SAR TEST REPORT

No. I18Z61798-SEM01

For

TCL Communication Ltd.

LTE/WCDMA/GSM mobile phone

Model name:5008R

With

Hardware Version:03

Software Version: EX3NUCN0

FCC ID: 2ACCJH100

Issued Date: 2018-11-27

TESTING
NVLAP LAB CODE 600118-0

Note:

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Test Laboratory:

CTTL, Telecommunication Technology Labs, CAICT

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REPORT HISTORY

Report Number	Revision	Issue Date	Description
I18Z61798-SEM01	Rev.0	2018-11-22	Initial creation of test report
I18Z61798-SEM01	Rev.1	2018-11-27	Update version of KDB in sections 10.1 on page 25 and 12.3 on page 50

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1 Test Laboratory

1.1 Testing Location

Company Name:	CTTL(Shouxiang)
Address:	No. 51 Shouxiang Science Building, Xueyuan Road, Haidian District, Beijing, P. R. China100191

1.2 Testing Environment

Temperature:	18°C~25°C,
Relative humidity:	30%~ 70%
Ground system resistance:	< 0.5 Ω
Ambient noise & Reflection:	< 0.012 W/kg

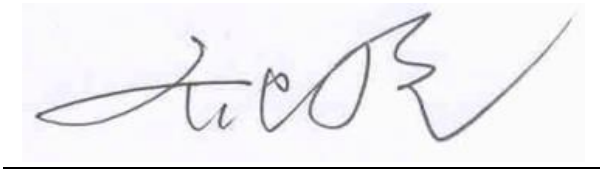
1.3 Project Data

Project Leader:	Qi Dianyuan
Test Engineer:	Lin Xiaojun
Testing Start Date:	November 6, 2018
Testing End Date:	November 13, 2018

1.4 Signature

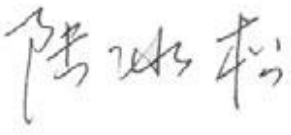
Lin Xiaojun

(Prepared this test report)



Qi Dianyuan

(Reviewed this test report)



Lu Bingsong

Deputy Director of the laboratory

(Approved this test report)

2 Statement of Compliance

The maximum results of SAR found during testing for TCL Communication Ltd. LTE/WCDMA/GSM mobile phone 5008R are as follows:

Table 2.1: Highest Reported SAR (1g)

Exposure Configuration	Technology Band	Highest Reported SAR 1g(W/kg)	Equipment Class
Head (Separation Distance 0mm)	GSM 850	**0.35**	PCE
	PCS 1900	**0.30**	
	UMTS FDD 5	**0.42**	
	UMTS FDD 4	**0.45**	
	UMTS FDD 2	**0.79**	
	LTE Band 2	**0.48**	
	LTE Band 4	**0.49**	
	LTE Band 5	**0.40**	
	LTE Band 12	**0.24**	
	LTE Band 14	**0.23**	
	WLAN 2.4 GHz	**0.56**	DTS
Hotspot (Separation Distance 10mm)	GSM 850	**0.65**	PCE
	PCS 1900	**1.28**	
	UMTS FDD 5	**0.51**	
	UMTS FDD 4	**0.64**	
	UMTS FDD 2	**0.94**	
	LTE Band 2	**1.19**	
	LTE Band 4	**0.81**	
	LTE Band 5	**0.57**	
	LTE Band 12	**0.32**	
	LTE Band 14	**0.31**	
	WLAN 2.4 GHz	**0.17**	
Body-worn (Separation Distance 15mm)	UMTS FDD 4	**0.65**	PCE
	UMTS FDD 2	**0.63**	
	LTE Band 2	**0.47**	
	LTE Band 4	**0.68**	

The SAR values found for the Mobile Phone are below the maximum recommended levels of 1.6 W/Kg as averaged over any 1g tissue according to the ANSI C95.1-1992.

For body operation, this device has been tested and meets FCC RF exposure guidelines when used with any accessory that contains no metal and which provides a minimum separation distance of 10 mm for hotspot and 15mm for body worn between this device and the body of the user. Use of other accessories may not ensure compliance with FCC RF exposure guidelines.

The EUT battery must be fully charged and checked periodically during the test to ascertain uniform power output.

The measurement together with the test system set-up is described in annex C of this test report. A detailed description of the equipment under test can be found in chapter 4 of this test report. The highest reported SAR value is obtained at the case of **(Table 2.1),** and the values are**: 1.28 W/kg(1g).**

Table 2.2: The sum of reported SAR values for main antenna and WiFi

	Position	Main antenna	WLAN 2.4G	Sum
Maximum reported SAR value for Head	Left hand, Touch cheek	0.71	0.56	**1.27**
	Right hand, Touch cheek	0.79	0.24	**1.03**
Maximum reported SAR value for Body	Bottom 10mm	1.28	/	**1.28**

According to the KDB 447498 D01, when the sum of SAR is larger than the limit, SAR test exclusion is determined by the SAR to peak location separation ratio. The ratio is determined by $(SAR1 + SAR2)^{1.5}/Ri$, rounded to two decimal digits, and must be ≤ 0.04 for all antenna pairs in the configuration to qualify for 1-g SAR test exclusion.

Table 2.3: The sum of reported SAR values for main antenna and BT

	Position	Main antenna	BT	Sum
Maximum reported SAR value for Head	Right hand, Touch cheek	0.79	0.21[1]	**1**
Maximum reported SAR value for Body	Bottom 10mm	1.28	/	**1.28**

[1] - Estimated SAR for Bluetooth (see the table 13.3)

According to the above tables, the highest sum of reported SAR values is **1.28 W/kg (1g)**. The detail for simultaneous transmission consideration is described in chapter 13.

According to the KDB648474 D04, 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 10-g extremity SAR according to the body-equivalent tissue dielectric parameters in KDB Publication 865664 D01 to address interactive hand use exposure conditions. 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

Table 2.4: 0mm Reported SAR for phablet (10g)

Exposure Configuration	Technology Band	Highest Reported SAR 10g(W/kg)	Limit 10g (W/kg)
Hotspot (Separation Distance 0mm)	PCS 1900	3.01	4.0
	UMTS FDD 2	2.90	4.0

3 Client Information

3.1 Applicant Information

Company Name:	TCL Communication Ltd.
Address/Post:	7/F, Block F4, TCL Communication Technology Building, TCL International E City, Zhong Shan Yuan Road, Nanshan District, Shenzhen, Guangdong, P.R. China 518052
City:	Gong Zhizhou
Country:	China
Contact Person:	Gong Zhizhou
E-mail:	zhizhou.gong@tcl.com
Telephone:	0086-755-36611722
Fax:	/

3.2 Manufacturer Information

Company Name:	TCL Communication Ltd.
Address/Post:	7/F, Block F4, TCL Communication Technology Building, TCL International E City, Zhong Shan Yuan Road, Nanshan District, Shenzhen, Guangdong, P.R. China 518052
City:	Gong Zhizhou
Country:	China
Contact Person:	Gong Zhizhou
E-mail:	zhizhou.gong@tcl.com
Telephone:	0086-755-36611722
Fax:	/

4 Equipment Under Test (EUT) and Ancillary Equipment (AE)

4.1 About EUT

Description:	LTE/WCDMA/GSM mobile phone
Model name:	5008R
Operating mode(s):	GSM 850/900/1800/1900, UMTS FDD 2/4/5, BT, Wi-Fi LTE Band 2/4/5/12/14
Tested Tx Frequency:	825 – 848.8 MHz (GSM 850)
	1850.2 – 1910 MHz (GSM 1900)
	826.4–846.6 MHz (WCDMA 850 Band V)
	1712.4 – 1752.6 MHz (WCDMA 1700 Band IV)
	1852.4–1907.6 MHz (WCDMA1900 Band II)
	1860 – 1900 MHz (LTE Band 2)
	1720 – 1745 MHz (LTE Band 4)
	824.7 – 848.3 MHz (LTE Band 5)
	699.7 – 715.3 MHz (LTE Band 12)
	790.5 –795.5 MHz (LTE Band 14)
	2412 – 2462 MHz (Wi-Fi 2.4G)
GPRS/EGPRS Multislot Class:	12
GPRS capability Class:	B
Test device Production information:	Production unit
Device type:	Portable device
Antenna type:	Integrated antenna
Hotspot mode:	Support
Product Dimension:	L: 146.35mm W: 68.8mm overall diagonal: 161.72mm

4.2Internal Identification of EUT used during the test

EUT ID*	IMEI	HW	SW Version
EUT1	015320000202601	03	EX3NUCN0
EUT2	015320000202619	03	EX3NUCN0
EUT3	015320000202627	03	EX3NUCN0
EUT4	015320000202635	03	EX3NUCN0
EUT5	015320000202759	03	EX3NUCN0
EUT6	015320000202593	03	EX3NUCN0
EUT7	015320000202684	03	EX3NUCN0

*EUT ID: is used to identify the test sample in the lab internally.

Note: It is performed to test SAR with the EUT1&2&3&4 and conducted power with the EUT5&6&7

4.3 Internal Identification of AE used during the test

AE ID*	Description	Model	SN	Manufacturer
AE1	Battery	CAC2900019C1	/	BYD

*AE ID: is used to identify the test sample in the lab internally.

5 TEST METHODOLOGY

5.1 Applicable Limit Regulations

ANSI C95.1–1992:IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.

It specifies the maximum exposure limit of **1.6 W/kg** as averaged over any 1 gram of tissue for portable devices being used within 20 cm of the user in the uncontrolled environment.

5.2 Applicable Measurement Standards

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

KDB447498 D01: General RF Exposure Guidance v06: Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies.

KDB648474 D04 Handset SAR v01r03: SAR Evaluation Considerations for Wireless Handsets.

KDB941225 D01 SAR test for 3G devices v03r01: SAR Measurement Procedures for 3G Devices

KDB941225 D05 SAR for LTE Devices v02r05: SAR Evaluation Considerations for LTE Devices

KDB941225 D06 Hotspot Mode SAR v02r01: SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities

KDB248227 D01 802.11 Wi-Fi SAR v02r02: SAR GUIDANCE FOR IEEE 802.11 (Wi-Fi) TRANSMITTERS

KDB865664 D01SAR measurement 100 MHz to 6 GHz v01r04: SAR Measurement Requirements for 100 MHz to 6 GHz.

KDB865664 D02RF Exposure Reporting v01r02: RF Exposure Compliance Reporting and Documentation Considerations

6 Specific Absorption Rate (SAR)

6.1 Introduction

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

6.2 SAR Definition

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

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

SAR is expressed in units of Watts per kilogram (W/kg)
SAR measurement can be either related to the temperature elevation in tissue by

$$SAR = c\left(\frac{\delta T}{\delta t}\right)$$

Where: C is the specific head capacity, δT is the temperature rise and δt is the exposure duration, or related to the electrical field in the tissue by

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

Where: σ is the conductivity of the tissue, ρ is the mass density of tissue and E is the RMS electrical field strength.

However for evaluating SAR of low power transmitter, electrical field measurement is typically applied.

7 Tissue Simulating Liquids

7.1 Targets for tissue simulating liquid

Table 7.1: Targets for tissue simulating liquid

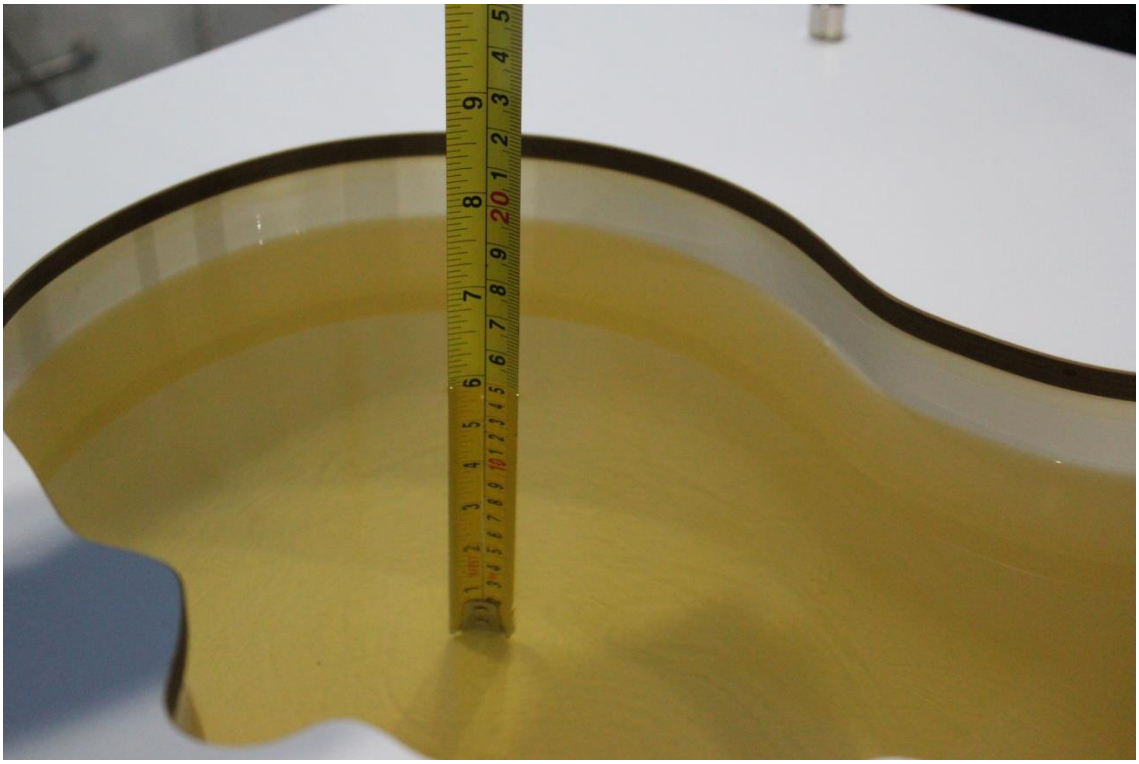
Frequency(MHz)	Liquid Type	Conductivity(σ)	± 5% Range	Permittivity(ε)	± 5% Range
750	Head	0.89	0.85～0.93	41.94	39.8～44.0
750	Body	0.96	0.91～1.01	55.5	52.7～58.3
835	Head	0.90	0.86～0.95	41.5	39.4～43.6
835	Body	0.97	0.92～1.02	55.2	52.4～58.0
1750	Head	1.37	1.30～1.44	40.08	38.1～42.1
1750	Body	1.49	1.42～1.56	53.4	50.7～56.1
1900	Head	1.40	1.33～1.47	40.0	38.0～42.0
1900	Body	1.52	1.44～1.60	53.3	50.6～56.0
2450	Head	1.80	1.71～1.89	39.2	37.2～41.2
2450	Body	1.95	1.85～2.05	52.7	50.1～55.3

7.2 Dielectric Performance

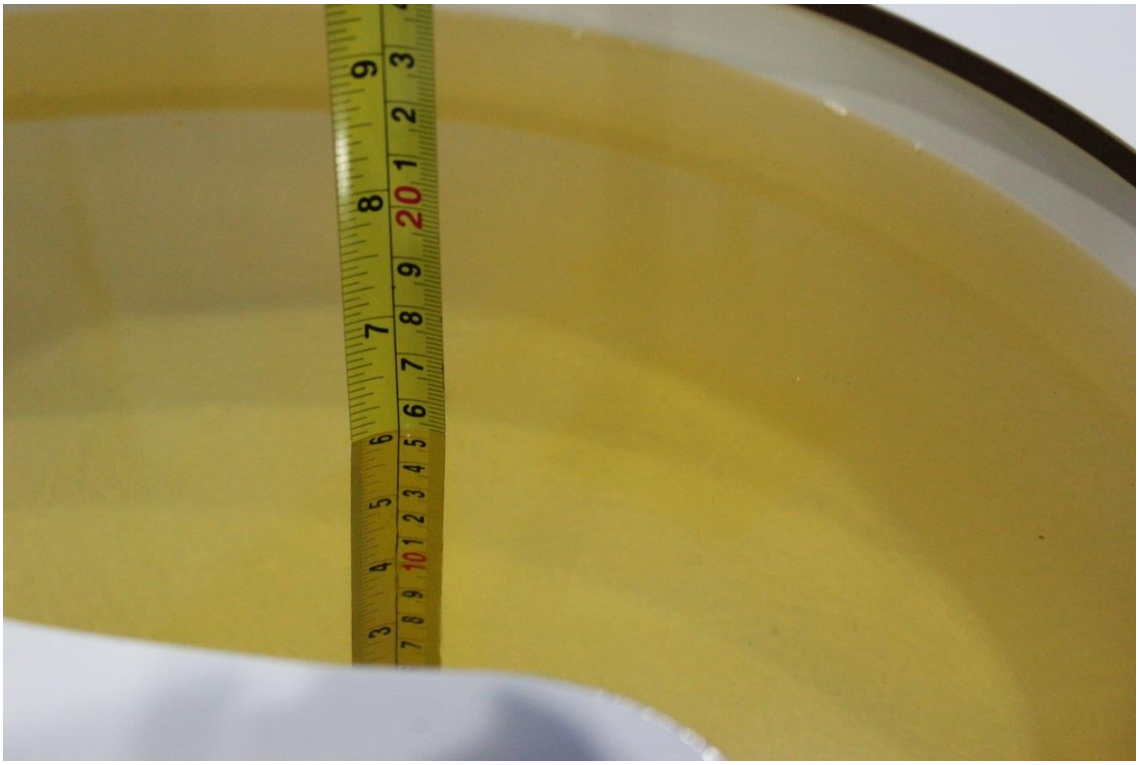
Table 7.2: Dielectric Performance of Tissue Simulating Liquid

Measurement Date (yyyy-mm-dd)	Type	Frequency	Permittivity ε	Drift (%)	Conductivity σ (S/m)	Drift (%)
2018-11-6	Head	750 MHz	42.43	1.17	0.88	-1.12
	Body	750 MHz	56.6	1.98	0.95	-1.04
2018-11-7	Head	835 MHz	41.86	0.87	0.916	1.78
	Body	835 MHz	56.06	1.56	0.998	2.89
2018-11-8	Head	1750 MHz	40.68	1.50	1.396	1.90
	Body	1750 MHz	52.5	-1.69	1.522	2.15
2018-11-12	Head	1900 MHz	40.56	1.40	1.37	-2.14
	Body	1900 MHz	52.51	-1.48	1.588	4.47
2018-11-13	Head	2450 MHz	39.52	0.82	1.814	0.78
	Body	2450 MHz	53.19	0.93	1.937	-0.67

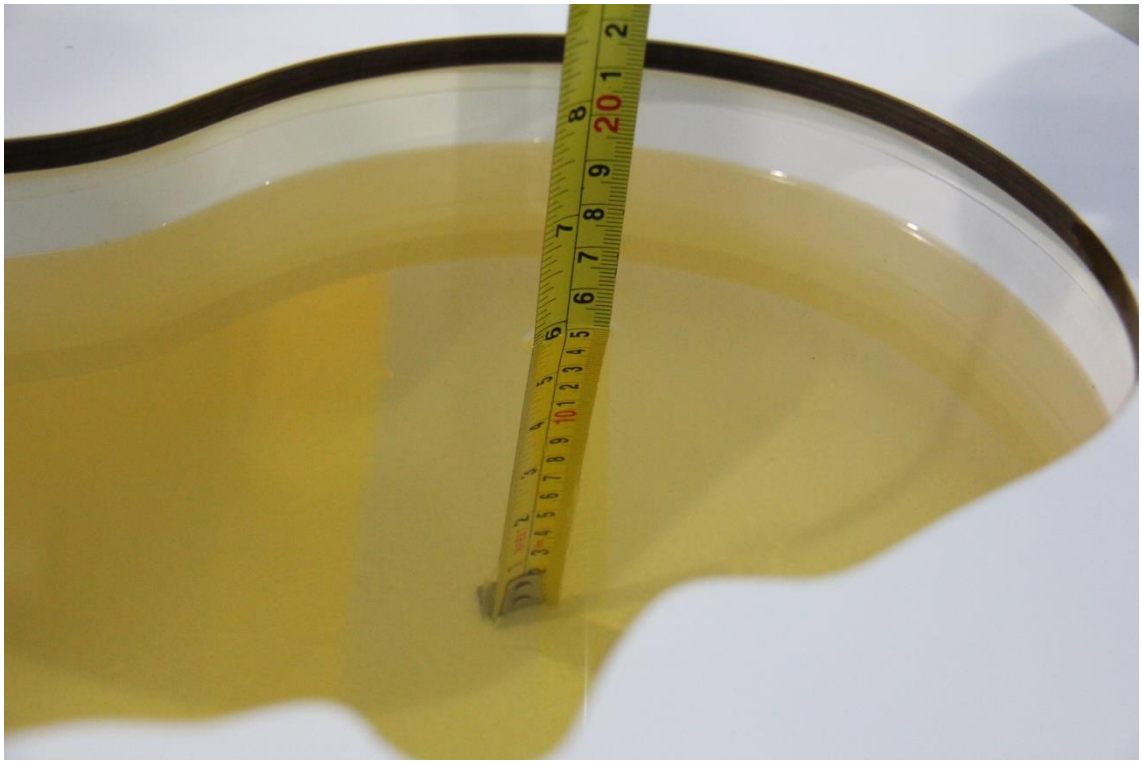
Note: The liquid temperature is 22.0°C



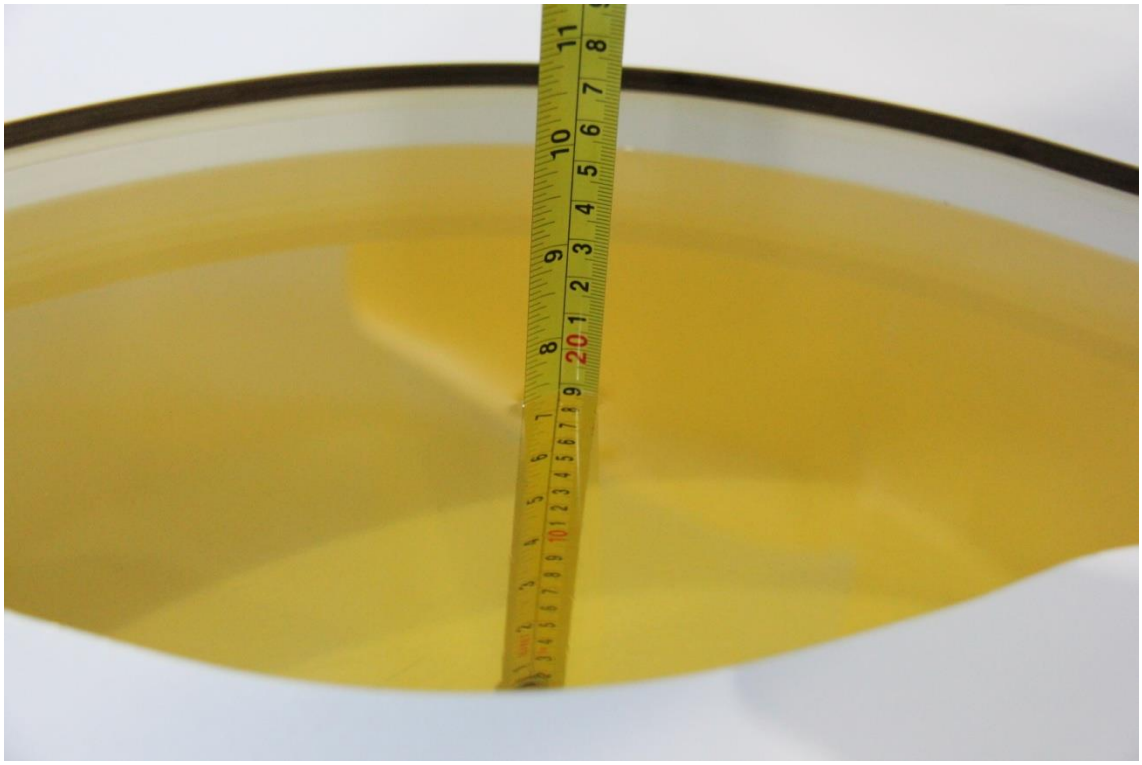
Picture 7-1 Liquid depth in the Head Phantom (750MHz)



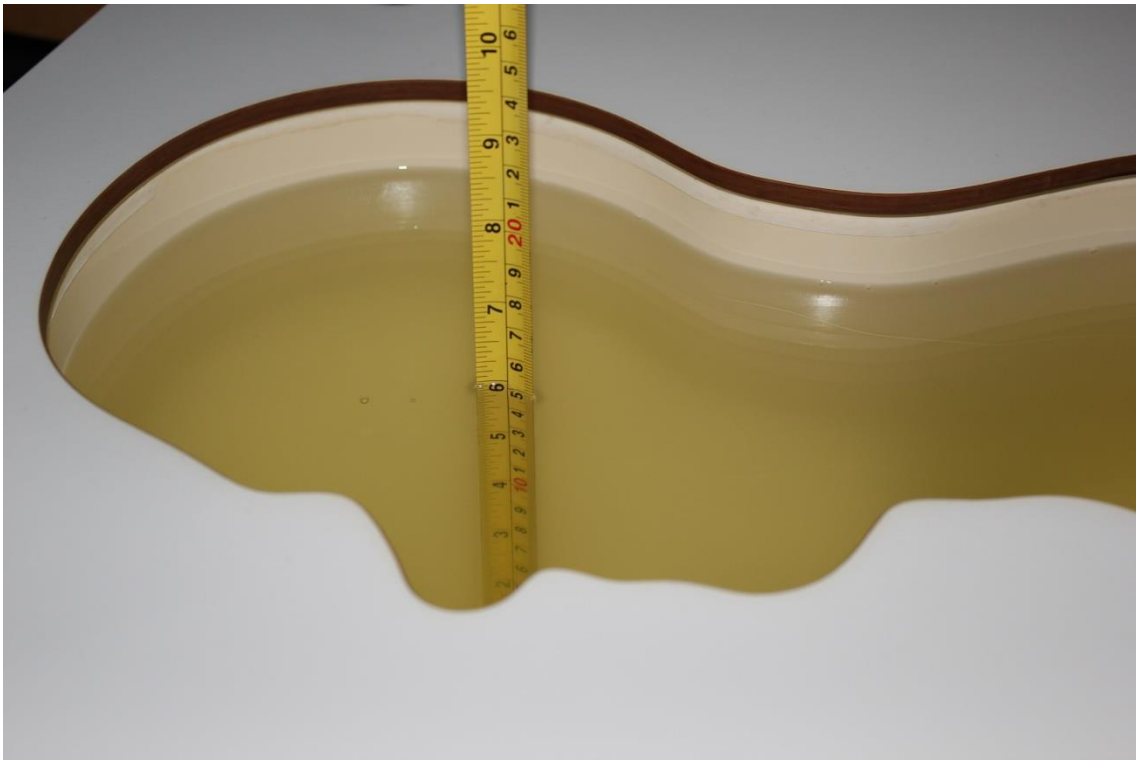
Picture 7-2 Liquid depth in the Flat Phantom (750MHz)



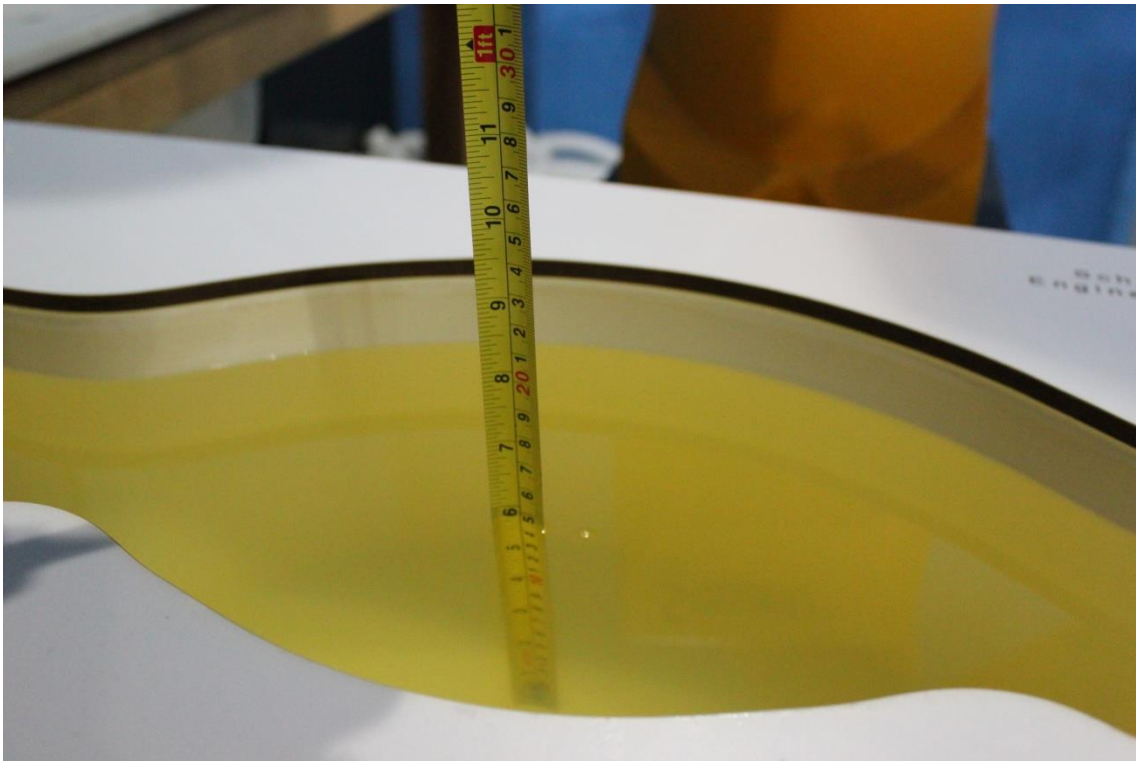
Picture 7-3 Liquid depth in the Head Phantom (835 MHz)



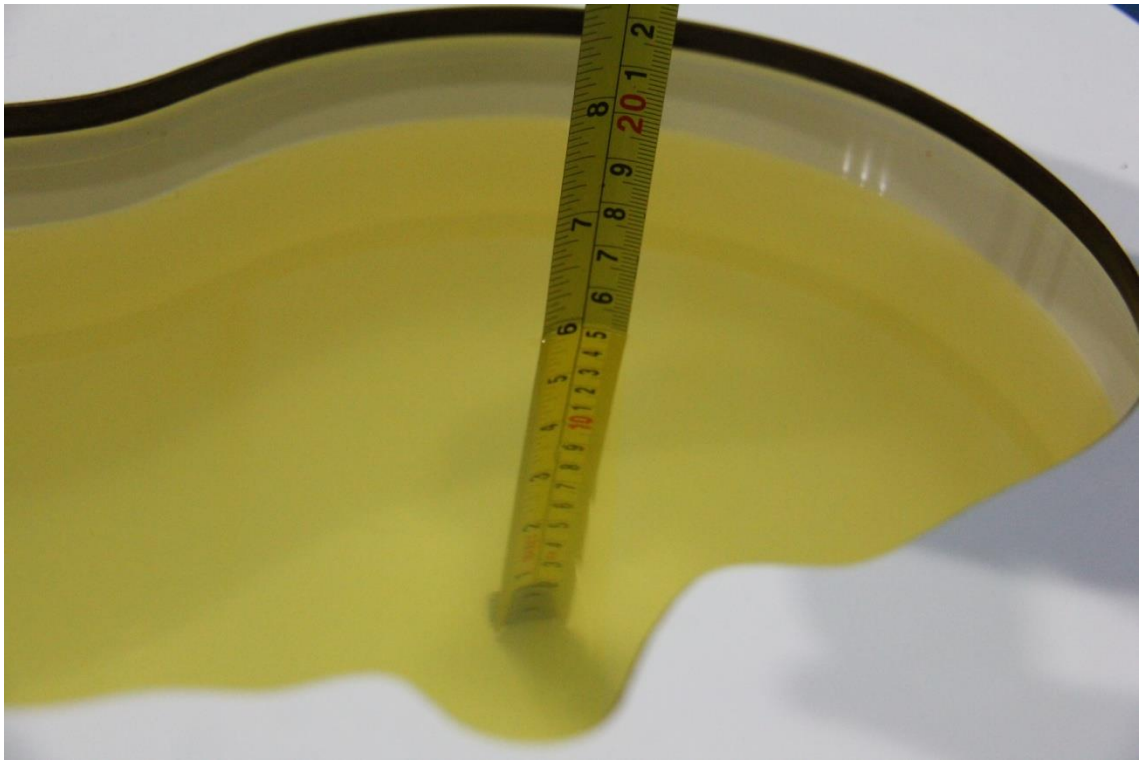
Picture 7-4 Liquid depth in the Flat Phantom (835 MHz)



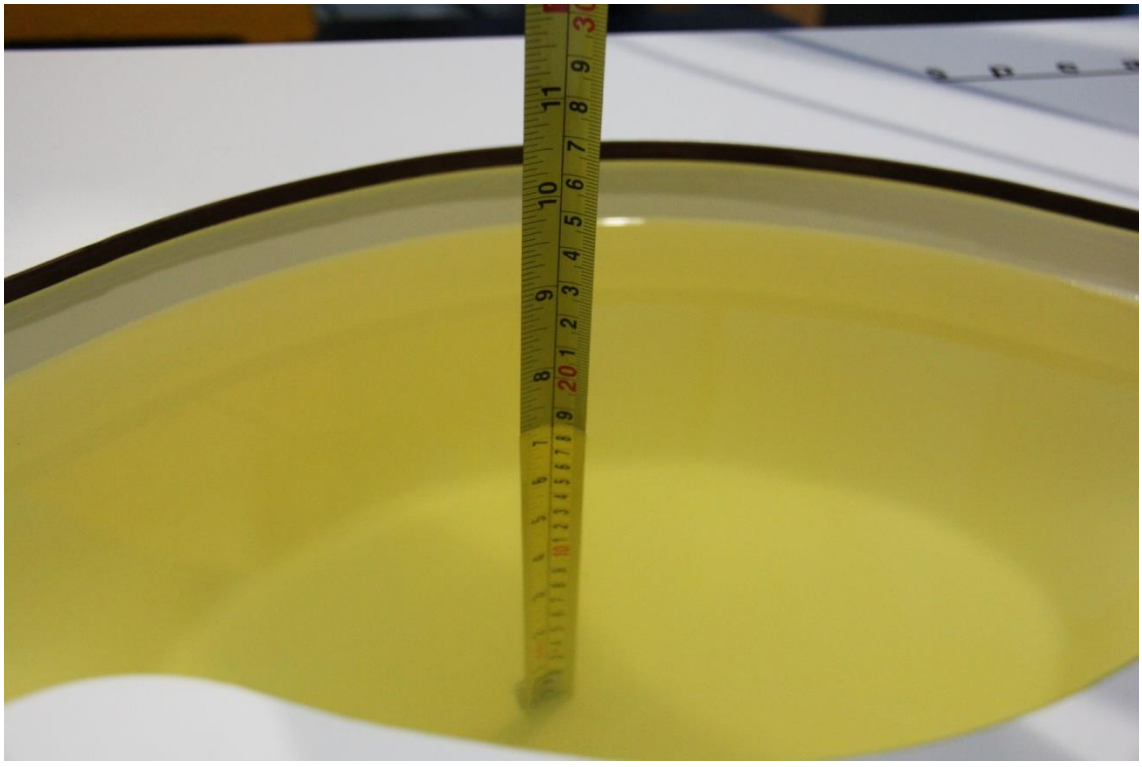
Picture 7-5 Liquid depth in the Head Phantom (1750 MHz)



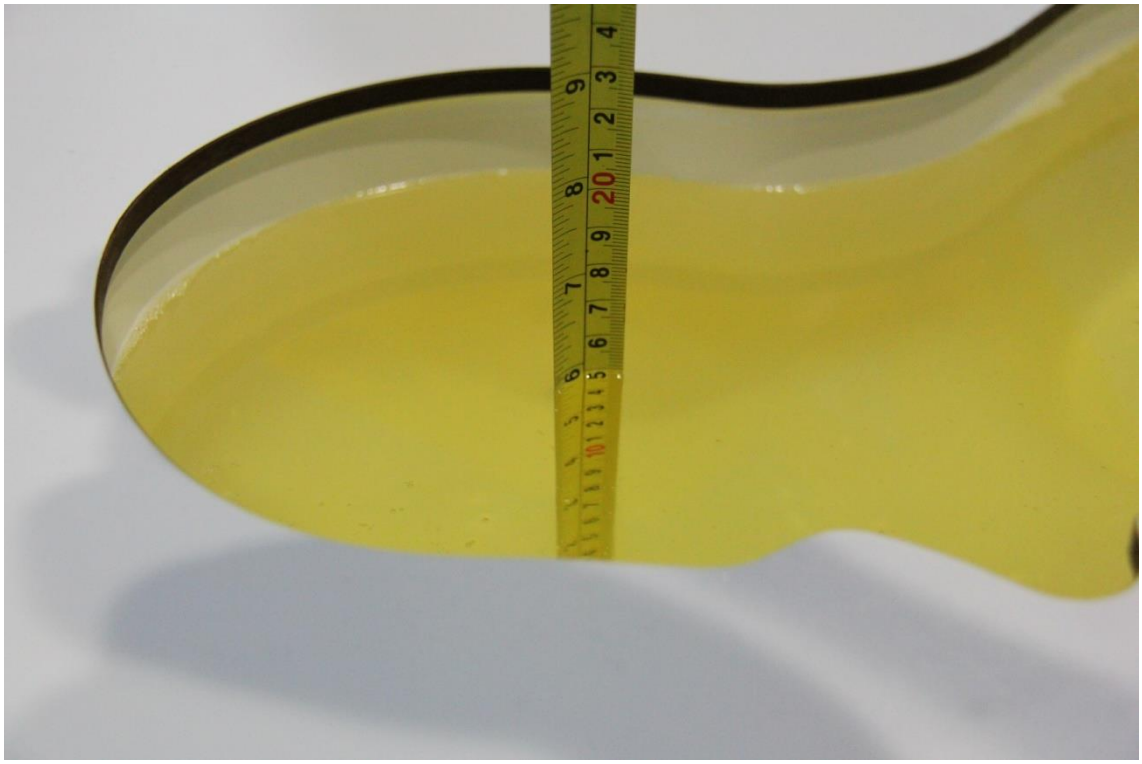
Picture 7-6 Liquid depth in the Flat Phantom (1750MHz)



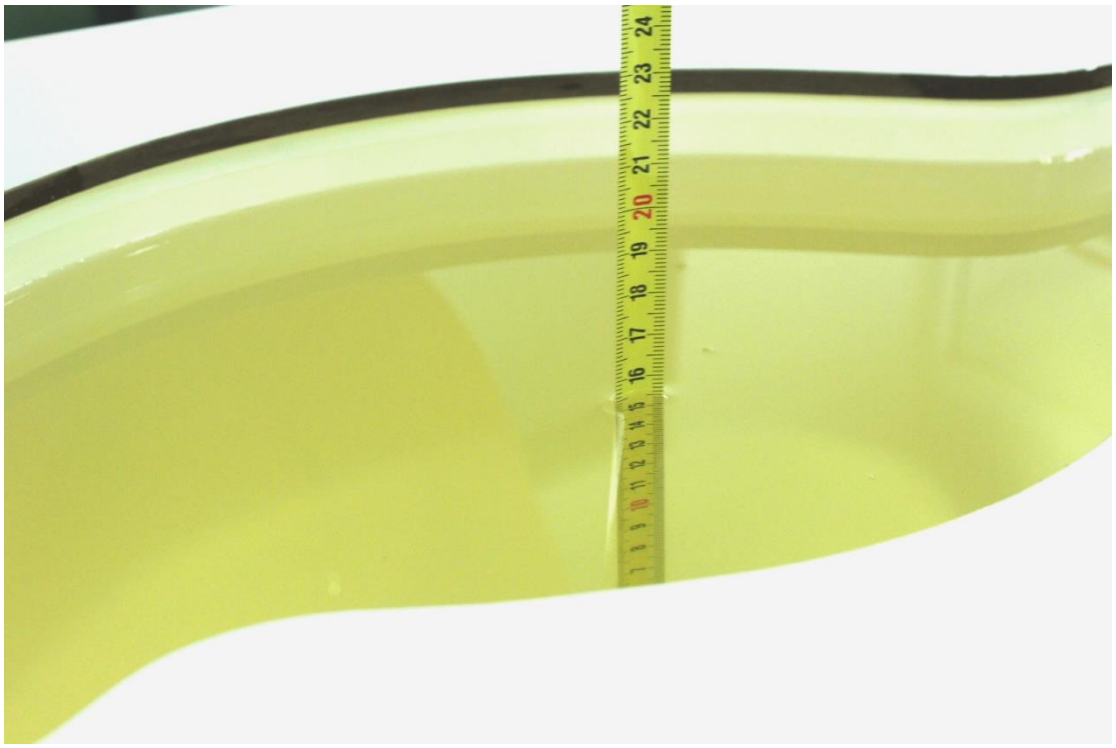
Picture 7-7 Liquid depth in the Head Phantom (1900 MHz)



Picture 7-8 Liquid depth in the Flat Phantom (1900MHz)



Picture 7-9 Liquid depth in the Head Phantom (2450MHz)

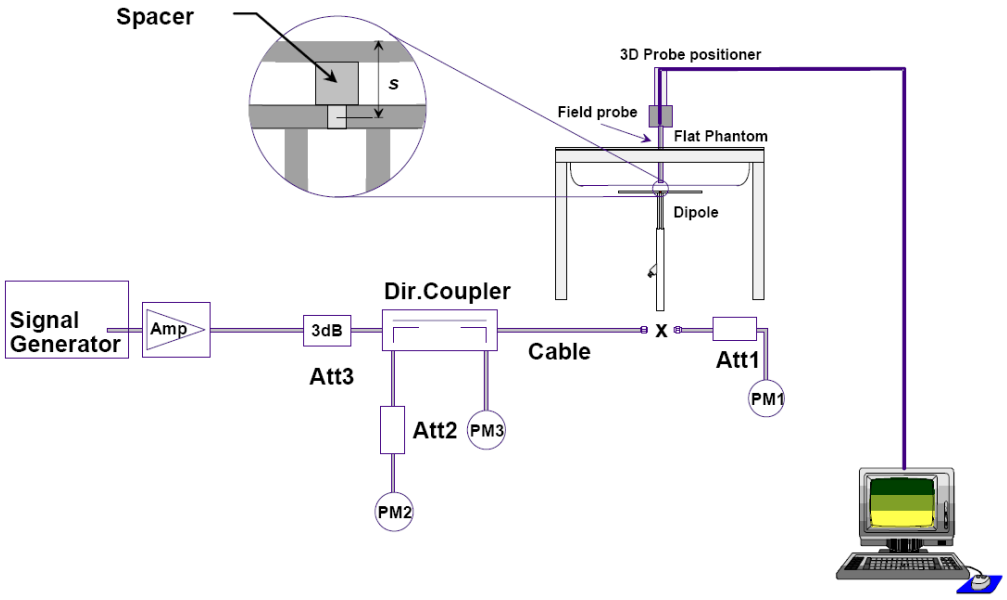


Picture 7-10 Liquid depth in the Flat Phantom (2450MHz)

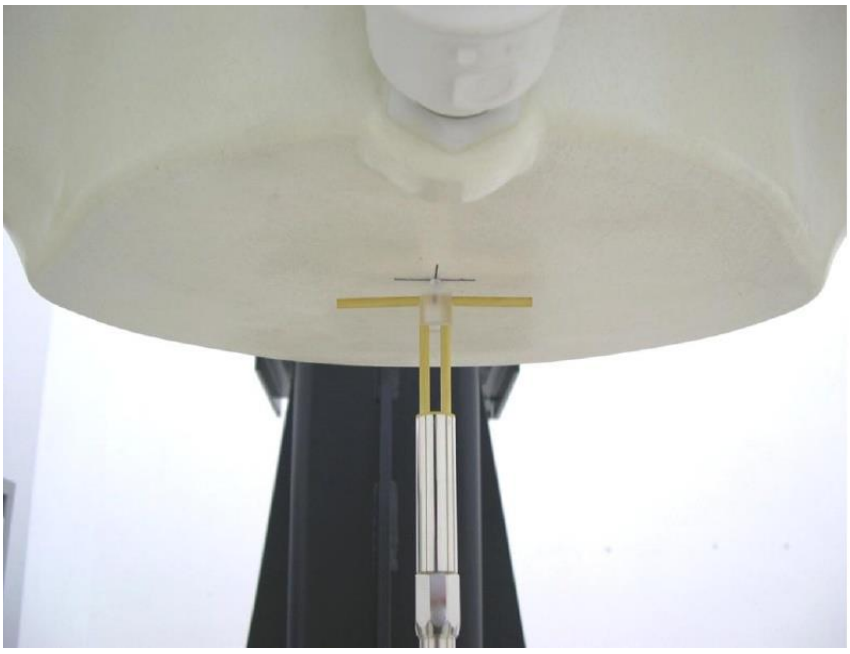
8 System verification

8.1 System Setup

In the simplified setup for system evaluation, the DUT is replaced by a calibrated dipole and the power source is replaced by a continuous wave that comes from a signal generator. The calibrated dipole must be placed beneath the flat phantom section of the SAM twin phantom with the correct distance holder. The distance holder should touch the phantom surface with a light pressure at the reference marking and be oriented parallel to the long side of the phantom. The equipment setup is shown below:



Picture 8.1 System Setup for System Evaluation



Picture 8.2 Photo of Dipole Setup

8.2 System Verification

SAR system verification is required to confirm measurement accuracy, according to the tissue dielectric media, probe calibration points and other system operating parameters required for measuring the SAR of a test device. The system verification must be performed for each frequency band and within the valid range of each probe calibration point required for testing the device.

The system verification results are required that the area scan estimated 1-g SAR is within 3% of the zoom scan 1-g SAR. The details are presented in annex B.

Table 8.1: System Verification of Head

Measurement Date (yyyy-mm-dd)	Frequency	Target value (W/kg)		Measured value(W/kg)		Deviation	
		10 g Average	1 g Average	10 g Average	1 g Average	10 g Average	1 g Average
2018-11-6	750 MHz	5.34	8.20	5.32	8.36	-0.37%	1.95%
2018-11-7	835 MHz	6.06	9.40	6.04	9.56	-0.33%	1.70%
2018-11-8	1750 MHz	18.9	35.9	19.4	36.8	2.65%	2.40%
2018-11-12	1900 MHz	21.3	40.4	21.4	39.9	0.47%	-1.19%
2018-11-13	2450 MHz	24.2	51.7	24.1	52.0	-0.50%	0.66%

Table 8.2: System Verification of Body

Measurement Date (yyyy-mm-dd)	Frequency	Target value (W/kg)		Measured value (W/kg)		Deviation	
		10 g Average	1 g Average	10 g Average	1 g Average	10 g Average	1 g Average
2018-11-6	750 MHz	5.68	8.63	5.60	8.56	-1.41%	-0.81%
2018-11-7	835 MHz	6.28	9.53	6.36	9.44	1.27%	-0.94%
2018-11-8	1750 MHz	19.3	36.4	19.52	36.72	1.14%	0.88%
2018-11-12	1900 MHz	21.4	40.4	21.56	39.76	0.75%	-1.58%
2018-11-13	2450 MHz	24.1	51.3	24.16	51.64	0.25%	0.66%

9 Measurement Procedures

9.1 Tests to be performed

In order to determine the highest value of the peak spatial-average SAR of a handset, all device positions, configurations and operational modes shall be tested for each frequency band according to steps 1 to 3 below. A flowchart of the test process is shown in picture 9.1.

