SAR TEST REPORT

No. 24T04Z100644-012

For

Smart Phone

Model Name: U572AA,U572AC

with

Hardware Version: V1.0

Software Version: U572AAV01.04.10

FCC ID: XD6U572AA

Issued Date: 2024-6-7

Note:

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

Test Laboratory:

CTTL, Telecommunication Technology Labs, CAICT

No. 52, Huayuan North Road, Haidian District, Beijing, P. R. China 100191.

Tel:+86(0)10-62304633-2512, Fax:+86(0)10-62304633-2504

Email: cttl_terminals@caict.ac.cn, website: www.caict.ac.cn

REPORT HISTORY

Report Number	Revision	Issue Date	Description
24T04Z100644-012	Rev.0	2024-6-3	Initial creation of test report
24T04Z100644-012	Rev.1	2024-6-7	1. Identify the scenario of DSI 0/1/2 of 2.4G/5G WLAN on page57. 2. Add NFC evaluation procedure on page6.

TABLE OF CONTENT

1 TEST LABORATORY 5

1.1 TESTING LOCATION 5
1.2 TESTING ENVIRONMENT 5
1.3 PROJECT DATA 5
1.4 SIGNATURE 5

2 STATEMENT OF COMPLIANCE 6

3 CLIENT INFORMATION 8

3.1 APPLICANT INFORMATION 8
3.2 MANUFACTURER INFORMATION 8

4 EQUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT (AE) 9

4.1 ABOUT EUT 9
4.2 INTERNAL IDENTIFICATION OF EUT USED DURING THE TEST 10
4.3 INTERNAL IDENTIFICATION OF AE USED DURING THE TEST 10

5 TEST METHODOLOGY 11

5.1 APPLICABLE LIMIT REGULATIONS 11
5.2 APPLICABLE MEASUREMENT STANDARDS 11

6 SPECIFIC ABSORPTION RATE (SAR) 12

6.1 INTRODUCTION 12
6.2 SAR DEFINITION 12

7 TISSUE SIMULATING LIQUIDS 13

7.1 TARGETS FOR TISSUE SIMULATING LIQUID 13
7.2 DIELECTRIC PERFORMANCE 13

8 SYSTEM VERIFICATION 15

8.1 SYSTEM SETUP 15
8.2 SYSTEM VERIFICATION 16

9 MEASUREMENT PROCEDURES 17

9.1 TESTS TO BE PERFORMED 17
9.2 GENERAL MEASUREMENT PROCEDURE 19
9.3 WCDMA MEASUREMENT PROCEDURES FOR SAR 20
9.4 SAR MEASUREMENT FOR LTE 21
9.5 BLUETOOTH & WI-FI MEASUREMENT PROCEDURES FOR SAR 23
9.6 POWER DRIFT 23

10 AREA SCAN BASED 1-G SAR 24

10.1 REQUIREMENT OF KDB 24
10.2 FAST SAR ALGORITHMS 24

11 CONDUCTED OUTPUT POWER 25

11.1 WCDMA MEASUREMENT RESULT 25
11.2 LTE MEASUREMENT RESULT 28
11.3 WI-FI AND BT MEASUREMENT RESULT 57

12 SIMULTANEOUS TX SAR CONSIDERATIONS 61

12.1 INTRODUCTION 61
12.2 TRANSMIT ANTENNA SEPARATION DISTANCES 61
12.3 SAR MEASUREMENT POSITIONS 61

13 EVALUATION OF SIMULTANEOUS 62

14 SAR TEST RESULT 65

14.1 SAR RESULTS FOR 3G/4G 66
14.2 SAR EVALUATION FOR WIFI 70
14.3 SAR EVALUATION FOR BT 71
14.4 SAR RESULTS FOR 10-G EXTREMITY SAR 72

15 SAR MEASUREMENT VARIABILITY 73

16 MEASUREMENT UNCERTAINTY 74

16.1 MEASUREMENT UNCERTAINTY FOR NORMAL SAR TESTS (300MHZ~3GHZ) 74
16.2 MEASUREMENT UNCERTAINTY FOR NORMAL SAR TESTS (3~6GHZ) 75
16.3 MEASUREMENT UNCERTAINTY FOR FAST SAR TESTS (300MHZ~3GHZ) 76
16.4 MEASUREMENT UNCERTAINTY FOR FAST SAR TESTS (3~6GHZ) 77

17 MAIN TEST INSTRUMENTS 79

APPENDIXES 80

1 Test Laboratory

1.1 Testing Location

Company Name:	CTTL
Address:	No. 52, Huayuan North Road, Haidian District, Beijing, P. R. China 100191.

1.2 Testing Environment

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

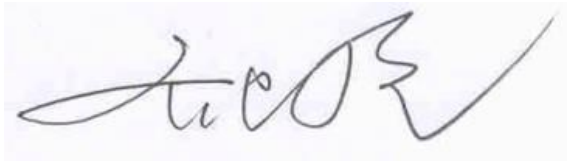
1.3 Project Data

Project Leader:	Qi Dianyuan
Test Engineer:	Yao Juming
Testing Start Date:	May 7, 2024
Testing End Date:	May 25, 2024

1.4 Signature

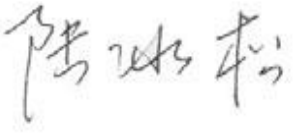
Yao Juming

(Prepared this test report)



Qi Dianyuan

(Reviewed this test report)



Lu Bingsong

Deputy Director of the laboratory

(Approved this test report)

2 Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for Shenzhen Tinno Mobile Technology Corp. Smart Phone U572AA,U572AC is as follows:

Table 2.1: Highest Reported SAR (1g)

Technology Band	Head	Hotspot	Body-Worn	Phablet-10g	Equipment Class
WCDMA1900	**0.20**	**1.18**	**0.40**	/	PCE
WCDMA1700	**0.14**	**1.29**	**0.38**	**3.14**	
WCDMA 850	**0.19**	**0.34**	**0.23**	/	
LTE Band2	**0.26**	**1.05**	**0.45**	**3.08**	
LTE Band5	**0.27**	**0.39**	**0.28**	/	
LTE Band7	**0.06**	**1.23**	**0.37**	**3.25**	
LTE Band12	**0.25**	**0.48**	**0.48**	/	
LTE Band14	**0.27**	**0.34**	**0.34**	/	
LTE Band30	**0.05**	**1.13**	**0.63**	**3.20**	
LTE Band66	**0.20**	**1.10**	**0.53**	**2.72**	
WLAN 2.4GHz	**1.18**	**1.12**	**0.44**	**2.58**	DTS
WLAN 5GHz	**0.79**	**0.99**	**0.50**	**1.21**	NII
BT	**0.25**	**0.11**	**0.04**	/	DSS

Note: This DUT has NFC operations. The NFC antenna is integrated into the device for this model. According to KDB 447498 D01 v06 and KDB 648474 D04 v01r03 chapter 8, all SAR tests were performed and evaluated with the device which already incorporates the NFC antenna.

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 15/10 mm between this device and the body of the user. Use of other accessories may not ensure compliance with FCC RF exposure guidelines.

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

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

Head: 1.18 W/kg(1g)

Body: 1.29 W/kg(1g)

Limb: 3.25 W/kg(10g).

Table 2.2: The sum of SAR values for Main antenna + Wifi2.4G

	Position	Main antenna	WiFi-2.4G	Sum
Highest SAR value for Head	Left head, Cheek (LTE B2)	0.26	1.16	**1.42**
Highest SAR value for Body	Rear 10mm (WCDMA B4)	0.77	0.77	**1.54**

Table 2.3: The sum of SAR values for Main antenna + Wifi5G +BT

	Position	Main antenna	WiFi-5G	BT	Sum
Highest SAR value for Head	Left head, Tilt (LTE B2)	0.20	0.64	0.25	**1.09**
Highest SAR value for Body	Rear 10mm (WCDMA B4)	0.77	0.73	0.07	**1.57**

Conclusion:

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

According to the above tables, the highest sum of reported SAR values is **1.57 W/kg (1g)**. The detail for simultaneous transmission consideration is described in chapter 13.

3 Client Information

3.1 Applicant Information

Company Name:	Shenzhen Tinno Mobile Technology Corp.
Address/Post:	27-001, South Side of Tianlong Mobile Headquarters Building, Tongfa South Road, Xili Community, Xili Street, Nanshan District, Shenzhen ,PRC
Contact Person:	xiaoping.li
Contact Email:	xiaoping.li@tinno.com
Telephone:	0755-86095550
Fax:	0755-86095551

3.2 Manufacturer Information

Company Name:	Shenzhen Tinno Mobile Technology Corp.
Address/Post:	27-001, South Side of Tianlong Mobile Headquarters Building, Tongfa South Road, Xili Community, Xili Street, Nanshan District, Shenzhen ,PRC
Contact Person:	xiaoping.li
Contact Email:	xiaoping.li@tinno.com
Telephone:	0755-86095550
Fax:	0755-86095551

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

4.1 About EUT

Description:	Smart Phone
Model name:	U572AA,U572AC
Operating mode(s):	WCDMA B1/B2/B4/B5/B8 LTE Band 2/3/4/5/7/12/14/20/29/30/66 BT, Wi-Fi(2.4G/5G)
Tested Tx Frequency:	824 – 849 MHz (WCDMA 850 Band V)
	1850 – 1910 MHz (WCDMA1900 Band IV)
	1710-1755 MHz (WCDMA1700 Band II)
	1850.7 – 1909.3 MHz (LTE Band 2)
	824 – 849 MHz (LTE Band 5)
	2502.5 – 2567.5 MHz (LTE Band 7)
	699.7 – 715.3 MHz (LTE Band 12)
	790.5 – 795.5 MHz (LTE Band 14)
	2307.5 – 2312.5 MHz (LTE Band 30)
	1710.7 –1779.3 MHz (LTE Band 66)
	2412 – 2462 MHz (Wi-Fi 2.4G)
	5180 – 5240 MHz (Wi-Fi 5.2G)
	5260 – 5320 MHz (Wi-Fi 5.3G)
	5500 – 5720 MHz (Wi-Fi 5.5G)
	5745 – 5825 MHz (Wi-Fi 5.8G)
	2400 – 2483.5 MHz (Bluetooth)
GPRS/EGPRS Multislot Class:	N/A
Test device production information:	Production unit
Device type:	Portable device
Antenna type:	Integrated antenna
Hotspot mode:	Support

4.2 Internal Identification of EUT used during the test

EUT ID*	IMEI	HW Version	SW Version
EUT1	864975070004880	V1.0	U572AAV01.04.10
EUT2	864975070004856	V1.0	U572AAV01.04.10
EUT3	864975070007347	V1.0	U572AAV01.04.10
EUT4	864975070007925	V1.0	U572AAV01.04.10
EUT5	864975070001654	V1.0	U572AAV01.04.10

*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	TNO496386AG-N1	/	GUANGDONG FENGHUA NEW ENERGY CO.,LTD

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

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

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

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

7 Tissue Simulating Liquids

7.1 Targets for tissue simulating liquid

Table 7.1: Targets for tissue simulating liquid

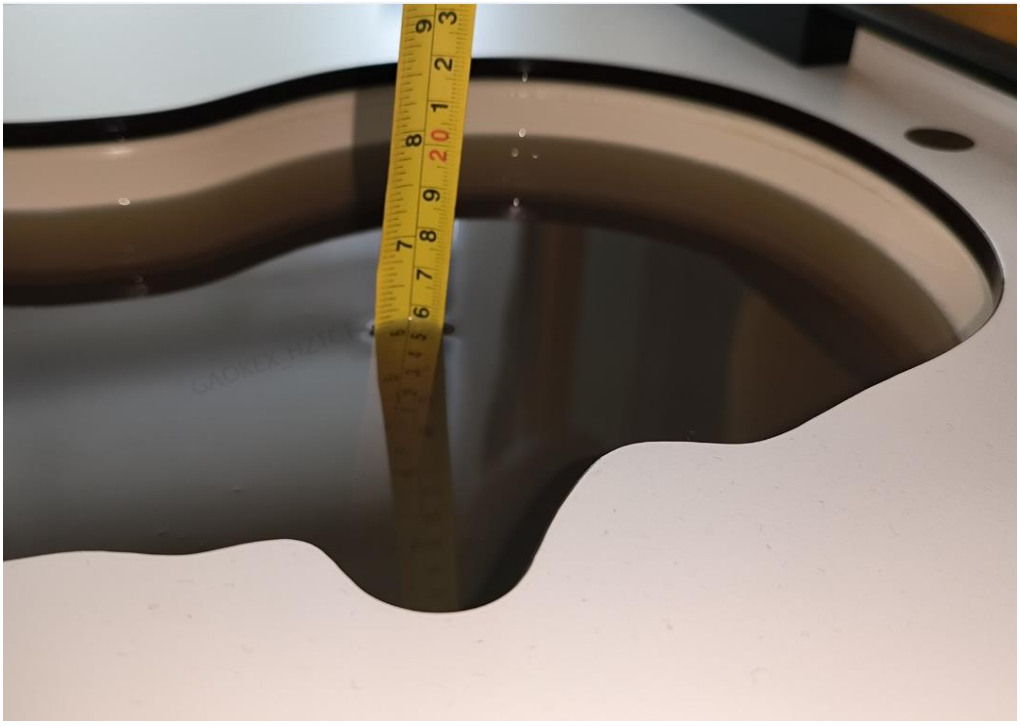
Frequency(MHz)	Liquid Type	Conductivity(σ)	± 5% Range	Permittivity(ε)	± 5% Range
750	Head	0.89	0.85～0.93	41.94	39.8～44.0
835	Head	0.90	0.86～0.95	41.5	39.4～43.6
1750	Head	1.37	1.30～1.44	40.08	38.1～42.1
1900	Head	1.40	1.33～1.47	40.0	38.0～42.0
2450	Head	1.67	1.59～1.75	39.47	37.5～41.4
2600	Head	1.96	1.76～2.16	39.01	35.11～42.91
5250	Head	4.71	4.47～4.95	35.93	34.13～37.73
5600	Head	5.07	4.82～5.32	35.53	33.8～37.3
5750	Head	5.22	4.96～5.48	35.36	33.59～37.13

7.2 Dielectric Performance

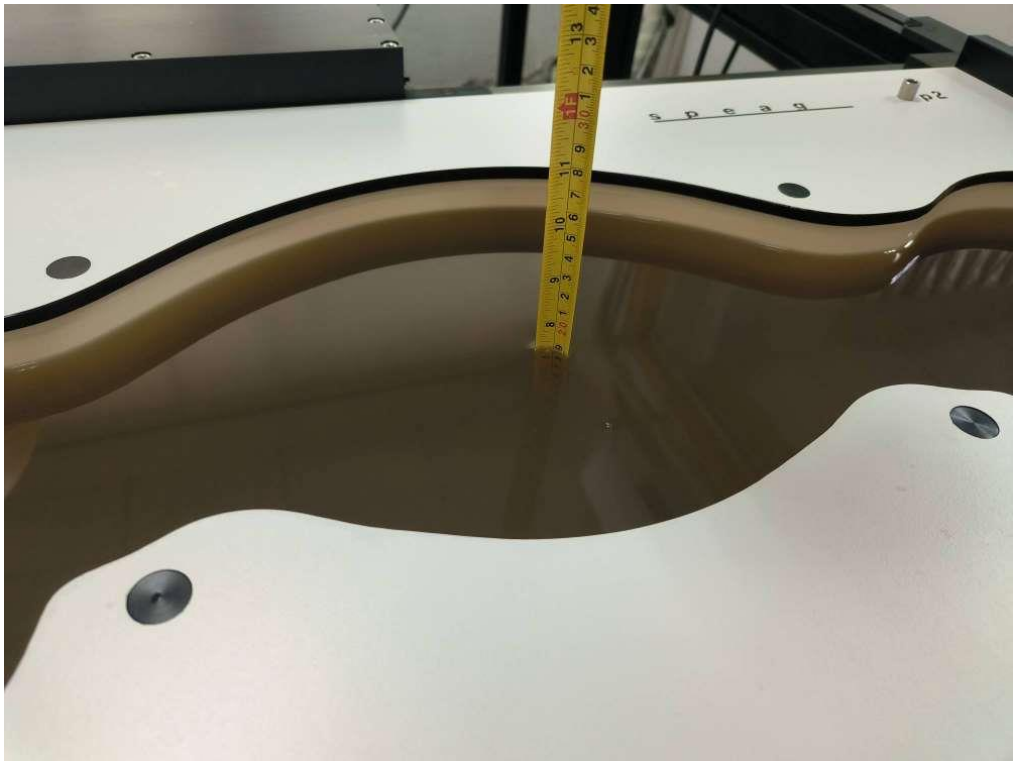
Table 7.2: Dielectric Performance of Tissue Simulating Liquid

Measurement Date (yyyy-mm-dd)	Type	Frequency	Permittivity ε	Drift (%)	Conductivity σ (S/m)	Drift (%)
2024-5-13	Head	750 MHz	41.31	-1.50%	0.871	-2.13%
2024-5-7	Head	835 MHz	41.27	-0.55%	0.914	1.56%
2024-5-9	Head	1800 MHz	40.63	1.58%	1.357	-3.07%
2024-5-12	Head	1900 MHz	38.95	-2.62%	1.384	-1.14%
2024-5-25	Head	2300 MHz	38.56	-2.31%	1.697	1.62%
2024-5-16	Head	2450 MHz	38.58	-1.58%	1.743	-3.17%
2024-5-15	Head	2600 MHz	38.33	-1.74%	1.91	-2.55%
2024-5-22	Head	5250 MHz	36.65	2.00%	4.721	0.23%
2024-5-23	Head	5600 MHz	36.59	2.98%	4.993	-1.52%
2024-5-24	Head	5750 MHz	36.48	3.17%	5.08	-2.68%

Note: The liquid temperature is 22.0℃



Picture 7-1 Liquid depth in the Head Phantom

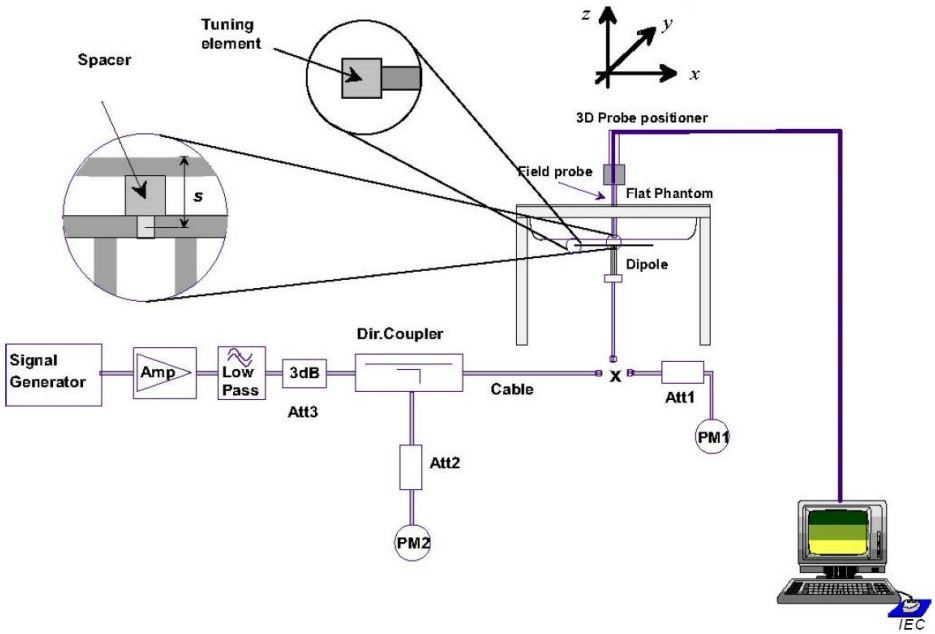


Picture 7-2 Liquid depth in the Flat Phantom

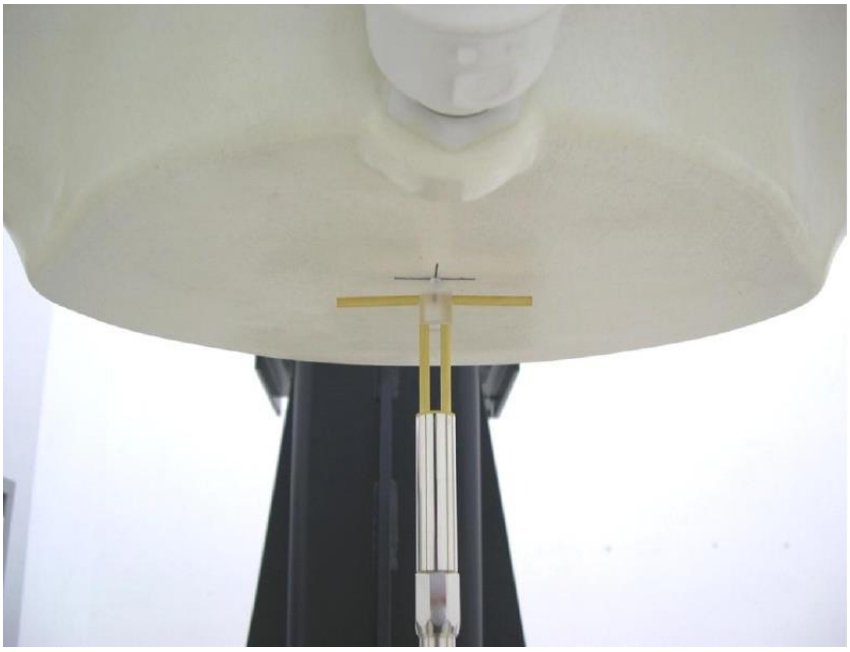
8 System verification

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
2024-5-13	750 MHz	5.49	8.42	5.48	8.44	-0.18%	0.24%
2024-5-7	835 MHz	6.25	9.62	6.28	9.68	0.48%	0.62%
2024-5-9	1800 MHz	19.8	37.9	19.32	36.88	-2.42%	-2.69%
2024-5-12	1900 MHz	20.7	39.8	21.04	40.32	1.64%	1.31%
2024-5-25	2300 MHz	24	49.1	24.72	50.6	3.00%	3.05%
2024-5-16	2450 MHz	24.7	52.1	25.24	53.4	2.19%	2.50%
2024-5-15	2600 MHz	25.1	55.2	24.44	53.92	-2.63%	-2.32%
2024-5-22	5250 MHz	22.8	79.6	22.6	78.8	-0.88%	-1.01%
2024-5-23	5600 MHz	23.8	83.6	24.3	85.2	2.10%	1.91%
2024-5-24	5750 MHz	22.7	80.5	23.3	82.5	2.64%	2.48%

