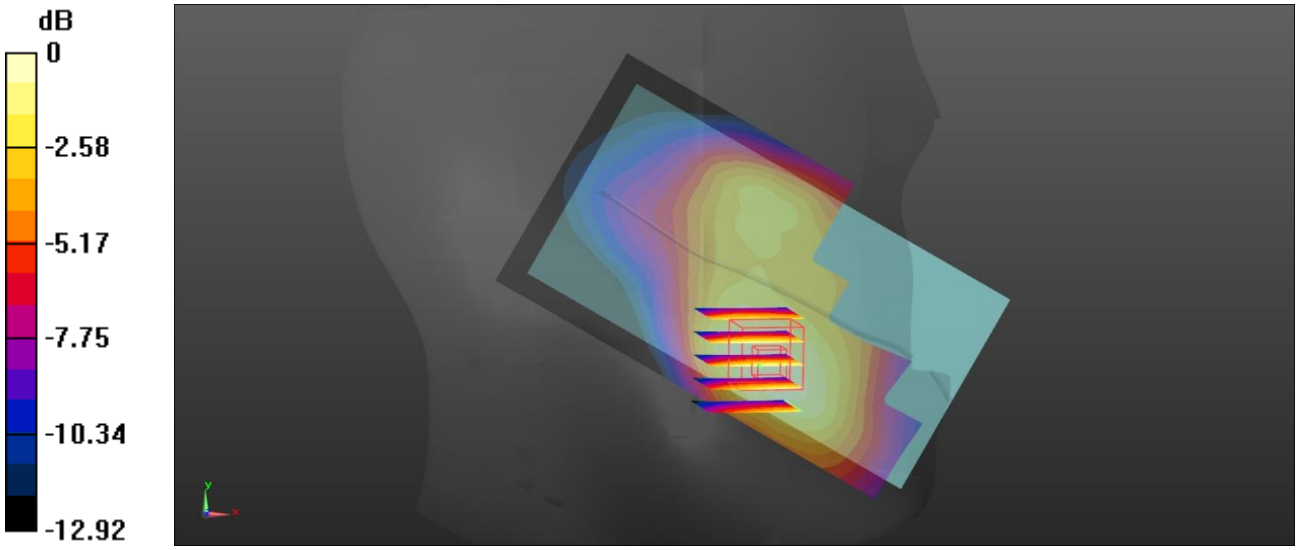
- Probe: EX3DV4 - SN7494; ConvF(9.23, 9.23, 9.23); Calibrated: 2/26/2018;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1549; Calibrated: 4/25/2018
- Phantom: Twin-SAM V8.0 ; Type: QD 000 P41 AA; Serial: 1974
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7437)

Left Touch Cheek/Procedure/Area Scan (61x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.321 W/kg

Left Touch Cheek/Procedure/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 5.263 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.358 W/kg
SAR(1 g) = 0.239 W/kg; SAR(10 g) = 0.161 W/kg
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.311 W/kg



0 dB = 0.311 W/kg = -5.07 dBW/kg

Test mode: LTE Band 5 Test Position: Left Touch Cheek Test Plot: H7

Date:2018-05-17
Communication System: UID 0, Generic LTE-FDD (0); Frequency: 836.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.5 MHz; σ = 0.933 S/m; ε_r = 42.499; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY5 Configuration:

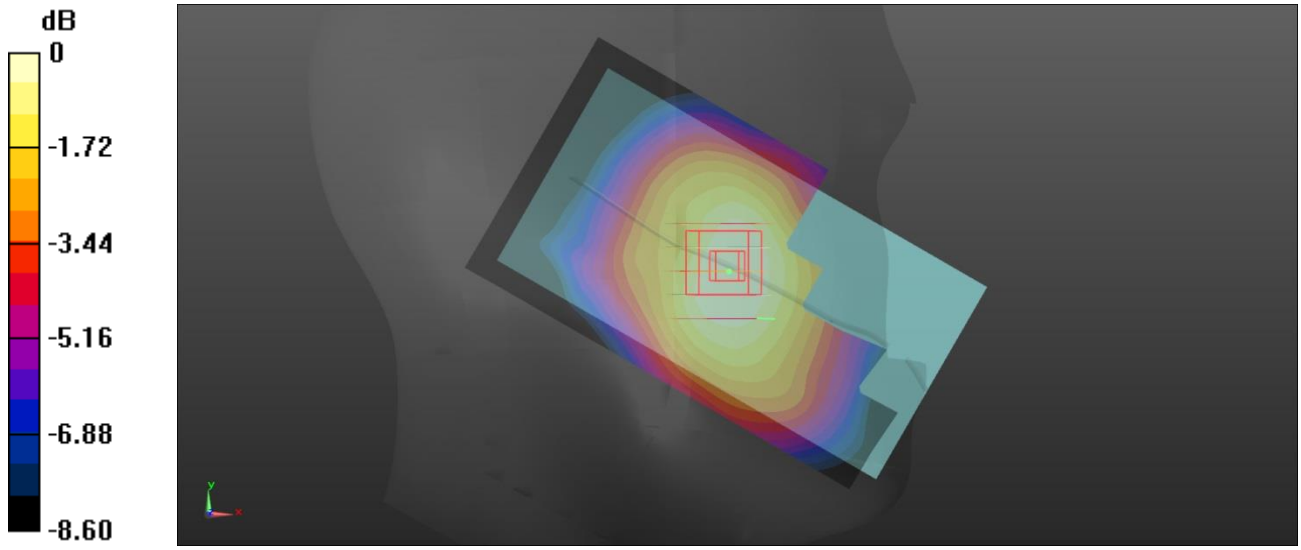
- Probe: EX3DV4 - SN7494; ConvF(10.73, 10.73, 10.73); Calibrated: 2/26/2018;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1549; Calibrated: 4/25/2018
- Phantom: Twin-SAM V8.0 ; Type: QD 000 P41 AA; Serial: 1974
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7437)

Left Touch Cheek/Procedure/Area Scan (61x111x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.0353 W/kg

Left Touch Cheek/Procedure/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 2.073 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 0.0360 W/kg
SAR(1 g) = 0.027 W/kg; SAR(10 g) = 0.021 W/kg
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.0328 W/kg



0 dB = 0.0328 W/kg = -14.84 dBW/kg

Test mode:	LTE Band 17	Test Position:	Left Touch Cheek	Test Plot:	H8

Date:2018-05-23
Communication System: UID 0, Generic LTE-FDD (0); Frequency: 710 MHz;Duty Cycle: 1:1
Medium parameters used: f = 710 MHz; σ = 0.883 S/m; ε_r = 44.334; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY5 Configuration:

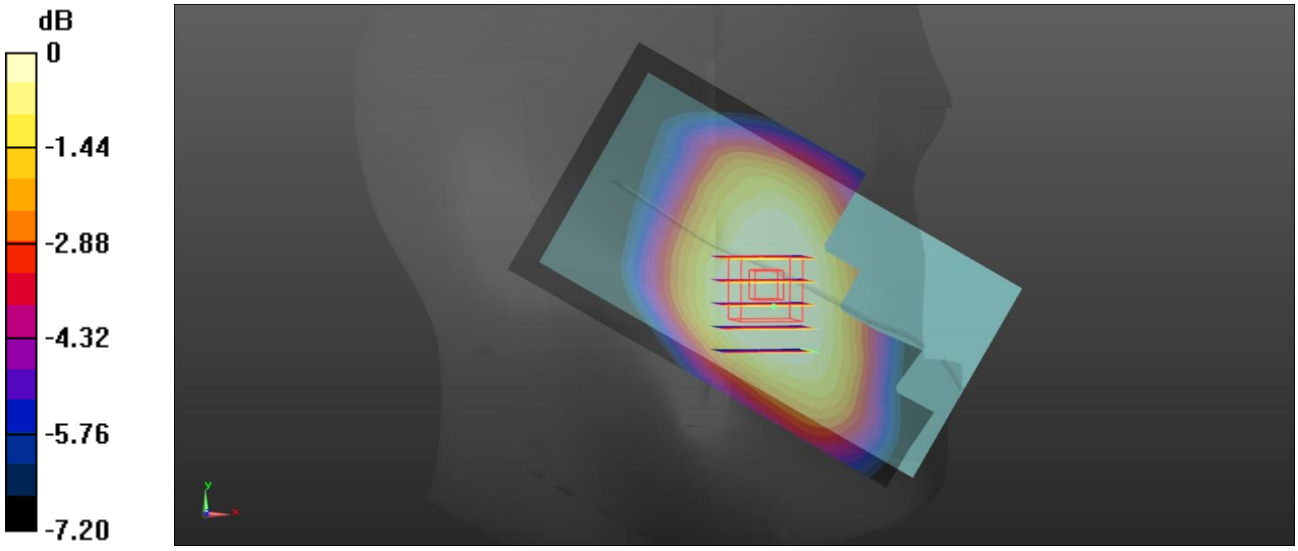
- Probe: EX3DV4 - SN7494; ConvF(11.02, 11.02, 11.02); Calibrated: 2/26/2018;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1549; Calibrated: 4/25/2018
- Phantom: Twin-SAM V8.0 ; Type: QD 000 P41 AA; Serial: 1974
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7437)

Left Touch Cheek/Procedure/Area Scan (61x111x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.127 W/kg

Left Touch Cheek/Procedure/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 4.261 V/m; Power Drift = -0.13 dB
Peak SAR (extrapolated) = 0.119 W/kg
SAR(1 g) = 0.094 W/kg; SAR(10 g) = 0.075 W/kg
Maximum value of SAR (measured) = 0.108 W/kg



0 dB = 0.108 W/kg = -9.67 dBW/kg

Test mode:	WLAN 802.11b	Test Position:	Left Touch Cheek	Test Plot:	H9

Date:2018-05-24
Communication System: UID 0, Generic WIFI (0); Frequency: 2412 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2412 MHz; σ = 1.829 S/m; ε_r = 41.002; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY5 Configuration:

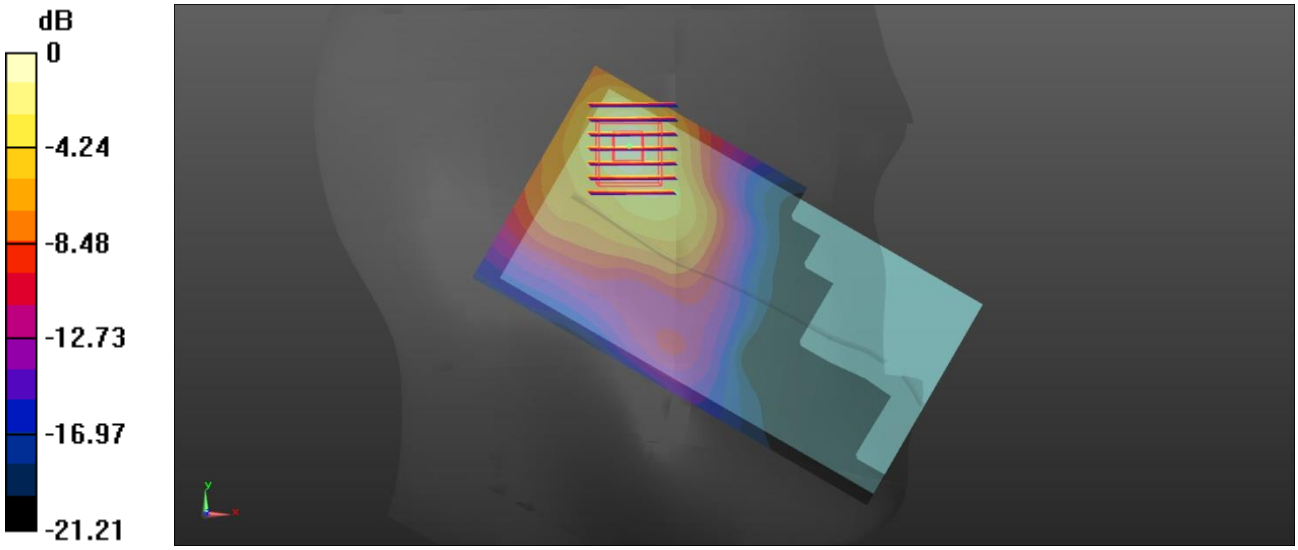
- Probe: EX3DV4 - SN7494; ConvF(8.27, 8.27, 8.27); Calibrated: 2/26/2018;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1549; Calibrated: 4/25/2018
- Phantom: Twin-SAM V8.0 ; Type: QD 000 P41 AA; Serial: 1974
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7437)

