Registration
No.910917

TEST REPORT FOR SAR TESTING

Report No.: SRTC2016-9004(F)-0004

Product Name: GSM/GPRS/EGPRS/UMTS/LTE Digital Mobile Phone with Bluetooth and WiFi

Product Model: Philips Xenium V787

Applicant: Shenzhen Sang Fei Consumer Communications Co.,Ltd.

Manufacturer: Shenzhen Sang Fei Consumer Communications Co.,Ltd.

Specification: FCC Part 2.1093

IEEE Std 1528-2013

FCC RF Exposure KDB Procedures

FCC ID: VQRCTV787

The State Radio_monitoring_center Testing Center (SRTC)

No.80 Beilishi Road Xicheng District Beijing, China

Tel: 86-10-57996181 Fax: 86-10-57996288

Contents

1. GENERAL INFORMATION

1.1 Notes of the test report

The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written permission of The State Radio_monitoring_center Testing Center (SRTC).
The test results relate only to individual items of the samples which have been tested.

1.2 Information about the testing laboratory

Company:	The State Radio_monitoring_center Testing Center (SRTC)
Address:	No.80 Beilishi Road, Xicheng District
City:	Beijing
Country or Region:	P.R.China
Contacted person:	Liu Jia
Tel:	+86 10 5799 6181
Fax:	+86 10 5799 6288
Email:	liujiaf@srtc.org.cn

1.3 Applicant's details

Company:	Shenzhen Sang Fei Consumer Communications Co.,Ltd.
Address:	11 Science & Technology Rd., Shenzhen Hi-tech Industrial Park, Nanshan District, Shenzhen
City:	Shenzhen
Country or Region:	China
Grantee Code:	VQR
Contacted person:	linda zhang
Tel:	010-68300097
Fax:	010-68300097
Email:	linda.zhang@sangfei.com

1.4 Manufacturer's details

Company:	Shenzhen Sang Fei Consumer Communications Co.,Ltd.
Address:	11 Science & Technology Rd., Shenzhen Hi-tech Industrial Park, Nanshan District
City:	Shenzhen
Country or Region:	China
Contacted person:	linda zhang
Tel:	010-68300097
Fax:	010-68300097
Email:	linda.zhang@sangfei.com

1.5 Test Environment

Date of Receipt of test sample at SRTC:	2016.01.18
Testing Start Date:	2016.01.21
Testing End Date:	2016.03.01

Environmental Data:	Temperature (°C)	Humidity (%)
Ambient	25.0	38.0

Normal Supply Voltage (V d.c.):	3.80

2. DESCRIPTION OF THE DEVICE UNDER TEST

2.1 Final Equipment Build Status

Wireless Technology and Frequency Bands	GSM Band : GSM850/PCS1900 WCDMA Band: FDD2/FDD5 LTE Band: FDD2/FDD4/FDD7/FDD28 Wi-Fi Band: 2400MHz~2483.5MHz 5150MHz~5250MHz 5250MHz~5350MHz 5725MHz~5850MHz Bluetooth Band: 2400MHz~2483.5MHz
Mode	GSM ☒Voice (GMSK) ☒GPRS (GMSK) ☒EGPRS (GMSK/8PSK) WCDMA ☒UMTS Rel. 99 (Voice & Data) ☒HSDPA (Rel. 5) ☒HSUPA (Rel. 6) ☐HSPA+ (Rel.) ☐DC-HSDPA (Rel.) Wi-Fi 2.4GHz (802.11a/b/g/n) ☒802.11a ☒802.11b ☒802.11g ☒802.11n (20MHz) ☒802.11n (40MHz) Bluetooth ☒BR(GFSK) ☒EDR(π/4 DQPSK , 8-DPSK) ☒BLE(GFSK)
Duty Cycle	GSM Voice: 12.5%; GPRS: 12.5% (1 Slot), 25% (2 Slots), 37.5% (3 Slots), 50% (4 Slots) WCDMA: 100% Wi-Fi 802.11b/g/n: 100% Bluetooth: 32.25% (DH1), 66.68% (DH3), 77.52% (DH5)
GPRS Multi-Slot Class	☐Class 8 - One Up ☐Class 10 - Two Up ☒Class 12 - Four Up
Mobile Phone Capability	☐Class A - Mobile phones can be connected to both GPRS and GSM services simultaneously. ☒Class B - Mobile phones can be attached to both GPRS and GSM services, using one service at a time. ☐Class C - Mobile phones are attached to either GPRS or GSM voice

	service. You need to switch manually between services
DTM (Dual Transfer Mode)	Not Supported

2.2 Support Equipment

The following support equipment was used to exercise the DUT during testing:

State of sample	Production unit
Headset	TJ-101158 /Dongguan Tian Zhi Industrial Co., Ltd.
Batteries	AB5000AWML/Zhongshan Tianmao Battery Co.
H/W Version S/W Version	WMCVc Philips_V787_1553_V01_AG_FCC
IMEI	866636024833471/866636024833398
Notes	---

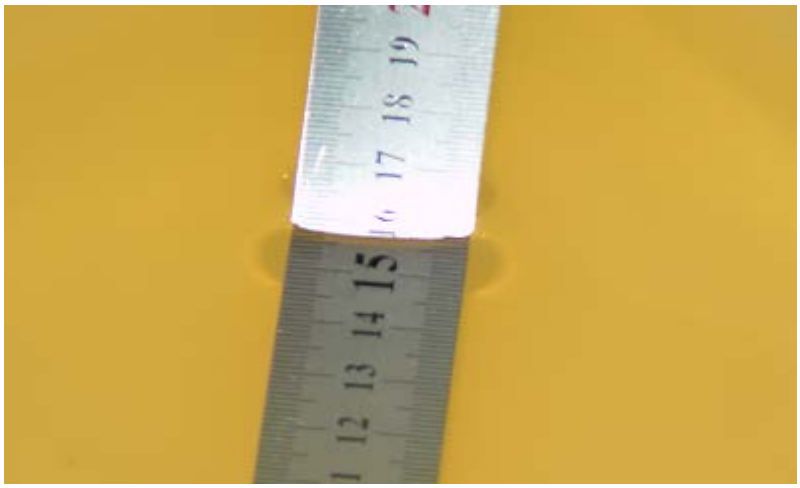
3. REFERENCE SPECIFICATION

Specification	Version	Title
Part 2.1093	June 23, 2015	Radiofrequency radiation exposure evaluation: portable devices.
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
IEEE Std 1528a	2005	IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques Amendment 1: CAD File for Human Head Model (SAM Phantom)
KDB 447498 D01	v06	General RF Exposure Guidance
KDB 648474 D04	v01r03	Handset SAR
KDB 941225 D01	v03r01	3G SAR Procedures
KDB 941225 D06	v02r01	Hotspot Mode
KDB 248227 D01	v02r02	SAR meas for 802 11 a b g
KDB 865664 D01	v01r04	SAR Measurement 100 MHz to 6 GHz
KDB 865664 D02	v01r02	RF Exposure Reporting

4. TEST CONDITIONS

4.1 Picture to demonstrate the required liquid depth

The liquid depth in the used SAM phantoms



Liquid depth for SAR Measurement

4.2 Test Signal, Frequencies and Output Power

The device was put into operation by using a call tester. Communication between the device and the call tester was established by air link.
The device output power was set to maximum power level for all tests; a fully charged battery was used for every test sequence.
In all operating bands the measurements were performed on lowest, middle and highest channels.

4.3 SAR Measurement Set-up

The system is based on a high precision robot (working range greater than 0.9m), which positions the probes with a positional repeatability of better than ± 0.02mm. Special E- and H-field probes have been developed for measurements close to material discontinuity, the sensors of which are directly loaded with a Schottky diode and connected via highly resistive lines (length =300mm) to the data acquisition unit. A cell controller system contains the power supply, robot controller, teaches pendant (Joystick), and remote control, is used to drive the robot motors.
The PC consists of the Micron Pentium IV computer with Win7 system and SAR Measurement Software DASY5 Professional, A/D interface card, monitor, mouse, and keyboard. The Stäubli Robot is connected to the cell controller to allow software

manipulation of the robot.
A data acquisition electronic (DAE) circuit performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. is connected to the Electro-optical coupler
(EOC). The EOC performs the conversion from the optical into digital electric signal of the DAEand transfers data to the PC plug-in card. The DAE consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the PC-card is accomplished through an optical downlink for data and status information and an optical uplink for commands and clock lines.
The mechanical probe mounting device includes two different sensor systems for frontal and sidewise probe contacts. They are also used for mechanical surface detection and probe collision detection
The robot uses its own controller with a built in VME-bus computer.

4.4 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 phantom conforms to the requirements of IEEE 1528 - 2013.
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.
The SPEAG device holder (see Section 5.1) was used to position the device in all tests whilst a tripod was used to position the validation dipoles against the flat section of phantom.

4.5 Tissue Simulants

Recommended values for the dielectric parameters of the tissue simulants are given in IEEE 1528 - 2013 and FCC Supplement C to OET Bulletin 65. All tests were carried out using simulants whose dielectric parameters were within ± 5% of the recommended values. All tests were carried out within 24 hours of measuring the dielectric parameters.
The depth of the tissue simulant was 15.0 ± 0.5 cm measured from the ear reference point during system checking and device measurements.

4.5.1 Tissue Simulant Recipes

The following recipe(s) were used for Head and Body tissue stimulant(s):

835MHz band

Ingredient	Head (% by weight)	Body (% by weight)
Water	41.45	52.50
Sugar	56.00	45.0
Nacl	1.45	1.40
Cellulose	1.00	1.00
Preventol	0.10	0.10

1900MHz band

Ingredient	Head (% by weight)	Body (% by weight)
Water	44,45	70.17
DGBE	55.24	29.44
Nacl	0.31	0.39

2450MHz band

Ingredient	Head (% by weight)	Body (% by weight)
Water	55.00	68.64
DGBE	45.00	31.37
Nacl	0.00	0.00

4.6 DESCRIPTION OF THE TEST PROCEDURE

4.6.1 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.

Device holder supplied by SPEAG

4.6.2 Test positions

4.6.2.1 Against Phantom Head

Measurements were made in “cheek” and “tilt” positions on both the left hand and right hand sides of the phantom.
The positions used in the measurements were according to IEEE 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".

4.6.2.2 Body Worn Configuration

The device was placed in the SPEAG holder below the flat section of the phantom. The distance between the device and the phantom was kept at the separation distance using a separate flat spacer that was removed before the start of the measurements. And the distance is 10mm.The device was oriented with its antenna facing the phantom since this orientation gives higher results.

4.6.3 Scan Procedure

First, area scans were used for determination of the field distribution and the approximate location of the local peak SAR values. The SAR distribution is scanned along the inside surface, at least for an area larger than the projection of the handset and antenna. The angle between the probe axis and the surface normal line is recommended but not required to be less than 30°. The SAR distribution is first measured on a 2-D coarse grid. The scan region should cover all areas that are exposed and encompassed by the projection of the handset. It is a 15 mm × 15 mm measurement grid used when two staggered one-dimensional cubic splines are used to estimate the maximum SAR location. Next, a zoom scan, a minimum of 7 x 7x7 points covering a volume of at least 30x30x30mm, was performed around the highest E-field value to determine the averaged SAR value. Drift was determined by measuring the same point at the start of the area scan and again at the end of the zoom scan.

4.6.4 SAR Averaging Methods

The maximum SAR value was averaged over a cube of tissue using interpolation and extrapolation.
The interpolation, extrapolation and maximum search routines within DASY5 are all based on the modified Quadratic Shepard’s method (Robert J. Renka,”Multivariate Interpolation of Large Sets of Scattered Data”, University of North Texas ACM Transactions on Mathematical Software, vol. 14, no. 2, June 1988, pp. 139-148).
The interpolation scheme combines a least-square fitted function method with a weighted average method. A trivariate 3-D / bivariate 2-D quadratic function is computed for each measurement point and fitted to neighbouring points by a least-square method. For the zoom scan, inverse distance weighting is incorporated to fit distant points more accurately. The interpolating function is finally calculated as a weighted average of the quadratics.
In the zoom scan, the interpolation function is used to extrapolate the Peak SAR from the deepest measurement points to the inner surface of the phantom.

5 RESULT SUMMAR

The maximum reported SAR values for Head configuration and Body Worn configuration are given as follows. The device conforms to the requirements of the standard(s) when the maximum reported SAR value is less than or equal to the limit.

Exposure Posltion	Frequency Band	1g-SAR Reported Result (W/kg)	Highest 1g-SAR Reported Result (W/kg)	Limit (W/kg)/1g	Result
Head	GSM 850	0.205	**1.155**	1.6	PASS
	GSM 1900	0.367			
	WCDMA Band 2	0.302			
	WCDMA Band 5	0.211			
	WLAN 2.4GHz Band	**0.637**			
	LTE Band 2	0.443			
	LTE Band 4	0.389			
	LTE Band 7	0.473			
	LTE Band 28	0.569			
Body (10mm Gap)	GSM 850	0.850			
	GSM 1900	**1.155**			
	WCDMA Band 2	1.078			
	WCDMA Band 5	0.348			
	WLAN 2.4GHz Band	0.637			
	LTE Band 2	0.861			
	LTE Band 4	0.779			
	LTE Band 7	0.161			
	LTE Band 28	0.611			

Simultaneous Transmission Summary

Exposure Position	Frequency Band	1g-SAR Result(W/kg)	Highest 1g-SAR Result(W/kg)	Limit (W/kg)/1g	Result
Head	GSM & Wi-Fi	0.940	**1.487**	1.6	PASS
	WCDMA & Wi-Fi	0.875			
	LTE& Wi-Fi	**1.046**			
	GSM & Bluetooth	0.449			
	WCDMA & Bluetooth	0.384			
	LTE& Bluetooth	0.555			
Body (Gap 10mm)	GSM & Wi-Fi	**1.487**			
	WCDMA & Wi-Fi	1.104			
	LTE& Wi-Fi	1.465			
	GSM & Bluetooth	1.237			
	WCDMA & Bluetooth	1.160			
	LTE& Bluetooth	0.996			

This Test Report Is Issued by: Mr. Tao Hongbo	Checked by: Mr. Li Boyu
Tested by: Mr. Chang Taosha	Issued date: 2016/3/13

6 TEST RESULT

6.1 Manufacturing Tolerance

GSM

GSM 850			
Channel	Channel 128	Channel 189	Channel 251
Tolerance (dBm)	30.0~34.5	30.0~34.5	30.0~34.5
GSM 1900			
Channel	Channel 512	Channel 661	Channel 810
Tolerance (dBm)	27.0~31.5	27.0~31.5	27.0~31.5

GSM 850 GPRS				
Channel		128	189	251
1 Txslot	Tolerance (dBm)	30.0~34.5	30.0~34.5	30.0~34.5
2 Txslot	Tolerance (dBm)	28.0~32.5	28.0~32.5	28.0~32.5
3 Txslot	Tolerance (dBm)	26.0~31.5	26.0~31.5	26.0~31.5
4 Txslot	Tolerance (dBm)	24.0~30.5	24.0~30.5	24.0~30.5
GSM 850 EGPRS (GMSK)				
Channel		128	189	251
1 Txslot	Tolerance (dBm)	30.0~34.5	30.0~34.5	30.0~34.5
2 Txslot	Tolerance (dBm)	28.0~32.5	28.0~32.5	28.0~32.5
3 Txslot	Tolerance (dBm)	26.0~31.5	26.0~31.5	26.0~31.5
4 Txslot	Tolerance (dBm)	24.0~30.5	24.0~30.5	24.0~30.5

GSM 1900 GPRS				
Channel		512	661	810
1 Txslot	Tolerance (dBm)	27.0~31.5	27.0~31.5	27.0~31.5
2 Txslot	Tolerance (dBm)	26.0~30.0	26.0~30.0	26.0~30.0
3 Txslot	Tolerance (dBm)	25.0~29.0	25.0~29.0	25.0~29.0
4 Txslot	Tolerance (dBm)	24.0~28.5	24.0~28.5	24.0~28.5
GSM 1900 EGPRS (GMSK)				
Channel		512	661	810
1 Txslot	Tolerance (dBm)	27.0~31.5	27.0~31.5	27.0~31.5
2 Txslot	Tolerance (dBm)	26.0~30.0	26.0~30.0	26.0~30.0
3 Txslot	Tolerance (dBm)	25.0~29.0	25.0~29.0	25.0~29.0
4 Txslot	Tolerance (dBm)	24.0~28.5	24.0~28.5	24.0~28.5

WCDMA

WCDMA Band2			
Channel	9662	9800	9938
Tolerance (dBm)	20.0~23.0	20.0~23.0	20.0~23.0
WCDMA Band5			
Channel	4357	4408	4458
Tolerance (dBm)	20.0~23.5	20.0~23.5	20.0~23.5

HSDPA Band2				
Channel		9662	9800	9938
Sub test 1	Tolerance (dBm)	18.0~22.0	18.0~22.0	18.0~22.0
Sub test 2	Tolerance (dBm)	18.0~22.0	18.0~22.0	18.0~22.0
Sub test 3	Tolerance (dBm)	18.0~22.0	18.0~22.0	18.0~22.0
Sub test 4	Tolerance (dBm)	18.0~22.0	18.0~22.0	18.0~22.0
HSDPA Band5				
Channel		4357	4408	4458
Sub test 1	Tolerance (dBm)	18.0~22.0	18.0~22.0	18.0~22.0
Sub test 2	Tolerance (dBm)	18.0~22.0	18.0~22.0	18.0~22.0
Sub test 3	Tolerance (dBm)	18.0~22.0	18.0~22.0	18.0~22.0
Sub test 4	Tolerance (dBm)	18.0~22.0	18.0~22.0	18.0~22.0

HSUPA Band2				
Channel		9662	9800	9938
Sub test 1	Tolerance (dBm)	18.0~22.0	18.0~22.0	18.0~22.0
Sub test 2	Tolerance (dBm)	18.0~22.0	18.0~22.0	18.0~22.0
Sub test 3	Tolerance (dBm)	18.0~22.0	18.0~22.0	18.0~22.0
Sub test 4	Tolerance (dBm)	17.0~21.0	17.0~21.0	17.0~21.0
Sub test 5	Tolerance (dBm)	19.0~23.5	19.0~23.5	19.0~23.5

HSUPA Band5				
Channel		4357	4408	4458
Sub test 1	Tolerance (dBm)	18.0~22.0	18.0~22.0	18.0~22.0
Sub test 2	Tolerance (dBm)	18.0~22.0	18.0~22.0	18.0~22.0
Sub test 3	Tolerance (dBm)	18.0~22.0	18.0~22.0	18.0~22.0
Sub test 4	Tolerance (dBm)	17.0~21.0	17.0~21.0	17.0~21.0
Sub test 5	Tolerance (dBm)	19.0~23.5	19.0~23.5	19.0~23.5

Bluetooth

GFSK			
Channel	0	39	78
Tolerance (dBm)	3.0~8.0	3.0~8.0	3.0~8.0
π/4DQPSK			
Channel	0	39	78
Tolerance (dBm)	2.0~7.0	2.0~7.0	2.0~7.0
8DPSK			
Channel	0	39	78
Tolerance (dBm)	3.0~7.0	3.0~7.0	3.0~7.0

Bluetooth (BLE)

GFSK			
Channel	0	39	78
Tolerance (dBm)	-4.0~1.0	-4.0~1.0	-4.0~1.0

Wi-Fi

802.11a			
Channel	1	6	11
Tolerance (dBm)	13.0~17.0	13.0~17.0	13.0~17.0
802.11b			
Channel	1	6	11
Tolerance (dBm)	13.0~17.0	13.0~17.0	13.0~17.0
802.11g			
Channel	1	6	11
Tolerance (dBm)	7.0~13.5	7.0~13.5	7.0~13.5
802.11n HT20 (MCS0~MCS3)			
Channel	1	6	11
Tolerance (dBm)	7.0~13.5	7.0~13.5	7.0~13.5
802.11n HT20 (MCS4~MCS7)			
Channel	1	6	11
Tolerance (dBm)	7.0~13.5	7.0~13.5	7.0~13.5
802.11n HT40 (MCS0~MCS3)			
Channel	1	6	11
Tolerance (dBm)	5.0~13.0	5.0~13.0	5.0~13.0
802.11n HT40 (MCS4~MCS7)			
Channel	1	6	11
Tolerance (dBm)	5.0~13.0	5.0~13.0	5.0~13.0

LTE

Band 2

20BW 100%RB			
Channel	Channel 18700	Channel 18900	Channel 19100
Tolerance (dBm)	20.0~24.5	20.0~24.5	20.0~24.5
20BW 50%RB			
Channel	Channel 18700	Channel 18900	Channel 19100
Tolerance (dBm)	20.0~24.5	20.0~24.5	20.0~24.5
20BW 1RB			
Channel	Channel 18700	Channel 18900	Channel 19100
Tolerance (dBm)	20.0~24.5	20.0~24.5	20.0~24.5
15BW 100%RB			
Channel	Channel 18675	Channel 18900	Channel 19125
Tolerance (dBm)	20.0~24.5	20.0~24.5	20.0~24.5
15BW 50%RB			
Channel	Channel 18675	Channel 18900	Channel 19125
Tolerance (dBm)	20.0~24.5	20.0~24.5	20.0~24.5
15BW 1RB			
Channel	Channel 18675	Channel 18900	Channel 19125
Tolerance (dBm)	20.0~24.5	20.0~24.5	20.0~24.5
10BW 100%RB			
Channel	Channel 18650	Channel 18900	Channel 19150
Tolerance (dBm)	20.0~24.5	20.0~24.5	20.0~24.5
10BW 50%RB			
Channel	Channel 18650	Channel 18900	Channel 19150
Tolerance (dBm)	20.0~24.5	20.0~24.5	20.0~24.5
10BW 1RB			
Channel	Channel 18650	Channel 18900	Channel 19150
Tolerance (dBm)	20.0~24.5	20.0~24.5	20.0~24.5
5BW 100%RB			
Channel	Channel 18625	Channel 18900	Channel 19175
Tolerance (dBm)	20.0~24.5	20.0~24.5	20.0~24.5
5BW 50%RB			
Channel	Channel 18625	Channel 18900	Channel 19175
Tolerance (dBm)	20.0~24.5	20.0~24.5	20.0~24.5
5BW 1RB			
Channel	Channel 18625	Channel 18900	Channel 19175
Tolerance (dBm)	20.0~24.5	20.0~24.5	20.0~24.5
3BW 100%RB			
Channel	Channel 18615	Channel 18900	Channel 19185
Tolerance (dBm)	20.0~24.5	20.0~24.5	20.0~24.5
3BW 50%RB			
Channel	Channel 18615	Channel 18900	Channel 19185
Tolerance (dBm)	20.0~24.5	20.0~24.5	20.0~24.5
3BW 1RB			
Channel	Channel 18615	Channel 18900	Channel 19185
Tolerance (dBm)	20.0~24.5	20.0~24.5	20.0~24.5
1.4BW 100%RB			
Channel	Channel 18607	Channel 18900	Channel 19193
Tolerance (dBm)	20.0~24.5	20.0~24.5	20.0~24.5
1.4BW 50%RB			
Channel	Channel 18607	Channel 18900	Channel 19193
Tolerance (dBm)	20.0~24.5	20.0~24.5	20.0~24.5
1.4BW 1RB			
Channel	Channel 18607	Channel 18900	Channel 19193
Tolerance (dBm)	20.0~24.5	20.0~24.5	20.0~24.5

Band 4

20BW 100%RB			
Channel	Channel 20050	Channel 20175	Channel 20300
Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0
20BW 50%RB			
Channel	Channel 20050	Channel 20175	Channel 20300
Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0
20BW 1RB			
Channel	Channel 20050	Channel 20175	Channel 20300
Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0
15BW 100%RB			
Channel	Channel 20250	Channel 20175	Channel 20325
Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0
15BW 50%RB			
Channel	Channel 20250	Channel 20175	Channel 20325
Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0
15BW 1RB			
Channel	Channel 20250	Channel 20175	Channel 20325
Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0
10BW 100%RB			
Channel	Channel 20000	Channel 20175	Channel 20350
Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0
10BW 50%RB			
Channel	Channel 20000	Channel 20175	Channel 20350
Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0
10BW 1RB			
Channel	Channel 20000	Channel 20175	Channel 20350
Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0
5BW 100%RB			
Channel	Channel 19975	Channel 20175	Channel 20375
Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0
5BW 50%RB			
Channel	Channel 19975	Channel 20175	Channel 20375
Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0
5BW 1RB			
Channel	Channel 19975	Channel 20175	Channel 20375
Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0
3BW 100%RB			
Channel	Channel 19965	Channel 20175	Channel 20385
Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0
3BW 50%RB			
Channel	Channel 19965	Channel 20175	Channel 20385
Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0
3BW 1RB			
Channel	Channel 19965	Channel 20175	Channel 20385
Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0
1.4BW 100%RB			
Channel	Channel 19957	Channel 20175	Channel 20393
Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0
1.4BW 50%RB			
Channel	Channel 19957	Channel 20175	Channel 20393
Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0
1.4BW 1RB			
Channel	Channel 19957	Channel 20175	Channel 20393
Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0

Band7

20BW 100%RB			
Channel	Channel 20850	Channel 21100	Channel 21350
Tolerance (dBm)	20.0~24.5	20.0~24.5	20.0~24.5
20BW 50%RB			
Channel	Channel 20850	Channel 21100	Channel 21350
Tolerance (dBm)	20.0~24.5	20.0~24.5	20.0~24.5
20BW 1RB			
Channel	Channel 20850	Channel 21100	Channel 21350
Tolerance (dBm)	20.0~24.5	20.0~24.5	20.0~24.5
15BW 100%RB			
Channel	Channel 20825	Channel 21100	Channel 21375
Tolerance (dBm)	20.0~24.5	20.0~24.5	20.0~24.5
15BW 50%RB			
Channel	Channel 20825	Channel 21100	Channel 21375
Tolerance (dBm)	20.0~24.5	20.0~24.5	20.0~24.5
15BW 1RB			
Channel	Channel 20825	Channel 21100	Channel 21375
Tolerance (dBm)	20.0~24.5	20.0~24.5	20.0~24.5
10BW 100%RB			
Channel	Channel 20800	Channel 21100	Channel 21400
Tolerance (dBm)	20.0~24.5	20.0~24.5	20.0~24.5
10BW 50%RB			
Channel	Channel 20800	Channel 21100	Channel 21400
Tolerance (dBm)	20.0~24.5	20.0~24.5	20.0~24.5
10BW 1RB			
Channel	Channel 20800	Channel 21100	Channel 21400
Tolerance (dBm)	20.0~24.5	20.0~24.5	20.0~24.5
5BW 100%RB			
Channel	Channel 20775	Channel 21100	Channel 21425
Tolerance (dBm)	20.0~24.5	20.0~24.5	20.0~24.5
5BW 50%RB			
Channel	Channel 20775	Channel 21100	Channel 21425
Tolerance (dBm)	20.0~24.5	20.0~24.5	20.0~24.5
5BW 1RB			
Channel	Channel 20775	Channel 21100	Channel 21425
Tolerance (dBm)	20.0~24.5	20.0~24.5	20.0~24.5

Band28

20BW 100%RB			
Channel	Channel 27310	Channel 27460	Channel 27560
Tolerance (dBm)	20.0~24.5	20.0~24.5	20.0~24.5
20BW 50%RB			
Channel	Channel 27310	Channel 27460	Channel 27560
Tolerance (dBm)	20.0~24.5	20.0~24.5	20.0~24.5
20BW 1RB			
Channel	Channel 27310	Channel 27460	Channel 27560
Tolerance (dBm)	20.0~24.5	20.0~24.5	20.0~24.5
15BW 100%RB			
Channel	Channel 27285	Channel 27435	Channel 27585
Tolerance (dBm)	20.0~24.5	20.0~24.5	20.0~24.5
15BW 50%RB			
Channel	Channel 27285	Channel 27435	Channel 27585
Tolerance (dBm)	20.0~24.5	20.0~24.5	20.0~24.5
15BW 1RB			
Channel	Channel 27285	Channel 27435	Channel 27585
Tolerance (dBm)	20.0~24.5	20.0~24.5	20.0~24.5
10BW 100%RB			
Channel	Channel 27260	Channel 27410	Channel 27610
Tolerance (dBm)	20.0~24.5	20.0~24.5	20.0~24.5
10BW 50%RB			
Channel	Channel 27260	Channel 27410	Channel 27610
Tolerance (dBm)	20.0~24.5	20.0~24.5	20.0~24.5
10BW 1RB			
Channel	Channel 27260	Channel 27410	Channel 27610
Tolerance (dBm)	20.0~24.5	20.0~24.5	20.0~24.5
5BW 100%RB			
Channel	Channel 27235	Channel 27385	Channel 27635
Tolerance (dBm)	20.0~24.5	20.0~24.5	20.0~24.5
5BW 50%RB			
Channel	Channel 27235	Channel 27385	Channel 27635
Tolerance (dBm)	20.0~24.5	20.0~24.5	20.0~24.5
5BW 1RB			
Channel	Channel 27235	Channel 27385	Channel 27635
Tolerance (dBm)	20.0~24.5	20.0~24.5	20.0~24.5
3BW 100%RB			
Channel	Channel 27225	Channel 27375	Channel 27645
Tolerance (dBm)	20.0~24.5	20.0~24.5	20.0~24.5
3BW 50%RB			
Channel	Channel 27225	Channel 27375	Channel 27645
Tolerance (dBm)	20.0~24.5	20.0~24.5	20.0~24.5
3BW 1RB			
Channel	Channel 27225	Channel 27375	Channel 27645
Tolerance (dBm)	20.0~24.5	20.0~24.5	20.0~24.5

6.2 GSM Measurement result

GSM Measured Power

Mode	GSM850			GSM1900		
Channel	128	189	251	512	661	810
Frequency(MHz)	824.2	836.4	848.8	1850.2	1880.0	1909.8
Measured Power(dBm)	32.77	32.75	32.71	30.13	29.97	29.91

GPRS Measured Power

Mode	GPRS850			GPRS1900		
Channel	128	189	251	512	661	810
Frequency(MHz)	824.2	836.4	848.8	1850.2	1880.0	1909.8
4Downlink1uplinkPower(dBm)	32.76	32.74	32.68	30.09	29.97	29.88
3Downlink2uplinkPower(dBm)	32.05	32.08	32.01	29.49	29.34	29.31
2Downlink3uplinkPower(dBm)	30.36	30.31	30.28	27.85	27.68	27.7
1Downlink4uplinkPower(dBm)	29.28	29.25	29.15	26.75	26.61	26.61

GPRS Averaged Power

Mode	GPRS850			GPRS1900		
Channel	128	189	251	512	661	810
Frequency(MHz)	824.2	836.4	848.8	1850.2	1880.0	1909.8
4Downlink1uplinkPower(dBm)	23.75	23.73	23.67	21.08	20.96	20.87
3Downlink2uplinkPower(dBm)	26.03	26.06	25.99	23.47	23.32	23.29
2Downlink3uplinkPower(dBm)	26.10	26.05	26.02	23.59	23.42	23.44
1Downlink4uplinkPower(dBm)	**26.27**	**26.24**	**26.14**	**23.74**	**23.6**	**23.6**

Division Factors (for Measured Power and Averaged Power):

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

1TX-slot (4Downlink1uplink) = 1 transmit time slot out of 8 time slots=> conducted power divided by (8/1) => -9.03dB

2TX-slots(3Downlink2uplink) = 2 transmit time slots out of 8 time slots=> conducted power divided by (8/2) => -6.02dB

3TX-slots (2Downlink3uplink)= 3 transmit time slots out of 8 time slots=> conducted power divided by (8/3) => -4.26dB

4TX-slots (1Downlink4uplink)= 4 transmit time slots out of 8 time slots=> conducted power divided by (8/4) => -3.01dB

According to the conducted power as above, the body measurements are performed with 4Txslots (1Downlink4uplink) for GPRS.

EGPRS Measured Power

Mode	EGPRS850 (GMSK) / EGPRS850 (8PSK)			EGPRS1900 (GMSK) / EGPRS1900 (8PSK)		
Channel	128	189	251	512	661	810
Frequency(MHz)	824.2	836.4	848.8	1850.2	1880.0	1909.8
4Downlink1uplinkPower(dBm)	32.7	32.72	32.71	30.03	29.93	29.91
	32.72	32.73	32.67	30.06	29.91	29.9
3Downlink2uplinkPower(dBm)	32.06	32.05	32.02	29.47	29.31	29.35
	32.03	32.06	32.01	29.45	29.32	29.29
2Downlink3uplinkPower(dBm)	30.31	30.27	30.27	27.83	27.67	27.71
	30.32	30.32	30.28	27.81	27.66	27.7
1Downlink4uplinkPower(dBm)	29.3	29.2	29.15	26.74	26.58	26.6
	29.29	29.25	29.12	26.72	26.59	26.59

EGPRS Averaged Power

Mode	EGPRS850 (GMSK) / EGPRS850 (8PSK)			EGPRS1900 (GMSK) / EGPRS1900 (8PSK)		
Channel	128	189	251	512	661	810
Frequency(MHz)	824.2	836.4	848.8	1850.2	1880.0	1909.8
4Downlink1uplinkPower(dBm)	23.69	23.71	23.7	21.02	20.92	20.90
	23.71	23.72	23.66	21.05	20.90	20.89
3Downlink2uplinkPower(dBm)	26.04	26.03	26.00	23.45	23.29	23.33
	26.01	26.04	25.99	23.43	23.30	23.27
2Downlink3uplinkPower(dBm)	26.05	26.01	26.01	23.57	23.41	23.45
	26.06	26.06	26.02	23.55	23.40	23.44
1Downlink4uplinkPower(dBm)	**26.29**	**26.19**	**26.14**	**23.73**	**23.57**	**23.59**
	26.28	26.24	26.11	23.71	23.58	23.58

Division Factors (for Measured Power and Averaged Power):

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

1TX-slot (4Downlink1uplink) = 1 transmit time slot out of 8 time slots=> conducted power divided by (8/1) => -9.03dB

2TX-slots(3Downlink2uplink) = 2 transmit time slots out of 8 time slots=> conducted power divided by (8/2) => -6.02dB

3TX-slots (2Downlink3uplink) = 3 transmit time slots out of 8 time slots=> conducted power divided by (8/3) => -4.26dB

4TX-slots (1Downlink4uplink) = 4 transmit time slots out of 8 time slots=> conducted power divided by (8/4) => -3.01dB

According to the conducted power as above, the body measurements are performed with 4Txslots (1Downlink4uplink) for EGPRS (GMSK).

6.3 WCDMA Measurement result

The following procedures are according to FCC KDB Publication 941225 D01.
Release 99
The following tests were completed according to the test requirements outlined in section 5.2 of the 3GPP TS34.121-1 specification. The DUT supports power Class 3, which has a nominal maximum output power of 24 dBm (+1.7/-3.7).

Mode	Subtest	Rel99
WCDMA General Settings	Loopback Mode	Test Mode 1
	Rel99 RMC	12.2kbps RMC
	Power Control Algorithm	Algorithm2
	βc/βd	8/15

Measured Results

Mode	Band2			Band5		
Channel	9262	9400	9538	4132	4183	4233
Frequency(MHz)	1852.4	1880	1907.6	826.4	836.4	846.6
RB test mode1+64kRMC(dBm)	22.46	22.47	22.48	21.93	21.86	21.90
RB test mode1+12.2kRMC(dBm)	**22.51**	**22.50**	**22.22**	**22.06**	**21.97**	**22.00**
RB test mode1+144kRMC(dBm)	22.54	22.53	22.29	22.07	21.99	22.06
RB test mode1+384kRMC(dBm)	22.56	22.53	22.25	22.06	21.98	22.03
AMR Voice test mode+12.2kRMC(dBm)	22.50	22.48	22.27	22.06	21.98	22.01

HSDPA

The following 4 Sub-tests were completed according to Release 5 procedures in section 5.2 of 3GPP TS34.121.

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{hs} (1)	CM(dB) (2)
1	2/15	15/15	64	2/15	4/15	0.0
2	12/15(3)	15/15(3)	64	12/15(3)	24/15	1.0
3	15/15	8/15	64	15/18	30/15	1.5
4	15/15	4/15	64	15/4	30/15	1.5

Note1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} =8⇔A_{hs}=β_{hs}/β_c=30/15⇔β_{hs}=30/15*β_c.
Note2:CM=1 for β_c/β_d=12/15, β_{hs}/β_c=24/15.
Note3: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 signaled gain factors for the reference TFC(TF1,TF1) to β_c=11/15 and β_d=15/15.

Measured Results

Mode	HSDPA Band 2			HSDPA Band 5		
Channel	9262	9400	9538	4132	4183	4233
Frequency(MHz)	1852.4	1880	1907.6	826.4	836.4	846.6
sub-test1(dBm)	21.55	21.52	21.55	21.18	21.19	21.17
sub-test2(dBm)	21.48	21.56	21.45	21.20	21.20	21.18
sub-test3(dBm)	21.07	20.99	20.99	20.65	20.71	20.66
sub-test4(dBm)	20.99	21.01	21.00	20.73	20.73	20.76

HSPA (HSDPA & HSUPA)

The following 5 Sub-tests were completed according to Release 6 procedures in section 5.2 of 3GPP TS34.121.

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{hs}(1)	β_{ec}	β_{ed}	β_{ed} (SF)	β_{ed} (codes)	CM(2) (dB)	MPR (dB)	AG(4) Index	E-TFCI
1	11/15(3)	15/15(3)	64	11/15(3)	22/15	209/225	1039/225	4	1	1.0	2.0	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_{ed1}:47/15 β_{ed2}:47/15	4	2	2.0	2.0	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(4)	15/15(4)	64	15/15(4)	30/15	24/15	134/15	4	1	1.0	2.0	21	81

Note1:Δ_{ACK}, Δ_{NACK} and Δ_{CQI} =8⇔A_{hs}=β_{hs}/β_c=30/15⇔β_{hs}=30/15*β_c.
Note2: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.
Note3: 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 signaled gain factors for the reference TFC(TF1,TF1) to β_c=10/15 and β_d=15/15.
Note4: 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 signaled gain factors for the reference TFC(TF1,TF1) to β_c=14/15 and β_d=15/15.
NOTE5: Testing UE using E-DPDCH Physical layer category 1 Sub-test 3 is not required according to TS 25.306 Table 5.1g.
NOTE6:β_{ed} can not be set directly; it is set by Absolute Grant Value.

Measured Results

Mode	HSUPA Band 2			HSUPA Band 5		
Channel	9262	9400	9538	4132	4183	4233
Frequency(MHz)	1852.4	1880	1907.6	826.4	836.4	846.6
sub-test1(dBm)	19.58	19.30	19.55	18.81	18.81	19.13
sub-test2(dBm)	19.50	19.28	19.50	18.76	18.80	19.09
sub-test3(dBm)	20.53	20.32	20.52	19.83	19.85	20.10
sub-test4(dBm)	19.02	18.76	18.99	18.31	18.24	18.58
sub-test5(dBm)	21.49	21.26	21.54	20.75	20.80	21.08

UMTS SAR was tested under RMC 12.2 kbps with HSPA Inactive per KDB Publication 941225 D01.
HSPA SAR was not required since the average output power of the HSPA subtests was not more than 0.25 dB higher than the RMC level and SAR was less than 1.2 W/kg.

6.4 LTE Measurement result

Band 2

Test Frequency ID	Bandwidth (MHz)	N_{UL}	Frequency of Uplink(MHz)	Modulation	RB Size	RB Offset	Test results (dBm)
Low Range	1.4	18607	1850.7	QPSK	1	Low	23.37
						Mid	23.49
						High	23.32
					50%	Low	23.31
						Mid	23.02
						High	23.22
					100%	---	22.31
				16QAM	1	Low	22.21
						Mid	22.64
						High	22.19
					50%	Low	22.17
						Mid	21.90
						High	22.07
					100%	---	21.31
	3	18615	1851.5	QPSK	1	Low	23.09
						Mid	23.74
						High	23.10
					50%	Low	22.03
						Mid	22.10
						High	22.08
					100%	---	22.04
				16QAM	1	Low	21.95
						Mid	22.73
						High	21.92
					50%	Low	21.06
						Mid	21.12
						High	21.08
					100%	---	21.11

Test Frequency ID	Bandwidth (MHz)	N_{UL}	Frequency of Uplink(MHz)	Modulation	RB Size	RB Offset	Test results (dBm)
Low Range	5	18625	1852.5	QPSK	1	Low	23.14
						Mid	23.75
						High	23.04
					50%	Low	22.07
						Mid	22.03
						High	22.09
					100%	---	21.99
				16QAM	1	Low	21.99
						Mid	22.75
						High	21.84
					50%	Low	21.05
						Mid	21.00
						High	21.03
					100%	---	21.01
	10	18650	1855	QPSK	1	Low	23.24
						Mid	23.25
						High	23.16
					50%	Low	22.06
						Mid	21.97
						High	22.03
					100%	---	21.99
				16QAM	1	Low	22.06
						Mid	22.31
						High	21.93
					50%	Low	21.09
						Mid	21.00
						High	21.03
					100%	---	20.96

Test Frequency ID	Bandwidth (MHz)	N_{UL}	Frequency of Uplink(MHz)	Modulation	RB Size	RB Offset	Test results (dBm)
Low Range	15	18675	1857.5	QPSK	1	Low	23.30
						Mid	22.95
						High	23.18
					50%	Low	22.02
						Mid	21.98
						High	21.96
					100%	---	22.04
				16QAM	1	Low	22.10
						Mid	22.05
						High	21.98
					50%	Low	21.01
						Mid	20.97
						High	20.96
					100%	---	21.00
	20	18700	1860	QPSK	1	Low	23.31
						Mid	23.21
						High	23.17
					50%	Low	22.01
						Mid	21.96
						High	21.98
					100%	---	21.99
				16QAM	1	Low	22.12
						Mid	22.32
						High	21.94
					50%	Low	20.97
						Mid	20.95
						High	20.93
					100%	---	21.01

Test Frequency ID	Bandwidth (MHz)	N_{UL}	Frequency of Uplink(MHz)	Modulation	RB Size	RB Offset	Test results (dBm)
Mid Range	1.4	18900	1880	QPSK	1	Low	23.02
						Mid	23.11
						High	23.03
					50%	Low	22.99
						Mid	22.70
						High	22.88
					100%	---	21.92
				16QAM	1	Low	21.89
						Mid	22.28
						High	21.91
					50%	Low	21.89
						Mid	21.54
						High	21.78
					100%	---	20.97
	3	18900	1880	QPSK	1	Low	23.06
						Mid	23.50
						High	22.97
					50%	Low	21.93
						Mid	21.87
						High	21.88
					100%	---	21.88
				16QAM	1	Low	21.90
						Mid	22.76
						High	21.87
					50%	Low	20.98
						Mid	21.02
						High	21.03
					100%	---	20.96

Test Frequency ID	Bandwidth (MHz)	N_{UL}	Frequency of Uplink(MHz)	Modulation	RB Size	RB Offset	Test results (dBm)
Mid Range	5	18900	1880	QPSK	1	Low	23.06
						Mid	23.60
						High	22.97
					50%	Low	21.93
						Mid	21.87
						High	21.88
					100%	---	21.80
				16QAM	1	Low	21.94
						Mid	22.73
						High	21.85
					50%	Low	20.91
						Mid	20.87
						High	20.89
					100%	---	20.92
	10	18900	1880	QPSK	1	Low	23.15
						Mid	23.18
						High	23.07
					50%	Low	21.88
						Mid	21.86
						High	21.89
					100%	---	21.92
				16QAM	1	Low	21.97
						Mid	22.34
						High	21.91
					50%	Low	21.00
						Mid	20.95
						High	20.97
					100%	---	20.95

Test Frequency ID	Bandwidth (MHz)	N_{UL}	Frequency of Uplink(MHz)	Modulation	RB Size	RB Offset	Test results (dBm)
Mid Range	15	18900	1880	QPSK	1	Low	23.17
						Mid	22.85
						High	23.06
					50%	Low	21.97
						Mid	21.93
						High	21.92
					100%	---	21.92
				16QAM	1	Low	21.99
						Mid	22.01
						High	21.89
					50%	Low	20.97
						Mid	20.95
						High	20.96
					100%	---	20.96
	20	18900	1880	QPSK	1	Low	23.35
						Mid	23.07
						High	23.04
					50%	Low	22.05
						Mid	21.87
						High	21.88
					100%	---	21.88
				16QAM	1	Low	21.99
						Mid	22.28
						High	21.84
					50%	Low	20.92
						Mid	20.91
						High	20.88
					100%	---	20.95

Test Frequency ID	Bandwidth (MHz)	N_{UL}	Frequency of Uplink(MHz)	Modulation	RB Size	RB Offset	Test results (dBm)
High Range	1.4	19193	1909.3	QPSK	1	Low	22.83
						Mid	22.93
						High	22.83
					50%	Low	22.76
						Mid	22.50
						High	22.69
					100%	---	21.81
				16QAM	1	Low	21.67
						Mid	22.09
						High	21.69
					50%	Low	21.63
						Mid	21.37
						High	21.53
					100%	---	20.82
	3	19185	1908.5	QPSK	1	Low	22.72
						Mid	23.47
						High	22.78
					50%	Low	21.72
						Mid	21.79
						High	21.68
					100%	---	21.71
				16QAM	1	Low	21.59
						Mid	22.48
						High	21.62
					50%	Low	20.71
						Mid	20.83
						High	20.75
					100%	---	20.78

Test Frequency ID	Bandwidth (MHz)	N_{UL}	Frequency of Uplink(MHz)	Modulation	RB Size	RB Offset	Test results (dBm)
High Range	5	19175	1907.5	QPSK	1	Low	22.87
						Mid	23.49
						High	22.79
					50%	Low	21.81
						Mid	21.73
						High	21.79
					100%	---	21.70
				16QAM	1	Low	21.64
						Mid	22.50
						High	21.63
					50%	Low	20.77
						Mid	20.70
						High	20.76
					100%	---	20.73
	10	19150	1905	QPSK	1	Low	22.93
						Mid	22.97
						High	22.86
					50%	Low	21.85
						Mid	21.78
						High	21.79
					100%	---	21.71
				16QAM	1	Low	21.65
						Mid	22.03
						High	21.68
					50%	Low	20.82
						Mid	20.76
						High	20.77
					100%	---	20.68

Test Frequency ID	Bandwidth (MHz)	N_{UL}	Frequency of Uplink(MHz)	Modulation	RB Size	RB Offset	Test results (dBm)
High Range	15	19125	1902.5	QPSK	1	Low	22.99
						Mid	22.78
						High	22.90
					50%	Low	21.73
						Mid	21.66
						High	21.71
					100%	---	21.80
				16QAM	1	Low	21.78
						Mid	21.79
						High	21.73
					50%	Low	20.70
						Mid	20.63
						High	20.71
					100%	---	20.73
	20	19100	1900	QPSK	1	Low	23.07
						Mid	22.99
						High	22.90
					50%	Low	21.79
						Mid	21.74
						High	21.70
					100%	---	21.71
				16QAM	1	Low	21.88
						Mid	22.02
						High	21.66
					50%	Low	20.74
						Mid	20.68
						High	20.69
					100%	---	20.73

Band 4

Test Frequency ID	Bandwidth (MHz)	N_{UL}	Frequency of Uplink(MHz)	Modulation	RB Size	RB Offset	Test results (dBm)
Low Range	1.4	19957	1710.7	QPSK	1	Low	22.47
						Mid	22.58
						High	22.45
					50%	Low	22.41
						Mid	22.10
						High	22.25
					100%	---	21.47
				16QAM	1	Low	21.31
						Mid	21.73
						High	21.31
					50%	Low	21.27
						Mid	20.99
						High	21.19
					100%	---	20.43
	3	19965	1711.5	QPSK	1	Low	22.36
						Mid	23.03
						High	22.41
					50%	Low	21.36
						Mid	21.43
						High	21.37
					100%	---	21.38
				16QAM	1	Low	21.26
						Mid	22.13
						High	21.26
					50%	Low	20.31
						Mid	20.39
						High	20.40
					100%	---	20.42

Test Frequency ID	Bandwidth (MHz)	N_{UL}	Frequency of Uplink(MHz)	Modulation	RB Size	RB Offset	Test results (dBm)
Low Range	5	19975	1712.5	QPSK	1	Low	22.47
						Mid	23.10
						High	22.39
					50%	Low	21.39
						Mid	21.33
						High	21.38
					100%	---	21.27
				16QAM	1	Low	21.32
						Mid	22.18
						High	21.31
					50%	Low	20.32
						Mid	20.26
						High	20.30
					100%	---	20.28
	10	20000	1715	QPSK	1	Low	22.45
						Mid	22.51
						High	22.45
					50%	Low	21.32
						Mid	21.26
						High	21.31
					100%	---	21.29
				16QAM	1	Low	21.30
						Mid	21.68
						High	21.33
					50%	Low	20.32
						Mid	20.28
						High	20.26
					100%	---	20.25

Test Frequency ID	Bandwidth (MHz)	N_{UL}	Frequency of Uplink(MHz)	Modulation	RB Size	RB Offset	Test results (dBm)
Low Range	15	20025	1717.5	QPSK	1	Low	22.51
						Mid	22.23
						High	22.49
					50%	Low	21.35
						Mid	21.31
						High	21.29
					100%	---	21.32
				16QAM	1	Low	21.33
						Mid	21.41
						High	21.36
					50%	Low	20.35
						Mid	20.36
						High	20.31
					100%	---	20.30
	20	20050	1720	QPSK	1	Low	22.53
						Mid	22.45
						High	22.46
					50%	Low	21.28
						Mid	21.31
						High	21.29
					100%	---	21.26
				16QAM	1	Low	21.35
						Mid	21.70
						High	21.31
					50%	Low	20.27
						Mid	20.26
						High	20.28
					100%	---	20.28

Test Frequency ID	Bandwidth (MHz)	N_{UL}	Frequency of Uplink(MHz)	Modulation	RB Size	RB Offset	Test results (dBm)
Mid Range	1.4	20175	1732.5	QPSK	1	Low	22.27
						Mid	22.39
						High	22.20
					50%	Low	22.21
						Mid	21.94
						High	22.10
					100%	---	21.23
				16QAM	1	Low	21.13
						Mid	21.54
						High	21.12
					50%	Low	21.08
						Mid	20.80
						High	20.99
					100%	---	20.21
	3	20175	1732.5	QPSK	1	Low	22.25
						Mid	22.85
						High	22.24
					50%	Low	21.20
						Mid	21.27
						High	21.25
					100%	---	21.20
				16QAM	1	Low	21.14
						Mid	21.96
						High	21.10
					50%	Low	20.21
						Mid	20.31
						High	20.25
					100%	---	20.26

Test Frequency ID	Bandwidth (MHz)	N_{UL}	Frequency of Uplink(MHz)	Modulation	RB Size	RB Offset	Test results (dBm)
Mid Range	5	20175	1732.5	QPSK	1	Low	22.31
						Mid	23.12
						High	22.23
					50%	Low	21.25
						Mid	21.14
						High	21.23
					100%	---	21.14
				16QAM	1	Low	21.19
						Mid	21.95
						High	21.07
					50%	Low	20.17
						Mid	20.10
						High	20.14
					100%	---	20.16
	10	20175	1732.5	QPSK	1	Low	22.40
						Mid	22.37
						High	22.31
					50%	Low	21.18
						Mid	21.11
						High	21.19
					100%	---	21.16
				16QAM	1	Low	21.26
						Mid	21.54
						High	21.12
					50%	Low	20.21
						Mid	20.14
						High	20.18
					100%	---	20.12

Test Frequency ID	Bandwidth (MHz)	N_{UL}	Frequency of Uplink(MHz)	Modulation	RB Size	RB Offset	Test results (dBm)
Mid Range	15	20175	1732.5	QPSK	1	Low	22.41
						Mid	22.06
						High	22.32
					50%	Low	21.18
						Mid	21.13
						High	21.14
					100%	---	21.16
				16QAM	1	Low	21.23
						Mid	21.22
						High	21.11
					50%	Low	20.14
						Mid	20.12
						High	20.09
					100%	---	20.14
	20	20175	1732.5	QPSK	1	Low	22.58
						Mid	22.36
						High	22.39
					50%	Low	21.32
						Mid	21.17
						High	21.18
					100%	---	21.14
				16QAM	1	Low	21.30
						Mid	21.52
						High	21.13
					50%	Low	20.18
						Mid	20.13
						High	20.09
					100%	---	20.19

Test Frequency ID	Bandwidth (MHz)	N_{UL}	Frequency of Uplink(MHz)	Modulation	RB Size	RB Offset	Test results (dBm)
High Range	1.4	20393	1754.3	QPSK	1	Low	22.38
						Mid	22.45
						High	22.37
					50%	Low	22.30
						Mid	22.02
						High	22.21
					100%	---	21.33
				16QAM	1	Low	21.25
						Mid	21.63
						High	21.23
					50%	Low	21.20
						Mid	20.88
						High	21.08
					100%	---	20.34
	3	20385	1753.5	QPSK	1	Low	22.37
						Mid	23.00
						High	22.40
					50%	Low	21.30
						Mid	21.34
						High	21.30
					100%	---	21.34
				16QAM	1	Low	21.27
						Mid	22.09
						High	21.26
					50%	Low	20.32
						Mid	20.39
						High	20.36
					100%	---	20.38

Test Frequency ID	Bandwidth (MHz)	N_{UL}	Frequency of Uplink(MHz)	Modulation	RB Size	RB Offset	Test results (dBm)
High Range	5	20375	1752.5	QPSK	1	Low	22.40
						Mid	22.99
						High	22.36
					50%	Low	21.38
						Mid	21.30
						High	21.29
					100%	---	21.20
				16QAM	1	Low	21.22
						Mid	22.09
						High	21.20
					50%	Low	20.27
						Mid	20.23
						High	20.25
					100%	---	20.26
	10	20350	1750	QPSK	1	Low	22.38
						Mid	22.46
						High	22.51
					50%	Low	21.23
						Mid	21.24
						High	21.23
					100%	---	21.25
				16QAM	1	Low	21.27
						Mid	21.62
						High	21.30
					50%	Low	20.29
						Mid	20.27
						High	20.33
					100%	---	20.26

Test Frequency ID	Bandwidth (MHz)	N_{UL}	Frequency of Uplink(MHz)	Modulation	RB Size	RB Offset	Test results (dBm)
High Range	15	20325	1747.5	QPSK	1	Low	22.42
						Mid	22.21
						High	22.53
					50%	Low	21.27
						Mid	21.25
						High	21.31
					100%	---	21.30
				16QAM	1	Low	21.21
						Mid	21.36
						High	21.37
					50%	Low	20.21
						Mid	20.23
						High	20.32
					100%	---	20.29
	20	20300	1745	QPSK	1	Low	22.45
						Mid	22.47
						High	22.50
					50%	Low	21.25
						Mid	21.29
						High	21.34
					100%	---	21.29
				16QAM	1	Low	21.25
						Mid	21.63
						High	21.34
					50%	Low	20.21
						Mid	20.23
						High	20.27
					100%	---	20.25

Band 7

Test Frequency ID	Bandwidth (MHz)	NUL	Frequency of Uplink(MHz)	Modulation	RB Size	RB Offset	Test results (dBm)
Low Range	5	20775	2502.5	QPSK	1	Low	23.00
						Mid	23.67
						High	23.01
					50%	Low	21.89
						Mid	21.85
						High	21.91
					100%	---	21.81
				16QAM	1	Low	21.73
						Mid	22.66
						High	21.79
					50%	Low	20.81
						Mid	20.78
						High	20.88
					100%	---	20.86
	10	20800	2505	QPSK	1	Low	23.10
						Mid	23.22
						High	23.29
					50%	Low	21.92
						Mid	21.97
						High	22.09
					100%	---	21.94
				16QAM	1	Low	21.89
						Mid	22.28
						High	21.91
					50%	Low	20.96
						Mid	21.02
						High	21.04
					100%	---	20.86

Test Frequency ID	Bandwidth (MHz)	NUL	Frequency of Uplink(MHz)	Modulation	RB Size	RB Offset	Test results (dBm)
Low Range	15	20825	2507.5	QPSK	1	Low	22.97
						Mid	22.78
						High	23.17
					50%	Low	21.74
						Mid	21.80
						High	21.84
					100%	---	21.84
				16QAM	1	Low	21.70
						Mid	21.92
						High	21.92
					50%	Low	20.74
						Mid	20.79
						High	20.85
					100%	---	20.82
	20	20850	2510	QPSK	1	Low	22.98
						Mid	23.17
						High	23.19
					50%	Low	21.81
						Mid	21.91
						High	21.92
					100%	---	21.83
				16QAM	1	Low	21.73
						Mid	22.23
						High	21.93
					50%	Low	20.78
						Mid	20.86
						High	20.88
					100%	---	20.86

