



SAR TEST REPORT

No. I16Z40348-SEM01

For

TCL Communication Ltd.

**HSDPA/HSUPA/HSPA+/UMTS quad band / GSM quad band/LTE 3
band mobile phone**

Model name: 6071W

With

Hardware Version: 01

Software Version: 01

FCC ID: 2ACCJN009

Issued Date: 2016-5-25



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CNAS L0570

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
I16Z40348-SEM01	Rev.0	2016-5-25	Initial creation of test report

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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

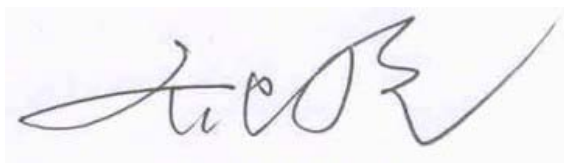
1.3 Project Data

Project Leader:	Qi Dianyuan
Test Engineer:	Lin Xiaojun
Testing Start Date:	April 24, 2016
Testing End Date:	May 8, 2016

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 HSDPA/HSUPA/HSPA+/UMTS quad band / GSM quad band/LTE 3 band mobile phone 6071W 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	0.08	PCE
	PCS 1900	0.24	
	UMTS FDD 5	0.04	
	UMTS FDD 4	0.37	
	UMTS FDD 2	0.32	
	LTE Band 2	0.48	
	LTE Band 4	0.36	
	LTE Band 12	0.22	
	WLAN 2.4 GHz	0.80	DTS
	WLAN 5 GHz	1.06	UNII
Hotspot (Separation Distance 10mm)	GSM 850	0.95	PCE
	PCS 1900	0.41	
	UMTS FDD 5	0.34	
	UMTS FDD 4	0.93	
	UMTS FDD 2	0.88	
	LTE Band 2	1.16	
	LTE Band 4	1.07	
	LTE Band 12	0.94	
	WLAN 2.4 GHz	0.27	DTS
	WLAN 5 GHz	0.90	UNII

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

For body 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 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: **1.16 W/kg (1g)**.

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

	Position	Main antenna	WiFi	Sum
Highest reported SAR value for Head	Left hand, Touch cheek	0.48	1.06	1.54
Highest reported SAR value for Body	Front	0.95	0.64	1.59
	Rear	0.69	0.90	1.59
	Bottom	1.16	/	1.16

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

	Position	Main antenna	BT	Sum
Maximum reported SAR value for Head	Left hand, Touch cheek	0.48	0.33	0.81
Maximum reported SAR value for Body	Front	0.95	0.17	1.12
	Bottom	1.16	/	1.16

Note: Estimated SAR for Bluetooth (see the table 13.3)

According to the above tables, the highest sum of reported SAR values is **1.59 W/kg (1g)**. The detail for simultaneous transmission consideration is described in chapter 13.

3 Client Information

3.1 Applicant Information

Company Name:	TCL Communication Ltd.
Address /Post:	5F, C building, No. 232, Liang Jing Road ZhangJiang High-Tech Park, Pudong Area Shanghai, P.R. China. 201203
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3.2 Manufacturer Information

Company Name:	TCL Communication Ltd.
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City:	Shanghai
Country:	China
Contact Person:	Gong Zhizhou
E-mail:	zhizhou.gong@tcl.com
Telephone:	0086-21-31363544
Fax:	0086-21-61460602

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

4.1 About EUT

Description:	HSDPA/HSUPA/HSPA+/UMTS quad band / GSM quad band/LTE 3 band mobile phone
Model name:	6071W
Operating mode(s):	GSM 850/900/1800/1900, WCDMA 850/1700/1900/2100 BT, Wi-Fi2.4G,Wi-Fi5G, LTE Band 2/4/12
Tested Tx Frequency:	825 – 848.8 MHz (GSM 850)
	1850.2 – 1910 MHz (GSM 1900)
	826.4–846.6 MHz (WCDMA 850 Band V)
	1712.4 – 1752.6 MHz (WCDMA 1700 Band IV)
	1852.4–1907.6 MHz (WCDMA1900 Band II)
	1860 – 1900 MHz (LTE Band 2)
	1720 – 1745 MHz (LTE Band 4)
	706.5 – 713.5MHz(LTE Band 12)
	2412 – 2462 MHz (Wi-Fi 2.4G)
	5150-5250 MHz (U-NII-1)
	5250-5350 MHz (U-NII-2A)
	5470-5725 MHz (U-NII-2C)
	5725-5825 MHz (U-NII-3)
GPRS/EGPRS Multislot Class:	12
GPRS capability Class:	B
Hotspot mode:	Support

4.2 Internal Identification of EUT used during the test

EUT ID*	IMEI	HW	SW Version
EUT1	014636000002944	01	01
EUT2	014636000002902	01	01
EUT3	014636000047039	01	01
EUT4	014636000056718	01	01
EUT5	014636000057039	01	01

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

Note: It is performed to test SAR with the EUT1&2 and conducted power with the EUT3&4&5.

4.3 Internal Identification of AE used during the test

AE ID*	Description	Model	SN	Manufacturer
AE1	Battery	TLp030F2	CAC3000013C2	SCUD

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

5 TEST METHODOLOGY

5.1 Applicable Limit Regulations

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

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

5.2 Applicable Measurement Standards

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

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

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

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

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

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

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

KDB865664 D01 SAR measurement 100 MHz to 6 GHz v01r04: SAR Measurement Requirements for 100 MHz to 6 GHz.

KDB865664 D02 RF Exposure Reporting v01r02: RF Exposure Compliance Reporting and Documentation Considerations

6 Specific Absorption Rate (SAR)

6.1 Introduction

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

6.2 SAR Definition

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

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

SAR is expressed in units of Watts per kilogram (W/kg)

SAR measurement can be either related to the temperature elevation in tissue by

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

Where: C is the specific 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

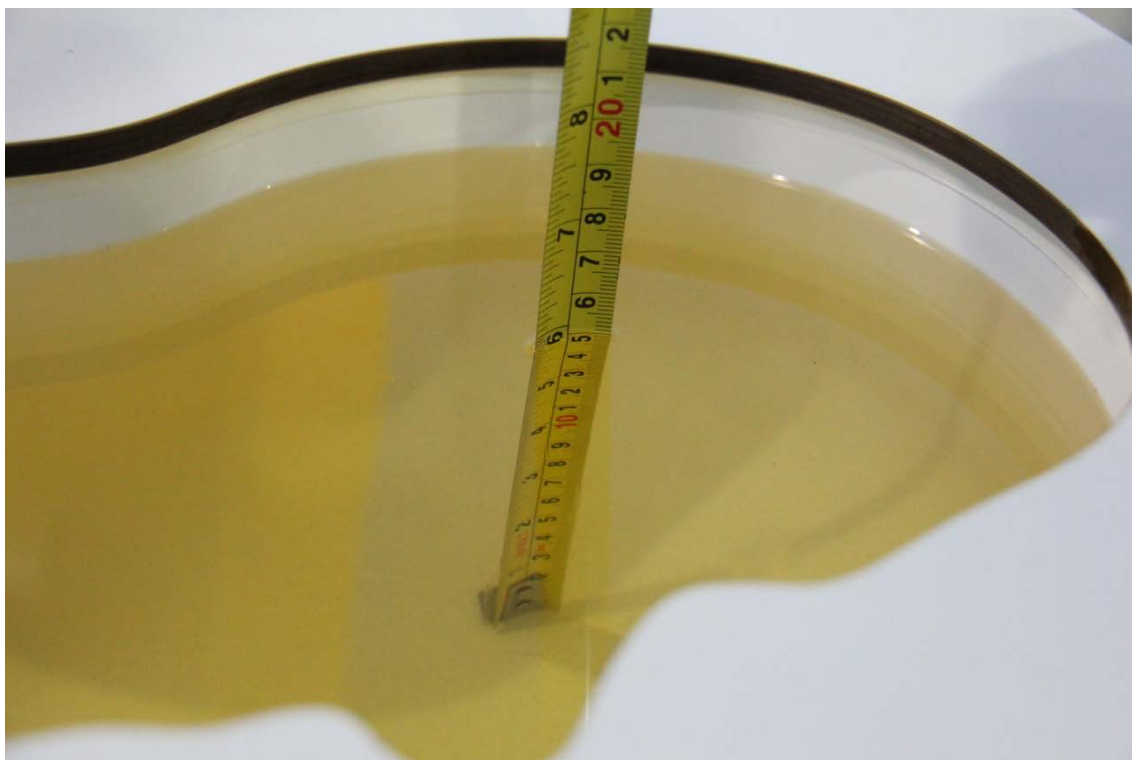
Frequency(MHz)	Liquid Type	Conductivity(σ)	$\pm 5\%$ Range	Permittivity(ϵ)	$\pm 5\%$ Range
750	Head	0.89	0.85~0.93	41.94	39.8~44.0
750	Body	0.96	0.91~1.01	55.5	52.7~58.3
835	Head	0.90	0.86~0.95	41.5	39.4~43.6
835	Body	0.97	0.92~1.02	55.2	52.4~58.0
1750	Head	1.37	1.30~1.44	40.08	38.1~42.1
1750	Body	1.49	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 (%)
2016-5-7	Head	750 MHz	43.07	2.69	0.915	2.81
	Body	750 MHz	56.99	2.68	0.956	-0.42
2016-4-25	Head	835 MHz	42.65	2.77	0.921	2.33
	Body	835 MHz	54.38	-1.49	0.953	-1.75
2016-4-26	Head	1750 MHz	40.81	1.82	1.366	-0.29
	Body	1750 MHz	54.35	1.78	1.519	1.95
2016-5-5	Head	1900 MHz	39.15	-2.13	1.421	1.50
	Body	1900 MHz	52.12	-2.21	1.542	1.45
2016-5-6	Head	2450 MHz	38.86	-0.87	1.815	0.83
	Body	2450 MHz	53.58	1.67	1.978	1.44
2016-5-8	Head	5200 MHz	36.74	2.08	4.658	-0.04
	Body	5200 MHz	50.58	3.22	5.158	-2.68
	Head	5300 MHz	36.69	2.29	4.772	0.25
	Body	5300 MHz	50.28	2.82	5.325	-1.75
	Head	5600 MHz	35.99	1.29	5.127	1.12
	Body	5600 MHz	49.58	2.23	5.741	-0.50
	Head	5800 MHz	35.68	1.08	5.34	1.33
	Body	5800 MHz	49.13	1.93	6.131	2.18

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)



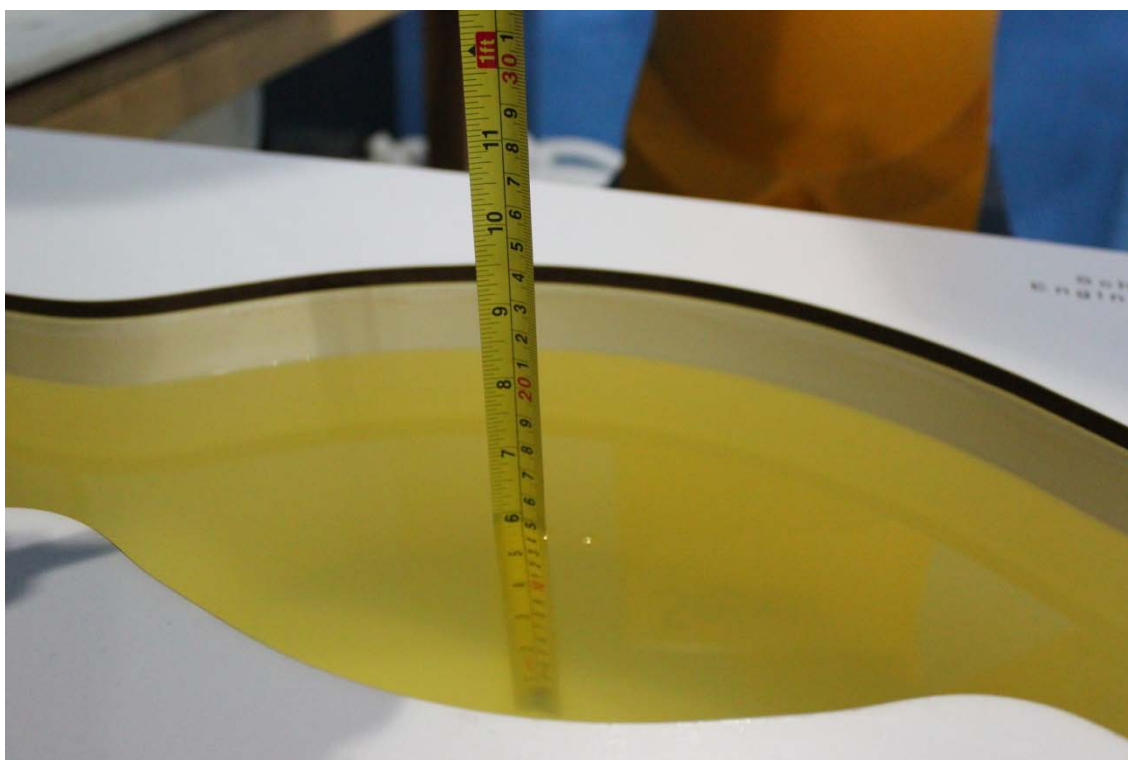
Picture 7-3 Liquid depth in the Head Phantom (835 MHz)



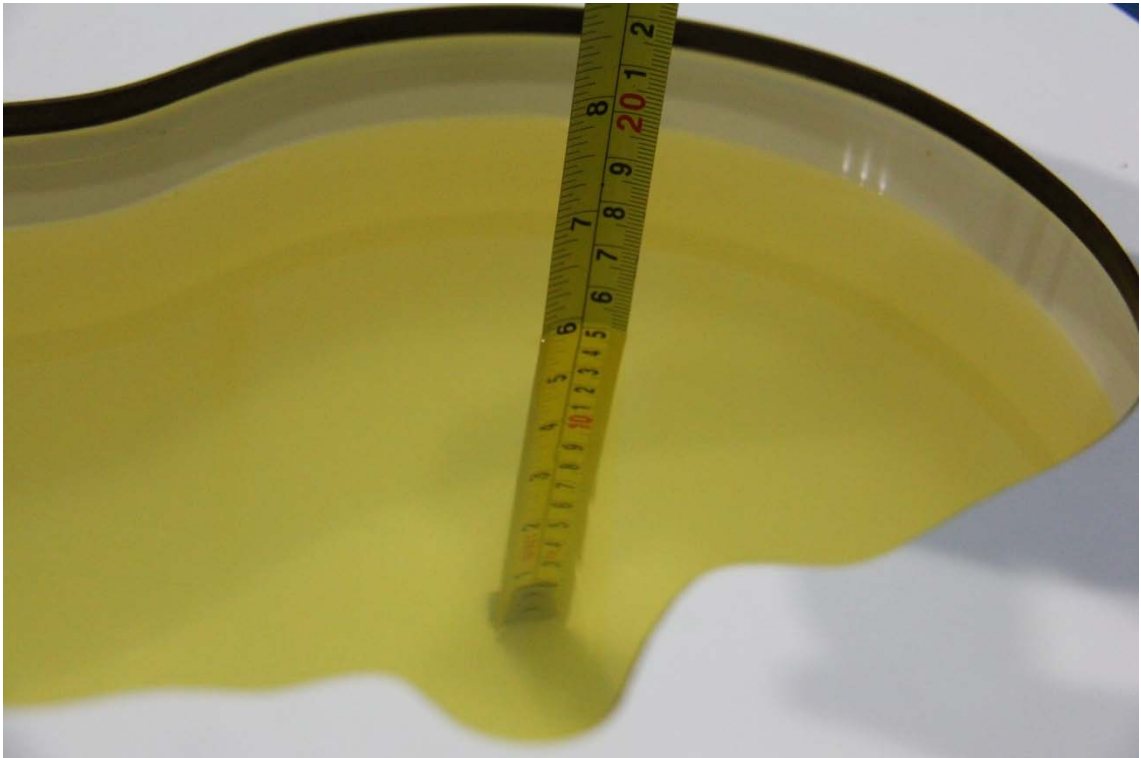
Picture 7-4 Liquid depth in the Flat Phantom (835 MHz)