Left Touch Cheek/Procedure/Area Scan (71x141x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.553 W/kg

Left Touch Cheek/Procedure/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 10.05 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 0.801 W/kg
SAR(1 g) = 0.388 W/kg; SAR(10 g) = 0.188 W/kg
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.641 W/kg



0 dB = 0.641 W/kg = -1.93 dBW/kg

Test mode:	WLAN 802.11a	Test Position:	Left Touch Cheek	Test Plot:	H10

Date:2018-05-25
Communication System: UID 0, Generic WIFI (0); Frequency: 5320 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5320 MHz; σ = 4.52 S/m; ε_r = 36.228; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY5 Configuration:

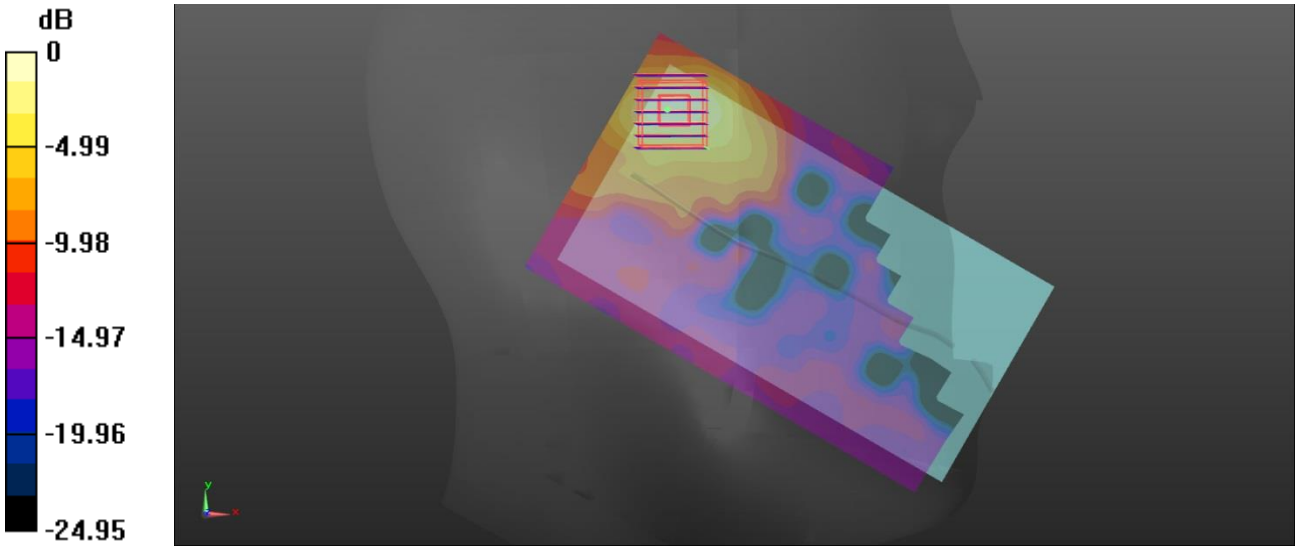
- Probe: EX3DV4 - SN7494; ConvF(5.63, 5.63, 5.63); Calibrated: 2/26/2018;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1549; Calibrated: 4/25/2018
- Phantom: Twin-SAM V8.0 ; Type: QD 000 P41 AA; Serial: 1974
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7437)

Left Touch Cheek/Procedure/Area Scan (91x171x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.404 W/kg

Left Touch Cheek/Procedure/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=5mm

Reference Value = 4.514 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 0.738 W/kg
SAR(1 g) = 0.191 W/kg; SAR(10 g) = 0.069 W/kg
Maximum value of SAR (measured) = 0.449 W/kg



0 dB = 0.449 W/kg = -3.48 dBW/kg

Test mode:	GPRS850 3Tx slot	Test Position:	Rear	Test Plot:	B1

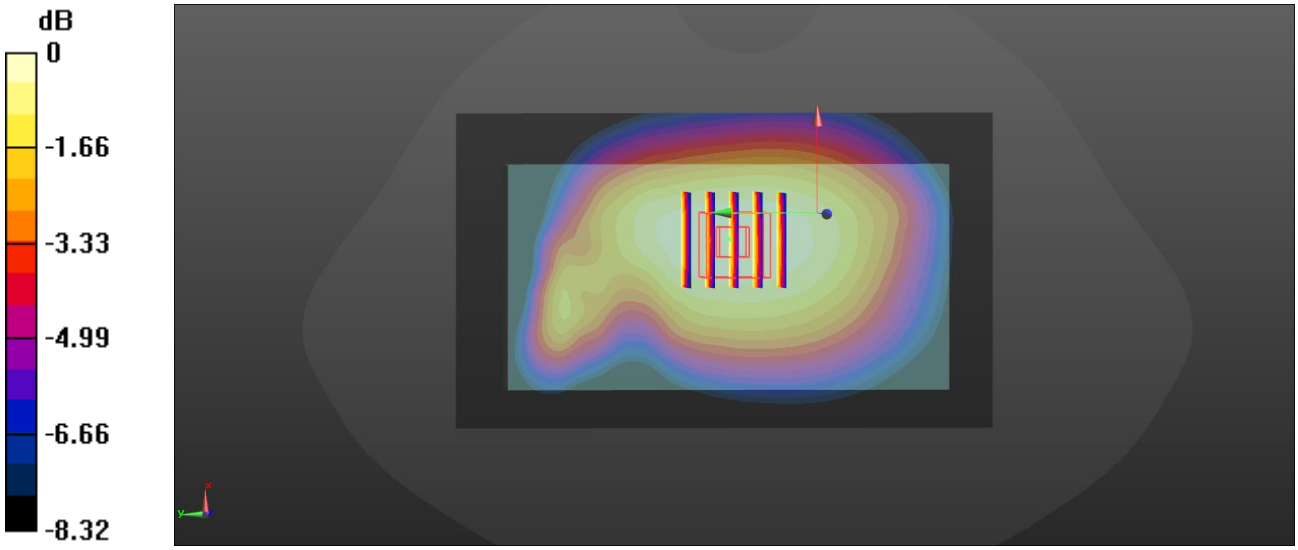
Date:2018-05-18
Communication System: UID 0, Generic GPRS(TDMA, GMSK, TN 0-1-2) (0); Frequency: 836.6 MHz;Duty Cycle: 1:2.67
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.967 S/m; ε_r = 55.399; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN7494; ConvF(10.5, 10.5, 10.5); Calibrated: 2/26/2018;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1549; Calibrated: 4/25/2018
- Phantom: Twin-SAM V8.0 ; Type: QD 000 P41 AA; Serial: 1974
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7437)

Rear/Procedure/Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.233 W/kg

Rear/Procedure/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.37 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.255 W/kg
SAR(1 g) = 0.190 W/kg; SAR(10 g) = 0.144 W/kg
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.232 W/kg



0 dB = 0.232 W/kg = -6.35 dBW/kg

Test mode:	GPRS1900 3Tx slot	Test Position:	Rear	Test Plot:	B2

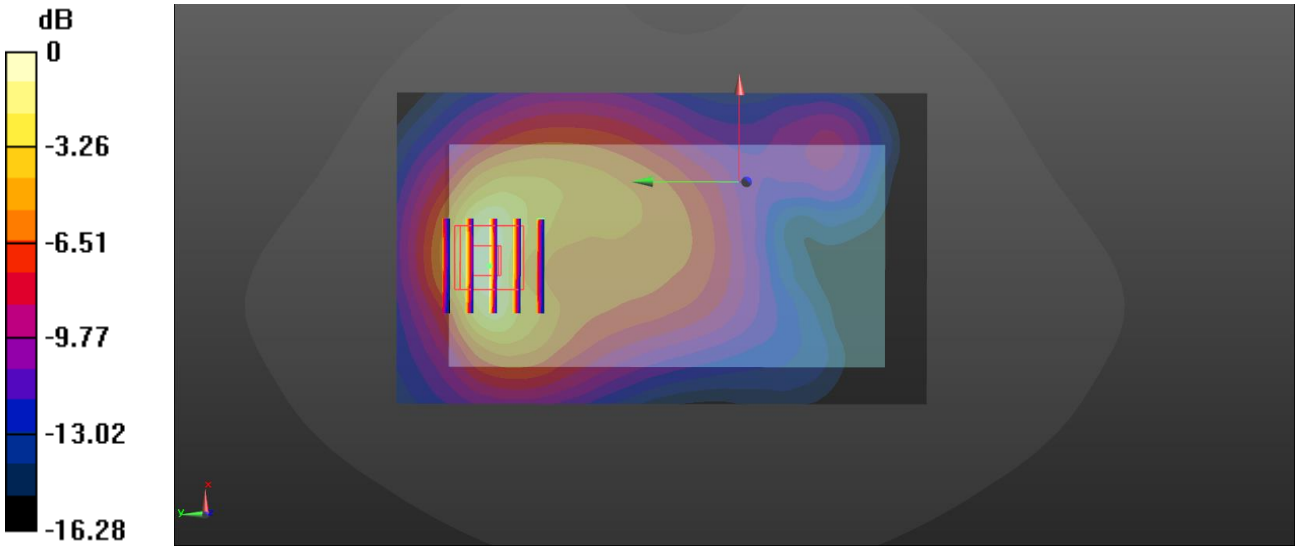
Date:2018-05-22
Communication System: UID 0, Generic GPRS(TDMA, GMSK, TN 0-1-2) (0); Frequency: 1880 MHz;Duty Cycle: 1:2.67
Medium parameters used: f = 1880 MHz; σ = 1.539 S/m; ε_r = 53.741; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7494; ConvF(8.42, 8.42, 8.42); Calibrated: 2/26/2018;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1549; Calibrated: 4/25/2018
- Phantom: Twin-SAM V8.0 ; Type: QD 000 P41 AA; Serial: 1974
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7437)

Rear/Procedure/Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.14 W/kg

Rear/Procedure/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.61 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 1.28 W/kg
SAR(1 g) = 0.709 W/kg; SAR(10 g) = 0.408 W/kg
Maximum value of SAR (measured) = 1.13 W/kg



