TESTING
NVLAP LAB CODE 600118-0

SAR TEST REPORT

No. I19Z61829-SEM01

For

LG Electronics Inc.

Multi-band GSM/WCDMA/LTE phone with Bluetooth, WLAN

Model Name: LM-X540HM

with

FCC ID: ZNFX540HM

Issued Date: 2019-10-10

Note:

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Test Laboratory:

CTTL, Telecommunication Technology Labs, CAICT

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REPORT HISTORY

Report Number	Revision	Issue Date	Description
I19Z61829-SEM01	Rev.0	2019-10-10	Initial creation of test report

TABLE OF CONTENT

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

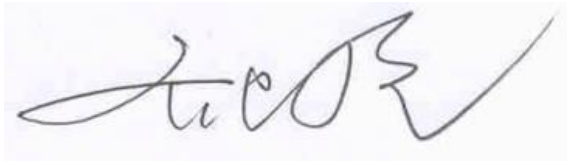
1.3 Project Data

Project Leader:	Qi Dianyuan
Test Engineer:	Lin Xiaojun
Testing Start Date:	September 1, 2019
Testing End Date:	October 9, 2019

1.4 Signature

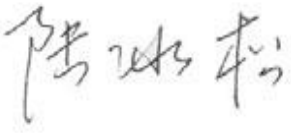
Lin Xiaojun

(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

This EUT is a variant product and the report of original sample is No.I19Z61530-SEM01. We do the spot check on highest value point in all bands of the original report for head and body respectively. The results of spot check are presented in the annex J.

The maximum results of Specific Absorption Rate (SAR) found during testing for LG Electronics Inc. Multi-band GSM/WCDMA/LTE phone with Bluetooth, WLAN LM-X540HM is 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	0.22	PCE
	PCS 1900	0.12	
	UMTS FDD 2	0.24	
	UMTS FDD 4	0.20	
	UMTS FDD 5	0.28	
	LTE Band 2	0.23	
	LTE Band 5	0.23	
	LTE Band 7	0.26	
	LTE Band 12	0.17	
	LTE Band13	0.18	
	LTE Band 38	0.14	
	LTE Band 66	0.19	
	WLAN 2.4 GHz	0.74	DTS
	WLAN 5GHz	0.95	UNII
Hotspot (Separation Distance 10mm)	GSM 850	0.53	PCE
	PCS 1900	0.54	
	UMTS FDD 2	1.05	
	UMTS FDD 4	0.75	
	UMTS FDD 5	0.51	
	LTE Band 2	1.10	
	LTE Band 5	0.52	
	LTE Band 7	1.27	
	LTE Band 12	0.31	
	LTE Band13	0.34	
	LTE Band 38	0.70	
	LTE Band 66	0.86	
	WLAN 2.4 GHz	0.17	DTS
	WLAN 5GHz	0.23	UNII

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 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**: 1.27 W/kg(1g).**

Table 2.2: The sum of reported SAR values for main antenna and WiFi 2.4G

	Position	Main antenna	WLAN	Sum
Maximum reported SAR value for Head	Right hand, Touch Tilt	0.13	0.95	**1.08**
Maximum reported SAR value for Body	Rear	1.10	0.17	**1.27**
	Bottom	1.27	/	**1.27**

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	0.28	0.37[1]	**0.65**
Maximum reported SAR value for Body	Rear	1.10	0.19[1]	**1.29**
	Bottom	1.27	/	**1.27**

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

According to the above tables, the highest sum of reported SAR values is **1.29 W/kg (1g)**. The detail for simultaneous transmission consideration is described in chapter 13.

3 Client Information

3.1 Applicant Information

Company Name:	LG Electronics Inc.
Address/Post:	LG Twin Towers,128,Yeoui-daero,Yeongdeungpo-gu
Contact Person:	NA
Contact Email:	NA
Telephone:	+82-2-6946-1675

3.2 Manufacturer Information

Company Name:	LG Electronics Inc.
Address/Post:	LG Twin Towers,128,Yeoui-daero,Yeongdeungpo-gu
Contact Person:	NA
Contact Email:	NA
Telephone:	+82-2-6946-1675

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

4.1 About EUT

Description:	Multi-band GSM/WCDMA/LTE phone with Bluetooth, WLAN
Model name:	LM-X540HM
Operating mode(s):	GSM850/900/1800/1900, WCDMA850/900/1700/1900/2100 LTE Band 1/2/3/4/5/7/8/12/13/17/28/38/40/66, BT, Wi-Fi(2.4G/5G)
Tested Tx Frequency:	825 – 848.8 MHz (GSM 850)
	1850.2 – 1910 MHz (GSM 1900)
	826.4–846.6 MHz (WCDMA 850 Band V)
	1710 – 1755 MHz (WCDMA 1700 Band IV)
	1852.4–1907.6 MHz (WCDMA1900 Band II)
	1860 – 1900 MHz (LTE Band 2)
	824.7 – 848.3 MHz (LTE Band 5)
	2502.5 – 2567.5 MHz (LTE Band 7)
	699.7 – 715.3 MHz (LTE Band 12)
	779.5 –784.5 MHz (LTE Band 13)
	2572.5 –2617.5 MHz (LTE Band 38)
	1710.7 – 1779.3 MHz (LTE Band 66)
	2412 – 2462 MHz (Wi-Fi 2.4G)
	5.15 – 5.825 GHz(Wi-Fi 5G)
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

4.2 Internal Identification of EUT used during the test

EUT ID*	IMEI	HW	SW Version
EUT1	358946100017716	/	/
EUT2	358946100017823	/	/

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

Note: It is performed to do spotcheck with the EUT1 and conducted power with the EUT2.

4.3 Internal Identification of AE used during the test

AE ID*	Description	Model	SN	Manufacturer
AE1	Battery	BL-T45	EAC64578801	Lishen
AE2	Headset	EAB64468444	/	Cresyn

*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

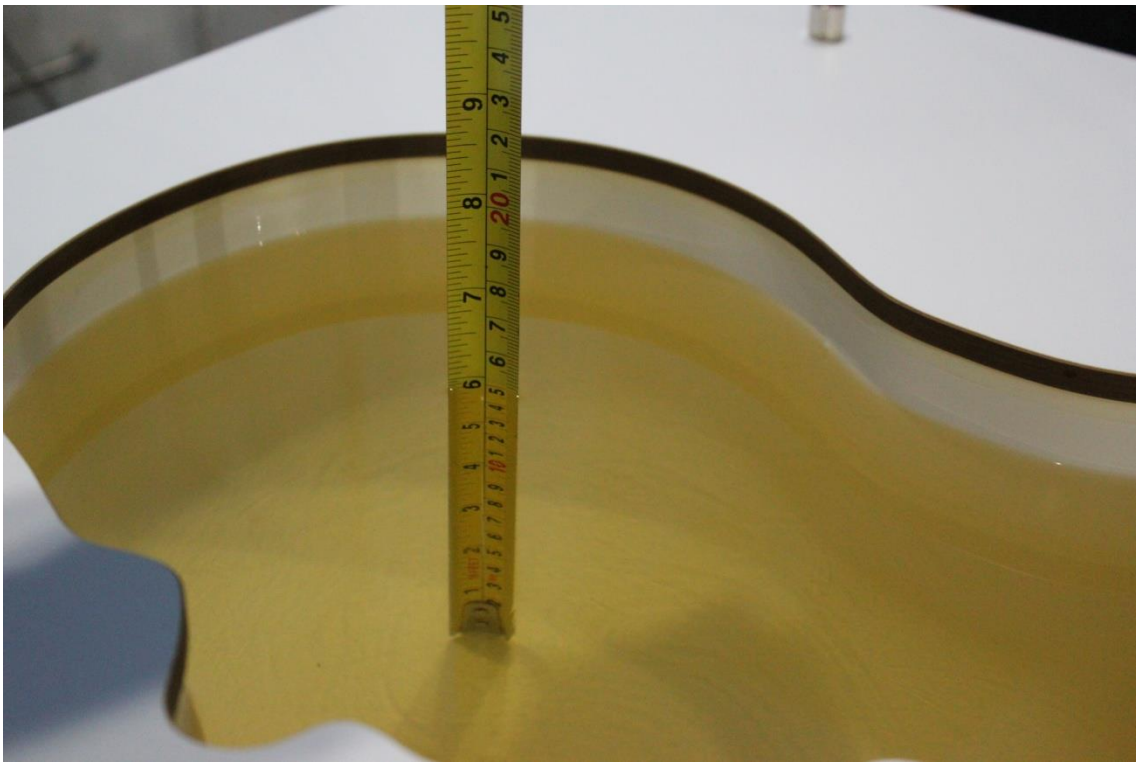
Frequency(MHz)	Liquid Type	Conductivity(σ)	± 5% Range	Permittivity(ε)	± 5% Range
835	Head	0.90	0.86～0.95	41.5	39.4～43.6
835	Body	0.97	0.92～1.02	55.2	52.4～58.0
1900	Head	1.40	1.33～1.47	40.0	38.0～42.0
1900	Body	1.52	1.44～1.60	53.3	50.6～56.0
2300	Head	1.67	1.59～1.75	39.47	37.5～41.4
2450	Body	1.95	1.85～2.05	52.7	50.1～55.3
2600	Head	1.96	1.86～2.06	39.01	37.1～41.0
2600	Body	2.16	2.05～2.27	52.5	49.9～55.1
5250	Head	4.71	4.47～4.95	35.93	34.13～37.73
5250	Body	5.36	5.09～5.63	48.9	46.46～51.35
5600	Head	5.07	4.82～5.32	35.5	33.75～37.31
5600	Body	5.77	5.48～6.06	48.5	46.08～50.92
5750	Head	5.22	4.96～5.48	35.36	33.59～37.13
5750	Body	5.94	5.64～6.24	48.3	45.89～50.72

7.2 Dielectric Performance

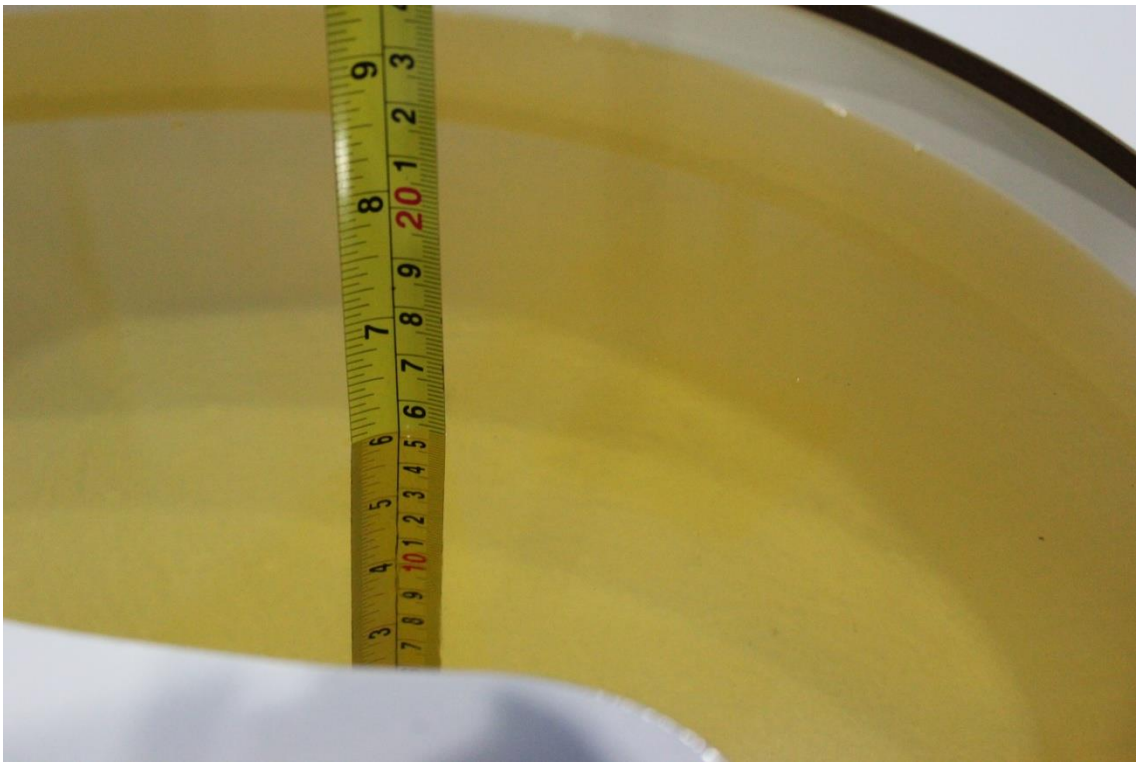
Table 7.2: Dielectric Performance of Tissue Simulating Liquid

Measurement Date (yyyy-mm-dd)	Type	Frequency	Permittivity ε	Drift (%)	Conductivity σ (S/m)	Drift (%)
2019/9/1	Head	750 MHz	42.41	1.12	0.905	1.69
	Body	750 MHz	56.11	1.10	0.973	1.35
2019/9/2	Head	835 MHz	41.94	1.06	0.913	1.44
	Body	835 MHz	56.14	1.70	0.982	1.24
2019/9/3	Head	1750 MHz	39.74	-0.85	1.377	0.51
	Body	1750 MHz	54.11	1.33	1.488	-0.13
2019/9/4	Head	1900 MHz	39.58	-1.05	1.375	-1.79
	Body	1900 MHz	52.35	-1.78	1.544	1.58
2019/9/5	Head	2450 MHz	38.81	-0.99	1.793	-0.39
	Body	2450 MHz	52.81	0.21	1.984	1.74
2019/9/5	Head	2600 MHz	39.01	0.00	1.926	-1.73
	Body	2600 MHz	52.9	0.76	2.171	0.51
2019/9/6	Head	5250 MHz	36.6	1.86	4.763	1.13
	Body	5250 MHz	49.88	2.00	5.262	-1.83
2019/9/6	Head	5600 MHz	34.97	-1.58	5.133	1.24
	Body	5600 MHz	48.74	0.49	5.701	-1.20
2019/9/6	Head	5750 MHz	35.2	-0.45	5.263	0.82
	Body	5750 MHz	47.79	-1.06	5.463	-0.49

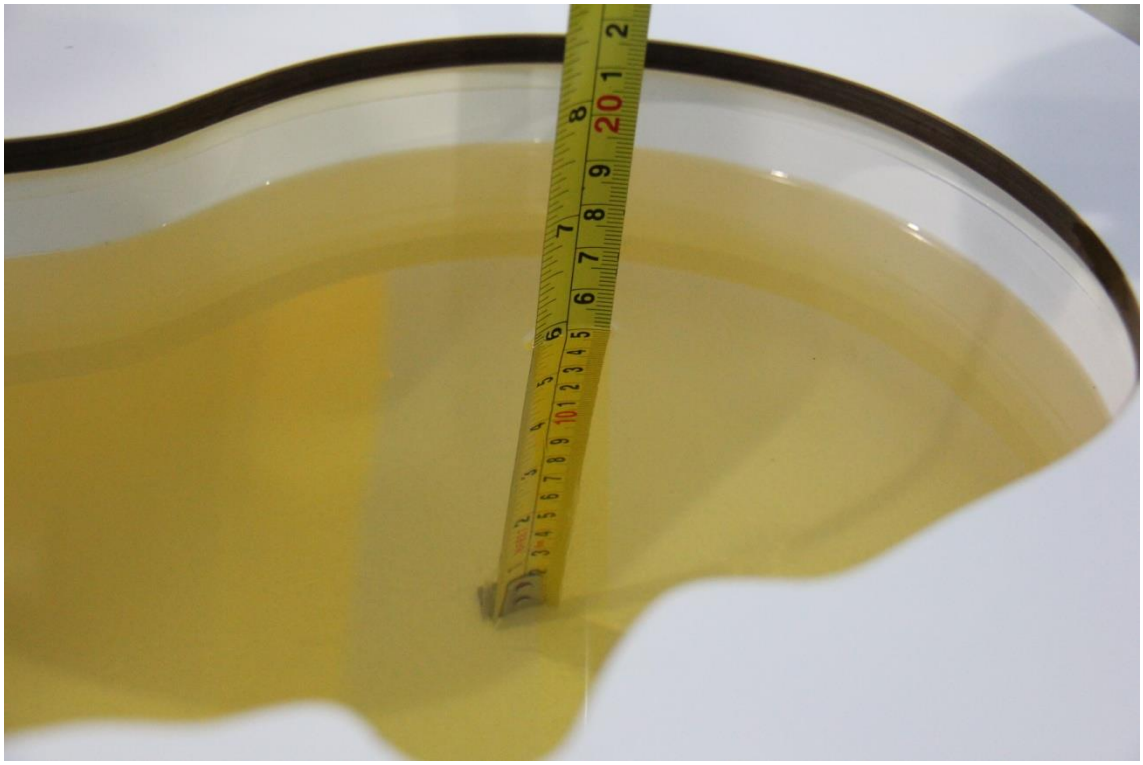
Note: The liquid temperature is 22.0℃



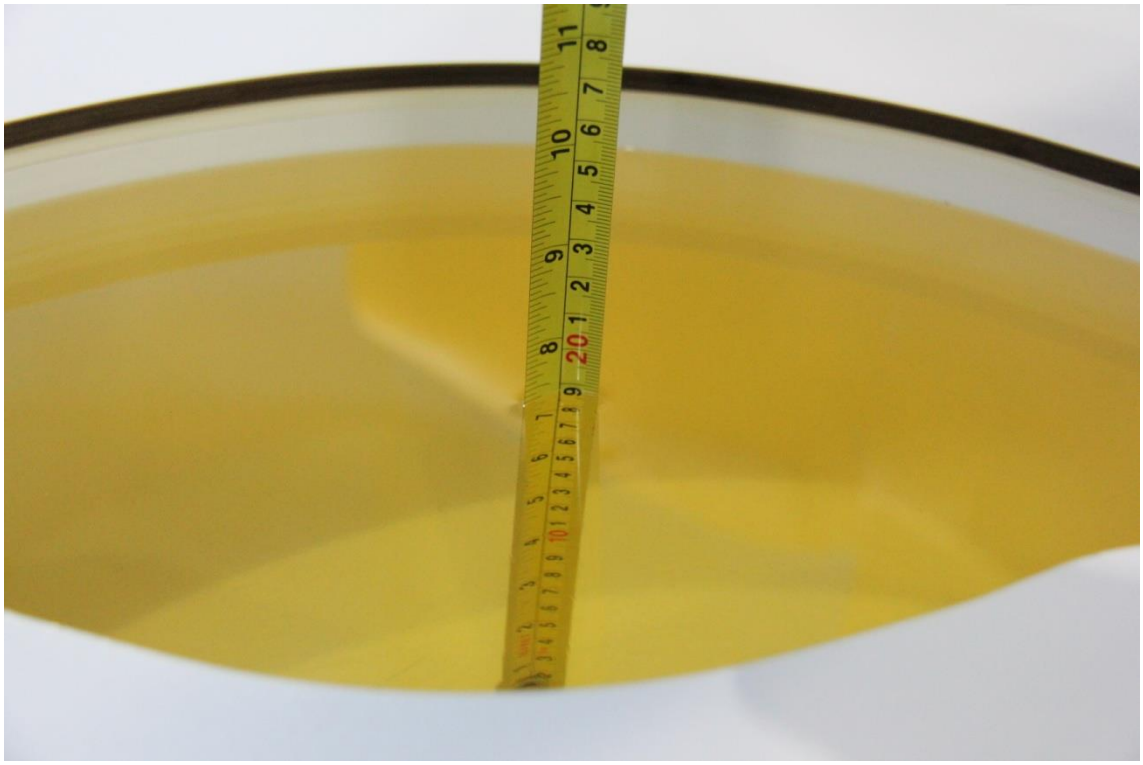
Picture 7-1 Liquid depth in the Head Phantom (750MHz)



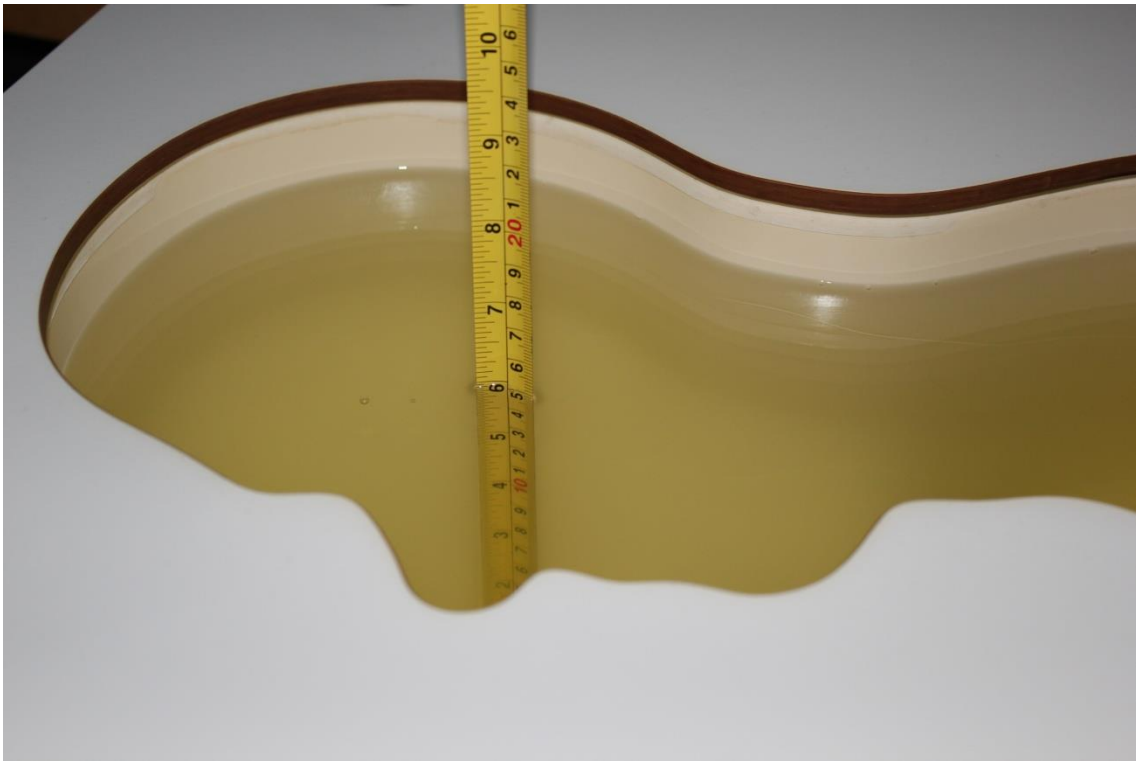
Picture 7-2 Liquid depth in the Flat Phantom (750MHz)



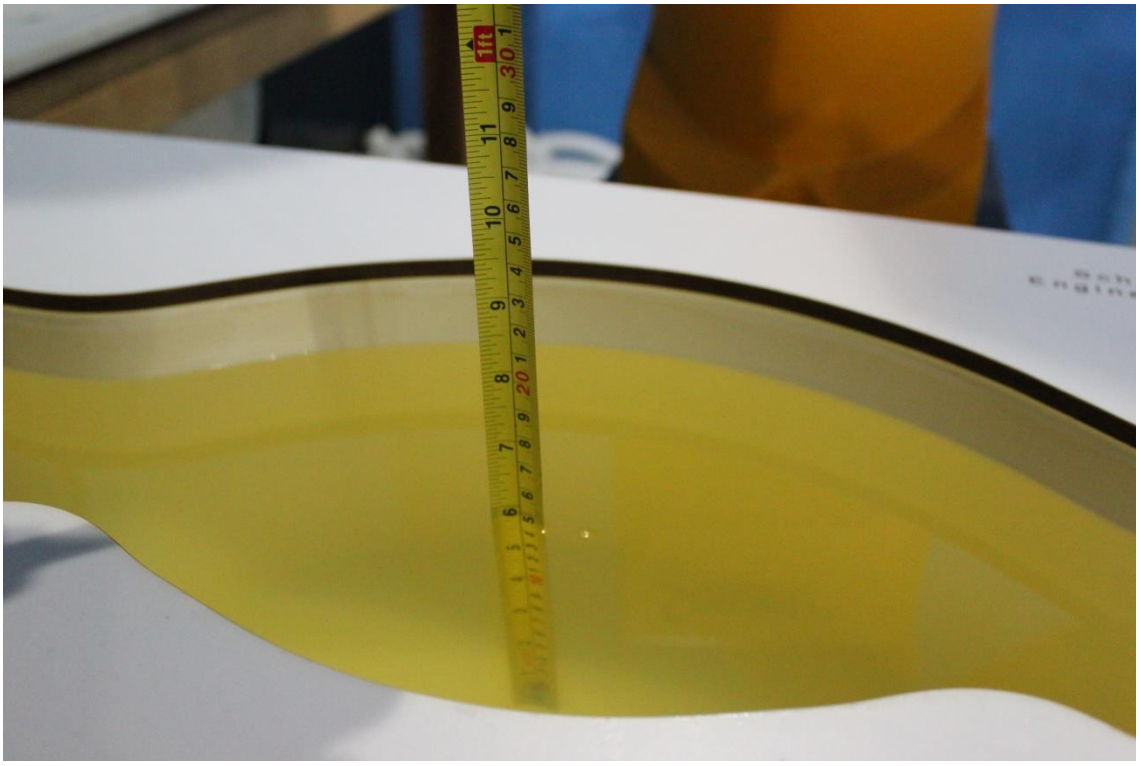
Picture 7-3 Liquid depth in the Head Phantom (835 MHz)



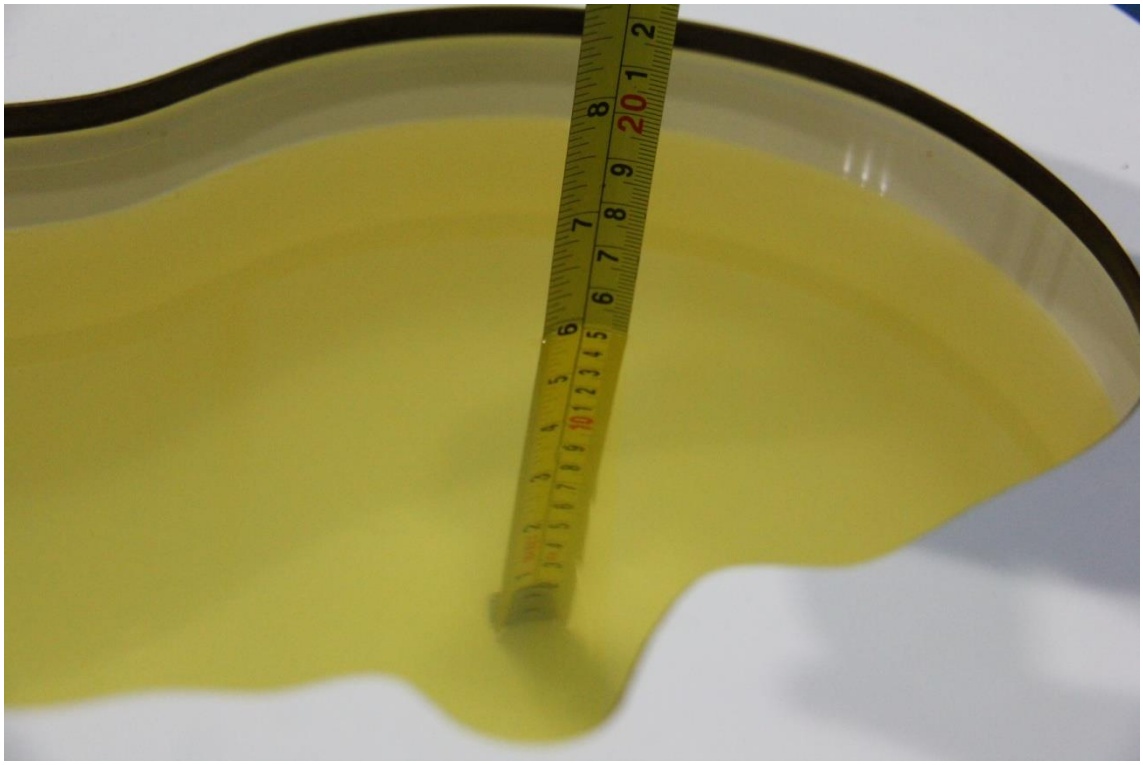
Picture 7-4 Liquid depth in the Flat Phantom (835 MHz)



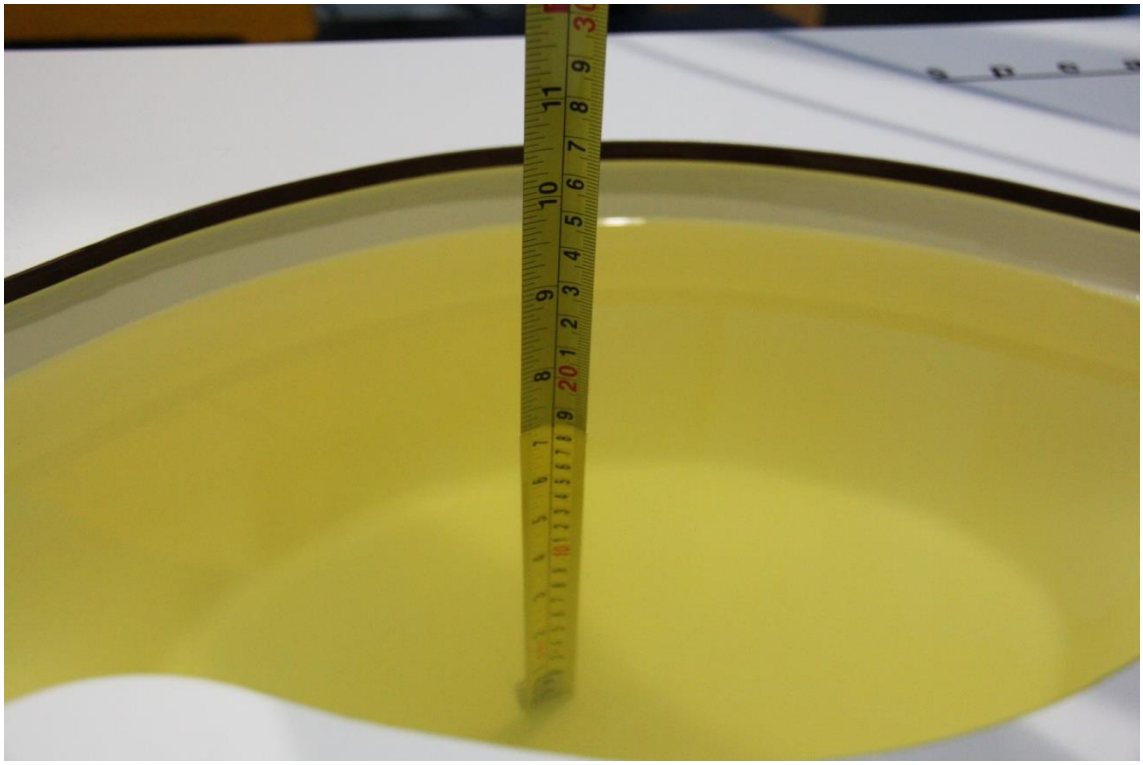
Picture 7-5 Liquid depth in the Head Phantom (1750 MHz)



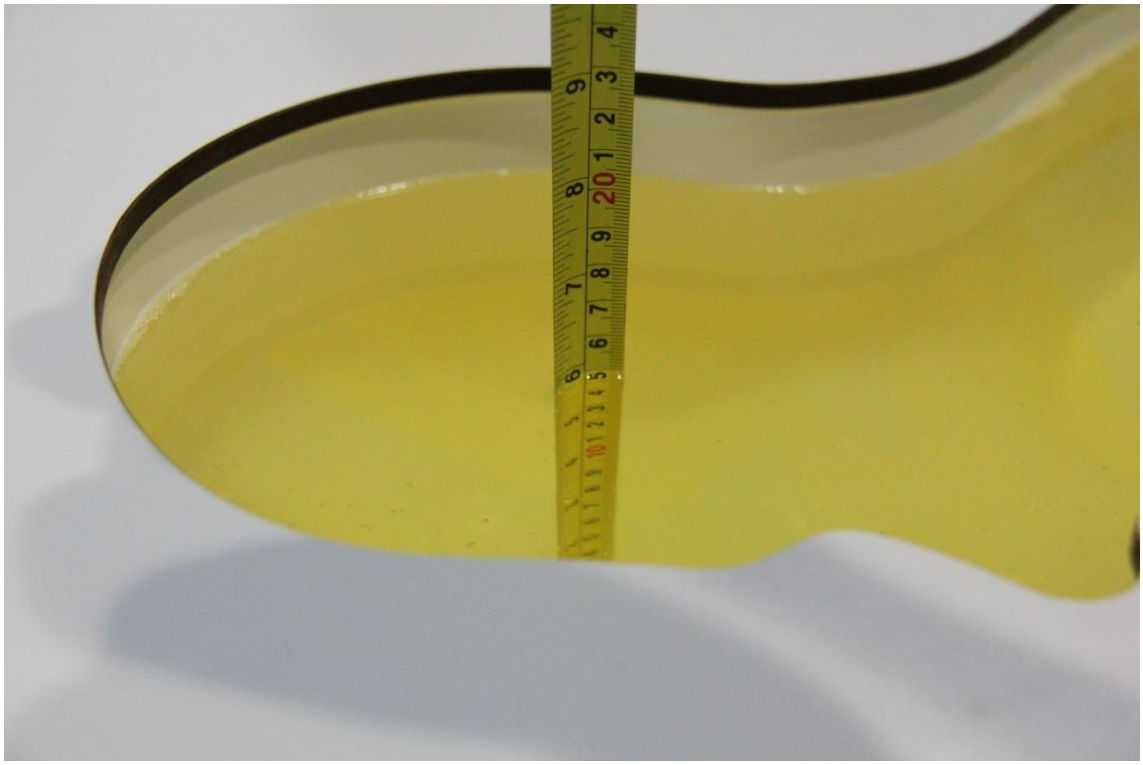
Picture 7-6 Liquid depth in the Flat Phantom (1750MHz)



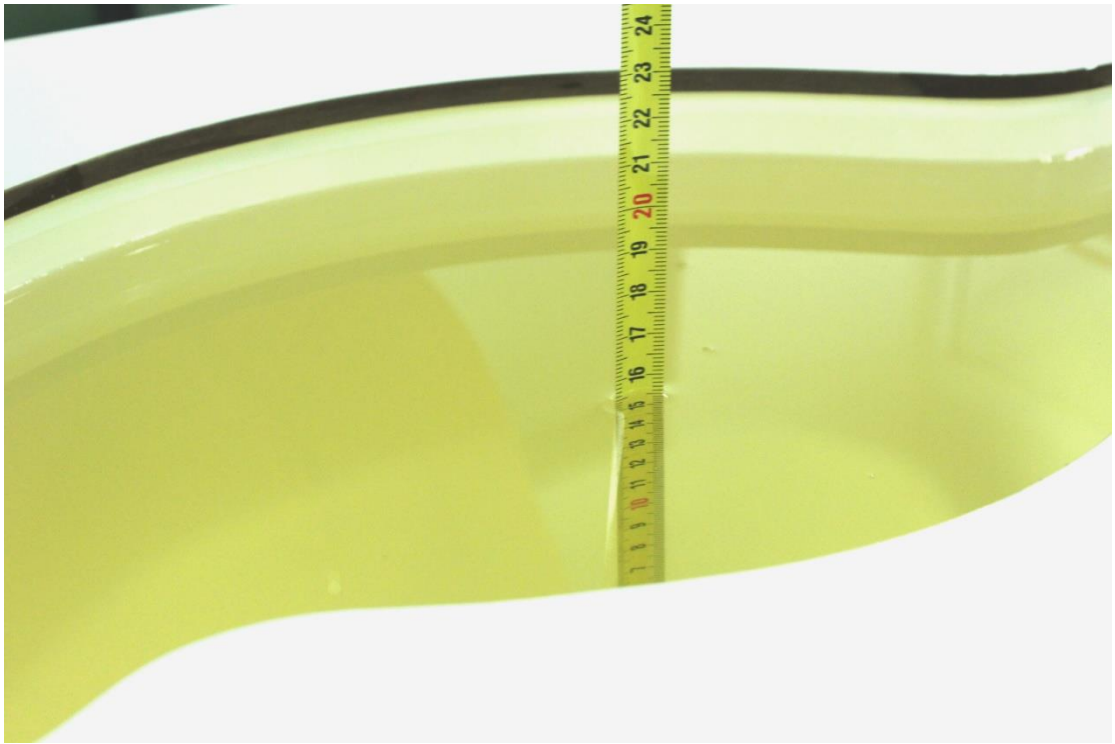
Picture 7-7 Liquid depth in the Head Phantom (1900 MHz)