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



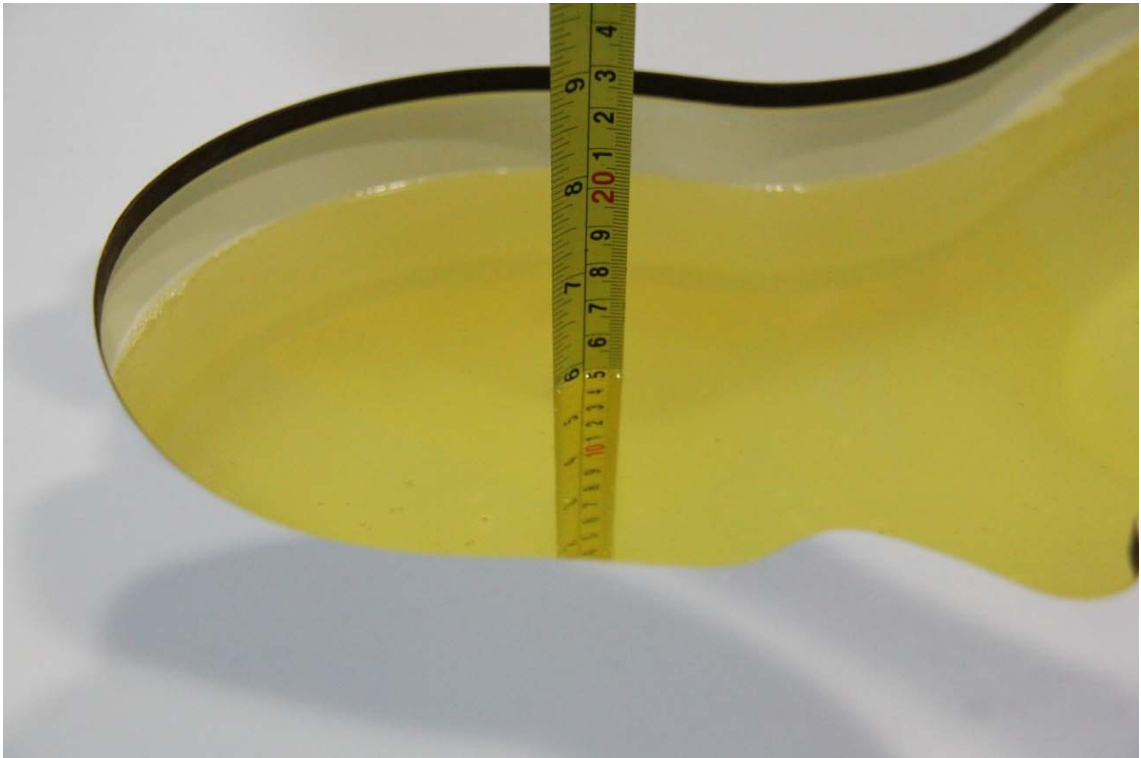
Picture 7-6 Liquid depth in the Flat Phantom (1750MHz)



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 (5GHz)

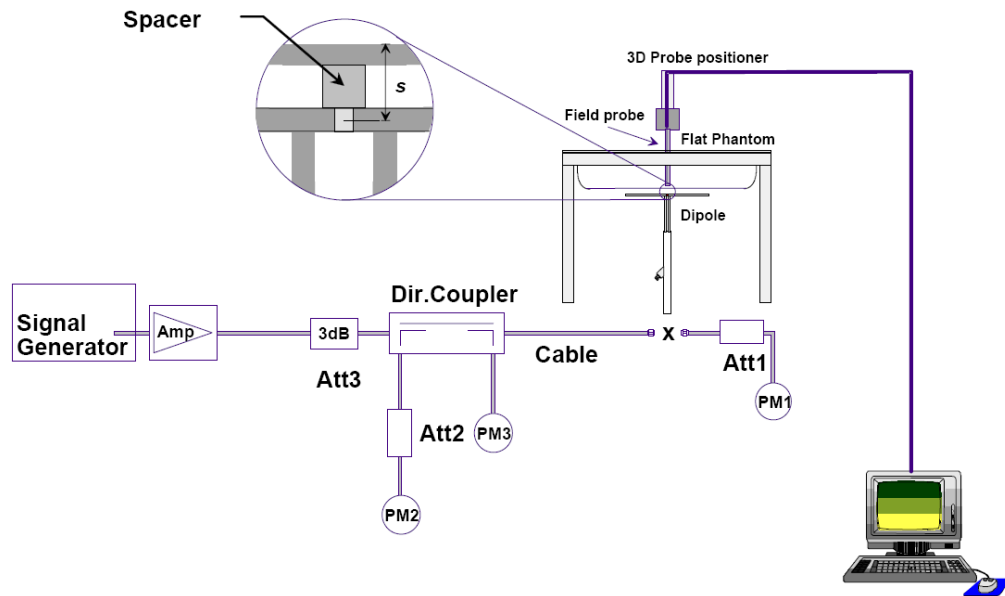


Picture 7-12 Liquid depth in the Flat Phantom (5GHz)

8 System verification

8.1 System Setup

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



Picture 8.1 System Setup for System Evaluation



Picture 8.2 Photo of Dipole Setup

8.2 System Verification

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

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

Table 8.1: System Verification of Head

Measurement Date (yyyy-mm-dd)	Frequency	Target value (W/kg)		Measured value (W/kg)		Deviation	
		10 g Average	1 g Average	10 g Average	1 g Average	10 g Average	1 g Average
2016-5-7	750 MHz	5.33	8.15	5.32	8.28	-0.19%	1.60%
2016-4-25	835 MHz	5.86	9.01	5.96	9.16	0.68%	0.44%
2016-4-26	1750 MHz	19.9	36.9	19.52	36.44	-1.91%	-1.25%
2016-5-5	1900 MHz	21.5	40.7	21.52	41.52	0.75%	2.77%
2016-5-6	2450 MHz	24.5	52.5	25.08	53.16	2.37%	1.26%
2016-5-8	5200 MHz	23.1	80.7	22.84	80.44	2.42%	3.39%
	5300 MHz	23.4	81.6	23.84	80.44	1.88%	-1.42%
	5600 MHz	23.5	82.6	24.14	81.94	2.72%	-0.80%
	5800 MHz	22.5	79	21.94	80.34	-2.49%	1.70%

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
2016-5-7	750 MHz	5.6	8.49	5.68	8.72	1.43%	2.71%
2016-4-25	835 MHz	6.24	9.52	6.12	9.36	-1.92%	-1.68%
2016-4-26	1750 MHz	20.3	37.4	20.12	37.44	-0.89%	0.11%
2016-5-5	1900 MHz	21.88	40.8	21.52	40.56	-1.65%	-0.59%
2016-5-6	2450 MHz	24.4	52.1	24.44	50.56	0.16%	-2.96%
2016-5-8	5200 MHz	21.7	77.5	21.64	75.34	-0.46%	-2.84%
	5300 MHz	21.5	76.8	21.74	74.74	0.93%	-2.73%
	5600 MHz	22.8	82.2	22.54	81.44	-1.32%	-0.97%
	5800 MHz	21.8	78.5	22.24	77.94	1.83%	-0.76%

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.

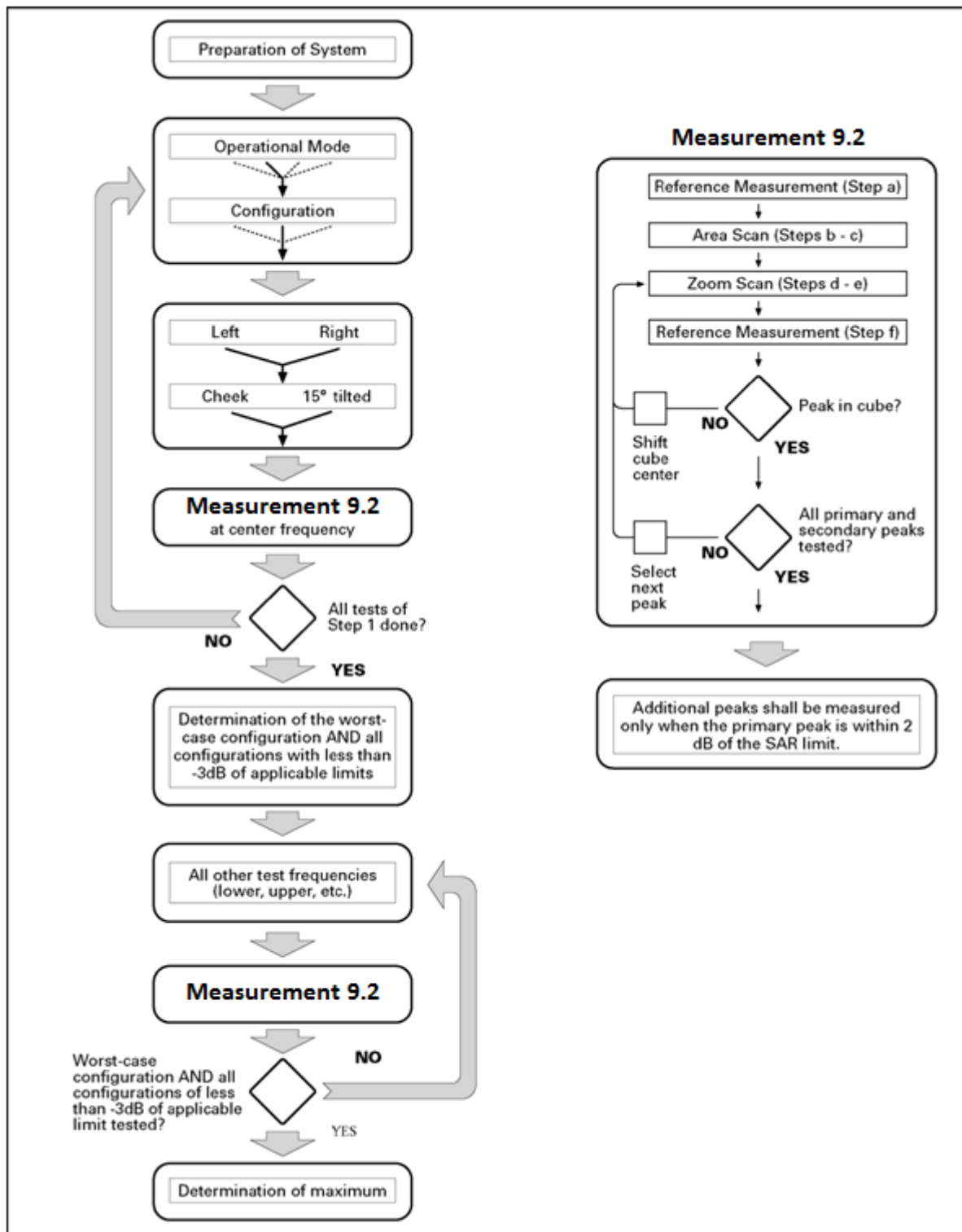
Step 1: The tests described in 9.2 shall be performed at the channel that is closest to the centre of the transmit frequency band (f_c) for:

- 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			$5 \pm 1\text{ mm}$	$\frac{1}{2} \cdot \delta \cdot \ln(2) \pm 0.5\text{ mm}$
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	1.5	1.5	20	75
2	6/15	15/15	64	6/15	12/15	12/15	12/15	4	1	1.5	1.5	12	67
3	15/15	9/15	64	15/9	30/15	30/15	$\beta_{ed1}:47/15$ $\beta_{ed2}:47/15$	4	2	1.5	1.5	15	92
4	2/15	15/15	64	2/15	4/15	4/15	56/75	4	1	1.5	1.5	17	71
5	15/15	15/15	64	15/15	24/15	30/15	134/15	4	1	1.5	1.5	21	81

Rel.8 DC-HSDPA (Cat 24)

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

9.4 SAR Measurement for LTE

SAR tests for LTE are performed with a base station simulator, Rohde & 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.

9.5 Bluetooth & Wi-Fi Measurement Procedures for SAR

Normal network operating configurations are not suitable for measuring the SAR of 802.11 transmitters in general. Unpredictable fluctuations in network traffic and antenna diversity conditions can introduce undesirable variations in SAR results. The SAR for these devices should be measured using chipset based test mode software to ensure that the results are consistent and reliable.

Chipset based test mode software is hardware dependent and generally varies among manufacturers. The device operating parameters established in a test mode for SAR measurements must be identical to those programmed in production units, including output power levels, amplifier gain settings and other RF performance tuning parameters. The test frequencies should correspond to actual channel frequencies defined for domestic use. SAR for devices with switched diversity should be measured with only one antenna transmitting at a time during each SAR measurement, according to a fixed modulation and data rate. The same data pattern should be used for all measurements.

9.6 Power Drift

To control the output power stability during the SAR test, DASY4 system calculates the power drift by measuring the E-field at the same location at the beginning and at the end of the measurement for each test position. These drift values can be found in 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

11.1 GSM Measurement result

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

There are two tune-up power tables used for different use cases in cellular and WLAN: Normal power and Low power.

Normal power status is applied for cellular head test and WLAN body/hotspot test.

Low power status is applied for WLAN head test and cellular body/hotspot test.

