



SAR TEST REPORT

No. I15Z40514-SEM02

For

Sony Mobile Communications Inc.

GSM/WCDMA/LTE device

With

Hardware Version: A

Software Version: 28.0.A.0.684 (Main antenna)

s_atp_1_41_5_2 (WLAN antenna)

FCC ID: PY7-PM0796

Issued Date: 2015-06-12



Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of CTTL.

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REPORT HISTORY

Report Number	Revision	Issue Date	Description
I15Z40514-SEM02	Rev.0	2015-04-30	Initial creation of test report
I15Z40514-SEM02	Rev.1	2015-05-19	Remove the type number, marketing name and the picture of Antenna Locations
I15Z40514-SEM02	Rev.2	2015-06-12	1. Add the power results of more channels for LTE B41 in section 11.5 on page 52 2. Retest the LTE band41 with correct duty factor 3. Add the description of TDD test in section 9.4 on page 27&28

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1 Test Laboratory

1.1 Testing Location

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

1.2 Testing Environment

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

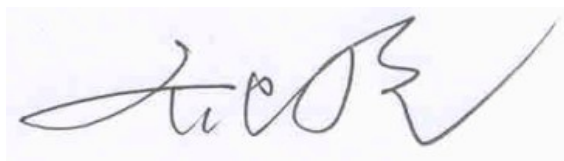
1.3 Project Data

Project Leader:	Qi Dianyuan
Test Engineer:	Lin Xiaojun
Testing Start Date:	April 1, 2015
Testing End Date:	June 9, 2015

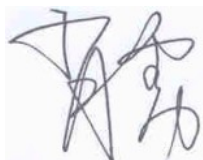
1.4 Signature



Lin Xiaojun
(Prepared this test report)



Qi Dianyuan
(Reviewed this test report)



Xiao Li
Deputy Director of the laboratory
(Approved this test report)

2 Statement of Compliance

The maximum results of SAR found during testing for Sony Mobile Communications Inc. GSM/WCDMA/LTE device are as follows:

Table 2.1: Highest Reported SAR (1g)

Exposure Configuration	Technology Band	Highest Reported SAR 1g (W/Kg)	Equipment Class
Head (Separation Distance 0mm)	GSM 850	0.33	PCE
	PCS 1900	0.21	
	UMTS FDD 2	0.20	
	UMTS FDD 4	0.32	
	UMTS FDD 5	0.59	
	LTE Band 2	0.15	
	LTE Band 4	0.13	
	LTE Band 5	0.33	
	LTE Band 7	0.41	
	LTE Band 17	0.06	
	LTE Band 41	0.15	
	WLAN 2.4 chain0	0.40	DTS
	WLAN 2.4 chain1	0.18	
	WLAN 5 GHz chain0	0.53	UNII
	WLAN 5 GHz chain1	0.46	
Hotspot (Separation Distance 10mm)	GSM 850	0.40	PCE
	PCS 1900	0.56	
	UMTS FDD 2	0.76	
	UMTS FDD 4	0.78	
	UMTS FDD 5	0.63	
	LTE Band 2	0.43	
	LTE Band 4	0.59	
	LTE Band 5	0.31	
	LTE Band 7	0.49	
	LTE Band 17	0.09	
	LTE Band 41	0.38	
	WLAN 2.4 chain0	0.07	DTS
	WLAN 2.4 chain1	0.02	
	WLAN 5 GHz chain0	0.11	UNII
	WLAN 5 GHz chain1	0.04	
Body-worn (Data) (Separation Distance 15mm)	UMTS FDD 4	1.12	PCE
	LTE Band 4	0.55	
	LTE Band 7	0.35	

The SAR values found for the Device are below the maximum recommended levels of 1.6 W/Kg as averaged over any 1g tissue according to the ANSI C95.1-1999.

For body worn operation, this device has been tested and meets FCC RF exposure guidelines when used with any accessory that contains no metal and which provides a minimum separation distance of 10 mm for hotspot on and 15mm for hotspot off and speech 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: **1.12 W/kg (1g)**.

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

	Position	Main antenna	WiFi (DTS) chain0	WiFi (DTS) chain1	Sum1	Main antenna	WiFi (UNII) chain0	WiFi (UNII) chain1	Sum2
Maximum reported SAR value for Head	Left hand, Touch cheek	0.56	0.40	0.06	1.02	0.56	0.53	0.18	1.27
	Right hand, Touch cheek	0.59	0.13	0.18	0.90	0.59	0.15	0.46	1.20
Maximum reported SAR value for Body	Front 10mm	0.63	0.07	0.01	0.71	0.63	0.06	0.03	0.72
	Rear 10mm	0.57	0.07	0.02	0.66	0.57	0.11	0.04	0.72
	Bottom 10mm	0.78	/	/	0.78	0.78	/	/	0.78
	Bottom 15mm	1.12	/	/	1.12	1.12	/	/	1.12

Note1: Sum1 is Main antenna + WiFi (DTS) chain0 + WiFi (DTS) chain1.

Sum2 is Main antenna + WiFi (UNII) chain0 + WiFi (UNII) chain1.

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

	Position	Main antenna	BT*	Sum
Highest reported SAR value for Head	Right hand, Touch cheek	0.59	0.40	0.99
Highest reported SAR value for Body	Bottom 10mm	0.78	0.20	0.98
	Bottom 15mm	1.12	0.13	1.25

BT* - Estimated SAR for Bluetooth (see the table 13.3)

According to the above tables, the highest sum of reported SAR values is **1.27 W/kg (1g)**. The detail for simultaneous transmission consideration is described in chapter 13.

3 Client Information

3.1 Applicant Information

Company Name:	Sony Mobile Communications (China) Co. Ltd
Address /Post:	Sony Mobile R&D Center, No. 16, Guangshun South Street, Chaoyang District
City:	Beijing
Postal Code:	100102
Country:	China
Contact Person:	Ma, Gang
Telephone:	+86-10-58656312
Fax:	+86-10-58659049

3.2 Manufacturer Information

Company Name:	Sony Mobile Communications Inc.
Address /Post:	1-8-15 Konan, Minato-ku, Tokyo, 108-0075, Japan
City:	Tokyo
Postal Code:	108-0075
Country:	Japan

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

4.1 About EUT

Description:	GSM/WCDMA/LTE device
Operating mode(s):	GSM 850/900/1800/1900, WCDMA 850/900/1700/1900/2100 BT, Wi-Fi (2.4G&5G), LTE Band 1/2/3/4/5/7/8/17/20/38/41
Tested Tx Frequency:	825 – 848.8 MHz (GSM 850)
	1850.2 – 1910 MHz (GSM 1900)
	826.4–846.6 MHz (WCDMA850 Band V)
	1712.4 – 1752.6 MHz (WCDMA 1700 Band IV)
	1852.4–1907.6 MHz (WCDMA1900 Band II)
	1860 – 1900 MHz (LTE Band 2)
	1720 – 1745 MHz (LTE Band 4)
	824.7 – 848.3 MHz (LTE Band 5)
	2502.5 – 2567.5 MHz (LTE Band 7)
	709 – 711 MHz (LTE Band 17)
	2498.5 – 2687.5 MHz (LTE Band 41)
	2412 – 2462 MHz (Wi-Fi 2.4G)
	5180 – 5825 MHz (Wi-Fi 5G)
GPRS/EGPRS Multislot Class:	33
GPRS capability Class:	B
Test device Production information:	Production unit
Device type:	Portable device
Antenna type:	Integrated antenna
Accessories/Body-worn configurations:	Headset
Hotspot mode:	Support simultaneous transmission of hotspot and voice(or data)

4.2 Internal Identification of EUT used during the test

EUT ID*	IMEI	HW	SW Version	Tested Band
EUT1	004402148060068	A	28.0.A.0.684	Main antenna
EUT2	004402148059987	A	28.0.A.0.684	Main antenna
EUT3	004402148060167	A	28.0.A.0.684	Main antenna
EUT4	004402148059789	A	28.0.A.0.684	Main antenna
EUT5	004402148060365	A	s_atp_1_41_5_2	WLAN-2.4G
EUT6	004402148059763	A	s_atp_1_41_5_2	WLAN-2.4G
EUT7	004402148060241	A	s_atp_1_41_5_2	WLAN-5G
EUT8	004402148060563	A	s_atp_1_41_5_2	WLAN-5G
EUT9	004402148058435	A	28.0.A.0.684	Power for Main antenna
EUT10	004402148061223	A	s_atp_1_41_5_2	Power for WLAN

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

Note: There are different software version between the SAR sample and the WLAN sample. Because the SAR sample is controlled to work by Digital Radio Communication tester, the WLAN sample is controlled to work by the terminal software installed on the PC.

4.3 Internal Identification of AE used during the test

AE ID*	Description	Model	SN	Manufacturer
AE1	Battery	1288-9125	/	Sony Mobile
AE2	Headset	MH410c	/	Cotron

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

5 TEST METHODOLOGY

5.1 Applicable Limit Regulations

ANSI C95.1–1999: 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 1528–2003: Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Body Due to Wireless Communications Devices: Experimental Techniques.

KDB447498 D01: General RF Exposure Guidance v05r02: Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies.

KDB648474 D04 Handset SAR v01r02: SAR Evaluation Considerations for Wireless Handsets.

KDB941225 D01 SAR test for 3G devices v03: SAR Measurement Procedures for 3G Devices

KDB941225 D05 SAR for LTE Devices v02r03: SAR Evaluation Considerations for LTE Devices

KDB941225 D06 Hotspot Mode SAR v02: SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities

KDB248227 D01 802.11 Wi-Fi SAR v02: SAR GUIDANCE FOR IEEE 802.11 (Wi-Fi) TRANSMITTERS

KDB 865664 D01 SAR measurement 100 MHz to 6 GHz v01r03: SAR Measurement Requirements for 100 MHz to 6 GHz.

KDB865664 D02 RF Exposure Reporting v01r01: 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 heat 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

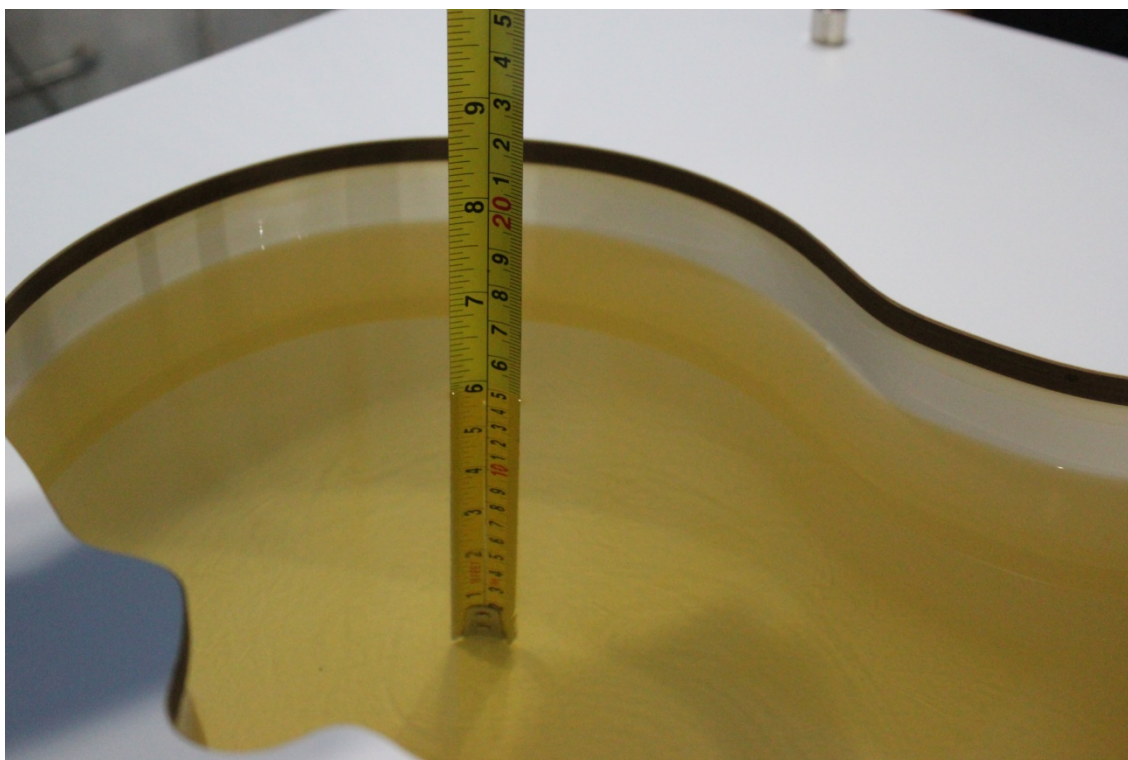
Frequency(MHz)	Liquid Type	Conductivity(σ)	$\pm 5\%$ Range	Permittivity(ϵ)	$\pm 5\%$ Range
750	Head	0.89	0.85~0.93	41.94	39.8~44.0
750	Body	0.96	0.91~1.01	55.5	52.7~58.3
835	Head	0.90	0.86~0.95	41.5	39.4~43.6
835	Body	0.97	0.92~1.02	55.2	52.4~58.0
1750	Head	1.37	1.30~1.44	40.08	38.1~42.1
1750	Body	1.49	1.42~1.56	53.4	50.7~56.1
1900	Head	1.40	1.33~1.47	40.0	38.0~42.0
1900	Body	1.52	1.44~1.60	53.3	50.6~56.0
2450	Head	1.80	1.71~1.89	39.2	37.2~41.2
2450	Body	1.95	1.85~2.05	52.7	50.1~55.3
2600	Head	1.96	1.86~2.06	39.01	37.06~40.96
2600	Body	2.16	2.05~2.27	52.5	49.9~55.1
5200	Head	4.66	4.43~4.89	35.99	34.19~37.79
5200	Body	5.30	5.04~5.56	49.0	46.6~51.4
5300	Head	4.76	4.52~5.00	35.87	34.08~37.66
5300	Body	5.42	5.15~5.69	48.9	46.46~51.34
5600	Head	5.07	4.82~5.32	35.53	33.75~37.31
5600	Body	5.77	5.48~6.06	48.5	46.08~50.92
5800	Head	5.27	5.01~5.53	35.3	33.5~37.1
5800	Body	6.00	5.70~6.30	48.2	45.8~50.6

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 (%)
2015-04-24	Head	750 MHz	43.44	3.58	0.91	2.25
	Body	750 MHz	57.38	3.39	0.936	-2.50
2015-04-01	Head	835 MHz	42.22	1.73	0.904	0.44
	Body	835 MHz	56.73	2.77	0.973	0.31
2015-04-02	Head	1750 MHz	40.19	0.27	1.393	1.68
	Body	1750 MHz	53.45	0.09	1.552	4.16
2015-04-03	Head	1900 MHz	39.31	-1.72	1.412	0.86
	Body	1900 MHz	52.12	-2.21	1.498	-1.45
2015-04-25	Head	2450 MHz	39.41	0.54	1.802	0.11
	Body	2450 MHz	50.62	-3.95	2.02	3.59
2015-04-23	Head	2600 MHz	39.15	0.36	1.975	0.77
	Body	2600 MHz	50.72	-3.39	2.176	0.74
2015-04-26	Head	5200 MHz	36.7	1.97	4.64	-0.43
	Body	5200 MHz	50.47	3.00	5.107	-3.64
	Head	5300 MHz	36.65	2.17	4.754	-0.13
	Body	5300 MHz	50.17	2.60	5.274	-2.69
	Head	5600 MHz	35.92	1.10	5.061	-0.18
	Body	5600 MHz	49.48	2.02	5.728	-0.73
	Head	5800 MHz	35.54	0.68	5.29	0.38
	Body	5800 MHz	48.99	1.64	6.055	0.92
2015-06-09	Head	2600 MHz	38.43	-1.49	1.903	-2.91
	Body	2600 MHz	51.01	-2.84	2.134	-1.20

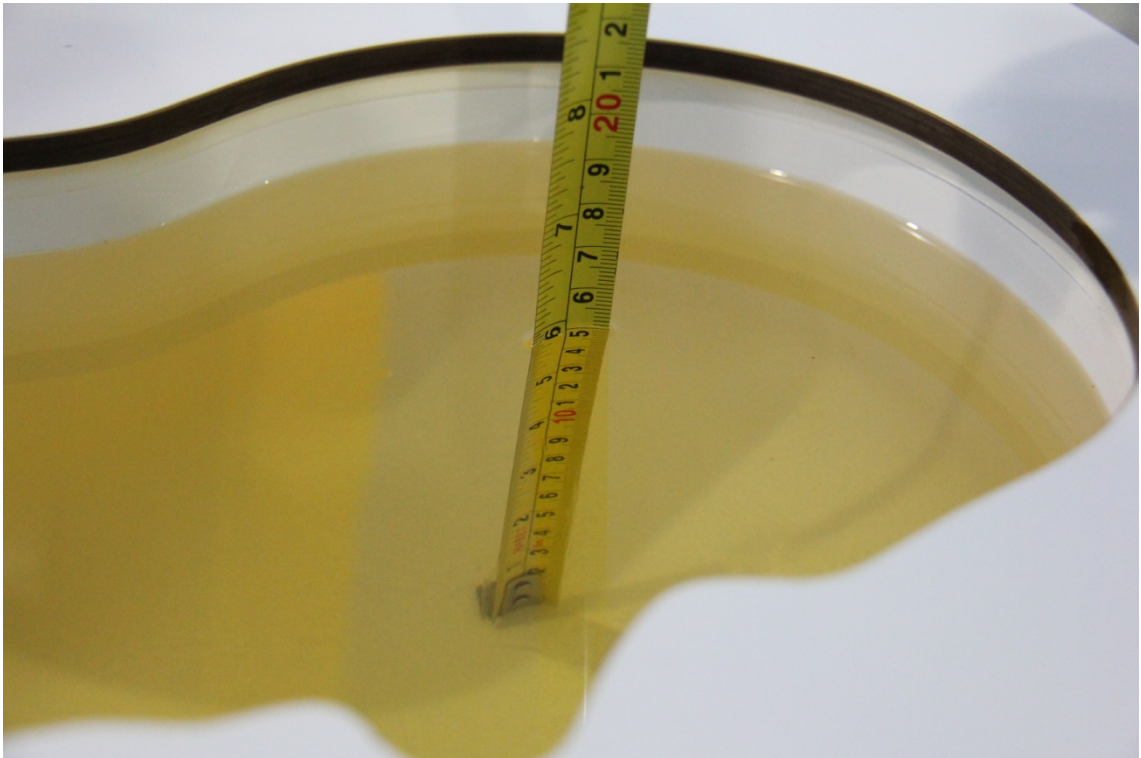
Note: The liquid temperature is 22.0°C



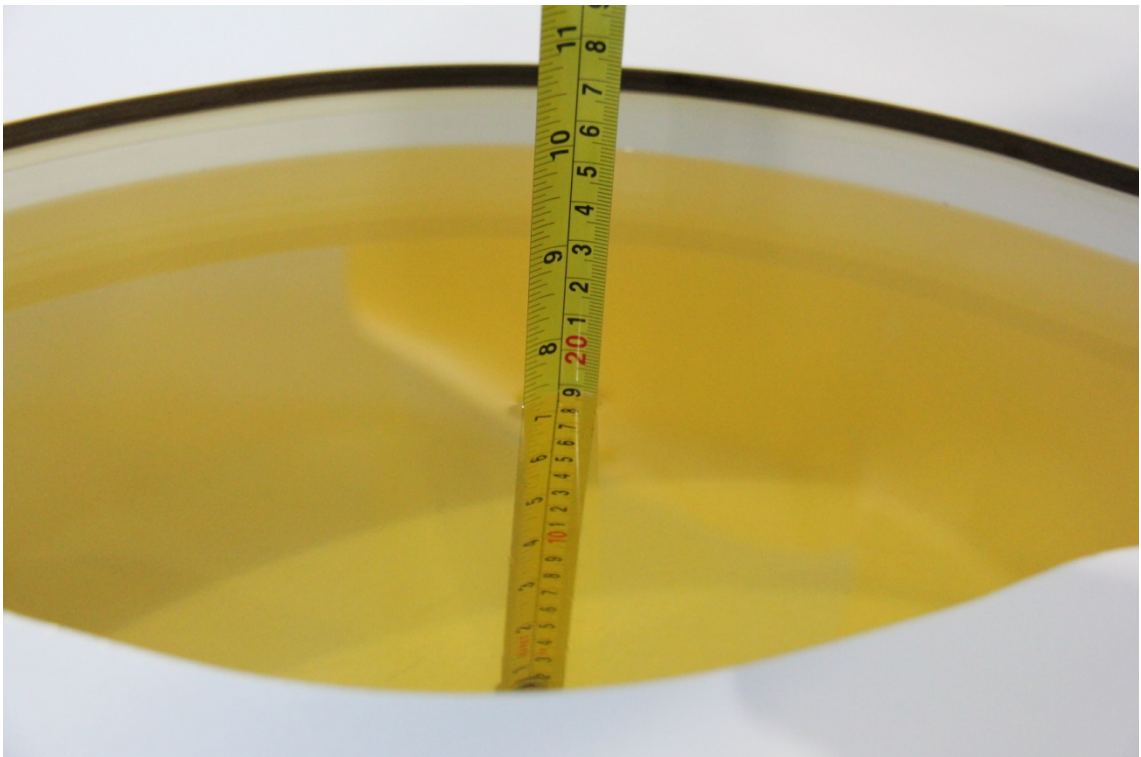
Picture 7-1: Liquid depth in the Head Phantom (750 MHz)



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



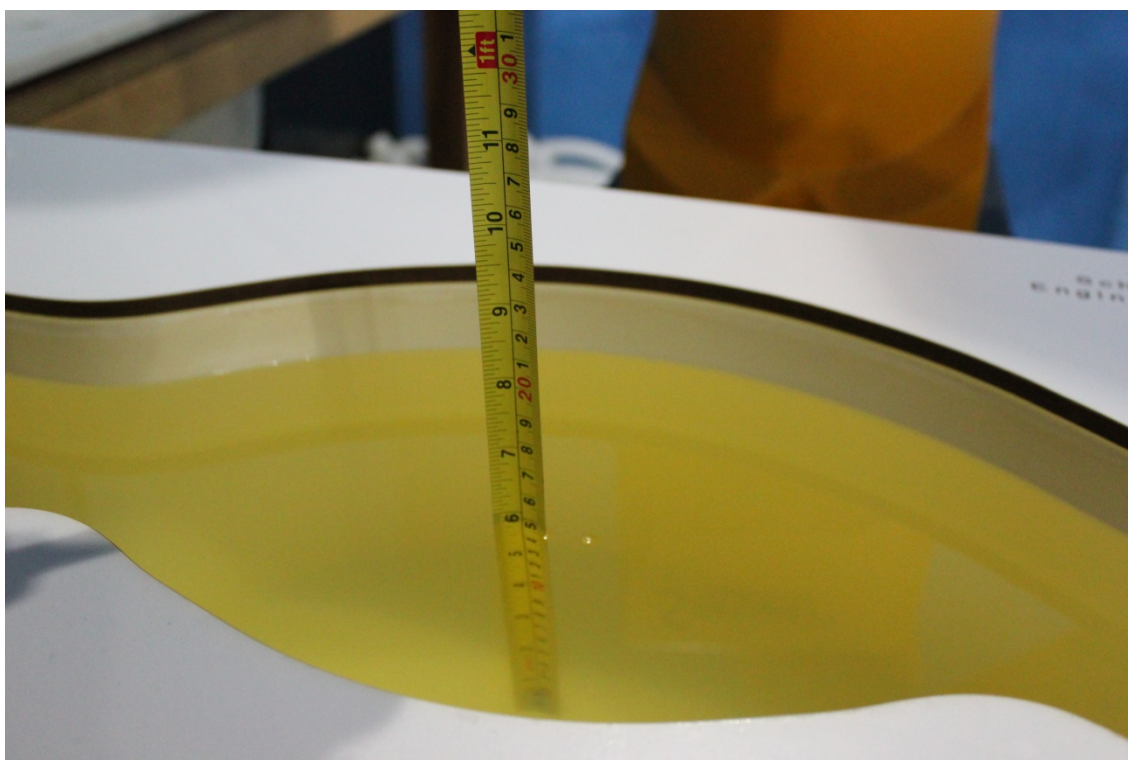
Picture 7-3: Liquid depth in the Head Phantom (835 MHz)



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



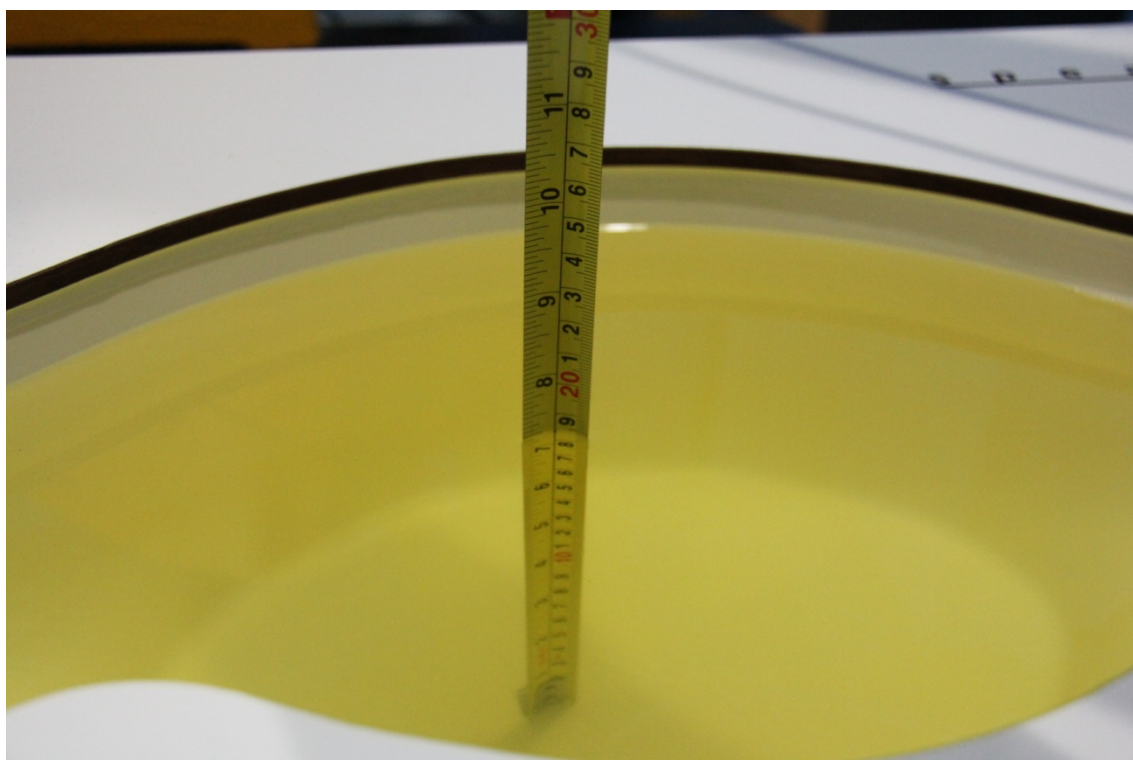
Picture 7-5: Liquid depth in the Head Phantom (1750 MHz)