Test Frequency ID	Bandwidth (MHz)	NUL	Frequency of Uplink(MHz)	Modulation	RB Size	RB Offset	Test results (dBm)
Mid Range	5	21100	2535	QPSK	1	Low	23.12
						Mid	23.57
						High	22.92
					50%	Low	21.94
						Mid	21.85
						High	21.83
					100%	---	21.80
				16QAM	1	Low	21.92
						Mid	22.67
						High	21.73
					50%	Low	20.92
						Mid	20.80
						High	20.81
					100%	---	20.85
	10	21100	2535	QPSK	1	Low	23.20
						Mid	23.10
						High	22.92
					50%	Low	21.94
						Mid	21.84
						High	21.78
					100%	---	21.84
				16QAM	1	Low	21.89
						Mid	22.28
						High	21.76
					50%	Low	21.02
						Mid	20.90
						High	20.87
					100%	---	20.92

Test Frequency ID	Bandwidth (MHz)	NUL	Frequency of Uplink(MHz)	Modulation	RB Size	RB Offset	Test results (dBm)
Mid Range	15	21100	2535	QPSK	1	Low	23.28
						Mid	22.86
						High	22.98
					50%	Low	22.02
						Mid	21.88
						High	21.76
					100%	---	21.90
				16QAM	1	Low	22.05
						Mid	21.98
						High	21.60
					50%	Low	20.97
						Mid	20.90
						High	20.78
					100%	---	20.87
	20	21100	2535	QPSK	1	Low	23.34
						Mid	23.11
						High	22.70
					50%	Low	21.97
						Mid	21.87
						High	21.65
					100%	---	21.81
				16QAM	1	Low	22.12
						Mid	22.28
						High	21.53
					50%	Low	20.97
						Mid	20.88
						High	20.67
					100%	---	20.87

Test Frequency ID	Bandwidth (MHz)	NUL	Frequency of Uplink(MHz)	Modulation	RB Size	RB Offset	Test results (dBm)
High Range	5	21425	2567.5	QPSK	1	Low	22.83
						Mid	23.36
						High	22.75
					50%	Low	21.63
						Mid	21.58
						High	21.59
					100%	---	21.54
				16QAM	1	Low	21.60
						Mid	22.41
						High	21.53
					50%	Low	20.61
						Mid	20.52
						High	20.54
					100%	---	20.62
	10	21400	2565	QPSK	1	Low	22.88
						Mid	22.59
						High	22.92
					50%	Low	22.81
						Mid	22.69
						High	22.81
					100%	---	21.64
				16QAM	1	Low	21.64
						Mid	21.98
						High	21.57
					50%	Low	20.66
						Mid	20.61
						High	20.67
					100%	---	20.61

Test Frequency ID	Bandwidth (MHz)	NUL	Frequency of Uplink(MHz)	Modulation	RB Size	RB Offset	Test results (dBm)
High Range	15	21375	2562.5	QPSK	1	Low	23.04
						Mid	22.72
						High	22.95
					50%	Low	21.75
						Mid	21.71
						High	21.66
					100%	---	21.75
				16QAM	1	Low	21.78
						Mid	21.79
						High	21.71
					50%	Low	20.74
						Mid	20.73
						High	20.70
					100%	---	20.76
	20	21350	2560	QPSK	1	Low	23.13
						Mid	22.92
						High	22.85
					50%	Low	21.81
						Mid	21.62
						High	21.59
					100%	---	21.63
				16QAM	1	Low	21.86
						Mid	21.96
						High	21.67
					50%	Low	20.70
						Mid	20.64
						High	20.58
					100%	---	20.67

Band28

Test Frequency ID	Bandwidth (MHz)	NUL	Frequency of Uplink(MHz)	Modulation	RB Size	RB Offset	Test results (dBm)
Low Range	5	27235	705.5	QPSK	1	Low	22.73
						Mid	23.26
						High	22.67
					50%	Low	21.55
						Mid	21.50
						High	21.56
					100%	---	21.47
				16QAM	1	Low	21.61
						Mid	22.50
						High	21.54
					50%	Low	20.55
						Mid	20.51
						High	20.59
					100%	---	20.62
	10	27260	708	QPSK	1	Low	22.79
						Mid	22.80
						High	22.81
					50%	Low	21.51
						Mid	21.53
						High	21.63
					100%	---	21.61
				16QAM	1	Low	21.68
						Mid	22.03
						High	21.60
					50%	Low	20.71
						Mid	20.61
						High	20.67
					100%	---	20.65

Test Frequency ID	Bandwidth (MHz)	NUL	Frequency of Uplink(MHz)	Modulation	RB Size	RB Offset	Test results (dBm)
Low Range	15	27285	710.5	QPSK	1	Low	22.82
						Mid	22.53
						High	22.85
					50%	Low	21.62
						Mid	21.64
						High	21.61
					100%	---	21.65
				16QAM	1	Low	21.72
						Mid	21.71
						High	21.69
					50%	Low	20.69
						Mid	20.67
						High	20.59
					100%	---	20.71
	20	27310	713	QPSK	1	Low	22.87
						Mid	22.85
						High	22.96
					50%	Low	21.64
						Mid	21.65
						High	21.71
					100%	---	21.70
				16QAM	1	Low	21.76
						Mid	21.91
						High	21.85
					50%	Low	20.66
						Mid	20.61
						High	20.70
					100%	---	20.76

Test Frequency ID	Bandwidth (MHz)	NUL	Frequency of Uplink(MHz)	Modulation	RB Size	RB Offset	Test results (dBm)
Mid Range	5	27385	720.5	QPSK	1	Low	22.80
						Mid	23.33
						High	22.77
					50%	Low	21.64
						Mid	21.53
						High	21.60
					100%	---	21.54
				16QAM	1	Low	21.65
						Mid	22.55
						High	21.72
					50%	Low	20.61
						Mid	20.51
						High	20.60
					100%	---	20.65
	10	27410	723	QPSK	1	Low	22.84
						Mid	22.87
						High	23.10
					50%	Low	21.53
						Mid	21.49
						High	21.73
					100%	---	21.72
				16QAM	1	Low	21.68
						Mid	22.13
						High	21.95
					50%	Low	20.68
						Mid	20.64
						High	20.82
					100%	---	20.79

Test Frequency ID	Bandwidth (MHz)	NUL	Frequency of Uplink(MHz)	Modulation	RB Size	RB Offset	Test results (dBm)
Mid Range	15	27435	725.5	QPSK	1	Low	22.99
						Mid	22.63
						High	22.96
					50%	Low	21.84
						Mid	21.97
						High	21.99
					100%	---	21.92
				16QAM	1	Low	21.89
						Mid	21.88
						High	21.76
					50%	Low	20.89
						Mid	21.08
						High	21.02
					100%	---	20.99
	20	27460	728	QPSK	1	Low	22.97
						Mid	22.75
						High	22.89
					50%	Low	21.67
						Mid	21.50
						High	21.57
					100%	---	21.49
				16QAM	1	Low	21.72
						Mid	21.99
						High	21.72
					50%	Low	20.41
						Mid	20.48
						High	20.55
					100%	---	20.53

Test Frequency ID	Bandwidth (MHz)	NUL	Frequency of Uplink(MHz)	Modulation	RB Size	RB Offset	Test results (dBm)
High Range	5	27635	745.5	QPSK	1	Low	22.96
						Mid	23.27
						High	22.48
					50%	Low	21.72
						Mid	21.59
						High	21.58
					100%	---	21.59
				16QAM	1	Low	21.85
						Mid	22.47
						High	21.35
					50%	Low	20.73
						Mid	20.57
						High	20.53
					100%	---	20.68
	10	27610	743	QPSK	1	Low	22.93
						Mid	22.99
						High	22.65
					50%	Low	21.68
						Mid	21.65
						High	21.64
					100%	---	21.70
				16QAM	1	Low	21.78
						Mid	22.28
						High	21.46
					50%	Low	20.84
						Mid	20.77
						High	20.76
					100%	---	20.74

Test Frequency ID	Bandwidth (MHz)	NUL	Frequency of Uplink(MHz)	Modulation	RB Size	RB Offset	Test results (dBm)
High Range	15	27585	740.5	QPSK	1	Low	22.76
						Mid	22.57
						High	22.64
					50%	Low	21.67
						Mid	21.72
						High	21.69
					100%	---	21.64
				16QAM	1	Low	21.58
						Mid	21.85
						High	21.49
					50%	Low	20.68
						Mid	20.78
						High	20.74
					100%	---	20.68
	20	27560	738	QPSK	1	Low	22.79
						Mid	22.86
						High	22.68
					50%	Low	21.58
						Mid	21.50
						High	21.52
					100%	---	21.51
				16QAM	1	Low	21.66
						Mid	22.11
						High	21.57
					50%	Low	20.56
						Mid	20.71
						High	20.73
					100%	---	20.64

6.5 Bluetooth Measurement result

Modulation type	Test Result (mW)		
	2402MHz(Ch0)	2441MHz(Ch39)	2480MHz(Ch78)
GFSK	2.09	3.10	**3.21**
π/4DQPSK	1.71	2.65	2.62
8DPSK	2.10	2.70	2.81
GFSK(BLE)	2402MHz(Ch0)	2440MHz(Ch19)	2480MHz(Ch39)
	0.49	0.75	0.80

Modulation type	Test Result (dBm)		
	2402MHz(Ch0)	2441MHz(Ch39)	2480MHz(Ch78)
GFSK	3.21	4.92	**5.07**
π/4DQPSK	2.34	4.24	4.19
8DPSK	3.23	4.31	4.48
GFSK(BLE)	2402MHz(Ch0)	2440MHz(Ch19)	2480MHz(Ch39)
	-3.11	-1.27	-0.98

6.6 Wi-Fi Measurement result

Test Mode	Data Rate (Mbps)	Test Result (mW)		
		2412MHz (Ch1)	2437MHz (Ch6)	2462MHz (Ch11)
802.11b	1	31.92	33.50	**34.83**
	2	31.70	32.81	33.27
	5.5	30.69	31.70	31.84
	11	27.67	30.34	31.05
802.11g	6	11.35	18.97	11.91
	9	10.50	18.03	11.04
	12	10.05	16.63	10.26
	18	9.29	15.45	9.73
	24	8.45	13.61	8.99
	36	7.80	12.50	8.34
	48	7.14	11.64	7.93
	54	6.81	10.40	7.62
802.11n (HT20)	6.5	11.12	18.97	12.53
	13	10.26	17.06	10.76
	19.5	9.75	15.89	9.93
	26	8.77	15.00	8.69
	39 s	8.34	13.55	7.98
	52	7.74	12.36	7.73
	58.5	7.18	11.04	7.43
	65	6.47	9.04	7.36
Test Mode	Data Rate (Mbps)	Test Result (mW)		
		2422MHz (Ch3)	2437MHz (Ch6)	2462MHz (Ch11)
802.11n (HT40)	13.5	7.11	**16.83**	15.03
	27	6.49	15.42	13.24
	40.5	6.14	13.61	11.97
	54	5.52	12.62	10.50
	81	5.02	11.38	9.25
	108	4.66	9.82	8.11
	121.5	3.91	7.71	7.05
	135	3.31	5.60	5.52

Test Mode	Data Rate (Mbps)	Test Result (dBm)		
		2412MHz (Ch1)	2437MHz (Ch6)	2462MHz (Ch11)
802.11b	1	15.04	15.25	**15.42**
	2	15.01	15.16	15.22
	5.5	14.87	15.01	15.03
	11	14.42	14.82	14.92
802.11g	6	10.55	12.78	10.76
	9	10.21	12.56	10.43
	12	10.02	12.21	10.11
	18	9.68	11.89	9.88
	24	9.27	11.34	9.54
	36	8.92	10.97	9.21
	48	8.54	10.66	8.99
	54	8.33	10.17	8.82
802.11n (HT20)	6.5	10.46	12.78	10.98
	13	10.11	12.32	10.32
	19.5	9.89	12.01	9.97
	26	9.43	11.76	9.39
	39	9.21	11.32	9.02
	52	8.89	10.92	8.88
	58.5	8.56	10.43	8.71
	65	8.11	9.56	8.67
Test Mode	Data Rate (Mbps)	Test Result (dBm)		
		2422MHz (Ch3)	2437MHz (Ch6)	2462MHz (Ch11)
802.11n (HT40)	13.5	8.52	**12.26**	11.77
	27	8.12	11.88	11.22
	40.5	7.88	11.34	10.78
	54	7.42	11.01	10.21
	81	7.01	10.56	9.66
	108	6.68	9.92	9.09
	121.5	5.92	8.87	8.48
	135	5.20	7.48	7.42

Test Mode	Data Rate (Mbps)	Test Result (dBm)		
		5180 MHz	5240MHz	5320 MHz
802.11a	6	4.12	**5.34**	5.29
	9	4.09	5.21	5.14
	12	4.05	5.16	5.01
	18	3.62	4.71	4.56
	24	2.46	3.84	3.70
	36	1.98	3.24	3.05
	48	1.45	2.62	2.41
	54	0.89	1.36	1.22
802.11n (HT20)	6.5	4.65	4.99	4.95
	13	4.53	4.81	4.77
	19.5	4.34	4.54	4.47
	26	3.38	3.62	3.56
	39	2.14	2.48	2.37
	52	1.54	1.72	1.66
	58.5	0.34	0.67	0.59
	65	-1.62	-0.13	-0.19
Test Mode	Data Rate (Mbps)	Test Result (dBm)		
		5190 MHz	5230 MHz	5310 MHz
802.11n (HT40)	13.5	3.89	4.04	4.89
	27	3.11	3.15	3.67
	40.5	2.67	2.71	3.11
	54	2.04	2.11	2.67
	81	0.13	0.32	0.98
	108	-1.02	-0.89	-0.13
	121.5	-2.45	-2.28	-1.78
	135	-3.90	-4.87	-2.75

Test Mode	Data Rate (Mbps)	Test Result (mW)		
		5180 MHz	5240MHz	5320 MHz
802.11a	6	2.58	**3.42**	3.38
	9	2.56	3.32	3.27
	12	2.54	3.28	3.17
	18	2.30	2.96	2.86
	24	1.76	2.42	2.34
	36	1.58	2.11	2.02
	48	1.40	1.83	1.74
	54	1.23	1.37	1.32
802.11n (HT20)	6.5	2.92	3.16	3.13
	13	2.84	3.03	3.00
	19.5	2.72	2.84	2.80
	26	2.18	2.30	2.27
	39	1.64	1.77	1.73
	52	1.43	1.49	1.47
	58.5	1.08	1.17	1.15
	65	0.69	0.97	0.96
Test Mode	Data Rate (Mbps)	Test Result (mW)		
		5190 MHz	5230 MHz	5310 MHz
802.11n (HT40)	13.5	2.45	2.54	3.08
	27	2.05	2.07	2.33
	40.5	1.85	1.87	2.05
	54	1.60	1.63	1.85
	81	1.03	1.08	1.25
	108	0.79	0.81	0.97
	121.5	0.57	0.59	0.66
	135	0.41	0.33	0.53

Average power output (dBm)				
Test Mode	Data Rate (Mbps)	Test Result (dBm)		
		5745 MHz	5785MHz	5825 MHz
802.11a	6	**11.03**	10.98	10.14
	9	11.00	10.91	10.05
	12	10.87	10.76	9.77
	18	10.56	10.34	9.51
	24	10.11	10.01	9.12
	36	9.91	9.76	8.90
	48	9.54	9.34	8.54
	54	8.95	8.54	8.20
802.11n (HT20)	6.5	10.89	10.78	10.28
	13	10.77	10.65	10.41
	19.5	10.54	10.44	10.03
	26	10.11	10.00	9.78
	39	9.67	9.43	9.21
	52	9.01	8.77	8.56
	58.5	8.66	8.32	8.01
	65	7.47	7.31	7.15
Test Mode	Data Rate (Mbps)	Test Result (dBm)		
		5755 MHz	---	5795 MHz
802.11n (HT40)	13.5	10.83	---	10.31
	27	10.45	---	10.22
	40.5	10.02	---	9.87
	54	9.54	---	9.43
	81	8.99	---	8.80
	108	8.23	---	7.89
	121.5	7.33	---	7.14
	135	6.18	---	6.04

Average power output (dBm)				
Test Mode	Data Rate (Mbps)	Test Result (dBm)		
		5745 MHz	5785MHz	5825 MHz
802.11a	6	**12.68**	12.53	10.33
	9	12.59	12.33	10.12
	12	12.22	11.91	9.48
	18	11.38	10.81	8.93
	24	10.26	10.02	8.17
	36	9.79	9.46	7.76
	48	8.99	8.59	7.14
	54	7.85	7.14	6.61
802.11n (HT20)	6.5	12.27	11.97	10.67
	13	11.94	11.61	10.99
	19.5	11.32	11.07	10.07
	26	10.26	10.00	9.51
	39	9.27	8.77	8.34
	52	7.96	7.53	7.18
	58.5	7.35	6.79	6.32
	65	5.58	5.38	5.19
Test Mode	Data Rate (Mbps)	Test Result (dBm)		
		5755 MHz	---	5795 MHz
802.11n (HT40)	13.5	12.11	---	10.74
	27	11.09	---	10.52
	40.5	10.05	---	9.71
	54	8.99	---	8.77
	81	7.93	---	7.59
	108	6.65	---	6.15
	121.5	5.41	---	5.18
	135	4.15	---	4.02

6.7 Standalone SAR Test Exclusion Considerations

Standalone 1-g head or body SAR evaluation by measurement or numerical simulation is not required when the corresponding SAR Exclusion Threshold condition, listed below, is satisfied. The 1-g SAR test exclusion threshold for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:
[(max. power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)] ·[√f(GHz)] ≤ 3.0 for 1-g SAR, where
f(GHz) is the RF channel transmit frequency in GHz Power and distance are rounded to the nearest mW and mm before calculation The result is rounded to one decimal place for comparison According to the KDB447498 appendix A, the SAR test exclusion threshold for 2450MHz at 5 mm test separation distances is 10 mW.

SAR Test Exclusion Thresholds for 100 MHz – 6 GHz and ≤ 50 mm
Approximate SAR Test Exclusion Power Thresholds at Selected Frequencies and Test Separation Distances are illustrated in the following Table.

MHz	5	10	15	20	25	mm
150	39	77	116	155	194	SAR Test Exclusion Threshold (mW)
300	27	55	82	110	137	
450	22	45	67	89	112	
835	16	33	49	66	82	
900	16	32	47	63	79	
1500	12	24	37	49	61	
1900	11	22	33	44	54	
2450	10	19	29	38	48	
3600	8	16	24	32	40	
5200	7	13	20	26	33	
5400	6	13	19	26	32	
5800	6	12	19	25	31	

Summary of Transmitters

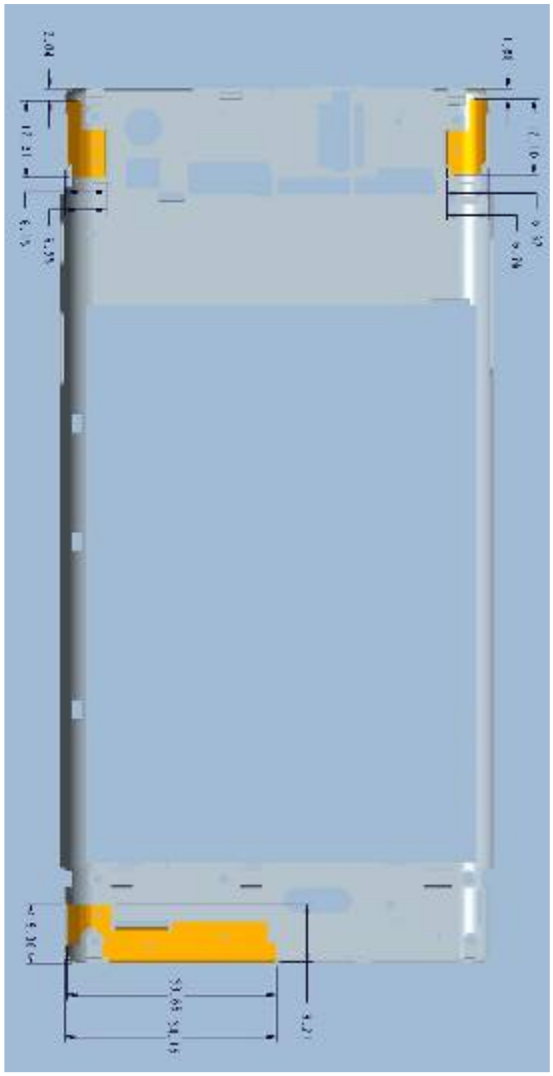
Band/Mode	SAR test exclusion threshold (mW)	RF output power (mW)
2.4GHz Bluetooth	19	3.21
2.4GHz WLAN	19	34.83
5GHz WLAN	19	12.68

According to the conducted power measurement results, we can draw the conclusion that: stand-alone SAR for WiFi should be performed. Then, simultaneous transmission SAR for WiFi is considered with measurement results of Cell and WiFi. Stand-alone SAR and simultaneous transmission SAR for Bluetooth should not be performed.

6.8 RF exposure conditions

Refer to the follow picture“Antenna Locations & Separation Distances” for the specific details of the antenna-to-antenna and antenna-to-edge(s) distances.

edge1



edge3 edge4

edge2

6.8.1 Head Exposure Conditions

For WWAN,

Test Configurations	SAR Required	Note
Left Touch	yes	/
Left Tilt (15°)	yes	/
Right Touch	yes	/
Right Tilt (15°)	yes	/

6.8.2 Body-worn Accessory Exposure conditions

For WWAN

Test Configurations	SAR Required	Note
Rear	yes	/
Front	yes	/

For WiFi

Test Configurations	SAR Required	Note
Rear	yes	/
Front	yes	/

6.8.3 Hotspot Exposure Conditions

For WWAN

Test Configurations	Antenna-to-edge/surface	SAR Required
Rear	<25 mm	Yes
Front	<25 mm	Yes
Edge 1 (top)	130 mm	No
Edge 2 (Bottom)	0 mm	Yes
Edge 3(Right)	0 mm	Yes
Edge 4(Left)	39 mm	No

For Wi-Fi

Test Configurations	Antenna-to-edge/surface	SAR Required
Rear	<25 mm	Yes
Front	<25 mm	Yes
Edge 1 (top)	2 mm	Yes
Edge 2 (Bottom)	130 mm	No
Edge 3(Right)	65 mm	No
Edge 4(Left)	0 mm	Yes

6.9 System Checking

The manufacturer calibrates the probes annully. Dielectric parameters of the tissue simulants were measured every day using the dielectric probe kit and the network analyser. A system check measurement was made following the determination of the dielectric parameters of the simulant, using the dipole validation kit. A power level of 250 mW was supplied to the dipole antenna, which was placed under the flat section of the twin SAM phantom. The system checking results (dielectric parameters and SAR values) are given in the table below.

Date Tested	System dipole	T.S. Liquid	SAR measured (normalized to 1W)		Target (Ref.Value)	Delta (%)	Tolerance (%)
2016.01.21	D835V2	Head	1g	9.36	9.24	1.30	±10
2016.01.24	D835V2	Head	1g	9.32	9.24	0.87	±10
2016.01.29	D835V2	Body	1g	9.32	9.38	0.64	±10
2016.02.01	D835V2	Body	1g	9.36	9.38	0.21	±10
2016.02.06	D1900V2	Head	1g	39.28	39.40	0.30	±10
2016.02.15	D1900V2	Head	1g	39.36	39.40	0.10	±10
2016.02.18	D1900V2	Body	1g	39.36	39.50	0.35	±10
2016.02.21	D1900V2	Body	1g	39.32	39.50	0.46	±10
2016.02.22	D2450V2	Head	1g	52.48	52.70	0.42	±10
2016.02.24	D2450V2	Head	1g	52.64	52.70	0.11	±10
2016.02.27	D2450V2	Body	1g	51.72	51.90	0.35	±10
2016.03.01	D2450V2	Body	1g	51.44	51.90	0.89	±10

Plots of the system checking scans are given in Appendix A.

Tissue Simulants used in the Measurements

For the measurement of the following parameters the SPEAG DAKS-3.5 dielectric parameter probe is used, representing the open-ended coaxial probe measurement procedure.

Date Tested	Freq.(MHz)	Liquid parameters	measured	Target	Delta(%)	Tolerance(%)
2016.01.21	Head 835	εr	42.11	41.50	1.47	±5
		σ[S/m]	0.91	0.90	1.11	±5
2016.01.29	Body 835	εr	53.85	55.20	2.45	±5
		σ[S/m]	0.98	0.97	1.03	±5
2016.02.06	Head 1900	εr	40.84	40.00	2.10	±5
		σ[S/m]	1.41	1.40	0.71	±5
2016.02.21	Body 1900	εr	52.18	53.30	2.10	±5
		σ[S/m]	1.53	1.52	0.66	±5
2016.02.22	Head 2450	εr	39.21	39.20	0.03	±5
		σ[S/m]	1.79	1.80	0.56	±5
2016.02.27	Body 2450	εr	52.04	52.70	1.25	±5
		σ[S/m]	1.97	1.95	1.03	±5

6.10 SAR TEST RESULT

In order to determine the largest value of the peak spatial-average SAR of a handset, all device positions, configurations, and operational modes should be tested for each frequency band according to Steps 1 to 3 below.

Step 1: The tests should be performed at the channel that is closest to the center of the transmit frequency band.
a) All device positions (cheek and tilt, for both left and right sides of the SAM phantom),
b) All configurations for each device position in a), e.g., antenna extended and retracted, and
c) All operational modes for each device position in item a) and configuration in item b) in each frequency band, e.g., analog and digital, If more than three frequencies need to be tested (i.e., Nc > 3), then all frequencies, configurations and modes shall be tested for all of the above test conditions.
Step 2: For the condition providing the highest peak spatial-average SAR determined in Step 1 for each frequency, perform all tests at all other test frequency channels, e.g., lowest and highest frequencies. In addition, for all other conditions (device position, configuration, and operational mode) where the peak spatial-average SAR value determined in Step 1 is within 3 dB of the applicable SAR limit, it is recommended that all other test frequencies should be tested as well.
Step 3: Examine all data to determine the largest value of the peak.
Note:
1. Per KDB 447498 D01v05, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
Scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
Reported SAR (W/kg) = Measured SAR (W/kg)* Scaling Factor
2. Per KDB 447498 D01v05, for each exposure position, if the highest output channel reported SAR ≤0.8W/kg, other channels SAR testing are not necessary.
3. In the report the test position “Mobile phone screen Towards Ground” abbreviated as “TG”, and “Mobile phone screen Towards Phantom” abbreviated as “TP”.

The measured and reported Head/body SAR values for the test device are tabulated below:

Mode: GSM 850

fL(MHz)=824.2MHz fM(MHz)=836.5MHz fH(MHz)= 848.8MHz

SAR Values（Head，850MHz Band）

Limit of SAR (W/kg) : <1.6W/kg (1g Average)

Test Case		Ch	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
position	mode					1g Average	1g Average
Left cheek	GSM	L	32.77	34.5	----	----	----
		M	32.75	34.5	1.50	0.130	0.195
		H	32.71	34.5	----	----	----
Left Tilted		L	32.77	34.5	----	----	----
		M	32.75	34.5	1.50	0.100	0.150
		H	32.71	34.5	----	----	----
Right cheek		L	32.77	34.5	----	----	----
		M	32.75	34.5	1.50	0.137	0.205
		H	32.71	34.5	----	----	----
Right Tilted		L	32.77	34.5	----	----	----
		M	32.75	34.5	1.50	0.118	0.177
		H	32.71	34.5	----	----	----

Mode: GSM850 (GSM/GPRS)

fL(MHz)=824.2MHz fM(MHz)=836.5MHz fH(MHz)= 848.8MHz

SAR Values（body，850MHz Band

Limit of SAR (W/kg) : <1.6W/kg (1g Average)

Test Case		Ch	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
position	mode					1 g Average	1g Average
TG	GSM With headset	L	32.77	34.5	----	----	----
		M	32.75	34.5	1.50	0.171	0.256
		H	32.71	34.5	----	----	----
	GPRS	L	29.28	30.5	----	----	----
		M	29.25	30.5	1.33	0.474	0.632
		H	29.15	30.5	----	----	----
	EGPRS	L	29.30	30.5	----	----	----
		M	29.20	30.5	1.35	0.630	0.850
		H	29.15	30.5	----	----	----
TP	GSM With headset	L	32.77	34.5	----	----	----
		M	32.75	34.5	1.50	0.149	0.223
		H	32.71	34.5	----	----	----
	GPRS	L	29.28	30.5	----	----	----
		M	29.25	30.5	1.33	0.438	0.584
		H	29.15	30.5	----	----	----
	EGPRS	L	29.30	30.5	----	----	----
		M	29.20	30.5	1.35	0.437	0.589
		H	29.15	30.5	----	----	----
EDGE 2	EGPRS	M	29.20	30.5	1.35	0.326	0.440
EDGE 3		M	29.20	30.5	1.35	0.588	0.793

Note: The distance between the EUT and the phantom bottom is 10mm.

Mode: GSM1900

fL(MHz)=1850.2MHz fM(MHz)=1880.0MHz fH(MHz)=1909.8MHz

SAR Values（Head，1900MHz Band）

Limit of SAR (W/kg) : <1.6W/kg(1g Average)

Test Case		CH	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
position	mode					1g Average	1g Average
Left cheek	GSM	L	30.13	31.5	----	----	----
		M	29.97	31.5	1.42	0.176	0.250
		H	29.91	31.5	----	----	----
Left Tilted		L	30.13	31.5	----	----	----
		M	29.97	31.5	1.42	0.058	0.082
		H	29.91	31.5	----	----	----
Right cheek		L	30.13	31.5	----	----	----
		M	29.97	31.5	1.42	0.258	0.367
		H	29.91	31.5	----	----	----
Right Tilted		L	30.13	31.5	----	----	----
		M	29.97	31.5	1.42	0.079	0.112
		H	29.91	31.5	----	----	----

Mode: GSM1900 (GSM/GPRS)

fL(MHz)=1850.2MHz fM(MHz)=1880.0MHz fH(MHz)=1909.8MHz

SAR Values（body，1900MHz Band）

Limit of SAR (W/kg) :<1.6W/kg(1g Average)

Test Case		CH	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
position	mode					1 g Average	1g Average
TG	GSM With headset	L	30.13	31.5	----	----	----
		M	29.97	31.5	1.42	0.274	0.390
		H	29.91	31.5	----	----	----
	GPRS	L	26.75	28.5	----	----	----
		M	26.61	28.5	1.55	0.508	0.785
		H	26.61	28.5	----	----	----
	EGPRS	L	26.74	28.5	----	----	----
		M	26.58	28.5	1.56	0.508	0.790
		H	26.60	28.5	----	----	----
TP	GSM With headset	L	29.56	31.5	----	----	----
		M	29.53	31.5	1.57	0.377	0.593
		H	29.51	31.5	----	----	----
	GPRS	L	26.75	28.5	----	----	----
		M	26.61	28.5	1.55	0.648	1.001
		H	26.61	28.5	----	----	----
	EGPRS	L	26.74	28.5	----	----	----
		M	26.58	28.5	1.56	0.689	1.072
		H	26.60	28.5	----	----	----
EDGE 2	EGPRS	L	26.74	28.5	1.50	0.749	1.123
		M	26.58	28.5	1.56	0.742	1.155
		H	26.60	28.5	1.55	0.725	1.123
EDGE 3		M	26.58	28.5	1.56	0.241	0.375

Note: The distance between the EUT and the phantom bottom is 10mm.

Mode: WCDMA BAND2
fL(MHz)=1852.4MHz fM(MHz)=1880MHz fH(MHz)= 1907.6MHz
SAR Values（Head，WCDMA BAND2）
Limit of SAR (W/kg):<1.6W/kg(1g Average)

Test Case		CH	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
position	mode					1 g Average	1g Average
Left cheek	RB test mode1+ 12.2kRMC	L	22.51	23.0	---	---	---
		M	22.50	23.0	1.12	0.197	0.221
		H	22.22	23.0	---	---	---
Left Tilted		L	22.51	23.0	---	---	---
		M	22.50	23.0	1.12	0.092	0.104
		H	22.22	23.0	---	---	---
Right cheek		L	22.51	23.0	---	---	---
		M	22.50	23.0	1.12	0.269	0.302
		H	22.22	23.0	---	---	---
Right Tilted		L	22.51	23.0	---	---	---
		M	22.50	23.0	1.12	0.110	0.123
		H	22.22	23.0	---	---	---

Mode: WCDMA BAND2
fL(MHz)=1852.4MHz fM(MHz)=1880MHz fH(MHz)= 1907.6MHz
SAR Values（body，WCDMA BAND2）
Limit of SAR (W/kg): <1.6W/kg(1g Average)

Test Case		CH	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
Position	mode					1 g Average	1g Average
TG	RB test mode1+12.2kRMC with headset	L	22.51	23.0	---	---	---
		M	22.50	23.0	1.12	0.416	0.467
		H	22.22	23.0	---	---	---
TP	RB test mode1+12.2kRMC with headset	L	22.51	23.0	---	---	---
		M	22.50	23.0	1.12	0.579	0.650
		H	22.22	23.0	---	---	---
EDGE2	RB test mode1+12.2kRMC	L	22.51	23.0	1.12	0.963	1.078
		M	22.50	23.0	1.12	0.936	1.050
		H	22.22	23.0	1.12	0.869	1.040
EDGE3	RB test mode1+12.2kRMC	M	22.50	23.0	1.12	0.182	0.204

Note: The distance between the EUT and the phantom bottom is 10mm.

Mode: WCDMA BAND5

fL(MHz)=826.4MHz fM(MHz)=836.4MHz fH(MHz)= 846.6MHz

SAR Values（Head，WCDMA BAND5）

Limit of SAR (W/kg): <1.6W/kg(1g Average)

Test Case		CH	Measure Conducted Power (dBm)	Tune-uplimit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
Position	mode					1 g Average	1g Average
Left cheek	RB test mode1+ 12.2kRMC	L	22.06	23.5	---	---	---
		M	21.97	23.5	1.42	0.145	0.206
		H	22.00	23.5	---	---	---
Left Tilted		L	22.06	23.5	---	---	---
		M	21.97	23.5	1.42	0.095	0.135
		H	22.00	23.5	---	---	---
Right cheek		L	22.06	23.5	---	---	---
		M	21.97	23.5	1.42	0.148	0.211
		H	22.00	23.5	---	---	---
Right Tilted		L	22.06	23.5	---	---	---
		M	21.97	23.5	1.42	0.113	0.161
		H	22.00	23.5	---	---	---

Mode: WCDMA BAND5

fL(MHz)=826.4MHz fM(MHz)=836.5MHz fH(MHz)= 846.6MHz

SAR Values（body，WCDMA BAND5）

Limit of SAR (W/kg): <1.6W/kg(1g Average)

Test Case		CH	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
Position	mode					1 g Average	1g Average
TG	RB test mode1+12.2kRMC with headset	L	22.06	23.5	---	---	---
		M	21.97	23.5	1.42	0.214	0.304
		H	22.00	23.5	---	---	---
TP	RB test mode1+12.2kRMC with headset	L	22.06	23.5	---	---	---
		M	21.97	23.5	1.42	0.198	0.282
		H	22.00	23.5	---	---	---
EDGE 2	RB test mode1+12.2kRMC	M	21.97	23.5	1.42	0.089	0.127
EDGE 3		M	21.97	23.5	1.42	0.245	0.348

Note: The distance between the EUT and the phantom bottom is 10mm.

Mode: WiFi
SAR Values (WIFI 802.11b - Head)
Limit of SAR (W/kg):<1.6W/kg(1g Average)

Test Case		CH	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Result (W/kg)	Reported Result (W/kg)
Position	mode					1 g Average	1g Average
Leftcheek	1Mbps	1	15.04	16.5	---	---	---
		6	15.25	16.5	---	---	---
		11	15.42	16.5	1.28	0.386	0.495
Left Tilt	1Mbps	1	15.04	16.5	---	---	---
		6	15.25	16.5	---	---	---
		11	15.42	16.5	1.28	0.497	0.637
Rightcheek	1Mbps	1	15.04	16.5	---	---	---
		6	15.25	16.5	---	---	---
		11	15.42	16.5	1.28	0.447	0.573
Right tilt	1Mbps	1	15.04	16.5	---	---	---
		6	15.25	16.5	---	---	---
		11	15.42	16.5	1.28	0.491	0.630

SAR Values (WIFI 802.11b - Body)
Limit of SAR (W/kg):<1.6W/kg(1g Average)

Test Case		CH	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Result (W/kg)	Reported Result (W/kg)
Position	mode					1 g Average	1g Average
TG	1Mbps	1	15.04	16.5	---	---	---
		6	15.25	16.5	---	---	---
		11	15.42	16.5	1.28	0.497	0.637
TP	1Mbps	1	15.04	16.5	---	---	---
		6	15.25	16.5	---	---	---
		11	15.42	16.5	1.28	0.131	0.168
Edge 1	1Mbps	1	15.04	16.5	---	---	---
		6	15.25	16.5	---	---	---
		11	15.42	16.5	1.28	0.174	0.223
Edge 4	1Mbps	1	15.04	16.5	---	---	---
		6	15.25	16.5	---	---	---
		11	15.42	16.5	1.28	0.395	0.507

Note: The distance between the EUT and the phantom bottom is 10mm.

Mode: LTE BAND2- 20BW-1RB (1880MHz/Head)
fL(MHz)=1860MHz fM(MHz)=1880MHz fH(MHz)= 1900MHz
SAR Values（Head，LTE BAND2）
Limit of SAR (W/kg): <1.6W/kg(1g Average)

Test Case		CH	Measure Conducted Power (dBm)	Tune-uplimit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
Position	mode					1 g Average	1g Average
Left cheek	20 BW 1RB	L	23.31	24.5	---	---	---
		M	23.35	24.5	1.30	0.298	0.388
		H	23.07	24.5	---	---	---
Left Tilted		L	23.31	24.5	---	---	---
		M	23.35	24.5	1.30	0.056	0.073
		H	23.07	24.5	---	---	---
Right cheek		L	23.31	24.5	---	---	---
		M	23.35	24.5	1.30	0.340	0.443
		H	23.07	24.5	---	---	---
Right Tilted		L	23.31	24.5	---	---	---
		M	23.35	24.5	1.30	0.109	0.142
		H	23.07	24.5	---	---	---

Mode: LTE BAND2- 20BW-1RB (1880MHz/Flat)
fL(MHz)=1860MHz fM(MHz)=1880MHz fH(MHz)= 1900MHz
SAR Values（body，LTE BAND2）
Limit of SAR (W/kg): <1.6W/kg(1g Average)

Test Case		CH	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
Position	mode					1 g Average	1g Average
TG	20 BW 1RB	L	23.31	24.5	---	---	---
		M	23.35	24.5	1.30	0.618	0.805
		H	23.07	24.5	---	---	---
TP	20 BW 1RB	L	23.31	24.5	---	---	---
		M	23.35	24.5	1.30	0.616	0.803
		H	23.07	24.5	---	---	---
EDGE 2	20 BW 1RB	M	23.35	24.5	1.30	0.661	0.861
EDGE 3		M	23.35	24.5	1.30	0.330	0.430

Note: The distance between the EUT and the phantom bottom is 10mm.

Mode: LTE BAND2- 20BW-50%RB (1880MHz/Head)
fL(MHz)=1860MHz fM(MHz)=1880MHz fH(MHz)= 1900MHz
SAR Values（Head，LTE BAND2）
Limit of SAR (W/kg): <1.6W/kg(1g Average)

Test Case		CH	Measure Conducted Power (dBm)	Tune-uplimit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
Position	mode					1 g Average	1g Average
Left cheek	20 BW 50%RB	L	22.01	23.5	---	---	---
		M	22.05	23.5	1.40	0.127	0.177
		H	21.79	23.5	---	---	---
Left Tilted		L	22.01	23.5	---	---	---
		M	22.05	23.5	1.40	0.095	0.133
		H	21.79	23.5	---	---	---
Right cheek		L	22.01	23.5	---	---	---
		M	22.05	23.5	1.40	0.251	0.350
		H	21.79	23.5	---	---	---
Right Tilted		L	22.01	23.5	---	---	---
		M	22.05	23.5	1.40	0.080	0.112
		H	21.79	23.5	---	---	---

Mode: LTE BAND2- 20BW-50%RB (1880MHz/Flat)
fL(MHz)=1860MHz fM(MHz)=1880MHz fH(MHz)= 1900MHz
SAR Values（body，LTE BAND2）
Limit of SAR (W/kg): <1.6W/kg(1g Average)

Test Case		CH	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
Position	mode					1 g Average	1g Average
TG	20 BW 50%RB	L	22.01	23.5	---	---	---
		M	22.05	23.5	1.40	0.442	0.617
		H	21.79	23.5	---	---	---
TP	20 BW 50%RB	L	22.01	23.5	---	---	---
		M	22.05	23.5	1.40	0.469	0.655
		H	21.79	23.5	---	---	---

Note: The distance between the EUT and the phantom bottom is 10mm.

Mode: LTE BAND4- 5BW-1RB (1732.5MHz/Head)
fL(MHz)=1712.5MHz fM(MHz)=1732.5MHz fH(MHz)= 1752.5MHz
SAR Values（Head，LTE BAND4）
Limit of SAR (W/kg): <1.6W/kg(1g Average)

Test Case		CH	Measure Conducted Power (dBm)	Tune-uplimit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
Position	mode					1 g Average	1g Average
Left cheek	5 BW 1 RB	L	23.10	24.5	---	---	---
		M	23.12	24.5	1.37	0.157	0.216
		H	22.99	24.5	---	---	---
Left Tilted		L	23.10	24.5	---	---	---
		M	23.12	24.5	1.37	0.078	0.107
		H	22.99	24.5	---	---	---
Right cheek		L	23.10	24.5	---	---	---
		M	23.12	24.5	1.37	0.283	0.389
		H	22.99	24.5	---	---	---
Right Tilted		L	23.10	24.5	---	---	---
		M	23.12	24.5	1.37	0.079	0.108
		H	22.99	24.5	---	---	---

Mode: LTE BAND4- 5BW-1RB (1732.5MHz/ Flat)
fL(MHz)=1712.5MHz fM(MHz)=1732.5MHz fH(MHz)= 1752.5MHz
SAR Values（body，LTE BAND4）
Limit of SAR (W/kg): <1.6W/kg(1g Average)

Test Case		CH	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
Position	mode					1 g Average	1g Average
TG	5 BW 1 RB	L	23.10	24.5	---	---	---
		M	23.12	24.5	1.37	0.526	0.723
		H	22.99	24.5	---	---	---
TP	5 BW 1 RB	L	23.10	24.5	---	---	---
		M	23.12	24.5	1.37	0.567	0.779
		H	22.99	24.5	---	---	---

Note: The distance between the EUT and the phantom bottom is 10mm.

Mode: LTE BAND4- 20BW-1RB (1732.5MHz/Head)
fL(MHz)=1720 MHz fM(MHz)=1732.5MHz fH(MHz)= 1745MHz
SAR Values（Head，LTE BAND4）
Limit of SAR (W/kg): <1.6W/kg(1g Average)

Test Case		CH	Measure Conducted Power (dBm)	Tune-uplimit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
Position	mode					1 g Average	1g Average
Left cheek	20 BW 1RB	L	22.53	24.0	---	---	---
		M	22.58	24.0	1.39	0.144	0.200
		H	22.45	24.0	---	---	---
Left Tilted		L	22.53	24.0	---	---	---
		M	22.58	24.0	1.39	0.043	0.059
		H	22.45	24.0	---	---	---
Right cheek		L	22.53	24.0	---	---	---
		M	22.58	24.0	1.39	0.211	0.293
		H	22.45	24.0	---	---	---
Right Tilted		L	22.53	24.0	---	---	---
		M	22.58	24.0	1.39	0.053	0.073
		H	22.45	24.0	---	---	---

Mode: LTE BAND4- 20BW-1RB (1732.5MHz/ Flat)
fL(MHz)=1720 MHz fM(MHz)=1732.5MHz fH(MHz)= 1745MHz
SAR Values（body，LTE BAND4）
Limit of SAR (W/kg): <1.6W/kg(1g Average)

Test Case		CH	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
Position	mode					1 g Average	1g Average
TG	20 BW 1RB	L	22.53	24.0	---	---	---
		M	22.58	24.0	1.39	0.597	0.828
		H	22.45	24.0	---	---	---
TP	20 BW 1RB	L	22.53	24.0	---	---	---
		M	22.58	24.0	1.39	0.455	0.631
		H	22.45	24.0	---	---	---
EDGE 2	20 BW 1RB	M	22.58	24.0	1.39	0.381	0.528
EDGE 3		M	22.58	24.0	1.39	0.147	0.204

Note: The distance between the EUT and the phantom bottom is 10mm.

Mode: LTE BAND4- 20BW-50%RB (1732.5MHz/Head)
fL(MHz)=1720 MHz fM(MHz)=1732.5MHz fH(MHz)= 1745MHz
SAR Values（Head，LTE BAND4）
Limit of SAR (W/kg): <1.6W/kg(1g Average)

Test Case		CH	Measure Conducted Power (dBm)	Tune-uplimit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
Position	mode					1 g Average	1g Average
Left cheek	20 BW 50%RB	L	21.28	23.0	---	---	---
		M	21.32	23.0	1.47	0.138	0.203
		H	21.25	23.0	---	---	---
Left Tilted		L	21.28	23.0	---	---	---
		M	21.32	23.0	1.47	0.070	0.104
		H	21.25	23.0	---	---	---
Right cheek		L	21.28	23.0	---	---	---
		M	21.32	23.0	1.47	0.215	0.317
		H	21.25	23.0	---	---	---
Right Tilted		L	21.28	23.0	---	---	---
		M	21.32	23.0	1.47	0.049	0.071
		H	21.25	23.0	---	---	---

Mode: LTE BAND4- 20BW-50%RB (1732.5MHz/ Flat)
fL(MHz)=1720 MHz fM(MHz)=1732.5MHz fH(MHz)= 1745MHz
SAR Values（body，LTE BAND4）
Limit of SAR (W/kg): <1.6W/kg(1g Average)

Test Case		CH	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
Position	mode					1 g Average	1g Average
TG	20 BW 50%RB	L	21.28	23.0	---	---	---
		M	21.32	23.0	1.47	0.408	0.601
		H	21.25	23.0	---	---	---
TP	20 BW 50%RB	L	21.28	23.0	---	---	---
		M	21.32	23.0	1.47	0.472	0.695
		H	21.25	23.0	---	---	---

Note: The distance between the EUT and the phantom bottom is 10mm.

Mode: LTE BAND7- 20BW-1RB (2535MHz/Head)
fL(MHz)=2510 MHz fM(MHz)=2535MHz fH(MHz)= 2560MHz
SAR Values（Head，LTE BAND7）
Limit of SAR (W/kg): <1.6W/kg(1g Average)

Test Case		CH	Measure Conducted Power (dBm)	Tune-uplimit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
Position	mode					1 g Average	1g Average
Left cheek	20 BW 1RB	L	22.98	24.5	---	---	---
		M	23.34	24.5	1.31	0.134	0.175
		H	23.13	24.5	---	---	---
Left Tilted		L	22.98	24.5	---	---	---
		M	23.34	24.5	1.31	0.127	0.166
		H	23.13	24.5	---	---	---
Right cheek		L	22.98	24.5	---	---	---
		M	23.34	24.5	1.31	0.362	0.473
		H	23.13	24.5	---	---	---
Right Tilted		L	22.98	24.5	---	---	---
		M	23.34	24.5	1.31	0.084	0.110
		H	23.13	24.5	---	---	---

Mode: LTE BAND4- 20BW-1RB (2535MHz/Head)
fL(MHz)=2510 MHz fM(MHz)=2535MHz fH(MHz)= 2560MHz
SAR Values（body，LTE BAND7）
Limit of SAR (W/kg): <1.6W/kg(1g Average)

Test Case		CH	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
Position	mode					1 g Average	1g Average
TG	20 BW 50%RB	L	22.98	24.5	---	---	---
		M	23.34	24.5	1.31	0.048	0.063
		H	23.13	24.5	---	---	---
TP	20 BW 50%RB	L	22.98	24.5	---	---	---
		M	23.34	24.5	1.31	0.001	0.001
		H	23.13	24.5	---	---	---

Note: The distance between the EUT and the phantom bottom is 10mm.

Mode: LTE BAND7- 20BW-50%RB (2535MHz/Head)
fL(MHz)=2510 MHz fM(MHz)=2535MHz fH(MHz)= 2560MHz
SAR Values（Head，LTE BAND7）
Limit of SAR (W/kg): <1.6W/kg(1g Average)

Test Case		CH	Measure Conducted Power (dBm)	Tune-uplimit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
Position	mode					1 g Average	1g Average
Left cheek	20 BW 50%RB	L	21.81	23.5	---	---	---
		M	21.97	23.5	1.42	0.128	0.182
		H	21.86	23.5	---	---	---
Left Tilted		L	21.81	23.5	---	---	---
		M	21.97	23.5	1.42	0.129	0.183
		H	21.86	23.5	---	---	---
Right cheek		L	21.81	23.5	---	---	---
		M	21.97	23.5	1.42	0.327	0.465
		H	21.86	23.5	---	---	---
Right Tilted		L	21.81	23.5	---	---	---
		M	21.97	23.5	1.42	0.087	0.124
		H	21.86	23.5	---	---	---

Mode: LTE BAND7- 20BW-50%RB (2535MHz/Head)
fL(MHz)=2510 MHz fM(MHz)=2535MHz fH(MHz)= 2560MHz
SAR Values（body，LTE BAND7）
Limit of SAR (W/kg): <1.6W/kg(1g Average)

Test Case		CH	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
Position	mode					1 g Average	1g Average
TG	20 BW 50%RB	L	21.81	23.5	---	---	---
		M	21.97	23.5	1.42	0.086	0.123
		H	21.86	23.5	---	---	---
TP	20 BW 50%RB	L	21.81	23.5	---	---	---
		M	21.97	23.5	1.42	0.011	0.016
		H	21.86	23.5	---	---	---
EDGE 2	20 BW 50%RB	M	21.97	23.5	1.42	0.113	0.161
EDGE 3		M	21.97	23.5	1.42	0.011	0.015

Note: The distance between the EUT and the phantom bottom is 10mm.

Mode: LTE BAND28- 20BW-1RB (728MHz/Head)
fL(MHz)=713 MHz fM(MHz)=728MHz fH(MHz)= 738MHz
SAR Values（Head，LTE BAND28）
Limit of SAR (W/kg): <1.6W/kg(1g Average)

Test Case		CH	Measure Conducted Power (dBm)	Tune-uplimit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
Position	mode					1 g Average	1g Average
Left cheek	20 BW 1RB	L	22.87	24.5	---	---	---
		M	22.97	24.5	1.42	0.217	0.309
		H	22.79	24.5	---	---	---
Left Tilted		L	22.87	24.5	---	---	---
		M	22.97	24.5	1.42	0.140	0.199
		H	22.79	24.5	---	---	---
Right cheek		L	22.87	24.5	---	---	---
		M	22.97	24.5	1.42	0.245	0.209
		H	22.79	24.5	---	---	---
Right Tilted		L	22.87	24.5	---	---	---
		M	22.97	24.5	1.42	0.147	0.569
		H	22.79	24.5	---	---	---

Mode: LTE BAND28- 20BW-1RB (728MHz/Head)
fL(MHz)=713 MHz fM(MHz)=728MHz fH(MHz)= 738MHz
SAR Values（body，LTE BAND28）
Limit of SAR (W/kg): <1.6W/kg(1g Average)

Test Case		CH	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
Position	mode					1 g Average	1g Average
TG	20 BW 1RB	L	22.87	24.5	---	---	---
		M	22.97	24.5	1.42	0.400	0.569
		H	22.79	24.5	---	---	---
TP	20 BW 1RB	L	22.87	24.5	---	---	---
		M	22.97	24.5	1.42	0.306	0.435
		H	22.79	24.5	---	---	---

Note: The distance between the EUT and the phantom bottom is 10mm.

Mode: LTE BAND28- 20BW-50%RB (728MHz/Head)
fL(MHz)=713 MHz fM(MHz)=728MHz fH(MHz)= 738MHz
SAR Values（Head，LTE BAND28）
Limit of SAR (W/kg): <1.6W/kg(1g Average)

Test Case		CH	Measure Conducted Power (dBm)	Tune-uplimit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
Position	mode					1 g Average	1g Average
Left cheek	20 BW 50%RB	L	21.64	23.5	---	---	---
		M	21.67	23.5	1.52	0.184	0.280
		H	21.58	23.5	---	---	---
Left Tilted		L	21.64	23.5	---	---	---
		M	21.67	23.5	1.52	0.104	0.159
		H	21.58	23.5	---	---	---
Right cheek		L	21.64	23.5	---	---	---
		M	21.67	23.5	1.52	0.209	0.319
		H	21.58	23.5	---	---	---
Right Tilted		L	21.64	23.5	---	---	---
		M	21.67	23.5	1.52	0.127	0.194
		H	21.58	23.5	---	---	---

Mode: LTE BAND28- 20BW-50%RB (728MHz/Head)
fL(MHz)=713 MHz fM(MHz)=728MHz fH(MHz)= 738MHz
SAR Values（body，LTE BAND28）
Limit of SAR (W/kg): <1.6W/kg(1g Average)

Test Case		CH	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
Position	mode					1 g Average	1g Average
TG	20 BW 50%RB	L	21.64	23.5	---	---	---
		M	21.67	23.5	1.52	0.401	0.611
		H	21.58	23.5	---	---	---
TP	20 BW 50%RB	L	21.64	23.5	---	---	---
		M	21.67	23.5	1.52	0.311	0.474
		H	21.58	23.5	---	---	---
EDGE 2	20 BW 50%RB	M	21.67	23.5	1.52	0.125	0.191
EDGE 3		M	21.67	23.5	1.52	0.396	0.604

Note: The distance between the EUT and the phantom bottom is 10mm.

6.11 SAR Measurement Variability

SAR measurement variability must be assessed for each frequency band, which is determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. When both head and body tissue-equivalent media are required for SAR measurements in a frequency band, the variability measurement procedures should be applied to the tissue medium with the highest measured SAR, using the highest measured SAR configuration for that tissue-equivalent medium.
The following procedures are applied to determine if repeated measurements are required.
1) Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg; steps 2) through 4) do not apply.
2) When the original highest measured SAR is ≥ 0.80 W/kg, repeat that measurement once.
3) Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 W/kg (~ 10% from the 1-g SAR limit).
4) Perform a third repeated measurement only if the original, first or second repeated measurement is ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.

6.11.1 The Highest Measured SAR configuration in Each Frequency Band

Frequency band(MHz)	Air interface	Head(w/kg)	Body(w/kg)
750	LTE Band 28	<0.8	<0.8
850	GSM 850 WCDMA Band 5	<0.8	<0.8
1900	WCDMA Band 2 LTE Band 4 LTE Band 7	<0.8	>0.8
1950	LTE Band 2	<0.8	<0.8
2450	WiFi 802.11a/b/g/n	<0.8	<0.8

6.11.2 Repeated Measurement Results

SAR Measurement Variability

Frequency		Test Position	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR(W/kg)
MHz	Ch.					
1852.4	9800	WCDMA Band2 EDGE2 L	0.963	0.954	1.009	/
1880.0	9800	WCDMA Band2 EDGE2 M	0.936	0.928	1.009	/
1907.6	9800	WCDMA Band2 EDGE2 H	0.869	0.858	1.013	/

6.12 Simultaneous Transmission SAR Analysis

The sum of SAR values for GSM & WiFi (Hotspot)

	MAXIMUM SAR VALUE FOR HEAD	MAXIMUM SAR VALUE FOR BODY
GSM	0.367	0.850
WiFi	0.573	0.637
Sum	**0.940**	**1.487**

According to the above tables, the sum of SAR values for GSM and WiFi < 1.6W/kg. So simultaneous transmission SAR are not required for WiFi transmitter.

The sum of SAR values for WCDMA & WiFi (Hotspot)

	MAXIMUM SAR VALUE FOR HEAD	MAXIMUM SAR VALUE FOR BODY
WCDMA	0.302	0.467
WiFi	0.573	0.637
Sum	**0.875**	**1.104**

According to the above tables, the sum of SAR values for WCDMA and WiFi < 1.6W/kg. So simultaneous transmission SAR are not required for WiFi transmitter.

The sum of SAR values for LTE & WiFi (Hotspot)

	MAXIMUM SAR VALUE FOR HEAD	MAXIMUM SAR VALUE FOR BODY
LTE	0.473	0.805
WiFi	0.573	0.637
Sum	**1.046**	**1.465**

According to the above tables, the sum of SAR values for LTE and WiFi < 1.6W/kg. So simultaneous transmission SAR are not required for WiFi transmitter.

According to the formula (KDB447498 4.3.2) the Bluetooth SAR as follow:
[(max.power of channel, including tune-up tolerance,mw)/(min.test separation distance,mm)]
[√f(GHz)/x] W/kg for test separation distances≦50mm.
Head:
min. test separation distance = 5mm
Body:
min. test separation distance = 10mm
Where x=7.5 for 1-g SAR, and x=18.75 for 10-g SAR.

The sum of SAR values for GSM & Bluetooth

	MAXIMUM SAR VALUE FOR HEAD	MAXIMUM SAR VALUE FOR BODY
GSM	0.367	1.155
Bluetooth	0.082	0.082
Sum	**0.449**	**1.237**

According to the above tables, the sum of SAR values for GSM and Bluetooth ＜1.6W/kg. So simultaneous transmission SAR are not required for Bluetooth transmitter.

