SAR TEST REPORT

Applicant	Huawei Technologies Co., Ltd.
FCC ID	QISPOT-LX1
Product	Smart Phone
Model	POT-LX1
Report No.	R1809H0131-S1V1
Issue Date	November 15, 2018

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **IEEE 1528- 2013, ANSI C95.1: 1992/IEEE C95.1: 1991.** The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

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1 Test Laboratory

1.1 Notes of the Test Report

This report shall not be reproduced in full or partial, without the written approval of **TA technology (shanghai) co., Ltd.** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein .Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above.

1.2 Test facility

CNAS (accreditation number:L2264)

TA Technology (Shanghai) Co., Ltd. has obtained the accreditation of China National Accreditation Service for Conformity Assessment (CNAS).

FCC (Designation number: CN1179, Test Firm Registration Number: 446626)

TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

IC (recognition number is 8510A)

TA Technology (Shanghai) Co., Ltd. has been listed by industry Canada to perform electromagnetic emission measurement.

VCCI (recognition number is C-4595, T-2154, R-4113, G-10766)

TA Technology (Shanghai) Co., Ltd. has been listed by industry Japan to perform electromagnetic emission measurement.

A2LA (Certificate Number: 3857.01)

TA Technology (Shanghai) Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.

1.3 Testing Location

Company:	TA Technology (Shanghai) Co., Ltd.
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1.4 Laboratory Environment

Temperature	Min. = 18°C, Max. = 25 °C
Relative humidity	Min. = 30%, Max. = 70%
Ground system resistance	< 0.5 Ω
Ambient noise is checked and found very low and in compliance with requirement of standards. Reflection of surrounding objects is minimized and in compliance with requirement of standards.	

2 Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for the EUT are as follows:
Table 1: Highest Reported SAR

Mode	Highest Reported SAR (W/kg)			
	1g SAR Head	1g SAR Body-worn (Separation 15mm)	1g SAR Hotspot (Separation 10mm)	Product Specific 10-g SAR (Separation 0mm)
GSM 850	0.62	0.40	**0.63**	/
GSM 1900	0.23	0.20	0.31	/
WCDMA Band II	0.27	**0.42**	0.53	/
WCDMA Band V	**0.75**	0.29	0.36	/
LTE FDD 7	0.21	0.27	0.39	/
Wi-Fi (2.4G)	＜0.1	＜0.1	0.12	/
Wi-Fi (5G)	0.20	0.30	0.56	**0.69**
BT	/	/	/	/
Date of Testing:	October 20, 2018~ October 31, 2018			

Note: 1) The highest Reported SAR for head, body-worn, hotspot, Product Specific 10-g SAR and simultaneous transmission exposure conditions (1-g) are 0.75W/kg, 0.42W/kg, 0.63W/kg, 0.69W/kg and 1.19W/kg.

2) Sand-alone SAR evaluation is not required for BT, more details information see section 10.2

3) For body worn operation, this device has been tested and meets FCC RF exposure guidelines when used with any accessory that contains no metal and that positions the handset a minimum of 15mm from the body. Use of other accessories may not ensure compliance with FCC RF exposure guidelines.

The device is in compliance with Specific Absorption Rate (SAR) for general population/uncontraolled exposure limits according to the FCC rule §2.1093, the ANSI C95.1: 1992/IEEE C95.1: 1991, and had been tested in accordance with the measurement methods and procedures specified in IEEE Std 1528-2013.

3 Description of Equipment under Test

Client Information

Applicant	Huawei Technologies Co., Ltd.
Applicant address	Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.China.
Manufacturer	Huawei Technologies Co., Ltd.
Manufacturer address	Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.China.

General Technologies

Application Purpose:	Original Grant
EUT Stage	Identical Prototype
Model:	POT-LX1
IMEI:	IMEI 1:869130040039807 IMEI 2:869130040046554
Hardware Version:	HL3POTM
Software Version:	5.0.1.50M (SP2C900E61R1P9)
Antenna Type:	Internal Antenna
Device Class:	B
Wi-Fi Hotspot	Wi-Fi 2.4G Wi-Fi 5G U-NII-1&U-NII-3
Power Class:	GSM 850:4 GSM 1900:1 UMTS Band II/V:3 LTE FDD 7:3
Power Level	GSM 850:level 5 GSM 1900:level 0 UMTS Band II/V:all up bits LTE FDD 7:max power
EUT Accessory	
Battery 1	Manufacturer: Huawei Technologies Co., Ltd. (Manufacturer: SCUD) Model: HB396286ECW
Battery 2	Manufacturer: Huawei Technologies Co., Ltd. (Manufacturer: Sunwoda) Model: HB396286ECW
Battery 3	Manufacturer: Huawei Technologies Co., Ltd. (Manufacturer: Desay) Model: HB396286ECW

Battery 4	Manufacturer: Huawei Technologies Co., Ltd. (Manufacturer: ATL) Model: HB396286ECW
Earphone 1	Manufacturer: Jiangxi Lianchuang Hongsheng Electronic Co. ,LTD Model: MEND1532B528A02
Earphone 2	Manufacturer: Boluo County Quancheng Electronic Co.,ltd Model: 1293-3283-3.5mm-322

Wireless Technology and Frequency Range

Wireless Technology		Modulation	Operating mode	Tx (MHz)
GSM	850	Voice(GMSK) GPRS(GMSK) EGPRS(GMSK,8PSK)	☐Multi-slot Class:8-1UP ☐Multi-slot Class:10-2UP ☒Multi-slot Class:12-4UP ☐Multi-slot Class:33-4UP	824 ~ 849
	1900			1850 ~ 1910
	Does this device support DTM (Dual Transfer Mode)? ☐Yes ☒No			
UMTS	Band II	QPSK	HSDPA UE Category:14 HSUPA UE Category:6 DC-HSDPA UE Category:24 (Only supported by single SIM) HSPA+ Downlink Category:10	1850 ~ 1910
	Band V			824 ~ 849
LTE	FDD 7	QPSK, 16QAM	Category 7, Rel 12	2500 ~ 2570
	Does this device support Carrier Aggregation (CA) ☒Yes downlink only☐No			
	Does this device support SV-LTE (1xRTT-LTE)? ☐Yes ☒No			
BT	2.4G	Version 4.2 LE		2402 ~2480
Wi-Fi	2.4G	DSSS,OFDM	802.11b/g/n HT20	2412 ~ 2462
		OFDM	802.11n HT40	2422 ~ 2452
	5G	OFDM	802.11a/n HT20/ HT40/ ac VHT20/ VHT40/ VHT80	5150 ~ 5350 5470 ~ 5850
	Does this device support MIMO ☐Yes ☒No			
NFC	13.56MHz			

4 Test Specification, Methods and Procedures

The tests documented in this report were performed in accordance with FCC 47 CFR § 2.1093, IEEE 1528- 2013, ANSI C95.1: 1992/IEEE C95.1: 1991, the following FCC Published RF exposure KDB procedures:

248227 D01 802.11Wi-Fi SAR v02r02
447498 D01 General RF Exposure Guidance v06
648474 D04 Handset SAR v01r03
865664 D01 SAR measurement 100 MHz to 6 GHz v01r04
865664 D02 RF Exposure Reporting v01r02
941225 D01 3G SAR Procedures v03r01
941225 D05 SAR for LTE Devices v02r05
941225 D06 Hotspot Mode v02r01
941225 D05A LTE Rel.10 KDB Inquiry Sheet v01r02
690783 D01 SAR Listings on Grants v01r03

5 Operational Conditions during Test

5.1 Test Positions

5.1.1 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".

5.1.2 Body Worn Configuration

Body-worn operating configurations should be tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in normal use configurations.

Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration. Per FCC KDB Publication 648474 D04, Body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in FCC KDB Publication 447498 D01 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode, when applicable. When the reported SAR for a body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

Accessories for Body-worn operation configurations are divided into two categories: those that do not contain metallic components and those that do contain metallic components. When multiple accessories that do not contain metallic components are supplied with the device, the device is tested with only the accessory that dictates the closest spacing to the body. Then multiple accessories that contain metallic components are tested with the device with each accessory. If multiple accessories share an identical metallic component (i.e. the same metallic belt-clip used with different holsters with no other metallic components) only the accessory that dictates the closest spacing to the body is tested.

Body-worn accessories may not always be supplied or available as options for some devices intended to be authorized for body-worn use. In this case, a test configuration with a separation distance between the back of the device and the flat phantom is used. Test position spacing was documented. Transmitters that are designed to operate in front of a person’s face, as in push-to-talk configurations, are tested for SAR compliance with the front of the device positioned to face the flat phantom in head fluid. For devices that are carried next to the body such as a shoulder, waist or chest-worn transmitters, SAR compliance is tested with the accessories, including headsets and microphones, attached to the device and positioned against a flat phantom in a normal use configuration.

5.1.3 Phablet SAR test considerations

For smart phones, with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm, that can provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets and support voice calls next to the ear, unless it is confirmed otherwise through KDB inquiries, the following phablet procedures should be applied to evaluate SAR compliance for each applicable wireless modes and frequency band. Devices marketed as phablets, regardless of form factors and operating characteristics must be tested as a phablet to determine SAR compliance.

a) The normally required head and body-worn accessory SAR test procedures for handsets, including hotspot mode, must be applied.

b) The UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna located at ≤ 25 mm from that surface or edge, in direct contact with a flat phantom, for product specific 10-g SAR according to the body-equivalent tissue dielectric parameters in KDB Publication 865664 D01 to address interactive hand use exposure conditions. The 1-g SAR at 5 mm for UMPC mini-tablets is not required. When hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg; however, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold. The normal tablet procedures in KDB Publication 616217 are required when the overall diagonal dimension of the device is > 20.0 cm. Hotspot mode SAR is not required when normal tablet procedures are applied. Extremity 10-g SAR is also not required for the front (top) surface of larger form factor full size tablets. The more conservative normal tablet SAR results can be used to support phablet mode 10-g extremity SAR.

c) The simultaneous transmission operating configurations applicable to voice and data transmissions for both phone and mini-tablet modes must be taken into consideration separately for 1-g and 10-g SAR to determine the simultaneous transmission SAR test exclusion and measurement requirements for the relevant wireless modes and exposure conditions.

5.2 Measurement Variability

Per FCC KDB Publication 865664 D01, SAR measurement variability was assessed for each frequency band, which was determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. When both head and body tissue-equivalent media were required for SAR measurements in a frequency band, the variability measurement procedures were applied to the tissue medium with the highest measured SAR, using the highest measured SAR configuration for that tissue-equivalent medium. These additional measurements were repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device was returned to ambient conditions (normal room temperature) with the battery fully charged before it was re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

SAR Measurement Variability was assessed using the following procedures for each frequency band:
1) When the original highest measured SAR is ≥ 0.80 W/kg, the measurement was repeated once.
2) A second repeated measurement was preformed only if the ratio of largest to smallest SAR for the original and first repeated measurements was > 1.20 or when the original or repeated measurement was ≥ 1.45 W/kg (~ 10% from the 1-g SAR limit).
3) A third repeated measurement was performed only if the original, first or second repeated measurement was ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.
4) Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg

The same procedures should be adapted for measurements according to extremity and occupational exposure limits by applying a factor of 2.5 for extremity exposure and a factor of 5 for occupational exposure to the corresponding SAR thresholds.

5.3 Test Configuration

5.3.1 GSM Test Configuration

According to specification 3GPP TS 51.010, the maximum power of the GSM can do the power reduction for the multi-slot. The allowed power reduction in the multi-slot configuration is as following:

Output power of reductions:

Table 2: The allowed power reduction in the multi-slot configuration

Number of timeslots in uplink assignment	Permissible nominal reduction of maximum output power,(dB)
1	0
2	0 to 3,0
3	1,8 to 4,8
4	3,0 to 6,0

SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power specified for production units, including tune-up tolerance. The data mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested. GSM voice and GPRS data use GMSK, which is a constant amplitude modulation with minimal peak to average power difference within the time-slot burst. For EDGE, GMSK is used for MCS 1 – MCS 4 and 8-PSK is used for MCS 5 – MCS 9; where 8-PSK has an inherently higher peak-to-average power ratio. The GMSK and 8-PSK EDGE configurations are considered separately for SAR compliance. The GMSK EDGE configurations are grouped with GPRS and considered with respect to time-averaged maximum output power to determine compliance. The 3G SAR test reduction procedure is applied to 8-PSK EDGE with GMSK GPRS/EDGE as the primary mode.

5.3.2 UMTS Test Configuration

5.3.2.1 3G SAR Test Reduction Procedure

The default test configuration is to measure SAR with an established radio link between the EUT and a communication test set using a 12.2 kbps RMC (reference measurement channel) configured in Test Loop Mode 1. SAR is selectively confirmed for other physical channel configurations modes according to output power, exposure conditions and device operating capabilities. Maximum output power is verified by applying the applicable versions of 3GPP TS 34.121.

5.3.2.2 Head SAR

SAR for next to the ear head exposure is measured using a 12.2 kbps RMC with TPC bits configured to all “1’s”. The 3G SAR test reduction procedure is applied to AMR configurations with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured for 12.2 kbps AMR in 3.4 kbps SRB (signaling radio bearer) using the highest SAR configuration in 12.2 kbps RMC for head exposure.

5.3.2.3 Body-worn accessory SAR

SAR for body-worn accessory configurations is measured using a 12.2 kbps RMC with TPC bits configured to all “1’s”. The 3G SAR test reduction procedure is applied to other spreading codes and multiple DPDCHn configurations supported by the EUT with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured using an applicable RMC configuration with the corresponding spreading code or DPDCHn, for the highest reported body-worn accessory exposure SAR configuration in 12.2 kbps RMC. When more than 2 DPDCHn are supported by the EUT, it may be necessary to configure additional DPDCHn using FTM (Factory Test Mode) or other chipset based test approaches with parameters similar to those used in 384 kbps and 768 kbps RMC

5.3.2.4 Release 5 HSDPA Test Configuration

The 3G SAR test reduction procedure is applied to HSDPA body-worn accessory configurations with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured for HSDPA using the HSDPA body SAR procedures in the “Release 5 HSDPA Data Devices” section of this document, for the highest SAR body-worn accessory exposure configuration in 12.2 kbps RMC. EUT with both HSDPA and HSUPA are tested according to Release 6 HSPA test procedures.

HSDPA should be configured according to the UE category of a test device.The number of HSDSCH/ HS-PDSCHs, HARQ processes, minimum inter-TTI interval, transport block sizes and RV coding sequence are defined by the H-set. To maintain a consistent test configuration and stable transmission conditions, QPSK is used in the H-set for SAR testing. HS-DPCCH should be configured with a CQI feedback cycle of 4 ms with a CQI repetition factor of 2 to maintain a constant rate of active CQI slots. DPCCH and DPDCH gain factors(βc, βd), and HS-DPCCH power offset parameters (ΔACK, ΔNACK, ΔCQI) should be set according to values indicated in the Table below. The CQI value is determined by the UE category, transport block size, number of HS-PDSCHs and modulation used in the H-set.

Table 3: Subtests for UMTS Release 5 HSDPA

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

Note1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI}= 8$\Leftrightarrow$$A_{hs}$ = β_{hs}/β_c=30/15$\Leftrightarrow$$\beta_{hs}$=30/15*$\beta_c$

Note2: CM=1 for β_c/β_d =12/15, β_{hs}/β_c=24/15.

Note3: For subtest 2 the $\beta_c\beta_d$ ratio of 12/15 for the TFC during the measurement period(TF1,TF0) is achieved by setting the signaled gain factors for the reference TFC (TFC1,TF1) to β_c=11/15 and β_d=15/15.

5.3.2.5 Release 6 HSUPA Test Configuration

The 3G SAR test reduction procedure is applied to HSPA (HSUPA/HSDPA with RMC) body-worn

accessory configurations with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured for HSPA using the HSPA body SAR procedures in the "Release 6 HSPA Data Devices" section of this document, for the highest body-worn accessory exposure SAR configuration in 12.2 kbps RMC. When VOIP is applicable for next to the ear head exposure in HSPA, the 3G SAR test reduction procedure is applied to HSPA with 12.2 kbps RMC as the primary mode; otherwise, the same HSPA configuration used for body-worn accessory measurements is tested for next to the ear head exposure.

Due to inner loop power control requirements in HSPA, a communication test set is required for output power and SAR tests. The 12.2 kbps RMC, FRC H-set 1 and E-DCH configurations for HSPA are configured according to the β values indicated in Table 4 and other applicable procedures described in the 'WCDMA EUT and 'Release 5 HSDPA Data Devices' sections of this document

Table 4: Sub-Test 5 Setup for Release 6 HSUPA

Sub-set	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	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	β_{ed1}:47/15 β_{ed2}:47/15	4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15 (4)	15/15 (4)	64	15/15 (4)	30/15	24/15	134/15	4	1	1.0	0.0	21	81

Note 1: Δ_{ACK}, ΔNACK and Δ_{CQI} = 8 $\Leftrightarrow$ $A_{hs} = \beta_{hs}/\beta_c$ = 30/15 $\Leftrightarrow \beta_{hs}$= 30/15 *$\beta_c$.

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

Note 3: For subtest 1 the βc/βd 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 βc = 10/15 and βd = 15/15.

Note 4: For subtest 5 the βc/βd 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 βc = 14/15 and βd = 15/15.

Note 5: Testing UE using E-DPDCH Physical Layer category 1 Sub-test 3 is not required according to TS 25.306 Figure 5.1g.

Note 6: βed can not be set directly; it is set by Absolute Grant Value.

Table 5: HSUPA UE category

UE E-DCH Category	Maximum E-DCH Codes Transmitted	Number of HARQ Processes	E-DCH TTI (ms)	MinimumSpreading Factor	Maximum E-DCH Transport Block Bits	Max Rate (Mbps)
1	1	4	10	4	7110	0.7296
2	2	8	2	4	2798	1.4592
	2	4	10	4	14484	
3	2	4	10	4	14484	1.4592

4	2	8	2	2	5772	2.9185
	2	4	10	2	20000	2.00
5	2	4	10	2	20000	2.00
6 (No DPDCH)	4	8	2	2 SF2 & 2 SF4	11484	5.76
	4	4	10		20000	2.00
7 (No DPDCH)	4	8	2	2 SF2 & 2 SF4	22996	?
	4	4	10		20000	?
NOTE: When 4 codes are transmitted in parallel, two codes shall be transmitted with SF2 and two with SF4. UE Categories 1 to 6 supports QPSK only. UE Category 7 supports QPSK and 16QAM. (TS25.306-7.3.0)						

5.3.2.6 HSPA, HSPA+ and DC-HSDPA Test Configuration

SAR test exclusion may apply to 3GPP Rel. 6 HSPA and Rel. 8 DC-HSDPA. When SAR measurement is required for HSPA or DC-HSDPA, a KDB inquiry is required to confirm that the wireless mode configurations in the test setup have remained stable throughout the SAR measurements. Without prior KDB confirmation to determine the SAR results are acceptable, a PAG is required for equipment approval.

SAR test exclusion for HSPA, HSPA+ and DC-HSDPA is determined according to the following:

1) The HSPA procedures are applied to configure 3GPP Rel. 6 HSPA devices in the required sub-test mode(s) to determine SAR test exclusion.

2) SAR is required for Rel. 7 HSPA+ when SAR is required for Rel. 6 HSPA; otherwise, the 3G SAR test reduction procedure is applied to (uplink) HSPA+ with 12.2 kbps RMC as the primary mode.36 Power is measured for HSPA+ that supports uplink 16 QAM according to configurations in Table C.11.1.4 of 3GPP TS 34.121-1 to determine SAR test reduction.

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

4) Regardless of whether a PBA is required, the following information must be verified and included in the SAR report for devices supporting HSPA, HSPA+ or DC-HSDPA: a) The output power measurement results and applicable release version(s) of 3GPP TS 34.121.

i) Power measurement difficulties due to test equipment setup or availability must be resolved between the grantee and its test lab.

b) The power measurement results are in agreement with the individual device implementation and specifications. When Enhanced MPR (E-MPR) applies, the normal MPR targets may be modified according to the Cubic Metric (CM) measured by the device, which must be taken into consideration.

c) The UE category, operating parameters, such as the β and Δ values used to configure the device for testing, power setback procedures described in 3GGPP TS 34.121 for the power measurements, and HSPA/HSPA+ channel conditions (active and stable) for the entire duration of the measurement according to the required E-TFCI and AG index values.

5) When SAR measurement is required, the test configurations, procedures and power measurement

results must be clearly described to confirm that the required test parameters are used, including E-TFCI and AG index stability and output power conditions.

Table 6: HS-DSCH UE category

Table 5.1a: FDD HS-DSCH physical layer categories

HS-DSCH category	Maximum number of HS-DSCH codes received	Minimum inter-TTI interval	Maximum number of bits of an HS-DSCH transport block received within an HS-DSCH TTI NOTE 1	Total number of soft channel bits	Supported modulations without MIMO operation or dual cell operation	Supported modulations with MIMO operation and without dual cell operation	Supported modulations with dual cell operation
Category 1	5	3	7298	19200	QPSK, 16QAM	Not applicable (MIMO not supported)	Not applicable (dual cell operation not supported)
Category 2	5	3	7298	28800			
Category 3	5	2	7298	28800			
Category 4	5	2	7298	38400			
Category 5	5	1	7298	57600			
Category 6	5	1	7298	67200			
Category 7	10	1	14411	115200			
Category 8	10	1	14411	134400			
Category 9	15	1	20251	172800			
Category 10	15	1	27952	172800			
Category 11	5	2	3630	14400	QPSK		
Category 12	5	1	3630	28800			
Category 13	15	1	35280	259200	QPSK, 16QAM, 64QAM		
Category 14	15	1	42192	259200			
Category 15	15	1	23370	345600	QPSK, 16QAM		
Category 16	15	1	27952	345600			
Category 17 NOTE 2	15	1	35280	259200	QPSK, 16QAM, 64QAM	–	
			23370	345600	–	QPSK, 16QAM	
Category 18 NOTE 3	15	1	42192	259200	QPSK, 16QAM, 64QAM	–	
			27952	345600	–	QPSK, 16QAM	
Category 19	15	1	35280	518400	QPSK, 16QAM, 64QAM		
Category 20	15	1	42192	518400			
Category 21	15	1	23370	345600	-	-	QPSK, 16QAM
Category 22	15	1	27952	345600			
Category 23	15	1	35280	518400			QPSK, 16QAM, 64QAM
Category 24	15	1	42192	518400			

5.3.3 LTE Test Configuration

LTE modes were tested according to FCC KDB 941225 D05 publication. Please see notes after the tabulated SAR data for required test configurations. Establishing connections with base station simulators ensure a consistent means for testing SAR and are recommended for evaluating SAR [4]. The R&S CMW500 was used for LTE output power measurements and SAR testing. Max power control was used so the UE transmits with maximum output power during SAR testing. SAR must be measured with the maximum TTI (transmit time interval) supported by the device in each LTE configuration.

A) Spectrum Plots for RB Configurations

A properly configured base station simulator was used for SAR tests and power measurements. Therefore, spectrum plots for RB configurations were not required to be included in this report.

B) MPR

MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 3GPP TS36.101 Section 6.2.3 – 6.2.5 under Table 6.2.3-1.

C)A-MPR

A-MPR (Additional MPR) has been disabled for all SAR tests by setting NS=01 on the base station simulator.

D) Largest channel bandwidth standalone SAR test requirements

1) QPSK with 1 RB allocation

Start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel. When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required for 1 RB allocation; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel. When the reported SAR of a required test channel is > 1.45 W/kg, SAR is required for all three RB offset configurations for that required test channel.

2) QPSK with 50% RB allocation

The procedures required for 1 RB allocation in 1) are applied to measure the SAR for QPSK with 50% RB allocation.

3) QPSK with 100% RB allocation

For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation in 1) and 2) are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.

4) Higher order modulations

For each modulation besides QPSK; e.g., 16-QAM, 64-QAM, apply the QPSK procedures in above sections to determine the QAM configurations that may need SAR measurement. For each configuration identified as required for testing, SAR is required only when the highest maximum output power for the configuration in the higher order modulation is > ½ dB higher than the same configuration in QPSK or when the reported SAR for the QPSK configuration is > 1.45 W/kg.

E) Other channel bandwidth standalone SAR test requirements

For the other channel bandwidths used by the device in a frequency band, apply all the procedures required for the largest channel bandwidth in section A) to determine the channels and RB configurations that need SAR testing and only measure SAR when the highest maximum output power of a configuration requiring testing in the smaller channel bandwidth is > ½ dB higher than the equivalent channel configurations in the largest channel bandwidth configuration or the *reported* SAR of a configuration for the largest channel bandwidth is > 1.45 W/kg.

5.3.4 Wi-Fi Test Configuration

SAR test reduction for 802.11 Wi-Fi transmission mode configurations are considered separately for

DSSS and OFDM. An initial test position is determined to reduce the number of tests required for certain exposure configurations with multiple test positions. An initial test configuration is determined for each frequency band and aggregated band according to maximum output power, channel bandwidth, wireless mode configurations and other operating parameters to streamline the measurement requirements. For 2.4 GHz DSSS, either the initial test position or DSSS procedure is applied to reduce the number of SAR tests; these are mutually exclusive. For OFDM, an initial test position is only applicable to next to the ear, UMPC mini-tablet and hotspot mode configurations, which is tested using the initial test configuration to facilitate test reduction. For other exposure conditions with a fixed test position, SAR test reduction is determined using only the initial test configuration.

The multiple test positions require SAR measurements in head, hotspot mode or UMPC mini-tablet configurations may be reduced according to the highest reported SAR determined using the *initial test position(s)* by applying the DSSS or OFDM SAR measurement procedures in the required wireless mode test configuration(s). The *initial test position(s)* is measured using the highest measured maximum output power channel in the required wireless mode test configuration(s). When the *reported* SAR for the *initial test position* is:

- ≤ 0.4 W/kg, further SAR measurement is not required for the other test positions in that exposure configuration and wireless mode combination within the frequency band or aggregated band. DSSS and OFDM configurations are considered separately according to the required SAR procedures.
- 0.4 W/kg, SAR is repeated using the same wireless mode test configuration tested in the *initial test position* to measure the subsequent next closet/smallest test separation distance and maximum coupling test position, on the highest maximum output power channel, until the *reported* SAR is ≤ 0.8 W/kg or all required test positions are tested.
    - ✧ For subsequent test positions with equivalent test separation distance or when exposure is dominated by coupling conditions, the position for maximum coupling condition should be tested.
    - ✧ When it is unclear, all equivalent conditions must be tested.
- For all positions/configurations tested using the *initial test position* and subsequent test positions, when the *reported* SAR is > 0.8 W/kg, measure the SAR for these positions/configurations on the subsequent next highest measured output power channel(s) until the *reported* SAR is ≤ 1.2 W/kg or all required test channels are considered.
    - ✧ The additional power measurements required for this step should be limited to those necessary for identifying subsequent highest output power channels to apply the test reduction.

To determine the initial test position, Area Scans were performed to determine the position with the Maximum Value of SAR (measured). The position that produced the highest Maximum Value of SAR is considered the worst case position; thus used as the initial test position.

A Wi-Fi device must be configured to transmit continuously at the required data rate, channel bandwidth and signal modulation, using the highest transmission duty factor supported by the test mode tools for SAR measurement.

5.3.5 LTE CA specification

The device supports LTE advanced Rel. 12, UE Category 7 Carrier Aggregation (CA) on downlink only for Intra band contiguous. More details information is provided in tables below:

Table 7: Intra-band contiguous CA configurations

E-UTRA CA configuration / Bandwidth combination set					
E-UTRA CA configuration	Uplink CA configurations	Component carriers in order of increasing carrier frequency		Bandwidth combination set	
		Channel bandwidths for carrier [MHz]	Channel bandwidths for carrier [MHz]		
CA_7C	NA	15	15	40	0
		20	20		
		10	20	40	1
		15	15, 20		
		20	10, 15, 20		
		15	10, 15	40	2
		20	15, 20		
		15	15		
		20	10, 15, 20		
NOTE 1: The CA configuration refers to an operating band and a CA bandwidth class specified in Table 5.6A-1 (the indexing letter). Absence of a CA bandwidth class for an operating band implies support of all classes.					

For downlink carrier aggregation, SAR is not required for downlink carrier aggregation in active uplink maximum output power not more than 1/4dB higher than the maximum output power measured when downlink carrier aggregation inactive.

5.3.6 Dynamic antenna switching specification

The device supports the dynamic antenna switching function to optimize transmission efficiency for wide range frequency operations. It has two 2G/3G/4G TX antennas (Main Antenna and Secondary Antenna). It can transmit from either Main Antenna (Ant1) or Secondary Antenna (Ant 2). The Main Antenna (Ant1) support GSM850/1900/ WCDMA B2/B5/ LTE B7 operating bands, and Secondary Antenna (Ant 2) support GSM850/1900/ WCDMA B2/B5 operating bands, only one antenna can be used for 2G/3G/4G transmission at a time.

Summary test plan:

For Dynamic antenna switching SAR test, set the Main Antenna / Secondary Antenna to the MAX transmit power level respectively and test the SAR respectively in all applicable RF exposure conditions. Some AT commands or test scripts are supplied to fix the DPDT operation state and choose the antenna, so that only one TX antenna (the Main Antenna or Secondary Antenna) is chosen at a time. All independent antennas and modems will be completely covered by the appropriate SAR measurements and all simultaneous transmission possibilities will be fully considered.

5.3.7 Receiver detection mechanism specification

This device support the receiver detection mechanism, the main purpose is to minimize triggering associated with power reduction scenarios by receiver detection mechanisms and provide enhanced user experience. It uses the receiver to indicate whether the user is making a call in head scenario or not. The selection between head and body power levels is based on the receiver detection mechanism. It can determine proximity to head or body and set the relevant power level for 2G&3G&4G and Wi-Fi antennas accordingly.

More details information followings:

Main antenna	Power Reduction Level Amount (dB)					
Power Reduction Scenario	Receiver	GSM850	GSM1900	UMTS B2	UMTS B5	LTE B7
Full power		33.70	31.00	24.00	25.00	23.80
Hotspot off	on	0.00	0.00	0.00	0.00	0.00
	off	0.00	0.00	0.70	0.00	1.80
Hotspot on	on	0.00	3.00	3.00	0.00	3.00
	off	0.00	3.00	3.70	0.00	4.80

Second antenna	Power Reduction Level Amount (dB)				
Power Reduction Scenario	Receiver	GSM850	GSM1900	UMTS B2	UMTS B5
Full power		33.70	29.00	20.00	25.00
Hotspot off	on	2.50	0.00	0.00	3.50
	off	0.00	0.00	0.00	0.00
Hotspot on	on	2.50	3.00	3.00	6.50
	off	0.00	3.00	3.00	3.00

Wi-Fi antenna		Power Reduction Level Amount (dB)									
Power Reduction Scenario	Receiver	WIFI2.4G 11b	WIFI2.4G 11g	WIFI2.4G 11nHT20	WIFI2.4G 11nHT40	WIFI5G 11a	WIFI5G 11nHT20	WIFI5G 11nHT40	WIFI5G 11ac-VHT20	WIFI5G 11ac-VHT40	WIFI5G 11ac-VHT80
Full power		19.00	18.00	16.00	16.00	18.00	17.00	15.00	17.00	15.00	14.00
Standalone	on	7.50	6.50	4.50	4.50	5.50	4.50	2.50	4.50	2.50	1.50
	off	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Simultaneous with 2G&3G&4G	on	7.50	6.50	4.50	4.50	5.50	4.50	2.50	4.50	2.50	1.50
	off	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: When the receiver detection mechanism is out of control, all active bands will be in the minimum transmit power level of the above table.

SAR test Plan

Table 8: Summery of Receiver detection mechanism

Antenna	Receiver on (head scenario)	Receiver off (Body/other scenario)
2G&3G&4G second ant	Power Level A1	Power Level B1
2G&3G&4G main ant	Power Level A2	Power Level B2
Wi-Fi Ant	Power Level A3	Power Level B3

Based on the summery table of Receiver detection mechanism above,

For Head SAR test,

1) Standalone Head SAR of 2G&3G&4G second ant is evaluated at power level A1（Receiver on）;
2) Standalone Head SAR of 2G&3G&4G Main ant is evaluated at power level A2（Receiver on）;
3) Standalone Head SAR of Wi-Fi ant is evaluated at power level A3（Receiver on）;

Note: As the receiver only works in voice mode when the user is making a call in head scenario, In LTE Data/ WCDMA RMC (Data) mode, the mobile phone won't ring and answer, it just can be connected with the test instrument. Therefore, for Head SAR test of UMTS and LTE, LTE Data/ WCDMA RMC (Data) mode through triggering the receiver on by XML test scripts in order to simulate the users' scene (LTE VOIP, WCDMA VOIP).

For Body SAR test,

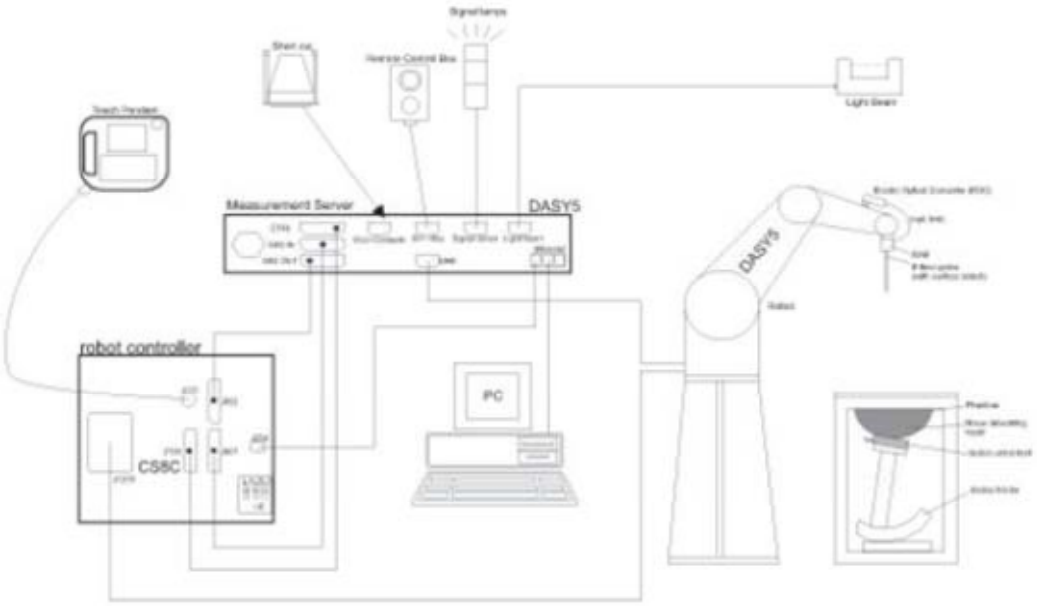
1) Standalone Body SAR of 2G&3G&4G second ant is evaluated at power level B1（Receiver off）;
2) Standalone Body SAR of 2G&3G&4G Main ant is evaluated at power level B2（Receiver off）;
3) Standalone Body SAR of Wi-Fi ant is evaluated at power level B3（Receiver off）;

Note: As the receiver will not work during body-worn voice mode operation with the headset connected. When the receiver is off, the power level with headset connected is the same as those without headset connected. So body-worn SAR with headset is tested at the body SAR worst case without headset connected at the same power level.

6 SAR Measurements System Configuration

6.1 SAR Measurement Set-up

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



- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic Field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running WinXP or Win7 and the DASY software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

6.2 DASY5 E-field Probe System

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

EX3DV4 Probe Specification

Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Calibration	ISO/IEC 17025 calibration service available
Frequency	10 MHz to > 6 GHz Linearity: ± 0.2 dB (30 MHz to 6 GHz)
Directivity	± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis)
Dynamic Range	10 μW/g to > 100 mW/g Linearity: ± 0.2dB (noise: typically < 1 μW/g)
Dimensions	Overall length: 330 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm
Application	High precision dosimetric measurements in any exposure Scenario (e.g., very strong gradient fields). Only probe which enables compliance testing for frequencies up to 6 GHz with precision of better 30%.

E-field Probe Calibration

Each probe is calibrated according to a dosimetric assessment procedure with accuracy better than ± 10%. The spherical isotropy was evaluated and found to be better than ± 0.25dB. The sensitivity parameters (NormX, NormY, NormZ), the diode compression parameter (DCP) and the conversion factor (ConvF) of the probe are tested.

The free space E-field from amplified probe outputs is determined in a test chamber. This is performed in a TEM cell for frequencies bellow 1 GHz, and in a wave guide above 1 GHz for free space. For the free space calibration, the probe is placed in the volumetric center of the cavity and at the proper orientation with the field. The probe is then rotated 360 degrees.

E-field temperature correlation calibration is performed in a flat phantom filled with the appropriate simulated brain tissue. The measured free space E-field in the medium correlates to temperature rise in a dielectric medium. For temperature correlation calibration a RF transparent thermistor-based temperature probe is used in conjunction with the E-field probe.

$$SAR=C\Delta T/\Delta t$$

Where: Δt = Exposure time (30 seconds),

C = Heat capacity of tissue (brain or muscle),

ΔT = Temperature increase due to RF exposure.

Or

$$SAR=|E|^2\sigma/\rho$$

Where: σ = Simulated tissue conductivity,

ρ = Tissue density (kg/m^3).

6.3 SAR Measurement Procedure

Power Reference Measurement

The Power Reference Measurement and Power Drift Measurements are for monitoring the power drift of the device under test in the batch process. The minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

Area Scan

The area scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot. The sophisticated interpolation routines implemented in DASY software can find the maximum found in the scanned area, within a range of the global maximum. The range (in dB) is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE standard 1528 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan), if only one zoom scan follows the area scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of zoom scans has to be increased accordingly.
Area scan parameters extracted from FCC KDB 865664 D01 SAR measurement 100 MHz to 6 GHz.

<table>
<tr><td></td><td>≤3 GHz</td><td>> 3 GHz</td></tr>
<tr><td>Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface</td><td>5 ± 1 mm</td><td>½·δ·ln(2) ± 0.5 mm</td></tr>
<tr><td>Maximum probe angle from probe axis to phantom surface normal at the measurement location</td><td>30° ± 1°</td><td>20° ± 1°</td></tr>
<tr><td rowspan="2">Maximum area scan spatial resolution: ΔxArea, ΔyArea</td><td>≤ 2 GHz: ≤ 15 mm
2 – 3 GHz: ≤ 12 mm</td><td>3 – 4 GHz: ≤ 12 mm
4 – 6 GHz: ≤ 10 mm</td></tr>
<tr><td colspan="2">When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.</td></tr>
</table>

Zoom Scan

Zoom scans are used assess the peak spatial SAR values within a cubic averaging volume containing 1 gram and 10 gram of simulated tissue. The zoom scan measures points (refer to table below) within a cube shoes base faces are centered on the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the zoom scan evaluates the averaged SAR for 1 gram and 10 gram and displays these values next to the job's label.

Zoom scan parameters extracted from FCC KDB 865664 D01 SAR measurement 100 MHz to 6 GHz.

<table>
<tr><td colspan="3"></td><td>≤3GHz</td><td>> 3 GHz</td></tr>
<tr><td colspan="3">Maximum zoom scan spatial resolution: $\triangle x_{zoom} \triangle y_{zoom}$</td><td>≤2GHz: ≤8mm
2 – 3GHz: ≤5mm*</td><td>3 – 4GHz: ≤5mm*
4 – 6GHz: ≤4mm*</td></tr>
<tr><td rowspan="3">Maximum zoom scan spatial resolution, normal to phantom surface</td><td colspan="2">Uniform grid: $\triangle z_{zoom}(n)$</td><td>≤5mm</td><td>3 – 4GHz: ≤4mm
4 – 5GHz: ≤3mm
5 – 6GHz: ≤2mm</td></tr>
<tr><td rowspan="2">Graded grid</td><td>$\triangle z_{zoom}(1)$: between 1st two points closest to phantom surface</td><td>≤4mm</td><td>3 – 4GHz: ≤3mm
4 – 5GHz: ≤2.5mm
5 – 6GHz: ≤2mm</td></tr>
<tr><td>$\triangle z_{zoom}(n>1)$: between subsequent points</td><td colspan="2">≤1.5•$\triangle z_{zoom}(n-1)$</td></tr>
<tr><td>Minimum zoom scan volume</td><td colspan="2">X, y, z</td><td>≥30mm</td><td>3 – 4GHz: ≥28mm
4 – 5GHz: ≥25mm
5 – 6GHz: ≥22mm</td></tr>
<tr><td colspan="5">Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.
* When zoom scan is required and the <u>reported</u> SAR from the area scan based 1-g SAR estimation procedures of KDB 447498 is ≤ 1.4W/kg, ≤8mm, ≤7mm and ≤5mm zoom scan resolution may be applied, respectively, for 2GHz to 3GHz, 3GHz to 4GHz and 4GHz to 6GHz.</td></tr>
</table>

Volume Scan Procedures

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

Power Drift Monitoring

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

7 Main Test Equipment

Name of Equipment	Manufacturer	Type/Model	Serial Number	Last Cal.	Cal. Due Date
Network analyzer	Agilent	E5071B	MY42404014	2018-05-20	2019-05-19
Dielectric Probe Kit	HP	85070E	US44020115	2018-05-20	2019-05-19
Power meter	Agilent	E4417A	GB41291714	2018-05-21	2019-05-20
Power sensor	Agilent	N8481H	MY50350004	2018-05-21	2019-05-20
Power sensor	Agilent	E9327A	US40441622	2018-05-20	2019-05-19
Dual directional coupler	Agilent	778D-012	50519	2018-05-21	2019-05-20
Dual directional coupler	Agilent	777D	50146	2018-05-20	2019-05-19
Amplifier	INDEXSAR	IXA-020	0401	2018-05-20	2019-05-19
Wideband radio communication tester	R&S	CMW 500	150415	2018-05-20	2019-05-19
E-field Probe	SPEAG	EX3DV4	3677	2018-05-29	2019-05-28
DAE	SPEAG	DAE4	1317	2018-03-23	2019-03-22
Validation Kit 835MHz	SPEAG	D835V2	4d020	2017-08-28	2020-08-27
Validation Kit 1900MHz	SPEAG	D1900V2	5d060	2017-08-26	2020-08-25
Validation Kit 2450MHz	SPEAG	D2450V2	786	2017-08-29	2020-08-28
Validation Kit 2600MHz	SPEAG	D2600V2	1025	2018-05-02	2021-05-01
Validation Kit 5GHz	SPEAG	D5GHzV2	1151	2017-01-05	2020-01-04
Temperature Probe	Tianjin jinming	JM222	AA1009129	2018-05-17	2019-05-16
Hygrothermograph	Anymetr	NT-311	20150731	2018-05-17	2019-05-16
Software for Test	Speag	DASY5	52.8.8.1222	/	/
Softwarefor Tissue	Agilent	85070	E06.01.36	/	/

8 Tissue Dielectric Parameter Measurements&System Verification

8.1 Tissue Verification

The temperature of the tissue-equivalent medium used during measurement must also be within 18°C to 25°C and within ± 2°C of the temperature when the tissue parameters are characterized. The dielectric parameters must be measured before the tissue-equivalent medium is used in a series of SAR measurements. The parameters should be re-measured after each 3 – 4 days of use; or earlier if the dielectric parameters can become out of tolerance.