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

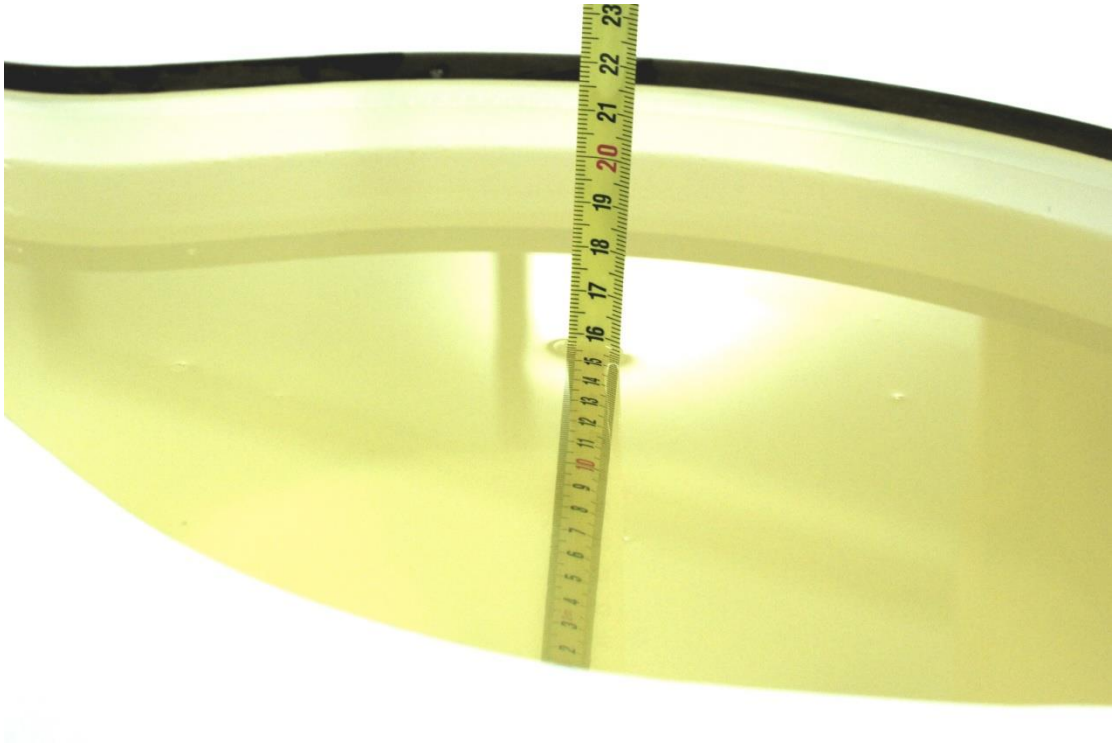


Picture 7-9 Liquid depth in the Head Phantom (2450MHz)

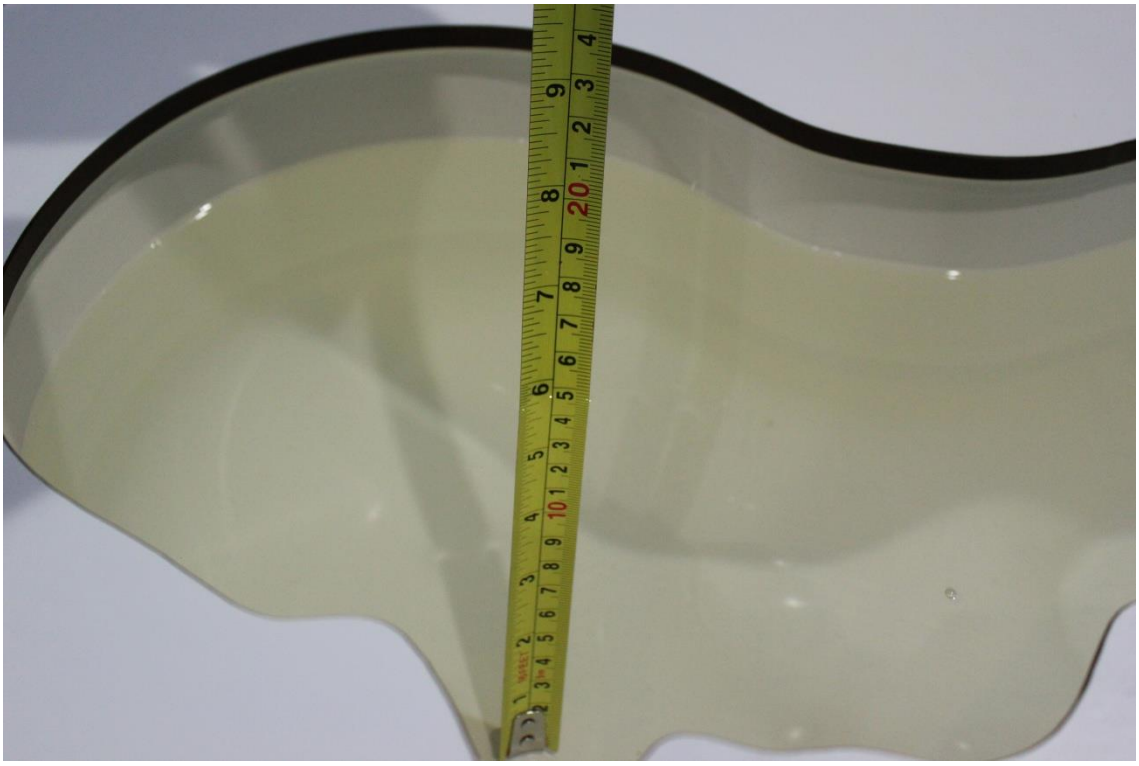


Picture 7-10 Liquid depth in the Flat Phantom (2450MHz)

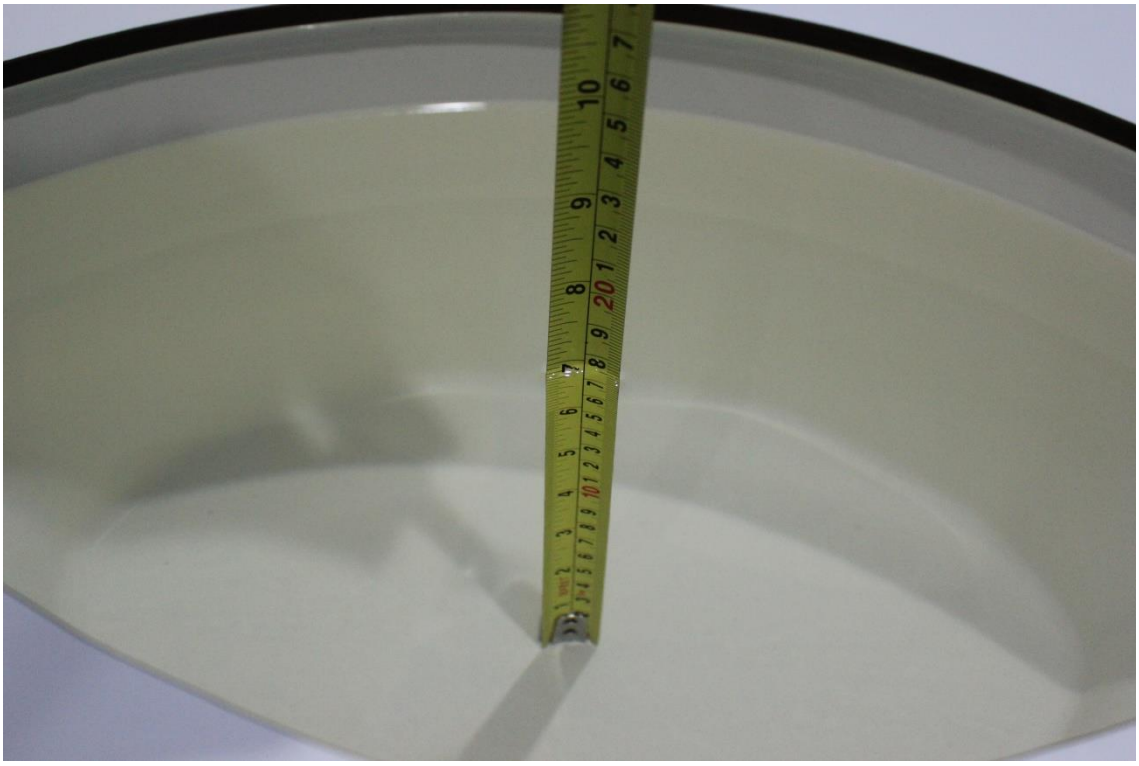
Picture 7-11 Liquid depth in the Head Phantom (2600 MHz)



Picture 7-12 Liquid depth in the Flat Phantom (2600MHz)



Picture 7-11 Liquid depth in the Head Phantom (5GHz)

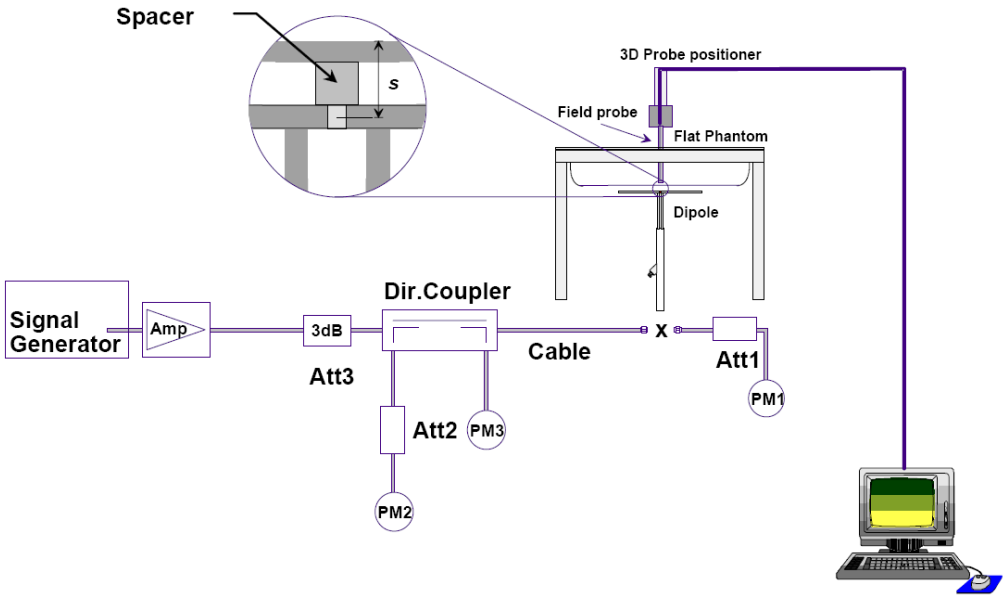


Picture 7-12 Liquid depth in the Flat Phantom (5GHz)

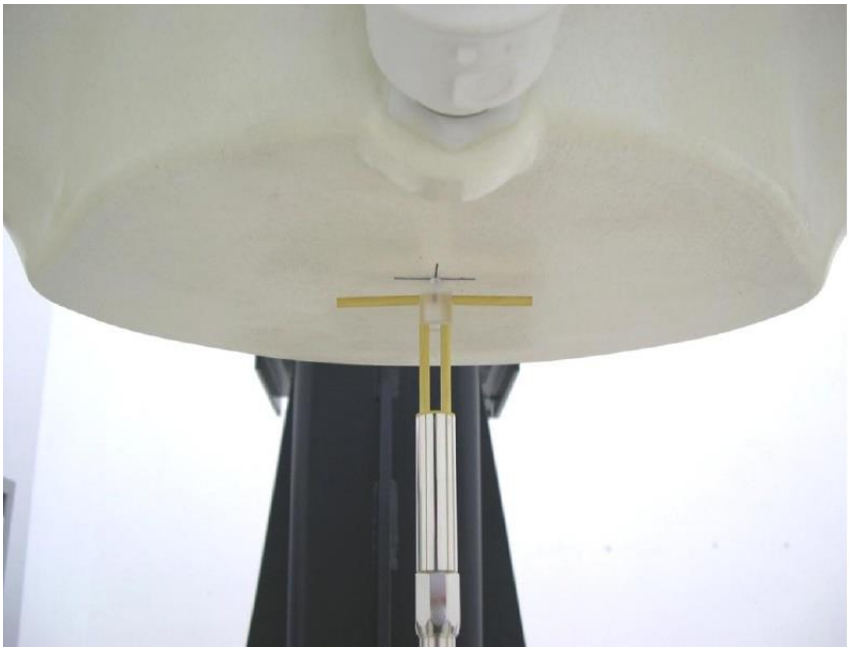
8 System verification

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
2019/9/1	750 MHz	5.57	8.57	5.56	8.56	-0.18%	-0.12%
2019/9/2	835 MHz	6.29	9.70	6.2	9.6	-1.43%	-1.03%
2019/9/3	1750 MHz	19.3	36.6	18.96	35.96	-1.76%	-1.75%
2019/9/4	1900 MHz	20.8	39.7	21.16	39.88	1.73%	0.45%
2019/9/5	2450 MHz	24.2	51.6	23.84	51.44	-1.49%	-0.31%
2019/9/5	2600 MHz	25.1	55.8	25.04	56.56	-0.24%	1.36%
2019/9/6	5250 MHz	23.1	80.8	23.6	78.9	2.16%	-2.35%
2019/9/6	5600 MHz	23.8	83.6	24.3	82.8	2.10%	-0.96%
2019/9/6	5750 MHz	23.1	81.7	23.4	79.9	1.30%	-2.20%

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
2019/9/1	750 MHz	5.63	8.55	5.68	8.72	0.89%	1.99%
2019/9/2	835 MHz	6.32	9.68	6.36	9.56	0.63%	-1.24%
2019/9/3	1750 MHz	19.5	36.8	19.24	37.32	-1.33%	1.41%
2019/9/4	1900 MHz	20.9	39.7	20.8	39.08	-0.48%	-1.56%
2019/9/5	2450 MHz	24.5	52.3	24.44	52.8	-0.24%	0.96%
2019/9/5	2600 MHz	24.8	55	24.8	54.56	0.00%	-0.80%
2019/9/6	5250 MHz	21.0	75.3	21.1	75.7	0.48%	0.53%
2019/9/6	5600 MHz	21.8	78.1	21.9	79.6	0.46%	1.92%
2019/9/6	5750 MHz	20.8	75.2	21.5	76.3	3.37%	1.46%

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.

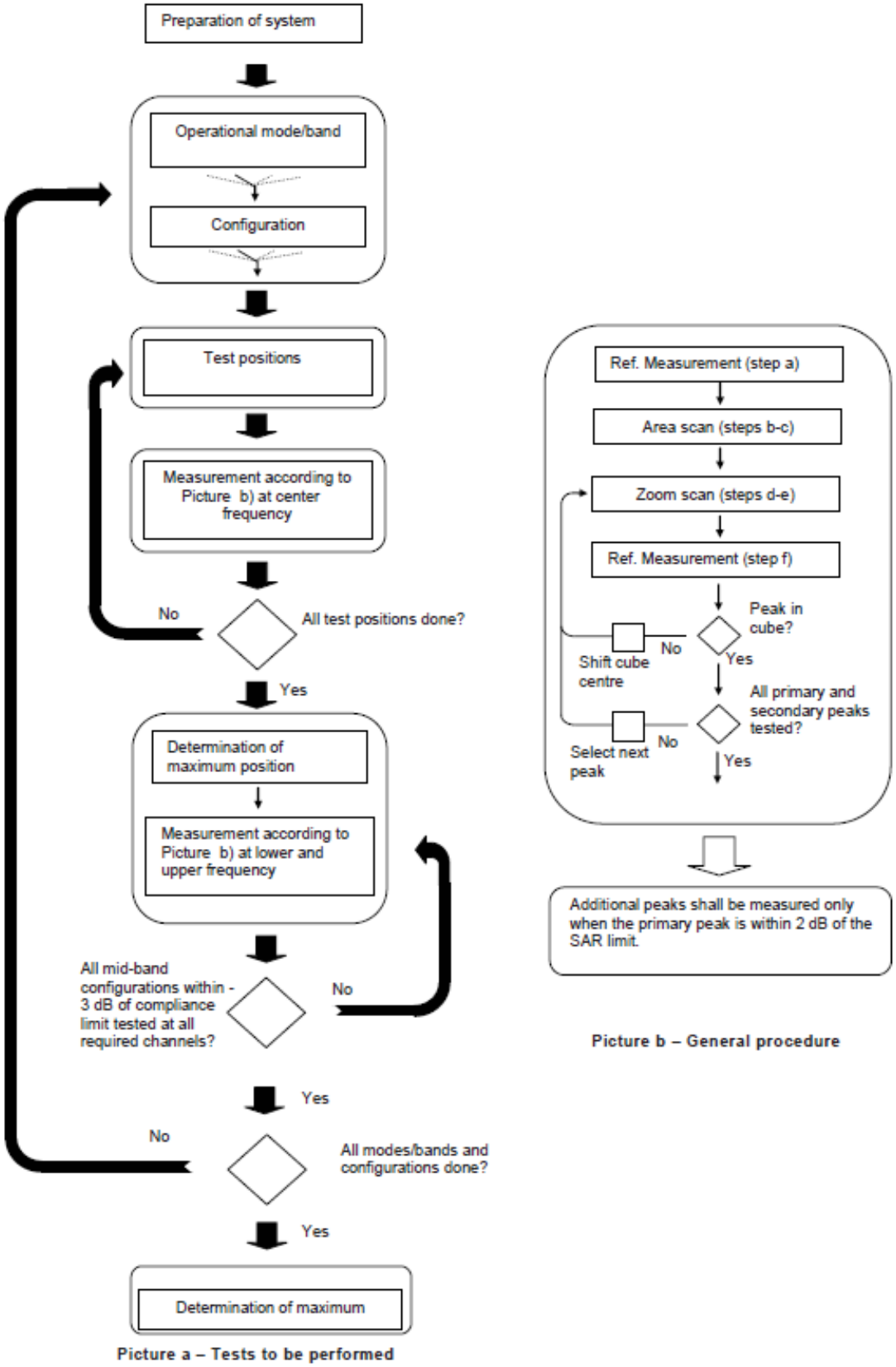
Step 1: The tests described in 9.2 shall be performed at the channel that is closest to the centre of the transmit frequency band (f_c) for:

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.

TDD test:

TDD testing is performed using guidance from FCC KDB 941225 D05 and the SAR test guidance provided in April 2013 TCB works hop notes. TDD is tested at the highest duty factor using UL-DL configuration 0 with special subframe configuration 6 and applying the FDD LTE procedures in KDB 941225 D05. SAR testing is performed using the extended cyclic prefix listed in 3GPP TS 36.211.

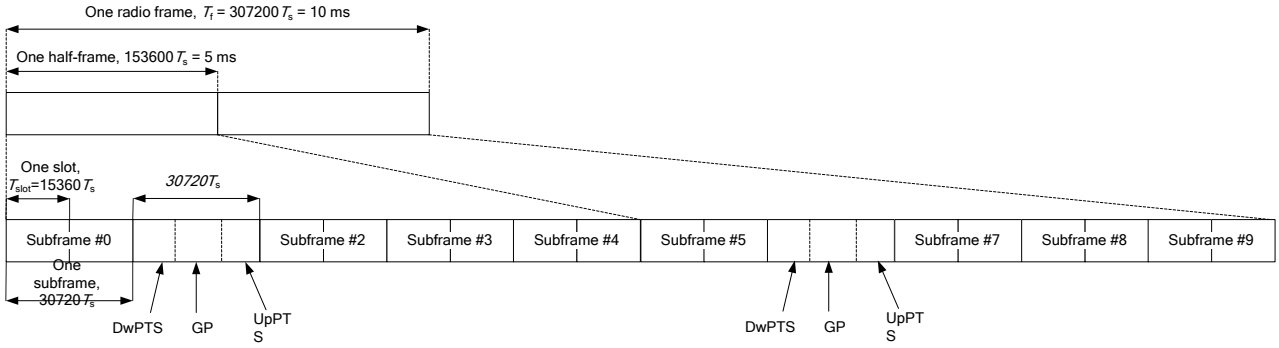


Figure 9.2: Frame structure type 2 (for 5 ms switch-point periodicity)

Table 9.1: Configuration of special subframe (lengths of DwPTS/GP/UpPTS)

Special subframe configuration	Normal cyclic prefix in downlink			Extended cyclic prefix in downlink		
	DwPTS	UpPTS		DwPTS	UpPTS	
		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink
0	$6592 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$	$7680 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$
1	$19760 \cdot T_s$			$20480 \cdot T_s$		
2	$21952 \cdot T_s$			$23040 \cdot T_s$		
3	$24144 \cdot T_s$			$25600 \cdot T_s$		
4	$26336 \cdot T_s$			$7680 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$
5	$6592 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$	$20480 \cdot T_s$		
6	$19760 \cdot T_s$			$23040 \cdot T_s$		
7	$21952 \cdot T_s$			$12800 \cdot T_s$		
8	$24144 \cdot T_s$			-	-	-
9	$13168 \cdot T_s$			-	-	-

Table 9.2: Uplink-downlink configurations

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

Duty factor is calculated by:

Duty factor = uplink frame*6+UpPTS*2/one frame length

= (30720.T_s * 6+5120. T_s*2)/307200.T_s

= 0.633

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.

9.6 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, 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

There are two sets of tune-up power, Normal power and Low power, for LTE Band7 by proximity sensor. The detail of proximity sensor is presented in annex I.

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

GSM 850	Measured Power (dBm)			Tune up	calculation	Averaged Power (dBm)		
Speech (GMSK)	251	190	128			251	190	128
1 Txslot	32.89	32.91	32.89	34.00	/	/	/	/
GSM 850	Measured Power (dBm)				calculation	Averaged Power (dBm)		
GPRS (GMSK)	251	190	128			251	190	128
1 Txslot	32.88	32.90	32.87	34.00	-9.03	23.85	23.87	23.84
2 Txslots	**29.94**	**29.92**	**29.92**	**31.00**	**-6.02**	**23.92**	**23.90**	**23.90**
3Txslots	27.95	27.91	27.91	29.50	-4.26	23.69	23.65	23.65
4 Txslots	26.82	26.81	26.77	28.50	-3.01	23.81	23.80	23.76
GSM 850	Measured Power (dBm)				calculation	Averaged Power (dBm)		
EGPRS (GMSK)	251	190	128			251	190	128
1 Txslot	32.88	32.88	32.86	34.00	-9.03	23.85	23.85	23.83
2 Txslots	**29.94**	**29.91**	**29.91**	**31.00**	**-6.02**	**23.92**	**23.89**	**23.89**
3Txslots	27.95	27.90	27.90	29.50	-4.26	23.69	23.64	23.64
4 Txslots	26.82	26.80	26.77	28.50	-3.01	23.81	23.79	23.76
GSM 850	Measured Power (dBm)				calculation	Averaged Power (dBm)		
EGPRS (8PSK)	251	190	128			251	190	128
1 Txslot	25.77	25.83	25.87	27.00	-9.03	16.74	16.80	16.84
2 Txslots	22.92	22.93	22.97	24.00	-6.02	16.90	16.91	16.95
3Txslots	21.26	21.30	21.37	23.00	-4.26	17.00	17.04	17.11
4 Txslots	20.22	20.55	20.34	22.00	-3.01	17.21	17.54	17.33
PCS1900	Measured Power (dBm)			Tune up	calculation	Averaged Power (dBm)		
Speech (GMSK)	810	661	512			810	661	512
1 Txslot	30.19	30.04	29.86	31.00	/	/	/	/
PCS1900	Measured Power (dBm)				calculation	Averaged Power (dBm)		
GPRS (GMSK)	810	661	512			810	661	512
1 Txslot	30.20	30.03	29.88	31.00	-9.03	21.17	21.00	20.85
2 Txslots	**27.25**	**27.08**	**26.97**	**28.00**	**-6.02**	**21.23**	**21.06**	**20.95**
3Txslots	25.23	25.08	24.92	26.50	-4.26	20.97	20.82	20.66
4 Txslots	24.15	23.99	23.85	25.50	-3.01	21.14	20.98	20.84
PCS1900	Measured Power (dBm)				calculation	Averaged Power (dBm)		

EGPRS (GMSK)	810	661	512			810	661	512
1 Txslot	30.17	30.03	29.85	31.00	-9.03	21.14	21.00	20.82
2 Txslots	**27.23**	**27.08**	**26.94**	**28.00**	**-6.02**	**21.21**	**21.06**	**20.92**
3Txslots	25.21	25.08	24.89	26.50	-4.26	20.95	20.82	20.63
4 Txslots	24.13	23.99	23.82	25.50	-3.01	21.12	20.98	20.81
PCS1900	Measured Power (dBm)				calculation	Averaged Power (dBm)		
EGPRS (8PSK)	810	661	512			810	661	512
1 Txslot	25.66	25.68	25.71	27.00	-9.03	16.63	16.65	16.68
2 Txslots	23.17	23.21	23.36	24.00	-6.02	17.15	17.19	17.34
3Txslots	21.35	21.37	21.51	23.00	-4.26	17.09	17.11	17.25
4 Txslots	20.34	20.53	20.68	22.00	-3.01	17.33	17.52	17.67

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

Table 11.2-1: The conducted Power for WCDMA

Item	band	FDDV result			
	ARFCN	4233 (846.6MHz)	4182 (836.4MHz)	4132 (826.4MHz)	Tune up
WCDMA	\	23.86	23.90	23.89	24.70
HSUPA	1	22.83	22.87	22.78	23.70
	2	22.86	22.82	22.81	23.70
	3	22.36	22.31	22.34	23.20
	4	22.86	22.82	22.81	23.70
	5	21.76	21.74	21.76	22.70
DC-HSDPA	1	21.96	21.87	21.94	23.20
	2	21.76	21.76	21.91	23.20
	3	21.37	21.34	21.45	22.20
	4	21.35	21.36	21.42	22.20
Item	band	FDDII result			
	ARFCN	9538 (1907.6MHz)	9400 (1880MHz)	9262 (1852.4MHz)	Tune up
WCDMA	\	23.31	23.35	23.38	24.00
HSUPA	1	22.07	22.03	22.16	23.00
	2	22.17	22.14	22.21	23.00
	3	21.66	21.69	21.74	22.50

	4	22.22	22.19	22.26	23.00
	5	21.06	21.19	21.14	22.00
DC-HSDPA	1	22.15	22.14	22.19	23.00
	2	22.04	22.02	22.14	23.00
	3	21.61	21.63	21.70	22.50
	4	21.6	21.63	21.66	22.50
Item	**band**	**FDDIV result**			
	ARFCN	**1513 (1752.6MHz)**	**1412 (1732.4MHz)**	**1312 (1712.4MHz)**	**Tune up**
WCDMA	\	23.48	23.42	23.32	24.00
HSUPA	1	22.47	22.41	22.31	23.00
	2	22.48	22.52	22.34	23.00
	3	22.06	21.98	21.90	22.50
	4	22.51	22.48	22.36	23.00
	5	21.97	21.44	21.41	22.00
DC-HSDPA	1	22.46	22.49	22.34	23.00
	2	22.33	22.32	22.14	23.00
	3	21.94	21.98	21.80	22.50
	4	21.91	21.92	21.79	22.50

11.3 LTE Measurement result

Table 11.3-1: Maximum Power Reduction (MPR) for LTE

Modulation	Channel bandwidth / Transmission bandwidth configuration [RB]						MPR (dB)
	1.4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20 MHz	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	1
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	1
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	2
64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	2
64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	3

Table 11.3-2: The tune up for LTE – Normal Power

Band	Tune up
LTE Band 2	24
LTE Band 5	24.7
LTE Band 7	24
LTE Band 12	24.7
LTE Band 13	24
LTE Band 38	24.7
LTE Band 66	24

Table 11.3-3: The tune up for LTE – Low Power

Band	Tune up
LTE Band 7	23

Note：The MPR is not apply to the low power

Table 11.4-1: The conducted Power for LTE– Normal power

Band 2					
Bandwidth (MHz)	RB allocation	Frequency (MHz)	Actual output power (dBm)		
	RB offset		QPSK	16QAM	64QAM
1.4 MHz	1RB_High	1909.3	22.94	21.87	21.38
		1880	22.96	21.97	21.34
		1850.7	22.91	21.72	21.35
	1RB_Middle	1909.3	23.01	22.02	21.47
		1880	23.08	22.15	21.49
		1850.7	23.06	22.39	21.36
	1RB_Low	1909.3	22.85	21.85	21.37
		1880	22.86	21.98	21.49
		1850.7	22.80	22.24	21.28
	3RB_High	1909.3	22.93	22.07	21.34
		1880	22.99	22.02	21.34
		1850.7	23.00	22.14	21.29
	3RB_Middle	1909.3	23.03	22.14	21.37
		1880	23.04	22.04	21.38
		1850.7	23.04	22.15	21.32
	3RB_Low	1909.3	23.02	22.10	21.30
		1880	22.98	22.05	21.36
		1850.7	22.97	22.14	21.33
	6RB	1909.3	21.92	21.07	20.26
		1880	21.93	21.06	20.24
		1850.7	21.93	20.85	20.22
3 MHz	1RB_High	1908.5	22.95	22.21	21.42
		1880	22.86	21.93	21.46
		1851.5	22.96	21.84	21.40
	1RB_Middle	1908.5	23.07	22.40	21.44
		1880	23.04	22.07	21.48
		1851.5	23.07	21.98	21.39
	1RB_Low	1908.5	22.93	22.24	21.40
		1880	22.89	22.03	21.47
		1851.5	22.92	21.89	21.36
	8RB_High	1908.5	21.92	20.99	20.34
		1880	21.93	20.98	20.31
		1851.5	21.90	21.06	20.26
	8RB_Middle	1908.5	21.97	21.02	20.36
		1880	21.96	21.01	20.34

		1851.5	21.99	21.11	20.28
	8RB_Low	1908.5	21.93	21.04	20.35
		1880	21.93	20.97	20.29
		1851.5	21.93	21.03	20.30
	15RB	1908.5	21.92	20.95	20.31
		1880	21.92	20.90	20.24
		1851.5	21.92	20.98	20.21
5 MHz	1RB_High	1907.5	22.76	21.87	21.32
		1880	22.78	21.97	21.27
		1852.5	22.85	22.33	21.24
	1RB_Middle	1907.5	23.05	22.16	21.43
		1880	23.06	22.29	21.40
		1852.5	23.11	22.63	21.37
	1RB_Low	1907.5	22.74	21.89	21.31
		1880	22.77	22.01	21.27
		1852.5	22.83	22.30	21.23
	12RB_High	1907.5	21.83	20.91	20.29
		1880	21.91	21.00	20.24
		1852.5	21.91	21.09	20.24
	12RB_Middle	1907.5	21.96	21.03	20.38
		1880	21.96	21.05	20.28
		1852.5	21.97	21.12	20.24
	12RB_Low	1907.5	21.89	20.93	20.25
		1880	21.88	20.99	20.19
		1852.5	21.89	21.04	20.19
	25RB	1907.5	21.91	20.87	20.31
		1880	21.90	20.96	20.22
		1852.5	21.90	21.00	20.19
10MHz	1RB_High	1905	22.94	21.81	21.33
		1880	22.85	21.82	21.32
		1855	22.96	22.20	21.28
	1RB_Middle	1905	23.11	21.96	21.42
		1880	22.97	21.93	21.44
		1855	23.06	22.34	21.38
	1RB_Low	1905	22.86	21.77	21.29
		1880	22.86	21.77	21.37
		1855	22.89	22.21	21.28
	25RB_High	1905	21.94	21.03	20.29
		1880	22.01	21.05	20.26
		1855	21.97	20.99	20.19
	25RB_Middle	1905	21.96	20.99	20.38
		1880	21.95	21.00	20.35
		1855	22.04	21.00	20.33
	25RB_Low	1905	21.95	21.04	20.36
		1880	21.92	20.97	20.22
		1855	22.01	20.99	20.26
	50RB	1905	21.97	20.97	20.27
		1880	21.98	20.98	20.12
		1855	21.98	20.96	20.12

15MHz	1RB_High	1902.5	22.76	22.13	21.26
		1880	22.71	21.66	21.24
		1857.5	22.83	22.13	21.29
	1RB_Middle	1902.5	22.85	22.23	21.34
		1880	22.87	21.82	21.36
		1857.5	22.98	22.26	21.33
	1RB_Low	1902.5	22.83	22.15	21.21
		1880	22.77	21.72	21.24
		1857.5	22.89	22.16	21.29
	36RB_High	1902.5	21.95	20.88	20.13
		1880	21.92	20.91	20.12
		1857.5	21.92	20.89	20.04
	36RB_Middle	1902.5	21.93	20.84	20.10
		1880	21.94	20.91	20.13
		1857.5	21.98	20.97	20.09
	36RB_Low	1902.5	21.99	20.87	20.12
		1880	21.93	20.86	20.09
		1857.5	21.90	20.94	20.05
	75RB	1902.5	21.96	20.93	20.11
		1880	21.93	20.92	20.08
		1857.5	21.95	20.92	20.05
20MHz	1RB_High	1900	22.65	22.16	21.16
		1880	22.59	22.05	21.34
		1860	22.70	22.24	21.15
	1RB_Middle	1900	23.00	22.34	21.28
		1880	22.95	22.44	21.35
		1860	23.01	22.49	21.31
	1RB_Low	1900	22.67	22.13	21.13
		1880	22.65	22.11	21.13
		1860	22.66	22.25	21.07
	50RB_High	1900	21.75	20.78	20.08
		1880	21.87	20.88	20.13
		1860	21.75	20.78	20.00
	50RB_Middle	1900	21.84	20.89	20.17
		1880	21.87	20.90	20.15
		1860	21.87	20.91	20.12
	50RB_Low	1900	21.90	20.95	20.24
		1880	21.88	20.86	20.11
		1860	21.89	20.91	20.15
	100RB	1900	21.83	20.84	20.13
		1880	21.89	20.94	20.13
		1860	21.80	20.86	20.04

