TESTING
NVLAP LAB CODE 600118-0

SAR TEST REPORT

No. I22Z61293-SEM03

For

TCL Communication Ltd.

GSM/UMTS/LTE Mobile phone

Model Name: 5131E

with

Hardware Version: 05

Software Version: v9Q51

FCC ID: 2ACCJH161

Issued Date: 2022-8-11

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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Test Laboratory:

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REPORT HISTORY

Report Number	Revision	Issue Date	Description
I22Z61293-SEM03	Rev.0	2022-8-10	Initial creation of test report
I22Z61293-SEM03	Rev.1	2022-8-11	Update the Bluetooth test data in Appendix I; Update the simultaneous transmission SAR for main antenna and WiFi in right tilt ;

TABLE OF CONTENT

1 Test Laboratory

1.1 Testing Location

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

1.2 Testing Environment

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

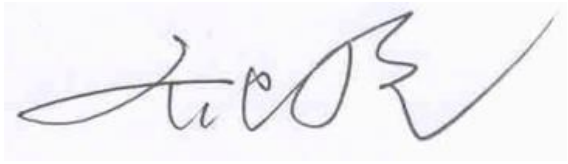
1.3 Project Data

Project Leader:	Qi Dianyuan
Test Engineer:	Yao Juming
Testing Start Date:	January 13, 2022
Testing End Date:	August 10, 2022

1.4 Signature

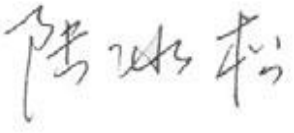
Yao Juming

(Prepared this test report)



Qi Dianyuan

(Reviewed this test report)



Lu Bingsong

Deputy Director of the laboratory

(Approved this test report)

2 Statement of Compliance

This EUT is a variant product and the report of original sample is No.I21Z62810-SEM01. We do full test for newly add bands LTE B5/71 and do spot check on highest value point in all bands of the original report. The results are presented in the annex I.

The maximum results of Specific Absorption Rate (SAR) found during testing for TCL Communication Ltd. GSM/UMTS/LTE Mobile phone 5131E are as follows:

Table 2.1: Highest Reported SAR (1g)

Technology Band	Head	Hotspot	Body-Worn	Equipment Class
GSM850	**0.47**	**0.61**	**0.61**	PCE
GSM1900	**0.25**	**1.13**	**1.05**	
WCDMA1900	**0.30**	**1.02**	**0.62**	
WCDMA 1700	**0.31**	**0.93**	**0.70**	
WCDMA 850	**0.51**	**0.60**	**0.60**	
LTE Band2	**0.25**	**0.70**	**0.68**	
LTE Band5	**0.50**	**0.59**	**0.59**	
LTE Band7	**0.08**	**1.08**	**0.59**	
LTE Band12	**0.20**	**0.25**	**0.25**	
LTE Band13	**0.35**	**0.49**	**0.49**	
LTE Band66	**0.43**	**0.90**	**0.41**	
LTE Band71	**0.21**	**0.38**	**0.38**	
WLAN 2.4GHz	**0.81**	**0.43**	**0.56**	DTS
BT	**0.09**	**0.06**	**0.06**	DSS

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

For body operation, this device has been tested and meets FCC RF exposure guidelines when used with any accessory that contains no metal and which provides a minimum separation distance of 10/15 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**:**

Head: 0.81 W/kg (1g)

Body: 1.13 W/kg (1g)

Remark：

This device supports both LTE B4/12 and LTE B66/17.Since the supported frequency span for LTE B4/17 falls completely within the supports frequency span for LTE B66/12, both LTE bands have the same target power, and both LTE bands share the same transmission path; therefore, SAR was only assessed for LTE B66/12.

Table 2.2: The sum of SAR values for Main antenna + WiFi-2.4G (1g)

	Position	Main antenna	WiFi-2.4G	Sum
Highest SAR value for Head	Right head, Tilt (WCDMA850)	0.33	0.54	**0.87**
Highest SAR value for Body	Rear 10mm (GSM1900)	1.05	0.43	**1.48**

Table 2.3: The sum of SAR values for main antenna and BT (1g)

	Position	Main antenna	BT	Sum
Maximum reported SAR value for Head	Left head, Cheek (WCDMA850)	0.51	<0.01	**0.51**
Maximum reported SAR value for Body	Rear 10mm (GSM1900)	1.05	0.06	**1.11**

Conclusion:

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

According to the above tables, the highest sum of reported SAR values is **1.48 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.
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3.2 Manufacturer Information

Company Name:	TCL Communication Ltd.
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Contact Person:	Peter yang
Contact Email:	peter.yang@tcl.com
Telephone:	+86 755 3664 5759
Fax:	+86 755 3661 2000-81722

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

4.1 About EUT

Description:	GSM/UMTS/LTE Mobile phone
Model name:	5131E
Operating mode(s):	GSM850/900/1800/1900, WCDMA850/900/1700/1900/2100 LTE Band 2/4/5/7/12/13/17/66/71 BT, Wi-Fi2.4G
Tested Tx Frequency:	824 – 849 MHz (GSM 850)
	1850 – 1910 MHz (GSM 1900)
	824 – 849 MHz (WCDMA 850 Band V)
	1710-1755 MHz (WCDMA1700 Band IV)
	1850 – 1910 MHz (WCDMA1900 Band II)
	1850.7 – 1909.3 MHz (LTE Band 2)
	824 – 849 MHz (LTE Band 5)
	2500 – 2570 MHz (LTE Band 7)
	699.7 – 715.3 MHz (LTE Band 12)
	779.5 –784.5 MHz (LTE Band 13)
	1710.7 –1779.3 MHz (LTE Band 66)
	665.5 – 695.5 MHz (LTE Band 71)
	2412 – 2462 MHz (Wi-Fi 2.4G)
	2400 – 2483.5 MHz (Bluetooth)
GPRS/EGPRS Multislot Class:	12
Test device Production information:	Production unit
Device type:	Portable device
Antenna type:	Integrated antenna
Hotspot mode:	Support

4.2 Internal Identification of EUT used during the test

EUT ID*	IMEI	HW Version	SW Version
EUT1	016304000220374	05	v9Q51
EUT2	016304000220382	05	v9Q51
EUT3	016304000220408	05	v9Q51

*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.

4.3 Internal Identification of AE used during the test

AE ID*	Description	Model	SN	Manufacturer
AE1	Battery	CAB2880012C7	/	VEKEN

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

5 TEST METHODOLOGY

5.1 Applicable Limit Regulations

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

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

5.2 Applicable Measurement Standards

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

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

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

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

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

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

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

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

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

6 Specific Absorption Rate (SAR)

6.1 Introduction

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

6.2 SAR Definition

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

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

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

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

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

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

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

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

7 Tissue Simulating Liquids

7.1 Targets for tissue simulating liquid

Table 7.1: Targets for tissue simulating liquid

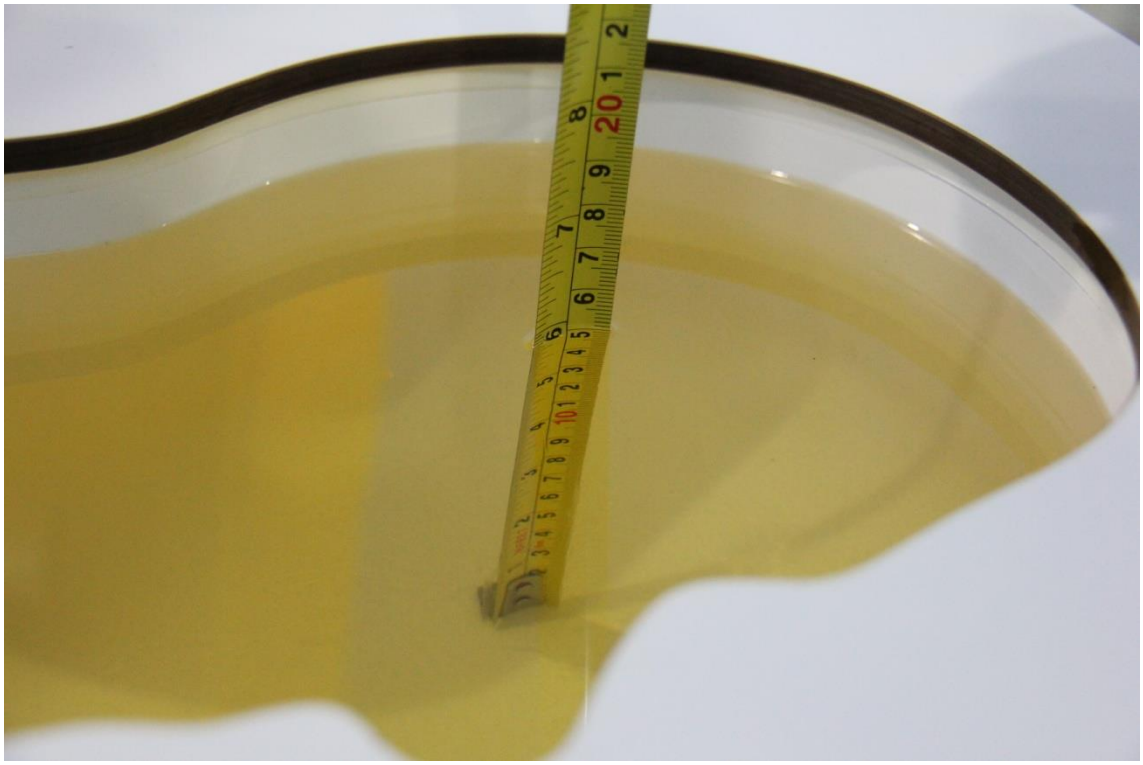
Frequency(MHz)	Liquid Type	Conductivity(σ)	± 5% Range	Permittivity(ε)	± 5% Range
750	Head	0.89	0.85～0.93	41.94	39.8～44.0
835	Head	0.90	0.86～0.95	41.5	39.4～43.6
1800	Head	1.40	1.33～1.47	40.0	38.0～42.0
1900	Head	1.40	1.33～1.47	40.0	38.0～42.0
2450	Head	1.67	1.59～1.75	39.47	37.5～41.4
2600	Head	1.96	1.86～2.06	39.01	37.1～41.0

7.2 Dielectric Performance

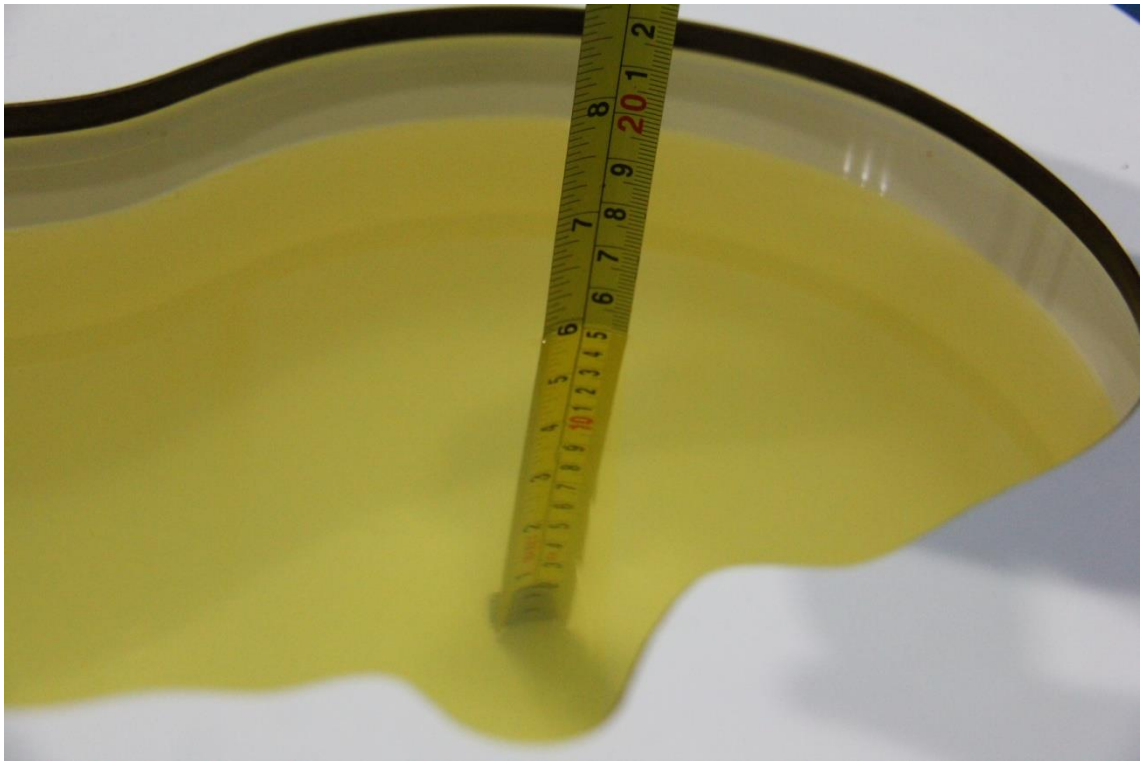
Table 7.2: Dielectric Performance of Tissue Simulating Liquid