Normal Power

Table 11.1-1: 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)	Tune up
	32.61	32.65	32.49	33.2
GSM 1900MHz	Conducted Power (dBm)			
	Channel 810(1909.8MHz)	Channel 661(1880MHz)	Channel 512(1850.2MHz)	Tune up
	29.60	29.44	29.45	30.2

Table 11.1-2: The conducted power measurement results for GPRS and EGPRS

GSM 850 GPRS (GMSK)	Measured Power (dBm)			Tune-up	calculation	Averaged Power (dBm)		
	251	190	128			251	190	128
1 Txslot	32.66	32.68	32.54	33.2	-9.03	23.63	23.65	23.51
2 Txslots	31.24	31.58	31.46	31.7	-6.02	25.22	25.56	25.44
3Txslots	29.87	29.90	29.80	30.2	-4.26	25.61	25.64	25.54
4 Txslots	29.11	29.34	29.18	29.5	-3.01	26.10	26.33	26.17
GSM 850 EGPRS (GMSK)	Measured Power (dBm)				calculation			
	251	190	128			251	190	128
1 Txslot	32.66	32.69	32.55	33.2	-9.03	23.63	23.66	23.52
2 Txslots	31.25	31.58	31.47	31.7	-6.02	25.23	25.56	25.45
3Txslots	29.86	29.90	29.80	30.2	-4.26	25.60	25.64	25.54
4 Txslots	29.10	29.32	29.16	29.5	-3.01	26.09	26.31	26.15
GSM 850 EGPRS (8PSK)	Measured Power (dBm)				calculation			
	251	190	128			251	190	128
1 Txslot	27.01	27.07	27.12	27.2	-9.03	17.98	18.04	18.09
2 Txslots	25.49	25.62	25.62	25.7	-6.02	19.47	19.60	19.60
3Txslots	23.85	24.04	24.01	24.2	-4.26	19.59	19.78	19.75
4 Txslots	23.63	23.67	23.54	23.7	-3.01	20.62	20.66	20.53

PCS1900 GPRS (GMSK)	Measured Power (dBm)				calculation			
	810	661	512			810	661	512
1 Txslot	29.60	29.43	29.42	30.2	-9.03	20.57	20.40	20.39
2 Txslots	28.28	28.16	28.12	28.7	-6.02	22.26	22.14	22.10
3Txslots	26.94	26.73	26.69	27.2	-4.26	22.68	22.47	22.43
4 Txslots	25.70	25.54	25.51	25.7	-3.01	22.69	22.53	22.50
PCS1900 EGPRS (GMSK)	Measured Power (dBm)				calculation			
	810	661	512			810	661	512
1 Txslot	29.52	29.42	29.35	30.2	-9.03	20.49	20.39	20.32
2 Txslots	28.29	28.09	28.05	28.7	-6.02	22.27	22.07	22.03
3Txslots	26.89	26.66	26.72	27.2	-4.26	22.63	22.40	22.46
4 Txslots	25.69	25.50	25.56	25.7	-3.01	22.68	22.49	22.55
PCS1900 EGPRS (8PSK)	Measured Power (dBm)				calculation			
	810	661	512			810	661	512
1 Txslot	25.88	25.77	25.91	26.2	-9.03	16.85	16.74	16.88
2 Txslots	24.23	24.18	24.25	24.7	-6.02	18.21	18.16	18.23
3Txslots	22.71	22.64	22.74	23.2	-4.26	18.45	18.38	18.48
4 Txslots	21.04	20.94	21.03	21.7	-3.01	18.03	17.93	18.02

Low Power

Table 11.1-3: The conducted power measurement results for GSM1900

GSM 1900MHz	Conducted Power (dBm)			
	Channel 810(1909.8MHz)	Channel 661(1880MHz)	Channel 512(1850.2MHz)	Tune up
	27.49	27.55	27.21	27.7

Table 11.1-4: The conducted power measurement results for GPRS and EGPRS

PCS1900 GPRS (GMSK)	Measured Power (dBm)			Tune-up	calculation	Averaged Power (dBm)		
	810	661	512			810	661	512
1 Txslot	27.51	27.60	27.31	27.7	-9.03	18.48	18.57	18.28
2 Txslots	24.49	24.48	24.25	25.2	-6.02	18.47	18.46	18.23
3Txslots	22.72	22.81	22.42	23.7	-4.26	18.46	18.55	18.16
4 Txslots	21.33	21.44	21.13	22.2	-3.01	18.32	18.43	18.12
PCS1900 EGPRS (GMSK)	Measured Power (dBm)				calculation			
	810	661	512			810	661	512
1 Txslot	27.51	27.55	27.26	27.7	-9.03	18.48	18.52	18.23
2 Txslots	24.49	24.52	24.24	25.2	-6.02	18.47	18.50	18.22
3Txslots	22.73	22.77	22.47	23.7	-4.26	18.47	18.51	18.21
4 Txslots	21.37	21.40	21.17	22.2	-3.01	18.36	18.39	18.16

PCS1900 EGPRS (8PSK)	Measured Power (dBm)				calculation			
	810	661	512			810	661	512
1 Txslot	26.21	26.38	26.14	27.2	-9.03	17.18	17.35	17.11
2 Txslots	24.24	24.39	24.18	24.7	-6.02	18.22	18.37	18.16
3Txslots	22.11	22.22	22.05	23.2	-4.26	17.85	17.96	17.79
4 Txslots	20.99	21.11	20.89	21.7	-3.01	17.98	18.10	17.88

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 4Txslots for 850 GPRS and EGPRS and 1Txslot for1900 GPRS and EGPRS.

11.2 WCDMA Measurement result

Normal Power

Table 11.2-1: The conducted Power for WCDMA

Item	band	FDDV result			
	ARFCN	4233 (846.6MHz)	4182 (836.4MHz)	4132 (826.4MHz)	Tune up
WCDMA	1	23.82	23.76	23.86	24.0
HSUPA	1	22.77	22.61	22.74	23.0
	2	20.78	20.62	20.70	21.0
	3	21.76	21.58	21.72	22.0
	4	20.78	20.62	20.75	21.0
	5	22.82	22.64	22.75	23.0
DC-HSDPA	1	22.03	22.04	22.02	23.0
	2	22.01	21.88	21.98	23.0
	3	21.94	22.00	21.95	23.0
	4	21.99	21.94	22.03	23.0
Item	band	FDDIV result			
	ARFCN	1513 (1752.6MHz)	1412 (1732.4MHz)	1312 (1712.4MHz)	
WCDMA	1	24.04	24.14	24.33	24.3
HSUPA	1	23.66	23.77	23.31	23.8
	2	21.59	21.78	21.29	21.8
	3	22.66	22.75	22.28	22.8
	4	21.67	21.77	21.30	21.8
	5	23.58	23.77	23.30	23.8
DC-HSDPA	1	22.67	22.47	22.62	23.0
	2	22.63	22.38	22.61	23.0

	3	22.55	22.39	22.58	23.0
	4	22.69	22.41	22.43	23.0
Item	band	FDDII result			
	ARFCN	9538 (1907.6MHz)	9400 (1880MHz)	9262 (1852.4MHz)	
WCDMA	1	23.86	23.97	24.18	24.5
HSUPA	1	23.19	23.42	23.06	24.0
	2	21.23	21.43	21.05	24.0
	3	22.19	22.42	22.03	24.0
	4	21.22	21.40	21.04	24.0
	5	23.20	23.43	23.07	24.0
DC-HSDPA	1	22.45	22.37	22.32	23.0
	2	22.33	22.44	22.33	23.0
	3	22.35	22.35	22.35	23.0
	4	22.31	22.25	22.38	23.0

Low Power

Table 11.2-2: The conducted Power for WCDMA

Item	band	FDDIV result			
	ARFCN	1513 (1752.6MHz)	1412 (1732.4MHz)	1312 (1712.4MHz)	Tune up
WCDMA	1	21.11	20.80	20.62	20.5
HSUPA	1	20.33	20.36	20.26	20.0
	2	18.25	18.34	18.25	18.0
	3	19.28	19.33	19.24	19.0
	4	18.24	18.33	18.26	18.0
	5	20.27	20.36	20.27	20.0
DC-HSDPA	1	19.33	19.38	19.35	19.0
	2	19.31	19.42	19.37	19.0
	3	19.28	19.39	19.32	19.0
	4	19.31	19.45	19.41	19.0
Item	band	FDDII result			
	ARFCN	9538 (1907.6MHz)	9400 (1880MHz)	9262 (1852.4MHz)	
WCDMA	1	20.40	20.27	20.29	21.3
HSUPA	1	19.50	19.37	18.90	21.0
	2	17.53	17.39	16.89	19.0
	3	18.51	18.38	17.91	20.0
	4	17.53	17.40	16.89	19.0
	5	19.50	19.38	18.87	21.0
DC-HSDPA	1	18.70	18.61	18.59	20.0
	2	18.62	18.55	18.62	20.0
	3	18.69	18.67	18.61	20.0
	4	18.70	18.63	18.56	20.0

11.3 LTE Measurement result

Normal Power

Table 11.3-1: 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)	Tune up	Actual output power (dBm)	Tune up
1.4 MHz	1RB High (5)	1909.3	25	23.16	25	22.46	24
		1880	25	23.43	25	22.66	24
		1850.7	25	23.72	25	22.69	24
	1RB Middle (3)	1909.3	25	23.58	25	22.83	24
		1880	25	23.59	25	22.76	24
		1850.7	25	23.66	25	22.73	24
	1RB Low (0)	1909.3	25	23.71	25	22.98	24
		1880	25	23.44	25	22.68	24
		1850.7	25	23.82	25	23.05	24
	3RB High (3)	1909.3	25	23.63	25	22.84	24
		1880	25	23.44	25	22.70	24
		1850.7	25	23.74	25	22.89	24
	3RB Middle (1)	1909.3	25	23.72	25	23.06	24
		1880	25	23.70	25	22.83	24
		1850.7	25	23.84	25	23.09	24
	3RB Low (0)	1909.3	25	23.73	25	22.79	24
		1880	25	23.57	25	22.83	24
		1850.7	25	23.81	25	22.93	24
	6RB (0)	1909.3	25	22.66	24	21.51	23
		1880	25	22.59	24	21.52	23
		1850.7	25	22.73	24	21.65	23
3 MHz	1RB High (14)	1908.5	25	23.09	25	22.43	24
		1880	25	23.54	25	22.79	24
		1851.5	25	23.67	25	22.88	24
	1RB Middle (7)	1908.5	25	23.58	25	22.90	24
		1880	25	23.54	25	22.83	24
		1851.5	25	23.50	25	22.76	24
	1RB Low (0)	1908.5	25	23.44	25	22.66	24
		1880	25	23.70	25	22.98	24
		1851.5	25	23.69	25	22.92	24
	8RB High (7)	1908.5	25	22.66	24	21.70	23
		1880	25	22.62	24	21.75	23
		1851.5	25	22.79	24	21.84	23

	8RB Middle (4)	1908.5	25	22.56	24	21.76	23
		1880	25	22.70	24	21.80	23
		1851.5	25	22.78	24	21.91	23
	8RB Low (0)	1908.5	25	22.70	24	21.77	23
		1880	25	22.69	24	21.80	23
		1851.5	25	22.82	24	21.90	23
	15RB (0)	1908.5	25	22.63	24	21.71	23
		1880	25	22.68	24	21.72	23
		1851.5	25	22.79	24	21.83	23
5 MHz	1RB High (24)	1907.5	25	23.74	25	22.86	24
		1880	25	23.77	25	23.01	24
		1852.5	25	23.70	25	23.15	24
	1RB Middle (12)	1907.5	25	23.76	25	23.05	24
		1880	25	23.82	25	23.23	24
		1852.5	25	23.89	25	23.19	24
	1RB Low (0)	1907.5	25	23.88	25	22.95	24
		1880	25	23.77	25	22.99	24
		1852.5	25	24.12	25	23.26	24
	12RB High (13)	1907.5	25	22.62	24	21.77	23
		1880	25	22.61	24	21.76	23
		1852.5	25	22.76	24	21.92	23
	12RB Middle (6)	1907.5	25	22.45	24	21.68	23
		1880	25	22.79	24	21.86	23
		1852.5	25	22.64	24	21.80	23
	12RB Low (0)	1907.5	25	22.76	24	21.84	23
		1880	25	22.71	24	21.86	23
		1852.5	25	22.84	24	21.98	23
	25RB (0)	1907.5	25	22.72	24	21.74	23
		1880	25	22.67	24	21.75	23
		1852.5	25	22.81	24	21.89	23
10 MHz	1RB High (49)	1905	25	23.64	25	22.84	24
		1880	25	23.68	25	22.81	24
		1855	25	23.89	25	23.00	24
	1RB Middle (24)	1905	25	23.67	25	22.92	24
		1880	25	23.77	25	22.83	24
		1855	25	23.76	25	22.86	24
	1RB Low (0)	1905	25	24.00	25	23.14	24
		1880	25	23.98	25	23.18	24
		1855	25	23.29	25	23.31	24
	25RB High (25)	1905	25	22.70	24	21.72	23
		1880	25	22.73	24	21.74	23
		1855	25	22.82	24	21.82	23

	25RB Middle (12)	1905	25	22.78	24	21.81	23
		1880	25	22.70	24	21.77	23
		1855	25	22.86	24	21.86	23
	25RB Low (0)	1905	25	22.80	24	21.79	23
		1880	25	22.85	24	21.84	23
		1855	25	22.95	24	21.94	23
	50RB (0)	1905	25	22.76	24	21.84	23
		1880	25	22.77	24	21.77	23
		1855	25	22.85	24	21.88	23
15 MHz	1RB High (74)	1902.5	25	23.79	25	22.97	24
		1880	25	23.75	25	23.02	24
		1857.5	25	23.72	25	23.16	24
	1RB Middle (37)	1902.5	25	23.71	25	22.89	24
		1880	25	23.76	25	22.83	24
		1857.5	25	23.72	25	22.83	24
	1RB Low (0)	1902.5	25	24.29	25	23.43	24
		1880	25	24.23	25	23.39	24
		1857.5	25	24.22	25	23.55	24
	36RB High (38)	1902.5	25	22.65	24	21.66	23
		1880	25	22.73	24	21.74	23
		1857.5	25	22.76	24	21.77	23
	36RB Middle (19)	1902.5	25	22.70	24	21.88	23
		1880	25	22.57	24	21.73	23
		1857.5	25	22.30	24	21.88	23
	36RB Low (0)	1902.5	25	23.06	24	21.94	23
		1880	25	22.97	24	21.95	23
		1857.5	25	23.04	24	22.00	23
	75RB (0)	1902.5	25	22.91	24	21.93	23
		1880	25	22.79	24	21.84	23
		1857.5	25	22.83	24	21.89	23
20 MHz	1RB High (99)	1900	25	23.95	25	23.18	24
		1880	25	24.06	25	23.28	24
		1860	25	24.02	25	23.27	24
	1RB Middle (50)	1900	25	23.67	25	22.92	24
		1880	25	23.66	25	22.88	24
		1860	25	23.66	25	22.87	24
	1RB Low (0)	1900	25	24.55	25	23.76	24
		1880	25	24.53	25	23.80	24
		1860	25	24.56	25	23.83	24
	50RB High (50)	1900	25	22.83	24	21.73	23
		1880	25	22.82	24	21.76	23
		1860	25	22.82	24	21.81	23