0 dB = 1.33 W/kg = 1.24 dBW/kg

Test mode:	WCDMA Band II	Test Position:	Rear	Test Plot:	B3

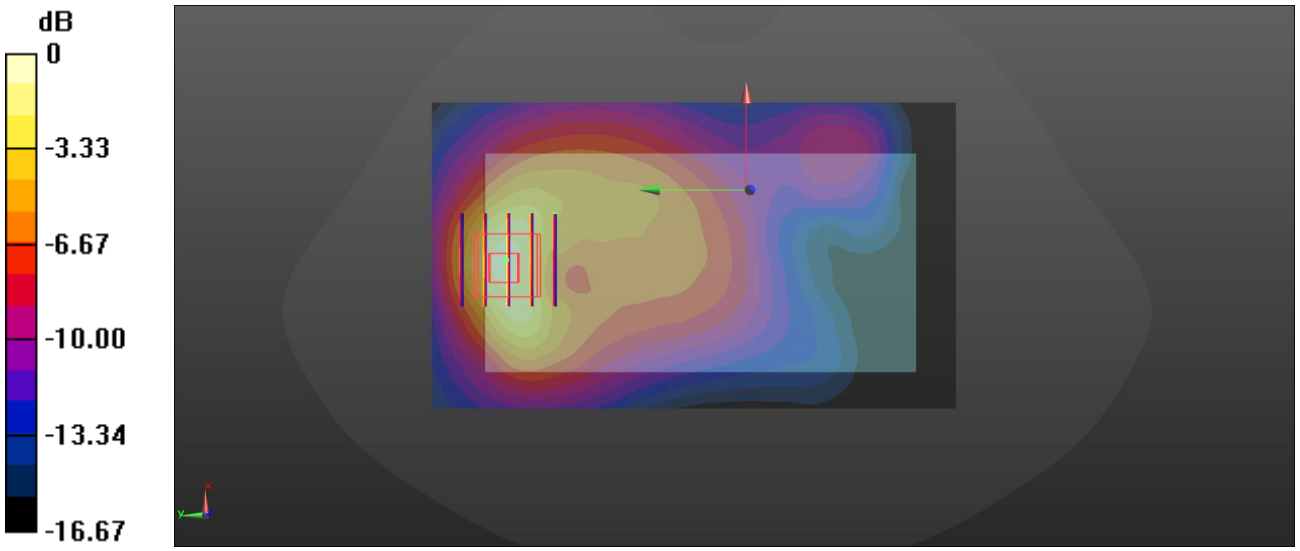
Date:2018-05-22
Communication System: UID 0, Generic UMTS (0); Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.539 S/m; ε_r = 53.741; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN7494; ConvF(8.42, 8.42, 8.42); Calibrated: 2/26/2018;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1549; Calibrated: 4/25/2018
- Phantom: Twin-SAM V8.0 ; Type: QD 000 P41 AA; Serial: 1974
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7437)

Rear/Procedure/Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.03 W/kg

Rear/Procedure/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.78 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 1.40 W/kg
SAR(1 g) = 0.707 W/kg; SAR(10 g) = 0.382 W/kg
Maximum value of SAR (measured) = 1.08 W/kg



0 dB = 1.18 W/kg = 0.72 dBW/kg

Test mode:	WCDMA Band V	Test Position:	Rear	Test Plot:	B4

Date:2018-05-18
Communication System: UID 0, Generic UMTS (0); Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.967 S/m; ε_r = 55.399; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

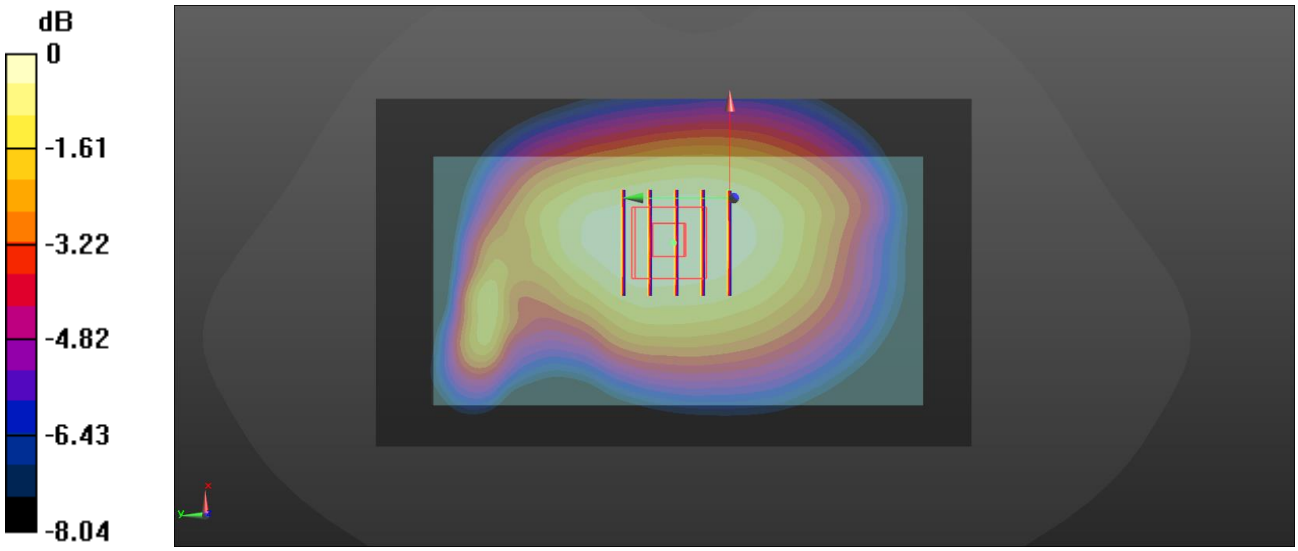
- Probe: EX3DV4 - SN7494; ConvF(10.5, 10.5, 10.5); Calibrated: 2/26/2018;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1549; Calibrated: 4/25/2018
- Phantom: Twin-SAM V8.0 ; Type: QD 000 P41 AA; Serial: 1974
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7437)

Rear 2/Procedure/Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.107 W/kg

Rear 2/Procedure/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 10.30 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.119 W/kg
SAR(1 g) = 0.087 W/kg; SAR(10 g) = 0.066 W/kg
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.107 W/kg



0 dB = 0.107 W/kg = -9.71 dBW/kg

Test mode:	LTE Band 2	Test Position:	Rear	Test Plot:	B5

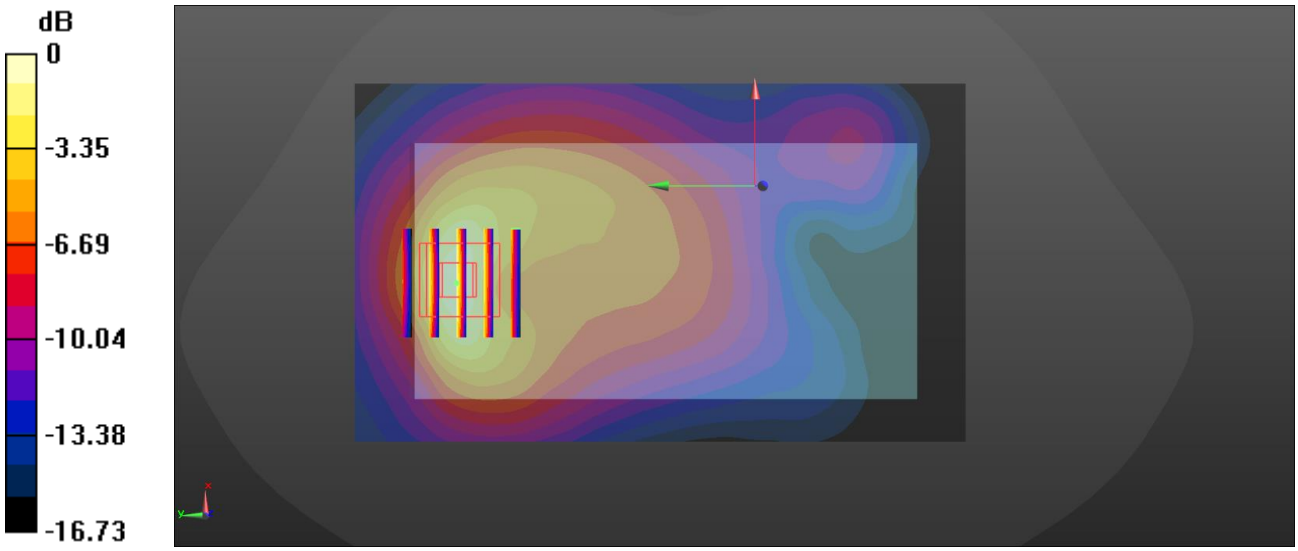
Date:2018-05-22
Communication System: UID 0, Generic LTE-FDD (0); Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.539 S/m; ε_r = 53.741; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7494; ConvF(8.42, 8.42, 8.42); Calibrated: 2/26/2018;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1549; Calibrated: 4/25/2018
- Phantom: Twin-SAM V8.0 ; Type: QD 000 P41 AA; Serial: 1974
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7437)

Rear/Procedure/Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.11 W/kg

Rear/Procedure/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.06 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 1.36 W/kg
SAR(1 g) = 0.749 W/kg; SAR(10 g) = 0.419 W/kg
Maximum value of SAR (measured) = 1.12 W/kg



0 dB = 1.42 W/kg = 1.52 dBW/kg

Test mode: LTE Band 4 Test Position: Rear Test Plot: B6

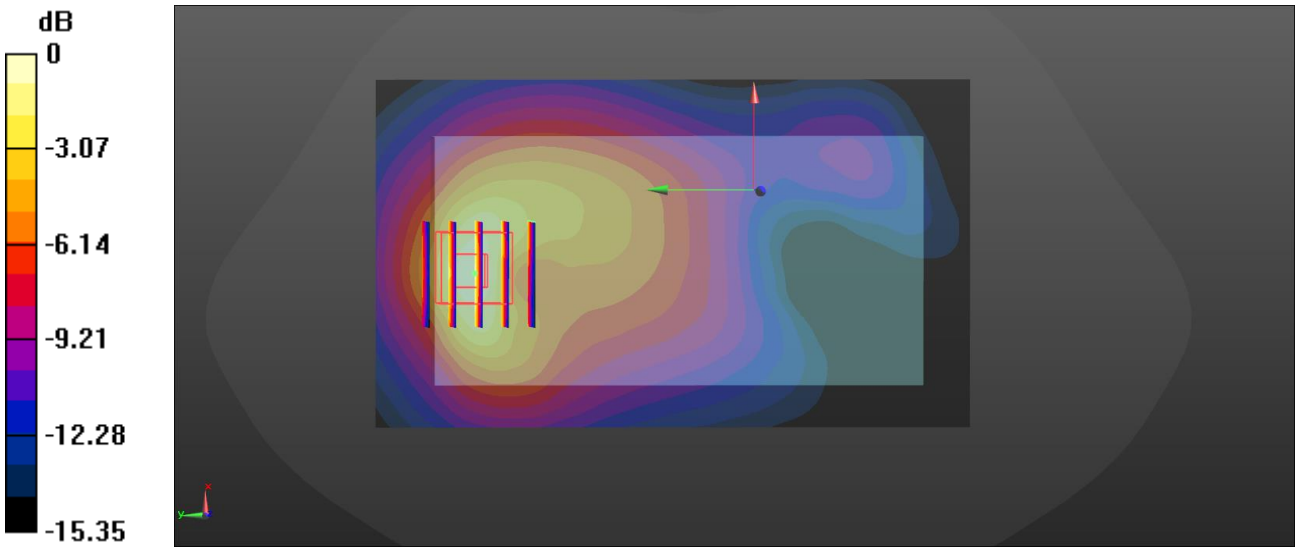
Date:2018-05-23
Communication System: UID 0, Generic LTE-FDD (0); Frequency: 1732.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.43 S/m; ε_r = 53.892; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7494; ConvF(8.77, 8.77, 8.77); Calibrated: 2/26/2018;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1549; Calibrated: 4/25/2018
- Phantom: Twin-SAM V8.0 ; Type: QD 000 P41 AA; Serial: 1974
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7437)