Band 5					
Bandwidth (MHz)	RB allocation RB offset (Start RB)	Frequency (MHz)	QPSK Actual output power (dBm)	16QAM Actual output power (dBm)	64QAM Actual output power (dBm)
1.4 MHz	1RB High (5)	848.3	23.43	22.44	21.93
		836.5	23.44	22.55	21.87
		824.7	23.51	22.85	21.89
	1RB Middle (3)	848.3	23.62	22.58	21.11
		836.5	23.67	22.69	21.94
		824.7	23.71	23.00	21.96
	1RB Low (0)	848.3	23.47	22.46	21.95
		836.5	23.50	22.51	21.95
		824.7	23.57	22.86	21.01
	3RB High (3)	848.3	23.60	22.67	21.83
		836.5	23.53	22.56	21.84
		824.7	23.61	22.77	21.91
	3RB Middle (1)	848.3	23.55	22.72	21.91
		836.5	23.56	22.59	21.95
		824.7	23.62	22.76	21.90
	3RB Low (0)	848.3	23.48	22.66	21.92
		836.5	23.53	22.58	21.81
		824.7	23.67	22.76	21.89
	6RB (0)	848.3	22.59	21.71	20.70
		836.5	22.52	21.67	20.65
		824.7	22.56	21.46	20.72
3 MHz	1RB High (14)	847.5	23.48	22.42	21.95
		836.5	23.59	22.43	21.93
		825.5	23.60	22.90	22.12
	1RB Middle (7)	847.5	23.66	22.66	21.96
		836.5	23.65	22.54	21.82
		825.5	23.71	23.06	22.01
	1RB Low (0)	847.5	23.54	22.60	21.91
		836.5	23.49	22.45	21.88
		825.5	23.61	22.91	22.07
	8RB High (7)	847.5	22.56	21.56	20.76
		836.5	22.56	21.65	20.68
		825.5	22.58	21.67	20.71
	8RB Middle (4)	847.5	22.62	21.66	20.74
		836.5	22.64	21.73	20.40
		825.5	22.63	21.71	20.76
	8RB Low (0)	847.5	22.59	21.59	20.76
		836.5	22.55	21.66	20.69
		825.5	22.57	21.69	20.71
	15RB (0)	847.5	22.55	21.53	20.71
		836.5	22.59	21.60	20.77
		825.5	22.56	21.63	20.72
5 MHz	1RB High (24)	846.5	23.46	22.51	21.88
		836.5	23.53	22.61	21.81
		826.5	23.45	22.96	21.92

	1RB Middle (12)	846.5	23.70	22.75	22.01
		836.5	23.76	22.81	21.96
		826.5	23.67	23.19	21.98
	1RB Low (0)	846.5	23.44	22.57	21.84
		836.5	23.52	22.63	21.88
		826.5	23.50	22.99	21.84
	12RB High (13)	846.5	22.54	21.60	20.76
		836.5	22.53	21.60	20.68
		826.5	22.57	21.75	20.72
	12RB Middle (6)	846.5	22.60	21.68	20.80
		836.5	22.63	21.68	20.78
		826.5	22.60	21.77	20.76
	12RB Low (0)	846.5	22.56	21.60	20.76
		836.5	22.59	21.63	20.79
		826.5	22.54	21.68	20.71
	25RB (0)	846.5	22.59	21.53	20.80
		836.5	22.57	21.62	20.74
		826.5	22.58	21.66	20.73
10 MHz	1RB High (49)	844.0	23.53	22.39	21.84
		836.5	23.53	22.86	21.79
		829.0	23.44	22.51	21.75
	1RB Middle (24)	844.0	23.60	22.49	21.98
		836.5	23.62	22.92	21.86
		829.0	23.55	22.62	21.89
	1RB Low (0)	844.0	23.41	22.38	21.88
		836.5	23.50	22.83	21.79
		829.0	23.48	22.51	21.86
	25RB High (25)	844.0	22.58	21.64	20.71
		836.5	22.51	21.54	20.55
		829.0	22.58	21.68	20.62
	25RB Middle (12)	844.0	22.59	21.67	20.69
		836.5	22.57	21.64	20.66
		829.0	22.59	21.67	20.60
	25RB Low (0)	844.0	22.60	21.67	20.74
		836.5	22.57	21.62	20.62
		829.0	22.48	21.64	20.56
	50RB (0)	844.0	22.61	21.63	20.73
		836.5	22.56	21.57	20.64
		829.0	22.54	21.61	20.58

Band 7					
Bandwidth (MHz)	RB allocation RB offset (Start RB)	Frequency (MHz)	QPSK Actual output power (dBm)	16QAM Actual output power (dBm)	64QAM Actual output power (dBm)
5 MHz	1RB High (24)	2567.5	22.81	21.88	21.25
		2535	22.92	21.98	21.09
		2502.5	22.96	22.42	21.44
	1RB Middle (12)	2567.5	23.11	22.16	21.29
		2535	23.17	22.24	21.23
		2502.5	23.29	22.50	21.56
	1RB Low (0)	2567.5	22.82	21.90	21.21
		2535	22.90	21.95	21.15
		2502.5	23.03	22.48	21.49
	12RB High (13)	2567.5	21.86	20.91	20.23
		2535	21.94	20.96	20.06
		2502.5	22.13	21.23	20.46
	12RB Middle (6)	2567.5	21.95	20.99	20.22
		2535	21.96	21.00	20.14
		2502.5	22.14	21.23	20.49
	12RB Low (0)	2567.5	21.90	20.93	20.24
		2535	21.92	20.94	20.06
		2502.5	22.08	21.18	20.44
	25RB (0)	2567.5	21.89	20.85	20.16
		2535	21.93	20.92	20.07
		2502.5	22.08	21.12	20.43
10 MHz	1RB High (49)	2565	22.83	21.87	21.31
		2535	22.90	21.77	21.16
		2505	23.01	22.32	21.41
	1RB Middle (24)	2565	22.95	21.96	21.31
		2535	23.02	21.90	21.27
		2505	23.22	22.43	21.55
	1RB Low (0)	2565	22.83	21.83	21.35
		2535	22.91	21.82	21.23
		2505	23.14	22.38	21.58
	25RB High (25)	2565	21.85	20.97	20.15
		2535	21.94	20.96	20.11
		2505	22.08	21.08	20.43
	25RB Middle (12)	2565	21.90	20.97	20.17
		2535	21.95	20.97	20.10
		2505	22.12	21.15	20.41
	25RB Low (0)	2565	21.86	21.00	20.18
		2535	21.93	20.95	20.11
		2505	22.06	21.11	20.42
	50RB (0)	2565	21.89	20.89	20.23
		2535	21.94	20.95	20.12
		2505	22.06	21.14	20.45
15 MHz	1RB High (74)	2562.5	22.81	22.12	21.15
		2535	22.78	21.66	21.07

		2507.5	22.91	22.23	21.29
	1RB Middle (37)	2562.5	22.98	22.24	21.25
		2535	22.95	21.84	21.20
		2507.5	23.09	22.35	21.27
	1RB Low (0)	2562.5	22.81	22.09	21.39
		2535	22.88	21.75	21.23
		2507.5	23.09	22.36	21.51
	36RB High (38)	2562.5	21.96	20.87	20.12
		2535	21.99	20.87	20.08
		2507.5	22.13	21.07	20.29
	36RB Middle (19)	2562.5	21.97	20.92	20.14
		2535	22.02	20.95	20.11
		2507.5	22.16	21.12	20.37
	36RB Low (0)	2562.5	21.94	20.85	20.09
		2535	22.00	20.90	20.08
		2507.5	22.17	21.09	20.42
	75RB (0)	2562.5	21.93	20.90	20.12
		2535	22.01	20.93	20.10
		2507.5	22.14	21.12	20.31
20 MHz	1RB High (99)	2560	22.74	22.07	21.13
		2535	22.75	22.24	20.92
		2510	22.81	22.20	21.09
	1RB Middle (50)	2560	23.01	22.36	21.34
		2535	23.11	22.45	21.21
		2510	23.17	22.41	21.38
	1RB Low (0)	2560	22.71	22.06	21.02
		2535	22.83	22.29	21.03
		2510	22.99	22.33	21.38
	50RB High (50)	2560	21.80	20.80	20.07
		2535	21.89	20.91	20.00
		2510	22.02	20.95	20.14
	50RB Middle (25)	2560	21.89	20.87	20.18
		2535	21.94	20.98	20.30
		2510	22.07	21.08	20.24
	50RB Low (0)	2560	21.82	20.79	20.09
		2535	21.83	20.90	20.04
		2510	22.02	21.00	20.18
	100RB (0)	2560	21.82	20.83	20.08
		2535	21.87	20.93	19.99
		2510	22.04	21.04	20.15

Band 12					
Bandwidth (MHz)	RB allocation RB offset (Start RB)	Frequency (MHz)	QPSK Actual output power (dBm)	16QAM Actual output power (dBm)	64QAM Actual output power (dBm)
1.4 MHz	1RB High (5)	715.3	23.21	22.17	21.67
		707.5	23.29	22.20	21.61
		699.7	23.31	22.52	21.68
	1RB Middle (3)	715.3	23.39	22.30	21.56
		707.5	23.46	22.41	21.66
		699.7	23.50	22.69	21.72
	1RB Low (0)	715.3	23.16	22.16	21.68
		707.5	23.29	22.21	21.56
		699.7	23.28	22.55	21.67
	3RB High (3)	715.3	23.23	22.40	21.56
		707.5	23.26	22.23	21.53
		699.7	23.32	22.43	21.63
	3RB Middle (1)	715.3	23.30	22.44	21.56
		707.5	23.32	22.27	21.64
		699.7	23.37	22.43	21.61
	3RB Low (0)	715.3	23.24	22.38	21.59
		707.5	23.23	22.24	21.55
		699.7	23.34	22.42	21.61
	6RB (0)	715.3	22.31	21.42	20.61
		707.5	22.27	21.39	20.54
		699.7	22.30	21.19	20.65
3 MHz	1RB High (14)	714.5	23.21	22.14	21.52
		707.5	23.29	22.03	21.61
		700.5	23.30	22.54	21.66
	1RB Middle (7)	714.5	23.36	22.33	21.59
		707.5	23.39	22.19	21.59
		700.5	23.47	22.68	21.53
	1RB Low (0)	714.5	23.25	22.18	21.53
		707.5	23.24	22.08	21.48
		700.5	23.36	22.55	21.67
	8RB High (7)	714.5	22.27	21.31	20.51
		707.5	22.25	21.34	20.56
		700.5	22.27	21.33	20.59
	8RB Middle (4)	714.5	22.32	21.34	20.59
		707.5	22.26	21.39	20.57
		700.5	22.35	21.41	20.62
	8RB Low (0)	714.5	22.30	21.30	20.46
		707.5	22.25	21.34	20.57
		700.5	22.30	21.36	20.59
	15RB (0)	714.5	22.25	21.21	20.50
		707.5	22.22	21.27	20.51
		700.5	22.29	21.33	20.55
5 MHz	1RB High (24)	713.5	23.23	22.20	21.55
		707.5	23.24	22.21	21.53

		701.5	23.18	22.60	21.58
	1RB Middle (12)	713.5	23.39	22.37	21.57
		707.5	23.49	22.48	21.66
		701.5	23.42	22.86	21.73
	1RB Low (0)	713.5	23.17	22.12	21.53
		707.5	23.28	22.27	21.74
		701.5	23.21	22.58	21.63
	12RB High (13)	713.5	22.11	21.19	20.40
		707.5	22.24	21.32	20.59
		701.5	22.21	21.34	20.52
	12RB Middle (6)	713.5	22.26	21.31	20.56
		707.5	22.26	21.34	20.57
		701.5	22.27	21.43	20.71
	12RB Low (0)	713.5	22.26	21.32	20.57
		707.5	22.26	21.31	20.58
		701.5	22.22	21.37	20.53
	25RB (0)	713.5	22.17	21.18	20.47
		707.5	22.24	21.32	20.56
		701.5	22.20	21.30	20.58
10 MHz	1RB High (49)	711	23.33	22.55	21.47
		707.5	23.19	22.10	21.49
		704	23.25	22.07	21.53
	1RB Middle (24)	711	23.42	22.60	21.64
		707.5	23.37	22.26	21.71
		704	23.39	22.24	21.76
	1RB Low (0)	711	23.25	22.51	21.61
		707.5	23.15	22.11	21.62
		704	23.29	22.06	21.68
	25RB High (25)	711	22.10	21.16	20.35
		707.5	22.30	21.44	20.56
		704	22.30	21.36	20.54
	25RB Middle (12)	711	22.27	21.33	20.51
		707.5	22.30	21.43	20.56
		704	22.36	21.41	20.58
	25RB Low (0)	711	22.17	21.24	20.47
		707.5	22.30	21.40	20.60
		704	22.28	21.33	20.58
	50RB (0)	711	22.16	21.21	20.42
		707.5	22.33	21.39	20.60
		704	22.33	21.35	20.55

Band 13					
Bandwidth (MHz)	RB allocation RB offset (Start RB)	Frequency (MHz)	QPSK Actual output power (dBm)	16QAM Actual output power (dBm)	64QAM Actual output power (dBm)
5 MHz	1RB High (24)	784.4	22.91	21.85	21.29
		782	22.94	21.87	21.18
		799.5	22.89	22.18	21.17
	1RB Middle (12)	784.4	23.03	22.01	21.29
		782	23.13	22.07	21.22
		799.5	23.09	22.21	21.27
	1RB Low (0)	784.4	22.81	21.79	21.20
		782	22.96	21.87	21.22
		799.5	22.88	22.20	21.17
	12RB High (13)	784.4	21.84	20.84	20.16
		782	21.84	20.85	20.18
		799.5	21.88	20.96	20.16
	12RB Middle (6)	784.4	21.90	20.92	20.21
		782	21.87	20.91	20.25
		799.5	21.93	21.01	20.28
	12RB Low (0)	784.4	21.87	20.89	20.19
		782	21.85	20.85	20.22
		799.5	21.84	20.93	20.15
	25RB (0)	784.4	21.83	20.80	20.17
		782	21.82	20.82	20.17
		799.5	21.86	20.90	20.19
10 MHz	1RB High (49)	782	22.93	21.78	21.18
	1RB Middle (24)	782	23.01	21.87	21.25
	1RB Low (0)	782	22.88	21.68	21.19
	25RB High (25)	782	21.84	20.95	20.08
	25RB Middle (12)	782	21.91	20.95	20.12
	25RB Low (0)	782	21.87	20.92	20.13
	50RB (0)	782	21.83	20.86	20.12

Band 38					
Bandwidth (MHz)	RB allocation RB offset (Start RB)	Frequency (MHz)	QPSK Actual output power (dBm)	16QAM Actual output power (dBm)	64QAM Actual output power (dBm)
5 MHz	1RB High (24)	2617.5	23.85	22.97	21.91
		2595	23.69	22.70	21.93
		2572.5	23.69	22.61	21.78
	1RB Middle (12)	2617.5	23.85	23.01	22.09
		2595	23.70	22.63	22.11
		2572.5	23.67	22.62	21.92
	1RB Low (0)	2617.5	23.83	22.94	21.95
		2595	23.68	22.67	21.95
		2572.5	23.67	22.61	21.80
	12RB High (13)	2617.5	22.98	22.08	21.11
		2595	22.89	21.89	21.14
		2572.5	22.78	21.72	20.92
	12RB Middle (6)	2617.5	23.15	22.20	21.09
		2595	23.01	21.96	21.14
		2572.5	22.89	21.82	20.94
	12RB Low (0)	2617.5	22.99	21.99	21.07
		2595	22.86	21.83	21.16
		2572.5	22.81	21.73	20.97
	25RB (0)	2617.5	23.03	22.01	21.07
		2595	22.95	21.93	21.21
		2572.5	22.78	21.81	20.95
10 MHz	1RB High (49)	2615	23.94	23.04	21.99
		2595	23.79	22.80	21.98
		2575	23.77	22.73	21.92
	1RB Middle (24)	2615	24.20	23.36	22.12
		2595	24.08	23.09	22.14
		2575	24.05	22.99	22.01
	1RB Low (0)	2615	23.82	23.02	22.05
		2595	23.78	22.78	22.08
		2575	23.76	22.67	21.95
	25RB High (25)	2615	23.06	22.03	21.16
		2595	22.94	21.98	21.19
		2575	22.82	21.81	21.02
	25RB Middle (12)	2615	23.03	22.04	21.16
		2595	22.92	21.93	21.19
		2575	22.84	21.80	21.03
	25RB Low (0)	2615	23.03	22.05	21.16
		2595	22.92	21.92	21.19
		2575	22.83	21.80	21.05
	50RB (0)	2615	22.98	22.06	21.08
		2595	22.94	21.95	21.15
		2575	22.82	21.82	21.01
15 MHz	1RB High (74)	2612.5	23.86	22.93	21.88
		2595	23.68	22.71	21.88

		2577.5	23.68	22.65	21.85
	1RB Middle (37)	2612.5	23.98	23.01	22.07
		2595	23.80	22.83	22.05
		2577.5	23.78	22.73	21.92
	1RB Low (0)	2612.5	23.79	22.88	22.01
		2595	23.69	22.72	22.02
		2577.5	23.69	22.65	21.85
	36RB High (38)	2612.5	22.96	21.98	20.97
		2595	22.94	21.88	21.03
		2577.5	22.80	21.72	20.94
	36RB Middle (19)	2612.5	22.97	21.98	21.02
		2595	22.94	21.91	21.07
		2577.5	22.81	21.71	20.92
	36RB Low (0)	2612.5	22.93	21.92	20.99
		2595	22.86	21.79	21.05
		2577.5	22.76	21.70	20.90
	75RB (0)	2612.5	22.99	21.97	21.05
		2595	22.90	21.89	21.08
		2577.5	22.80	21.76	20.92
20 MHz	1RB High (99)	2610	23.87	22.71	21.85
		2595	23.77	22.92	21.81
		2580	23.69	22.70	21.85
	1RB Middle (50)	2610	24.00	22.86	22.10
		2595	23.96	23.03	22.10
		2580	23.87	22.82	22.06
	1RB Low (0)	2610	23.75	22.61	21.94
		2595	23.72	22.82	21.95
		2580	23.60	22.58	21.86
	50RB High (50)	2610	22.97	21.96	21.01
		2595	22.85	21.94	21.04
		2580	22.80	21.77	20.96
	50RB Middle (25)	2610	22.96	21.99	21.06
		2595	22.90	21.96	21.07
		2580	22.78	21.73	20.98
	50RB Low (0)	2610	22.88	21.85	20.98
		2595	22.80	21.87	21.03
		2580	22.71	21.70	20.98
	100RB (0)	2610	22.91	21.86	21.06
		2595	22.86	21.86	21.10
		2580	22.73	21.73	21.02

Band 66					
Bandwidth (MHz)	RB allocation RB offset (Start RB)	Frequency (MHz)	QPSK Actual output power (dBm)	16QAM Actual output power (dBm)	64QAM Actual output power (dBm)
1.4 MHz	1RB High (5)	1779.3	23.01	22.01	21.45
		1745	22.90	22.28	21.45
		1710.7	22.78	21.91	21.45
	1RB Middle (3)	1779.3	23.22	22.21	21.54
		1745	23.11	22.42	21.57
		1710.7	22.97	22.04	21.56
	1RB Low (0)	1779.3	22.99	22.05	21.46
		1745	22.90	22.27	21.51
		1710.7	22.77	21.90	21.53
	3RB High (3)	1779.3	23.07	22.07	21.46
		1745	23.00	22.18	21.43
		1710.7	23.02	22.17	21.46
	3RB Middle (1)	1779.3	23.09	22.11	21.45
		1745	23.06	22.18	21.45
		1710.7	22.99	22.22	21.47
	3RB Low (0)	1779.3	23.06	22.10	21.45
		1745	23.04	22.20	21.44
		1710.7	22.94	22.13	21.46
	6RB (0)	1779.3	22.07	21.19	20.36
		1745	21.97	20.88	20.38
		1710.7	21.86	21.10	20.37
3 MHz	1RB High (14)	1778.5	23.04	21.88	21.48
		1745	22.94	22.30	21.47
		1711.5	22.75	21.80	21.48
	1RB Middle (7)	1778.5	23.17	22.06	21.48
		1745	23.05	22.41	21.39
		1711.5	22.97	22.05	21.45
	1RB Low (0)	1778.5	22.95	21.92	21.52
		1745	22.92	22.27	21.45
		1711.5	22.82	21.93	21.50
	8RB High (7)	1778.5	21.98	21.16	20.39
		1745	21.89	21.04	20.31
		1711.5	21.84	20.92	20.33
	8RB Middle (4)	1778.5	22.08	21.18	20.41
		1745	21.94	21.11	20.34
		1711.5	21.91	21.03	20.41
	8RB Low (0)	1778.5	22.04	21.17	20.41
		1745	21.95	21.04	20.28
		1711.5	21.88	20.99	20.37
	15RB (0)	1778.5	22.04	21.12	20.36
		1745	21.91	20.99	20.28
		1711.5	21.83	20.87	20.28

5 MHz	1RB High (24)	1777.5	23.01	22.02	21.37
		1745	22.79	22.32	21.33
		1712.5	22.71	21.81	21.41
	1RB Middle (12)	1777.5	23.29	22.28	21.56
		1745	23.04	22.59	21.44
		1712.5	23.01	22.11	21.44
	1RB Low (0)	1777.5	23.00	22.06	21.41
		1745	22.77	22.32	21.30
		1712.5	22.80	21.86	21.43
	12RB High (13)	1777.5	21.97	21.13	20.36
		1745	21.90	21.07	20.24
		1712.5	21.86	20.97	20.31
	12RB Middle (6)	1777.5	22.06	21.18	20.44
		1745	21.97	21.12	20.32
		1712.5	21.88	21.02	20.37
	12RB Low (0)	1777.5	22.00	21.13	20.41
		1745	21.90	21.11	20.29
		1712.5	21.82	20.93	20.22
	25RB (0)	1777.5	22.01	21.09	20.37
		1745	21.90	21.03	20.24
		1712.5	21.86	20.90	20.27
10 MHz	1RB High (49)	1775	22.94	21.84	21.45
		1745	22.92	22.25	21.42
		1715	22.79	21.84	21.40
	1RB Middle (24)	1775	23.13	21.98	21.62
		1745	23.01	22.34	21.55
		1715	22.87	22.02	21.59
	1RB Low (0)	1775	22.97	21.87	21.52
		1745	22.89	22.17	21.42
		1715	22.73	21.84	21.52
	25RB High (25)	1775	22.02	21.10	20.34
		1745	21.99	21.08	20.32
		1715	21.98	21.16	20.36
	25RB Middle (12)	1775	22.10	21.16	20.39
		1745	21.96	21.05	20.30
		1715	21.85	21.04	20.29
	25RB Low (0)	1775	22.11	21.17	20.46
		1745	21.96	21.02	20.32
		1715	21.76	20.94	20.20
	50RB (0)	1775	22.07	21.12	20.41
		1745	22.00	21.06	20.33
		1715	21.93	21.01	20.31
15 MHz	1RB High (74)	1772.5	22.81	21.72	21.42
		1745	22.80	22.16	21.33
		1717.5	22.76	22.11	21.36
	1RB Middle (37)	1772.5	22.99	21.92	21.60
		1745	22.93	22.27	21.47
		1717.5	22.87	22.24	21.43

	1RB Low (0)	1772.5	22.83	21.79	21.45
		1745	22.83	22.15	21.35
		1717.5	22.75	22.20	21.45
	36RB High (38)	1772.5	22.04	21.02	20.31
		1745	21.96	21.00	20.28
		1717.5	21.97	20.91	20.32
	36RB Middle (19)	1772.5	22.05	21.09	20.37
		1745	21.96	21.03	20.32
		1717.5	21.94	20.83	20.28
	36RB Low (0)	1772.5	22.13	21.08	20.42
		1745	21.94	20.99	20.29
		1717.5	21.78	20.72	20.18
	75RB (0)	1772.5	22.10	21.11	20.36
		1745	21.98	21.04	20.30
		1717.5	21.90	20.89	20.22
20 MHz	1RB High (99)	1770	22.76	22.15	21.21
		1745	22.71	22.22	21.25
		1720	22.68	22.15	21.27
	1RB Middle (50)	1770	23.11	22.47	21.48
		1745	23.03	22.53	21.44
		1720	22.97	22.43	21.46
	1RB Low (0)	1770	22.69	22.11	21.37
		1745	22.67	22.21	21.25
		1720	22.60	22.16	21.29
	50RB High (50)	1770	21.89	20.91	20.18
		1745	21.87	20.97	20.11
		1720	21.87	20.97	20.22
	50RB Middle (25)	1770	22.03	21.07	20.30
		1745	21.95	21.03	20.24
		1720	21.86	20.88	20.16
	50RB Low (0)	1770	22.02	21.07	20.32
		1745	21.91	20.97	20.22
		1720	21.69	20.78	20.02
	100RB (0)	1770	21.96	21.02	20.22
		1745	21.91	21.00	20.21
		1720	21.76	20.82	20.11

Table 11.3-2: The conducted Power for LTE– Low power

Band 7					
Bandwidth (MHz)	RB allocation RB offset (Start RB)	Frequency (MHz)	QPSK Actual output power (dBm)	16QAM Actual output power (dBm)	64QAM Actual output power (dBm)
5 MHz	1RB High (24)	2567.5	21.67	20.85	20.27
		2535	21.70	20.84	20.08
		2502.5	21.79	21.27	20.38
	1RB Middle (12)	2567.5	21.89	21.03	20.46
		2535	21.96	21.13	20.33
		2502.5	22.07	21.54	20.48
	1RB Low (0)	2567.5	21.65	20.80	20.21
		2535	21.68	20.88	20.10
		2502.5	21.82	21.26	20.20
	12RB High (13)	2567.5	20.76	19.83	19.24
		2535	20.83	19.90	19.06
		2502.5	20.92	20.07	19.32
	12RB Middle (6)	2567.5	20.84	19.88	19.34
		2535	20.85	19.92	19.08
		2502.5	20.94	20.08	19.26
	12RB Low (0)	2567.5	20.76	19.83	19.18
		2535	20.76	19.86	19.04
		2502.5	20.85	19.98	19.24
	25RB (0)	2567.5	20.78	19.76	19.21
		2535	20.80	19.81	19.03
		2502.5	20.89	19.98	19.21
10 MHz	1RB High (49)	2565	21.83	21.08	20.30
		2535	21.82	20.81	20.17
		2505	21.90	20.80	20.28
	1RB Middle (24)	2565	21.92	21.21	20.39
		2535	21.94	20.91	20.30
		2505	22.06	20.93	20.50
	1RB Low (0)	2565	21.73	21.08	20.45
		2535	21.23	20.80	20.13
		2505	21.33	20.76	20.54
	25RB High (25)	2565	20.82	19.89	19.22
		2535	20.87	19.98	19.08
		2505	20.91	20.00	19.26
	25RB Middle (12)	2565	20.77	19.85	19.23
		2535	20.81	19.97	19.11
		2505	20.91	20.01	19.27
	25RB Low (0)	2565	20.76	19.86	19.19
		2535	20.77	19.90	19.06
		2505	20.83	19.91	19.32
	50RB (0)	2565	20.78	19.82	19.23
		2535	20.85	19.88	19.06

		2505	20.90	19.93	19.26
15 MHz	1RB High (74)	2562.5	21.74	21.15	20.31
		2535	21.68	20.64	20.11
		2507.5	21.83	21.18	20.21
	1RB Middle (37)	2562.5	21.84	21.22	20.50
		2535	21.86	20.78	20.38
		2507.5	22.03	21.29	20.66
	1RB Low (0)	2562.5	21.72	21.13	20.44
		2535	21.80	20.72	20.12
		2507.5	21.95	21.21	20.37
	36RB High (38)	2562.5	20.83	19.81	19.19
		2535	20.88	19.90	19.07
		2507.5	20.90	19.98	19.11
	36RB Middle (19)	2562.5	20.83	19.83	19.18
		2535	20.89	19.90	19.05
		2507.5	20.96	20.00	19.22
	36RB Low (0)	2562.5	20.84	19.78	19.16
		2535	20.86	19.79	19.08
		2507.5	20.91	19.97	19.19
	75RB (0)	2562.5	20.83	19.81	19.17
		2535	20.85	19.86	19.03
		2507.5	20.94	19.97	19.14
20 MHz	1RB High (99)	2560	21.46	20.93	20.30
		2535	21.42	20.89	20.04
		2510	21.53	21.10	20.05
	1RB Middle (50)	2560	21.69	21.20	20.36
		2535	21.75	21.19	20.25
		2510	21.86	21.41	20.44
	1RB Low (0)	2560	21.43	20.98	20.24
		2535	21.48	20.94	20.12
		2510	21.54	21.17	20.14
	50RB High (50)	2560	20.57	19.62	19.09
		2535	20.65	19.65	19.04
		2510	20.67	19.76	19.03
	50RB Middle (25)	2560	20.60	19.68	19.16
		2535	20.65	19.70	19.05
		2510	20.76	19.83	19.20
	50RB Low (0)	2560	20.54	19.61	19.17
		2535	20.58	19.61	18.98
		2510	20.70	19.80	19.13
	100RB (0)	2560	20.60	19.63	19.13
		2535	20.62	19.66	19.00
		2510	20.71	19.82	19.11

Normal Power

The conducted power measurement results of downlink LTE CA are as below :

DL LT CA Class	PCC								SCC			Power		
	PCC Band	PCC Band Width (MHz)	PCC UL RB size	PCC UL RB offset	PCC DL RB size	PCC DL RB offset	PCC UL Channel	PCC DL Channel	SCC Band	SCC Band width (MHz)	SCC DL Channel	Rel 8 LTETx Power (dBm)	Rel 10 DL LTE CA Tx Power (dBm)	Tune-up
2A-28A	2	10	1	24	50	0	19150	1150	1	20	300	23.11	23.21	24
2A-5A	2	10	1	24	50	0	19150	1150	5	10	2525	23.11	23.27	24
2A-7A	2	10	1	24	50	0	19150	1150	7	20	3100	23.11	23.25	24
5A-1A	5	5	1	12	25	0	20525	2525	1	20	300	23.76	23.79	24.7
5A-2A	5	5	1	12	25	0	20525	2525	2	20	900	23.76	23.84	24.7
5A-3A	5	5	1	12	25	0	20525	2525	3	20	1575	23.76	23.84	24.7
5A-4A	5	5	1	12	25	0	20525	2525	4	20	2175	23.76	23.83	24.7
5A-7A	5	5	1	12	25	0	20525	2525	7	20	3100	23.76	23.81	24.7
5A-66A	5	5	1	12	25	0	20525	2525	66	20	67036	23.76	23.90	24.7
7A-1A	7	5	1	12	25	0	20775	2775	1	20	300	23.29	23.47	24
7A-2A	7	5	1	12	25	0	20775	2775	2	20	900	23.29	23.50	24
7A-3A	7	5	1	12	25	0	20775	2775	3	20	1575	23.29	23.42	24
7A-5A	7	5	1	12	25	0	20775	2775	5	10	2525	23.29	23.38	24
7A-28A	7	5	1	12	25	0	20775	2775	28	20	9460	23.29	23.37	24
7A-7A	7	5	1	12	25	0	20775	2775	7	20	3350	23.29	23.41	24
7C	7	20	1	50	100	0	20850	2630	7	20	3048	23.17	23.28	24
12A-4A	12	1.4	1	3	6	0	23017	5017	4	20	2175	23.50	23.48	24.7
12A-66A	12	1.4	1	3	6	0	23017	5017	66	20	67036	23.50	23.47	24.7
38C	38	20	1	50	100	0	38150	38150	38	20	37952	24.00	24.02	24.7
66C	66	10	1	24	50	0	132622	67086	66	20	67230	23.13	23.30	24
66B	66	5	1	12	25	0	132647	67111	66	15	67204	23.29	23.36	24
66A-66A	66	5	1	12	25	0	132647	67111	66	20	66536	23.29	23.41	24
66A-12A	66	5	1	12	25	0	132647	67111	12	10	5095	23.29	23.38	24
66A-5A	66	5	1	12	25	0	132647	67111	5	10	2525	23.29	23.45	24

Note: Testing is not required in bands or modes not intended/allowed for US operation.

Low Power

The conducted power measurement results of downlink LTE CA are as below :

DL LT CA Class	PCC								SCC			Power		
	PCC Band	PCC Band Width (MHz)	PCC UL RB size	PCC UL RB offset	PCC DL RB size	PCC DL RB offset	PCC UL Channel	PCC DL Channel	SCC Band	SCC Band width (MHz)	SCC DL Channel	Rel 8 LTETx Power (dBm)	Rel 10 DL LTE CA Tx Power (dBm)	Tune-up
7A-1A	7	5	1	12	25	0	20775	2775	1	20	300	22.07	21.94	23
7A-2A	7	5	1	12	25	0	20775	2775	2	20	900	22.07	22.05	23
7A-3A	7	5	1	12	25	0	20775	2775	3	20	1575	22.07	22.00	23
7A-5A	7	5	1	12	25	0	20775	2775	5	10	2525	22.07	22.05	23
7A-28A	7	5	1	12	25	0	20775	2775	28	20	9460	22.07	22.04	23
7A-7A	7	5	1	12	25	0	20775	2775	7	20	3350	22.07	22.03	23
7C	7	15	1	37	75	0	20825	2825	7	15	2975	22.03	22.08	23

Note: Testing is not required in bands or modes not intended/allowed for US operation.

11.5 Wi-Fi and BT Measurement result

The maximum output power of BT is 9.09dBm.

The maximum tune up of BT is 9.5dBm.