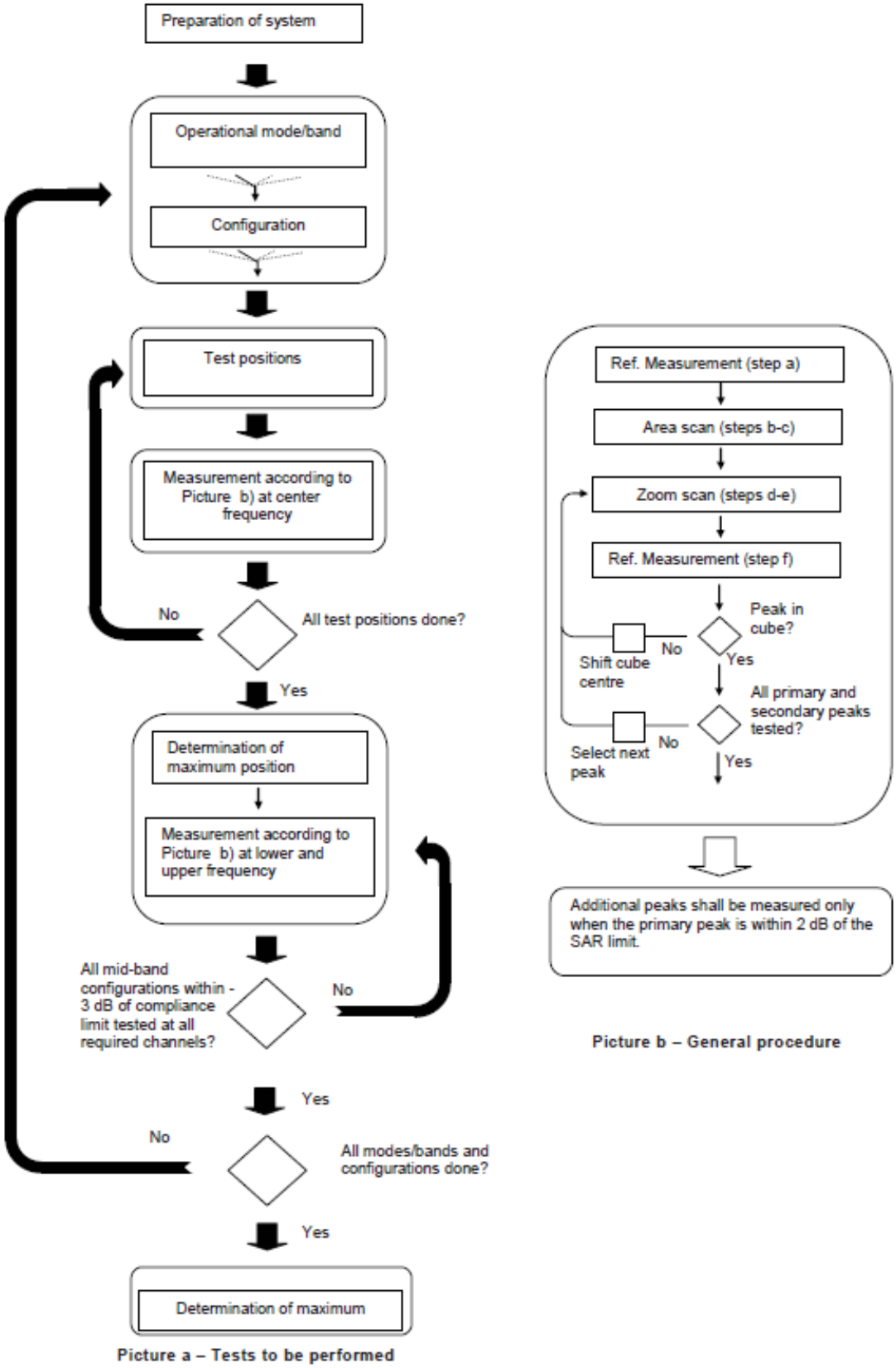
Step 1: The tests described in 9.2 shall be performed at the channel that is closest to the centre of the transmit frequency band (f_c) for:

a) all device positions (cheek and tilt, for both left and right sides of the SAM phantom, as described in annex D),
b) all configurations for each device position in a), e.g., antenna extended and retracted, and
c) all operational modes, e.g., analogue and digital, for each device position in a) and configuration in b) in each frequency band.

If more than three frequencies need to be tested according to 11.1 (i.e., $N_c > 3$), then all frequencies, configurations and modes shall be tested for all of the above test conditions.

Step 2: For the condition providing highest peak spatial-average SAR determined in Step 1,perform all tests described in 9.2 at all other test frequencies, i.e., lowest and highest frequencies. In addition, for all other conditions (device position, configuration and operational mode) where the peak spatial-average SAR value determined in Step 1 is within3 dB of the applicable SAR limit, it is recommended that all other test frequencies shall be tested as well.

Step 3: Examine all data to determine the highest value of the peak spatial-average SAR found in Steps 1 to 2.



Picture 9.1Block diagram of the tests to be performed

9.2 General Measurement Procedure

The area and zoom scan resolutions specified in the table below must be applied to the SAR measurements and fully documented in SAR reports to qualify for TCB approval. Probe boundary effect error compensation is required for measurements with the probe tip closer than half a probe tip diameter to the phantom surface. Both the probe tip diameter and sensor offset distance must satisfy measurement protocols; to ensure probe boundary effect errors are minimized and the higher fields closest to the phantom surface can be correctly measured and extrapolated to the phantom surface for computing 1-g SAR. Tolerances of the post-processing algorithms must be verified by the test laboratory for the scan resolutions used in the SAR measurements, according to the reference distribution functions specified in IEEE Std 1528-2003. The results should be documented as part of the system validation records and may be requested to support test results when all the measurement parameters in the following table are not satisfied.

<table>
<tr><td colspan="3"></td><td>≤ 3 GHz</td><td>> 3 GHz</td></tr>
<tr><td colspan="3">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 colspan="3">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 colspan="3" rowspan="2">Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}</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>
<tr><td colspan="3">Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}</td><td>≤ 2 GHz: ≤ 8 mm
2 – 3 GHz: ≤ 5 mm*</td><td>3 – 4 GHz: ≤ 5 mm*
4 – 6 GHz: ≤ 4 mm*</td></tr>
<tr><td rowspan="3">Maximum zoom scan spatial resolution, normal to phantom surface</td><td colspan="2">uniform grid: $\Delta z_{Zoom}(n)$</td><td>≤ 5 mm</td><td>3 – 4 GHz: ≤ 4 mm
4 – 5 GHz: ≤ 3 mm
5 – 6 GHz: ≤ 2 mm</td></tr>
<tr><td rowspan="2">graded grid</td><td>$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface</td><td>≤ 4 mm</td><td>3 – 4 GHz: ≤ 3 mm
4 – 5 GHz: ≤ 2.5 mm
5 – 6 GHz: ≤ 2 mm</td></tr>
<tr><td>$\Delta z_{Zoom}(n>1)$: between subsequent points</td><td colspan="2">≤ 1.5·$\Delta z_{Zoom}(n-1)$</td></tr>
<tr><td>Minimum zoom scan volume</td><td colspan="2">x, y, z</td><td>≥ 30 mm</td><td>3 – 4 GHz: ≥ 28 mm
4 – 5 GHz: ≥ 25 mm
5 – 6 GHz: ≥ 22 mm</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 ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.</td></tr>
</table>

9.3 WCDMA Measurement Procedures for SAR

The following procedures are applicable to WCDMA handsets operating under 3GPP Release99, Release 5 and Release 6. The default test configuration is to measure SAR with an established radio link between the DUT and a communication test set using a 12.2kbps RMC (reference measurement channel) configured in Test Loop Mode 1. SAR is selectively confirmed for other physical channel configurations (DPCCH & DPDCH$_n$), HSDPA and HSPA (HSUPA/HSDPA) modes according to output power, exposure conditions and device operating capabilities. Both uplink and downlink should be configured with the same RMC or AMR, when required. SAR for Release 5 HSDPA and Release 6 HSPA are measured using the applicable FRC (fixed reference channel) and E-DCH reference channel configurations. Maximum output power is verified according to applicable versions of 3GPP TS 34.121 and SAR must be measured according to these maximum output conditions. When Maximum Power Reduction (MPR) is not implemented according to Cubic Metric (CM) requirements for Release 6 HSPA, the following procedures do not apply.

For Release 5 HSDPA Data Devices:

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{hs}	CM/dB
1	2/15	15/15	64	2/15	4/15	0.0
2	12/15	15/15	64	12/15	24/25	1.0
3	15/15	8/15	64	15/8	30/15	1.5
4	15/15	4/15	64	15/4	30/15	1.5

For Release 6 HSPA Data Devices

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{hs}	β_{ec}	β_{ed}	β_{ed} (SF)	β_{ed} (codes)	CM (dB)	MPR (dB)	AG Index	E-TFCI
1	11/15	15/15	64	11/15	22/15	209/225	1039/225	4	1	1.5	1.5	20	75
2	6/15	15/15	64	6/15	12/15	12/15	12/15	4	1	1.5	1.5	12	67
3	15/15	9/15	64	15/9	30/15	30/15	β_{ed1}:47/15 β_{ed2}:47/15	4	2	1.5	1.5	15	92
4	2/15	15/15	64	2/15	4/15	4/15	56/75	4	1	1.5	1.5	17	71
5	15/15	15/15	64	15/15	24/15	30/15	134/15	4	1	1.5	1.5	21	81

Rel.8 DC-HSDPA (Cat 24)

SAR test exclusion for Rel.8 DC-HSDPA must satisfy the SAR test exclusion requirements of Rel.5 HSDPA. SAR test exclusion for DC-HSDPA devices is determined by power measurements according to the H-Set 12, Fixed Reference Channel (FRC) configuration in Table C.8.1.12 of 3GPP TS 34.121-1. A primary and a secondary serving HS-DSCH Cell are required to perform the power measurement and for the results to qualify for SAR test exclusion.

9.4 SAR Measurement for LTE

SAR tests for LTE are performed with a base station simulator, Rohde & Rchwarz CMW500. Closed loop power control was used so the UE transmits with maximum output power during SAR testing. All powers were measured with the CMW 500.
It is performed for conducted power and SAR based on the KDB941225 D05.
SAR is evaluated separately according to the following procedures for the different test positions in each exposure condition – head, body, body-worn accessories and other use conditions. The procedures in the following subsections are applied separately to test each LTE frequency band.

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 among 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.

9.5 Bluetooth & Wi-Fi Measurement Procedures for SAR

Normal network operating configurations are not suitable for measuring the SAR of 802.11 transmitters in general. Unpredictable fluctuations in network traffic and antenna diversity conditions can introduce undesirable variations in SAR results. The SAR for these devices should be measured using chipset based test mode software to ensure that the results are consistent and reliable.
Chipset based test mode software is hardware dependent and generally varies among manufacturers. The device operating parameters established in a test mode for SAR measurements must be identical to those programmed in production units, including output power levels, amplifier gain settings and other RF performance tuning parameters. The test frequencies should correspond to actual channel frequencies defined for domestic use. SAR for devices with switched diversity should be measured with only one antenna transmitting at a time during each SAR measurement, according to a fixed modulation and data rate. The same data pattern should be used for all measurements.

109.6 Power Drift

To control the output power stability during the SAR test, DASY4 system calculates the power drift by measuring the E-field at the same location at the beginning and at the end of the measurement for each test position. These drift values can be found in section14 labeled as: (Power Drift [dB]). This ensures that the power drift during one measurement is within 5%.

10 Area Scan Based 1-g SAR

10.1 Requirement of KDB

According to the KDB447498 D01 v06, when the implementation is based the specific polynomial fit
algorithm as presented at the 29th Bioelectromagnetics Society meeting (2007) and the estimated 1-gSAR is ≤ 1.2 W/kg, a zoom scan measurement is not required provided it is also not needed for any other purpose; for example, if the peak SAR location required for simultaneous transmission SAR test exclusion can be determined accurately by the SAR system or manually to discriminate between distinctive peaks and scattered noisy SAR distributions from area scans.

There must not be any warning or alert messages due to various measurement concerns identified by the SAR system; for example, noise in measurements, peaks too close to scan boundary, peaks are too sharp, spatial resolution and uncertainty issues etc. The SAR system verification must also demonstrate that the area scan estimated 1-g SAR is within 3% of the zoom scan 1-g SAR (See Annex B). When all the SAR results for each exposure condition in a frequency band and wireless mode are based on estimated 1-g SAR, the 1-g SAR for the highest SAR configuration must be determined by a zoom scan.

10.2 Fast SAR Algorithms

The approach is based on the area scan measurement applying a frequency dependent attenuation parameter. This attenuation parameter was empirically determined by analyzing a large number of phones. The MOTOROLA FAST SAR was developed and validated by the MOTOROLA Research Group in Ft. Lauderdale.

In the initial study, an approximation algorithm based on Linear fit was developed. The accuracy of the algorithm has been demonstrated across a broad frequency range (136-2450 MHz)and for both 1- and 10-g averaged SAR using a sample of 264 SAR measurements from 55wireless handsets. For the sample size studied, the root-mean-squared errors of the algorithm mare 1.2% and 5.8% for 1- and 10-g averaged SAR, respectively. The paper describing the algorithm in detail is expected to be published in August 2004 within the Special Issue of Transactions on MTT.

In the second step, the same research group optimized the fitting algorithm to an Polynomial fit whereby the frequency validity was extended to cover the range 30-6000MHz. Details of this study can be found in the BEMS 2007 Proceedings.

Both algorithms are implemented in DASY software.

11 Conducted Output Power

For Main antenna, there are two sets of tune-up power, Normal power and Low power, used for different use cases for W1700/1900 and LTE Band2/4. Normal power status is applied for head test and body worn test of above bands. Low power status is applied for hotspot test of above bands. For other bands, Normal power status is applied for both head and body test.

11.1 GSM Measurement result

During the process of testing, the EUT was controlled via Agilent Digital Radio Communication tester (E5515C) to ensure the maximum power transmission and proper modulation. This result contains conducted output power for the EUT. In all cases, the measured peak output power should be greater and within 5% than EMI measurement.

Table 11.1-1: The conducted power measurement results for GSM, GPRS and EGPRS

GSM850 #1								
		Measured Power (dBm)			Caculation	Frame Burst Power （dBm）		
Config	Tune-up	CH251 848.8 MHz	CH190 836.6 MHz	CH128 824.2 MHz		CH251 848.8 MHz	CH190 836.6 MHz	CH128 824.2 MHz
GSM Speech	33.30	32.66	32.66	32.64				
GPRS 1 Txslot	33.30	32.64	32.62	32.59	-9.03	23.61	23.59	23.56
GPRS 2 Txslots	31.50	30.89	30.87	30.83	-6.02	24.87	24.85	24.81
GPRS 3 Txslots	29.50	27.73	27.68	27.60	-4.26	23.47	23.42	23.34
GPRS 4 Txslots	28.50	26.72	26.65	26.55	-3.01	23.71	23.64	23.54
EGPRS GMSK 1 Txslot	33.30	32.57	32.58	32.57	-9.03	23.54	23.55	23.54
EGPRS GMSK 2 Txslots	31.50	30.84	30.83	30.80	-6.02	24.82	24.81	24.78
EGPRS GMSK 3 Txslots	29.50	27.69	27.65	27.58	-4.26	23.43	23.39	23.32
EGPRS GMSK 4 Txslots	28.50	26.68	26.62	26.54	-3.01	23.67	23.61	23.53
EGPRS 8PSK 1 Txslot	27.50	27.27	27.32	27.21	-9.03	18.24	18.29	18.18
EGPRS 8PSK 2 Txslots	26.00	25.79	25.71	25.75	-6.02	19.77	19.69	19.73
EGPRS 8PSK 3 Txslots	25.00	24.61	24.71	24.55	-4.26	20.35	20.45	20.29
EGPRS 8PSK 4 Txslots	24.00	23.38	23.45	23.31	-3.01	20.37	20.44	20.30

PCS1900 #1								
		Measured Power (dBm)			Caculation	Frame Burst Power （dBm）		
Config	Tune-up	CH810 1909.8 MHz	CH661 1880 MHz	CH512 1850.2 MHz		CH810 1909.8 MHz	CH661 1880 MHz	CH512 1850.2 MHz
GSM Speech	30.30	30.05	30.12	30.09				
GPRS 1 Txslot	30.30	30.11	30.11	30.08	-9.03	21.08	21.08	21.05
GPRS 2 Txslots	29.00	27.83	27.80	27.76	-6.02	21.81	21.78	21.74
GPRS 3 Txslots	27.00	25.86	25.83	25.76	-4.26	21.60	21.57	21.50
GPRS 4 Txslots	26.00	24.81	24.77	24.69	-3.01	21.80	21.76	21.68
EGPRS GMSK 1 Txslot	30.30	30.00	30.07	30.05	-9.03	20.97	21.04	21.02
EGPRS GMSK 2 Txslots	29.00	27.77	27.76	27.74	-6.02	21.75	21.74	21.72
EGPRS GMSK 3 Txslots	27.00	25.82	25.81	25.74	-4.26	21.56	21.55	21.48
EGPRS GMSK 4 Txslots	26.00	24.75	24.76	24.68	-3.01	21.74	21.75	21.67
EGPRS 8PSK 1 Txslot	27.00	26.50	26.31	26.35	-9.03	17.47	17.28	17.32
EGPRS 8PSK 2 Txslots	25.00	24.39	24.13	24.16	-6.02	18.37	18.11	18.14
EGPRS 8PSK 3 Txslots	24.00	23.53	23.23	23.05	-4.26	19.27	18.97	18.79
EGPRS 8PSK 4 Txslots	22.50	22.36	22.08	21.91	-3.01	19.35	19.07	18.90

NOTES:

1) Division Factors

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

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

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

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

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

According to the conducted power as above, the body measurements are performed with 2Txslots for GSM850 and GSM1900.

11.2 WCDMA Measurement result

Normal power

Table 11.2-1: The conducted Power for WCDMA

WCDMA1900-BII #1					
			Measured Power (dBm)		
Item		Tune-up	CH9538 1907.6 MHz	CH9400 1880 MHz	CH9262 1852.4 MHz
WCDMA	RMC	24.00	22.79	22.61	22.53
HSUPA	subtest1	23.00	21.86	21.78	21.67
	subtest2	23.00	21.85	21.75	21.65
	subtest3	23.00	21.34	21.25	21.15
	subtest4	23.00	21.81	21.73	21.59
	subtest5	23.00	21.84	21.74	21.57
HSPA+	\	23.50	23.20	23.09	22.98
DC-HSDPA	subtest1	22.00	21.79	21.64	21.46
	subtest2	22.00	21.78	21.63	21.45
	subtest3	22.00	21.80	21.62	21.44
	subtest4	22.00	21.78	21.61	21.46

WCDMA1700-BIV #1					
			Measured Power (dBm)		
Item		Tune-up	CH1513 1752.6 MHz	CH1412 1732.4 MHz	CH1312 1712.4 MHz
WCDMA	RMC	24.00	23.58	23.54	23.62
HSUPA	subtest1	23.00	22.57	22.65	22.54
	subtest2	23.00	22.67	22.68	22.61
	subtest3	23.00	22.15	22.16	22.08
	subtest4	23.00	22.58	22.63	22.58
	subtest5	23.00	21.57	21.64	21.57
HSPA+	\	23.50	22.97	23.00	23.07
DC-HSDPA	subtest1	22.00	21.46	21.54	21.55
	subtest2	22.00	21.45	21.53	21.56
	subtest3	22.00	21.45	21.51	21.55
	subtest4	22.00	21.43	21.53	21.56

WCDMA850-BV #1					
			Measured Power (dBm)		
Item		Tune-up	CH4233 846.6 MHz	CH4182 835.4 MHz	CH4132 826.4 MHz
WCDMA	RMC	24.00	23.07	23.16	23.02
HSUPA	subtest1	23.00	22.08	22.15	22.04
	subtest2	23.00	22.18	22.04	22.05
	subtest3	23.00	21.53	21.56	21.58
	subtest4	23.00	22.07	22.03	22.07
	subtest5	23.00	21.17	21.14	21.16
HSPA+	\	23.50	23.49	23.42	23.48
DC-HSDPA	subtest1	22.50	22.06	21.98	22.01
	subtest2	22.50	22.05	21.97	22.00
	subtest3	22.50	22.04	21.97	22.05
	subtest4	22.50	22.05	21.98	22.04

Low power

Table 11.2-2: The conducted Power for WCDMA

Item	band	FDDIV result			
	ARFCN	1513 (1752.6MHz)	1412 (1732.4MHz)	1312 (1712.4MHz)	Tune-up
WCDMA	\	19.93	19.82	19.84	20
HSUPA	1	19.85	19.87	19.84	20
	2	19.89	19.90	19.95	20
	3	19.47	19.42	19.36	20
	4	19.91	19.93	19.92	20
	5	18.86	18.92	19.89	20
HSPA+	1	19.91	19.98	19.99	20
DC-HSDPA	1	19.39	19.47	19.48	20
	2	19.38	19.48	19.49	20
	3	19.38	19.47	19.50	20
	4	19.40	19.48	19.49	20
Item	band	FDDII result			
	ARFCN	9538 (1907.6MHz)	9400 (1880MHz)	9262 (1852.4MHz)	Tune-up
WCDMA	\	20.91	20.75	20.68	21
HSUPA	1	20.88	20.72	20.65	21
	2	20.82	20.79	20.70	21
	3	20.38	20.18	20.32	21
	4	20.92	20.74	20.71	21
	5	19.87	19.75	19.78	21
HSPA+	1	21.14	21.03	21.01	22
DC-HSDPA	1	20.76	20.62	20.52	21
	2	20.77	20.61	20.53	21
	3	20.76	20.63	20.52	21
	4	20.78	20.62	20.51	21

11.3 LTE Measurement result

Normal power

Table 11.3-1: The conducted Power for LTE

LTE1900-FDD2 #1							
SN				Measured Power (dBm) & MPR			
BandWidth	RB No./Start	Channel	Tune-up	QPSK		16QAM	
				Measured Power	MPR	Measured Power	MPR
1.4MHz	1H	19193	24	23.82	0	22.61	1
		18900	24	23.54	0	22.76	1
		18607	24	23.39	0	22.35	1
	1M	19193	24	23.92	0	22.77	1
		18900	24	23.71	0	22.91	1
		18607	24	23.63	0	22.53	1
	1L	19193	24	23.84	0	22.62	1
		18900	24	23.53	0	22.77	1
		18607	24	23.43	0	22.35	1
	3H	19193	24	23.70	0	22.56	1
		18900	24	23.49	0	22.63	1
		18607	24	23.44	0	22.54	1
	3M	19193	24	23.71	0	22.59	1
		18900	24	23.58	0	22.66	1
		18607	24	23.47	0	22.61	1
	3L	19193	24	23.67	0	22.55	1
		18900	24	23.52	0	22.61	1
		18607	24	23.41	0	22.55	1
	6	19193	24	22.91	1	21.88	2
		18900	24	22.55	1	21.46	2
		18607	24	22.51	1	21.64	2
3MHz	1H	19185	24	23.85	0	22.56	1
		18900	24	23.59	0	22.33	1
		18615	24	23.54	0	22.69	1
	1M	19185	24	23.87	0	22.68	1
		18900	24	23.67	0	22.46	1
		18615	24	23.64	0	22.82	1
	1L	19185	24	23.86	0	22.59	1
		18900	24	23.53	0	22.35	1
		18615	24	23.54	0	22.73	1
	8H	19185	24	22.83	1	21.80	2
		18900	24	22.50	1	21.65	2
		18615	24	22.48	1	21.54	2
	8M	19185	24	22.86	1	21.85	2
		18900	24	22.58	1	21.68	2
		18615	24	22.52	1	21.57	2
	8L	19185	24	22.83	1	21.82	2
		18900	24	22.55	1	21.66	2
		18615	24	22.46	1	21.56	2
	15	19185	24	22.75	1	21.70	2
		18900	24	22.52	1	21.59	2
		18615	24	22.41	1	21.51	2

5MHz	1H	19175	24	23.78	0	22.59	1
		18900	24	23.58	0	22.54	1
		18625	24	23.34	0	22.69	1
	1M	19175	24	23.89	0	22.79	1
		18900	24	23.79	0	22.75	1
		18625	24	23.62	0	22.94	1
	1L	19175	24	23.71	0	22.58	1
		18900	24	23.53	0	22.53	1
		18625	24	23.42	0	22.80	1
	12H	19175	24	22.63	1	21.74	2
		18900	24	22.50	1	21.64	2
		18625	24	22.34	1	21.52	2
	12M	19175	24	22.71	1	21.81	2
		18900	24	22.52	1	21.67	2
		18625	24	22.40	1	21.57	2
	12L	19175	24	22.73	1	21.79	2
		18900	24	22.47	1	21.63	2
		18625	24	22.36	1	21.56	2
	25	19175	24	22.66	1	21.67	2
		18900	24	22.54	1	21.62	2
		18625	24	22.35	1	21.46	2
10MHz	1H	19150	24	23.87	0	22.58	1
		18900	24	23.58	0	22.38	1
		18650	24	23.52	0	22.69	1
	1M	19150	24	23.89	0	22.71	1
		18900	24	23.65	0	22.45	1
		18650	24	23.57	0	22.73	1
	1L	19150	24	23.70	0	22.61	1
		18900	24	23.50	0	22.29	1
		18650	24	23.55	0	22.73	1
	25H	19150	24	22.70	1	21.82	2
		18900	24	22.61	1	21.69	2
		18650	24	22.39	1	21.47	2
	25M	19150	24	22.73	1	21.86	2
		18900	24	22.54	1	21.63	2
		18650	24	22.40	1	21.49	2
	25L	19150	24	22.76	1	21.89	2
		18900	24	22.55	1	21.63	2
		18650	24	22.38	1	21.48	2
	50	19150	24	22.72	1	21.82	2
		18900	24	22.60	1	21.66	2
		18650	24	22.40	1	21.47	2

15MHz	1H	19125	24	23.84	0	22.78	1
		18900	24	23.48	0	22.29	1
		18675	24	23.37	0	22.55	1
	1M	19125	24	23.85	0	22.92	1
		18900	24	23.57	0	22.39	1
		18675	24	23.56	0	22.66	1
	1L	19125	24	23.69	0	22.86	1
		18900	24	23.43	0	22.22	1
		18675	24	23.47	0	22.65	1
	36H	19125	24	22.88	1	21.80	2
		18900	24	22.69	1	21.68	2
		18675	24	22.49	1	21.56	2
	36M	19125	24	22.84	1	21.84	2
		18900	24	22.63	1	21.66	2
		18675	24	22.53	1	21.57	2
	36L	19125	24	22.83	1	21.80	2
		18900	24	22.63	1	21.62	2
		18675	24	22.54	1	21.56	2
	75	19125	24	22.87	1	21.84	2
		18900	24	22.69	1	21.66	2
		18675	24	22.52	1	21.54	2
20MHz	1H	19100	24	23.57	0	22.70	1
		18900	24	23.31	0	22.55	1
		18700	24	23.20	0	22.60	1
	1M	19100	24	23.89	0	**22.93**	1
		18900	24	23.72	0	**22.90**	1
		18700	24	23.62	0	**22.97**	1
	1L	19100	24	23.31	0	22.64	1
		18900	24	23.23	0	22.46	1
		18700	24	23.20	0	22.60	1
	50H	19100	24	22.65	1	21.73	2
		18900	24	22.58	1	21.59	2
		18700	24	22.31	1	21.38	2
	50M	19100	24	22.68	1	21.77	2
		18900	24	22.53	1	21.59	2
		18700	24	22.37	1	21.48	2
	50L	19100	24	22.65	1	21.73	2
		18900	24	22.60	1	21.62	2
		18700	24	22.41	1	21.46	2
	100	19100	24	22.67	1	21.73	2
		18900	24	22.59	1	21.63	2
		18700	24	22.35	1	21.45	2

LTE1700-FDD4 #1							
SN				Measured Power (dBm) & MPR			
BandWidth	RB No./Start	Channel	Tune-up	QPSK		16QAM	
				Measured Power	MPR	Measured Power	MPR
1.4MHz	1H	20393	24.5	23.72	0	22.88	1
		20175	24.5	23.82	0	22.88	1
		19957	24.5	23.81	0	22.99	1
	1M	20393	24.5	23.93	0	23.06	1
		20175	24.5	24.02	0	23.03	1
		19957	24.5	23.97	0	23.19	1
	1L	20393	24.5	23.73	0	22.87	1
		20175	24.5	23.85	0	22.88	1
		19957	24.5	23.79	0	22.98	1
	3H	20393	24.5	23.76	0	22.87	1
		20175	24.5	23.85	0	23.10	1
		19957	24.5	23.83	0	22.98	1
	3M	20393	24.5	23.83	0	22.90	1
		20175	24.5	23.84	0	23.11	1
		19957	24.5	23.92	0	23.06	1
	3L	20393	24.5	23.75	0	22.90	1
		20175	24.5	23.82	0	23.09	1
		19957	24.5	23.84	0	22.99	1
	6	20393	24.5	22.92	1	22.03	2
		20175	24.5	22.95	1	22.05	2
		19957	24.5	23.03	1	22.06	2
3MHz	1H	20385	24.5	23.78	0	22.81	1
		20175	24.5	23.88	0	22.75	1
		19965	24.5	23.92	0	23.25	1
	1M	20385	24.5	23.92	0	23.03	1
		20175	24.5	23.98	0	22.94	1
		19965	24.5	24.08	0	23.42	1
	1L	20385	24.5	23.88	0	22.95	1
		20175	24.5	23.83	0	22.80	1
		19965	24.5	23.97	0	23.31	1
	8H	20385	24.5	22.92	1	21.89	2
		20175	24.5	22.93	1	21.96	2
		19965	24.5	22.97	1	22.00	2
	8M	20385	24.5	22.96	1	21.95	2
		20175	24.5	23.00	1	22.05	2
		19965	24.5	23.01	1	22.04	2
	8L	20385	24.5	22.94	1	21.93	2
		20175	24.5	22.94	1	21.97	2
		19965	24.5	23.00	1	22.03	2
	15	20385	24.5	22.90	1	21.80	2
		20175	24.5	22.96	1	21.92	2
		19965	24.5	23.00	1	21.97	2

5MHz	1H	20375	24.5	23.76	0	22.87	1
		20175	24.5	23.85	0	22.94	1
		19975	24.5	23.77	0	23.34	1
	1M	20375	24.5	24.08	0	23.17	1
		20175	24.5	24.07	0	23.19	1
		19975	24.5	24.03	0	23.38	1
	1L	20375	24.5	23.86	0	22.97	1
		20175	24.5	23.83	0	22.99	1
		19975	24.5	23.83	0	23.36	1
	12H	20375	24.5	22.89	1	21.91	2
		20175	24.5	22.85	1	21.91	2
		19975	24.5	22.94	1	22.10	2
	12M	20375	24.5	23.01	1	22.06	2
		20175	24.5	22.96	1	22.02	2
		19975	24.5	23.01	1	22.13	2
	12L	20375	24.5	22.94	1	21.99	2
		20175	24.5	22.87	1	21.91	2
		19975	24.5	22.95	1	22.07	2
	25	20375	24.5	22.92	1	21.87	2
		20175	24.5	22.86	1	21.90	2
		19975	24.5	22.98	1	22.00	2
10MHz	1H	20350	24.5	23.75	0	22.85	1
		20175	24.5	23.84	0	22.80	1
		20000	24.5	23.95	0	22.98	1
	1M	20350	24.5	23.95	0	23.01	1
		20175	24.5	23.96	0	22.96	1
		20000	24.5	24.04	0	23.05	1
	1L	20350	24.5	23.80	0	22.90	1
		20175	24.5	23.83	0	22.82	1
		20000	24.5	23.95	0	22.95	1
	25H	20350	24.5	22.99	1	22.02	2
		20175	24.5	22.97	1	21.95	2
		20000	24.5	23.06	1	22.16	2
	25M	20350	24.5	23.03	1	22.12	2
		20175	24.5	23.00	1	22.01	2
		20000	24.5	23.07	1	22.09	2
	25L	20350	24.5	22.99	1	22.07	2
		20175	24.5	22.92	1	21.92	2
		20000	24.5	23.01	1	22.06	2
	50	20350	24.5	23.02	1	22.04	2
		20175	24.5	22.94	1	21.94	2
		20000	24.5	23.03	1	22.07	2

15MHz	1H	20325	24.5	23.71	0	23.09	1
		20175	24.5	23.71	0	22.67	1
		20025	24.5	23.81	0	23.20	1
	1M	20325	24.5	23.89	0	23.32	1
		20175	24.5	23.87	0	22.84	1
		20025	24.5	23.93	0	23.32	1
	1L	20325	24.5	23.78	0	23.18	1
		20175	24.5	23.75	0	22.73	1
		20025	24.5	23.88	0	23.23	1
	36H	20325	24.5	22.97	1	21.93	2
		20175	24.5	22.96	1	21.94	2
		20025	24.5	23.04	1	22.08	2
	36M	20325	24.5	23.01	1	21.91	2
		20175	24.5	22.99	1	21.96	2
		20025	24.5	23.07	1	22.04	2
	36L	20325	24.5	23.01	1	21.98	2
		20175	24.5	22.98	1	21.95	2
		20025	24.5	22.99	1	22.03	2
	75	20325	24.5	23.03	1	21.98	2
		20175	24.5	23.00	1	21.91	2
		20025	24.5	23.09	1	22.02	2
20MHz	1H	20300	24.5	23.50	0	23.00	1
		20175	24.5	23.59	0	23.00	1
		20050	24.5	23.58	0	23.16	1
	1M	20300	24.5	24.06	0	**23.49**	1
		20175	24.5	23.98	0	**23.43**	1
		20050	24.5	24.11	0	**23.34**	1
	1L	20300	24.5	23.49	0	23.00	1
		20175	24.5	23.54	0	22.99	1
		20050	24.5	23.60	0	23.18	1
	50H	20300	24.5	22.93	1	21.97	2
		20175	24.5	22.90	1	21.91	2
		20050	24.5	23.01	1	22.02	2
	50M	20300	24.5	22.95	1	21.97	2
		20175	24.5	22.93	1	21.92	2
		20050	24.5	23.04	1	22.01	2
	50L	20300	24.5	23.02	1	22.00	2
		20175	24.5	22.98	1	21.90	2
		20050	24.5	22.96	1	21.95	2
	100	20300	24.5	22.99	1	21.97	2
		20175	24.5	22.93	1	21.90	2
		20050	24.5	23.03	1	22.02	2

LTE835-FDD5 #1							
SN				Measured Power (dBm) & MPR			
BandWidth	RB No./Start	Channel	Tune-up	QPSK		16QAM	
				Measured Power	MPR	Measured Power	MPR
1.4MHz	1H	20393	24	23.31	0	22.36	1
		20175	24	23.30	0	22.51	1
		19957	24	23.29	0	22.26	1
	1M	20393	24	23.55	0	22.55	1
		20175	24	23.52	0	22.70	1
		19957	24	23.48	0	22.39	1
	1L	20393	24	23.31	0	22.32	1
		20175	24	23.34	0	22.55	1
		19957	24	23.28	0	22.27	1
	3H	20393	24	23.38	0	22.32	1
		20175	24	23.28	0	22.38	1
		19957	24	23.31	0	22.43	1
	3M	20393	24	23.39	0	22.37	1
		20175	24	23.38	0	22.44	1
		19957	24	23.36	0	22.50	1
	3L	20393	24	23.32	0	22.32	1
		20175	24	23.31	0	22.38	1
		19957	24	23.30	0	22.43	1
	6	20393	24	22.50	1	21.53	2
		20175	24	22.38	1	21.18	2
		19957	24	22.40	1	21.46	2
3MHz	1H	20385	24	23.35	0	22.22	1
		20175	24	23.36	0	22.07	1
		19965	24	23.38	0	22.56	1
	1M	20385	24	23.45	0	22.39	1
		20175	24	23.42	0	22.19	1
		19965	24	23.50	0	22.74	1
	1L	20385	24	23.33	0	22.25	1
		20175	24	23.32	0	22.06	1
		19965	24	23.38	0	22.59	1
	8H	20385	24	22.32	1	21.28	2
		20175	24	22.31	1	21.30	2
		19965	24	22.33	1	21.32	2
	8M	20385	24	22.38	1	21.35	2
		20175	24	22.38	1	21.34	2
		19965	24	22.37	1	21.36	2
	8L	20385	24	22.35	1	21.27	2
		20175	24	22.28	1	21.30	2
		19965	24	22.31	1	21.34	2
	15	20385	24	22.31	1	21.19	2
		20175	24	22.27	1	21.22	2
		19965	24	22.29	1	21.25	2

5MHz	1H	20375	24	23.33	0	22.29	1
		20175	24	23.33	0	22.26	1
		19975	24	23.24	0	22.68	1
	1M	20375	24	23.51	0	22.48	1
		20175	24	23.55	0	22.48	1
		19975	24	23.47	0	22.87	1
	1L	20375	24	23.25	0	22.22	1
		20175	24	23.32	0	22.25	1
		19975	24	23.23	0	22.63	1
	12H	20375	24	22.27	1	21.30	2
		20175	24	22.23	1	21.25	2
		19975	24	22.30	1	21.38	2
	12M	20375	24	22.32	1	21.32	2
		20175	24	22.31	1	21.36	2
		19975	24	22.30	1	21.42	2
	12L	20375	24	22.26	1	21.28	2
		20175	24	22.22	1	21.27	2
		19975	24	22.17	1	21.33	2
	25	20375	24	22.28	1	21.17	2
		20175	24	22.28	1	21.22	2
		19975	24	22.30	1	21.27	2
10MHz	1H	20350	24	23.31	0	22.25	1
		20175	24	23.38	0	22.09	1
		20000	24	23.36	0	22.55	1
	1M	20350	24	23.35	0	22.27	1
		20175	24	23.40	0	22.16	1
		20000	24	23.43	0	22.63	1
	1L	20350	24	23.24	0	22.14	1
		20175	24	23.28	0	22.06	1
		20000	24	23.27	0	22.51	1
	25H	20350	24	22.32	1	21.30	2
		20175	24	22.29	1	21.24	2
		20000	24	22.34	1	21.31	2
	25M	20350	24	22.31	1	21.35	2
		20175	24	22.28	1	21.23	2
		20000	24	22.25	1	21.25	2
	25L	20350	24	22.32	1	21.37	2
		20175	24	22.29	1	21.25	2
		20000	24	22.24	1	21.24	2
	50	20350	24	22.32	1	21.31	2
		20175	24	22.28	1	21.24	2
		20000	24	22.29	1	21.25	2

LTE700-FDD12 #1							
				Measured Power (dBm) & MPR			
BandWidth	RB No./Start	Channel	Tune-up	QPSK		16QAM	
				Measured Power	MPR	Measured Power	MPR
1.4MHz	1H	23173	24	23.51	0	22.39	1
		23095	24	23.62	0	22.45	1
		23017	24	23.63	0	22.77	1
	1M	23173	24	23.69	0	22.50	1
		23095	24	23.79	0	22.59	1
		23017	24	23.79	0	22.94	1
	1L	23173	24	23.47	0	22.37	1
		23095	24	23.65	0	22.47	1
		23017	24	23.65	0	22.76	1
	3H	23173	24	23.48	0	22.50	1
		23095	24	23.46	0	22.37	1
		23017	24	23.54	0	22.63	1
	3M	23173	24	23.45	0	22.55	1
		23095	24	23.53	0	22.42	1
		23017	24	23.62	0	22.63	1
	3L	23173	24	23.42	0	22.51	1
		23095	24	23.47	0	22.39	1
		23017	24	23.55	0	22.60	1
	6	23173	24	22.62	1	21.75	2
		23095	24	22.68	1	21.71	2
		23017	24	22.68	1	21.53	2
3MHz	1H	23165	24	23.57	0	22.38	1
		23095	24	23.64	0	22.28	1
		23025	24	23.70	0	22.87	1
	1M	23165	24	23.65	0	22.57	1
		23095	24	23.77	0	22.45	1
		23025	24	23.81	0	23.00	1
	1L	23165	24	23.58	0	22.47	1
		23095	24	23.57	0	22.38	1
		23025	24	23.71	0	22.80	1
	8H	23165	24	22.56	1	21.58	2
		23095	24	22.57	1	21.67	2
		23025	24	22.58	1	21.65	2
	8M	23165	24	22.58	1	21.66	2
		23095	24	22.62	1	21.71	2
		23025	24	22.68	1	21.74	2
	8L	23165	24	22.59	1	21.60	2
		23095	24	22.57	1	21.66	2
		23025	24	22.66	1	21.69	2
	15	23165	24	22.49	1	21.49	2
		23095	24	22.53	1	21.54	2
		23025	24	22.56	1	21.59	2

5MHz	1H	23155	24	23.51	0	22.43	1
		23095	24	23.53	0	22.49	1
		23035	24	23.55	0	22.90	1
	1M	23155	24	23.73	0	22.70	1
		23095	24	23.82	0	22.75	1
		23035	24	23.83	0	22.87	1
	1L	23155	24	23.48	0	22.42	1
		23095	24	23.59	0	22.53	1
		23035	24	23.57	0	22.87	1
	12H	23155	24	22.45	1	21.54	2
		23095	24	22.58	1	21.67	2
		23035	24	22.52	1	21.69	2
	12M	23155	24	22.58	1	21.65	2
		23095	24	22.51	1	21.65	2
		23035	24	22.63	1	21.82	2
	12L	23155	24	22.61	1	21.69	2
		23095	24	22.39	1	21.52	2
		23035	24	22.62	1	21.78	2
	25	23155	24	22.55	1	21.53	2
		23095	24	22.50	1	21.54	2
		23035	24	22.57	1	21.65	2
10MHz	1H	23130	24	23.65	0	22.35	1
		23095	24	23.59	0	22.75	1
		23060	24	23.59	0	22.41	1
	1M	23130	24	23.68	0	**22.41**	1
		23095	24	23.74	0	**22.85**	1
		23060	24	23.71	0	**22.58**	1
	1L	23130	24	23.55	0	22.32	1
		23095	24	23.56	0	22.77	1
		23060	24	23.59	0	22.41	1
	25H	23130	24	22.36	1	21.43	2
		23095	24	22.66	1	21.67	2
		23060	24	22.75	1	21.86	2
	25M	23130	24	22.53	1	21.61	2
		23095	24	22.54	1	21.56	2
		23060	24	22.60	1	21.70	2
	25L	23130	24	22.38	1	21.44	2
		23095	24	22.51	1	21.55	2
		23060	24	22.73	1	21.84	2
	50	23130	24	22.39	1	21.42	2
		23095	24	22.57	1	21.60	2
		23060	24	22.74	1	21.74	2

LTE700-FDD14 #1							
				Measured Power (dBm) & MPR			
BandWidth	RB No./Start	Channel	Tune-up	QPSK		16QAM	
				Measured Power	MPR	Measured Power	MPR
5MHz	1H	23355	24	23.38	0	22.34	1
		23330	24	23.42	0	22.35	1
		23305	24	23.37	0	22.69	1
	1M	23355	24	23.59	0	22.57	1
		23330	24	23.69	0	22.58	1
		23305	24	23.67	0	22.94	1
	1L	23355	24	23.34	0	22.28	1
		23330	24	23.45	0	22.37	1
		23305	24	23.40	0	22.71	1
	12H	23355	24	22.32	1	21.32	2
		23330	24	22.36	1	21.39	2
		23305	24	22.42	1	21.45	2
	12M	23355	24	22.41	1	21.44	2
		23330	24	22.40	1	21.41	2
		23305	24	22.43	1	21.51	2
	12L	23355	24	22.36	1	21.37	2
		23330	24	22.33	1	21.32	2
		23305	24	22.29	1	21.35	2
	25	23355	24	22.35	1	21.24	2
		23330	24	22.35	1	21.29	2
		23305	24	22.41	1	21.38	2
10MHz	1H	H	24	23.44	0	**22.38**	1
		M	24	23.60	0	**22.42**	1
		23330	24	23.51	0	**22.32**	1
	1M	H	24	22.39	0	21.44	1
		M	24	22.48	0	21.49	1
		23330	24	22.33	0	21.34	1
	1L	H	24	22.40	0	21.37	1

Low power

Table 11.3-2: The conducted Power for LTE

Band 2							
Bandwidth (MHz)	RB allocation RB offset (Start RB)	Frequency (MHz)	Max. Target Power (dBm)	QPSK		16QAM	
				Actual output power (dBm)	MPR	Actual output power (dBm)	MPR
1.4 MHz	1RB High (5)	1909.3	**21.5**	20.68	/	20.68	/
		1880	**21.5**	20.56	/	20.61	/
		1850.7	**21.5**	20.47	/	20.81	/
	1RB Middle (3)	1909.3	**21.5**	20.87	/	20.84	/
		1880	**21.5**	20.71	/	20.81	/
		1850.7	**21.5**	20.65	/	20.90	/
	1RB Low (0)	1909.3	**21.5**	20.69	/	20.68	/
		1880	**21.5**	20.49	/	20.62	/
		1850.7	**21.5**	20.41	/	20.81	/
	3RB High (3)	1909.3	**21.5**	20.75	/	20.92	/
		1880	**21.5**	20.56	/	20.61	/
		1850.7	**21.5**	20.46	/	20.76	/
	3RB Middle (1)	1909.3	**21.5**	20.81	/	20.97	/
		1880	**21.5**	20.63	/	20.69	/
		1850.7	**21.5**	20.57	/	20.75	/
	3RB Low (0)	1909.3	**21.5**	20.75	/	20.90	/
		1880	**21.5**	20.55	/	20.64	/
		1850.7	**21.5**	20.50	/	20.74	/
	6RB (0)	1909.3	**21.5**	20.76	/	20.88	/
		1880	**21.5**	20.56	/	20.70	/
		1850.7	**21.5**	20.51	/	20.42	/
3 MHz	1RB High (14)	1908.5	**21.5**	20.81	/	20.60	/
		1880	**21.5**	20.51	/	20.96	/
		1851.5	**21.5**	20.79	/	20.49	/
	1RB Middle (7)	1908.5	**21.5**	20.78	/	20.72	/
		1880	**21.5**	20.57	/	21.09	/
		1851.5	**21.5**	20.58	/	20.66	/
	1RB Low (0)	1908.5	**21.5**	20.32	/	20.63	/
		1880	**21.5**	20.61	/	20.98	/
		1851.5	**21.5**	20.54	/	20.52	/
	8RB High (7)	1908.5	**21.5**	20.75	/	20.79	/
		1880	**21.5**	20.56	/	20.62	/
		1851.5	**21.5**	20.41	/	20.52	/
	8RB Middle (4)	1908.5	**21.5**	20.80	/	20.86	/
		1880	**21.5**	20.59	/	20.71	/
		1851.5	**21.5**	20.56	/	20.56	/
	8RB Low (0)	1908.5	**21.5**	20.77	/	20.79	/
		1880	**21.5**	20.56	/	20.65	/
		1851.5	**21.5**	20.51	/	20.53	/

	15RB (0)	1908.5	**21.5**	20.76	/	20.77	/
		1880	**21.5**	20.57	/	20.58	/
		1851.5	**21.5**	20.51	/	20.46	/
5 MHz	1RB High (24)	1907.5	**21.5**	20.73	/	20.74	/
		1880	**21.5**	20.51	/	20.63	/
		1852.5	**21.5**	20.39	/	20.85	/
	1RB Middle (12)	1907.5	**21.5**	20.95	/	20.95	/
		1880	**21.5**	20.78	/	20.88	/
		1852.5	**21.5**	20.64	/	21.02	/
	1RB Low (0)	1907.5	**21.5**	20.70	/	20.73	/
		1880	**21.5**	20.55	/	20.60	/
		1852.5	**21.5**	20.40	/	20.86	/
	12RB High (13)	1907.5	**21.5**	20.70	/	20.74	/
		1880	**21.5**	20.53	/	20.60	/
		1852.5	**21.5**	20.40	/	20.56	/
	12RB Middle (6)	1907.5	**21.5**	20.80	/	20.81	/
		1880	**21.5**	20.57	/	20.65	/
		1852.5	**21.5**	20.48	/	20.63	/
	12RB Low (0)	1907.5	**21.5**	20.75	/	20.77	/
		1880	**21.5**	20.51	/	20.63	/
		1852.5	**21.5**	20.41	/	20.55	/
	25RB (0)	1907.5	**21.5**	20.70	/	20.64	/
		1880	**21.5**	20.56	/	20.55	/
		1852.5	**21.5**	20.44	/	20.47	/
10 MHz	1RB High (49)	1905	**21.5**	20.77	/	20.74	/
		1880	**21.5**	20.52	/	20.45	/
		1855	**21.5**	20.53	/	20.85	/
	1RB Middle (24)	1905	**21.5**	20.82	/	20.86	/
		1880	**21.5**	20.72	/	20.59	/
		1855	**21.5**	20.65	/	20.92	/
	1RB Low (0)	1905	**21.5**	20.63	/	20.73	/
		1880	**21.5**	20.46	/	20.44	/
		1855	**21.5**	20.53	/	20.83	/
	25RB High (25)	1905	**21.5**	20.70	/	20.82	/
		1880	**21.5**	20.60	/	20.60	/
		1855	**21.5**	20.49	/	20.48	/
	25RB Middle (12)	1905	**21.5**	20.82	/	20.83	/
		1880	**21.5**	20.59	/	20.62	/
		1855	**21.5**	20.52	/	20.56	/
	25RB Low (0)	1905	**21.5**	20.76	/	20.82	/
		1880	**21.5**	20.62	/	20.60	/
		1855	**21.5**	20.46	/	20.49	/
	50RB (0)	1905	**21.5**	20.78	/	20.80	/
		1880	**21.5**	20.60	/	20.55	/
		1855	**21.5**	20.47	/	20.48	/
15 MHz	1RB High (74)	1902.5	**21.5**	20.74	/	21.05	/
		1880	**21.5**	20.48	/	20.44	/
		1857.5	**21.5**	20.43	/	20.73	/