Rear/Procedure/Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.31 W/kg

Rear/Procedure/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.92 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 1.55 W/kg
SAR(1 g) = 0.706 W/kg; SAR(10 g) = 0.406 W/kg
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.32 W/kg



0 dB = 1.32 W/kg = 1.21 dBW/kg

Test mode: LTE Band 5 Test Position: Rear Test Plot: B7

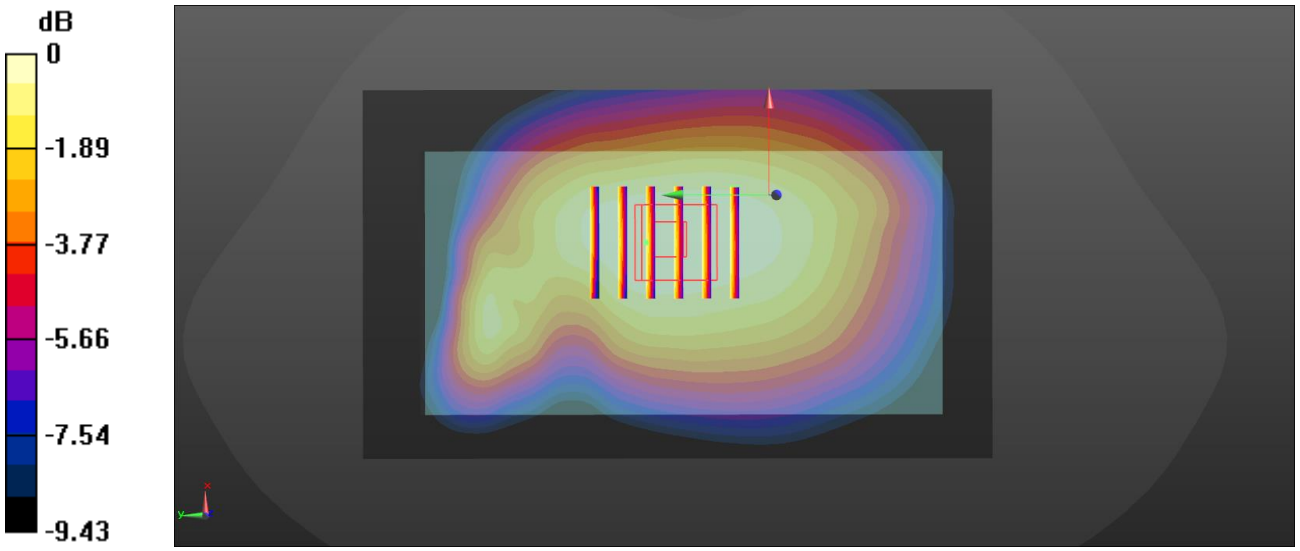
Date:2018-05-18
Communication System: UID 0, Generic LTE-FDD (0); Frequency: 836.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.5 MHz; σ = 0.967 S/m; ε_r = 55.399; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7494; ConvF(10.5, 10.5, 10.5); Calibrated: 2/26/2018;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1549; Calibrated: 4/25/2018
- Phantom: Twin-SAM V8.0 ; Type: QD 000 P41 AA; Serial: 1974
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7437)

Rear/Procedure/Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.0806 W/kg

Rear/Procedure/Zoom Scan (5x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.969 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.0880 W/kg
SAR(1 g) = 0.065 W/kg; SAR(10 g) = 0.049 W/kg
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.0799 W/kg



0 dB = 0.0799 W/kg = -10.97 dBW/kg

Test mode:	LTE Band 17	Test Position:	Rear	Test Plot:	B8

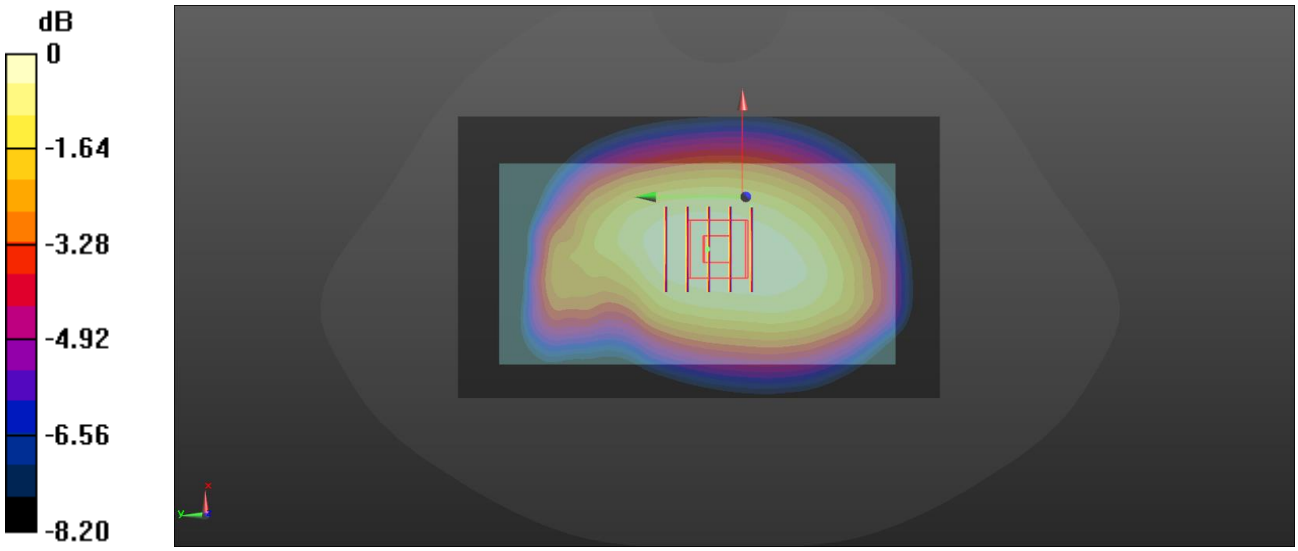
Date:2018-05-23
Communication System: UID 0, Generic LTE-FDD (0); Frequency: 710 MHz;Duty Cycle: 1:1
Medium parameters used: f = 710 MHz; σ = 0.919 S/m; ε_r = 55.736; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7494; ConvF(10.87, 10.87, 10.87); Calibrated: 2/26/2018;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1549; Calibrated: 4/25/2018
- Phantom: Twin-SAM V8.0 ; Type: QD 000 P41 AA; Serial: 1974
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7437)

Rear/Procedure/Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.331 W/kg

Rear/Procedure/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.75 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 0.361 W/kg
SAR(1 g) = 0.277 W/kg; SAR(10 g) = 0.213 W/kg
Maximum value of SAR (measured) = 0.332 W/kg



0 dB = 0.332 W/kg = -4.79 dBW/kg

Test mode:	WLAN 802.11b	Test Position:	Rear	Test Plot:	B9

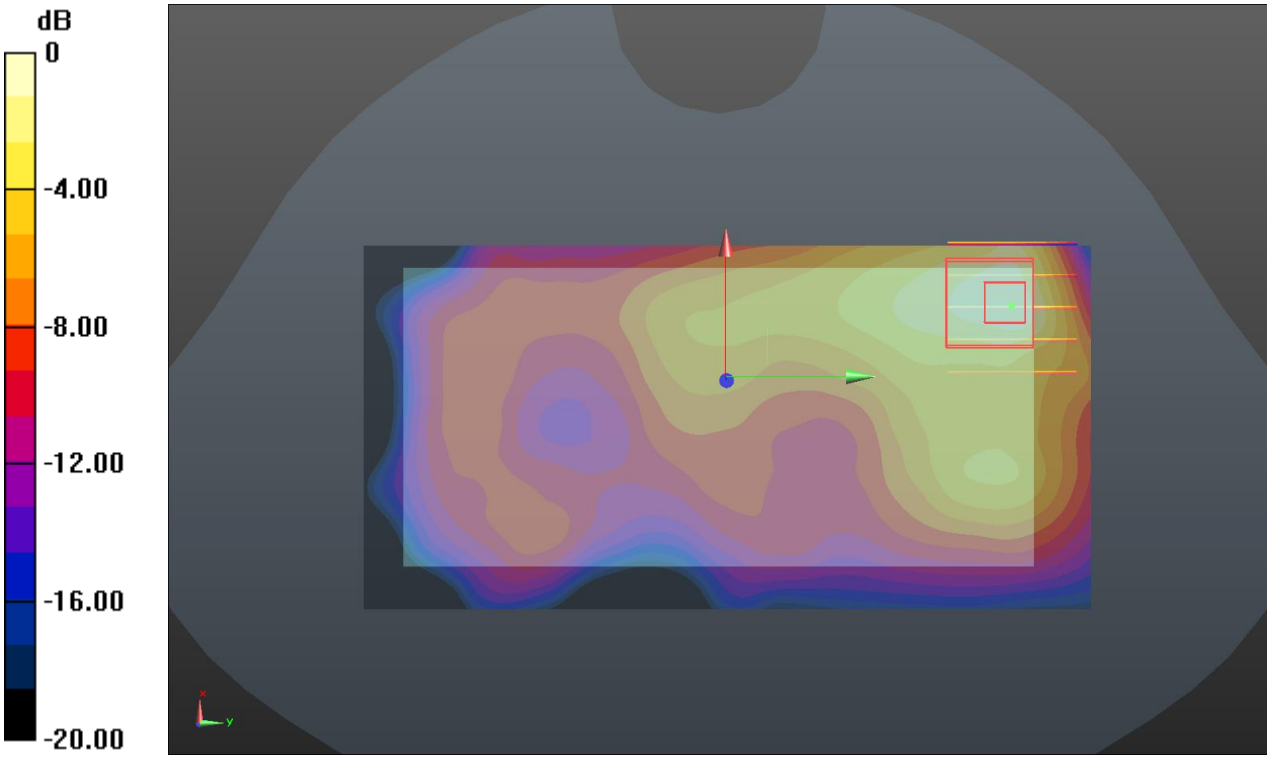
Date:2018-05-24
Communication System: UID 0, Generic WIFI (0); Frequency: 2412 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2412 MHz; σ = 1.991 S/m; ε_r = 53.023; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7494; ConvF(8.08, 8.08, 8.08); Calibrated: 2/26/2018;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1549; Calibrated: 4/25/2018
- Phantom: Twin-SAM V8.0 ; Type: QD 000 P41 AA; Serial: 1974
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7437)

Rear/Procedure/Area Scan (81x151x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.149 W/kg

Rear/Procedure/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.614 V/m; Power Drift = -0.13 dB
Peak SAR (extrapolated) = 0.346 W/kg
SAR(1 g) = 0.090 W/kg; SAR(10 g) = 0.027 W/kg
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.147 W/kg