The sum of SAR values for WCDMA & Bluetooth

	MAXIMUM SAR VALUE FOR HEAD	MAXIMUM SAR VALUE FOR BODY
WCDMA	0.302	1.078
Bluetooth	0.082	0.082
Sum	**0.384**	**1.160**

According to the above tables, the sum of SAR values for WCDMA and Bluetooth ＜1.6W/kg. So simultaneous transmission SAR are not required for Bluetooth transmitter.

The sum of SAR values for LTE & Bluetooth

	MAXIMUM SAR VALUE FOR HEAD	MAXIMUM SAR VALUE FOR BODY
LTE	0.473	0.914
Bluetooth	0.082	0.082
Sum	**0.555**	**0.996**

According to the above tables, the sum of SAR values for LTE and Bluetooth ＜1.6W/kg. So simultaneous transmission SAR are not required for Bluetooth transmitter.

7 MEASUREMENT UNCERTAINTY

DASY5 Uncertainty Budget								
Error description	Uncertainty value	Prob. Dist.	Div.	(c_i) 1g	(c_i) 10g	Std.Unc (1g).	Std.Unc. (10g)	(vi) Veff
Measurement system								
Probe calibration	±6.0%	N	1	1	1	±6.0%	±6.0%	∞
Axial isotropy	±4.7%	R	$\sqrt{3}$	0.7	0.7	±1.9%	±1.9%	∞
Hemispherical isotropy	±9.6%	R	$\sqrt{3}$	0.7	0.7	±3.9%	±3.9%	∞
Boundary Effects	±1.0%	R	$\sqrt{3}$	1	1	±0.6%	±0.6%	∞
Linearity	±4.7%	R	$\sqrt{3}$	1	1	±2.7%	±2.7%	∞
System detection limits	±1.0%	R	$\sqrt{3}$	1	1	±0.6%	±0.6%	∞
Readout electronics	±0.3%	N	1	1	1	±0.3%	±0.3%	∞
Response time	±0.8%	R	$\sqrt{3}$	1	1	±0.5%	±0.5%	∞
Integration time	±2.6%	R	$\sqrt{3}$	1	1	±1.5%	±1.5%	∞
RF ambient noise	±3.0%	R	$\sqrt{3}$	1	1	±1.7%	±1.7%	∞
RF ambient reflections	±3.0%	R	$\sqrt{3}$	1	1	±1.7%	±1.7%	∞
Probe positioner	±0.4%	R	$\sqrt{3}$	1	1	±0.2%	±0.2%	∞
Probe positioning	±2.9%	R	$\sqrt{3}$	1	1	±1.7%	±1.7%	∞
Max.SAR Eval.	±1.0%	R	$\sqrt{3}$	1	1	±0.6%	±0.6%	∞
Test Sample Related								
Device holder	±3.6%	N	1	1	1	±3.6%	±3.6%	5
Device Positioning	±2.9%	N	1	1	1	±2.9%	±2.9%	145
Power drift	±5.0%	R	$\sqrt{3}$	1	1	±2.9%	±2.9%	∞
Phantom and Setup								
Phantom uncertainty	±4.0%	R	$\sqrt{3}$	1	1	±2.3%	±2.3%	∞
Liquid conductivity (target.)	±5.0%	R	$\sqrt{3}$	0.64	0.43	±1.8%	±1.2%	∞
Liquid conductivity (mea.)	±2.5%	R	$\sqrt{3}$	0.64	0.43	±0.9%	±0.6%	∞
Liquid Permittivity (target.)	±5.0%	R	$\sqrt{3}$	0.60	0.49	±1.7%	±1.4%	∞
Liquid Permittivity (mea.)	±2.5%	R	$\sqrt{3}$	0.60	0.49	±0.9%	±0.7%	∞
Combined std. Uncertainty						±10.9%	±10.7%	387
Expanded STD Uncertainty						**±21.7%**	**±21.4%**	

8 TEST EQUIPMENTS

The measurements were performed using an automated near-field scanning system, DASY5, manufactured by Schmid & Partner Engineering AG (SPEAG) in Switzerland. The SAR extrapolation algorithm used in all measurements was the 'advanced extrapolation' algorithm.

The following table lists calibration dates of SPEAG components:

Test Equipment	Serial Number	Calibration interval	Calibration expiry
DAE4	546	1 year	2016.08.19
DAE4	720	1 year	2016.10.29
Dosimetric E-field Probe ES3DV3	3127	1 year	2016.08.21
Dosimetric E-field Probe EX3DV4	3708	1 year	2016.10.26
Dipole Validation Kit D835V2	4d023	1 year	2016.10.20
Dipole Validation Kit D1900V2	5d113	1 year	2016.10.19
Dipole Validation Kit D2450V2	738	1 year	2016.10.21

Additional test equipment used in testing:

Test Equipment	Model	Serial Number	Calibration interval	Calibration expiry
Signal Generator	E4428C	MY45280865	1 year	2016.08.20
Signal Generator	SML 03	103514	1 year	2016.08.20
Amplifier	5S1G4	0323472	N/A	2016.08.20
Amplifier	5S1G4	301305	N/A	2016.08.20
Power meter	E4417A	MY45101182	1 year	2016.08.20
Power Sensor	E4412A	MY41502214	1 year	2016.08.20
Power Sensor	E4412A	MY41502130	1 year	2016.08.20
Power meter	E4417A	MY45101004	1 year	2016.08.20
Power Sensor	E9300B	MY41496001	1 year	2016.08.20
Power Sensor	E9300B	MY41496003	1 year	2016.08.20
Communications Test Set	8960	GB43194054	1 year	2016.08.20
Communication Tester	CMU200	114666	1 year	2016.08.20
Vector Network Analyzer	VNAR140	0011213	1 year	2016.07.31
Dielectric Parameter Probe	DAKS-3.5	1042	1 year	2016.08.26

Detailed information of Isotropic E-field Probe Type ES3DV3

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	Calibration certificate in Appendix C
Frequency	10 MHz to 4 GHz; Linearity: ± 0.2 dB (30 MHz to 4 GHz)
Optical Surface Detection	± 0.2 mm repeatability in air and clear liquids over diffuse reflecting surfaces
Dimensions	Overall length: 337 mm (Tip: 20 mm) Tip diameter: 3.9 mm (Body: 12 mm) Distance from probe tip to dipole centers: 2.0 mm
Dynamic Range	5 µW/g to > 100 W/kg; Linearity: ± 0.2 dB
Application	General dosimetry up to 4 GHz Dosimetry in strong gradient fields Compliance tests of mobile phones

Detailed information of Isotropic E-field Probe Type EX3DV4

Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Calibration	Calibration certificate in Appendix C
Frequency	10 MHz to > 6 GHz Linearity: ± 0.2 dB (30 MHz to 6 GHz)
Optical Surface Detection	± 0.3 mm repeatability in air and clear liquids over diffuse reflecting surfaces
Dimensions	Overall length: 337 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm
Dynamic Range	10 µW/g to > 100 W/kg Linearity: ± 0.2 dB (noise: typically < 1 µW/g)
Application	High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields); the only probe that enables compliance testing for frequencies up to 6 GHz with precision of better 30%.

APPENDIX A: SYSTEM CHECKING SCANS

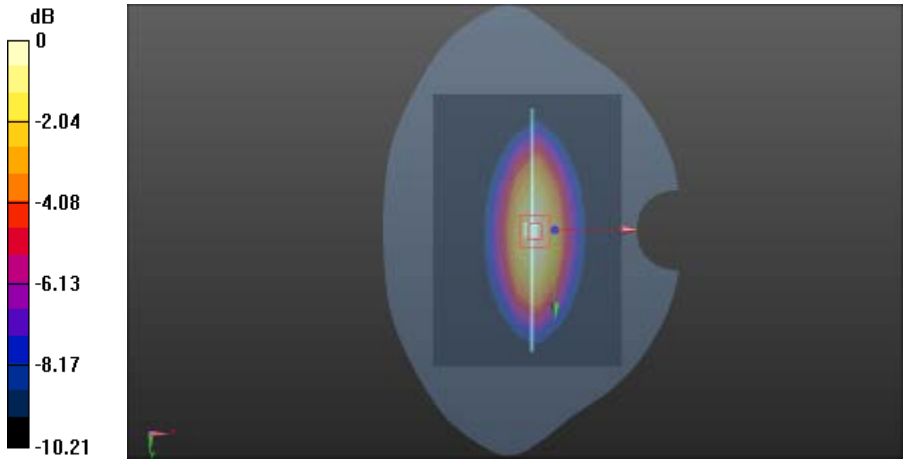
SYSTEM CHECKING SCANS	835MHz Head

Communication System: UID 0, CW (0); Frequency: 835 MHz
Medium parameters used (extrapolated): f = 835 MHz; σ = 0.909 S/m; ε_r = 42.108; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard:DASY5 (IEEE 1528-2013)

DASY Configuration:

- Probe: ES3DV3 - SN3127; ConvF(5.97, 5.97, 5.97); Calibrated: 8/21/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn546; Calibrated: 8/19/2015
- Phantom: SAM 1559; Type: SAM; Serial: 1559
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

  System Performance Check at Frequencies 835MHz Head/d=15mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Area Scan (10x13x1): Measurement grid: dx=15mm, dy=15mm
  Maximum value of SAR (measured) = 2.98 W/kg
  System Performance Check at Frequencies 835MHz Head/d=15mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
  Reference Value = 54.113 V/m; Power Drift = -0.05 dB
  Peak SAR (extrapolated) = 3.55 W/kg
  SAR(1 g) = 2.34 W/kg; SAR(10 g) = 1.53 W/kg
  Maximum value of SAR (measured) = 2.98 W/kg



SYSTEM CHECKING SCANS	835MHz Head

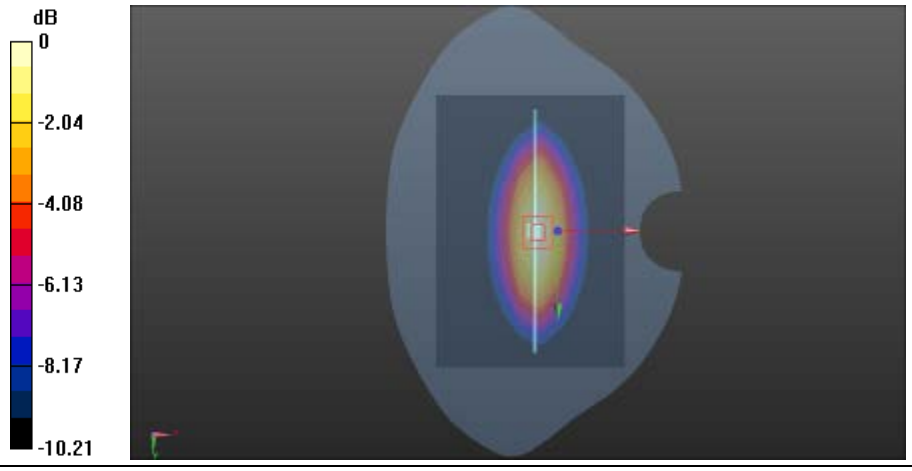
Communication System: UID 0, CW (0); Frequency: 835 MHz
Medium parameters used (extrapolated): f = 835 MHz; σ = 0.909 S/m; ε_r = 42.108; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard:DASY5 (IEEE 1528-2013)

DASY Configuration:

- Probe: ES3DV3 - SN3127; ConvF(5.97, 5.97, 5.97); Calibrated: 8/21/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn546; Calibrated: 8/19/2015
- Phantom: SAM 1559; Type: SAM; Serial: 1559
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

  System Performance Check at Frequencies 835MHz Head/d=15mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Area Scan (10x13x1): Measurement grid: dx=15mm, dy=15mm
  Maximum value of SAR (measured) = 2.95 W/kg

  System Performance Check at Frequencies 835MHz Head/d=15mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
  Reference Value = 54.092V/m; Power Drift = -0.08 dB
  Peak SAR (extrapolated) = 3.53 W/kg
  SAR(1 g) = 2.33 W/kg; SAR(10 g) = 1.55 W/kg
  Maximum value of SAR (measured) = 2.95 W/kg



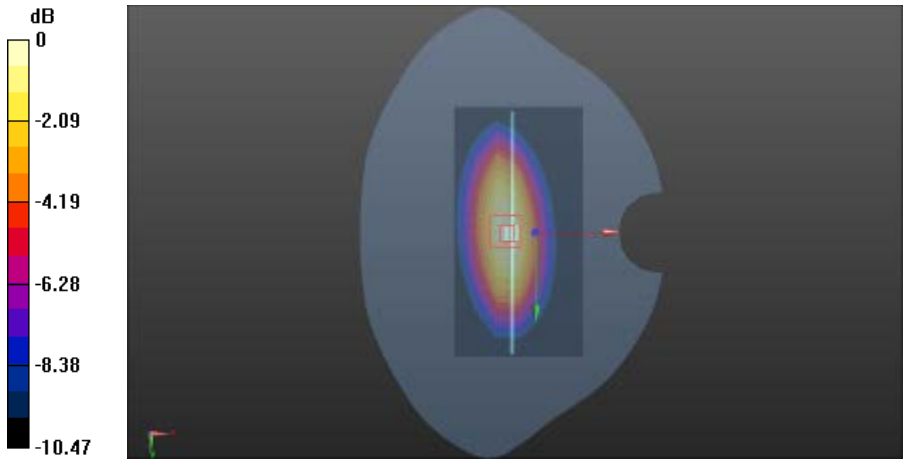
SYSTEM CHECKING SCANS	835MHz Flat

Communication System: UID 0, CW (0); Frequency: 835 MHz
Medium parameters used (extrapolated): f = 835 MHz; σ = 0.978 S/m; ε_r = 53.846; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE 1528-2013)

DASY Configuration:

- Probe: ES3DV3 - SN3127; ConvF(5.88, 5.88, 5.88); Calibrated: 8/21/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = -18.0, 32.0
- Electronics: DAE4 Sn546; Calibrated: 8/19/2015
- Phantom: SAM 1559; Type: SAM; Serial: 1559
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

  System Performance Check at Frequencies 835MHz Flat/d=15mm, Pin=250 mW, dist=3.0mm (ES-Probe)/Area Scan (7x12x1): Measurement grid: dx=15mm, dy=15mm
  Maximum value of SAR (measured) = 2.55 W/kg
  System Performance Check at Frequencies 835MHz Flat/d=15mm, Pin=250 mW, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
  Reference Value = 53.044 V/m; Power Drift = -0.01 dB
  Peak SAR (extrapolated) = 3.54 W/kg
  SAR(1 g) = 2.33 W/kg; SAR(10 g) = 1.53 W/kg
  Maximum value of SAR (measured) = 2.87 W/kg



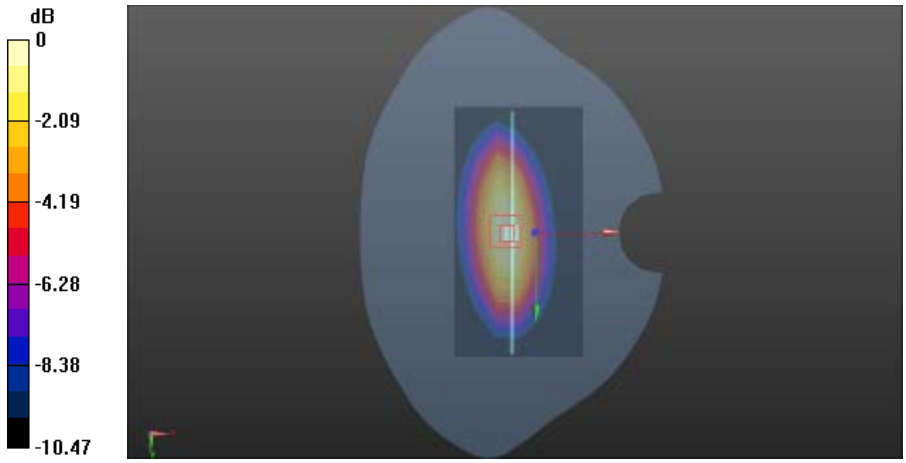
SYSTEM CHECKING SCANS	835MHz Flat

Communication System: UID 0, CW (0); Frequency: 835 MHz
Medium parameters used (extrapolated): f = 835 MHz; σ = 0.978 S/m; ε_r = 53.846; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE 1528-2013)

DASY Configuration:

- Probe: ES3DV3 - SN3127; ConvF(5.88, 5.88, 5.88); Calibrated: 8/21/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = -18.0, 32.0
- Electronics: DAE4 Sn546; Calibrated: 8/19/2015
- Phantom: SAM 1559; Type: SAM; Serial: 1559
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

  System Performance Check at Frequencies 835MHz Flat/d=15mm, Pin=250 mW, dist=3.0mm (ES-Probe)/Area Scan (7x12x1): Measurement grid: dx=15mm, dy=15mm
  Maximum value of SAR (measured) = 2.51 W/kg
  System Performance Check at Frequencies 835MHz Flat/d=15mm, Pin=250 mW, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
  Reference Value = 52.991 V/m; Power Drift = -0.01 dB
  Peak SAR (extrapolated) = 3.52 W/kg
  SAR(1 g) = 2.34 W/kg; SAR(10 g) = 1.52 W/kg
  Maximum value of SAR (measured) = 2.84 W/kg



SYSTEM CHECKING SCANS	1900MHz Head

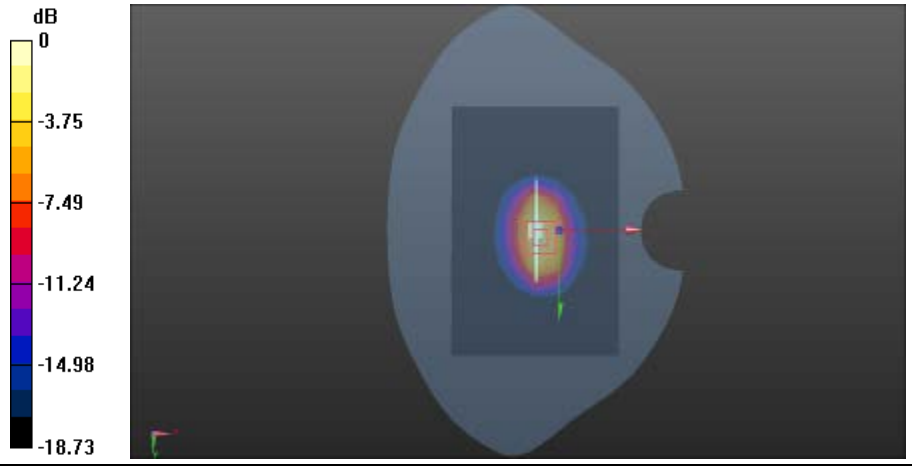
Communication System: UID 0, CW (0); Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.41 S/m; ε_r = 40.84; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard:DASY5 (IEEE 1528-2013)

DASY Configuration:

- Probe: ES3DV3 - SN3127; ConvF(4.94, 4.94, 4.94); Calibrated: 8/21/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn546; Calibrated: 8/19/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

  System Performance Check at Frequencies 1900MHz Head/d=10mm, Pin=250mW, dist=2.0mm (EX-Probe)/Area Scan (9x12x1): Measurement grid: dx=15mm, dy=15mm
  Maximum value of SAR (measured) = 14.0 W/kg

  System Performance Check at Frequencies 1900MHz Head/d=10mm, Pin=250mW, dist=2.0mm (EX-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
  Reference Value = 95.996 V/m; Power Drift = 0.05 dB
  Peak SAR (extrapolated) = 20.8 W/kg
  SAR(1 g) = 9.82 W/kg; SAR(10 g) = 5.47 W/kg
  Maximum value of SAR (measured) = 15.9 W/kg



SYSTEM CHECKING SCANS	1900MHz Head

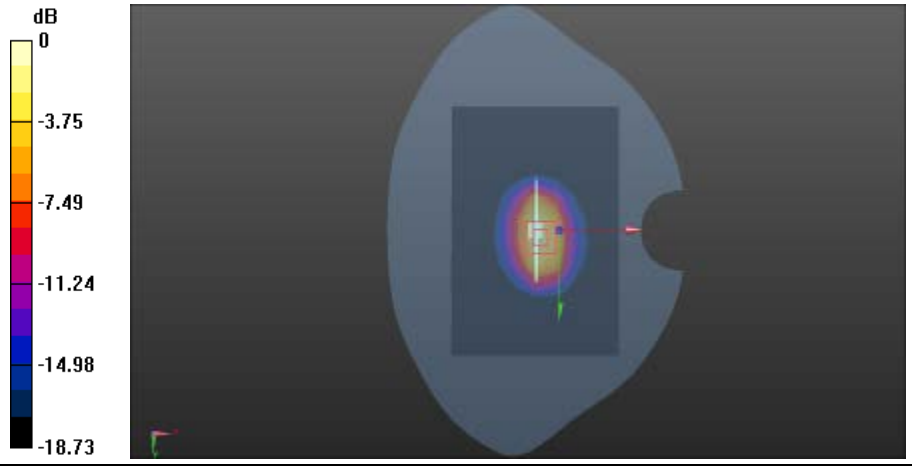
Communication System: UID 0, CW (0); Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.41 S/m; ε_r = 40.84; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard:DASY5 (IEEE 1528-2013)

DASY Configuration:

- Probe: ES3DV3 - SN3127; ConvF(4.94, 4.94, 4.94); Calibrated: 8/21/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn546; Calibrated: 8/19/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

  System Performance Check at Frequencies 1900MHz Head/d=10mm, Pin=250mW, dist=2.0mm (EX-Probe)/Area Scan (9x12x1): Measurement grid: dx=15mm, dy=15mm
  Maximum value of SAR (measured) = 14.1 W/kg

  System Performance Check at Frequencies 1900MHz Head/d=10mm, Pin=250mW, dist=2.0mm (EX-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
  Reference Value = 96.020 V/m; Power Drift = -0.02dB
  Peak SAR (extrapolated) = 20.9 W/kg
  SAR(1 g) = 9.84W/kg; SAR(10 g) = 5.46 W/kg
  Maximum value of SAR (measured) = 15.7 W/kg



SYSTEM CHECKING SCANS	1900MHz Flat

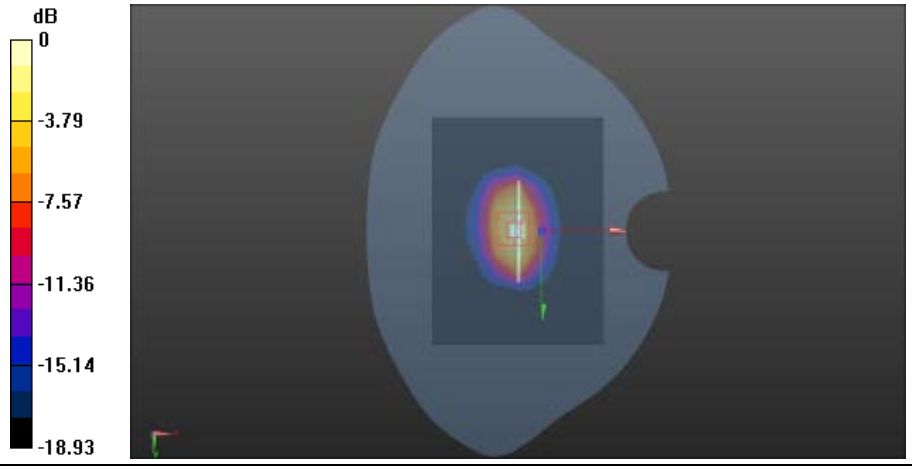
Communication System: UID 0, CW (0); Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.53 S/m; ε_r = 52.184; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard:DASY5 (IEEE 1528-2013)

DASY Configuration:

- Probe: ES3DV3 - SN3127; ConvF(4.67, 4.67, 4.67); Calibrated: 8/21/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn546; Calibrated: 8/19/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

  System Performance Check at Frequencies 1900MHz Flat/d=10mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Area Scan (9x11x1): Measurement grid: dx=15mm, dy=15mm
  Maximum value of SAR (measured) = 14.7 W/kg

  System Performance Check at Frequencies 1900MHz Flat/d=10mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
  Reference Value = 91.541 V/m; Power Drift = 0.01 dB
  Peak SAR (extrapolated) = 19.2 W/kg
  SAR(1 g) = 9.84 W/kg; SAR(10 g) = 5.64 W/kg
  Maximum value of SAR (measured) = 14.5 W/kg



SYSTEM CHECKING SCANS	1900MHz Flat

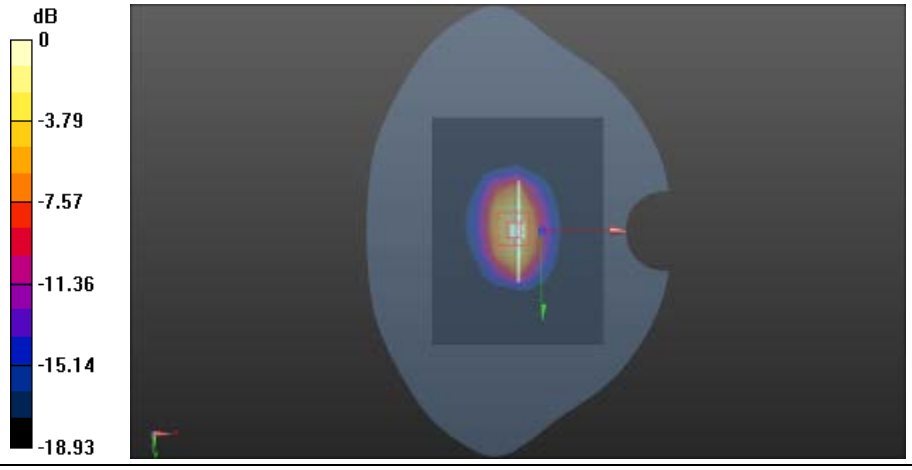
Communication System: UID 0, CW (0); Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.53 S/m; ε_r = 52.184; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard:DASY5 (IEEE 1528-2013)

DASY Configuration:

- Probe: ES3DV3 - SN3127; ConvF(4.67, 4.67, 4.67); Calibrated: 8/21/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn546; Calibrated: 8/19/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

  System Performance Check at Frequencies 1900MHz Flat/d=10mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Area Scan (9x11x1): Measurement grid: dx=15mm, dy=15mm
  Maximum value of SAR (measured) = 14.6 W/kg

  System Performance Check at Frequencies 1900MHz Flat/d=10mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
  Reference Value = 91.122 V/m; Power Drift = 0.02 dB
  Peak SAR (extrapolated) = 19.1 W/kg
  SAR(1 g) = 9.83 W/kg; SAR(10 g) = 5.63 W/kg
  Maximum value of SAR (measured) = 14.3 W/kg

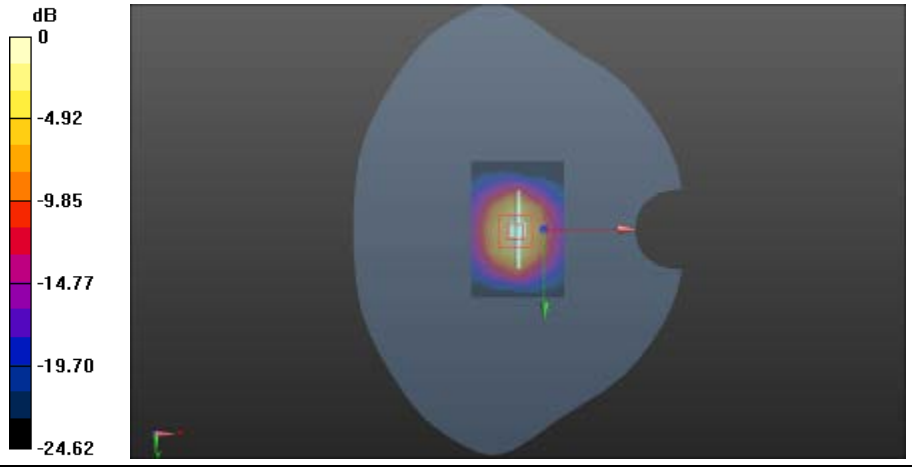


SYSTEM CHECKING SCANS	2450 MHz Head

Communication System: UID 0, CW (0); Frequency: 2450 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.79 S/m; ε_r = 39.208; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(4.35, 4.35, 4.35); Calibrated: 2015/8/21;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 2015/8/19
- Phantom: SAM 1659; Type: QD000P40CD; Serial: TP:1659
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)
  System Performance Check at Frequencies 2450MHz Head/d=10mm, Pin=250 mW, dist=3.0mm (ES-Probe)/Area Scan (5x7x1): Measurement grid: dx=15mm, dy=15mm
  Maximum value of SAR (measured) = 17.1 W/kg
  System Performance Check at Frequencies 2450MHz Head/d=10mm, Pin=250 mW, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
  Reference Value = 102.2 V/m; Power Drift = -0.02 dB
  Peak SAR (extrapolated) = 28.8 W/kg
  SAR(1 g) = 13.12 W/kg; SAR(10 g) = 5.92 W/kg
  Maximum value of SAR (measured) = 17.0 W/kg

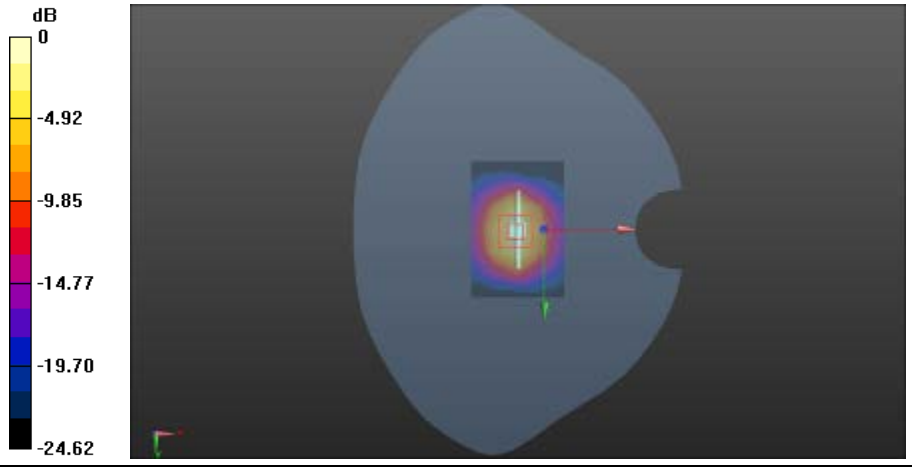


SYSTEM CHECKING SCANS	2450 MHz Head

Communication System: UID 0, CW (0); Frequency: 2450 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.79 S/m; ε_r = 39.208; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(4.35, 4.35, 4.35); Calibrated: 2015/8/21;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 2015/8/19
- Phantom: SAM 1659; Type: QD000P40CD; Serial: TP:1659
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)
  System Performance Check at Frequencies 2450MHz Head/d=10mm, Pin=250 mW, dist=3.0mm (ES-Probe)/Area Scan (5x7x1): Measurement grid: dx=15mm, dy=15mm
  Maximum value of SAR (measured) = 17.0 W/kg
  System Performance Check at Frequencies 2450MHz Head/d=10mm, Pin=250 mW, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
  Reference Value = 102.121 V/m; Power Drift = -0.02 dB
  Peak SAR (extrapolated) = 28.8 W/kg
  SAR(1 g) = 13.16 W/kg; SAR(10 g) = 5.94 W/kg
  Maximum value of SAR (measured) = 17.1 W/kg

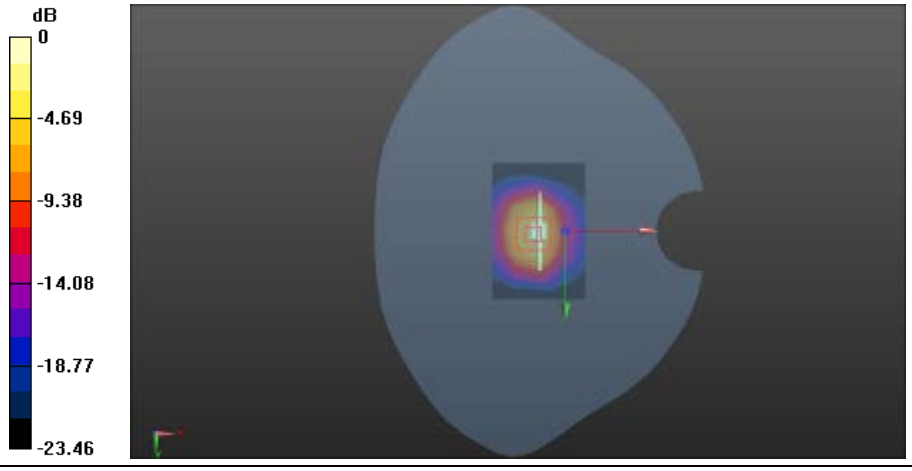


SYSTEM CHECKING SCANS	2450MHz Flat

Communication System: UID 0, CW (0); Frequency: 2450 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.965 S/m; ε_r = 52.042; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(4.19, 4.19, 4.19); Calibrated: 2015/8/21;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 2015/8/19
- Phantom: SAM 1659; Type: QD000P40CD; Serial: TP:1659
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)
  System Performance Check at Frequencies 2450MHz Flat/d=10mm, Pin=250 mW, dist=3.0mm (ES-Probe)/Area Scan (5x7x1): Measurement grid: dx=15mm, dy=15mm
  Maximum value of SAR (measured) = 17.1 W/kg
  System Performance Check at Frequencies 2450MHz Flat/d=10mm, Pin=250 mW, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
  Reference Value = 104.3 V/m; Power Drift = -0.01 dB
  Peak SAR (extrapolated) = 28.0 W/kg
  SAR(1 g) = 12.93 W/kg; SAR(10 g) = 5.78 W/kg
  Maximum value of SAR (measured) = 17.4 W/kg

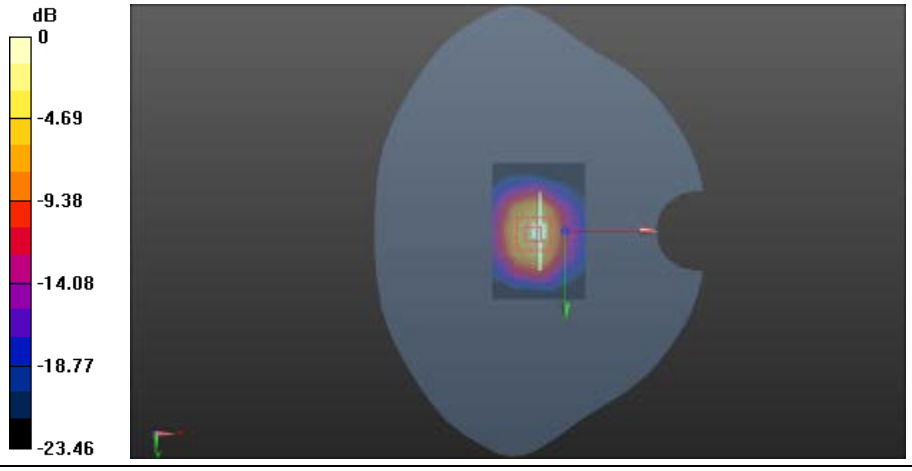


SYSTEM CHECKING SCANS	2450MHz Flat

Communication System: UID 0, CW (0); Frequency: 2450 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.965 S/m; ε_r = 52.042; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(4.19, 4.19, 4.19); Calibrated: 2015/8/21;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 2015/8/19
- Phantom: SAM 1659; Type: QD000P40CD; Serial: TP:1659
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)
  System Performance Check at Frequencies 2450MHz Flat/d=10mm, Pin=250 mW, dist=3.0mm (ES-Probe)/Area Scan (5x7x1): Measurement grid: dx=15mm, dy=15mm
  Maximum value of SAR (measured) = 16.8 W/kg
  System Performance Check at Frequencies 2450MHz Flat/d=10mm, Pin=250 mW, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
  Reference Value = 104.002 V/m; Power Drift = -0.03 dB
  Peak SAR (extrapolated) = 27.8 W/kg
  SAR(1 g) = 12.86 W/kg; SAR(10 g) = 5.74 W/kg
  Maximum value of SAR (measured) = 17.1 W/kg



APPENDIX B: MEASUREMENT SCANS

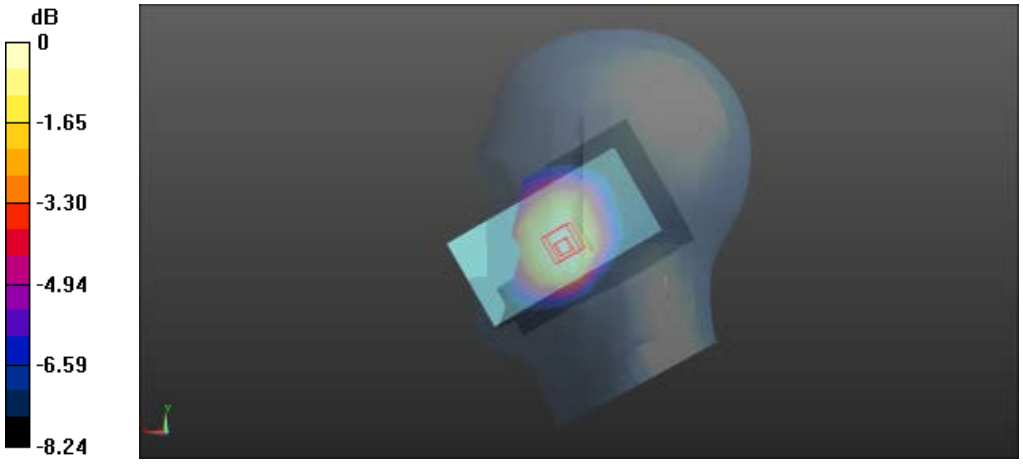
GSM (850MHz/Head)

Left Side	Cheek	836.6 MHz

Communication System: UID 0, Generic GSM (0); Frequency: 836.6 MHz
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.89 S/m; ε_r = 41.478; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: ES3DV3 - SN3127; ConvF(5.97, 5.97, 5.97); Calibrated: 8/21/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn546; Calibrated: 8/19/2015
- Phantom: SAM 1559; Type: SAM; Serial: 1559
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)
  Head-Section Left HSL 850/850GSM Hsl touch M/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
  Maximum value of SAR (measured) = 0.137 W/kg
  Head-Section Left HSL 850/850GSM Hsl touch M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
  Reference Value = 4.414 V/m; Power Drift = -0.18 dB
  Peak SAR (extrapolated) = 0.160 W/kg
  SAR(1 g) = 0.130 W/kg; SAR(10 g) = 0.100 W/kg



0 dB = 0.137 W/kg = -8.63 dBW/kg

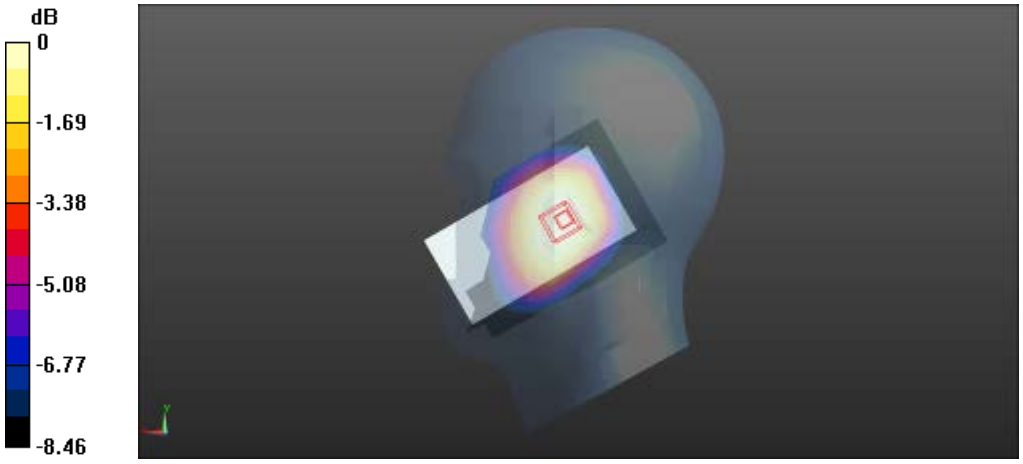
Left Side	Tilt	836.6 MHz

Communication System: UID 0, Generic GSM (0); Frequency: 836.6 MHz
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.89 S/m; ε_r = 41.478; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: ES3DV3 - SN3127; ConvF(5.97, 5.97, 5.97); Calibrated: 8/21/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn546; Calibrated: 8/19/2015
- Phantom: SAM 1559; Type: SAM; Serial: 1559
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Head-Section Left HSL 850/850GSM Hsl tilt M/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.106 W/kg
Head-Section Left HSL 850/850GSM Hsl tilt M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.814 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 0.121 W/kg
SAR(1 g) = 0.100 W/kg; SAR(10 g) = 0.079 W/kg
Maximum value of SAR (measured) = 0.105 W/kg



0 dB = 0.105 W/kg = -9.79 dBW/kg

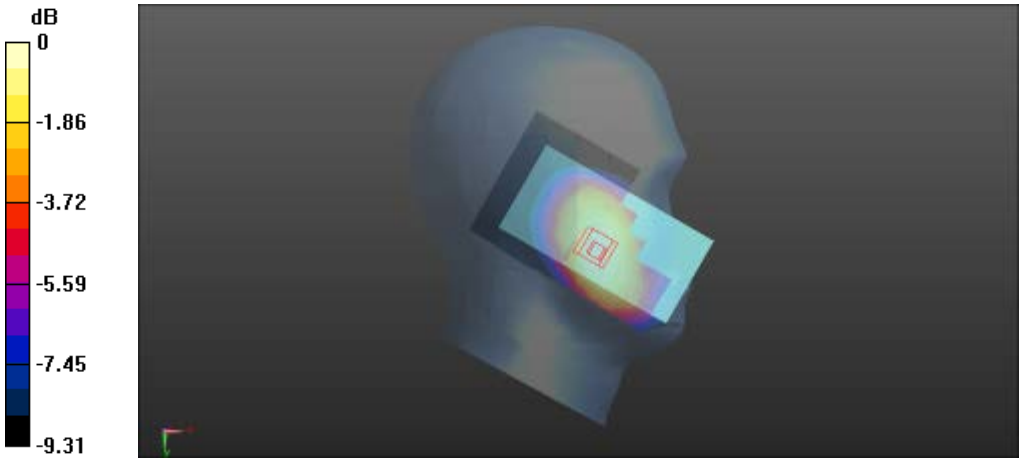
Right Side	Cheek	836.6 MHz

Communication System: UID 0, Generic GSM (0); Frequency: 836.6 MHz
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.89 S/m; ε_r = 41.478; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: ES3DV3 - SN3127; ConvF(5.97, 5.97, 5.97); Calibrated: 8/21/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn546; Calibrated: 8/19/2015
- Phantom: SAM 1559; Type: SAM; Serial: 1559
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Head-Section Right HSL 850/850GSM HSL touch M/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.139 W/kg
Head-Section Right HSL 850/850GSM HSL touch M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.034 V/m; Power Drift = -0.20 dB
Peak SAR (extrapolated) = 0.170 W/kg
SAR(1 g) = 0.137 W/kg; SAR(10 g) = 0.106 W/kg
Maximum value of SAR (measured) = 0.144 W/kg



0 dB = 0.144 W/kg = -8.42 dBW/kg

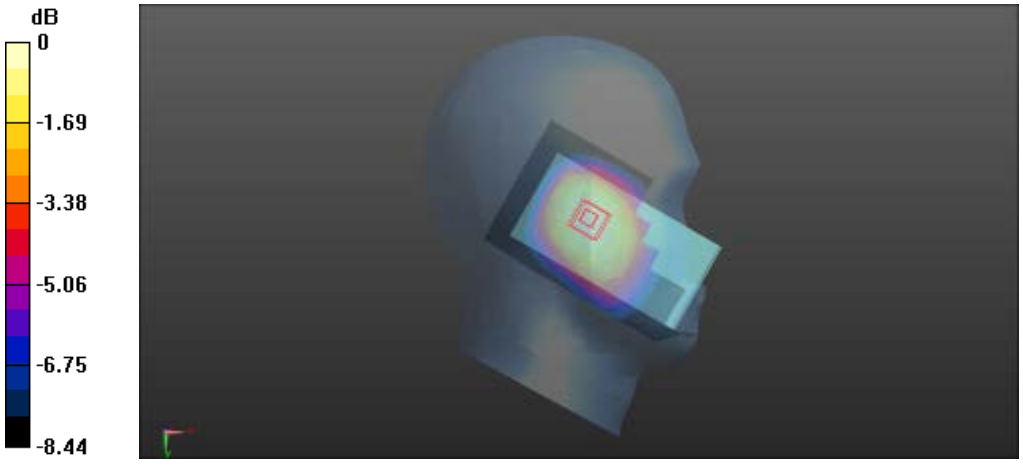
Right Side	Tilt	836.6 MHz

Communication System: UID 0, Generic GSM (0); Frequency: 836.6 MHz
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.89 S/m; ε_r = 41.478; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: ES3DV3 - SN3127; ConvF(5.97, 5.97, 5.97); Calibrated: 8/21/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn546; Calibrated: 8/19/2015
- Phantom: SAM 1559; Type: SAM; Serial: 1559
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Head-Section Right HSL 850/850GSM HSL tilt M/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.124 W/kg
Head-Section Right HSL 850/850GSM HSL tilt M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.626 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 0.142 W/kg
SAR(1 g) = 0.118 W/kg; SAR(10 g) = 0.092 W/kg



0 dB = 0.124 W/kg = -9.07 dBW/kg

GSM with headset (850MHz/Flat)

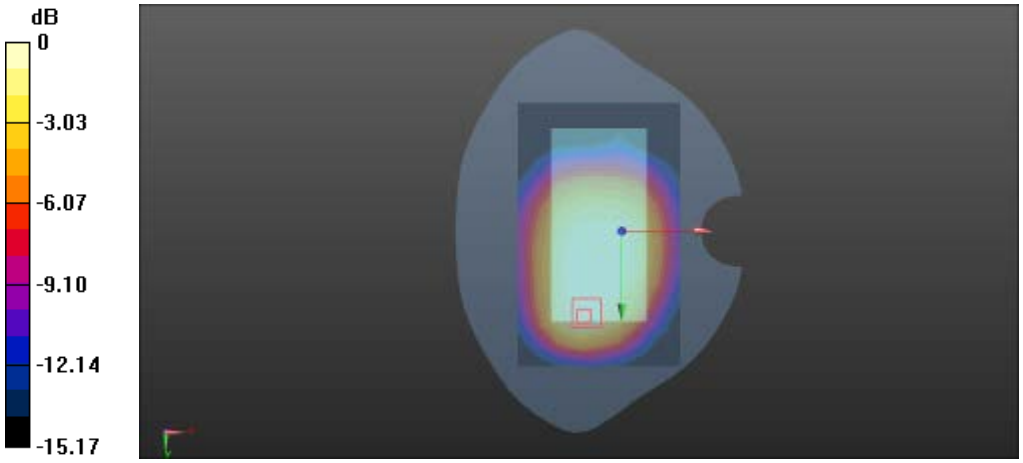
FLAT	TP	836.6 MHz

Communication System: UID 0, Generic GSM (0); Frequency: 836.6 MHz
Medium parameters used (extrapolated): f = 836.6 MHz; σ = 0.979 S/m; ε_r = 53.843; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(8.91, 8.91, 8.91); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = -19.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1559; Type: SAM; Serial: 1559
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Flat-Section MSL 850 TP/850GSM TP M/Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.160 W/kg
Flat-Section MSL 850 TP/850GSM TP M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.204 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 0.220 W/kg
SAR(1 g) = 0.149 W/kg; SAR(10 g) = 0.102 W/kg
Maximum value of SAR (measured) = 0.159 W/kg



0 dB = 0.159 W/kg = -7.99 dBW/kg

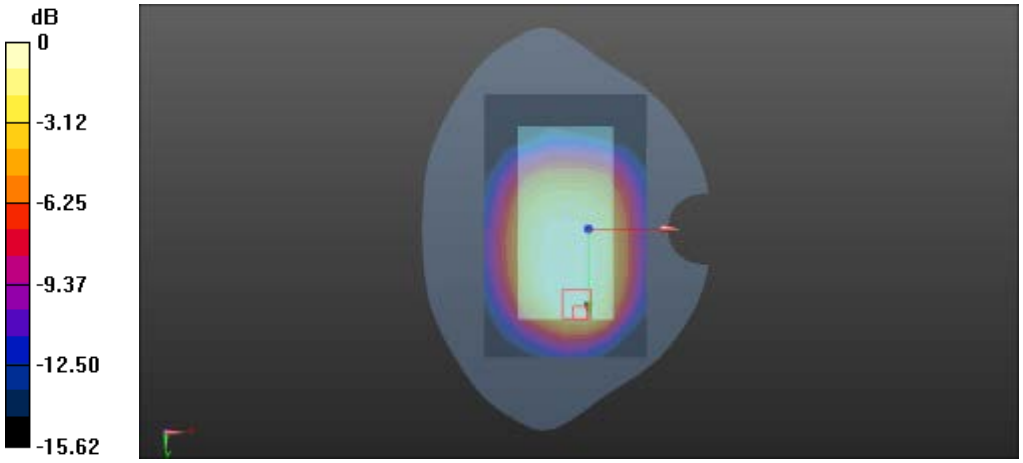
FLAT	TG	836.6 MHz

Communication System: UID 0, Generic GSM (0); Frequency: 836.6 MHz
Medium parameters used (extrapolated): f = 836.6 MHz; σ = 0.979 S/m; ε_r = 53.843; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(8.91, 8.91, 8.91); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = -9.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1559; Type: SAM; Serial: 1559
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Flat-Section MSL 850 TG/850GSM TG M/Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.189 W/kg
Flat-Section MSL 850 TG/850GSM TG M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.877 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 0.292 W/kg
SAR(1 g) = 0.171 W/kg; SAR(10 g) = 0.108 W/kg
Maximum value of SAR (measured) = 0.186 W/kg



0 dB = 0.186 W/kg = -7.30 dBW/kg

GSM (850MHz with GPRS/Flat)

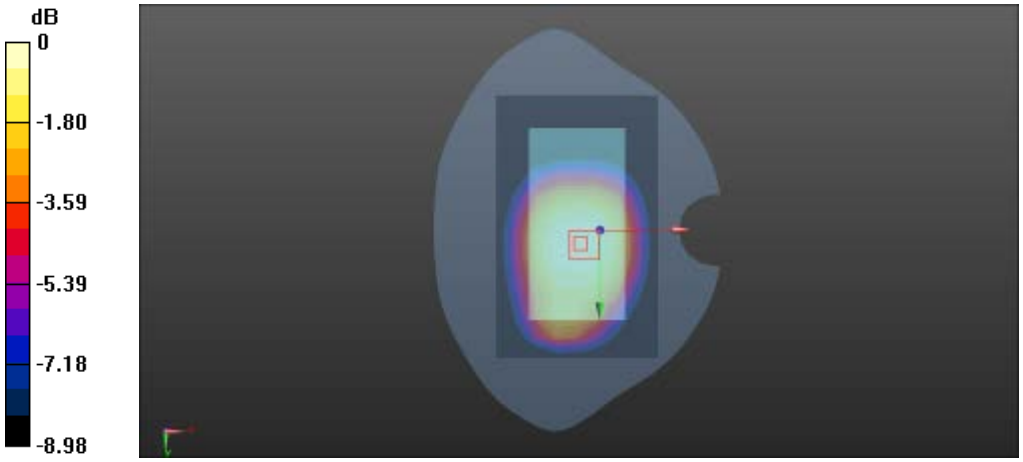
FLAT	TP	836.6 MHz

Communication System: UID 0, Generic GSM (0); Frequency: 836.6 MHz
Medium parameters used (extrapolated): f = 836.6 MHz; σ = 0.979 S/m; ε_r = 53.843; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(8.91, 8.91, 8.91); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = -19.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1559; Type: SAM; Serial: 1559
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Flat-Section MSL 850 TP/850GPRS TP M/Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.450 W/kg
Flat-Section MSL 850 TP/850GPRS TP M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 21.359 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.567 W/kg
SAR(1 g) = 0.438 W/kg; SAR(10 g) = 0.330 W/kg
Maximum value of SAR (measured) = 0.458 W/kg



0 dB = 0.458 W/kg = -3.39 dBW/kg

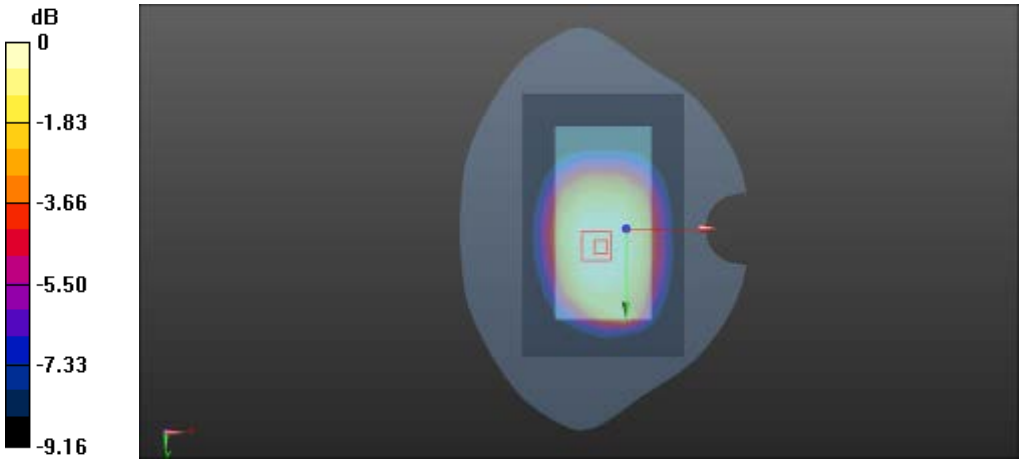
FLAT	TG	836.6 MHz

Communication System: UID 0, Generic GSM (0); Frequency: 836.6 MHz
Medium parameters used (extrapolated): f = 836.6 MHz; σ = 0.979 S/m; ε_r = 53.843; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(8.91, 8.91, 8.91); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1559; Type: SAM; Serial: 1559
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Flat-Section MSL 850 TG/850GPRS TG M/Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.498 W/kg
Flat-Section MSL 850 TG/850GPRS TG M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 22.336 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.599 W/kg
SAR(1 g) = 0.474 W/kg; SAR(10 g) = 0.361 W/kg



0 dB = 0.498 W/kg = -3.03 dBW/kg

GSM (850MHz with EGPRS/Flat)

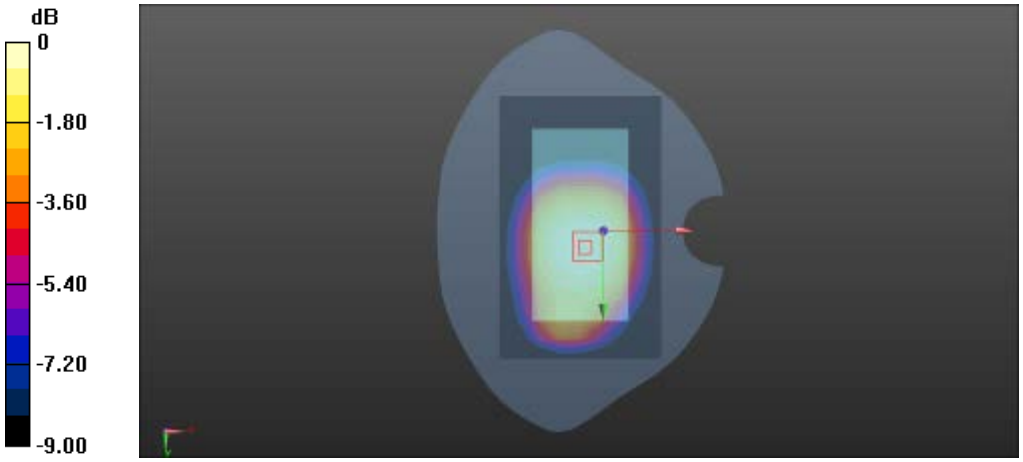
FLAT	TP	836.6 MHz

Communication System: UID 0, Generic GSM (0); Frequency: 836.6 MHz
Medium parameters used (extrapolated): f = 836.6 MHz; σ = 0.979 S/m; ε_r = 53.843; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(8.91, 8.91, 8.91); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = -19.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1559; Type: SAM; Serial: 1559
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Flat-Section MSL 850 TP/850EGPRS TP M/Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.453 W/kg
Flat-Section MSL 850 TP/850EGPRS TP M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 21.207 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.572 W/kg
SAR(1 g) = 0.437 W/kg; SAR(10 g) = 0.330 W/kg
Maximum value of SAR (measured) = 0.457 W/kg