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



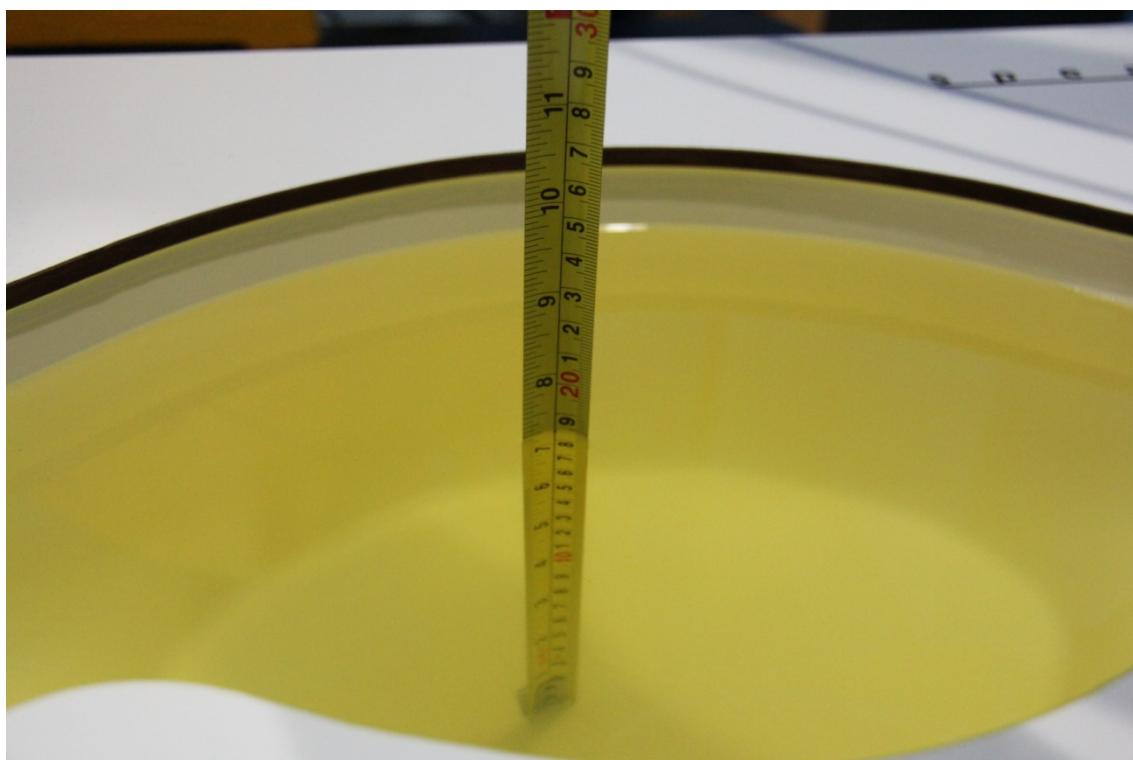
Picture 7-7: Liquid depth in the Head Phantom (1900 MHz)



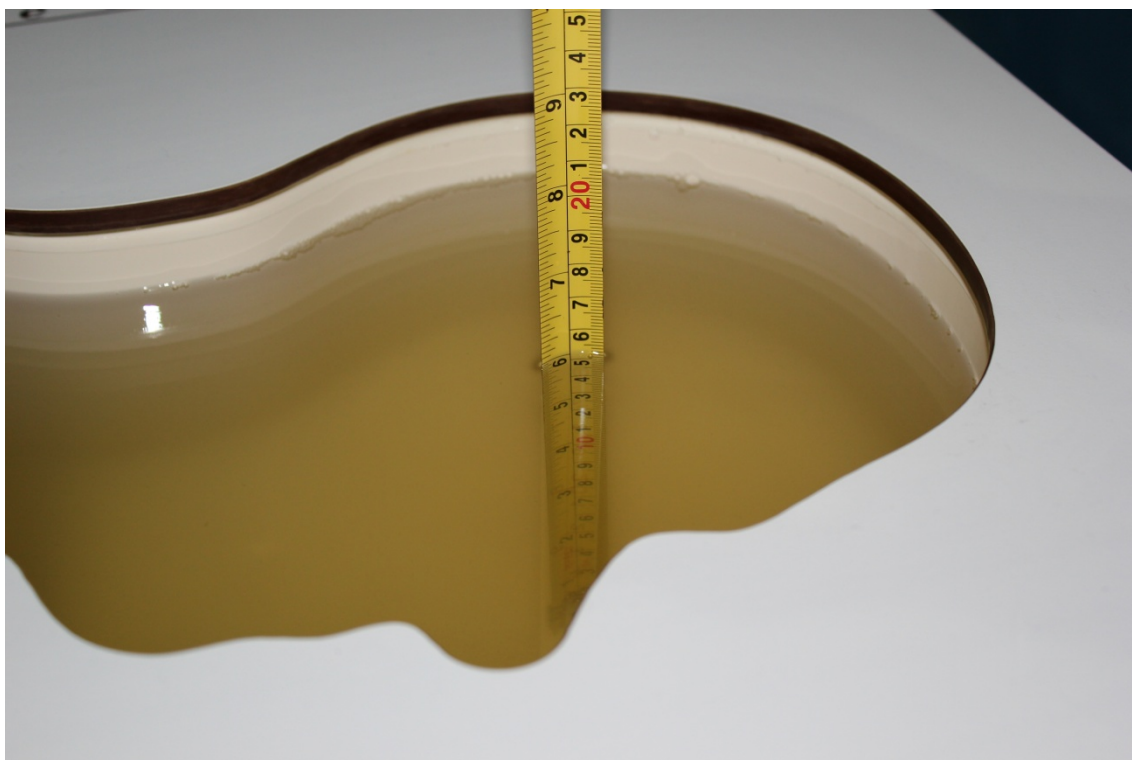
Picture 7-8 Liquid depth in the Flat Phantom (1900MHz)



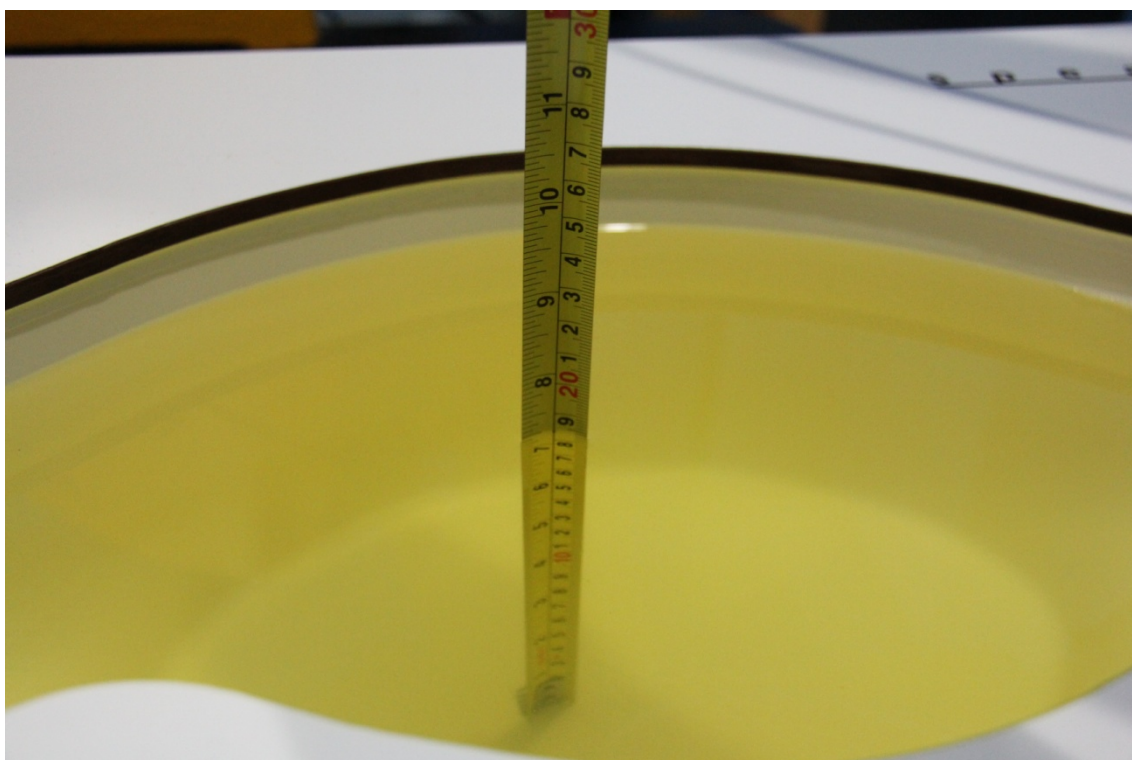
Picture 7-9 Liquid depth in the Head Phantom (2450MHz)



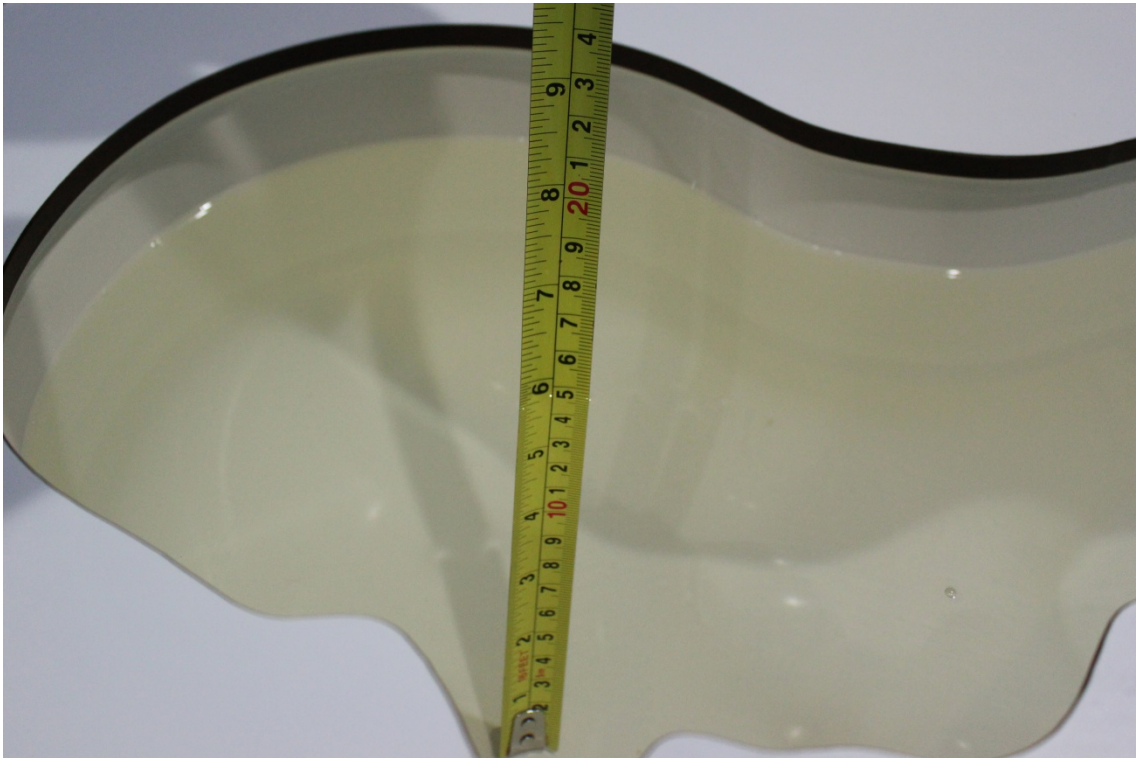
Picture 7-10 Liquid depth in the Flat Phantom (2450MHz)



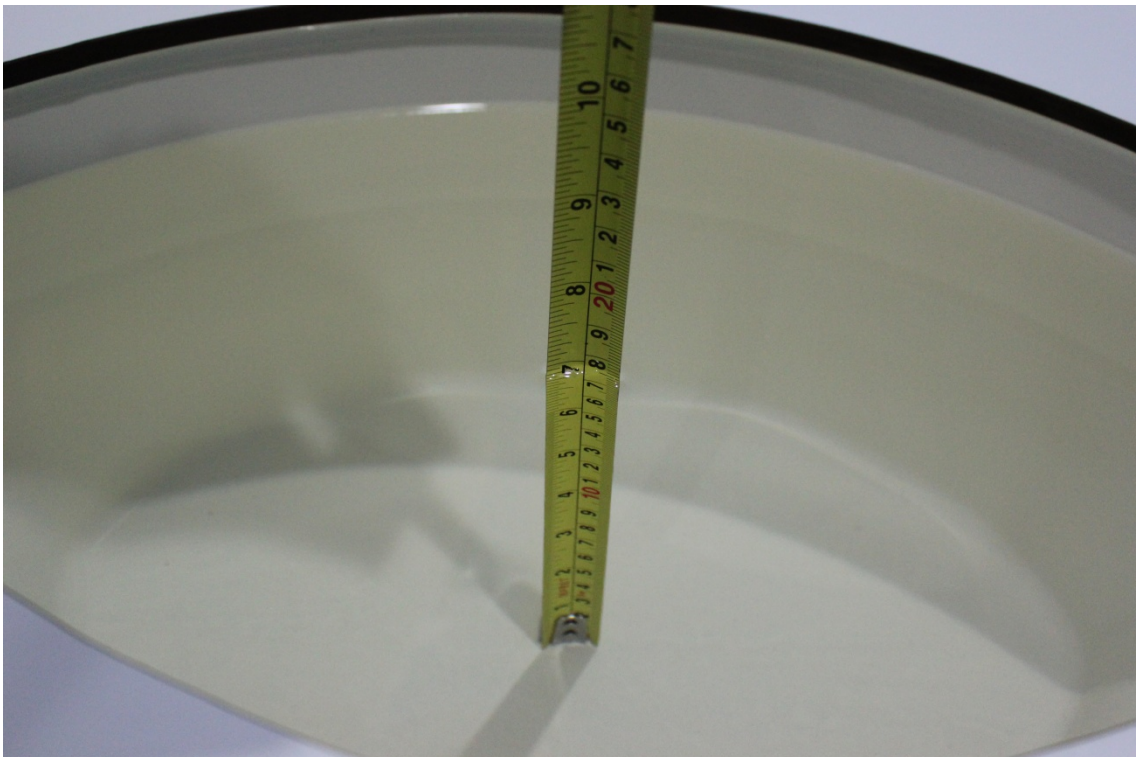
Picture 7-11 Liquid depth in the Head Phantom (2600 MHz Head)



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



Picture 7-13 Liquid depth in the Head Phantom (5GHz)

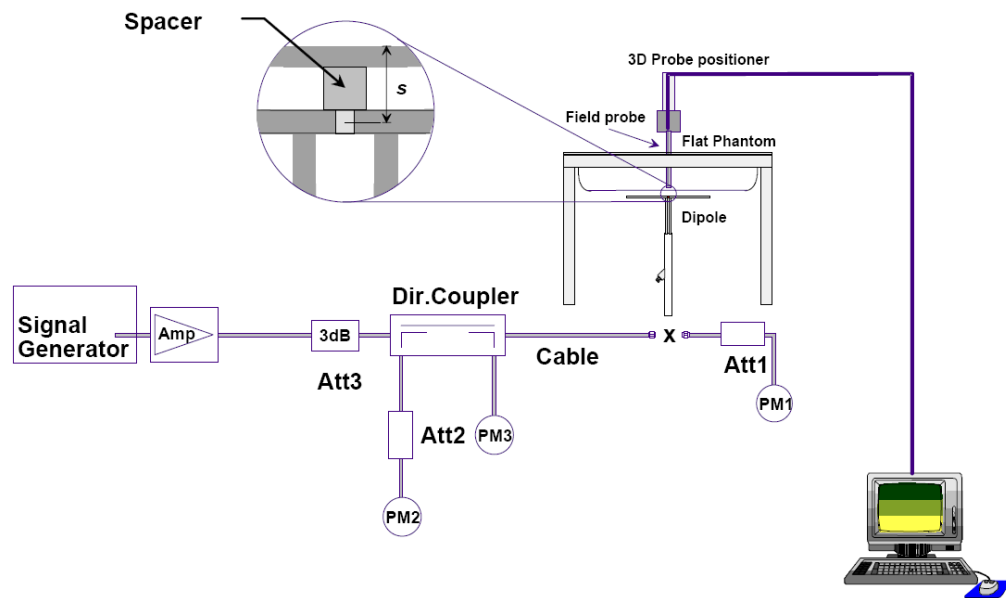


Picture 7-14 Liquid depth in the Flat Phantom (5GHz)

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
2015-04-24	750 MHz	5.49	8.31	5.64	8.56	2.73%	3.01%
2015-04-01	835 MHz	6.17	9.43	6.12	9.28	-0.81%	-1.59%
2015-04-02	1750 MHz	19.7	36.9	19.32	36.28	-1.93%	-1.68%
2015-04-03	1900 MHz	21.1	40.6	21.52	41.20	1.99%	1.48%
2015-04-25	2450 MHz	24.7	53.2	24.20	52.40	-2.02%	-1.50%
2015-04-23	2600 MHz	25.9	57.8	25.52	56.80	-1.47%	-1.73%
2015-04-26	5200 MHz	23.1	80.7	23.20	81.80	0.43%	1.36%
	5300 MHz	23.6	82.5	23.80	82.30	0.85%	-0.24%
	5600 MHz	24.3	85.3	24.20	85.10	-0.41%	-0.23%
	5800 MHz	22.8	80.5	22.10	78.20	-3.07%	-2.86%
2015-06-09	2600 MHz	25.9	57.8	25.12	57.20	-3.01%	-1.04%

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
2015-04-24	750 MHz	5.85	8.75	5.92	8.92	1.20%	1.94%
2015-04-01	835 MHz	6.33	9.55	6.16	9.32	-2.69%	-2.41%
2015-04-02	1750 MHz	20.3	37.7	19.96	37.20	-1.67%	-1.33%
2015-04-03	1900 MHz	21.4	40.4	21.96	41.60	2.62%	2.97%
2015-04-25	2450 MHz	23.9	51.3	23.52	50.40	-1.59%	-1.75%
2015-04-23	2600 MHz	25.4	57.2	25.88	58.00	1.89%	1.40%
2015-04-26	5200 MHz	21.7	77.5	21.20	74.80	-2.30%	-3.48%
	5300 MHz	22.1	78.7	21.60	76.00	-2.26%	-3.43%
	5600 MHz	23.1	83.4	22.50	81.40	-2.60%	-2.40%
	5800 MHz	21.4	77.6	21.40	76.10	0.00%	-1.93%
2015-06-09	2600 MHz	25.4	57.2	25.88	58.00	1.89%	1.40%

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.

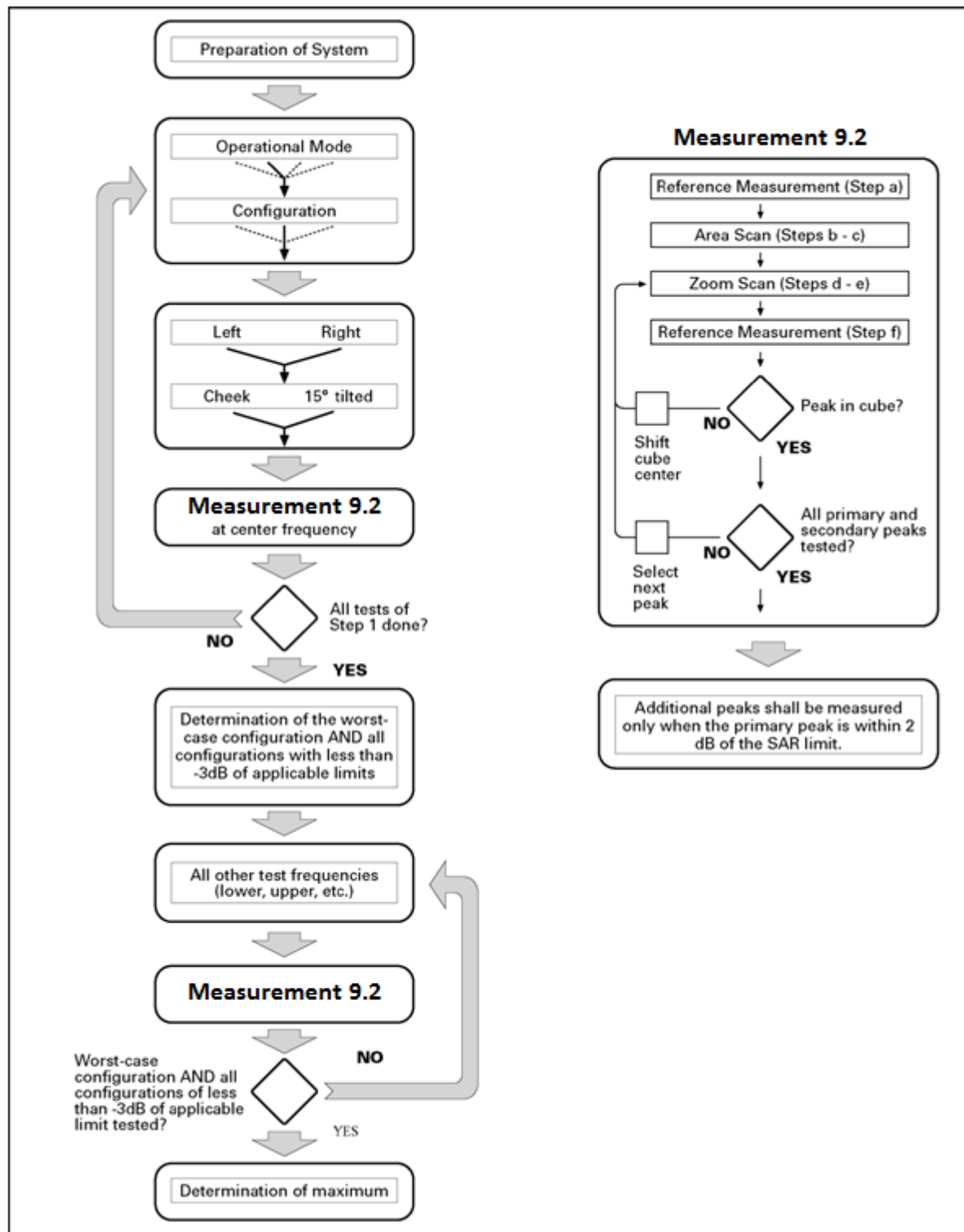
Step 1: The tests described in 9.2 shall be performed at the channel that is closest to the centre of the transmit frequency band (f_c) for:

- 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 within 3 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 9.1 Block 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.

			$\leq 3\text{ GHz}$	$> 3\text{ GHz}$
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface			$5 \pm 1\text{ mm}$	$\frac{1}{4} \cdot \delta \cdot \ln(2) \pm 0.5\text{ mm}$
Maximum probe angle from probe axis to phantom surface normal at the measurement location			$30^\circ \pm 1^\circ$	$20^\circ \pm 1^\circ$
Maximum area scan spatial resolution: Δx_{Area} , Δy_{Area}			$\leq 2\text{ GHz: } \leq 15\text{ mm}$ $2 - 3\text{ GHz: } \leq 12\text{ mm}$	$3 - 4\text{ GHz: } \leq 12\text{ mm}$ $4 - 6\text{ GHz: } \leq 10\text{ mm}$
			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 $\leq$ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	
Maximum zoom scan spatial resolution: Δx_{Zoom} , Δy_{Zoom}			$\leq 2\text{ GHz: } \leq 8\text{ mm}$ $2 - 3\text{ GHz: } \leq 5\text{ mm}^*$	$3 - 4\text{ GHz: } \leq 5\text{ mm}^*$ $4 - 6\text{ GHz: } \leq 4\text{ mm}^*$
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		$\leq 5\text{ mm}$	$3 - 4\text{ GHz: } \leq 4\text{ mm}$ $4 - 5\text{ GHz: } \leq 3\text{ mm}$ $5 - 6\text{ GHz: } \leq 2\text{ mm}$
	graded grid	$\Delta z_{Zoom}(1)$: between 1 st two points closest to phantom surface	$\leq 4\text{ mm}$	$3 - 4\text{ GHz: } \leq 3\text{ mm}$ $4 - 5\text{ GHz: } \leq 2.5\text{ mm}$ $5 - 6\text{ GHz: } \leq 2\text{ mm}$
		$\Delta z_{Zoom}(n>1)$: between subsequent points	$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z		$\geq 30\text{ mm}$	$3 - 4\text{ GHz: } \geq 28\text{ mm}$ $4 - 5\text{ GHz: } \geq 25\text{ mm}$ $5 - 6\text{ GHz: } \geq 22\text{ mm}$
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 $\leq 1.4\text{ W/kg}$, $\leq 8\text{ mm}$, $\leq 7\text{ mm}$ and $\leq 5\text{ mm}$ zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.				

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	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	12/15	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	$\beta_{ed1}:47/15$ $\beta_{ed2}:47/15$	4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	4/15	56/75	4	1	3.0	2.0	17	71
5	15/15	15/15	64	15/15	24/15	30/15	134/15	4	1	1.0	0.0	21	81

9.4 SAR Measurement for LTE

SAR tests for LTE are performed with a base station simulator, Rohde & Schwarz 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 D05v02r03 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 D05v02r03. SAR testing is performed using the extended cyclic prefix listed in 3GPP TS 36.211.

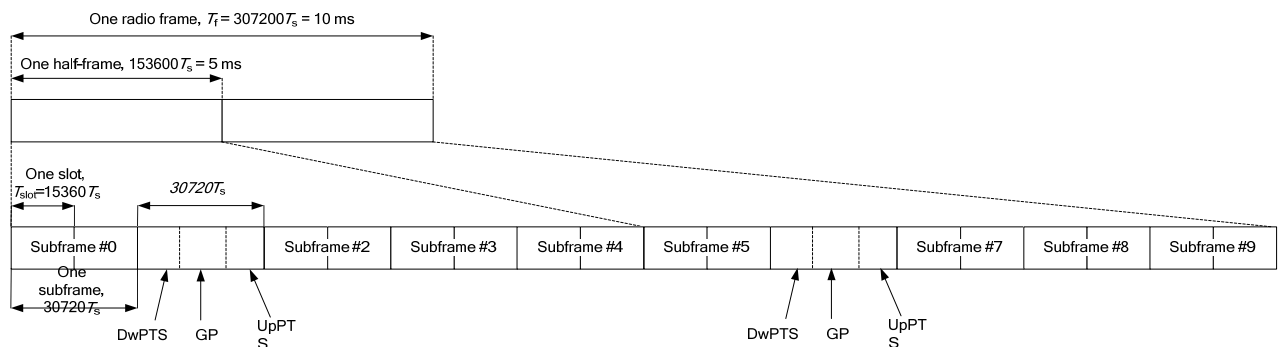


Figure 9.2: Frame structure type 2 (for 5 ms switch-point periodicity)

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	$26336 \cdot T_s$			$7680 \cdot T_s$		
5	$6592 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$	$20480 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$
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 subframe*6+UpPTS*2/one frame length

$$= (30720 \cdot T_s * 6 + 5120 \cdot T_s * 2) / 307200 \cdot T_s$$

$$= 0.633$$

According to the KDB 447498 D01, SAR should be evaluated at more than 3 frequencies for devices supporting transmit bands wider than 100MHz. Oct.2014 FCC-TCB conference notes (Dec. 2014 rev.) specifies the 5 test channels to use for 3GPP band 41 SAR evaluation.

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.

In order to testing the conducted power of WLAN, the DUT is controlled to transmit WLAN TX as maximum power by the terminal software installed on the PC. The procedure how to control is presented as below:

1. Connect DUT and PC via the USB cable and check the port is opened.
2. Input the command "WLPU" to power on WLAN.
3. Input the command "WTFD" to firmware download.
4. Input the WBTX command to start transmit (i.e., WBTX=1,0,1,1500,25,0,12).
5. Input the command "WIDL" to stop transmit.
6. Input the command "WLPD" to power off WLAN.

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 section 14 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 v05, when the implementation is based the specific polynomial fit algorithm as presented at the 29th Bioelectromagnetics Society meeting (2007) and the estimated 1-g SAR 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 55 wireless handsets. For the sample size studied, the root-mean-squared errors of the algorithm are 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

When WLAN Hotspot mode is activated (AP ON), the conducted output power will be reduced for WCDMA1700, LTE band 4 and LTE band 7. When WLAN Hotspot mode is deactivated (AP OFF), the RF output power level return to their normal RF power level.

