



SAR TEST REPORT

No. I20Z61833-SEM03

For

TCL Communication Ltd.

GSM/UMTS/LTE Mobile phone

Model name: A509DL

With

Hardware Version:PIO

Software Version:vL3R

FCC ID: 2ACCJH131

Issued Date: 2020-12-25

Note:

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**REPORT HISTORY**

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I20Z61833-SEM03	Rev.0	2020-12-21	Initial creation of test report
I20Z61833-SEM03	Rev.1	2020-12-25	Update the description of DL_2CA on page 79.

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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

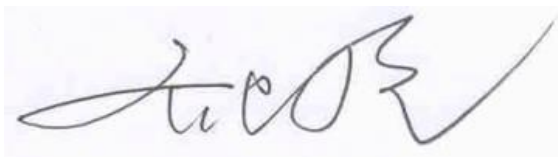
1.3 Project Data

Project Leader:	Qi Dianyuan
Test Engineer:	Lin Xiaojun
Testing Start Date:	December 10, 2020
Testing End Date:	December 15, 2020

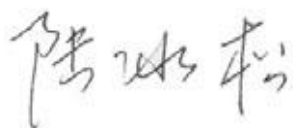
1.4 Signature



Lin Xiaojun
(Prepared this test report)



Qi Dianyuan
(Reviewed this test report)



Lu Bingsong
Deputy Director of the laboratory
(Approved this test report)

2 Statement of Compliance

The maximum results of SAR found during testing for TCL Communication Ltd. GSM/UMTS/LTE Mobile phone A509DL 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	0.28	PCE
	PCS 1900	0.20	
	UMTS FDD 2	0.36	
	UMTS FDD 4	0.55	
	UMTS FDD 5	0.43	
	LTE Band12	0.22	
	LTE Band 13	0.29	
	LTE Band 25	0.33	
	LTE Band 26	0.28	
	LTE Band 41PC3	0.06	
	LTE Band 41PC2	0.08	
	LTE Band 66	0.42	
	LTE Band 71	0.17	
WLAN 2.4 GHz	0.73	DTS	
Hotspot (Separation Distance 10mm)	GSM 850	0.47	PCE
	PCS 1900	0.43	
	UMTS FDD 2	0.71	
	UMTS FDD 4	0.73	
	UMTS FDD 5	0.49	
	LTE Band 12	0.50	
	LTE Band 13	0.39	
	LTE Band 25	0.66	
	LTE Band 26	0.46	
	LTE Band 41PC3	0.63	
	LTE Band 41PC2	0.86	
	LTE Band 66	0.74	
	LTE Band 71	0.41	
WLAN 2.4 GHz	0.61	DTS	
Body-worn (Separation Distance 15mm)	GSM1900	0.36	PCE
	WCDMA1900	0.39	
	WCDMA1700	0.39	
	LTE Band25	0.54	
	LTE Band 41PC3	0.55	
	LTE Band 41PC2	0.71	
LTE Band66	0.73		

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

For body operation, this device has been tested and meets FCC RF exposure guidelines when used with any accessory that contains no metal and which provides a minimum separation distance of 10 mm for hotspot and 15mm for body worn between this device and the body of the user. Use of other

accessories may not ensure compliance with FCC RF exposure guidelines.

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

The measurement together with the test system set-up is described in annex C of this test report. A detailed description of the equipment under test can be found in chapter 4 of this test report. The highest reported SAR value is obtained at the case of (Table 2.1), and the values are: **0.86 W/kg(1g)**.

Table 2.2: The sum of reported SAR values for main antenna and WiFi2.4G

	Position	Main antenna	WiFi	Sum
Highest reported SAR value for Head	Right head, Cheek (WCDMA1700)	0.55	0.73	1.28
Highest reported SAR value for Hotspot	Rear 10mm (LTE Band41 PC2)	0.74	0.61	1.35
Highest reported SAR value for Body	Rear 15mm (LTE Band66)	0.73	0.61	1.34

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

	Position	Main antenna	BT	Sum
Maximum reported SAR value for Head	Right head, Cheek (WCDMA1700)	0.55	0.33 ^[1]	0.88
Maximum reported SAR value for Hotspot	Rear 10mm (LTE Band41 PC2)	0.74	0.17 ^[1]	0.91
Highest reported SAR value for Body	Rear 15mm (LTE Band66)	0.73	0.11 ^[1]	0.84

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

According to the above tables, the highest sum of reported SAR values is **1.35W/kg (1g)**. The detail for simultaneous transmission consideration is described in chapter 13.

According to the KDB648474 D04, the UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna located at ≤ 25 mm from that surface or edge, in direct contact with a flat phantom, for 10-g extremity SAR according to the body-equivalent tissue dielectric parameters in KDB Publication 865664 D01 to address interactive hand use exposure conditions. When hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg

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

Exposure Configuration	Technology Band	Highest Reported SAR 10g(W/kg)	Limit 10g (W/kg)
Hotspot (Separation Distance 0mm)	LTE Band41(PC2)	2.59	4.0

Table 2.5: The sum of reported SAR values for main antenna and WiFi2.4G

Exposure Configuration	Main antenna	WiFi	Sum	Limit 10g (W/kg)
Highest reported SAR value for Limb	LTE Band41(PC2) 2.59	0.07	2.63	4.0

3 Client Information

3.1 Applicant Information

Company Name:	TCL Communication Ltd.
Address/Post:	5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science Park, Shatin, NT, Hong Kong
Contact Person:	Gong Zhizhou
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3.2 Manufacturer Information

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Contact Person:	Gong Zhizhou
Contact Email:	zhizhou.gong@tcl.com
Telephone:	0086-755-36611722
Fax	0086-755-36612000-81722

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

4.1 About EUT

Description:	GSM/UMTS/LTE Mobile phone
Model name:	A509DL
Operating mode(s):	GSM 850/900/1800/1900, WCDMA850/1700/1900, BT, Wi-Fi(2.4G) LTE Band 2/4/5/12/13/25/26/41/66/71
Tested Tx Frequency:	824 – 849 MHz (GSM 850)
	1850 – 1910 MHz (GSM 1900)
	824–849 MHz (WCDMA 850 Band V)
	1710 – 1755 MHz (WCDMA 1700 Band IV)
	1850–1910 MHz (WCDMA1900 Band II)
	699.7 – 711 MHz(LTE Band 12)
	779.5 – 782 MHz(LTE Band 13)
	1850.7–1905 MHz(LTE Band 25)
	814.7 – 841.5 MHz(LTE Band 26)
	2498.5 –2680 MHz (LTE Band 41)
	1710.7 – 1770MHz(LTE Band66)
	665.5 – 688MHz(LTE Band71)
2412 – 2462 MHz (Wi-Fi 2.4G)	
GPRS/EGPRS Multislot Class:	12
GPRS capability Class:	B
Test device Production information:	Production unit
Device type:	Portable device
Antenna type:	Integrated antenna
Hotspot mode:	Support

4.2 Internal Identification of EUT used during the test

EUT ID*	IMEI	HW	SW Version
EUT1	015858000011365	PIO	vL3R
EUT2	015858000011308	PIO	vL3R
EUT3	015858000011340	PIO	vL3R
EUT4	015858000011845	PIO	vL3R
EUT5	015858000011282	PIO	vL3R

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

Note: It is performed to test SAR with the EUT1~3 and conducted power with the EUT4~5.

4.3 Internal Identification of AE used during the test

AE ID*	Description	Model	SN	Manufacturer
AE1	Battery	CAB2880000C7	/	VEKEN
AE2	Battery	CAB2880001C1	/	BYD

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

5 TEST METHODOLOGY

5.1 Applicable Limit Regulations

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

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

5.2 Applicable Measurement Standards

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

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

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

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

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

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

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

KDB865664 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

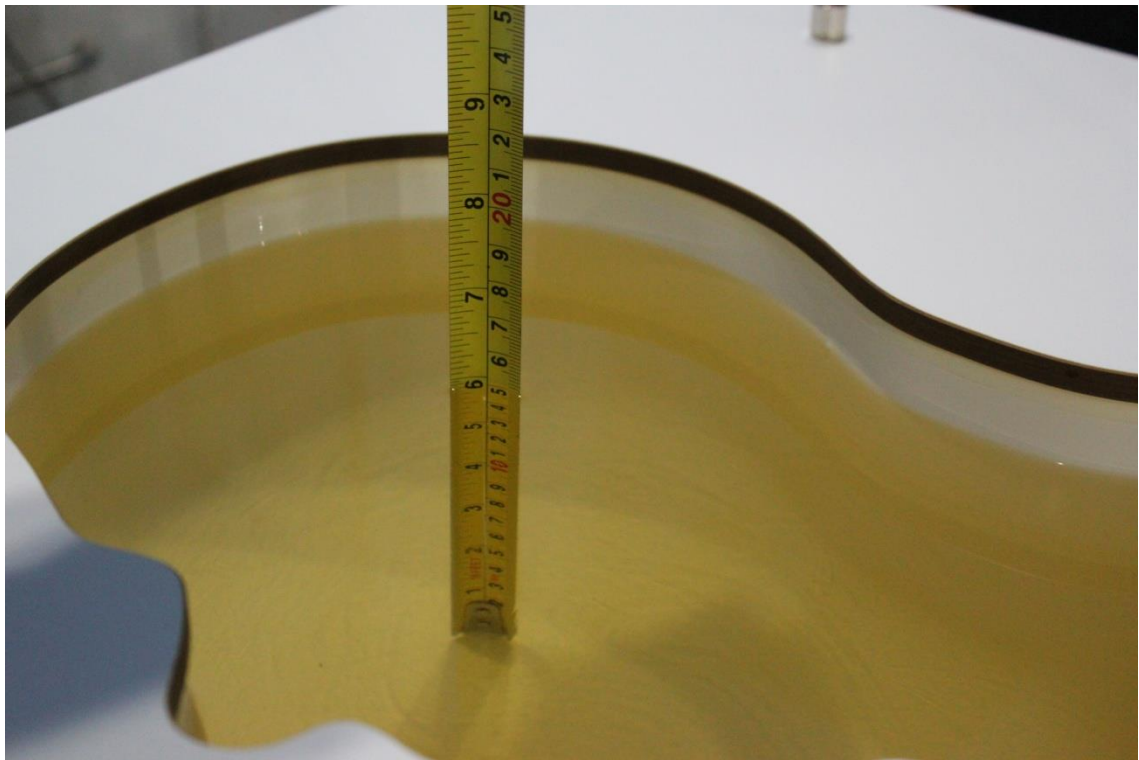
Frequency(MHz)	Liquid Type	Conductivity(σ)	$\pm 5\%$ Range	Permittivity(ϵ)	$\pm 5\%$ Range
750	Head	0.89	0.85~0.93	41.94	39.8~44.0
835	Head	0.90	0.86~0.95	41.5	39.4~43.6
1750	Head	1.37	1.30~1.44	40.08	38.1~42.1
1900	Head	1.40	1.33~1.47	40.0	38.0~42.0
2450	Head	1.80	1.71~1.89	39.2	37.2~41.2
2600	Head	1.96	1.86~2.06	39.01	37.1~41.0

7.2 Dielectric Performance

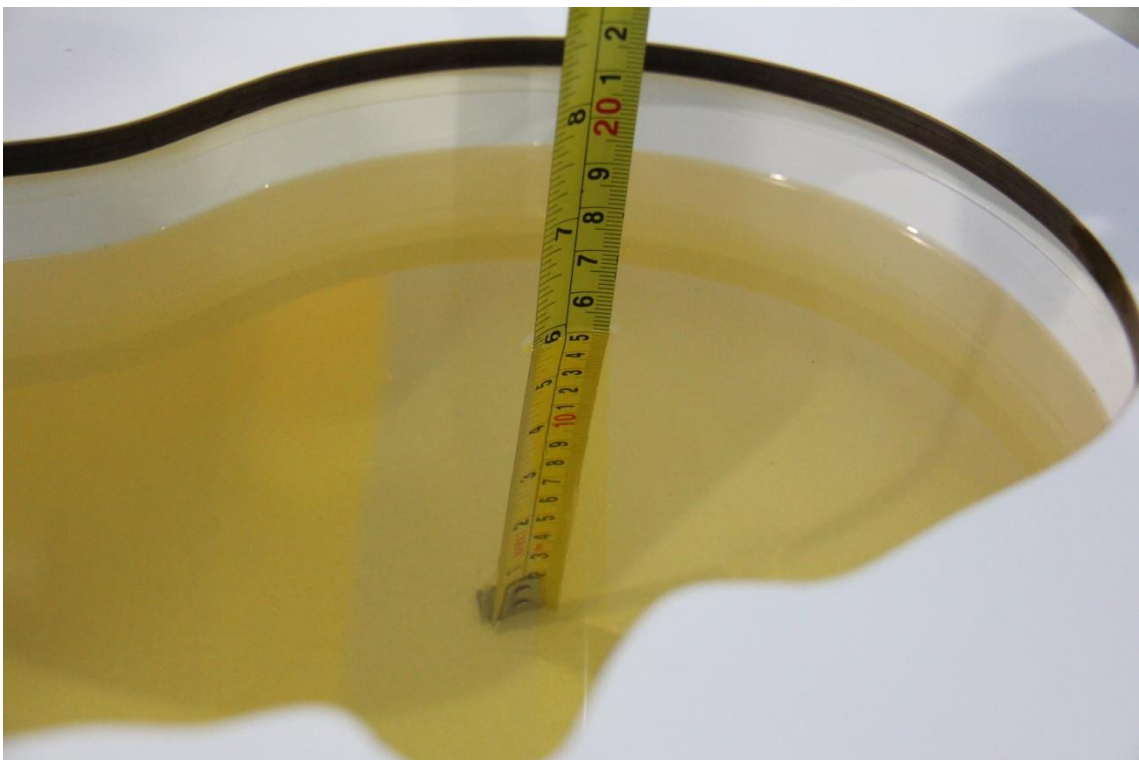
Table 7.2: Dielectric Performance of Tissue Simulating Liquid

Measurement Date yyyy/mm/dd	Frequency	Type	Permittivity ϵ	Drift (%)	Conductivity σ (S/m)	Drift (%)
2020/12/10	750 MHz	Head	42.5	1.34	0.89	0.00
2020/12/11	835 MHz	Head	40.69	-1.95	0.888	-1.33
2020/12/12	1750 MHz	Head	40.2	0.30	1.354	-1.17
2020/12/13	1900 MHz	Head	39.38	-1.55	1.411	0.79
2020/12/14	2450 MHz	Head	39.83	1.61	1.818	1.00
2020/12/15	2600 MHz	Head	39.01	0.00	1.956	-0.20

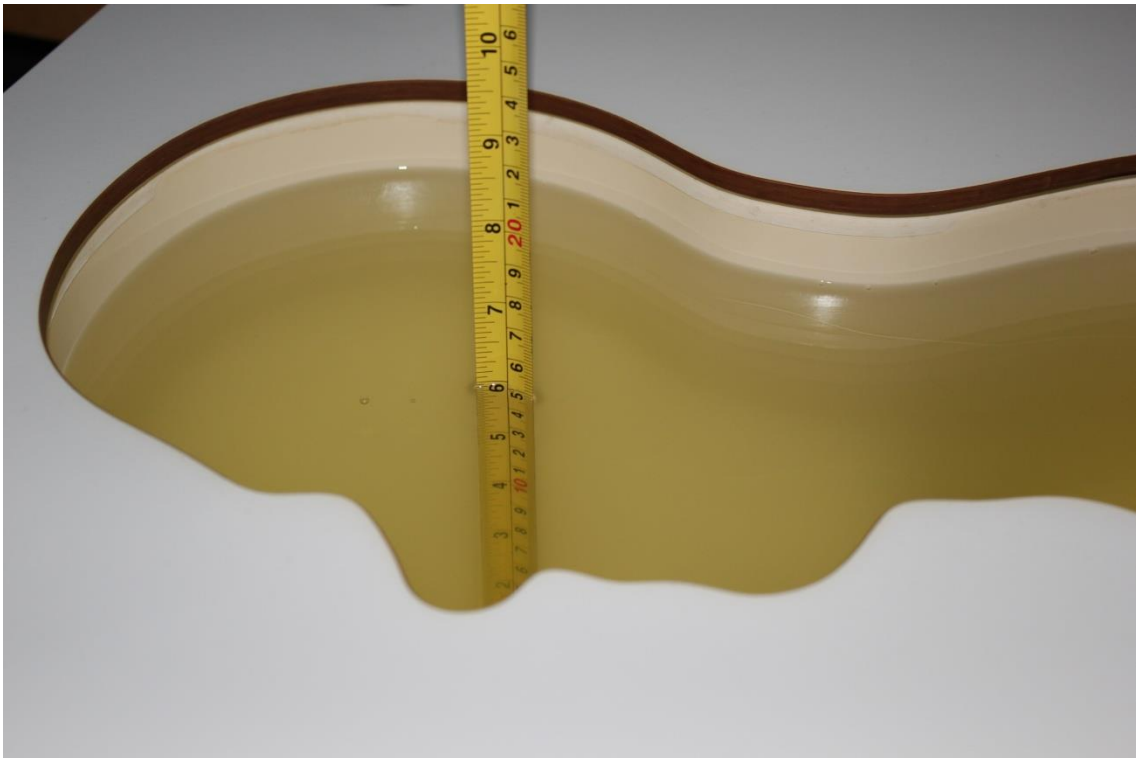
Note: The liquid temperature is 22.0°C



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



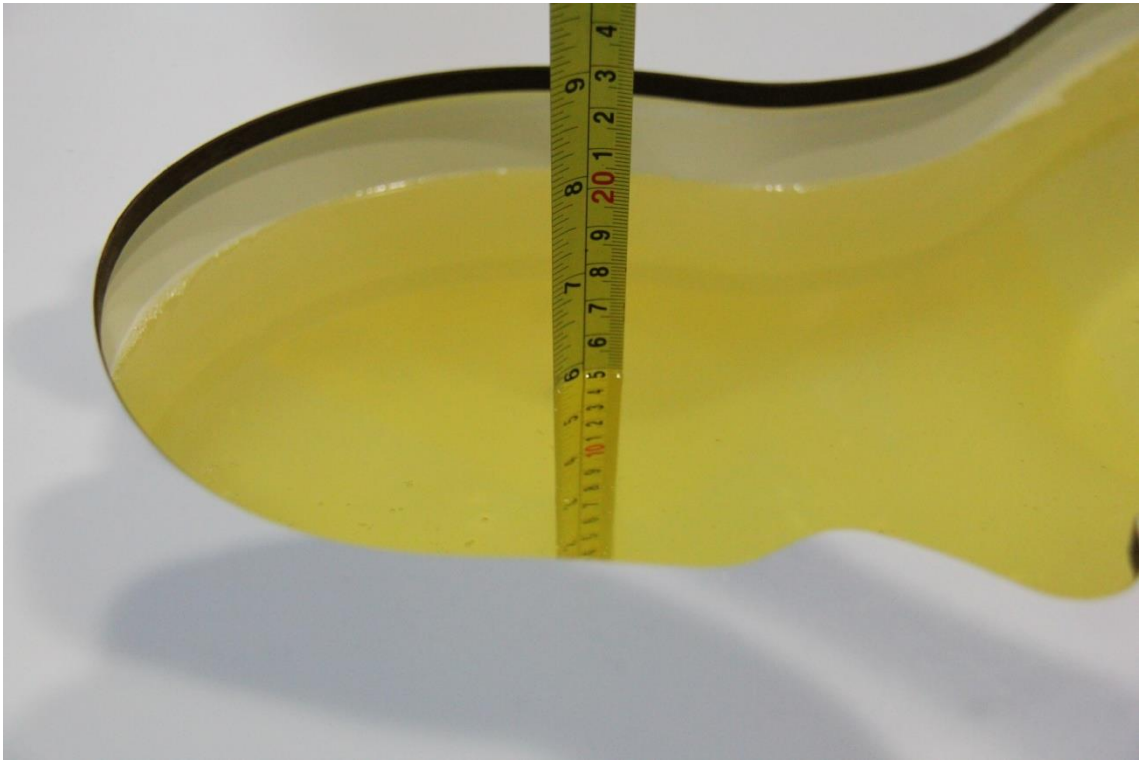
Picture 7-2 Liquid depth in the Head Phantom (835 MHz)



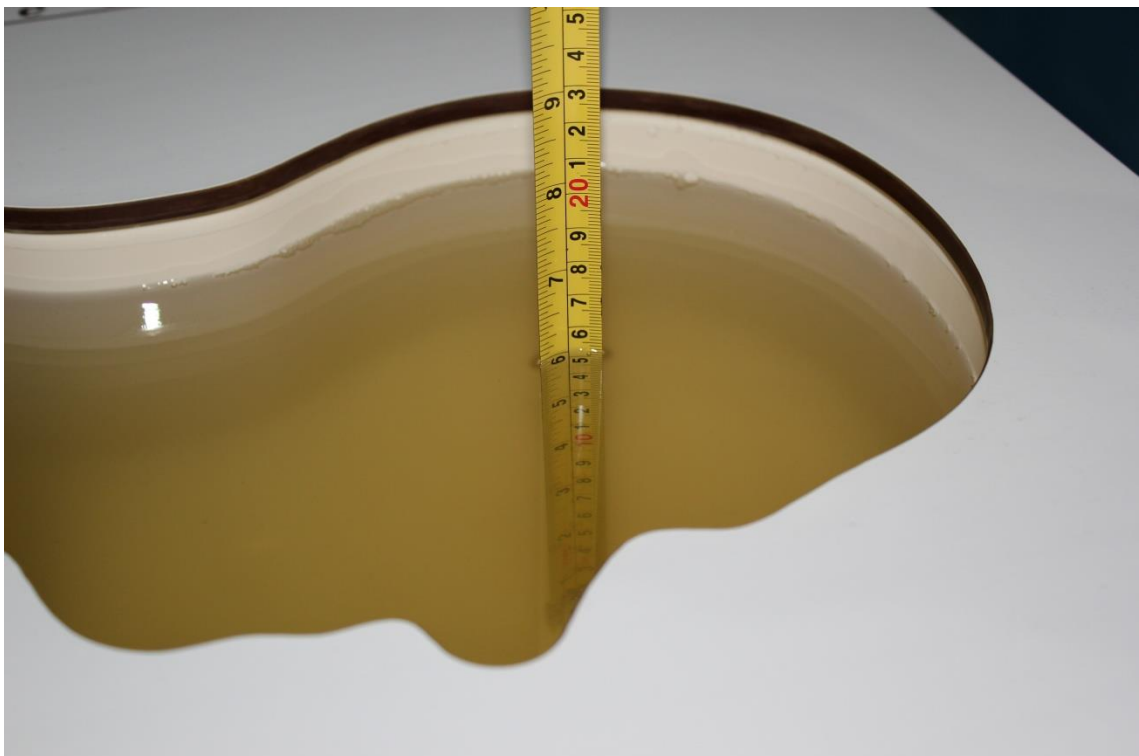
Picture 7-3 Liquid depth in the Head Phantom (1750 MHz)



Picture 7-4 Liquid depth in the Head Phantom (1900 MHz)



Picture 7-5 Liquid depth in the Head Phantom (2450MHz)