9 Measurement Procedures

9.1 Tests to be performed

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

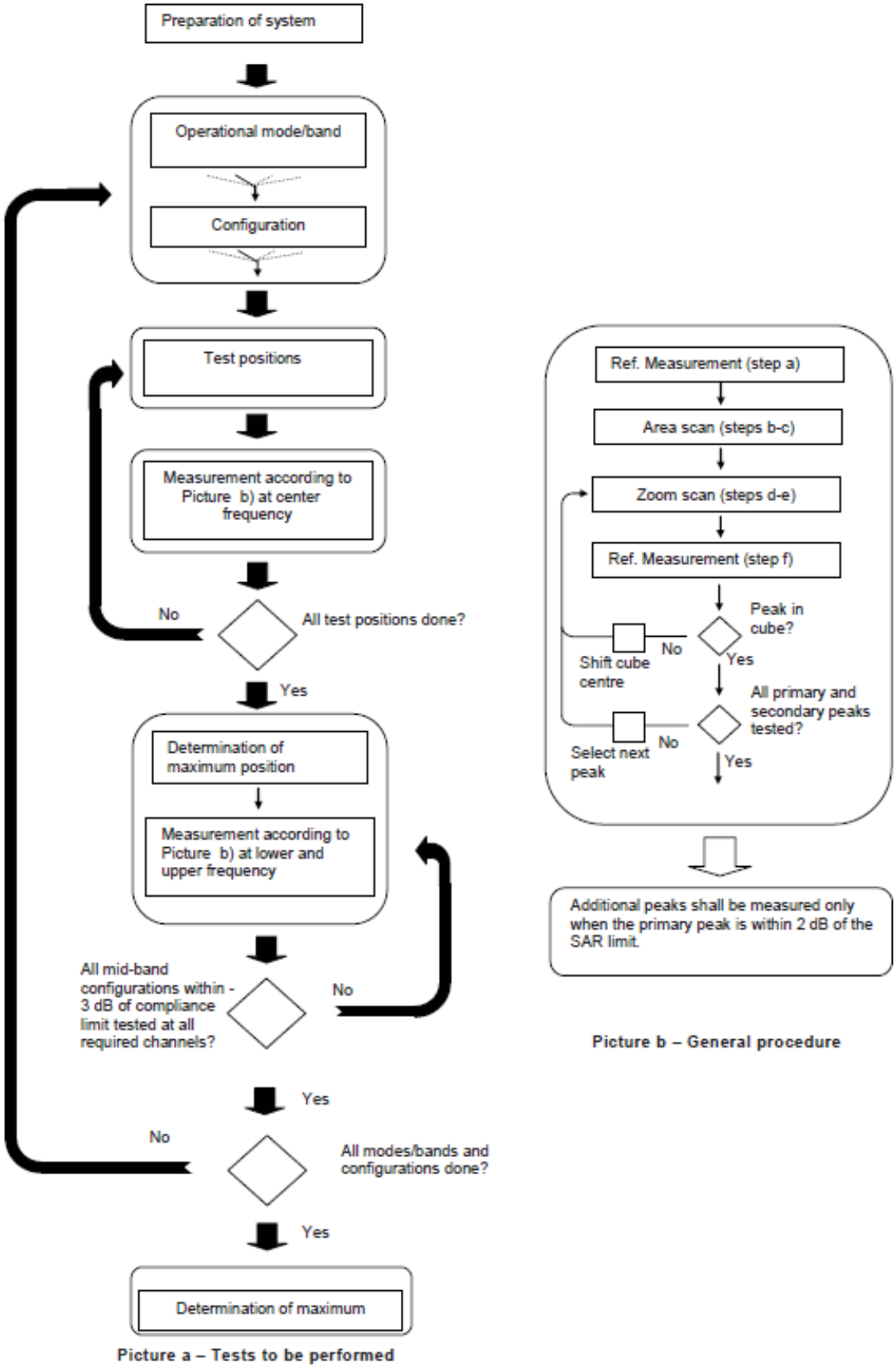
Step 1: The tests described in 9.2 shall be performed at the channel that is closest to the centre of the transmit frequency band (f_c) for:

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

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

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

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



Picture 9.1Block diagram of the tests to be performed

9.2 General Measurement Procedure

The area and zoom scan resolutions specified in the table below must be applied to the SAR measurements and fully documented in SAR reports to qualify for TCB approval. Probe boundary effect error compensation is required for measurements with the probe tip closer than half a probe tip diameter to the phantom surface. Both the probe tip diameter and sensor offset distance must satisfy measurement protocols; to ensure probe boundary effect errors are minimized and the higher fields closest to the phantom surface can be correctly measured and extrapolated to the phantom surface for computing 1-g SAR. Tolerances of the post-processing algorithms must be verified by the test laboratory for the scan resolutions used in the SAR measurements, according to the reference distribution functions specified in IEEE Std 1528-2003. The results should be documented as part of the system validation records and may be requested to support test results when all the measurement parameters in the following table are not satisfied.

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

9.3 WCDMA Measurement Procedures for SAR

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

For Release 5 HSDPA Data Devices:

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

For Release 6 HSPA Data Devices

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

Rel.8 DC-HSDPA (Cat 24)

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

9.4 SAR Measurement for LTE

SAR tests for LTE are performed with a base station simulator, Rohde & Rchwarz CMW500. Closed loop power control was used so the UE transmits with maximum output power during SAR testing. All powers were measured with the CMW 500.

It is performed for conducted power and SAR based on the KDB941225 D05.

SAR is evaluated separately according to the following procedures for the different test positions in each exposure condition – head, body, body-worn accessories and other use conditions. The procedures in the following subsections are applied separately to test each LTE frequency band.

1) QPSK with 1 RB allocation

   Start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power among RB offsets at the upper edge, middle and lower edge of each required test channel. When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required for 1 RB allocation; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel. When the reported SAR of a required test channel is > 1.45 W/kg, SAR is required for all three RB offset configurations for that required test channel.

2) QPSK with 50% RB allocation

   The procedures required for 1 RB allocation in 1) are applied to measure the SAR for QPSK with 50% RB allocation.

3) QPSK with 100% RB allocation

   For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation in 1) and 2) are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.

TDD test:

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

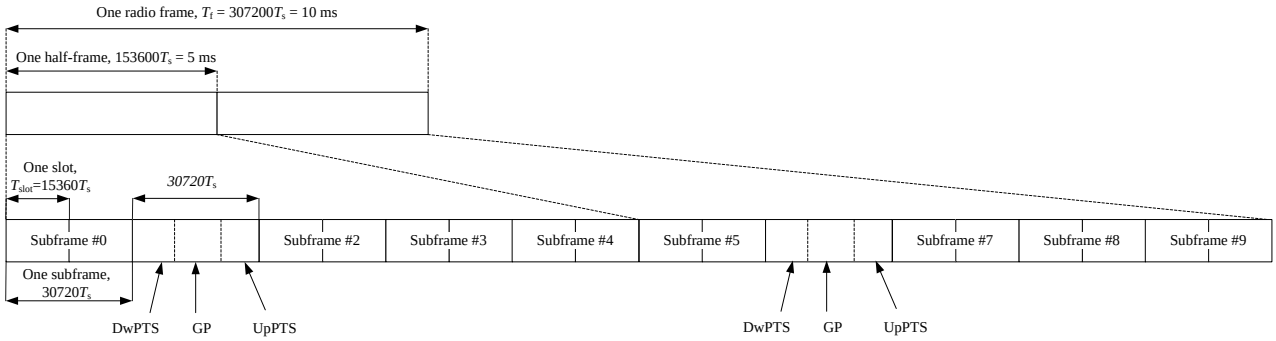


Figure 9.2: Frame structure type 2 (for 5 ms switch-point periodicity)

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

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

Table 9.2: Uplink-downlink configurations

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

Duty factor is calculated by:

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

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

= 0.633

9.5 Bluetooth & Wi-Fi Measurement Procedures for SAR

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

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

9.6 Power Drift

To control the output power stability during the SAR test, DASY5 system calculates the power drift by measuring the E-field at the same location at the beginning and at the end of the measurement for each test position. These drift values can be found in section14 labeled as: (Power Drift [dB]). This ensures that the power drift during one measurement is within 5%.

10 Area Scan Based 1-g SAR

10.1 Requirement of KDB

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

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

10.2 Fast SAR Algorithms

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

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

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

Both algorithms are implemented in DASY software.

11 Conducted Output Power

Table11.1: Summary of Receiver detection mechanism

Antenna	Receiver on	Receiver off+ Hotspot off	Receiver off+ Hotspot on
Main Antenna	DSI0	DSI1	DSI2
WIFI Antenna	DSI0	DSI1	DSI2

11.1 WCDMA Measurement result

Table 11.1-1: The conducted Power for WCDMA B2 – DSI0/1/2

WCDMA1900	FDDII result (dBm)			Tune up
	9538/9938	9400/9800	9262/9662	
	(1907.6MHz)	(1880MHz)	(1852.4MHz)	
	23.08	23.11	23.14	24.00
HSUPA	19.18	19.22	19.15	21.00
	19.21	19.25	19.18	21.00
	20.24	20.28	20.21	22.00
	18.74	18.78	18.71	20.50
	20.18	20.22	20.15	22.00
HSPA+	20.98	21.02	20.95	22.00
DC-HSDPA	21.37	21.41	21.34	22.50
	21.3	21.34	21.27	22.50
	20.99	21.03	20.96	22.50
	20.89	20.93	20.86	22.50

Table 11.1-2: The conducted Power for WCDMA B4 – DSI0/1

WCDMA1700	FDDIV result (dBm)			Tune up
	1513/1738	1412/1637	1312/1537	
	(1752.6MHz)	(1732.4MHz)	(1712.4MHz)	
	23.24	23.26	23.21	24.00
HSUPA	19.24	19.28	19.21	21.00
	19.23	19.27	19.20	21.00
	20.24	20.28	20.21	22.00
	18.74	18.78	18.71	20.50
	20.23	20.27	20.20	22.00
HSPA+	20.94	20.98	20.91	22.00
DC-HSDPA	21.35	21.39	21.32	22.50
	21.32	21.36	21.29	22.50
	20.88	20.92	20.85	22.50
	20.87	20.91	20.84	22.50

Table 11.1-3: The conducted Power for WCDMA B4 – DSI2

WCDMA1700	FDDIV result (dBm)			Tune up
	1513/1738	1412/1637	1312/1537	
	(1752.6MHz)	(1732.4MHz)	(1712.4MHz)	
	22.26	22.31	22.45	23.00
HSUPA	18.37	18.49	18.41	20.00
	18.53	18.51	18.44	20.00
	19.35	19.40	19.36	21.00
	17.99	18.01	17.89	19.50
	19.33	19.37	19.35	21.00
HSPA+	20.11	20.13	20.14	21.00
DC-HSDPA	20.47	20.52	20.54	21.50
	20.45	20.52	20.40	21.50
	20.14	20.10	20.12	21.50
	20.05	20.06	20.02	21.50

Table 11.1-4: The conducted Power for WCDMA B5 – DSI0/1/2

WCDMA850	FDDV result (dBm)			Tune up
	4233/4458	4183/4408	4132/4357	
	(846.6MHz)	(836.6MHz)	(826.4MHz)	
	23.15	23.18	23.16	24.00
HSUPA	19.43	19.47	19.40	21.00
	19.43	19.47	19.40	21.00
	20.4	20.44	20.37	22.00
	18.96	19.00	18.93	20.50
	20.39	20.43	20.36	22.00
HSPA+	20.21	20.25	20.18	22.00
DC-HSDPA	21.54	21.58	21.51	22.50
	21.11	21.15	21.08	22.50
	21.1	21.14	21.07	22.50
	21.05	21.09	21.02	22.50

11.2 LTE Measurement result

Maximum Target Power for Production Unit

Band	Receiver on	Receiver off+ Hotspot off	Receiver off+ Hotspot on
	DSI0	DSI1	DSI2
LTE B2	24.5	24.5	22.5
LTE B5	25	25	25
LTE B7	24	24	23
LTE B12	25	25	25
LTE B14	25	25	25
LTE B30	24	20.5	19
LTE B66	24.5	23.5	21.5

LTE B2 – DSI0/1

LTE B2					
BANDWIDTH	**Number of RBs**	**Frequency**	**QPSK**	**16QAM**	**64QAM**
1.4MHz	1RB-High (5)	1909.3 (19193)	23.82	23.04	21.92
		1880 (18900)	23.81	22.88	21.90
		1850.7 (18607)	23.82	22.99	21.93
	1RB-Middle (3)	1909.3 (19193)	23.89	23.12	22.04
		1880 (18900)	23.93	23.07	22.05
		1850.7 (18607)	23.85	23.06	21.95
	1RB-Low (0)	1909.3 (19193)	23.81	23.07	21.88
		1880 (18900)	23.80	22.96	21.91
		1850.7 (18607)	23.79	23.04	21.93
	3RB-High (3)	1909.3 (19193)	23.92	22.91	21.96
		1880 (18900)	23.91	22.89	21.96
		1850.7 (18607)	23.93	22.77	21.96
	3RB-Middle (1)	1909.3 (19193)	23.96	22.93	21.99
		1880 (18900)	23.95	22.92	21.97
		1850.7 (18607)	23.96	22.94	21.96
	3RB-Low (0)	1909.3 (19193)	23.91	22.86	21.96
		1880 (18900)	23.92	22.87	21.91
		1850.7 (18607)	23.91	22.90	21.93
	6RB (0)	1909.3 (19193)	22.96	21.96	20.96
		1880 (18900)	22.93	21.94	20.90
		1850.7 (18607)	22.92	22.00	20.85
3MHz	1RB-High (14)	1908.5 (19185)	23.86	23.06	21.96
		1880 (18900)	23.88	23.05	21.98
		1851.5 (18615)	23.84	23.05	21.96

	1RB-Middle (7)	1908.5 (19185)	23.98	23.13	22.14
		1880 (18900)	24.02	23.09	22.12
		1851.5 (18615)	24.02	23.23	22.00
	1RB-Low (0)	1908.5 (19185)	23.88	22.99	21.94
		1880 (18900)	23.86	23.01	21.88
		1851.5 (18615)	23.86	23.03	21.96
	8RB-High (7)	1908.5 (19185)	22.89	21.94	20.92
		1880 (18900)	22.87	21.90	20.89
		1851.5 (18615)	22.87	21.87	20.89
	8RB-Middle (4)	1908.5 (19185)	22.91	21.91	20.95
		1880 (18900)	22.87	21.90	20.91
		1851.5 (18615)	22.89	21.91	20.92
	8RB-Low (0)	1908.5 (19185)	22.90	21.91	20.92
		1880 (18900)	22.85	21.91	20.89
		1851.5 (18615)	22.86	21.90	20.91
	15RB (0)	1908.5 (19185)	22.87	21.87	20.90
		1880 (18900)	22.89	21.87	20.88
		1851.5 (18615)	22.87	21.86	20.84
5MHz	1RB-High (24)	1907.5 (19175)	23.83	22.99	21.95
		1880 (18900)	23.81	22.98	21.85
		1852.5 (18625)	23.82	23.08	21.95
	1RB-Middle (12)	1907.5 (19175)	23.97	23.09	22.08
		1880 (18900)	23.97	23.11	22.02
		1852.5 (18625)	24.00	23.20	22.12
	1RB-Low (0)	1907.5 (19175)	23.85	22.97	21.96
		1880 (18900)	23.80	22.95	21.93
		1852.5 (18625)	23.80	23.04	21.90
	12RB-High (13)	1907.5 (19175)	22.83	21.84	20.90
		1880 (18900)	22.89	21.86	20.89
		1852.5 (18625)	22.90	21.86	20.91
	12RB-Middle (6)	1907.5 (19175)	22.94	21.90	21.00
		1880 (18900)	22.89	21.91	20.91
		1852.5 (18625)	22.92	21.91	20.93
	12RB-Low (0)	1907.5 (19175)	22.93	21.91	20.99
		1880 (18900)	22.89	21.85	20.89
		1852.5 (18625)	22.87	21.83	20.91
	25RB (0)	1907.5 (19175)	22.92	21.91	20.95
		1880 (18900)	22.92	21.89	20.89
		1852.5 (18625)	22.90	21.88	20.91
10MHz	1RB-High (49)	1905 (19150)	23.88	23.04	21.93
		1880 (18900)	23.86	23.02	21.86
		1855 (18650)	23.83	23.11	21.98

	1RB-Middle (24)	1905 (19150)	23.95	23.11	22.06
		1880 (18900)	23.92	23.08	21.98
		1855 (18650)	23.89	23.06	22.01
	1RB-Low (0)	1905 (19150)	23.90	22.98	21.93
		1880 (18900)	23.89	23.02	21.92
		1855 (18650)	23.88	23.12	21.97
	25RB-High (25)	1905 (19150)	22.86	21.83	20.88
		1880 (18900)	22.94	21.90	20.93
		1855 (18650)	22.93	21.92	20.93
	25RB-Middle (12)	1905 (19150)	22.93	21.89	20.95
		1880 (18900)	22.94	21.92	20.93
		1855 (18650)	22.92	21.88	20.95
	25RB-Low (0)	1905 (19150)	23.00	21.96	20.95
		1880 (18900)	22.92	21.90	20.91
		1855 (18650)	22.89	21.87	20.90
	50RB (0)	1905 (19150)	22.95	21.88	20.92
		1880 (18900)	22.93	21.92	20.95
		1855 (18650)	22.93	21.90	20.92
15MHz	1RB-High (74)	1902.5 (19125)	23.83	23.06	21.97
		1880 (18900)	23.87	22.97	21.93
		1857.5 (18675)	23.83	23.01	21.93
	1RB-Middle (37)	1902.5 (19125)	23.88	23.07	21.94
		1880 (18900)	23.84	23.01	21.99
		1857.5 (18675)	23.84	23.12	21.95
	1RB-Low (0)	1902.5 (19125)	23.90	23.10	21.95
		1880 (18900)	23.92	23.16	22.05
		1857.5 (18675)	23.84	23.11	22.00
	36RB-High (38)	1902.5 (19125)	22.88	21.84	20.90
		1880 (18900)	22.92	21.86	20.90
		1857.5 (18675)	22.93	21.88	20.96
	36RB-Middle (19)	1902.5 (19125)	22.96	21.91	20.94
		1880 (18900)	22.96	21.90	20.95
		1857.5 (18675)	22.93	21.87	20.96
	36RB-Low (0)	1902.5 (19125)	22.95	21.91	20.93
		1880 (18900)	22.93	21.89	20.90
		1857.5 (18675)	22.88	21.88	20.93
	75RB (0)	1902.5 (19125)	22.90	21.86	20.89
		1880 (18900)	22.92	21.91	20.91
		1857.5 (18675)	22.91	21.89	20.91
20MHz	1RB-High (99)	1900 (19100)	24.09	23.28	22.15
		1880 (18900)	24.08	23.24	22.12
		1860 (18700)	24.06	23.32	22.15

	1RB-Middle (50)	1900 (19100)	24.15	23.43	22.23
		1880 (18900)	24.16	23.33	22.23
		1860 (18700)	24.13	23.45	22.30
	1RB-Low (0)	1900 (19100)	24.12	23.32	22.12
		1880 (18900)	24.12	23.25	22.24
		1860 (18700)	24.10	23.37	22.23
	50RB-High (50)	1900 (19100)	23.06	22.04	21.05
		1880 (18900)	23.15	22.15	21.11
		1860 (18700)	23.18	22.19	21.20
	50RB-Middle (25)	1900 (19100)	23.19	22.20	21.19
		1880 (18900)	23.20	22.17	21.19
		1860 (18700)	23.17	22.19	21.24
	50RB-Low (0)	1900 (19100)	23.18	22.15	21.17
		1880 (18900)	23.19	22.15	21.16
		1860 (18700)	23.16	22.14	21.17
	100RB (0)	1900 (19100)	23.12	22.09	21.12
		1880 (18900)	23.13	22.11	21.08
		1860 (18700)	23.17	22.15	21.19

LTE B2 – DSI2

LTE B2					
BANDWIDTH	**Number of RBs**	**Frequency**	**QPSK**	**16QAM**	**64QAM**
1.4MHz	1RB-High (5)	1909.3 (19193)	21.67	21.11	20.04
		1880 (18900)	21.70	21.09	19.80
		1850.7 (18607)	21.66	20.98	20.01
	1RB-Middle (3)	1909.3 (19193)	21.76	21.01	19.93
		1880 (18900)	22.02	21.20	20.03
		1850.7 (18607)	21.76	20.97	19.78
	1RB-Low (0)	1909.3 (19193)	21.90	21.16	20.11
		1880 (18900)	21.81	21.10	19.98
		1850.7 (18607)	21.82	20.95	19.94
	3RB-High (3)	1909.3 (19193)	20.69	19.78	18.78
		1880 (18900)	20.78	19.89	18.64
		1850.7 (18607)	20.56	19.91	18.60
	3RB-Middle (1)	1909.3 (19193)	20.80	19.88	18.56
		1880 (18900)	20.98	19.92	18.80
		1850.7 (18607)	20.78	19.62	18.97
	3RB-Low (0)	1909.3 (19193)	20.96	19.74	18.77
		1880 (18900)	20.84	19.78	18.76
		1850.7 (18607)	20.59	19.85	18.69

	6RB (0)	1909.3 (19193)	20.82	19.71	18.82
		1880 (18900)	20.76	19.83	18.74
		1850.7 (18607)	20.72	19.76	18.68
3MHz	1RB-High (14)	1908.5 (19185)	21.86	21.04	19.87
		1880 (18900)	21.72	20.88	19.89
		1851.5 (18615)	21.71	21.07	19.86
	1RB-Middle (7)	1908.5 (19185)	21.80	20.97	19.90
		1880 (18900)	21.89	21.13	19.84
		1851.5 (18615)	21.76	21.11	19.91
	1RB-Low (0)	1908.5 (19185)	21.74	21.10	19.90
		1880 (18900)	21.88	20.92	20.06
		1851.5 (18615)	21.99	21.16	20.09
	8RB-High (7)	1908.5 (19185)	20.67	19.74	18.74
		1880 (18900)	20.64	19.71	18.72
		1851.5 (18615)	20.73	19.88	18.81
	8RB-Middle (4)	1908.5 (19185)	20.79	19.68	18.74
		1880 (18900)	20.95	19.91	18.82
		1851.5 (18615)	20.82	19.56	18.83
	8RB-Low (0)	1908.5 (19185)	20.89	19.82	18.92
		1880 (18900)	20.74	19.72	18.68
		1851.5 (18615)	20.63	19.94	18.61
	15RB (0)	1908.5 (19185)	20.64	19.67	18.79
		1880 (18900)	20.65	19.94	18.70
		1851.5 (18615)	20.81	19.75	18.83
5MHz	1RB-High (24)	1907.5 (19175)	21.71	21.18	20.09
		1880 (18900)	21.74	20.88	19.77
		1852.5 (18625)	21.71	21.03	19.85
	1RB-Middle (12)	1907.5 (19175)	21.67	20.92	20.01
		1880 (18900)	21.92	21.32	19.82
		1852.5 (18625)	21.79	21.11	19.81
	1RB-Low (0)	1907.5 (19175)	21.80	21.15	20.07
		1880 (18900)	21.93	20.86	20.02
		1852.5 (18625)	21.74	21.05	19.94
	12RB-High (13)	1907.5 (19175)	20.75	19.59	18.58
		1880 (18900)	20.74	19.75	18.69
		1852.5 (18625)	20.67	19.85	18.75
	12RB-Middle (6)	1907.5 (19175)	20.79	19.80	18.66
		1880 (18900)	21.00	19.95	18.82
		1852.5 (18625)	20.63	19.69	18.75
	12RB-Low (0)	1907.5 (19175)	20.88	19.79	18.83
		1880 (18900)	20.90	19.62	18.76
		1852.5 (18625)	20.75	19.98	18.58