Measurement Date (yyyy-mm-dd)	Type	Frequency	Permittivity ε	Drift (%)	Conductivity σ (S/m)	Drift (%)
2022-1-13	Head	750 MHz	45.06	7.44%	0.8348	-6.20%
2022-1-14	Head	835 MHz	44.84	8.05%	0.8703	-3.30%
2022-1-15	Head	1800 MHz	42.83	7.08%	1.411	0.79%
2022-1-16	Head	1900 MHz	42.39	5.98%	1.474	5.29%
2022-1-17	Head	2450 MHz	40.99	4.57%	1.895	5.28%
2022-1-18	Head	2600 MHz	40.77	4.51%	2.029	3.52%

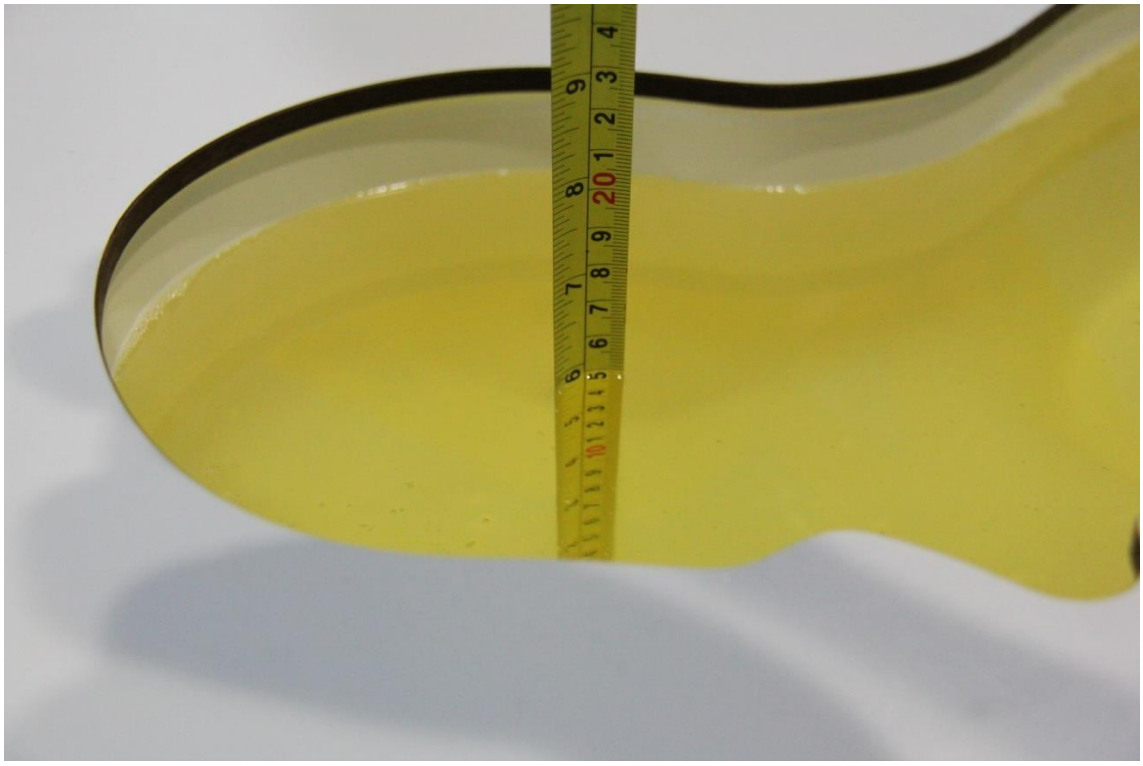
Note: The liquid temperature is 22.0℃



Picture 7-1 Liquid depth in the Head Phantom (835 MHz)

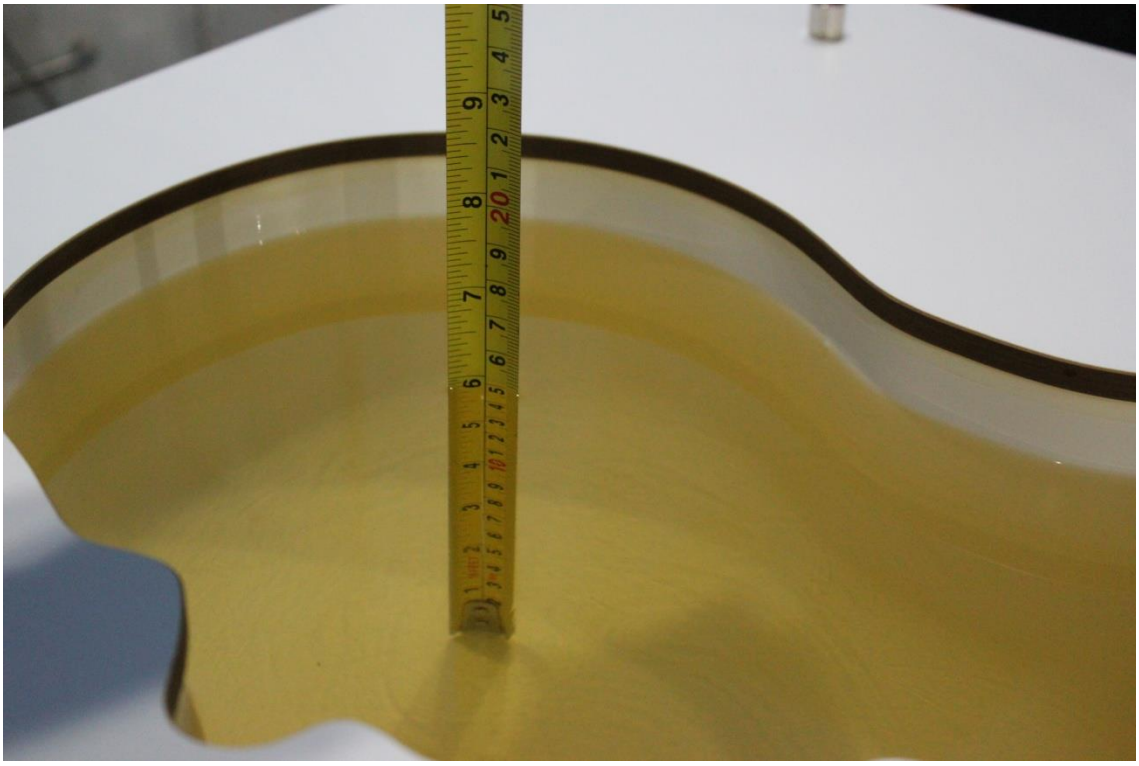


Picture 7-2 Liquid depth in the Head Phantom (1900 MHz)



Picture 7-3 Liquid depth in the Head Phantom (2450MHz)

Picture 7-4 Liquid depth in the Head Phantom (2600 MHz)

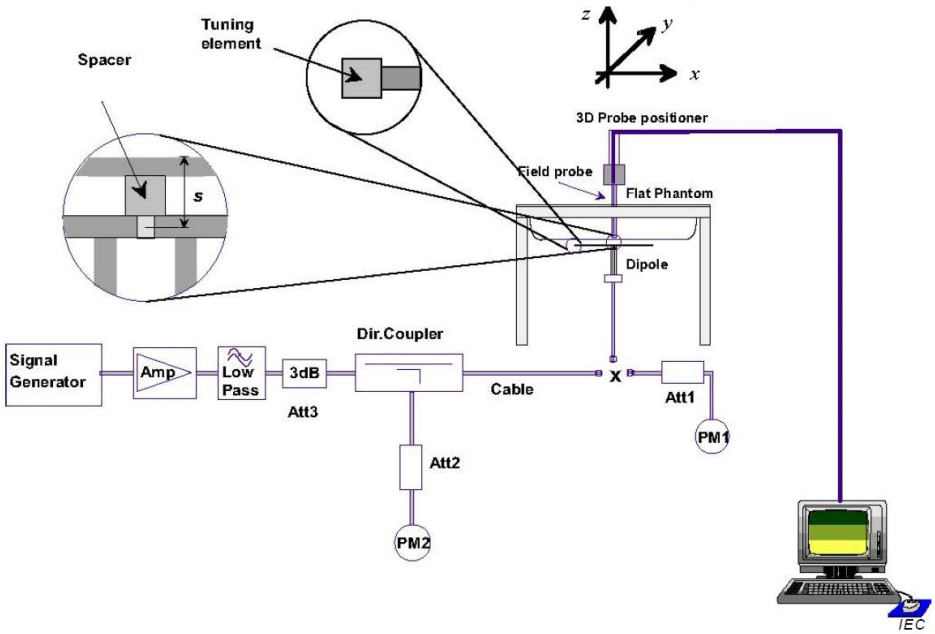


Picture 7-5 Liquid depth in the Head Phantom (750 MHz)

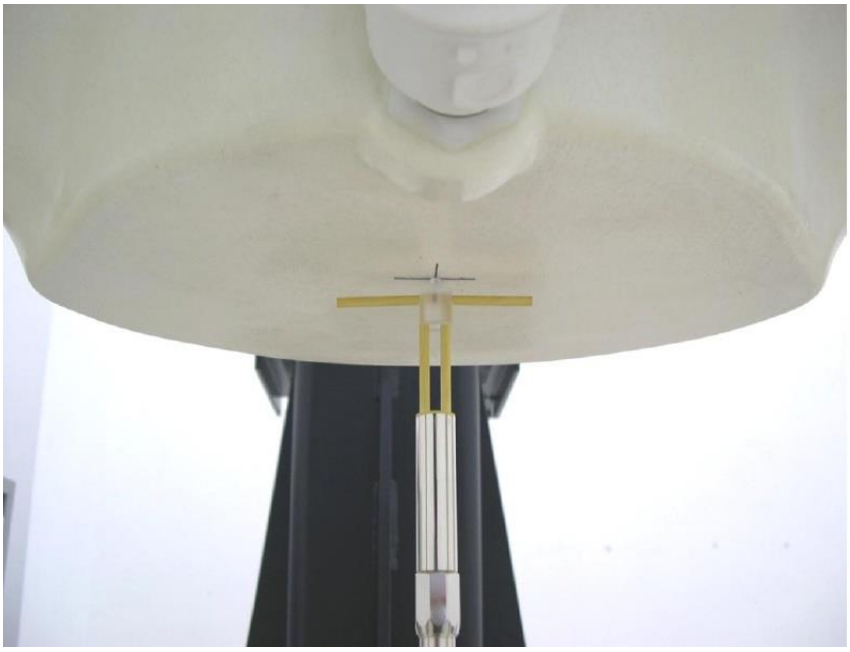
8 System verification

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
2022-1-13	750 MHz	5.65	8.68	5.52	8.44	-2.30%	-2.76%
2022-1-14	835 MHz	6.24	9.63	6.08	9.40	-2.56%	-2.39%
2022-1-15	1800 MHz	19.9	38.3	20.5	39.0	2.91%	1.83%
2022-1-16	1900 MHz	20.9	40.1	20.8	39.4	-0.48%	-1.75%
2022-1-17	2450 MHz	24.9	53.3	25.1	53.8	0.72%	0.94%
2022-1-18	2600 MHz	25.5	57.1	25.3	58.1	-0.71%	1.72%