Test mode:	WLAN 802.11a	Test Position:	Rear	Test Plot:	B10

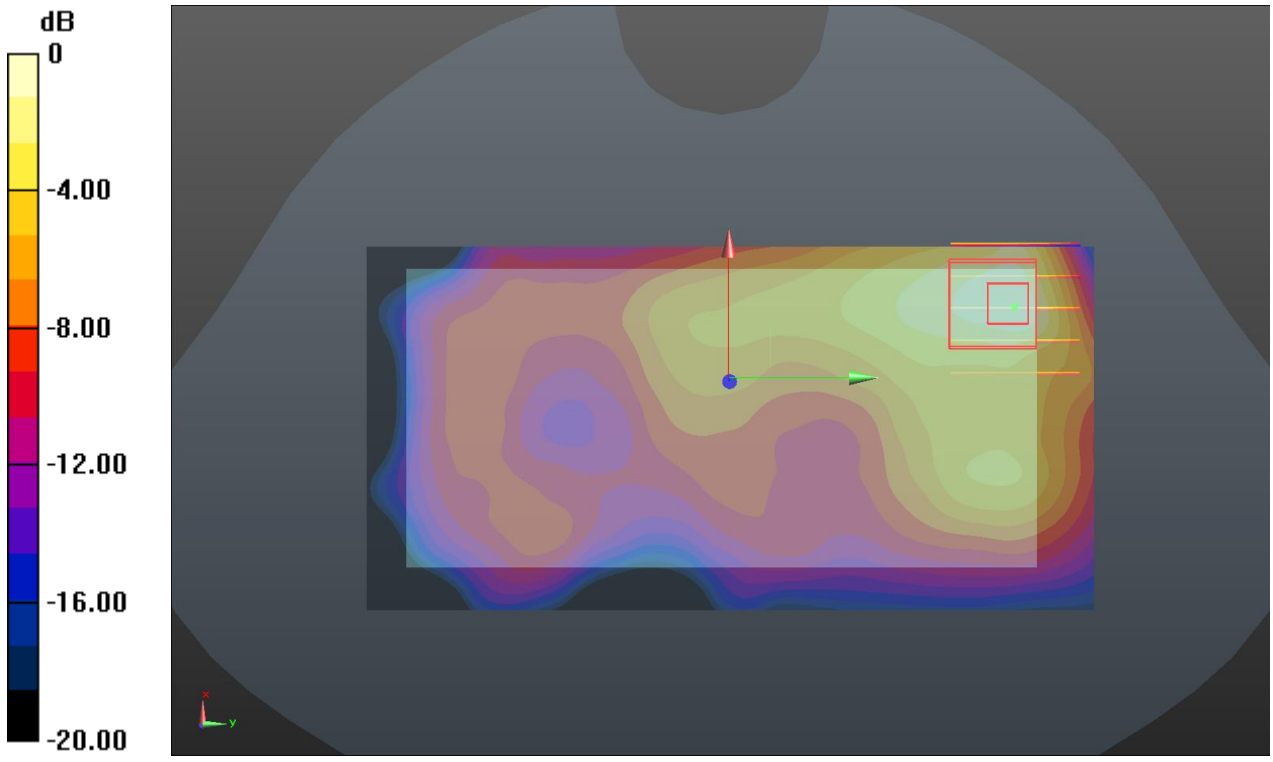
Date:2018-05-25
Communication System: UID 0, Generic WIFI (0); Frequency: 5320 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5320 MHz; σ = 5.381 S/m; ε_r = 48.152; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7494; ConvF(5.3, 5.3, 5.3); Calibrated: 2/26/2018;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1549; Calibrated: 4/25/2018
- Phantom: Twin-SAM V8.0 ; Type: QD 000 P41 AA; Serial: 1974
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7437)

Rear/Procedure/Area Scan (91x161x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.307 W/kg

Rear/Procedure/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.431 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 0.496 W/kg
SAR(1 g) = 0.145 W/kg; SAR(10 g) = 0.060 W/kg
Maximum value of SAR (measured) = 0.301 W/kg



15. Simultaneous Transmission analysis

No.	Simultaneous Transmission Configurations	Head	Body	Hotspot	Note
1	GSM(voice) + Bluetooth (data)	Yes	Yes	No	
2	GSM(voice) + WIFI (data)	Yes	Yes	Yes	
3	WCDMA(voice) + Bluetooth (data)	Yes	Yes	No	
4	WCDMA(voice) + WIFI (data)	Yes	Yes	Yes	
5	GPRS (data) + Bluetooth (data)	Yes	Yes	No	
6	GPRS (data) + WIFI (data)	Yes	Yes	Yes	
7	WCDMA (data) + Bluetooth (data)	Yes	Yes	No	
8	WCDMA (data) + WIFI (data)	Yes	Yes	Yes	
9	LTE + Bluetooth (data)	Yes	Yes	No	
10	LTE + WIFI (data)	Yes	Yes	Yes	

General note:

1. WLAN and Bluetooth share the same antenna, and cannot transmit simultaneously.
2. EUT will choose either GSM or WCDMA LTE according to the network signal condition; therefore, they will not operate simultaneously at any moment.
3. The reported SAR summation is calculated based on the same configuration and test position
4. For simultaneous transmission analysis, Bluetooth SAR is estimated per KDB 447498 D01 based on the formula below
   a) [(max. Power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)] * [√f(GHz)/x]W/kg for test separation distances ≦50mm; whetn x=7.5 for 1-g SAR, and x=18.75 for 10-g SAR.
   b) When the minimum separation distance is <5mm, the distance is used 5mm to determine SAR test exclusion
   c) 0.4 W/kg for 1-g SAR and 1.0W/kg for 10-g SAR, when the test separation distances is >50mm.

Bluetooth Max power	Exposure position	Head	Body worn
	Test separation	0mm	10mm
5.00 dBm	Estimated SAR (W/kg)	0.132	0.066

Maximum reported SAR value for Head mode

WWAN PCE + WLAN DTS					
WWAN Band		Exposure Position	Max SAR (W/kg)		Summed SAR
			WWAN PCE	WLAN DTS	(W/kg)
GSM	GSM850	Left Cheek	0.130	0.420	0.549
		Left Tilted	0.099	0.356	0.455
		Right Cheek	0.120	0.403	0.524
		Right Tilted	0.091	0.339	0.430
	PCS1900	Left Cheek	0.220	0.420	0.640
		Left Tilted	0.177	0.356	0.533
		Right Cheek	0.212	0.403	0.615
		Right Tilted	0.167	0.339	0.505
WCDMA	Band II	Left Cheek	0.173	0.420	0.593
		Left Tilted	0.142	0.356	0.498
		Right Cheek	0.165	0.403	0.569
		Right Tilted	0.132	0.339	0.471
	Band V	Left Cheek	0.064	0.420	0.484
		Left Tilted	0.051	0.356	0.407
		Right Cheek	0.062	0.403	0.465
		Right Tilted	0.049	0.339	0.387
LTE	B2 1RB	Left Cheek	0.046	0.420	0.466
		Left Tilted	0.038	0.356	0.394
		Right Cheek	0.045	0.403	0.448
		Right Tilted	0.036	0.339	0.375
	B2 50RB	Left Cheek	0.033	0.420	0.452
		Left Tilted	0.029	0.356	0.384
		Right Cheek	0.030	0.403	0.434
		Right Tilted	0.026	0.339	0.364
	B4 1RB	Left Cheek	0.241	0.420	**0.661**
		Left Tilted	0.180	0.356	0.536
		Right Cheek	0.234	0.403	0.637
		Right Tilted	0.182	0.339	0.520
	B4 50RB	Left Cheek	0.184	0.420	0.604
		Left Tilted	0.145	0.356	0.501
		Right Cheek	0.167	0.403	0.570
		Right Tilted	0.119	0.339	0.457

LTE	B5 1RB	Left Cheek	0.029	0.420	0.448
		Left Tilted	0.024	0.356	0.380
		Right Cheek	0.028	0.403	0.431
		Right Tilted	0.022	0.339	0.361
	B5 25RB	Left Cheek	0.016	0.420	0.436
		Left Tilted	0.012	0.356	0.368
		Right Cheek	0.016	0.403	0.419
		Right Tilted	0.013	0.339	0.352
	B17 1RB	Left Cheek	0.096	0.420	0.515
		Left Tilted	0.080	0.356	0.436
		Right Cheek	0.092	0.403	0.496
		Right Tilted	0.073	0.339	0.412
	B17 25RB	Left Cheek	0.074	0.420	0.493
		Left Tilted	0.057	0.356	0.413
		Right Cheek	0.073	0.403	0.477
		Right Tilted	0.060	0.339	0.399

WWAN PCE + WLAN U-NII					
WWAN Band		Exposure Position	Max SAR (W/kg)		Summed SAR
			WWAN PCE	WLAN U-NII	(W/kg)
GSM	GSM850	Left Cheek	0.130	0.196	0.326
		Left Tilted	0.099	0.166	0.266
		Right Cheek	0.120	0.189	0.309
		Right Tilted	0.091	0.158	0.250
	PCS1900	Left Cheek	0.220	0.196	0.417
		Left Tilted	0.177	0.166	0.344
		Right Cheek	0.212	0.189	0.400
		Right Tilted	0.167	0.158	0.325
WCDMA	Band II	Left Cheek	0.173	0.196	0.369
		Left Tilted	0.142	0.166	0.309
		Right Cheek	0.165	0.189	0.354
		Right Tilted	0.132	0.158	0.291
	Band V	Left Cheek	0.064	0.196	0.260
		Left Tilted	0.051	0.166	0.218
		Right Cheek	0.062	0.189	0.250
		Right Tilted	0.049	0.158	0.207
LTE	B2 1RB	Left Cheek	0.046	0.196	0.243
		Left Tilted	0.038	0.166	0.204
		Right Cheek	0.045	0.189	0.234
		Right Tilted	0.036	0.158	0.194
	B2 50RB	Left Cheek	0.033	0.196	0.229
		Left Tilted	0.029	0.166	0.195
		Right Cheek	0.030	0.189	0.219
		Right Tilted	0.026	0.158	0.184
	B4 1RB	Left Cheek	0.241	0.196	0.437
		Left Tilted	0.180	0.166	0.347
		Right Cheek	0.234	0.189	0.423
		Right Tilted	0.182	0.158	0.340
	B4 50RB	Left Cheek	0.184	0.196	0.380
		Left Tilted	0.145	0.166	0.312
		Right Cheek	0.167	0.189	0.356
		Right Tilted	0.119	0.158	0.277

LTE	B5 1RB	Left Cheek	0.029	0.196	0.225
		Left Tilted	0.024	0.166	0.190
		Right Cheek	0.028	0.189	0.216
		Right Tilted	0.022	0.158	0.180
	B5 25RB	Left Cheek	0.016	0.196	0.212
		Left Tilted	0.012	0.166	0.179
		Right Cheek	0.016	0.189	0.205
		Right Tilted	0.013	0.158	0.171
	B17 1RB	Left Cheek	0.096	0.196	0.292
		Left Tilted	0.080	0.166	0.246
		Right Cheek	0.092	0.189	0.281
		Right Tilted	0.073	0.158	0.232
	B17 25RB	Left Cheek	0.074	0.196	0.270
		Left Tilted	0.057	0.166	0.224
		Right Cheek	0.073	0.189	0.262
		Right Tilted	0.060	0.158	0.218