	25RB (0)	1907.5 (19175)	20.77	19.72	18.77
		1880 (18900)	20.80	19.88	18.81
		1852.5 (18625)	20.72	19.89	18.62
10MHz	1RB-High (49)	1905 (19150)	21.64	21.23	20.01
		1880 (18900)	21.84	20.92	19.85
		1855 (18650)	21.85	20.91	19.97
	1RB-Middle (24)	1905 (19150)	21.90	20.90	19.93
		1880 (18900)	21.87	21.21	19.96
		1855 (18650)	21.78	21.01	19.86
	1RB-Low (0)	1905 (19150)	21.84	21.22	20.09
		1880 (18900)	21.81	21.08	19.93
		1855 (18650)	21.97	21.16	20.09
	25RB-High (25)	1905 (19150)	20.83	19.58	18.65
		1880 (18900)	20.69	19.91	18.68
		1855 (18650)	20.77	19.76	18.73
	25RB-Middle (12)	1905 (19150)	20.84	19.73	18.66
		1880 (18900)	21.02	19.79	18.67
		1855 (18650)	20.75	19.62	18.82
	25RB-Low (0)	1905 (19150)	20.77	19.85	18.80
		1880 (18900)	20.77	19.59	18.65
		1855 (18650)	20.71	19.76	18.67
	50RB (0)	1905 (19150)	20.73	19.72	18.74
		1880 (18900)	20.63	19.88	18.77
		1855 (18650)	20.69	19.70	18.66
15MHz	1RB-High (74)	1902.5 (19125)	21.83	21.28	19.93
		1880 (18900)	21.66	20.97	20.00
		1857.5 (18675)	21.86	20.94	19.98
	1RB-Middle (37)	1902.5 (19125)	21.68	21.04	19.92
		1880 (18900)	21.95	21.09	19.86
		1857.5 (18675)	21.92	20.99	20.02
	1RB-Low (0)	1902.5 (19125)	21.87	21.12	20.12
		1880 (18900)	21.77	20.91	19.94
		1857.5 (18675)	21.96	21.03	20.08
	36RB-High (38)	1902.5 (19125)	20.71	19.70	18.73
		1880 (18900)	20.65	19.82	18.83
		1857.5 (18675)	20.67	19.82	18.62
	36RB-Middle (19)	1902.5 (19125)	20.78	19.86	18.80
		1880 (18900)	20.88	19.94	18.70
		1857.5 (18675)	20.69	19.66	18.75
	36RB-Low (0)	1902.5 (19125)	20.84	19.85	18.93
		1880 (18900)	20.82	19.81	18.89
		1857.5 (18675)	20.62	19.88	18.68

	75RB (0)	1902.5 (19125)	20.64	19.80	18.91
		1880 (18900)	20.87	19.87	18.87
		1857.5 (18675)	20.79	19.77	18.78
20MHz	1RB-High (99)	1900 (19100)	21.79	21.19	20.00
		1880 (18900)	21.77	21.03	19.91
		1860 (18700)	21.79	21.04	19.92
	1RB-Middle (50)	1900 (19100)	21.95	21.03	19.93
		1880 (18900)	21.98	21.23	19.95
		1860 (18700)	21.90	21.07	19.93
	1RB-Low (0)	1900 (19100)	21.85	21.14	20.02
		1880 (18900)	21.86	21.01	20.00
		1860 (18700)	21.89	21.07	20.09
	50RB-High (50)	1900 (19100)	20.75	19.71	18.70
		1880 (18900)	20.74	19.85	18.73
		1860 (18700)	20.70	19.83	18.71
	50RB-Middle (25)	1900 (19100)	20.90	19.79	18.71
		1880 (18900)	20.95	19.89	18.79
		1860 (18700)	20.88	19.70	18.89
	50RB-Low (0)	1900 (19100)	20.88	19.76	18.90
		1880 (18900)	20.81	19.73	18.79
		1860 (18700)	20.74	19.89	18.72
	100RB (0)	1900 (19100)	20.72	19.74	18.86
		1880 (18900)	20.78	19.87	18.77
		1860 (18700)	20.73	19.83	18.76

LTE B5 – DSI0/1/2

LTE B5					
BANDWIDTH	**Number of RBs**	**Frequency**	**QPSK**	**16QAM**	**64QAM**
1.4MHz	1RB-High (5)	848.3 (20643)	24.31	23.37	22.40
		836.5 (20525)	24.30	23.43	22.39
		824.7 (20407)	24.34	23.51	22.47
	1RB-Middle (3)	848.3 (20643)	24.39	23.37	22.46
		836.5 (20525)	24.39	23.45	22.44
		824.7 (20407)	24.40	23.61	22.43
	1RB-Low (0)	848.3 (20643)	24.29	23.42	22.32
		836.5 (20525)	24.32	23.39	22.39
		824.7 (20407)	24.33	23.42	22.42
	3RB-High (3)	848.3 (20643)	24.37	23.19	22.36
		836.5 (20525)	24.39	23.31	22.45
		824.7 (20407)	24.40	23.29	22.45

	3RB-Middle (1)	848.3 (20643)	24.42	23.35	22.44
		836.5 (20525)	24.45	23.37	22.45
		824.7 (20407)	24.44	23.32	22.49
	3RB-Low (0)	848.3 (20643)	24.38	23.28	22.39
		836.5 (20525)	24.40	23.38	22.44
		824.7 (20407)	24.40	23.35	22.44
	6RB (0)	848.3 (20643)	23.41	22.44	21.38
		836.5 (20525)	23.43	22.46	21.40
		824.7 (20407)	23.42	22.52	21.44
3MHz	1RB-High (14)	847.5 (20635)	24.39	23.47	22.44
		836.5 (20525)	24.40	23.55	22.47
		825.5 (20415)	24.42	23.63	22.55
	1RB-Middle (7)	847.5 (20635)	24.44	23.50	22.53
		836.5 (20525)	24.51	23.56	22.60
		825.5 (20415)	24.56	23.71	22.64
	1RB-Low (0)	847.5 (20635)	24.39	23.52	22.45
		836.5 (20525)	24.41	23.59	22.49
		825.5 (20415)	24.41	23.50	22.57
	8RB-High (7)	847.5 (20635)	23.38	22.41	21.37
		836.5 (20525)	23.40	22.39	21.42
		825.5 (20415)	23.40	22.47	21.41
	8RB-Middle (4)	847.5 (20635)	23.41	22.41	21.42
		836.5 (20525)	23.40	22.46	21.41
		825.5 (20415)	23.45	22.47	21.48
	8RB-Low (0)	847.5 (20635)	23.37	22.37	21.42
		836.5 (20525)	23.39	22.45	21.40
		825.5 (20415)	23.40	22.46	21.44
	15RB (0)	847.5 (20635)	23.42	22.36	21.38
		836.5 (20525)	23.43	22.42	21.40
		825.5 (20415)	23.41	22.40	21.39
5MHz	1RB-High (24)	846.5 (20625)	24.33	23.35	22.38
		836.5 (20525)	24.29	23.42	22.39
		826.5 (20425)	24.37	23.62	22.54
	1RB-Middle (12)	846.5 (20625)	24.49	23.61	22.56
		836.5 (20525)	24.52	23.58	22.60
		826.5 (20425)	24.54	23.68	22.65
	1RB-Low (0)	846.5 (20625)	24.31	23.43	22.40
		836.5 (20525)	24.40	23.49	22.41
		826.5 (20425)	24.33	23.55	22.49
	12RB-High (13)	846.5 (20625)	23.38	22.32	21.35
		836.5 (20525)	23.39	22.37	21.40
		826.5 (20425)	23.45	22.43	21.50

	12RB-Middle (6)	846.5 (20625)	23.44	22.39	21.44
		836.5 (20525)	23.45	22.39	21.46
		826.5 (20425)	23.48	22.43	21.48
	12RB-Low (0)	846.5 (20625)	23.38	22.35	21.39
		836.5 (20525)	23.41	22.40	21.44
		826.5 (20425)	23.44	22.40	21.41
	25RB (0)	846.5 (20625)	23.41	22.38	21.40
		836.5 (20525)	23.43	22.43	21.44
		826.5 (20425)	23.49	22.44	21.48
10MHz	1RB-High (49)	844 (20600)	24.45	23.54	22.53
		836.5 (20525)	24.43	23.66	22.57
		829 (20450)	24.48	23.54	22.58
	1RB-Middle (24)	844 (20600)	24.64	23.76	22.59
		836.5 (20525)	24.56	23.69	22.63
		829 (20450)	24.61	23.74	22.69
	1RB-Low (0)	844 (20600)	24.53	23.63	22.58
		836.5 (20525)	24.53	23.65	22.59
		829 (20450)	24.51	23.68	22.66
	25RB-High (25)	844 (20600)	23.53	22.49	21.52
		836.5 (20525)	23.54	22.50	21.52
		829 (20450)	23.61	22.55	21.55
	25RB-Middle (12)	844 (20600)	23.53	22.51	21.53
		836.5 (20525)	23.56	22.55	21.54
		829 (20450)	23.57	22.55	21.55
	25RB-Low (0)	844 (20600)	23.62	22.55	21.56
		836.5 (20525)	23.56	22.52	21.55
		829 (20450)	23.58	22.52	21.56
	50RB (0)	844 (20600)	23.56	22.51	21.54
		836.5 (20525)	23.57	22.53	21.55
		829 (20450)	23.60	22.58	21.58

LTE B7 – DSI0/1

LTE B7					
BANDWIDTH	**Number of RBs**	**Frequency**	**QPSK**	**16QAM**	**64QAM**
5MHz	1RB-High (24)	2567.5 (21425)	23.00	21.97	21.00
		2535 (21100)	22.92	22.17	21.07
		2502.5 (20775)	23.04	22.19	21.18
	1RB-Middle (12)	2567.5 (21425)	23.11	22.14	21.23
		2535 (21100)	23.09	22.23	21.25
		2502.5 (20775)	23.24	22.48	21.30

	1RB-Low (0)	2567.5 (21425)	22.99	22.21	21.12
		2535 (21100)	22.95	22.16	21.00
		2502.5 (20775)	23.10	22.33	21.21
	12RB-High (13)	2567.5 (21425)	22.09	21.00	20.10
		2535 (21100)	22.00	20.97	20.04
		2502.5 (20775)	22.15	21.17	20.22
	12RB-Middle (6)	2567.5 (21425)	22.10	21.03	20.10
		2535 (21100)	22.03	20.98	20.04
		2502.5 (20775)	22.18	21.20	20.25
	12RB-Low (0)	2567.5 (21425)	22.05	21.02	20.11
		2535 (21100)	22.02	20.94	20.04
		2502.5 (20775)	22.16	21.14	20.23
	25RB (0)	2567.5 (21425)	22.12	21.07	20.08
		2535 (21100)	21.98	21.00	20.03
		2502.5 (20775)	22.16	21.15	20.20
10MHz	1RB-High (49)	2565 (21400)	22.99	22.04	21.00
		2535 (21100)	22.91	22.15	21.06
		2505 (20800)	23.03	22.17	21.14
	1RB-Middle (24)	2565 (21400)	23.08	22.23	21.21
		2535 (21100)	22.97	22.25	21.06
		2505 (20800)	23.12	22.30	21.20
	1RB-Low (0)	2565 (21400)	23.07	22.22	21.11
		2535 (21100)	23.00	22.11	21.08
		2505 (20800)	23.11	22.19	21.26
	25RB-High (25)	2565 (21400)	22.15	21.10	20.10
		2535 (21100)	21.96	20.96	20.00
		2505 (20800)	22.13	21.16	20.16
	25RB-Middle (12)	2565 (21400)	22.10	21.07	20.08
		2535 (21100)	22.03	21.01	20.06
		2505 (20800)	22.15	21.16	20.19
	25RB-Low (0)	2565 (21400)	22.10	21.11	20.10
		2535 (21100)	22.02	21.03	20.04
		2505 (20800)	22.16	21.18	20.19
	50RB (0)	2565 (21400)	22.14	21.11	20.12
		2535 (21100)	22.00	20.99	20.02
		2505 (20800)	22.14	21.14	20.18
15MHz	1RB-High (74)	2562.5 (21375)	22.98	22.00	20.97
		2535 (21100)	22.91	22.14	21.02
		2507.5 (20825)	23.01	22.22	21.07
	1RB-Middle (37)	2562.5 (21375)	23.03	22.15	21.18
		2535 (21100)	22.95	22.19	21.01
		2507.5 (20825)	23.07	22.29	21.18

	1RB-Low (0)	2562.5 (21375)	23.00	22.27	21.16
		2535 (21100)	22.99	22.20	21.09
		2507.5 (20825)	23.11	22.29	21.20
	36RB-High (38)	2562.5 (21375)	22.15	21.07	20.11
		2535 (21100)	21.99	20.94	19.99
		2507.5 (20825)	22.16	21.11	20.17
	36RB-Middle (19)	2562.5 (21375)	22.13	21.07	20.10
		2535 (21100)	22.03	20.99	20.05
		2507.5 (20825)	22.17	21.12	20.19
	36RB-Low (0)	2562.5 (21375)	22.12	21.10	20.12
		2535 (21100)	22.04	21.00	20.05
		2507.5 (20825)	22.19	21.13	20.18
	75RB (0)	2562.5 (21375)	22.14	21.12	20.08
		2535 (21100)	22.01	21.00	19.99
		2507.5 (20825)	22.15	21.19	20.17
20MHz	1RB-High (99)	2560 (21350)	22.97	22.05	21.00
		2535 (21100)	22.91	22.05	21.01
		2510 (20850)	23.00	22.21	21.10
	1RB-Middle (50)	2560 (21350)	23.11	22.37	21.25
		2535 (21100)	23.04	22.25	21.21
		2510 (20850)	23.13	22.30	21.16
	1RB-Low (0)	2560 (21350)	23.04	22.20	21.12
		2535 (21100)	23.01	22.26	21.12
		2510 (20850)	23.11	22.28	21.22
	50RB-High (50)	2560 (21350)	22.16	21.12	20.11
		2535 (21100)	21.97	20.98	19.99
		2510 (20850)	22.18	21.14	20.15
	50RB-Middle (25)	2560 (21350)	22.16	21.15	20.13
		2535 (21100)	22.05	21.06	20.07
		2510 (20850)	22.22	21.19	20.19
	50RB-Low (0)	2560 (21350)	22.18	21.14	20.15
		2535 (21100)	22.10	21.04	20.09
		2510 (20850)	22.16	21.13	20.13
	100RB (0)	2560 (21350)	22.16	21.10	20.10
		2535 (21100)	22.02	21.01	20.04
		2510 (20850)	22.16	21.13	20.13

LTE B7 – DSI2

LTE B7					
BANDWIDTH	**Number of RBs**	**Frequency**	**QPSK**	**16QAM**	**64QAM**
5MHz	1RB-High (24)	2567.5 (21425)	22.29	21.33	20.13
		2535 (21100)	22.21	21.45	20.11
		2502.5 (20775)	21.96	21.51	20.20
	1RB-Middle (12)	2567.5 (21425)	22.16	21.37	20.25
		2535 (21100)	22.13	21.13	20.00
		2502.5 (20775)	22.35	21.22	20.25
	1RB-Low (0)	2567.5 (21425)	21.91	21.11	20.37
		2535 (21100)	22.08	21.29	20.20
		2502.5 (20775)	21.85	21.16	20.13
	12RB-High (13)	2567.5 (21425)	21.14	20.10	18.89
		2535 (21100)	21.12	20.08	19.40
		2502.5 (20775)	21.12	20.22	19.20
	12RB-Middle (6)	2567.5 (21425)	21.15	19.91	19.06
		2535 (21100)	21.16	20.25	19.45
		2502.5 (20775)	21.50	20.26	19.14
	12RB-Low (0)	2567.5 (21425)	21.30	20.18	19.31
		2535 (21100)	21.03	20.04	19.15
		2502.5 (20775)	21.40	20.03	19.29
	25RB (0)	2567.5 (21425)	21.19	20.00	19.19
		2535 (21100)	21.04	20.23	19.01
		2502.5 (20775)	21.18	19.99	19.22
10MHz	1RB-High (49)	2565 (21400)	22.00	21.16	20.43
		2535 (21100)	22.13	21.30	20.08
		2505 (20800)	22.28	21.12	20.43
	1RB-Middle (24)	2565 (21400)	22.01	21.09	20.30
		2535 (21100)	22.14	21.10	20.10
		2505 (20800)	22.25	21.31	20.07
	1RB-Low (0)	2565 (21400)	22.21	21.33	20.31
		2535 (21100)	22.16	21.33	20.23
		2505 (20800)	22.08	21.54	20.20
	25RB-High (25)	2565 (21400)	21.06	20.06	19.26
		2535 (21100)	20.90	20.05	19.10
		2505 (20800)	21.22	19.94	19.18
	25RB-Middle (12)	2565 (21400)	21.01	20.20	18.93
		2535 (21100)	21.17	20.09	19.07
		2505 (20800)	21.31	20.13	19.25
	25RB-Low (0)	2565 (21400)	21.02	20.11	18.96

		2535 (21100)	21.14	20.16	19.11
		2505 (20800)	21.12	19.96	19.34
	50RB (0)	2565 (21400)	20.95	20.26	18.86
		2535 (21100)	20.96	20.02	18.84
		2505 (20800)	21.36	20.34	19.39
15MHz	1RB-High (74)	2562.5 (21375)	22.29	21.13	20.32
		2535 (21100)	22.22	21.51	20.18
		2507.5 (20825)	22.05	21.17	20.09
	1RB-Middle (37)	2562.5 (21375)	22.13	21.18	20.44
		2535 (21100)	22.24	21.23	20.19
		2507.5 (20825)	22.52	21.21	20.30
	1RB-Low (0)	2562.5 (21375)	22.25	21.24	20.31
		2535 (21100)	22.15	21.35	19.94
		2507.5 (20825)	22.08	21.20	20.33
	36RB-High (38)	2562.5 (21375)	21.11	20.06	19.16
		2535 (21100)	21.23	20.08	19.26
		2507.5 (20825)	21.06	20.17	19.34
	36RB-Middle (19)	2562.5 (21375)	20.91	20.07	19.26
		2535 (21100)	21.50	20.09	19.19
		2507.5 (20825)	21.55	20.38	19.25
	36RB-Low (0)	2562.5 (21375)	21.20	19.87	19.24
		2535 (21100)	21.06	20.16	19.07
		2507.5 (20825)	21.20	20.12	19.35
	75RB (0)	2562.5 (21375)	20.98	19.93	19.20
		2535 (21100)	21.07	20.19	18.86
		2507.5 (20825)	21.33	20.03	19.07
20MHz	1RB-High (99)	2560 (21350)	22.12	21.28	20.23
		2535 (21100)	22.23	21.35	20.15
		2510 (20850)	22.14	21.32	20.29
	1RB-Middle (50)	2560 (21350)	22.17	21.25	20.26
		2535 (21100)	22.38	21.15	20.08
		2510 (20850)	22.50	21.33	20.10
	1RB-Low (0)	2560 (21350)	22.05	21.26	20.30
		2535 (21100)	22.14	21.27	20.10
		2510 (20850)	22.00	21.34	20.27
	50RB-High (50)	2560 (21350)	21.16	20.24	19.08
		2535 (21100)	21.03	20.25	19.26
		2510 (20850)	21.14	20.07	19.25
	50RB-Middle (25)	2560 (21350)	21.08	20.11	19.07
		2535 (21100)	21.30	20.12	19.25
		2510 (20850)	21.35	20.20	19.22
	50RB-Low (0)	2560 (21350)	21.17	20.05	19.16

		2535 (21100)	21.18	20.21	19.08
		2510 (20850)	21.22	20.00	19.25
	100RB (0)	2560 (21350)	21.11	20.08	19.03
		2535 (21100)	21.06	20.13	19.02
		2510 (20850)	21.26	20.18	19.27

LTE B12 – DSI0/1/2

LTE B12					
BANDWIDTH	**Number of RBs**	**Frequency**	**QPSK**	**16QAM**	**64QAM**
1.4MHz	1RB-High (5)	715.3 (23173)	24.42	23.65	22.51
		707.5 (23095)	24.35	23.65	22.57
		699.7 (23017)	24.41	23.53	22.46
	1RB-Middle (3)	715.3 (23173)	24.49	23.65	22.57
		707.5 (23095)	24.44	23.75	22.66
		699.7 (23017)	24.53	23.62	22.55
	1RB-Low (0)	715.3 (23173)	24.37	23.47	22.47
		707.5 (23095)	24.37	23.65	22.58
		699.7 (23017)	24.41	23.49	22.41
	3RB-High (3)	715.3 (23173)	24.52	23.43	22.53
		707.5 (23095)	24.53	23.49	22.58
		699.7 (23017)	24.53	23.50	22.53
	3RB-Middle (1)	715.3 (23173)	24.56	23.52	22.58
		707.5 (23095)	24.52	23.49	22.61
		699.7 (23017)	24.57	23.52	22.54
	3RB-Low (0)	715.3 (23173)	24.47	23.41	22.58
		707.5 (23095)	24.46	23.49	22.59
		699.7 (23017)	24.49	23.45	22.59
	6RB (0)	715.3 (23173)	23.48	22.60	21.45
		707.5 (23095)	23.54	22.61	21.50
		699.7 (23017)	23.55	22.60	21.45
3MHz	1RB-High (14)	714.5 (23165)	24.46	23.56	22.53
		707.5 (23095)	24.39	23.54	22.57
		700.5 (23025)	24.45	23.50	22.45
	1RB-Middle (7)	714.5 (23165)	24.53	23.64	22.62
		707.5 (23095)	24.55	23.77	22.76
		700.5 (23025)	24.62	23.72	22.59
	1RB-Low (0)	714.5 (23165)	24.44	23.54	22.53
		707.5 (23095)	24.46	23.60	22.64
		700.5 (23025)	24.47	23.47	22.54
	8RB-High (7)	714.5 (23165)	23.51	22.53	21.43

		707.5 (23095)	23.47	22.54	21.46
		700.5 (23025)	23.48	22.46	21.39
	8RB-Middle (4)	714.5 (23165)	23.53	22.51	21.45
		707.5 (23095)	23.54	22.56	21.53
		700.5 (23025)	23.53	22.55	21.44
	8RB-Low (0)	714.5 (23165)	23.46	22.49	21.41
		707.5 (23095)	23.48	22.56	21.47
		700.5 (23025)	23.53	22.53	21.46
	15RB (0)	714.5 (23165)	23.50	22.47	21.38
		707.5 (23095)	23.52	22.50	21.48
		700.5 (23025)	23.49	22.46	21.41
5MHz	1RB-High (24)	713.5 (23155)	24.39	23.58	22.52
		707.5 (23095)	24.38	23.45	22.49
		701.5 (23035)	24.35	23.50	22.50
	1RB-Middle (12)	713.5 (23155)	24.57	23.54	22.70
		707.5 (23095)	24.55	23.79	22.66
		701.5 (23035)	24.62	23.72	22.71
	1RB-Low (0)	713.5 (23155)	24.39	23.52	22.50
		707.5 (23095)	24.41	23.62	22.58
		701.5 (23035)	24.48	23.51	22.49
	12RB-High (13)	713.5 (23155)	23.45	22.45	21.41
		707.5 (23095)	23.50	22.46	21.48
		701.5 (23035)	23.46	22.40	21.40
	12RB-Middle (6)	713.5 (23155)	23.51	22.52	21.46
		707.5 (23095)	23.58	22.55	21.54
		701.5 (23035)	23.53	22.47	21.47
	12RB-Low (0)	713.5 (23155)	23.53	22.47	21.44
		707.5 (23095)	23.50	22.46	21.50
		701.5 (23035)	23.49	22.47	21.40
	25RB (0)	713.5 (23155)	23.55	22.53	21.45
		707.5 (23095)	23.51	22.50	21.49
		701.5 (23035)	23.49	22.46	21.42
10MHz	1RB-High (49)	711 (23130)	24.44	23.65	22.62
		707.5 (23095)	24.37	23.62	22.52
		704 (23060)	24.42	23.69	22.63
	1RB-Middle (24)	711 (23130)	24.49	23.71	22.57
		707.5 (23095)	24.55	23.81	22.78
		704 (23060)	24.54	23.77	22.70
	1RB-Low (0)	711 (23130)	24.51	23.82	22.71
		707.5 (23095)	24.53	23.75	22.65
		704 (23060)	24.53	23.70	22.61
	25RB-High (25)	711 (23130)	23.47	22.39	21.39