	1RB Middle (37)	1902.5	**21.5**	20.80	/	21.14	/
		1880	**21.5**	20.62	/	20.55	/
		1857.5	**21.5**	20.58	/	20.90	/
	1RB Low (0)	1902.5	**21.5**	20.63	/	20.99	/
		1880	**21.5**	20.45	/	20.34	/
		1857.5	**21.5**	20.43	/	20.76	/
	36RB High (38)	1902.5	**21.5**	20.84	/	20.81	/
		1880	**21.5**	20.60	/	20.58	/
		1857.5	**21.5**	20.52	/	20.54	/
	36RB Middle (19)	1902.5	**21.5**	20.82	/	20.76	/
		1880	**21.5**	20.64	/	20.61	/
		1857.5	**21.5**	20.55	/	20.59	/
	36RB Low (0)	1902.5	**21.5**	20.77	/	20.75	/
		1880	**21.5**	20.65	/	20.62	/
		1857.5	**21.5**	20.51	/	20.56	/
	75RB (0)	1902.5	**21.5**	20.79	/	20.73	/
		1880	**21.5**	20.67	/	20.62	/
		1857.5	**21.5**	20.51	/	20.50	/
20 MHz	1RB High (99)	1900	**21.5**	20.57	/	20.95	/
		1880	**21.5**	20.39	/	20.86	/
		1860	**21.5**	20.31	/	20.80	/
	1RB Middle (50)	1900	**21.5**	20.89	/	21.28	/
		1880	**21.5**	20.82	/	21.20	/
		1860	**21.5**	20.73	/	21.17	/
	1RB Low (0)	1900	**21.5**	20.44	/	20.89	/
		1880	**21.5**	20.28	/	20.67	/
		1860	**21.5**	20.59	/	20.78	/
	50RB High (50)	1900	**21.5**	20.80	/	20.78	/
		1880	**21.5**	20.68	/	20.66	/
		1860	**21.5**	20.46	/	20.47	/
	50RB Middle (25)	1900	**21.5**	20.80	/	20.80	/
		1880	**21.5**	20.66	/	20.61	/
		1860	**21.5**	20.58	/	20.58	/
	50RB Low (0)	1900	**21.5**	20.80	/	20.81	/
		1880	**21.5**	20.69	/	20.67	/
		1860	**21.5**	20.54	/	20.56	/
	100RB (0)	1900	**21.5**	20.77	/	20.72	/
		1880	**21.5**	20.70	/	20.69	/
		1860	**21.5**	20.53	/	20.56	/

Band 4							
Bandwidth (MHz)	RB allocation	Frequency (MHz)	Max. Target Power (dBm)	QPSK		16QAM	
	RB offset (Start RB)			Actual output power (dBm)	MPR	Actual output power (dBm)	MPR
1.4 MHz	1RB High (5)	1754.3	**20.5**	19.67	/	19.79	/
		1732.5	**20.5**	19.75	/	19.90	/
		1710.7	**20.5**	19.85	/	20.19	/
	1RB Middle (3)	1754.3	**20.5**	19.89	/	19.92	/
		1732.5	**20.5**	19.97	/	20.19	/
		1710.7	**20.5**	20.00	/	20.34	/
	1RB Low (0)	1754.3	**20.5**	19.73	/	19.79	/
		1732.5	**20.5**	19.78	/	19.92	/
		1710.7	**20.5**	19.84	/	20.25	/
	3RB High (3)	1754.3	**20.5**	19.84	/	20.07	/
		1732.5	**20.5**	19.84	/	19.98	/
		1710.7	**20.5**	19.90	/	20.18	/
	3RB Middle (1)	1754.3	**20.5**	19.83	/	20.10	/
		1732.5	**20.5**	19.92	/	20.01	/
		1710.7	**20.5**	19.95	/	20.21	/
	3RB Low (0)	1754.3	**20.5**	19.78	/	20.06	/
		1732.5	**20.5**	19.88	/	19.92	/
		1710.7	**20.5**	19.91	/	20.22	/
	6RB (0)	1754.3	**20.5**	19.79	/	20.02	/
		1732.5	**20.5**	19.86	/	20.00	/
		1710.7	**20.5**	19.84	/	19.76	/
3 MHz	1RB High (14)	1753.5	**20.5**	19.73	/	19.78	/
		1732.5	**20.5**	19.83	/	19.74	/
		1711.5	**20.5**	19.87	/	20.25	/
	1RB Middle (7)	1753.5	**20.5**	19.89	/	19.89	/
		1732.5	**20.5**	19.87	/	19.87	/
		1711.5	**20.5**	19.97	/	20.16	/
	1RB Low (0)	1753.5	**20.5**	19.75	/	19.85	/
		1732.5	**20.5**	19.78	/	19.78	/
		1711.5	**20.5**	19.87	/	20.20	/
	8RB High (7)	1753.5	**20.5**	19.76	/	19.79	/
		1732.5	**20.5**	19.80	/	19.93	/
		1711.5	**20.5**	19.83	/	19.93	/
	8RB Middle (4)	1753.5	**20.5**	19.81	/	19.88	/
		1732.5	**20.5**	19.86	/	19.95	/
		1711.5	**20.5**	19.87	/	19.97	/
	8RB Low (0)	1753.5	**20.5**	19.78	/	19.82	/
		1732.5	**20.5**	19.84	/	19.94	/
		1711.5	**20.5**	19.78	/	19.91	/
	15RB (0)	1753.5	**20.5**	19.77	/	19.76	/
		1732.5	**20.5**	19.84	/	19.85	/
		1711.5	**20.5**	19.81	/	19.85	/

5 MHz	1RB High (24)	1752.5	**20.5**	19.80	/	19.87	/
		1732.5	**20.5**	19.80	/	19.98	/
		1712.5	**20.5**	19.76	/	20.08	/
	1RB Middle (12)	1752.5	**20.5**	19.92	/	20.10	/
		1732.5	**20.5**	20.05	/	20.16	/
		1712.5	**20.5**	19.98	/	20.20	/
	1RB Low (0)	1752.5	**20.5**	19.83	/	19.88	/
		1732.5	**20.5**	19.80	/	20.01	/
		1712.5	**20.5**	19.77	/	20.27	/
	12RB High (13)	1752.5	**20.5**	19.73	/	19.87	/
		1732.5	**20.5**	19.78	/	19.88	/
		1712.5	**20.5**	19.76	/	19.95	/
	12RB Middle (6)	1752.5	**20.5**	19.82	/	19.92	/
		1732.5	**20.5**	19.82	/	19.96	/
		1712.5	**20.5**	19.85	/	20.04	/
	12RB Low (0)	1752.5	**20.5**	19.73	/	19.87	/
		1732.5	**20.5**	19.71	/	19.91	/
		1712.5	**20.5**	19.77	/	19.93	/
	25RB (0)	1752.5	**20.5**	19.77	/	19.73	/
		1732.5	**20.5**	19.79	/	19.80	/
		1712.5	**20.5**	19.81	/	19.89	/
10 MHz	1RB High (49)	1750	**20.5**	19.75	/	19.82	/
		1732.5	**20.5**	19.78	/	19.78	/
		1715	**20.5**	19.86	/	19.86	/
	1RB Middle (24)	1750	**20.5**	19.95	/	19.98	/
		1732.5	**20.5**	19.93	/	19.89	/
		1715	**20.5**	19.97	/	20.00	/
	1RB Low (0)	1750	**20.5**	19.75	/	19.85	/
		1732.5	**20.5**	19.76	/	19.78	/
		1715	**20.5**	19.85	/	19.88	/
	25RB High (25)	1750	**20.5**	19.80	/	19.87	/
		1732.5	**20.5**	19.87	/	19.91	/
		1715	**20.5**	19.85	/	20.02	/
	25RB Middle (12)	1750	**20.5**	19.87	/	20.00	/
		1732.5	**20.5**	19.91	/	19.97	/
		1715	**20.5**	19.89	/	19.99	/
	25RB Low (0)	1750	**20.5**	19.83	/	19.99	/
		1732.5	**20.5**	19.89	/	19.91	/
		1715	**20.5**	19.83	/	19.96	/
	50RB (0)	1750	**20.5**	19.88	/	19.95	/
		1732.5	**20.5**	19.88	/	19.86	/
		1715	**20.5**	19.84	/	19.95	/
15 MHz	1RB High (74)	1747.5	**20.5**	19.68	/	20.07	/
		1732.5	**20.5**	19.71	/	19.74	/
		1717.5	**20.5**	19.81	/	20.17	/
	1RB Middle (37)	1747.5	**20.5**	19.85	/	20.37	/
		1732.5	**20.5**	19.83	/	19.80	/
		1717.5	**20.5**	19.87	/	20.21	/

	1RB Low (0)	1747.5	**20.5**	19.72	/	20.21	/
		1732.5	**20.5**	19.74	/	19.72	/
		1717.5	**20.5**	19.79	/	20.15	/
	36RB High (38)	1747.5	**20.5**	19.80	/	19.81	/
		1732.5	**20.5**	19.86	/	19.87	/
		1717.5	**20.5**	19.87	/	19.93	/
	36RB Middle (19)	1747.5	**20.5**	19.88	/	19.87	/
		1732.5	**20.5**	19.87	/	19.86	/
		1717.5	**20.5**	19.88	/	19.93	/
	36RB Low (0)	1747.5	**20.5**	19.84	/	19.88	/
		1732.5	**20.5**	19.86	/	19.87	/
		1717.5	**20.5**	19.85	/	19.92	/
	75RB (0)	1747.5	**20.5**	19.83	/	19.81	/
		1732.5	**20.5**	19.87	/	19.86	/
		1717.5	**20.5**	19.86	/	19.86	/
20 MHz	1RB High (99)	1745	**20.5**	19.54	/	19.96	/
		1732.5	**20.5**	19.56	/	19.92	/
		1720	**20.5**	19.57	/	19.99	/
	1RB Middle (50)	1745	**20.5**	19.99	/	20.25	/
		1732.5	**20.5**	19.98	/	20.31	/
		1720	**20.5**	19.92	/	20.18	/
	1RB Low (0)	1745	**20.5**	19.57	/	20.03	/
		1732.5	**20.5**	19.49	/	19.89	/
		1720	**20.5**	19.53	/	19.99	/
	50RB High (50)	1745	**20.5**	19.82	/	19.83	/
		1732.5	**20.5**	19.86	/	19.91	/
		1720	**20.5**	19.88	/	19.90	/
	50RB Middle (25)	1745	**20.5**	19.84	/	19.86	/
		1732.5	**20.5**	19.87	/	19.90	/
		1720	**20.5**	19.86	/	19.87	/
	50RB Low (0)	1745	**20.5**	19.94	/	19.95	/
		1732.5	**20.5**	19.90	/	19.96	/
		1720	**20.5**	19.87	/	19.82	/
	100RB (0)	1745	**20.5**	19.84	/	19.91	/
		1732.5	**20.5**	19.86	/	19.90	/
		1720	**20.5**	19.87	/	19.86	/

11.4 Wi-Fi and BT Measurement result

The output power of BT antenna is as following:

Mode	Conducted Power (dBm)		
	Channel 0 (2402MHz)	Channel 39 (2441MHz)	Channel 78(2480MHz)
GFSK	5.36	5.95	5.33
Tune up	**6**	**7**	**6**
EDR2M-4_DQPSK	4.10	4.75	4.05
Tune up	**5**	**5.5**	**5**
EDR3M-8DPSK	4.13	4.79	4.06
Tune up	**5**	**5.5**	**5**

The average conducted power for Wi-Fi is as following:

802.11b (dBm)

Channel\data rate	1Mbps	2Mbps	5.5Mbps	11Mbps
1(2412MHz)	17.91	/	17.98	/
6(2437MHz)	18.16	18.18	18.32	18.24
11(2462MHz)	17.93	/	18.00	/
Tune up	**18.5**	**18.5**	**18.5**	**18.5**

802.11g (dBm)

Channel\data rate	6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
1(2412MHz)	17.71	/	/	/	/	/	/	/
6(2437MHz)	17.99	17.89	17.20	17.24	17.98	17.52	17.10	17.09
11(2462MHz)	17.76	/	/	/	/	/	/	/
Tune up	**18**	**18**	**18**	**18**	**18**	**18**	**18**	**18**

802.11n (dBm) - HT20 (2.4G)

Channel\data rate	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
1(2412MHz)	16.82	/	/	16.83	/	/	/	/
6(2437MHz)	16.99	16.95	16.86	17.24	16.98	16.16	16.19	16.14
11(2462MHz)	16.77	/	/	16.78	/	/	/	/
Tune up	**17.5**	**17.5**	**17.5**	**17.5**	**17.5**	**17.5**	**17.5**	**17.5**

802.11n (dBm) – HT40 (2.4G)

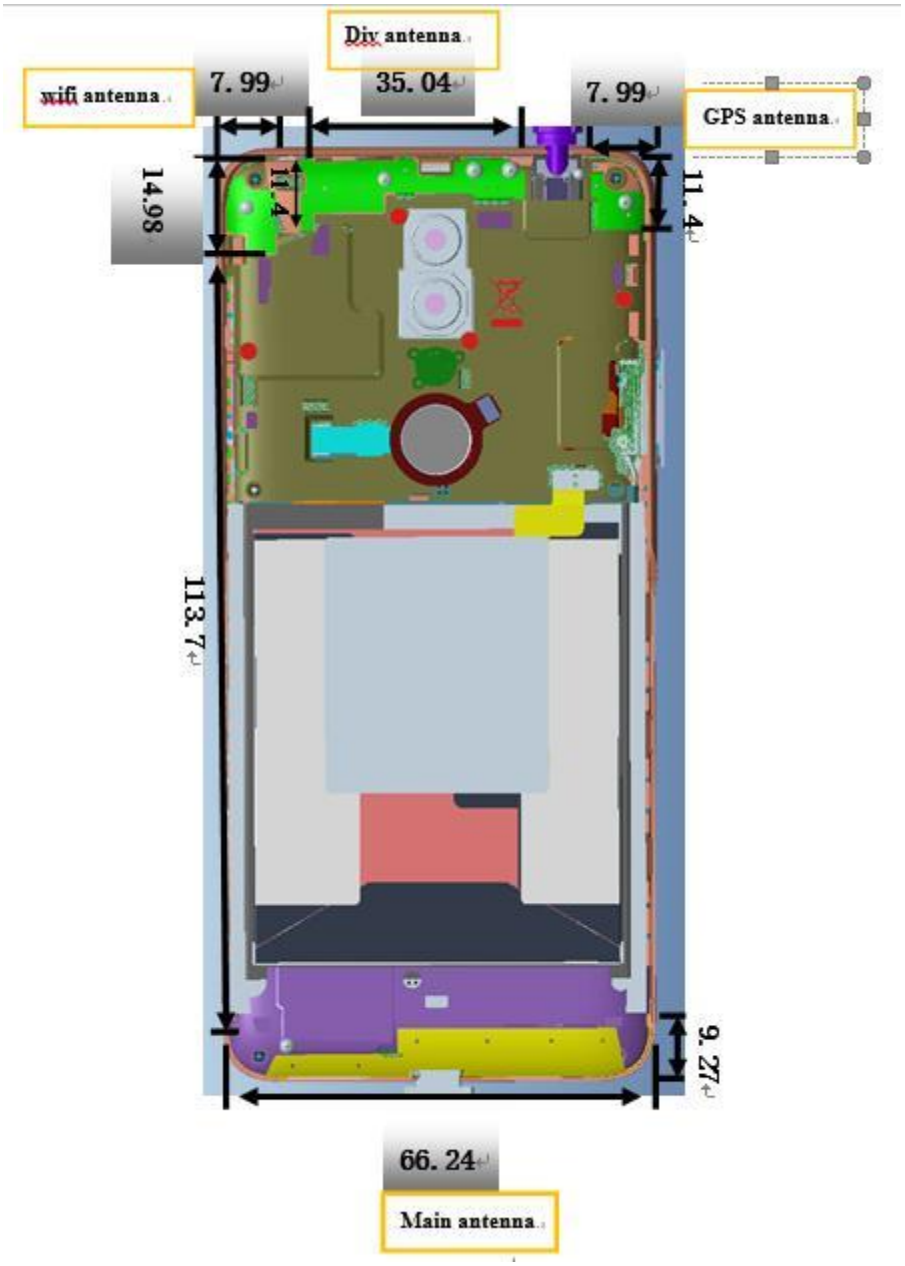
Channel\data rate	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
3(2422MHz)	16.17	16.21	16.16	16.30	16.13	14.93	15.00	14.96
6(2437MHz)	16.00	/	/	16.16	/	/	/	/
9(2452MHz)	16.13	/	/	15.86	/	/	/	/
Tune up	**16.5**	**16.5**	**16.5**	**16.5**	**16.5**	**16.5**	**16.5**	**16.5**

12 Simultaneous TX SAR Considerations

12.1 Introduction

The following procedures adopted from “FCC SAR Considerations for Cell Phones with Multiple Transmitters” are applicable to handsets with built-in unlicensed transmitters such as 802.11 a/b/g and Bluetooth devices which may simultaneously transmit with the licensed transmitter.
For this device, the BT and Wi-Fi can transmit simultaneous with other transmitters.

12.2 Transmit Antenna Separation Distances



Picture 12.1 Antenna Locations

12.3 SAR Measurement Positions

According to the KDB941225 D06 Hotspot Mode SAR v02r01, the edges with less than 2.5 cm distance to the antennas need to be tested for SAR.

SAR measurement positions						
Mode	Front	Rear	Left edge	Right edge	Top edge	Bottom edge
Main antenna	Yes	Yes	Yes	Yes	No	Yes
WLAN	Yes	Yes	No	Yes	Yes	No

12.4 Standalone SAR Test Exclusion Considerations

Standalone 1-g head or body SAR evaluation by measurement or numerical simulation is not required when the corresponding SAR Exclusion Threshold condition, listed below, is satisfied. The 1-g SAR test exclusion threshold for 100 MHz to 6 GHz at test separation distances≤ 50 mm are determined by:

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

- f(GHz) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison

Table 12.1: Standalone SAR test exclusion considerations

Band/Mode	F(GHz)	Position	SAR test exclusion threshold(mW)	RF output power		SAR test exclusion
				dBm	mW	
Bluetooth	2.441	Head	9.60	7	5.01	Yes
		Body	19.20	7	5.01	Yes
2.4GHz WLAN	2.45	Head	9.58	18.5	70.79	No
		Body	19.17	18.5	70.79	No

13 Evaluation of Simultaneous

Table 13.1: The sum of reported SAR values for main antenna and WiFi

	Position	Main antenna	WLAN 2.4G	Sum
Maximum reported SAR value for Head	Left hand, Touch cheek	**0.71**	0.56	**1.27**
	Right hand, Touch cheek	**0.79**	0.24	**1.03**
Maximum reported SAR value for Body	Bottom 10mm	1.28	/	**1.28**

Table 13.2: The sum of reported SAR values for main antenna and BT

	Position	Main antenna	BT	Sum
Maximum reported SAR value for Head	Right hand, Touch cheek	0.79	0.21[1]	**1**
Maximum reported SAR value for Body	Bottom 10mm	1.28	/	**1.28**

[1] - Estimated SAR for Bluetooth (see the table 13.3)

Table 13.3: Estimated SAR for Bluetooth

Mode/Band	F (GHz)	Position	Distance (mm)	Upper limit of power *		Estimated$_{1g}$ (W/kg)
				dBm	mW	
Bluetooth	2.441	Head	5	7	5.01	0.21

* - Maximum possible output power declared by manufacturer

When standalone SAR test exclusion applies to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to following to determine simultaneous transmission SAR test exclusion:

(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.

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

Conclusion:

According to the above tables, the sum of reported SAR values is < 1.6W/kg. So the simultaneous transmission SAR with volume scans is not required.

14 SAR Test Result

It is determined by user manual for the distance between the EUT and the phantom bottom. The distance is 10 mm or 15mm and just applied to the condition of body worn accessory.

It is performed for all SAR measurements with area scan based 1-g SAR estimation (Fast SAR). A zoom scan measurement is added when the estimated 1-gSAR is the highest measured SAR in each exposure configuration, wireless mode and frequency band combination or more than 1.2W/kg.

The calculated SAR is obtained by the following formula:

$$\text{Reported SAR} = \text{Measured SAR} \times 10^{(P_{Target}-P_{Measured})/10}$$

Where P_{Target} is the power of manufacturing upper limit;

$P_{Measured}$ is the measured power in chapter 11.

Table 14.1: Duty Cycle

Mode	Duty Cycle
Speech for GSM850/1900	1:8.3
GPRS&EGPRS for GSM850/1900	1:4
WCDMA&LTE FDD	1:1

14.1 SAR results for Fast SAR

Table 14.1-1: SAR Values (GSM 850 MHz Band - Head)

Ambient Temperature: 22.9 °C Liquid Temperature: 22.5°C											
Frequency		Side	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										
251	848.8	Left	Cheek	Fig.1	32.66	33.30	0.234	**0.27**	0.305	**0.35**	-0.08
190	836.6	Left	Cheek	/	32.66	33.30	0.213	**0.25**	0.269	**0.31**	0.08
128	824.2	Left	Cheek	/	32.64	33.30	0.193	**0.22**	0.244	**0.28**	0.06
190	836.6	Left	Tilt	/	32.66	33.30	0.139	**0.16**	0.172	**0.20**	-0.13
190	836.6	Right	Cheek	/	32.66	33.30	0.185	**0.21**	0.232	**0.27**	-0.13
190	836.6	Right	Tilt	/	32.66	33.30	0.119	**0.14**	0.146	**0.17**	-0.05

Table 14.1-2: SAR Values (GSM 850 MHz Band - Body)

Ambient Temperature: 22.9 °C Liquid Temperature: 22.5°C											
Frequency		Mode (number of timeslots)	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										
190	836.6	GPRS (2)	Front	/	30.87	31.50	0.243	**0.28**	0.310	**0.36**	0.08
251	848.8	GPRS (2)	Rear	Fig.2	30.89	31.50	0.442	**0.51**	0.563	**0.65**	-0.09
190	836.6	GPRS (2)	Rear	/	30.87	31.50	0.390	**0.45**	0.512	**0.59**	0.02
128	824.2	GPRS (2)	Rear	/	30.83	31.50	0.392	**0.46**	0.495	**0.58**	0.13
190	836.6	GPRS (2)	Left	/	30.87	31.50	0.198	**0.23**	0.277	**0.32**	0.01
190	836.6	GPRS (2)	Right	/	30.87	31.50	0.159	**0.18**	0.225	**0.26**	-0.04
190	836.6	GPRS (2)	Bottom	/	30.87	31.50	0.029	**0.03**	0.052	**0.06**	0.06
251	848.8	EGPRS (2)	Rear	/	30.84	31.50	0.430	**0.50**	0.548	**0.64**	0.03

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

Table 14.1-3: SAR Values (GSM 1900 MHz Band - Head)

Ambient Temperature: 22.9 °C Liquid Temperature: 22.5°C											
Frequency		Side	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										
661	1880	Left	Cheek	/	30.12	30.30	0.161	**0.17**	0.259	**0.27**	-0.11
661	1880	Left	Tilt	/	30.12	30.30	0.107	**0.11**	0.183	**0.19**	0.08
810	1909.8	Right	Cheek	/	30.05	30.30	0.161	**0.17**	0.259	**0.27**	-0.05

	8										
661	1880	Right	Cheek	/	30.12	30.30	0.167	**0.17**	0.274	**0.29**	-0.13
512	1850.2	Right	Cheek	Fig.3	30.09	30.30	0.171	**0.18**	0.284	**0.30**	-0.17
661	1880	Right	Tilt	/	30.12	30.30	0.083	**0.09**	0.126	**0.13**	0.12

Table 14.1-4: SAR Values (GSM 1900 MHz Band - Body)

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5°C					
Frequency		Mode (number of timeslots)	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										
661	1880	GPRS (2)	Front	/	27.80	29.00	0.298	**0.39**	0.514	**0.68**	0.03
661	1880	GPRS (2)	Rear	/	27.80	29.00	0.245	**0.32**	0.422	**0.56**	0.01
661	1880	GPRS (2)	Left	/	27.80	29.00	0.082	**0.11**	0.132	**0.17**	-0.09
661	1880	GPRS (2)	Right	/	27.80	29.00	0.064	**0.08**	0.105	**0.14**	0.16
810	1909.8	GPRS (2)	Bottom	/	27.83	29.00	0.408	**0.53**	0.754	**0.99**	0.01
661	1880	GPRS (2)	Bottom	/	27.80	29.00	0.430	**0.57**	0.785	**1.03**	0.19
512	1850.2	GPRS (2)	Bottom	Fig.4	27.76	29.00	0.528	**0.70**	0.963	**1.28**	-0.06
512	1850.2	EGPRS (2)	Bottom	/	27.74	29.00	0.526	**0.70**	0.926	**1.24**	0.07
810	1909.8	GPRS (2)	Bottom	Note2	27.83	29.00	1.90	**2.49**	4.45	**5.83**	0.09
661	1880	GPRS (2)	Bottom	Note2	27.80	29.00	2.12	**2.79**	4.96	**6.54**	0.01
512	1850.2	GPRS (2)	Bottom	Note2	27.76	29.00	2.26	**3.01**	5.19	**6.91**	-0.03

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

Note2: The distance between the EUT and the phantom bottom is 0mm Base on the Principle of adding Test for Phablet.

Table 14.1-5: SAR Values (WCDMA 850 MHz Band - Head)

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5°C					
Frequency		Side	Test Position	Figure No./Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										
4233	846.6	Left	Cheek	/	23.07	24.00	0.245	**0.30**	0.321	**0.40**	-0.07
4182	836.4	Left	Cheek	/	23.16	24.00	0.232	**0.28**	0.303	**0.37**	-0.14
4132	826.4	Left	Cheek	Fig.5	23.02	24.00	0.255	**0.32**	0.332	**0.42**	0.13
4182	836.4	Left	Tilt	/	23.16	24.00	0.185	**0.22**	0.235	**0.29**	0.05

4182	836.4	Right	Cheek	/	23.16	24.00	0.193	**0.23**	0.253	**0.31**	-0.07
4182	836.4	Right	Tilt	/	23.16	24.00	0.172	**0.21**	0.215	**0.26**	0.09

Table 14.1-6: SAR Values (WCDMA 850 MHz Band - Body)

Ambient Temperature: 22.9 °C Liquid Temperature: 22.5°C										
Frequency		Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz									
4182	836.4	Front	/	23.16	24.00	0.214	**0.26**	0.273	**0.33**	0.07
4182	836.4	Rear	/	23.16	24.00	0.311	**0.38**	0.399	**0.48**	-0.05
4233	846.6	Left	/	23.07	24.00	0.225	**0.28**	0.316	**0.39**	0.12
4182	836.4	Left	Fig.6	23.16	24.00	0.295	**0.36**	0.418	**0.51**	0.03
4132	826.4	Left	/	23.02	24.00	0.229	**0.29**	0.320	**0.40**	0.09
4182	836.4	Right	/	23.16	24.00	0.209	**0.25**	0.294	**0.36**	-0.02
4182	836.4	Bottom	/	23.16	24.00	0.029	**0.04**	0.050	**0.06**	0.05

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

Table 14.1-7: SAR Values (WCDMA 1700 MHz Band - Head)

Ambient Temperature: 22.9 °C Liquid Temperature: 22.5°C											
Frequency		Side	Test Position	Figure No./Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										
1637	1732.4	Left	Cheek	/	23.54	24.00	0.160	**0.18**	0.234	**0.26**	0.09
1637	1732.4	Left	Tilt	/	23.54	24.00	0.097	**0.11**	0.147	**0.16**	-0.03
1738	1752.6	Right	Cheek	Fig.7	23.58	24.00	0.257	**0.28**	0.410	**0.45**	0.07
1637	1732.4	Right	Cheek	/	23.54	24.00	0.230	**0.26**	0.363	**0.40**	0.12
1537	1712.4	Right	Cheek	/	23.62	24.00	0.245	**0.27**	0.390	**0.43**	0.01
1637	1732.4	Right	Tilt	/	23.54	24.00	0.087	**0.10**	0.125	**0.14**	-0.04

Table 14.1-8: SAR Values (WCDMA 1700 MHz Band - Body)

Ambient Temperature: 22.9 °C		Liquid Temperature: 22.5°C								
Frequency		Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz									
1637	1732.5	Front	/	19.82	20.00	0.182	**0.19**	0.296	**0.31**	0.04
1637	1732.5	Rear	/	19.82	20.00	0.233	**0.24**	0.390	**0.41**	-0.07
1637	1732.5	Left	/	19.82	20.00	0.030	**0.03**	0.051	**0.05**	0.06
1637	1732.5	Right	/	19.82	20.00	0.033	**0.03**	0.053	**0.06**	-0.07
1738	1752.6	Bottom	/	19.93	20.00	0.329	**0.33**	0.573	**0.58**	-0.09
1637	1732.5	Bottom	/	19.82	20.00	0.334	**0.35**	0.569	**0.59**	-0.08
1537	1712.4	Bottom	Fig.8	19.84	20.00	0.352	**0.36**	0.613	**0.64**	-0.09

Note1: The distance between the EUT and the phantom bottom is 10mm.

Table 14.1-9: SAR Values (WCDMA 1700 MHz Band - Body)

Ambient Temperature: 22.9 °C		Liquid Temperature: 22.5°C								
Frequency		Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz									
1637	1732.5	Front	/	23.54	24.00	0.316	**0.35**	0.491	**0.55**	0.30
1738	1752.6	Rear	/	23.58	24.00	0.358	**0.39**	0.566	**0.62**	0.09
1637	1732.5	Rear	/	23.54	24.00	0.368	**0.41**	0.580	**0.64**	0.06
1537	1712.4	Rear	Fig.9	23.62	24.00	0.373	**0.41**	0.592	**0.65**	-0.14

Note1: The distance between the EUT and the phantom bottom is 15mm.

Table 14.1-10: SAR Values (WCDMA 1900 MHz Band - Head)

Ambient Temperature: 22.9 °C		Liquid Temperature: 22.5°C									
Frequency		Side	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g)(W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										
9800	1880	Left	Cheek	/	22.61	24.00	0.320	**0.44**	0.514	**0.71**	-0.05
9800	1880	Left	Tilt	/	22.61	24.00	0.199	**0.27**	0.331	**0.46**	0.02
9938	1907.6	Right	Cheek	/	22.79	24.00	0.290	**0.38**	0.472	**0.62**	0.03
9800	1880	Right	Cheek	/	22.61	24.00	0.316	**0.44**	0.521	**0.72**	-0.11
9662	1852.4	Right	Cheek	Fig.10	22.53	24.00	0.342	**0.48**	0.566	**0.79**	-0.01
9800	1880	Right	Tilt	/	22.61	24.00	0.156	**0.21**	0.238	**0.33**	0.09

Table 14.1-11: SAR Values (WCDMA 1900 MHz Band - Body)

Ambient Temperature: 22.9 °C					Liquid Temperature: 22.5°C					
Frequency		Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz									
9800	1880	Front	/	20.75	21.00	0.294	**0.31**	0.493	**0.52**	0.03
9800	1880	Rear	/	20.75	21.00	0.253	**0.27**	0.438	**0.46**	0.06
9800	1880	Left	/	20.75	21.00	0.070	**0.07**	0.110	**0.12**	-0.04
9800	1880	Right	/	20.75	21.00	0.073	**0.08**	0.122	**0.13**	0.02
9938	1907.6	Bottom	/	20.91	21.00	0.359	**0.37**	0.674	**0.69**	0.09
9800	1880	Bottom	/	20.75	21.00	0.426	**0.45**	0.792	**0.84**	0.11
9662	1852.4	Bottom	Fig.11	20.68	21.00	0.475	**0.51**	0.870	**0.94**	-0.01
9938	1907.6	Bottom	Note2	20.91	21.00	2.84	**2.90**	6.57	**6.71**	0.13
9800	1880	Bottom	Note2	20.75	21.00	2.42	**2.56**	5.69	**6.03**	0.10
9662	1852.4	Bottom	Note2	20.68	21.00	2.65	**2.85**	6.21	**6.68**	-0.06

Note1: The distance between the EUT and the phantom bottom is 10mm.

Note2: The distance between the EUT and the phantom bottom is 0mm Base on the Principle of adding Test for Phablet.

Table 14.1-12: SAR Values (WCDMA 1900 MHz Band - Body)

Ambient Temperature: 22.9 °C					Liquid Temperature: 22.5°C					
Frequency		Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz									
9938	1907.6	Front	/	22.79	24.00	0.218	**0.29**	0.359	**0.47**	0.03
9800	1880	Front	/	22.61	24.00	0.255	**0.35**	0.415	**0.57**	0.10
9662	1852.4	Front	Fig.12	22.53	24.00	0.280	**0.39**	0.451	**0.63**	-0.05
9800	1880	Rear	/	22.61	24.00	0.213	**0.29**	0.346	**0.48**	0.07

Note1: The distance between the EUT and the phantom bottom is 15mm.

Table 14.1-13: SAR Values (LTE Band2 - Head)

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5°C						
Frequency		Mode	Side	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up	Measured SAR(10g	Reported SAR(10g) (W/kg)	Measured SAR(1g)	Reported SAR(1g)	Power Drift (dB)
Ch.	MHz											

							Power (dBm)	) (W/kg)		(W/kg)	(W/kg)	
19100	1900	1RB_Mid	Left	Cheek	Fig.13	23.89	24.00	0.306	**0.31**	0.472	**0.48**	-0.03
19100	1900	1RB_Mid	Left	Tilt	/	23.89	24.00	0.203	**0.21**	0.325	**0.33**	-0.12
19100	1900	1RB_Mid	Right	Cheek	/	23.89	24.00	0.299	**0.31**	0.461	**0.47**	-0.08
19100	1900	1RB_Mid	Right	Tilt	/	23.89	24.00	0.148	**0.15**	0.219	**0.22**	0.14
19100	1900	50RB_Mid	Left	Cheek	/	22.68	23.00	0.242	**0.26**	0.374	**0.40**	-0.06
19100	1900	50RB_Mid	Left	Tilt	/	22.68	23.00	0.154	**0.17**	0.248	**0.27**	0.03
19100	1900	50RB_Mid	Right	Cheek	/	22.68	23.00	0.225	**0.24**	0.346	**0.37**	-0.06
19100	1900	50RB_Mid	Right	Tilt	/	22.68	23.00	0.111	**0.12**	0.167	**0.18**	-0.01

Note1: The LTE mode is QPSK_20MHz.

Table 14.1-14: SAR Values (LTE Band2 - Body)

Ambient Temperature: 22.9 °C Liquid Temperature: 22.5°C											
Frequency		Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										
19100	1900	1RB_Mid	Front	/	20.89	21.50	0.383	**0.44**	0.627	**0.72**	-0.09
19100	1900	1RB_Mid	Rear	/	20.89	21.50	0.402	**0.46**	0.710	**0.82**	0.06
19100	1900	1RB_Mid	Left	/	20.89	21.50	0.068	**0.08**	0.105	**0.12**	-0.07
19100	1900	1RB_Mid	Right	/	20.89	21.50	0.129	**0.15**	0.212	**0.24**	0.08
19100	1900	1RB_Mid	Bottom	/	20.89	21.50	0.558	**0.64**	1.02	**1.17**	-0.02
18900	1880	1RB_Mid	Bottom	/	20.82	21.50	0.553	**0.65**	0.990	**1.16**	0.09
18700	1860	1RB_Mid	Bottom	/	20.73	21.50	0.500	**0.60**	0.936	**1.12**	-0.05
19100	1900	50RB_Mid	Front	/	20.80	21.50	0.373	**0.44**	0.611	**0.72**	-0.01

19100	1900	50RB_Mid	Rear	/	20.80	21.50	0.394	**0.46**	0.695	**0.82**	0.06
19100	1900	50RB_Mid	Left	/	20.80	21.50	0.068	**0.08**	0.103	**0.12**	0.01
19100	1900	50RB_Mid	Right	/	20.80	21.50	0.126	**0.15**	0.204	**0.24**	0.06
19100	1900	50RB_Mid	Bottom	/	20.80	21.50	0.549	**0.64**	1.00	**1.17**	-0.09
18900	1880	50RB_Low	Bottom	Fig.14	20.69	21.50	0.548	**0.66**	0.990	**1.19**	-0.06
18700	1860	50RB_Mid	Bottom	/	20.58	21.50	0.537	**0.66**	0.958	**1.18**	-0.01
19100	1900	100RB-Low	Bottom	/	20.77	21.50	0.550	**0.65**	0.971	**1.15**	-0.09

Note1: The distance between the EUT and the phantom bottom is 10mm.

Note2: The LTE mode is QPSK_20MHz.

Table 14.1-15: SAR Values (LTE Band2 - Body)

Ambient Temperature: 22.9 °C					Liquid Temperature: 22.5°C						
Frequency		Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										
19100	1900	1RB_Mid	Front	Fig.15	23.89	24.00	0.273	**0.28**	0.455	**0.47**	0.09
19100	1900	1RB_Mid	Rear	/	23.89	24.00	0.223	**0.23**	0.367	**0.38**	-0.03
19100	1900	50RB_Mid	Front	/	22.68	23.00	0.209	**0.22**	0.346	**0.37**	0.07
19100	1900	50RB_Mid	Rear	/	22.68	23.00	0.171	**0.18**	0.281	**0.30**	0.06

Note1: The distance between the EUT and the phantom bottom is 15mm.

Note2: The LTE mode is QPSK_20MHz.

Table 14.1-16: SAR Values (LTE Band4 - Head)

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5°C						
Frequency		Mode	Side	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz											
20050	1720	1RB_Mid	Left	Cheek	/	24.11	24.50	0.226	**0.25**	0.320	**0.35**	0.09
20050	1720	1RB_Mid	Left	Tilt	/	24.11	24.50	0.133	**0.15**	0.203	**0.22**	-0.03
20050	1720	1RB_Mid	Right	Cheek	Fig.16	24.11	24.50	0.285	**0.31**	0.447	**0.49**	0.08
2005	1720	1RB_Mid	Right	Tilt	/	24.11	24.50	0.118	**0.13**	0.166	**0.18**	0.11

0												
20050	1720	50RB_Mid	Left	Cheek	/	23.04	23.50	0.155	**0.17**	0.243	**0.27**	0.12
20050	1720	50RB_Mid	Left	Tilt	/	23.04	23.50	0.100	**0.11**	0.155	**0.17**	0.03
20050	1720	50RB_Mid	Right	Cheek	/	23.04	23.50	0.246	**0.27**	0.384	**0.43**	-0.02
20050	1720	50RB_Mid	Right	Tilt	/	23.04	23.50	0.086	**0.10**	0.121	**0.13**	0.18

Note1: The LTE mode is QPSK_20MHz.

Table 14.1-17: SAR Values (LTE Band4 - Body)

Ambient Temperature: 22.9 °C Liquid Temperature: 22.5°C											
Frequency		Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										
20300	1745	1RB_Mid	Front	/	19.99	20.50	0.205	**0.23**	0.332	**0.37**	-0.05
20300	1745	1RB_Mid	Rear	/	19.99	20.50	0.260	**0.29**	0.431	**0.48**	0.07
20300	1745	1RB_Mid	Left	/	19.99	20.50	0.039	**0.04**	0.059	**0.07**	-0.09
20300	1745	1RB_Mid	Right	/	19.99	20.50	0.041	**0.05**	0.066	**0.07**	-0.06
20300	1745	1RB_Mid	Bottom	/	19.99	20.50	0.287	**0.32**	0.670	**0.75**	-0.05
20300	1745	50RB_Low	Front	/	19.94	20.50	0.215	**0.24**	0.348	**0.40**	0.05
20300	1745	50RB_Low	Rear	/	19.94	20.50	0.275	**0.31**	0.456	**0.52**	-0.05
20300	1745	50RB_Low	Left	/	19.94	20.50	0.023	**0.03**	0.048	**0.05**	-0.06
20300	1745	50RB_Low	Right	/	19.94	20.50	0.043	**0.05**	0.068	**0.08**	-0.07
20300	1745	50RB_Low	Bottom	Fig.17	19.94	20.50	0.409	**0.47**	0.712	**0.81**	-0.16
20175	1732.5	50RB_Low	Bottom	/	19.90	20.50	0.364	**0.42**	0.624	**0.72**	-0.04
20050	1720	50RB_High	Bottom	/	19.88	20.50	0.338	**0.39**	0.579	**0.67**	-0.07
20050	1720	100RB	Bottom	/	19.87	20.50	0.388	**0.45**	0.667	**0.77**	-0.06

Note1: The distance between the EUT and the phantom bottom is 10mm.
Note2: The LTE mode is QPSK_20MHz.

Table 14.1-18: SAR Values (LTE Band4 - Body)

Ambient Temperature: 22.9 °C Liquid Temperature: 22.5°C											
Frequency		Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										

						(dBm)					
20050	1720	1RB_Mid	Front	/	24.11	24.50	0.319	**0.35**	0.512	**0.56**	0.06
20050	1720	1RB_Mid	Rear	Fig.18	24.11	24.50	0.386	**0.42**	0.622	**0.68**	0.02
20050	1720	50RB_Mid	Front	/	23.04	23.50	0.246	**0.27**	0.396	**0.44**	0.09
20050	1720	50RB_Mid	Rear	/	23.04	23.50	0.303	**0.34**	0.487	**0.54**	-0.05

Note1: The distance between the EUT and the phantom bottom is 15mm.

Note2: The LTE mode is QPSK_20MHz.

Table 14.1-19: SAR Values (LTE Band5 - Head)

Ambient Temperature: 22.9°C Liquid Temperature: 22.5°C												
Frequency		Mode	Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g)(W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz											
20450	829	1RB_Mid	Left	Cheek	Fig.19	23.43	24.00	0.269	**0.31**	0.354	**0.40**	0.08
20450	829	1RB_Mid	Left	Tilt	/	23.43	24.00	0.200	**0.23**	0.250	**0.29**	-0.12
20450	829	1RB_Mid	Right	Cheek	/	23.43	24.00	0.245	**0.28**	0.310	**0.35**	-0.02
20450	829	1RB_Mid	Right	Tilt	/	23.43	24.00	0.178	**0.20**	0.221	**0.25**	-0.08
20450	829	25RB_High	Left	Cheek	/	22.34	23.00	0.205	**0.24**	0.271	**0.32**	-0.09
20450	829	25RB_High	Left	Tilt	/	22.34	23.00	0.134	**0.16**	0.170	**0.20**	-0.06
20450	829	25RB_High	Right	Cheek	/	22.34	23.00	0.189	**0.22**	0.238	**0.28**	0.01
20450	829	25RB_High	Right	Tilt	/	22.34	23.00	0.135	**0.16**	0.168	**0.20**	-0.08

Note1: The LTE mode is QPSK_10MHz.

Table 14.1-20: SAR Values (LTE Band5 - Body)

Ambient Temperature: 22.9 °C Liquid Temperature: 22.5°C											
Frequency		Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										
20450	829	1RB_Mid	Front	/	23.43	24.00	0.263	**0.30**	0.333	**0.38**	0.05
20450	829	1RB_Mid	Rear	Fig.20	23.43	24.00	0.396	**0.45**	0.503	**0.57**	0.00
20450	829	1RB_Mid	Left	/	23.43	24.00	0.279	**0.32**	0.396	**0.45**	0.09
20450	829	1RB_Mid	Right	/	23.43	24.00	0.274	**0.31**	0.379	**0.43**	-0.03
20450	829	1RB_Mid	Bottom	/	23.43	24.00	0.036	**0.04**	0.064	**0.07**	0.12
20450	829	25RB_High	Front	/	22.34	23.00	0.199	**0.23**	0.252	**0.29**	0.06
20450	829	25RB_High	Rear	/	22.34	23.00	0.302	**0.35**	0.383	**0.45**	-0.04
20450	829	25RB_High	Left	/	22.34	23.00	0.229	**0.27**	0.321	**0.37**	0.08
20450	829	25RB_High	Right	/	22.34	23.00	0.214	**0.25**	0.297	**0.35**	0.10
20450	829	25RB_High	Bottom	/	22.34	23.00	0.029	**0.03**	0.052	**0.06**	0.09

Note1: The distance between the EUT and the phantom bottom is 10mm.

Note2: The LTE mode is QPSK_10MHz.

Table 14.1-21: SAR Values (LTE Band12 - Head)

Ambient Temperature: 22.9 oC Liquid Temperature: 22.5oC												
Frequency		Mode	Side	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g)(W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz											
23095	707.5	1RB_Mid	Left	Cheek	/	23.74	24.00	0.167	**0.18**	0.218	**0.23**	0.01
23095	707.5	1RB_Mid	Left	Tilt	/	23.74	24.00	0.135	**0.14**	0.173	**0.18**	-0.03
23095	707.5	1RB_Mid	Right	Cheek	Fig.21	23.74	24.00	0.177	**0.19**	0.228	**0.24**	0.03
23095	707.5	1RB_Mid	Right	Tilt	/	23.74	24.00	0.133	**0.14**	0.170	**0.18**	-0.10
23060	704	25RB_High	Left	Cheek	/	22.75	23.00	0.148	**0.16**	0.196	**0.21**	-0.04
23060	704	25RB_High	Left	Tilt	/	22.75	23.00	0.113	**0.12**	0.144	**0.15**	0.12
23060	704	25RB_High	Right	Cheek	/	22.75	23.00	0.155	**0.16**	0.198	**0.21**	-0.11
2306	704	25RB_High	Right	Tilt	/	22.75	23.00	0.115	**0.12**	0.146	**0.15**	0.11

0												

Note1: The LTE mode is QPSK_10MHz.

Table 14.1-22: SAR Values (LTE Band12 - Body)

Ambient Temperature: 22.9 °C Liquid Temperature: 22.5°C											
Frequency		Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										
23095	707.5	1RB_Mid	Front	/	23.74	24.00	0.177	**0.19**	0.231	**0.25**	0.02
23095	707.5	1RB_Mid	Rear	Fig.22	23.74	24.00	0.231	**0.25**	0.300	**0.32**	0.00
23095	707.5	1RB_Mid	Left	/	23.74	24.00	0.182	**0.19**	0.253	**0.27**	-0.05
23095	707.5	1RB_Mid	Right	/	23.74	24.00	0.186	**0.20**	0.263	**0.28**	0.10
23095	707.5	1RB_Mid	Bottom	/	23.74	24.00	0.037	**0.04**	0.062	**0.07**	0.07
23060	704	25RB_High	Front	/	22.75	23.00	0.151	**0.16**	0.200	**0.21**	0.09
23060	704	25RB_High	Rear	/	22.75	23.00	0.183	**0.19**	0.244	**0.26**	0.13
23060	704	25RB_High	Left	/	22.75	23.00	0.150	**0.16**	0.214	**0.23**	-0.04
23060	704	25RB_High	Right	/	22.75	23.00	0.152	**0.16**	0.214	**0.23**	0.08
23060	704	25RB_High	Bottom	/	22.75	23.00	0.027	**0.03**	0.046	**0.05**	-0.02

Note1: The distance between the EUT and the phantom bottom is 10mm.