Target values

Frequency (MHz)		Water (%)	Salt (%)	Sugar (%)	Glycol (%)	Preventol (%)	Cellulose (%)	ε_r	σ(s/m)
Head	835	41.45	1.45	56	0	0.1	1.0	41.5	0.90
	1900	55.242	0.306	0	44.452	0	0	40.0	1.40
	2450	62.7	0.5	0	36.8	0	0	39.2	1.80
	2600	55.242	0.306	0	44.452	0	0	39.0	1.96
Body	835	52.5	1.4	45	0	0.1	1.0	55.2	0.97
	1900	69.91	0.13	0	29.96	0	0	53.3	1.52
	2450	73.2	0.1	0	26.7	0	0	52.7	1.95
	2600	72.6	0.1	0	27.3	0	0	52.5	2.16

Frequency (MHz)		Water (%)	Diethylenglycol monohexylether	Triton X-100	ε_r	σ(s/m)
Head	5250	65.53	17.24	17.23	35.9	4.71
	5600	65.53	17.24	17.23	35.5	5.07
	5750	65.53	17.24	17.23	35.4	5.22
Body	5250	72.52	13.74	13.74	48.9	5.36
	5600	72.52	13.74	13.74	48.5	5.77
	5750	72.52	13.74	13.74	48.3	5.94

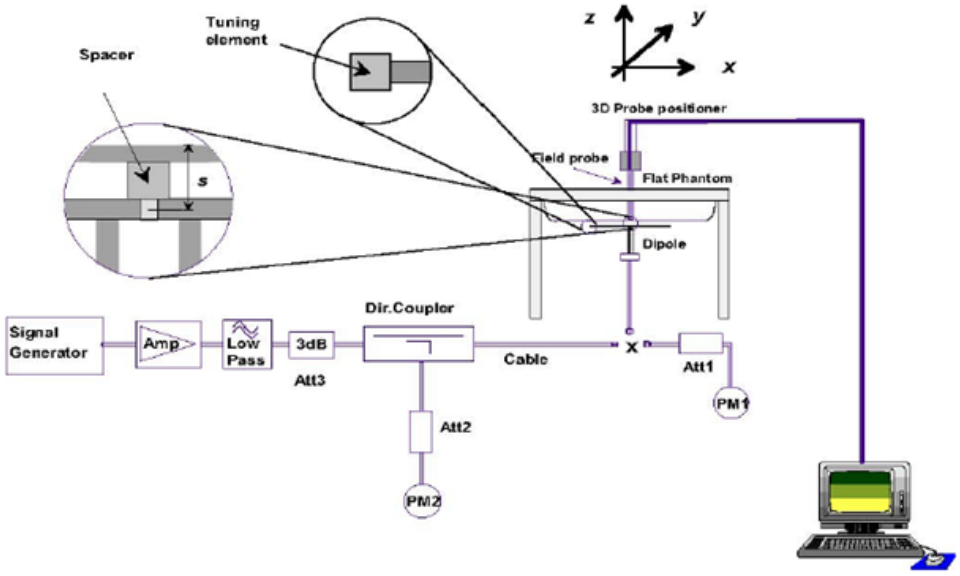
Measurements results

Frequency (MHz)		Test Date	Temp ℃	Measured Dielectric Parameters		Target Dielectric Parameters		Limit (Within ±5%)	
				ε_r	σ(s/m)	ε_r	σ(s/m)	Dev ε_r(%)	Dev σ(%)
835	Head	10/20/2018	21.5	42.0	0.91	41.5	0.90	1.20	1.11
	Body	10/21/2018	21.5	53.8	0.97	55.2	0.97	-2.54	0.00
1900	Head	10/28/2018	21.5	40.7	1.39	40.0	1.40	1.75	-0.71
	Body	10/31/2018	21.5	52.8	1.51	53.3	1.52	-0.94	-0.66
2450	Head	10/23/2018	21.5	39.7	1.85	39.2	1.80	1.28	2.78
	Body	10/23/2018	21.5	51.1	1.97	52.7	1.95	-3.04	1.03
2600	Head	10/23/2018	21.5	39.3	2.02	39.0	1.96	0.77	3.06
	Body	10/23/2018	21.5	50.7	2.16	52.5	2.16	-3.43	0.00
5250	Head	10/24/2018	21.5	36.9	4.83	35.9	4.71	2.79	2.55
	Body	10/24/2018	21.5	46.7	5.42	48.9	5.36	-4.50	1.12
5600	Head	10/26/2018	21.5	35.6	5.24	35.5	5.07	0.28	3.35
	Body	10/26/2018	21.5	46.7	6.00	48.5	5.77	-3.71	3.99
5750	Head	10/25/2018	21.5	35.4	5.38	35.4	5.22	0.00	3.07
	Body	10/25/2018	21.5	47.7	6.07	48.3	5.94	-1.24	2.19
Note: The depth of tissue-equivalent liquid in a phantom must be ≥ 15.0 cm for SAR measurements ≤ 3 GHz and ≥ 10.0 cm for measurements > 3 GHz.									

8.2 System Performance Check

The manufacturer calibrates the probes annually. Dielectric parameters of the tissue simulates were measured using the dielectric probe kit and the network analyzer. A system check measurement for every day was made following the determination of the dielectric parameters of the Tissue simulates, using the dipole validation kit. The dipole antenna was placed under the flat section of the twin SAM phantom.

System check is performed regularly on all frequency bands where tests are performed with the DASY system.



Picture 1System Performance Check setup

Picture 2 Setup Photo

Justification for Extended SAR Dipole Calibrations

Usage of SAR dipoles calibrated less than 3 years ago but more than 1 year ago were confirmed in maintaining return loss (< - 20 dB, within 20% of prior calibration) and impedance (within 5 ohm from prior calibration) requirements per extended calibrations in KDB 865664 D01:

Dipole		Date of Measurement	Return Loss(dB)	Δ %	Impedance (Ω)	ΔΩ
Dipole D5GHzV2 SN: 1151 (5250MHz)	Head Liquid	1/5/2017	-24.5	/	48.4	/
		1/4/2018	-24.2	1.2%	48.7	0.3Ω
	Body Liquid	1/5/2017	-24.7	/	50.4	/
		1/4/2018	-24.4	1.2%	49.9	-0.5Ω
Dipole D5GHzV2 SN: 1151 (5600MHz)	Head Liquid	1/5/2017	-22.8	/	55.5	/
		1/4/2018	-22.4	1.8%	55.2	-0.3Ω
	Body Liquid	1/5/2017	-23.3	/	57.2	/
		1/4/2018	-23.4	-0.4%	56.8	-0.4Ω
Dipole D5GHzV2 SN: 1151 (5750MHz)	Head Liquid	1/5/2017	-26.5	/	52.4	/
		1/4/2018	-26.8	-1.1%	52.5	0.1Ω
	Body Liquid	1/5/2017	-24.9	/	56.0	/
		1/4/2018	-25.2	-1.2%	56.4	0.4Ω

System Check results

Frequency (MHz)		Test Date	Temp ℃	250mW /100mW Measured SAR_{1g} (W/kg)	1W Normalized SAR_{1g} (W/kg)	1W Target SAR_{1g} (W/kg)	Δ % (Limit ±10%)	Plot No.
835	Head	10/20/2018	21.5	2.44	9.76	9.45	3.28	1
	Body	10/21/2018	21.5	2.41	9.64	9.75	-1.13	2
1900	Head	10/28/2018	21.5	9.88	39.52	40.10	-1.45	3
	Body	10/31/2018	21.5	9.93	39.72	39.50	0.56	4
2450	Head	10/23/2018	21.5	13.70	54.80	52.60	4.18	5
	Body	10/23/2018	21.5	12.50	50.00	50.80	-1.57	6
2600	Head	10/23/2018	21.5	13.90	55.60	54.10	2.77	7
	Body	10/23/2018	21.5	13.50	54.00	54.50	-0.92	8
5250	Head	10/24/2018	21.5	7.87	78.70	78.40	0.38	9
	Body	10/24/2018	21.5	7.46	74.60	75.60	-1.32	10
5600	Head	10/26/2018	21.5	7.81	78.10	81.50	-4.17	11
	Body	10/26/2018	21.5	8.10	81.00	80.20	1.00	12
5750	Head	10/25/2018	21.5	7.66	76.60	80.50	-4.84	13
	Body	10/25/2018	21.5	7.15	71.50	74.60	-4.16	14
Note：Target Values used derive from the calibration certificate Data Storage and Evaluation.								

9 Normal and Maximum Output Power

KDB 447498 D01 at the maximum rated output power and within the tune-up tolerance range specified for the product, but not more than 2 dB lower than the maximum tune-up tolerance limit.

9.1 GSM Mode

Antenna 1

GSM 850		Burst-Averaged output power(dBm)				Division Factors	Frame-Averaged output power(dBm)			
		Tune-up	Channel/Frenqucy(MHz)				Tune-up	Channel/Frenqucy(MHz)		
		MAX	128 /824.2	190 /836.6	251 /848.8		MAX	128 /824.2	190 /836.6	251 /848.8
GSM	CS	33.70	32.52	32.43	32.35	9.03	24.67	23.49	23.40	23.32
GPRS/ EGPRS (GMSK)	1 Tx Slot	33.70	32.53	32.47	32.36	9.03	24.67	23.50	23.44	23.33
	2 Tx Slots	30.70	29.45	29.37	29.29	6.02	24.68	23.43	23.35	23.27
	3 Tx Slots	28.90	27.69	27.60	27.53	4.26	24.64	23.43	23.34	23.27
	4 Tx Slots	27.70	26.52	26.46	26.39	3.01	**24.69**	**23.51**	**23.45**	**23.38**
EGPRS (8PSK)	1 Tx Slot	27.50	26.06	26.03	25.98	9.03	18.47	17.03	17.00	16.95
	2 Tx Slots	24.50	22.76	22.72	22.68	6.02	18.48	16.74	16.70	16.66
	3 Tx Slots	22.70	20.96	20.91	20.88	4.26	18.44	16.70	16.65	16.62
	4 Tx Slots	21.50	19.78	19.75	19.72	3.01	18.49	16.77	16.74	16.71
Notes:The worst-case configuration and mode for SAR testing is determined to be as follows: 1. Standalone: GSM 850 GMSK (GPRS) mode with 4 time slots for Max power, based on the output power measurements above.										

GSM 1900 (Hotspot off)		Burst-Averaged output power(dBm)				Division Factors	Frame-Averaged output power(dBm)			
		Tune-up	Channel/Frenqucy(MHz)				Tune-up	Channel/Frenqucy(MHz)		
		MAX	512 /1850.2	661 /1880	810 /1909.8		MAX	512 /1850.2	661 /1880	810 /1909.8
GSM	CS	31.00	30.15	30.14	30.20	9.03	21.97	21.12	21.11	21.17
GPRS/ EGPRS (GMSK)	1 Tx Slot	30.80	30.15	30.16	30.19	9.03	21.77	21.12	21.13	21.16
	2 Tx Slots	27.80	26.89	26.93	27.09	6.02	21.78	20.87	20.91	21.07
	3 Tx Slots	26.00	25.10	25.13	25.32	4.26	21.74	20.84	20.87	21.06
	4 Tx Slots	24.80	23.86	23.92	24.08	3.01	**21.79**	**20.85**	**20.91**	**21.07**
EGPRS (8PSK)	1 Tx Slot	26.00	25.31	25.31	25.33	9.03	16.97	16.28	16.28	16.30
	2 Tx Slots	23.00	21.84	21.86	21.94	6.02	16.98	15.82	15.84	15.92
	3 Tx Slots	21.00	19.74	19.75	19.85	4.26	16.74	15.48	15.49	15.59
	4 Tx Slots	20.00	18.38	18.41	18.49	3.01	16.99	15.37	15.40	15.48
GSM 1900 (Hotspot on)		Burst-Averaged output power(dBm)				Division Factors	Frame-Averaged output power(dBm)			
		Tune-up	Channel/Frenqucy(MHz)				Tune-up	Channel/Frenqucy(MHz)		
		MAX	512 /1850.2	661 /1880	810 /1909.8		MAX	512 /1850.2	661 /1880	810 /1909.8
GSM	CS	28.00	26.96	27.00	27.16	9.03	18.97	17.93	17.97	18.13
GPRS/ EGPRS (GMSK)	1 Tx Slot	27.80	26.95	26.98	27.15	9.03	18.77	17.92	17.95	18.12
	2 Tx Slots	24.80	23.94	24.00	24.17	6.02	18.78	17.92	17.98	18.15
	3 Tx Slots	23.00	22.09	22.15	22.33	4.26	18.74	17.83	17.89	18.07
	4 Tx Slots	21.80	20.87	20.92	21.12	3.01	**18.79**	**17.86**	**17.91**	**18.11**
EGPRS (8PSK)	1 Tx Slot	23.00	22.28	22.29	22.38	9.03	13.97	13.25	13.26	13.35
	2 Tx Slots	20.00	18.88	18.91	19.00	6.02	13.98	12.86	12.89	12.98
	3 Tx Slots	18.00	16.99	17.02	17.11	4.26	13.74	12.73	12.76	12.85
	4 Tx Slots	17.00	15.86	15.88	15.98	3.01	13.99	12.85	12.87	12.97

Notes:The worst-case configuration and mode for SAR testing is determined to be as follows:
1. Standalone: GSM 850 GMSK (GPRS) mode with 4 time slots for Max power, GSM 1900 GMSK (GPRS) mode with 4 time slots for Max power, based on the output power measurements above.

Antenna 2

GSM 850 (Rec off)		Burst-Averaged output power(dBm)				Division Factors	Frame-Averaged output power(dBm)			
		Tune-up	Channel/Frenqucy(MHz)				Tune-up	Channel/Frenqucy(MHz)		
		MAX	128 /824.2	190 /836.6	251 /848.8		MAX	128 /824.2	190 /836.6	251 /848.8
GSM	CS	33.70	32.22	32.23	32.64	9.03	24.67	23.19	23.20	23.61
GPRS/ EGPRS (GMSK)	1 Tx Slot	33.70	32.83	32.76	32.66	9.03	24.67	23.80	23.73	23.63
	2 Tx Slots	30.70	29.68	29.67	29.59	6.02	24.68	23.66	23.65	23.57
	3 Tx Slots	28.90	27.91	27.88	27.84	4.26	24.64	23.65	23.62	23.58
	4 Tx Slots	27.70	26.74	26.74	26.69	3.01	**24.69**	**23.73**	**23.73**	**23.68**
EGPRS (8PSK)	1 Tx Slot	27.50	26.61	26.57	26.52	9.03	18.47	17.58	17.54	17.49
	2 Tx Slots	24.50	23.27	23.26	23.22	6.02	18.48	17.25	17.24	17.20
	3 Tx Slots	22.70	21.30	21.28	21.26	4.26	18.44	17.04	17.02	17.00
	4 Tx Slots	21.50	20.17	20.17	20.15	3.01	18.49	17.16	17.16	17.14
GSM 850 (Rec on)		Burst-Averaged output power(dBm)				Division Factors	Frame-Averaged output power(dBm)			
		Tune-up	Channel/Frenqucy(MHz)				Tune-up	Channel/Frenqucy(MHz)		
		MAX	128 /824.2	190 /836.6	251 /848.8		MAX	128 /824.2	190 /836.6	251 /848.8
GSM	CS	31.20	30.34	30.33	30.22	9.03	22.17	21.31	21.30	21.19
GPRS/ EGPRS (GMSK)	1 Tx Slot	31.20	30.33	30.31	30.20	9.03	22.17	21.30	21.28	21.17
	2 Tx Slots	28.20	27.18	27.19	27.14	6.02	22.18	21.16	21.17	21.12
	3 Tx Slots	26.40	25.44	25.44	25.34	4.26	22.14	21.18	21.18	21.08
	4 Tx Slots	25.20	24.19	24.23	24.17	3.01	**22.19**	**21.18**	**21.22**	**21.16**
EGPRS (8PSK)	1 Tx Slot	25.00	24.14	24.13	24.08	9.03	15.97	15.11	15.10	15.05
	2 Tx Slots	22.00	21.09	21.09	21.07	6.02	15.98	15.07	15.07	15.05
	3 Tx Slots	20.20	18.99	18.99	18.94	4.26	15.94	14.73	14.73	14.68
	4 Tx Slots	19.00	17.76	17.78	17.75	3.01	15.99	14.75	14.77	14.74

Notes:The worst-case configuration and mode for SAR testing is determined to be as follows:
1. Standalone: GSM 850 GMSK (GPRS) mode with 4 time slots for Max power, based on the output power measurements above.

GSM 1900 (Hotspot off)		Burst-Averaged output power(dBm)				Division Factors	Frame-Averaged output power(dBm)			
		Tune-up	Channel/Frenqucy(MHz)				Tune-up	Channel/Frenqucy(MHz)		
		MAX	512 /1850.2	661 /1880	810 /1909.8		MAX	512 /1850.2	661 /1880	810 /1909.8
GSM	CS	29.00	27.64	27.60	27.66	9.03	19.97	18.61	18.57	18.63
GPRS/ EGPRS (GMSK)	1 Tx Slot	29.00	27.63	27.61	27.65	9.03	**19.97**	**18.60**	**18.58**	**18.62**
	2 Tx Slots	25.80	24.58	24.55	24.61	6.02	19.78	18.56	18.53	18.59
	3 Tx Slots	24.00	22.71	22.66	22.76	4.26	19.74	18.45	18.40	18.50
	4 Tx Slots	22.80	21.52	21.51	21.57	3.01	19.79	18.51	18.50	18.56
EGPRS (8PSK)	1 Tx Slot	24.20	22.89	22.88	22.90	9.03	15.17	13.86	13.85	13.87
	2 Tx Slots	21.00	19.83	19.81	19.84	6.02	14.98	13.81	13.79	13.82
	3 Tx Slots	19.20	17.76	17.73	17.78	4.26	14.94	13.50	13.47	13.52
	4 Tx Slots	18.00	16.43	16.42	16.45	3.01	14.99	13.42	13.41	13.44
GSM 1900 (Hotspot on)		Burst-Averaged output power(dBm)				Division Factors	Frame-Averaged output power(dBm)			
		Tune-up	Channel/Frenqucy(MHz)				Tune-up	Channel/Frenqucy(MHz)		
		MAX	512 /1850.2	661 /1880	810 /1909.8		MAX	512 /1850.2	661 /1880	810 /1909.8
GSM	CS	26.00	24.91	24.87	24.95	9.03	16.97	15.88	15.84	15.92
GPRS/ EGPRS (GMSK)	1 Tx Slot	25.80	24.89	24.85	24.93	9.03	16.77	15.86	15.82	15.90
	2 Tx Slots	22.80	21.85	21.86	21.92	6.02	16.78	15.83	15.84	15.90
	3 Tx Slots	21.00	20.04	20.02	20.12	4.26	16.74	15.78	15.76	15.86
	4 Tx Slots	19.80	18.81	18.80	18.91	3.01	**16.79**	**15.80**	**15.79**	**15.90**
EGPRS (8PSK)	1 Tx Slot	21.00	20.29	20.27	20.31	9.03	11.97	11.26	11.24	11.28
	2 Tx Slots	18.00	17.30	17.30	17.33	6.02	11.98	11.28	11.28	11.31
	3 Tx Slots	16.00	15.21	15.20	15.25	4.26	11.74	10.95	10.94	10.99
	4 Tx Slots	15.00	13.91	13.90	13.96	3.01	11.99	10.90	10.89	10.95

Notes:The worst-case configuration and mode for SAR testing is determined to be as follows:
1. Standalone: GSM 1900 GMSK (GPRS) mode with 1 time slots for Max power with Hotspot off mode, and with 4 time slots for Max power with Hotspot on mode, based on the output power measurements above.

9.2 WCDMA Mode

The following tests were completed according to the test requirements outlined in the 3GPP TS34.121 specification.

Antenna 1

WCDMA		Band II(dBm) (Rec on+Hotspot off)				Band II(dBm) (Rec on+Hotspot on)			
Tx Channel		9262	9400	9538	Tune-up	9262	9400	9538	Tune-up
Frequency(MHz)		1852.4	1880	1907.6	Limit	1852.4	1880	1907.6	Limit
RMC	12.2kbps	23.15	23.06	23.12	24.00	20.16	20.10	20.14	21.00
AMR	12.2kbps	23.10	22.98	23.02	24.00	20.09	20.06	20.03	21.00
HSDPA	Sub 1	22.50	22.43	22.46	23.40	19.49	19.43	19.51	20.40
	Sub 2	21.47	21.38	21.48	22.80	18.49	18.45	18.46	19.40
	Sub 3	21.07	21.00	21.03	22.50	18.11	18.01	18.07	19.00
	Sub 4	21.09	20.96	21.04	22.50	18.08	18.04	18.05	19.00
HSUPA	Sub 1	21.06	20.99	21.02	22.00	18.05	17.99	18.07	19.00
	Sub 2	18.82	18.73	18.79	19.80	15.87	15.80	15.85	16.80
	Sub 3	19.80	19.72	19.78	20.80	16.83	16.80	16.81	17.80
	Sub 4	18.79	18.71	18.77	19.80	15.81	15.77	15.82	16.80
	Sub 5	20.88	20.80	20.86	22.80	17.79	17.74	17.78	18.80
DC-HSDPA	Sub 1	22.39	22.32	22.36	23.40	19.40	19.36	19.38	20.40
	Sub 2	21.38	21.31	21.35	22.80	18.39	18.35	18.37	19.40
	Sub 3	21.06	20.90	20.96	22.50	18.07	17.94	17.98	19.00
	Sub 4	21.05	20.89	20.95	22.50	18.06	17.93	17.97	19.00
Note: 1.Per KDB 941225 D01, SAR for each exposure is measured using a 12.2 kbps RMC with TPC bits configured to all “1’s”.									

WCDMA		Band II(dBm) (Rec off+Hotspot off)				Band II(dBm) (Rec off+Hotspot on)			
Tx Channel		9262	9400	9538	Tune-up	9262	9400	9538	Tune-up
Frequency(MHz)		1852.4	1880	1907.6	Limit	1852.4	1880	1907.6	Limit
RMC	12.2kbps	22.43	22.44	22.41	23.30	19.37	19.39	19.38	20.30
AMR	12.2kbps	22.34	22.36	22.33	23.30	19.29	19.34	19.26	20.30
HSDPA	Sub 1	21.77	21.80	21.74	22.70	18.74	18.72	18.73	19.70
	Sub 2	20.69	20.66	20.65	21.60	17.61	17.65	17.61	18.60
	Sub 3	20.16	20.19	20.13	21.10	17.08	17.10	17.13	18.10
	Sub 4	20.13	20.14	20.15	21.10	17.10	17.11	17.11	18.10
HSUPA	Sub 1	20.25	20.25	20.23	21.20	17.17	17.21	17.17	18.20
	Sub 2	18.22	18.25	18.19	19.20	15.15	15.18	15.18	16.20
	Sub 3	19.09	19.12	19.10	20.10	16.05	16.10	16.06	17.10
	Sub 4	18.10	18.14	18.08	19.10	15.42	15.45	15.48	16.50
	Sub 5	20.17	20.19	20.20	21.20	17.14	17.16	17.16	18.20

DC-HSDPA	Sub 1	21.47	21.50	21.45	22.50	18.43	18.49	18.43	19.50
	Sub 2	20.56	20.59	20.54	21.60	17.50	17.54	17.51	18.60
	Sub 3	20.14	20.08	20.05	21.10	17.08	17.03	17.02	18.10
	Sub 4	20.13	20.07	20.04	21.10	17.07	17.02	17.01	18.10
Note: 1.Per KDB 941225 D01, SAR for each exposure is measured using a 12.2 kbps RMC with TPC bits configured to all “1’s”.									

WCDMA		Band V(dBm)			
Tx Channel		4132	4183	4233	Tune-up Limit
Frequency(MHz)		826.4	836.6	846.6	
RMC	12.2kbps	23.98	24.07	23.93	25.00
AMR	12.2kbps	23.88	23.98	23.80	25.00
HSDPA	Sub 1	23.60	23.69	23.55	24.70
	Sub 2	23.09	23.18	23.04	24.20
	Sub 3	22.68	22.77	22.63	23.80
	Sub 4	22.67	22.76	22.62	23.80
HSUPA	Sub 1	22.86	22.95	22.81	24.00
	Sub 2	21.35	21.44	21.30	22.00
	Sub 3	21.83	21.93	21.79	22.80
	Sub 4	21.22	21.32	21.18	22.00
	Sub 5	22.61	22.71	22.57	23.80
DC-HSDPA	Sub 1	23.52	23.63	23.47	24.70
	Sub 2	23.01	23.12	22.96	24.20
	Sub 3	22.69	22.71	22.57	23.80
	Sub 4	22.68	22.70	22.56	23.80
Note: 1.Per KDB 941225 D01, SAR for each exposure is measured using a 12.2 kbps RMC with TPC bits configured to all “1’s”.					

Antenna 2

WCDMA		Band II(dBm) (Hotspot off)				Band II(dBm) (Hotspot on)			
Tx Channel		9262	9400	9538	Tune-up	9262	9400	9538	Tune-up
Frequency(MHz)		1852.4	1880	1907.6	Limit	1852.4	1880	1907.6	Limit
RMC	12.2kbps	19.10	19.11	19.03	20.00	16.03	16.07	16.05	17.00
AMR	12.2kbps	19.00	19.02	18.90	20.00	15.97	16.01	15.96	17.00
HSDPA	Sub 1	18.42	18.43	18.35	19.40	15.37	15.43	15.38	16.40
	Sub 2	17.41	17.42	17.34	18.40	14.35	14.40	14.39	15.40
	Sub 3	17.00	17.01	16.93	18.00	13.96	14.02	13.97	15.00
	Sub 4	16.99	17.00	16.92	18.00	13.93	13.97	13.99	15.00
HSUPA	Sub 1	16.98	16.99	16.91	18.00	12.95	12.98	12.97	14.00
	Sub 2	13.97	13.98	13.90	15.00	10.92	10.98	10.93	12.00
	Sub 3	15.95	15.97	15.89	17.00	11.39	11.45	11.44	12.50
	Sub 4	14.94	14.96	14.88	16.00	10.87	10.92	10.90	12.00
	Sub 5	16.93	16.95	16.87	18.00	13.86	13.91	13.89	15.00
DC-HSDPA	Sub 1	18.34	18.37	18.27	19.40	15.27	15.33	15.29	16.40
	Sub 2	17.33	17.36	17.26	18.40	14.26	14.32	14.28	15.40
	Sub 3	17.01	16.95	16.87	18.00	13.94	13.91	13.89	15.00
	Sub 4	17.00	16.94	16.86	18.00	13.93	13.90	13.88	15.00
Note: 1.Per KDB 941225 D01, SAR for each exposure is measured using a 12.2 kbps RMC with TPC bits configured to all “1’s”.									

WCDMA		Band V(dBm) (Rec off+Hotspot off)				Band V(dBm) (Rec off+Hotspot on)			
Tx Channel		4132	4183	4233	Tune-up Limit	4132	4183	4233	Tune-up Limit
Frequency(MHz)		826.4	836.6	846.6		826.4	836.6	846.6	
RMC	12.2kbps	24.03	24.02	23.82	25.00	21.05	21.02	20.90	22.00
AMR	12.2kbps	23.96	23.98	23.71	25.00	20.97	20.97	20.78	22.00
HSDPA	Sub 1	23.66	23.65	23.49	24.70	20.72	20.65	20.55	21.70
	Sub 2	23.18	23.16	22.97	24.20	20.19	20.18	20.03	21.20
	Sub 3	22.75	22.76	22.53	23.80	19.76	19.73	19.65	20.80
	Sub 4	22.73	22.73	22.54	23.80	19.78	19.74	19.63	20.80
HSUPA	Sub 1	22.94	22.95	22.72	24.00	20.25	20.24	20.09	21.00
	Sub 2	21.41	21.40	21.24	22.00	18.43	18.41	18.30	19.00
	Sub 3	21.92	21.91	21.72	22.80	19.33	19.33	19.18	19.80
	Sub 4	21.27	21.27	21.07	22.00	18.29	18.27	18.15	19.40
	Sub 5	22.66	22.66	22.46	23.80	19.68	19.66	19.54	20.80
DC-HSDPA	Sub 1	23.57	23.58	23.36	24.70	20.59	20.58	20.44	21.70
	Sub 2	23.06	23.07	22.85	24.20	20.08	20.07	19.93	21.20
	Sub 3	22.74	22.66	22.46	23.80	19.76	19.66	19.54	20.80
	Sub 4	22.73	22.65	22.45	23.80	19.75	19.65	19.53	20.80
WCDMA		Band V(dBm) (Rec on+Hotspot off)				Band V(dBm) (Rec on+Hotspot on)			
Tx Channel		4132	4183	4233	Tune-up Limit	4132	4183	4233	Tune-up Limit
Frequency(MHz)		826.4	836.6	846.6		826.4	836.6	846.6	
RMC	12.2kbps	20.62	20.64	20.43	21.50	17.50	17.51	17.42	18.50
AMR	12.2kbps	20.55	20.60	20.32	21.50	17.42	17.46	17.30	18.50
HSDPA	Sub 1	20.25	20.27	20.10	21.20	17.17	17.14	17.07	18.20
	Sub 2	19.75	19.79	19.55	20.70	16.64	16.67	16.55	17.70
	Sub 3	19.37	19.35	19.16	20.30	16.21	16.22	16.17	17.30
	Sub 4	19.34	19.38	19.14	20.30	16.21	16.24	16.12	17.30
HSUPA	Sub 1	19.51	19.53	19.36	20.50	16.13	16.10	16.03	17.20
	Sub 2	18.03	18.04	17.84	18.50	14.57	14.58	14.49	15.70
	Sub 3	18.77	18.80	18.59	19.30	15.05	15.07	14.98	16.20
	Sub 4	17.96	17.99	17.78	18.50	14.54	14.56	14.47	15.70
	Sub 5	19.25	19.28	19.07	20.30	16.13	16.15	16.06	17.30
DC-HSDPA	Sub 1	20.16	20.20	19.97	21.20	17.04	17.07	16.96	18.20
	Sub 2	19.65	19.69	19.46	20.70	16.53	16.56	16.45	17.70
	Sub 3	19.33	19.28	19.07	20.30	16.21	16.15	16.06	17.30
	Sub 4	19.32	19.27	19.06	20.30	16.20	16.14	16.05	17.30

Note: 1.Per KDB 941225 D01, SAR for each exposure is measured using a 12.2 kbps RMC with TPC bits configured to all “1’s”.

9.3 LTE Mode

UE Power Class: 3 (23 +/- 2dBm). The allowed Maximum Power Reduction (MPR) for the maximum output power due to higher order modulation and transmit bandwidth configuration (resource blocks) is specified in Table 6.2.3-1 of the 3GPP TS36.101.

Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3

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

Antenna 1

LTE FDD Band 7 (Rec on+Hotspot off)				Conducted Power(dBm)			Tune-up Limit
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)			
				20775/2502.5	21100/2535	21425/2567.5	
5MHz	QPSK	1	0	22.86	22.85	22.85	23.80
		1	13	22.76	22.85	22.81	23.80
		1	24	23.03	22.83	22.78	23.80
		12	0	21.20	21.94	21.85	22.80
		12	6	21.92	21.91	21.88	22.80
		12	13	22.35	21.90	21.93	22.80
		25	0	21.86	21.97	21.91	22.80
	16QAM	1	0	22.25	22.60	22.65	22.80
		1	13	22.23	22.25	22.25	22.80
		1	24	22.55	22.48	22.42	22.80
		12	0	20.66	21.00	20.97	21.80
		12	6	21.12	21.09	21.09	21.80
		12	13	21.26	21.05	21.06	21.80
		25	0	21.07	21.09	21.06	21.80
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)			Tune-up Limit
				20800/2505	21100/2535	21400/2565	
10MHz	QPSK	1	0	22.88	22.86	22.88	23.80
		1	25	22.79	22.90	22.85	23.80
		1	49	23.05	22.87	22.81	23.80
		25	0	21.23	21.99	21.89	22.80
		25	13	21.95	21.96	21.92	22.80
		25	25	22.37	21.94	21.98	22.80
		50	0	21.94	21.99	21.95	22.80
	16QAM	1	0	22.27	22.63	22.67	22.80
		1	25	22.26	22.29	22.28	22.80

		1	49	22.58	22.50	22.45	22.80
		25	0	20.69	21.05	21.01	21.80
		25	13	21.14	21.13	21.12	21.80
		25	25	21.29	21.10	21.10	21.80
		50	0	21.10	21.14	21.10	21.80
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)			Tune-up Limit
				20825/2507.5	21100/2535	21375/2562.5	
15MHz	QPSK	1	0	22.87	22.82	22.86	23.80
		1	38	22.77	22.89	22.82	23.80
		1	74	23.02	22.82	22.77	23.80
		36	0	21.21	21.95	21.86	22.80
		36	18	21.92	21.91	21.88	22.80
		36	39	22.34	21.91	21.94	22.80
		75	0	21.92	21.95	21.90	22.80
	16QAM	1	0	22.22	22.61	22.65	22.80
		1	38	22.24	22.26	22.26	22.80
		1	74	22.55	22.46	22.42	22.80
		36	0	20.66	21.03	20.98	21.80
		36	18	21.11	21.08	21.08	21.80
		36	39	21.27	21.06	21.07	21.80
		75	0	21.07	21.09	21.06	21.80
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)			Tune-up Limit
				20850/2510	21100/2535	21350/2560	
20MHz	QPSK	1	0	22.84	22.78	22.83	23.80
		1	50	22.76	22.85	22.80	23.80
		1	99	23.00	22.81	22.74	23.80
		50	0	21.18	21.90	21.82	22.80
		50	25	21.90	21.87	21.85	22.80
		50	50	22.31	21.86	21.90	22.80
		100	0	21.89	21.90	21.86	22.80
	16QAM	1	0	22.60	22.57	22.60	22.80
		1	50	22.20	22.24	22.22	22.80
		1	99	22.53	22.43	22.40	22.80
		50	0	20.63	20.99	20.95	21.80
		50	25	21.08	21.06	21.05	21.80
		50	50	21.24	21.01	21.03	21.80
		100	0	21.05	21.05	21.03	21.80

LTE FDD Band 7 (Rec on+Hotspot on)				**Conducted Power(dBm)**			Tune-up Limit
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)			
				20775/2502.5	21100/2535	21425/2567.5	
5MHz	QPSK	1	0	19.80	19.80	19.78	20.80

		1	13	19.82	19.68	19.62	20.80
		1	24	19.90	19.72	19.77	20.80
		12	0	19.90	19.95	19.84	20.80
		12	6	19.93	19.89	19.89	20.80
		12	13	19.99	19.93	19.87	20.80
		25	0	19.89	19.90	19.88	20.80
	16QAM	1	0	19.94	20.02	20.03	20.80
		1	13	19.96	19.96	19.96	20.80
		1	24	19.89	19.81	19.82	20.80
		12	0	19.85	19.87	19.81	20.80
		12	6	19.96	19.92	19.94	20.80
		12	13	19.86	19.84	19.81	20.80
		25	0	19.84	19.85	19.84	20.80
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)			Tune-up Limit
				20800/2505	21100/2535	21400/2565	
10MHz	QPSK	1	0	19.81	19.84	19.80	20.80
		1	25	19.84	19.69	19.65	20.80
		1	49	19.93	19.77	19.81	20.80
		25	0	19.92	19.99	19.87	20.80
		25	13	19.96	19.94	19.93	20.80
		25	25	20.02	19.96	19.91	20.80
		50	0	19.91	19.94	19.93	20.80
	16QAM	1	0	19.99	20.04	20.05	20.80
		1	25	19.98	19.99	19.98	20.80
		1	49	19.92	19.85	19.85	20.80
		25	0	19.88	19.89	19.84	20.80
		25	13	19.99	19.97	19.98	20.80
		25	25	19.88	19.88	19.84	20.80
		50	0	19.87	19.90	19.88	20.80
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)			Tune-up Limit
				20825/2507.5	21100/2535	21375/2562.5	
15MHz	QPSK	1	0	19.79	19.83	19.77	20.80
		1	38	19.81	19.64	19.61	20.80
		1	74	19.91	19.73	19.78	20.80
		36	0	19.89	19.94	19.83	20.80
		36	18	19.93	19.89	19.89	20.80
		36	39	20.00	19.92	19.86	20.80
		75	0	19.83	19.92	19.89	20.80
	16QAM	1	0	19.97	20.01	20.03	20.80
		1	38	19.95	19.95	19.95	20.80
		1	74	19.89	19.83	19.82	20.80
		36	0	19.85	19.84	19.80	20.80
		36	18	19.97	19.93	19.95	20.80

		36	39	19.85	19.83	19.80	20.80
		75	0	19.84	19.85	19.84	20.80
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)			Tune-up Limit
				20850/2510	21100/2535	21350/2560	
20MHz	QPSK	1	0	19.77	19.76	19.75	20.80
		1	50	19.81	19.64	19.60	20.80
		1	99	19.88	19.71	19.74	20.80
		50	0	19.87	19.90	19.80	20.80
		50	25	19.91	19.85	19.86	20.80
		50	50	19.96	19.88	19.83	20.80
		100	0	19.86	19.85	19.84	20.80
	16QAM	1	0	19.99	19.98	19.98	20.80
		1	50	19.92	19.94	19.92	20.80
		1	99	19.87	19.78	19.80	20.80
		50	0	19.82	19.83	19.78	20.80
		50	25	19.93	19.90	19.91	20.80
		50	50	19.83	19.79	19.77	20.80
		100	0	19.82	19.81	19.81	20.80

LTE FDD Band 7 (Rec off+Hotspot off)				**Conducted Power(dBm)**			Tune-up Limit
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)			
				20775/2502.5	21100/2535	21425/2567.5	
5MHz	QPSK	1	0	21.08	21.22	21.15	22.00
		1	13	21.20	21.16	21.12	22.00
		1	24	21.20	21.22	21.20	22.00
		12	0	21.21	21.27	21.22	22.00
		12	6	21.16	21.21	21.19	22.00
		12	13	21.25	21.22	21.22	22.00
		25	0	21.25	21.24	21.22	22.00
	16QAM	1	0	21.26	21.31	21.30	22.00
		1	13	21.25	21.21	21.20	22.00
		1	24	21.27	21.29	21.26	22.00
		12	0	20.78	20.79	20.78	21.80
		12	6	20.82	20.83	20.83	21.80
		12	13	21.03	21.04	21.02	21.80
		25	0	20.88	20.89	20.86	21.80
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)			Tune-up Limit
				20800/2505	21100/2535	21400/2565	
10MHz	QPSK	1	0	21.06	21.21	21.12	22.00
		1	25	21.17	21.11	21.08	22.00
		1	49	21.18	21.18	21.17	22.00

		25	0	21.18	21.22	21.18	22.00
		25	13	21.13	21.16	21.15	22.00
		25	25	21.23	21.18	21.17	22.00
		50	0	21.17	21.22	21.18	22.00
	16QAM	1	0	21.24	21.28	21.28	22.00
		1	25	21.22	21.17	21.17	22.00
		1	49	21.24	21.27	21.23	22.00
		25	0	20.75	20.74	20.74	21.80
		25	13	20.80	20.79	20.80	21.80
		25	25	21.00	20.99	20.98	21.80
		50	0	20.85	20.84	20.82	21.80
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)			Tune-up Limit
				20825/2507.5	21100/2535	21375/2562.5	
15MHz	QPSK	1	0	21.09	21.23	21.16	22.00
		1	38	21.19	21.15	21.11	22.00
		1	74	21.21	21.23	21.21	22.00
		36	0	21.21	21.27	21.22	22.00
		36	18	21.15	21.20	21.20	22.00
		36	39	21.25	21.20	21.21	22.00
		75	0	21.19	21.23	21.20	22.00
	16QAM	1	0	21.27	21.32	21.31	22.00
		1	38	21.25	21.19	21.20	22.00
		1	74	21.27	21.29	21.27	22.00
		36	0	20.77	20.78	20.77	21.80
		36	18	20.83	20.84	20.84	21.80
		36	39	21.03	21.04	21.02	21.80
		75	0	20.87	20.88	20.87	21.80
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)			Tune-up Limit
				20850/2510	21100/2535	21350/2560	
20MHz	QPSK	1	0	21.04	21.14	21.10	22.00
		1	50	21.17	21.11	21.07	22.00
		1	99	21.15	21.16	21.13	22.00
		50	0	21.16	21.18	21.15	22.00
		50	25	21.11	21.12	21.12	22.00
		50	50	21.19	21.14	21.14	22.00
		100	0	21.20	21.15	21.13	22.00
	16QAM	1	0	21.20	21.25	21.23	22.00
		1	50	21.19	21.16	21.14	22.00
		1	99	21.22	21.22	21.21	22.00
		50	0	20.72	20.73	20.72	21.80
		50	25	20.76	20.76	20.76	21.80
		50	50	20.98	20.95	20.95	21.80
		100	0	20.83	20.80	20.79	21.80

LTE FDD Band 7 (Rec off+Hotspot on)				Conducted Power(dBm)			Tune-up Limit
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)			
				20775/2502.5	21100/2535	21425/2567.5	
5MHz	QPSK	1	0	18.05	18.12	18.03	19.00
		1	13	18.08	17.95	18.08	19.00
		1	24	18.12	18.14	18.08	19.00
		12	0	18.05	18.10	18.04	19.00
		12	6	18.10	18.15	18.07	19.00
		12	13	18.18	18.11	18.12	19.00
		25	0	18.12	18.10	18.09	19.00
	16QAM	1	0	18.23	18.31	18.31	19.00
		1	13	18.21	18.12	18.20	19.00
		1	24	18.20	18.24	18.17	19.00
		12	0	18.05	18.04	18.03	19.00
		12	6	18.01	18.01	17.99	19.00
		12	13	18.09	18.07	18.07	19.00
		25	0	18.08	18.04	18.04	19.00
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)			Tune-up Limit
				20800/2505	21100/2535	21400/2565	
10MHz	QPSK	1	0	18.06	18.09	18.04	19.00
		1	25	18.09	17.99	18.09	19.00
		1	49	18.11	18.13	18.07	19.00
		25	0	18.06	18.11	18.05	19.00
		25	13	18.10	18.15	18.07	19.00
		25	25	18.17	18.12	18.13	19.00
		50	0	18.18	18.08	18.08	19.00
	16QAM	1	0	18.20	18.32	18.31	19.00
		1	25	18.22	18.13	18.21	19.00
		1	49	18.20	18.22	18.17	19.00
		25	0	18.05	18.07	18.04	19.00
		25	13	18.00	18.00	17.98	19.00
		25	25	18.10	18.08	18.08	19.00
		50	0	18.08	18.04	18.04	19.00
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)			Tune-up Limit
				20825/2507.5	21100/2535	21375/2562.5	
15MHz	QPSK	1	0	18.08	18.14	18.07	19.00
		1	38	18.10	17.99	18.11	19.00
		1	74	18.15	18.19	18.12	19.00
		36	0	18.08	18.15	18.08	19.00
		36	18	18.12	18.19	18.12	19.00

		36	39	18.20	18.13	18.16	19.00
		75	0	18.14	18.11	18.11	19.00
	16QAM	1	0	18.26	18.35	18.34	19.00
		1	38	18.24	18.14	18.23	19.00
		1	74	18.23	18.26	18.21	19.00
		36	0	18.07	18.08	18.06	19.00
		36	18	18.04	18.06	18.03	19.00
		36	39	18.12	18.12	18.11	19.00
		75	0	18.10	18.08	18.09	19.00
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)			Tune-up Limit
				20850/2510	21100/2535	21350/2560	
20MHz	QPSK	1	0	18.03	18.05	18.01	19.00
		1	50	18.08	17.95	18.07	19.00
		1	99	18.09	18.12	18.04	19.00
		50	0	18.03	18.06	18.01	19.00
		50	25	18.08	18.11	18.04	19.00
		50	50	18.14	18.07	18.09	19.00
		100	0	18.15	18.03	18.04	19.00
	16QAM	1	0	18.27	18.28	18.26	19.00
		1	50	18.18	18.11	18.17	19.00
		1	99	18.18	18.19	18.15	19.00
		50	0	18.02	18.03	18.01	19.00
		50	25	17.97	17.98	17.95	19.00
		50	50	18.07	18.03	18.04	19.00
		100	0	18.06	18.00	18.01	19.00

CA configuration				DL				UL									Note
CA config#.	Bands		Mod#.	PCC		SCC1		PCC									
	PCC	SCC1		BW (MHz)	CH#.	BW (MHz)	CH#.	CH#.	RB	Offset	MPR	Tune-up	CA inactive	CA active	Delta	3GPP Rel.#	
CA_7C(0)(1)(2)	7	7	QPSK	20	2850	20	3048	20850	1	99	0	23.80	23.00	22.96	-0.04	12	Rec on+ Hotspot off
	7	7	QPSK	20	2850	20	3048	20850	1	99	0	20.80	19.88	19.81	-0.07	12	Rec on+ Hotspot on
	7	7	QPSK	20	2850	20	3048	20850	1	50	0	22.00	21.17	21.15	-0.02	12	Rec off+ Hotspot off
	7	7	QPSK	20	3100	20	3298	21100	1	99	0	19.00	18.12	18.09	-0.03	12	Rec off+ Hotspot on

9.4 WLAN Mode

Wi-Fi 2.4G (Rec off) Mode	Channel /Frequency(MHz)	Maximum Output Power (dBm)		
		Tune-up	Meas.	TP Set Level
802.11b (1M)	1/2412	19.00	18.26	18
	6/2437	19.00	18.13	18
	11/2462	19.00	18.15	18
802.11g (6M)	1/2412	16.00	15.28	15
	2/2417	18.00	16.67	17
	6/2437	18.00	16.84	17
	10/2457	18.00	16.87	17
	11/2462	16.00	15.39	15
802.11n-HT20 (MCS0)	1/2412	14.00	13.57	13
	2/2417	16.00	14.33	15
	6/2437	16.00	14.53	15
	10/2457	16.00	14.58	15
	11/2462	14.00	13.46	13
802.11n-HT40 (MCS0)	3/2422	14.00	13.85	13
	4/2427	16.00	14.17	15
	6/2437	16.00	14.18	15
	8/2447	16.00	14.19	15
	9/2452	14.00	13.89	13

Wi-Fi 2.4G (Rec on) Mode	Channel /Frequency(MHz)	Maximum Output Power (dBm)		
		Tune-up	Meas.	TP Set Level
802.11b (1M)	1/2412	11.50	10.69	10
	6/2437	11.50	10.35	10
	11/2462	11.50	10.41	10
802.11g (6M)	1/2412	11.50	10.26	10
	6/2437	11.50	10.27	10
	11/2462	11.50	10.31	10
802.11n-HT20 (MCS0)	1/2412	11.50	9.58	10
	6/2437	11.50	9.64	10
	11/2462	11.50	9.81	10
802.11n-HT40 (MCS0)	3/2422	11.50	9.42	10
	6/2437	11.50	9.74	10
	9/2452	11.50	9.65	10

Wi-Fi 5G (U-NII-1) (Rec off) Mode	Channel /Frequency(MHz)	Maximum Output Power (dBm)		
		Tune-up	Meas.	TP Set Level
802.11a (6M)	36/5180	18.00	17.39	17
	40/5200	18.00	17.37	17
	44/5220	18.00	17.28	17
	48/5240	18.00	17.28	17
802.11n-HT20 (MCS0)	36/5180	17.00	15.29	15
	40/5200	17.00	15.81	15
	44/5220	17.00	15.83	15
	48/5240	17.00	15.74	15
802.11n-HT40 (MCS0)	38/5190	15.00	13.83	14
	46/5230	15.00	13.90	14
802.11ac-VHT20 (6M)	36/5180	17.00	14.92	15
	40/5200	17.00	15.01	15
	44/5220	17.00	15.21	15
	48/5240	17.00	15.17	15
802.11ac-VHT40 (MCS0)	38/5190	15.00	14.11	14
	46/5230	15.00	14.25	14
802.11ac-VHT80 (MCS0)	42/5210	14.00	13.12	13
Note. Initial test configuration is 802.11a mode, since the highest maximum output power.				