11.1 Manufacturing tolerance

When the hotspot mode is ON:

Table 11.1: WCDMA

WCDMA 1700 CS			
Channel	Channel 1513	Channel 1412	Channel 1312
Target (dBm)	18	18	18
Tune-up (dBm)	19.5	19.5	19.5

Table 11.2: LTE

Mode	Target (dBm)	Tune-up (dBm)
LTE Band 4	18.5	20
LTE Band 7	20.5	22

Note: When the hotspot mode is ON, MPR settings doesn't work.

When the hotspot mode is OFF:

Table 11.3: GSM Speech

GSM 850			
Channel	Channel 251	Channel 190	Channel 128
Target (dBm)	32.5	32.5	32.5
Tune-up (dBm)	33.5	33.5	33.5
GSM 1900			
Channel	Channel 810	Channel 661	Channel 512
Target (dBm)	29.5	29.5	29.5
Tune-up (dBm)	30.7	30.7	30.7

Table 11.4: GPRS and EGPRS

GSM 850 GPRS (GMSK)				
Channel		251	190	128
1 Txslot	Target (dBm)	32.5	32.5	32.5
	Tune-up (dBm)	33.5	33.5	33.5
2 Txslots	Target (dBm)	30	30	30
	Tune-up (dBm)	31	31	31
3 Txslots	Target (dBm)	28	28	28
	Tune-up (dBm)	29	29	29
4 Txslots	Target (dBm)	27	27	27
	Tune-up (dBm)	28	28	28

GSM 850 EGPRS (GMSK)				
Channel		251	190	128
1 Txslot	Target (dBm)	32.5	32.5	32.5
	Tune-up (dBm)	33.5	33.5	33.5
2 Txslots	Target (dBm)	30	30	30
	Tune-up (dBm)	31	31	31
3 Txslots	Target (dBm)	28	28	28
	Tune-up (dBm)	29	29	29
4 Txslots	Target (dBm)	27	27	27
	Tune-up (dBm)	28	28	28
GSM 850 EGPRS (8PSK)				
Channel		251	190	128
1 Txslot	Target (dBm)	27	27	27
	Tune-up (dBm)	28	28	28
2 Txslots	Target (dBm)	25.5	25.5	25.5
	Tune-up (dBm)	26.5	26.5	26.5
3 Txslots	Target (dBm)	24	24	24
	Tune-up (dBm)	25	25	25
4 Txslots	Target (dBm)	23.5	23.5	23.5
	Tune-up (dBm)	24.5	24.5	24.5
GSM 1900 GPRS (GMSK)				
Channel		810	661	512
1 Txslot	Target (dBm)	29.5	29.5	29.5
	Tune-up (dBm)	30.7	30.7	30.7
2 Txslots	Target (dBm)	27	27	27
	Tune-up (dBm)	28	28	28
3 Txslots	Target (dBm)	24.5	24.5	24.5
	Tune-up (dBm)	25.5	25.5	25.5
4 Txslots	Target (dBm)	23.5	23.5	23.5
	Tune-up (dBm)	24.5	24.5	24.5
GSM 1900 EGPRS (GMSK)				
Channel		810	661	512
1 Txslot	Target (dBm)	29.5	29.5	29.5
	Tune-up (dBm)	30.7	30.7	30.7
2 Txslots	Target (dBm)	27	27	27
	Tune-up (dBm)	28	28	28
3 Txslots	Target (dBm)	24.5	24.5	24.5
	Tune-up (dBm)	25.5	25.5	25.5
4 Txslots	Target (dBm)	23.5	23.5	23.5
	Tune-up (dBm)	24.5	24.5	24.5

GSM 1900 EGPRS (8PSK)				
Channel		810	661	512
1 Txslot	Target (dBm)	25	25	25
	Tune-up (dBm)	27	27	27
2 Txslots	Target (dBm)	24	24	24
	Tune-up (dBm)	25	25	25
3 Txslots	Target (dBm)	23	23	23
	Tune-up (dBm)	24	24	24
4 Txslots	Target (dBm)	22.5	22.5	22.5
	Tune-up (dBm)	23.5	23.5	23.5

Table 11.5: WCDMA

WCDMA 850 CS			
Channel	Channel 4233	Channel 4182	Channel 4132
Target (dBm)	23	23	23
Tune-up (dBm)	24.3	24.3	24.3
HSUPA (sub-test 1/5)			
Channel	Channel 4233	Channel 4182	Channel 4132
Target (dBm)	22.8	22.8	22.8
Tune-up (dBm)	23.8	23.8	23.8
HSUPA (sub-test 2/3/4)			
Channel	Channel 4233	Channel 4182	Channel 4132
Target (dBm)	21	21	21
Tune-up (dBm)	22	22	22
WCDMA 1700 CS			
Channel	Channel 1513	Channel 1412	Channel 1312
Target (dBm)	23	23	23
Tune-up (dBm)	24.5	24.5	24.5
HSUPA (sub-test 1/5)			
Channel	Channel 1513	Channel 1412	Channel 1312
Target (dBm)	20.5	20.5	20.5
Tune-up (dBm)	21.7	21.7	21.7
HSUPA (sub-test 2/3/4)			
Channel	Channel 1513	Channel 1412	Channel 1312
Target (dBm)	20	20	20
Tune-up (dBm)	21	21	21
WCDMA 1900 CS			
Channel	Channel 9538	Channel 9400	Channel 9262
Target (dBm)	22	22	22
Tune-up (dBm)	23	24	23

HSUPA (sub-test 1/5)			
Channel	Channel 9538	Channel 9400	Channel 9262
Target (dBm)	20.5	20.5	20.5
Tune-up (dBm)	21.7	21.7	21.7
HSUPA (sub-test 2/3/4)			
Channel	Channel 9538	Channel 9400	Channel 9262
Target (dBm)	19	19	19
Tune-up (dBm)	20.5	20.5	20.5

Table 11.6: LTE

Mode	Target (dBm)	Tune-up (dBm)
LTE Band 2	22.5	23.6
LTE Band 4	22.5	24
LTE Band 5	23	24
LTE Band 7	22.5	24
LTE Band 17	22.5	24
LTE Band 41	22	23.5

LTE MPR will follow up 3GPP setting as below:

Modulation	Channel bandwidth / Transmission bandwidth (NRB)						MPR (dB)
	1.4MHz	3.0MHz	5MHz	10MHz	15MHz	20MHz	
QPSK	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	0
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

Table 11.7: Bluetooth

Bluetooth			
Channel	Channel 0	Channel 39	Channel 78
Target (dBm)	6.8	6.8	6.8
Tune-up (dBm)	9.8	9.8	9.8

Table 11.8: WiFi

Mode	Chain0		Chain1	
	Target (dBm)	Tune-up (dBm)	Target (dBm)	Tune-up (dBm)
WLAN-2.4G	13.5	14	10	10.5
WLAN-5G	12	14.5	11	13.5

11.2 Hotspot

There is power reduction enabled for WCDMA1700, LTE band 4 and LTE band 7. The power reduction is enabled when the user enables hotspot mode via the manufacturer software. The tables below show the measured powers with hotspot.

Table 11.9: The conducted Power for WCDMA

Item	band	FDDIV result		
	ARFCN	1513 (1752.6MHz)	1412 (1732.4MHz)	1312 (1712.4MHz)
WCDMA	\	19.24	19.12	18.97

Table 11.10: The conducted Power for LTE

Band 4							
Bandwidth (MHz)	RB allocation	Frequency (MHz)	Max. Target Power (dBm)	QPSK		16QAM	
	RB offset (Start RB)			Actual output power (dBm)	MPR	Actual output power (dBm)	MPR
1.4 MHz	1RB High (5)	1754.3	20	18.49	0	18.66	0
		1732.5	20	18.76	0	18.64	0
		1710.7	20	19.05	0	18.95	0
	1RB Middle (3)	1754.3	20	18.79	0	18.85	0
		1732.5	20	18.60	0	19.04	0
		1710.7	20	18.96	0	19.23	0
	1RB Low (0)	1754.3	20	18.85	0	18.71	0
		1732.5	20	18.61	0	18.91	0
		1710.7	20	19.21	0	19.24	0
	3RB High (3)	1754.3	20	18.59	0	18.91	0
		1732.5	20	18.61	0	18.92	0
		1710.7	20	18.64	0	18.83	0
	3RB Middle (1)	1754.3	20	18.54	0	18.97	0
		1732.5	20	18.67	0	18.87	0
		1710.7	20	18.57	0	18.61	0
	3RB Low (0)	1754.3	20	18.67	0	18.94	0
		1732.5	20	18.65	0	18.85	0
		1710.7	20	18.63	0	18.62	0
	6RB (0)	1754.3	20	18.57	0	18.34	0
		1732.5	20	18.48	0	18.46	0
		1710.7	20	18.50	0	18.38	0
3 MHz	1RB High (14)	1753.5	20	18.54	0	18.81	0
		1732.5	20	18.75	0	19.06	0
		1711.5	20	18.62	0	19.04	0
	1RB Middle (7)	1753.5	20	18.51	0	18.65	0
		1732.5	20	18.73	0	18.89	0
		1711.5	20	18.76	0	18.84	0

	1RB Low (0)	1753.5	20	18.65	0	19.03	0
		1732.5	20	18.75	0	18.98	0
		1711.5	20	18.97	0	19.05	0
	8RB High (7)	1753.5	20	18.48	0	18.67	0
		1732.5	20	18.51	0	18.56	0
		1711.5	20	18.59	0	18.64	0
	8RB Middle (4)	1753.5	20	18.52	0	18.57	0
		1732.5	20	18.69	0	18.58	0
		1711.5	20	18.57	0	18.71	0
	8RB Low (0)	1753.5	20	18.45	0	18.59	0
		1732.5	20	18.66	0	18.72	0
		1711.5	20	18.59	0	18.58	0
	15RB (0)	1753.5	20	18.50	0	18.65	0
		1732.5	20	18.59	0	18.48	0
		1711.5	20	18.64	0	18.49	0
5 MHz	1RB High (24)	1752.5	20	18.48	0	18.71	0
		1732.5	20	18.71	0	18.88	0
		1712.5	20	18.79	0	19.19	0
	1RB Middle (12)	1752.5	20	18.61	0	18.69	0
		1732.5	20	18.84	0	18.94	0
		1712.5	20	18.81	0	19.23	0
	1RB Low (0)	1752.5	20	18.71	0	19.18	0
		1732.5	20	18.83	0	19.08	0
		1712.5	20	18.90	0	18.92	0
	12RB High (13)	1752.5	20	18.46	0	18.59	0
		1732.5	20	18.57	0	18.56	0
		1712.5	20	18.48	0	18.42	0
	12RB Middle (6)	1752.5	20	18.43	0	18.52	0
		1732.5	20	18.56	0	18.63	0
		1712.5	20	18.57	0	18.56	0
	12RB Low (0)	1752.5	20	18.43	0	18.57	0
		1732.5	20	18.71	0	18.76	0
		1712.5	20	18.62	0	18.68	0
	25RB (0)	1752.5	20	18.36	0	18.43	0
		1732.5	20	18.59	0	18.63	0
		1712.5	20	18.47	0	18.42	0
10 MHz	1RB High (49)	1750	20	18.77	0	18.71	0
		1732.5	20	18.76	0	19.24	0
		1715	20	18.74	0	19.16	0
	1RB Middle (24)	1750	20	18.73	0	19.19	0
		1732.5	20	18.74	0	18.78	0
		1715	20	18.78	0	19.21	0

	1RB Low (0)	1750	20	19.03	0	19.49	0
		1732.5	20	19.08	0	19.01	0
		1715	20	19.33	0	18.91	0
	25RB High (25)	1750	20	18.44	0	18.59	0
		1732.5	20	18.55	0	18.58	0
		1715	20	18.57	0	18.56	0
	25RB Middle (12)	1750	20	18.64	0	18.66	0
		1732.5	20	18.73	0	18.74	0
		1715	20	18.61	0	18.70	0
	25RB Low (0)	1750	20	18.81	0	18.84	0
		1732.5	20	18.74	0	18.76	0
		1715	20	18.69	0	18.81	0
	50RB (0)	1750	20	18.69	0	18.66	0
		1732.5	20	18.75	0	18.72	0
		1715	20	18.65	0	18.61	0
15 MHz	1RB High (74)	1747.5	20	18.81	0	19.17	0
		1732.5	20	19.11	0	19.15	0
		1717.5	20	18.88	0	19.29	0
	1RB Middle (37)	1747.5	20	18.95	0	19.18	0
		1732.5	20	18.66	0	19.04	0
		1717.5	20	18.84	0	19.19	0
	1RB Low (0)	1747.5	20	19.67	0	19.98	0
		1732.5	20	19.59	0	19.94	0
		1717.5	20	19.69	0	19.85	0
	36RB High (38)	1747.5	20	18.98	0	18.93	0
		1732.5	20	18.92	0	18.86	0
		1717.5	20	18.94	0	19.05	0
	36RB Middle (19)	1747.5	20	18.93	0	19.05	0
		1732.5	20	18.94	0	18.87	0
		1717.5	20	18.94	0	18.98	0
	36RB Low (0)	1747.5	20	19.09	0	19.24	0
		1732.5	20	19.08	0	19.16	0
		1717.5	20	19.09	0	19.25	0
	75RB (0)	1747.5	20	19.05	0	19.21	0
		1732.5	20	19.12	0	19.27	0
		1717.5	20	19.04	0	19.24	0
20 MHz	1RB High (99)	1745	20	18.60	0	18.50	0
		1732.5	20	18.80	0	19.04	0
		1720	20	18.81	0	19.00	0
	1RB Middle (50)	1745	20	18.71	0	18.84	0
		1732.5	20	18.75	0	19.23	0
		1720	20	18.96	0	19.72	0

	1RB Low (0)	1745	20	19.55	0	19.68	0
		1732.5	20	19.53	0	19.82	0
		1720	20	19.43	0	19.75	0
	50RB High (50)	1745	20	18.55	0	18.89	0
		1732.5	20	18.51	0	18.93	0
		1720	20	18.61	0	18.87	0
	50RB Middle (25)	1745	20	18.62	0	18.80	0
		1732.5	20	18.63	0	18.78	0
		1720	20	18.56	0	18.71	0
	50RB Low (0)	1745	20	18.97	0	19.23	0
		1732.5	20	18.91	0	19.10	0
		1720	20	18.86	0	19.01	0
	100RB (0)	1745	20	18.74	0	18.81	0
		1732.5	20	18.78	0	18.87	0
		1720	20	18.73	0	18.85	0
Band 7							
Bandwidth (MHz)	RB allocation	Frequency (MHz)	Max. Target Power (dBm)	QPSK		16QAM	
	RB offset (Start RB)			Actual output power (dBm)	MPR	Actual output power (dBm)	MPR
5 MHz	1RB High (24)	2567.5	22	21.15	0	20.65	0
		2535	22	21.89	0	21.06	0
		2502.5	22	21.53	0	20.79	0
	1RB Middle (12)	2567.5	22	21.56	0	20.94	0
		2535	22	21.75	0	21.02	0
		2502.5	22	21.75	0	20.98	0
	1RB Low (0)	2567.5	22	21.74	0	21.02	0
		2535	22	21.86	0	21.30	0
		2502.5	22	21.75	0	21.09	0
	12RB High (13)	2567.5	22	20.56	0	20.03	0
		2535	22	21.09	0	20.22	0
		2502.5	22	20.85	0	20.04	0
	12RB Middle (6)	2567.5	22	20.73	0	20.11	0
		2535	22	21.14	0	20.29	0
		2502.5	22	20.99	0	20.12	0
	12RB Low (0)	2567.5	22	20.78	0	20.17	0
		2535	22	21.24	0	20.31	0
		2502.5	22	20.93	0	20.13	0
	25RB (0)	2567.5	22	20.88	0	20.09	0
		2535	22	21.21	0	20.37	0
		2502.5	22	21.05	0	20.12	0
10 MHz	1RB High (49)	2565	22	21.13	0	20.77	0
		2535	22	21.70	0	20.78	0
		2505	22	21.66	0	20.91	0

	1RB Middle (24)	2565	22	21.70	0	21.02	0
		2535	22	21.72	0	21.06	0
		2505	22	21.77	0	20.92	0
	1RB Low (0)	2565	22	21.89	0	21.32	0
		2535	22	21.88	0	21.63	0
		2505	22	21.49	0	20.78	0
	25RB High (25)	2565	22	20.62	0	20.05	0
		2535	22	20.97	0	20.10	0
		2505	22	20.85	0	20.08	0
	25RB Middle (12)	2565	22	20.94	0	20.16	0
		2535	22	21.05	0	20.23	0
		2505	22	20.91	0	20.13	0
	25RB Low (0)	2565	22	21.16	0	20.42	0
		2535	22	21.03	0	20.19	0
		2505	22	20.97	0	20.15	0
	50RB (0)	2565	22	20.91	0	20.11	0
		2535	22	20.88	0	20.07	0
		2505	22	20.84	0	20.01	0
15 MHz	1RB High (74)	2562.5	22	21.39	0	20.99	0
		2535	22	21.99	0	21.27	0
		2507.5	22	21.83	0	21.81	0
	1RB Middle (37)	2562.5	22	21.91	0	21.49	0
		2535	22	21.70	0	21.04	0
		2507.5	22	21.82	0	21.24	0
	1RB Low (0)	2562.5	22	21.84	0	21.96	0
		2535	22	21.96	0	21.92	0
		2507.5	22	21.79	0	21.24	0
	36RB High (38)	2562.5	22	20.82	0	20.03	0
		2535	22	20.97	0	20.14	0
		2507.5	22	21.22	0	20.41	0
	36RB Middle (19)	2562.5	22	21.25	0	20.49	0
		2535	22	21.13	0	20.32	0
		2507.5	22	20.90	0	20.08	0
	36RB Low (0)	2562.5	22	21.67	0	20.86	0
		2535	22	21.25	0	20.42	0
		2507.5	22	21.02	0	20.14	0
	75RB (0)	2562.5	22	21.22	0	20.36	0
		2535	22	20.96	0	20.12	0
		2507.5	22	21.09	0	20.30	0
20 MHz	1RB High (99)	2560	22	21.28	0	21.67	0
		2535	22	21.40	0	21.95	0
		2510	22	21.14	0	21.92	0

	1RB Middle (50)	2560	22	21.77	0	21.99	0
		2535	22	21.86	0	21.94	0
		2510	22	21.72	0	21.85	0
	1RB Low (0)	2560	22	21.67	0	21.84	0
		2535	22	21.68	0	21.89	0
		2510	22	21.56	0	21.83	0
	50RB High (50)	2560	22	21.53	0	20.56	0
		2535	22	21.61	0	20.61	0
		2510	22	21.60	0	20.63	0
	50RB Middle (25)	2560	22	21.80	0	20.88	0
		2535	22	21.76	0	20.75	0
		2510	22	21.71	0	20.75	0
	50RB Low (0)	2560	22	21.96	0	20.99	0
		2535	22	21.78	0	20.79	0
		2510	22	21.71	0	20.74	0
	100RB (0)	2560	22	21.75	0	20.80	0
		2535	22	21.70	0	20.73	0
		2510	22	21.62	0	20.63	0

11.3 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 11.11: The conducted power measurement results for GSM850/1900

GSM 850MHz	Conducted Power (dBm)		
	Channel 251(848.8MHz)	Channel 190(836.6MHz)	Channel 128(824.2MHz)
	32.95	33.06	33.00
GSM 1900MHz	Conducted Power (dBm)		
	Channel 810(1909.8MHz)	Channel 661(1880MHz)	Channel 512(1850.2MHz)
	29.25	29.47	29.41

Table 11.12: The conducted power measurement results for GPRS and EGPRS

GSM 850 GPRS (GMSK)	Measured Power (dBm)			calculation	Averaged Power (dBm)		
	251	190	128		251	190	128
1 Txslot	32.88	32.90	32.89	-9.03dB	23.85	23.87	23.86
2 Txslots	29.81	29.79	29.71	-6.02dB	23.79	23.77	23.69
3Txslots	28.10	28.12	28.11	-4.26dB	23.84	23.86	23.85
4 Txslots	26.69	26.67	26.68	-3.01dB	23.68	23.66	23.67

GSM 850 EGPRS (GMSK)	Measured Power (dBm)			calculation	Averaged Power (dBm)		
	251	190	128		251	190	128
1 Txslot	32.82	32.87	32.86	-9.03dB	23.79	23.84	23.83
2 Txslots	29.80	29.84	29.79	-6.02dB	23.78	23.82	23.77
3Txslots	28.01	28.02	28.00	-4.26dB	23.75	23.76	23.74
4 Txslots	26.67	26.63	26.65	-3.01dB	23.66	23.62	23.64
GSM 850 EGPRS (8PSK)	Measured Power (dBm)			calculation	Averaged Power (dBm)		
	251	190	128		251	190	128
1 Txslot	27.41	27.40	27.32	-9.03dB	18.38	18.37	18.29
2 Txslots	25.84	25.85	25.79	-6.02dB	19.82	19.83	19.77
3Txslots	24.33	24.37	24.29	-4.26dB	20.07	20.11	20.03
4 Txslots	23.77	23.81	23.80	-3.01dB	20.76	20.80	20.79
PCS1900 GPRS (GMSK)	Measured Power (dBm)			calculation	Averaged Power (dBm)		
	810	661	512		810	661	512
1 Txslot	29.17	29.43	29.35	-9.03dB	20.14	20.40	20.32
2 Txslots	26.48	26.51	26.43	-6.02dB	20.46	20.49	20.41
3Txslots	24.31	24.26	24.20	-4.26dB	20.05	20.00	19.94
4 Txslots	23.18	23.05	23.28	-3.01dB	20.17	20.04	20.27
PCS1900 EGPRS (GMSK)	Measured Power (dBm)			calculation	Averaged Power (dBm)		
	810	661	512		810	661	512
1 Txslot	29.19	29.41	29.27	-9.03dB	20.16	20.38	20.24
2 Txslots	26.39	26.51	26.32	-6.02dB	20.37	20.49	20.30
3Txslots	24.27	24.17	24.48	-4.26dB	20.01	19.91	20.22
4 Txslots	23.04	22.93	23.23	-3.01dB	20.03	19.92	20.22
PCS1900 EGPRS (8PSK)	Measured Power (dBm)			calculation	Averaged Power (dBm)		
	810	661	512		810	661	512
1 Txslot	25.97	25.99	26.02	-9.03dB	16.94	16.96	16.99
2 Txslots	24.05	24.15	24.17	-6.02dB	18.03	18.13	18.15
3Txslots	22.78	22.89	23.01	-4.26dB	18.52	18.63	18.75
4 Txslots	22.27	22.39	22.42	-3.01dB	19.26	19.38	19.41

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 1Txslot for GSM850 and 2Txslots for PCS1900.

Note: According to the KDB941225 D03, “when SAR tests for EDGE or EGPRS mode is necessary, GMSK modulation should be used”.

11.4 WCDMA Measurement result

Table 11.13: The conducted Power for WCDMA

Item	band	FDDV result		
	ARFCN	4233 (846.6MHz)	4182 (836.4MHz)	4132 (826.4MHz)
WCDMA	\	22.95	23.56	23.29
HSUPA	1	21.92	22.58	22.01
	2	20.39	20.92	20.70
	3	20.68	21.34	20.88
	4	20.80	21.41	21.15
	5	21.99	22.46	22.21
Item	band	FDDIV result		
	ARFCN	1513 (1752.6MHz)	1412 (1732.4MHz)	1312 (1712.4MHz)
WCDMA	\	22.94	22.89	23.43
HSUPA	1	20.47	19.97	20.74
	2	19.90	19.93	20.13
	3	20.31	20.32	20.54
	4	20.33	20.32	20.59
	5	21.33	21.55	21.61
Item	band	FDDII result		
	ARFCN	9538 (1907.6MHz)	9400 (1880MHz)	9262 (1852.4MHz)
WCDMA	\	21.57	22.64	22.42
HSUPA	1	19.85	20.10	20.08
	2	18.60	19.74	19.52
	3	18.72	19.80	19.77
	4	18.98	20.14	19.92
	5	21.61	19.97	21.02

11.5 LTE Measurement result

Table 11.14: The conducted Power for LTE

Band 2							
Bandwidth (MHz)	RB allocation	Frequency (MHz)	Max. Target Power (dBm)	QPSK		16QAM	
	RB offset (Start RB)			Actual output power (dBm)	MPR	Actual output power (dBm)	MPR
1.4 MHz	1RB High (5)	1909.3	23.6	21.99	0	21.15	1
		1880	23.6	22.82	0	21.89	1
		1850.7	23.6	22.69	0	21.72	1
	1RB Middle (3)	1909.3	23.6	22.08	0	21.15	1
		1880	23.6	22.90	0	21.95	1
		1850.7	23.6	22.74	0	21.89	1

	1RB Low (0)	1909.3	23.6	22.08	0	21.14	1
		1880	23.6	22.86	0	21.88	1
		1850.7	23.6	22.67	0	21.82	1
	3RB High (3)	1909.3	23.6	22.03	0	21.19	1
		1880	23.6	22.83	0	21.99	1
		1850.7	23.6	22.65	0	21.74	1
	3RB Middle (1)	1909.3	23.6	22.10	0	21.30	1
		1880	23.6	22.91	0	22.10	1
		1850.7	23.6	22.74	0	21.83	1
	3RB Low (0)	1909.3	23.6	22.15	0	21.33	1
		1880	23.6	22.90	0	21.03	1
		1850.7	23.6	22.71	0	21.80	1
	6RB (0)	1909.3	23.6	21.23	1	20.31	2
		1880	23.6	22.00	1	21.02	2
		1850.7	23.6	21.79	1	20.70	2
3 MHz	1RB High (14)	1908.5	23.6	21.99	0	21.07	1
		1880	23.6	22.89	0	22.40	1
		1851.5	23.6	22.74	0	21.88	1
	1RB Middle (7)	1908.5	23.6	22.08	0	21.15	1
		1880	23.6	22.83	0	22.00	1
		1851.5	23.6	22.70	0	22.24	1
	1RB Low (0)	1908.5	23.6	22.20	0	21.74	1
		1880	23.6	22.91	0	22.08	1
		1851.5	23.6	22.75	0	21.78	1
	8RB High (7)	1908.5	23.6	21.11	1	20.29	2
		1880	23.6	21.84	1	20.91	2
		1851.5	23.6	21.75	1	20.79	2
	8RB Middle (4)	1908.5	23.6	21.17	1	20.21	2
		1880	23.6	21.85	1	20.86	2
		1851.5	23.6	21.73	1	20.81	2
	8RB Low (0)	1908.5	23.6	21.08	1	20.23	2
		1880	23.6	21.71	1	20.85	2
		1851.5	23.6	21.63	1	20.61	2
	15RB (0)	1908.5	23.6	21.05	1	20.11	2
		1880	23.6	21.98	1	20.70	2
		1851.5	23.6	21.67	1	20.60	2
5 MHz	1RB High (24)	1907.5	23.6	21.82	0	21.01	1
		1880	23.6	22.58	0	21.61	1
		1852.5	23.6	22.52	0	21.75	1
	1RB Middle (12)	1907.5	23.6	22.13	0	21.28	1
		1880	23.6	22.77	0	22.08	1
		1852.5	23.6	22.69	0	21.65	1