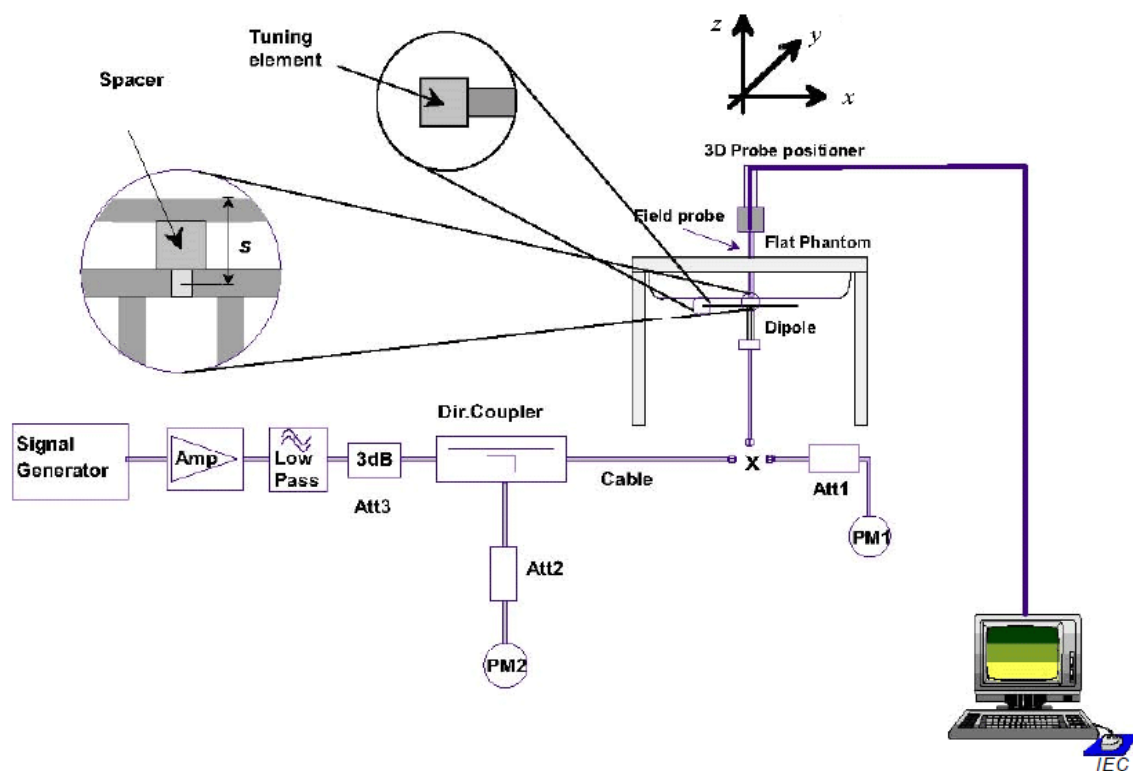


Picture 7-6 Liquid depth in the Head Phantom (2600MHz)

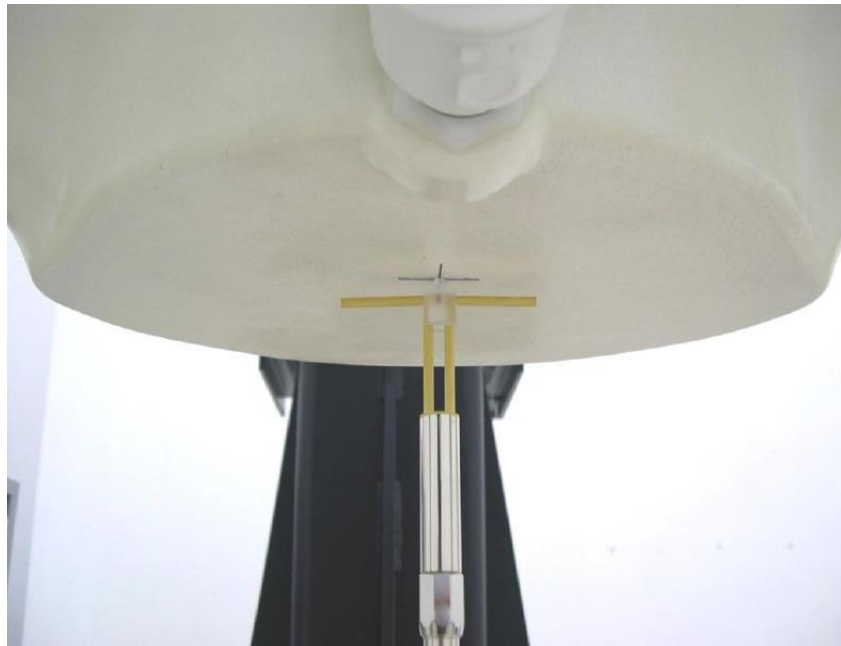
8 System verification

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
2020/12/10	750 MHz	5.53	8.47	5.44	8.64	-1.63%	2.01%
2020/12/11	835 MHz	6.25	9.60	6.20	9.72	-0.80%	1.25%
2020/12/12	1750 MHz	19.1	36.5	19.48	36.36	1.99%	-0.38%
2020/12/13	1900 MHz	20.6	39.6	20.52	39.96	-0.39%	0.91%
2020/12/14	2450 MHz	24.5	52.5	24.8	52.00	1.22%	-0.95%
2020/12/15	2600 MHz	25.3	57.0	25.36	56.80	0.24%	-0.35%

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.

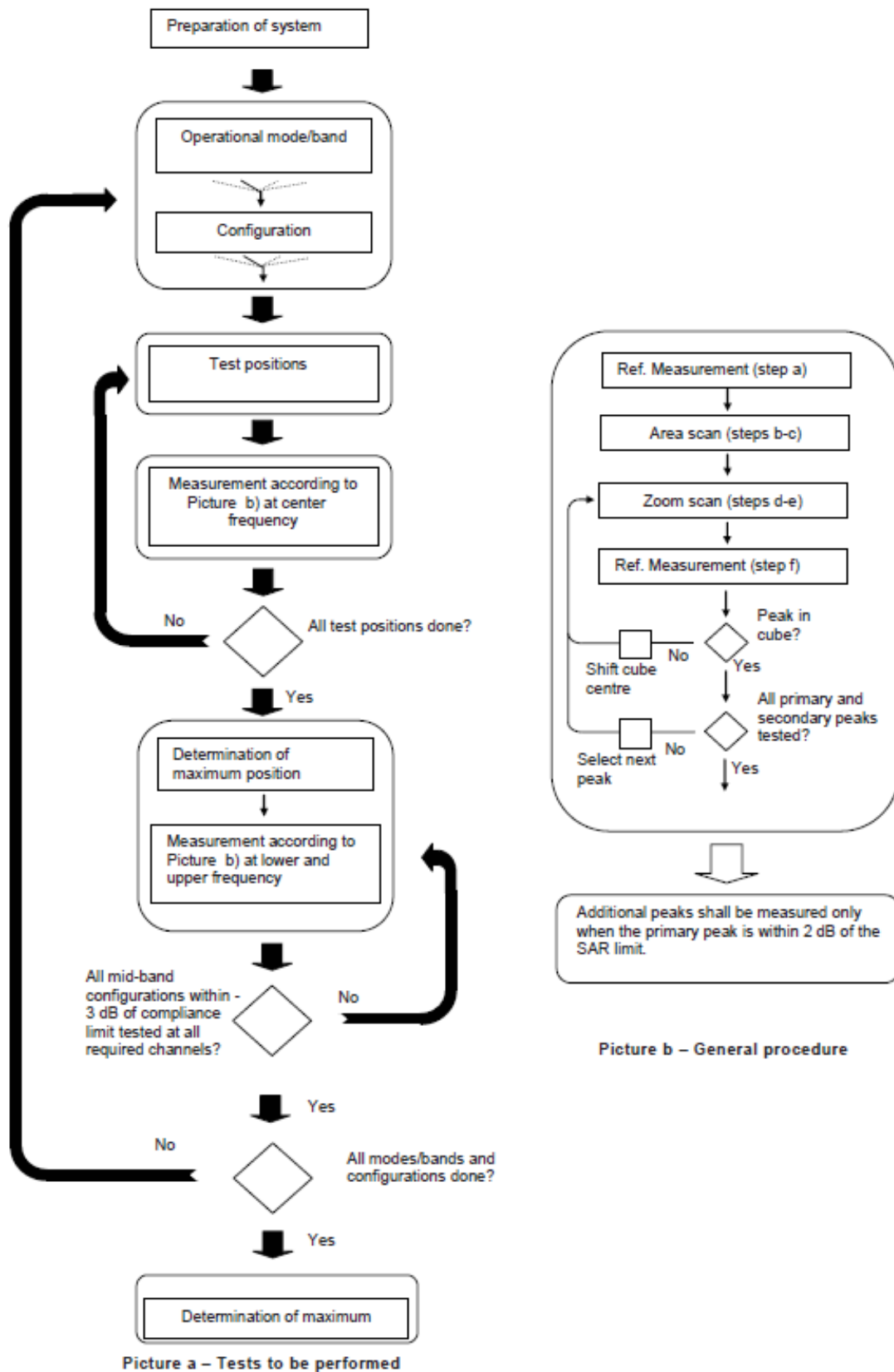
Step 1: The tests described in 9.2 shall be performed at the channel that is closest to the centre of the transmit frequency band (f_c) for:

- 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.

		≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface		5 ± 1 mm	$\frac{1}{2} \delta \cdot \ln(2) \pm 0.5$ 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}		≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 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}		≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$	≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1 st two points closest to phantom surface	≤ 4 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	≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 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 ≤ 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.			

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.

TDD test:

TDD testing is performed using guidance from FCC KDB 941225 D05 v02r05 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 v02r05. SAR testing is performed using the extended cyclic prefix listed in 3GPP TS 36.211.

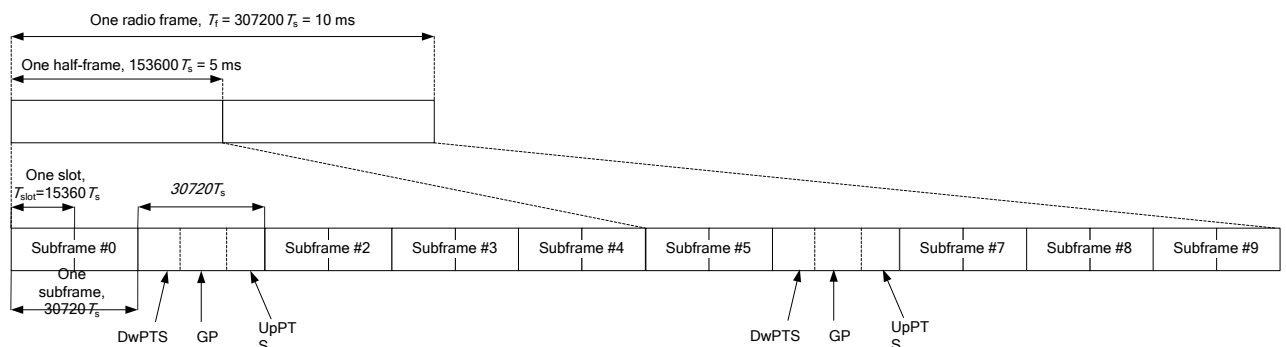


Figure 9.2: Frame structure type 2 (for 5 ms switch-point periodicity)

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	$26336 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$	$7680 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$
5	$6592 \cdot T_s$			$20480 \cdot T_s$		
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:

$$\begin{aligned}
 \text{Duty factor} &= \text{uplink frame} \cdot 6 + \text{UpPTS} \cdot 2 / \text{one frame length} \\
 &= (30720 \cdot T_s + 6 + 5120 \cdot T_s \cdot 2) / 307200 \cdot T_s \\
 &= 0.633
 \end{aligned}$$

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

9.5 Bluetooth & Wi-Fi Measurement Procedures for SAR

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

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

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-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 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

For Main antenna, there are three sets of tune-up power, Normal power (Receiver on) for Head SAR, Low power (Receiver off and Hotspot off) of WCDMA B2, WCDMA B4, LTE B66, LTE B41, LTE B25 for Body SAR test, and Low power (Receiver off and Hotspot on) of GSM1900, WCDMA B2, WCDMA B4, LTE B25, LTE B66, LTE B41 for hotspot test.

Normal power	Low Power- Receiver off and Hotspot off	Low Power- Receiver off and Hotspot on
Power Level A	Power Level B	Power Level C

11.1 GSM Measurement result

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

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

GSM 850 Speech (GMSK)	Measured Power (dBm)			Tune up	calculation	Averaged Power (dBm)		
	251	190	128			251	190	128
1 Txslot	32.26	32.33	32.24	33.30	/	/	/	/
GSM 850 GPRS (GMSK)	Measured Power (dBm)				calculation	Averaged Power (dBm)		
	251	190	128			251	190	128
1 Txslot	32.30	32.34	32.25	33.30	-9.03	23.27	23.31	23.22
2 Txslots	28.99	29.03	28.90	30.00	-6.02	22.97	23.01	22.88
3 Txslots	28.02	28.06	27.90	29.00	-4.26	23.76	23.80	23.64
4 Txslots	26.90	26.93	26.74	27.50	-3.01	23.89	23.92	23.73
GSM 850 EGPRS (GMSK)	Measured Power (dBm)				calculation	Averaged Power (dBm)		
	251	190	128			251	190	128
1 Txslot	32.25	32.32	32.22	33.30	-9.03	23.22	23.29	23.19
2 Txslots	28.95	29.01	28.87	30.00	-6.02	22.93	22.99	22.85
3Txslots	27.99	28.04	27.87	29.00	-4.26	23.73	23.78	23.61
4 Txslots	26.88	26.92	26.71	27.50	-3.01	23.87	23.91	23.70
GSM 850 EGPRS (8PSK)	Measured Power (dBm)				calculation	Averaged Power (dBm)		
	251	190	128			251	190	128
1 Txslot	26.36	26.83	26.79	27.00	-9.03	17.33	17.80	17.76
2 Txslots	22.72	23.12	23.18	24.50	-6.02	16.70	17.10	17.16
3 Txslots	22.01	22.00	22.14	24.00	-4.26	17.75	17.74	17.88
4 Txslots	20.78	20.83	21.13	22.50	-3.01	17.77	17.82	18.12
PCS1900 Speech (GMSK)	Measured Power (dBm)			Tune up	calculation	Averaged Power (dBm)		
	810	661	512			810	661	512
1 Txslot	28.75	28.49	28.47	29.70	/	/	/	/

PCS1900 GPRS (GMSK)	Measured Power (dBm)			30.00	calculation	Averaged Power (dBm)		
	28.29	28.15	28.34			/	/	/
1 Txslot	28.73	28.46	28.44	29.70	-9.03	19.70	19.43	19.41
2 Txslots	26.66	26.51	26.50	28.50	-6.02	20.64	20.49	20.48
3 Txslots	25.68	25.35	25.34	26.00	-4.26	21.42	21.09	21.08
4 Txslots	24.73	24.39	24.37	25.00	-3.01	21.72	21.38	21.36
PCS1900 EGPRS (GMSK)	Measured Power (dBm)				calculation	Averaged Power (dBm)		
	810	661	512				810	661
1 Txslot	28.75	28.47	28.46	29.70	-9.03	19.72	19.44	19.43
2 Txslots	26.67	26.51	26.50	28.50	-6.02	20.65	20.49	20.48
3 Txslots	25.69	25.36	25.35	26.00	-4.26	21.43	21.10	21.09
4 Txslots	24.74	24.40	24.38	25.00	-3.01	21.73	21.39	21.37
PCS1900 EGPRS (8PSK)	Measured Power (dBm)				calculation	Averaged Power (dBm)		
	810	661	512				810	661
1 Txslot	25.66	25.74	25.99	26.00	-9.03	16.63	16.71	16.96
2 Txslots	22.06	22.12	22.33	23.00	-6.02	16.04	16.10	16.31
3 Txslots	20.86	21.15	21.12	22.00	-4.26	16.60	16.89	16.86
4 Txslots	19.64	19.82	19.84	21.00	-3.01	16.63	16.81	16.83

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 GSM850 and 4Txslots for GSM1900.

Power-Level C

PCS1900 Speech (GMSK)	Measured Power (dBm)			Tune up	calculation	Averaged Power (dBm)		
	810	661	512				810	661
1 Txslot	26.10	25.79	25.78	26.70	/	/	/	/
PCS1900 GPRS (GMSK)	Measured Power (dBm)				calculation	Averaged Power (dBm)		
	810	661	512			/	/	/
1 Txslot	26.12	25.79	25.79	26.70	-9.03	17.09	16.76	16.76
2 Txslots	23.73	23.51	23.50	25.50	-6.02	17.71	17.49	17.48
3 Txslots	23.03	22.68	22.69	23.00	-4.26	18.77	18.42	18.43
4 Txslots	21.84	21.48	21.47	22.00	-3.01	18.83	18.47	18.46
PCS1900 EGPRS (GMSK)	Measured Power (dBm)			Tune up	calculation	Averaged Power (dBm)		
	810	661	512				810	661
1 Txslot	26.10	25.78	25.79	26.70	-9.03	17.07	16.75	16.76
2 Txslots	23.72	23.50	23.50	25.50	-6.02	17.70	17.48	17.48

3 Txslots	23.02	22.67	22.68	23.00	-4.26	18.76	18.41	18.42
4 Txslots	21.83	21.47	21.46	22.00	-3.01	18.82	18.46	18.45
PCS1900 EGPRS (8PSK)	Measured Power (dBm)			Tune up	calculation	Averaged Power (dBm)		
	810	661	512			810	661	512
1 Txslot	22.55	22.57	22.63	23.50	-9.03	13.52	13.54	13.60
2 Txslots	19.31	19.41	19.43	21.00	-6.02	13.29	13.39	13.41
3 Txslots	17.79	17.87	17.99	19.50	-4.26	13.53	13.61	13.73
4 Txslots	17.03	16.55	16.64	18.00	-3.01	14.02	13.54	13.63

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 GSM1900.

11.2 WCDMA Measurement result

Table 11.2-1: The conducted Power for WCDMA-Level A

Item	band	FDDV result			
	ARFCN	4233 (846.6MHz)	4182 (836.4MHz)	4132 (826.4MHz)	Tune up
WCDMA	\	24.09	23.93	24.11	25.00
HSUPA	1	21.19	21.15	21.24	21.50
	2	21.17	21.14	21.25	21.50
	3	21.96	21.98	21.99	22.00
	4	20.67	20.65	20.72	21.00
	5	21.98	21.96	21.99	22.00
HSPA+(16QAM)		22.87	22.76	22.80	23.00
DC-HSDPA	1	23.11	23.13	23.21	24.00
	2	23.09	23.10	23.17	24.00
	3	22.47	22.48	22.63	23.00
	4	22.46	22.50	22.69	23.00
Item	band	FDDIV result			
	ARFCN	1513 (1752.6MHz)	1412 (1732.4MHz)	1312 (1712.4MHz)	Tune up
WCDMA	\	24.07	24.03	24.09	25.00
HSUPA	1	21.06	21.03	21.04	22.00
	2	21.08	21.06	21.07	22.00
	3	21.98	21.96	21.93	22.00
	4	20.55	20.58	20.51	21.00

	5	22.03	22.06	22.04	22.50
HSPA+(16QAM)		22.58	22.56	22.65	23.00
DC-HSDPA	1	22.99	23.03	22.96	23.50
	2	22.91	22.94	22.93	23.50
	3	22.40	22.46	22.42	23.50
	4	22.42	22.49	22.43	23.50
Item	band	FDDII result			
	ARFCN	9538 (1907.6MHz)	9400 (1880MHz)	9262 (1852.4MHz)	Tune up
WCDMA	\	23.71	23.59	23.65	24.50
HSUPA	1	20.57	20.55	20.68	22.00
	2	20.61	20.58	20.70	22.00
	3	21.65	21.61	21.74	22.00
	4	20.11	20.06	20.22	22.00
	5	21.60	21.59	21.72	22.50
HSPA+(16QAM)		22.04	22.19	22.25	23.00
DC-HSDPA	1	22.46	22.57	22.79	23.50
	2	22.45	22.53	22.73	23.50
	3	22.04	22.01	22.20	23.50
	4	22.08	22.12	22.23	23.00

Table 11.2-2: The conducted Power for WCDMA-Level B

Item	band	FDDIV result			Tune up
	ARFCN	1513 (1752.6MHz)	1412 (1732.4MHz)	1312 (1712.4MHz)	
WCDMA	\	22.77	22.70	22.76	23.50
HSUPA	1	19.69	19.61	19.63	21.00
	2	19.72	19.62	19.65	21.00
	3	20.71	20.57	20.54	22.00
	4	19.20	19.09	19.11	21.00
	5	20.66	20.54	20.55	22.00
HSPA+(16QAM)		21.29	21.14	21.12	22.00
DC-HSDPA	1	21.66	21.65	21.69	22.50
	2	21.61	21.64	21.65	22.50
	3	21.11	21.05	21.17	22.50
	4	21.09	21.02	21.12	22.50
Item	band	FDDII result			Tune up
	ARFCN	9538 (1907.6MHz)	9400 (1880MHz)	9262 (1852.4MHz)	
WCDMA	\	22.73	22.77	22.80	23.50
HSUPA	1	19.70	19.71	19.75	21.00
	2	19.72	19.74	19.77	21.00
	3	20.62	20.66	20.71	22.00

	4	19.16	19.23	19.26	21.00
	5	20.61	20.64	20.70	22.00
HSPA+(16QAM)		21.27	21.31	21.33	23.00
DC-HSDPA	1	21.71	21.75	21.76	22.50
	2	21.70	21.69	21.73	22.50
	3	21.17	21.23	21.26	23.00
	4	21.15	21.22	21.25	22.00

Table 11.2-3: The conducted Power for WCDMA-Level C

Item	band	FDDIV result			Tune up
	ARFCN	1513 (1752.6MHz)	1412 (1732.4MHz)	1312 (1712.4MHz)	
WCDMA	\	21.01	20.94	21.04	22.00
HSUPA	1	18.04	18.08	18.07	19.50
	2	18.06	18.07	18.05	19.50
	3	19.08	19.11	19.09	20.00
	4	18.01	18.02	18.00	20.00
	5	19.07	19.06	19.03	20.00
HSPA+(16QAM)		19.61	19.69	19.65	21.50
DC-HSDPA	1	20.11	20.14	20.16	21.50
	2	20.09	20.13	20.14	21.50
	3	19.59	19.51	19.52	21.50
	4	19.54	19.50	19.53	21.50
Item	band	FDDII result			Tune up
	ARFCN	9538 (1907.6MHz)	9400 (1880MHz)	9262 (1852.4MHz)	
WCDMA	\	20.52	20.56	20.74	21.50
HSUPA	1	17.61	17.60	17.72	19.50
	2	17.63	17.59	17.74	19.50
	3	18.65	18.60	18.73	20.00
	4	17.13	17.08	17.22	19.00
	5	18.62	18.59	18.76	20.00
HSPA+(16QAM)		19.50	19.51	19.52	21.50
DC-HSDPA	1	19.63	19.66	19.77	21.50
	2	19.54	19.63	19.75	21.50
	3	19.08	19.15	19.28	20.50
	4	19.07	19.14	19.29	20.50

11.3 LTE Measurement result

Table 13.3-1: Maximum Power Reduction (MPR) for LTE-Normal Power

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

Table 13.3-2: Maximum Power Reduction (MPR) for LTE -Low power

Modulation	Channel bandwidth / Transmission bandwidth configuration [RB]						MPR (dB)
	1.4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20 MHz	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	0
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	0
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	0
64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	0
64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	0

Table 11.3-3: The tune up for LTE – Level A

Band	Tune up
LTE Band 12	25
LTE Band 13	25
LTE Band 25	24.5
LTE Band 26	25
LTE Band41(PC3)	24
LTE Band41(PC2)	27
LTE Band 66	25
LTE Band 71	25

Table 11.3-4: The tune up for LTE – Level B

Band	Tune up
LTE Band 25	23.5
LTE Band41(PC3)	22
LTE Band41(PC2)	25
LTE Band 66	23.5