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

802.11b(dBm)				
Channel\data rate	1Mbps	2Mbps	5.5Mbps	11Mbps
13(2472MHz)	/	/	/	3.52
12(2467MHz)	/	/	/	3.58
Tune up				4.50
11(2462MHz)	/	/	/	17.84
6(2437MHz)	17.98	18.00	18.12	18.29
1(2412MHz)	/	/	/	17.40
Tune up	19.00	19.00	19.00	19.00

802.11g(dBm)								
Channel\data rate	6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
13(2472MHz)	3.77	/	/	/	/	/	/	/
12(2467MHz)	3.96	/	/	/	/	/	/	/
Tune up	4.50							
11(2462MHz)	12.58	/	/	/	/	/	/	/
Tune up	14.00							
6(2437MHz)	17.21	16.96	16.95	16.93	16.92	16.35	15.29	15.27
Tune up	18.00	18.00	18.00	18.00	18.00	17.50	16.50	16.50
1(2412MHz)	13.35	/	/	/	/	/	/	/
Tune up	14.50							

802.11n(dBm)-20MHz								
Channel\data rate	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
13(2472MHz)	3.67	/	/	/	/	/	/	/
12(2467MHz)	4.07	/	/	/	/	/	/	/
Tune up	4.50							
11(2462MHz)	12.17	/	/	/	/	/	/	/
Tune up	12.50							
6(2437MHz)	17.20	16.90	16.43	16.42	16.04	16.34	14.91	14.89
Tune up	18.00	18.00	17.50	17.50	17.50	17.50	16.00	16.00
1(2412MHz)	11.74	/	/	/	/	/	/	/
Tune up	13.00							

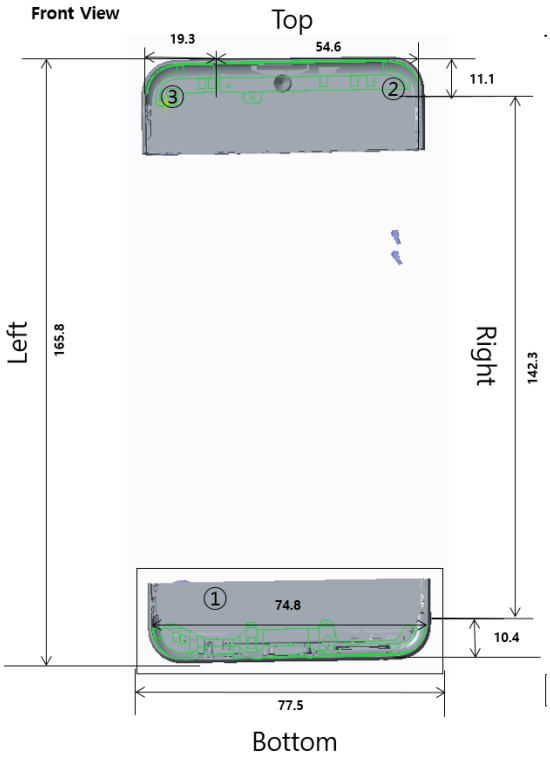
802.11a(dBm)								
Channel\data rate	6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
36(5180 MHz)	11.51	/	/	/	/	/	/	/
40(5200 MHz)	11.95	/	/	/	/	/	/	/
Tune up	13.50							
44(5220 MHz)	13.01	12.46	12.43	12.28	12.22	11.81	10.53	10.74
48(5240 MHz)	**12.90**	/	/	/	/	/	/	/
Tune up	14.00	14.00	14.00	14.00	14.00	13.00	12.00	12.00
52(5260 MHz)	**13.06**	12.97	12.86	12.82	12.69	12.16	11.16	11.10
56(5280 MHz)	12.90	/	/	/	/	/	/	/
60(5300 MHz)	12.89	/	/	/	/	/	/	/
64(5320 MHz)	12.57	/	/	/	/	/	/	/
Tune up	14.50	14.50	14.50	14.50	14.50	14.00	13.00	13.00
100(5500 MHz)	13.71	/	/	/	/	/	/	/
104(5520 MHz)	13.85	/	/	/	/	/	/	/
108(5540 MHz)	**14.17**	/	/	/	/	/	/	/
112(5560 MHz)	14.38	/	/	/	/	/	/	/
116(5580 MHz)	14.64	/	/	/	/	/	/	/
120(5600 MHz)	14.88	/	/	/	/	/	/	/
124(5620 MHz)	15.04	14.92	14.82	14.84	14.60	14.13	14.06	12.84
128(5640 MHz)	14.85	/	/	/	/	/	/	/
132(5660 MHz)	14.45	/	/	/	/	/	/	/
136(5680 MHz)	14.23	/	/	/	/	/	/	/
140(5700 MHz)	14.34	/	/	/	/	/	/	/
144(5720 MHz)	14.26	/	/	/	/	/	/	/
Tune up	16.00	16.00	16.00	16.00	16.00	15.50	15.00	14.00
149(5745 MHz)	14.58	/	/	/	/	/	/	/
153(5765 MHz)	15.02	/	/	/	/	/	/	/
157(5785 MHz)	15.54	/	/	/	/	/	/	/
161(5805 MHz)	**15.66**	15.63	15.38	15.32	15.31	14.68	13.65	13.63
165(5825 MHz)	15.54	/	/	/	/	/	/	/
Tune up	16.50	16.50	16.50	16.50	16.50	16.00	15.50	15.50

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



[ANT1] Tx,PRx
GSM : 850,900,1800,1900
WCDMA : B1,B2,B4,B5,B8
LTE :
B1,B2,B3,B4,B5,B7,B8,B12,B13,B17,B28,B38,B40,B66

[ANT2] DRx
GSM : 850,900,1800,1900
WCDMA : B1,B2,B4,B5,B8
LTE :
B1,B2,B3,B4,B5,B7,B8,B12,B13,B17,B28,B38,B40,B66

[ANT3] Tx,Rx
GPS Rx only
BT/WIFI 2.4G TX/RX
WIFI 5G TX/RX

1. #1 ANT is placed on inner_cover_bottom
2. #2, #3 ANT are placed on inner_cover_top

Picture 12.1 Antenna Locations

12.3 SAR Measurement Positions

According to the KDB941225 D06 Hot Spot SAR, 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	Yes	No	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	9.5	8.9	Yes
		Body	19.20	9.5	8.9	Yes
2.4GHz WLAN	2.45	Head	9.58	19	79.4	No
		Body	19.17	19	79.4	No
5GHz WLAN	5.2	Head	6.58	14	25.1	No
		Body	13.16	14	25.1	No
	5.3	Head	6.52	14.5	28.2	No
		Body	13.03	14.5	28.2	No
	5.6	Head	6.34	16	39.8	No
		Body	12.68	16	39.8	No
	5.8	Head	6.23	16.5	44.7	No
		Body	12.46	16.5	44.7	No

13 Evaluation of Simultaneous

Table 13.1: The sum of reported SAR values for main antenna and WiFi 2.4G

	Position	Main antenna	WLAN	Sum
Maximum reported SAR value for Head	Right hand, Touch Tilt	0.13	0.95	**1.08**
Maximum reported SAR value for Body	Rear	1.10	0.17	**1.27**
	Bottom	1.27	/	**1.27**

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	0.28	0.37[1]	**0.65**
Maximum reported SAR value for Body	Rear	1.10	0.19[1]	**1.29**
	Bottom	1.27	/	**1.27**

[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	9.5	8.9	0.37
Bluetooth	2.441	Body	10	9.5	8.9	0.19

* - 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 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-g SAR 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 GSM	1:4
GPRS&EGPRS for GSM	1:4
WCDMA&LTE FDD	1:1
LTE TDD	1:1.58

We'll perform the head measurement in all bands with the primary SIM card depending on the evaluation of multi-SIM cards and retest on highest value point with other SIM cards. Then, repeat the measurement in the Body test.

Frequency		Mode/Band	Side	Position	SIM Type	1g SAR (W/kg)	PowerDrift
MHz	Channel						
836.6	190	GSM850	Left	Cheek	SIM1	0.110	-0.10
836.6	190	GSM850	Left	Cheek	SIM2	0.102	-0.05

Note: According to the values in the above table, the **SIM1** is the primary SIM card.
We'll perform the head measurement with the SIM1 and retest on highest value point with others.

We'll perform the head measurements with this battery and retest on highest value point with others.

Frequency		Mode/Band	Position	SIM Type	1g SAR (W/kg)	PowerDrift
MHz	Channel					
836.6	190	GSM850	Front	SIM1	0.151	0.13
836.6	190	GSM850	Front	SIM2	0.140	0.11

Note: According to the values in the above table, the **SIM1** is the primary SIM card.
We'll perform the body measurement with the SIM1 and retest on highest value point with others.

Note

S2: SIM2

H: The headset of EMB-LGE41STGWE by Cresyn

14.1 SAR results for Fast SAR

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

Ambient Temperature: 22.9 ºC Liquid Temperature: 22.5ºC											
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										
190	836.6	Left	Cheek	/	29.92	31	0.086	**0.11**	0.110	**0.14**	-0.10
190	836.6	Left	Tilt	/	29.92	31	0.052	**0.07**	0.065	**0.08**	-0.10
251	848.8	Right	Cheek	Fig.1	29.94	31	0.130	**0.17**	0.171	**0.22**	-0.01
190	836.6	Right	Cheek	/	29.92	31	0.106	**0.14**	0.127	**0.16**	-0.11
128	824.2	Right	Cheek	/	29.92	31	0.082	**0.11**	0.108	**0.14**	-0.08
190	836.6	Right	Tilt	/	29.92	31	0.054	**0.07**	0.066	**0.08**	0.07
251	848.8	Right	Cheek	S2	29.94	31	0.123	**0.16**	0.154	**0.20**	0.02

Note: the head SAR of GSM850 is tested with GPRS (2Txslots) mode because of VoIP.

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

Ambient Temperature: 22.9 ºC Liquid Temperature: 22.5ºC											
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	/	29.92	31	0.094	**0.12**	0.151	**0.19**	0.13
251	848.8	GPRS (2)	Rear	Fig.2	29.94	31	0.235	**0.30**	0.412	**0.53**	0.06
190	836.6	GPRS (2)	Rear	/	29.92	31	0.195	**0.25**	0.360	**0.46**	-0.13
128	824.2	GPRS (2)	Rear	/	29.92	31	0.149	**0.19**	0.270	**0.35**	-0.02
190	836.6	GPRS (2)	Left	/	29.92	31	0.039	**0.05**	0.060	**0.08**	-0.04
190	836.6	GPRS (2)	Right	/	29.92	31	0.086	**0.11**	0.136	**0.17**	0.08
190	836.6	GPRS (2)	Bottom	/	29.92	31	0.087	**0.11**	0.155	**0.20**	0.13
190	836.6	EGPRS (2)	Rear	/	29.94	31	0.217	**0.28**	0.401	**0.51**	0.03
190	836.6	GPRS (2)	Rear	S2	29.94	31	0.230	**0.29**	0.404	**0.52**	0.17

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 ºC Liquid Temperature: 22.5ºC											
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	/	27.08	28	0.034	**0.04**	0.061	**0.08**	-0.03
661	1880	Left	Tilt	/	27.08	28	0.022	**0.03**	0.038	**0.05**	-0.08
810	1909.8	Right	Cheek	Fig.3	27.25	28	0.060	**0.07**	0.099	**0.12**	0.06
661	1880	Right	Cheek	/	27.08	28	0.052	**0.06**	0.089	**0.11**	0.11
512	1850.2	Right	Cheek	/	26.97	28	0.051	**0.06**	0.085	**0.11**	-0.08
661	1880	Right	Tilt	/	27.08	28	0.033	**0.04**	0.057	**0.07**	0.11
810	1909.8	Right	Cheek	S2	27.25	28	0.056	**0.07**	0.091	**0.11**	0.04

Note: the head SAR of GSM1900 is tested with GPRS (2Txslots) mode because of VoIP.

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

Ambient Temperature: 22.9 ºC Liquid Temperature: 22.5ºC											
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	/	27.08	28	0.113	**0.14**	0.207	**0.26**	-0.11
810	1909.8	GPRS (2)	Rear	Fig.4	27.25	28	0.241	**0.29**	0.455	**0.54**	0.13
661	1880	GPRS (2)	Rear	/	27.08	28	0.222	**0.27**	0.428	**0.53**	-0.04
512	1850.2	GPRS (2)	Rear	/	26.97	28	0.189	**0.24**	0.363	**0.46**	-0.05
661	1880	GPRS (2)	Left	/	27.08	28	0.070	**0.09**	0.124	**0.15**	-0.03
661	1880	GPRS (2)	Right	/	27.08	28	0.039	**0.05**	0.064	**0.08**	0.11
661	1880	GPRS (2)	Bottom	/	27.08	28	0.097	**0.12**	0.171	**0.21**	-0.06
810	1909.8	EGPRS (2)	Rear	/	27.23	28	0.227	**0.27**	0.438	**0.52**	0.08
810	1909.8	GPRS (2)	Rear	S2	27.25	28	0.237	**0.28**	0.448	**0.53**	0.09

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

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

Ambient Temperature: 22.9 ºC Liquid Temperature: 22.5ºC											
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										
4183	836.6	Left	Cheek	/	23.90	24.7	0.151	**0.18**	0.209	**0.25**	-0.13
4183	836.6	Left	Tilt	/	23.90	24.7	0.131	**0.16**	0.171	**0.21**	0.12
4233	846.6	Right	Cheek	/	23.86	24.7	0.146	**0.18**	0.201	**0.24**	-0.09
4183	836.6	Right	Cheek	/	23.90	24.7	0.162	**0.19**	0.223	**0.27**	-0.07
4132	826.4	Right	Cheek	Fig.5	23.89	24.7	0.170	**0.20**	0.233	**0.28**	-0.19
4183	836.6	Right	Tilt	/	23.90	24.7	0.074	**0.09**	0.097	**0.12**	0.05
4132	826.4	Right	Cheek	S2	23.89	24.7	0.016	**0.02**	0.224	**0.27**	0.18

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

Ambient Temperature: 22.9 ºC				Liquid Temperature: 22.5ºC						
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	/	23.90	24.7	0.128	**0.15**	0.200	**0.24**	-0.12
4233	846.6	Rear	/	23.86	24.7	0.223	**0.27**	0.380	**0.46**	-0.05
4182	836.4	Rear	Fig.6	23.90	24.7	0.243	**0.29**	0.425	**0.51**	0.12
4132	826.4	Rear	/	23.89	24.7	0.241	**0.29**	0.406	**0.49**	0.12
4182	836.4	Left	/	23.90	24.7	0.073	**0.09**	0.110	**0.13**	-0.01
4182	836.4	Right	/	23.90	24.7	0.141	**0.17**	0.212	**0.25**	-0.10
4182	836.4	Bottom	/	23.90	24.7	0.112	**0.13**	0.188	**0.23**	0.13
4182	836.4	Rear	S2	23.90	24.7	0.238	**0.29**	0.418	**0.50**	-0.11

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 ºC					Liquid Temperature: 22.5ºC						
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										
1412	1732.4	Left	Touch	/	23.42	24	0.112	**0.13**	0.145	**0.17**	0.05
1412	1732.4	Left	Tilt	/	23.42	24	0.077	**0.09**	0.102	**0.12**	0.06
1513	1752.6	Right	Touch	Fig.7	23.48	24	0.133	**0.15**	0.177	**0.20**	0.08
1412	1732.4	Right	Touch	/	23.42	24	0.127	**0.15**	0.170	**0.19**	0.11
1312	1712.4	Right	Touch	/	23.32	24	0.124	**0.15**	0.166	**0.19**	0.11
1412	1732.4	Right	Tilt	/	23.42	24	0.081	**0.09**	0.108	**0.12**	-0.03
1513	1752.6	Right	Touch	S2	23.48	24	0.128	**0.14**	0.171	**0.19**	0.17

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

Ambient Temperature: 22.9 ºC				Liquid Temperature: 22.5ºC						
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									
1412	1732.4	Front	/	23.42	24	0.170	**0.19**	0.294	**0.34**	0.13
1513	1752.6	Rear	Fig.8	23.48	24	0.355	**0.40**	0.663	**0.75**	-0.08
1412	1732.4	Rear	/	23.42	24	0.283	**0.32**	0.511	**0.58**	-0.02
1312	1712.4	Rear	/	23.32	24	0.319	**0.37**	0.588	**0.69**	-0.13
1412	1732.4	Left	/	23.42	24	0.137	**0.16**	0.230	**0.26**	-0.13
1412	1732.4	Right	/	23.42	24	0.091	**0.10**	0.152	**0.17**	0.08
1412	1732.4	Bottom	/	23.42	24	0.144	**0.16**	0.233	**0.27**	0.11
1513	1752.6	Rear	S2	23.48	24	0.348	**0.39**	0.641	**0.72**	0.18

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

Table 14.1-9: SAR Values (WCDMA 1900 MHz Band - Head)

Ambient Temperature: 22.9 ºC Liquid Temperature: 22.5ºC											
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										
9400	1880	Left	Touch	/	23.35	24	0.087	**0.10**	0.150	**0.17**	0.05
9400	1880	Left	Tilt	/	23.35	24	0.056	**0.07**	0.102	**0.12**	-0.08
9538	1907.6	Right	Touch	/	23.31	24	0.087	**0.10**	0.150	**0.18**	0.08
9400	1880	Right	Touch	Fig.9	23.35	24	0.124	**0.14**	0.204	**0.24**	0.03
9262	1852.4	Right	Touch	/	23.38	24	0.102	**0.12**	0.176	**0.20**	0.03
9400	1880	Right	Tilt	/	23.35	24	0.063	**0.07**	0.111	**0.13**	-0.06
9400	1880	Right	Touch	S2	23.35	24	0.114	**0.13**	0.195	**0.23**	0.13

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

Ambient Temperature: 22.9 oC Liquid Temperature: 22.5oC										
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									
9400	1880	Front	/	23.35	24	0.225	**0.26**	0.456	**0.53**	0.09
9538	1907.6	Rear	/	23.31	24	0.468	**0.55**	0.870	**1.02**	-0.02
9400	1880	Rear	/	23.35	24	0.443	**0.51**	0.794	**0.92**	-0.10
9262	1852.4	Rear	Fig.10	23.38	24	0.493	**0.57**	0.914	**1.05**	-0.02
9400	1880	Left	/	23.35	24	0.188	**0.22**	0.329	**0.38**	0.00
9400	1880	Right	/	23.35	24	0.088	**0.10**	0.144	**0.17**	0.13
9400	1880	Bottom	/	23.35	24	0.257	**0.30**	0.430	**0.50**	-0.13
9262	1852.4	Rear	S2	23.38	24	0.486	**0.56**	0.905	**1.04**	-0.18

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

Table 14.1-11: SAR Values (LTE Band2 - Head)

Ambient Temperature: 22.9ºC Liquid Temperature: 22.5ºC												
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											
18700	1860	1RB_Mid	Left	Cheek	/	23.01	24	0.065	**0.08**	0.099	**0.12**	0.11
18700	1860	1RB_Mid	Left	Tilt	/	23.01	24	0.062	**0.08**	0.105	**0.13**	0.07
18700	1860	1RB_Mid	Right	Cheek	Fig.11	23.01	24	0.113	**0.14**	0.184	**0.23**	0.03
18700	1860	1RB_Mid	Right	Tilt	/	23.01	24	0.049	**0.06**	0.077	**0.10**	-0.09
19100	1900	50RB_Low	Left	Cheek	/	21.90	23	0.065	**0.08**	0.105	**0.14**	0.11
19100	1900	50RB_Low	Left	Tilt	/	21.90	23	0.044	**0.06**	0.075	**0.10**	-0.09
19100	1900	50RB_Low	Right	Cheek	/	21.90	23	0.080	**0.10**	0.131	**0.17**	0.02
19100	1900	50RB_Low	Right	Tilt	/	21.90	23	0.038	**0.05**	0.061	**0.08**	0.00

18700	1860	1RB_Mid	Right	Cheek	S2	23.01	24	0.107	**0.13**	0.179	**0.22**	0.12

Note: The LTE mode is QPSK_20MHz.

Table 14.1-12: SAR Values (LTE Band2 - 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										
18700	1860	1RB_Mid	Front	/	23.01	24	0.272	**0.34**	0.496	**0.62**	0.09
19100	1900	1RB_Mid	Rear	/	23.00	24	0.459	**0.58**	0.868	**1.09**	-0.07
18900	1880	1RB_Mid	Rear	/	22.95	24	0.444	**0.57**	0.829	**1.06**	-0.07
18700	1860	1RB_Mid	Rear	Fig.12	23.01	24	0.475	**0.60**	0.875	**1.10**	-0.02
18700	1860	1RB_Mid	Left	/	23.01	24	0.186	**0.23**	0.335	**0.42**	0.05
18700	1860	1RB_Mid	Right	/	23.01	24	0.073	**0.09**	0.126	**0.16**	0.04
18700	1860	1RB_Mid	Bottom	/	23.01	24	0.247	**0.31**	0.444	**0.56**	-0.06
19100	1900	50RB_Low	Front	/	21.90	23	0.204	**0.26**	0.388	**0.50**	-0.04
19100	1900	50RB_Low	Rear	/	21.90	23	0.361	**0.46**	0.667	**0.86**	0.08
18900	1880	50RB_Low	Rear	/	21.88	23	0.319	**0.41**	0.637	**0.82**	0.18
18700	1860	50RB_Low	Rear	/	21.89	23	0.338	**0.44**	0.649	**0.84**	0.01
19100	1900	50RB_Low	Left	/	21.90	23	0.126	**0.16**	0.224	**0.29**	-0.13
19100	1900	50RB_Low	Right	/	21.90	23	0.068	**0.09**	0.115	**0.15**	0.12
19100	1900	50RB_Low	Bottom	/	21.90	23	0.184	**0.24**	0.325	**0.42**	0.10
18900	1880	100RB	Rear	/	21.89	23	0.346	**0.45**	0.664	**0.86**	0.02
18700	1860	1RB_Mid	Rear	S2	23.01	24	0.459	**0.58**	0.861	**1.08**	0.15

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

Note1: The LTE mode is QPSK_20MHz.

Table 14.1-13: 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											
20525	836.5	1RB_Mid	Left	Cheek	Fig.13	23.62	24.7	0.140	**0.18**	0.181	**0.23**	-0.08
20525	836.5	1RB_Mid	Left	Tilt	/	23.62	24.7	0.089	**0.11**	0.111	**0.14**	0.00
20525	836.5	1RB_Mid	Right	Cheek	/	23.62	24.7	0.136	**0.17**	0.174	**0.22**	0.10
20525	836.5	1RB_Mid	Right	Tilt	/	23.62	24.7	0.084	**0.11**	0.103	**0.13**	-0.09
20600	844	25RB_Low	Left	Cheek	/	22.60	23.7	0.078	**0.10**	0.102	**0.13**	0.12
20600	844	25RB_Low	Left	Tilt	/	22.60	23.7	0.051	**0.07**	0.065	**0.08**	0.01
20600	844	25RB_Low	Right	Cheek	/	22.60	23.7	0.098	**0.13**	0.128	**0.16**	0.12
20600	844	25RB_Low	Right	Tilt	/	22.60	23.7	0.065	**0.08**	0.081	**0.10**	0.02
20525	836.5	1RB_Mid	Left	Cheek	S2	23.62	24.7	0.128	**0.16**	0.167	**0.21**	0.17

Note: The LTE mode is QPSK_10MHz.

Table 14.1-14: SAR Values (LTE Band5 - Body)

Ambient Temperature: 22.9 ºC Liquid Temperature: 22.5ºC											
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										
20525	836.5	1RB_Mid	Front	/	23.62	24.7	0.131	**0.17**	0.205	**0.26**	-0.08
20525	836.5	1RB_Mi	Rear	Fig.14	23.62	24.7	0.231	**0.30**	0.403	**0.52**	0.04
20525	836.5	1RB_Mid	Left	/	23.62	24.7	0.065	**0.08**	0.098	**0.13**	0.00
20525	836.5	1RB_Mid	Right	/	23.62	24.7	0.133	**0.17**	0.201	**0.26**	-0.07
20525	836.5	1RB_Mid	Bottom	/	23.62	24.7	0.137	**0.18**	0.232	**0.30**	0.11
20600	844	25RB_Low	Front	/	22.60	23.7	0.099	**0.13**	0.159	**0.20**	-0.13
20600	844	25RB_Low	Rear	/	22.60	23.7	0.176	**0.23**	0.303	**0.39**	-0.04
20600	844	25RB_Low	Left	/	22.60	23.7	0.052	**0.07**	0.077	**0.10**	-0.07
20600	844	25RB_Low	Right	/	22.60	23.7	0.108	**0.14**	0.162	**0.21**	0.13
20600	844	25RB_Low	Bottom		22.60	23.7	0.102	**0.13**	0.171	**0.22**	0.06
20525	836.5	1RB_Mid	Rear	S2	23.62	24.7	0.224	**0.29**	0.396	**0.51**	0.16

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

Note1: The LTE mode is QPSK_10MHz.

Table 14.1-15: SAR Values (LTE Band7 - 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											
20850	2510	1RB_Mid	Left	Cheek	Fig.15	23.17	24	0.110	**0.13**	0.215	**0.26**	0.08
20850	2510	1RB_Mid	Left	Tilt	/	23.17	24	0.058	**0.07**	0.105	**0.13**	0.13
20850	2510	1RB_Mid	Right	Cheek	/	23.17	24	0.067	**0.08**	0.131	**0.16**	0.04
20850	2510	1RB_Mid	Right	Tilt	/	23.17	24	0.033	**0.04**	0.064	**0.08**	-0.02
20850	2510	50RB_Mid	Left	Cheek	/	22.07	23	0.084	**0.10**	0.163	**0.20**	0.12
20850	2510	50RB_Mid	Left	Tilt	/	22.07	23	0.040	**0.05**	0.079	**0.10**	0.12
20850	2510	50RB_Mid	Right	Cheek	/	22.07	23	0.050	**0.06**	0.098	**0.12**	0.12
20850	2510	50RB_Mid	Right	Tilt	/	22.07	23	0.025	**0.03**	0.050	**0.06**	0.08
20850	2510	1RB_Mid	Left	Cheek	S2	23.17	24	0.103	**0.12**	0.207	**0.25**	-0.18

Note: The LTE mode is QPSK_20MHz.

Table 14.1-16: SAR Values (LTE Band7 - Body)

Ambient Temperature: 22.9 ℃ Liquid Temperature: 22.5℃											
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										
20850	2510	1RB_Mid	Front	/	23.17	24	0.272	**0.33**	0.518	**0.63**	-0.03
21350	2560	1RB_Mid	Rear	/	23.01	24	0.297	**0.37**	0.582	**0.73**	0.03
21100	2535	1RB_Mid	Rear	/	23.11	24	0.331	**0.41**	0.650	**0.80**	0.08
20850	2510	1RB_Mid	Rear	/	23.17	24	0.345	**0.42**	0.715	**0.86**	0.03
20850	2510	1RB_Mid	Left	/	23.17	24	0.261	**0.32**	0.543	**0.66**	-0.03
20850	2510	1RB_Mid	Right	/	23.17	24	0.076	**0.09**	0.137	**0.17**	0.08
21350	2560	1RB_Mid	Bottom	Fig.16	23.01	24	0.490	**0.62**	1.01	**1.27**	-0.02
21100	2535	1RB_Mid	Bottom	/	23.11	24	0.464	**0.57**	0.945	**1.16**	-0.03
20850	2510	1RB_Mid	Bottom	/	23.17	24	0.399	**0.48**	0.824	**1.00**	-0.05
20850	2510	50RB_Mid	Front	/	22.07	23	0.206	**0.26**	0.391	**0.48**	0.10
20850	2510	50RB_Mid	Rear	/	22.07	23	0.261	**0.32**	0.543	**0.67**	0.00
20850	2510	50RB_Mid	Left	/	22.07	23	0.080	**0.10**	0.148	**0.18**	-0.11
20850	2510	50RB_Mid	Right	/	22.07	23	0.059	**0.07**	0.139	**0.17**	0.03
21350	2560	50RB_Mid	Bottom	/	21.89	23	0.328	**0.42**	0.668	**0.86**	-0.01
21100	2535	50RB_Mid	Bottom	/	21.94	23	0.348	**0.44**	0.709	**0.90**	-0.04
20850	2510	50RB_Mid	Bottom	/	22.07	23	0.310	**0.38**	0.640	**0.79**	-0.11
20850	2510	100RB	Rear	/	22.04	23	0.263	**0.33**	0.520	**0.65**	0.10
20850	2510	100RB	Bottom	/	22.04	23	0.347	**0.43**	0.709	**0.88**	0.06
21350	2560	1RB_Mid	Rear	S2	23.01	24	0.481	**0.60**	0.994	**1.25**	-0.19
21350	2560	1RB_Mid	Bottom	Note3 H	23.01	24	0.139	**0.17**	0.286	**0.36**	0.07
21350	2560	1RB_Mid	Bottom	Note1	23.01	24	2.360	**2.97**	6.230	**7.83**	-0.02
21350	2560	1RB_Mid	Bottom	Note2	21.86	23	2.460	**3.20**	6.520	**8.47**	-0.05

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

Note1: The distance between the EUT and the phantom bottom is 1mm(see the ANNEX I).

Note2: The distance between the EUT and the phantom bottom is 0mm(see the ANNEX I).

Note3: As the headset port is located at the bottom side and the device cannot be positioned at the distance of 10mm for bottom side with headset by design, so the bottom side with headset is positioned directly against the flat phantom. The distance between the EUT and the phantom bottom is 15mm.

Note4: The LTE mode is QPSK_20MHz.

Table 14.1-17: SAR Values (LTE Band12- Head)

Ambient Temperature: 22.9 ºC Liquid Temperature: 22.5ºC												
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											
23130	711	1RB_Mid	Left	Touch	/	23.42	24.7	0.057	**0.08**	0.074	**0.10**	0.06
23131	711	1RB_Mid	Left	Tilt	/	23.42	24.7	0.041	**0.06**	0.052	**0.07**	0.03
23134	711	1RB_Mid	Right	Touch	Fig.17	23.42	24.7	0.097	**0.13**	0.126	**0.17**	0.11
23135	711	1RB_Mid	Right	Tilt	/	23.42	24.7	0.075	**0.10**	0.093	**0.12**	-0.12
23060	704	25RB_Mid	Left	Touch	/	22.36	23.7	0.042	**0.06**	0.054	**0.07**	0.04
23060	704	25RB_Mid	Left	Tilt	/	22.36	23.7	0.031	**0.04**	0.041	**0.06**	-0.08
23060	704	25RB_Mid	Right	Touch	/	22.36	23.7	0.070	**0.10**	0.089	**0.12**	-0.04
23060	704	25RB_Mid	Right	Tilt	/	22.36	23.7	0.038	**0.05**	0.047	**0.06**	-0.04
23134	711	1RB_Mid	Right	Touch	S2	23.42	24.7	0.091	**0.12**	0.118	**0.16**	0.03

Note1: The LTE mode is QPSK_10MHz.

Table 14.1-18: SAR Values (LTE Band12 - Body)

Ambient Temperature: 22.9 ºC Liquid Temperature: 22.5ºC											
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										
23130	711	1RB_Mid	Front	/	23.42	24.7	0.067	**0.09**	0.145	**0.19**	0.00
23130	711	1RB_Mid	Rear	Fig.18	23.42	24.7	0.138	**0.19**	0.232	**0.31**	0.08
23130	711	1RB_Mid	Left	/	23.42	24.7	0.052	**0.07**	0.124	**0.17**	-0.09
23130	711	1RB_Mid	Right	/	23.42	24.7	0.104	**0.14**	0.145	**0.19**	-0.13
23130	711	1RB_Mid	Top	/	23.42	24.7	0.029	**0.04**	0.083	**0.11**	0.07
23060	704	25RB_High	Front	/	22.36	23.7	0.054	**0.07**	0.117	**0.16**	0.07
23060	704	25RB_High	Rear	/	22.36	23.7	0.083	**0.11**	0.178	**0.24**	0.05
23060	704	25RB_High	Left	/	22.36	23.7	0.059	**0.08**	0.142	**0.19**	0.11
23060	704	25RB_High	Right	/	22.36	23.7	0.057	**0.08**	0.137	**0.19**	-0.01
23060	704	25RB_High	Top	/	22.36	23.7	0.021	**0.03**	0.061	**0.08**	0.11
23130	711	1RB_Mid	Rear	S2	23.42	24.7	0.131	**0.18**	0.225	**0.30**	0.14

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

Note2: The LTE mode is QPSK_10MHz.

Table 14.1-19: SAR Values (LTE Band13 - Head)

Ambient Temperature: 22.9℃ Liquid Temperature: 22.5℃												
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											
23230	782	1RB_Mid	Left	Touch		23.01	24	0.084	**0.11**	0.107	**0.13**	-0.05
23230	782	1RB_Mid	Left	Tilt	/	23.01	24	0.052	**0.07**	0.066	**0.08**	-0.05
23230	782	1RB_Mid	Right	Touch	Fig.19	23.01	24	0.111	**0.14**	0.142	**0.18**	0.04
23230	782	1RB_Mid	Right	Tilt	/	23.01	24	0.067	**0.08**	0.080	**0.10**	0.07
23230	782	25RB_Mid	Left	Touch	/	21.91	23	0.066	**0.08**	0.083	**0.11**	0.08
23230	782	25RB_Mid	Left	Tilt	/	21.91	23	0.039	**0.05**	0.050	**0.06**	-0.01
23230	782	25RB_Mid	Right	Touch	/	21.91	23	0.096	**0.12**	0.123	**0.16**	-0.12
23230	782	25RB_Mid	Right	Tilt	/	21.91	23	0.059	**0.08**	0.072	**0.09**	0.09
23230	782	1RB_Mid	Right	Touch	S2	23.01	24	0.105	**0.13**	0.137	**0.17**	0.06

Note1: The LTE mode is QPSK_10MHz.

Table 14.1-20: SAR Values (LTE Band13 - Body)

Ambient Temperature: 22.9 ℃ Liquid Temperature: 22.5℃												
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											
23230	782	1RB_Mid	Front	/	23.01	24	0.116	**0.15**	0.160	**0.20**	0.12	
23231	782	1RB_Mid	Rear	Fig.20	23.01	24	0.155	**0.19**	0.269	**0.34**	0.03	
23232	782	1RB_Mid	Left	/	23.01	24	0.116	**0.15**	0.201	**0.25**	0.03	
23233	782	1RB_Mid	Right	/	23.01	24	0.118	**0.15**	0.183	**0.23**	0.09	
23234	782	1RB_Mid	Bottom	/	23.01	24	0.072	**0.09**	0.127	**0.16**	0.04	
23235	782	25RB_Mid	Front	/	21.91	23	0.091	**0.12**	0.126	**0.16**	-0.05	
23236	782	25RB_Mid	Rear	/	21.91	23	0.116	**0.15**	0.201	**0.26**	0.07	
23237	782	25RB_Mid	Left	/	21.91	23	0.077	**0.10**	0.121	**0.16**	0.09	
23238	782	25RB_Mid	Right	/	21.91	23	0.093	**0.12**	0.143	**0.18**	-0.08	
23239	782	25RB_Mid	Bottom	/	21.91	23	0.055	**0.07**	0.095	**0.12**	-0.09	
23231	782	1RB_Mid	Rear	S2	23.01	24	0.148	**0.19**	0.251	**0.32**	0.03	

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 Band38 - Head)

Ambient Temperature: 22.9 ℃ Liquid Temperature: 22.5℃												
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											
38150	2610	1RB_Mid	Left	Cheek	Fig.21	24.00	24.7	0.060	**0.07**	0.122	**0.14**	0.07
38150	2610	1RB_Mid	Left	Tilt	/	24.00	24.7	0.022	**0.03**	0.043	**0.05**	-0.04
38150	2610	1RB_Mid	Right	Cheek		24.00	24.7	0.032	**0.04**	0.059	**0.07**	-0.04
38150	2610	1RB_Mid	Right	Tilt	/	24.00	24.7	0.012	**0.01**	0.025	**0.03**	0.10
38150	2610	50RB_High	Left	Cheek	/	22.97	23.7	0.045	**0.05**	0.091	**0.11**	0.11
38150	2610	50RB_High	Left	Tilt	/	22.97	23.7	0.015	**0.02**	0.029	**0.03**	-0.07
38150	2610	50RB_High	Right	Cheek	/	22.97	23.7	0.024	**0.03**	0.042	**0.05**	-0.08
38150	2610	50RB_High	Right	Tilt	/	22.97	23.7	0.018	**0.02**	0.032	**0.04**	-0.07
38150	2610	1RB_Mid	Left	Cheek	S2	24.00	24.7	0.051	**0.06**	0.115	**0.14**	0.18

Note: The LTE mode is QPSK_20MHz.

Table 14.1-22: SAR Values (LTE Band38 - Body)

Ambient Temperature: 22.9 ℃ Liquid Temperature: 22.5℃											
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										
38150	2610	1RB_Mid	Front	/	24.00	24.7	0.185	**0.22**	0.354	**0.42**	-0.06
38150	2610	1RB_Mid	Rear	/	24.00	24.7	0.255	**0.30**	0.512	**0.60**	-0.13
38150	2610	1RB_Mid	Left	/	24.00	24.7	0.066	**0.08**	0.128	**0.15**	-0.08
38150	2610	1RB_Mid	Right	/	24.00	24.7	0.055	**0.06**	0.098	**0.12**	-0.13
38150	2610	1RB_Mid	Bottom	Fig.22	24.00	24.7	0.288	**0.34**	0.600	**0.70**	0.04
38150	2610	50RB_High	Front	/	22.97	23.7	0.160	**0.19**	0.286	**0.34**	0.09
38150	2610	50RB_High	Rear	/	22.97	23.7	0.188	**0.22**	0.376	**0.44**	0.05
38150	2610	50RB_High	Left	/	22.97	23.7	0.064	**0.08**	0.124	**0.15**	-0.09
38150	2610	50RB_High	Right	/	22.97	23.7	0.042	**0.05**	0.076	**0.09**	0.08
38150	2610	50RB_High	Bottom	/	22.97	23.7	0.210	**0.25**	0.438	**0.52**	-0.06
38150	2610	1RB_Mid	Bottom	S2	24.00	24.7	0.267	**0.31**	0.588	**0.69**	-0.15

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

Note1: The LTE mode is QPSK_20MHz.

Table 14.1-23: SAR Values (LTE Band66 - Head)

Ambient Temperature: 22.9 ℃ Liquid Temperature: 22.5℃												
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											
132572	1770	1RB_Mid	Left	Cheek	/	23.11	24	0.069	**0.08**	0.099	**0.12**	0.06
132572	1770	1RB_Mid	Left	Tilt	/	23.11	24	0.060	**0.07**	0.091	**0.11**	-0.10
132572	1770	1RB_Mid	Right	Cheek	Fig.23	23.11	24	0.099	**0.12**	0.155	**0.19**	-0.12
132572	1770	1RB_Mid	Right	Tilt	/	23.11	24	0.041	**0.05**	0.065	**0.08**	-0.03
132572	1770	50RB_Mid	Left	Cheek	/	22.03	23	0.054	**0.07**	0.078	**0.10**	0.02
132572	1770	50RB_Mid	Left	Tilt	/	22.03	23	0.064	**0.08**	0.099	**0.12**	0.10
132572	1770	50RB_Mid	Right	Cheek	/	22.03	23	0.078	**0.10**	0.121	**0.15**	-0.01
132572	1770	50RB_Mid	Right	Tilt	/	22.03	23	0.031	**0.04**	0.051	**0.06**	-0.12
132572	1770	1RB_Mid	Right	Cheek	S2	23.11	24	0.094	**0.12**	0.150	**0.18**	0.03

Note: The LTE mode is QPSK_20MHz.