	1RB Low (0)	1907.5	23.6	22.10	0	21.04	1
		1880	23.6	22.83	0	22.08	1
		1852.5	23.6	22.62	0	21.65	1
	12RB High (13)	1907.5	23.6	21.04	1	20.09	2
		1880	23.6	21.75	1	20.72	2
		1852.5	23.6	21.56	1	20.60	2
	12RB Middle (6)	1907.5	23.6	21.16	1	20.28	2
		1880	23.6	21.78	1	20.78	2
		1852.5	23.6	21.69	1	20.69	2
	12RB Low (0)	1907.5	23.6	21.26	1	20.30	2
		1880	23.6	21.93	1	20.79	2
		1852.5	23.6	21.72	1	20.71	2
	25RB (0)	1907.5	23.6	21.12	1	20.16	2
		1880	23.6	21.72	1	20.89	2
		1852.5	23.6	21.07	1	20.62	2
10 MHz	1RB High (49)	1905	23.6	21.84	0	21.38	1
		1880	23.6	22.81	0	21.97	1
		1855	23.6	22.72	0	21.71	1
	1RB Middle (24)	1905	23.6	22.16	0	21.72	1
		1880	23.6	22.74	0	21.77	1
		1855	23.6	22.53	0	21.67	1
	1RB Low (0)	1905	23.6	22.41	0	21.57	1
		1880	23.6	22.85	0	21.89	1
		1855	23.6	22.57	0	22.12	1
	25RB High (25)	1905	23.6	21.16	1	20.24	2
		1880	23.6	21.80	1	20.81	2
		1855	23.6	21.62	1	20.67	2
	25RB Middle (12)	1905	23.6	21.33	1	20.49	2
		1880	23.6	21.86	1	20.86	2
		1855	23.6	21.60	1	20.59	2
	25RB Low (0)	1905	23.6	21.35	1	20.48	2
		1880	23.6	21.84	1	20.89	2
		1855	23.6	21.64	1	20.63	2
	50RB (0)	1905	23.6	21.17	1	20.22	2
		1880	23.6	21.69	1	20.70	2
		1855	23.6	21.52	1	20.50	2
15 MHz	1RB High (74)	1902.5	23.6	21.98	0	21.42	1
		1880	23.6	23.16	0	22.49	1
		1857.5	23.6	22.96	0	22.14	1
	1RB Middle (37)	1902.5	23.6	22.31	0	21.76	1
		1880	23.6	22.76	0	21.90	1
		1857.5	23.6	22.60	0	22.20	1

	1RB Low (0)	1902.5	23.6	22.81	0	22.35	1
		1880	23.6	22.92	0	22.12	1
		1857.5	23.6	22.80	0	22.19	1
	36RB High (38)	1902.5	23.6	21.28	1	20.34	2
		1880	23.6	21.97	1	20.94	2
		1857.5	23.6	21.95	1	20.97	2
	36RB Middle (19)	1902.5	23.6	21.52	1	20.60	2
		1880	23.6	21.88	1	20.83	2
		1857.5	23.6	21.75	1	20.72	2
	36RB Low (0)	1902.5	23.6	21.63	1	20.69	2
		1880	23.6	22.02	1	21.03	2
		1857.5	23.6	21.67	1	20.61	2
	75RB (0)	1902.5	23.6	21.44	1	20.49	2
		1880	23.6	21.94	1	20.95	2
		1857.5	23.6	21.73	1	20.69	2
20 MHz	1RB High (99)	1900	23.6	22.53	0	21.82	1
		1880	23.6	23.31	0	22.54	1
		1860	23.6	23.19	0	22.52	1
	1RB Middle (50)	1900	23.6	22.84	0	22.14	1
		1880	23.6	23.13	0	22.43	1
		1860	23.6	23.05	0	22.51	1
	1RB Low (0)	1900	23.6	23.59	0	22.52	1
		1880	23.6	23.44	0	22.40	1
		1860	23.6	23.15	0	22.38	1
	50RB High (50)	1900	23.6	21.79	1	20.92	2
		1880	23.6	22.08	1	20.99	2
		1860	23.6	21.96	1	20.98	2
	50RB Middle (25)	1900	23.6	22.04	1	21.04	2
		1880	23.6	22.14	1	21.11	2
		1860	23.6	22.10	1	21.14	2
	50RB Low (0)	1900	23.6	22.31	1	21.33	2
		1880	23.6	22.38	1	21.30	2
		1860	23.6	22.25	1	21.31	2
	100RB (0)	1900	23.6	22.04	1	21.11	2
		1880	23.6	22.21	1	21.20	2
		1860	23.6	22.23	1	21.23	2
Band 4							
Bandwidth (MHz)	RB allocation	Frequency (MHz)	Max. Target Power (dBm)	QPSK		16QAM	
	RB offset (Start RB)			Actual output power (dBm)	MPR	Actual output power (dBm)	MPR
1.4 MHz	1RB High (5)	1754.3	24	22.66	0	21.95	1
		1732.5	24	22.98	0	22.05	1
		1710.7	24	23.02	0	22.07	1

	1RB Middle (3)	1754.3	24	23.02	0	22.17	1
		1732.5	24	23.35	0	22.58	1
		1710.7	24	23.25	0	22.29	1
	1RB Low (0)	1754.3	24	23.01	0	22.18	1
		1732.5	24	23.29	0	22.44	1
		1710.7	24	23.08	0	22.23	1
	3RB High (3)	1754.3	24	22.92	0	22.22	1
		1732.5	24	23.30	0	22.48	1
		1710.7	24	23.16	0	22.40	1
	3RB Middle (1)	1754.3	24	22.95	0	22.32	1
		1732.5	24	23.31	0	22.44	1
		1710.7	24	23.12	0	22.34	1
	3RB Low (0)	1754.3	24	22.94	0	22.27	1
		1732.5	24	23.35	0	22.51	1
		1710.7	24	23.06	0	22.14	1
	6RB (0)	1754.3	24	22.05	1	21.26	2
		1732.5	24	22.29	1	21.39	2
		1710.7	24	22.08	1	21.04	2
3 MHz	1RB High (14)	1753.5	24	22.88	0	22.46	1
		1732.5	24	23.18	0	22.42	1
		1711.5	24	23.31	0	22.35	1
	1RB Middle (7)	1753.5	24	22.94	0	22.53	1
		1732.5	24	23.19	0	22.32	1
		1711.5	24	23.18	0	22.38	1
	1RB Low (0)	1753.5	24	23.15	0	22.48	1
		1732.5	24	23.31	0	22.41	1
		1711.5	24	23.07	0	22.60	1
	8RB High (7)	1753.5	24	22.06	1	21.28	2
		1732.5	24	22.24	1	21.38	2
		1711.5	24	22.18	1	21.26	2
	8RB Middle (4)	1753.5	24	22.05	1	21.36	2
		1732.5	24	22.25	1	21.41	2
		1711.5	24	22.16	1	21.26	2
	8RB Low (0)	1753.5	24	22.14	1	21.24	2
		1732.5	24	22.27	1	21.39	2
		1711.5	24	22.07	1	21.20	2
	15RB (0)	1753.5	24	21.93	1	21.10	2
		1732.5	24	22.08	1	21.31	2
		1711.5	24	22.02	1	21.11	2
5 MHz	1RB High (24)	1752.5	24	22.96	0	22.08	1
		1732.5	24	23.18	0	22.48	1
		1712.5	24	23.28	0	22.40	1

	1RB Middle (12)	1752.5	24	23.18	0	22.31	1
		1732.5	24	23.31	0	22.51	1
		1712.5	24	23.41	0	22.60	1
	1RB Low (0)	1752.5	24	23.10	0	22.60	1
		1732.5	24	23.30	0	22.41	1
		1712.5	24	23.06	0	22.10	1
	12RB High (13)	1752.5	24	22.19	1	21.35	2
		1732.5	24	22.60	1	21.41	2
		1712.5	24	22.32	1	21.36	2
	12RB Middle (6)	1752.5	24	22.29	1	21.48	2
		1732.5	24	22.35	1	21.44	2
		1712.5	24	22.31	1	21.42	2
	12RB Low (0)	1752.5	24	22.34	1	21.51	2
		1732.5	24	22.34	1	21.40	2
		1712.5	24	22.21	1	21.25	2
	25RB (0)	1752.5	24	22.23	1	21.32	2
		1732.5	24	22.29	1	21.42	2
		1712.5	24	22.17	1	21.16	2
10 MHz	1RB High (49)	1750	24	22.83	0	22.41	1
		1732.5	24	23.16	0	22.36	1
		1715	24	23.23	0	22.24	1
	1RB Middle (24)	1750	24	23.20	0	22.56	1
		1732.5	24	23.19	0	22.32	1
		1715	24	23.29	0	22.47	1
	1RB Low (0)	1750	24	22.98	0	22.15	1
		1732.5	24	23.03	0	22.07	1
		1715	24	23.01	0	22.54	1
	25RB High (25)	1750	24	22.23	1	21.38	2
		1732.5	24	22.30	1	21.37	2
		1715	24	22.29	1	21.40	2
	25RB Middle (12)	1750	24	22.30	1	21.46	2
		1732.5	24	22.32	1	21.48	2
		1715	24	22.31	1	21.37	2
	25RB Low (0)	1750	24	22.20	1	21.31	2
		1732.5	24	22.25	1	21.39	2
		1715	24	22.21	1	21.25	2
	50RB (0)	1750	24	22.15	1	21.26	2
		1732.5	24	22.23	1	21.31	2
		1715	24	22.20	1	21.25	2
15 MHz	1RB High (74)	1747.5	24	23.18	0	22.56	1
		1732.5	24	23.19	0	22.41	1
		1717.5	24	22.98	0	22.43	1

	1RB Middle (37)	1747.5	24	23.15	0	22.51	1
		1732.5	24	23.22	0	22.46	1
		1717.5	24	23.32	0	22.51	1
	1RB Low (0)	1747.5	24	23.20	0	22.37	1
		1732.5	24	23.26	0	22.56	1
		1717.5	24	23.23	0	22.49	1
	36RB High (38)	1747.5	24	22.26	1	21.38	2
		1732.5	24	22.22	1	21.35	2
		1717.5	24	22.25	1	21.37	2
	36RB Middle (19)	1747.5	24	22.17	1	21.30	2
		1732.5	24	22.30	1	21.35	2
		1717.5	24	22.32	1	21.44	2
	36RB Low (0)	1747.5	24	22.18	1	21.29	2
		1732.5	24	22.23	1	21.26	2
		1717.5	24	22.29	1	21.34	2
	75RB (0)	1747.5	24	22.13	1	21.24	2
		1732.5	24	22.20	1	21.31	2
		1717.5	24	22.19	1	21.22	2
20 MHz	1RB High (99)	1745	24	23.05	0	22.48	1
		1732.5	24	23.13	0	22.54	1
		1720	24	23.12	0	22.51	1
	1RB Middle (50)	1745	24	22.91	0	22.54	1
		1732.5	24	22.92	0	22.54	1
		1720	24	23.09	0	22.40	1
	1RB Low (0)	1745	24	23.43	0	22.57	1
		1732.5	24	23.60	0	22.58	1
		1720	24	23.56	0	22.42	1
	50RB High (50)	1745	24	21.93	1	20.94	2
		1732.5	24	21.95	1	21.01	2
		1720	24	22.05	1	21.02	2
	50RB Middle (25)	1745	24	22.00	1	21.04	2
		1732.5	24	22.02	1	21.10	2
		1720	24	22.09	1	21.04	2
	50RB Low (0)	1745	24	22.30	1	21.35	2
		1732.5	24	22.29	1	21.33	2
		1720	24	22.33	1	21.28	2
	100RB (0)	1745	24	22.10	1	21.12	2
		1732.5	24	22.20	1	21.20	2
		1720	24	22.17	1	21.19	2

Band 5							
Bandwidth (MHz)	RB allocation	Frequency (MHz)	Max. Target Power (dBm)	QPSK		16QAM	
	RB offset (Start RB)			Actual output power (dBm)	MPR	Actual output power (dBm)	MPR
1.4 MHz	1RB High (5)	848.3	24	22.77	0	22.06	1
		836.5	24	23.14	0	22.17	1
		824.7	24	23.22	0	22.29	1
	1RB Middle (3)	848.3	24	22.88	0	22.01	1
		836.5	24	23.21	0	22.22	1
		824.7	24	23.19	0	22.36	1
	1RB Low (0)	848.3	24	22.95	0	22.07	1
		836.5	24	23.17	0	22.33	1
		824.7	24	23.07	0	22.10	1
	3RB High (3)	848.3	24	22.80	0	22.03	1
		836.5	24	23.14	0	22.19	1
		824.7	24	23.15	0	22.33	1
	3RB Middle (1)	848.3	24	22.89	0	22.13	1
		836.5	24	23.16	0	22.25	1
		824.7	24	23.19	0	22.36	1
	3RB Low (0)	848.3	24	22.92	0	22.11	1
		836.5	24	23.10	0	22.34	1
		824.7	24	23.04	0	22.12	1
	6RB (0)	848.3	24	21.94	1	21.01	2
		836.5	24	22.17	1	21.20	2
		824.7	24	22.15	1	21.08	2
3 MHz	1RB High (14)	847.5	24	22.88	0	22.43	1
		836.5	24	23.22	0	22.39	1
		825.5	24	23.46	0	22.51	1
	1RB Middle (7)	847.5	24	23.05	0	22.63	1
		836.5	24	23.19	0	22.24	1
		825.5	24	23.37	0	22.54	1
	1RB Low (0)	847.5	24	23.31	0	22.44	1
		836.5	24	23.80	0	22.80	1
		825.5	24	23.21	0	22.37	1
	8RB High (7)	847.5	24	22.10	1	21.55	2
		836.5	24	22.27	1	21.37	2
		825.5	24	22.49	1	21.52	2
	8RB Middle (4)	847.5	24	22.19	1	21.27	2
		836.5	24	22.30	1	21.41	2
		825.5	24	22.45	1	21.53	2

	8RB Low (0)	847.5	24	22.25	1	21.34	2
		836.5	24	22.32	1	21.41	2
		825.5	24	22.30	1	21.40	2
	15RB (0)	847.5	24	22.17	1	21.17	2
		836.5	24	22.28	1	21.33	2
		825.5	24	22.38	1	21.43	2
5 MHz	1RB High (24)	846.5	24	22.94	0	21.98	1
		836.5	24	23.26	0	22.56	1
		826.5	24	23.45	0	22.60	1
	1RB Middle (12)	846.5	24	23.23	0	22.27	1
		836.5	24	23.28	0	22.44	1
		826.5	24	23.59	0	22.83	1
	1RB Low (0)	846.5	24	23.51	0	22.83	1
		836.5	24	23.35	0	22.47	1
		826.5	24	23.22	0	22.25	1
	12RB High (13)	846.5	24	22.17	1	21.29	2
		836.5	24	22.31	1	21.34	2
		826.5	24	22.50	1	21.53	2
	12RB Middle (6)	846.5	24	22.41	1	21.46	2
		836.5	24	22.33	1	21.35	2
		826.5	24	22.55	1	21.03	2
	12RB Low (0)	846.5	24	22.55	1	21.61	2
		836.5	24	22.34	1	21.44	2
		826.5	24	22.44	1	21.45	2
	25RB (0)	846.5	24	22.34	1	21.33	2
		836.5	24	22.32	1	21.41	2
		826.5	24	22.46	1	21.44	2
10 MHz	1RB High (49)	844.0	24	23.54	0	22.37	1
		836.5	24	23.28	0	22.27	1
		829.0	24	23.43	0	22.26	1
	1RB Middle (24)	844.0	24	23.67	0	22.47	1
		836.5	24	23.64	0	22.36	1
		829.0	24	23.18	0	22.30	1
	1RB Low (0)	844.0	24	23.61	0	22.20	1
		836.5	24	23.30	0	22.38	1
		829.0	24	23.50	0	22.46	1
	25RB High (25)	844.0	24	22.37	1	21.42	2
		836.5	24	22.36	1	21.41	2
		829.0	24	22.35	1	21.36	2
	25RB Middle (12)	844.0	24	22.51	1	21.52	2
		836.5	24	22.48	1	21.50	2
		829.0	24	22.36	1	21.45	2

	25RB Low (0)	844.0	24	22.45	1	21.61	2
		836.5	24	22.38	1	21.46	2
		829.0	24	22.30	1	21.49	2
	50RB (0)	844.0	24	22.48	1	21.52	2
		836.5	24	22.37	1	21.38	2
		829.0	24	22.46	1	21.40	2
Band 7							
Bandwidth (MHz)	RB allocation	Frequency (MHz)	Max. Target Power (dBm)	QPSK		16QAM	
	RB offset (Start RB)			Actual output power (dBm)	MPR	Actual output power (dBm)	MPR
5 MHz	1RB High (24)	2567.5	24	22.41	0	21.62	1
		2535	24	23.13	0	22.33	1
		2502.5	24	22.87	0	22.30	1
	1RB Middle (12)	2567.5	24	22.74	0	21.96	1
		2535	24	23.33	0	22.34	1
		2502.5	24	23.04	0	22.43	1
	1RB Low (0)	2567.5	24	22.96	0	22.36	1
		2535	24	23.29	0	22.41	1
		2502.5	24	22.98	0	22.20	1
	12RB High (13)	2567.5	24	21.73	1	20.89	2
		2535	24	22.15	1	21.28	2
		2502.5	24	22.01	1	21.14	2
	12RB Middle (6)	2567.5	24	21.88	1	21.01	2
		2535	24	22.19	1	21.25	2
		2502.5	24	22.18	1	21.33	2
	12RB Low (0)	2567.5	24	21.91	1	21.10	2
		2535	24	22.29	1	21.34	2
		2502.5	24	22.13	1	21.29	2
	25RB (0)	2567.5	24	21.85	1	21.06	2
		2535	24	22.22	1	21.22	2
		2502.5	24	22.09	1	21.24	2
10 MHz	1RB High (49)	2565	24	22.27	0	21.45	1
		2535	24	22.85	0	22.14	1
		2505	24	22.87	0	22.43	1
	1RB Middle (24)	2565	24	22.87	0	22.18	1
		2535	24	23.18	0	22.30	1
		2505	24	23.03	0	22.57	1
	1RB Low (0)	2565	24	23.31	0	22.63	1
		2535	24	23.37	0	22.53	1
		2505	24	22.97	0	22.23	1
	25RB High (25)	2565	24	21.76	1	20.90	2
		2535	24	22.15	1	21.25	2
		2505	24	22.13	1	21.32	2

	25RB Middle (12)	2565	24	22.12	1	21.32	2
		2535	24	22.23	1	21.40	2
		2505	24	22.17	1	21.41	2
	25RB Low (0)	2565	24	22.27	1	21.49	2
		2535	24	22.37	1	21.48	2
		2505	24	22.23	1	21.37	2
	50RB (0)	2565	24	22.05	1	21.19	2
		2535	24	22.28	1	21.38	2
		2505	24	22.11	1	21.25	2
15 MHz	1RB High (74)	2562.5	24	22.51	0	22.12	1
		2535	24	23.27	0	22.50	1
		2507.5	24	23.57	0	22.68	1
	1RB Middle (37)	2562.5	24	23.23	0	22.61	1
		2535	24	23.20	0	22.47	1
		2507.5	24	23.09	0	22.65	1
	1RB Low (0)	2562.5	24	23.68	0	22.47	1
		2535	24	23.62	0	22.55	1
		2507.5	24	23.25	0	22.62	1
	36RB High (38)	2562.5	24	21.91	1	21.12	2
		2535	24	22.16	1	21.27	2
		2507.5	24	22.51	1	21.67	2
	36RB Middle (19)	2562.5	24	22.38	1	21.58	2
		2535	24	22.27	1	21.34	2
		2507.5	24	22.21	1	21.41	2
	36RB Low (0)	2562.5	24	22.65	1	21.66	2
		2535	24	22.53	1	21.69	2
		2507.5	24	22.26	1	21.47	2
	75RB (0)	2562.5	24	22.47	1	21.53	2
		2535	24	22.33	1	21.50	2
		2507.5	24	22.34	1	21.48	2
20 MHz	1RB High (99)	2560	24	22.78	0	22.28	1
		2535	24	22.80	0	22.42	1
		2510	24	22.60	0	22.10	1
	1RB Middle (50)	2560	24	23.27	0	22.61	1
		2535	24	23.19	0	22.68	1
		2510	24	23.19	0	22.67	1
	1RB Low (0)	2560	24	23.12	0	22.60	1
		2535	24	23.10	0	22.62	1
		2510	24	23.14	0	22.63	1
	50RB High (50)	2560	24	22.06	1	21.11	2
		2535	24	22.10	1	21.11	2
		2510	24	22.10	1	21.11	2

	50RB Middle (25)	2560	24	22.32	1	21.37	2
		2535	24	22.28	1	21.29	2
		2510	24	22.26	1	21.30	2
	50RB Low (0)	2560	24	22.47	1	21.51	2
		2535	24	22.31	1	21.26	2
		2510	24	22.28	1	21.32	2
	100RB (0)	2560	24	22.27	1	21.31	2
		2535	24	22.25	1	21.28	2
		2510	24	22.15	1	21.11	2
Band 17							
Bandwidth (MHz)	RB allocation	Frequency (MHz)	Max. Target Power (dBm)	QPSK		16QAM	
	RB offset (Start RB)			Actual output power (dBm)	MPR	Actual output power (dBm)	MPR
5 MHz	1RB High (24)	713.5	24	22.67	0	21.94	1
		710	24	23.20	0	22.38	1
		706.5	24	23.51	0	22.61	1
	1RB Middle (12)	713.5	24	23.04	0	22.31	1
		710	24	23.34	0	22.35	1
		706.5	24	23.60	0	22.79	1
	1RB Low (0)	713.5	24	23.12	0	22.20	1
		710	24	23.61	0	22.86	1
		706.5	24	23.40	0	22.59	1
	12RB High (13)	713.5	24	21.87	1	20.98	2
		710	24	22.27	1	21.33	2
		706.5	24	22.60	1	21.62	2
	12RB Middle (6)	713.5	24	22.13	1	21.19	2
		710	24	22.44	1	21.51	2
		706.5	24	22.65	1	21.75	2
	12RB Low (0)	713.5	24	22.21	1	21.28	2
		710	24	22.56	1	21.63	2
		706.5	24	22.53	1	21.66	2
	25RB (0)	713.5	24	21.96	1	20.96	2
		710	24	22.33	1	21.35	2
		706.5	24	22.42	1	21.70	2
10 MHz	1RB High (49)	711	24	23.28	0	22.93	1
		710	24	23.32	0	22.32	1
		709	24	23.35	0	22.77	1
	1RB Middle (24)	711	24	23.38	0	22.25	1
		710	24	23.37	0	22.26	1
		709	24	23.36	0	22.80	1

	1RB Low (0)	711	24	23.34	0	22.97	1
		710	24	23.34	0	22.35	1
		709	24	23.44	0	22.71	1
	25RB High (25)	711	24	22.22	1	21.22	2
		710	24	22.18	1	21.27	2
		709	24	22.26	1	21.28	2
	25RB Middle (12)	711	24	22.29	1	21.33	2
		710	24	22.38	1	21.10	2
		709	24	22.23	1	21.33	2
	25RB Low (0)	711	24	22.33	1	21.36	2
		710	24	22.34	1	21.57	2
		709	24	22.35	1	21.35	2
	50RB (0)	711	24	22.23	1	21.22	2
		710	24	22.30	1	21.31	2
		709	24	22.35	1	21.10	2
Band 41							
Bandwidth (MHz)	RB allocation	Frequency (MHz)	Max. Target Power (dBm)	QPSK		16QAM	
	RB offset (Start RB)			Actual output power (dBm)	MPR	Actual output power (dBm)	MPR
5 MHz	1RB High (24)	2687.5	23.5	22.57	0	21.48	1
		2640.3	23.5	22.65	0	21.84	1
		2593	23.5	22.25	0	21.33	1
		2545.8	23.5	22.83	0	21.83	1
		2498.5	23.5	23.15	0	22.16	1
	1RB Middle (12)	2687.5	23.5	22.92	0	22.12	1
		2640.3	23.5	22.61	0	21.92	1
		2593	23.5	22.21	0	21.41	1
		2545.8	23.5	23.03	0	22.09	1
		2498.5	23.5	23.14	0	22.12	1
	1RB Low (0)	2687.5	23.5	22.96	0	22.15	1
		2640.3	23.5	22.58	0	21.81	1
		2593	23.5	22.23	0	21.37	1
		2545.8	23.5	22.97	0	22.09	1
		2498.5	23.5	22.99	0	21.94	1
	12RB High (13)	2687.5	23.5	21.81	1	20.86	2
		2640.3	23.5	21.74	1	20.73	2
		2593	23.5	21.18	1	20.18	2
		2545.8	23.5	21.95	1	20.90	2
		2498.5	23.5	21.96	1	21.03	2
	12RB Middle (6)	2687.5	23.5	22.01	1	21.18	2
		2640.3	23.5	21.78	1	20.82	2
		2593	23.5	21.35	1	20.46	2
		2545.8	23.5	22.03	1	20.98	2

		2498.5	23.5	22.09	1	20.33	2
		2687.5	23.5	21.85	1	20.89	2
		2640.3	23.5	21.75	1	20.81	2
		2593	23.5	21.25	1	20.22	2
		2545.8	23.5	21.95	1	21.05	2
		2498.5	23.5	21.99	1	21.08	2
		2687.5	23.5	21.82	1	20.94	2
		2640.3	23.5	21.80	1	20.95	2
		2593	23.5	21.15	1	20.06	2
		2545.8	23.5	21.86	1	20.93	2
10 MHz	1RB High (49)	2498.5	23.5	21.91	1	20.96	2
		2685	23.5	22.53	0	21.44	1
		2639	23.5	22.94	0	21.56	1
		2593	23.5	22.20	0	21.28	1
		2547	23.5	23.11	0	21.95	1
	1RB Middle (24)	2501	23.5	23.20	0	22.11	1
		2685	23.5	22.97	0	22.11	1
		2639	23.5	22.85	0	21.50	1
		2593	23.5	22.25	0	21.38	1
		2547	23.5	23.08	0	21.71	1
	1RB Low (0)	2501	23.5	23.11	0	22.15	1
		2685	23.5	22.98	0	22.17	1
		2639	23.5	22.82	0	21.55	1
		2593	23.5	22.20	0	21.35	1
		2547	23.5	22.92	0	22.16	1
	25RB High (25)	2501	23.5	22.94	0	21.91	1
		2685	23.5	21.94	1	21.01	2
		2639	23.5	21.53	1	20.65	2
		2593	23.5	21.43	1	20.41	2
		2547	23.5	21.72	1	20.57	2
	25RB Middle (12)	2501	23.5	22.16	1	21.20	2
		2685	23.5	22.13	1	21.13	2
		2639	23.5	21.55	1	20.67	2
		2593	23.5	21.47	1	20.54	2
		2547	23.5	21.78	1	20.81	2
	25RB Low (0)	2501	23.5	22.15	1	21.19	2
		2685	23.5	22.17	1	21.14	2
		2639	23.5	21.64	1	20.66	2
		2593	23.5	21.21	1	20.21	2
		2547	23.5	21.71	1	20.87	2
		2501	23.5	22.11	1	21.16	2