Table 11.3-5: The tune up for LTE – Level C

Band	Tune up
LTE Band 25	21.5



LTE Band41(PC3)	20
LTE Band41(PC2)	23
LTE Band66	22

LTE B12-Level A						
BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM	64QAM	
1.4MHz	1RB-High (5)	715.3 (23173)	24.09	22.91	22.18	
		707.5 (23095)	24.03	22.99	22.11	
		699.7 (23017)	24.12	23.21	22.00	
	1RB-Middle (3)	715.3 (23173)	24.26	23.11	22.23	
		707.5 (23095)	24.24	23.17	22.20	
		699.7 (23017)	24.28	23.41	22.14	
	1RB-Low (0)	715.3 (23173)	23.97	22.94	22.10	
		707.5 (23095)	23.93	23.00	22.06	
		699.7 (23017)	23.98	23.25	22.11	
	3RB-High (3)	715.3 (23173)	24.02	23.19	22.13	
		707.5 (23095)	23.99	23.01	22.05	
		699.7 (23017)	24.07	23.19	22.04	
	3RB-Middle (1)	715.3 (23173)	24.14	23.25	22.14	
		707.5 (23095)	24.09	23.06	22.17	
		699.7 (23017)	24.10	23.15	22.10	
	3RB-Low (0)	715.3 (23173)	24.00	23.17	22.17	
		707.5 (23095)	24.04	23.03	22.12	
		699.7 (23017)	24.08	23.13	22.07	
	6RB (0)	715.3 (23173)	23.12	22.18	21.08	
		707.5 (23095)	23.03	22.17	21.04	
		699.7 (23017)	23.02	21.93	21.04	
	3MHz	1RB-High (14)	714.5 (23165)	24.05	22.87	22.11
			707.5 (23095)	24.00	22.77	22.09
			700.5 (23025)	24.14	23.22	22.04
		1RB-Middle (7)	714.5 (23165)	24.20	23.05	22.23
			707.5 (23095)	24.19	22.90	22.26
			700.5 (23025)	24.28	23.40	22.17
1RB-Low (0)		714.5 (23165)	24.04	22.92	22.10	
		707.5 (23095)	24.00	22.81	22.10	
		700.5 (23025)	24.01	23.23	22.07	
8RB-High (7)		714.5 (23165)	23.01	21.99	21.04	
		707.5 (23095)	22.94	22.06	21.07	
		700.5 (23025)	22.98	21.99	21.05	
8RB-Middle (4)		714.5 (23165)	23.08	22.08	21.10	
		707.5 (23095)	23.01	22.11	21.08	

	8RB-Low (0)	700.5 (23025)	23.04	22.07	21.06	
		714.5 (23165)	23.02	22.02	21.07	
		707.5 (23095)	22.96	22.07	21.07	
	15RB (0)	700.5 (23025)	23.00	22.02	21.07	
		714.5 (23165)	23.01	21.93	21.00	
		707.5 (23095)	22.95	21.98	21.00	
5MHz	1RB-High (24)	700.5 (23025)	22.98	21.99	21.01	
		713.5 (23155)	23.90	23.37	22.02	
		707.5 (23095)	23.86	22.96	22.05	
	1RB-Middle (12)	701.5 (23035)	23.83	22.91	21.97	
		713.5 (23155)	24.11	23.58	22.32	
		707.5 (23095)	24.10	23.16	22.25	
	1RB-Low (0)	701.5 (23035)	24.13	23.19	22.22	
		713.5 (23155)	23.81	23.33	22.01	
		707.5 (23095)	23.82	22.87	22.04	
	12RB-High (13)	701.5 (23035)	23.82	22.94	21.98	
		713.5 (23155)	22.91	22.03	21.01	
		707.5 (23095)	22.98	22.04	21.07	
	12RB-Middle (6)	701.5 (23035)	22.87	21.90	21.03	
		713.5 (23155)	23.00	22.12	21.04	
		707.5 (23095)	22.99	22.03	21.08	
	12RB-Low (0)	701.5 (23035)	22.99	22.02	21.08	
		713.5 (23155)	22.96	22.04	21.02	
		707.5 (23095)	22.95	21.98	21.02	
	25RB (0)	701.5 (23035)	22.94	22.02	21.02	
		713.5 (23155)	22.93	22.02	21.01	
		707.5 (23095)	22.91	21.90	21.04	
	10MHz	1RB-High (49)	701.5 (23035)	22.87	21.89	20.96
			711 (23130)	24.02	22.91	22.06
			707.5 (23095)	23.98	22.87	22.05
1RB-Middle (24)		704 (23060)	24.01	23.27	22.06	
		711 (23130)	24.01	23.04	22.19	
		707.5 (23095)	24.14	22.85	22.23	
1RB-Low (0)		704 (23060)	24.12	23.27	22.17	
		711 (23130)	23.93	22.89	22.08	
		707.5 (23095)	23.98	22.65	22.00	
25RB-High (25)		704 (23060)	23.90	23.18	22.11	
		711 (23130)	22.98	22.12	21.04	
		707.5 (23095)	23.10	22.11	21.11	
25RB-Middle (12)		704 (23060)	22.95	21.99	21.01	
		711 (23130)	23.00	22.13	21.02	
			707.5 (23095)	22.95	22.02	21.06

	25RB-Low (0)	704 (23060)	22.95	21.98	21.04
		711 (23130)	22.92	22.01	21.06
		707.5 (23095)	22.93	21.98	21.10
	50RB (0)	704 (23060)	22.93	21.95	21.08
		711 (23130)	22.93	22.00	21.01
		707.5 (23095)	23.00	22.03	21.13
		704 (23060)	22.95	22.00	21.07

LTE B13-Level A					
BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM	64QAM
5MHz	1RB-High (24)	784.5 (23255)	23.72	22.85	22.15
		782 (23230)	23.70	22.90	22.16
		779.5 (23205)	23.76	23.25	22.16
	1RB-Middle (12)	784.5 (23255)	24.00	23.11	22.47
		782 (23230)	24.00	23.17	22.48
		779.5 (23205)	24.10	23.56	22.53
	1RB-Low (0)	784.5 (23255)	23.68	22.84	22.19
		782 (23230)	23.79	22.97	22.30
		779.5 (23205)	23.82	23.21	22.20
	12RB-High (13)	784.5 (23255)	22.90	21.94	21.20
		782 (23230)	22.91	21.93	21.19
		779.5 (23205)	22.98	22.06	21.27
	12RB-Middle (6)	784.5 (23255)	22.95	21.96	21.24
		782 (23230)	22.94	21.97	21.26
		779.5 (23205)	23.02	22.14	21.31
	12RB-Low (0)	784.5 (23255)	22.87	21.87	21.19
		782 (23230)	22.86	21.84	21.13
		779.5 (23205)	22.92	21.98	21.19
	25RB (0)	784.5 (23255)	22.87	21.83	21.17
		782 (23230)	22.85	21.85	21.16
		779.5 (23205)	22.92	21.97	21.26
10MHz	1RB-High (49)	782 (23230)	23.84	22.79	22.21
	1RB-Middle (24)	782 (23230)	23.95	22.90	22.39
	1RB-Low (0)	782 (23230)	23.86	22.71	22.33
	25RB-High (25)	782 (23230)	22.98	21.97	21.25
	25RB-Middle (12)	782 (23230)	22.96	21.98	21.24
	25RB-Low (0)	782 (23230)	22.88	21.91	21.23
	50RB (0)	782 (23230)	22.92	21.90	21.23

LTE B25-Level A					
BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM	64QAM
1.4MHz	1RB-High (5)	1914.3 (26683)	23.65	22.45	22.49
		1882.5 (26365)	23.62	22.68	22.11
		1850.7 (26047)	23.77	23.13	22.25
	1RB-Middle (3)	1914.3 (26683)	23.84	22.52	22.46
		1882.5 (26365)	23.80	22.80	22.24
		1850.7 (26047)	23.89	23.25	22.39
	1RB-Low (0)	1914.3 (26683)	23.61	22.28	22.47
		1882.5 (26365)	23.62	22.69	22.14
		1850.7 (26047)	23.71	23.08	22.23
	3RB-High (3)	1914.3 (26683)	23.60	22.27	22.05
		1882.5 (26365)	23.68	22.75	22.15
		1850.7 (26047)	23.56	22.95	22.29
	3RB-Middle (1)	1914.3 (26683)	23.65	22.44	22.08
		1882.5 (26365)	23.65	22.74	22.19
		1850.7 (26047)	23.68	23.00	22.28
	3RB-Low (0)	1914.3 (26683)	23.57	22.40	22.02
		1882.5 (26365)	23.64	22.75	22.09
		1850.7 (26047)	23.56	22.97	22.21
	6RB (0)	1914.3 (26683)	22.76	21.56	21.05
		1882.5 (26365)	22.63	21.81	21.02
		1850.7 (26047)	22.44	21.63	21.13
3MHz	1RB-High (14)	1913.5 (26675)	23.70	22.44	22.45
		1882.5 (26365)	23.61	22.54	22.14
		1851.5 (26055)	23.80	23.14	22.34
	1RB-Middle (7)	1913.5 (26675)	23.74	22.63	22.48
		1882.5 (26365)	23.70	22.69	22.34
		1851.5 (26055)	23.91	23.29	22.46
	1RB-Low (0)	1913.5 (26675)	23.61	22.55	22.45
		1882.5 (26365)	23.62	22.64	22.18
		1851.5 (26055)	23.76	23.16	22.34
	8RB-High (7)	1913.5 (26675)	22.67	21.67	21.07
		1882.5 (26365)	22.56	21.76	21.03
		1851.5 (26055)	22.76	21.89	21.18
	8RB-Middle (4)	1913.5 (26675)	22.71	21.70	21.10
		1882.5 (26365)	22.70	21.83	21.09
		1851.5 (26055)	22.81	21.97	21.16
	8RB-Low (0)	1913.5 (26675)	22.66	21.71	21.08
		1882.5 (26365)	22.66	21.85	21.12
		1851.5 (26055)	22.81	21.91	21.14

	15RB (0)	1913.5 (26675)	22.58	21.56	21.02	
		1882.5 (26365)	22.67	21.74	21.00	
		1851.5 (26055)	22.79	21.84	21.11	
5MHz	1RB-High (24)	1912.5 (26665)	23.58	22.49	22.43	
		1882.5 (26365)	23.54	22.66	22.11	
		1852.5 (26065)	23.61	23.19	22.14	
	1RB-Middle (12)	1912.5 (26665)	23.75	22.70	22.47	
		1882.5 (26365)	23.87	22.96	22.38	
		1852.5 (26065)	23.88	23.44	22.44	
	1RB-Low (0)	1912.5 (26665)	23.46	22.48	22.49	
		1882.5 (26365)	23.63	22.78	22.12	
		1852.5 (26065)	23.65	23.18	22.21	
	12RB-High (13)	1912.5 (26665)	22.50	21.54	21.01	
		1882.5 (26365)	22.63	21.72	21.00	
		1852.5 (26065)	22.80	21.94	22.15	
	12RB-Middle (6)	1912.5 (26665)	22.63	21.66	21.07	
		1882.5 (26365)	22.70	21.86	21.15	
		1852.5 (26065)	22.83	21.99	22.16	
	12RB-Low (0)	1912.5 (26665)	22.62	21.67	21.08	
		1882.5 (26365)	22.67	21.80	21.10	
		1852.5 (26065)	22.77	21.88	22.08	
	25RB (0)	1912.5 (26665)	22.57	21.54	21.04	
		1882.5 (26365)	22.65	21.75	21.01	
		1852.5 (26065)	22.76	21.88	21.13	
	10MHz	1RB-High (49)	1910 (26640)	23.75	22.41	22.48
			1882.5 (26365)	23.55	22.43	22.13
			1855 (26090)	23.77	23.13	22.21
1RB-Middle (24)		1910 (26640)	23.76	22.48	22.45	
		1882.5 (26365)	23.74	22.65	22.32	
		1855 (26090)	23.90	23.20	22.36	
1RB-Low (0)		1910 (26640)	23.51	22.46	22.47	
		1882.5 (26365)	23.60	22.64	22.38	
		1855 (26090)	23.69	23.07	22.29	
25RB-High (25)		1910 (26640)	22.41	21.57	20.95	
		1882.5 (26365)	22.59	21.74	21.07	
		1855 (26090)	22.84	21.95	21.21	
25RB-Middle (12)		1910 (26640)	22.51	21.70	21.03	
		1882.5 (26365)	22.67	21.79	21.11	
		1855 (26090)	22.79	21.88	21.17	
25RB-Low (0)		1910 (26640)	22.56	21.75	21.11	
		1882.5 (26365)	22.76	21.88	21.17	
		1855 (26090)	22.71	21.90	21.12	

	50RB (0)	1910 (26640)	22.51	21.61	21.01	
		1882.5 (26365)	22.73	21.78	21.13	
		1855 (26090)	22.80	21.91	21.13	
15MHz	1RB-High (74)	1907.5 (26615)	23.61	22.68	22.18	
		1882.5 (26365)	23.42	22.37	22.05	
		1857.5 (26115)	23.74	23.05	22.24	
	1RB-Middle (37)	1907.5 (26615)	23.61	22.88	22.11	
		1882.5 (26365)	23.64	22.61	22.22	
		1857.5 (26115)	23.82	23.16	22.32	
	1RB-Low (0)	1907.5 (26615)	23.50	22.89	22.15	
		1882.5 (26365)	23.70	22.64	22.30	
		1857.5 (26115)	23.76	23.05	22.32	
	36RB-High (38)	1907.5 (26615)	22.62	21.49	20.93	
		1882.5 (26365)	22.62	21.64	21.04	
		1857.5 (26115)	22.83	21.91	21.16	
	36RB-Middle (19)	1907.5 (26615)	22.64	21.57	21.04	
		1882.5 (26365)	22.70	21.72	21.09	
		1857.5 (26115)	22.88	21.89	21.20	
	36RB-Low (0)	1907.5 (26615)	22.59	21.57	21.00	
		1882.5 (26365)	22.79	21.83	21.21	
		1857.5 (26115)	22.73	21.80	21.12	
	75RB (0)	1907.5 (26615)	22.55	21.58	20.95	
		1882.5 (26365)	22.73	21.80	21.07	
		1857.5 (26115)	22.80	21.86	21.16	
	20MHz	1RB-High (99)	1905 (26590)	23.41	22.82	21.94
			1882.5 (26365)	23.34	22.80	22.02
			1860 (26140)	23.57	23.04	22.25
		1RB-Middle (50)	1905 (26590)	23.57	23.13	22.20
			1882.5 (26365)	23.74	23.20	22.35
			1860 (26140)	23.85	23.29	22.36
1RB-Low (0)		1905 (26590)	23.30	22.85	22.07	
		1882.5 (26365)	23.61	23.06	22.25	
		1860 (26140)	23.56	22.98	22.25	
50RB-High (50)		1905 (26590)	22.30	21.41	20.76	
		1882.5 (26365)	22.55	21.64	20.98	
		1860 (26140)	22.72	21.75	21.05	
50RB-Middle (25)		1905 (26590)	22.52	21.63	21.01	
		1882.5 (26365)	22.70	21.80	21.13	
		1860 (26140)	22.83	21.83	21.18	
50RB-Low (0)		1905 (26590)	22.52	21.66	21.02	
		1882.5 (26365)	22.80	21.91	21.22	
		1860 (26140)	22.69	21.74	21.07	



100RB (0)	1905 (26590)	22.40	21.55	20.91
	1882.5 (26365)	22.69	21.76	21.09
	1860 (26140)	22.74	21.81	21.07

LTE B26-Level A						
BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM	64QAM	
1.4MHz	1RB-High (5)	848.3 (27033)	23.93	22.87	22.56	
		831.5 (26865)	23.93	22.91	22.33	
		814.7 (26697)	23.97	23.19	22.24	
	1RB-Middle (3)	848.3 (27033)	24.13	23.02	22.73	
		831.5 (26865)	24.13	23.11	22.42	
		814.7 (26697)	24.17	23.35	22.46	
	1RB-Low (0)	848.3 (27033)	23.91	22.85	22.69	
		831.5 (26865)	23.96	22.90	22.31	
		814.7 (26697)	24.00	23.19	22.25	
	3RB-High (3)	848.3 (27033)	24.02	23.07	22.37	
		831.5 (26865)	23.95	22.95	22.36	
		814.7 (26697)	23.98	23.09	22.29	
	3RB-Middle (1)	848.3 (27033)	24.05	23.14	22.41	
		831.5 (26865)	24.00	22.99	22.38	
		814.7 (26697)	24.03	23.09	22.34	
	3RB-Low (0)	848.3 (27033)	24.01	23.07	22.35	
		831.5 (26865)	23.95	22.95	22.33	
		814.7 (26697)	23.97	23.05	22.33	
	6RB (0)	848.3 (27033)	23.08	22.16	21.35	
		831.5 (26865)	22.95	22.11	21.30	
		814.7 (26697)	22.99	21.85	21.29	
	3MHz	1RB-High (14)	847.5 (27025)	24.03	23.27	22.33
			831.5 (26865)	23.98	22.86	22.44
			815.5 (26705)	23.99	22.87	22.94
		1RB-Middle (7)	847.5 (27025)	24.13	23.37	22.58
			831.5 (26865)	24.10	23.05	22.54
			815.5 (26705)	24.09	23.07	22.76
1RB-Low (0)		847.5 (27025)	23.98	23.25	22.48	
		831.5 (26865)	23.94	22.94	22.40	
		815.5 (26705)	23.94	22.94	22.94	
8RB-High (7)		847.5 (27025)	23.03	22.09	21.36	
		831.5 (26865)	22.96	22.06	21.34	
		815.5 (26705)	22.96	22.05	21.82	



	8RB-Middle (4)	847.5 (27025)	23.05	22.14	21.39	
		831.5 (26865)	23.02	22.09	21.35	
		815.5 (26705)	23.02	22.07	21.84	
	8RB-Low (0)	847.5 (27025)	23.03	22.13	21.39	
		831.5 (26865)	22.95	22.03	21.31	
		815.5 (26705)	22.96	22.03	21.85	
	15RB (0)	847.5 (27025)	23.02	22.04	21.34	
		831.5 (26865)	22.98	21.99	21.29	
		815.5 (26705)	22.98	21.99	20.82	
5MHz	1RB-High (24)	846.5 (27015)	23.92	22.89	22.78	
		831.5 (26865)	23.93	22.99	22.29	
		816.5 (26715)	23.89	23.35	22.31	
	1RB-Middle (12)	846.5 (27015)	24.15	23.14	22.71	
		831.5 (26865)	24.22	23.25	22.53	
		816.5 (26715)	24.13	23.58	22.57	
	1RB-Low (0)	846.5 (27015)	23.90	22.89	22.69	
		831.5 (26865)	23.99	22.96	22.37	
		816.5 (26715)	23.90	23.28	22.29	
	12RB-High (13)	846.5 (27015)	22.86	21.93	21.30	
		831.5 (26865)	22.95	22.08	21.32	
		816.5 (26715)	23.01	22.16	21.34	
	12RB-Middle (6)	846.5 (27015)	22.99	22.08	21.38	
		831.5 (26865)	23.00	22.10	21.38	
		816.5 (26715)	23.02	22.17	21.38	
	12RB-Low (0)	846.5 (27015)	22.92	22.05	21.33	
		831.5 (26865)	22.92	22.06	21.32	
		816.5 (26715)	22.96	22.13	21.32	
	25RB (0)	846.5 (27015)	22.94	21.93	21.33	
		831.5 (26865)	22.96	22.04	21.33	
		816.5 (26715)	22.97	22.12	21.35	
	10MHz	1RB-High (49)	844 (26990)	24.06	22.77	22.41
			831.5 (26865)	23.96	23.22	22.31
			820 (26750)	24.01	22.93	22.41
		1RB-Middle (24)	844 (26990)	24.07	22.92	22.57
			831.5 (26865)	24.10	23.34	22.47
			820 (26750)	24.11	23.02	22.51
1RB-Low (0)		844 (26990)	23.88	22.77	22.37	
		831.5 (26865)	24.08	23.28	22.55	
		820 (26750)	23.93	22.82	22.39	
25RB-High (25)		844 (26990)	22.97	22.07	21.39	
		831.5 (26865)	23.03	22.10	21.36	
		820 (26750)	23.02	22.17	21.42	



	25RB-Middle (12)	844 (26990)	23.00	22.10	21.39
		831.5 (26865)	22.98	22.10	21.34
		820 (26750)	23.00	22.16	21.33
	25RB-Low (0)	844 (26990)	23.03	22.15	21.47
		831.5 (26865)	22.92	22.04	21.30
		820 (26750)	22.92	22.08	21.29
	50RB (0)	844 (26990)	22.99	22.06	21.41
		831.5 (26865)	22.98	22.07	21.33
		820 (26750)	22.95	22.09	21.35
15MHz	1RB-High (74)	841.5 (26965)	24.04	23.17	22.34
		831.5 (26865)	23.91	23.17	22.37
		822.5 (26775)	23.95	22.78	22.40
	1RB-Middle (37)	841.5 (26965)	24.00	23.27	22.45
		831.5 (26865)	23.98	23.24	22.36
		822.5 (26775)	24.05	22.84	22.49
	1RB-Low (0)	841.5 (26965)	23.94	23.14	22.40
		831.5 (26865)	23.97	23.23	22.47
		822.5 (26775)	23.94	22.69	22.38
	36RB-High (38)	841.5 (26965)	23.04	22.13	21.42
		831.5 (26865)	22.99	21.97	21.34
		822.5 (26775)	23.15	22.09	21.38
	36RB-Middle (19)	841.5 (26965)	23.06	22.08	21.42
		831.5 (26865)	23.05	22.00	21.36
		822.5 (26775)	23.12	22.12	21.39
	36RB-Low (0)	841.5 (26965)	23.04	22.03	21.39
		831.5 (26865)	23.04	22.02	21.40
		822.5 (26775)	23.02	21.97	21.30
	75RB (0)	841.5 (26965)	23.07	22.08	21.40
		831.5 (26865)	23.06	22.02	21.33
		822.5 (26775)	23.05	22.07	21.30

LTE 41(PC3)-Level A					
BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM	64QAM
5MHz	1RB-High (24)	2687.5 (41565)	22.87	21.85	21.12
		2640.3(41093)	22.81	22.01	20.99
		2593 (40620)	22.99	21.89	21.17
		2545.8(40148)	23.25	22.22	21.26
		2498.5 (39675)	23.25	22.43	21.64
	1RB-Middle (12)	2687.5 (41565)	22.87	21.88	21.37
		2640.3(41093)	22.87	22.05	21.21
		2593 (40620)	22.97	21.87	21.43
		2545.8(40148)	23.22	22.25	21.52
		2498.5 (39675)	23.29	22.46	21.90
	1RB-Low (0)	2687.5 (41565)	22.82	21.82	21.14
		2640.3(41093)	22.87	22.10	21.08
		2593 (40620)	23.01	21.91	21.22
		2545.8(40148)	23.17	22.16	21.21
		2498.5 (39675)	23.25	22.44	21.63
	12RB-High (13)	2687.5 (41565)	21.98	20.93	20.59
		2640.3(41093)	22.06	21.12	20.48
		2593 (40620)	22.05	21.07	20.63
		2545.8(40148)	22.36	21.33	20.74
		2498.5 (39675)	22.50	21.55	21.08
	12RB-Middle (6)	2687.5 (41565)	22.09	21.01	20.63
		2640.3(41093)	22.12	21.19	20.50
		2593 (40620)	22.16	21.20	20.75
		2545.8(40148)	22.44	21.42	20.83
		2498.5 (39675)	22.54	21.61	21.14
	12RB-Low (0)	2687.5 (41565)	21.97	20.90	20.58
		2640.3(41093)	22.05	21.14	20.54
		2593 (40620)	22.10	21.12	20.68
		2545.8(40148)	22.31	21.28	20.72
		2498.5 (39675)	22.44	21.49	21.10
	25RB (0)	2687.5 (41565)	21.99	21.02	20.61
		2640.3(41093)	22.03	21.09	20.49
2593 (40620)		22.09	21.10	20.69	
2545.8(40148)		22.35	21.39	20.79	
2498.5 (39675)		22.53	21.54	20.89	
10MHz	1RB-High (49)	2685 (41540)	22.87	21.96	21.18
		2639(41080)	22.97	22.08	21.02
		2593 (40620)	23.06	21.97	21.17
		2547(40160)	23.32	22.35	21.40