Table 14.1-24: SAR Values (LTE Band66 - Body)

Ambient Temperature: 22.9 ℃ Liquid Temperature: 22.5℃												
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											
132572	1770	1RB_Mid	Front	/	23.11	24	0.181	**0.22**	0.322	**0.39**	0.13	
132572	1770	1RB_Mid	Rear	Fig.24	23.11	24	0.376	**0.46**	0.702	**0.86**	-0.04	
132322	1745	1RB_Mid	Rear	/	23.03	24	0.311	**0.39**	0.574	**0.72**	-0.03	
132072	1720	1RB_Mid	Rear	/	22.97	24	0.302	**0.38**	0.552	**0.70**	0.01	
132572	1770	1RB_Mid	Left	/	23.11	24	0.137	**0.17**	0.244	**0.30**	0.01	
132572	1770	1RB_Mid	Right	/	23.11	24	0.088	**0.11**	0.145	**0.18**	0.08	
132572	1770	1RB_Mid	Bottom	/	23.11	24	0.179	**0.22**	0.307	**0.38**	0.05	
132572	1770	50RB_Mid	Front	/	22.03	23	0.141	**0.18**	0.252	**0.31**	-0.01	
132572	1770	50RB_Mid	Rear	/	22.03	23	0.294	**0.37**	0.548	**0.68**	-0.05	
132572	1770	50RB_Mid	Left	/	22.03	23	0.105	**0.13**	0.188	**0.23**	-0.1	
132572	1770	50RB_Mid	Right	/	22.03	23	0.069	**0.09**	0.114	**0.14**	0.01	
132572	1770	50RB_Mid	Bottom	/	22.03	23	0.140	**0.17**	0.242	**0.30**	0.03	
132572	1770	100RB	Rear	/	21.96	23	0.235	**0.30**	0.447	**0.57**	-0.03	
132572	1770	1RB_Mid	Rear	S2	23.11	24	0.366	**0.45**	0.694	**0.85**	-0.18	

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

Note1: The LTE mode is QPSK_20MHz.

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	Right	Cheek	Fig.1	29.94	31	0.130	**0.17**	0.171	**0.22**	-0.01

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										
251	848.8	GPRS (2)	Rear	Fig.2	29.94	31	0.235	**0.30**	0.412	**0.53**	0.06

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										
810	1909.8	Right	Cheek	Fig.3	27.25	28	0.060	**0.07**	0.099	**0.12**	0.06

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										
810	1909.8	GPRS (2)	Rear	Fig.4	27.25	28	0.241	**0.29**	0.455	**0.54**	0.13

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

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										
4132	826.4	Right	Cheek	Fig.5	23.89	24.7	0.170	**0.20**	0.233	**0.28**	-0.19

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

Ambient Temperature: 22.9 ºC				Liquid Temperature: 22.5ºC						
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	Rear	Fig.6	23.90	24.7	0.243	**0.29**	0.425	**0.51**	0.12

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 ºC					Liquid Temperature: 22.5ºC						
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										
1513	1752.6	Right	Touch	Fig.7	23.48	24	0.133	**0.15**	0.177	**0.20**	0.08

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

Ambient Temperature: 22.9 ºC				Liquid Temperature: 22.5ºC						
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									
1513	1752.6	Rear	Fig.8	23.48	24	0.355	**0.40**	0.663	**0.75**	-0.08

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

Table 14.1-9: SAR Values (WCDMA 1900 MHz Band - Head)

Ambient Temperature: 22.9 ºC					Liquid Temperature: 22.5ºC						
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										
9400	1880	Right	Touch	Fig.9	23.35	24	0.124	**0.14**	0.204	**0.24**	0.03

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

Ambient Temperature: 22.9 oC				Liquid Temperature: 22.5oC						
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	Rear	Fig.10	23.38	24	0.493	**0.57**	0.914	**1.05**	-0.02

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

Table 14.1-11: SAR Values (LTE Band2 - 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											
18700	1860	1RB_Mid	Right	Cheek	Fig.11	23.01	24	0.113	**0.14**	0.184	**0.23**	0.03

Note: The LTE mode is QPSK_20MHz.

Table 14.1-12: SAR Values (LTE Band2 - 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										
18700	1860	1RB_Mid	Rear	Fig.12	23.01	24	0.475	**0.60**	0.875	**1.10**	-0.02

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

Note1: The LTE mode is QPSK_20MHz.

Table 14.1-13: 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											
20525	836.5	1RB_Mid	Left	Cheek	Fig.13	23.62	24.7	0.140	**0.18**	0.181	**0.23**	-0.08

Note: The LTE mode is QPSK_10MHz.

Table 14.1-14: 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										
20525	836.5	1RB_Mi	Rear	Fig.14	23.62	24.7	0.231	**0.30**	0.403	**0.52**	0.04

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

Note1: The LTE mode is QPSK_10MHz.

Table 14.1-15: SAR Values (LTE Band7 - 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											
20850	2510	1RB_Mid	Left	Cheek	Fig.15	23.17	24	0.110	**0.13**	0.215	**0.26**	0.08

Note: The LTE mode is QPSK_20MHz.

Table 14.1-16: SAR Values (LTE Band7 - Body)

Ambient Temperature: 22.9 ºC Liquid Temperature: 22.5ºC												
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											
21350	2560	1RB_Mid	Bottom	Fig.16	23.01	24	0.490	**0.62**	1.01	**1.27**	-0.02	

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

Note2: The LTE mode is QPSK_20MHz.

Table 14.1-17: SAR Values (LTE Band12- Head)

Ambient Temperature: 22.9 ºC Liquid Temperature: 22.5ºC												
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											
23134	711	1RB_Mid	Right	Touch	Fig.17	23.42	24.7	0.097	**0.13**	0.126	**0.17**	0.11

Note1: The LTE mode is QPSK_10MHz.

Table 14.1-18: SAR Values (LTE Band12 - Body)

Ambient Temperature: 22.9 ºC Liquid Temperature: 22.5ºC											
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										
23130	711	1RB_Mid	Rear	Fig.18	23.42	24.7	0.138	**0.19**	0.232	**0.31**	0.08

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

Note2: The LTE mode is QPSK_10MHz.

Table 14.1-19: SAR Values (LTE Band13 - Head)

Ambient Temperature: 22.9℃ Liquid Temperature: 22.5℃												
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											
23230	782	1RB_Mid	Right	Touch	Fig.19	23.01	24	0.111	**0.14**	0.142	**0.18**	0.04

Note1: The LTE mode is QPSK_10MHz.

Table 14.1-20: SAR Values (LTE Band13 - Body)

Ambient Temperature: 22.9 ℃ Liquid Temperature: 22.5℃											
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										
23231	782	1RB_Mid	Rear	Fig.20	23.01	24	0.155	**0.19**	0.269	**0.34**	0.03

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 Band38 - Head)

Ambient Temperature: 22.9 ℃ Liquid Temperature: 22.5℃												
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											
38150	2610	1RB_Mid	Left	Cheek	Fig.21	24.00	24.7	0.060	**0.07**	0.122	**0.14**	0.07

Note: The LTE mode is QPSK_20MHz.

Table 14.1-22: SAR Values (LTE Band38 - Body)

Ambient Temperature: 22.9 ℃ Liquid Temperature: 22.5℃											
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										
38150	2610	1RB_Mid	Bottom	Fig.22	24.00	24.7	0.288	**0.34**	0.600	**0.70**	0.04

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

Note1: The LTE mode is QPSK_20MHz.

Table 14.1-23: SAR Values (LTE Band66 - Head)

Ambient Temperature: 22.9 ℃ Liquid Temperature: 22.5℃												
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											
132572	1770	1RB_Mid	Right	Cheek	Fig.23	23.11	24	0.099	**0.12**	0.155	**0.19**	-0.12

Note: The LTE mode is QPSK_20MHz.

Table 14.1-24: SAR Values (LTE Band66 - Body)

Ambient Temperature: 22.9 ºC Liquid Temperature: 22.5ºC											
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										
132572	1770	1RB_Mid	Rear	Fig.24	23.11	24	0.376	**0.46**	0.702	**0.86**	-0.04

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

14.3 WLAN Evaluation for 2.4G

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 ºC Liquid Temperature: 22.5ºC											
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	Touch	/	18.29	19	0.118	**0.14**	0.234	**0.28**	0.08
2437	6	Left	Tilt	/	18.29	19	0.117	**0.14**	0.238	**0.28**	0.06
2437	6	Right	Touch	/	18.29	19	0.318	**0.37**	0.622	**0.73**	0.07
2437	6	Right	Tilt	/	18.29	19	0.274	**0.32**	0.573	**0.67**	0.05
2437	6	Right	Touch	S2	18.29	19	0.307	**0.36**	0.608	**0.72**	0.13

As shown above table, the initial test position for head is “Right 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 ºC Liquid Temperature: 22.5ºC											
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	Right	Touch	Fig.25	18.29	19	0.303	**0.36**	0.628	**0.74**	0.07
2437	6	Right	Tilt	/	18.29	19	0.247	**0.29**	0.501	**0.59**	0.05

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 ºC Liquid Temperature: 22.5ºC							
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	Right	Touch	100%	100%	**0.74**	**0.74**

SAR is not required for OFDM 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 ºC Liquid Temperature: 22.5ºC										
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.									
6	2437	Front	/	18.29	19	0.042	**0.05**	0.080	**0.09**	0.05
6	2437	Rear	/	18.29	19	0.073	**0.09**	0.141	**0.17**	0.04
6	2437	Left	/	18.29	19	0.062	**0.07**	0.101	**0.12**	0.12
6	2437	Top	/	18.29	19	0.025	**0.03**	0.052	**0.06**	-0.09
6	2437	Rear	S2	18.29	19	0.064	**0.08**	0.125	**0.15**	0.09

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 ºC Liquid Temperature: 22.5ºC										
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.									
6	2437	Rear	Fig.26	18.29	19	0.075	**0.09**	0.142	**0.17**	0.04

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.

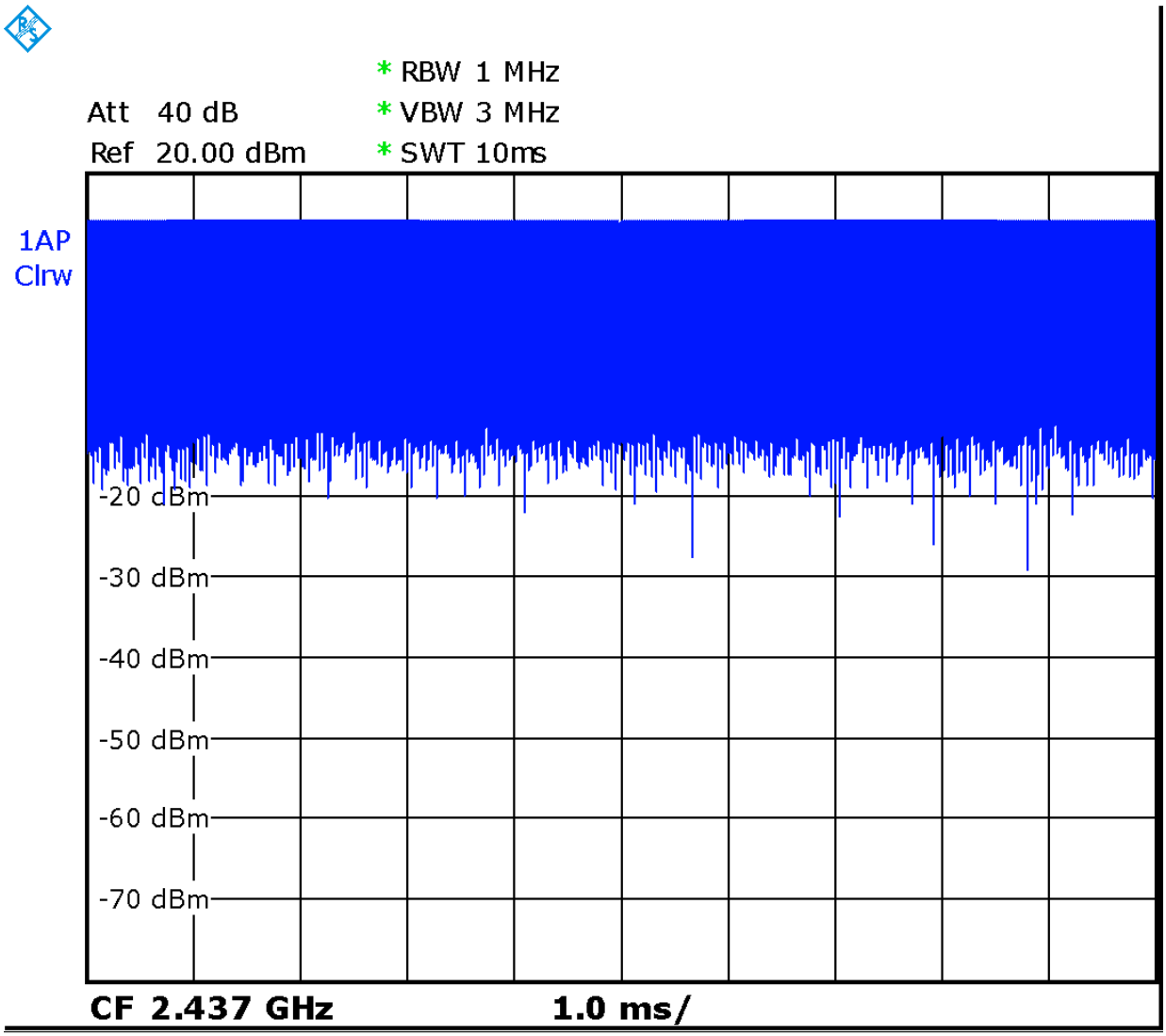
Note2: For all positions/configurations tested using the initial test position and subsequent test positions, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel until the reported SAR is ≤ 1.2 W/kg 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 ºC Liquid Temperature: 22.5ºC						
Frequency		Test Position	Actual duty factor	maximum duty factor	Reported SAR (1g)(W/kg)	Scaled reported SAR (1g)(W/kg)
MHz	Ch.					
6	2437	Rear	100%	100%	**0.17**	**0.17**

SAR is not required for OFDM because the 802.11b adjusted SAR ≤ 1.2 W/kg.



Picture 14.1 Duty factor plot

14.4 WLAN Evaluation For 5G

Table 14.4-1: OFDM mode specified maximum output power of WLAN antenna

802.11 mode	a	g	n		ac			
Ch. BW(MHz)	20	20	20	40	20	40	80	160
U-NII-1	X		X	X	X	X	X	
U-NII-2A	X		X	X	X	X	X	
U-NII-2C	X		X	X	X	X	X	
U-NII-3	X		X	X	X	X	X	
§ 15.247 (5.8 GHz)								
X: maximum(conducted) output power(mW), including tolerance, specified for production units								

Table 14.4-2: Maximum output power specified of WLAN antenna

802.11 mode	a	g	n		ac			
Ch. BW(MHz)	20	20	20	40	20	40	80	160
U-NII-1	25		25	22	20	14	11	
U-NII-2A	28		25	22	20	16	14	
U-NII-2C	40		35	32	28	20	20	
U-NII-3	45		45	40	35	25	22	
§ 15.247 (5.8 GHz)								

- The maximum output power specified for production units is the same for all channels, modulations and data rates in each channel bandwidth configuration of the 802.11a/g/n/ac modes.
- The blue highlighted cells represent highest output configurations in each standalone or aggregated frequency band, with tune-up tolerance included.

Table 14.4-4: Maximum output power measured of WLAN antenna, for the applicable OFDM configurations according to the default power measurement procedures for selection initial test configurations

802.11 mode	a	n		ac	
BW(MHz)	20	20	40	20	40
U-NII-1	36/40/44/48 **14/16/20/19**	36/40/44/48 Lower power	38/46 Lower power	36/40/44/48 Lower power	38/46 Lower power
U-NII-2A	52/56/60/64 **20/19/19/18**	52/56/60/64 Lower power	54/62 Lower power	52/56/60/64 Lower power	54/62 Lower power
U-NII-2C	100/104/108/112/116/120/124/128/132/136/140/144 **23/24/26/27/29/31/32/31/28/26/27/27**	100/104/108/112 116/132/136/140 Lower power	102/110/118/126/134/142 Lower power	100/104/108/112 116/132/136/140 Lower power	102/110/134 Lower power
U-NII-3	149/153/157/161/165 **29/32/36/37/36**	149/153/157/161 /165 Lower power	151/159 Lower power	149/153/157/161 /165 Lower power	151/159 Lower power

- The **bold numbers** is the maximum output measured power (mW).
- Channels with measured maximum power within 0.25dB are considered to have the same measured output. Channels selected for initial test configuration are highlighted in yellow.

Table 14.4-6: Reported SAR of initial test configuration for Head

802.11 mode	a	n		ac		
BW(MHz)	20	20	40	20	40	80
U-NII-2A	52/56/60/64 **0.86**	52/56/60/64	54/62	52/56/60/64	54/62	58
U-NII-2C	100/104/108/112 116/120/124/128 132/136/140/144 **0.74**	100/104/108/112 116/132/136/140	102/110/ 118/126/ 134/142	100/104/108/112 116/132/136/140	102/110 /134	106/122/138
U-NII-3	149/153/157/161 /165 **0.73**	149/153/157/161/ 165	151/159	149/153/157/161 /165	151/159	155
Highest measured output power channel tested initially are in yellow highlight.						

Table 14.4-7: Reported SAR of initial test configuration for Head

802.11 mode	a	n		ac	
BW(MHz)	20	20	40	20	40
U-NII-2A	52/56/60/64 **0.86 / 0.95**	52/56/60/64	54/62	52/56/60/64	54/62
Highest measured output power channel tested initially are in green highlight.					

Table 14.4-8: Reported SAR of initial test configuration for Body – 10mm

802.11 mode	a	n		ac	
BW(MHz)	20	20	40	20	40
U-NII-2A	52/56/60/64 **0.23**	52/56/60/64	54/62	52/56/60/64	54/62
U-NII-2C	100/104/108/112 116/120/124/128 132/136/140/144 **0.21**	100/104/108/112 116/132/136/140	102/110/118 /126/134/14 2	100/104/108/112 116/132/136/140	102/110 /134
U-NII-3	149/153/157/161 /165 **0.22**	149/153/157/161/ 165	151/159	149/153/157/161 /165	151/159
Highest measured output power channel tested initially are in yellow highlight.					

Table 14.4-9: SAR Values (WLAN 5G - Head)

Frequency		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										
52	5260	Left	Touch	/	13.06	14.5	0.120	**0.17**	0.355	**0.49**	0.01
52	5260	Left	Tilt	/	13.06	14.5	0.128	**0.18**	0.407	**0.57**	0.03
52	5260	Right	Touch	/	13.06	14.5	0.184	**0.26**	0.554	**0.77**	-0.11
52	5260	Right	Tilt	/	13.06	14.5	0.211	**0.29**	0.618	**0.86**	-0.02
60	5300	Right	Tilt	Fig.27	12.89	14.5	0.192	**0.28**	0.656	**0.95**	0.01
124	5620	Left	Touch	/	15.04	16	0.107	**0.13**	0.347	**0.43**	0.07
124	5620	Left	Tilt	/	15.04	16	0.118	**0.15**	0.398	**0.50**	-0.06
124	5620	Right	Touch	/	15.04	16	0.161	**0.20**	0.511	**0.64**	-0.02
124	5620	Right	Tilt	/	15.04	16	0.178	**0.22**	0.594	**0.74**	0.04
161	5785	Left	Touch	/	15.66	16.5	0.141	**0.17**	0.371	**0.45**	0.00
161	5785	Left	Tilt	/	15.66	16.5	0.157	**0.19**	0.429	**0.52**	0.06
161	5785	Right	Touch	/	15.66	16.5	0.164	**0.20**	0.448	**0.54**	0.01
161	5785	Right	Tilt	/	15.66	16.5	0.208	**0.25**	0.598	**0.73**	0.08
60	5300	Right	Tilt	S2	12.89	14.5	0.184	**0.27**	0.631	**0.91**	0.08

Table 14.4-10: SAR Values (WLAN 5G - Body)

Frequency		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									
52	5260	Front	Fig.28	13.06	14.5	0.064	**0.09**	0.165	**0.23**	-0.03
52	5260	Rear	/	13.06	14.5	0.051	**0.07**	0.098	**0.14**	0.12
52	5260	Left	/	13.06	14.5	0.052	**0.07**	0.100	**0.14**	0.15
52	5260	Top	/	13.06	14.5	0.050	**0.07**	0.128	**0.18**	-0.08
124	5620	Front	/	15.04	16	0.056	**0.07**	0.134	**0.17**	0.09
124	5620	Rear	/	15.04	16	0.047	**0.06**	0.082	**0.10**	0.06
124	5620	Left	/	15.04	16	0.048	**0.06**	0.094	**0.12**	0.17
124	5620	Top	/	15.04	16	0.063	**0.08**	0.169	**0.21**	-0.05
161	5785	Front	/	15.66	16.5	0.053	**0.06**	0.106	**0.13**	0.05
161	5785	Rear	/	15.66	16.5	0.050	**0.06**	0.092	**0.11**	-0.18
161	5785	Left	/	15.66	16.5	0.051	**0.06**	0.094	**0.11**	0.17
161	5785	Top	/	15.66	16.5	0.067	**0.08**	0.184	**0.22**	-0.01
153	5765	Rear	S2	13.06	14.5	0.061	**0.08**	0.158	**0.22**	-0.17

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

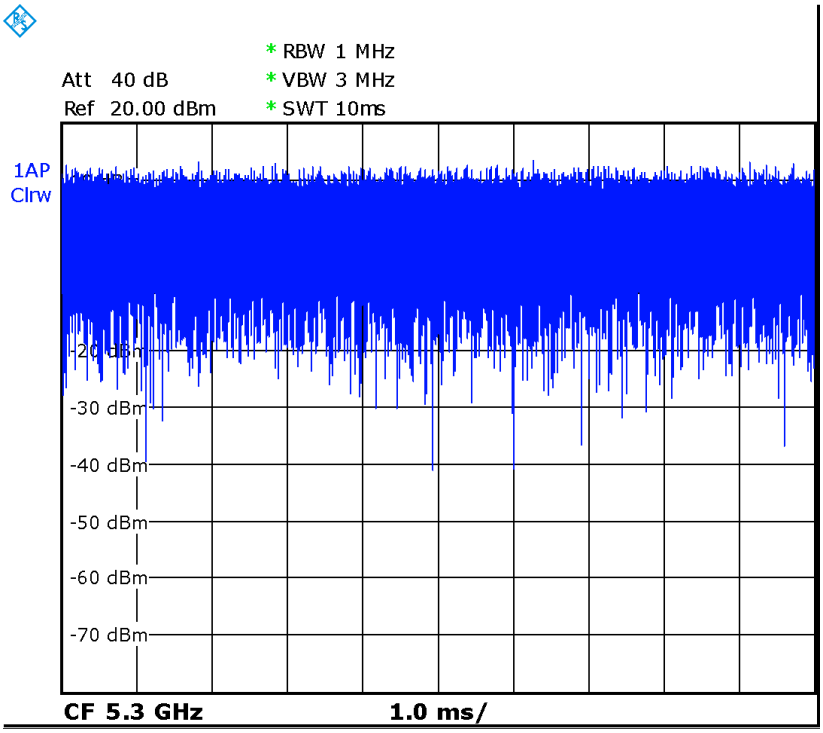
According to the KDB248227 D01, The reported SAR must be scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit. The scaled reported SAR is presented as below.

Table 14.4-12: SAR Values (WLAN 5G - Head) (Scaled Reported SAR)

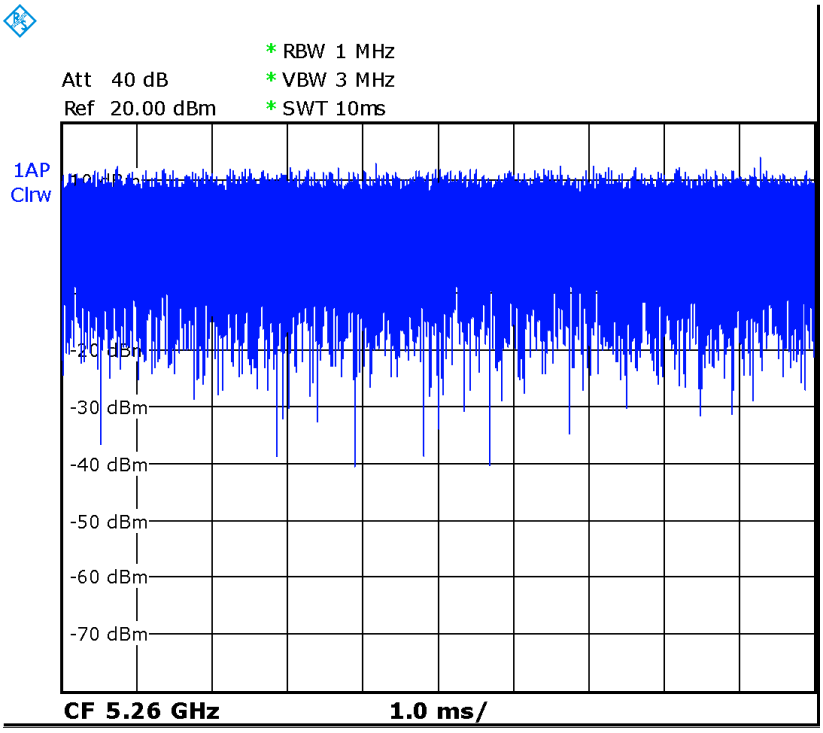
Frequency		Side	Test Position	Actual duty factor	maximum duty factor	Reported SAR (1g) (W/kg)	Scaled reported SAR (1g) (W/kg)
Ch.	MHz						
60	5300	Right	Tilt	100%	100%	**0.95**	**0.95**

Table 14.4-13 SAR Values (WLAN 5G - Body) (Scaled Reported SAR)

Frequency		Test Position	D (mm)	Actual duty factor	maximum duty factor	Reported SAR (1g) (W/kg)	Scaled reported SAR (1g) (W/kg)
Ch.	MHz						
52	5260	Front	10	100%	100%	**0.23**	**0.23**



Picture 14.4 The plot of duty factor for Head



Picture 14.5The plot of duty factor for Body

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 WCDMA1900 (1g)

Frequency		Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
Ch.	MHz						
9262	1852.4	Rear	10	0.914	0.897	1.02	/

. **Table 15.2: 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_Middle	Rear	10	0.875	0.851	1.03	/

. **Table 15.3: SAR Measurement Variability for Body LTE B7 (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							
21350	2560	1RB_Middle	Bottom	10	1.01	0.982	1.03	/

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	$\sqrt{3}$	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	N	1	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	∞
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	$\sqrt{3}$	1	1	2.9	2.9	∞
Phantom and set-up										
17	Phantom uncertainty	B	4.0	R	$\sqrt{3}$	1	1	2.3	2.3	∞
18	Liquid conductivity (target)	B	5.0	R	$\sqrt{3}$	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	$\sqrt{3}$	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, 2019	One year
02	Power meter	NRVD	102083	October 24, 2018	One year
03	Power sensor	NRV-Z5	100542		
04	Power sensor	NRP6A	101369	April 11, 2019	One Year
05	Signal Generator	E4438C	MY49070393	January 4, 2019	One Year
06	Amplifier	60S1G4	0331848	No Calibration Requested	
07	Directional Coupler	778D	MY48220584	No Calibration Requested	
08	Directional Coupler	772D	MY46151265	No Calibration Requested	
09	BTS	E5515C	MY50263375	January 17, 2019	One year
10	BTS	CMW500	159890	January 3, 2019	One year
11	E-field Probe	SPEAG EX3DV4	3617	January 31, 2019	One year
12	DAE	SPEAG DAE4	771	January 11,2019	One year
13	Dipole Validation Kit	SPEAG D750V3	1017	July 18, 2019	One year
14	Dipole Validation Kit	SPEAG D835V2	4d069	July 18, 2019	One year
15	Dipole Validation Kit	SPEAG D1750V2	1003	July 16, 2019	One year
16	Dipole Validation Kit	SPEAG D1900V2	5d101	July 17, 2019	One year
17	Dipole Validation Kit	SPEAG D2450V2	853	July 17, 2019	One year
18	Dipole Validation Kit	SPEAG D2600V2	1012	July 17, 2019	One year
19	Dipole Validation Kit	SPEAG D5GHzV2	1262	January 31, 2019	One year

END OF REPORT BODY

ANNEX A Graph Results

GSM850_CH251 Right Cheek
Date: 9/2/2019
Electronics: DAE4 Sn771
Medium: head 835 MHz
Medium parameters used: f = 848.8; σ = 0.926 mho/m; εr = 41.92; ρ = 1000 kg/m^3
Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C
Communication System: GSM850 848.8 Duty Cycle: 1:4
Probe: EX3DV4 – SN3617 ConvF(9.75,9.75,9.75)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.192 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.834 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.22 W/kg
SAR(1 g) = 0.171 W/kg; SAR(10 g) = 0.13 W/kg
Maximum value of SAR (measured) = 0.198 W/kg

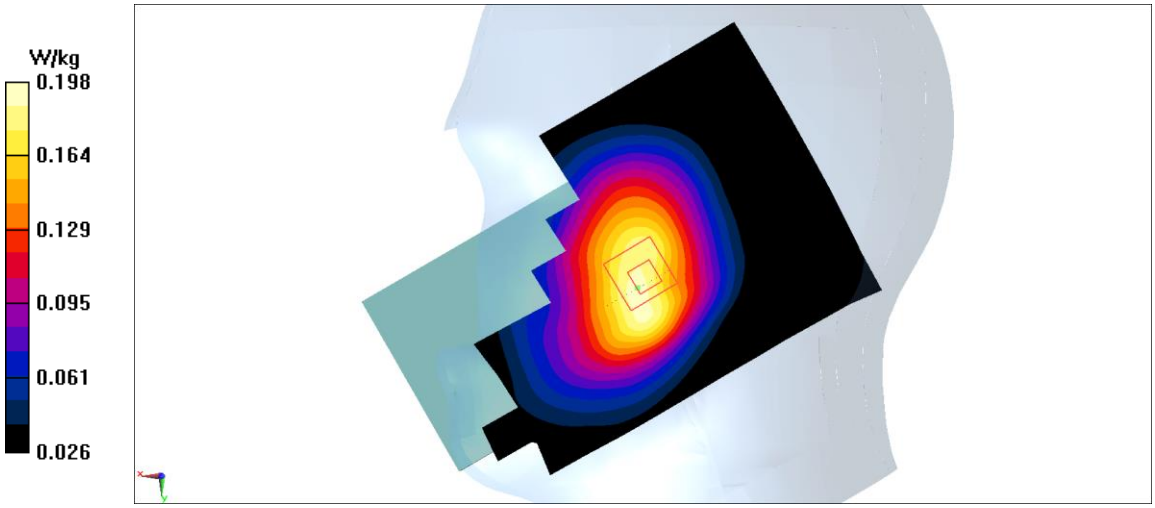


Fig A.1

GSM850_CH251 Rear
Date: 9/2/2019
Electronics: DAE4 Sn771
Medium: body 835 MHz
Medium parameters used: f = 848.8; σ = 0.995 mho/m; εr = 56.12; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: GSM850 848.8 Duty Cycle: 1:4
Probe: EX3DV4 – SN3617 ConvF(9.61,9.61,9.61)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.52 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.33 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.73 W/kg
SAR(1 g) = 0.412 W/kg; SAR(10 g) = 0.235 W/kg
Maximum value of SAR (measured) = 0.57 W/kg

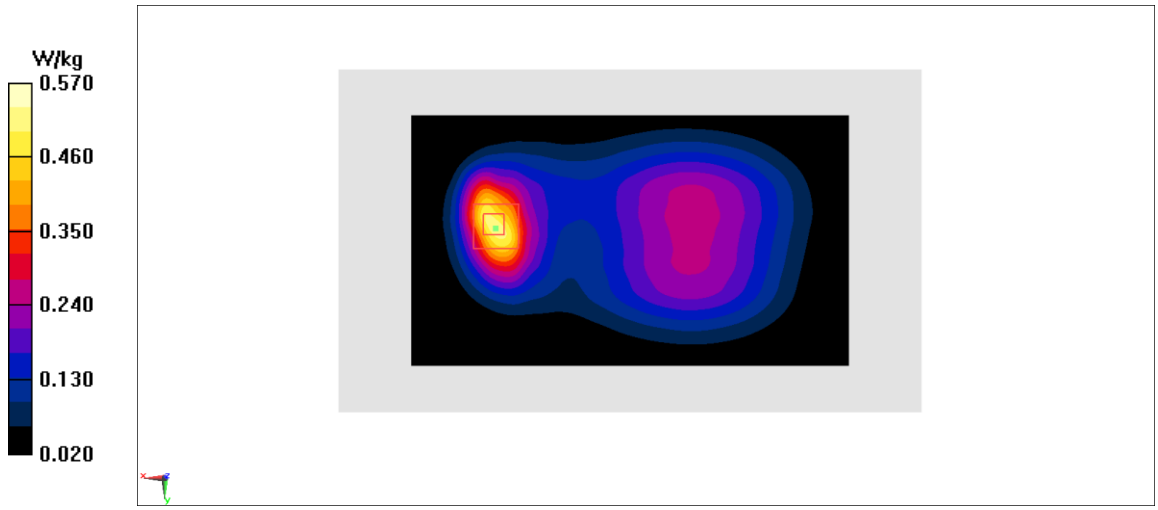


Fig A.2

PCS1900_CH810 Right Cheek
Date: 9/4/2019
Electronics: DAE4 Sn771
Medium: head 1900 MHz
Medium parameters used: f = 1909.8; σ = 1.384 mho/m; εr = 39.57; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: PCS1900 1909.8 Duty Cycle: 1:4
Probe: EX3DV4 – SN3617 ConvF(8.14,8.14,8.14)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.128 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.366 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.156 W/kg
SAR(1 g) = 0.099 W/kg; SAR(10 g) = 0.06 W/kg
Maximum value of SAR (measured) = 0.127 W/kg

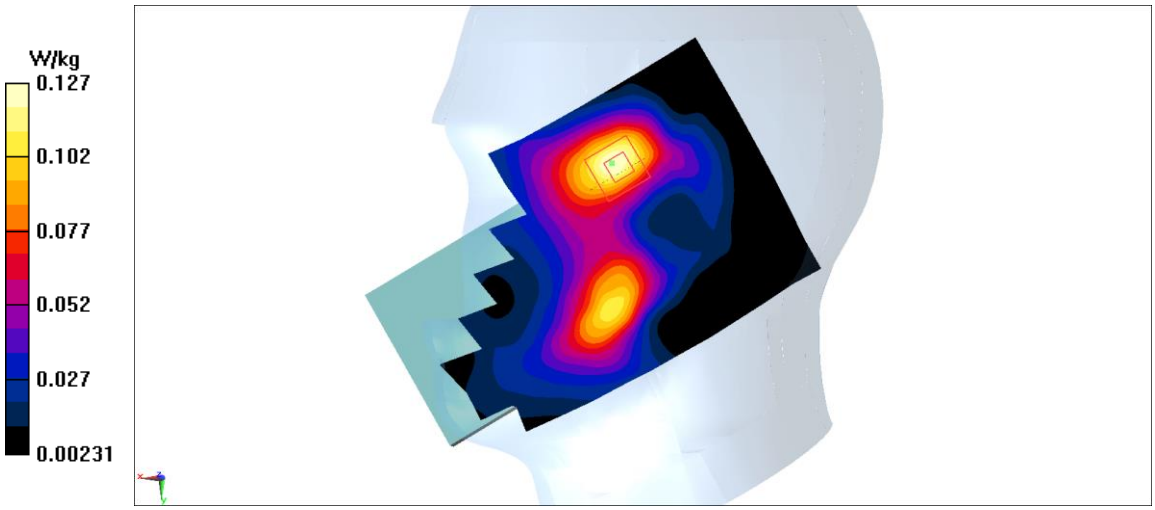


Fig A.3

PCS1900_CH810 Rear
Date: 9/4/2019
Electronics: DAE4 Sn771
Medium: body 1900 MHz
Medium parameters used: f = 1909.8; σ = 1.554 mho/m; εr = 52.34; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: PCS1900 1909.8 Duty Cycle: 1:4
Probe: EX3DV4 – SN3617 ConvF(7.78,7.78,7.78)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.646 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.749 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 0.822 W/kg
SAR(1 g) = 0.455 W/kg; SAR(10 g) = 0.241 W/kg
Maximum value of SAR (measured) = 0.617 W/kg