WWAN PCE + Bluetooth					
WWAN Band		Exposure Position	Max SAR (W/kg)		Summed SAR
			WWAN PCE	Bluetooth	(W/kg)
GSM	GSM850	Left Cheek	0.130	0.132	0.262
		Left Tilted	0.099	0.132	0.231
		Right Cheek	0.120	0.132	0.252
		Right Tilted	0.091	0.132	0.223
	PCS1900	Left Cheek	0.220	0.132	0.352
		Left Tilted	0.177	0.132	0.309
		Right Cheek	0.212	0.132	0.344
		Right Tilted	0.167	0.132	0.299
WCDMA	Band II	Left Cheek	0.173	0.132	0.305
		Left Tilted	0.142	0.132	0.274
		Right Cheek	0.165	0.132	0.297
		Right Tilted	0.132	0.132	0.264
	Band V	Left Cheek	0.064	0.132	0.196
		Left Tilted	0.051	0.132	0.183
		Right Cheek	0.062	0.132	0.194
		Right Tilted	0.049	0.132	0.181
LTE	B2 1RB	Left Cheek	0.046	0.132	0.178
		Left Tilted	0.038	0.132	0.170
		Right Cheek	0.045	0.132	0.177
		Right Tilted	0.036	0.132	0.168
	B2 50RB	Left Cheek	0.033	0.132	0.165
		Left Tilted	0.029	0.132	0.161
		Right Cheek	0.030	0.132	0.162
		Right Tilted	0.026	0.132	0.158
	B4 1RB	Left Cheek	0.241	0.132	0.373
		Left Tilted	0.180	0.132	0.312
		Right Cheek	0.234	0.132	0.366
		Right Tilted	0.182	0.132	0.314
	B4 50RB	Left Cheek	0.184	0.132	0.316
		Left Tilted	0.145	0.132	0.277
		Right Cheek	0.167	0.132	0.299
		Right Tilted	0.119	0.132	0.251

LTE	B5 1RB	Left Cheek	0.029	0.132	0.161
		Left Tilted	0.024	0.132	0.156
		Right Cheek	0.028	0.132	0.160
		Right Tilted	0.022	0.132	0.154
	B5 25RB	Left Cheek	0.016	0.132	0.148
		Left Tilted	0.012	0.132	0.144
		Right Cheek	0.016	0.132	0.148
		Right Tilted	0.013	0.132	0.145
	B17 1RB	Left Cheek	0.096	0.132	0.228
		Left Tilted	0.080	0.132	0.212
		Right Cheek	0.092	0.132	0.224
		Right Tilted	0.073	0.132	0.205
	B17 25RB	Left Cheek	0.074	0.132	0.206
		Left Tilted	0.057	0.132	0.189
		Right Cheek	0.073	0.132	0.205
		Right Tilted	0.060	0.132	0.192

Maximum reported SAR value for Body

WWAN PCE + WLAN DTS					
WWAN Band		Exposure Position	Max SAR (W/kg)		Summed SAR
			WWAN PCE	WLAN DTS	(W/kg)
GSM	GSM850	Front	0.129	0.066	0.196
		Rear	0.196	0.097	0.293
	PCS1900	Front	0.466	0.066	0.533
		Rear	0.737	0.097	0.835
WCDMA	Band II	Front	0.516	0.066	0.582
		Rear	0.725	0.097	0.822
	Band V	Front	0.054	0.066	0.121
		Rear	0.088	0.097	0.186
LTE	B2 1RB	Front	0.497	0.066	0.564
		Rear	0.827	0.097	0.925
	B2 50RB	Front	0.367	0.066	0.433
		Rear	0.648	0.097	0.745
	B4 1RB	Front	0.332	0.066	0.398
		Rear	0.713	0.097	0.810
	B4 50RB	Front	0.261	0.066	0.327
		Rear	0.597	0.097	0.694
	B5 1RB	Front	0.046	0.066	0.113
		Rear	0.069	0.097	0.166
	B5 25RB	Front	0.025	0.066	0.091
		Rear	0.045	0.097	0.142
	B17 1RB	Front	0.190	0.066	0.256
		Rear	0.282	0.097	0.379
	B17 25RB	Front	0.111	0.066	0.177
		Rear	0.203	0.097	0.300

WWAN PCE + WLAN U-NII					
WWAN Band		Exposure Position	Max SAR (W/kg)		Summed SAR
			WWAN PCE	WLAN U-NII	(W/kg)
GSM	GSM850	Front	0.129	0.102	0.231
		Rear	0.196	0.149	0.345
	PCS1900	Front	0.466	0.102	0.568
		Rear	0.737	0.149	0.886
WCDMA	Band II	Front	0.516	0.102	0.617
		Rear	0.725	0.149	0.874
	Band V	Front	0.054	0.102	0.156
		Rear	0.088	0.149	0.237
LTE	B2 1RB	Front	0.497	0.102	0.599
		Rear	0.827	0.149	**0.976**
	B2 50RB	Front	0.367	0.102	0.468
		Rear	0.648	0.149	0.797
	B4 1RB	Front	0.332	0.102	0.434
		Rear	0.713	0.149	0.861
	B4 50RB	Front	0.261	0.102	0.362
		Rear	0.597	0.149	0.746
	B5 1RB	Front	0.046	0.102	0.148
		Rear	0.069	0.149	0.218
	B5 25RB	Front	0.025	0.102	0.126
		Rear	0.045	0.149	0.194
	B17 1RB	Front	0.190	0.102	0.291
		Rear	0.282	0.149	0.430
	B17 25RB	Front	0.111	0.102	0.212
		Rear	0.203	0.149	0.352

WWAN PCE + Bluetooth					
WWAN Band		Exposure Position	Max SAR (W/kg)		Summed SAR
			WWAN PCE	Bluetooth	(W/kg)
GSM	GSM850	Front	0.129	0.066	0.195
		Back	0.196	0.066	0.262
	PCS1900	Front	0.466	0.066	0.532
		Back	0.737	0.066	0.803
WCDMA	Band II	Front	0.516	0.066	0.582
		Back	0.725	0.066	0.791
	Band V	Front	0.054	0.066	0.120
		Back	0.088	0.066	0.154
LTE	B2 1RB	Front	0.497	0.066	0.563
		Back	0.827	0.066	0.893
	B2 50RB	Front	0.367	0.066	0.433
		Back	0.648	0.066	0.714
	B4 1RB	Front	0.332	0.066	0.398
		Back	0.713	0.066	0.779
	B4 50RB	Front	0.261	0.066	0.327
		Back	0.597	0.066	0.663
	B5 1RB	Front	0.046	0.066	0.112
		Back	0.069	0.066	0.135
	B5 25RB	Front	0.025	0.066	0.091
		Back	0.045	0.066	0.111
	B17 1RB	Front	0.190	0.066	0.256
		Back	0.282	0.066	0.347
	B17 25RB	Front	0.111	0.066	0.177
		Back	0.203	0.066	0.269

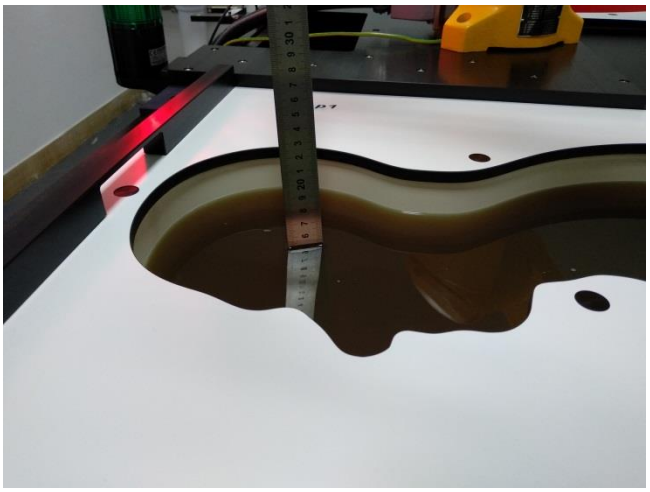
Maximum reported SAR value for Hotspot mode

WWAN PCE + WLAN DTS					
WWAN Band		Exposure Position	Max SAR (W/kg)		Summed SAR
			WWAN PCE	WLAN DTS	(W/kg)
GSM	GSM850	Front	0.129	0.066	0.196
		Back	0.196	0.097	0.293
		Left side	0.140	-	0.140
		Right side	-	0.081	0.081
		Top side	-	0.064	0.064
		Bottom side	0.133	-	0.133
	PCS1900	Front	0.466	0.066	0.533
		Back	0.737	0.097	0.835
		Left side	0.446	-	0.446
		Right side	-	0.081	0.081
		Top side	-	0.064	0.064
		Bottom side	0.463	-	0.463
WCDMA	Band II	Front	0.516	0.066	0.582
		Back	0.725	0.097	0.822
		Left side	0.493	-	0.493
		Right side	-	0.081	0.081
		Top side	-	0.064	0.064
		Bottom side	0.477	-	0.477
	Band V	Front	0.054	0.066	0.121
		Back	0.088	0.097	0.186
		Left side	0.054	-	0.054
		Right side	-	0.081	0.081
		Top side	-	0.064	0.064
		Bottom side	0.054	-	0.054

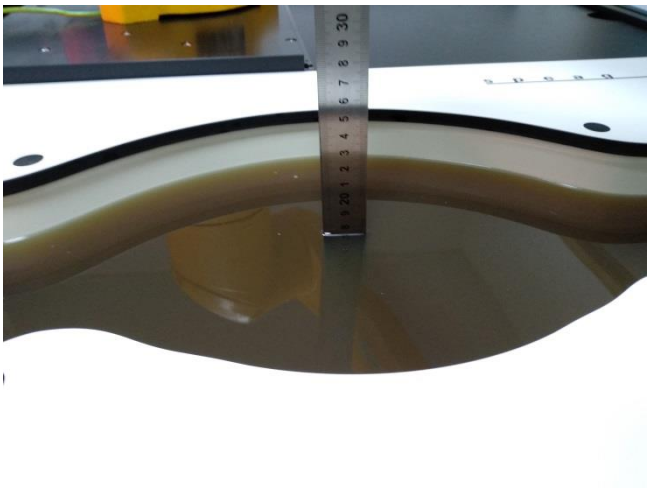
LTE	B2 1RB	Front	0.497	0.066	0.564
		Back	0.827	0.097	**0.924**
		Left side	0.478	-	0.478
		Right side	-	0.081	0.081
		Top side	-	0.064	0.064
		Bottom side	0.518	-	0.518
	B2 50RB	Front	0.367	0.066	0.433
		Back	0.648	0.097	0.745
		Left side	0.419	-	0.419
		Right side	-	0.081	0.081
		Top side	-	0.064	0.064
		Bottom side	0.410	-	0.410
	B4 1RB	Front	0.332	0.066	0.398
		Back	0.713	0.097	0.810
		Left side	0.431	-	0.431
		Right side	-	0.081	0.081
		Top side	-	0.064	0.064
		Bottom side	0.437	-	0.437
	B4 50RB	Front	0.261	0.066	0.327
		Back	0.597	0.097	0.694
		Left side	0.406	-	0.406
		Right side	-	0.081	0.081
		Top side	-	0.064	0.064
		Bottom side	0.395	-	0.395
	B5 1RB	Front	0.046	0.066	0.113
		Back	0.069	0.097	0.166
		Left side	0.049	-	0.049
		Right side	-	0.081	0.081
		Top side	-	0.064	0.064
		Bottom side	0.042	-	0.042
	B5 25RB	Front	0.025	0.066	0.091
		Back	0.045	0.097	0.142
		Left side	0.030	-	0.030
		Right side	-	0.081	0.081
		Top side	-	0.064	0.064
		Bottom side	0.025	-	0.025