0 dB = 0.457 W/kg = -3.40 dBW/kg

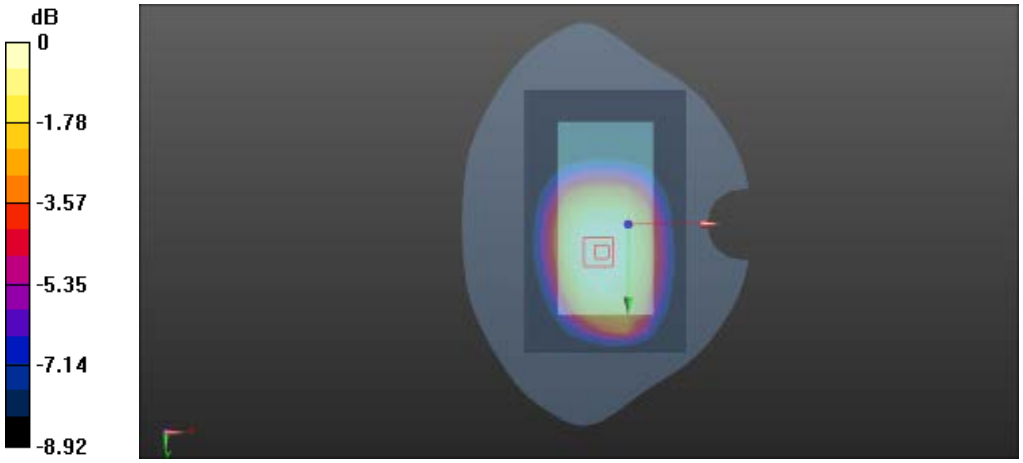
FLAT	TG	836.6 MHz

Communication System: UID 10021 - DAB, GSM-FDD (TDMA, GMSK); Frequency: 836.6 MHz
Medium parameters used (extrapolated): f = 836.6 MHz; σ = 0.979 S/m; ε_r = 53.843; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(8.91, 8.91, 8.91); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1559; Type: SAM; Serial: 1559
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Flat-Section MSL 850 TG/850EGPRS TG M/Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.660 W/kg
Flat-Section MSL 850 TG/850EGPRS TG M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 25.327 V/m; Power Drift = -0.19 dB
Peak SAR (extrapolated) = 0.810 W/kg
SAR(1 g) = 0.630 W/kg; SAR(10 g) = 0.478 W/kg
Maximum value of SAR (measured) = 0.659 W/kg



0 dB = 0.659 W/kg = -1.81 dBW/kg

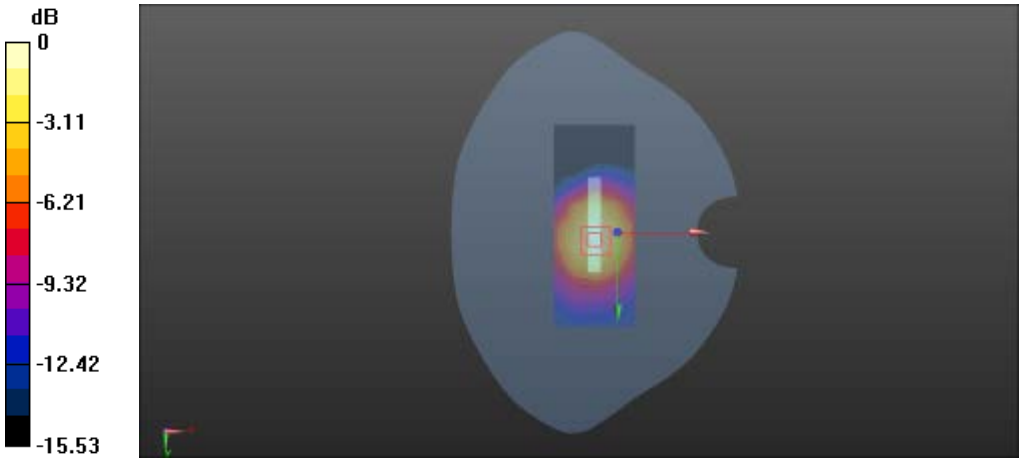
FLAT	Edge2	836.6 MHz

Communication System: UID 10021 - DAB, GSM-FDD (TDMA, GMSK); Frequency: 836.6 MHz
Medium parameters used (extrapolated): f = 836.6 MHz; σ = 0.979 S/m; ε_r = 53.843; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(8.91, 8.91, 8.91); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = -19.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1559; Type: SAM; Serial: 1559
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Flat-Section MSL 850 HOT/850EGPRS edge 2/Area Scan (5x11x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.352 W/kg
Flat-Section MSL 850 HOT/850EGPRS edge 2/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 19.030 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.619 W/kg
SAR(1 g) = 0.326 W/kg; SAR(10 g) = 0.187 W/kg
Maximum value of SAR (measured) = 0.358 W/kg



0 dB = 0.358 W/kg = -4.46 dBW/kg

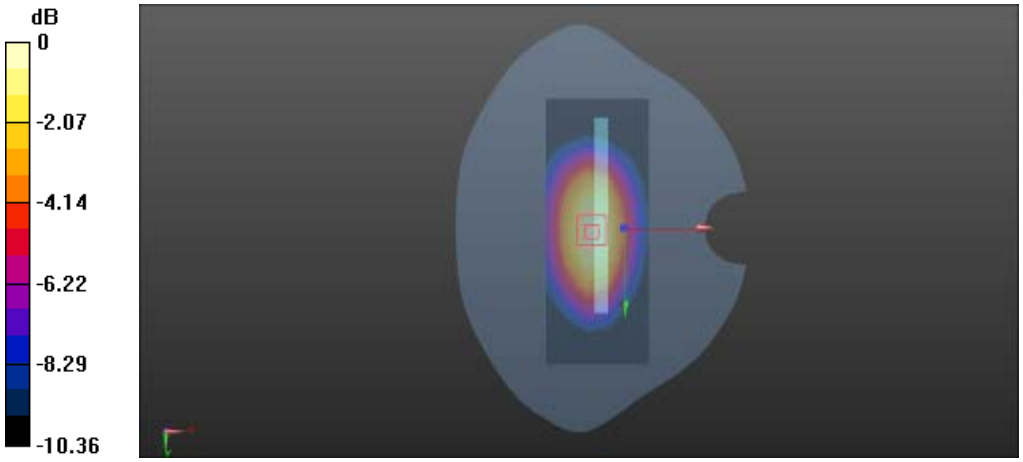
FLAT	Edge3	836.6 MHz

Communication System: UID 10021 - DAB, GSM-FDD (TDMA, GMSK); Frequency: 836.6 MHz
Medium parameters used (extrapolated): f = 836.6 MHz; σ = 0.979 S/m; ε_r = 53.843; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(8.91, 8.91, 8.91); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = -19.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1559; Type: SAM; Serial: 1559
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Flat-Section MSL 850 HOT/850EGPRS edge 3/Area Scan (6x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.602 W/kg
Flat-Section MSL 850 HOT/850EGPRS edge 3/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 24.403 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.882 W/kg
SAR(1 g) = 0.588 W/kg; SAR(10 g) = 0.390 W/kg
Maximum value of SAR (measured) = 0.635 W/kg



0 dB = 0.635 W/kg = -1.97 dBW/kg

GSM (1900MHz/Head)

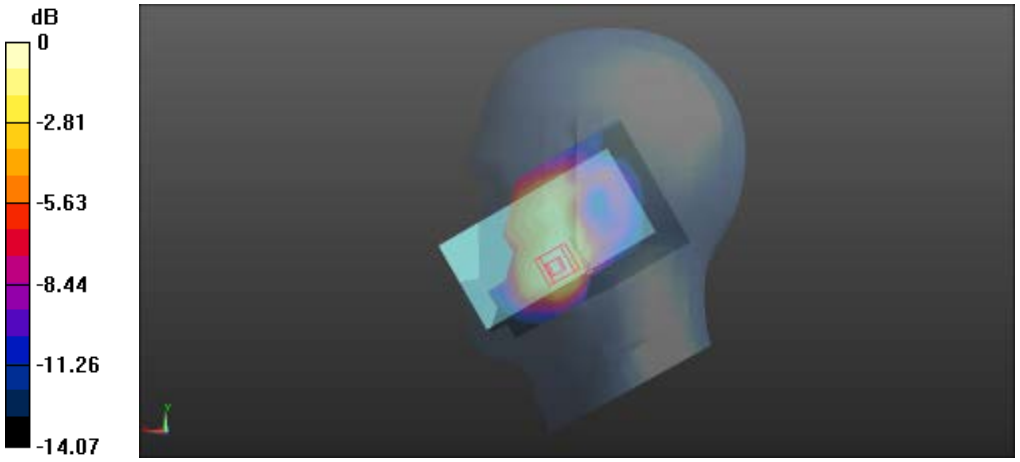
Left Side	Cheek	1880.0 MHz

Communication System: UID 0, Generic GSM (0); Frequency: 1880 MHz
Medium parameters used: f = 1880 MHz; σ = 1.45 S/m; ε_r = 39.74; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.77, 7.77, 7.77); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Head-Section Left HSL 1900/1900GSM touch M/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.173 W/kg
Head-Section Left HSL 1900/1900GSM touch M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.922 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 0.273 W/kg
SAR(1 g) = 0.176 W/kg; SAR(10 g) = 0.110 W/kg
Maximum value of SAR (measured) = 0.192 W/kg



0 dB = 0.192 W/kg = -7.17 dBW/kg

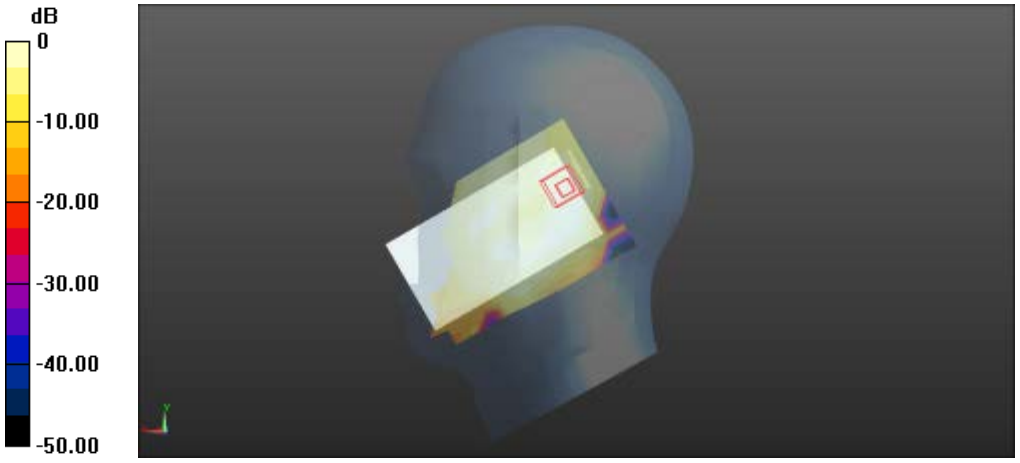
Left Side	tilt	1880 MHz

Communication System: UID 0, Generic GSM (0); Frequency: 1880 MHz
Medium parameters used: f = 1880 MHz; σ = 1.45 S/m; ε_r = 39.74; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.77, 7.77, 7.77); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Head-Section Left HSL 1900/1900GSM tilt M/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.0501 W/kg
Head-Section Left HSL 1900/1900GSM tilt M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.349 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 0.0950 W/kg
SAR(1 g) = 0.058 W/kg; SAR(10 g) = 0.030 W/kg
Maximum value of SAR (measured) = 0.0641 W/kg



0 dB = 0.0641 W/kg = -11.93 dBW/kg

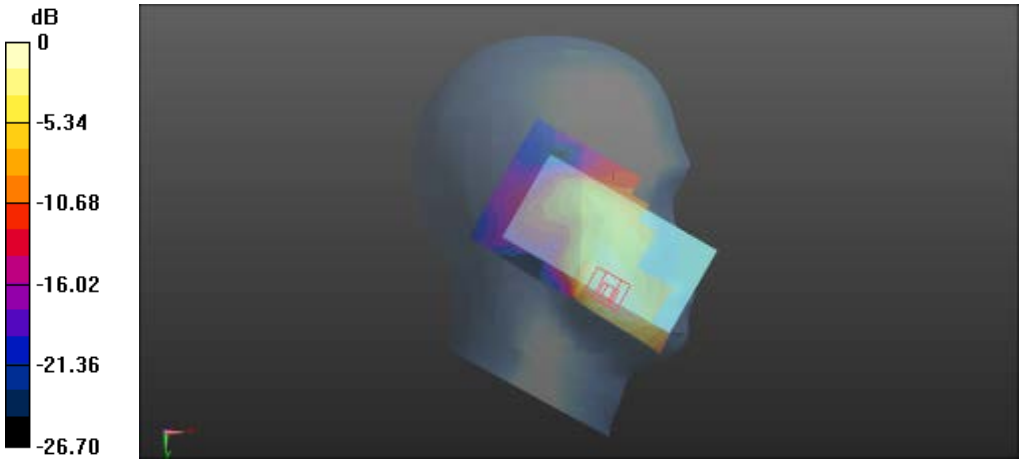
Right Side	Cheek	1880 MHz

Communication System: UID 0, Generic GSM (0); Frequency: 1880 MHz
Medium parameters used: f = 1880 MHz; σ = 1.45 S/m; ε_r = 39.74; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.77, 7.77, 7.77); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Head-Section Right HSL 1900/1900GSM touch M/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.270 W/kg
Head-Section Right HSL 1900/1900GSM touch M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.756 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 0.410 W/kg
SAR(1 g) = 0.258 W/kg; SAR(10 g) = 0.156 W/kg
Maximum value of SAR (measured) = 0.281 W/kg



0 dB = 0.281 W/kg = -5.51 dBW/kg

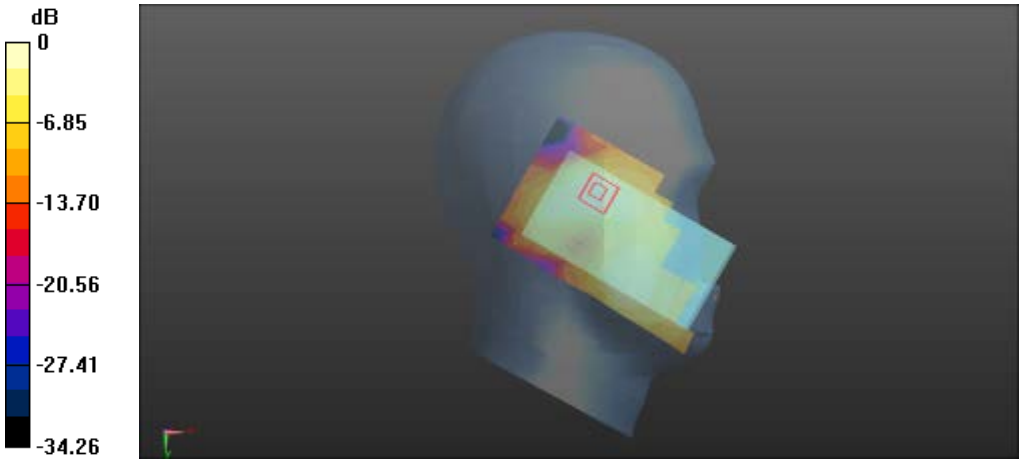
Right Side	tilt	1880.0 MHz

Communication System: UID 0, Generic GSM (0); Frequency: 1880 MHz
Medium parameters used: f = 1880 MHz; σ = 1.45 S/m; ε_r = 39.74; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.77, 7.77, 7.77); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Head-Section Right HSL 1900/1900GSM tilt M/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.0752 W/kg
Head-Section Right HSL 1900/1900GSM tilt M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.202 V/m; Power Drift = 0.39 dB
Peak SAR (extrapolated) = 0.125 W/kg
SAR(1 g) = 0.079 W/kg; SAR(10 g) = 0.047 W/kg
Maximum value of SAR (measured) = 0.0854 W/kg



0 dB = 0.0854 W/kg = -10.69 dBW/kg

GSM with headset (1900MHz/Flat)

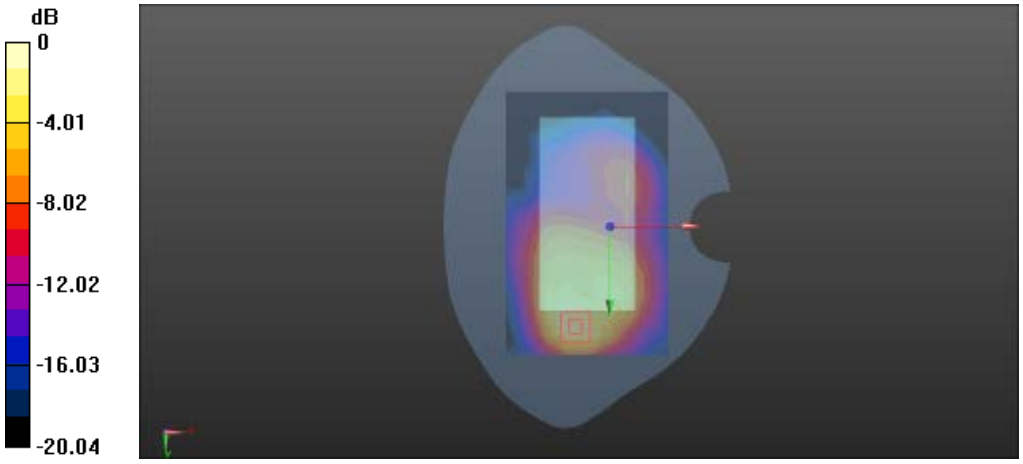
FLAT	TP	1880 MHz

Communication System: UID 10021 - DAB, GSM-FDD (TDMA, GMSK); Frequency: 1880 MHz
Medium parameters used: f = 1880 MHz; σ = 1.57 S/m; ε_r = 51.14; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.53, 7.53, 7.53); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = -19.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Flat-Section MSL 1900 TP/1900GSM TP M/Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.304 W/kg
Flat-Section MSL 1900 TP/1900GSM TP M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.065 V/m; Power Drift = 0.20 dB
Peak SAR (extrapolated) = 0.684 W/kg
SAR(1 g) = 0.377 W/kg; SAR(10 g) = 0.199 W/kg
Maximum value of SAR (measured) = 0.420 W/kg



0 dB = 0.420 W/kg = -3.77 dBW/kg

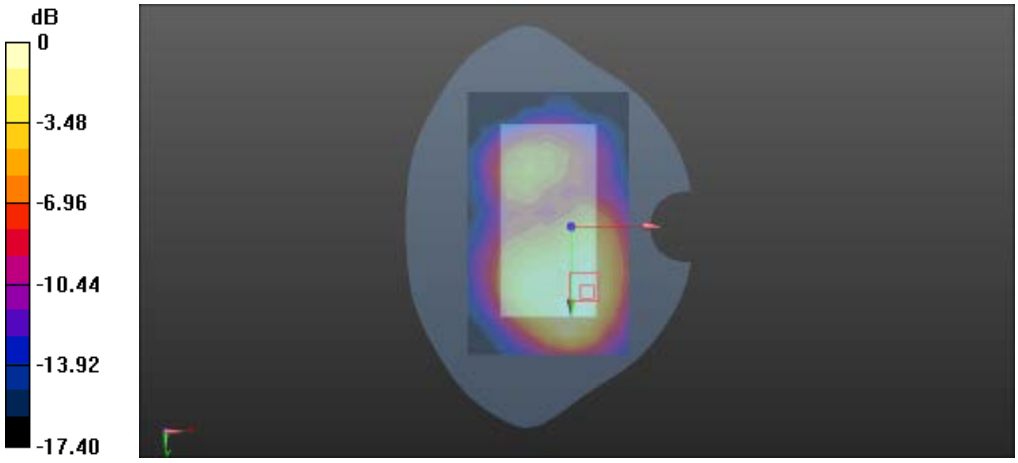
FLAT	TG	1880 MHz

Communication System: UID 10021 - DAB, GSM-FDD (TDMA, GMSK); Frequency: 1880 MHz
Medium parameters used: f = 1880 MHz; σ = 1.57 S/m; ε_r = 51.14; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.53, 7.53, 7.53); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = -19.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Flat-Section MSL 1900 TG/1900GSM TG M/Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.303 W/kg
Flat-Section MSL 1900 TG/1900GSM TG M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.201 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 0.485 W/kg
SAR(1 g) = 0.274 W/kg; SAR(10 g) = 0.159 W/kg
Maximum value of SAR (measured) = 0.297 W/kg



0 dB = 0.297 W/kg = -5.27 dBW/kg

GSM (1900MHz with GPRS/Flat)

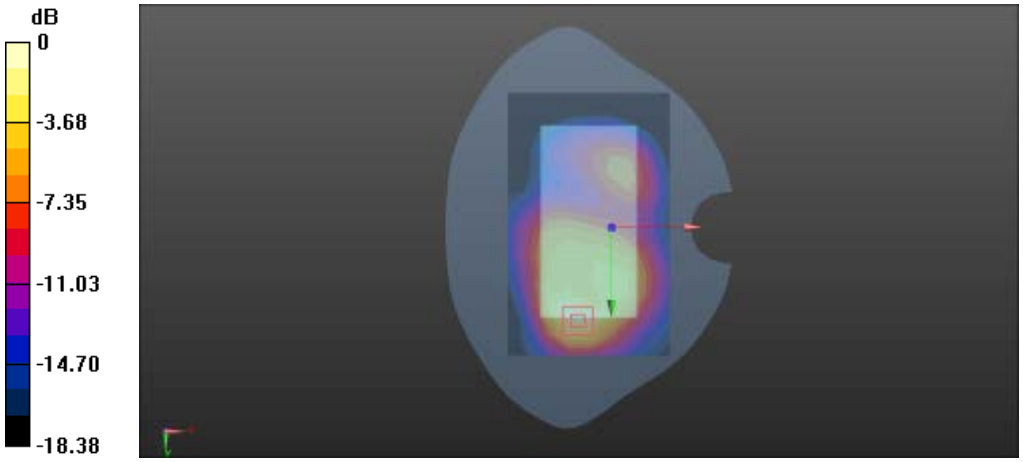
FLAT	TP	1880 MHz

Communication System: UID 10021 - DAB, GSM-FDD (TDMA, GMSK); Frequency: 1880 MHz
Medium parameters used: f = 1880 MHz; σ = 1.57 S/m; ε_r = 51.14; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.53, 7.53, 7.53); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = -19.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Flat-Section MSL 1900 TP/1900GPRS TP M/Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.641 W/kg
Flat-Section MSL 1900 TP/1900GPRS TP M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.873 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 1.17 W/kg
SAR(1 g) = 0.648 W/kg; SAR(10 g) = 0.338 W/kg
Maximum value of SAR (measured) = 0.711 W/kg



0 dB = 0.711 W/kg = -1.48 dBW/kg

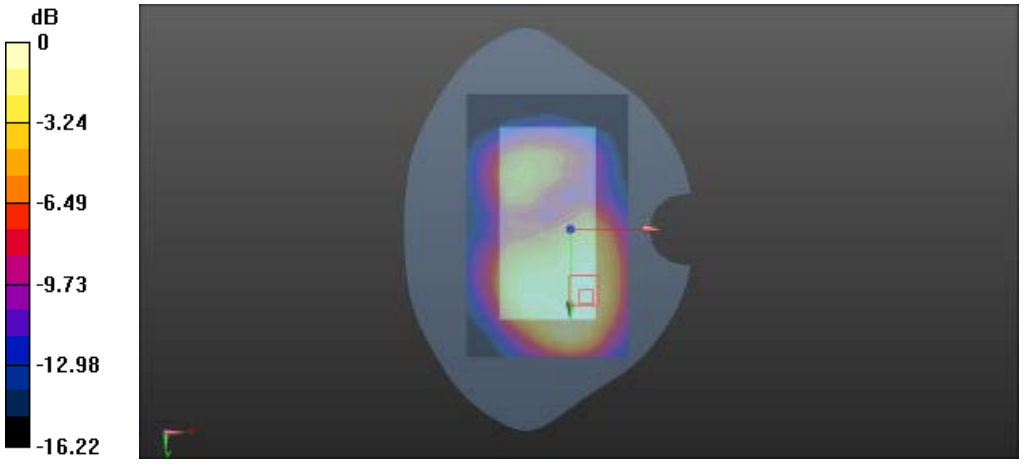
FLAT	TG	1880 MHz

Communication System: UID 10021 - DAB, GSM-FDD (TDMA, GMSK); Frequency: 1880 MHz
Medium parameters used: f = 1880 MHz; σ = 1.57 S/m; ε_r = 51.14; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.53, 7.53, 7.53); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = -19.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Flat-Section MSL 1900 TG/1900GPRS TG M/Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.554 W/kg
Flat-Section MSL 1900 TG/1900GPRS TG M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.117 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.954 W/kg
SAR(1 g) = 0.508 W/kg; SAR(10 g) = 0.290 W/kg
Maximum value of SAR (measured) = 0.546 W/kg



0 dB = 0.546 W/kg = -2.63 dBW/kg

GSM (1900MHz with EGPRS/Flat)

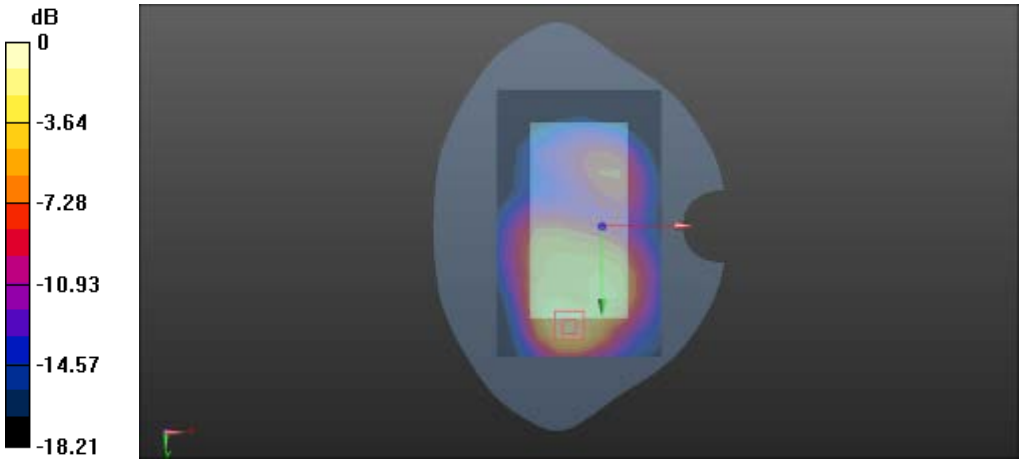
FLAT	TP	1880 MHz

Communication System: UID 10021 - DAB, GSM-FDD (TDMA, GMSK); Frequency: 1880 MHz
Medium parameters used: f = 1880 MHz; σ = 1.57 S/m; ε_r = 51.14; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.53, 7.53, 7.53); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = -19.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Flat-Section MSL 1900 TP/1900EGPRS TP M/Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.571 W/kg
Flat-Section MSL 1900 TP/1900EGPRS TP M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.864 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 1.27 W/kg
SAR(1 g) = 0.689 W/kg; SAR(10 g) = 0.360 W/kg
Maximum value of SAR (measured) = 0.777 W/kg



0 dB = 0.777 W/kg = -1.10 dBW/kg

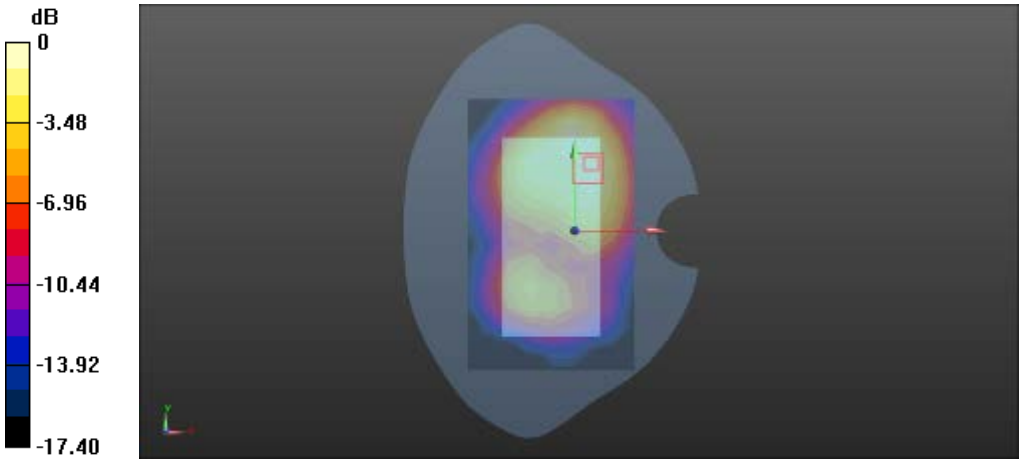
FLAT	TG	1880 MHz

Communication System: UID 10021 - DAB, GSM-FDD (TDMA, GMSK); Frequency: 1880 MHz
Medium parameters used: f = 1880 MHz; σ = 1.57 S/m; ε_r = 51.14; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.53, 7.53, 7.53); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = -19.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Flat-Section MSL 1900 TG/1900GSM TG M/Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.303 W/kg
Flat-Section MSL 1900 TG/1900GSM TG M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.201 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 0.485 W/kg
SAR(1 g) = 0.274 W/kg; SAR(10 g) = 0.159 W/kg
Maximum value of SAR (measured) = 0.297 W/kg



0 dB = 0.297 W/kg = -5.27 dBW/kg

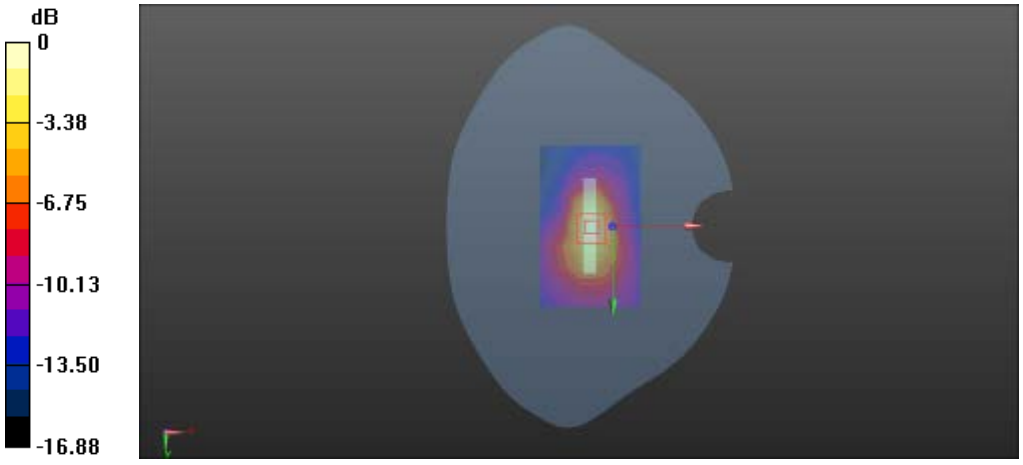
FLAT	EDGE2	1880 MHz

Communication System: UID 10021 - DAB, GSM-FDD (TDMA, GMSK); Frequency: 1880 MHz
Medium parameters used: f = 1880 MHz; σ = 1.57 S/m; ε_r = 51.14; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.53, 7.53, 7.53); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Flat-Section MSL hotspot/1900 EGPRS edge 2 CH810 3 2 2 3 2/Area Scan (6x9x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.641 W/kg
Flat-Section MSL hotspot/1900 EGPRS edge 2 CH810 3 2 2 3 2/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 23.132 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 1.29 W/kg
SAR(1 g) = 0.742 W/kg; SAR(10 g) = 0.395 W/kg
Maximum value of SAR (measured) = 0.842 W/kg



0 dB = 0.842 W/kg = -0.75 dBW/kg

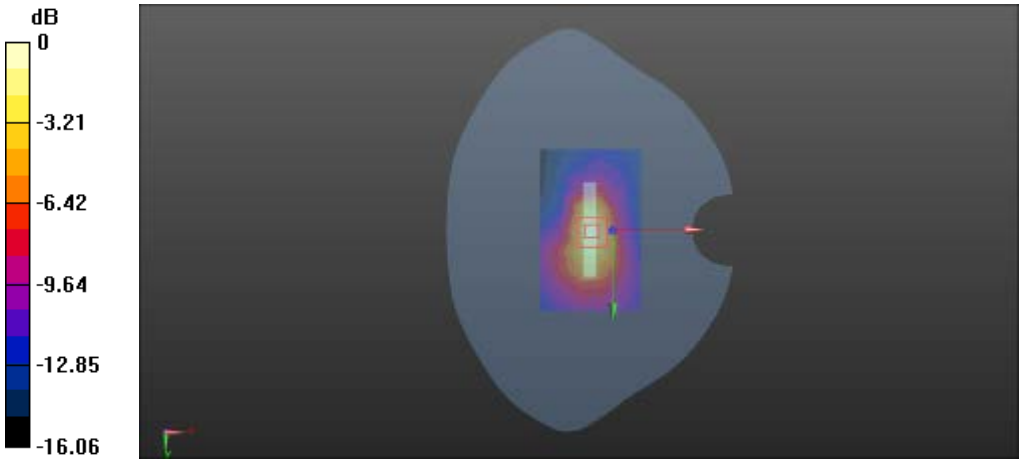
FLAT	EDGE2	1850.2 MHz

Communication System: UID 10021 - DAB, GSM-FDD (TDMA, GMSK); Frequency: 1850.2 MHz
Medium parameters used: f = 1850.2 MHz; σ = 1.53 S/m; ε_r = 51.24; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.53, 7.53, 7.53); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Flat-Section MSL hotspot/1900 EGPRS edge 2 CH810 3 2 2 3 4/Area Scan (6x9x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.652 W/kg
Flat-Section MSL hotspot/1900 EGPRS edge 2 CH810 3 2 2 3 4/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 23.470 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 1.27 W/kg
SAR(1 g) = 0.749 W/kg; SAR(10 g) = 0.401 W/kg
Maximum value of SAR (measured) = 0.851 W/kg



0 dB = 0.851 W/kg = -0.70 dBW/kg

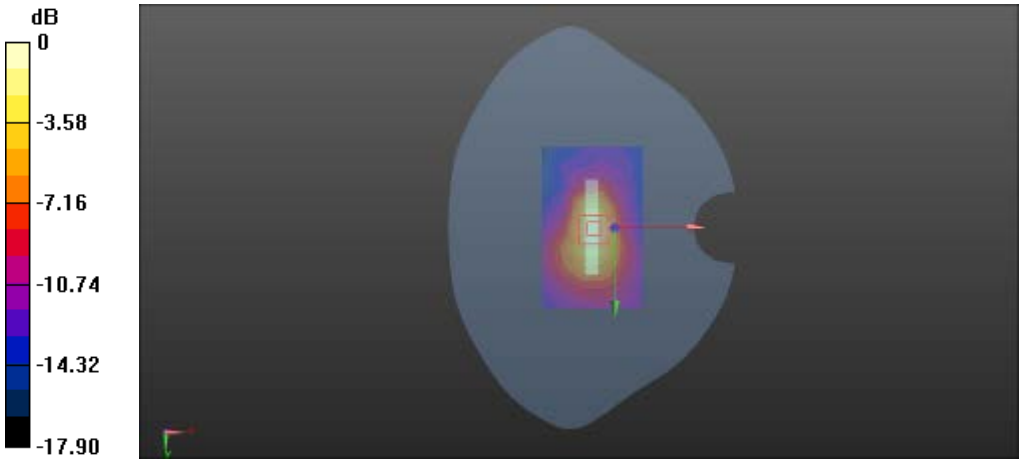
FLAT	EDGE2	1909.8 MHz

Communication System: UID 10021 - DAB, GSM-FDD (TDMA, GMSK); Frequency: 1909.8 MHz
Medium parameters used: f = 1909.8 MHz; σ = 1.6 S/m; ε_r = 51.04; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.53, 7.53, 7.53); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Flat-Section MSL hotspot/1900 EGPRS edge 2 CH810 3 2 2 3 3/Area Scan (6x9x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.611 W/kg
Flat-Section MSL hotspot/1900 EGPRS edge 2 CH810 3 2 2 3 3/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 22.680 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 1.27 W/kg
SAR(1 g) = 0.725 W/kg; SAR(10 g) = 0.387 W/kg
Maximum value of SAR (measured) = 0.823 W/kg



0 dB = 0.823 W/kg = -0.85 dBW/kg

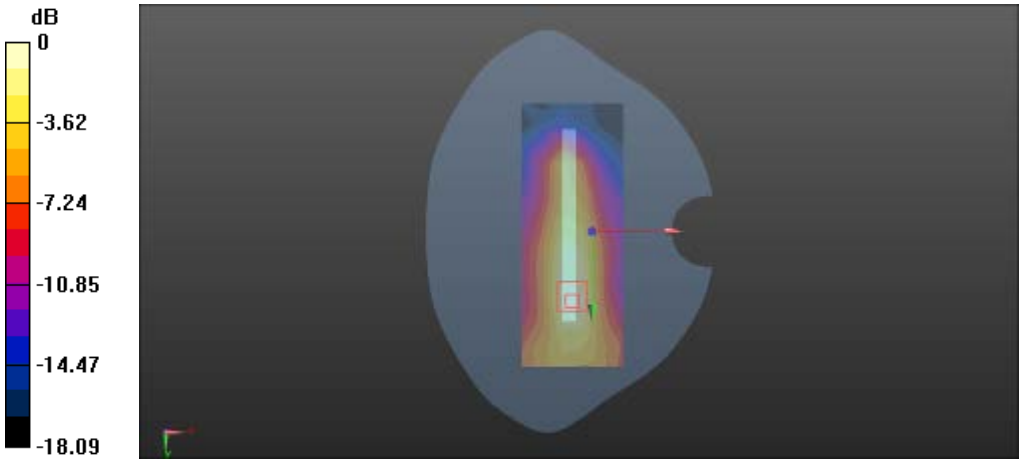
FLAT	EDGE3	1880 MHz

Communication System: UID 10021 - DAB, GSM-FDD (TDMA, GMSK); Frequency: 1880 MHz
Medium parameters used: f = 1880 MHz; σ = 1.57 S/m; ε_r = 51.14; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.53, 7.53, 7.53); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Flat-Section MSL hotspot/1900 EGPRS edge 3/Area Scan (6x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.212 W/kg
Flat-Section MSL hotspot/1900 EGPRS edge 3/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.221 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.419 W/kg
SAR(1 g) = 0.241 W/kg; SAR(10 g) = 0.135 W/kg
Maximum value of SAR (measured) = 0.265 W/kg



0 dB = 0.265 W/kg = -5.77 dBW/kg

WCDMA BAND2 (Head)

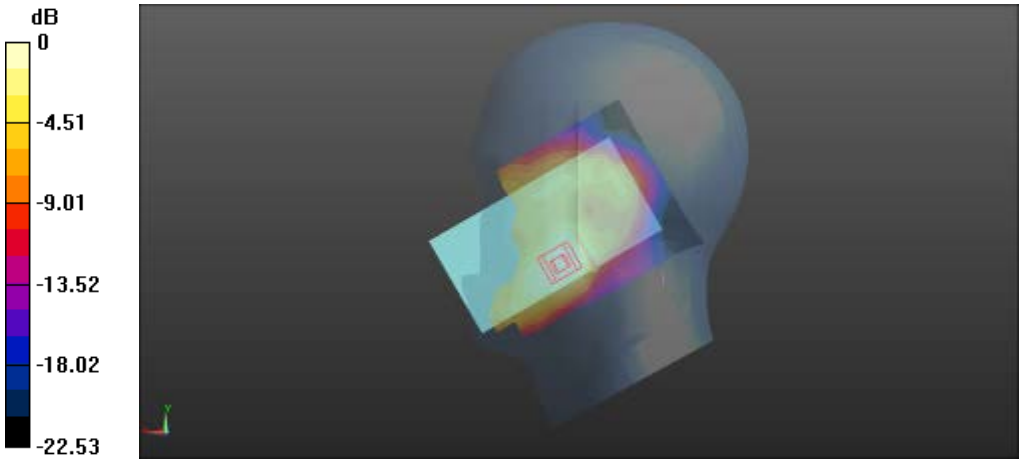
Left Side	Cheek	1880 MHz

Communication System: UID 0, band 2 (0); Frequency: 1880 MHz
Medium parameters used: f = 1880 MHz; σ = 1.45 S/m; ε_r = 39.74; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: ES3DV3 - SN3127; ConvF(4.94, 4.94, 4.94); Calibrated: 8/21/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn546; Calibrated: 8/19/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Head-Section Left HSL Band 2/WCDMA Band 2 touch M/Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.217 W/kg
Head-Section Left HSL Band 2/WCDMA Band 2 touch M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.235 V/m; Power Drift = -0.19 dB
Peak SAR (extrapolated) = 0.307 W/kg
SAR(1 g) = 0.193 W/kg; SAR(10 g) = 0.116 W/kg
Maximum value of SAR (measured) = 0.208 W/kg



0 dB = 0.208 W/kg = -6.82 dBW/kg

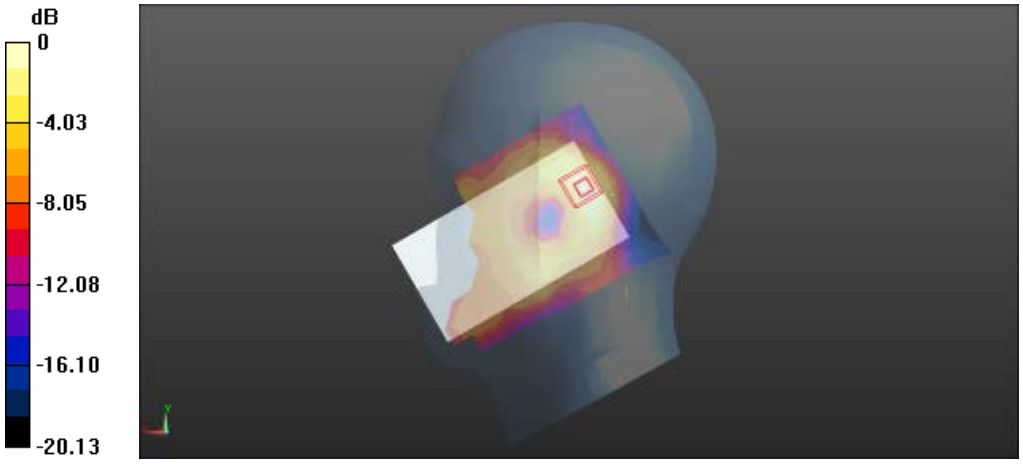
Left Side	Tilt	1880 MHz

Communication System: UID 0, band 2 (0); Frequency: 1880 MHz
Medium parameters used: f = 1880 MHz; σ = 1.45 S/m; ε_r = 39.74; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: ES3DV3 - SN3127; ConvF(4.94, 4.94, 4.94); Calibrated: 8/21/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn546; Calibrated: 8/19/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Head-Section Left HSL Band 2/WCDMA Band 2 tilt M/Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.0944 W/kg
Head-Section Left HSL Band 2/WCDMA Band 2 tilt M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.217 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.156 W/kg
SAR(1 g) = 0.090 W/kg; SAR(10 g) = 0.050 W/kg
Maximum value of SAR (measured) = 0.100 W/kg



0 dB = 0.100 W/kg = -10.00 dBW/kg

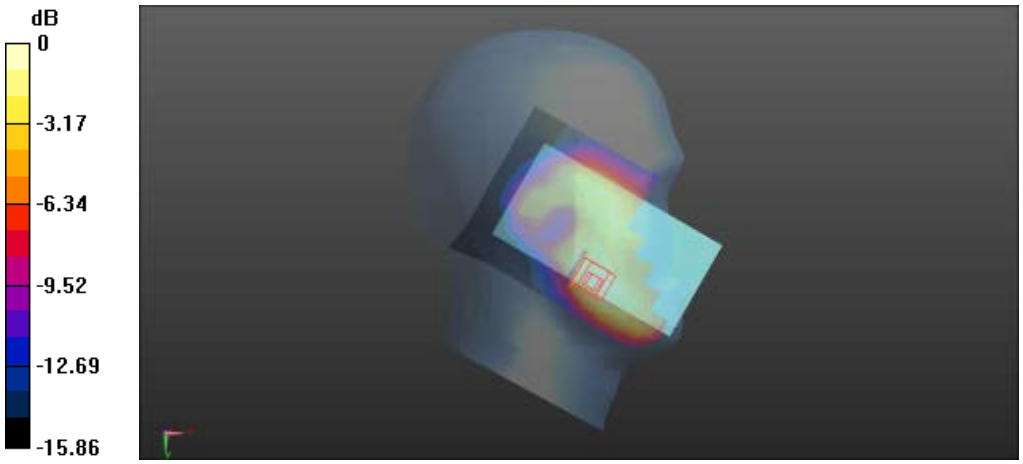
Right Side	Cheek	1880 MHz

Communication System: UID 0, band 2 (0); Frequency: 1880 MHz
Medium parameters used: f = 1880 MHz; σ = 1.45 S/m; ε_r = 39.74; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: ES3DV3 - SN3127; ConvF(4.94, 4.94, 4.94); Calibrated: 8/21/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn546; Calibrated: 8/19/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Head-Section Right HSL Band 2/WCDMA Band 2 touch M/Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.152 W/kg
Head-Section Right HSL Band 2/WCDMA Band 2 touch M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.916 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 0.227 W/kg
SAR(1 g) = 0.142 W/kg; SAR(10 g) = 0.086 W/kg



0 dB = 0.152 W/kg = -8.18 dBW/kg

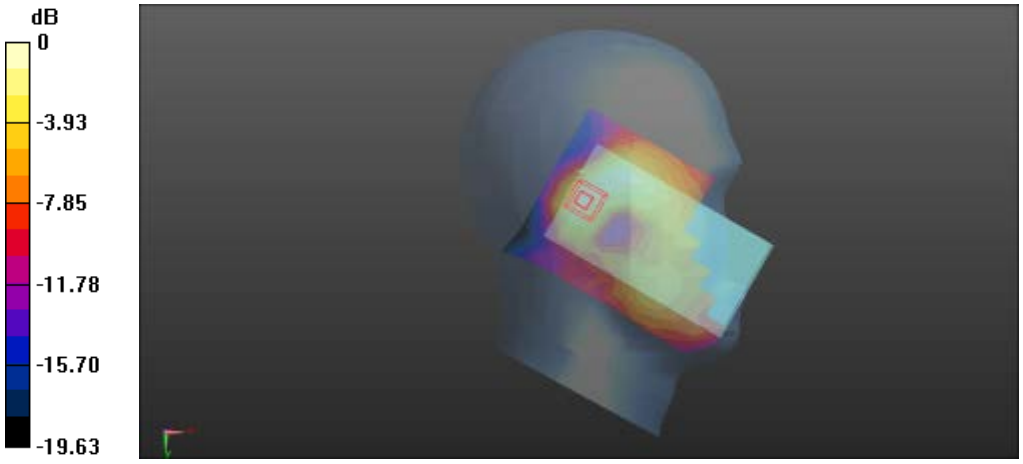
Right Side	Tilt	1880 MHz

Communication System: UID 0, band 2 (0); Frequency: 1880 MHz
Medium parameters used: f = 1880 MHz; σ = 1.45 S/m; ε_r = 39.74; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: ES3DV3 - SN3127; ConvF(4.94, 4.94, 4.94); Calibrated: 8/21/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn546; Calibrated: 8/19/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Head-Section Right HSL Band 2/WCDMA Band 2 tilt M/Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.0744 W/kg
Head-Section Right HSL Band 2/WCDMA Band 2 tilt M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.154 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.123 W/kg
SAR(1 g) = 0.068 W/kg; SAR(10 g) = 0.037 W/kg
Maximum value of SAR (measured) = 0.0754 W/kg



0 dB = 0.0754 W/kg = -11.23 dBW/kg

WCDMA BAND2 (Flat)

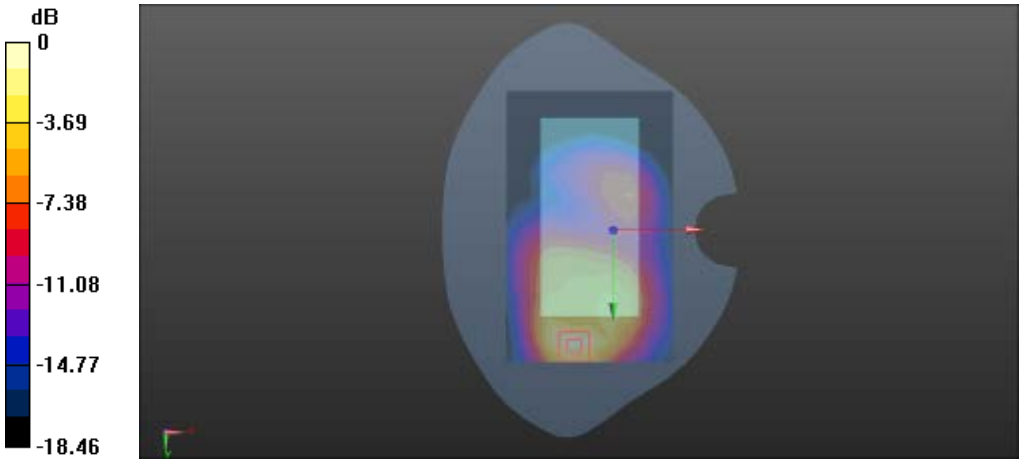
FLAT	Towards phantom	1880 MHz

Communication System: UID 10011 - CAB, UMTS-FDD (WCDMA); Frequency: 1880 MHz
Medium parameters used: f = 1880 MHz; σ = 1.45 S/m; ε_r = 39.74; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.77, 7.77, 7.77); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = -19.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Flat-Section MSL Band 2 TP/WCDMA Band 2 TP M/Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.601 W/kg
Flat-Section MSL Band 2 TP/WCDMA Band 2 TP M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.367 V/m; Power Drift = -0.13 dB
Peak SAR (extrapolated) = 1.04 W/kg
SAR(1 g) = 0.579 W/kg; SAR(10 g) = 0.303 W/kg
Maximum value of SAR (measured) = 0.637 W/kg



0 dB = 0.637 W/kg = -1.96 dBW/kg

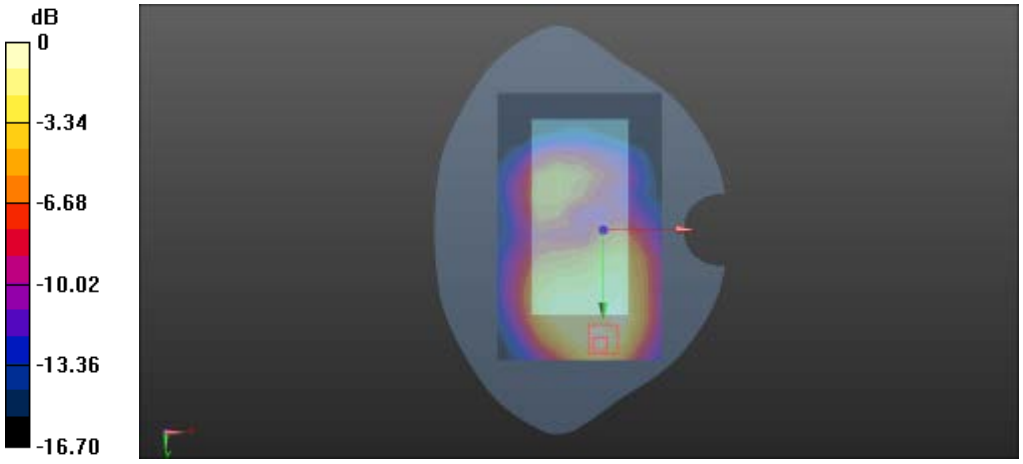
FLAT	Towards ground	1880 MHz

Communication System: UID 10011 - CAB, UMTS-FDD (WCDMA); Frequency: 1880 MHz
Medium parameters used: f = 1880 MHz; σ = 1.45 S/m; ε_r = 39.74; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.77, 7.77, 7.77); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = -19.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Flat-Section MSL Band 2 TG/WCDMA Band 2 TG M/Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.445 W/kg
Flat-Section MSL Band 2 TG/WCDMA Band 2 TG M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.615 V/m; Power Drift = 0.19 dB
Peak SAR (extrapolated) = 0.718 W/kg
SAR(1 g) = 0.416 W/kg; SAR(10 g) = 0.235 W/kg
Maximum value of SAR (measured) = 0.460 W/kg



0 dB = 0.460 W/kg = -3.37 dBW/kg

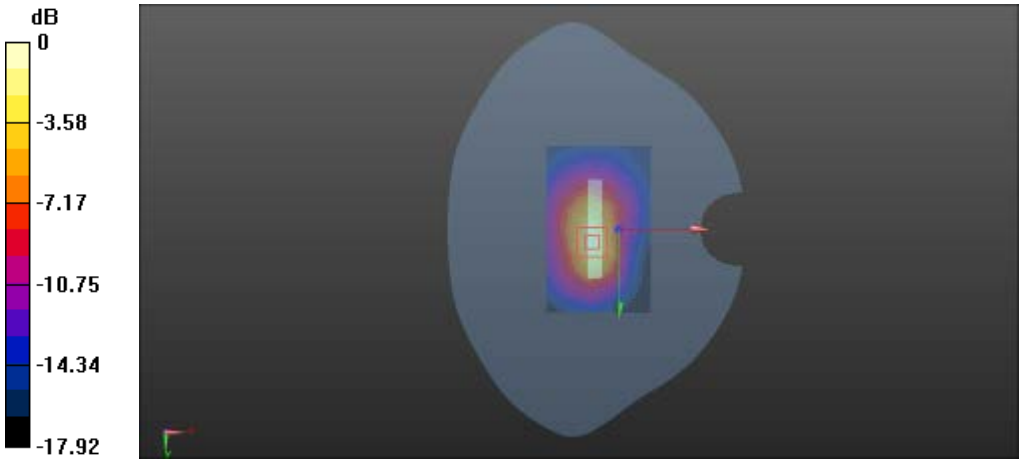
FLAT	Edge2	1880 MHz

Communication System: UID 10011 - CAB, UMTS-FDD (WCDMA); Frequency: 1880 MHz
Medium parameters used: f = 1880 MHz; σ = 1.45 S/m; ε_r = 39.74; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.77, 7.77, 7.77); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Flat-Section MSL hotspot/WCDMA Band 2 edge 2 M 2/Area Scan (6x9x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.899 W/kg
Flat-Section MSL hotspot/WCDMA Band 2 edge 2 M 2/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 24.317 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 1.68 W/kg
SAR(1 g) = 0.936 W/kg; SAR(10 g) = 0.480 W/kg
Maximum value of SAR (measured) = 1.07 W/kg



0 dB = 1.07 W/kg = 0.29 dBW/kg

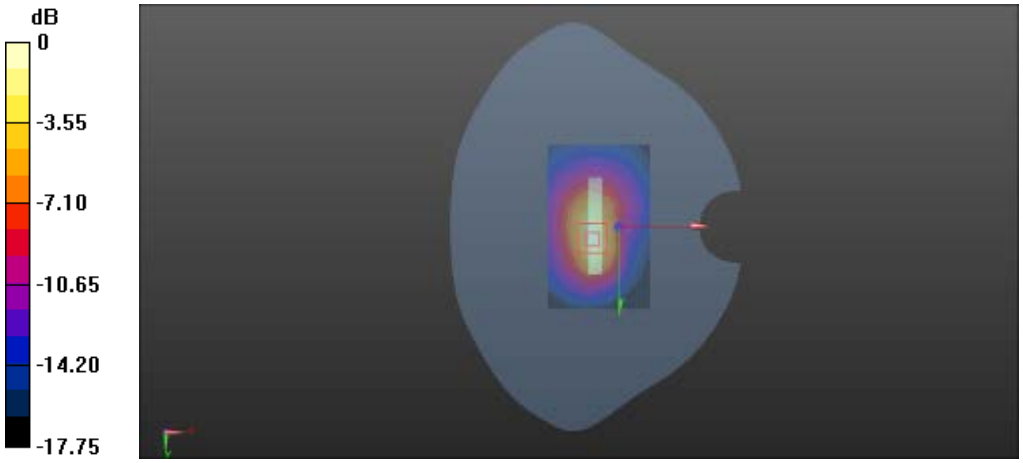
FLAT	Edge2	1852.4 MHz

Communication System: UID 10011 - CAB, UMTS-FDD (WCDMA); Frequency: 1852.4 MHz
Medium parameters used (interpolated): f = 1852.4 MHz; σ = 1.422 S/m; ε_r = 39.86; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.77, 7.77, 7.77); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Flat-Section MSL hotspot/WCDMA Band 2 edge 2 L/Area Scan (6x9x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.917 W/kg
Flat-Section MSL hotspot/WCDMA Band 2 edge 2 L/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 25.134 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 1.72 W/kg
SAR(1 g) = 0.963 W/kg; SAR(10 g) = 0.497 W/kg
Maximum value of SAR (measured) = 1.10 W/kg