9 Measurement Procedures

9.1 Tests to be performed

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

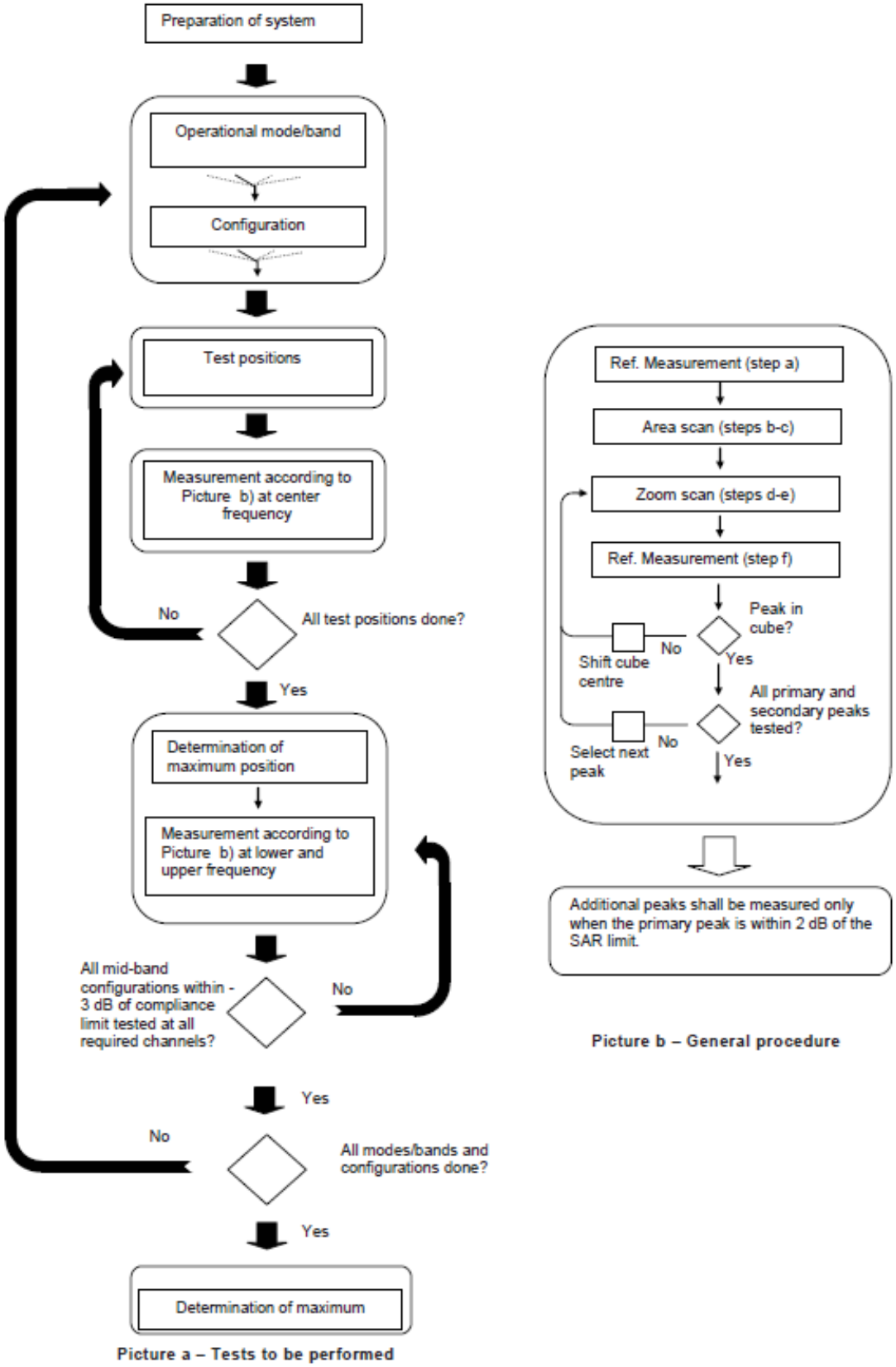
Step 1: The tests described in 9.2 shall be performed at the channel that is closest to the centre of the transmit frequency band (f_c) for:

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

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

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

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



Picture 9.1Block diagram of the tests to be performed

9.2 General Measurement Procedure

The area and zoom scan resolutions specified in the table below must be applied to the SAR measurements and fully documented in SAR reports to qualify for TCB approval. Probe boundary effect error compensation is required for measurements with the probe tip closer than half a probe tip diameter to the phantom surface. Both the probe tip diameter and sensor offset distance must satisfy measurement protocols; to ensure probe boundary effect errors are minimized and the higher fields closest to the phantom surface can be correctly measured and extrapolated to the phantom surface for computing 1-g SAR. Tolerances of the post-processing algorithms must be verified by the test laboratory for the scan resolutions used in the SAR measurements, according to the reference distribution functions specified in IEEE Std 1528-2013. The results should be documented as part of the system validation records and may be requested to support test results when all the measurement parameters in the following table are not satisfied.

<table>
<tr><td colspan="3"></td><td>≤ 3 GHz</td><td>> 3 GHz</td></tr>
<tr><td colspan="3">Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface</td><td>5 ± 1 mm</td><td>½·δ·ln(2) ± 0.5 mm</td></tr>
<tr><td colspan="3">Maximum probe angle from probe axis to phantom surface normal at the measurement location</td><td>30° ± 1°</td><td>20° ± 1°</td></tr>
<tr><td colspan="3" rowspan="2">Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}</td><td>≤ 2 GHz: ≤ 15 mm
2 – 3 GHz: ≤ 12 mm</td><td>3 – 4 GHz: ≤ 12 mm
4 – 6 GHz: ≤ 10 mm</td></tr>
<tr><td colspan="2">When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.</td></tr>
<tr><td colspan="3">Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}</td><td>≤ 2 GHz: ≤ 8 mm
2 – 3 GHz: ≤ 5 mm*</td><td>3 – 4 GHz: ≤ 5 mm*
4 – 6 GHz: ≤ 4 mm*</td></tr>
<tr><td rowspan="3">Maximum zoom scan spatial resolution, normal to phantom surface</td><td colspan="2">uniform grid: $\Delta z_{Zoom}(n)$</td><td>≤ 5 mm</td><td>3 – 4 GHz: ≤ 4 mm
4 – 5 GHz: ≤ 3 mm
5 – 6 GHz: ≤ 2 mm</td></tr>
<tr><td rowspan="2">graded grid</td><td>$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface</td><td>≤ 4 mm</td><td>3 – 4 GHz: ≤ 3 mm
4 – 5 GHz: ≤ 2.5 mm
5 – 6 GHz: ≤ 2 mm</td></tr>
<tr><td>$\Delta z_{Zoom}(n>1)$: between subsequent points</td><td colspan="2">≤ 1.5·$\Delta z_{Zoom}(n-1)$</td></tr>
<tr><td>Minimum zoom scan volume</td><td colspan="2">x, y, z</td><td>≥ 30 mm</td><td>3 – 4 GHz: ≥ 28 mm
4 – 5 GHz: ≥ 25 mm
5 – 6 GHz: ≥ 22 mm</td></tr>
<tr><td colspan="5">Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.
* When zoom scan is required and the <u>reported</u> SAR from the area scan based 1-g SAR estimation procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.</td></tr>
</table>

9.3 WCDMA Measurement Procedures for SAR

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

For Release 5 HSDPA Data Devices:

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

For Release 6 HSPA Data Devices

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

Rel.8 DC-HSDPA (Cat 24)

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

9.4 SAR Measurement for LTE

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

1) QPSK with 1 RB allocation
   Start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power among RB offsets at the upper edge, middle and lower edge of each required test channel. When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required for 1 RB allocation; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel. When the reported SAR of a required test channel is > 1.45 W/kg, SAR is required for all three RB offset configurations for that required test channel.
2) QPSK with 50% RB allocation
   The procedures required for 1 RB allocation in 1) are applied to measure the SAR for QPSK with 50% RB allocation.
3) QPSK with 100% RB allocation
   For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation in 1) and 2) are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.

TDD test:

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

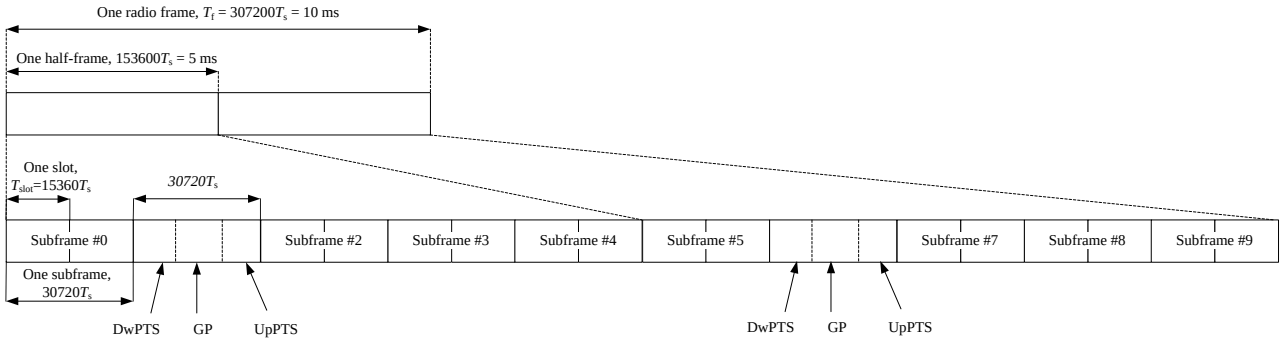


Figure 9.2: Frame structure type 2 (for 5 ms switch-point periodicity)

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

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

Table 9.2: Uplink-downlink configurations

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

Duty factor is calculated by:

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

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

= 0.633

9.5 Bluetooth & Wi-Fi Measurement Procedures for SAR

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

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

9.6 Power Drift

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

10 Area Scan Based 1-g SAR

10.1 Requirement of KDB

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

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

10.2 Fast SAR Algorithms

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

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

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

Both algorithms are implemented in DASY software.

11 Conducted Output Power

Table11: Summary of Receiver detection mechanism

Antenna	Receiver on (head scenario)	Receiver off + Hotspot off (Body scenario)	Receiver off + Hotspot on (Hotspot scenario)
Main Antenna/ Wifi Antenna	Power Level A1	Power Level B1	Power Level C1

For WWAN, When the phone is in body mode (receiver off) and hotspot worked, then power reduction will be implemented immediately at WCDMA B2/B4 and LTEB2/B7/B38/B66. When the phone is in body mode (receiver off) and hotspot not worked, then power reduction will be implemented immediately at LTE B7.