		2501 (39700)	23.43	22.60	21.69
	1RB-Middle (24)	2685 (41540)	23.16	22.22	21.32
		2639(41080)	23.25	22.40	21.22
		2593 (40620)	23.35	22.26	21.31
		2547(40160)	23.57	22.64	21.41
		2501 (39700)	23.70	22.79	21.78
	1RB-Low (0)	2685 (41540)	22.84	21.90	21.19
		2639(41080)	23.00	22.17	21.21
		2593 (40620)	23.14	22.06	21.35
		2547(40160)	23.15	22.25	21.38
		2501 (39700)	23.35	22.49	21.70
	25RB-High (25)	2685 (41540)	22.03	21.05	20.67
		2639(41080)	22.11	21.16	20.64
		2593 (40620)	22.11	21.14	20.73
		2547(40160)	22.45	21.48	20.87
		2501 (39700)	22.51	21.57	21.18
	25RB-Middle (12)	2685 (41540)	22.04	21.07	20.66
		2639(41080)	22.10	21.19	20.77
		2593 (40620)	22.15	21.20	20.86
		2547(40160)	22.44	21.44	20.86
		2501 (39700)	22.56	21.59	21.22
	25RB-Low (0)	2685 (41540)	21.99	21.01	20.67
		2639(41080)	22.19	21.26	20.70
		2593 (40620)	22.21	21.23	20.83
		2547(40160)	22.40	21.46	20.87
2501 (39700)		22.51	21.57	21.18	
50RB (0)	2685 (41540)	22.02	21.05	20.66	
	2639(41080)	22.15	21.24	20.72	
	2593 (40620)	22.16	21.17	20.84	
	2547(40160)	22.41	21.46	20.94	
	2501 (39700)	22.55	21.61	20.98	
15MHz	1RB-High (74)	2682.5 (41515)	22.80	21.90	21.03
		2637.8(41068)	22.88	21.77	20.87
		2593 (40620)	22.90	21.91	21.09
		2548.3(40173)	23.24	22.38	21.34
		2503.5 (39725)	23.35	22.32	21.58
	1RB-Middle (37)	2682.5 (41515)	22.95	22.05	21.20
		2637.8(41068)	23.10	22.00	21.21
		2593 (40620)	23.08	22.11	21.30
		2548.3(40173)	23.28	22.42	21.43
		2503.5 (39725)	23.50	22.42	21.73
	1RB-Low (0)	2682.5 (41515)	22.77	21.90	21.01

		2637.8(41068)	23.00	21.95	21.17
		2593 (40620)	23.06	22.07	21.31
		2548.3(40173)	23.09	22.23	21.26
		2503.5 (39725)	23.41	22.24	21.61
	36RB-High (38)	2682.5 (41515)	21.96	20.97	20.53
		2637.8(41068)	22.04	21.01	20.43
		2593 (40620)	22.00	20.97	20.56
		2548.3(40173)	22.40	21.41	20.81
		2503.5 (39725)	22.45	21.40	21.05
	36RB-Middle (19)	2682.5 (41515)	21.89	20.92	20.51
		2637.8(41068)	22.11	21.08	20.53
		2593 (40620)	22.07	21.05	20.64
		2548.3(40173)	22.38	21.37	20.75
		2503.5 (39725)	22.51	21.43	21.06
	36RB-Low (0)	2682.5 (41515)	21.86	20.86	20.46
		2637.8(41068)	22.08	21.06	20.57
		2593 (40620)	22.09	21.08	20.71
		2548.3(40173)	22.28	21.28	20.69
		2503.5 (39725)	22.45	21.42	21.09
	75RB (0)	2682.5 (41515)	21.94	20.92	20.53
2637.8(41068)		22.07	21.09	20.60	
2593 (40620)		22.08	21.07	20.73	
2548.3(40173)		22.36	21.35	20.87	
2503.5 (39725)		22.48	21.47	20.98	
20MHz	1RB-High (99)	2680 (41490)	22.83	21.79	21.03
		2636.5(41055)	22.85	21.70	20.80
		2593 (40620)	22.86	22.00	21.00
		2549.5(40185)	23.32	22.25	21.25
		2506 (39750)	23.32	22.19	21.41
	1RB-Middle (50)	2680 (41490)	23.16	22.08	21.24
		2636.5(41055)	23.20	22.13	21.25
		2593 (40620)	23.18	22.29	21.37
		2549.5(40185)	23.44	22.43	21.49
		2506 (39750)	23.57	22.49	21.79
	1RB-Low (0)	2680 (41490)	22.75	21.74	20.96
		2636.5(41055)	23.03	21.82	21.15
		2593 (40620)	23.11	22.22	21.34
		2549.5(40185)	23.10	22.06	21.17
		2506 (39750)	23.33	22.19	21.56
	50RB-High (50)	2680 (41490)	22.02	21.01	20.62
		2636.5(41055)	22.10	21.11	20.60
		2593 (40620)	21.99	21.06	20.65

		2549.5(40185)	22.44	21.44	20.88
		2506 (39750)	22.49	21.54	21.11
	50RB-Middle (25)	2680 (41490)	21.96	20.93	20.60
		2636.5(41055)	22.14	21.23	20.70
		2593 (40620)	22.15	21.22	20.79
		2549.5(40185)	22.46	21.49	20.90
		2506 (39750)	22.57	21.63	21.20
		2680 (41490)	21.81	20.80	20.47
	50RB-Low (0)	2636.5(41055)	22.19	21.20	20.77
		2593 (40620)	22.22	21.29	20.93
		2549.5(40185)	22.32	21.33	20.80
		2506 (39750)	22.55	21.60	21.25
		2680 (41490)	21.89	20.91	20.47
	100RB (0)	2636.5(41055)	22.11	21.14	20.61
		2593 (40620)	22.11	21.13	20.72
		2549.5(40185)	22.38	21.40	20.77
		2506 (39750)	22.56	21.57	20.96
		2680 (41490)	21.81	20.80	20.47

LTE 41(PC2)-Level A					
BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM	64QAM
5MHz	1RB-High (24)	2687.5 (41565)	25.78	25.03	24.28
		2640.3(41093)	25.80	25.07	24.06
		2593 (40620)	25.94	25.00	24.27
		2545.8(40148)	26.21	25.38	24.44
		2498.5 (39675)	26.34	25.55	24.71
	1RB-Middle (12)	2687.5 (41565)	26.11	25.33	24.37
		2640.3(41093)	26.20	25.42	24.18
		2593 (40620)	26.30	25.31	24.37
		2545.8(40148)	26.53	25.64	24.49
		2498.5 (39675)	26.69	25.84	24.80
	1RB-Low (0)	2687.5 (41565)	25.77	25.02	24.26
		2640.3(41093)	25.89	25.14	24.16
		2593 (40620)	25.98	25.03	24.32
		2545.8(40148)	26.15	25.34	24.41
		2498.5 (39675)	26.34	25.55	24.71
	12RB-High (13)	2687.5 (41565)	24.89	23.90	23.55
		2640.3(41093)	24.94	24.02	23.40

		2593 (40620)	24.94	23.97	23.57	
		2545.8(40148)	25.25	24.23	23.70	
		2498.5 (39675)	25.37	24.44	24.08	
	12RB-Middle (6)	2687.5 (41565)	24.91	23.91	23.59	
		2640.3(41093)	25.00	24.05	23.46	
		2593 (40620)	25.02	24.02	23.66	
		2545.8(40148)	25.29	24.30	23.77	
		2498.5 (39675)	25.42	24.49	24.07	
	12RB-Low (0)	2687.5 (41565)	24.89	23.87	23.53	
		2640.3(41093)	24.98	24.04	23.42	
		2593 (40620)	24.99	23.98	23.63	
		2545.8(40148)	25.21	24.20	23.68	
		2498.5 (39675)	25.40	24.42	24.04	
	25RB (0)	2687.5 (41565)	24.87	23.92	23.56	
		2640.3(41093)	24.95	23.98	23.44	
		2593 (40620)	24.92	23.94	23.60	
		2545.8(40148)	25.21	24.30	23.70	
		2498.5 (39675)	25.37	24.38	24.00	
	10MHz	1RB-High (49)	2685 (41540)	25.86	25.06	24.32
			2639(41080)	25.85	25.14	24.08
2593 (40620)			25.90	25.19	24.31	
2547(40160)			26.22	25.45	24.52	
2501 (39700)			26.40	25.67	24.76	
1RB-Middle (24)		2685 (41540)	25.93	25.13	24.43	
		2639(41080)	26.04	25.27	24.27	
		2593 (40620)	26.03	25.28	24.44	
		2547(40160)	26.30	25.49	24.60	
		2501 (39700)	26.48	25.72	24.89	
1RB-Low (0)		2685 (41540)	25.81	25.04	24.35	
		2639(41080)	25.96	25.23	24.28	
		2593 (40620)	26.01	25.27	24.46	
		2547(40160)	26.19	25.35	24.49	
		2501 (39700)	26.42	25.61	24.76	
25RB-High (25)		2685 (41540)	24.92	23.93	23.62	
		2639(41080)	24.94	24.00	23.50	
		2593 (40620)	24.95	24.01	23.62	
		2547(40160)	25.30	24.35	23.82	
		2501 (39700)	25.37	24.43	24.05	
25RB-Middle (12)		2685 (41540)	24.94	23.95	23.65	
		2639(41080)	24.99	24.04	23.55	
		2593 (40620)	24.99	24.05	23.70	
		2547(40160)	25.29	24.32	23.81	

		2501 (39700)	25.40	24.46	24.11
	25RB-Low (0)	2685 (41540)	24.89	23.89	23.62
		2639(41080)	25.01	24.03	23.57
		2593 (40620)	25.03	24.09	23.73
		2547(40160)	25.24	24.28	23.80
		2501 (39700)	25.40	24.43	24.07
	50RB (0)	2685 (41540)	24.91	23.91	23.58
		2639(41080)	25.02	24.05	23.50
		2593 (40620)	24.96	24.04	23.66
		2547(40160)	25.29	24.34	23.75
2501 (39700)		25.38	24.46	23.96	
15MHz	1RB-High (74)	2682.5 (41515)	25.81	24.96	24.23
		2637.8(41068)	25.77	25.08	23.96
		2593 (40620)	25.83	25.05	24.18
		2548.3(40173)	26.25	25.34	24.42
		2503.5 (39725)	26.39	25.62	24.65
	1RB-Middle (37)	2682.5 (41515)	25.92	25.10	24.33
		2637.8(41068)	26.07	25.28	24.23
		2593 (40620)	26.02	25.18	24.36
		2548.3(40173)	26.33	25.43	24.51
		2503.5 (39725)	26.57	25.69	24.81
	1RB-Low (0)	2682.5 (41515)	25.77	24.96	24.21
		2637.8(41068)	26.01	25.22	24.23
		2593 (40620)	26.00	25.22	24.41
		2548.3(40173)	26.10	25.28	24.37
		2503.5 (39725)	26.42	25.56	24.68
	36RB-High (38)	2682.5 (41515)	24.96	23.91	23.47
		2637.8(41068)	25.05	23.96	23.35
		2593 (40620)	25.05	23.98	23.51
		2548.3(40173)	25.44	24.36	23.70
		2503.5 (39725)	25.58	24.42	23.93
	36RB-Middle (19)	2682.5 (41515)	24.89	23.86	23.44
		2637.8(41068)	25.12	24.04	23.44
		2593 (40620)	25.14	24.02	23.57
		2548.3(40173)	25.41	24.32	23.71
		2503.5 (39725)	25.60	24.47	23.99
	36RB-Low (0)	2682.5 (41515)	24.82	23.82	23.40
		2637.8(41068)	25.14	24.02	23.47
		2593 (40620)	25.13	24.05	23.64
		2548.3(40173)	25.29	24.22	23.66
		2503.5 (39725)	25.58	24.45	23.99
75RB (0)	2682.5 (41515)	24.91	23.89	23.45	

		2637.8(41068)	25.10	24.04	23.43
		2593 (40620)	25.09	24.02	23.60
		2548.3(40173)	25.37	24.33	23.71
		2503.5 (39725)	25.57	24.47	23.99
20MHz	1RB-High (99)	2680 (41490)	25.76	24.87	24.14
		2636.5(41055)	25.74	25.07	23.89
		2593 (40620)	25.91	24.98	24.06
		2549.5(40185)	26.27	25.28	24.38
		2506 (39750)	26.27	25.54	24.51
	1RB-Middle (50)	2680 (41490)	26.16	25.23	24.40
		2636.5(41055)	26.32	25.52	24.30
		2593 (40620)	26.36	25.39	24.43
		2549.5(40185)	26.60	25.61	24.60
		2506 (39750)	26.76	25.96	24.86
	1RB-Low (0)	2680 (41490)	25.66	24.79	24.09
		2636.5(41055)	25.94	25.17	24.20
		2593 (40620)	26.16	25.23	24.40
		2549.5(40185)	26.04	25.10	24.33
		2506 (39750)	26.34	25.56	24.63
	50RB-High (50)	2680 (41490)	24.95	23.96	23.48
		2636.5(41055)	24.98	24.03	23.35
		2593 (40620)	24.90	23.89	23.45
		2549.5(40185)	25.33	24.34	23.71
		2506 (39750)	25.40	24.43	23.92
	50RB-Middle (25)	2680 (41490)	24.93	23.87	23.43
		2636.5(41055)	25.05	24.08	23.45
		2593 (40620)	25.03	24.04	23.62
		2549.5(40185)	25.36	24.37	23.73
		2506 (39750)	25.46	24.52	24.03
	50RB-Low (0)	2680 (41490)	24.74	23.77	23.30
		2636.5(41055)	25.06	24.10	23.53
		2593 (40620)	25.11	24.10	23.69
		2549.5(40185)	25.22	24.25	23.65
		2506 (39750)	25.45	24.49	24.03
100RB (0)	2680 (41490)	24.84	23.82	23.39	
	2636.5(41055)	25.01	24.03	23.46	
	2593 (40620)	24.99	24.00	23.59	
	2549.5(40185)	25.29	24.30	23.69	
	2506 (39750)	25.40	24.42	23.98	

LTE 66-Level A						
BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM	64QAM	
1.4MHz	1RB-High (5)	1779.3 (132665)	24.59	23.12	22.70	
		1745 (132322)	24.14	23.32	22.59	
		1710.7 (131979)	24.11	23.04	22.63	
	1RB-Middle (3)	1779.3 (132665)	24.70	23.28	22.84	
		1745 (132322)	24.39	23.53	22.64	
		1710.7 (131979)	24.28	23.20	22.79	
	1RB-Low (0)	1779.3 (132665)	24.70	23.04	22.72	
		1745 (132322)	24.16	23.39	22.63	
		1710.7 (131979)	23.85	23.02	22.69	
	3RB-High (3)	1779.3 (132665)	24.22	22.89	22.72	
		1745 (132322)	24.17	23.23	22.60	
		1710.7 (131979)	23.78	23.26	22.69	
	3RB-Middle (1)	1779.3 (132665)	24.04	22.99	22.79	
		1745 (132322)	24.22	23.25	22.72	
		1710.7 (131979)	23.87	23.31	22.78	
	3RB-Low (0)	1779.3 (132665)	24.01	22.95	22.76	
		1745 (132322)	24.18	23.22	22.66	
		1710.7 (131979)	23.68	23.22	22.70	
	6RB (0)	1779.3 (132665)	23.19	22.40	21.80	
		1745 (132322)	23.25	22.10	21.57	
		1710.7 (131979)	22.79	22.28	21.67	
	3MHz	1RB-High (14)	1778.5 (132657)	24.54	23.11	22.64
			1745 (132322)	24.29	23.42	22.67
			1711.5 (131987)	24.15	23.02	22.77
1RB-Middle (7)		1778.5 (132657)	24.70	23.17	22.84	
		1745 (132322)	24.38	23.54	22.77	
		1711.5 (131987)	24.29	23.23	22.92	
1RB-Low (0)		1778.5 (132657)	24.53	23.15	22.69	
		1745 (132322)	24.30	23.45	22.73	
		1711.5 (131987)	24.21	23.12	22.78	
8RB-High (7)		1778.5 (132657)	23.46	22.45	21.81	
		1745 (132322)	23.25	22.23	21.61	
		1711.5 (131987)	23.15	22.20	21.68	
8RB-Middle (4)		1778.5 (132657)	23.57	22.48	21.88	
		1745 (132322)	23.25	22.26	21.63	
		1711.5 (131987)	23.12	22.25	21.73	
8RB-Low (0)		1778.5 (132657)	23.34	22.50	21.87	
		1745 (132322)	23.25	22.27	21.69	
		1711.5 (131987)	23.11	22.23	21.71	

	15RB (0)	1778.5 (132657)	23.35	22.36	21.82	
		1745 (132322)	23.18	22.21	21.62	
		1711.5 (131987)	23.02	22.14	21.66	
5MHz	1RB-High (24)	1777.5 (132647)	24.57	23.37	22.68	
		1745 (132322)	24.13	23.47	22.57	
		1712.5 (131997)	24.08	23.08	22.71	
	1RB-Middle (12)	1777.5 (132647)	24.69	23.58	22.93	
		1745 (132322)	24.36	23.69	22.79	
		1712.5 (131997)	24.32	23.32	22.98	
	1RB-Low (0)	1777.5 (132647)	24.51	23.36	22.77	
		1745 (132322)	24.13	23.53	22.64	
		1712.5 (131997)	24.12	23.07	22.61	
	12RB-High (13)	1777.5 (132647)	23.36	22.30	21.80	
		1745 (132322)	23.12	22.22	21.56	
		1712.5 (131997)	23.16	22.20	21.70	
	12RB-Middle (6)	1777.5 (132647)	23.45	22.41	21.89	
		1745 (132322)	23.25	22.34	21.68	
		1712.5 (131997)	23.19	22.26	21.73	
	12RB-Low (0)	1777.5 (132647)	23.39	22.38	21.81	
		1745 (132322)	23.18	22.31	21.64	
		1712.5 (131997)	23.15	22.18	21.67	
	25RB (0)	1777.5 (132647)	23.38	22.32	21.85	
		1745 (132322)	23.16	22.20	21.64	
		1712.5 (131997)	23.09	22.12	21.69	
	10MHz	1RB-High (49)	1775 (132622)	24.65	23.15	22.75
			1745 (132322)	24.24	23.40	22.61
			1715 (132022)	24.05	23.08	22.74
1RB-Middle (24)		1775 (132622)	24.67	23.24	22.87	
		1745 (132322)	24.35	23.51	22.77	
		1715 (132022)	24.19	23.16	22.85	
1RB-Low (0)		1775 (132622)	24.32	23.11	22.90	
		1745 (132322)	24.19	23.42	22.74	
		1715 (132022)	24.15	23.02	22.76	
25RB-High (25)		1775 (132622)	23.38	22.37	21.88	
		1745 (132322)	23.12	22.15	21.60	
		1715 (132022)	23.18	22.35	21.72	
25RB-Middle (12)		1775 (132622)	23.42	22.41	21.90	
		1745 (132322)	23.20	22.22	21.67	
		1715 (132022)	23.20	22.32	21.71	
25RB-Low (0)		1775 (132622)	23.41	22.41	21.89	
		1745 (132322)	23.19	22.21	21.69	
		1715 (132022)	23.13	22.25	21.68	

	50RB (0)	1775 (132622)	23.41	22.38	21.92	
		1745 (132322)	23.17	22.19	21.68	
		1715 (132022)	23.20	22.29	21.73	
15MHz	1RB-High (74)	1772.5 (132597)	24.61	23.43	22.70	
		1745 (132322)	24.14	22.88	22.59	
		1717.5 (132047)	24.09	23.45	22.70	
	1RB-Middle (37)	1772.5 (132597)	24.51	23.55	22.83	
		1745 (132322)	24.22	22.99	22.69	
		1717.5 (132047)	24.19	23.48	22.76	
	1RB-Low (0)	1772.5 (132597)	24.35	23.41	22.80	
		1745 (132322)	24.16	22.98	22.75	
		1717.5 (132047)	24.17	23.40	22.73	
	36RB-High (38)	1772.5 (132597)	23.55	22.35	21.87	
		1745 (132322)	23.29	22.16	21.60	
		1717.5 (132047)	23.24	22.33	21.68	
	36RB-Middle (19)	1772.5 (132597)	23.54	22.40	21.89	
		1745 (132322)	23.36	22.25	21.65	
		1717.5 (132047)	23.31	22.28	21.72	
	36RB-Low (0)	1772.5 (132597)	23.48	22.31	21.85	
		1745 (132322)	23.31	22.22	21.67	
		1717.5 (132047)	23.23	22.30	21.68	
	75RB (0)	1772.5 (132597)	23.51	22.39	21.85	
		1745 (132322)	23.32	22.25	21.63	
		1717.5 (132047)	23.27	22.30	21.67	
	20MHz	1RB-High (99)	1770 (132572)	24.41	23.60	22.59
			1745 (132322)	24.10	23.30	22.52
			1720 (132072)	23.98	23.46	22.65
		1RB-Middle (50)	1770 (132572)	24.43	23.86	22.93
			1745 (132322)	24.37	23.52	22.77
			1720 (132072)	24.23	23.61	22.86
1RB-Low (0)		1770 (132572)	24.10	23.50	22.68	
		1745 (132322)	24.04	23.39	22.76	
		1720 (132072)	24.03	23.29	22.73	
50RB-High (50)		1770 (132572)	23.23	22.29	21.82	
		1745 (132322)	23.03	22.01	21.50	
		1720 (132072)	23.19	22.25	21.71	
50RB-Middle (25)		1770 (132572)	23.32	22.37	21.88	
		1745 (132322)	23.16	22.17	21.67	
		1720 (132072)	23.18	22.23	21.69	
50RB-Low (0)		1770 (132572)	23.26	22.34	21.85	
		1745 (132322)	23.15	22.23	21.67	
		1720 (132072)	23.11	22.19	21.67	



	100RB (0)	1770 (132572)	23.27	22.30	21.80
		1745 (132322)	23.11	22.17	21.61
		1720 (132072)	23.12	22.23	21.67

LTE 71-Level A					
BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM	64QAM
5MHz	1RB-High (24)	695.5 (133447)	23.74	22.76	22.18
		680.5 (133297)	23.82	22.89	22.23
		665.5 (133147)	23.81	23.25	22.19
	1RB-Middle (12)	695.5 (133447)	23.96	22.98	22.44
		680.5 (133297)	24.07	23.12	22.64
		665.5 (133147)	24.11	23.51	22.60
	1RB-Low (0)	695.5 (133447)	23.72	22.74	22.24
		680.5 (133297)	23.85	22.88	22.30
		665.5 (133147)	23.87	23.21	22.25
	12RB-High (13)	695.5 (133447)	22.81	21.85	21.25
		680.5 (133297)	22.84	21.87	21.30
		665.5 (133147)	22.92	22.01	21.33
	12RB-Middle (6)	695.5 (133447)	22.83	21.83	21.24
		680.5 (133297)	22.84	21.96	21.33
		665.5 (133147)	22.99	22.08	21.40
	12RB-Low (0)	695.5 (133447)	22.77	21.76	21.19
		680.5 (133297)	22.80	21.85	21.30
		665.5 (133147)	22.87	21.95	21.26
	25RB (0)	695.5 (133447)	22.81	21.74	21.29
		680.5 (133297)	22.83	21.85	21.30
		665.5 (133147)	22.87	21.93	21.31
10MHz	1RB-High (49)	693 (132422)	23.79	23.18	22.50
		680.5 (133297)	23.79	22.77	22.35
		668 (133172)	23.94	22.74	22.39
	1RB-Middle (24)	693 (132422)	23.94	23.18	22.60
		680.5 (133297)	23.91	22.90	22.49
		668 (133172)	24.02	22.82	22.61
	1RB-Low (0)	693 (132422)	23.83	23.10	22.45
		680.5 (133297)	23.75	22.77	22.40
		668 (133172)	23.91	22.66	22.37
	25RB-High (25)	693 (132422)	22.95	22.01	21.46
		680.5 (133297)	22.86	21.93	21.37
		668 (133172)	23.00	21.94	21.42