LTE	B17 1RB	Front	0.190	0.066	0.256
		Back	0.282	0.097	0.379
		Left side	0.199	-	0.199
		Right side	-	0.081	0.081
		Top side	-	0.064	0.064
		Bottom side	0.170	-	0.170
	B17 25RB	Front	0.111	0.066	0.177
		Back	0.203	0.097	0.300
		Left side	0.134	-	0.134
		Right side	-	0.081	0.081
		Top side	-	0.064	0.064
		Bottom side	0.111	-	0.111

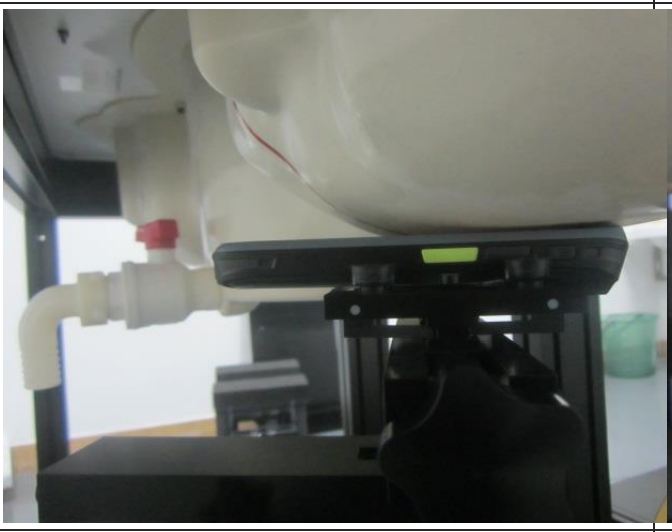
16. TestSetup Photos



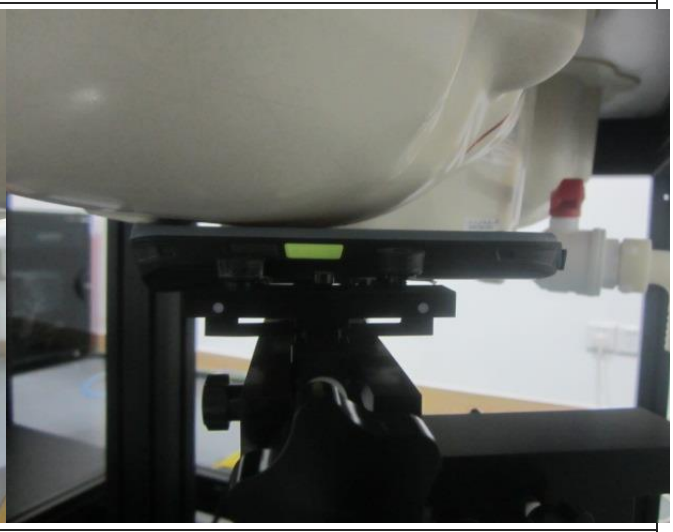
Liquid depth in the Body phantom



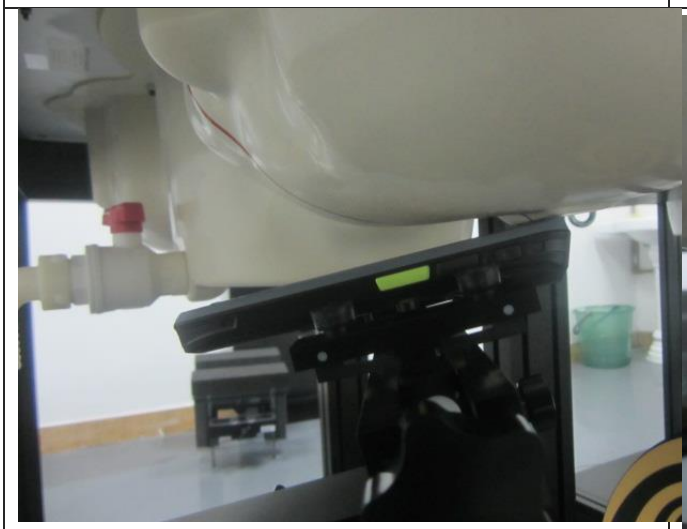
Liquid depth in the Head phantom



Left Head Touch

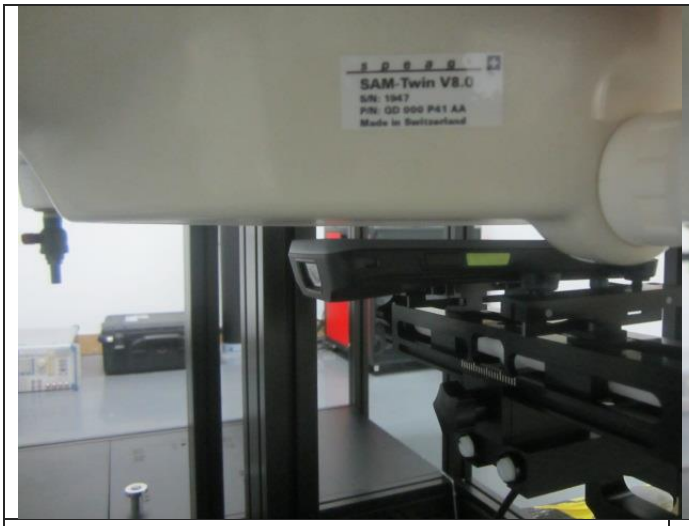


Right Head Touch



Left Head Tilt (15^{o})

Right Head Tilt (15^{o})

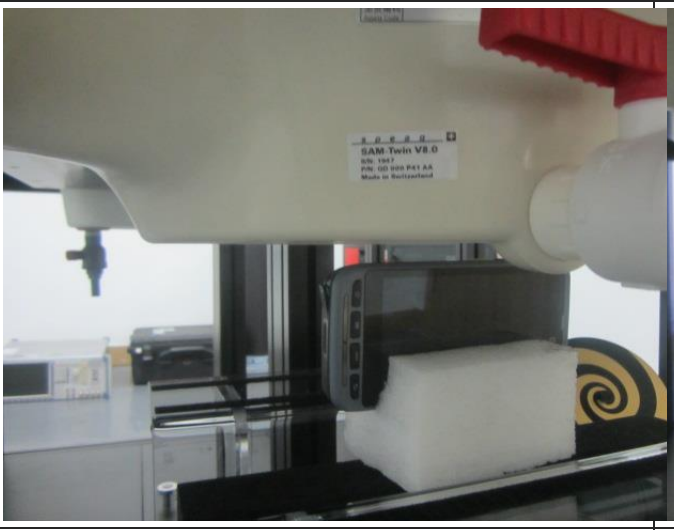


Body-worn Front (10mm)

Body-worn Rear (10mm)

Front (10mm)

Rear (10mm)



Left Side (10mm)

Right Side (10mm)

	
Top Side (10mm)	Bottom Side (10mm)

17. External and Internal Photos of the EUT

Please reference to the report No.: TRE1805013701.

---------End of Report----------

1.1. DAE4 Calibration Certificate

Calibration Laboratory of
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Accreditation No.: SCS 0108

Client CCIC - HTW (Auden)

Certificate No: DAE4-1549_Apr18

CALIBRATION CERTIFICATE

Object	DAE4 - SD 000 D04 BN - SN: 1549
Calibration procedure(s)	QA CAL-06.v29 Calibration procedure for the data acquisition electronics (DAE)
Calibration date:	April 25, 2018

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Keithley Multimeter Type 2001	SN: 0810278	31-Aug-17 (No:21092)	Aug-18
Secondary Standards	**ID #**	**Check Date (in house)**	**Scheduled Check**
Auto DAE Calibration Unit	SE UWS 053 AA 1001	04-Jan-18 (in house check)	In house check: Jan-19
Calibrator Box V2.1	SE UMS 006 AA 1002	04-Jan-18 (in house check)	In house check: Jan-19

	Name	Function	Signature
Calibrated by:	Eric Hainfeld	Laboratory Technician	
Approved by:	Sven Kühn	Deputy Manager	i.V.

Issued: April 25, 2018

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Certificate No: DAE4-1549_Apr18 Page 1 of 5

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Accreditation No.: SCS 0108

Glossary

DAE	data acquisition electronics
Connector angle	information used in DASY system to align probe sensor X to the robot coordinate system.

Methods Applied and Interpretation of Parameters

- *DC Voltage Measurement:* Calibration Factor assessed for use in DASY system by comparison with a calibrated instrument traceable to national standards. The figure given corresponds to the full scale range of the voltmeter in the respective range.
- *Connector angle*: The angle of the connector is assessed measuring the angle mechanically by a tool inserted. Uncertainty is not required.
- The following parameters as documented in the Appendix contain technical information as a result from the performance test and require no uncertainty.
  - *DC Voltage Measurement Linearity:* Verification of the Linearity at +10% and -10% of the nominal calibration voltage. Influence of offset voltage is included in this measurement.
  - *Common mode sensitivity:* Influence of a positive or negative common mode voltage on the differential measurement.
  - *Channel separation:* Influence of a voltage on the neighbor channels not subject to an input voltage.
  - *AD Converter Values with inputs shorted:* Values on the internal AD converter corresponding to zero input voltage
  - *Input Offset Measurement*: Output voltage and statistical results over a large number of zero voltage measurements.
  - *Input Offset Current:* Typical value for information; Maximum channel input offset current, not considering the input resistance.
  - *Input resistance:* Typical value for information: DAE input resistance at the connector, during internal auto-zeroing and during measurement.
  - *Low Battery Alarm Voltage:* Typical value for information. Below this voltage, a battery alarm signal is generated.
  - *Power consumption:* Typical value for information. Supply currents in various operating modes.

