Certificate Number: 5055.02

TEST REPORT FOR SAR TESTING

Report No.: SRTC2019-9004(F)-19101501(H)

Product Name: Mobile Phone

Product Model: HLTE220E

Applicant: Hisense International Co., Ltd.

Manufacturer: Hisense Communications Co., Ltd.

Specification: Part 2.1093

IEEE Std 1528

KDB Procedures

FCC ID: 2ADOBHLTE220E

The State Radio_monitoring_center Testing Center (SRTC)

15th Building, No.30 Shixing Street, Shijingshan District, Beijing, P.R. China

Tel: 86-10-57996183 Fax: 86-10-57996388

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.
The certification and accreditation identifiers used in this report shall not be applicable to the tested or calibrated samples thereof. The manufacturer shall not mark the tested samples or items (or a separate part of the item) with the identifiers of certification and accreditation to mislead relevant parties about the tested samples or items.

1.2 Information about the testing laboratory

Company:	The State Radio_monitoring_center Testing Center (SRTC)
Address:	15th Building, No.30 Shixing Street, Shijingshan District, Beijing P.R. China
City:	Beijing
Country or Region:	P.R. China
Contacted person:	Liu Jia
Tel:	+86 10 57996183
Fax:	+86 10 57996388
Email:	liujiaf@srtc.org.cn

1.3 Applicant's details

Company:	Hisense International Co., Ltd.
Address:	Floor 22, Hisense Tower, 17 Donghai Xi Road, Qingdao, 266071, China
City:	Qingdao
Country or Region:	China
Contacted person:	Geng Ruifeng
Tel:	+86-532-80877742
Fax:	---
Email:	gengruifeng@hisense.com

1.4 Manufacturer's details

Company:	Hisense Communications Co., Ltd.
Address:	No.218 Qianwangang Road, Economic & Technological Development Zone, Qingdao, China
City:	Qingdao
Country or Region:	China
Contacted person:	Song Haibin
Tel:	+86-532-55753700
Fax:	---
Email:	songhaibin@hisense.com

1.5 Test Environment

Date of Receipt of test sample at SRTC:	2019.10.15
Testing Start Date:	2019.10.15
Testing End Date:	2019.10.29

Environmental Data:	Temperature (°C)	Humidity (%)
Ambient	25	40

Normal Supply Voltage (Vdc.):	3.8

2. DESCRIPTION OF THE DEVICE UNDER TEST

2.1 Final Equipment Build Status

Wireless Technology and Frequency Bands	☒GSM Band: GSM850/PCS1900 ☒WCDMA Band: FDD II/IV/V ☒LTE Band: 2/4/5/7/12 ☒Bluetooth Band: 2.4GHz ☒Wi-Fi Band: 2.4GHz/5GHz
Mode	GSM ☒Voice (GMSK) ☒GPRS (GMSK) ☒EGPRS (GMSK) WCDMA ☒UMTS Rel. 99 (Voice & Data) ☒HSDPA (Rel. 5) ☒HSUPA (Rel. 6) ☐HSPA+ (Rel.7) ☐DC-HSDPA (Rel.8) Wi-Fi 2.4GHz ☒802.11b ☒802.11g ☒802.11n (20MHz) Wi-Fi 5GHz ☒802.11a ☒802.11n (20MHz) ☒802.11n (40MHz) Bluetooth ☒BR(GFSK) ☒EDR (π/4 DQPSK, 8-DPSK) ☒BLE(GFSK) LTE ☒QPSK ☒16QAM ☐64QAM
Duty Cycle	GSM Voice: 12.5%; GPRS: 12.5% (1 Slot), 25% (2 Slots), 37.5% (3 Slots), 50% (4 Slots) WCDMA: 100% Bluetooth: 30.07% (DH1), 43.49% (DH3), 46.06% (DH5) Wi-Fi 2.4GHz:802.11b: 99.7%/11g: 97.6%/11n 20: 97.4% Wi-Fi 5GHz:802.11a: 97.6%/11n 20: 97.4%/11n 40: 95.1%
GPRS/EGPRS Multi-Slot Class	☐Class 8 - One Up ☐Class 10 - Two Up ☒Class 12 - Four Up ☐Class 33 - 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	Not Supported

2.2 Support Equipment

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

State of sample	Normal
Batteries	Li-Lon/Shenzhen Tianjin New Energy Technology Co.,Ltd ;
H/W Version S/W Version	YK680--MB-V0.1 Hisense_HLTE220E_MX02_L201.01_20190926
IMEI	863501040485040
Notes	As the information described above, we use test sample offered by the customer. The relevant tests have been performed in order to verify in which combination case the EUT would have the worst features. **The product: Main supply and Secondary Supply are different from the camera, Changes will not affect any RF performance. The test shown in the report is when Battery1 is used as the main power source and Battery2 is the second power source. We only test the worst case of the variant product based on the data of the original product.**

Main Supply

Part Name	Model	Supplier(Brand)
Camera	ST-CFKS816-5MFF-V2.0/ ST-CFKS816-30WFF-V2.0/	Union Image
Camera	ST-CFKS816BF-V2.0	Union Image
CTP	CCF11700-6.0	Jiangxi Holitech Technology Co.,Ltd
Data cable	KLKS816AUSB	Dongguan Keling Electronic Technology Co., Ltd.
Earphone	KLKS816A	Shenzhen Jinchuangju Electronic Technology Co.,Ltd.

Secondary Supply

Part Name	Model Name	supplier
Camera	HTP1157 HTV1155	JIXIHOLITECH TECHNOLGY CO.LTD
Camera	HTV1156	JIXIHOLITECH TECHNOLGY CO.LTD
CTP	Y152073B2-D-X	Dongguan Yuye Commumication Technology CO.,ted
Data cable	A106-0022-S	SHENZHEN KOAR ELECTIC CO.,LTD
Earphone	W1G513A06S	Shenzhen Jinchuangju Electronic Technology Co.,Ltd.

3. REFERENCE SPECIFICATION

Specification	Version	Title
Part 2.1093	2019	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 248227 D01	v02r02	SAR GUIDANCE FOR IEEE 802.11 (Wi-Fi) TRANSMITTERS
KDB 865664 D01	v01r04	SAR Measurement from 100 MHz to 6 GHz
KDB 865664 D02	v01r02	RF Exposure Reporting
KDB 941225 D05	v02r05	SAR for LTE Devices
KDB 941225 D05A	v01r02	LTE Rel.10 KDB Inquiry Sheet

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 middle channel, and few of them were also performed on lowest 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-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 DAE and 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 16bit 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 Stimulant Recipes

The following tissue stimulants were used for Head and Body test:

Name	Broadband tissue-equivalent liquid
Type for Head	HBBL600-6000V6 Head Simulating Liquid
Type for Body	HBBL600-6000V6 Head Simulating Liquid

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 Dasy5 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. There are 15 mm × 15 mm (equal or less than 2GHz), 12 mm × 12 mm (from 2GHz~3GHz) and 10mm x 10mm (above 5GHz) 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 7x7x7 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 triradiate 3-D / bivariate 2-D quadratic function is computed for each measurement point and fitted to neighboring 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.
The second supply is tested for the worst mode of the main supply and the SAR values is less than main supply test result, so the result summary only reported SAR values for main supply.

Exposure Position	Frequency Band	1g-SAR Result(W/kg)	Highest 1g-SAR Result(W/kg)		Limit (W/kg)/1g	Result
Head	GSM 850	0.47	1.02	1.20	1.6	Pass
	GSM 1900	0.40				
	WCDMA Band 2	0.21				
	WCDMA Band 4	0.24				
	WCDMA Band 5	0.17				
	LTE Band 2	0.29				
	LTE Band 4	0.30				
	LTE Band 5	0.22				
	LTE Band 7	0.43				
	LTE Band 12	0.14				
	BT/BLE 2.4GHz Band	0.09				
	WLAN 2.4GHz	1.02 (main supply) 0.85 (second supply)				
	WLAN 5GHz U-NII-1	0.84				
	WLAN 5GHz U-NII-2A	0.99				
	WLAN 5GHz U-NII-3	0.71				
Body-Worn (10mm Gap)	GSM 850	0.60	0.77			
	GSM 1900	0.66				
	WCDMA Band 2	0.57				
	WCDMA Band 4	0.69				
	WCDMA Band 5	0.28				
	LTE Band 2	0.71				
	LTE Band 4	0.59				
	LTE Band 5	0.29				
	LTE Band 7	0.77				
	LTE Band 12	0.29				
	BT/BLE 2.4GHz Band	0.04				
	WLAN 2.4GHz	0.40				
	WLAN 5GHz U-NII-1	0.12				
	WLAN 5GHz U-NII-2A	0.19				
	WLAN 5GHz U-NII-3	0.39				
Hotspot (10mm Gap)	GSM 850	0.60	1.20			
	GSM 1900	1.09				
	WCDMA Band 2	0.91				
	WCDMA Band 4	0.98				
	WCDMA Band 5	0.28				
	LTE Band 2	1.20(main supply) 0.88(second supply)				
	LTE Band 4	0.68				
	LTE Band 5	0.29				
	LTE Band 7	0.86				
	LTE Band 12	0.29				
	BT/BLE 2.4GHz Band	0.04				
	WLAN 2.4GHz	0.40				
	WLAN 5GHz U-NII-1	0.13				
	WLAN 5GHz U-NII-2A	0.21				
	WLAN 5GHz U-NII-3	0.39				

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(2.4G/5G)	1.40	1.42	1.42	.1.60	pass
	WCDMA & Wi-Fi(2.4G/5G)	1.23				
	LTE & Wi-Fi(2.4G/5G)	1.42				
	GSM & BT/BLE	0.56				
	WCDMA & BT/BLE	0.33				
	LTE & BT/BLE	0.52				
Body-Worn (10mm Gap)	GSM & Wi-Fi(2.4G/5G)	1.06	1.10			
	WCDMA & Wi-Fi(2.4G/5G)	1.08				
	LTE & Wi-Fi(2.4G/5G)	1.10				
	GSM & BT/BLE	0.71				
	WCDMA & BT/BLE	0.73				
	LTE & BT/BLE	0.81				
hotspot (10mm Gap)	GSM & Wi-Fi(2.4G/5G)	1.09	1.20			
	WCDMA & Wi-Fi(2.4G/5G)	1.08				
	LTE & Wi-Fi(2.4G/5G)	1.20				

This Test Report Is Issued by: Mr. Peng Zhen	Checked by: Mr. Lin Bin
Tested by: Miss Jin Wanqing 靳婉晴	Issued date:

6 TEST RESULT

6.1 Manufacturing Tolerance

GSM

GSM 850			
Channel	Channel 128	Channel 189	Channel 251
Tolerance (dBm)	29.5~33.5	29.5~33.5	29.5~33.5

GSM 850 GPRS				
Channel		128	189	251
1 Txslot	Tolerance (dBm)	29.5~33.5	29.5~33.5	29.5~33.5
2 Txslot	Tolerance (dBm)	29.0~33.0	29.0~33.0	29.0~33.0
3 Txslot	Tolerance (dBm)	27.0~31.0	27.0~31.0	27.0~31.0
4 Txslot	Tolerance (dBm)	26.0~30.0	26.0~30.0	26.0~30.0

GSM 850 EGPRS(GMSK)				
Channel		128	189	251
1 Txslot	Tolerance (dBm)	29.5~33.5	29.5~33.5	29.5~33.5
2 Txslot	Tolerance (dBm)	29.0~33.0	29.0~33.0	29.0~33.0
3 Txslot	Tolerance (dBm)	27.0~31.0	27.0~31.0	27.0~31.0
4 Txslot	Tolerance (dBm)	26.0~30.0	26.0~30.0	26.0~30.0

GSM 850 EGPRS(8PSK)				
Channel		128	189	251
1 Txslot	Tolerance (dBm)	23.0~27.0	23.0~27.0	23.0~27.0
2 Txslot	Tolerance (dBm)	22.0~26.0	22.0~26.0	22.0~26.0
3 Txslot	Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0
4 Txslot	Tolerance (dBm)	19.0~23.0	19.0~23.0	19.0~23.0

GSM 1900			
Channel	Channel 512	Channel 661	Channel 810
Tolerance (dBm)	23.0~27.0	23.0~27.0	23.0~27.0

GSM 1900 GPRS				
Channel		512	661	810
1 Txslot	Tolerance (dBm)	23.0~27.0	23.0~27.0	23.0~27.0
2 Txslot	Tolerance (dBm)	22.0~26.0	22.0~26.0	22.0~26.0
3 Txslot	Tolerance (dBm)	21.0~25.0	21.0~25.0	21.0~25.0
4 Txslot	Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0

GSM 1900 EGPRS(GMSK)				
Channel		512	661	810
1 Txslot	Tolerance (dBm)	23.0~27.0	23.0~27.0	23.0~27.0
2 Txslot	Tolerance (dBm)	22.0~26.0	22.0~26.0	22.0~26.0
3 Txslot	Tolerance (dBm)	21.0~25.0	21.0~25.0	21.0~25.0
4 Txslot	Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0

GSM 1900 EGPRS(8PSK)				
Channel		512	661	810
1 Txslot	Tolerance (dBm)	23.0~27.0	23.0~27.0	23.0~27.0
2 Txslot	Tolerance (dBm)	22.0~26.0	22.0~26.0	22.0~26.0
3 Txslot	Tolerance (dBm)	21.0~25.0	21.0~25.0	21.0~25.0
4 Txslot	Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0

WCDMA

WCDMA Band II			
Channel	9262	9400	9538
Tolerance (dBm)	19.5~23.5	19.5~23.5	19.5~23.5

HSDPA Band II				
Channel		9262	9400	9538
Sub test 1	Tolerance (dBm)	18.5~22.5	18.5~22.5	18.5~22.5
Sub test 2	Tolerance (dBm)	18.5~22.5	18.5~22.5	18.5~22.5
Sub test 3	Tolerance (dBm)	18.5~22.5	18.5~22.5	18.5~22.5
Sub test 4	Tolerance (dBm)	18.5~22.5	18.5~22.5	18.5~22.5

HSUPA Band II				
Channel		9262	9400	9538
Sub test 1	Tolerance (dBm)	18.5~22.5	18.5~22.5	18.5~22.5
Sub test 2	Tolerance (dBm)	18.5~22.5	18.5~22.5	18.5~22.5
Sub test 3	Tolerance (dBm)	18.5~22.5	18.5~22.5	18.5~22.5
Sub test 4	Tolerance (dBm)	18.5~22.5	18.5~22.5	18.5~22.5
Sub test 5	Tolerance (dBm)	18.5~22.5	18.5~22.5	18.5~22.5

WCDMA Band IV			
Channel	4132	4183	4233
Tolerance (dBm)	19.0~23.0	19.0~23.0	19.0~23.0

HSDPA Band IV				
Channel		4132	4183	4233
Sub test 1	Tolerance (dBm)	18.5~22.5	18.5~22.5	18.5~22.5
Sub test 2	Tolerance (dBm)	18.5~22.5	18.5~22.5	18.5~22.5
Sub test 3	Tolerance (dBm)	18.5~22.5	18.5~22.5	18.5~22.5
Sub test 4	Tolerance (dBm)	18.5~22.5	18.5~22.5	18.5~22.5

HSUPA Band IV				
Channel		4132	4183	4233
Sub test 1	Tolerance (dBm)	18.5~22.5	18.5~22.5	18.5~22.5
Sub test 2	Tolerance (dBm)	18.5~22.5	18.5~22.5	18.5~22.5
Sub test 3	Tolerance (dBm)	18.5~22.5	18.5~22.5	18.5~22.5
Sub test 4	Tolerance (dBm)	18.5~22.5	18.5~22.5	18.5~22.5
Sub test 5	Tolerance (dBm)	18.5~22.5	18.5~22.5	18.5~22.5

WCDMA Band V				
Channel		4132	4183	4233
Tolerance (dBm)		19.0~23.0	19.0~23.0	19.0~23.0
HSDPA Band V				
Channel		4132	4183	4233
Sub test 1	Tolerance (dBm)	18.5~22.5	18.5~22.5	18.5~22.5
Sub test 2	Tolerance (dBm)	18.5~22.5	18.5~22.5	18.5~22.5
Sub test 3	Tolerance (dBm)	18.5~22.5	18.5~22.5	18.5~22.5
Sub test 4	Tolerance (dBm)	18.5~22.5	18.5~22.5	18.5~22.5

HSUPA Band V				
Channel		4132	4183	4233
Sub test 1	Tolerance (dBm)	18.5~22.5	18.5~22.5	18.5~22.5
Sub test 2	Tolerance (dBm)	18.5~22.5	18.5~22.5	18.5~22.5
Sub test 3	Tolerance (dBm)	18.5~22.5	18.5~22.5	18.5~22.5
Sub test 4	Tolerance (dBm)	18.5~22.5	18.5~22.5	18.5~22.5
Sub test 5	Tolerance (dBm)	18.5~22.5	18.5~22.5	18.5~22.5

LTE

Band 2

QPSK

20BW 100%RB			
Channel	Channel 18700	Channel 18900	Channel 19100
Tolerance (dBm)	19.0~23.0	19.0~23.0	19.0~23.0
20BW 50%RB			
Channel	Channel 18700	Channel 18900	Channel 19100
Tolerance (dBm)	19.0~23.0	19.0~23.0	19.0~23.0
20BW 1RB			
Channel	Channel 18700	Channel 18900	Channel 19100
Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0

16QAM

20BW 100%RB			
Channel	Channel 18700	Channel 18900	Channel 19100
Tolerance (dBm)	18.0~22.0	18.0~22.0	18.0~22.0
20BW 50%RB			
Channel	Channel 18700	Channel 18900	Channel 19100
Tolerance (dBm)	18.0~22.0	18.0~22.0	18.0~22.0
20BW 1RB			
Channel	Channel 18700	Channel 18900	Channel 19100
Tolerance (dBm)	19.5~23.5	19.5~23.5	19.5~23.5

Band 4

QPSK

20BW 100%RB			
Channel	Channel 20050	Channel 20175	Channel 20300
Tolerance (dBm)	17.5~21.5	17.5~21.5	17.5~21.5
20BW 50%RB			
Channel	Channel 20050	Channel 20175	Channel 20300
Tolerance (dBm)	17.5~21.5	17.5~21.5	17.5~21.5
20BW 1RB			
Channel	Channel 20050	Channel 20175	Channel 20300
Tolerance (dBm)	18.0~22.0	18.0~22.0	18.0~22.0

16QAM

20BW 100%RB			
Channel	Channel 20050	Channel 20175	Channel 20300
Tolerance (dBm)	16.5~20.5	16.5~20.5	16.5~20.5
20BW 50%RB			
Channel	Channel 20050	Channel 20175	Channel 20300
Tolerance (dBm)	16.5~20.5	16.5~20.5	16.5~20.5
20BW 1RB			
Channel	Channel 20050	Channel 20175	Channel 20300
Tolerance (dBm)	17.5~21.5	17.5~21.5	17.5~21.5

Band 5

QPSK

10BW 100%RB			
Channel	Channel 20450	Channel 20525	Channel 20600
Tolerance (dBm)	19.0~23.0	19.0~23.0	19.0~23.0
10BW 50%RB			
Channel	Channel 20450	Channel 20525	Channel 20600
Tolerance (dBm)	19.0~23.0	19.0~23.0	19.0~23.0
10BW 1RB			
Channel	Channel 20450	Channel 20525	Channel 20600
Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0

16QAM

10BW 100%RB			
Channel	Channel 20450	Channel 20525	Channel 20600
Tolerance (dBm)	18.0~22.0	18.0~22.0	18.0~22.0
10BW 50%RB			
Channel	Channel 20450	Channel 20525	Channel 20600
Tolerance (dBm)	18.0~22.0	18.0~22.0	18.0~22.0
10BW 1RB			
Channel	Channel 20450	Channel 20525	Channel 20600
Tolerance (dBm)	19.0~23.0	19.0~23.0	19.0~23.0

Band 7

QPSK

20BW 100%RB			
Channel	Channel 20850	Channel 21100	Channel 21350
Tolerance (dBm)	16.0~20.0	16.0~20.0	16.0~20.0
20BW 50%RB			
Channel	Channel 20850	Channel 21100	Channel 21350
Tolerance (dBm)	15.5~19.5	15.5~19.5	15.5~19.5
20BW 1RB			
Channel	Channel 20850	Channel 21100	Channel 21350
Tolerance (dBm)	16.5~20.5	16.5~20.5	16.5~20.5

16QAM

20BW 100%RB			
Channel	Channel 20850	Channel 21100	Channel 21350
Tolerance (dBm)	14.5~18.5	14.5~18.5	14.5~18.5
20BW 50%RB			
Channel	Channel 20850	Channel 21100	Channel 21350
Tolerance (dBm)	14.5~18.5	14.5~18.5	14.5~18.5
20BW 1RB			
Channel	Channel 20850	Channel 21100	Channel 21350
Tolerance (dBm)	15.5~19.5	15.5~19.5	15.5~19.5

Band 12
QPSK

10BW 100%RB			
Channel	Channel 23230	Channel 23230	Channel 23230
Tolerance (dBm)	19.5~23.5	19.5~23.5	19.5~23.5
10BW 50%RB			
Channel	Channel 23230	Channel 23230	Channel 23230
Tolerance (dBm)	19.0~23.0	19.0~23.0	19.0~23.0
10BW 1RB			
Channel	Channel 23230	Channel 23230	Channel 23230
Tolerance (dBm)	20.0~24.0	20.0~24.0	20.0~24.0

16QAM

10BW 100%RB			
Channel	Channel 23230	Channel 23230	Channel 23230
Tolerance (dBm)	18.0~22.0	18.0~22.0	18.0~22.0
10BW 50%RB			
Channel	Channel 23230	Channel 23230	Channel 23230
Tolerance (dBm)	18.0~22.0	18.0~22.0	18.0~22.0
10BW 1RB			
Channel	Channel 23230	Channel 23230	Channel 23230
Tolerance (dBm)	19.5~23.5	19.5~23.5	19.5~23.5

Bluetooth

GFSK			
Channel	0	39	78
Tolerance (dBm)	-1.0~3.0	-1.0~3.0	-1.0~3.0
π/4DQPSK			
Channel	0	39	78
Tolerance (dBm)	-4.0~0.0	-4.0~0.0	-4.0~0.0
8DPSK			
Channel	0	39	78
Tolerance (dBm)	-4.0~0.0	-4.0~0.0	-4.0~0.0

Bluetooth (BLE)

GFSK(1Mbps)			
Channel	0	19	39
Tolerance (dBm)	-0.5~-3.5	-0.5~-3.5	-0.5~-3.5

WLAN 2.4GHz

802.11b			
Channel	1	6	11
Tolerance (dBm)	13.5~17.5	13.5~17.5	13.5~17.5
802.11g			
Channel	1	6	11
Tolerance (dBm)	9.5~13.5	9.5~13.5	9.5~13.5
802.11n HT20			
Channel	1	6	11
Tolerance (dBm)	9.5~13.5	9.5~13.5	9.5~13.5

WLAN 5GHz U-NII-1

802.11a	
Tolerance (dBm)	11.0~15.0
802.11n HT20	
Tolerance (dBm)	11.0~15.0
802.11n HT40	
Tolerance (dBm)	11.0~15.0

WLAN 5GHz U-NII-2A

802.11a	
Tolerance (dBm)	11.0~15.0
802.11n HT20	
Tolerance (dBm)	11.0~15.0
802.11n HT40	
Tolerance (dBm)	11.0~15.0

WLAN 5GHz U-NII-3

802.11a	
Tolerance (dBm)	10.5~14.5
802.11n HT20	
Tolerance (dBm)	10.5~14.5
802.11n HT40	
Tolerance (dBm)	9.5~13.5

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)	33.20	33.04	33.25	26.57	26.34	26.37

GSM Frame Average 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
Frame Average Power (dBm)	24.17	24.01	24.22	17.54	17.31	17.34

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)	33.21	33.05	33.26	26.60	26.36	26.37
3Downlink2uplinkPower(dBm)	32.52	32.35	32.59	25.56	25.34	25.38
2Downlink3uplinkPower(dBm)	30.83	30.67	30.98	24.91	24.93	24.96
1Downlink4uplinkPower(dBm)	29.61	29.45	29.78	23.73	23.48	23.54

GPRS Frame Average 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)	24.18	24.02	24.23	17.57	17.33	17.34
3Downlink2uplinkPower(dBm)	26.50	26.33	26.57	19.54	19.32	19.36
2Downlink3uplinkPower(dBm)	26.57	26.41	26.72	**20.65**	**20.67**	**20.70**
1Downlink4uplinkPower(dBm)	**26.60**	**26.44**	**26.77**	20.72	20.47	20.53

EGPRS Measured Power

Mode	EGPRS850(GMSK)			EGPRS1900(GMSK)		
	EGPRS850 (8PSK)			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)	33.21	33.05	33.26	26.60	26.36	26.37
	26.74	26.48	26.83	26.60	26.37	26.40
3Downlink2uplinkPower(dBm)	32.52	32.35	32.59	25.56	25.34	25.38
	25.57	25.64	25.68	25.60	25.32	25.41
2Downlink3uplinkPower(dBm)	30.83	30.67	30.98	24.91	24.93	24.96
	23.56	23.57	23.54	24.93	24.92	24.94
1Downlink4uplinkPower(dBm)	29.61	29.45	29.78	23.73	23.48	23.54
	22.35	22.48	22.53	23.71	23.47	23.54

EGPRS Frame Average Power

Mode	EGPRS850(GMSK)			EGPRS1900(GMSK)		
	EGPRS850 (8PSK)			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)	24.18	24.02	24.23	17.57	17.33	17.34
	17.71	17.45	17.80	17.57	17.34	17.37
3Downlink2uplinkPower(dBm)	26.50	26.33	26.57	19.54	19.32	19.36
	19.55	19.62	19.66	19.58	19.3	19.39
2Downlink3uplinkPower(dBm)	26.57	26.41	26.72	20.65	20.67	20.7
	19.30	19.31	19.28	20.67	20.66	20.68
1Downlink4uplinkPower(dBm)	26.60	26.44	26.77	20.72	20.47	20.53
	19.34	19.47	19.52	20.7	20.46	20.53

Division Factors (for Measured Power and Frame Average 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

There is a little difference for modulation type GMSK between GPRS and EDGE (EGPRS), the bit rate is not the same, so we also test the power of GMSK type for EDGE. According to the frame average conducted power as above, the SAR measurements are performed with **4Txslots (1Downlink4uplink)** of GPRS850 (GMSK) and **3Txslots (2Downlink3uplink)** of GPRS1900 (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

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⇔ $A_{hs}=\beta_{hs}/\beta_c=30/15 \Leftrightarrow \beta_{hs}=30/15*\beta_c$.
Note2:CM=1 for $\beta_c/\beta_d=12/15$, $\beta_{hs}/\beta_c=24/15$.
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 $\beta_c=11/15$ and $\beta_d=15/15$.

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⇔$A_{hs}=\beta_{hs}/\beta_c$=30/15⇔$\beta_{hs}$=30/15*$\beta_c$.
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.