11.1 GSM Measurement result

Table 11.1-1: The conducted power measurement results-GSM850 Power Level A1/B1/C1

GSM 850 Speech (GMSK)	Measured timeslot-averaged output power (dBm)			Tune up	calculation	Source-based time-averaged output power (dBm)		
	251	190	128			251	190	128
1 Txslot	32.23	32.33	32.16	33.30	/	/	/	/
GSM 850 GPRS (GMSK)	Measured timeslot-averaged output power (dBm)				calculation	Source-based time-averaged output power (dBm)		
	251	190	128			251	190	128
1 Txslot	32.22	32.32	32.11	33.30	-9.03	23.19	23.29	23.08
2 Txslots	29.76	29.94	29.71	31.00	-6.02	23.74	23.92	23.69
3 Txslots	27.56	27.83	27.64	29.00	-4.26	23.30	23.57	23.38
4 Txslots	26.28	26.65	26.49	27.50	-3.01	23.27	23.64	23.48
GSM 850 EGPRS (GMSK)	Measured timeslot-averaged output power (dBm)				calculation	Source-based time-averaged output power (dBm)		
	251	190	128			251	190	128
1 Txslot	32.16	32.28	32.09	33.30	-9.03	23.13	23.25	23.06
2 Txslots	29.71	29.91	29.70	31.00	-6.02	23.69	23.89	23.68
3 Txslots	27.53	27.80	27.62	29.00	-4.26	23.27	23.54	23.36
4 Txslots	26.24	26.62	26.48	27.50	-3.01	23.23	23.61	23.47
GSM 850 EGPRS (8PSK)	Measured timeslot-averaged output power (dBm)				calculation	Source-based time-averaged output power (dBm)		
	251	190	128			251	190	128
1 Txslot	25.85	25.86	26.09	26.50	-9.03	16.82	16.83	17.06
2 Txslots	22.88	22.81	23.08	23.50	-6.02	16.86	16.79	17.06
3Txslots	20.86	20.81	21.07	21.50	-4.26	16.60	16.55	16.81
4 Txslots	19.77	19.73	19.98	20.50	-3.01	16.76	16.72	16.97

NOTES:

1) Division Factors

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

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

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

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

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

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

Table 11.1-2: The conducted power measurement results-GSM1900 Power Level A1/B1/C1

PCS1900 Speech (GMSK)	Measured timeslot-averaged output power (dBm)			Tune up	calculation	Source-based time-averaged output power (dBm)		
	810	661	512			810	661	512
1 Txslot	29.59	29.77	29.72	30.30	/	/	/	/
PCS1900 GPRS (GMSK)	Measured timeslot-averaged output power (dBm)				calculation	Source-based time-averaged output power (dBm)		
	810	661	512			810	661	512
1 Txslot	29.63	29.76	29.72	30.30	-9.03	20.60	20.73	20.69
2 Txslots	27.43	27.63	27.61	28.00	-6.02	21.41	21.61	21.59
3 Txslots	25.46	25.59	25.55	26.00	-4.26	21.20	21.33	21.29
4 Txslots	24.38	24.51	24.41	25.00	-3.01	21.37	21.50	21.40
PCS1900 EGPRS (GMSK)	Measured timeslot-averaged output power (dBm)				calculation	Source-based time-averaged output power (dBm)		
	810	661	512			810	661	512
1 Txslot	29.58	29.76	29.71	30.30	-9.03	20.55	20.73	20.68
2 Txslots	27.36	27.61	27.60	28.00	-6.02	21.34	21.59	21.58
3Txslots	25.40	25.56	25.55	26.00	-4.26	21.14	21.30	21.29
4 Txslots	24.34	24.49	24.40	25.00	-3.01	21.33	21.48	21.39
PCS1900 EGPRS (8PSK)	Measured timeslot-averaged output power (dBm)				calculation	Source-based time-averaged output power (dBm)		
	810	661	512			810	661	512
1 Txslot	25.42	25.68	25.71	26.00	-9.03	16.39	16.65	16.68
2 Txslots	22.52	22.67	22.72	24.00	-6.02	16.50	16.65	16.70
3Txslots	20.46	20.68	20.72	21.50	-4.26	16.20	16.42	16.46
4 Txslots	19.44	19.67	19.73	20.50	-3.01	16.43	16.66	16.72

NOTES:

1) Division Factors

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

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

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

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

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

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

11.2 WCDMA Measurement result

Table 11.2-1: The conducted Power for WCDMA Band5-Power Level A1/B1/C1

WCDMA850	Sub test	FDDV result (dBm)			Tune up
		4233/4458	4183/4408	4132/4357	
		(846.6MHz)	(836.6MHz)	(826.4MHz)	
	/	23.51	23.56	23.63	24.50
HSUPA	1	20.51	20.60	20.67	21.50
	2	20.54	20.60	20.53	21.50
	3	20.51	20.60	20.68	21.50
	4	20.03	20.13	20.14	21.00
	5	21.47	21.55	21.46	22.50
DC-HSDPA	1	22.03	22.24	22.08	23.00
	2	22.55	22.56	22.61	23.00
	3	22.53	22.52	22.49	23.00
	4	22.09	22.08	22.09	23.00

Table 11.2-2: The conducted Power for WCDMA Band2-Power Level A1/B1

WCDMA1900	Sub test	FDDII result (dBm)			Tune up
		9538/9938	9400/9800	9262/9662	
		(1907.6MHz)	(1880MHz)	(1852.4MHz)	
	/	23.71	23.79	23.74	24.50
HSUPA	1	20.68	20.79	20.79	21.50
	2	20.71	20.83	20.78	21.50
	3	20.72	20.79	20.69	21.50
	4	20.24	20.38	19.58	21.00
	5	21.66	21.78	21.78	22.50
DC-HSDPA	1	22.23	22.39	22.38	23.00
	2	22.69	22.84	22.78	23.00
	3	21.95	22.02	21.93	23.00
	4	22.29	22.27	22.24	23.00

Table 11.2-3: The conducted Power for WCDMA Band2-Power Level C1

WCDMA1900	Sub test	FDDII result (dBm)			Tune up
		9538/9938	9400/9800	9262/9662	
		(1907.6MHz)	(1880MHz)	(1852.4MHz)	
	/	21.77	21.81	21.78	22.50
HSUPA	1	20.16	20.27	20.24	21.00
	2	20.14	20.25	20.26	21.00
	3	21.14	21.28	21.24	21.50
	4	19.67	19.79	19.73	21.00
	5	21.12	21.25	21.21	21.50
DC-HSDPA	1	21.84	21.77	21.74	22.50
	2	21.21	21.35	21.36	22.50
	3	21.20	21.32	21.34	22.50
	4	20.71	20.83	20.87	21.50

Table 11.2-4: The conducted Power for WCDMA Band4-Power Level A1/B1

WCDMA1700	Sub test	FDDIV result (dBm)			Tune up
		1513/1738	1412/1637	1312/1537	
		(1752.6MHz)	(1732.4MHz)	(1712.4MHz)	
	/	23.85	23.90	23.84	24.50
HSUPA	1	20.90	20.87	20.78	21.50
	2	20.87	20.90	20.79	21.50
	3	20.88	20.88	20.81	21.50
	4	20.43	20.42	20.29	21.00
	5	21.85	21.83	21.76	22.50
DC-HSDPA	1	22.39	22.47	22.26	23.00
	2	22.79	22.89	22.76	23.00
	3	22.72	22.67	22.75	23.00
	4	22.29	22.28	22.25	23.00

Table 11.2-5: The conducted Power for WCDMA Band4-Power Level C1

WCDMA1700	Sub test	FDDIV result (dBm)			Tune up
		1513/1738	1412/1637	1312/1537	
		(1752.6MHz)	(1732.4MHz)	(1712.4MHz)	
	/	21.82	21.89	21.69	22.50
HSUPA	1	20.30	20.31	20.22	21.00
	2	20.32	20.30	20.21	21.00
	3	21.33	21.32	21.23	21.50
	4	19.82	19.80	19.74	21.00
	5	21.32	21.31	21.22	21.50
DC-HSDPA	1	21.91	21.83	21.76	22.50
	2	21.34	21.35	21.37	22.50
	3	21.31	21.32	21.35	22.50
	4	20.79	20.81	20.82	21.50

11.3 LTE Measurement result

Maximum Target Power for Production Unit – Power Level A1/B1/C1

Band	Tune up (dBm)		
	Receiver on (head scenario)	**Receiver off + Hotspot off (Body scenario)**	**Receiver off + Hotspot on (Hotspot scenario)**
	Level A1	Level B1	Level C1
Band2	24.5	24.5	22.5
Band 7	24.5	22	20
Band 12	24.5	24.5	24.5
Band 13	24.5	24.5	24.5
Band 66	24.5	24.5	22.5

LTE B2-Power Level A1/B1				
BANDWIDTH	**Number of RBs**	**Frequency**	**QPSK**	**16QAM**
1.4MHz	1RB-High (5)	1909.3 (19193)	23.61	22.72
		1880 (18900)	23.59	22.99
		1850.7 (18607)	23.79	23.00
	1RB-Middle (3)	1909.3 (19193)	23.70	22.90
		1880 (18900)	23.64	23.08
		1850.7 (18607)	23.92	23.12
	1RB-Low (0)	1909.3 (19193)	23.61	22.78
		1880 (18900)	23.46	22.92
		1850.7 (18607)	23.76	22.98
	3RB-High (3)	1909.3 (19193)	23.70	22.63
		1880 (18900)	23.65	22.68
		1850.7 (18607)	23.87	22.84
	3RB-Middle (1)	1909.3 (19193)	23.74	22.70
		1880 (18900)	23.73	22.79
		1850.7 (18607)	23.94	22.79
	3RB-Low (0)	1909.3 (19193)	23.58	22.59
		1880 (18900)	23.62	22.70
		1850.7 (18607)	23.90	22.73
	6RB (0)	1909.3 (19193)	22.75	21.77
		1880 (18900)	22.78	21.87
		1850.7 (18607)	22.94	21.99
3MHz	1RB-High (14)	1908.5 (19185)	23.67	22.90
		1880 (18900)	23.77	22.97
		1851.5 (18615)	23.83	22.99
	1RB-Middle (7)	1908.5 (19185)	23.88	23.09
		1880 (18900)	23.93	23.15
		1851.5 (18615)	24.10	23.24
	1RB-Low (0)	1908.5 (19185)	23.72	22.87
		1880 (18900)	23.75	23.02
		1851.5 (18615)	23.87	23.01
	8RB-High (7)	1908.5 (19185)	22.72	21.74
		1880 (18900)	22.79	21.88
		1851.5 (18615)	22.89	21.98
	8RB-Middle (4)	1908.5 (19185)	22.75	21.80
		1880 (18900)	22.81	21.90
		1851.5 (18615)	22.96	22.00
	8RB-Low (0)	1908.5 (19185)	22.75	21.80
		1880 (18900)	22.79	21.87
		1851.5 (18615)	22.91	21.92
	15RB (0)	1908.5 (19185)	22.72	21.72
		1880 (18900)	22.78	21.80
		1851.5 (18615)	22.92	21.91

5MHz	1RB-High (24)	1907.5 (19175)	23.55	22.78
		1880 (18900)	23.67	22.91
		1852.5 (18625)	23.73	22.87
	1RB-Middle (12)	1907.5 (19175)	23.96	23.05
		1880 (18900)	23.96	23.20
		1852.5 (18625)	24.04	23.11
	1RB-Low (0)	1907.5 (19175)	23.62	22.85
		1880 (18900)	23.67	23.00
		1852.5 (18625)	23.77	22.94
	12RB-High (13)	1907.5 (19175)	22.67	21.65
		1880 (18900)	22.83	21.81
		1852.5 (18625)	22.91	21.90
	12RB-Middle (6)	1907.5 (19175)	22.82	21.78
		1880 (18900)	22.85	21.85
		1852.5 (18625)	22.98	21.94
	12RB-Low (0)	1907.5 (19175)	22.75	21.76
		1880 (18900)	22.82	21.82
		1852.5 (18625)	22.87	21.82
	25RB (0)	1907.5 (19175)	22.74	21.75
		1880 (18900)	22.81	21.82
		1852.5 (18625)	22.93	21.94
10MHz	1RB-High (49)	1905 (19150)	23.65	22.78
		1880 (18900)	23.75	22.94
		1855 (18650)	23.77	23.02
	1RB-Middle (24)	1905 (19150)	23.84	23.05
		1880 (18900)	23.83	23.18
		1855 (18650)	23.97	23.13
	1RB-Low (0)	1905 (19150)	23.70	23.02
		1880 (18900)	23.74	23.00
		1855 (18650)	23.86	23.11
	25RB-High (25)	1905 (19150)	22.78	21.81
		1880 (18900)	22.86	21.86
		1855 (18650)	22.91	21.88
	25RB-Middle (12)	1905 (19150)	22.82	21.82
		1880 (18900)	22.83	21.83
		1855 (18650)	22.90	21.89
	25RB-Low (0)	1905 (19150)	22.87	21.89
		1880 (18900)	22.91	21.91
		1855 (18650)	22.91	21.87
	50RB (0)	1905 (19150)	22.83	21.85
		1880 (18900)	22.90	21.88
		1855 (18650)	22.93	21.89