	25RB-Middle (12)	693 (132422)	22.87	21.93	21.50	
		680.5 (133297)	22.85	21.95	21.33	
		668 (133172)	22.90	21.95	21.39	
	25RB-Low (0)	693 (132422)	22.88	21.96	21.50	
		680.5 (133297)	22.84	21.92	21.36	
		668 (133172)	22.91	21.96	21.40	
	50RB (0)	693 (132422)	22.92	21.94	21.48	
		680.5 (133297)	22.86	21.89	21.39	
		668 (133172)	22.91	21.90	21.43	
15MHz	1RB-High (74)	690.5 (133397)	23.71	22.99	22.28	
		680.5 (133297)	23.80	23.12	22.31	
		670.5 (133197)	23.76	22.64	22.32	
	1RB-Middle (37)	690.5 (133397)	23.83	23.14	22.41	
		680.5 (133297)	23.88	23.15	22.44	
		670.5 (133197)	23.89	22.73	22.45	
	1RB-Low (0)	690.5 (133397)	23.75	23.01	22.42	
		680.5 (133297)	23.81	23.09	22.43	
		670.5 (133197)	23.85	22.58	22.40	
	36RB-High (38)	690.5 (133397)	22.86	21.84	21.31	
		680.5 (133297)	22.93	21.85	21.36	
		670.5 (133197)	23.02	21.94	21.43	
	36RB-Middle (19)	690.5 (133397)	22.91	21.89	21.38	
		680.5 (133297)	22.92	21.84	21.39	
		670.5 (133197)	22.96	21.87	21.42	
	36RB-Low (0)	690.5 (133397)	22.88	21.86	21.38	
		680.5 (133297)	22.88	21.74	21.33	
		670.5 (133197)	22.97	21.88	21.42	
	75RB (0)	690.5 (133397)	22.90	21.88	21.35	
		680.5 (133297)	22.86	21.83	21.35	
		670.5 (133197)	23.04	21.95	21.39	
	20MHz	1RB-High (99)	688 (133372)	23.66	23.13	22.21
			683 (133322)	23.70	23.07	22.16
			673 (133222)	23.72	23.08	22.28
		1RB-Middle (50)	688 (133372)	23.94	23.40	22.50
			683 (133322)	23.99	23.36	22.57
			673 (133222)	24.01	23.34	22.55
1RB-Low (0)		688 (133372)	23.67	23.12	22.46	
		683 (133322)	23.73	23.07	22.42	
		673 (133222)	23.80	23.00	22.32	
50RB-High (50)		688 (133372)	22.81	21.85	21.36	
		683 (133322)	22.82	21.82	21.33	
		673 (133222)	22.88	21.87	21.45	

	50RB-Middle (25)	688 (133372)	22.85	21.85	21.39
		683 (133322)	22.86	21.84	21.40
		673 (133222)	22.86	21.85	21.39
	50RB-Low (0)	688 (133372)	22.78	21.80	21.42
		683 (133322)	22.78	21.80	21.34
		673 (133222)	22.79	21.76	21.35
	100RB (0)	688 (133372)	22.81	21.84	21.35
		683 (133322)	22.83	21.81	21.34
		673 (133222)	22.88	21.77	21.36

LTE B25-Level B					
BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM	64QAM
1.4MHz	1RB-High (5)	1914.3 (26683)	22.56	21.38	21.10
		1882.5 (26365)	22.59	21.73	21.35
		1850.7 (26047)	22.67	22.11	21.35
	1RB-Middle (3)	1914.3 (26683)	22.76	21.50	21.23
		1882.5 (26365)	22.77	21.95	21.47
		1850.7 (26047)	22.87	22.24	21.49
	1RB-Low (0)	1914.3 (26683)	22.40	21.40	21.14
		1882.5 (26365)	22.50	21.74	21.35
		1850.7 (26047)	22.65	22.12	21.43
	3RB-High (3)	1914.3 (26683)	22.41	21.57	21.13
		1882.5 (26365)	22.59	21.75	21.31
		1850.7 (26047)	22.82	22.00	21.32
	3RB-Middle (1)	1914.3 (26683)	22.51	21.66	21.22
		1882.5 (26365)	22.72	21.82	21.41
		1850.7 (26047)	22.87	22.09	21.43
	3RB-Low (0)	1914.3 (26683)	22.47	21.59	21.10
		1882.5 (26365)	22.71	21.79	21.37
		1850.7 (26047)	22.82	22.04	21.38
	6RB (0)	1914.3 (26683)	21.51	20.62	20.08
		1882.5 (26365)	21.60	20.84	20.22
		1850.7 (26047)	21.80	20.74	20.32
3MHz	1RB-High (14)	1913.5 (26675)	22.52	21.31	21.06
		1882.5 (26365)	22.61	21.57	21.27
		1851.5 (26055)	22.68	22.07	21.28
	1RB-Middle (7)	1913.5 (26675)	22.69	21.49	21.20
		1882.5 (26365)	22.79	21.68	21.43
		1851.5 (26055)	22.85	22.21	21.46
	1RB-Low (0)	1913.5 (26675)	22.44	21.40	21.10

		1882.5 (26365)	22.56	21.60	21.37	
		1851.5 (26055)	22.68	22.15	21.35	
		1913.5 (26675)	21.44	20.42	20.04	
	8RB-High (7)	1882.5 (26365)	21.56	20.73	20.17	
		1851.5 (26055)	21.64	20.76	20.20	
		1913.5 (26675)	21.46	20.53	20.08	
	8RB-Middle (4)	1882.5 (26365)	21.60	20.79	20.21	
		1851.5 (26055)	21.64	20.83	20.20	
		1913.5 (26675)	21.44	20.48	20.04	
	8RB-Low (0)	1882.5 (26365)	21.59	20.74	20.18	
		1851.5 (26055)	21.72	20.84	20.21	
		1913.5 (26675)	21.44	20.37	19.99	
	15RB (0)	1882.5 (26365)	21.60	20.67	20.10	
		1851.5 (26055)	21.72	20.72	20.15	
		1912.5 (26665)	22.29	21.36	21.01	
5MHz	1RB-High (24)	1882.5 (26365)	22.47	21.75	21.17	
		1852.5 (26065)	22.52	22.06	21.14	
		1912.5 (26665)	22.54	21.63	21.22	
	1RB-Middle (12)	1882.5 (26365)	22.71	21.96	21.48	
		1852.5 (26065)	22.78	22.34	21.46	
		1912.5 (26665)	22.32	21.41	21.10	
	1RB-Low (0)	1882.5 (26365)	22.50	21.74	21.18	
		1852.5 (26065)	22.59	22.18	21.33	
		1912.5 (26665)	21.35	20.41	19.97	
	12RB-High (13)	1882.5 (26365)	21.56	20.70	20.14	
		1852.5 (26065)	21.62	20.79	20.13	
		1912.5 (26665)	21.45	20.53	20.08	
	12RB-Middle (6)	1882.5 (26365)	21.63	20.79	20.22	
		1852.5 (26065)	21.72	20.87	20.18	
		1912.5 (26665)	21.46	20.50	20.09	
	12RB-Low (0)	1882.5 (26365)	21.61	20.74	20.16	
		1852.5 (26065)	21.65	20.75	20.16	
		1912.5 (26665)	21.44	20.41	20.04	
	25RB (0)	1882.5 (26365)	21.62	20.67	20.13	
		1852.5 (26065)	21.66	20.75	20.13	
		1910 (26640)	22.41	21.35	21.14	
	10MHz	1RB-High (49)	1882.5 (26365)	22.56	21.55	21.31
			1855 (26090)	22.55	21.96	21.29
			1910 (26640)	22.52	21.50	21.24
1RB-Middle (24)		1882.5 (26365)	22.82	21.66	21.46	
		1855 (26090)	22.77	22.09	21.38	
1RB-Low (0)		1910 (26640)	22.41	21.46	21.23	

		1882.5 (26365)	22.61	21.63	21.44	
		1855 (26090)	22.69	22.07	21.37	
		1910 (26640)	21.29	20.42	19.93	
	25RB-High (25)	1882.5 (26365)	21.56	20.70	20.15	
		1855 (26090)	21.68	20.75	20.14	
		1910 (26640)	21.46	20.58	20.07	
	25RB-Middle (12)	1882.5 (26365)	21.65	20.68	20.17	
		1855 (26090)	21.65	20.73	20.15	
		1910 (26640)	21.53	20.68	20.14	
	25RB-Low (0)	1882.5 (26365)	21.65	20.76	20.20	
		1855 (26090)	21.67	20.73	20.12	
		1910 (26640)	21.48	20.54	20.06	
	50RB (0)	1882.5 (26365)	21.65	20.73	20.16	
		1855 (26090)	21.68	20.73	20.12	
		1907.5 (26615)	22.36	21.67	21.07	
15MHz	1RB-High (74)	1882.5 (26365)	22.50	21.51	21.26	
		1857.5 (26115)	22.56	21.92	21.10	
		1907.5 (26615)	22.51	21.89	21.16	
	1RB-Middle (37)	1882.5 (26365)	22.64	21.63	21.27	
		1857.5 (26115)	22.67	22.00	21.25	
		1907.5 (26615)	22.50	21.95	21.20	
	1RB-Low (0)	1882.5 (26365)	22.53	21.60	21.29	
		1857.5 (26115)	22.71	22.08	21.27	
		1907.5 (26615)	21.50	20.41	19.94	
	36RB-High (38)	1882.5 (26365)	21.68	20.63	20.12	
		1857.5 (26115)	21.68	20.70	20.06	
		1907.5 (26615)	21.57	20.51	20.09	
	36RB-Middle (19)	1882.5 (26365)	21.68	20.67	20.13	
		1857.5 (26115)	21.66	20.70	20.10	
		1907.5 (26615)	21.55	20.49	20.07	
	36RB-Low (0)	1882.5 (26365)	21.69	20.71	20.15	
		1857.5 (26115)	21.60	20.70	20.07	
		1907.5 (26615)	21.49	20.47	20.00	
	75RB (0)	1882.5 (26365)	21.64	20.69	20.12	
		1857.5 (26115)	21.61	20.66	20.05	
		1905 (26590)	22.28	21.79	21.03	
	20MHz	1RB-High (99)	1882.5 (26365)	22.45	21.98	21.15
			1860 (26140)	22.43	21.95	21.19
			1905 (26590)	22.62	22.17	21.38
		1RB-Middle (50)	1882.5 (26365)	22.74	22.29	21.35
			1860 (26140)	22.64	22.15	21.38
		1RB-Low (0)	1905 (26590)	22.41	21.99	21.14



		1882.5 (26365)	22.49	22.05	21.26
		1860 (26140)	22.52	22.07	21.32
	50RB-High (50)	1905 (26590)	21.33	20.40	19.87
		1882.5 (26365)	21.61	20.68	20.05
		1860 (26140)	21.59	20.59	20.02
	50RB-Middle (25)	1905 (26590)	21.55	20.61	20.11
		1882.5 (26365)	21.67	20.76	20.12
		1860 (26140)	21.63	20.62	20.10
	50RB-Low (0)	1905 (26590)	21.57	20.66	20.08
		1882.5 (26365)	21.70	20.74	20.11
		1860 (26140)	21.60	20.56	19.97
	100RB (0)	1905 (26590)	21.41	20.51	19.97
		1882.5 (26365)	21.69	20.73	20.11
		1860 (26140)	21.62	20.60	19.98

LTE B25-Level C					
BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM	64QAM
1.4MHz	1RB-High (5)	1914.3 (26683)	20.47	20.55	20.71
		1882.5 (26365)	20.51	20.70	20.71
		1850.7 (26047)	20.67	20.89	20.94
	1RB-Middle (3)	1914.3 (26683)	20.76	20.70	20.85
		1882.5 (26365)	20.68	20.96	20.81
		1850.7 (26047)	20.90	21.05	21.06
	1RB-Low (0)	1914.3 (26683)	20.44	20.57	20.72
		1882.5 (26365)	20.53	20.74	20.82
		1850.7 (26047)	20.68	21.03	20.87
	3RB-High (3)	1914.3 (26683)	20.68	20.83	20.72
		1882.5 (26365)	20.64	20.75	20.71
		1850.7 (26047)	20.78	21.04	20.90
	3RB-Middle (1)	1914.3 (26683)	20.68	20.88	20.79
		1882.5 (26365)	20.68	20.76	20.82
		1850.7 (26047)	20.82	21.03	20.87
	3RB-Low (0)	1914.3 (26683)	20.59	20.81	20.70
		1882.5 (26365)	20.62	20.73	20.75
		1850.7 (26047)	20.82	21.01	20.87
	6RB (0)	1914.3 (26683)	20.59	20.75	20.66
		1882.5 (26365)	20.56	20.79	20.65
		1850.7 (26047)	20.72	20.69	20.76
3MHz	1RB-High (14)	1913.5 (26675)	20.53	20.57	20.76
		1882.5 (26365)	20.48	20.53	20.84

	1RB-Middle (7)	1851.5 (26055)	20.71	21.01	20.90	
		1913.5 (26675)	20.63	20.73	20.96	
		1882.5 (26365)	20.62	20.72	20.88	
	1RB-Low (0)	1851.5 (26055)	20.87	21.03	21.05	
		1913.5 (26675)	20.48	20.59	20.78	
		1882.5 (26365)	20.52	20.68	20.92	
	8RB-High (7)	1851.5 (26055)	20.73	20.98	20.94	
		1913.5 (26675)	20.57	20.63	20.65	
		1882.5 (26365)	20.52	20.70	20.63	
	8RB-Middle (4)	1851.5 (26055)	20.64	20.83	20.80	
		1913.5 (26675)	20.63	20.71	20.69	
		1882.5 (26365)	20.65	20.77	20.72	
	8RB-Low (0)	1851.5 (26055)	20.74	20.90	20.81	
		1913.5 (26675)	20.57	20.65	20.67	
		1882.5 (26365)	20.61	20.79	20.71	
15RB (0)	1851.5 (26055)	20.70	20.87	20.77		
	1913.5 (26675)	20.56	20.54	20.62		
	1882.5 (26365)	20.60	20.66	20.62		
5MHz	1RB-High (24)	1851.5 (26055)	20.69	20.79	20.71	
		1912.5 (26665)	20.47	20.54	20.63	
		1882.5 (26365)	20.53	20.73	20.72	
	1RB-Middle (12)	1852.5 (26065)	20.62	20.96	20.83	
		1912.5 (26665)	20.69	20.80	20.86	
		1882.5 (26365)	20.79	20.99	20.93	
	1RB-Low (0)	1852.5 (26065)	20.85	21.21	21.09	
		1912.5 (26665)	20.47	20.53	20.61	
		1882.5 (26365)	20.56	20.81	20.75	
	12RB-High (13)	1852.5 (26065)	20.62	21.17	20.86	
		1912.5 (26665)	20.48	20.49	20.60	
		1882.5 (26365)	20.54	20.70	20.64	
	12RB-Middle (6)	1852.5 (26065)	20.73	20.89	20.77	
		1912.5 (26665)	20.60	20.66	20.72	
		1882.5 (26365)	20.65	20.80	20.74	
	12RB-Low (0)	1852.5 (26065)	20.76	20.93	20.81	
		1912.5 (26665)	20.62	20.68	20.70	
		1882.5 (26365)	20.59	20.75	20.70	
	25RB (0)	1852.5 (26065)	20.70	20.84	20.72	
		1912.5 (26665)	20.57	20.56	20.66	
		1882.5 (26365)	20.65	20.68	20.65	
	10MHz	1RB-High (49)	1852.5 (26065)	20.75	20.84	20.74
			1910 (26640)	20.45	20.51	20.80
			1882.5 (26365)	20.40	20.49	20.77

	1RB-Middle (24)	1855 (26090)	20.75	21.13	20.84
		1910 (26640)	20.64	20.62	20.77
		1882.5 (26365)	20.57	20.66	20.99
	1RB-Low (0)	1855 (26090)	20.81	21.27	21.06
		1910 (26640)	20.40	20.50	20.75
		1882.5 (26365)	20.58	20.68	20.97
	25RB-High (25)	1855 (26090)	20.72	21.10	20.95
		1910 (26640)	20.45	20.59	20.56
		1882.5 (26365)	20.62	20.72	20.68
	25RB-Middle (12)	1855 (26090)	20.82	20.88	20.82
		1910 (26640)	20.56	20.68	20.68
		1882.5 (26365)	20.66	20.77	20.70
	25RB-Low (0)	1855 (26090)	20.74	20.88	20.78
		1910 (26640)	20.57	20.70	20.68
		1882.5 (26365)	20.76	20.79	20.79
	50RB (0)	1855 (26090)	20.73	20.78	20.73
		1910 (26640)	20.57	20.60	20.60
		1882.5 (26365)	20.70	20.76	20.76
15MHz	1RB-High (74)	1855 (26090)	20.76	20.84	20.77
		1907.5 (26615)	20.52	20.86	20.73
		1882.5 (26365)	20.37	20.90	20.68
	1RB-Middle (37)	1857.5 (26115)	20.60	20.65	20.86
		1907.5 (26615)	20.52	20.92	20.84
		1882.5 (26365)	20.65	21.14	20.91
	1RB-Low (0)	1857.5 (26115)	20.70	20.73	20.96
		1907.5 (26615)	20.45	20.85	20.81
		1882.5 (26365)	20.68	21.16	20.99
	36RB-High (38)	1857.5 (26115)	20.60	20.68	20.89
		1907.5 (26615)	20.49	20.49	20.57
		1882.5 (26365)	20.58	20.52	20.64
	36RB-Middle (19)	1857.5 (26115)	20.76	20.78	20.79
		1907.5 (26615)	20.53	20.57	20.67
		1882.5 (26365)	20.59	20.62	20.72
	36RB-Low (0)	1857.5 (26115)	20.79	20.80	20.82
		1907.5 (26615)	20.47	20.56	20.64
		1882.5 (26365)	20.75	20.75	20.84
75RB (0)	1857.5 (26115)	20.68	20.72	20.70	
	1907.5 (26615)	20.49	20.53	20.57	
	1882.5 (26365)	20.63	20.69	20.75	
20MHz	1RB-High (99)	1857.5 (26115)	20.72	20.81	20.74
		1905 (26590)	20.42	20.91	20.69
		1882.5 (26365)	20.37	20.95	20.60



	1RB-Middle (50)	1860 (26140)	20.59	21.15	20.91
		1905 (26590)	20.68	21.03	20.93
		1882.5 (26365)	20.72	21.12	20.95
	1RB-Low (0)	1860 (26140)	20.91	21.16	21.08
		1905 (26590)	20.38	20.94	20.73
		1882.5 (26365)	20.67	21.01	20.86
	50RB-High (50)	1860 (26140)	20.61	21.10	20.77
		1905 (26590)	20.34	20.41	20.44
		1882.5 (26365)	20.59	20.67	20.61
	50RB-Middle (25)	1860 (26140)	20.72	20.73	20.71
		1905 (26590)	20.60	20.64	20.66
		1882.5 (26365)	20.72	20.77	20.72
	50RB-Low (0)	1860 (26140)	20.79	20.81	20.83
		1905 (26590)	20.59	20.68	20.66
		1882.5 (26365)	20.70	20.70	20.85
	100RB (0)	1860 (26140)	20.85	20.91	20.68
		1905 (26590)	20.44	20.50	20.55
		1882.5 (26365)	20.72	20.75	20.71
		1860 (26140)	20.76	20.79	20.70

LTE 41(PC3)-Level B					
BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM	64QAM
5MHz	1RB-High (24)	2687.5 (41565)	20.42	19.46	18.93
		2640.3(41093)	20.50	19.71	18.91
		2593 (40620)	20.79	19.67	19.14
		2545.8(40148)	20.69	19.68	18.89
		2498.5 (39675)	20.54	19.72	19.02
	1RB-Middle (12)	2687.5 (41565)	20.52	19.56	19.16
		2640.3(41093)	20.65	19.88	19.18
		2593 (40620)	20.92	19.79	19.54
		2545.8(40148)	20.81	19.81	19.24
		2498.5 (39675)	20.58	19.78	19.28
	1RB-Low (0)	2687.5 (41565)	20.44	19.46	18.93
		2640.3(41093)	20.48	19.73	18.93
		2593 (40620)	20.82	19.70	19.21
		2545.8(40148)	20.76	19.78	19.01
		2498.5 (39675)	20.43	19.62	18.96
	12RB-High (13)	2687.5 (41565)	19.60	18.49	18.36
		2640.3(41093)	19.71	18.75	18.19
		2593 (40620)	19.93	18.85	18.55

		2545.8(40148)	19.79	18.72	18.28
		2498.5 (39675)	19.72	18.74	18.50
	12RB-Middle (6)	2687.5 (41565)	19.67	18.61	18.44
		2640.3(41093)	19.78	18.87	18.32
		2593 (40620)	20.02	18.99	18.63
		2545.8(40148)	19.92	18.86	18.38
		2498.5 (39675)	19.80	18.84	18.54
		2687.5 (41565)	19.55	18.49	18.35
	12RB-Low (0)	2640.3(41093)	19.68	18.75	18.22
		2593 (40620)	19.93	18.86	18.57
		2545.8(40148)	19.82	18.76	18.35
		2498.5 (39675)	19.65	18.66	18.41
		2687.5 (41565)	19.59	18.61	18.43
	25RB (0)	2640.3(41093)	19.73	18.77	18.26
		2593 (40620)	19.97	18.88	18.56
		2545.8(40148)	19.88	18.87	18.33
		2498.5 (39675)	19.72	18.70	18.50
		2685 (41540)	20.48	19.51	18.96
	1RB-High (49)	2639(41080)	20.56	19.82	18.88
		2593 (40620)	20.84	19.78	19.20
2547(40160)		20.59	19.70	18.91	
2501 (39700)		20.71	19.97	19.23	
2685 (41540)		20.83	19.87	19.16	
1RB-Middle (24)	2639(41080)	20.87	20.15	19.16	
	2593 (40620)	21.23	20.15	19.48	
	2547(40160)	21.03	20.12	19.17	
	2501 (39700)	20.97	20.19	19.31	
	2685 (41540)	20.38	19.49	19.01	
1RB-Low (0)	2639(41080)	20.53	19.74	18.91	
	2593 (40620)	20.87	19.81	19.27	
	2547(40160)	20.69	19.81	19.09	
	2501 (39700)	20.52	19.72	18.99	
	2685 (41540)	19.62	18.61	18.44	
25RB-High (25)	2639(41080)	19.71	18.76	18.30	
	2593 (40620)	19.96	18.93	18.62	
	2547(40160)	19.82	18.81	18.33	
	2501 (39700)	19.78	18.76	18.58	
	2685 (41540)	19.63	18.59	18.49	
25RB-Middle (12)	2639(41080)	19.72	18.75	18.39	
	2593 (40620)	19.95	18.94	18.71	
	2547(40160)	19.85	18.84	18.42	
	2501 (39700)	19.75	18.76	18.57	
	2685 (41540)	20.48	19.51	18.96	
10MHz	1RB-High (49)	2639(41080)	20.56	19.82	18.88
		2593 (40620)	20.84	19.78	19.20
		2547(40160)	20.59	19.70	18.91
		2501 (39700)	20.71	19.97	19.23
		2685 (41540)	20.83	19.87	19.16
	1RB-Middle (24)	2639(41080)	20.87	20.15	19.16
		2593 (40620)	21.23	20.15	19.48
		2547(40160)	21.03	20.12	19.17
		2501 (39700)	20.97	20.19	19.31
		2685 (41540)	20.38	19.49	19.01
	1RB-Low (0)	2639(41080)	20.53	19.74	18.91
		2593 (40620)	20.87	19.81	19.27
		2547(40160)	20.69	19.81	19.09
		2501 (39700)	20.52	19.72	18.99
		2685 (41540)	19.62	18.61	18.44
	25RB-High (25)	2639(41080)	19.71	18.76	18.30
		2593 (40620)	19.96	18.93	18.62
		2547(40160)	19.82	18.81	18.33
		2501 (39700)	19.78	18.76	18.58
		2685 (41540)	19.63	18.59	18.49
25RB-Middle (12)	2639(41080)	19.72	18.75	18.39	
	2593 (40620)	19.95	18.94	18.71	
	2547(40160)	19.85	18.84	18.42	
	2501 (39700)	19.75	18.76	18.57	
	2685 (41540)	20.48	19.51	18.96	