	50RB Middle (25)	1900	25	22.88	24	21.89	23
		1880	25	22.78	24	21.79	23
		1860	25	22.80	24	21.82	23
	50RB Low (0)	1900	25	23.21	24	22.17	23
		1880	25	23.11	24	22.07	23
		1860	25	23.07	24	22.06	23
	100RB (0)	1900	25	22.98	24	22.06	23
		1880	25	22.96	24	21.94	23
		1860	25	23.03	24	21.91	23
Band 4							
Bandwidth (MHz)	RB allocation	Frequency (MHz)	Max. Target Power (dBm)	QPSK		16QAM	
	RB offset (Start RB)			Actual output power (dBm)	Tune up	Actual output power (dBm)	Tune up
1.4 MHz	1RB High (5)	1754.3	25.5	24.19	25.5	23.40	24.5
		1732.5	25.5	24.21	25.5	23.51	24.5
		1710.7	25.5	24.07	25.5	23.16	24.5
	1RB Middle (3)	1754.3	25.5	24.32	25.5	23.63	24.5
		1732.5	25.5	24.27	25.5	23.31	24.5
		1710.7	25.5	23.96	25.5	23.06	24.5
	1RB Low (0)	1754.3	25.5	24.24	25.5	23.43	24.5
		1732.5	25.5	24.16	25.5	23.47	24.5
		1710.7	25.5	24.06	25.5	23.19	24.5
	3RB High (3)	1754.3	25.5	24.27	25.5	23.46	24.5
		1732.5	25.5	24.21	25.5	23.51	24.5
		1710.7	25.5	24.18	25.5	23.31	24.5
	3RB Middle (1)	1754.3	25.5	24.38	25.5	23.70	24.5
		1732.5	25.5	24.22	25.5	23.30	24.5
		1710.7	25.5	23.95	25.5	23.21	24.5
	3RB Low (0)	1754.3	25.5	24.25	25.5	23.55	24.5
		1732.5	25.5	24.02	25.5	23.34	24.5
		1710.7	25.5	24.22	25.5	23.34	24.5
	6RB (0)	1754.3	25.5	23.24	24.5	22.18	23.5
		1732.5	25.5	23.10	24.5	22.06	23.5
		1710.7	25.5	23.10	24.5	22.15	23.5
3 MHz	1RB High (14)	1753.5	25.5	24.12	25.5	23.39	24.5
		1732.5	25.5	24.28	25.5	23.57	24.5
		1711.5	25.5	24.50	25.5	23.71	24.5
	1RB Middle (7)	1753.5	25.5	24.44	25.5	23.70	24.5
		1732.5	25.5	24.25	25.5	23.59	24.5
		1711.5	25.5	24.08	25.5	23.32	24.5

	1RB Low (0)	1753.5	25.5	25.14	25.5	24.43	24.5
		1732.5	25.5	24.31	25.5	23.66	24.5
		1711.5	25.5	23.60	25.5	22.82	24.5
	8RB High (7)	1753.5	25.5	23.40	24.5	22.45	23.5
		1732.5	25.5	23.15	24.5	22.24	23.5
		1711.5	25.5	23.20	24.5	22.29	23.5
	8RB Middle (4)	1753.5	25.5	23.46	24.5	22.42	23.5
		1732.5	25.5	23.16	24.5	22.39	23.5
		1711.5	25.5	23.25	24.5	22.37	23.5
	8RB Low (0)	1753.5	25.5	23.39	24.5	22.50	23.5
		1732.5	25.5	23.24	24.5	22.30	23.5
		1711.5	25.5	23.25	24.5	22.36	23.5
	15RB (0)	1753.5	25.5	23.34	24.5	22.37	23.5
		1732.5	25.5	23.17	24.5	22.25	23.5
		1711.5	25.5	23.24	24.5	22.29	23.5
5 MHz	1RB High (24)	1752.5	25.5	24.35	25.5	23.63	24.5
		1732.5	25.5	24.08	25.5	23.58	24.5
		1712.5	25.5	24.59	25.5	23.55	24.5
	1RB Middle (12)	1752.5	25.5	24.44	25.5	23.87	24.5
		1732.5	25.5	24.28	25.5	23.64	24.5
		1712.5	25.5	24.34	25.5	23.63	24.5
	1RB Low (0)	1752.5	25.5	24.38	25.5	23.77	24.5
		1732.5	25.5	24.29	25.5	23.64	24.5
		1712.5	25.5	24.56	25.5	23.68	24.5
	12RB High (13)	1752.5	25.5	23.33	24.5	22.48	23.5
		1732.5	25.5	23.18	24.5	22.36	23.5
		1712.5	25.5	23.23	24.5	22.37	23.5
	12RB Middle (6)	1752.5	25.5	23.77	24.5	23.02	23.5
		1732.5	25.5	23.15	24.5	22.44	23.5
		1712.5	25.5	22.78	24.5	22.00	23.5
	12RB Low (0)	1752.5	25.5	23.35	24.5	22.55	23.5
		1732.5	25.5	23.24	24.5	22.40	23.5
		1712.5	25.5	23.33	24.5	22.39	23.5
	25RB (0)	1752.5	25.5	23.38	24.5	22.42	23.5
		1732.5	25.5	23.18	24.5	22.28	23.5
		1712.5	25.5	23.27	24.5	22.36	23.5
10 MHz	1RB High (49)	1750	25.5	24.35	25.5	23.49	24.5
		1732.5	25.5	24.26	25.5	23.46	24.5
		1715	25.5	24.34	25.5	23.48	24.5
	1RB Middle (24)	1750	25.5	24.48	25.5	23.62	24.5
		1732.5	25.5	24.24	25.5	23.37	24.5
		1715	25.5	24.20	25.5	23.32	24.5

	1RB Low (0)	1750	25.5	24.66	25.5	23.91	24.5
		1732.5	25.5	24.43	25.5	23.61	24.5
		1715	25.5	24.37	25.5	23.72	24.5
	25RB High (25)	1750	25.5	23.36	24.5	22.35	23.5
		1732.5	25.5	23.29	24.5	22.33	23.5
		1715	25.5	23.32	24.5	22.33	23.5
	25RB Middle (12)	1750	25.5	23.52	24.5	22.53	23.5
		1732.5	25.5	23.28	24.5	22.30	23.5
		1715	25.5	23.34	24.5	22.38	23.5
	25RB Low (0)	1750	25.5	23.59	24.5	22.60	23.5
		1732.5	25.5	23.33	24.5	22.39	23.5
		1715	25.5	23.45	24.5	22.44	23.5
	50RB (0)	1750	25.5	23.54	24.5	22.52	23.5
		1732.5	25.5	23.30	24.5	22.32	23.5
		1715	25.5	23.32	24.5	22.43	23.5
15 MHz	1RB High (74)	1747.5	25.5	24.59	25.5	23.78	24.5
		1732.5	25.5	24.81	25.5	24.07	24.5
		1717.5	25.5	24.37	25.5	23.72	24.5
	1RB Middle (37)	1747.5	25.5	24.59	25.5	23.50	24.5
		1732.5	25.5	24.91	25.5	23.63	24.5
		1717.5	25.5	24.34	25.5	23.39	24.5
	1RB Low (0)	1747.5	25.5	25.24	25.5	24.27	24.5
		1732.5	25.5	25.08	25.5	24.22	24.5
		1717.5	25.5	24.95	25.5	24.04	24.5
	36RB High (38)	1747.5	25.5	23.63	24.5	22.61	23.5
		1732.5	25.5	23.60	24.5	22.65	23.5
		1717.5	25.5	23.48	24.5	22.42	23.5
	36RB Middle (19)	1747.5	25.5	24.08	24.5	23.20	23.5
		1732.5	25.5	23.45	24.5	22.65	23.5
		1717.5	25.5	23.40	24.5	22.52	23.5
	36RB Low (0)	1747.5	25.5	23.69	24.5	22.77	23.5
		1732.5	25.5	23.79	24.5	22.83	23.5
		1717.5	25.5	23.52	24.5	22.64	23.5
	75RB (0)	1747.5	25.5	23.63	24.5	22.62	23.5
		1732.5	25.5	23.63	24.5	22.73	23.5
		1717.5	25.5	23.42	24.5	22.50	23.5
20 MHz	1RB High (99)	1745	25.5	24.84	25.5	24.03	24.5
		1732.5	25.5	24.95	25.5	24.13	24.5
		1720	25.5	24.62	25.5	23.86	24.5
	1RB Middle (50)	1745	25.5	24.35	25.5	23.66	24.5
		1732.5	25.5	24.50	25.5	23.66	24.5
		1720	25.5	24.26	25.5	23.50	24.5

	1RB Low (0)	1745	25.5	25.19	25.5	24.47	24.5
		1732.5	25.5	25.22	25.5	24.50	24.5
		1720	25.5	25.04	25.5	24.32	24.5
	50RB High (50)	1745	25.5	23.71	24.5	22.68	23.5
		1732.5	25.5	23.63	24.5	22.60	23.5
		1720	25.5	23.48	24.5	22.45	23.5
	50RB Middle (25)	1745	25.5	23.50	24.5	22.60	23.5
		1732.5	25.5	23.55	24.5	22.55	23.5
		1720	25.5	23.47	24.5	22.42	23.5
	50RB Low (0)	1745	25.5	23.76	24.5	22.76	23.5
		1732.5	25.5	23.84	24.5	22.86	23.5
		1720	25.5	23.68	24.5	22.69	23.5
	100RB (0)	1745	25.5	23.82	24.5	22.70	23.5
		1732.5	25.5	23.72	24.5	22.72	23.5
		1720	25.5	23.57	24.5	22.62	23.5
Band 12							
Bandwidth (MHz)	RB allocation	Frequency (MHz)	Max. Target Power (dBm)	QPSK		16QAM	
	RB offset (Start RB)			Actual output power (dBm)	Tune up	Actual output power (dBm)	Tune up
1.4MHz	1RB-High (5)	715.3	25.5	24.04	25.5	23.31	24.5
		707.5	25.5	24.00	25.5	22.92	24.5
		699.7	25.5	23.69	25.5	22.83	24.5
	1RB-Middle (3)	715.3	25.5	23.72	25.5	22.96	24.5
		707.5	25.5	23.81	25.5	23.08	24.5
		699.7	25.5	23.92	25.5	22.88	24.5
	1RB-Low (0)	715.3	25.5	23.59	25.5	22.92	24.5
		707.5	25.5	24.04	25.5	23.05	24.5
		699.7	25.5	23.87	25.5	22.79	24.5
	3RB-High (3)	715.3	25.5	23.86	24.5	23.14	23.5
		707.5	25.5	23.83	24.5	23.09	23.5
		699.7	25.5	23.84	24.5	23.06	23.5
	3RB-Middle (1)	715.3	25.5	24.23	24.5	23.14	23.5
		707.5	25.5	23.53	24.5	22.78	23.5
		699.7	25.5	24.18	24.5	23.52	23.5
	3RB-Low (0)	715.3	25.5	23.76	24.5	23.09	23.5
		707.5	25.5	24.06	24.5	22.99	23.5
		699.7	25.5	23.88	24.5	22.98	23.5
	6RB (0)	715.3	25.5	22.77	24.5	21.84	23.5
		707.5	25.5	22.86	24.5	21.85	23.5
		699.7	25.5	22.74	24.5	21.72	23.5

3MHz	1RB-High (14)	714.5	25.5	24.86	25.5	24.15	24.5
		707.5	25.5	25.30	25.5	23.66	24.5
		700.5	25.5	24.94	25.5	23.28	24.5
	1RB-Middle (7)	714.5	25.5	24.17	25.5	23.55	24.5
		707.5	25.5	24.69	25.5	24.00	24.5
		700.5	25.5	23.87	25.5	23.07	24.5
	1RB-Low (0)	714.5	25.5	24.04	25.5	23.43	24.5
		707.5	25.5	23.57	25.5	22.87	24.5
		700.5	25.5	24.72	25.5	24.07	24.5
	8RB-High (7)	714.5	25.5	22.80	24.5	22.06	23.5
		707.5	25.5	23.08	24.5	22.03	23.5
		700.5	25.5	22.82	24.5	22.00	23.5
	8RB-Middle (4)	714.5	25.5	22.87	24.5	22.05	23.5
		707.5	25.5	22.80	24.5	21.98	23.5
		700.5	25.5	22.91	24.5	22.00	23.5
	8RB-Low (0)	714.5	25.5	22.88	24.5	22.19	23.5
		707.5	25.5	22.90	24.5	22.10	23.5
		700.5	25.5	22.82	24.5	21.97	23.5
	15RB (0)	714.5	25.5	22.82	24.5	22.00	23.5
		707.5	25.5	22.99	24.5	22.04	23.5
		700.5	25.5	22.83	24.5	21.91	23.5
5MHz	1RB-High (24)	713.5	25.5	24.09	25.5	23.49	24.5
		707.5	25.5	24.81	25.5	23.34	24.5
		701.5	25.5	24.12	25.5	22.88	24.5
	1RB-Middle (12)	713.5	25.5	24.03	25.5	23.20	24.5
		707.5	25.5	24.02	25.5	23.33	24.5
		701.5	25.5	23.92	25.5	23.36	24.5
	1RB-Low (0)	713.5	25.5	24.67	25.5	23.43	24.5
		707.5	25.5	23.82	25.5	23.23	24.5
		701.5	25.5	24.68	25.5	23.10	24.5
	12RB-High (13)	713.5	25.5	22.87	24.5	22.10	23.5
		707.5	25.5	22.90	24.5	22.13	23.5
		701.5	25.5	22.86	24.5	22.10	23.5
	12RB-Middle (6)	713.5	25.5	23.19	24.5	22.54	23.5
		707.5	25.5	23.23	24.5	22.45	23.5
		701.5	25.5	23.19	24.5	22.18	23.5
	12RB-Low (0)	713.5	25.5	22.86	24.5	22.19	23.5
		707.5	25.5	23.02	24.5	22.05	23.5
		701.5	25.5	22.75	24.5	21.98	23.5
	25RB (0)	713.5	25.5	22.85	24.5	22.04	23.5
		707.5	25.5	23.05	24.5	22.04	23.5
		701.5	25.5	22.96	24.5	21.94	23.5

10MHz	1RB-High (49)	711	25.5	24.06	25.5	23.37	24.5
		707.5	25.5	23.85	25.5	23.22	24.5
		704	25.5	24.45	25.5	23.22	24.5
	1RB-Middle (24)	711	25.5	24.17	25.5	23.25	24.5
		707.5	25.5	24.21	25.5	23.22	24.5
		704	25.5	23.83	25.5	22.98	24.5
	1RB-Low (0)	711	25.5	24.92	25.5	23.30	24.5
		707.5	25.5	24.88	25.5	22.98	24.5
		704	25.5	25.46	25.5	22.97	24.5
	25RB-High (25)	711	25.5	23.07	24.5	22.03	23.5
		707.5	25.5	23.21	24.5	22.08	23.5
		704	25.5	23.04	24.5	22.04	23.5
	25RB-Middle (12)	711	25.5	23.07	24.5	21.99	23.5
		707.5	25.5	23.11	24.5	22.10	23.5
		704	25.5	22.96	24.5	21.96	23.5
	25RB-Low (0)	711	25.5	23.19	24.5	22.20	23.5
		707.5	25.5	22.96	24.5	21.76	23.5
		704	25.5	23.11	24.5	21.76	23.5
	50RB (0)	711	25.5	23.26	24.5	22.07	23.5
		707.5	25.5	23.02	24.5	22.09	23.5
		704	25.5	22.87	24.5	21.99	23.5