	50RB (0)	2685	23.5	22.19	1	21.16	2
		2639	23.5	21.57	1	20.72	2
		2593	23.5	21.40	1	20.13	2
		2547	23.5	21.76	1	20.77	2
		2501	23.5	22.04	1	21.13	2
15 MHz	1RB High (74)	2682.5	23.5	22.76	0	21.74	1
		2637.8	23.5	22.83	0	21.70	1
		2593	23.5	22.38	0	21.67	1
		2548.3	23.5	22.34	0	22.05	1
		2503.5	23.5	23.10	0	22.07	1
	1RB Middle (37)	2682.5	23.5	23.13	0	22.12	1
		2637.8	23.5	22.66	0	21.63	1
		2593	23.5	22.25	0	21.40	1
		2548.3	23.5	23.09	0	22.14	1
		2503.5	23.5	23.12	0	22.15	1
	1RB Low (0)	2682.5	23.5	23.18	0	22.18	1
		2637.8	23.5	22.71	0	21.74	1
		2593	23.5	22.60	0	21.81	1
		2548.3	23.5	23.16	0	22.13	1
		2503.5	23.5	23.10	0	22.13	1
	36RB High (38)	2682.5	23.5	22.20	1	21.12	2
		2637.8	23.5	21.71	1	20.74	2
		2593	23.5	21.59	1	20.62	2
		2548.3	23.5	22.05	1	20.97	2
		2503.5	23.5	22.12	1	21.10	2
	36RB Middle (19)	2682.5	23.5	22.17	1	21.16	2
		2637.8	23.5	21.72	1	20.77	2
		2593	23.5	21.54	1	20.59	2
		2548.3	23.5	22.13	1	21.09	2
		2503.5	23.5	22.12	1	21.10	2
	36RB Low (0)	2682.5	23.5	22.16	1	21.18	2
		2637.8	23.5	21.75	1	20.89	2
		2593	23.5	21.56	1	20.63	2
		2548.3	23.5	22.16	1	21.17	2
		2503.5	23.5	22.18	1	21.20	2
	75RB (0)	2682.5	23.5	22.18	1	21.12	2
		2637.8	23.5	21.71	1	20.79	2
		2593	23.5	21.57	1	20.61	2
		2548.3	23.5	22.08	1	21.05	2
		2503.5	23.5	22.09	1	21.08	2
20 MHz	1RB High (99)	2680	23.5	22.74	0	21.72	1
		2636.5	23.5	22.60	0	21.47	1

		2593	23.5	22.77	0	21.62	1
		2549.5	23.5	22.30	0	21.42	1
		2506	23.5	22.61	0	21.86	1
	1RB Middle (50)	2680	23.5	23.04	0	22.18	1
		2636.5	23.5	22.29	0	21.69	1
		2593	23.5	22.54	0	21.66	1
		2549.5	23.5	22.84	0	22.00	1
		2506	23.5	23.07	0	22.16	1
	1RB Low (0)	2680	23.5	22.97	0	22.10	1
		2636.5	23.5	22.32	0	21.79	1
		2593	23.5	23.17	0	22.19	1
		2549.5	23.5	22.85	0	21.80	1
		2506	23.5	22.65	0	21.71	1
	50RB High (50)	2680	23.5	21.68	1	20.71	2
		2636.5	23.5	21.43	1	20.68	2
		2593	23.5	21.70	1	20.68	2
		2549.5	23.5	21.80	1	20.74	2
		2506	23.5	21.91	1	20.88	2
	50RB Middle (25)	2680	23.5	21.98	1	20.95	2
		2636.5	23.5	21.51	1	20.65	2
		2593	23.5	21.69	1	20.83	2
		2549.5	23.5	22.01	1	20.90	2
		2506	23.5	22.01	1	21.08	2
	50RB Low (0)	2680	23.5	21.95	1	20.94	2
		2636.5	23.5	21.50	1	20.58	2
		2593	23.5	22.02	1	21.06	2
		2549.5	23.5	22.01	1	20.90	2
		2506	23.5	21.98	1	21.09	2
	100RB (0)	2680	23.5	21.82	1	20.87	2
		2636.5	23.5	21.51	1	20.61	2
		2593	23.5	21.89	1	20.95	2
		2549.5	23.5	22.00	1	20.88	2
		2506	23.5	22.07	1	21.03	2

11.6 Wi-Fi and BT Measurement result

The output power of BT antenna is as following:

Mode	Conducted Power (dBm)		
	Channel 0 (2402MHz)	Channel 39 (2441MHz)	Channel 78 (2480MHz)
GFSK	9.2	8.4	9.7

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

802.11b (dBm) – chain0

Channel\data rate	1Mbps	2Mbps	5.5Mbps	11Mbps
1	12.68	/	/	/
6	13.19	/	/	/
11	13.41	13.40	13.34	13.39

802.11g (dBm) – chain0

Channel\data rate	6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
1	12.91	/	/	/	13.08	/	/	/
6	13.31	/	/	/	13.30	/	/	/
11	13.57	13.84	13.86	13.94	13.93	13.82	13.79	13.83

802.11n (dBm) - HT20 (2.4G) – chain0

Channel\data rate	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
1	13.35	/	/	/	13.44	/	/	/
6	13.77	/	/	/	13.87	/	/	/
11	13.79	13.86	13.85	13.87	13.98	13.90	13.90	13.89

802.11b (dBm) – chain1

Channel\data rate	1Mbps	2Mbps	5.5Mbps	11Mbps
1	10.03	9.88	/	/
6	10.09	10.13	/	/
11	10.14	10.33	10.12	10.15

802.11g (dBm) – chain1

Channel\data rate	6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
1	9.89	/	/	/	10.03	/	/	/
6	10.22	/	/	/	10.47	/	/	/
11	10.36	10.33	10.34	10.39	10.49	10.46	10.48	10.47

802.11n (dBm) - HT20 (2.4G) – chain1

Channel\data rate	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
1	9.85	/	/	/	/	10.14	/	/
6	10.13	/	/	/	/	10.29	/	/
11	10.19	10.18	10.01	10.28	10.21	10.48	10.44	10.41

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

Please refer to antenna specification file.

12.3 SAR Measurement Positions

According to the KDB941225 D06 Hot Spot SAR v01, 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 – chain0	Yes	Yes	No	Yes	Yes	No
WLAN – chain1	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:

$$\left[\frac{\text{max. power of channel, including tune-up tolerance, mW}}{(\text{min. test separation distance, mm})} \right] \cdot \sqrt{f(\text{GHz})} \leq 3.0$$
 for 1-g SAR, where

- $f(\text{GHz})$ 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	9.8	9.55	Yes
		Body	19.20	9.8	9.55	Yes
2.4GHz WLAN 802.11 b	2.45	Head	9.58	14	25.12	No
		Body	19.17	14	25.12	No
WLAN 5GHz	5.2	Head	6.58	14.5	28.18	No
		Body	13.16	14.5	28.18	No
	5.3	Head	6.52	14.5	28.18	No
		Body	13.03	14.5	28.18	No
	5.6	Head	6.34	14.5	28.18	No
		Body	12.68	14.5	28.18	No
	5.8	Head	6.23	14.5	28.18	No
		Body	12.46	14.5	28.18	No

13 Evaluation of Simultaneous

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

	Position	Main antenna	WiFi (DTS) chain0	WiFi (DTS) chain1	Sum1	Main antenna	WiFi (UNII) chain0	WiFi (UNII) chain1	Sum2
Maximum reported SAR value for Head	Left hand, Touch cheek	0.56	0.40	0.06	1.02	0.56	0.53	0.18	1.27
	Right hand, Touch cheek	0.59	0.13	0.18	0.90	0.59	0.15	0.46	1.20
Maximum reported SAR value for Body	Front 10mm	0.63	0.07	0.01	0.71	0.63	0.06	0.03	0.72
	Rear 10mm	0.57	0.07	0.02	0.66	0.57	0.11	0.04	0.72
	Bottom 10mm	0.78	/	/	0.78	0.78	/	/	0.78
	Bottom 15mm	1.12	/	/	1.12	1.12	/	/	1.12

Note1: Sum1 is Main antenna + WiFi (DTS) chain0 + WiFi (DTS) chain1.

Sum2 is Main antenna + WiFi (UNII) chain0 + WiFi (UNII) chain1.

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

	Position	Main antenna	BT*	Sum
Highest reported SAR value for Head	Right hand, Touch cheek	0.59	0.40	0.99
Highest reported SAR value for Body	Bottom 10mm	0.78	0.20	0.98
	Bottom 15mm	1.12	0.13	1.25

BT* - 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	9.8	9.55	0.40
Bluetooth	2.441	Body	10	9.8	9.55	0.20
Bluetooth	2.441	Body	15	9.8	9.55	0.13

* - 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 10mm for normal bands and AP ON, 15mm for AP OFF 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:

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

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

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

Table 14.1: Duty Cycle

Duty Cycle	
Speech for GSM850/1900	1:8.3
GPRS&EGPRS for GSM850	1:8.3
GPRS&EGPRS for GSM1900	1:4
WCDMA850/1700/1900 & LTE & WiFi	1:1

14.1 SAR results for Fast SAR

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

Ambient Temperature: 22.3 °C						Liquid Temperature: 21.8 °C					
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)
MHz	Ch.										
848.8	251	Left	Touch	/	32.95	33.5	0.196	0.22	0.253	0.29	-0.19
836.6	190	Left	Touch	/	33.06	33.5	0.151	0.17	0.218	0.24	0.16
824.2	128	Left	Touch	/	33.00	33.5	0.150	0.17	0.216	0.24	0.17
836.6	190	Left	Tilt	/	33.06	33.5	0.087	0.10	0.126	0.14	0.17
848.8	251	Right	Touch	Fig.1	32.95	33.5	0.226	0.26	0.294	0.33	-0.11
836.6	190	Right	Touch	/	33.06	33.5	0.175	0.19	0.253	0.28	0.14
824.2	128	Right	Touch	/	33.00	33.5	0.165	0.19	0.239	0.27	0.11
836.6	190	Right	Tilt	/	33.06	33.5	0.085	0.09	0.121	0.13	-0.13

Table 14.3: SAR Values (GSM 850 MHz Band - Body)

Ambient Temperature: 22.3 °C						Liquid Temperature: 21.8 °C					
Frequency		Mode (number of timeslots)	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)
MHz	Ch.										
836.6	190	GPRS (1)	Front	/	32.90	33.5	0.248	0.28	0.341	0.39	-0.05
848.8	251	GPRS (1)	Rear	/	32.88	33.5	0.256	0.30	0.330	0.38	-0.03
836.6	190	GPRS (1)	Rear	Fig.2	32.90	33.5	0.269	0.31	0.350	0.40	0.03
824.2	128	GPRS (1)	Rear	/	32.89	33.5	0.254	0.29	0.328	0.38	-0.03
836.6	190	GPRS (1)	Left	/	32.90	33.5	0.110	0.13	0.160	0.18	-0.06
836.6	190	GPRS (1)	Right	/	32.90	33.5	0.224	0.26	0.327	0.38	-0.02
836.6	190	GPRS (1)	Bottom	/	32.90	33.5	0.025	0.03	0.042	0.05	0.06
836.6	190	EGPRS (1)	Rear	/	32.87	33.5	0.220	0.25	0.305	0.35	-0.13

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

Table 14.4: SAR Values (GSM 1900 MHz Band - Head)

Ambient Temperature: 22.3 °C						Liquid Temperature: 21.8 °C					
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)
MHz	Ch.										
1909.8	810	Left	Touch	Fig.3	29.25	30.7	0.093	0.13	0.149	0.21	0.06
1880	661	Left	Touch	/	29.47	30.7	0.063	0.08	0.105	0.14	0.19
1850.2	512	Left	Touch	/	29.41	30.7	0.043	0.06	0.073	0.10	0.11
1880	661	Left	Tilt	/	29.47	30.7	0.018	0.02	0.030	0.04	0.12
1909.8	810	Right	Touch	/	29.25	30.7	0.046	0.06	0.071	0.10	0.13
1880	661	Right	Touch	/	29.47	30.7	0.032	0.04	0.051	0.07	0.10
1850.2	512	Right	Touch	/	29.41	30.7	0.021	0.03	0.033	0.04	0.12
1880	661	Right	Tilt	/	29.47	30.7	0.020	0.03	0.035	0.05	0.19

Table 14.5: SAR Values (GSM 1900 MHz Band - Body)

Ambient Temperature: 22.3 °C						Liquid Temperature: 21.8 °C					
Frequency		Mode (number of timeslots)	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)
MHz	Ch.										
1880	661	GPRS (2)	Front	/	26.51	28.0	0.087	0.12	0.154	0.22	0.05
1880	661	GPRS (2)	Rear	/	26.51	28.0	0.112	0.16	0.213	0.30	0.02
1880	661	GPRS (2)	Left	/	26.51	28.0	0.070	0.10	0.124	0.17	-0.04
1880	661	GPRS (2)	Right	/	26.51	28.0	0.007	0.01	0.013	0.02	-0.05
1909.8	810	GPRS (2)	Bottom	Fig.4	26.51	28.0	0.206	0.29	0.396	0.56	0.05
1880	661	GPRS (2)	Bottom	/	26.48	28.0	0.124	0.18	0.256	0.36	0.05
1850.2	512	GPRS (2)	Bottom	/	26.43	28.0	0.099	0.14	0.204	0.29	-0.05
1909.8	810	EGPRS (2)	Bottom	/	26.39	28.0	0.147	0.21	0.294	0.43	-0.01

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

Table 14.6: SAR Values (WCDMA 850 MHz Band - Head)

Ambient Temperature: 22.3 °C						Liquid Temperature: 21.8 °C					
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)
MHz	Ch.										
846.6	4233	Left	Touch	/	22.95	24.3	0.328	0.45	0.410	0.56	0.11
836.4	4182	Left	Touch	/	23.56	24.3	0.240	0.28	0.345	0.41	0.14
826.4	4132	Left	Touch	/	23.29	24.3	0.227	0.29	0.325	0.41	-0.09
836.4	4182	Left	Tilt	/	23.56	24.3	0.136	0.16	0.195	0.23	-0.14
846.6	4233	Right	Touch	Fig.5	22.95	24.3	0.336	0.46	0.435	0.59	-0.11
836.4	4182	Right	Touch	/	23.56	24.3	0.272	0.32	0.391	0.46	-0.17
826.4	4132	Right	Touch	/	23.29	24.3	0.251	0.32	0.362	0.46	0.14
836.4	4182	Right	Tilt	/	23.56	24.3	0.128	0.15	0.185	0.22	0.10

Table 14.7: SAR Values (WCDMA 850 MHz Band - Body)

Ambient Temperature: 22.3 °C						Liquid Temperature: 21.8 °C				
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)
MHz	Ch.									
846.6	4233	Front	/	22.95	24.3	0.335	0.46	0.461	0.63	0.04
836.4	4182	Front	/	23.56	24.3	0.343	0.41	0.473	0.56	0.16
826.4	4132	Front	Fig.6	23.29	24.3	0.389	0.49	0.496	0.63	0.01
836.4	4182	Rear	/	23.56	24.3	0.341	0.40	0.471	0.56	0.10
836.4	4182	Left	/	23.56	24.3	0.169	0.20	0.246	0.29	0.02
836.4	4182	Right	/	23.56	24.3	0.287	0.34	0.419	0.50	0.11
836.4	4182	Bottom	/	23.56	24.3	0.032	0.04	0.052	0.06	-0.07

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

Table 14.8: SAR Values (WCDMA 1700 MHz Band - Head)

Ambient Temperature: 22.3 °C						Liquid Temperature: 21.8 °C					
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)
MHz	Ch.										
1752.6	1513	Left	Touch	/	22.94	24.5	0.078	0.11	0.123	0.18	0.06
1732.4	1412	Left	Touch	/	22.89	24.5	0.049	0.07	0.079	0.12	0.01
1712.4	1312	Left	Touch	/	23.43	24.5	0.036	0.05	0.059	0.08	0.13
1732.4	1412	Left	Tilt	/	22.89	24.5	0.043	0.06	0.075	0.11	0.07
1752.6	1513	Right	Touch	Fig.7	22.94	24.5	0.141	0.20	0.225	0.32	0.04
1732.4	1412	Right	Touch	/	22.89	24.5	0.111	0.16	0.189	0.27	-0.02
1712.4	1312	Right	Touch	/	23.43	24.5	0.102	0.13	0.172	0.22	0.12
1732.4	1412	Right	Tilt	/	22.89	24.5	0.040	0.06	0.064	0.09	0.06

Table 14.9: SAR Values (WCDMA 1700 MHz Band - Body) – AP ON

Ambient Temperature: 22.3 °C						Liquid Temperature: 21.8 °C				
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)
MHz	Ch.									
1732.4	1412	Front	/	19.12	19.5	0.193	0.21	0.352	0.38	0.10
1732.4	1412	Rear	/	19.12	19.5	0.213	0.23	0.405	0.44	-0.09
1732.4	1412	Left	/	19.12	19.5	0.047	0.05	0.082	0.09	0.10
1732.4	1412	Right	/	19.12	19.5	0.058	0.06	0.103	0.11	0.19
1752.6	1513	Bottom	/	19.24	19.5	0.145	0.15	0.322	0.34	0.18
1732.4	1412	Bottom	/	19.12	19.5	0.200	0.22	0.411	0.45	-0.04
1712.4	1312	Bottom	Fig.8	18.97	19.5	0.336	0.38	0.687	0.78	-0.07

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

Table 14.10: SAR Values (WCDMA 1700 MHz Band - Body) – AP OFF

Ambient Temperature: 22.3 °C						Liquid Temperature: 21.8 °C				
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)
MHz	Ch.									
1712.4	1312	Front	/	22.89	24.5	0.251	0.36	0.476	0.69	0.06
1712.4	1312	Rear	/	23.43	24.5	0.330	0.42	0.608	0.78	0.08
1712.4	1312	Left	/	22.89	24.5	0.027	0.04	0.045	0.07	0.12
1712.4	1312	Right	/	22.89	24.5	0.086	0.12	0.145	0.21	0.12
1752.6	1513	Bottom	/	22.94	24.5	0.193	0.28	0.378	0.54	0.01
1732.4	1412	Bottom	/	22.89	24.5	0.280	0.41	0.544	0.79	-0.04
1712.4	1312	Bottom	Fig.9	23.43	24.5	0.475	0.61	0.879	1.12	0.02

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

Table 14.11: SAR Values (WCDMA 1900 MHz Band - Head)

Ambient Temperature: 22.3 °C						Liquid Temperature: 21.8 °C					
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)
MHz	Ch.										
1907.6	9538	Left	Touch	/	21.57	23.0	0.077	0.11	0.129	0.18	0.19
1880	9400	Left	Touch	Fig.10	22.64	24.0	0.090	0.12	0.146	0.20	0.19
1852.4	9262	Left	Touch	/	22.42	23.0	0.069	0.08	0.116	0.13	0.11
1880	9400	Left	Tilt	/	22.64	24.0	0.027	0.04	0.045	0.06	0.14
1907.6	9538	Right	Touch	/	21.57	23.0	0.047	0.06	0.074	0.10	0.13
1880	9400	Right	Touch	/	22.64	24.0	0.044	0.06	0.071	0.10	-0.16
1852.4	9262	Right	Touch	/	22.42	23.0	0.033	0.04	0.053	0.06	0.18
1880	9400	Right	Tilt	/	22.64	24.0	0.028	0.04	0.048	0.07	0.17

Table 14.12: SAR Values (WCDMA 1900 MHz Band - Body)

Ambient Temperature: 22.3 °C						Liquid Temperature: 21.8 °C				
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)
MHz	Ch.									
1880	9400	Front	/	22.64	24.0	0.198	0.27	0.399	0.55	0.00
1880	9400	Rear	/	22.64	24.0	0.200	0.27	0.419	0.57	0.12
1880	9400	Left	/	22.64	24.0	0.116	0.16	0.204	0.28	-0.01
1880	9400	Right	/	22.64	24.0	0.016	0.02	0.028	0.04	-0.09
1907.6	9538	Bottom	/	21.57	23.0	0.269	0.37	0.539	0.75	0.00
1880	9400	Bottom	Fig.11	22.64	24.0	0.289	0.40	0.558	0.76	0.00
1852.4	9262	Bottom	/	22.42	23.0	0.222	0.25	0.439	0.50	-0.05

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

Table 14.13: SAR Values (LTE Band2 - Head)

Ambient Temperature: 22.3 °C						Liquid Temperature: 21.8 °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)
MHz	Ch.											
1900	19100	1RB_Low	Left	Touch	Fig.12	23.59	23.6	0.088	0.09	0.153	0.15	0.05
1900	19100	1RB_Low	Left	Tilt	/	23.59	23.6	0.044	0.04	0.074	0.07	-0.01
1900	19100	1RB_Low	Right	Touch	/	23.59	23.6	0.055	0.05	0.090	0.09	0.01
1900	19100	1RB_Low	Right	Tilt	/	23.59	23.6	0.039	0.04	0.070	0.07	0.03
1880	18900	50RB_Low	Left	Touch	/	22.38	22.6	0.057	0.06	0.099	0.10	0.04
1880	18900	50RB_Low	Left	Tilt	/	22.38	22.6	0.019	0.02	0.033	0.03	0.06
1880	18900	50RB_Low	Right	Touch	/	22.38	22.6	0.036	0.04	0.059	0.06	0.06
1880	18900	50RB_Low	Right	Tilt	/	22.38	22.6	0.027	0.03	0.048	0.05	0.03

Note1: The LTE mode is QPSK_20MHz.

Table 14.14: SAR Values (LTE Band2 - Body)

Ambient Temperature: 22.3 °C						Liquid Temperature: 21.8 °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)
MHz	Ch.										
1900	19100	1RB_Low	Front	/	23.59	23.6	0.148	0.15	0.271	0.27	-0.13
1900	19100	1RB_Low	Rear	/	23.59	23.6	0.170	0.17	0.351	0.35	0.08
1900	19100	1RB_Low	Left	/	23.59	23.6	0.096	0.10	0.171	0.17	0.06
1900	19100	1RB_Low	Right	/	23.59	23.6	0.011	0.01	0.019	0.02	-0.10
1900	19100	1RB_Low	Bottom	Fig.13	23.59	23.6	0.218	0.22	0.426	0.43	0.06
1880	18900	50RB_Low	Front	/	22.38	22.6	0.101	0.11	0.185	0.19	-0.06
1880	18900	50RB_Low	Rear	/	22.38	22.6	0.114	0.12	0.237	0.25	0.11

1880	18900	50RB_Low	Left	/	22.38	22.6	0.065	0.07	0.114	0.12	0.06
1880	18900	50RB_Low	Right	/	22.38	22.6	0.007	0.01	0.013	0.01	0.11
1880	18900	50RB_Low	Bottom	/	22.38	22.6	0.138	0.15	0.274	0.29	-0.01

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

Note2: The LTE mode is QPSK_20MHz.

Table 14.15: SAR Values (LTE Band4 - Head)

Ambient Temperature: 22.3 °C						Liquid Temperature: 21.8 °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)
MHz	Ch.											
1732.5	20175	1RB_Low	Left	Touch	/	23.60	24.0	0.037	0.04	0.058	0.06	0.07
1732.5	20175	1RB_Low	Left	Tilt	/	23.60	24.0	0.025	0.03	0.043	0.05	0.13
1732.5	20175	1RB_Low	Right	Touch	Fig.14	23.60	24.0	0.072	0.08	0.118	0.13	0.06
1732.5	20175	1RB_Low	Right	Tilt	/	23.60	24.0	0.021	0.02	0.034	0.04	0.07
1720	20050	50RB_Low	Left	Touch	/	22.33	23.0	0.024	0.03	0.039	0.05	0.12
1720	20050	50RB_Low	Left	Tilt	/	22.33	23.0	0.018	0.02	0.030	0.03	0.01
1720	20050	50RB_Low	Right	Touch	/	22.33	23.0	0.050	0.06	0.086	0.10	0.11
1720	20050	50RB_Low	Right	Tilt	/	22.33	23.0	0.013	0.02	0.022	0.03	0.06

Note1: The LTE mode is QPSK_20MHz.

Table 14.16: SAR Values (LTE Band4 - Body) – AP ON

Ambient Temperature: 22.3 °C						Liquid Temperature: 21.8 °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)
MHz	Ch.										
1745	20300	1RB_Low	Front	/	19.55	20.0	0.203	0.23	0.401	0.44	0.16
1745	20300	1RB_Low	Rear	/	19.55	20.0	0.249	0.28	0.447	0.50	0.10
1745	20300	1RB_Low	Left	/	19.55	20.0	0.011	0.01	0.019	0.02	0.18
1745	20300	1RB_Low	Right	/	19.55	20.0	0.051	0.06	0.089	0.10	0.10
1745	20300	1RB_Low	Bottom	Fig.15	19.55	20.0	0.259	0.29	0.530	0.59	0.00
1745	20300	50RB_Low	Front	/	18.97	20.0	0.146	0.19	0.286	0.36	0.11
1745	20300	50RB_Low	Rear	/	18.97	20.0	0.167	0.21	0.294	0.37	0.10
1745	20300	50RB_Low	Left	/	18.97	20.0	0.016	0.02	0.027	0.03	0.09
1745	20300	50RB_Low	Right	/	18.97	20.0	0.047	0.06	0.082	0.10	0.19
1745	20300	50RB_Low	Bottom	/	18.97	20.0	0.142	0.18	0.282	0.36	0.02

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

Note2: The LTE mode is QPSK_20MHz.

Table 14.17: SAR Values (LTE Band4 - Body) – AP OFF

Ambient Temperature: 22.3 °C						Liquid Temperature: 21.8 °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)
MHz	Ch.										
1732.5	20175	1RB_Low	Front	Fig.16	23.60	24.0	0.254	0.28	0.502	0.55	0.05
1732.5	20175	1RB_Low	Rear	/	23.60	24.0	0.261	0.29	0.466	0.51	0.06
1720	20050	50RB_Low	Front	/	22.33	23.0	0.218	0.25	0.428	0.50	0.04
1720	20050	50RB_Low	Rear	/	22.33	23.0	0.225	0.26	0.408	0.48	0.07

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

Note2: The LTE mode is QPSK_20MHz.

Table 14.18: SAR Values (LTE Band5 - Head)

Ambient Temperature: 22.3 °C						Liquid Temperature: 21.8 °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)
MHz	Ch.											
844	20600	1RB_Mid	Left	Touch	/	23.67	24.0	0.166	0.18	0.238	0.26	-0.11
844	20600	1RB_Mid	Left	Tilt	/	23.67	24.0	0.096	0.10	0.138	0.15	0.04
844	20600	1RB_Mid	Right	Touch	Fig.17	23.67	24.0	0.236	0.25	0.307	0.33	0.12
844	20600	1RB_Mid	Right	Tilt	/	23.67	24.0	0.088	0.09	0.128	0.14	0.13
844	20600	25RB_Mid	Left	Touch	/	22.51	23.0	0.128	0.14	0.183	0.20	0.03
844	20600	25RB_Mid	Left	Tilt	/	22.51	23.0	0.078	0.09	0.112	0.13	0.10
844	20600	25RB_Mid	Right	Touch	/	22.51	23.0	0.163	0.18	0.237	0.27	0.06
844	20600	25RB_Mid	Right	Tilt	/	22.51	23.0	0.072	0.08	0.103	0.12	0.10

Note1: The LTE mode is QPSK_10MHz.

Table 14.19: SAR Values (LTE Band5 - Body)

Ambient Temperature: 22.3 °C						Liquid Temperature: 21.8 °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)
MHz	Ch.										
844	20600	1RB_Mid	Front	Fig.18	23.67	24.0	0.226	0.24	0.289	0.31	-0.04
844	20600	1RB_Mid	Rear	/	23.67	24.0	0.197	0.21	0.272	0.29	0.09
844	20600	1RB_Mid	Left	/	23.67	24.0	0.095	0.10	0.138	0.15	-0.01
844	20600	1RB_Mid	Right	/	23.67	24.0	0.191	0.21	0.280	0.30	-0.01
844	20600	1RB_Mid	Bottom	/	23.67	24.0	0.022	0.02	0.040	0.04	-0.05
844	20600	25RB_Mid	Front	/	22.51	23.0	0.162	0.18	0.224	0.25	-0.02
844	20600	25RB_Mid	Rear	/	22.51	23.0	0.163	0.18	0.227	0.25	0.03
844	20600	25RB_Mid	Left	/	22.51	23.0	0.071	0.08	0.103	0.12	0.03

844	20600	25RB_Mid	Right	/	22.51	23.0	0.144	0.16	0.211	0.24	0.00
844	20600	25RB_Mid	Bottom	/	22.51	23.0	0.019	0.02	0.032	0.04	-0.08

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

Note2: The LTE mode is QPSK_10MHz.