	25RB-Low (0)	2685 (41540)	19.59	18.59	18.46
		2639(41080)	19.71	18.77	18.40
		2593 (40620)	20.00	18.98	18.69
		2547(40160)	19.90	18.89	18.43
		2501 (39700)	19.74	18.76	18.54
	50RB (0)	2685 (41540)	19.57	18.58	18.42
		2639(41080)	19.72	18.80	18.37
		2593 (40620)	19.89	18.86	18.67
		2547(40160)	19.82	18.82	18.36
		2501 (39700)	19.74	18.78	18.54
15MHz	1RB-High (74)	2682.5 (41515)	20.41	19.42	18.89
		2637.8(41068)	20.48	19.65	18.86
		2593 (40620)	20.75	19.72	19.13
		2548.3(40173)	20.58	19.63	18.83
		2503.5 (39725)	20.72	19.91	19.23
	1RB-Middle (37)	2682.5 (41515)	20.58	19.64	19.06
		2637.8(41068)	20.64	19.79	19.06
		2593 (40620)	21.03	19.99	19.32
		2548.3(40173)	20.79	19.85	19.09
		2503.5 (39725)	20.76	19.91	19.22
	1RB-Low (0)	2682.5 (41515)	20.45	19.52	18.92
		2637.8(41068)	20.54	19.67	18.96
		2593 (40620)	20.90	19.79	19.25
		2548.3(40173)	20.73	19.79	19.02
		2503.5 (39725)	20.50	19.64	18.95
	36RB-High (38)	2682.5 (41515)	19.53	18.50	18.36
		2637.8(41068)	19.62	18.64	18.22
		2593 (40620)	19.79	18.77	18.52
		2548.3(40173)	19.72	18.66	18.20
		2503.5 (39725)	19.81	18.83	18.51
	36RB-Middle (19)	2682.5 (41515)	19.54	18.49	18.35
		2637.8(41068)	19.62	18.65	18.34
		2593 (40620)	19.80	18.78	18.59
		2548.3(40173)	19.74	18.72	18.28
		2503.5 (39725)	19.77	18.79	18.56
	36RB-Low (0)	2682.5 (41515)	19.49	18.43	18.36
		2637.8(41068)	19.59	18.61	18.35
		2593 (40620)	19.84	18.83	18.59
		2548.3(40173)	19.74	18.73	18.30
		2503.5 (39725)	19.68	18.67	18.42
75RB (0)	2682.5 (41515)	19.53	18.50	18.29	
	2637.8(41068)	19.64	18.65	18.31	

		2593 (40620)	19.81	18.80	18.60
		2548.3(40173)	19.71	18.73	18.27
		2503.5 (39725)	19.74	18.74	18.55
20MHz	1RB-High (99)	2680 (41490)	20.37	19.38	18.86
		2636.5(41055)	20.53	19.49	18.78
		2593 (40620)	20.67	19.76	19.02
		2549.5(40185)	20.56	19.57	18.81
		2506 (39750)	20.78	19.69	19.12
	1RB-Middle (50)	2680 (41490)	20.66	19.59	19.10
		2636.5(41055)	20.75	19.67	19.09
		2593 (40620)	20.94	19.85	19.40
		2549.5(40185)	20.85	19.85	19.10
		2506 (39750)	20.98	20.13	19.34
	1RB-Low (0)	2680 (41490)	20.45	19.40	18.90
		2636.5(41055)	20.48	19.38	18.92
		2593 (40620)	20.69	19.77	19.17
		2549.5(40185)	20.67	19.69	18.99
		2506 (39750)	20.52	19.42	18.89
	50RB-High (50)	2680 (41490)	19.51	18.50	18.35
		2636.5(41055)	19.64	18.66	18.31
		2593 (40620)	19.79	18.80	18.57
		2549.5(40185)	19.68	18.67	18.21
		2506 (39750)	19.83	18.85	18.53
	50RB-Middle (25)	2680 (41490)	19.55	18.52	18.38
		2636.5(41055)	19.66	18.70	18.41
		2593 (40620)	19.84	18.91	18.66
		2549.5(40185)	19.77	18.77	18.31
		2506 (39750)	19.87	18.89	18.59
	50RB-Low (0)	2680 (41490)	19.42	18.40	18.30
		2636.5(41055)	19.60	18.61	18.43
		2593 (40620)	19.83	18.85	18.66
		2549.5(40185)	19.74	18.75	18.37
		2506 (39750)	19.74	18.72	18.57
100RB (0)	2680 (41490)	19.46	18.46	18.32	
	2636.5(41055)	19.61	18.63	18.38	
	2593 (40620)	19.79	18.77	18.56	
	2549.5(40185)	19.72	18.71	18.24	
	2506 (39750)	19.75	18.77	18.51	

LTE 41(PC3)-Level C					
BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM	64QAM
5MHz	1RB-High (24)	2687.5 (41565)	18.78	18.79	18.97
		2640.3(41093)	18.70	18.93	18.59
		2593 (40620)	18.90	18.81	18.81
		2545.8(40148)	19.13	19.16	18.90
		2498.5 (39675)	19.21	19.45	19.24
	1RB-Middle (12)	2687.5 (41565)	18.75	18.77	19.20
		2640.3(41093)	18.77	19.06	18.90
		2593 (40620)	18.91	18.79	19.08
		2545.8(40148)	19.09	19.16	19.08
		2498.5 (39675)	19.21	19.42	19.52
	1RB-Low (0)	2687.5 (41565)	18.73	18.75	19.00
		2640.3(41093)	18.76	19.03	18.69
		2593 (40620)	18.94	18.85	18.87
		2545.8(40148)	19.07	19.10	18.87
		2498.5 (39675)	19.20	19.43	19.26
	12RB-High (13)	2687.5 (41565)	18.88	18.86	19.12
		2640.3(41093)	18.96	19.07	19.04
		2593 (40620)	18.96	19.00	19.19
		2545.8(40148)	19.26	19.24	19.26
		2498.5 (39675)	19.35	19.46	19.65
	12RB-Middle (6)	2687.5 (41565)	18.96	18.93	19.18
		2640.3(41093)	19.02	19.14	19.13
		2593 (40620)	19.07	19.11	19.26
		2545.8(40148)	19.37	19.35	19.35
		2498.5 (39675)	19.46	19.58	19.70
	12RB-Low (0)	2687.5 (41565)	18.87	18.85	19.10
		2640.3(41093)	18.97	19.10	19.11
		2593 (40620)	18.98	19.02	19.24
		2545.8(40148)	19.21	19.20	19.22
		2498.5 (39675)	19.35	19.47	19.62
	25RB (0)	2687.5 (41565)	18.93	18.96	19.18
		2640.3(41093)	18.99	19.06	19.05
2593 (40620)		18.98	19.02	19.22	
2545.8(40148)		19.27	19.33	19.33	
2498.5 (39675)		19.43	19.47	19.67	
10MHz	1RB-High (49)	2685 (41540)	18.80	18.89	18.81
		2639(41080)	18.80	19.14	18.65
		2593 (40620)	18.99	18.97	18.85
		2547(40160)	19.20	19.34	19.03



		2501 (39700)	19.35	19.61	19.35
	1RB-Middle (24)	2685 (41540)	19.05	19.14	18.90
		2639(41080)	19.15	19.39	18.82
		2593 (40620)	19.33	19.27	18.99
		2547(40160)	19.44	19.62	19.14
		2501 (39700)	19.58	19.84	19.44
	1RB-Low (0)	2685 (41540)	18.73	18.84	18.80
		2639(41080)	18.90	19.22	18.86
		2593 (40620)	19.10	19.06	18.99
		2547(40160)	19.08	19.20	18.96
		2501 (39700)	19.30	19.55	19.33
	25RB-High (25)	2685 (41540)	18.95	18.99	19.21
		2639(41080)	18.99	19.11	19.08
		2593 (40620)	18.98	19.08	19.28
		2547(40160)	19.35	19.42	19.43
		2501 (39700)	19.46	19.55	19.68
	25RB-Middle (12)	2685 (41540)	18.93	18.98	19.25
		2639(41080)	19.07	19.15	19.21
		2593 (40620)	19.03	19.12	19.31
		2547(40160)	19.32	19.35	19.42
		2501 (39700)	19.48	19.55	19.82
	25RB-Low (0)	2685 (41540)	18.90	18.94	19.19
		2639(41080)	19.07	19.16	19.16
		2593 (40620)	19.10	19.18	19.41
		2547(40160)	19.33	19.36	19.40
2501 (39700)		19.50	19.56	19.76	
50RB (0)	2685 (41540)	18.93	18.96	19.18	
	2639(41080)	19.05	19.16	19.27	
	2593 (40620)	19.03	19.09	19.35	
	2547(40160)	19.33	19.37	19.43	
	2501 (39700)	19.50	19.58	19.76	
15MHz	1RB-High (74)	2682.5 (41515)	18.76	18.86	18.68
		2637.8(41068)	18.83	18.78	18.49
		2593 (40620)	18.82	18.89	18.76
		2548.3(40173)	19.20	19.35	18.93
		2503.5 (39725)	19.40	19.37	19.19
	1RB-Middle (37)	2682.5 (41515)	18.85	19.00	18.79
		2637.8(41068)	19.10	19.04	18.80
		2593 (40620)	18.97	19.04	18.94
		2548.3(40173)	19.24	19.38	19.01
		2503.5 (39725)	19.53	19.49	19.38
	1RB-Low (0)	2682.5 (41515)	18.71	18.83	18.64

		2637.8(41068)	18.99	18.95	18.72
		2593 (40620)	18.99	19.05	18.96
		2548.3(40173)	19.02	19.20	18.85
		2503.5 (39725)	19.38	19.31	19.23
	36RB-High (38)	2682.5 (41515)	18.89	18.92	19.05
		2637.8(41068)	18.89	18.93	18.98
		2593 (40620)	18.90	18.92	19.10
		2548.3(40173)	19.32	19.35	19.31
		2503.5 (39725)	19.36	19.38	19.50
	36RB-Middle (19)	2682.5 (41515)	18.83	18.84	19.02
		2637.8(41068)	18.96	18.98	19.07
		2593 (40620)	18.95	18.97	19.23
		2548.3(40173)	19.30	19.32	19.33
		2503.5 (39725)	19.39	19.42	19.54
	36RB-Low (0)	2682.5 (41515)	18.77	18.82	18.98
		2637.8(41068)	18.95	19.00	19.13
		2593 (40620)	18.99	19.00	19.20
		2548.3(40173)	19.20	19.24	19.24
		2503.5 (39725)	19.39	19.42	19.66
	75RB (0)	2682.5 (41515)	18.83	18.86	19.01
2637.8(41068)		18.92	19.03	19.17	
2593 (40620)		18.94	19.00	19.23	
2548.3(40173)		19.26	19.30	19.37	
2503.5 (39725)		19.36	19.44	19.65	
20MHz	1RB-High (99)	2680 (41490)	18.73	18.73	18.62
		2636.5(41055)	18.71	18.70	18.43
		2593 (40620)	18.79	18.99	18.65
		2549.5(40185)	19.25	19.30	18.91
		2506 (39750)	19.24	19.17	19.05
	1RB-Middle (50)	2680 (41490)	18.96	18.99	18.85
		2636.5(41055)	19.11	19.06	18.92
		2593 (40620)	19.07	19.26	18.96
		2549.5(40185)	19.40	19.43	19.14
		2506 (39750)	19.57	19.31	19.40
	1RB-Low (0)	2680 (41490)	18.65	18.63	18.57
		2636.5(41055)	18.90	18.87	18.82
		2593 (40620)	19.04	19.19	18.95
		2549.5(40185)	19.02	19.05	18.81
		2506 (39750)	19.14	19.17	19.17
	50RB-High (50)	2680 (41490)	18.91	18.93	19.07
		2636.5(41055)	18.95	19.05	19.09
		2593 (40620)	18.87	19.00	19.18



		2549.5(40185)	19.36	19.39	19.40
		2506 (39750)	19.34	19.44	19.62
	50RB-Middle (25)	2680 (41490)	18.83	18.86	19.02
		2636.5(41055)	19.02	19.11	19.23
		2593 (40620)	19.03	19.15	19.34
		2549.5(40185)	19.37	19.40	19.43
		2506 (39750)	19.44	19.54	19.74
	50RB-Low (0)	2680 (41490)	18.70	18.72	18.96
		2636.5(41055)	19.02	19.14	19.30
		2593 (40620)	19.09	19.22	19.42
		2549.5(40185)	19.22	19.26	19.33
		2506 (39750)	19.37	19.53	19.77
	100RB (0)	2680 (41490)	18.77	18.84	18.97
		2636.5(41055)	18.99	19.09	19.16
		2593 (40620)	18.97	19.08	19.23
		2549.5(40185)	19.27	19.32	19.30
		2506 (39750)	19.43	19.44	19.65

LTE 41(PC2)-Level B					
BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM	64QAM
5MHz	1RB-High (24)	2687.5 (41565)	23.41	22.77	22.16
		2640.3(41093)	23.52	23.03	22.12
		2593 (40620)	23.65	22.99	22.40
		2545.8(40148)	23.58	22.99	22.15
		2498.5 (39675)	23.60	23.04	22.29
	1RB-Middle (12)	2687.5 (41565)	23.78	23.10	22.30
		2640.3(41093)	23.83	23.32	22.27
		2593 (40620)	24.04	23.36	22.58
		2545.8(40148)	23.98	23.34	22.32
		2498.5 (39675)	23.80	23.26	22.37
	1RB-Low (0)	2687.5 (41565)	23.43	22.76	22.16
		2640.3(41093)	23.46	23.00	22.17
		2593 (40620)	23.70	23.02	22.49
		2545.8(40148)	23.68	23.04	22.28
		2498.5 (39675)	23.45	22.92	22.20
	12RB-High (13)	2687.5 (41565)	22.59	21.56	21.36
		2640.3(41093)	22.73	21.80	21.31
		2593 (40620)	22.84	21.96	21.59
		2545.8(40148)	22.78	21.82	21.35
		2498.5 (39675)	22.75	21.82	21.52

	12RB-Middle (6)	2687.5 (41565)	22.62	21.62	21.43
		2640.3(41093)	22.74	21.86	21.36
		2593 (40620)	22.92	22.02	21.69
		2545.8(40148)	22.91	21.87	21.45
		2498.5 (39675)	22.76	21.94	21.54
	12RB-Low (0)	2687.5 (41565)	22.54	21.49	21.32
		2640.3(41093)	22.72	21.81	21.34
		2593 (40620)	22.87	21.95	21.63
		2545.8(40148)	22.87	21.82	21.40
		2498.5 (39675)	22.69	21.76	21.42
	25RB (0)	2687.5 (41565)	22.56	21.62	21.44
		2640.3(41093)	22.72	21.75	21.37
		2593 (40620)	22.85	21.93	21.64
		2545.8(40148)	22.82	21.88	21.43
		2498.5 (39675)	22.75	21.71	21.54
10MHz	1RB-High (49)	2685 (41540)	23.49	22.98	22.23
		2639(41080)	23.57	23.08	22.19
		2593 (40620)	23.78	23.04	22.46
		2547(40160)	23.65	23.14	22.13
		2501 (39700)	23.68	23.24	22.47
	1RB-Middle (24)	2685 (41540)	23.62	23.11	22.38
		2639(41080)	23.67	23.18	22.34
		2593 (40620)	23.98	23.24	22.69
		2547(40160)	23.82	23.37	22.44
		2501 (39700)	23.78	23.25	22.54
	1RB-Low (0)	2685 (41540)	23.48	22.94	22.23
		2639(41080)	23.53	23.02	22.22
		2593 (40620)	23.84	23.09	22.54
		2547(40160)	23.70	23.24	22.36
		2501 (39700)	23.51	23.00	22.27
	25RB-High (25)	2685 (41540)	22.63	21.63	21.46
		2639(41080)	22.76	21.81	21.38
		2593 (40620)	22.88	21.93	21.71
		2547(40160)	22.83	21.84	21.42
		2501 (39700)	22.79	21.85	21.62
	25RB-Middle (12)	2685 (41540)	22.62	21.61	21.52
		2639(41080)	22.75	21.82	21.46
		2593 (40620)	22.95	21.98	21.76
		2547(40160)	22.85	21.89	21.50
2501 (39700)		22.74	21.78	21.63	
25RB-Low (0)	2685 (41540)	22.60	21.60	21.46	
	2639(41080)	22.75	21.79	21.49	

		2593 (40620)	22.91	21.97	21.78	
		2547(40160)	22.86	21.87	21.51	
		2501 (39700)	22.77	21.81	21.56	
	50RB (0)	2685 (41540)	22.58	21.61	21.35	
		2639(41080)	22.76	21.80	21.34	
		2593 (40620)	22.89	21.92	21.66	
		2547(40160)	22.84	21.86	21.37	
		2501 (39700)	22.74	21.79	21.48	
	15MHz	1RB-High (74)	2682.5 (41515)	23.44	22.87	22.12
			2637.8(41068)	23.50	22.94	22.10
			2593 (40620)	23.72	22.99	22.38
			2548.3(40173)	23.58	23.13	22.08
			2503.5 (39725)	23.68	23.16	22.47
		1RB-Middle (37)	2682.5 (41515)	23.62	23.05	22.29
2637.8(41068)			23.64	23.06	22.28	
2593 (40620)			23.95	23.18	22.60	
2548.3(40173)			23.74	23.29	22.30	
2503.5 (39725)			23.76	23.15	22.49	
1RB-Low (0)		2682.5 (41515)	23.49	22.96	22.18	
		2637.8(41068)	23.50	22.91	22.21	
		2593 (40620)	23.77	23.04	22.49	
		2548.3(40173)	23.70	23.29	22.27	
		2503.5 (39725)	23.50	22.90	22.23	
36RB-High (38)		2682.5 (41515)	22.59	21.54	21.30	
		2637.8(41068)	22.70	21.71	21.26	
		2593 (40620)	22.86	21.83	21.52	
		2548.3(40173)	22.76	21.72	21.25	
		2503.5 (39725)	22.89	21.90	21.54	
36RB-Middle (19)		2682.5 (41515)	22.61	21.58	21.33	
		2637.8(41068)	22.72	21.72	21.29	
		2593 (40620)	22.91	21.89	21.57	
		2548.3(40173)	22.84	21.79	21.34	
		2503.5 (39725)	22.85	21.84	21.54	
36RB-Low (0)		2682.5 (41515)	22.52	21.50	21.30	
		2637.8(41068)	22.67	21.68	21.31	
		2593 (40620)	22.90	21.86	21.62	
		2548.3(40173)	22.80	21.80	21.35	
		2503.5 (39725)	22.74	21.72	21.44	
75RB (0)	2682.5 (41515)	22.56	21.57	21.30		
	2637.8(41068)	22.70	21.72	21.33		
	2593 (40620)	22.86	21.88	21.60		
	2548.3(40173)	22.81	21.78	21.35		

		2503.5 (39725)	22.81	21.79	21.53
20MHz	1RB-High (99)	2680 (41490)	23.38	22.81	22.03
		2636.5(41055)	23.57	22.86	21.99
		2593 (40620)	23.63	22.85	22.29
		2549.5(40185)	23.57	23.03	22.04
		2506 (39750)	23.76	23.14	22.38
	1RB-Middle (50)	2680 (41490)	23.83	23.25	22.36
		2636.5(41055)	23.97	23.22	22.33
		2593 (40620)	24.14	23.32	22.68
		2549.5(40185)	24.00	23.50	22.37
		2506 (39750)	24.15	23.43	22.63
	1RB-Low (0)	2680 (41490)	23.48	22.85	22.12
		2636.5(41055)	23.53	22.79	22.14
		2593 (40620)	23.63	22.89	22.41
		2549.5(40185)	23.62	23.14	22.27
		2506 (39750)	23.56	22.85	22.13
	50RB-High (50)	2680 (41490)	22.58	21.63	21.26
		2636.5(41055)	22.71	21.71	21.24
		2593 (40620)	22.81	21.84	21.57
		2549.5(40185)	22.73	21.79	21.22
		2506 (39750)	22.91	21.91	21.56
	50RB-Middle (25)	2680 (41490)	22.62	21.65	21.32
		2636.5(41055)	22.75	21.72	21.31
		2593 (40620)	22.90	21.89	21.60
		2549.5(40185)	22.81	21.90	21.34
		2506 (39750)	22.93	21.92	21.59
	50RB-Low (0)	2680 (41490)	22.48	21.52	21.28
		2636.5(41055)	22.65	21.65	21.29
		2593 (40620)	22.87	21.91	21.58
		2549.5(40185)	22.80	21.85	21.36
		2506 (39750)	22.81	21.79	21.51
100RB (0)	2680 (41490)	22.54	21.52	21.27	
	2636.5(41055)	22.66	21.68	21.30	
	2593 (40620)	22.80	21.87	21.53	
	2549.5(40185)	22.78	21.78	21.29	
	2506 (39750)	22.86	21.85	21.48	

LTE 41(PC2)-Level C					
BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM	64QAM
5MHz	1RB-High (24)	2687.5 (41565)	21.75	22.12	21.99
		2640.3(41093)	21.73	22.24	21.84
		2593 (40620)	21.85	22.15	22.05
		2545.8(40148)	22.13	22.44	22.12
		2498.5 (39675)	22.24	22.74	22.47
	1RB-Middle (12)	2687.5 (41565)	22.04	22.40	22.09
		2640.3(41093)	22.05	22.56	21.97
		2593 (40620)	22.10	22.37	22.08
		2545.8(40148)	22.40	22.70	22.22
		2498.5 (39675)	22.49	22.76	22.52
	1RB-Low (0)	2687.5 (41565)	21.71	22.09	21.97
		2640.3(41093)	21.80	22.33	21.95
		2593 (40620)	21.91	22.13	22.09
		2545.8(40148)	22.08	22.44	22.14
		2498.5 (39675)	22.23	22.70	22.47
	12RB-High (13)	2687.5 (41565)	21.87	21.94	22.13
		2640.3(41093)	21.95	22.08	22.02
		2593 (40620)	21.97	22.07	22.26
		2545.8(40148)	22.30	22.30	22.31
		2498.5 (39675)	22.39	22.54	22.63
	12RB-Middle (6)	2687.5 (41565)	21.92	21.94	22.17
		2640.3(41093)	21.97	22.13	22.10
		2593 (40620)	22.05	22.11	22.26
		2545.8(40148)	22.34	22.35	22.38
		2498.5 (39675)	22.43	22.55	22.70
	12RB-Low (0)	2687.5 (41565)	21.87	21.90	22.13
		2640.3(41093)	21.97	22.13	22.07
		2593 (40620)	21.98	22.05	22.29
		2545.8(40148)	22.25	22.27	22.28
		2498.5 (39675)	22.38	22.53	22.63
	25RB (0)	2687.5 (41565)	21.88	21.96	22.16
		2640.3(41093)	21.97	22.04	22.09
		2593 (40620)	22.02	22.05	22.20
		2545.8(40148)	22.26	22.37	22.33
		2498.5 (39675)	22.44	22.50	22.67
	10MHz	1RB-High (49)	2685 (41540)	21.84	22.36
2639(41080)			21.78	22.33	21.87
2593 (40620)			21.97	22.28	22.10