R99 Measured Results

Mode	Band II		
Channel	9262	9400	9538
Frequency (MHz)	1852.4	1880	1907.6
RB test mode1+64kRMC(dBm)	22.58	22.65	22.71
RB test mode1+12.2kRMC(dBm)	**22.93**	**23.04**	**23.05**
RB test mode1+144kRMC(dBm)	22.62	22.67	22.71
RB test mode1+384kRMC(dBm)	22.64	22.52	22.63

Mode	Band IV		
Channel	1312	1412	1513
Frequency (MHz)	1712.4	1732.4	1752.6
RB test mode1+64kRMC(dBm)	22.08	22.05	22.01
RB test mode1+12.2kRMC(dBm)	**22.56**	**22.61**	**22.55**
RB test mode1+144kRMC(dBm)	22.12	22.17	22.11
RB test mode1+384kRMC(dBm)	21.94	21.92	21.93

Mode	Band V		
Channel	4132	4183	4233
Frequency(MHz)	826.4	836.4	846.6
RB test mode1+64kRMC(dBm)	21.96	22.01	22.75
RB test mode1+12.2kRMC(dBm)	**22.85**	**22.91**	**22.86**
RB test mode1+144kRMC(dBm)	21.97	22.02	22.75
RB test mode1+384kRMC(dBm)	21.91	22.08	22.74

WCDMA Band II

Mode		Carrier frequency (MHz)	Channel No.	RF Power Output (dBm)
HSDPA	Subtest 1	1852.4	9262	22.18
		1880.0	9400	22.24
		1907.6	9538	22.14
	Subtest 2	1852.4	9262	22.14
		1880.0	9400	22.05
		1907.6	9538	22.25
	Subtest 3	1852.4	9262	22.18
		1880.0	9400	22.11
		1907.6	9538	22.10
	Subtest 4	1852.4	9262	22.26
		1880.0	9400	22.11
		1907.6	9538	22.27
HSUPA	Subtest 1	1852.4	9262	22.06
		1880.0	9400	22.21
		1907.6	9538	22.21
	Subtest 2	1852.4	9262	22.14
		1880.0	9400	22.21
		1907.6	9538	22.15
	Subtest 3	1852.4	9262	22.07
		1880.0	9400	22.13
		1907.6	9538	22.30
	Subtest 4	1852.4	9262	22.28
		1880.0	9400	22.08
		1907.6	9538	22.08
	Subtest 5	1852.4	9262	22.17
		1880.0	9400	22.00
		1907.6	9538	22.05

WCDMA Band Ⅳ

Mode		Carrier frequency (MHz)	Channel No.	RF Power Output (dBm)
HSDPA	Subtest 1	1852.4	9262	22.11
		1880.0	9400	22.04
		1907.6	9538	21.95
	Subtest 2	1852.4	9262	22.06
		1880.0	9400	21.98
		1907.6	9538	22.05
	Subtest 3	1852.4	9262	22.05
		1880.0	9400	22.00
		1907.6	9538	22.02
	Subtest 4	1852.4	9262	21.97
		1880.0	9400	22.07
		1907.6	9538	22.01
HSUPA	Subtest 1	1852.4	9262	22.10
		1880.0	9400	22.04
		1907.6	9538	22.00
	Subtest 2	1852.4	9262	22.06
		1880.0	9400	22.07
		1907.6	9538	22.03
	Subtest 3	1852.4	9262	21.96
		1880.0	9400	22.10
		1907.6	9538	22.01
	Subtest 4	1852.4	9262	21.95
		1880.0	9400	22.09
		1907.6	9538	22.05
	Subtest 5	1852.4	9262	22.01
		1880.0	9400	22.08
		1907.6	9538	22.05

WCDMA Band V

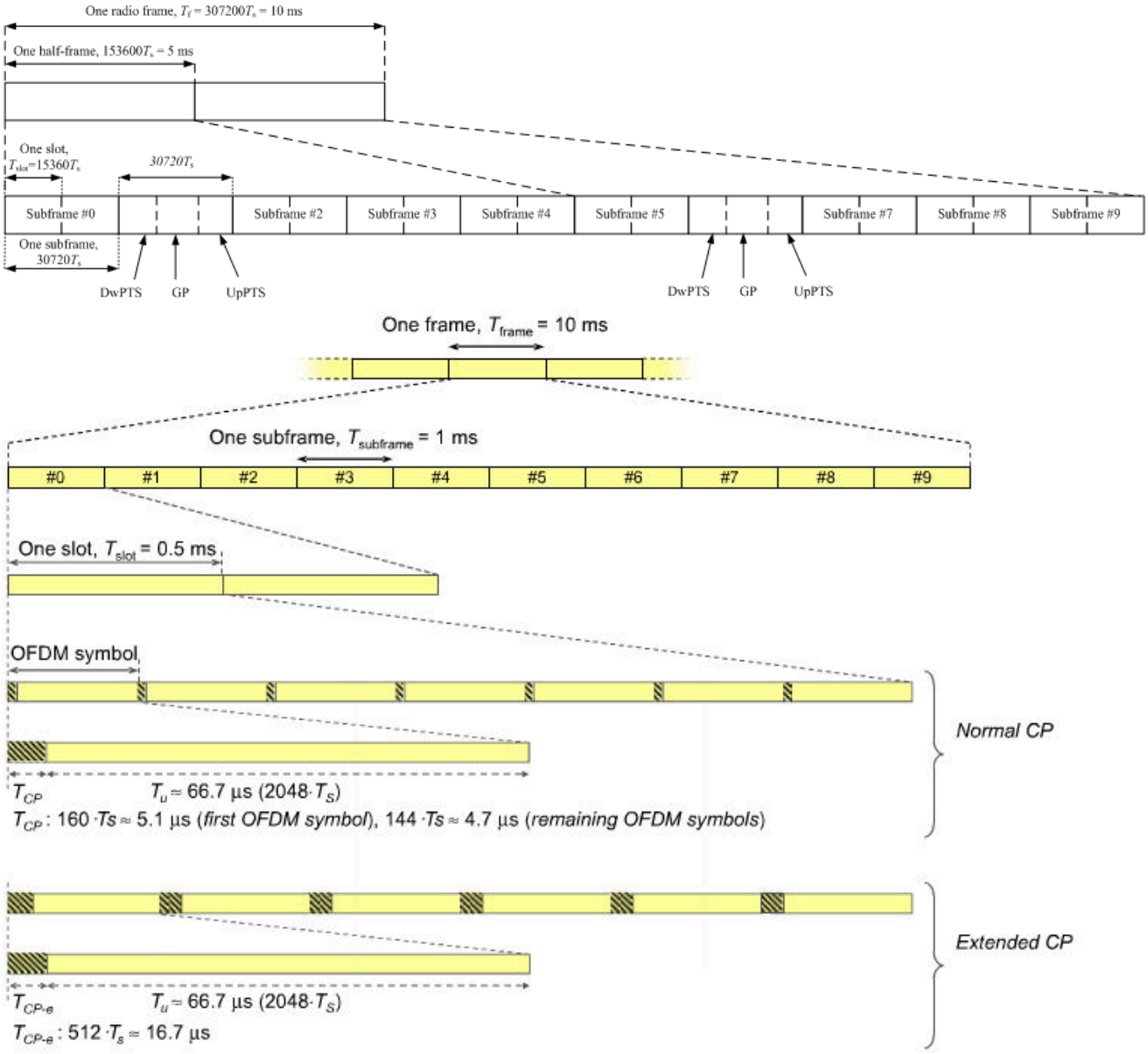
Mode		Carrier frequency (MHz)	Channel No.	RF Power Output (dBm)
HSDPA	Subtest 1	826.4	4132	22.15
		836.6	4183	22.09
		846.6	4233	22.15
	Subtest 2	826.4	4132	22.04
		836.6	4183	22.13
		846.6	4233	22.14
	Subtest 3	826.4	4132	22.20
		836.6	4183	22.09
		846.6	4233	22.14
	Subtest 4	826.4	4132	22.06
		836.6	4183	22.20
		846.6	4233	22.13
HSUPA	Subtest 1	826.4	4132	22.16
		836.6	4183	22.14
		846.6	4233	22.21
	Subtest 2	826.4	4132	22.14
		836.6	4183	22.07
		846.6	4233	22.10
	Subtest 3	826.4	4132	22.13
		836.6	4183	22.06
		846.6	4233	22.09
	Subtest 4	826.4	4132	22.04
		836.6	4183	22.17
		846.6	4233	22.08
	Subtest 5	826.4	4132	22.11
		836.6	4183	22.10
		846.6	4233	22.08

Note: 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

General description:

TDD-LTE frame structure



Uplink-downlink configuration

Uplink-downlink configuration	Downlink-to-Uplink Switch-point periodicity	Subframe number									
		0	1	2	3	4	5	6	7	8	9
0	5 ms	D	S	U	U	U	D	S	U	U	U
1	5 ms	D	S	U	U	D	D	S	U	U	D
2	5 ms	D	S	U	D	D	D	S	U	D	D
3	10 ms	D	S	U	U	U	D	D	D	D	D
4	10 ms	D	S	U	U	D	D	D	D	D	D
5	10 ms	D	S	U	D	D	D	D	D	D	D
6	5 ms	D	S	U	U	U	D	S	U	U	D

Special sub-frame configuration

Special subframe configuration	Normal cyclic prefix in downlink			Extended cyclic prefix in downlink		
	DwPTS	UpPTS		DwPTS	UpPTS	
		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink
0	$6592 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$	$7680 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$
1	$19760 \cdot T_s$			$20480 \cdot T_s$		
2	$21952 \cdot T_s$			$23040 \cdot T_s$		
3	$24144 \cdot T_s$			$25600 \cdot T_s$		
4	$26336 \cdot T_s$			$7680 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$
5	$6592 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$	$20480 \cdot T_s$		
6	$19760 \cdot T_s$			$23040 \cdot T_s$		
7	$21952 \cdot T_s$			-	-	-
8	$24144 \cdot T_s$			-	-	-

Special sub-frame with cyclic prefix uplink

Special sub-frame configuration		Duty factor with normal cyclic prefix in uplink	Duty factor with extended cyclic prefix in uplink
Normal cyclic prefix in downlink	0~4	7.13%	8.33%
	5~9	14.3%	16.7%
Extended cyclic prefix in downlink	0~3	7.13%	8.33%
	4~7	14.3%	16.7%

So we perform SAR test with maximum duty factor equal to 63.3% by using uplink-downlink configuration 0.

Note: One sub-frame is 30720Ts=1ms, when UpPTS(uplink) in special sub-frame with extended cyclic prefix, duty factor = 5120/30720=0.167.There are 5 sub-frames in half frame(3up link),so the final duty factor is (30720*3+5120)/(30720*5)=63.3% which we used to evaluate the SAR compliance (worst case)

LTE Band 2

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	1850.7	18607	1.4	1	0	23.62
				1	5	23.62
				3	2	22.79
				6	0	22.75
	1880	18900		1	0	23.75
				1	5	23.75
				3	2	22.91
				6	0	22.82
	1909.3	19193		1	0	23.76
				1	5	23.76
				3	2	22.82
				6	0	22.81
16QAM	1850.7	18607	1.4	1	0	22.78
				1	5	22.78
				3	2	21.81
				6	0	21.71
	1880	18900		1	0	23.10
				1	5	23.10
				3	2	21.78
				6	0	21.72
	1909.3	19193		1	0	23.02
				1	5	23.02
				3	2	21.82
				6	0	21.68

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	1851.5	18615	3	1	0	23.44
				1	14	23.44
				8	4	22.61
				15	0	22.57
	1880	18900		1	0	23.57
				1	14	23.57
				8	4	22.73
				15	0	22.64
	1908.5	19185		1	0	23.58
				1	14	23.58
				8	4	22.64
				15	0	22.63
16QAM	1851.5	18615	3	1	0	22.60
				1	14	22.60
				8	4	21.67
				15	0	21.60
	1880	18900		1	0	22.99
				1	14	22.99
				8	4	21.67
				15	0	21.61
	1908.5	19185		1	0	22.91
				1	14	22.91
				8	4	21.71
				15	0	21.57

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	1852.5	18625	5	1	0	23.56
				1	24	23.56
				12	6	22.73
				25	0	22.69
	1880	18900		1	0	23.69
				1	24	23.69
				12	6	22.85
				25	0	22.76
	1907.5	19175		1	0	23.70
				1	24	23.70
				12	6	22.76
				25	0	22.75
16QAM	1852.5	18625	5	1	0	22.70
				1	24	22.70
				12	6	21.77
				25	0	21.67
	1880	18900		1	0	23.06
				1	24	23.06
				12	6	21.74
				25	0	21.68
	1907.5	19175		1	0	22.98
				1	24	22.98
				12	6	21.78
				25	0	21.64

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	1855	18650	10	1	0	23.52
				1	49	23.52
				24	12	22.69
				50	0	22.65
	1880	18900		1	0	23.65
				1	49	23.65
				24	12	22.81
				50	0	22.72
	1905	19150		1	0	23.66
				1	49	23.66
				24	12	22.72
				50	0	22.71
16QAM	1855	18650	10	1	0	22.64
				1	49	22.64
				24	12	21.71
				50	0	21.61
	1880	18900		1	0	23.00
				1	49	23.00
				24	12	21.72
				50	0	21.66
	1905	19150		1	0	22.96
				1	49	22.96
				24	12	21.76
				50	0	21.62

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	1857.5	18675	15	1	0	23.61
				1	74	23.61
				40	18	22.78
				75	0	22.74
	1880	18900		1	0	23.74
				1	74	23.74
				40	18	22.82
				75	0	22.73
	1902.5	19125		1	0	23.67
				1	74	23.67
				40	18	22.73
				75	0	22.72
16QAM	1857.5	18675	15	1	0	22.69
				1	74	22.69
				40	18	21.76
				75	0	21.66
	1880	18900		1	0	23.05
				1	74	23.10
				40	18	21.78
				75	0	21.72
	1902.5	19125		1	0	23.02
				1	74	23.02
				40	18	21.82
				75	0	21.68

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	1860	18700	20	1	0	23.65
				1	99	23.65
				50	25	22.82
				100	0	22.78
	1880	18900		1	0	23.78
				1	99	23.78
				50	25	22.94
				100	0	22.85
	1900	19100		1	0	23.79
				1	99	23.79
				50	25	22.85
				100	0	22.84
16QAM	1860	18700	20	1	0	22.81
				1	99	22.81
				50	25	21.88
				100	0	21.78
	1880	18900		1	0	23.17
				1	99	23.17
				50	25	21.85
				100	0	21.79
	1900	19100		1	0	23.09
				1	99	23.09
				50	25	21.89
				100	0	21.75

LTE Band 4

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	1710.7	19957	1.4	1	0	21.88
				1	5	21.88
				3	2	21.23
				6	0	21.14
	1732.5	20175		1	0	21.88
				1	5	21.88
				3	2	21.06
				6	0	21.03
	1754.3	20393		1	0	21.87
				1	5	21.87
				3	2	21.04
				6	0	20.98
16QAM	1710.7	19957	1.4	1	0	21.15
				1	5	21.15
				3	2	20.17
				6	0	20.07
	1732.5	20175		1	0	21.12
				1	5	21.12
				3	2	19.99
				6	0	19.97
	1754.3	20393		1	0	21.12
				1	5	21.12
				3	2	19.97
				6	0	19.90

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	1711.5	19965	3	1	0	21.77
				1	14	21.77
				8	4	21.12
				15	0	21.03
	1732.5	20175		1	0	21.77
				1	14	21.77
				8	4	20.95
				15	0	20.92
	1753.5	20385		1	0	21.76
				1	14	21.76
				8	4	20.93
				15	0	20.87
16QAM	1711.5	19965	3	1	0	21.09
				1	14	21.09
				8	4	20.15
				15	0	20.05
	1732.5	20175		1	0	21.10
				1	14	21.10
				8	4	19.97
				15	0	19.95
	1753.5	20385		1	0	21.10
				1	14	21.10
				8	4	19.95
				15	0	19.88

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	1712.5	19975	5	1	0	21.83
				1	24	21.83
				12	6	21.18
				25	0	21.09
	1732.5	20175		1	0	21.83
				1	24	21.83
				12	6	21.01
				25	0	20.98
	1752.5	20375		1	0	21.82
				1	24	21.82
				12	6	20.99
				25	0	20.88
16QAM	1712.5	19975	5	1	0	21.05
				1	24	21.05
				12	6	20.11
				25	0	20.01
	1732.5	20175		1	0	21.06
				1	24	21.06
				12	6	19.93
				25	0	19.91
	1752.5	20375		1	0	21.06
				1	24	21.06
				12	6	19.91
				25	0	19.84

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	1715	20000	10	1	0	21.77
				1	49	21.77
				24	12	21.12
				50	0	21.03
	1732.5	20175		1	0	21.77
				1	49	21.77
				24	12	21.06
				50	0	21.03
	1750	20350		1	0	21.87
				1	49	21.87
				24	12	21.04
				50	0	20.98
16QAM	1715	20000	10	1	0	21.15
				1	49	21.15
				24	12	20.10
				50	0	20.00
	1732.5	20175		1	0	21.05
				1	49	21.05
				24	12	19.92
				50	0	19.90
	1750	20350		1	0	21.05
				1	49	21.05
				24	12	19.90
				50	0	19.83

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	1717.5	20025	15	1	0	21.85
				1	74	21.85
				40	18	21.20
				75	0	21.11
	1732.5	20175		1	0	21.85
				1	74	21.85
				40	18	21.03
				75	0	21.00
	1747.5	20325		1	0	21.84
				1	74	21.84
				40	18	20.95
				75	0	20.89
16QAM	1717.5	20025	15	1	0	21.06
				1	74	21.06
				40	18	20.12
				75	0	20.02
	1732.5	20175		1	0	21.07
				1	74	21.07
				40	18	19.94
				75	0	19.92
	1747.5	20325		1	0	21.07
				1	74	21.07
				40	18	19.92
				75	0	19.85

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	1720	20050	20	1	0	21.96
				1	99	21.96
				50	25	21.18
				100	0	21.10
	1732.5	20175		1	0	21.95
				1	99	21.95
				50	25	21.04
				100	0	21.00
	1745	20300		1	0	21.94
				1	99	21.94
				50	25	20.97
				100	0	20.94
16QAM	1720	20050	20	1	0	21.20
				1	99	21.20
				50	25	20.22
				100	0	20.11
	1732.5	20175		1	0	21.27
				1	99	21.27
				50	25	20.05
				100	0	20.02
	1745	20300		1	0	21.17
				1	99	21.17
				50	25	20.03
				100	0	19.97

LTE Band 5

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	824.7	20407	1.4	1	0	23.62
				1	5	23.62
				3	2	22.70
				6	0	22.73
	836.5	20525		1	0	23.55
				1	5	23.55
				3	2	22.69
				6	0	22.71
	848.3	20643		1	0	23.50
				1	5	23.50
				3	2	22.66
				6	0	22.65
16QAM	824.7	20407	1.4	1	0	22.76
				1	5	22.76
				3	2	21.62
				6	0	21.63
	836.5	20525		1	0	22.77
				1	5	22.77
				3	2	21.62
				6	0	21.59
	848.3	20643		1	0	22.71
				1	5	22.71
				3	2	21.64
				6	0	21.61

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	825.5	20415	3	1	0	23.52
				1	14	23.52
				8	4	22.60
				15	0	22.63
	836.5	20525		1	0	23.45
				1	14	23.45
				8	4	22.59
				15	0	22.61
	847.5	20635		1	0	23.40
				1	14	23.40
				8	4	22.69
				15	0	22.68
16QAM	825.5	20415	3	1	0	22.79
				1	14	22.79
				8	4	21.65
				15	0	21.66
	836.5	20525		1	0	22.82
				1	14	22.82
				8	4	21.67
				15	0	21.64
	847.5	20635		1	0	22.76
				1	14	22.76
				8	4	21.69
				15	0	21.66

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	826.5	20425	5	1	0	23.63
				1	24	23.63
				12	6	22.71
				25	0	22.74
	836.5	20525		1	0	23.56
				1	24	23.56
				12	6	22.70
				25	0	22.72
	846.5	20625		1	0	23.51
				1	24	23.51
				12	6	22.73
				25	0	22.72
16QAM	826.5	20425	5	1	0	22.80
				1	24	22.80
				12	6	21.66
				25	0	21.67
	836.5	20525		1	0	22.81
				1	24	22.81
				12	6	21.66
				25	0	21.63
	846.5	20625		1	0	22.75
				1	24	22.75
				12	6	21.68
				25	0	21.65

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	829	20450	10	1	0	23.68
				1	49	23.68
				24	12	22.76
				50	0	22.79
	836.5	20525		1	0	23.61
				1	49	23.61
				24	12	22.75
				50	0	22.77
	844	20600		1	0	23.56
				1	49	23.56
				24	12	22.78
				50	0	22.77
16QAM	829	20450	10	1	0	22.88
				1	49	22.88
				24	12	21.74
				50	0	21.75
	836.5	20525		1	0	22.89
				1	49	22.89
				24	12	21.74
				50	0	21.71
	844	20600		1	0	22.83
				1	49	22.83
				24	12	21.76
				50	0	21.73

LTE Band 7

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	2502.5	20775	5	1	0	20.01
				1	24	20.01
				12	6	19.18
				25	0	19.26
	2535	21100		1	0	19.97
				1	24	19.97
				12	6	19.33
				25	0	19.35
	2567.5	21425		1	0	19.93
				1	24	19.93
				12	6	19.26
				25	0	19.21
16QAM	2502.5	20775	5	1	0	19.24
				1	24	19.24
				12	6	18.10
				25	0	18.19
	2535	21100		1	0	19.23
				1	24	19.23
				12	6	18.26
				25	0	18.27
	2567.5	21425		1	0	19.32
				1	24	19.32
				12	6	18.18
				25	0	18.13

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	2505	20800	10	1	0	19.94
				1	49	19.94
				24	12	19.11
				50	0	19.19
	2535	21100		1	0	19.90
				1	49	19.90
				24	12	19.26
				50	0	19.28
	2565	21400		1	0	19.86
				1	49	19.86
				24	12	19.19
				50	0	19.22
16QAM	2505	20800	10	1	0	19.28
				1	49	19.28
				24	12	18.14
				50	0	18.23
	2535	21100		1	0	19.27
				1	49	19.27
				24	12	18.30
				50	0	18.31
	2565	21400		1	0	19.36
				1	49	19.36
				24	12	18.22
				50	0	18.13

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	2507.5	20825	15	1	0	19.97
				1	74	19.97
				40	18	19.14
				75	0	19.22
	2535	21100		1	0	19.93
				1	74	19.93
				40	18	19.29
				75	0	19.31
	2562.5	21375		1	0	19.89
				1	74	19.89
				40	18	19.22
				75	0	19.15
16QAM	2507.5	20825	15	1	0	19.21
				1	74	19.21
				40	18	18.07
				75	0	18.16
	2535	21100		1	0	19.20
				1	74	19.20
				40	18	18.28
				75	0	18.29
	2562.5	21375		1	0	19.34
				1	74	19.34
				40	18	18.20
				75	0	18.15

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	2510	20850	20	1	0	20.17
				1	99	20.17
				50	25	19.18
				100	0	19.27
	2535	21100		1	0	20.04
				1	99	20.04
				50	25	19.31
				100	0	19.28
	2560	21350		1	0	20.07
				1	99	20.07
				50	25	19.20
				100	0	19.16
16QAM	2510	20850	20	1	0	19.32
				1	99	19.32
				50	25	18.18
				100	0	18.27
	2535	21100		1	0	19.31
				1	99	19.31
				50	25	18.34
				100	0	18.35
	2560	21350		1	0	19.40
				1	99	19.40
				50	25	18.26
				100	0	18.21

LTE Band 12

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	699.7	23017	1.4	1	0	23.79
				1	5	23.79
				3	2	22.84
				6	0	22.94
	707.5	23095		1	0	23.74
				1	5	23.74
				3	2	22.90
				6	0	22.99
	715.3	23173		1	0	23.78
				1	5	23.78
				3	2	22.88
				6	0	22.93
16QAM	699.7	23017	1.4	1	0	22.98
				1	5	22.98
				3	2	21.80
				6	0	21.90
	707.5	23095		1	0	23.03
				1	5	23.03
				3	2	21.88
				6	0	21.93
	715.3	23173		1	0	23.02
				1	5	23.02
				3	2	21.73
				6	0	21.77

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	700.5	23025	3	1	0	23.68
				1	14	23.68
				8	4	22.73
				15	0	22.83
	707.5	23095		1	0	23.63
				1	14	23.63
				8	4	22.79
				15	0	22.88
	714.5	23165		1	0	23.67
				1	14	23.67
				8	4	22.79
				15	0	22.80
16QAM	700.5	23025	3	1	0	22.85
				1	14	22.85
				8	4	21.67
				15	0	21.77
	707.5	23095		1	0	22.90
				1	14	22.90
				8	4	21.75
				15	0	21.80
	714.5	23165		1	0	22.89
				1	14	22.89
				8	4	21.73
				15	0	21.77

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	701.5	23035	5	1	0	23.72
				1	24	23.72
				12	6	22.77
				25	0	22.87
	707.5	23095		1	0	23.67
				1	24	23.67
				12	6	22.83
				25	0	22.92
	713.5	23155		1	0	23.71
				1	24	23.71
				12	6	22.83
				25	0	22.86
16QAM	701.5	23035	5	1	0	22.91
				1	24	22.91
				12	6	21.73
				25	0	21.83
	707.5	23095		1	0	22.96
				1	24	22.96
				12	6	21.86
				25	0	21.91
	713.5	23155		1	0	23.00
				1	24	23.00
				12	6	21.84
				25	0	21.88

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)
QPSK	704	23060	10	1	0	23.81
				1	49	23.81
				24	12	22.86
				50	0	22.96
	707.5	23095		1	0	23.76
				1	49	23.76
				24	12	22.92
				50	0	23.01
	711	23130		1	0	23.80
				1	49	23.80
				24	12	22.92
				50	0	22.97
16QAM	704	23060	10	1	0	23.02
				1	49	23.02
				24	12	21.84
				50	0	21.94
	707.5	23095		1	0	23.07
				1	49	23.07
				24	12	21.92
				50	0	21.97
	711	23130		1	0	23.06
				1	49	23.06
				24	12	21.90
				50	0	21.94

6.6 Bluetooth Measurement result

Modulation type	Test Result (dBm)		
	2402MHz (Ch0)	2441MHz (Ch39)	2480MHz (Ch78)
GFSK	1.19	2.38	2.23
π/4DQPSK	-1.46	-0.19	-0.76
8DPSK	-1.79	-0.25	-0.74
Modulation type	2402MHz (Ch0)	2440MHz (Ch19)	2480MHz (Ch39)
GFSK (BLE1Mbps)	2.56	3.19	1.94

6.7 Wi-Fi Measurement result

WIFI 2.4GHz

Test Mode	Average power (dBm)		
	2412MHz	2437MHz	2462MHz
802.11b	17.06	17.28	16.44
802.11g	13.07	13.08	12.32
802.11n HT20	13.06	13.04	12.08

WIFI 5GHz U-NII-1

Test Mode	Average power (dBm)		
	5180MHz	5200MHz	5240MHz
802.11a	14.96	14.87	14.89
802.11 n HT20	14.76	14.93	14.96
Test Mode	5190 MHz		5230 MHz
802.11 n HT40	14.92		14.94

WIFI 5GHz U-NII-2A

Test Mode	Average power (dBm)		
	5260MHz	5300MHz	5320MHz
802.11a	14.54	14.69	13.96
802.11 n HT20	14.45	13.92	14.52
Test Mode	5270 MHz		5310 MHz
802.11 n HT40	14.64		14.15

WIFI 5GHz U-NII-3

Test Mode	Average power (dBm)		
	5745MHz	5785MHz	5825MHz
802.11a	12.76	13.42	14.32
802.11 n HT20	13.31	13.48	14.22
Test Mode	5755 MHz		5795 MHz
802.11 n HT40	13.27		13.15

6.8 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.

SAR Test Exclusion Thresholds for 100 MHz – 6 GHz and ≤ 50 mm

Mothod1:
According to the KDB447498 4.3.1 (1)

For 100 MHz to 6 GHz and test separation distances ≤ 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following:

[(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

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm, and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

This is equivalent to [(max. power of channel, including tune-up tolerance, mW)/(60/√f(GHz) mW)] ·[20 mm/(min.test separation distance, mm)] ≤ 1.0 for 1-g SAR; also see Appendix A for approximate exclusion threshold values at selected frequencies and distances.