Note2: The LTE mode is QPSK_10MHz.

Table 14.1-23: SAR Values (LTE Band14 - Head)

Ambient Temperature: 22.9 °C Liquid Temperature: 22.5°C												
Frequency		Mode	Side	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g)(W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz											
23330	793	1RB_Mid	Left	Cheek	/	23.60	24.00	0.151	**0.17**	0.195	**0.21**	-0.11
23330	793	1RB_Mid	Left	Tilt	/	23.60	24.00	0.084	**0.09**	0.108	**0.12**	0.04
23330	793	1RB_Mid	Right	Cheek	Fig.23	23.60	24.00	0.159	**0.17**	0.206	**0.23**	0.03
23330	793	1RB_Mid	Right	Tilt	/	23.60	24.00	0.086	**0.09**	0.106	**0.12**	-0.10

23330	793	25RB_Mid	Left	Cheek	/	22.48	23.00	0.120	**0.14**	0.156	**0.18**	0.06
23330	793	25RB_Mid	Left	Tilt	/	22.48	23.00	0.064	**0.07**	0.082	**0.09**	-0.07
23330	793	25RB_Mid	Right	Cheek	/	22.48	23.00	0.116	**0.13**	0.149	**0.17**	-0.09
23330	793	25RB_Mid	Right	Tilt	/	22.48	23.00	0.067	**0.08**	0.084	**0.09**	0.01

Note1: The LTE mode is QPSK_10MHz.

Table 14.1-24: SAR Values (LTE Band14 - Body)

Ambient Temperature: 22.9 °C Liquid Temperature: 22.5°C											
Frequency		Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										
23330	793	1RB_Mid	Front	/	23.60	24.00	0.158	**0.17**	0.203	**0.22**	0.01
23330	793	1RB_Mid	Rear	/	23.60	24.00	0.211	**0.23**	0.268	**0.29**	0.04
23330	793	1RB_Mid	Left	/	23.60	24.00	0.195	**0.21**	0.272	**0.30**	0.09
23330	793	1RB_Mid	Right	Fig.24	23.60	24.00	0.202	**0.22**	0.285	**0.31**	0.02
23330	793	1RB_Mid	Bottom	/	23.60	24.00	0.046	**0.05**	0.073	**0.08**	-0.03
23330	793	25RB_Mid	Front	/	22.48	23.00	0.121	**0.14**	0.153	**0.17**	-0.07
23330	793	25RB_Mid	Rear	/	22.48	23.00	0.162	**0.18**	0.207	**0.23**	0.15
23330	793	25RB_Mid	Left	/	22.48	23.00	0.149	**0.17**	0.207	**0.23**	0.03
23330	793	25RB_Mid	Right	/	22.48	23.00	0.154	**0.17**	0.217	**0.24**	0.09
23330	793	25RB_Mid	Bottom	/	22.48	23.00	0.027	**0.03**	0.048	**0.05**	0.01

Note1: The distance between the EUT and the phantom bottom is 10mm.

Note2: The LTE mode is QPSK_10MHz.

14.2 SAR results for Standard procedure

There is zoom scan measurement to be added for the highest measured SAR in each exposure configuration/band.

Table 14.2-1: SAR Values (GSM 850 MHz Band - Head)

Ambient Temperature: 22.9 °C Liquid Temperature: 22.5°C											
Frequency		Side	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										
251	848.8	Left	Cheek	Fig.1	32.66	33.30	0.234	**0.27**	0.305	**0.35**	-0.08

Table 14.2-2: SAR Values (GSM 850 MHz Band - Body)

Ambient Temperature: 22.9 °C Liquid Temperature: 22.5°C											
Frequency		Mode (number of timeslots)	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										
251	848.8	GPRS (2)	Rear	Fig.2	30.89	31.50	0.442	**0.51**	0.563	**0.65**	-0.09

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

Table 14.2-3: SAR Values (GSM 1900 MHz Band - Head)

Ambient Temperature: 22.9 °C Liquid Temperature: 22.5°C											
Frequency		Side	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										
512	1850.2	Right	Touch	Fig.3	30.09	30.30	0.171	**0.18**	0.284	**0.30**	-0.17

Table 14.2-4: SAR Values (GSM 1900 MHz Band - Body)

Ambient Temperature: 22.9 °C Liquid Temperature: 22.5°C										
Frequency	Mode	Test	Figure	Conducted	Max. tune-up	Measured	Reported	Measured	Reported	Power

Ch.	MHz	(number of timeslots)	Position	No./ Note	Power (dBm)	Power (dBm)	SAR(10g) (W/kg)	SAR(10g) (W/kg)	SAR(1g) (W/kg)	SAR(1g) (W/kg)	Drift (dB)
512	1850.2	GPRS (2)	Bottom	Fig.4	27.76	29.00	0.528	**0.70**	0.963	**1.28**	-0.06

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

Table 14.2-5: SAR Values (WCDMA 850 MHz Band - Head)

Ambient Temperature: 22.9 °C Liquid Temperature: 22.5°C											
Frequency		Side	Test Position	Figure No./Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										
4132	826.4	Left	Cheek	Fig.5	23.02	24.00	0.255	**0.32**	0.332	**0.42**	0.13

Table 14.2-6: SAR Values (WCDMA 850 MHz Band - Body)

Ambient Temperature: 22.9 °C Liquid Temperature: 22.5°C										
Frequency		Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz									
4182	836.4	Left	Fig.6	23.16	24.00	0.295	**0.36**	0.418	**0.51**	0.03

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

Table 14.2-7: SAR Values (WCDMA 1700 MHz Band - Head)

Ambient Temperature: 22.9 °C Liquid Temperature: 22.5°C											
Frequency		Side	Test Position	Figure No./Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										
1738	1752.6	Right	Cheek	23.58	24.00	0.257	**0.28**	0.410	**0.45**	0.07	23.58

Table 14.2-8: SAR Values (WCDMA 1700 MHz Band - Body)

Ambient Temperature: 22.9 °C Liquid Temperature: 22.5°C										
Frequency		Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz									
1537	1712.4	Bottom	Fig.8	19.84	20.00	0.352	**0.36**	0.613	**0.64**	-0.09

Note1: The distance between the EUT and the phantom bottom is 10mm.

Table 14.2-9: SAR Values (WCDMA 1700 MHz Band - Body)

Ambient Temperature: 22.9 °C Liquid Temperature: 22.5°C										
Frequency		Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz									
1537	1712.4	Rear	Fig.9	23.62	24.00	0.373	**0.41**	0.592	**0.65**	-0.14

Note1: The distance between the EUT and the phantom bottom is 15mm.

Table 14.2-10: SAR Values (WCDMA 1900 MHz Band - Head)

Ambient Temperature: 22.9 °C Liquid Temperature: 22.5°C										
Frequency	Side	Test	Figure	Conducte	Max. tune-	Measure	Reported	Measure	Reporte	Power

Ch.	MHz		Position	No./ Note	d Power (dBm)	up Power (dBm)	d SAR(10g) (W/kg)	SAR(10g)(W/kg)	d SAR(1g) (W/kg)	d SAR(1g) (W/kg)	Drift (dB)
9662	1852.4	Righ t	Cheek	Fig.1 0	22.53	24.00	0.342	**0.48**	0.566	**0.79**	-0.01

Table 14.2-11: SAR Values (WCDMA 1900 MHz Band - Body)

Ambient Temperature: 22.9 °C Liquid Temperature: 22.5°C										
Frequency		Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz									
9262	1852.4	Bottom	Fig.11	20.68	21.00	0.475	**0.51**	0.870	**0.94**	-0.01

Note1: The distance between the EUT and the phantom bottom is 10mm.

Table 14.2-12: SAR Values (WCDMA 1900 MHz Band - Body)

Ambient Temperature: 22.9 °C Liquid Temperature: 22.5°C										
Frequency		Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz									
9262	1852.4	Front	Fig.12	22.53	24.00	0.280	**0.39**	0.451	**0.63**	-0.05

Note1: The distance between the EUT and the phantom bottom is 15mm.

Table 14.2-13: SAR Values (WCDMA 1900 MHz Band - Body)

Ambient Temperature: 22.9 °C Liquid Temperature: 22.5°C										
Frequency		Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz									
9938	1907.6	Bottom	Fig.13	20.91	21.00	2.84	**2.90**	6.57	**6.71**	0.13

Note1: The distance between the EUT and the phantom bottom is 0 mm.

Table 14.2-14: SAR Values (LTE Band2 - Head)

Ambient Temperature: 22.9 °C Liquid Temperature: 22.5°C												
Frequency		Mode	Side	Test Positio n	Figure No./ Note	Conducte d Power (dBm)	Max. tune-up Power (dBm)	Measure d SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measure d SAR(1g) (W/kg)	Reporte d SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz											
1910 0	1900	1RB_Mid	Left	Cheek	Fig.14	23.89	24.00	0.306	**0.31**	0.472	**0.48**	-0.03

Note1: The LTE mode is QPSK_20MHz.

Table 14.2-15: SAR Values (LTE Band2 - Body)

Ambient Temperature: 22.9 °C Liquid Temperature: 22.5°C											
Frequency		Mode	Test Positio	Figure No./	Conducted Power	Max. tune-up	Measured SAR(10g)	Reported SAR(10g)	Measured SAR(1g)	Reported SAR(1g)	Power Drift
Ch.	MHz										

			n	Note	(dBm)	Power (dBm)	(W/kg)	(W/kg)	(W/kg)	(W/kg)	(dB)
18700	1860	150RB_Low	Bottom	Fig.15	20.69	21.50	0.548	**0.66**	0.990	**1.19**	-0.06

Note1: The distance between the EUT and the phantom bottom is 10mm.

Note2: The LTE mode is QPSK_20MHz.

Table 14.2-16: SAR Values (LTE Band2 - Body)

Ambient Temperature: 22.9 °C Liquid Temperature: 22.5°C											
Frequency		Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										
19100	1900	1RB_Mid	Front	Fig.16	23.89	24.00	0.273	**0.28**	0.455	**0.47**	0.09

Note1: The distance between the EUT and the phantom bottom is 15mm.

Note2: The LTE mode is QPSK_20MHz.

Table 14.2-17: SAR Values (LTE Band4 - Head)

Ambient Temperature: 22.9°C Liquid Temperature: 22.5°C												
Frequency		Mode	Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g)) (W/kg)	Reported SAR(10g)(W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz											
20050	1720	1RB_Mid	Right	Cheek	Fig.17	24.11	24.50	0.285	**0.31**	0.447	**0.49**	0.08

Note1: The LTE mode is QPSK_10MHz.

Table 14.2-18: SAR Values (LTE Band4 - Body)

Ambient Temperature: 22.9 °C Liquid Temperature: 22.5°C											
Frequency		Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										
20300	1745	50RB_Low	Bottom	Fig.18	19.94	20.50	0.409	**0.47**	0.712	**0.81**	-0.16

Note1: The distance between the EUT and the phantom bottom is 10mm.

Note2: The LTE mode is QPSK_10MHz.

Table 14.2-19: SAR Values (LTE Band4 - Body)

Ambient Temperature: 22.9 °C Liquid Temperature: 22.5°C											
Frequency		Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										
20050	1720	50RB_Low	Rear	Fig.19	24.11	24.50	0.386	**0.42**	0.622	**0.68**	0.02

Note1: The distance between the EUT and the phantom bottom is 15mm.

Note2: The LTE mode is QPSK_10MHz.

Table 14.2-20: SAR Values (LTE Band5 - Head)

Ambient Temperature: 22.9°C Liquid Temperature: 22.5°C												
Frequency		Mode	Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g)(W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz											
20450	829	1RB_Mid	Lefft	Cheek	Fig.17	23.43	24.00	0.269	**0.31**	0.354	**0.40**	0.08

Note1: The LTE mode is QPSK_10MHz.

Table 14.2-21: SAR Values (LTE Band5 - Body)

Ambient Temperature: 22.9°C Liquid Temperature: 22.5°C											
Frequency		Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										
20450	829	1RB_Mid	Rear	Fig.21	23.43	24.00	0.396	**0.45**	0.503	**0.57**	0.00

Note1: The distance between the EUT and the phantom bottom is 10mm.

Note2: The LTE mode is QPSK_10MHz.

Table 14.2-22: SAR Values (LTE Band12 - Head)

Ambient Temperature: 22.9°C Liquid Temperature: 22.5°C												
Frequency		Mode	Side	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g)(W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz											
23095	707.5	1RB_Mid	Right	Cheek	Fig.22	23.74	24.00	0.177	**0.19**	0.228	**0.24**	0.03

Note1: The LTE mode is QPSK_10MHz.

Table 14.2-23: SAR Values (LTE Band12 - Body)

Ambient Temperature: 22.9°C Liquid Temperature: 22.5°C											
Frequency		Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										
23095	707.5	1RB_Mid	Rear	Fig.23	23.74	24.00	0.231	**0.25**	0.300	**0.32**	0.00

Note1: The distance between the EUT and the phantom bottom is 10mm.

Note2: The LTE mode is QPSK_10MHz.

Table 14.2-24: SAR Values (LTE Band14 - Head)

Ambient Temperature: 22.9°C Liquid Temperature: 22.5°C												
Frequency		Mode	Side	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g)(W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz											
23330	793	1RB_Mid	Right	Cheek	Fig.24	23.60	24.00	0.159	**0.17**	0.206	**0.23**	0.03

Note1: The LTE mode is QPSK_10MHz.

Table 14.2-25: SAR Values (LTE Band14 - Body)

Ambient Temperature: 22.9 °C					Liquid Temperature: 22.5°C						
Frequency		Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										
23330	793	1RB_Mid	Right	Fig.25	23.60	24.00	0.202	**0.22**	0.285	**0.31**	0.02

Note1: The distance between the EUT and the phantom bottom is 10mm.

Note2: The LTE mode is QPSK_10MHz.

14.3 WLAN Evaluation for

According to the KDB248227 D01, SAR is measured for 2.4GHz 802.11b DSSS using the initial test position procedure.

Head Evaluation

Table 14.3-1: SAR Values (WLAN - Head)– 802.11b (Fast SAR)

Ambient Temperature: 22.9 °C Liquid Temperature: 22.5°C											
Frequency		Side	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
MHz	Ch.										
2437	6	Left	Cheek	/	18.32	18.50	0.226	**0.24**	0.482	**0.50**	0.05
2437	6	Left	Tilt	/	18.32	18.50	0.201	**0.21**	0.432	**0.45**	0.03
2437	6	Right	Cheek	/	18.32	18.50	0.116	**0.12**	0.230	**0.24**	-0.17
2437	6	Right	Tilt	/	18.32	18.50	0.105	**0.11**	0.223	**0.23**	0.05

As shown above table, the initial test position for head is “Left Touch”. So the head SAR of WLAN is presented as below:

Table 14.3-2: SAR Values (WLAN - Head)– 802.11b (Full SAR)

Ambient Temperature: 22.9 °C Liquid Temperature: 22.5°C											
Frequency		Side	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
MHz	Ch.										
2437	6	Left	Cheek	Fig.26	18.32	18.50	0.236	**0.25**	0.537	**0.56**	0.05
2437	6	Left	Tilt	/	18.32	18.50	0.212	**0.22**	0.504	**0.53**	0.03
Note1: When the reported SAR of the initial test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position using subsequent highest estimated 1-g SAR conditions determined by area scans, on the highest maximum output power channel, until the reported SAR is ≤ 0.8 W/kg. Note2: For all positions/configurations tested using the initial test position and subsequent test positions, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.											

According to the KDB248227 D01, The reported SAR must be scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit. The scaled reported SAR is presented as below:

Table 14.3-3: SAR Values (WLAN - Head) – 802.11b (Scaled Reported SAR)

Ambient Temperature: 22.9 °C Liquid Temperature: 22.5°C							
Frequency		Side	Test Position	Actual duty factor	maximum duty factor	Reported SAR (1g)(W/kg)	Scaled reported SAR (1g)(W/kg)
MHz	Ch.						
2437	6	Left	Cheek	100%	100%	**0.56**	**0.56**

SAR is not required for 802.11g/n because the 802.11b adjusted SAR < 1.2 W/kg.

Body Evaluation

Table 14.3-4: SAR Values (WLAN - Body)– 802.11b (Fast SAR)

Ambient Temperature: 22.9 °C		Liquid Temperature: 22.5°C								
Frequency		Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
MHz	Ch.									
2437	6	Front	/	18.32	18.50	0.054	**0.06**	0.097	**0.10**	0.07
2437	6	Rear	/	18.32	18.50	0.086	**0.09**	0.162	**0.17**	0.18
2437	6	Right	/	18.32	18.50	0.025	**0.03**	0.048	**0.05**	0.07
2437	6	Top	/	18.32	18.50	0.033	**0.03**	0.067	**0.07**	-0.03

As shown above table, the initial test position for body is “Rear”. So the body SAR of WLAN is presented as below:

Table 14.3-5: SAR Values (WLAN - Body)– 802.11b (Full SAR)

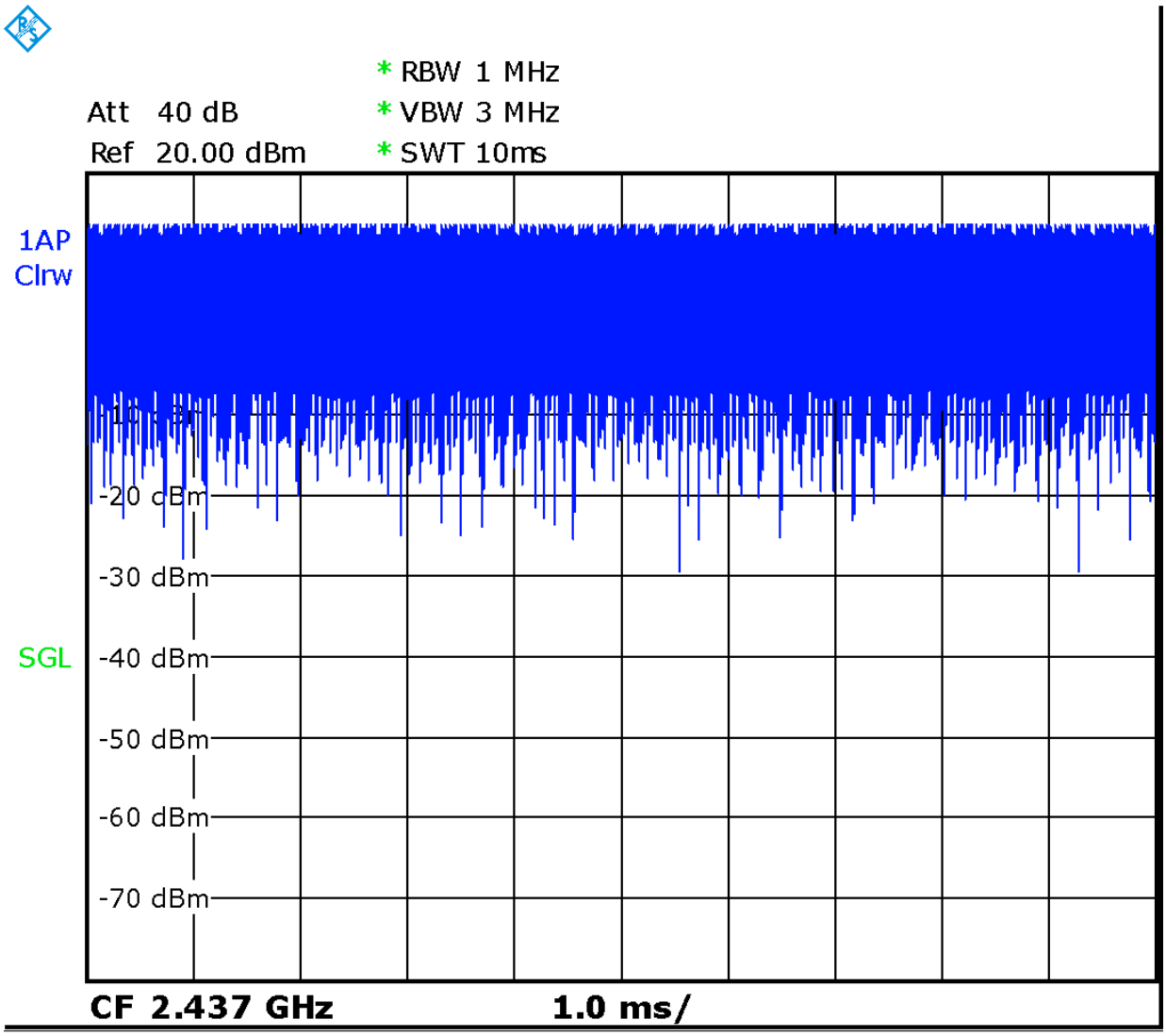
Ambient Temperature: 22.9 °C		Liquid Temperature: 22.5°C								
Frequency		Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
MHz	Ch.									
2437	6	Rear	Fig.27	18.32	18.50	0.085	**0.09**	0.159	**0.17**	0.18
Note1: When the reported SAR of the initial test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position using subsequent highest estimated 1-g SAR conditions determined by area scans, on the highest maximum output power channel, until the reported SAR is ≤ 0.8 W/kg. Note2: For all positions/configurations tested using the initial test position and subsequent test positions, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.										

According to the KDB248227 D01, The reported SAR must be scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit. The scaled reported SAR is presented as below.

Table 14.3-6: SAR Values (WLAN - Body) – 802.11b (Scaled Reported SAR)

Ambient Temperature: 22.9 °C		Liquid Temperature: 22.5°C				
Frequency		Test Position	Actual duty factor	maximum duty factor	Reported SAR (1g)(W/kg)	Scaled reported SAR (1g)(W/kg)
MHz	Ch.					
2437	6	Rear	100%	100%	**0.17**	**0.17**

SAR is not required for 802.11g/n because the 802.11b adjusted SAR < 1.2 W/kg.



Picture 14.1 Duty factor plot for channel 6

15 SAR Measurement Variability

SAR measurement variability must be assessed for each frequency band, which is determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. When both head and body tissue-equivalent media are required for SAR measurements in a frequency band, the variability measurement procedures should be applied to the tissue medium with the highest measured SAR, using the highest measured SAR configuration for that tissue-equivalent medium.

The following procedures are applied to determine if repeated measurements are required.

1) Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg; steps2) through 4) do not apply.

2) When the original highest measured SAR is ≥ 0.80 W/kg, repeat that measurement once.

3) Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45W/kg (~ 10% from the 1-g SAR limit).

4) Perform a third repeated measurement only if the original, first or second repeated measurement is ≥1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.

Table 15.1: SAR Measurement Variability for Body PCS1900 (1g)

Frequency		Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
Ch.	MHz						
512	1850.2	Bottom	10	1.28	1.19	1.01	/

Table 15.2: SAR Measurement Variability for Body W1900 (1g)

Frequency		Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
Ch.	MHz						
9662	1852.4	Bottom	10	0.94	0.86	1.01	/

Table 15.3: SAR Measurement Variability for Body W1900 (1g)

Frequency		Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
Ch.	MHz						
9800	1880	Bottom	10	0.84	0.80	1.01	/

Table 15.4: SAR Measurement Variability for Body LTE B2 (1g)

Frequency		Mode	Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
Ch.	MHz							
18900	1880	1RB_Mid	Bottom	10	1.16	1.07	1.01	/

Table 15.4: SAR Measurement Variability for Body LTE B2 (1g)

Frequency		Mode	Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
Ch.	MHz							
19100	1900	1RB_Mid	Bottom	10	1.17	1.05	1.01	/

Table 15.4: SAR Measurement Variability for Body LTE B2 (1g)

Frequency		Mode	Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
Ch.	MHz							
18700	1860	1RB_Mid	Bottom	10	1.12	1.05	1.01	/

Table 15.4: SAR Measurement Variability for Body LTE B2 (1g)

Frequency		Mode	Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
Ch.	MHz							
19100	1900	50RB_Mid	Rear	10	0.82	0.70	1.01	/

Table 15.4: SAR Measurement Variability for Body LTE B2 (1g)

Frequency		Mode	Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
Ch.	MHz							
19100	1900	50RB_Mid	Bottom	10	1.17	1.07	1.01	/

Table 15.4: SAR Measurement Variability for Body LTE B2 (1g)

Frequency		Mode	Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
Ch.	MHz							
18900	1880	50RB_Low	Bottom	10	1.19	1.10	1.01	/

Table 15.4: SAR Measurement Variability for Body LTE B2 (1g)

Frequency		Mode	Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
Ch.	MHz							
18700	1860	50RB_Mid	Bottom	10	1.18	1.09	1.01	/

Table 15.4: SAR Measurement Variability for Body LTE B2 (1g)

Frequency		Mode	Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
Ch.	MHz							
19100	1900	100RB_Low	Bottom	10	1.15	1.07	1.01	/

16 Measurement Uncertainty

16.1 Measurement Uncertainty for Normal SAR Tests (300MHz~3GHz)

No.	Error Description	Type	Uncertainty value	Probably Distribution	Div.	(Ci) 1g	(Ci) 10g	Std. Unc. (1g)	Std. Unc. (10g)	Degree of freedom
Measurement system										
1	Probe calibration	B	6.0	N	1	1	1	6.0	6.0	∞
2	Isotropy	B	4.7	R	√3	0.7	0.7	1.9	1.9	∞
3	Boundary effect	B	1.0	R	√3	1	1	0.6	0.6	∞
4	Linearity	B	4.7	R	√3	1	1	2.7	2.7	∞
5	Detection limit	B	1.0	N	1	1	1	0.6	0.6	∞
6	Readout electronics	B	0.3	R	√3	1	1	0.3	0.3	∞
7	Response time	B	0.8	R	√3	1	1	0.5	0.5	∞
8	Integration time	B	2.6	R	√3	1	1	1.5	1.5	∞
9	RF ambient conditions-noise	B	0	R	√3	1	1	0	0	∞
10	RFambient conditions-reflection	B	0	R	√3	1	1	0	0	∞
11	Probe positioned mech. restrictions	B	0.4	R	√3	1	1	0.2	0.2	∞
12	Probe positioning with respect to phantom shell	B	2.9	R	√3	1	1	1.7	1.7	∞
13	Post-processing	B	1.0	R	√3	1	1	0.6	0.6	∞
Test sample related										
14	Test sample positioning	A	3.3	N	1	1	1	3.3	3.3	71
15	Device holder uncertainty	A	3.4	N	1	1	1	3.4	3.4	5
16	Drift of output power	B	5.0	R	√3	1	1	2.9	2.9	∞
Phantom and set-up										
17	Phantom uncertainty	B	4.0	R	√3	1	1	2.3	2.3	∞
18	Liquid conductivity (target)	B	5.0	R	√3	0.64	0.43	1.8	1.2	∞
19	Liquid conductivity (meas.)	A	2.06	N	1	0.64	0.43	1.32	0.89	43
20	Liquid permittivity (target)	B	5.0	R	√3	0.6	0.49	1.7	1.4	∞
21	Liquid permittivity (meas.)	A	1.6	N	1	0.6	0.49	1.0	0.8	521

Combined standard uncertainty	$u_c^{'} = \sqrt{\sum_{i=1}^{21} c_i^2 u_i^2}$					9.55	9.43	257
Expanded uncertainty (confidence interval of 95 %)	$u_e = 2u_c$					19.1	18.9	

16.2 Measurement Uncertainty for Normal SAR Tests (3~6GHz)

No.	Error Description	Type	Uncertainty value	Probably Distribution	Div.	(Ci) 1g	(Ci) 10g	Std. Unc. (1g)	Std. Unc. (10g)	Degree of freedom
Measurement system										
1	Probe calibration	B	6.55	N	1	1	1	6.55	6.55	∞
2	Isotropy	B	4.7	R	√3	0.7	0.7	1.9	1.9	∞
3	Boundary effect	B	2.0	R	√3	1	1	1.2	1.2	∞
4	Linearity	B	4.7	R	√3	1	1	2.7	2.7	∞
5	Detection limit	B	1.0	R	√3	1	1	0.6	0.6	∞
6	Readout electronics	B	0.3	R	√3	1	1	0.3	0.3	∞
7	Response time	B	0.8	R	√3	1	1	0.5	0.5	∞
8	Integration time	B	2.6	R	√3	1	1	1.5	1.5	∞
9	RF ambient conditions-noise	B	0	R	√3	1	1	0	0	∞
10	RFambient conditions-reflection	B	0	R	√3	1	1	0	0	∞
11	Probe positioned mech. restrictions	B	0.8	R	√3	1	1	0.5	0.5	∞
12	Probe positioning with respect to phantom shell	B	6.7	R	√3	1	1	3.9	3.9	∞
13	Post-processing	B	4.0	R	√3	1	1	2.3	2.3	∞
Test sample related										
14	Test sample positioning	A	3.3	N	1	1	1	3.3	3.3	71
15	Device holder uncertainty	A	3.4	N	1	1	1	3.4	3.4	5
16	Drift of output power	B	5.0	R	√3	1	1	2.9	2.9	∞
Phantom and set-up										
17	Phantom uncertainty	B	4.0	R	√3	1	1	2.3	2.3	∞
18	Liquid conductivity (target)	B	5.0	R	√3	0.64	0.43	1.8	1.2	∞
19	Liquid conductivity (meas.)	A	2.06	N	1	0.64	0.43	1.32	0.89	43
20	Liquid permittivity (target)	B	5.0	R	√3	0.6	0.49	1.7	1.4	∞

21	Liquid permittivity (meas.)	A	1.6	N	1	0.6	0.49	1.0	0.8	521
Combined standard uncertainty		$u_c^{'} = \sqrt{\sum_{i=1}^{21} c_i^2 u_i^2}$						10.7	10.6	257
Expanded uncertainty (confidence interval of 95 %)		$u_e = 2u_c$						21.4	21.1	

16.3 Measurement Uncertainty for Fast SAR Tests (300MHz~3GHz)

No.	Error Description	Type	Uncertainty value	Probably Distribution	Div.	(Ci) 1g	(Ci) 10g	Std. Unc. (1g)	Std. Unc. (10g)	Degree of freedom
Measurement system										
1	Probe calibration	B	6.0	N	1	1	1	6.0	6.0	∞
2	Isotropy	B	4.7	R	$\sqrt{3}$	0.7	0.7	1.9	1.9	∞
3	Boundary effect	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
4	Linearity	B	4.7	R	$\sqrt{3}$	1	1	2.7	2.7	∞
5	Detection limit	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
6	Readout electronics	B	0.3	R	$\sqrt{3}$	1	1	0.3	0.3	∞
7	Response time	B	0.8	R	$\sqrt{3}$	1	1	0.5	0.5	∞
8	Integration time	B	2.6	R	$\sqrt{3}$	1	1	1.5	1.5	∞
9	RF ambient conditions-noise	B	0	R	$\sqrt{3}$	1	1	0	0	∞
10	RFambient conditions-reflection	B	0	R	$\sqrt{3}$	1	1	0	0	∞
11	Probe positioned mech. Restrictions	B	0.4	R	$\sqrt{3}$	1	1	0.2	0.2	∞
12	Probe positioning with respect to phantom shell	B	2.9	R	$\sqrt{3}$	1	1	1.7	1.7	∞
13	Post-processing	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
14	Fast SAR z-Approximation	B	7.0	R	$\sqrt{3}$	1	1	4.0	4.0	∞
Test sample related										
15	Test sample positioning	A	3.3	N	1	1	1	3.3	3.3	71
16	Device holder uncertainty	A	3.4	N	1	1	1	3.4	3.4	5
17	Drift of output power	B	5.0	R	$\sqrt{3}$	1	1	2.9	2.9	∞
Phantom and set-up										
18	Phantom uncertainty	B	4.0	R	$\sqrt{3}$	1	1	2.3	2.3	∞
19	Liquid conductivity (target)	B	5.0	R	$\sqrt{3}$	0.64	0.43	1.8	1.2	∞

20	Liquid conductivity (meas.)	A	2.06	N	1	0.64	0.43	1.32	0.89	43
21	Liquid permittivity (target)	B	5.0	R	$\sqrt{3}$	0.6	0.49	1.7	1.4	∞
22	Liquid permittivity (meas.)	A	1.6	N	1	0.6	0.49	1.0	0.8	521
Combined standard uncertainty		$u_c^{'} = \sqrt{\sum_{i=1}^{22} c_i^2 u_i^2}$						10.4	10.3	257
Expanded uncertainty (confidence interval of 95 %)		$u_e = 2u_c$						20.8	20.6	

16.4 Measurement Uncertainty for Fast SAR Tests (3~6GHz)

No.	Error Description	Type	Uncertainty value	Probably Distribution	Div.	(Ci) 1g	(Ci) 10g	Std. Unc. (1g)	Std. Unc. (10g)	Degree of freedom
Measurement system										
1	Probe calibration	B	6.55	N	1	1	1	6.55	6.55	∞
2	Isotropy	B	4.7	R	$\sqrt{3}$	0.7	0.7	1.9	1.9	∞
3	Boundary effect	B	2.0	R	$\sqrt{3}$	1	1	1.2	1.2	∞
4	Linearity	B	4.7	R	$\sqrt{3}$	1	1	2.7	2.7	∞
5	Detection limit	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
6	Readout electronics	B	0.3	R	$\sqrt{3}$	1	1	0.3	0.3	∞
7	Response time	B	0.8	R	$\sqrt{3}$	1	1	0.5	0.5	∞
8	Integration time	B	2.6	R	$\sqrt{3}$	1	1	1.5	1.5	∞
9	RF ambient conditions-noise	B	0	R	$\sqrt{3}$	1	1	0	0	∞
10	RFambient conditions-reflection	B	0	R	$\sqrt{3}$	1	1	0	0	∞
11	Probe positioned mech. Restrictions	B	0.8	R	$\sqrt{3}$	1	1	0.5	0.5	∞
12	Probe positioning with respect to phantom shell	B	6.7	R	$\sqrt{3}$	1	1	3.9	3.9	∞
13	Post-processing	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
14	Fast SAR z-Approximation	B	14.0	R	$\sqrt{3}$	1	1	8.1	8.1	∞
Test sample related										
15	Test sample positioning	A	3.3	N	1	1	1	3.3	3.3	71
16	Device holder uncertainty	A	3.4	N	1	1	1	3.4	3.4	5
17	Drift of output power	B	5.0	R	$\sqrt{3}$	1	1	2.9	2.9	∞

Phantom and set-up										
18	Phantom uncertainty	B	4.0	R	$\sqrt{3}$	1	1	2.3	2.3	∞
19	Liquid conductivity (target)	B	5.0	R	$\sqrt{3}$	0.64	0.43	1.8	1.2	∞
20	Liquid conductivity (meas.)	A	2.06	N	1	0.64	0.43	1.32	0.89	43
21	Liquid permittivity (target)	B	5.0	R	$\sqrt{3}$	0.6	0.49	1.7	1.4	∞
22	Liquid permittivity (meas.)	A	1.6	N	1	0.6	0.49	1.0	0.8	521
Combined standard uncertainty		$u_c^{'} = \sqrt{\sum_{i=1}^{22} c_i^2 u_i^2}$						13.5	13.4	257
Expanded uncertainty (confidence interval of 95 %)		$u_e = 2u_c$						27.0	26.8	

17 MAIN TEST INSTRUMENTS

Table 17.1: List of Main Instruments

No.	Name	Type	Serial Number	Calibration Date	Valid Period
01	Network analyzer	E5071C	MY46110673	January 24, 2018	One year
02	Power meter	NRVD	102196	March 07, 2018	One year
03	Power sensor	NRV-Z5	100596		
04	Signal Generator	E4438C	MY49071430	January 2,2018	One Year
05	Amplifier	60S1G4	0331848	No Calibration Requested	
06	BTS	E5515C	MY50263375	January 23, 2018	One year
07	BTS	CMW500	159890	December 14, 2017	One year
08	E-field Probe	SPEAG EX3DV4	7514	August 27, 2018	One year
09	DAE	SPEAG DAE4	1555	August 20, 2018	One year
10	Dipole Validation Kit	SPEAG D750V3	1017	July 23, 2018	One year
11	Dipole Validation Kit	SPEAG D835V2	4d069	July 23, 2018	One year
12	Dipole Validation Kit	SPEAG D1750V2	1003	July 20, 2018	One year
13	Dipole Validation Kit	SPEAG D1900V2	5d101	July 24, 2018	One year
14	Dipole Validation Kit	SPEAG D2450V2	853	July 24, 2018	One year

END OF REPORT BODY

ANNEX A Graph Results

850 Right Cheek High

Date: 2018-11-7
Electronics: DAE4 Sn1555
Medium: Head 850 MHz
Medium parameters used: f = 824.2 MHz; σ = 0.897 mho/m; εr = 42.12; ρ = 1000 kg/m^3
Ambient Temperature: 22.9°C Liquid Temperature: 22.5°C
Communication System: GSM 850 Frequency: 824.2 MHz Duty Cycle: 1:4
Probe: EX3DV4 – SN7514 ConvF(9.09, 9.09, 9.09)

Area Scan (71x131x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.335 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.467 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 0.380 W/kg
SAR(1 g) = 0.305 W/kg; SAR(10 g) = 0.234 W/kg
Maximum value of SAR (measured) = 0.335 W/kg

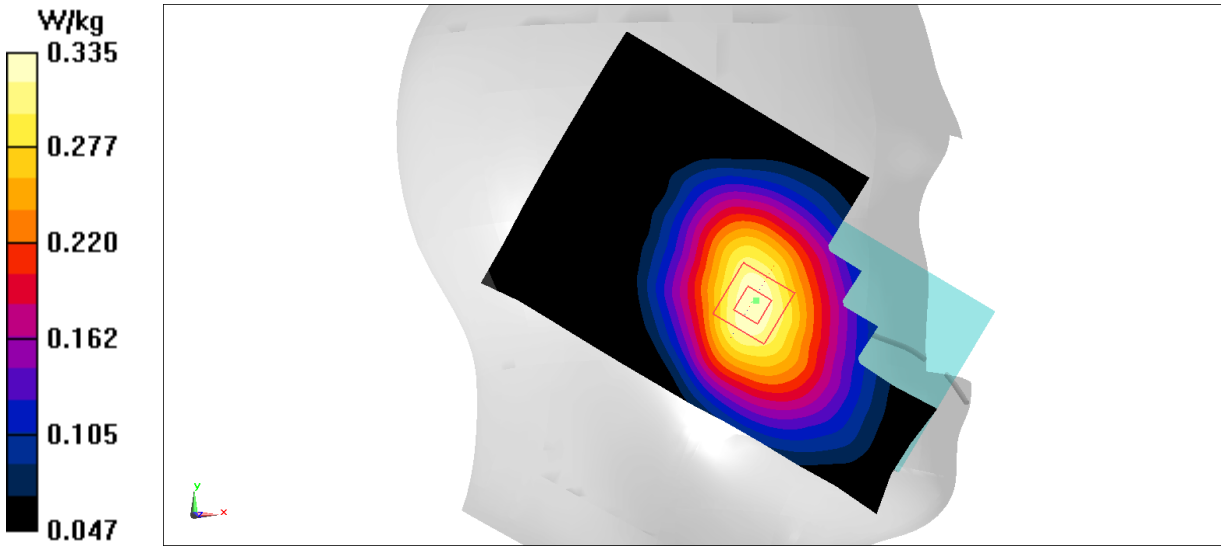


Fig.1 850MHz

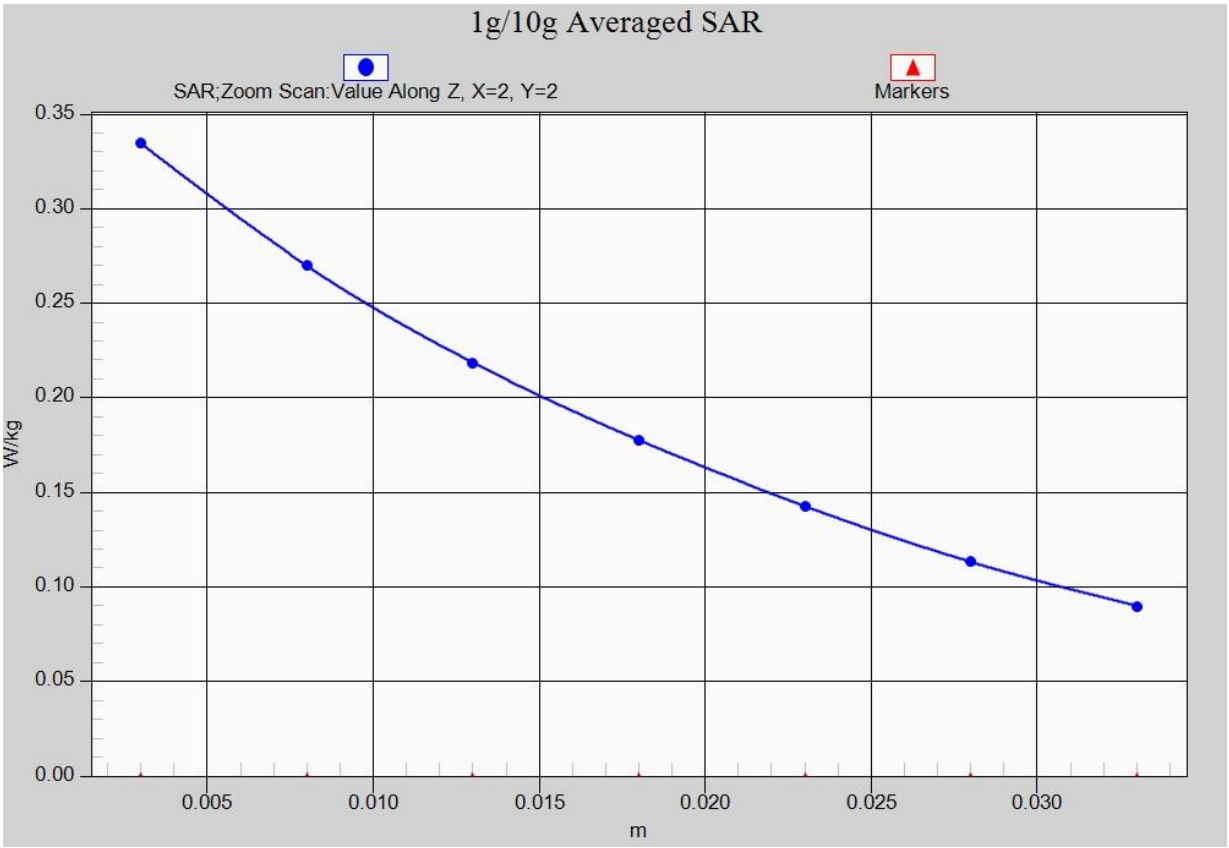


Fig. 1-1 Z-Scan at power reference point (850 MHz)

850 Body Rear High

Date: 2018-11-7
Electronics: DAE4 Sn1555
Medium: Body 850 MHz
Medium parameters used: f = 836.6 MHz; σ = 0.988 mho/m; εr = 56.16; ρ = 1000 kg/m^3
Ambient Temperature: 22.9°C Liquid Temperature: 22.5°C
Communication System: GSM 850 GPRS Frequency: 836.6 MHz Duty Cycle: 1:4
Probe: EX3DV4 – SN7514 ConvF(9.47, 9.47, 9.47)

Area Scan (121x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.613 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 24.56 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 0.686 W/kg
SAR(1 g) = 0.563 W/kg; SAR(10 g) = 0.442 W/kg
Maximum value of SAR (measured) = 0.611 W/kg

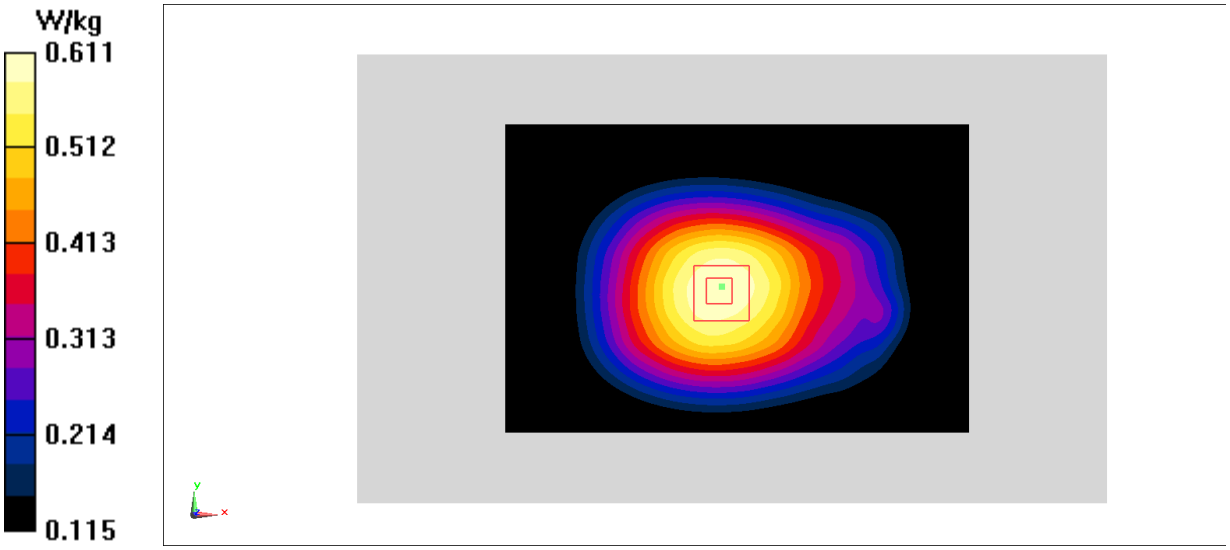


Fig.2 850 MHz

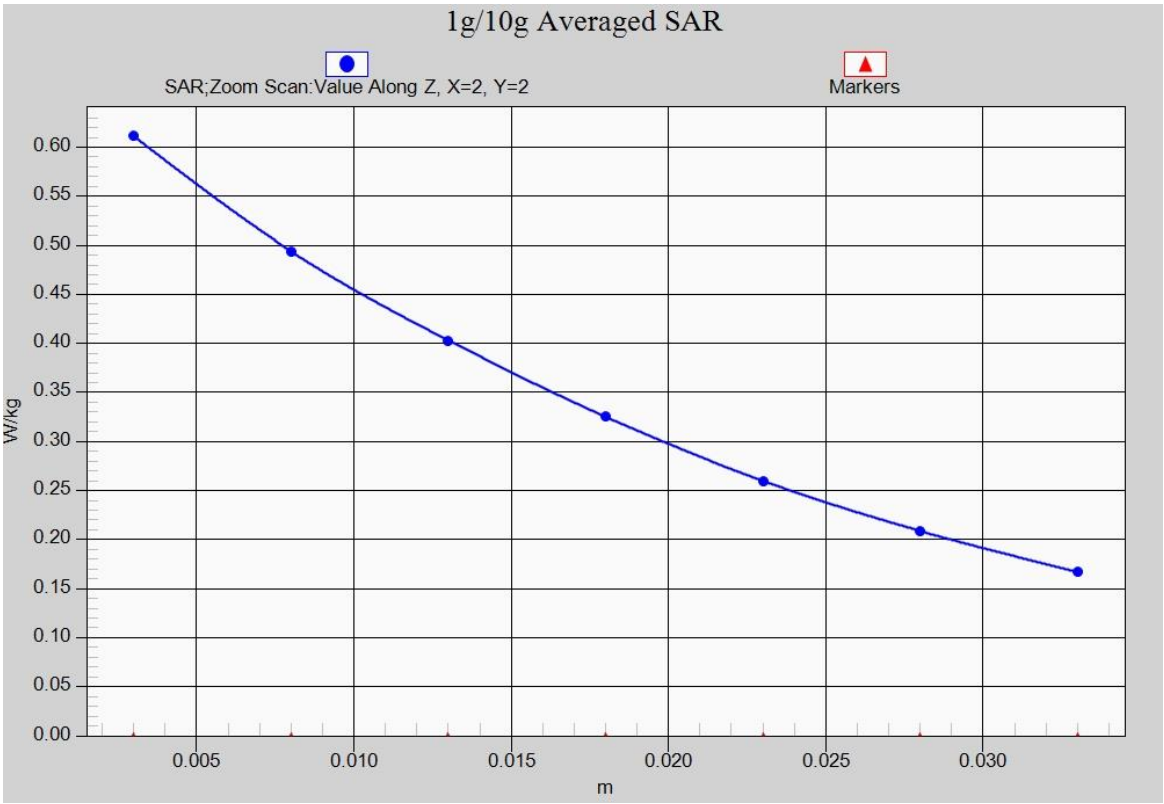


Fig. 2-1 Z-Scan at power reference point (850 MHz)