		707.5 (23095)	23.52	22.49	21.48
		704 (23060)	23.65	22.66	21.61
	25RB-Middle (12)	711 (23130)	23.59	22.56	21.50
		707.5 (23095)	23.59	22.58	21.57
		704 (23060)	23.60	22.62	21.53
	25RB-Low (0)	711 (23130)	23.59	22.54	21.53
		707.5 (23095)	23.68	22.57	21.54
		704 (23060)	23.66	22.64	21.56
	50RB (0)	711 (23130)	23.57	22.53	21.48
		707.5 (23095)	23.59	22.55	21.54
		704 (23060)	23.71	22.66	21.62

LTE B14 – DSI0/1/2

LTE B14					
BANDWIDTH	**Number of RBs**	**Frequency**	**QPSK**	**16QAM**	**64QAM**
5MHz	1RB-High (24)	795.5 (23355)	24.20	23.34	22.28
		793 (23330)	24.23	23.44	22.36
		790.5 (23305)	24.26	23.37	22.39
	1RB-Middle (12)	795.5 (23355)	24.35	23.58	22.49
		793 (23330)	24.38	23.65	22.50
		790.5 (23305)	24.39	23.55	22.56
	1RB-Low (0)	795.5 (23355)	24.27	23.43	22.41
		793 (23330)	24.27	23.43	22.43
		790.5 (23305)	24.27	23.39	22.46
	12RB-High (13)	795.5 (23355)	23.27	22.32	21.34
		793 (23330)	23.26	22.30	21.33
		790.5 (23305)	23.27	22.28	21.32
	12RB-Middle (6)	795.5 (23355)	23.34	22.37	21.40
		793 (23330)	23.35	22.42	21.40
		790.5 (23305)	23.35	22.38	21.38
	12RB-Low (0)	795.5 (23355)	23.34	22.35	21.38
		793 (23330)	23.34	22.36	21.37
		790.5 (23305)	23.35	22.36	21.37
	25RB (0)	795.5 (23355)	23.30	22.35	21.35
		793 (23330)	23.35	22.36	21.34
		790.5 (23305)	23.35	22.36	21.35
10MHz	1RB-High (49)	793 (23330)	24.35	23.55	22.52
	1RB-Middle (24)	793 (23330)	24.35	23.53	22.51
	1RB-Low (0)	793 (23330)	24.36	23.48	22.48
	25RB-High (25)	793 (23330)	23.53	22.53	21.52

	25RB-Middle (12)	793 (23330)	23.53	22.54	21.52
	25RB-Low (0)	793 (23330)	23.53	22.51	21.54
	50RB (0)	793 (23330)	23.55	22.55	21.53

LTE B30 – DSI0

LTE B30					
BANDWIDTH	**Number of RBs**	**Frequency**	**QPSK**	**16QAM**	**64QAM**
5MHz	1RB-High (24)	2312.5 (27735)	23.16	22.25	21.15
		2310 (27710)	23.13	22.32	21.14
		2307.5 (27685)	23.13	22.29	21.22
	1RB-Middle (12)	2312.5 (27735)	23.32	22.58	21.42
		2310 (27710)	23.35	22.51	21.38
		2307.5 (27685)	23.27	22.52	21.35
	1RB-Low (0)	2312.5 (27735)	23.17	22.41	21.22
		2310 (27710)	23.20	22.33	21.24
		2307.5 (27685)	23.19	22.42	21.25
	12RB-High (13)	2312.5 (27735)	22.30	21.20	20.16
		2310 (27710)	22.24	21.19	20.13
		2307.5 (27685)	22.30	21.19	20.19
	12RB-Middle (6)	2312.5 (27735)	22.29	21.23	20.17
		2310 (27710)	22.31	21.25	20.21
		2307.5 (27685)	22.30	21.24	20.20
	12RB-Low (0)	2312.5 (27735)	22.23	21.18	20.14
		2310 (27710)	22.25	21.21	20.17
		2307.5 (27685)	22.24	21.16	20.16
	25RB (0)	2312.5 (27735)	22.30	21.23	20.20
		2310 (27710)	22.29	21.26	20.19
		2307.5 (27685)	22.26	21.24	20.17
10MHz	1RB-High (49)	2310 (27710)	23.06	22.36	21.27
	1RB-Middle (24)	2310 (27710)	23.14	22.45	21.33
	1RB-Low (0)	2310 (27710)	23.18	22.49	21.40
	25RB-High (25)	2310 (27710)	22.27	21.36	20.31
	25RB-Middle (12)	2310 (27710)	22.29	21.32	20.28
	25RB-Low (0)	2310 (27710)	22.27	21.30	20.24
	50RB (0)	2310 (27710)	22.29	21.33	20.28

LTE B30 – DSI1

LTE B30					
BANDWIDTH	**Number of RBs**	**Frequency**	**QPSK**	**16QAM**	**64QAM**
5MHz	1RB-High (24)	2312.5 (27735)	20.14	18.86	18.04
		2310 (27710)	19.91	18.85	17.82
		2307.5 (27685)	19.70	19.13	17.88
	1RB-Middle (12)	2312.5 (27735)	20.12	19.15	17.68
		2310 (27710)	20.09	19.02	17.64
		2307.5 (27685)	19.76	19.01	18.12
	1RB-Low (0)	2312.5 (27735)	19.89	19.12	17.70
		2310 (27710)	19.59	18.70	17.84
		2307.5 (27685)	20.01	19.02	17.91
	12RB-High (13)	2312.5 (27735)	18.45	17.75	16.91
		2310 (27710)	18.35	17.58	16.68
		2307.5 (27685)	18.40	17.96	16.96
	12RB-Middle (6)	2312.5 (27735)	18.78	17.69	16.90
		2310 (27710)	18.91	17.79	17.16
		2307.5 (27685)	18.53	17.90	16.52
	12RB-Low (0)	2312.5 (27735)	18.79	17.71	16.70
		2310 (27710)	18.82	17.60	16.85
		2307.5 (27685)	18.62	17.81	16.67
	25RB (0)	2312.5 (27735)	18.48	17.86	16.84
		2310 (27710)	18.64	17.94	16.75
		2307.5 (27685)	18.47	17.50	16.61
10MHz	1RB-High (49)	2310 (27710)	20.18	18.98	17.76
	1RB-Middle (24)	2310 (27710)	19.98	18.93	17.89
	1RB-Low (0)	2310 (27710)	19.89	19.07	17.85
	25RB-High (25)	2310 (27710)	18.52	17.54	17.03
	25RB-Middle (12)	2310 (27710)	18.69	17.61	16.74
	25RB-Low (0)	2310 (27710)	18.68	17.86	16.67
	50RB (0)	2310 (27710)	18.78	17.50	17.00

LTE B30 – DSI2

LTE B30					
BANDWIDTH	**Number of RBs**	**Frequency**	**QPSK**	**16QAM**	**64QAM**
5MHz	1RB-High (24)	2312.5 (27735)	18.47	17.56	16.44
		2310 (27710)	18.53	17.47	16.52
		2307.5 (27685)	18.40	17.56	16.57
	1RB-Middle (12)	2312.5 (27735)	18.42	17.48	16.34

		2310 (27710)	18.59	17.50	16.34
		2307.5 (27685)	18.45	17.48	16.44
	1RB-Low (0)	2312.5 (27735)	18.33	17.51	16.33
		2310 (27710)	18.29	17.35	16.46
		2307.5 (27685)	18.36	17.41	16.49
	12RB-High (13)	2312.5 (27735)	17.06	16.35	15.46
		2310 (27710)	17.05	16.10	15.27
		2307.5 (27685)	17.00	16.32	15.42
	12RB-Middle (6)	2312.5 (27735)	17.11	16.08	15.40
		2310 (27710)	17.30	16.09	15.53
		2307.5 (27685)	17.15	16.24	15.22
	12RB-Low (0)	2312.5 (27735)	17.18	16.30	15.29
		2310 (27710)	17.19	16.10	15.49
		2307.5 (27685)	16.96	16.32	15.27
	25RB (0)	2312.5 (27735)	17.04	16.26	15.23
		2310 (27710)	17.07	16.32	15.39
		2307.5 (27685)	17.02	16.08	15.25
10MHz	1RB-High (49)	2310 (27710)	18.42	17.42	16.39
	1RB-Middle (24)	2310 (27710)	18.44	17.45	16.41
	1RB-Low (0)	2310 (27710)	18.38	17.41	16.42
	25RB-High (25)	2310 (27710)	17.12	16.22	15.37
	25RB-Middle (12)	2310 (27710)	17.15	16.23	15.38
	25RB-Low (0)	2310 (27710)	17.11	16.19	15.35
	50RB (0)	2310 (27710)	17.09	16.19	15.37

LTE B66 – DSI0

LTE B66					
BANDWIDTH	**Number of RBs**	**Frequency**	**QPSK**	**16QAM**	**64QAM**
1.4MHz	1RB-High (5)	1779.3 (132665)	23.69	22.84	21.72
		1745 (132322)	23.66	22.79	21.70
		1710.7 (131979)	23.66	22.89	21.84
	1RB-Middle (3)	1779.3 (132665)	23.76	22.79	21.80
		1745 (132322)	23.73	22.88	21.76
		1710.7 (131979)	23.73	22.91	21.84
	1RB-Low (0)	1779.3 (132665)	23.70	22.74	21.79
		1745 (132322)	23.64	22.70	21.64
		1710.7 (131979)	23.65	22.81	21.85
	3RB-High (3)	1779.3 (132665)	23.76	22.65	21.75
		1745 (132322)	23.76	22.71	21.77
		1710.7 (131979)	23.76	22.64	21.82

	3RB-Middle (1)	1779.3 (132665)	23.81	22.65	21.83
		1745 (132322)	23.78	22.67	21.80
		1710.7 (131979)	23.81	22.75	21.80
	3RB-Low (0)	1779.3 (132665)	23.78	22.70	21.77
		1745 (132322)	23.73	22.65	21.79
		1710.7 (131979)	23.78	22.69	21.81
	6RB (0)	1779.3 (132665)	22.81	21.79	20.76
		1745 (132322)	22.74	21.79	20.72
		1710.7 (131979)	22.77	21.86	20.78
3MHz	1RB-High (14)	1778.5 (132657)	23.72	22.76	21.76
		1745 (132322)	23.70	22.80	21.69
		1711.5 (131987)	23.69	22.92	21.84
	1RB-Middle (7)	1778.5 (132657)	23.81	22.93	21.96
		1745 (132322)	23.80	22.91	21.93
		1711.5 (131987)	23.79	23.00	21.93
	1RB-Low (0)	1778.5 (132657)	23.70	22.82	21.78
		1745 (132322)	23.69	22.82	21.72
		1711.5 (131987)	23.69	22.94	21.84
	8RB-High (7)	1778.5 (132657)	22.71	21.73	20.78
		1745 (132322)	22.69	21.70	20.70
		1711.5 (131987)	22.73	21.77	20.77
	8RB-Middle (4)	1778.5 (132657)	22.76	21.74	20.76
		1745 (132322)	22.70	21.74	20.77
		1711.5 (131987)	22.76	21.78	20.83
	8RB-Low (0)	1778.5 (132657)	22.76	21.73	20.77
		1745 (132322)	22.68	21.70	20.71
		1711.5 (131987)	22.72	21.75	20.79
	15RB (0)	1778.5 (132657)	22.77	21.70	20.74
		1745 (132322)	22.71	21.70	20.71
		1711.5 (131987)	22.73	21.73	20.72
5MHz	1RB-High (24)	1777.5 (132647)	23.66	22.80	21.76
		1745 (132322)	23.67	22.83	21.70
		1712.5 (131997)	23.68	22.96	21.77
	1RB-Middle (12)	1777.5 (132647)	23.90	22.85	21.93
		1745 (132322)	23.84	23.00	21.91
		1712.5 (131997)	23.92	23.14	22.03
	1RB-Low (0)	1777.5 (132647)	23.69	22.81	21.77
		1745 (132322)	23.65	22.74	21.74
		1712.5 (131997)	23.68	22.95	21.85
	12RB-High (13)	1777.5 (132647)	22.73	21.68	20.73
		1745 (132322)	22.71	21.68	20.74
		1712.5 (131997)	22.77	21.75	20.80

	12RB-Middle (6)	1777.5 (132647)	22.80	21.76	20.84
		1745 (132322)	22.77	21.75	20.78
		1712.5 (131997)	22.80	21.78	20.81
	12RB-Low (0)	1777.5 (132647)	22.77	21.71	20.76
		1745 (132322)	22.72	21.68	20.75
		1712.5 (131997)	22.74	21.71	20.79
	25RB (0)	1777.5 (132647)	22.78	21.76	20.75
		1745 (132322)	22.71	21.73	20.74
		1712.5 (131997)	22.78	21.74	20.76
10MHz	1RB-High (49)	1775 (132622)	23.75	22.83	21.68
		1745 (132322)	23.67	22.82	21.81
		1715 (132022)	23.66	22.87	21.82
	1RB-Middle (24)	1775 (132622)	23.81	22.84	21.84
		1745 (132322)	23.79	22.80	21.84
		1715 (132022)	23.78	22.98	21.97
	1RB-Low (0)	1775 (132622)	23.71	22.93	21.78
		1745 (132322)	23.67	22.83	21.73
		1715 (132022)	23.72	22.88	21.87
	25RB-High (25)	1775 (132622)	22.74	21.70	20.72
		1745 (132322)	22.70	21.69	20.75
		1715 (132022)	22.76	21.78	20.78
	25RB-Middle (12)	1775 (132622)	22.80	21.77	20.78
		1745 (132322)	22.74	21.73	20.78
		1715 (132022)	22.81	21.77	20.79
	25RB-Low (0)	1775 (132622)	22.79	21.76	20.79
		1745 (132322)	22.76	21.73	20.75
		1715 (132022)	22.76	21.74	20.80
	50RB (0)	1775 (132622)	22.79	21.77	20.76
		1745 (132322)	22.74	21.71	20.77
		1715 (132022)	22.78	21.78	20.80
15MHz	1RB-High (74)	1772.5 (132597)	23.69	22.85	21.67
		1745 (132322)	23.66	22.81	21.73
		1717.5 (132047)	23.64	22.79	21.80
	1RB-Middle (37)	1772.5 (132597)	23.71	22.90	21.83
		1745 (132322)	23.67	22.84	21.72
		1717.5 (132047)	23.72	23.00	21.85
	1RB-Low (0)	1772.5 (132597)	23.73	22.94	21.81
		1745 (132322)	23.69	22.78	21.77
		1717.5 (132047)	23.74	22.86	21.85
	36RB-High (38)	1772.5 (132597)	22.80	21.72	20.79
		1745 (132322)	22.75	21.71	20.80
		1717.5 (132047)	22.83	21.72	20.82

	36RB-Middle (19)	1772.5 (132597)	22.83	21.78	20.87
		1745 (132322)	22.80	21.75	20.81
		1717.5 (132047)	22.81	21.75	20.79
	36RB-Low (0)	1772.5 (132597)	22.82	21.77	20.81
		1745 (132322)	22.79	21.71	20.78
		1717.5 (132047)	22.79	21.78	20.79
	75RB (0)	1772.5 (132597)	22.82	21.78	20.79
		1745 (132322)	22.75	21.74	20.78
		1717.5 (132047)	22.79	21.76	20.79
20MHz	1RB-High (99)	1770 (132572)	23.90	22.98	21.92
		1745 (132322)	23.90	23.12	22.01
		1720 (132072)	23.89	23.05	21.93
	1RB-Middle (50)	1770 (132572)	23.99	23.08	22.10
		1745 (132322)	24.02	23.10	22.11
		1720 (132072)	24.05	23.23	22.18
	1RB-Low (0)	1770 (132572)	23.90	23.11	22.01
		1745 (132322)	23.94	23.06	21.99
		1720 (132072)	23.94	23.17	22.10
	50RB-High (50)	1770 (132572)	23.02	22.01	20.99
		1745 (132322)	22.95	21.93	20.98
		1720 (132072)	23.04	22.05	21.07
	50RB-Middle (25)	1770 (132572)	23.09	22.06	21.08
		1745 (132322)	23.03	22.03	21.06
		1720 (132072)	23.10	22.01	21.03
	50RB-Low (0)	1770 (132572)	23.05	21.99	21.03
		1745 (132322)	23.03	21.99	21.03
		1720 (132072)	22.97	21.97	21.00
	100RB (0)	1770 (132572)	23.02	21.98	21.01
		1745 (132322)	22.98	21.94	20.98
		1720 (132072)	23.02	21.98	21.00

LTE B66 – DSI1

LTE B66					
BANDWIDTH	**Number of RBs**	**Frequency**	**QPSK**	**16QAM**	**64QAM**
1.4MHz	1RB-High (5)	1779.3 (132665)	23.04	21.70	20.94
		1745 (132322)	22.53	21.88	20.93
		1710.7 (131979)	22.65	22.01	21.21
	1RB-Middle (3)	1779.3 (132665)	22.72	22.11	20.83
		1745 (132322)	22.60	22.09	21.20
		1710.7 (131979)	22.77	22.27	20.75
	1RB-Low (0)	1779.3 (132665)	22.61	21.92	20.84
		1745 (132322)	22.54	22.38	20.67
		1710.7 (131979)	22.64	22.10	20.90
	3RB-High (3)	1779.3 (132665)	22.97	21.93	21.04
		1745 (132322)	22.59	22.15	20.98
		1710.7 (131979)	22.49	22.18	21.06
	3RB-Middle (1)	1779.3 (132665)	22.72	22.12	20.78
		1745 (132322)	22.59	22.21	20.88
		1710.7 (131979)	22.86	22.00	20.95
	3RB-Low (0)	1779.3 (132665)	22.47	21.90	20.83
		1745 (132322)	22.43	22.32	20.78
		1710.7 (131979)	22.57	21.89	20.63
	6RB (0)	1779.3 (132665)	21.50	20.64	19.86
		1745 (132322)	21.71	20.54	19.78
		1710.7 (131979)	21.60	20.47	19.54
3MHz	1RB-High (14)	1778.5 (132657)	22.45	22.00	20.97
		1745 (132322)	22.88	21.67	21.11
		1711.5 (131987)	22.49	21.97	20.72
	1RB-Middle (7)	1778.5 (132657)	22.88	22.34	20.98
		1745 (132322)	22.77	22.28	21.08
		1711.5 (131987)	22.91	22.31	20.77
	1RB-Low (0)	1778.5 (132657)	22.59	22.05	21.08
		1745 (132322)	22.55	22.29	20.92
		1711.5 (131987)	22.40	22.06	20.65
	8RB-High (7)	1778.5 (132657)	21.80	20.52	19.81
		1745 (132322)	21.32	20.75	19.52
		1711.5 (131987)	21.43	20.66	19.77
	8RB-Middle (4)	1778.5 (132657)	21.80	20.77	19.69
		1745 (132322)	21.68	20.66	19.55
		1711.5 (131987)	21.84	20.66	19.53
	8RB-Low (0)	1778.5 (132657)	21.45	20.80	19.94

		1745 (132322)	21.39	20.56	19.59
		1711.5 (131987)	21.84	20.73	19.59
	15RB (0)	1778.5 (132657)	21.81	20.39	19.77
		1745 (132322)	21.62	20.67	19.72
		1711.5 (131987)	21.77	20.48	19.46
5MHz	1RB-High (24)	1777.5 (132647)	22.71	21.86	21.14
		1745 (132322)	22.45	22.05	20.89
		1712.5 (131997)	22.77	22.02	20.99
	1RB-Middle (12)	1777.5 (132647)	22.39	22.25	20.99
		1745 (132322)	22.90	22.25	21.03
		1712.5 (131997)	22.61	22.14	20.51
	1RB-Low (0)	1777.5 (132647)	22.41	22.02	20.92
		1745 (132322)	22.72	22.11	20.73
		1712.5 (131997)	22.65	22.20	20.90
	12RB-High (13)	1777.5 (132647)	21.49	20.55	19.60
		1745 (132322)	21.71	20.37	19.78
		1712.5 (131997)	21.59	20.47	19.55
	12RB-Middle (6)	1777.5 (132647)	21.78	20.67	19.59
		1745 (132322)	21.95	20.79	19.56
		1712.5 (131997)	21.83	20.69	19.55
	12RB-Low (0)	1777.5 (132647)	21.45	20.58	19.78
		1745 (132322)	21.79	20.59	19.76
		1712.5 (131997)	21.82	20.96	19.76
	25RB (0)	1777.5 (132647)	21.63	20.41	20.05
		1745 (132322)	21.69	20.73	20.02
		1712.5 (131997)	21.70	20.61	19.37
10MHz	1RB-High (49)	1775 (132622)	22.72	21.71	20.75
		1745 (132322)	22.76	21.87	20.88
		1715 (132022)	22.44	21.88	20.84
	1RB-Middle (24)	1775 (132622)	22.85	22.37	20.99
		1745 (132322)	22.85	22.13	21.19
		1715 (132022)	22.59	22.43	20.83
	1RB-Low (0)	1775 (132622)	22.30	21.83	21.04
		1745 (132322)	22.56	22.00	20.87
		1715 (132022)	22.83	22.09	20.80
	25RB-High (25)	1775 (132622)	21.54	20.66	19.56
		1745 (132322)	21.56	20.69	19.93
		1715 (132022)	21.62	20.81	19.51
	25RB-Middle (12)	1775 (132622)	21.54	20.85	19.59
		1745 (132322)	21.83	20.56	19.50
		1715 (132022)	21.48	20.67	19.51
	25RB-Low (0)	1775 (132622)	21.69	20.54	19.56

		1745 (132322)	21.94	20.33	19.77
		1715 (132022)	21.86	20.62	19.74
	50RB (0)	1775 (132622)	21.70	20.41	19.89
		1745 (132322)	21.71	20.59	19.87
		1715 (132022)	21.54	20.56	19.64
15MHz	1RB-High (74)	1772.5 (132597)	22.66	21.76	21.03
		1745 (132322)	22.63	22.02	21.15
		1717.5 (132047)	22.55	21.95	20.86
	1RB-Middle (37)	1772.5 (132597)	22.79	22.13	20.81
		1745 (132322)	22.72	22.17	21.06
		1717.5 (132047)	22.76	22.38	20.61
	1RB-Low (0)	1772.5 (132597)	22.71	22.14	21.00
		1745 (132322)	22.44	22.27	20.82
		1717.5 (132047)	22.55	21.87	20.88
	36RB-High (38)	1772.5 (132597)	21.39	20.38	19.73
		1745 (132322)	21.79	20.84	19.66
		1717.5 (132047)	21.78	20.43	19.66
	36RB-Middle (19)	1772.5 (132597)	21.82	20.50	19.65
		1745 (132322)	21.63	20.71	19.54
		1717.5 (132047)	21.57	20.75	19.61
	36RB-Low (0)	1772.5 (132597)	21.68	20.52	19.81
		1745 (132322)	21.74	20.62	19.65
		1717.5 (132047)	21.55	20.45	19.80
	75RB (0)	1772.5 (132597)	21.44	20.50	19.85
		1745 (132322)	21.70	20.65	19.82
		1717.5 (132047)	21.44	20.61	19.69
20MHz	1RB-High (99)	1770 (132572)	22.58	22.12	21.03
		1745 (132322)	22.74	22.02	21.16
		1720 (132072)	22.76	22.15	20.85
	1RB-Middle (50)	1770 (132572)	22.75	22.07	20.94
		1745 (132322)	22.71	22.28	21.10
		1720 (132072)	22.75	22.11	20.87
	1RB-Low (0)	1770 (132572)	22.64	21.93	21.00
		1745 (132322)	22.68	22.14	20.88
		1720 (132072)	22.50	22.27	20.99
	50RB-High (50)	1770 (132572)	21.73	20.60	19.68
		1745 (132322)	21.44	20.43	19.57
		1720 (132072)	21.43	20.81	19.66
	50RB-Middle (25)	1770 (132572)	21.70	20.83	19.77
		1745 (132322)	21.72	20.53	19.62
		1720 (132072)	21.78	20.79	19.49
	50RB-Low (0)	1770 (132572)	21.57	20.70	19.78