15MHz	1RB-High (74)	1902.5 (19125)	23.62	22.71
		1880 (18900)	23.65	22.88
		1857.5 (18675)	23.71	22.91
	1RB-Middle (37)	1902.5 (19125)	23.75	22.94
		1880 (18900)	23.79	22.99
		1857.5 (18675)	23.86	23.08
	1RB-Low (0)	1902.5 (19125)	23.65	22.90
		1880 (18900)	23.73	22.91
		1857.5 (18675)	23.81	23.03
	36RB-High (38)	1902.5 (19125)	22.83	21.79
		1880 (18900)	22.85	21.84
		1857.5 (18675)	22.86	21.82
	36RB-Middle (19)	1902.5 (19125)	22.83	21.77
		1880 (18900)	22.86	21.83
		1857.5 (18675)	22.93	21.86
	36RB-Low (0)	1902.5 (19125)	22.82	21.81
		1880 (18900)	22.91	21.89
		1857.5 (18675)	22.90	21.83
	75RB (0)	1902.5 (19125)	22.83	21.83
		1880 (18900)	22.87	21.86
		1857.5 (18675)	22.87	21.82
20MHz	1RB-High (99)	1900 (19100)	23.53	22.79
		1880 (18900)	23.55	22.74
		1860 (18700)	23.58	22.83
	1RB-Middle (50)	1900 (19100)	23.89	23.14
		1880 (18900)	24.03	23.13
		1860 (18700)	24.01	23.13
	1RB-Low (0)	1900 (19100)	23.55	22.89
		1880 (18900)	23.63	22.82
		1860 (18700)	23.70	22.86
	50RB-High (50)	1900 (19100)	22.86	21.84
		1880 (18900)	22.92	21.97
		1860 (18700)	22.88	21.88
	50RB-Middle (25)	1900 (19100)	22.88	21.92
		1880 (18900)	22.95	21.96
		1860 (18700)	23.01	22.00
	50RB-Low (0)	1900 (19100)	22.88	21.90
		1880 (18900)	23.04	22.05
		1860 (18700)	22.93	21.90
	100RB (0)	1900 (19100)	22.86	21.83
		1880 (18900)	22.97	22.00
		1860 (18700)	22.89	21.86

LTE B2-Power Level C1				
BANDWIDTH	**Number of RBs**	**Frequency**	**QPSK**	**16QAM**
1.4MHz	1RB-High (5)	1909.3 (19193)	21.65	21.89
		1880 (18900)	21.73	21.98
		1850.7 (18607)	21.85	22.05
	1RB-Middle (3)	1909.3 (19193)	21.76	21.93
		1880 (18900)	21.86	22.15
		1850.7 (18607)	21.98	22.25
	1RB-Low (0)	1909.3 (19193)	21.67	21.93
		1880 (18900)	21.70	22.02
		1850.7 (18607)	21.83	22.10
	3RB-High (3)	1909.3 (19193)	21.75	21.71
		1880 (18900)	21.85	21.84
		1850.7 (18607)	21.91	21.86
	3RB-Middle (1)	1909.3 (19193)	21.79	21.76
		1880 (18900)	21.86	21.83
		1850.7 (18607)	21.97	21.94
	3RB-Low (0)	1909.3 (19193)	21.73	21.72
		1880 (18900)	21.81	21.86
		1850.7 (18607)	21.91	21.94
	6RB (0)	1909.3 (19193)	21.78	21.79
		1880 (18900)	21.79	21.92
		1850.7 (18607)	21.93	22.01
3MHz	1RB-High (14)	1908.5 (19185)	21.75	21.90
		1880 (18900)	21.81	22.03
		1851.5 (18615)	21.88	22.17
	1RB-Middle (7)	1908.5 (19185)	21.86	22.18
		1880 (18900)	21.97	22.20
		1851.5 (18615)	22.07	22.30
	1RB-Low (0)	1908.5 (19185)	21.77	21.99
		1880 (18900)	21.82	22.10
		1851.5 (18615)	21.91	22.07
	8RB-High (7)	1908.5 (19185)	21.76	21.79
		1880 (18900)	21.83	21.87
		1851.5 (18615)	21.94	22.00
	8RB-Middle (4)	1908.5 (19185)	21.81	21.84
		1880 (18900)	21.87	21.93
		1851.5 (18615)	21.99	22.01
	8RB-Low (0)	1908.5 (19185)	21.79	21.85
		1880 (18900)	21.83	21.92
		1851.5 (18615)	21.94	21.99
	15RB (0)	1908.5 (19185)	21.79	21.79
		1880 (18900)	21.82	21.85
		1851.5 (18615)	21.95	21.94

5MHz	1RB-High (24)	1907.5 (19175)	21.66	21.79
		1880 (18900)	21.68	21.98
		1852.5 (18625)	21.76	22.00
	1RB-Middle (12)	1907.5 (19175)	21.95	22.10
		1880 (18900)	21.92	22.33
		1852.5 (18625)	22.05	22.24
	1RB-Low (0)	1907.5 (19175)	21.66	21.93
		1880 (18900)	21.74	22.03
		1852.5 (18625)	21.84	22.00
	12RB-High (13)	1907.5 (19175)	21.75	21.70
		1880 (18900)	21.84	21.85
		1852.5 (18625)	21.93	21.94
	12RB-Middle (6)	1907.5 (19175)	21.84	21.82
		1880 (18900)	21.90	21.88
		1852.5 (18625)	22.01	21.97
	12RB-Low (0)	1907.5 (19175)	21.80	21.78
		1880 (18900)	21.86	21.84
		1852.5 (18625)	21.91	21.86
	25RB (0)	1907.5 (19175)	21.79	21.77
		1880 (18900)	21.85	21.84
		1852.5 (18625)	21.93	21.95
10MHz	1RB-High (49)	1905 (19150)	21.73	21.90
		1880 (18900)	21.77	22.14
		1855 (18650)	21.83	22.15
	1RB-Middle (24)	1905 (19150)	21.86	22.16
		1880 (18900)	21.92	22.26
		1855 (18650)	22.00	22.24
	1RB-Low (0)	1905 (19150)	21.70	22.08
		1880 (18900)	21.78	22.07
		1855 (18650)	21.87	22.10
	25RB-High (25)	1905 (19150)	21.80	21.82
		1880 (18900)	21.90	21.90
		1855 (18650)	21.93	21.93
	25RB-Middle (12)	1905 (19150)	21.83	21.83
		1880 (18900)	21.85	21.87
		1855 (18650)	21.95	21.93
	25RB-Low (0)	1905 (19150)	21.87	21.91
		1880 (18900)	21.93	21.94
		1855 (18650)	21.88	21.92
	50RB (0)	1905 (19150)	21.82	21.86
		1880 (18900)	21.93	21.91
		1855 (18650)	21.92	21.95

15MHz	1RB-High (74)	1902.5 (19125)	21.59	21.85
		1880 (18900)	21.67	21.95
		1857.5 (18675)	21.73	21.99
	1RB-Middle (37)	1902.5 (19125)	21.78	21.99
		1880 (18900)	21.81	22.20
		1857.5 (18675)	21.86	22.16
	1RB-Low (0)	1902.5 (19125)	21.69	22.01
		1880 (18900)	21.76	22.03
		1857.5 (18675)	21.86	22.19
	36RB-High (38)	1902.5 (19125)	21.81	21.80
		1880 (18900)	21.85	21.82
		1857.5 (18675)	21.90	21.81
	36RB-Middle (19)	1902.5 (19125)	21.84	21.82
		1880 (18900)	21.88	21.85
		1857.5 (18675)	21.94	21.88
	36RB-Low (0)	1902.5 (19125)	21.83	21.82
		1880 (18900)	21.92	21.87
		1857.5 (18675)	21.94	21.88
	75RB (0)	1902.5 (19125)	21.83	21.84
		1880 (18900)	21.88	21.88
		1857.5 (18675)	21.91	21.86
20MHz	1RB-High (99)	1900 (19100)	21.58	21.77
		1880 (18900)	21.61	21.82
		1860 (18700)	21.66	21.90
	1RB-Middle (50)	1900 (19100)	21.91	22.16
		1880 (18900)	22.08	22.26
		1860 (18700)	22.05	22.29
	1RB-Low (0)	1900 (19100)	21.64	21.92
		1880 (18900)	21.68	21.99
		1860 (18700)	21.76	21.94
	50RB-High (50)	1900 (19100)	21.87	21.89
		1880 (18900)	21.92	21.98
		1860 (18700)	21.91	21.89
	50RB-Middle (25)	1900 (19100)	21.93	21.93
		1880 (18900)	21.98	21.99
		1860 (18700)	22.04	22.01
	50RB-Low (0)	1900 (19100)	21.95	21.94
		1880 (18900)	22.07	22.07
		1860 (18700)	21.97	21.91
	100RB (0)	1900 (19100)	21.90	21.88
		1880 (18900)	22.01	22.01
		1860 (18700)	21.92	21.88

LTE B7-Power Level A1				
BANDWIDTH	**Number of RBs**	**Frequency**	**QPSK**	**16QAM**
5MHz	1RB-High (24)	2567.5 (21425)	23.65	22.99
		2535 (21100)	23.95	23.35
		2502.5 (20775)	24.08	23.42
	1RB-Middle (12)	2567.5 (21425)	23.90	23.27
		2535 (21100)	24.28	23.45
		2502.5 (20775)	24.34	23.45
	1RB-Low (0)	2567.5 (21425)	23.75	23.01
		2535 (21100)	23.99	23.42
		2502.5 (20775)	24.09	23.42
	12RB-High (13)	2567.5 (21425)	22.86	21.89
		2535 (21100)	23.16	22.21
		2502.5 (20775)	23.26	22.33
	12RB-Middle (6)	2567.5 (21425)	22.94	21.99
		2535 (21100)	23.21	22.29
		2502.5 (20775)	23.35	22.41
	12RB-Low (0)	2567.5 (21425)	22.89	21.90
		2535 (21100)	23.17	22.22
		2502.5 (20775)	23.29	22.38
	25RB (0)	2567.5 (21425)	22.89	21.92
		2535 (21100)	23.17	22.24
		2502.5 (20775)	23.31	22.36
10MHz	1RB-High (49)	2565 (21400)	23.76	22.99
		2535 (21100)	24.02	23.31
		2505 (20800)	24.16	23.42
	1RB-Middle (24)	2565 (21400)	23.96	23.26
		2535 (21100)	24.22	23.45
		2505 (20800)	24.26	23.46
	1RB-Low (0)	2565 (21400)	23.92	23.32
		2535 (21100)	24.07	23.42
		2505 (20800)	24.19	23.47
	25RB-High (25)	2565 (21400)	22.95	22.00
		2535 (21100)	23.22	22.28
		2505 (20800)	23.35	22.39
	25RB-Middle (12)	2565 (21400)	22.97	22.05
		2535 (21100)	23.20	22.27
		2505 (20800)	23.30	22.38
	25RB-Low (0)	2565 (21400)	23.02	22.09
		2535 (21100)	23.21	22.26
		2505 (20800)	23.35	22.44
	50RB (0)	2565 (21400)	22.98	22.02
		2535 (21100)	23.23	22.27
		2505 (20800)	23.37	22.42

15MHz	1RB-High (74)	2562.5 (21375)	23.63	22.97
		2535 (21100)	23.91	23.29
		2507.5 (20825)	24.07	23.50
	1RB-Middle (37)	2562.5 (21375)	23.90	23.31
		2535 (21100)	24.09	23.46
		2507.5 (20825)	24.18	23.41
	1RB-Low (0)	2562.5 (21375)	23.87	23.18
		2535 (21100)	24.04	23.43
		2507.5 (20825)	24.10	23.39
	36RB-High (38)	2562.5 (21375)	22.94	21.93
		2535 (21100)	23.18	22.22
		2507.5 (20825)	23.33	22.34
	36RB-Middle (19)	2562.5 (21375)	23.01	22.02
		2535 (21100)	23.18	22.21
		2507.5 (20825)	23.33	22.34
	36RB-Low (0)	2562.5 (21375)	23.04	22.05
		2535 (21100)	23.19	22.21
		2507.5 (20825)	23.33	22.37
	75RB (0)	2562.5 (21375)	23.00	22.04
		2535 (21100)	23.16	22.22
		2507.5 (20825)	23.31	22.36
20MHz	1RB-High (99)	2560 (21350)	23.57	22.87
		2535 (21100)	23.84	23.17
		2510 (20850)	23.96	23.26
	1RB-Middle (50)	2560 (21350)	24.10	23.37
		2535 (21100)	24.23	23.47
		2510 (20850)	24.34	23.43
	1RB-Low (0)	2560 (21350)	23.82	23.18
		2535 (21100)	24.02	23.37
		2510 (20850)	23.99	23.32
	50RB-High (50)	2560 (21350)	23.06	22.10
		2535 (21100)	23.28	22.32
		2510 (20850)	23.34	22.41
	50RB-Middle (25)	2560 (21350)	23.09	22.15
		2535 (21100)	23.26	22.33
		2510 (20850)	23.37	22.44
	50RB-Low (0)	2560 (21350)	23.16	22.20
		2535 (21100)	23.23	22.28
		2510 (20850)	23.41	22.45
	100RB (0)	2560 (21350)	23.11	22.15
		2535 (21100)	23.26	22.31
		2510 (20850)	23.37	22.44