Low Power

Table 11.3-2: 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)	Tune up	Actual output power (dBm)	Tune up
1.4 MHz	1RB High (5)	1909.3	21.5	20.04	21.5	19.21	20.5
		1880	21.5	19.81	21.5	19.00	20.5
		1850.7	21.5	20.22	21.5	19.38	20.5
	1RB Middle (3)	1909.3	21.5	20.04	21.5	19.24	20.5
		1880	21.5	19.94	21.5	19.17	20.5
		1850.7	21.5	20.26	21.5	19.40	20.5
	1RB Low (0)	1909.3	21.5	19.71	21.5	18.87	20.5
		1880	21.5	19.91	21.5	19.10	20.5
		1850.7	21.5	20.21	21.5	19.26	20.5
	3RB High (3)	1909.3	21.5	20.11	21.5	19.22	20.5
		1880	21.5	20.01	21.5	19.16	20.5
		1850.7	21.5	20.16	21.5	19.34	20.5

	3RB Middle (1)	1909.3	21.5	20.03	21.5	19.20	20.5
		1880	21.5	20.04	21.5	19.23	20.5
		1850.7	21.5	20.38	21.5	19.52	20.5
	3RB Low (0)	1909.3	21.5	20.16	21.5	19.27	20.5
		1880	21.5	20.02	21.5	19.22	20.5
		1850.7	21.5	20.24	21.5	19.43	20.5
	6RB (0)	1909.3	21.5	19.03	20.5	18.04	19.5
		1880	21.5	19.00	20.5	17.96	19.5
		1850.7	21.5	19.28	20.5	18.18	19.5
3 MHz	1RB High (14)	1908.5	21.5	20.73	21.5	19.90	20.5
		1880	21.5	19.85	21.5	19.02	20.5
		1851.5	21.5	20.25	21.5	19.44	20.5
	1RB Middle (7)	1908.5	21.5	20.33	21.5	19.52	20.5
		1880	21.5	20.18	21.5	19.45	20.5
		1851.5	21.5	20.23	21.5	19.44	20.5
	1RB Low (0)	1908.5	21.5	19.85	21.5	19.03	20.5
		1880	21.5	20.43	21.5	19.61	20.5
		1851.5	21.5	20.20	21.5	19.41	20.5
	8RB High (7)	1908.5	21.5	19.07	20.5	18.18	19.5
		1880	21.5	19.07	20.5	18.15	19.5
		1851.5	21.5	19.46	20.5	18.53	19.5
	8RB Middle (4)	1908.5	21.5	19.00	20.5	18.09	19.5
		1880	21.5	19.14	20.5	18.19	19.5
		1851.5	21.5	19.49	20.5	18.61	19.5
	8RB Low (0)	1908.5	21.5	19.11	20.5	18.20	19.5
		1880	21.5	19.14	20.5	18.23	19.5
		1851.5	21.5	19.51	20.5	18.58	19.5
	15RB (0)	1908.5	21.5	19.10	20.5	18.23	19.5
		1880	21.5	19.06	20.5	18.15	19.5
		1851.5	21.5	19.46	20.5	18.53	19.5
5 MHz	1RB High (24)	1907.5	21.5	20.10	21.5	19.36	20.5
		1880	21.5	20.09	21.5	19.41	20.5
		1852.5	21.5	20.27	21.5	19.68	20.5
	1RB Middle (12)	1907.5	21.5	19.54	21.5	18.86	20.5
		1880	21.5	20.18	21.5	19.51	20.5
		1852.5	21.5	20.49	21.5	19.80	20.5
	1RB Low (0)	1907.5	21.5	20.25	21.5	19.50	20.5
		1880	21.5	20.21	21.5	19.51	20.5
		1852.5	21.5	20.62	21.5	19.89	20.5
	12RB High (13)	1907.5	21.5	19.12	20.5	18.25	19.5
		1880	21.5	19.05	20.5	18.22	19.5
		1852.5	21.5	19.43	20.5	18.57	19.5

	12RB Middle (6)	1907.5	21.5	18.87	20.5	18.02	19.5
		1880	21.5	19.15	20.5	18.28	19.5
		1852.5	21.5	19.51	20.5	18.65	19.5
	12RB Low (0)	1907.5	21.5	19.25	20.5	18.36	19.5
		1880	21.5	19.16	20.5	18.34	19.5
		1852.5	21.5	19.51	20.5	18.65	19.5
	25RB (0)	1907.5	21.5	19.15	20.5	18.23	19.5
		1880	21.5	19.10	20.5	18.17	19.5
		1852.5	21.5	19.48	20.5	18.55	19.5
10 MHz	1RB High (49)	1905	21.5	20.13	21.5	19.30	20.5
		1880	21.5	20.14	21.5	19.30	20.5
		1855	21.5	20.42	21.5	19.59	20.5
	1RB Middle (24)	1905	21.5	20.16	21.5	19.22	20.5
		1880	21.5	20.06	21.5	19.19	20.5
		1855	21.5	20.31	21.5	19.44	20.5
	1RB Low (0)	1905	21.5	20.36	21.5	19.52	20.5
		1880	21.5	20.41	21.5	19.59	20.5
		1855	21.5	20.04	21.5	20.00	20.5
	25RB High (25)	1905	21.5	19.15	20.5	18.24	19.5
		1880	21.5	19.17	20.5	18.15	19.5
		1855	21.5	19.49	20.5	18.50	19.5
	25RB Middle (12)	1905	21.5	19.17	20.5	18.24	19.5
		1880	21.5	19.17	20.5	18.19	19.5
		1855	21.5	19.48	20.5	18.49	19.5
	25RB Low (0)	1905	21.5	19.25	20.5	18.30	19.5
		1880	21.5	19.31	20.5	18.32	19.5
		1855	21.5	19.63	20.5	18.65	19.5
	50RB (0)	1905	21.5	19.24	20.5	18.25	19.5
		1880	21.5	19.22	20.5	18.20	19.5
		1855	21.5	19.48	20.5	18.50	19.5
15 MHz	1RB High (74)	1902.5	21.5	20.21	21.5	19.40	20.5
		1880	21.5	20.08	21.5	19.29	20.5
		1857.5	21.5	20.14	21.5	19.53	20.5
	1RB Middle (37)	1902.5	21.5	20.20	21.5	19.17	20.5
		1880	21.5	20.06	21.5	19.07	20.5
		1857.5	21.5	20.19	21.5	19.35	20.5
	1RB Low (0)	1902.5	21.5	20.71	21.5	19.90	20.5
		1880	21.5	20.56	21.5	19.87	20.5
		1857.5	21.5	20.74	21.5	20.13	20.5
	36RB High (38)	1902.5	21.5	19.21	20.5	18.19	19.5
		1880	21.5	19.10	20.5	18.11	19.5
		1857.5	21.5	19.24	20.5	18.30	19.5
	36RB	1902.5	21.5	19.29	20.5	18.33	19.5

	Middle (19)	1880	21.5	19.18	20.5	18.25	19.5	
		1857.5	21.5	19.07	20.5	18.14	19.5	
		1902.5	21.5	19.43	20.5	18.49	19.5	
	36RB Low (0)	1880	21.5	19.43	20.5	18.42	19.5	
		1857.5	21.5	19.55	20.5	18.56	19.5	
		1902.5	21.5	19.32	20.5	18.32	19.5	
	75RB (0)	1880	21.5	19.21	20.5	18.23	19.5	
		1857.5	21.5	19.39	20.5	18.45	19.5	
		20 MHz	1RB High (99)	1900	21.5	20.43	21.5	19.56
1880	21.5			20.36	21.5	19.56	20.5	
1860	21.5			20.41	21.5	19.63	20.5	
1RB Middle (50)	1900		21.5	20.08	21.5	19.32	20.5	
	1880		21.5	20.04	21.5	19.19	20.5	
	1860		21.5	20.11	21.5	19.36	20.5	
1RB Low (0)	1900		21.5	20.98	21.5	20.21	20.5	
	1880		21.5	20.97	21.5	20.24	20.5	
	1860		21.5	21.09	21.5	20.34	20.5	
50RB High (50)	1900		21.5	19.22	20.5	18.28	19.5	
	1880		21.5	19.22	20.5	18.24	19.5	
	1860		21.5	19.24	20.5	18.29	19.5	
50RB Middle (25)	1900		21.5	19.30	20.5	18.26	19.5	
	1880		21.5	19.19	20.5	18.17	19.5	
	1860		21.5	19.39	20.5	18.38	19.5	
50RB Low (0)	1900		21.5	19.47	20.5	18.45	19.5	
	1880		21.5	19.57	20.5	18.57	19.5	
	1860		21.5	19.63	20.5	18.60	19.5	
100RB (0)	1900		21.5	19.37	20.5	18.41	19.5	
	1880		21.5	19.32	20.5	18.31	19.5	
	1860		21.5	19.53	20.5	18.46	19.5	
Band 4								
Bandwidth (MHz)	RB allocation		Frequency (MHz)	Max. Target Power (dBm)	QPSK		16QAM	
	RB offset (Start RB)				Actual output power (dBm)	Tune up	Actual output power (dBm)	Tune up
1.4 MHz	1RB High (5)		1754.3	22	20.54	22	19.72	21
			1732.5	22	20.66	22	19.87	21
			1710.7	22	20.39	22	19.47	21
	1RB Middle (3)	1754.3	22	20.66	22	19.87	21	
		1732.5	22	20.71	22	19.97	21	
		1710.7	22	20.84	22	19.95	21	
	1RB	1754.3	22	20.60	22	19.80	21	

	Low (0)	1732.5	22	20.61	22	19.80	21
		1710.7	22	20.63	22	19.85	21
	3RB High (3)	1754.3	22	20.64	22	19.82	21
		1732.5	22	20.28	22	19.51	21
		1710.7	22	20.90	22	20.02	21
	3RB Middle (1)	1754.3	22	20.87	22	20.08	21
		1732.5	22	20.73	22	19.91	21
		1710.7	22	20.74	22	19.96	21
	3RB Low (0)	1754.3	22	20.70	22	19.91	21
		1732.5	22	20.63	22	19.90	21
		1710.7	22	20.94	22	20.07	21
	6RB (0)	1754.3	22	19.71	21	18.67	20
		1732.5	22	19.71	21	18.59	20
		1710.7	22	19.90	21	18.77	20
3 MHz	1RB High (14)	1753.5	22	20.72	22	19.91	21
		1732.5	22	20.25	22	19.49	21
		1711.5	22	21.23	22	20.41	21
	1RB Middle (7)	1753.5	22	20.16	22	19.38	21
		1732.5	22	20.27	22	19.55	21
		1711.5	22	20.79	22	20.01	21
	1RB Low (0)	1753.5	22	20.81	22	20.02	21
		1732.5	22	20.37	22	19.63	21
		1711.5	22	20.35	22	19.55	21
	8RB High (7)	1753.5	22	19.77	21	18.82	20
		1732.5	22	19.68	21	18.77	20
		1711.5	22	19.92	21	18.98	20
	8RB Middle (4)	1753.5	22	19.75	21	18.83	20
		1732.5	22	19.68	21	18.82	20
		1711.5	22	19.72	21	18.83	20
	8RB Low (0)	1753.5	22	19.79	21	18.85	20
		1732.5	22	19.78	21	18.85	20
		1711.5	22	19.98	21	19.04	20
	15RB (0)	1753.5	22	19.70	21	18.76	20
		1732.5	22	19.76	21	18.80	20
		1711.5	22	19.95	21	19.02	20
5 MHz	1RB High (24)	1752.5	22	20.16	22	20.02	21
		1732.5	22	20.29	22	20.13	21
		1712.5	22	21.27	22	20.28	21
	1RB Middle (12)	1752.5	22	20.78	22	20.14	21
		1732.5	22	20.92	22	20.20	21
		1712.5	22	21.08	22	20.32	21
	1RB	1752.5	22	21.42	22	20.17	21

	Low (0)	1732.5	22	20.92	22	20.29	21
		1712.5	22	20.13	22	20.43	21
	12RB High (13)	1752.5	22	19.69	21	18.89	2
		1732.5	22	19.72	21	18.89	20
		1712.5	22	19.94	21	19.05	20
	12RB Middle (6)	1752.5	22	19.78	21	18.94	20
		1732.5	22	19.79	21	18.97	20
		1712.5	22	19.62	21	18.79	20
	12RB Low (0)	1752.5	22	19.80	21	19.06	20
		1732.5	22	19.78	21	18.97	20
		1712.5	22	20.03	21	19.10	20
	25RB (0)	1752.5	22	19.78	21	18.83	20
		1732.5	22	19.77	21	18.83	20
		1712.5	22	19.99	21	19.02	20
10 MHz	1RB High (49)	1750	22	20.67	22	19.86	21
		1732.5	22	20.80	22	20.00	21
		1715	22	20.93	22	20.12	21
	1RB Middle (24)	1750	22	20.85	22	19.93	21
		1732.5	22	20.81	22	19.92	21
		1715	22	20.94	22	20.06	21
	1RB Low (0)	1750	22	21.06	22	20.28	21
		1732.5	22	21.07	22	20.18	21
		1715	22	20.25	22	20.41	21
	25RB High (25)	1750	22	19.72	21	18.74	20
		1732.5	22	19.80	21	18.87	20
		1715	22	19.95	21	18.92	20
	25RB Middle (12)	1750	22	19.86	21	18.87	20
		1732.5	22	19.82	21	18.84	20
		1715	22	20.06	21	19.05	20
	25RB Low (0)	1750	22	20.07	21	18.90	20
		1732.5	22	19.91	21	18.94	20
		1715	22	20.12	21	19.17	20
	50RB (0)	1750	22	19.80	21	18.82	20
		1732.5	22	19.86	21	18.85	20
		1715	22	20.01	21	19.10	20
15 MHz	1RB High (74)	1747.5	22	20.81	22	20.05	21
		1732.5	22	20.93	22	20.16	21
		1717.5	22	20.88	22	20.14	21
	1RB Middle (37)	1747.5	22	21.03	22	19.88	21
		1732.5	22	20.97	22	19.89	21
		1717.5	22	20.89	22	19.90	21
	1RB	1747.5	22	21.33	22	20.51	21