Wi-Fi 5G (U-NII-1) (Rec on) Mode	Channel /Frequency(MHz)	Maximum Output Power (dBm)		
		Tune-up	Meas.	TP Set Level
802.11a (6M)	36/5180	12.50	10.90	10
	40/5200	12.50	11.28	10
	44/5220	12.50	10.86	10
	48/5240	12.50	11.16	10
802.11n-HT20 (MCS0)	36/5180	12.50	10.83	10
	40/5200	12.50	10.94	10
	44/5220	12.50	11.12	10
	48/5240	12.50	11.22	10
802.11n-HT40 (MCS0)	38/5190	12.50	11.01	10
	46/5230	12.50	11.49	10
802.11ac-VHT20 (6M)	36/5180	12.50	11.18	10
	40/5200	12.50	10.87	10

	44/5220	12.50	11.01	10
	48/5240	12.50	11.31	10
802.11ac-VHT40 (MCS0)	38/5190	12.50	10.94	10
	46/5230	12.50	11.01	10
802.11ac-VHT80 (MCS0)	42/5210	12.50	10.93	10
Note. Initial test configuration is 802.11ac-VHT80 mode, since the highest maximum output power, the largest channel bandwidth.				

Wi-Fi 5G (U-NII-2A) (Rec off)	Channel /Frequency(MHz)	Maximum Output Power (dBm)		
Mode		Tune-up	Meas.	TP Set Level
802.11a (6M)	52/5260	18.00	17.31	17
	56/5280	18.00	17.58	17
	60/5300	18.00	17.45	17
	64/5320	18.00	17.78	17
802.11n-HT20 (MCS0)	52/5260	17.00	15.41	15
	56/5280	17.00	15.21	15
	60/5300	17.00	15.17	15
	64/5320	17.00	15.29	15
802.11n-HT40 (MCS0)	54/5270	15.00	14.16	14
	62/5310	15.00	14.27	14
802.11ac-VHT20 (6M)	52/5260	17.00	15.29	15
	56/5280	17.00	15.17	15
	60/5300	17.00	15.18	15
	64/5320	17.00	15.21	15
802.11ac-VHT40 (MCS0)	54/5270	15.00	13.93	14
	62/5310	15.00	13.95	14
802.11ac-VHT80 (MCS0)	58/5290	14.00	13.27	13
Note. Initial test configuration is 802.11a mode, since the highest maximum output power.				

Wi-Fi 5G (U-NII-2A) (Rec on)	Channel /Frequency(MHz)	Maximum Output Power (dBm)		
Mode		Tune-up	Meas.	TP Set Level
802.11a (6M)	52/5260	12.50	11.10	10
	56/5280	12.50	10.99	10
	60/5300	12.50	11.06	10

	64/5320	12.50	10.96	10
802.11n-HT20 (MCS0)	52/5260	12.50	11.03	10
	56/5280	12.50	10.88	10
	60/5300	12.50	10.97	10
	64/5320	12.50	11.01	10
802.11n-HT40 (MCS0)	54/5270	12.50	10.63	10
	62/5310	12.50	10.69	10
802.11ac-VHT20 (6M)	52/5260	12.50	10.96	10
	56/5280	12.50	11.14	10
	60/5300	12.50	10.98	10
	64/5320	12.50	11.23	10
802.11ac-VHT40 (MCS0)	54/5270	12.50	10.73	10
	62/5310	12.50	10.56	10
802.11ac-VHT80 (MCS0)	58/5290	12.50	10.74	10
Note. Initial test configuration is 802.11ac-VHT80 mode, since the highest maximum output power, the largest channel bandwidth.				

Wi-Fi 5G (U-NII-2C) (Rec off)	Channel /Frequency(MHz)	Maximum Output Power (dBm)		
Mode		Tune-up	Meas.	TP Set Level
802.11a (6M)	100/5500	18.00	17.40	17
	116/5580	18.00	17.41	17
	132/5660	18.00	17.45	17
	140/5700	18.00	17.44	17
802.11n-HT20 (MCS0)	100/5500	17.00	15.23	15
	116/5580	17.00	15.23	15
	132/5660	17.00	15.22	15
	140/5700	17.00	15.23	15
802.11n-HT40 (MCS0)	102/5510	15.00	13.97	14
	110/5550	15.00	14.01	14
	118/5590	15.00	14.03	14
	134/5670	15.00	13.99	14
802.11ac-VHT20 (6M)	100/5500	17.00	14.87	15
	116/5580	17.00	14.94	15
	132/5660	17.00	15.01	15
	140/5700	17.00	14.99	15
802.11ac-VHT40 (MCS0)	102/5510	15.00	13.98	14
	110/5550	15.00	14.01	14

	118/5590	15.00	14.09	14
	134/5670	15.00	13.94	14
802.11ac-VHT80 (MCS0)	106/5530	14.00	13.14	13
	122/5610	14.00	13.17	13
Note. Initial test configuration is 802.11a mode, since the highest maximum output power.				

Wi-Fi 5G (U-NII-2C) (Rec on)	Channel /Frequency(MHz)	Maximum Output Power (dBm)		
Mode		Tune-up	Meas.	TP Set Level
802.11a (6M)	100/5500	12.50	11.24	10
	116/5580	12.50	11.08	10
	132/5660	12.50	11.18	10
	140/5700	12.50	11.21	10
802.11n-HT20 (MCS0)	100/5500	12.50	10.88	10
	116/5580	12.50	11.08	10
	132/5660	12.50	11.24	10
	140/5700	12.50	11.17	10
802.11n-HT40 (MCS0)	102/5510	12.50	11.27	10
	110/5550	12.50	11.18	10
	118/5590	12.50	11.07	10
	134/5670	12.50	11.11	10
802.11ac-VHT20 (6M)	100/5500	12.50	11.03	10
	116/5580	12.50	11.08	10
	132/5660	12.50	11.25	10
	140/5700	12.50	11.19	10
802.11ac-VHT40 (MCS0)	102/5510	12.50	10.96	10
	110/5550	12.50	11.08	10
	118/5590	12.50	10.86	10
	134/5670	12.50	10.21	10
802.11ac-VHT80 (MCS0)	106/5530	12.50	10.54	10
	122/5610	12.50	10.51	10
Note. Initial test configuration is 802.11ac-VHT80 mode, since the highest maximum output power, the largest channel bandwidth.				

Wi-Fi 5G (U-NII-3) (Rec off)	Channel /Frequency(MHz)	Maximum Output Power (dBm)		
Mode		Tune-up	Meas.	TP Set Level
802.11a (6M)	149/5745	18.00	17.40	17
	157/5785	18.00	17.41	17

	165/5825	18.00	17.45	17
802.11n-HT20 (MCS0)	149/5745	17.00	16.52	15
	157/5785	17.00	16.52	15
	165/5825	17.00	16.52	15
802.11n-HT40 (MCS0)	151/5755	15.00	14.53	14
	159/5795	15.00	13.78	14
802.11ac-VHT20 (6M)	149/5745	17.00	14.01	15
	157/5785	17.00	14.09	15
	165/5825	17.00	14.01	15
802.11ac-VHT40 (MCS0)	151/5755	15.00	14.09	14
	159/5795	15.00	14.09	14
802.11ac-VHT80 (MCS0)	155/5775	14.00	11.01	13
Note. Initial test configuration is 802.11a mode, since the highest maximum output power.				

Wi-Fi 5G (U-NII-3) (Rec on)	Channel /Frequency(MHz)	Maximum Output Power (dBm)		
Mode		Tune-up	Meas.	TP Set Level
802.11a (6M)	149/5745	12.50	11.14	10
	157/5785	12.50	11.03	10
	165/5825	12.50	10.61	10
802.11n-HT20 (MCS0)	149/5745	12.50	11.27	10
	157/5785	12.50	11.32	10
	165/5825	12.50	11.04	10
802.11n-HT40 (MCS0)	151/5755	12.50	10.98	10
	159/5795	12.50	10.69	10
802.11ac-VHT20 (6M)	149/5745	12.50	10.61	10
	157/5785	12.50	10.45	10
	165/5825	12.50	10.61	10
802.11ac-VHT40 (MCS0)	151/5755	12.50	10.89	10
	159/5795	12.50	10.24	10
802.11ac-VHT80 (MCS0)	155/5775	12.50	10.61	10
Note. Initial test configuration is 802.11ac-VHT80 mode, since the highest maximum output power, the largest channel bandwidth.				

9.5 Bluetooth Mode

BT	Conducted Power(dBm)			Tune-up Limit (dBm)
	Channel/Frequency(MHz)			
	Ch 0/2402 MHz	Ch 39/2441 MHz	Ch 78/2480 MHz	
GFSK	8.36	8.15	8.36	9.50
π/4DQPSK	8.24	8.21	8.27	9.00
8DPSK	8.34	8.35	8.15	9.00
BLE	**Ch 0/2402 MHz**	**Ch 19/2440 MHz**	**Ch 39/2480 MHz**	**Tune-up Limit (dBm)**
GFSK	3.59	4.09	4.79	8.00

10 Measured and Reported (Scaled) SAR Results

10.1 EUT Antenna Locations

The Detailed Antenna Locations refer to *SAR Test Setup and Antenna Locations.*

Overall (Length x Width): 155.2mm x 73.4 mm Overall Diagonal: 161.2 mm/Display Diagonal: 160mm						
Distance of the Antenna to the EUT surface/edge						
Antenna	Back Side	Front side	Left Edge	Right Edge	Top Edge	Bottom Edge
Main-Antenna(Antenna 1)	＜25mm	＜25mm	＜25mm	＜25mm	＞25mm	＜25mm
Div-Antenna(Antenna 2)	＜25mm	＜25mm	＜25mm	＞25mm	＜25mm	＞25mm
GPS/Wi-Fi Antenna	＜25mm	＜25mm	＞25mm	＜25mm	＜25mm	＞25mm
Hotspot mode, Positions for SAR tests						
Mode	Back Side	Front side	Left Edge	Right Edge	Top Edge	Bottom Edge
Main-Antenna(Antenna 1)	Yes	Yes	Yes	Yes	N/A	Yes
Div-Antenna(Antenna 2)	Yes	Yes	Yes	N/A	Yes	N/A
GPS/Wi-Fi Antenna	Yes	Yes	N/A	Yes	Yes	N/A

Note: 1. Per KDB 941225 D06, when the overall device length and width are ≥ 9cm*5cm, the test distance is 10mm. SAR must be measured for all sides and surfaces with a transmitting antenna located within 25mm from that surface or edge.

2.For smart phones with an overall diagonal dimension is 161.2mm. Per KDB 648474 D04, for smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension> 16.0 cm, 10-g extremity SAR must be tested as a phablet to determine SAR compliance. For Phablet, Since hotspot mode 1-g *reported* SAR < 1.2 W/kg, 10-g extremity SAR is no required.

3. Per FCC KDB 447498 D01,

for each exposure position, testing of other requised channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:

a) ≤0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100MHz

b) ≤0.6 W/kg or 1.5 W/kg, for1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz.

c) ≤ 0.4 W/kg or 1.0 Wkg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz.

4.When the original highest measured SAR is ≥ 0.80 W/kg, the measurement was repeated once.

5. Per KDB 648474 D04, SAR was evaluated without a headset connected to the device. Since the reported SAR was ≤ 1.2 W/kg, no additional SAR evaluations using a headset cable were required.

10.2 Standalone SAR test exclusion considerations

Per KDB 447498 D01, the 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:
[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] ·[√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR

- 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

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

Bluetooth	Distance (mm)	MAXPower (dBm)	Frequency (MHz)	Ratio	Evaluation
Head	5	9.50	2480	2.81	No
Body-worn	15	9.50	2480	0.94	No
Hotspot	10	9.50	2480	1.40	No
Product Specific 10-g SAR	5	9.50	2480	2.81	No

10.3 Measured SAR Results

Table 9: GSM 850 (Antenna 1)

Test Position	Cover Type	Time slot	Duty Cycle	Channel/ Frequency (MHz)	Tune-up (dBm)	Measured power (dBm)	Limit of SAR 1.6 W/kg (mW/g)				Plot No.
							Measured SAR1g	Power Drift (dB)	Scaling Factor	Report SAR1g	
Head SAR											
Left Cheek	standard	GSM	1:8.3	190/836.6	33.70	32.43	0.045	0.068	1.34	0.060	15
Left Tilt	standard	GSM	1:8.3	190/836.6	33.70	32.43	0.017	0.024	1.34	0.023	/
Right Cheek	standard	GSM	1:8.3	190/836.6	33.70	32.43	0.024	-0.027	1.34	0.033	/
Right Tilt	standard	GSM	1:8.3	190/836.6	33.70	32.43	0.012	0.010	1.34	0.016	/
Body-worn (Distance 15mm)											
Back Side	standard	GSM	1:8.3	190/836.6	33.70	32.43	0.187	0.100	1.34	0.251	16
Front Side	standard	GSM	1:8.3	190/836.6	33.70	32.43	0.123	0.045	1.34	0.165	/
Hotspot (Distance 10mm)											
Back Side	standard	4Txslots	1:2.07	190/836.6	27.70	26.46	0.287	0.160	1.33	0.382	17
Front Side	standard	4Txslots	1:2.07	190/836.6	27.70	26.46	0.185	-0.040	1.33	0.246	/
Left Edge	standard	4Txslots	1:2.07	190/836.6	27.70	26.46	0.080	0.180	1.33	0.106	/
Right Edge	standard	4Txslots	1:2.07	190/836.6	27.70	26.46	0.062	0.040	1.33	0.082	/
Top Edge	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Bottom Edge	standard	4Txslots	1:2.07	190/836.6	27.70	26.46	0.121	0.100	1.33	0.161	/

Note: 1.The value with blue color is the maximum SAR Value of each test band.

2.When multiple slots are used, SAR should be tested to account for the maximum source-based time-averaged output power.

Table 10: GSM 1900 (Antenna 1)

Test Position	Cover Type	Time slot	Duty Cycle	Channel/ Frequency (MHz)	Tune-up (dBm)	Measured power (dBm)	Limit of SAR 1.6 W/kg (mW/g)				Plot No.
							Measured SAR1g	Power Drift (dB)	Scaling Factor	Report SAR1g	
Head SAR(Hotspot off)											
Left Cheek	standard	GSM	1:8.3	661/1880	31.00	30.14	0.155	0.061	1.22	0.189	18
Left Tilt	standard	GSM	1:8.3	661/1880	31.00	30.14	0.051	0.040	1.22	0.062	/
Right Cheek	standard	GSM	1:8.3	661/1880	31.00	30.14	0.047	0.082	1.22	0.057	/
Right Tilt	standard	GSM	1:8.3	661/1880	31.00	30.14	0.047	0.082	1.22	0.057	/
Body-worn (Distance 15mm) (Hotspot off)											
Back Side	standard	GSM	1:8.3	661/1880	31.00	30.14	0.165	-0.040	1.22	0.201	19
Front Side	standard	GSM	1:8.3	661/1880	31.00	30.14	0.115	0.060	1.22	0.140	/
Hotspot (Distance 10mm) (Hotspot on)											
Back Side	standard	4Txslots	1:8.3	661/1880	21.80	20.92	0.150	-0.190	1.22	0.184	/
Front Side	standard	4Txslots	1:8.3	661/1880	21.80	20.92	0.084	0.030	1.22	0.103	/
Left Edge	standard	4Txslots	1:8.3	661/1880	21.80	20.92	0.065	0.050	1.22	0.080	/
Right Edge	standard	4Txslots	1:8.3	661/1880	21.80	20.92	0.038	0.010	1.22	0.047	/
Top Edge	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Bottom Edge	standard	4Txslots	1:8.3	661/1880	21.80	20.92	0.251	0.180	1.22	0.307	20

Note: 1.The value with blue color is the maximum SAR Value of each test band.

2.When multiple slots are used, SAR should be tested to account for the maximum source-based time-averaged output power.

Table 11: UMTS Band II (Antenna 1)

Test Position	Cover Type	Channel Type	Duty Cycle	Channel/ Frequency (MHz)	Tune-up (dBm)	Measured power (dBm)	Limit of SAR 1.6 W/kg (mW/g)				Plot No.
							Measured SAR1g	Power Drift (dB)	Scaling Factor	Report SAR1g	
Head SAR(Rec on+ Hotspot off)											
Left Cheek	standard	RMC 12.2K	1:1	9400/1880	24.00	23.06	0.214	0.150	1.24	0.266	21
Left Tilt	standard	RMC 12.2K	1:1	9400/1880	24.00	23.06	0.071	0.020	1.24	0.088	/
Right Cheek	standard	RMC 12.2K	1:1	9400/1880	24.00	23.06	0.121	0.089	1.24	0.150	/
Right Tilt	standard	RMC 12.2K	1:1	9400/1880	24.00	23.06	0.071	-0.057	1.24	0.088	/
Left Cheek	SIM2	RMC 12.2K	1:1	9400/1880	24.00	23.06	0.187	-0.016	1.24	0.232	/
Left Cheek	Battery2	RMC 12.2K	1:1	9400/1880	24.00	23.06	0.209	-0.020	1.24	0.260	/
Left Cheek	Battery3	RMC 12.2K	1:1	9400/1880	24.00	23.06	0.213	0.130	1.24	0.264	/
Left Cheek	Battery4	RMC 12.2K	1:1	9400/1880	24.00	23.06	0.196	0.022	1.24	0.243	/
Body-worn (Distance 15mm) (Rec off+ Hotspot off)											
Back Side	standard	RMC 12.2K	1:1	9400/1880	23.30	22.44	0.344	-0.070	1.22	0.419	22
Front Side	standard	RMC 12.2K	1:1	9400/1880	23.30	22.44	0.204	0.070	1.22	0.249	/
Back Side	SIM2	RMC 12.2K	1:1	9400/1880	23.30	22.44	0.310	0.152	1.22	0.378	/
Back Side	Battery2	RMC 12.2K	1:1	9400/1880	23.30	22.44	0.338	0.012	1.22	0.412	/
Back Side	Battery3	RMC 12.2K	1:1	9400/1880	23.30	22.44	0.332	0.064	1.22	0.405	/
Back Side	Battery4	RMC 12.2K	1:1	9400/1880	23.30	22.44	0.325	-0.033	1.22	0.396	/
Hotspot (Distance 10mm) (Rec off+ Hotspot on)											
Back Side	standard	RMC 12.2K	1:1	9400/1880	20.30	19.39	0.279	-0.050	1.23	0.344	/
Front Side	standard	RMC 12.2K	1:1	9400/1880	20.30	19.39	0.155	0.170	1.23	0.191	/
Left Edge	standard	RMC 12.2K	1:1	9400/1880	20.30	19.39	0.116	0.190	1.23	0.143	/
Right Edge	standard	RMC 12.2K	1:1	9400/1880	20.30	19.39	0.021	0.046	1.23	0.026	/
Top Edge	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Bottom Edge	standard	RMC 12.2K	1:1	9400/1880	20.30	19.39	0.429	0.160	1.23	0.529	23
Bottom Edge	SIM2	RMC 12.2K	1:1	9400/1880	20.30	19.39	0.410	-0.033	1.23	0.506	/
Bottom Edge	Battery2	RMC 12.2K	1:1	9400/1880	20.30	19.39	0.367	-0.072	1.23	0.453	/
Bottom Edge	Battery3	RMC 12.2K	1:1	9400/1880	20.30	19.39	0.322	0.188	1.23	0.397	/
Bottom Edge	Battery4	RMC 12.2K	1:1	9400/1880	20.30	19.39	0.408	0.026	1.23	0.503	/

Note: 1.The value with blue color is the maximum SAR Value of each test band.

2. When the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode.
3. Accessories that do not contain RF transmitters and have been proven to increase the peak SAR by less than 5 %, such as hands-free kits, do not need SAR tests separate from the SAR tests attached to a main EUT configuration.

Table 12: UMTS Band V (Antenna 1)

Test Position	Cover Type	Channel Type	Duty Cycle	Channel/ Frequency (MHz)	Tune-up (dBm)	Measured power (dBm)	Limit of SAR 1.6 W/kg (mW/g)				Plot No.
							Measured SAR1g	Power Drift (dB)	Scaling Factor	Report SAR1g	
Head SAR											
Left Cheek	standard	RMC 12.2K	1:1	4183/836.6	25.00	24.07	0.037	0.096	1.24	0.046	24
Left Tilt	standard	RMC 12.2K	1:1	4183/836.6	25.00	24.07	0.012	0.150	1.24	0.015	/
Right Cheek	standard	RMC 12.2K	1:1	4183/836.6	25.00	24.07	0.030	0.075	1.24	0.037	/
Right Tilt	standard	RMC 12.2K	1:1	4183/836.6	25.00	24.07	0.013	0.022	1.24	0.016	/
Body-worn (Distance 15mm)											
Back Side	standard	RMC 12.2K	1:1	4183/836.6	25.00	24.07	0.237	0.000	1.24	0.294	25
Front Side	standard	RMC 12.2K	1:1	4183/836.6	25.00	24.07	0.172	0.100	1.24	0.213	/
Hotspot (Distance 10mm)											
Back Side	standard	RMC 12.2K	1:1	4183/836.6	25.00	24.07	0.275	-0.050	1.24	0.341	/
Front Side	standard	RMC 12.2K	1:1	4183/836.6	25.00	24.07	0.291	0.120	1.24	0.360	26
Left Edge	standard	RMC 12.2K	1:1	4183/836.6	25.00	24.07	0.069	0.060	1.24	0.085	/
Right Edge	standard	RMC 12.2K	1:1	4183/836.6	25.00	24.07	0.057	-0.090	1.24	0.070	/
Top Edge	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Bottom Edge	standard	RMC 12.2K	1:1	4183/836.6	25.00	24.07	0.103	0.070	1.24	0.128	/

Note: 1.The value with blue color is the maximum SAR Value of each test band.

2. When the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode.

Table 13: LTE Band 7 (Antenna 1)

Test Position	Cover Type	Duty Cycle	RB allocation	RB offset	Channel/ Frequency (MHz)	Tune-up (dBm)	Measured power (dBm)	Limit of SAR 1.6 W/kg (mW/g)				Plot No.
								Measured SAR1g	Power Drift (dB)	Scaling Factor	Report SAR1g	
Head SAR (QPSK) (Rec on+Hotspot off)												
Left Cheek	standard	1:1	1	99	20850/2510	23.80	23.00	0.172	0.031	1.20	0.207	27
Left Tilt	standard	1:1	1	99	20850/2510	23.80	23.00	0.030	0.160	1.20	0.036	/
Right Cheek	standard	1:1	1	99	20850/2510	23.80	23.00	0.078	0.099	1.20	0.094	/
Right Tilt	standard	1:1	1	99	20850/2510	23.80	23.00	0.074	0.078	1.20	0.089	/
Left Cheek	standard	1:1	50%	50	20850/2510	22.80	22.31	0.134	0.021	1.12	0.150	/
Left Tilt	standard	1:1	50%	50	20850/2510	22.80	22.31	0.024	0.012	1.12	0.027	/
Right Cheek	standard	1:1	50%	50	20850/2510	22.80	22.31	0.068	0.014	1.12	0.076	/
Right Tilt	standard	1:1	50%	50	20850/2510	22.80	22.31	0.061	0.015	1.12	0.068	/
Body-worn (QPSK, Distance 15mm) (Rec off+Hotspot off)												
Back Side	standard	1:1	1	50	20850/2510	22.00	21.17	0.208	-0.053	1.21	0.252	/
Front Side	standard	1:1	1	50	20850/2510	22.00	21.17	0.125	0.044	1.21	0.151	/
Back Side	standard	1:1	50%	50	20850/2510	22.00	21.19	0.223	-0.027	1.21	0.269	28
Hotspot (QPSK, Distance 10mm) (Rec off+Hotspot on)												
Back Side	standard	1:1	1	99	21100/2535	19.00	18.12	0.102	0.049	1.22	0.125	/
Front Side	standard	1:1	1	99	21100/2535	19.00	18.12	0.055	0.067	1.22	0.067	/
Left Edge	standard	1:1	1	99	21100/2535	19.00	18.12	0.024	-0.020	1.22	0.029	/
Right Edge	standard	1:1	1	99	21100/2535	19.00	18.12	0.007	-0.046	1.22	0.009	/
Top Edge	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Bottom Edge	standard	1:1	1	99	21100/2535	19.00	18.12	0.289	0.110	1.22	0.354	/
Back Side	standard	1:1	50%	50	20850/2510	19.00	18.14	0.306	0.160	1.22	0.373	/
Front Side	standard	1:1	50%	50	20850/2510	19.00	18.14	0.050	0.012	1.22	0.061	/
Left Edge	standard	1:1	50%	50	20850/2510	19.00	18.14	0.020	0.036	1.22	0.024	/
Right Edge	standard	1:1	50%	50	20850/2510	19.00	18.14	0.006	-0.010	1.22	0.007	/
Top Edge	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Bottom Edge	standard	1:1	50%	50	20850/2510	19.00	18.14	0.321	0.028	1.22	0.391	29

Note: 1.The value with blue color is the maximum SAR Value of each test band.

2.For QPSK with 100% RB allocation, SAR is required when and the highest reported SAR for 1 RB and 50% RB allocation in are ≥ 0.8 W/kg.

Table 14: GSM 850 (Antenna 2)

Test Position	Cover Type	Time slot	Duty Cycle	Channel/ Frequency (MHz)	Tune-up (dBm)	Measured power (dBm)	Limit of SAR 1.6 W/kg (mW/g)				Plot No.
							Measured SAR1g	Power Drift (dB)	Scaling Factor	Report SAR1g	
Head SAR(Rec on)											
Left Cheek	standard	GSM	1:8.3	190/836.6	31.20	30.33	0.199	0.074	1.22	0.243	/
Left Tilt	standard	GSM	1:8.3	190/836.6	31.20	30.33	0.118	-0.031	1.22	0.144	/
Right Cheek	standard	GSM	1:8.3	190/836.6	31.20	30.33	0.509	-0.061	1.22	0.622	30
Right Tilt	standard	GSM	1:8.3	190/836.6	31.20	30.33	0.195	0.138	1.22	0.238	/
Body-worn (Distance 15mm) (Rec off)											
Back Side	standard	GSM	1:8.3	190/836.6	33.70	32.23	0.283	0.130	1.40	0.397	31
Front Side	standard	GSM	1:8.3	190/836.6	33.70	32.23	0.202	-0.110	1.40	0.283	/
Back Side	SIM2	GSM	1:8.3	190/836.6	33.70	32.23	0.270	0.026	1.40	0.379	/
Back Side	Battery2	GSM	1:8.3	190/836.6	33.70	32.23	0.281	0.104	1.40	0.394	/
Back Side	Battery3	GSM	1:8.3	190/836.6	33.70	32.23	0.266	-0.008	1.40	0.373	/
Back Side	Battery4	GSM	1:8.3	190/836.6	33.70	32.23	0.243	0.033	1.40	0.341	/
Hotspot (Distance 10mm) (Rec off)											
Back Side	standard	4Txslots	1:2.07	190/836.6	27.70	26.74	0.501	0.010	1.25	0.625	32
Front Side	standard	4Txslots	1:2.07	190/836.6	27.70	26.74	0.311	-0.060	1.25	0.388	/
Left Edge	standard	4Txslots	1:2.07	190/836.6	27.70	26.74	0.252	0.026	1.25	0.314	/
Right Edge	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Top Edge	standard	4Txslots	1:2.07	190/836.6	27.70	26.74	0.097	0.040	1.25	0.121	/
Bottom Edge	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Back Side	SIM2	4Txslots	1:2.07	190/836.6	27.70	26.74	0.460	-0.050	1.25	0.574	/
Back Side	Battery2	4Txslots	1:2.07	190/836.6	27.70	26.74	0.488	0.011	1.25	0.609	/
Back Side	Battery3	4Txslots	1:2.07	190/836.6	27.70	26.74	0.491	-0.042	1.25	0.612	/
Back Side	Battery4	4Txslots	1:2.07	190/836.6	27.70	26.74	0.427	0.090	1.25	0.533	/

Note: 1.The value with blue color is the maximum SAR Value of each test band.

2. When multiple slots are used, SAR should be tested to account for the maximum source-based time-averaged output power.

3. Accessories that do not contain RF transmitters and have been proven to increase the peak SAR by less than 5 %, such as hands-free kits, do not need SAR tests separate from the SAR tests attached to a main EUT configuration.

Table 15: GSM 1900 (Antenna 2)

Test Position	Cover Type	Time slot	Duty Cycle	Channel/ Frequency (MHz)	Tune-up (dBm)	Measured power (dBm)	Limit of SAR 1.6 W/kg (mW/g)				Plot No.
							Measured SAR1g	Power Drift (dB)	Scaling Factor	Report SAR1g	
Head SAR(Hotspot off)											
Left Cheek	standard	GSM	1:8.3	661/1880	29.00	27.60	0.102	0.110	1.38	0.141	/
Left Tilt	standard	GSM	1:8.3	661/1880	29.00	27.60	0.075	0.014	1.38	0.104	/
Right Cheek	standard	GSM	1:8.3	661/1880	29.00	27.60	0.164	0.045	1.38	0.226	33
Right Tilt	standard	GSM	1:8.3	661/1880	29.00	27.60	0.127	0.010	1.38	0.175	/
Body-worn (Distance 15mm) (Hotspot off)											
Back Side	standard	GSM	1:8.3	661/1880	29.00	27.60	0.090	-0.090	1.38	0.124	34
Front Side	standard	GSM	1:8.3	661/1880	29.00	27.60	0.056	0.040	1.38	0.077	/
Hotspot (Distance 10mm) (Hotspot off)											
Back Side	standard	1Txslot	1:8.3	661/1880	29.00	27.61	0.076	0.020	1.38	0.105	35
Front Side	standard	1Txslot	1:8.3	661/1880	29.00	27.61	0.034	0.134	1.38	0.047	/
Left Edge	standard	1Txslot	1:8.3	661/1880	29.00	27.61	0.047	-0.080	1.38	0.065	/
Right Edge	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Top Edge	standard	1Txslot	1:8.3	661/1880	29.00	27.61	0.035	0.041	1.38	0.048	/
Bottom Edge	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Note: 1.The value with blue color is the maximum SAR Value of each test band.

2.When multiple slots are used, SAR should be tested to account for the maximum source-based time-averaged output power.

Table 16: UMTS Band II (Antenna 2)

Test Position	Cover Type	Channel Type	Duty Cycle	Channel/ Frequency (MHz)	Tune-up (dBm)	Measured power (dBm)	Limit of SAR 1.6 W/kg (mW/g)				Plot No.
							Measured SAR1g	Power Drift (dB)	Scaling Factor	Report SAR1g	
Head SAR(Hotspot off)											
Left Cheek	standard	RMC 12.2K	1:1	9400/1880	20.00	19.11	0.180	-0.080	1.23	0.221	/
Left Tilt	standard	RMC 12.2K	1:1	9400/1880	20.00	19.11	0.064	0.014	1.23	0.079	/
Right Cheek	standard	RMC 12.2K	1:1	9400/1880	20.00	19.11	0.204	0.190	1.23	0.250	36
Right Tilt	standard	RMC 12.2K	1:1	9400/1880	20.00	19.11	0.089	0.100	1.23	0.109	/
Body-worn (Distance 15mm) (Hotspot off)											
Back Side	standard	RMC 12.2K	1:1	9400/1880	20.00	19.11	0.151	0.032	1.23	0.185	37
Front Side	standard	RMC 12.2K	1:1	9400/1880	20.00	19.11	0.066	0.022	1.23	0.081	/
Hotspot (Distance 10mm) (Hotspot on)											
Back Side	standard	RMC 12.2K	1:1	9400/1880	17.00	16.07	0.082	0.033	1.24	0.102	38
Front Side	standard	RMC 12.2K	1:1	9400/1880	17.00	16.07	0.056	0.029	1.24	0.069	/
Left Edge	Standard	RMC 12.2K	1:1	9400/1880	17.00	16.07	0.060	0.101	1.24	0.074	/
Right Edge	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Top Edge	standard	RMC 12.2K	1:1	9400/1880	17.00	16.07	0.063	0.090	1.24	0.078	/
Bottom Edge	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Note: 1.The value with blue color is the maximum SAR Value of each test band.

2. When the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode.

Table 17: UMTS Band V (Antenna 2)

Test Position	Cover Type	Channel Type	Duty Cycle	Channel/ Frequency (MHz)	Tune-up (dBm)	Measured power (dBm)	Limit of SAR 1.6 W/kg (mW/g)				Plot No.
							Measured SAR1g	Power Drift (dB)	Scaling Factor	Report SAR1g	
Head SAR(Rec on+Hotspot off)											
Left Cheek	standard	RMC 12.2K	1:1	4183/836.6	21.50	20.64	0.366	-0.043	1.22	0.446	/
Left Tilt	standard	RMC 12.2K	1:1	4183/836.6	21.50	20.64	0.188	0.060	1.22	0.229	/
Right Cheek	standard	RMC 12.2K	1:1	4183/836.6	21.50	20.64	0.617	-0.100	1.22	0.752	39
Right Tilt	standard	RMC 12.2K	1:1	4183/836.6	21.50	20.64	0.342	0.070	1.22	0.417	/
Right Cheek	SIM2	RMC 12.2K	1:1	4183/836.6	21.50	20.64	0.593	-0.080	1.22	0.723	/
Right Cheek	Battery2	RMC 12.2K	1:1	4183/836.6	21.50	20.64	0.612	0.164	1.22	0.746	/
Right Cheek	Battery3	RMC 12.2K	1:1	4183/836.6	21.50	20.64	0.561	-0.014	1.22	0.684	/
Right Cheek	Battery4	RMC 12.2K	1:1	4183/836.6	21.50	20.64	0.601	0.020	1.22	0.733	/
Body-worn (Distance 15mm) (Rec off+Hotspot off)											
Back Side	standard	RMC 12.2K	1:1	4183/836.6	25.00	24.02	0.219	-0.040	1.25	0.274	40
Front Side	standard	RMC 12.2K	1:1	4183/836.6	25.00	24.02	0.125	0.027	1.25	0.157	/
Hotspot (Distance 10mm) (Rec off+Hotspot on)											
Back Side	standard	RMC 12.2K	1:1	4183/836.6	22.00	21.02	0.181	-0.030	1.25	0.227	41
Front Side	standard	RMC 12.2K	1:1	4183/836.6	22.00	21.02	0.100	0.023	1.25	0.125	/
Left Edge	Standard	RMC 12.2K	1:1	4183/836.6	22.00	21.02	0.119	0.050	1.25	0.149	/
Right Edge	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Top Edge	standard	RMC 12.2K	1:1	4183/836.6	22.00	21.02	0.001	0.067	1.25	0.001	/
Bottom Edge	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Note: 1.The value with blue color is the maximum SAR Value of each test band.

2. When the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode.

3. Accessories that do not contain RF transmitters and have been proven to increase the peak SAR by less than 5 %, such as hands-free kits, do not need SAR tests separate from the SAR tests attached to a main EUT configuration.

Table 18: Wi-Fi (2.4G)

Test Position	Cover Type	Mode 802.11 b	Duty Cycle	Channel/ Frequency (MHz)	Tune-up dBm)	Measured power (dBm)	Limit of SAR 1.6 W/kg (mW/g)					Plot No.
							Area Scan SAR 1g	Zoom Scan SAR 1g	Power Drift (dB)	Scaling Factor	Report SAR 1g	
Head SAR(Rec on)												
Left Cheek	standard	DSSS	99.7%	1/2412	11.50	10.69	0.039	0.040	0.020	1.21	0.048	42
Left Tilt	standard	DSSS	99.7%	1/2412	11.50	10.69	0.022	0.020	0.120	1.21	0.024	/
Right Cheek	standard	DSSS	99.7%	1/2412	11.50	10.69	0.012	0.013	0.028	1.21	0.015	/
Right Tilt	standard	DSSS	99.7%	1/2412	11.50	10.69	0.012	0.017	0.113	1.21	0.021	/
Body-worn (Distance 15mm) (Rec off)												
Back Side	standard	DSSS	99.7%	1/2412	19.00	18.26	0.050	0.055	-0.041	1.19	0.065	43
Front Side	standard	DSSS	99.7%	1/2412	19.00	18.26	0.040	0.036	0.037	1.19	0.043	/
Hotspot (Distance 10mm) (Rec off)												
Back Side	standard	DSSS	99.7%	1/2412	19.00	18.26	0.102	0.102	-0.130	1.19	0.121	44
Front Side	standard	DSSS	99.7%	1/2412	19.00	18.26	0.101	0.101	0.053	1.19	0.120	/
Left Edge	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Right Edge	standard	DSSS	99.7%	1/2412	19.00	18.26	0.101	0.090	0.131	1.19	0.107	/
Top Edge	standard	DSSS	99.7%	1/2412	19.00	18.26	0.100	0.087	0.066	1.19	0.103	/
Bottom Edge	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Note: 1. The value with blue color is the maximum SAR Value of each test band.

2. Initial test configuraton is 802.11b mode, since the highest maximum output power.

MAX Adjusted SAR							
Mode	Test Position	Channel/ Frequency(MHz)	MAX Reported SAR_{1g} (W/kg)	802.11b Tune-up limit (dBm)	Tune-up limit (dBm)	Scaling Factor	Adjusted SAR_{1g} (W/kg)
802.11g	Back Side	1/2412	0.121	19.00	18.00	0.79	0.096
802.11n HT20	Back Side	1/2412	0.121	19.00	16.00	0.50	0.061
802.11n HT40	Back Side	1/2412	0.121	19.00	16.00	0.50	0.061

Note:
SAR is not required for OFDM when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSSspecifiedmaximum output power and the adjusted SAR is ≤ 1.2 W/kg.

Table 19: Wi-Fi (5G,U-NII-1)

Per 248227, for band U-NII-1 and U-NII-2A, when the same maximum output power is specified for both bands, begin SAR measurement in U-NII-2A band by applying the OFDM SAR requirements. If the highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band for that configuration (802.11 mode and exposure condition); otherwise, each band is tested independently for SAR.

Test Position	Cover Type	Mode	Duty Cycle	Channel/ Frequency (MHz)	Tune-up dBm)	Measured power (dBm)	Limit of SAR 1.6 W/kg (mW/g)					Plot No.
							Area Scan SAR 1g	Zoom Scan SAR 1g	Power Drift (dB)	Scaling Factor	Report SAR 1g	
Hotspot (Distance 10mm) (Rec off)												
Back Side	standard	802.11a	98.1%	36/5180	18.00	17.39	0.026	0.016	0.034	1.17	0.019	45
Front Side	standard	802.11a	98.1%	36/5180	18.00	17.39	0.021	0.010	-0.165	1.17	0.012	/
Left Edge	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Right Edge	standard	802.11a	98.1%	36/5180	18.00	17.39	0.009	0.012	0.104	1.17	0.014	/
Top Edge	standard	802.11a	98.1%	36/5180	18.00	17.39	0.011	0.007	-0.066	1.17	0.008	/
Bottom Edge	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Note: 1. The value with blue color is the maximum SAR Value of each test band.

2. Initial test configuration is 802.11a mode, since the highest maximum output power.

3. Since the band does not support hotspot function, Product Specific 10-g SAR is required.

Table 20: Wi-Fi (5G,U-NII-2A)

Test Position	Cover Type	Mode	Duty Cycle	Channe/ Frequency (MHz)	Tune-up dBm)	Measured power (dBm)	Limit of SAR 1.6 W/kg (mW/g)					Plot No.
							Area Scan SAR 1g	Zoom Scan SAR 1g	Power Drift (dB)	Scaling Factor	Report SAR 1g	
Head SAR(Rec on)												
Left Cheek	standard	802.11ac VHT80	93.5%	58/5290	12.50	10.74	0.047	0.052	-0.038	1.60	0.084	46
Left Tilt	standard	802.11ac VHT80	93.5%	58/5290	12.50	10.74	0.006	0.003	0.035	1.60	0.006	/
Right Cheek	standard	802.11ac VHT80	93.5%	58/5290	12.50	10.74	0.013	0.011	0.000	1.60	0.018	/
Right Tilt	standard	802.11ac VHT80	93.5%	58/5290	12.50	10.74	0.009	0.009	0.020	1.60	0.014	/
Body-worn (Distance 15mm) (Rec off)												
Back Side	standard	802.11 a	98.1%	64/5320	18.00	17.78	0.189	0.143	0.033	1.07	0.153	47
Front Side	standard	802.11 a	98.1%	64/5320	18.00	17.78	0.057	0.057	0.064	1.07	0.061	/
Test Position	Cover Type	Mode	Duty Cycle	Channe/ Frequency (MHz)	Tune-up dBm)	Measured power (dBm)	Limit of SAR 4 W/kg (mW/g)					Plot No.
							Area Scan SAR 10g	Zoom Scan SAR 10g	Power Drift (dB)	Scaling Factor	Report SAR 10g	
Product Specific 10-g SAR (Distance 0mm)(Rec off)												
Back Side	standard	802.11 a	98.1%	64/5320	18.00	17.78	0.757	0.647	0.151	1.07	0.694	48
Front Side	standard	802.11 a	98.1%	64/5320	18.00	17.78	0.118	0.148	0.050	1.07	0.159	/
Left Edge	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Right Edge	standard	802.11 a	98.1%	64/5320	18.00	17.78	0.015	0.191	0.024	1.07	0.205	/
Top Edge	standard	802.11 a	98.1%	64/5320	18.00	17.78	0.037	0.029	0.102	1.07	0.031	/
Bottom Edge	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Back Side	Battery2	802.11 a	98.1%	64/5320	18.00	17.78	0.476	0.490	-0.021	1.07	0.525	/
Back Side	Battery3	802.11 a	98.1%	64/5320	18.00	17.78	0.503	0.520	0.174	1.07	0.558	/
Back Side	Battery4	802.11 a	98.1%	64/5320	18.00	17.78	0.550	0.564	0.009	1.07	0.605	/

Note: 1. The value with blue color is the maximum SAR Value of each test band.