0 dB = 1.10 W/kg = 0.41 dBW/kg

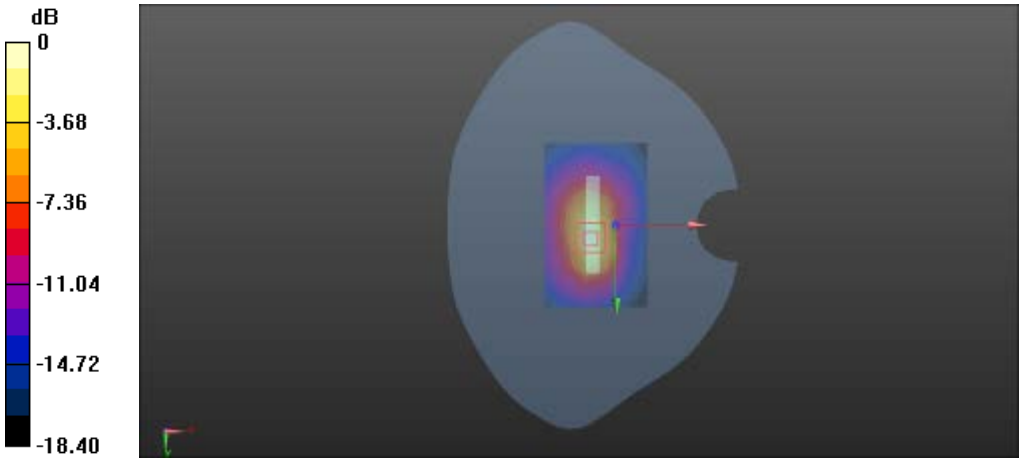
FLAT	Edge2	1907.6 MHz

Communication System: UID 10011 - CAB, UMTS-FDD (WCDMA); Frequency: 1907.6 MHz
Medium parameters used (interpolated): f = 1907.6 MHz; σ = 1.473 S/m; ε_r = 39.634; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.77, 7.77, 7.77); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Flat-Section MSL hotspot/WCDMA Band 2 edge 2 H/Area Scan (6x9x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.819 W/kg
Flat-Section MSL hotspot/WCDMA Band 2 edge 2 H/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 23.115 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 1.58 W/kg
SAR(1 g) = 0.869 W/kg; SAR(10 g) = 0.440 W/kg
Maximum value of SAR (measured) = 0.986 W/kg



0 dB = 0.986 W/kg = -0.06 dBW/kg

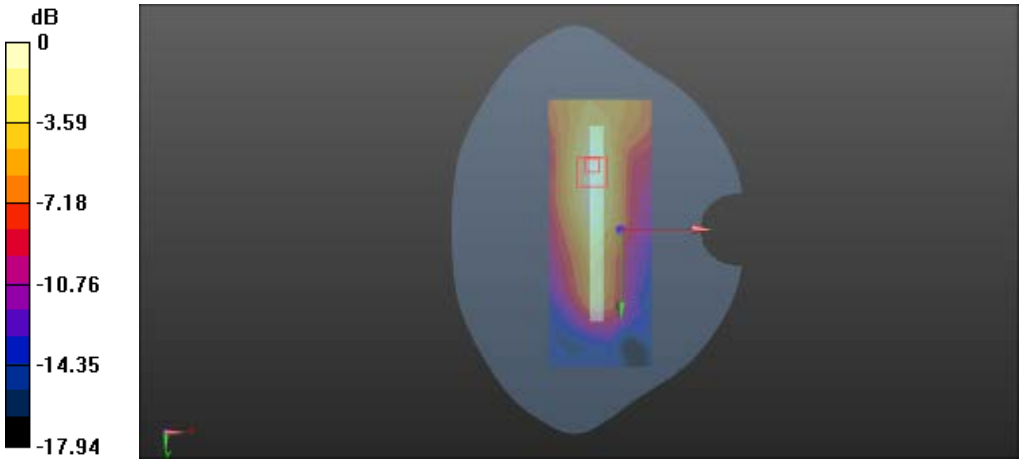
FLAT	Edge3	1880 MHz

Communication System: UID 10011 - CAB, UMTS-FDD (WCDMA); Frequency: 1880 MHz
Medium parameters used: f = 1880 MHz; σ = 1.45 S/m; ε_r = 39.74; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.77, 7.77, 7.77); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Flat-Section MSL hotspot/WCDMA Band 2 edge 3 M/Area Scan (6x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.194 W/kg
Flat-Section MSL hotspot/WCDMA Band 2 edge 3 M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.429 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 0.312 W/kg
SAR(1 g) = 0.182 W/kg; SAR(10 g) = 0.105 W/kg
Maximum value of SAR (measured) = 0.202 W/kg



0 dB = 0.202 W/kg = -6.95 dBW/kg

WCDMA BAND 5 (Head)

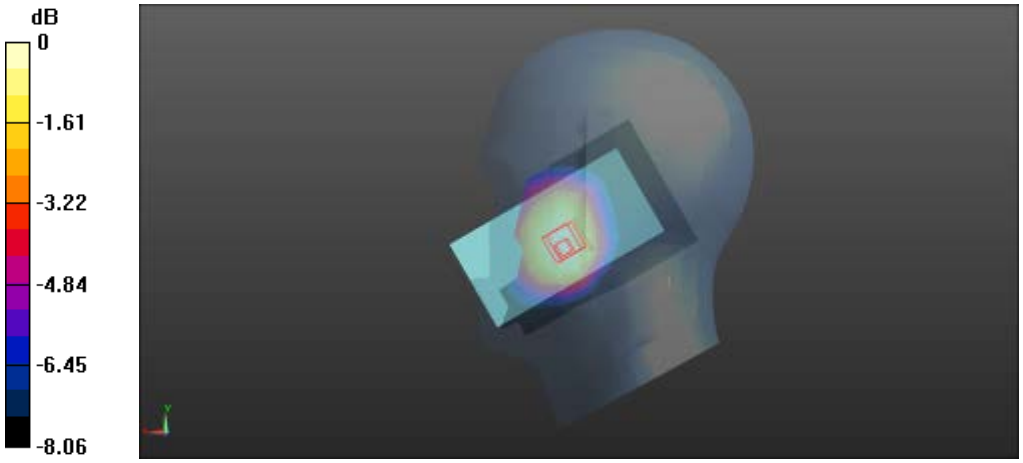
Left Side	Cheek	836.6 MHz

Communication System: UID 0, band 5 (0); Frequency: 836.6 MHz
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.89 S/m; ε_r = 41.478; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: ES3DV3 - SN3127; ConvF(5.97, 5.97, 5.97); Calibrated: 8/21/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn546; Calibrated: 8/19/2015
- Phantom: SAM 1559; Type: SAM; Serial: 1559
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Head-Section Left HSL Band 5/WCDMA Band 5 touch M/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.153 W/kg
Head-Section Left HSL Band 5/WCDMA Band 5 touch M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.140 V/m; Power Drift = 0.19 dB
Peak SAR (extrapolated) = 0.179 W/kg
SAR(1 g) = 0.145 W/kg; SAR(10 g) = 0.112 W/kg
Maximum value of SAR (measured) = 0.152 W/kg



0 dB = 0.152 W/kg = -8.18 dBW/kg

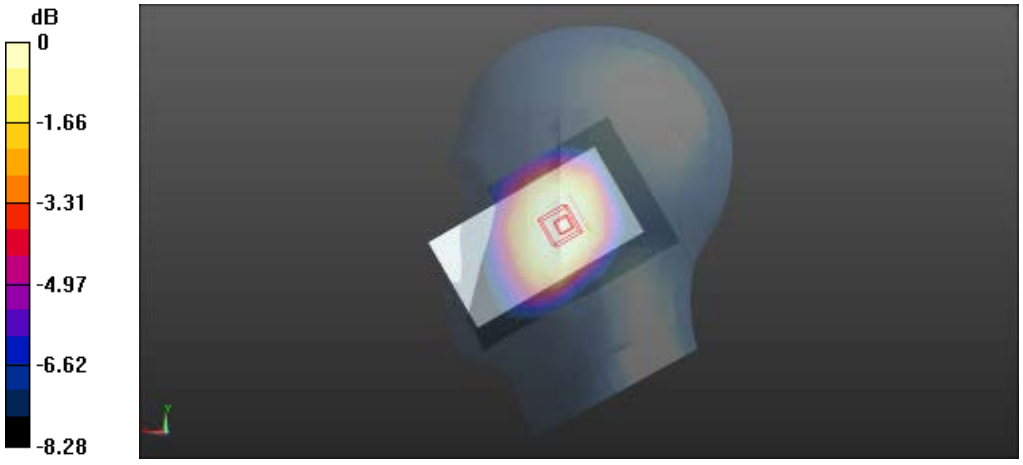
Left Side	Tilt	836.6 MHz

Communication System: UID 0, band 5 (0); Frequency: 836.6 MHz
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.89 S/m; ε_r = 41.478; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: ES3DV3 - SN3127; ConvF(5.97, 5.97, 5.97); Calibrated: 8/21/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn546; Calibrated: 8/19/2015
- Phantom: SAM 1559; Type: SAM; Serial: 1559
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Head-Section Left HSL Band 5/WCDMA Band 5 tilt M/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.0969 W/kg
Head-Section Left HSL Band 5/WCDMA Band 5 tilt M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.666 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 0.113 W/kg
SAR(1 g) = 0.095 W/kg; SAR(10 g) = 0.076 W/kg
Maximum value of SAR (measured) = 0.0993 W/kg



0 dB = 0.0993 W/kg = -10.03 dBW/kg

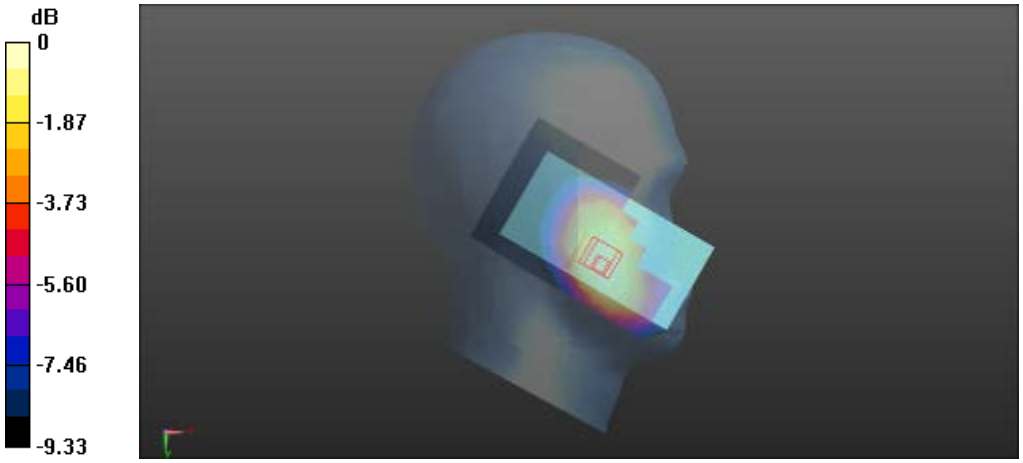
Right Side	Cheek	836.6 MHz

Communication System: UID 0, band 5 (0); Frequency: 836.6 MHz
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.89 S/m; ε_r = 41.478; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: ES3DV3 - SN3127; ConvF(5.97, 5.97, 5.97); Calibrated: 8/21/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn546; Calibrated: 8/19/2015
- Phantom: SAM 1559; Type: SAM; Serial: 1559
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Head-Section Right HSL Band 5/WCDMA Band 5 touch M/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.137 W/kg
Head-Section Right HSL Band 5/WCDMA Band 5 touch M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.230 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 0.193 W/kg
SAR(1 g) = 0.148 W/kg; SAR(10 g) = 0.111 W/kg
Maximum value of SAR (measured) = 0.156 W/kg



0 dB = 0.156 W/kg = -8.07 dBW/kg

Right Side	Tilt	836.6 MHz

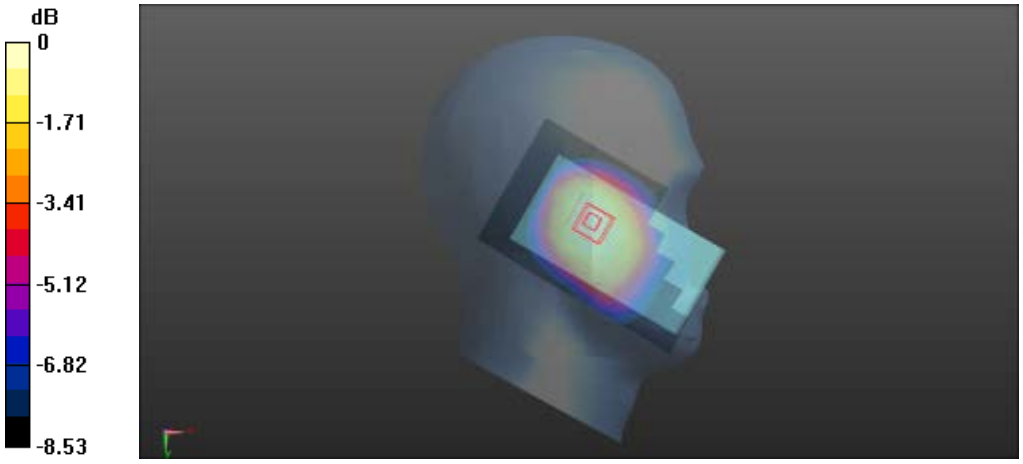
Communication System: UID 0, band 5 (0); Frequency: 836.6 MHz
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.89 S/m; ε_r = 41.478; ρ = 1000 kg/m^3

Phantom section: Right Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: ES3DV3 - SN3127; ConvF(5.97, 5.97, 5.97); Calibrated: 8/21/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn546; Calibrated: 8/19/2015
- Phantom: SAM 1559; Type: SAM; Serial: 1559
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Head-Section Right HSL Band 5/WCDMA Band 5 tilt M/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.116 W/kg
Head-Section Right HSL Band 5/WCDMA Band 5 tilt M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.270 V/m; Power Drift = -0.46 dB
Peak SAR (extrapolated) = 0.137 W/kg
SAR(1 g) = 0.113 W/kg; SAR(10 g) = 0.088 W/kg
Maximum value of SAR (measured) = 0.119 W/kg



0 dB = 0.119 W/kg = -9.24 dBW/kg

WCDMA BAND 5 (Flat)

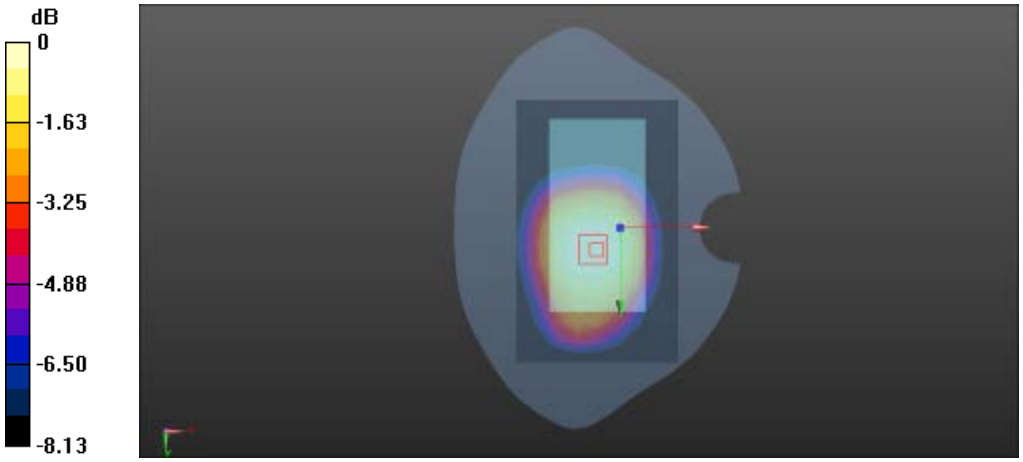
FLAT	Towards phantom	836.6 MHz

Communication System: UID 10011 - CAB, UMTS-FDD (WCDMA); Frequency: 836.6 MHz
Medium parameters used (extrapolated): f = 836.6 MHz; σ = 0.979 S/m; ε_r = 53.843; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(8.91, 8.91, 8.91); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = -19.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1559; Type: SAM; Serial: 1559
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Flat-Section MSL Band 5 TP/WCDMA Band 5 TP M/Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.207 W/kg
Flat-Section MSL Band 5 TP/WCDMA Band 5 TP M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.027 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.254 W/kg
SAR(1 g) = 0.198 W/kg; SAR(10 g) = 0.150 W/kg
Maximum value of SAR (measured) = 0.206 W/kg



0 dB = 0.206 W/kg = -6.86 dBW/kg

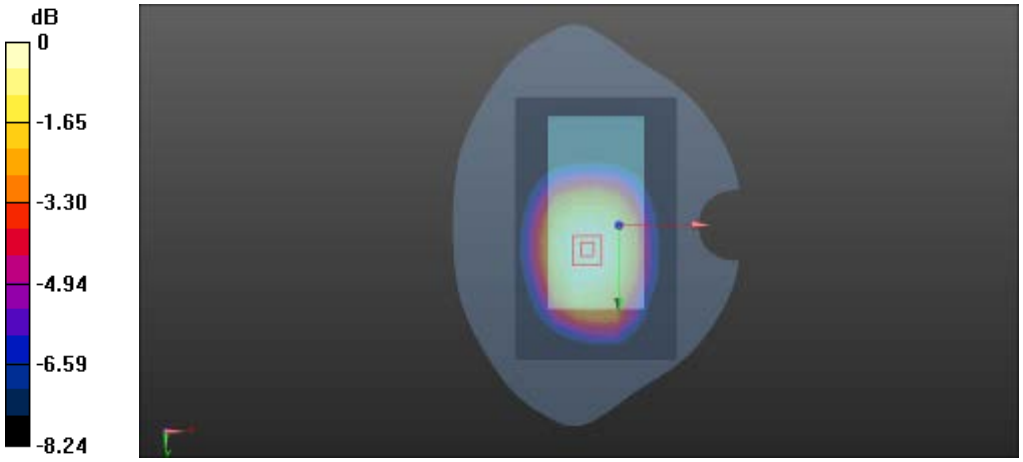
FLAT	Towards ground	836.6 MHz

Communication System: UID 10011 - CAB, UMTS-FDD (WCDMA); Frequency: 836.6 MHz
Medium parameters used (extrapolated): f = 836.6 MHz; σ = 0.979 S/m; ε_r = 53.843; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(8.91, 8.91, 8.91); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = -19.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1559; Type: SAM; Serial: 1559
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Flat-Section MSL Band 5 TG/WCDMA Band 5 TG M/Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.221 W/kg
Flat-Section MSL Band 5 TG/WCDMA Band 5 TG M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.425 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.273 W/kg
SAR(1 g) = 0.214 W/kg; SAR(10 g) = 0.162 W/kg
Maximum value of SAR (measured) = 0.224 W/kg



0 dB = 0.224 W/kg = -6.50 dBW/kg

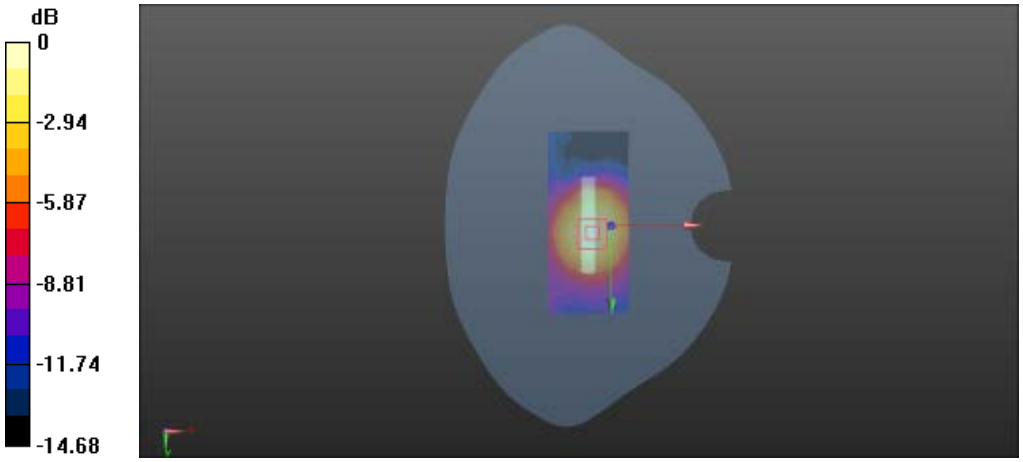
FLAT	Edge2	836.6 MHz

Communication System: UID 10011 - CAB, UMTS-FDD (WCDMA); Frequency: 836.6 MHz
Medium parameters used (extrapolated): f = 836.6 MHz; σ = 0.979 S/m; ε_r = 53.843; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(8.91, 8.91, 8.91); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = -19.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1559; Type: SAM; Serial: 1559
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Flat-Section MSL Band 5 hot/WCDMA Band 5 edge 2/Area Scan (5x10x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.0956 W/kg
Flat-Section MSL Band 5 hot/WCDMA Band 5 edge 2/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.578 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 0.152 W/kg
SAR(1 g) = 0.089 W/kg; SAR(10 g) = 0.054 W/kg
Maximum value of SAR (measured) = 0.0971 W/kg



0 dB = 0.0971 W/kg = -10.13 dBW/kg

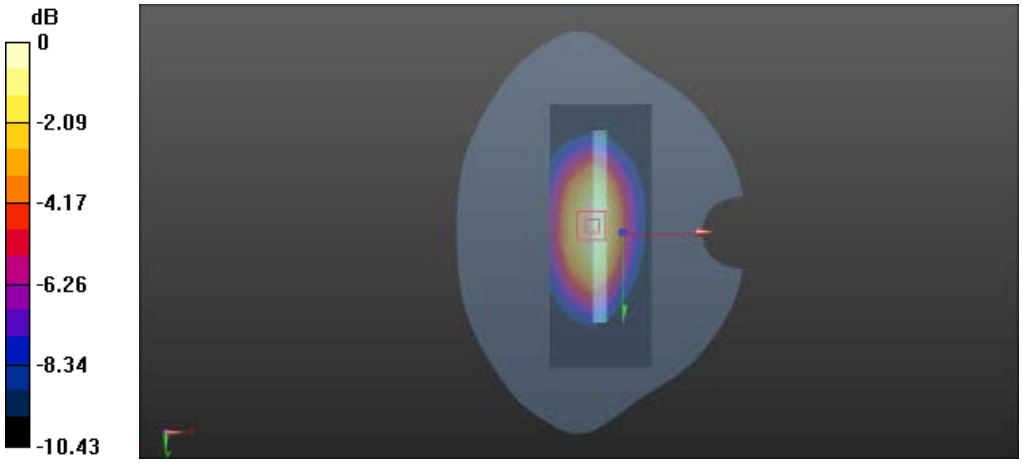
FLAT	Edge3	836.6 MHz

Communication System: UID 10011 - CAB, UMTS-FDD (WCDMA); Frequency: 836.6 MHz
Medium parameters used (extrapolated): f = 836.6 MHz; σ = 0.979 S/m; ε_r = 53.843; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(8.91, 8.91, 8.91); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = -19.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1559; Type: SAM; Serial: 1559
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Flat-Section MSL Band 5 hot/WCDMA Band 5 edge 3/Area Scan (6x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.263 W/kg
Flat-Section MSL Band 5 hot/WCDMA Band 5 edge 3/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.779 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 0.357 W/kg
SAR(1 g) = 0.245 W/kg; SAR(10 g) = 0.164 W/kg
Maximum value of SAR (measured) = 0.264 W/kg



0 dB = 0.264 W/kg = -5.78 dBW/kg

Wi-Fi (Head)

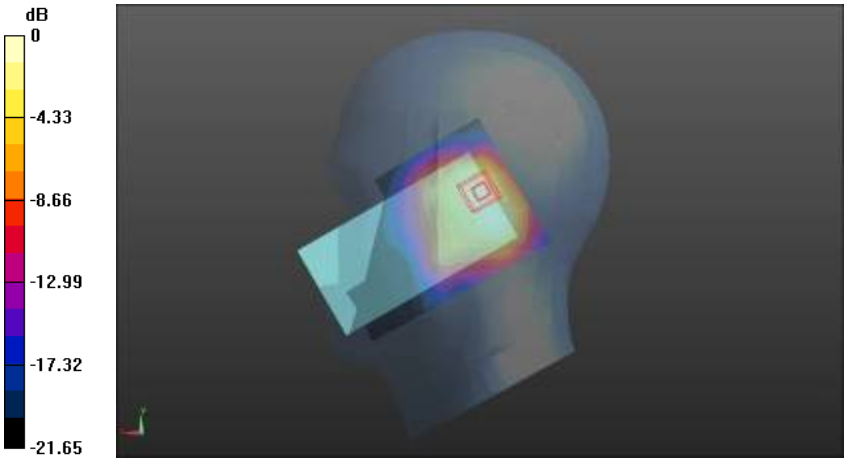
Left Side	Cheek	2462MHz

Communication System: UID 10012 - CAB, IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps);
Frequency: 2462 MHz;Duty Cycle: 1:1.53815
Medium parameters used (interpolated): f = 2462 MHz; σ = 1.791 S/m; ε_r = 39.17; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(4.35, 4.35, 4.35); Calibrated: 2015/8/21;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 2015/8/19
- Phantom: SAM 1659; Type: QD000P40CD; Serial: TP:1659
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Head-Section Left HSL WIFI/WIFI touch H/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.397 W/kg
Head-Section Left HSL WIFI/WIFI touch H/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.482 V/m; Power Drift = -0.17 dB
Peak SAR (extrapolated) = 0.733 W/kg
SAR(1 g) = 0.386 W/kg; SAR(10 g) = 0.204 W/kg
Maximum value of SAR (measured) = 0.423 W/kg



0 dB = 0.423 W/kg = -3.74 dBW/kg

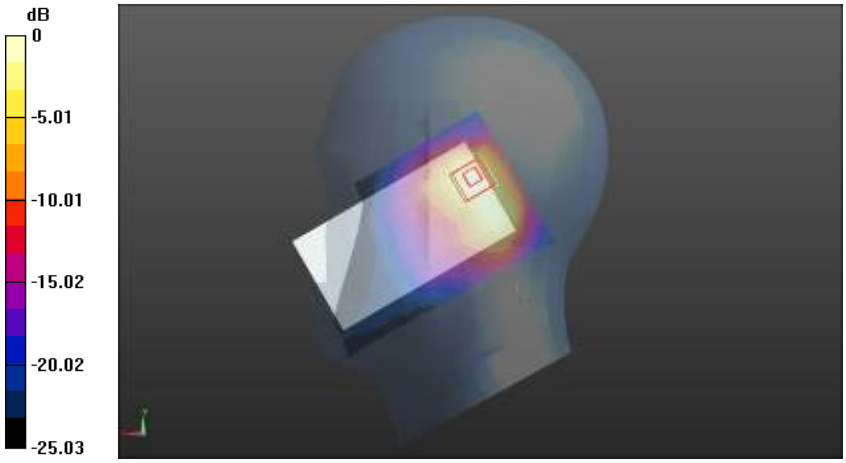
Left Side	Tilt	2462MHz

Communication System: UID 10012 - CAB, IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps);
Frequency: 2462 MHz;Duty Cycle: 1:1.53815
Medium parameters used (interpolated): f = 2462 MHz; σ = 1.791 S/m; ε_r = 39.17; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(4.35, 4.35, 4.35); Calibrated: 2015/8/21;
- Sensor-Surface: 3mm (Mechanical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 2015/8/19
- Phantom: SAM 1659; Type: QD000P40CD; Serial: TP:1659
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Head-Section Right HSL WIFI/WIFI touch H/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.445 W/kg
Head-Section Right HSL WIFI/WIFI touch H/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.469 V/m; Power Drift = -0.17 dB
Peak SAR (extrapolated) = 0.975 W/kg
SAR(1 g) = 0.447 W/kg; SAR(10 g) = 0.217 W/kg
Maximum value of SAR (measured) = 0.487 W/kg



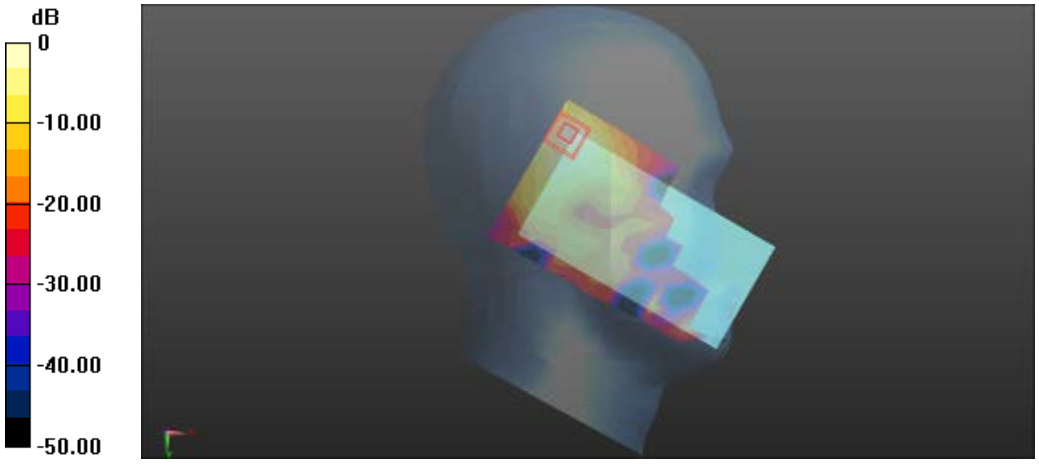
0 dB = 0.487 W/kg = -3.12 dBW/kg

Right Side	Cheek	2462MHz

Communication System: UID 10012 - CAB, IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps);
Frequency: 2437 MHz;Duty Cycle: 1:1.53815
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.782 S/m; ε_r = 39.236; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(4.35, 4.35, 4.35); Calibrated: 2015/8/21;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 2015/8/19
- Phantom: SAM 1659; Type: QD000P40CD; Serial: TP:1659
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)
  Head-Section Right HSL WIFI/WIFI touch M/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
  Maximum value of SAR (measured) = 0.0639 W/kg
  Head-Section Right HSL WIFI/WIFI touch M/Zoom Scan (7x7x7)/Cube 0:
  Measurement grid: dx=5mm, dy=5mm, dz=5mm
  Reference Value = 2.531 V/m; Power Drift = -0.14 dB
  Peak SAR (extrapolated) = 0.161 W/kg
  SAR(1 g) = 0.061 W/kg; SAR(10 g) = 0.024 W/kg
  Maximum value of SAR (measured) = 0.0701 W/kg



0 dB = 0.0701 W/kg = -11.54 dBW/kg

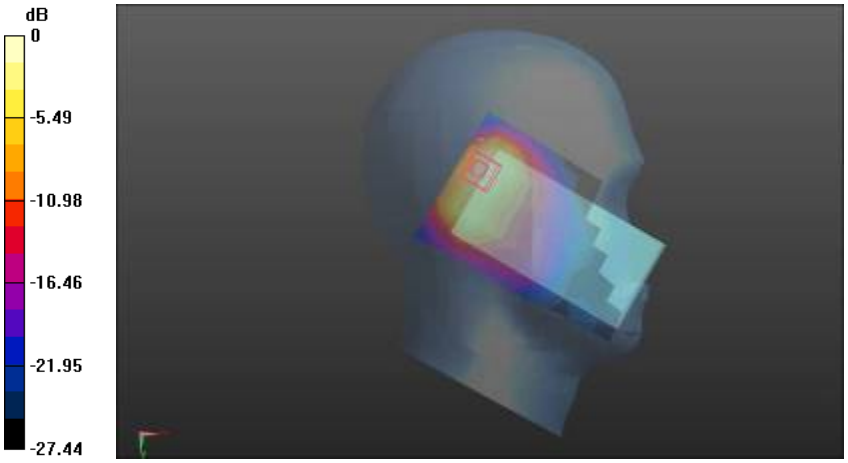
Right Side	Tilt	2462MHz

Communication System: UID 10012 - CAB, IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps);
Frequency: 2462 MHz;Duty Cycle: 1:1.53815
Medium parameters used (interpolated): f = 2462 MHz; σ = 1.791 S/m; ε_r = 39.17; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(4.35, 4.35, 4.35); Calibrated: 2015/8/21;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 2015/8/19
- Phantom: SAM 1659; Type: QD000P40CD; Serial: TP:1659
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Head-Section Right HSL WIFI/WIFI tilt H/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.446 W/kg
Head-Section Right HSL WIFI/WIFI tilt H/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.496 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 1.07 W/kg
SAR(1 g) = 0.491 W/kg; SAR(10 g) = 0.226 W/kg
Maximum value of SAR (measured) = 0.546 W/kg



0 dB = 0.546 W/kg = -2.63 dBW/kg

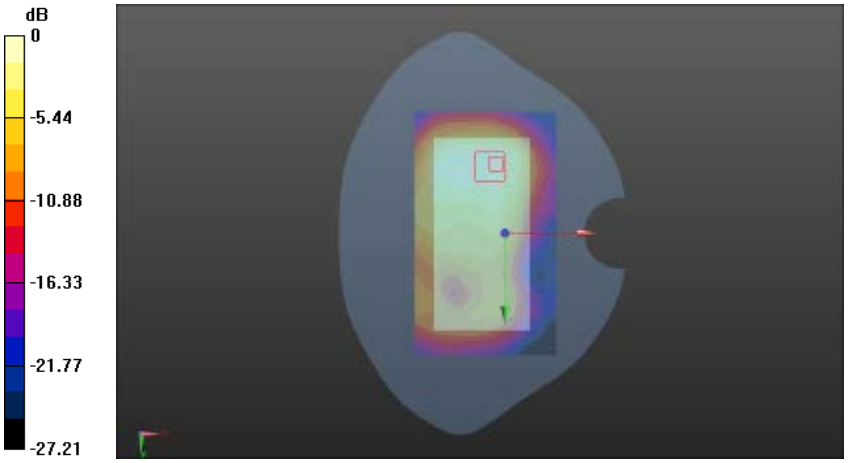
FLAT	Towards phantom	2462MHz

Communication System: UID 10012 - CAB, IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps);
Frequency: 2462 MHz;Duty Cycle: 1:1.53815
Medium parameters used (interpolated): f = 2462 MHz; σ = 1.968 S/m; ε_r = 51.852; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(4.19, 4.19, 4.19); Calibrated: 2015/8/21;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 2015/8/19
- Phantom: SAM 1660; Type: QD000P40CD; Serial: TP:1660
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Flat-Section MSL WIFI TP/WIFI TP H/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.139 W/kg
Flat-Section MSL WIFI TP/WIFI TP H/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.715 V/m; Power Drift = -0.20 dB
Peak SAR (extrapolated) = 0.276 W/kg
SAR(1 g) = 0.131 W/kg; SAR(10 g) = 0.070 W/kg



0 dB = 0.139 W/kg = -8.57 dBW/kg

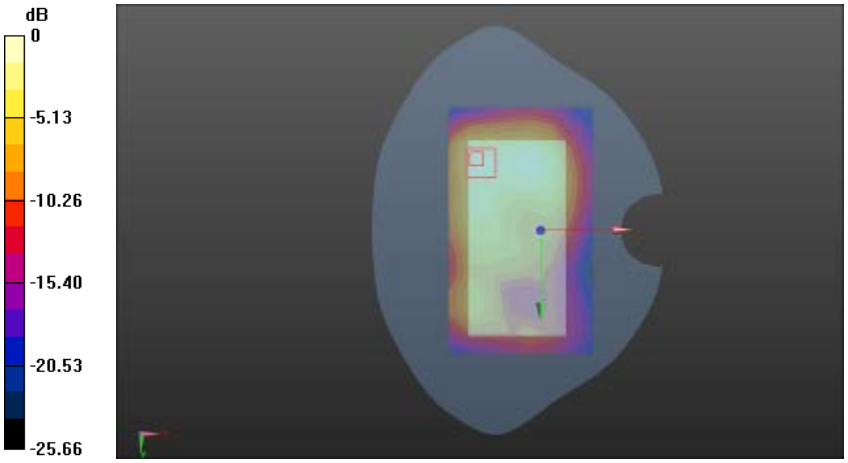
FLAT	Towards ground	2462MHz

Communication System: UID 10012 - CAA, IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps); Frequency: 2462 MHz;Duty Cycle: 1:1.53815
Medium parameters used (interpolated): f = 2462 MHz; σ = 1.968 S/m; ε_r = 51.852; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(4.19, 4.19, 4.19); Calibrated: 2015/8/21;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 2015/8/19
- Phantom: SAM 1660; Type: QD000P40CD; Serial: TP:1660
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Flat-Section MSLWIFI TG/WIF TG H/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.194 W/kg
Flat-Section MSLWIFI TG/WIF TG H/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.991 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 0.401 W/kg
SAR(1 g) = 0.170 W/kg; SAR(10 g) = 0.081 W/kg
Maximum value of SAR (measured) = 0.222 W/kg



0 dB = 0.222 W/kg = -6.54 dBW/kg

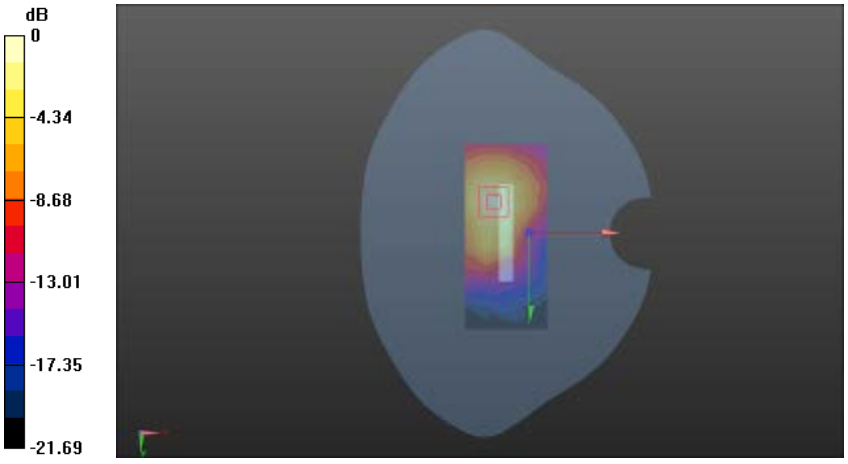
FLAT	Edge1	2462MHz

Communication System: UID 10012 - CAB, IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps);
Frequency: 2462 MHz;Duty Cycle: 1:1.53815
Medium parameters used (interpolated): f = 2462 MHz; σ = 1.968 S/m; ε_r = 51.852; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(4.19, 4.19, 4.19); Calibrated: 2015/8/21;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 2015/8/19
- Phantom: SAM 1660; Type: QD000P40CD; Serial: TP:1660
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Flat-Section MSLWIFI HOT/WIF H edge 1/Area Scan (5x10x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.170 W/kg
Flat-Section MSLWIFI HOT/WIF H edge 1/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.699 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.339 W/kg
SAR(1 g) = 0.174 W/kg; SAR(10 g) = 0.089 W/kg
Maximum value of SAR (measured) = 0.192 W/kg



0 dB = 0.192 W/kg = -7.17 dBW/kg

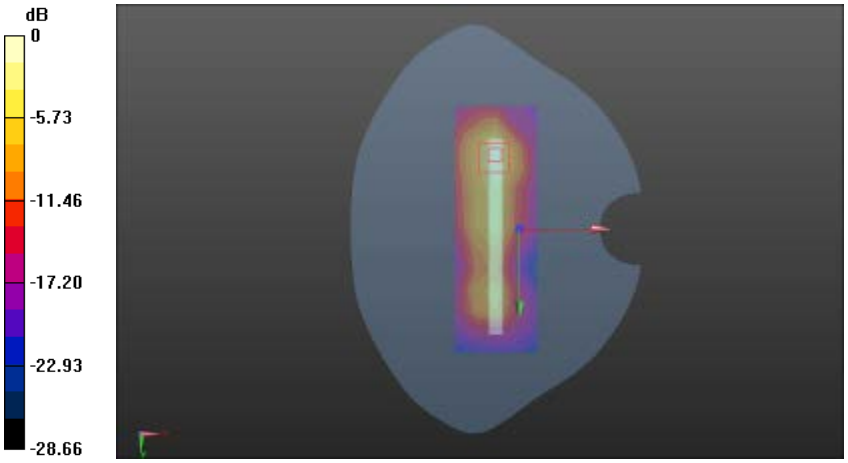
FLAT	Edge4	2462 MHz

Communication System: UID 10012 - CAB, IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps);
Frequency: 2462 MHz;Duty Cycle: 1:1.53815
Medium parameters used (interpolated): f = 2462 MHz; σ = 1.968 S/m; ε_r = 51.852; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(4.19, 4.19, 4.19); Calibrated: 2015/8/21;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 2015/8/19
- Phantom: SAM 1660; Type: QD000P40CD; Serial: TP:1660
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Flat-Section MSLWIFI HOT/WIF H edge 4/Area Scan (5x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.391 W/kg
Flat-Section MSLWIFI HOT/WIF H edge 4/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.118 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 0.976 W/kg
SAR(1 g) = 0.395 W/kg; SAR(10 g) = 0.168 W/kg
Maximum value of SAR (measured) = 0.447 W/kg



0 dB = 0.447 W/kg = -3.50 dBW/kg

LTE BAND2- 20BW-1RB (Head)

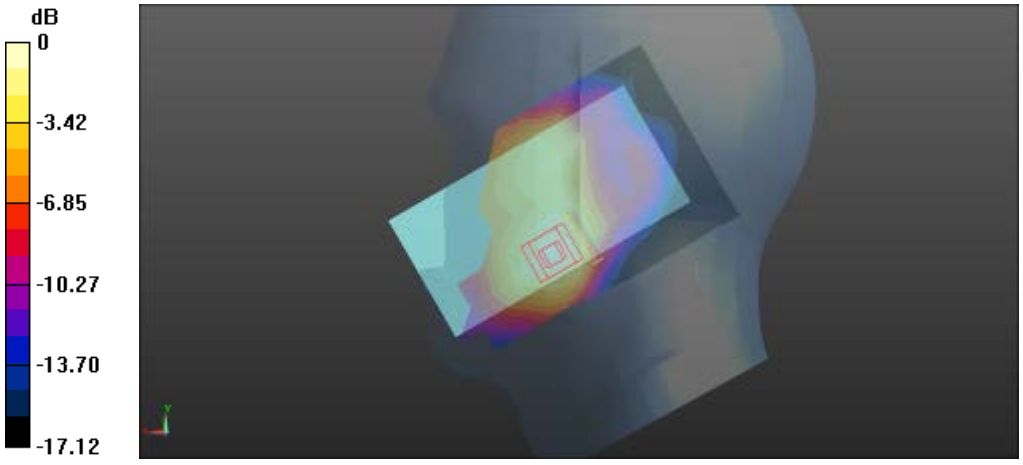
Left Side	Check	1880MHz

Communication System: UID 0, LTE band 2 (0); Frequency: 1880 MHz
Medium parameters used: f = 1880 MHz; σ = 1.57 S/m; ε_r = 51.14; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.53, 7.53, 7.53); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Head-Section Left HSL Band 2/LTE Band 2 touch M/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.308 W/kg
Head-Section Left HSL Band 2/LTE Band 2 touch M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.312 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 0.466 W/kg
SAR(1 g) = 0.298 W/kg; SAR(10 g) = 0.187 W/kg
Maximum value of SAR (measured) = 0.325 W/kg



0 dB = 0.325 W/kg = -4.88 dBW/kg

Left Side	Tilt	1880MHz

Communication System: UID 0, LTE band 2 (0); Frequency: 1880 MHz
Medium parameters used: f = 1880 MHz; σ = 1.57 S/m; ε_r = 51.14; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.53, 7.53, 7.53); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Head-Section Left HSL Band 2/LTE Band 2 tilt M/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.0619 W/kg
Head-Section Left HSL Band 2/LTE Band 2 tilt M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.796 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 0.0930 W/kg
SAR(1 g) = 0.056 W/kg; SAR(10 g) = 0.031 W/kg
Maximum value of SAR (measured) = 0.0638 W/kg

0 dB = 0.0638 W/kg = -11.95 dBW/kg

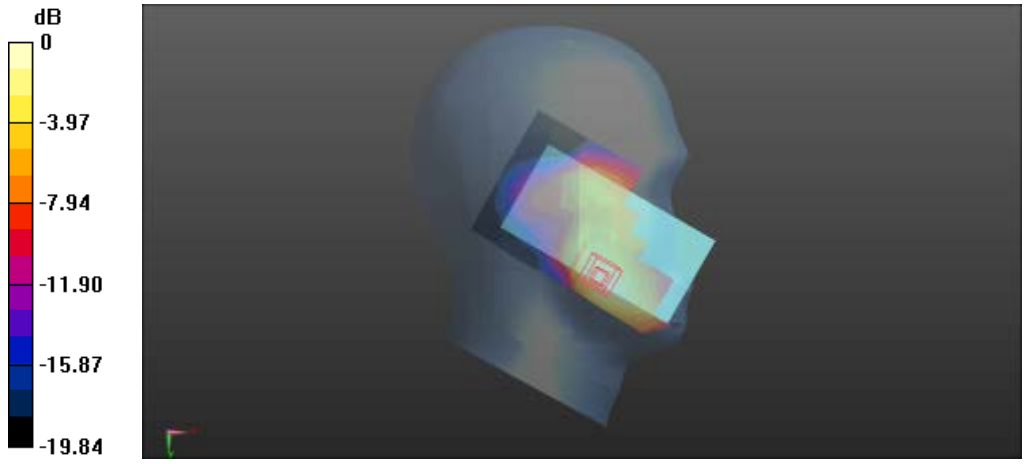
Right Side	Check	1880MHz

Communication System: UID 0, LTE band 2 (0); Frequency: 1880 MHz
Medium parameters used: f = 1880 MHz; σ = 1.45 S/m; ε_r = 39.74; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.77, 7.77, 7.77); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Head-Section Right HSL Band 2/LTE Band 2 touch M/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.344 W/kg
Head-Section Right HSL Band 2/LTE Band 2 touch M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.657 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 0.539 W/kg
SAR(1 g) = 0.340 W/kg; SAR(10 g) = 0.206 W/kg
Maximum value of SAR (measured) = 0.372 W/kg



0 dB = 0.372 W/kg = -4.29 dBW/kg

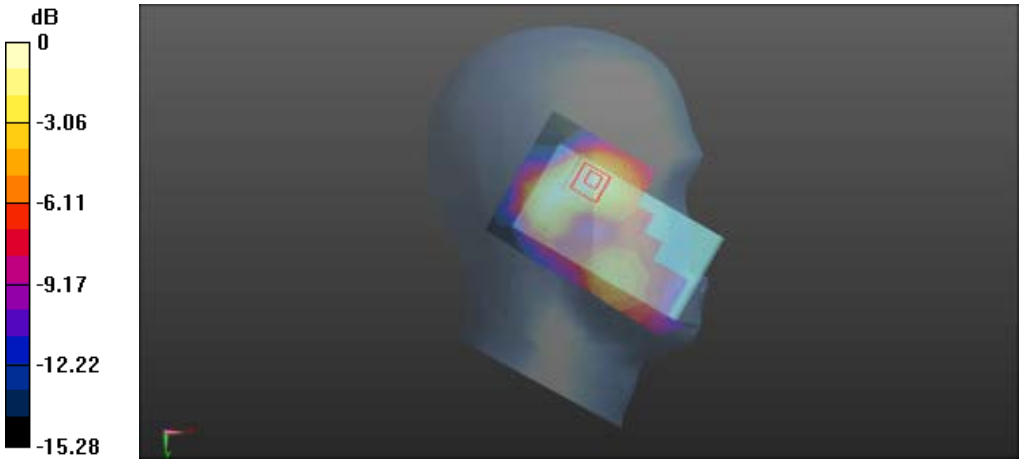
Right Side	Tilt	1880MHz

Communication System: UID 0, LTE band 2 (0); Frequency: 1880 MHz
Medium parameters used: f = 1880 MHz; σ = 1.45 S/m; ε_r = 39.74; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.77, 7.77, 7.77); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Head-Section Right HSL Band 2/LTE Band 2 tilt M/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.112 W/kg
Head-Section Right HSL Band 2/LTE Band 2 tilt M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.312 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 0.169 W/kg
SAR(1 g) = 0.109 W/kg; SAR(10 g) = 0.067 W/kg
Maximum value of SAR (measured) = 0.119 W/kg



0 dB = 0.119 W/kg = -9.24 dBW/kg

LTE BAND2- 20BW-1RB (Flat)

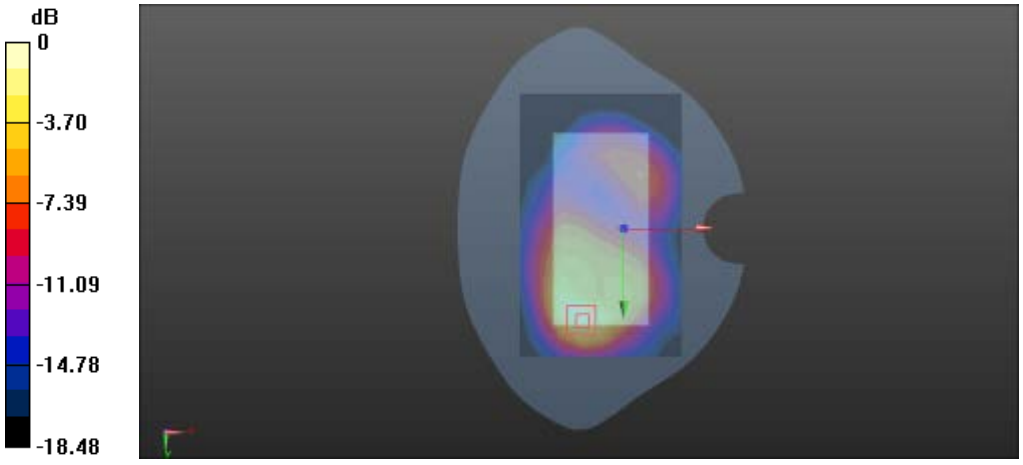
FLAT	Towards phantom	1880MHz

Communication System: UID 0, LTE band 2 (0); Frequency: 1880 MHz
Medium parameters used: f = 1880 MHz; σ = 1.45 S/m; ε_r = 39.74; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.77, 7.77, 7.77); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = -19.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Flat-Section MSL Band 2 TP/LTE Band 2 TP M/Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.649 W/kg
Flat-Section MSL Band 2 TP/LTE Band 2 TP M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.904 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 1.13 W/kg
SAR(1 g) = 0.616 W/kg; SAR(10 g) = 0.317 W/kg
Maximum value of SAR (measured) = 0.691 W/kg



0 dB = 0.691 W/kg = -1.61 dBW/kg

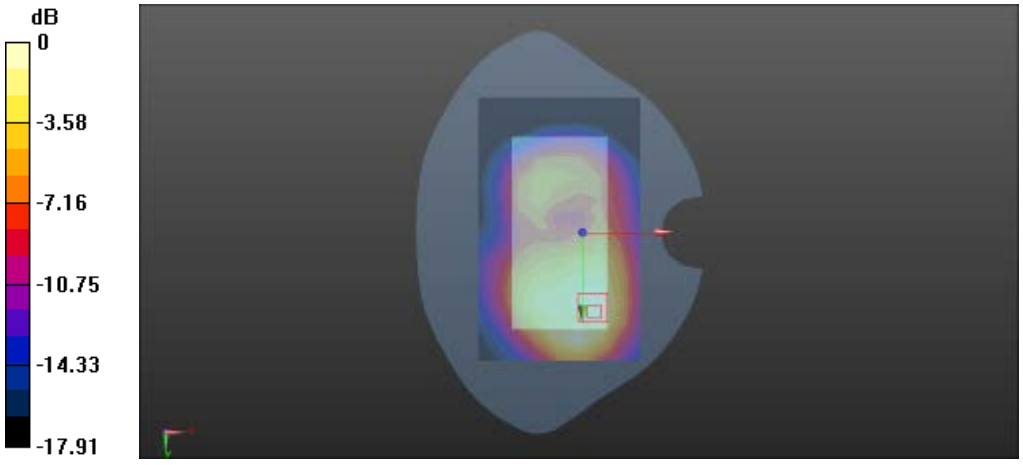
FLAT	Towards ground	1880MHz

Communication System: UID 0, LTE band 2 (0); Frequency: 1880 MHz
Medium parameters used: f = 1880 MHz; σ = 1.45 S/m; ε_r = 39.74; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.77, 7.77, 7.77); Calibrated: 10/26/2015;
- Sensor-Surface: 3mm (Mechanical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection), z = -19.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Flat-Section MSL Band 2 TG/LTE Band 2 TG M/Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.656 W/kg
Flat-Section MSL Band 2 TG/LTE Band 2 TG M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.925 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 1.12 W/kg
SAR(1 g) = 0.618 W/kg; SAR(10 g) = 0.349 W/kg
Maximum value of SAR (measured) = 0.674 W/kg



0 dB = 0.674 W/kg = -1.71 dBW/kg

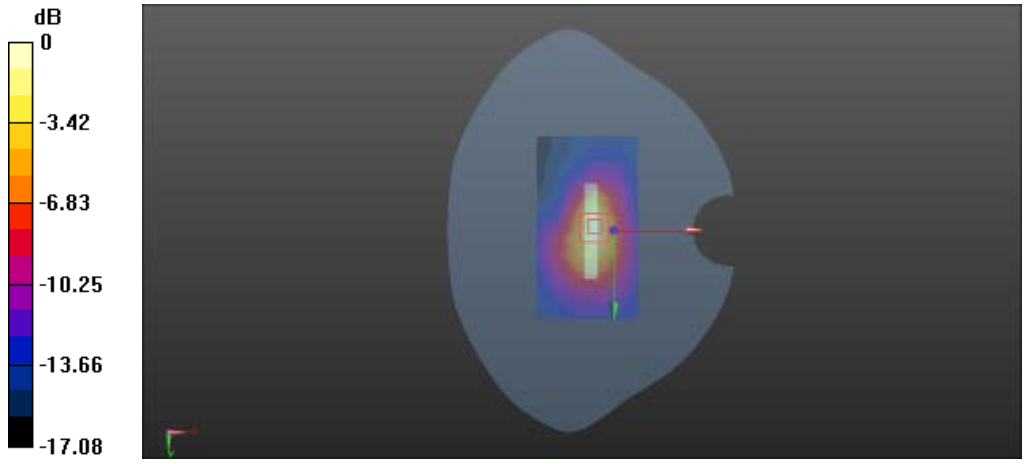
FLAT	Edge2	1880MHz

Communication System: UID 0, LTE band 2 (0); Frequency: 1880 MHz
Medium parameters used: f = 1880 MHz; σ = 1.45 S/m; ε_r = 39.74; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.77, 7.77, 7.77); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = -9.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Flat-Section MSL Band 2 HOT/LTE Band 2 M edge 2/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.651 W/kg
Flat-Section MSL Band 2 HOT/LTE Band 2 M edge 2/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 22.173 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 1.16 W/kg
SAR(1 g) = 0.661 W/kg; SAR(10 g) = 0.343 W/kg
Maximum value of SAR (measured) = 0.748 W/kg



0 dB = 0.748 W/kg = -1.26 dBW/kg

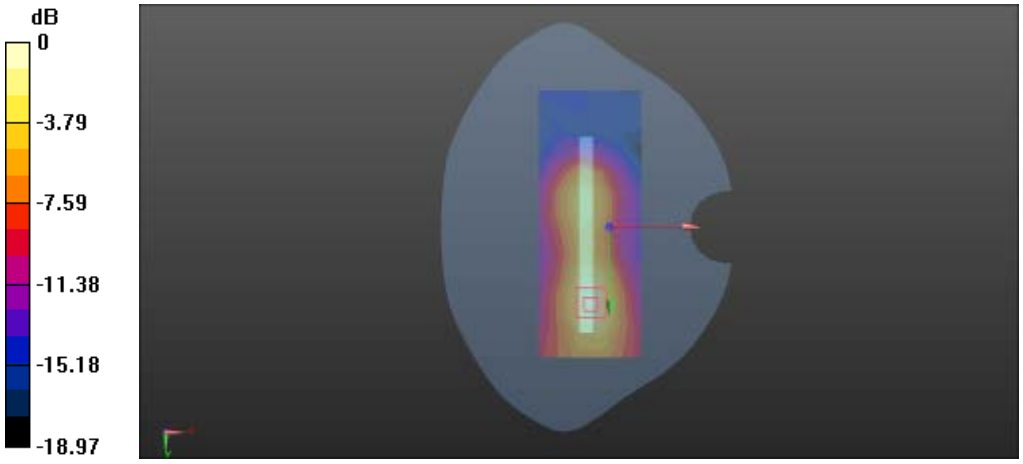
FLAT	Edge3	1880MHz

Communication System: UID 0, LTE band 2 (0); Frequency: 1880 MHz
Medium parameters used: f = 1880 MHz; σ = 1.45 S/m; ε_r = 39.74; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.77, 7.77, 7.77); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = -19.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Flat-Section MSL Band 2 HOT/LTE Band 2 M edge 3/Area Scan (6x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.291 W/kg
Flat-Section MSL Band 2 HOT/LTE Band 2 M edge 3/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.091 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.564 W/kg
SAR(1 g) = 0.330 W/kg; SAR(10 g) = 0.184 W/kg
Maximum value of SAR (measured) = 0.363 W/kg



0 dB = 0.363 W/kg = -4.40 dBW/kg

LTE BAND2- 20BW-50%RB (Head)