LTE B7-Power Level B1				
BANDWIDTH	**Number of RBs**	**Frequency**	**QPSK**	**16QAM**
5MHz	1RB-High (24)	2567.5 (21425)	20.56	20.90
		2535 (21100)	20.89	20.95
		2502.5 (20775)	20.80	21.22
	1RB-Middle (12)	2567.5 (21425)	21.33	21.61
		2535 (21100)	21.31	21.87
		2502.5 (20775)	21.63	21.70
	1RB-Low (0)	2567.5 (21425)	21.10	21.33
		2535 (21100)	20.86	21.74
		2502.5 (20775)	20.92	21.29
	12RB-High (13)	2567.5 (21425)	20.94	21.32
		2535 (21100)	21.22	21.33
		2502.5 (20775)	21.34	21.24
	12RB-Middle (6)	2567.5 (21425)	21.15	21.09
		2535 (21100)	21.32	21.51
		2502.5 (20775)	21.28	21.64
	12RB-Low (0)	2567.5 (21425)	21.14	21.45
		2535 (21100)	21.09	21.44
		2502.5 (20775)	21.34	21.33
	25RB (0)	2567.5 (21425)	20.90	21.02
		2535 (21100)	21.35	21.22
		2502.5 (20775)	21.12	21.53
10MHz	1RB-High (49)	2565 (21400)	20.39	20.85
		2535 (21100)	20.63	21.30
		2505 (20800)	21.25	21.47
	1RB-Middle (24)	2565 (21400)	21.00	21.73
		2535 (21100)	21.37	21.97
		2505 (20800)	21.39	21.85
	1RB-Low (0)	2565 (21400)	20.87	21.24
		2535 (21100)	21.09	21.43
		2505 (20800)	20.84	21.24
	25RB-High (25)	2565 (21400)	20.86	20.98
		2535 (21100)	21.46	21.27
		2505 (20800)	21.19	21.19
	25RB-Middle (12)	2565 (21400)	21.15	20.98
		2535 (21100)	21.35	21.39
		2505 (20800)	21.41	21.40
	25RB-Low (0)	2565 (21400)	21.41	21.07
		2535 (21100)	21.32	21.46
		2505 (20800)	21.25	21.31
	50RB (0)	2565 (21400)	20.98	20.98
		2535 (21100)	21.31	21.28
		2505 (20800)	21.32	21.45

15MHz	1RB-High (74)	2562.5 (21375)	20.73	21.09
		2535 (21100)	20.91	21.02
		2507.5 (20825)	20.93	21.25
	1RB-Middle (37)	2562.5 (21375)	21.41	21.43
		2535 (21100)	21.23	21.79
		2507.5 (20825)	21.63	22.11
	1RB-Low (0)	2562.5 (21375)	20.86	21.52
		2535 (21100)	21.07	21.38
		2507.5 (20825)	21.23	21.47
	36RB-High (38)	2562.5 (21375)	21.28	21.32
		2535 (21100)	21.33	21.04
		2507.5 (20825)	21.14	21.53
	36RB-Middle (19)	2562.5 (21375)	21.04	20.88
		2535 (21100)	21.01	21.24
		2507.5 (20825)	21.11	21.58
	36RB-Low (0)	2562.5 (21375)	21.19	21.42
		2535 (21100)	21.38	21.41
		2507.5 (20825)	21.16	21.51
	75RB (0)	2562.5 (21375)	21.07	21.36
		2535 (21100)	21.24	21.49
		2507.5 (20825)	21.44	21.50
20MHz	1RB-High (99)	2560 (21350)	20.68	21.06
		2535 (21100)	20.88	21.19
		2510 (20850)	21.07	21.49
	1RB-Middle (50)	2560 (21350)	21.24	21.65
		2535 (21100)	21.38	21.86
		2510 (20850)	21.48	21.91
	1RB-Low (0)	2560 (21350)	20.95	21.37
		2535 (21100)	21.09	21.57
		2510 (20850)	21.11	21.46
	50RB-High (50)	2560 (21350)	21.09	21.15
		2535 (21100)	21.27	21.33
		2510 (20850)	21.36	21.42
	50RB-Middle (25)	2560 (21350)	21.10	21.16
		2535 (21100)	21.29	21.35
		2510 (20850)	21.41	21.48
	50RB-Low (0)	2560 (21350)	21.28	21.25
		2535 (21100)	21.35	21.31
		2510 (20850)	21.43	21.47
	100RB (0)	2560 (21350)	21.15	21.18
		2535 (21100)	21.28	21.34
		2510 (20850)	21.42	21.46

LTE B7-Power Level C1				
BANDWIDTH	**Number of RBs**	**Frequency**	**QPSK**	**16QAM**
5MHz	1RB-High (24)	2567.5 (21425)	18.72	19.03
		2535 (21100)	19.05	19.32
		2502.5 (20775)	19.17	19.47
	1RB-Middle (12)	2567.5 (21425)	19.07	19.31
		2535 (21100)	19.30	19.61
		2502.5 (20775)	19.43	19.78
	1RB-Low (0)	2567.5 (21425)	18.82	19.17
		2535 (21100)	19.05	19.35
		2502.5 (20775)	19.19	19.50
	12RB-High (13)	2567.5 (21425)	18.87	18.86
		2535 (21100)	19.16	19.17
		2502.5 (20775)	19.25	19.28
	12RB-Middle (6)	2567.5 (21425)	18.97	18.93
		2535 (21100)	19.22	19.19
		2502.5 (20775)	19.37	19.34
	12RB-Low (0)	2567.5 (21425)	18.90	18.87
		2535 (21100)	19.16	19.14
		2502.5 (20775)	19.31	19.29
	25RB (0)	2567.5 (21425)	18.91	18.91
		2535 (21100)	19.18	19.18
		2502.5 (20775)	19.33	19.33
10MHz	1RB-High (49)	2565 (21400)	18.84	19.20
		2535 (21100)	19.09	19.44
		2505 (20800)	19.24	19.51
	1RB-Middle (24)	2565 (21400)	19.04	19.36
		2535 (21100)	19.30	19.61
		2505 (20800)	19.40	19.70
	1RB-Low (0)	2565 (21400)	19.00	19.40
		2535 (21100)	19.17	19.60
		2505 (20800)	19.27	19.52
	25RB-High (25)	2565 (21400)	18.93	18.95
		2535 (21100)	19.21	19.23
		2505 (20800)	19.37	19.36
	25RB-Middle (12)	2565 (21400)	19.00	19.02
		2535 (21100)	19.23	19.22
		2505 (20800)	19.35	19.36
	25RB-Low (0)	2565 (21400)	19.02	19.02
		2535 (21100)	19.21	19.17
		2505 (20800)	19.38	19.37
	50RB (0)	2565 (21400)	18.97	18.99
		2535 (21100)	19.20	19.20
		2505 (20800)	19.37	19.39

15MHz	1RB-High (74)	2562.5 (21375)	18.75	18.96
		2535 (21100)	19.01	19.22
		2507.5 (20825)	19.17	19.56
	1RB-Middle (37)	2562.5 (21375)	19.00	19.35
		2535 (21100)	19.19	19.50
		2507.5 (20825)	19.30	19.58
	1RB-Low (0)	2562.5 (21375)	18.96	19.23
		2535 (21100)	19.14	19.35
		2507.5 (20825)	19.22	19.59
	36RB-High (38)	2562.5 (21375)	18.94	18.90
		2535 (21100)	19.19	19.16
		2507.5 (20825)	19.36	19.30
	36RB-Middle (19)	2562.5 (21375)	19.05	19.02
		2535 (21100)	19.22	19.18
		2507.5 (20825)	19.38	19.32
	36RB-Low (0)	2562.5 (21375)	19.08	19.03
		2535 (21100)	19.22	19.18
		2507.5 (20825)	19.36	19.31
	75RB (0)	2562.5 (21375)	19.02	19.00
		2535 (21100)	19.18	19.18
		2507.5 (20825)	19.35	19.34
20MHz	1RB-High (99)	2560 (21350)	19.02	18.97
		2535 (21100)	18.77	19.10
		2510 (20850)	18.97	19.28
	1RB-Middle (50)	2560 (21350)	19.03	19.44
		2535 (21100)	19.24	19.48
		2510 (20850)	19.36	19.45
	1RB-Low (0)	2560 (21350)	19.04	19.05
		2535 (21100)	18.95	19.27
		2510 (20850)	19.01	19.35
	50RB-High (50)	2560 (21350)	18.97	19.00
		2535 (21100)	19.19	19.20
		2510 (20850)	19.33	19.31
	50RB-Middle (25)	2560 (21350)	19.01	19.04
		2535 (21100)	19.22	19.25
		2510 (20850)	19.35	19.34
	50RB-Low (0)	2560 (21350)	19.31	19.12
		2535 (21100)	19.27	19.22
		2510 (20850)	19.36	19.35
	100RB (0)	2560 (21350)	19.05	19.04
		2535 (21100)	19.21	19.19
		2510 (20850)	19.31	19.31

LTE B12-Power Level A1/B1/C1				
BANDWIDTH	**Number of RBs**	**Frequency**	**QPSK**	**16QAM**
1.4MHz	1RB-High (5)	715.3 (23173)	23.36	22.49
		707.5 (23095)	23.38	22.56
		699.7 (23017)	23.41	22.69
	1RB-Middle (3)	715.3 (23173)	23.51	22.68
		707.5 (23095)	23.47	22.60
		699.7 (23017)	23.51	22.75
	1RB-Low (0)	715.3 (23173)	23.37	22.55
		707.5 (23095)	23.32	22.48
		699.7 (23017)	23.39	22.51
	3RB-High (3)	715.3 (23173)	23.49	22.30
		707.5 (23095)	23.45	22.45
		699.7 (23017)	23.50	22.40
	3RB-Middle (1)	715.3 (23173)	23.53	22.46
		707.5 (23095)	23.53	22.39
		699.7 (23017)	23.54	22.46
	3RB-Low (0)	715.3 (23173)	23.46	22.35
		707.5 (23095)	23.47	22.40
		699.7 (23017)	23.46	22.47
	6RB (0)	715.3 (23173)	22.48	21.56
		707.5 (23095)	22.50	21.61
		699.7 (23017)	22.54	21.58
3MHz	1RB-High (14)	714.5 (23165)	23.39	22.52
		707.5 (23095)	23.40	22.57
		700.5 (23025)	23.44	22.62
	1RB-Middle (7)	714.5 (23165)	23.53	22.73
		707.5 (23095)	23.53	22.72
		700.5 (23025)	23.65	22.88
	1RB-Low (0)	714.5 (23165)	23.41	22.71
		707.5 (23095)	23.42	22.70
		700.5 (23025)	23.47	22.74
	8RB-High (7)	714.5 (23165)	22.46	21.49
		707.5 (23095)	22.46	21.54
		700.5 (23025)	22.52	21.57
	8RB-Middle (4)	714.5 (23165)	22.50	21.55
		707.5 (23095)	22.52	21.55
		700.5 (23025)	22.54	21.64
	8RB-Low (0)	714.5 (23165)	22.46	21.56
		707.5 (23095)	22.46	21.53
		700.5 (23025)	22.49	21.57
	15RB (0)	714.5 (23165)	22.43	21.48
		707.5 (23095)	22.50	21.50
		700.5 (23025)	22.53	21.55