2. Initial test configuration is 802.11a mode, since the highest maximum output power.

3. Since the band does not support hotspot function, Product Specific 10-g SAR is required.

4. Accessories that do not contain RF transmitters and have been proven to increase the peak SAR by less than 5 %, such as hands-free kits, do not need SAR tests separate from the SAR tests attached to a main EUT configuration.

Table 21: Wi-Fi (5G,U-NII-2C)

Test Position	Cover Type	Mode	Duty Cycle	Channe/ Frequency (MHz)	Tune-up dBm)	Measured power (dBm)	Limit of SAR 1.6 W/kg (mW/g)					Plot No.
							Area Scan SAR 1g	Zoom Scan SAR 1g	Power Drift (dB)	Scaling Factor	Report SAR 1g	
Head SAR(Rec on)												
Left Cheek	standard	802.11ac VHT80	93.5%	106/5530	12.50	10.54	0.095	0.117	0.076	1.68	0.196	49
Left Tilt	standard	802.11ac VHT80	93.5%	106/5530	12.50	10.54	0.010	0.019	-0.010	1.68	0.032	/
Right Cheek	standard	802.11ac VHT80	93.5%	106/5530	12.50	10.54	0.016	0.021	0.047	1.68	0.035	/
Right Tilt	standard	802.11ac VHT80	93.5%	106/5530	12.50	10.54	0.014	0.016	0.075	1.68	0.027	/
Left Cheek	Battery2	802.11ac VHT80	93.5%	106/5530	12.50	10.54	0.090	0.095	-0.016	1.68	0.160	/
Left Cheek	Battery3	802.11ac VHT80	93.5%	106/5530	12.50	10.54	0.102	0.114	-0.050	1.68	0.191	/
Left Cheek	Battery4	802.11ac VHT80	93.5%	106/5530	12.50	10.54	0.103	0.108	0.122	1.68	0.181	/
Body-worn (Distance 15mm) (Rec off)												
Back Side	standard	802.11 a	98.1%	132/5660	18.00	17.45	0.163	0.148	-0.177	1.16	0.171	50
Front Side	standard	802.11 a	98.1%	132/5660	18.00	17.45	0.074	0.076	0.119	1.16	0.088	/
Test Position	Cover Type	Mode	Duty Cycle	Channe/ Frequency (MHz)	Tune-up dBm)	Measured power (dBm)	Limit of SAR 4 W/kg (mW/g)					Plot No.
							Area Scan SAR 1g	Zoom Scan SAR 1g	Power Drift (dB)	Scaling Factor	Report SAR 10g	
Product Specific 10-g SAR (Distance 0mm)(Rec off)												
Back Side	standard	802.11 a	98.1%	132/5660	18.00	17.45	0.325	0.331	-0.180	1.16	0.383	/
Front Side	standard	802.11 a	98.1%	132/5660	18.00	17.45	0.250	0.341	-0.042	1.16	0.395	51
Left Edge	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Right Edge	standard	802.11 a	98.1%	132/5660	18.00	17.45	0.084	0.183	0.020	1.16	0.212	/
Top Edge	standard	802.11 a	98.1%	132/5660	18.00	17.45	0.098	0.096	0.064	1.16	0.111	/
Bottom Edge	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Note: 1. The value with blue color is the maximum SAR Value of each test band.

2. Initial test configuration is 802.11a mode, since the highest maximum output power.

3. Since the band does not support hotspot function, Product Specific 10-g SAR is required.

4. Accessories that do not contain RF transmivtters and have been proven to increase the peak SAR by less than 5 %, such as hands-free kits, do not need SAR tests separate from the SAR tests attached to a main EUT configuration.

Table 22: Wi-Fi (5G,U-NII-3)

Test Position	Cover Type	Mode	Duty Cycle	Channe/ Frequency (MHz)	Tune-up dBm)	Measured power (dBm)	Limit of SAR 1.6 W/kg (mW/g)					Plot No.
							Area Scan SAR 1g	Zoom Scan SAR 1g	Power Drift (dB)	Scaling Factor	Report SAR 1g	
Head SAR(Rec on)												
Left Cheek	standard	802.11ac VHT80	93.5%	155/5775	12.50	10.61	0.088	0.102	0.000	1.65	0.169	52
Left Tilt	standard	802.11ac VHT80	93.5%	155/5775	12.50	10.61	0.006	0.006	0.022	1.65	0.010	/
Right Cheek	standard	802.11ac VHT80	93.5%	155/5775	12.50	10.61	0.035	0.030	0.078	1.65	0.050	/
Right Tilt	standard	802.11ac VHT80	93.5%	155/5775	12.50	10.61	0.027	0.031	0.061	1.65	0.051	/
Body-worn (Distance 15mm) (Rec off)												
Back Side	standard	802.11 a	98.1%	165/5825	18.00	17.45	0.229	0.258	0.058	1.16	0.299	53
Front Side	standard	802.11 a	98.1%	165/5825	18.00	17.45	0.153	0.090	0.032	1.16	0.104	/
Back Side	Battery2	802.11 a	98.1%	165/5825	18.00	17.45	0.240	0.251	-0.032	1.16	0.290	/
Back Side	Battery3	802.11 a	98.1%	165/5825	18.00	17.45	0.215	0.220	-0.160	1.16	0.255	/
Back Side	Battery4	802.11 a	98.1%	165/5825	18.00	17.45	0.231	0.246	0.041	1.16	0.285	/
Hotspot SAR (Distance 10mm)(Rec off)												
Back Side	standard	802.11 a	98.1%	165/5825	18.00	17.45	0.482	0.487	0.031	1.16	0.564	54
Front Side	standard	802.11 a	98.1%	165/5825	18.00	17.45	0.365	0.359	-0.047	1.16	0.415	/
Left Edge	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Right Edge	standard	802.11 a	98.1%	165/5825	18.00	17.45	0.123	0.217	0.005	1.16	0.251	/
Top Edge	standard	802.11 a	98.1%	165/5825	18.00	17.45	0.114	0.119	-0.107	1.16	0.138	/
Bottom Edge	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Back Side	Battery2	802.11 a	98.1%	165/5825	18.00	17.45	0.461	0.457	0.048	1.16	0.529	/
Back Side	Battery3	802.11 a	98.1%	165/5825	18.00	17.45	0.447	0.436	0.002	1.16	0.505	/
Back Side	Battery4	802.11 a	98.1%	165/5825	18.00	17.45	0.439	0.458	0.106	1.16	0.530	/

Note: 1. The value with blue color is the maximum SAR Value of each test band.

2. Initial test configuration is 802.11a mode, since the highest maximum output power.

3. Accessories that do not contain RF transmitters and have been proven to increase the peak SAR by less than 5 %, such as hands-free kits, do not need SAR tests separate from the SAR tests attached to a main EUT configuration.

Table 23: BT

Band	Configuration	Frequency (MHz)	Maximum Power (dBm)	Separation Distance (mm)	Estimated SAR (W/kg)
Bluetooth	Head	2480	9.50	5	0.374
	Body-worn	2480	9.50	15	0.125
	Hotspot	2480	9.50	10	0.187
	Product Specific 10-g SAR	2480	9.50	5	0.150
For simultaneous transmission analysis, Bluetooth SAR is estimated per KDB 447498 D01 based on the formula below. (max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)]·[√f(GHz)/x] W/kg for test separation distances ≤ 50 mm; where x = 7.5 for 1-g SAR, and x = 18.75 for 10-g SAR.					

10.4 Simultaneous Transmission Analysis

Simultaneous Tx Combination	Head	Body-Worn	Hotspot	Product Specific 10-g SAR
GSM Voice + BT	Yes	Yes	N/A	N/A
GSM DATA + BT	N/A	Yes	Yes	Yes
GSM Voice + Wi-Fi 2.4G	Yes	Yes	N/A	N/A
GSM DATA + Wi-Fi 2.4G	N/A	Yes	Yes	Yes
GSM Voice + Wi-Fi 5G	Yes	Yes	N/A	N/A
GSM DATA + Wi-Fi 5G	N/A	Yes	Yes	Yes
UMTS + BT	Yes	Yes	Yes	Yes
UMTS + Wi-Fi 2.4G	Yes	Yes	Yes	Yes
UMTS + Wi-Fi 5G	Yes	Yes	Yes	Yes
LTE + Wi-Fi 2.4G	Yes	Yes	Yes	Yes
LTE + Wi-Fi 5G	Yes	Yes	Yes	Yes
LTE + BT	Yes	Yes	Yes	Yes
Wi-Fi 2.4G + BT	N/A	N/A	N/A	N/A
Wi-Fi 5G + BT	N/A	N/A	N/A	N/A
Antenna 1 + Antenna 2	N/A	N/A	N/A	N/A

General Note:

1. The Scaled SAR summation is calculated based on the same configuration and test position.
2. Per KDB 447498 D01, simultaneous transmission SAR is compliant if,

i) Scalar SAR summation < 1.6W/kg, simultaneously transmission SAR measurement is not necessary.

ii) SPLSR = (SAR1 + SAR2)^1.5 / (min. separation distance, mm), and the peak separation distance is determined from the square root of [(x1-x2)2 + (y1-y2)2 + (z1-z2)2], where (x1, y1, z1) and (x2, y2, z2) are the coordinates of the extrapolated peak SAR locations in the zoom scan.

iii) If SPLSR ≤ 0.04, simultaneously transmission SAR measurement is not necessary.

The maximum SAR_{1g} Value for Antenna 1

SAR_{1g}(W/kg) / Test Position		GSM 850	GSM 1900	WCDMA Band II	WCDMA Band V	LTE FDD 7	MAX. SAR_{1g}
Left Cheek		0.060	0.189	0.266	0.046	0.207	0.266
Left Tilt		0.023	0.062	0.088	0.015	0.036	0.088
Right Cheek		0.033	0.057	0.150	0.037	0.094	0.150
Right Tilt		0.016	0.057	0.088	0.016	0.089	0.089
Body worn	Back Side	0.251	0.201	0.419	0.294	0.269	0.419
	Front Side	0.165	0.140	0.249	0.213	0.151	0.249
Hotspot	Back Side	0.382	0.184	0.344	0.341	0.373	0.382
	Front Side	0.246	0.103	0.191	0.360	0.067	0.360
	Left Edge	0.106	0.080	0.143	0.085	0.029	0.143
	Right Edge	0.082	0.047	0.026	0.070	0.009	0.082
	Top Edge	N/A	N/A	N/A	N/A	N/A	N/A
	Bottom Edge	0.161	0.307	0.529	0.128	0.391	0.529

The maximum SAR_{1g} Value for Antenna 2

SAR_{1g}(W/kg) / Test Position		GSM 850	GSM 1900	WCDMA Band II	WCDMA Band V	MAX. SAR_{1g}
Left Cheek		0.243	0.141	0.221	0.446	0.446
Left Tilt		0.144	0.104	0.079	0.229	0.229
Right Cheek		0.622	0.226	0.250	0.752	0.752
Right Tilt		0.238	0.175	0.109	0.417	0.417
Body worn	Back Side	0.397	0.124	0.185	0.274	0.397
	Front Side	0.283	0.077	0.081	0.157	0.283
Hotspot	Back Side	0.625	0.105	0.102	0.227	0.625
	Front Side	0.388	0.047	0.069	0.125	0.388
	Left Edge	0.314	0.065	0.074	0.149	0.314
	Right Edge	N/A	N/A	N/A	N/A	N/A
	Top Edge	0.121	0.048	0.078	0.001	0.121
	Bottom Edge	N/A	N/A	N/A	N/A	N/A

About BT and Antenna 1

SAR$_{1g}$ (W/kg) / Test Position		Antenna 1	BT	MAX. ΣSAR$_{1g}$
Left Cheek		0.266	0.374	0.640
Left Tilt		0.088	0.374	0.462
Right Cheek		0.150	0.374	0.524
Right Tilt		0.089	0.374	0.463
Body worn	Back Side	0.419	0.125	0.544
	Front Side	0.249	0.125	0.374
Hotspot	Back Side	0.382	0.187	0.569
	Front Side	0.360	0.187	0.547
	Left Edge	0.143	0.187	0.330
	Right Edge	0.082	0.187	0.269
	Top Edge	N/A	0.187	0.187
	Bottom Edge	0.529	0.187	0.716
Note: 1.The value with blue color is the maximum ΣSAR$_{1g}$ Value. 2.MAX. ΣSAR$_{1g}$ =Unlicensed SAR$_{MAX}$ +Licensed SAR$_{MAX}$				

MAX. ΣSAR$_{1g}$ =0.716W/kg<1.6W/kg, so the Simultaneous transimition SAR with volum scan are not required for BT and Antenna 1.

About BT and Antenna 2

SAR$_{1g}$ (W/kg) / Test Position		Antenna 2	BT	MAX. ΣSAR$_{1g/10g}$
Left Cheek		0.446	0.374	0.820
Left Tilt		0.229	0.374	0.603
Right Cheek		0.752	0.374	1.126
Right Tilt		0.417	0.374	0.791
Body worn	Back Side	0.397	0.125	0.522
	Front Side	0.283	0.125	0.408
Hotspot	Back Side	0.625	0.187	0.812
	Front Side	0.388	0.187	0.575
	Left Edge	0.314	0.187	0.501
	Right Edge	N/A	0.187	0.187
	Top Edge	0.121	0.187	0.308
	Bottom Edge	N/A	0.187	0.187
Note: 1.The value with blue color is the maximum ΣSAR$_{1g}$ Value. 2.MAX. ΣSAR$_{1g}$ =Unlicensed SAR$_{MAX}$ +Licensed SAR$_{MAX}$				

MAX. ΣSAR_{1g} =1.126W/kg<1.6W/kg, so the Simultaneous transimition SAR with volum scan are not required for BT and Antenna 2.

The maximum $SAR_{1g/10g}$ Value for Wi-Fi

$SAR_{1g/10g}$(W/kg) Test Position		Wi-Fi 2.4G	Wi-Fi (U-NII-1)	Wi-Fi (U-NII-2A)	Wi-Fi (U-NII-2C)	Wi-Fi (U-NII-3)	MAX. $SAR_{1g/10g}$
Left, Cheek		0.048	N/A	0.084	0.196	0.169	0.196
Left, Tilt		0.024	N/A	0.006	0.032	0.010	0.032
Right, Cheek		0.015	N/A	0.018	0.035	0.050	0.050
Right, Tilt		0.021	N/A	0.014	0.027	0.051	0.051
Body-worn	Back Side	0.065	N/A	0.153	0.171	0.299	0.299
	Front Side	0.043	N/A	0.061	0.088	0.104	0.104
Hotspot	Back Side	0.121	0.019	N/A	N/A	0.564	0.564
	Front Side	0.120	0.012	N/A	N/A	0.415	0.415
	Left Edge	N/A	N/A	N/A	N/A	N/A	N/A
	Right Edge	0.107	0.014	N/A	N/A	0.251	0.251
	Top Edge	0.103	0.008	N/A	N/A	0.138	0.138
	Bottom Edge	N/A	N/A	N/A	N/A	N/A	N/A
Product Specific 10-g SAR	Back Side	N/A	N/A	0.694	0.383	N/A	0.694
	Front Side	N/A	N/A	0.159	0.395	N/A	0.395
	Left Edge	N/A	N/A	N/A	N/A	N/A	N/A
	Right Edge	N/A	N/A	0.205	0.212	N/A	0.212
	Top Edge	N/A	N/A	0.031	0.111	N/A	0.111
	Bottom Edge	N/A	N/A	N/A	N/A	N/A	N/A

About Wi-Fi and Antenna 1

Test Position \ $SAR_{1g/10g}$(W/kg)		Antenna 1	Wi-Fi	MAX. $\Sigma SAR_{1g/10g}$
Left, Cheek		0.266	0.196	0.462
Left, Tilt		0.088	0.032	0.120
Right, Cheek		0.150	0.050	0.200
Right, Tilt		0.089	0.051	0.140
Body-worn	Back Side	0.419	0.299	0.718
	Front Side	0.249	0.104	0.353
Hotspot	Back Side	0.382	0.564	0.946
	Front Side	0.360	0.415	0.775
	Left Edge	0.143	N/A	0.143
	Right Edge	0.082	0.251	0.333
	Top Edge	N/A	0.138	0.138
	Bottom Edge	0.529	N/A	0.529
Product Specific 10-g SAR	Back Side	N/A	0.694	0.694
	Front Side	N/A	0.395	0.395
	Left Edge	N/A	N/A	0
	Right Edge	N/A	0.212	0.212
	Top Edge	N/A	0.111	0.111
	Bottom Edge	N/A	N/A	0
Note: 1.The value with blue color is the maximum $\Sigma SAR_{1g/10g}$ Value. 2.MAX. $\Sigma SAR_{1g/10g}$ =Unlicensed SAR_{MAX} +Licensed SAR_{MAX}				

MAX. ΣSAR_{1g} =0.946W/kg<1.6W/kg , MAX. ΣSAR_{10g} = 0.694W/kg<4W/kg, so the Simultaneous transimition SAR with volum scan are not required for Wi-Fi and Antenna 1.

About Wi-Fi and Antenna 2

Test Position \ $SAR_{1g/10g}$(W/kg)		Antenna 2	Wi-Fi	MAX. ΣSAR_{1g}
Left, Cheek		0.446	0.196	0.642
Left, Tilt		0.229	0.032	0.261
Right, Cheek		0.752	0.050	0.802
Right, Tilt		0.417	0.051	0.468
Body-worn	Back Side	0.397	0.299	0.696
	Front Side	0.283	0.104	0.387
Hotspot	Back Side	0.625	0.564	1.189

	Front Side	0.388	0.415	0.803
	Left Edge	0.314	N/A	0.314
	Right Edge	N/A	0.251	0.251
	Top Edge	0.121	0.138	0.259
	Bottom Edge	N/A	N/A	0
Product Specific 10-g SAR	**Back Side**	N/A	0.694	0.694
	Front Side	N/A	0.395	0.395
	Left Edge	N/A	N/A	0
	Right Edge	N/A	0.212	0.212
	Top Edge	N/A	0.111	0.111
	Bottom Edge	N/A	N/A	N/A
Note: 1.The value with blue color is the maximum $\Sigma SAR_{1g/10g}$ Value. 2.MAX. $\Sigma SAR_{1g/10g}$ =Unlicensed SAR_{MAX} +Licensed SAR_{MAX}				

MAX. ΣSAR_{1g} =1.189W/kg<1.6W/kg, MAX.ΣSAR_{10g}=0.694W/kg<4W/kg, so the Simultaneous transimition SAR with volum scan are not required for Wi-Fi and Antenna 2.

Conclusion:

According to the KDB 690783 D01 section 1) d) i), when the sum of 1-g/10-g SAR applies for simultaneous transmission SAR test exclusion, the highest sum of 1-g/10-g SAR according to the highest reported stand-alone SAR values is used, and the highest Reported SAR for simultaneous transmission exposure conditions is 1.189 W/kg and 0.694W/kg

11 Measurement Uncertainty

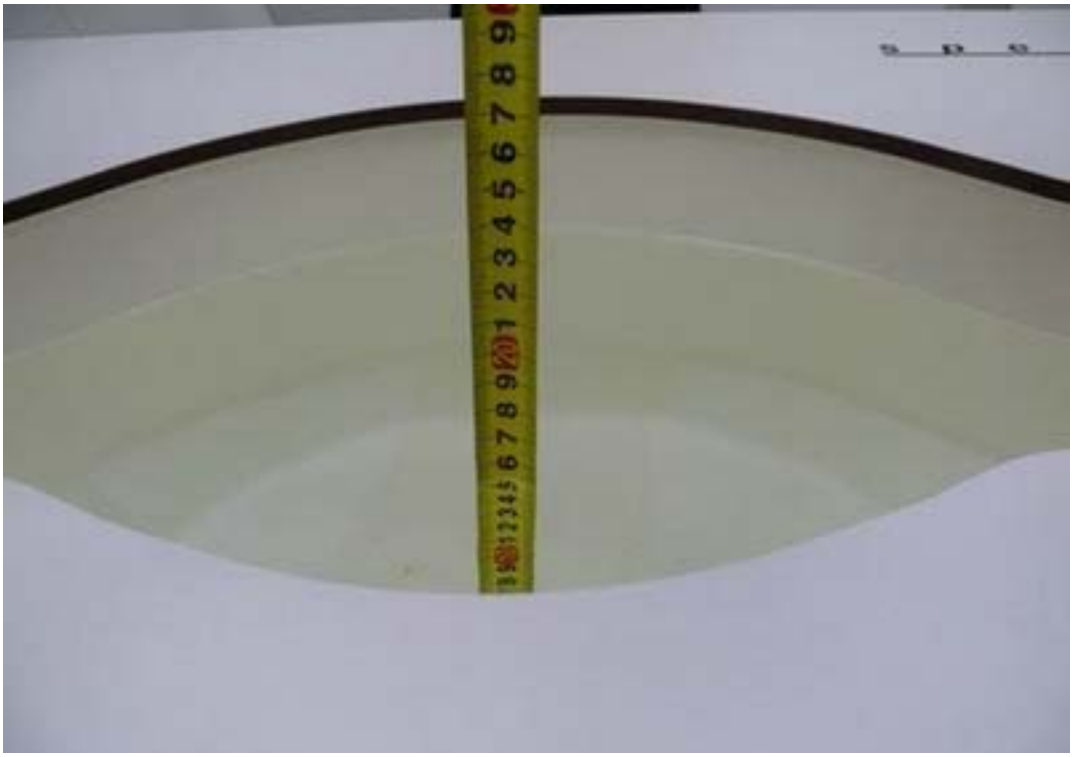
Per KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg, the extensive SAR measurement uncertainty analysis described in IEEE Std 1528- 2013 is not required in SAR reports submitted for equipment approval.

ANNEX A: Test Layout

Tissue Simulating Liquids

For the measurement of the field distribution inside the flat phantom with DASY, the phantom must be filled with around 25 liters of homogeneous body tissue simulating liquid. For Head and Body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15 cm, which is shown in Picture 3 and Picture 4.

Picture 3: liquid depth in the head Phantom



Picture 4: Liquid depth in the flat Phantom

ANNEX B: System Check Results

Plot1 System Performance Check at 835 MHz Head TSL

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d020

Date: 10/20/2018

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

Medium parameters used: f = 835 MHz; σ = 0.91 mho/m; ε_r = 42.0; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN3677; ConvF(9.10, 9.10, 9.10); Calibrated: 5/29/2018;

Electronics: DAE4 SN1317; Calibrated: 3/23/2018

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

d=15mm, Pin=250mW/Area Scan (41x121x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 2.64 mW/g

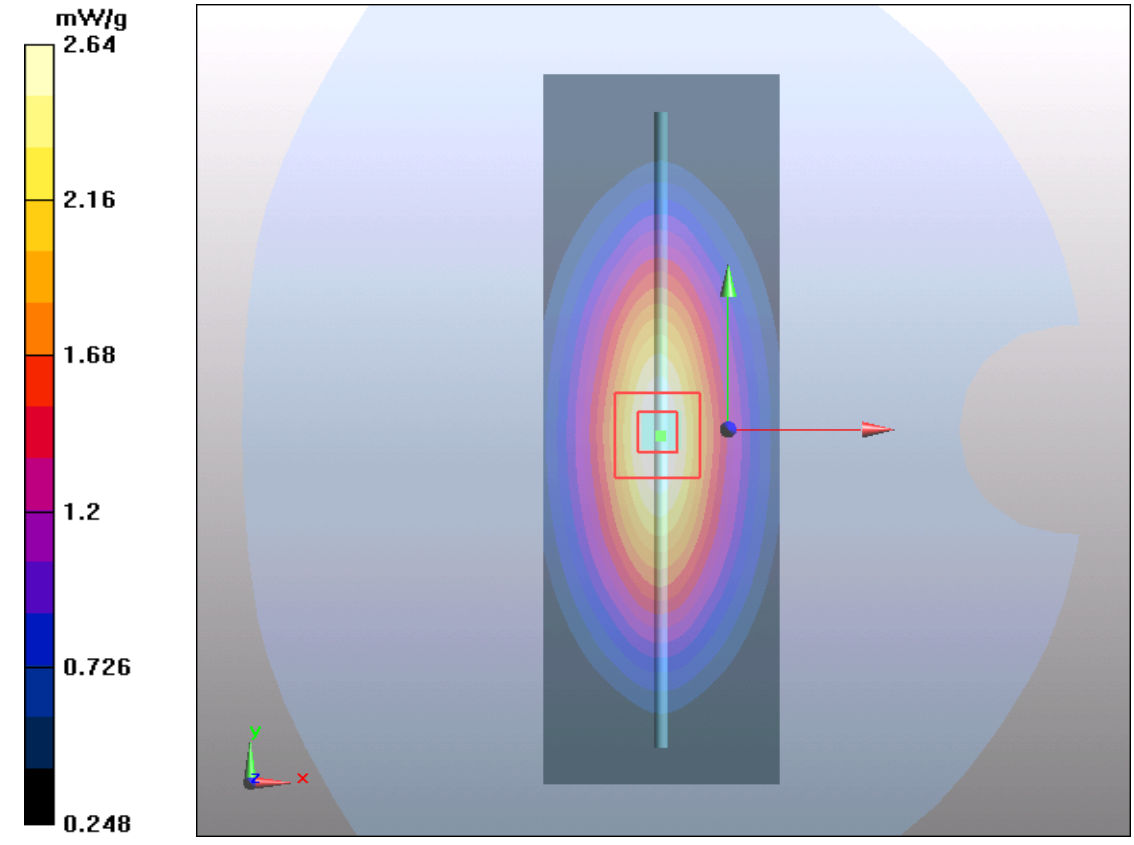
d=15mm, Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 54.4 V/m; Power Drift = -0.076 dB

Peak SAR (extrapolated) = 3.67 W/kg

SAR(1 g) = 2.44 mW/g; SAR(10 g) = 1.6 mW/g

Maximum value of SAR (measured) = 2.64 mW/g



Plot 2 System Performance Check at 835 MHz Body TSL

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d020

Date: 10/21/2018

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

Medium parameters used: f = 835 MHz; σ = 0.97 mho/m; ε_r = 53.8; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN3677; ConvF(9.32, 9.32, 9.32); Calibrated: 5/29/2018;

Electronics: DAE4 SN1317; Calibrated: 3/23/2018

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

d=15mm, Pin=250mW/Area Scan (41x121x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 2.58 mW/g

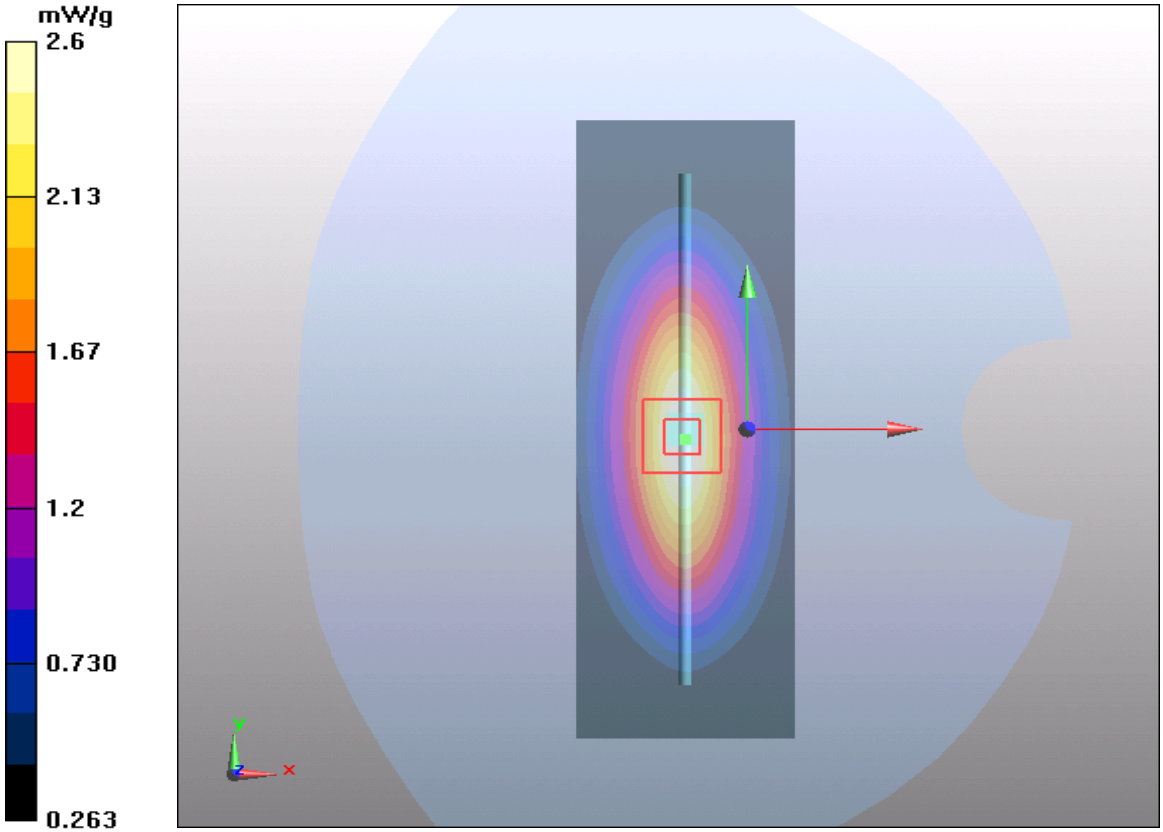
d=15mm, Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 51.9 V/m; Power Drift = -0.058 dB

Peak SAR (extrapolated) = 3.5 W/kg

SAR(1 g) = 2.41 mW/g; SAR(10 g) = 1.6 mW/g

Maximum value of SAR (measured) = 2.6 mW/g



Plot 3 System Performance Check at 1900 MHz Head TSL

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d060

Date: 10/28/2018

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

Medium parameters used: f = 1900 MHz; σ = 1.39 mho/m; ε_r = 40.7; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN3677; ConvF(7.96, 7.96, 7.96); Calibrated: 5/29/2018;

Electronics: DAE4 SN1317; Calibrated: 3/23/2018

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

d=10mm, Pin=250mW/Area Scan (41x71x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 11.3 mW/g

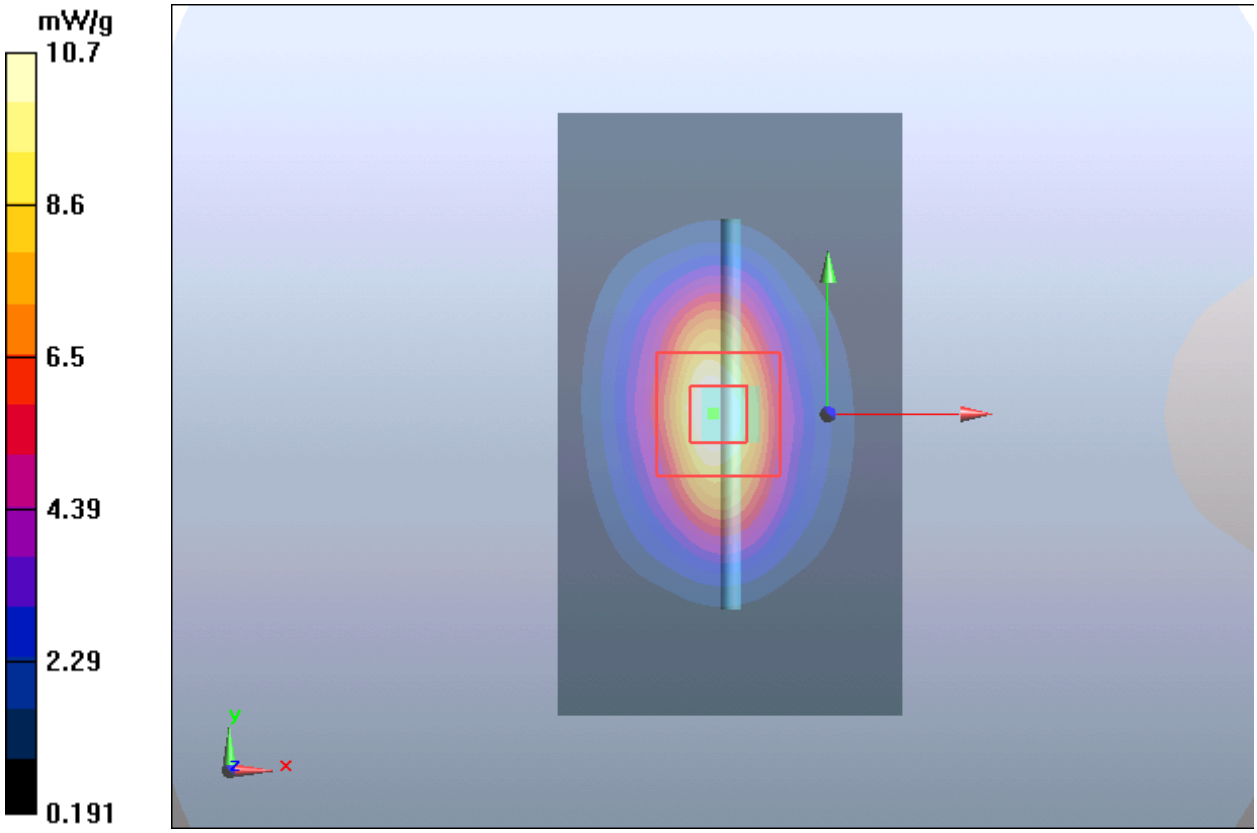
d=10mm, Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 85.5 V/m; Power Drift = 0.028 dB

Peak SAR (extrapolated) = 17.8 W/kg

SAR(1 g) = 9.88 mW/g; SAR(10 g) = 4.9 mW/g

Maximum value of SAR (measured) = 10.7 mW/g



Plot 4 System Performance Check at 1900 MHz Body TSL

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d060

Date: 10/31/2018

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

Medium parameters used: f = 1900 MHz; σ = 1.51 mho/m; ε_r = 52.8; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN3677; ConvF(7.70, 7.70, 7.70); Calibrated: 5/29/2018;

Electronics: DAE4 SN1317; Calibrated: 3/23/2018

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

d=10mm, Pin=250mW/Area Scan (41x71x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 12.2 mW/g

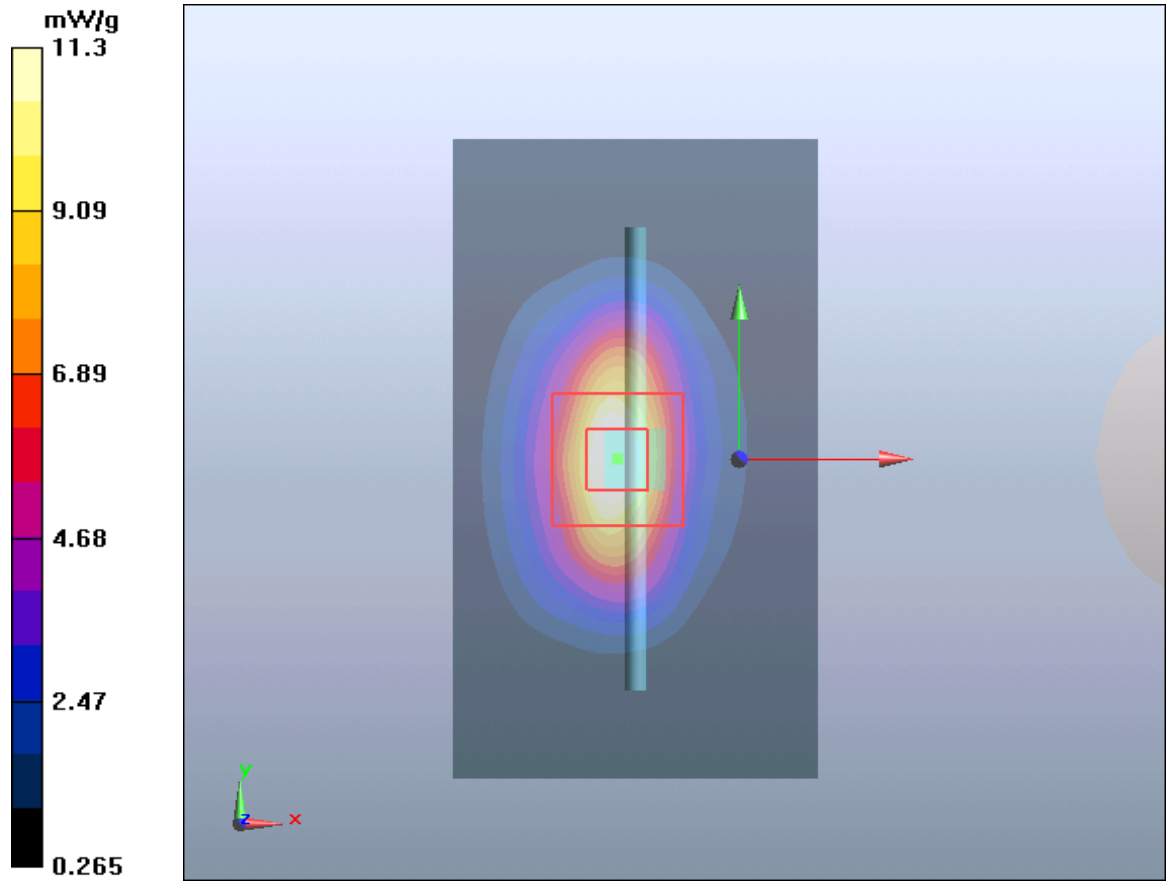
d=10mm, Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 82.3 V/m; Power Drift = 0.068 dB

Peak SAR (extrapolated) = 17.8 W/kg

SAR(1 g) = 9.93 mW/g; SAR(10 g) = 5.25 mW/g

Maximum value of SAR (measured) = 11.3 mW/g



Plot 5 System Performance Check at 2450 MHz Head TSL

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 786

Date: 10/23/2018

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

Medium parameters used: f = 2450 MHz; σ = 1.85 mho/m; ε_r = 39.7; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN3677; ConvF(7.57, 7.57, 7.57); Calibrated: 5/29/2018;

Electronics: DAE4 SN1317; Calibrated: 3/23/2018

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

d=10mm, Pin=250mW/Area Scan (41x71x1): Measurement grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 18.2 mW/g

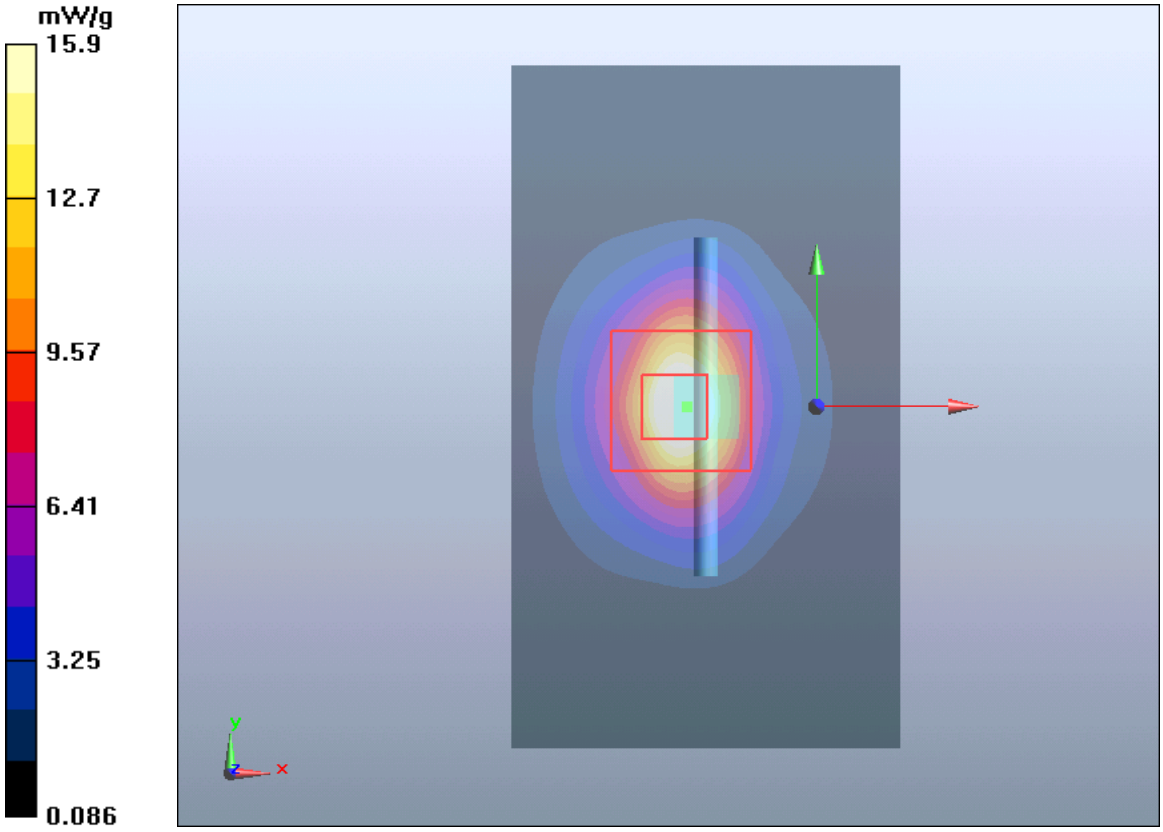
d=10mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 88.8 V/m; Power Drift = 0.075 dB

Peak SAR (extrapolated) = 30 W/kg

SAR(1 g) = 13.7 mW/g; SAR(10 g) = 6.22 mW/g

Maximum value of SAR (measured) = 15.9 mW/g



Plot 6 System Performance Check at 2450 MHz Body TSL

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 786

Date: 10/23/2018

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

Medium parameters used: f = 2450 MHz; σ = 1.97 mho/m; ε_r = 51.1; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN3677; ConvF(7.53, 7.53, 7.53); Calibrated: 5/29/2018;

Electronics: DAE4 SN1317; Calibrated: 3/23/2018

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

d=10mm, Pin=250mW/Area Scan (41x71x1): Measurement grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 16 mW/g