Mothod2:
According to the KDB447498 appendix A

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	

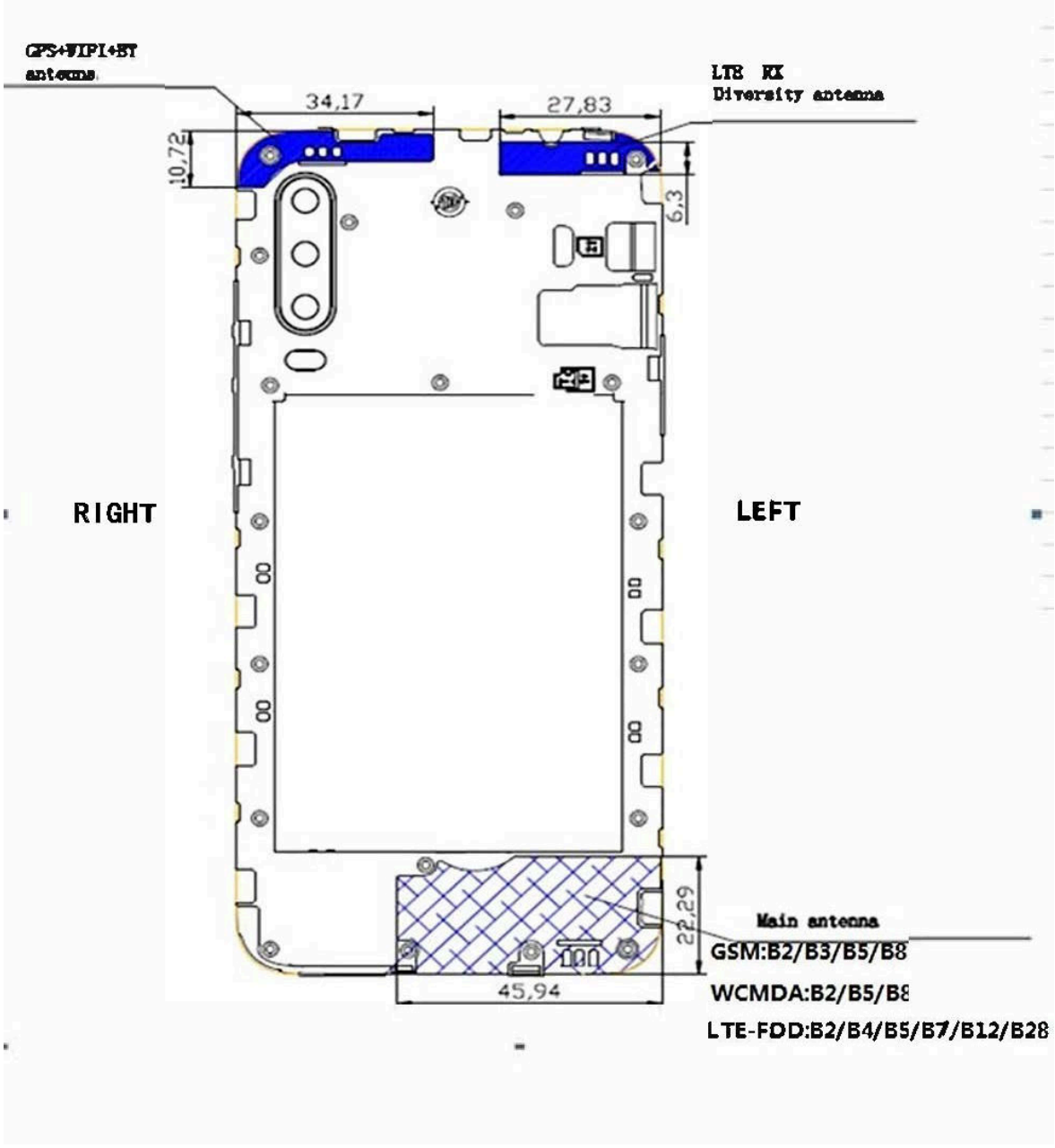
According to KDB 248227 D01 802 11 Wi-Fi SAR chapter 5.3.1 b)
For devices that operate in only one of the U-NII-1 and U-NII-2A bands, the normally required SAR procedures for OFDM configurations are applied. For devices that operate in both U-NII bands using the same transmitter and antenna(s), SAR test reduction is determined according to the following, with respect to the highest *reported* SAR and maximum output power specified for production units. The procedures are applied independently to each exposure configuration; for example, head, body, hotspot mode etc. When different maximum output power is specified for the bands, begin SAR measurement in the band with higher specified maximum output power. The highest *reported* SAR for the tested configuration is adjusted by the ratio of lower to higher specified maximum output power for the two bands. When the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for the band with lower maximum output power in that test configuration; otherwise, each band is tested independently for SAR.

Summary of Transmitters

Band/Mode	Position	SAR test exclusion threshold (mW)	Max conducted power adjusted for tune-up tolerance(mW)	Standalone SAR Required
2.4GHz BT/BLE	Head	10	2.08	No
	Body	19	2.08	No
2.4GHz Wi-Fi	Head	10	53.46	Yes
	Body	19	53.46	Yes
5GHz WIFI U-NII-1	Head	7	31.33	Yes
	Body	13	31.33	Yes
5GHz WIFI U-NII-2A	Head	6	29.44	Yes
	Body	13	29.44	Yes
5GHz WIFI U-NII-3	Head	6	27.03	Yes
	Body	12	27.03	Yes

6.9 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.



6.9.1 Head Exposure Conditions

For WWAN

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

For WLAN&BT/BLE

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

6.9.2 Body Exposure conditions

For WWAN

Test Configurations	SAR Required	Note
Back	Yes	/
Front	Yes	/

For WLAN&BT/BLE

Test Configurations	SAR Required	Note
Back	Yes	/
Front	Yes	/

6.9.3 Hotspot Exposure conditions

For WWAN

Test Configurations	SAR Required	Note
Back	Yes	＜25mm
Front	Yes	＜25mm
Top	No	＞25mm
Bottom	Yes	＜25mm
Right	No	＞25mm
Left	Yes	＜25mm

For WLAN&BT/BLE

Test Configurations	SAR Required	Note
Back	Yes	＜25mm
Front	Yes	＜25mm
Top	Yes	＜25mm
Bottom	No	＞25mm
Left	No	＞25mm
Right	Yes	＜25mm

Note: For hotspot mode, it's not necessary test Rear and Front position cause we already test the these position without hotspot mode in Body Exposure conditions, Normally if the hotspot mode opened, the technology "power reduction" used for mobile, so we consider the worst condition, and remain the data of body worn as hotspots mode.

6.10 System Checking

The manufacturer calibrates the probes annually. 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. 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 (%)
2019.10.15	D750V3	Head	1g	8.36	8.26	1.2	±10
2019.10.16	D750V3	Head	1g	8.48	8.26	2.7	±10
2019.10.16	D835V2	Head	1g	9.64	9.37	2.9	±10
2019.10.17	D835V2	Head	1g	9.56	9.37	2.0	±10
2019.10.17	D1800V2	Head	1g	38.2	38.9	-1.8	±10
2019.10.18	D1800V2	Head	1g	37.96	38.9	-2.4	±10
2019.10.21	D1800V2	Head	1g	38.12	38.9	-2.0	±10
2019.10.21	D2000V2	Head	1g	39.28	40.3	-2.5	±10
2019.10.22	D2000V2	Head	1g	39.92	40.3	-0.9	±10
2019.10.23	D2450V2	Head	1g	54.0	52.4	3.1	±10
2019.10.24	D2450V2	Head	1g	52.8	52.4	0.8	±10
2019.10.25	D5GHzV2 (5200MHz)	Head	1g	78.2	77.6	0.8	±10
2019.10.28	D5GHzV2 (5300MHz)	Head	1g	83.9	81.3	3.2	±10
2019.10.29	D5GHzV2 (5800MHz)	Head	1g	79.9	78.7	1.5	±10

According to KDB 865664 D01&IEEE 1528-2013, 2450MHz system check could cover the frequency range from 2205MHz to 2695 MHz

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 (%)
2019.10.15	Head 750	εr	42.263	41.90	0.9	±5
		σ[S/m]	0.914	0.89	2.7	±5
2019.10.16	Head 750	εr	42.177	41.90	0.7	±5
		σ[S/m]	0.92	0.89	3.4	±5
2019.10.16	Head 835	εr	42.533	41.50	2.5	±5
		σ[S/m]	0.917	0.90	1.9	±5
2019.10.17	Head 835	εr	40.266	41.50	-3.0	±5
		σ[S/m]	0.911	0.90	1.2	±5
2019.10.17	Head 1800	εr	38.885	40.00	-2.8	±5
		σ[S/m]	1.414	1.40	1.0	±5
2019.10.18	Head 1800	εr	40.688	40.00	1.7	±5
		σ[S/m]	1.418	1.40	1.3	±5
2019.10.21	Head 1800	εr	40.722	40.00	1.8	±5
		σ[S/m]	1.427	1.40	1.9	±5
2019.10.21	Head 2000	εr	39.844	40.00	-0.4	±5
		σ[S/m]	1.427	1.40	1.9	±5
2019.10.22	Head 2000	εr	40.355	40.00	0.9	±5
		σ[S/m]	1.377	1.40	-1.6	±5
2019.10.23	Head 2450	εr	38.343	39.20	-2.2	±5
		σ[S/m]	1.866	1.80	3.7	±5
2019.10.24	Head 2450	εr	39.672	39.20	1.2	±5
		σ[S/m]	1.851	1.80	2.8	±5
2019.10.25	Head 5200	εr	37.691	36.00	4.70	±5
		σ[S/m]	4.734	4.66	1.59	±5
2019.10.28	Head 5300	εr	36.775	35.9	2.44	±5
		σ[S/m]	4.822	4.76	1.30	±5
2019.10.29	Head 5800	εr	36.774	35.2	4.47	±5
		σ[S/m]	5.495	5.27	4.27	±5

6.11 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 D01v06, 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 D01v06, for each exposure position, if the highest output channel reported SAR ≤0.8W/kg, other channels SAR testing are not necessary.
3. The distance between the EUT and the phantom bottom is 10mm.

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

Mode: GSM 850(GPRS)

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

SAR Values (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	GPRS 4TX (head)	L	29.61	30.00	1.09	---	---
		M	29.45	30.00	1.14	0.353	0.402
		H	29.78	30.00	1.05	---	---
Left Tilted		L	29.61	30.00	1.09	---	---
		M	29.45	30.00	1.14	0.181	0.206
		H	29.78	30.00	1.05	---	---
Right cheek		L	29.61	30.00	1.09	---	---
		M	29.45	30.00	1.14	0.415	0.473
		H	29.78	30.00	1.05	---	---
Right Tilted		L	29.61	30.00	1.09	---	---
		M	29.45	30.00	1.14	0.252	0.287
		H	29.78	30.00	1.05	---	---
Back	GPRS 4TX (body-worn&hotspot)	L	29.61	30.00	1.09	---	---
		M	29.45	30.00	1.14	0.523	0.596
		H	29.78	30.00	1.05	---	---
Front		L	29.61	30.00	1.09	---	---
		M	29.45	30.00	1.14	0.429	0.489
		H	29.78	30.00	1.05	---	---
Bottom	GPRS 4TX (hotspot)	L	29.61	30.00	1.09	---	---
		M	29.45	30.00	1.14	0.241	0.275
		H	29.78	30.00	1.05	---	---
Left		L	29.61	30.00	1.09	---	---
		M	29.45	30.00	1.14	0.201	0.229
		H	29.78	30.00	1.05	---	---

Mode: GSM1900(GPRS)

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

SAR Values (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	GPRS 3TX (head)	L	24.91	25.00	1.02	---	---
		M	24.93	25.00	1.02	0.389	0.397
		H	24.96	25.00	1.01	---	---
Left Tilted		L	24.91	25.00	1.02	---	---
		M	24.93	25.00	1.02	0.149	0.152
		H	24.96	25.00	1.01	---	---
Right cheek		L	24.91	25.00	1.02	---	---
		M	24.93	25.00	1.02	0.189	0.193
		H	24.96	25.00	1.01	---	---
Right Tilted		L	24.91	25.00	1.02	---	---
		M	24.93	25.00	1.02	0.197	0.201
		H	24.96	25.00	1.01	---	---
Back	GPRS 3TX (body-worn&hotspot)	L	24.91	25.00	1.02	0.651	0.664
		M	24.93	25.00	1.02	---	---
		H	24.96	25.00	1.01	---	---
Front		L	24.91	25.00	1.02	---	---
		M	24.93	25.00	1.02	0.548	0.559
		H	24.96	25.00	1.01	---	---
Bottom	GPRS 3TX (hotspot)	L1	24.91	25.00	1.02	1.070	1.091
		L2	24.91	25.00	1.02	1.010	1.031
		M1	24.93	25.00	1.02	0.980	1.000
		M2	24.93	25.00	1.02	0.997	1.013
		H1	24.96	25.00	1.01	0.957	0.967
		H2	24.96	25.00	1.01	0.934	0.943
Left		L	24.91	25.00	1.01	---	---
		M	24.93	25.00	1.05	0.426	0.435
		H	24.96	25.00	1.04	---	---

Mode: WCDMA BAND II
fL (MHz)= 1852.4MHz fM (MHz)= 1880.0MHz fH (MHz)= 1907.6MHz
SAR Values (WCDMA BANDII)
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	12.2KRMC (head)	L	22.93	23.10	1.04	---	---
		M	23.04	23.10	1.01	0.212	0.214
		H	23.05	23.10	1.01	---	---
Left Tilted		L	22.93	23.10	1.04	---	---
		M	23.04	23.10	1.01	0.081	0.082
		H	23.05	23.10	1.01	---	---
Right cheek		L	22.93	23.10	1.04	---	---
		M	23.04	23.10	1.01	0.154	0.156
		H	23.05	23.10	1.01	---	---
Right Tilted		L	22.93	23.10	1.04	---	---
		M	23.04	23.10	1.01	0.103	0.104
		H	23.05	23.10	1.01	---	---
Back	12.2KRMC (body-worn&hotspot)	L	22.93	23.10	1.04	---	---
		M	23.04	23.10	1.01	0.569	0.575
		H	23.05	23.10	1.01	---	---
Front		L	22.93	23.10	1.04	---	---
		M	23.04	23.10	1.01	0.306	0.309
		H	23.05	23.10	1.01	---	---
Bottom	12.2KRMC (hotspot)	L1	22.93	23.10	1.04	0.780	0.811
		L2	22.93	23.10	1.04	0.810	0.842
		M1	23.04	23.10	1.01	0.900	0.909
		M2	23.04	23.10	1.01	0.890	0.902
		H1	23.05	23.10	1.01	0.830	0.838
		H2	23.05	23.10	1.01	0.820	0.829
Left		L	22.93	23.10	1.04	---	---
		M	23.04	23.10	1.01	0.221	0.223
		H	23.05	23.10	1.01	---	---

Mode: WCDMA BANDIV

fL (MHz)=1712.4MHz fM (MHz)=1732.4MHz fH (MHz)= 1752.6MHz

SAR Values (WCDMA BAND Ⅳ)

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	12.2KRMC (head)	L	22.56	22.70	1.03	---	---
		M	22.61	22.70	1.02	0.233	0.238
		H	22.55	22.70	1.04	---	---
Left Tilted		L	22.56	22.70	1.03	---	---
		M	22.61	22.70	1.02	0.108	0.110
		H	22.55	22.70	1.04	---	---
Right cheek		L	22.56	22.70	1.03	---	---
		M	22.61	22.70	1.02	0.136	0.139
		H	22.55	22.70	1.04	---	---
Right Tilted		L	22.56	22.70	1.03	---	---
		M	22.61	22.70	1.02	0.087	0.089
		H	22.55	22.70	1.04	---	---
Back	12.2KRMC (body-worn&hotspot)	L	22.56	22.70	1.03		---
		M	22.61	22.70	1.02	0.672	0.685
		H	22.55	22.70	1.04		---
Front		L	22.56	22.70	1.03	---	---
		M	22.61	22.70	1.02	0.371	0.378
		H	22.55	22.70	1.04	---	---
Bottom	12.2KRMC (hotspot)	L1	22.56	22.70	1.03	0.856	0.882
		L2	22.56	22.70	1.03	0.847	0.875
		M1	22.61	22.70	1.02	0.964	0.983
		M2	22.61	22.70	1.02	0.957	0.977
		H1	22.55	22.70	1.04	0.823	0.856
		H2	22.55	22.70	1.04	0.835	0.864
Left		L	22.56	22.70	1.03	---	---
		M	22.61	22.70	1.02	0.273	0.278
		H	22.55	22.70	1.04	---	---

Mode: WCDMA BAND V

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

SAR Values (WCDMA BAND V)

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	12.2KRMC (head)	L	22.85	23.00	1.04	---	---
		M	22.91	23.00	1.02	0.137	0.140
		H	22.86	23.00	1.03	---	---
Left Tilted		L	22.85	23.00	1.04	---	---
		M	22.91	23.00	1.02	0.081	0.082
		H	22.86	23.00	1.03	---	---
Right cheek		L	22.85	23.00	1.04	---	---
		M	22.91	23.00	1.02	0.166	0.169
		H	22.86	23.00	1.03	---	---
Right Tilted		L	22.85	23.00	1.04	---	---
		M	22.91	23.00	1.02	0.082	0.084
		H	22.86	23.00	1.03	---	---
Back	12.2KRMC (body-worn&hotspot)	L	22.85	23.00	1.04	---	---
		M	22.91	23.00	1.02	0.276	0.282
		H	22.86	23.00	1.03	---	---
Front		L	22.85	23.00	1.04	---	---
		M	22.91	23.00	1.02	0.176	0.180
		H	22.86	23.00	1.03	---	---
Bottom	12.2KRMC (hotspot)	L	22.85	23.00	1.04	---	---
		M	22.91	23.00	1.02	0.098	0.100
		H	22.86	23.00	1.03	---	---
Left		L	22.85	23.00	1.04	---	---
		M	22.91	23.00	1.02	0.100	0.102
		H	22.86	23.00	1.03	---	---

Mode: LTE Band 2

fL (MHz)= 1860MHz fM (MHz)= 1880MHz fH (MHz)= 1900MHz

SAR Values (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					1g Average	1g Average
Left cheek	20BW 1RB (head)	L	23.65	24.00	1.08	---	---
		M	23.78	24.00	1.05	0.273	0.287
		H	23.79	24.00	1.05	---	---
Left Tilted		L	23.65	24.00	1.08	---	---
		M	23.78	24.00	1.05	0.099	0.104
		H	23.79	24.00	1.05	---	---
Right cheek		L	23.65	24.00	1.08	---	---
		M	23.78	24.00	1.05	0.135	0.142
		H	23.79	24.00	1.05	---	---
Right Tilted		L	23.65	24.00	1.08	---	---
		M	23.78	24.00	1.05	0.106	0.111
		H	23.79	24.00	1.05	---	---
Back	20BW 1RB (body-worn&hotspot)	L	23.65	24.00	1.08		---
		M	23.78	24.00	1.05	0.673	0.707
		H	23.79	24.00	1.05		---
Front		L	23.65	24.00	1.08	---	---
		M	23.78	24.00	1.05	0.383	0.402
		H	23.79	24.00	1.05	---	---
Bottom	20BW 1RB (hotspot)	L1(main supply)	23.65	24.00	1.08	1.110	1.199
		L2(main supply)	23.65	24.00	1.08	1.050	1.138
		L1(secondary supply)	23.65	24.00	1.08	0.738	0.797
		M1	23.78	24.00	1.05	1.010	1.061
		M2	23.78	24.00	1.05	0.98	1.038
		H1	23.79	24.00	1.05	0.975	1.024
		H2	23.79	24.00	1.05	0.979	1.028
Left		L	23.65	24.00	1.08	---	---
		M	23.78	24.00	1.05	0.278	0.292
		H	23.79	24.00	1.05	---	---

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	20BW 50%RB (head)	L	22.82	23.00	1.04	---	---
		M	22.94	23.00	1.01	0.200	0.202
		H	22.85	23.00	1.04	---	---
Left Tilted		L	22.82	23.00	1.04	---	---
		M	22.94	23.00	1.01	0.083	0.083
		H	22.85	23.00	1.04	---	---
Right cheek		L	22.82	23.00	1.04	---	---
		M	22.94	23.00	1.01	0.101	0.102
		H	22.85	23.00	1.04	---	---
Right Tilted		L	22.82	23.00	1.04	---	---
		M	22.94	23.00	1.01	0.090	0.091
		H	22.85	23.00	1.04	---	---
Back	20BW 50%RB (body-worn&hotspot)	L	22.82	23.00	1.04	---	---
		M	22.94	23.00	1.01	0.577	0.583
		H	22.85	23.00	1.04	---	---
Front		L	22.82	23.00	1.04	---	---
		M	22.94	23.00	1.01	0.321	0.324
		H	22.85	23.00	1.04	---	---
Bottom	20BW 50%RB (hotspot)	L	22.82	23.00	1.04	---	---
		M	22.94	23.00	1.01	0.789	0.797
		H	22.85	23.00	1.04	---	---
Left		L	22.82	23.00	1.04	---	---
		M	22.94	23.00	1.01	0.203	0.205
		H	22.85	23.00	1.04	---	---
Bottom	20BW 100%RB (hotspot)	L	22.78	22.90	1.03	---	---
		M	22.85	22.90	1.01	0.786	0.794
		H	22.84	22.90	1.01	---	---

Mode: LTE Band 4

fL (MHz)= 1720MHz fM (MHz)= 1732.5MHz fH (MHz)= 1745MHz

SAR Values (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					1g Average	1g Average
Left cheek	20BW 1RB (head)	L	21.96	22.00	1.01	---	---
		M	21.95	22.00	1.01	0.301	0.304
		H	21.94	22.00	1.01	---	---
Left Tilted		L	21.96	22.00	1.01	---	---
		M	21.95	22.00	1.01	0.118	0.119
		H	21.94	22.00	1.01	---	---
Right cheek		L	21.96	22.00	1.01		---
		M	21.95	22.00	1.01	0.161	0.163
		H	21.94	22.00	1.01		---
Right Tilted		L	21.96	22.00	1.01		---
		M	21.95	22.00	1.01	0.143	0.144
		H	21.94	22.00	1.01		---
Back	20BW 1RB (body-worn&hotspot)	L	21.96	22.00	1.01		---
		M	21.95	22.00	1.01	0.589	0.595
		H	21.94	22.00	1.01		---
Front		L	21.96	22.00	1.01	---	---
		M	21.95	22.00	1.01	0.437	0.441
		H	21.94	22.00	1.01	---	---
Bottom	20BW 1RB (hotspot)	L	21.96	22.00	1.01	---	---
		M	21.95	22.00	1.01	0.672	0.679
		H	21.94	22.00	1.01	---	---
Left		L	21.96	22.00	1.01	---	---
		M	21.95	22.00	1.01	0.328	0.331
		H	21.94	22.00	1.01	---	---

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	20BW 50%RB (head)	L	21.20	21.20	1.00	---	---
		M	21.27	21.20	1.02	0.261	0.266
		H	21.17	21.20	1.01	---	---
Left Tilted		L	21.20	21.20	1.00	---	---
		M	21.27	21.20	1.02	0.098	0.100
		H	21.17	21.20	1.01	---	---
Right cheek		L	21.20	21.20	1.00	---	---
		M	21.27	21.20	1.02	0.142	0.145
		H	21.17	21.20	1.01	---	---
Right Tilted		L	21.20	21.20	1.00	---	---
		M	21.27	21.20	1.02	0.123	0.125
		H	21.17	21.20	1.01	---	---
Back	20BW 50%RB (body-worn&hotspot)	L	21.20	21.20	1.00		---
		M	21.27	21.20	1.02	0.377	0.385
		H	21.17	21.20	1.01		---
Front		L	21.20	21.20	1.00	---	---
		M	21.27	21.20	1.02	0.384	0.392
		H	21.17	21.20	1.01	---	---
Bottom	20BW 50%RB (hotspot)	L	21.20	21.20	1.00	---	---
		M	21.27	21.20	1.02	0.577	0.589
		H	21.17	21.20	1.01	---	---
Left		L	21.20	21.20	1.00	---	---
		M	21.27	21.20	1.02	0.286	0.292
		H	21.17	21.20	1.01	---	---

Mode: LTE Band 5

fL (MHz)=829 MHz fM (MHz)=836.5MHz fH (MHz)= 844MHz

SAR Values (LTE 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					1g Average	1g Average
Left cheek	10BW 1RB (head)	L	23.68	24.00	1.08	---	---
		M	23.61	24.00	1.09	0.145	0.158
		H	23.56	24.00	1.11	---	---
Left Tilted		L	23.68	24.00	1.08	---	---
		M	23.61	24.00	1.09	0.088	0.096
		H	23.56	24.00	1.11	---	---
Right cheek		L	23.68	24.00	1.08	---	---
		M	23.61	24.00	1.09	0.203	0.221
		H	23.56	24.00	1.11	---	---
Right Tilted		L	23.68	24.00	1.08	---	---
		M	23.61	24.00	1.09	0.096	0.104
		H	23.56	24.00	1.11	---	---
Back	10BW 1RB (body-worn&hotspot)	L	23.68	24.00	1.08	---	---
		M	23.61	24.00	1.09	0.265	0.289
		H	23.56	24.00	1.11	---	---
Front		L	23.68	24.00	1.08	---	---
		M	23.61	24.00	1.09	0.198	0.216
		H	23.56	24.00	1.11	---	---
Bottom	10BW 1RB (hotspot)	L	23.68	24.00	1.08	---	---
		M	23.61	24.00	1.09	0.120	0.131
		H	23.56	24.00	1.11	---	---
Left		L	23.68	24.00	1.08	---	---
		M	23.61	24.00	1.09	0.104	0.113
		H	23.56	24.00	1.11	---	---

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	10BW 50%RB (head)	L	22.76	23.00	1.06	---	---
		M	22.75	23.00	1.06	0.126	0.134
		H	22.78	23.00	1.05	---	---
Left Tilted		L	22.76	23.00	1.06	---	---
		M	22.75	23.00	1.06	0.071	0.076
		H	22.78	23.00	1.05	---	---
Right cheek		L	22.76	23.00	1.06	---	---
		M	22.75	23.00	1.06	0.165	0.175
		H	22.78	23.00	1.05	---	---
Right Tilted		L	22.76	23.00	1.06	---	---
		M	22.75	23.00	1.06	0.077	0.082
		H	22.78	23.00	1.05	---	---
Back	10BW 50%RB (body-worn&hotspot)	L	22.76	23.00	1.06	---	---
		M	22.75	23.00	1.06	0.188	0.199
		H	22.78	23.00	1.05	---	---
Front		L	22.76	23.00	1.06	---	---
		M	22.75	23.00	1.06	0.156	0.165
		H	22.78	23.00	1.05	---	---
Bottom	10BW 50%RB (hotspot)	L	22.76	23.00	1.06	---	---
		M	22.75	23.00	1.06	0.097	0.103
		H	22.78	23.00	1.05	---	---
Left		L	22.76	23.00	1.06	---	---
		M	22.75	23.00	1.06	0.102	0.108
		H	22.78	23.00	1.05	---	---

Mode: LTE Band 7

fL (MHz)=2510 MHz fM (MHz)=2535MHz fH (MHz)= 2560MHz

SAR Values (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	position					1g Average	1g Average
Left cheek	20BW 1RB (head)	L	20.17	20.20	1.01	---	---
		M	20.04	20.20	1.04	0.413	0.430
		H	20.07	20.20	1.03	---	---
Left Tilted		L	20.17	20.20	1.01	---	---
		M	20.04	20.20	1.04	0.215	0.224
		H	20.07	20.20	1.03	---	---
Right cheek		L	20.17	20.20	1.01	---	---
		M	20.04	20.20	1.04	0.303	0.315
		H	20.07	20.20	1.03	---	---
Right Tilted		L	20.17	20.20	1.01	---	---
		M	20.04	20.20	1.04	0.313	0.326
		H	20.07	20.20	1.03	---	---
Back	20BW 1RB (body-worn&hotspot)	L	20.17	20.20	1.01	---	---
		M	20.04	20.20	1.04	0.581	0.604
		H	20.07	20.20	1.03	---	---
Front		L	20.17	20.20	1.01	---	---
		M	20.04	20.20	1.04	0.736	0.765
		H	20.07	20.20	1.03	---	---
Bottom	20BW 1RB (hotspot)	L1	18.80	18.80	1.00	0.798	0.806
		L2	18.80	18.80	1.00	0.802	0.808
		M1	18.76	18.80	1.01	0.825	0.858
		M2	18.76	18.80	1.01	0.823	0.854
		H1	18.72	18.80	1.02	0.809	0.833
		H2	18.72	18.80	1.02	0.810	0.835
Left		L	20.17	20.20	1.01	---	---
		M	20.04	20.20	1.04	0.568	0.591
		H	20.07	20.20	1.03	---	---

Test Case		Ch	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
position	position					1g Average	1g Average
Left cheek	20BW 50%RB (head)	L	19.32	19.40	1.02	---	---
		M	19.31	19.40	1.02	0.386	0.394
		H	19.20	19.40	1.05	---	---
Left Tilted		L	19.32	19.40	1.02	---	---
		M	19.31	19.40	1.02	0.187	0.191
		H	19.20	19.40	1.05	---	---
Right cheek		L	19.32	19.40	1.02	---	---
		M	19.31	19.40	1.02	0.267	0.272
		H	19.20	19.40	1.05	---	---
Right Tilted		L	19.32	19.40	1.02	---	---
		M	19.31	19.40	1.02	0.275	0.281
		H	19.20	19.40	1.05	---	---
Back	20BW 50%RB (body-worn&hotspot)	L	19.32	19.40	1.02	---	---
		M	19.31	19.40	1.02	0.643	0.656
		H	19.20	19.40	1.05	---	---
Front		L	19.32	19.40	1.02	---	---
		M	19.31	19.40	1.02	0.630	0.643
		H	19.20	19.40	1.05	---	---
Bottom	20BW 50%RB (hotspot)	L	19.32	19.40	1.02	---	---
		M	19.31	19.40	1.02	0.721	0.735
		H	19.20	19.40	1.05	---	---
Left		L	19.32	19.40	1.02	---	---
		M	19.31	19.40	1.02	0.427	0.436
		H	19.20	19.40	1.05	---	---
Bottom	20BW 100%RB (hotspot)	L	19.27	19.30	1.01	---	---
		M	19.28	19.30	1.00	0.675	0.675
		H	19.16	19.30	1.03	---	---