5MHz	1RB-High (24)	713.5 (23155)	23.34	22.43
		707.5 (23095)	23.29	22.49
		701.5 (23035)	23.33	22.53
	1RB-Middle (12)	713.5 (23155)	23.58	22.77
		707.5 (23095)	23.58	22.82
		701.5 (23035)	23.58	22.84
	1RB-Low (0)	713.5 (23155)	23.34	22.49
		707.5 (23095)	23.34	22.55
		701.5 (23035)	23.38	22.63
	12RB-High (13)	713.5 (23155)	22.45	21.46
		707.5 (23095)	22.46	21.44
		701.5 (23035)	22.53	21.54
	12RB-Middle (6)	713.5 (23155)	22.54	21.53
		707.5 (23095)	22.52	21.55
		701.5 (23035)	22.54	21.59
	12RB-Low (0)	713.5 (23155)	22.50	21.54
		707.5 (23095)	22.46	21.49
		701.5 (23035)	22.55	21.55
	25RB (0)	713.5 (23155)	22.51	21.51
		707.5 (23095)	22.47	21.48
		701.5 (23035)	22.54	21.56
10MHz	1RB-High (49)	711 (23130)	23.49	22.61
		707.5 (23095)	23.46	22.70
		704 (23060)	23.53	22.70
	1RB-Middle (24)	711 (23130)	23.63	22.88
		707.5 (23095)	23.59	22.86
		704 (23060)	23.64	22.81
	1RB-Low (0)	711 (23130)	23.53	22.77
		707.5 (23095)	23.55	22.74
		704 (23060)	23.56	22.80
	25RB-High (25)	711 (23130)	22.57	21.61
		707.5 (23095)	22.56	21.59
		704 (23060)	22.65	21.65
	25RB-Middle (12)	711 (23130)	22.61	21.63
		707.5 (23095)	22.60	21.61
		704 (23060)	22.64	21.65
	25RB-Low (0)	711 (23130)	22.69	21.72
		707.5 (23095)	22.59	21.59
		704 (23060)	22.65	21.63
	50RB (0)	711 (23130)	22.64	21.69
		707.5 (23095)	22.58	21.59
		704 (23060)	22.65	21.66

LTE B13-Power Level A1/B1/C1				
BANDWIDTH	**Number of RBs**	**Frequency**	**QPSK**	**16QAM**
5MHz	1RB-High (24)	784.5 (23255)	23.32	22.63
		782 (23230)	23.32	22.55
		779.5 (23205)	23.37	22.58
	1RB-Middle (12)	784.5 (23255)	23.60	22.84
		782 (23230)	23.65	22.86
		779.5 (23205)	23.57	22.76
	1RB-Low (0)	784.5 (23255)	23.38	22.73
		782 (23230)	23.35	22.68
		779.5 (23205)	23.35	22.53
	12RB-High (13)	784.5 (23255)	22.42	21.41
		782 (23230)	22.51	21.48
		779.5 (23205)	22.52	21.52
	12RB-Middle (6)	784.5 (23255)	22.55	21.50
		782 (23230)	22.56	21.52
		779.5 (23205)	22.55	21.53
	12RB-Low (0)	784.5 (23255)	22.49	21.47
		782 (23230)	22.47	21.43
		779.5 (23205)	22.58	21.55
	25RB (0)	784.5 (23255)	22.47	21.45
		782 (23230)	22.51	21.52
		779.5 (23205)	22.55	21.53
10MHz	1RB-High (49)	782 (23230)	23.41	22.72
	1RB-Middle (24)	782 (23230)	23.57	22.83
	1RB-Low (0)	782 (23230)	23.52	22.67
	25RB-High (25)	782 (23230)	22.51	21.50
	25RB-Middle (12)	782 (23230)	22.59	21.59
	25RB-Low (0)	782 (23230)	22.58	21.57
	50RB (0)	782 (23230)	22.56	21.56

LTE B66-Power Level A1/B1				
BANDWIDTH	**Number of RBs**	**Frequency**	**QPSK**	**16QAM**
1.4MHz	1RB-High (5)	1779.3 (132665)	23.99	22.97
		1745 (132322)	23.65	23.12
		1710.7 (131979)	23.37	22.69
	1RB-Middle (3)	1779.3 (132665)	24.08	23.01
		1745 (132322)	23.79	23.03
		1710.7 (131979)	23.48	22.78
	1RB-Low (0)	1779.3 (132665)	23.99	22.80
		1745 (132322)	23.58	22.89
		1710.7 (131979)	23.33	22.56
	3RB-High (3)	1779.3 (132665)	23.97	22.82
		1745 (132322)	23.73	22.75
		1710.7 (131979)	23.45	22.43
	3RB-Middle (1)	1779.3 (132665)	23.97	22.81
		1745 (132322)	23.78	22.82
		1710.7 (131979)	23.47	22.49
	3RB-Low (0)	1779.3 (132665)	23.78	22.78
		1745 (132322)	23.71	22.82
		1710.7 (131979)	23.42	22.47
	6RB (0)	1779.3 (132665)	22.91	21.98
		1745 (132322)	22.94	22.10
		1710.7 (131979)	22.60	22.01
3MHz	1RB-High (14)	1778.5 (132657)	24.07	23.09
		1745 (132322)	23.83	23.27
		1711.5 (131987)	23.65	23.04
	1RB-Middle (7)	1778.5 (132657)	24.21	23.27
		1745 (132322)	24.04	23.18
		1711.5 (131987)	23.88	23.14
	1RB-Low (0)	1778.5 (132657)	24.04	23.10
		1745 (132322)	23.78	23.09
		1711.5 (131987)	23.56	22.99
	8RB-High (7)	1778.5 (132657)	23.11	22.07
		1745 (132322)	23.05	22.10
		1711.5 (131987)	22.97	21.99
	8RB-Middle (4)	1778.5 (132657)	23.15	22.11
		1745 (132322)	23.06	22.13
		1711.5 (131987)	22.99	22.03
	8RB-Low (0)	1778.5 (132657)	23.12	22.10
		1745 (132322)	23.02	22.08
		1711.5 (131987)	22.93	21.95
	15RB (0)	1778.5 (132657)	23.13	22.08
		1745 (132322)	23.05	22.03
		1711.5 (131987)	22.97	21.97

5MHz	1RB-High (24)	1777.5 (132647)	23.95	23.01
		1745 (132322)	23.87	23.21
		1712.5 (131997)	23.84	23.05
	1RB-Middle (12)	1777.5 (132647)	24.21	23.34
		1745 (132322)	24.08	23.33
		1712.5 (131997)	24.08	23.33
	1RB-Low (0)	1777.5 (132647)	23.98	23.14
		1745 (132322)	23.91	23.05
		1712.5 (131997)	23.76	22.96
	12RB-High (13)	1777.5 (132647)	23.14	22.05
		1745 (132322)	23.07	22.04
		1712.5 (131997)	23.05	21.99
	12RB-Middle (6)	1777.5 (132647)	23.16	22.07
		1745 (132322)	23.09	22.05
		1712.5 (131997)	23.03	21.98
	12RB-Low (0)	1777.5 (132647)	23.10	22.04
		1745 (132322)	23.04	22.01
		1712.5 (131997)	22.95	21.88
	25RB (0)	1777.5 (132647)	23.15	22.07
		1745 (132322)	23.04	22.04
		1712.5 (131997)	23.02	21.98
10MHz	1RB-High (49)	1775 (132622)	24.03	23.18
		1745 (132322)	23.96	23.24
		1715 (132022)	23.90	23.07
	1RB-Middle (24)	1775 (132622)	24.14	23.22
		1745 (132322)	24.08	23.37
		1715 (132022)	24.02	23.20
	1RB-Low (0)	1775 (132622)	24.03	23.22
		1745 (132322)	23.98	23.24
		1715 (132022)	23.89	23.03
	25RB-High (25)	1775 (132622)	23.23	22.17
		1745 (132322)	23.11	22.11
		1715 (132022)	23.17	22.15
	25RB-Middle (12)	1775 (132622)	23.20	22.17
		1745 (132322)	23.09	22.07
		1715 (132022)	23.08	22.07
	25RB-Low (0)	1775 (132622)	23.22	22.14
		1745 (132322)	23.14	22.11
		1715 (132022)	23.00	21.95
	50RB (0)	1775 (132622)	23.23	22.16
		1745 (132322)	23.14	22.10
		1715 (132022)	23.10	22.07

15MHz	1RB-High (74)	1772.5 (132597)	23.94	23.10
		1745 (132322)	23.88	23.20
		1717.5 (132047)	23.84	23.08
	1RB-Middle (37)	1772.5 (132597)	24.04	23.14
		1745 (132322)	24.00	23.25
		1717.5 (132047)	23.96	23.07
	1RB-Low (0)	1772.5 (132597)	23.98	23.17
		1745 (132322)	23.91	23.00
		1717.5 (132047)	23.80	23.02
	36RB-High (38)	1772.5 (132597)	23.20	22.09
		1745 (132322)	23.10	22.04
		1717.5 (132047)	23.11	22.05
	36RB-Middle (19)	1772.5 (132597)	23.19	22.08
		1745 (132322)	23.09	22.02
		1717.5 (132047)	23.08	21.98
	36RB-Low (0)	1772.5 (132597)	23.15	22.09
		1745 (132322)	23.12	22.03
		1717.5 (132047)	23.00	21.92
	75RB (0)	1772.5 (132597)	23.20	22.14
		1745 (132322)	23.10	22.05
		1717.5 (132047)	23.05	22.01
20MHz	1RB-High (99)	1770 (132572)	23.83	22.89
		1745 (132322)	23.77	23.07
		1720 (132072)	23.76	22.99
	1RB-Middle (50)	1770 (132572)	24.24	23.31
		1745 (132322)	24.16	23.46
		1720 (132072)	24.14	23.26
	1RB-Low (0)	1770 (132572)	23.82	23.00
		1745 (132322)	23.77	23.04
		1720 (132072)	23.73	22.96
	50RB-High (50)	1770 (132572)	23.30	22.25
		1745 (132322)	23.23	22.15
		1720 (132072)	23.26	22.16
	50RB-Middle (25)	1770 (132572)	23.26	22.25
		1745 (132322)	23.18	22.15
		1720 (132072)	23.17	22.14
	50RB-Low (0)	1770 (132572)	23.26	22.22
		1745 (132322)	23.23	22.20
		1720 (132072)	23.00	21.95
	100RB (0)	1770 (132572)	23.23	22.19
		1745 (132322)	23.18	22.15
		1720 (132072)	23.08	22.03

LTE B66-Power Level C1				
BANDWIDTH	**Number of RBs**	**Frequency**	**QPSK**	**16QAM**
1.4MHz	1RB-High (5)	1779.3 (132665)	22.06	22.14
		1745 (132322)	22.03	22.21
		1710.7 (131979)	21.97	22.12
	1RB-Middle (3)	1779.3 (132665)	22.17	22.40
		1745 (132322)	22.15	22.44
		1710.7 (131979)	22.03	22.30
	1RB-Low (0)	1779.3 (132665)	22.06	22.21
		1745 (132322)	22.01	22.21
		1710.7 (131979)	21.95	22.11
	3RB-High (3)	1779.3 (132665)	22.16	22.08
		1745 (132322)	22.18	22.12
		1710.7 (131979)	22.03	21.93
	3RB-Middle (1)	1779.3 (132665)	22.22	22.16
		1745 (132322)	22.17	22.16
		1710.7 (131979)	22.10	22.04
	3RB-Low (0)	1779.3 (132665)	22.18	22.06
		1745 (132322)	22.13	22.10
		1710.7 (131979)	22.07	21.98
	6RB (0)	1779.3 (132665)	22.18	22.24
		1745 (132322)	22.15	22.19
		1710.7 (131979)	22.08	22.08
3MHz	1RB-High (14)	1778.5 (132657)	22.13	22.32
		1745 (132322)	22.14	22.37
		1711.5 (131987)	22.03	22.29
	1RB-Middle (7)	1778.5 (132657)	22.26	22.48
		1745 (132322)	22.26	22.40
		1711.5 (131987)	22.14	22.28
	1RB-Low (0)	1778.5 (132657)	22.14	22.40
		1745 (132322)	22.09	22.35
		1711.5 (131987)	22.00	22.27
	8RB-High (7)	1778.5 (132657)	22.16	22.12
		1745 (132322)	22.13	22.17
		1711.5 (131987)	22.07	22.08
	8RB-Middle (4)	1778.5 (132657)	22.20	22.18
		1745 (132322)	22.16	22.21
		1711.5 (131987)	22.10	22.09
	8RB-Low (0)	1778.5 (132657)	22.16	22.16
		1745 (132322)	22.11	22.16
		1711.5 (131987)	22.03	22.01
	15RB (0)	1778.5 (132657)	22.19	22.15
		1745 (132322)	22.12	22.10
		1711.5 (131987)	22.08	22.05