PCS1900 Right Cheek Low

Date: 2018-11-12
Electronics: DAE4 Sn1555
Medium: Head 1900 MHz
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.358 mho/m; εr = 40.61; ρ = 1000 kg/m^3
Ambient Temperature: 22.9°C Liquid Temperature: 22.5°C
Communication System: GSM 1900MHz Frequency: 1850.2 MHz Duty Cycle: 1:4
Probe: EX3DV4– SN7514 ConvF(7.73, 7.73, 7.73)

Area Scan (71x131x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.345 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.322 V/m; Power Drift = -0.17 dB
Peak SAR (extrapolated) = 0.444 W/kg
SAR(1 g) = 0.284 W/kg; SAR(10 g) = 0.171 W/kg
Maximum value of SAR (measured) = 0.320 W/kg

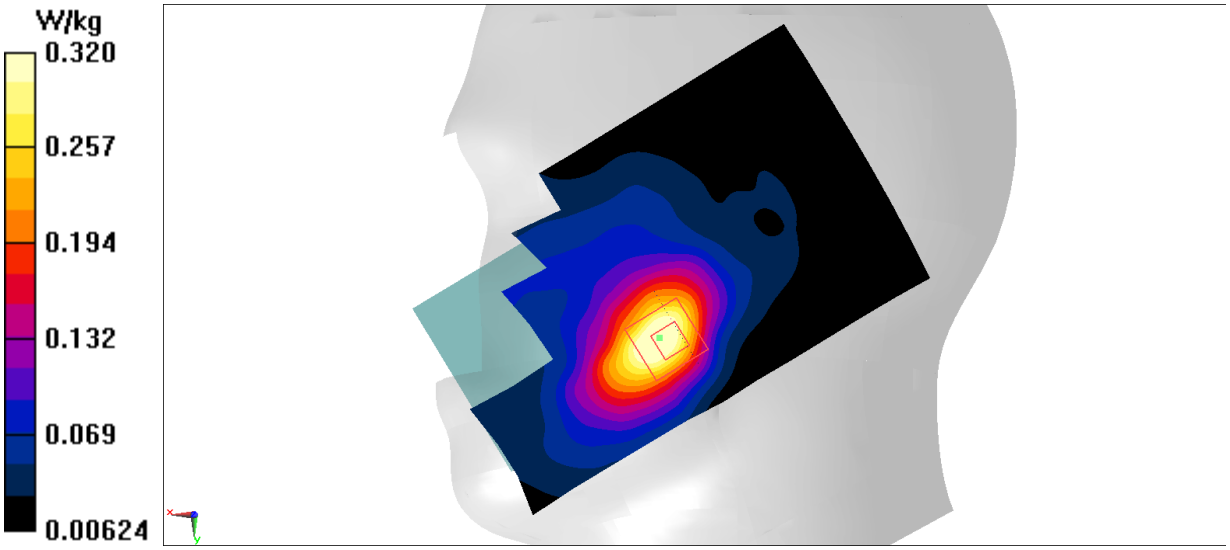


Fig.3 1900 MHz

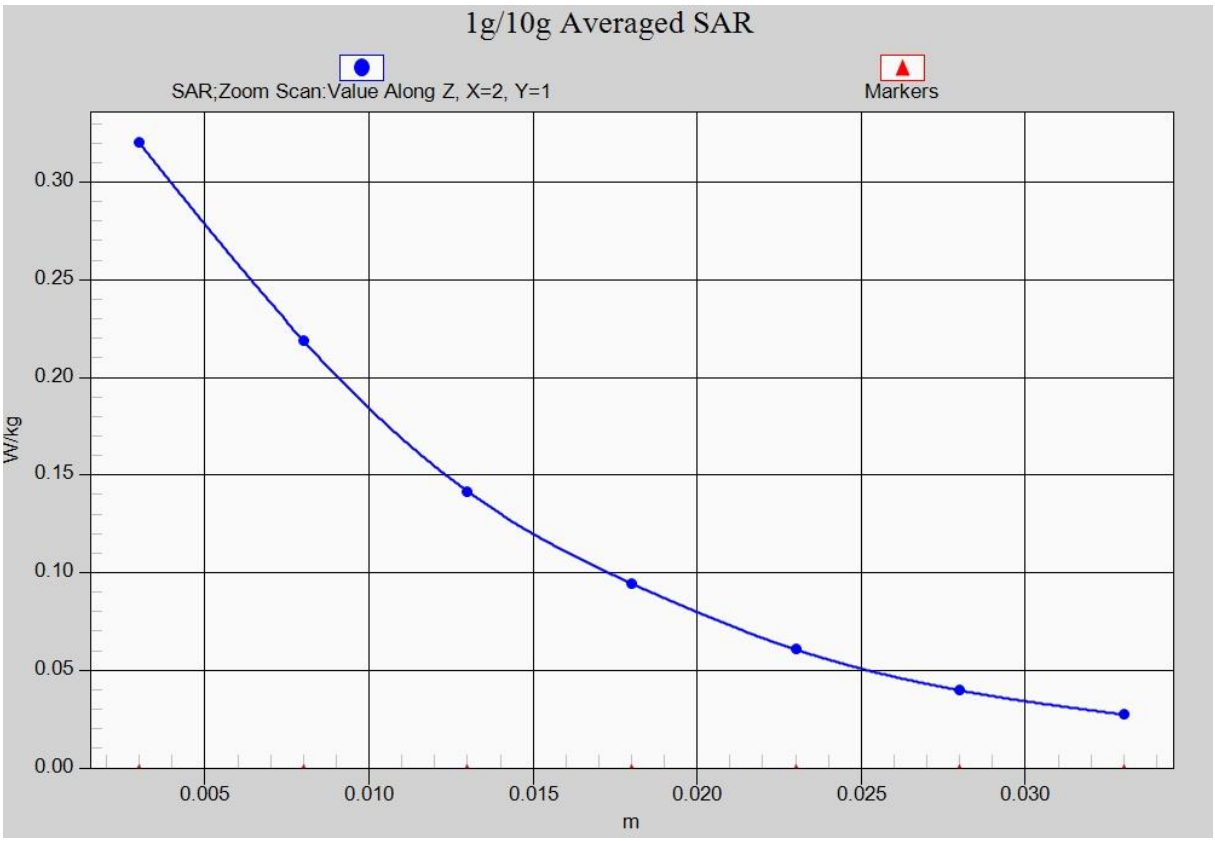


Fig. 3-1 Z-Scan at power reference point (1900 MHz)

PCS1900 Body Rear Low

Date: 2018-11-12
Electronics: DAE4 Sn1555
Medium: Body 1900 MHz
Medium parameters used: f = 1850.2 MHz; σ =1.476 mho/m; εr = 52.73; ρ = 1000 kg/m^3
Ambient Temperature: 22.9°C Liquid Temperature: 22.5°C
Communication System: GSM 1900MHz GPRS Frequency: 1850.2 MHz Duty Cycle: 1:4
Probe: EX3DV4– SN7514 ConvF(7.53, 7.53, 7.53)

Area Scan (121x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.20 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 22.75 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 1.62 W/kg
SAR(1 g) = 0.963 W/kg; SAR(10 g) = 0.528 W/kg
Maximum value of SAR (measured) = 1.20 W/kg

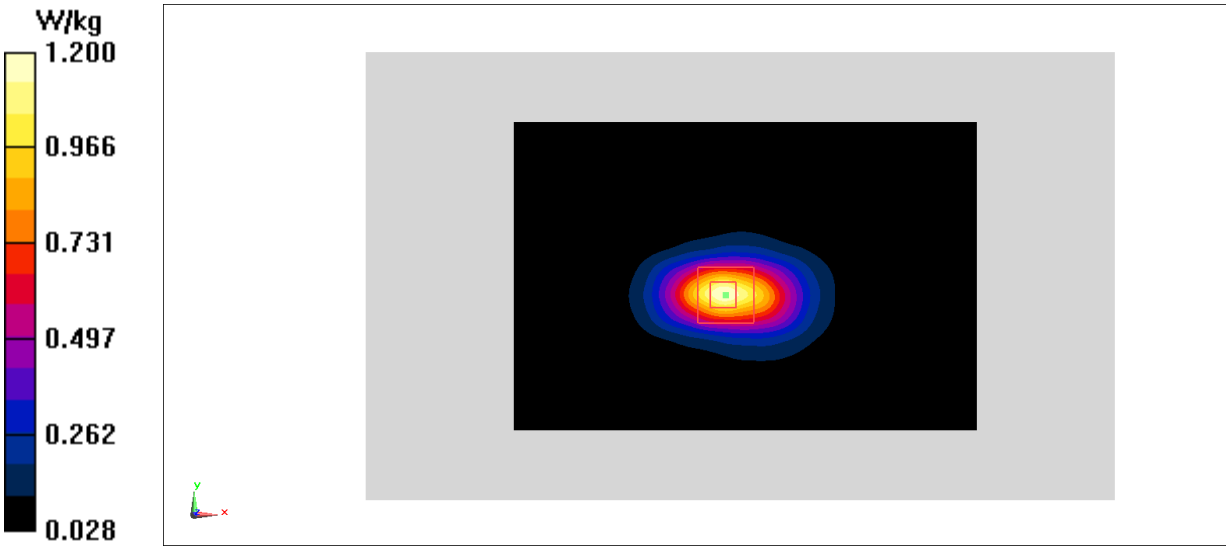


Fig.4 1900 MHz

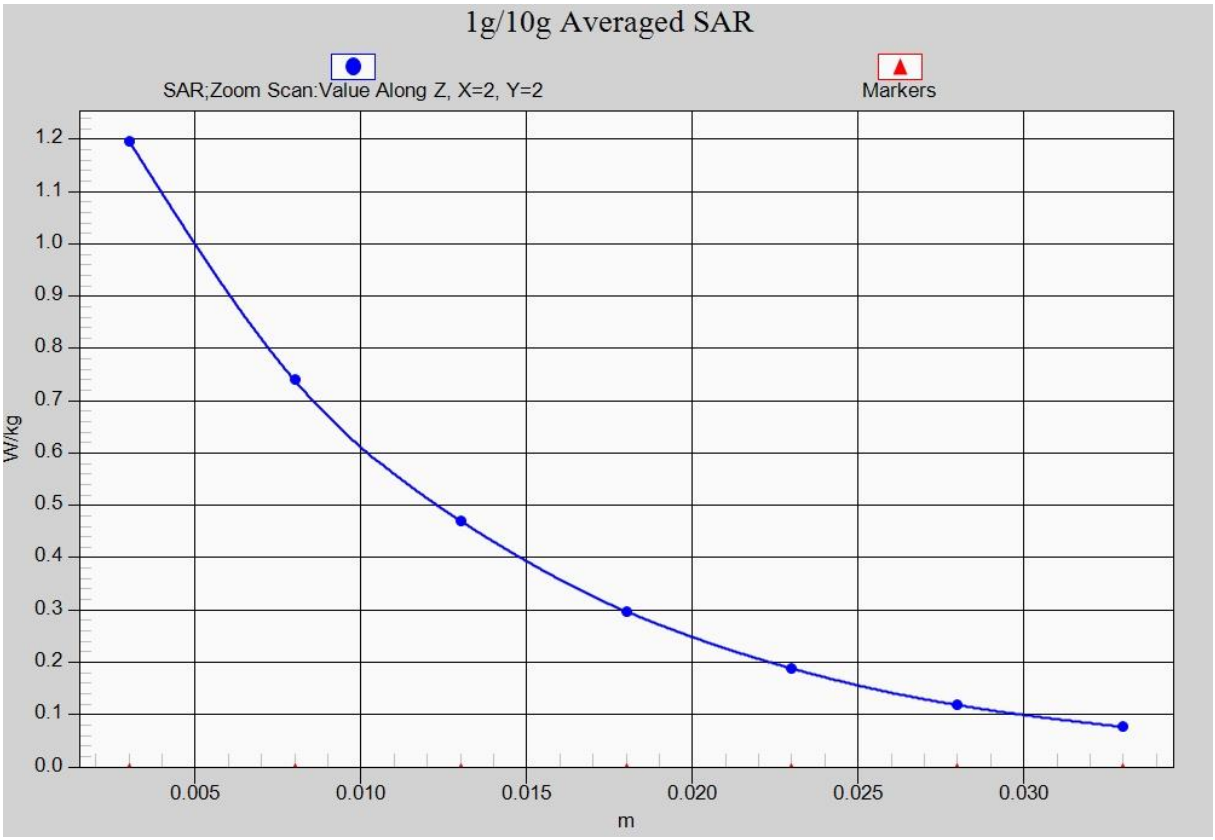


Fig. 4-1 Z-Scan at power reference point (1900 MHz)

WCDMA 850 Left Cheek Low

Date: 2018-11-7
Electronics: DAE4 Sn1555
Medium: Head 850 MHz
Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.899 mho/m; εr = 42.065; ρ = 1000 kg/m^3
Ambient Temperature: 22.9°C Liquid Temperature: 22.5°C
Communication System: WCDMA; Frequency: 826.4 MHz; Duty Cycle: 1:1
Probe: EX3DV4 – SN7514 ConvF(9.09, 9.09, 9.09)

Area Scan (71x131x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.368 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.681 V/m; Power Drift = -0.13 dB
Peak SAR (extrapolated) = 0.419 W/kg
SAR(1 g) = 0.332 W/kg; SAR(10 g) = 0.255 W/kg
Maximum value of SAR (measured) = 0.364 W/kg

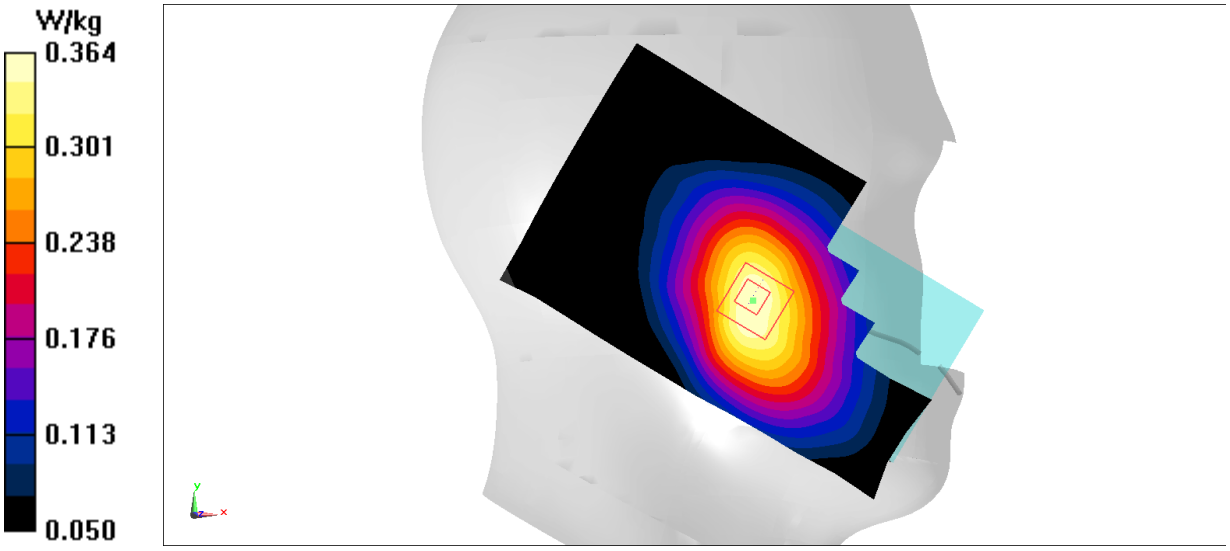


Fig.5 WCDMA 850

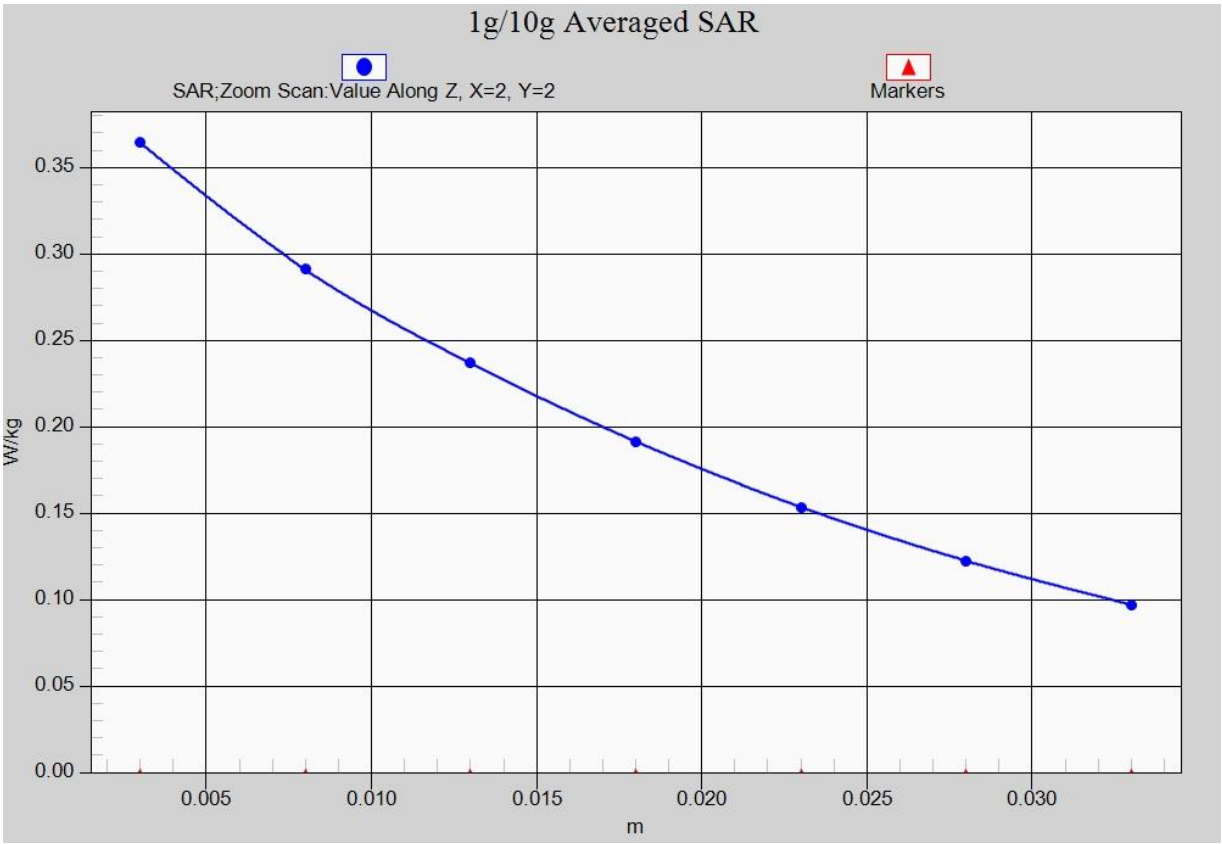


Fig. 5-1 Z-Scan at power reference point (850 MHz)

WCDMA 850 Body Left Middle

Date: 2018-11-7

Electronics: DAE4 Sn1555

Medium: Body 850 MHz

Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.981mho/m; εr = 56.216; ρ = 1000 kg/m^3

Ambient Temperature: 22.9°C Liquid Temperature: 22.5°C

Communication System: WCDMA; Frequency: 826.4 MHz; Duty Cycle: 1:1

Probe: EX3DV4 – SN7514 ConvF(9.47, 9.47, 9.47)

Area Scan (121x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.473 W/kg

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

Reference Value = 19.71 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.576 W/kg

SAR(1 g) = 0.418 W/kg; SAR(10 g) = 0.295 W/kg

Maximum value of SAR (measured) = 0.473 W/kg

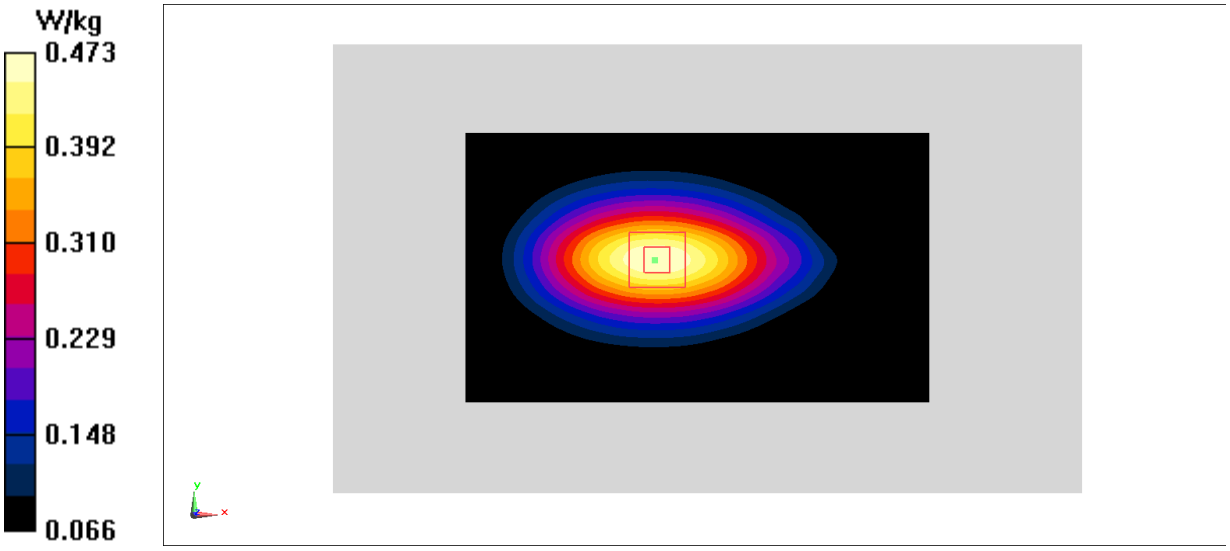


Fig.6 WCDMA 850

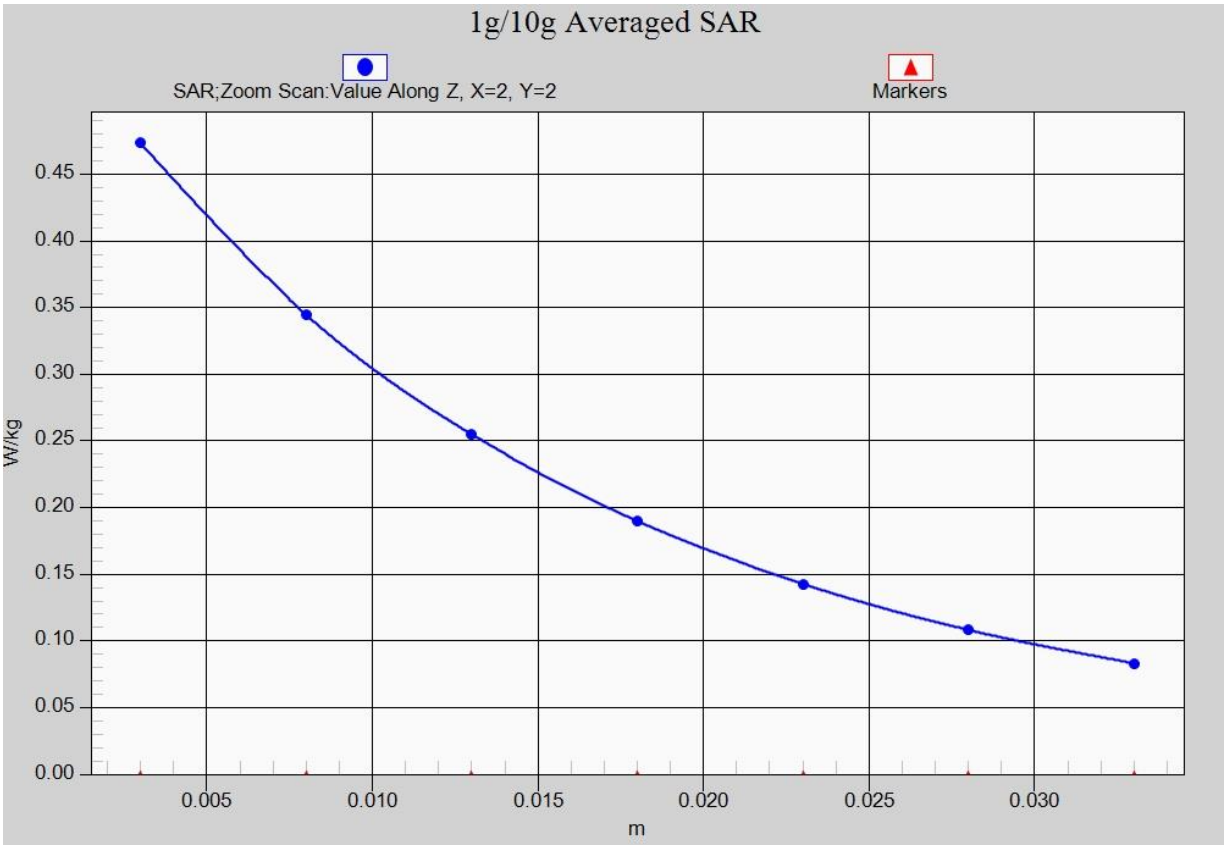


Fig. 6-1 Z-Scan at power reference point (WCDMA850)

WCDMA 1700 Right Cheek High

Date: 2018-11-18
Electronics: DAE4 Sn1555
Medium: Head 1750 MHz
Medium parameters used (interpolated): f = 1732.4 MHz; σ = 1.395 mho/m; εr = 40.907; ρ = 1000 kg/m^3
Ambient Temperature: 22.9°C Liquid Temperature: 22.5°C
Communication System: WCDMA 1750 Frequency: 1732.4 MHz Duty Cycle: 1:1
Probe: EX3DV4– SN7514 ConvF(8.10, 8.10, 8.10)

Area Scan (91x161x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.474 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.182 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 0.605 W/kg
SAR(1 g) = 0.410 W/kg; SAR(10 g) = 0.257 W/kg
Maximum value of SAR (measured) = 0.479 W/kg

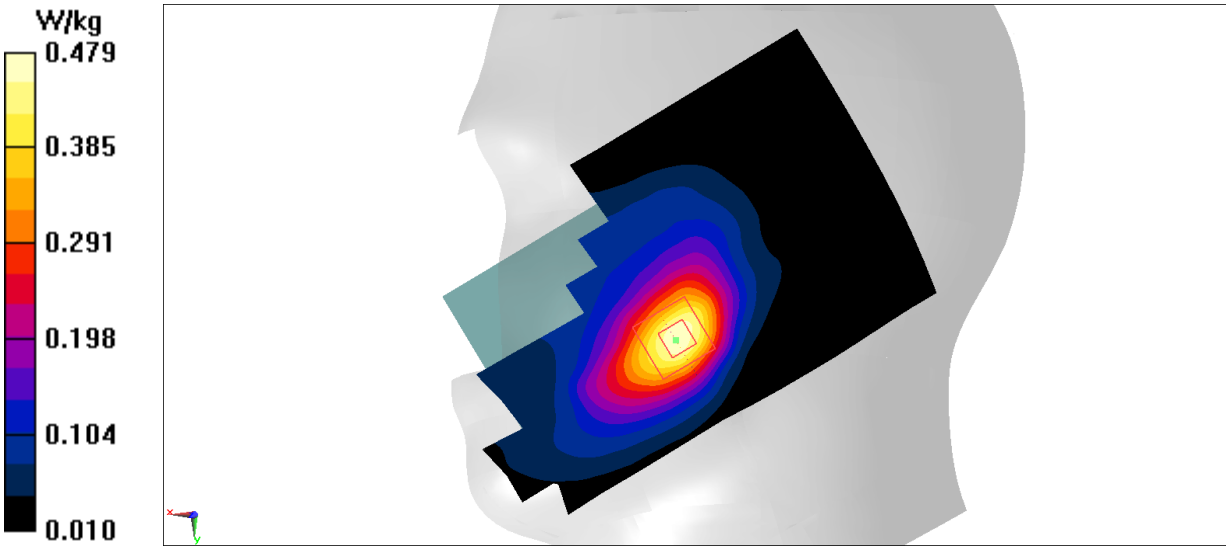


Fig.7 WCDMA1700

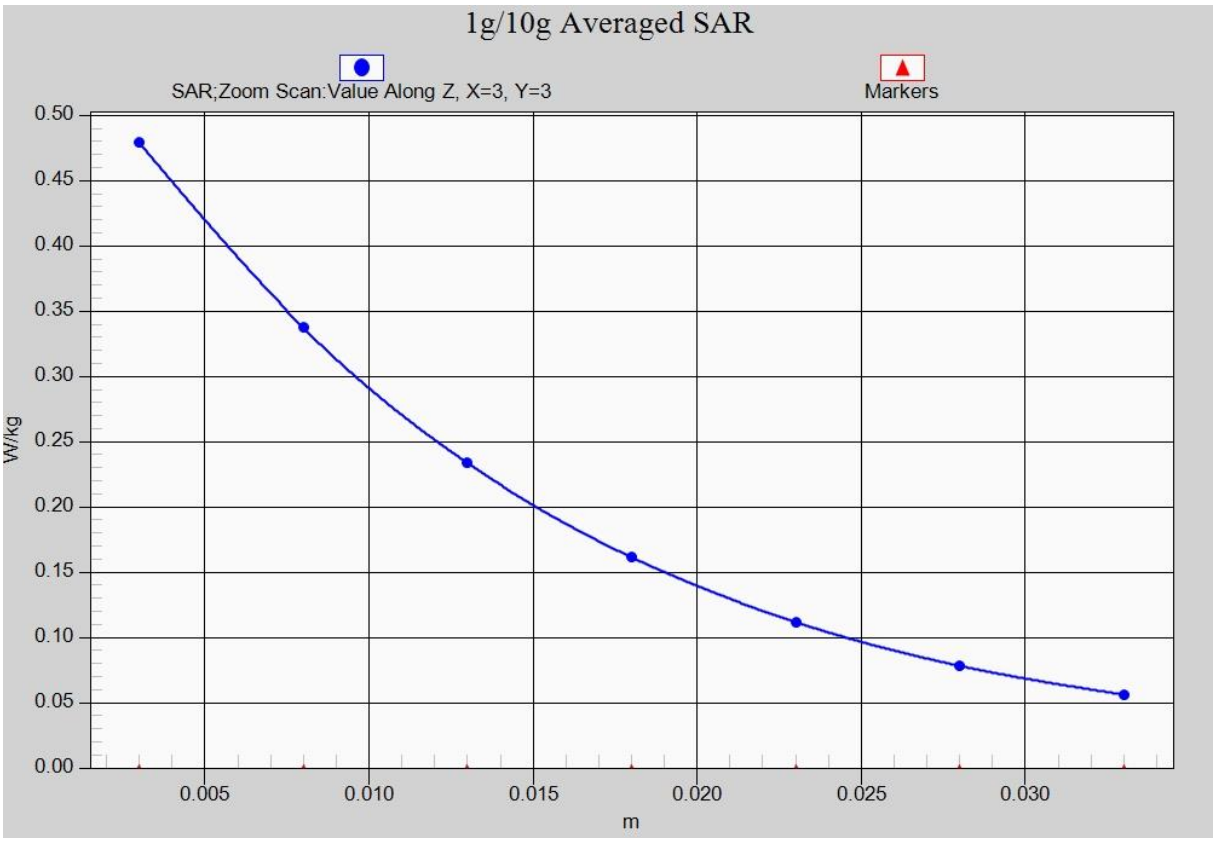


Fig. 7-1 Z-Scan at power reference point (WCDMA1700)

WCDMA 1700 Body Bottom Low

Date: 2018-11-8

Electronics: DAE4 Sn1555

Medium: Body 1750 MHz

Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.512 mho/m; εr = 52.578; ρ = 1000 kg/m^3

Ambient Temperature: 22.9°C Liquid Temperature: 22.5°C

Communication System: WCDMA1700-BIV 1712.4 MHz Duty Cycle: 1:1

Probe: EX3DV4– SN7514 ConvF(7.82, 7.82, 7.82)

Area Scan (131x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.749 W/kg

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

Reference Value = 22.04 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 0.963 W/kg

SAR(1 g) = 0.613 W/kg; SAR(10 g) = 0.352 W/kg

Maximum value of SAR (measured) = 0.732 W/kg

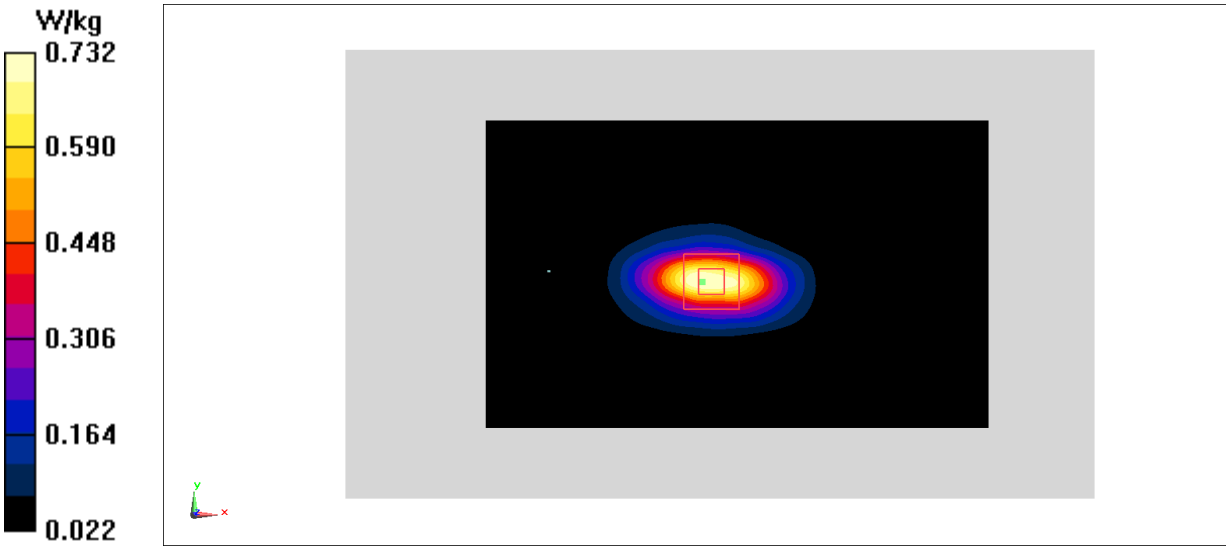


Fig.8 WCDMA1700

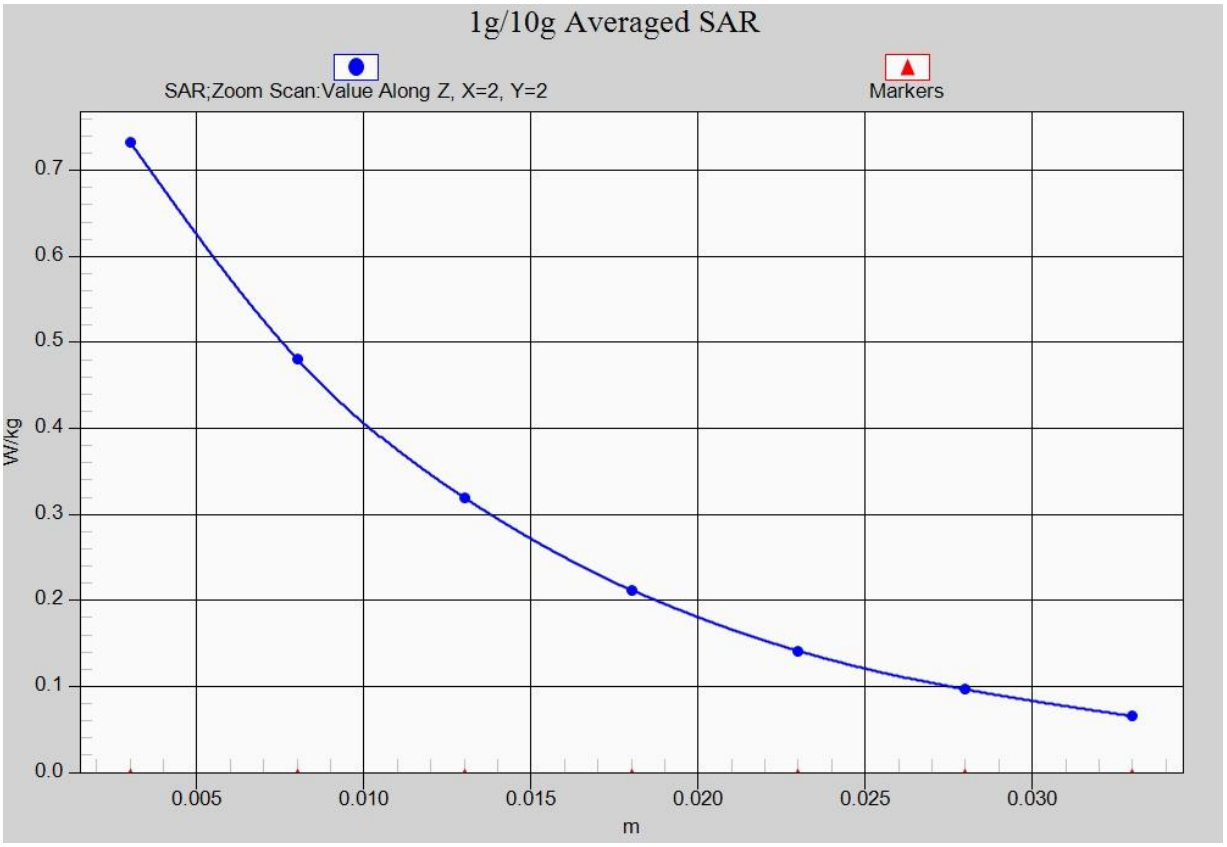


Fig. 8-1 Z-Scan at power reference point (WCDMA1700)

WCDMA 1700 Body Rear Low

Date: 2018-11-8

Electronics: DAE4 Sn1555

Medium: Body 1750 MHz

Medium parameters used (interpolated): f = 1752.6 MHz; σ = 1.525 mho/m; εr = 52.498; ρ = 1000 kg/m^3

Ambient Temperature: 22.9°C Liquid Temperature: 22.5°C

Communication System: WCDMA1700-BIV 1712.4 MHz Duty Cycle: 1:1

Probe: EX3DV4– SN7514 ConvF(7.82, 7.82, 7.82)

Area Scan (121x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.692 W/kg

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

Reference Value = 9.809 V/m; Power Drift = -0.14 dB

Peak SAR (extrapolated) = 0.883 W/kg

SAR(1 g) = 0.592 W/kg; SAR(10 g) = 0.373 W/kg

Maximum value of SAR (measured) = 0.697 W/kg

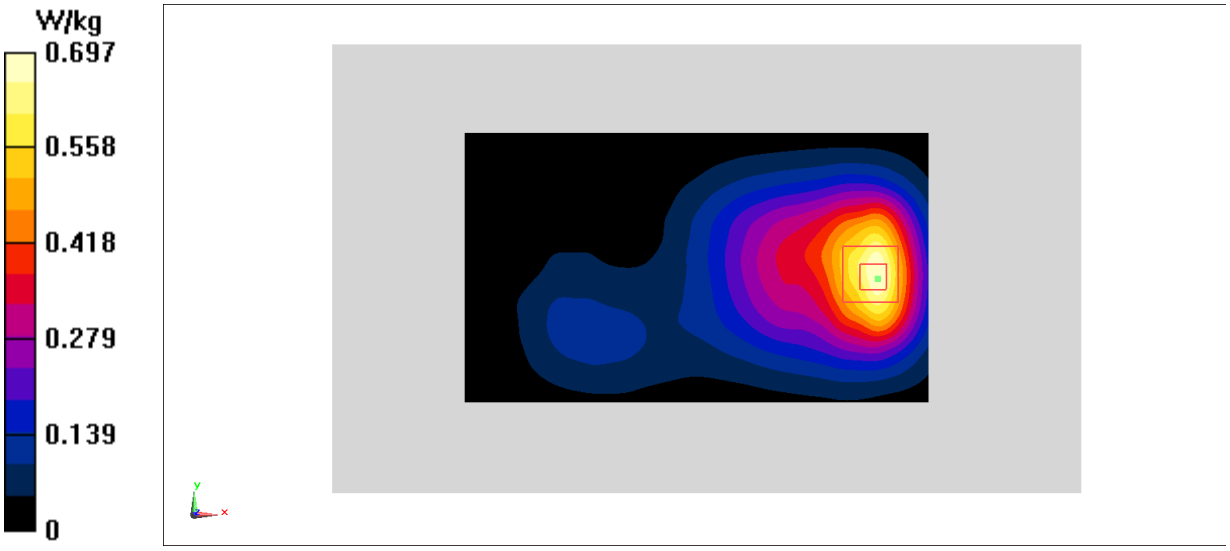


Fig.9 WCDMA1700

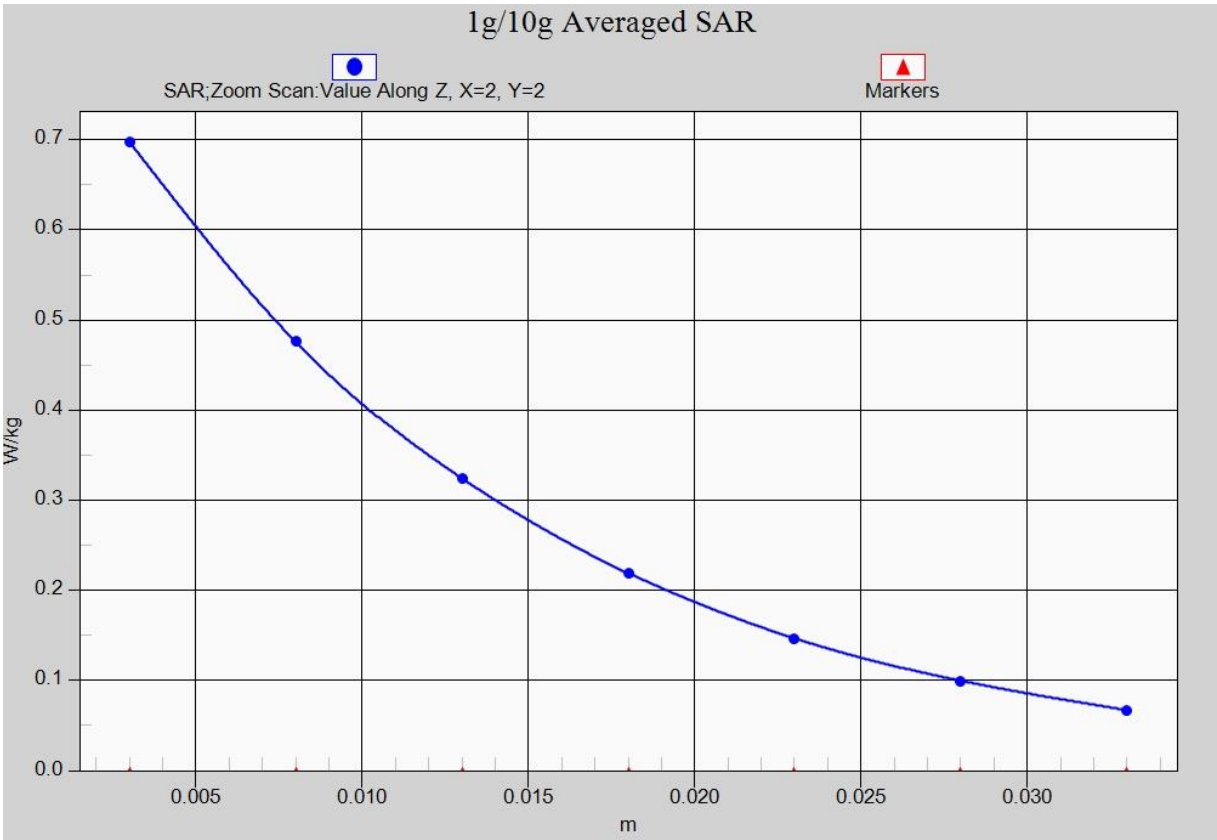


Fig. 9-1 Z-Scan at power reference point (WCDMA1700)

WCDMA 1900 Right Cheek Low

Date: 2018-11-12
Electronics: DAE4 Sn1555
Medium: Head 1900 MHz
Medium parameters used (interpolated): f = 1852.4 MHz; σ = 1.331 mho/m; εr = 40.826; ρ = 1000 kg/m^3
Ambient Temperature: 22.9°C Liquid Temperature: 22.5°C
Communication System: WCDMA 1900 Frequency: 1852.4 MHz Duty Cycle: 1:1
Probe: EX3DV4– SN7514 ConvF(7.73, 7.73, 7.73)

Area Scan (71x131x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.688 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.128 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.882 W/kg
SAR(1 g) = 0.566 W/kg; SAR(10 g) = 0.342 W/kg
Maximum value of SAR (measured) = 0.652 W/kg

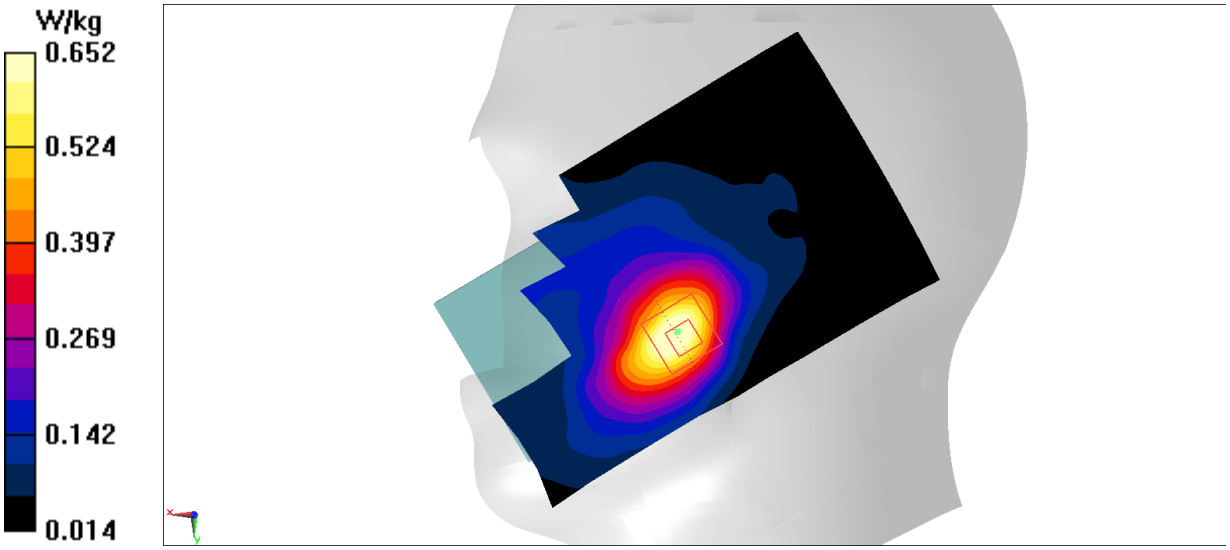


Fig.10 WCDMA1900

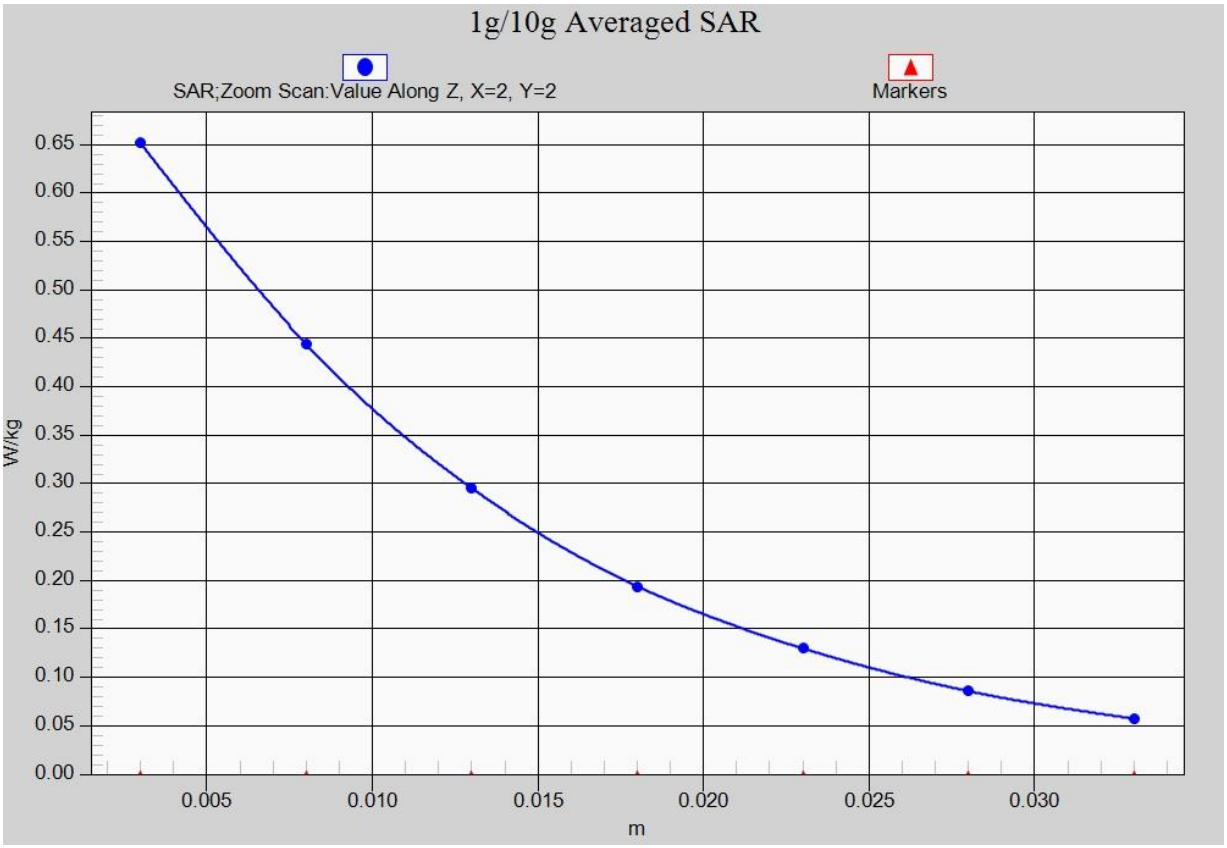


Fig. 10-1 Z-Scan at power reference point (WCDMA1900)