Mode: LTE Band 12

fL (MHz)=704 MHz fM (MHz)=707.5MHz fH (MHz)= 711MHz

SAR Values (LTE BAND12)

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	position					1g Average	1g Average
Left cheek	10BW 1RB (head)	L	23.81	24.00	1.04	---	---
		M	23.76	24.00	1.06	0.116	0.123
		H	23.80	24.00	1.05	---	---
Left Tilted		L	23.81	24.00	1.04	---	---
		M	23.76	24.00	1.06	0.059	0.062
		H	23.80	24.00	1.05	---	---
Right cheek		L	23.81	24.00	1.04	---	---
		M	23.76	24.00	1.06	0.130	0.138
		H	23.80	24.00	1.05	---	---
Right Tilted		L	23.81	24.00	1.04	---	---
		M	23.76	24.00	1.06	0.062	0.066
		H	23.80	24.00	1.05	---	---
Back	10BW 1RB (body-worn&hotspot)	L	23.81	24.00	1.04	---	---
		M	23.76	24.00	1.06	0.276	0.293
		H	23.80	24.00	1.05	---	---
Front		L	23.81	24.00	1.04	---	---
		M	23.76	24.00	1.06	0.182	0.193
		H	23.80	24.00	1.05	---	---
Bottom	10BW 1RB (hotspot)	L	23.81	24.00	1.04	---	---
		M	23.76	24.00	1.06	0.052	0.055
		H	23.80	24.00	1.05	---	---
Left		L	23.81	24.00	1.04	---	---
		M	23.76	24.00	1.06	0.166	0.176
		H	23.80	24.00	1.05	---	---

Test Case		Ch	Measure Conducted Power (dBm)	Tune-up limit (dBm)	Scaling Factor	Measure Results (W/kg)	Reported Results (W/kg)
position	position					1g Average	1g Average
Left cheek	10BW 50%RB (head)	L	22.86	23.00	1.03	---	---
		M	22.92	23.00	1.02	0.095	0.097
		H	22.92	23.00	1.02	---	---
Left Tilted		L	22.86	23.00	1.03	---	---
		M	22.92	23.00	1.02	0.048	0.049
		H	22.92	23.00	1.02	---	---
Right cheek		L	22.86	23.00	1.03	---	---
		M	22.92	23.00	1.02	0.111	0.113
		H	22.92	23.00	1.02	---	---
Right Tilted		L	22.86	23.00	1.03	---	---
		M	22.92	23.00	1.02	0.056	0.057
		H	22.92	23.00	1.02	---	---
Back	10BW 50%RB (body-worn&hotspot)	L	22.86	23.00	1.03	---	---
		M	22.92	23.00	1.02	0.213	0.217
		H	22.92	23.00	1.02	---	---
Front		L	22.86	23.00	1.03	---	---
		M	22.92	23.00	1.02	0.193	0.197
		H	22.92	23.00	1.02	---	---
Bottom	10BW 50%RB (hotspot)	L	22.86	23.00	1.03	---	---
		M	22.92	23.00	1.02	0.165	0.168
		H	22.92	23.00	1.02	---	---
Left		L	22.86	23.00	1.03	---	---
		M	22.92	23.00	1.02	0.271	0.276
		H	22.92	23.00	1.02	---	---

Mode: Wi-Fi 2.4GHz

fL (MHz)=2412MHz fM (MHz)=2437MHz fH (MHz)= 2462MHz

SAR Values (Wi-Fi 802.11b)

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	802.11b (head)	L	17.06	17.50	1.11	---	---
		M	17.28	17.50	1.05	0.657	0.690
		H	16.44	17.50	1.28	---	---
Left Tilted		L1	17.06	17.50	1.11	0.836	0.928
		L2	17.06	17.50	1.11	0.841	0.931
		M1(main supply)	17.28	17.50	1.05	0.971	1.020
		M2(main supply)	17.28	17.50	1.05	0.969	1.019
		M1(secondary supply)	17.28	17.50	1.05	0.760	0.799
		H1	16.44	17.50	1.28	0.558	0.714
		H2	16.44	17.50	1.28	0.563	0.719
Right cheek		L	17.06	17.50	1.11	---	---
		M	17.28	17.50	1.05	0.382	0.401
		H	16.44	17.50	1.28	---	---
Right Tilted		L	17.06	17.50	1.11	---	---
		M	17.28	17.50	1.05	0.431	0.453
		H	16.44	17.50	1.28	---	---
Back	802.11b (body-worn&hotspot)	L	17.06	17.50	1.11	---	---
		M	17.28	17.50	1.05	0.379	0.398
		H	16.44	17.50	1.28	---	---
Front		L	17.06	17.50	1.11	---	---
		M	17.28	17.50	1.05	0.170	0.179
		H	16.44	17.50	1.28	---	---
Top	802.11b (hotspot)	L	17.06	17.50	1.11	---	---
		M	17.28	17.50	1.05	0.331	0.348
		H	16.44	17.50	1.28	---	---
Right		L	17.06	17.50	1.11	---	---
		M	17.28	17.50	1.05	0.045	0.047
		H	16.44	17.50	1.28	---	---

Mode: Wi-Fi 5GHz 1

fL (MHz)=5180MHz fM (MHz)=5200MHz fH (MHz)= 5240MHz

SAR Values (Wi-Fi 802.11a)

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	802.11b (head)	L1	14.96	15.00	1.01	0.802	0.810
		L2	14.96	15.00	1.01	0.805	0.812
		M1	14.87	15.00	1.03	0.814	0.838
		M2	14.87	15.00	1.03	0.809	0.834
		H1	14.89	15.00	1.03	0.799	0.823
		H2	14.89	15.00	1.03	0.803	0.824
Left Tilted		L	14.96	15.00	1.01	---	---
		M	14.87	15.00	1.03	0.730	0.752
		H	14.89	15.00	1.03	---	---
Right cheek		L	14.96	15.00	1.01	---	---
		M	14.87	15.00	1.03	0.373	0.384
		H	14.89	15.00	1.03	---	---
Right Tilted		L	14.96	15.00	1.01	---	---
		M	14.87	15.00	1.03	0.505	0.520
		H	14.89	15.00	1.03	---	---
Back	802.11b (body-worn&hotspot)	L	14.96	15.00	1.01	---	---
		M	14.87	15.00	1.03	0.117	0.121
		H	14.89	15.00	1.03	---	---
Front		L	14.96	15.00	1.01	---	---
		M	14.87	15.00	1.03	0.102	0.105
		H	14.89	15.00	1.03	---	---
Top	802.11b (hotspot)	L	14.96	15.00	1.01	---	---
		M	14.87	15.00	1.03	0.127	0.131
		H	14.89	15.00	1.03	---	---
Right		L	14.96	15.00	1.01	---	---
		M	14.87	15.00	1.03	0.089	0.092
		H	14.89	15.00	1.03	---	---

Mode: Wi-Fi 5GHz 2A

fL (MHz)=5260MHz fM (MHz)=5300MHz fH (MHz)= 5320MHz

SAR Values (Wi-Fi 802.11a)

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	802.11a (head)	L1	14.54	14.70	1.04	0.856	0.890
		L2	14.54	14.70	1.04	0.833	0.864
		M1	14.69	14.70	1.00	0.993	0.993
		M2	14.69	14.70	1.00	0.927	0.929
		H	13.96	14.70	1.19	0.566	0.674
Left Tilted		L	14.54	14.70	1.04	---	---
		M	14.69	14.70	1.00	0.887	0.887
		H	13.96	14.70	1.19	---	---
Right cheek		L	14.54	14.70	1.04	---	---
		M	14.69	14.70	1.00	0.384	0.384
		H	13.96	14.70	1.19	---	---
Right Tilted		L	14.54	14.70	1.04	---	---
		M	14.69	14.70	1.00	0.489	0.489
		H	13.96	14.70	1.19	---	---
Back	802.11a (body-worn&hotspot)	L	14.54	14.70	1.04	---	---
		M	14.69	14.70	1.00	0.187	0.187
		H	13.96	14.70	1.19	---	---
Front		L	14.54	14.70	1.04	---	---
		M	14.69	14.70	1.00	0.159	0.159
		H	13.96	14.70	1.19	---	---
Top	802.11a (hotspot)	L	14.54	14.70	1.04	---	---
		M	14.69	14.70	1.00	0.212	0.212
		H	13.96	14.70	1.19	---	---
Right		L	14.54	14.70	1.04	---	---
		M	14.69	14.70	1.00	0.144	0.144
		H	13.96	14.70	1.19	---	---

Mode: Wi-Fi 5GHz 3

fL (MHz)=5745MHz fM (MHz)=5785MHz fH (MHz)= 5825MHz

SAR Values (Wi-Fi 802.11a)

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	802.11a (head)	L	12.76	14.40	1.46	---	---
		M	13.42	14.40	1.25	0.566	0.708
		H	14.32	14.40	1.02	---	---
Left Tilted		L	12.76	14.40	1.46	---	---
		M	13.42	14.40	1.25	0.463	0.579
		H	14.32	14.40	1.02	---	---
Right cheek		L	12.76	14.40	1.46	---	---
		M	13.42	14.40	1.25	0.464	0.580
		H	14.32	14.40	1.02	---	---
Right Tilted		L	12.76	14.40	1.46	---	---
		M	13.42	14.40	1.25	0.390	0.488
		H	14.32	14.40	1.02	---	---
Back	802.11a (body-worn&hotspot)	L	12.76	14.40	1.46	---	---
		M	13.42	14.40	1.25	0.315	0.394
		H	14.32	14.40	1.02	---	---
Front		L	12.76	14.40	1.46	---	---
		M	13.42	14.40	1.25	0.162	0.203
		H	14.32	14.40	1.02	---	---
Top	802.11a (hotspot)	L	12.76	14.40	1.46	---	---
		M	13.42	14.40	1.25	0.315	0.394
		H	14.32	14.40	1.02	---	---
Right		L	12.76	14.40	1.46	---	---
		M	13.42	14.40	1.25	0.159	0.199
		H	14.32	14.40	1.02	---	---

6.12 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.

The Highest Reported SAR configuration in Each Frequency Band

Frequency band	Air interface	Head(w/kg)	Body-worn(w/kg)	Hotspot(w/kg)
Below 1G	GSM850 WCDMA BAND5 LTE BAND5 LTE BAND12	<0.8	<0.8	<0.8
1G-2G	GSM1900 WCDMA BAND2 WCDMA BAND4 LTE BAND2 LTE BAND4	<0.8	<0.8	> 0.8
2G-3G	WIFI 2.4G LTE BAND7	> 0.8	<0.8	> 0.8
Above 5G	WIFI 5G 1 WIFI 5G 2A WIFI 5G 3	> 0.8	<0.8	<0.8

6.13 Simultaneous Transmission SAR Analysis

The sum of SAR values for GSM & Wi-Fi/ Bluetooth

	MAXIMUM SAR VALUE FOR HEAD	MAXIMUM SAR VALUE FOR BODY WORN	MAXIMUM SAR VALUE FOR HOTSPOT
GSM	0.402	0.664	1.091
Wi-Fi	0.993	0.398	---
Sum	1.395	1.062	1.091
Note	Left cheek: GSM850+ WIFI5G 2A	Back: GSM1900+WIFI2.4G	Bottom: GSM1900

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

The sum of SAR values for WCDMA & Wi-Fi 2.4G/ Bluetooth

	MAXIMUM SAR VALUE FOR HEAD	MAXIMUM SAR VALUE FOR BODY	MAXIMUM SAR VALUE FOR HOTSPOT
WCDMA	0.238	0.685	0.685
Wi-Fi	0.993	0.398	0.398
Sum	1.231	1.083	1.083
Note	Left cheek: WCDMAIV+ WIFI5G 2A	Back: WCDMAIV+ WIFI2.4G	Back: WCDMAIV+ WIFI2.4G

According to the above tables, the sum of SAR values for WCDMA and Wi-Fi < 1.6W/kg. So simultaneous transmission SAR are not required for Wi-Fi transmitter.5

The sum of SAR values for LTE& Wi-Fi 2.4G/ Bluetooth

	MAXIMUM SAR VALUE FOR HEAD	MAXIMUM SAR VALUE FOR BODY	MAXIMUM SAR VALUE FOR HOTSPOT
LTE	0.430	0.707	1.199
Wi-Fi	0.993	0.398	---
Sum	1.423	1.105	1.199
Note	Left cheek: LTE7 + WIFI5G 2A	Back: LTE2 + WIFI2.4G	Bottom: LTE2

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

7 MEASUREMENT UNCERTAINTY

(0.3 - 3 GHz range)								
Error Description	Uncert. value	Prob. Dist.	Div.	(c_i) 1g	(c_i) 10g	Std. Unc. (1g)	Std. Unc. (10g)	(v_i) v_{eff}
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 %	∞
Modulation Response^m	±2.4 %	R	$\sqrt{3}$	1	1	±1.4 %	±1.4 %	∞
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.	±2.0 %	R	$\sqrt{3}$	1	1	±1.2 %	±1.2 %	∞
Test Sample Related								
Device Positioning	±2.9 %	N	1	1	1	±2.9 %	±2.9 %	145
Device Holder	±3.6 %	N	1	1	1	±3.6 %	±3.6 %	5
Power Drift	±5.0 %	R	$\sqrt{3}$	1	1	±2.9 %	±2.9 %	∞
Power Scaling^p	±0 %	R	$\sqrt{3}$	1	1	±0.0 %	±0.0 %	∞
Phantom and Setup								
Phantom Uncertainty	±6.1 %	R	$\sqrt{3}$	1	1	±3.5 %	±3.5 %	∞
SAR correction	±1.9 %	R	$\sqrt{3}$	1	0.84	±1.1 %	±0.9 %	∞
Liquid Conductivity (mea.)^{DAK}	±2.5 %	R	$\sqrt{3}$	0.78	0.71	±1.1 %	±1.0 %	∞
Liquid Permittivity (mea.) ^{DAK}	±2.5 %	R	$\sqrt{3}$	0.26	0.26	±0.3 %	±0.4 %	∞
Temp. unc. - Conductivity ^{BB}	±3.4 %	R	$\sqrt{3}$	0.78	0.71	±1.5 %	±1.4 %	∞
Temp. unc. - Permittivity ^{BB}	±0.4 %	R	$\sqrt{3}$	0.23	0.26	±0.1 %	±0.1 %	∞
Combined Std. Uncertainty						±11.2 %	±11.1 %	361
Expanded STD Uncertainty						**±22.3 %**	**±22.2 %**	

(3 - 6 GHz range)								
Error Description	Uncert. value	Prob. Dist.	Div.	(c_i) 1g	(c_i) 10g	Std. Unc. (1g)	Std. Unc. (10g)	(v_i) v_{eff}
Measurement System								
Probe Calibration	±6.55 %	N	1	1	1	±6.55 %	±6.55 %	∞
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	±2.0 %	R	$\sqrt{3}$	1	1	±1.2 %	±1.2 %	∞
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 %	∞
Modulation Response^{m}	±2.4 %	R	$\sqrt{3}$	1	1	±1.4 %	±1.4 %	∞
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	±0.8 %	R	$\sqrt{3}$	1	1	±0.5 %	±0.5 %	∞
Probe Positioning	±6.7 %	R	$\sqrt{3}$	1	1	±3.9 %	±3.9 %	∞
Max. SAR Eval.	±4.0 %	R	$\sqrt{3}$	1	1	±2.3 %	±2.3 %	∞
Test Sample Related								
Device Positioning	±2.9 %	N	1	1	1	±2.9 %	±2.9 %	145
Device Holder	±3.6 %	N	1	1	1	±3.6 %	±3.6 %	5
Power Drift	±5.0 %	R	$\sqrt{3}$	1	1	±2.9 %	±2.9 %	∞
Power Scaling^{p}	±0 %	R	$\sqrt{3}$	1	1	±0.0 %	±0.0 %	∞
Phantom and Setup								
Phantom Uncertainty	±6.6 %	R	$\sqrt{3}$	1	1	±3.8 %	±3.8 %	∞
SAR correction	±1.9 %	R	$\sqrt{3}$	1	0.84	±1.1 %	±0.9 %	∞
Liquid Conductivity (mea.)^{DAK}	±2.5 %	R	$\sqrt{3}$	0.78	0.71	±1.1 %	±1.0 %	∞
Liquid Permittivity (mea.) ^{DAK}	±2.5 %	R	$\sqrt{3}$	0.26	0.26	±0.3 %	±0.4 %	∞
Temp. unc. - Conductivity ^{BB}	±3.4 %	R	$\sqrt{3}$	0.78	0.71	±1.5 %	±1.4 %	∞
Temp. unc. - Permittivity ^{BB}	±0.4 %	R	$\sqrt{3}$	0.23	0.26	±0.1 %	±0.1 %	∞
Combined Std. Uncertainty						±12.3 %	±12.2 %	748
Expanded STD Uncertainty						**±24.6 %**	**±24.5 %**	

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	Model	Serial Number	Calibration date	Calibration Due data
DAE	DAE4	546	2019.08.27	2020.08.26
Dosimetric E-field Probe	ES3DV3	3127	2019.08.28	2020.08.27
Dosimetric E-field Probe	EX3DV4	3708	2019.09.26	2020.09.25
Dipole Validation Kit	D750V3	1101	2017.09.13	2020.09.12
Dipole Validation Kit	D835V2	4d023	2017.09.13	2020.09.12
Dipole Validation Kit	D1800V2	2d084	2017.09.15	2020.09.14
Dipole Validation Kit	D2000V2	1009	2018.02.01	2021.01.31
Dipole Validation Kit	D2450V2	738	2017.09.18	2020.09.17
Dipole Validation Kit	D5GHzV2	1079	2017.09.25	2020.09.24

Additional test equipment used in testing:

Test Equipment	Model	Serial Number	Calibration date	Calibration Due data
Signal Generator	E4428C	MY45280865	2019.08.20	2020.08.19
Signal Generator	SML 03	103514	2019.08.20	2020.08.19
Power meter	E4417A	MY45101182	2019.08.20	2020.08.19
Power Sensor	E4412A	MY41502214	2019.08.20	2020.08.19
Power Sensor	E4412A	MY41502130	2019.08.20	2020.08.19
Power meter	E4417A	MY45101004	2019.08.20	2020.08.19
Power Sensor	E9300B	MY41496001	2019.08.20	2020.08.19
Power Sensor	E9300B	MY41496003	2019.08.20	2020.08.19
Communication Tester	E5515C	MY48367401	2019.08.20	2020.08.19
Communication Tester	CMU500	114666	2019.08.20	2020.08.19
Communication Tester	MT8820C	6201300660	2019.08.20	2020.08.19
Communication Tester	MT8821C	6201547819	2019.08.20	2020.08.19
Vector Network Analyzer	E5072A	MY51100334	2019.03.01	2020.02.28
Vector Network Analyzer	VNA R140	0011213	2019.10.17	2020.10.16
Dielectric Parameter Probe	DAKS-3.5	1042	2019.10.17	2020.10.16

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%.

According to KDB 865664 D01 section 3.2.2, instead of the typical annual calibration recommended by measurement standards, longer calibration intervals of up to three years may be considered when it is demonstrated that the **SAR target**, **impedance** and **return loss** of a dipole have remain stable according to the following requirements.

1) The test laboratory must ensure that the required supporting information and documentation are included in the SAR report to qualify for the three-year extended calibration interval; otherwise, the IEEE Std 1528-2013 recommended annual calibration applies.
2) Immediate re-calibration is required for the following conditions.
a) After a dipole is damaged and properly repaired to meet required specifications.
b) When the measured SAR deviates from the calibrated SAR value by more than 10% due to changes in physical, mechanical, electrical or other relevant dipole conditions; i.e., the error is not introduced by incorrect measurement procedures or other issues relating to the SAR measurement system.
c) When the most recent return-loss result, measured at least annually, deviates by more than 20% from the previous measurement (i.e. value in dB×0.2) or not meeting the required 20 dB minimum return-loss requirement.
d) When the most recent measurement of the real or imaginary parts of the impedance, measured at least annually, deviates by more than 5 Ω from the previous measurement.

Dipole 750

SAR target

Refers to system check, measured SAR (1g and 10g) deviates from the Target SAR value of calibration report within 10%.

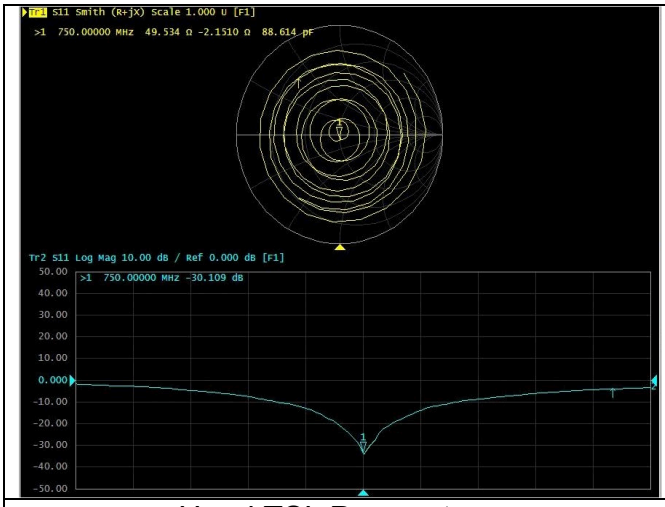
Impedance and Return loss measured by Network analyzer

The most recent measurement of the real or imaginary parts of the impedance (measured on 2018.8.20), deviates within 5 Ω from the previous measurement. (Data from the last calibration report)

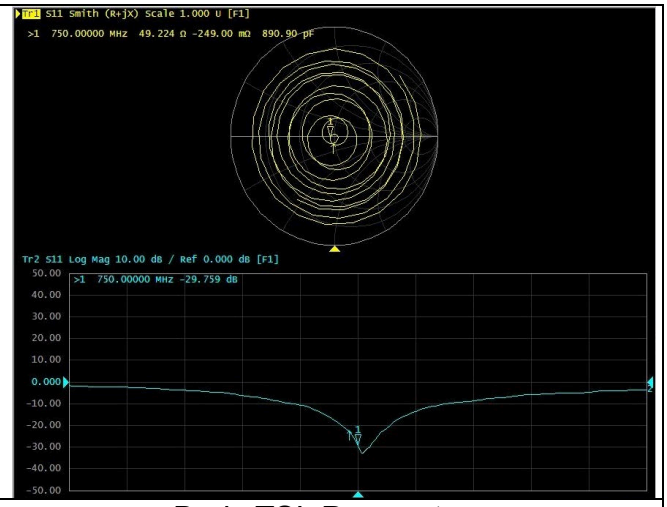
The most recent return-loss result (measured on 2018.8.20) deviates within 20% from the previous measurement. (Data from the last calibration report)

Head TSL Parameters			
Parameters	Target (Ref. Value)	Measured data	Deviation
Impedance	53.9Ω+0.24jΩ	49.5Ω-2.15jΩ	<5Ω
Return loss	-28.4dB	-29.8dB	<20%

Body TSL Parameters			
Parameters	Target (Ref. Value)	Measured data	Deviation
Impedance	52.0Ω-2.22jΩ	49.2Ω-0.25jΩ	<5Ω
Return loss	-30.6dB	-30.1dB	<20%



Head TSL Parameters



Body TSL Parameters

Dipole 835

SAR target

Refers to system check, measured SAR (1g and 10g) deviates from the Target SAR value of calibration report within 10%.

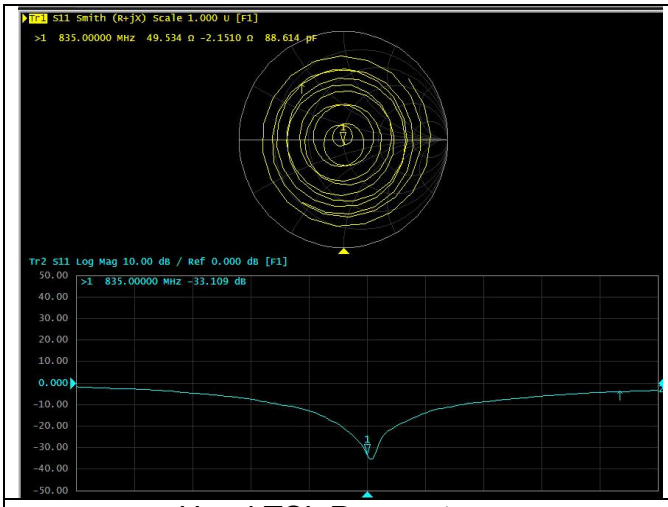
Impedance and Return loss measured by Network analyzer

The most recent measurement of the real or imaginary parts of the impedance (measured on 2018.8.20), deviates within 5 Ω from the previous measurement. (Data from the last calibration report)

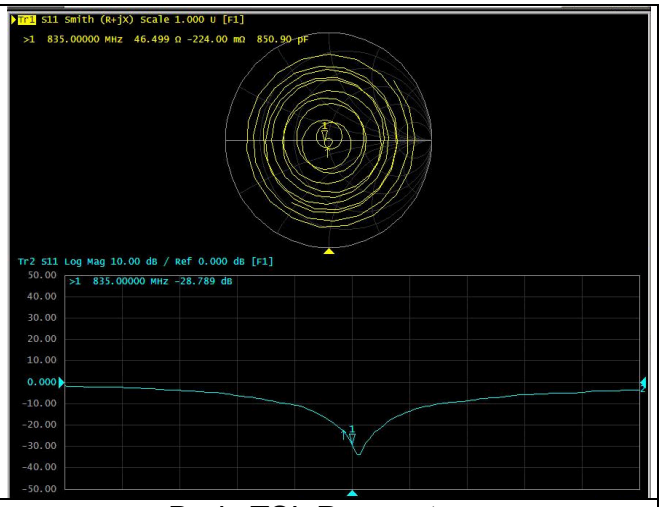
The most recent return-loss result (measured on 2018.8.20) deviates within 20% from the previous measurement. (Data from the last calibration report)

Head TSL Parameters			
Parameters	Target (Ref. Value)	Measured data	Deviation
Impedance	51.0Ω-2.79jΩ	49.5Ω-2.15jΩ	<5Ω
Return loss	-30.7 dB	-33.1 dB	<20%

Body TSL Parameters			
Parameters	Target (Ref. Value)	Measured data	Deviation
Impedance	46.6Ω-3.61jΩ	49.5Ω-0.22jΩ	<5Ω
Return loss	-25.8dB	-28.8dB	<20%



Head TSL Parameters



Body TSL Parameters

Dipole1800

SAR target

Refers to system check, measured SAR (1g and 10g) deviates from the Target SAR value of calibration report within 10%.

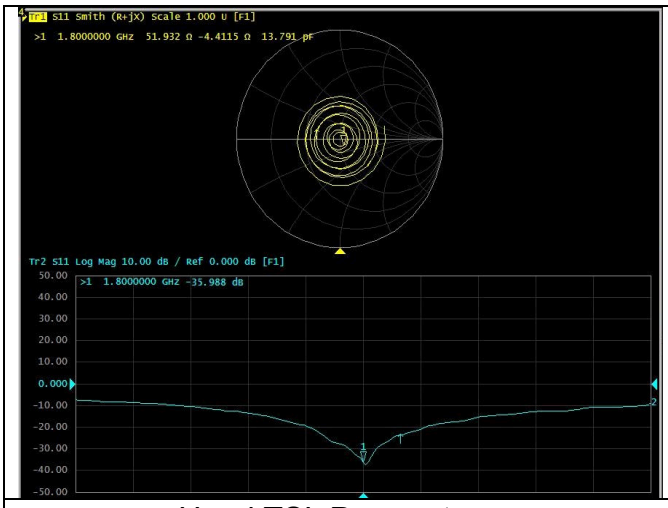
Impedance and Return loss measured by Network analyzer

The most recent measurement of the real or imaginary parts of the impedance (measured on 2018.8.20), deviates within 5 Ω from the previous measurement. (Data from the last calibration report)

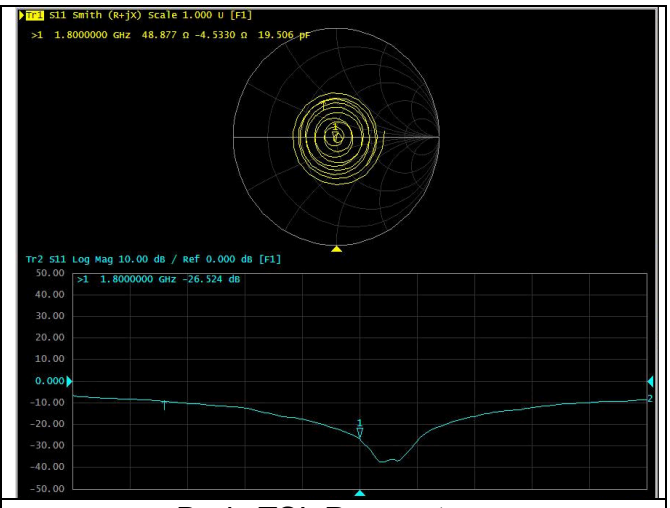
The most recent return-loss result (measured on 2018.8.20) deviates within 20% from the previous measurement. (Data from the last calibration report)

Head TSL Parameters			
Parameters	Target (Ref. Value)	Measured data	Deviation
Impedance	49.3Ω-1.55jΩ	51.9Ω-4.41jΩ	<5Ω
Return loss	-35.4 dB	-36.0dB	<20%

Body TSL Parameters			
Parameters	Target (Ref. Value)	Measured data	Deviation
Impedance	46.0Ω-1.32jΩ	48.9Ω-4.53jΩ	<5Ω
Return loss	-27.1dB	-26.5dB	<20%



Head TSL Parameters



Body TSL Parameters

Dipole2000

SAR target

Refers to system check, measured SAR (1g and 10g) deviates from the Target SAR value of calibration report within 10%.