5MHz	1RB-High (24)	1777.5 (132647)	22.02	22.13
		1745 (132322)	22.02	22.27
		1712.5 (131997)	21.97	22.24
	1RB-Middle (12)	1777.5 (132647)	22.29	22.46
		1745 (132322)	22.32	22.47
		1712.5 (131997)	22.22	22.34
	1RB-Low (0)	1777.5 (132647)	22.04	22.23
		1745 (132322)	21.98	22.24
		1712.5 (131997)	21.97	22.08
	12RB-High (13)	1777.5 (132647)	22.15	22.09
		1745 (132322)	22.14	22.10
		1712.5 (131997)	22.11	22.06
	12RB-Middle (6)	1777.5 (132647)	22.20	22.14
		1745 (132322)	22.15	22.11
		1712.5 (131997)	22.10	22.05
	12RB-Low (0)	1777.5 (132647)	22.16	22.11
		1745 (132322)	22.09	22.08
		1712.5 (131997)	22.03	21.97
	25RB (0)	1777.5 (132647)	22.18	22.14
		1745 (132322)	22.10	22.11
		1712.5 (131997)	22.10	22.03
10MHz	1RB-High (49)	1775 (132622)	22.15	22.32
		1745 (132322)	22.06	22.26
		1715 (132022)	22.04	22.27
	1RB-Middle (24)	1775 (132622)	22.25	22.41
		1745 (132322)	22.23	22.40
		1715 (132022)	22.20	22.36
	1RB-Low (0)	1775 (132622)	22.15	22.42
		1745 (132322)	22.10	22.37
		1715 (132022)	22.02	22.08
	25RB-High (25)	1775 (132622)	22.24	22.24
		1745 (132322)	22.16	22.18
		1715 (132022)	22.26	22.25
	25RB-Middle (12)	1775 (132622)	22.22	22.19
		1745 (132322)	22.16	22.14
		1715 (132022)	22.17	22.12
	25RB-Low (0)	1775 (132622)	22.21	22.20
		1745 (132322)	22.19	22.18
		1715 (132022)	22.05	22.02
	50RB (0)	1775 (132622)	22.24	22.24
		1745 (132322)	22.21	22.19
		1715 (132022)	22.17	22.14

15MHz	1RB-High (74)	1772.5 (132597)	22.02	22.19
		1745 (132322)	21.99	22.18
		1717.5 (132047)	21.93	22.14
	1RB-Middle (37)	1772.5 (132597)	22.16	22.34
		1745 (132322)	22.11	22.30
		1717.5 (132047)	22.06	22.35
	1RB-Low (0)	1772.5 (132597)	22.03	22.38
		1745 (132322)	22.01	22.24
		1717.5 (132047)	21.92	22.18
	36RB-High (38)	1772.5 (132597)	22.20	22.18
		1745 (132322)	22.13	22.08
		1717.5 (132047)	22.14	22.11
	36RB-Middle (19)	1772.5 (132597)	22.23	22.16
		1745 (132322)	22.14	22.09
		1717.5 (132047)	22.11	22.05
	36RB-Low (0)	1772.5 (132597)	22.18	22.16
		1745 (132322)	22.15	22.09
		1717.5 (132047)	22.05	21.96
	75RB (0)	1772.5 (132597)	22.22	22.19
		1745 (132322)	22.17	22.13
		1717.5 (132047)	22.09	22.09
20MHz	1RB-High (99)	1770 (132572)	21.82	21.99
		1745 (132322)	21.81	22.14
		1720 (132072)	21.73	22.05
	1RB-Middle (50)	1770 (132572)	22.20	22.46
		1745 (132322)	22.15	22.42
		1720 (132072)	22.03	22.25
	1RB-Low (0)	1770 (132572)	21.81	22.09
		1745 (132322)	21.78	22.09
		1720 (132072)	21.74	22.00
	50RB-High (50)	1770 (132572)	22.24	22.20
		1745 (132322)	22.11	22.10
		1720 (132072)	22.12	22.12
	50RB-Middle (25)	1770 (132572)	22.21	22.19
		1745 (132322)	22.14	22.12
		1720 (132072)	22.08	22.06
	50RB-Low (0)	1770 (132572)	22.19	22.18
		1745 (132322)	22.21	22.17
		1720 (132072)	21.96	21.90
	100RB (0)	1770 (132572)	22.19	22.15
		1745 (132322)	22.16	22.11
		1720 (132072)	22.03	21.99

11.4 Wi-Fi and BT Measurement result

The maximum output power of BT antenna is 8.14dBm.
The maximum tune up of BT antenna is 9.8dBm.

The average conducted power for Wi-Fi 2.4G is as following-Normal power (Wifi only, Receiver off):

802.11b	
Channel\data rate	5.5Mbps
11(2462MHz)	19.72
6(2437(MHz)	19.75
1(2412MHz)	19.16
Tune up	20.00
802.11g	
Channel\data rate	6Mbps
11(2462MHz)	18.45
6(2437(MHz)	18.67
1(2412MHz)	17.92
Tune up	19.00
802.11n-20MHz	
Channel\data rate	MCS0
11(2462MHz)	17.42
6(2437(MHz)	17.45
1(2412MHz)	17.40
Tune up	18.00
802.11n-40MHz	
Channel\data rate	MCS0
9(2452MHz)	17.58
6(2437MHz)	17.59
3(2422MHz)	17.47
Tune up	18.00

The average conducted power for Wi-Fi 2.4G is as following-Low power (Wifi only, Receiver on):

802.11b	
Channel\data rate	5.5Mbps
11(2462MHz)	16.53
6(2437(MHz)	16.32
1(2412MHz)	16.33
Tune up	17.00
802.11g	
Channel\data rate	6Mbps
11(2462MHz)	15.22
6(2437(MHz)	14.88
1(2412MHz)	14.61
Tune up	16.00
802.11n-20MHz	
Channel\data rate	MCS0
11(2462MHz)	14.19
6(2437(MHz)	13.96
1(2412MHz)	13.70
Tune up	15.00
802.11n-40MHz	
Channel\data rate	MCS0
9(2452MHz)	14.29
6(2437MHz)	14.42
3(2422MHz)	14.37
Tune up	15.00

The average conducted power for Wi-Fi 2.4G is as following-Low power (WIFI+ Cellular head SAR/15mm body SAR):

802.11b	
Channel\data rate	5.5Mbps
11(2462MHz)	14.47
6(2437(MHz)	14.60
1(2412MHz)	14.40
Tune up	15.00
802.11g	
Channel\data rate	6Mbps
11(2462MHz)	13.05
6(2437(MHz)	12.98
1(2412MHz)	12.76
Tune up	14.00
802.11n-20MHz	
Channel\data rate	MCS0
11(2462MHz)	13.19
6(2437(MHz)	12.94
1(2412MHz)	12.74
Tune up	14.00
802.11n-40MHz	
Channel\data rate	MCS0
9(2452MHz)	13.35
6(2437MHz)	13.45
3(2422MHz)	13.39
Tune up	14.00

The average conducted power for Wi-Fi 2.4G is as following-Low power (WIFI+Cellular 10mm body SAR):

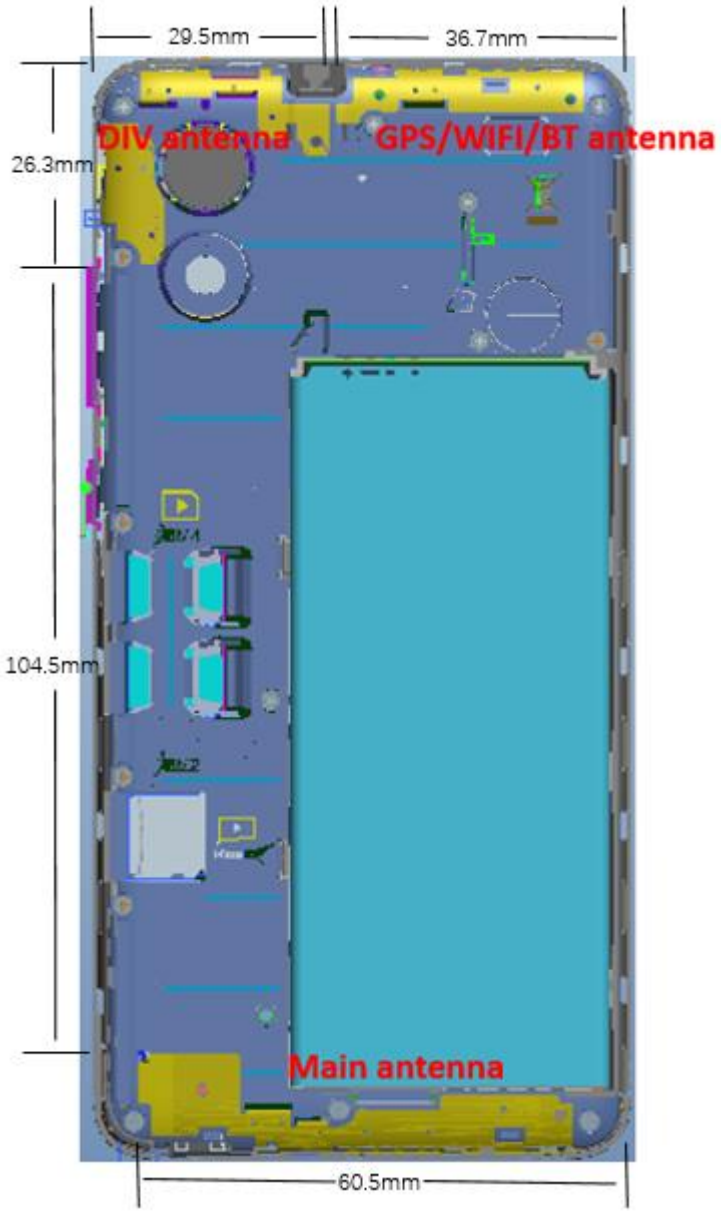
802.11b	
Channel\data rate	5.5Mbps
11(2462MHz)	13.53
6(2437(MHz)	13.69
1(2412MHz)	13.05
Tune up	14.00
802.11g	
Channel\data rate	6Mbps
11(2462MHz)	12.33
6(2437(MHz)	12.07
1(2412MHz)	11.81
Tune up	13.00
802.11n-20MHz	
Channel\data rate	MCS0
11(2462MHz)	11.98
6(2437(MHz)	11.94
1(2412MHz)	11.74
Tune up	13.00
802.11n-40MHz	
Channel\data rate	MCS0
9(2452MHz)	12.33
6(2437MHz)	12.44
3(2422MHz)	12.39
Tune up	13.00

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, 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	Right	Top	Bottom
MAIN ANT	Yes	Yes	Yes	Yes	No	Yes
WiFi ANT	Yes	Yes	Yes	No	Yes	No

13 Evaluation of Simultaneous

Table 13.1: The sum of SAR values for Main antenna + WiFi-2.4G (1g)

	Position	Main antenna	WiFi-2.4G	Sum
Highest SAR value for Head	Right head, Tilt (WCDMA850)	0.33	0.54	**0.87**
Highest SAR value for Body	Rear 10mm (GSM1900)	1.05	0.43	**1.48**

Table 13.2: The sum of SAR values for main antenna and BT (1g)

	Position	Main antenna	BT	Sum
Maximum reported SAR value for Head	Left head, Cheek (WCDMA850)	0.51	<0.01	**0.51**
Maximum reported SAR value for Body	Rear 10mm (GSM1900)	1.05	0.06	**1.11**

Conclusion:

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