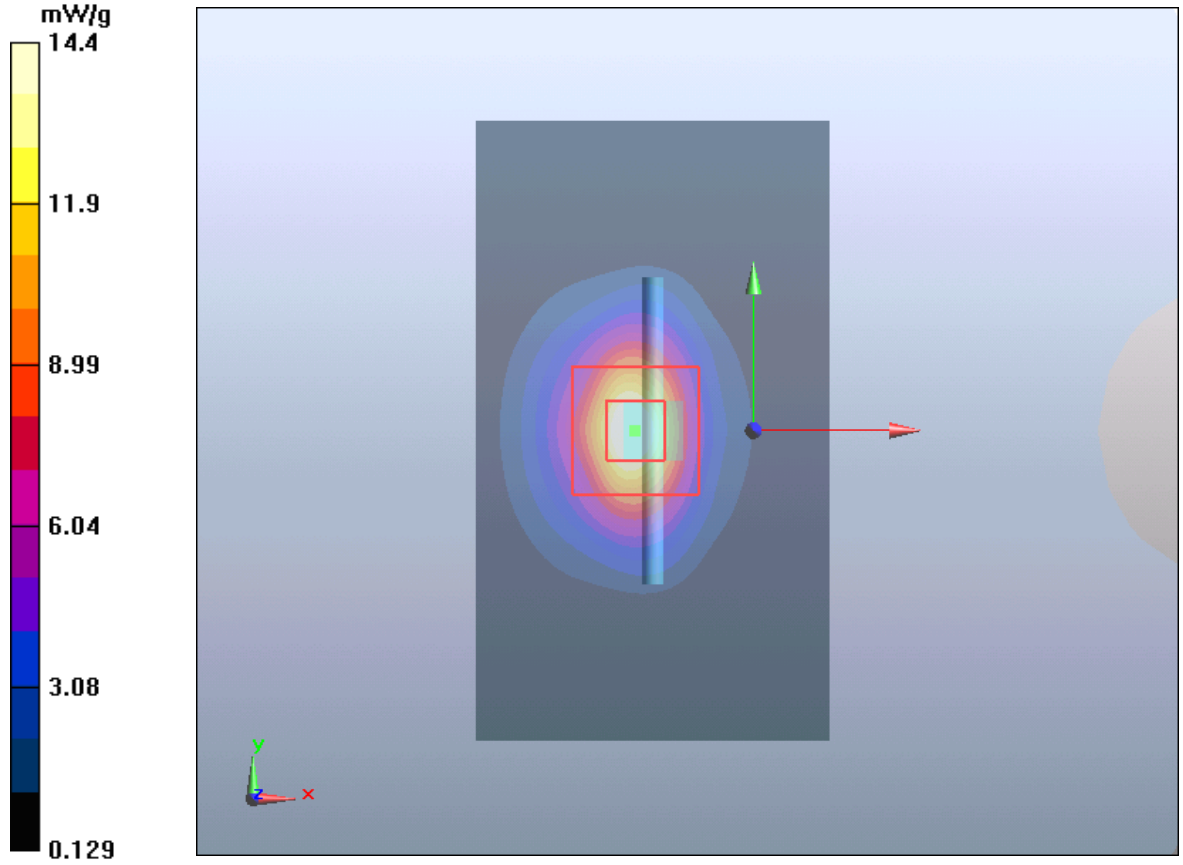
d=10mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 81.2 V/m; Power Drift = 0.003 dB

Peak SAR (extrapolated) = 25.4 W/kg

SAR(1 g) = 12.5 mW/g; SAR(10 g) = 6.20 mW/g

Maximum value of SAR (measured) = 14.4 mW/g



Plot 7 System Performance Check at 2600 MHz Head TSL

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN: 1025

Date: 10/23/2018

Communication System: CW; Frequency: 2600 MHz

Medium parameters used: f = 2600 MHz; σ =2.02 mho/m; ε_r = 39.3; ρ = 1000 kg/m^3

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN3677; ConvF(7.28, 7.28, 7.28); Calibrated: 5/29/2018;

Electronics: DAE4 SN1317; Calibrated: 3/23/2018

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

d=10mm, Pin=250mW/Area Scan (41x71x1): Measurement grid:dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 17.439 mW/g

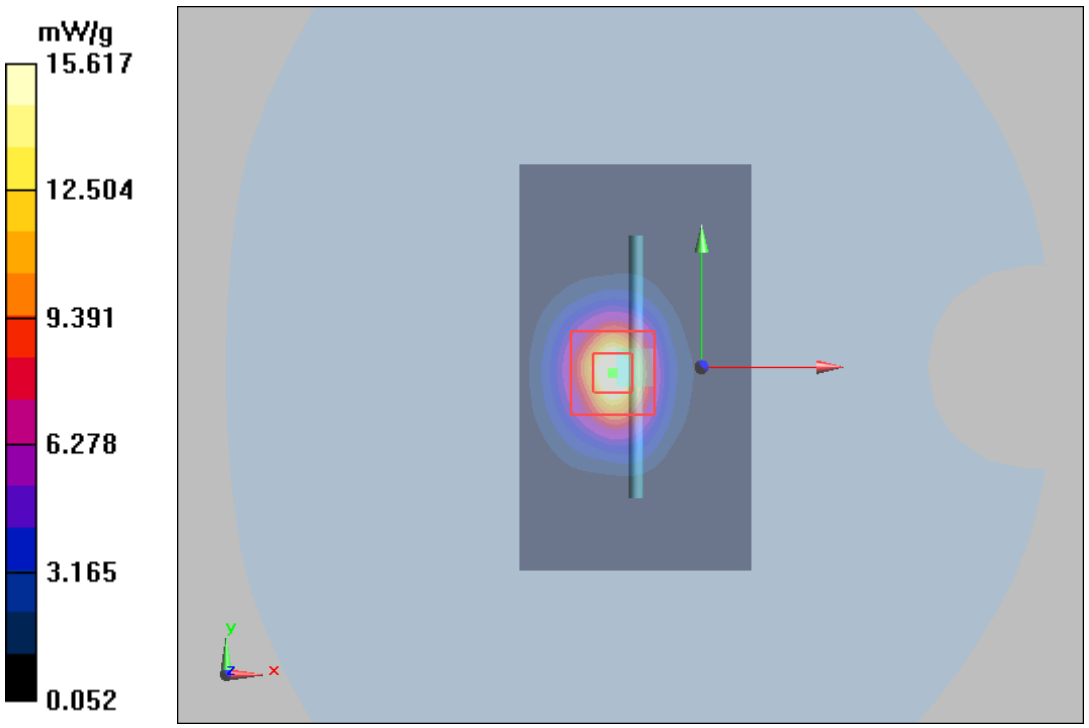
d=10mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 87.998 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 31.858 W/kg

SAR(1 g) = 13.9 mW/g; SAR(10 g) = 6.07 mW/g

Maximum value of SAR (measured) = 15.617 mW/g



Plot 8 System Performance Check at 2600 MHz Body TSL

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN: 1025

Date: 10/23/2018

Communication System: CW; Frequency: 2600 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2600 MHz; σ = 2.16 mho/m; ε_r = 50.7; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN3677; ConvF(7.16, 7.16, 7.16); Calibrated: 5/29/2018;

Electronics: DAE4 SN1317; Calibrated: 3/23/2018

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

d=10mm, Pin=250mW /Area Scan (41x71x1): Measurement grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 17.7 mW/g

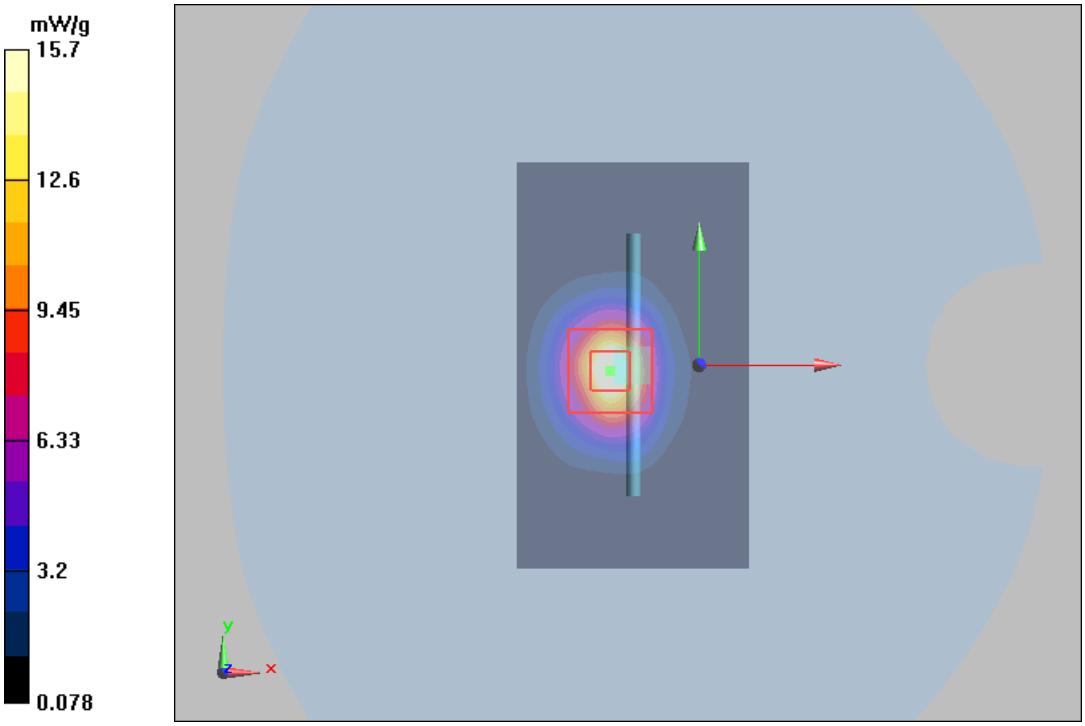
d=10mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 74 V/m; Power Drift = -0.0027 dB

Peak SAR (extrapolated) = 28.5 W/kg

SAR(1 g) = 13.5 mW/g; SAR(10 g) = 5.99 mW/g

Maximum value of SAR (measured) = 15.7 mW/g



Plot 9 System Performance Check at 5250 MHz Head TSL

DUT: Dipole 5250 MHz; Type: D5GHzV2; Serial: D5GHzV2 - SN: 1151

Date: 10/24/2018

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

Medium parameters used: f = 5250 MHz; σ = 4.83 mho/m; ε_r = 36.9; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN3677; ConvF(5.60, 5.60, 5.60); Calibrated: 5/29/2018;

Electronics: DAE4 SN1317; Calibrated: 3/23/2018

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

d=10mm, Pin=100mW/Area Scan (61x101x1): Measurement grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 9.14 mW/g

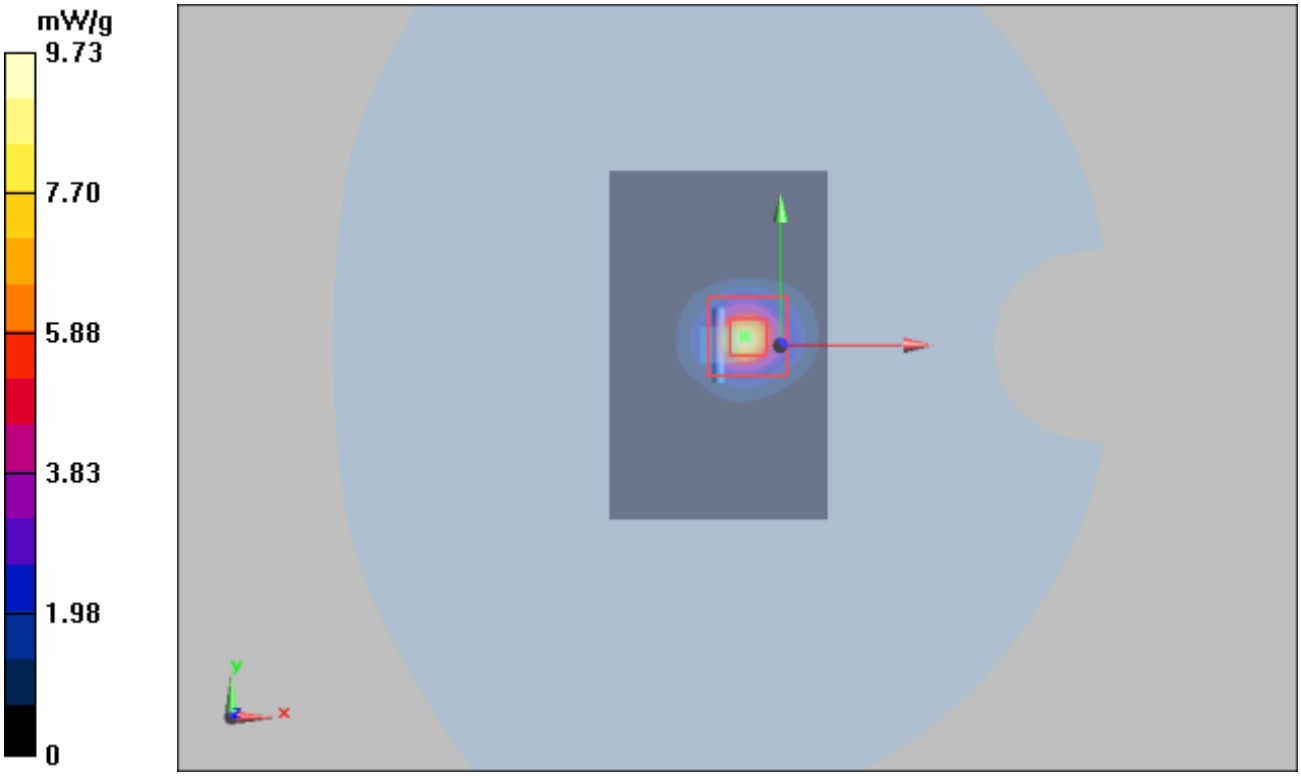
d=10mm, Pin=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 33.6 V/m; Power Drift = -0.095 dB

Peak SAR (extrapolated) = 52.2 W/kg

SAR(1 g) = 7.87 mW/g; SAR(10 g) = 2.25 mW/g

Maximum value of SAR (measured) = 9.73 mW/g



Plot 10 System Performance Check at 5250 MHz Body TSL

DUT: Dipole 5250 MHz; Type: D5GHzV2; Serial: D5GHzV2 - SN: 1151

Date: 10/24/2018

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

Medium parameters used: f = 5250 MHz; σ = 5.42 mho/m; ε_r = 46.7; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN3677; ConvF(5.04, 5.04, 5.04); Calibrated: 5/29/2018;

Electronics: DAE4 SN1317; Calibrated: 3/23/2018

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

d=10mm, Pin=250mW/Area Scan (61x101x1): Measurement grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 7.69 mW/g

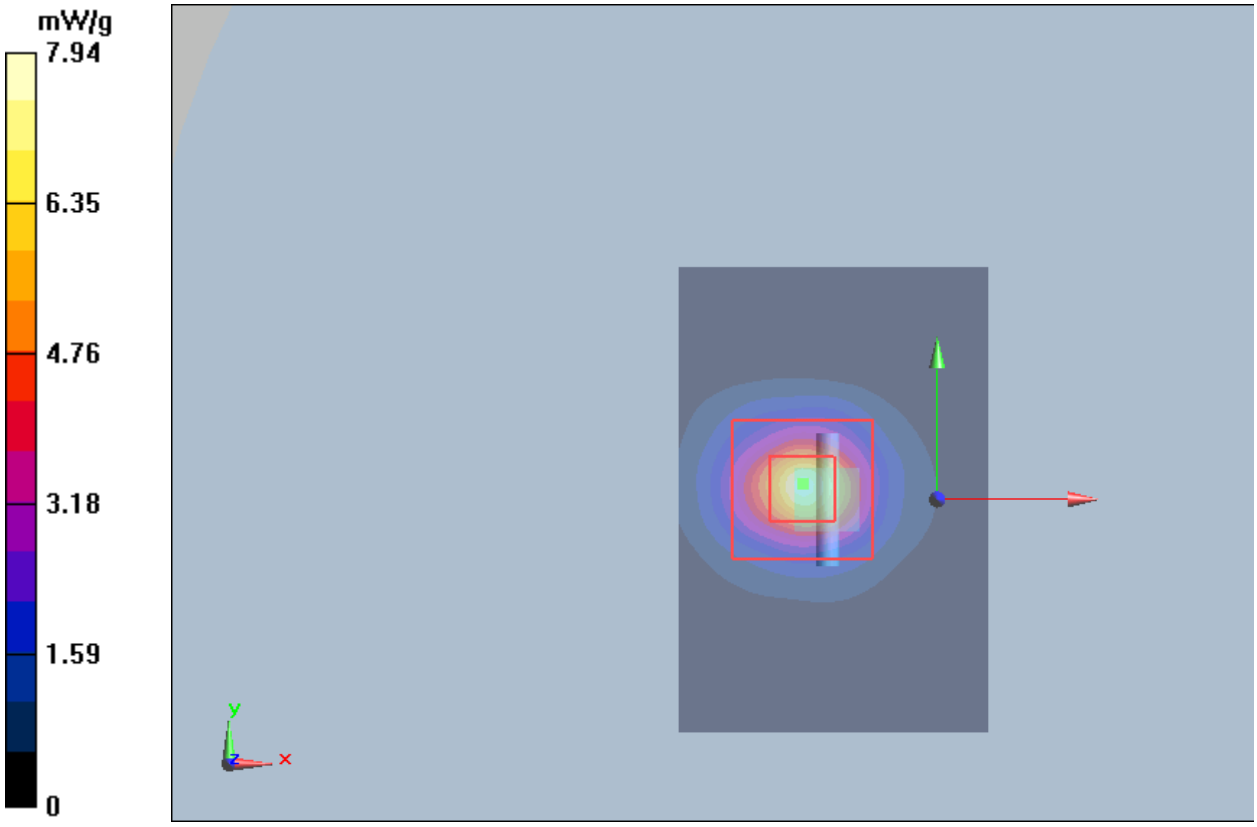
d=10mm, Pin=250mW/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 36.3 V/m; Power Drift = 0.0277 dB

Peak SAR (extrapolated) = 47.7 W/kg

SAR(1 g) = 7.46 mW/g; SAR(10 g) = 2.26 mW/g

Maximum value of SAR (measured) = 7.94 mW/g



Plot 11 System Performance Check at 5600 MHz Head TSL

DUT: Dipole 5600 MHz; Type: D5GHzV2; Serial: D5GHzV2 - SN: 1151

Date: 10/26/2018

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

Medium parameters used: f = 5600 MHz; σ = 5.24 mho/m; ε_r = 35.6; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN3677; ConvF(4.87, 4.87, 4.87); Calibrated: 5/29/2018;

Electronics: DAE4 SN1317; Calibrated: 3/23/2018

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

d=10mm, Pin=100mW/Area Scan (61x101x1): Measurement grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 8.25 mW/g

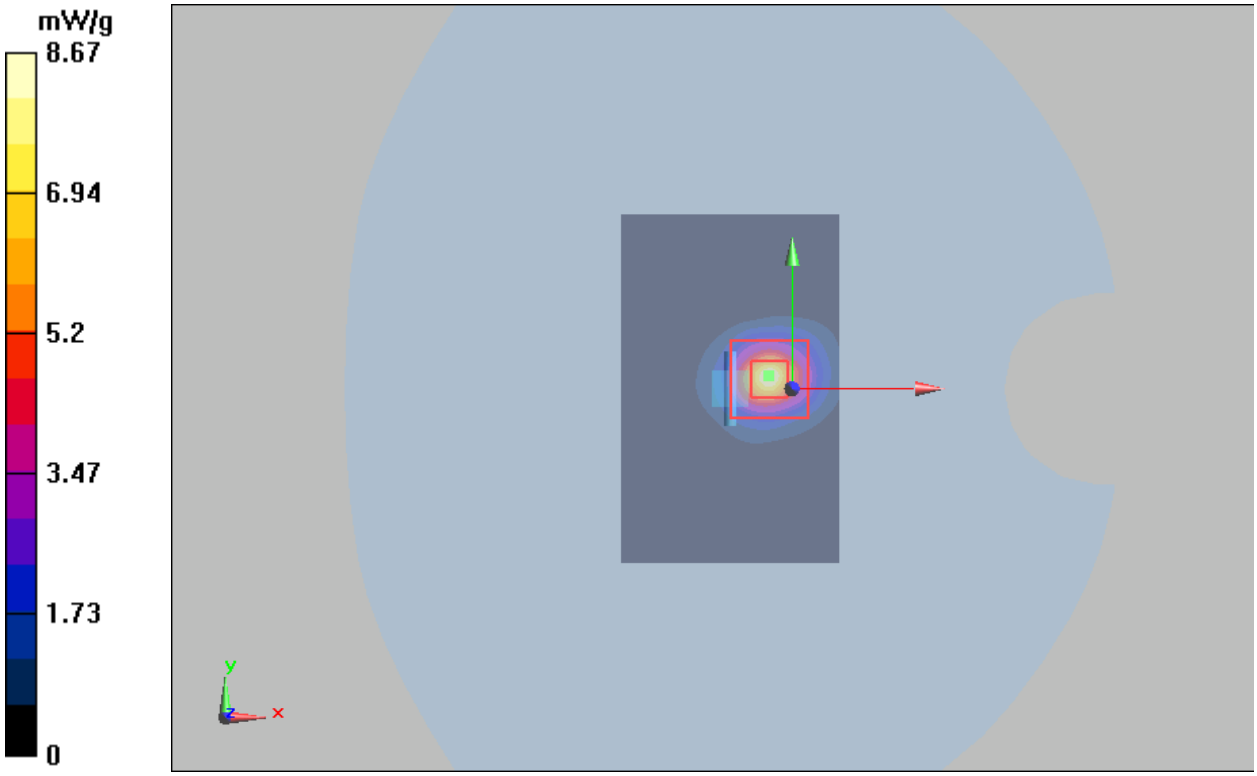
d=10mm, Pin=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 23.1 V/m; Power Drift = -0.028 dB

Peak SAR (extrapolated) = 22.9 W/kg

SAR(1 g) = 7.81 mW/g; SAR(10 g) = 2.27 mW/g

Maximum value of SAR (measured) = 8.67 mW/g



Plot 12 System Performance Check at 5600 MHz Body TSL

DUT: Dipole 5600 MHz; Type: D5GHzV2; Serial: D5GHzV2 - SN: 1151

Date: 10/26/2018

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

Medium parameters used: f = 5600 MHz; σ = 6.00 mho/m; ε_r = 46.7; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN3677; ConvF(4.27, 4.27, 4.27); Calibrated: 5/29/2018;

Electronics: DAE4 SN1317; Calibrated: 3/23/2018

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

d=10mm, Pin=250mW/Area Scan (61x101x1): Measurement grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 7.84 mW/g

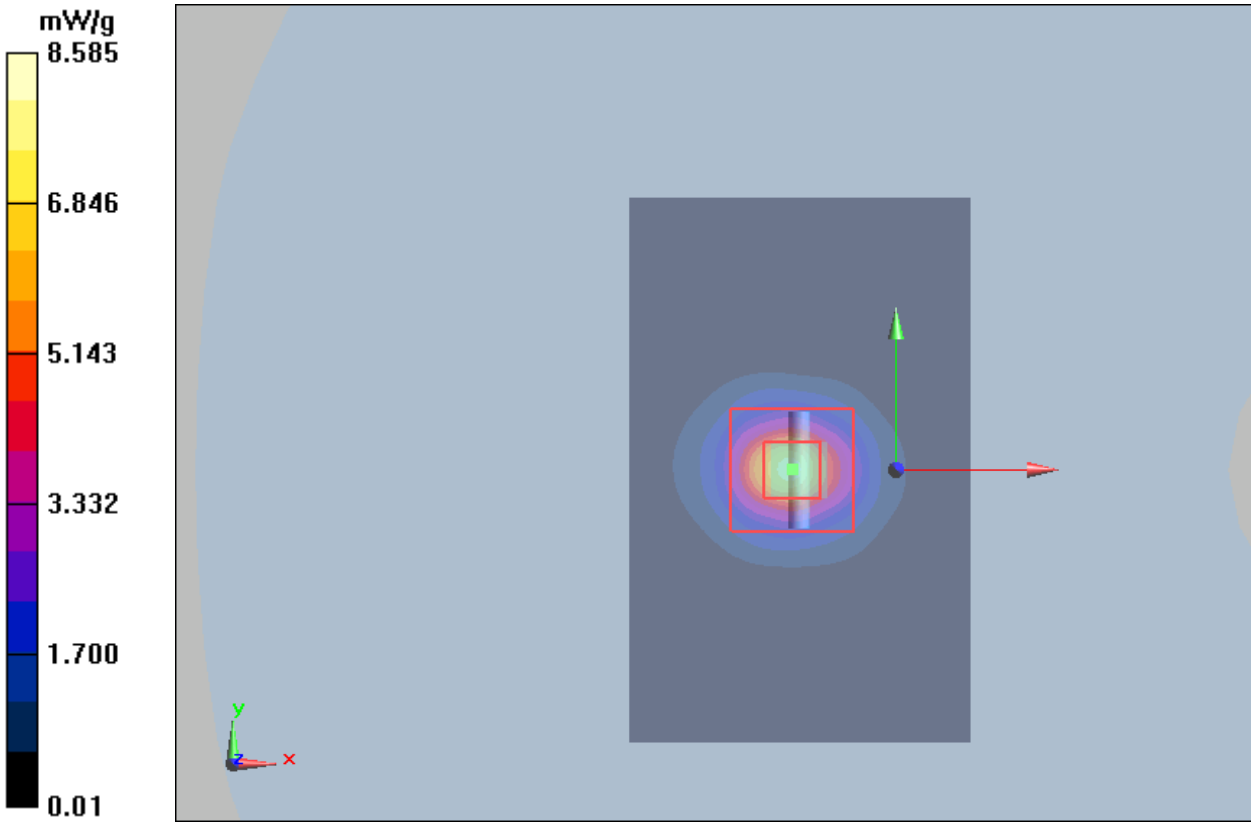
d=10mm, Pin=250mW/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 38 V/m; Power Drift = -0.018 dB

Peak SAR (extrapolated) = 22.6 W/kg

SAR(1 g) = 8.10 mW/g; SAR(10 g) = 2.11 mW/g

Maximum value of SAR (measured) = 8.585 mW/g



Plot 13 System Performance Check at 5750 MHz Head TSL

DUT: Dipole 5750 MHz; Type: D5GHzV2; Serial: D5GHzV2 - SN: 1151

Date: 10/25/2018

Communication System: CW; Frequency: 5750 MHz;Duty Cycle: 1:1

Medium parameters used: f = 5750 MHz; σ = 5.38 mho/m; ε_r = 35.4; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN3677; ConvF(4.99, 4.99, 4.99); Calibrated: 5/29/2018;

Electronics: DAE4 SN1317; Calibrated: 3/23/2018

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

d=10mm, Pin=100mW/Area Scan (61x101x1): Measurement grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 8.31 mW/g

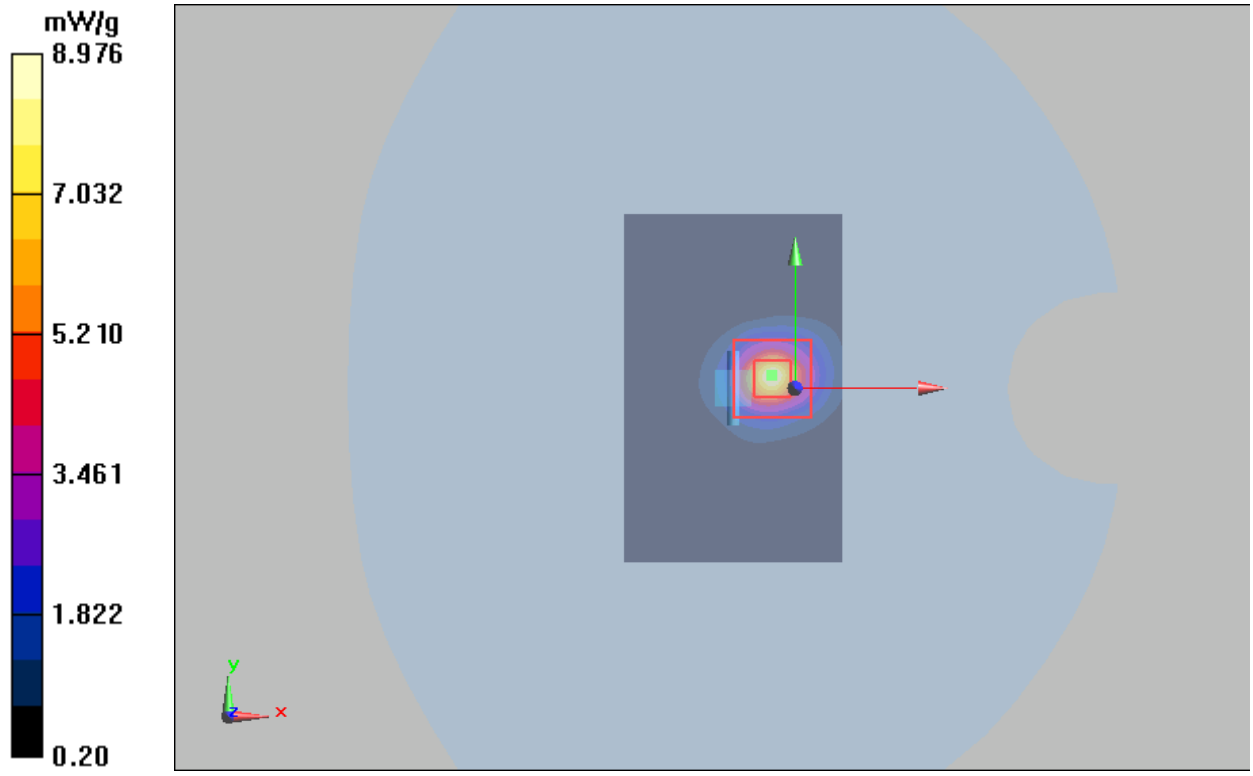
d=10mm, Pin=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 23.1 V/m; Power Drift = 0.044 dB

Peak SAR (extrapolated) = 23.4 W/kg

SAR(1 g) = 7.66 mW/g; SAR(10 g) = 2.27 mW/g

Maximum value of SAR (measured) = 8.976 mW/g



Plot 14 System Performance Check at 5750 MHz Body TSL

DUT: Dipole 5750 MHz; Type: D5GHzV2; Serial: D5GHzV2 - SN: 1151

Date: 10/25/2018

Communication System: CW; Frequency: 5750 MHz;Duty Cycle: 1:1

Medium parameters used: f = 5750 MHz; σ = 6.07 mho/m; ε_r = 47.7; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN3677; ConvF(4.43, 4.43, 4.43); Calibrated: 5/29/2018;

Electronics: DAE4 SN1317; Calibrated: 3/23/2018

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

d=10mm, Pin=250mW/Area Scan (61x101x1): Measurement grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 7.84 mW/g

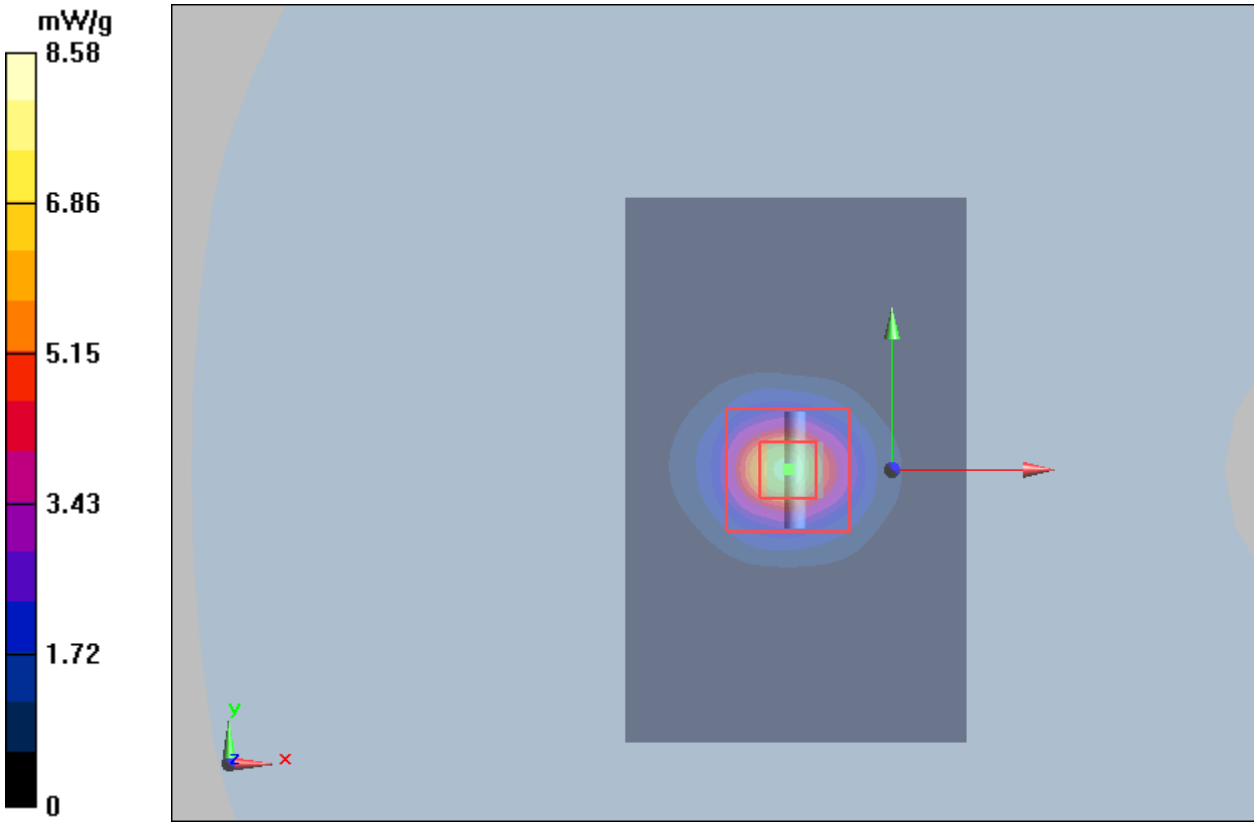
d=10mm, Pin=250mW/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 38 V/m; Power Drift = -0.018 dB

Peak SAR (extrapolated) = 22.6 W/kg

SAR(1 g) = 7.15 mW/g; SAR(10 g) = 1.99 mW/g

Maximum value of SAR (measured) = 8.58 mW/g



ANNEX C: Highest Graph Results

Plot 15GSM 850 Left Cheek Middle (Antenna 1)

Date: 10/20/2018

Communication System: UID 0, GSM 850 (0); Frequency: 836.6 MHz;Duty Cycle: 1:8.30042

Medium parameters used: f = 837 MHz; σ = 0.916 S/m; ε_r = 41.951; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Left Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN3677; ConvF(9.10, 9.10, 9.10); Calibrated: 5/29/2018;

Electronics: DAE4 SN1317; Calibrated: 3/23/2018

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Left Cheek Middle/Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.0465 W/kg

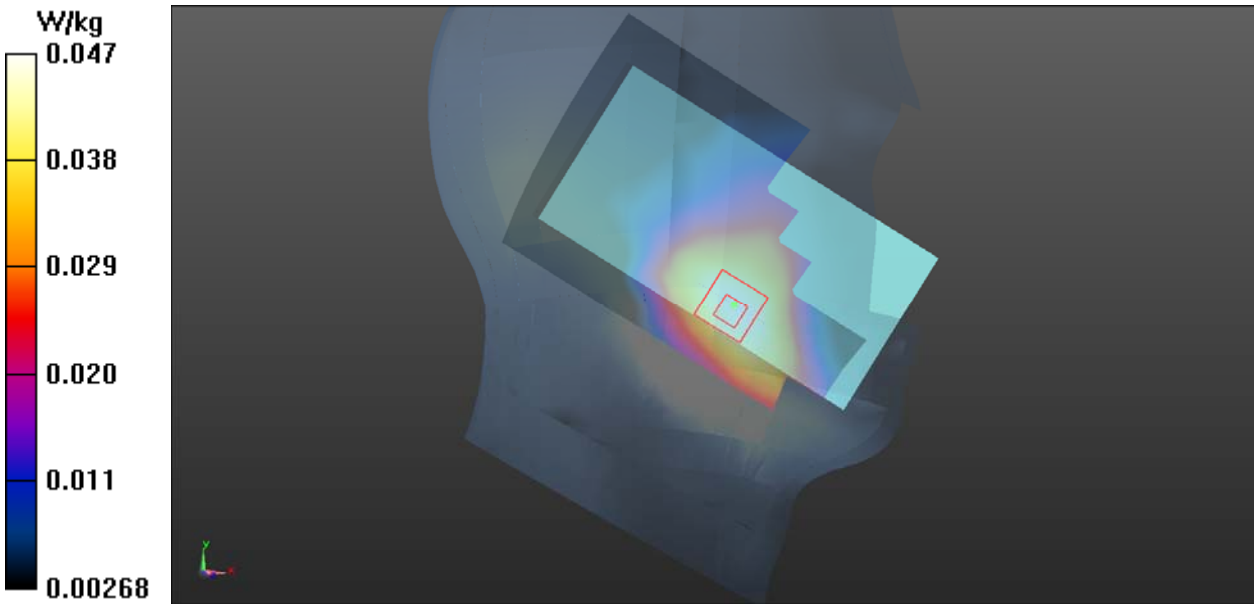
Left Cheek Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 0.7490 V/m; Power Drift = 0.068 dB

Peak SAR (extrapolated) = 0.0560 W/kg

SAR(1 g) = 0.045 W/kg; SAR(10 g) = 0.033 W/kg

Maximum value of SAR (measured) = 0.047W/kg



Plot 16GSM 850 Back Side Middle (Antenna 1, Distance 15mm)

Date: 10/21/2018

Communication System: UID 0, GSM 850 (0); Frequency: 836.6 MHz;Duty Cycle: 1:8.30042

Medium parameters used: f = 837 MHz; σ = 0.974 S/m; ε_r = 53.795; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN3677; ConvF(9.32, 9.32, 9.32); Calibrated: 5/29/2018;

Electronics: DAE4 SN1317; Calibrated: 3/23/2018

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Back Side Middle/Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.201 W/kg

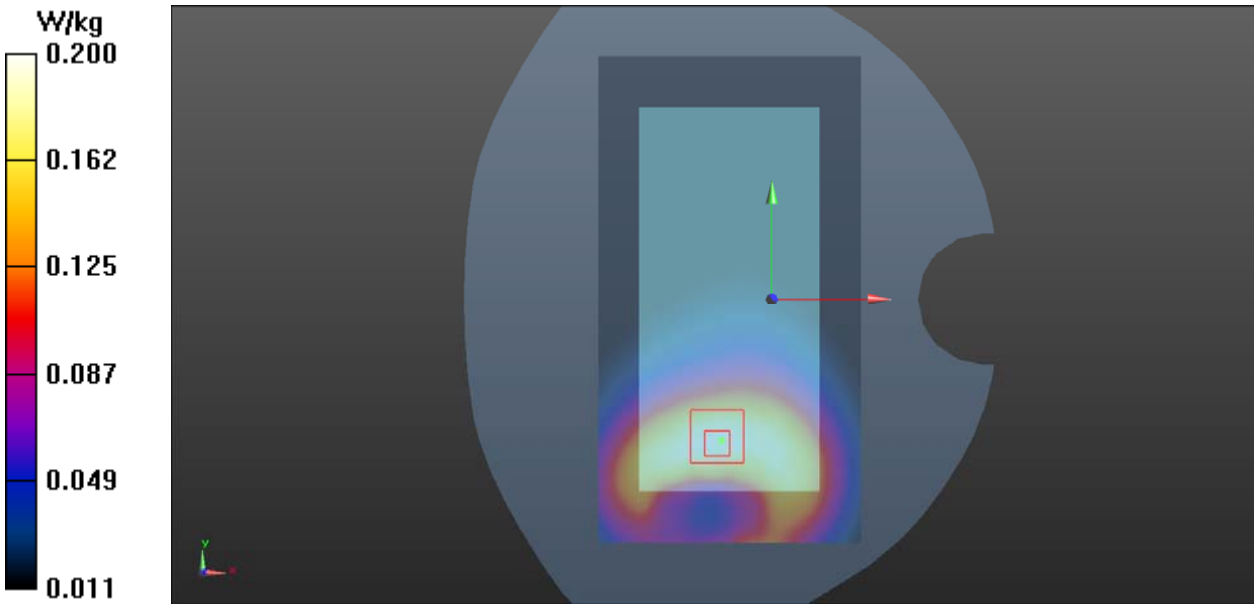
Back Side Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 4.791 V/m; Power Drift = 0.10 dB

Peak SAR (extrapolated) = 0.253 W/kg

SAR(1 g) = 0.187 W/kg; SAR(10 g) = 0.129 W/kg

Maximum value of SAR (measured) = 0.200 W/kg

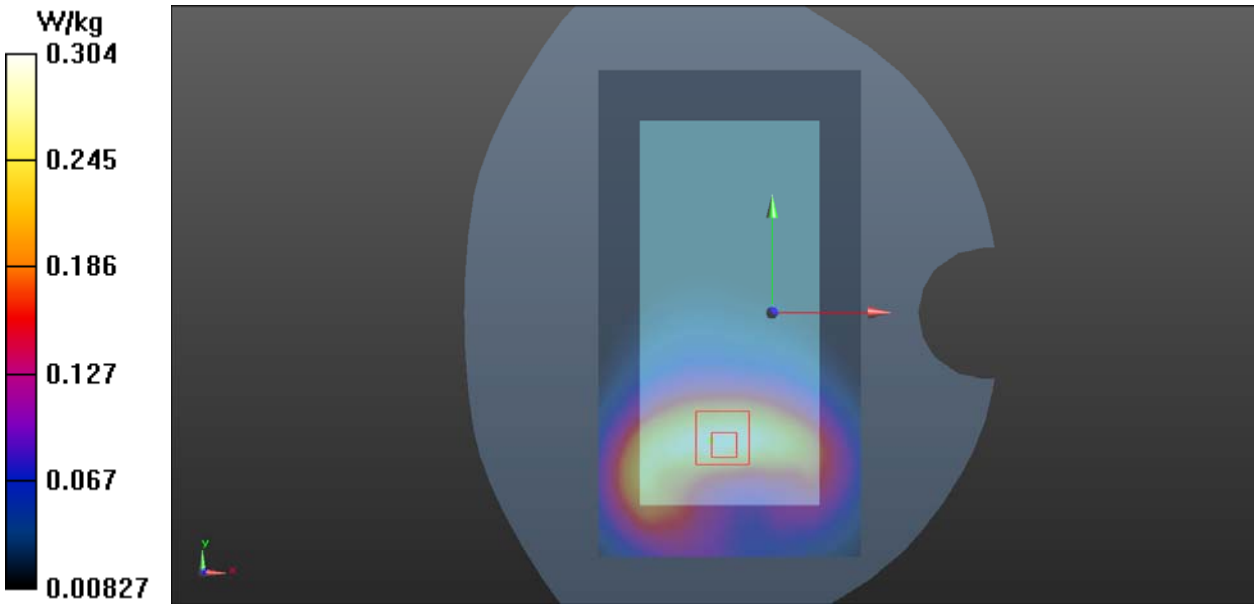


Plot 17GSM 850 GPRS (4Txslots) Back Side Middle (Antenna 1, Distance 10mm)

Date: 10/21/2018
Communication System: UID 0, GSM 850 (0); Frequency: 836.6 MHz;Duty Cycle: 1:2.07
Medium parameters used: f = 837 MHz; σ = 0.974 S/m; ε_r = 53.795; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3677; ConvF(9.32, 9.32, 9.32); Calibrated: 5/29/2018;
Electronics: DAE4 SN1317; Calibrated: 3/23/2018
Phantom: SAM1; Type: SAM; Serial: TP-1534
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Back Side Middle /Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.394 W/kg

Back Side Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.680 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 0.462 W/kg
SAR(1 g) = 0.287 W/kg; SAR(10 g) = 0.124 W/kg
Maximum value of SAR (measured) = 0.304 W/kg