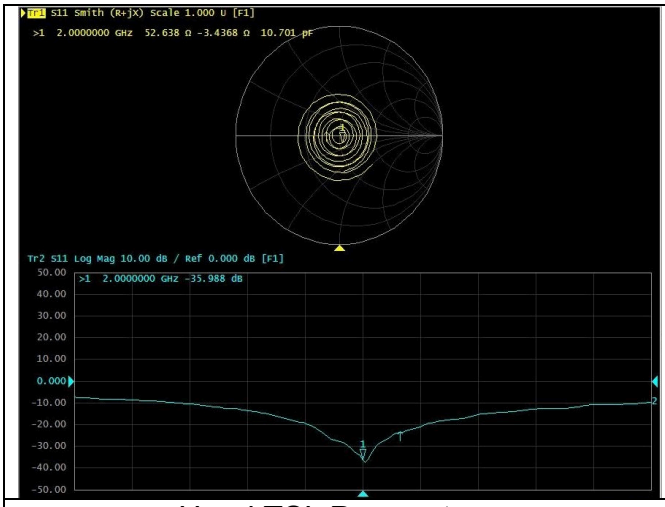
Impedance and Return loss measured by Network analyzer

The most recent measurement of the real or imaginary parts of the impedance (measured on 2018.8.20), deviates within 5 Ω from the previous measurement. (Data from the last calibration report)

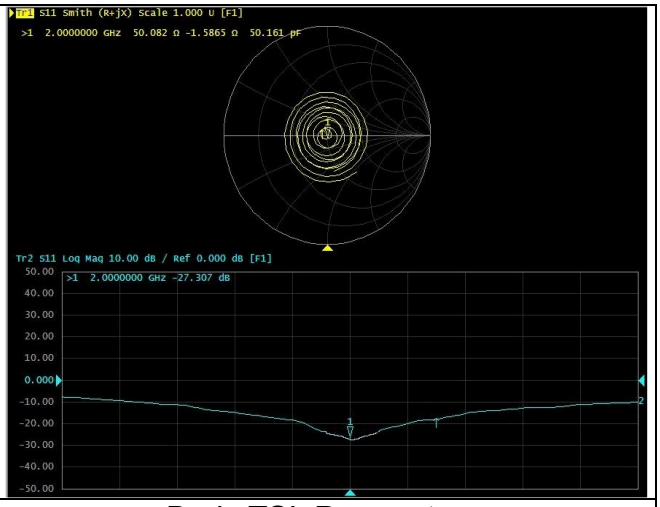
The most recent return-loss result (measured on 2018.8.20) deviates within 20% from the previous measurement. (Data from the last calibration report)

Head TSL Parameters			
Parameters	Target (Ref. Value)	Measured data	Deviation
Impedance	49.8Ω-2.08jΩ	52.6Ω-3.44jΩ	<5Ω
Return loss	-33.6dB	-36.0dB	<20%

Body TSL Parameters			
Parameters	Target (Ref. Value)	Measured data	Deviation
Impedance	46.3Ω-1.63jΩ	50.1Ω-1.59jΩ	<5Ω
Return loss	-27.6dB	-27.3dB	<20%



Head TSL Parameters



Body TSL Parameters

Dipole2450

SAR target

Refers to system check, measured SAR (1g and 10g) deviates from the Target SAR value of calibration report within 10%.

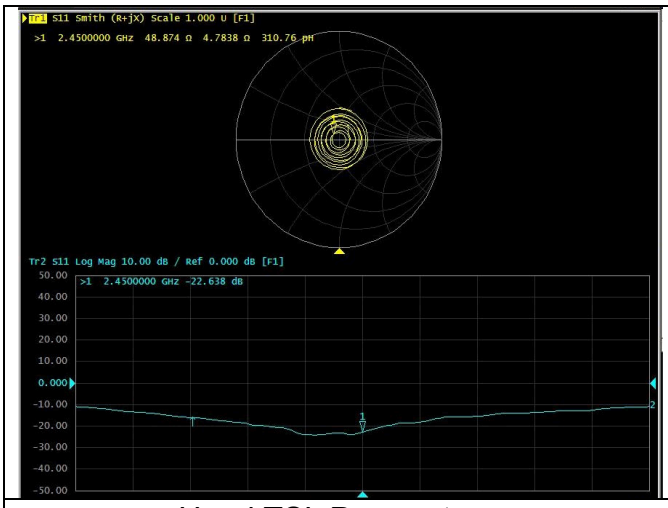
Impedance and Return loss measured by Network analyzer

The most recent measurement of the real or imaginary parts of the impedance (measured on 2018.8.20), deviates within 5 Ω from the previous measurement. (Data from the last calibration report)

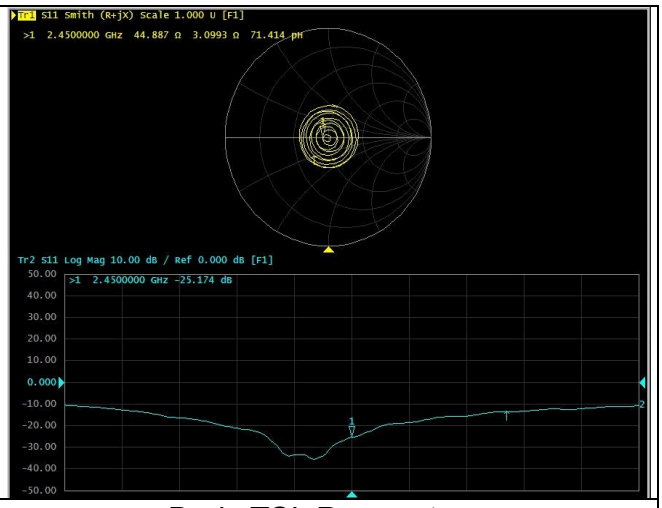
The most recent return-loss result (measured on 2018.8.20) deviates within 20% from the previous measurement. (Data from the last calibration report)

Head TSL Parameters			
Parameters	Target (Ref. Value)	Measured data	Deviation
Impedance	51.3Ω+5.92jΩ	48.9Ω+4.78jΩ	<5Ω
Return loss	-24.5 dB	-22.6dB	<20%

Body TSL Parameters			
Parameters	Target (Ref. Value)	Measured data	Deviation
Impedance	47.6Ω+6.39jΩ	44.9Ω+3.10jΩ	<5Ω
Return loss	-23.1dB	-25.2dB	<20%



Head TSL Parameters



Body TSL Parameters

Dipole5GHz

SAR target

Refers to system check, measured SAR (1g and 10g) deviates from the Target SAR value of calibration report within 10%.

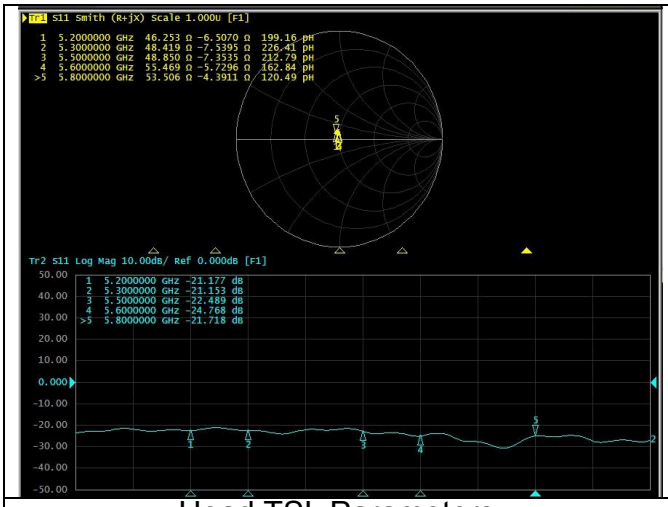
Impedance and Return loss measured by Network analyzer

The most recent measurement of the real or imaginary parts of the impedance (measured on 2018.8.20), deviates within 5 Ω from the previous measurement. (Data from the last calibration report)

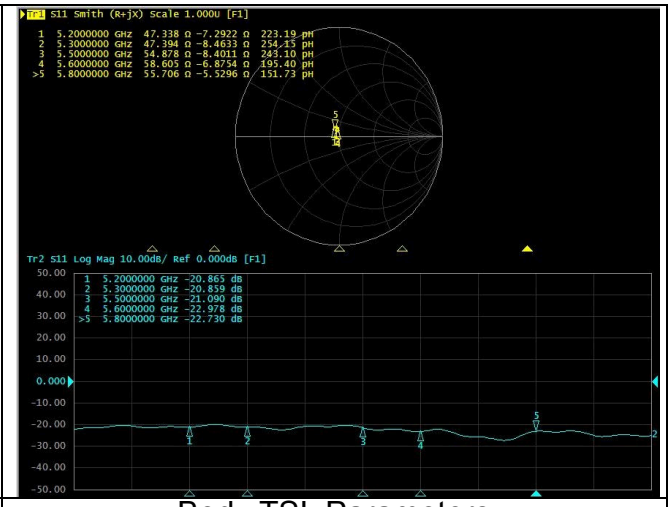
The most recent return-loss result (measured on 2018.8.20) deviates within 20% from the previous measurement. (Data from the last calibration report)

Head TSL Parameters				
Parameters	Target (Ref. Value)	Measured data	Deviation	Frequency (MHz)
Impedance	47.6Ω-8.77jΩ	46.3Ω-6.51jΩ	<5Ω	5200
Return loss	-20.7dB	-20.9dB	<20%	5200
Impedance	45.5Ω-6.82jΩ	48.4Ω-7.54jΩ	<5Ω	5300
Return loss	-21.4dB	-20.9dB	<20%	5300
Impedance	50.7Ω-7.14jΩ	48.9Ω-7.35jΩ	<5Ω	5500
Return loss	-23.0dB	-20.9dB	<20%	5500
Impedance	55.2Ω-4.00jΩ	55.5Ω-5.73jΩ	<5Ω	5600
Return loss	-24.1dB	-20.9dB	<20%	5600
Impedance	52.2Ω-8.20jΩ	53.5Ω-4.39jΩ	<5Ω	5800
Return loss	-21.6dB	-20.9dB	<20%	5800

Body TSL Parameters				
Parameters	Target (Ref. Value)	Measured data	Deviation	Frequency (MHz)
Impedance	50.8Ω-10.10jΩ	47.3Ω-7.29jΩ	<5Ω	5200
Return loss	-20.0dB	-20.9dB	<20%	5200
Impedance	48.5Ω-8.56jΩ	47.4Ω-8.46jΩ	<5Ω	5300
Return loss	-21.1dB	-20.9dB	<20%	5300
Impedance	54.9Ω-6.85jΩ	54.9Ω-8.40jΩ	<5Ω	5500
Return loss	-21.9dB	-21.1dB	<20%	5500
Impedance	56.6Ω-2.29jΩ	58.6Ω-6.88jΩ	<5Ω	5600
Return loss	-23.7dB	-23.0dB	<20%	5600
Impedance	56.7Ω-8.10jΩ	55.7Ω-5.53jΩ	<5Ω	5800
Return loss	-20.2dB	-22.7dB	<20%	5800



Head TSL Parameters



Body TSL Parameters

ANNEX A – TEST PLOTS

Please refer to the attachment.

ANNEX B – RELEVANT PAGES FROM CALIBRATION REPORTS

Please refer to the attachment.

ANNEX A – TEST PLOTS

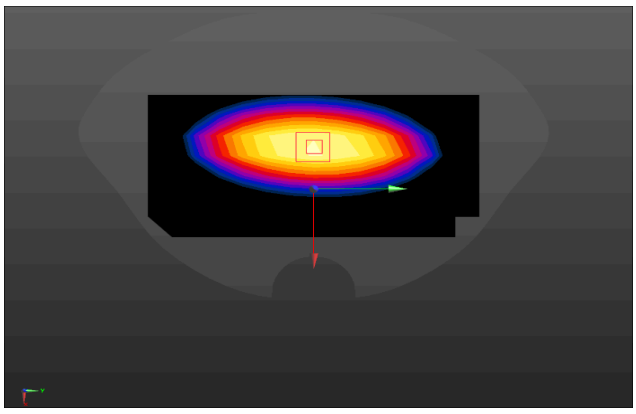
Head liquid

System check	750MHz

Communication System: UID 0, CW (0); Communication System Band: D750 (750.0 MHz); Frequency: 750 MHz;Communication System PAR: 0 dB
Medium parameters used: f = 750 MHz; σ = 0.914 S/m; ε_r = 42.263; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3127; ConvF(6.34, 6.34, 6.34); Calibrated: 8/27/2019;
- Sensor-Surface: 3mm (Mechanical Surface Detection), z = -3.0, 32.0
- Electronics: DAE4 Sn546; Calibrated: 8/28/2019
- Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)
  System Performance Check at Frequencies 750MHz/d=15mm, Pin=250 mW, dist=3.0mm (ES-Probe)/Area Scan (8x15x1): Measurement grid: dx=15mm, dy=15mm
  Maximum value of SAR (measured) = 2.16 W/kg
  System Performance Check at Frequencies 750MHz/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 = 41.77 V/m; Power Drift = 0.19 dB
  Peak SAR (extrapolated) = 3.26 W/kg
  SAR(1 g) = 2.09 W/kg; SAR(10 g) = 1.37 W/kg
  Maximum value of SAR (measured) = 2.49 W/kg



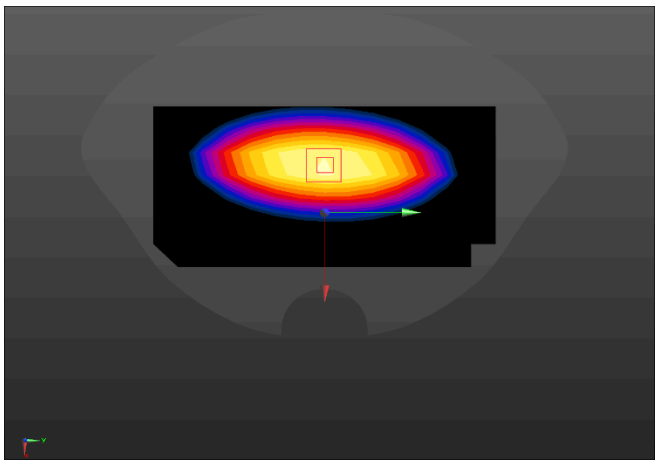
0 dB = 2.49 W/kg = 3.96 dBW/kg

System check	750MHz

Communication System: UID 0, CW (0); Communication System Band: D750 (750.0 MHz); Frequency: 750 MHz;Communication System PAR: 0 dB
Medium parameters used: f = 750 MHz; σ = 0.920 S/m; ε_r = 42.177; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3127; ConvF(6.34, 6.34, 6.34); Calibrated: 8/27/2019;
- Sensor-Surface: 3mm (Mechanical Surface Detection), z = -3.0, 32.0
- Electronics: DAE4 Sn546; Calibrated: 8/28/2019
- Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7437)
  System Performance Check at Frequencies 750MHz/d=15mm, Pin=250 mW, dist=3.0mm (ES-Probe)/Area Scan (8x15x1): Measurement grid: dx=15mm, dy=15mm
  Maximum value of SAR (measured) = 2.27 W/kg
  System Performance Check at Frequencies 750MHz/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 = 43.47 V/m; Power Drift = -0.10 dB
  Peak SAR (extrapolated) = 4.11 W/kg
  SAR(1 g) = 2.12 W/kg; SAR(10 g) = 1.45 W/kg
  Maximum value of SAR (measured) = 2.55 W/kg



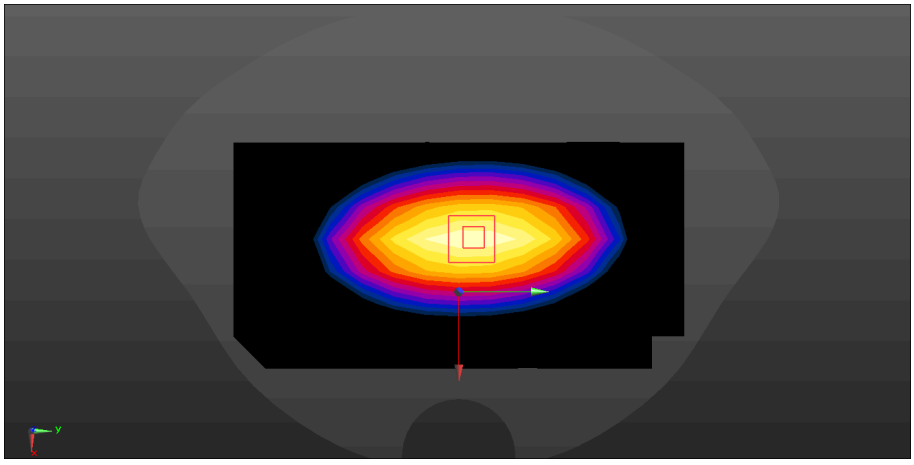
0 dB = 2.55 W/kg = 4.07 dBW/kg

System check	835MHz

Communication System: UID 0, CW (0); Frequency: 835 MHz
Medium parameters used (interpolated): f = 835 MHz; σ = 0.917 S/m; ε_r = 42.533; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(6.20, 6.20, 6.20); Calibrated: 8/27/2019;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 8/28/2019
- Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)
  Configuration 835/835/Area Scan (8x15x1): Measurement grid: dx=15mm, dy=15mm
  Maximum value of SAR (measured) = 2.75 W/kg
  Configuration 835/835/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
  Reference Value = 52.68 V/m; Power Drift = -0.09 dB
  Peak SAR (extrapolated) = 3.58 W/kg
  SAR(1 g) = 2.41 W/kg; SAR(10 g) = 1.56 W/kg
  Maximum value of SAR (measured) = 2.79 W/kg

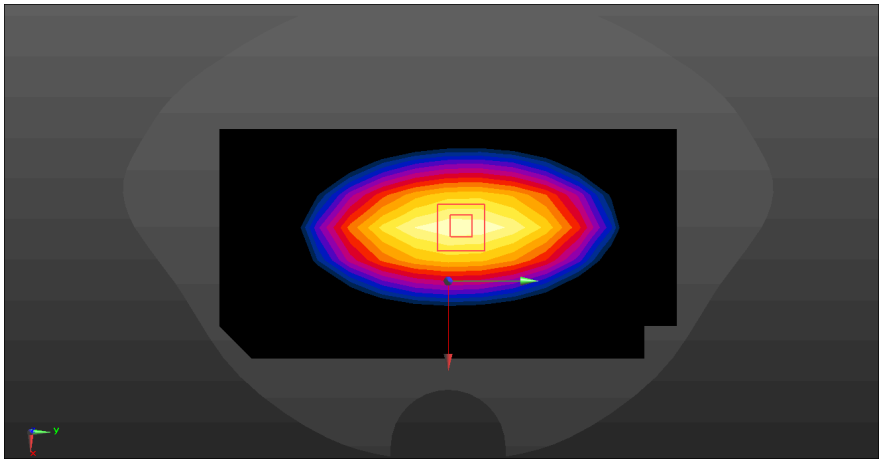


System check	835MHz

Communication System: UID 0, CW (0); Frequency: 835 MHz
Medium parameters used (interpolated): f = 835 MHz; σ = 0.911 S/m; ε_r = 40.266 ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(6.20, 6.20, 6.20); Calibrated: 8/27/2019;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 8/28/2019
- Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)
  Configuration 835/835/Area Scan (8x15x1): Measurement grid: dx=15mm, dy=15mm
  Maximum value of SAR (measured) = 2.72 W/kg
  Configuration 835/835/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
  Reference Value = 51.67 V/m; Power Drift = 0.08 dB
  Peak SAR (extrapolated) = 3.58 W/kg
  SAR(1 g) = 2.39 W/kg; SAR(10 g) = 1.51 W/kg
  Maximum value of SAR (measured) = 2.75 W/kg

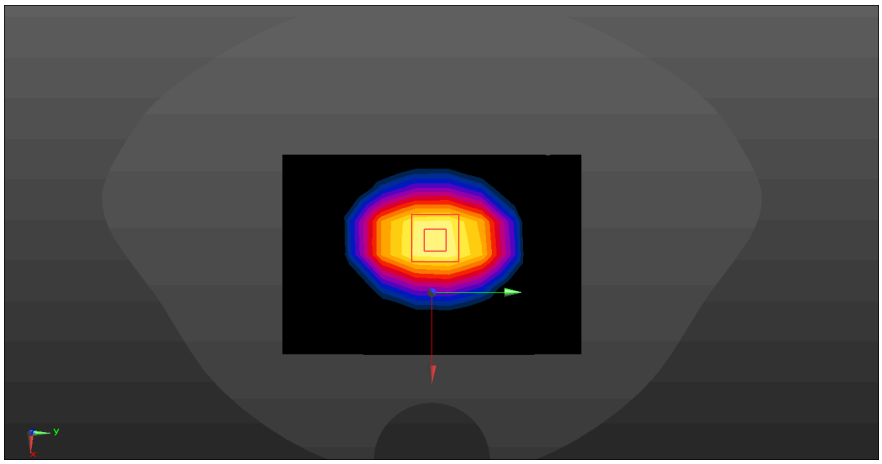


System check	1800MHz

Communication System: UID 0, CW (0); Frequency: 1800 MHz
Medium parameters used: f = 1800 MHz; σ = 1.414 S/m; ε_r = 38.885; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(5.10, 5.10, 5.10); Calibrated: 8/27/2019;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 8/28/2019
- Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)
  Configuration 1800/1800/Area Scan (7x10x1): Measurement grid: dx=15mm, dy=15mm
  Maximum value of SAR (measured) = 8.57 W/kg
  Configuration 1800/1800/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
  Reference Value = 80.04 V/m; Power Drift = 0.11 dB
  Peak SAR (extrapolated) = 17.7 W/kg
  SAR(1 g) = 9.55 W/kg; SAR(10 g) = 4.97 W/kg
  Maximum value of SAR (measured) = 12.0 W/kg

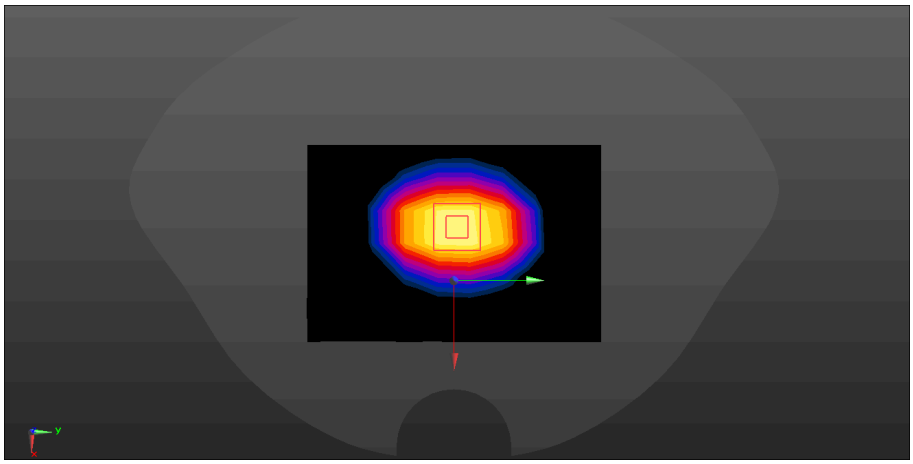


System check	1800MHz

Communication System: UID 0, CW (0); Frequency: 1800 MHz
Medium parameters used: f = 1800 MHz; σ = 1.418 S/m; ε_r = 40.688; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(5.10, 5.10, 5.10); Calibrated: 8/27/2019;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 8/28/2019
- Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)
  Configuration 1800/1800/Area Scan (7x10x1): Measurement grid: dx=15mm, dy=15mm
  Maximum value of SAR (measured) = 8.31 W/kg
  Configuration 1800/1800/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
  Reference Value = 76.60 V/m; Power Drift = 0.01 dB
  Peak SAR (extrapolated) = 17.5 W/kg
  SAR(1 g) = 9.49 W/kg; SAR(10 g) = 4.97 W/kg
  Maximum value of SAR (measured) = 12.1 W/kg

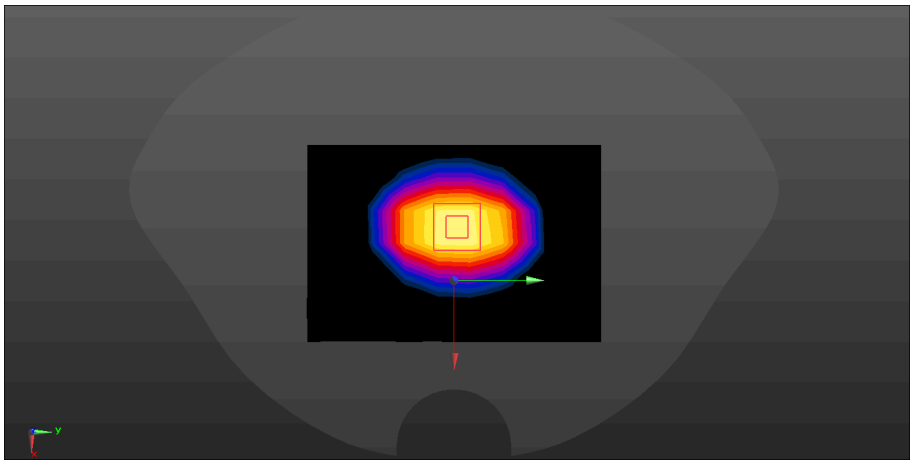


System check	1800MHz

Communication System: UID 0, CW (0); Frequency: 1800 MHz
Medium parameters used: f = 1800 MHz; σ = 1.427 S/m; ε_r = 40.722; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(5.10, 5.10, 5.10); Calibrated: 8/27/2019;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 8/28/2019
- Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)
  Configuration 1800/1800/Area Scan (7x10x1): Measurement grid: dx=15mm, dy=15mm
  Maximum value of SAR (measured) = 8.31 W/kg
  Configuration 1800/1800/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
  Reference Value = 76.40 V/m; Power Drift = 0.05 dB
  Peak SAR (extrapolated) = 17.5 W/kg
  SAR(1 g) = 9.53 W/kg; SAR(10 g) = 4.99 W/kg
  Maximum value of SAR (measured) = 12.2 W/kg