Table 14.20: SAR Values (LTE Band7 - Head)

Ambient Temperature: 22.5 °C						Liquid Temperature: 22.0 °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)
MHz	Ch.											
2560	21350	1RB_Mid	Left	Touch	Fig.19	23.27	24.0	0.182	0.22	0.345	0.41	0.07
2560	21350	1RB_Mid	Left	Tilt	/	23.27	24.0	0.050	0.06	0.102	0.12	0.08
2560	21350	1RB_Mid	Right	Touch	/	23.27	24.0	0.151	0.18	0.291	0.34	0.18
2560	21350	1RB_Mid	Right	Tilt	/	23.27	24.0	0.044	0.05	0.089	0.11	0.11
2560	21350	50RB_Low	Left	Touch	/	22.47	23.0	0.088	0.10	0.157	0.18	0.13
2560	21350	50RB_Low	Left	Tilt	/	22.47	23.0	0.054	0.06	0.104	0.12	0.08
2560	21350	50RB_Low	Right	Touch	/	22.47	23.0	0.074	0.08	0.137	0.15	0.13
2560	21350	50RB_Low	Right	Tilt	/	22.47	23.0	0.048	0.05	0.093	0.11	0.03

Note1: The LTE mode is QPSK_20MHz.

Table 14.21: SAR Values (LTE Band7 - Body) – AP ON

Ambient Temperature: 22.5 °C						Liquid Temperature: 22.0 °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)
MHz	Ch.										
2535	21100	1RB_Mid	Front	Fig.20	21.86	22.0	0.245	0.25	0.475	0.49	-0.09
2535	21100	1RB_Mid	Rear	/	21.86	22.0	0.219	0.23	0.422	0.44	0.05
2535	21100	1RB_Mid	Left	/	21.86	22.0	0.150	0.15	0.284	0.29	0.03
2535	21100	1RB_Mid	Right	/	21.86	22.0	0.033	0.03	0.063	0.06	0.07
2535	21100	1RB_Mid	Bottom	/	21.86	22.0	0.181	0.19	0.377	0.39	-0.05
2560	21350	50RB_Low	Front	/	21.96	22.0	0.230	0.23	0.429	0.43	-0.01
2560	21350	50RB_Low	Rear	/	21.96	22.0	0.211	0.21	0.407	0.41	0.11
2560	21350	50RB_Low	Left	/	21.96	22.0	0.153	0.15	0.290	0.29	0.09
2560	21350	50RB_Low	Right	/	21.96	22.0	0.033	0.03	0.062	0.06	0.13
2560	21350	50RB_Low	Bottom	/	21.96	22.0	0.144	0.15	0.358	0.36	-0.12

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

Note2: The LTE mode is QPSK_20MHz.

Table 14.22: SAR Values (LTE Band7 - Body) – AP OFF

Ambient Temperature: 22.5 °C						Liquid Temperature: 22.0 °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)
MHz	Ch.										
2560	21350	1RB_Mid	Front	/	23.27	24.0	0.115	0.14	0.214	0.25	0.17
2560	21350	1RB_Mid	Rear	Fig.21	23.27	24.0	0.156	0.18	0.293	0.35	-0.07
2560	21350	50RB_Low	Front	/	22.47	23.0	0.103	0.12	0.190	0.21	0.06
2560	21350	50RB_Low	Rear	/	22.47	23.0	0.134	0.15	0.256	0.29	-0.10

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

Note2: The LTE mode is QPSK_20MHz.

Table 14.23: SAR Values (LTE Band17 - Head)

Ambient Temperature: 22.5 °C						Liquid Temperature: 22.0 °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)
MHz	Ch.											
709	23780	1RB_Low	Left	Touch	/	23.44	24.0	0.032	0.04	0.045	0.05	0.08
709	23780	1RB_Low	Left	Tilt	/	23.44	24.0	0.013	0.01	0.018	0.02	0.18
709	23780	1RB_Low	Right	Touch	Fig.22	23.44	24.0	0.040	0.05	0.050	0.06	0.12
709	23780	1RB_Low	Right	Tilt	/	23.44	24.0	0.016	0.02	0.023	0.03	0.13
710	23790	25RB_Mid	Left	Touch	/	22.38	23.0	0.020	0.02	0.029	0.03	0.18
710	23790	25RB_Mid	Left	Tilt	/	22.38	23.0	0.009	0.01	0.012	0.01	0.02
710	23790	25RB_Mid	Right	Touch	/	22.38	23.0	0.023	0.03	0.032	0.04	0.07
710	23790	25RB_Mid	Right	Tilt	/	22.38	23.0	0.011	0.01	0.016	0.02	0.08

Note1: The LTE mode is QPSK_10MHz.

Table 14.24: SAR Values (LTE Band17 - Body)

Ambient Temperature: 22.5 °C						Liquid Temperature: 22.0 °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)
MHz	Ch.										
709	23780	1RB_Low	Front	/	23.44	24.0	0.052	0.06	0.073	0.08	0.03
709	23780	1RB_Low	Rear	Fig.23	23.44	24.0	0.064	0.07	0.081	0.09	-0.02
709	23780	1RB_Low	Left	/	23.44	24.0	0.028	0.03	0.040	0.05	-0.03
709	23780	1RB_Low	Right	/	23.44	24.0	0.032	0.04	0.046	0.05	0.11
709	23780	1RB_Low	Bottom	/	23.44	24.0	0.005	0.01	0.007	0.01	0.04
710	23790	25RB_Mid	Front	/	22.38	23.0	0.040	0.05	0.056	0.06	0.03
710	23790	25RB_Mid	Rear	/	22.38	23.0	0.045	0.05	0.066	0.08	-0.02
710	23790	25RB_Mid	Left	/	22.38	23.0	0.022	0.02	0.031	0.04	0.08

710	23790	25RB_Mid	Right	/	22.38	23.0	0.025	0.03	0.035	0.04	0.06
710	23790	25RB_Mid	Bottom	/	22.38	23.0	0.004	0.00	0.006	0.01	0.10

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

Note2: The LTE mode is QPSK_10MHz.

Table 14.25: SAR Values (LTE Band41 - Head)

Ambient Temperature: 22.7 °C							Liquid Temperature: 22.3 °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)
MHz	Ch.											
2680	41490	1RB_Low	Left	Touch	/	22.97	23.5	0.042	0.05	0.080	0.09	0.00
2636.5	41055	1RB_Low	Left	Touch	/	22.32	23.5	0.045	0.06	0.084	0.11	0.00
2593	40620	1RB_Low	Left	Touch	/	23.17	23.5	0.063	0.07	0.114	0.12	-0.18
2549.5	40185	1RB_Low	Left	Touch	Fig.24	22.85	23.5	0.072	0.08	0.133	0.15	0.19
2506	39750	1RB_Low	Left	Touch	/	22.65	23.5	0.054	0.07	0.099	0.12	-0.17
2593	40620	1RB_Low	Left	Tilt	/	23.17	23.5	0.016	0.02	0.031	0.03	0.12
2593	40620	1RB_Low	Right	Touch	/	23.17	23.5	0.033	0.04	0.067	0.07	0.11
2593	40620	1RB_Low	Right	Tilt	/	23.17	23.5	0.020	0.02	0.039	0.04	-0.11
2593	40620	50RB_Low	Left	Touch	/	22.02	22.5	0.042	0.05	0.077	0.09	0.16
2593	40620	50RB_Low	Left	Tilt	/	22.02	22.5	0.011	0.01	0.021	0.02	0.15
2593	40620	50RB_Low	Right	Touch	/	22.02	22.5	0.025	0.03	0.049	0.05	-0.07
2593	40620	50RB_Low	Right	Tilt	/	22.02	22.5	0.014	0.02	0.027	0.03	0.09

Note1: The LTE mode is QPSK_20MHz.

Table 14.26: SAR Values (LTE Band41 - Body)

Ambient Temperature: 22.7 °C						Liquid Temperature: 22.3 °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)
MHz	Ch.										
2593	40620	1RB_Low	Front	/	23.17	23.5	0.114	0.12	0.221	0.24	0.02
2680	41490	1RB_Low	Rear	/	22.97	23.5	0.098	0.11	0.191	0.22	0.14
2636.5	41055	1RB_Low	Rear	/	22.32	23.5	0.099	0.13	0.190	0.25	0.12
2593	40620	1RB_Low	Rear	/	23.17	23.5	0.125	0.13	0.246	0.27	-0.18
2549.5	40185	1RB_Low	Rear	Fig.25	22.85	23.5	0.175	0.20	0.329	0.38	0.13
2506	39750	1RB_Low	Rear	/	22.65	23.5	0.139	0.17	0.269	0.33	0.03
2593	40620	1RB_Low	Left	/	23.17	23.5	0.108	0.12	0.211	0.23	0.08
2593	40620	1RB_Low	Right	/	23.17	23.5	0.031	0.03	0.059	0.06	-0.05
2593	40620	1RB_Low	Bottom	/	23.17	23.5	0.115	0.12	0.233	0.25	-0.03
2593	40620	50RB_Low	Front	/	22.02	22.5	0.081	0.09	0.157	0.18	0.15
2593	40620	50RB_Low	Rear	/	22.02	22.5	0.091	0.10	0.178	0.20	0.18
2593	40620	50RB_Low	Left	/	22.02	22.5	0.081	0.09	0.158	0.18	0.02

2593	40620	50RB_Low	Right	/	22.02	22.5	0.023	0.03	0.044	0.05	0.15
2593	40620	50RB_Low	Bottom	/	22.02	22.5	0.097	0.11	0.199	0.22	0.01

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

Note2: 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 14.27: SAR Values (GSM 850 MHz Band - Head)

Ambient Temperature: 22.3 °C						Liquid Temperature: 21.8 °C					
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)
MHz	Ch.										
848.8	251	Right	Touch	Fig.1	32.95	33.5	0.226	0.26	0.294	0.33	-0.11

Table 14.28: SAR Values (GSM 850 MHz Band - Body)

Ambient Temperature: 22.3 °C						Liquid Temperature: 21.8 °C					
Frequency		Mode (number of timeslots)	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)
MHz	Ch.										
836.6	190	GPRS (1)	Rear	Fig.2	32.90	33.5	0.269	0.31	0.350	0.40	0.03

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

Table 14.29: SAR Values (GSM 1900 MHz Band - Head)

Ambient Temperature: 22.3 °C						Liquid Temperature: 21.8 °C					
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)
MHz	Ch.										
1909.8	810	Left	Touch	Fig.3	29.25	30.7	0.093	0.13	0.149	0.21	0.06

Table 14.30: SAR Values (GSM 1900 MHz Band - Body)

Ambient Temperature: 22.3 °C						Liquid Temperature: 21.8 °C					
Frequency		Mode (number of timeslots)	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)
MHz	Ch.										
1909.8	810	GPRS (2)	Bottom	Fig.4	26.51	28.0	0.206	0.29	0.396	0.56	0.05

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

Table 14.31: SAR Values (WCDMA 850 MHz Band - Head)

Ambient Temperature: 22.3 °C						Liquid Temperature: 21.8 °C					
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)
MHz	Ch.										
846.6	4233	Right	Touch	Fig.5	22.95	24.3	0.336	0.46	0.435	0.59	-0.11

Table 14.32: SAR Values (WCDMA 850 MHz Band - Body)

Ambient Temperature: 22.3 °C						Liquid Temperature: 21.8 °C				
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)
MHz	Ch.									
826.4	4132	Front	Fig.6	23.29	24.3	0.389	0.49	0.496	0.63	0.01

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

Table 14.33: SAR Values (WCDMA 1700 MHz Band - Head)

Ambient Temperature: 22.3 °C						Liquid Temperature: 21.8 °C					
Frequency		Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g)	Reported SAR(10g)	Measured SAR(1g)	Reported SAR(1g)	Power Drift
MHz	Ch.						(W/kg)	(W/kg)	(W/kg)	(W/kg)	
1752.6	1513	Right	Touch	Fig.7	22.94	24.5	0.141	0.20	0.225	0.32	0.04

Table 14.34: SAR Values (WCDMA 1700 MHz Band - Body) – AP ON

Ambient Temperature: 22.3 °C						Liquid Temperature: 21.8 °C				
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)
MHz	Ch.									
1712.4	1312	Bottom	Fig.8	18.97	19.5	0.336	0.38	0.687	0.78	-0.07

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

Table 14.35: SAR Values (WCDMA 1700 MHz Band - Body) – AP OFF

Ambient Temperature: 22.3 °C						Liquid Temperature: 21.8 °C				
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)
MHz	Ch.									
1712.4	1312	Bottom	Fig.9	23.43	24.5	0.475	0.61	0.879	1.12	0.02

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

Table 14.36: SAR Values (WCDMA 1900 MHz Band - Head)

Ambient Temperature: 22.3 °C Liquid Temperature: 21.8 °C											
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)
MHz	Ch.										
1880	9400	Left	Touch	Fig.10	22.64	24.0	0.090	0.12	0.146	0.20	0.19

Table 14.37: SAR Values (WCDMA 1900 MHz Band - Body)

Ambient Temperature: 22.3 °C						Liquid Temperature: 21.8 °C				
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)
MHz	Ch.									
1880	9400	Bottom	Fig.11	22.64	24.0	0.289	0.40	0.558	0.76	0.00

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

Table 14.38: SAR Values (LTE Band2 - Head)

Ambient Temperature: 22.3 °C						Liquid Temperature: 21.8 °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)
MHz	Ch.											
1900	19100	1RB_Low	Left	Touch	Fig.12	23.59	23.6	0.088	0.09	0.153	0.15	0.05

Note1: The LTE mode is QPSK_20MHz.

Table 14.39: SAR Values (LTE Band2 - Body)

Ambient Temperature: 22.3 °C Liquid Temperature: 21.8 °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)
MHz	Ch.										
1900	19100	1RB_Low	Bottom	Fig.13	23.59	23.6	0.218	0.22	0.426	0.43	0.06

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

Note2: The LTE mode is QPSK_20MHz.

Table 14.40: SAR Values (LTE Band4 - Head)

Ambient Temperature: 22.3 °C						Liquid Temperature: 21.8 °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)
MHz	Ch.											
1732.5	20175	1RB_Low	Right	Touch	Fig.14	23.60	24.0	0.072	0.08	0.118	0.13	0.06

Note1: The LTE mode is QPSK_20MHz.

Table 14.41: SAR Values (LTE Band4 - Body) – AP ON

Ambient Temperature: 22.3 °C						Liquid Temperature: 21.8 °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)
MHz	Ch.										
1745	20300	1RB_Low	Bottom	Fig.15	19.55	20.0	0.259	0.29	0.530	0.59	0.00

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

Note2: The LTE mode is QPSK_20MHz.

Table 14.42: SAR Values (LTE Band4 - Body) – AP OFF

Ambient Temperature: 22.3 °C Liquid Temperature: 21.8 °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)
MHz	Ch.										
1732.5	20175	1RB_Low	Front	Fig.16	23.60	24.0	0.254	0.28	0.502	0.55	0.05

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

Note2: The LTE mode is QPSK_20MHz.

Table 14.43: SAR Values (LTE Band5 - Head)

Ambient Temperature: 22.3 °C Liquid Temperature: 21.8 °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)
MHz	Ch.											
844	20600	1RB_Mid	Right	Touch	Fig.17	23.67	24.0	0.236	0.25	0.307	0.33	0.12

Note1: The LTE mode is QPSK_10MHz.

Table 14.44: SAR Values (LTE Band5 - Body)

Ambient Temperature: 22.3 °C						Liquid Temperature: 21.8 °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)
MHz	Ch.										
844	20600	1RB_Mid	Front	Fig.18	23.67	24.0	0.226	0.24	0.289	0.31	-0.04

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

Note2: The LTE mode is QPSK_10MHz.

Table 14.45: SAR Values (LTE Band7 - Head)

Ambient Temperature: 22.5 °C						Liquid Temperature: 22.0 °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)
MHz	Ch.											
2560	21350	1RB_Mid	Left	Touch	Fig.19	23.27	24.0	0.182	0.22	0.345	0.41	0.07

Note1: The LTE mode is QPSK_20MHz.

Table 14.46: SAR Values (LTE Band7 - Body) – AP ON

Ambient Temperature: 22.5 °C						Liquid Temperature: 22.0 °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)
MHz	Ch.										
2535	21100	1RB_Mid	Front	Fig.20	21.86	22.0	0.245	0.25	0.475	0.49	-0.09

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

Note2: The LTE mode is QPSK_20MHz.

Table 14.47: SAR Values (LTE Band7 - Body) – AP OFF

Ambient Temperature: 22.5 °C						Liquid Temperature: 22.0 °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)
MHz	Ch.										
2560	21350	1RB_Mid	Rear	Fig.21	23.27	24.0	0.156	0.18	0.293	0.35	-0.07

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

Note2: The LTE mode is QPSK_20MHz.

Table 14.48: SAR Values (LTE Band17 - Head)

Ambient Temperature: 22.5 °C						Liquid Temperature: 22.0 °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)
MHz	Ch.											
709	23780	1RB_Low	Right	Touch	Fig.22	23.44	24.0	0.040	0.05	0.050	0.06	0.12

Note1: The LTE mode is QPSK_10MHz.

Table 14.49: SAR Values (LTE Band17 - Body)

Ambient Temperature: 22.5 °C Liquid Temperature: 22.0 °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)
MHz	Ch.										
709	23780	1RB_Low	Rear	Fig.23	23.44	24.0	0.064	0.07	0.081	0.09	-0.02

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

Note2: The LTE mode is QPSK_10MHz.

Table 14.50: SAR Values (LTE Band41 - Head)

Ambient Temperature: 22.7 °C						Liquid Temperature: 22.3 °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)
MHz	Ch.											
2549.5	40185	1RB_Low	Left	Touch	Fig.24	22.85	23.5	0.072	0.08	0.133	0.15	0.19

Note1: The LTE mode is QPSK_20MHz.

Table 14.51: SAR Values (LTE Band41 - Body)

Ambient Temperature: 22.7 °C Liquid Temperature: 22.3 °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)
MHz	Ch.										
2549.5	40185	1RB_Low	Rear	Fig.25	22.85	23.5	0.175	0.20	0.329	0.38	0.13

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

Note2: The LTE mode is QPSK_20MHz.

14.3 WLAN Evaluation

DSSS – chain0

For 802.11b DSSS, the highest measured maximum output power channel is 1Mbps_channel 11.
So the initial test position procedure is performed according to the following:

Table 14.52: Initial test position evaluation (Wi-Fi 802.11b - Head)

Ambient Temperature: 22.5 °C						Liquid Temperature: 22.0 °C					
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)
MHz	Ch.										
2462	11	Left	Touch	Fig.26	13.41	14.0	0.141	0.16	0.345	0.40	0.05
2462	11	Left	Tilt	/	13.41	14.0	0.054	0.06	0.110	0.13	0.10
2462	11	Right	Touch	/	13.41	14.0	0.056	0.06	0.111	0.13	0.13
2462	11	Right	Tilt	/	13.41	14.0	0.047	0.05	0.096	0.11	0.10

According to the above table, the initial test position for head is “Left Touch”, and its reported SAR is $\leq 0.4\text{W/kg}$. Thus further SAR measurement is not required for the other (remaining) test positions. Because the reported SAR of the highest measured maximum output power channel for the exposure configuration is $\leq 0.8\text{W/kg}$, no further SAR testing is required for 802.11b DSSS in that exposure configuration.

Table 14.53: Initial test position evaluation (Wi-Fi 802.11b - Body)

Ambient Temperature: 22.5 °C						Liquid Temperature: 22.0 °C				
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)
MHz	Ch.									
2462	11	Front	Fig.27	13.41	14.0	0.034	0.04	0.064	0.07	0.11
2462	11	Rear	/	13.41	14.0	0.027	0.03	0.057	0.07	0.03
2462	11	Right	/	13.41	14.0	0.005	0.01	0.011	0.01	0.04
2462	11	Top	/	13.41	14.0	0.008	0.01	0.018	0.02	0.11

According to the above table, the initial test position for body is “Front”, and its reported SAR is $\leq 0.4\text{W/kg}$. Thus further SAR measurement is not required for the other (remaining) test positions. Because the reported SAR of the highest measured maximum output power channel for the exposure configuration is $\leq 0.8\text{W/kg}$, no further SAR testing is required for 802.11b DSSS in that exposure configuration.

DSSS – chain1

For 802.11b DSSS, the highest measured maximum output power channel is 2Mbps_channel 11.
So the initial test position procedure is performed according to the following:

Table 14.54: Initial test position evaluation (Wi-Fi 802.11b - Head)

Ambient Temperature: 22.5 °C						Liquid Temperature: 22.0 °C					
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)
MHz	Ch.										
2462	11	Left	Touch	/	10.33	10.5	0.028	0.03	0.055	0.06	0.13
2462	11	Left	Tilt	/	10.33	10.5	0.010	0.01	0.020	0.02	0.12
2462	11	Right	Touch	Fig.28	10.33	10.5	0.072	0.08	0.171	0.18	0.12
2462	11	Right	Tilt	/	10.33	10.5	0.025	0.03	0.059	0.06	0.06

According to the above table, the initial test position for head is “Right Touch”, and its reported SAR is $\leq 0.4\text{W/kg}$.
Thus further SAR measurement is not required for the other (remaining) test positions.

Because the reported SAR of the highest measured maximum output power channel for the exposure configuration is $\leq 0.8\text{W/kg}$, no further SAR testing is required for 802.11b DSSS in that exposure configuration.

Table 14.55: Initial test position evaluation (Wi-Fi 802.11b - Body)

Ambient Temperature: 22.5 °C						Liquid Temperature: 22.0 °C				
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)
MHz	Ch.									
2462	11	Front	/	10.33	10.5	0.008	0.01	0.014	0.01	0.09
2462	11	Rear	Fig.29	10.33	10.5	0.008	0.01	0.016	0.02	0.06
2462	11	Left	/	10.33	10.5	0.001	0.00	0.003	0.00	0.13
2462	11	Top	/	10.33	10.5	0.000	0.00	0.000	0.00	0.11

According to the above table, the initial test position for body is “Rear”, and its reported SAR is $\leq 0.4\text{W/kg}$.
Thus further SAR measurement is not required for the other (remaining) test positions.

Because the reported SAR of the highest measured maximum output power channel for the exposure configuration is $\leq 0.8\text{W/kg}$, no further SAR testing is required for 802.11b DSSS in that exposure configuration.

OFDM – chain0

Table 14.56: OFDM mode specified maximum output power at chain0 of WLAN antenna

802.11 mode	a	g		n		ac			
Ch. BW(MHz)	20	20	40	20	40	20	40	80	160
§ 15.247 (2.4 GHz)		X		X					
U-NII-1	X			X	X	X	X	X	
U-NII-2A	X			X	X	X	X	X	
U-NII-1 + U-NII-2A									
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 14.57: Maximum output power specified at chain0 of WLAN antenna

802.11 mode	a	g		n		ac			
Ch. BW(MHz)	20	20	40	20	40	20	40	80	160
§ 15.247 (2.4 GHz)		25		25					
U-NII-1	28			28	28	28	28	28	
U-NII-2A	28			28	28	28	28	28	
U-NII-1 + U-NII-2A									
U-NII-2C	28			28	28	28	28	28	
U-NII-3	28			28	28	28	28	28	
§ 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.
- For SAR test reduction in the 2.4GHz band, the maximum output specified for production units is 25mW for 802.11b and the highest reported SAR for DSSS is 0.40 W/kg for head, 0.07 W/kg for body.

Table 14.58: Maximum output power measured at chain0 of WLAN antenna, for the applicable OFDM configurations according to the default power measurement procedures for selection initial test configurations

802.11 mode	a	g	n		ac		
BW(MHz)	20	20	20	40	20	40	80
§ 15.247 (2.4 GHz)		1/6/11 20/21/23	1/6/11 22/24/24				
U-NII-1	36/40/44/48 21/22/22/22		36/40/44/48 Test Reduction	38/46 20/21	36/40/44/48 Test Reduction	38/46 Test Reduction	42 22
U-NII-2A	52/56/60/64 20/21/19/18		52/56/60/64 Test Reduction	54/62 24/21	52/56/60/64 Test Reduction	54/62 Test Reduction	58 20
U-NII-2C	100/104/108/112 23/24/23/22 116/132/136/140 22/18/18/18		100/104/108/112 116/132/136/140 Test Reduction	102/110/118 21/20/18 126/134 21/20	100/104/108/11 2 116/132/136/14 0 Test Reduction	102/110/118 126/134 Test Reduction	106/122 23/24
U-NII-3	149/153/157 22/23/25 161/165 24/25		149/153/157 161/165 Test Reduction	151/159 21/22	149/153/157 161/165 Test Reduction	151/159 Test Reduction	155 23

- 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.

Base on the above table, the initial test position procedure is performed according to the following:

Table 14.59: Initial test position evaluation for OFDM - Head

Ambient Temperature: 22.5 °C						Liquid Temperature: 22.0 °C					
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)
MHz	Ch.										
5270	54	Left	Touch	/	13.89	14.5	0.058	0.07	0.191	0.22	0.12
5270	54	Left	Tilt	/	13.89	14.5	0.014	0.02	0.051	0.06	0.12
5270	54	Right	Touch	/	13.89	14.5	0.038	0.04	0.132	0.15	0.10
5270	54	Right	Tilt	/	13.89	14.5	0.001	0.00	0.008	0.01	0.10
5520	104	Left	Touch	Fig.30	13.75	14.5	0.121	0.14	0.442	0.53	0.13
5520	104	Left	Tilt	/	13.75	14.5	0.037	0.04	0.128	0.15	0.16
5520	104	Right	Touch	/	13.75	14.5	0.021	0.03	0.082	0.10	0.18
5520	104	Right	Tilt	/	13.75	14.5	0.018	0.02	0.054	0.06	0.16
5785	157	Left	Touch	/	13.92	14.5	0.067	0.08	0.204	0.23	0.08
5785	157	Left	Tilt	/	13.92	14.5	0.022	0.03	0.076	0.09	-0.06
5785	157	Right	Touch	/	13.92	14.5	0.015	0.02	0.062	0.07	0.10
5785	157	Right	Tilt	/	13.92	14.5	0.011	0.01	0.042	0.05	0.12

According to the above table, the initial test position of head for all bands is "Left Touch".

Because the reported SAR for U-NII-2C is > 0.4W/kg, SAR is repeated for 802.11 transmission mode configuration tested in the initial test position using subsequent highest maximum output power channel.

Table 14.60: Initial test position evaluation with subsequent highest maximum output power channel for U-NII-2C - Head

Ambient Temperature: 22.5 °C						Liquid Temperature: 22.0 °C					
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)
MHz	Ch.										
5540	108	Left	Touch	/	13.71	14.5	0.114	0.14	0.413	0.50	0.06

Because the repeat SAR is $\leq 0.8\text{W/kg}$, further SAR measurement is not required.