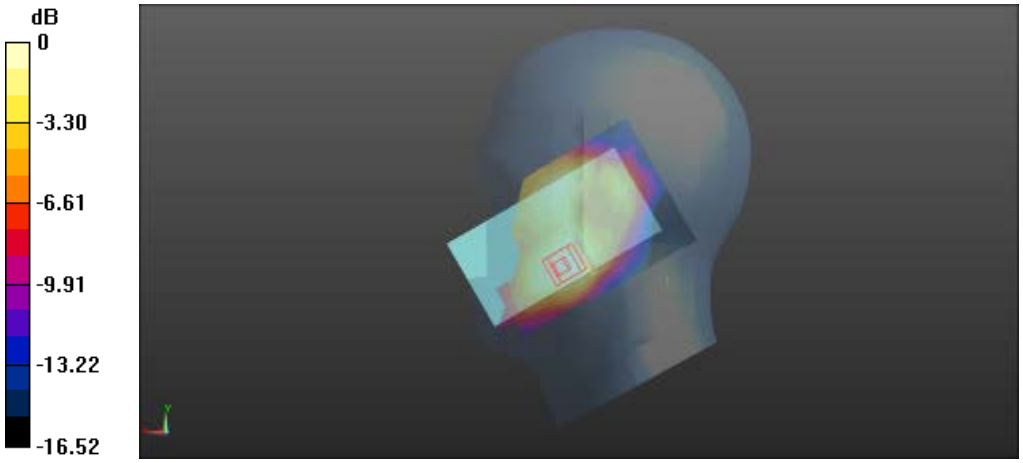
Left Side	Check	1880MHz

Communication System: UID 0, LTE band 2 (0); Frequency: 1880 MHz
Medium parameters used: f = 1880 MHz; σ = 1.45 S/m; ε_r = 39.74; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.77, 7.77, 7.77); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Head-Section Left HSL Band 2/LTE Band 2 touch M/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.132 W/kg
Head-Section Left HSL Band 2/LTE Band 2 touch M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.118 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.200 W/kg
SAR(1 g) = 0.127 W/kg; SAR(10 g) = 0.080 W/kg
Maximum value of SAR (measured) = 0.136 W/kg



0 dB = 0.136 W/kg = -8.66 dBW/kg

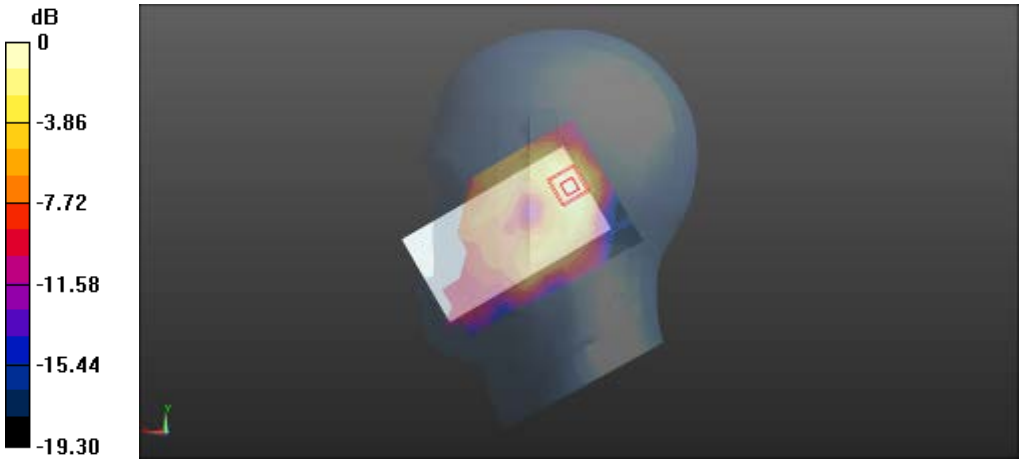
Left Side	Tilt	1880MHz

Communication System: UID 0, LTE band 2 (0); Frequency: 1880 MHz
Medium parameters used: f = 1880 MHz; σ = 1.45 S/m; ε_r = 39.74; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.77, 7.77, 7.77); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Head-Section Left HSL Band 2/LTE Band 2 tilt M/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.0993 W/kg
Head-Section Left HSL Band 2/LTE Band 2 tilt M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.998 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 0.166 W/kg
SAR(1 g) = 0.095 W/kg; SAR(10 g) = 0.053 W/kg
Maximum value of SAR (measured) = 0.105 W/kg



0 dB = 0.105 W/kg = -9.79 dBW/kg

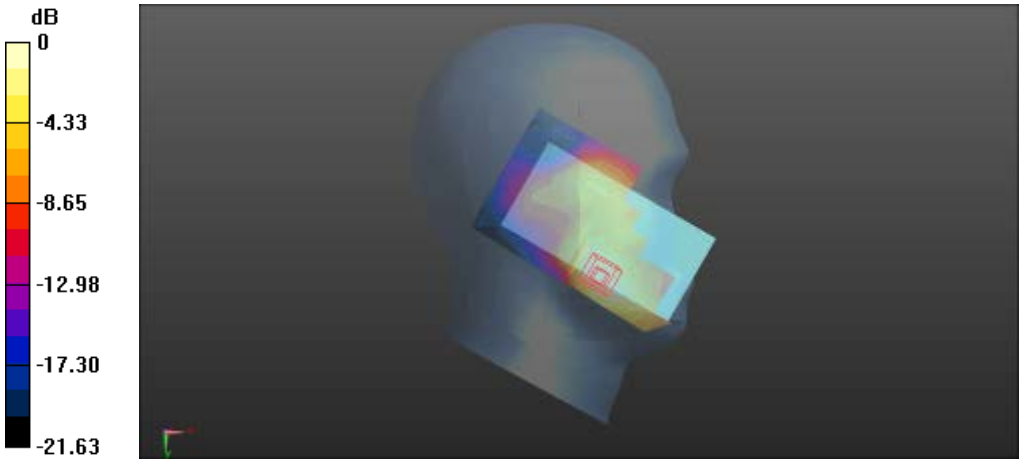
Right Side	Check	1880MHz

Communication System: UID 0, LTE band 2 (0); Frequency: 1880 MHz
Medium parameters used: f = 1880 MHz; σ = 1.45 S/m; ε_r = 39.74; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.77, 7.77, 7.77); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Head-Section Right HSL Band 2/LTE Band 2 touch M/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.267 W/kg
Head-Section Right HSL Band 2/LTE Band 2 touch M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.087 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 0.405 W/kg
SAR(1 g) = 0.251 W/kg; SAR(10 g) = 0.152 W/kg
Maximum value of SAR (measured) = 0.270 W/kg



0 dB = 0.270 W/kg = -5.69 dBW/kg

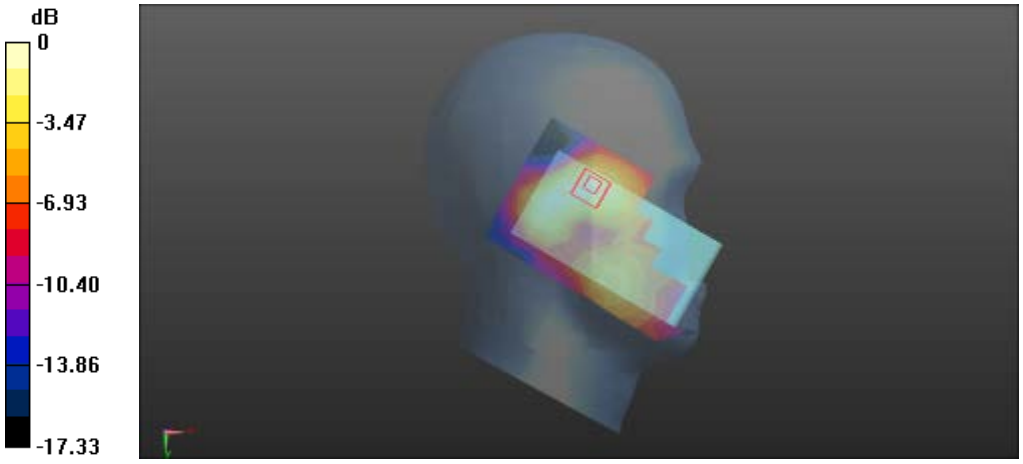
Right Side	Tilt	1880MHz

Communication System: UID 0, LTE band 2 (0); Frequency: 1880 MHz
Medium parameters used: f = 1880 MHz; σ = 1.45 S/m; ε_r = 39.74; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.77, 7.77, 7.77); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Head-Section Right HSL Band 2/LTE Band 2 tilt M/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.0852 W/kg
Head-Section Right HSL Band 2/LTE Band 2 tilt M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.210 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.125 W/kg
SAR(1 g) = 0.080 W/kg; SAR(10 g) = 0.050 W/kg
Maximum value of SAR (measured) = 0.0864 W/kg



0 dB = 0.0864 W/kg = -10.63 dBW/kg

LTE BAND2- 20BW-50%RB (Flat)

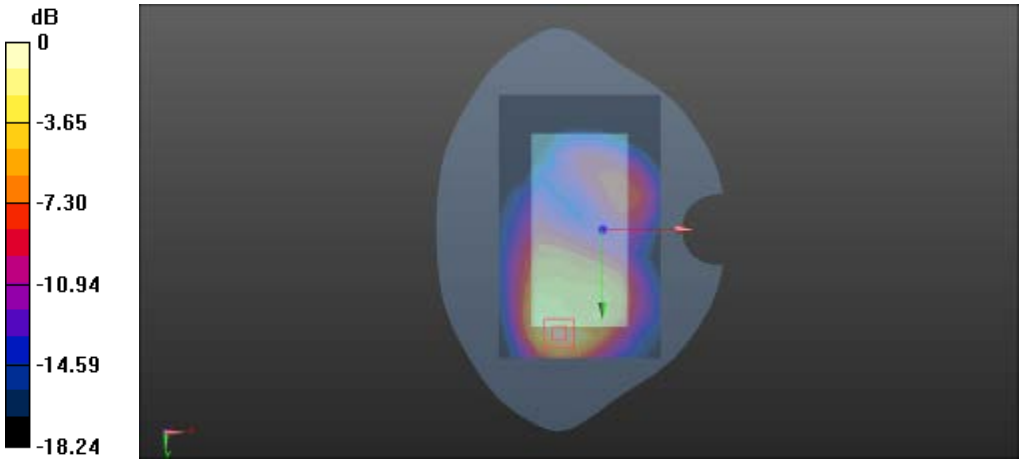
FLAT	Towards phantom	1880MHz

Communication System: UID 0, LTE band 2 (0); Frequency: 1880 MHz
Medium parameters used: f = 1880 MHz; σ = 1.45 S/m; ε_r = 39.74; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.77, 7.77, 7.77); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = -19.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Flat-Section MSL Band 2 TP/LTE Band 2 TP M/Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.506 W/kg
Flat-Section MSL Band 2 TP/LTE Band 2 TP M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.767 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 0.849 W/kg
SAR(1 g) = 0.469 W/kg; SAR(10 g) = 0.244 W/kg
Maximum value of SAR (measured) = 0.536 W/kg



0 dB = 0.536 W/kg = -2.71 dBW/kg

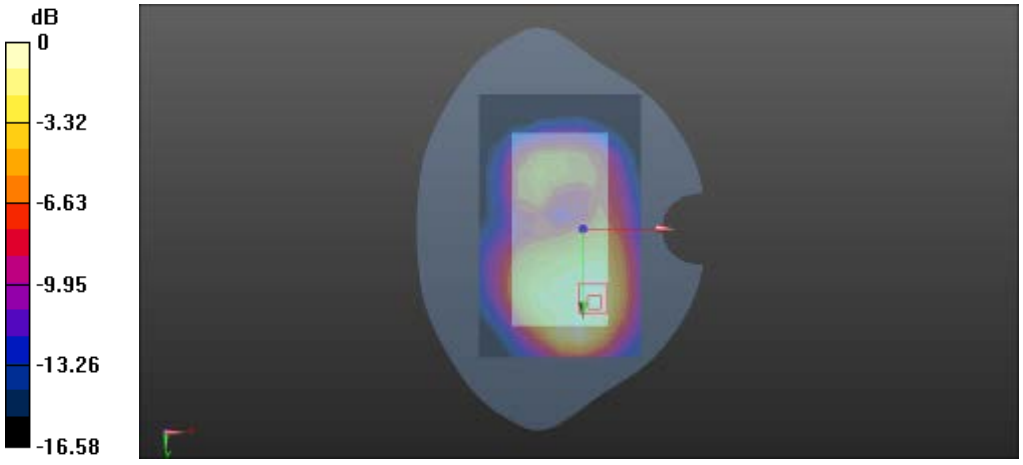
FLAT	Towards ground	1880MHz

Communication System: UID 0, LTE band 2 (0); Frequency: 1880 MHz
Medium parameters used: f = 1880 MHz; σ = 1.45 S/m; ε_r = 39.74; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.77, 7.77, 7.77); Calibrated: 10/26/2015;
- Sensor-Surface: 3mm (Mechanical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection), z = -19.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Flat-Section MSL Band 2 TG/LTE Band 2 TG M/Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.489 W/kg
Flat-Section MSL Band 2 TG/LTE Band 2 TG M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.180 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.804 W/kg
SAR(1 g) = 0.442 W/kg; SAR(10 g) = 0.249 W/kg
Maximum value of SAR (measured) = 0.485 W/kg



0 dB = 0.485 W/kg = -3.14 dBW/kg

LTE BAND4- 5BW-1RB (Head)

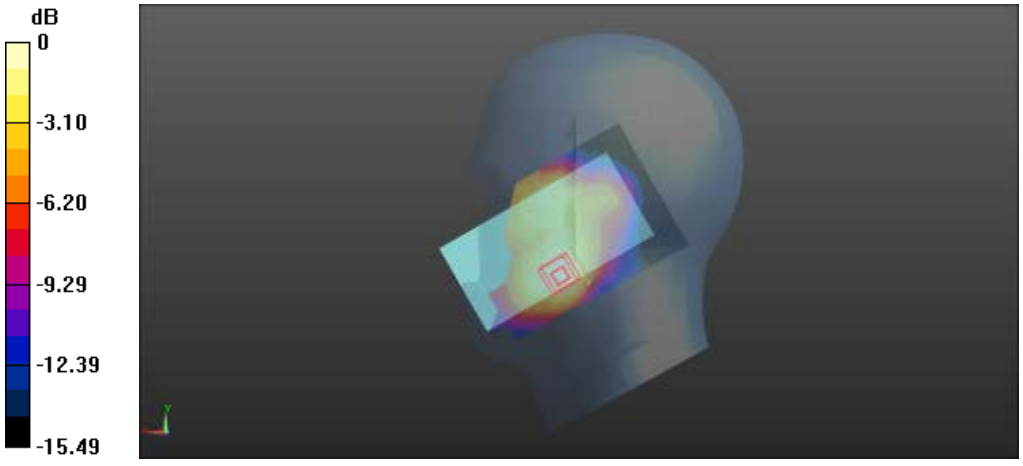
Left Side	Check	1732.5MHz

Communication System: UID 0, LTE band 4 (0); Frequency: 1732.5 MHz
Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.363 S/m; ε_r = 40.136; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.77, 7.77, 7.77); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Head-Section Left HSL Band 4/LTE Band 4 touch M/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.166 W/kg
Head-Section Left HSL Band 4/LTE Band 4 touch M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.698 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 0.222 W/kg
SAR(1 g) = 0.157 W/kg; SAR(10 g) = 0.104 W/kg
Maximum value of SAR (measured) = 0.169 W/kg



0 dB = 0.169 W/kg = -7.72 dBW/kg

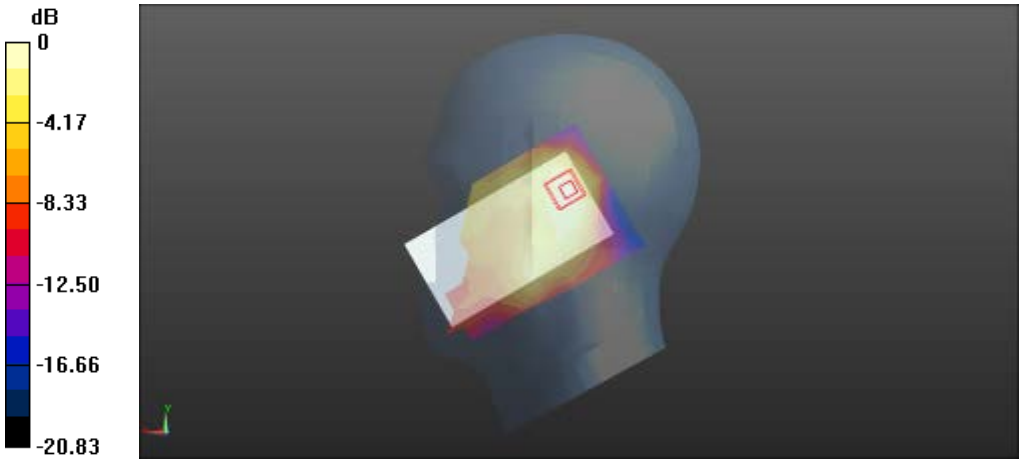
Left Side	Tilt	1732.5MHz

Communication System: UID 0, LTE band 4 (0); Frequency: 1732.5 MHz
Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.363 S/m; ε_r = 40.136; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.77, 7.77, 7.77); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Head-Section Left HSL Band 4/LTE Band 4 tilt M/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.0825 W/kg
Head-Section Left HSL Band 4/LTE Band 4 tilt M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.057 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.124 W/kg
SAR(1 g) = 0.078 W/kg; SAR(10 g) = 0.047 W/kg
Maximum value of SAR (measured) = 0.0834 W/kg



0 dB = 0.0834 W/kg = -10.79 dBW/kg

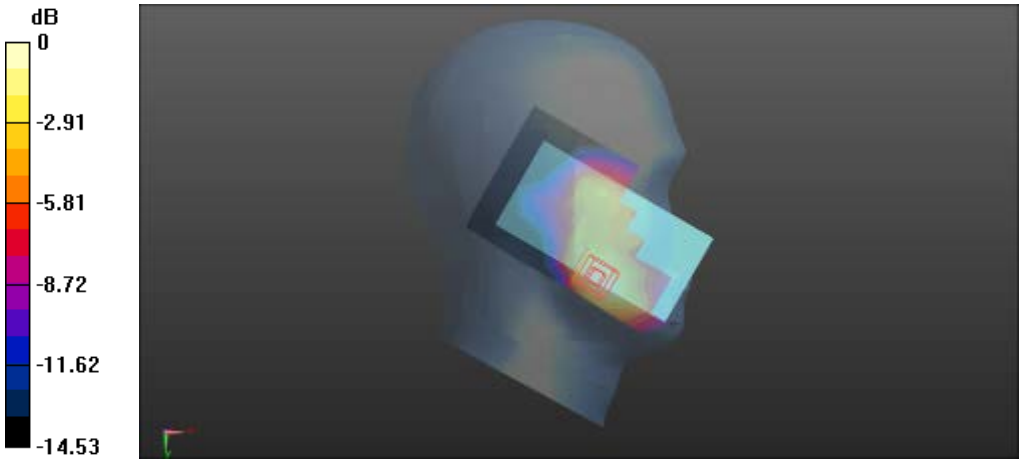
Right Side	Check	1732.5MHz

Communication System: UID 0, LTE band 4 (0); Frequency: 1732.5 MHz
Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.363 S/m; ε_r = 40.136; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.77, 7.77, 7.77); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Head-Section Right HSL Band 4/LTE Band 4 touch M/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.298 W/kg
Head-Section Right HSL Band 4/LTE Band 4 touch M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.973 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 0.431 W/kg
SAR(1 g) = 0.283 W/kg; SAR(10 g) = 0.180 W/kg
Maximum value of SAR (measured) = 0.308 W/kg



0 dB = 0.308 W/kg = -5.11 dBW/kg

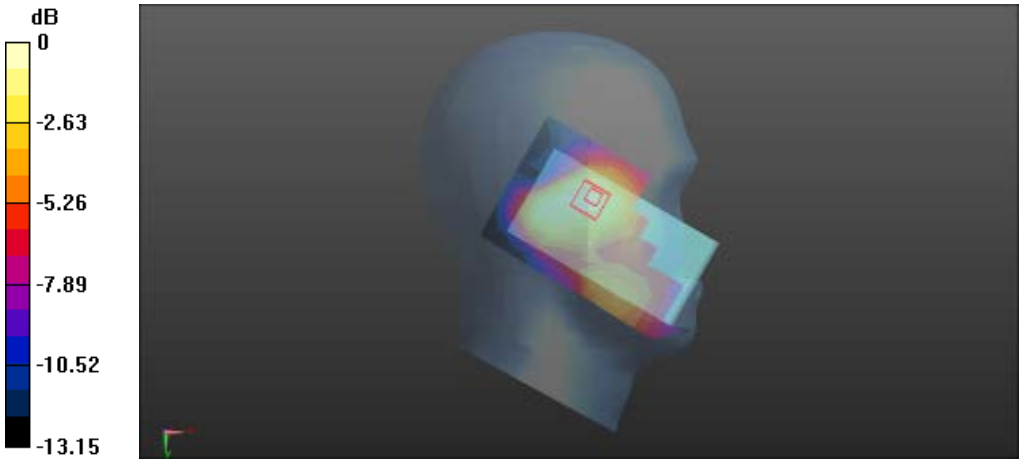
Right Side	Tilt	1732.5MHz

Communication System: UID 0, LTE band 4 (0); Frequency: 1732.5 MHz
Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.363 S/m; ε_r = 40.136; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.77, 7.77, 7.77); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Head-Section Right HSL Band 4/LTE Band 4 tilt M/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.0770 W/kg
Head-Section Right HSL Band 4/LTE Band 4 tilt M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.198 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 0.114 W/kg
SAR(1 g) = 0.079 W/kg; SAR(10 g) = 0.052 W/kg
Maximum value of SAR (measured) = 0.0846 W/kg



0 dB = 0.0846 W/kg = -10.73 dBW/kg

LTE BAND4- 5BW-1RB (Flat)

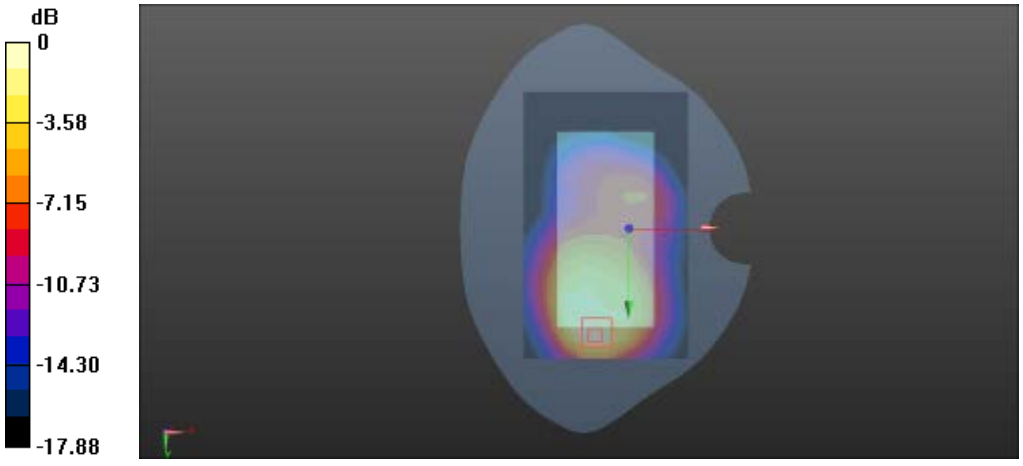
FLAT	Towards phantom	1732.5MHz

Communication System: UID 0, LTE band 4 (0); Frequency: 1732.5 MHz
Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.363 S/m; ε_r = 40.136; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.77, 7.77, 7.77); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = -19.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Flat-Section MSL Band 4 TP/LTE Band 4 TP M/Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.588 W/kg
Flat-Section MSL Band 4 TP/LTE Band 4 TP M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.260 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 0.977 W/kg
SAR(1 g) = 0.567 W/kg; SAR(10 g) = 0.315 W/kg
Maximum value of SAR (measured) = 0.633 W/kg



0 dB = 0.633 W/kg = -1.99 dBW/kg

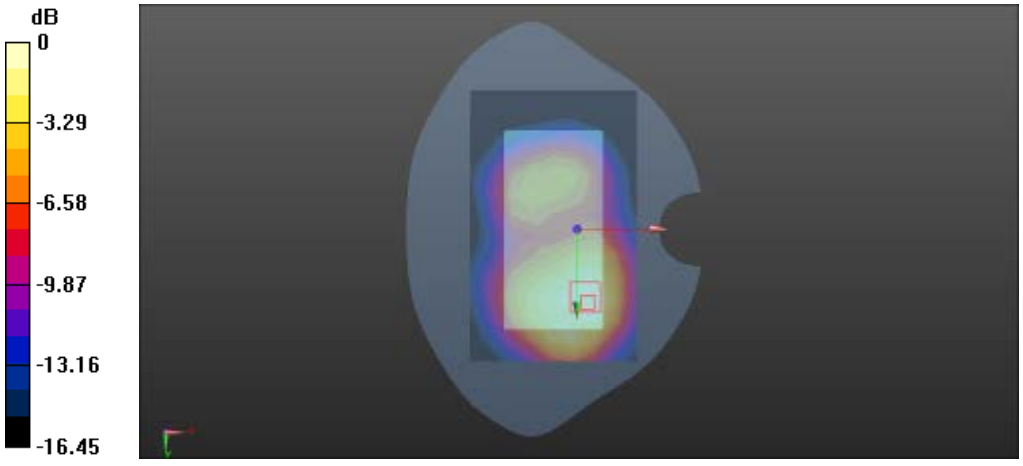
FLAT	Towards ground	1732.5MHz

Communication System: UID 0, LTE band 4 (0); Frequency: 1732.5 MHz
Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.363 S/m; ε_r = 40.136; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.77, 7.77, 7.77); Calibrated: 10/26/2015;
- Sensor-Surface: 3mm (Mechanical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection), z = -19.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Flat-Section MSL Band 4 TG/LTE Band 4 TG M/Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.598 W/kg
Flat-Section MSL Band 4 TG/LTE Band 4 TG M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.274 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 0.873 W/kg
SAR(1 g) = 0.526 W/kg; SAR(10 g) = 0.316 W/kg
Maximum value of SAR (measured) = 0.569 W/kg



0 dB = 0.569 W/kg = -2.45 dBW/kg

LTE BAND4- 20BW-1RB (Head)

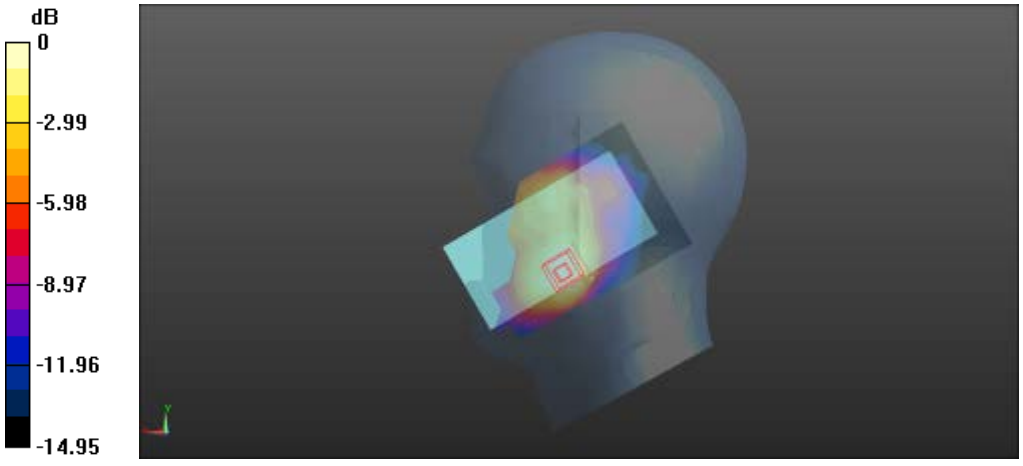
Left Side	Check	1732.5MHz

Communication System: UID 0, LTE band 4 (0); Frequency: 1732.5 MHz
Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.363 S/m; ε_r = 40.136; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.77, 7.77, 7.77); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Head-Section Left HSL Band 4/LTE Band 4 touch M/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.154 W/kg
Head-Section Left HSL Band 4/LTE Band 4 touch M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.195 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.211 W/kg
SAR(1 g) = 0.144 W/kg; SAR(10 g) = 0.095 W/kg
Maximum value of SAR (measured) = 0.156 W/kg



0 dB = 0.156 W/kg = -8.07 dBW/kg

Left Side	Tilt	1732.5MHz

Communication System: UID 0, LTE band 4 (0); Frequency: 1732.5 MHz
Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.363 S/m; ε_r = 40.136; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.77, 7.77, 7.77); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Head-Section Left HSL Band 4/LTE Band 4 tilt M/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.0445 W/kg
Head-Section Left HSL Band 4/LTE Band 4 tilt M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.340 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 0.0660 W/kg
SAR(1 g) = 0.043 W/kg; SAR(10 g) = 0.026 W/kg
Maximum value of SAR (measured) = 0.0460 W/kg

0 dB = 0.0460 W/kg = -13.37 dBW/kg

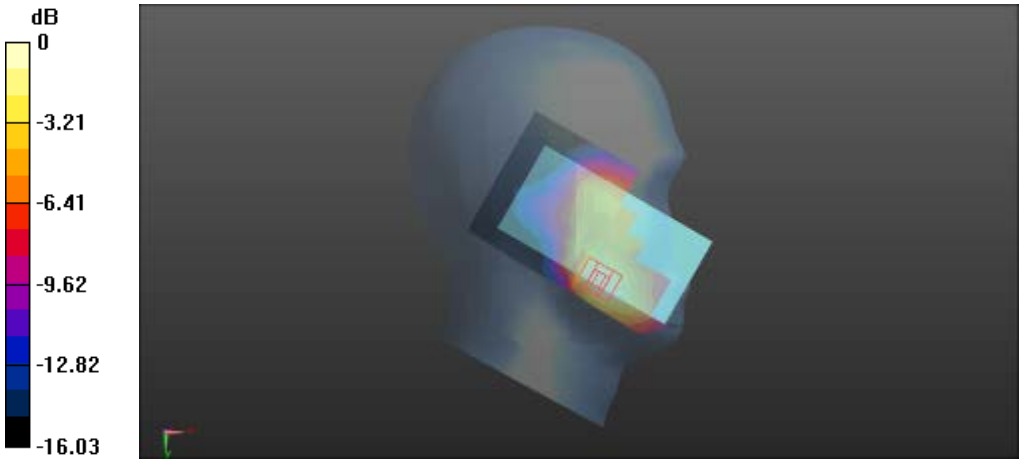
Right Side	Check	1732.5MHz

Communication System: UID 0, LTE band 4 (0); Frequency: 1732.5 MHz
Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.363 S/m; ε_r = 40.136; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.77, 7.77, 7.77); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Head-Section Right HSL Band 4/LTE Band 4 touch M/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.220 W/kg
Head-Section Right HSL Band 4/LTE Band 4 touch M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.903 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 0.324 W/kg
SAR(1 g) = 0.211 W/kg; SAR(10 g) = 0.135 W/kg
Maximum value of SAR (measured) = 0.228 W/kg



0 dB = 0.228 W/kg = -6.42 dBW/kg

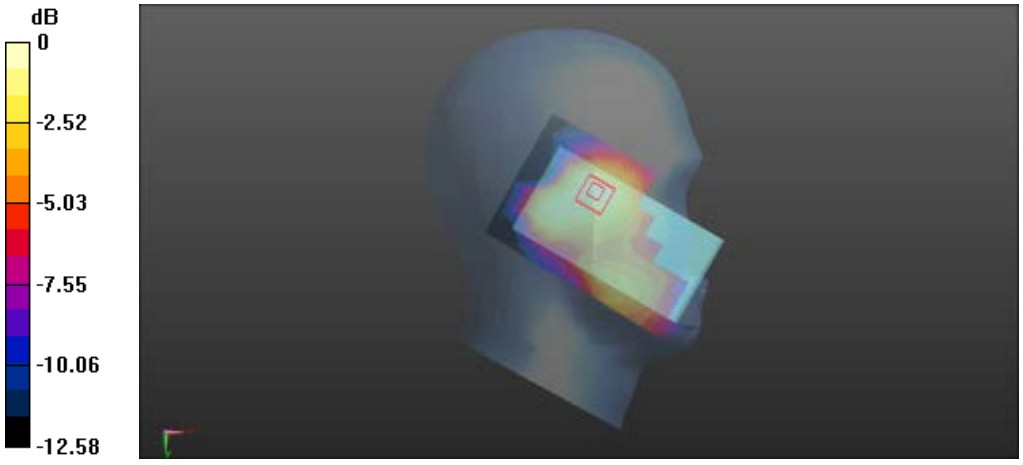
Right Side	Tilt	1732.5MHz

Communication System: UID 0, LTE band 4 (0); Frequency: 1732.5 MHz
Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.363 S/m; ε_r = 40.136; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.77, 7.77, 7.77); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Head-Section Right HSL Band 4/LTE Band 4 tilt M/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm.
Maximum value of SAR (measured) = 0.0535 W/kg
Head-Section Right HSL Band 4/LTE Band 4 tilt M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.621 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.0790 W/kg
SAR(1 g) = 0.053 W/kg; SAR(10 g) = 0.036 W/kg
Maximum value of SAR (measured) = 0.0558 W/kg



0 dB = 0.0558 W/kg = -12.53 dBW/kg

LTE BAND4- 20BW-1RB (Flat)

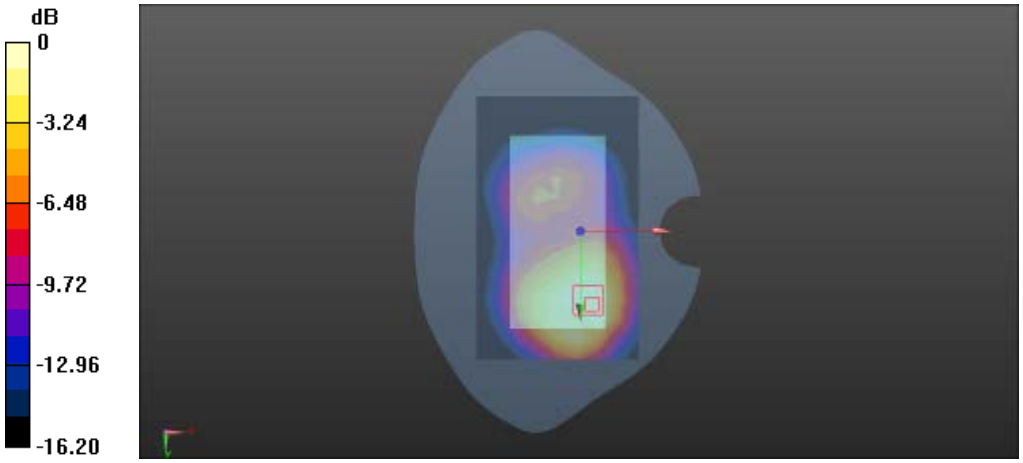
FLAT	Towards phantom	1732.5MHz

Communication System: UID 0, LTE band 4 (0); Frequency: 1732.5 MHz
Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.363 S/m; ε_r = 40.136; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.77, 7.77, 7.77); Calibrated: 10/26/2015;
- Sensor-Surface: 3mm (Mechanical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection), z = -19.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Flat-Section MSL Band 4 TG/LTE Band 4 TG M/Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.677 W/kg
Flat-Section MSL Band 4 TG/LTE Band 4 TG M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.646 V/m; Power Drift = -0.19 dB
Peak SAR (extrapolated) = 1.02 W/kg
SAR(1 g) = 0.597 W/kg; SAR(10 g) = 0.353 W/kg
Maximum value of SAR (measured) = 0.650 W/kg



0 dB = 0.650 W/kg = -1.87 dBW/kg

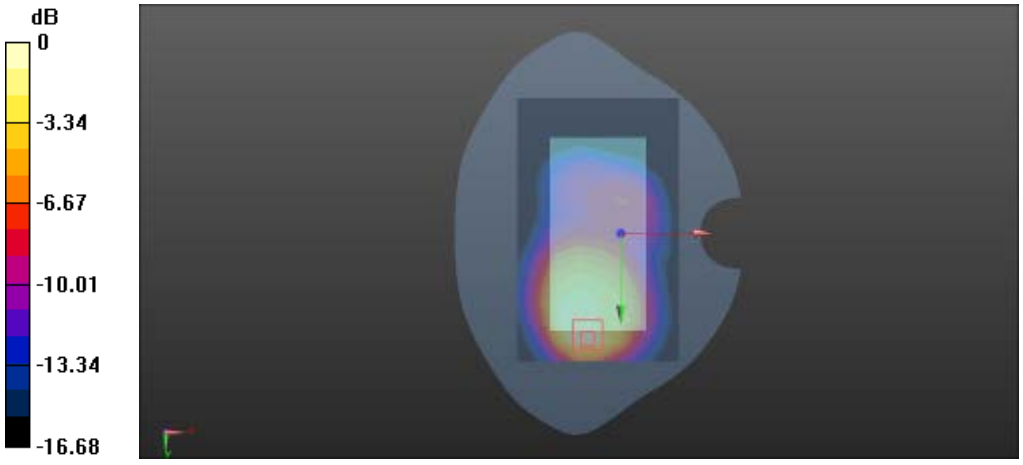
FLAT	Towards ground	1732.5MHz

Communication System: UID 0, LTE band 4 (0); Frequency: 1732.5 MHz
Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.363 S/m; ε_r = 40.136; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.77, 7.77, 7.77); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = -19.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Flat-Section MSL Band 4 TP/LTE Band 4 TP M/Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.442 W/kg
Flat-Section MSL Band 4 TP/LTE Band 4 TP M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.845 V/m; Power Drift = -0.22 dB
Peak SAR (extrapolated) = 0.768 W/kg
SAR(1 g) = 0.455 W/kg; SAR(10 g) = 0.258 W/kg
Maximum value of SAR (measured) = 0.507 W/kg



0 dB = 0.507 W/kg = -2.95 dBW/kg

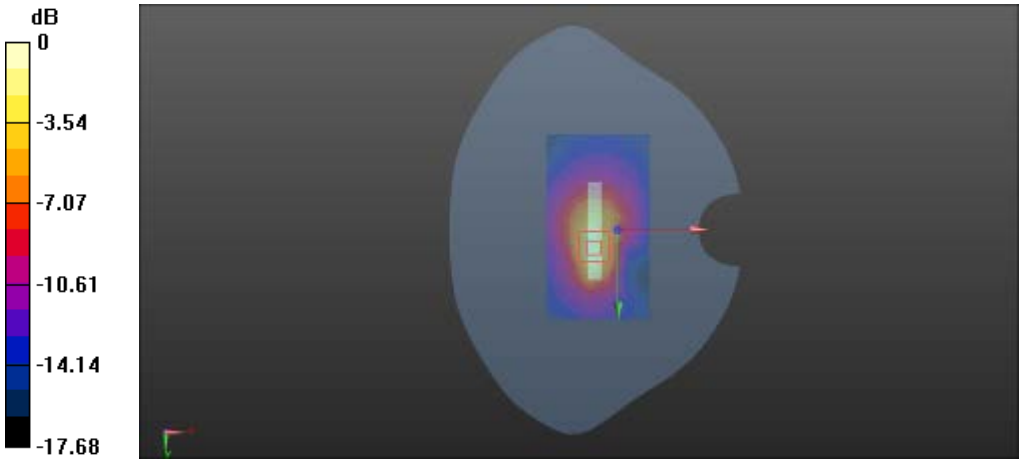
FLAT	Edge2	1732.5MHz

Communication System: UID 0, LTE band 4 (0); Frequency: 1732.5 MHz
Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.363 S/m; ε_r = 40.136; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.77, 7.77, 7.77); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = -19.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Flat-Section MSL Band 4 HOT/LTE Band 4 M edge 2/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.333 W/kg
Flat-Section MSL Band 4 HOT/LTE Band 4 M edge 2/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.372 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 0.655 W/kg
SAR(1 g) = 0.381 W/kg; SAR(10 g) = 0.199 W/kg
Maximum value of SAR (measured) = 0.440 W/kg



0 dB = 0.440 W/kg = -3.57 dBW/kg

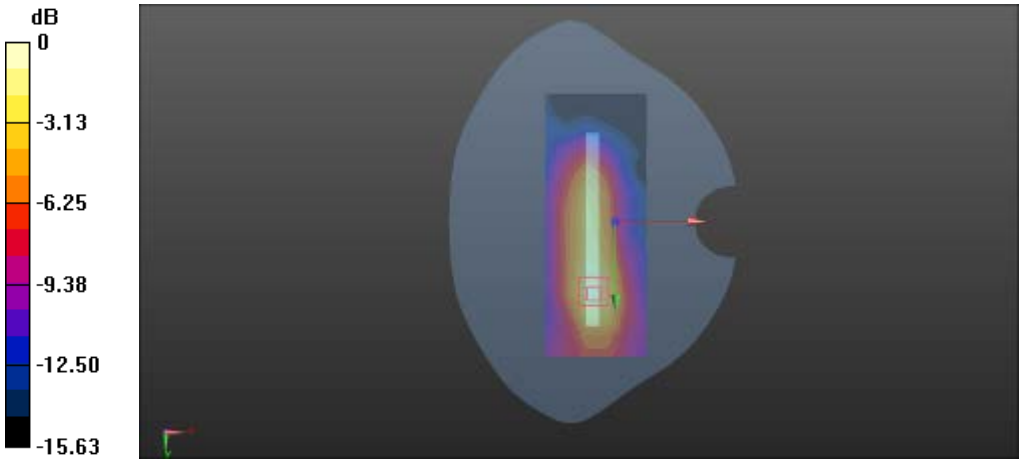
FLAT	Edge3	1732.5MHz

Communication System: UID 0, LTE band 4 (0); Frequency: 1732.5 MHz
Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.363 S/m; ε_r = 40.136; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.77, 7.77, 7.77); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = -19.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Flat-Section MSL Band 4 HOT/LTE Band 4 M edge 3/Area Scan (6x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.138 W/kg
Flat-Section MSL Band 4 HOT/LTE Band 4 M edge 3/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.309 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.243 W/kg
SAR(1 g) = 0.147 W/kg; SAR(10 g) = 0.084 W/kg
Maximum value of SAR (measured) = 0.162 W/kg



0 dB = 0.162 W/kg = -7.90 dBW/kg

LTE BAND4- 20BW-50%RB (Head)

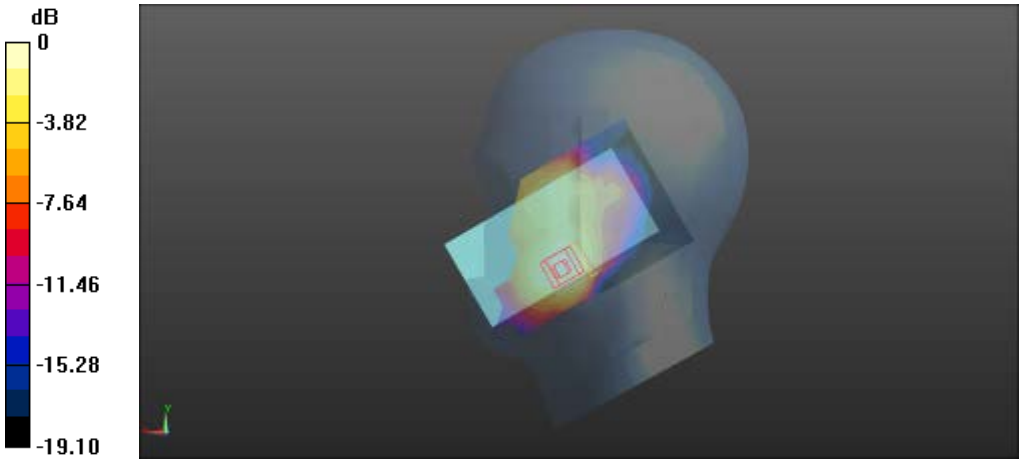
Left Side	Check	1732.5MHz

Communication System: UID 0, LTE band 4 (0); Frequency: 1732.5 MHz
Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.363 S/m; ε_r = 40.136; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.77, 7.77, 7.77); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Head-Section Left HSL Band 4/LTE Band 4 touch M/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.139 W/kg
Head-Section Left HSL Band 4/LTE Band 4 touch M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.269 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.210 W/kg
SAR(1 g) = 0.138 W/kg; SAR(10 g) = 0.090 W/kg
Maximum value of SAR (measured) = 0.150 W/kg



0 dB = 0.150 W/kg = -8.24 dBW/kg

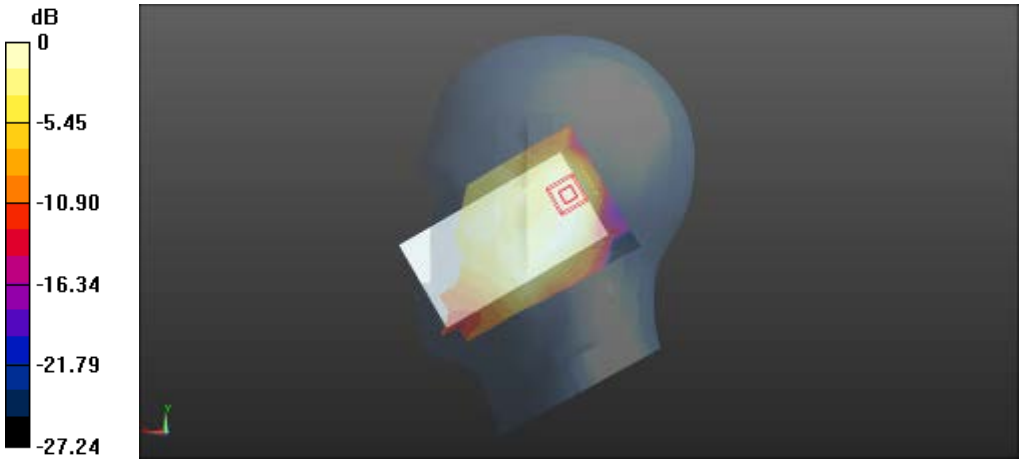
Left Side	Tilt	1732.5MHz

Communication System: UID 0, LTE band 4 (0); Frequency: 1732.5 MHz
Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.363 S/m; ε_r = 40.136; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.77, 7.77, 7.77); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Head-Section Left HSL Band 4/LTE Band 4 tilt M/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.0789 W/kg
Head-Section Left HSL Band 4/LTE Band 4 tilt M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.468 V/m; Power Drift = 0.21 dB
Peak SAR (extrapolated) = 0.109 W/kg
SAR(1 g) = 0.070 W/kg; SAR(10 g) = 0.043 W/kg
Maximum value of SAR (measured) = 0.0784 W/kg



0 dB = 0.0784 W/kg = -11.06 dBW/kg

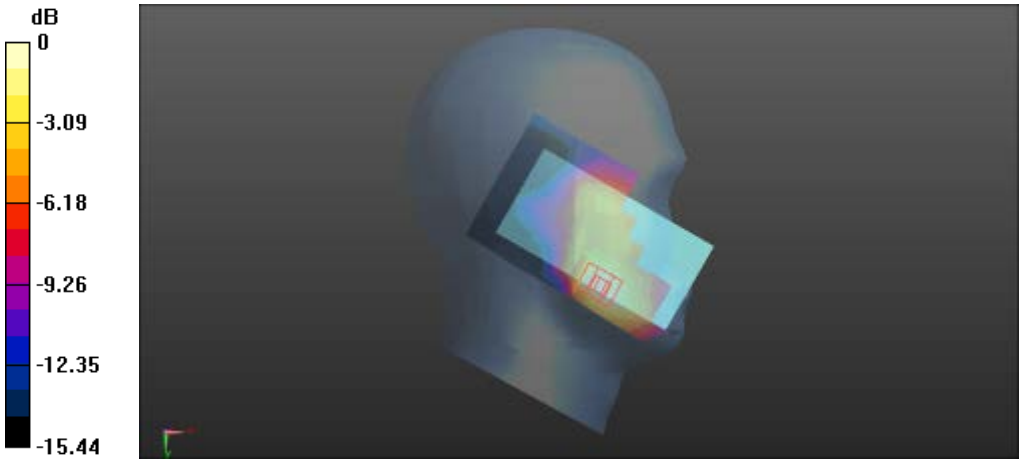
Right Side	Check	1732.5MHz

Communication System: UID 0, LTE band 4 (0); Frequency: 1732.5 MHz
Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.363 S/m; ε_r = 40.136; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.77, 7.77, 7.77); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Head-Section Right HSL Band 4/LTE Band 4 touch M/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.227 W/kg
Head-Section Right HSL Band 4/LTE Band 4 touch M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.657 V/m; Power Drift = 0.19 dB
Peak SAR (extrapolated) = 0.322 W/kg
SAR(1 g) = 0.215 W/kg; SAR(10 g) = 0.138 W/kg
Maximum value of SAR (measured) = 0.233 W/kg



0 dB = 0.233 W/kg = -6.33 dBW/kg

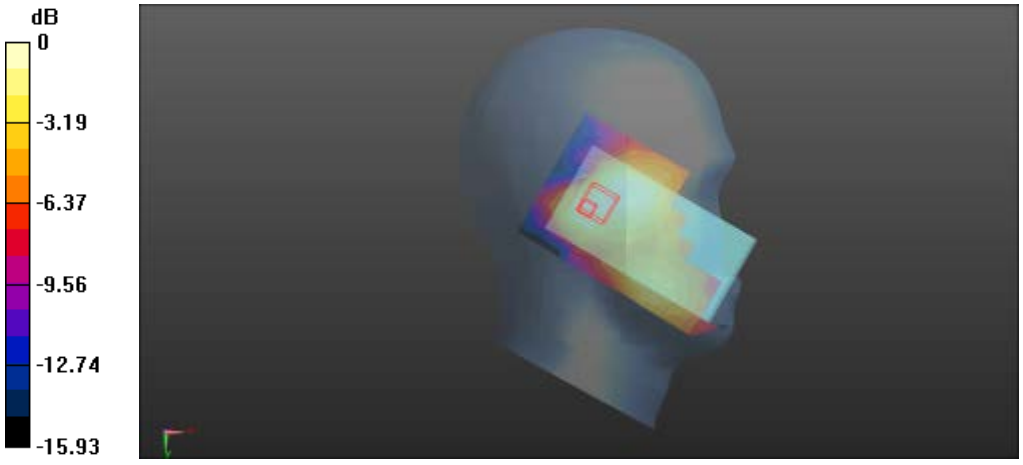
Right Side	Tilt	1732.5MHz

Communication System: UID 0, LTE band 4 (0); Frequency: 1732.5 MHz
Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.363 S/m; ε_r = 40.136; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.77, 7.77, 7.77); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Head-Section Right HSL Band 4/LTE Band 4 tilt M/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.0538 W/kg
Head-Section Right HSL Band 4/LTE Band 4 tilt M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.858 V/m; Power Drift = -0.18 dB
Peak SAR (extrapolated) = 0.0750 W/kg
SAR(1 g) = 0.048 W/kg; SAR(10 g) = 0.032 W/kg
Maximum value of SAR (measured) = 0.0528 W/kg



0 dB = 0.0528 W/kg = -12.77 dBW/kg

LTE BAND4- 20BW-50%RB (Flat)

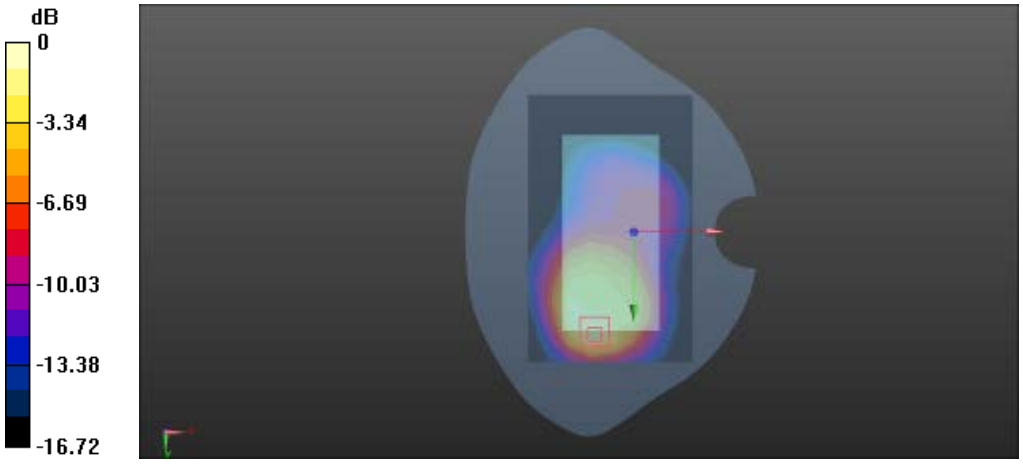
FLAT	Towards phantom	1732.5MHz

Communication System: UID 0, LTE band 4 (0); Frequency: 1732.5 MHz
Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.363 S/m; ε_r = 40.136; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.77, 7.77, 7.77); Calibrated: 10/26/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = -19.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Flat-Section MSL Band 4 TP/LTE Band 4 TP M/Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.435 W/kg
Flat-Section MSL Band 4 TP/LTE Band 4 TP M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.898 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.817 W/kg
SAR(1 g) = 0.472 W/kg; SAR(10 g) = 0.258 W/kg
Maximum value of SAR (measured) = 0.531 W/kg



0 dB = 0.531 W/kg = -2.75 dBW/kg

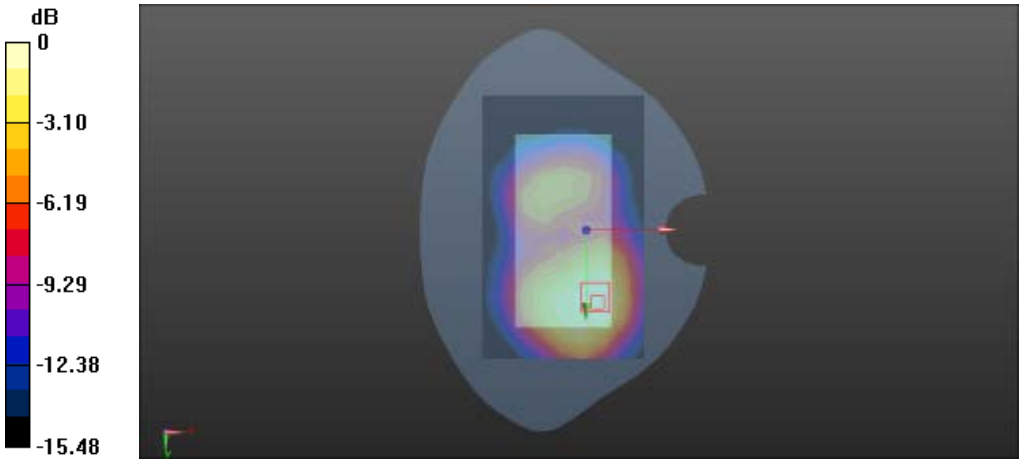
FLAT	Towards ground	1732.5MHz

Communication System: UID 0, LTE band 4 (0); Frequency: 1732.5 MHz
Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.363 S/m; ε_r = 40.136; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3708; ConvF(7.77, 7.77, 7.77); Calibrated: 10/26/2015;
- Sensor-Surface: 3mm (Mechanical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection), z = -19.0, 31.0
- Electronics: DAE4 Sn720; Calibrated: 10/29/2015
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Flat-Section MSL Band 4 TG/LTE Band 4 TG M/Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.456 W/kg
Flat-Section MSL Band 4 TG/LTE Band 4 TG M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.315 V/m; Power Drift = 0.21 dB
Peak SAR (extrapolated) = 0.670 W/kg
SAR(1 g) = 0.408 W/kg; SAR(10 g) = 0.246 W/kg
Maximum value of SAR (measured) = 0.440 W/kg



0 dB = 0.440 W/kg = -3.57 dBW/kg

LTE BAND7- 20BW-1RB (Head)

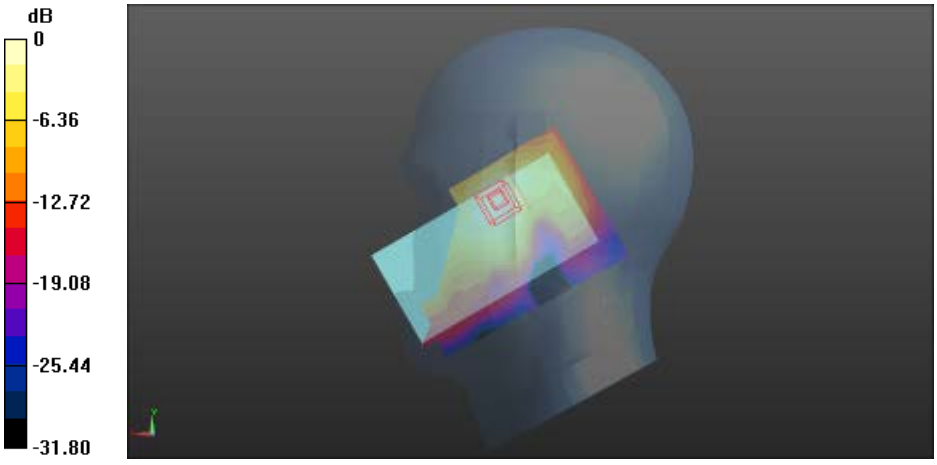
Left Side	Check	2535MHz

Communication System: UID 0, LTE band 7 (0); Frequency: 2535 MHz;Duty Cycle: 1:1
Medium parameters used (extrapolated): f = 2535 MHz; σ = 1.869 S/m; ε_r = 38.76; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(4.26, 4.26, 4.26); Calibrated: 2015/8/21;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 2015/8/19
- Phantom: SAM 1659; Type: QD000P40CD; Serial: TP:1659
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Head-Section Left HSL Band 7/LTE Band 7 touch M/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.138 W/kg
Head-Section Left HSL Band 7/LTE Band 7 touch M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.082 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 0.244 W/kg
SAR(1 g) = 0.134 W/kg; SAR(10 g) = 0.073 W/kg
Maximum value of SAR (measured) = 0.147 W/kg