		1745 (132322)	21.75	20.41	19.72
		1720 (132072)	21.65	20.80	19.97
	100RB (0)	1770 (132572)	21.40	20.61	19.68
		1745 (132322)	21.64	20.80	19.71
		1720 (132072)	21.71	20.51	19.62

LTE B66 – DSI2

LTE B66					
BANDWIDTH	**Number of RBs**	**Frequency**	**QPSK**	**16QAM**	**64QAM**
1.4MHz	1RB-High (5)	1779.3 (132665)	20.86	19.87	18.93
		1745 (132322)	20.70	20.02	18.92
		1710.7 (131979)	20.70	20.03	19.10
	1RB-Middle (3)	1779.3 (132665)	20.58	20.20	18.82
		1745 (132322)	20.73	20.22	19.10
		1710.7 (131979)	20.79	20.17	18.57
	1RB-Low (0)	1779.3 (132665)	20.56	19.90	18.88
		1745 (132322)	20.59	20.26	18.65
		1710.7 (131979)	20.52	20.24	18.95
	3RB-High (3)	1779.3 (132665)	20.80	19.83	18.93
		1745 (132322)	20.62	19.97	18.89
		1710.7 (131979)	20.64	20.03	18.88
	3RB-Middle (1)	1779.3 (132665)	20.57	20.24	18.77
		1745 (132322)	20.77	20.05	19.00
		1710.7 (131979)	20.92	20.16	18.86
	3RB-Low (0)	1779.3 (132665)	20.62	19.96	18.84
		1745 (132322)	20.47	20.18	18.86
		1710.7 (131979)	20.62	19.97	18.81
	6RB (0)	1779.3 (132665)	19.46	18.58	17.85
		1745 (132322)	19.85	18.65	17.75
		1710.7 (131979)	19.51	18.60	17.42
3MHz	1RB-High (14)	1778.5 (132657)	20.61	19.97	18.83
		1745 (132322)	20.75	19.83	19.00
		1711.5 (131987)	20.44	19.89	18.81
	1RB-Middle (7)	1778.5 (132657)	20.81	20.28	18.80
		1745 (132322)	20.66	20.22	18.90
		1711.5 (131987)	20.82	20.23	18.64
	1RB-Low (0)	1778.5 (132657)	20.60	19.90	19.06
		1745 (132322)	20.66	20.26	18.79
		1711.5 (131987)	20.49	20.15	18.79
	8RB-High (7)	1778.5 (132657)	19.75	18.53	17.71

		1745 (132322)	19.40	18.64	17.61
		1711.5 (131987)	19.60	18.52	17.67
	8RB-Middle (4)	1778.5 (132657)	19.73	18.85	17.51
		1745 (132322)	19.80	18.70	17.62
		1711.5 (131987)	19.85	18.83	17.65
	8RB-Low (0)	1778.5 (132657)	19.57	18.65	17.89
		1745 (132322)	19.53	18.64	17.69
		1711.5 (131987)	19.66	18.60	17.64
	15RB (0)	1778.5 (132657)	19.65	18.42	17.67
		1745 (132322)	19.76	18.55	17.82
		1711.5 (131987)	19.72	18.55	17.41
5MHz	1RB-High (24)	1777.5 (132647)	20.57	19.83	18.98
		1745 (132322)	20.49	19.91	18.95
		1712.5 (131997)	20.64	20.12	18.90
	1RB-Middle (12)	1777.5 (132647)	20.56	20.10	18.84
		1745 (132322)	20.90	20.09	18.93
		1712.5 (131997)	20.77	20.15	18.57
	1RB-Low (0)	1777.5 (132647)	20.57	19.85	18.91
		1745 (132322)	20.66	20.26	18.71
		1712.5 (131997)	20.69	20.10	18.91
	12RB-High (13)	1777.5 (132647)	19.52	18.52	17.68
		1745 (132322)	19.55	18.47	17.74
		1712.5 (131997)	19.61	18.53	17.61
	12RB-Middle (6)	1777.5 (132647)	19.73	18.74	17.75
		1745 (132322)	19.78	18.81	17.55
		1712.5 (131997)	19.73	18.82	17.60
	12RB-Low (0)	1777.5 (132647)	19.56	18.56	17.62
		1745 (132322)	19.79	18.58	17.67
		1712.5 (131997)	19.67	18.82	17.72
	25RB (0)	1777.5 (132647)	19.64	18.41	17.87
		1745 (132322)	19.83	18.57	17.92
		1712.5 (131997)	19.74	18.65	17.43
10MHz	1RB-High (49)	1775 (132622)	20.77	19.84	18.85
		1745 (132322)	20.65	19.97	18.86
		1715 (132022)	20.53	19.95	18.95
	1RB-Middle (24)	1775 (132622)	20.80	20.33	18.84
		1745 (132322)	20.70	20.24	19.13
		1715 (132022)	20.67	20.27	18.67
	1RB-Low (0)	1775 (132622)	20.41	19.90	18.96
		1745 (132322)	20.50	20.07	18.84
		1715 (132022)	20.72	20.23	18.85
	25RB-High (25)	1775 (132622)	19.52	18.66	17.53

		1745 (132322)	19.54	18.74	17.82
		1715 (132022)	19.64	18.65	17.68
	25RB-Middle (12)	1775 (132622)	19.62	18.76	17.58
		1745 (132322)	19.84	18.56	17.44
		1715 (132022)	19.66	18.66	17.55
	25RB-Low (0)	1775 (132622)	19.77	18.59	17.68
		1745 (132322)	19.79	18.44	17.60
		1715 (132022)	19.74	18.77	17.69
	50RB (0)	1775 (132622)	19.69	18.54	17.88
		1745 (132322)	19.69	18.61	17.84
		1715 (132022)	19.63	18.54	17.60
15MHz	1RB-High (74)	1772.5 (132597)	20.61	19.86	18.85
		1745 (132322)	20.59	19.89	19.02
		1717.5 (132047)	20.47	19.90	18.84
	1RB-Middle (37)	1772.5 (132597)	20.76	20.06	18.68
		1745 (132322)	20.62	20.06	18.97
		1717.5 (132047)	20.86	20.31	18.60
	1RB-Low (0)	1772.5 (132597)	20.64	20.02	19.09
		1745 (132322)	20.55	20.09	18.85
		1717.5 (132047)	20.62	19.96	18.91
	36RB-High (38)	1772.5 (132597)	19.49	18.48	17.74
		1745 (132322)	19.62	18.73	17.61
		1717.5 (132047)	19.64	18.52	17.66
	36RB-Middle (19)	1772.5 (132597)	19.78	18.60	17.61
		1745 (132322)	19.70	18.69	17.61
		1717.5 (132047)	19.74	18.79	17.59
	36RB-Low (0)	1772.5 (132597)	19.69	18.51	17.88
		1745 (132322)	19.78	18.67	17.78
		1717.5 (132047)	19.69	18.58	17.86
	75RB (0)	1772.5 (132597)	19.58	18.49	17.81
		1745 (132322)	19.68	18.65	17.91
		1717.5 (132047)	19.59	18.52	17.57
20MHz	1RB-High (99)	1770 (132572)	20.72	19.97	18.96
		1745 (132322)	20.64	19.94	18.98
		1720 (132072)	20.58	20.00	18.95
	1RB-Middle (50)	1770 (132572)	20.70	20.20	18.80
		1745 (132322)	20.77	20.12	18.99
		1720 (132072)	20.78	20.25	18.72
	1RB-Low (0)	1770 (132572)	20.55	19.96	18.98
		1745 (132322)	20.58	20.12	18.72
		1720 (132072)	20.64	20.10	18.82
	50RB-High (50)	1770 (132572)	19.64	18.62	17.62

		1745 (132322)	19.53	18.60	17.69
		1720 (132072)	19.54	18.64	17.55
	50RB-Middle (25)	1770 (132572)	19.74	18.70	17.61
		1745 (132322)	19.72	18.71	17.50
		1720 (132072)	19.75	18.80	17.67
	50RB-Low (0)	1770 (132572)	19.63	18.63	17.76
		1745 (132322)	19.65	18.58	17.69
		1720 (132072)	19.73	18.72	17.79
	100RB (0)	1770 (132572)	19.58	18.54	17.73
		1745 (132322)	19.78	18.70	17.80
		1720 (132072)	19.59	18.51	17.56

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 measurement results of LTE downlink CA are as below：

DL LTE CA Class	PCC								SCC			Power		
	PCC Band	PCC Bandwidth (MHz)	PCC UL RB size	PCC UL RB offset	PCC DL RB size	PCC DL RB offset	PCC UL Channel	PCC DL Channel	SCC Band	SCC Bandwidth (MHz)	SCC DL Channel	Rel 8 LTETx Power (dBm)	Rel 10 DL LTE CA Tx Power(dBm)	Tune-up
2A-5A	2	20	1	50	100	0	18900	900	5	10	2525	24.16	24.14	24.5
2A-5A	5	10	1	24	50	0	20600	2600	2	20	900	24.64	24.52	25
2A-12A	2	20	1	50	100	0	18900	900	12	10	5095	24.16	24.04	24.5
2A-12A	12	10	1	24	50	0	23095	5095	2	20	900	24.55	24.48	25
2A-14A	2	20	1	50	100	0	18900	900	14	10	5330	24.16	24.13	24.5
2A-14A	14	20	1	0	50	0	23330	5330	2	20	900	24.36	24.24	25
2A-29A	2	20	1	50	100	0	18900	900	29	10	9715	24.16	24.13	24.5
5A-30A	5	10	1	24	50	0	20600	2600	30	10	9820	24.64	24.68	25
5A-30A	30	10	1	0	50	0	27710	9820	4	10	2175	23.18	22.98	24
5A-66A	5	10	1	24	50	0	20600	2600	66	20	66786	24.64	24.64	25
5A-66A	66	20	1	50	100	0	132572	67036	5	10	2525	24.05	23.85	24.5
12A-30A	12	10	1	24	50	0	23095	5095	30	10	9820	24.55	24.54	25
12A-30A	30	10	1	0	50	0	27710	9820	12	10	5095	23.18	23.07	24
12A-66A	12	10	1	24	50	0	23095	5095	66	20	66786	24.55	24.5	25
12A-66A	66	20	1	50	100	0	132572	67036	12	10	5095	24.05	23.93	25
14A-30A	14	20	1	0	50	0	23330	5330	30	10	9820	24.36	24.27	25
14A-30A	30	10	1	0	50	0	27710	9820	14	10	5330	23.18	23.18	24
14A-66A	14	20	1	0	50	0	23330	5330	66	20	66786	24.36	24.34	25
14A-66A	66	20	1	50	100	0	132572	67036	14	10	5330	24.05	23.89	25
29A-30A	30	10	1	0	50	0	27710	9820	29	10	9715	23.18	23.09	24
29A-66A	66	20	1	50	100	0	132572	67036	29	10	9715	24.05	23.97	25
66A-66A	66	20	1	50	100	0	132572	67036	66	20	66786	24.05	23.87	25
66B	66	10	1	24	50	0	1775	2175	66	10	67185	23.81	23.71	25
66C	66	20	1	50	100	0	132323	66787	66	20	66985	24.02	23.98	25

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

11.3 Wi-Fi and BT Measurement result

The maximum output power of BT antenna is 9.63dBm.
The maximum tune up of BT antenna is 10dBm.

Table11.3: Summary of Receiver detection mechanism

Antenna	Receiver on	Receiver off+ Hotspot off	Receiver off+ Hotspot on
WIFI Antenna	DSI0	DSI1	DSI2

The average conducted power for Wi-Fi 2.4G is as following:

WIFI2.4G-DSI0

802.11b	
Channel\data rate	1Mbps
11(2462MHz)	13.83
6(2437(MHz)	13.83
1(2412MHz)	13.87
Tune up	14.70
802.11g	
Channel\data rate	6Mbps
11(2462MHz)	13.82
6(2437(MHz)	13.96
1(2412MHz)	13.92
Tune up	14.50
802.11n-20MHz	
Channel\data rate	MCS0
11(2462MHz)	13.77
6(2437(MHz)	13.92
1(2412MHz)	13.90
Tune up	14.50

WIFI2.4G-DSI1

802.11b	
Channel\data rate	1Mbps
11(2462MHz)	17.75
6(2437(MHz)	17.93
1(2412MHz)	17.96
Tune up	19.00
802.11g	
Channel\data rate	6Mbps
11(2462MHz)	16.82
6(2437(MHz)	16.94
1(2412MHz)	16.91
Tune up	18.00
802.11n-20MHz	
Channel\data rate	MCS0
11(2462MHz)	16.64
6(2437(MHz)	16.95
1(2412MHz)	16.87
Tune up	18.00

WIFI2.4G-DSI2

802.11b	
Channel\data rate	1Mbps
11(2462MHz)	16.83
6(2437(MHz)	16.97
1(2412MHz)	16.98
Tune up	18.00
802.11g	
Channel\data rate	6Mbps
11(2462MHz)	15.86
6(2437(MHz)	15.91
1(2412MHz)	15.88
Tune up	17.00
802.11n-20MHz	
Channel\data rate	MCS0
11(2462MHz)	15.73
6(2437(MHz)	15.97
1(2412MHz)	15.95
Tune up	17.00

The average conducted power for Wi-Fi 5G is as following:

WIFI5G-DSI0/1/2

802.11a(dBm)	
Channel\data rate	6Mbps
36(5180 MHz)	17.69
40(5200 MHz)	17.75
44(5220 MHz)	17.87
48(5240 MHz)	17.65
52(5260 MHz)	17.41
56(5280 MHz)	17.35
60(5300 MHz)	17.22
64(5320 MHz)	17.29
100(5500 MHz)	17.69
104(5520 MHz)	17.95
108(5540 MHz)	17.67
112(5560 MHz)	17.69
116(5580 MHz)	17.92
120(5600 MHz)	17.88
124(5620 MHz)	17.90
128(5640 MHz)	17.99
132(5660 MHz)	17.92
136(5680 MHz)	17.94
140(5700 MHz)	18.00
144(5720 MHz)	18.03
149(5745 MHz)	18.12
153(5765 MHz)	17.96
157(5785 MHz)	18.09
161(5805 MHz)	18.15
165(5825 MHz)	18.21
Tune up	18.50

802.11n(dBm)-20MHz	
Channel\data rate	MCS0
36(5180 MHz)	17.81
40(5200 MHz)	17.63
44(5220 MHz)	17.52
48(5240 MHz)	17.51
52(5260 MHz)	17.24
56(5280 MHz)	17.08
60(5300 MHz)	16.97
64(5320 MHz)	17.06
100(5500 MHz)	17.66
104(5520 MHz)	17.54
108(5540 MHz)	17.79
112(5560 MHz)	17.61
116(5580 MHz)	17.77
120(5600 MHz)	17.78
124(5620 MHz)	17.71
128(5640 MHz)	17.79
132(5660 MHz)	17.75
136(5680 MHz)	17.88
140(5700 MHz)	17.98
144(5720 MHz)	17.81
149(5745 MHz)	17.91
153(5765 MHz)	17.90
157(5785 MHz)	18.09
161(5805 MHz)	18.16
165(5825 MHz)	18.02
Tune up	18.50

802.11ac(dBm)-20MHz	
Channel\data rate	MCS0
36(5180 MHz)	17.76
40(5200 MHz)	17.45
44(5220 MHz)	17.55
48(5240 MHz)	17.57
52(5260 MHz)	17.21
56(5280 MHz)	17.34
60(5300 MHz)	17.09
64(5320 MHz)	17.16
100(5500 MHz)	17.64
104(5520 MHz)	17.78
108(5540 MHz)	17.70
112(5560 MHz)	17.74
116(5580 MHz)	17.91
120(5600 MHz)	17.71
124(5620 MHz)	17.91
128(5640 MHz)	18.03
132(5660 MHz)	17.98
136(5680 MHz)	17.85
140(5700 MHz)	17.95
144(5720 MHz)	17.97
149(5745 MHz)	17.82
153(5765 MHz)	18.01
157(5785 MHz)	17.98
161(5805 MHz)	17.92
165(5825 MHz)	18.01
Tune up	18.50

802.11n(dBm)-40MHz	
Channel\data rate	MCS0
38(5190 MHz)	17.14
46(5230 MHz)	17.01
54(5270 MHz)	17.02
62(5310 MHz)	16.83
102(5510 MHz)	17.40
110(5550 MHz)	17.65
118(5590 MHz)	17.46
126(5630 MHz)	17.74
134(5670 MHz)	17.64
142(5710 MHz)	17.74
151(5755 MHz)	17.73
159(5795 MHz)	17.84
Tune up	18.50

802.11ac(dBm)-40MHz	
Channel\data rate	MCS0
38(5190 MHz)	17.25
46(5230 MHz)	17.22
54(5270 MHz)	17.15
62(5310 MHz)	16.87
102(5510 MHz)	17.23
110(5550 MHz)	17.43
118(5590 MHz)	17.53
126(5630 MHz)	17.70
134(5670 MHz)	17.67
142(5710 MHz)	17.92
151(5755 MHz)	17.83
159(5795 MHz)	17.91
Tune up	18.50

802.11ac(dBm)-80MHz	
Channel\data rate	MCS0
42(5210 MHz)	17.32
58(5290 MHz)	17.57
106(5530 MHz)	17.29
122(5610 MHz)	17.36
138(5690 MHz)	17.52
155(5775 MHz)	17.79
Tune up	18.50

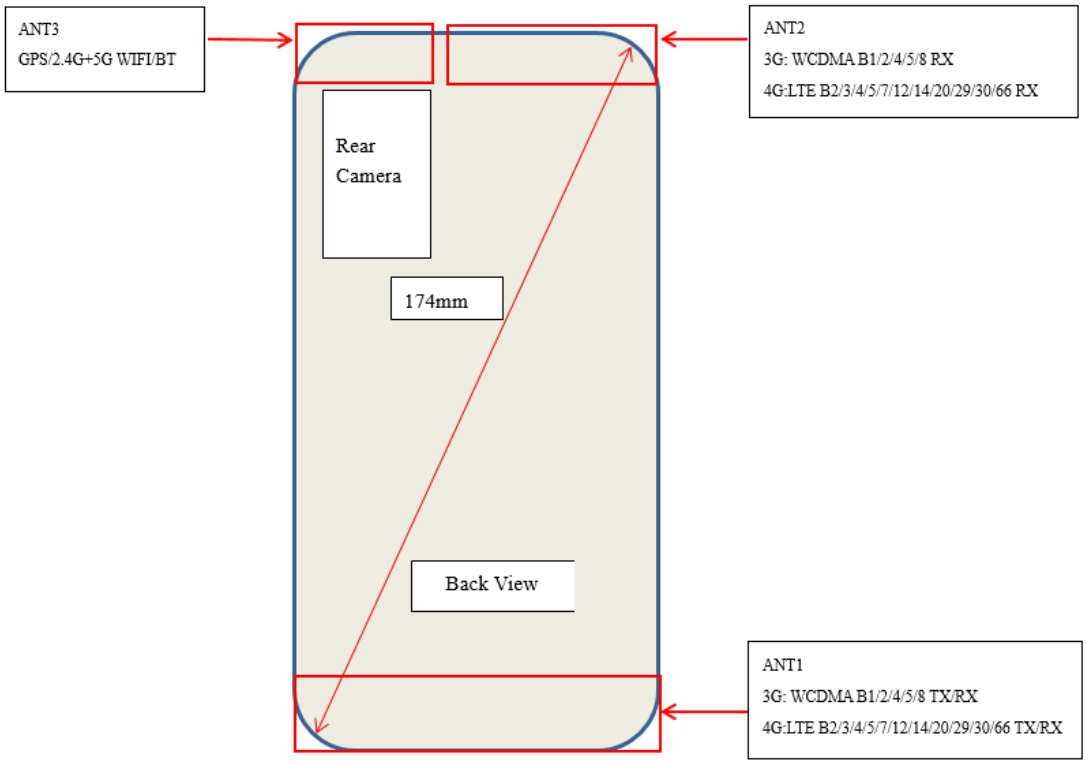
12 Simultaneous TX SAR Considerations

12.1 Introduction

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

For this device, the BT and Wi-Fi can transmit simultaneous with other transmitters.

12.2 Transmit Antenna Separation Distances



Picture 12-1: Antenna Locations

12.3 SAR Measurement Positions

According to the KDB941225 D06 Hot Spot SAR, the edges with less than 2.5 cm distance to the antennas need to be tested for SAR.

SAR measurement positions						
Antenna	Front	Rear	Left edge	Right edge	Top edge	Bottom edge
ANT1	Yes	Yes	Yes	Yes	No	Yes
ANT3	Yes	Yes	No	Yes	Yes	No

13 Evaluation of Simultaneous

Table 13.1: The sum of SAR values for Main antenna + Wifi2.4G

	Position	Main antenna	WiFi-2.4G	Sum
Highest SAR value for Head	Left head, Cheek (LTE B2)	0.26	1.11	**1.37**
Highest SAR value for Body	Rear 10mm (WCDMA B4)	0.77	0.77	**1.54**

Table 13.2: The sum of SAR values for Main antenna + Wifi5G +BT

	Position	Main antenna	WiFi-5G	BT	Sum
Highest SAR value for Head	Left head, Tilt (LTE B2)	0.20	0.64	0.25	**1.09**
Highest SAR value for Body	Rear 10mm (WCDMA B4)	0.77	0.73	0.07	**1.57**

Conclusion:

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

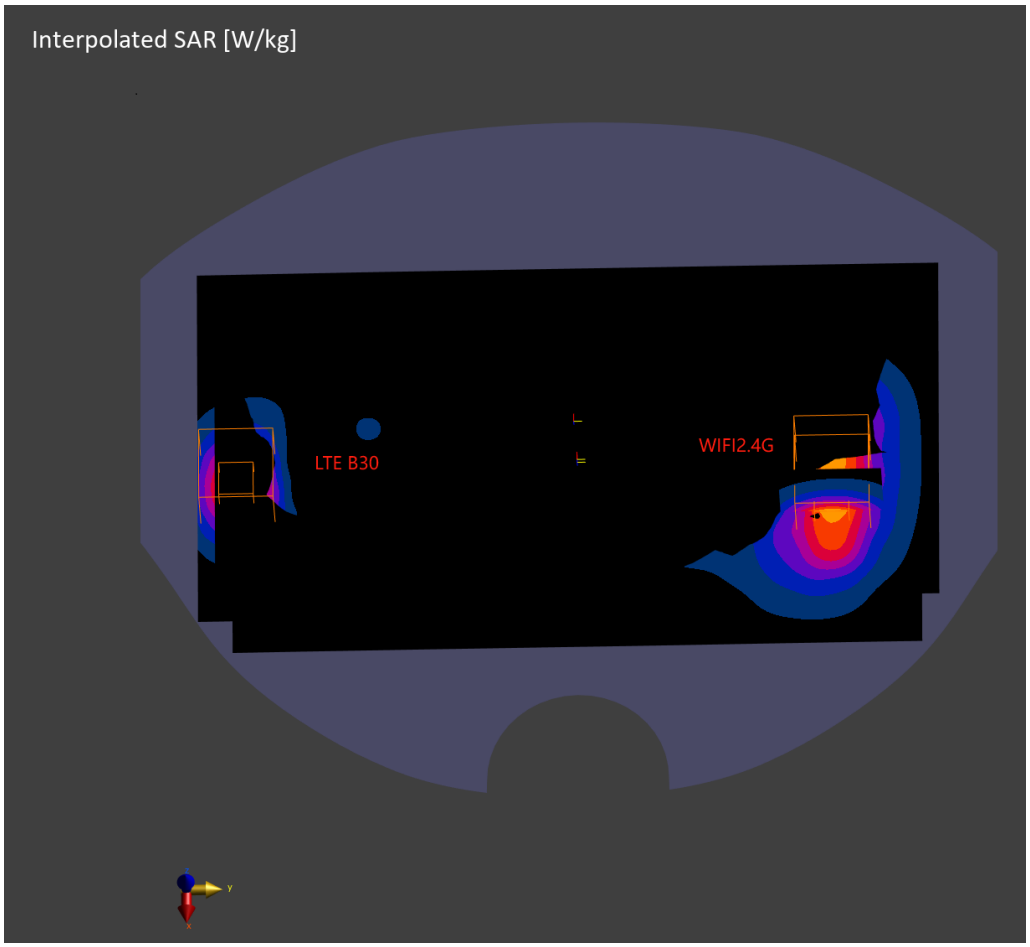
According to the KDB 447498 D01, when the sum of SAR is larger than the limit, SAR test exclusion is determined by the SAR to peak location separation ratio. The ratio is determined by (SAR1 + SAR2)1.5/Ri, rounded to two decimal digits, and must be ≤ 0.04 for all antenna pairs in the configuration to qualify for 1-g SAR test exclusion. When 10-g SAR applies, the ratio must be ≤ 0.10. SAR1 and SAR2 are the highest reported or estimated SAR values for each antenna in the pair, and Ri is the separation distance in mm between the peak SAR locations for the antenna pair.