WCDMA 1900 Body Bottom Low

Date: 2018-11-12

Electronics: DAE4 Sn1555

Medium: Body 1900 MHz

Medium parameters used (interpolated): f = 1852.4 MHz; σ = 1.532 mho/m; εr = 52.7; ρ = 1000 kg/m^3

Ambient Temperature: 22.9°C Liquid Temperature: 22.5°C

Communication System: WCDMA 1900 Frequency: 1852.4 MHz Duty Cycle: 1:1

Probe: EX3DV4– SN7514 ConvF(7.53, 7.53, 7.53)

Area Scan (121x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

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

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

Reference Value = 23.70 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 1.47 W/kg

SAR(1 g) = 0.870 W/kg; SAR(10 g) = 0.475 W/kg

Maximum value of SAR (measured) = 1.08 W/kg

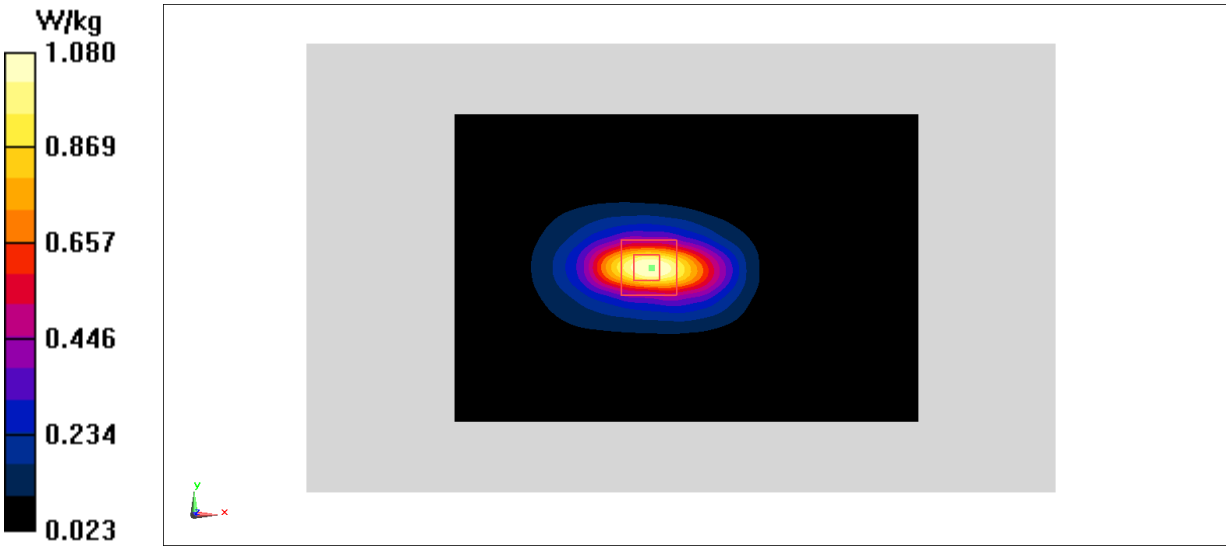


Fig.11 WCDMA1900

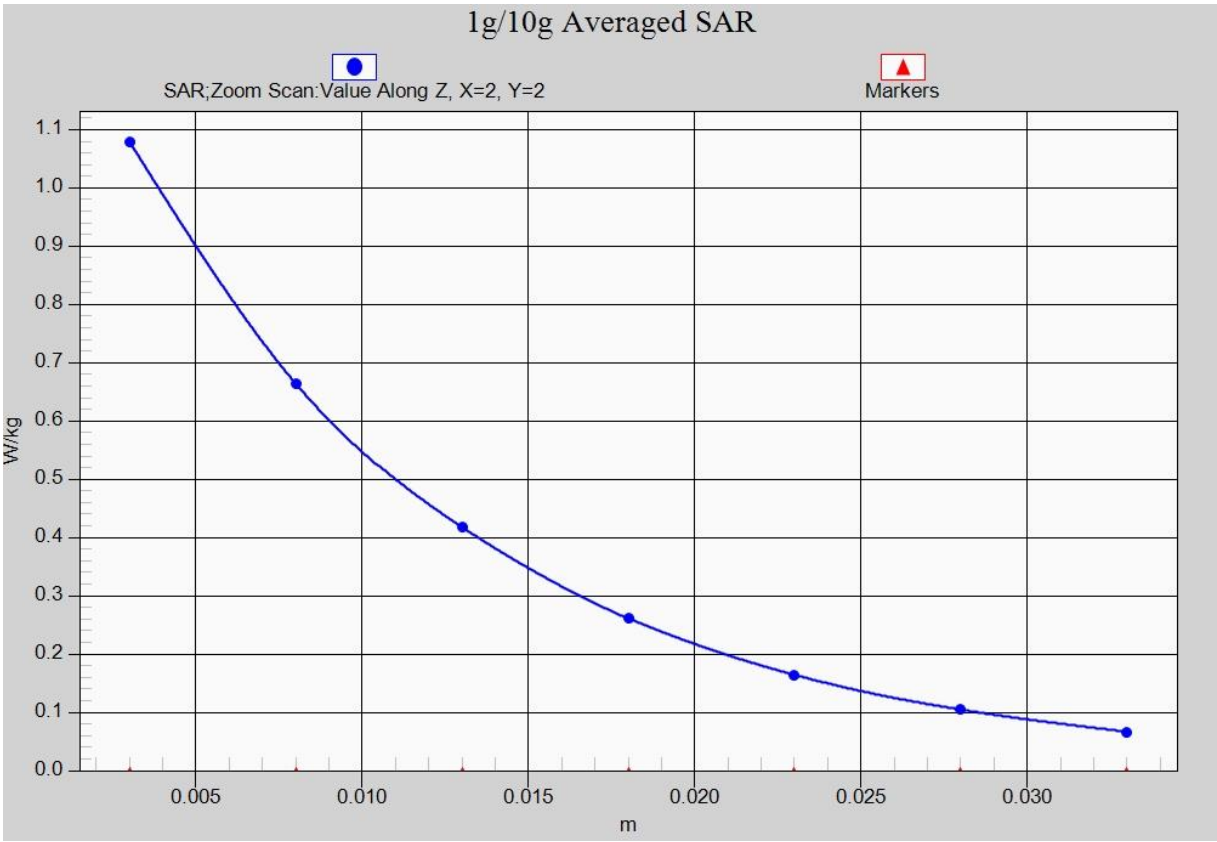


Fig. 11-1 Z-Scan at power reference point (WCDMA1900)

WCDMA 1900 Body Bottom Low

Date: 2018-11-12
Electronics: DAE4 Sn1555
Medium: Body 1900 MHz
Medium parameters used (interpolated): f = 1852.4 MHz; σ = 1.482 mho/m; εr = 52.75; ρ = 1000 kg/m^3
Ambient Temperature: 22.9°C Liquid Temperature: 22.5°C
Communication System: WCDMA 1900 Frequency: 1852.4 MHz Duty Cycle: 1:1
Probe: EX3DV4– SN7514 ConvF(7.53, 7.53, 7.53)

Area Scan (121x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.533 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.67 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.697 W/kg
SAR(1 g) = 0.451 W/kg; SAR(10 g) = 0.280 W/kg
Maximum value of SAR (measured) = 0.537 W/kg

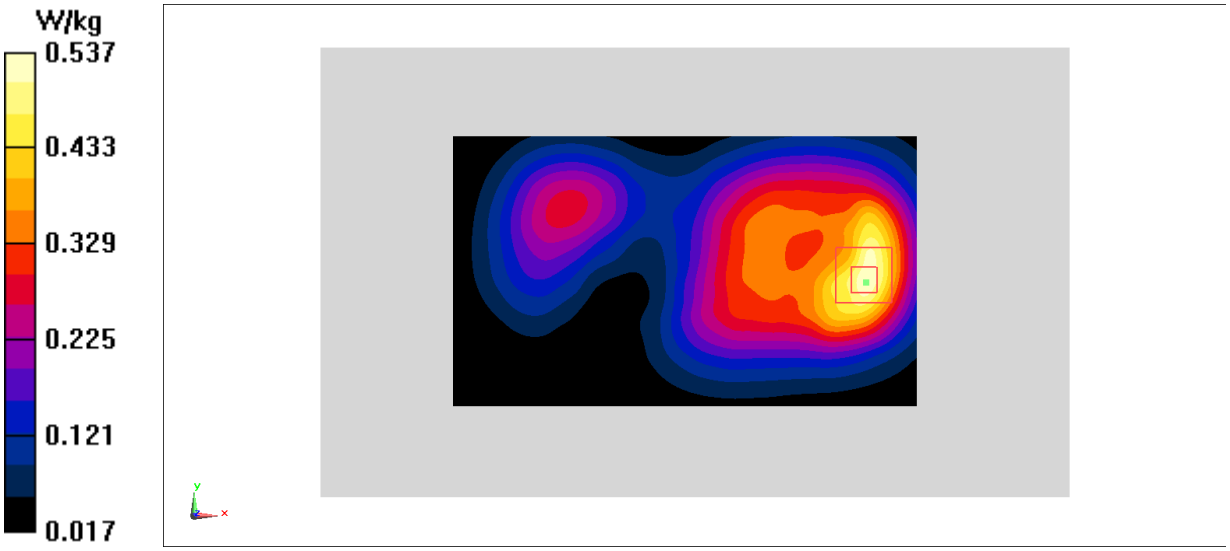


Fig.12 WCDMA1900

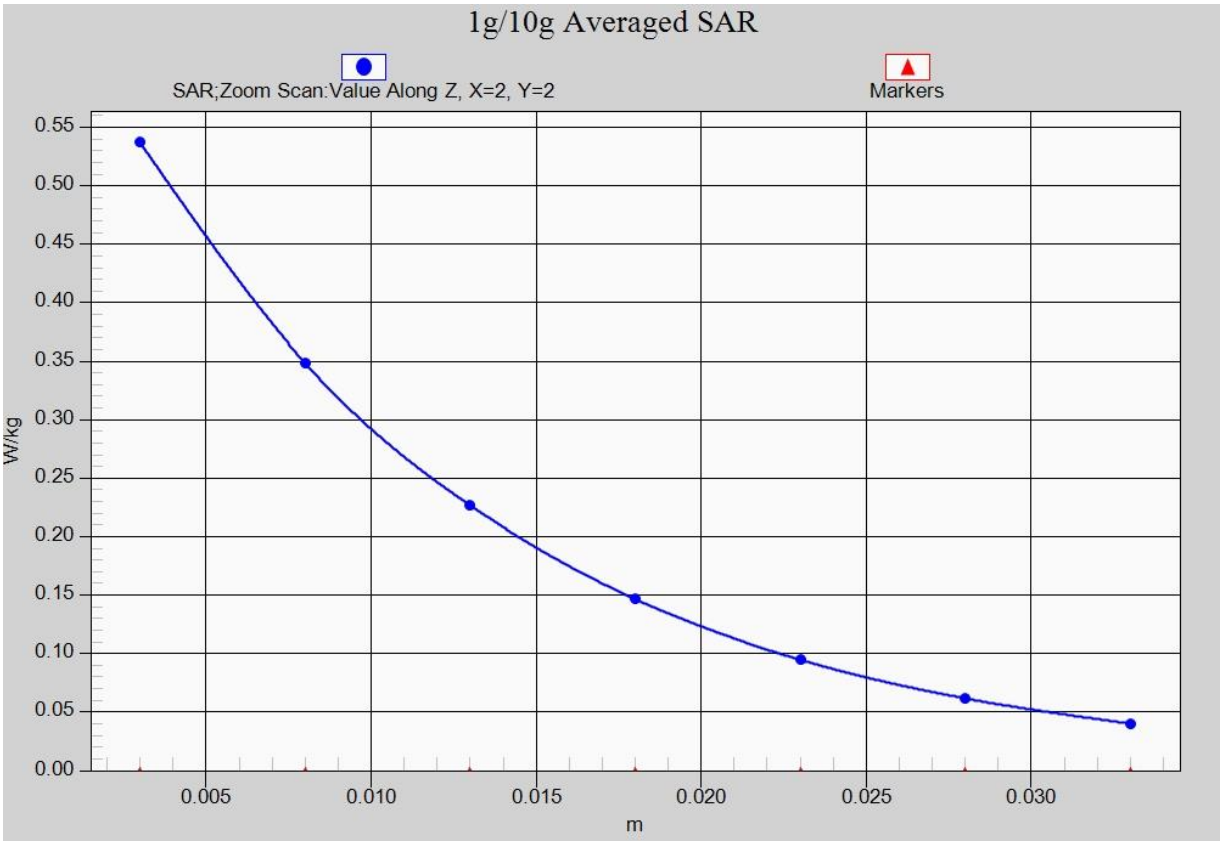


Fig. 12-1 Z-Scan at power reference point (WCDMA1900)

LTE Band2 Right Cheek High with QPSK_20M_1RB_Middle

Date: 2018-11-12
Electronics: DAE4 Sn1555
Medium: Head 1900 MHz
Medium parameters used: f = 1900 MHz; σ =1.37 mho/m; εr = 40.56; ρ = 1000 kg/m^3
Ambient Temperature: 22.9°C Liquid Temperature: 22.5°C
Communication System: LTE Band2 Frequency: 1900 MHz Duty Cycle: 1:1
Probe: EX3DV4– SN7514 ConvF(7.73, 7.73, 7.73)

Area Scan (71x131x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.583 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.474 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.706 W/kg
SAR(1 g) = 0.472 W/kg; SAR(10 g) = 0.306 W/kg
Maximum value of SAR (measured) = 0.542 W/kg

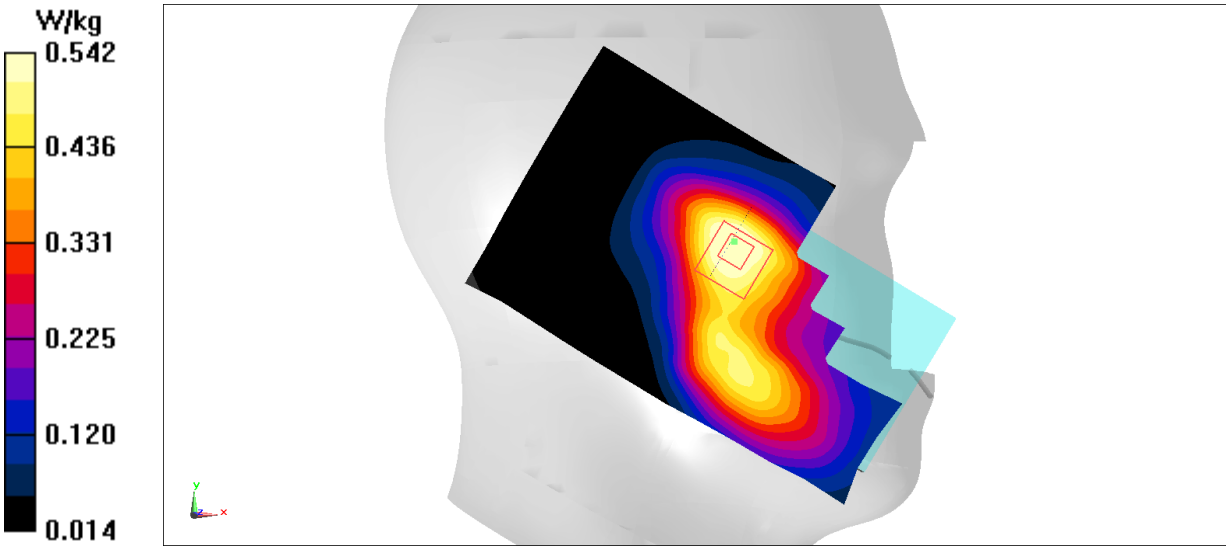


Fig.13 LTE Band2

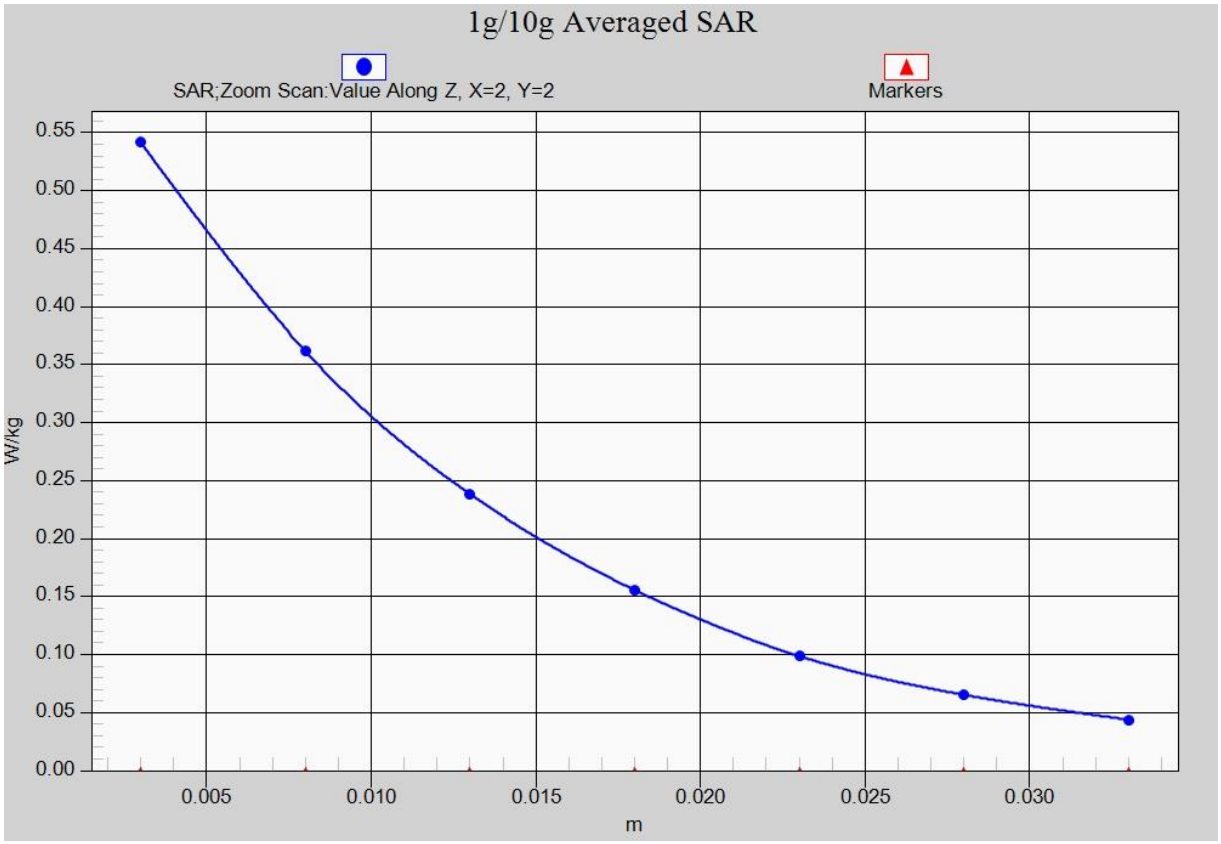


Fig. 13-1 Z-Scan at power reference point (LTE Band2)

LTE Band2 Body Bottom Low with QPSK_20M_1RB_Middle

Date: 2018-11-12
Electronics: DAE4 Sn1555
Medium: Body 1900 MHz
Medium parameters used: f = 1860 MHz; σ = 1.549 mho/m; εr = 52.63; ρ = 1000 kg/m^3
Ambient Temperature: 22.9°C Liquid Temperature: 22.5°C
Communication System: LTE Band2 Frequency: 1860 MHz Duty Cycle: 1:1
Probe: EX3DV4– SN7514 ConvF(7.53, 7.53, 7.53)

Area Scan (131x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 1.19 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 24.84 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 1.63 W/kg
SAR(1 g) = 0.990 W/kg; SAR(10 g) = 0.548 W/kg
Maximum value of SAR (measured) = 1.21 W/kg

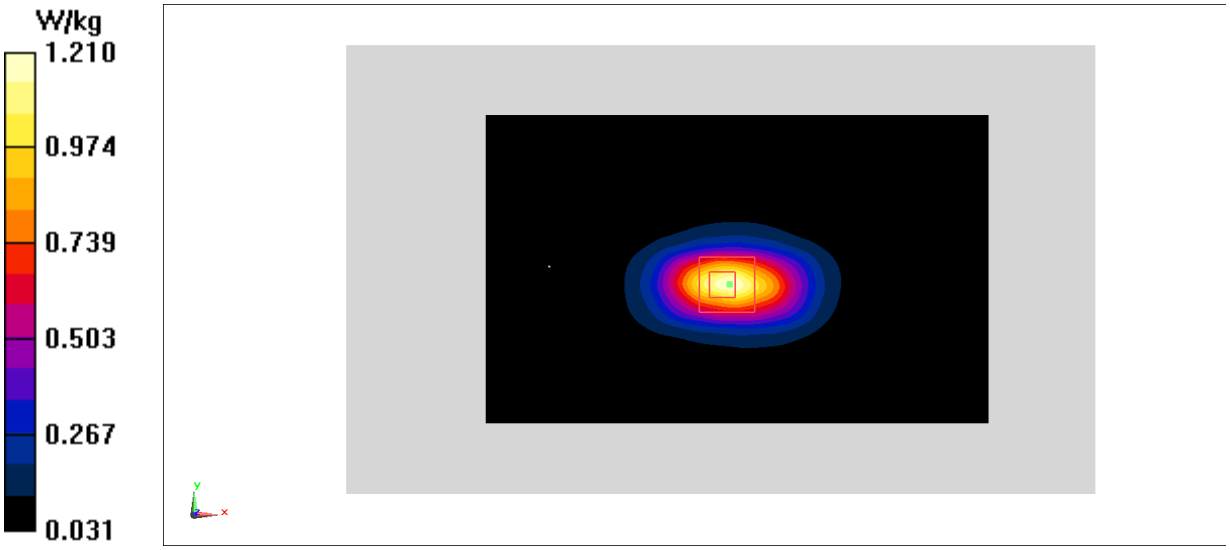


Fig.14 LTE Band2

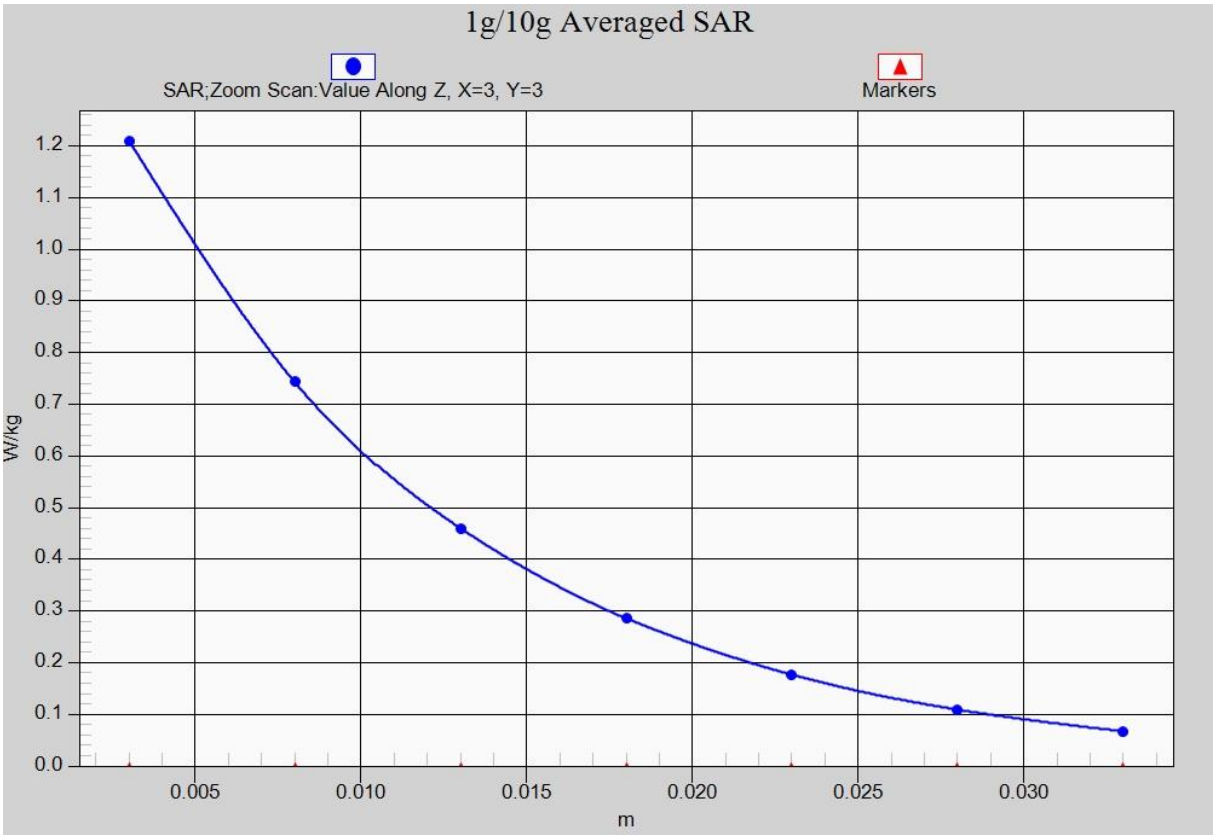


Fig. 14-1 Z-Scan at power reference point (LTE Band2)

LTE Band2 Body Front High with QPSK_20M_1RB_Middle

Date: 2018-11-12
Electronics: DAE4 Sn1555
Medium: Body 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.588 mho/m; εr = 52.51; ρ = 1000 kg/m^3
Ambient Temperature: 22.9°C Liquid Temperature: 22.5°C
Communication System: LTE Band2 Frequency: 1900 MHz Duty Cycle: 1:1
Probe: EX3DV4– SN7514 ConvF(7.53, 7.53, 7.53)

Area Scan (121x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.553 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.54 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 0.727 W/kg
SAR(1 g) = 0.455 W/kg; SAR(10 g) = 0.273 W/kg
Maximum value of SAR (measured) = 0.534 W/kg

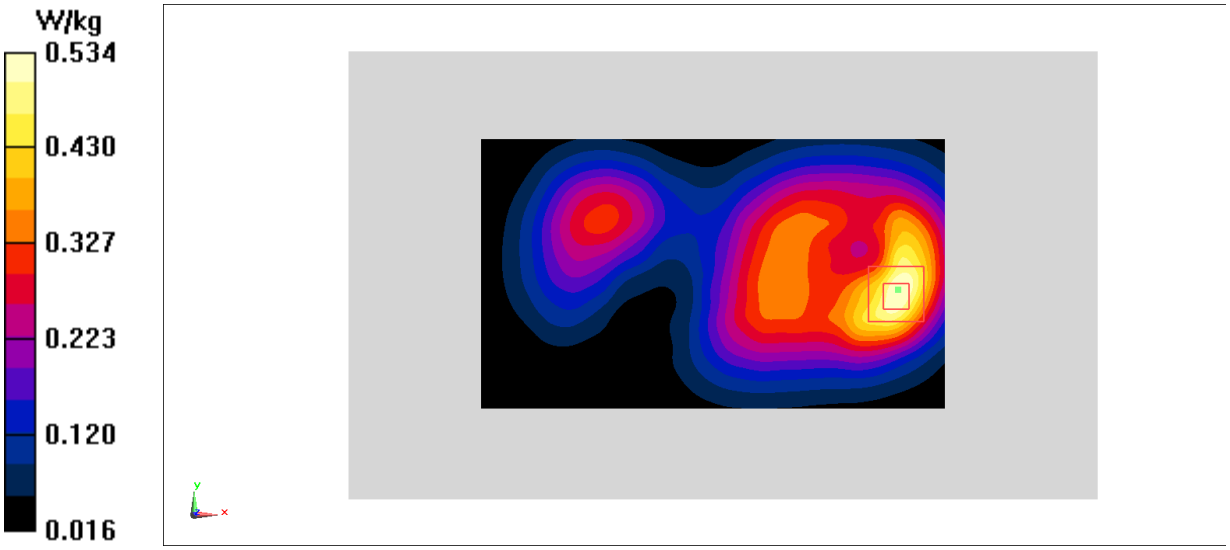


Fig.15 LTE Band2

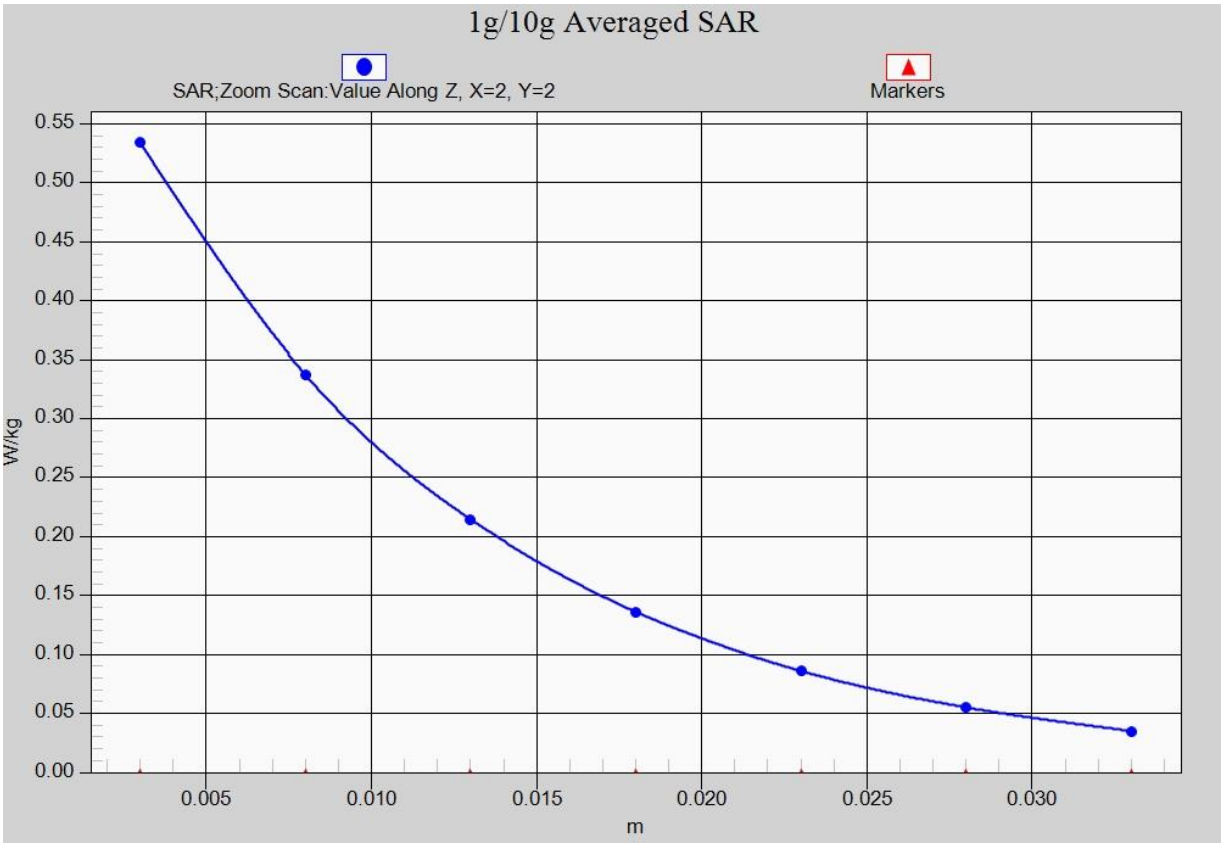


Fig. 15-1 Z-Scan at power reference point (LTE Band2)

LTE Band4 Right Cheek Low with QPSK_10M_1RB_Middle

Date: 2018-11-8
Electronics: DAE4 Sn1555
Medium: Head 1750 MHz
Medium parameters used: f = 1732.5 MHz; σ = 1.379 mho/m; εr = 40.70; ρ = 1000 kg/m^3
Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C
Communication System: LTE1700-FDD4 1732.5 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN7514 ConvF(9.09, 9.09, 9.09)

Area Scan (91x161x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.517 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.144 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.655 W/kg
SAR(1 g) = 0.447 W/kg; SAR(10 g) = 0.285 W/kg
Maximum value of SAR (measured) = 0.520 W/kg

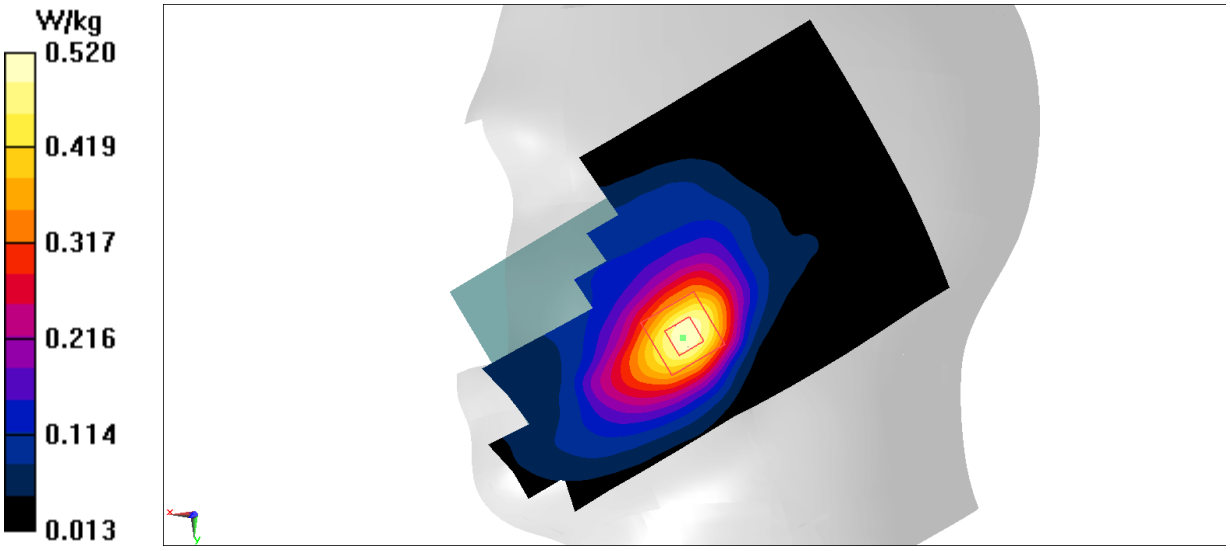


Fig.16 LTE Band4

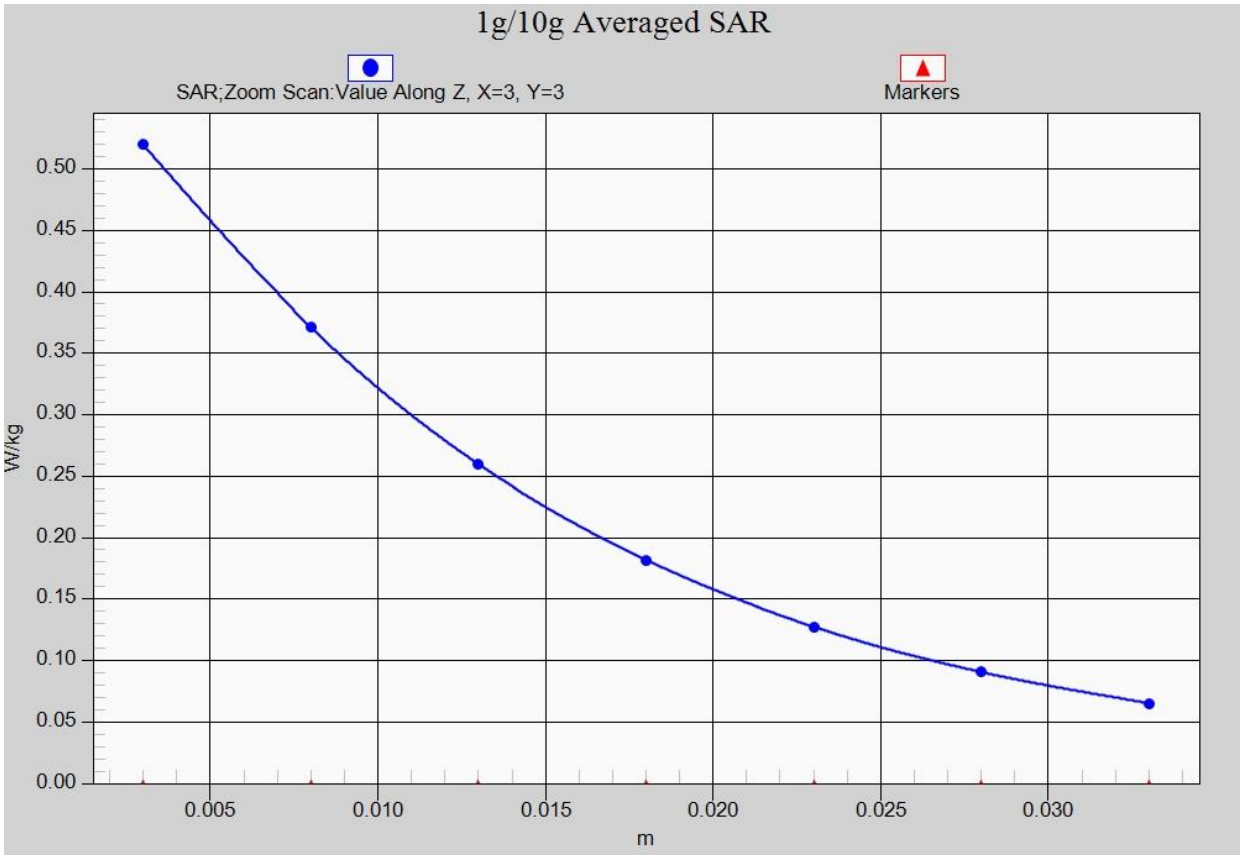


Fig. 16-1 Z-Scan at power reference point (LTE Band4)

LTE Band4 Bottom High with QPSK_20M_50RB_Low

Date: 2018-11-8
Electronics: DAE4 Sn1555
Medium: body 1750 MHz
Medium parameters used: f = 1732.5 MHz; σ = 1.407 mho/m; εr = 52.52; ρ = 1000 kg/m^3
Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C
Communication System: LTE1700-FDD4 1732.5 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN7514 ConvF(9.09, 9.09, 9.09)

Area Scan (131x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.877 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 23.99 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 1.12 W/kg
SAR(1 g) = 0.712 W/kg; SAR(10 g) = 0.409 W/kg
Maximum value of SAR (measured) = 0.864 W/kg

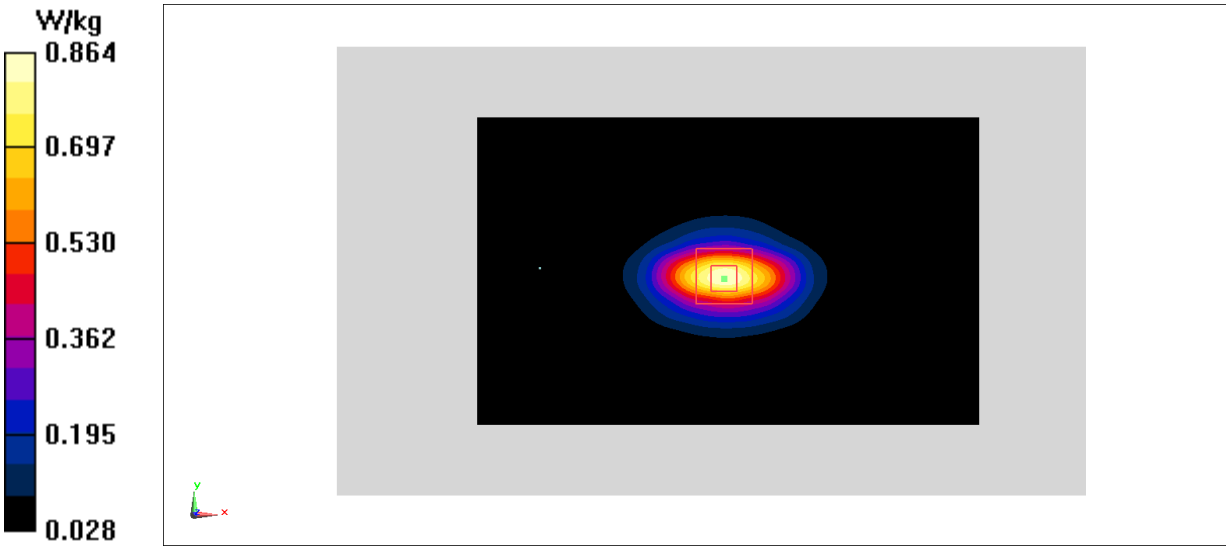


Fig.17 LTE Band4

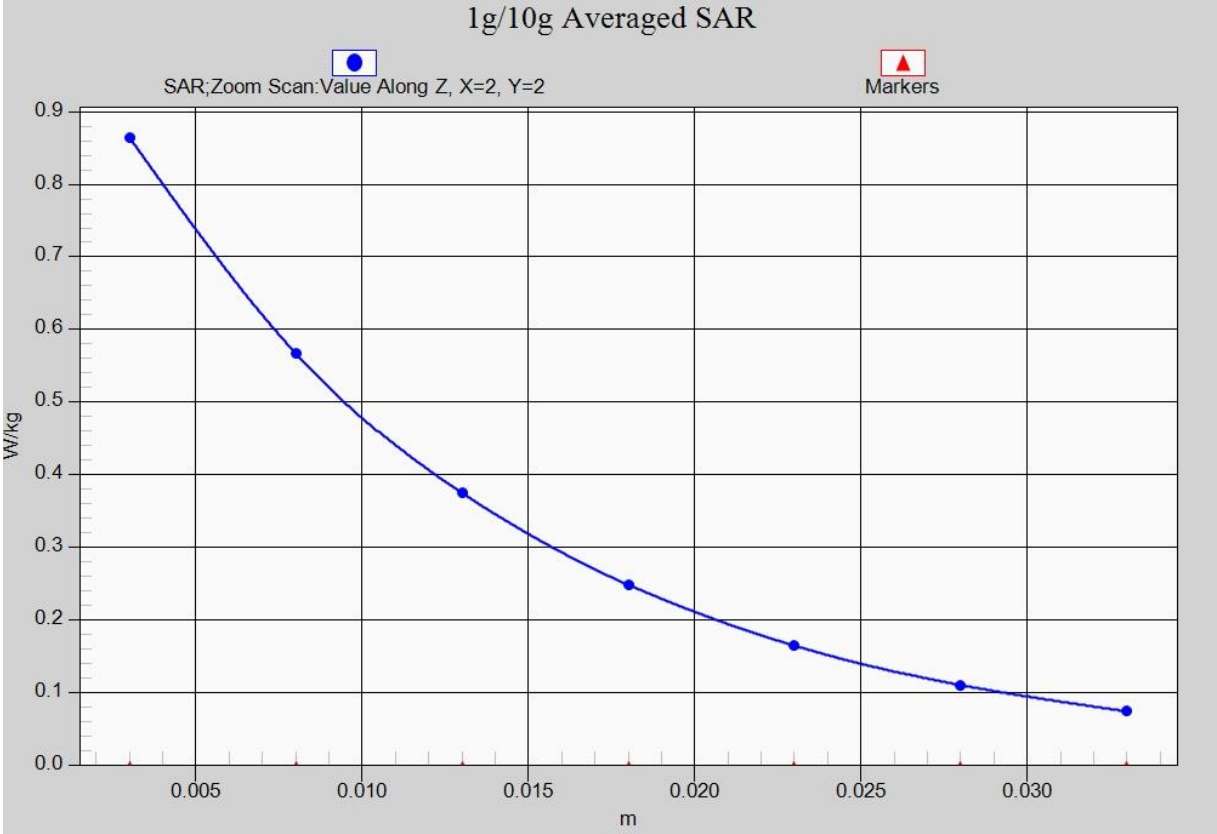


Fig. 17-1 Z-Scan at power reference point (LTE Band4)

LTE Band4 Rear Low with QPSK_20M_1RB_Middle

Date: 2018-11-8
Electronics: DAE4 Sn1555
Medium: Head 850 MHz
Medium parameters used (interpolated): f = 844 MHz; σ = 0.926 mho/m; εr = 40.781; ρ = 1000 kg/m^3
Ambient Temperature: 22.9°C Liquid Temperature: 22.5°C
Communication System: LTE Band5 Frequency: 844 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN7514 ConvF(9.09, 9.09, 9.09)

Area Scan (121x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.724 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.44 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.935 W/kg
SAR(1 g) = 0.622 W/kg; SAR(10 g) = 0.386 W/kg
Maximum value of SAR (measured) = 0.677 W/kg