0 dB = 0.147 W/kg = -8.33 dBW/kg

Left Side	Tilt	2535MHz

Communication System: UID 0, LTE band 7 (0); Frequency: 2535 MHz;Duty Cycle: 1:1
Medium parameters used (extrapolated): f = 2535 MHz; σ = 1.869 S/m; ε_r = 38.76; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(4.26, 4.26, 4.26); Calibrated: 2015/8/21;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 2015/8/19
- Phantom: SAM 1659; Type: QD000P40CD; Serial: TP:1659
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Head-Section Left HSL Band 7/LTE Band 7 tilt M/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.133 W/kg
Head-Section Left HSL Band 7/LTE Band 7 tilt M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.620 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.252 W/kg
SAR(1 g) = 0.127 W/kg; SAR(10 g) = 0.065 W/kg
Maximum value of SAR (measured) = 0.138 W/kg

0 dB = 0.138 W/kg = -8.60 dBW/kg

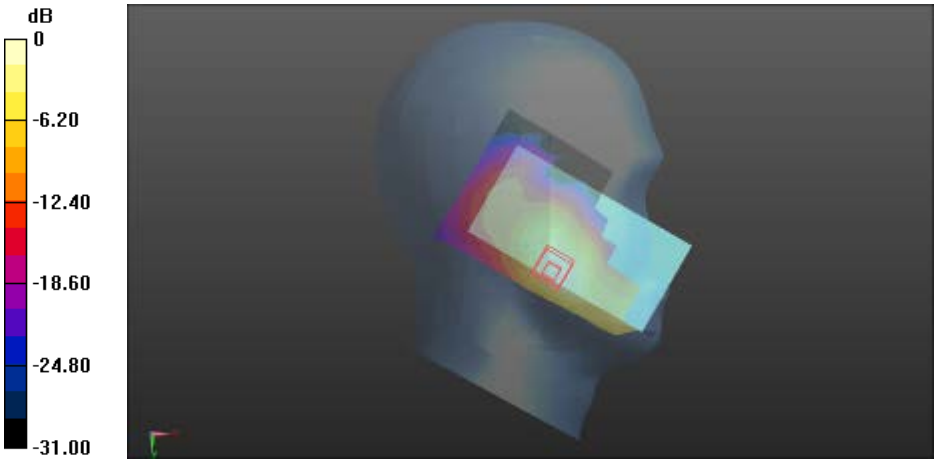
Right Side	Check	2535MHz

Communication System: UID 0, LTE band 7 (0); Frequency: 2535 MHz;Duty Cycle: 1:1
Medium parameters used): f = 2535 MHz; σ = 1.869 S/m; ε_r = 38.76; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(4.26, 4.26, 4.26); Calibrated: 2015/8/21;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 2015/8/19
- Phantom: SAM 1659; Type: QD000P40CD; Serial: TP:1659
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Head-Section Right HSL Band 7/LTE Band 7 touch M/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.395 W/kg
Head-Section Right HSL Band 7/LTE Band 7 touch M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.058 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 0.767 W/kg
SAR(1 g) = 0.362 W/kg; SAR(10 g) = 0.178 W/kg
Maximum value of SAR (measured) = 0.393 W/kg



0 dB = 0.393 W/kg = -4.06 dBW/kg

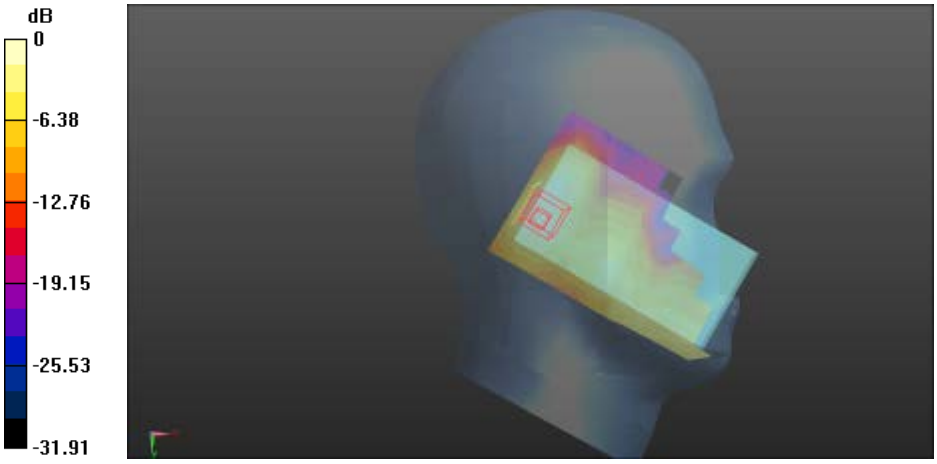
Right Side	Tilt	2535MHz

Communication System: UID 0, LTE band 7 (0); Frequency: 2535 MHz;Duty Cycle: 1:1
Medium parameters used (extrapolated): f = 2535 MHz; σ = 1.869 S/m; ε_r = 38.76; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(4.26, 4.26, 4.26); Calibrated: 2015/8/21;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 2015/8/19
- Phantom: SAM 1659; Type: QD000P40CD; Serial: TP:1659
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Head-Section Right HSL Band 7/LTE Band 7 tilt M/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.0858 W/kg
Head-Section Right HSL Band 7/LTE Band 7 tilt M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.879 V/m; Power Drift = 0.19 dB
Peak SAR (extrapolated) = 0.164 W/kg
SAR(1 g) = 0.084 W/kg; SAR(10 g) = 0.044 W/kg
Maximum value of SAR (measured) = 0.0926 W/kg



0 dB = 0.0926 W/kg = -10.33 dBW/kg

LTE BAND7- 20BW-1RB (Flat)

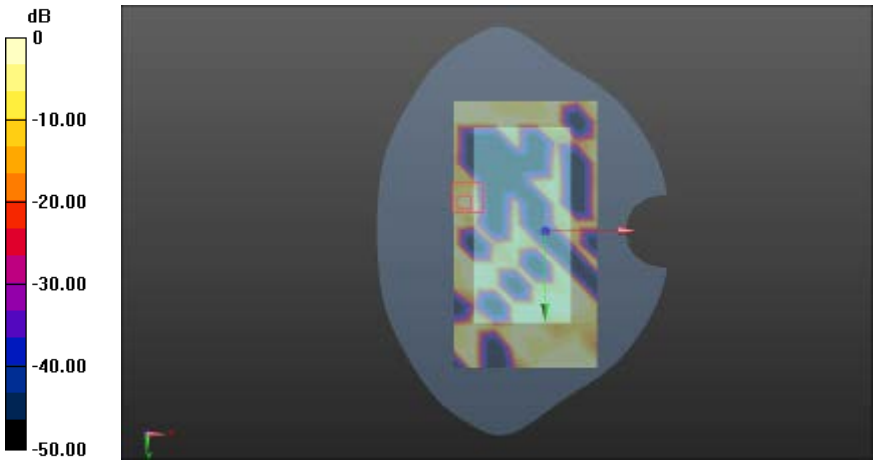
FLAT	Towards phantom	2535MHz

Communication System: UID 10169 - CAB, LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK);
Frequency: 2535 MHz;Duty Cycle: 1:3.74111
Medium parameters used (extrapolated): f = 2535 MHz; σ = 2.045 S/m; ε_r = 50.427; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(4.09, 4.09, 4.09); Calibrated: 2015/8/21;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 2015/8/19
- Phantom: SAM 1660; Type: QD000P40CD; Serial: TP:1660
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Flat-Section MSL Band 7 TP/LTE Band 7 TP M 2/Area Scan (8x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.000680 W/kg
Flat-Section MSL Band 7 TP/LTE Band 7 TP M 2/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.437 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 0.000921 W/kg
SAR(1 g) = 6.42e-005 W/kg; SAR(10 g) = 1.31e-005 W/kg
Maximum value of SAR (measured) = 0.000924 W/kg



0 dB = 0.000924 W/kg = -30.34 dBW/kg

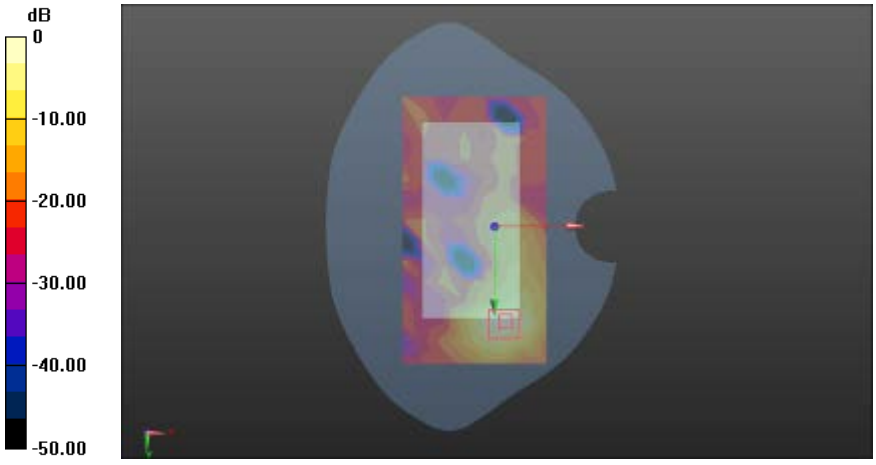
FLAT	Towards ground	2535MHz

Communication System: UID 10169 - CAB, LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK);
Frequency: 2535 MHz;Duty Cycle: 1:3.74111
Medium parameters used: f = 2535 MHz; σ = 2.045 S/m; ε_r = 50.427; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(4.09, 4.09, 4.09); Calibrated: 2015/8/21;
- Sensor-Surface: 3mm (Mechanical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 2015/8/19
- Phantom: SAM 1660; Type: QD000P40CD; Serial: TP:1660
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Flat-Section MSL Band 7 TG/LTE Band 7 TG M 2/Area Scan (8x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.0649 W/kg
Flat-Section MSL Band 7 TG/LTE Band 7 TG M 2/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.346 V/m; Power Drift = -0.18 dB
Peak SAR (extrapolated) = 0.111 W/kg
SAR(1 g) = 0.048 W/kg; SAR(10 g) = 0.020 W/kg
Maximum value of SAR (measured) = 0.0536 W/kg



0 dB = 0.0536 W/kg = -12.71 dBW/kg

LTE BAND7- 20BW-50%RB (Head)

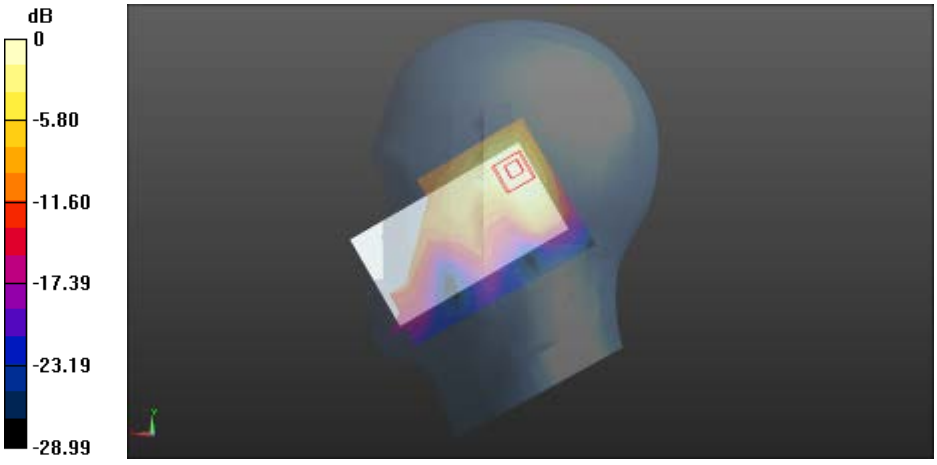
Left Side	Check	2535MHz

Communication System: UID 10297 - AAA, LTE-FDD (SC-FDMA, 50% RB, 20 MHz, QPSK);
Frequency: 2535 MHz;Duty Cycle: 1:3.81066
Medium parameters used: f = 2535 MHz; σ = 2.045 S/m; ε_r = 50.427; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(4.26, 4.26, 4.26); Calibrated: 2015/8/21;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 2015/8/19
- Phantom: SAM 1659; Type: QD000P40CD; Serial: TP:1659
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Head-Section Left HSL Band 7/LTE Band 7 tilt M/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.125 W/kg
Head-Section Left HSL Band 7/LTE Band 7 tilt M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.596 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 0.250 W/kg
SAR(1 g) = 0.129 W/kg; SAR(10 g) = 0.065 W/kg
Maximum value of SAR (measured) = 0.141 W/kg



0 dB = 0.141 W/kg = -8.51 dBW/kg

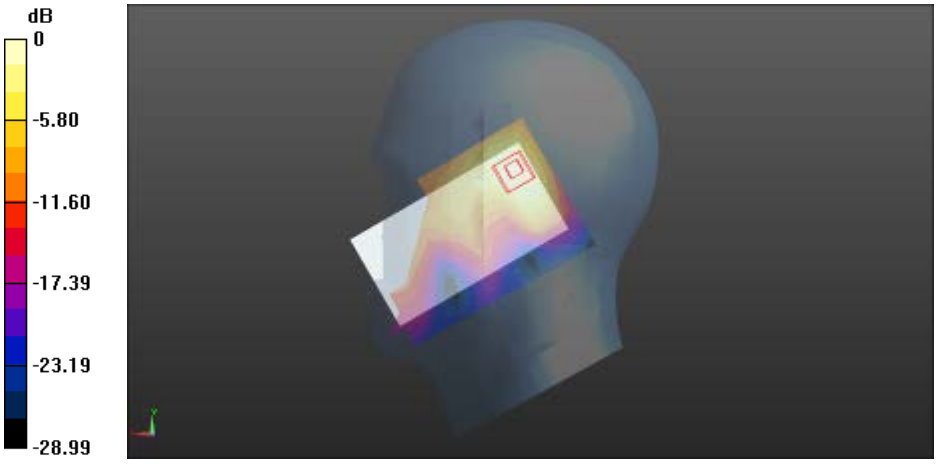
Left Side	Tilt	2535MHz

Communication System: UID 10297 - AAA, LTE-FDD (SC-FDMA, 50% RB, 20 MHz, QPSK);
Frequency: 2535 MHz;Duty Cycle: 1:3.81066
Medium parameters used: f = 2535 MHz; σ = 2.045 S/m; ε_r = 50.427; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(4.26, 4.26, 4.26); Calibrated: 2015/8/21;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 2015/8/19
- Phantom: SAM 1659; Type: QD000P40CD; Serial: TP:1659
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Head-Section Left HSL Band 7/LTE Band 7 tilt M/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.125 W/kg
Head-Section Left HSL Band 7/LTE Band 7 tilt M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.596 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 0.250 W/kg
SAR(1 g) = 0.129 W/kg; SAR(10 g) = 0.065 W/kg
Maximum value of SAR (measured) = 0.141 W/kg



0 dB = 0.141 W/kg = -8.51 dBW/kg

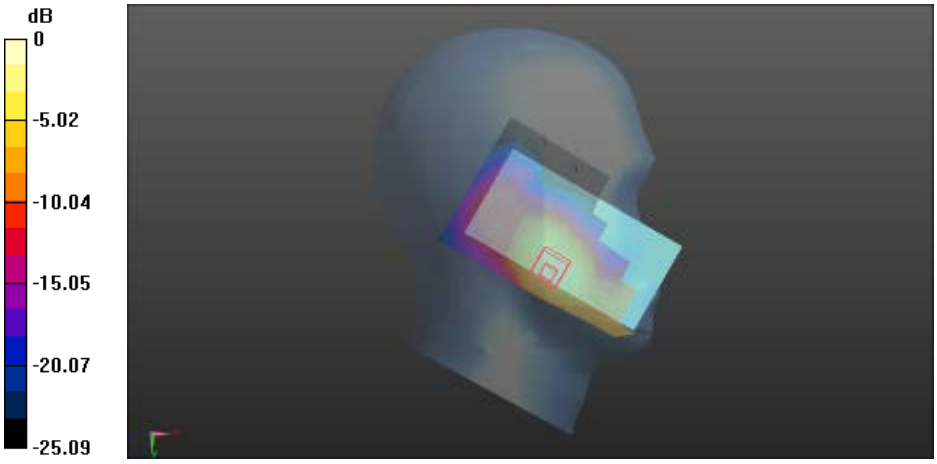
Right Side	Check	2535MHz

Communication System: UID 10297 - AAA, LTE-FDD (SC-FDMA, 50% RB, 20 MHz, QPSK);
Frequency: 2535 MHz;Duty Cycle: 1:3.81066
Medium parameters used: f = 2535 MHz; σ = 2.045 S/m; ε_r = 50.427; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(4.26, 4.26, 4.26); Calibrated: 2015/8/21;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 2015/8/19
- Phantom: SAM 1659; Type: QD000P40CD; Serial: TP:1659
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Head-Section Right HSL Band 7/LTE Band 7 touch M/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.275 W/kg
Head-Section Right HSL Band 7/LTE Band 7 touch M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.557 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.673 W/kg
SAR(1 g) = 0.327 W/kg; SAR(10 g) = 0.164 W/kg
Maximum value of SAR (measured) = 0.370 W/kg



0 dB = 0.370 W/kg = -4.32 dBW/kg

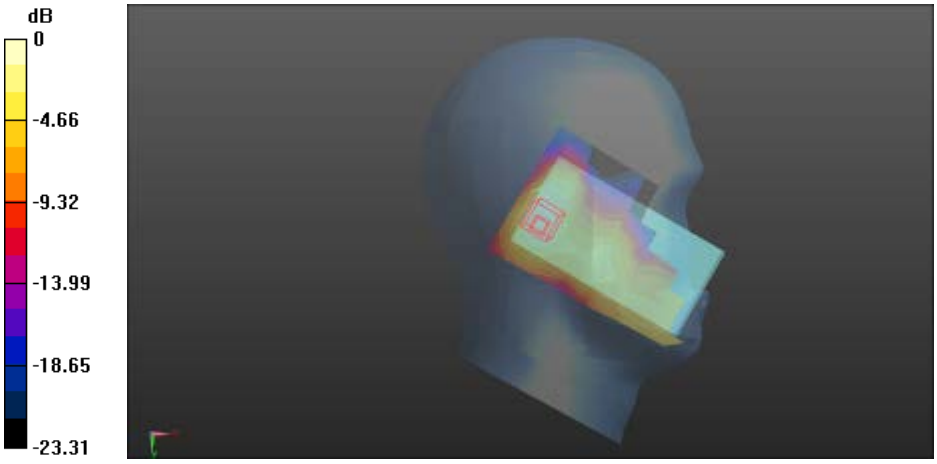
Right Side	Tilt	2535MHz

Communication System: UID 10297 - AAA, LTE-FDD (SC-FDMA, 50% RB, 20 MHz, QPSK);
Frequency: 2535 MHz;Duty Cycle: 1:3.81066
Medium parameters used: f = 2500 MHz; σ = 1.837 S/m; ε_r = 38.944; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(4.26, 4.26, 4.26); Calibrated: 2015/8/21;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 2015/8/19
- Phantom: SAM 1659; Type: QD000P40CD; Serial: TP:1659
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Head-Section Right HSL Band 7/LTE Band 7 tilt M/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.0878 W/kg
Head-Section Right HSL Band 7/LTE Band 7 tilt M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.248 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 0.163 W/kg
SAR(1 g) = 0.087 W/kg; SAR(10 g) = 0.047 W/kg
Maximum value of SAR (measured) = 0.0948 W/kg



0 dB = 0.0948 W/kg = -10.23 dBW/kg

LTE BAND7- 20BW-50%RB (Flat)

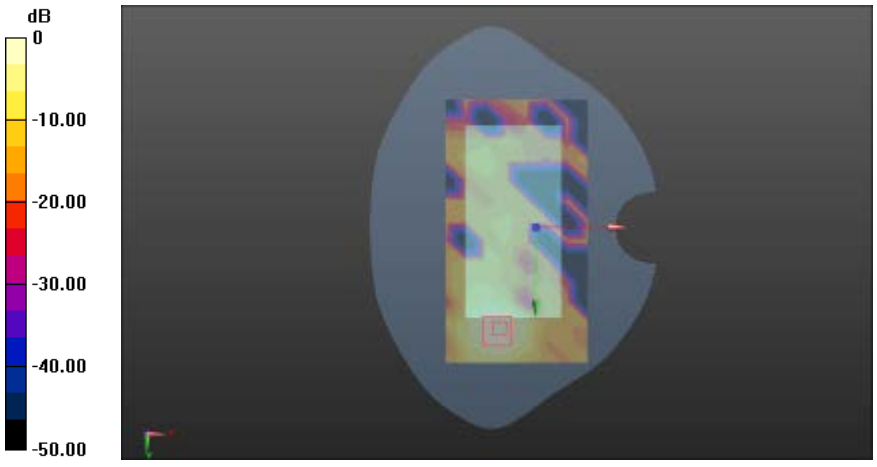
FLAT	Towards phantom	2535MHz

Communication System: UID 10297 - AAA, LTE-FDD (SC-FDMA, 50% RB, 20 MHz, QPSK); Frequency: 2535 MHz;Duty Cycle: 1:3.81066
Medium parameters used (extrapolated): f = 2535 MHz; σ = 2.045 S/m; ε_r = 50.427; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(4.09, 4.09, 4.09); Calibrated: 2015/8/21;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 2015/8/19
- Phantom: SAM 1660; Type: QD000P40CD; Serial: TP:1660
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Flat-Section MSL Band 7 TP/LTE Band 7 TP M 2/Area Scan (8x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.00940 W/kg
Flat-Section MSL Band 7 TP/LTE Band 7 TP M 2/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.511 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 0.0230 W/kg
SAR(1 g) = 0.011 W/kg; SAR(10 g) = 0.00442 W/kg
Maximum value of SAR (measured) = 0.0127 W/kg



0 dB = 0.0127 W/kg = -18.96 dBW/kg

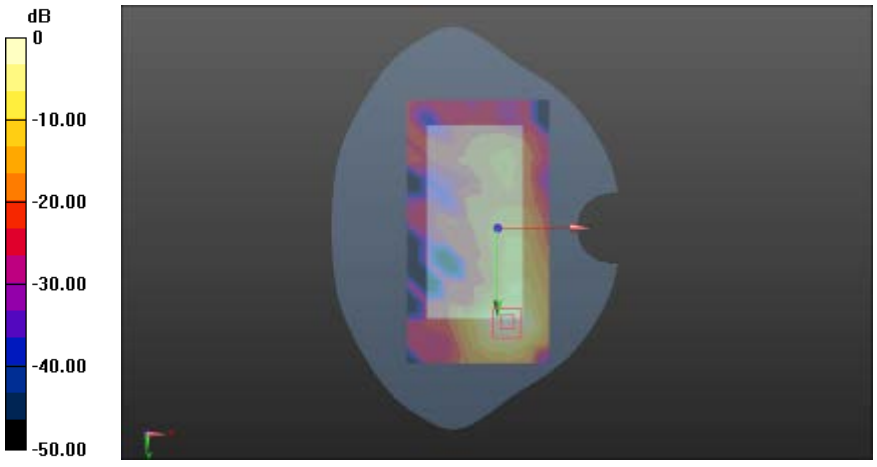
FLAT	Towards ground	2535MHz

Communication System: UID 10297 - AAA, LTE-FDD (SC-FDMA, 50% RB, 20 MHz, QPSK); Frequency: 2535 MHz;Duty Cycle: 1:3.81066
Medium parameters used (extrapolated): f = 2535 MHz; σ = 2.045 S/m; ε_r = 50.427; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(4.09, 4.09, 4.09); Calibrated: 2015/8/21;
- Sensor-Surface: 3mm (Mechanical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 2015/8/19
- Phantom: SAM 1660; Type: QD000P40CD; Serial: TP:1660
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Flat-Section MSL Band 7 TG/LTE Band 7 TG M 3/Area Scan (8x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.116 W/kg
Flat-Section MSL Band 7 TG/LTE Band 7 TG M 3/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.800 V/m; Power Drift = 1.13 dB
Peak SAR (extrapolated) = 0.204 W/kg
SAR(1 g) = 0.086 W/kg; SAR(10 g) = 0.036 W/kg
Maximum value of SAR (measured) = 0.0948 W/kg



0 dB = 0.0948 W/kg = -10.23 dBW/kg

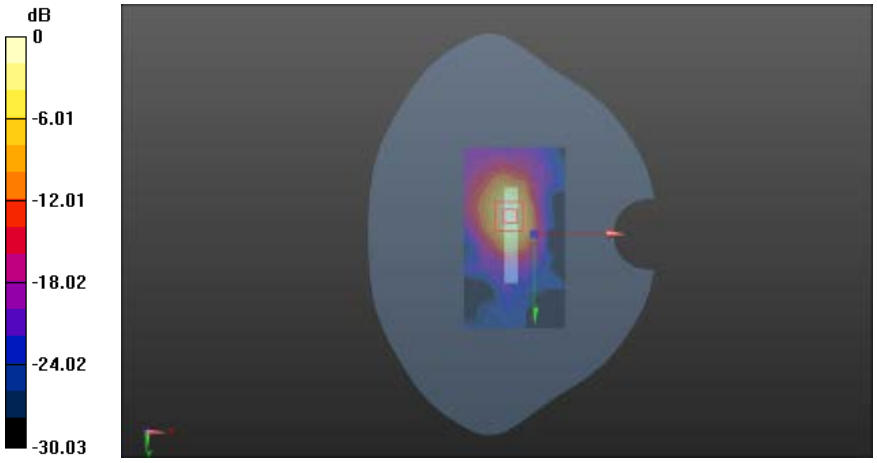
FLAT	Edge2	2535MHz

Communication System: UID 10297 - AAA, LTE-FDD (SC-FDMA, 50% RB, 20 MHz, QPSK); Frequency: 2535 MHz;Duty Cycle: 1:3.81066
Medium parameters used (extrapolated): f = 2535 MHz; σ = 2.045 S/m; ε_r = 50.427; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(4.09, 4.09, 4.09); Calibrated: 2015/8/21;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 2015/8/19
- Phantom: SAM 1660; Type: QD000P40CD; Serial: TP:1660
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Flat-Section MSL Band 7 HOT/LTE Band 7 L edge 2/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.0995 W/kg
Flat-Section MSL Band 7 HOT/LTE Band 7 L edge 2/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.675 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.260 W/kg
SAR(1 g) = 0.113 W/kg; SAR(10 g) = 0.048 W/kg
Maximum value of SAR (measured) = 0.128 W/kg



0 dB = 0.128 W/kg = -8.93 dBW/kg

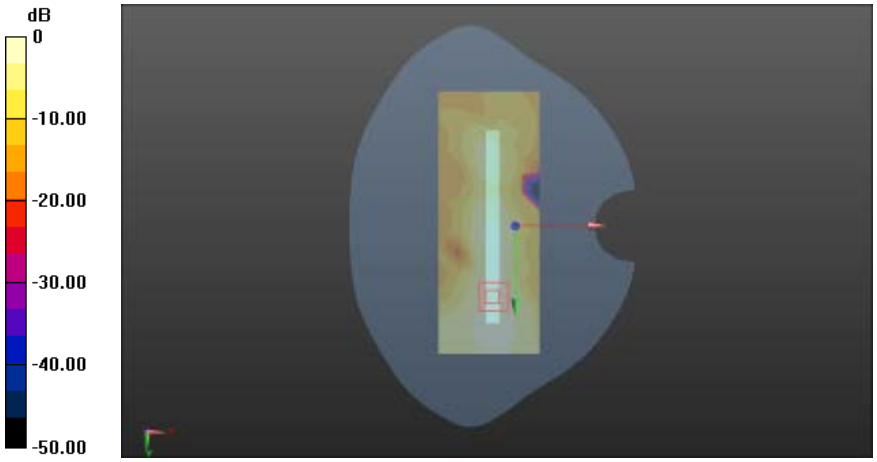
FLAT	Edge3	2535MHz

Communication System: UID 10297 - AAA, LTE-FDD (SC-FDMA, 50% RB, 20 MHz, QPSK); Frequency: 2535 MHz;Duty Cycle: 1:3.81066
Medium parameters used (extrapolated): f = 2535 MHz; σ = 2.045 S/m; ε_r = 50.427; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(4.09, 4.09, 4.09); Calibrated: 2015/8/21;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 2015/8/19
- Phantom: SAM 1660; Type: QD000P40CD; Serial: TP:1660
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Flat-Section MSL Band 7 HOT/LTE Band 7 L edge 3/Area Scan (6x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.0104 W/kg
Flat-Section MSL Band 7 HOT/LTE Band 7 L edge 3/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.979 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 0.0330 W/kg
SAR(1 g) = 0.011 W/kg; SAR(10 g) = 0.00508 W/kg
Maximum value of SAR (measured) = 0.0111 W/kg



0 dB = 0.0111 W/kg = -19.55 dBW/kg

LTE BAND28- 20BW-1RB (Head)

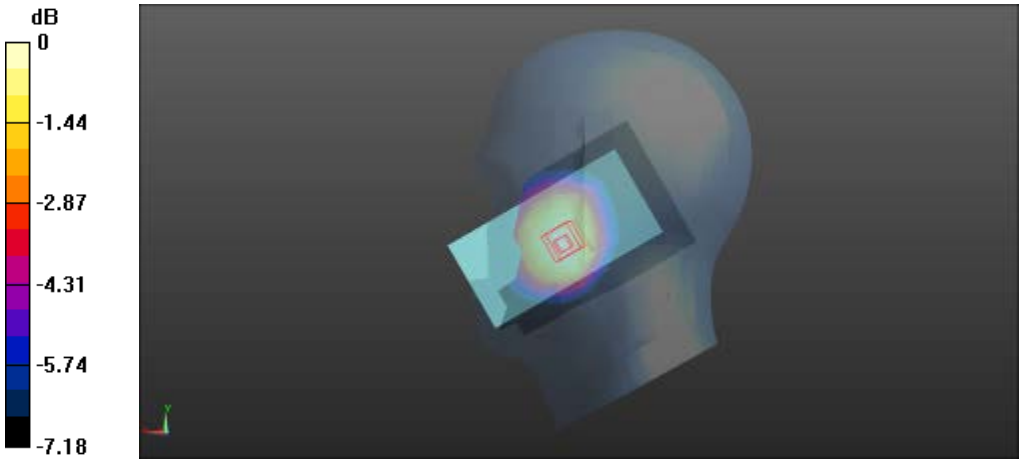
Left Side	Check	728MHz

Communication System: UID 0, LTE band 28 (0); Frequency: 728 MHz
Medium parameters used (interpolated): f = 728 MHz; σ = 0.878 S/m; ε_r = 42.164; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: ES3DV3 - SN3127; ConvF(6.25, 6.25, 6.25); Calibrated: 8/21/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn546; Calibrated: 8/19/2015
- Phantom: SAM 1559; Type: SAM; Serial: 1559
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Head-Section Left HSL Band 28/LTE Band 28 touch M/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.224 W/kg
Head-Section Left HSL Band 28/LTE Band 28 touch M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.389 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 0.255 W/kg
SAR(1 g) = 0.217 W/kg; SAR(10 g) = 0.174 W/kg
Maximum value of SAR (measured) = 0.226 W/kg



0 dB = 0.226 W/kg = -6.46 dBW/kg

Left Side	Tilt	728MHz

Communication System: UID 0, LTE band 28 (0); Frequency: 728 MHz
Medium parameters used (interpolated): f = 728 MHz; σ = 0.878 S/m; ε_r = 42.164; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: ES3DV3 - SN3127; ConvF(6.25, 6.25, 6.25); Calibrated: 8/21/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn546; Calibrated: 8/19/2015
- Phantom: SAM 1559; Type: SAM; Serial: 1559
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Head-Section Left HSL Band 28/LTE Band 28 tilt M/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.139 W/kg
Head-Section Left HSL Band 28/LTE Band 28 tilt M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.567 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.166 W/kg
SAR(1 g) = 0.140 W/kg; SAR(10 g) = 0.113 W/kg
Maximum value of SAR (measured) = 0.146 W/kg

0 dB = 0.146 W/kg = -8.36 dBW/kg

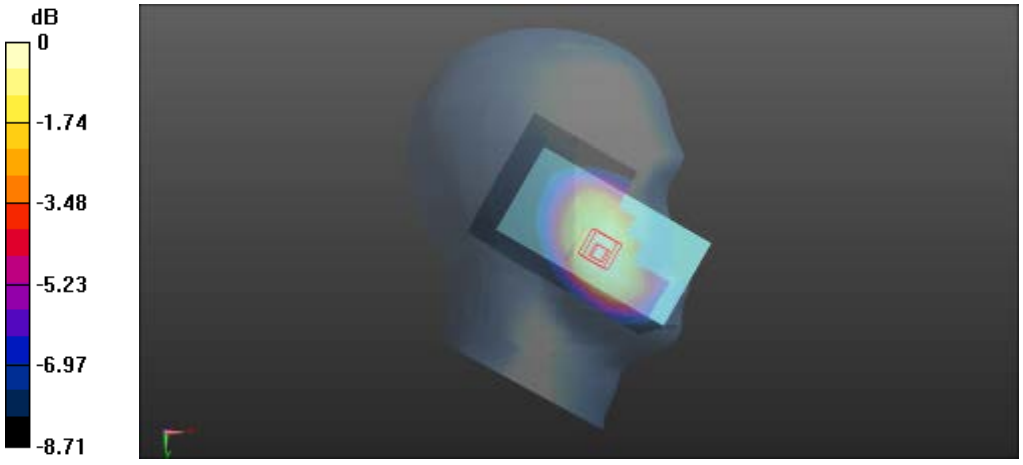
Right Side	Check	728MHz

Communication System: UID 0, LTE band 28 (0); Frequency: 728 MHz
Medium parameters used (interpolated): f = 728 MHz; σ = 0.878 S/m; ε_r = 42.164; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: ES3DV3 - SN3127; ConvF(6.25, 6.25, 6.25); Calibrated: 8/21/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn546; Calibrated: 8/19/2015
- Phantom: SAM 1559; Type: SAM; Serial: 1559
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Head-Section Right HSL Band 28/LTE Band 28 touch M/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.248 W/kg
Head-Section Right HSL Band 28/LTE Band 28 touch M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.381 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 0.308 W/kg
SAR(1 g) = 0.245 W/kg; SAR(10 g) = 0.191 W/kg
Maximum value of SAR (measured) = 0.259 W/kg



0 dB = 0.259 W/kg = -5.87 dBW/kg

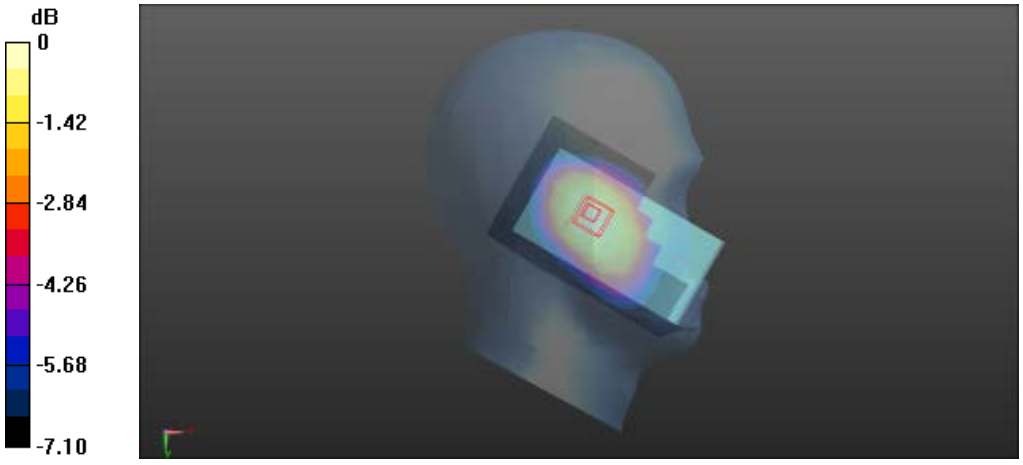
Right Side	Tilt	728MHz

Communication System: UID 0, LTE band 28 (0); Frequency: 728 MHz
Medium parameters used (interpolated): f = 728 MHz; σ = 0.878 S/m; ε_r = 42.164; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: ES3DV3 - SN3127; ConvF(6.25, 6.25, 6.25); Calibrated: 8/21/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn546; Calibrated: 8/19/2015
- Phantom: SAM 1559; Type: SAM; Serial: 1559
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Head-Section Right HSL Band 28/LTE Band 28 tilt M/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.149 W/kg
Head-Section Right HSL Band 28/LTE Band 28 tilt M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.521 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 0.174 W/kg
SAR(1 g) = 0.147 W/kg; SAR(10 g) = 0.118 W/kg
Maximum value of SAR (measured) = 0.155 W/kg



0 dB = 0.155 W/kg = -8.10 dBW/kg

LTE BAND28- 20BW-1RB (Flat)

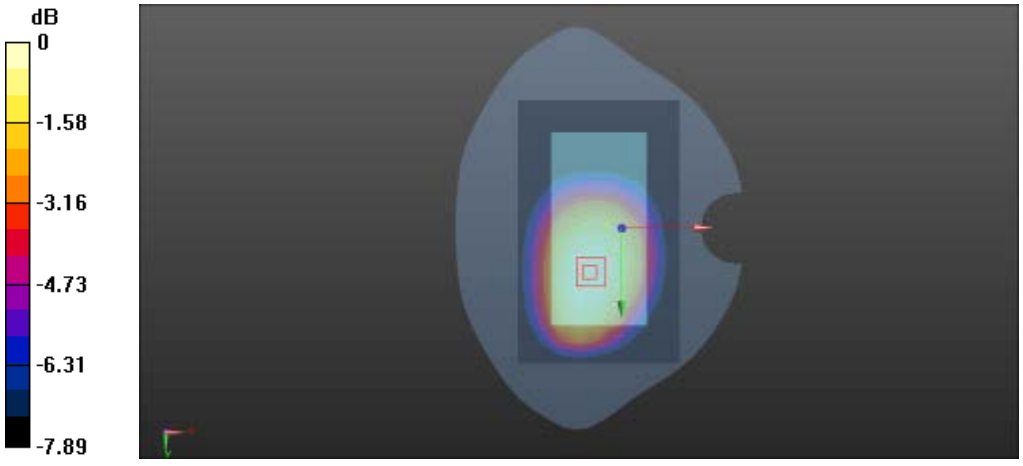
FLAT	Towards phantom	728MHz

Communication System: UID 0, LTE band 28 (0); Frequency: 728 MHz
Medium parameters used (interpolated): f = 728 MHz; σ = 0.87 S/m; ε_r = 42.267; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: ES3DV3 - SN3127; ConvF(6.25, 6.25, 6.25); Calibrated: 8/21/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = -18.0, 32.0
- Electronics: DAE4 Sn546; Calibrated: 8/19/2015
- Phantom: SAM 1559; Type: SAM; Serial: 1559
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Flat-Section MSL Band 28 TP/LTE Band 28 TP M/Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.321 W/kg
Flat-Section MSL Band 28 TP/LTE Band 28 TP M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 17.349 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 0.381 W/kg
SAR(1 g) = 0.306 W/kg; SAR(10 g) = 0.240 W/kg
Maximum value of SAR (measured) = 0.322 W/kg



0 dB = 0.322 W/kg = -4.92 dBW/kg

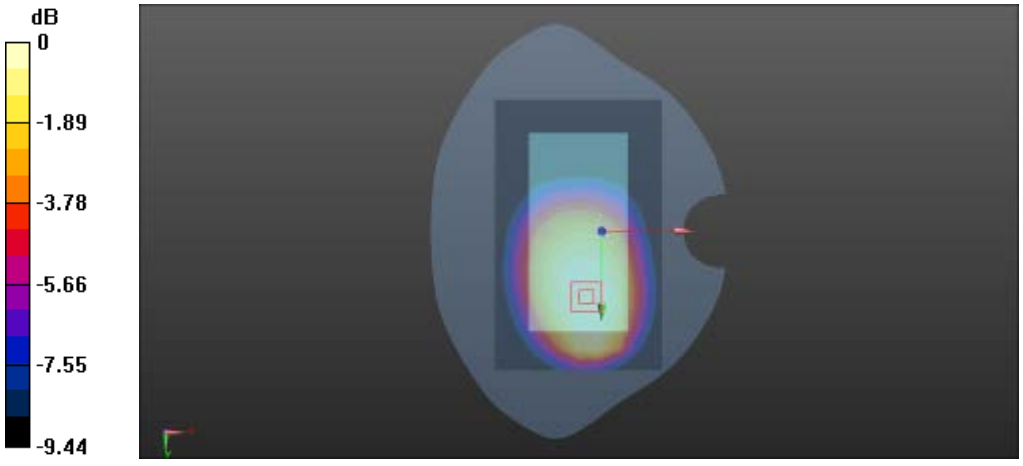
FLAT	Towards ground	728MHz

Communication System: UID 0, LTE band 28 (0); Frequency: 728 MHz
Medium parameters used (interpolated): f = 728 MHz; σ = 0.87 S/m; ε_r = 42.267; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: ES3DV3 - SN3127; ConvF(6.25, 6.25, 6.25); Calibrated: 8/21/2015;
- Sensor-Surface: 3mm (Mechanical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn546; Calibrated: 8/19/2015
- Phantom: SAM 1559; Type: SAM; Serial: 1559
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Flat-Section MSL Band 28 TG/LTE Band 28 TG M/Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.433 W/kg
Flat-Section MSL Band 28 TG/LTE Band 28 TG M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 18.433 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.506 W/kg
SAR(1 g) = 0.400 W/kg; SAR(10 g) = 0.307 W/kg
Maximum value of SAR (measured) = 0.420 W/kg



0 dB = 0.420 W/kg = -3.77 dBW/kg

LTE BAND28- 20BW-50%RB (Head)

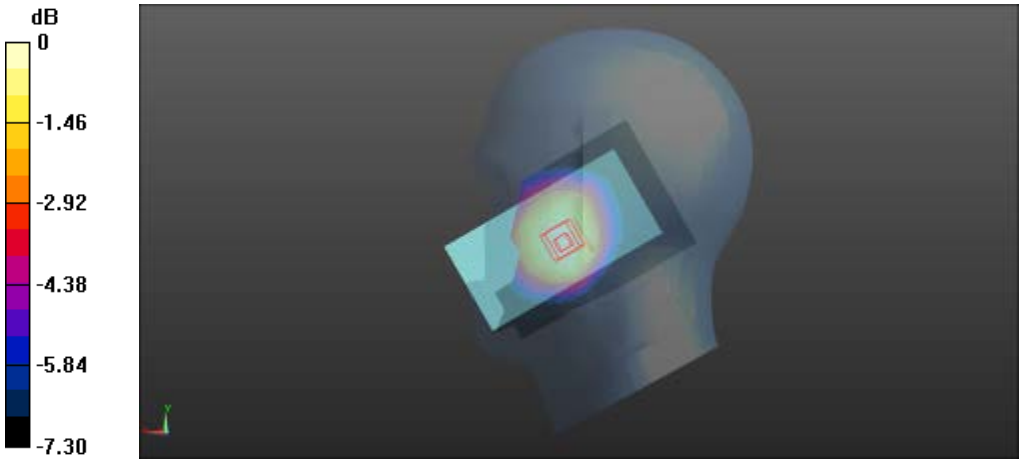
Left Side	Check	728MHz

Communication System: UID 0, LTE band 28 (0); Frequency: 728 MHz
Medium parameters used (interpolated): f = 728 MHz; σ = 0.878 S/m; ε_r = 42.164; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: ES3DV3 - SN3127; ConvF(6.25, 6.25, 6.25); Calibrated: 8/21/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn546; Calibrated: 8/19/2015
- Phantom: SAM 1559; Type: SAM; Serial: 1559
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Head-Section Left HSL Band 28/LTE Band 28 touch M/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.189 W/kg
Head-Section Left HSL Band 28/LTE Band 28 touch M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.654 V/m; Power Drift = 0.21 dB
Peak SAR (extrapolated) = 0.218 W/kg
SAR(1 g) = 0.184 W/kg; SAR(10 g) = 0.148 W/kg
Maximum value of SAR (measured) = 0.191 W/kg



0 dB = 0.191 W/kg = -7.19 dBW/kg

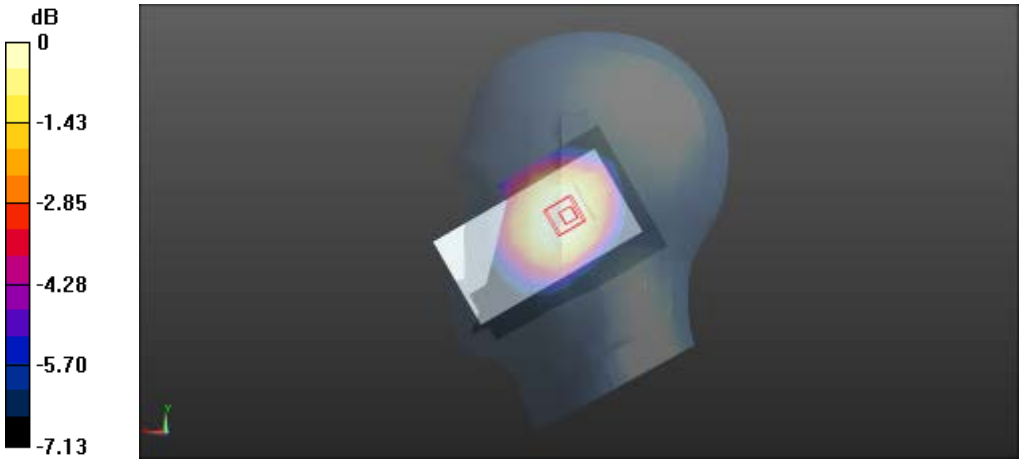
Left Side	Tilt	728MHz

Communication System: UID 0, LTE band 28 (0); Frequency: 728 MHz
Medium parameters used (interpolated): f = 728 MHz; σ = 0.878 S/m; ε_r = 42.164; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: ES3DV3 - SN3127; ConvF(6.25, 6.25, 6.25); Calibrated: 8/21/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn546; Calibrated: 8/19/2015
- Phantom: SAM 1559; Type: SAM; Serial: 1559
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Head-Section Left HSL Band 28/LTE Band 28 tilt M/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.106 W/kg
Head-Section Left HSL Band 28/LTE Band 28 tilt M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.146 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 0.124 W/kg
SAR(1 g) = 0.104 W/kg; SAR(10 g) = 0.085 W/kg
Maximum value of SAR (measured) = 0.108 W/kg



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

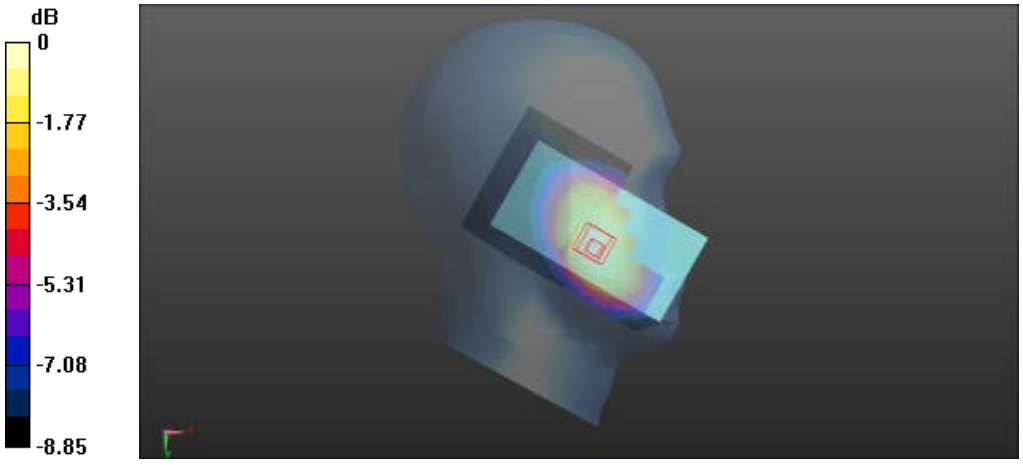
Right Side	Check	728MHz

Communication System: UID 0, LTE band 28 (0); Frequency: 728 MHz
Medium parameters used (interpolated): f = 728 MHz; σ = 0.878 S/m; ε_r = 42.164; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: ES3DV3 - SN3127; ConvF(6.25, 6.25, 6.25); Calibrated: 8/21/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn546; Calibrated: 8/19/2015
- Phantom: SAM 1559; Type: SAM; Serial: 1559
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Head-Section Right HSL Band 28/LTE Band 28 touch M/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.212 W/kg
Head-Section Right HSL Band 28/LTE Band 28 touch M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.006 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 0.264 W/kg
SAR(1 g) = 0.209 W/kg; SAR(10 g) = 0.163 W/kg
Maximum value of SAR (measured) = 0.220 W/kg



0 dB = 0.220 W/kg = -6.58 dBW/kg

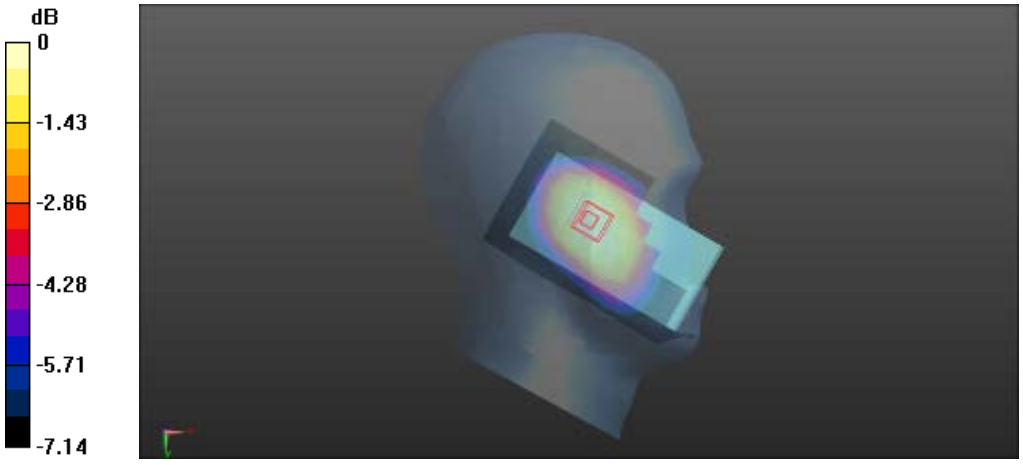
Right Side	Tilt	728MHz

Communication System: UID 0, LTE band 28 (0); Frequency: 728 MHz
Medium parameters used (interpolated): f = 728 MHz; σ = 0.878 S/m; ε_r = 42.164; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: ES3DV3 - SN3127; ConvF(6.25, 6.25, 6.25); Calibrated: 8/21/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn546; Calibrated: 8/19/2015
- Phantom: SAM 1559; Type: SAM; Serial: 1559
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Head-Section Right HSL Band 28/LTE Band 28 tilt M/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.129 W/kg
Head-Section Right HSL Band 28/LTE Band 28 tilt M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.664 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.150 W/kg
SAR(1 g) = 0.127 W/kg; SAR(10 g) = 0.102 W/kg
Maximum value of SAR (measured) = 0.131 W/kg



0 dB = 0.131 W/kg = -8.83 dBW/kg

LTE BAND28- 20BW-50%RB (Flat)

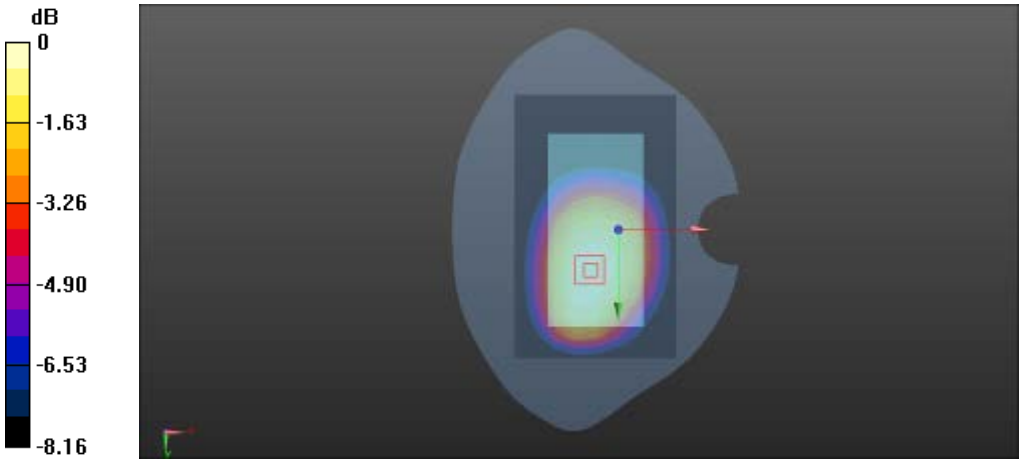
FLAT	Towards phantom	728MHz

Communication System: UID 0, LTE band 28 (0); Frequency: 728 MHz
Medium parameters used (interpolated): f = 728 MHz; σ = 0.87 S/m; ε_r = 42.267; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: ES3DV3 - SN3127; ConvF(6.25, 6.25, 6.25); Calibrated: 8/21/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = -18.0, 32.0
- Electronics: DAE4 Sn546; Calibrated: 8/19/2015
- Phantom: SAM 1559; Type: SAM; Serial: 1559
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Flat-Section MSL Band 28 TP/LTE Band 28 TP M/Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.320 W/kg
Flat-Section MSL Band 28 TP/LTE Band 28 TP M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 17.786 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.383 W/kg
SAR(1 g) = 0.311 W/kg; SAR(10 g) = 0.242 W/kg
Maximum value of SAR (measured) = 0.325 W/kg



0 dB = 0.325 W/kg = -4.88 dBW/kg

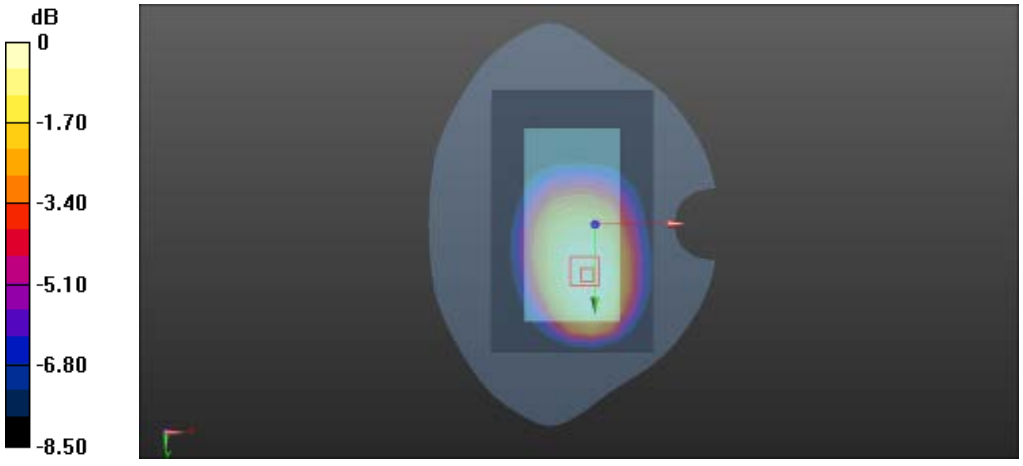
FLAT	Towards ground	728MHz

Communication System: UID 0, LTE band 28 (0); Frequency: 728 MHz
Medium parameters used (interpolated): f = 728 MHz; σ = 0.87 S/m; ε_r = 42.267; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: ES3DV3 - SN3127; ConvF(6.25, 6.25, 6.25); Calibrated: 8/21/2015;
- Sensor-Surface: 3mm (Mechanical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection), z = -18.0, 32.0
- Electronics: DAE4 Sn546; Calibrated: 8/19/2015
- Phantom: SAM 1559; Type: SAM; Serial: 1559
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Flat-Section MSL Band 28 TG/LTE Band 28 TG M/Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.433 W/kg
Flat-Section MSL Band 28 TG/LTE Band 28 TG M/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 19.726 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.506 W/kg
SAR(1 g) = 0.401 W/kg; SAR(10 g) = 0.309 W/kg
Maximum value of SAR (measured) = 0.421 W/kg