Table 13.3: The evaluation procedure for SPLSR of WWAN + WiFi (Body SAR 1g)

Highest reported SAR value for Body	**Position**	**Band**	**Main antenna**	**WiFi5G+BT**	**Sum**	**Distance (mm)**	**Ratio**	**Limit**
	Rear 10mm	LTE B7	0.94	0.80	**1.74**	138	0.017	0.04
	Rear 10mm	LTE B30	1.13	0.80	**1.93**	145	0.018	0.04
	Position	**Band**	**Main antenna**	**WiFi2.4G**	**Sum**	**Distance (mm)**	**Ratio**	**Limit**
	Rear 10mm	LTE B7	0.94	0.77	**1.71**	137	0.016	0.04
	Rear 10mm	LTE B30	1.13	0.77	**1.90**	142	0.018	0.04

Table 13.4: The evaluation procedure for SPLSR of WWAN + WiFi (Limb SAR 10g)

Highest reported SAR value for Phablet	**Position**	**Band**	**Main antenna**	**WiFi2.4G**	**Sum**	**Distance (mm)**	**Ratio**	**Limit**
	Rear 0mm	LTE B30	3.20	2.30	5.50	142	0.091	0.10
	Position	**Band**	**Main antenna**	**WiFi5G+BT**	**Sum**	**Distance (mm)**	**Ratio**	**Limit**
	Rear 0mm	LTE B30	3.20	1.33	4.53	139	0.069	0.10



Picture 13.1 SAR location for LTE B30 and WiFi 2.4G Body (Rear 0mm)

14 SAR Test Result

It is determined by user manual for the distance between the EUT and the phantom bottom. The distance is 10 mm and just applied to the condition of body worn accessory.
It is performed for all SAR measurements with area scan based 1-g SAR estimation (Fast SAR). A zoom scan measurement is added when the estimated 1-g SAR is the highest measured SAR in each exposure configuration, wireless mode and frequency band combination or more than 1.2W/kg.
The calculated SAR is obtained by the following formula:

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

Where P_{Target} is the power of manufacturing upper limit;
$P_{Measured}$ is the measured power in chapter 11.

Table 14.1: Duty Cycle

Mode	Duty Cycle
GSM850/1900	1:4
WCDMA&LTE FDD	1:1
LTE TDD	1:1.58

14.1 SAR results for 3G/4G

Table 14.1-1: SAR Values-WCDMA B2/B4/B5

Test Position	Phantom position L/R/F	Frequency Band	Channel Number	Frequency (MHz)	Test setup/Position	Figure No./Note	EUT Measured Power (dBm)	Tune up (dBm)	Measured SAR 1g (W/kg)	Calculated SAR 1g (W/kg)	Measured SAR 10g (W/kg)	Calculated SAR 10g (W/kg)	Power Drift
Cheek	L	WCDMA1900	9538	1907.6	RMC	\	23.08	24	0.153	**0.19**	0.094	**0.12**	-0.02
Cheek	L	WCDMA1900	9400	1880	RMC	1	23.11	24	0.163	**0.20**	0.1	**0.12**	0.01
Cheek	L	WCDMA1900	9262	1852.4	RMC	\	23.14	24	0.152	**0.19**	0.094	**0.11**	-0.11
Tilt	L	WCDMA1900	9400	1880	RMC	\	23.11	24	0.128	**0.16**	0.078	**0.10**	0.17
Cheek	R	WCDMA1900	9400	1880	RMC	\	23.11	24	0.125	**0.15**	0.078	**0.10**	-0.1
Tilt	R	WCDMA1900	9400	1880	RMC	\	23.11	24	0.105	**0.13**	0.067	**0.08**	0.18
Body	F	WCDMA1900	9400	1880	Front 10mm	\	23.11	24	0.45	**0.55**	0.267	**0.33**	-0.11
Body	F	WCDMA1900	9400	1880	Rear 10mm	\	23.11	24	0.391	**0.48**	0.226	**0.28**	-0.07
Body	F	WCDMA1900	9400	1880	Left Edge 10mm	\	23.11	24	0.164	**0.20**	0.098	**0.12**	0.12
Body	F	WCDMA1900	9400	1880	Right Edge 10mm	\	23.11	24	0.07	**0.09**	0.042	**0.05**	-0.14
Body	F	WCDMA1900	9538	1907.6	Bottom Edge 10mm	\	23.08	24	0.676	**0.84**	0.371	**0.46**	0.04
Body	F	WCDMA1900	9400	1880	Bottom Edge 10mm	\	23.11	24	0.928	**1.14**	0.501	**0.61**	-0.17
Body	F	WCDMA1900	9262	1852.4	Bottom Edge 10mm	2	23.14	24	0.97	**1.18**	0.529	**0.64**	-0.02
Body	F	WCDMA1900	9400	1880	Front 15mm	\	23.11	24	0.32	**0.39**	0.182	**0.22**	0.09
Body	F	WCDMA1900	9538	1907.6	Rear 15mm	\	23.08	24	0.306	**0.38**	0.168	**0.21**	0.16
Body	F	WCDMA1900	9400	1880	Rear 15mm	3	23.11	24	0.329	**0.40**	0.183	**0.22**	-0.11
Body	F	WCDMA1900	9262	1852.4	Rear 15mm	\	23.14	24	0.309	**0.38**	0.169	**0.21**	0.04
Cheek	L	WCDMA 1700	1412	1732.4	RMC	\	23.26	24	0.118	**0.14**	0.077	**0.09**	0.02
Tilt	L	WCDMA 1700	1412	1732.4	RMC	\	23.26	24	0.066	**0.08**	0.044	**0.05**	0.08
Cheek	R	WCDMA 1700	1513	1752.6	RMC	4	23.24	24	0.121	**0.14**	0.073	**0.09**	0.03
Cheek	R	WCDMA 1700	1412	1732.4	RMC	\	23.26	24	0.15	**0.18**	0.097	**0.12**	0.03
Cheek	R	WCDMA 1700	1312	1712.4	RMC	\	23.21	24	0.146	**0.18**	0.094	**0.11**	-0.11
Tilt	R	WCDMA 1700	1412	1732.4	RMC	\	23.26	24	0.063	**0.07**	0.043	**0.05**	-0.09
Body	F	WCDMA1700	1412	1732.5	Front 10mm	\	22.31	23	0.222	**0.26**	0.136	**0.16**	0.09
Body	F	WCDMA1700	1412	1732.5	Rear 10mm	\	22.31	23	0.656	**0.77**	0.375	**0.44**	-0.09
Body	F	WCDMA1700	1412	1732.5	Left Edge 10mm	\	22.31	23	0.04	**0.05**	0.025	**0.03**	-0.14
Body	F	WCDMA1700	1412	1732.5	Right Edge 10mm	\	22.31	23	0.036	**0.04**	0.022	**0.03**	0.07
Body	F	WCDMA1700	1513	1752.6	Bottom Edge 10mm	\	22.26	23	1.06	**1.26**	0.566	**0.67**	-0.1
Body	F	WCDMA1700	1412	1732.5	Bottom Edge 10mm	\	22.31	23	1.07	**1.25**	0.575	**0.67**	0.08
Body	F	WCDMA1700	1312	1712.4	Bottom Edge 10mm	5	22.45	23	1.14	**1.29**	0.607	**0.69**	0.01
Body	F	WCDMA1700	1412	1732.5	Front 15mm	\	23.26	24	0.254	**0.30**	0.156	**0.18**	0.09
Body	F	WCDMA1700	1513	1752.6	Rear 15mm	\	23.24	24	0.303	**0.36**	0.184	**0.22**	-0.12
Body	F	WCDMA1700	1412	1732.5	Rear 15mm	6	23.26	24	0.323	**0.38**	0.190	**0.23**	-0.01
Body	F	WCDMA1700	1312	1712.4	Rear 15mm	\	23.21	24	0.292	**0.35**	0.177	**0.21**	0.07
Cheek	L	WCDMA 850	4183	836.6	RMC	\	23.18	24	0.135	**0.16**	0.1	**0.12**	-0.18
Tilt	L	WCDMA 850	4183	836.6	RMC	\	23.18	24	0.083	**0.10**	0.064	**0.08**	0.07
Cheek	R	WCDMA 850	4233	846.6	RMC	\	23.15	24	0.142	**0.17**	0.108	**0.13**	0.07
Cheek	R	WCDMA 850	4183	836.6	RMC	7	23.18	24	0.154	**0.19**	0.115	**0.14**	-0.02
Cheek	R	WCDMA 850	4132	826.4	RMC	\	23.16	24	0.143	**0.17**	0.108	**0.13**	0.05
Tilt	R	WCDMA 850	4183	836.6	RMC	\	23.18	24	0.088	**0.11**	0.068	**0.08**	-0.08
Body	F	WCDMA 850	4183	836.6	Front 10mm	\	23.18	24	0.156	**0.19**	0.096	**0.12**	0.09
Body	F	WCDMA 850	4233	846.6	Rear 10mm	8	23.15	24	0.276	**0.34**	0.159	**0.19**	-0.01
Body	F	WCDMA 850	4183	836.6	Rear 10mm	\	23.18	24	0.266	**0.32**	0.152	**0.18**	0.18
Body	F	WCDMA 850	4132	826.4	Rear 10mm	\	23.16	24	0.247	**0.30**	0.145	**0.18**	-0.13
Body	F	WCDMA 850	4183	836.6	Left Edge 10mm	\	23.18	24	0.071	**0.09**	0.046	**0.06**	-0.13
Body	F	WCDMA 850	4183	836.6	Right Edge 10mm	\	23.18	24	0.134	**0.16**	0.088	**0.11**	0.18
Body	F	WCDMA 850	4183	836.6	Bottom Edge 10mm	\	23.18	24	0.107	**0.13**	0.062	**0.07**	-0.01
Body	F	WCDMA 850	4183	836.6	Front 15mm	\	23.18	24	0.14	**0.17**	0.106	**0.13**	0.09
Body	F	WCDMA 850	4233	846.6	Rear 15mm	\	23.15	24	0.165	**0.20**	0.124	**0.15**	0.17
Body	F	WCDMA 850	4183	836.6	Rear 15mm	\	23.18	24	0.174	**0.21**	0.133	**0.16**	0.14
Body	F	WCDMA 850	4132	826.4	Rear 15mm	9	23.16	24	0.193	**0.23**	0.146	**0.18**	-0.09

Table 14.1-2: SAR Values-LTE B2/B5/B7

Test Position	Phantom position L/R/F	Frequency Band	Channel Number	Frequency (MHz)	Test setup/Position	Figure No./Note	EUT Measured Power (dBm)	Tune up (dBm)	Measured SAR 1g (W/kg)	Calculated SAR 1g (W/kg)	Measured SAR 10g (W/kg)	Calculated SAR 10g (W/kg)	Power Drift
Cheek	L	LTE Band2	18900	1880	1RB-Middle	10	24.16	24.5	0.236	**0.26**	0.148	**0.16**	0.1
Tilt	L	LTE Band2	18900	1880	1RB-Middle	\	24.16	24.5	0.182	**0.20**	0.112	**0.12**	0.13
Cheek	R	LTE Band2	18900	1880	1RB-Middle	\	24.16	24.5	0.209	**0.23**	0.129	**0.14**	0.12
Tilt	R	LTE Band2	18900	1880	1RB-Middle	\	24.16	24.5	0.146	**0.16**	0.093	**0.10**	-0.12
Cheek	L	LTE Band2	18900	1880	50RB-Middle	\	23.2	23.5	0.189	**0.20**	0.118	**0.13**	0.07
Tilt	L	LTE Band2	18900	1880	50RB-Middle	\	23.2	23.5	0.143	**0.15**	0.088	**0.09**	-0.16
Cheek	R	LTE Band2	18900	1880	50RB-Middle	\	23.2	23.5	0.161	**0.17**	0.100	**0.11**	0.04
Tilt	R	LTE Band2	18900	1880	50RB-Middle	\	23.2	23.5	0.115	**0.12**	0.074	**0.08**	-0.02
Body	F	LTE Band2	18900	1880	1RB-Mid Front 10mm	\	21.98	22.5	0.501	**0.56**	0.292	**0.33**	-0.09
Body	F	LTE Band2	18900	1880	1RB-Mid Rear 10mm	\	21.98	22.5	0.581	**0.65**	0.316	**0.36**	-0.06
Body	F	LTE Band2	18900	1880	1RB-Mid Left Edge 10mm	\	21.98	22.5	0.241	**0.27**	0.142	**0.16**	0.12
Body	F	LTE Band2	18900	1880	1RB-Mid Right Edge 10mm	\	21.98	22.5	0.095	**0.11**	0.054	**0.06**	0.05
Body	F	LTE Band2	18700	1860	1RB-Mid Bottom Edge 10mm	\	21.9	22.5	0.91	**1.04**	0.491	**0.56**	-0.14
Body	F	LTE Band2	18900	1880	1RB-Mid Bottom Edge 10mm	11	21.98	22.5	0.929	**1.05**	0.503	**0.57**	-0.01
Body	F	LTE Band2	19100	1900	1RB-Mid Bottom Edge 10mm	\	21.95	22.5	0.787	**0.89**	0.417	**0.47**	0.1
Body	F	LTE Band2	18900	1880	100RB Bottom Edge 10mm	\	20.78	21.5	0.761	**0.90**	0.41	**0.48**	0.09
Body	F	LTE Band2	18900	1880	50RB-Mid Front 10mm	\	20.95	21.5	0.38	**0.43**	0.221	**0.25**	-0.12
Body	F	LTE Band2	18900	1880	50RB-Mid Rear 10mm	\	20.95	21.5	0.472	**0.54**	0.257	**0.29**	-0.05
Body	F	LTE Band2	18900	1880	50RB-Mid Left Edge 10mm	\	20.95	21.5	0.143	**0.16**	0.083	**0.09**	0.12
Body	F	LTE Band2	18900	1880	50RB-Mid Right Edge 10mm	\	20.95	21.5	0.038	**0.04**	0.021	**0.02**	0.07
Body	F	LTE Band2	18700	1860	50RB-Mid Bottom Edge 10mm	\	20.88	21.5	0.741	**0.85**	0.389	**0.45**	0.03
Body	F	LTE Band2	18900	1880	50RB-Mid Bottom Edge 10mm	\	20.95	21.5	0.759	**0.86**	0.403	**0.46**	-0.11
Body	F	LTE Band2	19100	1900	50RB-Mid Bottom Edge 10mm	\	20.9	21.5	0.578	**0.66**	0.381	**0.44**	-0.09
Body	F	LTE Band2	18900	1880	1RB-Middle Front 15mm	\	24.16	24.5	0.317	**0.34**	0.188	**0.20**	0.11
Body	F	LTE Band2	18900	1880	1RB-Middle Rear 15mm	12	24.16	24.5	0.413	**0.45**	0.238	**0.26**	0.03
Body	F	LTE Band2	18900	1880	50RB-Mid Front 15mm	\	23.2	23.5	0.313	**0.34**	0.183	**0.20**	-0.12
Body	F	LTE Band2	18900	1880	50RB-Mid Rear 15mm	\	23.2	23.5	0.322	**0.35**	0.185	**0.20**	0.07
Cheek	L	LTE Band5	20600	844	1RB-Middle	\	24.64	25	0.215	**0.23**	0.160	**0.17**	0.13
Tilt	L	LTE Band5	20600	844	1RB-Middle	\	24.64	25	0.128	**0.14**	0.099	**0.11**	0.18
Cheek	R	LTE Band5	20600	844	1RB-Middle	13	24.64	25	0.246	**0.27**	0.184	**0.20**	0.08
Tilt	R	LTE Band5	20600	844	1RB-Middle	\	24.64	25	0.136	**0.15**	0.106	**0.12**	0.14
Cheek	L	LTE Band5	20600	844	25RB-Low	\	23.62	24	0.168	**0.18**	0.127	**0.14**	0.15
Tilt	L	LTE Band5	20600	844	25RB-Low	\	23.62	24	0.105	**0.11**	0.080	**0.09**	0.06
Cheek	R	LTE Band5	20600	844	25RB-Low	\	23.62	24	0.19	**0.21**	0.143	**0.16**	-0.04
Tilt	R	LTE Band5	20600	844	25RB-Low	\	23.62	24	0.109	**0.12**	0.083	**0.09**	0.13
Body	F	LTE Band5	20600	844	1RB-Mid Front 10mm	\	24.64	25	0.209	**0.23**	0.127	**0.14**	0.15
Body	F	LTE Band5	20600	844	1RB-Mid Rear 10mm	14	24.64	25	0.361	**0.39**	0.211	**0.23**	0.01
Body	F	LTE Band5	20600	844	1RB-Mid Left Edge 10mm	\	24.64	25	0.083	**0.09**	0.055	**0.06**	0.14
Body	F	LTE Band5	20600	844	1RB-Mid Right Edge 10mm	\	24.64	25	0.173	**0.19**	0.115	**0.12**	0.17
Body	F	LTE Band5	20600	844	1RB-Mid Bottom Edge 10mm	\	24.64	25	0.168	**0.18**	0.095	**0.10**	-0.11
Body	F	LTE Band5	20600	844	25RB-Low Front 10mm	\	23.62	24	0.157	**0.17**	0.097	**0.11**	-0.12
Body	F	LTE Band5	20600	844	25RB-Low Rear 10mm	\	23.62	24	0.276	**0.30**	0.162	**0.18**	0.05
Body	F	LTE Band5	20600	844	25RB-Low Left Edge 10mm	\	23.62	24	0.064	**0.07**	0.042	**0.05**	-0.07
Body	F	LTE Band5	20600	844	25RB-Low Right Edge 10mm	\	23.62	24	0.134	**0.15**	0.089	**0.10**	-0.12
Body	F	LTE Band5	20600	844	25RB-Low Bottom Edge 10mm	\	23.62	24	0.136	**0.15**	0.074	**0.08**	-0.01
Body	F	LTE Band5	20600	844	1RB-Middle Front 15mm	\	24.64	25	0.206	**0.22**	0.158	**0.17**	0.13
Body	F	LTE Band5	20600	844	1RB-Middle Rear 15mm	15	24.64	25	0.261	**0.28**	0.197	**0.21**	-0.04
Body	F	LTE Band5	20600	844	25RB-Low Front 15mm	\	23.62	24	0.16	**0.17**	0.121	**0.13**	-0.01
Body	F	LTE Band5	20600	844	25RB-Low Rear 15mm	\	23.62	24	0.205	**0.22**	0.156	**0.17**	0.17
Cheek	L	LTE Band7	20850	2510	1RB-Mid	\	23.19	24	0.039	**0.05**	0.021	**0.03**	-0.06
Tilt	L	LTE Band7	20850	2510	1RB-Mid	\	23.19	24	0.033	**0.04**	0.016	**0.02**	0.11
Cheek	R	LTE Band7	20850	2510	1RB-Mid	16	23.19	24	0.046	**0.06**	0.023	**0.03**	-0.03
Tilt	R	LTE Band7	20850	2510	1RB-Mid	\	23.19	24	<0.01	<0.01	<0.01	<0.01	\
Cheek	L	LTE Band7	20850	2510	50RB-Mid	\	22.22	23	0.031	**0.04**	0.016	**0.02**	0.14
Tilt	L	LTE Band7	20850	2510	50RB-Mid	\	22.22	23	0.029	**0.03**	0.015	**0.02**	-0.02
Cheek	R	LTE Band7	20850	2510	50RB-Mid	\	22.22	23	0.034	**0.04**	0.016	**0.02**	-0.18
Tilt	R	LTE Band7	20850	2510	50RB-Mid	\	22.22	23	<0.01	<0.01	<0.01	<0.01	\
Body	F	LTE Band7	20850	2510	1RB-Middle Front 10mm	\	22.5	23	0.471	**0.53**	0.229	**0.26**	0.05
Body	F	LTE Band7	21350	2560	1RB-Middle Rear 10mm	\	22.17	23	0.638	**0.77**	0.294	**0.36**	0.07
Body	F	LTE Band7	21100	2535	1RB-Middle Rear 10mm	\	22.38	23	0.746	**0.86**	0.34	**0.39**	0.12
Body	F	LTE Band7	20850	2510	1RB-Middle Rear 10mm	\	22.5	23	0.837	**0.94**	0.384	**0.43**	-0.17
Body	F	LTE Band7	20850	2510	100RB Rear 10mm	\	21.26	22	0.754	**0.89**	0.331	**0.39**	-0.09
Body	F	LTE Band7	20850	2510	1RB-Middle Left Edge 10mm	\	22.5	23	0.047	**0.05**	0.026	**0.03**	-0.05
Body	F	LTE Band7	20850	2510	1RB-Middle Right Edge 10mm	\	22.5	23	0.024	**0.03**	0.012	**0.01**	-0.11
Body	F	LTE Band7	21350	2560	1RB-Middle Bottom Edge 10mm	\	22.17	23	0.838	**1.01**	0.354	**0.43**	0.12
Body	F	LTE Band7	21100	2535	1RB-Middle Bottom Edge 10mm	\	22.38	23	0.98	**1.13**	0.409	**0.47**	-0.07
Body	F	LTE Band7	20850	2510	1RB-Middle Bottom Edge 10mm	17	22.5	23	1.1	**1.23**	0.462	**0.52**	0.01
Body	F	LTE Band7	20850	2510	100RB Bottom Edge 10mm	\	21.26	22	0.951	**1.13**	0.381	**0.45**	0.15
Body	F	LTE Band7	20850	2510	50RB-Middle Front 10mm	\	21.35	22	0.403	**0.47**	0.199	**0.23**	0.03
Body	F	LTE Band7	20850	2510	50RB-Middle Rear 10mm	\	21.35	22	0.635	**0.74**	0.283	**0.33**	-0.01
Body	F	LTE Band7	20850	2510	50RB-Middle Left Edge 10mm	\	21.35	22	0.024	**0.03**	0.013	**0.02**	0.05
Body	F	LTE Band7	20850	2510	50RB-Middle Right Edge 10mm	\	21.35	22	0.022	**0.03**	0.012	**0.01**	-0.11
Body	F	LTE Band7	21350	2560	50RB-Low Bottom Edge 10mm	\	21.17	22	0.738	**0.89**	0.287	**0.35**	-0.07
Body	F	LTE Band7	21100	2535	50RB-Middle Bottom Edge 10mm	\	21.3	22	0.863	**1.01**	0.332	**0.39**	0.06
Body	F	LTE Band7	20850	2510	50RB-Middle Bottom Edge 10mm	\	21.35	22	0.969	**1.13**	0.375	**0.44**	0.02
Body	F	LTE Band7	20850	2510	1RB-Middle Front 15mm	\	23.19	24	0.17	**0.20**	0.090	**0.11**	0.09
Body	F	LTE Band7	20850	2510	1RB-Middle Rear 15mm	18	23.19	24	0.305	**0.37**	0.154	**0.19**	-0.12
Body	F	LTE Band7	20850	2510	50RB-Mid Front 15mm	\	22.22	23	0.129	**0.15**	0.069	**0.08**	-0.1
Body	F	LTE Band7	20850	2510	50RB-Mid Rear 15mm	\	22.22	23	0.235	**0.28**	0.117	**0.14**	0.07