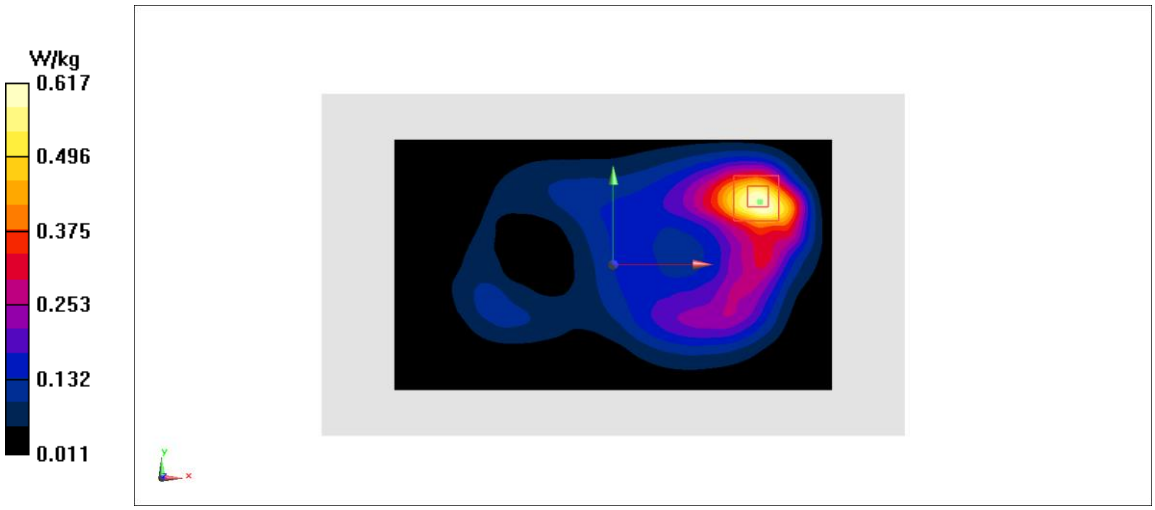


Fig A.4

WCDMA1900-BII_CH9400 Right Cheek
Date: 9/4/2019
Electronics: DAE4 Sn771
Medium: head 1900 MHz
Medium parameters used: f = 1880; σ = 1.356 mho/m; εr = 39.6; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: WCDMA1900-BII 1880 Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(8.14,8.14,8.14)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.281 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.867 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.314 W/kg
SAR(1 g) = 0.204 W/kg; SAR(10 g) = 0.124 W/kg
Maximum value of SAR (measured) = 0.257 W/kg

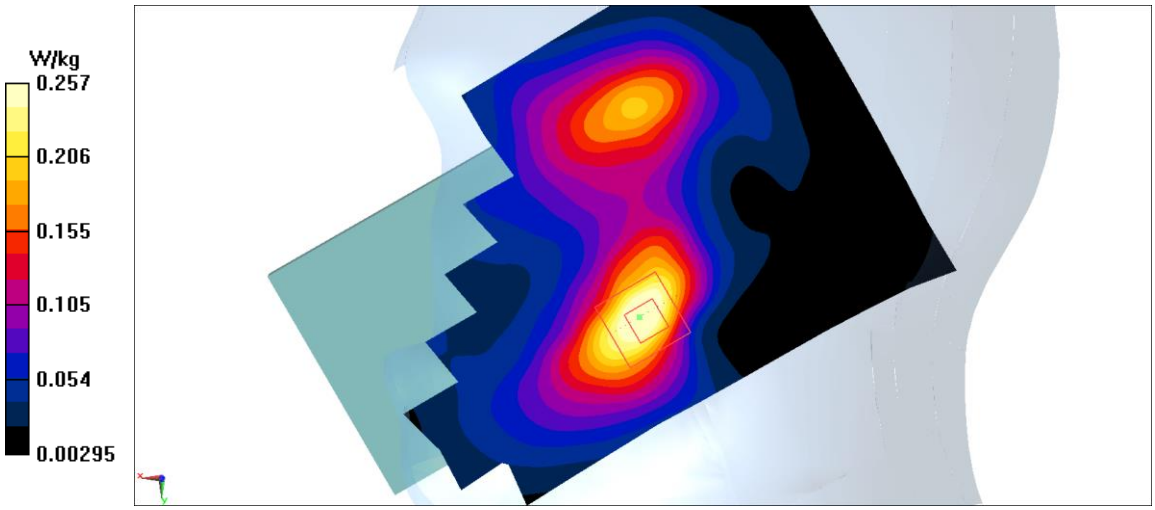


Fig A.5

WCDMA1900-BII_CH9262 Rear
Date: 9/4/2019
Electronics: DAE4 Sn771
Medium: body 1900 MHz
Medium parameters used: f = 1852.4; σ = 1.498 mho/m; εr = 52.41; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: WCDMA1900-BII 1852.4 Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(7.78,7.78,7.78)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.32 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.75 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 1.66 W/kg
SAR(1 g) = 0.914 W/kg; SAR(10 g) = 0.493 W/kg
Maximum value of SAR (measured) = 1.26 W/kg

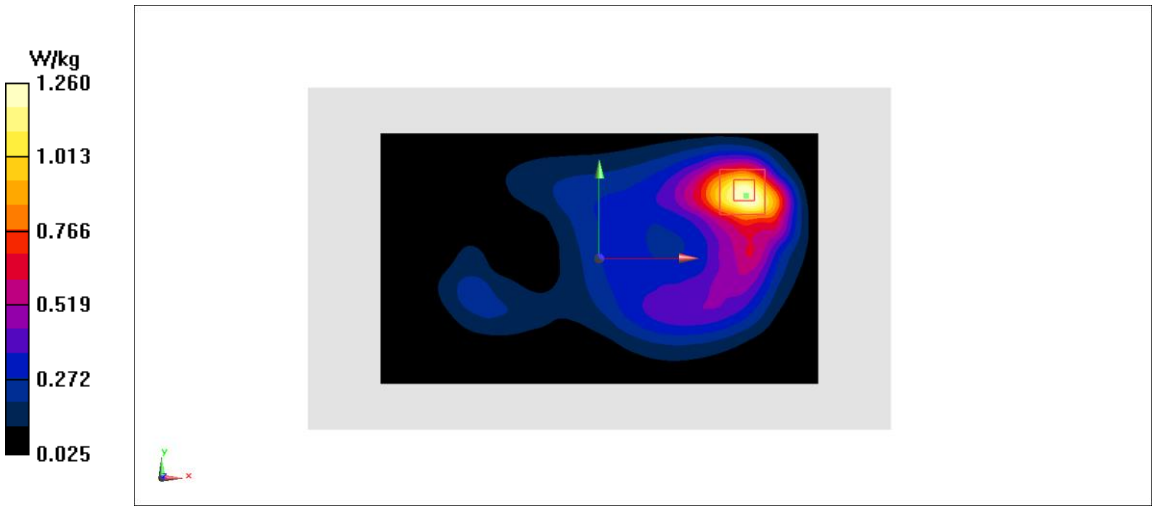


Fig A.6

WCDMA1700-BIV_CH1513 Right Cheek
Date: 9/3/2019
Electronics: DAE4 Sn771
Medium: head 1750 MHz
Medium parameters used: f = 1752.6; σ = 1.38 mho/m; εr = 39.74; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: WCDMA1700-BIV 1752.6 Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(8.38,8.38,8.38)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.236 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.36 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.26 W/kg
SAR(1 g) = 0.177 W/kg; SAR(10 g) = 0.133 W/kg
Maximum value of SAR (measured) = 0.219 W/kg

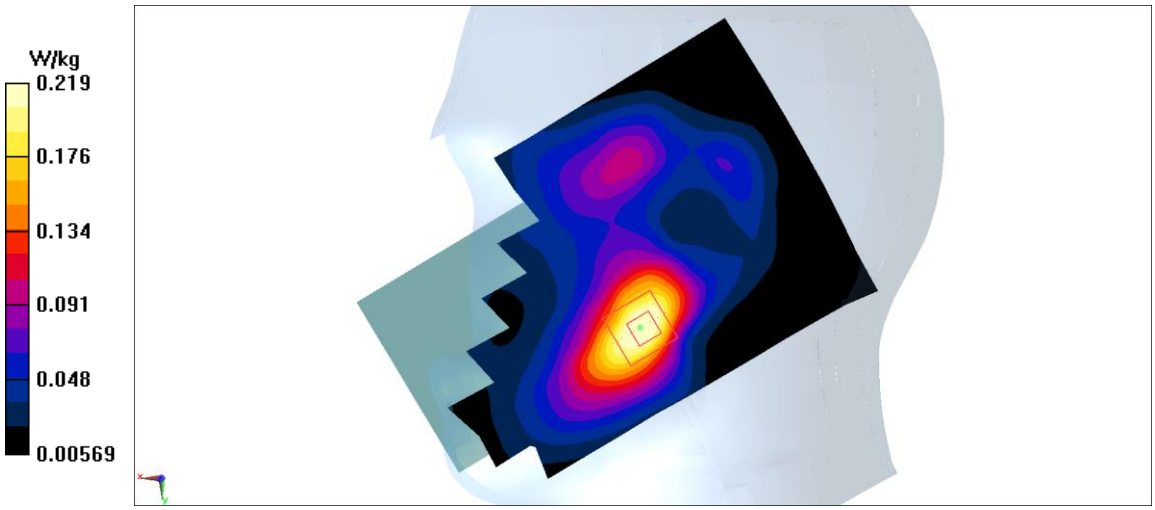


Fig A.7

WCDMA1700-BIV_CH1513 Rear
Date: 9/3/2019
Electronics: DAE4 Sn771
Medium: body 1750 MHz
Medium parameters used: f = 1752.6; σ = 1.491 mho/m; εr = 54.11; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: WCDMA1700-BIV 1752.6 Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(8.03,8.03,8.03)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.959 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.911 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 1.2 W/kg
SAR(1 g) = 0.663 W/kg; SAR(10 g) = 0.355 W/kg
Maximum value of SAR (measured) = 0.916 W/kg

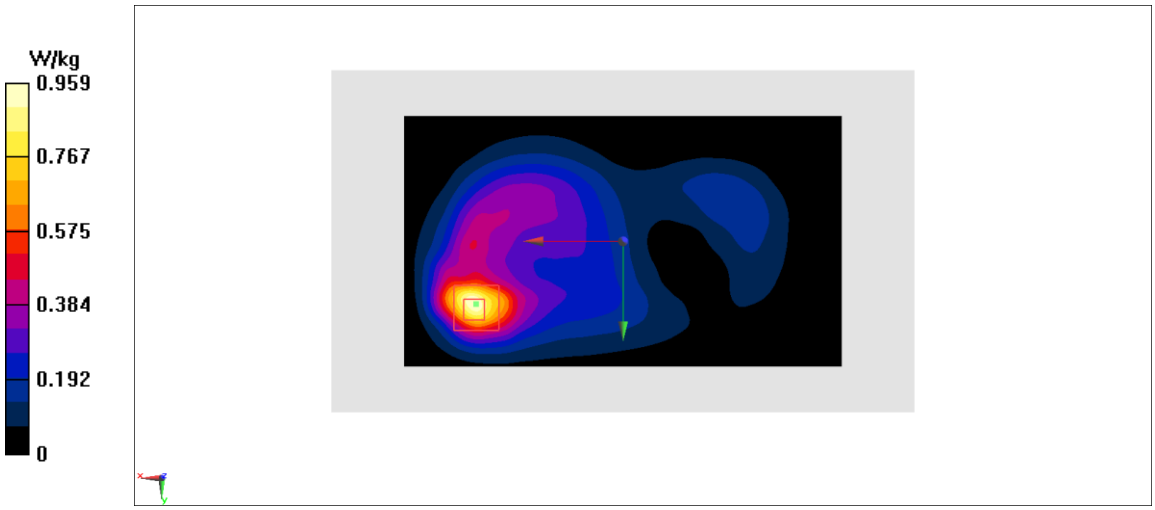


Fig A.8

WCDMA850-BV_CH4132 Right Cheek
Date: 9/2/2019
Electronics: DAE4 Sn771
Medium: head 835 MHz
Medium parameters used: f = 826.4; σ = 0.904 mho/m; εr = 41.95; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: WCDMA850-BV 826.4 Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(9.75,9.75,9.75)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.259 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.828 V/m; Power Drift = -0.19 dB
Peak SAR (extrapolated) = 0.29 W/kg
SAR(1 g) = 0.233 W/kg; SAR(10 g) = 0.17 W/kg
Maximum value of SAR (measured) = 0.256 W/kg

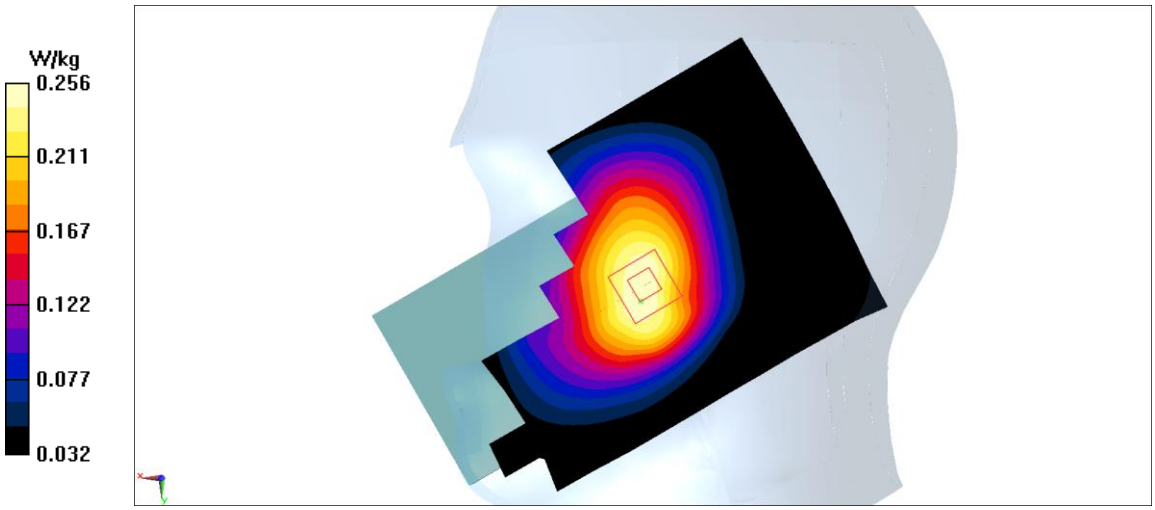


Fig A.9

WCDMA850-BV_CH4183 Rear
Date: 9/2/2019
Electronics: DAE4 Sn771
Medium: body 835 MHz
Medium parameters used: f = 836.6; σ = 0.984 mho/m; εr = 56.14; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: WCDMA850-BV 836.6 Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(9.61,9.61,9.61)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.539 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.19 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 0.758 W/kg
SAR(1 g) = 0.425 W/kg; SAR(10 g) = 0.243 W/kg
Maximum value of SAR (measured) = 0.588 W/kg

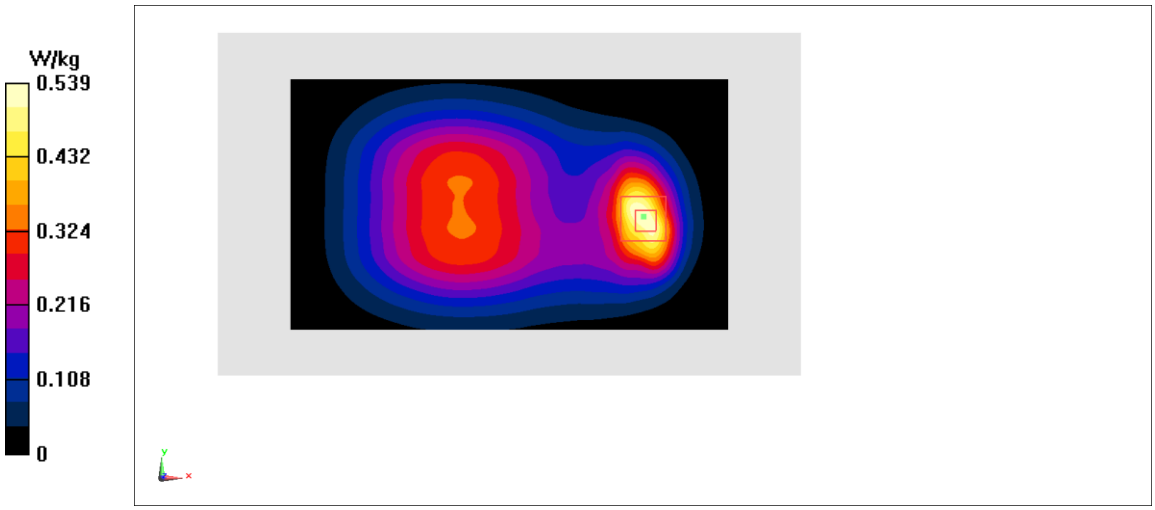


Fig A.10

LTE1900-FDD2_CH18700 Right Cheek
Date: 9/4/2019
Electronics: DAE4 Sn771
Medium: head 1900 MHz
Medium parameters used: f = 1860 MHz; σ = 1.337 mho/m; εr = 39.63; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: LTE1900-FDD2 1860 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(8.14,8.14,8.14)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.248 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.415 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.281 W/kg
SAR(1 g) = 0.184 W/kg; SAR(10 g) = 0.113 W/kg
Maximum value of SAR (measured) = 0.236 W/kg

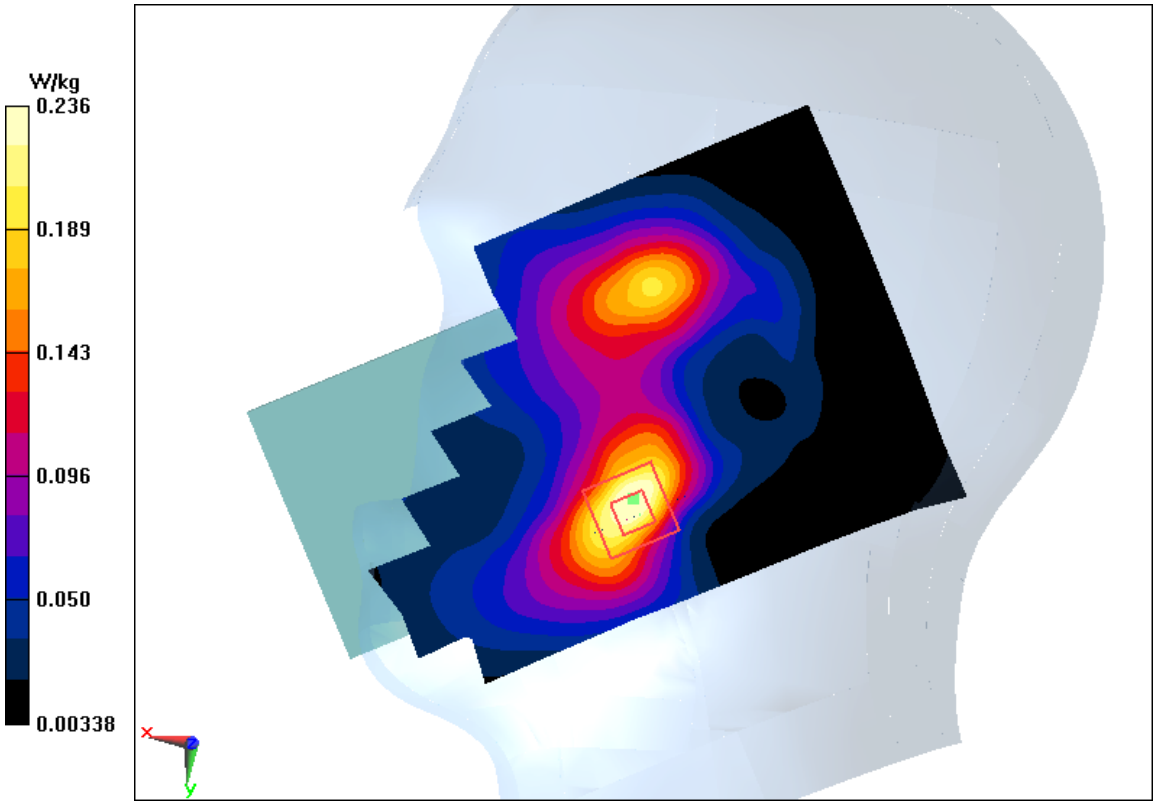


Fig A.11

LTE1900-FDD2_CH18700 Rear
Date: 9/4/2019
Electronics: DAE4 Sn771
Medium: body 1900 MHz
Medium parameters used: f = 1860 MHz; σ = 1.506 mho/m; εr = 52.4; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: LTE1900-FDD2 1860 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(7.78,7.78,7.78)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.27 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.55 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 1.58 W/kg
SAR(1 g) = 0.875 W/kg; SAR(10 g) = 0.475 W/kg
Maximum value of SAR (measured) = 1.2 W/kg

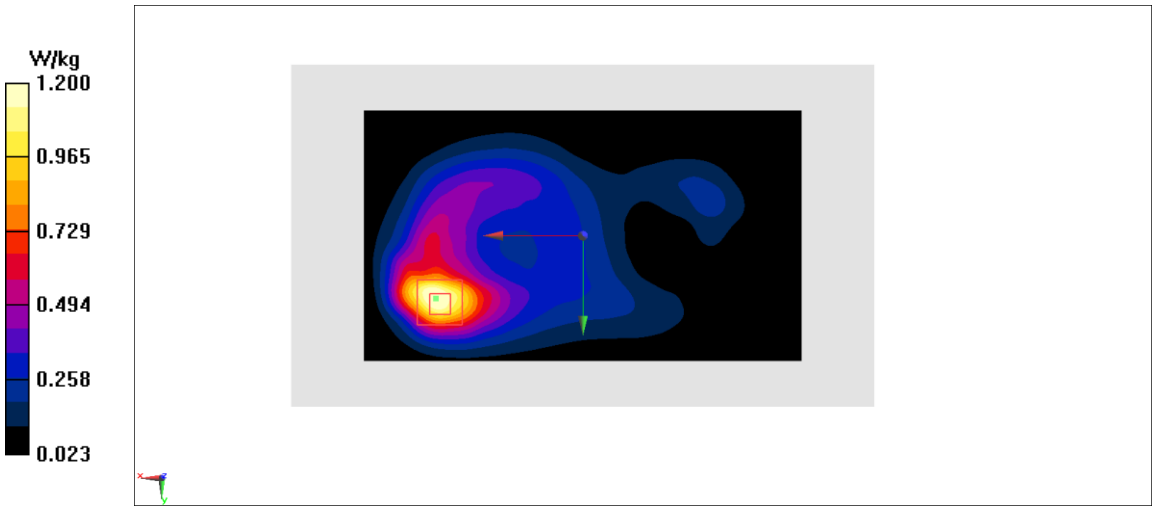


Fig A.12

LTE850-FDD5_CH20525 Left Cheek
Date: 9/2/2019
Electronics: DAE4 Sn771
Medium: head 835 MHz
Medium parameters used: f = 836.5 MHz; σ = 0.914 mho/m; εr = 41.94; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: LTE850-FDD5 836.5 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(9.75,9.75,9.75)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.205 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.26 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 0.227 W/kg
SAR(1 g) = 0.181 W/kg; SAR(10 g) = 0.14 W/kg
Maximum value of SAR (measured) = 0.207 W/kg

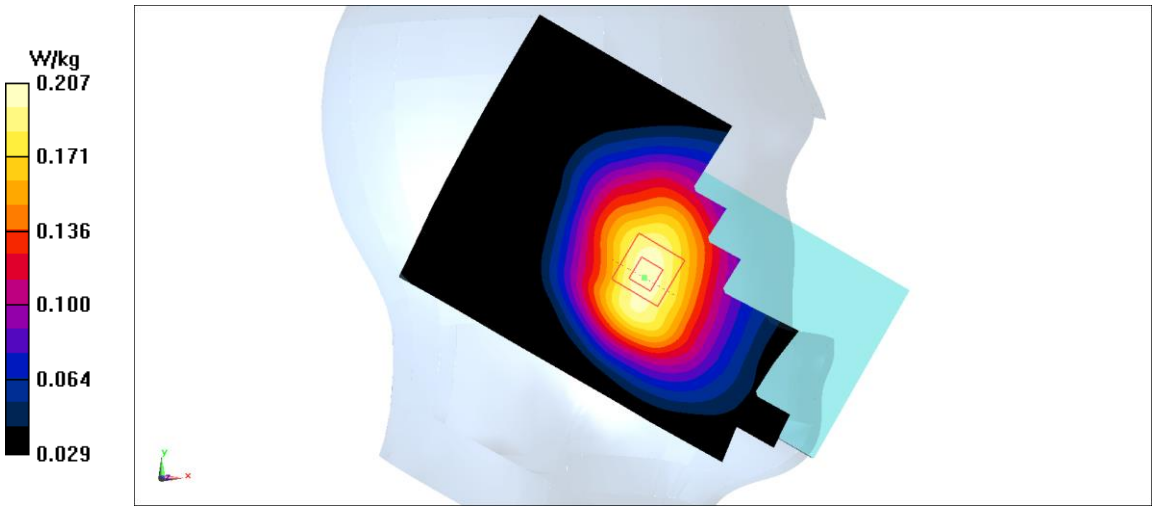


Fig A.13

LTE850-FDD5_CH20525 Rear
Date: 9/2/2019
Electronics: DAE4 Sn771
Medium: body 835 MHz
Medium parameters used: f = 836.5 MHz; σ = 0.983 mho/m; εr = 56.14; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: LTE850-FDD5 836.5 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(9.61,9.61,9.61)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.511 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.77 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.717 W/kg
SAR(1 g) = 0.403 W/kg; SAR(10 g) = 0.231 W/kg
Maximum value of SAR (measured) = 0.556 W/kg

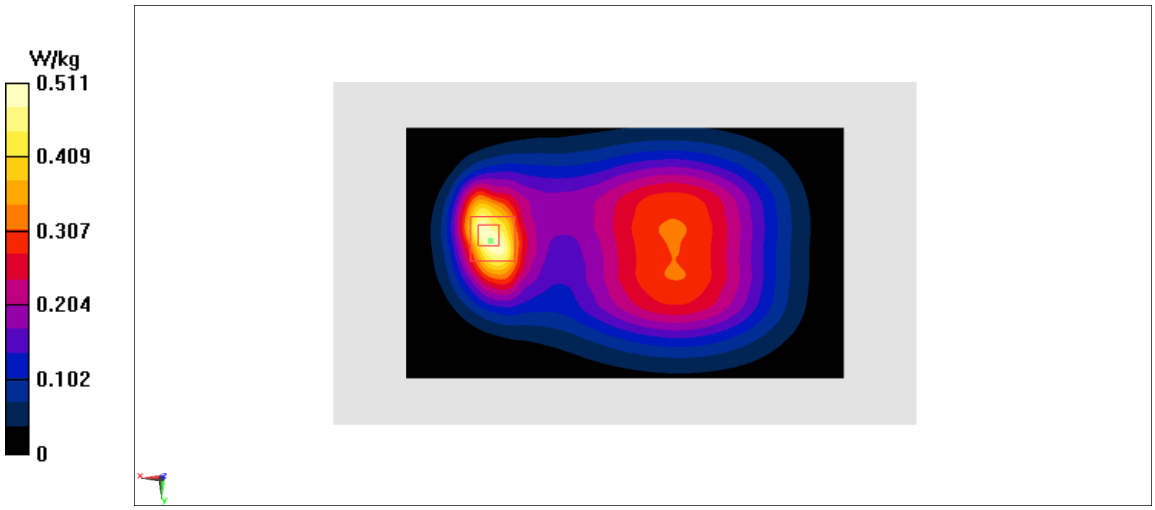


Fig A.14

LTE2500-FDD7_CH20850 Left Cheek
Date: 9/5/2019
Electronics: DAE4 Sn771
Medium: head 2600 MHz
Medium parameters used: f = 2510 MHz; σ = 1.84 mho/m; εr = 39.12; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: LTE2500-FDD7 2510 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(7.19,7.19,7.19)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.314 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.036 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.387 W/kg
SAR(1 g) = 0.215 W/kg; SAR(10 g) = 0.11 W/kg
Maximum value of SAR (measured) = 0.302 W/kg

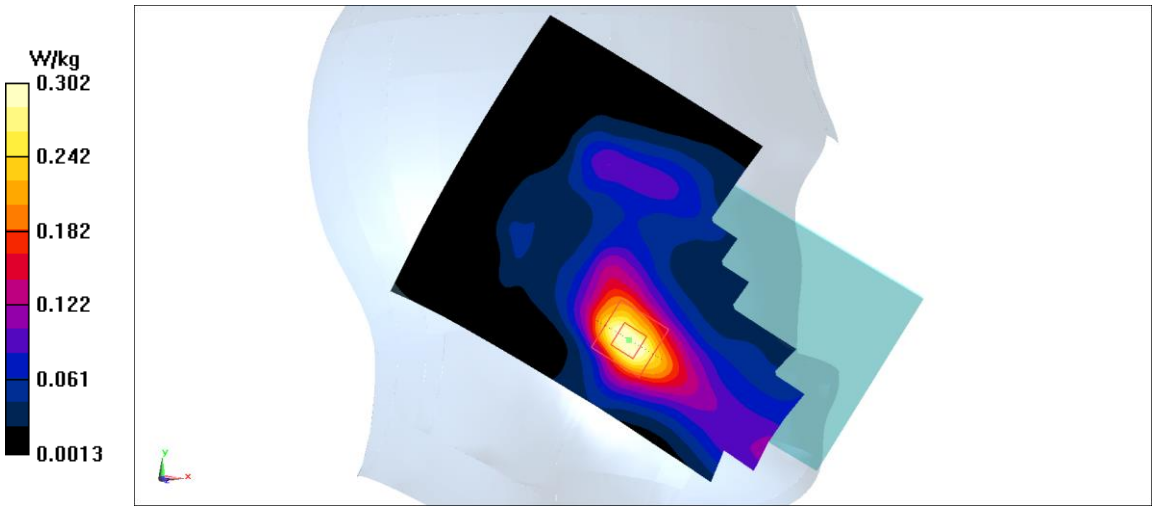


Fig A.15

LTE2500-FDD7_CH21350 Bottom
Date: 9/5/2019
Electronics: DAE4 Sn771
Medium: body 2600 MHz
Medium parameters used: f = 2560 MHz; σ = 2.133 mho/m; εr = 52.95; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: LTE2500-FDD7 2560 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(7.49,7.49,7.49)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.65 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 21.97 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 2.04 W/kg
SAR(1 g) = 1.01 W/kg; SAR(10 g) = 0.49 W/kg
Maximum value of SAR (measured) = 1.6 W/kg

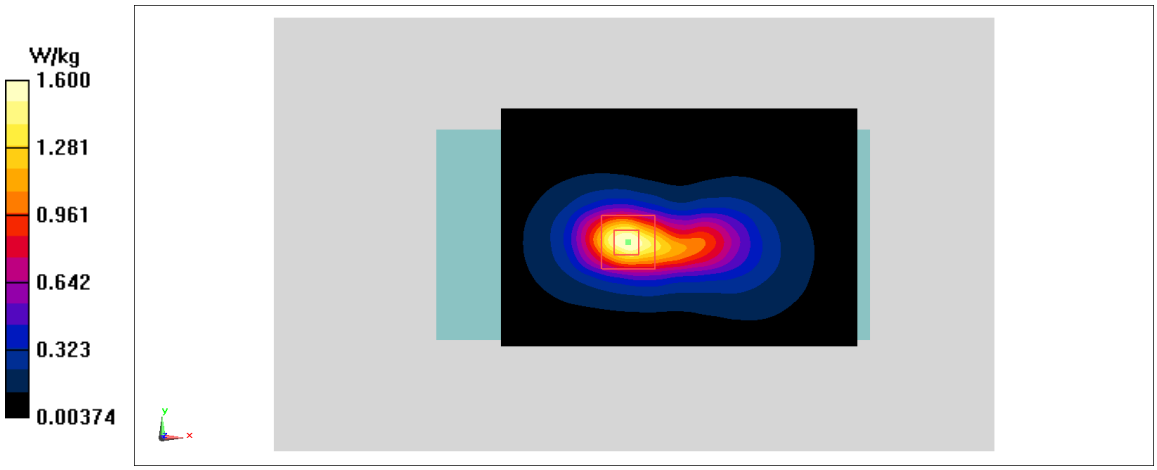


Fig A.16

LTE700-FDD12_CH23130 Right Cheek
Date: 9/1/2019
Electronics: DAE4 Sn771
Medium: head 750 MHz
Medium parameters used: f = 711 MHz; σ = 0.868 mho/m; εr = 42.46; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: LTE700-FDD12 711 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(10.03,10.03,10.03)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.146 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.055 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 0.157 W/kg
SAR(1 g) = 0.126 W/kg; SAR(10 g) = 0.097 W/kg
Maximum value of SAR (measured) = 0.142 W/kg

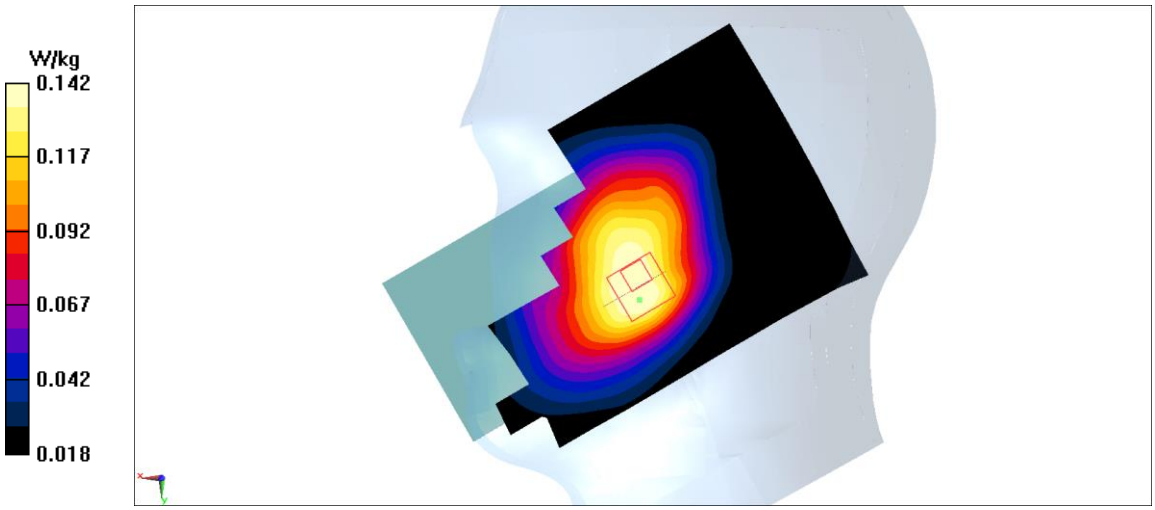


Fig A.17

LTE700-FDD12_CH23130 Rear
Date: 9/1/2019
Electronics: DAE4 Sn771
Medium: body 750 MHz
Medium parameters used: f = 711 MHz; σ = 0.936 mho/m; εr = 56.16; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: LTE700-FDD12 711 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(9.85,9.85,9.85)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.291 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 17.18 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.421 W/kg
SAR(1 g) = 0.232 W/kg; SAR(10 g) = 0.138 W/kg
Maximum value of SAR (measured) = 0.323 W/kg