Table 14.61: Reported SAR of initial test configuration for head

802.11 mode	a	g	n		ac		
BW(MHz)	20	20	20	40	20	40	80
§ 15.247 (2.4 GHz)		1/6/11	1/6/11				
		SAR not required for OFDM 802.11b adjusted SAR ≤ 1.2					
U-NII-1	36/40/44/48 U-NII-2A exclusion applied		36/40/44/48	38/46	36/40/44/48	38/46	42
U-NII-2A	52/56/60/64		52/56/60/64	54/62 0.22	52/56/60/64	54/62	58
U-NII-2C	100/104/108/112 116/132/136/140 0.53		100/104/108/112 116/132/136/140	102/110/118 126/134	100/104/108/112 116/132/136/140	102/110/118 126/134	106/122
U-NII-3	149/153/157 161/165 0.23		149/153/157 161/165	151/159	149/153/157 161/165	151/159	155

U-NII-1 and U-NII-2A bands have the same specified maximum output and tolerance; SAR is measured for U-NII-2A band first. Adjusted SAR of U-NII-2A band is $\leq 1.2\text{W/kg}$, SAR is not required for U-NII-1 band.

Table 14.62: Initial test position evaluation for OFDM - Body

Ambient Temperature: 22.5 °C						Liquid Temperature: 22.0 °C				
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)
MHz	Ch.									
5270	54	Front	/	13.89	14.5	0.007	0.01	0.022	0.03	0.08
5270	54	Rear	/	13.89	14.5	0.012	0.01	0.029	0.03	0.09
5270	54	Right	/	13.89	14.5	0.002	0.00	0.008	0.01	0.08
5270	54	Top	/	13.89	14.5	0.002	0.00	0.008	0.01	0.11
5520	104	Front	/	13.75	14.5	0.013	0.02	0.049	0.06	0.09
5520	104	Rear	Fig.31	13.75	14.5	0.032	0.04	0.089	0.11	-0.04
5520	104	Right	/	13.75	14.5	0.011	0.01	0.031	0.04	-0.13
5520	104	Top	/	13.75	14.5	0.005	0.01	0.014	0.02	0.03

5785	157	Front	/	13.92	14.5	0.010	0.01	0.035	0.04	-0.08
5785	157	Rear	/	13.92	14.5	0.014	0.02	0.043	0.05	0.00
5785	157	Right	/	13.92	14.5	0.003	0.00	0.011	0.01	0.03
5785	157	Top	/	13.92	14.5	0.000	0.00	0.002	0.00	0.14

According to the above table, the initial test position of body for all bands is "Rear".

Because the reported SAR for all bands is $\leq 0.4\text{W/kg}$, further SAR measurement is not required for the other (remaining) test positions.

Table 14.63: Reported SAR of initial test configuration for body

802.11 mode	a	g	n		ac		
BW(MHz)	20	20	20	40	20	40	80
§ 15.247 (2.4 GHz)		1/6/11	1/6/11				
		SAR not required for OFDM 802.11b adjusted SAR ≤ 1.2					
U-NII-1	36/40/44/48 U-NII-2A exclusion applied		36/40/44/48	38/46	36/40/44/48	38/46	42
U-NII-2A	52/56/60/64		52/56/60/64	54/62 0.03	52/56/60/64	54/62	58
U-NII-2C	100/104/108/112 116/132/136/140 0.11		100/104/108/112 116/132/136/140	102/110/118 126/134	100/104/108/112 116/132/136/140	102/110/118 126/134	106/122
U-NII-3	149/153/157 161/165 0.05		149/153/157 161/165	151/159	149/153/157 161/165	151/159	155
U-NII-1 and U-NII-2A bands have the same specified maximum output and tolerance; SAR is measured for U-NII-2A band first. Adjusted SAR of U-NII-2A band is $\leq 1.2\text{W/kg}$, SAR is not required for U-NII-1 band.							

OFDM – chain1

Table 14.64: OFDM mode specified maximum output power at chain1 of WLAN antenna

802.11 mode	a	g		n		ac			
Ch. BW(MHz)	20	20	40	20	40	20	40	80	160
§ 15.247 (2.4 GHz)		X		X					
U-NII-1	X			X	X	X	X	X	
U-NII-2A	X			X	X	X	X	X	
U-NII-1 + U-NII-2A									
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 14.65: Maximum output power specified at chain1 of WLAN antenna

802.11 mode	a	g		n		ac			
Ch. BW(MHz)	20	20	40	20	40	20	40	80	160
§ 15.247 (2.4 GHz)		11		11					
U-NII-1	22			22	22	22	22	22	
U-NII-2A	22			22	22	22	22	22	
U-NII-1 + U-NII-2A									
U-NII-2C	22			22	22	22	22	22	
U-NII-3	22			22	22	22	22	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.
- For SAR test reduction in the 2.4GHz band, the maximum output specified for production units is 11mW for 802.11b and the highest reported SAR for DSSS is 0.18 W/kg for head, 0.02 W/kg for body.

Table 14.66: Maximum output power measured at chain1 of WLAN antenna, for the applicable OFDM configurations according to the default power measurement procedures for selection initial test configurations

802.11 mode	a	g	n		ac		
BW(MHz)	20	20	20	40	20	40	80
§ 15.247 (2.4 GHz)		1/6/11 10/11/11	1/6/11 10/10/10				
U-NII-1	36/40/44/48 18/18/19/18		36/40/44/48 Test Reduction	38/46 17/18	36/40/44/48 Test Reduction	38/46 Test Reduction	42 18
U-NII-2A	52/56/60/64 17/16/19/17		52/56/60/64 Test Reduction	54/62 19/17	52/56/60/64 Test Reduction	54/62 Test Reduction	58 19
U-NII-2C	100/104/108/112 19/19/18/17 116/132/136/140 17/18/18/19		100/104/108/112 116/132/136/140 Test Reduction	102/110/118 17/16/19 126/134 19/21	100/104/108/112 116/132/136/140 Test Reduction	102/110/118 126/134 Test Reduction	106/122 18/16
U-NII-3	149/153/157 20/19/20 161/165 20/20		149/153/157 161/165 Test Reduction	151/159 18/19	149/153/157 161/165 Test Reduction	151/159 Test Reduction	155 20

- 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.

Base on the above table, the initial test position procedure is performed according to the following:

Table 14.67: Initial test position evaluation for OFDM - Head

Ambient Temperature: 22.5 °C						Liquid Temperature: 22.0 °C					
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)
MHz	Ch.										
5300	60	Left	Touch	/	12.79	13.5	0.026	0.03	0.066	0.08	0.10
5300	60	Left	Tilt	/	12.79	13.5	0.015	0.02	0.038	0.05	0.08
5300	60	Right	Touch	/	12.79	13.5	0.106	0.12	0.308	0.36	-0.07
5300	60	Right	Tilt	/	12.79	13.5	0.046	0.05	0.119	0.14	0.08
5670	134	Left	Touch	/	13.12	13.5	0.053	0.06	0.162	0.18	0.09
5670	134	Left	Tilt	/	13.12	13.5	0.033	0.04	0.084	0.09	0.10
5670	134	Right	Touch	Fig.32	13.12	13.5	0.141	0.15	0.418	0.46	0.15
5670	134	Right	Tilt	/	13.12	13.5	0.081	0.09	0.254	0.28	0.07
5785	157	Left	Touch	/	12.98	13.5	0.042	0.05	0.101	0.11	0.18
5785	157	Left	Tilt	/	12.98	13.5	0.024	0.03	0.055	0.06	0.11
5785	157	Right	Touch	/	12.98	13.5	0.123	0.14	0.304	0.34	0.02
5785	157	Right	Tilt	/	12.98	13.5	0.061	0.07	0.163	0.18	0.07

According to the above table, the initial test position of head for all bands is "Right Touch".

Because the reported SAR for U-NII-2C is > 0.4W/kg, SAR is repeated for 802.11 transmission mode configuration tested in the initial test position using subsequent highest maximum output power channel.

Table 14.68: Initial test position evaluation with subsequent highest maximum output power channel for U-NII-2C - Head

Ambient Temperature: 22.5 °C						Liquid Temperature: 22.0 °C					
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)
MHz	Ch.										
5630	126	Right	Touch	/	12.79	13.5	0.118	0.14	0.357	0.42	-0.04

Because the repeat SAR is $\leq 0.8\text{W/kg}$, further SAR measurement is not required.

Table 14.69: Reported SAR of initial test configuration for head

802.11 mode	a	g	n		ac		
BW(MHz)	20	20	20	40	20	40	80
§ 15.247 (2.4 GHz)		1/6/11	1/6/11				
		SAR not required for OFDM 802.11b adjusted SAR ≤ 1.2					
U-NII-1	36/40/44/48 U-NII-2A exclusion applied		36/40/44/48	38/46	36/40/44/48	38/46	42
U-NII-2A	52/56/60/64 0.36		52/56/60/64	54/62	52/56/60/64	54/62	58
U-NII-2C	100/104/108/112 116/132/136/140		100/104/108/112 116/132/136/140	102/110/118 126/134 0.46	100/104/108/112 116/132/136/140	102/110/118 126/134	106/122
U-NII-3	149/153/157 161/165 0.34		149/153/157 161/165	151/159	149/153/157 161/165	151/159	155

U-NII-1 and U-NII-2A bands have the same specified maximum output and tolerance; SAR is measured for U-NII-2A band first. Adjusted SAR of U-NII-2A band is $\leq 1.2\text{W/kg}$, SAR is not required for U-NII-1 band.

Table 14.70: Initial test position evaluation for OFDM - Body

Ambient Temperature: 22.5 °C						Liquid Temperature: 22.0 °C				
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)
MHz	Ch.									
5300	60	Front	/	12.79	13.5	0.007	0.01	0.023	0.03	0.06
5300	60	Rear	/	12.79	13.5	0.005	0.01	0.017	0.02	0.09
5300	60	Left	/	12.79	13.5	0.002	0.00	0.007	0.01	0.05
5300	60	Top	/	12.79	13.5	0.000	0.00	0.001	0.00	-0.11
5670	134	Front	/	13.12	13.5	0.004	0.00	0.026	0.03	0.10
5670	134	Rear	Fig.33	13.12	13.5	0.014	0.01	0.041	0.04	0.02
5670	134	Left	/	13.12	13.5	0.000	0.00	0.000	0.00	0.08
5670	134	Top	/	13.12	13.5	0.000	0.00	0.002	0.00	0.05

5785	157	Front	/	12.98	13.5	0.000	0.00	0.002	0.00	0.09
5785	157	Rear	/	12.98	13.5	0.006	0.01	0.020	0.02	0.01
5785	157	Left	/	12.98	13.5	0.011	0.01	0.031	0.04	-0.03
5785	157	Top	/	12.98	13.5	0.003	0.00	0.016	0.02	0.07

According to the above table, the initial test position of body is “Front” for U-NII-2A, “Rear” for U-NII-2C and “Left” for U-NII-3.

Because the reported SAR for all bands is $\leq 0.4\text{W/kg}$, further SAR measurement is not required for the other (remaining) test positions.

Table 14.71: Reported SAR of initial test configuration for body

802.11 mode	a	g	n		ac		
BW(MHz)	20	20	20	40	20	40	80
§ 15.247 (2.4 GHz)		1/6/11	1/6/11				
		SAR not required for OFDM 802.11b adjusted SAR ≤ 1.2					
U-NII-1	36/40/44/48		36/40/44/48	38/46	36/40/44/48	38/46	42
	U-NII-2A exclusion applied						
U-NII-2A	52/56/60/64 0.03		52/56/60/64	54/62	52/56/60/64	54/62	58
U-NII-2C	100/104/108/112 116/132/136/140		100/104/108/112 116/132/136/140	102/110/118 126/134 0.04	100/104/108/112 116/132/136/140	102/110/118 126/134	106/122
U-NII-3	149/153/157 161/165 0.04		149/153/157 161/165	151/159	149/153/157 161/165	151/159	155
U-NII-1 and U-NII-2A bands have the same specified maximum output and tolerance; SAR is measured for U-NII-2A band first. Adjusted SAR of U-NII-2A band is $\leq 1.2\text{W/kg}$, SAR is not required for U-NII-1 band.							

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; steps 2) through 4) do not apply.
- 2) When the original highest measured SAR is ≥ 0.80 W/kg, repeat that measurement once.
- 3) Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 W/kg (~ 10% from the 1-g SAR limit).
- 4) Perform a third repeated measurement only if the original, first or second repeated measurement is ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20 .

Table 15.1: SAR Measurement Variability for Body WCDMA 1700 (1g) – AP OFF

Frequency		Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
MHz	Ch.						
1712.4	1312	Bottom	15	0.879	0.871	1.01	/

16 Measurement Uncertainty

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

No.	Error Description	Type	Uncertainty value	Probably Distribution	Div.	(Ci) 1g	(Ci) 10g	Std. Unc. (1g)	Std. Unc. (10g)	Degree of freedom
Measurement system										
1	Probe calibration	B	5.5	N	1	1	1	5.5	5.5	∞
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	RF ambient 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	$u'_c = \sqrt{\sum_{i=1}^{21} c_i^2 u_i^2}$					9.25	9.12	257
Expanded uncertainty (confidence interval of 95 %)	$u_e = 2u_c$					18.5	18.2	

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	6.5	N	1	1	1	6.5	6.5	∞
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	RF ambient 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	4.0	R	$\sqrt{3}$	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	$\sqrt{3}$	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		$u'_c = \sqrt{\sum_{i=1}^{21} c_i^2 u_i^2}$						10.8	10.7	257
Expanded uncertainty (confidence interval of 95 %)		$u_e = 2u_c$						21.6	21.4	

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	5.5	N	1	1	1	5.5	5.5	∞
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	RF ambient 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		$u'_c = \sqrt{\sum_{i=1}^{22} c_i^2 u_i^2}$						10.1	9.95	257
Expanded uncertainty (confidence interval of 95 %)		$u_e = 2u_c$						20.2	19.9	

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	6.5	N	1	1	1	6.5	6.5	∞
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	RF ambient 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		$u_c' = \sqrt{\sum_{i=1}^{22} c_i^2 u_i^2}$						13.3	13.2	257
Expanded uncertainty (confidence interval of 95 %)		$u_e = 2u_c$						26.6	26.4	

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	February 03, 2015	One year
02	Power meter	NRVD	102196	March 03, 2015	One year
03	Power sensor	NRV-Z5	100596		
04	Signal Generator	E4438C	MY49071430	February 02, 2015	One Year
05	Amplifier	60S1G4	0331848	No Calibration Requested	
06	BTS	E5515C	MY50263375	January 30, 2015	One year
07	BTS	CMW500	129942	March 03, 2015	One year
08	E-field Probe	SPEAG EX3DV4	3846	September 24, 2014	One year
09	DAE	SPEAG DAE4	777	September 17, 2014	One year
10	Dipole Validation Kit	SPEAG D750V3	1017	August 28, 2014	One year
11	Dipole Validation Kit	SPEAG D835V2	4d069	August 28, 2014	One year
12	Dipole Validation Kit	SPEAG D1750V2	1003	August 18, 2014	One year
13	Dipole Validation Kit	SPEAG D1900V2	5d101	July 23, 2014	One year
14	Dipole Validation Kit	SPEAG D2450V2	853	July 24, 2014	One year
15	Dipole Validation Kit	SPEAG D2600V2	1012	July 16, 2014	One year
16	Dipole Validation Kit	SPEAG D5GHzV2	1060	July 22, 2014	One year

END OF REPORT BODY

ANNEX A Graph Results

850 Right Cheek High

Date: 2015-4-1

Electronics: DAE4 Sn777

Medium: Head 850 MHz

Medium parameters used (interpolated): $f = 848.8$ MHz; $\sigma = 0.919$ mho/m; $\epsilon_r = 42.029$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3°C Liquid Temperature: 21.8°C

Communication System: GSM 850 Frequency: 848.8 MHz Duty Cycle: 1:8.3

Probe: EX3DV4 - SN3846 ConvF(9.18, 9.18, 9.18)

Cheek High/Area Scan (61x121x1): Interpolated grid: $dx=1.000$ mm, $dy=1.000$ mm

Maximum value of SAR (interpolated) = 0.332 W/kg

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

Reference Value = 3.282 V/m; Power Drift = -0.11 dB

Peak SAR (extrapolated) = 0.368 W/kg

SAR(1 g) = 0.294 W/kg; SAR(10 g) = 0.226 W/kg

Maximum value of SAR (measured) = 0.333 W/kg

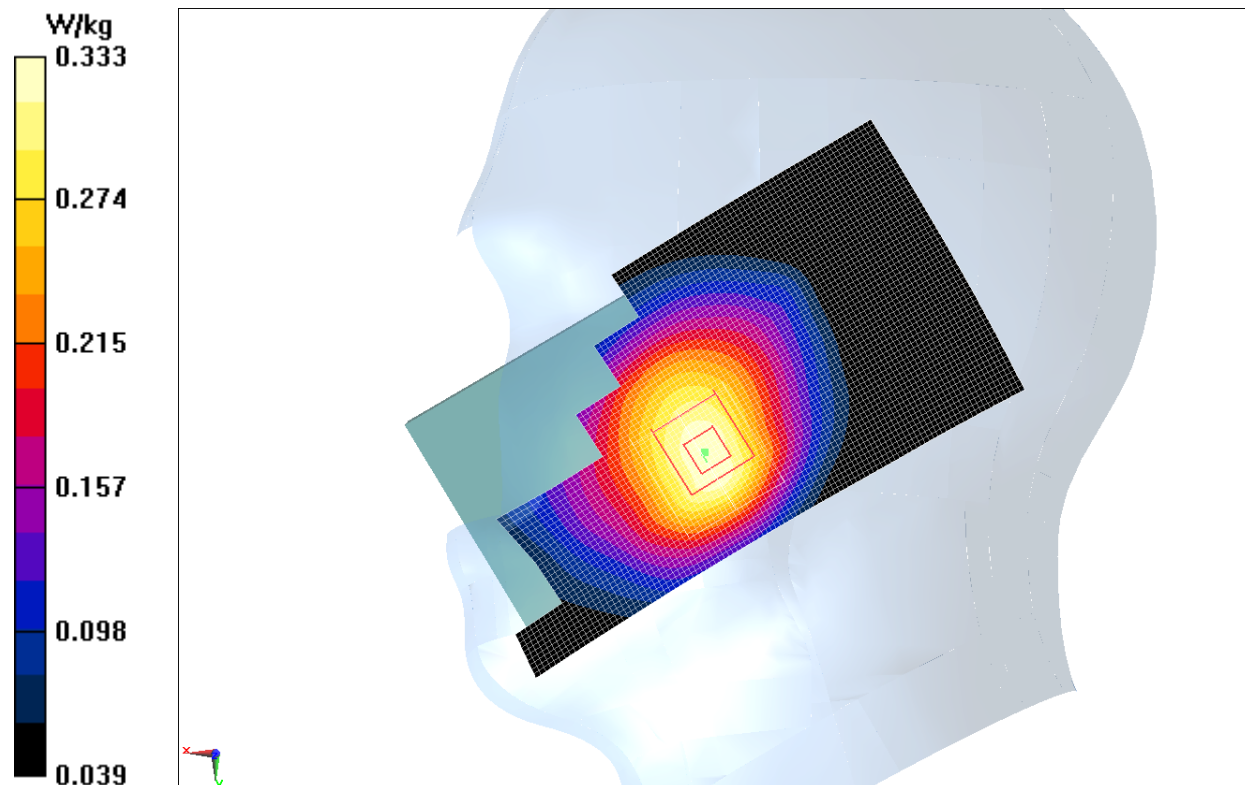


Fig.1 850MHz

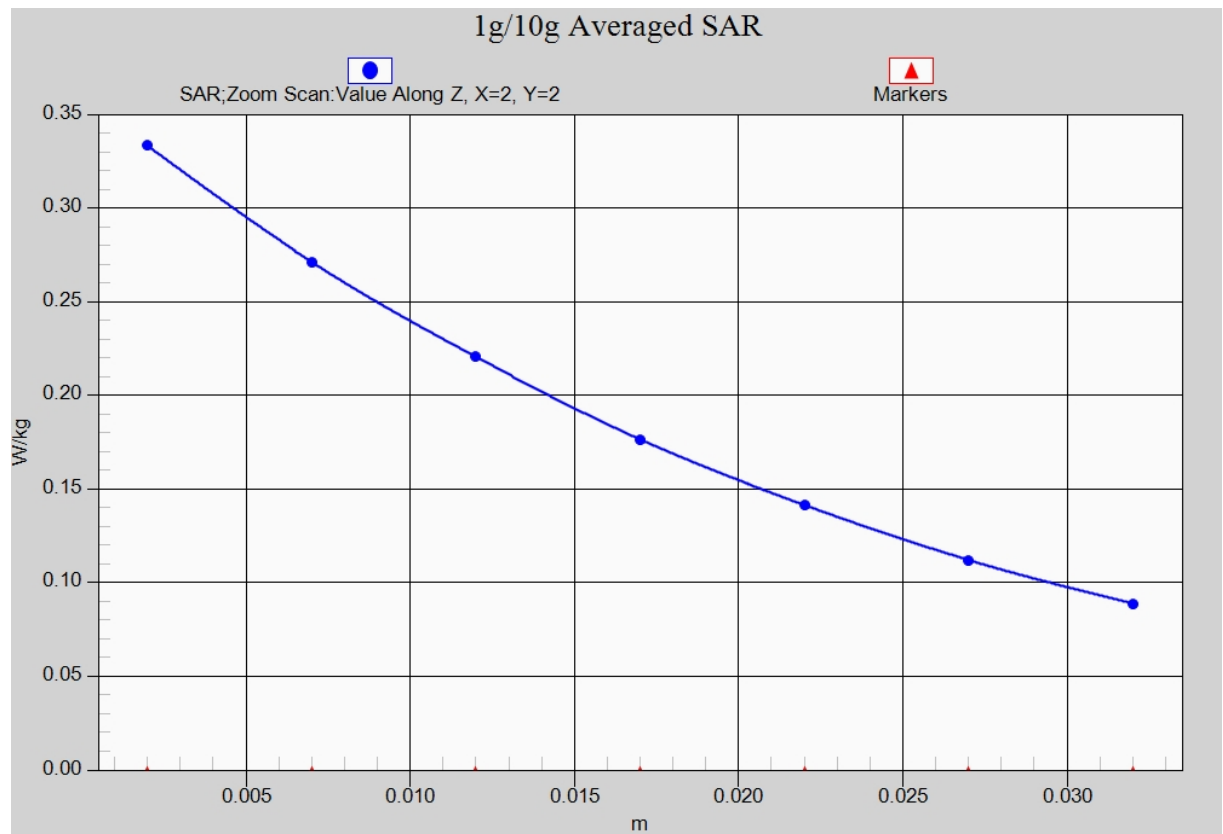


Fig. 1-1 Z-Scan at power reference point (850 MHz)

850 Body Rear Middle

Date: 2015-4-1

Electronics: DAE4 Sn777

Medium: Body 850 MHz

Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.974$ mho/m; $\epsilon_r = 56.711$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3°C Liquid Temperature: 21.8°C

Communication System: GSM 850 GPRS Frequency: 836.6 MHz Duty Cycle: 1:8.3

Probe: EX3DV4 - SN3846 ConvF(9.09, 9.09, 9.09)

Rear Middle/Area Scan (121x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.398 W/kg

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

Reference Value = 19.73 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.443 W/kg

SAR(1 g) = 0.350 W/kg; SAR(10 g) = 0.269 W/kg

Maximum value of SAR (measured) = 0.380 W/kg

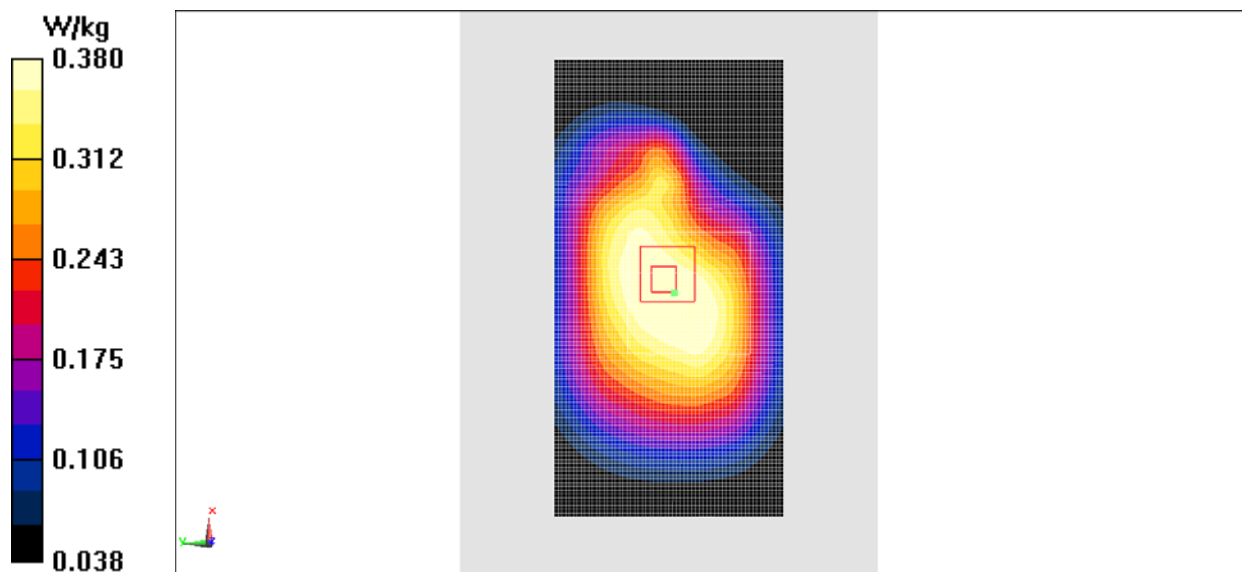


Fig.2 850 MHz

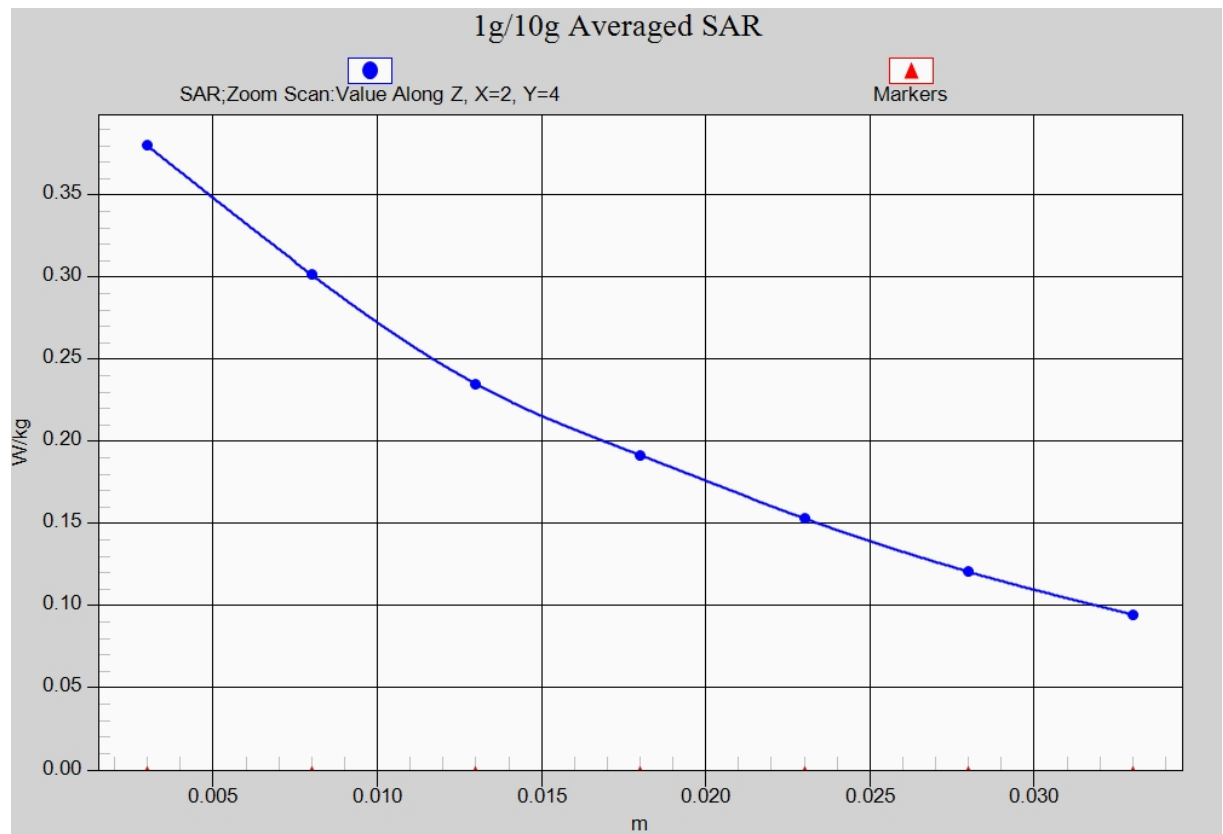


Fig. 2-1 Z-Scan at power reference point (850 MHz)