		2547(40160)	22.27	22.74	22.28
		2501 (39700)	22.32	22.83	22.54
	1RB-Middle (24)	2685 (41540)	21.87	22.43	22.14
		2639(41080)	21.95	22.43	22.08
		2593 (40620)	22.07	22.30	22.16
		2547(40160)	22.28	22.81	22.32
		2501 (39700)	22.36	22.87	22.63
		2685 (41540)	21.73	22.33	22.04
	1RB-Low (0)	2639(41080)	21.89	22.40	22.09
		2593 (40620)	22.10	22.36	22.23
		2547(40160)	22.13	22.69	22.24
		2501 (39700)	22.27	22.78	22.53
		2685 (41540)	21.95	21.99	22.17
	25RB-High (25)	2639(41080)	22.00	22.11	22.10
		2593 (40620)	22.09	22.06	22.30
		2547(40160)	22.38	22.44	22.41
		2501 (39700)	22.47	22.56	22.73
		2685 (41540)	21.94	22.00	22.24
	25RB-Middle (12)	2639(41080)	22.07	22.15	22.19
		2593 (40620)	22.04	22.12	22.35
		2547(40160)	22.36	22.41	22.43
		2501 (39700)	22.49	22.58	22.76
		2685 (41540)	21.90	22.05	22.24
	25RB-Low (0)	2639(41080)	22.08	22.16	22.22
		2593 (40620)	22.07	22.17	22.43
		2547(40160)	22.32	22.31	22.37
		2501 (39700)	22.46	22.55	22.74
		2685 (41540)	21.91	21.96	22.17
	50RB (0)	2639(41080)	22.09	22.15	22.13
		2593 (40620)	22.05	22.11	22.27
2547(40160)		22.34	22.43	22.31	
2501 (39700)		22.47	22.59	22.69	
2682.5 (41515)		21.84	22.02	21.97	
15MHz	1RB-High (74)	2637.8(41068)	21.70	22.24	21.75
		2593 (40620)	21.73	22.17	21.98
		2548.3(40173)	22.29	22.51	22.20
		2503.5 (39725)	22.27	22.79	22.43
		2682.5 (41515)	22.02	22.18	22.04
1RB-Middle (37)	2637.8(41068)	21.98	22.48	22.03	
	2593 (40620)	21.89	22.31	22.14	
	2548.3(40173)	22.37	22.56	22.26	
	2503.5 (39725)	22.41	22.71	22.57	

	1RB-Low (0)	2682.5 (41515)	21.82	21.99	21.89
		2637.8(41068)	21.92	22.41	22.02
		2593 (40620)	22.01	22.33	22.19
		2548.3(40173)	22.14	22.34	22.12
		2503.5 (39725)	22.27	22.74	22.42
	36RB-High (38)	2682.5 (41515)	21.92	21.89	22.04
		2637.8(41068)	21.92	21.91	21.95
		2593 (40620)	21.92	21.98	22.11
		2548.3(40173)	22.33	22.36	22.31
		2503.5 (39725)	22.38	22.41	22.55
	36RB-Middle (19)	2682.5 (41515)	21.84	21.84	21.99
		2637.8(41068)	21.96	22.00	22.04
		2593 (40620)	22.02	22.06	22.19
		2548.3(40173)	22.30	22.35	22.31
		2503.5 (39725)	22.42	22.46	22.63
	36RB-Low (0)	2682.5 (41515)	21.77	21.77	21.96
		2637.8(41068)	21.97	21.98	22.11
		2593 (40620)	22.03	22.08	22.23
		2548.3(40173)	22.20	22.24	22.24
		2503.5 (39725)	22.41	22.43	22.60
75RB (0)	2682.5 (41515)	21.83	21.86	22.06	
	2637.8(41068)	21.96	22.02	22.08	
	2593 (40620)	21.98	22.05	22.21	
	2548.3(40173)	22.28	22.35	22.32	
	2503.5 (39725)	22.44	22.48	22.61	
20MHz	1RB-High (99)	2680 (41490)	21.73	22.13	21.87
		2636.5(41055)	21.70	22.02	21.66
		2593 (40620)	21.76	22.04	21.87
		2549.5(40185)	22.18	22.68	22.13
		2506 (39750)	22.21	22.51	22.31
	1RB-Middle (50)	2680 (41490)	22.10	22.53	22.05
		2636.5(41055)	22.26	22.55	22.09
		2593 (40620)	22.27	22.45	22.19
		2549.5(40185)	22.50	22.78	22.30
		2506 (39750)	22.56	22.70	22.52
	1RB-Low (0)	2680 (41490)	21.62	22.07	21.81
		2636.5(41055)	21.87	22.17	22.00
		2593 (40620)	21.96	22.21	22.20
		2549.5(40185)	22.00	22.50	22.08
		2506 (39750)	21.98	22.30	22.38
	50RB-High (50)	2680 (41490)	21.91	21.99	22.04
		2636.5(41055)	21.99	21.99	21.97

		2593 (40620)	21.91	21.97	22.06
		2549.5(40185)	22.36	22.45	22.28
		2506 (39750)	22.37	22.41	22.52
	50RB-Middle (25)	2680 (41490)	21.85	21.94	22.00
		2636.5(41055)	22.05	22.09	22.10
		2593 (40620)	22.06	22.09	22.19
		2549.5(40185)	22.38	22.47	22.32
		2506 (39750)	22.40	22.45	22.60
	50RB-Low (0)	2680 (41490)	21.69	21.80	21.88
		2636.5(41055)	22.03	22.07	22.14
		2593 (40620)	22.11	22.17	22.27
		2549.5(40185)	22.23	22.35	22.23
		2506 (39750)	22.42	22.42	22.63
	100RB (0)	2680 (41490)	21.85	21.81	21.97
		2636.5(41055)	22.00	22.04	22.07
		2593 (40620)	22.01	22.06	22.18
		2549.5(40185)	22.29	22.37	22.28
		2506 (39750)	22.30	22.50	22.61

LTE 66-Level B					
BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM	64QAM
1.4MHz	1RB-High (5)	1779.3 (132665)	22.87	21.82	21.43
		1745 (132322)	22.64	21.74	21.30
		1710.7 (131979)	22.57	21.95	21.28
	1RB-Middle (3)	1779.3 (132665)	23.01	21.94	21.49
		1745 (132322)	22.90	21.90	21.43
		1710.7 (131979)	22.81	22.09	21.39
	1RB-Low (0)	1779.3 (132665)	22.71	21.82	21.44
		1745 (132322)	22.58	21.74	21.26
		1710.7 (131979)	22.48	21.98	21.35
	3RB-High (3)	1779.3 (132665)	22.88	22.07	21.36
		1745 (132322)	22.71	21.70	21.24
		1710.7 (131979)	22.64	21.96	21.29
	3RB-Middle (1)	1779.3 (132665)	22.96	22.15	21.43
		1745 (132322)	22.76	21.79	21.30
		1710.7 (131979)	22.72	21.97	21.36
	3RB-Low (0)	1779.3 (132665)	22.94	22.11	21.37
		1745 (132322)	22.73	21.75	21.27
		1710.7 (131979)	22.70	21.88	21.29
6RB (0)	1779.3 (132665)	21.88	21.09	20.31	

		1745 (132322)	21.71	20.82	20.16
		1710.7 (131979)	21.60	20.55	20.11
3MHz	1RB-High (14)	1778.5 (132657)	22.86	21.75	21.43
		1745 (132322)	22.68	21.55	21.31
		1711.5 (131987)	22.52	21.98	21.34
	1RB-Middle (7)	1778.5 (132657)	23.01	21.94	21.46
		1745 (132322)	22.82	21.70	21.37
		1711.5 (131987)	22.67	22.12	21.49
	1RB-Low (0)	1778.5 (132657)	22.81	21.82	21.41
		1745 (132322)	22.63	21.57	21.31
		1711.5 (131987)	22.56	22.04	21.28
	8RB-High (7)	1778.5 (132657)	21.84	20.89	20.36
		1745 (132322)	21.58	20.76	20.13
		1711.5 (131987)	21.51	20.71	20.19
	8RB-Middle (4)	1778.5 (132657)	21.89	20.93	20.37
		1745 (132322)	21.64	20.78	20.18
		1711.5 (131987)	21.58	20.77	20.21
	8RB-Low (0)	1778.5 (132657)	21.85	20.89	20.37
		1745 (132322)	21.63	20.79	20.16
		1711.5 (131987)	21.59	20.73	20.17
	15RB (0)	1778.5 (132657)	21.83	20.82	20.36
		1745 (132322)	21.60	20.68	20.09
		1711.5 (131987)	21.59	20.67	20.11
5MHz	1RB-High (24)	1777.5 (132647)	22.69	21.86	21.31
		1745 (132322)	22.52	22.08	21.24
		1712.5 (131997)	22.41	21.62	21.18
	1RB-Middle (12)	1777.5 (132647)	22.97	22.15	21.47
		1745 (132322)	22.81	22.32	21.46
		1712.5 (131997)	22.68	21.87	21.46
	1RB-Low (0)	1777.5 (132647)	22.70	21.94	21.43
		1745 (132322)	22.50	22.10	21.14
		1712.5 (131997)	22.47	21.67	21.29
	12RB-High (13)	1777.5 (132647)	21.85	20.91	20.31
		1745 (132322)	21.60	20.76	20.09
		1712.5 (131997)	21.62	20.67	20.14
	12RB-Middle (6)	1777.5 (132647)	21.88	20.95	20.40
		1745 (132322)	21.72	20.83	20.18
		1712.5 (131997)	21.65	20.70	20.17
	12RB-Low (0)	1777.5 (132647)	21.85	20.97	20.36
		1745 (132322)	21.66	20.78	20.14
		1712.5 (131997)	21.61	20.68	20.16
	25RB (0)	1777.5 (132647)	21.87	20.90	20.33

		1745 (132322)	21.65	20.74	20.09
		1712.5 (131997)	21.66	20.64	20.13
10MHz	1RB-High (49)	1775 (132622)	22.85	21.79	21.41
		1745 (132322)	22.65	21.55	21.24
		1715 (132022)	22.56	22.01	21.32
	1RB-Middle (24)	1775 (132622)	22.90	21.94	21.48
		1745 (132322)	22.80	21.67	21.41
		1715 (132022)	22.64	22.08	21.43
	1RB-Low (0)	1775 (132622)	22.77	21.82	21.43
		1745 (132322)	22.63	21.58	21.34
		1715 (132022)	22.51	21.95	21.37
	25RB-High (25)	1775 (132622)	21.78	20.95	20.36
		1745 (132322)	21.62	20.69	20.13
		1715 (132022)	21.59	20.71	20.14
	25RB-Middle (12)	1775 (132622)	21.87	21.05	20.41
		1745 (132322)	21.69	20.74	20.20
		1715 (132022)	21.64	20.74	20.15
	25RB-Low (0)	1775 (132622)	21.90	21.07	20.41
		1745 (132322)	21.65	20.71	20.17
		1715 (132022)	21.64	20.75	20.18
	50RB (0)	1775 (132622)	21.89	20.97	20.38
		1745 (132322)	21.66	20.70	20.16
		1715 (132022)	21.67	20.76	20.17
15MHz	1RB-High (74)	1772.5 (132597)	22.77	22.07	21.34
		1745 (132322)	22.55	21.97	21.19
		1717.5 (132047)	22.45	21.52	21.26
	1RB-Middle (37)	1772.5 (132597)	22.84	22.25	21.49
		1745 (132322)	22.68	22.08	21.33
		1717.5 (132047)	22.60	21.61	21.33
	1RB-Low (0)	1772.5 (132597)	22.68	22.11	21.41
		1745 (132322)	22.59	22.01	21.32
		1717.5 (132047)	22.53	21.49	21.37
	36RB-High (38)	1772.5 (132597)	21.88	20.90	20.31
		1745 (132322)	21.67	20.63	20.13
		1717.5 (132047)	21.63	20.64	20.18
	36RB-Middle (19)	1772.5 (132597)	21.91	20.94	20.40
		1745 (132322)	21.75	20.66	20.18
		1717.5 (132047)	21.61	20.60	20.15
	36RB-Low (0)	1772.5 (132597)	21.87	20.87	20.35
		1745 (132322)	21.70	20.60	20.16
		1717.5 (132047)	21.63	20.63	20.18
	75RB (0)	1772.5 (132597)	21.89	20.92	20.34

		1745 (132322)	21.67	20.66	20.16
		1717.5 (132047)	21.69	20.63	20.15
20MHz	1RB-High (99)	1770 (132572)	22.74	22.19	21.26
		1745 (132322)	22.63	22.09	21.19
		1720 (132072)	22.54	22.16	21.15
	1RB-Middle (50)	1770 (132572)	22.99	22.49	21.47
		1745 (132322)	22.91	22.28	21.47
		1720 (132072)	22.79	22.42	21.46
	1RB-Low (0)	1770 (132572)	22.67	22.14	21.36
		1745 (132322)	22.56	22.05	21.18
		1720 (132072)	22.50	22.13	21.21
	50RB-High (50)	1770 (132572)	21.87	20.94	20.25
		1745 (132322)	21.64	20.63	20.03
		1720 (132072)	21.77	20.82	20.11
	50RB-Middle (25)	1770 (132572)	21.94	21.03	20.34
		1745 (132322)	21.81	20.74	20.18
		1720 (132072)	21.78	20.82	20.15
	50RB-Low (0)	1770 (132572)	21.90	21.00	20.34
		1745 (132322)	21.75	20.74	20.14
		1720 (132072)	21.71	20.75	20.12
	100RB (0)	1770 (132572)	21.88	20.92	20.30
		1745 (132322)	21.70	20.68	20.10
		1720 (132072)	21.75	20.79	20.10

LTE 66-Level C					
BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM	64QAM
1.4MHz	1RB-High (5)	1779.3 (132665)	21.32	21.36	21.39
		1745 (132322)	21.07	21.40	21.31
		1710.7 (131979)	21.02	21.10	21.37
	1RB-Middle (3)	1779.3 (132665)	21.50	21.51	21.59
		1745 (132322)	21.24	21.59	21.32
		1710.7 (131979)	21.19	21.27	21.49
	1RB-Low (0)	1779.3 (132665)	21.35	21.39	21.50
		1745 (132322)	21.10	21.40	21.21
		1710.7 (131979)	21.02	21.10	21.35
	3RB-High (3)	1779.3 (132665)	21.42	21.41	21.46
		1745 (132322)	21.14	21.32	21.26
		1710.7 (131979)	21.20	21.37	21.30
	3RB-Middle (1)	1779.3 (132665)	21.43	21.48	21.56
		1745 (132322)	21.21	21.36	21.33

	3RB-Low (0)	1710.7 (131979)	21.24	21.40	21.39	
		1779.3 (132665)	21.40	21.40	21.47	
		1745 (132322)	21.17	21.29	21.30	
	6RB (0)	1710.7 (131979)	21.16	21.33	21.34	
		1779.3 (132665)	21.37	21.47	21.41	
		1745 (132322)	21.09	21.04	21.19	
3MHz	1RB-High (14)	1710.7 (131979)	21.13	21.30	21.28	
		1778.5 (132657)	21.37	21.23	21.41	
		1745 (132322)	21.12	21.48	21.32	
	1RB-Middle (7)	1711.5 (131987)	21.07	21.12	21.42	
		1778.5 (132657)	21.46	21.40	21.49	
		1745 (132322)	21.30	21.60	21.37	
	1RB-Low (0)	1711.5 (131987)	21.18	21.32	21.56	
		1778.5 (132657)	21.26	21.27	21.53	
		1745 (132322)	21.15	21.48	21.31	
	8RB-High (7)	1711.5 (131987)	21.13	21.19	21.37	
		1778.5 (132657)	21.32	21.43	21.36	
		1745 (132322)	21.11	21.17	21.19	
	8RB-Middle (4)	1711.5 (131987)	21.08	21.17	21.25	
		1778.5 (132657)	21.41	21.52	21.47	
		1745 (132322)	21.17	21.22	21.21	
	8RB-Low (0)	1711.5 (131987)	21.13	21.20	21.33	
		1778.5 (132657)	21.37	21.49	21.48	
		1745 (132322)	21.17	21.23	21.22	
	15RB (0)	1711.5 (131987)	21.15	21.18	21.31	
		1778.5 (132657)	21.39	21.41	21.37	
		1745 (132322)	21.14	21.17	21.18	
	5MHz	1RB-High (24)	1711.5 (131987)	21.12	21.11	21.25
			1777.5 (132647)	21.33	21.38	21.39
			1745 (132322)	21.02	21.51	21.17
1RB-Middle (12)		1712.5 (131997)	21.05	21.16	21.29	
		1777.5 (132647)	21.59	21.65	21.69	
		1745 (132322)	21.28	21.78	21.41	
1RB-Low (0)		1712.5 (131997)	21.30	21.42	21.62	
		1777.5 (132647)	21.30	21.46	21.45	
		1745 (132322)	21.07	21.53	21.27	
12RB-High (13)		1712.5 (131997)	21.04	21.12	21.33	
		1777.5 (132647)	21.34	21.40	21.39	
		1745 (132322)	21.09	21.22	21.15	
12RB-Middle (6)		1712.5 (131997)	21.13	21.18	21.30	
		1777.5 (132647)	21.43	21.48	21.50	
		1745 (132322)	21.18	21.30	21.28	

	12RB-Low (0)	1712.5 (131997)	21.18	21.21	21.33	
		1777.5 (132647)	21.34	21.44	21.39	
		1745 (132322)	21.16	21.24	21.24	
	25RB (0)	1712.5 (131997)	21.12	21.17	21.27	
		1777.5 (132647)	21.36	21.37	21.45	
		1745 (132322)	21.11	21.20	21.19	
10MHz	1RB-High (49)	1712.5 (131997)	21.13	21.13	21.18	
		1775 (132622)	21.31	21.25	21.44	
		1745 (132322)	21.15	21.43	21.29	
	1RB-Middle (24)	1715 (132022)	21.05	21.16	21.43	
		1775 (132622)	21.38	21.36	21.63	
		1745 (132322)	21.23	21.54	21.35	
	1RB-Low (0)	1715 (132022)	21.16	21.29	21.51	
		1775 (132622)	21.15	21.22	21.58	
		1745 (132322)	21.09	21.45	21.35	
	25RB-High (25)	1715 (132022)	21.10	21.11	21.49	
		1775 (132622)	21.42	21.43	21.50	
		1745 (132322)	21.12	21.14	21.20	
	25RB-Middle (12)	1715 (132022)	21.14	21.31	21.30	
		1775 (132622)	21.39	21.41	21.49	
		1745 (132322)	21.20	21.20	21.26	
	25RB-Low (0)	1715 (132022)	21.20	21.31	21.32	
		1775 (132622)	21.42	21.47	21.52	
		1745 (132322)	21.16	21.22	21.26	
	50RB (0)	1715 (132022)	21.16	21.27	21.27	
		1775 (132622)	21.43	21.44	21.51	
		1745 (132322)	21.20	21.20	21.23	
	15MHz	1RB-High (74)	1715 (132022)	21.18	21.26	21.32
			1772.5 (132597)	21.22	21.19	21.45
			1745 (132322)	21.07	21.38	21.17
1RB-Middle (37)		1717.5 (132047)	21.09	21.61	21.36	
		1772.5 (132597)	21.27	21.29	21.59	
		1745 (132322)	21.12	21.48	21.28	
1RB-Low (0)		1717.5 (132047)	21.11	21.60	21.39	
		1772.5 (132597)	21.13	21.15	21.47	
		1745 (132322)	21.12	21.46	21.39	
36RB-High (38)		1717.5 (132047)	21.06	21.52	21.32	
		1772.5 (132597)	21.38	21.41	21.42	
		1745 (132322)	21.18	21.17	21.17	
36RB-Middle (19)		1717.5 (132047)	21.12	21.12	21.32	
		1772.5 (132597)	21.36	21.35	21.48	
			1745 (132322)	21.22	21.21	21.25

	36RB-Low (0)	1717.5 (132047)	21.09	21.13	21.30	
		1772.5 (132597)	21.31	21.32	21.45	
		1745 (132322)	21.20	21.21	21.24	
	75RB (0)	1717.5 (132047)	21.13	21.10	21.28	
		1772.5 (132597)	21.37	21.37	21.40	
		1745 (132322)	21.20	21.21	21.18	
20MHz	1RB-High (99)	1717.5 (132047)	21.15	21.20	21.28	
		1770 (132572)	21.19	21.71	21.39	
		1745 (132322)	21.02	21.44	21.15	
	1RB-Middle (50)	1720 (132072)	20.97	21.54	21.23	
		1770 (132572)	21.41	21.76	21.63	
		1745 (132322)	21.22	21.69	21.39	
	1RB-Low (0)	1720 (132072)	21.18	21.76	21.51	
		1770 (132572)	21.02	21.57	21.31	
		1745 (132322)	20.99	21.53	21.27	
	50RB-High (50)	1720 (132072)	20.98	21.46	21.25	
		1770 (132572)	21.29	21.34	21.36	
		1745 (132322)	21.07	21.03	21.05	
	50RB-Middle (25)	1720 (132072)	21.24	21.28	21.25	
		1770 (132572)	21.30	21.42	21.44	
		1745 (132322)	21.16	21.22	21.22	
	50RB-Low (0)	1720 (132072)	21.15	21.24	21.24	
		1770 (132572)	21.25	21.38	21.43	
		1745 (132322)	21.15	21.18	21.24	
	100RB (0)	1720 (132072)	21.12	21.13	21.24	
		1770 (132572)	21.30	21.34	21.39	
		1745 (132322)	21.13	21.16	21.14	
			1720 (132072)	21.15	21.22	21.24

Uplink maximum output power is measured with downlink carrier aggregation active, using the channel with highest measured maximum output power when downlink carrier aggregation is inactive. SAR test is not required since maximum output power when downlink carrier aggregation active is not more than ¼ dB higher than the maximum output power measured when downlink carrier aggregation inactive.

The conducted power are as follows:

Level A											
DL LTE CA Class	PCC					SCC				Power	
	PCC Bandwidth	UL channel	DL channel	UL RB	UL RB OFFSET	SCC Bandwidth	DL channel	RB	RB OFFSET	tune up	conducted power (dBm)
CA_66A-66A	5M	131997	66461	1	12	15M	67261	1	0	25	24.26
CA_66B	5M	132647	67111	1	12	15M	67204	1	0	25	24.55
CA_66CC	5M	132647	67111	1	12	20M	67228	1	0	25	24.59
Level B											
DL LTE CA Class	PCC					SCC				Power	
	PCC Bandwidth	UL channel	DL channel	UL RB	UL RB OFFSET	SCC Bandwidth	DL channel	RB	RB OFFSET	tune up	conducted power (dBm)
CA_66A-66A	20M	132072	66536	1	50	20M	67236	1	0	23.5	22.69
CA_66B	5M	132647	67111	1	12	15M	67204	1	0	23.5	22.78
CA_66CC	5M	132647	67111	1	12	20M	67228	1	0	23.5	22.85
Level C											
DL LTE CA Class	PCC					SCC				Power	
	PCC Bandwidth	UL channel	DL channel	UL RB	UL RB OFFSET	SCC Bandwidth	DL channel	RB	RB OFFSET	tune up	conducted power (dBm)
CA_66A-66A	5M	131997	66461	1	12	15M	67261	1	0	22	21.18
CA_66B	5M	132647	67111	1	12	15M	67204	1	0	22	21.46
CA_66CC	5M	132647	67111	1	12	20M	67228	1	0	22	21.49
Level A											
DL LTE CA Class	PCC					SCC				Power	
	PCC Bandwidth	UL channel	DL channel	UL RB	UL RB OFFSET	SCC Bandwidth	DL channel	RB	RB OFFSET	tune up	conducted power (dBm)
CA_2A-2A	10M	18650	650	1	24	20M	1100	1	0	24.5	23.82
CA_2C	20M	18700	700	1	50	20M	898	1	0	24.5	23.8
Level B											
DL LTE CA Class	PCC					SCC				Power	
	PCC Bandwidth	UL channel	DL channel	UL RB	UL RB OFFSET	SCC Bandwidth	DL channel	RB	RB OFFSET	tune up	conducted power (dBm)
CA_2A-2A	10M	18650	650	1	24	20M	1100	1	0	23.5	22.68
CA_2C	15M	18675	675	1	0	15	825	1	74	23.5	22.58
Level C											
DL LTE CA Class	PCC					SCC				Power	
	PCC Bandwidth	UL channel	DL channel	UL RB	UL RB OFFSET	SCC Bandwidth	DL channel	RB	RB OFFSET	tune up	conducted power (dBm)
CA_2A-2A	20M	18700	700	1	50	20M	1100	1	0	21.5	20.89
CA_2C	20M	18700	700	1	50	20M	898	1	0	21.5	20.88

11.4 Wi-Fi and BT Measurement result

The maximum tune up of BT is 9dBm.