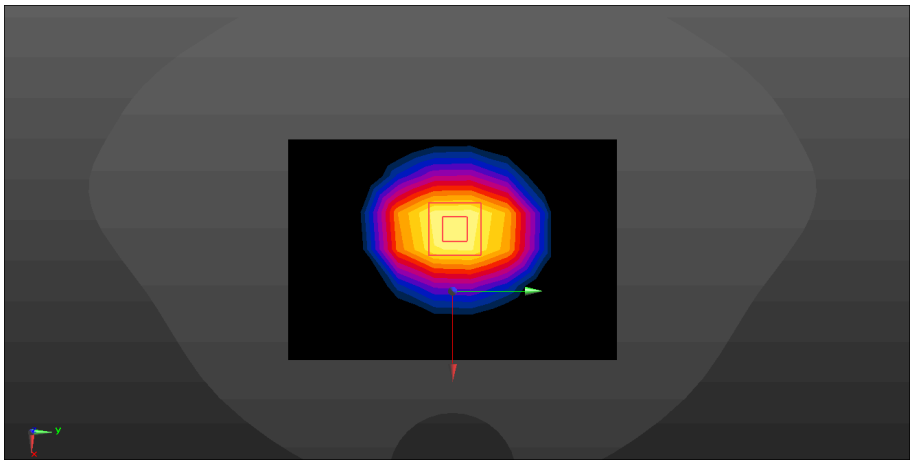


System check	2000MHz

Communication System: UID 0, CW (0); Frequency: 2000 MHz
Medium parameters used: f = 2000 MHz; σ = 1.427 S/m; ε_r = 39.844; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(5.02, 5.02, 5.02); Calibrated: 8/27/2019;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 8/28/2019
- Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)
  Configuration 2000/2000/Area Scan (7x10x1): Measurement grid: dx=10mm, dy=10mm
  Maximum value of SAR (measured) = 8.40 W/kg
  Configuration 2000/2000/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
  Reference Value = 76.22 V/m; Power Drift = 0.07 dB
  Peak SAR (extrapolated) = 18.7 W/kg
  SAR(1 g) = 9.82 W/kg; SAR(10 g) = 4.96 W/kg
  Maximum value of SAR (measured) = 12.9 W/kg

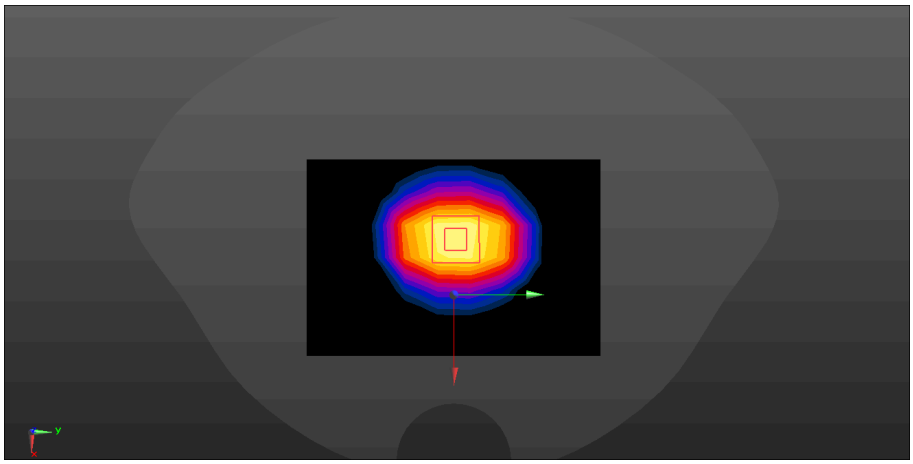


System check	2000MHz

Communication System: UID 0, CW (0); Frequency: 2000 MHz
Medium parameters used: f = 2000 MHz; σ = 1.377 S/m; ε_r = 40.355; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(5.02, 5.02, 5.02); Calibrated: 8/27/2019;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 8/28/2019
- Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)
  Configuration 2000/2000/Area Scan (7x10x1): Measurement grid: dx=10mm, dy=10mm
  Maximum value of SAR (measured) = 8.96 W/kg
  Configuration 2000/2000/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
  Reference Value = 77.20 V/m; Power Drift = 0.15 dB
  Peak SAR (extrapolated) = 19.9 W/kg
  SAR(1 g) = 9.98 W/kg; SAR(10 g) = 5.09 W/kg
  Maximum value of SAR (measured) = 13.0 W/kg

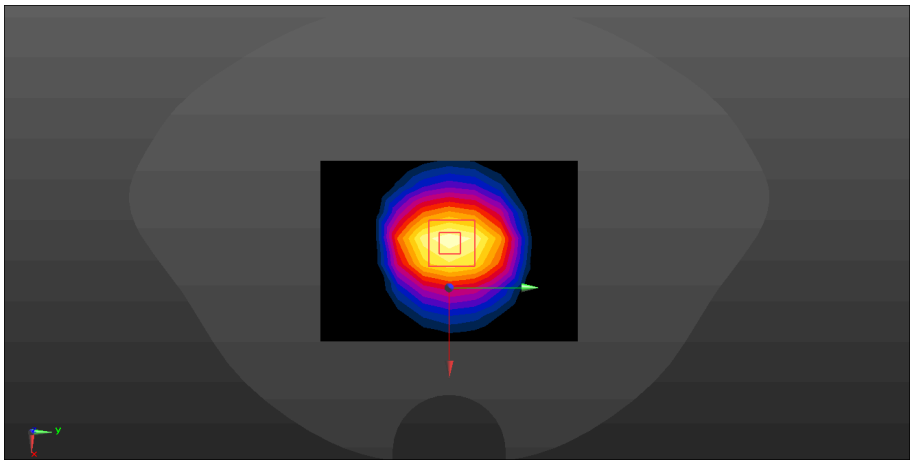


System check	2450MHz

Communication System: UID 0, CW (0); Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 1.866 S/m; ε_r = 38.343; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(4.50, 4.50, 4.50); Calibrated: 8/27/2019;
- Sensor-Surface: 3mm (Mechanical Surface Detection), z = -3.0, 32.0
- Electronics: DAE4 Sn546; Calibrated: 8/28/2019
- Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)
  System Performance Check at Frequencies 2450 MHz/2450/Area Scan (8x11x1):
  Measurement grid: dx=12mm, dy=12mm
  Maximum value of SAR (measured) = 21.2 W/kg
  System Performance Check at Frequencies 2450 MHz/2450/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
  Reference Value = 108.3 V/m; Power Drift = 0.19 dB
  Peak SAR (extrapolated) = 28.2 W/kg
  SAR(1 g) = 13.5 W/kg; SAR(10 g) = 6.14 W/kg
  Maximum value of SAR (measured) = 22.6 W/kg

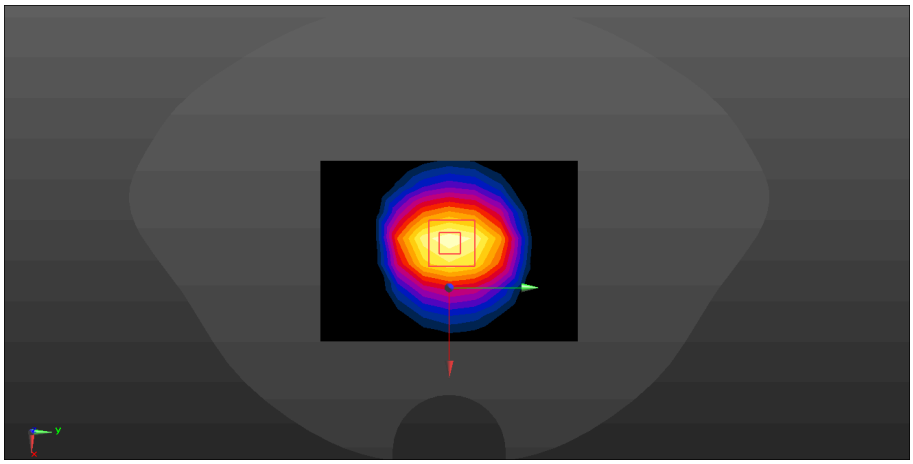


System check	2450MHz

Communication System: UID 0, CW (0); Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 1.851 S/m; ε_r = 39.672; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(4.50, 4.50, 4.50); Calibrated: 8/27/2019;
- Sensor-Surface: 3mm (Mechanical Surface Detection), z = -3.0, 32.0
- Electronics: DAE4 Sn546; Calibrated: 8/28/2019
- Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)
  System Performance Check at Frequencies 2450 MHz/2450/Area Scan (8x11x1):
  Measurement grid: dx=12mm, dy=12mm
  Maximum value of SAR (measured) = 21.2 W/kg
  System Performance Check at Frequencies 2450 MHz/2450/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
  Reference Value = 106.9 V/m; Power Drift = -0.08 dB
  Peak SAR (extrapolated) = 28.2 W/kg
  SAR(1 g) = 13.2 W/kg; SAR(10 g) = 5.98 W/kg
  Maximum value of SAR (measured) = 22.2 W/kg

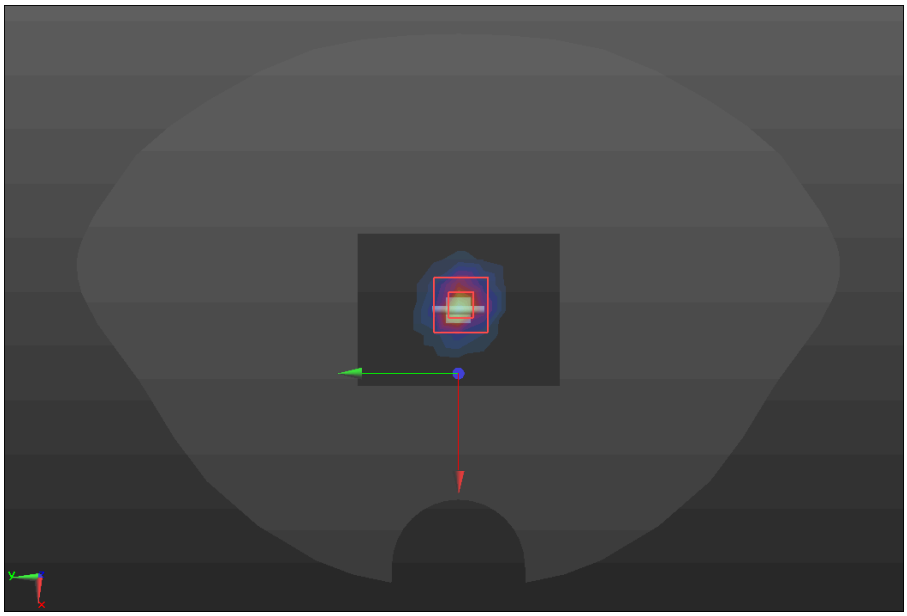


System check	5200MHz

Communication System: UID 0, CW (0); Frequency: 5200 MHz
Medium parameters used: f = 5200 MHz; σ = 4.734 S/m; ε_r = 37.691; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3708; ConvF(5.63, 5.63, 5.63); Calibrated: 09/26/2019, ConvF(5.63, 5.63, 5.63); Calibrated: 09/26/2019;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 8/28/2019
- Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7437)
  HEAD/5200MHZ /Area Scan (7x9x1): Measurement grid: dx=10mm, dy=10mm
  Maximum value of SAR (measured) = 1.86 W/kg
  HEAD/5200MHZ /Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
  Reference Value = 21.92 V/m; Power Drift = 0.12 dB
  Peak SAR (extrapolated) = 3.29 W/kg
  SAR(1 g) = 0.782 W/kg; SAR(10 g) = 0.231 W/kg.
  Maximum value of SAR (measured) = 1.98 W/kg

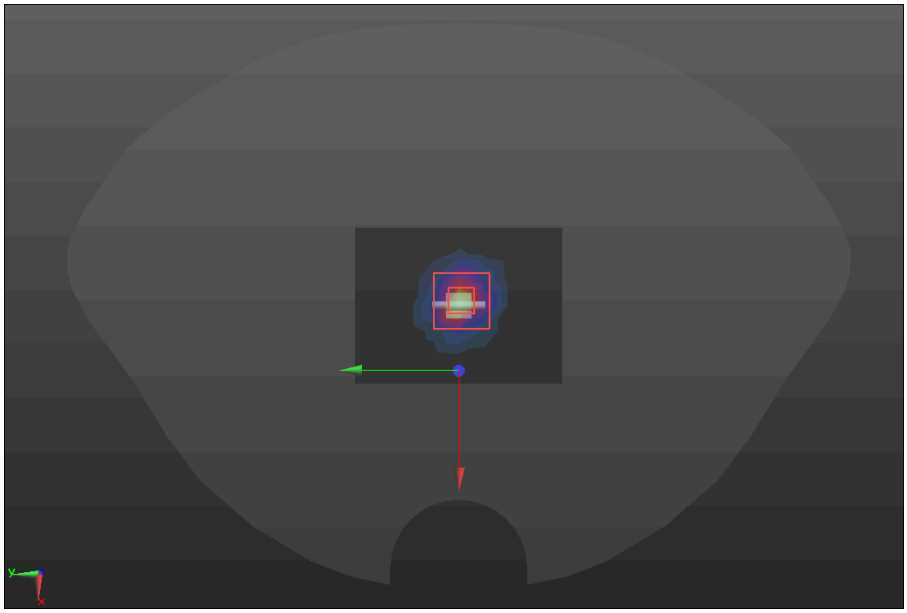


System check	5300MHz

Communication System: UID 0, CW (0); Frequency: 5300 MHz
Medium parameters used: f = 5300 MHz; σ = 4.822 S/m; ε_r = 36.775; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3708; ConvF(5.46, 5.46, 5.46); Calibrated: 09/26/2019, ConvF(5.46, 5.46, 5.46); Calibrated: 09/26/2019;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 8/28/2019
- Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7437)
  HEAD/5300MHz/Area Scan (7x9x1): Measurement grid: dx=10mm, dy=10mm
  Maximum value of SAR (measured) = 2.02 W/kg
  HEAD/5300MHz/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
  Reference Value = 22.70 V/m; Power Drift = 0.10 dB
  Peak SAR (extrapolated) = 3.63 W/kg
  SAR(1 g) = 0.839 W/kg; SAR(10 g) = 0.233 W/kg.
  Maximum value of SAR (measured) = 2.16 W/kg

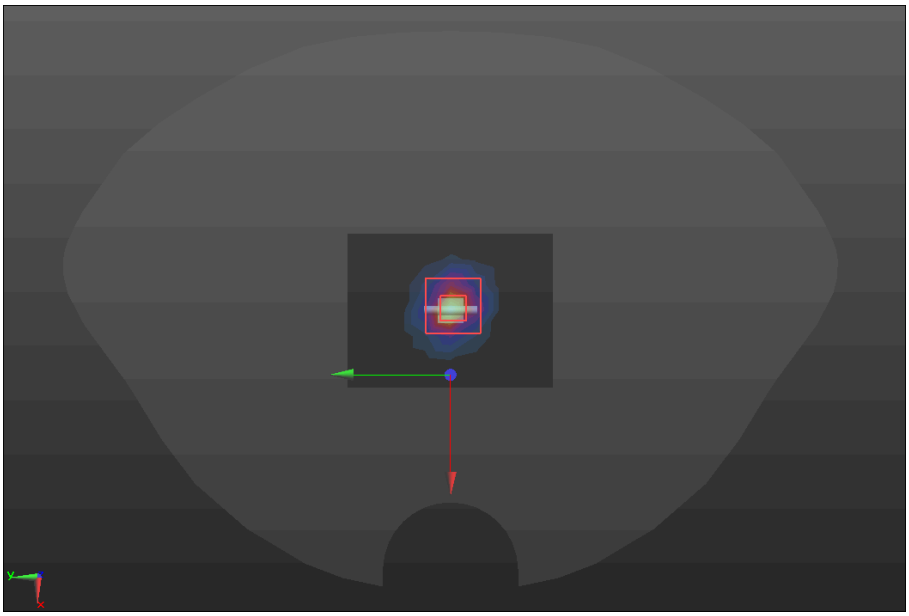


System check	5800MHz

Communication System: UID 0, CW (0); Frequency: 5800 MHz
Medium parameters used: f = 5800 MHz; σ = 5.495 S/m; ε_r = 36.774; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3708; ConvF(5.17, 5.17, 5.17); Calibrated: 09/26/2019, ConvF(5.17, 5.17, 5.17); Calibrated: 09/26/2019;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 8/28/2019
- Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7437)
  HEAD/5800MHz/Area Scan (7x9x1): Measurement grid: dx=10mm, dy=10mm
  Maximum value of SAR (measured) = 2.07 W/kg
  HEAD/5800MHz/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
  Reference Value = 21.65 V/m; Power Drift = 0.14 dB
  Peak SAR (extrapolated) = 4.17 W/kg
  SAR(1 g) = 0.799 W/kg; SAR(10 g) = 0.225 W/kg.
  Maximum value of SAR (measured) = 1.81 W/kg



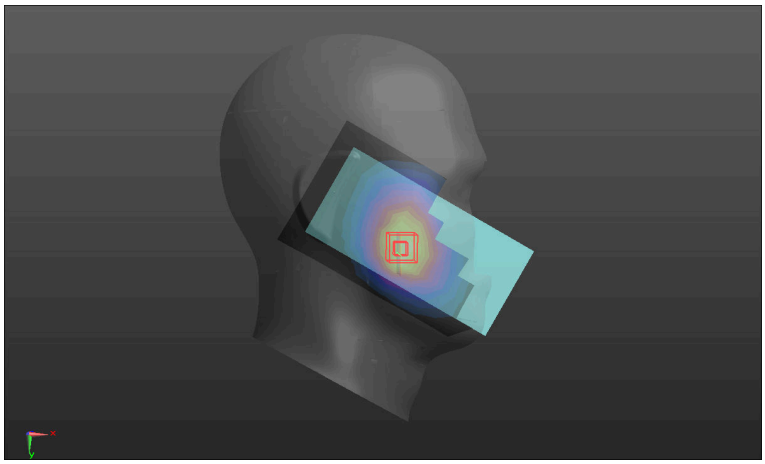
GSM (850MHz)

Right side	cheek

Communication System: UID 0, Generic GSM (0); Frequency: 836.6 MHz;Duty Cycle: 4:8
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.905 S/m; ε_r = 41.528; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(6.2, 6.2, 6.2) @ 836.6 MHz; Calibrated: 8/27/2019;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 2019/8/28
- Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)
  RC/GSM850 RC/Area Scan (8x14x1): Measurement grid: dx=15mm, dy=15mm
  Maximum value of SAR (measured) = 0.553 W/kg
  RC/GSM850 RC/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
  Reference Value = 7.430 V/m; Power Drift = -0.19 dB
  Peak SAR (extrapolated) = 0.646 W/kg
  SAR(1 g) = 0.415 W/kg; SAR(10 g) = 0.323 W/kg
  Maximum value of SAR (measured) = 0.586 W/kg

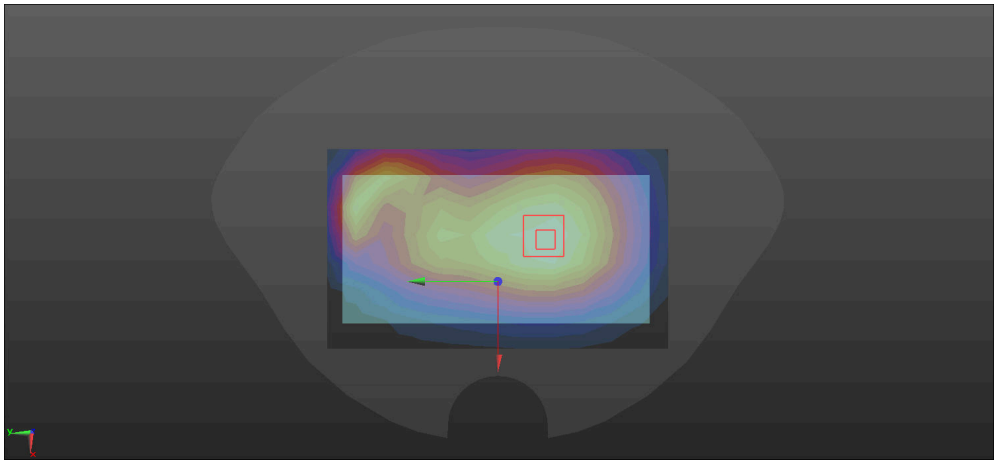


Body-worn	Back

Communication System: UID 0, Generic GSM (0); Frequency: 836.6 MHz;Duty Cycle: 4:8
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.905 S/m; ε_r = 41.528; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(6.2, 6.2, 6.2) @ 836.6 MHz; Calibrated: 8/27/2019
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 8/28/2019
- Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.12 (7450)
  flat/GSM850 back/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
  Maximum value of SAR (measured) = 0.577 W/kg
  flat/GSM850 back/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
  Reference Value = 24.56 V/m; Power Drift = 0.00 dB
  Peak SAR (extrapolated) = 0.698 W/kg
  SAR(1 g) = 0.523 W/kg; SAR(10 g) = 0.381 W/kg
  Maximum value of SAR (measured) = 0.587 W/kg



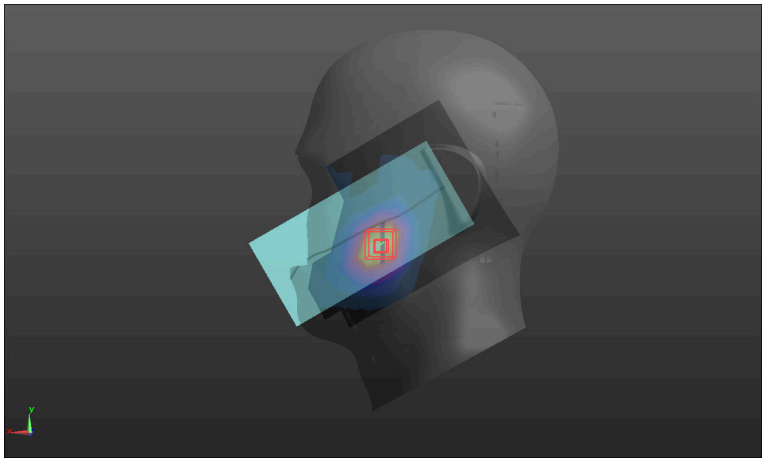
GSM (1900MHz)

Left side	Cheek

Communication System: UID 0, Generic GSM (0); Frequency: 1880 MHz;Duty Cycle: 3:8
Medium parameters used (interpolated): f = 1880 MHz; σ = 1.4 S/m; ε_r = 40; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(5.10, 5.10, 5.10) @ 1850.2 MHz; Calibrated: 8/27/2019;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 2019/8/28
- Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)
  LC/GSM1900 LC/Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
  Maximum value of SAR (measured) = 0.329 W/kg
  LC/GSM1900 LC/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
  Reference Value = 4.178 V/m; Power Drift = -0.11 dB
  Peak SAR (extrapolated) = 0.427 W/kg
  SAR(1 g) = 0.389 W/kg; SAR(10 g) = 0.252 W/kg
  Maximum value of SAR (measured) = 0.452 W/kg

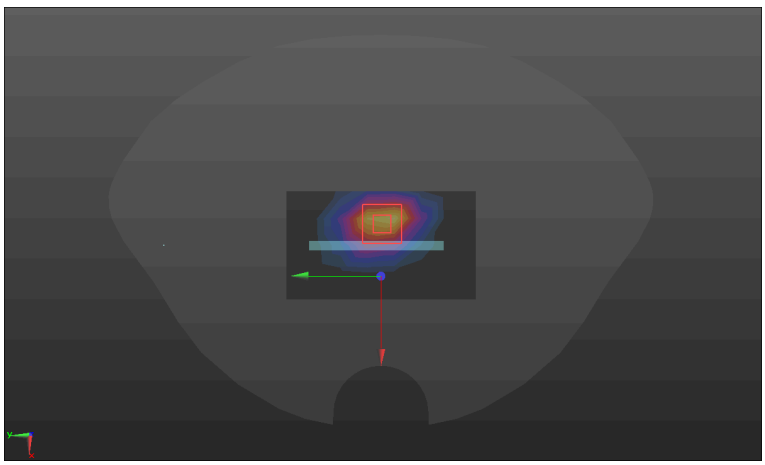


Body-worn	Bottom

Communication System: UID 0, Generic GSM (0); Frequency: 1850.2 MHz;Duty Cycle: 3:8
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.4 S/m; ε_r = 40; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(5.10, 5.10, 5.10) @ 1850.2 MHz; Calibrated: 8/27/2019
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 8/28/2019
- Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.12 (7450)
  1023/GSM1900/512/BOTTOM 2/Area Scan (5x8x1): Measurement grid: dx=15mm, dy=15mm
  Maximum value of SAR (measured) = 1.48 W/kg
  1023/GSM1900/512/BOTTOM 2/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
  Reference Value = 24.82 V/m; Power Drift = 0.15 dB
  Peak SAR (extrapolated) = 2.02 W/kg
  SAR(1 g) = 1.07 W/kg; SAR(10 g) = 0.555 W/kg
  Maximum value of SAR (measured) = 1.67 W/kg



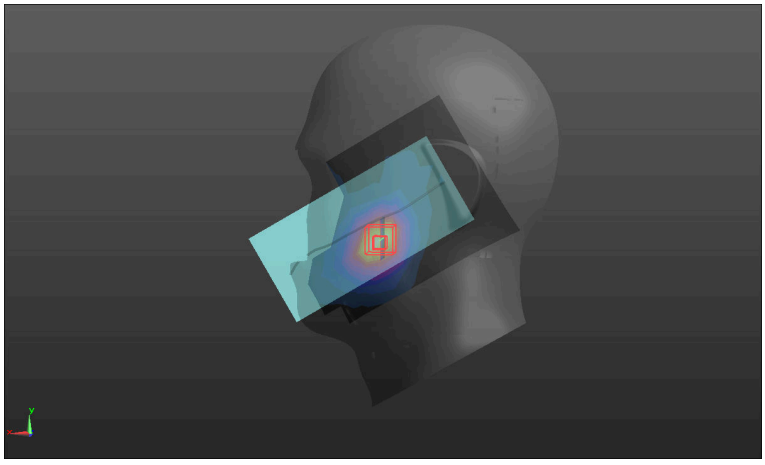
WCDMA Band II

Left side	Cheek

Communication System: UID 0, WCDMA BAND2 (0); Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1880 MHz; σ = 1.4 S/m; ε_r = 40; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(5.1, 5.1, 5.1) @ 1880 MHz; Calibrated: 8/27/2019;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 2019/8/28
- Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)
  LC/WCDMA2 LC/Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
  Maximum value of SAR (measured) = 0.323 W/kg
  LC/WCDMA2 LC/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
  Reference Value = 4.054 V/m; Power Drift = -0.15 dB
  Peak SAR (extrapolated) = 0.414 W/kg
  SAR(1 g) = 0.212 W/kg; SAR(10 g) = 0.110 W/kg
  Maximum value of SAR (measured) = 0.316 W/kg

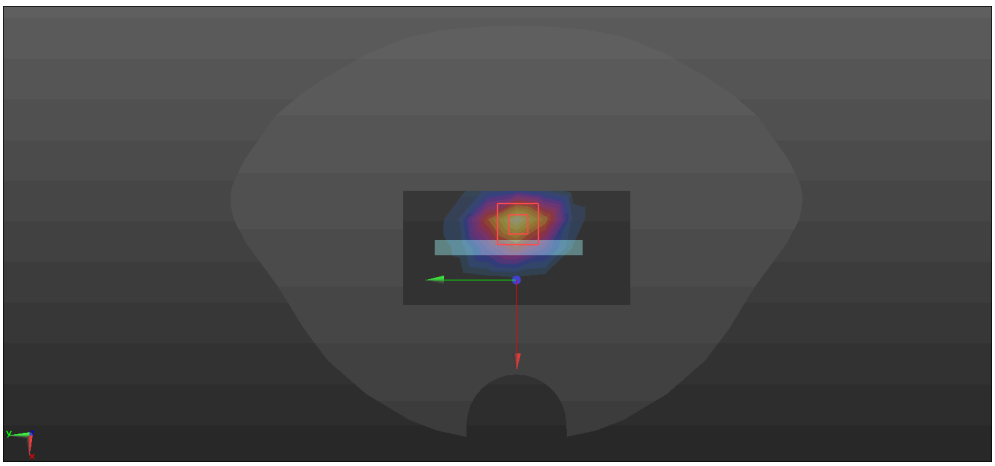


Body-worn	Bottom

Communication System: UID 0, WCDMA BAND2 (0); Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1880 MHz; σ = 1.4 S/m; ε_r = 40; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(5.1, 5.1, 5.1) @ 1880 MHz; Calibrated: 8/27/2019
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 8/28/2019
- Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.12 (7450)
  TOP&bottom/wcdma band2 bottom/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm
  Maximum value of SAR (measured) = 1.07 W/kg
  TOP&bottom/wcdma band2 bottom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
  Reference Value = 20.56 V/m; Power Drift = 0.11 dB
  Peak SAR (extrapolated) = 1.69 W/kg
  SAR(1 g) = 0.900 W/kg; SAR(10 g) = 0.469 W/kg
  Maximum value of SAR (measured) = 1.10 W/kg