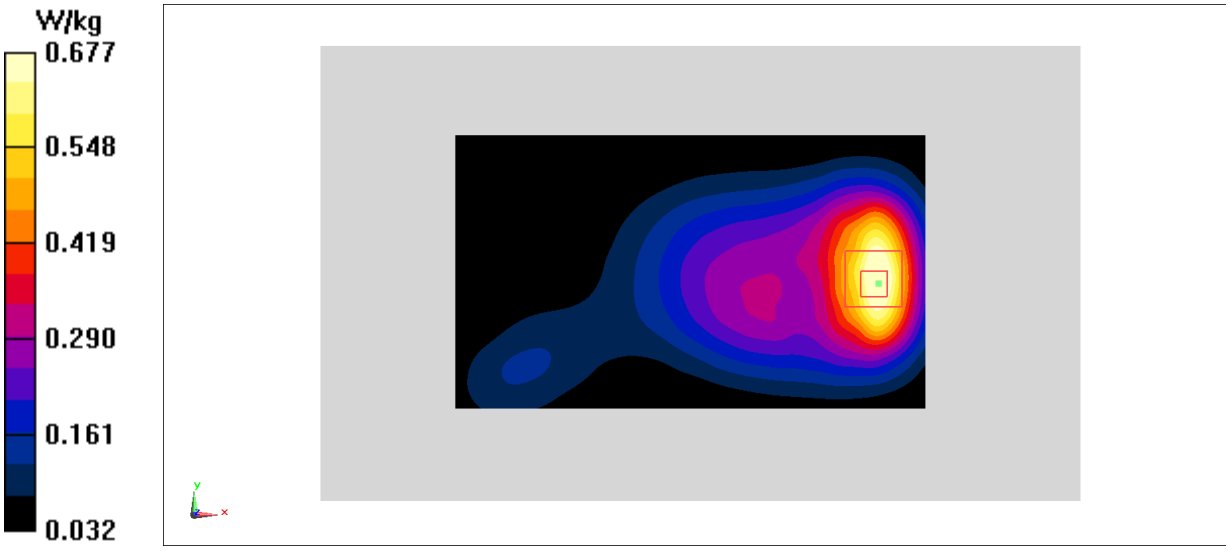


Fig.18 LTE Band4

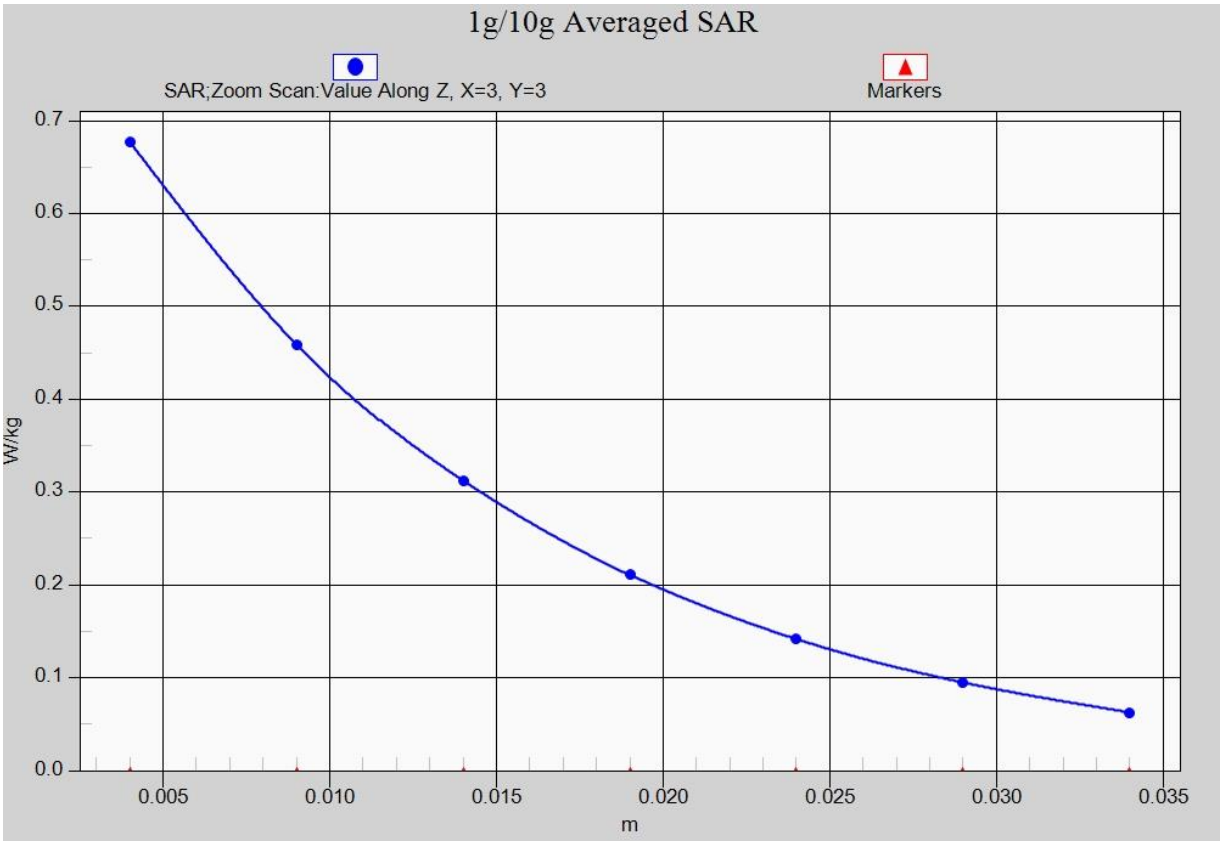


Fig. 18-1 Z-Scan at power reference point (LTE Band4)

LTE Band5 Left Cheek High with QPSK_10M_1RB_Middle

Date: 2018-11-7
Electronics: DAE4 Sn1555
Medium: Head 850 MHz
Medium parameters used (interpolated): f = 844 MHz; σ = 0.921 mho/m; εr = 41.781; ρ = 1000 kg/m^3
Ambient Temperature: 22.9°C Liquid Temperature: 22.5°C
Communication System: LTE Band5 Frequency: 844 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN7514 ConvF(9.09, 9.09, 9.09)

Area Scan (71x131x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.388 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.054 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.450 W/kg
SAR(1 g) = 0.354 W/kg; SAR(10 g) = 0.269 W/kg
Maximum value of SAR (measured) = 0.388 W/kg

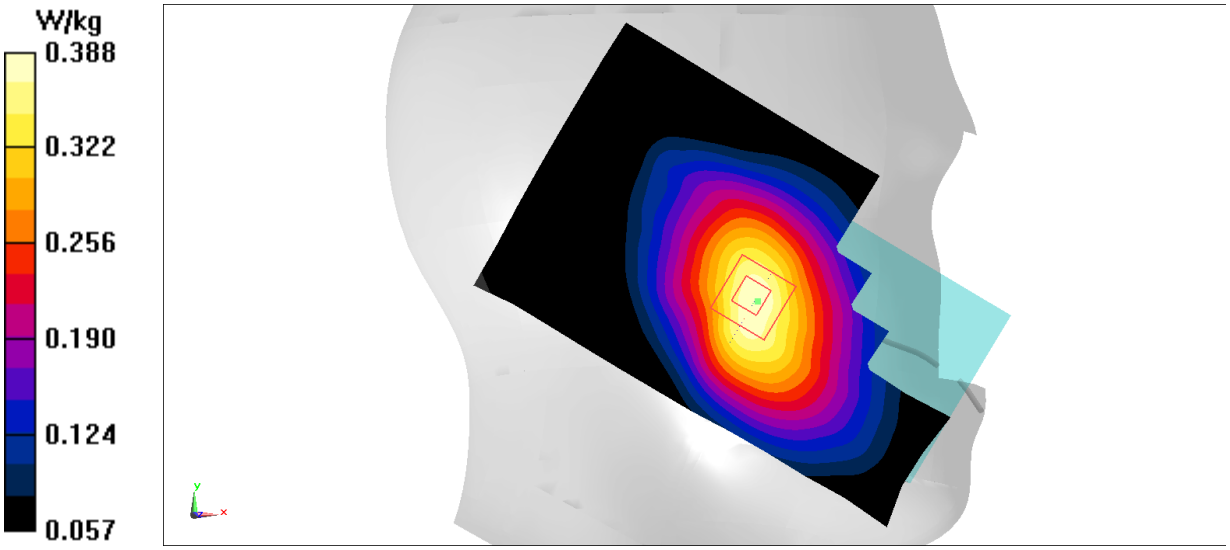


Fig.19 LTE Band5

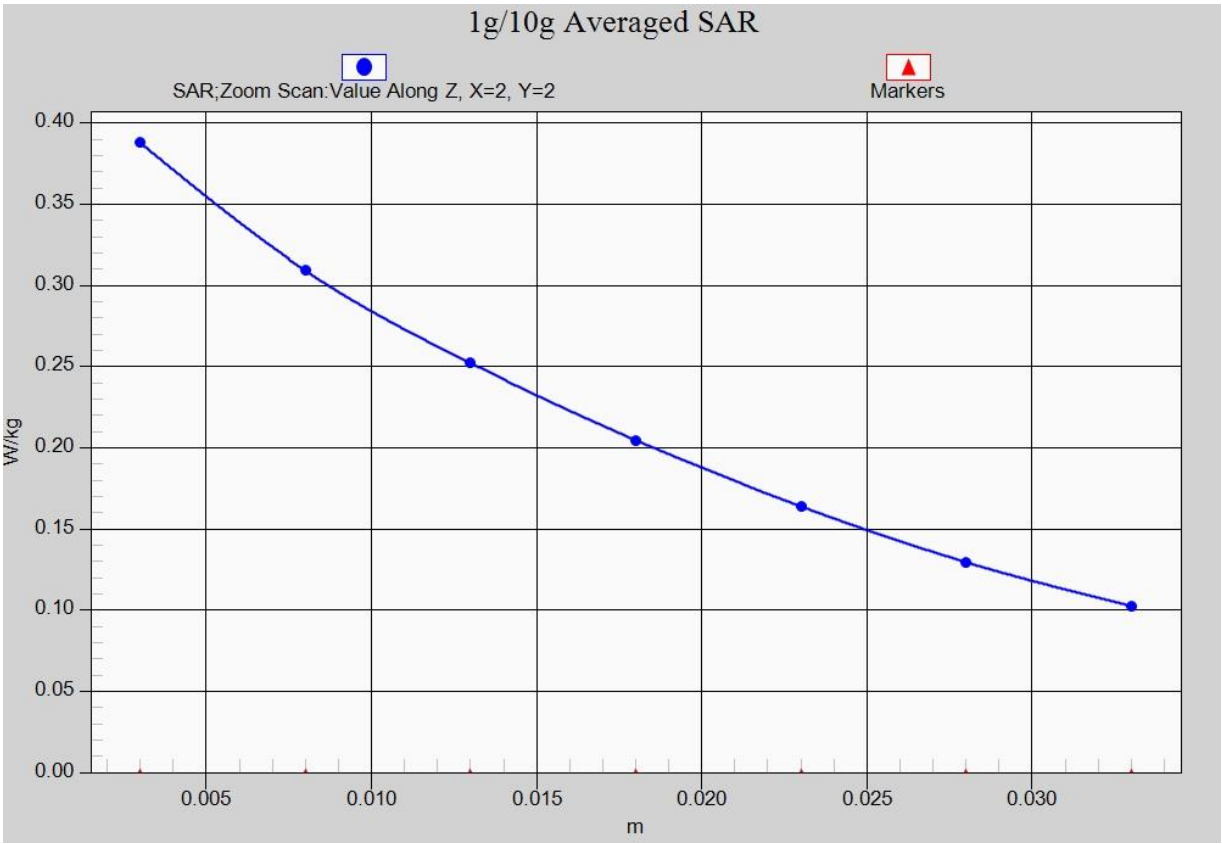


Fig. 19-1 Z-Scan at power reference point (LTE Band5)

LTE Band5 Body Rear High with QPSK_10M_1RB_Middle

Date: 2018-11-7
Electronics: DAE4 Sn1555
Medium: Body 850 MHz
Medium parameters used (interpolated): f = 844 MHz; σ = 1.035 mho/m; εr = 55.684; ρ = 1000 kg/m^3
Ambient Temperature: 22.9°C Liquid Temperature: 22.5°C
Communication System: LTE Band5 Frequency: 844 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN7514 ConvF(9.47, 9.47, 9.47)

Area Scan (121x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.545 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 23.09 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.613 W/kg
SAR(1 g) = 0.503 W/kg; SAR(10 g) = 0.396 W/kg
Maximum value of SAR (measured) = 0.546 W/kg

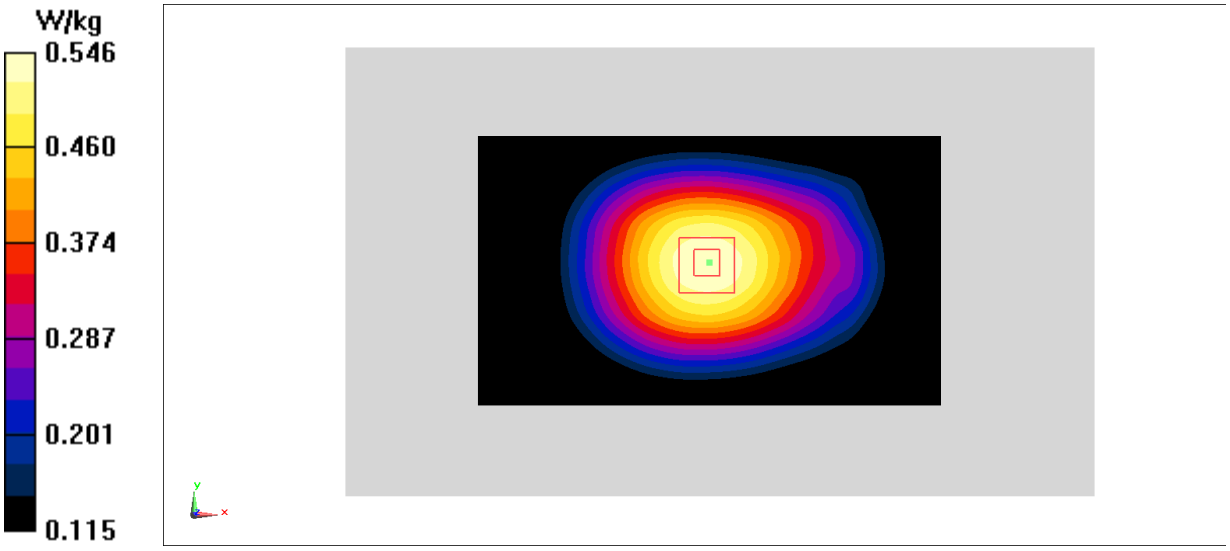


Fig.20 LTE Band5

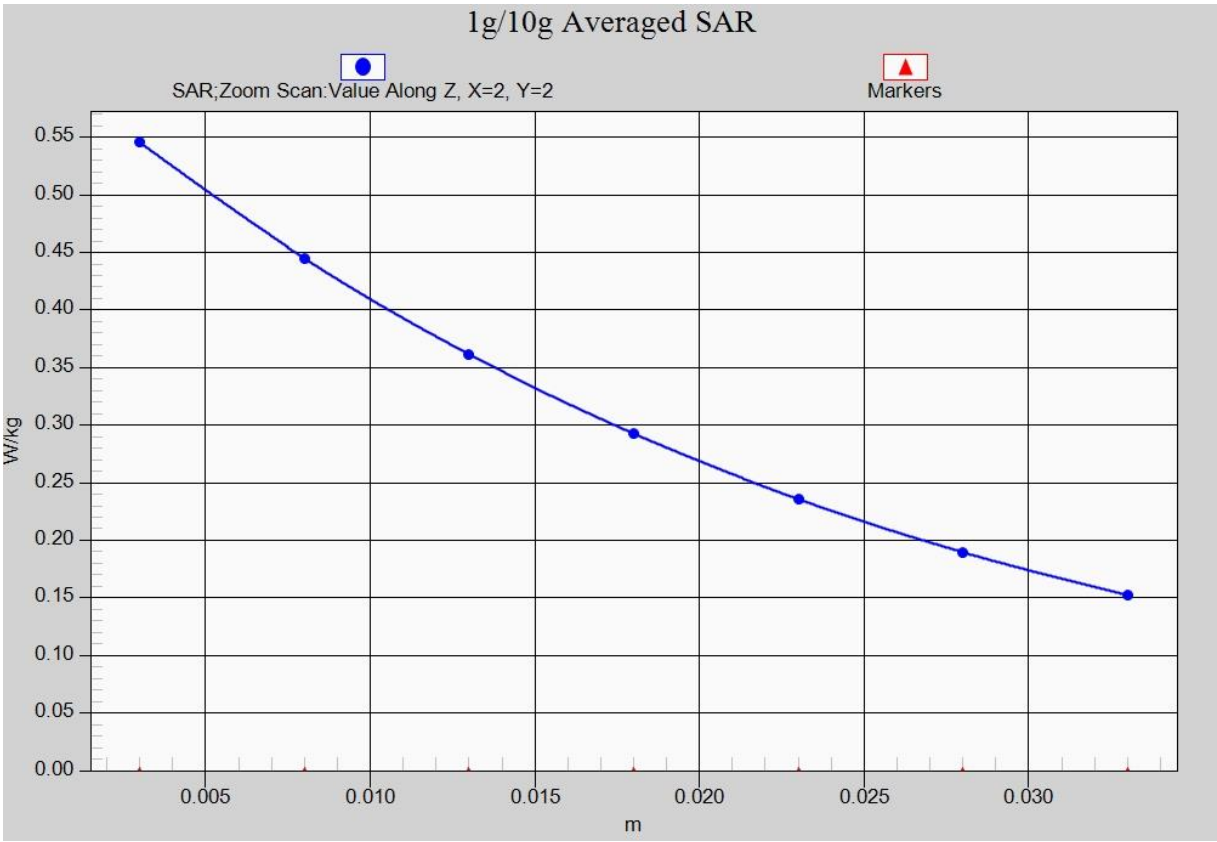


Fig. 20-1 Z-Scan at power reference point (LTE Band5)

LTE Band12 Right Cheek Middle with QPSK_10M_1RB_Middle

Date: 2018-11-6
Electronics: DAE4 Sn1555
Medium: Head 750 MHz
Medium parameters used (interpolated): f = 707.5 MHz; σ = 0.855 mho/m; εr = 42.37; ρ = 1000 kg/m^3
Ambient Temperature: 22.9°C Liquid Temperature: 22.5°C
Communication System: LTE Band12Frequency: 707.5 MHz Duty Cycle: 1:1
Probe: EX3DV4– SN7514 ConvF(9.47, 9.47, 9.47)

Area Scan (71x131x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.250 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.794 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.281 W/kg
SAR(1 g) = 0.228 W/kg; SAR(10 g) = 0.177 W/kg
Maximum value of SAR (measured) = 0.246 W/kg

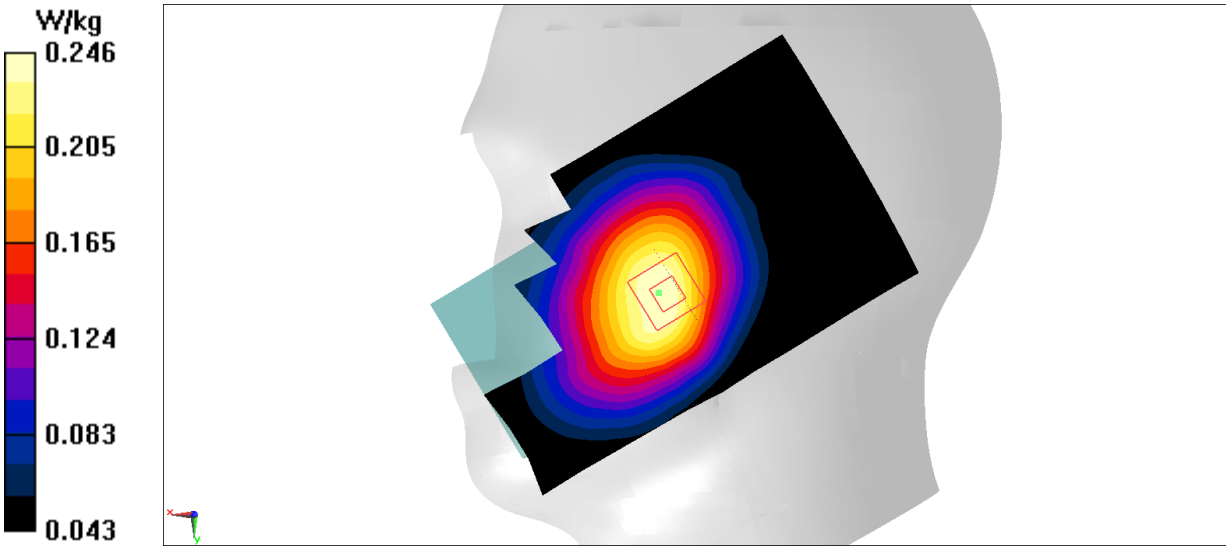


Fig.21 LTE Band12

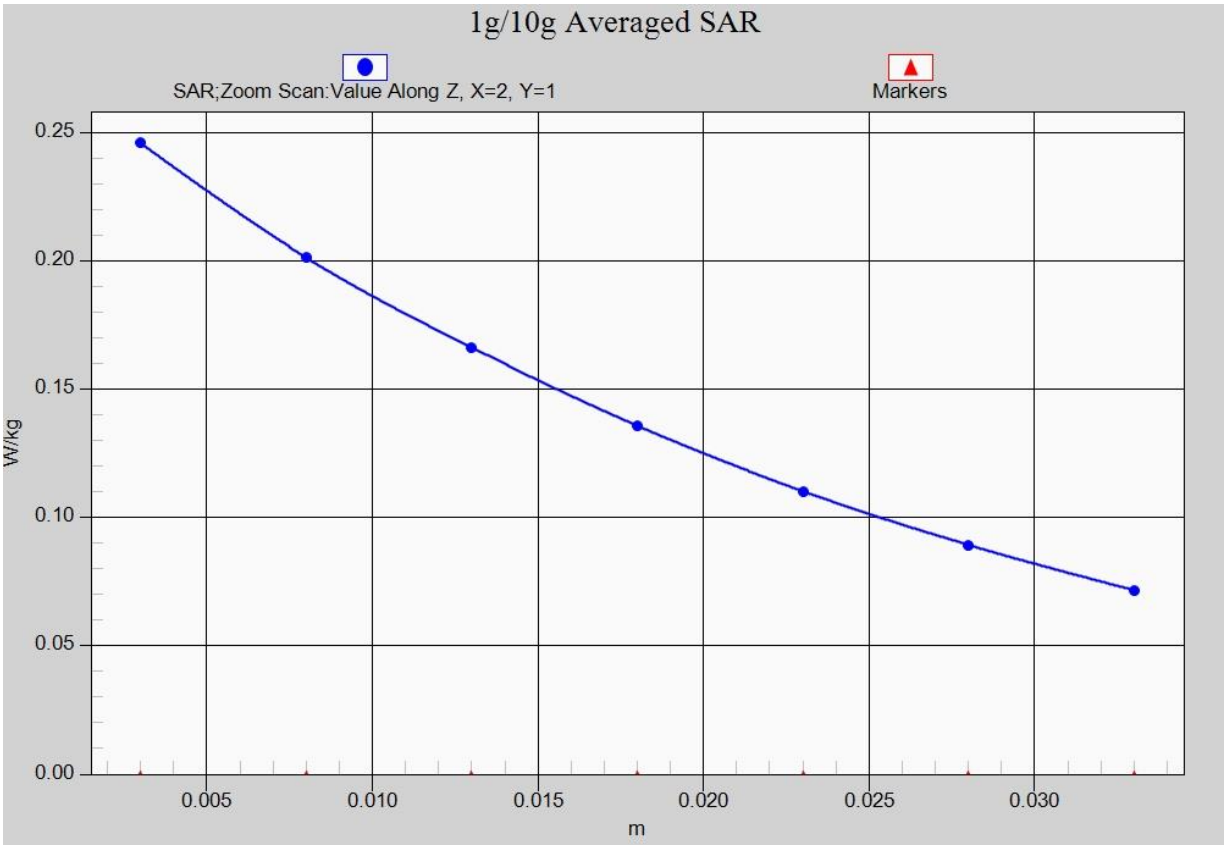


Fig. 21-1 Z-Scan at power reference point (LTE Band12)

LTE Band12 Body Rear Middle with QPSK_10M_1RB_Middle

Date: 2018-11-6
Electronics: DAE4 Sn1555
Medium: Body750 MHz
Medium parameters used (interpolated): f = 707.5 MHz; σ = 0.938 mho/m; εr = 56.65; ρ = 1000 kg/m^3
Ambient Temperature: 22.9°C Liquid Temperature: 22.5°C
Communication System: LTE Band12Frequency: 707.5 MHz Duty Cycle: 1:1
Probe: EX3DV4– SN7514 ConvF(9.68, 9.68, 9.68)

Area Scan (121x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.331 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 17.41 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 0.391 W/kg
SAR(1 g) = 0.300 W/kg; SAR(10 g) = 0.231 W/kg
Maximum value of SAR (measured) = 0.326 W/kg

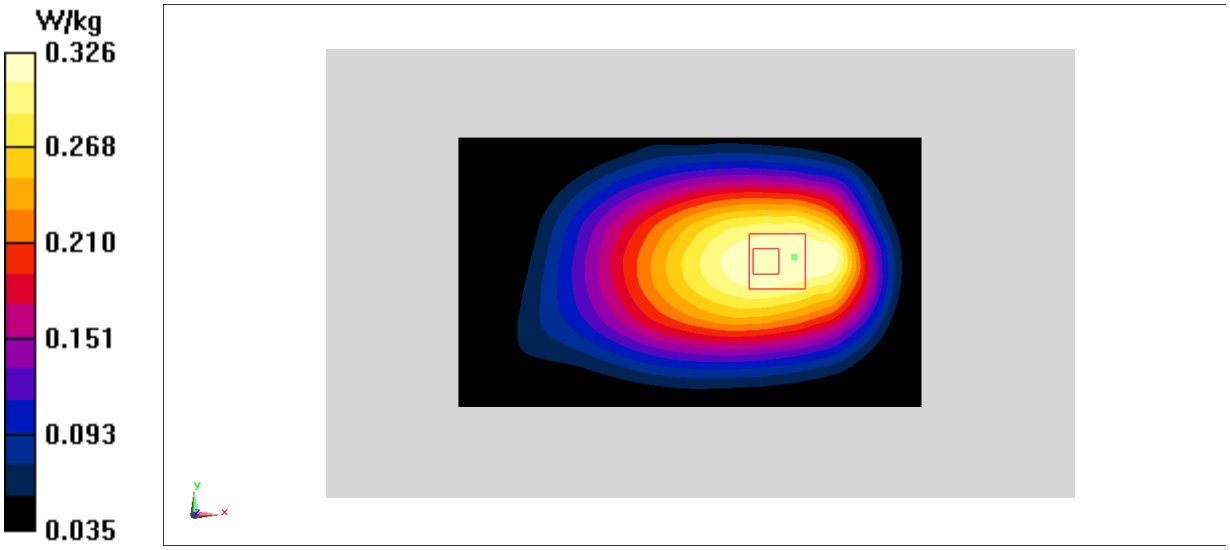


Fig.22 LTE Band12

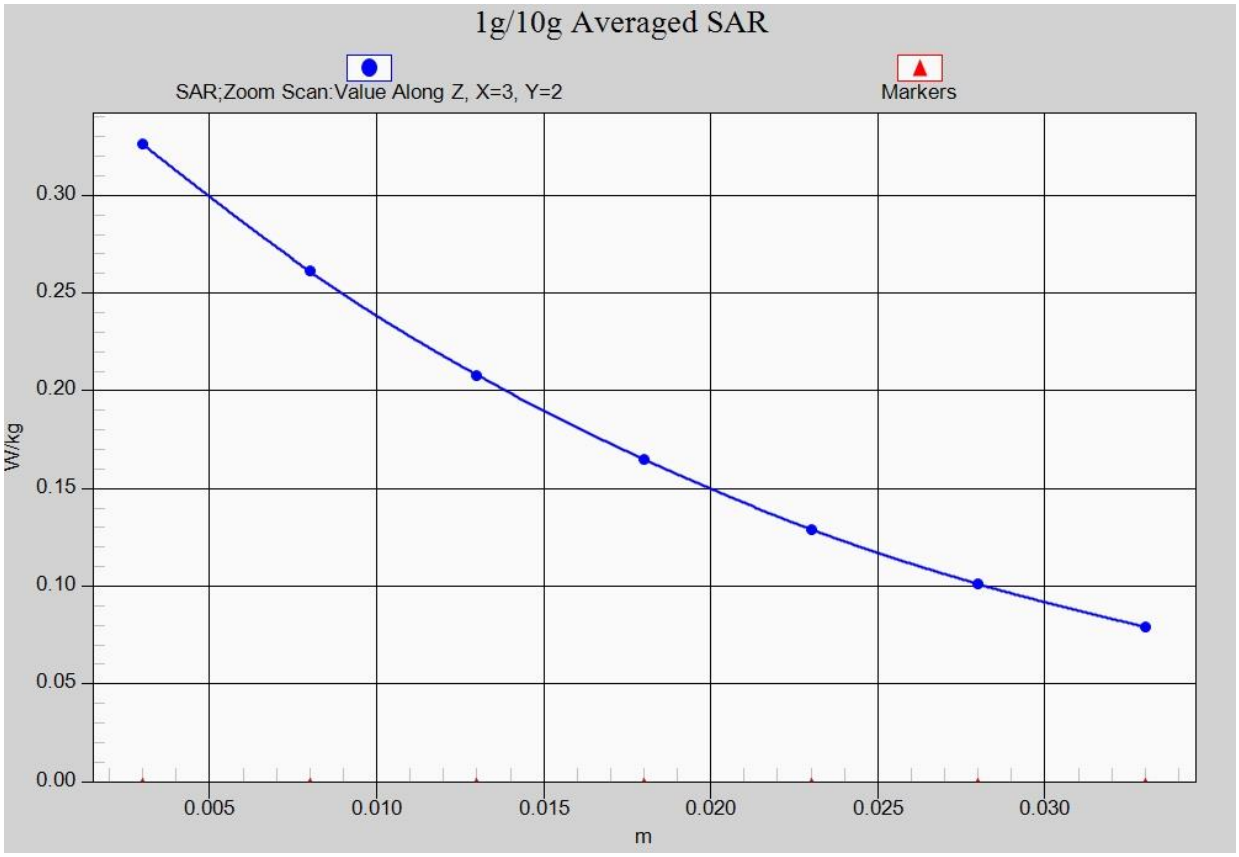


Fig. 22-1 Z-Scan at power reference point (LTE Band12)

LTE Band14 Right Cheek with QPSK_10M_1RB_Middle

Date: 2018-11-6
Electronics: DAE4 Sn1555
Medium: Head 750 MHz
Medium parameters used: f = 793 MHz; σ = 0.921 mho/m; εr = 42.74; ρ = 1000 kg/m^3
Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C
Communication System: LTE700-FDD14 793 MHz Duty Cycle: 1:1
Probe: EX3DV4– SN7514 ConvF(9.47, 9.47, 9.47)

Area Scan (71x131x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.225 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.294 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.260 W/kg
SAR(1 g) = 0.206 W/kg; SAR(10 g) = 0.159 W/kg
Maximum value of SAR (measured) = 0.225 W/kg

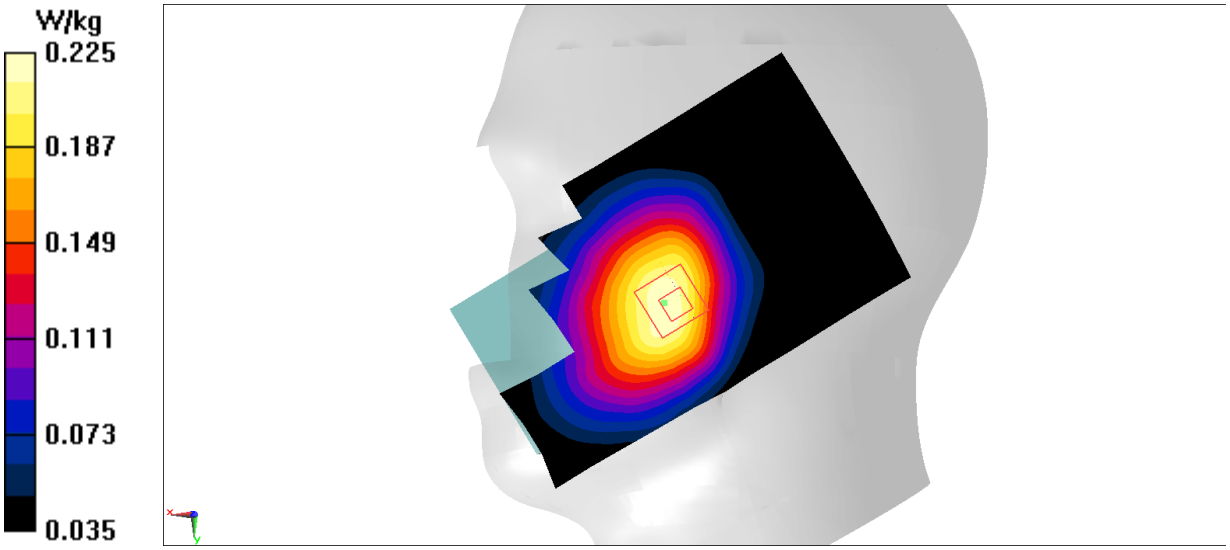


Fig.23 LTE Band14

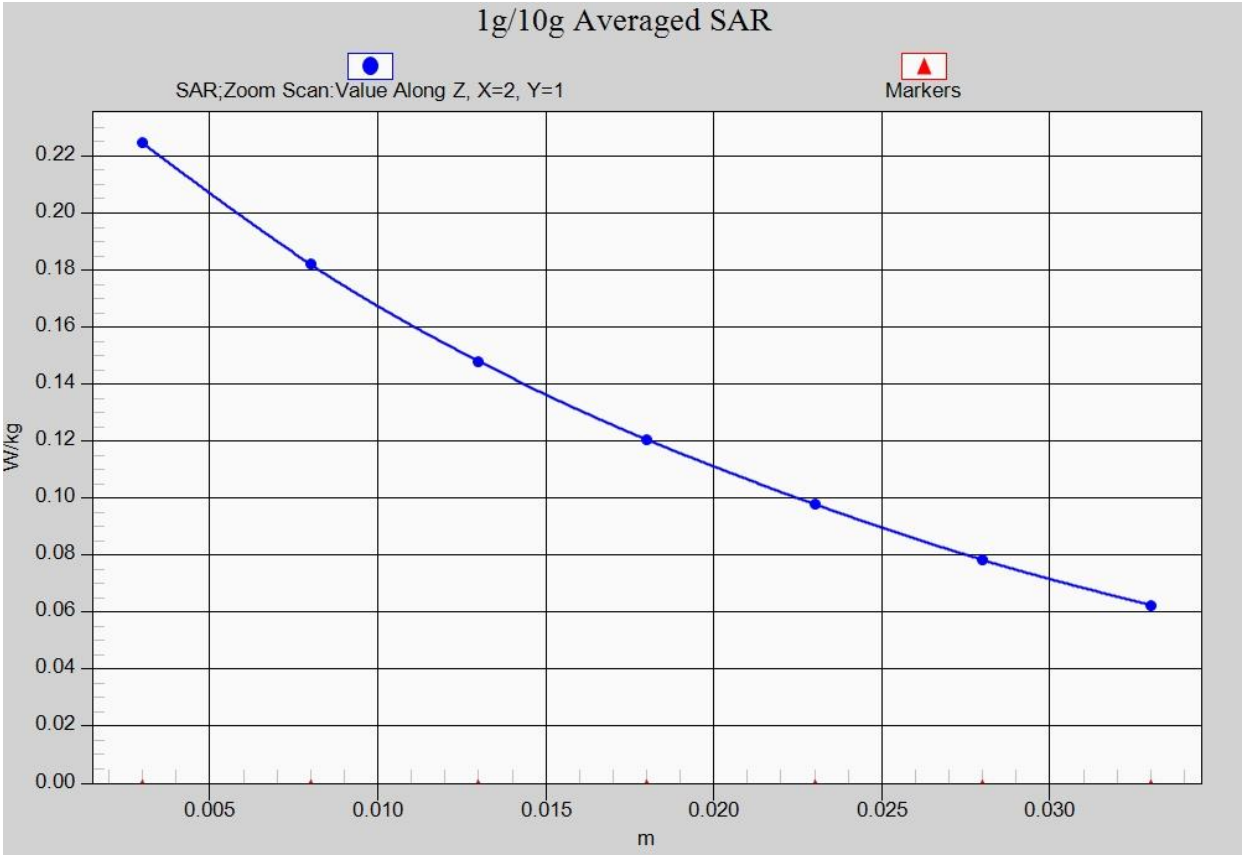


Fig. 23-1 Z-Scan at power reference point (LTE Band14)

LTE Band14 Body Right with QPSK_10M_1RB_Middle

Date: 2018-11-6
Electronics: DAE4 Sn1555
Medium: Body 750 MHz
Medium parameters used: f = 793 MHz; σ = 1.001 mho/m; εr = 56.55; ρ = 1000 kg/m^3
Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C
Communication System: LTE700-FDD14 793 MHz Duty Cycle: 1:1
Probe: EX3DV4– SN7514 ConvF(9.68, 9.68, 9.68)

Area Scan (121x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.321 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.74 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.391 W/kg
SAR(1 g) = 0.285 W/kg; SAR(10 g) = 0.202 W/kg
Maximum value of SAR (measured) = 0.323 W/kg

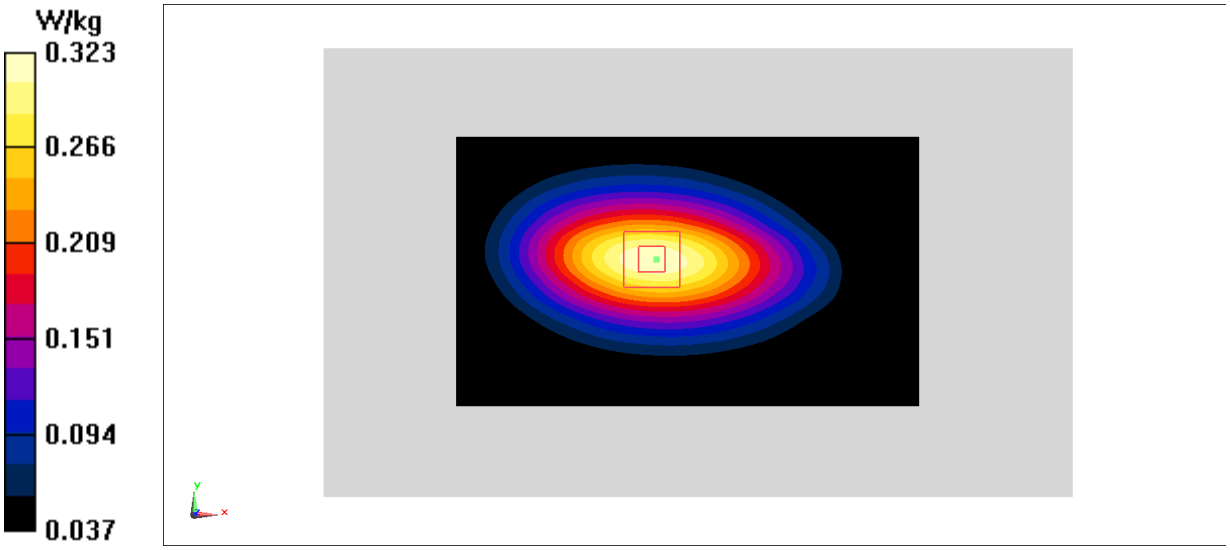


Fig.24 LTE Band14

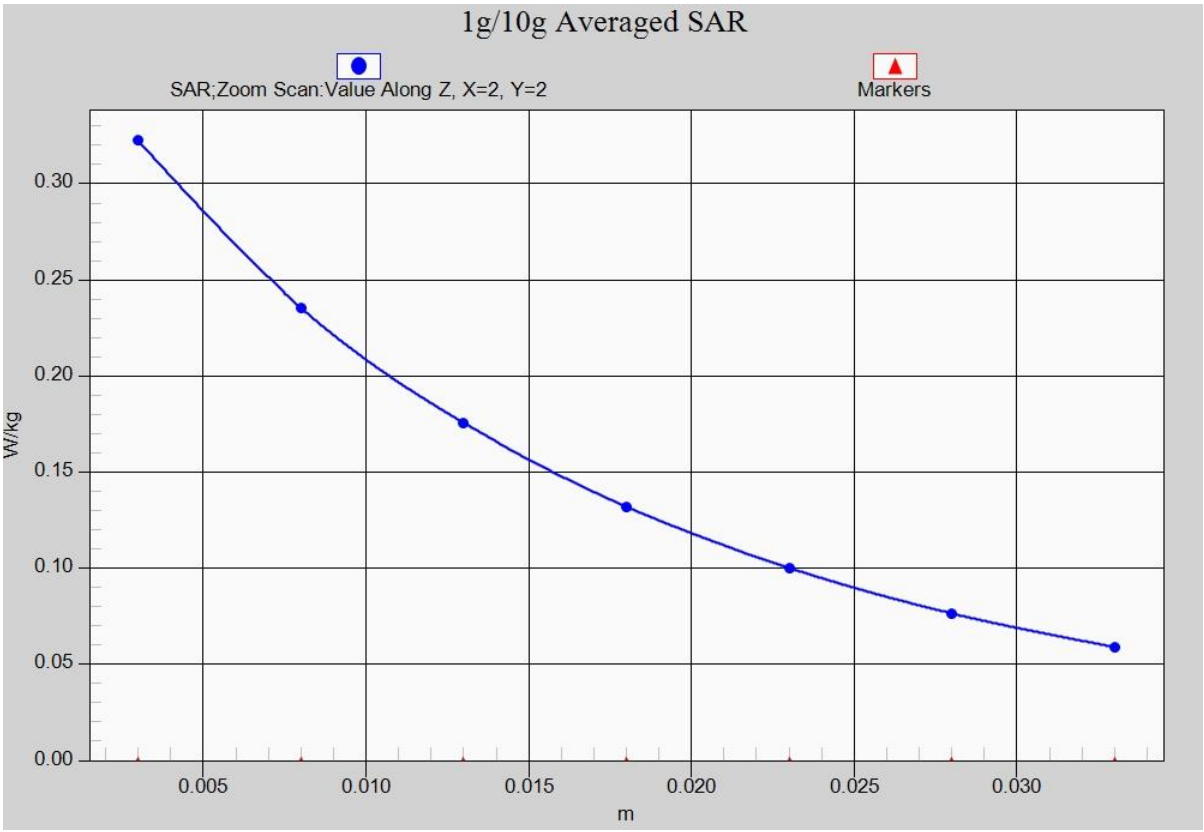


Fig. 24-1 Z-Scan at power reference point (LTE Band14)

Wifi 802.11b Left Cheek Channel 6

Date: 2018-11-13
Electronics: DAE4 Sn1555
Medium: Head 2450 MHz
Medium parameters used (interpolated): f = 2462 MHz; σ = 1.823 mho/m; ε_r = 39.49; ρ = 1000 kg/m^3
Ambient Temperature: 22.9°C Liquid Temperature: 22.5°C
Communication System: WLan 2450 Frequency: 2462 MHz Duty Cycle: 1:1
Probe: EX3DV4– SN7514 ConvF(6.95, 6.95, 6.95)

Area Scan (81x151x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.704 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.107 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 1.15 W/kg
SAR(1 g) = 0.537 W/kg; SAR(10 g) = 0.236 W/kg
Maximum value of SAR (measured) = 0.710 W/kg

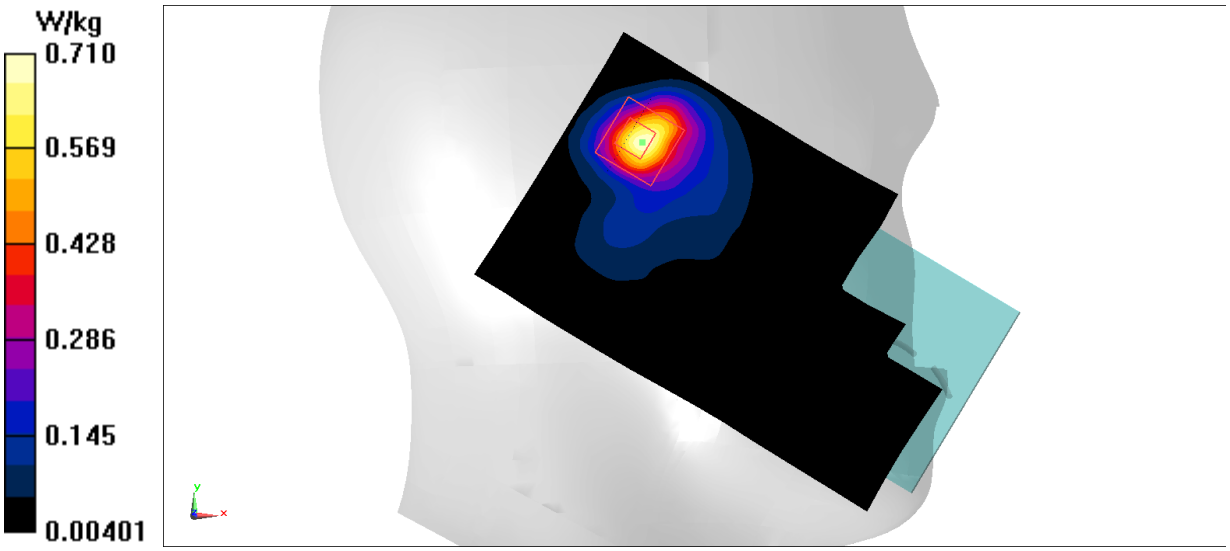


Fig.25 2450 MHz

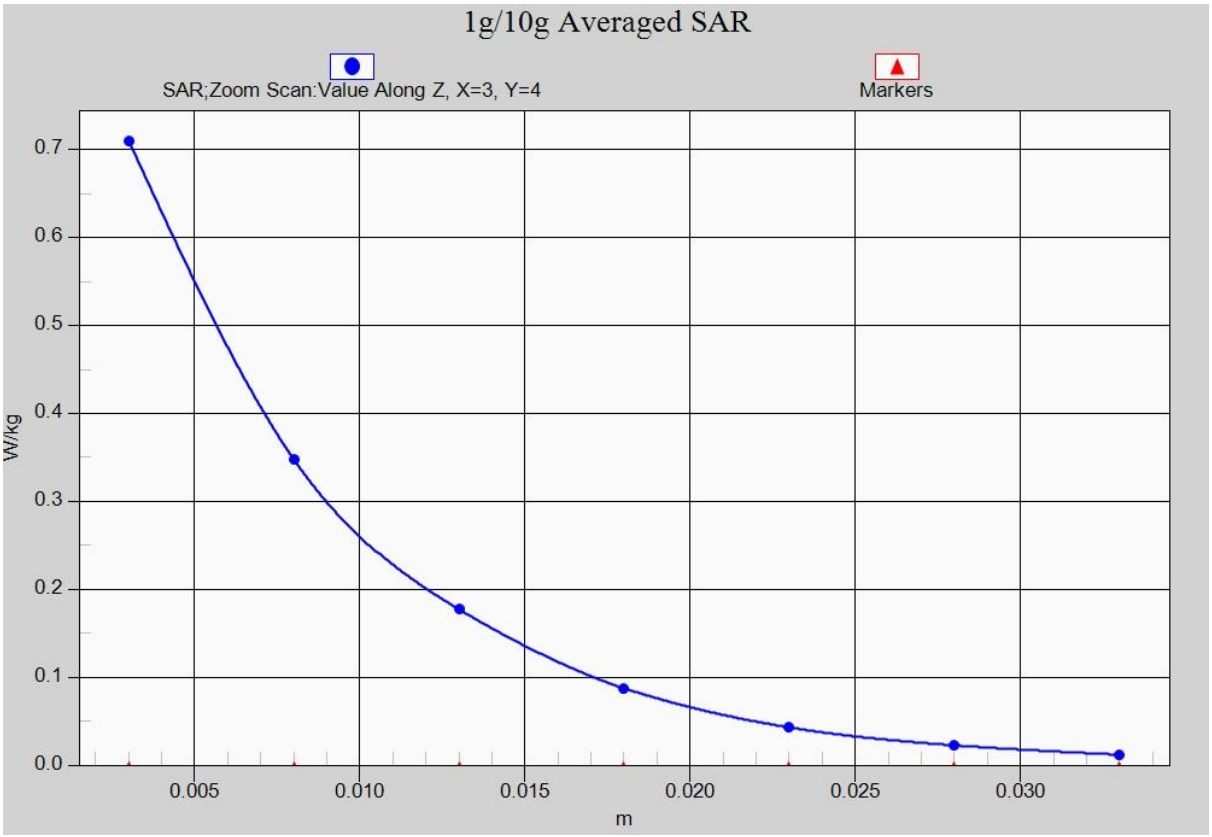


Fig. 25-1 Z-Scan at power reference point (2450 MHz)

Wifi 802.11b Body Rear Channel 6

Date: 2018-11-13

Electronics: DAE4 Sn1555

Medium: Body 2450 MHz

Medium parameters used (interpolated): f = 2462 MHz; σ = 1.944 mho/m; ε_r = 53.22; ρ = 1000 kg/m^3