DC Voltage Measurement

A/D - Converter Resolution nominal

High Range:	1LSB =	6.1μV ,	full range =	-100...+300 mV
Low Range:	1LSB =	61nV ,	full range =	-1.....+3mV

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

Calibration Factors	X	Y	Z
High Range	406.286 ± 0.02% (k=2)	405.992 ± 0.02% (k=2)	406.121 ± 0.02% (k=2)
Low Range	3.98481 ± 1.50% (k=2)	3.99129 ± 1.50% (k=2)	3.99380 ± 1.50% (k=2)

Connector Angle

Connector Angle to be used in DASY system	19.5 ° ± 1 °

Appendix (Additional assessments outside the scope of SCS0108)

1. DC Voltage Linearity

High Range		Reading (μV)	Difference (μV)	Error (%)
Channel X	+ Input	200032.88	-6.49	-0.00
Channel X	+ Input	20007.86	2.59	0.01
Channel X	- Input	-19999.45	5.51	-0.03
Channel Y	+ Input	200041.48	8.18	0.00
Channel Y	+ Input	20005.02	-0.19	-0.00
Channel Y	- Input	-20006.61	-1.53	0.01
Channel Z	+ Input	200032.37	-0.87	-0.00
Channel Z	+ Input	20003.95	-1.15	-0.01
Channel Z	- Input	-20006.60	-1.44	0.01

Low Range		Reading (μV)	Difference (μV)	Error (%)
Channel X	+ Input	2001.67	0.37	0.02
Channel X	+ Input	201.82	0.29	0.15
Channel X	- Input	-198.25	0.31	-0.16
Channel Y	+ Input	2001.35	0.05	0.00
Channel Y	+ Input	200.82	-0.59	-0.29
Channel Y	- Input	-199.06	-0.48	0.24
Channel Z	+ Input	2000.94	-0.41	-0.02
Channel Z	+ Input	200.84	-0.55	-0.27
Channel Z	- Input	-199.79	-1.17	0.59

2. Common mode sensitivity

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	Common mode Input Voltage (mV)	High Range Average Reading (μV)	Low Range Average Reading (μV)
Channel X	200	-15.83	-18.16
	- 200	21.36	19.06
Channel Y	200	20.98	20.64
	- 200	-22.25	-22.23
Channel Z	200	5.37	5.05
	- 200	-7.46	-7.54

3. Channel separation

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	Input Voltage (mV)	Channel X (μV)	Channel Y (μV)	Channel Z (μV)
Channel X	200	-	-1.66	-2.66
Channel Y	200	5.97	-	-0.75
Channel Z	200	9.87	3.19	-

4. AD-Converter Values with inputs shorted

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	High Range (LSB)	Low Range (LSB)
Channel X	16424	16943
Channel Y	15770	17113
Channel Z	15616	15207

5. Input Offset Measurement

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec
Input 10MΩ

	Average (μV)	min. Offset (μV)	max. Offset (μV)	Std. Deviation (μV)
Channel X	-0.33	-1.57	0.89	0.48
Channel Y	0.13	-0.93	1.54	0.52
Channel Z	-0.98	-2.13	0.50	0.47

6. Input Offset Current

Nominal Input circuitry offset current on all channels: <25fA

7. Input Resistance (Typical values for information)

	Zeroing (kOhm)	Measuring (MOhm)
Channel X	200	200
Channel Y	200	200
Channel Z	200	200

8. Low Battery Alarm Voltage (Typical values for information)

Typical values	Alarm Level (VDC)
Supply (+ Vcc)	+7.9
Supply (- Vcc)	-7.6

9. Power Consumption (Typical values for information)

Typical values	Switched off (mA)	Stand by (mA)	Transmitting (mA)
Supply (+ Vcc)	+0.01	+6	+14
Supply (- Vcc)	–0.01	-8	-9

1.2. Probe Calibration Certificate

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Accreditation No.: SCS 0108

Client CCIC-HTW (Auden) **Certificate No: EX3-7494_Feb18**

CALIBRATION CERTIFICATE

Object EX3DV4 - SN:7494

Calibration procedure(s) QA CAL-01.v9, QA CAL-12.v9, QA CAL-14.v4, QA CAL-23.v5, QA CAL-25.v6
Calibration procedure for dosimetric E-field probes

Calibration date: February 26, 2018

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	04-Apr-17 (No. 217-02521/02522)	Apr-18
Power sensor NRP-Z91	SN: 103244	04-Apr-17 (No. 217-02521)	Apr-18
Power sensor NRP-Z91	SN: 103245	04-Apr-17 (No. 217-02525)	Apr-18
Reference 20 dB Attenuator	SN: S5277 (20x)	07-Apr-17 (No. 217-02528)	Apr-18
Reference Probe ES3DV2	SN: 3013	30-Dec-17 (No. ES3-3013_Dec17)	Dec-18
DAE4	SN: 660	21-Dec-17 (No. DAE4-660_Dec17)	Dec-18
Secondary Standards	ID	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB41293874	06-Apr-16 (in house check Jun-16)	In house check: Jun-18
Power sensor E4412A	SN: MY41498087	06-Apr-16 (in house check Jun-16)	In house check: Jun-18
Power sensor E4412A	SN: 000110210	06-Apr-16 (in house check Jun-16)	In house check: Jun-18
RF generator HP 8648C	SN: US3642U01700	04-Aug-99 (in house check Jun-16)	In house check: Jun-18
Network Analyzer HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-17)	In house check: Oct-18

	Name	Function	Signature
Calibrated by:	Jeton Kastrati	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: February 27, 2018

Calibration Laboratory of
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Accreditation No.: SCS 0108

Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C, D	modulation dependent linearization parameters
Polarization φ	φ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., ϑ = 0 is normal to probe axis
Connector Angle	information used in DASY system to align probe sensor X to the robot coordinate system

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, ", "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Methods Applied and Interpretation of Parameters:

- *NORMx,y,z:* Assessed for E-field polarization ϑ = 0 (f ≤ 900 MHz in TEM-cell; f > 1800 MHz: R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not affect the E^2-field uncertainty inside TSL (see below *ConvF*).
- *NORM(f)x,y,z = NORMx,y,z * frequency_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of *ConvF*.
- *DCPx,y,z:* DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- *PAR:* PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- *Ax,y,z; Bx,y,z; Cx,y,z; Dx,y,z; VRx,y,z: A, B, C, D* are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. *VR* is the maximum calibration range expressed in RMS voltage across the diode.
- *ConvF and Boundary Effect Parameters:* Assessed in flat phantom using E-field (or Temperature Transfer Standard for f ≤ 800 MHz) and inside waveguide using analytical field distributions based on power measurements for f > 800 MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to *NORMx,y,z * ConvF* whereby the uncertainty corresponds to that given for *ConvF*. A frequency dependent *ConvF* is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- *Spherical isotropy (3D deviation from isotropy)*: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- *Sensor Offset*: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- *Connector Angle*: The angle is assessed using the information gained by determining the *NORMx* (no uncertainty required).

Probe EX3DV4

SN:7494

Manufactured: March 20, 2017
Calibrated: February 26, 2018

Calibrated for DASY/EASY Systems
(Note: non-compatible with DASY2 system!)

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7494

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	0.40	0.46	0.38	± 10.1 %
DCP (mV)[B]	96.1	100.9	97.7	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB√μV	C	D dB	VR mV	Unc[E] (k=2)
0	CW	X	0.0	0.0	1.0	0.00	139.9	±3.0 %
		Y	0.0	0.0	1.0		130.5	
		Z	0.0	0.0	1.0		141.2	

Note: For details on UID parameters see Appendix.

Sensor Model Parameters

	C1 fF	C2 fF	α V^{-1}	T1 $ms.V^{-2}$	T2 $ms.V^{-1}$	T3 ms	T4 V^{-2}	T5 V^{-1}	T6
X	35.16	262.6	35.64	5.712	0.042	5.019	0.180	0.312	1.002
Y	33.86	260.4	37.41	4.029	0.204	5.030	0.324	0.359	1.006
Z	29.60	221.1	35.61	5.101	0.000	5.027	0.562	0.186	1.003

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

[A] The uncertainties of Norm X,Y,Z do not affect the E^2-field uncertainty inside TSL (see Pages 5 and 6).
[B] Numerical linearization parameter: uncertainty not required.
[E] Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7494

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha [G]	Depth [G] (mm)	Unc (k=2)
150	52.3	0.76	13.63	13.63	13.63	0.00	1.00	± 13.3 %
450	43.5	0.87	11.70	11.70	11.70	0.14	1.25	± 13.3 %
750	41.9	0.89	11.02	11.02	11.02	0.43	0.86	± 12.0 %
835	41.5	0.90	10.73	10.73	10.73	0.44	0.82	± 12.0 %
1750	40.1	1.37	9.23	9.23	9.23	0.30	0.96	± 12.0 %
1900	40.0	1.40	8.83	8.83	8.83	0.36	0.84	± 12.0 %
2450	39.2	1.80	8.27	8.27	8.27	0.32	0.85	± 12.0 %
2600	39.0	1.96	7.92	7.92	7.92	0.35	0.84	± 12.0 %
5200	36.0	4.66	5.63	5.63	5.63	0.35	1.80	± 13.1 %
5300	35.9	4.76	5.40	5.40	5.40	0.35	1.80	± 13.1 %
5500	35.6	4.96	5.06	5.06	5.06	0.40	1.80	± 13.1 %
5600	35.5	5.07	4.93	4.93	4.93	0.40	1.80	± 13.1 %
5800	35.3	5.27	4.90	4.90	4.90	0.40	1.80	± 13.1 %

[C] Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7494

Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha [G]	Depth [G] (mm)	Unc (k=2)
150	61.9	0.80	12.81	12.81	12.81	0.00	1.00	± 13.3 %
450	56.7	0.94	11.87	11.87	11.87	0.08	1.25	± 13.3 %
750	55.5	0.96	10.87	10.87	10.87	0.41	0.85	± 12.0 %
835	55.2	0.97	10.50	10.50	10.50	0.38	0.85	± 12.0 %
1750	53.4	1.49	8.77	8.77	8.77	0.31	0.90	± 12.0 %
1900	53.3	1.52	8.42	8.42	8.42	0.36	0.84	± 12.0 %
2450	52.7	1.95	8.08	8.08	8.08	0.24	1.07	± 12.0 %
2600	52.5	2.16	7.51	7.51	7.51	0.19	1.10	± 12.0 %
5200	49.0	5.30	5.30	5.30	5.30	0.35	1.90	± 13.1 %
5300	48.9	5.42	4.97	4.97	4.97	0.40	1.90	± 13.1 %
5500	48.6	5.65	4.62	4.62	4.62	0.40	1.90	± 13.1 %
5600	48.5	5.77	4.51	4.51	4.51	0.40	1.90	± 13.1 %
5800	48.2	6.00	4.61	4.61	4.61	0.40	1.90	± 13.1 %

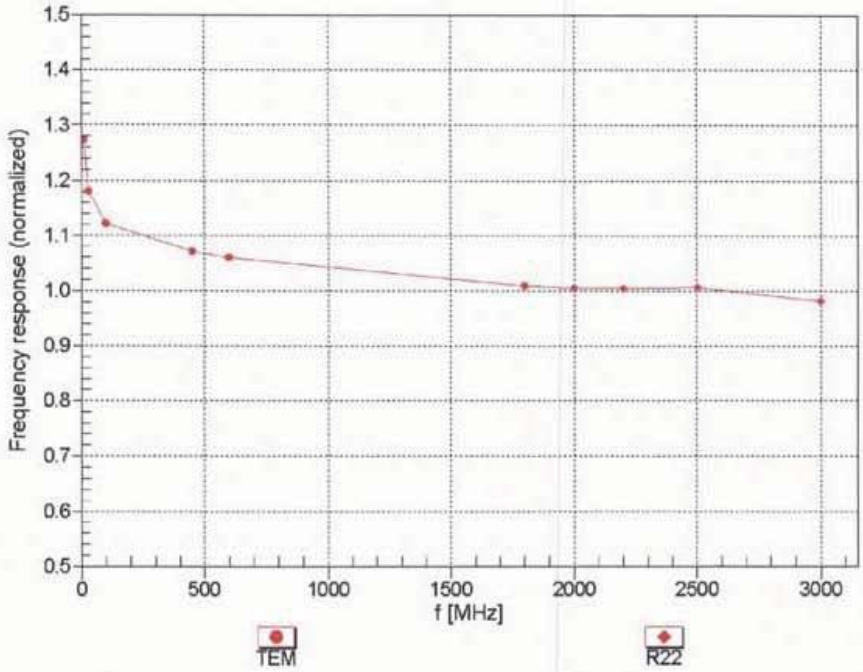
[C] Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

EX3DV4– SN:7494 February 26, 2018

Frequency Response of E-Field
(TEM-Cell:ifi110 EXX, Waveguide: R22)



Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)