	Low (0)	1732.5	22	21.48	22	20.66	21
		1717.5	22	21.40	22	20.81	21
	36RB High (38)	1747.5	22	19.78	21	18.89	20
		1732.5	22	19.86	21	18.89	20
		1717.5	22	19.92	21	18.95	20
	36RB Middle (19)	1747.5	22	20.26	21	19.36	20
		1732.5	22	19.86	21	18.98	20
		1717.5	22	20.05	21	19.14	20
	36RB Low (0)	1747.5	22	20.03	21	19.12	20
		1732.5	22	20.14	21	19.11	20
		1717.5	22	20.22	21	19.31	20
	75RB (0)	1747.5	22	19.96	21	18.99	20
		1732.5	22	19.98	21	18.99	20
		1717.5	22	20.03	21	19.02	20
20 MHz	1RB High (99)	1745	22	21.07	22	20.27	21
		1732.5	22	21.19	22	20.43	21
		1720	22	21.07	22	20.29	21
	1RB Middle (50)	1745	22	20.69	22	19.97	21
		1732.5	22	20.73	22	20.05	21
		1720	22	20.88	22	19.99	21
	1RB Low (0)	1745	22	21.82	22	20.89	21
		1732.5	22	21.87	22	20.95	21
		1720	22	21.89	22	20.96	21
	50RB High (50)	1745	22	19.96	21	18.83	20
		1732.5	22	19.98	21	18.99	20
		1720	22	20.06	21	18.93	20
	50RB Middle (25)	1745	22	19.91	21	19.02	20
		1732.5	22	19.95	21	18.93	20
		1720	22	20.03	21	18.96	20
	50RB Low (0)	1745	22	20.13	21	19.13	20
		1732.5	22	20.27	21	19.25	20
		1720	22	20.30	21	19.40	20
	100RB (0)	1745	22	20.12	21	19.08	20
		1732.5	22	20.13	21	19.05	20
		1720	22	20.14	21	19.14	20

Note: The detail information of CA power is presented in Annex I

11.4 Wi-Fi and BT Measurement result

The output power of BT antenna is as following:

Mode	Conducted Power (dBm)		
	Channel 0 (2402MHz)	Channel 39 (2441MHz)	Channel 78 (2480MHz)
GFSK	8.15	8.58	6.95
Tune up	9	9	8
EDR2M-4_DQPSK	5.39	5.96	4.11
Tune up	7	7	6
EDR3M-8DPSK	5.41	6.09	4.18
Tune up	7	7	6

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

Normal Power

2.4G

802.11b (dBm)

Channel\data rate	1Mbps	2Mbps	5.5Mbps	11Mbps
1	18.47	/	/	/
6	18.55	/	/	/
11	18.60	18.59	18.50	18.38

802.11b (dBm) tune up

Channel\data rate	1Mbps	2Mbps	5.5Mbps	11Mbps
1	19.50	/	/	/
6	19.50	/	/	/
11	19.50	19.40	19.30	19.20

802.11g (dBm)

Channel\data rate	6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
1	18.56	/	/	/	/	/	/	/
6	18.52	/	/	/	/	/	/	/
11	18.59	18.51	18.39	18.38	18.39	18.12	17.91	17.75

802.11g (dBm)tune up

Channel\data rate	6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
1	19.50	/	/	/	/	/	/	/
6	19.50	/	/	/	/	/	/	/
11	19.50	19.40	19.30	19.20	19.10	19.00	18.90	18.80

802.11n (dBm) - HT20 (2.4G)

Channel\data rate	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
1	18.41	/	/	/	/	/	/	/
6	18.39	/	/	/	/	/	/	/
11	18.45	18.14	18.16	18.42	18.15	17.91	17.81	17.68

802.11n (dBm) - HT20 (2.4G) tune up

Channel\data rate	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
1	19.50	/	/	/	/	/	/	/
6	19.50	/	/	/	/	/	/	/
11	19.50	19.40	19.30	19.20	19.10	19.00	18.90	18.80

802.11n(dBm)- HT40 (2.4G)

Channel\data rate	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
3(2422MHz)	18.28	/	/	/	/	/	/	/
6(2437MHz)	18.26	/	/	/	/	/	/	/
9(2452MHz)	18.35	18.05	17.75	17.57	17.19	16.82	16.73	16.54

802.11n(dBm)- HT40 (2.4G)tune up

Channel\data rate	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
3(2422MHz)	19.50	/	/	/	/	/	/	/
6(2437MHz)	19.50	/	/	/	/	/	/	/
9(2452MHz)	19.50	19.20	18.90	18.60	18.30	18.00	17.70	17.40

5G(802.11a)

Channel\data rate	Tune up
36(5180 MHz)	19.38
40(5200 MHz)	19.47
44(5220 MHz)	19.67
48(5240 MHz)	19.90
52(5260 MHz)	19.79
56(5280 MHz)	19.84
60(5300 MHz)	19.95
64(5320 MHz)	19.82
100(5500 MHz)	19.94
104(5520 MHz)	19.91
108(5540 MHz)	19.92
112(5560 MHz)	19.97
116(5580 MHz)	19.98
120(5600 MHz)	19.96
124(5620 MHz)	19.91
128(5640 MHz)	19.64
132(5660 MHz)	19.37
136(5680 MHz)	19.05
140(5700 MHz)	18.84
149(5745 MHz)	19.09
153(5765 MHz)	19.12
157(5785 MHz)	19.23
161(5805 MHz)	19.47
165(5825 MHz)	19.54

Low Power

2.4G

802.11b (dBm)

Channel\data rate	1Mbps	2Mbps	5.5Mbps	11Mbps
1	15.86	/	/	/
6	15.80	/	/	/
11	15.88	15.81	15.73	15.60

802.11b (dBm)tune up

Channel\data rate	1Mbps	2Mbps	5.5Mbps	11Mbps
1	17.00	/	/	/
6	17.00	/	/	/
11	17.00	16.90	16.80	16.70

802.11g (dBm)

Channel\data rate	6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
1	15.88	/	/	/	/	/	/	/
6	15.78	/	/	/	/	/	/	/
11	15.89	15.80	15.67	15.64	15.77	15.42	15.19	15.03

802.11g (dBm)tune up

Channel\data rate	6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
1	17.00	/	/	/	/	/	/	/
6	17.00	/	/	/	/	/	/	/
11	17.00	16.90	16.80	16.70	16.60	16.50	16.40	16.30

802.11n (dBm) - HT20 (2.4G)

Channel\data rate	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
1	15.66	/	/	15.70	/	/	/	/
6	15.54	/	/	15.55	/	/	/	/
11	15.68	15.37	15.39	15.72	15.42	15.15	15.06	14.92

802.11n (dBm) - HT20 (2.4G)tune up

Channel\data rate	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
1	17.00	/	/	16.70	/	/	/	/
6	17.00	/	/	16.70	/	/	/	/
11	17.00	16.90	16.80	16.70	16.60	16.50	16.40	16.30

802.11n(dBm)- HT40 (2.4G)

Channel\data rate	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
3(2422MHz)	15.42	/	/	/	/	/	/	/
6(2437MHz)	15.34	/	/	/	/	/	/	/
9(2452MHz)	15.44	15.12	14.81	14.66	14.26	13.90	13.77	13.60

802.11n(dBm)- HT40 (2.4G)tune up

Channel\data rate	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
3(2422MHz)	17.00	/	/	/	/	/	/	/
6(2437MHz)	17.00	/	/	/	/	/	/	/
9(2452MHz)	17.00	16.70	16.40	16.10	15.80	15.50	15.20	14.90

5G(802.11a)

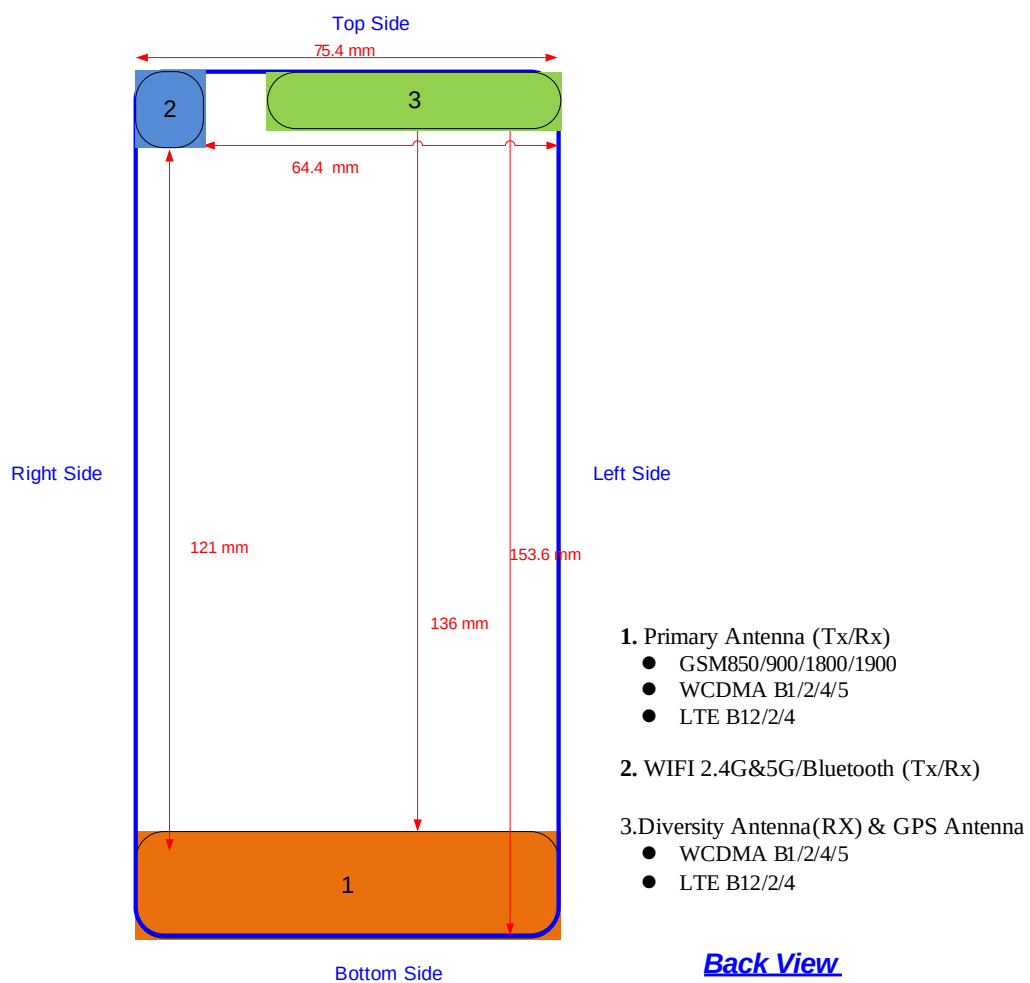
Channel\data rate		Tune up
36(5180 MHz)	17.59	18.4
40(5200 MHz)	17.70	18.6
44(5220 MHz)	17.87	18.8
48(5240 MHz)	18.09	19.0
52(5260 MHz)	17.82	19.0
56(5280 MHz)	17.85	19.0
60(5300 MHz)	18.04	19.0
64(5320 MHz)	17.94	19.0
100(5500 MHz)	15.11	15.5
104(5520 MHz)	15.10	15.5
108(5540 MHz)	15.14	15.5
112(5560 MHz)	15.19	15.5
116(5580 MHz)	15.18	15.5
120(5600 MHz)	15.15	15.5
124(5620 MHz)	15.13	15.4
128(5640 MHz)	14.88	15.3
132(5660 MHz)	14.71	15.2
136(5680 MHz)	14.42	15.1
140(5700 MHz)	14.26	15.0
149(5745 MHz)	12.23	13.6
153(5765 MHz)	12.34	13.7
157(5785 MHz)	12.45	13.8
161(5805 MHz)	12.66	13.9
165(5825 MHz)	12.77	14.0

12 Simultaneous TX SAR Considerations

12.1 Introduction

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

12.2 Transmit Antenna Separation Distances



Picture 12.1 Antenna Locations

12.3 SAR Measurement Positions

According to the KDB941225 D06 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	Yes	Yes	No	Yes	Yes	No

12.4 Standalone SAR Test Exclusion Considerations

Standalone 1-g head or body SAR evaluation by measurement or numerical simulation is not required when the corresponding SAR Exclusion Threshold condition, listed below, is satisfied.

The 1-g SAR test exclusion threshold for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$$\left[\frac{\text{max. power of channel, including tune-up tolerance, mW}}{\text{min. test separation distance, mm}} \right] \cdot \sqrt{f(\text{GHz})} \leq 3.0$$
 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	7.94	Yes
		Body	19.20	9	7.94	Yes
2.4GHz WLAN 802.11 b	2.45	Head	9.58	17	50.12	No
		Body	19.17	19.5	89.13	No
WLAN 5GHz	5.2	Head	6.58	19	79.43	No
		Body	13.16	21	125.89	No
	5.3	Head	6.52	19	79.43	No
		Body	13.03	21	125.89	No
	5.6	Head	6.34	15.5	35.48	No
		Body	12.68	20.5	112.20	No
	5.8	Head	6.23	14	25.12	No
		Body	12.46	20	100.00	No

13 Evaluation of Simultaneous

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

	Position	Main antenna	WiFi	Sum
Highest reported SAR value for Head	Left hand, Touch cheek	0.48	1.06	1.54
Highest reported SAR value for Body	Front	0.95	0.64	1.59
	Rear	0.69	0.90	1.59
	Bottom	1.16	/	1.16

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

	Position	Main antenna	BT	Sum
Maximum reported SAR value for Head	Left hand, Touch cheek	0.48	0.33	0.81
Maximum reported SAR value for Body	Front	0.95	0.17	1.12
	Bottom	1.16	/	1.16

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

Table 13.3: Estimated SAR for Bluetooth

Mode/Band	F (GHz)	Position	Distance (mm)	Upper limit of power *		Estimated _{1g} (W/kg)
				dBm	mW	
Bluetooth	2.441	Head	5	9	7.94	0.33
Bluetooth	2.441	Body	10	9	7.94	0.17

* - 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) · [$\sqrt{f(\text{GHz})}$]/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 < 1.6 W/kg. So the simultaneous transmission SAR with volume scans is not required.

14 SAR Test Result

It is determined by user manual for the distance between the EUT and the phantom bottom.

The distance is 10 mm and just applied to the condition of body worn accessory.