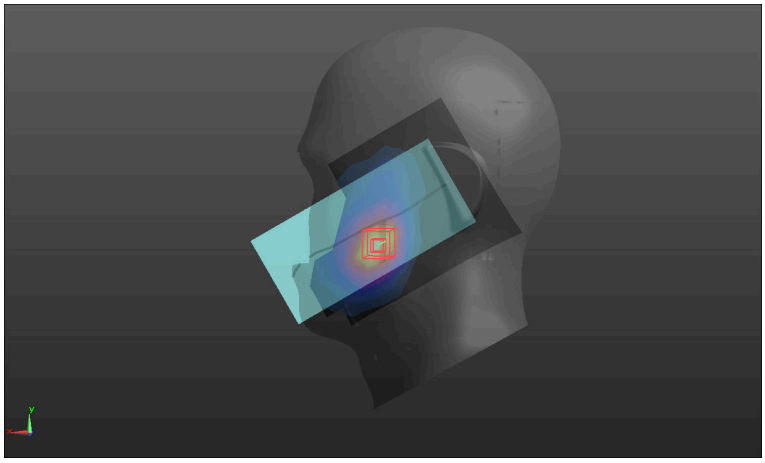
WCDMA Band IV

Left side	Cheek

Communication System: UID 0, WCDMA BAND4 (0); Frequency: 1732.4 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1732.4 MHz; σ = 1.375 S/m; ε_r = 40.07; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(5.1, 5.1, 5.1) @ 1732.4 MHz; Calibrated: 8/27/2019
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 2019/8/28
- Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)
  LC/WCDMA4 LC/Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
  Maximum value of SAR (measured) = 0.185 W/kg
  LC/WCDMA4 LC/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
  Reference Value = 2.390 V/m; Power Drift = -0.12 dB
  Peak SAR (extrapolated) = 0.212 W/kg
  SAR(1 g) = 0.233 W/kg; SAR(10 g) = 0.177 W/kg
  Maximum value of SAR (measured) = 0.278 W/kg

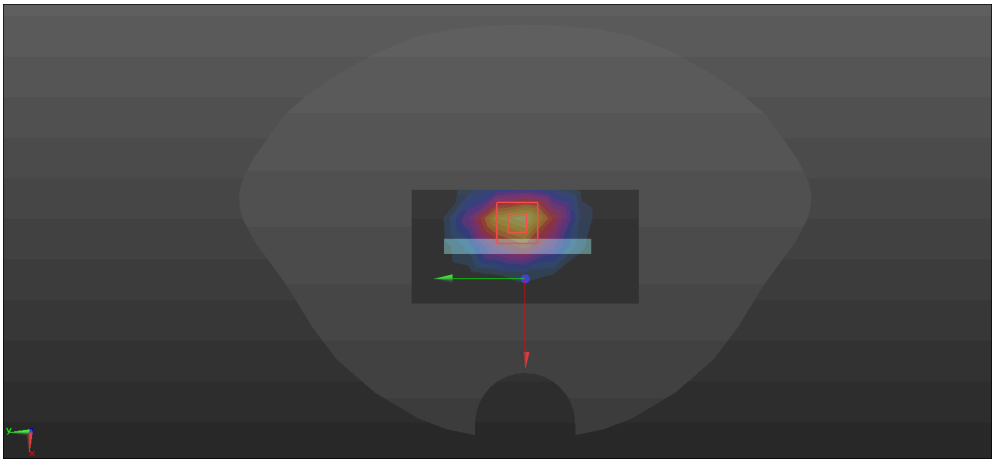


Body-worn	Bottom

Communication System: UID 0, WCDMA BAND4 (0); Frequency: 1732.4 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1732.4 MHz; σ = 1.375 S/m; ε_r = 40.07; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(5.1, 5.1, 5.1) @ 1732.4 MHz; Calibrated: 8/27/2019
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 8/28/2019
- Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.12 (7450)
  TOP&bottom/wcdma band4 bottom/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm
  Maximum value of SAR (measured) = 1.09 W/kg
  TOP&bottom/wcdma band4 bottom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
  Reference Value = 22.49 V/m; Power Drift = 0.10 dB
  Peak SAR (extrapolated) = 1.69 W/kg
  SAR(1 g) = 0.964 W/kg; SAR(10 g) = 0.528 W/kg
  Maximum value of SAR (measured) = 1.18 W/kg



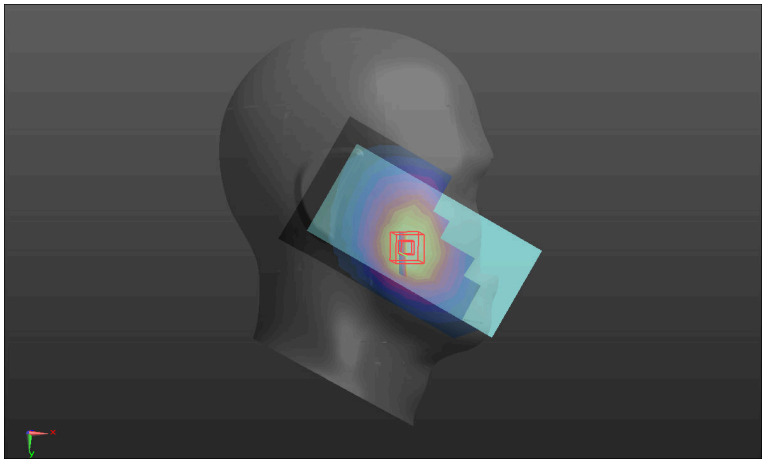
WCDMA Band V

Right side	Cheek

Communication System: UID 0, WCDMA BAND 5 (0); Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.905 S/m; ε_r = 41.528; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(6.2, 6.2, 6.2) @ 836.6 MHz; Calibrated: 8/27/2019
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 2019/8/28
- Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)
  RC/WCDMA5 RC/Area Scan (8x14x1): Measurement grid: dx=15mm, dy=15mm
  Maximum value of SAR (measured) = 0.212 W/kg
  RC/WCDMA5 RC/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
  Reference Value = 4.585 V/m; Power Drift = -0.10 dB
  Peak SAR (extrapolated) = 0.234 W/kg
  SAR(1 g) = 0.166 W/kg; SAR(10 g) = 0.131 W/kg
  Maximum value of SAR (measured) = 0.193 W/kg

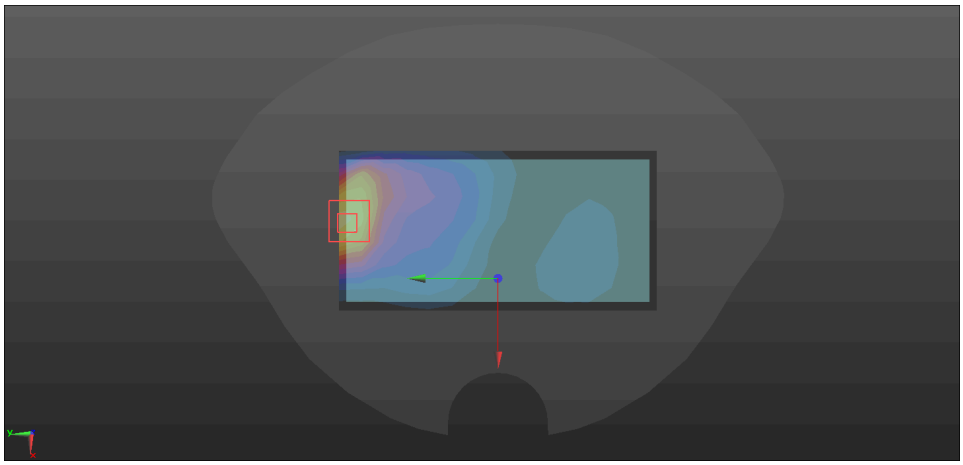


Body-worn	Back

Communication System: UID 0, WCDMA 5 (0); Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.905 S/m; ε_r = 41.528; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(6.2, 6.2, 6.2) @ 836.6 MHz; Calibrated: 8/27/2019
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 8/28/2019
- Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)
  1023/WCDMA 5 BACK/Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
  Maximum value of SAR (measured) = 0.321 W/kg
  1023/WCDMA 5 BACK/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
  Reference Value = 9.061 V/m; Power Drift = -0.15 dB
  Peak SAR (extrapolated) = 0.453 W/kg
  SAR(1 g) = 0.276 W/kg; SAR(10 g) = 0.155 W/kg
  Maximum value of SAR (measured) = 0.398 W/kg



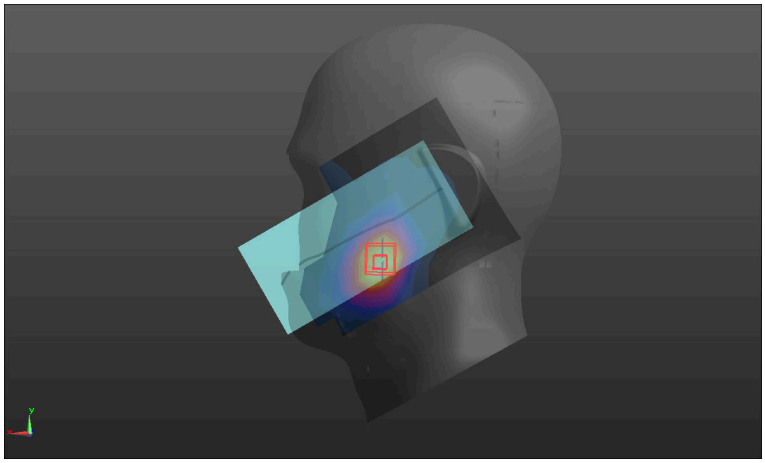
LTE B2(main supply)

Left side	Cheek

Communication System: UID 0, LTE band 02 (0); Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1880 MHz; σ = 1.4 S/m; ε_r = 40; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(5.1, 5.1, 5.1) @ 1860 MHz; Calibrated: 8/27/2019
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 2019/8/28
- Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)
  LC/LTE2 LC/Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
  Maximum value of SAR (measured) = 0.278 W/kg
  LC/LTE2 LC/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
  Reference Value = 5.390 V/m; Power Drift = -0.16 dB
  Peak SAR (extrapolated) = 0.333 W/kg
  SAR(1 g) = 0.273 W/kg; SAR(10 g) = 0.198 W/kg
  Maximum value of SAR (measured) = 0.315 W/kg

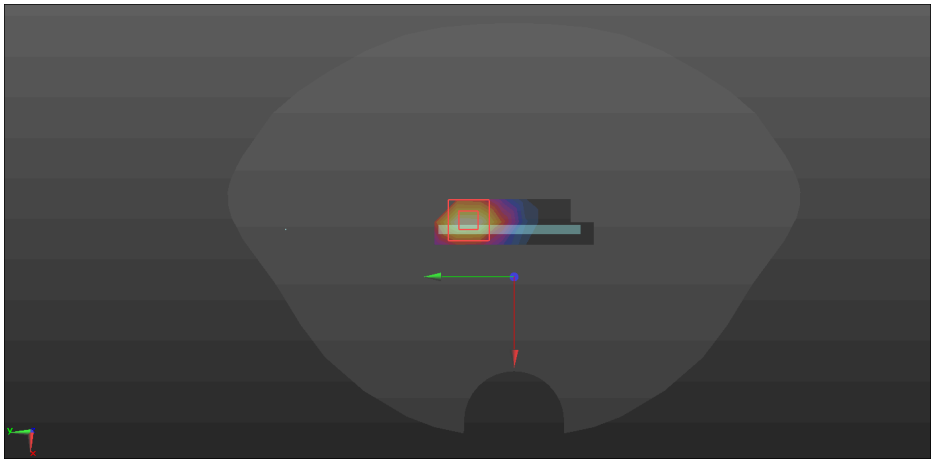


Body-worn	Bottom

Communication System: UID 0, LTE BAND02 (0); Frequency: 1860 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1860 MHz; σ = 1.4 S/m; ε_r = 40; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(5.1, 5.1, 5.1) @ 1860 MHz; Calibrated: 8/27/2019
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 8/28/2019
- Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)
  BOTTOM/LTE BAND2 LOW 18700 BOTTOM/Area Scan (6x12x1): Measurement grid: dx=12mm, dy=12mm
  Maximum value of SAR (measured) = 1.27 W/kg
  BOTTOM/LTE BAND2 LOW 18700 BOTTOM/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
  Reference Value = 17.45 V/m; Power Drift = -0.07 dB
  Peak SAR (extrapolated) = 1.90 W/kg
  SAR(1 g) = 1.11 W/kg; SAR(10 g) = 0.599 W/kg
  Maximum value of SAR (measured) = 1.38 W/kg



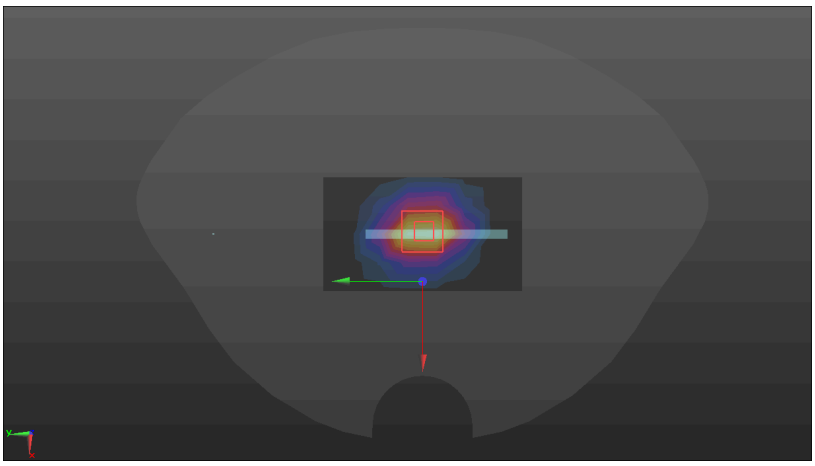
LTE B2(second supply)

Body-worn	Bottom

Communication System: UID 0, LTE BAND02 (0); Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1880 MHz; σ = 1.4 S/m; ε_r = 40; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(5.1, 5.1, 5.1) @ 1880 MHz; Calibrated: 8/27/2019
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 8/28/2019
- Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)
  1023/LTE2 2 2/Area Scan (5x8x1): Measurement grid: dx=15mm, dy=15mm
  Maximum value of SAR (measured) = 0.981 W/kg
  1023/LTE2 2 2/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
  Reference Value = 28.63 V/m; Power Drift = 0.04 dB
  Peak SAR (extrapolated) = 1.58 W/kg
  SAR(1 g) = 0.738 W/kg; SAR(10 g) = 0.426 W/kg
  Maximum value of SAR (measured) = 1.11 W/kg



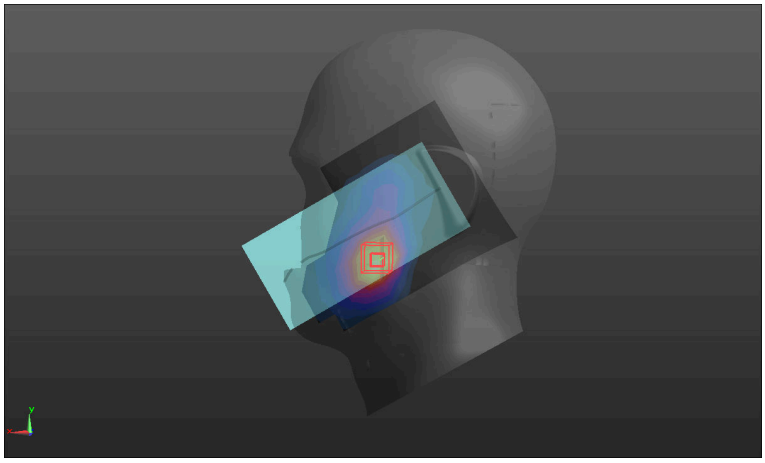
LTE B4

Left side	Cheek

Communication System: UID 0, LTE band 4 (0); Frequency: 1732.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.375 S/m; ε_r = 40.07; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(5.1, 5.1, 5.1) @ 1732.5 MHz; Calibrated: 8/27/2019
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 2019/8/28
- Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)
  LC/LTE4 LC/Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
  Maximum value of SAR (measured) = 0.245 W/kg
  LC/LTE4 LC/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
  Reference Value = 4.099 V/m; Power Drift = 0.17 dB
  Peak SAR (extrapolated) = 0.296 W/kg
  SAR(1 g) = 0.301 W/kg; SAR(10 g) = 0.319 W/kg
  Maximum value of SAR (measured) = 0.356 W/kg

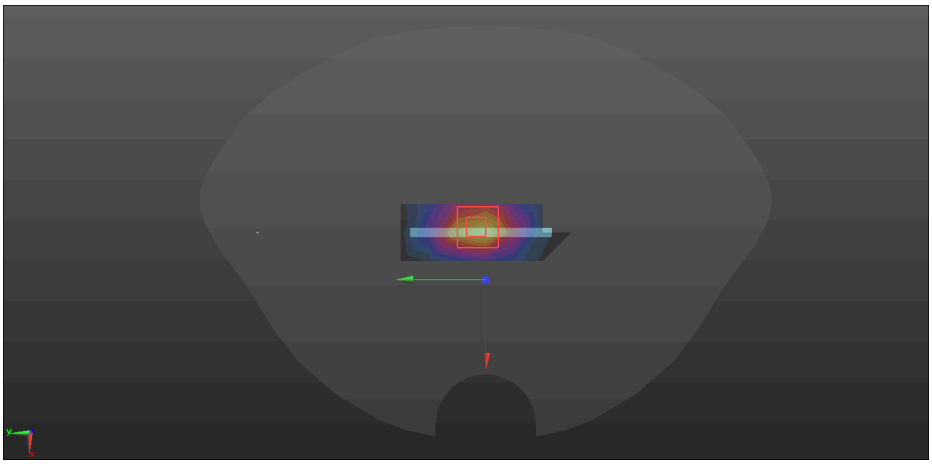


Body-worn	Bottom

Communication System: UID 0, LTE BAND4 (0); Frequency: 1732.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.375 S/m; ε_r = 40.07; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(5.1, 5.1, 5.1) @ 1732.5 MHz; Calibrated: 8/27/2019
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 8/28/2019
- Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)
  bottom/LTE BAND4 MID 20175 BOTTOM/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm
  Maximum value of SAR (measured) = 0.762 W/kg
  bottom/LTE BAND4 MID 20175 BOTTOM/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
  Reference Value = 24.18 V/m; Power Drift = 0.10 dB
  Peak SAR (extrapolated) = 1.16 W/kg
  SAR(1 g) = 0.672 W/kg; SAR(10 g) = 0.370 W/kg
  Maximum value of SAR (measured) = 0.842 W/kg



LTE B5

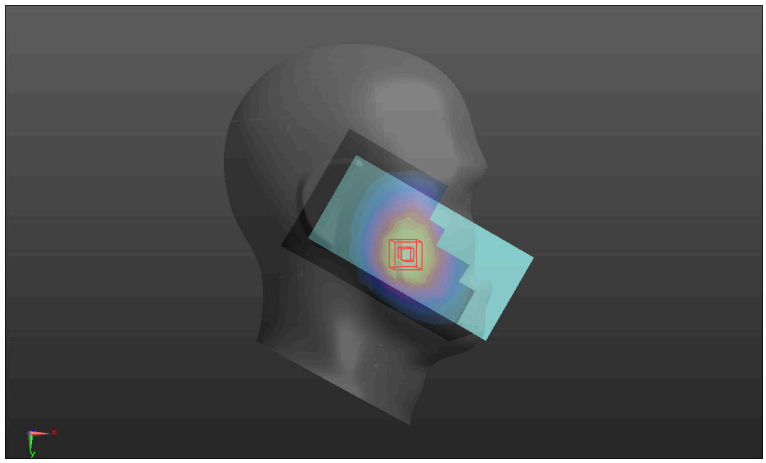
Right side	Cheek

Communication System: UID 0, LTE Band 5 (0); Frequency: 836.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.5 MHz; σ = 0.905 S/m; ε_r = 41.528; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(6.2, 6.2, 6.2) @ 836.5 MHz; Calibrated: 8/27/2019;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 2019/8/28
- Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)
  RC/LTE5 RC/Area Scan (8x14x1): Measurement grid: dx=15mm, dy=15mm
  Maximum value of SAR (measured) = 0.177 W/kg
  RC/LTE5 RC/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
  Reference Value = 3.300 V/m; Power Drift = -0.14 dB
  Peak SAR (extrapolated) = 0.194 W/kg
  SAR(1 g) = 0.203 W/kg; SAR(10 g) = 0.112 W/kg

  Maximum value of SAR (measured) = 0.216 W/kg

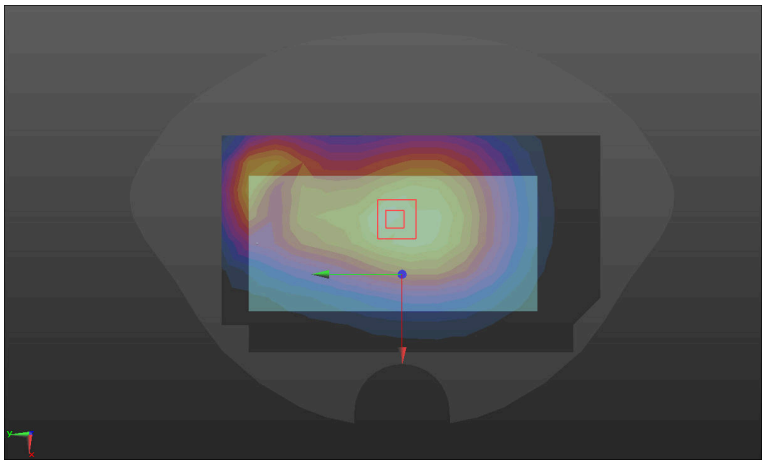


Body-worn	Back

Communication System: UID 0, LTE Band 5 (0); Frequency: 836.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.5 MHz; σ = 0.905 S/m; ε_r = 41.528; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(6.2, 6.2, 6.2) @ 836.5 MHz; Calibrated: 8/27/2019;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 8/28/2019
- Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)
  1023/LTE5/Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
  Maximum value of SAR (measured) = 0.338 W/kg
  1023/LTE5/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
  Reference Value = 19.31 V/m; Power Drift = -0.04 dB
  Peak SAR (extrapolated) = 0.385 W/kg
  SAR(1 g) = 0.265 W/kg; SAR(10 g) = 0.191 W/kg
  Maximum value of SAR (measured) = 0.346 W/kg



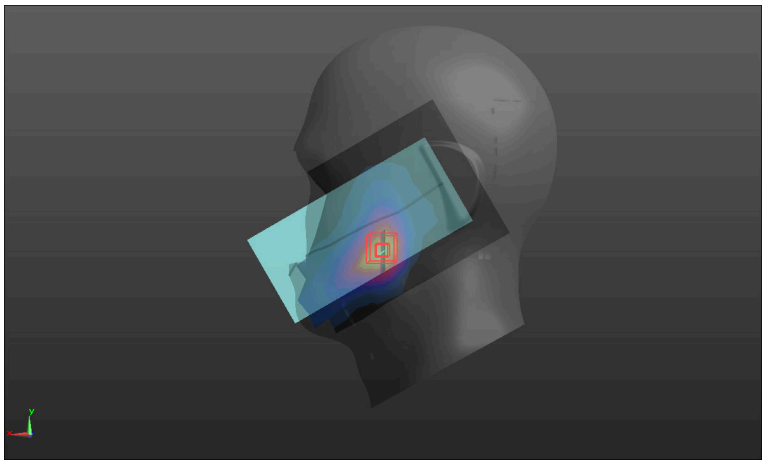
LTE B7

Left side	Cheek

Communication System: UID 0, LTE BAND07 (0); Frequency: 2535 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2535 MHz; σ = 1.888 S/m; ε_r = 39.084; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(4.32, 4.32, 4.32) @ 2560 MHz; Calibrated: 8/27/2019
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 2019/8/28
- Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)
  LC/LTE7 LC 21100 1RB 20M/Area Scan (11x18x1): Measurement grid: dx=12mm, dy=12mm
  Maximum value of SAR (measured) = 0.521 W/kg
  LC/LTE7 LC 21100 1RB 20M/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
  Reference Value = 2.036 V/m; Power Drift = 0.16 dB
  Peak SAR (extrapolated) = 0.732 W/kg
  SAR(1 g) = 0.413 W/kg; SAR(10 g) = 0.220 W/kg
  Maximum value of SAR (measured) = 0.519 W/kg

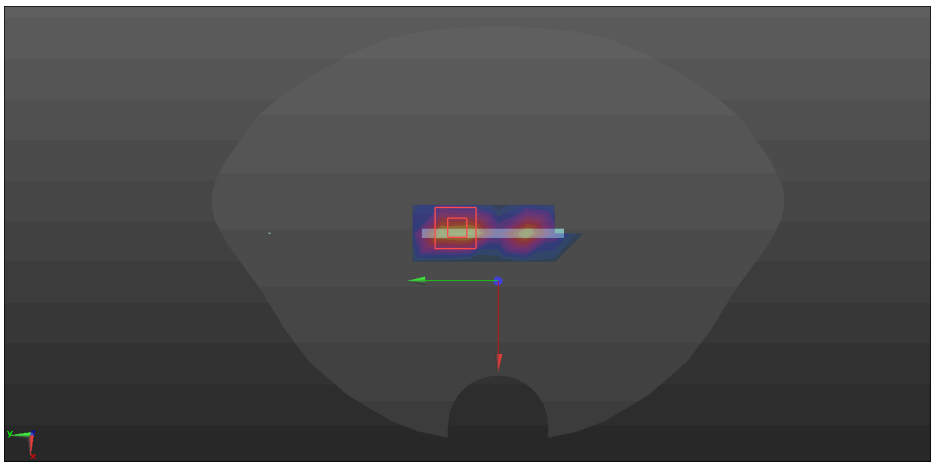


Body-worn	Bottom

Communication System: UID 0, LTE BAND07 (0); Frequency: 2560 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2560 MHz; σ = 1.916 S/m; ε_r = 39.051; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(4.32, 4.32, 4.32) @ 2560 MHz; Calibrated: 8/27/2019
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 8/28/2019
- Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)
  bottom/LTE BAND7 HIGH 21350 BOTTOM/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm
  Maximum value of SAR (measured) = 0.851 W/kg
  bottom/LTE BAND7 HIGH 21350 BOTTOM/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
  Reference Value = 15.21 V/m; Power Drift = 0.18 dB
  Peak SAR (extrapolated) = 1.74 W/kg
  SAR(1 g) = 0.825 W/kg; SAR(10 g) = 0.356 W/kg
  Maximum value of SAR (measured) = 1.11 W/kg



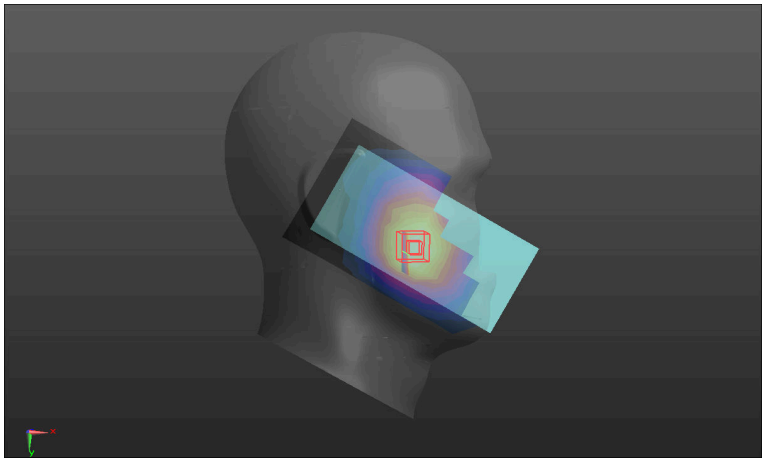
LTE B12

Right side	Cheek

Communication System: UID 0, LTE Band 12 (0); Frequency: 707.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 707.5 MHz; σ = 0.887 S/m; ε_r = 42.115; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(6.34, 6.34, 6.34); @ 707.5 MHz Calibrated: 8/27/2019;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 2019/8/28
- Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)
  RC/LTE12 RC/Area Scan (8x14x1): Measurement grid: dx=15mm, dy=15mm
  Maximum value of SAR (measured) = 0.114 W/kg
  RC/LTE12 RC/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
  Reference Value = 3.113 V/m; Power Drift = -0.04 dB
  Peak SAR (extrapolated) = 0.124 W/kg
  SAR(1 g) = 0.130 W/kg; SAR(10 g) = 0.096 W/kg
  Maximum value of SAR (measured) = 0.165 W/kg