Table 14.1-3: SAR Values-LTE B12/B14

Test Position	Phantom position L/R/F	Frequency Band	Channel Number	Frequency (MHz)	Test setup/Position	Figure No./Note	EUT Measured Power (dBm)	Tune up (dBm)	Measured SAR 1g (W/kg)	Calculated SAR 1g (W/kg)	Measured SAR 10g (W/kg)	Calculated SAR 10g (W/kg)	Power Drift
Cheek	L	LTE Band12	23095	707.5	1RB-Mid	\	24.55	25	0.197	**0.22**	0.152	**0.17**	0.11
Tilt	L	LTE Band12	23095	707.5	1RB-Mid	\	24.55	25	0.119	**0.13**	0.094	**0.10**	0.17
Cheek	R	LTE Band12	23095	707.5	1RB-Mid	19	24.55	25	0.229	**0.25**	0.176	**0.20**	0.08
Tilt	R	LTE Band12	23095	707.5	1RB-Mid	\	24.55	25	0.144	**0.16**	0.115	**0.13**	-0.09
Cheek	L	LTE Band12	23095	707.5	25RB-Low	\	23.68	24	0.134	**0.14**	0.105	**0.11**	-0.12
Tilt	L	LTE Band12	23095	707.5	25RB-Low	\	23.68	24	0.089	**0.10**	0.07	**0.08**	0.12
Cheek	R	LTE Band12	23095	707.5	25RB-Low	\	23.68	24	0.168	**0.18**	0.129	**0.14**	-0.03
Tilt	R	LTE Band12	23095	707.5	25RB-Low	\	23.68	24	0.103	**0.11**	0.082	**0.09**	0.13
Body	F	LTE Band12	23095	707.5	1RB-Mid Front 10mm	\	24.55	25	0.307	**0.34**	0.237	**0.26**	-0.18
Body	F	LTE Band12	23095	707.5	1RB-Mid Rear 10mm	20	24.55	25	0.437	**0.48**	0.336	**0.37**	-0.01
Body	F	LTE Band12	23095	707.5	1RB-Mid Left 10mm	\	24.55	25	0.164	**0.18**	0.113	**0.13**	-0.12
Body	F	LTE Band12	23095	707.5	1RB-Mid Right 10mm	\	24.55	25	0.241	**0.27**	0.169	**0.19**	-0.05
Body	F	LTE Band12	23095	707.5	1RB-Mid Bottom 10mm	\	24.55	25	0.094	**0.10**	0.049	**0.05**	-0.11
Body	F	LTE Band12	23095	707.5	25RB-Low Front 10mm	\	23.68	24	0.223	**0.24**	0.169	**0.18**	-0.09
Body	F	LTE Band12	23095	707.5	25RB-Low Rear 10mm	\	23.68	24	0.313	**0.34**	0.24	**0.26**	0.08
Body	F	LTE Band12	23095	707.5	25RB-Low Left 10mm	\	23.68	24	<0.01	<0.01	<0.01	<0.01	\
Body	F	LTE Band12	23095	707.5	25RB-Low Right 10mm	\	23.68	24	0.102	**0.11**	0.072	**0.08**	0.18
Body	F	LTE Band12	23095	707.5	25RB-Low Bottom 10mm	\	23.68	24	0.068	**0.07**	0.036	**0.04**	0.09
Body	F	LTE Band12	23095	707.5	1RB-Mid Front 15mm	\	24.55	25	0.344	**0.38**	0.265	**0.29**	0.02
Body	F	LTE Band12	23095	707.5	1RB-Mid Rear 15mm	21	24.55	25	0.437	**0.48**	0.336	**0.37**	-0.01
Body	F	LTE Band12	23095	707.5	25RB-Low Front 15mm	\	23.68	24	0.245	**0.26**	0.188	**0.20**	0.11
Body	F	LTE Band12	23095	707.5	25RB-Low Rear 15mm	\	23.68	24	0.312	**0.34**	0.241	**0.26**	0.16
Cheek	L	LTE Band14	23330	793	1RB-Low	\	24.36	25	0.214	**0.25**	0.16	**0.19**	0.13
Tilt	L	LTE Band14	23330	793	1RB-Low	\	24.36	25	0.148	**0.17**	0.104	**0.12**	-0.01
Cheek	R	LTE Band14	23330	793	1RB-Low	22	24.36	25	0.232	**0.27**	0.174	**0.20**	0.08
Tilt	R	LTE Band14	23330	793	1RB-Low	\	24.36	25	0.138	**0.16**	0.108	**0.13**	-0.08
Cheek	L	LTE Band14	23330	793	25RB-Mid	\	23.53	24	0.18	**0.20**	0.134	**0.15**	0.15
Tilt	L	LTE Band14	23330	793	25RB-Mid	\	23.53	24	0.11	**0.12**	0.084	**0.09**	0.14
Cheek	R	LTE Band14	23330	793	25RB-Mid	\	23.53	24	0.178	**0.20**	0.134	**0.15**	-0.09
Tilt	R	LTE Band14	23330	793	25RB-Mid	\	23.53	24	0.111	**0.12**	0.087	**0.10**	0.11
Body	F	LTE Band14	23330	793	1RB-Low Front 10mm	\	24.36	25	0.189	**0.22**	0.177	**0.21**	-0.1
Body	F	LTE Band14	23330	793	1RB-Low Rear 10mm	23	24.36	25	0.291	**0.34**	0.22	**0.25**	0.05
Body	F	LTE Band14	23330	793	1RB-Low Left 10mm	\	24.36	25	0.085	**0.10**	0.072	**0.08**	-0.09
Body	F	LTE Band14	23330	793	1RB-Low Right 10mm	\	24.36	25	0.167	**0.19**	0.145	**0.17**	-0.14
Body	F	LTE Band14	23330	793	1RB-Low Bottom 10mm	\	24.36	25	0.112	**0.13**	0.079	**0.09**	-0.02
Body	F	LTE Band14	23330	793	25RB-Mid Front 10mm	\	23.53	24	0.149	**0.17**	0.138	**0.15**	0.03
Body	F	LTE Band14	23330	793	25RB-Mid Rear 10mm	\	23.53	24	0.242	**0.27**	0.18	**0.20**	-0.13
Body	F	LTE Band14	23330	793	25RB-Mid Left 10mm	\	23.53	24	0.063	**0.07**	0.053	**0.06**	-0.1
Body	F	LTE Band14	23330	793	25RB-Mid Right 10mm	\	23.53	24	0.13	**0.14**	0.111	**0.12**	0.07
Body	F	LTE Band14	23330	793	25RB-Mid Bottom 10mm	\	23.53	24	0.098	**0.11**	0.07	**0.08**	0.07
Body	F	LTE Band14	23330	793	1RB-Low Front 15mm	\	24.36	25	0.223	**0.26**	0.17	**0.20**	-0.09
Body	F	LTE Band14	23330	793	1RB-Low Rear 15mm	24	24.36	25	0.293	**0.34**	0.223	**0.26**	0.02
Body	F	LTE Band14	23330	793	25RB-Mid Front 15mm	\	23.53	24	0.181	**0.20**	0.137	**0.15**	0.08
Body	F	LTE Band14	23330	793	25RB-Mid Rear 15mm	\	23.53	24	0.231	**0.26**	0.175	**0.20**	-0.03

Table 14.1-4: SAR Values-LTE B30/B66

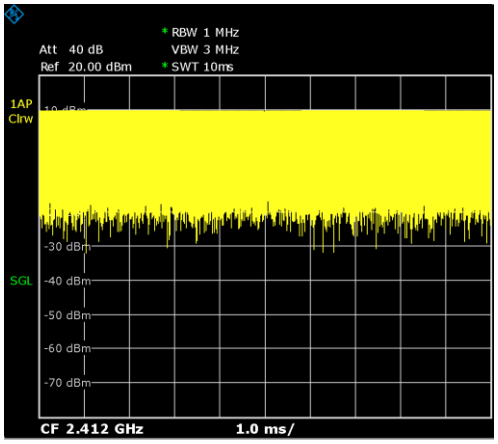
Test Position	Phantom position L/R/F	Frequency Band	Channel Number	Frequency (MHz)	Test setup/Position	Figure No./Note	EUT Measured Power (dBm)	Tune up (dBm)	Measured SAR 1g (W/kg)	Calculated SAR 1g (W/kg)	Measured SAR 10g (W/kg)	Calculated SAR 10g (W/kg)	Power Drift
Cheek	L	LTE Band30	27710	2310	1RB-Low	25	23.18	24	0.038	0.05	0.022	0.03	-0.07
Tilt	L	LTE Band30	27710	2310	1RB-Low	\	23.18	24	<0.01	<0.01	<0.01	<0.01	\
Cheek	R	LTE Band30	27710	2310	1RB-Low	\	23.18	24	<0.01	<0.01	<0.01	<0.01	\
Tilt	R	LTE Band30	27710	2310	1RB-Low	\	23.18	24	<0.01	<0.01	<0.01	<0.01	\
Cheek	L	LTE Band30	27710	2310	25RB-Mid	\	22.29	23	0.024	0.03	0.013	0.02	0.12
Tilt	L	LTE Band30	27710	2310	25RB-Mid	\	22.29	23	<0.01	<0.01	<0.01	<0.01	\
Cheek	R	LTE Band30	27710	2310	25RB-Mid	\	22.29	23	<0.01	<0.01	<0.01	<0.01	\
Tilt	R	LTE Band30	27710	2310	25RB-Mid	\	22.29	23	<0.01	<0.01	<0.01	<0.01	\
Body	F	LTE Band30	27710	2310	1RB-Mid Front 10mm	\	18.44	19	0.42	0.48	0.212	0.24	-0.08
Body	F	LTE Band30	27710	2310	1RB-Mid Rear 10mm	26	18.44	19	0.995	1.13	0.458	0.52	-0.03
Body	F	LTE Band30	27710	2310	50RB Rear 10mm	\	17.09	18	0.812	1.00	0.375	0.46	0.06
Body	F	LTE Band30	27710	2310	1RB-Mid Left 10mm	\	18.44	19	0.092	0.10	0.054	0.06	0.12
Body	F	LTE Band30	27710	2310	1RB-Mid Right 10mm	\	18.44	19	<0.01	<0.01	<0.01	<0.01	\
Body	F	LTE Band30	27710	2310	1RB-Mid Bottom 10mm	\	18.44	19	0.991	1.13	0.452	0.51	-0.01
Body	F	LTE Band30	27710	2310	50RB Bottom 10mm	\	17.09	18	0.825	1.02	0.381	0.47	0.09
Body	F	LTE Band30	27710	2310	25RB-Mid Front 10mm	\	17.15	18	0.32	0.39	0.165	0.20	0.08
Body	F	LTE Band30	27710	2310	25RB-Mid Rear 10mm	\	17.15	18	0.781	0.95	0.368	0.45	0.12
Body	F	LTE Band30	27710	2310	25RB-Mid Left 10mm	\	17.15	18	0.037	0.04	0.023	0.03	-0.08
Body	F	LTE Band30	27710	2310	25RB-Mid Right 10mm	\	17.15	18	<0.01	<0.01	<0.01	<0.01	\
Body	F	LTE Band30	27710	2310	25RB-Mid Bottom 10mm	\	17.15	18	0.838	1.02	0.385	0.47	0.13
Body	F	LTE Band30	27710	2310	1RB-High Front 15mm	\	20.18	20.5	0.318	0.34	0.169	0.18	-0.16
Body	F	LTE Band30	27710	2310	1RB-High Rear 15mm	27	20.18	20.5	0.586	0.63	0.297	0.32	0.11
Body	F	LTE Band30	27710	2310	25RB-Mid Front 15mm	\	18.69	19.5	0.244	0.29	0.13	0.16	-0.07
Body	F	LTE Band30	27710	2310	25RB-Mid Rear 15mm	\	18.69	19.5	0.459	0.55	0.234	0.28	0.09
Cheek	L	LTE Band66	132072	1720	1RB-Mid	\	24.05	24.5	0.14	0.16	0.091	0.10	-0.03
Tilt	L	LTE Band66	132072	1720	1RB-Mid	\	24.05	24.5	0.071	0.08	0.045	0.05	-0.16
Cheek	R	LTE Band66	132072	1720	1RB-Mid	28	24.05	24.5	0.177	0.20	0.113	0.13	-0.05
Tilt	R	LTE Band66	132072	1720	1RB-Mid	\	24.05	24.5	0.056	0.06	0.038	0.04	-0.12
Cheek	L	LTE Band66	132072	1720	50RB-High	\	23.1	23.5	0.115	0.13	0.074	0.08	0.01
Tilt	L	LTE Band66	132072	1720	50RB-High	\	23.1	23.5	0.056	0.06	0.037	0.04	-0.02
Cheek	R	LTE Band66	132072	1720	50RB-High	\	23.1	23.5	0.134	0.15	0.086	0.09	0.1
Tilt	R	LTE Band66	132072	1720	50RB-High	\	23.1	23.5	0.046	0.05	0.031	0.03	0.04
Body	F	LTE Band66	132072	1720	1RB-Middle Front 10mm	\	20.78	21.5	0.372	0.44	0.218	0.26	0.05
Body	F	LTE Band66	132072	1720	1RB-Middle Rear 10mm	\	20.78	21.5	0.546	0.64	0.311	0.37	-0.12
Body	F	LTE Band66	132072	1720	1RB-Middle Left Edge 10mm	\	20.78	21.5	0.094	0.11	0.057	0.07	-0.14
Body	F	LTE Band66	132072	1720	1RB-Middle Right Edge 10mm	\	20.78	21.5	0.062	0.07	0.037	0.04	0.12
Body	F	LTE Band66	132572	1770	1RB-High Bottom Edge 10mm	\	20.72	21.5	0.828	0.99	0.459	0.55	-0.1
Body	F	LTE Band66	132322	1745	1RB-Middle Bottom Edge 10mm	\	20.77	21.5	0.814	0.96	0.453	0.54	-0.04
Body	F	LTE Band66	132072	1720	1RB-Middle Bottom Edge 10mm	29	20.78	21.5	0.929	1.10	0.511	0.60	-0.01
Body	F	LTE Band66	132072	1720	100RB Bottom Edge 10mm	\	19.59	20.5	0.754	0.93	0.412	0.51	0.15
Body	F	LTE Band66	132072	1720	50RB-Mid Front 10mm	\	19.75	20.5	0.293	0.35	0.175	0.21	-0.05
Body	F	LTE Band66	132072	1720	50RB-Mid Rear 10mm	\	19.75	20.5	0.533	0.63	0.287	0.34	-0.1
Body	F	LTE Band66	132072	1720	50RB-Mid Left 10mm	\	19.75	20.5	0.127	0.15	0.076	0.09	-0.08
Body	F	LTE Band66	132072	1720	50RB-Mid Right 10mm	\	19.75	20.5	0.079	0.09	0.046	0.05	-0.15
Body	F	LTE Band66	132572	1770	50RB-Mid Bottom 10mm	\	19.75	20.5	0.679	0.81	0.377	0.45	-0.04
Body	F	LTE Band66	132322	1745	50RB-Mid Bottom 10mm	\	19.75	20.5	0.668	0.79	0.372	0.44	0.13
Body	F	LTE Band66	132072	1720	50RB-Mid Bottom 10mm	\	19.75	20.5	0.762	0.91	0.42	0.50	-0.12
Body	F	LTE Band66	132072	1720	1RB-High Front 15mm	\	22.76	23.5	0.254	0.30	0.159	0.19	0.06
Body	F	LTE Band66	132072	1720	1RB-High Rear 15mm	30	22.76	23.5	0.448	0.53	0.27	0.32	-0.09
Body	F	LTE Band66	132072	1720	50RB-Mid Front 15mm	\	21.78	22.5	0.254	0.30	0.159	0.19	-0.12
Body	F	LTE Band66	132072	1720	50RB-Mid Rear 15mm	\	21.78	22.5	0.356	0.42	0.214	0.25	0.08

14.2 SAR Evaluation for WIFI

The maximum output power specified for production units are determined for all applicable 802.11 transmission modes in each standalone and aggregated frequency band. Maximum output power is measured for the highest maximum output power configuration(s) in each frequency band according to the default power measurement procedures.
When the same transmission mode configurations have the same maximum output power on the same channel for the 802.11 a/g/n/ac/ax modes, the channel in the lower order/sequence 802.11 mode (i.e. a, g, n ac then ax) is selected.
SAR Test reduction was applied from KDB 248227 guidance, when the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel in the initial test configuration, for each frequency band. Additional output power measurements were not deemed necessary.

Duty factor plot

CH1



CH58

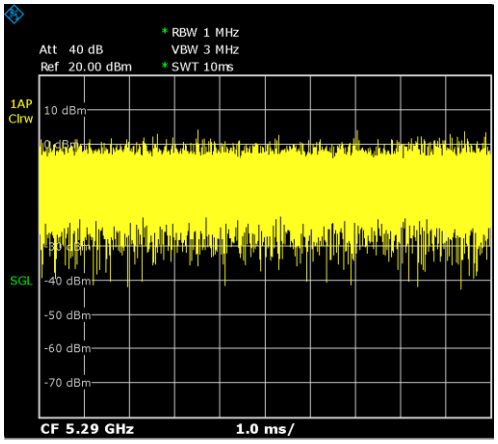


Table 14.2-1: SAR Values-WLAN 2.4GHz

Test Position	Phantom position L/R/F	Frequency Band	Channel Number	Frequency (MHz)	Test setup/Position	Figure No./Note	EUT Measured Power (dBm)	Tune up (dBm)	Measured SAR 1g (W/kg)	Calculated SAR 1g (W/kg)	Measured SAR 10g (W/kg)	Calculated SAR 10g (W/kg)	Power Drift
Cheek	L	WIFI2.4G	11	2462	802.11b 1M	\	13.83	14.7	0.916	**1.12**	0.295	**0.36**	0.17
Cheek	L	WIFI2.4G	6	2437	802.11b 1M	\	13.83	14.7	0.936	**1.14**	0.301	**0.37**	0.08
Cheek	L	WIFI2.4G	1	2412	802.11b 1M	\	13.87	14.7	0.961	**1.16**	0.313	**0.38**	0.1
Tilt	L	WIFI2.4G	11	2462	802.11b 1M	\	13.83	14.7	0.936	**1.14**	0.295	**0.36**	0.12
Tilt	L	WIFI2.4G	6	2437	802.11b 1M	\	13.83	14.7	0.911	**1.11**	0.281	**0.34**	-0.14
Tilt	L	WIFI2.4G	1	2412	802.11b 1M	31	13.87	14.7	0.971	**1.18**	0.367	**0.44**	0.12
Cheek	R	WIFI2.4G	1	2412	802.11b 1M	\	13.87	14.7	0.23	**0.28**	0.084	**0.10**	-0.1
Tilt	R	WIFI2.4G	1	2412	802.11b 1M	\	13.87	14.7	0.423	**0.51**	0.143	**0.17**	-0.15
Body	F	WIFI2.4G	1	2412	802.11b 1M/Front 10mm	\	16.98	18	0.41	**0.52**	0.188	**0.24**	-0.07
Body	F	WIFI2.4G	1	2412	802.11b 1M/Rear 10mm	\	16.98	18	0.606	**0.77**	0.281	**0.36**	-0.01
Body	F	WIFI2.4G	1	2412	802.11b 1M/Left 10mm	\	16.98	18	<0.01	<0.01	<0.01	<0.01	\
Body	F	WIFI2.4G	1	2412	802.11b 1M/Right 10mm	\	16.98	18	0.102	**0.13**	0.056	**0.07**	-0.05
Body	F	WIFI2.4G	11	2462	802.11b 1M/Top 10mm	\	16.83	18	0.797	**1.04**	0.336	**0.44**	0.07
Body	F	WIFI2.4G	6	2437	802.11b 1M/Top 10mm	\	16.97	18	0.843	**1.07**	0.362	**0.46**	-0.09
Body	F	WIFI2.4G	1	2412	802.11b 1M/Top 10mm	32	16.98	18	0.884	**1.12**	0.383	**0.48**	0.09
Body	F	WIFI2.4G	1	2412	802.11b 1M/Front 15mm	\	17.96	19	0.214	**0.27**	0.107	**0.14**	0.05
Body	F	WIFI2.4G	1	2412	802.11b 1M/Rear 15mm	33	17.96	19	0.344	**0.44**	0.171	**0.22**	-0.16