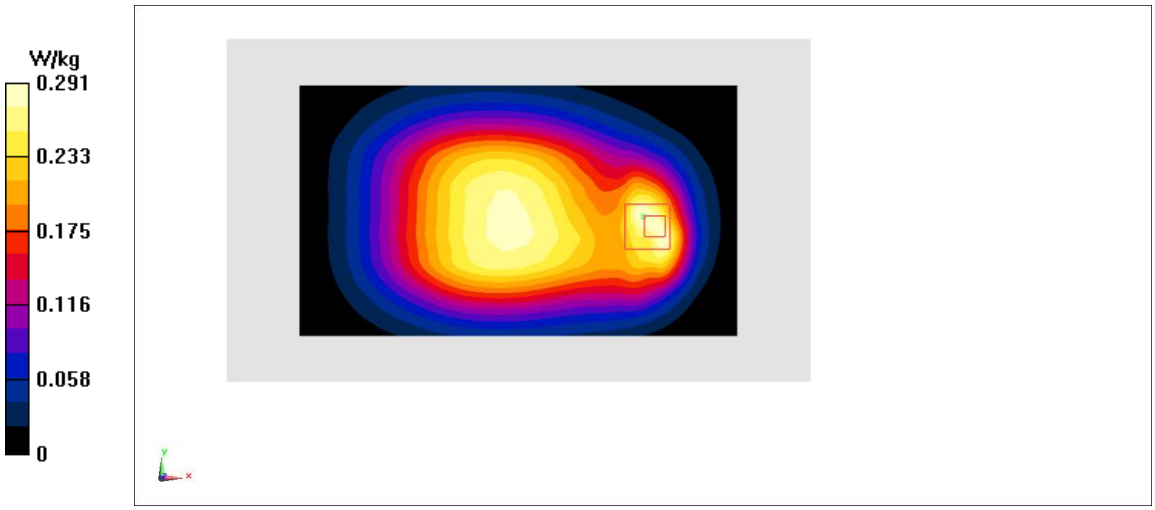


Fig A.18

LTE750-FDD13_CH23230 Right Cheek
Date: 9/1/2019
Electronics: DAE4 Sn771
Medium: head 750 MHz
Medium parameters used: f = 782 MHz; σ = 0.935 mho/m; εr = 42.37; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: LTE750-FDD13 782 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(10.03,10.03,10.03)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.162 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.807 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.178 W/kg
SAR(1 g) = 0.142 W/kg; SAR(10 g) = 0.111 W/kg
Maximum value of SAR (measured) = 0.16 W/kg

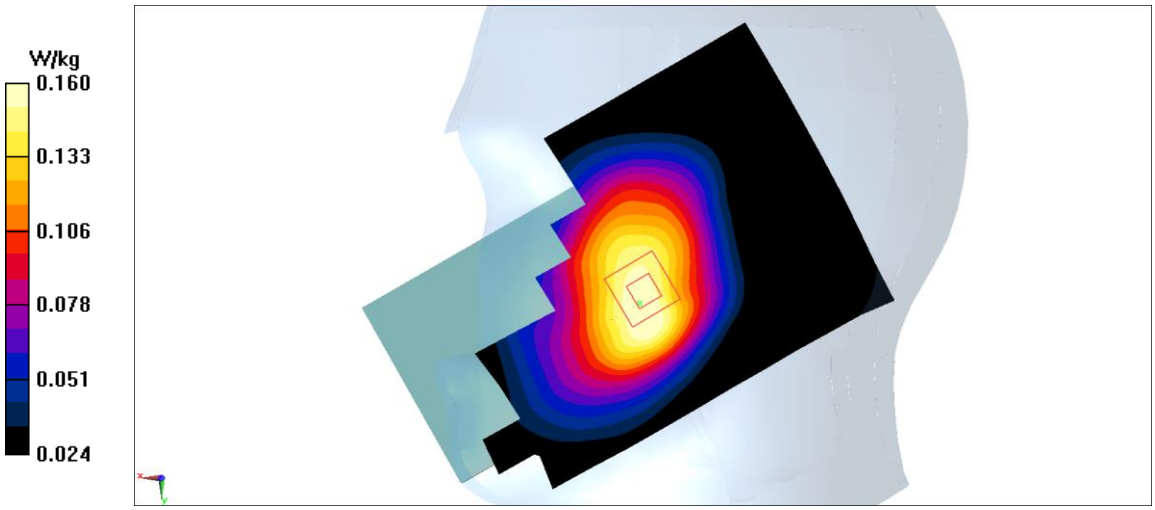


Fig A.19

LTE750-FDD13_CH23230 Rear
Date: 9/1/2019
Electronics: DAE4 Sn771
Medium: body 750 MHz
Medium parameters used: f = 782 MHz; σ = 1.003 mho/m; εr = 56.07; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: LTE750-FDD13 782 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(9.85,9.85,9.85)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.336 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.66 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.486 W/kg
SAR(1 g) = 0.269 W/kg; SAR(10 g) = 0.155 W/kg
Maximum value of SAR (measured) = 0.368 W/kg

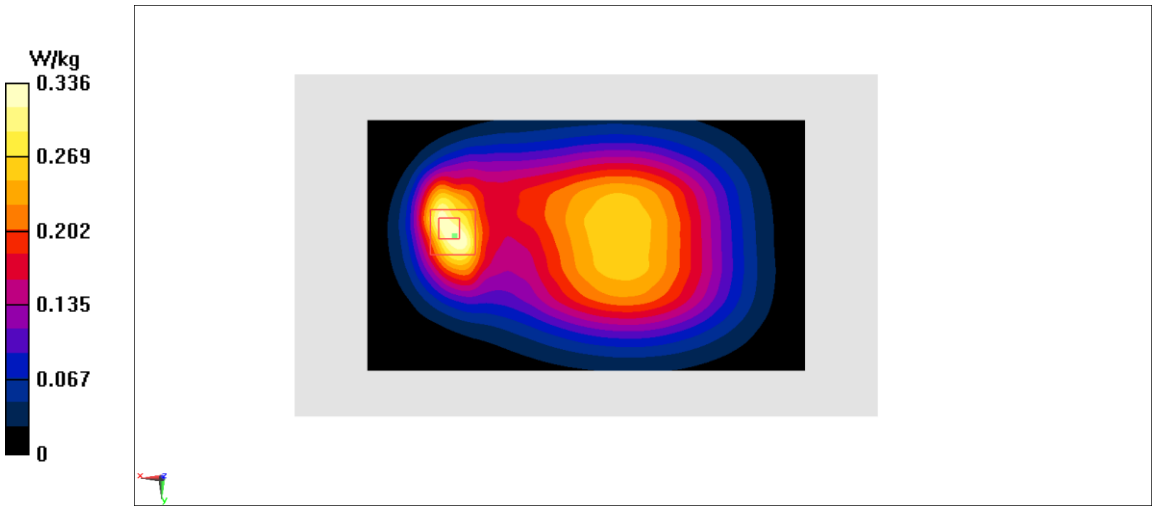


Fig A.20

LTE2600-TDD38_CH38150 Left Cheek
Date: 9/5/2019
Electronics: DAE4 Sn771
Medium: head 2600 MHz
Medium parameters used: f = 2610 MHz; σ = 1.936 mho/m; εr = 39; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: LTE2600-TDD38 2610 MHz Duty Cycle: 1:1.58
Probe: EX3DV4 – SN3617 ConvF(7.19,7.19,7.19)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.183 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.924 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 0.226 W/kg
SAR(1 g) = 0.122 W/kg; SAR(10 g) = 0.06 W/kg
Maximum value of SAR (measured) = 0.174 W/kg

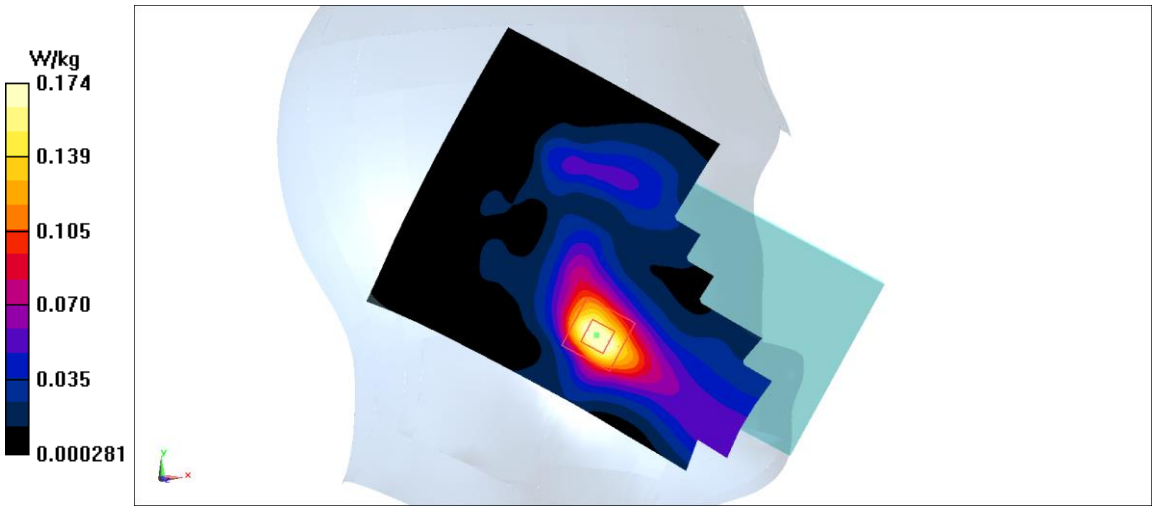


Fig A.21

LTE2600-TDD38_CH38150 Bottom
Date: 9/5/2019
Electronics: DAE4 Sn771
Medium: body 2600 MHz
Medium parameters used: f = 2610 MHz; σ = 2.18 mho/m; εr = 52.89; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: LTE2600-TDD38 2610 MHz Duty Cycle: 1:1.58
Probe: EX3DV4 – SN3617 ConvF(7.49,7.49,7.49)

Area Scan (31x101x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.927 W/kg

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

Reference Value = 16.60 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 1.20 W/kg
SAR(1 g) = 0.600 W/kg; SAR(10 g) = 0.288 W/kg
Maximum value of SAR (measured) = 0.931 W/kg

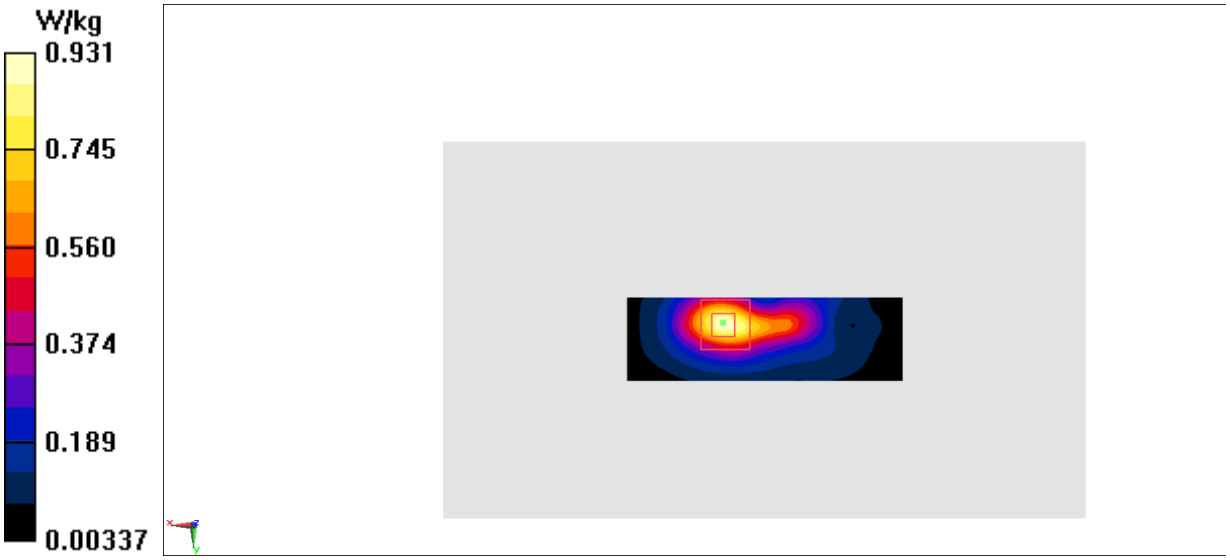


Fig A.22

LTE1700-FDD66_CH132572 Right Cheek
Date: 9/3/2019
Electronics: DAE4 Sn771
Medium: head 1750 MHz
Medium parameters used: f = 2610 MHz; σ = 2.194 mho/m; εr = 38.71; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: LTE1700-FDD66 2610 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(8.38,8.38,8.38)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.203 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.215 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 0.229 W/kg
SAR(1 g) = 0.155 W/kg; SAR(10 g) = 0.099 W/kg
Maximum value of SAR (measured) = 0.194 W/kg

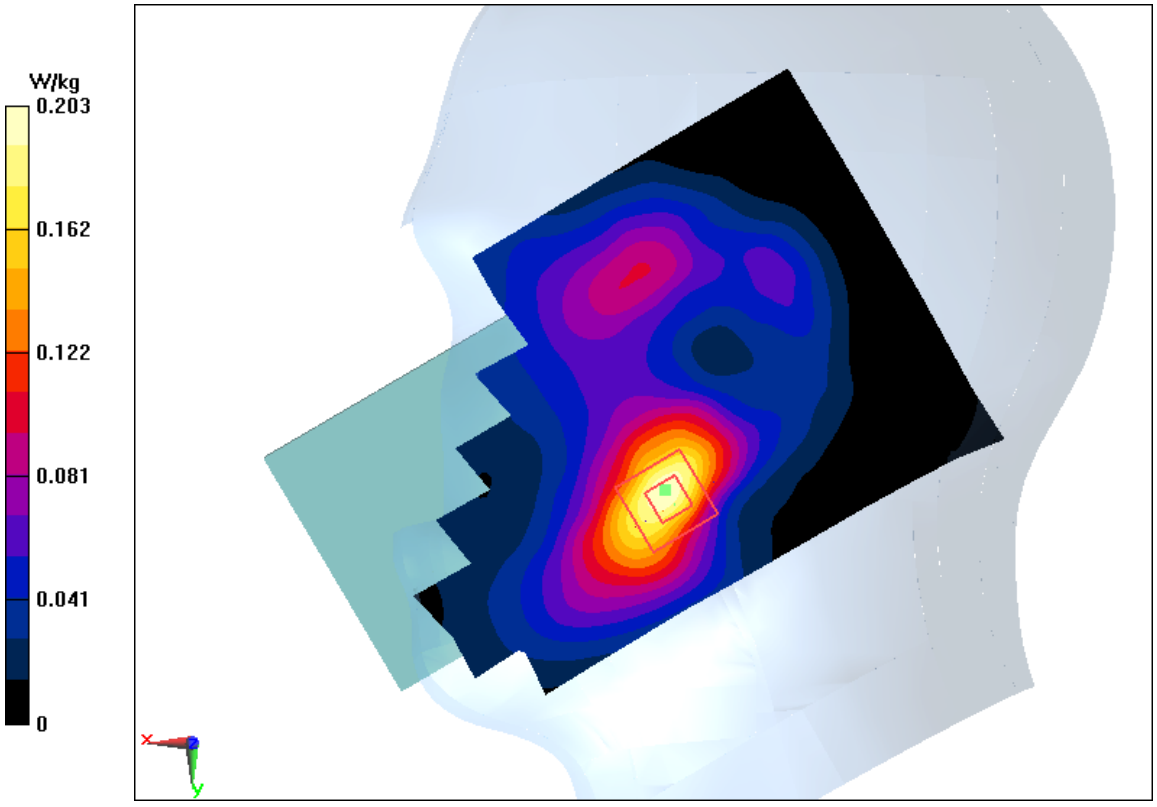


Fig A.23

LTE1700-FDD66_CH132572 Rear
Date: 9/3/2019
Electronics: DAE4 Sn771
Medium: body 1750 MHz
Medium parameters used: f = 2610 MHz; σ = 2.305 mho/m; εr = 53.08; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: LTE1700-FDD66 2610 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(8.03,8.03,8.03)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.02 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.58 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 1.27 W/kg
SAR(1 g) = 0.702 W/kg; SAR(10 g) = 0.376 W/kg
Maximum value of SAR (measured) = 0.97 W/kg

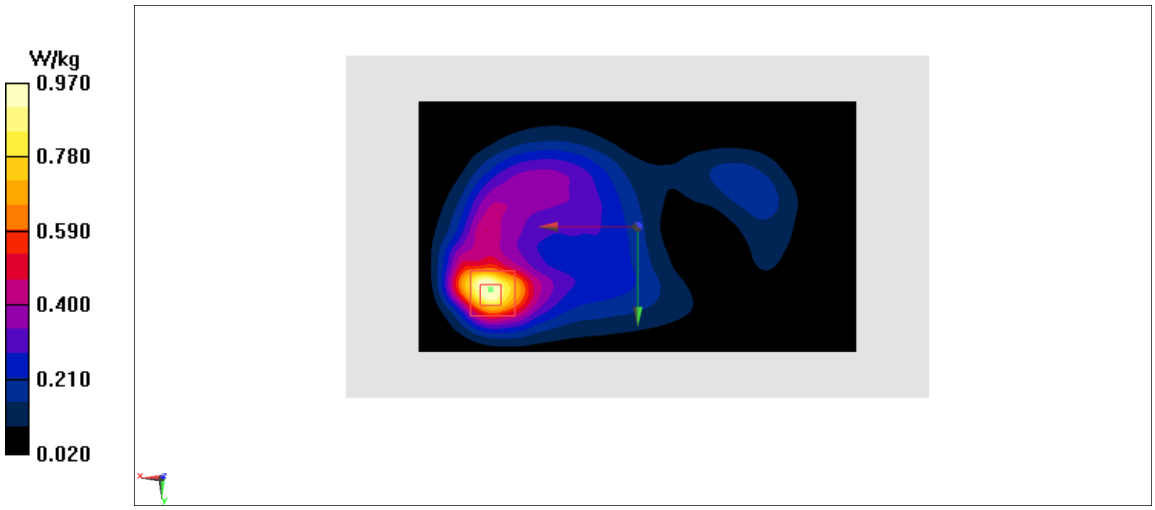


Fig A.24

WLAN2450_CH6 Right Cheek
Date: 9/5/2019
Electronics: DAE4 Sn771
Medium: head 2450 MHz
Medium parameters used: f = 2437; σ = 1.781 mho/m; εr = 38.83; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: WLAN2450 2437 Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(7.62,7.62,7.62)

Area Scan (101x161x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 1.24 W/kg

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

Reference Value = 7.978 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 1.30 W/kg
SAR(1 g) = 0.628 W/kg; SAR(10 g) = 0.303 W/kg
Maximum value of SAR (measured) = 0.928 W/kg

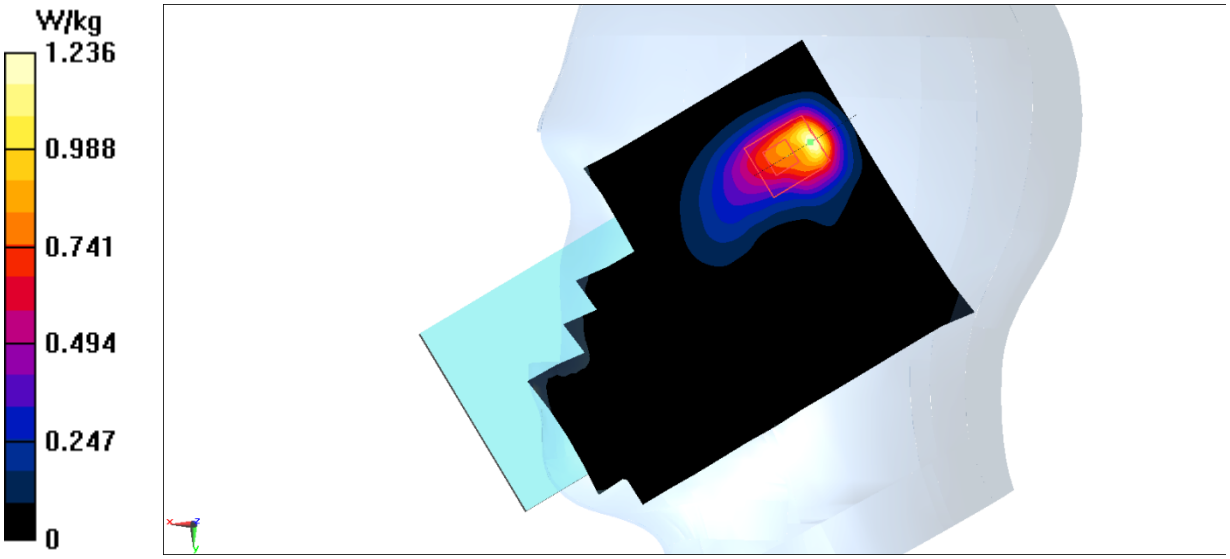


Fig A.25

WLAN2450_CH6 Rear
Date: 9/5/2019
Electronics: DAE4 Sn771
Medium: body 2450 MHz
Medium parameters used: f = 2437; σ = 1.972 mho/m; εr = 52.83; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: WLAN2450 2437 Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(7.79,7.79,7.79)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.222 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.898 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.27 W/kg
SAR(1 g) = 0.142 W/kg; SAR(10 g) = 0.075 W/kg
Maximum value of SAR (measured) = 0.221 W/kg

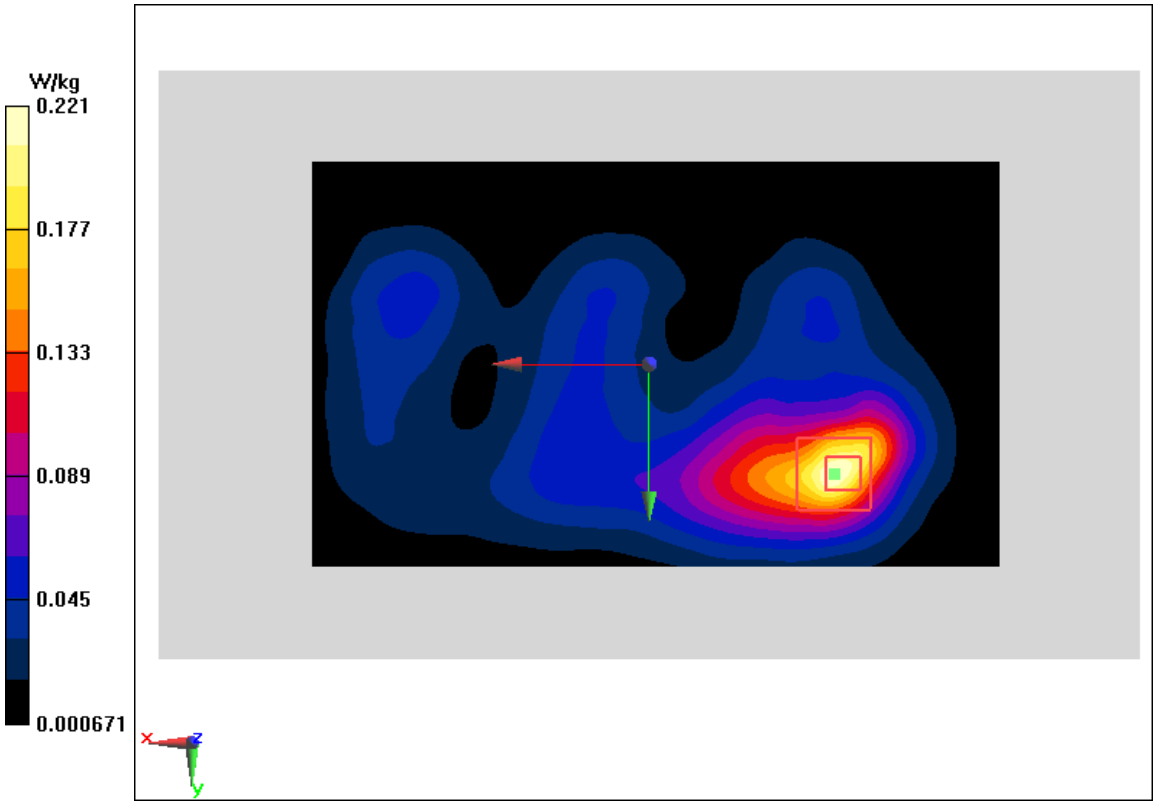


Fig A.26

WLAN_CH60 Right Tilt
Date: 9/6/2019
Electronics: DAE4 Sn771
Medium: head 5 GHz
Medium parameters used: f = 5300; σ = 4.813 mho/m; εr = 36.55; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: WLAN 5300 Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(5.25, 5.25, 5.25)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.8 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.82 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 2.7 W/kg
SAR(1 g) = 0.656 W/kg; SAR(10 g) = 0.192 W/kg
Maximum value of SAR (measured) = 1.58 W/kg

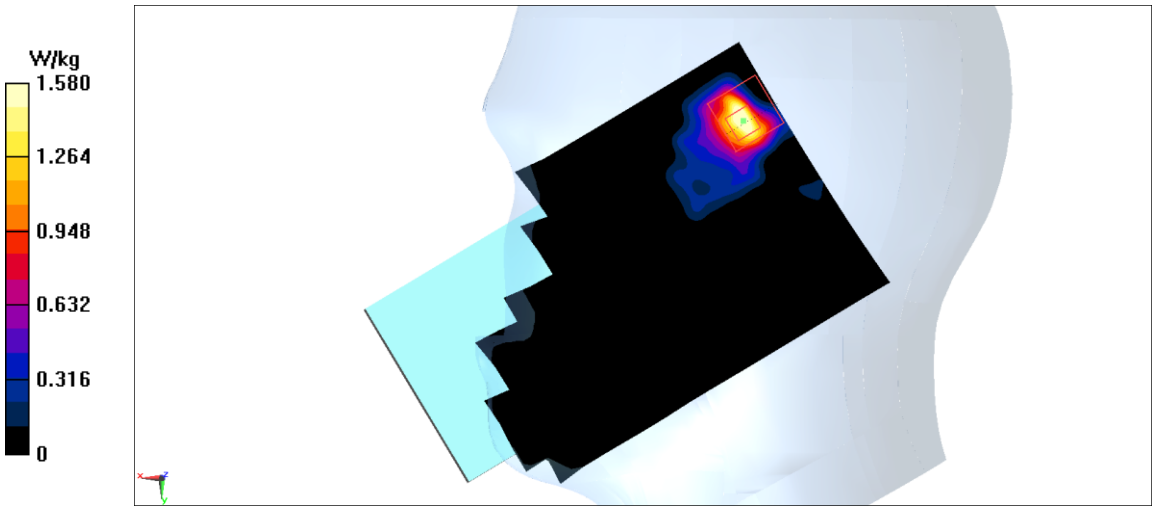


Fig A.27

WLAN_CH52 Front
Date: 9/6/2019
Electronics: DAE4 Sn771
Medium: body 5 GHz
Medium parameters used: f = 5260; σ = 5.312 mho/m; εr = 49.88; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: WLAN 5260 Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(4.76, 4.76, 4.76)

Area Scan (111x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.358 W/kg

Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 4.593 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.562 W/kg
SAR(1 g) = 0.165 W/kg; SAR(10 g) = 0.064 W/kg
Maximum value of SAR (measured) = 0.360 W/kg

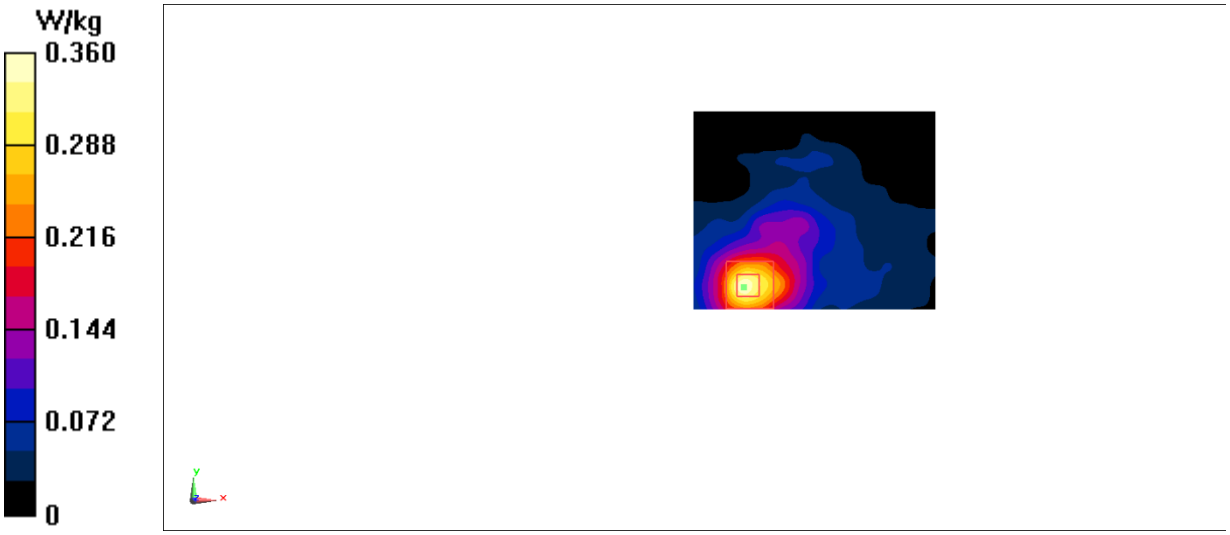


Fig A.28

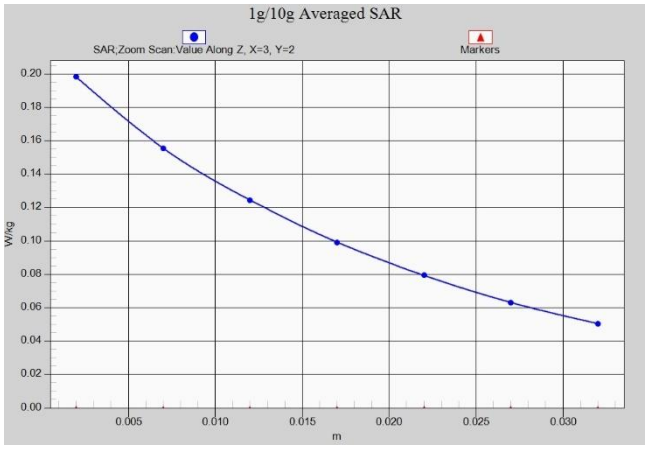


Fig. 1-1 Z-Scan at power reference point (850 MHz)

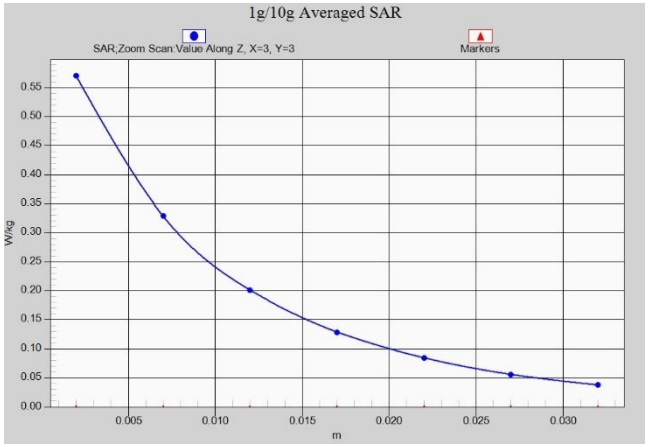


Fig. 1-2 Z-Scan at power reference point (850 MHz)

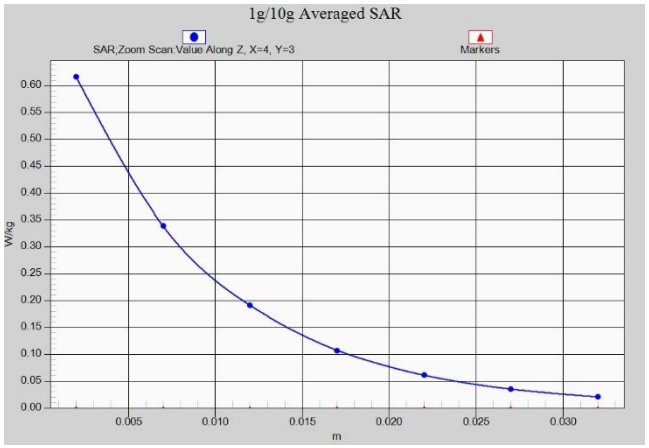


Fig. 1-3 Z-Scan at power reference point (1900 MHz)

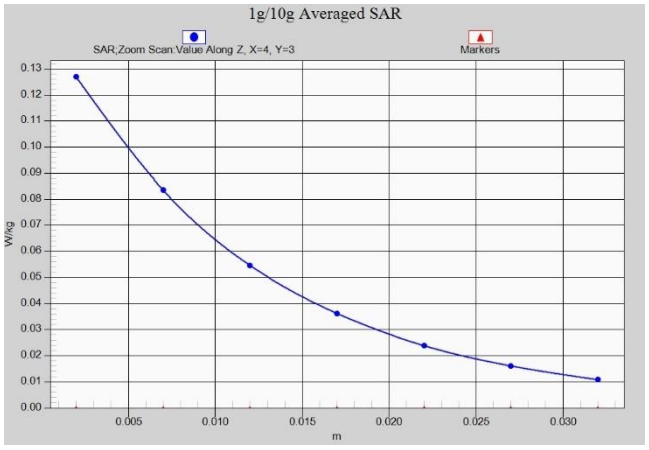


Fig. 1-4 Z-Scan at power reference point (1900 MHz)

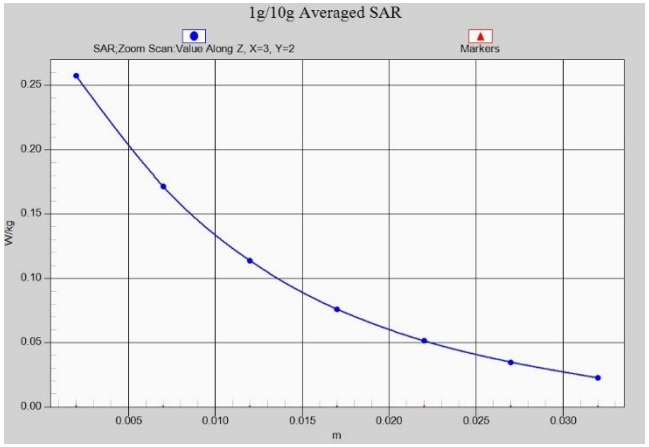


Fig. 1-5 Z-Scan at power reference point (WCDMA1900)

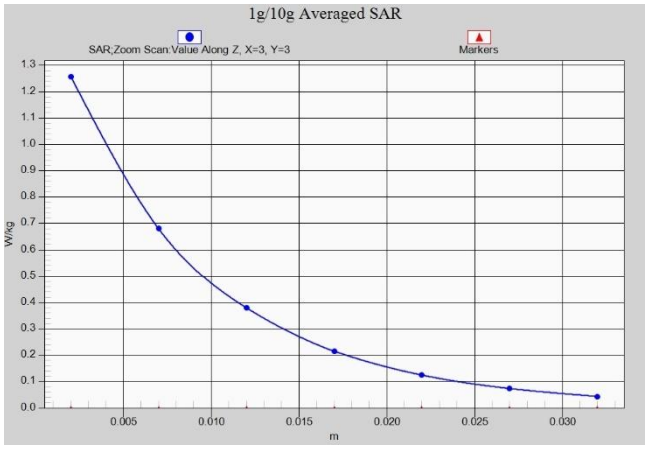


Fig. 1-6 Z-Scan at power reference point (WCDMA1900)