1900 Left Cheek High

Date: 2015-4-3

Electronics: DAE4 Sn777

Medium: Head 1900 MHz

Medium parameters use: $f = 1910$ MHz; $\sigma = 1.42$ mho/m; $\epsilon_r = 40.57$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3°C Liquid Temperature: 21.8°C

Communication System: GSM 1900MHz Frequency: 1909.8 MHz Duty Cycle: 1:8.3

Probe: EX3DV4 - SN3846 ConvF(7.26, 7.26, 7.26)

Cheek High/Area Scan (61x121x1): Interpolated grid: $dx=1.000$ mm, $dy=1.000$ mm

Maximum value of SAR (interpolated) = 0.172 W/kg

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

Reference Value = 1.332 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 0.223 W/kg

SAR(1 g) = 0.149 W/kg; SAR(10 g) = 0.093 W/kg

Maximum value of SAR (measured) = 0.175 W/kg

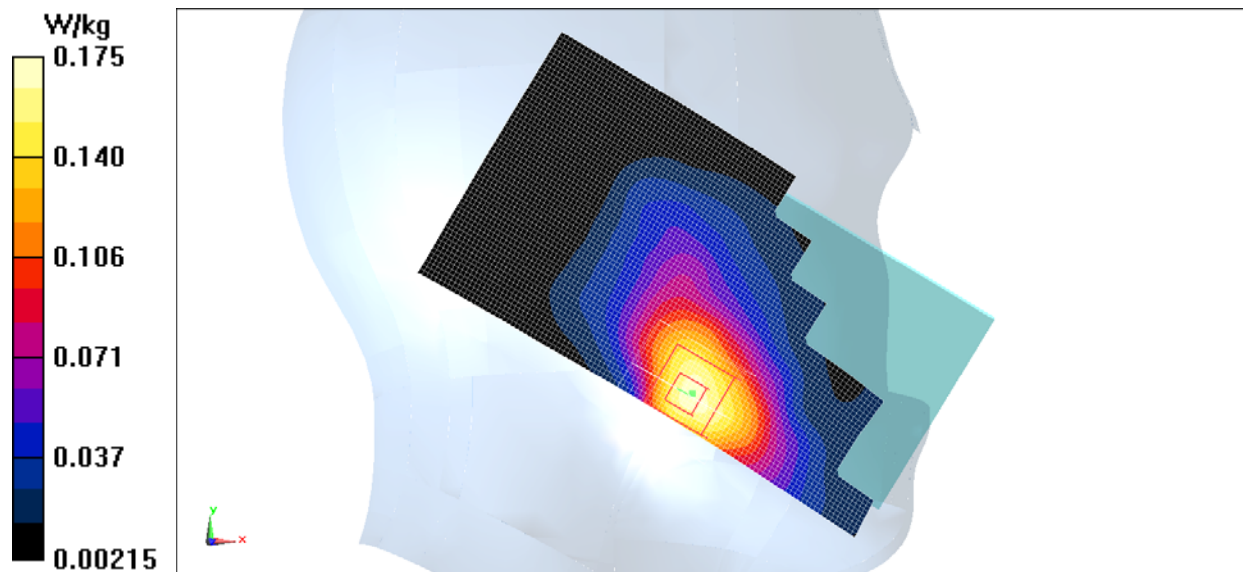


Fig.3 1900 MHz

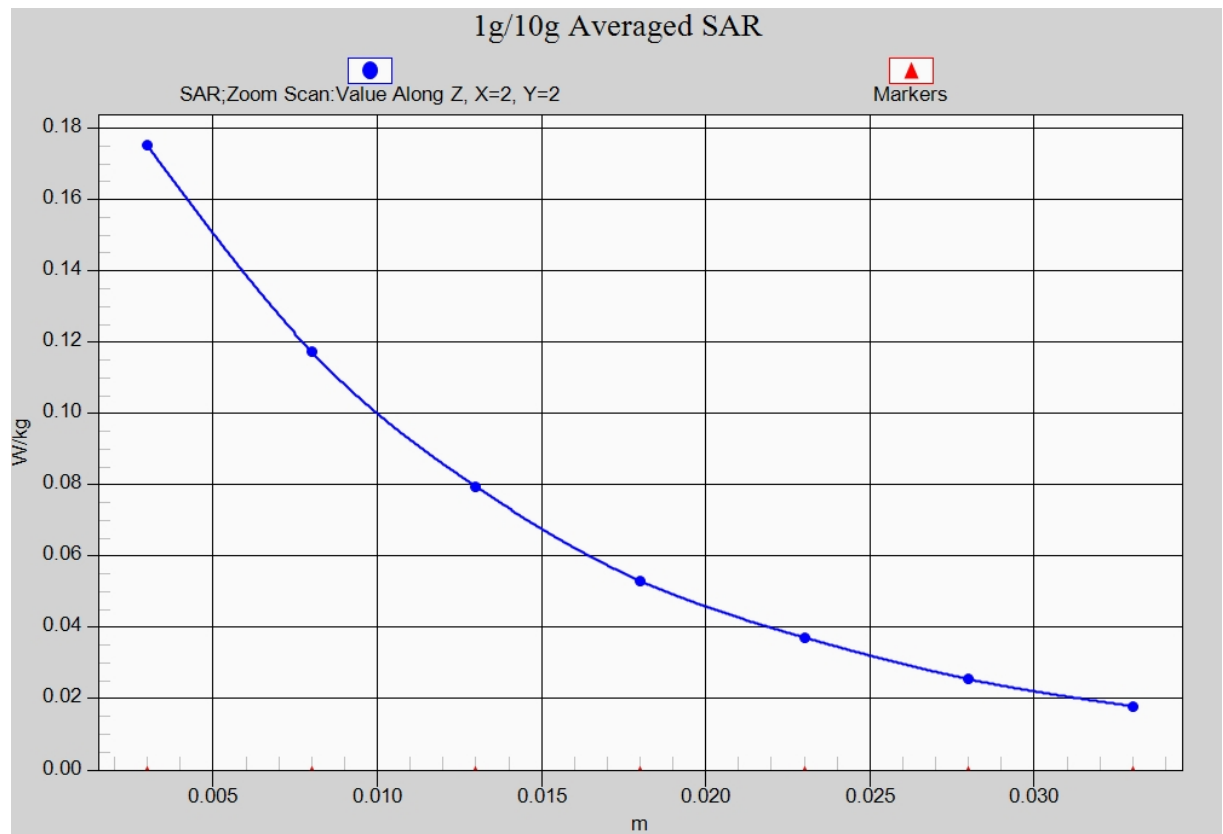


Fig. 3-1 Z-Scan at power reference point (1900 MHz)

1900 Body Bottom High

Date: 2015-4-3

Electronics: DAE4 Sn777

Medium: Body 1900 MHz

Medium parameters used: $f = 1910$ MHz; $\sigma = 1.567$ mho/m; $\epsilon_r = 52.167$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3°C Liquid Temperature: 21.8°C

Communication System: GSM 1900MHz GPRS Frequency: 1909.8 MHz Duty Cycle: 1:4

Probe: EX3DV4 - SN3846 ConvF(7.15, 7.15, 7.15)

Bottom High/Area Scan (61x41x1): Interpolated grid: $dx=1.000$ mm, $dy=1.000$ mm

Maximum value of SAR (interpolated) = 0.543 W/kg

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

Reference Value = 14.98 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 0.804 W/kg

SAR(1 g) = 0.396 W/kg; SAR(10 g) = 0.206 W/kg

Maximum value of SAR (measured) = 0.505 W/kg

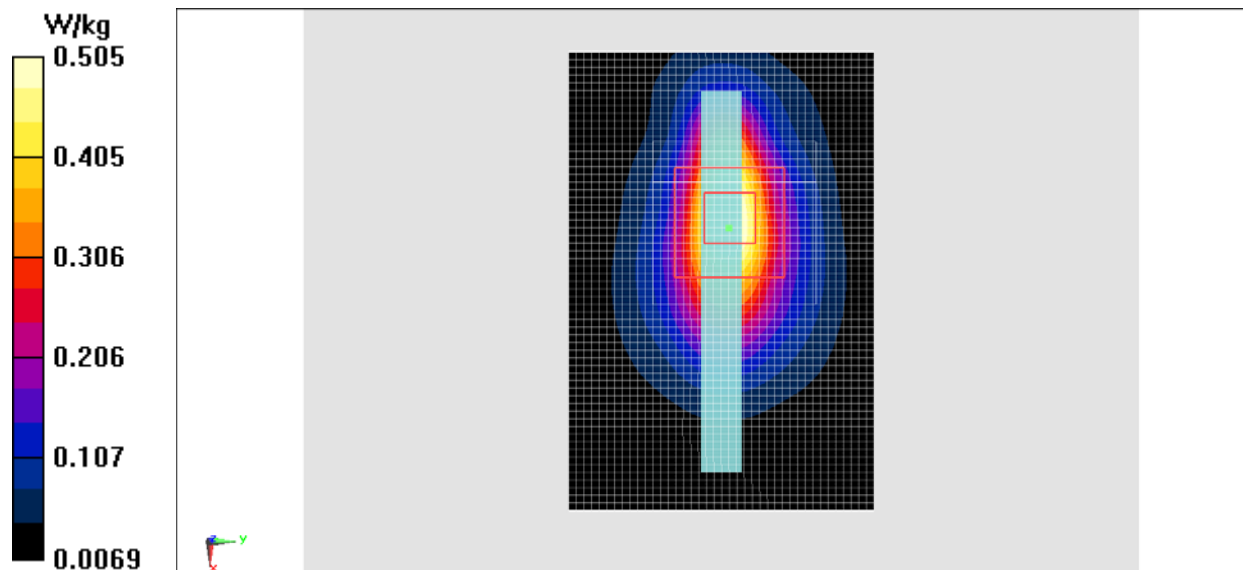


Fig.4 1900 MHz

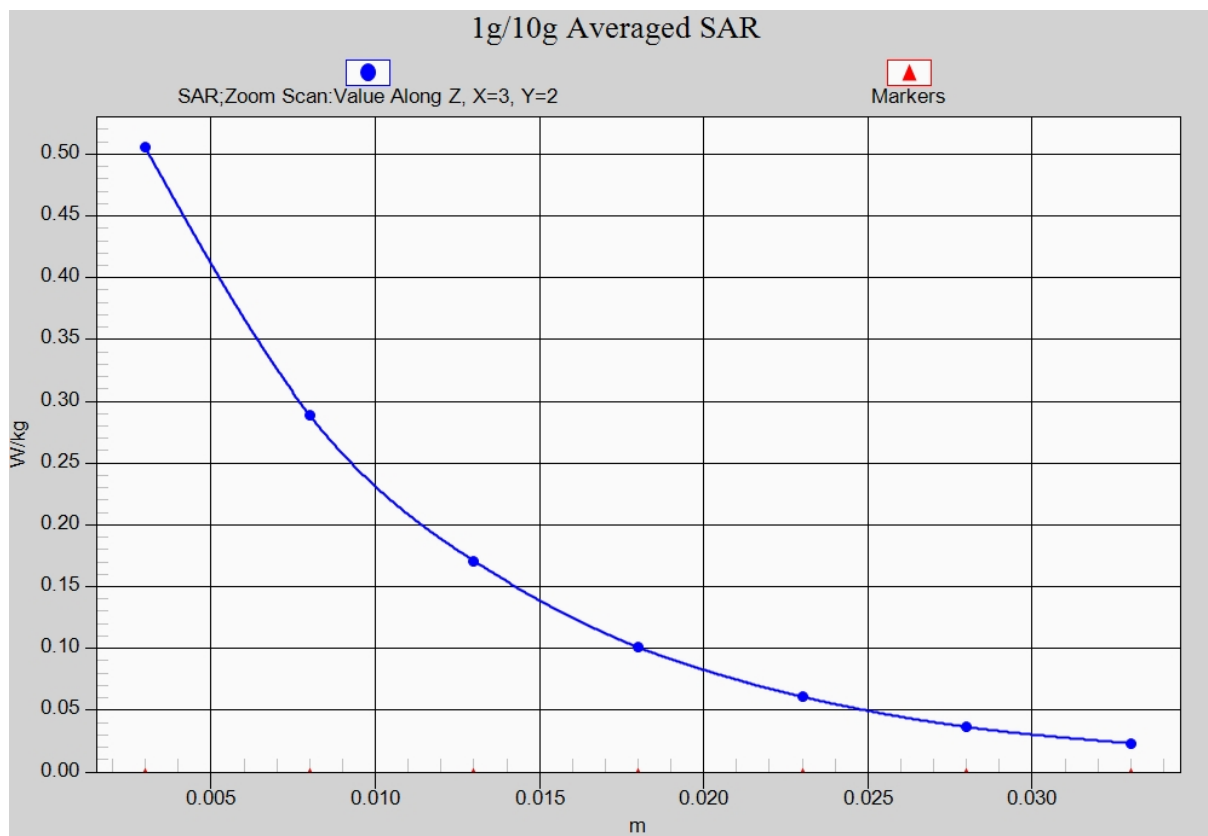


Fig.4-1 Z-Scan at power reference point (1900 MHz)

WCDMA 850 Right Cheek High

Date: 2015-4-1

Electronics: DAE4 Sn777

Medium: Head 850 MHz

Medium parameters used (interpolated): $f = 846.6$ MHz; $\sigma = 0.916$ mho/m; $\epsilon_r = 42.058$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3°C Liquid Temperature: 21.8°C

Communication System: WCDMA; Frequency: 846.6 MHz; Duty Cycle: 1:1

Probe: EX3DV4 - SN3846 ConvF(9.18, 9.18, 9.18)

Cheek High/Area Scan (61x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.496 W/kg

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

Reference Value = 4.603 V/m; Power Drift = -0.11 dB

Peak SAR (extrapolated) = 0.536 W/kg

SAR(1 g) = 0.435 W/kg; SAR(10 g) = 0.336 W/kg

Maximum value of SAR (measured) = 0.494 W/kg

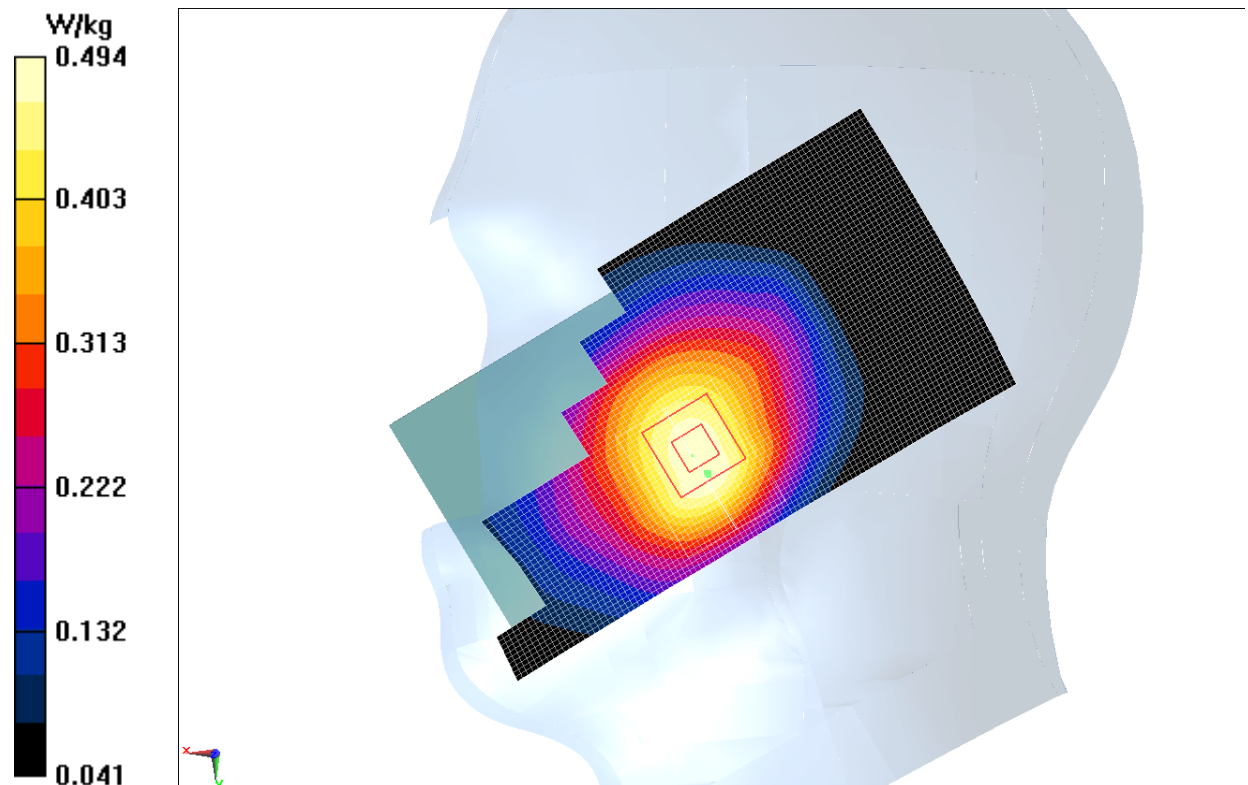


Fig.5 WCDMA 850

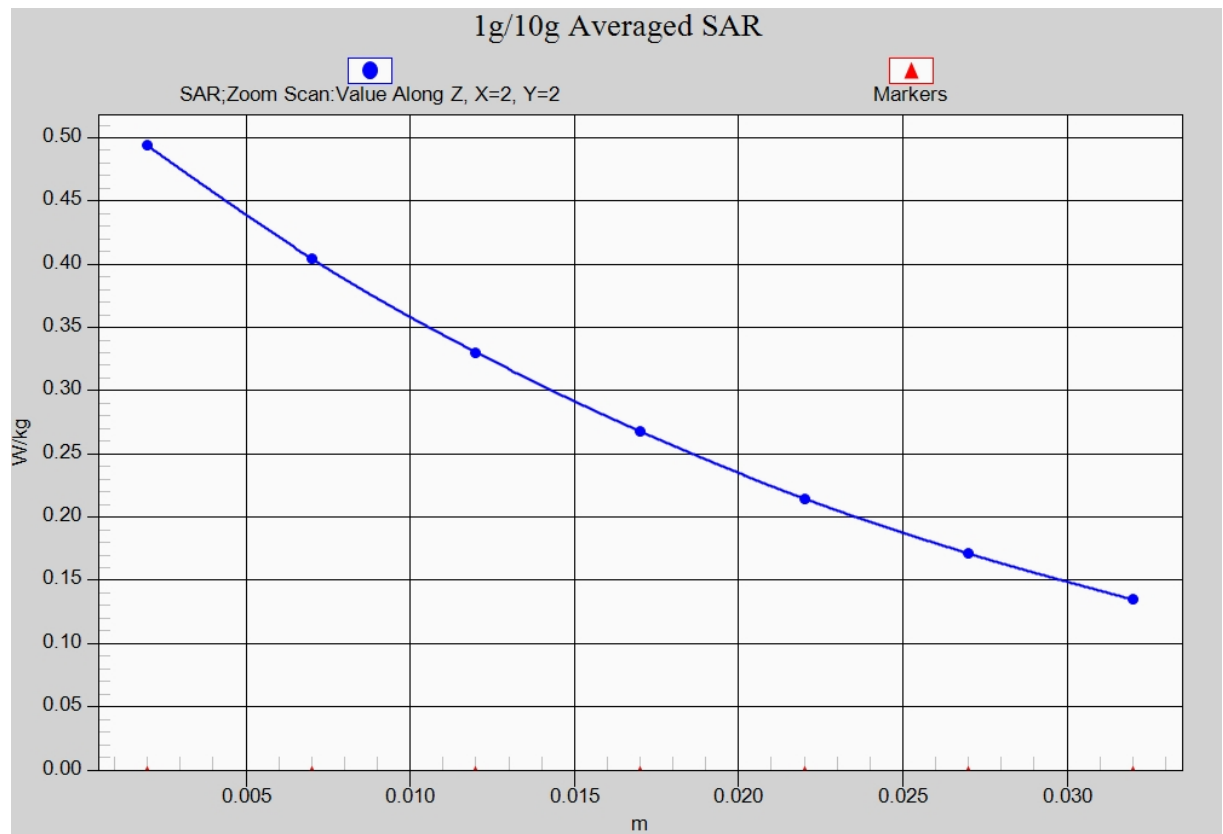


Fig. 5-1 Z-Scan at power reference point (WCDMA 850)

WCDMA 850 Body Front Low

Date: 2015-4-1

Electronics: DAE4 Sn777

Medium: Body 850 MHz

Medium parameters used (interpolated): $f = 826.4$ MHz; $\sigma = 0.965$ mho/m; $\epsilon_r = 56.779$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3°C Liquid Temperature: 21.8°C

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

Probe: EX3DV4 - SN3846 ConvF(9.09, 9.09, 9.09)

Front Low/Area Scan (121x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.541 W/kg

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

Reference Value = 23.13 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.606 W/kg

SAR(1 g) = 0.496 W/kg; SAR(10 g) = 0.389 W/kg

Maximum value of SAR (measured) = 0.539 W/kg

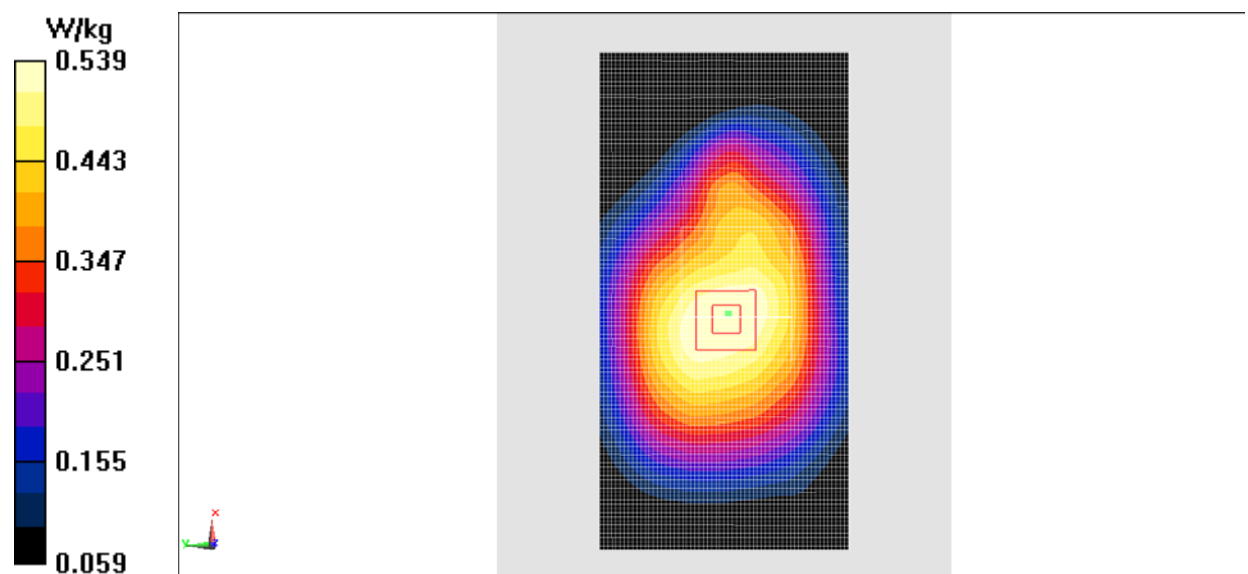


Fig.6 WCDMA 850

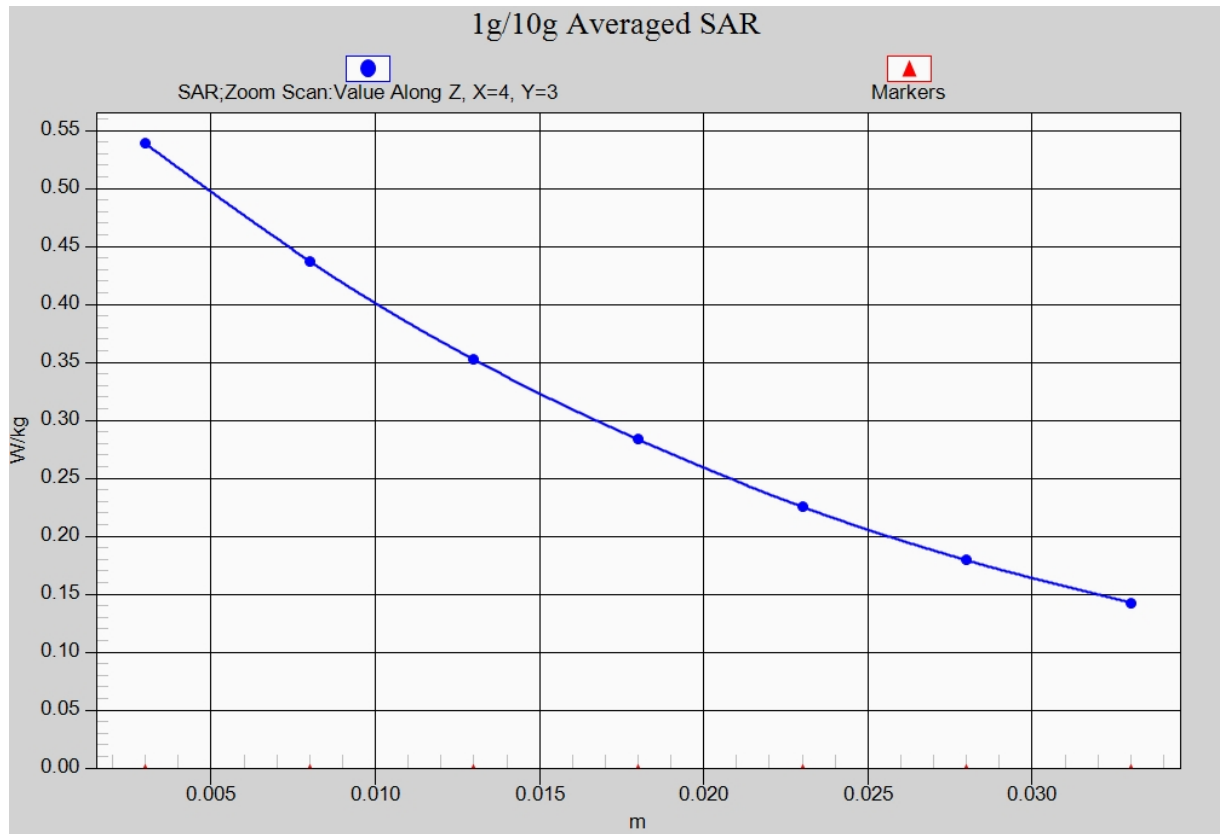


Fig. 6-1 Z-Scan at power reference point (WCDMA850)