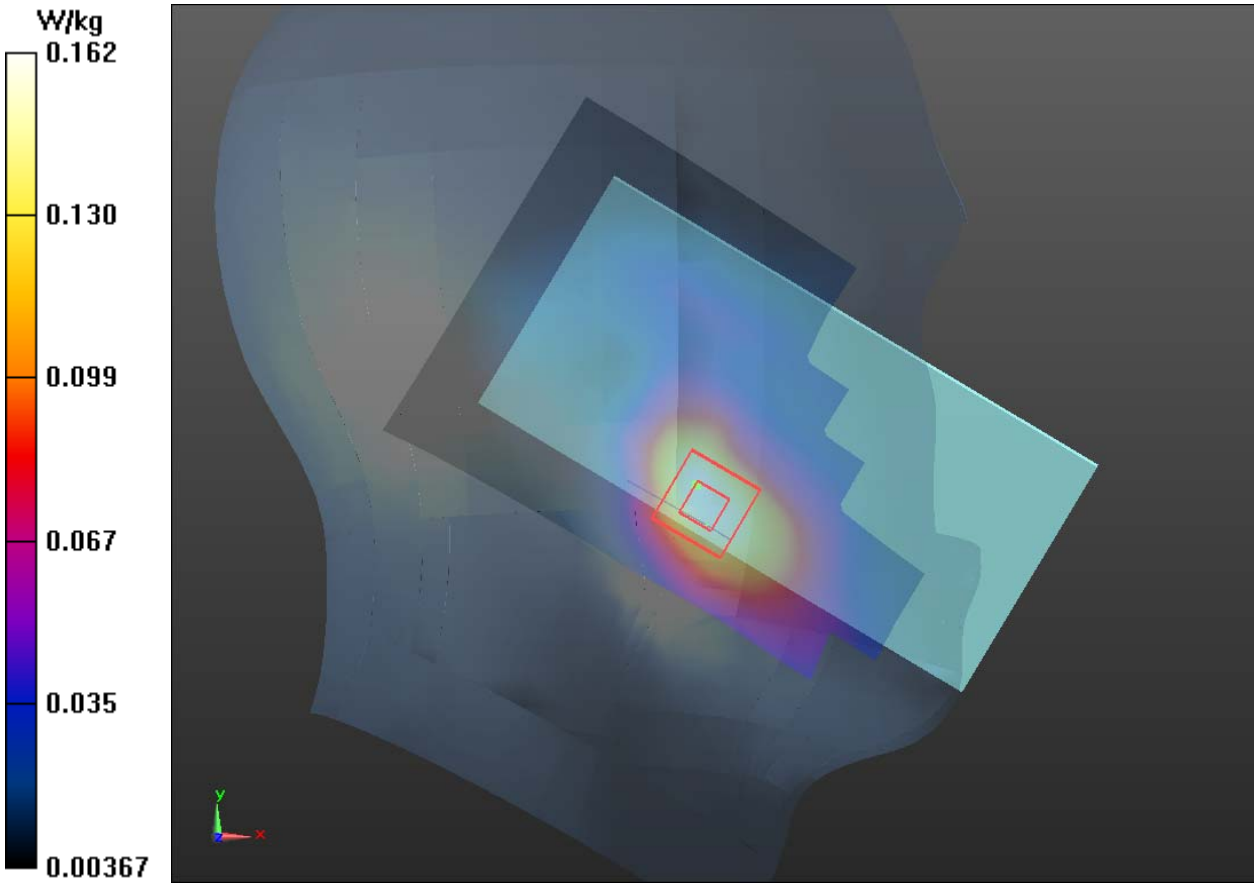
Plot 18GSM 1900 Left Cheek Middle (Antenna 1)

Date: 10/28/2018
Communication System: UID 0, GSM 1900 (0); Frequency: 1880 MHz;Duty Cycle: 1:8.30042
Medium parameters used: f = 1880 MHz; σ = 1.371 S/m; ε_r = 40.715; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Left Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3677; ConvF(7.96, 7.96, 7.96); Calibrated: 5/29/2018;
Electronics: DAE4 SN1317; Calibrated: 3/23/2018
Phantom: SAM1; Type: SAM; Serial: TP-1534
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Left Cheek Middle/Area Scan (71x131x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.164 W/kg

Left Cheek Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.593 V/m; Power Drift = 0.061 dB
Peak SAR (extrapolated) = 0.238 W/kg
SAR(1 g) = 0.155 W/kg; SAR(10 g) = 0.096 W/kg

Maximum value of SAR (measured) = 0.162 W/kg

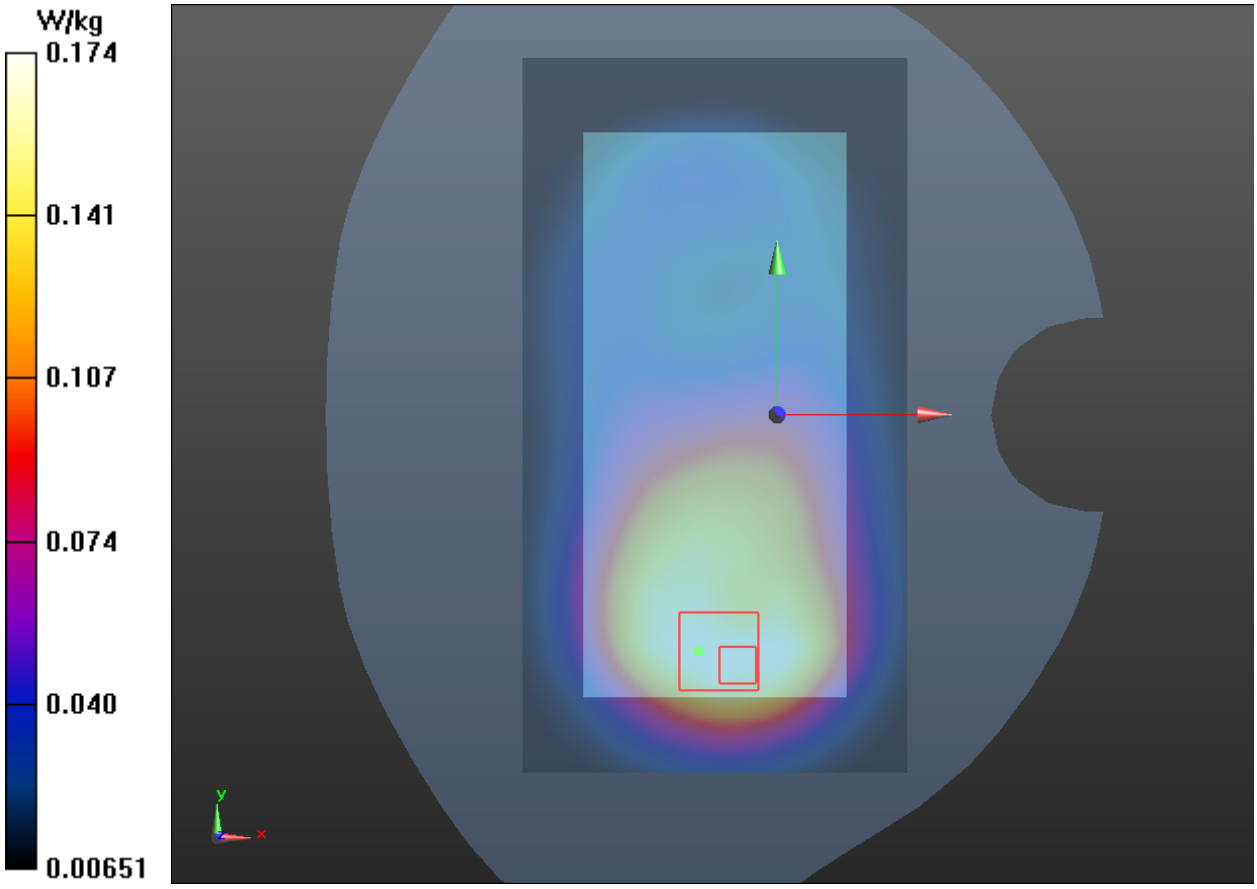


Plot 19GSM 1900 Back Side Middle (Antenna 1, Distance 15mm)

Date: 10/31/2018
Communication System: UID 0, GSM 1900 (0); Frequency: 1880 MHz;Duty Cycle: 1:8.30042
Medium parameters used: f = 1880 MHz; σ = 1.479 S/m; ε_r = 51.275; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3677; ConvF(7.70, 7.70, 7.70); Calibrated: 5/29/2018;
Electronics: DAE4 SN1317; Calibrated: 3/23/2018
Phantom: SAM1; Type: SAM; Serial: TP-1534
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Back Side Middle/Area Scan (71x131x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.183 W/kg

Back Side Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.937 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.246 W/kg
SAR(1 g) = 0.165 W/kg; SAR(10 g) = 0.107 W/kg
Maximum value of SAR (measured) = 0.174 W/kg



Plot 20GSM 1900 GPRS (4Txslots) Bottom Edge Middle (Antenna 1, Distance 10mm)

Date: 10/31/2018

Communication System: UID 0, GPRS 4TX (0); Frequency: 1880 MHz;Duty Cycle: 1:2.07491

Medium parameters used: f = 1880 MHz; σ = 1.479 S/m; ε_r = 51.275; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN3677; ConvF(7.70, 7.70, 7.70); Calibrated: 5/29/2018;

Electronics: DAE4 SN1317; Calibrated: 3/23/2018

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Bottom Edge Middle/Area Scan (51x111x1): Interpolated grid: dx=10 mm, dy=10mm

Maximum value of SAR (interpolated) = 0.269 W/kg

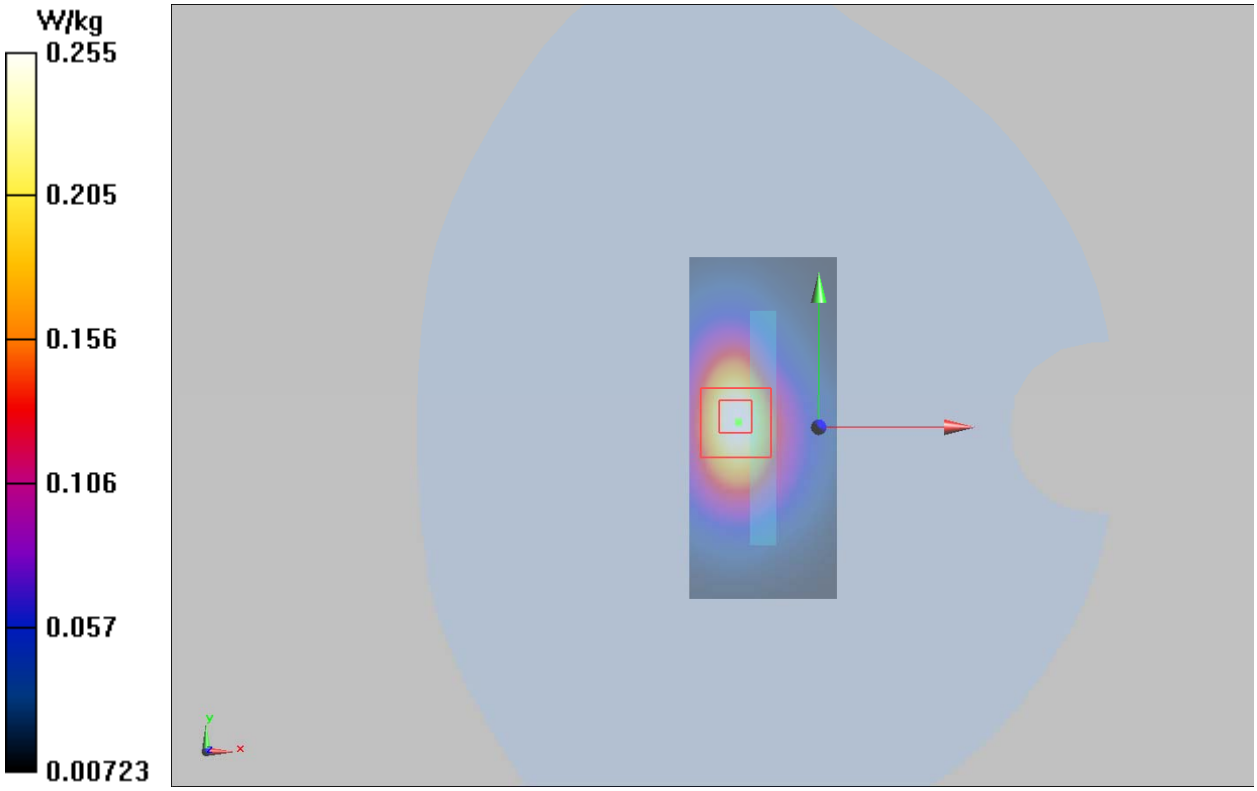
Bottom Edge Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 11.42 V/m; Power Drift = 0.18 dB

Peak SAR (extrapolated) = 0.382 W/kg

SAR(1 g) = 0.251 W/kg; SAR(10 g) = 0.130 W/kg

Maximum value of SAR (measured) = 0.255 W/kg



Plot 21UMTS Band II Left Cheek Middle (Antenna 1)

Date: 10/28/2018

Communication System: UID 0, WCDMA II (0); Frequency: 1880 MHz;Duty Cycle: 1:1

Medium parameters used: f = 1880 MHz; σ = 1.371 S/m; ε_r = 40.715; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Left Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN3677; ConvF(7.96, 7.96, 7.96); Calibrated: 5/29/2018;

Electronics: DAE4 SN1317; Calibrated: 3/23/2018

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Left Cheek Middle/Area Scan (71x131x1): Interpolated grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.224 W/kg

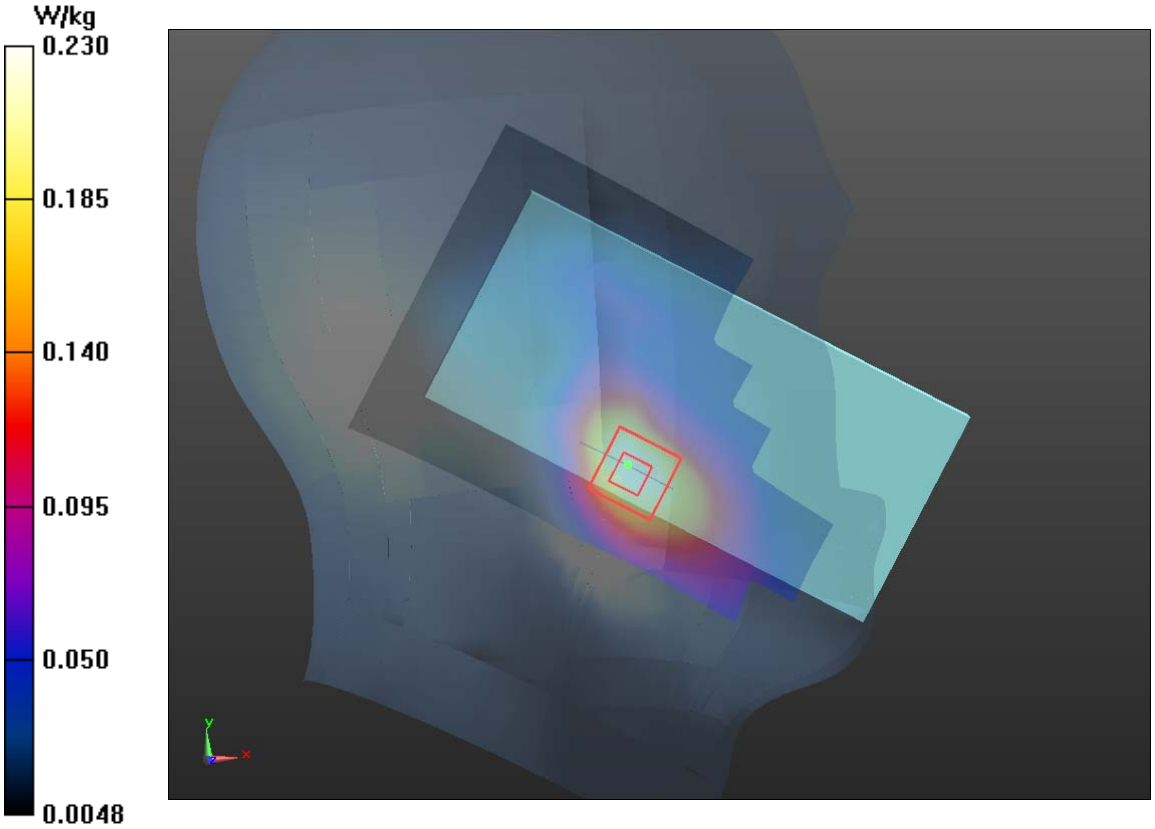
Left Cheek Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 4.264 V/m; Power Drift = 0.15 dB

Peak SAR (extrapolated) = 0.326 W/kg

SAR(1 g) = 0.214 W/kg; SAR(10 g) = 0.132 W/kg

Maximum value of SAR (measured) = 0.230 W/kg

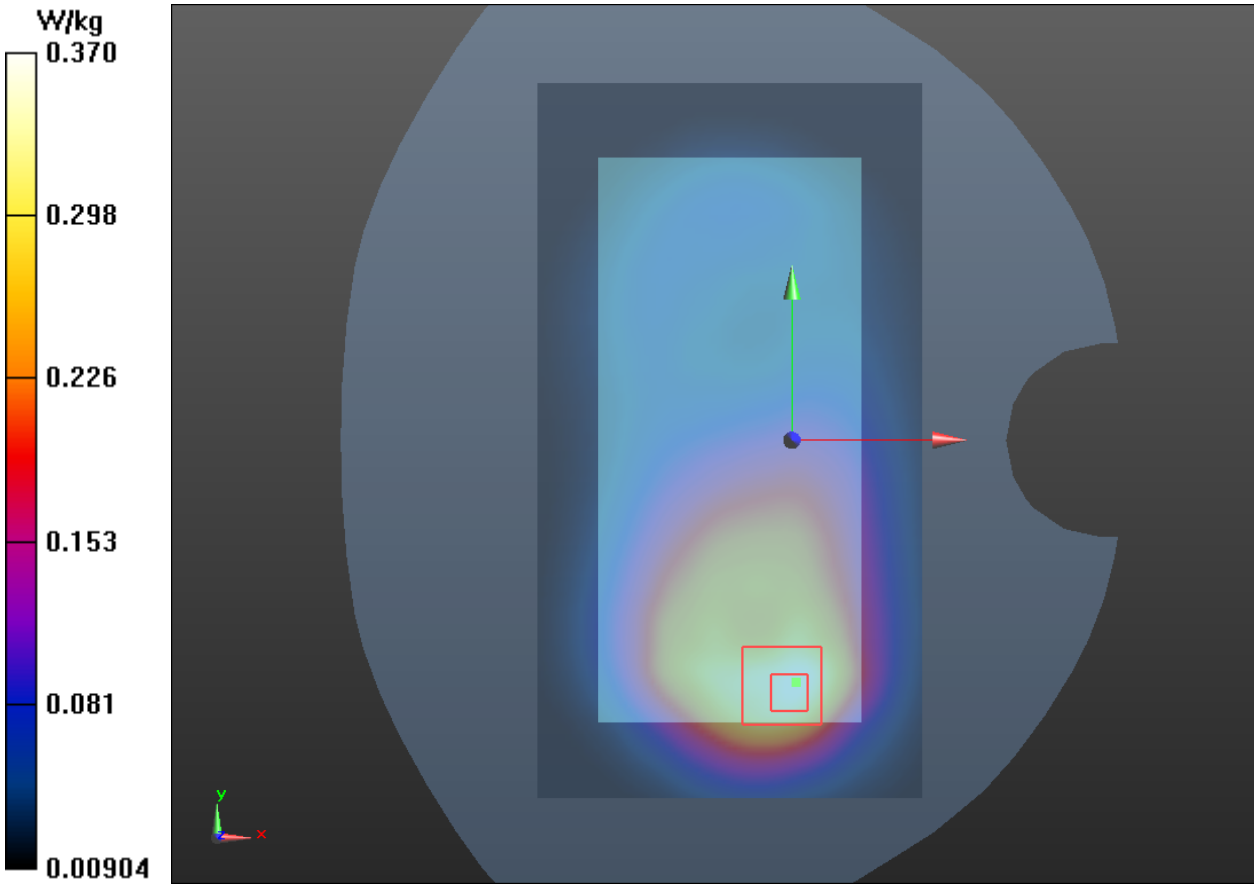


Plot 22UMTS Band II Back Side Middle (Antenna 1, Distance 15mm)

Date: 10/31/2018
Communication System: UID 0, WCDMA II (0); Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.489 S/m; ε_r = 52.896; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3677; ConvF(7.70, 7.70, 7.70); Calibrated: 5/29/2018;
Electronics: DAE4 SN1317; Calibrated: 3/23/2018
Phantom: SAM1; Type: SAM; Serial: TP-1534
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Back Side Middle/Area Scan (71x131x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.386 W/kg

Back Side Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.536 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 0.533 W/kg
SAR(1 g) = 0.344 W/kg; SAR(10 g) = 0.211 W/kg
Maximum value of SAR (measured) = 0.370 W/kg



Plot 23UMTS Band II Bottom Edge Middle (Antenna 1, Distance 10mm)

Date: 10/31/2018

Communication System: UID 0, WCDMA II (0); Frequency: 1880 MHz;Duty Cycle: 1:1

Medium parameters used: f = 1880 MHz; σ = 1.489 S/m; ε_r = 52.896; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN3677; ConvF(7.70, 7.70, 7.70); Calibrated: 5/29/2018;

Electronics: DAE4 SN1317; Calibrated: 3/23/2018

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Bottom Edge Middle/Area Scan (51x111x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 0.385 W/kg

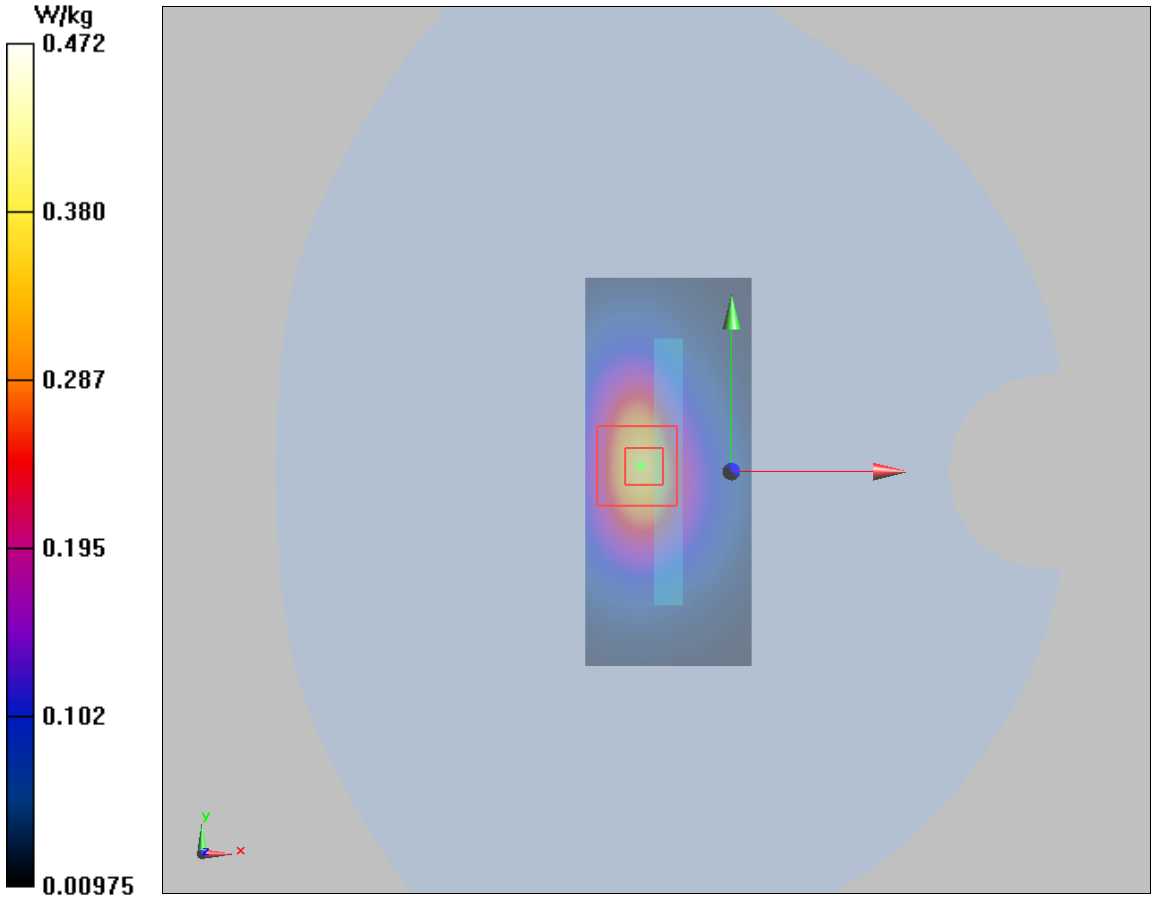
Bottom Edge Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 14.12 V/m; Power Drift = 0.16 dB

Peak SAR (extrapolated) = 0.636 W/kg

SAR(1 g) = 0.429 W/kg; SAR(10 g) = 0.187 W/kg

Maximum value of SAR (measured) = 0.472 W/kg

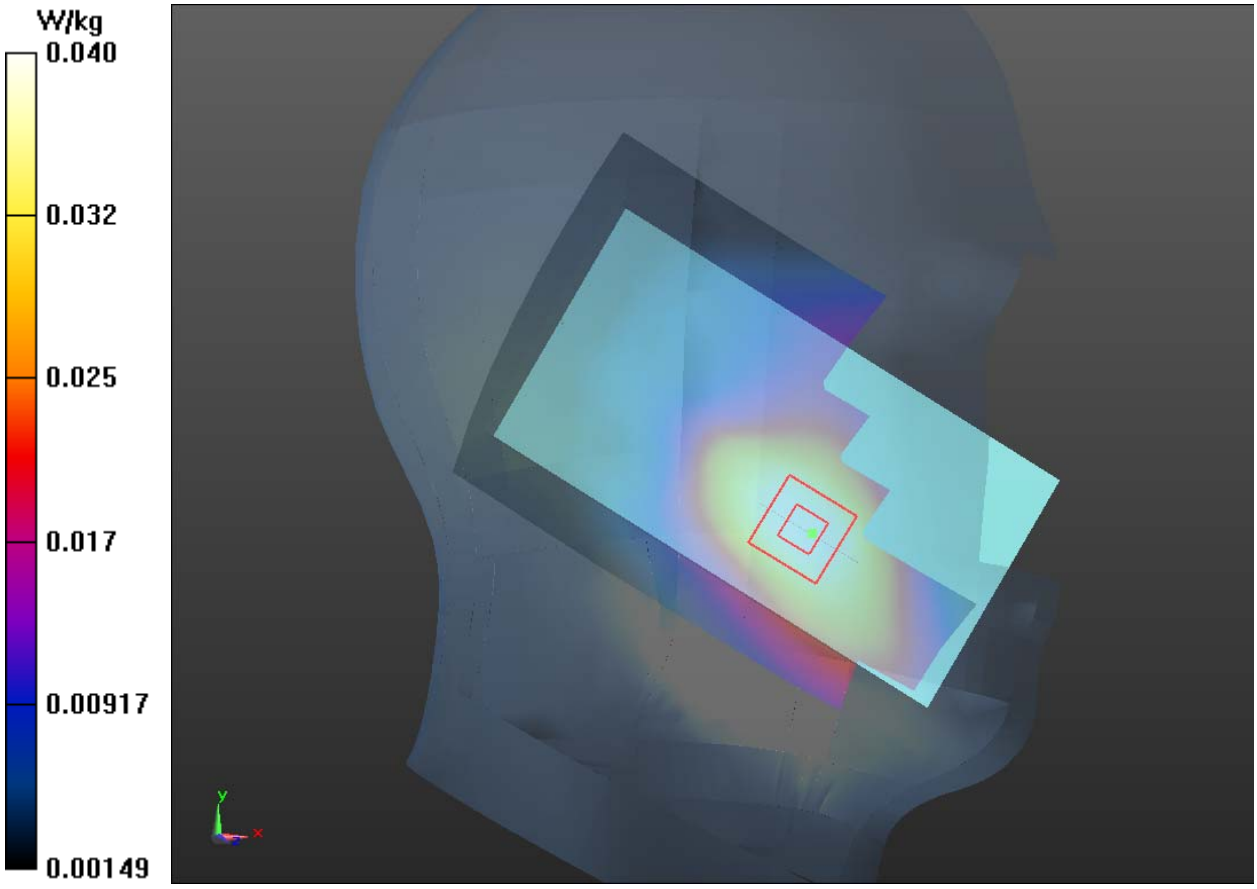


Plot 24UMTS Band V Left Cheek Middle (Antenna 1)

Date: 10/20/2018
Communication System: UID 0, WCDMA V (0); Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium parameters used: f = 837 MHz; σ = 0.916 S/m; ε_r = 41.951; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Left Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3677; ConvF(9.10, 9.10, 9.10); Calibrated: 5/29/2018;
Electronics: DAE4 SN1317; Calibrated: 3/23/2018
Phantom: SAM1; Type: SAM; Serial: TP-1534
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Left Cheek Middle/Area Scan (71x131x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.0414 W/kg

Left Cheek Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.770 V/m; Power Drift = 0.096 dB
Peak SAR (extrapolated) = 0.0470 W/kg
SAR(1 g) = 0.037 W/kg; SAR(10 g) = 0.027 W/kg
Maximum value of SAR (measured) = 0.040 W/kg



Plot 25UMTS Band V Back Side Middle(Antenna 1, Distance 15mm)

Date: 10/21/2018

Communication System: UID 0, WCDMA V (0); Frequency: 836.6 MHz;Duty Cycle: 1:1

Medium parameters used: f = 837 MHz; σ = 0.974 S/m; ε_r = 53.795; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN3677; ConvF(9.32, 9.32, 9.32); Calibrated: 5/29/2018;

Electronics: DAE4 SN1317; Calibrated: 3/23/2018

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Back Side Middle/Area Scan (71x131x1): Interpolated grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.252 W/kg

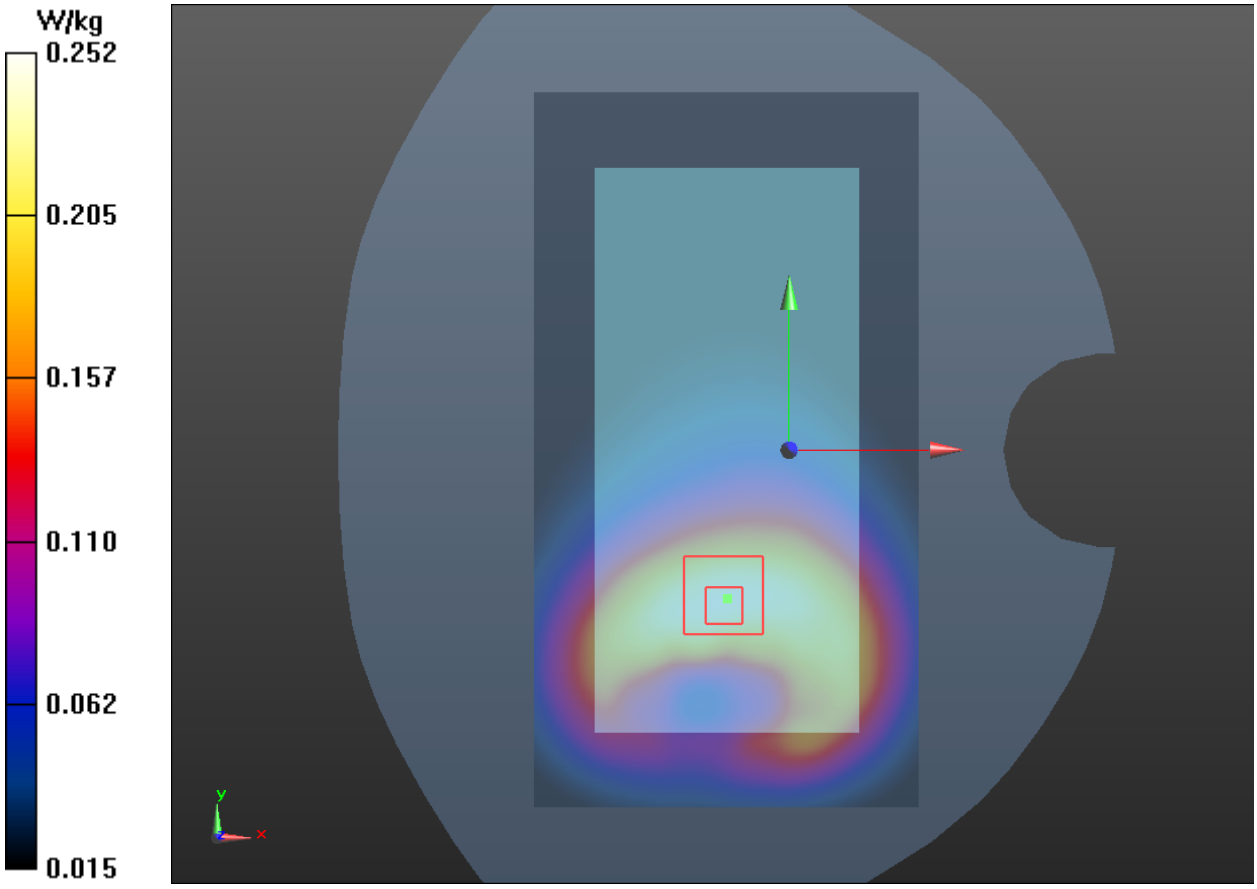
Back Side Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 7.776 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.322 W/kg

SAR(1 g) = 0.237 W/kg; SAR(10 g) = 0.163 W/kg

Maximum value of SAR (measured) = 0.252 W/kg



Plot 26UMTS Band V Front Side Middle (Antenna 1, Distance 10mm)

Date: 10/21/2018

Communication System: UID 0, WCDMA V (0); Frequency: 836.6 MHz;Duty Cycle: 1:1

Medium parameters used: f = 837 MHz; σ = 0.974 S/m; ε_r = 53.795; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN3677; ConvF(9.32, 9.32, 9.32); Calibrated: 5/29/2018;

Electronics: DAE4 SN1317; Calibrated: 3/23/2018

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Front Side Middle/Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.307 W/kg

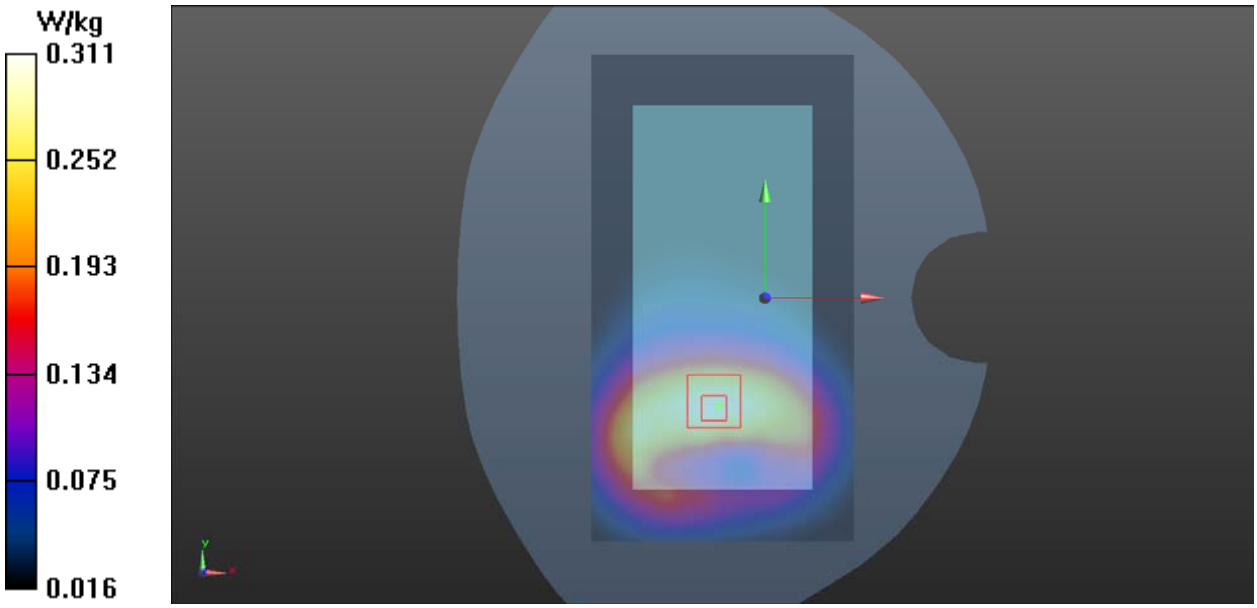
Front Side Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 6.646 V/m; Power Drift = 0.12 dB

Peak SAR (extrapolated) = 0.414 W/kg

SAR(1 g) = 0.291 W/kg; SAR(10 g) = 0.195 W/kg

Maximum value of SAR (measured) = 0.311 W/kg



Plot 27LTE Band 7 1RB Left Cheek Low (Antenna 1)

Date: 10/23/2018

Communication System: UID 0, LTE (0); Frequency: 2510 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2510 MHz; σ = 1.913 S/m; ε_r = 39.535; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Left Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN3677; ConvF(7.28, 7.28, 7.28); Calibrated: 5/29/2018;

Electronics: DAE4 SN1317; Calibrated: 3/23/2018

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Left Cheek Low/Area Scan (91x171x1): Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 0.202 W/kg

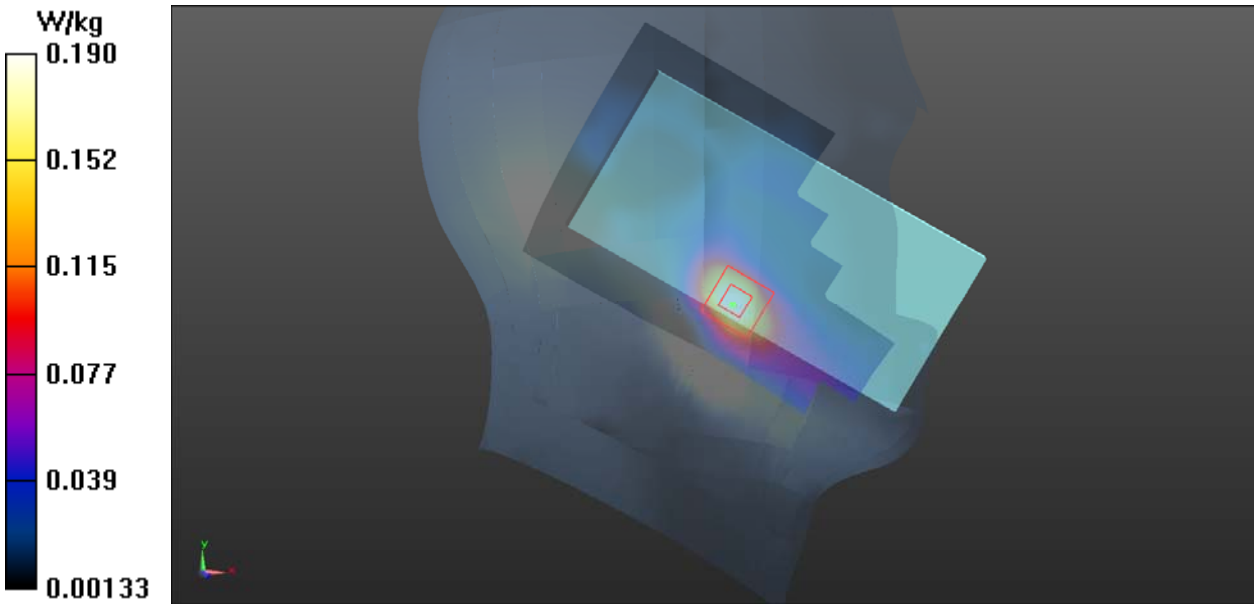
Left Cheek Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 1.599 V/m; Power Drift = 0.031 dB

Peak SAR (extrapolated) = 0.332 W/kg

SAR(1 g) = 0.172 W/kg; SAR(10 g) = 0.085 W/kg

Maximum value of SAR (measured) = 0.190 W/kg



Plot 28LTE Band 7 50%RB Back Side Low (Antenna 1, Distance 15mm)

Date: 10/23/2018

Communication System: UID 0, LTE (0); Frequency: 2510 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2510 MHz; σ = 2.045 S/m; ε_r = 50.913; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN3677; ConvF(7.16, 7.16, 7.16); Calibrated: 5/29/2018;

Electronics: DAE4 SN1317; Calibrated: 3/23/2018

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Back Side Low/Area Scan (91x171x1): Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 0.242 W/kg

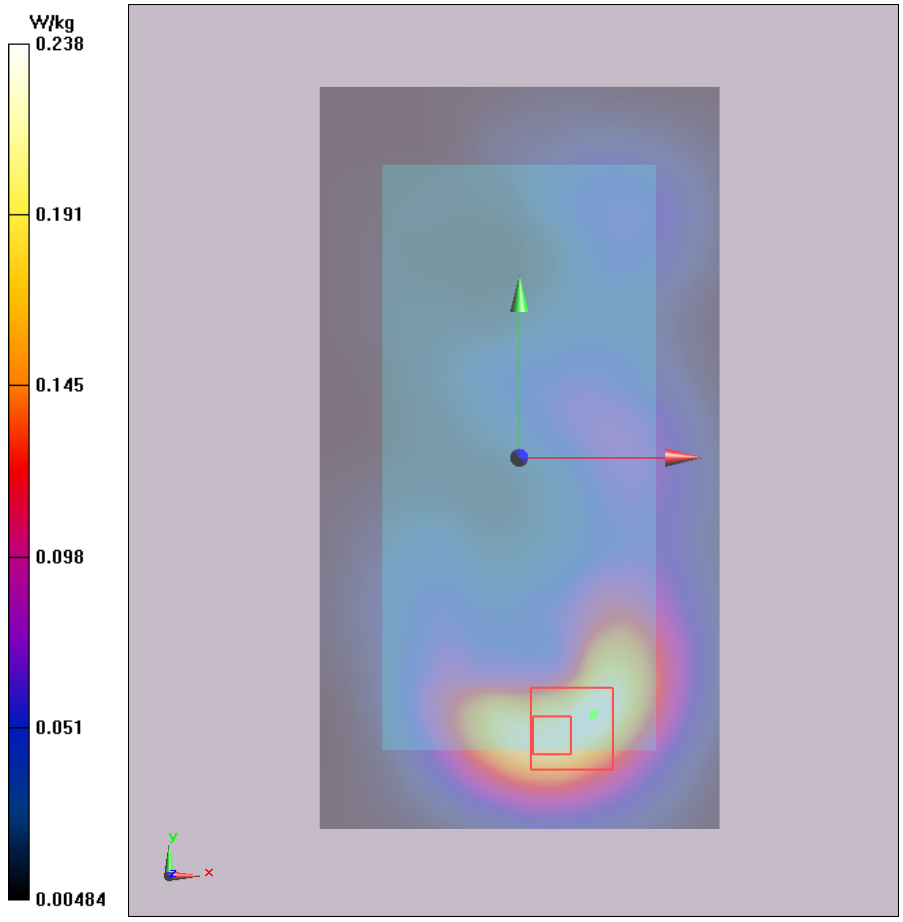
Back Side Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 3.720 V/m; Power Drift = -0.027 dB

Peak SAR (extrapolated) = 0.395 W/kg

SAR(1 g) = 0.223 W/kg; SAR(10 g) = 0.121 W/kg

Maximum value of SAR (measured) = 0.238 W/kg



Plot 29LTE Band 7 50%RB Bottom Edge Low (Antenna 1, Distance 10mm)

Date: 10/23/2018

Communication System: UID 0, LTE (0); Frequency: 2510 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2510 MHz; σ = 2.045 S/m; ε_r = 50.913; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN3677; ConvF(7.16, 7.16, 7.16); Calibrated: 5/29/2018;

Electronics: DAE4 SN1317; Calibrated: 3/23/2018

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Bottom Edge Low/Area Scan (51x111x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 0.376 W/kg