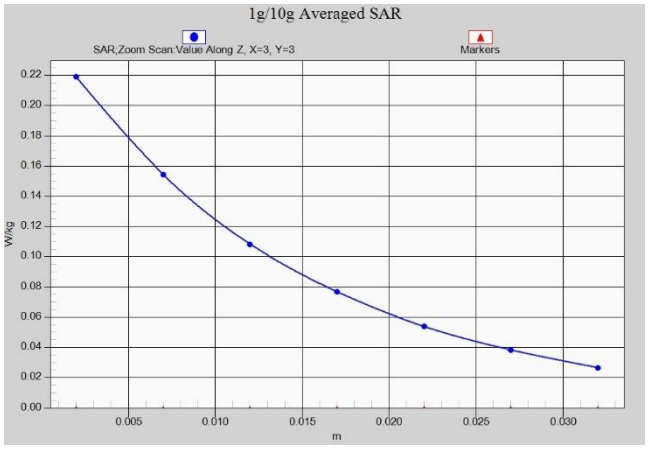


Fig. 1-7 Z-Scan at power reference point (WCDMA1700)

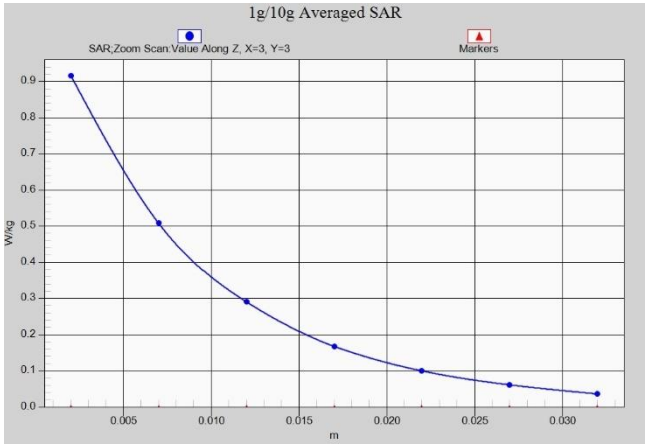


Fig. 1-8 Z-Scan at power reference point (WCDMA1700)

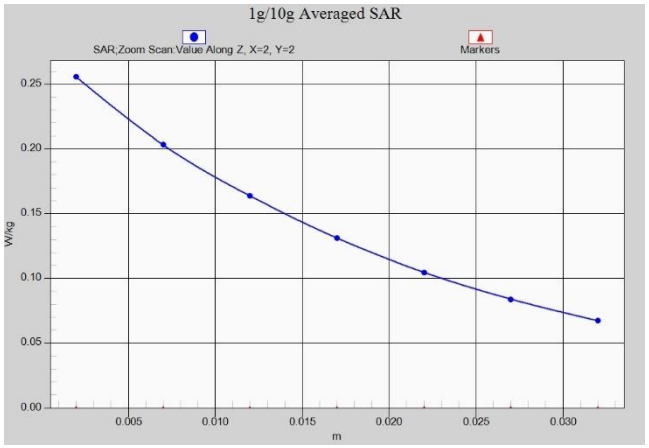


Fig. 1-9 Z-Scan at power reference point (WCDMA850)

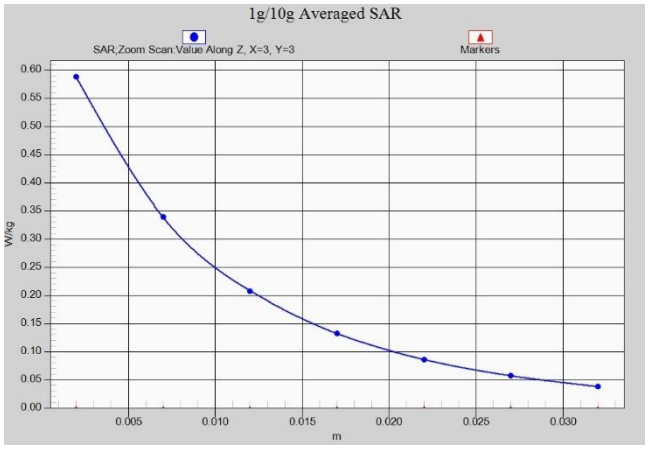


Fig. 1-10 Z-Scan at power reference point (WCDMA850)

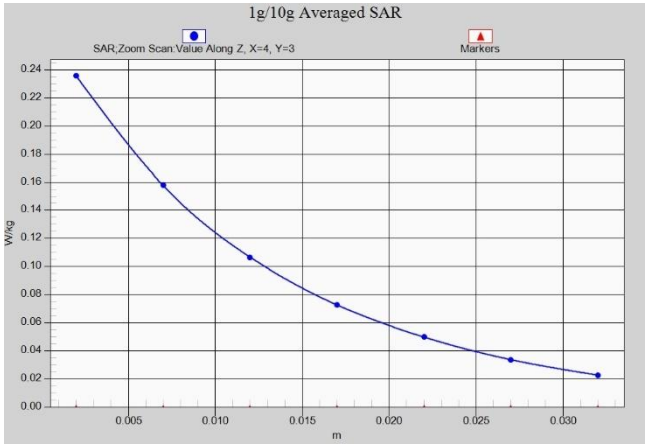


Fig. 1-11 Z-Scan at power reference point (LTE B2 MHz)

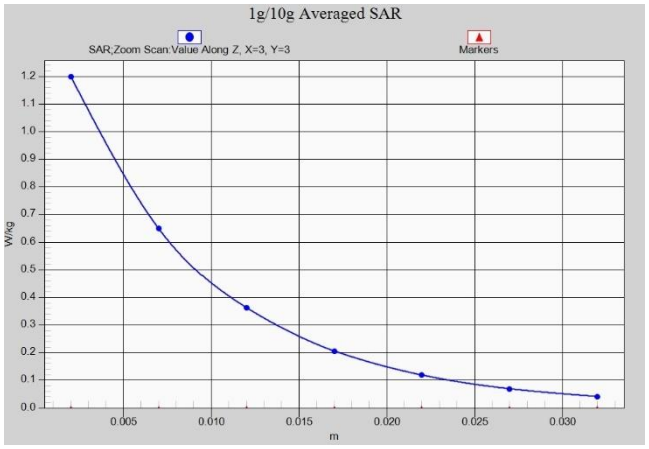


Fig. 1-12 Z-Scan at power reference point (LTE B2 MHz)

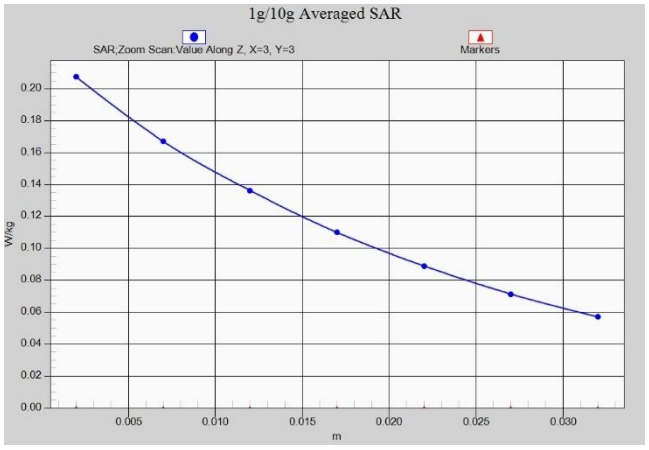


Fig. 1-13 Z-Scan at power reference point (LTE B5 MHz)

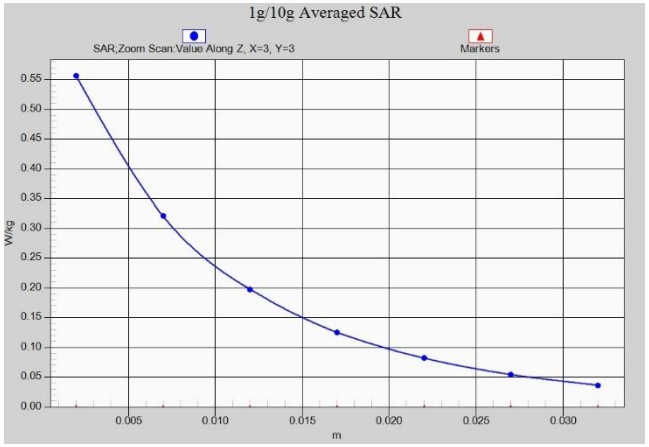


Fig. 1-14 Z-Scan at power reference point (LTE B5 MHz)

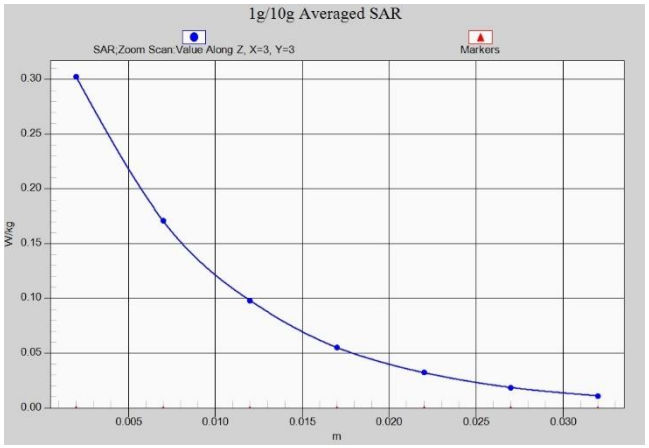


Fig. 1-15 Z-Scan at power reference point (LTE B7 MHz)

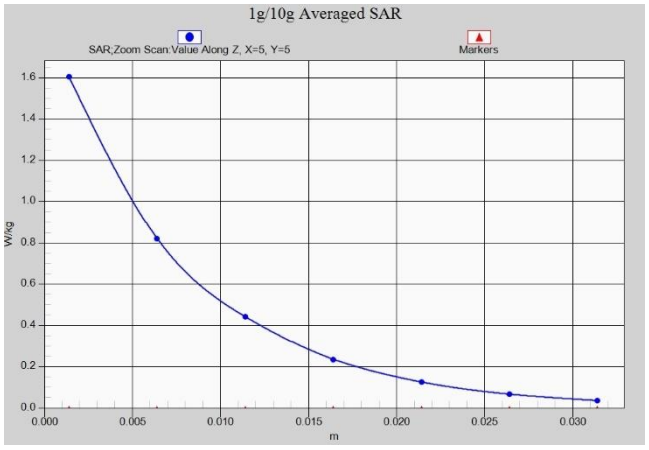


Fig. 1-16 Z-Scan at power reference point (LTE B7 MHz)

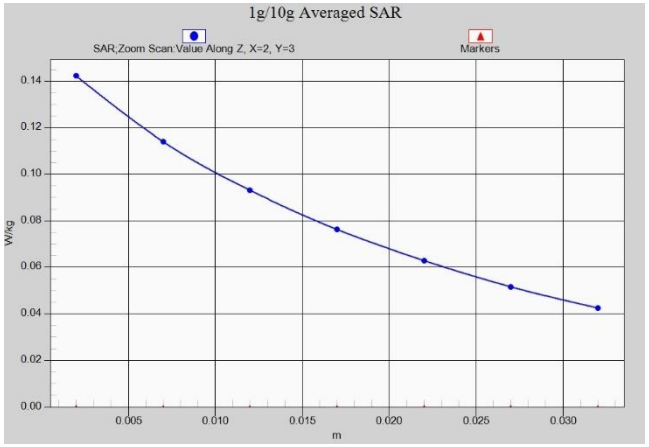


Fig. 1-17 Z-Scan at power reference point (LTE B12 MHz)

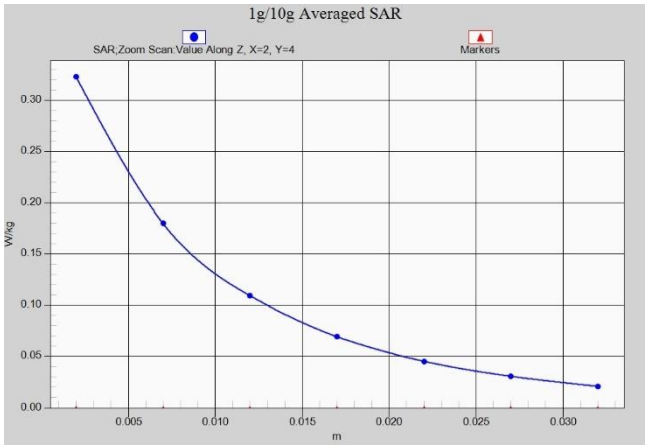


Fig. 1-18 Z-Scan at power reference point (LTE B12 MHz)

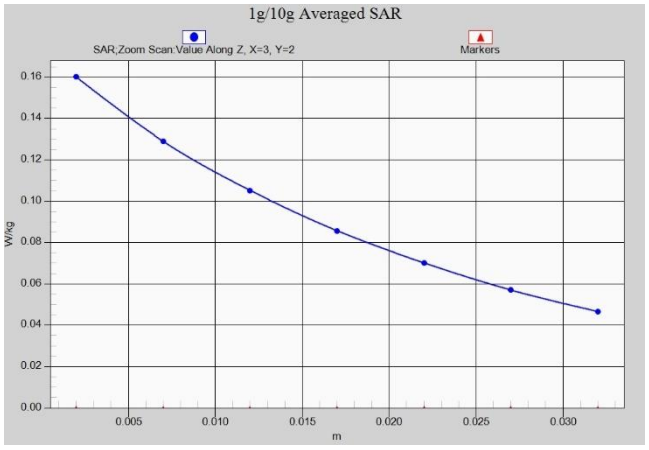


Fig. 1-19 Z-Scan at power reference point (LTE B13 MHz)

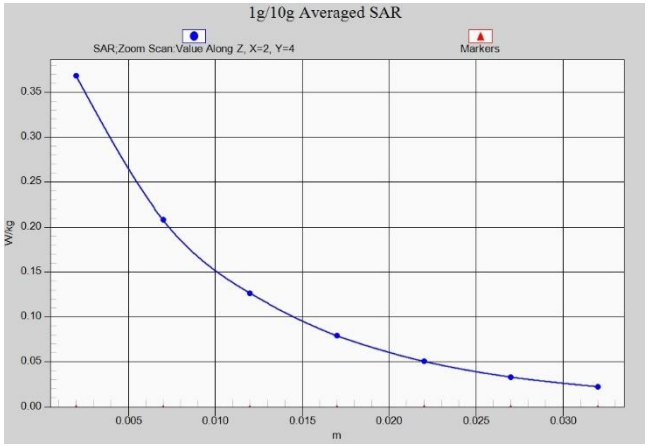


Fig. 1-20 Z-Scan at power reference point (LTE B13 MHz)

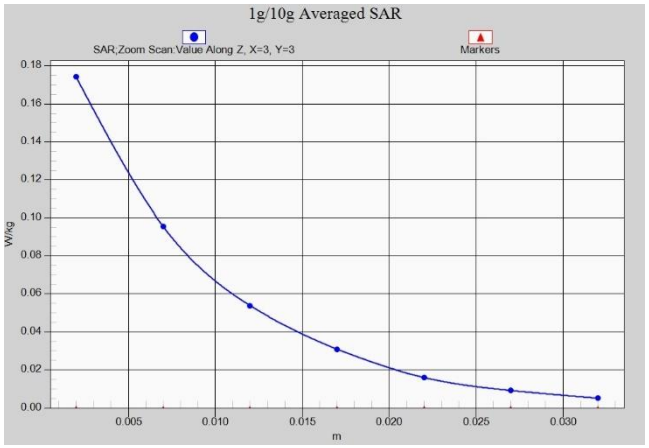


Fig. 1-21 Z-Scan at power reference point (LTE B38 MHz)

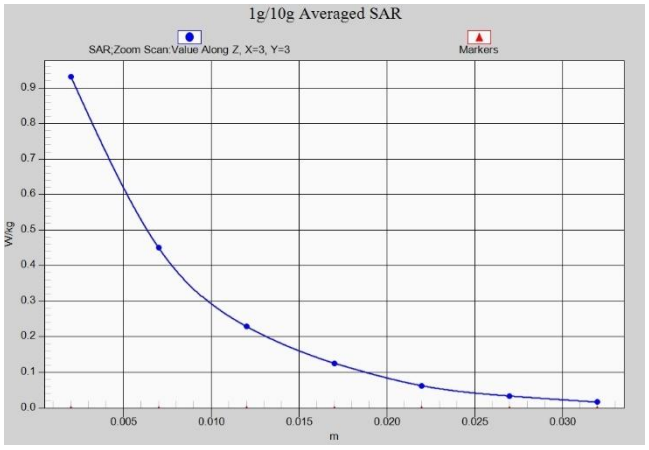


Fig. 1-22 Z-Scan at power reference point (LTE B38 MHz)

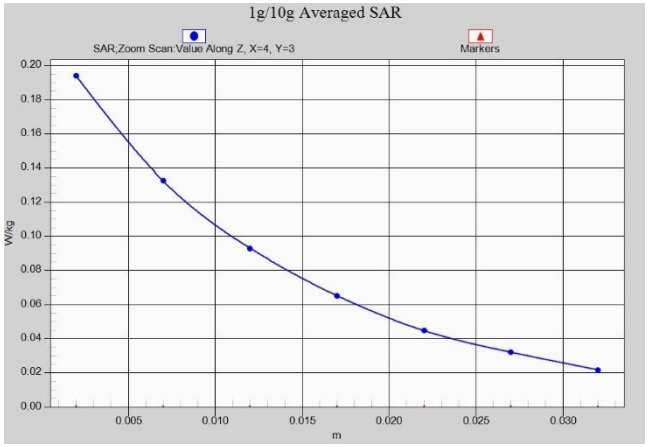


Fig. 1-23 Z-Scan at power reference point (LTE B66 MHz)

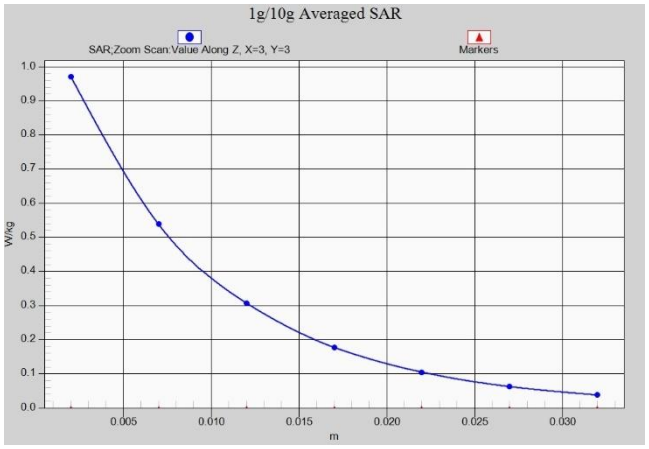


Fig. 1-24 Z-Scan at power reference point (LTE B66 MHz)

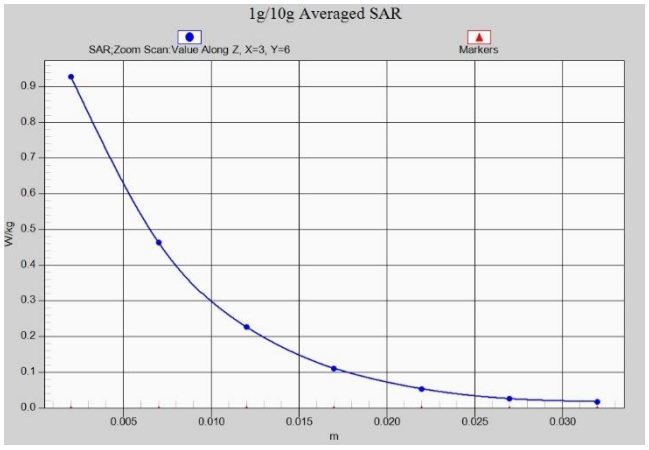


Fig. 1-25 Z-Scan at power reference point (WIFI 2.4G)

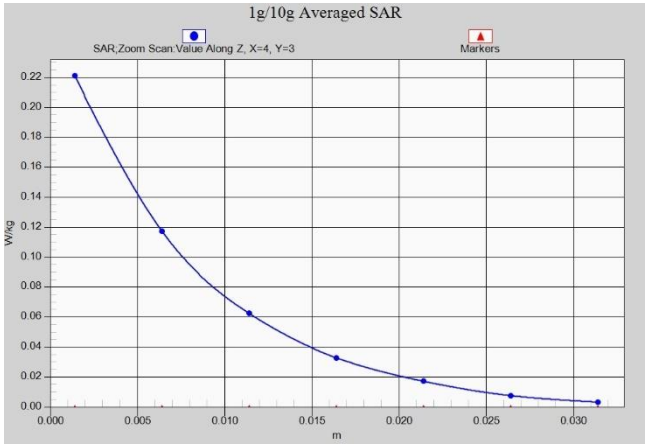


Fig. 1-26 Z-Scan at power reference point (WIFI 2.4G)

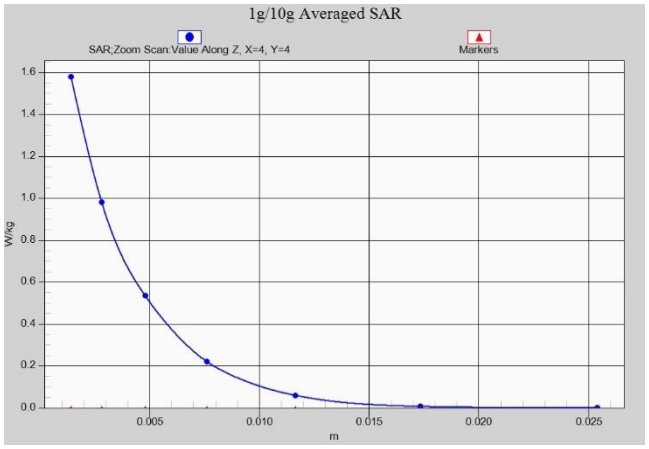


Fig. 1-27 Z-Scan at power reference point (WIFI 5G)

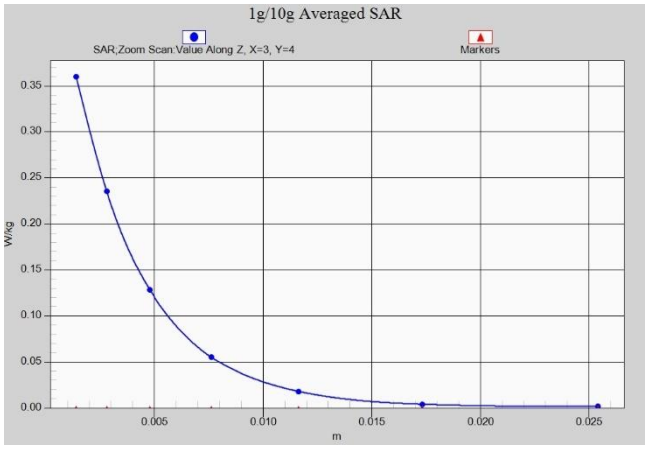


Fig. 1-28 Z-Scan at power reference point (WIFI 5G)

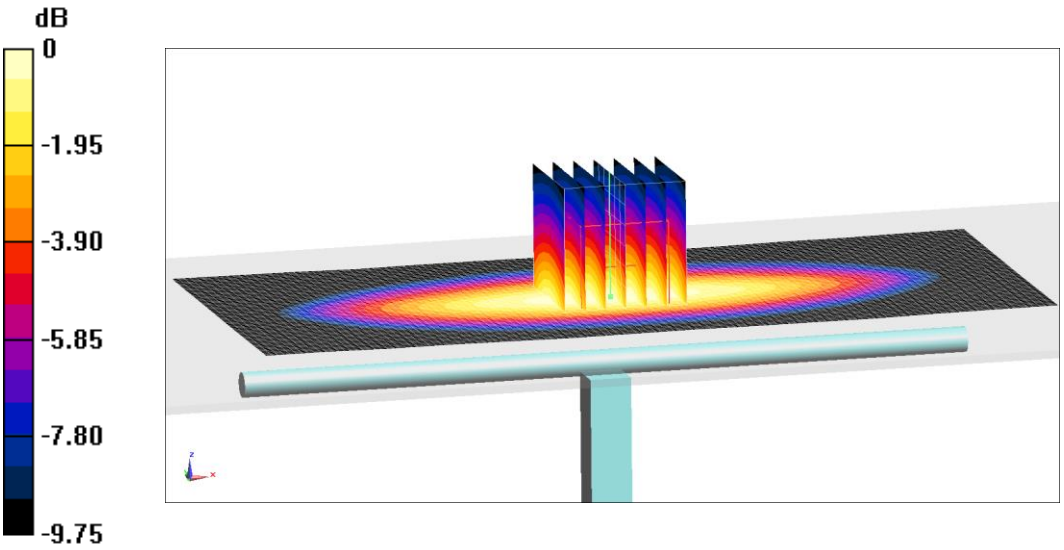
ANNEX B System Verification Results

750 MHz

Date: 9/1/2019
Electronics: DAE4 Sn771
Medium: Head 750 MHz
Medium parameters used: f = 750 MHz; σ =0.905 mho/m; ε_r = 42.41; ρ = 1000 kg/m^3
Ambient Temperature: 22.5°C Liquid Temperature: 22.3°C
Communication System: CW Frequency: 750 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(10.03,10.03,10.03)

System Validation /Area Scan (81x191x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 59.66 V/m; Power Drift = 0.01
Fast SAR: SAR(1 g) = 2.18 W/kg; SAR(10 g) = 1.39 W/kg
Maximum value of SAR (interpolated) = 2.82 W/kg

System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value =59.66 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 3.19 W/kg
SAR(1 g) = 2.14 W/kg; SAR(10 g) = 1.39 W/kg
Maximum value of SAR (measured) = 2.82 W/kg



0 dB = 2.82 W/kg = 4.5 dB W/kg

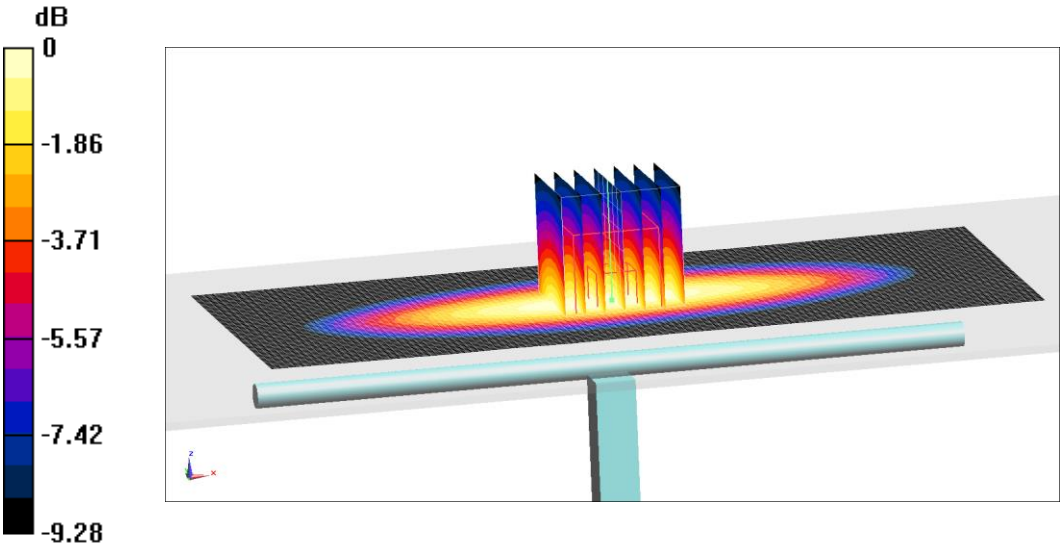
Fig.B.1 validation 750 MHz 250mW

750 MHz

Date: 9/1/2019
Electronics: DAE4 Sn771
Medium: Body 750 MHz
Medium parameters used: f = 750 MHz; σ =0.973 mho/m; ε_r = 56.11; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC Liquid Temperature: 22.3ºC
Communication System: CW Frequency: 750 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(9.85,9.85,9.85)

System Validation /Area Scan (81x191x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 56.27 V/m; Power Drift = -0.07
Fast SAR: SAR(1 g) = 2.17 W/kg; SAR(10 g) = 1.43 W/kg
Maximum value of SAR (interpolated) = 3.03 W/kg

System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value =56.27 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 3.18 W/kg
SAR(1 g) = 2.18 W/kg; SAR(10 g) = 1.42 W/kg
Maximum value of SAR (measured) = 2.79 W/kg



0 dB = 2.79 W/kg = 4.46 dB W/kg

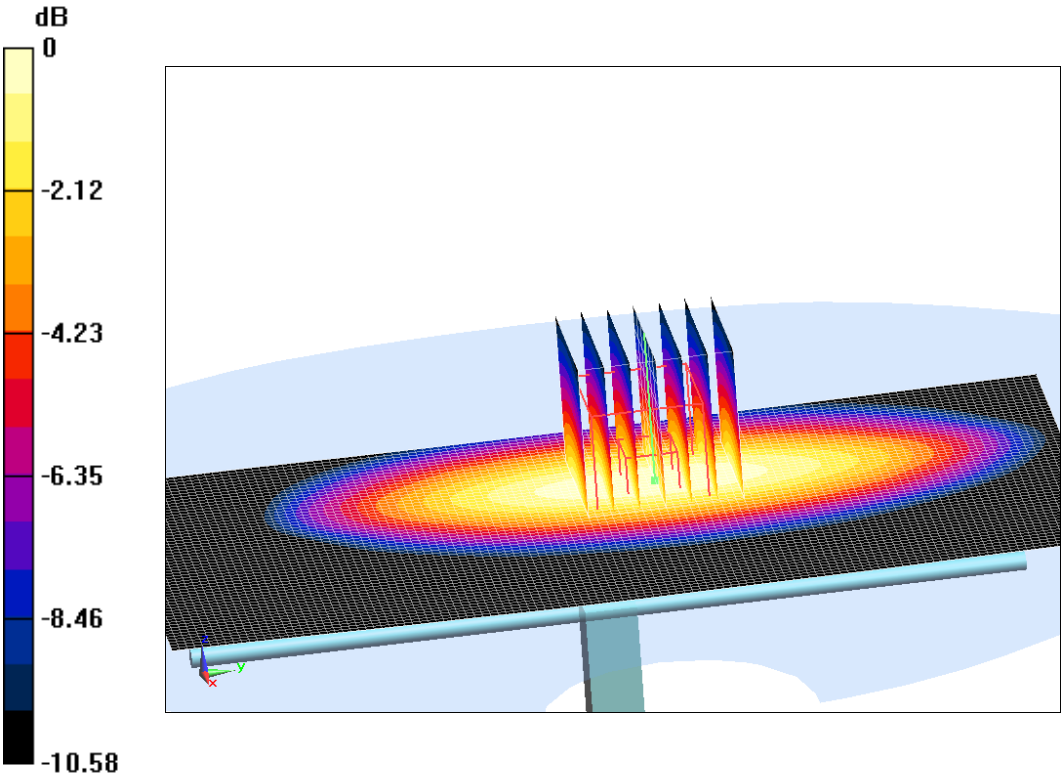
Fig.B.2 validation 750 MHz 250mW

835 MHz

Date: 9/2/2019
Electronics: DAE4 Sn771
Medium: Head 835 MHz
Medium parameters used: f = 835 MHz; σ =0.913 mho/m; ε_r = 41.94; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC Liquid Temperature: 22.3ºC
Communication System: CW Frequency: 835 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(9.75,9.75,9.75)

System Validation /Area Scan (81x191x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 62.34 V/m; Power Drift = -0.05
Fast SAR: SAR(1 g) = 2.47 W/kg; SAR(10 g) = 1.58 W/kg
Maximum value of SAR (interpolated) = 3.05 W/kg

System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value =62.34 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 3.52 W/kg
SAR(1 g) = 2.4 W/kg; SAR(10 g) = 1.55 W/kg
Maximum value of SAR (measured) = 3.23 W/kg



0 dB = 3.23 W/kg = 5.09 dB W/kg

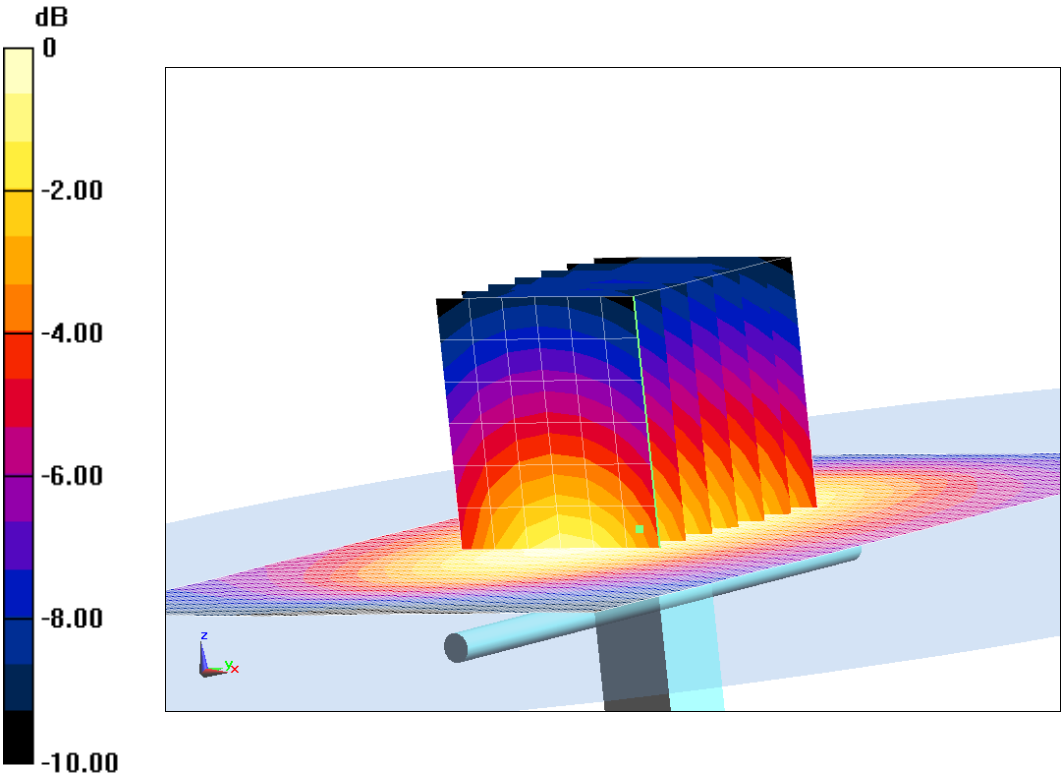
Fig.B.3 validation 835 MHz 250mW

835 MHz

Date: 9/2/2019
Electronics: DAE4 Sn771
Medium: Body 835 MHz
Medium parameters used: f = 835 MHz; σ =0.982 mho/m; ε_r = 56.14; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC Liquid Temperature: 22.3ºC
Communication System: CW Frequency: 835 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3617 ConvF(9.61,9.61,9.61)

System Validation /Area Scan (81x191x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 58.56 V/m; Power Drift = -0.05
Fast SAR: SAR(1 g) = 2.4 W/kg; SAR(10 g) = 1.57 W/kg
Maximum value of SAR (interpolated) = 3.37 W/kg

System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value =58.56 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 3.71 W/kg
SAR(1 g) = 2.39 W/kg; SAR(10 g) = 1.59 W/kg
Maximum value of SAR (measured) = 3.33 W/kg



0 dB = 3.33 W/kg = 5.22 dB W/kg

Fig.B.4 validation 835 MHz 250mW