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

The calculated SAR is obtained by the following formula:

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

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

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

Table 14.1: Duty Cycle

Mode	Duty Cycle
Speech for GSM850/1900	1:8.3
GPRS&EGPRS for 850	1:2
GPRS&EGPRS for 1900	1:8
WCDMA<E	1:1

14.1 SAR results for Fast SAR

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

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C					
Frequency		Side	Test Position	Figure No.	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	Left	Touch	/	32.65	33.2	0.027	0.03	0.040	0.05	0.02
836.6	190	Left	Touch	/	32.65	33.2	0.017	0.02	0.026	0.03	0.07
848.8	251	Right	Touch	/	32.61	33.2	0.031	0.04	0.046	0.05	0.04
836.6	190	Right	Touch	/	32.65	33.2	0.039	0.04	0.056	0.06	-0.08
824.2	128	Right	Touch	Fig.1	32.49	33.2	0.056	0.07	0.071	0.08	0.05
836.6	190	Right	Tilt	/	32.65	33.2	0.020	0.02	0.030	0.03	0.09

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

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C					
Frequency		Mode (number of timeslots)	Test Position/ Headset	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	GPRS (4)	Front	/	29.11	29.5	0.478	0.52	0.835	0.91	-0.04
836.6	190	GPRS (4)	Front	Fig.2	29.34	29.5	0.529	0.55	0.913	0.95	-0.03
824.2	128	GPRS (4)	Front	/	29.18	29.5	0.477	0.51	0.770	0.83	0.11
836.6	190	GPRS (4)	Rear	/	29.34	29.5	0.373	0.39	0.621	0.64	-0.18
836.6	190	GPRS (4)	Left	/	29.34	29.5	0.094	0.10	0.152	0.16	0.11
836.6	190	GPRS (4)	Right	/	29.34	29.5	0.162	0.17	0.241	0.25	0.16
836.6	190	GPRS (4)	Bottom	/	29.34	29.5	0.218	0.23	0.429	0.45	0.09
836.6	190	EGPRS (4)	Front	/	29.34	29.5	0.528	0.55	0.850	0.88	-0.08

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

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

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C					
Frequency		Side	Test Position	Figure No.	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	29.6	33.2	0.066	0.15	0.106	0.24	0.14
1880	661	Left	Touch	/	29.44	33.2	0.052	0.12	0.089	0.21	0.12
1850.2	512	Left	Touch	/	29.45	33.2	0.055	0.13	0.093	0.22	0.05
1880	661	Left	Tilt	/	29.44	33.2	0.027	0.06	0.047	0.11	0.17
1880	661	Right	Touch	/	29.44	33.2	0.038	0.09	0.066	0.16	0.07
1880	661	Right	Tilt	/	29.44	33.2	0.036	0.09	0.063	0.15	0.13

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

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C					
Frequency		Mode (number of timeslots)	Test Position/ Headset	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 (1)	Front	/	27.6	27.7	0.102	0.10	0.177	0.18	0.12
1880	661	GPRS (1)	Rear	/	27.6	27.7	0.105	0.11	0.178	0.18	0.01
1880	661	GPRS (1)	Left	/	27.6	27.7	0.028	0.03	0.053	0.05	0.19
1880	661	GPRS (1)	Right	/	27.6	27.7	0.005	0.01	0.009	0.01	0.11
1909.8	810	GPRS (1)	Bottom	/	27.51	27.7	0.183	0.19	0.346	0.36	0.00
1880	661	GPRS (1)	Bottom	/	27.6	27.7	0.178	0.18	0.336	0.34	-0.06
1850.2	512	GPRS (1)	Bottom	Fig.4	27.31	27.7	0.211	0.23	0.377	0.41	-0.01
1850.2	512	EGPRS (1)	Bottom	/	27.31	27.7	0.199	0.22	0.355	0.39	-0.07

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

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

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C					
Frequency		Side	Test Position	Figure No.	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.										
836.4	4182	Left	Touch	/	23.76	24	0.021	0.02	0.032	0.03	0.06
836.4	4182	Left	Tilt	/	23.76	24	0.015	0.02	0.020	0.02	0.07
846.6	4233	Right	Touch	/	23.82	24	0.025	0.03	0.027	0.03	-0.05
836.4	4182	Right	Touch	/	23.76	24	0.030	0.03	0.033	0.03	0.07
826.4	4132	Right	Touch	Fig.5	23.86	24	0.034	0.04	0.043	0.04	0.05
836.4	4182	Right	Tilt	/	23.76	24	0.021	0.02	0.022	0.02	0.03

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

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C				
Frequency		Test Position/ Headset	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	/	23.82	24	0.175	0.18	0.276	0.29	0.01
836.4	4182	Front	Fig.6	23.76	24	0.184	0.19	0.318	0.34	-0.17
826.4	4132	Front	/	23.86	24	0.137	0.14	0.211	0.22	0.07
836.4	4182	Rear	/	23.76	24	0.103	0.11	0.156	0.16	-0.06
836.4	4182	Left	/	23.76	24	0.032	0.03	0.051	0.05	0.10
836.4	4182	Right	/	23.76	24	0.043	0.05	0.065	0.07	0.00
836.4	4182	Bottom	/	23.76	24	0.071	0.08	0.154	0.16	0.17

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

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

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C					
Frequency		Side	Test Position	Figure No.	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	1738	Left	Touch	/	24.04	24.5	0.140	0.16	0.240	0.27	0.04
1732.4	1637	Left	Touch	Fig.7	24.14	24.5	0.213	0.23	0.337	0.37	0.14
1712.4	1537	Left	Touch	/	24.33	24.5	0.136	0.14	0.230	0.24	0.13
1732.4	1637	Left	Tilt	/	24.14	24.5	0.058	0.06	0.099	0.11	0.11
1732.4	1637	Right	Touch	/	24.14	24.5	0.112	0.12	0.186	0.20	0.12
1732.4	1637	Right	Tilt	/	24.14	24.5	0.058	0.06	0.098	0.11	0.13

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

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C				
Frequency		Test Position/ Headset	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	1637	Front	/	20.8	21.3	0.233	0.26	0.394	0.44	-0.11
1732.5	1637	Rear	/	20.8	21.3	0.286	0.32	0.515	0.58	-0.08
1732.5	1637	Left	/	20.8	21.3	0.068	0.08	0.121	0.14	0.06
1732.5	1637	Right	/	20.8	21.3	0.035	0.04	0.059	0.07	0.05
1752.6	1738	Bottom	Fig.8	21.11	21.3	0.508	0.53	0.892	0.93	-0.02
1732.5	1637	Bottom	/	20.8	21.3	0.455	0.51	0.802	0.90	-0.01
1712.4	1537	Bottom	/	20.62	21.3	0.379	0.44	0.690	0.81	0.05

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

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

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °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	9938	Left	Touch	/	23.86	24.3	0.156	0.17	0.263	0.29	0.12
1880	9800	Left	Touch	Fig.9	23.97	24.3	0.186	0.20	0.300	0.32	-0.04
1852.4	9662	Left	Touch	/	24.18	24.3	0.164	0.17	0.275	0.28	0.14
1880	9800	Left	Tilt	/	23.97	24.3	0.100	0.11	0.179	0.19	-0.16
1880	9800	Right	Touch	/	23.97	24.3	0.137	0.15	0.231	0.25	0.07
1880	9800	Right	Tilt	/	23.97	24.3	0.122	0.13	0.207	0.22	0.11

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

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C				
Frequency		Test Position/ Headset	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	9800	Front	/	20.27	20.5	0.231	0.24	0.409	0.43	-0.03
1880	9800	Rear	/	20.27	20.5	0.232	0.24	0.420	0.44	-0.06
1880	9800	Left	/	20.27	20.5	0.113	0.12	0.210	0.22	-0.13
1880	9800	Right	/	20.27	20.5	0.055	0.06	0.097	0.10	0.10
1907.6	9938	Bottom	Fig.10	20.4	20.5	0.475	0.49	0.863	0.88	-0.01
1880	9800	Bottom	/	20.27	20.5	0.427	0.45	0.805	0.85	0.05
1852.4	9662	Bottom	/	20.29	20.5	0.403	0.42	0.759	0.80	-0.07

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

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

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C						
Frequency		Mode	Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.											
1860	18700	1RB_Low	Left	Touch	Fig.11	24.56	25	0.267	0.30	0.433	0.48	0.07
1860	18700	1RB_Low	Left	Tilt	/	24.56	25	0.084	0.09	0.160	0.18	0.09
1860	18700	1RB_Low	Right	Touch	/	24.56	25	0.132	0.15	0.221	0.24	0.10
1860	18700	1RB_Low	Right	Tilt	/	24.56	25	0.124	0.14	0.223	0.25	0.10
1900	19100	50RB_Low	Left	Touch	/	23.21	24	0.134	0.16	0.233	0.28	0.00
1900	19100	50RB_Low	Left	Tilt	/	23.21	24	0.072	0.09	0.141	0.17	0.05
1900	19100	50RB_Low	Right	Touch	/	23.21	24	0.108	0.13	0.184	0.22	0.14
1900	19100	50RB_Low	Right	Tilt	/	23.21	24	0.099	0.12	0.180	0.22	0.09

Note1: The LTE mode is QPSK_20MHz.

Table 14.1-12: SAR Values (LTE Band2 - Body)

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C					
Frequency		Mode/ Headset	Test Position	Figure No.	Conducte d 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.										
18700	1860	1RB_Low	Front	/	21.09	21.5	0.177	0.19	0.326	0.36	-0.07
18700	1860	1RB_Low	Rear	/	21.09	21.5	0.227	0.25	0.403	0.44	-0.07
18700	1860	1RB_Low	Left	/	21.09	21.5	0.131	0.14	0.116	0.13	0.02
18700	1860	1RB_Low	Right	/	21.09	21.5	0.044	0.05	0.073	0.08	0.03
19100	1900	1RB_Low	Bottom	Fig.12	20.98	21.5	0.578	0.65	1.030	1.16	-0.17
18900	1880	1RB_Low	Bottom	/	20.97	21.5	0.509	0.58	0.985	1.11	0.11
18700	1860	1RB_Low	Bottom	/	21.09	21.5	0.488	0.54	0.942	1.04	0.03
18700	1860	50RB_Low	Front	/	19.63	20.5	0.124	0.15	0.228	0.28	-0.07
18700	1860	50RB_Low	Rear	/	19.63	20.5	0.163	0.20	0.291	0.36	0.02
18700	1860	50RB_Low	Left	/	19.63	20.5	0.063	0.08	0.106	0.13	0.03
18700	1860	50RB_Low	Right	/	19.63	20.5	0.031	0.04	0.052	0.06	0.03
19100	1900	50RB_Low	Bottom	/	19.47	20.5	0.341	0.43	0.655	0.83	0.01
18900	1880	50RB_Low	Bottom	/	19.57	20.5	0.333	0.41	0.666	0.83	0.03
18700	1860	50RB_Low	Bottom	/	19.63	20.5	0.358	0.44	0.695	0.85	0.09
18700	1860	100RB	Bottom	/	19.53	20.5	0.303	0.38	0.584	0.73	-0.07

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

Note2: The LTE mode is QPSK_20MHz.

Table 14.1-13: SAR Values (LTE Band4 - Head)

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C						
Frequency		Mode	Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.											
1732.5	20175	1RB_Low	Left	Touch	Fig.13	25.22	25.5	0.212	0.23	0.336	0.36	0.04
1732.5	20175	1RB_Low	Left	Tilt	/	25.22	25.5	0.129	0.14	0.242	0.26	0.12
1732.5	20175	1RB_Low	Right	Touch	/	25.22	25.5	0.117	0.12	0.194	0.21	0.06
1732.5	20175	1RB_Low	Right	Tilt	/	25.22	25.5	0.095	0.10	0.172	0.18	0.04
1732.5	20175	50RB_Low	Left	Touch	/	23.84	24.5	0.113	0.13	0.192	0.22	0.05
1732.5	20175	50RB_Low	Left	Tilt	/	23.84	24.5	0.090	0.10	0.170	0.20	0.06
1732.5	20175	50RB_Low	Right	Touch	/	23.84	24.5	0.083	0.10	0.138	0.16	0.08
1732.5	20175	50RB_Low	Right	Tilt	/	23.84	24.5	0.066	0.08	0.119	0.14	0.18

Note1: The LTE mode is QPSK_20MHz.

Table 14.1-14: SAR Values (LTE Band4 - Body)

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C					
Frequency		Mode/ Headset	Test Position	Figure No.	Conduct ed 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.										
1720	20050	1RB_Low	Front	/	21.89	22	0.301	0.31	0.535	0.55	-0.16
1720	20050	1RB_Low	Rear	/	21.89	22	0.341	0.35	0.594	0.61	-0.07
1720	20050	1RB_Low	Left	/	21.89	22	0.130	0.13	0.233	0.24	-0.07
1720	20050	1RB_Low	Right	/	21.89	22	0.057	0.06	0.108	0.11	0.02
1745	20300	1RB_Low	Bottom	Fig.14	21.87	22	0.586	0.60	1.040	1.07	0.05
1732.5	20175	1RB_Low	Bottom	/	21.82	22	0.527	0.55	0.968	1.01	0.03
1720	20050	1RB_Low	Bottom	/	21.89	22	0.511	0.52	0.936	0.96	0.03
1720	20050	50RB_Low	Front	/	20.3	21	0.210	0.25	0.375	0.44	-0.09
1720	20050	50RB_Low	Rear	/	20.3	21	0.238	0.28	0.415	0.49	0.04
1720	20050	50RB_Low	Left	/	20.3	21	0.074	0.09	0.137	0.16	-0.10
1720	20050	50RB_Low	Right	/	20.3	21	0.036	0.04	0.062	0.07	0.04
1720	20050	50RB_Low	Bottom	/	20.3	21	0.286	0.34	0.529	0.62	-0.16
1720	20050	100RB	Bottom	/	20.14	21	0.351	0.43	0.644	0.79	0.04

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

Note2: The LTE mode is QPSK_20MHz.

Table 14.1-15: SAR Values (LTE Band12 - Head)

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C						
Frequency		Mode	Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.											
704	23060	1RB_Low	Left	Touch	/	25.46	25.5	0.150	0.15	0.185	0.19	0.01
704	23060	1RB_Low	Left	Tilt	/	25.46	25.5	0.092	0.09	0.106	0.11	-0.05
704	23060	1RB_Low	Right	Touch	/	25.46	25.5	0.160	0.16	0.195	0.20	-0.05
704	23060	1RB_Low	Right	Tilt	/	25.46	25.5	0.080	0.08	0.096	0.10	-0.02
707.5	23095	25RB_High	Left	Touch	/	23.21	24.5	0.126	0.17	0.153	0.21	-0.06
707.5	23095	25RB_High	Left	Tilt	/	23.21	24.5	0.104	0.14	0.120	0.16	0.01
707.5	23095	25RB_High	Right	Touch	Fig.15	23.21	24.5	0.133	0.18	0.162	0.22	0.04
707.5	23095	25RB_High	Right	Tilt	/	23.21	24.5	0.078	0.10	0.093	0.13	0.02

Note1: The LTE mode is QPSK_10MHz.