For WIFI Antenna there are two of tune-up power, normal power (Receiver off) and lower power (Receiver on):

2.4G-Normal power		
802.11b	Channel\data rate	1Mbps
WLAN2450	11(2462MHz)	19.97
	6(2437(MHz)	19.43
	1(2412MHz)	20.02
	Tune up	21.00
802.11g	Channel\data rate	6Mbps
WLAN2450	11(2462MHz)	18.38
	6(2437(MHz)	17.90
	1(2412MHz)	18.51
	Tune up	19.50
802.11n-20MHz	Channel\data rate	MCS0
WLAN2450	11(2462MHz)	18.66
	6(2437(MHz)	18.16
	1(2412MHz)	18.78
	Tune up	19.50
802.11n-40MHz	Channel\data rate	MCS0
WLAN2450	9(2452MHz)	17.79
	6(2437MHz)	18.08
	3(2422MHz)	17.99
	Tune up	19.50

2.4G-Lower power		
802.11b	Channel\data rate	1Mbps
WLAN2450	11(2462MHz)	17.08
	6(2437(MHz)	16.51
	1(2412MHz)	17.27
	Tune up	18.00
802.11g	Channel\data rate	6Mbps
WLAN2450	11(2462MHz)	17.36
	6(2437(MHz)	16.96
	1(2412MHz)	17.52
	Tune up	18.00
802.11n-20MHz	Channel\data rate	MCS0
WLAN2450	11(2462MHz)	17.28
	6(2437(MHz)	16.90
	1(2412MHz)	17.50
	Tune up	18.00
802.11n-40MHz	Channel\data rate	MCS0
WLAN2450	9(2452MHz)	16.51
	6(2437MHz)	16.84
	3(2422MHz)	16.71
	Tune up	18.00

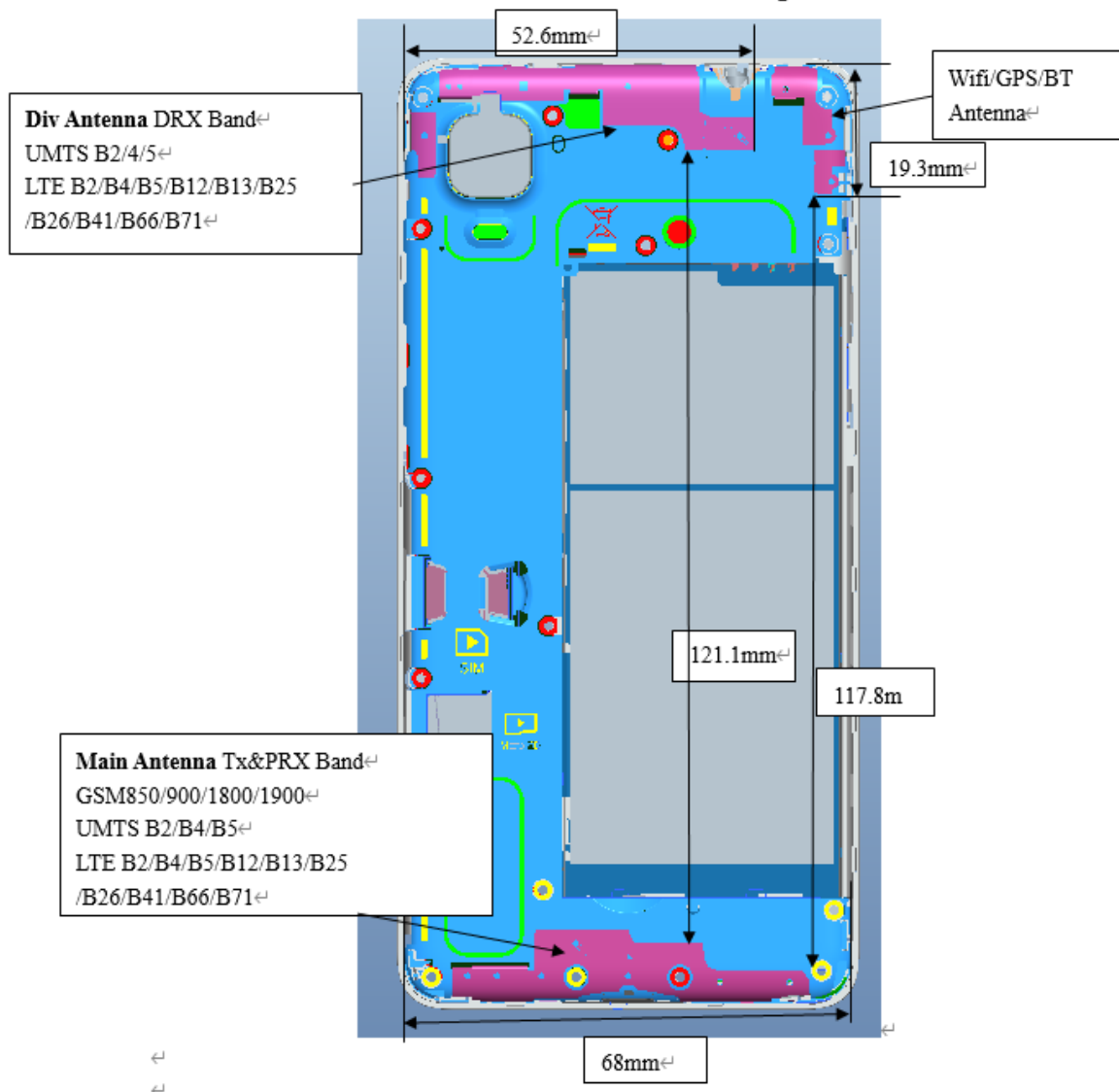
12 Simultaneous TX SAR Considerations

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

The location of the antennas inside mobile phone is shown below:↵



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 2.4G	Yes	Yes	Yes	No	Yes	No

12.4 Standalone SAR Test Exclusion Considerations

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

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$ 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	7.9	Yes
		Body	19.20	9	7.9	Yes
2.4GHz WLAN	2.45	Head	9.58	18	63.1	No
		Body	19.17	21	125.9	No

13 Evaluation of Simultaneous

Table 13.1: The sum of reported SAR values for main antenna and WiFi2.4G

	Position	Main antenna	WiFi	Sum
Highest reported SAR value for Head	Right head, Cheek (WCDMA1700)	0.55	0.73	1.28
Highest reported SAR value for Hotspot	Rear 10mm (LTE Band41 PC2)	0.74	0.61	1.35
Highest reported SAR value for Body	Rear 15mm (LTE Band66)	0.73	0.61	1.34

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

	Position	Main antenna	BT	Sum
Maximum reported SAR value for Head	Right head, Cheek (WCDMA1700)	0.55	0.33 ^[1]	0.88
Maximum reported SAR value for Hotspot	Rear 10mm (LTE Band41 PC2)	0.74	0.17 ^[1]	0.91
Highest reported SAR value for Body	Rear 15mm (LTE Band66)	0.73	0.11 ^[1]	0.84

[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	7.9	0.33
Bluetooth	2.441	Body	10	9	7.9	0.17
Bluetooth	2.441	Body	15	9	7.9	0.11

* - Maximum possible output power declared by manufacturer

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

(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm) · [√f(GHz)/x] W/kg for test separation distances ≤ 50 mm;

where x = 7.5 for 1-g SAR.

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

Conclusion:

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

14 SAR Test Result

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

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

The calculated SAR is obtained by the following formula:

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

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	1:8.3
Speech for GSM1900	1:8.3
GPRS&EGPRS for GSM850	1:2
GPRS&EGPRS for GSM1900-Normal Power	1:2
GPRS&EGPRS for GSM1900-Low Power	1:2
WCDMA<E FDD	1:1
LTE B41 PC2	1:2.309
LTE B41 PC3	1:1.58

14.1 SAR results for Fast SAR

The evaluation of multi-Batteries cards:

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

Frequency		Side	Test Position	Batteries	SAR(1g) (W/kg)	Power Drift(dB)
MHz	Ch.					
836.6	190	Left	Cheek	B1	0.224	-0.04
836.6	190	Left	Cheek	B2	0.213	0.03

Note: According to the values in the above table, the **B1** is the primary battery.

We'll perform the head measurement with the **B1** and retest on highest value point with others.

frequency		Test Position	Spacing (mm)	Batteries	SAR(10g) (W/kg)	Power Drift(dB)
MHz	Ch.					
836.6	190	Rear	10	B1	0.41	-0.12
836.6	190	Rear	10	B2	0.381	0.12

Note: According to the values in the above table, the **B1** is the primary battery.

We'll perform the body measurement with the **B1** and retest on highest value point with others.

Note

B1: CAB2880000C7 by VEKEN

B2: CAB2880001C1 by BYD

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

Frequency		Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										
		Ambient Temperature: 22.9 °C Liquid Temperature: 22.5°C									
251	848.8	Left	Touch	/	32.26	33.3	0.148	0.19	0.187	0.24	0.15
190	836.6	Left	Touch	Fig.1	32.33	33.3	0.174	0.22	0.224	0.28	-0.04
128	824.2	Left	Touch	/	32.24	33.3	0.154	0.20	0.195	0.25	0.02
190	836.6	Left	Tilt	/	32.33	33.3	0.118	0.15	0.141	0.18	0.02
190	836.6	Right	Touch	/	32.33	33.3	0.143	0.18	0.172	0.21	-0.11
190	836.6	Right	Tilt	/	32.33	33.3	0.122	0.15	0.15	0.19	0.01
190	836.6	Left	Touch	B2	32.33	33.3	0.163	0.20	0.213	0.27	0.03

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

Ambient Temperature: 22.9°C Liquid Temperature: 22.5°C											
Frequency		Mode (number of timeslots)	Test Position	Figure No.	Conduc- ted Power (dBm)	Max. tune- up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measure d SAR(1g) (W/kg)	Reporte d SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										
190	836.6	GPRS(4)	Front	/	26.93	27.5	0.179	0.20	0.232	0.26	0.01
251	848.8	GPRS(4)	Rear	/	26.90	27.5	0.242	0.28	0.316	0.36	0.12
190	836.6	GPRS(4)	Rear	Fig.2	26.93	27.5	0.31	0.35	0.41	0.47	-0.12
128	824.2	GPRS(4)	Rear	/	26.74	27.5	0.295	0.35	0.39	0.46	0.11
190	836.6	GPRS(4)	Left	/	26.93	27.5	0.188	0.21	0.265	0.30	0.11
190	836.6	GPRS(4)	Right	/	26.93	27.5	0.116	0.13	0.156	0.18	0.19
190	836.6	GPRS(4)	Bottom	/	26.93	27.5	0.062	0.07	0.105	0.12	-0.16
190	836.6	EGPRS(4)	Rear	/	26.92	27.5	0.307	0.35	0.405	0.46	0.07
190	836.6	GPRS(4)	Rear	B2	26.93	27.5	0.26	0.30	0.381	0.43	0.12

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

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

Ambient Temperature: 22.9°C Liquid Temperature: 22.5°C											
Frequency		Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										
661	1880	Left	Touch	/	28.49	29.7	0.081	0.11	0.134	0.18	0.06
661	1880	Left	Tilt	/	28.49	29.7	0.031	0.04	0.047	0.06	-0.19
810	1909.8	Right	Touch	Fig.3	28.75	29.7	0.098	0.12	0.163	0.20	0.13
661	1880	Right	Touch	/	28.49	29.7	0.093	0.12	0.152	0.20	-0.19
512	1850.2	Right	Touch	/	28.47	29.7	0.088	0.12	0.142	0.19	0.13
661	1880	Right	Tilt	/	28.49	29.7	0.036	0.05	0.057	0.08	0.00
810	1909.8	Right	Touch	B2	28.75	29.7	0.076	0.09	0.156	0.19	0.11

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

Ambient Temperature: 22.9°C Liquid Temperature: 22.5°C											
Frequency		Mode (number of timeslots)	Test Position	Figure No.	Conduc- ted Power (dBm)	Max. tune- up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measure d SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										
661	1880	GPRS(4)	Front	/	21.48	22	0.098	0.11	0.15	0.17	-0.08
810	1909.8	GPRS(4)	Rear	/	21.84	22	0.205	0.21	0.371	0.38	-0.04
661	1880	GPRS(4)	Rear	Fig.4	21.48	22	0.211	0.24	0.382	0.43	0.11
512	1850.2	GPRS(4)	Rear	/	21.47	22	0.175	0.20	0.327	0.37	-0.04
661	1880	GPRS(4)	Left	/	21.48	22	0.028	0.03	0.043	0.05	0
661	1880	GPRS(4)	Right	/	21.48	22	0.057	0.06	0.095	0.11	0.07
661	1880	GPRS(4)	Bottom	/	21.48	22	0.142	0.16	0.257	0.29	0.02

661	1880	EGPRS(4)	Rear	/	24.47	22	0.209	0.12	0.379	0.21	0.13
661	1880	GPRS(4)	Rear	B2	21.48	22	0.198	0.22	0.376	0.42	0.03

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

Table 14.1-5: 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.	Conduc ted Power (dBm)	Max. tune- up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measure d SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										
661	1880	GPRS(4)	Front	/	24.39	25	0.108	0.12	0.15	0.17	-0.15
810	1909.8	GPRS(4)	Rear	/	24.73	25	0.198	0.21	0.302	0.32	-0.08
661	1880	GPRS(4)	Rear	Fig.5	24.39	25	0.193	0.22	0.311	0.36	-0.09
512	1850.2	GPRS(4)	Rear	/	24.37	25	0.158	0.18	0.241	0.28	-0.04
661	1880	EGPRS(4)	Rear	/	24.40	25	0.189	0.22	0.307	0.35	-0.06
661	1880	GPRS(4)	Rear	B2	24.39	25	0.187	0.22	0.298	0.34	0.06

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

Table 14.1-6: 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)
Ch.	MHz										
9400	1880	Left	Touch	/	23.59	24.5	0.14	0.17	0.238	0.29	-0.1
9400	1880	Left	Tilt	/	23.59	24.5	0.042	0.05	0.066	0.08	-0.08
9538	1907.6	Right	Touch	/	23.71	24.5	0.161	0.19	0.256	0.31	-0.06
9400	1880	Right	Touch	/	23.59	24.5	0.156	0.19	0.248	0.31	-0.13
9262	1852.4	Right	Touch	Fig.6	23.65	24.5	0.184	0.22	0.296	0.36	0.04
9400	1880	Right	Tilt	/	23.59	24.5	0.058	0.07	0.097	0.12	-0.12
9262	1852.4	Right	Touch	B2	23.65	24.5	0.176	0.21	0.279	0.34	0.01

Table 14.1-7: SAR Values (WCDMA 1900 MHz Band - Body)

Frequency		Test Position	Figure No.	Conduct ed Power (dBm)	Max. tune-up Power (dBm)	Ambient Temperature: 22.9 °C		Liquid Temperature: 22.5°C		Power Drift (dB)
Ch.	MHz					Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	
9400	1880	Front	/	20.56	21.5	0.137	0.17	0.213	0.26	-0.12
9538	1907.6	Rear	/	20.52	21.5	0.296	0.37	0.554	0.69	-0.16
9400	1880	Rear	/	20.56	21.5	0.303	0.38	0.556	0.69	-0.07
9262	1852.4	Rear	Fig.7	20.74	21.5	0.315	0.38	0.592	0.71	0.17
9400	1880	Left	/	20.56	21.5	0.043	0.05	0.066	0.08	0.1
9400	1880	Right	/	20.56	21.5	0.08	0.10	0.134	0.17	0.09
9400	1880	Bottom	/	20.56	21.5	0.213	0.26	0.388	0.48	0.18
9262	1852.4	Rear	B2	20.74	21.5	0.276	0.33	0.586	0.70	0.03

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

Table 14.1-8: SAR Values (WCDMA 1900 MHz Band - Body)

Frequency		Test Position	Figure No.	Conduct ed Power (dBm)	Max. tune-up Power (dBm)	Ambient Temperature: 22.9 °C		Liquid Temperature: 22.5°C		Power Drift (dB)
Ch.	MHz					Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	
9400	1880	Front	/	22.77	23.5	0.125	0.15	0.188	0.22	0.06
9538	1907.6	Rear	/	22.73	23.5	0.171	0.20	0.285	0.34	-0.09
9400	1880	Rear	/	22.77	23.5	0.184	0.22	0.307	0.36	-0.18
9262	1852.4	Rear	Fig.8	22.80	23.5	0.199	0.23	0.336	0.39	0.02
9262	1852.4	Rear	B2	22.80	23.5	0.186	0.22	0.326	0.38	0.01

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

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

Frequency		Side	Test Position	Figure No.	Conducte d Power (dBm)	Max. tune-up Power (dBm)	Ambient Temperature: 22.9 °C		Liquid Temperature: 22.5°C		Power Drift (Db)
Ch.	MHz						Measure d SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measure d SAR(1g) (W/kg)	Reporte d SAR(1g) (W/kg)	
1412	1732.4	Left	Touch	/	24.03	25	0.247	0.31	0.405	0.51	0.09
1412	1732.4	Left	Tilt	/	24.03	25	0.088	0.11	0.143	0.18	-0.01
1513	1752.6	Right	Touch	Fig.9	24.07	25	0.283	0.35	0.447	0.55	-0.03
1412	1732.4	Right	Touch	/	24.03	25	0.278	0.35	0.435	0.54	-0.06
1312	1712.4	Right	Touch	/	24.09	25	0.256	0.32	0.403	0.50	0.07
1412	1732.4	Right	Tilt	/	24.03	25	0.11	0.14	0.172	0.22	0.19
1513	1752.6	Right	Touch	B2	24.07	25	0.276	0.34	0.431	0.53	0.06

Table 14.1-10: SAR Values (WCDMA 1700 MHz Band - Body)

Frequency		Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz									
Ambient Temperature: 22.9 °C Liquid Temperature: 22.5 °C										
1412	1732.5	Front	/	20.94	22	0.195	0.25	0.294	0.38	-0.11
1513	1752.6	Rear	/	21.01	22	0.314	0.39	0.56	0.70	-0.15
1412	1732.5	Rear	Fig.10	20.94	22	0.325	0.41	0.573	0.73	-0.02
1312	1712.4	Rear	/	21.04	22	0.291	0.36	0.507	0.63	-0.14
1412	1732.5	Left	/	20.94	22	0.043	0.05	0.067	0.09	-0.06
1412	1732.5	Right	/	20.94	22	0.09	0.11	0.143	0.18	-0.01
1412	1732.5	Bottom	/	20.94	22	0.181	0.23	0.308	0.39	-0.17
1412	1732.5	Rear	B2	20.94	22	0.321	0.41	0.563	0.72	0.0..1

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

Table 14.1-11: SAR Values (WCDMA 1700 MHz Band - Body)

Frequency		Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz									
Ambient Temperature: 22.9 °C Liquid Temperature: 22.5 °C										
1412	1732.5	Front	/	22.70	23.5	0.145	0.17	0.229	0.28	-0.14
1513	1752.6	Rear	Fig.11	22.77	23.5	0.191	0.23	0.327	0.39	0.04
1412	1732.5	Rear	/	22.70	23.5	0.189	0.23	0.317	0.38	0.01
1312	1712.4	Rear	/	22.76	23.5	0.178	0.21	0.296	0.35	0.06
1513	1752.6	Rear	B2	22.77	23.5	0.178	0.21	0.316	0.37	0.05

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

Table 14.1-12: SAR Values (WCDMA 850 MHz Band - Head)

Frequency		Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										
Ambient Temperature: 22.9 °C Liquid Temperature: 22.5 °C											
4233	846.6	Left	Touch	/	24.09	25	0.234	0.29	0.306	0.38	0.11
4183	836.6	Left	Touch	Fig.12	23.93	25	0.256	0.33	0.335	0.43	-0.04
4132	826.4	Left	Touch	/	24.11	25	0.251	0.31	0.327	0.40	-0.12
4183	836.6	Left	Tilt	/	23.93	25	0.159	0.20	0.201	0.26	0.11
4183	836.6	Right	Touch	/	23.93	25	0.203	0.26	0.251	0.32	0.16
4183	836.6	Right	Tilt	/	23.93	25	0.169	0.22	0.214	0.27	-0.06
4183	836.6	Left	Touch	B2	23.93	25	0.234	0.30	0.328	0.42	0.06

Table 14.1-13: SAR Values (WCDMA 850 MHz Band - Body)

Frequency		Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Ambient Temperature: 22.9 °C		Liquid Temperature: 22.5°C		Power Drift (dB)
Ch.	MHz					Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	
4183	836.6	Front	/	23.93	25	0.115	0.15	0.207	0.26	0.17
4233	846.6	Rear	/	24.09	25	0.178	0.22	0.326	0.40	-0.10
4183	836.6	Rear	/	23.93	25	0.204	0.26	0.373	0.48	0.07
4132	826.4	Rear	Fig.13	24.11	25	0.218	0.27	0.397	0.49	-0.17
4183	836.6	Left	/	23.93	25	0.127	0.16	0.246	0.31	-0.11
4183	836.6	Right	/	23.93	25	0.08	0.10	0.156	0.20	-0.10
4183	836.6	Bottom	/	23.93	25	0.045	0.06	0.113	0.14	-0.03
4132	826.4	Rear	B2	24.11	25	0.213	0.26	0.386	0.47	0.13

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

Table 14.1-14: SAR Values (LTE Band12 - Head)

Frequency		Mode	Side	Test Position	Figure No.	Ambient Temperature: 22.9 °C		Liquid Temperature: 22.5°C		Reported SAR(1g) (W/kg)	Power Drift (dB)	
Ch.	MHz					Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)			Measured SAR(1g) (W/kg)
23095	707.5	1RB-Mid	Left	Touch	/	24.14	25	0.126	0.15	0.163	0.20	-0.07
23095	707.5	1RB-Mid	Left	Tilt	Fig.14	24.14	25	0.14	0.17	0.178	0.22	-0.04
23095	707.5	1RB-Mid	Right	Touch	/	24.14	25	0.103	0.13	0.13	0.16	-0.05
23095	707.5	1RB-Mid	Right	Tilt	/	24.14	25	0.09	0.11	0.115	0.14	0.04
23095	707.5	25RB-High	Left	Touch	/	23.10	24	0.104	0.13	0.135	0.17	-0.08
23095	707.5	25RB-High	Left	Tilt	/	23.10	24	0.117	0.14	0.148	0.18	-0.15
23095	707.5	25RB-High	Right	Touch	/	23.10	24	0.086	0.11	0.109	0.13	0.18
23095	707.5	25RB-High	Right	Tilt	/	23.10	24	0.077	0.09	0.098	0.12	-0.12
23095	707.5	1RB-Mid	Left	Tilt	B2	24.14	25	0.119	0.14	0.168	0.20	0.01

Note1: The LTE mode is QPSK_10MHz.

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

Frequency		Mode	Test Position	Figure No.	Ambient Temperature: 22.9 °C		Liquid Temperature: 22.5°C		Reported SAR(1g) (W/kg)	Power Drift (dB)	
Ch.	MHz				Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)			Measured SAR(1g) (W/kg)
23095	707.5	1RB-Mid	Front	/	24.14	25	0.161	0.20	0.211	0.26	-0.03
23095	707.5	1RB-Mid	Rear	Fig.15	24.14	25	0.315	0.38	0.411	0.50	-0.11
23095	707.5	1RB-Mid	Left	/	24.14	25	0.171	0.21	0.235	0.29	-0.19
23095	707.5	1RB-Mid	Right	/	24.14	25	0.147	0.18	0.201	0.24	-0.17
23095	707.5	1RB-Mid	Bottom	/	24.14	25	0.042	0.05	0.09	0.11	-0.13