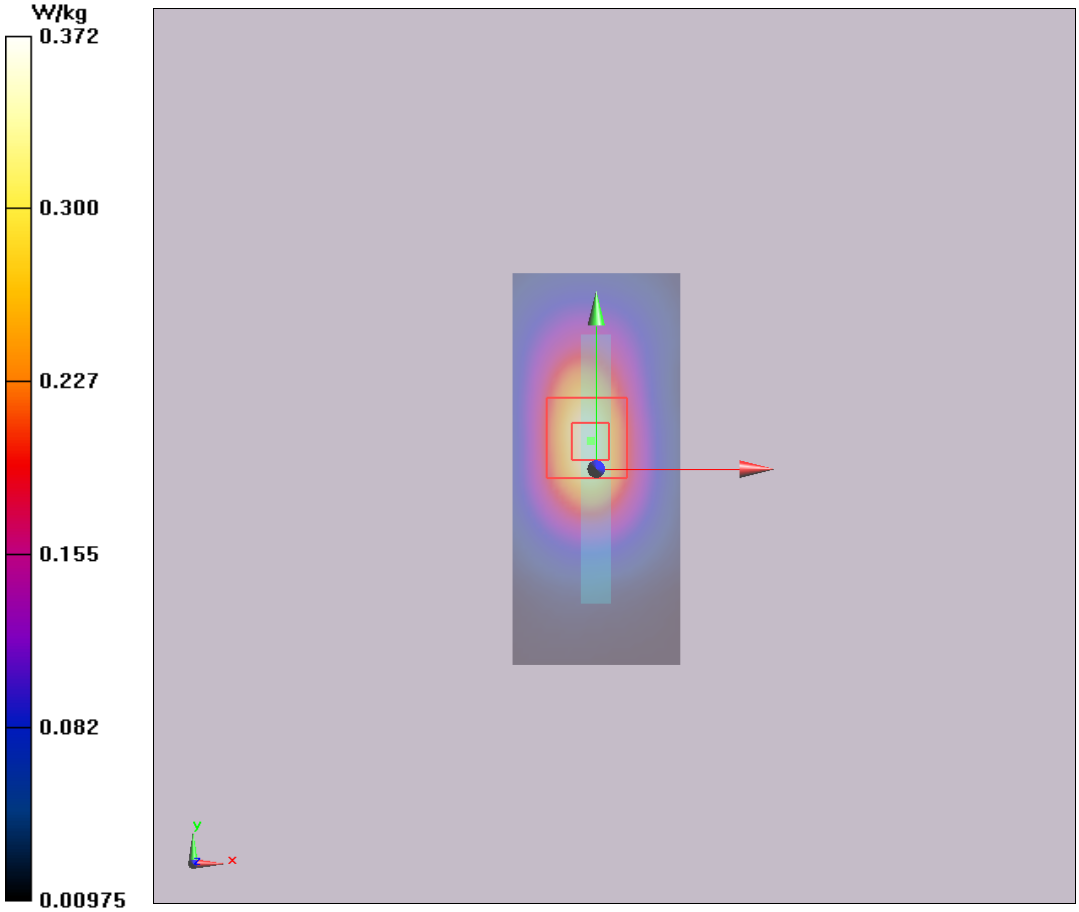
Bottom Edge Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 10.07 V/m; Power Drift = 0.028 dB

Peak SAR (extrapolated) = 0.581 W/kg

SAR(1 g) = 0.321 W/kg; SAR(10 g) = 0.126 W/kg

Maximum value of SAR (measured) = 0.372 W/kg



Plot 30 GSM 850 Right Cheek Middle (Antenna 2)

Date: 10/20/2018

Communication System: UID 0, GSM 850 (0); Frequency: 836.6 MHz;Duty Cycle: 1:8.30042

Medium parameters used (interpolated): f = 837 MHz; σ = 0.916 S/m; ε_r = 41.951; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Right Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN3677; ConvF(9.10, 9.10, 9.10); Calibrated: 5/29/2018;

Electronics: DAE4 SN1317; Calibrated: 3/23/2018

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Right Cheek Middle/Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.613 W/kg

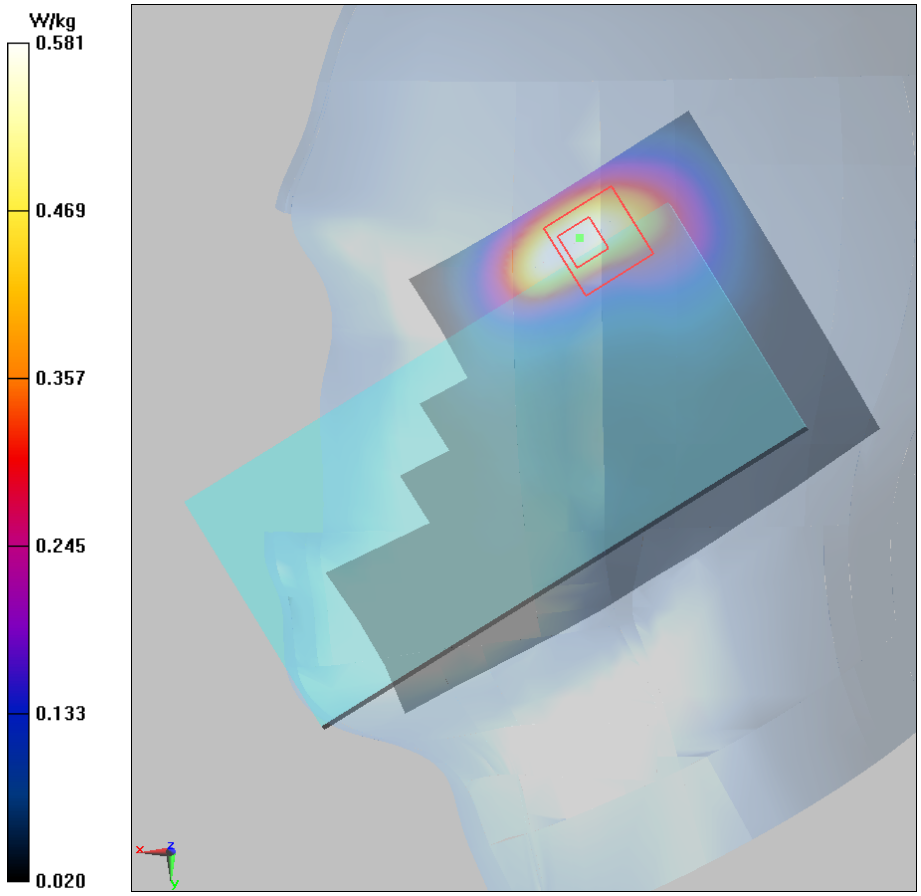
Right Cheek Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 6.782 V/m; Power Drift = -0.061 dB

Peak SAR (extrapolated) = 0.875 W/kg

SAR(1 g) = 0.509 W/kg; SAR(10 g) = 0.297 W/kg

Maximum value of SAR (measured) = 0.581 W/kg

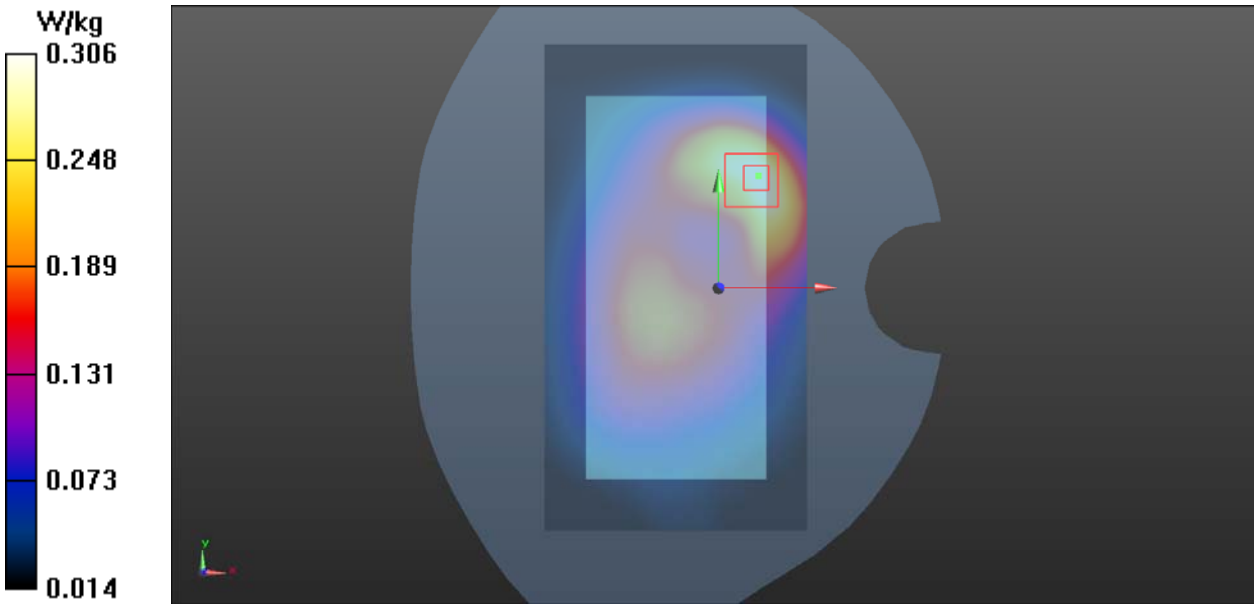


Plot 31GSM 850 Back Side Middle (Antenna 2, Distance 15mm)

Date: 10/21/2018
Communication System: UID 0, GSM 850 (0); Frequency: 836.6 MHz;Duty Cycle: 1:8.30042
Medium parameters used: f = 837 MHz; σ = 0.974 S/m; ε_r = 53.795; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3677; ConvF(9.32, 9.32, 9.32); Calibrated: 5/29/2018;
Electronics: DAE4 SN1317; Calibrated: 3/23/2018
Phantom: SAM1; Type: SAM; Serial: TP-1534
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Back Side Middle/Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.309 W/kg

Back Side Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.49 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 0.423 W/kg
SAR(1 g) = 0.283 W/kg; SAR(10 g) = 0.185 W/kg
Maximum value of SAR (measured) = 0.306 W/kg

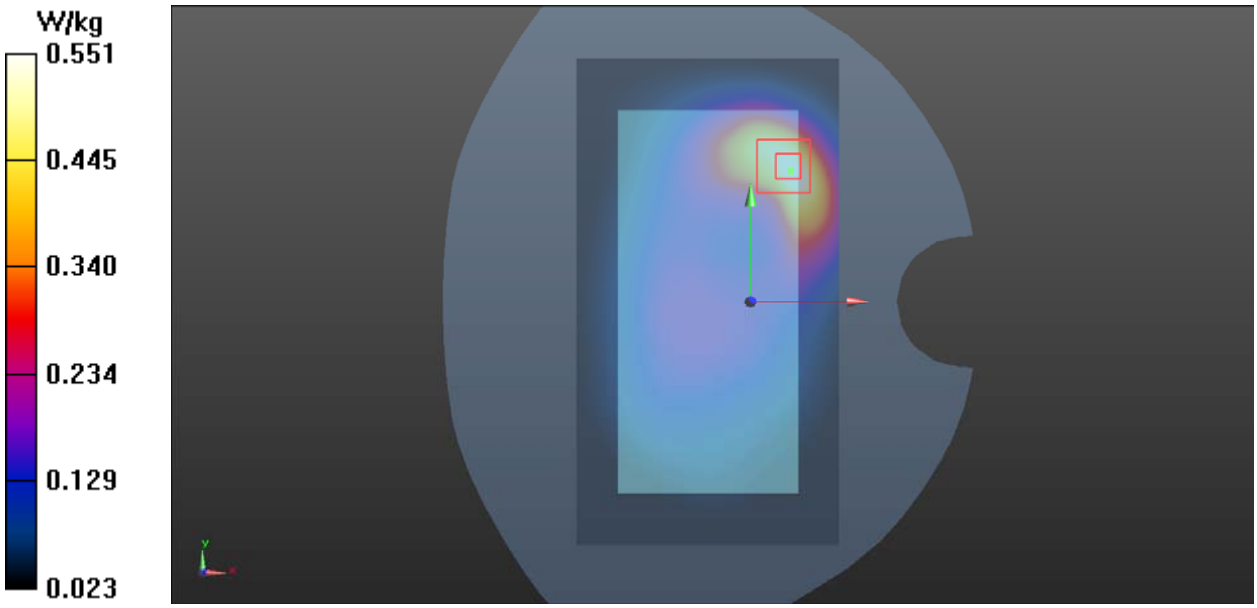


Plot 32GSM 850 GPRS (4Txslots) Back Side Middle (Antenna 2, Distance 10mm)

Date: 10/21/2018
Communication System: UID 0, GSM 850 (0); Frequency: 836.6 MHz;Duty Cycle: 1:2.07
Medium parameters used: f = 837 MHz; σ = 0.974 S/m; ε_r = 53.795; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3677; ConvF(9.32, 9.32, 9.32); Calibrated: 5/29/2018;
Electronics: DAE4 SN1317; Calibrated: 3/23/2018
Phantom: SAM1; Type: SAM; Serial: TP-1534
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Back Side Middle /Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.572 W/kg

Back Side Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.16 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.830 W/kg
SAR(1 g) = 0.501 W/kg; SAR(10 g) = 0.302 W/kg
Maximum value of SAR (measured) = 0.551 W/kg



Plot 33GSM 1900 Right Cheek Middle (Antenna 2)

Date: 10/28/2018

Communication System: UID 0, GSM 1900 (0); Frequency: 1880 MHz;Duty Cycle: 1:8.30042

Medium parameters used: f = 1880 MHz; σ = 1.371 S/m; ε_r = 40.715; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Right Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN3677; ConvF(7.96, 7.96, 7.96); Calibrated: 5/29/2018;

Electronics: DAE4 SN1317; Calibrated: 3/23/2018

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Right Cheek Middle/Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.209 W/kg

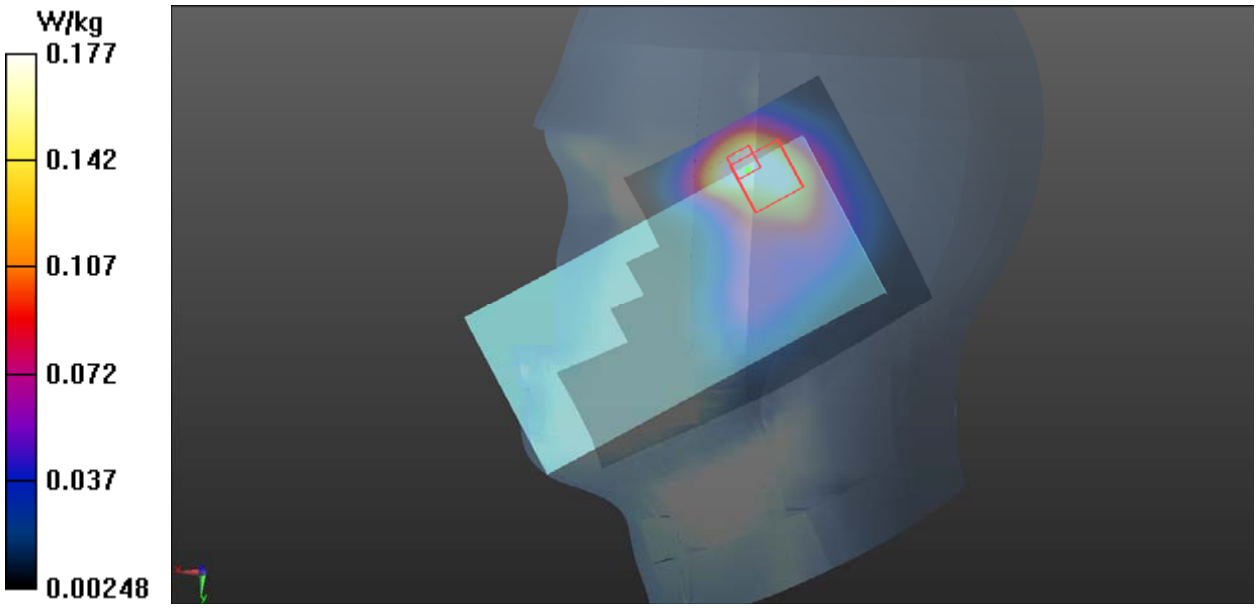
Right Cheek Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 6.769 V/m; Power Drift = 0.045 dB

Peak SAR (extrapolated) = 0.319 W/kg

SAR(1 g) = 0.164 W/kg; SAR(10 g) = 0.096 W/kg

Maximum value of SAR (measured) = 0.177 W/kg

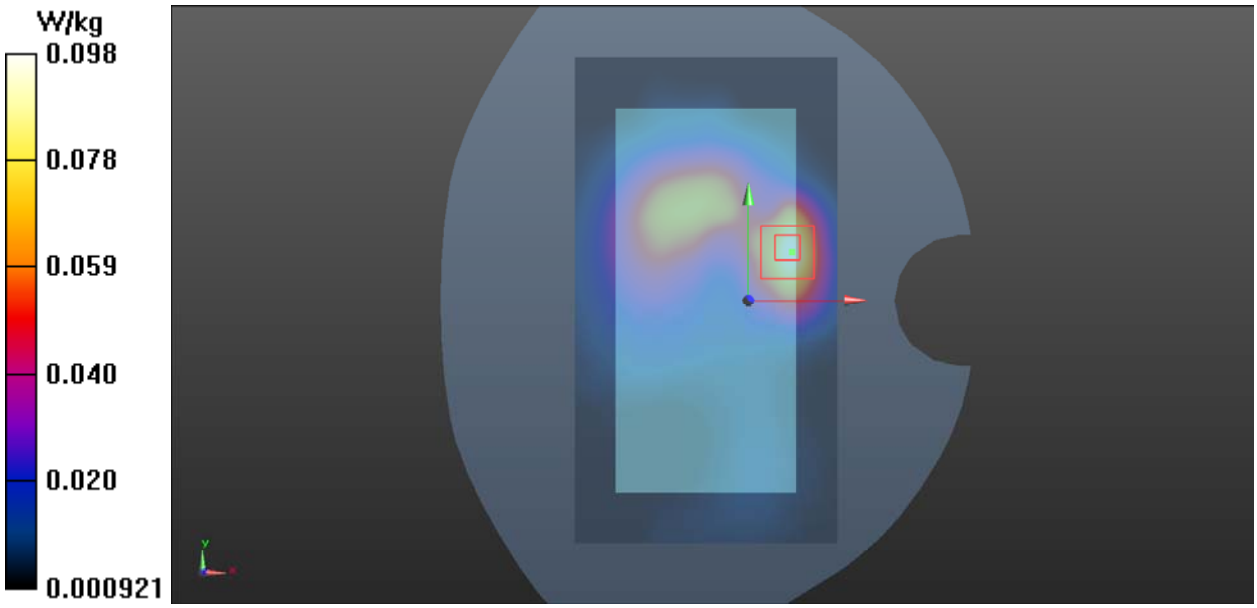


Plot 34GSM 1900 Back Side Middle (Antenna 2, Distance 15mm)

Date: 10/31/2018
Communication System: UID 0, GSM 1900 (0); Frequency: 1880 MHz;Duty Cycle: 1:8.30042
Medium parameters used: f = 1880 MHz; σ = 1.479 S/m; ε_r = 51.275; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3677; ConvF(7.70, 7.70, 7.70); Calibrated: 5/29/2018;
Electronics: DAE4 SN1317; Calibrated: 3/23/2018
Phantom: SAM1; Type: SAM; Serial: TP-1534
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Back Side Middle/Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.0982 W/kg

Back Side Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.881 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 0.154 W/kg
SAR(1 g) = 0.090 W/kg; SAR(10 g) = 0.049 W/kg
Maximum value of SAR (measured) = 0.098 W/kg



Plot 35 GSM 1900 GPRS (4Txslots) Back Side Middle (Antenna 2, Distance 10mm)

Date: 10/31/2018

Communication System: UID 0, GPRS 1TX (0); Frequency: 1880 MHz;Duty Cycle: 1:8.30042

Medium parameters used: f = 1880 MHz; σ = 1.479 S/m; ε_r = 51.275; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN3677; ConvF(7.70, 7.70, 7.70); Calibrated: 5/29/2018;

Electronics: DAE4 SN1317; Calibrated: 3/23/2018

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Back Side Middle/Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.098 W/kg

Back Side Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 2.729 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 0.104 W/kg

SAR(1 g) = 0.076 W/kg; SAR(10 g) = 0.042 W/kg

Maximum value of SAR (measured) = 0.081 W/kg

Plot 36UMTS Band II Right Cheek Middle (Antenna 2)

Date: 10/28/2018

Communication System: UID 0, WCDMA II (0); Frequency: 1880 MHz;Duty Cycle: 1:1

Medium parameters used: f = 1880 MHz; σ = 1.371 S/m; ε_r = 40.715; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Right Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN3677; ConvF(7.96, 7.96, 7.96); Calibrated: 5/29/2018;

Electronics: DAE4 SN1317; Calibrated: 3/23/2018

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Right Cheek Middle/Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.237 W/kg

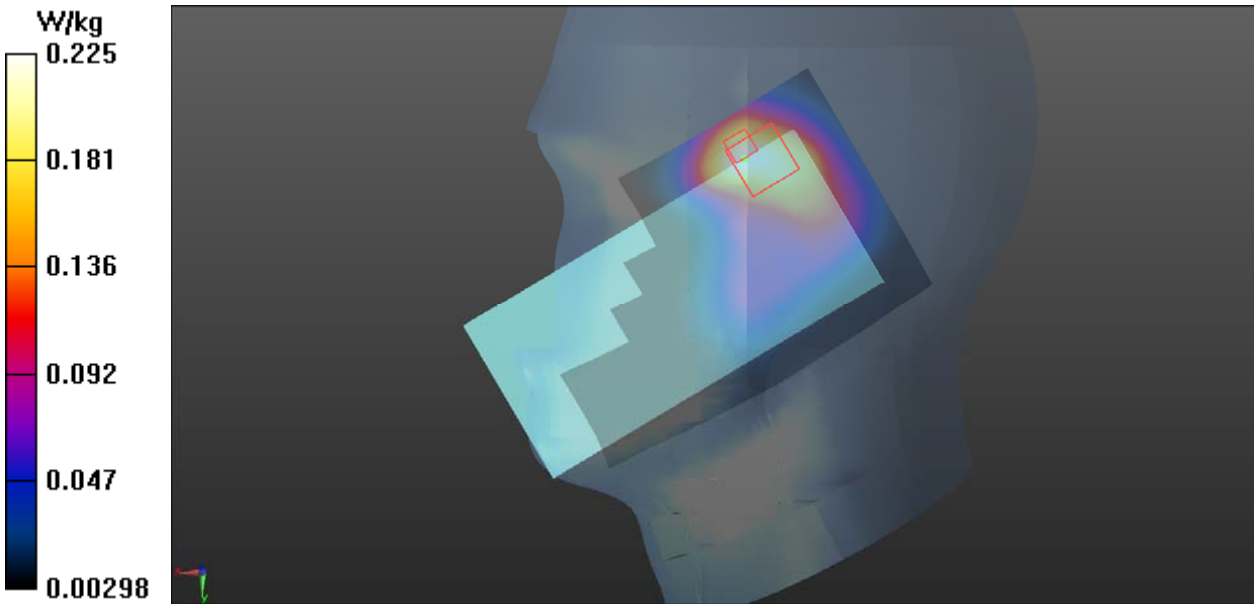
Right Cheek Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 9.488 V/m; Power Drift = 0.19 dB

Peak SAR (extrapolated) = 0.397 W/kg

SAR(1 g) = 0.204 W/kg; SAR(10 g) = 0.116 W/kg

Maximum value of SAR (measured) = 0.225 W/kg



Plot 37UMTS Band II Back Side Middle (Antenna 2, Distance 15mm)

Date: 10/31/2018

Communication System: UID 0, WCDMA II (0); Frequency: 1880 MHz;Duty Cycle: 1:1

Medium parameters used: f = 1880 MHz; σ = 1.489 S/m; ε_r = 52.896; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN3677; ConvF(7.70, 7.70, 7.70); Calibrated: 5/29/2018;

Electronics: DAE4 SN1317; Calibrated: 3/23/2018

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Back Side Middle/Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.165 W/kg

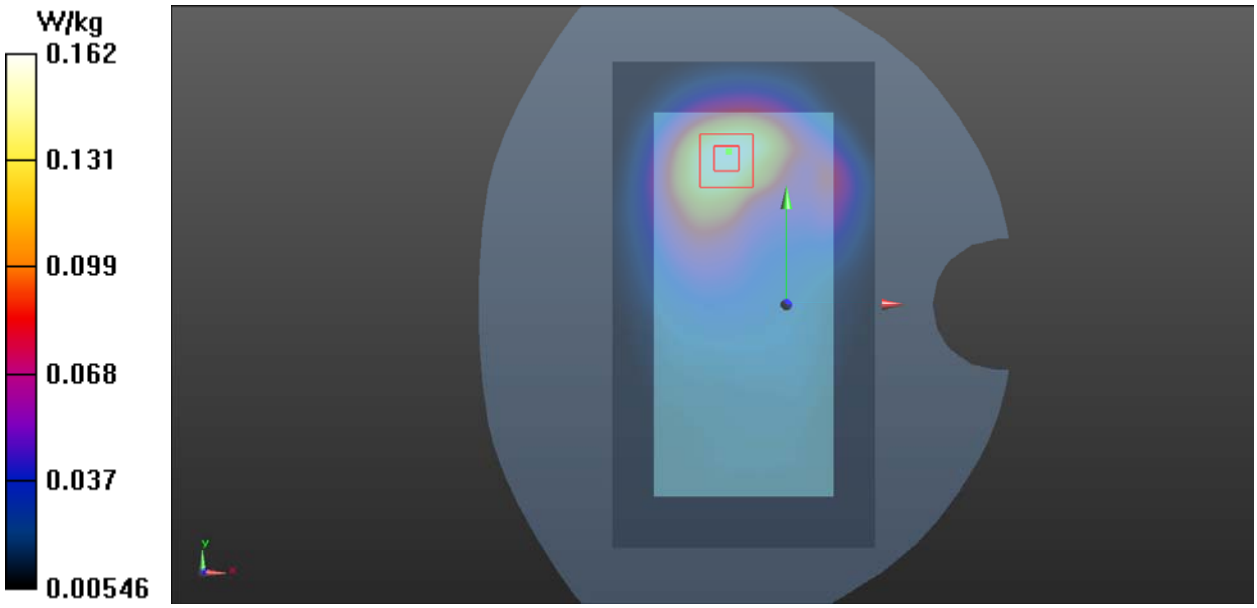
Back Side Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 4.807 V/m; Power Drift = 0.032 dB

Peak SAR (extrapolated) = 0.219 W/kg

SAR(1 g) = 0.151 W/kg; SAR(10 g) = 0.098 W/kg

Maximum value of SAR (measured) = 0.162 W/kg



Plot 38UMTS Band II Back Side Middle (Antenna 2, Distance 10mm)

Date: 10/31/2018

Communication System: UID 0, WCDMA II (0); Frequency: 1880 MHz;Duty Cycle: 1:1

Medium parameters used: f = 1880 MHz; σ = 1.489 S/m; ε_r = 52.896; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN3677; ConvF(7.70, 7.70, 7.70); Calibrated: 5/29/2018;

Electronics: DAE4 SN1317; Calibrated: 3/23/2018

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Back Side Middle /Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.0919 W/kg

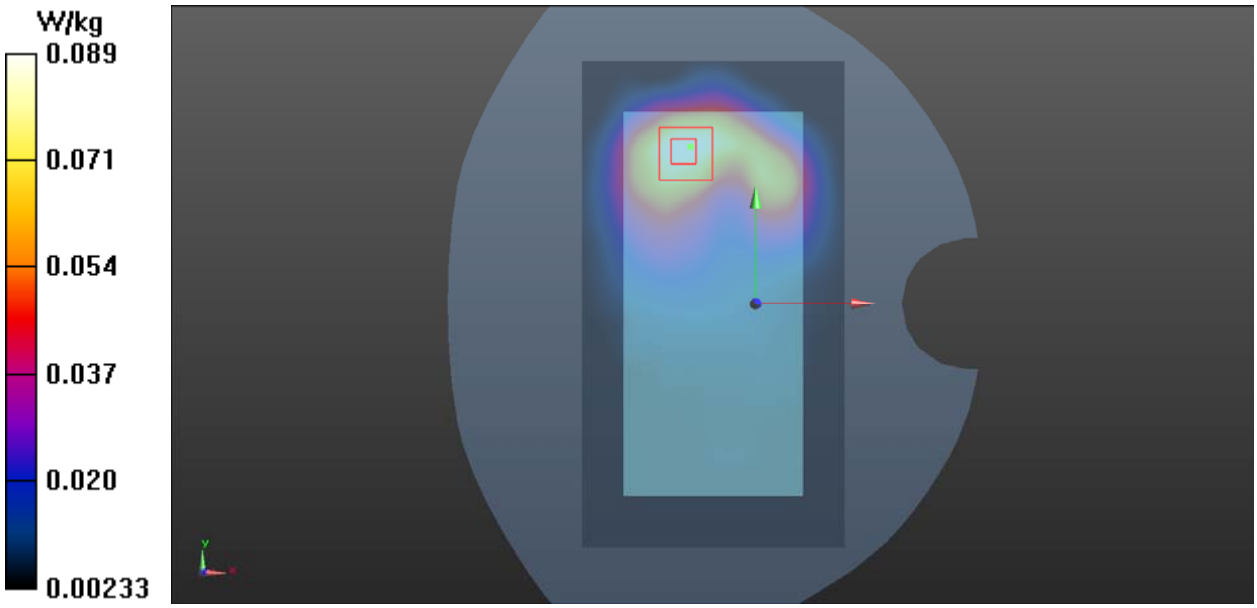
Back Side Middle /Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 3.048 V/m; Power Drift = 0.033 dB

Peak SAR (extrapolated) = 0.121 W/kg

SAR(1 g) = 0.082 W/kg; SAR(10 g) = 0.053 W/kg

Maximum value of SAR (measured) = 0.089 W/kg



Plot 39UMTS Band V Right Cheek Middle (Antenna 2)

Date: 10/20/2018

Communication System: UID 0, WCDMA V (0); Frequency: 836.6 MHz;Duty Cycle: 1:1

Medium parameters used: f = 837 MHz; σ = 0.916 S/m; ε_r = 41.951; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Right Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN3677; ConvF(9.10, 9.10, 9.10); Calibrated: 5/29/2018;

Electronics: DAE4 SN1317; Calibrated: 3/23/2018

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Right Cheek Middle/Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 1.18 W/kg

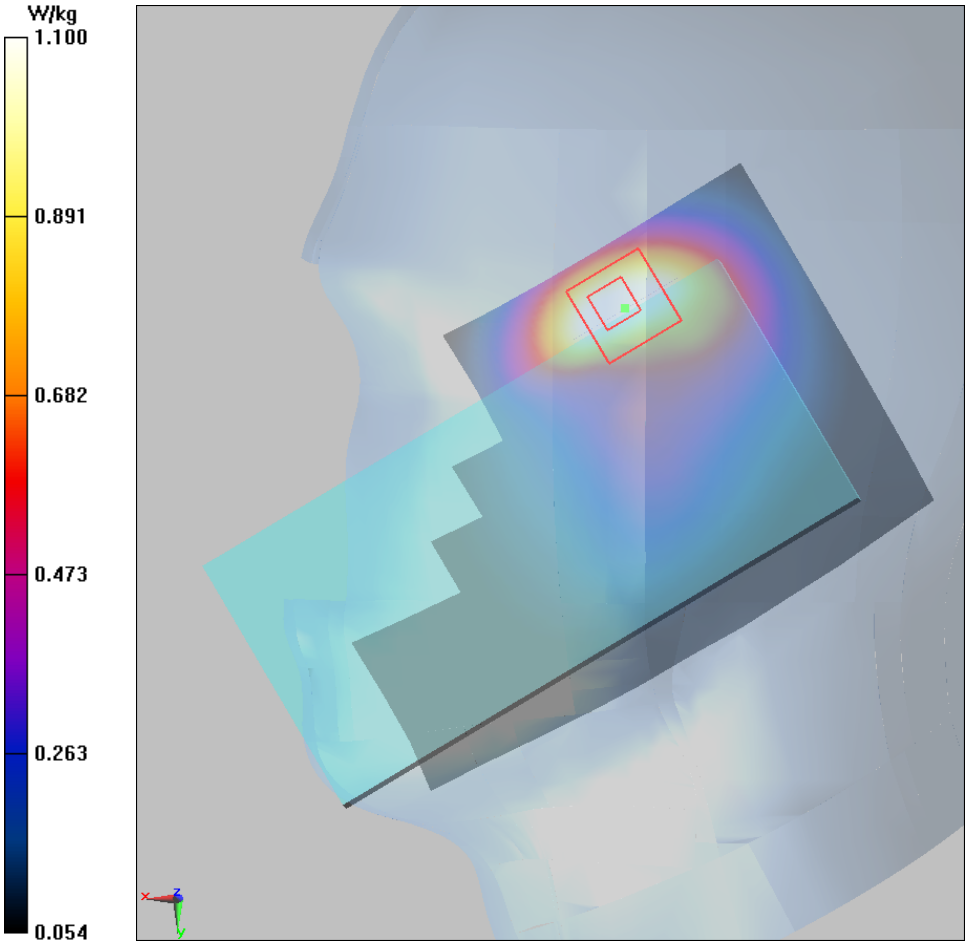
Right Cheek Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 17.46 V/m; Power Drift = -0.1 dB

Peak SAR (extrapolated) = 1.72 W/kg

SAR(1 g) = 0.617 W/kg; SAR(10 g) = 0.299 W/kg

Maximum value of SAR (measured) = 1.10 W/kg



Plot 40UMTS Band V Back Side Middle (Antenna 2, Distance 15mm)

Date: 10/21/2018

Communication System: UID 0, WCDMA V (0); Frequency: 836.6 MHz;Duty Cycle: 1:1

Medium parameters used: f = 837 MHz; σ = 0.974 S/m; ε_r = 53.795; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN3677; ConvF(9.32, 9.32, 9.32); Calibrated: 5/29/2018;

Electronics: DAE4 SN1317; Calibrated: 3/23/2018

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Back Side Middle/Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.237 W/kg

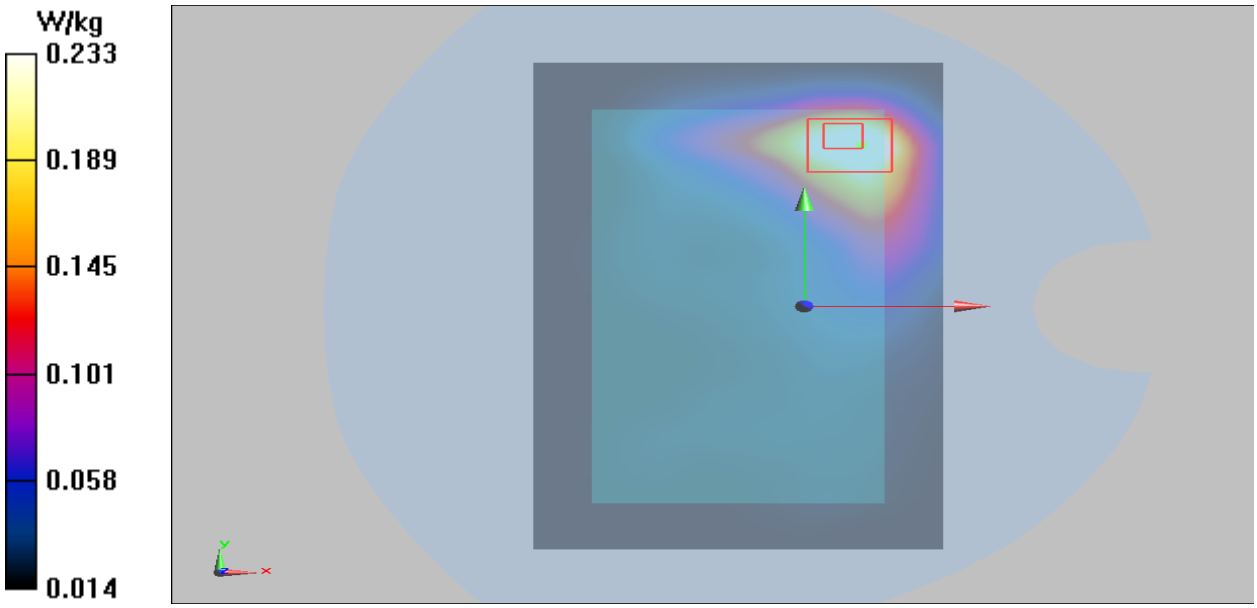
Back Side Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 7.041 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 0.307 W/kg

SAR(1 g) = 0.219 W/kg; SAR(10 g) = 0.151 W/kg

Maximum value of SAR (measured) = 0.233 W/kg



Plot 41UMTS Band V Back Side Middle (Antenna 2, Distance 10mm)

Date: 10/21/2018

Communication System: UID 0, WCDMA V (0); Frequency: 836.6 MHz;Duty Cycle: 1:1

Medium parameters used: f = 837 MHz; σ = 0.974 S/m; ε_r = 53.795; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN3677; ConvF(9.32, 9.32, 9.32); Calibrated: 5/29/2018;

Electronics: DAE4 SN1317; Calibrated: 3/23/2018

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Back Side Middle/Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.188 W/kg

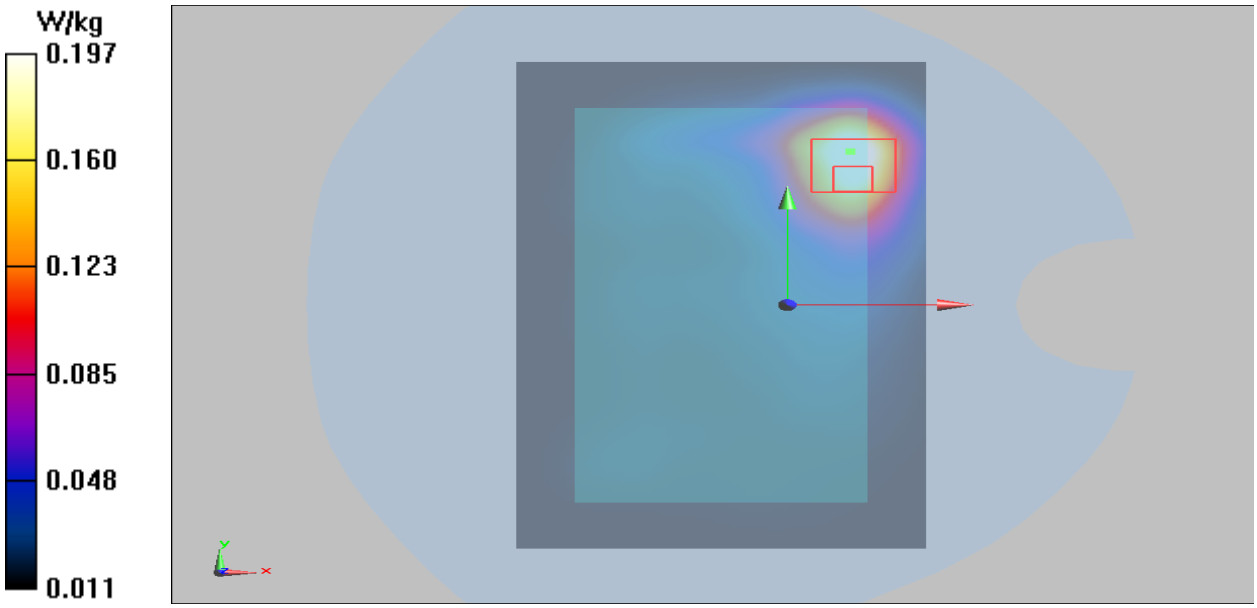
Back Side Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 5.943 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.297 W/kg

SAR(1 g) = 0.181 W/kg; SAR(10 g) = 0.119 W/kg

Maximum value of SAR (measured) = 0.197 W/kg



Plot 42 802.11b Left Cheek Low

Date: 10/23/2018

Communication System: UID 0, 802.11b (0); Frequency: 2412 MHz;Duty Cycle: 1:100311

Medium parameters used: f = 2412 MHz; σ = 1.803 S/m; ε_r = 39.834; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Left Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN3677; ConvF(7.57, 7.57, 7.57); Calibrated: 5/29/2018;

Electronics: DAE4 SN1317; Calibrated: 3/23/2018

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Left Cheek Low/Area Scan (91x171x1): Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 0.072 W/kg

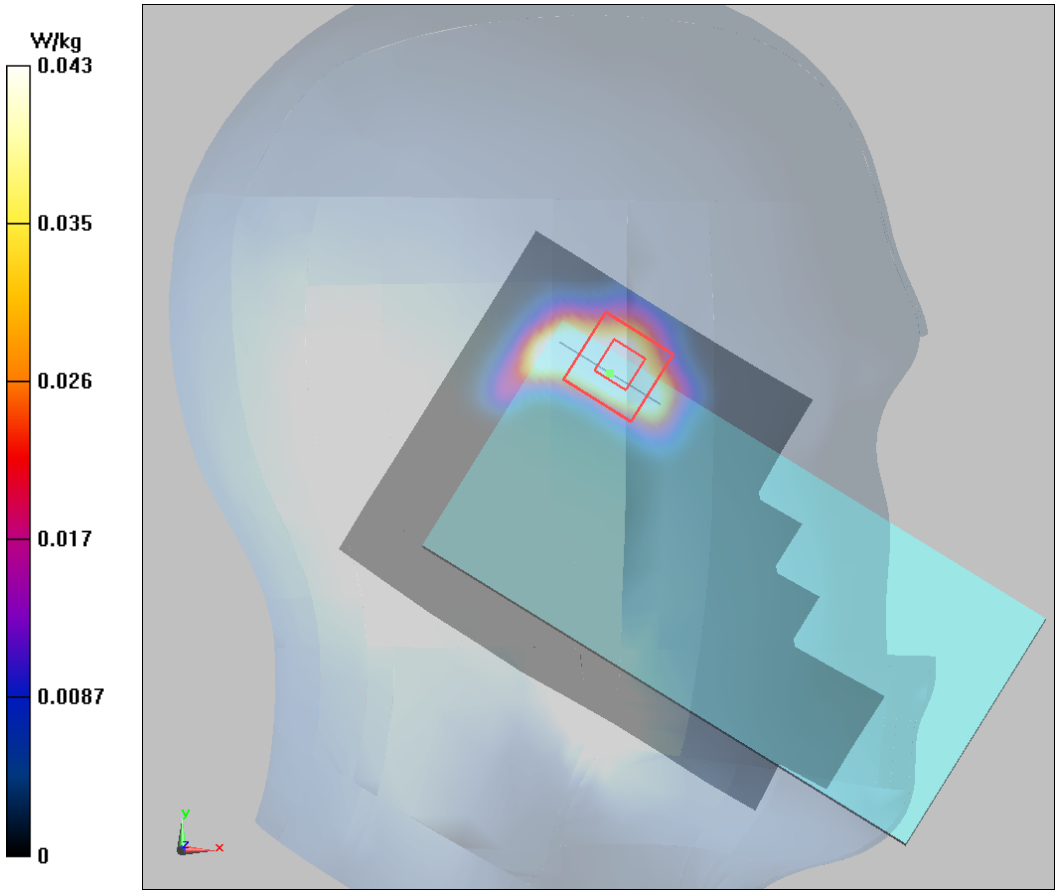
Left Cheek Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 2.550 V/m; Power Drift = 0.020 dB

Peak SAR (extrapolated) = 0.085 W/kg

SAR(1 g) = 0.040 W/kg; SAR(10 g) = 0.016 W/kg

Maximum value of SAR (measured) = 0.043 W/kg



Plot 43 802.11b Back Side Low (Distance 15mm)

Date: 10/23/2018

Communication System: UID 0, 802.11b (0); Frequency: 2412 MHz;Duty Cycle: 1:1.00311

Medium parameters used: f = 2412 MHz; σ = 1.929 S/m; ε_r = 51.204; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN3677; ConvF(7.53, 7.53, 7.53); Calibrated: 5/29/2018;

Electronics: DAE4 SN1317; Calibrated: 3/23/2018

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Back Side Low/Area Scan (91x171x1): Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 0.0569 W/kg