0 dB = 0.421 W/kg = -3.76 dBW/kg

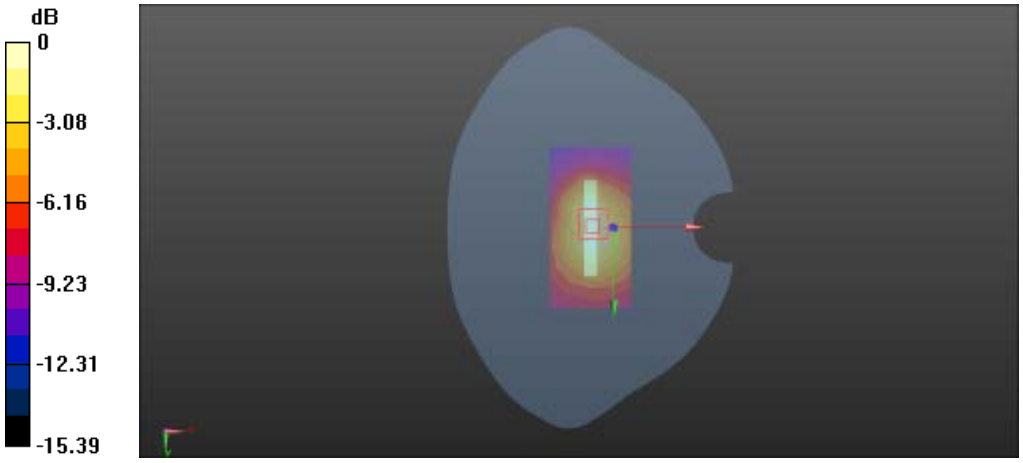
FLAT	Edge2	728MHz

Communication System: UID 0, LTE band 28 (0); Frequency: 728 MHz
Medium parameters used (interpolated): f = 728 MHz; σ = 0.87 S/m; ε_r = 42.267; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: ES3DV3 - SN3127; ConvF(6.25, 6.25, 6.25); Calibrated: 8/21/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = -18.0, 32.0
- Electronics: DAE4 Sn546; Calibrated: 8/19/2015
- Phantom: SAM 1559; Type: SAM; Serial: 1559
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Flat-Section MSL Band 28 HOT/LTE Band 28 L edge 2/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.135 W/kg
Flat-Section MSL Band 28 HOT/LTE Band 28 L edge 2/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.646 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.242 W/kg
SAR(1 g) = 0.125 W/kg; SAR(10 g) = 0.072 W/kg
Maximum value of SAR (measured) = 0.135 W/kg



0 dB = 0.135 W/kg = -8.70 dBW/kg

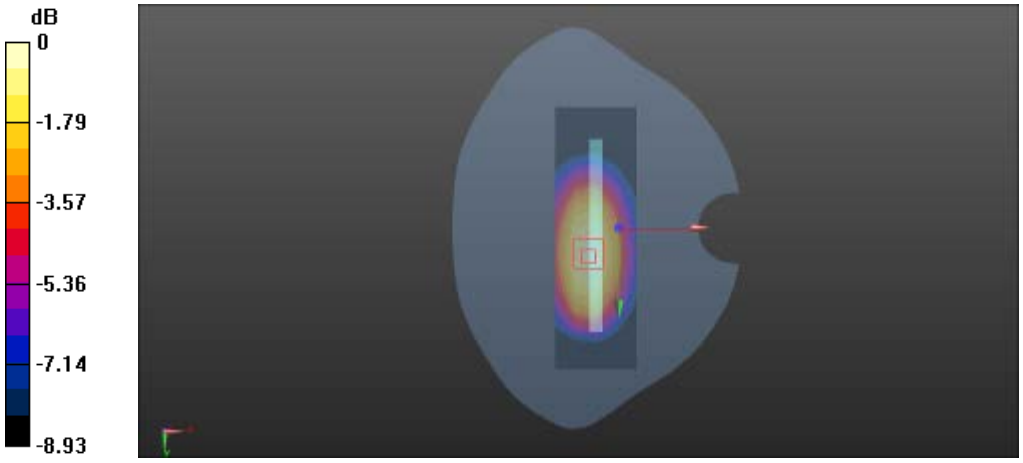
FLAT	Edge3	728MHz

Communication System: UID 0, LTE band 28 (0); Frequency: 728 MHz
Medium parameters used (interpolated): f = 728 MHz; σ = 0.87 S/m; ε_r = 42.267; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: ES3DV3 - SN3127; ConvF(6.25, 6.25, 6.25); Calibrated: 8/21/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection), z = -18.0, 32.0
- Electronics: DAE4 Sn546; Calibrated: 8/19/2015
- Phantom: SAM 1559; Type: SAM; Serial: 1559
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Flat-Section MSL Band 28 HOT/LTE Band 28 L edge 3/Area Scan (5x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.400 W/kg
Flat-Section MSL Band 28 HOT/LTE Band 28 L edge 3/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 20.631 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.550 W/kg
SAR(1 g) = 0.396 W/kg; SAR(10 g) = 0.276 W/kg
Maximum value of SAR (measured) = 0.424 W/kg



0 dB = 0.424 W/kg = -3.73 dBW/kg

APPENDIX C: RELEVANT PAGES FROM PROBE CALIBRATION REPORT(S)

EX3DV4 – SN:3708

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Client SRTC (Vitec) Certificate No: EX3-3708_Oct15

CALIBRATION CERTIFICATE

Object EX3DV4 - SN:3708

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

Calibration date October 26, 2015

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 E4419B	GB41293874	01-Apr-15 (No. 217-02128)	Mar-16
Power sensor E4412A	MY41498087	01-Apr-15 (No. 217-02128)	Mar-16
Reference 3 dB Attenuator	SN: S5054 (3c)	01-Apr-15 (No. 217-02129)	Mar-16
Reference 20 dB Attenuator	SN: S5277 (20x)	01-Apr-15 (No. 217-02132)	Mar-16
Reference 30 dB Attenuator	SN: S5129 (30b)	01-Apr-15 (No. 217-02133)	Mar-16
Reference Probe ES3DV2	SN: 3013	30-Dec-14 (No. ES3-3013_Dec14)	Dec-15
DAE4	SN: 660	14-Jan-15 (No. DAE4-660_Jan15)	Jan-16
Secondary Standards	ID	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Apr-13)	In house check: Apr-16
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-15)	In house check: Oct-16

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

Issued: October 27, 2015

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

Certificate No: EX3-3708_Oct15 Page 1 of 11

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

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, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
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:3708

Manufactured: July 21, 2009
Calibrated: October 26, 2015

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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3708

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm (μV/(V/m)²)[A]	0.19	0.35	0.44	± 10.1 %
DCP (mV)[B]	95.9	108.2	104.3	

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	162.7	±3.0 %
		Y	0.0	0.0	1.0		188.3	
		Z	0.0	0.0	1.0		147.6	
10011-CAB	UMTS-FDD (WCDMA)	X	2.76	62.1	15.2	2.91	125.0	±0.9 %
		Y	3.39	68.0	18.7		107.0	
		Z	3.38	67.4	18.5		114.8	
10021-DAB	GSM-FDD (TDMA, GMSK)	X	0.84	56.0	8.3	9.39	46.5	±1.4 %
		Y	1.79	64.4	12.2		103.4	
		Z	1.87	64.0	12.7		81.8	
10062-CAB	IEEE 802.11ah WiFi 5 GHz (OFDM, 6 Mbps)	X	9.51	66.2	19.8	8.66	114.5	±2.5 %
		Y	10.21	69.5	21.9		141.3	
		Z	9.59	67.6	20.8		103.5	

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 E²-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:3708

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)
900	41.5	0.97	9.09	9.09	9.09	0.30	1.10	± 12.0 %
1810	40.0	1.40	7.77	7.77	7.77	0.30	0.98	± 12.0 %
2000	40.0	1.40	7.78	7.78	7.78	0.31	0.95	± 12.0 %
5200	36.0	4.66	5.19	5.19	5.19	0.40	1.80	± 13.1 %
5300	35.9	4.76	4.97	4.97	4.97	0.40	1.80	± 13.1 %
5500	35.6	4.96	4.78	4.78	4.78	0.45	1.80	± 13.1 %
5600	35.5	5.07	4.46	4.46	4.46	0.50	1.80	± 13.1 %
5800	35.3	5.27	4.57	4.57	4.57	0.50	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 6 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:3708

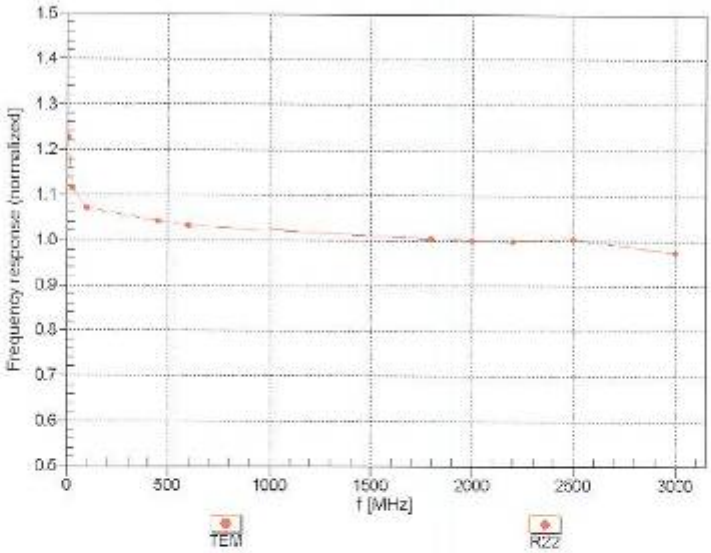
Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha [G]	Depth [G] (mm)	Unc (k=2)
900	55.0	1.05	8.91	8.91	8.91	0.28	1.05	± 12.0 %
1810	53.3	1.52	7.53	7.53	7.53	0.39	0.80	± 12.0 %
2000	53.3	1.52	7.55	7.55	7.55	0.25	1.18	± 12.0 %
5200	49.0	5.30	4.34	4.34	4.34	0.50	1.90	± 13.1 %
5300	48.9	5.42	4.18	4.18	4.18	0.50	1.90	± 13.1 %
5500	48.6	5.65	3.82	3.82	3.82	0.55	1.90	± 13.1 %
5600	48.5	5.77	3.71	3.71	3.71	0.55	1.90	± 13.1 %
5800	48.2	6.00	3.86	3.86	3.86	0.55	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:3708 October 26, 2015

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



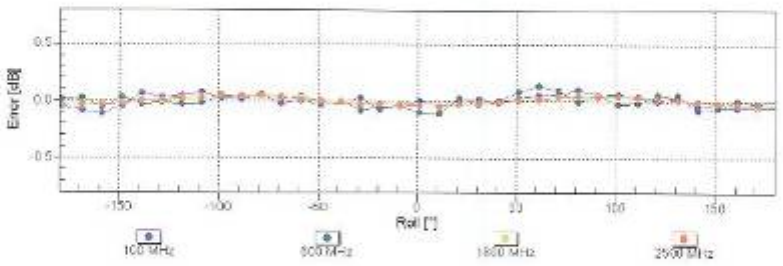
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

EX3DV4- SN:3708 October 26, 2015

Receiving Pattern (ϕ), ϑ = 0°

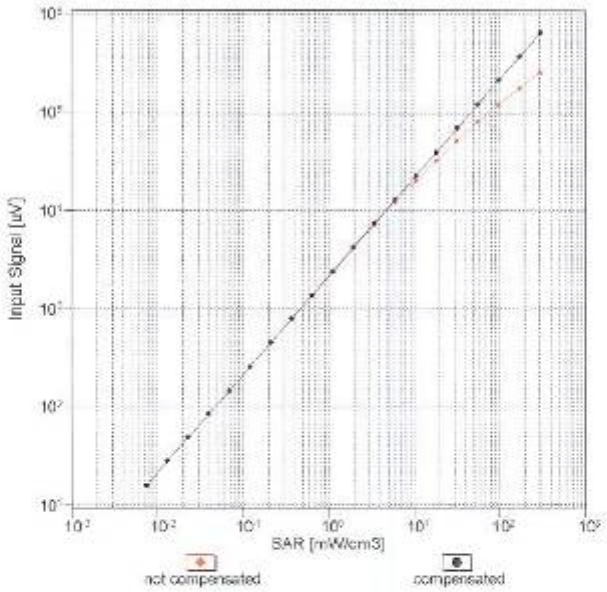
f=600 MHz,TEM

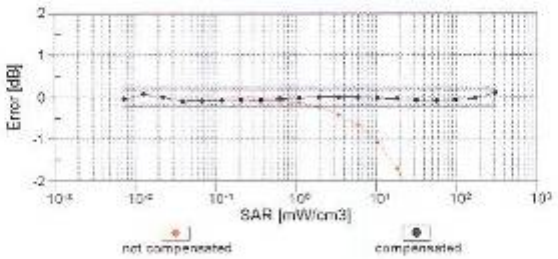
f=1800 MHz,R22



Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

Dynamic Range f(SAR$_{head}$)
(TEM cell , f_{eval}= 1900 MHz)



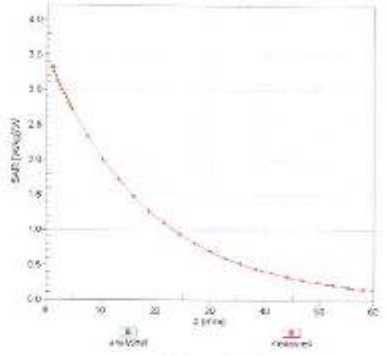


Uncertainty of Linearity Assessment: ± 0.6% (k=2)

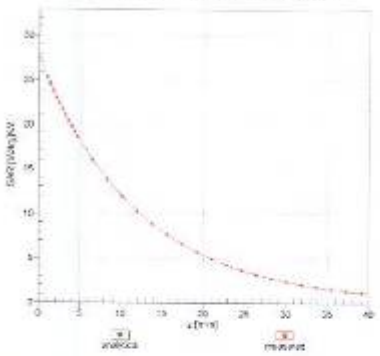
EX3DV4– SN:3708 October 26, 2015

Conversion Factor Assessment

f = 900 MHz,WGLS R9 (H_convF)

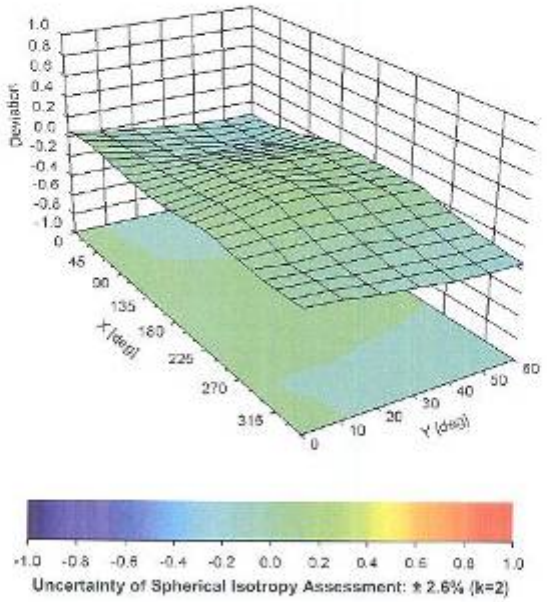


f = 1810 MHz,WGLS R22 (H_convF)



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz



Uncertainty of Spherical Isotropy Assessment: ± 2.6% (k=2)

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3708

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	1.4
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	1.4 mm

ES3DV3 – SN:3127

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S C S Schweizerischer Kalibrierdienst
Service suisse d'étalonnage
Servizio svizzero di taratura
Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Client SRTC (Vitec)

Certificate No: ES3-3127_Aug15

CALIBRATION CERTIFICATE

Object ES3DV3 - SN:3127

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

Calibration date: August 21, 2015

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 E4419B	GB41293874	01-Apr-15 (No. 217-02128)	Mar-16
Power sensor E4412A	MY41498087	01-Apr-15 (No. 217-02128)	Mar-16
Reference 3 dB Attenuator	SN: S5054 (3c)	01-Apr-15 (No. 217-02129)	Mar-16
Reference 20 dB Attenuator	SN: S5277 (20x)	01-Apr-15 (No. 217-02132)	Mar-16
Reference 30 dB Attenuator	SN: S5129 (30b)	01-Apr-15 (No. 217-02133)	Mar-16
Reference Probe ES3DV2	SN: 3013	30-Dec-14 (No. ES3-3013_Dec14)	Dec-15
DAE4	SN: 660	14-Jan-15 (No. DAE4-660_Jan15)	Jan-16
Secondary Standards	ID	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Apr-13)	In house check: Apr-16
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-14)	In house check: Oct-15

	Name	Function	Signature
Calibrated by:	Claudio Leubler	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: August 22, 2015

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

Certificate No: ES3-3127_Aug15 Page 1 of 11

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

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, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
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 ES3DV3

SN:3127

Manufactured: July 11, 2006
Calibrated: August 21, 2015

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

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3127

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	1.29	1.26	1.21	± 10.1 %
DCP (mV)[B]	101.9	102.4	102.3	

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	212.8	±3.5 %
		Y	0.0	0.0	1.0		217.6	
		Z	0.0	0.0	1.0		201.8	
10012-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps)	X	3.13	70.1	19.5	1.87	149.4	±1.2 %
		Y	3.22	70.8	19.9		128.9	
		Z	3.05	69.7	19.4		143.4	
10100-CAB	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	6.55	68.1	20.1	5.67	140.4	±1.4 %
		Y	6.53	68.0	20.0		143.6	
		Z	6.46	67.7	19.9		138.9	
10108-CAC	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	6.42	67.6	20.0	5.80	138.0	±1.4 %
		Y	6.42	67.5	19.9		141.5	
		Z	6.34	67.4	19.9		131.8	
10154-CAC	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	6.09	67.0	19.7	5.75	134.4	±1.2 %
		Y	6.05	66.8	19.6		132.2	
		Z	5.98	66.6	19.5		128.3	
10169-CAB	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	5.23	67.7	20.3	5.73	139.3	±1.4 %
		Y	5.17	67.5	20.1		142.3	
		Z	4.99	66.8	19.8		131.0	
10175-CAC	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	5.14	67.2	20.0	5.72	143.2	±1.2 %
		Y	5.07	67.0	19.9		135.5	
		Z	5.10	67.3	20.1		136.2	
10297-AAA	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	6.48	67.8	20.2	5.81	142.2	±1.4 %
		Y	6.41	67.5	19.9		135.3	
		Z	6.35	67.4	19.9		135.2	

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: ES3DV3 - SN:3127

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)
450	43.5	0.87	6.50	6.50	6.50	0.19	2.30	± 13.3 %
750	41.9	0.89	6.25	6.25	6.25	0.38	1.58	± 12.0 %
900	41.5	0.97	5.97	5.97	5.97	0.45	1.57	± 12.0 %
1450	40.5	1.20	5.17	5.17	5.17	0.24	2.18	± 12.0 %
1810	40.0	1.40	4.94	4.94	4.94	0.62	1.35	± 12.0 %
2000	40.0	1.40	4.89	4.89	4.89	0.53	1.45	± 12.0 %
2450	39.2	1.80	4.35	4.35	4.35	0.50	1.71	± 12.0 %
2600	39.0	1.96	4.26	4.26	4.26	0.80	1.26	± 12.0 %

[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: ES3DV3 - SN:3127

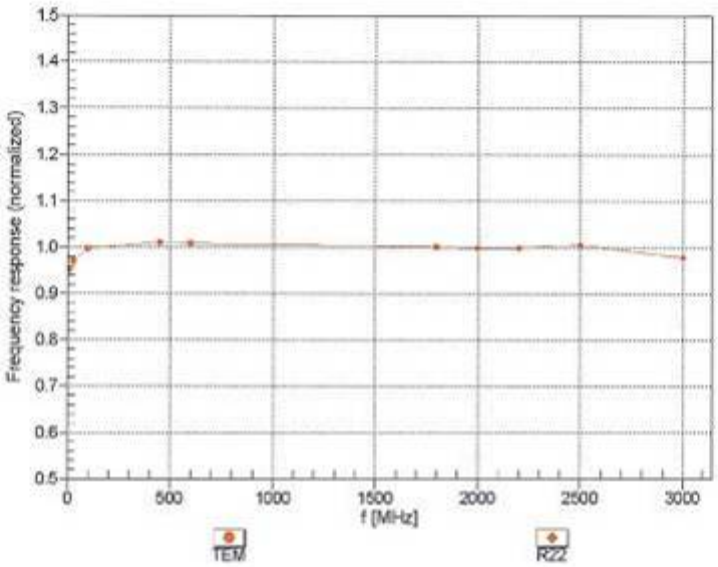
Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha [G]	Depth [G] (mm)	Unc (k=2)
450	56.7	0.94	6.82	6.82	6.82	0.12	1.50	± 13.3 %
750	55.5	0.96	6.02	6.02	6.02	0.55	1.41	± 12.0 %
900	55.0	1.05	5.88	5.88	5.88	0.67	1.27	± 12.0 %
1450	54.0	1.30	5.02	5.02	5.02	0.39	1.72	± 12.0 %
1810	53.3	1.52	4.67	4.67	4.67	0.57	1.49	± 12.0 %
2000	53.3	1.52	4.66	4.66	4.66	0.41	1.82	± 12.0 %
2450	52.7	1.95	4.19	4.19	4.19	0.80	1.13	± 12.0 %
2600	52.5	2.16	4.09	4.09	4.09	0.80	0.80	± 12.0 %

[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.

ES3DV3– SN:3127 August 21, 2015

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

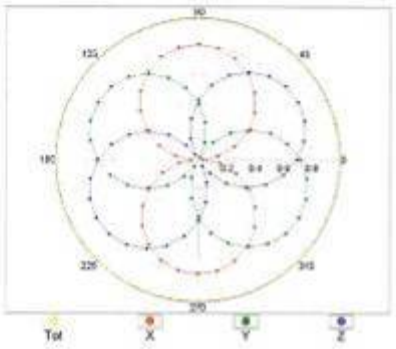


Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

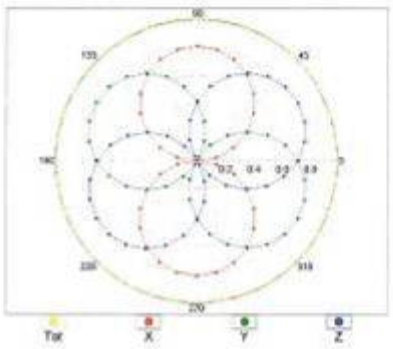
ES3DV3- SN:3127 August 21, 2015

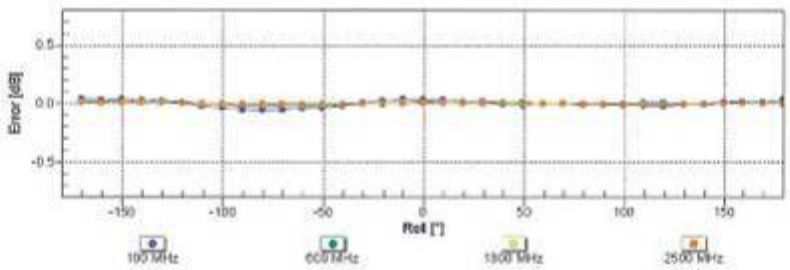
Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM



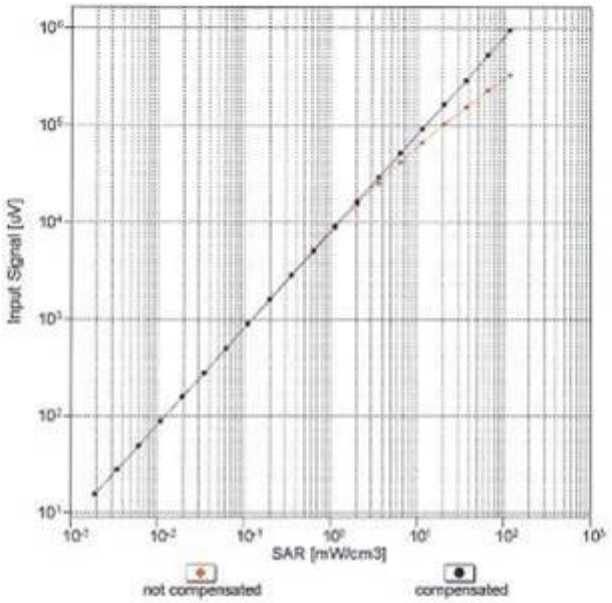
f=1800 MHz,R22

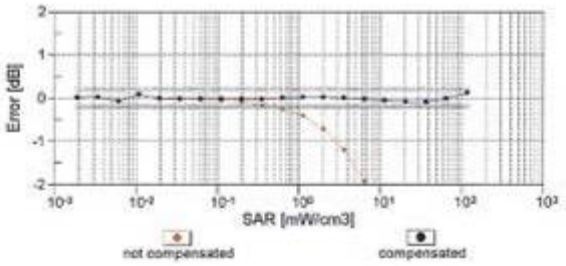




Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

Dynamic Range f(SAR$_{head}$)
(TEM cell , f_{eval}= 1900 MHz)



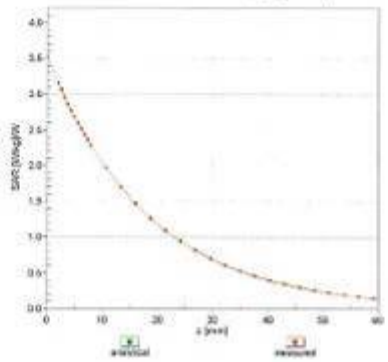


Uncertainty of Linearity Assessment: ± 0.6% (k=2)

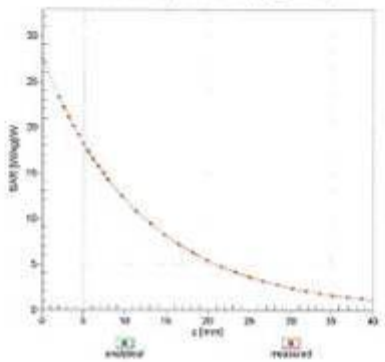
ES3DV3- SN:3127 August 21, 2015

Conversion Factor Assessment

f = 900 MHz,WGLS R9 (H_convF)

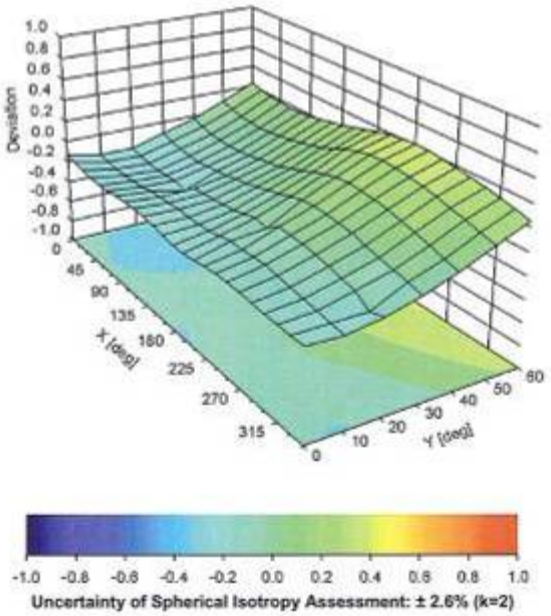


f = 1810 MHz,WGLS R22 (H_convF)



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz



Uncertainty of Spherical Isotropy Assessment: ± 2.6% (k=2)

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3127

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	-20.6
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	10 mm
Tip Diameter	4 mm
Probe Tip to Sensor X Calibration Point	2 mm
Probe Tip to Sensor Y Calibration Point	2 mm
Probe Tip to Sensor Z Calibration Point	2 mm
Recommended Measurement Distance from Surface	3 mm

APPENDIX D: RELEVANT PAGES FROM DAE REPORT(S)

DAE4 – SN:546

Schmid & Partner Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland
Phone +41 44 245 9700, Fax +41 44 245 9779
info@speag.com, http://www.speag.com

s p e a g

IMPORTANT NOTICE

USAGE OF THE DAE 4

The DAE unit is a delicate, high precision instrument and requires careful treatment by the user. There are no serviceable parts inside the DAE. Special attention shall be given to the following points:

Battery Exchange: The battery cover of the DAE4 unit is closed using a screw, over tightening the screw may cause the threads inside the DAE to wear out.

Shipping of the DAE: Before shipping the DAE to SPEAG for calibration, remove the batteries and pack the DAE in an antistatic bag. This antistatic bag shall then be packed into a larger box or container which protects the DAE from impacts during transportation. The package shall be marked to indicate that a fragile instrument is inside.

E-Stop Failures: Touch detection may be malfunctioning due to broken magnets in the E-stop. Rough handling of the E-stop may lead to damage of these magnets. Touch and collision errors are often caused by dust and dirt accumulated in the E-stop. To prevent E-stop failure, the customer shall always mount the probe to the DAE carefully and keep the DAE unit in a non-dusty environment if not used for measurements.

Repair: Minor repairs are performed at no extra cost during the annual calibration. However, SPEAG reserves the right to charge for any repair especially if rough unprofessional handling caused the defect.

DASY Configuration Files: Since the exact values of the DAE input resistances, as measured during the calibration procedure of a DAE unit, are not used by the DASY software, a nominal value of 200 MOhm is given in the corresponding configuration file.

Important Note:
Warranty and calibration is void if the DAE unit is disassembled partly or fully by the Customer.

Important Note:
Never attempt to grease or oil the E-stop assembly. Cleaning and readjusting of the E-stop assembly is allowed by certified SPEAG personnel only and is part of the annual calibration procedure.

Important Note:
To prevent damage of the DAE probe connector pins, use great care when installing the probe to the DAE. Carefully connect the probe with the connector notch oriented in the mating position. Avoid any rotational movement of the probe body versus the DAE while turning the locking nut of the connector. The same care shall be used when disconnecting the probe from the DAE.

Schmid & Partner Engineering

TN_BR040315AD DAE4.doc 11.12.2009

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Client **SRTC (Vitec)** **Certificate No: DAE4-546_Aug15**

CALIBRATION CERTIFICATE

Object	DAE4 - SD 000 D04 BM - SN: 546
Calibration procedure(s)	QA CAL-06.v29 Calibration procedure for the data acquisition electronics (DAE)
Calibration date:	August 19, 2015

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	03-Oct-14 (No:15573)	Oct-15
Secondary Standards	**ID #**	**Check Date (in house)**	**Scheduled Check**
Auto DAE Calibration Unit	SE UWS 053 AA 1001	06-Jan-15 (in house check)	In house check: Jan-16
Calibrator Box V2.1	SE UMS 006 AA 1002	06-Jan-15 (in house check)	In house check: Jan-16

	Name	Function	Signature
Calibrated by:	Eric Hainfeld	Technician	
Approved by:	Fin Bomholt	Deputy Technical Manager	

Issued: August 19, 2015

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

Certificate No: DAE4-546_Aug15 Page 1 of 5

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

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	405.336 ± 0.02% (k=2)	404.092 ± 0.02% (k=2)	404.198 ± 0.02% (k=2)
Low Range	3.98692 ± 1.50% (k=2)	3.95822 ± 1.50% (k=2)	3.97804 ± 1.50% (k=2)

Connector Angle

Connector Angle to be used in DASY system	238.0 ° ± 1 °

Appendix (Additional assessments outside the scope of SCS0108)

1. DC Voltage Linearity

High Range		Reading (μV)	Difference (μV)	Error (%)
Channel X	+ Input	200000.17	2.61	0.00
Channel X	+ Input	20001.92	0.26	0.00
Channel X	- Input	-19996.52	4.00	-0.02
Channel Y	+ Input	199998.64	0.80	0.00
Channel Y	+ Input	20000.01	-1.60	-0.01
Channel Y	- Input	-20002.44	-1.87	0.01
Channel Z	+ Input	199998.98	1.47	0.00
Channel Z	+ Input	19999.86	-1.78	-0.01
Channel Z	- Input	-19999.36	1.28	-0.01

Low Range		Reading (μV)	Difference (μV)	Error (%)
Channel X	+ Input	2001.57	0.04	0.00
Channel X	+ Input	202.28	0.46	0.23
Channel X	- Input	-197.49	0.58	-0.29
Channel Y	+ Input	2001.33	-0.16	-0.01
Channel Y	+ Input	200.95	-0.77	-0.38
Channel Y	- Input	-197.62	0.49	-0.25
Channel Z	+ Input	2001.37	-0.14	-0.01
Channel Z	+ Input	200.95	-0.72	-0.36
Channel Z	- Input	-199.01	-0.75	0.38

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	1.65	-0.31
	- 200	2.62	0.50
Channel Y	200	-0.53	-0.83
	- 200	-2.23	-2.01
Channel Z	200	2.37	2.32
	- 200	-4.10	-4.41

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	-	-3.10	-2.81
Channel Y	200	9.67	-	-0.28
Channel Z	200	5.63	7.07	-

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	15842	16118
Channel Y	16154	14844
Channel Z	15905	16297

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	1.14	0.46	2.34	0.37
Channel Y	-0.92	-2.45	0.81	0.55
Channel Z	-0.38	-1.37	0.99	0.43

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

DAE4 – SN:720

Schmid & Partner Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland
Phone +41 44 245 9700, Fax +41 44 245 9779
info@speag.com, http://www.speag.com

s p e a g

720

IMPORTANT NOTICE

USAGE OF THE DAE 4

The DAE unit is a delicate, high precision instrument and requires careful treatment by the user. There are no serviceable parts inside the DAE. Special attention shall be given to the following points.

Battery Exchange: The battery cover of the DAE4 unit is closed using a screw, over tightening the screw may cause the threads inside the DAE to wear out.

Shipping of the DAE: Before shipping the DAE to SPEAG for calibration, remove the batteries and pack the DAE in an antistatic bag. This antistatic bag shall then be packed into a larger box or container which protects the DAE from impacts during transportation. The package shall be marked to indicate that a fragile instrument is inside.

E-Stop Failures: Touch detection may be malfunctioning due to broken magnets in the E-stop. Rough handling of the E-stop may lead to damage of these magnets. Touch and collision errors are often caused by dust and dirt accumulated in the E-stop. To prevent E-stop failure, the customer shall always mount the probe to the DAE carefully and keep the DAE unit in a non-dusty environment if not used for measurements.

Repair: Minor repairs are performed at no extra cost during the annual calibration. However, SPEAG reserves the right to charge for any repair especially if rough unprofessional handling caused the defect.

DASY Configuration Files: Since the exact values of the DAE input resistances, as measured during the calibration procedure of a DAE unit, are not used by the DASY software, a nominal value of 200 MOhm is given in the corresponding configuration file.

Important Note:
Warranty and calibration is void if the DAE unit is disassembled partly or fully by the Customer.

Important Note:
Never attempt to grease or oil the E-stop assembly. Cleaning and readjusting of the E-stop assembly is allowed by certified SPEAG personnel only and is part of the annual calibration procedure.

Important Note:
To prevent damage of the DAE probe connector pins, use great care when installing the probe to the DAE. Carefully connect the probe with the connector notch oriented in the mating position. Avoid any rotational movement of the probe body versus the DAE while turning the locking nut of the connector. The same care shall be used when disconnecting the probe from the DAE.

Schmid & Partner Engineering

TN_BR040315AD DAE4.doc 11.12.2009

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

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	403.371 ± 0.02% (k=2)	404.803 ± 0.02% (k=2)	403.221 ± 0.02% (k=2)
Low Range	3.95418 ± 1.50% (k=2)	3.96453 ± 1.50% (k=2)	3.95678 ± 1.50% (k=2)

Connector Angle

Connector Angle to be used in DASY system	24.5 ° ± 1 °

Appendix (Additional assessments outside the scope of SCS0108)

1. DC Voltage Linearity

High Range		Reading (μV)	Difference (μV)	Error (%)
Channel X	+ Input	200039.17	0.08	0.00
Channel X	+ Input	20007.85	2.88	0.01
Channel X	- Input	-20003.79	1.66	-0.01
Channel Y	+ Input	200038.17	1.27	0.00
Channel Y	+ Input	20005.71	0.94	0.00
Channel Y	- Input	-20005.02	0.65	-0.00
Channel Z	+ Input	200037.58	0.29	0.00
Channel Z	+ Input	20002.16	-2.60	-0.01
Channel Z	- Input	-20009.49	-3.85	0.02

Low Range		Reading (μV)	Difference (μV)	Error (%)
Channel X	+ Input	2000.87	-0.43	-0.02
Channel X	+ Input	201.73	0.49	0.25
Channel X	- Input	-197.98	0.71	-0.36
Channel Y	+ Input	2000.71	-0.43	-0.02
Channel Y	+ Input	200.60	-0.47	-0.23
Channel Y	- Input	-199.19	-0.20	0.10
Channel Z	+ Input	2001.53	0.36	0.02
Channel Z	+ Input	200.20	-0.80	-0.40
Channel Z	- Input	-199.10	-0.12	0.06

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	-6.45	-7.56
	- 200	9.03	8.09
Channel Y	200	15.19	15.61
	- 200	-16.95	-16.86
Channel Z	200	-16.60	-16.82
	- 200	14.86	14.92

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	-	0.52	-2.99
Channel Y	200	8.70	-	0.42
Channel Z	200	5.85	6.72	-

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	16154	16284
Channel Y	16181	16307
Channel Z	16425	15796

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	-0.59	-1.81	0.44	0.51
Channel Y	0.28	-0.71	1.50	0.42
Channel Z	0.28	-2.44	2.30	0.74

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

APPENDIX E: RELEVANT PAGES FROM DIPOLE VALIDATION KIT REPORT(S)

D835V2 – SN:4d023

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Client SRTC (Vitec)

Certificate No: D835V2-4d023_Oct15

CALIBRATION CERTIFICATE

Object	D835V2 - SN: 4d023
Calibration procedure(s)	QA CAL-05.v9 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	October 20, 2015

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 EPM-442A	GB37480704	07-Oct-15 (No. 217-02222)	Oct-16
Power sensor HP 8481A	US37292783	07-Oct-15 (No. 217-02222)	Oct-16
Power sensor HP 8481A	MY41092317	07-Oct-15 (No. 217-02223)	Oct-16
Reference 20 dB Attenuator	SN: 5058 (20k)	01-Apr-15 (No. 217-02131)	Mar-16
Type-N mismatch combination	SN: 5047.2 / 06327	01-Apr-15 (No. 217-02134)	Mar-16
Reference Probe EX3DV4	SN: 7349	30-Dec-14 (No. EX3-7349_Dec14)	Dec-15
DAE4	SN: 601	17-Aug-15 (No. DAE4-601_Aug15)	Aug-16

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator R&S SMT-06	100972	15-Jun-15 (in house check Jun-15)	In house check: Jun-18
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-15)	In house check: Oct-16

	Name	Function	Signature
Calibrated by:	Leif Klysner	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: October 21, 2015

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

Certificate No: D835V2-4d023_Oct15 Page 1 of 8

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

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, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
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"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

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%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	835 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	41.5	0.90 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	41.3 ± 6 %	0.94 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.39 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**9.24 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.55 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**6.04 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Body TSL parameters	22.0 °C	55.2	0.97 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	53.2 ± 6 %	1.00 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.42 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**9.38 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.57 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**6.13 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	53.3 Ω - 3.8 jΩ
Return Loss	- 26.2 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	48.6 Ω - 5.4 jΩ
Return Loss	- 24.9 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.389 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	December 17, 2004

DASY5 Validation Report for Head TSL

Date: 20.10.2015

Test Laboratory: SPEAG, Zurich, Switzerland

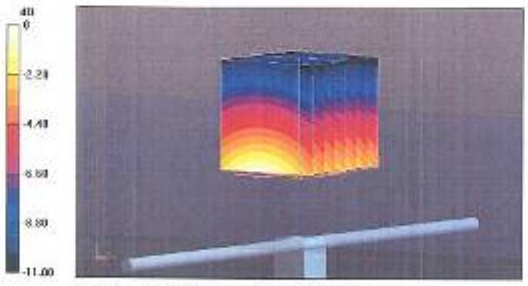
DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d023

Communication System: UID 0 - CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 0.94 S/m; ε_r = 41.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

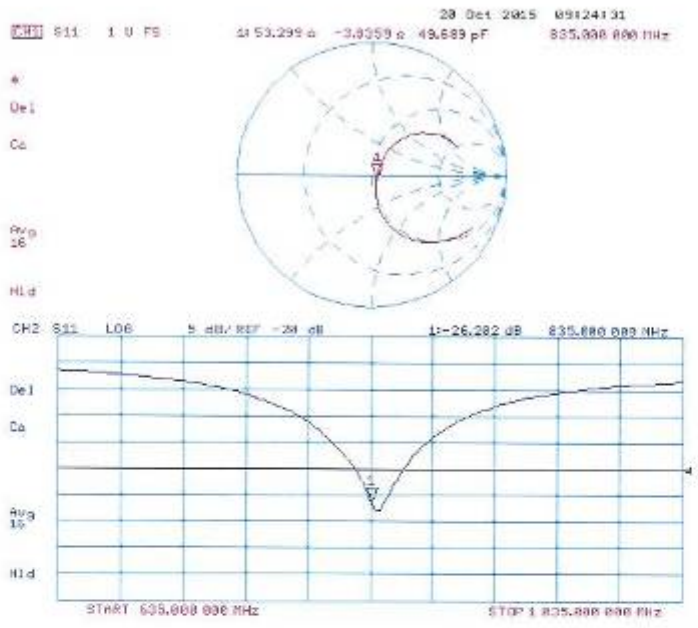
- Probe: EX3DV4 - SN7349; ConvF(9.77, 9.77, 9.77); Calibrated: 30.12.2014;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 17.08.2015
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 61.11 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 3.57 W/kg
SAR(1 g) = 2.39 W/kg; SAR(10 g) = 1.55 W/kg
Maximum value of SAR (measured) = 3.16 W/kg

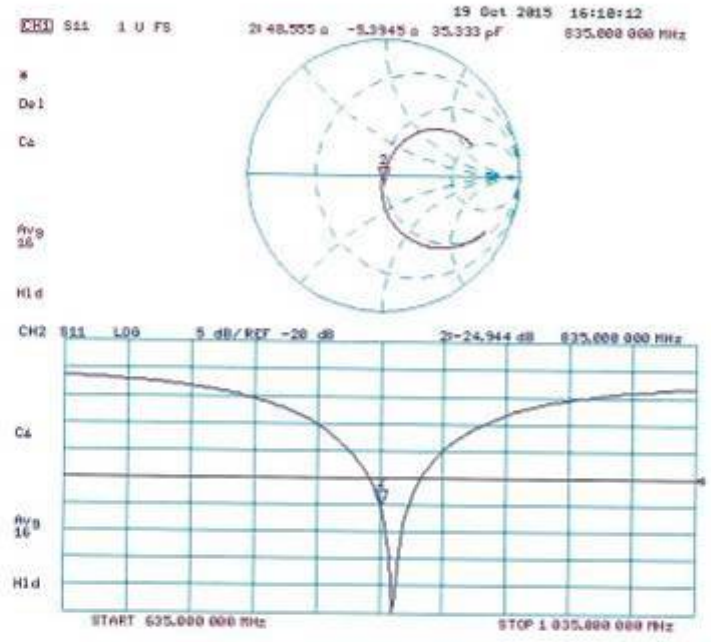


0 dB = 3.16 W/kg = 5.00 dBW/kg

Impedance Measurement Plot for Head TSL



Impedance Measurement Plot for Body TSL



DASY5 Validation Report for Body TSL

Date: 19.10.2015

Test Laboratory: SPEAG, Zurich, Switzerland

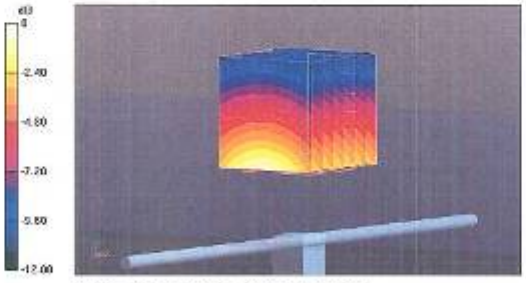
DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d023

Communication System: UID 0 - CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 1 S/m; ε_r = 53.2; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(9.72, 9.72, 9.72); Calibrated: 30.12.2014;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 17.08.2015
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 60.02 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 3.65 W/kg
SAR(1 g) = 2.42 W/kg; SAR(10 g) = 1.57 W/kg
Maximum value of SAR (measured) = 3.23 W/kg



0 dB = 3.23 W/kg = 5.09 dBW/kg

D1900V2 – SN:5d113

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Client SRTC (Vitec)

Certificate No: D1900V2-5d113_Oct15

CALIBRATION CERTIFICATE

Object	D1900V2 - SN: 5d113
Calibration procedure(s)	QA CAL-05.v9 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	October 19, 2015

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 EPM-442A	GB37480704	07-Oct-15 (No. 217-02222)	Oct-16
Power sensor HP 8481A	US37292783	07-Oct-15 (No. 217-02222)	Oct-16
Power sensor HP 8481A	MY41092317	07-Oct-15 (No. 217-02223)	Oct-16
Reference 20 dB Attenuator	SN: 5058 (20k)	31-Mar-15 (No. 217-02131)	Mar-16
Type-N mismatch combination	SN: 5047.2 / 06327	01-Apr-15 (No. 217-02134)	Mar-16
Reference Probe EX3DV4	SN: 7349	30-Dec-14 (No. EX3-7349_Dec14)	Dec-15
DAE4	SN: 601	17-Aug-15 (No. DAE4-601_Aug15)	Aug-16

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator R&S SMT-06	100972	15-Jun-15 (in house check Jun-15)	In house check: Jun-18
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-15)	In house check: Oct-16

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

Issued: October 19, 2015

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

Certificate No: D1900V2-5d113_Oct15 Page 1 of 8

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

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, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
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"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

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%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1900 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	38.9 ± 6 %	1.38 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	---	---

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.82 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**39.4 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.13 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**20.5 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	53.3	1.52 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	52.3 ± 6 %	1.51 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	---	---

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	9.89 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**39.5 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.21 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**20.8 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	52.7 Ω + 8.3 jΩ
Return Loss	- 21.4 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	47.7 Ω + 8.3 jΩ
Return Loss	- 21.1 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.200 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	July 24, 2009

DASY5 Validation Report for Head TSL

Date: 19.10.2015

Test Laboratory: SPEAG, Zurich, Switzerland

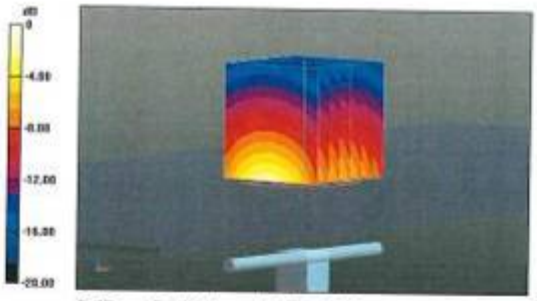
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d113

Communication System: UID 0 - CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.38 S/m; ε_r = 38.9; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

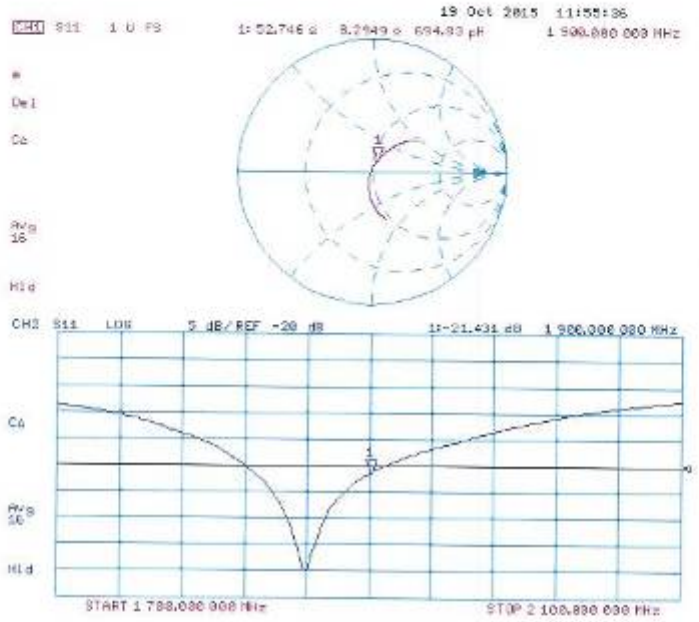
- Probe: EX3DV4 - SN7349; ConvF(8.14, 8.14, 8.14); Calibrated: 30.12.2014;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 17.08.2015
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 108.3 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 18.5 W/kg
SAR(1 g) = 9.82 W/kg; SAR(10 g) = 5.13 W/kg
Maximum value of SAR (measured) = 15.2 W/kg



0 dB = 15.2 W/kg = 11.82 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 19.10.2015

Test Laboratory: SPEAG, Zurich, Switzerland

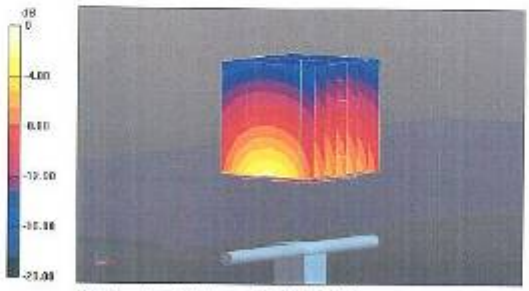
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d113

Communication System: UID 0 - CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.51 S/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

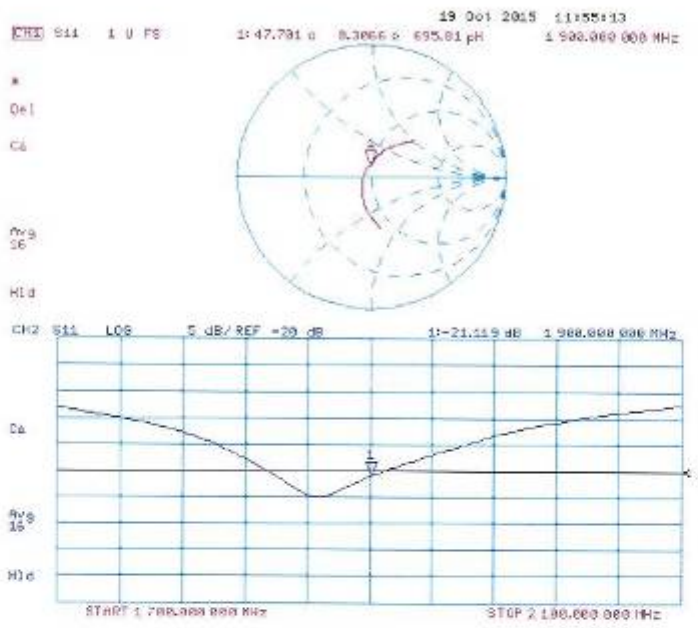
- Probe: EX3DV4 - SN7349; ConvF(7.9, 7.9, 7.9); Calibrated: 30.12.2014;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 17.08.2015
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 104.0 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 17.7 W/kg
SAR(1 g) = 9.89 W/kg; SAR(10 g) = 5.21 W/kg
Maximum value of SAR (measured) = 15.1 W/kg



0 dB = 15.1 W/kg = 11.79 dBW/kg

Impedance Measurement Plot for Body TSL



D2450V2 – SN:738

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Client SRTC (Vitec)

Certificate No: D2450V2-738_Oct15

CALIBRATION CERTIFICATE

Object: D2450V2 - SN: 738

Calibration procedure(s): QA CAL-05.v9
Calibration procedure for dipole validation kits above 700 MHz

Calibration date: October 21, 2015

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 EPM-442A	GB37480704	07-Oct-15 (No. 217-02222)	Oct-16
Power sensor HP 8481A	US37292783	07-Oct-15 (No. 217-02222)	Oct-16
Power sensor HP 8481A	MY41092317	07-Oct-15 (No. 217-02223)	Oct-16
Reference 20 dB Attenuator	SN: 5058 (20k)	01-Apr-15 (No. 217-02131)	Mar-16
Type-N mismatch combination	SN: 5047.2 / 06327	01-Apr-15 (No. 217-02134)	Mar-16
Reference Probe EX3DV4	SN: 7349	30-Dec-14 (No. EX3-7349_Dec14)	Dec-15
DAE4	SN: 601	17-Aug-15 (No. DAE4-601_Aug15)	Aug-16

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator R&S SMT-06	100972	15-Jun-15 (in house check Jun-15)	In house check: Jun-18
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-15)	In house check: Oct-16

	Name	Function	Signature
Calibrated by:	Leif Klysner	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: October 22, 2015

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

Certificate No: D2450V2-738_Oct15 Page 1 of 8

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

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, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
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"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

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%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2450 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	39.2	1.80 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	38.0 ± 6 %	1.84 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	---	---

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	13.4 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**52.7 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.17 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**24.4 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Body TSL parameters	22.0 °C	52.7	1.95 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	52.8 ± 6 %	1.99 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	---	---

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	13.1 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**51.9 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	6.14 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**24.4 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	54.3 Ω + 5.7 jΩ
Return Loss	- 23.3 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	49.7 Ω + 7.1 jΩ
Return Loss	- 23.0 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.157 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	August 26, 2003

DASY5 Validation Report for Head TSL

Date: 21.10.2015

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz ; Type: D2450V2; Serial: D2450V2 - SN: 738

Communication System: UID 0 - CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 1.84 S/m; ε_r = 38; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

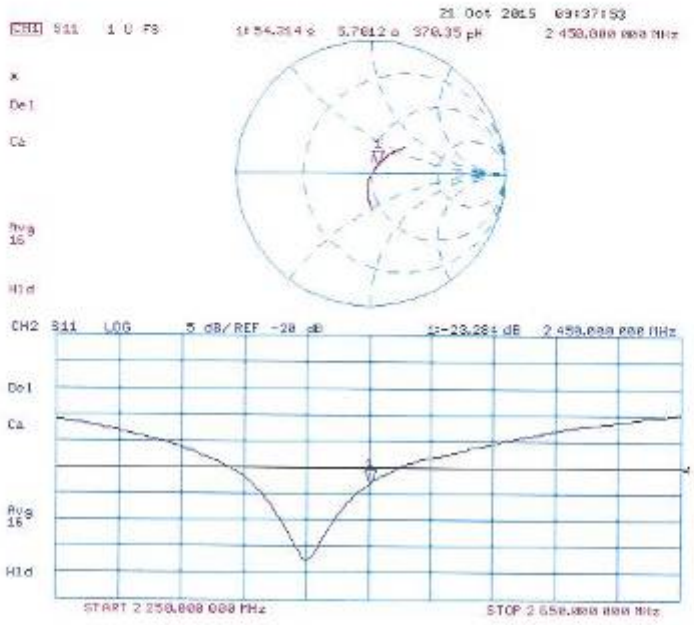
DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(7.67, 7.67, 7.67); Calibrated: 30.12.2014;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 17.08.2015
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 114.5 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 27.8 W/kg
SAR(1 g) = 13.4 W/kg; SAR(10 g) = 6.17 W/kg
Maximum value of SAR (measured) = 22.2 W/kg

0 dB = 22.2 W/kg = 13.46 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 21.10.2015

Test Laboratory: SPEAG, Zurich, Switzerland

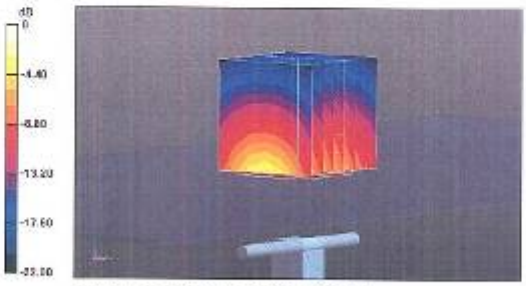
DUT: Dipole 2450 MHz ; Type: D2450V2; Serial: D2450V2 - SN: 738

Communication System: UID 0 - CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 1.99 S/m; ε_r = 52.8; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

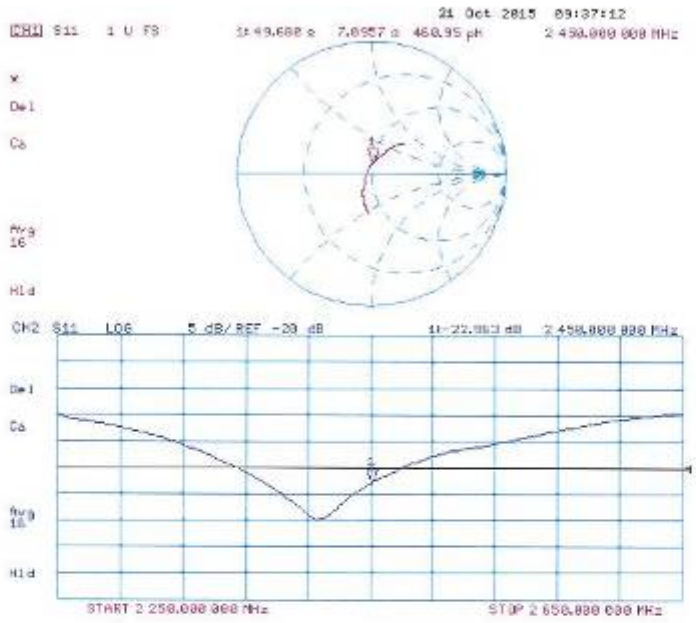
- Probe: EX3DV4 - SN7349; ConvF(7.53, 7.53, 7.53); Calibrated: 30.12.2014;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 17.08.2015
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 108.5 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 26.0 W/kg
SAR(1 g) = 13.1 W/kg; SAR(10 g) = 6.14 W/kg
Maximum value of SAR (measured) = 21.3 W/kg



0 dB = 21.3 W/kg = 13.28 dBW/kg

Impedance Measurement Plot for Body TSL



APPENDIX F: TEST SETUP

Appendix Test Setup

--- End of report---