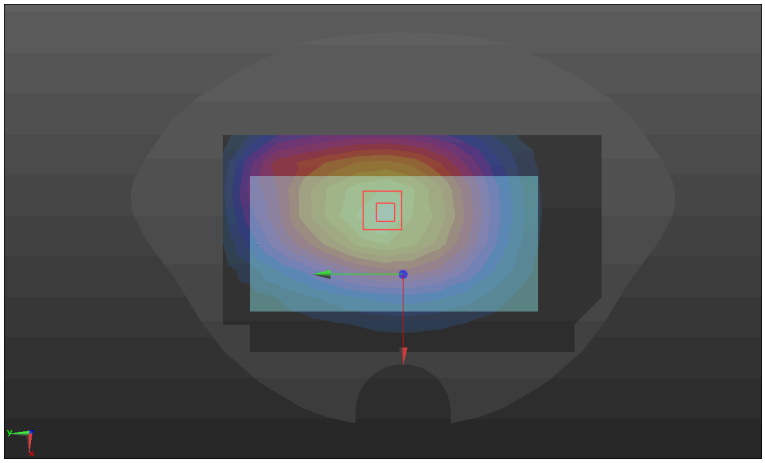


Body-worn	Back

Communication System: UID 0, LTE Band 12 (0); Frequency: 707.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 707.5 MHz; σ = 0.887 S/m; ε_r = 42.115; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(6.34, 6.34, 6.34); @ 707.5 MHz Calibrated: 8/27/2019;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 8/28/2019
- Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)
  1023/LTE 12/Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
  Maximum value of SAR (measured) = 0.350 W/kg
  1023/LTE 12/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
  Reference Value = 18.76 V/m; Power Drift = -0.02 dB
  Peak SAR (extrapolated) = 0.375 W/kg
  SAR(1 g) = 0.276 W/kg; SAR(10 g) = 0.202 W/kg
  Maximum value of SAR (measured) = 0.344 W/kg



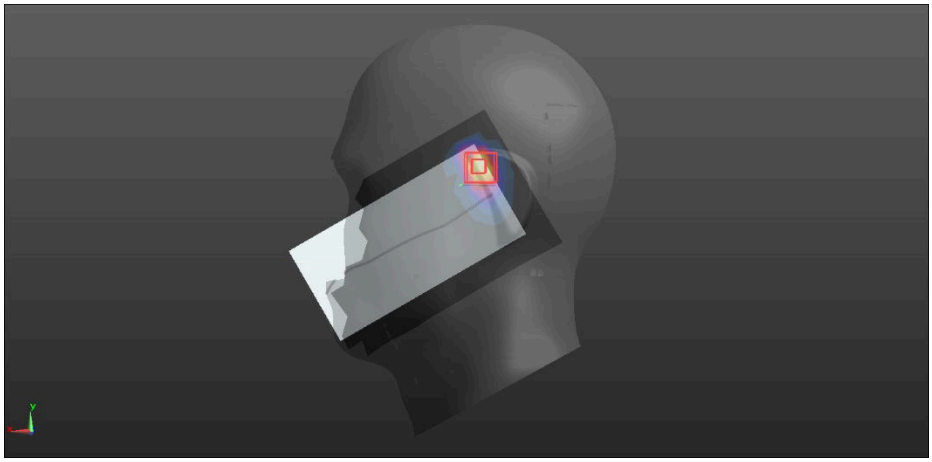
WIFI 2.4GHz(main supply)

Left side	Tilt

Communication System: UID 0, WIFI 2.4GHz (0); Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.788 S/m; ε_r = 39.219; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(4.50, 4.50, 4.50) @ 2437 MHz; Calibrated: 8/27/2019
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 8/28/2019
- Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)
  WIFI5G LT/2437lt/Area Scan (12x21x1): Measurement grid: dx=10mm, dy=10mm
  Maximum value of SAR (measured) = 1.26 W/kg
  WIFI5G LT/2437lt/Zoom Scan (6x6x12)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=2mm
  Reference Value = 16.46 V/m; Power Drift = -0.10 dB
  Peak SAR (extrapolated) = 2.33 W/kg
  SAR(1 g) = 0.971 W/kg; SAR(10 g) = 0.386 W/kg
  Maximum value of SAR (measured) = 1.76 W/kg

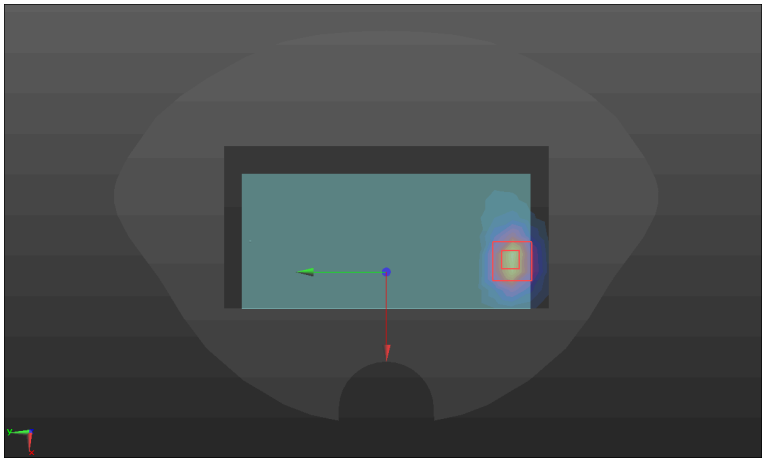


Body-worn	Back

Communication System: UID 0, WIFI 2.4GHz (0); Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.788 S/m; ε_r = 39.219; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(4.50, 4.50, 4.50) @ 2437 MHz; Calibrated: 8/27/2019
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 2019/8/28
- Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)
  5785back/2.4back 2/Area Scan (12x21x1): Measurement grid: dx=10mm, dy=10mm
  Maximum value of SAR (measured) = 0.556 W/kg
  5785back/2.4back 2/Zoom Scan (6x6x12)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=2mm
  Reference Value = 0.4140 V/m; Power Drift = -0.10 dB
  Peak SAR (extrapolated) = 0.757 W/kg
  SAR(1 g) = 0.379 W/kg; SAR(10 g) = 0.170 W/kg
  Maximum value of SAR (measured) = 0.609 W/kg



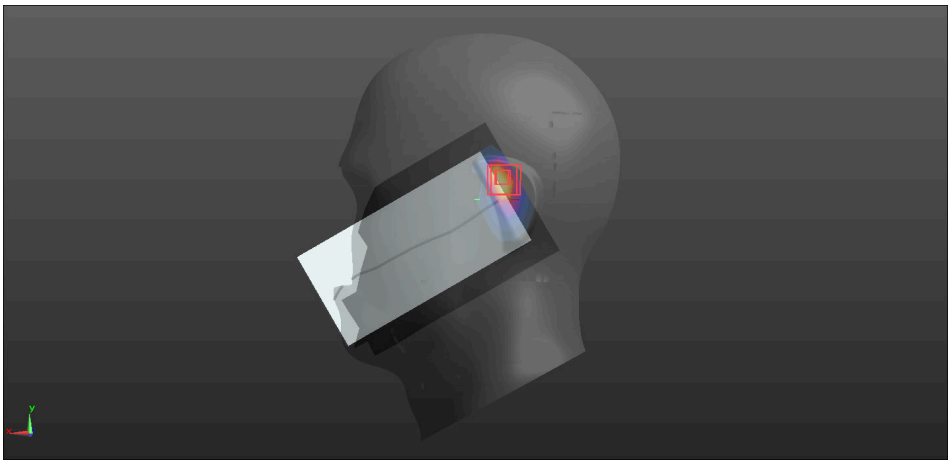
WIFI 2.4GHz(second supply)

Left side	Tilt

Communication System: UID 0, WIFI 2.4GHz (0); Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.788 S/m; ε_r = 39.219; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(4.5, 4.5, 4.5) @ 2437 MHz; Calibrated: 8/27/2019
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 8/28/2019
- Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)
  LT/WIFI 2.4G LT 2437/Area Scan (10x16x1): Measurement grid: dx=12mm, dy=12mm
  Maximum value of SAR (measured) = 1.10 W/kg
  LT/WIFI 2.4G LT 2437/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
  Reference Value = 15.37 V/m; Power Drift = -0.12 dB
  Peak SAR (extrapolated) = 1.94 W/kg
  SAR(1 g) = 0.760 W/kg; SAR(10 g) = 0.278 W/kg
  Maximum value of SAR (measured) = 1.22 W/kg



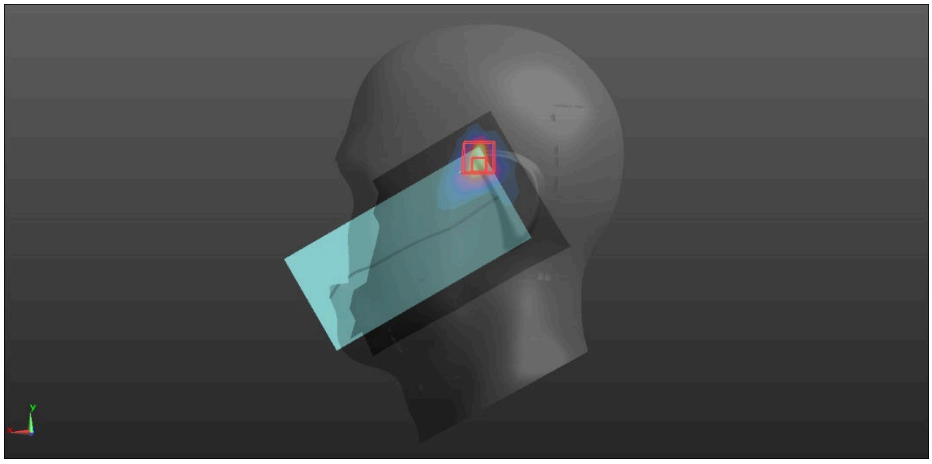
WIFI 5GHz U-NII-1

Left side	Cheek

Communication System: UID 0, WIFI 5.3G (0); Frequency: 5200 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5200 MHz; σ = 4.66 S/m; ε_r = 36; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3708; ConvF(5.63, 5.63, 5.63) @ 5200 MHz; Calibrated: 9/26/2019
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 8/28/2019
- Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.12 (7450)
  LC/5200LC/Area Scan (12x21x1): Measurement grid: dx=10mm, dy=10mm
  Maximum value of SAR (measured) = 1.80 W/kg
  LC/5200LC/Zoom Scan (6x6x12)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=2mm
  Reference Value = 5.902 V/m; Power Drift = 0.05 dB
  Peak SAR (extrapolated) = 3.17 W/kg
  SAR(1 g) = 0.814 W/kg; SAR(10 g) = 0.285 W/kg
  Maximum value of SAR (measured) = 1.83 W/kg

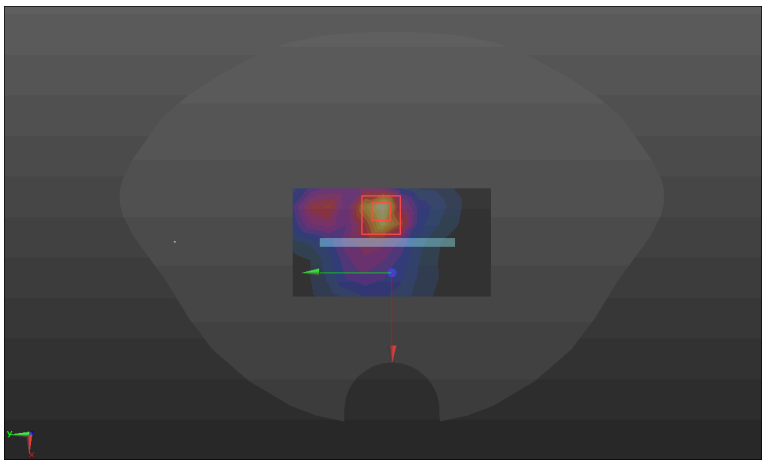


Body-worn	Top

Communication System: UID 0, WIFI 802.11 5GHz (0); Frequency: 5200 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5200 MHz; σ = 4.66 S/m; ε_r = 36; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3708; ConvF(5.63, 5.63, 5.63); Calibrated: 2019/9/26;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 2019/8/28
- Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)
  1023/5200top/Area Scan (7x12x1): Measurement grid: dx=10mm, dy=10mm
  Maximum value of SAR (measured) = 0.339 W/kg
  1023/5200top/Zoom Scan (6x6x12)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=2mm
  Reference Value = 6.294 V/m; Power Drift = -0.18 dB
  Peak SAR (extrapolated) = 0.567 W/kg
  SAR(1 g) = 0.156 W/kg; SAR(10 g) = 0.057 W/kg
  Maximum value of SAR (measured) = 0.341 W/kg



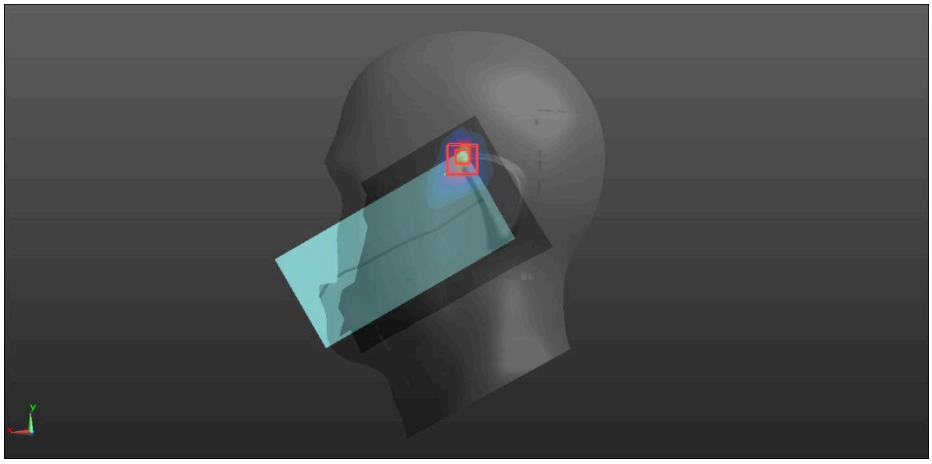
WIFI 5GHz U-NII-2A

Left side	Cheek

Communication System: UID 0, WIFI 5.3G (0); Frequency: 5300 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5300 MHz; σ = 4.76 S/m; ε_r = 35.9; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3708; ConvF(5.46, 5.46, 5.46) @ 5300 MHz; Calibrated: 9/26/2019
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 8/28/2019
- Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.12 (7450)
  LC/5300LC/Area Scan (12x21x1): Measurement grid: dx=10mm, dy=10mm
  Maximum value of SAR (measured) = 2.44 W/kg
  LC/5300LC/Zoom Scan (6x6x12)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=2mm
  Reference Value = 5.496 V/m; Power Drift = 0.10 dB
  Peak SAR (extrapolated) = 4.25 W/kg
  SAR(1 g) = 0.993 W/kg; SAR(10 g) = 0.312 W/kg
  Maximum value of SAR (measured) = 2.29 W/kg

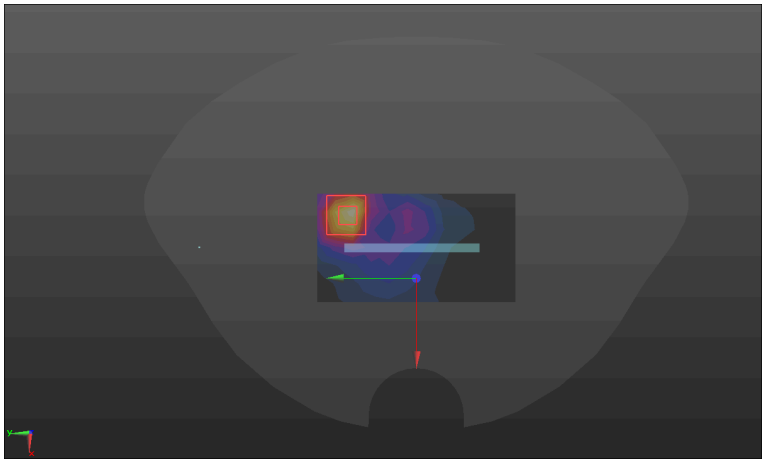


Body-worn	Top

Communication System: UID 0, WIFI 802.11 5GHz (0); Frequency: 5300 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5300 MHz; σ = 4.76 S/m; ε_r = 35.9; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3708; ConvF(5.46, 5.46, 5.46) @ 5300 MHz; Calibrated: 9/26/2019
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 8/28/2019
- Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)
  1023/5300top/Area Scan (7x12x1): Measurement grid: dx=10mm, dy=10mm
  Maximum value of SAR (measured) = 0.502 W/kg
  1023/5300top/Zoom Scan (6x6x12)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=2mm
  Reference Value = 5.956 V/m; Power Drift = 0.02 dB
  Peak SAR (extrapolated) = 0.891 W/kg
  SAR(1 g) = 0.245 W/kg; SAR(10 g) = 0.091 W/kg
  Maximum value of SAR (measured) = 0.524 W/kg



WIFI 5GHz U-NII-3

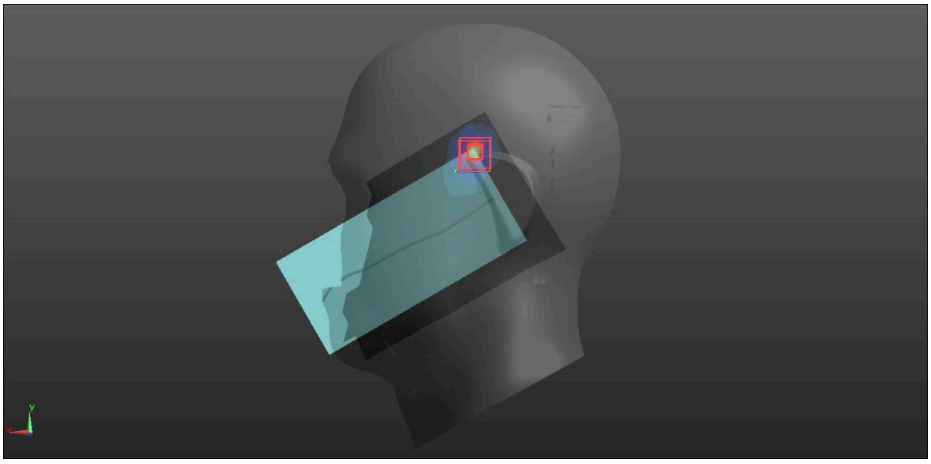
Left side	Cheek

Communication System: UID 0, WIFI 5.8G (0); Frequency: 5785 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5785 MHz; σ = 5.255 S/m; ε_r = 35.315; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3708; ConvF(5.17, 5.17, 5.17) @ 5785 MHz; Calibrated: 9/26/2019
- Sensor-Surface: 1.4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 8/28/2019
- Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.12 (7450)
  LC/5785LC/Area Scan (12x21x1): Measurement grid: dx=10mm, dy=10mm
  Maximum value of SAR (measured) = 1.56 W/kg
  LC/5785LC/Zoom Scan (6x6x12)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=2mm
  Reference Value = 0 V/m; Power Drift = 0.00 dB
  Peak SAR (extrapolated) = 2.70 W/kg
  SAR(1 g) = 0.566 W/kg; SAR(10 g) = 0.144 W/kg

  Maximum value of SAR (measured) = 1.43 W/kg

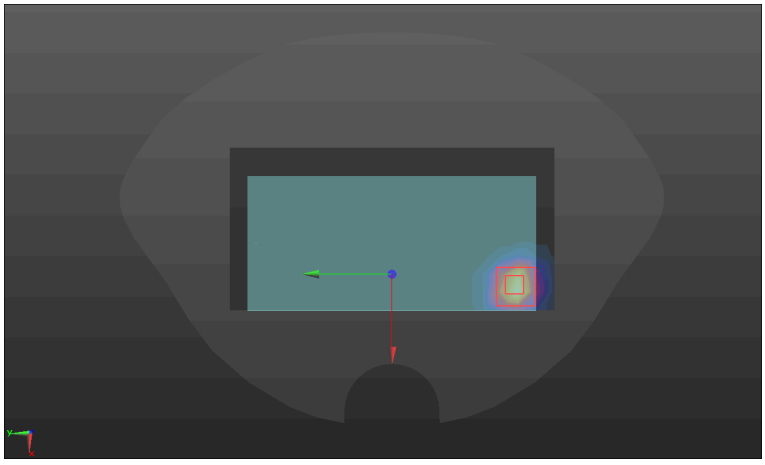


Body-worn	Back

Communication System: UID 0, WIFI 5.8G (0); Frequency: 5785 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5785 MHz; σ = 5.255 S/m; ε_r = 35.315; ρ = 1000 kg/m^3
Phantom section: Flat Section

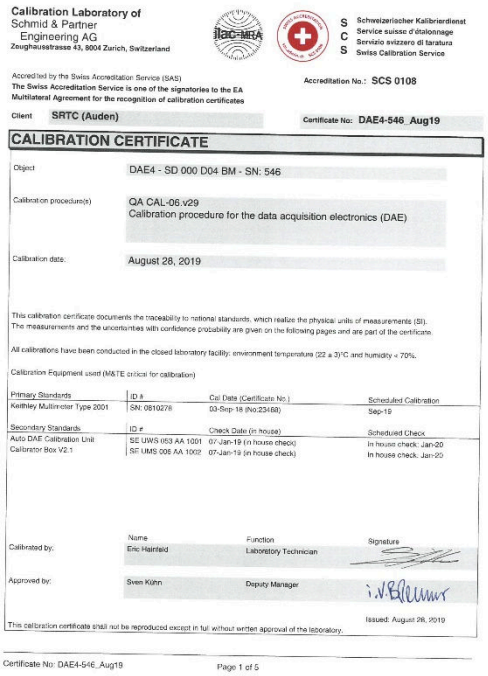
DASY5 Configuration:

- Probe: EX3DV4 - SN3708; ConvF(5.17, 5.17, 5.17) @ 5785 MHz; Calibrated: 9/26/2019
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 2019/8/28
- Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)
  5785back/5785back/Area Scan (12x21x1): Measurement grid: dx=10mm, dy=10mm
  Maximum value of SAR (measured) = 0.665 W/kg
  5785back/5785back/Zoom Scan (6x6x12)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=2mm
  Reference Value = 0 V/m; Power Drift = 0.00 dB
  Peak SAR (extrapolated) = 1.27 W/kg
  SAR(1 g) = 0.315 W/kg; SAR(10 g) = 0.103 W/kg
  Maximum value of SAR (measured) = 0.724 W/kg



ANNEX B – RELEVANT PAGES FROM CALIBRATION REPORTS

DAE4 Sn:546



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

Client SRTC (Auden) Certificate No: DAE4-546_Aug19

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 28, 2019

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)

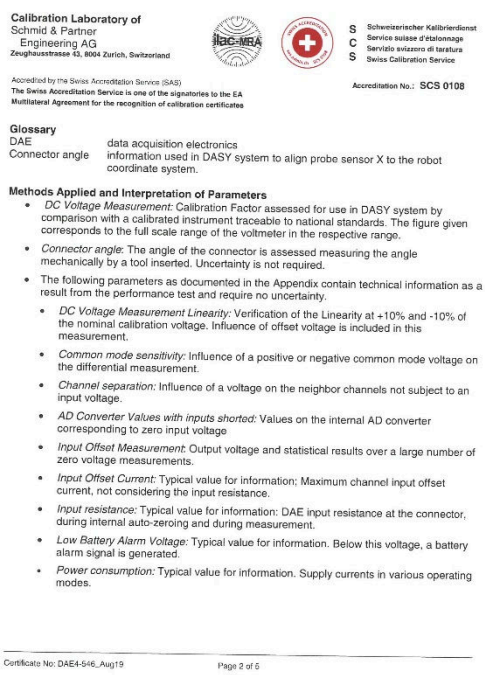
Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Keithley Multimeter Type 2001	SN: 0810278	03-Sep-18 (No:23168)	Sep-19
Secondary Standards	**ID #**	**Check Date (in house)**	**Scheduled Check**
Auto DAE Calibration Unit	SE UWS 053 AA 1001	07-Jan-19 (in house check)	In house check: Jan-20
Calibrator Box V2.1	SE UMS 006 AA 1002	07-Jan-19 (in house check)	In house check: Jan-20

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

Issued: August 28, 2019

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

Certificate No: DAE4-546_Aug19 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

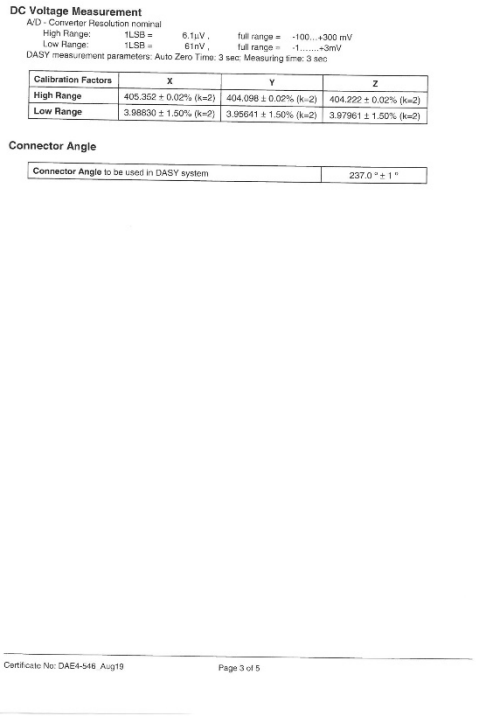
Glossary

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.

Certificate No: DAE4-546_Aug19 Page 2 of 5



DC Voltage Measurement

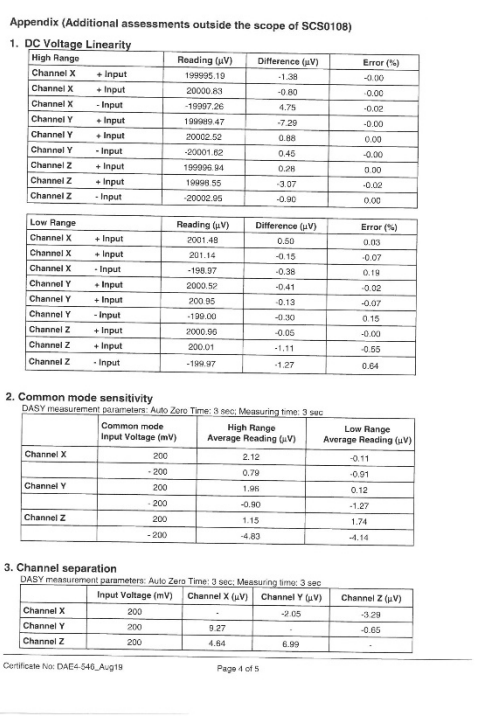
A/D - Converter Resolution nominal
High Range: 1LSB = 6.1uV, full range = -100...+300 mV
Low Range: 1LSB = 61nV, full range = -1.....+3mV
DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

Calibration Factors	X	Y	Z
High Range	405.352 ± 0.02% (k=2)	404.098 ± 0.02% (k=2)	404.222 ± 0.02% (k=2)
Low Range	3.98830 ± 1.50% (k=2)	3.95641 ± 1.50% (k=2)	3.97961 ± 1.50% (k=2)

Connector Angle

Connector Angle to be used in DASY system	237.0 ° ± 1 °

Certificate No: DAE4-546_Aug19 Page 3 of 5



Appendix (Additional assessments outside the scope of SCS0108)

1. DC Voltage Linearity

High Range		Reading (μV)	Difference (μV)	Error (%)
Channel X	+ Input	199995.19	-1.38	-0.00
Channel X	+ Input	20000.83	-0.80	-0.00
Channel X	- Input	-19997.26	4.75	-0.02
Channel Y	+ Input	199989.47	-7.29	-0.00
Channel Y	- Input	20002.52	0.88	0.00
Channel Y	- Input	-20001.62	0.45	-0.00
Channel Z	+ Input	199996.94	0.28	0.00
Channel Z	+ Input	19998.55	-3.07	-0.02
Channel Z	- Input	-20002.95	-0.90	0.00

Low Range		Reading (μV)	Difference (μV)	Error (%)
Channel X	+ Input	2001.48	0.50	0.03
Channel X	+ Input	201.14	-0.15	-0.07
Channel X	- Input	-198.97	-0.38	0.19
Channel Y	+ Input	2000.52	-0.41	-0.02
Channel Y	+ Input	200.95	-0.13	-0.07
Channel Y	- Input	-199.00	-0.30	0.15
Channel Z	+ Input	2000.96	-0.05	-0.00
Channel Z	+ Input	200.01	-1.11	-0.55
Channel Z	- Input	-199.97	-1.27	0.64

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	2.12	-0.11
	- 200	0.79	-0.91
Channel Y	200	1.96	0.12
	- 200	-0.90	-1.27
Channel Z	200	1.15	1.74
	- 200	-4.83	-4.14

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	-	-2.05	-3.29
Channel Y	200	9.27	-	-0.65
Channel Z	200	4.64	6.99	-

Certificate No: DAE4-546_Aug19 Page 4 of 5