Ambient Temperature: 22.9°C Liquid Temperature: 22.5°C

Communication System: WLan 2450 Frequency: 2462 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN7514 ConvF(7.13, 7.13, 7.13)

Area Scan (141x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.212 W/kg

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

Reference Value = 3.218 V/m; Power Drift = 0.18 dB

Peak SAR (extrapolated) = 0.300 W/kg

SAR(1 g) = 0.159 W/kg; SAR(10 g) = 0.085 W/kg

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

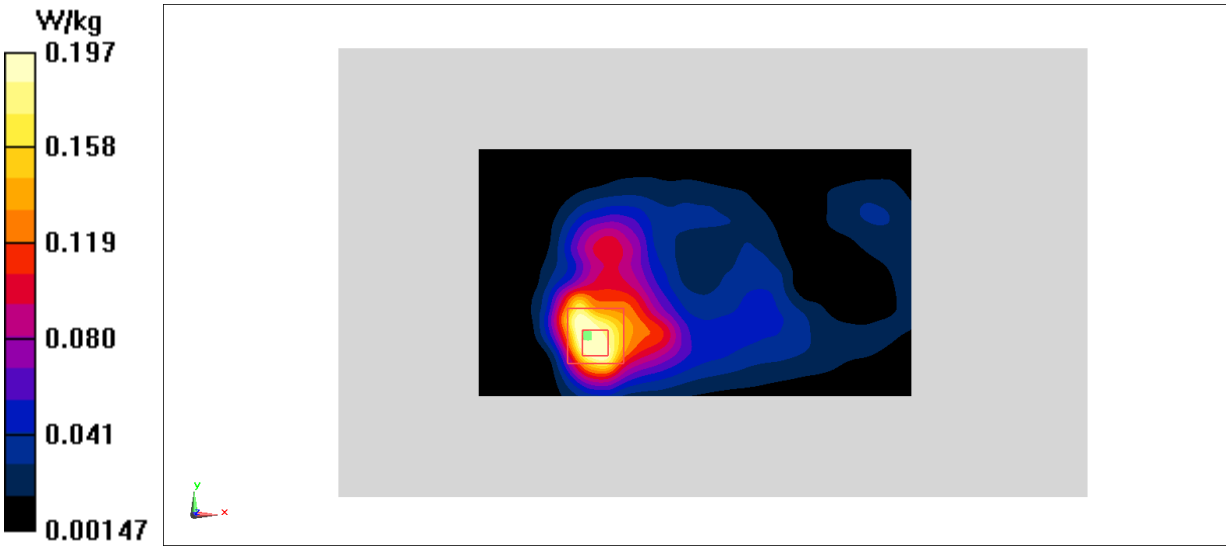


Fig.26 2450 MHz

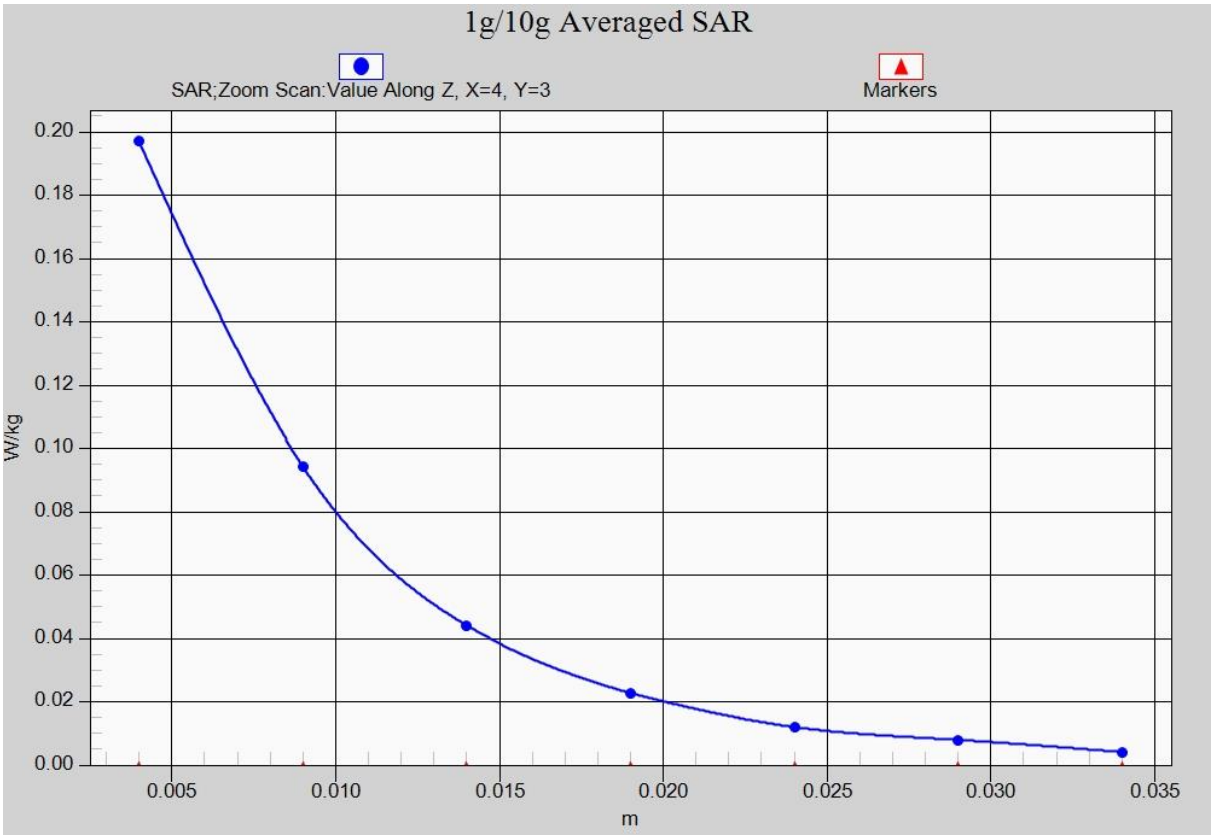


Fig. 26-1 Z-Scan at power reference point (2450 MHz)

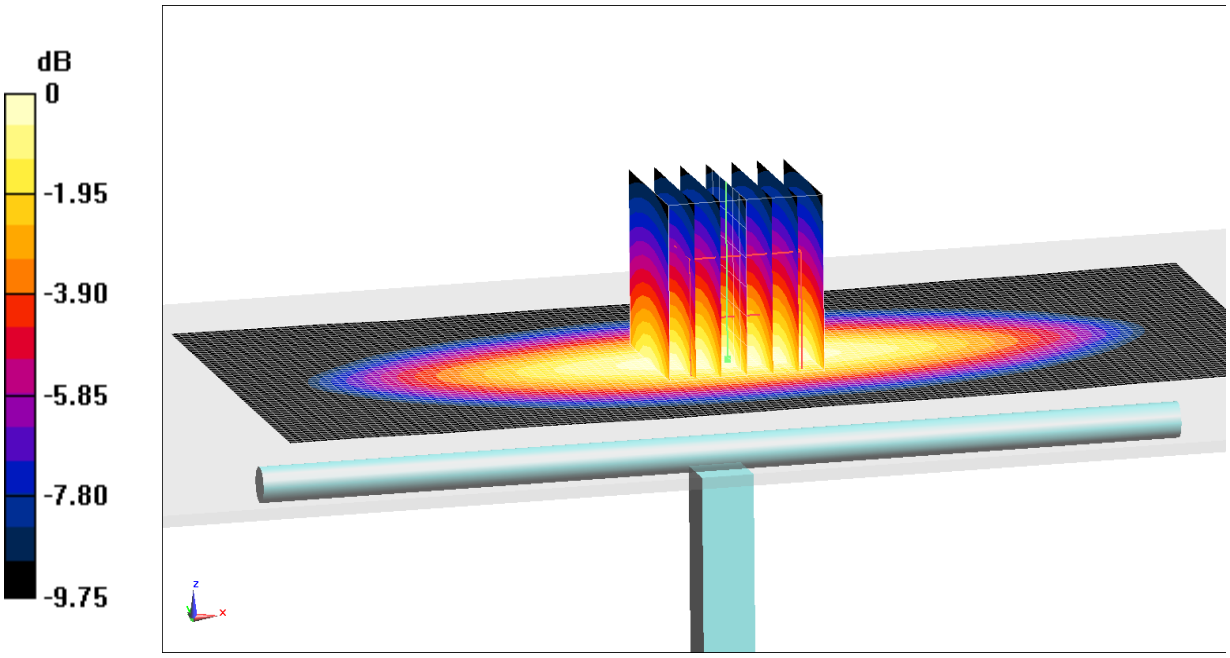
ANNEX B System Verification Results

750MHz

Date: 2018-11-6
Electronics: DAE4 Sn1555
Medium: Head 750 MHz
Medium parameters used: f = 750 MHz; σ = 0.88mho/m; ε_r = 42.43; ρ = 1000 kg/m^3
Ambient Temperature: 22.9°C Liquid Temperature: 22.5°C
Communication System: CW Frequency: 750 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN7514 ConvF(9.47, 9.47, 9.47)

System Validation /Area Scan (81x191x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 49.65 V/m; Power Drift = -0.07 dB
Fast SAR: SAR(1 g) = 2.13 W/kg; SAR(10 g) = 1.4 W/kg
Maximum value of SAR (interpolated) = 2.25 W/kg

System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 49.65 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 2.89 W/kg
SAR(1 g) = 2.09 W/kg; SAR(10 g) = 1.33 W/kg
Maximum value of SAR (measured) = 2.23 W/kg



0 dB = 2.23 W/kg = 3.48 dB W/kg

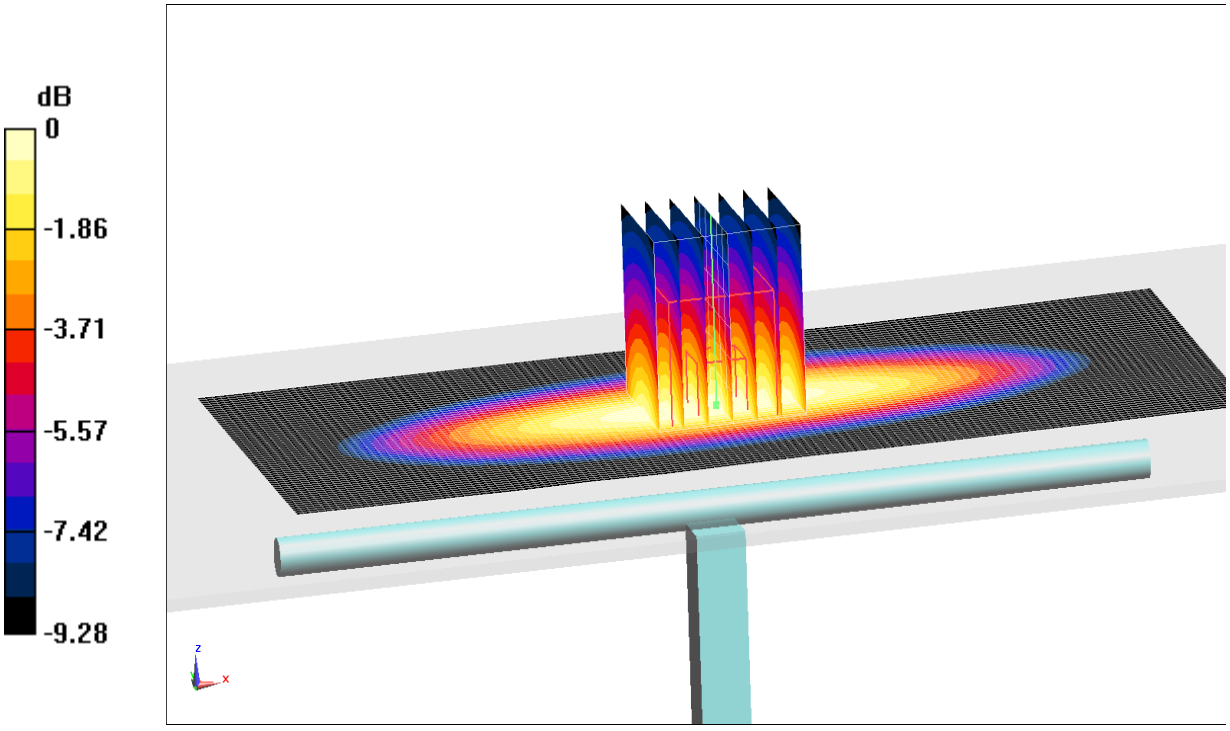
Fig.B.1 validation 750MHz 250mW

750MHz

Date: 2018-11-6
Electronics: DAE4 Sn1555
Medium: Body750 MHz
Medium parameters used: f = 750 MHz; σ = 0.95 mho/m; ε_r = 56.6; ρ = 1000 kg/m^3
Ambient Temperature: 22.9°C Liquid Temperature: 22.5°C
Communication System: CW Frequency: 750 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN7514 ConvF(9.68, 9.68, 9.68)

System Validation/Area Scan (81x191x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 51.32 V/m; Power Drift = 0.03 dB
Fast SAR: SAR(1 g) = 2.19 W/kg; SAR(10 g) = 1.49 W/kg
Maximum value of SAR (interpolated) = 2.23 W/kg

System Validation/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 51.32 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 3.01 W/kg
SAR(1 g) = 2.14 W/kg; SAR(10 g) = 1.4 W/kg
Maximum value of SAR (measured) = 2.15 W/kg



0 dB = 2.15 W/kg = 3.32 dB W/kg

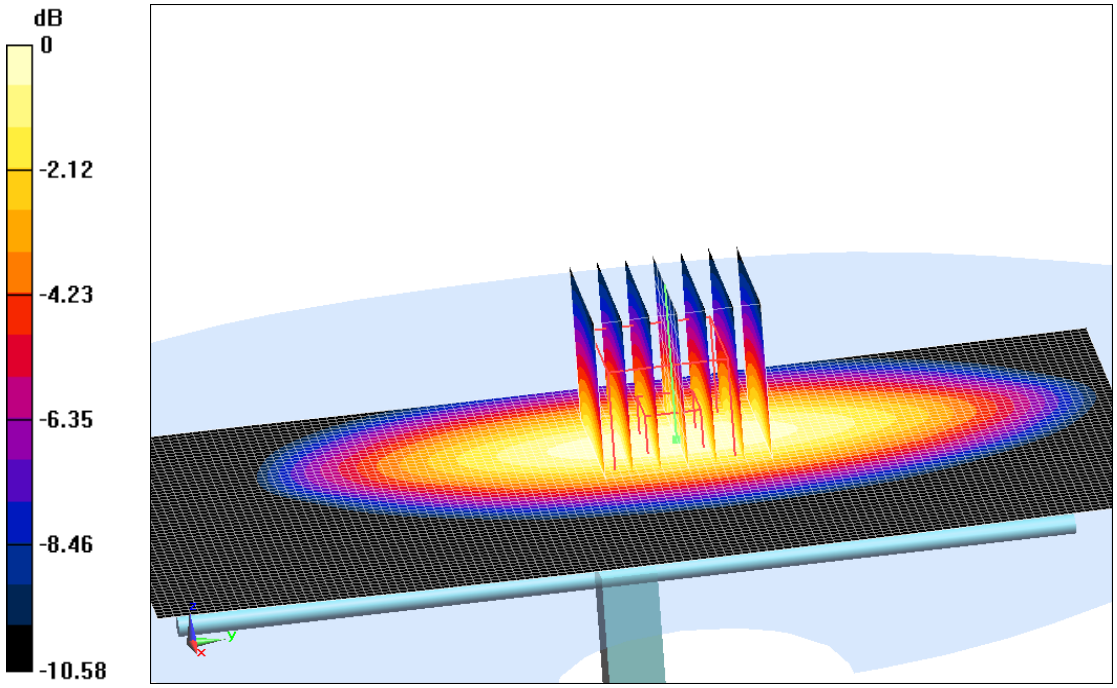
Fig.B.2 validation 750MHz 250mW

835MHz

Date: 2018-11-7
Electronics: DAE4 Sn1555
Medium: Head 850 MHz
Medium parameters used: f = 835 MHz; σ = 0.916 S/m; ε_r = 41.86; ρ = 1000 kg/m^3
Ambient Temperature: 22.9°C Liquid Temperature: 22.5°C
Communication System: CW Frequency: 835 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN7514 ConvF(9.09, 9.09, 9.09)

System Validation/Area Scan (61x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 54.93 V/m; Power Drift = 0.08 dB
Fast SAR: SAR(1 g) = 2.40 W/kg; SAR(10 g) = 1.54 W/kg
Maximum value of SAR (interpolated) = 2.59 W/kg

System Validation/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 54.93 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 3.13 W/kg
SAR(1 g) = 2.38 W/kg; SAR(10 g) = 1.51 W/kg
Maximum value of SAR (measured) = 2.56 W/kg



0 dB = 2.56 W/kg = 4.08 dBW/kg

Fig.B.3 validation 835MHz 250mW

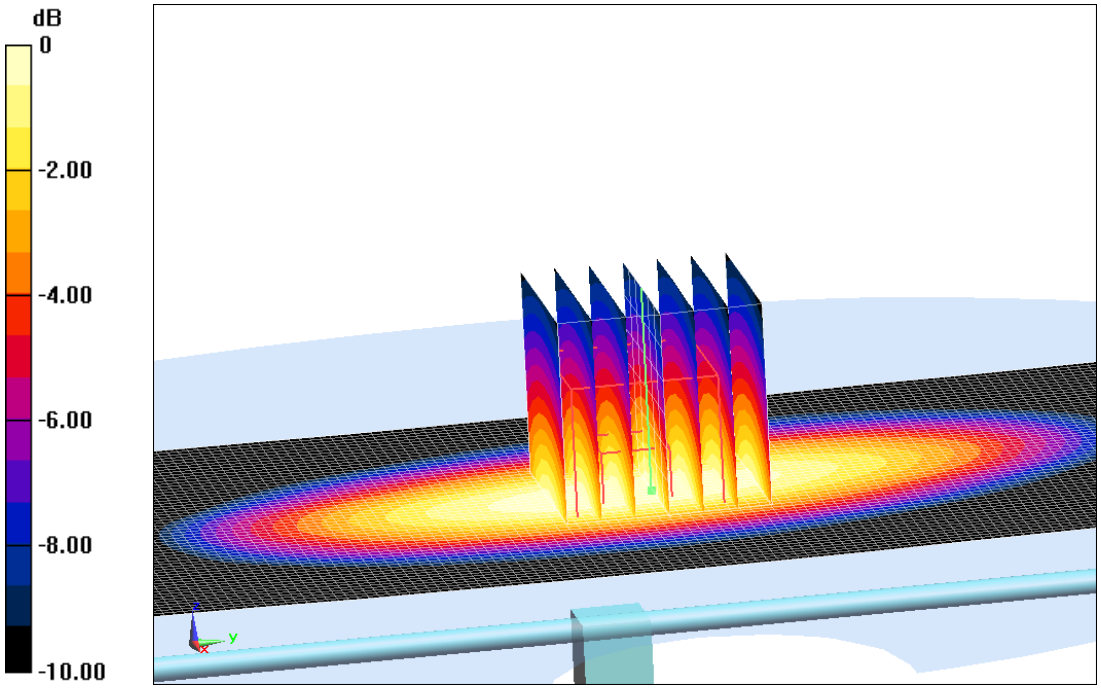
835MHz

Date: 2018-11-7

Electronics: DAE4 Sn1555
Medium: Body 850 MHz
Medium parameters used: f = 835 MHz; σ = 0.988 S/m; ε_r = 56.51; ρ = 1000 kg/m^3
Ambient Temperature: 22.9°C Liquid Temperature: 22.5°C
Communication System: CW Frequency: 835 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN7514 ConvF(9.47, 9.47, 9.47)

System Validation /Area Scan (61x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 51.69 V/m; Power Drift = 0.09 dB
Fast SAR: SAR(1 g) = 2.32 W/kg; SAR(10 g) = 1.56 W/kg
Maximum value of SAR (interpolated) = 2.66 W/kg

System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 51.69 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 3.12 W/kg
SAR(1 g) = 2.36 W/kg; SAR(10 g) = 1.59 W/kg
Maximum value of SAR (measured) = 2.69 W/kg



0 dB = 2.69 W/kg = 4.30 dBW/kg

Fig.B.4 validation 835MHz 250mW

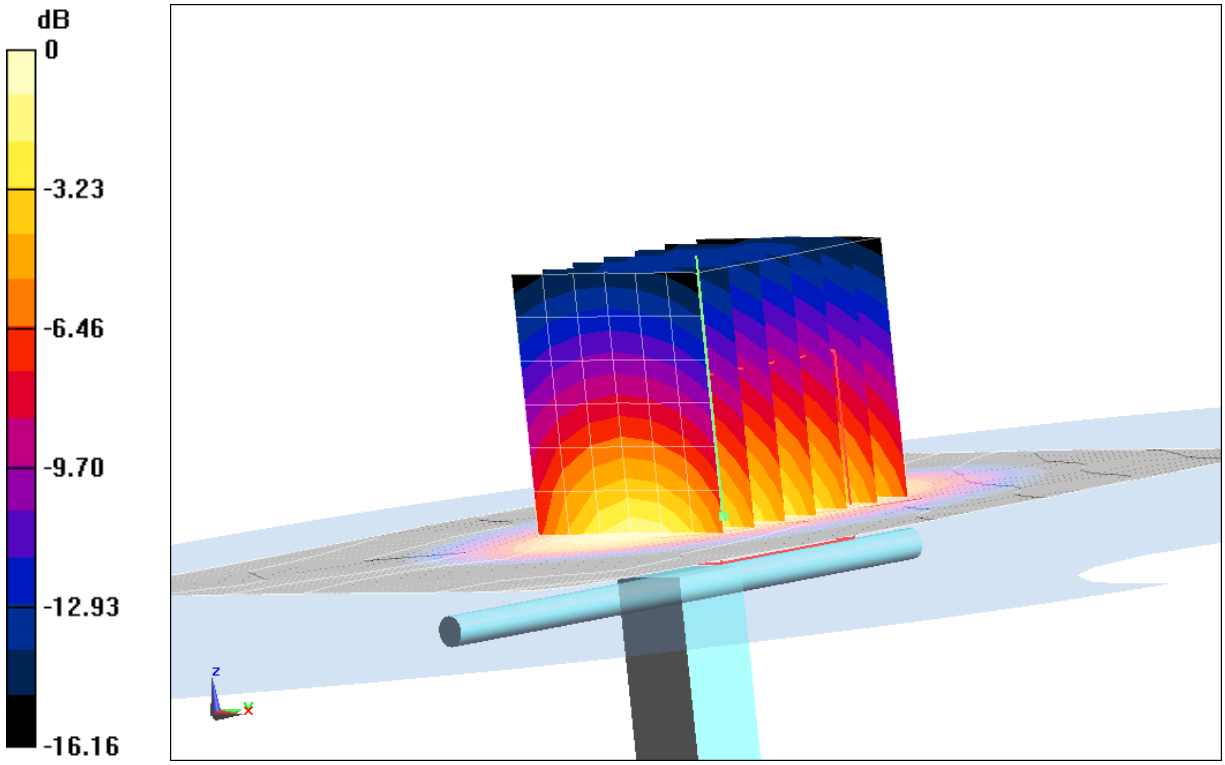
1750MHz

Date: 2018-11-8
Electronics: DAE4 Sn1555

Medium: Head 1750 MHz
Medium parameters used: f=1750 MHz; σ = 1.411 mho/m; εr = 39.63; ρ = 1000 kg/m^3
Ambient Temperature: 22.9°C Liquid Temperature: 22.5°C
Communication System: CW Frequency: 1750 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN7514 ConvF(8.10, 8.10, 8.10)

System Validation/Area Scan (81x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 88.74 V/m; Power Drift = 0.02 dB
Fast SAR: SAR(1 g) = 9.09 W/kg; SAR(10 g) = 4.78 W/kg
Maximum value of SAR (interpolated) = 10.0 W/kg

System Validation/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 88.74 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 15.57 W/kg
SAR(1 g) = 9.19 W/kg; SAR(10 g) = 4.85 W/kg
Maximum value of SAR (measured) = 10.1 W/kg



0 dB = 10.1 W/kg = 10.04 dB W/kg

Fig.B.5 validation 1750MHz 250mW

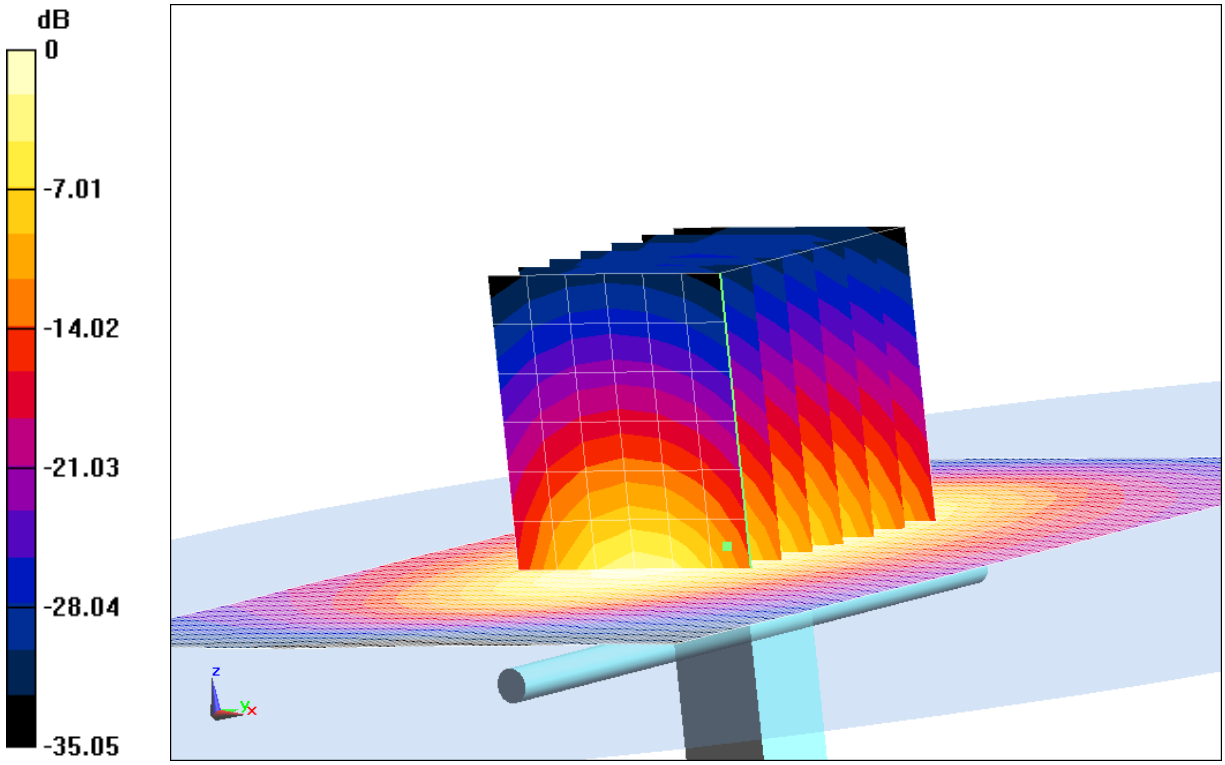
1750MHz

Date: 2018-11-8
Electronics: DAE4 Sn1555

Medium: Body 1750 MHz
Medium parameters used: f=1750 MHz; σ = 1.522 mho/m; εr = 52.5; ρ = 1000 kg/m^3
Ambient Temperature: 22.9°C Liquid Temperature: 22.5°C
Communication System: CW Frequency: 1750 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN7514 ConvF(7.82, 7.82, 7.82)

System Validation/Area Scan (81x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 91.6 V/m; Power Drift = 0.03 dB
Fast SAR: SAR(1 g) = 9.28 W/kg; SAR(10 g) = 4.98 W/kg
Maximum value of SAR (interpolated) = 10.2 W/kg

System Validation/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 91.6 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 15.26 W/kg
SAR(1 g) = 9.18 W/kg; SAR(10 g) = 4.88 W/kg
Maximum value of SAR (measured) = 10.1 W/kg



0 dB = 10.1 W/kg = 10.04 dB W/kg

Fig.B.6 validation 1750MHz 250mW

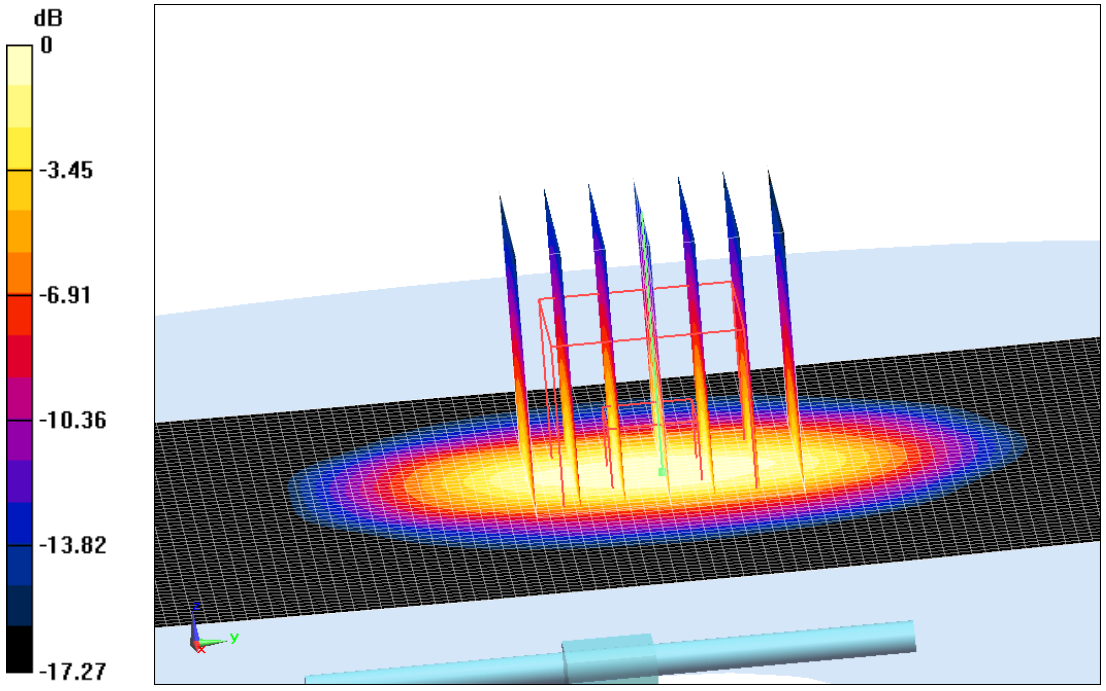
1900MHz

Date: 2018-11-12
Electronics: DAE4 Sn1555

Medium: Head 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.37 mho/m; ε_r = 40.56; ρ = 1000 kg/m^3
Ambient Temperature: 22.9°C Liquid Temperature: 22.5°C
Communication System: CW Frequency: 1900 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN7514 ConvF (7.73, 7.73, 7.73)

System Validation /Area Scan(61x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 89.6 V/m; Power Drift = 0.02 dB
SAR(1 g) =10.17 W/kg; SAR(10 g) = 5.53 W/kg
Maximum value of SAR (interpolated) = 12.4 W/kg

System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 89.6 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 17.74 W/kg
SAR(1 g) = 9.98 W/kg; SAR(10 g) = 5.35 W/kg
Maximum value of SAR (measured) = 12.2 W/kg



0 dB = 12.2 W/kg = 10.86 dBW/kg

Fig.B.7 validation 1900MHz 250mW

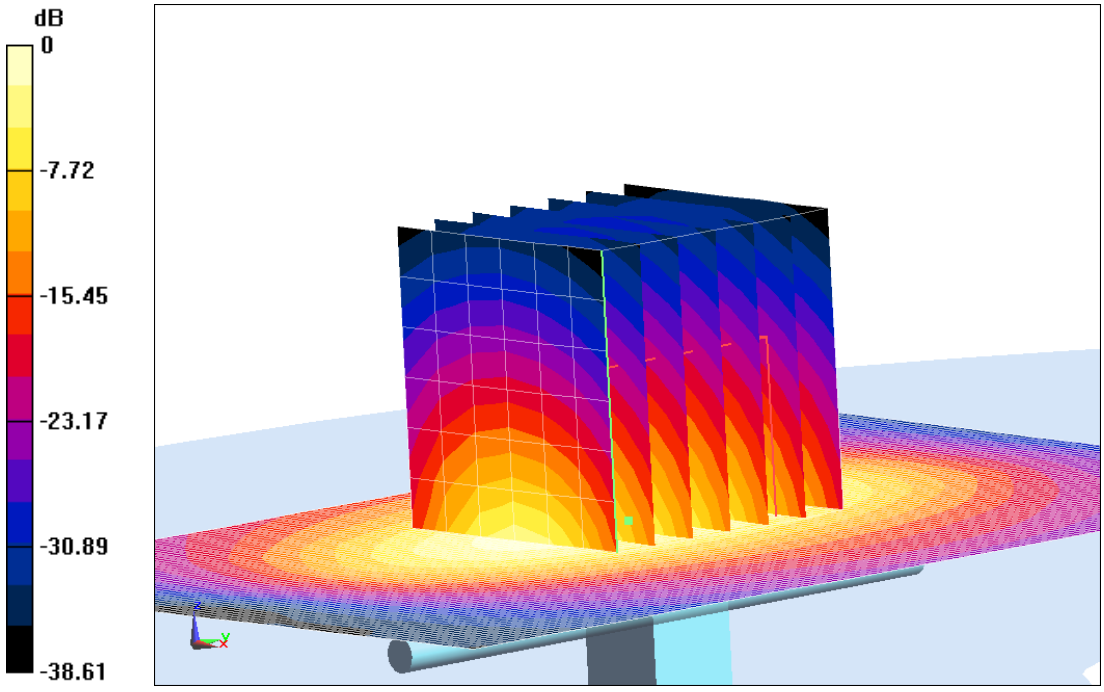
1900MHz

Date: 2018-11-12
Electronics: DAE4 Sn1555
Medium: Body 1900 MHz

Medium parameters used: f = 1900 MHz; σ = 1.588 S/m; ε_r = 52.51; ρ = 1000 kg/m^3
Ambient Temperature: 22.9°C Liquid Temperature: 22.5°C
Communication System: CW Frequency: 1900 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN7514 ConvF(7.53, 7.53, 7.53)

System Validation/Area Scan (81x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 93.12 V/m; Power Drift = -0.01 dB
Fast SAR: SAR(1 g) = 10.14 W/kg; SAR(10 g) = 5.58 W/kg
Maximum value of SAR (interpolated) = 12.1 W/kg

System Validation/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 90.12 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 18.65 W/kg
SAR(1 g) = 9.94 W/kg; SAR(10 g) = 5.39 W/kg
Maximum value of SAR (measured) = 11.9 W/kg



0 dB = 11.9 W/kg = 10.76 dB W/kg

Fig.B.8 validation 1900MHz 250mW

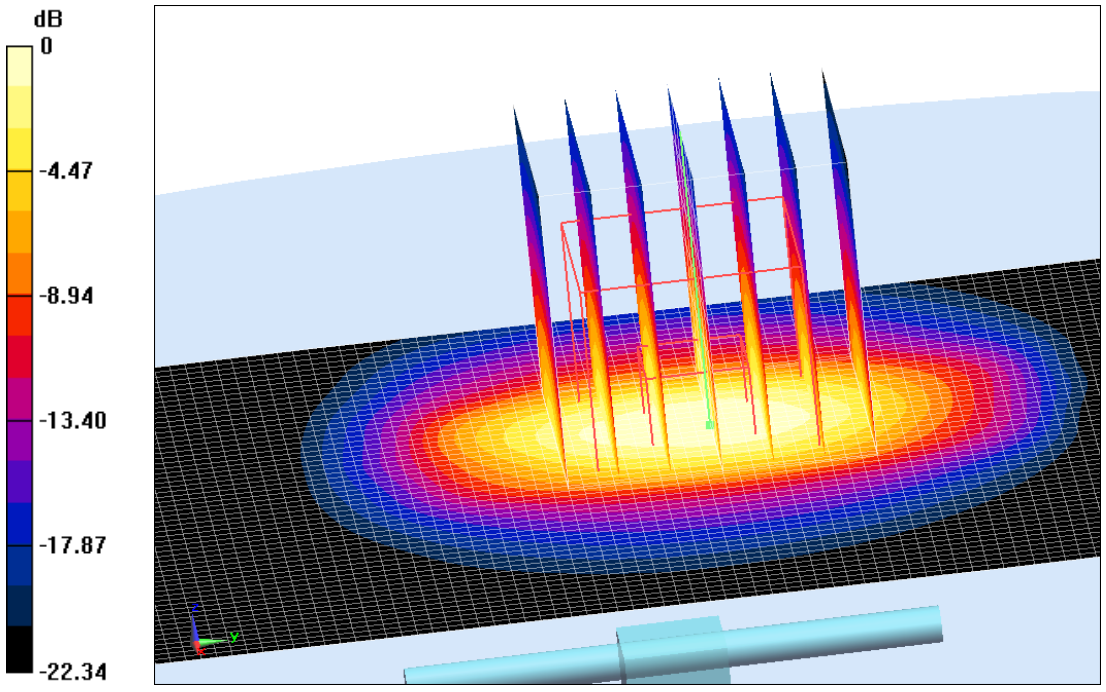
2450MHz

Date: 2018-11-13
Electronics: DAE4 Sn1555
Medium: Head 2450 MHz

Medium parameters used: f = 2450 MHz; σ = 1.814 mho/m; ε_r = 39.07; ρ = 1000 kg/m^3
Ambient Temperature: 22.9°C Liquid Temperature: 22.5°C
Communication System: CW Frequency: 2450 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN7514 ConvF(6.95, 6.95, 6.95)

System Validation /Area Scan (61x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 88.25 V/m; Power Drift = 0.03 dB
SAR(1 g) = 13.2 W/kg; SAR(10 g) = 6.05 W/kg
Maximum value of SAR (interpolated) = 16.41 W/kg

System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 88.25 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 27.09 W/kg
SAR(1 g) = 13.01 W/kg; SAR(10 g) = 6.02 W/kg
Maximum value of SAR (measured) = 16.21 W/kg



0 dB = 16.21 W/kg = 12.1 dBW/kg

Fig.B.9 validation 2450MHz 250mW

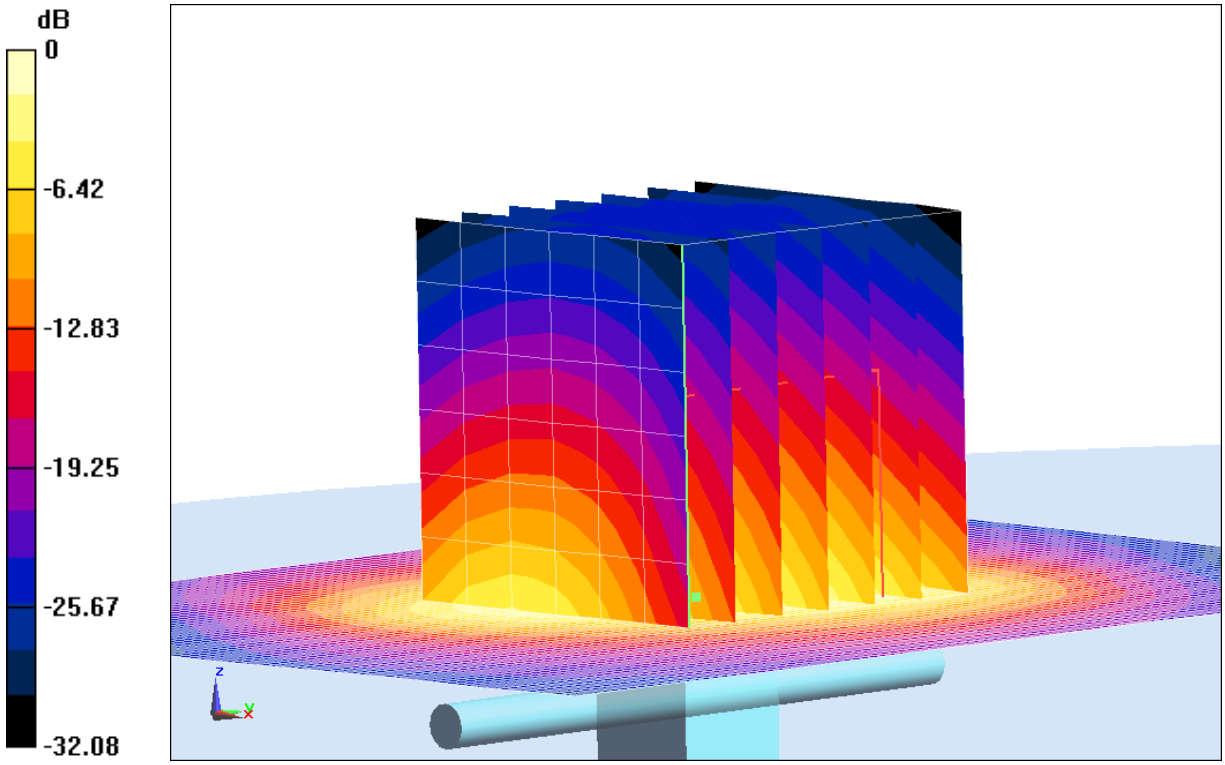
2450MHz

Date: 2018-11-13
Electronics: DAE4 Sn1555
Medium: Body 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 1.937 S/m; ε_r = 52.19; ρ = 1000 kg/m^3
Ambient Temperature: 22.9°C Liquid Temperature: 22.5°C

Communication System: CW Frequency: 2450 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN7514 ConvF(7.13, 7.13, 7.13)

System Validation/Area Scan (81x101x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 91.06 V/m; Power Drift = 0.02 dB
SAR(1 g) = 12.7 W/kg; SAR(10 g) = 5.95 W/kg
Maximum value of SAR (interpolated) = 14.4 W/kg

System Validation/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 91.06 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 24.59 W/kg
SAR(1 g) = 12.91 W/kg; SAR(10 g) = 6.04 W/kg
Maximum value of SAR (measured) = 14.6 W/kg



0 dB = 14.6 W/kg = 11.64 dB W/kg

Fig.B.10 validation 2450MHz 250mW

The SAR system verification must be required that the area scan estimated 1-g SAR is within 3% of the zoom scan 1-g SAR.

Table B.1 Comparison between area scan and zoom scan for system verification

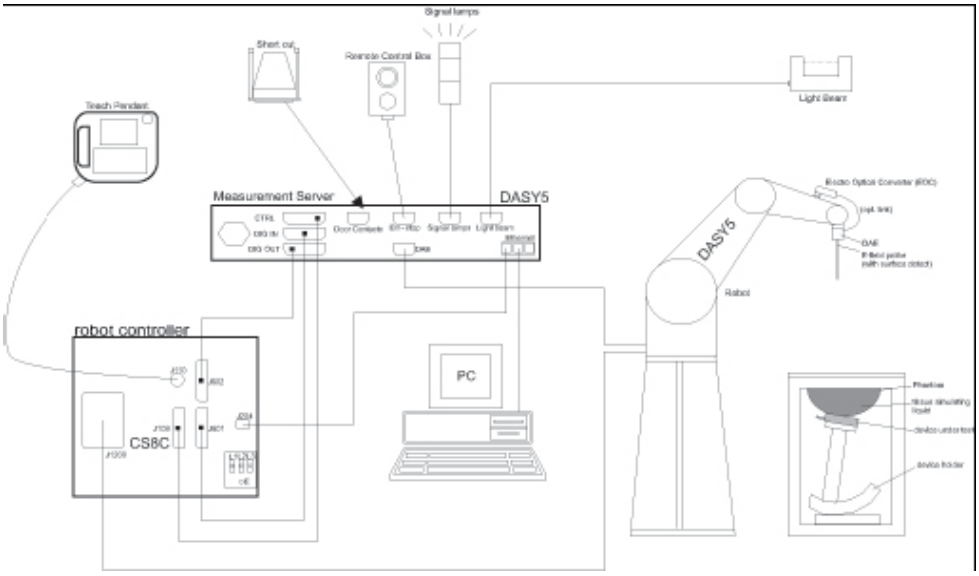
Date	Band	Position	Area scan (1g)	Zoom scan (1g)	Drift (%)

2018-10-11	750	Head	2.13	2.09	1.9
	750	Body	2.19	2.14	2.3
2018-10-12	835	Head	2.40	2.38	0.8
	835	Body	2.32	2.36	-1.7
2018-10-13	1750	Head	9.09	9.19	-1.1
	1750	Body	9.28	9.18	1.1
2018-10-14	1900	Head	10.17	9.98	1.9
	1900	Body	10.14	9.94	2.0
2018-10-23	2450	Head	13.2	13.01	1.5
	2450	Body	12.7	12.91	1.6

ANNEX C SAR Measurement Setup

C.1 Measurement Set-up

The Dasy4 or DASY5 system for performing compliance tests is illustrated above graphically. This system consists of the following items:



Picture C.1SAR Lab Test Measurement Set-up

- A standard high precision 6-axis robot (StäubliTX=RX family) 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 and the DASY4 or DASY5 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.

C.2 Dasy4 or DASY5 E-field Probe System

The SAR measurements were conducted with the dosimetric probe designed in the classical triangular configuration and optimized for dosimetric evaluation. The probe is constructed using the thick film technique; with printed resistive lines on ceramic substrates. The probe is equipped with an optical multifiber line ending at the front of the probe tip. It is connected to the EOC box on the robot arm and provides an automatic detection of the phantom surface. Half of the fibers are connected to a pulsed infrared transmitter, the other half to a synchronized receiver. As the probe approaches the surface, the reflection from the surface produces a coupling from the transmitting to the receiving fibers. This reflection increases first during the approach, reaches maximum and then decreases. If the probe is flatly touching the surface, the coupling is zero. The distance of the coupling maximum to the surface is independent of the surface reflectivity and largely independent of the surface to probe angle. The DASY4 or DASY5 software reads the reflection durning a software approach and looks for the maximum using 2nd ord curve fitting. The approach is stopped at reaching the maximum.

Probe Specifications:

Model: ES3DV3, EX3DV4
Frequency 10MHz — 6.0GHz(EX3DV4)
Range: 10MHz — 4GHz(ES3DV3)
Calibration: In head and body simulating tissue at Frequencies from 835 up to 5800MHz
Linearity: ± 0.2 dB(30 MHz to 6 GHz) for EX3DV4
± 0.2 dB(30 MHz to 4 GHz) for ES3DV3
DynamicRange: 10 mW/kg — 100W/kg
Probe Length: 330 mm
Probe Tip
Length: 20 mm
Body Diameter: 12 mm
Tip Diameter: 2.5 mm (3.9 mm for ES3DV3)
Tip-Center: 1 mm (2.0mm for ES3DV3)
Application: SAR Dosimetry Testing
Compliance tests ofmobile phones
Dosimetry in strong gradient fields

Picture C.2Near-field Probe

Picture C.3E-field Probe

C.3 E-field Probe Calibration

Each E-Probe/Probe Amplifier combination has unique calibration parameters. A TEM cell calibration procedure is conducted to determine the proper amplifier settings to enter in the probe parameters. The amplifier settings are determined for a given frequency by subjecting the probe to a known E-field density (1 mW/cm^2) using an RF Signal generator, TEM cell, and RF Power Meter.

The free space E-field from amplified probe outputs is determined in a test chamber. This calibration can be performed in a TEM cell if the frequency is below 1 GHz and inn a waveguide or other methodologies 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 until the three channels show the maximum reading. The power density readings equates to 1 mW/cm^2.

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

$$SAR = C\frac{\Delta T}{\Delta t}$$

Where:

Δt = Exposure time (30 seconds),

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

ΔT = Temperature increase due to RF exposure.

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

Where:

σ = Simulated tissue conductivity,

ρ = Tissue density (kg/m^3).

C.4 Other Test Equipment

C.4.1 Data Acquisition Electronics(DAE)

The data acquisition electronics consist of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder with a control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information, as well as an optical uplink for commands and the clock.

The mechanical probe mounting device includes two different sensor systems for frontal and sideways probe contacts. They are used for mechanical surface detection and probe collision detection.

The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

Picture C.4: DAE