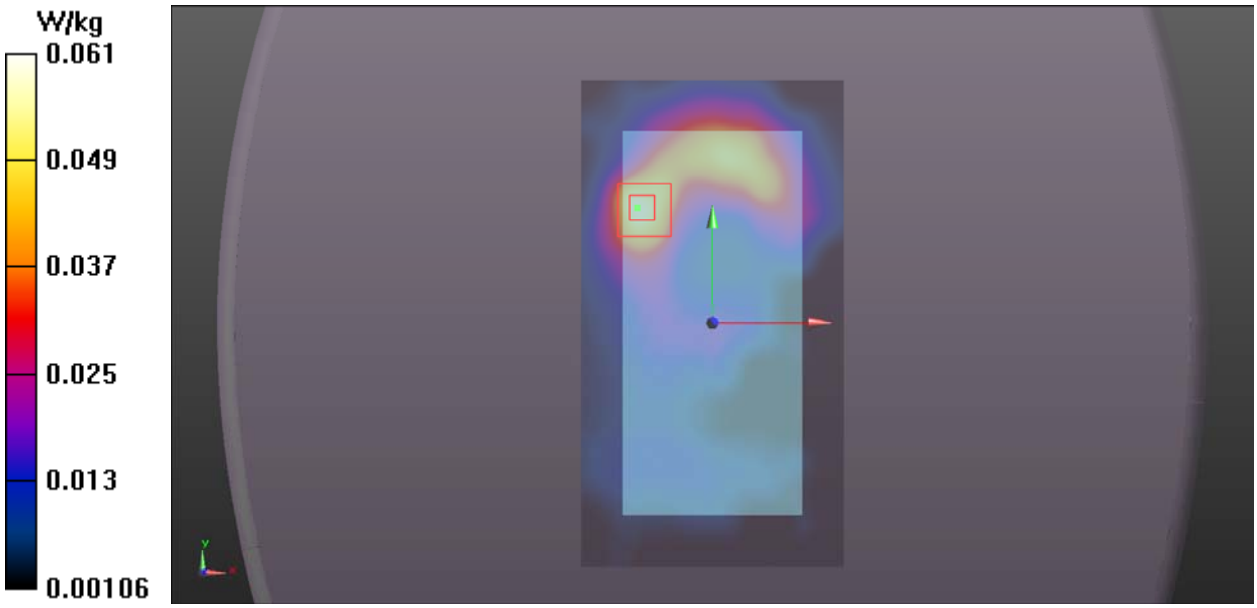
Back Side Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 2.924 V/m; Power Drift = -0.041 dB

Peak SAR (extrapolated) = 0.0990 W/kg

SAR(1 g) = 0.055 W/kg; SAR(10 g) = 0.028 W/kg

Maximum value of SAR (measured) = 0.061 W/kg



Plot 44 802.11b Back Side Low (Distance 10mm)

Date: 10/23/2018

Communication System: UID 0, 802.11b (0); Frequency: 2412 MHz;Duty Cycle: 1:1.00311

Medium parameters used: f = 2412 MHz; σ = 1.929 S/m; ε_r = 51.204; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN3677; ConvF(7.53, 7.53, 7.53); Calibrated: 5/29/2018;

Electronics: DAE4 SN1317; Calibrated: 3/23/2018

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Back Side Low/Area Scan (91x171x1): Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 0.117 W/kg

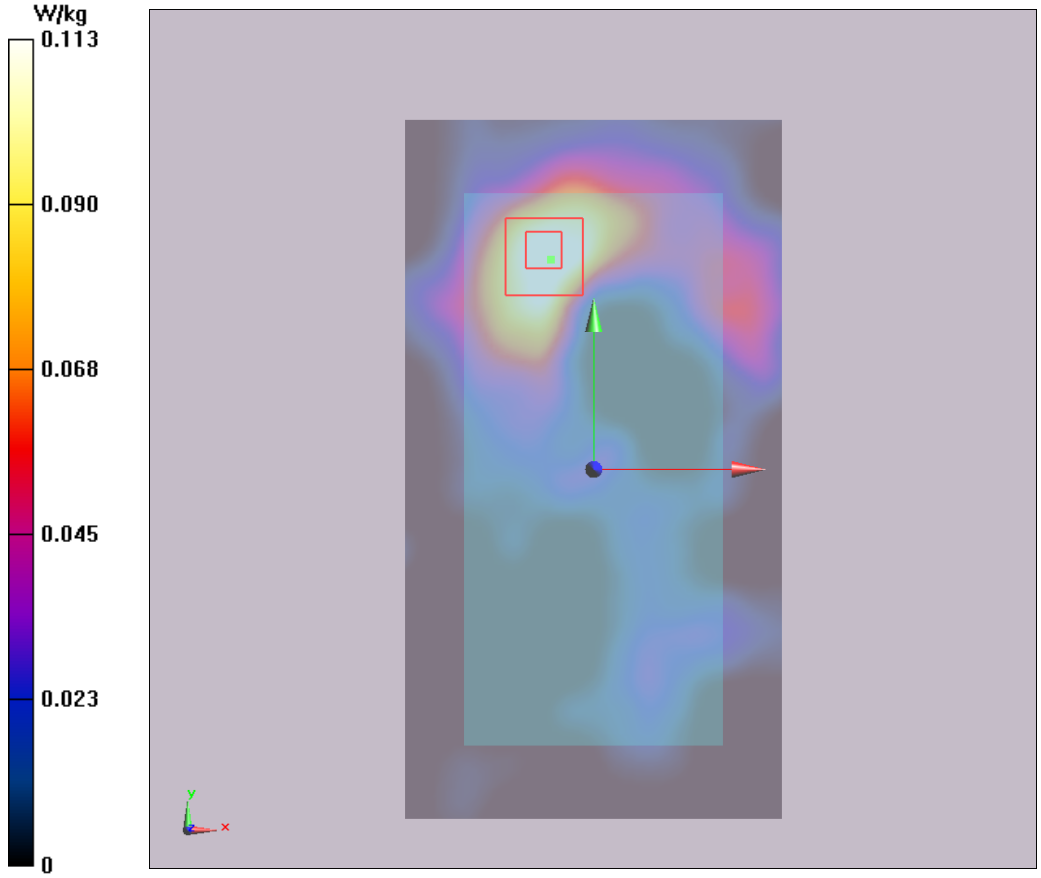
Back Side Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value =1.95 V/m; Power Drift = -0.13 dB

Peak SAR (extrapolated) = 0.156 W/kg

SAR(1 g) = 0.102 W/kg; SAR(10 g) = 0.057 W/kg

Maximum value of SAR (measured) = 0.113 W/kg



Plot 45 802.11a U-NII-1 Back Side CH36 (Distance 10mm)

Date: 10/24/2018

Communication System: UID 0, 802.11a (0); Frequency: 5180 MHz;Duty Cycle: 1:1.01947

Medium parameters used: f = 5180 MHz; σ = 5.29 S/m; ε_r = 48.113; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN3677; ConvF(5.04, 5.04, 5.04); Calibrated: 5/29/2018;

Electronics: DAE4 SN1317; Calibrated: 3/23/2018

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Back Side CH36/Area Scan (111x201x1): Interpolated grid: dx=10mm, dy=10 mm

Maximum value of SAR (interpolated) = 0.0279 W/kg

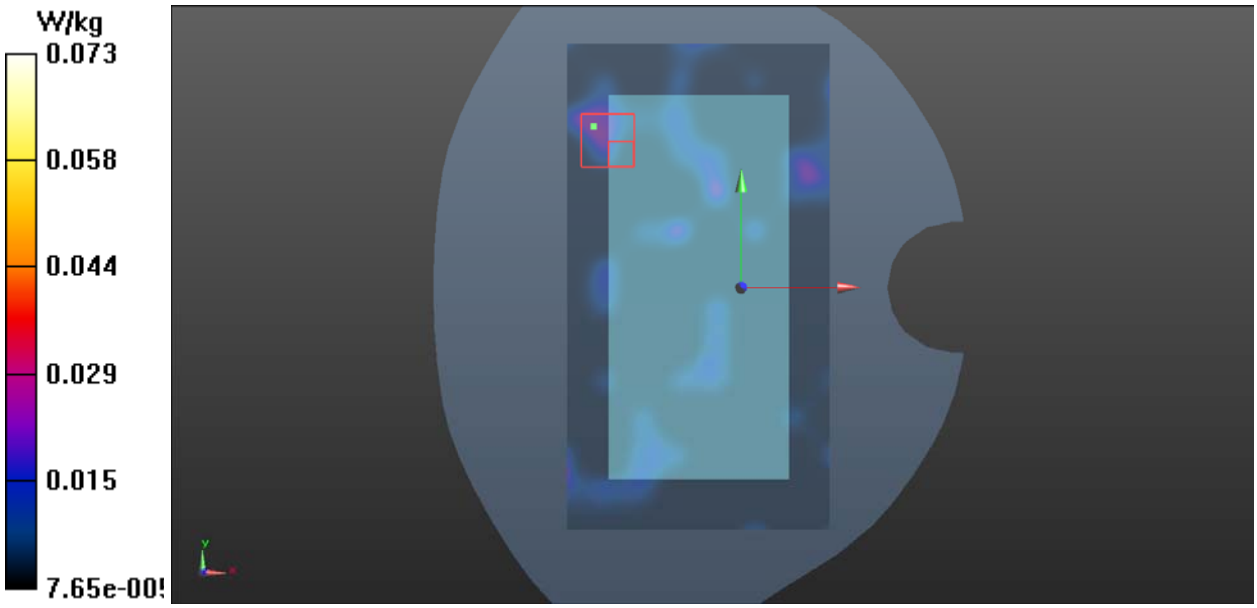
Back Side CH36/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 0.6860 V/m; Power Drift = 0.0343 dB

Peak SAR (extrapolated) = 0.344 W/kg

SAR(1 g) = 0.016 W/kg; SAR(10 g) = 0.00712 W/kg

Maximum value of SAR (measured) = 0.073 W/kg



Plot 46 802.11ac-VHT80 U-NII-2A Left Cheek CH58

Date: 10/24/2018

Communication System: UID 0, 802.11ac VHT80M (0); Frequency: 5290 MHz;Duty Cycle: 1:1.06929

Medium parameters used: f = 5290 MHz; σ = 4.803 S/m; ε_r = 35.856; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Left Section

DASY5 Configuration:

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN3677; ConvF(5.60, 5.60, 5.60); Calibrated: 5/29/2018;

Electronics: DAE4 SN1317; Calibrated: 3/23/2018

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Left Cheek CH58/Area Scan (111x201x1): Interpolated grid: dx=10mm, dy=10 mm

Maximum value of SAR (interpolated) = 0.0726 W/kg

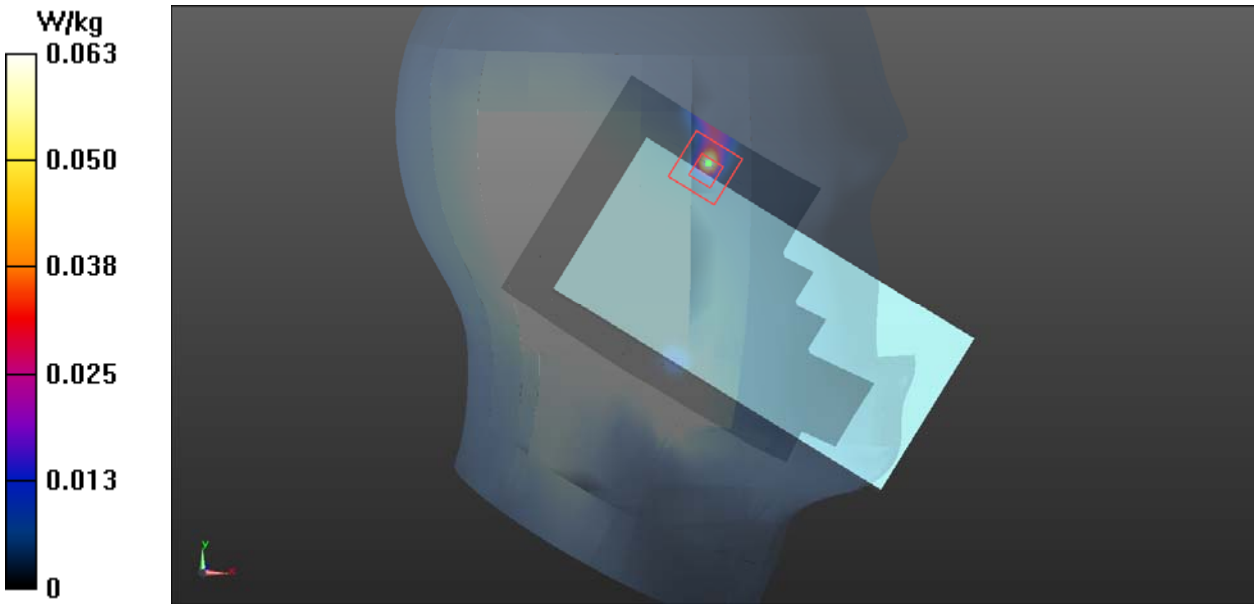
Left Cheek CH58 /Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 0.8590 V/m; Power Drift = -0.038 dB

Peak SAR (extrapolated) = 0.192 W/kg

SAR(1 g) = 0.052 W/kg; SAR(10 g) = 0.017 W/kg

Maximum value of SAR (measured) = 0.063 W/kg



Plot 47 802.11a U-NII-2A Back Side CH64 (Distance 15mm)

Date: 10/24/2018

Communication System: UID 0, 802.11a (0); Frequency: 5320 MHz;Duty Cycle: 1:1.01947

Medium parameters used: f = 5320 MHz; σ = 5.518 S/m; ε_r = 46.537; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN3677; ConvF(5.04, 5.04, 5.04); Calibrated: 5/29/2018;

Electronics: DAE4 SN1317; Calibrated: 3/23/2018

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Back Side CH64/Area Scan (111x201x1): Interpolated grid: dx=10mm, dy=10 mm

Maximum value of SAR (interpolated) = 0.189 W/kg

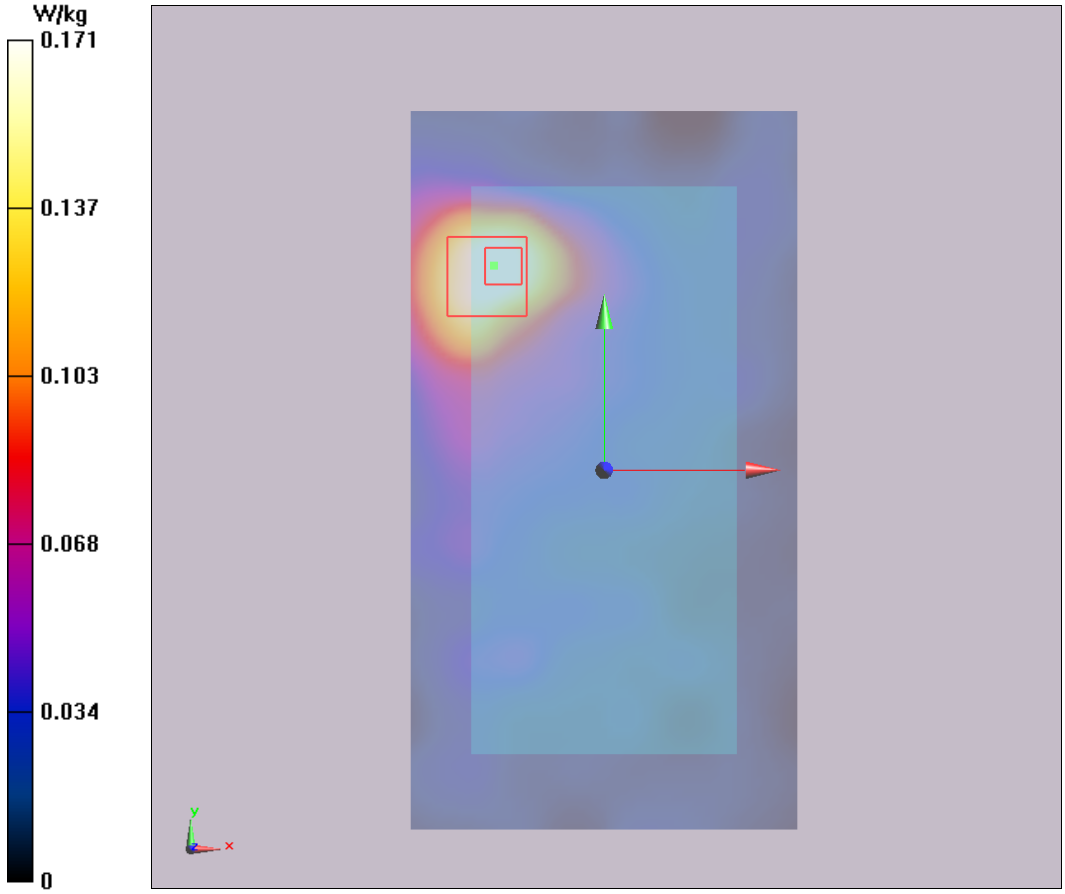
Back Side CH64/Zoom Scan(7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 2.041 V/m; Power Drift = 0.033 dB

Peak SAR (extrapolated) = 0.305 W/kg

SAR(1 g) = 0.143 W/kg; SAR(10 g) = 0.064 W/kg

Maximum value of SAR (measured) = 0.171 W/kg



Plot 48 802.11a U-NII-2A Back Side CH64 (Distance 0mm)

Date: 10/24/2018

Communication System: UID 0, 802.11a (0); Frequency: 5320 MHz;Duty Cycle: 1:1.01947

Medium parameters used: f = 5320 MHz; σ = 5.518 S/m; ε_r = 46.537; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN3677; ConvF(5.04, 5.04, 5.04); Calibrated: 5/29/2018;

Electronics: DAE4 SN1317; Calibrated: 3/23/2018

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Back Side CH64/Area Scan (111x201x1): Interpolated grid: dx=10mm, dy=10 mm

Maximum value of SAR (interpolated) = 1.74 W/kg

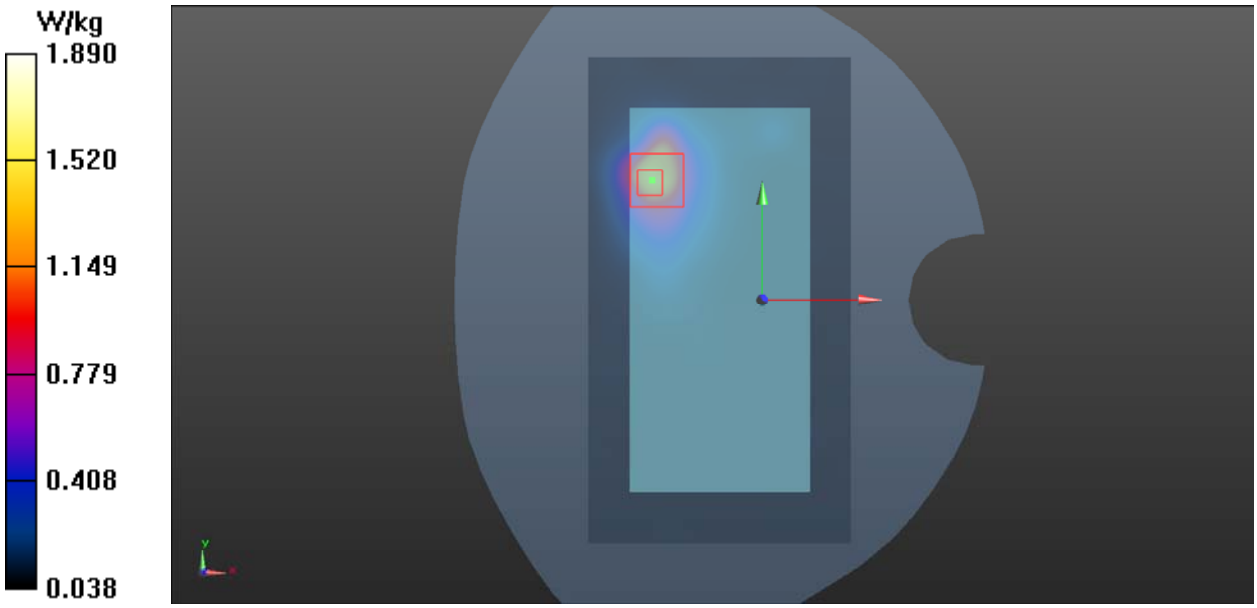
Back Side CH64 /Zoom Scan(7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 3.606 V/m; Power Drift = 0.151 dB

Peak SAR (extrapolated) = 4.40 W/kg

SAR(1 g) = 1.54 W/kg; SAR(10 g) = 0.647 W/kg

Maximum value of SAR (measured) = 1.890 W/kg



Plot 49 802.11ac-VHT80 U-NII-2C Left Cheek CH106

Date: 10/26/2018

Communication System: UID 0, 802.11ac VHT80M (0); Frequency: 5530 MHz;Duty Cycle: 1:1.06929

Medium parameters used: f = 5530 MHz; σ = 5.109 S/m; ε_r = 35.234; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Left Section

DASY5 Configuration:

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN3677; ConvF(4.87, 4.87, 4.87); Calibrated: 5/29/2018;

Electronics: DAE4 SN1317; Calibrated: 3/23/2018

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Left Cheek CH106/Area Scan (111x201x1): Interpolated grid: dx=10mm, dy=10 mm

Maximum value of SAR (interpolated) = 0.154 W/kg

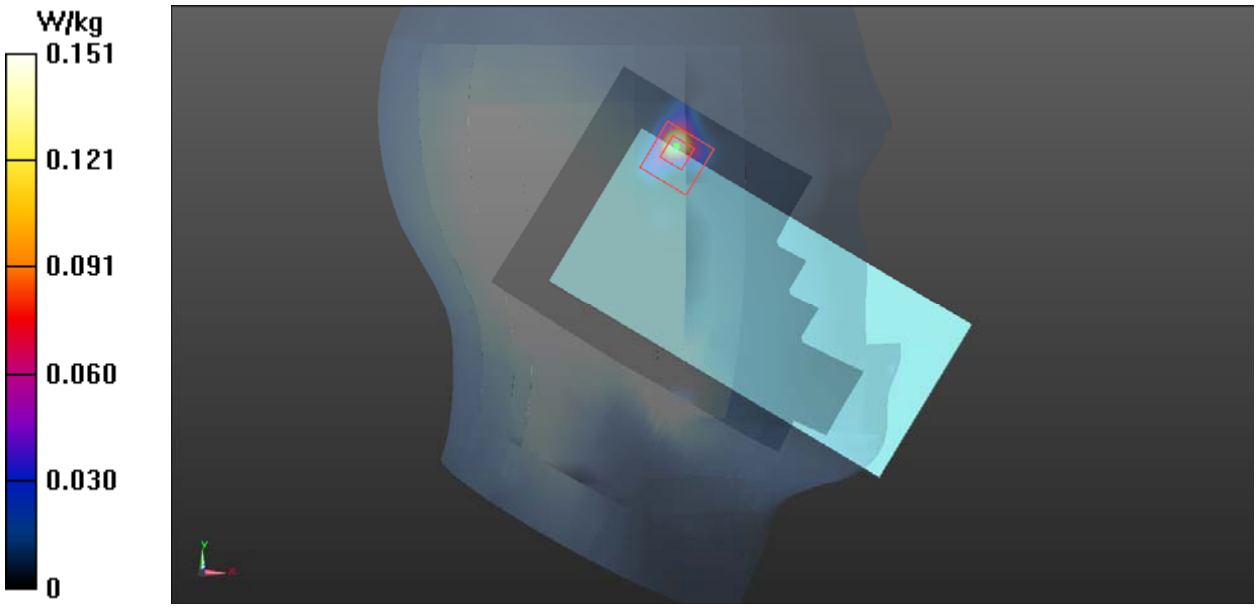
Left Cheek CH106/Zoom Scan(7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 0.7970 V/m; Power Drift = 0.0755 dB

Peak SAR (extrapolated) = 0.442 W/kg

SAR(1 g) = 0.117 W/kg; SAR(10 g) = 0.038 W/kg

Maximum value of SAR (measured) = 0.151 W/kg



Plot 50 802.11a U-NII-2C Back Side CH132 (Distance 15mm)

Date: 10/26/2018

Communication System: UID 0, 802.11a (0); Frequency: 5660 MHz;Duty Cycle: 1:1.01947

Medium parameters used: f = 5660 MHz; σ = 6.073 S/m; ε_r = 45.546; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN3677; ConvF(4.27, 4.27, 4.27); Calibrated: 5/29/2018;

Electronics: DAE4 SN1317; Calibrated: 3/23/2018

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Back Side CH132/Area Scan (111x201x1): Interpolated grid: dx=10mm, dy=10 mm

Maximum value of SAR (interpolated) = 0.546 W/kg

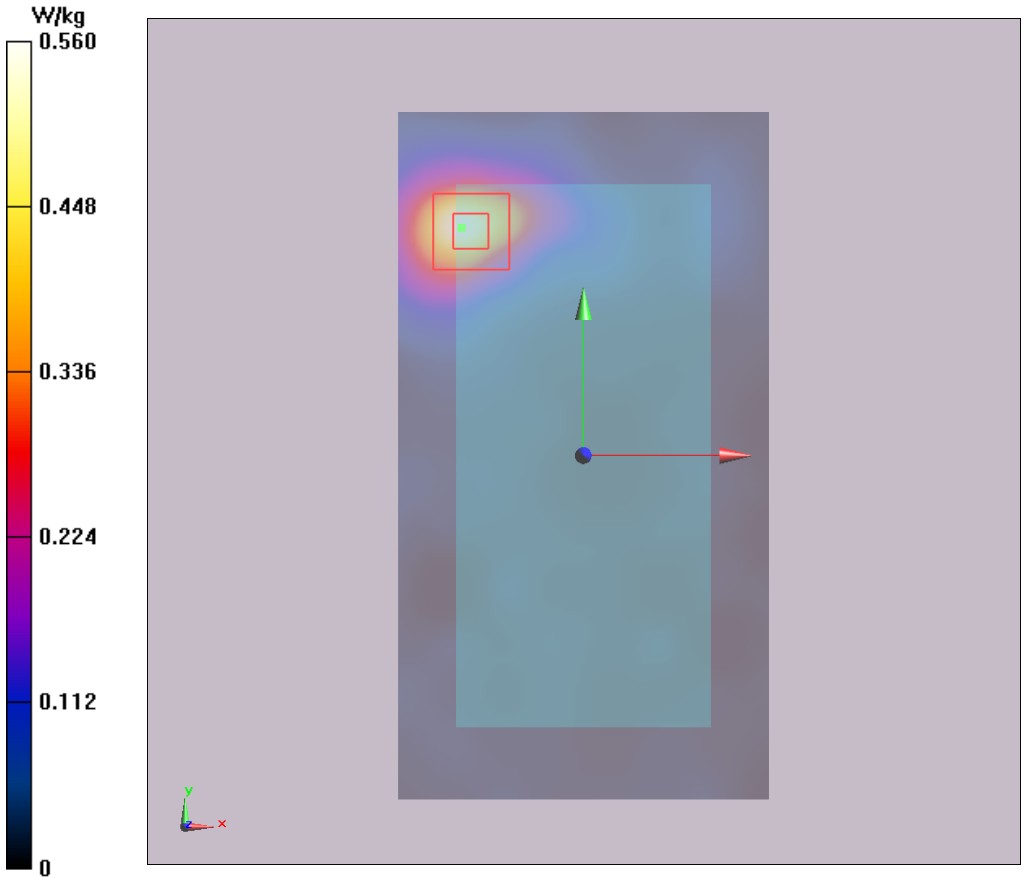
Back Side CH132/Zoom Scan(7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 1.070 V/m; Power Drift =-0.177 dB

Peak SAR (extrapolated) = 1.56 W/kg

SAR(1 g) = 0.148 W/kg; SAR(10 g) = 0.094 W/kg

Maximum value of SAR (measured) = 0.560 W/kg



Plot 51 802.11a U-NII-2C Front Side CH132 (Distance 0mm)

Date: 10/26/2018

Communication System: UID 0, 802.11a (0); Frequency: 5660 MHz;Duty Cycle: 1:1.01947

Medium parameters used: f = 5660 MHz; σ = 6.073 S/m; ε_r = 45.546; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN3677; ConvF(4.27, 4.27, 4.27); Calibrated: 5/29/2018;

Electronics: DAE4 SN1317; Calibrated: 3/23/2018

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Front Side CH132/Area Scan (111x201x1): Interpolated grid: dx=10mm, dy=10 mm

Maximum value of SAR (interpolated) = 1.674 W/kg

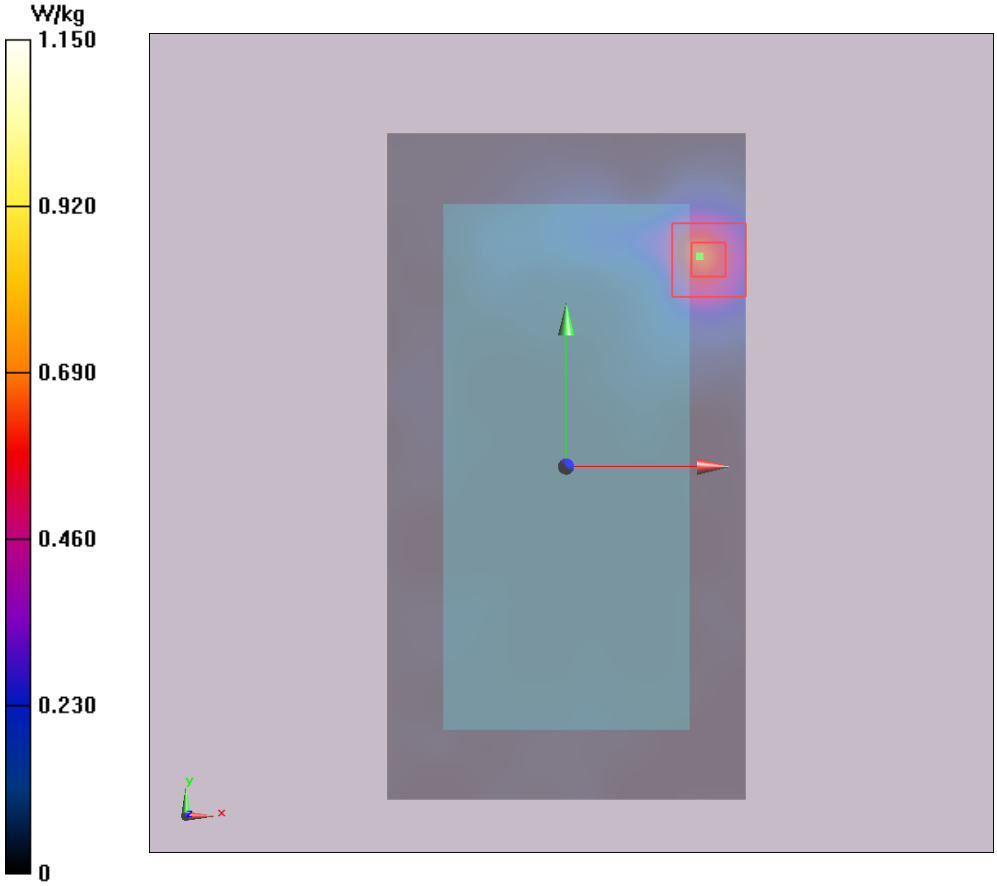
Front Side CH132 /Zoom Scan(7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 0.6320 V/m; Power Drift =-0.042 dB

Peak SAR (extrapolated) = 7.43 W/kg

SAR(1 g) = 1.19 W/kg; SAR(10 g) = 0.341 W/kg

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



Plot 52 802.11ac-VHT80 U-NII-3 Left Cheek CH155

Date:10/25/2018

Communication System: UID 0, 802.11ac VHT80M (0); Frequency: 5775 MHz;Duty Cycle: 1:1.069

Medium parameters used: f = 5775 MHz; σ = 5.428 S/m; ε_r = 34.617; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Left Section

DASY5 Configuration:

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN3677; ConvF(4.99, 4.99, 4.99); Calibrated: 5/29/2018;

Electronics: DAE4 SN1317; Calibrated: 3/23/2018

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Left Cheek CH155/Area Scan (111x201x1): Interpolated grid: dx=10mm, dy=10 mm

Maximum value of SAR (interpolated) = 0.148 W/kg

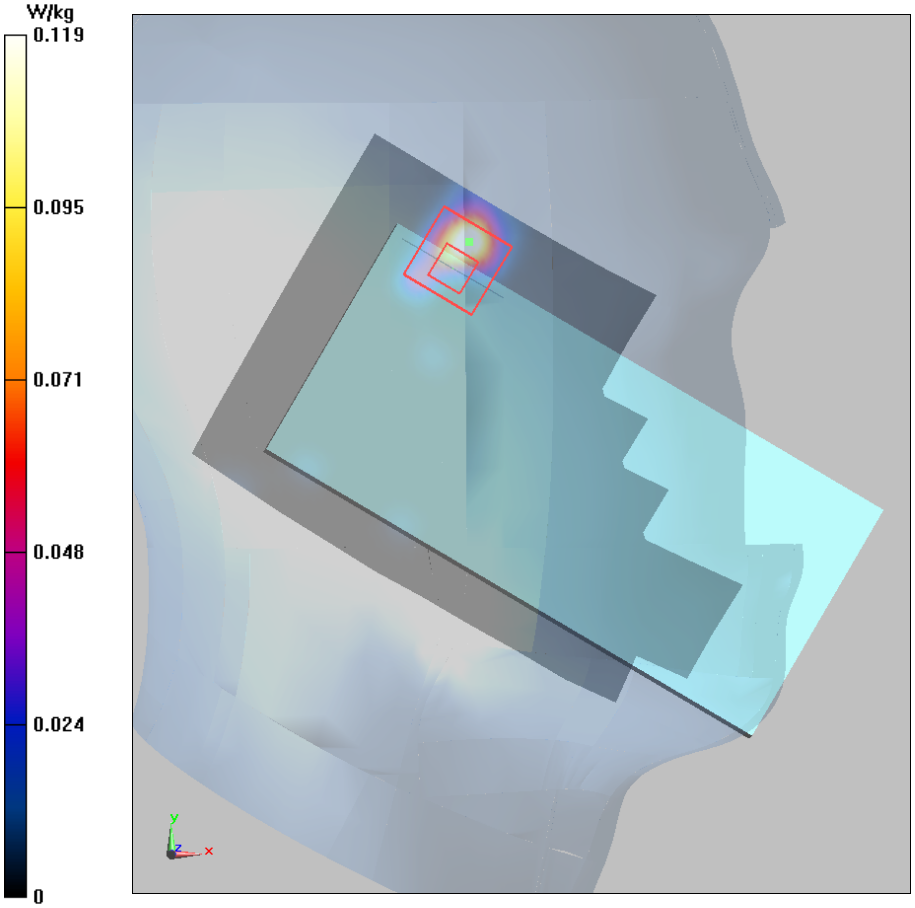
Left Cheek CH155 /Zoom Scan(7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 1.695 V/m; Power Drift = 0.000 dB

Peak SAR (extrapolated) = 0.342 W/kg

SAR(1 g) = 0.102 W/kg; SAR(10 g) = 0.047 W/kg

Maximum value of SAR (measured) = 0.119 W/kg

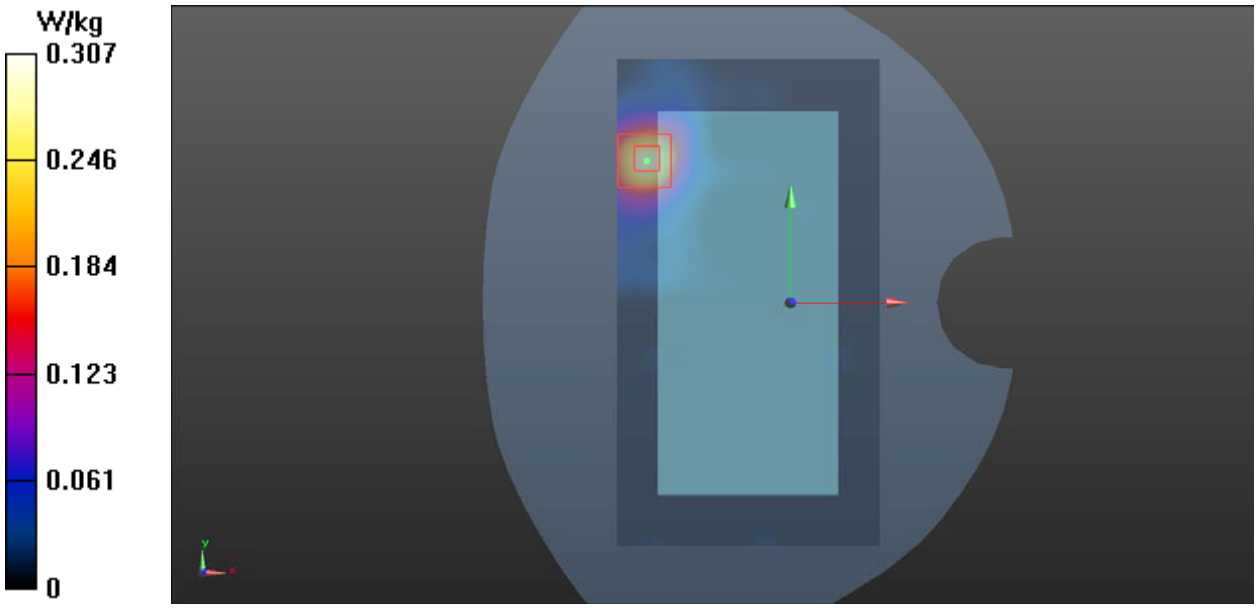


Plot 53 802.11a U-NII-3 Back Side CH165 (Distance 15mm)

Date:10/25/2018
Communication System: UID 0, 802.11a (0); Frequency: 5825 MHz;Duty Cycle: 1:1.01947
Medium parameters used: f = 5825 MHz; σ = 6.174 S/m; ε_r = 47.504; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃
Phantom section: Flat Section
DASY5 Configuration:
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Probe: EX3DV4 - SN3677; ConvF(4.43, 4.43, 4.43); Calibrated: 5/29/2018;
Electronics: DAE4 SN1317; Calibrated: 3/23/2018
Phantom: SAM1; Type: SAM; Serial: TP-1534
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Back Side CH165/Area Scan (111x201x1): Interpolated grid: dx=10mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.287 W/kg

Back Side CH165/Zoom Scan(7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.6560 V/m; Power Drift =0.0583 dB
Peak SAR (extrapolated) = 0.753 W/kg
SAR(1 g) = 0.258 W/kg; SAR(10 g) = 0.097 W/kg
Maximum value of SAR (measured) = 0.307 W/kg



Plot 54 802.11a U-NII-3 Back Side CH165 (Distance 10mm)

Date:10/25/2018

Communication System: UID 0, 802.11a (0); Frequency: 5825 MHz;Duty Cycle: 1:1.01947

Medium parameters used: f = 5825 MHz; σ = 6.174 S/m; ε_r = 47.504; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN3677; ConvF(4.43, 4.43, 4.43); Calibrated: 5/29/2018;

Electronics: DAE4 SN1317; Calibrated: 3/23/2018

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Back Side CH165/Area Scan (111x201x1): Interpolated grid: dx=10mm, dy=10 mm

Maximum value of SAR (interpolated) = 0.578 W/kg

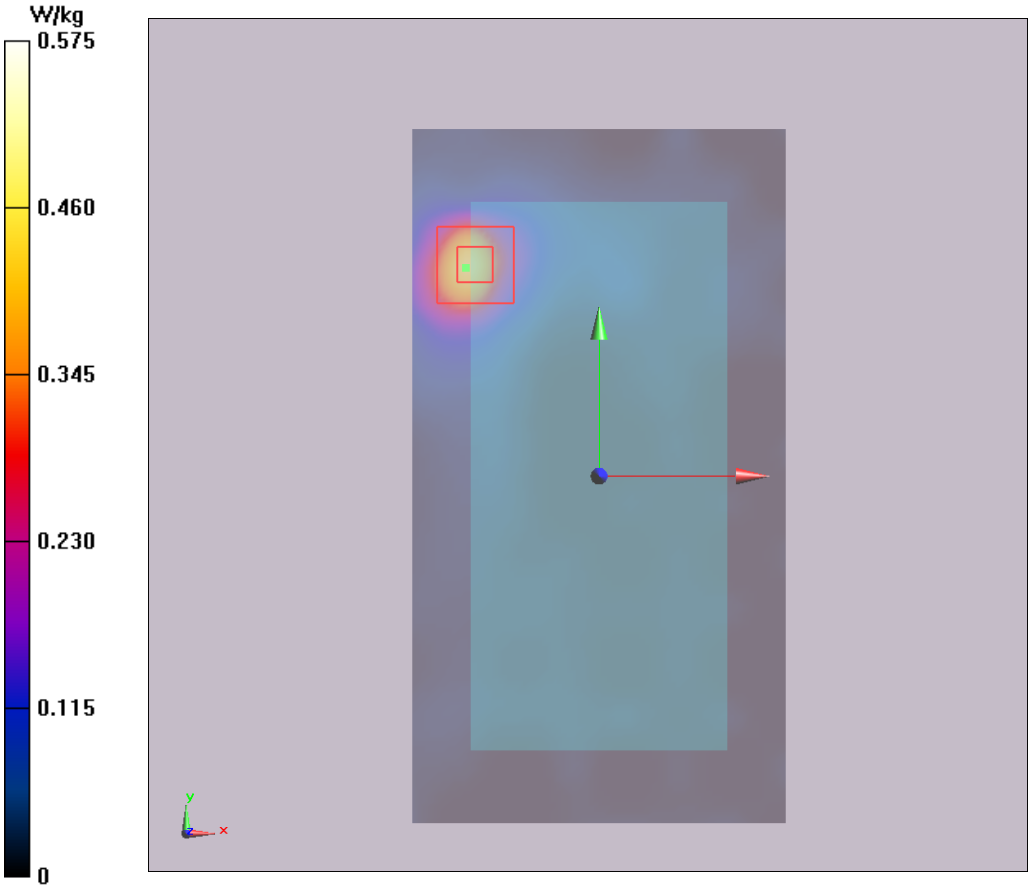
Back Side CH165/Zoom Scan(7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 0.7630 V/m; Power Drift = 0.031 dB

Peak SAR (extrapolated) = 1.41 W/kg

SAR(1 g) = 0.487 W/kg; SAR(10 g) = 0.170 W/kg

Maximum value of SAR (measured) = 0.575 W/kg



ANNEX D: Probe Calibration Certificate

In Collaboration with
CALIBRATION LABORATORY
Add: No.51 Xueyuan Road, Haidian District, Beijing, 100191, China
Tel: +86-10-62304633-2512 Fax: +86-10-62304633-2504
E-mail: cttl@chinattl.com Http://www.chinattl.cn

中国认可
国际互认
校准
CALIBRATION
CNAS L0570

Client TA(shanghai) Certificate No: Z18-60093

CALIBRATION CERTIFICATE

Object	EX3DV4 - SN:3677
Calibration Procedure(s)	FF-Z11-004-01 Calibration Procedures for Dosimetric E-field Probes
Calibration date:	May 29, 2018

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Power Meter NRP2	101919	27-Jun-17 (CTTL, No.J17X05857)	Jun-18
Power sensor NRP-Z91	101547	27-Jun-17 (CTTL, No.J17X05857)	Jun-18
Power sensor NRP-Z91	101548	27-Jun-17 (CTTL, No.J17X05857)	Jun-18
Reference10dBAttenuator	18N50W-10dB	09-Feb-18(CTTL, No.J18X01133)	Feb-20
Reference20dBAttenuator	18N50W-20dB	09-Feb-18(CTTL, No.J18X01132)	Feb-20
Reference Probe EX3DV4	SN 3846	25-Jan-18(SPEAG,No.EX3-3846_Jan18)	Jan-19
DAE4	SN 777	15-Dec-17(SPEAG, No.DAE4-777_Dec17)	Dec -18
Secondary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
SignalGeneratorMG3700A	6201052605	27-Jun-17 (CTTL, No.J17X05858)	Jun-18
Network Analyzer E5071C	MY46110673	14-Jan-18 (CTTL, No.J18X00561)	Jan -19

	Name	Function	Signature
Calibrated by:	Yu Zongying	SAR Test Engineer	
Reviewed by:	Lin Hao	SAR Test Engineer	
Approved by:	Qi Dianyuan	SAR Project Leader	

Issued: May 31, 2018

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

Certificate No: Z18-60093 Page 1 of 11

In Collaboration with
CALIBRATION LABORATORY
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Glossary:

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

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013

b) IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016

c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010

d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Methods Applied and Interpretation of Parameters:

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