Table 14.2-2: SAR Values-WLAN 5GHz

Test Position	Phantom position L/R/F	Frequency Band	Channel Number	Frequency (MHz)	Test setup/Position	Figure No./Note	EUT Measured Power (dBm)	Tune up (dBm)	Measured SAR 1g (W/kg)	Calculated SAR 1g (W/kg)	Measured SAR 10g (W/kg)	Calculated SAR 10g (W/kg)	Power Drift
Cheek	L	WIFI5G	58	5290	802.11ac-80M MCS0	\	17.15	18.5	0.28	**0.38**	0.104	**0.14**	-0.05
Tilt	L	WIFI5G	58	5290	802.11ac-80M MCS0	\	17.15	18.5	0.469	**0.64**	0.177	**0.24**	0.18
Cheek	R	WIFI5G	58	5290	802.11ac-80M MCS0	\	17.15	18.5	0.388	**0.53**	0.147	**0.20**	0.07
Tilt	R	WIFI5G	58	5290	802.11ac-80M MCS0	34	17.15	18.5	0.582	**0.79**	0.209	**0.29**	-0.11
Cheek	L	WIFI5G	138	5690	802.11ac-80M MCS0	\	17.52	18.5	0.255	**0.32**	0.104	**0.13**	0.09
Tilt	L	WIFI5G	138	5690	802.11ac-80M MCS0	\	17.52	18.5	0.347	**0.43**	0.137	**0.17**	0.15
Cheek	R	WIFI5G	138	5690	802.11ac-80M MCS0	\	17.52	18.5	0.27	**0.34**	0.111	**0.14**	0.12
Tilt	R	WIFI5G	138	5690	802.11ac-80M MCS0	\	17.52	18.5	0.313	**0.39**	0.13	**0.16**	-0.07
Cheek	L	WIFI5G	155	5775	802.11ac-80M MCS0	\	17.79	18.5	0.241	**0.28**	0.099	**0.12**	0.01
Tilt	L	WIFI5G	155	5775	802.11ac-80M MCS0	\	17.79	18.5	0.45	**0.53**	0.17	**0.20**	0.07
Cheek	R	WIFI5G	155	5775	802.11ac-80M MCS0	\	17.79	18.5	0.233	**0.27**	0.094	**0.11**	-0.05
Tilt	R	WIFI5G	155	5775	802.11ac-80M MCS0	\	17.79	18.5	0.391	**0.46**	0.151	**0.18**	-0.06
Body	F	WIFI5G	58	5290	802.11ac-80M MCS0/Front 15mm	\	17.57	18.5	0.081	**0.10**	0.018	**0.02**	-0.15
Body	F	WIFI5G	58	5290	802.11ac-80M MCS0/Rear 15mm	35	17.57	18.5	0.405	**0.50**	0.163	**0.20**	-0.09
Body	F	WIFI5G	138	5690	802.11ac-80M MCS0/Front 15mm	\	17.52	18.5	0.07	**0.09**	0.022	**0.03**	-0.11
Body	F	WIFI5G	138	5690	802.11ac-80M MCS0/Rear 15mm	\	17.52	18.5	0.365	**0.46**	0.146	**0.18**	-0.11
Body	F	WIFI5G	155	5775	802.11ac-80M MCS0/Front 15mm	\	17.79	18.5	0.142	**0.17**	0.038	**0.04**	0.14
Body	F	WIFI5G	155	5775	802.11ac-80M MCS0/Rear 15mm	\	17.79	18.5	0.372	**0.44**	0.153	**0.18**	0.15
Body	F	WIFI5G	58	5290	802.11ac-80M MCS0/Front 10mm	\	17.57	18.5	0.102	**0.13**	0.043	**0.05**	0.04
Body	F	WIFI5G	58	5290	802.11ac-80M MCS0/Rear 10mm	\	17.57	18.5	0.589	**0.73**	0.221	**0.27**	0.12
Body	F	WIFI5G	58	5290	802.11ac-80M MCS0/Right 10mm	\	17.57	18.5	0.091	**0.11**	0.038	**0.05**	0.15
Body	F	WIFI5G	58	5290	802.11ac-80M MCS0/Top 10mm	36	17.57	18.5	0.799	**0.99**	0.267	**0.33**	-0.02
Body	F	WIFI5G	138	5690	802.11ac-80M MCS0/Front 10mm	\	17.52	18.5	0.081	**0.10**	0.034	**0.04**	0.06
Body	F	WIFI5G	138	5690	802.11ac-80M MCS0/Rear 10mm	\	17.52	18.5	0.377	**0.47**	0.155	**0.19**	-0.04
Body	F	WIFI5G	138	5690	802.11ac-80M MCS0/Right 10mm	\	17.52	18.5	0.137	**0.17**	0.058	**0.07**	-0.16
Body	F	WIFI5G	138	5690	802.11ac-80M MCS0/Top 10mm	\	17.52	18.5	0.531	**0.67**	0.189	**0.24**	-0.16
Body	F	WIFI5G	155	5775	802.11ac-80M MCS0/Front 10mm	\	17.79	18.5	0.092	**0.11**	0.022	**0.03**	0.18
Body	F	WIFI5G	155	5775	802.11ac-80M MCS0/Rear 10mm	\	17.79	18.5	0.377	**0.44**	0.163	**0.19**	0.17
Body	F	WIFI5G	155	5775	802.11ac-80M MCS0/Right 10mm	\	17.79	18.5	0.174	**0.20**	0.071	**0.08**	0.05
Body	F	WIFI5G	155	5775	802.11ac-80M MCS0/Top 10mm	\	17.79	18.5	0.559	**0.66**	0.202	**0.24**	-0.06

14.3 SAR Evaluation For BT

Table 14.3-1: SAR Values-BT

Test Position	Phantom position L/R/F	Frequency Band	Channel Number	Frequency (MHz)	Test setup/Position	Figure No./Note	EUT Measured Power (dBm)	Tune up (dBm)	Measured SAR 1g (W/kg)	Calculated SAR 1g (W/kg)	Measured SAR 10g (W/kg)	Calculated SAR 10g (W/kg)	Power Drift
Cheek	L	BT	39	2441	DH5	\	9.63	10	0.195	**0.21**	0.078	**0.08**	0.06
Tilt	L	BT	39	2441	DH5	37	9.63	10	0.232	**0.25**	0.088	**0.10**	-0.11
Cheek	R	BT	39	2441	DH5	\	9.63	10	0.084	**0.09**	0.044	**0.05**	-0.07
Tilt	R	BT	39	2441	DH5	\	9.63	10	0.088	**0.10**	0.041	**0.04**	0.02
Body	F	BT	39	2441	DH5/Front 15mm	\	9.63	10	0.021	**0.02**	0.011	**0.01**	-0.14
Body	F	BT	39	2441	DH5/Rear 15mm	38	9.63	10	0.033	**0.04**	0.017	**0.02**	-0.09
Body	F	BT	39	2441	DH5/Front 10mm	\	9.63	10	<0.01	<0.01	<0.01	<0.01	\
Body	F	BT	39	2441	DH5/Rear 10mm	\	9.63	10	0.064	**0.07**	0.029	**0.03**	0.03
Body	F	BT	39	2441	DH5/Right 10mm	\	9.63	10	<0.01	<0.01	<0.01	<0.01	\
Body	F	BT	39	2441	DH5/Top 10mm	39	9.63	10	0.101	**0.11**	0.044	**0.05**	0.08

14.4 SAR results for 10-g extremity SAR

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.

Scaled SAR for Phablet evaluation procedure						
Band	**Position**	**SAR 1g (W/kg)**	**Tune up(dBm) for Hotspot**	**Tune up(dBm) for Body-worn**	**Scaled SAR**	**>1.2**
WCDMA B4	Rear	0.77	23	24	**0.97**	**No**
WCDMA B4	Bottom	1.29	23	24	**1.62**	**Yes**
LTE B2	Rear	0.65	22.5	24.5	**1.03**	**No**
LTE B2	Bottom	1.05	22.5	24.5	**1.66**	**Yes**
LTE B2	Rear	0.77	23	24	**0.97**	**No**
LTE B2	Bottom	1.23	23	24	**1.55**	**Yes**
LTE B30	Rear	1.13	19	20.5	**1.60**	**Yes**
LTE B30	Bottom	1.13	19	20.5	**1.60**	**Yes**
LTE B66	Rear	0.64	21.5	23.5	**1.01**	**No**
LTE B66	Bottom	1.1	21.5	23.5	**1.74**	**Yes**

SAR results for Phablet is below:

Test Position	Phantom position L/R/F	Frequency Band	Channel Number	Frequency (MHz)	Test setup/Position	EUT Measured Power (dBm)	Tune up (dBm)	Measured SAR 1g (W/kg)	Calculated SAR 1g (W/kg)	Measured SAR 10g (W/kg)	Calculated SAR 10g (W/kg)	Power Drift
Body	F	WCDMA1700	1513	1752.6	Bottom Edge 0mm	23.24	24	5.72	**6.81**	2.51	**2.99**	0.12
Body	F	WCDMA1700	1412	1732.5	Bottom Edge 0mm	23.26	24	5.54	**6.57**	2.53	**3.00**	-0.07
Body	F	WCDMA1700	1312	1712.4	Bottom Edge 0mm	23.21	24	5.86	**7.03**	2.62	**3.14**	0.01
Body	F	LTE Band2	19100	1900	1RB-Mid Bottom Edge 0mm	24.15	24.5	5.41	**5.86**	2.57	**2.79**	-0.15
Body	F	LTE Band2	18900	1880	1RB-Mid Bottom Edge 0mm	24.16	24.5	5.57	**6.02**	2.57	**2.78**	0.08
Body	F	LTE Band2	18700	1860	1RB-Mid Bottom Edge 0mm	24.13	24.5	6.48	**7.06**	2.83	**3.08**	-0.02
Body	F	LTE Band7	21350	2560	1RB-Middle Bottom Edge 0mm	23.11	24	5.36	**6.58**	2.19	**2.69**	-0.08
Body	F	LTE Band7	21100	2535	1RB-Middle Bottom Edge 0mm	23.04	24	7.33	**9.14**	2.41	**3.01**	0.14
Body	F	LTE Band7	20850	2510	1RB-Middle Bottom Edge 0mm	23.19	24	8.03	**9.68**	2.7	**3.25**	-0.04
Body	F	LTE Band30	27710	2310	1RB-Mid Rear 0mm	20.18	20.5	8.18	**8.81**	2.97	**3.20**	0.11
Body	F	LTE Band30	27710	2310	1RB-Mid Bottom 0mm	20.18	20.5	6.42	**6.91**	2.33	**2.51**	-0.09
Body	F	LTE Band66	132572	1770	1RB-Middle Bottom Edge 0mm	22.75	23.5	4.7	**5.59**	2.12	**2.52**	0.16
Body	F	LTE Band66	132322	1745	1RB-High Bottom Edge 0mm	22.74	23.5	4.81	**5.73**	2.13	**2.54**	0.08
Body	F	LTE Band66	132072	1720	1RB-High Bottom Edge 0mm	22.76	23.5	5.03	**5.96**	2.29	**2.72**	-0.01
Body	F	WIFI2.4G	1	2412	802.11b 1M/Rear 0mm	17.96	19	5.11	**6.49**	1.81	**2.30**	-0.03
Body	F	WIFI2.4G	1	2412	802.11b 1M/Top 0mm	17.96	19	6.07	**7.71**	2.03	**2.58**	0.01
Body	F	WIFI5G	58	5290	802.11ac-80M MCS0/Rear 0mm	17.57	18.5	3.99	**4.94**	0.973	**1.21**	0.05
Body	F	BT	39	2441	DH5/Rear 0mm	9.63	10	0.314	**0.34**	0.114	**0.12**	0.08

15 SAR Measurement Variability

SAR measurement variability must be assessed for each frequency band, which is determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. When both head and body tissue-equivalent media are required for SAR measurements in a frequency band, the variability measurement procedures should be applied to the tissue medium with the highest measured SAR, using the highest measured SAR configuration for that tissue-equivalent medium.
The following procedures are applied to determine if repeated measurements are required.
1) Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg; steps2) through 4) do not apply.
2) When the original highest measured SAR is ≥ 0.80 W/kg, repeat that measurement once.
3) Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45W/kg (~ 10% from the 1-g SAR limit).
4) Perform a third repeated measurement only if the original, first or second repeated measurement is ≥1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20

Mode	CH	Freq	Test Position	Original SAR(W/kg)	First Repeated SAR(W/kg)	The Ratio
WCDMA1900	9262	1852.4	Bottom Edge 10mm	0.97	0.945	1.03
WCDMA1700	1312	1712.4	Bottom Edge 10mm	1.14	1.11	1.03
LTE Band2	18900	1880	1RB-Mid Bottom Edge 10mm	0.929	0.907	1.02
LTE Band7	20850	2510	1RB-Mid Bottom Edge 10mm	1.1	1.07	1.03
LTE Band30	27710	2310	1RB-Mid Rear 10mm	0.995	0.983	1.01
LTE Band30	27710	2310	1RB-Mid Bottom 10mm	0.991	0.985	1.01
LTE Band66	132072	1720	1RB-Mid Bottom Edge 10mm	0.929	0.911	1.02
WIFI2.4G	1	2412	802.11b 1M Left Cheek	0.961	0.945	1.02
WIFI2.4G	1	2412	802.11b 1M Left Tilt	0.971	0.962	1.01

16 Measurement Uncertainty

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

No.	Error Description	Type	Uncertainty value	Probably Distribution	Div.	(Ci) 1g	(Ci) 10g	Std. Unc. (1g)	Std. Unc. (10g)	Degree of freedom
Measurement system										
1	Probe calibration	B	6.0	N	1	1	1	6.0	6.0	∞
2	Isotropy	B	4.7	R	√3	0.7	0.7	1.9	1.9	∞
3	Boundary effect	B	1.0	R	√3	1	1	0.6	0.6	∞
4	Linearity	B	4.7	R	√3	1	1	2.7	2.7	∞
5	Detection limit	B	1.0	N	1	1	1	0.6	0.6	∞
6	Readout electronics	B	0.3	R	√3	1	1	0.3	0.3	∞
7	Response time	B	0.8	R	√3	1	1	0.5	0.5	∞
8	Integration time	B	2.6	R	√3	1	1	1.5	1.5	∞
9	RF ambient conditions-noise	B	0	R	√3	1	1	0	0	∞
10	RFambient conditions-reflection	B	0	R	√3	1	1	0	0	∞
11	Probe positioned mech. restrictions	B	0.4	R	√3	1	1	0.2	0.2	∞
12	Probe positioning with respect to phantom shell	B	2.9	R	√3	1	1	1.7	1.7	∞
13	Post-processing	B	1.0	R	√3	1	1	0.6	0.6	∞
Test sample related										
14	Test sample positioning	A	3.3	N	1	1	1	3.3	3.3	71
15	Device holder uncertainty	A	3.4	N	1	1	1	3.4	3.4	5
16	Drift of output power	B	5.0	R	√3	1	1	2.9	2.9	∞
Phantom and set-up										
17	Phantom uncertainty	B	4.0	R	√3	1	1	2.3	2.3	∞
18	Liquid conductivity (target)	B	5.0	R	√3	0.64	0.43	1.8	1.2	∞
19	Liquid conductivity (meas.)	A	2.06	N	1	0.64	0.43	1.32	0.89	43
20	Liquid permittivity (target)	B	5.0	R	√3	0.6	0.49	1.7	1.4	∞
21	Liquid permittivity (meas.)	A	1.6	N	1	0.6	0.49	1.0	0.8	521

Combined standard uncertainty	$u_c^{'} = \sqrt{\sum_{i=1}^{21} c_i^2 u_i^2}$					9.55	9.43	257
Expanded uncertainty (confidence interval of 95 %)	$u_e = 2u_c$					19.1	18.9	

16.2 Measurement Uncertainty for Normal SAR Tests (3~6GHz)

No.	Error Description	Type	Uncertainty value	Probably Distribution	Div.	(Ci) 1g	(Ci) 10g	Std. Unc. (1g)	Std. Unc. (10g)	Degree of freedom
Measurement system										
1	Probe calibration	B	6.55	N	1	1	1	6.55	6.55	∞
2	Isotropy	B	4.7	R	√3	0.7	0.7	1.9	1.9	∞
3	Boundary effect	B	2.0	R	√3	1	1	1.2	1.2	∞
4	Linearity	B	4.7	R	√3	1	1	2.7	2.7	∞
5	Detection limit	B	1.0	R	√3	1	1	0.6	0.6	∞
6	Readout electronics	B	0.3	R	√3	1	1	0.3	0.3	∞
7	Response time	B	0.8	R	√3	1	1	0.5	0.5	∞
8	Integration time	B	2.6	R	√3	1	1	1.5	1.5	∞
9	RF ambient conditions-noise	B	0	R	√3	1	1	0	0	∞
10	RFambient conditions-reflection	B	0	R	√3	1	1	0	0	∞
11	Probe positioned mech. restrictions	B	0.8	R	√3	1	1	0.5	0.5	∞
12	Probe positioning with respect to phantom shell	B	6.7	R	√3	1	1	3.9	3.9	∞
13	Post-processing	B	4.0	R	√3	1	1	2.3	2.3	∞
Test sample related										
14	Test sample positioning	A	3.3	N	1	1	1	3.3	3.3	71
15	Device holder uncertainty	A	3.4	N	1	1	1	3.4	3.4	5
16	Drift of output power	B	5.0	R	√3	1	1	2.9	2.9	∞
Phantom and set-up										
17	Phantom uncertainty	B	4.0	R	√3	1	1	2.3	2.3	∞
18	Liquid conductivity (target)	B	5.0	R	√3	0.64	0.43	1.8	1.2	∞
19	Liquid conductivity (meas.)	A	2.06	N	1	0.64	0.43	1.32	0.89	43
20	Liquid permittivity	B	5.0	R	√3	0.6	0.49	1.7	1.4	∞

	(target)									
21	Liquid permittivity (meas.)	A	1.6	N	1	0.6	0.49	1.0	0.8	521
Combined standard uncertainty		$u_c^{'} = \sqrt{\sum_{i=1}^{21} c_i^2 u_i^2}$						10.7	10.6	257
Expanded uncertainty (confidence interval of 95 %)		$u_e = 2u_c$						21.4	21.1	

16.3 Measurement Uncertainty for Fast SAR Tests (300MHz~3GHz)

No.	Error Description	Type	Uncertainty value	Probably Distribution	Div.	(Ci) 1g	(Ci) 10g	Std. Unc. (1g)	Std. Unc. (10g)	Degree of freedom
Measurement system										
1	Probe calibration	B	6.0	N	1	1	1	6.0	6.0	∞
2	Isotropy	B	4.7	R	√3	0.7	0.7	1.9	1.9	∞
3	Boundary effect	B	1.0	R	√3	1	1	0.6	0.6	∞
4	Linearity	B	4.7	R	√3	1	1	2.7	2.7	∞
5	Detection limit	B	1.0	R	√3	1	1	0.6	0.6	∞
6	Readout electronics	B	0.3	R	√3	1	1	0.3	0.3	∞
7	Response time	B	0.8	R	√3	1	1	0.5	0.5	∞
8	Integration time	B	2.6	R	√3	1	1	1.5	1.5	∞
9	RF ambient conditions-noise	B	0	R	√3	1	1	0	0	∞
10	RFambient conditions-reflection	B	0	R	√3	1	1	0	0	∞
11	Probe positioned mech. Restrictions	B	0.4	R	√3	1	1	0.2	0.2	∞
12	Probe positioning with respect to phantom shell	B	2.9	R	√3	1	1	1.7	1.7	∞
13	Post-processing	B	1.0	R	√3	1	1	0.6	0.6	∞
14	Fast SAR z-Approximation	B	7.0	R	√3	1	1	4.0	4.0	∞
Test sample related										
15	Test sample positioning	A	3.3	N	1	1	1	3.3	3.3	71
16	Device holder uncertainty	A	3.4	N	1	1	1	3.4	3.4	5
17	Drift of output power	B	5.0	R	√3	1	1	2.9	2.9	∞
Phantom and set-up										
18	Phantom uncertainty	B	4.0	R	√3	1	1	2.3	2.3	∞

19	Liquid conductivity (target)	B	5.0	R	$\sqrt{3}$	0.64	0.43	1.8	1.2	∞
20	Liquid conductivity (meas.)	A	2.06	N	1	0.64	0.43	1.32	0.89	43
21	Liquid permittivity (target)	B	5.0	R	$\sqrt{3}$	0.6	0.49	1.7	1.4	∞
22	Liquid permittivity (meas.)	A	1.6	N	1	0.6	0.49	1.0	0.8	521
Combined standard uncertainty		$u_c^{'} = \sqrt{\sum_{i=1}^{22} c_i^2 u_i^2}$						10.4	10.3	257
Expanded uncertainty (confidence interval of 95 %)		$u_e = 2u_c$						20.8	20.6	

16.4 Measurement Uncertainty for Fast SAR Tests (3~6GHz)

No.	Error Description	Type	Uncertainty value	Probably Distribution	Div.	(Ci) 1g	(Ci) 10g	Std. Unc. (1g)	Std. Unc. (10g)	Degree of freedom
Measurement system										
1	Probe calibration	B	6.55	N	1	1	1	6.55	6.55	∞
2	Isotropy	B	4.7	R	$\sqrt{3}$	0.7	0.7	1.9	1.9	∞
3	Boundary effect	B	2.0	R	$\sqrt{3}$	1	1	1.2	1.2	∞
4	Linearity	B	4.7	R	$\sqrt{3}$	1	1	2.7	2.7	∞
5	Detection limit	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
6	Readout electronics	B	0.3	R	$\sqrt{3}$	1	1	0.3	0.3	∞
7	Response time	B	0.8	R	$\sqrt{3}$	1	1	0.5	0.5	∞
8	Integration time	B	2.6	R	$\sqrt{3}$	1	1	1.5	1.5	∞
9	RF ambient conditions-noise	B	0	R	$\sqrt{3}$	1	1	0	0	∞
10	RFambient conditions-reflection	B	0	R	$\sqrt{3}$	1	1	0	0	∞
11	Probe positioned mech. Restrictions	B	0.8	R	$\sqrt{3}$	1	1	0.5	0.5	∞
12	Probe positioning with respect to phantom shell	B	6.7	R	$\sqrt{3}$	1	1	3.9	3.9	∞
13	Post-processing	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
14	Fast SAR z-Approximation	B	14.0	R	$\sqrt{3}$	1	1	8.1	8.1	∞
Test sample related										
15	Test sample	A	3.3	N	1	1	1	3.3	3.3	71

	positioning									
16	Device holder uncertainty	A	3.4	N	1	1	1	3.4	3.4	5
17	Drift of output power	B	5.0	R	$\sqrt{3}$	1	1	2.9	2.9	∞
Phantom and set-up										
18	Phantom uncertainty	B	4.0	R	$\sqrt{3}$	1	1	2.3	2.3	∞
19	Liquid conductivity (target)	B	5.0	R	$\sqrt{3}$	0.64	0.43	1.8	1.2	∞
20	Liquid conductivity (meas.)	A	2.06	N	1	0.64	0.43	1.32	0.89	43
21	Liquid permittivity (target)	B	5.0	R	$\sqrt{3}$	0.6	0.49	1.7	1.4	∞
22	Liquid permittivity (meas.)	A	1.6	N	1	0.6	0.49	1.0	0.8	521
Combined standard uncertainty		$u_c^{'} = \sqrt{\sum_{i=1}^{22} c_i^2 u_i^2}$						13.5	13.4	257
Expanded uncertainty (confidence interval of 95 %)		$u_e = 2u_c$						27.0	26.8	

17 MAIN TEST INSTRUMENTS

Table 17.1: List of Main Instruments

No.	Name	Type	Serial Number	Calibration Date	Valid Period
01	Network analyzer	E5071C	MY46110673	December 25, 2023	One year
02	Power sensor	NRP110T	101139	January 13, 2024	One year
03	Power sensor	NRP110T	101159	January 13, 2024	One year
04	Signal Generator	E4438C	MY49071430	December 25, 2023	One year
05	Amplifier	60S1G4	0331848	No Calibration Requested	
06	BTS	CMW500	159890	January 9, 2024	One year
07	E-field Probe	SPEAG EX3DV4	7727	June 5, 2023	One year
08	DAE	SPEAG DAE4	1744	August 30, 2023	One year
09	Dipole Validation Kit	SPEAG D750V3	1017	July 14,2023	One year
10	Dipole Validation Kit	SPEAG D835V2	4d069	July 14,2023	One year
11	Dipole Validation Kit	SPEAG D1800V2	2d145	July 12,2023	One year
12	Dipole Validation Kit	SPEAG D1900V2	5d101	July 17,2023	One year
13	Dipole Validation Kit	SPEAG D2300V2	1018	July 11,2023	One year
14	Dipole Validation Kit	SPEAG D2600V2	1012	July 11,2023	One year
15	Dipole Validation Kit	SPEAG D5GHzV2	1060	June 19,2023	One year

END OF REPORT BODY

Appendixes

ANNEX A Graph Results
ANNEX B System Verification Results
ANNEX C SAR Measurement Setup
ANNEX D Position of the wireless device in relation to the phantom
ANNEX E Equivalent Media Recipes
ANNEX F System Validation
ANNEX G Probe Calibration Certificate
ANNEX H Dipole Calibration Certificate
ANNEX I Accreditation Certificate