Table 14.1-16: SAR Values (LTE Band12 - Body)

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C					
Frequency		Mode/ Headset	Test Position	Figure No.	Conducte d 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.										
711	23130	1RB_Low	Front	/	24.92	25.5	0.513	0.59	0.774	0.88	-0.12
707.5	23095	1RB_Low	Front	Fig.16	24.88	25.5	0.484	0.56	0.817	0.94	0.00
704	23060	1RB_Low	Front	/	25.46	25.5	0.504	0.51	0.804	0.81	-0.03
704	23060	1RB_Low	Rear	/	25.46	25.5	0.449	0.45	0.665	0.67	-0.03
704	23060	1RB_Low	Left	/	25.46	25.5	0.069	0.07	0.105	0.11	-0.10
704	23060	1RB_Low	Right	/	25.46	25.5	0.141	0.14	0.204	0.21	-0.15
704	23060	1RB_Low	Bottom	/	25.46	25.5	0.240	0.24	0.413	0.42	0.01
711	23130	25RB_Low	Front	/	23.19	24.5	0.407	0.55	0.598	0.81	0.05
707.5	23095	25RB_High	Front	/	23.21	24.5	0.439	0.59	0.662	0.89	-0.12
704	23060	25RB_Low	Front	/	23.11	24.5	0.404	0.56	0.588	0.81	0.04
707.5	23095	25RB_High	Rear	/	23.21	24.5	0.384	0.52	0.511	0.69	-0.01
707.5	23095	25RB_High	Left	/	23.21	24.5	0.072	0.10	0.111	0.15	-0.01
707.5	23095	25RB_High	Right	/	23.21	24.5	0.133	0.18	0.192	0.26	-0.09
707.5	23095	25RB_High	Bottom	/	23.21	24.5	0.231	0.31	0.400	0.54	0.14
711	23130	50RB	Front	/	23.26	24.5	0.451	0.60	0.671	0.89	0.05

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

Note2: The LTE mode is QPSK_10MHz.

14.2 SAR results for Standard procedure

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

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

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C					
Frequency		Side	Test Position	Figure No.	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.										
824.2	128	Right	Touch	Fig.1	32.49	33.2	0.056	0.07	0.071	0.08	0.05

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

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C					
Frequency		Mode (number of timeslots)	Test Position	Figure No.	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 (4)	Front	Fig.2	29.34	29.5	0.529	0.55	0.913	0.95	-0.03

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

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

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C					
Frequency		Side	Test Position	Figure No.	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	29.6	33.2	0.066	0.15	0.106	0.24	0.14

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

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C					
Frequency		Mode (number of timeslots)	Test Position	Figure No.	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.										
1850.2	512	GPRS (1)	Bottom	Fig.4	27.31	27.7	0.211	0.23	0.377	0.41	-0.01

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

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

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C					
Frequency		Side	Test Position	Figure No.	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	Right	Touch	Fig.5	23.86	24	0.034	0.04	0.043	0.04	0.05

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

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C				
Frequency		Test Position	Figure No.	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.									
836.4	4182	Front	Fig.6	23.76	24	0.184	0.19	0.318	0.34	-0.17

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

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

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C					
Frequency		Side	Test Position	Figure No.	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	1637	Left	Touch	Fig.7	24.14	24.5	0.213	0.23	0.337	0.37	0.14

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

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C				
Frequency		Test Position	Figure No.	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	1738	Bottom	Fig.8	21.11	21.3	0.508	0.53	0.892	0.93	-0.02

Table 14.2-9: SAR Values (WCDMA 1900 MHz Band - Head)

Ambient Temperature: 22.9 °C Liquid Temperature: 22.5 °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	9800	Left	Touch	Fig.9	23.97	24.3	0.186	0.20	0.300	0.32	-0.04

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

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °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.									
1907.6	9938	Bottom	Fig.10	20.4	20.5	0.475	0.49	0.863	0.88	-0.01

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

Table 14.2-11: SAR Values (LTE Band2 - Head)

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C						
Frequency		Mode	Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.											
1860	18700	1RB_Low	Left	Touch	Fig.11	24.56	25	0.267	0.30	0.433	0.48	0.07

Note1: The LTE mode is QPSK_20MHz.

Table 14.2-12: SAR Values (LTE Band2 - Body)

Ambient Temperature: 22.9 °C Liquid Temperature: 22.5 °C											
Frequency		Mode	Test Position	Figure No.	Conducte d 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.										
19100	1900	1RB_Low	Bottom	Fig.12	20.98	21.5	0.578	0.65	1.030	1.16	-0.17

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

Note2: The LTE mode is QPSK_20MHz.

Table 14.2-13: SAR Values (LTE Band4 - Head)

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C						
Frequency		Mode	Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.											
1732.5	20175	1RB_Low	Left	Touch	Fig.13	25.22	25.5	0.212	0.23	0.336	0.36	0.04

Note1: The LTE mode is QPSK_20MHz.

Table 14.2-14: SAR Values (LTE Band4 - Body)

Ambient Temperature: 22.9 °C Liquid Temperature: 22.5 °C											
Frequency		Mode	Test Position	Figure No.	Conduct ed 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.14	21.87	22	0.586	0.60	1.040	1.07	0.05

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

Note2: The LTE mode is QPSK_20MHz.

Table 14.2-15: SAR Values (LTE Band12- Head)

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C						
Frequency		Mode	Side	Test Position	Fig 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.											
707.5	23095	25RB_High	Right	Touch	Fig. 15	23.21	24.5	0.133	0.18	0.162	0.22	0.04

Note1: The LTE mode is QPSK_10MHz.

Table 14.2-16: SAR Values (LTE Band12- Body)

Ambient Temperature: 22.9 °C Liquid Temperature: 22.5 °C											
Frequency		Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
707.5	23095	1RB_Low	Front	Fig.16	24.88	25.5	0.484	0.56	0.817	0.94	0.00

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

Note2: The LTE mode is QPSK_10MHz.

14.3 WLAN Evaluation For 2.4G

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

Head Evaluation

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

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °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	/	15.88	17	0.306	0.40	0.592	0.77	-0.03
2462	11	Left	Tilt	/	15.88	17	0.224	0.29	0.457	0.59	0.11
2462	11	Right	Touch	/	15.88	17	0.224	0.29	0.429	0.56	-0.13
2462	11	Right	Tilt	/	15.88	17	0.154	0.20	0.317	0.41	-0.18

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

Table 14.3-2: SAR Values (WLAN - Head) – 802.11b 1Mbps (Full SAR)

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °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.17	15.88	17	0.295	0.38	0.613	0.79	-0.03
2462	11	Left	Tilt	/	15.88	17	0.215	0.28	0.454	0.59	0.11

Note1: When the reported SAR of the initial test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position using subsequent highest estimated 1-g SAR conditions determined by area scans, on the highest maximum output power channel, until the reported SAR is ≤ 0.8 W/kg.

Note2: For all positions/configurations tested using the initial test position and subsequent test positions, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.

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

Table 14.3-3: SAR Values (WLAN - Head) – 802.11b 1Mbps (Scaled Reported SAR)

Ambient Temperature: 22.9 °C					Liquid Temperature: 22.5 °C		
Frequency		Side	Test Position	Actual duty factor	maximum duty factor	Reported SAR (1g) (W/kg)	Scaled reported SAR (1g) (W/kg)
MHz	Ch.						
2462	11	Left	Touch	99.28%	100%	0.79	0.80
2462	11	Left	Tilt	99.28%	100%	0.59	0.59

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

Body Evaluation

Table 14.3-4: SAR Values (WLAN - Body) – 802.11b 1Mbps (Fast SAR)

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C				
Frequency		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)	
2462	11	Front	/	18.6	19.5	0.123	0.15	0.223	0.27	0.13
2462	11	Rear	/	18.6	19.5	0.102	0.13	0.184	0.23	-0.12
2462	11	Right	/	18.6	19.5	0.035	0.04	0.076	0.09	0.04
2462	11	Top	/	18.6	19.5	0.050	0.06	0.095	0.12	-0.02

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

Table 14.3-5: SAR Values (WLAN - Body) – 802.11b 1Mbps (Full SAR)

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C				
Frequency		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)	
2462	11	Front	Fig.18	18.6	19.5	0.126	0.16	0.223	0.27	0.13

Note1: When the reported SAR of the initial test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position using subsequent highest estimated 1-g SAR conditions determined by area scans, on the highest maximum output power channel, until the reported SAR is $\leq$ 0.8 W/kg.

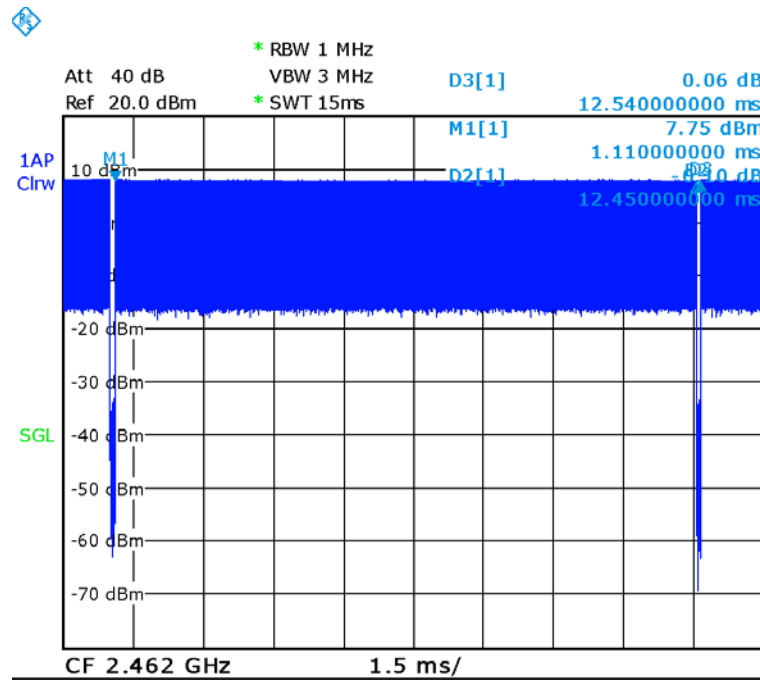
Note2: For all positions/configurations tested using the initial test position and subsequent test positions, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel until the reported SAR is $\leq$ 1.2 W/kg or all required channels are tested.

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

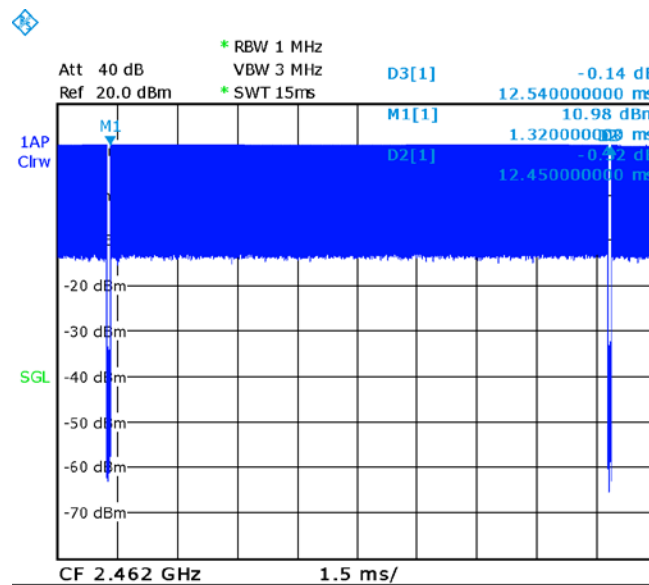
Table 14.3-6: SAR Values (WLAN - Body) – 802.11b 1Mbps (Scaled Reported SAR)

Ambient Temperature: 22.9 °C					Liquid Temperature: 22.5 °C	
Frequency		Test Position	Actual duty factor	maximum duty factor	Reported SAR (1g) (W/kg)	Scaled reported SAR (1g) (W/kg)
MHz	Ch.					
2462	11	Front	99.28%	100%	0.27	0.27

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



Picture 14.1 Duty factor plot 2.4G Head



Picture 14.2 Duty factor plot 2.4G Body

14.4 WLAN Evaluation For 5G

Low Power

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

802.11 mode	a	g	n		ac			
Ch. BW(MHz)	20	20	20	40	20	40	80	160
U-NII-1	X		X	X	X	X	X	
U-NII-2A	X		X	X	X	X	X	
U-NII-2C	X		X	X	X	X	X	
U-NII-3	X		X	X	X	X	X	
§ 15.247 (5.8 GHz)								

X: maximum(conducted) output power(mW), including tolerance, specified for production units

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

802.11 mode	a	g	n		ac			
Ch. BW(MHz)	20	20	20	40	20	40	80	160
U-NII-1	79		79	63	79	63	45	
U-NII-2A	79		79	63	79	63	45	
U-NII-2C	35		35	32	35	32	22	
U-NII-3	25		25	20	25	20	14	
§ 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 63mW for 802.11b and the highest reported SAR for DSSS is 1.39 W/kg for head, 0.29 W/kg for body.

Table 14.4-3: Maximum output power measured of WLAN antenna, for the applicable OFDM configurations according to the default power measurement procedures for selection initial test configurations

802.11 mode	a	n		ac		
BW(MHz)	20	20	40	20	40	80
U-NII-1	36/40/44/48 57/59/61/64	36/40/44/48 Lower power	38/46 Lower power	36/40/44/48 Lower power	38/46 Lower power	42 Lower power
U-NII-2A	52/56/60/64 61/61/64/62	52/56/60/64 Lower power	54/62 Lower power	52/56/60/64 Lower power	54/62 Lower power	58 Lower power
U-NII-2C	100/104/108/112 32/32/33/33 116/132/136/140 33/30/28/27	100/104/108/112 116/132/136/140 Lower power	102/110/134 Lower power	100/104/108/112 116/132/136/140 Lower power	102/110/134 Lower power	106 Lower power
U-NII-3	149/153/157/161 /165 17/17/18/18/19	149/153/157/161 /165 Lower power	151/159 Lower power	149/153/157/161 /165 Lower power	151/159 Lower power	155 Lower power

Channels selected for initial test configuration are highlighted in yellow.

Table 14.4-4: Reported SAR of initial test configuration for head

802.11 mode	a	n		ac		
BW(MHz)	20	20	40	20	40	80
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 1.00	52/56/60/64	54/62	52/56/60/64	54/62	58
U-NII-2C	100/104/108/112 116/132/136/140 0.89	100/104/108/112 116/132/136/140	102/110/118/ 126/134	100/104/108/112 116/132/136/140	102/110/134	106
U-NII-3	149/153/157/161/165 1.06	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 14.4-5: Reported SAR of next highest measured output channel in initial test configuration for head

802.11 mode	a	n		ac		
BW(MHz)	20	20	40	20	40	80
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 1.00/0.93	52/56/60/64	54/62	52/56/60/64	54/62	58
U-NII-2C	100/104/108/112 116/132/136/140 0.89 / 0.78	100/104/108/112 116/132/136/140	102/110/118/ 126/134	100/104/108/112 116/132/136/140	102/110/134	106
U-NII-3	149/153/157/161/165 1.06 / 0.91	149/153/157/161 /165	151/159	149/153/157/161 /165	151/159	155

- The green highlighted channels are next highest measured output channel in the initial test configuration. Highest measured output power channel tested initially are in yellow highlight.
- Initial test configuration SAR for U-NII-2C band is $> 0.8\text{ W/kg}$, SAR is required for next highest output channel in initial test configuration. The next highest output channel SAR is $\leq 1.2\text{ W/kg}$, SAR is not required for subsequent next highest output channel. Similar circumstances apply to U-NII-3 band.
- Adjusted SAR according to the ratio of the specified maximum output power of subsequent test configuration to initial test configuration is $\leq 1.2\text{ W/kg}$. Therefore, subsequent test configuration SAR is not required.